

THE
AMERICAN EPHEMERIS
AND
NAUTICAL ALMANAC

FOR THE YEAR

1916

PUBLISHED BY THE NAUTICAL ALMANAC OFFICE, U. S.
NAVAL OBSERVATORY, BY DIRECTION OF THE SECRETARY
OF THE NAVY AND UNDER THE AUTHORITY OF CONGRESS.
SOLD BY THE SUPERINTENDENT OF DOCUMENTS,
GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C.



WASHINGTON
GOVERNMENT PRINTING OFFICE
1914

U. S. NAVAL OBSERVATORY.

Captain J. L. JAYNE, *U. S. N.*, *Superintendent.*

ASTRONOMICAL COUNCIL.

Captain J. L. JAYNE, *U. S. N.*

Prof. F. B. LITTELL, *U. S. N.*

Commander E. T. POLLOCK, *U. S. N.*

Prof. A. HALL, *U. S. N.*

Prof. W. S. EICHELBERGER, *U. S. N.*

Assistant Astronomer G. A. HILL.

Assistant Astronomer J. C. HAMMOND.

DEPARTMENT OF THE NAUTICAL ALMANAC.

Prof. W. S. EICHELBERGER, *U. S. N.*, *Director.*

ASSISTANTS.

JAMES ROBERTSON.

CLIFFORD S. LEWIS.

WALTER M. HAMILTON.

GEORGE F. CRAWLEY.

WILLIAM T. CARRIGAN.

JOSEPH F. RITT.

ARTHUR SNOW.

CLETUS H. KILLIAN.

PEREZ FISCH

JOSEPH J. ARNAUD.

PIECEWORKERS.

Elizabeth B. Davis.

FRANK E. ROSS.

Janet Mc William.

Henry B. Hedrick.

Hannah F. M. Hedrick.

Thomas E. Trott.

Alfred Doolittle.

Louis Lindsey.

Henry B. Evans.

ARTHUR NEWTON.

George B. Merriman.

Isabel M. Lewis.

HENRY SHATTYN.

* NOTE.—Those whose names are printed in italics devote only a small portion of their time to work of the Nautical Almanac Office.

January, 1914.

PREFACE.

This volume of the *American Ephemeris and Nautical Almanac* was prepared under the immediate supervision of Professor W. S. EICHELBERGER, U. S. N., the Director. The character of the matter herein contained is the same as in the immediately preceding volumes, but the arrangement has been changed in a number of instances. The changes in the Ephemeris have been made with the approval of the Astronomical Council of the Observatory upon the recommendation of the Director, after consultation with the Assistants of the Nautical Almanac Office.

This is the first volume to be issued under the international agreement resulting from the *Congrès International des Éphémérides Astronomiques* held at Paris in October, 1911.

The naval appropriation bill approved August 22, 1912, contained the following:

The Secretary of the Navy is hereby authorized to arrange for the exchange of data with such foreign almanac offices as he may from time to time deem desirable, with a view to reducing the amount of duplication of work in preparing the different national nautical and astronomical almanacs and increasing the total data which may be of use to navigators and astronomers available for publication in the *American Ephemeris and Nautical Almanac*: *Provided*, That any such arrangement shall be terminable on one year's notice: *Provided further*, That the work of the Nautical Almanac Office during the continuance of any such arrangement shall be conducted so that in case of emergency the entire portion of the work intended for the use of navigators may be computed by the force employed by that office, and without any foreign cooperation whatsoever: *Provided further*, That any employee of the Nautical Almanac Office who may be authorized in any annual appropriation bill and whose services in whole or in part can be spared from the duty of preparing for publication the annual volumes of the *American Ephemeris and Nautical Almanac* may be employed by said office in the duty of improving the tables of the planets, moon, and stars, to be used in preparing for publication the annual volumes of the office: *Provided further*, That section four hundred and thirty-five, Revised Statutes, is hereby repealed.

In accordance with the authority granted by Congress, the Navy Department has expressed its willingness to adopt the program of exchanges of data recommended by the International Congress at

Paris, October, 1911, with the understanding that the proposed agreement shall be terminable on one year's notice, and with the following conditions:

(a) That in adopting the resolution, "the ordinary ephemerides of the stars will hereafter be calculated to 0^o.001 nearly in R. A. to 60° of declination, and 0''.01 nearly in declination, not for every tenth day, but for every tenth culmination for the meridian of Greenwich * * *," the department is not committed to the printing of the extra decimals in right ascension and declination, nor to the exclusive use of the Greenwich meridian in the *American Ephemeris and Nautical Almanac*.

(b) With reference to the resolution, "the predictions of the eclipses and occultations will be made with every possible precision," it is understood that the data with regard to eclipses and occultations will be furnished with the same degree of precision as now published in the *American Ephemeris and Nautical Almanac*.

(c) With regard to the meridian of Greenwich and the resolution, "The conference expresses the wish that the adoption of the meridian of Greenwich for all the ephemerides be realized as soon as possible," the department accepts this resolution in spirit but with certain reservations. The *American Ephemeris and Nautical Almanac* has from the beginning used that meridian for nautical purposes, but on account of the remoteness of the American Continent from it, and the fact that the Naval Observatory and other observatories near its meridian are extensive users of the star places published by the *American Ephemeris and Nautical Almanac*, the department deems it expedient to reserve the right to publish certain ephemerides for the meridian of Washington.

The volume, as in previous years, is divided into three parts, as follows:

Part I, *Ephemeris for the Meridian of Greenwich*, which gives the ephemerides of the Sun and Moon, the geocentric and heliocentric positions of the major planets, and other fundamental astronomical data for equidistant intervals of Greenwich mean time.

The material of this part has been rearranged. All information needed in connection with observations of the positions of the Sun has been brought together, and the resulting solar ephemeris is given first in order and for the entire year. Then follows the lunar ephemeris for the entire year, embodying all the information for use in connection with observations of the position of the Moon. Finally, there

appear the planetary ephemerides arranged in accordance with the planet's distance from the Sun, beginning with Mercury.

Part II, *Ephemeris for the Meridian of Washington*, which gives ephemerides of 825 stars, Sun, Moon, and major planets, for transit over the meridian of the Naval Observatory, Washington, which passes midway between the West and East Transit Circles of the Observatory. The mean places of the fixed stars and the data for their reduction are also included in Part II.

In this part the principal changes are that the number of circumpolar stars for which daily ephemerides are given has been increased to 35, and these ephemerides are given together; that the apparent right ascensions of stars whose declination is less than 60° are given to $0^{\circ}.001$; and that the apparent declinations of all stars are given to $0''.01$.

Part III, *Phenomena*, which contains predictions of phenomena to be observed, with data for their computation. Greenwich mean time is used throughout this part except with the occultations visible at Washington where Washington time is used. Tables for the determination of latitude and azimuth from Polaris, tables for the conversion of time, and an alphabetical list of observatories, with their latitudes, longitudes, and other data, are contained in this part.

The hourly ephemeris of the Moon, and the Greenwich ephemeris of Mars, Jupiter, Saturn, Uranus, and Neptune, were furnished by the office of the *British Nautical Almanac*.

The Greenwich ephemeris of Mercury, the elements of Saturn's rings, the elongations of Saturn's satellites, and the apparent places for Greenwich transit of 518 ten-day stars were furnished by the office of the *Berliner Jahrbuch*.

The conjunctions, phenomena, and configurations of Jupiter's satellites I-IV and the apparent places for Greenwich transit of 38 circumpolar stars were furnished by the office of the *Connaissance des Temps*.

The apparent places for Greenwich transit of 121 ten-day stars were furnished by the office of the *Almanaque Nautico*.

The apparent places for Greenwich transit of 47 ten-day stars were furnished by the office of the *Annuario Astronomico di Torino*.

In accordance with the recommendations of the *Congrès International des Éphémérides Astronomiques*, most of the material furnished from abroad is based upon tables prepared in the American Nautical Almanac Office. In the Introduction are mentioned the various tables upon which the different ephemerides are based.

The following computations were made by the American Nautical Almanac Office:

In Part I, the entire ephemeris of the Sun and Venus; the longitude, latitude, and horizontal parallax of the Moon; and all the hourly and daily variations for the quantities furnished from abroad except in the case of the right ascension and declination of the Moon.

In Part II, the quantities used in computing the apparent places of the stars from their mean places; the mean place list; the interpolation of the apparent places of 724 stars from transit at Greenwich to transit at Washington; the apparent places of 101 stars; the interpolation of the ephemerides of the Sun, Moon, and planets from Greenwich noon to transit at Washington; the stellar magnitudes of the planets.

In Part III, the data relating to the eclipses of the Sun and Moon; the data relating to the occultations of stars by the Moon; the ephemerides for physical observations of the Sun, Moon, Mars, and Jupiter; the elements of the illuminated disks of Mercury and Venus; the stellar magnitudes of the planets; the data concerning the satellites of Mars, Uranus, Neptune, the fifth, sixth, and seventh satellites of Jupiter, and the ninth satellite of Saturn; the diagrams of all the satellite orbits; the position angle and distance tables of the satellites of Saturn; the list of phenomena; the list of observatories with their geographical coordinates; and the tables for the determination of latitude and azimuth from observations of Polaris.

In addition, all computations made in the American Nautical Almanac Office and those received from the other offices were subjected to checks to insure absence of errors.

The personnel of the Office at the date of issue of this volume is given on page ii, and those who worked on this Ephemeris and are not now members of the force are William Auhagen and Walter C. Grebe.

J. L. JAYNE,
Captain, U. S. Navy,
Superintendent Naval Observatory.

U. S. NAVAL OBSERVATORY, *January, 1914.*

CONTENTS.

	Page.
Introduction	ix
Anniversaries and Festivals	xvi
Chronological Eras and Cycles	xvii
Astronomical Constants	xxiii
Symbols and Abbreviations	xx

PART I—EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

Ephemeris of the Sun	2
Ephemeris of the Moon	26
Phases of the Moon	117
Ephemerides of the Planets Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune.	134

PART II—EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Bessel's Formulae for Star-Reductions	200
Besselian and Independent Star-Numbers	202
Nutation, Terms of Short Period in the	215
Mean Places of 790 Standard Stars for 1916.0	217
Mean Places of 35 Circumpolar Stars for 1916.0	231
Apparent Places of 35 Circumpolar Stars	232
Apparent Places of 790 Standard Stars	316
Ephemeris of the Sun for Apparent Noon	514
Moon-Culminations	522
Transit-Ephemerides of the Planets Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune	538

PART III—PHENOMENA.

Eclipses	558
Mean Places of Stars Occulted by the Moon	566
Elements for the Prediction of Occultations	571
Occultations Visible at Washington	607
Ephemeris for Physical Observations of the Sun	610
Moon, Mean Equator, Orbit, and Mean Longitude	611
Ephemeris for Physical Observations of the Moon	612
Disks of Mercury and Venus	620
Ephemeris for Physical Observations of Mars	622
Satellites of Mars	626
Ephemeris for Physical Observations of Jupiter	627
Satellites of Jupiter, Saturn, Uranus, and Neptune	631
Phenomena, Planetary Configurations	670
Positions of Observatories	672
Problems in Lunar Distances	682

TABLES.

Table I—For Finding the Latitude by an Observed Altitude of Polaris	683
Table Ia—Auxiliary Table of Corrections for Latitudes other than 45°	687
Table II—Sidereal into Mean Solar Time	688
Table III—Mean Solar into Sidereal Time	691
Table IV—Azimuth of Polaris at all Hour Angles	694
Table IVa—Correction for Declination	699
Table V—Azimuth of Polaris at Elongation	700
Table Va—For Reduction of Observations Near Elongation	705
Table VI—For Finding the Times of Upper and Lower Culmination of Polaris	706
Table VII—Apparent Place, Upper Culmination, and Elongations, of Polaris	707
On the Arrangement and Use of <i>The American Ephemeris and Nautical Almanac</i>	709
Index to Apparent Places of Stars	736
General Index	739

ERRATA.

	<i>The American Ephemeris, 1913.</i>		
Page.			
677,	No. 143, Description	for 3°.6 E.	read 3°.6 W.
	<i>The American Ephemeris, 1914.</i>		
677,	No. 143, Description	for 3°.6 E.	read 3°.6 W.
	<i>The American Ephemeris, 1915.</i>		
558,	Dec. 32, Apparent Right Ascension	for 5°.67	read 5°.65
677,	No. 144, Description	for 3°.6 E.	read 3°.6 W.
698,	Table V, Lat. 58° 10', Decl. 88° 51' 50''	for 15''.8	read 15''.6

INTRODUCTION.

The Ephemeris for the Meridian of Greenwich, comprising Part I of this volume, has been constructed from various tables of the Sun, Moon, and planets, as stated below, and the ephemerides of these bodies for the meridian of Washington contained in Part II have been computed from the same tables.

The Ephemeris of the Sun is constructed from NEWCOMB'S *Tables of the Sun, Astronomical Papers of the American Ephemeris*, Vol. VI, part 1.

The adopted value of the mean equatorial horizontal parallax of the Sun is 8''.80, *Paris Conference, May, 1896*.

The Sun's rectangular equatorial coordinates are computed from the longitudes and latitudes by the following formulæ:

$$\begin{aligned} X &= R \cos \lambda \\ Y &= R \sin \lambda \cos \omega - 19.3 R \beta \\ Z &= R \sin \lambda \sin \omega + 44.5 R \beta \end{aligned}$$

The reductions to mean equinox are computed by the formulæ—

$$\begin{aligned} \Delta X &= + Y \sec \omega \Delta \lambda \sin 1'' \\ \Delta Y &= -X \cos \omega \Delta \lambda \sin 1'' + Z \Delta \omega \sin 1'' + 9.1 \tau R \sin (\lambda + 6^\circ) \\ \Delta Z &= -X \sin \omega \Delta \lambda \sin 1'' - Y \Delta \omega \sin 1'' - 21.0 \tau R \sin (\lambda + 6^\circ) \end{aligned}$$

where the numerical coefficients are in units of the seventh place of decimals and

- R = the Sun's distance from the Earth,
- λ = the Sun's true longitude,
- β = the Sun's true latitude, expressed in seconds of arc,
- ω = the obliquity of the ecliptic,
- $\Delta \lambda$ = the reduction of longitude for precession and nutation from the beginning of the Besselian fictitious year,
- $\Delta \omega$ = the reduction of the mean to the apparent obliquity,
- τ = the fraction of the year since the beginning of the Besselian fictitious year.

The longitude, latitude, and parallax of the Moon are derived from HANSEN'S *Tables de la Lune* (London, 1857), the mean longitude being corrected as in previous years, beginning with the volume for the year 1883. The statement concerning these corrections which is contained in the volumes from 1883 to 1911, inclusive, is erroneous, in that they have not been computed strictly in accordance with the formula in NEWCOMB'S *Researches on the Motion of the Moon*, part 1, page 268, *Washington Observations*, 1875, Appendix II. That formula is,

$$-1''.14 - 29''.17 T - 3''.86 T^2 - V_2 - 0''.09 \sin A - 15''.49 \cos A,$$

while the expression actually used is,

$$-1''.14 - 29''.17 T - 3''.76 T^2 - V_2 - 15''.49 \cos A.$$

In these formulæ T is the time in units of 100 years reckoned from 1800.

The ephemerides of Mercury, Venus, and Mars are derived from NEWCOMB'S tables of these planets, *Astronomical Papers of the American Ephemeris*, Vol. VI, parts 2, 3, and 4.

The ephemerides of Jupiter and Saturn are derived from the tables constructed in this office by GEORGE W. HILL, *Astronomical Papers of the American Ephemeris*, Vol. VII, parts 1 and 2.

The ephemerides of Uranus and Neptune are derived from NEWCOMB'S tables of these planets, *Astronomical Papers of the American Ephemeris*, Vol. VII, parts 3 and 4.

The nutation used in computing the ephemerides of the Sun, Moon, and planets has been taken from Tables XXXII and XXXIII of NEWCOMB'S *Tables of the Sun, Astronomical Papers of the American Ephemeris*, Vol. VI, part 1. The formulæ from which this nutation is computed are as follows, the time interval T being expressed in units of 100 years, reckoned from 1900. See *Tables of the Sun*, page 26.

$$\begin{array}{ll} \delta\psi = -(17''.234 + 0''.017 T) \sin \Omega & \delta\varepsilon = +9''.214 \cos \Omega \\ + 0''.209 \sin 2 \Omega & -0''.090 \cos 2 \Omega \\ - 1''.257 \sin 2 L & +0''.546 \cos 2 L \\ - 0''.049 \sin (3 L + 78^\circ.7) & +0''.021 \cos (3 L + 78^\circ.7) \\ + 0''.110 \sin (L + 75^\circ.3) & -0''.009 \cos (L - 78^\circ.7) \end{array}$$

The formulæ for the nutation used in computing the Besselian and Independent Star Numbers are as follows:

Terms of Long Period.	Terms of Short Period.
$\delta\psi = -(17''.234 + 0''.017 T) \sin \Omega$	$-0''.204 \sin 2 \zeta$
$+ 0''.209 \sin 2 \Omega$	$+0''.011 \sin (\zeta + \Gamma')$
$- 1''.272 \sin 2 L$	$+0''.068 \sin (\zeta - \Gamma')$
$+ 0''.126 \sin (L - \Gamma)$	$-0''.034 \sin (2 \zeta - \Omega)$
$- 0''.050 \sin (3 L - \Gamma)$	$-0''.026 \sin (3 \zeta - \Gamma')$
$+ 0''.021 \sin (L + \Gamma)$	$+0''.015 \sin (\zeta - 2 L + \Gamma')$
$+ 0''.012 \sin (2 L - \Omega)$	$+0''.006 \sin 2 (\zeta - L)$
$\delta\varepsilon = + (9''.210 + 0''.0009 T) \cos \Omega$	$+0''.088 \cos 2 \zeta$
$- 0''.090 \cos 2 \Omega$	$+0''.018 \cos (2 \zeta - \Omega)$
$+ 0''.552 \cos 2 L$	$+0''.011 \cos (3 \zeta - \Gamma')$
$+ 0''.022 \cos (3 L - \Gamma)$	$-0''.005 \cos (\zeta + \Gamma')$
$- 0''.009 \cos (L + \Gamma)$	
$- 0''.007 \cos (2 L - \Omega)$	

The meaning of the symbols used and the manner in which these latter formulæ have been employed in computing the ephemerides of the stars are explained on pages 200 and 201. The slight discrepancy between the terms in 2 L in these two sets of formulæ is due to the correction of an error in the first set. See *Bulletin Astronomique*, 1898, Vol. XV, page 244.

The list of 825 stars contained in Part II has been selected from NEWCOMB'S *Catalogue of Fundamental Stars, Astronomical Papers of the American Ephemeris*, Vol. VIII, part 2.

In general, the names of the stars are the same as in NEWCOMB'S Suggested List of Fundamental Stars, except that the FLAMSTEED number has been omitted in all cases where Greek or italic letters are available. In some cases the constellation and number of the uranometries of HEIS or GOULD have been used. In all such cases, H¹ or the letter G precedes the constellation name, as, for example, 5 H¹. Cassiopeiæ and 38 G. Horologii.

The magnitudes of the stars have, with a few exceptions, been taken from *Annals of the Harvard College Observatory*, Vol. L, 1908.

The spectral classification has been furnished by the Harvard College Observatory. The notation is that of *Annals of Harvard College Observatory*, Vol. LVI.

The mean places, annual variations, and annual proper motions of the stars have been taken from NEWCOMB'S Catalogue, except that those of ϵ Hydri, 38 G. Horologii, and π Centauri have been taken from *Veroeffentlichungen des Koeniglichen Astronomischen Rechen-Instituts zu Berlin*, 1907, No. 33.

The values of $\Delta\alpha$ and $\Delta\delta$ which are given for the companions to the stars γ Andromedæ, α^1 Crucis, ζ^1 Ursæ Majoris and 61 Cygni, have been taken from BOSS'S *Preliminary General Catalogue*, and those for α^2 Geminorum from DOBERCK'S elements given in the *Astronomische Nachrichten*, 1904, vol. 166, page 145.

The formulæ for the computation of the Besselian and Independent Star Numbers are given on page 200, the coefficients being those given by NEWCOMB in *Bulletin Astronomique*, 1898, Vol. XV, page 241.

The terms of short period of the nutation, depending on the Moon's mean longitude, have been computed from the formulæ for these terms given above.

The method by which the right ascensions and declinations of the stars interpolated from the 10-day ephemerides are corrected for the effect of these short-period terms is given on page 201.

According to the formulæ on pages 200 and 201 the star constants $a, b, c, d, a', b', c', d'$ are computed for each star from its mean place at the beginning of the year, but if strict accuracy is required they should be computed from the star's mean place at date, and the following second-order terms should be added to the usual expressions for the reduction from mean to apparent place, namely—

To $\alpha - \alpha_0$,	To $\delta - \delta_0$,
$\left. \begin{aligned} &+0.000\ 003\ r^2\ \sin\ \alpha \\ &-0.000\ 149\ r^2\ \cos\ \alpha \end{aligned} \right\} \tan\ \delta$	$\left. \begin{aligned} &+0.000\ 975\ r^2\ \sin^2\ \alpha \\ &-0.000\ 023\ \cos\ 2\ \Omega \end{aligned} \right\} \tan\ \delta$
$\left. \begin{aligned} &-0.000\ 0650\ r^2\ \sin\ 2\ \alpha \\ &+0.000\ 0103\ \sin\ 2\ \Omega\ \cos\ 2\ \alpha \\ &-0.000\ 0107\ \cos\ 2\ \Omega\ \sin\ 2\ \alpha \end{aligned} \right\} \tan^2\ \delta$	$\left. \begin{aligned} &-0.000\ 080\ \cos\ 2\ \Omega\ \cos\ 2\ \alpha \\ &-0.000\ 077\ \sin\ 2\ \Omega\ \sin\ 2\ \alpha \\ &+0.000\ 040\ \cos\ 2\ \odot \end{aligned} \right\} \tan\ \delta$
$\left. \begin{aligned} &+0.000\ 0620\ \sin\ 2\ \odot\ \cos\ 2\ \alpha \\ &-0.000\ 0622\ \cos\ 2\ \odot\ \sin\ 2\ \alpha \end{aligned} \right\} \sec^2\ \delta$	$\left. \begin{aligned} &-0.000\ 467\ \cos\ 2\ \odot\ \cos\ 2\ \alpha \\ &-0.000\ 465\ \sin\ 2\ \odot\ \sin\ 2\ \alpha \end{aligned} \right\} \tan\ \delta$
$\left. \begin{aligned} &+0.000\ 0513\ \sin\ (\odot + \Omega)\ \cos\ 2\ \alpha \\ &-0.000\ 0507\ \cos\ (\odot + \Omega)\ \sin\ 2\ \alpha \\ &+0.000\ 0097\ \sin\ (\odot - \Omega)\ \cos\ 2\ \alpha \\ &-0.000\ 0053\ \cos\ (\odot - \Omega)\ \sin\ 2\ \alpha \end{aligned} \right\} \tan\ \delta\ \sec\ \delta$	$\left. \begin{aligned} &-0.000\ 039\ \cos\ (\odot + \Omega) \\ &-0.000\ 380\ \cos\ (\odot + \Omega)\ \cos\ 2\ \alpha \\ &-0.000\ 385\ \sin\ (\odot + \Omega)\ \sin\ 2\ \alpha \\ &-0.000\ 380\ \cos\ (\odot - \Omega) \\ &-0.000\ 040\ \cos\ (\odot - \Omega)\ \cos\ 2\ \alpha \\ &-0.000\ 072\ \sin\ (\odot - \Omega)\ \sin\ 2\ \alpha \end{aligned} \right\} \sin\ \delta\ \tan\ \delta$

These terms are negligible for stars whose declination is numerically less than 80° , but in computing the apparent places given in the American Ephemeris they have been applied whenever sensible.

The *apparent* places of seven stars have been corrected for the effect of annual parallax. These stars, with the adopted values of the annual parallax, are—

r Ceti 0.31	" α Centauri 0.75
ϵ Eridani 0.32	" α Aquilæ (Altair) 0.23
α Canis Majoris (Sirius) 0.38	" 61 Cygni 0.30
α Canis Minoris (Procyon) 0.33	

The *apparent* places of α Canis Majoris (Sirius), α Canis Minoris (Procyon), and α^2 Centauri have been corrected for the effect of orbital motion. AUWERS'S elements were used for Sirius and Procyon, and SEE'S elements for α^2 Centauri. The values of these corrections are given on pages 98 and 99 of *Veroeffentlichungen des Koeniglichen Astronomischen Rechen-Instituts zu Berlin*, 1907, No. 33, but those for Sirius and Procyon need an additional correction to refer them to the center of the orbit before they are applicable to the mean places taken from NEWCOMB'S Fundamental Catalogue. These additional corrections for Sirius and Procyon were omitted in the *Star List of the American Ephemeris [Supplement to the American Ephemeris and Nautical Almanac]* for 1910 and 1911, and in the *American Ephemeris and Nautical Almanac* for 1912 and 1913. The values of the corrections for the three stars are—

	Sirius.		Procyon.		α^2 Centauri.	
	1916.0	1917.0	1916.0	1917.0	1916.0	1917.0
$\Delta\alpha$	-0°.142	-0°.143	-0°.062	-0°.062	+0°.658	+0°.647
$\Delta\delta$	-0′.46	-0′.59	-0′.08	+0′.05	+6″.25	+5″.98

These corrections have not been applied to the mean places as published in this volume.

The stars occulted by the Moon have been selected from the *Catalogue of Zodiacal Stars* contained in Vol. VIII, part 3, *Astronomical Papers of the American Ephemeris*, and the mean places for 1916.0 have been derived from the same catalogue.

In Part III the elements of eclipses of the Sun and occultations of stars by the Moon are given in accordance with BESSEL'S method, the special forms employed being a modification of those developed in CHAUVENET'S *Spherical and Practical Astronomy*.

In the computation of the elements of Eclipses, the following corrections to the longitude, latitude, and parallax of the Moon, deduced by NEWCOMB from recent observations of occultations of stars by the Moon, *Astronomical Papers of the American Ephemeris*, Vol. IX, part 1, have been applied. These corrections have been assumed in each case to be constant during the eclipse.

G. M. T.	δv	δb	$\delta \pi$
1916	"	"	"
Jan. 19 ^d 21 ^h	+6.4	+1.0	+0.34
Feb. 3 4	+7.5	-0.3	+0.42
July 14 17	+6.2	-0.1	+0.43
July 29 14	+8.3	+1.0	+0.34
Dec. 24 8	+7.0	0.0	+0.42

The elongations of the satellites of Mars are derived from elements given by H. STRUVE in *Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften*, 1911, page 1073.

The conjunctions and phenomena of Jupiter's four brighter satellites are derived from SAMPSON'S tables. The configurations are derived from a continuation of DAMOISEAU'S tables by M. POTTIER.

The elongations of the Vth satellite of Jupiter are derived from unpublished elements deduced from the observations of BARNARD.

The differential coordinates of Jupiter's VIth and VIIth satellites are derived from elements and tables given in *Lick Observatory Bulletin*, 1906, IV, No. 112, and in *Astronomische Nachrichten*, 1907, Vol. 174, page 359,

The elongations and conjunctions of the satellites and the positions of the rings of Saturn are derived from elements given by H. STRUVE in *Observations de Poulkova*, Supplement 1, St. Petersburg, 1888; *Publications de Poulkovo*, Second Series, Vol. XI, St. Petersburg, 1898; with corrections communicated by H. STRUVE to the *Berliner Jahrbuch*. The differential coordinates of Phœbe are derived from elements and tables given in the *Annals of Harvard College Observatory*, 1905, Vol. LIII, No. VI.

The apparent outer dimensions (a and b) of the rings of Saturn are also according to STRUVE; the relative dimensions of the rings are computed from BESSEL's data, except those for the dusky ring, which are based on the observations of various astronomers.

The elongations of Ariel and Umbriel, the inner satellites of Uranus, are derived from the data of NEWCOMB's *Uranian and Neptunian Systems*, *Washington Observations*, 1873, Appendix I. The elongations of Titania and Oberon, the outer satellites of Uranus, are derived from elements given by H. STRUVE in *Abhandlungen der K. Preussischen Akademie der Wissenschaften*, 1912.

The elongations of the satellite of Neptune are derived from elements given by A. HALL in the *Astronomical Journal*, 1898, Vol. XIX, page 65.

The adopted apparent semidiameter of the Sun at the Earth's mean distance is $16' 1''.50$, while in the computation of eclipses the value given by AUWERS in the *Astronomische Nachrichten*, 1891, Vol. 128, page 367, is employed, viz., $15' 59''.63$.

In the computation of the ephemeris for physical observations of the Sun, the following elements by CARRINGTON have been used:

Inclination of the Sun's equator to the ecliptic	7° 15'
Longitude of the ascending node of the Sun's equator on the ecliptic	73° 40' + 50''.25 ($t - 1850$)
Sidereal period of rotation (mean solar days)	25 ^d .38

The apparent semidiameter of the Moon is computed from the Moon's equatorial horizontal parallax, π , by the formula,

$$S = 0.272\ 506\ \pi + 1''.50$$

where the constant 0.272 506 is based on data from occultations given by J. PETERS in the *Astronomische Nachrichten*, 1895, Vol. 138, page 147; and the constant $1''.50$ is added to cover the average effect of irradiation.

The value of the Moon's semidiameter employed in the computation of eclipses is computed from the formula,

$$\sin S = 0.272\ 274\ \sin \pi$$

In the computation of the ephemeris for physical observations of the Moon, the following notation and formulæ have been used, the value of I and the formulæ for physical libration being those given by F. HAYN in *Abhandlungen der K. Sächsischen Gesell. der Wissenschaften*, Vols. 29 and 30, 1904, 1907:

- I = the inclination of the Moon's mean equator to the ecliptic ($= 1^\circ 32'.1$),
- Ω = the longitude of the ascending node of the Moon's orbit, or the longitude of the descending node of the Moon's mean equator,
- C = the angle at the center of the Moon's disk made by a lunar meridian with the circle of declination, counted from north to east,

$\lambda, \beta, \alpha, \delta$ = the geocentric longitude, latitude, right ascension, and declination of the Moon,

i = the inclination of the Moon's mean equator to the Earth's true equator,

Δ = the distance on the Moon's mean equator from its ascending node on the Earth's true equator to its ascending node on the ecliptic,

Ω' = the distance along the Earth's true equator from the true equinox to the ascending node of the Moon's mean equator,

\mathcal{C} = the Moon's mean longitude, referred to the mean equinox,

g' = the Earth's mean anomaly,

g = the Moon's mean anomaly,

ω = the angular distance of the perigee of the Moon's orbit from its ascending node on the ecliptic,

b, l = the optical librations in latitude and longitude, respectively,

$\delta b, \delta l$ = the physical librations in latitude and longitude, respectively,

$b + \delta b$ = the Moon's geocentric libration in latitude = the Earth's selenographic latitude,

$l + \delta l$ = the Moon's geocentric libration in longitude = the Earth's selenographic longitude,

δC = the physical libration of C ,

$$\mu = -0'.617 \sin 2(\Omega - \lambda),$$

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

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

$$\lambda' = \lambda + \mu + Ab,$$

$$b = B - \beta,$$

$$l = \lambda' - \mathcal{C},$$

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

$$\delta b = +108'' \sin(\omega + l) + 37'' \sin(\omega - l) - 11'' \sin(g + \omega - l),$$

$$\delta l = +12'' \sin g - 59'' \sin g' - 18'' \sin 2\omega,$$

$$- [108'' \cos(\omega + l) - 37'' \cos(\omega - l) + 11'' \cos(g + \omega - l)] \tan b,$$

$$\delta C = - [108'' \cos(\omega + l) - 37'' \cos(\omega - l) + 11'' \cos(g + \omega - l)] \sec b,$$

$$C = C' + \delta C.$$

The Sun's selenographic latitude and longitude have been computed from formulæ the same as those given above except that the heliocentric coordinates of the Moon have been substituted for the geocentric coordinates.

The following elements have been used in computing the ephemerides for physical observations of the planets Mars and Jupiter:

Position of north pole of Mars	$\{\alpha = 21^{\text{h}} 10^{\text{m}} 0^{\text{s}} + 1^{\text{s}}.565(t-1905)$ $\delta = 54^{\circ} 30' 0'' + 12''.60(t-1905)$
Position of north pole of Jupiter	$\{\alpha = 17^{\text{h}} 52^{\text{m}} 0^{\text{s}}.84 + 0^{\text{s}}.247(t-1910)$ $\delta = 64^{\circ} 33' 34''.6 - 0''.60(t-1910)$
Rotation period of Mars	24 ^h 37 ^m 22 ^s .65
Rotation period of Jupiter {System I.	9 ^h 50 ^m 30 ^s .004
{System II.	9 ^h 55 ^m 40 ^s .632
Longitude of Central Meridian of Mars, May 15, 1897, Greenwich Mean Noon	52°.01
Longitude of Central Meridian of Jupiter (System I.), July 14, 1897, Greenwich Mean Noon	47°.31
Longitude of Central Meridian of Jupiter (System II.), July 14, 1897, Greenwich Mean Noon	96°.58

The position of the north pole of Mars is as given by LOWELL and CROMMELIN (see *Monthly Notices R. A. S.*, 1905, Vol. 66, page 56), while that of the north pole of Jupiter has been deduced from the position given by DAMOISEAU for 1750 (see *Tables Écliptiques des Satellites de Jupiter*, page (1)). The rotation periods of Mars and of Jupiter and the longitudes of the central meridians are according to MARTH (see *Monthly Notices R. A. S.*, 1896, Vol. 56, pages 395-403 and 517-524). The longitude of the Great Red Spot and the time of transit across the Central Meridian given in the volumes for 1913 and 1914

have been replaced by those of System II. of MARTH. This change has been made in view of the following facts: The Paris Conference of October, 1911, assigned to the office of the American Ephemeris and Nautical Almanac the preparation of the ephemerides for the physical observations of the planets; a general desire exists that the use of System II. of MARTH should not be discontinued; and the position of the Great Red Spot during the opposition of 1912 was about 70° from the place predicted from the elements adopted in the *American Ephemeris and Nautical Almanac* for 1913.

The adopted semidiameters of the planets, with the authority for each, are given on page xix. Their stellar magnitudes have been computed from formulæ given by G. MUELLER in *Publicationen des Astrophysikalischen Observatoriums zu Potsdam*, 1893, Vol. 8, page 366.

In the list of observatories the positions given in this volume have been thoroughly revised, and in each case the authority from which they are derived is given. The latitudes given are in most cases astronomical. In some instances they have been determined by geodetic triangulation from other points. The reductions from geographic to geocentric latitude, $\varphi' - \varphi$, and the distance from the center of the earth, ρ , are computed from the formulæ on page xviii, using the flattening $\frac{1}{297}$ obtained by JOHN F. HAYFORD in *Supplementary Investigation in 1909 of the Figure of the Earth and Isostasy*, U. S. Coast and Geodetic Survey, 1910, and adopted by the *Paris Conference*, October, 1911.

ANNIVERSARIES AND FESTIVALS, 1916.

New Year's Day	Saturday,	Jan. 1.
Epiphany	Thursday,	Jan. 6.
Lincoln's Birthday	Saturday,	Feb. 12.
Septuagesima Sunday	Sunday,	Feb. 20.
Washington's Birthday	Tuesday,	Feb. 22.
Quinquagesima (Shrove Sunday)	Sunday,	Mar. 5.
Ash Wednesday	Wednesday,	Mar. 8.
Palm Sunday	Sunday,	Apr. 16.
First Day of Passover	Tuesday,	Apr. 18.
Good Friday	Friday,	Apr. 21.
Easter Sunday	Sunday,	Apr. 23.
Rogation Sunday	Sunday,	May 28.
Memorial Day	Tuesday,	May 30.
Ascension Day (Holy Thursday)	Thursday,	June 1.
Hebrew Pentecost (Shebuoth)	Wednesday,	June 7.
Pentecost (Whit Sunday)	Sunday,	June 11.
Trinity Sunday	Sunday,	June 18.
Corpus Christi	Thursday,	June 22.
Independence Day	Tuesday,	July 4.
Labor Day (except in certain States)	Monday,	Sept. 4.
Hebrew New Year (Rosh Hashanah)	Thursday,	Sept. 28.
Day of Atonement (Yom Kippur)	Saturday,	Oct. 7.
First Day of Tabernacle (Sucoth)	Thursday,	Oct. 12.
Election Day	Tuesday,	Nov. 7.
Thanksgiving Day	Thursday,	Nov. 30.
First Sunday in Advent	Sunday,	Dec. 3.
Christmas Day	Monday,	Dec. 25.

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1916, WHICH COMPRISES THE LATTER PART OF THE 140TH AND THE BEGINNING OF THE 141ST YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

- The year 6629 of the Julian period;
- “ 7424–7425 of the Byzantine era, the year 7425 commencing on September 1;
- “ 5676–5677 of the Jewish era, the year 5677 commencing on September 28, or, more exactly, at sunset on September 27;
- “ 2669 since the foundation of Rome, according to VARRO;
- “ 2663 since the beginning of the era of NABONASSAR, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period; corresponding in the notation of chronologists, to the 747th, and, in the notation of astronomers, to the 746th year before the birth of CHRIST;
- “ 2692 of the Olympiads, or the fourth year of the 673d Olympiad, commencing in July, 1916, 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;
- “ 2228 of the Grecian era, or the era of the SELEUCIDÆ, which began near the vernal equinox of the year, –311 = B. C. 312, = 4402 of the Julian Period;
- “ 1632 of the era of DIOCLETIAN;
- “ 2576 of the Japanese era and to the 5th year of the period entitled Taisho.

The year 1335 of the Mohammedan era, or the era of the Hegira, begins on the 28th day of October, 1916.

The first day of January of the year 1916 is the 2,420,864th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

dominical Letter	BA	Solar Cycle	21
lunar Cycle	26	Roman Indiction	14
lunar Cycle or Golden Number	17	Julian Period	6629

ASTRONOMICAL CONSTANTS.

Solar Parallax	8.80	
Constant of Nutation	9.21	} Paris Conference.
Constant of Aberration	20.47	
General Precession	50''.2564 + 0''.000 222(t-1900)	} Newcomb.
Obliquity of the Ecliptic	23° 27' 8''.26 - 0''.4684(t-1900)	
Equatorial Horizontal Parallax of the Moon	57' 2''.63*	(Newcomb)

Mean distance Earth to Moon 384 411 kilometers=238 862 miles, or 60.2678 radii.
 Mean distance Earth to Sun 149 504 201 kilometers=92 897 416 statute miles.

Velocity of light 299 860 kilometers=186 324 statute miles per second (Newcomb and Michelson).
 Light travels unit distance in 498°.580.

Gaussian Gravitation Constant, $\dagger k=0.017\ 202\ 099=3\ 548''.187\ 61$.

Acceleration in one second due to gravity, $g=9.8060-0.0260 \cos 2\varphi - \frac{2h}{R} g \ddagger$ }
 Length of seconds pendulum, $l=0.993\ 549-0.002\ 631 \cos 2\varphi - \frac{2h}{R} l \ddagger$ } Helmert.

Length of the year:		
Tropical (ordinary)	365.242 198 79-0.000 000 0614 (t-1900)	} Newcomb.
Sidereal	365.256 360 42+0.000 000 0011 (t-1900)	
Anomalistic	365.259 641 34+0.000 000 0304 (t-1900)	
Eclipse	346.620 000 +0.000 000 36 (t-1900)	

Length of the month:		
Synodical (ordinary)	29.530 588=29 12 44 2.8	} Hansen.
Tropical	27.321 582=27 7 43 4.7	
Sidereal	27.321 661=27 7 43 11.5	
Anomalistic	27.554 550=27 13 18 33.1	
Nodical	27.212 219=27 5 5 35.7	

Length of the day:		
Sidereal	23 56 4.091 of mean solar time.	
Mean Solar	24 3 56.555 of sidereal time.	

Dimensions of the Earth (Hayford's Spheroid of 1909):

Equatorial Radius, $a=6378.388$ kilometers or 3963.34 statute miles.
 Polar Radius, $b=6356.909$ " or 3949.99 " " "

Flattening, $\frac{a-b}{a} = \frac{1}{297.0}$

Logarithm of the eccentricity $\frac{\sqrt{a^2-b^2}}{a} = \log e = 8.913\ 804$

Logarithm radius= $\log \rho = 9.999\ 2695 + 0.000\ 7324 \cos 2\varphi - 0.000\ 0019 \cos 4\varphi$.

Reduction from geographic latitude φ to geocentric latitude φ' ,
 $\varphi' - \varphi = -11' 35''.66 \sin 2\varphi + 1''.17 \sin 4\varphi$.

- 1 meter=3.280 8333 feet. 1 foot=0.304 8006 meters.
- 1 statute mile=0.868 362 nautical or geographical miles.
- 1 nautical mile=1.151 594 statute miles.

* Used in the computation of eclipses. The parallax used in the computation of the ephemeris of the Moon contained in this volume is 57' 2''.23 (Hansen).

† k^2 is the acceleration due to the Sun's attraction at the mean distance of the Earth from the Sun, which is also the astronomical unit of distance, the unit of time being one mean solar day.

‡ φ =latitude, h =elevation above sea level in meters, and $\log R=6.80416$.

NOTE.—The above values of $\log \rho$ and $\varphi' - \varphi$ were computed with the eccentricity that results from assuming that the flattening of the earth is exactly $\frac{1}{297}$.

ASTRONOMICAL CONSTANTS.

SEMIDIAMETERS OF THE SUN, MOON, AND PLANETS.

Name.	At Unit Distance.	At Mean Least Distance.	In Kilometers.	In Statute Miles.	Authority.
Sun	15 59.63	. . . . .	695 553.46	432 196.01	Auwers.
Moon	15 32.53*	. . . . .	1 738.02	1 079.96	Newcomb.
Mercury	3.34	5.45	2 420.89	1 504.27	Le Verrier.
Venus	8.55	30.90	6 197.18	3 850.74	Peirce.
Mars	5.05	9.64	3 660.32	2 274.42	Peirce.
Jupiter (Equatorial)	1 40.20	23.84	72 626.64	45 128.01	Am. Eph.
Jupiter (Polar)	1 34.12	22.40	68 219.76	42 389.71	Peirce.
Saturn (Equatorial)	1 24.88	9.94	61 522.45	38 228.20	Barnard.
Saturn (Polar)	1 17.47	9.07	56 151.56	34 890.69	Barnard.
Uranus	33.52	1.84	24 295.86	15 096.72	Am. Eph.
Neptune	38.66	1.33	28 021.42	17 411.67	Am. Eph.

ELEMENTS OF THE PLANETARY ORBITS FOR THE EPOCH 1916—January 1^d G. M. T.

Name.	Mean Distance.	Sidereal Period in Tropical Years.	Sidereal Mean Daily Motion.	Synodic Period in Tropical Years.	Eccentricity.
☿ Mercury	0.387 099	0.240 85	14 732.420	0.317 26	0.205 6175
♀ Venus	0.723 331	0.615 21	5 767.670	1.598 72	0.006 8131
⊕ Earth	1.000 000	1.000 04	3 548.193	. . . . .	0.016 7448
♂ Mars	1.523 688	1.880 89	1 886.519	2.135 39	0.093 3234
♃ Jupiter	5.202 803	11.862 23	299.128	1.092 11	0.048 3636
♄ Saturn	9.538 843	29.457 72	120.455	1.035 18	0.055 8344
♅ Uranus	19.160 978	84.015 29	42.23	1.012 09	0.047 0894
♆ Neptune	30.070 672	164.788 29	21.53	1.006 14	0.008 5434

Name.	Inclination to the Ecliptic.	Mean Longitude of the Node.	Mean Longitude of the Perihelion.	Mean Longitude at the Epoch.	Logarithm of Mass in Unit of Sun's Mass.
☿ Mercury	7 0 11.4	47 20 8.1	76 8 54.9	334 1 49.48	3.221 8487—10
♀ Venus	3 23 37.6	75 55 25.1	130 23 20.7	345 50 27.48	4.389 3398—10
⊕ Earth . . . . .	. . . . .	. . . . .	101 29 45.3	99 49 10.97	4.482 2896—10
♂ Mars	1 51 1.0	48 54 33.7	334 30 46.8	116 25 10.21	3.509 5499—10
♃ Jupiter	1 18 28.3	99 35 58.8	12 58 9.8	3 61 29.51	6.979 9082—10
♄ Saturn	2 29 30.0	112 55 23.2	91 24 7.9	102 19 36.17	6.455 7335—10
♅ Uranus	0 46 21.9	73 34 14.6	169 18 16.4	312 8 48.45	5.640 7528—10
♆ Neptune	1 46 39.8	130 51 17.2	43 53 43.7	120 12 12.53	5.705 5338—10

The elements of the four inner planets are derived from those given by NEWCOMB in Vol. VI of the *Astronomical Papers of the American Ephemeris*, and are the same as those used in computing the ephemerides of these planets. Those of Jupiter, Saturn, Uranus, and Neptune are taken from Vol. VII of the *Astronomical Papers* for the epoch of the tables. They are reduced to 1916 by applying LE VERRIER's variations, and can not be regarded as being strictly identical with the elements used in computing the ephemerides of those planets in this volume.

* At mean distance. See *Ast. Papers Am. Eph.*, Vol. IX, p. 39. For the values of the semidiameter used in this volume see page xiii.

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, ETC.

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

SIGNS OF THE ZODIAC.

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

ASPECTS.

- ♋ Conjunction, or having the same Longitude or Right Ascension.
- ☐ Quadrature, or differing $\pm 90^\circ$ in Longitude or Right Ascension.
- ♁ Opposition, or differing 180° in Longitude or Right Ascension.

ABBREVIATIONS.

<p>♊ Ascending Node. ♋ Descending Node. N. North. S. South. E. East. W. West.</p>		<p>° Degrees. ' Minutes of Arc. " Seconds of Arc. h Hours. m Minutes of Time. s Seconds of Time.</p>
--	--	---

PART I.

ASTRONOMICAL EPHEMERIS FOR THE
MERIDIAN OF GREENWICH.

FOR GREENWICH MEAN NOON.

Date.	Day of the Week.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Semi-diameter.	Hor. Par.	Equation of Time. App.—Mean.		Var. per Hour.	Sideres or Right sion of Su	
		h	m	s	s	°	'	"	"	'	"	m	s	s	h m	
Jan. 1	Sa	18	42	27.14	11.054	-23	5	35.0	+11.21	16	17.84	8.95	- 3	10.95	-1.198	18 39
2	Su	18	46	52.30	11.042	23	0	52.1	12.36	16	17.84	8.95	3	39.55	1.186	18 43
3	Mo	18	51	17.16	11.028	22	55	41.5	13.51	16	17.84	8.95	4	7.85	1.172	18 47
4	Tu	18	55	41.67	11.013	22	50	3.5	14.65	16	17.84	8.95	4	35.81	1.157	18 51
5	We	19	0	5.81	10.997	22	43	58.2	15.78	16	17.83	8.95	5	3.39	1.140	18 55
6	Th	19	4	29.53	10.979	-22	37	25.8	+16.91	16	17.82	8.95	- 5	30.55	-1.122	18 58
7	Fr	19	8	52.80	10.960	22	30	26.6	18.02	16	17.80	8.95	5	57.27	1.103	19 2
8	Sa	19	13	15.60	10.939	22	23	0.7	19.12	16	17.78	8.95	6	23.50	1.083	19 6
9	Su	19	17	37.88	10.917	22	15	8.4	20.22	16	17.76	8.95	6	49.23	1.061	19 10
10	Mo	19	21	59.62	10.894	22	6	49.9	21.31	16	17.73	8.95	7	14.41	1.038	19 14
11	Tu	19	26	20.80	10.870	-21	58	5.6	+22.38	16	17.70	8.95	- 7	39.03	-1.014	19 18
12	We	19	30	41.39	10.845	21	48	55.6	23.45	16	17.66	8.95	8	3.06	0.988	19 22
13	Th	19	35	1.36	10.819	21	39	20.2	24.50	16	17.62	8.95	8	26.47	0.962	19 26
14	Fr	19	39	20.70	10.792	21	29	19.7	25.54	16	17.57	8.95	8	49.25	0.935	19 30
15	Sa	19	43	39.39	10.765	21	18	54.5	26.57	16	17.52	8.95	9	11.38	0.908	19 34
16	Su	19	47	57.40	10.737	-21	8	4.7	+27.58	16	17.46	8.95	- 9	32.84	-0.880	19 38
17	Mo	19	52	14.73	10.708	20	56	50.7	28.58	16	17.39	8.95	9	53.61	0.851	19 42
18	Tu	19	56	31.36	10.678	20	45	12.8	29.57	16	17.32	8.94	10	13.69	0.821	19 46
19	We	20	0	47.28	10.648	20	33	11.3	30.55	16	17.24	8.94	10	33.05	0.791	19 50
20	Th	20	5	2.47	10.617	20	20	46.5	31.51	16	17.16	8.94	10	51.68	0.761	19 54
21	Fr	20	9	16.92	10.586	-20	7	58.8	+32.46	16	17.07	8.94	-11	9.57	-0.730	19 58
22	Sa	20	13	30.62	10.555	19	54	48.5	33.40	16	16.97	8.94	11	26.72	0.699	20 2
23	Su	20	17	43.57	10.524	19	41	15.8	34.32	16	16.87	8.94	11	43.11	0.667	20 6
24	Mo	20	21	55.76	10.492	19	27	21.2	35.23	16	16.76	8.94	11	58.74	0.635	20 9
25	Tu	20	26	7.18	10.460	19	13	5.0	36.12	16	16.65	8.94	12	13.60	0.603	20 13
26	We	20	30	17.82	10.427	-18	58	27.5	+37.00	16	16.53	8.94	-12	27.68	-0.571	20 17
27	Th	20	34	27.68	10.395	18	43	29.2	37.86	16	16.41	8.94	12	40.99	0.538	20 21
28	Fr	20	38	36.76	10.362	18	28	10.3	38.71	16	16.28	8.94	12	53.51	0.505	20 25
29	Sa	20	42	45.05	10.329	18	12	31.2	39.54	16	16.15	8.93	13	5.24	0.472	20 29
30	Su	20	46	52.54	10.296	17	56	32.4	40.35	16	16.02	8.93	13	16.18	0.439	20 33
31	Mo	20	50	59.23	10.262	-17	40	14.3	+41.15	16	15.88	8.93	-13	26.31	-0.406	20 37
Feb. 1	Tu	20	55	5.11	10.228	17	23	37.2	41.93	16	15.74	8.93	13	35.64	0.372	20 41
2	We	20	59	10.19	10.194	17	6	41.6	42.69	16	15.59	8.93	13	44.16	0.338	20 45
3	Th	21	3	14.45	10.160	16	49	27.9	43.44	16	15.44	8.93	13	51.86	0.304	20 49
4	Fr	21	7	17.89	10.126	16	31	56.5	44.17	16	15.28	8.93	13	58.74	0.270	20 53
5	Sa	21	11	20.51	10.092	-16	14	8.0	+44.88	16	15.13	8.92	-14	4.80	-0.235	20 57
6	Su	21	15	22.30	10.058	15	56	2.7	45.56	16	14.97	8.92	14	10.04	0.201	21 1
7	Mo	21	19	23.27	10.023	15	37	41.0	46.23	16	14.81	8.92	14	14.46	0.167	21 5
8	Tu	21	23	23.42	9.989	15	19	3.4	46.89	16	14.65	8.92	14	18.05	0.133	21 9
9	We	21	27	22.75	9.955	15	0	10.3	47.52	16	14.48	8.92	14	20.83	0.099	21 13
10	Th	21	31	21.28	9.922	-14	41	2.2	+48.14	16	14.31	8.92	-14	22.80	-0.065	21 16
11	Fr	21	35	19.00	9.889	14	21	39.5	48.74	16	14.14	8.92	14	23.96	-0.032	21 20
12	Sa	21	39	15.92	9.856	14	2	2.6	49.33	16	13.96	8.91	14	24.33	+0.001	21 24
13	Su	21	43	12.06	9.823	13	42	11.8	49.89	16	13.78	8.91	14	23.92	0.033	21 28
14	Mo	21	47	7.43	9.791	13	22	7.7	50.44	16	13.59	8.91	14	22.73	0.065	21 32
15	Tu	21	51	2.04	9.760	-13	1	50.6	+50.98	16	13.40	8.91	-14	20.78	+0.097	21 36
16	We	21	54	55.89	9.729	-12	41	20.9	+51.49	16	13.21	8.91	-14	18.08	+0.128	21 40

FOR GREENWICH MEAN NOON.

Day of the Year.	True Longitude.	Var. per Hour.	Latitude.	Logarithm of the Radius Vector of the Earth.	Var. per Hour.	Prec. in Long.	Nut. in Long.	Aber.	True Obliquity.	Mean Time of Sidereal Noon.	
									23° 27'	h m s	
1	1	279 45 35.0	152.94	-0.58	9.992 6812	- 0.8	-0.03	+13.49	20.81	6.14	5 19 51.27
2	2	280 46 45.8	152.95	0.53	9.992 6802	- 0.1	+0.11	13.54	20.81	6.14	5 15 55.36
3	3	281 47 56.7	152.96	0.44	9.992 6810	+ 0.6	0.25	13.60	20.81	6.14	5 11 59.44
4	4	282 49 7.8	152.96	0.33	9.992 6834	1.3	0.39	13.65	20.81	6.14	5 8 3.53
5	5	283 50 18.9	152.96	0.21	9.992 6873	2.0	0.52	13.70	20.81	6.14	5 4 7.02
6	6	284 51 29.9	152.95	-0.07	9.992 6928	+ 2.6	0.66	+13.75	20.81	6.14	5 0 11.71
7	7	285 52 40.7	152.94	+0.08	9.992 6999	3.3	0.80	13.80	20.81	6.14	4 56 15.79
8	8	286 53 51.2	152.93	0.22	9.992 7087	4.0	0.94	13.85	20.81	6.15	4 52 19.88
9	9	287 55 1.2	152.91	0.34	9.992 7193	4.8	1.07	13.90	20.81	6.15	4 48 23.97
10	10	288 56 10.7	152.89	0.45	9.992 7318	5.6	1.21	13.95	20.81	6.16	4 44 28.06
11	11	289 57 19.7	152.86	+0.53	9.992 7463	+ 6.5	1.35	+14.00	20.81	6.16	4 40 32.14
12	12	290 58 28.1	152.83	0.59	9.992 7630	7.4	1.49	14.05	20.81	6.17	4 36 36.23
13	13	291 59 35.8	152.81	0.61	9.992 7820	8.4	1.63	14.09	20.81	6.17	4 32 40.32
14	14	293 0 42.9	152.78	0.61	9.992 8033	9.4	1.76	14.14	20.81	6.18	4 28 44.40
15	15	294 1 49.4	152.75	0.58	9.992 8271	10.4	1.90	14.18	20.81	6.19	4 24 48.49
16	16	295 2 55.1	152.73	+0.52	9.992 8535	+11.5	2.04	+14.22	20.80	6.19	4 20 52.58
17	17	296 4 0.2	152.70	0.44	9.992 8824	12.6	2.18	14.26	20.80	6.20	4 16 56.67
18	18	297 5 4.6	152.67	0.34	9.992 9140	13.7	2.31	14.30	20.80	6.21	4 13 0.76
19	19	298 6 8.4	152.64	0.22	9.992 9482	14.8	2.45	14.34	20.80	6.22	4 9 4.85
20	20	299 7 11.5	152.62	+0.09	9.992 9852	16.0	2.59	14.37	20.80	6.23	4 5 8.93
21	21	300 8 14.0	152.59	-0.04	9.993 0249	+17.1	2.72	+14.41	20.79	6.24	4 1 13.02
22	22	301 9 15.8	152.56	0.17	9.993 0672	18.2	2.86	14.44	20.79	6.25	3 57 17.11
23	23	302 10 17.0	152.54	0.29	9.993 1122	19.3	3.00	14.48	20.79	6.26	3 53 21.20
24	24	303 11 17.7	152.52	0.40	9.993 1598	20.3	3.14	14.51	20.79	6.27	3 49 25.29
25	25	304 12 17.7	152.49	0.48	9.993 2099	21.3	3.28	14.54	20.79	6.28	3 45 29.38
26	26	305 13 17.2	152.47	-0.54	9.993 2624	+22.3	3.41	+14.57	20.78	6.29	3 41 33.47
27	27	306 14 16.2	152.44	0.57	9.993 3171	23.2	3.55	14.60	20.78	6.30	3 37 37.56
28	28	307 15 14.5	152.42	0.56	9.993 3739	24.1	3.69	14.62	20.78	6.31	3 33 41.64
29	29	308 16 12.2	152.39	0.52	9.993 4327	24.9	3.83	14.65	20.78	6.32	3 29 45.73
30	30	309 17 9.3	152.36	0.45	9.993 4933	25.6	3.96	14.67	20.77	6.33	3 25 49.82
31	31	310 18 5.6	152.33	-0.35	9.993 5555	+26.2	4.10	+14.69	20.77	6.34	3 21 53.91
b. 1	32	311 19 1.2	152.30	0.23	9.993 6191	26.8	4.24	14.71	20.77	6.35	3 17 58.00
2	33	312 19 55.8	152.26	-0.10	9.993 6841	27.4	4.38	14.72	20.76	6.36	3 14 2.09
3	34	313 20 49.5	152.21	+0.04	9.993 7504	27.9	4.51	14.74	20.76	6.37	3 10 6.18
4	35	314 21 42.0	152.16	0.19	9.993 8179	28.4	4.65	14.75	20.76	6.39	3 6 10.27
5	36	315 22 33.4	152.11	+0.32	9.993 8866	+28.9	4.79	+14.76	20.75	6.40	3 2 14.36
6	37	316 23 23.4	152.05	0.43	9.993 9566	29.4	4.93	14.77	20.75	6.41	2 58 18.45
7	38	317 24 12.0	151.99	0.52	9.994 0279	30.0	5.07	14.78	20.75	6.43	2 54 22.54
8	39	318 24 59.1	151.93	0.58	9.994 1006	30.6	5.20	14.79	20.74	6.44	2 50 26.63
9	40	319 25 44.8	151.87	0.62	9.994 1748	31.3	5.34	14.80	20.74	6.45	2 46 30.72
10	41	320 26 28.8	151.80	+0.63	9.994 2506	+32.0	5.48	+14.80	20.74	6.46	2 42 34.81
11	42	321 27 11.2	151.73	0.61	9.994 3282	32.7	5.62	14.80	20.73	6.47	2 38 38.90
12	43	322 27 52.0	151.67	0.56	9.994 4075	33.4	5.75	14.80	20.73	6.48	2 34 42.99
13	44	323 28 31.1	151.60	0.48	9.994 4886	34.2	5.89	14.80	20.73	6.49	2 30 47.08
14	45	324 29 8.6	151.53	0.39	9.994 5717	35.0	6.03	14.80	20.72	6.50	2 26 51.17
15	46	325 29 44.5	151.46	+0.28	9.994 6567	+35.8	6.16	+14.79	20.72	6.51	2 22 55.26
16	47	326 30 18.7	151.39	+0.15	9.994 7436	+36.7	6.30	+14.78	20.71	6.52	2 18 59.35

FOR GREENWICH MEAN NOON.

Date.	Day of the Week.	Apparent Right Ascension.	Var. per Hour.	Apparent Declination.	Var. per Hour.	Semi-diameter.	Hor. Par.	Equation of Time. App.—Mean.	Var. per Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ' "	" ' "	' "	"	m s	s	h m s
Feb. 16	We	21 54 55.89	9.729	-12 41 20.9	+51.49	16 13.21	8.91	-14 18.08	+0.128	21 40 37.81
17	Th	21 58 49.01	9.698	12 20 39.0	51.99	16 13.01	8.91	14 14.65	0.188	21 44 34.37
18	Fr	22 2 41.42	9.669	11 59 45.3	52.47	16 12.80	8.90	14 10.49	0.188	21 48 30.92
19	Sa	22 6 33.12	9.640	11 38 40.2	52.94	16 12.59	8.90	14 5.64	0.217	21 52 27.48
20	Su	22 10 24.13	9.612	11 17 24.1	53.39	16 12.38	8.90	14 0.10	0.245	21 56 24.03
21	Mo	22 14 14.47	9.584	-10 55 57.4	+53.83	16 12.16	8.90	-13 53.88	+0.272	22 0 20.59
22	Tu	22 18 4.16	9.557	10 34 20.4	54.25	16 11.93	8.89	13 47.02	0.299	22 4 17.14
23	We	22 21 53.22	9.531	10 12 33.6	54.65	16 11.71	8.89	13 39.53	0.325	22 8 13.70
24	Th	22 25 41.67	9.506	9 50 37.3	55.04	16 11.48	8.89	13 31.42	0.350	22 12 10.25
25	Fr	22 29 29.52	9.482	9 28 32.0	55.41	16 11.25	8.89	13 22.72	0.374	22 16 6.81
26	Sa	22 33 16.79	9.458	- 9 6 17.9	+55.76	16 11.01	8.89	-13 13.43	+0.398	22 20 3.36
27	Su	22 37 3.50	9.435	8 43 55.5	56.10	16 10.78	8.88	13 3.59	0.421	22 23 59.91
28	Mo	22 40 49.67	9.413	8 21 25.3	56.42	16 10.54	8.88	12 53.20	0.444	22 27 56.47
29	Tu	22 44 35.31	9.391	7 58 47.6	56.72	16 10.30	8.88	12 42.29	0.466	22 31 53.02
Mar. 1	We	22 48 20.43	9.370	7 36 2.8	57.00	16 10.05	8.88	12 30.86	0.487	22 35 49.57
2	Th	22 52 5.06	9.349	- 7 13 11.4	+57.27	16 9.81	8.88	-12 18.93	+0.507	22 39 46.13
3	Fr	22 55 49.20	9.329	6 50 13.8	57.52	16 9.56	8.87	12 6.52	0.527	22 43 42.68
4	Sa	22 59 32.87	9.310	6 27 10.5	57.75	16 9.31	8.87	11 53.64	0.546	22 47 39.24
5	Su	23 3 16.09	9.292	6 4 1.8	57.96	16 9.06	8.87	11 40.30	0.565	22 51 35.79
6	Mo	23 6 58.97	9.274	5 40 48.2	58.16	16 8.81	8.87	11 26.52	0.583	22 55 32.34
7	Tu	23 10 41.22	9.256	- 5 17 30.1	+58.34	16 8.56	8.86	-11 12.32	+0.600	22 59 28.90
8	We	23 14 23.16	9.240	4 54 7.9	58.50	16 8.31	8.86	10 57.72	0.616	23 3 25.45
9	Th	23 18 4.72	9.224	4 30 42.0	58.64	16 8.06	8.86	10 42.72	0.632	23 7 22.00
10	Fr	23 21 45.91	9.209	4 7 12.7	58.77	16 7.81	8.85	10 27.35	0.647	23 11 18.56
11	Sa	23 25 26.74	9.195	3 43 40.5	58.89	16 7.55	8.85	10 11.63	0.662	23 15 15.11
12	Su	23 29 7.24	9.181	- 3 20 5.8	+58.99	16 7.29	8.85	- 9 55.58	+0.675	23 19 11.67
13	Mo	23 32 47.43	9.168	2 56 28.9	59.08	16 7.03	8.85	9 39.21	0.688	23 23 8.22
14	Tu	23 36 27.33	9.157	2 32 50.1	59.15	16 6.77	8.85	9 22.56	0.700	23 27 4.77
15	We	23 40 6.96	9.146	2 9 9.9	59.20	16 6.51	8.85	9 5.63	0.710	23 31 1.33
16	Th	23 43 46.34	9.136	1 45 28.6	59.24	16 6.25	8.84	8 48.46	0.720	23 34 57.88
17	Fr	23 47 25.49	9.127	- 1 21 46.5	+59.26	16 5.98	8.84	- 8 31.06	+0.729	23 38 54.43
18	Sa	23 51 4.44	9.119	0 58 4.0	59.27	16 5.71	8.84	8 13.46	0.737	23 42 50.99
19	Su	23 54 43.21	9.112	0 34 21.5	59.27	16 5.44	8.84	7 55.68	0.744	23 46 47.54
20	Mo	23 58 21.83	9.106	- 0 10 39.3	59.25	16 5.17	8.83	7 37.74	0.750	23 50 44.09
21	Tu	0 2 0.32	9.101	+ 0 13 2.4	59.22	16 4.89	8.83	7 19.68	0.755	23 54 40.65
22	We	0 5 38.70	9.097	+ 0 36 43.2	+59.17	16 4.61	8.83	- 7 1.50	+0.759	23 58 37.20
23	Th	0 9 17.00	9.095	1 0 22.7	59.11	16 4.33	8.83	6 43.25	0.762	0 2 33.75
24	Fr	0 12 55.24	9.093	1 24 0.6	59.04	16 4.05	8.83	6 24.94	0.764	0 6 30.30
25	Sa	0 16 33.45	9.092	1 47 36.5	58.95	16 3.77	8.82	6 6.59	0.765	0 10 26.86
26	Su	0 20 11.64	9.092	2 11 10.1	58.85	16 3.49	8.82	5 48.23	0.765	0 14 23.41
27	Mo	0 23 49.84	9.093	+ 2 34 41.1	+58.73	16 3.20	8.82	- 5 29.88	+0.764	0 18 19.96
28	Tu	0 27 28.07	9.094	2 58 9.1	58.60	16 2.91	8.82	5 11.55	0.763	0 22 16.52
29	We	0 31 6.34	9.096	3 21 33.7	58.45	16 2.63	8.81	4 53.27	0.760	0 26 13.07
30	Th	0 34 44.68	9.099	3 44 54.6	58.28	16 2.35	8.81	4 35.06	0.757	0 30 9.63
31	Fr	0 38 23.10	9.103	4 8 11.3	58.10	16 2.07	8.81	4 16.92	0.753	0 34 6.18
Apr. 1	Sa	0 42 1.62	9.107	+ 4 31 23.5	+57.91	16 1.79	8.80	- 3 58.88	+0.749	0 38 2.73
2	Su	0 45 40.25	9.112	+ 4 54 30.8	+57.69	16 1.52	8.80	- 3 40.96	+0.744	0 41 59.29

FOR GREENWICH MEAN NOON.

Date.	Day of the Year.	True Longitude.	Var. per Hour.	Latitude.	Logarithm of the Radius Vector of the Earth.	Var. per Hour.	Prec. in Long.	Nut. in Long.	Aber-ration.	True Obliquity.	Mean Time of Sidereal Noon.		
											23° 27'	h	m	s
Feb. 16	47	326 30 18.7	151.39	+0.15	9.994 7436	+36.7	6.30	+14.78	20.71	6.52	2 18	59.35	
17	48	327 30 51.3	151.32	+0.02	9.994 8327	37.5	6.44	14.78	20.71	6.53	2 15	3.44	
18	49	328 31 22.3	151.26	-0.11	9.994 9238	38.4	6.58	14.77	20.70	6.54	2 11	7.54	
19	50	329 31 51.7	151.19	0.23	9.995 0169	39.3	6.72	14.76	20.70	6.55	2 7	11.63	
20	51	330 32 19.5	151.13	0.34	9.995 1122	40.1	6.85	14.75	20.69	6.56	2 3	15.72	
21	52	331 32 45.8	151.07	-0.44	9.995 2094	+40.9	6.99	+14.74	20.69	6.57	1 59	19.81	
22	53	332 33 10.7	151.01	0.51	9.995 3086	41.7	7.13	14.73	20.68	6.58	1 55	23.90	
23	54	333 33 34.1	150.95	0.55	9.995 4097	42.4	7.27	14.71	20.68	6.59	1 51	27.99	
24	55	334 33 56.1	150.89	0.55	9.995 5124	43.1	7.40	14.70	20.67	6.60	1 47	32.08	
25	56	335 34 16.7	150.83	0.52	9.995 6168	43.7	7.54	14.68	20.67	6.60	1 43	36.18	
26	57	336 34 35.9	150.77	-0.46	9.995 7226	+44.3	7.68	+14.66	20.66	6.61	1 39	40.27	
27	58	337 34 53.7	150.71	0.37	9.995 8295	44.8	7.82	14.64	20.66	6.62	1 35	44.36	
28	59	338 35 10.1	150.65	0.25	9.995 9376	45.2	7.95	14.62	20.66	6.62	1 31	48.45	
29	60	339 35 24.9	150.59	-0.12	9.996 0464	45.5	8.09	14.60	20.65	6.63	1 27	52.54	
Mar. 1	61	340 35 38.3	150.52	+0.02	9.996 1561	45.8	8.23	14.57	20.65	6.63	1 23	56.64	
2	62	341 35 50.0	150.45	+0.16	9.996 2662	+46.0	8.37	+14.55	20.64	6.63	1 20	0.73	
3	63	342 36 0.0	150.38	0.29	9.996 3769	46.2	8.51	14.52	20.64	6.63	1 16	4.82	
4	64	343 36 8.3	150.30	0.41	9.996 4880	46.4	8.64	14.50	20.63	6.63	1 12	8.91	
5	65	344 36 14.6	150.22	0.51	9.996 5994	46.5	8.78	14.47	20.63	6.63	1 8	13.00	
6	66	345 36 19.1	150.14	0.58	9.996 7112	46.6	8.92	14.44	20.62	6.64	1 4	17.10	
7	67	346 36 21.4	150.05	+0.62	9.996 8234	+46.8	9.06	+14.41	20.62	6.64	1 0	21.19	
8	68	347 36 21.7	149.97	0.63	9.996 9360	47.0	9.19	14.38	20.61	6.64	0 56	25.28	
9	69	348 36 19.9	149.88	0.62	9.997 0492	47.3	9.33	14.35	20.60	6.64	0 52	29.37	
10	70	349 36 15.9	149.79	0.58	9.997 1630	47.6	9.47	14.32	20.60	6.64	0 48	33.46	
11	71	350 36 9.7	149.69	0.52	9.997 2775	47.9	9.60	14.29	20.59	6.64	0 44	37.56	
12	72	351 36 1.3	149.60	+0.44	9.997 3927	+48.2	9.74	+14.26	20.58	6.63	0 40	41.65	
13	73	352 35 50.6	149.51	0.33	9.997 5087	48.5	9.88	14.23	20.58	6.63	0 36	45.74	
14	74	353 35 37.8	149.42	0.21	9.997 6255	48.9	10.02	14.20	20.57	6.62	0 32	49.84	
15	75	354 35 22.8	149.33	+0.08	9.997 7433	49.3	10.16	14.16	20.57	6.62	0 28	53.93	
16	76	355 35 5.5	149.24	-0.05	9.997 8620	49.7	10.29	14.13	20.56	6.62	0 24	58.02	
17	77	356 34 46.1	149.15	-0.17	9.997 9818	+50.1	10.43	+14.10	20.55	6.61	0 21	2.11	
18	78	357 34 24.6	149.06	0.28	9.998 1026	50.6	10.57	14.06	20.55	6.61	0 17	6.20	
19	79	358 34 1.0	148.97	0.37	9.998 2244	51.0	10.71	14.03	20.54	6.60	0 13	10.30	
20	80	359 33 35.3	148.89	0.44	9.998 3474	51.4	10.84	14.00	20.54	6.60	0 9	14.39	
21	81	0 33 7.7	148.81	0.48	9.998 4714	51.8	10.98	13.96	20.53	6.59	0 5	18.48	
22	82	1 32 38.2	148.73	-0.49	9.998 5963	+52.2	11.12	+13.93	20.52	6.58	0 1	22.57	
23	83	2 32 6.8	148.65	0.47	9.998 7222	52.6	11.26	13.89	20.52	6.57	23 53	30.76	
24	84	3 31 33.6	148.58	0.42	9.998 8488	52.9	11.39	13.86	20.51	6.56	23 49	34.85	
25	85	4 30 58.6	148.51	0.35	9.998 9759	53.1	11.53	13.83	20.51	6.55	23 45	38.94	
26	86	5 30 22.0	148.44	0.24	9.999 1034	53.2	11.67	13.79	20.50	6.53	23 41	43.04	
27	87	6 29 43.5	148.36	-0.11	9.999 2312	+53.2	11.81	+13.76	20.50	6.52	23 37	47.13	
28	88	7 29 3.3	148.29	+0.03	9.999 3590	53.2	11.95	13.73	20.49	6.51	23 33	51.22	
29	89	8 28 21.4	148.22	0.16	9.999 4867	53.1	12.08	13.69	20.49	6.50	23 29	55.31	
30	90	9 27 37.7	148.14	0.29	9.999 6140	53.0	12.22	13.66	20.48	6.49	23 25	59.41	
31	91	10 26 52.2	148.06	0.41	9.999 7410	52.8	12.35	13.63	20.48	6.47	23 22	3.50	
Apr. 1	92	11 26 4.7	147.98	+0.51	9.999 8674	+52.5	12.49	+13.60	20.47	6.46	23 18	7.59	
2	93	12 25 15.2	147.90	+0.58	9.999 9931	+52.3	12.63	+13.57	20.47	6.44	23 14	11.68	

FOR GREENWICH MEAN NOON.

Date.	Day of the Week.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Semi-diameter.	Hor. Par.	Equation of Time. App.—Mean.		Var. per Hour.	Sideric or Right ascension of Sun			
		h	m	s	s	°	'	"	"			'	"	"	m	s	s	h	m
Apr. 1	Sa	0	42	1.62	9.107	+	4	31	23.5	+57.91	16	1.79	8.80	-3	58.88	+0.749	0	38
2	Su	0	45	40.25	9.112		4	54	30.8	57.69	16	1.52	8.80	3	40.96	0.744	0	41
3	Mo	0	49	19.00	9.118		5	17	32.8	57.46	16	1.24	8.80	3	23.16	0.738	0	45
4	Tu	0	52	57.90	9.124		5	40	29.2	57.22	16	0.97	8.79	3	5.50	0.732	0	49
5	We	0	56	36.96	9.131		6	3	19.6	56.97	16	0.69	8.79	2	48.01	0.725	0	53
6	Th	1	0	16.19	9.138	+	6	26	3.7	+56.70	16	0.42	8.79	-2	30.68	+0.718	0	57
7	Fr	1	3	55.60	9.147		6	48	41.0	56.41	16	0.15	8.79	2	13.55	0.710	1	1
8	Sa	1	7	35.22	9.156		7	11	11.2	56.11	15	59.88	8.78	1	56.62	0.701	1	5
9	Su	1	11	15.07	9.165		7	33	34.0	55.79	15	59.61	8.78	1	39.91	0.691	1	9
10	Mo	1	14	55.16	9.175		7	55	49.1	55.46	15	59.34	8.78	1	23.44	0.681	1	13
11	Tu	1	18	35.49	9.186	+	8	17	56.1	+55.12	15	59.07	8.78	-1	7.22	+0.670	1	17
12	We	1	22	16.10	9.198		8	39	54.6	54.76	15	58.81	8.77	0	51.28	0.658	1	21
13	Th	1	25	57.00	9.211		9	1	44.4	54.39	15	58.54	8.77	0	35.62	0.646	1	25
14	Fr	1	29	38.20	9.224		9	23	25.2	54.00	15	58.27	8.77	0	20.27	0.633	1	29
15	Sa	1	33	19.72	9.238		9	44	56.5	53.60	15	58.01	8.77	-0	5.24	0.619	1	33
16	Su	1	37	1.59	9.252	+10	6	18	1.1	+53.19	15	57.75	8.76	+0	9.45	+0.604	1	37
17	Mo	1	40	43.81	9.267		10	27	29.7	52.77	15	57.48	8.76	0	23.78	0.589	1	41
18	Tu	1	44	26.41	9.283		10	48	31.0	52.33	15	57.22	8.76	0	37.74	0.573	1	45
19	We	1	48	9.41	9.300		11	9	21.7	51.88	15	56.95	8.75	0	51.29	0.556	1	49
20	Th	1	51	62.82	9.318		11	30	1.4	51.42	15	56.69	8.75	1	4.44	0.538	1	52
21	Fr	1	55	36.66	9.337	+11	50	29.9		+50.95	15	56.42	8.75	+1	17.15	+0.520	1	56
22	Sa	1	59	20.96	9.350		12	10	46.8	50.46	15	56.16	8.75	1	29.41	0.501	2	0
23	Su	2	3	5.72	9.375		12	30	51.8	49.96	15	55.90	8.75	1	41.20	0.481	2	4
24	Mo	2	6	50.95	9.395		12	50	44.7	49.44	15	55.64	8.75	1	52.52	0.461	2	8
25	Tu	2	10	36.68	9.416		13	10	25.0	48.91	15	55.38	8.74	2	3.35	0.440	2	12
26	We	2	14	22.91	9.437	+13	29	52.4		+48.37	15	55.12	8.74	+2	13.67	+0.419	2	16
27	Th	2	18	9.66	9.458		13	49	6.6	47.81	15	54.87	8.74	2	23.48	0.398	2	20
28	Fr	2	21	56.93	9.480		14	8	7.2	47.24	15	54.62	8.74	2	32.77	0.376	2	24
29	Sa	2	25	44.72	9.502		14	26	53.9	46.65	15	54.37	8.74	2	41.53	0.354	2	28
30	Su	2	29	33.05	9.525		14	45	26.3	46.05	15	54.12	8.73	2	49.76	0.332	2	32
May 1	Mo	2	33	21.91	9.547	+15	3	44.2		+45.43	15	53.88	8.73	+2	57.45	+0.309	2	36
2	Tu	2	37	11.31	9.570		15	21	47.1	44.80	15	53.65	8.73	3	4.61	0.287	2	40
3	We	2	41	1.26	9.592		15	39	34.7	44.16	15	53.41	8.73	3	11.22	0.264	2	44
4	Th	2	44	51.75	9.615		15	57	6.7	43.50	15	53.18	8.72	3	17.28	0.241	2	48
5	Fr	2	48	42.79	9.638		16	14	22.9	42.83	15	52.95	8.72	3	22.79	0.218	2	52
6	Sa	2	52	34.38	9.661	+16	31	22.9		+42.15	15	52.73	8.72	+3	27.76	+0.195	2	56
7	Su	2	56	26.53	9.684		16	48	6.3	41.46	15	52.51	8.72	3	32.17	0.172	2	59
8	Mo	3	0	19.23	9.707		17	4	32.8	40.75	15	52.30	8.72	3	36.03	0.149	3	3
9	Tu	3	4	12.48	9.730		17	20	42.2	40.03	15	52.09	8.71	3	39.33	0.126	3	7
10	We	3	8	6.29	9.754		17	36	34.2	39.30	15	51.88	8.71	3	42.08	0.103	3	11
11	Th	3	12	0.65	9.777	+17	52	8.4		+38.55	15	51.67	8.71	+3	44.27	+0.080	3	15
12	Fr	3	15	55.57	9.800		18	7	24.6	37.80	15	51.47	8.71	3	45.91	0.057	3	19
13	Sa	3	19	51.05	9.823		18	22	22.6	37.03	15	51.26	8.71	3	46.99	0.033	3	23
14	Su	3	23	47.08	9.846		18	37	2.0	36.25	15	51.06	8.70	3	47.51	+0.010	3	27
15	Mo	3	27	43.67	9.869		18	51	22.6	35.46	15	50.86	8.70	3	47.48	-0.013	3	31
16	Tu	3	31	40.81	9.893	+19	5	24.1		+34.66	15	50.66	8.70	+3	46.89	-0.036	3	35
17	We	3	35	38.51	9.916	+19	19	6.2		+33.85	15	50.47	8.70	+3	45.74	-0.059	3	39

FOR GREENWICH MEAN NOON.

Date.	Day of the Year.	True Longitude.	Var. per Hour.	Latitude.	Logarithm of the Radius Vector of the Earth.	Var. per Hour.	Prece. in Long.	Nut. in Long.	Aber-ration.	True Obliquity.	Mean Time of Sidereal Noon.
		" " "	" "	" "			" "	" "	" "	23° 27'	h m s
Apr. 1	92	11 26 4.7	147.98	+0.51	9.999 8674	+52.5	12.49	+13.60	20.47	6.46	23 18 7.59
2	93	12 25 15.2	147.90	0.58	9.999 9931	52.3	12.63	13.57	20.47	6.44	23 14 11.68
3	94	13 24 23.8	147.81	0.62	0.000 1182	52.0	12.77	13.54	20.46	6.42	23 10 15.78
4	95	14 23 30.2	147.72	0.64	0.000 2426	51.7	12.91	13.51	20.46	6.40	23 6 19.87
5	96	15 22 34.4	147.63	0.63	0.000 3663	51.4	13.04	13.49	20.45	6.38	23 2 23.96
6	97	16 21 36.5	147.54	+0.59	0.000 4894	+51.1	13.18	+13.46	20.45	6.37	22 58 28.05
7	98	17 20 36.4	147.45	0.53	0.000 6119	50.9	13.32	13.43	20.44	6.35	22 54 32.14
8	99	18 19 34.0	147.35	0.45	0.000 7338	50.7	13.46	13.40	20.43	6.33	22 50 36.24
9	100	19 18 29.4	147.26	0.35	0.000 8553	50.5	13.60	13.38	20.43	6.31	22 46 40.33
10	101	20 17 22.4	147.16	0.24	0.000 9763	50.3	13.73	13.36	20.42	6.29	22 42 44.42
11	102	21 16 13.3	147.07	+0.12	0.001 0970	+50.2	13.87	+13.33	20.41	6.27	22 38 48.51
12	103	22 15 1.8	146.98	-0.01	0.001 2173	50.1	14.01	13.31	20.41	6.25	22 34 52.60
13	104	23 13 48.1	146.88	0.13	0.001 3374	50.0	14.15	13.29	20.40	6.22	22 30 56.70
14	105	24 12 32.2	146.79	0.24	0.001 4574	50.0	14.28	13.27	20.40	6.20	22 27 0.79
15	106	25 11 14.1	146.70	0.33	0.001 5772	49.9	14.42	13.25	20.39	6.18	22 23 4.88
16	107	26 9 53.8	146.61	-0.40	0.001 6970	+49.9	14.56	+13.23	20.38	6.16	22 19 8.97
17	108	27 8 31.5	146.53	0.44	0.001 8169	49.9	14.70	13.21	20.38	6.14	22 15 13.06
18	109	28 7 7.2	146.45	0.45	0.001 9368	49.9	14.83	13.20	20.37	6.12	22 11 17.16
19	110	29 5 41.0	146.37	0.43	0.002 0566	49.9	14.97	13.18	20.37	6.10	22 7 21.25
20	111	30 4 13.0	146.30	0.39	0.002 1765	49.9	15.11	13.17	20.36	6.07	22 3 25.34
21	112	31 2 43.2	146.23	-0.32	0.002 2962	+49.8	15.25	+13.16	20.35	6.05	21 59 29.43
22	113	32 1 11.7	146.16	0.22	0 002 4157	49.7	15.39	13.15	20.35	6.03	21 55 33.52
23	114	32 59 38.6	146.09	-0.09	0.002 5347	49.5	15.52	13.14	20.34	6.00	21 51 37.61
24	115	33 58 4.0	146.02	+0.05	0.002 6531	49.2	15.66	13.13	20.34	5.98	21 47 41.70
25	116	34 56 27.8	145.96	0.18	0.002 7708	48.8	15.79	13.12	20.33	5.95	21 43 45.79
26	117	35 54 50.0	145.89	+0.30	0.002 8875	+48.4	15.93	+13.11	20.33	5.92	21 39 49.88
27	118	36 53 10.7	145.83	0.42	0.003 0031	47.9	16.07	13.11	20.32	5.90	21 35 53.98
28	119	37 51 29.9	145.77	0.53	0.003 1175	47.4	16.21	13.10	20.32	5.87	21 31 58.07
29	120	38 49 47.5	145.70	0.61	0.003 2304	46.8	16.35	13.10	20.31	5.85	21 28 2.16
30	121	39 48 3.4	145.63	0.66	0.003 3419	46.1	16.48	13.10	20.31	5.82	21 24 6.25
May 1	122	40 46 17.7	145.56	+0.68	0.003 4518	+45.4	16.62	+13.10	20.30	5.79	21 20 10.34
2	123	41 44 30.3	145.49	0.67	0.003 5600	44.7	16.76	13.10	20.30	5.77	21 16 14.43
3	124	42 42 41.2	145.41	0.63	0.003 6667	44.0	16.90	13.11	20.30	5.74	21 12 18.52
4	125	43 40 50.2	145.34	0.56	0.003 7716	43.3	17.04	13.11	20.29	5.71	21 8 22.61
5	126	44 38 57.5	145.28	0.48	0.003 8750	42.6	17.17	13.12	20.28	5.68	21 4 26.70
6	127	45 37 2.9	145.19	+0.38	0.003 9768	+42.0	17.31	+13.13	20.28	5.66	21 0 30.79
7	128	46 35 6.5	145.11	0.27	0.004 0770	41.4	17.45	13.14	20.28	5.63	20 56 34.88
8	129	47 33 8.2	145.03	0.15	0.004 1757	40.8	17.59	13.15	20.27	5.61	20 52 38.97
9	130	48 31 8.1	144.96	+0.02	0.004 2730	40.2	17.72	13.16	20.26	5.58	20 48 43.06
10	131	49 29 6.1	144.88	-0.10	0.004 3689	39.7	17.86	13.17	20.26	5.55	20 44 47.15
11	132	50 27 2.3	144.80	-0.21	0.004 4635	+39.2	18.00	+13.18	20.26	5.53	20 40 51.24
12	133	51 24 56.6	144.73	0.31	0.004 5569	38.7	18.14	13.20	20.25	5.50	20 36 55.33
13	134	52 22 49.2	144.66	0.38	0.004 6491	38.2	18.27	13.22	20.25	5.48	20 32 59.42
14	135	53 20 40.1	144.59	0.42	0.004 7404	37.8	18.41	13.24	20.24	5.45	20 29 3.51
15	136	54 18 29.3	144.52	0.43	0.004 8307	37.5	18.55	13.26	20.24	5.42	20 25 7.60
16	137	55 16 16.8	144.45	-0.41	0.004 9201	+37.2	18.69	+13.28	20.23	5.40	20 21 11.68
17	138	56 14 2.9	144.39	-0.37	0.005 0088	+36.9	18.83	+13.30	20.23	5.38	20 17 15.77

FOR GREENWICH MEAN NOON.

Date.	Day of the Week.	Apparent Right Ascension.	Var. per Hour.	Apparent Declination.	Var. per Hour.	Semi-diameter.	Hor. Par.	Equation of Time. App.—Mean.	Var. per Hour.	Sidereal Time or Right Ascension of Mean Sun.
		h m s	s	° ' "	"	' "	"	m s	s	h m s
May 17	We	3 35 38.51	9.916	+19 19 6.2	+33.85	15 50.47	8.70	+3 45.74	-0.059	3 39 24.26
18	Th	3 39 36.78	9.939	19 32 28.8	33.03	15 50.28	8.70	3 44.04	0.063	3 43 20.82
19	Fr	3 43 35.61	9.963	19 45 31.5	32.19	15 50.09	8.69	3 41.77	0.106	3 47 17.38
20	Sa	3 47 34.99	9.986	19 58 14.1	31.35	15 49.91	8.69	3 38.94	0.129	3 51 13.93
21	Su	3 51 34.93	10.009	20 10 36.4	30.50	15 49.72	8.69	3 35.56	0.153	3 55 10.49
22	Mo	3 55 35.43	10.032	+20 22 38.1	+29.64	15 49.54	8.69	+3 31.62	-0.176	3 59 7.05
23	Tu	3 59 36.47	10.055	20 34 19.0	28.76	15 49.36	8.69	3 27.13	0.198	4 3 3.60
24	We	4 3 38.05	10.077	20 45 38.7	27.88	15 49.18	8.69	3 22.11	0.220	4 7 0.16
25	Th	4 7 40.17	10.099	20 56 37.1	26.98	15 49.00	8.69	3 16.55	0.242	4 10 56.72
26	Fr	4 11 42.80	10.121	21 7 13.9	26.08	15 48.83	8.68	3 10.48	0.263	4 14 53.28
27	Sa	4 15 45.93	10.141	+21 17 28.9	+25.16	15 48.67	8.68	+3 3.90	-0.284	4 18 49.83
28	Su	4 19 49.56	10.161	21 27 21.8	24.24	15 48.51	8.68	2 56.83	0.304	4 22 46.39
29	Mo	4 23 53.66	10.180	21 36 52.5	23.31	15 48.35	8.68	2 49.29	0.323	4 26 42.95
30	Tu	4 27 58.21	10.199	21 46 0.7	22.37	15 48.20	8.68	2 41.29	0.342	4 30 39.50
31	We	4 32 3.21	10.217	21 54 46.2	21.42	15 48.06	8.68	2 32.85	0.360	4 34 36.06
June 1	Th	4 36 8.62	10.234	+22 3 8.8	+20.46	15 47.92	8.68	+2 24.00	-0.377	4 38 32.62
2	Fr	4 40 14.43	10.250	22 11 8.3	19.50	15 47.78	8.67	2 14.74	0.393	4 42 29.18
3	Sa	4 44 20.62	10.265	22 18 44.6	18.53	15 47.65	8.67	2 5.11	0.408	4 46 25.74
4	Su	4 48 27.17	10.280	22 25 57.5	17.55	15 47.53	8.67	1 55.12	0.423	4 50 22.29
5	Mo	4 52 34.06	10.294	22 32 46.9	16.56	15 47.41	8.67	1 44.79	0.437	4 54 18.85
6	Tu	4 56 41.27	10.306	+22 39 12.5	+15.57	15 47.29	8.67	+1 34.14	-0.450	4 58 15.41
7	We	5 0 48.77	10.318	22 45 14.3	14.58	15 47.18	8.67	1 23.20	0.462	5 2 11.97
8	Th	5 4 56.54	10.329	22 50 52.2	13.58	15 47.07	8.67	1 11.98	0.473	5 6 8.53
9	Fr	5 9 4.57	10.339	22 56 6.0	12.57	15 46.97	8.67	1 0.51	0.483	5 10 5.08
10	Sa	5 13 12.83	10.348	23 0 55.6	11.56	15 46.87	8.66	0 48.81	0.492	5 14 1.64
11	Su	5 17 21.30	10.356	+23 5 20.9	+10.55	15 46.77	8.66	+0 36.90	-0.500	5 17 58.20
12	Mo	5 21 29.95	10.364	23 9 21.9	9.53	15 46.68	8.66	0 24.81	0.507	5 21 54.76
13	Tu	5 25 38.78	10.371	23 12 58.5	8.51	15 46.59	8.66	0 12.54	0.514	5 25 51.32
14	We	5 29 47.76	10.377	23 16 10.5	7.49	15 46.50	8.66	+0 0.12	0.520	5 29 47.87
15	Th	5 33 56.87	10.382	23 18 58.0	6.47	15 46.42	8.66	-0 12.43	0.525	5 33 44.43
16	Fr	5 38 6.09	10.386	+23 21 20.9	+ 5.44	15 46.34	8.66	-0 25.10	-0.530	5 37 40.99
17	Sa	5 42 15.41	10.390	23 23 19.1	4.41	15 46.27	8.66	0 37.87	0.534	5 41 37.55
18	Su	5 46 24.82	10.393	23 24 52.6	3.38	15 46.20	8.66	0 50.72	0.537	5 45 34.11
19	Mo	5 50 34.30	10.395	23 26 1.3	2.35	15 46.13	8.66	1 3.64	0.539	5 49 30.66
20	Tu	5 54 43.82	10.396	23 26 45.2	1.31	15 46.06	8.66	1 16.59	0.540	5 53 27.22
21	We	5 58 53.35	10.397	+23 27 4.4	+ 0.28	15 46.00	8.66	-1 29.57	-0.541	5 57 23.78
22	Th	6 3 2.88	10.397	23 26 58.7	- 0.75	15 45.94	8.66	1 42.54	0.540	6 1 20.34
23	Fr	6 7 12.39	10.396	23 26 28.2	1.79	15 45.88	8.66	1 55.50	0.538	6 5 16.90
24	Sa	6 11 21.86	10.393	23 25 32.8	2.82	15 45.83	8.66	2 8.40	0.536	6 9 13.46
25	Su	6 15 31.25	10.389	23 24 12.7	3.85	15 45.78	8.66	2 21.23	0.532	6 13 10.02
26	Mo	6 19 40.53	10.384	+23 22 27.8	- 4.88	15 45.74	8.66	-2 33.96	-0.527	6 17 6.57
27	Tu	6 23 49.69	10.378	23 20 18.3	5.91	15 45.71	8.66	2 46.56	0.522	6 21 3.13
28	We	6 27 58.70	10.372	23 17 44.1	6.94	15 45.68	8.66	2 59.01	0.515	6 24 59.69
29	Th	6 32 7.53	10.364	23 14 45.3	7.96	15 45.66	8.66	3 11.28	0.507	6 28 56.25
30	Fr	6 36 16.15	10.354	23 11 22.1	8.98	15 45.64	8.66	3 23.35	0.498	6 32 52.81
July 1	Sa	6 40 24.54	10.344	+23 7 34.5	- 9.99	15 45.63	8.66	-3 35.18	-0.488	6 36 49.36
2	Su	6 44 32.68	10.333	+23 3 22.6	-11.00	15 45.62	8.66	-3 46.76	-0.477	6 40 45.92

FOR GREENWICH MEAN NOON.

Date.	Day of the Year.	True Longitude.		Var. per Hour.	Latitude.	Logarithm of the Radius Vector of the Earth.	Var. per Hour.	Prec. in Long.	Nut. in Long.	Aber-ration.	True Oblig-uity.	Mean Time of Sidereal Noon.		
		"	"									23° 27'	h	m	s
May 17	138	56 14	2.9	144.39	-0.37	0.005 0088	+36.9	18.83	+13.30	20.23	5.38	20 17	15.77	
18	139	57 11	47.5	144.33	0.30	0.005 0966	36.5	18.96	13.32	20.23	5.35	20 13	19.86	
19	140	58 9	30.9	144.28	0.21	0.005 1836	36.1	19.10	13.35	20.22	5.32	20 9	23.95	
20	141	59 7	13.0	144.23	-0.09	0.005 2697	35.7	19.23	13.38	20.22	5.30	20 5	28.04	
21	142	60 4	54.0	144.18	+0.05	0.005 3547	35.2	19.37	13.41	20.22	5.28	20 1	32.13	
22	143	61 2	34.0	144.14	+0.18	0.005 4386	+34.6	19.51	+13.44	20.21	5.25	19 57	36.22	
23	144	62 0	13.0	144.10	0.31	0.005 5211	34.0	19.65	13.47	20.21	5.23	19 53	40.31	
24	145	62 57	51.0	144.06	0.44	0.005 6021	33.4	19.79	13.50	20.20	5.20	19 49	44.40	
25	146	63 55	28.1	144.03	0.55	0.005 6814	32.7	19.92	13.53	20.20	5.18	19 45	48.48	
26	147	64 53	4.2	143.99	0.63	0.005 7589	31.9	20.06	13.56	20.20	5.16	19 41	52.57	
27	148	65 50	39.5	143.95	+0.68	0.005 8344	+31.1	20.20	+13.59	20.19	5.14	19 37	56.66	
28	149	66 48	13.8	143.91	0.70	0.005 9079	30.2	20.34	13.63	20.19	5.12	19 34	0.75	
29	150	67 45	47.1	143.87	0.69	0.005 9792	29.3	20.48	13.66	20.18	5.09	19 30	4.84	
30	151	68 43	19.5	143.83	0.65	0.006 0483	28.4	20.61	13.70	20.18	5.07	19 26	8.93	
31	152	69 40	50.9	143.79	0.59	0.006 1151	27.4	20.75	13.74	20.18	5.05	19 22	13.01	
June 1	153	70 38	21.3	143.74	+0.51	0.006 1796	+28.4	20.89	+13.78	20.17	5.03	19 18	17.10	
2	154	71 35	50.6	143.70	0.42	0.006 2418	28.4	21.03	13.82	20.17	5.01	19 14	21.19	
3	155	72 33	18.8	143.65	0.31	0.006 3016	24.5	21.16	13.86	20.17	4.99	19 10	25.28	
4	156	73 30	46.0	143.61	0.18	0.006 3592	23.5	21.30	13.90	20.16	4.97	19 6	29.37	
5	157	74 28	12.0	143.56	+0.05	0.006 4146	22.6	21.44	13.94	20.16	4.96	19 2	33.46	
6	158	75 25	37.0	143.52	-0.07	0.006 4678	+21.7	21.58	+13.98	20.16	4.94	18 58	37.54	
7	159	76 23	0.9	143.47	0.18	0.006 5188	20.8	21.71	14.02	20.16	4.92	18 54	41.63	
8	160	77 20	23.7	143.43	0.28	0.006 5678	20.0	21.85	14.06	20.15	4.90	18 50	45.72	
9	161	78 17	45.4	143.38	0.36	0.006 6149	19.2	21.98	14.11	20.15	4.88	18 46	49.81	
10	162	79 15	6.1	143.34	0.42	0.006 6602	18.5	22.12	14.15	20.15	4.87	18 42	53.90	
11	163	80 12	25.7	143.30	-0.44	0.006 7037	+17.8	22.26	+14.20	20.15	4.86	18 38	57.98	
12	164	81 9	44.4	143.26	0.43	0.006 7456	17.2	22.40	14.24	20.14	4.84	18 35	2.07	
13	165	82 7	2.1	143.22	0.40	0.006 7860	16.6	22.54	14.29	20.14	4.83	18 31	6.16	
14	166	83 4	19.1	143.19	0.34	0.006 8250	16.0	22.67	14.34	20.14	4.81	18 27	10.25	
15	167	84 1	35.2	143.16	0.25	0.006 8627	15.4	22.81	14.38	20.14	4.80	18 23	14.33	
16	168	84 58	50.8	143.14	-0.13	0.006 8991	+14.9	22.95	+14.43	20.14	4.79	18 19	18.42	
17	169	85 56	5.8	143.12	+0.01	0.006 9342	14.4	23.09	14.47	20.14	4.78	18 15	22.51	
18	170	86 53	20.5	143.10	0.15	0.006 9680	13.8	23.23	14.52	20.14	4.77	18 11	26.60	
19	171	87 50	34.8	143.09	0.28	0.007 0003	13.1	23.36	14.57	20.14	4.76	18 7	30.68	
20	172	88 47	49.0	143.09	0.41	0.007 0311	12.4	23.50	14.62	20.14	4.75	18 3	34.77	
21	173	89 45	3.0	143.08	+0.52	0.007 0601	+11.7	23.64	+14.66	20.14	4.74	17 59	38.86	
22	174	90 42	16.8	143.08	0.60	0.007 0872	10.9	23.78	14.71	20.14	4.73	17 55	42.95	
23	175	91 39	30.6	143.07	0.66	0.007 1123	10.0	23.92	14.76	20.14	4.73	17 51	47.04	
24	176	92 36	44.4	143.07	0.69	0.007 1353	9.1	24.05	14.81	20.14	4.72	17 47	51.12	
25	177	93 33	58.1	143.07	0.69	0.007 1560	8.1	24.19	14.85	20.13	4.71	17 43	55.21	
26	178	94 31	11.7	143.07	+0.66	0.007 1744	+ 7.1	24.33	+14.90	20.13	4.71	17 39	59.30	
27	179	95 28	25.3	143.06	0.61	0.007 1902	6.1	24.47	14.95	20.13	4.70	17 36	3.39	
28	180	96 25	38.8	143.06	0.51	0.007 2036	5.1	24.60	14.99	20.13	4.70	17 32	7.47	
29	181	97 22	52.3	143.06	0.40	0.007 2145	4.0	24.74	15.04	20.13	4.69	17 28	11.56	
30	182	98 20	5.6	143.05	0.29	0.007 2228	2.9	24.88	15.08	20.13	4.69	17 24	15.65	
July 1	183	99 17	18.8	143.05	+0.17	0.007 2285	+ 1.9	25.02	+15.12	20.13	4.68	17 20	19.74	
2	184	100 14	31.9	143.04	+0.04	0.007 2316	+ 0.8	25.16	+15.17	20.13	4.68	17 16	23.82	

FOR GREENWICH MEAN NOON.

Date.	Day of the Week.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Semi-diameter.	Hor. Par.	Equation of Time. App.—Mean.		Var. per Hour.	Sidereal Time or Right Ascension of Mean Sun.				
		h	m	s	s	°	'	"	"	"	"	m	s	s	h	m	s		
July	1	Sa	6	40	24.54	10.344	+23	7	34.5	-9.99	15	45.63	8.66	-3	35.18	-0.488	6	36	49.36
	2	Su	6	44	32.68	10.333	23	3	22.6	11.00	15	45.62	8.66	3	46.76	0.477	6	40	45.92
	3	Mo	6	48	40.54	10.321	22	58	46.5	12.00	15	45.62	8.65	3	58.06	0.464	6	44	42.48
	4	Tu	6	52	48.09	10.308	22	53	46.4	13.00	15	45.62	8.65	4	9.05	0.451	6	48	39.04
	5	We	6	56	55.32	10.294	22	48	22.4	13.99	15	45.63	8.65	4	19.72	0.437	6	52	35.60
	6	Th	7	1	2.19	10.279	+22	42	34.6	-14.98	15	45.65	8.65	-4	30.04	-0.422	6	56	32.15
	7	Fr	7	5	8.69	10.263	22	36	23.2	15.96	15	45.67	8.65	4	39.98	0.406	7	0	28.71
	8	Sa	7	9	14.80	10.246	22	29	48.4	16.93	15	45.69	8.65	4	49.53	0.389	7	4	25.27
	9	Su	7	13	20.50	10.229	22	22	50.4	17.90	15	45.72	8.66	4	58.68	0.372	7	8	21.83
	10	Mo	7	17	25.77	10.211	22	15	29.2	18.86	15	45.75	8.66	5	7.39	0.354	7	12	18.38
	11	Tu	7	21	30.60	10.192	+22	7	45.1	-19.81	15	45.79	8.66	-5	15.66	-0.335	7	16	14.94
	12	We	7	25	34.97	10.172	21	59	38.3	20.75	15	45.83	8.66	5	23.47	0.316	7	20	11.50
	13	Th	7	29	38.86	10.152	21	51	8.9	21.69	15	45.83	8.66	5	30.80	0.296	7	24	8.06
	14	Fr	7	33	42.28	10.132	21	42	17.2	22.62	15	45.93	8.66	5	37.66	0.276	7	28	4.62
	15	Sa	7	37	45.21	10.112	21	33	3.2	23.54	15	45.98	8.66	5	44.03	0.255	7	32	1.17
	16	Su	7	41	47.64	10.091	+21	23	27.2	-24.45	15	46.03	8.66	-5	49.90	-0.234	7	35	57.73
	17	Mo	7	45	49.56	10.070	21	13	29.4	25.36	15	46.09	8.66	5	55.27	0.213	7	39	54.29
	18	Tu	7	49	50.97	10.048	21	3	10.0	26.26	15	46.14	8.66	6	0.13	0.192	7	43	50.85
	19	We	7	53	51.87	10.026	20	52	29.1	27.14	15	46.20	8.66	6	4.47	0.170	7	47	47.40
	20	Th	7	57	52.24	10.004	20	41	27.1	28.02	15	46.26	8.66	6	8.28	0.148	7	51	43.96
	21	Fr	8	1	52.08	9.982	+20	30	4.1	-28.89	15	46.33	8.66	-6	11.56	-0.125	7	55	40.52
	22	Sa	8	5	51.37	9.959	20	18	20.3	29.75	15	46.40	8.66	6	14.30	0.102	7	59	37.08
	23	Su	8	9	50.11	9.936	20	6	16.1	30.60	15	46.48	8.66	6	16.48	0.079	8	3	33.63
	24	Mo	8	13	48.29	9.912	19	53	51.6	31.44	15	46.57	8.66	6	18.10	0.056	8	7	30.19
	25	Tu	8	17	45.90	9.888	19	41	7.1	32.26	15	46.66	8.66	6	19.16	0.032	8	11	26.75
	26	We	8	21	42.94	9.864	+19	28	2.9	-33.07	15	46.76	8.67	-6	19.64	-0.008	8	15	23.30
	27	Th	8	25	39.39	9.840	19	14	39.3	33.88	15	46.96	8.67	6	19.53	+0.017	8	19	19.86
	28	Fr	8	29	35.25	9.815	19	0	56.6	34.67	15	46.96	8.67	6	18.84	0.042	8	23	16.41
	29	Sa	8	33	30.52	9.790	18	46	55.0	35.45	15	47.07	8.67	6	17.54	0.067	8	27	12.97
	30	Su	8	37	25.18	9.765	18	32	34.8	36.22	15	47.18	8.67	6	15.65	0.092	8	31	9.53
	31	Mo	8	41	19.24	9.740	+18	17	56.4	-36.98	15	47.30	8.67	-6	13.15	+0.117	8	35	6.08
Aug.	1	Tu	8	45	12.68	9.714	18	3	0.0	37.72	15	47.42	8.67	6	10.04	0.142	8	39	2.64
	2	We	8	49	5.51	9.688	17	47	45.9	38.45	15	47.55	8.67	6	6.31	0.168	8	42	59.20
	3	Th	8	52	57.73	9.663	17	32	14.5	39.16	15	47.68	8.67	6	1.97	0.194	8	46	55.75
	4	Fr	8	56	49.33	9.637	17	16	26.1	39.87	15	47.82	8.68	5	57.02	0.219	8	50	52.31
	5	Sa	9	0	40.31	9.611	+17	0	21.0	-40.56	15	47.96	8.68	-5	51.45	+0.245	8	54	48.86
	6	Su	9	4	30.68	9.586	16	43	59.4	41.23	15	48.11	8.68	5	45.26	0.271	8	58	45.42
	7	Mo	9	8	20.43	9.560	16	27	21.7	41.90	15	48.26	8.68	5	38.45	0.296	9	2	41.98
	8	Tu	9	12	9.57	9.535	16	10	28.2	42.55	15	48.42	8.68	5	31.04	0.321	9	6	38.53
	9	We	9	15	58.11	9.510	15	53	19.3	43.19	15	48.58	8.68	5	23.03	0.346	9	10	35.09
	10	Th	9	19	46.06	9.486	+15	35	55.1	-43.82	15	48.74	8.68	-5	14.42	+0.371	9	14	31.64
	11	Fr	9	23	33.42	9.462	15	18	16.0	44.43	15	48.90	8.68	5	5.22	0.395	9	18	28.20
	12	Sa	9	27	20.21	9.438	15	0	22.3	45.04	15	49.07	8.69	4	55.45	0.419	9	22	24.76
	13	Su	9	31	6.43	9.415	14	42	14.2	45.63	15	49.24	8.69	4	45.12	0.442	9	26	21.31
	14	Mo	9	34	52.10	9.392	14	23	52.0	46.21	15	49.41	8.69	4	34.24	0.465	9	30	17.86
	15	Tu	9	38	37.24	9.370	+14	5	16.1	-46.78	15	49.58	8.69	-4	22.82	+0.487	9	34	14.42
	16	We	9	42	21.86	9.348	+13	46	26.7	-47.34	15	49.76	8.69	-4	10.88	+0.508	9	38	10.98

FOR GREENWICH MEAN NOON.

Date.	Day of the Year.	True Longitude.	Var. per Hour.	Latitude.	Logarithm of the Radius Vector of the Earth.	Var. per Hour.	Prec. in Long.	Nut. in Long.	Aber-ration.	True Obliquity.	Mean Time of Sidereal Noon.
		" " "	"	"			"	"	"	23° 27'	h m s
July 1	183	99 17 18.8	143.05	+0.17	0.007 2285	+ 1.9	25.02	+15.12	20.13	4.68	17 20 19.74
2	184	100 14 31.9	143.04	+0.04	0.007 2316	+ 0.8	25.15	15.17	20.13	4.68	17 16 23.82
3	185	101 11 44.9	143.04	-0.09	0.007 2322	- 0.3	25.29	15.21	20.13	4.68	17 12 27.91
4	186	102 8 57.7	143.03	0.22	0.007 2303	1.3	25.42	15.26	20.13	4.68	17 8 32.00
5	187	103 6 10.3	143.02	0.33	0.007 2259	2.3	25.56	15.30	20.13	4.68	17 4 36.09
6	188	104 3 22.8	143.02	-0.42	0.007 2192	- 3.3	25.70	+15.34	20.13	4.68	17 0 40.18
7	189	105 0 35.1	143.01	0.48	0.007 2101	4.2	25.84	15.38	20.13	4.68	16 56 44.26
8	190	105 57 47.2	143.00	0.51	0.007 1989	5.1	25.98	15.43	20.13	4.68	16 52 48.35
9	191	106 54 59.2	143.00	0.52	0.007 1857	5.9	26.11	15.47	20.13	4.68	16 48 52.44
10	192	107 52 11.1	142.99	0.50	0.007 1705	6.7	26.25	15.51	20.13	4.68	16 44 56.53
11	193	108 49 23.0	142.99	-0.44	0.007 1536	- 7.4	26.39	+15.55	20.13	4.68	16 41 0.62
12	194	109 46 34.8	143.00	0.35	0.007 1350	8.1	26.53	15.58	20.13	4.68	16 37 4.70
13	195	110 43 46.7	143.00	0.23	0.007 1149	8.7	26.67	15.62	20.13	4.69	16 33 8.79
14	196	111 40 58.8	143.01	-0.10	0.007 0934	9.3	26.80	15.66	20.13	4.69	16 29 12.88
15	197	112 38 11.1	143.02	+0.04	0.007 0705	9.8	26.94	15.70	20.13	4.70	16 25 16.97
16	198	113 35 23.9	143.04	+0.18	0.007 0463	-10.4	27.08	+15.73	20.14	4.70	16 21 21.06
17	199	114 32 37.1	143.06	0.31	0.007 0208	11.0	27.22	15.76	20.14	4.71	16 17 25.15
18	200	115 29 51.0	143.09	0.43	0.006 9938	11.6	27.36	15.80	20.14	4.71	16 13 29.24
19	201	116 27 5.5	143.12	0.53	0.006 9653	12.2	27.49	15.83	20.14	4.72	16 9 33.32
20	202	117 24 20.9	143.16	0.61	0.006 9351	12.9	27.63	15.86	20.14	4.72	16 5 37.41
21	203	118 21 37.1	143.19	+0.65	0.006 9031	-13.7	27.77	+15.89	20.14	4.73	16 1 41.50
22	204	119 18 54.1	143.23	0.66	0.006 8692	14.5	27.91	15.92	20.15	4.73	15 57 45.59
23	205	120 16 12.0	143.26	0.64	0.006 8333	15.4	28.04	15.94	20.15	4.74	15 53 49.68
24	206	121 13 30.8	143.30	0.59	0.006 7952	16.3	28.18	15.97	20.15	4.75	15 49 53.77
25	207	122 10 50.4	143.34	0.51	0.006 7549	17.3	28.32	16.00	20.15	4.75	15 45 57.86
26	208	123 8 11.0	143.37	+0.42	0.006 7124	-18.2	28.46	+16.02	20.15	4.76	15 42 1.95
27	209	124 5 32.4	143.41	0.31	0.006 6674	19.2	28.59	16.04	20.16	4.77	15 38 6.04
28	210	125 2 54.7	143.45	0.18	0.006 6202	20.2	28.73	16.06	20.16	4.78	15 34 10.12
29	211	126 0 17.8	143.48	+0.05	0.006 5705	21.2	28.86	16.08	20.16	4.79	15 30 14.21
30	212	126 57 41.9	143.52	-0.08	0.006 5184	22.2	29.00	16.10	20.16	4.79	15 26 18.30
31	213	127 55 6.7	143.55	-0.20	0.006 4639	-23.3	29.14	+16.12	20.17	4.80	15 22 22.39
1	214	128 52 32.3	143.58	0.31	0.006 4070	24.3	29.28	16.13	20.17	4.81	15 18 26.48
2	215	129 49 58.7	143.62	0.40	0.006 3478	25.2	29.42	16.15	20.17	4.82	15 14 30.57
3	216	130 47 25.9	143.65	0.47	0.006 2863	26.1	29.55	16.16	20.17	4.83	15 10 34.66
4	217	131 44 53.8	143.68	0.51	0.006 2227	27.0	29.69	16.17	20.18	4.84	15 6 38.75
5	218	132 42 22.5	143.71	-0.52	0.006 1569	-27.8	29.83	+16.18	20.18	4.85	15 2 42.84
6	219	133 39 51.9	143.74	0.50	0.006 0892	28.6	29.97	16.19	20.18	4.86	14 58 46.93
7	220	134 37 22.0	143.77	0.45	0.006 0197	29.3	30.11	16.20	20.19	4.87	14 54 51.02
8	221	135 34 53.0	143.81	0.37	0.005 9485	30.0	30.24	16.20	20.19	4.88	14 50 55.11
9	222	136 32 24.7	143.84	0.27	0.005 8759	30.6	30.38	16.20	20.19	4.89	14 46 59.20
10	223	137 29 57.3	143.88	-0.14	0.005 8018	-31.1	30.52	+16.21	20.20	4.90	14 43 3.29
11	224	138 27 30.8	143.92	0.00	0.005 7266	31.6	30.66	16.21	20.20	4.91	14 39 7.38
12	225	139 25 5.4	143.96	+0.14	0.005 6504	32.0	30.80	16.21	20.20	4.92	14 35 11.47
13	226	140 22 41.0	144.01	0.27	0.005 5731	32.4	30.93	16.21	20.20	4.93	14 31 15.56
14	227	141 20 18.0	144.06	0.40	0.005 4949	32.8	31.07	16.20	20.21	4.93	14 27 19.66
15	228	142 17 56.2	144.12	+0.51	0.005 4158	-33.2	31.21	+16.20	20.21	4.94	14 23 23.75
16	229	143 15 35.9	144.18	+0.59	0.005 3356	-33.6	31.35	+16.20	20.21	4.95	14 19 27.84

FOR GREENWICH MEAN NOON.

Date.	Day of the Week.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Semi-diameter.	Hor. Par.	Equation of Time. App.—Mean.		Var. per Hour.	Sid or H. sic
		h	m	s	s	°	'	"	"	'	"	m	s	s	h
Aug. 16	We	9	42	21.86	9.348	+13	46	26.7	-47.34	15 49.76	8.69	- 4	10.88	+0.508	9
17	Th	9	46	5.96	9.327	13	27	24.0	47.88	15 49.94	8.69	3	58.43	0.529	9
18	Fr	9	49	49.57	9.307	13	9	8.4	48.41	15 50.12	8.70	3	45.49	0.549	9
19	Sa	9	53	32.70	9.287	12	48	40.2	48.93	15 50.30	8.70	3	32.06	0.569	9
20	Su	9	57	15.36	9.268	12	28	59.6	49.44	15 50.49	8.70	3	18.17	0.588	9
21	Mo	10	0	57.56	9.249	+12	9	7.1	-49.93	15 50.68	8.70	- 3	3.81	+0.607	9
22	Tu	10	4	39.32	9.231	11	49	2.9	50.41	15 50.87	8.70	2	49.01	0.626	10
23	We	10	8	20.64	9.213	11	28	47.4	50.88	15 51.07	8.70	2	33.78	0.644	10
24	Th	10	12	1.53	9.195	11	8	20.8	51.33	15 51.27	8.71	2	18.12	0.661	10
25	Fr	10	15	42.01	9.178	10	47	43.6	51.77	15 51.47	8.71	2	2.05	0.678	10
26	Sa	10	19	22.10	9.162	+10	26	56.0	-52.19	15 51.68	8.71	- 1	45.58	+0.694	10
27	Su	10	23	1.79	9.146	10	5	58.4	52.60	15 51.89	8.71	1	28.72	0.710	10
28	Mo	10	26	41.11	9.131	9	44	51.2	53.00	15 52.11	8.71	1	11.48	0.725	10
29	Tu	10	30	20.07	9.116	9	23	34.6	53.38	15 52.33	8.72	0	53.89	0.740	10
30	We	10	33	58.68	9.102	9	2	9.1	53.74	15 52.55	8.72	0	35.94	0.754	10
31	Th	10	37	36.95	9.088	+ 8	40	35.0	-54.09	15 52.78	8.72	- 0	17.66	+0.768	10
Sept. 1	Fr	10	41	14.90	9.075	8	18	52.6	54.43	15 53.01	8.72	+ 0	0.94	0.781	10
2	Sa	10	44	52.54	9.062	7	57	2.2	54.73	15 53.24	8.72	0	19.86	0.794	10
3	Su	10	48	29.82	9.050	7	35	4.3	55.06	15 53.48	8.73	0	39.07	0.806	10
4	Mo	10	52	6.94	9.039	7	12	59.2	55.36	15 53.72	8.73	0	58.57	0.817	10
5	Tu	10	55	43.74	9.028	+ 6	50	47.1	-55.64	15 53.97	8.73	+ 1	18.32	+0.828	10
6	We	10	59	20.29	9.018	6	28	28.4	55.91	15 54.22	8.73	1	38.33	0.838	11
7	Th	11	2	56.61	9.009	6	6	3.4	56.16	15 54.47	8.74	1	58.56	0.847	11
8	Fr	11	6	32.72	9.001	5	43	32.5	56.41	15 54.72	8.74	2	19.00	0.855	11
9	Sa	11	10	8.65	8.994	5	20	55.9	56.64	15 54.97	8.74	2	39.63	0.863	11
10	Su	11	13	44.41	8.987	+ 4	58	13.9	-56.85	15 55.22	8.74	+ 3	0.42	+0.869	11
11	Mo	11	17	20.03	8.982	4	35	26.9	57.06	15 55.47	8.74	3	21.35	0.874	11
12	Tu	11	20	55.53	8.977	4	12	35.1	57.25	15 55.72	8.75	3	42.41	0.879	11
13	We	11	24	30.93	8.973	3	49	38.8	57.43	15 55.98	8.75	4	3.56	0.883	11
14	Th	11	28	6.27	8.971	3	26	38.4	57.60	15 56.23	8.75	4	24.77	0.885	11
15	Fr	11	31	41.56	8.970	+ 3	3	34.1	-57.75	15 56.49	8.75	+ 4	46.04	+0.886	11
16	Sa	11	35	16.82	8.969	2	40	26.2	57.89	15 56.74	8.76	5	7.33	0.887	11
17	Su	11	38	52.07	8.970	2	17	15.0	58.02	15 57.00	8.76	5	28.63	0.887	11
18	Mo	11	42	27.34	8.971	1	54	1.0	58.14	15 57.25	8.76	5	49.91	0.886	11
19	Tu	11	46	2.66	8.973	1	30	44.4	58.24	15 57.51	8.76	6	11.15	0.884	11
20	We	11	49	38.04	8.976	+ 1	7	25.6	-58.32	15 57.77	8.77	+ 6	32.33	+0.881	11
21	Th	11	53	13.49	8.979	0	44	4.9	58.39	15 58.04	8.77	6	53.43	0.877	12
22	Fr	11	56	49.03	8.984	+ 0	20	42.6	58.45	15 58.30	8.78	7	14.44	0.873	12
23	Sa	12	0	24.69	8.989	- 0	2	40.8	58.49	15 58.57	8.78	7	35.33	0.868	12
24	Su	12	4	0.49	8.995	0	26	5.0	58.52	15 58.84	8.78	7	56.08	0.862	12
25	Mo	12	7	36.45	9.002	- 0	49	29.7	-58.53	15 59.11	8.78	+ 8	16.68	+0.855	12
26	Tu	12	11	12.57	9.009	1	13	54.5	58.53	15 59.38	8.78	8	37.11	0.847	12
27	We	12	14	48.88	9.017	1	33	19.0	58.51	15 59.65	8.78	8	57.35	0.839	12
28	Th	12	18	25.40	9.026	1	59	42.8	58.47	15 59.92	8.79	9	17.38	0.830	12
29	Fr	12	22	2.15	9.036	2	23	5.6	58.42	16 0.20	8.79	9	37.19	0.820	12
30	Sa	12	25	39.13	9.046	- 2	46	27.0	-58.35	16 0.48	8.79	+ 9	56.76	+0.810	12
Oct. 1	Su	12	29	16.37	9.057	- 3	9	46.6	-58.27	16 0.76	8.79	+10	16.08	+0.799	12

FOR GREENWICH MEAN NOON.

Date.	Day of the Year.	True Longitude.	Var. per Hour.	Latitude.	Logarithm of the Radius Vector of the Earth.	Var. per Hour.	Prec. in Long.	Nut. in Long.	Aber-ration.	True Obliquity.	Mean Time of Sidereal Noon.
		" " "	" "	" "		" "	" "	" "	" "	23° 27'	h m s
Aug. 16	229	143 15 35.9	144.18	+0.59	0.005 3356	-33.6	31.35	+16.20	20.21	4.95	14 19 27.84
17	230	144 13 17.1	144.25	0.64	0.005 2543	34.1	31.48	16.19	20.22	4.96	14 15 31.93
18	231	145 10 59.9	144.32	0.66	0.005 1719	34.6	31.62	16.18	20.22	4.97	14 11 36.02
19	232	146 8 44.3	144.39	0.65	0.005 0882	35.2	31.76	16.17	20.22	4.97	14 7 40.11
20	233	147 6 30.4	144.46	0.61	0.005 0031	35.8	31.90	16.16	20.23	4.98	14 3 44.20
21	234	148 4 18.2	144.53	+0.55	0.004 9166	-36.4	32.03	+16.15	20.23	4.99	13 59 48.29
22	235	149 2 7.7	144.60	0.46	0.004 8284	37.1	32.17	16.14	20.23	5.00	13 55 52.38
23	236	149 59 58.9	144.67	0.35	0.004 7387	37.8	32.30	16.13	20.24	5.01	13 51 56.48
24	237	150 57 51.8	144.74	0.24	0.004 6472	38.5	32.44	16.11	20.24	5.01	13 48 0.57
25	238	151 55 46.3	144.81	+0.12	0.004 5540	39.2	32.58	16.09	20.25	5.02	13 44 4.66
26	239	152 53 42.6	144.88	-0.01	0.004 4590	-40.0	32.72	+16.08	20.25	5.02	13 40 8.75
27	240	153 51 40.5	144.95	0.13	0.004 3622	40.7	32.86	16.06	20.26	5.03	13 36 12.84
28	241	154 49 40.1	145.02	0.24	0.004 2636	41.5	32.99	16.04	20.26	5.04	13 32 16.93
29	242	155 47 41.2	145.08	0.34	0.004 1632	42.2	33.13	16.02	20.26	5.04	13 28 21.02
30	243	156 45 44.0	145.15	0.41	0.004 0610	43.0	33.27	16.00	20.27	5.05	13 24 25.12
31	244	157 43 48.3	145.21	-0.46	0.003 9570	-43.7	33.41	+15.98	20.27	5.05	13 20 29.21
pt. 1	245	158 41 54.1	145.27	0.48	0.003 8513	44.4	33.55	15.95	20.28	5.06	13 16 33.30
2	246	159 40 1.4	145.33	0.47	0.003 7440	45.0	33.68	15.93	20.28	5.06	13 12 37.39
3	247	160 38 10.1	145.39	0.43	0.003 6352	45.6	33.82	15.91	20.29	5.06	13 8 41.48
4	248	161 36 20.2	145.45	0.36	0.003 5252	46.1	33.96	15.88	20.29	5.06	13 4 45.58
5	249	162 34 31.8	145.51	-0.26	0.003 4139	-46.5	34.10	+15.85	20.30	5.07	13 0 49.67
6	250	163 32 44.8	145.57	0.14	0.003 3017	46.9	34.24	15.82	20.30	5.07	12 56 53.76
7	251	164 30 59.3	145.64	-0.01	0.003 1886	47.2	34.37	15.79	20.31	5.07	12 52 57.85
8	252	165 29 15.4	145.70	+0.13	0.003 0749	47.5	34.51	15.76	20.32	5.07	12 49 1.94
9	253	166 27 33.0	145.77	0.26	0.002 9607	47.7	34.65	15.73	20.32	5.07	12 45 6.04
10	254	167 25 52.2	145.84	+0.38	0.002 8461	-47.8	34.79	+15.70	20.33	5.07	12 41 10.13
11	255	168 24 13.1	145.91	0.49	0.002 7313	47.9	34.92	15.67	20.33	5.07	12 37 14.22
12	256	169 22 35.9	145.99	0.57	0.002 6163	48.0	35.05	15.63	20.34	5.06	12 33 18.32
13	257	170 21 0.6	146.07	0.63	0.002 5011	48.1	35.19	15.60	20.34	5.06	12 29 22.41
14	258	171 19 27.2	146.15	0.65	0.002 3857	48.2	35.33	15.57	20.35	5.06	12 25 26.50
15	259	172 17 55.9	146.24	+0.64	0.002 2701	-48.3	35.47	+15.53	20.36	5.05	12 21 30.59
16	260	173 16 26.8	146.33	0.61	0.002 1542	48.4	35.61	15.50	20.36	5.05	12 17 34.69
17	261	174 14 59.8	146.42	0.56	0.002 0378	48.6	35.74	15.46	20.37	5.04	12 13 38.78
18	262	175 13 35.0	146.51	0.48	0.001 9210	48.8	35.88	15.43	20.38	5.04	12 9 42.87
19	263	176 12 12.4	146.61	0.38	0.001 8036	49.0	36.02	15.39	20.38	5.03	12 5 46.96
20	264	177 10 52.1	146.70	+0.27	0.001 6856	-49.3	36.16	+15.36	20.39	5.02	12 1 51.06
21	265	178 9 33.9	146.79	0.15	0.001 5669	49.6	36.30	15.32	20.39	5.02	11 57 55.15
22	266	179 8 18.0	146.88	+0.03	0.001 4475	49.9	36.43	15.28	20.40	5.01	11 53 59.24
23	267	180 7 4.2	146.97	-0.09	0.001 3272	50.3	36.57	15.25	20.40	5.00	11 50 3.34
24	268	181 5 52.6	147.06	0.21	0.001 2062	50.6	36.71	15.21	20.41	4.99	11 46 7.43
25	269	182 4 43.2	147.15	-0.31	0.001 0842	-51.0	36.85	+15.17	20.41	4.98	11 42 11.52
26	270	183 3 35.9	147.24	0.38	0.000 9613	51.4	36.99	15.14	20.42	4.97	11 38 15.61
27	271	184 2 30.6	147.32	0.43	0.000 8375	51.8	37.12	15.10	20.42	4.96	11 34 19.71
28	272	185 1 27.3	147.40	0.46	0.000 7129	52.1	37.26	15.06	20.43	4.95	11 30 23.80
29	273	186 0 26.0	147.48	0.46	0.000 5873	52.5	37.40	15.03	20.43	4.93	11 26 27.89
30	274	186 59 26.6	147.56	-0.43	0.000 4610	-52.8	37.54	+14.99	20.44	4.92	11 22 31.98
1	275	187 58 29.0	147.64	-0.37	0.000 3340	-53.0	37.68	+14.96	20.44	4.90	11 18 36.08

FOR GREENWICH MEAN NOON.

Date.	Day of the Week.	Apparent Right Ascension.	Var. per Hour.	Apparent Declination.	Var. per Hour.	Semi-diameter.	Hor. Par.	Equation of Time. App.—Mean.	Var. per Hour.	Sidereal Time or Right Ascension of Mean Sun.
		h m s	s	° ' "	"	' "	"	m s	s	h m s
Oct. 1	Su	12 29 16.37	9.057	- 3 9 46.6	-58.27	16 0.76	8.79	+10 16.08	+0.799	12 39 32.45
2	Mo	12 32 53.89	9.069	3 33 4.0	58.17	16 1.04	8.80	10 35.11	0.787	12 43 29.00
3	Tu	12 36 31.69	9.082	3 56 18.9	58.06	16 1.32	8.80	10 53.86	0.774	12 47 25.55
4	We	12 40 9.80	9.095	4 19 31.0	57.93	16 1.60	8.80	11 12.30	0.761	12 51 22.11
5	Th	12 43 48.25	9.109	4 42 39.8	57.79	16 1.89	8.80	11 30.41	0.747	12 55 18.66
6	Fr	12 47 27.05	9.124	- 5 5 45.0	-57.63	16 2.18	8.81	+11 48.17	+0.732	12 59 15.21
7	Sa	12 51 6.22	9.140	5 28 46.3	57.46	16 2.46	8.81	12 5.55	0.716	13 3 11.77
8	Su	12 54 45.77	9.157	5 51 43.3	57.28	16 2.74	8.81	12 22.55	0.700	13 7 8.32
9	Mo	12 58 25.74	9.175	6 14 35.7	57.08	16 3.02	8.81	12 39.13	0.682	13 11 4.87
10	Tu	13 2 6.15	9.194	6 37 23.2	56.87	16 3.30	8.82	12 55.27	0.663	13 15 1.43
11	We	13 5 47.03	9.214	- 7 0 5.3	-56.64	16 3.58	8.82	+13 10.95	+0.643	13 18 57.98
12	Th	13 9 28.39	9.235	7 22 41.8	56.40	16 3.86	8.82	13 26.15	0.622	13 22 54.54
13	Fr	13 13 10.25	9.256	7 45 12.4	56.14	16 4.13	8.82	13 40.83	0.600	13 26 51.09
14	Sa	13 16 52.65	9.278	8 7 36.6	55.87	16 4.40	8.83	13 54.99	0.578	13 30 47.64
15	Su	13 20 35.60	9.301	8 29 54.0	55.58	16 4.67	8.83	14 8.60	0.555	13 34 44.20
16	Mo	13 24 19.12	9.326	- 8 52 4.4	-55.28	16 4.94	8.83	+14 21.63	+0.531	13 38 40.75
17	Tu	13 28 3.23	9.351	9 14 7.3	54.96	16 5.21	8.83	14 34.07	0.506	13 42 37.30
18	We	13 31 47.95	9.376	9 36 2.4	54.62	16 5.48	8.84	14 45.90	0.480	13 46 33.86
19	Th	13 35 33.30	9.403	9 57 49.2	54.27	16 5.74	8.84	14 57.11	0.453	13 50 30.41
20	Fr	13 39 19.29	9.430	10 19 27.4	53.90	16 6.01	8.84	15 7.67	0.426	13 54 26.97
21	Sa	13 43 5.94	9.458	-10 40 56.5	-53.51	16 6.27	8.84	+15 17.58	+0.398	13 58 23.52
22	Su	13 46 53.27	9.486	11 2 16.1	53.11	16 6.54	8.85	15 26.80	0.370	14 2 20.07
23	Mo	13 50 41.29	9.515	11 23 25.9	52.69	16 6.80	8.85	15 35.34	0.341	14 6 16.63
24	Tu	13 54 30.00	9.545	11 44 25.4	52.26	16 7.07	8.85	15 43.18	0.312	14 10 13.18
25	We	13 58 19.43	9.575	12 5 14.3	51.80	16 7.33	8.85	15 50.31	0.282	14 14 9.74
26	Th	14 2 9.59	9.605	-12 25 52.0	-51.33	16 7.59	8.85	+15 56.70	+0.252	14 18 6.29
27	Fr	14 6 0.48	9.636	12 46 18.2	50.84	16 7.85	8.86	16 2.37	0.221	14 22 2.85
28	Sa	14 9 52.11	9.667	13 6 32.4	50.33	16 8.11	8.86	16 7.29	0.190	14 25 59.40
29	Su	14 13 44.49	9.698	13 26 34.2	49.81	16 8.37	8.86	16 11.46	0.158	14 29 55.96
30	Mo	14 17 37.63	9.730	13 46 23.2	49.27	16 8.63	8.87	16 14.88	0.126	14 33 52.51
31	Tu	14 21 31.54	9.762	-14 5 59.0	-48.71	16 8.88	8.87	+16 17.53	+0.094	14 37 49.07
Nov. 1	We	14 25 26.22	9.794	14 25 21.2	48.13	16 9.14	8.87	16 19.40	0.062	14 41 45.62
2	Th	14 29 21.67	9.827	14 44 29.3	47.54	16 9.39	8.87	16 20.51	+0.030	14 45 42.18
3	Fr	14 33 17.91	9.860	15 3 23.0	46.93	16 9.65	8.87	16 20.82	-0.003	14 49 38.73
4	Sa	14 37 14.95	9.893	15 22 1.9	46.30	16 9.90	8.88	16 20.34	0.036	14 53 35.29
5	Su	14 41 12.79	9.927	-15 40 25.5	-45.66	16 10.15	8.88	+16 19.06	-0.070	14 57 31.84
6	Mo	14 45 11.44	9.961	15 58 33.5	45.00	16 10.40	8.88	16 16.96	0.104	15 1 28.40
7	Tu	14 49 10.91	9.995	16 16 25.4	44.32	16 10.64	8.88	16 14.05	0.139	15 5 24.96
8	We	14 53 11.20	10.030	16 34 1.0	43.63	16 10.87	8.89	16 10.31	0.174	15 9 21.51
9	Th	14 57 12.34	10.065	16 51 19.9	42.93	16 11.10	8.89	16 5.73	0.209	15 13 18.07
10	Fr	15 1 14.32	10.100	-17 8 21.6	-42.21	16 11.33	8.89	+16 0.31	-0.244	15 17 14.62
11	Sa	15 5 17.15	10.136	17 25 5.8	41.47	16 11.56	8.89	15 54.03	0.279	15 21 11.18
12	Su	15 9 20.83	10.171	17 41 32.0	40.71	16 11.78	8.89	15 46.91	0.315	15 25 7.74
13	Mo	15 13 25.37	10.207	17 57 39.9	39.94	16 12.00	8.90	15 38.92	0.351	15 29 4.29
14	Tu	15 17 30.78	10.243	18 13 29.1	39.15	16 12.21	8.90	15 30.07	0.387	15 33 0.85
15	We	15 21 37.04	10.279	-18 28 59.2	-38.35	16 12.42	8.90	+15 20.37	-0.423	15 36 57.41
16	Th	15 25 44.17	10.315	-18 44 9.8	-37.53	16 12.62	8.90	+15 9.80	-0.459	15 40 53.96

FOR GREENWICH MEAN NOON.

Date.	Day of the Year.	True Longitude.	Var. per Hour.	Latitude.	Logarithm of the Radius Vector of the Earth.	Var. per Hour.	Prec. in Long.	Nut. in Long.	Aber-ration.	True Obliquity.	Mean Time of Sidereal Noon.		
											23° 27'	h	m	s
Oct. 1	275	187 58 29.0	147.64	-0.37	0.000 3340	-53.0	37.68	+14.96	20.44	4.90	11 18 36.08		
2	276	188 57 33.3	147.71	0.28	0.000 2065	53.2	37.81	14.92	20.45	4.89	11 14 40.17		
3	277	189 56 39.3	147.79	0.17	0.000 0785	53.3	37.95	14.89	20.45	4.88	11 10 44.26		
4	278	190 55 47.0	147.86	-0.05	9.999 9503	53.4	38.09	14.85	20.46	4.86	11 6 48.36		
5	279	191 54 56.5	147.93	+0.09	9.999 8221	53.4	38.23	14.82	20.47	4.85	11 2 52.45		
6	280	192 54 7.8	148.00	+0.23	9.999 6940	-53.3	38.36	+14.79	20.47	4.83	10 58 56.54		
7	281	193 53 20.8	148.08	0.35	9.999 5662	53.1	38.49	14.76	20.48	4.82	10 55 0.63		
8	282	194 52 35.5	148.16	0.46	9.999 4389	52.9	38.63	14.73	20.49	4.80	10 51 4.72		
9	283	195 51 52.2	148.24	0.54	9.999 3123	52.6	38.77	14.70	20.49	4.78	10 47 8.82		
10	284	196 51 10.8	148.32	0.60	9.999 1863	52.3	38.91	14.67	20.50	4.76	10 43 12.91		
11	285	197 50 31.4	148.40	+0.63	9.999 0612	-52.0	39.05	+14.64	20.50	4.74	10 39 17.00		
12	286	198 49 54.0	148.49	0.63	9.998 9369	51.6	39.18	14.61	20.51	4.72	10 35 21.09		
13	287	199 49 18.7	148.58	0.60	9.998 8134	51.2	39.32	14.58	20.52	4.70	10 31 25.18		
14	288	200 48 45.7	148.67	0.54	9.998 6908	50.9	39.46	14.56	20.52	4.68	10 27 29.28		
15	289	201 48 14.8	148.76	0.46	9.998 5689	50.6	39.60	14.53	20.53	4.66	10 23 33.37		
16	290	202 47 46.3	148.86	+0.36	9.998 4477	-50.3	39.74	+14.51	20.53	4.64	10 19 37.46		
17	291	203 47 20.0	148.95	0.25	9.998 3272	50.1	39.87	14.49	20.54	4.61	10 15 41.55		
18	292	204 46 55.9	149.05	0.13	9.998 2072	49.9	40.01	14.47	20.55	4.59	10 11 45.65		
19	293	205 46 34.2	149.14	+0.01	9.998 0878	49.7	40.15	14.45	20.55	4.56	10 7 49.74		
20	294	206 46 14.6	149.23	-0.11	9.997 9689	49.5	40.29	14.43	20.56	4.54	10 3 53.83		
21	295	207 45 57.4	149.33	-0.23	9.997 8504	-49.3	40.43	+14.41	20.56	4.51	9 59 57.92		
22	296	208 45 42.4	149.42	0.33	9.997 7322	49.2	40.56	14.39	20.57	4.49	9 56 2.01		
23	297	209 45 29.6	149.51	0.41	9.997 6142	49.1	40.70	14.37	20.58	4.47	9 52 6.10		
24	298	210 45 18.9	149.60	0.46	9.997 4966	49.0	40.84	14.36	20.58	4.44	9 48 10.20		
25	299	211 45 10.4	149.69	0.49	9.997 3791	48.9	40.98	14.35	20.59	4.42	9 44 14.29		
26	300	212 45 3.9	149.77	-0.49	9.997 2617	-48.9	41.12	+14.33	20.59	4.40	9 40 18.38		
27	301	213 44 59.4	149.85	0.46	9.997 1445	48.8	41.25	14.32	20.60	4.37	9 36 22.47		
28	302	214 44 56.7	149.93	0.40	9.997 0275	48.7	41.39	14.31	20.60	4.35	9 32 26.56		
29	303	215 44 55.9	150.00	0.31	9.996 9108	48.6	41.53	14.30	20.61	4.32	9 28 30.65		
30	304	216 44 56.8	150.07	0.20	9.996 7943	48.4	41.67	14.30	20.62	4.29	9 24 34.74		
31	305	217 44 59.4	150.14	-0.08	9.996 6784	-48.2	41.80	+14.29	20.62	4.26	9 20 38.83		
v. 1	306	218 45 3.5	150.21	+0.05	9.996 5630	47.9	41.93	14.29	20.63	4.23	9 16 42.92		
2	307	219 45 9.2	150.27	0.18	9.996 4485	47.5	42.07	14.29	20.63	4.21	9 12 47.02		
3	308	220 45 16.5	150.33	0.31	9.996 3349	47.1	42.21	14.29	20.64	4.18	9 8 51.11		
4	309	221 45 25.2	150.40	0.42	9.996 2225	46.6	42.35	14.29	20.64	4.15	9 4 55.20		
5	310	222 45 35.5	150.46	+0.51	9.996 1114	-46.0	42.49	+14.30	20.65	4.12	9 0 59.29		
6	311	223 45 47.4	150.53	0.57	9.996 0019	45.3	42.62	14.30	20.65	4.09	8 57 3.38		
7	312	224 46 0.8	150.59	0.61	9.995 8939	44.6	42.76	14.31	20.66	4.06	8 53 7.47		
8	313	225 46 15.8	150.66	0.62	9.995 7878	43.9	42.90	14.32	20.66	4.03	8 49 11.56		
9	314	226 46 32.5	150.73	0.59	9.995 6834	43.1	43.04	14.33	20.66	4.00	8 45 15.65		
10	315	227 46 50.8	150.80	+0.53	9.995 5809	-42.3	43.18	+14.34	20.67	3.97	8 41 19.74		
11	316	228 47 11.0	150.87	0.45	9.995 4803	41.5	43.31	14.36	20.67	3.94	8 37 23.83		
12	317	229 47 32.8	150.95	0.35	9.995 3815	40.7	43.45	14.37	20.68	3.91	8 33 27.92		
13	318	230 47 56.5	151.02	0.23	9.995 2846	40.0	43.59	14.39	20.68	3.88	8 29 32.00		
14	319	231 48 22.0	151.10	+0.11	9.995 1895	39.3	43.73	14.41	20.68	3.85	8 25 36.09		
15	320	232 48 49.3	151.18	-0.01	9.995 0961	-38.6	43.87	+14.43	20.69	3.82	8 21 40.18		
16	321	233 49 18.5	151.25	-0.13	9.995 0044	-37.9	44.00	+14.45	20.70	3.80	8 17 44.27		

FOR GREENWICH MEAN NOON.

Date.	Day of the Week.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Semi-diameter.	Hor. Par.	Equation of Time. App.—Mean.	Var. per Hour.	Sidereal Time. or Right Ascension of Mean Sun.			
		h	m	s	s	°	'	"	"	'	"	m	s	h	m	s	
Nov. 16	Th	15	25	44.17	10.315	-18	44	9.8	-37.63	16	12.62	8.90	+15 9.80	-0.469	15	40	53.96
17	Fr	15	29	52.15	10.350	18	59	0.5	36.69	16	12.82	8.90	14 58.37	0.494	15	44	50.52
18	Sa	15	34	0.98	10.386	19	13	30.9	35.84	16	13.02	8.91	14 46.10	0.529	15	48	47.08
19	Su	15	38	10.66	10.421	19	27	40.6	34.97	16	13.22	8.91	14 32.97	0.564	15	52	43.63
20	Mo	15	42	21.18	10.456	19	41	29.3	34.08	16	13.41	8.91	14 19.00	0.599	15	56	40.19
21	Tu	15	46	32.54	10.490	-19	54	56.6	-33.18	16	13.60	8.91	+14 4.21	-0.634	16	0	36.75
22	We	15	50	44.71	10.524	20	8	2.0	32.26	16	13.79	8.91	13 48.59	0.668	16	4	33.30
23	Th	15	54	57.69	10.557	20	20	45.3	31.33	16	13.98	8.92	13 32.17	0.701	16	8	29.86
24	Fr	15	59	11.46	10.590	20	33	6.0	30.39	16	14.16	8.92	13 14.96	0.734	16	12	26.42
25	Sa	16	3	26.00	10.622	20	45	3.8	29.42	16	14.34	8.92	12 56.97	0.766	16	16	22.97
26	Su	16	7	41.30	10.653	-20	56	38.4	-28.45	16	14.51	8.92	+12 38.23	-0.797	16	20	19.53
27	Mo	16	11	57.33	10.683	21	7	49.4	27.46	16	14.68	8.92	12 18.76	0.827	16	24	16.09
28	Tu	16	16	14.07	10.712	21	18	36.4	26.46	16	14.85	8.92	11 58.58	0.856	16	28	12.65
29	We	16	20	31.49	10.740	21	28	59.2	25.44	16	15.02	8.92	11 37.71	0.884	16	32	9.20
30	Th	16	24	49.59	10.767	21	38	57.5	24.41	16	15.18	8.93	11 16.17	0.911	16	36	5.76
Dec. 1	Fr	16	29	8.33	10.793	-21	48	30.9	-23.37	16	15.34	8.93	+10 53.99	-0.937	16	40	2.32
2	Sa	16	33	27.69	10.819	21	57	39.3	22.32	16	15.50	8.93	10 31.19	0.962	16	43	58.88
3	Su	16	37	47.66	10.844	22	6	22.3	21.26	16	15.66	8.93	10 7.78	0.987	16	47	55.44
4	Mo	16	42	8.20	10.867	22	14	39.6	20.18	16	15.81	8.93	9 43.80	1.011	16	51	52.00
5	Tu	16	46	29.30	10.890	22	22	31.1	19.10	16	15.95	8.93	9 19.26	1.034	16	55	48.55
6	We	16	50	50.93	10.912	-22	29	56.5	-18.01	16	16.09	8.93	+ 8 54.18	-1.066	16	59	45.11
7	Th	16	55	13.08	10.933	22	36	55.6	16.91	16	16.22	8.93	8 28.59	1.076	17	3	41.67
8	Fr	16	59	35.72	10.953	22	43	28.2	15.80	16	16.35	8.94	8 2.51	1.096	17	7	38.23
9	Sa	17	3	58.82	10.972	22	49	34.0	14.68	16	16.47	8.94	7 35.97	1.115	17	11	34.79
10	Su	17	8	22.37	10.990	22	55	12.8	13.55	16	16.59	8.94	7 8.98	1.133	17	15	31.35
11	Mo	17	12	46.33	11.007	-23	0	24.5	-12.42	16	16.70	8.94	+ 6 41.58	-1.150	17	19	27.90
12	Tu	17	17	10.68	11.022	23	5	8.9	11.28	16	16.80	8.94	6 13.78	1.166	17	23	24.46
13	We	17	21	35.39	11.037	23	9	25.9	10.13	16	16.90	8.94	5 45.63	1.180	17	27	21.02
14	Th	17	26	0.44	11.050	23	13	15.2	8.98	16	16.99	8.94	5 17.14	1.193	17	31	17.58
15	Fr	17	30	25.79	11.062	23	16	36.7	7.82	16	17.08	8.94	4 48.34	1.205	17	35	14.14
16	Sa	17	34	51.42	11.073	-23	19	30.4	-6.65	16	17.16	8.94	+ 4 19.28	-1.216	17	39	10.70
17	Su	17	39	17.29	11.082	23	21	56.1	5.48	16	17.23	8.94	3 49.97	1.226	17	43	7.26
18	Mo	17	43	43.37	11.090	23	23	53.7	4.31	16	17.30	8.94	3 20.45	1.234	17	47	3.81
19	Tu	17	48	9.62	11.097	23	25	23.2	3.14	16	17.36	8.95	2 50.75	1.240	17	51	0.37
20	We	17	52	36.02	11.102	23	26	24.4	1.96	16	17.42	8.95	2 20.91	1.245	17	54	56.93
21	Th	17	57	2.52	11.106	-23	26	57.3	-0.78	16	17.48	8.95	+ 1 50.97	-1.249	17	58	53.49
22	Fr	18	1	29.09	11.108	23	27	1.9	+0.40	16	17.54	8.95	1 20.96	1.251	18	2	50.05
23	Sa	18	5	55.70	11.108	23	26	38.2	1.58	16	17.59	8.95	0 50.91	1.252	18	6	46.61
24	Su	18	10	22.30	11.107	23	25	46.2	2.76	16	17.64	8.95	+ 0 20.87	1.251	18	10	43.17
25	Mo	18	14	48.85	11.104	23	24	25.8	3.94	16	17.68	8.95	- 0 9.12	1.248	18	14	39.72
26	Tu	18	19	15.31	11.100	-23	22	37.2	+5.12	16	17.72	8.95	- 0 39.03	-1.243	18	18	36.28
27	We	18	23	41.64	11.094	23	20	20.4	6.29	16	17.75	8.95	1 8.80	1.237	18	22	32.84
28	Th	18	28	7.81	11.086	23	17	35.5	7.46	16	17.78	8.95	1 38.41	1.230	18	26	29.40
29	Fr	18	32	33.78	11.077	23	14	22.6	8.62	16	17.81	8.95	2 7.82	1.221	18	30	25.96
30	Sa	18	36	59.51	11.066	23	10	41.7	9.78	16	17.83	8.95	2 36.99	1.210	18	34	22.52
31	Su	18	41	24.96	11.054	-23	6	33.0	+10.94	16	17.85	8.95	- 3 5.88	-1.198	18	38	19.07
32	Mo	18	45	50.11	11.041	-23	1	56.7	+12.09	16	17.87	8.95	- 3 34.47	-1.184	18	42	15.63

FOR GREENWICH MEAN NOON.

Date	Day of the Year	True Longitude.	Var. per Hour.	Latitude.	Logarithm of the Radius Vector of the Earth.	Var. per Hour.	Prec. in Long.	Nut. in Long.	Aber-ration.	True Obliquity.	Mean Time of Sidereal Noon.		
											23° 27'	h	m	s
Nov. 16	321	233 49 18.5	151.25	-0.13	9.995 0044	-37.9	44.00	+14.45	20.70	3.80	8	17	44.27
17	322	234 49 49.4	151.33	0.25	9.994 9144	37.2	44.14	14.47	20.70	3.77	8	13	48.36
18	323	235 50 22.2	151.40	0.36	9.994 8259	36.6	44.28	14.49	20.71	3.75	8	9	52.45
19	324	236 50 56.7	151.48	0.44	9.994 7388	36.0	44.42	14.52	20.71	3.72	8	5	56.54
20	325	237 51 33.0	151.55	0.49	9.994 6533	35.4	44.55	14.54	20.72	3.70	8	2	0.63
21	326	238 52 11.0	151.62	-0.52	9.994 5690	-34.8	44.68	+14.57	20.72	3.67	7	58	4.72
22	327	239 52 50.7	151.69	0.53	9.994 4860	34.3	44.82	14.60	20.72	3.65	7	54	8.81
23	328	240 53 32.0	151.75	0.50	9.994 4041	33.8	44.96	14.63	20.73	3.63	7	50	12.90
24	329	241 54 14.7	151.81	0.44	9.994 3234	33.4	45.10	14.66	20.73	3.60	7	46	16.98
25	330	242 54 58.9	151.86	0.36	9.994 2437	33.0	45.24	14.70	20.74	3.57	7	42	21.07
26	331	243 55 44.4	151.92	-0.26	9.994 1651	-32.5	45.37	+14.73	20.74	3.55	7	38	25.16
27	332	244 56 31.1	151.97	-0.13	9.994 0876	32.0	45.51	14.77	20.74	3.53	7	34	29.25
28	333	245 57 18.9	152.01	+0.01	9.994 0113	31.5	45.65	14.80	20.75	3.50	7	30	33.34
29	334	246 58 7.8	152.05	0.15	9.993 9364	30.9	45.79	14.84	20.75	3.48	7	26	37.43
30	335	247 58 57.5	152.09	0.28	9.993 8629	30.3	45.93	14.88	20.75	3.46	7	22	41.52
Dec. 1	336	248 59 48.2	152.13	+0.39	9.993 7910	-29.6	46.06	+14.92	20.76	3.43	7	18	45.60
2	337	250 0 39.7	152.16	0.48	9.993 7209	28.8	46.20	14.96	20.76	3.41	7	14	49.69
3	338	251 1 31.9	152.19	0.55	9.993 6528	28.0	46.34	15.00	20.76	3.39	7	10	53.78
4	339	252 2 25.0	152.23	0.59	9.993 5868	27.1	46.48	15.05	20.76	3.37	7	6	57.86
5	340	253 3 18.9	152.26	0.60	9.993 5230	26.1	46.62	15.09	20.77	3.35	7	3	1.95
6	341	254 4 13.5	152.29	+0.58	9.993 4617	-25.1	46.75	+15.14	20.77	3.33	6	59	6.04
7	342	255 5 9.0	152.33	0.53	9.993 4028	24.0	46.89	15.19	20.77	3.31	6	55	10.13
8	343	256 6 5.3	152.36	0.45	9.993 3465	22.9	47.03	15.24	20.78	3.29	6	51	14.22
9	344	257 7 2.5	152.40	0.35	9.993 2928	21.8	47.17	15.29	20.78	3.27	6	47	18.30
10	345	258 8 0.6	152.44	0.24	9.993 2417	20.7	47.31	15.34	20.78	3.25	6	43	22.39
11	346	259 8 59.5	152.48	+0.12	9.993 1932	-19.7	47.44	+15.39	20.78	3.24	6	39	26.48
12	347	260 9 59.4	152.51	-0.01	9.993 1473	18.6	47.58	15.44	20.79	3.22	6	35	30.57
13	348	261 11 0.2	152.55	0.14	9.993 1039	17.6	47.72	15.49	20.79	3.20	6	31	34.65
14	349	262 12 1.8	152.59	0.26	9.993 0630	16.5	47.86	15.54	20.79	3.19	6	27	38.74
15	350	263 13 4.5	152.63	0.36	9.993 0246	15.5	47.99	15.60	20.80	3.18	6	23	42.83
16	351	264 14 8.0	152.67	-0.44	9.992 9886	-14.5	48.12	+15.65	20.80	3.16	6	19	46.92
17	352	265 15 12.4	152.70	0.50	9.992 9548	13.6	48.26	15.70	20.80	3.15	6	15	51.00
18	353	266 16 17.7	152.74	0.54	9.992 9232	12.7	48.40	15.76	20.80	3.14	6	11	55.09
19	354	267 17 23.9	152.77	0.55	9.992 8938	11.9	48.54	15.81	20.81	3.13	6	7	59.18
20	355	268 18 30.8	152.80	0.54	9.992 8663	11.1	48.68	15.86	20.81	3.12	6	4	3.26
21	356	269 19 38.5	152.83	-0.49	9.992 8407	-10.3	48.81	+15.92	20.81	3.11	6	0	7.35
22	357	270 20 46.8	152.86	0.41	9.992 8169	9.6	48.95	15.97	20.81	3.10	5	56	11.44
23	358	271 21 55.8	152.88	0.30	9.992 7947	8.9	49.09	16.03	20.81	3.09	5	52	15.52
24	359	272 23 5.2	152.90	0.17	9.992 7740	8.2	49.23	16.08	20.81	3.08	5	48	19.61
25	360	273 24 15.0	152.91	-0.04	9.992 7550	7.6	49.37	16.13	20.81	3.07	5	44	23.70
26	361	274 25 25.0	152.92	+0.10	9.992 7374	-7.0	49.50	+16.18	20.81	3.07	5	40	27.79
27	362	275 26 35.1	152.92	0.24	9.992 7215	6.3	49.64	16.23	20.81	3.06	5	36	31.88
28	363	276 27 45.3	152.92	0.37	9.992 7073	5.5	49.78	16.28	20.81	3.06	5	32	35.96
29	364	277 28 55.4	152.92	0.47	9.992 6949	4.7	49.92	16.33	20.81	3.05	5	28	40.05
30	365	278 30 5.4	152.91	0.55	9.992 6845	3.9	50.06	16.39	20.81	3.05	5	24	44.14
31	366	279 31 15.2	152.90	+0.60	9.992 6762	-3.0	50.19	+16.44	20.81	3.05	5	20	48.22
32	367	280 32 24.7	152.89	+0.62	9.992 6701	-2.0	50.33	+16.49	20.81	3.04	5	16	52.31

GREENWICH MEAN TIME.

Date.	X True Equinox.		Reduc. to Mean Eq'x of 1916.0	Y True Equinox.		Reduc. to Mean Eq'x of 1916.0	Z True Equinox.		Reduc. to Mean Eq'x of 1916.0
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Jan. 1	+0.166 6840	+0.175 2997	-632	-0.889 0088	-0.887 6115	-200	-0.385 6644	-0.385 0581	+189
2	0.183 9019	0.192 4900	639	0.886 1451	0.884 6092	212	0.384 4218	0.383 7553	183
3	0.201 0633	0.209 6211	646	0.883 0040	0.881 3297	224	0.383 0587	0.382 3321	177
4	0.218 1625	0.226 6870	652	0.879 5864	0.877 7742	236	0.381 5756	0.380 7891	171
5	0.235 1937	0.243 6820	658	0.875 8933	0.873 9439	248	0.379 9728	0.379 1268	164
6	+0.252 1511	+0.260 6004	-664	-0.871 9260	-0.869 8400	-260	-0.378 2510	-0.377 3457	+158
7	0.269 0291	0.277 4366	669	0.867 6860	0.865 4641	273	0.376 4109	0.375 4466	151
8	0.285 8221	0.294 1850	674	0.863 1746	0.860 8178	286	0.374 4531	0.373 4304	144
9	0.302 5246	0.310 8402	679	0.858 3939	0.855 9030	299	0.372 3785	0.371 2977	137
10	0.319 1312	0.327 3970	684	0.853 3455	0.850 7217	312	0.370 1880	0.369 0495	130
11	+0.335 6368	+0.343 8502	-688	-0.848 0316	-0.845 2757	-326	-0.367 8823	-0.366 6866	+123
12	0.352 0365	0.360 1950	692	0.842 4542	0.839 5672	339	0.365 4625	0.364 2100	116
13	0.368 3252	0.376 4264	695	0.836 6152	0.833 5982	353	0.362 9294	0.361 6206	108
14	0.384 4981	0.392 5396	698	0.830 5167	0.827 3708	367	0.360 2839	0.358 9192	101
15	0.400 5505	0.408 5300	700	0.824 1609	0.820 8872	381	0.357 5268	0.356 1068	93
16	+0.416 4776	+0.424 3927	-702	-0.817 5499	-0.814 1495	-395	-0.354 6593	-0.353 1843	+ 85
17	0.432 2748	0.440 1232	704	0.810 6860	0.807 1599	409	0.351 6821	0.350 1527	77
18	0.447 9374	0.455 7169	705	0.803 5714	0.799 9208	423	0.348 5963	0.347 0130	69
19	0.463 4611	0.471 1693	706	0.796 2084	0.792 4345	438	0.345 4028	0.343 7660	61
20	0.478 8411	0.486 4759	707	0.788 5993	0.784 7032	452	0.342 1026	0.340 4128	53
21	+0.494 0732	+0.501 6324	-707	-0.780 7464	-0.776 7293	-467	-0.338 6967	-0.336 9544	+ 45
22	0.509 1529	0.516 6342	707	0.772 6521	0.768 5152	482	0.335 1860	0.333 3917	36
23	0.524 0758	0.531 4770	706	0.764 3188	0.760 0632	496	0.331 5716	0.329 7258	28
24	0.538 8375	0.546 1565	705	0.755 7489	0.751 3759	511	0.327 8544	0.325 9577	19
25	0.553 4336	0.560 6682	703	0.746 9447	0.742 4556	526	0.324 0356	0.322 0884	11
26	+0.567 8598	+0.575 0077	-701	-0.737 9088	-0.733 3048	-540	-0.320 1161	-0.318 1189	+ 2
27	0.582 1114	0.589 1704	698	0.728 6438	0.723 9261	555	0.316 0970	0.314 0504	- 7
28	0.596 1842	0.603 1520	696	0.719 1522	0.714 3223	570	0.311 9794	0.309 8841	16
29	0.610 0734	0.616 9479	693	0.709 4368	0.704 4960	585	0.307 7646	0.305 6211	25
30	0.623 7747	0.630 5534	689	0.699 5004	0.694 4502	599	0.303 4537	0.301 2627	34
31	+0.637 2834	+0.643 9642	-685	-0.689 3460	-0.684 1880	-614	-0.299 0481	-0.296 8103	- 43
Feb. 1	0.650 5951	0.657 1756	680	0.678 9766	0.673 7124	629	0.294 5492	0.292 2652	53
2	0.663 7052	0.670 1832	675	0.668 3957	0.663 0270	643	0.289 9585	0.287 6291	62
3	0.676 6093	0.682 9827	669	0.657 6068	0.652 1353	658	0.285 2774	0.282 9035	71
4	0.689 3030	0.695 5698	663	0.646 6133	0.641 0410	672	0.280 5076	0.278 0899	80
5	+0.701 7825	+0.707 9406	-656	-0.635 4191	-0.629 7480	-686	-0.275 6508	-0.273 1903	- 90
6	0.714 0437	0.720 0912	649	0.624 0282	0.618 2602	700	0.270 7087	0.268 2062	99
7	0.726 0828	0.732 0181	642	0.612 4445	0.606 5816	714	0.265 6831	0.263 1396	109
8	0.737 8965	0.743 7177	635	0.600 6720	0.594 7163	728	0.260 5758	0.257 9921	118
9	0.749 4812	0.755 1866	627	0.588 7149	0.582 6684	742	0.255 3885	0.252 7654	128
10	+0.760 8336	+0.766 4218	-618	-0.576 5772	-0.570 4419	-756	-0.250 1230	-0.247 4615	-137
11	0.771 9507	0.777 4201	609	0.564 2630	0.558 0409	769	0.244 7811	0.242 0820	147
12	0.782 8295	0.788 1786	599	0.551 7762	0.545 4693	782	0.239 3645	0.236 6287	156
13	0.793 4669	0.798 6943	589	0.539 1209	0.532 7313	795	0.233 8749	0.231 1032	166
14	0.803 8602	0.808 9644	579	0.526 3011	0.519 8308	808	0.228 3140	0.225 5074	175
15	+0.814 0066	+0.818 9864	-568	-0.513 3210	-0.506 7720	-821	-0.222 6837	-0.219 8430	-185
16	+0.823 9034	+0.828 7575	-557	-0.500 1845	-0.493 5590	-834	-0.216 9856	-0.214 1118	-194

GREENWICH MEAN TIME.

Date.	X		Reduc.	Y		Reduc.	Z		Reduc.
	True Equinox.		to Mean	True Equinox.		to Mean	True Equinox.		to Mean
	Noon.	Midnight.	Eq'x of 1916.0	Noon.	Midnight.	Eq'x of 1916.0	Noon.	Midnight.	Eq'x of 1916.0
Feb. 16	+0.823 9034	+0.828 7575	-557	-0.500 1845	-0.493 5590	- 834	-0.216 9856	-0.214 1118	-194
17	0.833 5481	0.838 2751	546	0.486 8958	0.480 1956	846	0.211 2216	0.208 3153	204
18	0.842 9381	0.847 5368	534	0.473 4589	0.466 6861	858	0.205 3932	0.202 4554	213
19	0.852 0710	0.856 5402	522	0.459 8778	0.453 0344	870	0.199 5021	0.196 5337	223
20	0.860 9443	0.865 2828	509	0.446 1564	0.439 2444	882	0.193 5503	0.190 5520	232
21	+0.869 5556	+0.873 7622	-496	-0.432 2988	-0.425 3202	- 894	-0.187 5392	-0.184 5120	-242
22	0.877 9025	0.881 9762	483	0.418 3091	0.411 2659	905	0.181 4707	0.178 4154	251
23	0.885 9828	0.889 9222	469	0.404 1912	0.397 0855	916	0.175 3464	0.172 2639	261
24	0.893 7940	0.897 5980	455	0.389 9493	0.382 7830	927	0.169 1681	0.166 0592	270
25	0.901 3337	0.905 0010	441	0.375 5873	0.368 3626	937	0.162 9376	0.159 8033	279
26	+0.908 5995	+0.912 1288	-426	-0.361 1095	-0.353 8286	- 948	-0.156 6566	-0.153 4978	-288
27	0.915 5889	0.918 9792	411	0.346 5202	0.339 1852	958	0.150 3272	0.147 1448	297
28	0.922 2997	0.925 5499	396	0.331 8238	0.324 4369	967	0.143 9511	0.140 7462	306
29	0.928 7296	0.931 8385	380	0.317 0249	0.309 5884	977	0.137 5304	0.134 3040	316
Mar. 1	0.934 8764	0.937 8430	364	0.302 1280	0.294 6444	986	0.131 0672	0.127 8203	325
2	+0.940 7380	+0.943 5613	-348	-0.287 1381	-0.279 6096	- 995	-0.124 5636	-0.121 2973	-334
3	0.946 3127	0.948 9919	331	0.272 0598	0.264 4891	1004	0.118 0217	0.114 7371	342
4	0.951 5987	0.954 1330	314	0.256 8982	0.249 2877	1012	0.111 4438	0.108 1420	351
5	0.956 5946	0.958 9832	297	0.241 6583	0.234 0106	1020	0.104 8320	0.101 5142	360
6	0.961 2988	0.963 5413	279	0.226 3453	0.218 6629	1027	0.098 1886	0.094 8558	368
7	+0.965 7104	+0.967 8062	-262	-0.210 9640	-0.203 2494	-1034	-0.091 5158	-0.088 1691	-377
8	0.969 8285	0.971 7773	244	0.195 5197	0.187 7753	1041	0.084 8158	0.081 4562	385
9	0.973 6524	0.975 4537	225	0.180 0170	0.172 2454	1048	0.078 0906	0.074 7192	393
10	0.977 1812	0.978 8348	207	0.164 4611	0.156 6647	1054	0.071 3424	0.067 9604	401
11	0.980 4145	0.981 9202	188	0.148 8568	0.141 0380	1060	0.064 5734	0.061 1817	409
12	+0.983 3518	+0.984 7094	-169	-0.133 2089	-0.125 3701	-1066	-0.057 7855	-0.054 3852	-417
13	0.985 9929	0.987 2022	150	0.117 5222	0.109 6658	1072	0.050 9810	0.047 5730	425
14	0.988 3374	0.989 3983	131	0.101 8014	0.093 9297	1077	0.044 1617	0.040 7472	433
15	0.990 3851	0.991 2977	111	0.086 0512	0.078 1666	1082	0.037 3298	0.033 9096	440
16	0.992 1361	0.992 9003	91	0.070 2763	0.062 3810	1086	0.030 4871	0.027 0623	448
17	+0.993 5904	+0.994 2062	- 71	-0.054 4813	-0.046 5776	-1090	-0.023 6356	-0.020 2072	-455
18	0.994 7478	0.995 2152	50	0.038 6706	0.030 7609	1094	0.016 7773	0.013 3462	462
19	0.995 6085	0.995 9276	30	0.022 8489	-0.014 9353	1098	0.009 9141	-0.006 4812	469
20	0.996 1725	0.996 3434	- 9	-0.007 0205	+0.000 8948	1101	-0.003 0479	+0.000 3858	476
21	0.996 4401	0.996 4627	+ 12	+0.008 8102	0.016 7251	1104	+0.003 8195	0.007 2530	482
22	+0.996 4113	+0.996 2858	+ 33	+0.024 6389	+0.032 5511	-1107	+0.010 6861	+0.014 1185	-489
23	0.996 0862	0.995 8125	54	0.040 4612	0.048 3685	1109	0.017 5501	0.020 9804	495
24	0.995 4647	0.995 0428	75	0.056 2725	0.064 1727	1111	0.024 4095	0.027 8369	502
25	0.994 5470	0.993 9770	97	0.072 0684	0.079 9592	1112	0.031 2624	0.034 6858	508
26	0.993 3331	0.992 6153	118	0.087 8445	0.095 7235	1113	0.038 1068	0.041 5252	514
27	+0.991 8235	+0.990 9579	+140	+0.103 5959	+0.111 4609	-1114	+0.044 9406	+0.048 3529	-519
28	0.990 0184	0.989 0051	162	0.119 3180	0.127 1666	1115	0.051 7618	0.055 1670	525
29	0.987 9180	0.986 7573	184	0.135 0060	0.142 8358	1115	0.058 5682	0.061 9651	530
30	0.985 5230	0.984 2152	206	0.150 6551	0.158 4636	1115	0.065 3576	0.068 7453	535
31	0.982 8341	0.981 3797	228	0.166 2604	0.174 0451	1115	0.072 1280	0.075 5054	540
pr. 1	+0.979 8522	+0.978 2517	+251	+0.181 8170	+0.189 5754	-1114	+0.078 8771	+0.082 2430	-545
2	+0.976 5784	+0.974 8325	+273	+0.197 3198	+0.205 0494	-1114	+0.085 6028	+0.088 9562	-550

GREENWICH MEAN TIME.

Date.	X		Reduc.	Y			Reduc.	Z		Reduc.
	True Equinox.		to Mean Eq'x of 1916.0	True Equinox.			to Mean Eq'x of 1916.0	True Equinox.		to Mean Eq'x of 1916.0
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	
Apr. 1	+0.979 8522	+0.978 2517	+ 251	+0.181 8170	+0.189 5754	-1114	+0.078 8771	+0.082 2430	-545	
2	0.976 5784	0.974 8325	273	0.197 3198	0.205 0494	1114	0.085 6028	0.088 9562	550	
3	0.973 0140	0.971 1232	296	0.212 7639	0.220 4625	1113	0.092 3029	0.095 6427	554	
4	0.969 1604	0.967 1256	319	0.228 1446	0.235 8097	1111	0.098 9753	0.102 3004	558	
5	0.965 0191	0.962 8412	341	0.243 4571	0.251 0863	1109	0.105 6179	0.108 9275	562	
6	+0.960 5920	+0.958 2717	+ 364	+0.258 6968	+0.266 2878	-1107	+0.112 2288	+0.115 5218	-566	
7	0.955 8808	0.953 4193	387	0.273 8589	0.281 4095	1104	0.118 8060	0.122 0813	570	
8	0.950 8875	0.948 2858	410	0.288 9391	0.296 4470	1101	0.125 3475	0.128 6043	573	
9	0.945 6143	0.942 8732	433	0.303 9328	0.311 3960	1098	0.131 8514	0.135 0887	576	
10	0.940 0630	0.937 1838	456	0.318 8359	0.326 2521	1095	0.138 3159	0.141 5328	579	
11	+0.934 2359	+0.931 2196	+ 480	+0.333 6440	+0.341 0112	-1091	+0.144 7392	+0.147 9348	-582	
12	0.928 1351	0.924 9828	503	0.348 3530	0.355 6690	1086	0.151 1194	0.154 2928	585	
13	0.921 7630	0.918 4759	526	0.362 9587	0.370 2215	1082	0.157 4548	0.160 6051	587	
14	0.915 1219	0.911 7012	550	0.377 4570	0.384 6648	1077	0.163 7437	0.166 8702	589	
15	0.908 2142	0.904 6612	573	0.391 8442	0.398 9949	1072	0.169 9845	0.173 0863	591	
16	+0.901 0424	+0.897 3581	+ 596	+0.406 1164	+0.413 2083	-1066	+0.176 1755	+0.179 2519	-593	
17	0.893 6086	0.889 7943	620	0.420 2700	0.427 3012	1060	0.182 3152	0.185 3653	594	
18	0.885 9153	0.881 9721	643	0.434 3012	0.441 2698	1054	0.188 4020	0.191 4250	595	
19	0.877 9648	0.873 8939	667	0.448 2065	0.455 1107	1048	0.194 4343	0.197 4295	596	
20	0.869 7595	0.865 5619	690	0.461 9820	0.468 8201	1041	0.200 4104	0.203 3770	597	
21	+0.861 3014	+0.856 9784	+ 714	+0.475 6244	+0.482 3944	-1034	+0.206 3289	+0.209 2660	-598	
22	0.852 5930	0.848 1455	737	0.489 1298	0.495 8299	1026	0.212 1882	0.215 0950	598	
23	0.843 6363	0.839 0657	761	0.502 4943	0.509 1226	1018	0.217 9864	0.220 8622	598	
24	0.834 4339	0.829 7414	784	0.515 7143	0.522 2688	1010	0.223 7220	0.226 5658	598	
25	0.824 9884	0.820 1752	808	0.528 7858	0.535 2647	1001	0.229 3932	0.232 2041	597	
26	+0.815 3022	+0.810 3697	+ 831	+0.541 7050	+0.548 1063	- 992	+0.234 9983	+0.237 7755	-597	
27	0.805 3780	0.800 3275	855	0.554 4681	0.560 7898	983	0.240 5356	0.243 2782	596	
28	0.795 2187	0.790 0519	878	0.567 0710	0.573 3112	973	0.246 0033	0.248 7106	595	
29	0.784 8274	0.779 5459	902	0.579 5099	0.585 6667	963	0.251 3998	0.254 0708	594	
30	0.774 2075	0.768 8128	925	0.591 7811	0.597 8526	953	0.256 7233	0.259 3572	592	
May 1	+0.763 3621	+0.757 8560	+ 948	+0.603 8807	+0.609 8650	- 943	+0.261 9722	+0.264 5682	-590	
2	0.752 2948	0.746 6790	972	0.615 8051	0.621 7004	932	0.267 1450	0.269 7023	588	
3	0.741 0091	0.735 2856	995	0.627 5507	0.633 3554	921	0.272 2400	0.274 7579	586	
4	0.729 5089	0.723 6794	1018	0.639 1141	0.644 8264	909	0.277 2558	0.279 7336	583	
5	0.717 7978	0.711 8644	1041	0.650 4920	0.656 1104	897	0.282 1911	0.284 6281	580	
6	+0.705 8797	+0.699 8442	+1064	+0.661 6812	+0.667 2040	- 885	+0.287 0445	+0.289 4400	-577	
7	0.693 7584	0.687 6227	1087	0.672 6785	0.678 1042	872	0.291 8145	0.294 1679	574	
8	0.681 4378	0.675 2041	1110	0.683 4809	0.688 8082	859	0.296 4999	0.298 8106	570	
9	0.668 9220	0.662 5922	1133	0.694 0857	0.699 3131	846	0.301 0996	0.303 3669	567	
10	0.656 2150	0.649 7911	1155	0.704 4900	0.709 6161	832	0.305 6123	0.307 8357	563	
11	+0.643 3208	+0.636 8047	+1178	+0.714 6911	+0.719 7146	- 818	+0.310 0369	+0.312 2158	-558	
12	0.630 2433	0.623 6371	1200	0.724 6864	0.729 6061	803	0.314 3723	0.316 5062	554	
13	0.616 9866	0.610 2923	1222	0.734 4735	0.739 2883	788	0.318 6175	0.320 7060	549	
14	0.603 5548	0.596 7744	1244	0.744 0501	0.748 7587	773	0.322 7716	0.324 8141	544	
15	0.589 9517	0.583 0872	1266	0.753 4138	0.758 0152	758	0.326 8334	0.328 8295	539	
16	+0.576 1813	+0.569 2346	+1288	+0.762 5625	+0.767 0556	- 742	+0.330 8022	+0.332 7514	-534	
17	+0.562 2476	+0.555 2206	+1310	+0.771 4942	+0.775 8779	- 725	+0.334 6769	+0.336 5787	-528	

GREENWICH MEAN TIME.

Date.	X		Reduc.	Y			Reduc.	Z		Reduc.
	True Equinox.		to Mean	True Equinox.			to Mean	True Equinox.		to Mean
	Noon.	Midnight.	Eq'x of 1916.0	Noon.	Noon.	Midnight.	Eq'x of 1916.0	Noon.	Midnight.	Eq'x of 1916.0
May 17	+0.562 2478	+0.555 2206	+1310	+0.771 4942	+0.775 8779	-725	+0.334 8769	+0.336 5787	-528	
18	0.548 1542	0.541 0487	1331	0.780 2066	0.784 4800	709	0.338 4567	0.340 3106	522	
19	0.533 9047	0.528 7227	1352	0.788 6977	0.792 8596	692	0.342 1405	0.343 9462	516	
20	0.519 5030	0.512 2461	1373	0.796 9653	0.801 0146	674	0.345 7276	0.347 4845	510	
21	0.504 9526	0.497 6229	1394	0.805 0071	0.808 9426	656	0.349 2167	0.350 9243	503	
22	+0.490 2576	+0.482 8570	+1415	+0.812 8208	+0.816 6414	-638	+0.352 8070	+0.354 2647	-496	
23	0.475 4217	0.467 9522	1435	0.820 4041	0.824 1086	620	0.355 8973	0.357 5046	489	
24	0.460 4490	0.452 9126	1456	0.827 7546	0.831 3419	601	0.359 0866	0.360 6430	482	
25	0.445 3437	0.437 7426	1476	0.834 8702	0.838 3392	582	0.362 1738	0.363 6788	474	
26	0.430 1100	0.422 4464	1495	0.841 7486	0.845 0981	562	0.365 1580	0.366 6111	466	
27	+0.414 7524	+0.407 0285	+1515	+0.848 3875	+0.851 6165	-542	+0.368 0381	+0.369 4389	-458	
28	0.399 2753	0.391 4934	1534	0.854 7848	0.857 8923	521	0.370 8133	0.372 1613	450	
29	0.383 6834	0.375 8458	1553	0.860 9387	0.863 9238	500	0.373 4828	0.374 7776	442	
30	0.367 9813	0.360 0905	1572	0.866 8473	0.869 7091	479	0.376 0456	0.377 2868	433	
31	0.352 1739	0.344 2322	1590	0.872 5088	0.875 2464	458	0.378 5012	0.379 6884	424	
June 1	+0.336 2660	+0.328 2759	+1608	+0.877 9216	+0.880 5342	-36	+0.380 8487	+0.381 9817	-415	
2	0.320 2625	0.312 2264	1626	0.883 0840	0.885 5709	414	0.383 0875	0.384 1660	406	
3	0.304 1682	0.296 0885	1643	0.887 9948	0.890 3554	391	0.385 2171	0.386 2408	396	
4	0.287 9880	0.279 8672	1660	0.892 6527	0.894 8864	368	0.387 2370	0.388 2056	387	
5	0.271 7268	0.263 5674	1677	0.897 0565	0.899 1628	345	0.389 1466	0.390 0600	377	
6	+0.255 3895	+0.247 1939	+1693	+0.901 2052	+0.903 1836	-321	+0.390 9456	+0.391 8035	-366	
7	0.238 9810	0.230 7516	1709	0.905 0980	0.906 9481	297	0.392 6336	0.393 4359	356	
8	0.222 5062	0.214 2454	1725	0.908 7339	0.910 4554	272	0.394 2103	0.394 9568	346	
9	0.205 9700	0.197 6803	1740	0.912 1124	0.913 7048	247	0.395 6754	0.396 3660	335	
10	0.189 3771	0.181 0610	1755	0.915 2327	0.916 6959	222	0.397 0286	0.397 6632	324	
11	+0.172 7324	+0.164 3921	+1769	+0.918 0945	+0.919 4283	-197	+0.398 2696	+0.398 8484	-313	
12	0.156 0405	0.147 6782	1783	0.920 6974	0.921 9017	171	0.399 3990	0.399 9214	302	
13	0.139 3059	0.130 9240	1796	0.923 0411	0.924 1157	145	0.400 4158	0.400 8821	290	
14	0.122 5332	0.114 1339	1809	0.925 1254	0.926 0702	119	0.401 3203	0.401 7303	279	
15	0.105 7268	0.097 3123	1822	0.926 9499	0.927 7647	92	0.402 1122	0.402 4659	267	
16	+0.088 8909	+0.080 4633	+1834	+0.928 5145	+0.929 1991	- 65	+0.402 7915	+0.403 0888	-255	
17	0.072 0299	0.063 5912	1846	0.929 8186	0.930 3730	37	0.403 3579	0.403 5987	243	
18	0.055 1479	0.046 7004	1857	0.930 8621	0.931 2860	- 10	0.403 8113	0.403 9955	231	
19	0.038 2492	0.029 7951	1867	0.931 6445	0.931 9376	+ 18	0.404 1513	0.404 2788	219	
20	0.021 3385	+0.012 8600	1878	0.932 1653	0.932 3274	46	0.404 3779	0.404 4485	206	
21	+0.004 4202	-0.004 0403	+1888	+0.932 4241	+0.932 4551	+ 75	+0.404 4907	+0.404 5044	-193	
22	-0.012 5010	0.020 9612	1897	0.932 4206	0.932 3203	104	0.404 4895	0.404 4462	180	
23	0.029 4203	0.037 8778	1905	0.932 1543	0.931 9225	133	0.404 3743	0.404 2738	167	
24	0.046 3330	0.054 7853	1913	0.931 6250	0.931 2618	162	0.404 1448	0.403 9872	154	
25	0.063 2341	0.071 6787	1921	0.930 8328	0.930 3380	191	0.403 8011	0.403 5864	141	
26	-0.080 1185	-0.088 5529	+1928	+0.929 7775	+0.929 1513	+221	+0.403 3432	+0.403 0713	-127	
27	0.096 9812	0.105 4030	1934	0.928 4593	0.927 7017	251	0.402 7710	0.402 4421	114	
28	0.113 8174	0.122 2240	1939	0.926 8785	0.925 9897	281	0.402 0848	0.401 6989	100	
29	0.130 6220	0.139 0108	1944	0.925 0354	0.924 0157	312	0.401 2846	0.400 8419	86	
30	0.147 3898	0.155 7584	1948	0.922 9305	0.921 7801	343	0.400 3709	0.399 8715	72	
July 1	-0.164 1159	-0.172 4617	+1952	+0.920 5645	+0.919 2838	+374	+0.399 3438	+0.398 7878	- 58	
2	-0.180 7952	-0.189 1158	+1956	+0.917 9381	+0.916 5275	+405	+0.398 2037	+0.397 5914	- 44	

GREENWICH MEAN TIME.

Date.	X True Equinox.		Reduc. to Mean Eq'x of 1916.0	Y True Equinox.		Reduc. to Mean Eq'x of 1916.0	Z True Equinox.		Reduc. to Mean Eq'x of 1916.0
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
July 1	-0.164 1159	-0.172 4617	+1952	+0.920 5645	+0.919 2838	+ 374	+0.399 3438	+0.398 7878	- 52
2	0.180 7952	0.189 1158	1956	0.917 9381	0.916 5275	405	0.398 2037	0.397 5914	44
3	0.197 4229	0.205 7158	1959	0.915 0521	0.913 5120	436	0.396 9510	0.396 2826	30
4	0.213 9939	0.222 2567	1961	0.911 9075	0.910 2385	467	0.395 5862	0.394 8619	15
5	0.230 5035	0.238 7337	1962	0.908 5053	0.906 7081	498	0.394 1098	0.393 3298	- 1
6	-0.246 9467	-0.255 1419	+1963	+0.904 8469	+0.902 9219	+ 530	+0.392 5222	+0.391 6870	+ 13
7	0.263 3188	0.271 4768	1963	0.900 9333	0.898 8813	562	0.390 8242	0.389 9339	28
8	0.279 6152	0.287 7336	1962	0.896 7661	0.894 5879	593	0.389 0163	0.388 0713	43
9	0.295 8314	0.303 9079	1961	0.892 3468	0.890 0430	625	0.387 0991	0.386 0998	57
10	0.311 9628	0.319 9953	1959	0.887 6769	0.885 2485	657	0.385 0734	0.384 0201	72
11	-0.328 0050	-0.335 9913	+1956	+0.882 7580	+0.880 2057	+ 689	+0.382 9400	+0.381 8330	+ 87
12	0.343 9538	0.351 8919	1953	0.877 5918	0.874 9164	721	0.380 6993	0.379 5391	102
13	0.359 8051	0.367 6930	1949	0.872 1798	0.869 3822	753	0.378 3523	0.377 1390	117
14	0.375 5550	0.383 3906	1944	0.866 5238	0.863 6048	785	0.375 8994	0.374 6335	133
15	0.391 1994	0.398 9809	1939	0.860 6254	0.857 5857	818	0.373 3414	0.372 0231	147
16	-0.406 7344	-0.414 4596	+1934	+0.854 4859	+0.851 3262	+ 850	+0.370 6788	+0.369 3085	+163
17	0.422 1560	0.429 8229	1927	0.848 1068	0.844 8279	882	0.367 9123	0.366 4902	178
18	0.437 4600	0.445 0666	1919	0.841 4896	0.838 0921	914	0.365 0424	0.363 5689	193
19	0.452 6424	0.460 1866	1911	0.834 6356	0.831 1204	946	0.362 0697	0.360 5450	208
20	0.467 6989	0.475 1786	1902	0.827 5464	0.823 9141	978	0.358 9949	0.357 4193	223
21	-0.482 6252	-0.490 0382	+1892	+0.820 2236	+0.816 4752	+1010	+0.355 8185	+0.354 1924	+239
22	0.497 4169	0.504 7608	1882	0.812 6689	0.808 8051	1041	0.352 5413	0.350 8651	254
23	0.512 0694	0.519 3421	1871	0.804 8840	0.800 9058	1073	0.349 1641	0.347 4383	270
24	0.526 5784	0.533 7777	1859	0.796 8709	0.792 7793	1105	0.345 6878	0.343 9127	285
25	0.540 9394	0.548 0631	1847	0.788 6316	0.784 4277	1137	0.342 1131	0.340 2893	300
26	-0.555 1481	-0.562 1939	+1834	+0.780 1682	+0.775 8532	+1168	+0.338 4412	+0.336 5691	+316
27	0.569 2000	0.576 1658	1820	0.771 4831	0.767 0582	1199	0.334 6731	0.332 7532	331
28	0.583 0909	0.589 9746	1805	0.762 5787	0.758 0450	1230	0.330 8097	0.328 8426	346
29	0.596 8165	0.603 6161	1790	0.753 4574	0.748 8163	1261	0.326 8522	0.324 8385	361
30	0.610 3727	0.617 0859	1774	0.744 1219	0.739 3746	1292	0.322 8017	0.320 7420	376
31	-0.623 7552	-0.630 3801	+1757	+0.734 5748	+0.729 7228	+1322	+0.318 6596	+0.316 5545	+392
Aug. 1	0.636 9800	0.643 4945	1739	0.724 8190	0.719 8637	1352	0.314 4269	0.312 2770	407
2	0.649 9830	0.656 4252	1721	0.714 8573	0.709 8003	1382	0.310 1051	0.307 9111	422
3	0.662 8204	0.669 1683	1702	0.704 6929	0.699 5356	1412	0.305 6954	0.303 4580	437
4	0.675 4685	0.681 7203	1682	0.694 3287	0.689 0727	1441	0.301 1992	0.298 9190	452
5	-0.687 9235	-0.694 0775	+1662	+0.683 7679	+0.678 4148	+1470	+0.296 6178	+0.294 2957	+467
6	0.700 1819	0.706 2364	1641	0.673 0138	0.667 5653	1499	0.291 9528	0.289 5894	482
7	0.712 2403	0.718 1935	1620	0.662 0697	0.656 5274	1527	0.287 2055	0.284 8015	496
8	0.724 0955	0.729 9459	1598	0.650 9388	0.645 3044	1556	0.282 3774	0.279 9334	511
9	0.735 7443	0.741 4904	1575	0.639 6245	0.633 8996	1584	0.277 4698	0.274 9867	525
10	-0.747 1837	-0.752 8240	+1551	+0.628 1300	+0.622 3162	+1611	+0.272 4842	+0.269 9625	+540
11	0.758 4110	0.763 9441	1527	0.616 4586	0.610 5578	1638	0.267 4219	0.264 8624	554
12	0.769 4231	0.774 8476	1502	0.604 6135	0.598 6267	1665	0.262 2842	0.259 6875	568
13	0.780 2174	0.785 5319	1477	0.592 5976	0.586 5267	1691	0.257 0724	0.254 4392	583
14	0.790 7908	0.795 9939	1450	0.580 4142	0.574 2605	1717	0.251 7879	0.249 1187	597
15	-0.801 1406	-0.806 2307	+1423	+0.568 0661	+0.561 8312	+1742	+0.246 4318	+0.243 7274	+611
16	-0.811 2638	-0.816 2394	+1396	+0.555 5564	+0.549 2419	+1767	+0.241 0056	+0.238 2665	+625

GREENWICH MEAN TIME.

Date	X True Equinox.		Reduc. to Mean Eq'x of 1916.0	Y True Equinox.		Reduc. to Mean Eq'x of 1916.0	Z True Equinox.		Reduc. to Mean Eq'x of 1916.0
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.
Aug. 16	-0.811 2638	-0.816 2394	+1396	+0.555 5564	+0.549 2419	+1767	+0.241 0056	+0.238 2665	+ 625
17	0.821 1573	0.826 0170	1368	0.542 8882	0.536 4957	1792	0.235 5104	0.232 7374	638
18	0.830 8181	0.835 5603	1339	0.530 0647	0.523 5957	1816	0.229 9476	0.227 1413	652
19	0.840 2431	0.844 8663	1310	0.517 0891	0.510 5453	1840	0.224 3187	0.221 4799	665
20	0.849 4293	0.853 9318	1280	0.503 9648	0.497 3479	1863	0.218 6251	0.215 7546	678
21	-0.858 3734	-0.862 7538	+1249	+0.490 6953	+0.484 0072	+1886	+0.212 8684	+0.209 9669	+ 691
22	0.867 0726	0.871 3294	1218	0.477 2841	0.470 5266	1908	0.207 0502	0.204 1185	704
23	0.875 5238	0.879 6555	1187	0.463 7351	0.456 9100	1930	0.201 1720	0.198 2110	717
24	0.883 7242	0.887 7294	1155	0.450 0519	0.443 1612	1951	0.195 2356	0.192 2460	730
25	0.891 6709	0.895 5482	1122	0.436 2384	0.429 2841	1972	0.189 2426	0.186 2255	742
26	-0.899 3612	-0.903 1094	+1089	+0.422 2986	+0.415 2826	+1992	+0.183 1948	+0.180 1510	+ 754
27	0.906 7925	0.910 4103	1055	0.408 2366	0.401 1610	2012	0.177 0940	0.174 0243	766
28	0.913 9623	0.917 4484	1021	0.394 0564	0.386 9234	2031	0.170 9421	0.167 8474	778
29	0.920 8682	0.924 2214	986	0.379 7624	0.372 5739	2049	0.164 7407	0.161 6221	790
30	0.927 5078	0.930 7270	951	0.365 3587	0.358 1171	2067	0.158 4919	0.155 3503	802
31	-0.933 8789	-0.936 9632	+ 916	+0.350 8498	+0.343 5572	+2084	+0.152 1976	+0.149 0340	+ 813
Sept. 1	0.939 9796	0.942 9279	880	0.336 2400	0.328 8987	2101	0.145 8597	0.142 6751	824
2	0.945 8079	0.948 6193	843	0.321 5338	0.314 1460	2117	0.139 4802	0.136 2755	835
3	0.951 3620	0.954 0358	806	0.306 7359	0.299 3038	2133	0.133 0610	0.129 8372	846
4	0.956 6406	0.959 1760	769	0.291 8505	0.284 3764	2148	0.126 6041	0.123 3621	856
5	-0.961 6421	-0.964 0385	+ 731	+0.276 8822	+0.269 3684	+2162	+0.120 1113	+0.116 8521	+ 866
6	0.966 3653	0.968 6221	693	0.261 8354	0.254 2839	2176	0.113 5846	0.110 3091	876
7	0.970 8090	0.972 9256	654	0.246 7144	0.239 1275	2189	0.107 0257	0.103 7348	885
8	0.974 9721	0.976 9481	615	0.231 5236	0.223 9033	2201	0.100 4366	0.097 1312	895
9	0.978 8536	0.980 6885	576	0.216 2672	0.208 6156	2213	0.093 8190	0.090 5000	904
10	-0.982 4526	-0.984 1459	+ 536	+0.200 9493	+0.193 2685	+2224	+0.087 1746	+0.083 8430	+ 913
11	0.985 7681	0.987 3193	496	0.185 5740	0.177 8660	2235	0.080 5053	0.077 1618	922
12	0.988 7991	0.990 2076	456	0.170 1453	0.162 4122	2245	0.073 8127	0.070 4582	930
13	0.991 5445	0.992 8098	415	0.154 6672	0.146 9110	2254	0.067 0986	0.063 7340	938
14	0.994 0032	0.995 1247	374	0.139 1440	0.131 3667	2263	0.060 3647	0.056 9908	946
15	-0.996 1741	-0.997 1513	+ 333	+0.123 5797	+0.115 7834	+2271	+0.053 6128	+0.050 2306	+ 954
16	0.998 0561	0.998 8884	292	0.107 9784	0.100 1653	2278	0.046 8447	0.043 4552	961
17	0.999 6481	1.000 3350	250	0.092 3445	0.084 5167	2285	0.040 0624	0.036 6664	968
18	1.000 9490	1.001 4900	208	0.076 6824	0.068 8421	2291	0.033 2677	0.029 8663	975
19	1.001 9580	1.002 3527	166	0.060 9965	0.053 1461	2296	0.026 4626	0.023 0567	982
20	-1.002 6741	-1.002 9222	+ 123	+0.045 2915	+0.037 4332	+2300	+0.019 6490	+0.016 2398	+ 988
21	1.003 0967	1.003 1977	81	0.029 5719	0.021 7081	2304	0.012 8292	0.009 4175	994
22	1.003 2251	1.003 1788	+ 38	+0.013 8424	+0.005 9754	2308	+0.006 0050	+0.002 5920	999
23	1.003 0587	1.002 8647	- 5	-0.001 8922	-0.009 7600	2311	-0.000 8213	-0.004 2347	1005
24	1.002 5970	1.002 2553	48	0.017 6273	0.025 4934	2313	0.007 6478	0.011 0605	1010
25	-1.001 8398	-1.001 3503	- 92	-0.033 3579	-0.041 2200	+2314	-0.014 4723	-0.017 8832	+1014
26	1.000 7870	1.000 1496	135	0.049 0792	0.056 9349	2315	0.021 2927	0.024 7007	1018
27	0.999 4384	0.998 6532	179	0.064 7863	0.072 6330	2315	0.028 1068	0.031 5108	1022
28	0.997 7942	0.996 8612	222	0.080 4742	0.088 3095	2314	0.034 9124	0.038 3114	1026
29	0.995 8545	0.994 7741	266	0.096 1381	0.103 9594	2312	0.041 7074	0.045 1003	1030
30	-0.993 6200	-0.992 3924	- 310	-0.111 7729	-0.119 5778	+2310	-0.048 4897	-0.051 8753	+1033
Oct. 1	-0.991 0913	-0.989 7168	- 354	-0.127 3736	-0.135 1597	+2307	-0.055 2570	-0.058 6344	+1036

GREENWICH MEAN TIME.

Date.	X True Equinox.		Reduc. to Mean Eq'x of 1916.0	Y True Equinox.		Reduc. to Mean Eq'x of 1916.0	Z True Equinox.		Reduc. to Mean Eq'x of 1916.0
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.
Oct. 1	-0.991 0913	-0.989 7168	-354	-0.127 3736	-0.135 1597	+2307	-0.055 2570	-0.058 6344	+1036
2	0.988 2691	0.986 7483	398	0.142 9354	0.150 7002	2303	0.062 0073	0.065 3754	1038
3	0.985 1544	0.983 4877	442	0.158 4535	0.166 1947	2299	0.068 7385	0.072 0964	1040
4	0.981 7482	0.979 9362	486	0.173 9231	0.181 6384	2294	0.075 4486	0.078 7952	1042
5	0.978 0518	0.976 0951	531	0.189 3398	0.197 0268	2289	0.082 1357	0.085 4699	1043
6	-0.974 0663	-0.971 9655	-575	-0.204 6989	-0.212 3555	+2282	-0.088 7977	-0.092 1188	+1044
7	0.969 7930	0.967 5489	619	0.219 9960	0.227 6200	2275	0.095 4330	0.098 7400	1045
8	0.965 2334	0.962 8466	663	0.235 2268	0.242 8161	2268	0.102 0396	0.105 3316	1046
9	0.960 3887	0.957 8599	708	0.250 3872	0.257 9396	2260	0.108 6158	0.111 8918	1046
10	0.955 2603	0.952 5900	752	0.265 4728	0.272 9862	2251	0.115 1596	0.118 4188	1045
11	-0.949 8493	-0.947 0382	-796	-0.280 4795	-0.287 9519	+2241	-0.121 6693	-0.124 9108	+1044
12	0.944 1570	0.941 2057	840	0.295 4031	0.302 8324	2231	0.128 1432	0.131 3661	1043
13	0.938 1845	0.935 0937	884	0.310 2394	0.317 6236	2220	0.134 5794	0.137 7828	1042
14	0.931 9333	0.928 7035	928	0.324 9844	0.332 3212	2209	0.140 9761	0.144 1590	1040
15	0.925 4046	0.922 0366	971	0.339 6335	0.346 9208	2197	0.147 3313	0.150 4927	1038
16	-0.918 5997	-0.915 0942	-1015	-0.354 1824	-0.361 4180	+2184	-0.153 6431	-0.156 7822	+1036
17	0.911 5202	0.907 8779	1059	0.368 6268	0.375 8084	2170	0.159 9096	0.163 0253	1033
18	0.904 1676	0.900 3895	1103	0.382 9622	0.390 0876	2156	0.166 1289	0.169 2202	1030
19	0.896 5437	0.892 6306	1146	0.397 1841	0.404 2511	2141	0.172 2990	0.175 3650	1026
20	0.888 6502	0.884 6030	1189	0.411 2881	0.418 2944	2126	0.178 4179	0.181 4575	1022
21	-0.880 4890	-0.876 3087	-1232	-0.425 2696	-0.432 2130	+2110	-0.184 4836	-0.187 4960	+1018
22	0.872 0621	0.867 7497	1275	0.439 1242	0.446 0025	2093	0.190 4942	0.193 4782	1013
23	0.863 3717	0.858 9284	1318	0.452 8474	0.459 6583	2075	0.196 4477	0.199 4024	1008
24	0.854 4200	0.849 8470	1360	0.466 4347	0.473 1760	2057	0.202 3421	0.205 2666	1003
25	0.845 2095	0.840 5080	1403	0.479 8817	0.486 5511	2038	0.208 1755	0.211 0687	997
26	-0.835 7427	-0.830 9140	-1445	-0.493 1837	-0.499 7790	+2018	-0.213 9458	-0.216 8068	+ 991
27	0.826 0223	0.821 0680	1487	0.506 3364	0.512 8553	1998	0.219 6513	0.222 4790	985
28	0.816 0514	0.810 9729	1529	0.519 3352	0.525 7755	1977	0.225 2896	0.228 0833	978
29	0.805 8330	0.800 6320	1570	0.532 1758	0.538 5355	1956	0.230 8595	0.233 6180	971
30	0.795 3704	0.790 0486	1611	0.544 8542	0.551 1312	1934	0.236 3587	0.239 0813	964
31	-0.784 6670	-0.779 2261	-1652	-0.557 3661	-0.563 5584	+1911	-0.241 7856	-0.244 4715	+ 956
Nov. 1	0.773 7262	0.768 1680	1693	0.569 7077	0.575 8134	1888	0.247 1386	0.249 7869	948
2	0.762 5517	0.756 8779	1733	0.581 8751	0.587 8924	1864	0.252 4161	0.255 0260	939
3	0.751 1470	0.745 3594	1773	0.593 8647	0.599 7918	1839	0.257 6164	0.260 1872	930
4	0.739 5156	0.733 6160	1813	0.605 6731	0.611 5082	1814	0.262 7382	0.265 2692	921
5	-0.727 6611	-0.721 6513	-1852	-0.617 2967	-0.623 0383	+1788	-0.267 7800	-0.270 2704	+ 911
6	0.715 5870	0.709 4688	1891	0.628 7324	0.634 3787	1762	0.272 7403	0.275 1895	901
7	0.703 2970	0.697 0720	1930	0.639 9768	0.645 5262	1735	0.277 6178	0.280 0251	891
8	0.690 7944	0.684 4646	1968	0.651 0267	0.656 4777	1707	0.282 4111	0.284 7757	880
9	0.678 0830	0.671 6500	2006	0.661 8789	0.667 2300	1679	0.287 1188	0.289 4402	869
10	-0.665 1660	-0.658 6316	-2044	-0.672 5304	-0.677 7798	+1650	-0.291 7396	-0.294 0169	+ 857
11	0.652 0471	0.645 4130	2081	0.682 9778	0.688 1240	1620	0.296 2719	0.298 5045	845
12	0.638 7296	0.631 9976	2118	0.693 2180	0.698 2593	1590	0.300 7145	0.302 9017	833
13	0.625 2172	0.618 3891	2154	0.703 2477	0.708 1826	1559	0.305 0659	0.307 2069	821
14	0.611 5136	0.604 5913	2190	0.713 0638	0.717 8907	1528	0.309 3246	0.311 4188	808
15	-0.597 6225	-0.590 6079	-2226	-0.722 6630	-0.727 3804	+1496	-0.313 4893	-0.315 5359	+ 795
16	-0.583 5478	-0.576 4428	-2261	-0.732 0423	-0.736 6484	+1463	-0.317 5585	-0.319 5568	+ 782

GREENWICH MEAN TIME.

Date.	X True Equinox.		Reduc. to Mean Eq'x of 1916.0	Y True Equinox.		Reduc. to Mean Eq'x of 1916.0	Z True Equinox.		Reduc. to Mean Eq'x of 1916.0
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Nov. 16	-0.583 5478	-0.576 4428	-2261	-0.732 0423	-0.736 6484	+1463	-0.317 5585	-0.319 5568	+782
17	0.569 2933	0.562 1000	2295	0.741 1984	0.745 6918	1430	0.321 5308	0.323 4803	768
18	0.554 8632	0.547 5835	2329	0.750 1282	0.754 5073	1396	0.325 4050	0.327 3048	754
19	0.540 2616	0.532 8978	2362	0.758 8287	0.763 0920	1361	0.329 1796	0.331 0291	739
20	0.525 4927	0.518 0469	2395	0.767 2967	0.771 4426	1326	0.332 8532	0.334 6517	725
21	-0.510 5610	-0.503 0354	-2427	-0.775 5293	-0.779 5563	+1291	-0.336 4245	-0.338 1714	+710
22	0.495 4707	0.487 8676	2460	0.783 5234	0.787 4300	1255	0.339 8922	0.341 5868	695
23	0.480 2268	0.472 5483	2491	0.791 2760	0.795 0609	1218	0.343 2550	0.344 8967	679
24	0.464 8334	0.457 0824	2522	0.798 7844	0.802 4462	1180	0.346 5117	0.348 0999	663
25	0.449 2960	0.441 4749	2552	0.806 0458	0.809 5830	1142	0.349 6611	0.351 1952	647
26	-0.433 6196	-0.425 7308	-2582	-0.813 0575	-0.816 4690	+1104	-0.352 7021	-0.354 1816	+631
27	0.417 8091	0.409 8553	2611	0.819 8172	0.823 1017	1065	0.355 6336	0.357 0580	614
28	0.401 8700	0.393 8539	2639	0.826 3224	0.829 4790	1025	0.358 4547	0.359 8236	597
29	0.385 8076	0.377 7318	2667	0.832 5712	0.835 5989	985	0.361 1646	0.362 4776	579
30	0.369 6270	0.361 4942	2694	0.838 5617	0.841 4596	944	0.363 7624	0.365 0192	561
Dec. 1	-0.353 3337	-0.345 1463	-2720	-0.844 2922	-0.847 0594	+ 903	-0.366 2476	-0.367 4477	+543
2	0.336 9327	0.328 6934	2745	0.849 7611	0.852 3969	861	0.368 6194	0.369 7626	525
3	0.320 4292	0.312 1406	2770	0.854 9668	0.857 4706	819	0.370 8772	0.371 9632	507
4	0.303 8283	0.295 4930	2795	0.859 9081	0.862 2792	776	0.373 0204	0.374 0489	488
5	0.287 1352	0.278 7555	2819	0.864 5837	0.866 8214	733	0.375 0485	0.376 0192	469
6	-0.270 3546	-0.261 9330	-2842	-0.868 9923	-0.871 0961	+ 689	-0.376 9609	-0.377 8736	+450
7	0.253 4915	0.245 0306	2864	0.873 1327	0.875 1020	645	0.378 7572	0.379 6116	431
8	0.236 5510	0.228 0532	2885	0.877 0038	0.878 8380	600	0.380 4367	0.381 2326	411
9	0.219 5379	0.211 0056	2906	0.880 6044	0.882 3029	555	0.381 9990	0.382 7361	391
10	0.202 4570	0.193 8928	2926	0.883 9334	0.885 4956	509	0.383 4436	0.384 1216	371
11	-0.185 3135	-0.176 7197	-2945	-0.886 9896	-0.888 4152	+ 463	-0.384 7699	-0.385 3886	+351
12	0.168 1121	0.159 4913	2963	0.889 7721	0.891 0603	417	0.385 9775	0.386 5366	330
13	0.150 8580	0.142 2128	2980	0.892 2797	0.893 4301	370	0.387 0659	0.387 5652	310
14	0.133 5562	0.124 8891	2996	0.894 5115	0.895 5237	322	0.388 0346	0.388 4739	289
15	0.116 2120	0.107 5255	3012	0.896 4666	0.897 3400	274	0.388 8832	0.389 2623	268
16	-0.098 8303	-0.090 1271	-3027	-0.898 1440	-0.898 8783	+ 226	-0.389 6112	-0.389 9299	+246
17	0.081 4165	0.072 6993	3040	0.899 5429	0.900 1377	178	0.390 2183	0.390 4764	225
18	0.063 9760	0.055 2474	3053	0.900 6625	0.901 1174	129	0.390 7041	0.390 9014	203
19	0.046 5141	0.037 7767	3065	0.901 5022	0.901 8169	80	0.391 0684	0.391 2048	181
20	0.029 0361	0.020 2928	3077	0.902 0613	0.902 2355	+ 30	0.391 3108	0.391 3862	159
21	-0.011 5476	-0.002 8013	-3087	-0.902 3393	-0.902 3727	- 20	-0.391 4311	-0.391 4454	+137
22	+0.005 9456	+0.014 6923	3096	0.902 3354	0.902 2280	70	0.391 4290	0.391 3820	115
23	0.023 4380	0.032 1820	3104	0.902 0499	0.901 8013	121	0.391 3044	0.391 1962	93
24	0.040 9235	0.049 6619	3111	0.901 4821	0.901 0924	172	0.391 0574	0.390 8880	70
25	0.058 3964	0.067 1262	3117	0.900 6322	0.900 1016	223	0.390 6880	0.390 4574	48
26	+0.075 8507	+0.084 5890	-3122	-0.899 5005	-0.898 8291	- 274	-0.390 1963	-0.389 9047	+ 25
27	0.093 2805	0.101 9845	3126	0.898 0874	0.897 2755	326	0.389 5826	0.389 2300	+ 2
28	0.110 6802	0.119 3669	3129	0.896 3936	0.895 4416	377	0.388 8471	0.388 4338	- 21
29	0.128 0439	0.136 7104	3131	0.894 4197	0.893 3281	429	0.387 9903	0.387 5165	44
30	0.145 3659	0.154 0097	3132	0.892 1669	0.890 9362	481	0.387 0126	0.386 4786	67
31	+0.162 6410	+0.171 2593	-3132	-0.889 6362	-0.888 2671	- 533	-0.385 9145	-0.385 3205	- 90
32	+0.179 8638	+0.188 4540	-3132	-0.886 8289	-0.885 3218	- 586	-0.384 6965	-0.384 0428	-114

GREENWICH MEAN TIME.

Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.	Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.
JANUARY 1.									JANUARY 3.								
	h	m	s	s	°	'	"	"		h	m	s	s	°	'	"	"
0	14	55	33.31	2.5091	-22	7	2.7	-9.914	0	17	4	49.80	2.8278	-26	54	25.3	-1.412
1	14	58	4.12	2.5179	22	16	53.6	9.782	1	17	7	39.55	2.8303	26	55	43.7	1.201
2	15	0	35.46	2.5268	22	26	36.5	9.646	2	17	10	29.44	2.8326	26	56	49.4	0.989
3	15	3	7.33	2.5355	22	36	11.1	9.508	3	17	13	19.46	2.8348	26	57	42.4	0.777
4	15	5	39.72	2.5442	22	45	37.4	9.368	4	17	16	9.61	2.8367	26	58	22.6	0.564
5	15	8	12.63	2.5529	22	54	55.3	9.228	5	17	18	59.86	2.8383	26	58	50.1	0.352
6	15	10	46.07	2.5617	23	4	4.7	9.084	6	17	21	50.21	2.8398	26	59	4.8	-0.138
7	15	13	20.03	2.5703	23	13	5.4	8.938	7	17	24	40.63	2.8409	26	59	6.7	+0.075
8	15	15	54.50	2.5788	23	21	57.2	8.789	8	17	27	31.12	2.8419	26	58	55.8	0.289
9	15	18	29.49	2.5874	23	30	40.1	8.640	9	17	30	21.66	2.8427	26	58	32.0	0.503
10	15	21	4.99	2.5958	23	39	14.0	8.488	10	17	33	12.24	2.8433	26	57	55.4	0.718
11	15	23	40.99	2.6043	23	47	38.7	8.334	11	17	36	2.85	2.8435	26	57	5.9	0.932
12	15	26	17.50	2.6127	23	55	54.1	8.178	12	17	38	53.46	2.8435	26	56	3.6	1.146
13	15	28	54.51	2.6209	24	4	0.0	8.019	13	17	41	44.07	2.8433	26	54	48.4	1.361
14	15	31	32.01	2.6291	24	11	56.4	7.860	14	17	44	34.66	2.8428	26	53	20.3	1.575
15	15	34	10.00	2.6373	24	19	43.2	7.698	15	17	47	25.21	2.8422	26	51	39.4	1.788
16	15	36	48.48	2.6453	24	27	20.2	7.533	16	17	50	15.72	2.8413	26	49	45.7	2.002
17	15	39	27.43	2.6532	24	34	47.2	7.367	17	17	53	6.17	2.8402	26	47	39.2	2.216
18	15	42	6.86	2.6610	24	42	4.2	7.199	18	17	55	56.54	2.8388	26	45	19.8	2.429
19	15	44	46.75	2.6688	24	49	11.1	7.030	19	17	58	46.82	2.8372	26	42	47.7	2.641
20	15	47	27.11	2.6764	24	56	7.8	6.858	20	18	1	37.00	2.8354	26	40	2.9	2.853
21	15	50	7.92	2.6839	25	2	54.1	6.684	21	18	4	27.07	2.8333	26	37	5.4	3.063
22	15	52	49.18	2.6913	25	9	29.9	6.508	22	18	7	17.00	2.8310	26	33	55.3	3.274
23	15	55	30.87	2.6985	-25	15	55.1	-6.332	23	18	10	6.79	2.8286	-26	30	32.5	+3.485
JANUARY 2.									JANUARY 4.								
0	15	58	13.00	2.7058	-25	22	9.7	-6.153	0	18	12	56.43	2.8259	-26	26	57.1	+3.694
1	16	0	55.56	2.7128	25	28	13.5	5.972	1	18	15	45.90	2.8229	26	23	9.2	3.903
2	16	3	38.53	2.7196	25	34	6.3	5.788	2	18	18	35.18	2.8197	26	19	8.8	4.110
3	16	6	21.91	2.7263	25	39	48.1	5.604	3	18	21	24.26	2.8163	26	14	56.0	4.317
4	16	9	5.69	2.7330	25	45	18.8	5.418	4	18	24	13.14	2.8128	26	10	30.8	4.523
5	16	11	49.87	2.7395	25	50	38.3	5.231	5	18	27	1.80	2.8090	26	5	53.3	4.728
6	16	14	34.43	2.7458	25	55	46.5	5.042	6	18	29	50.22	2.8050	26	1	3.5	4.931
7	16	17	19.36	2.7518	26	0	43.3	4.851	7	18	32	38.40	2.8008	25	56	1.6	5.133
8	16	20	4.65	2.7578	26	5	28.6	4.668	8	18	35	26.32	2.7965	25	50	47.6	5.334
9	16	22	50.29	2.7636	26	10	2.3	4.465	9	18	38	13.98	2.7920	25	45	21.5	5.534
10	16	25	36.28	2.7693	26	14	24.4	4.270	10	18	41	1.36	2.7872	25	39	43.5	5.733
11	16	28	22.60	2.7747	26	18	34.7	4.073	11	18	43	48.44	2.7822	25	33	53.6	5.930
12	16	31	9.24	2.7800	26	22	33.2	3.875	12	18	46	35.22	2.7771	25	27	51.9	6.126
13	16	33	56.20	2.7851	26	26	19.7	3.676	13	18	49	21.69	2.7718	25	21	38.5	6.320
14	16	36	43.45	2.7899	26	29	54.3	3.476	14	18	52	7.83	2.7663	25	15	13.5	6.513
15	16	39	30.99	2.7947	26	33	16.8	3.273	15	18	54	53.64	2.7607	25	8	37.0	6.703
16	16	42	18.81	2.7992	26	36	27.1	3.070	16	18	57	39.11	2.7549	25	1	49.1	6.893
17	16	45	6.89	2.8034	26	39	25.2	2.866	17	19	0	24.23	2.7489	24	54	49.8	7.082
18	16	47	55.22	2.8075	26	42	11.0	2.661	18	19	3	8.98	2.7428	24	47	39.3	7.268
19	16	50	43.79	2.8114	26	44	44.5	2.456	19	19	5	53.36	2.7365	24	40	17.6	7.453
20	16	53	32.59	2.8151	26	47	5.7	2.249	20	19	8	37.36	2.7301	24	32	44.9	7.635
21	16	56	21.60	2.8186	26	49	14.4	2.041	21	19	11	20.97	2.7236	24	25	1.4	7.816
22	16	59	10.82	2.8218	26	51	10.6	1.833	22	19	14	4.19	2.7169	24	17	7.0	7.996
23	17	2	0.22	2.8248	26	52	54.3	1.623	23	19	16	47.00	2.7101	24	9	1.9	8.173
24	17	4	49.80	2.8278	-26	54	25.3	-1.412	24	19	19	29.40	2.7031	-24	0	46.2	+8.348

GREENWICH MEAN TIME.

Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.	Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.
JANUARY 5.									JANUARY 7.								
	h	m	s	s	"	"	"	"		h	m	s	s	"	"	"	"
0	19	19	29.40	2.7031	-24	0	46.2	+ 8.348	0	21	20	0.03	2.3128	-14	38	55.1	+14.201
1	19	22	11.37	2.6960	23	52	20.1	8.522	1	21	22	18.56	2.3050	14	24	41.0	14.268
2	19	24	52.92	2.6889	23	43	43.6	8.693	2	21	24	36.63	2.2973	14	10	23.0	14.333
3	19	27	34.04	2.6817	23	34	56.9	8.863	3	21	26	54.23	2.2896	13	56	1.1	14.397
4	19	30	14.72	2.6743	23	26	0.1	9.030	4	21	29	11.38	2.2821	13	41	35.4	14.458
5	19	32	54.95	2.6668	23	16	53.3	9.195	5	21	31	28.08	2.2746	13	27	6.1	14.518
6	19	35	34.73	2.6592	23	7	36.7	9.358	6	21	33	44.33	2.2671	13	12	33.3	14.574
7	19	38	14.05	2.6515	22	58	10.3	9.520	7	21	36	0.13	2.2597	12	57	57.2	14.629
8	19	40	52.91	2.6438	22	48	34.3	9.679	8	21	38	15.49	2.2524	12	43	17.8	14.683
9	19	43	31.30	2.6358	22	38	48.8	9.836	9	21	40	30.42	2.2452	12	28	35.2	14.735
10	19	46	9.21	2.6279	22	28	54.0	9.991	10	21	42	44.91	2.2380	12	13	49.6	14.784
11	19	48	46.65	2.6200	22	18	49.9	10.143	11	21	44	58.98	2.2309	11	59	1.1	14.832
12	19	51	23.61	2.6119	22	8	36.8	10.293	12	21	47	12.62	2.2239	11	44	9.8	14.878
13	19	54	0.08	2.6038	21	58	14.7	10.442	13	21	49	25.85	2.2170	11	29	15.8	14.922
14	19	56	36.06	2.5956	21	47	43.8	10.588	14	21	51	38.66	2.2101	11	14	19.2	14.963
15	19	59	11.55	2.5874	21	37	4.2	10.732	15	21	53	51.06	2.2033	10	59	20.2	15.003
16	20	1	46.55	2.5792	21	26	16.0	10.873	16	21	56	3.06	2.1967	10	44	18.8	15.042
17	20	4	21.05	2.5708	21	15	19.4	11.013	17	21	58	14.66	2.1901	10	29	15.2	15.078
18	20	6	55.05	2.5625	21	4	14.5	11.149	18	22	0	25.87	2.1836	10	14	9.4	15.113
19	20	9	28.55	2.5541	20	53	1.5	11.284	19	22	2	36.69	2.1771	9	59	1.6	15.146
20	20	12	1.54	2.5457	20	41	40.4	11.417	20	22	4	47.12	2.1707	9	43	51.9	15.177
21	20	14	34.03	2.5373	20	30	11.5	11.546	21	22	6	57.17	2.1644	9	28	40.4	15.207
22	20	17	6.01	2.5288	20	18	34.9	11.674	22	22	9	6.85	2.1583	9	13	27.1	15.235
23	20	19	37.48	2.5203	-20	6	50.6	+11.800	23	22	11	16.16	2.1522	- 8	58	12.2	+15.261
JANUARY 6.									JANUARY 8.								
0	20	22	8.44	2.5118	-19	54	58.9	+11.923	0	22	13	25.11	2.1462	- 8	42	55.8	+15.285
1	20	24	38.89	2.5033	19	42	59.8	12.044	1	22	15	33.70	2.1403	8	27	38.0	15.308
2	20	27	8.83	2.4948	19	30	53.6	12.163	2	22	17	41.94	2.1344	8	12	18.9	15.329
3	20	29	38.26	2.4863	19	18	40.3	12.279	3	22	19	49.83	2.1286	7	56	58.5	15.349
4	20	32	7.18	2.4778	19	6	20.1	12.393	4	22	21	57.37	2.1229	7	41	37.0	15.367
5	20	34	35.59	2.4693	18	53	53.2	12.504	5	22	24	4.58	2.1174	7	26	14.5	15.383
6	20	37	3.49	2.4608	18	41	19.6	12.614	6	22	26	11.46	2.1119	7	10	51.1	15.398
7	20	39	30.88	2.4523	18	28	39.5	12.721	7	22	28	18.01	2.1065	6	55	26.8	15.411
8	20	41	57.76	2.4438	18	15	53.1	12.826	8	22	30	24.24	2.1012	6	40	1.8	15.423
9	20	44	24.13	2.4353	18	3	0.4	12.929	9	22	32	30.15	2.0959	6	24	36.1	15.433
10	20	46	50.00	2.4269	17	50	1.6	13.029	10	22	34	35.75	2.0908	6	9	9.8	15.443
11	20	49	15.36	2.4184	17	36	56.9	13.127	11	22	36	41.05	2.0858	5	53	43.0	15.449
12	20	51	40.21	2.4101	17	23	46.4	13.223	12	22	38	46.05	2.0808	5	38	15.9	15.454
13	20	54	4.57	2.4018	17	10	30.2	13.317	13	22	40	50.75	2.0760	5	22	48.5	15.459
14	20	56	28.42	2.3934	16	57	8.4	13.408	14	22	42	55.17	2.0713	5	7	20.8	15.463
15	20	58	51.78	2.3852	16	43	41.2	13.497	15	22	44	59.30	2.0666	4	51	53.0	15.464
16	21	1	14.64	2.3769	16	30	8.8	13.583	16	22	47	3.16	2.0620	4	36	25.1	15.465
17	21	3	37.01	2.3688	16	16	31.3	13.668	17	22	49	6.74	2.0575	4	20	57.2	15.463
18	21	5	58.89	2.3606	16	2	48.7	13.751	18	22	51	10.06	2.0532	4	5	29.5	15.460
19	21	8	20.28	2.3525	15	49	1.2	13.831	19	22	53	13.12	2.0488	3	50	2.0	15.457
20	21	10	41.19	2.3444	15	35	9.0	13.909	20	22	55	15.92	2.0446	3	34	34.7	15.453
21	21	13	1.61	2.3364	15	21	12.1	13.985	21	22	57	18.47	2.0404	3	19	7.7	15.446
22	21	15	21.56	2.3285	15	7	10.8	14.058	22	22	59	20.77	2.0364	3	3	41.2	15.438
23	21	17	41.03	2.3206	14	53	5.1	14.131	23	23	1	22.84	2.0325	2	48	15.2	15.429
24	21	20	0.03	2.3128	-14	38	55.1	+14.201	24	23	3	24.67	2.0286	- 2	32	49.7	

GREENWICH MEAN TIME.

Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.	Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.	
JANUARY 9.									JANUARY 11.									
	h	m	s	s	°	'	"	"		h	m	s	s	°	'	"	"	
0	23	3	24.87	2.0286	-2	32	49.7	+15.419	0	0	37	59.28	1.9435	+	9	15	8.2	+13.718
1	23	5	26.27	2.0248	2	17	24.9	15.408	1	0	39	55.89	1.9437	9	28	49.6	13.663	
2	23	7	27.65	2.0212	2	2	0.8	15.395	2	0	41	52.52	1.9439	9	42	27.6	13.604	
3	23	9	28.81	2.0176	1	46	37.5	15.381	3	0	43	49.16	1.9442	9	56	2.1	13.546	
4	23	11	29.76	2.0141	1	31	15.1	15.366	4	0	45	45.82	1.9445	10	9	33.1	13.487	
5	23	13	30.50	2.0107	1	15	53.6	15.350	5	0	47	42.50	1.9448	10	23	0.5	13.427	
6	23	15	31.04	2.0073	1	0	33.1	15.333	6	0	49	39.20	1.9453	10	36	24.3	13.367	
7	23	17	31.38	2.0041	0	45	13.7	15.314	7	0	51	35.94	1.9460	10	49	44.5	13.306	
8	23	19	31.53	2.0010	0	29	55.4	15.295	8	0	53	32.72	1.9466	11	3	1.0	13.243	
9	23	21	31.50	1.9979	-0	14	38.3	15.274	9	0	55	29.53	1.9472	11	16	13.7	13.181	
10	23	23	31.28	1.9949	+0	0	37.5	15.253	10	0	57	26.38	1.9479	11	29	22.7	13.118	
11	23	25	30.89	1.9921	0	15	52.0	15.229	11	0	59	23.28	1.9487	11	42	27.8	13.053	
12	23	27	30.33	1.9893	0	31	5.0	15.205	12	1	1	20.22	1.9495	11	55	29.1	12.989	
13	23	29	29.60	1.9866	0	46	16.6	15.181	13	1	3	17.22	1.9505	12	8	26.5	12.923	
14	23	31	28.72	1.9840	1	1	26.7	15.154	14	1	5	14.28	1.9515	12	21	19.9	12.857	
15	23	33	27.68	1.9814	1	16	35.1	15.127	15	1	7	11.40	1.9525	12	34	9.3	12.790	
16	23	35	26.49	1.9790	1	31	41.9	15.099	16	1	9	8.58	1.9536	12	46	54.7	12.723	
17	23	37	25.16	1.9767	1	46	47.0	15.070	17	1	11	5.83	1.9548	12	59	36.0	12.654	
18	23	39	23.69	1.9744	2	1	50.3	15.040	18	1	13	3.15	1.9560	13	12	13.2	12.586	
19	23	41	22.09	1.9722	2	16	51.8	15.009	19	1	15	0.55	1.9573	13	24	46.3	12.517	
20	23	43	20.35	1.9700	2	31	51.4	14.977	20	1	16	58.02	1.9585	13	37	15.2	12.446	
21	23	45	18.49	1.9681	2	46	49.0	14.943	21	1	18	55.57	1.9599	13	49	39.8	12.374	
22	23	47	16.52	1.9662	3	1	44.6	14.910	22	1	20	53.21	1.9614	14	2	0.1	12.303	
23	23	49	14.43	1.9643	+3	16	38.2	+14.875	23	1	22	50.94	1.9629	+14	14	16.1	+12.230	
JANUARY 10.									JANUARY 12.									
0	23	51	12.23	1.9625	+3	31	29.6	+14.838	0	1	24	48.76	1.9645	+14	26	27.7	+12.157	
1	23	53	9.93	1.9608	3	46	18.8	14.802	1	1	26	46.68	1.9661	14	38	34.9	12.083	
2	23	55	7.53	1.9592	4	1	5.8	14.764	2	1	28	44.69	1.9677	14	50	37.7	12.009	
3	23	57	5.03	1.9577	4	15	50.5	14.726	3	1	30	42.80	1.9694	15	2	36.0	11.934	
4	23	59	2.45	1.9563	4	30	32.9	14.687	4	1	32	41.02	1.9712	15	14	29.8	11.858	
5	0	0	59.78	1.9548	4	45	12.9	14.646	5	1	34	39.34	1.9729	15	26	19.0	11.782	
6	0	2	57.03	1.9536	4	59	50.4	14.604	6	1	36	37.77	1.9748	15	38	3.6	11.705	
7	0	4	54.21	1.9524	5	14	25.4	14.563	7	1	38	36.32	1.9768	15	49	43.6	11.628	
8	0	6	51.32	1.9513	5	28	57.9	14.519	8	1	40	34.98	1.9787	16	1	18.9	11.548	
9	0	8	48.36	1.9502	5	43	27.7	14.475	9	1	42	33.76	1.9807	16	12	49.4	11.469	
10	0	10	45.34	1.9492	5	57	54.9	14.430	10	1	44	32.66	1.9827	16	24	15.2	11.389	
11	0	12	42.26	1.9483	6	12	19.3	14.384	11	1	46	31.68	1.9847	16	35	36.1	11.308	
12	0	14	39.14	1.9476	6	26	41.0	14.338	12	1	48	30.82	1.9868	16	46	52.2	11.228	
13	0	16	35.97	1.9468	6	40	59.9	14.291	13	1	50	30.10	1.9890	16	58	3.4	11.146	
14	0	18	32.75	1.9461	6	55	15.9	14.245	14	1	52	29.50	1.9912	17	9	9.7	11.063	
15	0	20	29.50	1.9456	7	9	29.0	14.194	15	1	54	29.04	1.9934	17	20	11.0	10.981	
16	0	22	26.22	1.9451	7	23	39.2	14.144	16	1	56	28.71	1.9957	17	31	7.4	10.898	
17	0	24	22.91	1.9446	7	37	46.3	14.093	17	1	58	28.52	1.9980	17	41	58.7	10.813	
18	0	26	19.57	1.9442	7	51	50.4	14.043	18	2	0	28.47	2.0003	17	52	44.9	10.727	
19	0	28	16.21	1.9439	8	5	51.4	13.991	19	2	2	28.56	2.0026	18	3	25.9	10.641	
20	0	30	12.84	1.9437	8	19	49.3	13.938	20	2	4	28.80	2.0053	18	14	1.8	10.555	
21	0	32	9.45	1.9435	8	33	43.9	13.883	21	2	6	29.19	2.0077	18	24	32.5	10.468	
22	0	34	6.06	1.9435	8	47	35.3	13.829	22	2	8	29.72	2.0101	18	34	58.0	10.381	
23	0	36	2.67	1.9435	9	1	23.4	13.774	23	2	10	30.40	2.0127	18	45	18.2	10.292	
24	0	37	59.28	1.9435	+9	15	8.2	+13.718	24	2	12	31.24	2.0153	+18	55	33.0	+10.203	

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JANUARY 13.					JANUARY 15.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	2 12 31.24	2.0163	+18 55 33.0	+10.203	0	3 52 28.68	2.1493	+25 10 43.5	+5.200
1	2 14 32.23	2.0178	19 5 42.5	10.113	1	3 54 37.72	2.1518	25 15 52.0	5.082
2	2 16 33.38	2.0204	19 15 46.6	10.023	2	3 56 46.90	2.1543	25 20 53.3	4.963
3	2 18 34.68	2.0230	19 25 45.2	9.932	3	3 58 56.23	2.1567	25 25 47.5	4.844
4	2 20 36.14	2.0257	19 35 38.4	9.840	4	4 1 5.70	2.1590	25 30 34.6	4.725
5	2 22 37.76	2.0284	19 45 26.0	9.748	5	4 3 15.31	2.1614	25 35 14.5	4.606
6	2 24 39.55	2.0312	19 55 8.1	9.655	6	4 5 25.07	2.1638	25 39 47.2	4.484
7	2 26 41.50	2.0338	20 4 44.6	9.562	7	4 7 34.96	2.1659	25 44 12.6	4.363
8	2 28 43.61	2.0365	20 14 15.5	9.468	8	4 9 44.98	2.1681	25 48 30.8	4.243
9	2 30 45.88	2.0393	20 23 40.7	9.373	9	4 11 55.13	2.1703	25 52 41.7	4.121
10	2 32 48.33	2.0423	20 33 0.2	9.277	10	4 14 5.42	2.1725	25 56 45.3	3.999
11	2 34 50.95	2.0450	20 42 13.9	9.180	11	4 16 15.83	2.1746	26 0 41.6	3.877
12	2 36 53.73	2.0478	20 51 21.8	9.083	12	4 18 26.37	2.1767	26 4 30.5	3.753
13	2 38 56.68	2.0506	21 0 23.9	8.987	13	4 20 37.03	2.1788	26 8 12.0	3.630
14	2 40 59.80	2.0535	21 9 20.2	8.888	14	4 22 47.80	2.1805	26 11 46.1	3.507
15	2 43 3.10	2.0564	21 18 10.5	8.789	15	4 24 58.69	2.1824	26 15 12.8	3.383
16	2 45 6.57	2.0593	21 26 54.9	8.691	16	4 27 9.69	2.1843	26 18 32.0	3.258
17	2 47 10.21	2.0621	21 35 33.4	8.591	17	4 29 20.80	2.1860	26 21 43.8	3.134
18	2 48 14.02	2.0650	21 44 5.8	8.490	18	4 31 32.01	2.1878	26 24 48.1	3.009
19	2 51 18.01	2.0679	21 52 32.2	8.389	19	4 33 43.33	2.1895	26 27 44.9	2.883
20	2 53 22.17	2.0708	22 0 52.5	8.287	20	4 35 54.75	2.1911	26 30 34.1	2.758
21	2 55 26.51	2.0738	22 9 6.6	8.184	21	4 38 6.26	2.1926	26 33 15.8	2.632
22	2 57 31.03	2.0768	22 17 14.6	8.082	22	4 40 17.86	2.1941	26 35 49.9	2.505
23	2 59 35.72	2.0796	+22 25 16.4	+7.978	23	4 42 29.55	2.1955	+26 38 16.4	+2.379
JANUARY 14.					JANUARY 16.				
0	3 1 40.58	2.0825	+22 33 12.0	+7.874	0	4 44 41.32	2.1969	+26 40 35.4	+2.253
1	3 3 45.62	2.0854	22 41 1.3	7.769	1	4 46 53.18	2.1983	26 42 46.7	2.125
2	3 5 50.83	2.0883	22 48 44.3	7.663	2	4 49 5.11	2.1995	26 44 50.4	1.998
3	3 7 56.22	2.0913	22 56 20.9	7.558	3	4 51 17.12	2.2008	26 46 46.5	1.871
4	3 10 1.79	2.0943	23 3 51.2	7.451	4	4 53 29.20	2.2018	26 48 34.9	1.743
5	3 12 7.53	2.0971	23 11 15.0	7.343	5	4 55 41.34	2.2029	26 50 15.6	1.615
6	3 14 13.44	2.0999	23 18 32.4	7.236	6	4 57 53.55	2.2039	26 51 48.7	1.487
7	3 16 19.52	2.1028	23 25 43.3	7.128	7	5 0 5.81	2.2048	26 53 14.0	1.358
8	3 18 25.78	2.1058	23 32 47.7	7.018	8	5 2 18.13	2.2058	26 54 31.7	1.230
9	3 20 32.21	2.1087	23 39 45.5	6.908	9	5 4 30.50	2.2066	26 55 41.6	1.101
10	3 22 38.82	2.1116	23 46 36.7	6.798	10	5 6 42.92	2.2073	26 56 43.8	0.973
11	3 24 45.60	2.1143	23 53 21.3	6.688	11	5 8 55.38	2.2080	26 57 38.3	0.843
12	3 26 52.54	2.1171	23 59 59.3	6.578	12	5 11 7.88	2.2087	26 58 25.0	0.714
13	3 28 59.65	2.1199	24 6 30.6	6.465	13	5 13 20.42	2.2092	26 59 4.0	0.585
14	3 31 6.93	2.1228	24 12 55.1	6.353	14	5 15 32.98	2.2096	26 59 35.2	0.456
15	3 33 14.38	2.1255	24 19 12.9	6.240	15	5 17 45.57	2.2100	26 59 58.7	0.327
16	3 35 21.99	2.1283	24 25 23.9	6.126	16	5 19 58.18	2.2103	27 0 14.4	0.198
17	3 37 29.77	2.1310	24 31 28.0	6.012	17	5 22 10.81	2.2106	27 0 22.4	+0.068
18	3 39 37.71	2.1337	24 37 25.3	5.898	18	5 24 23.45	2.2108	27 0 22.6	-0.062
19	3 41 45.81	2.1363	24 43 15.7	5.783	19	5 26 36.11	2.2110	27 0 15.0	0.192
20	3 43 54.07	2.1390	24 48 59.2	5.668	20	5 28 48.77	2.2110	26 59 59.6	0.321
21	3 46 2.49	2.1417	24 54 35.8	5.552	21	5 31 1.43	2.2110	26 59 36.5	0.450
22	3 48 11.07	2.1443	25 0 5.4	5.435	22	5 33 14.09	2.2109	26 59 5.6	0.580
23	3 50 19.80	2.1468	25 5 28.0	5.318	23	5 35 26.74	2.2107	26 58 26.9	0.710
24	3 52 28.68	2.1493	+25 10 43.5	+5.200	24	5 37 39.37	2.2104	+26 57 40.4	0.840

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JANUARY 17.					JANUARY 19.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	5 37 39.37	2.2104	+26 57 40.4	-0.839	0	7 22 15.27	2.1280	+23 52 15.9	-6.744
1	5 39 51.99	2.2102	26 56 46.2	0.068	1	7 24 22.74	2.1281	23 45 27.9	6.857
2	5 42 4.59	2.2098	26 55 44.2	1.098	2	7 26 30.04	2.1202	23 38 33.1	6.908
3	5 44 17.17	2.2094	26 54 34.5	1.227	3	7 28 37.16	2.1172	23 31 31.7	7.078
4	5 46 29.72	2.2089	26 53 17.0	1.356	4	7 30 44.10	2.1141	23 24 23.7	7.188
5	5 48 42.24	2.2083	26 51 51.8	1.485	5	7 32 50.85	2.1110	23 17 9.2	7.297
6	5 50 54.72	2.2077	26 50 18.8	1.614	6	7 34 57.42	2.1079	23 9 48.1	7.406
7	5 53 7.16	2.2069	26 48 38.1	1.743	7	7 37 3.80	2.1048	23 2 20.5	7.513
8	5 55 19.55	2.2061	26 46 49.6	1.872	8	7 39 10.00	2.1018	22 54 46.5	7.620
9	5 57 31.89	2.2053	26 44 53.5	2.000	9	7 41 16.01	2.0986	22 47 6.1	7.727
10	5 59 44.18	2.2044	26 42 49.6	2.129	10	7 43 21.83	2.0955	22 39 19.3	7.833
11	6 1 56.42	2.2034	26 40 38.0	2.257	11	7 45 27.47	2.0923	22 31 26.2	7.938
12	6 4 8.59	2.2023	26 38 18.8	2.384	12	7 47 32.91	2.0891	22 23 26.8	8.042
13	6 6 20.70	2.2013	26 35 51.9	2.512	13	7 49 38.16	2.0859	22 15 21.2	8.145
14	6 8 32.74	2.2000	26 33 17.4	2.639	14	7 51 43.22	2.0828	22 7 9.4	8.248
15	6 10 44.70	2.1988	26 30 35.2	2.767	15	7 53 48.09	2.0795	21 58 51.5	8.350
16	6 12 56.59	2.1975	26 27 45.4	2.894	16	7 55 52.76	2.0762	21 50 27.4	8.452
17	6 15 8.40	2.1961	26 24 47.9	3.021	17	7 57 57.23	2.0729	21 41 57.3	8.552
18	6 17 20.12	2.1946	26 21 42.9	3.147	18	8 0 1.51	2.0698	21 33 21.2	8.652
19	6 19 31.75	2.1931	26 18 30.3	3.273	19	8 2 5.60	2.0665	21 24 39.1	8.751
20	6 21 43.29	2.1916	26 15 10.2	3.398	20	8 4 9.49	2.0633	21 15 51.1	8.849
21	6 23 54.74	2.1899	26 11 42.6	3.523	21	8 6 13.19	2.0600	21 6 57.2	8.947
22	6 26 6.08	2.1882	26 8 7.4	3.649	22	8 8 16.69	2.0567	20 57 57.5	9.043
23	6 28 17.32	2.1864	+26 4 24.7	-3.774	23	8 10 19.99	2.0534	+20 48 52.0	-9.139
JANUARY 18.					JANUARY 20.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	6 30 28.45	2.1846	+26 0 34.5	-3.898	0	8 12 23.10	2.0502	+20 39 40.8	-9.234
1	6 32 39.47	2.1828	25 56 36.9	4.023	1	8 14 26.01	2.0469	20 30 23.9	9.329
2	6 34 50.38	2.1808	25 52 31.8	4.147	2	8 16 28.73	2.0437	20 21 1.3	9.423
3	6 37 1.17	2.1788	25 48 19.3	4.269	3	8 18 31.25	2.0403	20 11 33.1	9.516
4	6 39 11.84	2.1768	25 43 59.5	4.392	4	8 20 33.57	2.0371	20 1 59.4	9.608
5	6 41 22.39	2.1748	25 39 32.3	4.514	5	8 22 35.70	2.0338	19 52 20.1	9.700
6	6 43 32.81	2.1726	25 34 57.8	4.636	6	8 24 37.63	2.0306	19 42 35.4	9.790
7	6 45 43.10	2.1703	25 30 16.0	4.758	7	8 26 39.37	2.0274	19 32 45.3	9.880
8	6 47 53.25	2.1681	25 25 26.9	4.879	8	8 28 40.92	2.0242	19 22 49.8	9.969
9	6 50 3.27	2.1658	25 20 30.5	5.000	9	8 30 42.27	2.0210	19 12 49.0	10.057
10	6 52 13.15	2.1634	25 15 26.9	5.120	10	8 32 43.44	2.0178	19 2 43.0	10.144
11	6 54 22.88	2.1610	25 10 16.1	5.239	11	8 34 44.41	2.0146	18 52 31.7	10.231
12	6 56 32.47	2.1586	25 4 58.2	5.358	12	8 36 45.19	2.0114	18 42 15.3	10.316
13	6 58 41.91	2.1561	24 59 33.1	5.478	13	8 38 45.78	2.0083	18 31 53.8	10.401
14	7 0 51.20	2.1536	24 54 0.9	5.595	14	8 40 46.19	2.0052	18 21 27.2	10.486
15	7 3 0.34	2.1510	24 48 21.7	5.712	15	8 42 46.40	2.0020	18 10 55.5	10.569
16	7 5 9.32	2.1483	24 42 35.5	5.829	16	8 44 46.43	1.9989	18 0 18.9	10.651
17	7 7 18.14	2.1457	24 36 42.2	5.947	17	8 46 46.27	1.9958	17 49 37.4	10.733
18	7 9 26.80	2.1430	24 30 41.9	6.063	18	8 48 45.93	1.9928	17 38 51.0	10.813
19	7 11 35.30	2.1403	24 24 34.7	6.178	19	8 50 45.41	1.9898	17 27 59.8	10.893
20	7 13 43.63	2.1375	24 18 20.6	6.293	20	8 52 44.71	1.9868	17 17 3.8	10.973
21	7 15 51.80	2.1348	24 11 59.6	6.407	21	8 54 43.83	1.9838	17 6 3.1	11.051
22	7 17 59.80	2.1318	24 5 31.8	6.520	22	8 56 42.77	1.9809	16 54 57.7	11.128
23	7 20 7.62	2.1289	23 58 57.2	6.633	23	8 58 41.54	1.9780	16 43 47.7	11.205
24	7 22 15.27	2.1260	+23 52 15.9	-6.744	24	9 0 40.13	1.9751	+16 32 33.1	-11.281

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JANUARY 21.					JANUARY 23.				
	h m s	s	" ' "	"		h m s	s	" ' "	"
0	9 0 40.13	1.9751	+16 32 33.1	-11.281	0	10 32 53.54	1.8866	+6 20 1.9	-13.913
1	9 2 38.55	1.9722	16 21 14.0	11.355	1	10 34 46.72	1.8861	6 6 6.1	13.946
2	9 4 36.79	1.9693	16 9 50.5	11.429	2	10 36 39.87	1.8856	5 52 8.4	13.978
3	9 6 34.87	1.9666	15 58 22.5	11.503	3	10 38 32.99	1.8852	5 38 8.8	14.010
4	9 8 32.78	1.9638	15 46 50.1	11.575	4	10 40 26.09	1.8849	5 24 7.2	14.043
5	9 10 30.53	1.9611	15 35 13.5	11.646	5	10 42 19.18	1.8847	5 10 3.7	14.073
6	9 12 28.11	1.9583	15 23 32.6	11.717	6	10 44 12.25	1.8845	4 55 58.5	14.101
7	9 14 25.53	1.9557	15 11 47.5	11.787	7	10 46 5.32	1.8845	4 41 51.6	14.129
8	9 16 22.79	1.9530	14 59 58.2	11.856	8	10 47 58.39	1.8844	4 27 43.0	14.158
9	9 18 19.89	1.9504	14 48 4.8	11.924	9	10 49 51.45	1.8843	4 13 32.7	14.184
10	9 20 16.84	1.9479	14 36 7.3	11.992	10	10 51 44.51	1.8843	3 59 20.9	14.210
11	9 22 13.64	1.9454	14 24 5.8	12.058	11	10 53 37.59	1.8848	3 45 7.5	14.235
12	9 24 10.29	1.9429	14 12 0.4	12.123	12	10 55 30.68	1.8849	3 30 52.7	14.258
13	9 26 6.79	1.9405	13 59 51.1	12.188	13	10 57 23.78	1.8853	3 16 36.5	14.282
14	9 28 3.15	1.9381	13 47 37.9	12.252	14	10 59 16.91	1.8857	3 2 18.9	14.304
15	9 29 59.36	1.9357	13 35 20.9	12.314	15	11 1 10.06	1.8861	2 48 0.0	14.326
16	9 31 55.43	1.9334	13 23 0.2	12.377	16	11 3 3.24	1.8866	2 33 39.8	14.347
17	9 33 51.37	1.9312	13 10 35.7	12.438	17	11 4 56.45	1.8872	2 19 18.4	14.366
18	9 35 47.17	1.9289	12 58 7.6	12.498	18	11 6 49.70	1.8878	2 4 55.9	14.384
19	9 37 42.84	1.9268	12 45 35.9	12.558	19	11 8 42.99	1.8886	1 50 32.3	14.403
20	9 39 38.38	1.9246	12 33 0.6	12.617	20	11 10 36.33	1.8894	1 36 7.6	14.419
21	9 41 33.79	1.9225	12 20 21.9	12.674	21	11 12 29.72	1.8903	1 21 42.0	14.435
22	9 43 29.08	1.9205	12 7 39.7	12.732	22	11 14 23.17	1.8913	1 7 15.4	14.450
23	9 45 24.25	1.9185	+11 54 54.1	-12.788	23	11 16 16.67	1.8923	+0 52 48.0	-14.464
JANUARY 22.					JANUARY 24.				
0	9 47 19.30	1.9166	+11 42 5.2	-12.843	0	11 18 10.24	1.8934	+0 38 19.7	-14.478
1	9 49 14.24	1.9147	11 29 13.0	12.897	1	11 20 3.88	1.8946	0 23 50.7	14.490
2	9 51 9.06	1.9128	11 16 17.6	12.951	2	11 21 57.59	1.8958	+0 9 20.9	14.502
3	9 53 3.78	1.9111	11 3 18.9	13.004	3	11 23 51.38	1.8972	-0 5 9.5	14.512
4	9 54 58.39	1.9093	10 50 17.1	13.056	4	11 25 45.25	1.8986	0 19 40.5	14.521
5	9 56 52.90	1.9077	10 37 12.2	13.107	5	11 27 39.21	1.9001	0 34 12.0	14.529
6	9 58 47.31	1.9060	10 24 4.3	13.157	6	11 29 33.26	1.9016	0 48 44.0	14.538
7	10 0 41.62	1.9044	10 10 53.4	13.206	7	11 31 27.40	1.9033	1 3 16.5	14.544
8	10 2 35.84	1.9029	9 57 39.6	13.254	8	11 33 21.65	1.9050	1 17 49.3	14.549
9	10 4 29.97	1.9015	9 44 22.9	13.302	9	11 35 16.00	1.9068	1 32 22.4	14.554
10	10 6 24.02	1.9001	9 31 3.4	13.348	10	11 37 10.46	1.9087	1 46 55.8	14.558
11	10 8 17.98	1.8987	9 17 41.1	13.395	11	11 39 5.04	1.9106	2 1 29.4	14.562
12	10 10 11.86	1.8974	9 4 16.0	13.440	12	11 40 59.73	1.9126	2 16 3.2	14.563
13	10 12 5.67	1.8962	8 50 48.3	13.483	13	11 42 54.55	1.9148	2 30 37.0	14.564
14	10 13 59.40	1.8950	8 37 18.0	13.527	14	11 44 49.50	1.9169	2 45 10.9	14.564
15	10 15 53.07	1.8939	8 23 45.1	13.569	15	11 46 44.58	1.9192	2 59 44.7	14.563
16	10 17 46.67	1.8928	8 10 9.7	13.611	16	11 48 39.80	1.9215	3 14 18.4	14.561
17	10 19 40.21	1.8918	7 56 31.8	13.652	17	11 50 35.16	1.9239	3 28 52.0	14.558
18	10 21 33.68	1.8908	7 42 51.5	13.692	18	11 52 30.67	1.9264	3 43 25.4	14.554
19	10 23 27.11	1.8900	7 29 8.8	13.731	19	11 54 26.33	1.9289	3 57 58.5	14.548
20	10 25 20.48	1.8892	7 15 23.8	13.768	20	11 56 22.14	1.9316	4 12 31.2	14.542
21	10 27 13.81	1.8884	7 1 36.6	13.805	21	11 58 18.12	1.9344	4 27 3.5	14.535
22	10 29 7.09	1.8877	6 47 47.2	13.842	22	12 0 14.27	1.9373	4 41 35.4	14.528
23	10 31 0.33	1.8871	6 33 55.6	13.878	23	12 2 10.59	1.9402	4 56 6.8	14.513
24	10 32 53.54	1.8866	+ 6 20 1.9	-13.913	24	12 4 7.09	1.9432	-5 10 37.6	-14.508

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JANUARY 25.					JANUARY 27.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 4 7.09	1.9432	-5 10 37.6	-14.508	0	13 42 22.35	2.1812	-16 13 36.5	-12.633
1	12 6 3.77	1.9462	5 25 7.7	14.497	1	13 44 33.42	2.1880	16 26 12.3	12.560
2	12 8 0.63	1.9493	5 39 37.2	14.485	2	13 46 44.91	2.1949	16 38 43.7	12.487
3	12 9 57.69	1.9526	5 54 5.9	14.471	3	13 48 56.81	2.2018	16 51 10.7	12.412
4	12 11 54.94	1.9558	6 8 33.7	14.457	4	13 51 9.12	2.2068	17 3 33.1	12.334
5	12 13 52.39	1.9593	6 23 0.7	14.442	5	13 53 21.86	2.2158	17 15 50.8	12.256
6	12 15 50.05	1.9628	6 37 26.7	14.425	6	13 55 35.02	2.2220	17 28 3.8	12.176
7	12 17 47.92	1.9663	6 51 51.7	14.408	7	13 57 48.61	2.2301	17 40 11.9	12.094
8	12 19 46.00	1.9699	7 6 15.6	14.389	8	14 0 2.63	2.2373	17 52 15.1	12.012
9	12 21 44.31	1.9737	7 20 38.4	14.369	9	14 2 17.08	2.2445	18 4 13.3	11.927
10	12 23 42.84	1.9774	7 34 59.9	14.348	10	14 4 31.97	2.2518	18 16 6.3	11.840
11	12 25 41.60	1.9813	7 49 20.1	14.326	11	14 6 47.30	2.2593	18 27 54.1	11.753
12	12 27 40.60	1.9853	8 3 39.0	14.303	12	14 9 3.08	2.2667	18 39 36.6	11.663
13	12 29 39.84	1.9894	8 17 56.5	14.278	13	14 11 19.30	2.2741	18 51 13.7	11.572
14	12 31 39.33	1.9935	8 32 12.4	14.253	14	14 13 35.97	2.2816	19 2 45.2	11.478
15	12 33 39.06	1.9977	8 46 26.8	14.226	15	14 15 53.09	2.2891	19 14 11.1	11.383
16	12 35 39.05	2.0020	9 0 39.5	14.198	16	14 18 10.66	2.2967	19 25 31.2	11.287
17	12 37 39.30	2.0064	9 14 50.5	14.169	17	14 20 28.69	2.3043	19 36 45.5	11.190
18	12 39 39.82	2.0108	9 28 59.8	14.139	18	14 22 47.18	2.3120	19 47 54.0	11.091
19	12 41 40.60	2.0153	9 43 7.2	14.108	19	14 25 6.13	2.3197	19 58 56.4	10.988
20	12 43 41.66	2.0200	9 57 12.7	14.075	20	14 27 25.54	2.3273	20 9 52.6	10.885
21	12 45 43.00	2.0248	10 11 16.2	14.042	21	14 29 45.41	2.3351	20 20 42.6	10.781
22	12 47 44.63	2.0295	10 25 17.7	14.007	22	14 32 5.75	2.3428	20 31 26.3	10.675
23	12 49 46.54	2.0343	-10 39 17.0	-13.970	23	14 34 26.55	2.3506	-20 42 3.6	-10.567
JANUARY 26.					JANUARY 28.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 51 48.75	2.0393	-10 53 14.1	-13.933	0	14 36 47.82	2.3584	-20 52 34.3	-10.457
1	12 53 51.26	2.0443	11 7 8.9	13.893	1	14 39 9.56	2.3663	21 2 58.4	10.345
2	12 55 54.07	2.0494	11 21 1.3	13.853	2	14 41 31.77	2.3742	21 13 15.7	10.233
3	12 57 57.19	2.0547	11 34 51.3	13.813	3	14 43 54.46	2.3821	21 23 26.2	10.117
4	13 0 0.63	2.0599	11 48 38.8	13.770	4	14 46 17.62	2.3899	21 33 29.7	9.999
5	13 2 4.38	2.0653	12 2 23.7	13.726	5	14 48 41.25	2.3978	21 43 26.1	9.880
6	13 4 8.46	2.0708	12 16 5.9	13.681	6	14 51 5.35	2.4056	21 53 15.3	9.760
7	13 6 12.87	2.0763	12 29 45.4	13.635	7	14 53 29.92	2.4135	22 2 57.3	9.638
8	13 8 17.61	2.0818	12 43 22.1	13.587	8	14 55 54.97	2.4214	22 12 31.9	9.514
9	13 10 22.68	2.0874	12 56 55.8	13.538	9	14 58 20.49	2.4293	22 21 59.0	9.388
10	13 12 28.10	2.0932	13 10 26.6	13.488	10	15 0 46.48	2.4371	22 31 18.5	9.261
11	13 14 33.86	2.0990	13 23 54.3	13.435	11	15 3 12.94	2.4450	22 40 30.3	9.132
12	13 16 39.98	2.1049	13 37 18.8	13.382	12	15 5 39.88	2.4529	22 49 34.3	9.001
13	13 18 46.45	2.1108	13 50 40.1	13.328	13	15 8 7.29	2.4607	22 58 30.4	8.868
14	13 20 53.28	2.1169	14 3 58.1	13.272	14	15 10 35.16	2.4684	23 7 18.5	8.733
15	13 23 0.48	2.1230	14 17 12.7	13.214	15	15 13 3.50	2.4762	23 15 58.4	8.597
16	13 25 8.04	2.1292	14 30 23.8	13.155	16	15 15 32.30	2.4839	23 24 30.1	8.459
17	13 27 15.98	2.1354	14 43 31.3	13.094	17	15 18 1.57	2.4917	23 32 53.5	8.319
18	13 29 24.29	2.1418	14 56 35.1	13.033	18	15 20 31.30	2.4993	23 41 8.4	8.178
19	13 31 32.99	2.1482	15 9 35.2	12.970	19	15 23 1.49	2.5070	23 49 14.8	8.035
20	13 33 42.07	2.1546	15 22 31.5	12.906	20	15 25 32.14	2.5146	23 57 12.6	7.890
21	13 35 51.54	2.1612	15 35 23.9	12.839	21	15 28 3.24	2.5221	24 5 1.6	7.743
22	13 38 1.41	2.1678	15 48 12.2	12.771	22	15 30 34.79	2.5296	24 12 41.7	7.594
23	13 40 11.68	2.1745	16 0 56.4	12.703	23	15 33 6.79	2.5371	24 20 12.9	7.444
24	13 42 22.35	2.1812	-16 13 36.5	-12.633	24	15 35 39.24	2.5445	-24 27 35.0	-7.293

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JANUARY 29.					JANUARY 31.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	15 35 39.24	2.5445	-24 27 35.0	-7.203	0	17 44 15.06	2.7566	-26 55 24.3	+ 1.538
1	15 38 12.13	2.5518	24 34 48.0	7.139	1	17 47 04.47	2.7568	26 53 46.0	1.740
2	15 40 45.45	2.5590	24 41 51.7	6.983	2	17 49 45.88	2.7568	26 51 55.5	1.943
3	15 43 19.21	2.5662	24 48 46.0	6.827	3	17 52 31.29	2.7568	26 49 52.9	2.143
4	15 45 53.39	2.5733	24 55 30.9	6.668	4	17 55 16.69	2.7564	26 47 38.3	2.344
5	15 48 28.00	2.5803	25 2 6.2	6.508	5	17 58 2.06	2.7558	26 45 11.6	2.546
6	15 51 3.03	2.5873	25 8 31.8	6.346	6	18 0 47.39	2.7552	26 42 32.8	2.747
7	15 53 38.47	2.5941	25 14 47.7	6.183	7	18 3 32.68	2.7543	26 39 42.0	2.947
8	15 56 14.32	2.6008	25 20 53.7	6.018	8	18 6 17.91	2.7532	26 36 39.2	3.148
9	15 58 50.57	2.6075	25 26 49.8	5.852	9	18 9 3.06	2.7518	26 33 24.3	3.348
10	16 1 27.22	2.6141	25 32 35.9	5.683	10	18 11 48.13	2.7504	26 29 57.4	3.548
11	16 4 4.26	2.6206	25 38 11.8	5.513	11	18 14 33.11	2.7488	26 26 18.6	3.746
12	16 6 41.69	2.6269	25 43 37.5	5.343	12	18 17 17.98	2.7468	26 22 27.9	3.944
13	16 9 19.49	2.6332	25 48 52.9	5.170	13	18 20 2.73	2.7448	26 18 25.3	4.143
14	16 11 57.67	2.6394	25 53 57.9	4.996	14	18 22 47.35	2.7426	26 14 10.8	4.340
15	16 14 36.22	2.6454	25 58 52.4	4.821	15	18 25 31.84	2.7403	26 9 44.5	4.537
16	16 17 15.12	2.6513	26 3 36.4	4.644	16	18 28 16.18	2.7376	26 5 6.4	4.733
17	16 19 54.37	2.6570	26 8 9.7	4.466	17	18 31 0.35	2.7348	26 0 16.6	4.928
18	16 22 33.96	2.6627	26 12 32.3	4.287	18	18 33 44.35	2.7318	25 55 15.1	5.122
19	16 25 13.89	2.6682	26 16 44.1	4.106	19	18 36 28.17	2.7288	25 50 2.0	5.314
20	16 27 54.14	2.6735	26 20 45.0	3.923	20	18 39 11.80	2.7255	25 44 37.4	5.507
21	16 30 34.71	2.6788	26 24 34.9	3.740	21	18 41 55.23	2.7221	25 39 1.2	5.698
22	16 33 15.59	2.6838	26 28 13.8	3.556	22	18 44 38.45	2.7185	25 33 13.6	5.888
23	16 35 56.77	2.6888	-26 31 41.6	-3.370	23	18 47 21.45	2.7147	-25 27 14.6	+ 6.078
JANUARY 30.					FEBRUARY 1.				
0	16 38 38.25	2.6937	-26 34 58.2	-3.183	0	18 50 4.21	2.7107	-25 21 4.2	+ 6.267
1	16 41 20.01	2.6983	26 38 3.5	2.995	1	18 52 46.73	2.7066	25 14 42.6	6.453
2	16 44 2.04	2.7027	26 40 57.6	2.807	2	18 55 29.00	2.7024	25 8 9.8	6.639
3	16 46 44.33	2.7070	26 43 40.3	2.616	3	18 58 11.02	2.6981	25 1 25.9	6.824
4	16 49 26.88	2.7113	26 46 11.5	2.425	4	19 0 52.77	2.6935	24 54 30.9	7.008
5	16 52 9.68	2.7153	26 48 31.3	2.233	5	19 3 34.24	2.6888	24 47 25.0	7.189
6	16 54 52.71	2.7190	26 50 39.5	2.040	6	19 6 15.42	2.6839	24 40 8.2	7.369
7	16 57 35.96	2.7226	26 52 36.1	1.846	7	19 8 56.31	2.6790	24 32 40.7	7.548
8	17 0 19.42	2.7261	26 54 21.0	1.652	8	19 11 36.90	2.6740	24 25 2.4	7.727
9	17 3 3.09	2.7295	26 55 54.3	1.458	9	19 14 17.19	2.6688	24 17 13.5	7.903
10	17 5 46.96	2.7326	26 57 15.9	1.261	10	19 16 57.16	2.6635	24 9 14.0	8.078
11	17 8 31.00	2.7355	26 58 25.6	1.063	11	19 19 36.81	2.6581	24 1 4.1	8.251
12	17 11 15.22	2.7383	26 59 23.5	0.866	12	19 22 16.13	2.6525	23 52 43.9	8.423
13	17 13 59.60	2.7409	27 0 9.5	0.668	13	19 24 55.11	2.6468	23 44 13.4	8.593
14	17 16 44.13	2.7433	27 0 43.6	0.469	14	19 27 33.75	2.6411	23 35 32.8	8.761
15	17 19 28.79	2.7454	27 1 5.8	0.270	15	19 30 12.04	2.6352	23 26 42.1	8.928
16	17 22 13.58	2.7474	27 1 16.0	-0.070	16	19 32 49.97	2.6292	23 17 41.5	9.093
17	17 24 58.48	2.7493	27 1 14.2	+0.130	17	19 35 27.54	2.6232	23 8 31.0	9.257
18	17 27 43.49	2.7509	27 1 0.4	0.330	18	19 38 4.75	2.6170	22 59 10.7	9.418
19	17 30 28.59	2.7523	27 0 34.6	0.531	19	19 40 41.58	2.6108	22 49 40.8	9.578
20	17 33 13.77	2.7536	26 59 56.7	0.733	20	19 43 18.04	2.6044	22 40 1.4	9.735
21	17 35 59.02	2.7547	26 59 6.7	0.933	21	19 45 54.11	2.5980	22 30 12.6	9.892
22	17 38 44.33	2.7555	26 58 4.7	1.135	22	19 48 29.80	2.5915	22 20 14.4	10.047
23	17 41 29.68	2.7561	26 56 50.5	1.337	23	19 51 5.09	2.5849	22 10 7.0	10.198
24	17 44 15.06	2.7566	-26 55 24.3	+1.538	24	19 53 39.99	2.5783	-21 59 50.6	+10.348

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
FEBRUARY 2.					FEBRUARY 4.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	19 53 39.99	2.5783	-21 59 50.6	+10.348	0	21 49 21.48	2.2475	-11 28 43.7	+15.143
1	19 56 14.49	2.5717	21 49 25.2	10.498	1	21 51 36.15	2.2414	11 13 33.6	15.193
2	19 58 48.59	2.5649	21 38 50.9	10.644	2	21 53 50.45	2.2353	10 58 20.6	15.240
3	20 1 22.28	2.5581	21 28 7.9	10.788	3	21 56 4.89	2.2294	10 43 4.8	15.286
4	20 3 55.56	2.5513	21 17 16.3	10.932	4	21 58 17.98	2.2236	10 27 46.3	15.330
5	20 6 28.43	2.5443	21 6 16.1	11.073	5	22 0 31.22	2.2178	10 12 25.2	15.372
6	20 9 0.88	2.5373	20 55 7.6	11.210	6	22 2 44.11	2.2120	9 57 1.7	15.411
7	20 11 32.91	2.5303	20 43 50.9	11.347	7	22 4 56.66	2.2063	9 41 35.9	15.449
8	20 14 4.52	2.5233	20 32 26.0	11.482	8	22 7 8.87	2.2006	9 26 7.8	15.486
9	20 16 35.71	2.5163	20 20 53.1	11.615	9	22 9 20.75	2.1953	9 10 37.6	15.519
10	20 19 6.48	2.5093	20 9 12.2	11.746	10	22 11 32.30	2.1898	8 55 5.5	15.552
11	20 21 36.82	2.5021	19 57 23.6	11.873	11	22 13 43.52	2.1843	8 39 31.4	15.583
12	20 24 6.73	2.4949	19 45 27.4	12.000	12	22 15 54.42	2.1791	8 23 55.5	15.612
13	20 26 36.21	2.4878	19 33 23.6	12.124	13	22 18 5.01	2.1738	8 8 18.0	15.638
14	20 29 5.27	2.4807	19 21 12.5	12.246	14	22 20 15.28	2.1687	7 52 38.9	15.664
15	20 31 33.89	2.4734	19 8 54.1	12.366	15	22 22 25.25	2.1636	7 36 58.3	15.688
16	20 34 2.08	2.4663	18 56 28.6	12.484	16	22 24 34.91	2.1585	7 21 16.4	15.709
17	20 36 29.84	2.4591	18 43 56.0	12.600	17	22 26 44.27	2.1536	7 5 33.2	15.730
18	20 38 57.17	2.4518	18 31 16.6	12.713	18	22 28 53.34	2.1488	6 49 48.8	15.748
19	20 41 24.06	2.4446	18 18 30.4	12.825	19	22 31 2.12	2.1440	6 34 3.4	15.765
20	20 43 50.52	2.4374	18 5 37.6	12.934	20	22 33 10.62	2.1393	6 18 17.0	15.780
21	20 46 16.55	2.4303	17 52 38.3	13.042	21	22 35 18.83	2.1346	6 2 29.8	15.793
22	20 48 42.15	2.4231	17 39 32.6	13.147	22	22 37 26.77	2.1301	5 46 41.8	15.806
23	20 51 7.32	2.4158	-17 26 20.7	+13.249	23	22 39 34.44	2.1257	-5 30 53.2	+15.815
FEBRUARY 3.					FEBRUARY 5.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	20 53 32.05	2.4087	-17 13 2.7	+13.351	0	22 41 41.85	2.1213	-5 15 4.0	+15.823
1	20 55 56.36	2.4016	16 59 38.6	13.450	1	22 43 48.99	2.1169	4 59 14.4	15.830
2	20 58 20.24	2.3945	16 46 8.7	13.546	2	22 45 55.88	2.1128	4 43 24.4	15.836
3	21 0 43.70	2.3874	16 32 33.1	13.640	3	22 48 2.52	2.1086	4 27 34.1	15.840
4	21 3 6.73	2.3803	16 18 51.9	13.733	4	22 50 8.91	2.1044	4 11 43.6	15.843
5	21 5 29.34	2.3733	16 5 5.2	13.823	5	22 52 15.05	2.1004	3 55 53.0	15.843
6	21 7 51.52	2.3663	15 51 13.2	13.911	6	22 54 20.96	2.0966	3 40 2.5	15.841
7	21 10 13.29	2.3593	15 37 15.9	13.998	7	22 56 26.64	2.0928	3 24 12.1	15.839
8	21 12 34.64	2.3523	15 23 13.5	14.082	8	22 58 32.09	2.0890	3 8 21.8	15.836
9	21 14 55.57	2.3454	15 9 6.1	14.163	9	23 0 37.32	2.0853	2 52 31.8	15.830
10	21 17 16.09	2.3386	14 54 53.9	14.243	10	23 2 42.33	2.0818	2 36 42.2	15.823
11	21 19 36.20	2.3318	14 40 37.0	14.320	11	23 4 47.13	2.0783	2 20 53.0	15.816
12	21 21 55.90	2.3249	14 26 15.5	14.396	12	23 6 51.72	2.0748	2 5 4.3	15.806
13	21 24 15.19	2.3182	14 11 49.5	14.469	13	23 8 56.11	2.0715	1 49 16.3	15.794
14	21 26 34.08	2.3115	13 57 19.2	14.540	14	23 11 0.30	2.0682	1 33 29.0	15.782
15	21 28 52.57	2.3048	13 42 44.7	14.610	15	23 13 4.29	2.0649	1 17 42.5	15.768
16	21 31 10.66	2.2983	13 28 6.0	14.678	16	23 15 8.09	2.0618	1 1 56.8	15.753
17	21 33 28.36	2.2918	13 13 23.4	14.743	17	23 17 11.71	2.0588	0 46 12.1	15.737
18	21 35 45.67	2.2853	12 58 36.9	14.806	18	23 19 15.15	2.0559	0 30 28.4	15.718
19	21 38 2.59	2.2788	12 43 46.7	14.867	19	23 21 18.42	2.0531	-0 14 45.9	15.698
20	21 40 19.12	2.2723	12 28 52.9	14.927	20	23 23 21.52	2.0503	+0 0 55.4	15.678
21	21 42 35.27	2.2661	12 13 55.5	14.984	21	23 25 24.45	2.0475	0 16 35.5	15.658
22	21 44 51.05	2.2598	11 58 54.8	15.039	22	23 27 27.22	2.0449	0 32 14.3	15.634
23	21 47 6.45	2.2536	11 43 50.8	15.093	23	23 29 29.84	2.0423	0 47 51.6	15.609
24	21 49 21.48	2.2475	-11 28 43.7	+15.143	24	23 31 32.30	2.0398	+1 3 27.4	+15.583

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
FEBRUARY 6.					FEBRUARY 8.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 31 32.30	2.0398	+ 1 3 27.4	+15.583	0	1 8 0.66	2.0061	+12 40 52.2	+13.100
1	23 33 34.62	2.0375	1 19 1.6	15.557	1	1 10 1.05	2.0069	12 53 56.0	13.026
2	23 35 36.80	2.0352	1 34 54.2	15.529	2	1 12 1.49	2.0078	13 6 55.3	12.951
3	23 37 38.84	2.0329	1 50 5.1	15.499	3	1 14 1.99	2.0088	13 19 50.1	12.876
4	23 39 40.75	2.0308	2 5 34.1	15.468	4	1 16 2.55	2.0098	13 32 40.4	12.800
5	23 41 42.53	2.0287	2 21 1.3	15.437	5	1 18 3.17	2.0109	13 45 26.1	12.723
6	23 43 44.19	2.0267	2 36 26.5	15.403	6	1 20 3.86	2.0121	13 58 7.1	12.644
7	23 45 45.73	2.0248	2 51 49.7	15.370	7	1 22 4.62	2.0133	14 10 43.4	12.566
8	23 47 47.16	2.0229	3 7 10.9	15.335	8	1 24 5.45	2.0144	14 23 15.0	12.488
9	23 49 48.48	2.0211	3 22 29.9	15.298	9	1 26 6.35	2.0157	14 35 41.9	12.408
10	23 51 49.69	2.0193	3 37 46.7	15.261	10	1 28 7.33	2.0170	14 48 3.9	12.327
11	23 53 50.80	2.0178	3 53 1.2	15.222	11	1 30 8.39	2.0183	15 0 21.1	12.245
12	23 55 51.82	2.0163	4 8 13.3	15.182	12	1 32 9.53	2.0198	15 12 33.3	12.163
13	23 57 52.75	2.0148	4 23 23.0	15.141	13	1 34 10.76	2.0212	15 24 40.6	12.080
14	23 59 53.69	2.0133	4 38 30.2	15.099	14	1 36 12.07	2.0227	15 36 42.9	11.997
15	0 1 54.35	2.0120	4 53 34.9	15.057	15	1 38 13.48	2.0243	15 48 40.2	11.913
16	0 3 55.03	2.0108	5 8 37.0	15.013	16	1 40 14.98	2.0258	16 0 32.5	11.828
17	0 5 55.64	2.0096	5 23 36.4	14.968	17	1 42 16.58	2.0274	16 12 19.6	11.742
18	0 7 56.18	2.0085	5 38 33.1	14.921	18	1 44 18.27	2.0291	16 24 1.5	11.656
19	0 9 56.66	2.0074	5 53 26.9	14.873	19	1 46 20.07	2.0308	16 35 38.3	11.569
20	0 11 57.07	2.0064	6 8 17.9	14.826	20	1 48 21.97	2.0325	16 47 9.8	11.481
21	0 13 57.43	2.0056	6 23 6.0	14.777	21	1 50 23.97	2.0342	16 58 36.0	11.393
22	0 15 57.74	2.0048	6 37 51.1	14.727	22	1 52 26.07	2.0360	17 9 56.9	11.303
23	0 17 58.00	2.0039	+ 6 52 33.2	+14.675	23	1 54 28.29	2.0379	+17 21 12.4	+11.213
FEBRUARY 7.					FEBRUARY 9.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	0 19 58.21	2.0033	+ 7 7 12.1	+14.623	0	1 56 30.62	2.0398	+17 32 22.5	+11.123
1	0 21 58.39	2.0027	7 21 47.9	14.569	1	1 58 33.06	2.0417	17 43 27.2	11.033
2	0 23 58.53	2.0021	7 36 20.4	14.515	2	2 0 35.62	2.0436	17 54 28.4	10.941
3	0 25 58.64	2.0017	7 50 49.7	14.461	3	2 2 38.29	2.0455	18 5 20.1	10.848
4	0 27 58.73	2.0013	8 5 15.7	14.405	4	2 4 41.08	2.0476	18 16 8.2	10.755
5	0 29 58.79	2.0008	8 19 38.3	14.348	5	2 6 44.00	2.0496	18 26 50.7	10.662
6	0 31 58.83	2.0006	8 33 57.4	14.289	6	2 8 47.03	2.0516	18 37 27.6	10.568
7	0 33 58.86	2.0003	8 48 13.0	14.231	7	2 10 50.19	2.0538	18 47 58.8	10.473
8	0 35 58.87	2.0002	9 2 25.1	14.171	8	2 12 53.48	2.0559	18 58 24.3	10.377
9	0 37 58.88	2.0001	9 16 33.5	14.110	9	2 14 56.90	2.0580	19 8 44.0	10.281
10	0 39 58.88	2.0001	9 30 38.3	14.049	10	2 17 0.44	2.0602	19 18 58.0	10.184
11	0 41 58.89	2.0002	9 44 39.4	13.987	11	2 19 4.12	2.0624	19 29 6.1	10.086
12	0 43 58.90	2.0003	9 58 36.7	13.923	12	2 21 7.93	2.0646	19 39 8.3	9.988
13	0 45 58.92	2.0004	10 12 30.2	13.859	13	2 23 11.87	2.0668	19 49 4.7	9.890
14	0 47 58.95	2.0006	10 26 19.8	13.794	14	2 25 15.95	2.0691	19 58 55.1	9.790
15	0 49 58.99	2.0008	10 40 5.5	13.728	15	2 27 20.16	2.0713	20 8 39.5	9.690
16	0 51 59.05	2.0013	10 53 47.2	13.662	16	2 29 24.51	2.0736	20 18 17.9	9.590
17	0 53 59.14	2.0017	11 7 24.9	13.595	17	2 31 28.99	2.0759	20 27 50.3	9.489
18	0 55 59.25	2.0021	11 20 58.6	13.527	18	2 33 33.62	2.0783	20 37 16.6	9.388
19	0 57 59.39	2.0027	11 34 28.1	13.458	19	2 35 38.38	2.0805	20 46 36.8	9.285
20	0 59 59.57	2.0033	11 47 53.5	13.388	20	2 37 43.28	2.0829	20 55 50.8	9.182
21	1 1 59.78	2.0038	12 1 14.6	13.317	21	2 39 48.33	2.0853	21 4 58.6	9.078
22	1 4 0.03	2.0045	12 14 31.5	13.245	22	2 41 53.51	2.0876	21 14 0.2	8.975
23	1 6 0.32	2.0053	12 27 44.0	13.173	23	2 43 58.84	2.0900	21 22 55.6	8.870
24	1 8 0.66	2.0061	+12 40 52.2	+13.100	24	2 46 4.31	2.0923	+21 31 44.6	+ 8.764

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
FEBRUARY 10.					FEBRUARY 12.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	2 46 4.31	2.0923	+21 31 44.6	+8.764	0	4 29 7.05	2.1928	+26 21 39.5	+3.148
1	2 48 9.92	2.0948	21 40 27.3	8.659	1	4 31 18.65	2.1940	26 24 44.6	3.022
2	2 50 15.68	2.0972	21 49 3.7	8.553	2	4 33 30.33	2.1953	26 27 42.1	2.895
3	2 52 21.58	2.0996	21 57 33.7	8.446	3	4 35 42.09	2.1966	26 30 32.0	2.769
4	2 54 27.63	2.1020	22 5 57.2	8.338	4	4 37 53.92	2.1978	26 33 14.4	2.643
5	2 56 33.82	2.1044	22 14 14.3	8.231	5	4 40 5.82	2.1988	26 35 49.1	2.514
6	2 58 40.16	2.1068	22 22 24.9	8.122	6	4 42 17.78	2.1999	26 38 16.1	2.387
7	3 0 46.64	2.1093	22 30 28.9	8.013	7	4 44 29.81	2.2010	26 40 35.5	2.259
8	3 2 53.26	2.1116	22 38 26.4	7.903	8	4 46 41.90	2.2019	26 42 47.2	2.132
9	3 5 0.03	2.1140	22 46 17.3	7.793	9	4 48 54.04	2.2028	26 44 51.3	2.004
10	3 7 6.94	2.1164	22 54 1.6	7.683	10	4 51 6.24	2.2037	26 46 47.7	1.876
11	3 9 14.00	2.1188	23 1 39.2	7.572	11	4 53 18.48	2.2044	26 48 36.4	1.748
12	3 11 21.20	2.1212	23 9 10.2	7.460	12	4 55 30.77	2.2053	26 50 17.4	1.619
13	3 13 28.54	2.1236	23 16 34.4	7.348	13	4 57 43.11	2.2059	26 51 50.7	1.491
14	3 15 36.03	2.1260	23 23 51.9	7.235	14	4 59 55.48	2.2065	26 53 16.3	1.363
15	3 17 43.66	2.1283	23 31 2.6	7.122	15	5 2 7.89	2.2071	26 54 34.2	1.233
16	3 19 51.42	2.1306	23 38 6.5	7.008	16	5 4 20.33	2.2076	26 55 44.3	1.104
17	3 21 59.33	2.1330	23 45 3.6	6.894	17	5 6 32.80	2.2081	26 56 46.7	0.975
18	3 24 7.38	2.1353	23 51 53.8	6.779	18	5 8 45.30	2.2085	26 57 41.4	0.847
19	3 26 15.57	2.1376	23 58 37.1	6.664	19	5 10 57.82	2.2088	26 58 28.3	0.718
20	3 28 23.89	2.1399	24 5 13.5	6.549	20	5 13 10.36	2.2091	26 59 7.5	0.589
21	3 30 32.36	2.1423	24 11 43.0	6.433	21	5 15 22.91	2.2093	26 59 39.0	0.460
22	3 32 40.96	2.1444	24 18 5.5	6.317	22	5 17 35.47	2.2094	27 0 2.7	0.330
23	3 34 49.69	2.1467	+24 24 21.0	+6.199	23	5 19 48.04	2.2096	+27 0 18.6	+0.201
FEBRUARY 11.					FEBRUARY 13.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	3 36 58.56	2.1489	+24 30 29.4	+6.082	0	5 22 0.62	2.2097	+27 0 26.8	+0.072
1	3 39 7.56	2.1511	24 36 30.8	5.964	1	5 24 13.20	2.2096	27 0 27.2	-0.058
2	3 41 16.69	2.1533	24 42 25.1	5.846	2	5 26 25.77	2.2095	27 0 19.9	0.196
3	3 43 25.95	2.1554	24 48 12.3	5.727	3	5 28 38.34	2.2094	27 0 4.9	0.315
4	3 45 35.34	2.1576	24 53 52.3	5.608	4	5 30 50.90	2.2092	26 59 42.1	0.445
5	3 47 44.86	2.1597	24 59 25.2	5.488	5	5 33 3.44	2.2088	26 59 11.5	0.574
6	3 49 54.50	2.1617	25 4 50.9	5.368	6	5 35 15.96	2.2086	26 58 33.2	0.703
7	3 52 4.26	2.1638	25 10 9.4	5.248	7	5 37 28.47	2.2083	26 57 47.2	0.832
8	3 54 14.15	2.1658	25 15 20.7	5.128	8	5 39 40.95	2.2078	26 56 53.4	0.961
9	3 56 24.15	2.1677	25 20 24.7	5.006	9	5 41 53.40	2.2073	26 55 51.9	1.090
10	3 58 34.27	2.1697	25 25 21.4	4.884	10	5 44 5.82	2.2067	26 54 42.6	1.218
11	4 0 44.51	2.1716	25 30 10.8	4.763	11	5 46 18.20	2.2060	26 53 25.7	1.347
12	4 2 54.86	2.1734	25 34 52.9	4.640	12	5 48 30.54	2.2053	26 52 1.0	1.476
13	4 5 5.32	2.1753	25 39 27.6	4.518	13	5 50 42.84	2.2046	26 50 28.6	1.604
14	4 7 15.89	2.1771	25 43 55.0	4.395	14	5 52 55.09	2.2038	26 48 48.5	1.732
15	4 9 26.57	2.1788	25 48 15.0	4.272	15	5 55 7.30	2.2030	26 47 0.8	1.859
16	4 11 37.35	2.1805	25 52 27.6	4.148	16	5 57 19.45	2.2020	26 45 5.4	1.988
17	4 13 48.23	2.1822	25 56 32.8	4.024	17	5 59 31.54	2.2010	26 43 2.3	2.116
18	4 15 59.21	2.1838	26 0 30.5	3.900	18	6 1 43.57	2.2000	26 40 51.5	2.243
19	4 18 10.29	2.1855	26 4 20.8	3.776	19	6 3 55.54	2.1990	26 38 33.1	2.370
20	4 20 21.47	2.1870	26 8 3.6	3.651	20	6 6 7.45	2.1978	26 36 7.1	2.498
21	4 22 32.73	2.1884	26 11 38.9	3.525	21	6 8 19.28	2.1966	26 33 33.4	2.625
22	4 24 44.08	2.1899	26 15 6.6	3.399	22	6 10 31.04	2.1953	26 30 52.1	2.751
23	4 26 55.52	2.1914	26 18 26.8	3.274	23	6 12 42.72	2.1940	26 28 3.3	2.877
24	4 29 7.05	2.1928	+26 21 39.5	+3.148	24	6 14 54.32	2.1926	+26 25 6.9	-3.003

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
FEBRUARY 14.					FEBRUARY 16.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	6 14 54.32	2.1926	+26 25 6.9	-3.003	0	7 57 42.94	2.0787	+21 43 5.2	-8.554
1	6 17 5.83	2.1912	26 22 2.9	3.129	1	7 59 47.57	2.0758	21 34 28.9	8.656
2	6 19 17.26	2.1898	26 18 51.4	3.254	2	8 1 52.03	2.0728	21 25 46.5	8.757
3	6 21 28.60	2.1882	26 15 32.4	3.380	3	8 3 56.31	2.0699	21 16 58.1	8.857
4	6 23 39.84	2.1866	26 12 5.8	3.506	4	8 6 0.42	2.0670	21 8 3.7	8.956
5	6 25 50.99	2.1850	26 8 31.7	3.630	5	8 8 4.35	2.0640	20 59 3.4	9.055
6	6 28 2.04	2.1833	26 4 50.2	3.754	6	8 10 8.10	2.0611	20 49 57.1	9.153
7	6 30 12.98	2.1814	26 1 1.2	3.878	7	8 12 11.68	2.0582	20 40 45.0	9.250
8	6 32 23.81	2.1797	25 57 4.8	4.002	8	8 14 15.08	2.0552	20 31 27.1	9.347
9	6 34 34.54	2.1779	25 53 1.0	4.125	9	8 16 18.30	2.0522	20 22 3.4	9.443
10	6 36 45.16	2.1760	25 48 49.8	4.248	10	8 18 21.34	2.0493	20 12 34.0	9.538
11	6 38 55.66	2.1740	25 44 31.3	4.370	11	8 20 24.21	2.0464	20 2 58.9	9.633
12	6 41 6.04	2.1720	25 40 5.4	4.493	12	8 22 26.91	2.0435	19 53 18.1	9.727
13	6 43 16.30	2.1700	25 35 32.2	4.614	13	8 24 29.43	2.0406	19 43 31.7	9.819
14	6 45 26.44	2.1679	25 30 51.7	4.736	14	8 26 31.78	2.0377	19 33 39.8	9.911
15	6 47 36.45	2.1658	25 26 3.9	4.857	15	8 28 33.95	2.0348	19 23 42.4	10.003
16	6 49 46.34	2.1637	25 21 8.9	4.977	16	8 30 35.95	2.0319	19 13 39.5	10.093
17	6 51 56.09	2.1614	25 16 6.7	5.097	17	8 32 37.78	2.0290	19 3 31.2	10.183
18	6 54 5.71	2.1593	25 10 57.3	5.217	18	8 34 39.43	2.0261	18 53 17.6	10.272
19	6 56 15.20	2.1570	25 5 40.7	5.336	19	8 36 40.91	2.0233	18 42 58.6	10.361
20	6 58 24.55	2.1547	25 0 17.0	5.454	20	8 38 42.23	2.0206	18 32 34.3	10.448
21	7 0 33.76	2.1523	24 54 46.2	5.573	21	8 40 43.38	2.0178	18 22 4.8	10.535
22	7 2 42.82	2.1498	24 49 8.3	5.690	22	8 42 44.36	2.0149	18 11 30.1	10.622
23	7 4 51.74	2.1475	+24 43 23.4	-5.808	23	8 44 45.17	2.0122	+18 0 50.2	-10.707
FEBRUARY 15.					FEBRUARY 17.				
0	7 7 0.52	2.1450	+24 37 31.4	-5.925	0	8 46 45.82	2.0094	+17 50 5.3	-10.790
1	7 9 9.14	2.1425	24 31 32.4	6.041	1	8 48 46.30	2.0067	17 39 15.4	10.874
2	7 11 17.62	2.1401	24 25 26.5	6.156	2	8 50 46.62	2.0040	17 28 20.4	10.958
3	7 13 25.95	2.1375	24 19 13.7	6.271	3	8 52 46.78	2.0013	17 17 20.5	11.039
4	7 15 34.12	2.1348	24 12 54.0	6.386	4	8 54 46.78	1.9987	17 6 15.7	11.120
5	7 17 42.13	2.1322	24 6 27.4	6.500	5	8 56 46.62	1.9961	16 55 6.1	11.200
6	7 19 49.98	2.1296	23 59 54.0	6.613	6	8 58 46.31	1.9935	16 43 51.7	11.280
7	7 21 57.68	2.1270	23 53 13.8	6.727	7	9 0 45.84	1.9909	16 32 32.5	11.359
8	7 24 5.22	2.1243	23 46 26.8	6.839	8	9 2 45.22	1.9883	16 21 8.6	11.437
9	7 26 12.59	2.1215	23 39 33.1	6.951	9	9 4 44.44	1.9858	16 9 40.1	11.513
10	7 28 19.80	2.1188	23 32 32.7	7.062	10	9 6 43.51	1.9833	15 58 7.0	11.590
11	7 30 26.84	2.1160	23 25 25.7	7.173	11	9 8 42.44	1.9809	15 46 29.3	11.666
12	7 32 33.72	2.1133	23 18 12.0	7.283	12	9 10 41.22	1.9785	15 34 47.1	11.740
13	7 34 40.43	2.1104	23 10 51.8	7.392	13	9 12 39.86	1.9761	15 23 0.5	11.813
14	7 36 46.97	2.1077	23 3 25.0	7.501	14	9 14 38.35	1.9737	15 11 9.5	11.887
15	7 38 53.35	2.1048	22 55 51.7	7.609	15	9 16 36.70	1.9713	14 59 14.1	11.959
16	7 40 59.55	2.1019	22 48 11.9	7.717	16	9 18 34.91	1.9691	14 47 14.4	12.030
17	7 43 5.58	2.0991	22 40 25.7	7.823	17	9 20 32.99	1.9668	14 35 10.5	12.100
18	7 45 11.44	2.0963	22 32 33.1	7.930	18	9 22 30.93	1.9646	14 23 2.4	12.170
19	7 47 17.13	2.0933	22 24 34.1	8.036	19	9 24 28.74	1.9624	14 10 50.1	12.238
20	7 49 22.64	2.0904	22 16 28.8	8.141	20	9 26 26.42	1.9603	13 58 33.8	12.306
21	7 51 27.98	2.0875	22 8 17.2	8.245	21	9 28 23.97	1.9582	13 46 13.4	12.373
22	7 53 33.14	2.0846	21 59 59.4	8.348	22	9 30 21.40	1.9561	13 33 49.0	12.439
23	7 55 38.13	2.0817	21 51 35.4	8.452	23	9 32 18.70	1.9540	13 21 20.7	12.504
24	7 57 42.94	2.0787	+21 43 5.2	-8.554	24	9 34 15.88	1.9520	+13 8 48.5	-12.568

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
FEBRUARY 18.					FEBRUARY 20.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	9 34 15.88	1.9520	+13 8 48.5	-12.568	0	11 6 36.22	1.9168	+2 8 40.6	-14.576
1	9 36 12.94	1.9501	12 56 12.5	12.632	1	11 8 31.25	1.9175	1 54 5.5	14.593
2	9 38 9.89	1.9483	12 43 32.7	12.664	2	11 10 26.32	1.9183	1 39 29.4	14.611
3	9 40 6.73	1.9464	12 30 49.2	12.756	3	11 12 21.45	1.9193	1 24 52.2	14.628
4	9 42 3.46	1.9446	12 18 2.0	12.817	4	11 14 16.63	1.9201	1 10 14.1	14.643
5	9 44 0.08	1.9428	12 5 11.2	12.877	5	11 16 11.86	1.9211	0 55 35.1	14.657
6	9 45 56.59	1.9410	11 52 16.8	12.936	6	11 18 7.16	1.9222	0 40 55.3	14.669
7	9 47 53.00	1.9393	11 39 18.9	12.994	7	11 20 2.52	1.9233	0 26 14.8	14.681
8	9 49 49.31	1.9378	11 26 17.5	13.052	8	11 21 57.95	1.9245	+0 11 33.6	14.692
9	9 51 45.53	1.9362	11 13 12.7	13.108	9	11 23 53.46	1.9258	-0 3 8.2	14.702
10	9 53 41.65	1.9346	11 0 4.6	13.163	10	11 25 49.04	1.9271	0 17 50.6	14.711
11	9 55 37.68	1.9331	10 46 53.2	13.218	11	11 27 44.71	1.9285	0 32 33.5	14.719
12	9 57 33.62	1.9317	10 33 38.5	13.271	12	11 29 40.46	1.9299	0 47 16.9	14.726
13	9 59 29.48	1.9303	10 20 20.7	13.323	13	11 31 36.30	1.9315	1 2 0.6	14.731
14	10 1 25.25	1.9288	10 6 59.7	13.376	14	11 33 32.24	1.9332	1 16 44.6	14.736
15	10 3 20.94	1.9276	9 53 35.6	13.427	15	11 35 28.28	1.9348	1 31 28.9	14.740
16	10 5 16.56	1.9264	9 40 8.5	13.476	16	11 37 24.42	1.9365	1 46 13.4	14.743
17	10 7 12.11	1.9252	9 26 38.5	13.525	17	11 59 20.66	1.9383	2 0 58.0	14.743
18	10 9 7.58	1.9240	9 13 5.5	13.573	18	11 41 17.02	1.9403	2 15 42.6	14.743
19	10 11 2.99	1.9230	8 59 29.7	13.621	19	11 43 13.50	1.9423	2 30 27.2	14.743
20	10 12 58.34	1.9220	8 45 51.0	13.668	20	11 45 10.09	1.9442	2 45 11.7	14.740
21	10 14 53.63	1.9210	8 32 9.6	13.713	21	11 47 6.80	1.9463	2 59 56.0	14.738
22	10 16 48.86	1.9201	8 18 25.5	13.757	22	11 49 3.65	1.9486	3 14 40.2	14.734
23	10 18 44.04	1.9192	+ 8 4 38.8	-13.800	23	11 51 0.63	1.9508	-3 29 24.1	-14.728
FEBRUARY 19.					FEBRUARY 21.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	10 20 39.16	1.9183	+ 7 50 49.5	-13.843	0	11 52 57.74	1.9531	-3 44 7.6	-14.722
1	10 22 34.24	1.9176	7 36 57.7	13.884	1	11 54 55.00	1.9555	3 58 50.7	14.714
2	10 24 29.27	1.9169	7 23 3.4	13.925	2	11 56 52.40	1.9579	4 13 33.3	14.706
3	10 26 24.27	1.9163	7 9 6.7	13.965	3	11 58 49.95	1.9604	4 28 15.4	14.696
4	10 28 19.23	1.9157	6 55 7.6	14.003	4	12 0 47.65	1.9630	4 42 56.8	14.685
5	10 30 14.15	1.9152	6 41 6.3	14.041	5	12 2 45.51	1.9658	4 57 37.6	14.673
6	10 32 9.05	1.9148	6 27 2.7	14.078	6	12 4 43.54	1.9686	5 12 17.6	14.660
7	10 34 3.92	1.9143	6 12 56.9	14.114	7	12 6 41.74	1.9713	5 26 56.8	14.646
8	10 35 58.76	1.9139	5 58 49.0	14.149	8	12 8 40.10	1.9742	5 41 35.1	14.631
9	10 37 53.59	1.9137	5 44 39.0	14.183	9	12 10 38.64	1.9772	5 56 12.5	14.614
10	10 39 48.40	1.9134	5 30 27.0	14.217	10	12 12 37.36	1.9803	6 10 48.8	14.596
11	10 41 43.20	1.9133	5 16 13.0	14.248	11	12 14 36.27	1.9833	6 25 24.0	14.577
12	10 43 37.99	1.9132	5 1 57.2	14.279	12	12 16 35.36	1.9865	6 39 58.0	14.557
13	10 45 32.78	1.9132	4 47 39.5	14.309	13	12 18 34.65	1.9898	6 54 30.8	14.535
14	10 47 27.57	1.9132	4 33 20.1	14.338	14	12 20 34.13	1.9931	7 9 2.2	14.513
15	10 49 22.36	1.9133	4 18 58.9	14.368	15	12 22 33.82	1.9965	7 23 32.3	14.489
16	10 51 17.16	1.9133	4 4 36.0	14.394	16	12 24 33.71	1.9999	7 38 0.9	14.463
17	10 53 11.96	1.9135	3 50 11.6	14.420	17	12 26 33.81	2.0035	7 52 27.9	14.438
18	10 55 6.78	1.9138	3 35 45.6	14.446	18	12 28 34.13	2.0071	8 6 53.4	14.411
19	10 57 1.62	1.9142	3 21 18.1	14.470	19	12 30 34.66	2.0108	8 21 17.2	14.382
20	10 58 56.48	1.9146	3 6 49.2	14.493	20	12 32 35.42	2.0146	8 35 39.2	14.351
21	11 0 51.37	1.9150	2 52 19.0	14.515	21	12 34 36.41	2.0184	8 49 59.3	14.320
22	11 2 46.28	1.9155	2 37 47.4	14.537	22	12 36 37.63	2.0223	9 4 17.6	14.288
23	11 4 41.23	1.9162	2 23 14.6	14.557	23	12 38 39.08	2.0262	9 18 33.9	14.254
24	11 6 36.22	1.9168	+ 2 8 40.6	-14.576	24	12 40 40.77	2.0303	-9 32 48.1	-14.219

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
FEBRUARY 22.					FEBRUARY 24.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 40 40.77	2.0303	- 9 32 48.1	-14.219	0	14 24 04.43	2.2958	-19 49 32.5	-10.930
1	12 42 42.71	2.0344	9 47 0.2	14.183	1	14 26 18.58	2.3025	20 0 25.2	10.826
2	12 44 44.90	2.0386	10 1 10.1	14.146	2	14 28 36.73	2.3091	20 11 11.6	10.720
3	12 46 47.34	2.0428	10 15 17.7	14.107	3	14 30 55.47	2.3158	20 21 51.6	10.613
4	12 48 50.04	2.0472	10 29 22.9	14.067	4	14 33 14.62	2.3224	20 32 25.1	10.503
5	12 50 53.00	2.0515	10 43 25.7	14.026	5	14 35 34.16	2.3290	20 42 52.0	10.393
6	12 52 56.22	2.0559	10 57 26.0	13.983	6	14 37 54.10	2.3358	20 53 12.2	10.280
7	12 54 59.71	2.0605	11 11 23.7	13.939	7	14 40 14.45	2.3425	21 3 25.6	10.166
8	12 57 3.48	2.0651	11 25 18.7	13.894	8	14 42 35.20	2.3492	21 13 32.1	10.051
9	12 59 7.52	2.0698	11 39 11.0	13.848	9	14 44 56.35	2.3558	21 23 31.7	9.934
10	13 1 11.85	2.0745	11 53 0.4	13.799	10	14 47 17.90	2.3625	21 33 24.2	9.815
11	13 3 16.46	2.0793	12 6 46.9	13.750	11	14 49 39.85	2.3693	21 43 9.5	9.695
12	13 5 21.36	2.0842	12 20 30.4	13.699	12	14 52 2.21	2.3759	21 52 47.6	9.574
13	13 7 26.56	2.0891	12 34 10.8	13.648	13	14 54 24.96	2.3826	22 2 18.4	9.451
14	13 9 32.05	2.0940	12 47 48.1	13.595	14	14 56 48.12	2.3893	22 11 41.7	9.326
15	13 11 37.84	2.0991	13 1 22.2	13.540	15	14 59 11.68	2.3960	22 20 57.5	9.200
16	13 13 43.94	2.1043	13 14 52.9	13.483	16	15 1 35.64	2.4026	22 30 5.7	9.072
17	13 15 50.35	2.1094	13 28 20.2	13.426	17	15 3 59.99	2.4092	22 39 6.1	8.943
18	13 17 57.07	2.1147	13 41 44.0	13.368	18	15 6 24.74	2.4158	22 47 58.8	8.813
19	13 20 4.11	2.1199	13 55 4.3	13.308	19	15 8 49.89	2.4224	22 56 43.6	8.680
20	13 22 11.46	2.1253	14 8 20.9	13.246	20	15 11 15.43	2.4289	23 5 20.4	8.547
21	13 24 19.14	2.1308	14 21 33.8	13.183	21	15 13 41.36	2.4354	23 13 49.2	8.412
22	13 26 27.15	2.1363	14 34 42.9	13.118	22	15 16 7.68	2.4419	23 22 9.8	8.275
23	13 28 35.49	2.1418	-14 47 48.0	-13.053	23	15 18 34.39	2.4484	-23 30 22.2	-8.137
FEBRUARY 23.					FEBRUARY 25.				
0	13 30 44.16	2.1473	-15 0 49.2	-12.986	0	15 21 1.49	2.4548	-23 38 26.2	-7.997
1	13 32 53.17	2.1530	15 13 46.3	12.917	1	15 23 28.97	2.4613	23 46 21.8	7.856
2	13 35 2.52	2.1588	15 26 39.2	12.847	2	15 25 56.84	2.4676	23 54 8.9	7.713
3	13 37 12.22	2.1645	15 39 27.9	12.776	3	15 28 25.08	2.4738	24 1 47.4	7.569
4	13 39 22.26	2.1703	15 52 12.3	12.703	4	15 30 53.70	2.4801	24 9 17.2	7.423
5	13 41 32.65	2.1762	16 4 52.2	12.628	5	15 33 22.69	2.4863	24 16 38.2	7.277
6	13 43 43.40	2.1822	16 17 27.6	12.552	6	15 35 52.05	2.4923	24 23 50.4	7.129
7	13 45 54.51	2.1881	16 29 58.4	12.474	7	15 38 21.77	2.4984	24 30 53.7	6.979
8	13 48 5.97	2.1941	16 42 24.5	12.396	8	15 40 51.86	2.5045	24 37 47.9	6.828
9	13 50 17.80	2.2003	16 54 45.9	12.316	9	15 43 22.31	2.5104	24 44 33.0	6.675
10	13 52 30.00	2.2063	17 7 2.4	12.234	10	15 45 53.11	2.5163	24 51 8.9	6.522
11	13 54 42.56	2.2124	17 19 14.0	12.151	11	15 48 24.26	2.5220	24 57 35.6	6.368
12	13 56 55.49	2.2187	17 31 20.5	12.066	12	15 50 55.75	2.5278	25 3 53.0	6.211
13	13 59 8.80	2.2249	17 43 21.9	11.980	13	15 53 27.59	2.5334	25 10 0.9	6.053
14	14 1 22.48	2.2312	17 55 18.1	11.892	14	15 55 59.76	2.5390	25 15 59.3	5.893
15	14 3 36.54	2.2375	18 7 8.9	11.802	15	15 58 32.27	2.5445	25 21 48.1	5.733
16	14 5 50.98	2.2438	18 18 54.3	11.712	16	16 1 5.10	2.5498	25 27 27.3	5.573
17	14 8 5.80	2.2503	18 30 34.3	11.620	17	16 3 38.25	2.5552	25 32 56.8	5.409
18	14 10 21.01	2.2567	18 42 8.7	11.526	18	16 6 11.72	2.5603	25 38 16.4	5.245
19	14 12 36.60	2.2631	18 53 37.4	11.430	19	16 8 45.49	2.5654	25 43 26.2	5.081
20	14 14 52.58	2.2697	19 5 0.3	11.333	20	16 11 19.57	2.5704	25 48 26.1	4.915
21	14 17 8.96	2.2762	19 16 17.4	11.235	21	16 13 53.94	2.5753	25 53 16.0	4.748
22	14 19 25.72	2.2827	19 27 28.5	11.135	22	16 16 28.61	2.5802	25 57 55.8	4.578
23	14 21 42.88	2.2893	19 38 33.6	11.033	23	16 19 3.56	2.5848	26 2 25.4	4.408
24	14 24 0.43	2.2958	-19 49 32.5	-10.930	24	16 21 38.79	2.5894	-26 6 44.8	-4.238

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
FEBRUARY 26.					FEBRUARY 28.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	16 21 38.79	2.5894	-26 6 44.8	-4.238	0	18 28 36.94	2.6430	-26 0 55.7	+ 4.569
1	16 24 14.29	2.5939	26 10 54.0	4.067	1	18 31 15.44	2.6404	25 56 16.1	4.750
2	16 26 50.06	2.5983	26 14 52.8	3.893	2	18 33 53.79	2.6378	25 51 25.7	4.930
3	16 29 26.08	2.6024	26 18 41.2	3.720	3	18 36 31.97	2.6349	25 46 24.5	5.110
4	16 32 2.35	2.6066	26 22 19.2	3.546	4	18 39 9.98	2.6319	25 41 12.5	5.289
5	16 34 38.87	2.6106	26 25 46.7	3.370	5	18 41 47.80	2.6288	25 35 49.8	5.468
6	16 37 15.62	2.6144	26 29 3.6	3.193	6	18 44 25.43	2.6255	25 30 16.4	5.645
7	16 39 52.60	2.6182	26 32 9.9	3.017	7	18 47 2.86	2.6221	25 24 32.4	5.822
8	16 42 29.80	2.6218	26 35 5.6	2.838	8	18 49 40.08	2.6187	25 18 37.8	5.998
9	16 45 7.21	2.6253	26 37 50.5	2.659	9	18 52 17.10	2.6151	25 12 32.7	6.172
10	16 47 44.83	2.6286	26 40 24.7	2.480	10	18 54 53.89	2.6113	25 6 17.2	6.345
11	16 50 22.64	2.6318	26 42 48.1	2.299	11	18 57 30.46	2.6075	24 59 51.3	6.518
12	16 53 0.64	2.6348	26 45 0.6	2.118	12	19 0 6.79	2.6035	24 53 15.1	6.689
13	16 55 38.82	2.6378	26 47 2.3	1.937	13	19 2 42.88	2.5994	24 46 28.6	6.860
14	16 58 17.17	2.6405	26 48 53.0	1.753	14	19 5 18.72	2.5953	24 39 31.9	7.029
15	17 0 55.68	2.6431	26 50 32.7	1.570	15	19 7 54.31	2.5910	24 32 25.1	7.197
16	17 3 34.34	2.6456	26 52 1.4	1.387	16	19 10 29.64	2.5866	24 25 8.3	7.363
17	17 6 13.15	2.6479	26 53 19.1	1.203	17	19 13 4.70	2.5821	24 17 41.5	7.530
18	17 8 52.09	2.6501	26 54 25.7	1.018	18	19 15 39.49	2.5775	24 10 4.7	7.694
19	17 11 31.16	2.6521	26 55 21.3	0.833	19	19 18 14.00	2.5728	24 2 18.2	7.858
20	17 14 10.34	2.6539	26 56 5.7	0.647	20	19 20 48.23	2.5681	23 54 21.8	8.020
21	17 16 49.63	2.6558	26 56 38.9	0.461	21	19 23 22.17	2.5633	23 46 15.8	8.180
22	17 19 29.03	2.6573	26 57 1.0	0.275	22	19 25 55.82	2.5583	23 38 0.2	8.339
23	17 22 8.51	2.6587	-26 57 11.9	-0.088	23	19 28 29.17	2.5533	-23 29 35.1	+ 8.498
FEBRUARY 27.					FEBRUARY 29.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	17 24 48.07	2.6599	-26 57 11.6	+0.098	0	19 31 2.21	2.5482	-23 21 0.5	+ 8.654
1	17 27 27.70	2.6610	26 57 0.1	0.286	1	19 33 34.95	2.5430	23 12 16.6	8.809
2	17 30 7.39	2.6620	26 56 37.3	0.473	2	19 36 7.37	2.5378	23 3 23.4	8.963
3	17 32 47.14	2.6628	26 56 3.3	0.661	3	19 38 39.48	2.5325	22 54 21.1	9.115
4	17 35 26.92	2.6633	26 55 18.0	0.848	4	19 41 11.27	2.5272	22 45 9.6	9.266
5	17 38 6.74	2.6638	26 54 21.5	1.036	5	19 43 42.74	2.5218	22 35 49.2	9.415
6	17 40 46.58	2.6642	26 53 13.7	1.224	6	19 46 13.88	2.5162	22 26 19.8	9.563
7	17 43 26.44	2.6643	26 51 54.6	1.412	7	19 48 44.68	2.5106	22 16 41.6	9.709
8	17 46 6.30	2.6643	26 50 24.3	1.599	8	19 51 15.15	2.5051	22 6 54.7	9.853
9	17 48 46.15	2.6641	26 48 42.7	1.788	9	19 53 45.29	2.4994	21 56 59.2	9.997
10	17 51 25.99	2.6638	26 46 49.8	1.975	10	19 56 15.08	2.4937	21 46 55.1	10.138
11	17 54 5.81	2.6633	26 44 45.7	2.163	11	19 58 44.53	2.4880	21 36 42.6	10.278
12	17 56 45.59	2.6627	26 42 30.3	2.350	12	20 1 13.64	2.4823	21 26 21.7	10.417
13	17 59 25.33	2.6618	26 40 3.7	2.537	13	20 3 42.40	2.4764	21 15 52.6	10.553
14	18 2 5.01	2.6608	26 37 25.9	2.723	14	20 6 10.81	2.4705	21 5 15.3	10.688
15	18 4 44.63	2.6598	26 34 36.9	2.910	15	20 8 38.86	2.4646	20 54 30.0	10.821
16	18 7 24.18	2.6585	26 31 36.7	3.097	16	20 11 6.56	2.4588	20 43 36.8	10.953
17	18 10 3.65	2.6571	26 28 25.3	3.283	17	20 13 33.91	2.4528	20 32 35.7	11.083
18	18 12 43.03	2.6555	26 25 2.8	3.468	18	20 16 0.90	2.4468	20 21 26.8	11.212
19	18 15 22.31	2.6538	26 21 29.2	3.653	19	20 18 27.53	2.4408	20 10 10.3	11.338
20	18 18 1.49	2.6520	26 17 44.5	3.837	20	20 20 53.80	2.4349	19 58 46.3	11.463
21	18 20 40.55	2.6499	26 13 48.8	4.020	21	20 23 19.72	2.4289	19 47 14.8	11.586
22	18 23 19.48	2.6478	26 9 42.1	4.203	22	20 25 45.27	2.4228	19 35 36.0	11.707
23	18 25 58.28	2.6455	26 5 24.4	4.387	23	20 28 10.46	2.4168	19 23 50.0	11.827
24	18 28 36.94	2.6430	-26 0 55.7	+4.569	24	20 30 35.29	2.4108	-19 11 56.8	+11.945

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MARCH 1.					MARCH 3.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	20 30 35.29	2.4108	-19 11 56.8	+11.945	0	22 19 45.25	2.1538	-7 57 16.3	+15.477
1	20 32 59.76	2.4048	18 59 56.6	12.060	1	22 21 54.36	2.1498	7 41 46.8	15.507
2	20 35 23.86	2.3987	18 47 49.6	12.174	2	22 24 3.22	2.1458	7 26 15.5	15.536
3	20 37 47.60	2.3927	18 35 35.7	12.288	3	22 26 11.85	2.1418	7 10 42.5	15.563
4	20 40 10.98	2.3866	18 23 15.1	12.398	4	22 28 20.24	2.1380	6 55 7.9	15.588
5	20 42 33.99	2.3806	18 10 48.0	12.506	5	22 30 28.41	2.1343	6 39 31.9	15.612
6	20 44 56.65	2.3747	17 58 14.4	12.613	6	22 32 36.35	2.1304	6 23 54.5	15.634
7	20 47 18.95	2.3686	17 45 34.4	12.719	7	22 34 44.06	2.1268	6 8 15.8	15.654
8	20 49 40.88	2.3626	17 32 48.1	12.823	8	22 36 51.56	2.1232	5 52 36.0	15.673
9	20 52 2.46	2.3567	17 19 55.7	12.923	9	22 38 58.84	2.1196	5 36 55.0	15.692
10	20 54 23.68	2.3507	17 6 57.3	13.023	10	22 41 5.91	2.1162	5 21 13.0	15.708
11	20 56 44.54	2.3448	16 53 52.9	13.122	11	22 43 12.78	2.1128	5 5 30.1	15.721
12	20 59 5.05	2.3388	16 40 42.7	13.218	12	22 45 19.44	2.1094	4 49 46.5	15.733
13	21 1 25.20	2.3329	16 27 26.8	13.312	13	22 47 25.91	2.1062	4 34 2.2	15.744
14	21 5 45.00	2.3271	16 14 5.3	13.404	14	22 49 32.18	2.1030	4 18 17.2	15.754
15	21 6 4.45	2.3213	16 0 38.3	13.495	15	22 51 38.27	2.1000	4 2 31.7	15.762
16	21 8 23.55	2.3154	15 47 5.9	13.584	16	22 53 44.18	2.0969	3 46 45.8	15.768
17	21 10 42.30	2.3096	15 33 28.2	13.671	17	22 55 49.90	2.0939	3 30 59.5	15.773
18	21 13 0.70	2.3038	15 19 45.4	13.756	18	22 57 55.45	2.0910	3 15 13.0	15.776
19	21 15 18.76	2.2981	15 5 57.5	13.840	19	23 0 0.82	2.0882	2 59 26.4	15.778
20	21 17 36.47	2.2924	14 52 4.6	13.922	20	23 2 6.03	2.0855	2 43 39.7	15.778
21	21 19 53.85	2.2868	14 38 6.9	14.001	21	23 4 11.08	2.0828	2 27 53.0	15.778
22	21 22 10.89	2.2813	14 24 4.5	14.078	22	23 6 15.97	2.0802	2 12 6.4	15.775
23	21 24 27.60	2.2757	-14 9 57.5	+14.154	23	23 8 20.70	2.0776	-1 56 20.0	+15.771
MARCH 2.					MARCH 4.				
0	21 26 43.97	2.2701	-13 55 46.0	+14.228	0	23 10 25.28	2.0752	-1 40 33.9	+15.765
1	21 29 0.01	2.2647	13 41 30.1	14.301	1	23 12 29.72	2.0728	1 24 48.2	15.758
2	21 31 15.73	2.2593	13 27 9.9	14.372	2	23 14 34.01	2.0704	1 9 3.0	15.749
3	21 33 31.13	2.2539	13 12 45.5	14.441	3	23 16 38.17	2.0683	0 53 18.3	15.740
4	21 35 46.20	2.2486	12 58 17.0	14.508	4	23 18 42.20	2.0661	0 37 34.2	15.728
5	21 38 0.96	2.2433	12 43 44.6	14.573	5	23 20 46.10	2.0639	0 21 50.9	15.715
6	21 40 15.40	2.2381	12 29 8.3	14.637	6	23 22 49.87	2.0618	-0 6 8.4	15.701
7	21 42 29.53	2.2329	12 14 28.2	14.698	7	23 24 53.52	2.0598	+0 9 33.2	15.686
8	21 44 43.35	2.2278	11 59 44.5	14.758	8	23 26 57.05	2.0580	0 25 13.9	15.669
9	21 46 56.86	2.2227	11 44 57.3	14.816	9	23 29 0.48	2.0563	0 40 53.5	15.651
10	21 49 10.07	2.2177	11 30 6.6	14.873	10	23 31 3.80	2.0544	0 56 32.0	15.631
11	21 51 22.98	2.2127	11 15 12.6	14.927	11	23 33 7.01	2.0527	1 12 9.2	15.610
12	21 53 35.59	2.2078	11 0 15.4	14.979	12	23 35 10.12	2.0511	1 27 45.2	15.588
13	21 55 47.91	2.2030	10 45 15.1	15.030	13	23 37 13.14	2.0496	1 43 19.8	15.564
14	21 57 59.95	2.1983	10 30 11.8	15.079	14	23 39 16.07	2.0481	1 58 52.9	15.539
15	22 0 11.70	2.1935	10 15 5.6	15.127	15	23 41 18.91	2.0467	2 14 24.5	15.513
16	22 2 23.17	2.1888	9 59 56.6	15.173	16	23 43 21.67	2.0453	2 29 54.4	15.484
17	22 4 34.36	2.1843	9 44 44.9	15.216	17	23 45 24.35	2.0441	2 45 22.6	15.456
18	22 6 45.28	2.1798	9 29 30.7	15.258	18	23 47 26.96	2.0428	3 0 49.1	15.427
19	22 8 55.93	2.1753	9 14 13.9	15.300	19	23 49 29.49	2.0417	3 16 13.8	15.395
20	22 11 6.31	2.1708	8 58 54.7	15.338	20	23 51 31.96	2.0406	3 31 36.5	15.362
21	22 13 16.43	2.1665	8 43 33.3	15.375	21	23 53 34.36	2.0396	3 46 57.2	15.328
22	22 15 26.29	2.1623	8 28 9.7	15.411	22	23 55 36.71	2.0387	4 2 15.8	15.293
23	22 17 35.90	2.1580	8 12 44.0	15.445	23	23 57 39.00	2.0378	4 17 32.3	15.257
24	22 19 45.25	2.1538	-7 57 16.3	+15.477	24	23 59 41.25	2.0371	+4 32 46.8	+15.219

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	
MARCH 5.					MARCH 7.				
	h m s	s	° ' "	"		h m s	s	° ' "	
0	23 59 41.25	2.0371	+ 4 32 46.6	+15.219	0	1 37 39.12	2.0645	+15 38 40.9	
1	0 1 43.45	2.0363	4 47 58.6	15.180	1	1 39 43.04	2.0663	15 50 46.6	
2	0 3 45.60	2.0355	5 3 8.2	15.140	2	1 41 47.07	2.0680	16 2 47.1	
3	0 5 47.71	2.0349	5 18 15.4	15.098	3	1 43 51.20	2.0698	16 14 42.2	
4	0 7 49.79	2.0344	5 33 20.0	15.055	4	1 45 55.44	2.0716	16 26 32.0	
5	0 9 51.84	2.0339	5 48 22.0	15.012	5	1 47 59.79	2.0733	16 38 16.4	
6	0 11 53.86	2.0335	6 3 21.4	14.968	6	1 50 4.24	2.0752	16 49 55.3	
7	0 13 55.86	2.0332	6 18 18.1	14.922	7	1 52 8.81	2.0771	17 1 28.7	
8	0 15 57.84	2.0328	6 33 12.0	14.874	8	1 54 13.49	2.0789	17 12 56.6	
9	0 17 59.80	2.0326	6 48 3.0	14.826	9	1 56 18.28	2.0808	17 24 18.9	
10	0 20 1.75	2.0324	7 2 51.1	14.777	10	1 58 23.19	2.0828	17 35 35.6	
11	0 22 3.69	2.0323	7 17 36.2	14.726	11	2 0 28.21	2.0847	17 46 46.5	
12	0 24 5.62	2.0322	7 32 18.2	14.674	12	2 2 33.35	2.0867	17 57 51.7	
13	0 26 7.55	2.0322	7 46 57.1	14.622	13	2 4 38.61	2.0887	18 8 51.1	
14	0 28 9.48	2.0323	8 1 32.8	14.568	14	2 6 43.99	2.0907	18 19 44.7	
15	0 30 11.42	2.0324	8 16 5.2	14.512	15	2 8 49.49	2.0928	18 30 32.5	
16	0 32 13.37	2.0326	8 30 34.2	14.456	16	2 10 55.12	2.0948	18 41 14.3	
17	0 34 15.33	2.0328	8 44 59.9	14.399	17	2 13 0.87	2.0968	18 51 50.2	
18	0 36 17.30	2.0331	8 59 22.1	14.341	18	2 15 6.74	2.0989	19 2 20.1	
19	0 38 19.30	2.0335	9 13 40.8	14.282	19	2 17 12.74	2.1011	19 12 43.9	
20	0 40 21.32	2.0338	9 27 55.9	14.222	20	2 19 18.87	2.1033	19 23 1.7	
21	0 42 23.36	2.0343	9 42 7.4	14.160	21	2 21 25.13	2.1053	19 33 13.4	
22	0 44 25.43	2.0348	9 56 15.1	14.098	22	2 23 31.51	2.1074	19 43 18.9	
23	0 46 27.54	2.0354	+10 10 19.1	+14.034	23	2 25 38.02	2.1096	+19 53 18.2	
MARCH 6.					MARCH 8.				
0	0 48 29.68	2.0360	+10 24 19.2	+13.969	0	2 27 44.66	2.1118	+20 3 11.2	
1	0 50 31.86	2.0367	10 38 15.4	13.904	1	2 29 51.43	2.1138	20 12 58.0	
2	0 52 34.08	2.0373	10 52 7.7	13.838	2	2 31 58.32	2.1160	20 22 38.4	
3	0 54 36.34	2.0381	11 5 56.0	13.771	3	2 34 5.35	2.1183	20 32 12.5	
4	0 56 38.65	2.0389	11 19 40.2	13.703	4	2 36 12.51	2.1204	20 41 40.2	
5	0 58 41.01	2.0398	11 33 20.3	13.633	5	2 38 19.80	2.1226	20 51 1.4	
6	1 0 43.43	2.0408	11 46 56.1	13.562	6	2 40 27.22	2.1248	21 0 16.2	
7	1 2 45.90	2.0417	12 0 27.7	13.491	7	2 42 34.77	2.1269	21 9 24.5	
8	1 4 48.43	2.0427	12 13 55.0	13.419	8	2 44 42.45	2.1292	21 18 26.2	
9	1 6 51.02	2.0438	12 27 18.0	13.346	9	2 46 50.27	2.1313	21 27 21.4	
10	1 8 53.68	2.0448	12 40 36.5	13.271	10	2 48 58.21	2.1335	21 36 9.9	
11	1 10 56.40	2.0460	12 53 50.5	13.196	11	2 51 6.29	2.1358	21 44 51.8	
12	1 12 59.20	2.0473	13 7 0.0	13.120	12	2 53 14.50	2.1379	21 53 27.0	
13	1 15 2.07	2.0484	13 20 4.9	13.043	13	2 55 22.84	2.1400	22 1 55.5	
14	1 17 5.01	2.0497	13 33 5.2	12.966	14	2 57 31.30	2.1421	22 10 17.2	
15	1 19 8.03	2.0510	13 46 0.8	12.887	15	2 59 39.89	2.1443	22 18 32.1	
16	1 21 11.13	2.0524	13 58 51.6	12.807	16	3 1 48.62	2.1465	22 26 40.2	
17	1 23 14.32	2.0538	14 11 37.6	12.727	17	3 3 57.47	2.1486	22 34 41.5	
18	1 25 17.59	2.0553	14 24 18.8	12.645	18	3 6 6.45	2.1507	22 42 35.9	
19	1 27 20.95	2.0568	14 36 55.0	12.563	19	3 8 15.55	2.1528	22 50 23.4	
20	1 29 24.40	2.0583	14 49 26.3	12.480	20	3 10 24.78	2.1549	22 58 3.9	
21	1 31 27.94	2.0598	15 1 52.6	12.396	21	3 12 34.14	2.1570	23 5 37.4	
22	1 33 31.57	2.0613	15 14 13.8	12.311	22	3 14 43.62	2.1590	23 13 3.9	
23	1 35 35.30	2.0629	15 26 29.9	12.226	23	3 16 53.22	2.1610	23 20 23.4	
24	1 37 39.12	2.0645	+15 38 40.9	+12.139	24	3 19 2.94	2.1630	+23 27 35.8	

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MARCH 9.					MARCH 11.				
	h m s	s	" ' "	"		h m s	s	" ' "	"
0	3 19 2.94	2.1630	+23 27 35.8	+7.148	0	5 4 34.77	2.2174	+26 47 49.2	+1.101
1	3 21 12.78	2.1650	23 34 41.1	7.029	1	5 6 47.81	2.2173	26 48 51.4	0.972
2	3 23 22.74	2.1670	23 41 39.3	6.910	2	5 9 0.85	2.2173	26 49 45.8	0.841
3	3 25 32.82	2.1690	23 48 30.3	6.791	3	5 11 13.88	2.2171	26 50 32.3	0.711
4	3 27 43.02	2.1709	23 55 14.2	6.672	4	5 13 26.90	2.2168	26 51 11.1	0.582
5	3 29 53.33	2.1728	24 1 50.9	6.551	5	5 15 39.90	2.2165	26 51 42.1	0.453
6	3 32 3.75	2.1747	24 8 20.3	6.430	6	5 17 52.88	2.2162	26 52 5.4	0.323
7	3 34 14.29	2.1765	24 14 42.5	6.309	7	5 20 5.84	2.2158	26 52 20.8	0.192
8	3 36 24.93	2.1783	24 20 57.4	6.188	8	5 22 18.78	2.2154	26 52 28.4	+0.063
9	3 38 35.69	2.1802	24 27 5.0	6.066	9	5 24 31.69	2.2148	26 52 28.3	-0.067
10	3 40 46.55	2.1818	24 33 5.3	5.943	10	5 26 44.56	2.2143	26 52 20.4	0.196
11	3 42 57.51	2.1836	24 38 58.2	5.820	11	5 28 57.40	2.2136	26 52 4.8	0.325
12	3 45 8.58	2.1853	24 44 43.7	5.698	12	5 31 10.19	2.2128	26 51 41.4	0.455
13	3 47 19.75	2.1870	24 50 21.9	5.574	13	5 33 22.94	2.2122	26 51 10.2	0.584
14	3 49 31.02	2.1886	24 55 52.6	5.450	14	5 35 35.65	2.2114	26 50 31.3	0.713
15	3 51 42.38	2.1902	25 1 15.9	5.326	15	5 37 48.31	2.2106	26 49 44.7	0.841
16	3 53 53.84	2.1918	25 6 31.7	5.202	16	5 40 0.92	2.2097	26 48 50.4	0.970
17	3 56 5.40	2.1933	25 11 40.1	5.078	17	5 42 13.47	2.2087	26 47 48.3	1.098
18	3 58 17.04	2.1948	25 16 41.0	4.952	18	5 44 25.96	2.2077	26 46 38.6	1.226
19	4 0 28.77	2.1962	25 21 34.3	4.826	19	5 46 38.39	2.2066	26 45 21.2	1.354
20	4 2 40.58	2.1975	25 26 20.1	4.701	20	5 48 50.75	2.2054	26 43 56.1	1.483
21	4 4 52.47	2.1989	25 30 58.4	4.575	21	5 51 3.04	2.2043	26 42 23.3	1.610
22	4 7 4.45	2.2003	25 35 29.1	4.448	22	5 53 15.26	2.2031	26 40 42.9	1.738
23	4 9 16.50	2.2015	+25 39 52.2	+4.322	23	5 55 27.41	2.2018	+26 38 54.8	-1.865
MARCH 10.					MARCH 12.				
0	4 11 28.63	2.2028	+25 44 7.7	+4.195	0	5 57 39.48	2.2005	+26 36 59.1	-1.992
1	4 13 40.83	2.2039	25 48 15.6	4.068	1	5 59 51.47	2.1991	26 34 55.8	2.118
2	4 15 53.10	2.2051	25 52 15.8	3.940	2	6 2 3.37	2.1977	26 32 44.9	2.244
3	4 18 5.44	2.2063	25 56 8.4	3.813	3	6 4 15.19	2.1962	26 30 26.5	2.370
4	4 20 17.85	2.2073	25 59 53.4	3.686	4	6 6 26.91	2.1946	26 28 0.5	2.497
5	4 22 30.31	2.2082	26 3 30.7	3.558	5	6 8 38.54	2.1931	26 25 26.9	2.623
6	4 24 42.83	2.2092	26 7 0.3	3.429	6	6 10 50.08	2.1914	26 22 45.8	2.748
7	4 26 55.41	2.2101	26 10 22.2	3.301	7	6 13 1.51	2.1897	26 19 57.2	2.873
8	4 29 8.04	2.2110	26 13 36.4	3.173	8	6 15 12.84	2.1880	26 17 1.1	2.998
9	4 31 20.73	2.2118	26 16 42.9	3.043	9	6 17 24.07	2.1863	26 13 57.5	3.122
10	4 33 33.46	2.2125	26 19 41.6	2.914	10	6 19 35.19	2.1844	26 10 46.5	3.245
11	4 35 46.23	2.2132	26 22 32.6	2.786	11	6 21 46.20	2.1826	26 7 28.1	3.369
12	4 37 59.04	2.2138	26 25 15.9	2.657	12	6 23 57.10	2.1807	26 4 2.2	3.493
13	4 40 11.89	2.2144	26 27 51.4	2.528	13	6 26 7.88	2.1788	26 0 28.9	3.616
14	4 42 24.77	2.2150	26 30 19.2	2.398	14	6 28 18.55	2.1768	25 56 48.3	3.738
15	4 44 37.69	2.2155	26 32 39.2	2.268	15	6 30 29.09	2.1747	25 53 0.3	3.861
16	4 46 50.63	2.2158	26 34 51.4	2.139	16	6 32 39.51	2.1727	25 49 5.0	3.983
17	4 49 3.59	2.2163	26 36 55.9	2.010	17	6 34 49.81	2.1706	25 45 2.4	4.103
18	4 51 16.58	2.2167	26 38 52.6	1.880	18	6 36 59.98	2.1684	25 40 52.6	4.224
19	4 53 29.59	2.2169	26 40 41.5	1.750	19	6 39 10.02	2.1663	25 36 35.5	4.346
20	4 55 42.61	2.2171	26 42 22.6	1.620	20	6 41 19.93	2.1640	25 32 11.1	4.467
21	4 57 55.64	2.2173	26 43 55.9	1.491	21	6 43 29.70	2.1618	25 27 39.5	4.586
22	5 0 8.68	2.2173	26 45 21.5	1.362	22	6 45 39.34	2.1595	25 23 0.8	4.705
23	5 2 21.72	2.2174	26 46 39.3	1.231	23	6 47 48.84	2.1572	25 18 14.9	4.824
24	5 4 34.77	2.2174	+26 47 49.2	+1.101	24	6 49 58.20	2.1548	+25 13 21.9	-4.942

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MARCH 13.					MARCH 15.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	6 49 58.20	2.1548	+25 13 21.9	-4.943	0	8 30 20.52	2.0253	+19 9 27.9	-9.994
1	6 52 7.42	2.1525	25 8 21.8	5.061	1	8 32 21.96	2.0228	18 59 25.5	10.084
2	6 54 16.50	2.1501	25 3 14.6	5.178	2	8 34 23.25	2.0203	18 49 17.8	10.178
3	6 56 25.43	2.1476	24 58 0.4	5.296	3	8 36 24.39	2.0177	18 39 4.7	10.262
4	6 58 34.21	2.1451	24 52 39.1	5.413	4	8 38 25.37	2.0151	18 28 46.4	10.346
5	7 0 42.84	2.1427	24 47 10.9	5.528	5	8 40 26.20	2.0126	18 18 22.8	10.437
6	7 2 51.33	2.1402	24 41 35.7	5.644	6	8 42 26.88	2.0101	18 7 54.0	10.533
7	7 4 59.66	2.1376	24 35 53.6	5.760	7	8 44 27.41	2.0076	17 57 20.0	10.609
8	7 7 7.84	2.1350	24 30 4.5	5.875	8	8 46 27.79	2.0052	17 46 40.9	10.684
9	7 9 15.86	2.1324	24 24 8.6	5.988	9	8 48 28.03	2.0028	17 35 56.7	10.778
10	7 11 23.73	2.1298	24 18 5.9	6.103	10	8 50 28.13	2.0004	17 25 7.5	10.862
11	7 13 31.44	2.1272	24 11 56.3	6.216	11	8 52 28.08	1.9980	17 14 13.3	10.945
12	7 15 38.99	2.1245	24 5 40.0	6.328	12	8 54 27.89	1.9957	17 3 14.1	11.028
13	7 17 46.38	2.1218	23 59 17.0	6.440	13	8 56 27.56	1.9934	16 52 10.0	11.108
14	7 19 53.61	2.1192	23 52 47.2	6.553	14	8 58 27.10	1.9912	16 41 1.1	11.188
15	7 22 0.68	2.1165	23 46 10.7	6.663	15	9 0 26.50	1.9889	16 29 47.4	11.268
16	7 24 7.59	2.1138	23 39 27.6	6.773	16	9 2 25.77	1.9868	16 18 28.9	11.348
17	7 26 14.33	2.1110	23 32 37.9	6.883	17	9 4 24.91	1.9846	16 7 5.6	11.427
18	7 28 20.91	2.1083	23 25 41.6	6.993	18	9 6 23.92	1.9824	15 55 37.7	11.504
19	7 30 27.32	2.1055	23 18 38.7	7.103	19	9 8 22.80	1.9803	15 44 5.1	11.581
20	7 32 33.57	2.1028	23 11 29.3	7.210	20	9 10 21.56	1.9783	15 32 28.0	11.657
21	7 34 39.65	2.0999	23 4 13.5	7.318	21	9 12 20.20	1.9763	15 20 46.3	11.733
22	7 36 45.56	2.0971	22 56 51.2	7.425	22	9 14 18.72	1.9743	15 9 0.1	11.807
23	7 38 51.30	2.0943	+22 49 22.5	-7.532	23	9 16 17.12	1.9723	+14 57 9.5	-11.881
MARCH 14.					MARCH 16.				
0	7 40 56.88	2.0916	+22 41 47.4	-7.638	0	9 18 15.40	1.9704	+14 45 14.4	-11.954
1	7 43 2.29	2.0888	22 34 6.0	7.743	1	9 20 13.57	1.9686	14 33 15.0	12.027
2	7 45 7.53	2.0859	22 26 18.3	7.848	2	9 22 11.63	1.9668	14 21 11.2	12.098
3	7 47 12.60	2.0831	22 18 24.3	7.953	3	9 24 9.58	1.9650	14 9 3.2	12.166
4	7 49 17.50	2.0803	22 10 24.0	8.057	4	9 26 7.43	1.9633	13 56 50.9	12.239
5	7 51 22.24	2.0776	22 2 17.5	8.159	5	9 28 5.17	1.9615	13 44 34.5	12.308
6	7 53 26.81	2.0747	21 54 4.9	8.261	6	9 30 2.81	1.9599	13 32 13.9	12.377
7	7 55 31.20	2.0718	21 45 46.2	8.363	7	9 32 0.36	1.9583	13 19 49.3	12.444
8	7 57 35.43	2.0691	21 37 21.4	8.464	8	9 33 57.81	1.9568	13 7 20.6	12.511
9	7 59 39.49	2.0663	21 28 50.5	8.565	9	9 35 55.17	1.9552	12 54 48.0	12.577
10	8 1 43.38	2.0635	21 20 13.6	8.664	10	9 37 52.43	1.9537	12 42 11.4	12.643
11	8 3 47.11	2.0608	21 11 30.8	8.763	11	9 39 49.61	1.9523	12 29 30.9	12.707
12	8 5 50.67	2.0579	21 2 42.0	8.863	12	9 41 46.70	1.9508	12 16 46.6	12.770
13	8 7 54.06	2.0551	20 53 47.3	8.960	13	9 43 43.71	1.9496	12 3 58.5	12.833
14	8 9 57.28	2.0523	20 44 46.8	9.058	14	9 45 40.65	1.9483	11 51 6.6	12.895
15	8 12 0.34	2.0496	20 35 40.4	9.154	15	9 47 37.51	1.9471	11 38 11.1	12.956
16	8 14 3.23	2.0468	20 26 28.3	9.250	16	9 49 34.30	1.9459	11 25 11.9	13.017
17	8 16 5.96	2.0441	20 17 10.4	9.346	17	9 51 31.02	1.9448	11 12 9.1	13.077
18	8 18 8.52	2.0413	20 7 46.8	9.440	18	9 53 27.67	1.9436	10 59 2.7	13.135
19	8 20 10.92	2.0387	19 58 17.6	9.534	19	9 55 24.25	1.9426	10 45 52.9	13.192
20	8 22 13.16	2.0360	19 48 42.7	9.628	20	9 57 20.78	1.9417	10 32 39.7	13.249
21	8 24 15.24	2.0333	19 39 2.3	9.720	21	9 59 17.25	1.9407	10 19 23.0	13.306
22	8 26 17.16	2.0307	19 29 16.3	9.813	22	10 1 13.66	1.9398	10 6 3.0	13.361
23	8 28 18.92	2.0280	19 19 24.8	9.903	23	10 3 10.02	1.9389	9 52 39.7	13.415
24	8 30 20.52	2.0253	+19 9 27.9	-9.994	24	10 5 6.33	1.9382	+ 9 39 13.2	-13.466

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MARCH 17.					MARCH 19.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	10 5 6.33	1.9382	+9 39 13.2	-13.468	0	11 38 22.15	1.9722	- 1 51 6.4	-14.907
1	10 7 2.60	1.9375	9 25 43.5	13.521	1	11 40 20.55	1.9745	2 6 0.9	14.910
2	10 8 58.83	1.9368	9 12 10.7	13.573	2	11 42 19.09	1.9768	2 20 55.6	14.913
3	10 10 55.02	1.9362	8 58 34.8	13.624	3	11 44 17.77	1.9793	2 35 50.5	14.915
4	10 12 51.17	1.9356	8 44 55.8	13.674	4	11 46 16.60	1.9818	2 50 45.4	14.915
5	10 14 47.29	1.9352	8 31 13.9	13.723	5	11 48 15.59	1.9844	3 5 40.3	14.913
6	10 16 43.39	1.9348	8 17 29.1	13.771	6	11 50 14.73	1.9871	3 20 35.0	14.911
7	10 18 39.46	1.9343	8 3 41.4	13.818	7	11 52 14.04	1.9898	3 35 29.6	14.908
8	10 20 35.51	1.9340	7 49 50.9	13.865	8	11 54 13.51	1.9926	3 50 24.0	14.904
9	10 22 31.54	1.9337	7 35 57.6	13.910	9	11 56 13.15	1.9955	4 5 18.1	14.898
10	10 24 27.55	1.9335	7 22 1.7	13.954	10	11 58 12.97	1.9984	4 20 1.8	14.891
11	10 26 23.56	1.9334	7 8 3.1	13.998	11	12 0 12.96	2.0014	4 35 5.0	14.883
12	10 28 19.56	1.9333	6 54 1.9	14.041	12	12 2 13.14	2.0045	4 49 57.7	14.873
13	10 30 15.56	1.9333	6 39 58.2	14.083	13	12 4 13.50	2.0076	5 4 49.8	14.862
14	10 32 11.55	1.9333	6 25 52.0	14.123	14	12 6 14.05	2.0108	5 19 41.1	14.849
15	10 34 7.55	1.9333	6 11 43.4	14.163	15	12 8 14.80	2.0142	5 34 31.7	14.836
16	10 36 3.55	1.9334	5 57 32.4	14.203	16	12 10 15.75	2.0175	5 49 21.4	14.821
17	10 37 59.56	1.9337	5 43 19.1	14.241	17	12 12 16.90	2.0209	6 4 10.2	14.805
18	10 39 55.59	1.9340	5 29 3.5	14.278	18	12 14 18.26	2.0244	6 18 58.0	14.788
19	10 41 51.64	1.9343	5 14 45.8	14.313	19	12 16 19.83	2.0279	6 33 44.7	14.769
20	10 43 47.71	1.9347	5 0 26.0	14.348	20	12 18 21.61	2.0316	6 48 30.3	14.749
21	10 45 43.80	1.9351	4 46 4.0	14.383	21	12 20 23.62	2.0353	7 3 14.6	14.728
22	10 47 39.92	1.9357	4 31 40.1	14.415	22	12 22 25.85	2.0391	7 17 57.6	14.705
23	10 49 36.08	1.9363	+4 17 14.2	-14.448	23	12 24 28.31	2.0429	- 7 32 39.2	-14.681
MARCH 18.					MARCH 20.				
0	10 51 32.27	1.9368	+4 2 46.4	-14.478	0	12 26 31.00	2.0468	- 7 47 19.3	-14.655
1	10 53 28.50	1.9376	3 48 16.8	14.508	1	12 28 33.92	2.0506	8 1 57.8	14.628
2	10 55 24.78	1.9384	3 33 45.4	14.538	2	12 30 37.09	2.0548	8 16 34.7	14.600
3	10 57 21.11	1.9393	3 19 12.3	14.566	3	12 32 40.50	2.0589	8 31 9.8	14.571
4	10 59 17.49	1.9401	3 4 37.5	14.593	4	12 34 44.16	2.0631	8 45 43.2	14.540
5	11 1 13.92	1.9411	2 50 1.2	14.618	5	12 36 48.07	2.0673	9 0 14.6	14.507
6	11 3 10.42	1.9422	2 35 23.3	14.644	6	12 38 52.24	2.0716	9 14 44.0	14.473
7	11 5 6.98	1.9432	2 20 43.9	14.668	7	12 40 56.66	2.0759	9 29 11.4	14.438
8	11 7 3.60	1.9443	2 6 3.2	14.690	8	12 43 1.35	2.0804	9 43 36.6	14.401
9	11 9 0.30	1.9457	1 51 21.1	14.713	9	12 45 6.31	2.0849	9 57 59.5	14.363
10	11 10 57.08	1.9469	1 36 37.7	14.733	10	12 47 11.54	2.0894	10 12 20.1	14.324
11	11 12 53.93	1.9483	1 21 53.1	14.753	11	12 49 17.04	2.0940	10 26 38.4	14.283
12	11 14 50.87	1.9498	1 7 7.4	14.771	12	12 51 22.82	2.0987	10 40 54.1	14.240
13	11 16 47.90	1.9513	0 52 20.6	14.788	13	12 53 28.88	2.1034	10 55 7.2	14.196
14	11 18 45.02	1.9528	0 37 32.8	14.805	14	12 55 35.23	2.1083	11 9 17.6	14.151
15	11 20 42.23	1.9543	0 22 44.0	14.820	15	12 57 41.87	2.1132	11 23 25.3	14.104
16	11 22 39.54	1.9561	+0 7 54.4	14.833	16	12 59 48.81	2.1181	11 37 30.1	14.056
17	11 24 36.96	1.9579	-0 6 56.0	14.847	17	13 1 56.04	2.1230	11 51 32.0	14.006
18	11 26 34.49	1.9598	0 21 47.2	14.859	18	13 4 3.57	2.1281	12 5 30.8	13.954
19	11 28 32.13	1.9617	0 36 39.1	14.870	19	13 6 11.41	2.1333	12 19 26.5	13.901
20	11 30 29.89	1.9636	0 51 31.6	14.880	20	13 8 19.56	2.1383	12 33 18.9	13.847
21	11 32 27.76	1.9656	1 6 24.7	14.888	21	13 10 28.01	2.1434	12 47 8.1	13.792
22	11 34 25.76	1.9678	1 21 18.2	14.895	22	13 12 36.77	2.1488	13 0 53.9	13.734
23	11 36 23.89	1.9699	1 36 12.1	14.902	23	13 14 45.86	2.1542	13 14 36.2	13.676
24	11 38 22.15	1.9722	-1 51 6.4	-14.907	24	13 16 55.27	2.1595	-13 28 14.9	-13.614

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MARCH 21.					MARCH 23.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	13 16 55.27	2.1595	-13 28 14.9	-13.614	0	15 7 27.31	2.4515	-22 41 42.8	-8.830
1	13 19 5.00	2.1649	13 41 49.9	13.552	1	15 9 54.58	2.4574	22 50 28.5	8.692
2	13 21 15.06	2.1704	13 55 21.1	13.488	2	15 12 22.20	2.4633	22 59 5.8	8.552
3	13 23 25.45	2.1759	14 8 48.5	13.423	3	15 14 50.18	2.4693	23 7 34.7	8.410
4	13 25 36.17	2.1814	14 22 11.9	13.357	4	15 17 18.51	2.4751	23 15 55.0	8.267
5	13 27 47.22	2.1871	14 35 31.3	13.288	5	15 19 47.19	2.4808	23 24 6.7	8.123
6	13 29 58.62	2.1928	14 48 46.5	13.218	6	15 22 16.21	2.4866	23 32 9.8	7.978
7	13 32 10.36	2.1986	15 1 57.5	13.147	7	15 24 45.58	2.4923	23 40 4.1	7.831
8	13 34 22.45	2.2043	15 15 4.1	13.073	8	15 27 15.28	2.4978	23 47 49.5	7.682
9	13 36 34.88	2.2101	15 28 6.3	12.999	9	15 29 45.31	2.5033	23 55 25.9	7.533
10	13 38 47.66	2.2159	15 41 4.0	12.923	10	15 32 15.68	2.5088	24 2 53.4	7.382
11	13 41 0.79	2.2218	15 53 57.1	12.845	11	15 34 46.37	2.5142	24 10 11.7	7.229
12	13 43 14.28	2.2278	16 6 45.4	12.765	12	15 37 17.38	2.5194	24 17 20.9	7.076
13	13 45 28.12	2.2337	16 19 28.9	12.684	13	15 39 48.70	2.5247	24 24 20.8	6.921
14	13 47 42.32	2.2398	16 32 7.5	12.602	14	15 42 20.34	2.5299	24 31 11.4	6.764
15	13 49 56.89	2.2458	16 44 41.1	12.518	15	15 44 52.29	2.5349	24 37 52.5	6.606
16	13 52 11.82	2.2518	16 57 9.6	12.431	16	15 47 24.53	2.5398	24 44 24.1	6.448
17	13 54 27.11	2.2579	17 9 32.8	12.343	17	15 49 57.07	2.5448	24 50 46.2	6.288
18	13 56 42.77	2.2640	17 21 50.8	12.255	18	15 52 29.90	2.5496	24 56 58.6	6.127
19	13 58 58.79	2.2702	17 34 3.4	12.164	19	15 55 3.02	2.5543	25 3 1.4	5.965
20	14 1 15.19	2.2764	17 46 10.5	12.072	20	15 57 36.41	2.5588	25 8 54.4	5.802
21	14 3 31.96	2.2826	17 58 12.0	11.978	21	16 0 10.08	2.5633	25 14 37.6	5.638
22	14 5 49.10	2.2888	18 10 7.8	11.882	22	16 2 44.01	2.5677	25 20 10.9	5.472
23	14 8 6.62	2.2951	-18 21 57.8	-11.784	23	16 5 18.20	2.5720	-25 25 34.2	-5.305
MARCH 22.					MARCH 24.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	14 10 24.51	2.3013	-18 33 41.9	-11.685	0	16 7 52.65	2.5762	-25 30 47.5	-5.138
1	14 12 42.78	2.3077	18 45 20.0	11.585	1	16 10 27.34	2.5803	25 35 50.7	4.968
2	14 15 1.43	2.3139	18 56 52.1	11.483	2	16 13 2.28	2.5843	25 40 43.7	4.798
3	14 17 20.45	2.3202	19 8 18.0	11.378	3	16 15 37.45	2.5880	25 45 26.5	4.628
4	14 19 39.85	2.3266	19 19 37.5	11.273	4	16 18 12.84	2.5918	25 49 59.1	4.457
5	14 21 59.64	2.3329	19 30 50.7	11.166	5	16 20 48.46	2.5953	25 54 21.3	4.284
6	14 24 19.80	2.3392	19 41 57.4	11.058	6	16 23 24.28	2.5988	25 58 33.2	4.112
7	14 26 40.34	2.3455	19 52 57.6	10.948	7	16 26 0.31	2.6022	26 2 34.7	3.938
8	14 29 1.26	2.3519	20 3 51.1	10.836	8	16 28 36.54	2.6054	26 6 25.7	3.763
9	14 31 22.57	2.3583	20 14 37.9	10.723	9	16 31 12.96	2.6085	26 10 6.2	3.588
10	14 33 44.26	2.3646	20 25 17.8	10.607	10	16 33 49.56	2.6115	26 13 36.2	3.411
11	14 36 6.32	2.3708	20 35 50.7	10.490	11	16 36 26.34	2.6143	26 16 55.5	3.233
12	14 38 28.76	2.3772	20 46 16.6	10.372	12	16 39 3.28	2.6170	26 20 4.2	3.056
13	14 40 51.58	2.3835	20 56 35.3	10.252	13	16 41 40.38	2.6196	26 23 2.2	2.878
14	14 43 14.78	2.3898	21 6 46.8	10.131	14	16 44 17.63	2.6220	26 25 49.5	2.699
15	14 45 38.36	2.3961	21 16 51.0	10.008	15	16 46 55.02	2.6243	26 28 26.1	2.520
16	14 48 2.31	2.4023	21 26 47.7	9.883	16	16 49 32.54	2.6263	26 30 51.9	2.339
17	14 50 26.64	2.4086	21 36 36.9	9.757	17	16 52 10.18	2.6283	26 33 6.8	2.158
18	14 52 51.34	2.4148	21 46 18.5	9.629	18	16 54 47.94	2.6302	26 35 10.9	1.978
19	14 55 16.42	2.4210	21 55 52.4	9.499	19	16 57 25.80	2.6319	26 37 4.2	1.797
20	14 57 41.86	2.4272	22 5 18.4	9.368	20	17 0 3.77	2.6335	26 38 46.5	1.615
21	15 0 7.68	2.4333	22 14 36.6	9.237	21	17 2 41.82	2.6348	26 40 18.0	1.433
22	15 2 33.86	2.4393	22 23 46.8	9.103	22	17 5 19.95	2.6362	26 41 38.5	1.250
23	15 5 0.40	2.4454	22 32 48.9	8.967	23	17 7 58.16	2.6373	26 42 48.0	1.068
24	15 7 27.31	2.4515	-22 41 42.8	-8.830	24	17 10 36.43	2.6383	-26 43 46.6	-0.885

GREENWICH MEAN TIME.

R.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MARCH 25.					MARCH 27.				
	h m s	s	" ' "	"	0	h m s	s	" ' "	"
	17 10 36.43	2.6383	-26 43 46.6	-0.885	0	19 15 36.55	2.5213	-23 59 29.2	+7.492
	17 13 14.75	2.6390	26 44 34.2	0.702	1	19 18 7.67	2.5162	23 51 55.1	7.644
	17 15 53.11	2.6397	26 45 10.8	0.518	2	19 20 38.49	2.5110	23 44 11.9	7.796
	17 18 31.51	2.6402	26 45 36.3	0.334	3	19 23 8.99	2.5058	23 36 19.6	7.947
	17 21 9.93	2.6405	26 45 50.9	-0.152	4	19 25 39.18	2.5005	23 28 18.3	8.097
	17 23 48.37	2.6408	26 45 54.5	+0.032	5	19 28 9.05	2.4951	23 20 8.0	8.245
	17 26 26.82	2.6408	26 45 47.1	0.216	6	19 30 38.59	2.4897	23 11 48.9	8.391
	17 29 5.27	2.6408	26 45 28.6	0.400	7	19 33 7.81	2.4843	23 3 21.1	8.536
	17 31 43.71	2.6405	26 44 59.1	0.583	8	19 35 36.70	2.4788	22 54 44.6	8.680
	17 34 22.13	2.6401	26 44 18.6	0.766	9	19 38 5.26	2.4732	22 45 59.5	8.823
	17 37 0.52	2.6395	26 43 27.2	0.949	10	19 40 33.48	2.4675	22 37 5.9	8.963
	17 39 38.87	2.6388	26 42 24.7	1.133	11	19 43 1.36	2.4618	22 28 3.9	9.103
	17 42 17.18	2.6380	26 41 11.2	1.317	12	19 45 28.90	2.4562	22 18 53.5	9.242
	17 44 55.43	2.6370	26 39 46.7	1.499	13	19 47 56.10	2.4504	22 9 34.9	9.378
	17 47 33.62	2.6359	26 38 11.3	1.681	14	19 50 22.95	2.4447	22 0 8.1	9.514
	17 50 11.74	2.6346	26 36 25.0	1.863	15	19 52 49.46	2.4389	21 50 33.2	9.648
	17 52 49.77	2.6331	26 34 27.7	2.046	16	19 55 15.62	2.4332	21 40 50.4	9.779
	17 55 27.71	2.6316	26 32 19.5	2.227	17	19 57 41.44	2.4273	21 30 59.7	9.910
	17 58 5.56	2.6299	26 30 0.5	2.408	18	20 0 6.90	2.4214	21 21 1.2	10.040
	18 0 43.30	2.6280	26 27 30.6	2.588	19	20 2 32.01	2.4155	21 10 54.9	10.168
	18 3 20.92	2.6260	26 24 49.9	2.768	20	20 4 56.76	2.4097	21 0 41.0	10.294
	18 5 58.42	2.6238	26 21 58.4	2.948	21	20 7 21.17	2.4038	20 50 19.6	10.418
	18 8 35.78	2.6216	26 18 56.2	3.127	22	20 9 45.22	2.3978	20 39 50.8	10.542
	18 11 13.01	2.6193	-26 15 43.2	+3.306	23	20 12 8.91	2.3919	-20 29 14.6	+10.664
MARCH 26.					MARCH 28.				
	18 13 50.09	2.6167	-26 12 19.5	+3.483	0	20 14 32.25	2.3860	-20 18 31.1	+10.784
	18 16 27.01	2.6139	26 8 45.2	3.661	1	20 16 55.23	2.3801	20 7 40.5	10.903
	18 19 3.76	2.6111	26 5 0.2	3.838	2	20 19 17.86	2.3743	19 56 42.8	11.020
	18 21 40.34	2.6082	26 1 4.7	4.013	3	20 21 40.14	2.3683	19 45 38.1	11.135
	18 24 16.74	2.6052	25 56 58.6	4.188	4	20 24 2.06	2.3623	19 34 26.6	11.248
	18 26 52.96	2.6020	25 52 42.1	4.362	5	20 26 23.62	2.3564	19 23 8.3	11.362
	18 29 28.98	2.5987	25 48 15.2	4.536	6	20 28 44.83	2.3506	19 11 43.2	11.473
	18 32 4.80	2.5953	25 43 37.8	4.709	7	20 31 5.69	2.3448	19 0 11.6	11.582
	18 34 40.41	2.5917	25 38 50.1	4.880	8	20 33 26.20	2.3388	18 48 33.4	11.690
	18 37 15.80	2.5880	25 33 52.2	5.051	9	20 35 46.35	2.3329	18 36 48.8	11.796
	18 39 50.97	2.5843	25 28 44.0	5.222	10	20 38 6.15	2.3271	18 24 57.9	11.900
	18 42 25.91	2.5804	25 23 25.6	5.391	11	20 40 25.60	2.3213	18 13 0.8	12.003
	18 45 0.62	2.5764	25 17 57.1	5.559	12	20 42 44.71	2.3155	18 0 57.6	12.103
	18 47 35.08	2.5723	25 12 18.5	5.726	13	20 45 3.46	2.3097	17 48 48.4	12.203
	18 50 9.30	2.5682	25 6 30.0	5.892	14	20 47 21.87	2.3040	17 36 33.2	12.302
	18 52 43.26	2.5638	25 0 31.5	6.057	15	20 49 39.94	2.2983	17 24 12.2	12.398
	18 55 16.96	2.5594	24 54 23.2	6.220	16	20 51 57.67	2.2926	17 11 45.5	12.493
	18 57 50.39	2.5549	24 48 5.1	6.383	17	20 54 15.05	2.2868	16 59 13.1	12.586
	19 0 23.55	2.5504	24 41 37.2	6.546	18	20 56 32.09	2.2813	16 46 35.2	12.678
	19 2 56.44	2.5458	24 34 59.6	6.706	19	20 58 48.80	2.2757	16 33 51.8	12.768
	19 5 29.04	2.5410	24 28 12.5	6.865	20	21 1 5.17	2.2701	16 21 3.0	12.857
	19 8 1.36	2.5363	24 21 15.8	7.024	21	21 3 21.21	2.2646	16 8 9.0	12.943
	19 10 33.39	2.5313	24 14 9.6	7.181	22	21 5 36.92	2.2591	15 55 9.8	13.028
	19 13 5.12	2.5263	24 6 54.1	7.337	23	21 7 52.30	2.2537	15 42 5.6	13.112
	19 15 36.55	2.5213	-23 59 29.2	+7.492	24	21 10 7.36	2.2483	-15 28 56.4	+13.194

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MARCH 29.					MARCH 31.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 10 7.36	2.2483	-15 28 56.4	+13.194	0	22 52 52.30	2.0677	-3 50 24.9	+15.238
1	21 12 22.09	2.2428	15 15 42.3	13.274	1	22 54 55.69	2.0553	3 35 4.3	15.347
2	21 14 36.50	2.2376	15 2 23.5	13.353	2	22 56 58.94	2.0531	3 19 43.3	15.353
3	21 16 50.60	2.2323	14 49 0.0	13.431	3	22 59 2.06	2.0509	3 4 21.9	15.360
4	21 19 4.38	2.2271	14 35 31.8	13.507	4	23 1 5.05	2.0488	2 49 0.1	15.366
5	21 21 17.85	2.2219	14 21 59.2	13.581	5	23 3 7.92	2.0468	2 33 38.0	15.369
6	21 23 31.01	2.2168	14 8 22.1	13.653	6	23 5 10.67	2.0448	2 18 15.8	15.371
7	21 25 43.87	2.2118	13 54 40.8	13.724	7	23 7 13.30	2.0429	2 2 53.5	15.373
8	21 27 56.42	2.2068	13 40 55.2	13.794	8	23 9 15.82	2.0411	1 47 31.1	15.375
9	21 30 8.68	2.2018	13 27 5.5	13.862	9	23 11 18.23	2.0393	1 32 8.8	15.371
10	21 32 20.64	2.1968	13 13 11.8	13.928	10	23 13 20.54	2.0377	1 16 46.6	15.368
11	21 34 32.30	2.1919	12 59 14.1	13.993	11	23 15 22.75	2.0360	1 1 24.7	15.363
12	21 36 43.67	2.1872	12 45 12.6	14.056	12	23 17 24.86	2.0344	0 46 3.1	15.357
13	21 38 54.76	2.1825	12 31 7.4	14.118	13	23 19 26.88	2.0330	0 30 41.9	15.350
14	21 41 5.57	2.1778	12 16 58.5	14.178	14	23 21 28.82	2.0317	0 15 21.1	15.343
15	21 43 16.10	2.1732	12 2 46.0	14.238	15	23 23 30.68	2.0303	-0 0 0.8	15.333
16	21 45 26.35	2.1686	11 48 30.0	14.294	16	23 25 32.46	2.0291	+0 15 18.8	15.321
17	21 47 36.33	2.1641	11 34 10.7	14.349	17	23 27 34.17	2.0279	0 30 37.7	15.309
18	21 49 46.04	2.1597	11 19 48.1	14.403	18	23 29 35.81	2.0268	0 45 55.9	15.296
19	21 51 55.49	2.1553	11 5 22.3	14.456	19	23 31 37.38	2.0257	1 1 13.2	15.281
20	21 54 4.67	2.1509	10 50 53.4	14.508	20	23 33 38.89	2.0248	1 16 29.6	15.263
21	21 56 13.60	2.1468	10 36 21.4	14.558	21	23 35 40.35	2.0238	1 31 45.0	15.245
22	21 58 22.28	2.1426	10 21 46.5	14.605	22	23 37 41.75	2.0229	1 46 59.3	15.229
23	22 0 30.71	2.1384	-10 7 8.8	+14.651	23	23 39 43.10	2.0222	+2 2 12.5	+15.210
MARCH 30.					APRIL 1.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	22 2 38.89	2.1343	-9 52 28.4	+14.696	0	23 41 44.41	2.0215	+2 17 24.5	+15.188
1	22 4 46.83	2.1303	9 37 45.3	14.739	1	23 43 45.68	2.0208	2 32 35.1	15.166
2	22 6 54.53	2.1264	9 22 59.7	14.781	2	23 45 46.91	2.0202	2 47 44.4	15.143
3	22 9 2.00	2.1226	9 8 11.6	14.822	3	23 47 48.10	2.0197	3 2 52.3	15.118
4	22 11 9.24	2.1188	8 53 21.1	14.861	4	23 49 49.27	2.0193	3 17 58.6	15.092
5	22 13 16.26	2.1151	8 38 28.3	14.898	5	23 51 50.41	2.0188	3 33 3.3	15.065
6	22 15 23.05	2.1114	8 23 33.3	14.934	6	23 53 51.53	2.0185	3 48 6.4	15.037
7	22 17 29.63	2.1078	8 8 36.2	14.969	7	23 55 52.63	2.0183	4 3 7.7	15.007
8	22 19 35.99	2.1043	7 53 37.0	15.003	8	23 57 53.72	2.0181	4 18 7.2	14.976
9	22 21 42.15	2.1009	7 38 35.9	15.034	9	23 59 54.80	2.0179	4 33 4.8	14.944
10	22 23 48.10	2.0975	7 23 32.9	15.064	10	0 1 55.87	2.0178	4 48 0.5	14.911
11	22 25 53.85	2.0943	7 8 28.2	15.093	11	0 3 56.94	2.0178	5 2 54.1	14.876
12	22 27 59.41	2.0910	6 53 21.8	15.120	12	0 5 58.01	2.0179	5 17 45.6	14.840
13	22 30 4.77	2.0878	6 38 13.8	15.146	13	0 7 59.09	2.0180	5 32 34.9	14.803
14	22 32 9.95	2.0848	6 23 4.3	15.170	14	0 10 0.17	2.0182	5 47 22.0	14.766
15	22 34 14.94	2.0817	6 7 53.4	15.193	15	0 12 1.27	2.0184	6 2 6.8	14.727
16	22 36 19.75	2.0788	5 52 41.1	15.215	16	0 14 2.38	2.0187	6 16 49.2	14.687
17	22 38 24.39	2.0759	5 37 27.6	15.234	17	0 16 3.51	2.0191	6 31 29.2	14.645
18	22 40 28.86	2.0731	5 22 13.0	15.253	18	0 18 4.67	2.0195	6 46 6.6	14.602
19	22 42 33.16	2.0703	5 6 57.2	15.272	19	0 20 5.85	2.0199	7 0 41.4	14.558
20	22 44 37.29	2.0676	4 51 40.4	15.288	20	0 22 7.06	2.0204	7 15 13.6	14.513
21	22 46 41.27	2.0651	4 36 22.7	15.302	21	0 24 8.30	2.0210	7 29 43.0	14.467
22	22 48 45.10	2.0625	4 21 4.2	15.315	22	0 26 9.58	2.0217	7 44 9.6	14.419
23	22 50 48.77	2.0600	4 5 44.9	15.328	23	0 28 10.90	2.0223	7 58 33.3	14.371
24	22 52 52.30	2.0577	-3 50 24.9	+15.338	24	0 30 12.26	2.0231	+8 12 54.1	+14.322

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
APRIL 2.					APRIL 4.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	0 30 12.26	2.0231	+ 8 12 54.1	+14.322	0	2 9 2.26	2.1063	+18 23 7.6	+10.724
1	0 32 13.67	2.0239	8 27 11.9	14.271	1	2 11 8.83	2.1107	18 33 48.1	10.626
2	0 34 15.13	2.0248	8 41 26.6	14.219	2	2 13 15.54	2.1131	18 44 22.7	10.528
3	0 36 16.64	2.0257	8 55 38.2	14.167	3	2 15 22.40	2.1155	18 54 51.4	10.428
4	0 38 18.21	2.0267	9 9 46.6	14.113	4	2 17 29.40	2.1179	19 5 14.1	10.328
5	0 40 19.84	2.0277	9 23 51.7	14.057	5	2 19 36.55	2.1204	19 15 30.8	10.228
6	0 42 21.53	2.0288	9 37 53.4	14.001	6	2 21 43.85	2.1228	19 25 41.4	10.125
7	0 44 23.29	2.0298	9 51 51.8	13.944	7	2 23 51.29	2.1253	19 35 45.8	10.022
8	0 46 25.11	2.0310	10 5 46.7	13.885	8	2 25 58.88	2.1278	19 45 44.0	9.918
9	0 48 27.01	2.0323	10 19 38.0	13.826	9	2 28 6.62	2.1302	19 55 36.0	9.815
10	0 50 28.98	2.0335	10 33 25.8	13.766	10	2 30 14.50	2.1326	20 5 21.8	9.710
11	0 52 31.03	2.0348	10 47 9.9	13.704	11	2 32 22.53	2.1351	20 15 1.2	9.603
12	0 54 33.15	2.0361	11 0 50.3	13.642	12	2 34 30.71	2.1375	20 24 34.2	9.497
13	0 56 35.36	2.0375	11 14 26.9	13.578	13	2 36 39.03	2.1399	20 34 0.8	9.390
14	0 58 37.65	2.0389	11 27 59.6	13.513	14	2 38 47.50	2.1424	20 43 21.0	9.283
15	1 0 40.03	2.0405	11 41 28.4	13.447	15	2 40 56.12	2.1448	20 52 34.7	9.173
16	1 2 42.51	2.0421	11 54 53.2	13.380	16	2 43 4.88	2.1472	21 1 41.8	9.064
17	1 4 45.08	2.0436	12 8 14.0	13.312	17	2 45 13.78	2.1496	21 10 42.4	8.954
18	1 6 47.74	2.0452	12 21 30.6	13.243	18	2 47 22.83	2.1520	21 19 36.3	8.843
19	1 8 50.50	2.0468	12 34 43.1	13.173	19	2 49 32.02	2.1543	21 28 23.6	8.733
20	1 10 53.36	2.0485	12 47 51.4	13.103	20	2 51 41.35	2.1567	21 37 4.2	8.620
21	1 12 56.32	2.0502	13 0 55.4	13.030	21	2 53 50.82	2.1590	21 45 38.0	8.506
22	1 14 59.38	2.0520	13 13 55.0	12.957	22	2 56 0.43	2.1614	21 54 5.1	8.394
23	1 17 2.56	2.0539	+13 26 50.2	+12.883	23	2 58 10.19	2.1638	+22 2 25.3	+ 8.279
APRIL 3.					APRIL 5.				
0	1 19 5.85	2.0558	+13 39 41.0	+12.808	0	3 0 20.08	2.1660	+22 10 38.6	+ 8.165
1	1 21 9.25	2.0576	13 52 27.2	12.732	1	3 2 30.11	2.1683	22 18 45.1	8.050
2	1 23 12.76	2.0595	14 5 8.8	12.655	2	3 4 40.27	2.1705	22 26 44.6	7.934
3	1 25 16.39	2.0614	14 17 45.8	12.578	3	3 6 50.57	2.1728	22 34 37.2	7.818
4	1 27 20.13	2.0633	14 30 18.1	12.498	4	3 9 1.00	2.1749	22 42 22.8	7.701
5	1 29 23.99	2.0654	14 42 45.6	12.418	5	3 11 11.56	2.1771	22 50 1.3	7.583
6	1 31 27.98	2.0675	14 55 8.2	12.337	6	3 13 22.25	2.1793	22 57 32.8	7.465
7	1 33 32.09	2.0695	15 7 26.0	12.255	7	3 15 33.07	2.1813	23 4 57.1	7.346
8	1 35 36.32	2.0716	15 19 38.8	12.173	8	3 17 44.01	2.1834	23 12 14.3	7.227
9	1 37 40.68	2.0738	15 31 46.7	12.089	9	3 19 55.08	2.1855	23 19 24.3	7.108
10	1 39 45.17	2.0759	15 43 49.5	12.004	10	3 22 6.27	2.1875	23 26 27.2	6.988
11	1 41 49.79	2.0781	15 55 47.2	11.918	11	3 24 17.58	2.1895	23 33 22.8	6.866
12	1 43 54.54	2.0803	16 7 39.7	11.832	12	3 26 29.01	2.1915	23 40 11.1	6.745
13	1 45 59.42	2.0825	16 19 27.0	11.745	13	3 28 40.56	2.1934	23 46 52.2	6.623
14	1 48 4.44	2.0848	16 31 9.1	11.657	14	3 30 52.22	2.1953	23 53 25.9	6.501
15	1 50 9.59	2.0870	16 42 45.8	11.567	15	3 33 3.99	2.1972	23 59 52.3	6.378
16	1 52 14.88	2.0893	16 54 17.1	11.477	16	3 35 15.88	2.1990	24 6 11.3	6.255
17	1 54 20.31	2.0917	17 5 43.0	11.386	17	3 37 27.87	2.2007	24 12 22.9	6.131
18	1 56 25.88	2.0940	17 17 3.4	11.294	18	3 39 39.96	2.2024	24 18 27.0	6.007
19	1 58 31.59	2.0963	17 28 18.3	11.201	19	3 41 52.16	2.2042	24 24 23.7	5.883
20	2 0 37.44	2.0987	17 39 27.5	11.107	20	3 44 4.46	2.2058	24 30 13.0	5.758
21	2 2 43.43	2.1010	17 50 31.1	11.013	21	3 46 18.86	2.2074	24 35 54.7	5.633
22	2 4 49.56	2.1034	18 1 29.0	10.918	22	3 48 29.35	2.2089	24 41 28.9	5.507
23	2 6 55.84	2.1058	18 12 21.2	10.822	23	3 50 41.93	2.2105	24 46 55.5	5.381
24	2 9 2.26	2.1083	+18 23 7.6	+10.724	24	3 52 54.61	2.2120	+24 52 14.6	+ 5.255

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
APRIL 6.					APRIL 8.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	3 52 54.61	2.2120	+24 52 14.6	+5.255	0	5 39 43.24	2.2154	+26 35 12.7	-0.979
1	3 55 7.37	2.2134	24 57 26.1	5.128	1	5 41 56.12	2.2140	26 34 10.1	1.108
2	3 57 20.22	2.2148	25 2 30.0	5.002	2	5 44 8.92	2.2126	26 32 59.8	1.235
3	3 59 33.14	2.2160	25 7 26.3	4.874	3	5 46 21.63	2.2111	26 31 41.9	1.363
4	4 1 46.14	2.2173	25 12 14.9	4.746	4	5 48 34.25	2.2095	26 30 16.3	1.491
5	4 3 59.22	2.2186	25 16 55.8	4.618	5	5 50 46.77	2.2078	26 28 43.0	1.618
6	4 6 12.37	2.2198	25 21 29.0	4.490	6	5 52 59.19	2.2062	26 27 2.1	1.745
7	4 8 25.59	2.2208	25 25 54.6	4.362	7	5 55 11.51	2.2045	26 25 13.6	1.872
8	4 10 38.87	2.2219	25 30 12.4	4.233	8	5 57 23.73	2.2028	26 23 17.5	1.998
9	4 12 52.22	2.2229	25 34 22.5	4.103	9	5 59 35.84	2.2008	26 21 13.9	2.123
10	4 15 5.62	2.2238	25 38 24.8	3.974	10	6 1 47.83	2.1989	26 19 2.7	2.249
11	4 17 19.08	2.2248	25 42 19.4	3.845	11	6 3 59.71	2.1970	26 16 44.0	2.374
12	4 19 32.59	2.2256	25 46 6.2	3.715	12	6 6 11.47	2.1950	26 14 17.8	2.499
13	4 21 46.15	2.2264	25 49 45.2	3.586	13	6 8 23.11	2.1930	26 11 44.1	2.623
14	4 23 59.76	2.2272	25 53 16.5	3.457	14	6 10 34.63	2.1909	26 9 3.0	2.748
15	4 26 13.41	2.2278	25 56 40.0	3.326	15	6 12 46.02	2.1888	26 6 14.4	2.872
16	4 28 27.09	2.2283	25 59 55.6	3.195	16	6 14 57.29	2.1867	26 3 18.4	2.995
17	4 30 40.81	2.2289	26 3 3.4	3.065	17	6 17 8.42	2.1844	26 0 15.0	3.118
18	4 32 54.56	2.2294	26 6 3.4	2.934	18	6 19 19.42	2.1822	25 57 4.2	3.241
19	4 35 8.34	2.2298	26 8 55.5	2.803	19	6 21 30.28	2.1798	25 53 46.1	3.363
20	4 37 22.14	2.2302	26 11 39.8	2.673	20	6 23 41.00	2.1775	25 50 20.7	3.484
21	4 39 35.96	2.2305	26 14 16.2	2.542	21	6 25 51.58	2.1751	25 46 48.0	3.605
22	4 41 49.80	2.2308	26 16 44.8	2.411	22	6 28 2.01	2.1727	25 43 8.1	3.726
23	4 44 3.65	2.2309	+26 19 5.5	+2.279	23	6 30 12.30	2.1703	+25 39 20.9	-3.847
APRIL 7.					APRIL 9.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	4 46 17.51	2.2311	+26 21 18.3	+2.148	0	6 32 22.44	2.1678	+25 35 26.5	-3.967
1	4 48 31.38	2.2312	26 23 23.3	2.018	1	6 34 32.43	2.1653	25 31 24.9	4.086
2	4 50 45.25	2.2312	26 25 20.4	1.887	2	6 36 42.27	2.1627	25 27 16.2	4.204
3	4 52 59.12	2.2311	26 27 9.7	1.756	3	6 38 51.95	2.1600	25 23 0.4	4.323
4	4 55 12.98	2.2309	26 28 51.1	1.624	4	6 41 1.47	2.1574	25 18 37.4	4.442
5	4 57 26.83	2.2308	26 30 24.6	1.493	5	6 43 10.84	2.1548	25 14 7.4	4.558
6	4 59 40.67	2.2305	26 31 50.2	1.362	6	6 45 20.04	2.1520	25 9 30.4	4.676
7	5 1 54.49	2.2302	26 33 8.0	1.231	7	6 47 29.08	2.1493	25 4 46.3	4.793
8	5 4 8.29	2.2298	26 34 17.9	1.100	8	6 49 37.96	2.1466	24 59 55.3	4.908
9	5 6 22.07	2.2294	26 35 20.0	0.969	9	6 51 46.67	2.1438	24 54 57.3	5.024
10	5 8 35.82	2.2288	26 36 14.2	0.838	10	6 53 55.22	2.1411	24 49 52.4	5.139
11	5 10 49.53	2.2283	26 37 0.6	0.708	11	6 56 3.60	2.1382	24 44 40.6	5.254
12	5 13 3.21	2.2277	26 37 39.1	0.577	12	6 58 11.80	2.1353	24 39 21.9	5.368
13	5 15 16.85	2.2270	26 38 9.8	0.447	13	7 0 19.84	2.1325	24 33 56.4	5.482
14	5 17 30.45	2.2263	26 38 32.7	0.316	14	7 2 27.70	2.1295	24 28 24.1	5.594
15	5 19 44.00	2.2254	26 38 47.7	0.185	15	7 4 35.38	2.1266	24 22 45.1	5.706
16	5 21 57.50	2.2245	26 38 54.9	+0.055	16	7 6 42.89	2.1238	24 16 59.4	5.818
17	5 24 10.94	2.2236	26 38 54.3	-0.075	17	7 8 50.23	2.1208	24 11 6.9	5.930
18	5 26 24.33	2.2226	26 38 45.9	0.204	18	7 10 57.39	2.1178	24 5 7.8	6.040
19	5 28 37.65	2.2215	26 38 29.8	0.333	19	7 13 4.37	2.1149	23 59 2.1	6.150
20	5 30 50.91	2.2205	26 38 5.9	0.463	20	7 15 11.18	2.1119	23 52 49.8	6.260
21	5 33 4.11	2.2193	26 37 34.2	0.593	21	7 17 17.80	2.1088	23 46 30.9	6.369
22	5 35 17.23	2.2180	26 36 54.8	0.722	22	7 19 24.24	2.1058	23 40 5.5	6.478
23	5 37 30.27	2.2168	26 36 7.6	0.851	23	7 21 30.50	2.1028	23 33 33.6	6.586
24	5 39 43.24	2.2154	+26 35 12.7	-0.979	24	7 23 36.58	2.0998	+23 26 55.2	-6.693

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
APRIL 10.					APRIL 12.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	7 23 36.58	2.0996	+23 26 55.2	-6.693	0	9 1 1.77	1.9068	+16 13 40.2	-11.117
1	7 25 42.48	2.0968	23 20 10.4	6.799	1	9 2 59.71	1.9047	16 2 30.9	11.193
2	7 27 48.19	2.0937	23 13 19.3	6.905	2	9 4 57.53	1.9027	15 51 17.1	11.268
3	7 29 53.72	2.0907	23 6 21.8	7.011	3	9 6 55.23	1.9006	15 39 58.7	11.343
4	7 31 59.07	2.0877	22 59 18.0	7.116	4	9 8 52.80	1.9588	15 28 35.9	11.418
5	7 34 4.24	2.0846	22 52 7.9	7.221	5	9 10 50.26	1.9568	15 17 8.6	11.492
6	7 36 9.22	2.0815	22 44 51.5	7.324	6	9 12 47.61	1.9548	15 5 36.9	11.565
7	7 38 14.02	2.0785	22 37 29.0	7.427	7	9 14 44.84	1.9529	14 54 0.8	11.637
8	7 40 18.64	2.0754	22 30 0.3	7.530	8	9 16 41.96	1.9512	14 42 20.5	11.708
9	7 42 23.07	2.0723	22 22 25.4	7.632	9	9 18 38.98	1.9494	14 30 35.8	11.779
10	7 44 27.32	2.0693	22 14 44.5	7.733	10	9 20 35.89	1.9477	14 18 47.0	11.849
11	7 46 31.39	2.0663	22 6 57.5	7.833	11	9 22 32.70	1.9461	14 6 53.9	11.919
12	7 48 35.28	2.0633	21 59 4.5	7.933	12	9 24 29.42	1.9445	13 54 56.7	11.986
13	7 50 38.99	2.0603	21 51 5.5	8.033	13	9 26 26.01	1.9429	13 42 55.4	12.056
14	7 52 42.51	2.0572	21 43 0.5	8.133	14	9 28 22.57	1.9414	13 30 50.0	12.123
15	7 54 45.85	2.0542	21 34 49.6	8.231	15	9 30 19.01	1.9399	13 18 40.6	12.190
16	7 56 49.01	2.0512	21 26 32.8	8.328	16	9 32 15.36	1.9385	13 6 27.2	12.257
17	7 58 51.99	2.0483	21 18 10.2	8.425	17	9 34 11.63	1.9373	12 54 9.8	12.323
18	8 0 54.80	2.0453	21 9 41.8	8.522	18	9 36 7.83	1.9360	12 41 48.5	12.387
19	8 2 57.42	2.0423	21 1 7.6	8.618	19	9 38 3.95	1.9347	12 29 23.4	12.450
20	8 4 59.87	2.0393	20 52 27.7	8.713	20	9 39 59.99	1.9334	12 16 54.5	12.513
21	8 7 2.14	2.0364	20 43 42.1	8.807	21	9 41 55.96	1.9323	12 4 21.8	12.577
22	8 9 4.24	2.0335	20 34 50.9	8.901	22	9 43 51.87	1.9313	11 51 45.3	12.638
23	8 11 6.16	2.0306	+20 25 54.0	-8.994	23	9 45 47.71	1.9303	+11 39 5.2	-12.699
APRIL 11.					APRIL 13.				
0	8 13 7.91	2.0278	+20 16 51.6	-9.087	0	9 47 43.50	1.9293	+11 26 21.4	-12.760
1	8 15 9.49	2.0248	20 7 43.6	9.179	1	9 49 39.23	1.9283	11 13 34.0	12.819
2	8 17 10.89	2.0219	19 58 30.1	9.270	2	9 51 34.90	1.9274	11 0 43.1	12.878
3	8 19 12.12	2.0192	19 49 11.2	9.361	3	9 53 30.52	1.9267	10 47 48.6	12.937
4	8 21 13.19	2.0164	19 39 46.8	9.451	4	9 55 26.10	1.9260	10 34 50.7	12.993
5	8 23 14.09	2.0137	19 30 17.1	9.540	5	9 57 21.64	1.9253	10 21 49.4	13.050
6	8 25 14.83	2.0109	19 20 42.0	9.629	6	9 59 17.14	1.9247	10 8 44.7	13.107
7	8 27 15.40	2.0081	19 11 1.6	9.718	7	10 1 12.60	1.9241	9 55 36.6	13.163
8	8 29 15.80	2.0054	19 1 15.9	9.805	8	10 3 8.03	1.9236	9 42 25.2	13.217
9	8 31 16.05	2.0028	18 51 25.0	9.892	9	10 5 3.43	1.9231	9 29 10.6	13.270
10	8 33 16.14	2.0002	18 41 28.9	9.978	10	10 6 58.80	1.9228	9 15 52.8	13.323
11	8 35 16.07	1.9976	18 31 27.6	10.063	11	10 8 54.16	1.9225	9 2 31.9	13.375
12	8 37 15.85	1.9950	18 21 21.3	10.148	12	10 10 49.50	1.9223	8 49 7.8	13.427
13	8 39 15.47	1.9924	18 11 9.9	10.233	13	10 12 44.83	1.9220	8 35 40.7	13.477
14	8 41 14.94	1.9899	18 0 53.4	10.317	14	10 14 40.14	1.9218	8 22 10.6	13.527
15	8 43 14.26	1.9874	17 50 31.9	10.399	15	10 16 35.45	1.9218	8 8 37.5	13.576
16	8 45 13.43	1.9850	17 40 5.5	10.482	16	10 18 30.76	1.9218	7 55 1.5	13.624
17	8 47 12.46	1.9826	17 29 34.1	10.563	17	10 20 26.06	1.9218	7 41 22.6	13.672
18	8 49 11.34	1.9803	17 18 57.9	10.644	18	10 22 21.37	1.9219	7 27 40.9	13.718
19	8 51 10.09	1.9779	17 8 16.8	10.725	19	10 24 16.69	1.9222	7 13 56.5	13.763
20	8 53 8.69	1.9756	16 57 30.9	10.804	20	10 26 12.03	1.9224	7 0 9.3	13.809
21	8 55 7.16	1.9734	16 46 40.3	10.883	21	10 28 7.38	1.9227	6 46 19.4	13.853
22	8 57 5.50	1.9712	16 35 45.0	10.962	22	10 30 2.75	1.9231	6 32 26.9	13.897
23	8 59 3.70	1.9689	16 24 44.9	11.040	23	10 31 58.15	1.9235	6 18 31.8	13.939
24	9 1 1.77	1.9668	+16 13 40.2	-11.117	24	10 33 53.57	1.9240	+6 4 34.2	-13.980

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
APRIL 14.					APRIL 16.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	10 33 53.57	1.9240	+6 4 34.2	-13.980	0	12 8 10.49	2.0325	-5 36 32.4	-14.825
1	10 35 49.03	1.9246	5 50 34.2	14.021	1	12 10 12.56	2.0366	5 51 21.6	14.814
2	10 37 44.52	1.9253	5 36 31.7	14.062	2	12 12 14.88	2.0408	6 6 10.1	14.803
3	10 39 40.06	1.9260	5 22 26.8	14.101	3	12 14 17.45	2.0449	6 20 57.9	14.792
4	10 41 35.64	1.9268	5 8 19.6	14.138	4	12 16 20.27	2.0492	6 35 44.8	14.782
5	10 43 31.27	1.9276	4 54 10.2	14.176	5	12 18 23.35	2.0536	6 50 30.8	14.772
6	10 45 26.95	1.9285	4 39 58.5	14.213	6	12 20 26.70	2.0580	7 5 15.8	14.762
7	10 47 22.69	1.9295	4 25 44.7	14.248	7	12 22 30.31	2.0625	7 19 59.7	14.752
8	10 49 18.49	1.9305	4 11 28.7	14.283	8	12 24 34.20	2.0672	7 34 42.5	14.742
9	10 51 14.35	1.9317	3 57 10.7	14.317	9	12 26 38.37	2.0718	7 49 24.0	14.732
10	10 53 10.29	1.9329	3 42 50.7	14.349	10	12 28 42.82	2.0766	8 4 4.2	14.722
11	10 55 6.30	1.9342	3 28 28.8	14.381	11	12 30 47.56	2.0813	8 18 43.0	14.712
12	10 57 2.39	1.9355	3 14 5.0	14.413	12	12 32 52.58	2.0862	8 33 20.2	14.702
13	10 58 58.56	1.9369	2 59 39.3	14.444	13	12 34 57.90	2.0912	8 47 55.8	14.692
14	11 0 54.82	1.9384	2 45 11.9	14.474	14	12 37 3.52	2.0962	9 2 29.8	14.682
15	11 2 51.17	1.9399	2 30 42.8	14.499	15	12 39 9.44	2.1013	9 17 1.9	14.672
16	11 4 47.61	1.9415	2 16 12.0	14.527	16	12 41 15.67	2.1064	9 31 32.2	14.662
17	11 6 44.15	1.9433	2 1 39.6	14.553	17	12 43 22.21	2.1116	9 46 0.6	14.652
18	11 8 40.80	1.9451	1 47 5.7	14.578	18	12 45 29.06	2.1169	10 0 26.9	14.642
19	11 10 37.56	1.9469	1 32 30.3	14.603	19	12 47 36.24	2.1223	10 14 51.0	14.632
20	11 12 34.43	1.9488	1 17 53.4	14.626	20	12 49 43.74	2.1277	10 29 12.9	14.622
21	11 14 31.42	1.9508	1 3 15.2	14.648	21	12 51 51.56	2.1332	10 43 32.4	14.612
22	11 16 28.53	1.9528	0 48 35.7	14.668	22	12 53 59.72	2.1388	10 57 49.5	14.602
23	11 18 25.76	1.9549	+0 33 55.0	-14.688	23	12 56 8.21	2.1443	-11 12 4.1	-14.592
APRIL 15.					APRIL 17.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	11 20 23.12	1.9572	+0 19 13.1	-14.708	0	12 58 17.04	2.1500	-11 26 16.1	-14.178
1	11 22 20.62	1.9594	+0 4 30.1	14.726	1	13 0 26.21	2.1558	11 40 25.4	14.121
2	11 24 18.25	1.9618	-0 10 14.0	14.743	2	13 2 35.73	2.1616	11 54 31.8	14.063
3	11 26 16.03	1.9643	0 24 59.0	14.758	3	13 4 45.60	2.1674	12 8 35.3	14.003
4	11 28 13.96	1.9668	0 39 45.0	14.774	4	13 6 55.82	2.1733	12 22 35.8	13.943
5	11 30 12.04	1.9693	0 54 31.9	14.788	5	13 9 6.40	2.1793	12 36 33.2	13.883
6	11 32 10.28	1.9720	1 9 19.5	14.799	6	13 11 17.34	2.1854	12 50 27.4	13.823
7	11 34 8.68	1.9747	1 24 7.8	14.811	7	13 13 28.65	2.1915	13 4 18.3	13.763
8	11 36 7.24	1.9775	1 38 56.8	14.822	8	13 15 40.32	2.1976	13 18 5.8	13.703
9	11 38 5.98	1.9804	1 53 46.4	14.831	9	13 17 52.36	2.2038	13 31 49.8	13.643
10	11 40 4.89	1.9833	2 8 36.5	14.839	10	13 20 4.78	2.2102	13 45 30.1	13.583
11	11 42 3.98	1.9863	2 23 27.1	14.846	11	13 22 17.58	2.2164	13 59 6.7	13.523
12	11 44 3.25	1.9894	2 38 18.0	14.851	12	13 24 30.75	2.2228	14 12 39.5	13.463
13	11 46 2.71	1.9926	2 53 9.2	14.856	13	13 26 44.31	2.2292	14 26 8.4	13.403
14	11 48 2.36	1.9958	3 8 0.7	14.859	14	13 28 58.25	2.2356	14 39 33.2	13.343
15	11 50 2.21	1.9993	3 22 52.3	14.862	15	13 31 12.58	2.2421	14 52 53.9	13.283
16	11 52 2.27	2.0027	3 37 44.1	14.863	16	13 33 27.30	2.2487	15 6 10.3	13.223
17	11 54 2.53	2.0061	3 52 35.9	14.863	17	13 35 42.42	2.2553	15 19 22.4	13.164
18	11 56 3.00	2.0096	4 7 27.6	14.860	18	13 37 57.93	2.2619	15 32 30.0	13.104
19	11 58 3.68	2.0132	4 22 19.1	14.858	19	13 40 13.85	2.2687	15 45 33.0	13.044
20	12 0 4.58	2.0169	4 37 10.5	14.854	20	13 42 30.17	2.2753	15 58 31.4	12.983
21	12 2 5.71	2.0208	4 52 1.6	14.848	21	13 44 46.89	2.2820	16 11 25.0	12.923
22	12 4 7.07	2.0246	5 6 52.3	14.842	22	13 47 4.01	2.2888	16 24 13.7	12.862
23	12 6 8.66	2.0285	5 21 42.6	14.834	23	13 49 21.54	2.2956	16 36 57.4	12.802
24	12 8 10.49	2.0325	-5 36 32.4	-14.825	24	13 51 39.48	2.3024	-16 49 35.9	-12.742

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
APRIL 18.					APRIL 20.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	13 51 39.48	2.3024	-16 49 35.9	-12.598	0	15 50 0.70	2.6142	-24 40 30.2	-6.356
1	13 53 57.83	2.3093	17 2 9.2	12.511	1	15 52 37.70	2.6191	24 46 46.5	6.186
2	13 56 16.59	2.3162	17 14 37.2	12.422	2	15 55 14.99	2.6238	24 52 52.5	6.015
3	13 58 35.77	2.3232	17 26 59.8	12.330	3	15 57 52.55	2.6283	24 58 48.8	5.843
4	14 0 55.37	2.3301	17 39 16.8	12.237	4	16 0 30.39	2.6329	25 4 33.7	5.670
5	14 3 15.38	2.3370	17 51 28.2	12.142	5	16 3 8.50	2.6373	25 10 8.7	5.496
6	14 5 35.81	2.3439	18 3 33.8	12.043	6	16 5 46.87	2.6416	25 15 33.2	5.321
7	14 7 56.65	2.3508	18 15 33.4	11.944	7	16 8 25.49	2.6457	25 20 47.2	5.144
8	14 10 17.91	2.3579	18 27 27.1	11.844	8	16 11 4.35	2.6496	25 25 50.5	4.967
9	14 12 39.60	2.3650	18 39 14.7	11.741	9	16 13 43.44	2.6534	25 30 43.2	4.788
10	14 15 1.71	2.3720	18 50 56.0	11.636	10	16 16 22.76	2.6572	25 35 25.1	4.608
11	14 17 24.24	2.3789	19 2 31.0	11.530	11	16 19 2.30	2.6607	25 39 56.2	4.428
12	14 19 47.18	2.3859	19 13 59.6	11.422	12	16 21 42.04	2.6641	25 44 16.5	4.247
13	14 22 10.55	2.3930	19 25 21.6	11.312	13	16 24 21.99	2.6673	25 48 25.8	4.064
14	14 24 34.34	2.4000	19 36 37.0	11.200	14	16 27 2.12	2.6703	25 52 24.2	3.882
15	14 26 58.55	2.4071	19 47 45.6	11.086	15	16 29 42.43	2.6733	25 56 11.6	3.698
16	14 29 23.19	2.4141	19 58 47.3	10.970	16	16 32 22.92	2.6762	25 59 47.9	3.513
17	14 31 48.24	2.4210	20 9 42.0	10.853	17	16 35 3.57	2.6787	26 3 13.1	3.328
18	14 34 13.71	2.4280	20 20 29.6	10.733	18	16 37 44.36	2.6811	26 6 27.2	3.142
19	14 36 39.60	2.4349	20 31 10.0	10.612	19	16 40 25.30	2.6834	26 9 30.1	2.955
20	14 39 5.90	2.4418	20 41 43.0	10.488	20	16 43 6.37	2.6856	26 12 21.8	2.768
21	14 41 32.62	2.4488	20 52 8.6	10.364	21	16 45 47.57	2.6876	26 15 2.2	2.580
22	14 43 59.75	2.4556	21 2 26.7	10.238	22	16 48 28.88	2.6893	26 17 31.4	2.393
23	14 46 27.29	2.4625	-21 12 37.1	-10.109	23	16 51 10.29	2.6910	-26 19 49.3	-2.203
APRIL 19.					APRIL 21.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	14 48 55.25	2.4693	-21 22 39.8	-9.979	0	16 53 51.80	2.6924	-26 21 55.8	-2.014
1	14 51 23.61	2.4761	21 32 34.6	9.847	1	16 56 33.38	2.6937	26 23 51.0	1.825
2	14 53 52.38	2.4828	21 42 21.4	9.713	2	16 59 15.04	2.6948	26 25 34.8	1.634
3	14 56 21.55	2.4895	21 52 0.1	9.578	3	17 1 56.75	2.6957	26 27 7.1	1.444
4	14 58 51.12	2.4962	22 1 30.7	9.440	4	17 4 38.52	2.6965	26 28 28.1	1.255
5	15 1 21.09	2.5028	22 10 52.9	9.301	5	17 7 20.33	2.6971	26 29 37.7	1.064
6	15 3 51.46	2.5094	22 20 6.8	9.161	6	17 10 2.17	2.6975	26 30 35.8	0.873
7	15 6 22.22	2.5158	22 29 12.2	9.018	7	17 12 44.03	2.6977	26 31 22.5	0.683
8	15 8 53.36	2.5223	22 38 9.0	8.874	8	17 15 25.89	2.6978	26 31 57.8	0.493
9	15 11 24.89	2.5286	22 46 57.1	8.728	9	17 18 7.76	2.6978	26 32 21.6	0.302
10	15 13 56.79	2.5349	22 55 36.4	8.581	10	17 20 49.62	2.6975	26 32 34.0	-0.111
11	15 16 29.08	2.5412	23 4 6.8	8.432	11	17 23 31.46	2.6970	26 32 34.9	+0.080
12	15 19 1.73	2.5473	23 12 28.2	8.281	12	17 26 13.26	2.6963	26 32 24.4	0.270
13	15 21 34.75	2.5533	23 20 40.5	8.128	13	17 28 55.01	2.6954	26 32 2.5	0.461
14	15 24 8.13	2.5593	23 28 43.6	7.975	14	17 31 36.71	2.6945	26 31 29.1	0.652
15	15 26 41.87	2.5653	23 36 37.5	7.820	15	17 34 18.35	2.6933	26 30 44.3	0.841
16	15 29 15.97	2.5712	23 44 22.0	7.663	16	17 36 59.91	2.6920	26 29 48.2	1.030
17	15 31 50.41	2.5768	23 51 57.0	7.504	17	17 39 41.39	2.6906	26 28 40.7	1.220
18	15 34 25.19	2.5824	23 59 22.5	7.345	18	17 42 22.77	2.6888	26 27 21.8	1.409
19	15 37 0.30	2.5880	24 6 38.4	7.183	19	17 45 4.05	2.6871	26 25 51.6	1.597
20	15 39 35.75	2.5935	24 13 44.5	7.020	20	17 47 45.22	2.6851	26 24 10.2	1.784
21	15 42 11.52	2.5988	24 20 40.8	6.857	21	17 50 26.26	2.6829	26 22 17.5	1.973
22	15 44 47.61	2.6040	24 27 27.3	6.692	22	17 53 7.17	2.6806	26 20 13.5	2.160
23	15 47 24.00	2.6091	24 34 3.8	6.524	23	17 55 47.93	2.6781	26 17 58.3	2.346
24	15 50 0.70	2.6142	-24 40 30.2	-6.356	24	17 58 28.54	2.6754	-26 15 32.0	+2.532

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
APRIL 22.					APRIL 24.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	17 58 28.54	2.6784	-26 15 32.0	+ 2.532	0	20 1 29.80	2.4179	-20 59 44.6	+10.113
1	18 1 8.98	2.6726	26 12 54.5	2.717	1	20 3 54.67	2.4112	20 49 34.2	10.234
2	18 3 49.25	2.6697	26 10 6.0	2.901	2	20 6 19.14	2.4044	20 39 16.5	10.254
3	18 6 29.34	2.6666	26 7 6.4	3.085	3	20 8 43.20	2.3976	20 28 51.7	10.473
4	18 9 9.24	2.6633	26 3 55.8	3.268	4	20 11 6.85	2.3908	20 18 19.8	10.526
5	18 11 48.94	2.6599	26 0 34.3	3.449	5	20 13 30.10	2.3841	20 7 41.0	10.704
6	18 14 28.43	2.6564	25 57 1.9	3.630	6	20 15 52.94	2.3773	19 56 55.3	10.815
7	18 17 7.71	2.6528	25 53 18.7	3.810	7	20 18 15.38	2.3707	19 46 2.8	10.928
8	18 19 46.76	2.6488	25 49 24.7	3.990	8	20 20 37.42	2.3639	19 35 3.7	11.046
9	18 22 25.57	2.6449	25 45 19.9	4.169	9	20 22 59.05	2.3572	19 23 58.0	11.166
10	18 25 4.15	2.6408	25 41 4.4	4.346	10	20 25 20.28	2.3506	19 12 45.8	11.289
11	18 27 42.47	2.6366	25 36 38.4	4.522	11	20 27 41.11	2.3438	19 1 27.3	11.381
12	18 30 20.54	2.6323	25 32 1.8	4.698	12	20 30 1.54	2.3372	18 50 2.5	11.464
13	18 32 58.34	2.6278	25 27 14.7	4.872	13	20 32 21.57	2.3306	18 38 31.6	11.548
14	18 35 35.87	2.6231	25 22 17.2	5.045	14	20 34 41.21	2.3240	18 26 54.6	11.627
15	18 38 13.11	2.6183	25 17 9.3	5.217	15	20 37 0.45	2.3174	18 15 11.6	11.706
16	18 40 50.07	2.6136	25 11 51.2	5.388	16	20 39 19.30	2.3108	18 3 22.7	11.783
17	18 43 26.74	2.6088	25 6 22.8	5.558	17	20 41 37.75	2.3043	17 51 28.1	11.860
18	18 46 3.10	2.6035	25 0 44.3	5.726	18	20 43 55.82	2.2979	17 39 27.8	12.035
19	18 48 39.16	2.5984	24 54 55.7	5.893	19	20 46 13.50	2.2914	17 27 21.9	12.143
20	18 51 14.91	2.5932	24 48 57.1	6.059	20	20 48 30.79	2.2850	17 15 10.6	12.233
21	18 53 50.34	2.5878	24 42 48.6	6.223	21	20 50 47.70	2.2788	17 2 53.9	12.323
22	18 56 25.44	2.5823	24 36 30.3	6.387	22	20 53 4.24	2.2724	16 50 31.9	12.411
23	18 59 0.21	2.5768	-24 30 2.2	+ 6.549	23	20 55 20.39	2.2661	-16 38 4.6	+12.497
APRIL 23.					APRIL 25.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	19 1 34.65	2.5711	-24 23 24.4	+ 6.710	0	20 57 36.17	2.2599	-16 25 32.3	+12.586
1	19 4 8.74	2.5653	24 16 37.0	6.869	1	20 59 51.58	2.2538	16 12 55.0	12.653
2	19 6 42.49	2.5595	24 9 40.1	7.027	2	21 2 6.62	2.2477	16 0 12.8	12.743
3	19 9 15.88	2.5536	24 2 33.8	7.183	3	21 4 21.30	2.2416	15 47 25.8	12.823
4	19 11 48.92	2.5477	23 55 18.2	7.338	4	21 6 35.61	2.2355	15 34 34.1	12.908
5	19 14 21.60	2.5417	23 47 53.3	7.492	5	21 8 49.56	2.2295	15 21 37.8	12.978
6	19 16 53.92	2.5356	23 40 19.2	7.643	6	21 11 3.15	2.2236	15 8 37.0	13.061
7	19 19 25.87	2.5294	23 32 36.1	7.793	7	21 13 16.39	2.2178	14 55 31.8	13.128
8	19 21 57.45	2.5232	23 24 44.0	7.943	8	21 15 29.29	2.2121	14 42 22.2	13.194
9	19 24 28.65	2.5168	23 16 43.0	8.090	9	21 17 41.84	2.2063	14 29 8.3	13.260
10	19 26 59.47	2.5105	23 8 33.2	8.236	10	21 19 54.04	2.2005	14 15 50.3	13.323
11	19 29 29.91	2.5042	23 0 14.7	8.380	11	21 22 5.90	2.1949	14 2 28.3	13.400
12	19 31 59.97	2.4977	22 51 47.6	8.523	12	21 24 17.43	2.1894	13 49 2.3	13.466
13	19 34 29.63	2.4912	22 43 12.0	8.664	13	21 26 28.63	2.1839	13 35 32.4	13.528
14	19 36 58.91	2.4848	22 34 27.9	8.804	14	21 28 39.50	2.1785	13 21 58.8	13.588
15	19 39 27.80	2.4782	22 25 35.5	8.943	15	21 30 50.05	2.1732	13 8 21.4	13.653
16	19 41 56.29	2.4715	22 16 34.8	9.079	16	21 33 0.28	2.1678	12 54 40.4	13.713
17	19 44 24.38	2.4648	22 7 26.0	9.213	17	21 35 10.19	2.1626	12 40 55.9	13.777
18	19 46 52.07	2.4583	21 58 9.2	9.347	18	21 37 19.79	2.1574	12 27 8.0	13.838
19	19 49 19.37	2.4516	21 48 44.4	9.478	19	21 39 29.08	2.1523	12 13 16.8	13.898
20	19 51 46.26	2.4448	21 39 11.8	9.608	20	21 41 38.07	2.1473	11 59 22.3	13.953
21	19 54 12.75	2.4382	21 29 31.4	9.738	21	21 43 46.75	2.1423	11 45 24.6	13.998
22	19 56 38.84	2.4314	21 19 43.3	9.864	22	21 45 55.14	2.1374	11 31 23.8	14.035
23	19 59 4.52	2.4247	21 9 47.7	9.989	23	21 48 3.24	2.1327	11 17 20.1	14.059
24	20 1 29.80	2.4179	-20 59 44.6	+10.113	24	21 50 11.06	2.1279	-11 3 13.4	+14.133

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
APRIL 26.					APRIL 28.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 50 11.06	2.1279	-11 3 13.4	+14.135	0	23 28 18.53	1.9008	+ 0 44 58.1	+14.893
1	21 52 18.59	2.1233	10 49 3.9	14.181	1	23 30 17.92	1.9093	0 59 51.3	14.880
2	21 54 25.85	2.1187	10 34 51.7	14.226	2	23 32 17.25	1.9084	1 14 43.7	14.865
3	21 56 32.83	2.1141	10 20 36.8	14.269	3	23 34 16.53	1.9077	1 29 35.1	14.848
4	21 58 39.54	2.1097	10 6 19.4	14.312	4	23 36 15.77	1.9069	1 44 25.5	14.832
5	22 0 45.99	2.1053	9 51 59.4	14.353	5	23 38 14.96	1.9061	1 59 14.9	14.813
6	22 2 52.18	2.1010	9 37 37.1	14.392	6	23 40 14.10	1.9054	2 14 3.1	14.794
7	22 4 58.11	2.0968	9 23 12.4	14.430	7	23 42 13.21	1.9049	2 28 50.2	14.774
8	22 7 3.79	2.0927	9 8 45.5	14.467	8	23 44 12.29	1.9045	2 43 36.0	14.753
9	22 9 9.23	2.0886	8 54 16.4	14.502	9	23 46 11.35	1.9041	2 58 20.5	14.730
10	22 11 14.42	2.0846	8 39 45.3	14.535	10	23 48 10.38	1.9037	3 13 3.6	14.707
11	22 13 19.38	2.0807	8 25 12.2	14.568	11	23 50 9.39	1.9034	3 27 45.3	14.682
12	22 15 24.10	2.0768	8 10 37.1	14.600	12	23 52 8.39	1.9033	3 42 25.4	14.656
13	22 17 28.60	2.0731	7 56 0.2	14.629	13	23 54 7.38	1.9031	3 57 4.0	14.629
14	22 19 32.87	2.0693	7 41 21.6	14.658	14	23 56 6.36	1.9030	4 11 40.9	14.601
15	22 21 36.92	2.0656	7 26 41.3	14.686	15	23 58 5.34	1.9031	4 26 16.1	14.572
16	22 23 40.76	2.0623	7 11 59.3	14.712	16	0 0 4.33	1.9032	4 40 49.5	14.542
17	22 25 44.39	2.0588	6 57 15.9	14.736	17	0 2 3.32	1.9033	4 55 21.1	14.510
18	22 27 47.81	2.0553	6 42 31.0	14.760	18	0 4 2.32	1.9034	5 9 50.7	14.478
19	22 29 51.03	2.0521	6 27 44.7	14.782	19	0 6 1.33	1.9037	5 24 18.4	14.445
20	22 31 54.06	2.0489	6 12 57.2	14.803	20	0 8 0.36	1.9041	5 38 44.1	14.411
21	22 33 56.90	2.0458	5 58 8.4	14.823	21	0 9 59.42	1.9045	5 53 7.7	14.375
22	22 35 59.55	2.0427	5 43 18.5	14.841	22	0 11 58.50	1.9049	6 7 29.1	14.338
23	22 38 2.02	2.0397	- 5 28 27.5	+14.858	23	0 13 57.61	1.9054	+ 6 21 48.3	+14.301
APRIL 27.					APRIL 29.				
0	22 40 4.31	2.0366	- 5 13 35.5	+14.873	0	0 15 56.75	1.9060	+ 6 36 5.2	+14.263
1	22 42 6.43	2.0340	4 58 42.7	14.888	1	0 17 55.93	1.9067	6 50 19.8	14.223
2	22 44 8.39	2.0313	4 43 49.0	14.902	2	0 19 55.15	1.9074	7 4 31.9	14.182
3	22 46 10.18	2.0285	4 28 54.5	14.913	3	0 21 54.42	1.9082	7 18 41.6	14.140
4	22 48 11.81	2.0259	4 13 59.4	14.924	4	0 23 53.73	1.9089	7 32 48.7	14.097
5	22 50 13.29	2.0235	3 59 3.6	14.934	5	0 25 53.09	1.9098	7 46 53.2	14.053
6	22 52 14.63	2.0211	3 44 7.3	14.943	6	0 27 52.51	1.9098	8 0 55.1	14.009
7	22 54 15.82	2.0187	3 29 10.5	14.950	7	0 29 51.99	1.9018	8 14 54.3	13.963
8	22 56 16.87	2.0163	3 14 13.3	14.956	8	0 31 51.53	1.9029	8 28 50.6	13.915
9	22 58 17.78	2.0142	2 59 15.8	14.961	9	0 33 51.14	1.9041	8 42 44.1	13.868
10	23 0 18.57	2.0121	2 44 18.0	14.964	10	0 35 50.82	1.9053	8 56 34.7	13.818
11	23 2 19.23	2.0100	2 29 20.1	14.967	11	0 37 50.57	1.9064	9 10 22.3	13.768
12	23 4 19.77	2.0081	2 14 22.0	14.968	12	0 39 50.39	1.9077	9 24 6.9	13.718
13	23 6 20.20	2.0062	1 59 23.9	14.968	13	0 41 50.29	1.9091	9 37 48.4	13.665
14	23 8 20.51	2.0043	1 44 25.9	14.967	14	0 43 50.28	2.0005	9 51 26.7	13.612
15	23 10 20.72	2.0026	1 29 27.9	14.965	15	0 45 50.35	2.0019	10 5 1.8	13.558
16	23 12 20.82	2.0009	1 14 30.1	14.962	16	0 47 50.51	2.0034	10 18 33.7	13.503
17	23 14 20.83	1.9993	0 59 32.5	14.958	17	0 49 50.76	2.0050	10 32 2.2	13.447
18	23 16 20.74	1.9978	0 44 35.2	14.952	18	0 51 51.11	2.0067	10 45 27.3	13.389
19	23 18 20.57	1.9964	0 29 38.3	14.944	19	0 53 51.56	2.0083	10 58 48.9	13.331
20	23 20 20.31	1.9950	- 0 14 41.9	14.936	20	0 55 52.10	2.0099	11 12 7.0	13.272
21	23 22 19.97	1.9938	+ 0 0 14.0	14.928	21	0 57 52.75	2.0118	11 25 21.5	13.212
22	23 24 19.56	1.9926	0 15 9.4	14.918	22	0 59 53.51	2.0135	11 38 32.4	13.151
23	23 26 19.08	1.9914	0 30 4.1	14.906	23	1 1 54.37	2.0153	11 51 39.6	13.088
24	23 28 18.53	1.9903	+ 0 44 58.1	+14.893	24	1 3 55.35	2.0173	+12 4 43.0	+13.026

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
APRIL 30.					MAY 2.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	1 3 55.35	2.0173	+12 4 43.0	+13.025	0	2 43 32.61	2.1407	+20 58 53.8	+8.285
1	1 5 56.44	2.0192	12 17 42.6	12.961	1	2 45 41.13	2.1434	21 7 43.7	8.778
2	1 7 57.65	2.0212	12 30 38.3	12.895	2	2 47 49.82	2.1462	21 16 27.2	8.671
3	1 9 58.98	2.0232	12 43 30.0	12.829	3	2 49 58.67	2.1490	21 25 4.2	8.562
4	1 12 0.43	2.0253	12 56 17.8	12.763	4	2 52 7.69	2.1516	21 33 34.6	8.452
5	1 14 2.01	2.0273	13 9 1.5	12.694	5	2 54 16.86	2.1542	21 41 58.4	8.342
6	1 16 3.71	2.0296	13 21 41.1	12.625	6	2 56 26.19	2.1569	21 50 15.6	8.231
7	1 18 5.55	2.0317	13 34 16.5	12.554	7	2 58 35.69	2.1597	21 58 26.1	8.119
8	1 20 7.51	2.0338	13 46 47.6	12.483	8	3 0 45.35	2.1623	22 6 29.9	8.008
9	1 22 9.61	2.0362	13 59 14.5	12.412	9	3 2 55.16	2.1648	22 14 27.0	7.894
10	1 24 11.85	2.0385	14 11 37.0	12.338	10	3 5 5.12	2.1673	22 22 17.2	7.780
11	1 26 14.23	2.0406	14 23 55.1	12.264	11	3 7 15.24	2.1699	22 30 0.6	7.666
12	1 28 16.74	2.0431	14 36 8.7	12.189	12	3 9 25.51	2.1724	22 37 37.1	7.551
13	1 30 19.40	2.0455	14 48 17.8	12.113	13	3 11 35.93	2.1749	22 45 6.7	7.436
14	1 32 22.20	2.0479	15 0 22.3	12.037	14	3 13 46.50	2.1774	22 52 29.4	7.319
15	1 34 25.15	2.0503	15 12 22.2	11.960	15	3 15 57.22	2.1798	22 59 45.0	7.202
16	1 36 28.24	2.0528	15 24 17.4	11.880	16	3 18 8.08	2.1822	23 6 53.6	7.085
17	1 38 31.49	2.0554	15 36 7.8	11.800	17	3 20 19.08	2.1846	23 13 55.2	6.968
18	1 40 34.89	2.0579	15 47 53.4	11.719	18	3 22 30.22	2.1868	23 20 49.7	6.848
19	1 42 38.44	2.0605	15 59 34.1	11.638	19	3 24 41.50	2.1892	23 27 37.0	6.729
20	1 44 42.15	2.0631	16 11 9.9	11.555	20	3 26 52.92	2.1914	23 34 17.2	6.610
21	1 46 46.01	2.0657	16 22 40.7	11.472	21	3 29 4.47	2.1936	23 40 50.2	6.490
22	1 48 50.03	2.0683	16 34 6.5	11.388	22	3 31 16.15	2.1958	23 47 15.9	6.366
23	1 50 54.21	2.0710	+16 45 27.2	+11.302	23	3 33 27.96	2.1979	+23 53 34.4	+6.247
MAY 1.					MAY 3.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	1 52 58.55	2.0737	+16 56 42.7	+11.215	0	3 35 39.90	2.2000	+23 59 45.5	+6.124
1	1 55 3.05	2.0763	17 7 53.0	11.128	1	3 37 51.96	2.2019	24 5 49.3	6.003
2	1 57 7.71	2.0790	17 18 58.1	11.041	2	3 40 4.13	2.2038	24 11 45.8	5.880
3	1 59 12.53	2.0818	17 29 57.9	10.952	3	3 42 16.42	2.2056	24 17 34.9	5.757
4	2 1 17.52	2.0846	17 40 52.3	10.862	4	3 44 28.83	2.2075	24 23 16.6	5.633
5	2 3 22.68	2.0873	17 51 41.3	10.771	5	3 46 41.35	2.2096	24 28 50.8	5.508
6	2 5 28.00	2.0901	18 2 24.8	10.679	6	3 48 53.98	2.2113	24 34 17.6	5.384
7	2 7 33.49	2.0928	18 13 2.8	10.587	7	3 51 6.71	2.2131	24 39 36.9	5.258
8	2 9 39.14	2.0956	18 23 35.2	10.493	8	3 53 19.55	2.2148	24 44 48.6	5.133
9	2 11 44.96	2.0985	18 34 2.0	10.399	9	3 55 32.48	2.2163	24 49 52.8	5.007
10	2 13 50.96	2.1013	18 44 23.1	10.304	10	3 57 45.51	2.2179	24 54 49.4	4.881
11	2 15 57.12	2.1041	18 54 38.5	10.208	11	3 59 58.63	2.2194	24 59 38.5	4.754
12	2 18 3.45	2.1069	19 4 48.1	10.111	12	4 2 11.84	2.2208	25 4 19.9	4.627
13	2 20 9.95	2.1098	19 14 51.8	10.013	13	4 4 25.13	2.2223	25 8 53.7	4.499
14	2 22 16.62	2.1125	19 24 49.7	9.915	14	4 6 38.51	2.2236	25 13 19.8	4.372
15	2 24 23.45	2.1153	19 34 41.6	9.816	15	4 8 51.96	2.2248	25 17 38.3	4.244
16	2 26 30.46	2.1182	19 44 27.6	9.716	16	4 11 5.49	2.2260	25 21 49.1	4.116
17	2 28 37.64	2.1210	19 54 7.5	9.614	17	4 13 19.08	2.2271	25 25 52.2	3.987
18	2 30 44.98	2.1238	20 3 41.3	9.513	18	4 15 32.74	2.2283	25 29 47.5	3.858
19	2 32 52.50	2.1268	20 13 9.0	9.410	19	4 17 46.47	2.2293	25 33 35.1	3.729
20	2 35 0.19	2.1295	20 22 30.5	9.307	20	4 20 0.25	2.2302	25 37 15.0	3.600
21	2 37 8.04	2.1323	20 31 45.8	9.203	21	4 22 14.09	2.2311	25 40 47.1	3.471
22	2 39 16.06	2.1351	20 40 54.8	9.098	22	4 24 27.98	2.2318	25 44 11.5	3.341
23	2 41 24.25	2.1379	20 49 57.5	8.992	23	4 26 41.91	2.2326	25 47 28.0	3.210
24	2 43 32.61	2.1407	+20 58 53.8	+8.885	24	4 28 55.89	2.2333	+25 50 36.7	+3.080

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MAY 4.					MAY 6.				
	h m s	s	" ' "	"		h m s	s	" ' "	"
0	4 28 55.89	2.2333	+25 50 36.7	+3.080	0	6 15 35.90	2.1856	+25 48 35.4	-3.097
1	4 31 9.91	2.2339	25 53 37.6	2.950	1	6 17 46.96	2.1830	25 45 25.9	3.218
2	4 33 23.96	2.2345	25 56 30.7	2.819	2	6 19 57.86	2.1804	25 42 9.2	3.339
3	4 35 38.05	2.2350	25 59 15.9	2.688	3	6 22 8.61	2.1778	25 38 45.2	3.460
4	4 37 52.16	2.2353	26 1 53.3	2.558	4	6 24 19.20	2.1752	25 35 14.0	3.581
5	4 40 6.29	2.2357	26 4 22.9	2.428	5	6 26 29.63	2.1725	25 31 35.5	3.701
6	4 42 20.44	2.2360	26 6 44.6	2.296	6	6 28 39.90	2.1698	25 27 49.9	3.819
7	4 44 34.61	2.2363	26 8 58.4	2.165	7	6 30 50.00	2.1670	25 23 57.2	3.938
8	4 46 48.79	2.2363	26 11 4.4	2.034	8	6 32 59.94	2.1642	25 19 57.3	4.057
9	4 49 2.97	2.2363	26 13 2.5	1.903	9	6 35 9.70	2.1613	25 15 50.4	4.174
10	4 51 17.15	2.2363	26 14 52.7	1.772	10	6 37 19.29	2.1584	25 11 36.4	4.293
11	4 53 31.33	2.2363	26 16 35.1	1.641	11	6 39 28.71	2.1555	25 7 15.3	4.409
12	4 55 45.50	2.2361	26 18 9.6	1.509	12	6 41 37.95	2.1525	25 2 47.3	4.524
13	4 57 59.66	2.2358	26 19 36.2	1.378	13	6 43 47.01	2.1495	24 58 12.4	4.640
14	5 0 13.80	2.2356	26 20 55.0	1.248	14	6 45 55.89	2.1465	24 53 30.5	4.756
15	5 2 27.93	2.2353	26 22 5.9	1.116	15	6 48 4.59	2.1434	24 48 41.7	4.870
16	5 4 42.03	2.2348	26 23 8.9	0.985	16	6 50 13.10	2.1403	24 43 46.1	4.984
17	5 6 56.10	2.2343	26 24 4.1	0.854	17	6 52 21.42	2.1372	24 38 43.6	5.098
18	5 9 10.14	2.2337	26 24 51.4	0.723	18	6 54 29.56	2.1340	24 33 34.4	5.209
19	5 11 24.14	2.2330	26 25 30.8	0.592	19	6 56 37.50	2.1308	24 28 18.5	5.322
20	5 13 38.10	2.2323	26 26 2.4	0.462	20	6 58 45.25	2.1276	24 22 55.8	5.433
21	5 15 52.02	2.2315	26 26 26.2	0.332	21	7 0 52.81	2.1244	24 17 26.5	5.544
22	5 18 5.88	2.2306	26 26 42.2	0.201	22	7 3 0.18	2.1212	24 11 50.5	5.655
23	5 20 19.69	2.2298	+26 26 50.3	+0.071	23	7 5 7.35	2.1178	+24 6 7.9	-5.764
MAY 5.					MAY 7.				
	h m s	s	" ' "	"		h m s	s	" ' "	"
0	5 22 33.45	2.2288	+26 26 50.7	-0.058	0	7 7 14.32	2.1146	+24 0 18.8	-5.873
1	5 24 47.14	2.2277	26 26 43.3	0.189	1	7 9 21.10	2.1113	23 54 23.2	5.982
2	5 27 0.77	2.2266	26 26 28.0	0.319	2	7 11 27.68	2.1079	23 48 21.0	6.090
3	5 29 14.33	2.2253	26 26 5.0	0.448	3	7 13 34.05	2.1046	23 42 12.4	6.197
4	5 31 27.81	2.2240	26 25 34.2	0.578	4	7 15 40.23	2.1013	23 35 57.4	6.303
5	5 33 41.21	2.2227	26 24 55.7	0.707	5	7 17 46.21	2.0979	23 29 36.0	6.410
6	5 35 54.53	2.2213	26 24 9.4	0.835	6	7 19 51.98	2.0945	23 23 8.2	6.515
7	5 38 7.76	2.2198	26 23 15.5	0.963	7	7 21 57.55	2.0912	23 16 34.2	6.619
8	5 40 20.91	2.2183	26 22 13.8	1.093	8	7 24 2.92	2.0878	23 9 53.9	6.723
9	5 42 33.96	2.2167	26 21 4.4	1.220	9	7 26 8.09	2.0844	23 3 7.4	6.827
10	5 44 46.91	2.2150	26 19 47.4	1.348	10	7 28 13.05	2.0810	22 56 14.7	6.930
11	5 46 59.76	2.2133	26 18 22.7	1.475	11	7 30 17.81	2.0776	22 49 15.8	7.032
12	5 49 12.50	2.2115	26 16 50.4	1.602	12	7 32 22.36	2.0742	22 42 10.9	7.133
13	5 51 25.14	2.2097	26 15 10.5	1.728	13	7 34 26.71	2.0708	22 34 59.9	7.234
14	5 53 37.66	2.2077	26 13 23.0	1.855	14	7 36 30.85	2.0673	22 27 42.8	7.334
15	5 55 50.06	2.2058	26 11 27.9	1.982	15	7 38 34.79	2.0639	22 20 19.8	7.433
16	5 58 2.35	2.2038	26 9 25.2	2.107	16	7 40 38.52	2.0605	22 12 50.8	7.533
17	6 0 14.51	2.2017	26 7 15.1	2.231	17	7 42 42.05	2.0571	22 5 15.9	7.630
18	6 2 26.55	2.1995	26 4 57.5	2.357	18	7 44 45.37	2.0537	21 57 35.2	7.728
19	6 4 38.45	2.1973	26 2 32.3	2.482	19	7 46 48.49	2.0503	21 49 48.6	7.825
20	6 6 50.22	2.1950	25 59 59.7	2.605	20	7 48 51.41	2.0469	21 41 56.2	7.921
21	6 9 1.85	2.1927	25 57 19.7	2.728	21	7 50 54.12	2.0435	21 33 58.1	8.016
22	6 11 13.34	2.1903	25 54 32.3	2.852	22	7 52 56.63	2.0402	21 25 54.3	8.111
23	6 13 24.69	2.1880	25 51 37.5	2.974	23	7 54 58.94	2.0368	21 17 44.8	8.205
24	6 15 35.90	2.1856	+25 48 35.4	-3.097	24	7 57 1.05	2.0335	+21 9 29.7	-8.298

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	V P M
MAY 8.					MAY 10.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	7 57 1.05	2.0335	+21 9 29.7	-8.298	0	9 31 15.85	1.9079	+12 56 7.8	-12
1	7 59 2.96	2.0302	21 1 9.0	8.391	1	9 33 10.28	1.9064	12 44 5.7	12
2	8 1 4.67	2.0268	20 52 42.8	8.483	2	9 35 4.62	1.9049	12 32 0.0	12
3	8 3 6.18	2.0235	20 44 11.0	8.575	3	9 36 58.87	1.9035	12 19 50.6	12
4	8 5 7.49	2.0203	20 35 33.8	8.666	4	9 38 53.04	1.9022	12 7 37.7	12
5	8 7 8.61	2.0170	20 26 51.1	8.757	5	9 40 47.13	1.9009	11 55 21.2	12
6	8 9 9.53	2.0138	20 18 3.0	8.846	6	9 42 41.15	1.8997	11 43 1.2	12
7	8 11 10.26	2.0105	20 9 9.6	8.934	7	9 44 35.09	1.8985	11 30 37.8	12
8	8 13 10.79	2.0073	20 0 10.9	9.023	8	9 46 28.97	1.8974	11 18 11.0	12
9	8 15 11.13	2.0041	19 51 6.9	9.110	9	9 48 22.78	1.8963	11 5 40.8	12
10	8 17 11.28	2.0009	19 41 57.7	9.197	10	9 50 16.53	1.8953	10 53 7.3	12
11	8 19 11.24	1.9978	19 32 43.3	9.283	11	9 52 10.22	1.8943	10 40 30.5	12
12	8 21 11.02	1.9948	19 23 23.8	9.368	12	9 54 3.85	1.8935	10 27 50.4	12
13	8 23 10.61	1.9917	19 13 59.1	9.453	13	9 55 57.44	1.8928	10 15 7.1	12
14	8 25 10.02	1.9886	19 4 29.4	9.537	14	9 57 50.98	1.8919	10 2 20.7	12
15	8 27 9.24	1.9855	18 54 54.7	9.620	15	9 59 44.47	1.8913	9 49 31.1	12
16	8 29 8.28	1.9826	18 45 15.0	9.703	16	10 1 37.93	1.8908	9 36 38.4	12
17	8 31 7.15	1.9797	18 35 30.3	9.786	17	10 3 31.36	1.8902	9 23 42.7	12
18	8 33 5.84	1.9767	18 25 40.7	9.867	18	10 5 24.75	1.8896	9 10 43.9	13
19	8 35 4.35	1.9738	18 15 46.3	9.947	19	10 7 18.11	1.8892	8 57 42.2	13
20	8 37 2.69	1.9709	18 5 47.1	10.028	20	10 9 11.45	1.8889	8 44 37.5	13
21	8 39 0.86	1.9681	17 55 43.0	10.108	21	10 11 4.78	1.8887	8 31 30.0	13
22	8 40 58.86	1.9653	17 45 34.2	10.186	22	10 12 58.09	1.8883	8 18 19.6	13
23	8 42 56.70	1.9626	+17 35 20.7	-10.264	23	10 14 51.38	1.8882	+ 8 5 6.4	-13
MAY 9.					MAY 11.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	8 44 54.37	1.9598	+17 25 2.5	-10.342	0	10 16 44.67	1.8882	+ 7 51 50.4	-13
1	8 46 51.88	1.9572	17 14 39.7	10.418	1	10 18 37.96	1.8882	7 38 31.7	13
2	8 48 49.23	1.9545	17 4 12.3	10.495	2	10 20 31.25	1.8882	7 25 10.4	13
3	8 50 46.42	1.9519	16 53 40.3	10.571	3	10 22 24.54	1.8883	7 11 46.4	13
4	8 52 43.46	1.9493	16 43 3.8	10.645	4	10 24 17.85	1.8886	6 58 19.8	13
5	8 54 40.34	1.9468	16 32 22.9	10.718	5	10 26 11.17	1.8888	6 44 50.6	13
6	8 56 37.08	1.9444	16 21 37.6	10.793	6	10 28 4.50	1.8891	6 31 18.9	13
7	8 58 33.67	1.9419	16 10 47.8	10.866	7	10 29 57.86	1.8895	6 17 44.8	13
8	9 0 30.11	1.9395	15 59 53.7	10.938	8	10 31 51.24	1.8900	6 4 8.3	13
9	9 2 26.41	1.9372	15 48 55.2	11.010	9	10 33 44.66	1.8906	5 50 29.4	13
10	9 4 22.57	1.9349	15 37 52.5	11.081	10	10 35 38.11	1.8912	5 36 48.1	13
11	9 6 18.60	1.9327	15 26 45.5	11.151	11	10 37 31.60	1.8919	5 23 4.5	13
12	9 8 14.49	1.9304	15 15 34.4	11.220	12	10 39 25.14	1.8927	5 9 18.7	13
13	9 10 10.25	1.9283	15 4 19.1	11.289	13	10 41 18.72	1.8935	4 55 30.7	13
14	9 12 5.88	1.9262	14 52 59.7	11.358	14	10 43 12.36	1.8944	4 41 40.6	13
15	9 14 1.39	1.9242	14 41 36.2	11.425	15	10 45 6.05	1.8954	4 27 48.3	13
16	9 15 56.78	1.9222	14 30 8.7	11.492	16	10 46 59.81	1.8965	4 13 54.0	13
17	9 17 52.05	1.9202	14 18 37.2	11.558	17	10 48 53.63	1.8976	3 59 57.6	13
18	9 19 47.20	1.9183	14 7 1.7	11.624	18	10 50 47.52	1.8988	3 45 59.3	13
19	9 21 42.24	1.9164	13 55 22.3	11.689	19	10 52 41.49	1.9002	3 31 59.1	14
20	9 23 37.17	1.9146	13 43 39.0	11.754	20	10 54 35.54	1.9015	3 17 57.0	14
21	9 25 31.99	1.9128	13 31 51.8	11.818	21	10 56 29.67	1.9029	3 3 53.0	14
22	9 27 26.71	1.9112	13 20 0.9	11.880	22	10 58 23.89	1.9045	2 49 47.3	14
23	9 29 21.33	1.9095	13 8 6.2	11.943	23	11 0 18.21	1.9061	2 35 39.8	14
24	9 31 15.85	1.9079	+12 56 7.8	-12.004	24	11 2 12.62	1.9078	+ 2 21 30.7	-14

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MAY 12.					MAY 14.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	11 2 12.62	1.9078	+2 21 30.7	-14.166	0	12 37 14.89	2.0838	-9 12 7.8	-14.315
1	11 4 7.14	1.9095	2 7 19.9	14.193	1	12 39 20.09	2.0895	9 26 25.9	14.288
2	11 6 1.76	1.9113	1 53 7.6	14.218	2	12 41 25.63	2.0953	9 40 42.4	14.261
3	11 7 56.50	1.9133	1 38 53.7	14.243	3	12 43 31.52	2.1011	9 54 57.2	14.231
4	11 9 51.35	1.9153	1 24 38.4	14.268	4	12 45 37.76	2.1070	10 9 10.1	14.199
5	11 11 46.33	1.9173	1 10 21.6	14.292	5	12 47 44.36	2.1130	10 23 21.1	14.168
6	11 13 41.43	1.9195	0 56 3.4	14.314	6	12 49 51.32	2.1191	10 37 30.2	14.134
7	11 15 36.67	1.9218	0 41 43.9	14.335	7	12 51 58.65	2.1253	10 51 37.2	14.098
8	11 17 32.04	1.9240	0 27 23.2	14.355	8	12 54 6.35	2.1314	11 5 42.0	14.061
9	11 19 27.55	1.9264	+0 13 1.3	14.375	9	12 56 14.42	2.1377	11 19 44.5	14.023
10	11 21 23.21	1.9289	-0 1 21.8	14.394	10	12 58 22.87	2.1441	11 33 44.7	13.983
11	11 23 19.02	1.9314	0 15 46.0	14.412	11	13 0 31.71	2.1506	11 47 42.4	13.941
12	11 25 14.98	1.9340	0 30 11.2	14.428	12	13 2 40.94	2.1571	12 1 37.6	13.898
13	11 27 11.10	1.9368	0 44 37.4	14.444	13	13 4 50.56	2.1637	12 15 30.1	13.853
14	11 29 7.39	1.9396	0 59 4.5	14.459	14	13 7 0.58	2.1703	12 29 19.9	13.806
15	11 31 3.85	1.9425	1 13 32.5	14.474	15	13 9 11.00	2.1770	12 43 6.8	13.758
16	11 33 0.49	1.9454	1 28 1.4	14.488	16	13 11 21.82	2.1838	12 56 50.8	13.708
17	11 34 57.30	1.9484	1 42 31.0	14.499	17	13 13 33.06	2.1908	13 10 31.7	13.656
18	11 36 54.30	1.9516	1 57 1.3	14.510	18	13 15 44.71	2.1977	13 24 9.5	13.603
19	11 38 51.49	1.9548	2 11 32.2	14.520	19	13 17 56.78	2.2047	13 37 44.0	13.548
20	11 40 48.87	1.9580	2 26 3.7	14.530	20	13 20 9.27	2.2117	13 51 15.2	13.491
21	11 42 46.45	1.9614	2 40 35.8	14.538	21	13 22 22.18	2.2188	14 4 42.9	13.433
22	11 44 44.24	1.9648	2 55 8.3	14.544	22	13 24 35.52	2.2260	14 18 7.1	13.373
23	11 46 42.23	1.9683	-3 9 41.1	-14.550	23	13 26 49.30	2.2333	-14 31 27.6	-13.310
MAY 13.					MAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	11 48 40.44	1.9720	-3 24 14.3	-14.556	0	13 29 3.51	2.2405	-14 44 44.3	-13.246
1	11 50 38.87	1.9757	3 38 47.8	14.559	1	13 31 18.16	2.2478	14 57 57.1	13.180
2	11 52 37.52	1.9795	3 53 21.4	14.562	2	13 33 33.25	2.2553	15 11 5.9	13.113
3	11 54 36.41	1.9834	4 7 55.2	14.563	3	13 35 48.79	2.2628	15 24 10.6	13.043
4	11 56 35.53	1.9873	4 22 29.0	14.563	4	13 38 4.78	2.2703	15 37 11.1	12.973
5	11 58 34.89	1.9914	4 37 2.8	14.563	5	13 40 21.22	2.2778	15 50 7.3	12.899
6	12 0 34.50	1.9955	4 51 36.6	14.562	6	13 42 38.12	2.2855	16 2 59.0	12.824
7	12 2 34.35	1.9997	5 6 10.2	14.558	7	13 44 55.48	2.2931	16 15 46.2	12.748
8	12 4 34.46	2.0040	5 20 43.6	14.554	8	13 47 13.29	2.3008	16 28 28.7	12.668
9	12 6 34.83	2.0083	5 35 16.7	14.549	9	13 49 31.57	2.3086	16 41 6.4	12.588
10	12 8 35.46	2.0128	5 49 49.5	14.543	10	13 51 50.32	2.3163	16 53 39.2	12.505
11	12 10 36.36	2.0173	6 4 21.8	14.534	11	13 54 9.53	2.3241	17 6 7.0	12.421
12	12 12 37.54	2.0220	6 18 53.6	14.525	12	13 56 29.21	2.3320	17 18 29.7	12.334
13	12 14 39.00	2.0267	6 33 24.8	14.515	13	13 58 49.37	2.3399	17 30 47.1	12.246
14	12 16 40.74	2.0314	6 47 55.4	14.504	14	14 1 10.00	2.3478	17 42 59.2	12.156
15	12 18 42.77	2.0363	7 2 25.3	14.491	15	14 3 31.10	2.3557	17 55 5.8	12.063
16	12 20 45.09	2.0412	7 16 54.3	14.476	16	14 5 52.68	2.3637	18 7 6.8	11.968
17	12 22 47.71	2.0463	7 31 22.4	14.461	17	14 8 14.74	2.3718	18 19 2.0	11.872
18	12 24 50.64	2.0514	7 45 49.6	14.444	18	14 10 37.29	2.3798	18 30 51.4	11.773
19	12 26 53.88	2.0566	8 0 15.7	14.425	19	14 13 0.31	2.3877	18 42 34.8	11.673
20	12 28 57.43	2.0618	8 14 40.7	14.407	20	14 15 23.81	2.3958	18 54 12.2	11.572
21	12 31 1.30	2.0673	8 29 4.5	14.386	21	14 17 47.80	2.4038	19 5 43.4	11.467
22	12 33 5.50	2.0728	8 43 27.0	14.363	22	14 20 12.27	2.4118	19 17 8.2	11.360
23	12 35 10.03	2.0783	8 57 48.1	14.340	23	14 22 37.22	2.4199	19 28 26.6	11.251
24	12 37 14.89	2.0838	-9 12 7.8	-14.315	24	14 25 2.66	2.4280	-19 39 38.4	-11.142

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MAY 16.					MAY 18.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	14 25 2.66	2.4280	-19 39 38.4	-11.142	0	16 30 2.03	2.7439	-25 50 16.7	-3.635
1	14 27 28.58	2.4361	19 50 43.6	11.029	1	16 32 46.77	2.7474	25 53 49.0	3.442
2	14 29 54.99	2.4442	20 1 41.9	10.914	2	16 35 31.72	2.7508	25 57 9.7	3.248
3	14 32 21.88	2.4522	20 12 33.3	10.798	3	16 38 16.86	2.7538	26 0 18.8	3.053
4	14 34 49.25	2.4602	20 23 17.6	10.679	4	16 41 2.18	2.7568	26 3 16.1	2.858
5	14 37 17.10	2.4683	20 33 54.8	10.559	5	16 43 47.67	2.7595	26 6 1.7	2.661
6	14 39 45.44	2.4763	20 44 24.7	10.437	6	16 46 33.32	2.7621	26 8 35.4	2.463
7	14 42 14.26	2.4843	20 54 47.2	10.312	7	16 49 19.12	2.7644	26 10 57.3	2.267
8	14 44 43.55	2.4922	21 5 2.1	10.185	8	16 52 5.05	2.7665	26 13 7.4	2.068
9	14 47 13.52	2.5001	21 15 9.4	10.057	9	16 54 51.10	2.7684	26 15 5.5	1.869
10	14 49 43.56	2.5079	21 25 8.9	9.925	10	16 57 37.26	2.7702	26 16 51.7	1.670
11	14 52 14.27	2.5158	21 35 0.4	9.793	11	17 0 23.52	2.7718	26 18 25.9	1.470
12	14 54 45.46	2.5238	21 44 44.0	9.658	12	17 3 9.87	2.7731	26 19 48.1	1.270
13	14 57 17.12	2.5315	21 54 19.4	9.521	13	17 5 56.29	2.7743	26 20 58.3	1.069
14	14 59 49.24	2.5392	22 3 46.5	9.383	14	17 8 42.78	2.7752	26 21 56.4	0.868
15	15 2 21.82	2.5469	22 13 5.5	9.243	15	17 11 29.31	2.7758	26 22 12.5	0.668
16	15 4 54.87	2.5546	22 22 15.6	9.100	16	17 14 15.88	2.7763	26 23 16.6	0.467
17	15 7 28.37	2.5621	22 31 17.3	8.955	17	17 17 2.47	2.7767	26 25 38.5	0.265
18	15 10 2.32	2.5695	22 40 10.2	8.808	18	17 19 49.08	2.7768	26 23 48.4	-0.064
19	15 12 36.71	2.5769	22 48 54.3	8.661	19	17 22 35.69	2.7767	26 23 46.2	+0.138
20	15 15 11.55	2.5843	22 57 29.5	8.511	20	17 25 22.28	2.7763	26 23 31.9	0.338
21	15 17 46.83	2.5916	23 5 55.6	8.358	21	17 28 8.85	2.7758	26 23 5.6	0.539
22	15 20 22.54	2.5988	23 14 12.5	8.205	22	17 30 55.38	2.7752	26 22 27.2	0.741
23	15 22 58.68	2.6059	-23 22 20.2	-8.050	23	17 33 41.87	2.7743	-26 21 36.7	+0.943
MAY 17.					MAY 19.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	15 25 35.25	2.6130	-23 30 18.5	-7.892	0	17 36 28.29	2.7731	-26 20 34.1	+1.143
1	15 28 12.24	2.6199	23 38 7.2	7.732	1	17 39 14.64	2.7718	26 19 19.5	1.343
2	15 30 49.64	2.6267	23 45 46.3	7.570	2	17 42 0.90	2.7702	26 17 53.0	1.543
3	15 33 27.44	2.6333	23 53 15.6	7.407	3	17 44 47.06	2.7684	26 16 14.4	1.743
4	15 36 5.64	2.6400	24 0 35.1	7.243	4	17 47 33.11	2.7665	26 14 23.9	1.941
5	15 38 44.24	2.6466	24 7 44.7	7.077	5	17 50 19.04	2.7644	26 12 21.5	2.139
6	15 41 23.23	2.6529	24 14 44.3	6.908	6	17 53 4.84	2.7621	26 10 7.2	2.337
7	15 44 2.59	2.6592	24 21 33.7	6.738	7	17 55 50.49	2.7595	26 7 41.1	2.534
8	15 46 42.33	2.6654	24 28 12.9	6.568	8	17 58 35.98	2.7568	26 5 3.1	2.731
9	15 49 22.44	2.6714	24 34 41.8	6.394	9	18 1 21.31	2.7540	26 2 13.4	2.926
10	15 52 2.90	2.6773	24 41 0.2	6.219	10	18 4 6.46	2.7509	25 59 12.0	3.121
11	15 54 43.71	2.6830	24 47 8.1	6.044	11	18 6 51.42	2.7476	25 55 58.9	3.315
12	15 57 24.86	2.6887	24 53 5.5	5.868	12	18 9 36.17	2.7441	25 52 34.2	3.508
13	16 0 6.35	2.6942	24 58 52.2	5.688	13	18 12 20.71	2.7405	25 48 57.9	3.701
14	16 2 48.16	2.6995	25 4 28.0	5.507	14	18 15 5.03	2.7367	25 45 10.1	3.892
15	16 5 30.29	2.7047	25 9 53.0	5.326	15	18 17 49.11	2.7327	25 41 10.9	4.083
16	16 8 12.72	2.7096	25 15 7.1	5.143	16	18 20 32.95	2.7285	25 37 0.2	4.273
17	16 10 55.44	2.7145	25 20 10.1	4.958	17	18 23 16.53	2.7242	25 32 38.2	4.460
18	16 13 38.46	2.7193	25 25 2.0	4.773	18	18 25 59.85	2.7198	25 28 5.0	4.647
19	16 16 21.76	2.7238	25 29 42.8	4.586	19	18 28 42.90	2.7152	25 23 20.6	4.833
20	16 19 5.32	2.7282	25 34 12.3	4.398	20	18 31 25.67	2.7104	25 18 25.1	5.018
21	16 21 49.14	2.7323	25 38 30.5	4.209	21	18 34 8.15	2.7055	25 13 18.5	5.201
22	16 24 33.20	2.7363	25 42 37.4	4.019	22	18 36 50.33	2.7003	25 8 1.0	5.383
23	16 27 17.50	2.7403	25 46 32.8	3.828	23	18 39 32.19	2.6951	25 2 32.6	5.564
24	16 30 2.05	2.7439	-25 50 16.7	-3.635	24	18 42 13.74	2.6898	-24 56 53.3	+5.744

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MAY 20.					MAY 22.				
	h m s	s	" "	" "		h m s	s	" "	" "
0	18 42 13.74	2.6898	-24 56 53.3	+ 5.744	0	20 43 28.16	2.3468	-17 26 20.1	+12.323
1	18 44 54.96	2.6843	24 51 3.3	5.922	1	20 45 48.74	2.3393	17 13 58.0	12.413
2	18 47 35.85	2.6786	24 45 2.7	6.098	2	20 48 8.88	2.3320	17 1 30.5	12.503
3	18 50 16.39	2.6728	24 38 51.6	6.273	3	20 50 28.58	2.3248	16 48 57.7	12.590
4	18 52 56.58	2.6669	24 32 30.0	6.447	4	20 52 47.85	2.3175	16 36 19.7	12.676
5	18 55 36.42	2.6609	24 25 58.0	6.619	5	20 55 6.68	2.3103	16 23 36.6	12.759
6	18 58 15.89	2.6548	24 19 15.7	6.789	6	20 57 25.08	2.3031	16 10 48.6	12.841
7	19 0 54.99	2.6486	24 12 23.3	6.958	7	20 59 43.05	2.2959	15 57 55.7	12.922
8	19 3 33.72	2.6423	24 5 20.8	7.125	8	21 2 0.59	2.2888	15 44 58.0	13.000
9	19 6 12.06	2.6358	23 58 8.3	7.292	9	21 4 17.71	2.2819	15 31 55.7	13.077
10	19 8 50.01	2.6293	23 50 45.8	7.456	10	21 6 34.42	2.2750	15 18 48.8	13.152
11	19 11 27.57	2.6226	23 43 13.6	7.618	11	21 8 50.71	2.2680	15 5 37.5	13.224
12	19 14 4.72	2.6158	23 35 31.7	7.778	12	21 11 6.58	2.2612	14 52 21.9	13.295
13	19 16 41.47	2.6090	23 27 40.2	7.937	13	21 13 22.05	2.2544	14 39 2.1	13.365
14	19 19 17.80	2.6021	23 19 39.3	8.093	14	21 15 37.11	2.2477	14 25 38.1	13.433
15	19 21 53.72	2.5951	23 11 29.0	8.249	15	21 17 51.77	2.2411	14 12 10.1	13.499
16	19 24 29.21	2.5880	23 3 9.4	8.403	16	21 20 6.04	2.2345	13 58 38.2	13.563
17	19 27 4.28	2.5809	22 54 40.7	8.554	17	21 22 19.91	2.2279	13 45 2.5	13.626
18	19 29 38.92	2.5738	22 46 2.9	8.704	18	21 24 33.39	2.2215	13 31 23.1	13.688
19	19 32 13.13	2.5666	22 37 16.2	8.853	19	21 26 46.49	2.2152	13 17 40.0	13.748
20	19 34 46.91	2.5593	22 28 20.6	8.999	20	21 28 59.21	2.2089	13 3 53.4	13.805
21	19 37 20.24	2.5518	22 19 16.3	9.143	21	21 31 11.56	2.2027	12 50 3.4	13.861
22	19 39 53.13	2.5444	22 10 3.4	9.286	22	21 33 23.53	2.1964	12 36 10.1	13.915
23	19 42 25.57	2.5370	-22 0 42.0	+ 9.427	23	21 35 35.13	2.1903	-12 22 13.6	+13.968
MAY 21.					MAY 23.				
0	19 44 57.57	2.5295	-21 51 12.2	+ 9.565	0	21 37 46.37	2.1843	-12 8 13.9	+14.020
1	19 47 29.11	2.5219	21 41 34.2	9.702	1	21 39 57.25	2.1784	11 54 11.2	14.069
2	19 50 0.20	2.5144	21 31 48.0	9.838	2	21 42 7.78	2.1726	11 40 5.6	14.118
3	19 52 30.84	2.5068	21 21 53.7	9.971	3	21 44 17.96	2.1668	11 25 57.1	14.164
4	19 55 1.02	2.4992	21 11 51.5	10.102	4	21 46 27.79	2.1610	11 11 45.9	14.209
5	19 57 30.74	2.4916	21 1 41.5	10.231	5	21 48 37.28	2.1554	10 57 32.0	14.253
6	20 0 0.01	2.4840	20 51 23.8	10.358	6	21 50 46.44	2.1499	10 43 15.6	14.294
7	20 2 28.82	2.4763	20 40 58.5	10.483	7	21 52 55.27	2.1444	10 28 56.7	14.335
8	20 4 57.16	2.4685	20 30 25.8	10.607	8	21 55 3.77	2.1390	10 14 35.4	14.374
9	20 7 25.04	2.4608	20 19 45.7	10.728	9	21 57 11.95	2.1338	10 0 11.8	14.411
10	20 9 52.46	2.4532	20 8 58.4	10.848	10	21 59 19.82	2.1286	9 45 46.1	14.447
11	20 12 19.42	2.4455	19 58 3.9	10.967	11	22 1 27.38	2.1234	9 31 18.2	14.483
12	20 14 45.92	2.4378	19 47 2.4	11.083	12	22 3 34.63	2.1183	9 16 48.2	14.516
13	20 17 11.95	2.4301	19 35 54.0	11.196	13	22 5 41.58	2.1133	9 2 16.3	14.547
14	20 19 37.53	2.4225	19 24 38.9	11.308	14	22 7 48.23	2.1084	8 47 42.6	14.577
15	20 22 2.65	2.4148	19 13 17.1	11.418	15	22 9 54.59	2.1037	8 33 7.1	14.606
16	20 24 27.31	2.4071	19 1 48.8	11.526	16	22 12 0.67	2.0990	8 18 29.9	14.633
17	20 26 51.50	2.3994	18 50 14.0	11.633	17	22 14 6.47	2.0943	8 3 51.1	14.660
18	20 29 15.24	2.3918	18 38 32.9	11.737	18	22 16 11.99	2.0898	7 49 10.7	14.685
19	20 31 38.52	2.3843	18 26 45.6	11.839	19	22 18 17.24	2.0853	7 34 28.9	14.708
20	20 34 1.35	2.3768	18 14 52.2	11.940	20	22 20 22.22	2.0809	7 19 45.8	14.729
21	20 36 23.73	2.3692	18 2 52.8	12.038	21	22 22 26.95	2.0767	7 5 1.4	14.750
22	20 38 45.65	2.3617	17 50 47.6	12.134	22	22 24 31.42	2.0724	6 50 15.8	14.770
23	20 41 7.13	2.3543	17 38 36.7	12.229	23	22 26 35.64	2.0683	6 35 29.0	14.788
24	20 43 28.16	2.3468	-17 26 20.1	+12.323	24	22 28 39.61	2.0643	- 6 20 41.2	+14.805

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MAY 24.					MAY 26.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	22 28 39.61	2.0643	-6 20 41.2	+14.805	0	0 4 42.24	1.9090	+ 5 26 52.5	+14.362
1	22 30 43.35	2.0603	6 5 52.4	14.820	1	0 6 40.38	1.9090	5 41 7.1	14.224
2	22 32 46.85	2.0564	5 51 2.8	14.834	2	0 8 38.52	1.9090	5 55 19.4	14.187
3	22 34 50.12	2.0526	5 36 12.3	14.848	3	0 10 36.66	1.9091	6 9 29.5	14.148
4	22 36 53.16	2.0489	5 21 21.1	14.862	4	0 12 34.81	1.9093	6 23 37.2	14.108
5	22 38 55.99	2.0454	5 6 29.2	14.870	5	0 14 32.97	1.9095	6 37 42.5	14.068
6	22 40 58.61	2.0418	4 51 36.7	14.879	6	0 16 31.15	1.9098	6 51 45.4	14.028
7	22 43 1.01	2.0383	4 36 43.7	14.888	7	0 18 29.34	1.9701	7 5 45.8	13.988
8	22 45 3.21	2.0350	4 21 50.2	14.894	8	0 20 27.56	1.9706	7 19 43.6	13.942
9	22 47 5.21	2.0318	4 6 56.4	14.899	9	0 22 25.81	1.9711	7 33 38.8	13.898
10	22 49 7.02	2.0286	3 52 2.3	14.903	10	0 24 24.09	1.9717	7 47 31.3	13.853
11	22 51 8.64	2.0255	3 37 8.0	14.907	11	0 26 22.41	1.9723	8 1 21.1	13.807
12	22 53 10.08	2.0225	3 22 13.5	14.909	12	0 28 20.76	1.9729	8 15 8.1	13.759
13	22 55 11.34	2.0196	3 7 18.9	14.910	13	0 30 19.16	1.9737	8 28 52.2	13.712
14	22 57 12.43	2.0168	2 52 24.3	14.909	14	0 32 17.60	1.9745	8 42 33.5	13.663
15	22 59 13.35	2.0140	2 37 29.8	14.908	15	0 34 16.10	1.9754	8 56 11.8	13.614
16	23 1 14.11	2.0113	2 22 35.4	14.906	16	0 36 14.65	1.9763	9 9 47.2	13.564
17	23 3 14.71	2.0088	2 7 41.2	14.902	17	0 38 13.26	1.9773	9 23 19.5	13.512
18	23 5 15.16	2.0063	1 52 47.2	14.897	18	0 40 11.93	1.9784	9 36 48.6	13.459
19	23 7 15.46	2.0038	1 37 53.6	14.891	19	0 42 10.67	1.9796	9 50 14.6	13.406
20	23 9 15.62	2.0015	1 23 0.3	14.884	20	0 44 9.48	1.9808	10 3 37.3	13.352
21	23 11 15.64	1.9993	1 8 7.5	14.875	21	0 46 8.36	1.9820	10 16 56.8	13.298
22	23 13 15.53	1.9972	0 53 15.3	14.866	22	0 48 7.32	1.9833	10 30 13.0	13.241
23	23 15 15.30	1.9951	-0 38 23.6	+14.856	23	0 50 6.36	1.9847	+10 43 25.7	+13.183
MAY 25.					MAY 27.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	23 17 14.94	1.9930	-0 23 32.6	+14.844	0	0 52 5.48	1.9861	+10 56 35.0	+13.136
1	23 19 14.46	1.9911	-0 8 42.3	14.832	1	0 54 4.69	1.9876	11 9 40.8	13.088
2	23 21 13.87	1.9893	+0 6 7.2	14.818	2	0 56 3.99	1.9891	11 22 43.1	13.008
3	23 23 13.18	1.9876	0 20 55.8	14.803	3	0 58 3.38	1.9907	11 35 41.8	12.948
4	23 25 12.38	1.9859	0 35 43.5	14.788	4	1 0 2.87	1.9923	11 48 36.9	12.887
5	23 27 11.49	1.9843	0 50 30.3	14.772	5	1 2 2.46	1.9940	12 1 28.2	12.824
6	23 29 10.50	1.9828	1 5 16.1	14.753	6	1 4 2.15	1.9958	12 14 15.8	12.762
7	23 31 9.42	1.9813	1 20 0.7	14.733	7	1 6 1.95	1.9976	12 26 59.6	12.698
8	23 33 8.26	1.9800	1 34 44.1	14.714	8	1 8 1.86	1.9994	12 39 39.5	12.633
9	23 35 7.02	1.9788	1 49 26.4	14.694	9	1 10 1.88	2.0013	12 52 15.5	12.567
10	23 37 5.71	1.9776	2 4 7.4	14.672	10	1 12 2.01	2.0032	13 4 47.5	12.500
11	23 39 4.33	1.9765	2 18 47.0	14.648	11	1 14 2.26	2.0052	13 17 15.5	12.433
12	23 41 2.89	1.9755	2 33 25.2	14.625	12	1 16 2.63	2.0073	13 29 39.4	12.364
13	23 43 1.39	1.9745	2 48 2.0	14.600	13	1 18 3.13	2.0096	13 41 59.2	12.295
14	23 44 59.83	1.9736	3 2 37.2	14.573	14	1 20 3.75	2.0114	13 54 14.8	12.225
15	23 46 58.22	1.9728	3 17 10.8	14.547	15	1 22 4.50	2.0136	14 6 26.2	12.154
16	23 48 56.57	1.9721	3 31 42.8	14.519	16	1 24 5.38	2.0158	14 18 33.3	12.082
17	23 50 54.87	1.9714	3 46 13.1	14.490	17	1 26 6.40	2.0181	14 30 36.0	12.009
18	23 52 53.14	1.9709	4 0 41.6	14.460	18	1 28 7.55	2.0203	14 42 34.4	11.936
19	23 54 51.38	1.9704	4 15 8.3	14.429	19	1 30 8.84	2.0227	14 54 28.3	11.861
20	23 56 49.59	1.9699	4 29 33.1	14.398	20	1 32 10.27	2.0250	15 6 17.7	11.786
21	23 58 47.77	1.9696	4 43 56.0	14.365	21	1 34 11.84	2.0274	15 18 2.6	11.710
22	0 0 45.94	1.9694	4 58 16.9	14.331	22	1 36 13.56	2.0299	15 29 42.9	11.633
23	0 2 44.10	1.9692	5 12 35.7	14.297	23	1 38 15.43	2.0323	15 41 18.5	11.554
24	0 4 42.24	1.9690	+5 26 52.5	+14.262	24	1 40 17.44	2.0348	+15 52 49.4	+11.475

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
MAY 28.					MAY 30.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	1 40 17.44	2.0348	+15 52 49.4	+11.475	0	3 21 10.53	2.1690	+23 17 16.9	+6.749
1	1 42 19.60	2.0373	16 4 15.5	11.396	1	3 23 20.75	2.1715	23 23 58.4	6.633
2	1 44 21.92	2.0400	16 15 36.9	11.316	2	3 25 31.11	2.1739	23 30 32.9	6.517
3	1 46 24.40	2.0426	16 26 53.4	11.234	3	3 27 41.62	2.1763	23 37 0.4	6.399
4	1 48 27.03	2.0451	16 38 5.0	11.153	4	3 29 52.27	2.1788	23 43 20.8	6.282
5	1 50 29.81	2.0478	16 49 11.7	11.069	5	3 32 3.07	2.1812	23 49 34.2	6.163
6	1 52 32.76	2.0505	17 0 13.3	10.985	6	3 34 14.01	2.1835	23 55 40.4	6.044
7	1 54 35.87	2.0532	17 11 9.9	10.901	7	3 36 25.09	2.1858	24 1 39.5	5.925
8	1 56 39.14	2.0559	17 22 1.4	10.815	8	3 38 36.30	2.1880	24 7 31.4	5.805
9	1 58 42.58	2.0587	17 32 47.7	10.728	9	3 40 47.65	2.1903	24 13 16.1	5.685
10	2 0 46.18	2.0614	17 43 28.8	10.641	10	3 42 59.13	2.1923	24 18 53.6	5.564
11	2 2 49.95	2.0643	17 54 4.6	10.553	11	3 45 10.73	2.1944	24 24 23.8	5.443
12	2 4 53.89	2.0671	18 4 35.1	10.464	12	3 47 22.46	2.1965	24 29 46.7	5.321
13	2 6 58.00	2.0698	18 15 0.3	10.374	13	3 49 34.31	2.1985	24 35 2.3	5.198
14	2 9 2.27	2.0726	18 25 20.0	10.283	14	3 51 46.28	2.2004	24 40 10.5	5.076
15	2 11 6.71	2.0755	18 35 34.3	10.193	15	3 53 58.36	2.2023	24 45 11.4	4.953
16	2 13 11.33	2.0784	18 45 43.1	10.100	16	3 56 10.56	2.2042	24 50 4.8	4.828
17	2 15 16.12	2.0813	18 55 46.3	10.007	17	3 58 22.86	2.2059	24 54 50.8	4.704
18	2 17 21.08	2.0842	19 5 43.9	9.913	18	4 0 35.27	2.2077	24 59 29.3	4.579
19	2 19 26.22	2.0871	19 15 35.9	9.818	19	4 2 47.78	2.2093	25 4 0.3	4.455
20	2 21 31.53	2.0900	19 25 22.1	9.723	20	4 5 0.39	2.2110	25 8 23.9	4.330
21	2 23 37.02	2.0929	19 35 2.6	9.627	21	4 7 13.10	2.2125	25 12 39.9	4.204
22	2 25 42.68	2.0958	19 44 37.3	9.530	22	4 9 25.89	2.2139	25 16 48.4	4.078
23	2 27 48.52	2.0988	+19 54 6.2	+9.432	23	4 11 38.77	2.2154	+25 20 49.3	+3.953
MAY 29.					MAY 31.				
0	2 29 54.53	2.1017	+20 3 29.1	+9.333	0	4 13 51.74	2.2168	+25 24 42.7	+3.826
1	2 32 0.72	2.1046	20 12 46.1	9.234	1	4 16 4.79	2.2181	25 28 28.4	3.698
2	2 34 7.06	2.1075	20 21 57.2	9.134	2	4 18 17.91	2.2193	25 32 6.5	3.572
3	2 36 13.62	2.1105	20 31 2.2	9.033	3	4 20 31.11	2.2205	25 35 37.0	3.444
4	2 38 20.34	2.1134	20 40 1.1	8.931	4	4 22 44.37	2.2216	25 38 59.8	3.317
5	2 40 27.23	2.1163	20 48 53.9	8.829	5	4 24 57.70	2.2227	25 42 15.0	3.189
6	2 42 34.30	2.1193	20 57 40.6	8.726	6	4 27 11.09	2.2236	25 45 22.5	3.060
7	2 44 41.54	2.1221	21 6 21.0	8.622	7	4 29 24.53	2.2245	25 48 22.2	2.931
8	2 46 48.95	2.1250	21 14 55.2	8.518	8	4 31 38.03	2.2254	25 51 14.2	2.803
9	2 48 56.54	2.1279	21 23 23.1	8.412	9	4 33 51.58	2.2263	25 53 58.6	2.675
10	2 51 4.30	2.1308	21 31 44.6	8.306	10	4 36 5.17	2.2269	25 56 35.2	2.545
11	2 53 12.23	2.1337	21 39 59.8	8.199	11	4 38 18.80	2.2274	25 59 4.0	2.416
12	2 55 20.34	2.1366	21 48 8.5	8.091	12	4 40 32.46	2.2280	26 1 25.1	2.287
13	2 57 28.62	2.1395	21 56 10.7	7.983	13	4 42 46.16	2.2285	26 3 38.4	2.157
14	2 59 37.06	2.1421	22 4 6.5	7.875	14	4 44 59.88	2.2288	26 5 43.9	2.028
15	3 1 45.67	2.1449	22 11 55.7	7.765	15	4 47 13.62	2.2292	26 7 41.7	1.898
16	3 3 54.45	2.1478	22 19 38.3	7.655	16	4 49 27.38	2.2295	26 9 31.7	1.768
17	3 6 3.40	2.1505	22 27 14.3	7.544	17	4 51 41.16	2.2297	26 11 13.9	1.638
18	3 8 12.51	2.1532	22 34 43.6	7.432	18	4 53 54.94	2.2298	26 12 48.3	1.508
19	3 10 21.78	2.1559	22 42 6.1	7.319	19	4 56 8.73	2.2298	26 14 14.9	1.378
20	3 12 31.22	2.1586	22 49 21.9	7.206	20	4 58 22.52	2.2298	26 15 33.7	1.248
21	3 14 40.81	2.1612	22 56 31.0	7.094	21	5 0 36.30	2.2297	26 16 44.7	1.118
22	3 16 50.56	2.1638	23 3 33.2	6.979	22	5 2 50.08	2.2295	26 17 47.9	0.988
23	3 19 0.47	2.1664	23 10 28.5	6.864	23	5 5 3.84	2.2293	26 18 43.3	0.858
24	3 21 10.53	2.1690	+23 17 16.9	+6.749	24	5 7 17.59	2.2289	+26 19 30.9	+0.728

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JUNE 1.					JUNE 3.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	5 7 17.59	2.2289	+26 19 30.9	+0.728	0	6 52 33.78	2.1239	+24 29 3.3	-5.196
1	5 9 31.31	2.2285	26 20 10.7	0.598	1	6 54 41.72	2.1208	24 23 48.8	5.298
2	5 11 45.01	2.2280	26 20 42.7	0.469	2	6 56 49.47	2.1275	24 18 27.6	5.408
3	5 13 58.67	2.2274	26 21 7.0	0.340	3	6 58 57.02	2.1241	24 12 59.8	5.519
4	5 16 12.30	2.2268	26 21 23.5	0.210	4	7 1 4.36	2.1208	24 7 25.4	5.628
5	5 18 25.89	2.2262	26 21 32.2	+0.080	5	7 3 11.51	2.1174	24 1 44.4	5.738
6	5 20 39.44	2.2253	26 21 33.1	-0.049	6	7 5 18.45	2.1140	23 55 56.9	5.846
7	5 22 52.93	2.2244	26 21 26.3	0.178	7	7 7 25.19	2.1106	23 50 2.9	5.953
8	5 25 6.37	2.2235	26 21 11.8	0.307	8	7 9 31.72	2.1071	23 44 2.5	6.061
9	5 27 19.75	2.2225	26 20 49.5	0.436	9	7 11 38.04	2.1036	23 37 55.6	6.168
10	5 29 33.07	2.2214	26 20 19.5	0.564	10	7 13 44.15	2.1002	23 31 42.4	6.273
11	5 31 46.32	2.2203	26 19 41.8	0.693	11	7 15 50.06	2.0967	23 25 22.8	6.378
12	5 33 59.51	2.2192	26 18 56.4	0.821	12	7 17 55.75	2.0931	23 18 57.0	6.483
13	5 36 12.62	2.2178	26 18 5.3	0.949	13	7 20 1.23	2.0896	23 12 24.9	6.587
14	5 38 25.65	2.2164	26 17 2.5	1.078	14	7 22 6.50	2.0860	23 5 46.6	6.689
15	5 40 38.59	2.2149	26 15 54.0	1.205	15	7 24 11.55	2.0824	22 59 2.2	6.792
16	5 42 51.44	2.2135	26 14 37.9	1.332	16	7 26 16.39	2.0788	22 52 11.6	6.893
17	5 45 4.21	2.2120	26 13 14.2	1.458	17	7 28 21.01	2.0753	22 45 15.0	6.993
18	5 47 16.88	2.2103	26 11 42.9	1.585	18	7 30 25.42	2.0717	22 38 12.4	7.094
19	5 49 29.44	2.2085	26 10 4.0	1.712	19	7 32 29.61	2.0680	22 31 3.7	7.194
20	5 51 41.90	2.2068	26 8 17.5	1.838	20	7 34 33.58	2.0644	22 23 49.1	7.293
21	5 53 54.25	2.2049	26 6 23.5	1.963	21	7 36 37.34	2.0608	22 16 28.5	7.392
22	5 56 6.49	2.2031	26 4 21.9	2.089	22	7 38 40.88	2.0572	22 9 2.1	7.488
23	5 58 18.62	2.2011	+26 2 12.8	-2.214	23	7 40 44.20	2.0536	+22 1 29.9	-7.585
JUNE 2.					JUNE 4.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	6 0 30.62	2.1990	+25 59 56.2	-2.338	0	7 42 47.31	2.0600	+21 53 51.9	-7.682
1	6 2 42.50	2.1990	25 57 32.2	2.463	1	7 44 50.20	2.0463	21 46 8.1	7.777
2	6 4 54.25	2.1948	25 55 0.7	2.587	2	7 46 52.87	2.0427	21 38 18.7	7.871
3	6 7 5.87	2.1926	25 52 21.8	2.709	3	7 48 55.32	2.0390	21 30 23.6	7.965
4	6 9 17.36	2.1903	25 49 35.6	2.832	4	7 50 57.55	2.0354	21 22 22.9	8.058
5	6 11 28.71	2.1879	25 46 42.0	2.955	5	7 52 59.57	2.0318	21 14 16.6	8.150
6	6 13 39.91	2.1855	25 43 41.0	3.078	6	7 55 1.37	2.0283	21 6 4.9	8.242
7	6 15 50.97	2.1831	25 40 32.7	3.198	7	7 57 2.96	2.0247	20 57 47.6	8.333
8	6 18 1.88	2.1806	25 37 17.2	3.319	8	7 59 4.33	2.0210	20 49 24.9	8.423
9	6 20 12.64	2.1780	25 33 54.4	3.441	9	8 1 5.48	2.0174	20 40 56.8	8.513
10	6 22 23.24	2.1754	25 30 24.3	3.561	10	8 3 6.42	2.0139	20 32 23.4	8.601
11	6 24 33.69	2.1728	25 26 47.1	3.680	11	8 5 7.15	2.0103	20 23 44.7	8.689
12	6 26 43.97	2.1700	25 23 2.7	3.799	12	8 7 7.66	2.0068	20 15 0.7	8.778
13	6 28 54.09	2.1673	25 19 11.2	3.918	13	8 9 7.96	2.0033	20 6 11.4	8.864
14	6 31 4.04	2.1644	25 15 12.6	4.036	14	8 11 8.05	1.9998	19 57 17.0	8.949
15	6 33 13.82	2.1616	25 11 6.9	4.153	15	8 13 7.93	1.9963	19 48 17.5	9.034
16	6 35 23.43	2.1588	25 6 54.2	4.270	16	8 15 7.60	1.9928	19 39 12.9	9.118
17	6 37 32.87	2.1558	25 2 34.5	4.387	17	8 17 7.07	1.9894	19 30 3.3	9.203
18	6 39 42.12	2.1528	24 58 7.8	4.503	18	8 19 6.33	1.9859	19 20 48.6	9.286
19	6 41 51.20	2.1498	24 53 34.2	4.618	19	8 21 5.38	1.9825	19 11 29.0	9.368
20	6 44 0.09	2.1467	24 48 53.7	4.733	20	8 23 4.23	1.9791	19 2 4.5	9.449
21	6 46 8.80	2.1436	24 44 6.3	4.847	21	8 25 2.87	1.9758	18 52 35.1	9.530
22	6 48 17.32	2.1404	24 39 12.1	4.960	22	8 27 1.32	1.9725	18 43 0.9	9.609
23	6 50 25.65	2.1372	24 34 11.1	5.073	23	8 28 59.57	1.9692	18 33 22.0	9.688
24	6 52 33.78	2.1339	+24 29 3.3	-5.186	24	8 30 57.62	1.9658	+18 23 38.3	-9.768

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JUNE 5.					JUNE 7.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	8 30 57.62	1.9658	+18 23 38.3	-9.768	0	10 2 18.18	1.8591	+9 17 37.8	-12.720
1	8 32 55.47	1.9626	18 13 49.9	9.845	1	10 4 9.70	1.8582	9 4 53.2	12.765
2	8 34 53.13	1.9594	18 3 56.9	9.923	2	10 6 1.16	1.8573	8 52 6.0	12.809
3	8 36 50.60	1.9563	17 53 59.2	9.999	3	10 7 52.58	1.8567	8 39 16.1	12.853
4	8 38 47.88	1.9531	17 43 57.0	10.074	4	10 9 43.96	1.8560	8 26 23.6	12.896
5	8 40 44.97	1.9500	17 33 50.3	10.149	5	10 11 35.30	1.8553	8 13 28.6	12.938
6	8 42 41.88	1.9469	17 23 39.1	10.223	6	10 13 26.60	1.8548	8 0 31.0	12.980
7	8 44 38.60	1.9438	17 13 23.5	10.298	7	10 15 17.87	1.8543	7 47 31.0	13.021
8	8 46 35.14	1.9408	17 3 3.4	10.371	8	10 17 9.12	1.8539	7 34 28.5	13.062
9	8 48 31.49	1.9378	16 52 39.0	10.443	9	10 19 0.34	1.8535	7 21 23.6	13.102
10	8 50 27.67	1.9349	16 42 10.3	10.513	10	10 20 51.54	1.8533	7 8 16.3	13.141
11	8 52 23.68	1.9320	16 31 37.4	10.584	11	10 22 42.73	1.8531	6 55 6.7	13.178
12	8 54 19.51	1.9291	16 21 0.2	10.655	12	10 24 33.91	1.8529	6 41 54.9	13.216
13	8 56 15.17	1.9263	16 10 18.8	10.724	13	10 26 25.08	1.8528	6 28 40.8	13.253
14	8 58 10.67	1.9236	15 59 33.3	10.793	14	10 28 16.25	1.8528	6 15 24.5	13.289
15	9 0 6.00	1.9208	15 48 43.7	10.860	15	10 30 7.42	1.8529	6 2 6.1	13.325
16	9 2 1.17	1.9181	15 37 50.1	10.928	16	10 31 58.60	1.8531	5 48 45.5	13.360
17	9 3 56.17	1.9154	15 26 52.4	10.994	17	10 33 49.79	1.8533	5 35 22.9	13.394
18	9 5 51.02	1.9128	15 15 50.8	11.060	18	10 35 41.00	1.8537	5 21 58.2	13.428
19	9 7 45.71	1.9103	15 4 45.2	11.125	19	10 37 32.23	1.8540	5 8 31.5	13.462
20	9 9 40.25	1.0078	14 53 35.8	11.189	20	10 39 23.48	1.8544	4 55 2.8	13.493
21	9 11 34.65	1.9064	14 42 22.5	11.253	21	10 41 14.76	1.8550	4 41 32.3	13.524
22	9 13 28.90	1.9029	14 31 5.4	11.317	22	10 43 6.08	1.8556	4 27 59.9	13.555
23	9 15 23.00	1.9005	+14 19 44.5	-11.379	23	10 44 57.43	1.8562	+4 14 25.7	-13.585
JUNE 6.					JUNE 8.				
0	9 17 16.96	1.8982	+14 8 19.9	-11.441	0	10 46 48.82	1.8569	+4 0 49.7	-13.614
1	9 19 10.78	1.8959	13 56 51.6	11.502	1	10 48 40.26	1.8578	3 47 12.0	13.643
2	9 21 4.47	1.8938	13 45 19.7	11.562	2	10 50 31.75	1.8587	3 33 32.5	13.672
3	9 22 58.03	1.8916	13 33 44.2	11.622	3	10 52 23.30	1.8597	3 19 51.4	13.698
4	9 24 51.46	1.8894	13 22 5.1	11.681	4	10 54 14.91	1.8607	3 6 8.7	13.725
5	9 26 44.76	1.8873	13 10 22.5	11.739	5	10 56 6.58	1.8618	2 52 24.4	13.752
6	9 28 37.94	1.8853	12 58 36.4	11.797	6	10 57 58.32	1.8630	2 38 38.5	13.777
7	9 30 31.00	1.8834	12 46 46.9	11.853	7	10 59 50.14	1.8643	2 24 51.2	13.800
8	9 32 23.95	1.8815	12 34 54.0	11.910	8	11 1 42.03	1.8656	2 11 2.5	13.823
9	9 34 16.78	1.8796	12 22 57.7	11.966	9	11 3 34.01	1.8670	1 57 12.4	13.847
10	9 36 9.50	1.8778	12 10 58.1	12.021	10	11 5 26.07	1.8685	1 43 20.9	13.869
11	9 38 2.12	1.8762	11 58 55.2	12.075	11	11 7 18.23	1.8702	1 29 28.1	13.891
12	9 39 54.64	1.8745	11 46 49.1	12.128	12	11 9 10.49	1.8718	1 15 34.0	13.912
13	9 41 47.06	1.8729	11 34 39.8	12.181	13	11 11 2.85	1.8736	1 1 38.7	13.931
14	9 43 39.39	1.8713	11 22 27.4	12.233	14	11 12 55.32	1.8754	0 47 42.3	13.950
15	9 45 31.62	1.8698	11 10 11.8	12.286	15	11 14 47.90	1.8773	0 33 44.7	13.968
16	9 47 23.76	1.8683	10 57 53.1	12.337	16	11 16 40.59	1.8793	0 19 46.1	13.985
17	9 49 15.82	1.8670	10 45 31.4	12.387	17	11 18 33.41	1.8813	+0 5 46.5	14.003
18	9 51 7.80	1.8657	10 33 6.7	12.436	18	11 20 26.35	1.8835	-0 8 14.2	14.019
19	9 52 59.70	1.8644	10 20 39.1	12.485	19	11 22 19.43	1.8858	0 22 15.8	14.033
20	9 54 51.53	1.8633	10 8 8.5	12.534	20	11 24 12.64	1.8880	0 36 18.2	14.047
21	9 56 43.29	1.8621	9 55 35.0	12.582	21	11 26 5.99	1.8904	0 50 21.4	14.061
22	9 58 34.98	1.8610	9 42 58.7	12.628	22	11 27 59.49	1.8929	1 4 25.5	14.074
23	10 0 26.61	1.8600	9 30 19.6	12.674	23	11 29 53.14	1.8955	1 18 30.3	14.086
24	10 2 18.18	1.8591	+9 17 37.8	-12.720	24	11 31 46.95	1.8982	-1 32 35.8	-14.097

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JUNE 9.					JUNE 11.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	11 31 46.95	1.8982	- 1 32 35.8	-14.097	0	13 7 34.78	2.1267	-12 43 10.3	-13.408
1	11 33 40.92	1.9009	1 46 41.9	14.107	1	13 9 42.58	2.1335	12 56 33.4	13.353
2	11 35 35.06	1.9038	2 0 48.6	14.116	2	13 11 50.80	2.1405	13 9 53.8	13.210
3	11 37 29.37	1.9066	2 14 55.8	14.124	3	13 13 59.44	2.1475	13 23 11.3	13.367
4	11 39 23.85	1.9096	2 29 3.5	14.132	4	13 16 8.50	2.1545	13 36 25.8	13.217
5	11 41 18.52	1.9127	2 43 11.6	14.138	5	13 18 17.98	2.1617	13 49 37.3	13.166
6	11 43 13.37	1.9158	2 57 20.0	14.143	6	13 20 27.90	2.1689	14 2 45.7	13.113
7	11 45 8.42	1.9191	3 11 28.8	14.148	7	13 22 38.25	2.1762	14 15 50.9	13.059
8	11 47 3.66	1.9223	3 25 37.8	14.153	8	13 24 49.04	2.1836	14 28 52.8	13.006
9	11 48 59.10	1.9258	3 39 47.1	14.156	9	13 27 0.28	2.1911	14 41 51.2	12.944
10	11 50 54.75	1.9293	3 53 56.5	14.157	10	13 29 11.97	2.1986	14 54 46.1	12.882
11	11 52 50.61	1.9328	4 8 5.9	14.158	11	13 31 24.11	2.2061	15 7 37.4	12.820
12	11 54 46.69	1.9366	4 22 15.4	14.158	12	13 33 36.70	2.2138	15 20 24.9	12.760
13	11 56 43.00	1.9403	4 36 24.9	14.158	13	13 35 49.76	2.2215	15 33 8.6	12.698
14	11 58 39.53	1.9441	4 50 34.3	14.155	14	13 38 3.28	2.2293	15 45 48.4	12.636
15	12 0 36.29	1.9480	5 4 43.5	14.152	15	13 40 17.27	2.2371	15 58 24.2	12.574
16	12 2 33.29	1.9521	5 18 52.5	14.148	16	13 42 31.73	2.2450	16 10 55.8	12.512
17	12 4 30.54	1.9563	5 33 1.2	14.143	17	13 44 46.67	2.2530	16 23 23.2	12.450
18	12 6 28.04	1.9604	5 47 9.6	14.138	18	13 47 2.09	2.2610	16 35 46.3	12.388
19	12 8 25.79	1.9647	6 1 17.7	14.131	19	13 49 17.99	2.2691	16 48 4.9	12.327
20	12 10 23.80	1.9691	6 15 25.3	14.122	20	13 51 34.38	2.2773	17 0 18.9	12.265
21	12 12 22.08	1.9736	6 29 32.3	14.113	21	13 53 51.26	2.2854	17 12 28.3	12.217
22	12 14 20.63	1.9781	6 43 38.8	14.103	22	13 56 8.63	2.2937	17 24 32.9	12.160
23	12 16 19.45	1.9827	- 6 57 44.7	-14.092	23	13 58 26.50	2.3019	-17 36 32.6	-11.993
JUNE 10.					JUNE 12.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 18 18.55	1.9874	- 7 11 49.8	-14.078	0	14 0 44.86	2.3102	-17 48 27.3	-11.980
1	12 20 17.94	1.9923	7 25 54.1	14.065	1	14 3 3.72	2.3186	18 0 16.9	11.783
2	12 22 17.62	1.9971	7 39 57.6	14.050	2	14 5 23.09	2.3271	18 12 1.2	11.694
3	12 24 17.59	2.0021	7 54 0.1	14.034	3	14 7 42.97	2.3355	18 23 40.2	11.604
4	12 26 17.87	2.0072	8 8 1.7	14.018	4	14 10 3.35	2.3440	18 35 13.7	11.512
5	12 28 18.45	2.0123	8 22 2.2	13.999	5	14 12 24.25	2.3526	18 46 41.6	11.419
6	12 30 19.35	2.0176	8 36 1.6	13.980	6	14 14 45.66	2.3611	18 58 3.9	11.328
7	12 32 20.56	2.0229	8 49 59.8	13.959	7	14 17 7.58	2.3697	19 9 20.3	11.234
8	12 34 22.10	2.0283	9 3 56.7	13.937	8	14 19 30.02	2.3783	19 20 30.8	11.134
9	12 36 23.96	2.0338	9 17 52.2	13.913	9	14 21 52.98	2.3869	19 31 35.2	11.023
10	12 38 26.16	2.0395	9 31 46.3	13.889	10	14 24 16.45	2.3955	19 42 33.5	10.919
11	12 40 28.70	2.0452	9 45 38.9	13.864	11	14 26 40.44	2.4043	19 53 25.5	10.813
12	12 42 31.58	2.0509	9 59 30.0	13.838	12	14 29 4.96	2.4130	20 4 11.1	10.706
13	12 44 34.81	2.0568	10 13 19.4	13.809	13	14 31 30.00	2.4217	20 14 50.2	10.596
14	12 46 38.39	2.0627	10 27 7.1	13.779	14	14 33 55.56	2.4303	20 25 22.6	10.483
15	12 48 42.33	2.0688	10 40 52.9	13.748	15	14 36 21.64	2.4390	20 35 48.2	10.369
16	12 50 46.64	2.0748	10 54 36.9	13.717	16	14 38 48.24	2.4478	20 46 6.9	10.253
17	12 52 51.31	2.0810	11 8 18.9	13.683	17	14 41 15.37	2.4565	20 56 18.6	10.136
18	12 54 56.36	2.0873	11 21 58.8	13.647	18	14 43 43.02	2.4652	21 6 23.2	10.016
19	12 57 1.79	2.0937	11 35 36.5	13.611	19	14 46 11.19	2.4738	21 16 20.5	9.893
20	12 59 7.60	2.1001	11 49 12.1	13.574	20	14 48 39.88	2.4825	21 26 10.4	9.769
21	13 1 13.80	2.1066	12 2 45.4	13.534	21	14 51 9.09	2.4912	21 35 52.8	9.643
22	13 3 20.39	2.1132	12 16 16.2	13.493	22	14 53 38.82	2.4998	21 45 27.6	9.515
23	13 5 27.38	2.1199	12 29 44.5	13.451	23	14 56 9.07	2.5084	21 54 54.6	9.385
24	13 7 34.78	2.1267	-12 43 10.3	-13.408	24	14 58 39.83	2.5170	-22 4 13.8	-9.253

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JUNE 13.					JUNE 15.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	14 58 39.83	2.5170	-22 4 13.8	-9.253	0	17 7 45.96	2.8094	-26 20 23.4	-0.827
1	15 1 11.11	2.5256	22 13 25.0	9.119	1	17 10 34.59	2.8114	26 21 6.8	0.621
2	15 3 42.90	2.5341	22 22 28.1	8.983	2	17 13 23.33	2.8132	26 21 37.9	0.415
3	15 6 15.20	2.5426	22 31 22.9	8.843	3	17 16 12.17	2.8148	26 21 56.6	0.209
4	15 8 48.01	2.5510	22 40 9.3	8.703	4	17 19 1.10	2.8160	26 22 3.0	-0.003
5	15 11 21.32	2.5593	22 48 47.3	8.561	5	17 21 50.09	2.8170	26 21 56.9	+0.205
6	15 13 55.13	2.5677	22 57 16.6	8.416	6	17 24 39.14	2.8178	26 21 38.4	0.412
7	15 16 29.44	2.5759	23 5 37.2	8.270	7	17 27 28.23	2.8184	26 21 7.5	0.618
8	15 19 4.24	2.5841	23 13 49.0	8.122	8	17 30 17.35	2.8189	26 20 24.2	0.826
9	15 21 39.53	2.5922	23 21 51.8	7.971	9	17 33 6.50	2.8191	26 19 28.4	1.033
10	15 24 15.30	2.6003	23 29 45.5	7.818	10	17 35 55.64	2.8190	26 18 20.2	1.241
11	15 26 51.56	2.6083	23 37 30.0	7.663	11	17 38 44.78	2.8188	26 16 59.5	1.448
12	15 29 28.29	2.6162	23 45 5.1	7.508	12	17 41 33.90	2.8183	26 15 26.4	1.655
13	15 32 5.50	2.6240	23 52 30.9	7.350	13	17 44 22.98	2.8176	26 13 40.9	1.863
14	15 34 43.17	2.6317	23 59 47.1	7.189	14	17 47 12.01	2.8167	26 11 42.9	2.069
15	15 37 21.30	2.6393	24 6 53.6	7.027	15	17 50 0.98	2.8156	26 9 32.6	2.275
16	15 39 59.89	2.6468	24 13 50.3	6.863	16	17 52 49.88	2.8143	26 7 9.9	2.481
17	15 42 38.92	2.6543	24 20 37.2	6.698	17	17 55 38.69	2.8127	26 4 34.9	2.686
18	15 45 18.40	2.6616	24 27 14.1	6.531	18	17 58 27.40	2.8108	26 1 47.6	2.891
19	15 47 58.31	2.6688	24 33 40.9	6.361	19	18 1 15.99	2.8088	25 58 48.0	3.095
20	15 50 38.66	2.6759	24 39 57.4	6.189	20	18 4 4.45	2.8065	25 55 36.2	3.298
21	15 53 19.42	2.6828	24 46 3.6	6.017	21	18 6 52.77	2.8042	25 52 12.2	3.502
22	15 56 0.60	2.6896	24 51 59.4	5.843	22	18 9 40.95	2.8016	25 48 36.0	3.704
23	15 58 42.19	2.6964	-24 57 44.7	-5.667	23	18 12 28.96	2.7988	-25 44 47.7	+3.905
JUNE 14.					JUNE 16.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	16 1 24.17	2.7029	-25 3 19.4	-5.489	0	18 15 16.80	2.7957	-25 40 47.4	+4.106
1	16 4 6.54	2.7093	25 8 43.4	5.309	1	18 18 4.44	2.7924	25 36 35.0	4.306
2	16 6 49.29	2.7157	25 13 56.5	5.128	2	18 20 51.89	2.7891	25 32 10.7	4.504
3	16 9 32.42	2.7218	25 18 58.7	4.945	3	18 23 39.13	2.7854	25 27 34.5	4.703
4	16 12 15.91	2.7278	25 23 49.9	4.761	4	18 26 26.14	2.7816	25 22 46.4	4.899
5	16 14 59.75	2.7336	25 28 30.0	4.575	5	18 29 12.92	2.7776	25 17 46.6	5.094
6	16 17 43.94	2.7393	25 32 58.9	4.388	6	18 31 59.45	2.7734	25 12 35.1	5.289
7	16 20 28.46	2.7448	25 37 16.5	4.199	7	18 34 45.73	2.7691	25 7 11.9	5.483
8	16 23 13.31	2.7501	25 41 22.8	4.010	8	18 37 31.74	2.7646	25 1 37.2	5.673
9	16 25 58.47	2.7552	25 45 17.7	3.819	9	18 40 17.48	2.7599	24 55 51.1	5.864
10	16 28 43.93	2.7602	25 49 1.1	3.627	10	18 43 2.93	2.7551	24 49 53.5	6.054
11	16 31 29.69	2.7650	25 52 32.9	3.433	11	18 45 48.09	2.7501	24 43 44.6	6.242
12	16 34 15.73	2.7696	25 55 53.0	3.238	12	18 48 32.94	2.7448	24 37 24.5	6.428
13	16 37 2.04	2.7740	25 59 1.4	3.042	13	18 51 17.47	2.7394	24 30 53.2	6.613
14	16 39 48.61	2.7783	26 1 58.0	2.845	14	18 54 1.67	2.7339	24 24 10.9	6.796
15	16 42 35.43	2.7823	26 4 42.8	2.647	15	18 56 45.54	2.7283	24 17 17.7	6.978
16	16 45 22.49	2.7862	26 7 15.6	2.448	16	18 59 29.06	2.7224	24 10 13.6	7.158
17	16 48 9.77	2.7898	26 9 36.5	2.248	17	19 2 12.23	2.7166	24 2 58.7	7.338
18	16 50 57.26	2.7932	26 11 45.3	2.047	18	19 4 55.05	2.7106	23 55 33.1	7.514
19	16 53 44.95	2.7964	26 13 42.1	1.846	19	19 7 37.50	2.7043	23 47 57.0	7.689
20	16 56 32.83	2.7994	26 15 26.8	1.643	20	19 10 19.57	2.6980	23 40 10.4	7.863
21	16 59 20.88	2.8022	26 16 59.3	1.440	21	19 13 1.26	2.6917	23 32 13.5	8.034
22	17 2 9.09	2.8048	26 18 19.6	1.236	22	19 15 42.57	2.6852	23 24 6.3	8.204
23	17 4 57.46	2.8073	26 19 27.6	1.032	23	19 18 23.48	2.6784	23 15 49.0	8.373
24	17 7 45.96	2.8094	-26 20 23.4	-0.827	24	19 21 3.98	2.6716	-23 7 21.6	+8.539

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JUNE 17.					JUNE 19.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	19 21 3.98	2.6716	-23 7 21.6	+ 8.539	0	21 20 32.32	2.3048	-13 45 9.8	+14.071
1	19 23 44.07	2.6648	22 58 44.3	8.703	1	21 22 50.39	2.2977	13 31 3.6	14.135
2	19 26 23.75	2.6578	22 49 57.2	8.865	2	21 25 8.04	2.2907	13 16 53.6	14.198
3	19 29 3.01	2.6508	22 41 0.5	9.025	3	21 27 25.27	2.2837	13 2 39.9	14.258
4	19 31 41.84	2.6436	22 31 54.2	9.184	4	21 29 42.08	2.2768	12 48 22.7	14.315
5	19 34 20.24	2.6363	22 22 38.4	9.341	5	21 31 58.48	2.2699	12 34 2.1	14.372
6	19 36 58.20	2.6291	22 13 13.3	9.495	6	21 34 14.47	2.2632	12 19 38.1	14.427
7	19 39 35.73	2.6218	22 3 39.0	9.648	7	21 36 30.06	2.2564	12 5 10.9	14.479
8	19 42 12.81	2.6143	21 53 55.5	9.799	8	21 38 45.24	2.2497	11 50 40.6	14.530
9	19 44 49.44	2.6068	21 44 3.1	9.947	9	21 41 0.02	2.2432	11 36 7.3	14.579
10	19 47 25.62	2.5992	21 34 1.9	10.093	10	21 43 14.42	2.2368	11 21 31.1	14.626
11	19 50 1.34	2.5915	21 23 51.9	10.238	11	21 45 28.43	2.2303	11 6 52.2	14.671
12	19 52 36.60	2.5838	21 13 33.4	10.379	12	21 47 42.06	2.2240	10 52 10.6	14.715
13	19 55 11.40	2.5761	21 3 6.4	10.519	13	21 49 55.31	2.2178	10 37 26.4	14.757
14	19 57 45.73	2.5683	20 52 31.1	10.658	14	21 52 8.19	2.2116	10 22 39.8	14.796
15	20 0 19.60	2.5606	20 41 47.5	10.793	15	21 54 20.70	2.2055	10 7 50.9	14.834
16	20 2 53.00	2.5528	20 30 55.9	10.927	16	21 56 32.85	2.1994	9 52 59.7	14.871
17	20 5 25.93	2.5448	20 19 56.3	11.058	17	21 58 44.63	2.1934	9 38 6.4	14.906
18	20 7 58.38	2.5369	20 8 48.9	11.188	18	22 0 56.06	2.1877	9 23 11.0	14.939
19	20 10 30.36	2.5290	19 57 33.8	11.315	19	22 3 7.15	2.1819	9 8 13.7	14.971
20	20 13 1.86	2.5211	19 46 11.1	11.440	20	22 5 17.89	2.1762	8 53 14.5	15.001
21	20 15 32.89	2.5132	19 34 41.0	11.563	21	22 7 28.29	2.1706	8 38 13.6	15.029
22	20 18 3.44	2.5052	19 23 3.6	11.683	22	22 9 38.36	2.1651	8 23 11.0	15.056
23	20 20 33.51	2.4972	-19 11 19.0	+11.803	23	22 11 48.10	2.1597	- 8 8 6.9	+15.080
JUNE 18.					JUNE 20.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	20 23 3.10	2.4892	-18 59 27.3	+11.919	0	22 13 57.52	2.1543	- 7 55 1.4	+15.103
1	20 25 32.21	2.4813	18 47 28.7	12.033	1	22 16 6.62	2.1491	7 37 54.5	15.135
2	20 28 0.85	2.4733	18 35 23.4	12.144	2	22 18 15.41	2.1439	7 22 46.4	15.163
3	20 30 29.00	2.4653	18 23 11.4	12.254	3	22 20 23.89	2.1388	7 7 37.1	15.194
4	20 32 56.68	2.4573	18 10 52.9	12.362	4	22 22 32.06	2.1338	6 52 26.7	15.182
5	20 35 23.88	2.4494	17 58 28.0	12.468	5	22 24 39.94	2.1289	6 37 15.3	15.196
6	20 37 50.61	2.4415	17 45 56.8	12.571	6	22 26 47.53	2.1241	6 22 3.0	15.212
7	20 40 16.86	2.4336	17 33 19.5	12.672	7	22 28 54.83	2.1193	6 6 49.9	15.224
8	20 42 42.64	2.4258	17 20 36.2	12.771	8	22 31 1.85	2.1147	5 51 36.1	15.235
9	20 45 7.95	2.4178	17 7 47.0	12.868	9	22 33 8.59	2.1101	5 36 21.7	15.245
10	20 47 32.78	2.4099	16 54 52.1	12.963	10	22 35 15.06	2.1057	5 21 6.7	15.254
11	20 49 57.14	2.4022	16 41 51.5	13.055	11	22 37 21.27	2.1013	5 5 51.2	15.261
12	20 52 21.04	2.3944	16 28 45.5	13.145	12	22 39 27.21	2.0969	4 50 35.4	15.266
13	20 54 44.17	2.3867	16 15 34.1	13.233	13	22 41 32.90	2.0928	4 35 19.3	15.270
14	20 57 7.44	2.3791	16 2 17.5	13.320	14	22 43 38.34	2.0887	4 20 3.0	15.273
15	20 59 29.96	2.3714	15 48 55.7	13.405	15	22 45 43.54	2.0847	4 4 46.6	15.274
16	21 1 52.01	2.3638	15 35 28.9	13.487	16	22 47 48.50	2.0807	3 49 30.1	15.275
17	21 4 13.61	2.3563	15 21 57.3	13.567	17	22 49 53.22	2.0768	3 34 13.6	15.273
18	21 6 34.76	2.3488	15 8 20.9	13.645	18	22 51 57.72	2.0731	3 18 57.3	15.270
19	21 8 55.46	2.3413	14 54 39.9	13.721	19	22 54 1.99	2.0694	3 3 41.2	15.267
20	21 11 15.71	2.3338	14 40 51.4	13.795	20	22 56 6.05	2.0658	2 48 25.3	15.263
21	21 13 35.52	2.3265	14 27 4.5	13.867	21	22 58 9.89	2.0623	2 33 9.8	15.255
22	21 15 54.89	2.3192	14 13 10.4	13.937	22	23 0 13.53	2.0589	2 17 54.7	15.246
23	21 18 13.82	2.3119	13 59 12.1	14.005	23	23 2 16.96	2.0556	2 2 40.1	15.239
24	21 20 32.32	2.3048	-13 45 9.8	+14.071	24	23 4 20.20	2.0524	- 1 47 26.0	+15.229

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JUNE 21.					JUNE 23.				
	h m s	s	" "	" "		h m s	s	" "	" "
0	23 4 20.20	2.0524	-1 47 26.0	+15.229	0	0 40 43.52	1.9940	+ 9 51 1.7	+13.494
1	23 6 23.25	2.0493	1 32 12.6	15.218	1	0 42 43.18	1.9946	10 4 29.6	13.435
2	23 8 26.11	2.0462	1 16 59.9	15.205	2	0 44 42.87	1.9952	10 17 53.9	13.375
3	23 10 28.79	2.0432	1 1 48.0	15.191	3	0 46 42.60	1.9959	10 31 14.6	13.315
4	23 12 31.29	2.0403	0 46 37.0	15.176	4	0 48 42.38	1.9968	10 44 31.7	13.254
5	23 14 33.63	2.0376	0 31 26.9	15.160	5	0 50 42.21	1.9976	10 57 45.1	13.192
6	23 16 35.80	2.0348	0 16 17.8	15.143	6	0 52 42.09	1.9985	11 10 54.7	13.128
7	23 18 37.81	2.0323	-0 1 9.8	15.124	7	0 54 42.03	1.9994	11 24 0.5	13.064
8	23 20 39.67	2.0297	+0 13 57.1	15.108	8	0 56 42.02	2.0004	11 37 2.4	12.999
9	23 22 41.37	2.0272	0 29 2.8	15.084	9	0 58 42.08	2.0016	11 50 0.4	12.934
10	23 24 42.93	2.0248	0 44 7.2	15.063	10	1 0 42.21	2.0027	12 2 54.5	12.868
11	23 26 44.35	2.0226	0 59 10.3	15.039	11	1 2 42.40	2.0038	12 15 44.6	12.801
12	23 28 45.64	2.0204	1 14 11.9	15.015	12	1 4 42.67	2.0052	12 28 30.6	12.733
13	23 30 46.80	2.0183	1 29 12.1	14.990	13	1 6 43.02	2.0064	12 41 12.5	12.664
14	23 32 47.83	2.0163	1 44 10.7	14.963	14	1 8 43.44	2.0078	12 53 50.3	12.595
15	23 34 48.75	2.0143	1 59 7.7	14.937	15	1 10 43.95	2.0092	13 6 23.9	12.524
16	23 36 49.55	2.0124	2 14 3.1	14.908	16	1 12 44.54	2.0106	13 18 53.2	12.453
17	23 38 50.24	2.0107	2 28 56.7	14.879	17	1 14 45.22	2.0122	13 31 18.3	12.382
18	23 40 50.83	2.0090	2 43 48.6	14.849	18	1 16 46.00	2.0138	13 43 39.0	12.308
19	23 42 51.32	2.0074	2 58 38.6	14.818	19	1 18 46.87	2.0153	13 55 55.3	12.234
20	23 44 51.72	2.0059	3 13 26.7	14.785	20	1 20 47.84	2.0170	14 8 7.1	12.160
21	23 46 52.03	2.0044	3 28 12.8	14.752	21	1 22 48.91	2.0188	14 20 14.5	12.086
22	23 48 52.25	2.0030	3 42 56.9	14.718	22	1 24 50.09	2.0206	14 32 17.4	12.010
23	23 50 52.39	2.0018	+3 57 38.9	+14.682	23	1 26 51.37	2.0223	+14 44 15.7	+11.933
JUNE 22.					JUNE 24.				
0	23 52 52.46	2.0006	+4 12 18.7	+14.645	0	1 28 52.76	2.0241	+14 56 9.4	+11.856
1	23 54 52.46	1.9994	4 26 56.3	14.608	1	1 30 54.26	2.0260	15 7 58.4	11.778
2	23 56 52.39	1.9983	4 41 31.7	14.570	2	1 32 55.88	2.0279	15 19 42.7	11.699
3	23 58 52.26	1.9974	4 56 4.7	14.530	3	1 34 57.61	2.0298	15 31 22.3	11.619
4	0 0 52.08	1.9966	5 10 35.3	14.490	4	1 36 59.46	2.0319	15 42 57.0	11.538
5	0 2 51.85	1.9958	5 25 3.5	14.449	5	1 39 1.44	2.0340	15 54 26.9	11.458
6	0 4 51.57	1.9949	5 39 29.2	14.407	6	1 41 3.54	2.0361	16 5 51.9	11.376
7	0 6 51.24	1.9943	5 53 52.3	14.363	7	1 43 5.77	2.0382	16 17 12.0	11.293
8	0 8 50.88	1.9937	6 8 12.8	14.320	8	1 45 8.12	2.0403	16 28 27.1	11.209
9	0 10 50.48	1.9932	6 22 30.7	14.275	9	1 47 10.60	2.0425	16 39 37.1	11.125
10	0 12 50.06	1.9928	6 36 45.8	14.229	10	1 49 13.22	2.0448	16 50 42.1	11.040
11	0 14 49.61	1.9923	6 50 58.2	14.183	11	1 51 15.97	2.0470	17 1 41.9	10.954
12	0 16 49.14	1.9921	7 5 7.7	14.134	12	1 53 18.86	2.0493	17 12 36.6	10.868
13	0 18 48.66	1.9918	7 19 14.3	14.086	13	1 55 21.89	2.0516	17 23 26.1	10.781
14	0 20 48.16	1.9917	7 33 18.0	14.037	14	1 57 25.05	2.0539	17 34 10.3	10.693
15	0 22 47.66	1.9916	7 47 18.7	13.986	15	1 59 28.36	2.0563	17 44 49.2	10.604
16	0 24 47.15	1.9916	8 1 16.3	13.935	16	2 1 31.81	2.0588	17 55 22.8	10.514
17	0 26 46.65	1.9917	8 15 10.9	13.883	17	2 3 35.41	2.0612	18 5 50.9	10.423
18	0 28 46.15	1.9918	8 29 2.3	13.830	18	2 5 39.15	2.0636	18 16 13.6	10.333
19	0 30 45.66	1.9920	8 42 50.5	13.777	19	2 7 43.04	2.0661	18 26 30.9	10.242
20	0 32 45.19	1.9923	8 56 35.5	13.722	20	2 9 47.08	2.0686	18 36 42.6	10.149
21	0 34 44.73	1.9926	9 10 17.1	13.666	21	2 11 51.27	2.0711	18 46 48.4	10.057
22	0 36 44.30	1.9931	9 23 55.4	13.610	22	2 13 55.61	2.0736	18 56 49.8	9.963
23	0 38 43.90	1.9935	9 37 30.3	13.553	23	2 16 0.10	2.0762	19 6 44.3	9.868
24	0 40 43.52	1.9940	+9 51 1.7	+13.494	24	2 18 4.75	2.0788	+19 16 33.6	+9.773

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JUNE 25.					JUNE 27.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	2 18 4.75	2.0788	+19 16 33.6	+9.773	0	4 0 48.59	2.1947	+25 3 34.0	+4.463
1	2 20 9.55	2.0813	19 26 17.1	9.677	1	4 3 0.32	2.1963	25 7 58.1	4.339
2	2 22 14.51	2.0840	19 35 54.8	9.580	2	4 5 12.15	2.1979	25 12 14.7	4.215
3	2 24 19.63	2.0867	19 45 26.7	9.483	3	4 7 24.07	2.1995	25 16 23.9	4.092
4	2 26 24.91	2.0893	19 54 52.8	9.386	4	4 9 36.09	2.2011	25 20 25.7	3.966
5	2 28 30.34	2.0918	20 4 13.0	9.287	5	4 11 48.20	2.2025	25 24 20.0	3.843
6	2 30 35.93	2.0945	20 13 27.2	9.188	6	4 14 0.39	2.2038	25 28 6.9	3.718
7	2 32 41.68	2.0972	20 22 35.5	9.088	7	4 16 12.66	2.2053	25 31 46.2	3.593
8	2 34 47.59	2.0998	20 31 37.7	8.987	8	4 18 25.02	2.2066	25 35 18.0	3.468
9	2 36 53.66	2.1025	20 40 33.9	8.885	9	4 20 37.45	2.2078	25 38 42.3	3.342
10	2 38 59.89	2.1051	20 49 23.9	8.783	10	4 22 49.96	2.2090	25 41 56.0	3.215
11	2 41 6.27	2.1078	20 58 7.8	8.680	11	4 25 2.53	2.2101	25 45 8.1	3.089
12	2 43 12.82	2.1105	21 6 45.5	8.577	12	4 27 15.17	2.2112	25 48 9.7	2.963
13	2 45 19.53	2.1132	21 15 17.0	8.473	13	4 29 27.87	2.2122	25 51 3.7	2.836
14	2 47 26.40	2.1158	21 23 42.2	8.368	14	4 31 40.63	2.2131	25 53 50.0	2.708
15	2 49 33.42	2.1184	21 32 1.1	8.263	15	4 33 53.44	2.2139	25 56 28.7	2.582
16	2 51 40.61	2.1212	21 40 13.7	8.157	16	4 36 6.30	2.2147	25 58 59.8	2.454
17	2 53 47.96	2.1238	21 48 19.9	8.049	17	4 38 19.20	2.2154	26 1 23.2	2.327
18	2 55 55.46	2.1264	21 56 19.6	7.942	18	4 40 32.15	2.2162	26 3 39.0	2.199
19	2 58 3.13	2.1291	22 4 12.9	7.834	19	4 42 45.14	2.2168	26 5 47.1	2.071
20	3 0 10.95	2.1317	22 11 59.7	7.726	20	4 44 58.16	2.2173	26 7 47.5	1.943
21	3 2 18.93	2.1343	22 19 40.0	7.617	21	4 47 11.21	2.2177	26 9 40.2	1.815
22	3 4 27.06	2.1368	22 27 13.7	7.507	22	4 49 24.28	2.2181	26 11 25.3	1.688
23	3 6 35.35	2.1394	+22 34 40.8	+7.397	23	4 51 37.38	2.2184	+26 13 2.7	+1.556
JUNE 26.					JUNE 28.				
0	3 8 43.79	2.1420	+22 42 1.3	+7.286	0	4 53 50.49	2.2187	+26 14 32.3	+1.429
1	3 10 52.39	2.1446	22 49 15.1	7.174	1	4 56 3.62	2.2188	26 15 54.2	1.302
2	3 13 1.14	2.1471	22 56 22.2	7.063	2	4 58 16.75	2.2189	26 17 8.5	1.174
3	3 15 10.04	2.1495	23 3 22.6	6.949	3	5 0 29.89	2.2190	26 18 15.1	1.045
4	3 17 19.08	2.1519	23 10 16.1	6.835	4	5 2 43.03	2.2190	26 19 13.9	0.916
5	3 19 28.27	2.1544	23 17 2.8	6.722	5	5 4 56.17	2.2189	26 20 5.0	0.788
6	3 21 37.61	2.1569	23 23 42.7	6.608	6	5 7 9.30	2.2188	26 20 48.4	0.659
7	3 23 47.10	2.1593	23 30 15.7	6.493	7	5 9 22.42	2.2185	26 21 24.1	0.531
8	3 25 56.73	2.1617	23 36 41.8	6.377	8	5 11 35.52	2.2182	26 21 52.1	0.403
9	3 28 6.50	2.1640	23 43 0.9	6.261	9	5 13 48.60	2.2178	26 22 12.4	0.274
10	3 30 16.41	2.1663	23 49 13.1	6.144	10	5 16 1.66	2.2174	26 22 25.0	0.147
11	3 32 26.46	2.1686	23 55 18.2	6.027	11	5 18 14.69	2.2168	26 22 30.0	+0.018
12	3 34 36.64	2.1708	24 1 16.3	5.910	12	5 20 27.68	2.2163	26 22 27.2	-0.111
13	3 36 46.96	2.1730	24 7 7.4	5.792	13	5 22 40.64	2.2156	26 22 16.7	0.238
14	3 38 57.40	2.1752	24 12 51.3	5.673	14	5 24 53.55	2.2148	26 21 58.6	0.366
15	3 41 7.98	2.1774	24 18 28.1	5.553	15	5 27 6.41	2.2140	26 21 32.8	0.494
16	3 43 18.69	2.1795	24 23 57.7	5.434	16	5 29 19.23	2.2132	26 20 59.3	0.622
17	3 45 29.52	2.1815	24 29 20.2	5.315	17	5 31 31.99	2.2122	26 20 18.1	0.750
18	3 47 40.47	2.1835	24 34 35.5	5.194	18	5 33 44.69	2.2112	26 19 29.3	0.877
19	3 49 51.54	2.1855	24 39 43.5	5.073	19	5 35 57.33	2.2101	26 18 32.9	1.003
20	3 52 2.73	2.1874	24 44 44.2	4.951	20	5 38 9.90	2.2089	26 17 28.9	1.130
21	3 54 14.03	2.1893	24 49 37.6	4.830	21	5 40 22.40	2.2077	26 16 17.3	1.257
22	3 56 25.44	2.1911	24 54 23.8	4.708	22	5 42 34.82	2.2063	26 14 58.1	1.383
23	3 58 36.96	2.1929	24 59 2.6	4.585	23	5 44 47.16	2.2050	26 13 31.3	1.510
24	4 0 48.59	2.1947	+25 3 34.0	+4.463	24	5 46 59.42	2.2036	+26 11 56.9	-1.636

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JUNE 29.					JULY 1.				
	h m s	s	" ' "	"		h m s	s	" ' "	"
0	5 46 59.42	2.2036	+26 11 56.9	-1.636	0	7 30 0.93	2.0723	+22 36 21.9	-7.138
1	5 49 11.59	2.2021	26 10 15.0	1.762	1	7 32 5.16	2.0687	22 29 10.6	7.238
2	5 51 23.67	2.2005	26 8 25.5	1.887	2	7 34 9.17	2.0651	22 21 53.4	7.336
3	5 53 35.65	2.1988	26 6 28.6	2.011	3	7 36 12.97	2.0615	22 14 30.3	7.434
4	5 55 47.53	2.1972	26 4 24.2	2.136	4	7 38 16.55	2.0578	22 7 1.3	7.533
5	5 57 59.31	2.1954	26 2 12.3	2.260	5	7 40 19.91	2.0543	21 59 26.4	7.629
6	6 0 10.98	2.1936	25 59 53.0	2.384	6	7 42 23.06	2.0507	21 51 45.8	7.725
7	6 2 22.54	2.1917	25 57 26.2	2.508	7	7 44 25.99	2.0471	21 43 59.4	7.820
8	6 4 33.98	2.1897	25 54 52.0	2.632	8	7 46 28.71	2.0435	21 36 7.4	7.914
9	6 6 45.30	2.1877	25 52 10.4	2.754	9	7 48 31.21	2.0398	21 28 9.7	8.008
10	6 8 56.50	2.1857	25 49 21.5	2.877	10	7 50 33.49	2.0362	21 20 6.4	8.101
11	6 11 7.58	2.1835	25 46 25.2	2.999	11	7 52 35.55	2.0325	21 11 57.6	8.193
12	6 13 18.52	2.1813	25 43 21.6	3.121	12	7 54 37.39	2.0289	21 3 43.2	8.285
13	6 15 29.33	2.1790	25 40 10.7	3.242	13	7 56 39.02	2.0253	20 55 23.4	8.376
14	6 17 40.00	2.1767	25 36 52.6	3.363	14	7 58 40.43	2.0217	20 46 58.1	8.466
15	6 19 50.53	2.1743	25 33 27.2	3.483	15	8 0 41.62	2.0181	20 38 27.5	8.554
16	6 22 0.91	2.1718	25 29 54.6	3.603	16	8 2 42.60	2.0145	20 29 51.6	8.643
17	6 24 11.15	2.1694	25 26 14.9	3.722	17	8 4 43.36	2.0108	20 21 10.3	8.732
18	6 26 21.24	2.1669	25 22 28.0	3.841	18	8 6 43.90	2.0073	20 12 23.8	8.818
19	6 28 31.18	2.1643	25 18 34.0	3.960	19	8 8 44.23	2.0038	20 3 32.2	8.903
20	6 30 40.96	2.1617	25 14 32.8	4.078	20	8 10 44.35	2.0002	19 54 35.4	8.990
21	6 32 50.58	2.1589	25 10 24.6	4.195	21	8 12 44.25	1.9966	19 45 33.4	9.075
22	6 35 0.03	2.1562	25 6 9.4	4.312	22	8 14 43.94	1.9931	19 36 26.4	9.158
23	6 37 9.32	2.1535	+25 1 47.2	-4.428	23	8 16 43.42	1.9895	+19 27 14.4	-9.241
JUNE 30.					JULY 2.				
	h m s	s	" ' "	"		h m s	s	" ' "	"
0	6 39 18.45	2.1507	+24 57 18.0	-4.544	0	8 18 42.68	1.9859	+19 17 57.5	-9.323
1	6 41 27.40	2.1478	24 52 41.9	4.659	1	8 20 41.73	1.9825	19 8 35.6	9.405
2	6 43 36.18	2.1448	24 47 58.9	4.774	2	8 22 40.58	1.9791	18 59 8.9	9.485
3	6 45 44.78	2.1419	24 43 9.0	4.888	3	8 24 39.22	1.9756	18 49 37.4	9.565
4	6 47 53.21	2.1389	24 38 12.3	5.002	4	8 26 37.65	1.9721	18 40 1.1	9.645
5	6 50 1.45	2.1358	24 33 8.8	5.114	5	8 28 35.87	1.9687	18 30 20.0	9.723
6	6 52 9.51	2.1328	24 27 58.6	5.227	6	8 30 33.89	1.9653	18 20 34.3	9.801
7	6 54 17.38	2.1296	24 22 41.6	5.339	7	8 32 31.71	1.9620	18 10 43.9	9.878
8	6 56 25.06	2.1264	24 17 17.9	5.450	8	8 34 29.33	1.9586	18 0 49.0	9.953
9	6 58 32.55	2.1233	24 11 47.6	5.560	9	8 36 26.74	1.9553	17 50 49.5	10.029
10	7 0 39.85	2.1201	24 6 10.7	5.670	10	8 38 23.96	1.9520	17 40 45.5	10.104
11	7 2 46.96	2.1168	24 0 27.2	5.779	11	8 40 20.98	1.9487	17 30 37.0	10.178
12	7 4 53.87	2.1135	23 54 37.2	5.888	12	8 42 17.80	1.9454	17 20 24.2	10.250
13	7 7 0.58	2.1102	23 48 40.7	5.996	13	8 44 14.43	1.9422	17 10 7.0	10.323
14	7 9 7.09	2.1069	23 42 37.7	6.103	14	8 46 10.86	1.9390	16 59 45.4	10.395
15	7 11 13.41	2.1036	23 36 28.3	6.209	15	8 48 7.11	1.9359	16 49 19.6	10.465
16	7 13 19.52	2.1001	23 30 12.6	6.315	16	8 50 3.17	1.9328	16 38 49.6	10.535
17	7 15 25.42	2.0967	23 23 50.5	6.421	17	8 51 59.04	1.9297	16 28 15.4	10.604
18	7 17 31.12	2.0933	23 17 22.1	6.526	18	8 53 54.73	1.9267	16 17 37.1	10.673
19	7 19 36.61	2.0898	23 10 47.4	6.629	19	8 55 50.24	1.9237	16 6 54.7	10.741
20	7 21 41.90	2.0863	23 4 6.6	6.732	20	8 57 45.57	1.9207	15 56 8.2	10.808
21	7 23 46.97	2.0828	22 57 19.6	6.835	21	8 59 40.72	1.9177	15 45 17.7	10.874
22	7 25 51.83	2.0793	22 50 26.4	6.937	22	9 1 35.69	1.9148	15 34 23.3	10.939
23	7 27 56.49	2.0758	22 43 27.2	7.038	23	9 3 30.49	1.9119	15 23 25.0	11.004
24	7 30 0.93	2.0723	+22 36 21.9	-7.138	24	9 5 25.12	1.9091	+15 12 22.8	-11.068

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JULY 3.					JULY 5.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	9 5 25.12	1.9091	+15 12 22.8	-11.068	0	10 34 42.40	1.8326	+5 21 22.1	-13.282
1	9 7 19.58	1.9063	15 1 16.8	11.132	1	10 36 32.35	1.8326	5 8 4.3	13.210
2	9 9 13.88	1.9036	14 50 7.0	11.194	2	10 38 22.30	1.8325	4 54 44.9	13.238
3	9 11 8.01	1.9008	14 38 53.5	11.266	3	10 40 12.25	1.8325	4 41 23.8	13.265
4	9 13 1.98	1.8982	14 27 36.3	11.317	4	10 42 2.20	1.8326	4 28 1.1	13.292
5	9 14 55.79	1.8955	14 16 15.5	11.377	5	10 43 52.16	1.8328	4 14 36.8	13.415
6	9 16 49.44	1.8929	14 4 51.1	11.437	6	10 45 42.13	1.8330	4 1 10.9	13.443
7	9 18 42.94	1.8904	13 53 23.1	11.495	7	10 47 32.12	1.8333	3 47 43.6	13.467
8	9 20 36.29	1.8879	13 41 51.7	11.553	8	10 49 22.12	1.8336	3 34 14.9	13.491
9	9 22 29.49	1.8855	13 30 16.8	11.610	9	10 51 12.15	1.8341	3 20 44.7	13.514
10	9 24 22.55	1.8832	13 18 38.5	11.667	10	10 53 2.21	1.8346	3 7 13.2	13.538
11	9 26 15.47	1.8808	13 6 56.8	11.723	11	10 54 52.30	1.8352	2 53 40.4	13.559
12	9 28 8.24	1.8784	12 55 11.8	11.778	12	10 56 42.43	1.8358	2 40 6.3	13.577
13	9 30 0.88	1.8763	12 43 23.5	11.832	13	10 58 32.60	1.8365	2 26 31.0	13.598
14	9 31 53.39	1.8740	12 31 32.0	11.885	14	11 0 22.81	1.8373	2 12 54.5	13.615
15	9 33 45.76	1.8718	12 19 37.3	11.938	15	11 2 13.08	1.8383	1 59 16.9	13.637
16	9 35 38.01	1.8698	12 7 39.4	11.991	16	11 4 3.40	1.8392	1 45 38.1	13.655
17	9 37 30.13	1.8677	11 55 38.4	12.042	17	11 5 53.78	1.8402	1 31 58.3	13.671
18	9 39 22.13	1.8657	11 43 34.4	12.093	18	11 7 44.22	1.8413	1 18 17.6	13.687
19	9 41 14.01	1.8638	11 31 27.3	12.143	19	11 9 34.73	1.8424	1 4 35.9	13.703
20	9 43 5.78	1.8619	11 19 17.3	12.192	20	11 11 25.31	1.8437	0 50 53.2	13.718
21	9 44 57.44	1.8600	11 7 4.3	12.241	21	11 13 15.97	1.8450	0 37 9.7	13.732
22	9 46 48.98	1.8582	10 54 48.4	12.288	22	11 15 6.71	1.8463	0 23 25.4	13.745
23	9 48 40.42	1.8565	+10 42 29.7	-12.335	23	11 16 57.53	1.8478	+0 9 40.3	-13.759
JULY 4.					JULY 6.				
0	9 50 31.76	1.8548	+10 30 8.2	-12.382	0	11 18 48.45	1.8494	-0 4 5.6	-13.770
1	9 52 23.00	1.8532	10 17 43.9	12.428	1	11 20 39.46	1.8510	0 17 52.1	13.781
2	9 54 14.14	1.8516	10 5 16.9	12.472	2	11 22 30.57	1.8528	0 31 39.3	13.792
3	9 56 5.19	1.8501	9 52 47.3	12.516	3	11 24 21.79	1.8545	0 45 27.1	13.801
4	9 57 56.15	1.8487	9 40 15.0	12.559	4	11 26 13.11	1.8563	0 59 15.4	13.809
5	9 59 47.03	1.8473	9 27 40.2	12.602	5	11 28 4.55	1.8583	1 13 4.2	13.815
6	10 1 37.82	1.8459	9 15 2.8	12.645	6	11 29 56.10	1.8603	1 26 53.5	13.825
7	10 3 28.54	1.8448	9 2 22.8	12.687	7	11 31 47.78	1.8624	1 40 43.2	13.831
8	10 5 19.19	1.8435	8 49 40.4	12.727	8	11 33 39.59	1.8646	1 54 33.2	13.837
9	10 7 9.76	1.8423	8 36 55.6	12.767	9	11 35 31.53	1.8668	2 8 23.6	13.842
10	10 9 0.27	1.8413	8 24 8.4	12.806	10	11 37 23.61	1.8692	2 22 14.2	13.845
11	10 10 50.71	1.8402	8 11 18.9	12.844	11	11 39 15.83	1.8716	2 36 5.0	13.848
12	10 12 41.09	1.8393	7 58 27.1	12.883	12	11 41 8.20	1.8741	2 49 56.0	13.851
13	10 14 31.42	1.8383	7 45 33.0	12.919	13	11 43 0.72	1.8766	3 3 47.1	13.852
14	10 16 21.69	1.8375	7 32 36.8	12.955	14	11 44 53.39	1.8793	3 17 38.2	13.853
15	10 18 11.92	1.8368	7 19 38.4	12.992	15	11 46 46.23	1.8820	3 31 29.4	13.853
16	10 20 2.10	1.8360	7 6 37.8	13.027	16	11 48 39.23	1.8848	3 45 20.5	13.852
17	10 21 52.24	1.8354	6 53 35.2	13.060	17	11 50 32.41	1.8878	3 59 11.6	13.850
18	10 23 42.35	1.8348	6 40 30.6	13.094	18	11 52 25.76	1.8907	4 13 2.5	13.847
19	10 25 32.42	1.8343	6 27 23.9	13.128	19	11 54 19.29	1.8938	4 26 53.2	13.843
20	10 27 22.46	1.8338	6 14 15.3	13.159	20	11 56 13.01	1.8969	4 40 43.6	13.838
21	10 29 12.47	1.8333	6 1 4.8	13.191	21	11 58 6.92	1.9001	4 54 33.8	13.833
22	10 31 2.46	1.8331	5 47 52.4	13.223	22	12 0 1.02	1.9034	5 8 23.6	13.827
23	10 32 52.44	1.8328	5 34 38.1	13.253	23	12 1 55.33	1.9068	5 22 13.0	13.820
24	10 34 42.40	1.8326	+ 5 21 22.1	-13.282	24	12 3 49.84	1.9103	-5 36 2.0	-13.812

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JULY 7.					JULY 9.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 3 49.84	1.9103	- 5 36 2.0	-13.812	0	13 41 6.89	2.1745	-16 9 38.5	-12.128
1	12 5 44.56	1.9138	5 49 50.4	13.803	1	13 43 17.58	2.1819	16 21 44.2	12.061
2	12 7 39.50	1.9175	6 3 38.3	13.793	2	13 45 28.72	2.1894	16 33 45.8	11.993
3	12 9 34.66	1.9213	6 17 25.5	13.781	3	13 47 40.31	2.1970	16 45 43.3	11.923
4	12 11 30.05	1.9251	6 31 12.0	13.769	4	13 49 52.36	2.2046	16 57 36.5	11.850
5	12 13 25.67	1.9289	6 44 57.8	13.757	5	13 52 4.86	2.2123	17 9 25.3	11.777
6	12 15 21.52	1.9328	6 58 42.8	13.743	6	13 54 17.83	2.2200	17 21 9.7	11.703
7	12 17 17.61	1.9369	7 12 26.9	13.728	7	13 56 31.26	2.2277	17 32 49.6	11.626
8	12 19 13.95	1.9411	7 26 10.1	13.712	8	13 58 45.15	2.2355	17 44 24.8	11.547
9	12 21 10.54	1.9453	7 39 52.3	13.695	9	14 0 59.52	2.2435	17 55 55.2	11.467
10	12 23 7.39	1.9497	7 53 33.5	13.678	10	14 3 14.37	2.2514	18 7 20.8	11.385
11	12 25 4.50	1.9541	8 7 13.6	13.658	11	14 5 29.69	2.2593	18 18 41.4	11.302
12	12 27 1.88	1.9586	8 20 52.5	13.638	12	14 7 45.49	2.2674	18 29 57.0	11.217
13	12 28 59.53	1.9631	8 34 30.2	13.618	13	14 10 1.78	2.2755	18 41 7.4	11.130
14	12 30 57.45	1.9678	8 48 6.6	13.596	14	14 12 18.55	2.2836	18 52 12.6	11.042
15	12 32 55.66	1.9725	9 1 41.7	13.573	15	14 14 35.81	2.2918	19 3 12.4	10.951
16	12 34 54.15	1.9773	9 15 15.3	13.548	16	14 16 53.57	2.3001	19 14 6.7	10.859
17	12 36 52.93	1.9822	9 28 47.4	13.523	17	14 19 11.82	2.3083	19 24 55.5	10.766
18	12 38 52.01	1.9872	9 42 18.0	13.497	18	14 21 30.57	2.3167	19 35 38.6	10.670
19	12 40 51.39	1.9923	9 55 47.0	13.469	19	14 23 49.82	2.3249	19 46 15.9	10.573
20	12 42 51.08	1.9974	10 9 14.3	13.441	20	14 26 9.56	2.3333	19 56 47.4	10.474
21	12 44 51.08	2.0027	10 22 39.9	13.411	21	14 28 29.81	2.3417	20 7 12.8	10.373
22	12 46 51.40	2.0080	10 36 3.6	13.379	22	14 30 50.56	2.3500	20 17 32.2	10.272
23	12 48 52.04	2.0133	-10 49 25.4	-13.348	23	14 33 11.81	2.3585	-20 27 45.4	-10.167
JULY 8.					JULY 10.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 50 53.00	2.0188	-11 2 45.3	-13.315	0	14 35 33.58	2.3671	-20 37 52.2	-10.060
1	12 52 54.30	2.0244	11 16 3.2	13.280	1	14 37 55.86	2.3755	20 47 52.6	9.953
2	12 54 55.93	2.0301	11 29 18.9	13.244	2	14 40 18.64	2.3839	20 57 46.5	9.843
3	12 56 57.91	2.0358	11 42 32.5	13.208	3	14 42 41.93	2.3924	21 7 33.7	9.731
4	12 59 0.23	2.0417	11 55 43.9	13.170	4	14 45 5.73	2.4010	21 17 14.2	9.618
5	13 1 2.91	2.0476	12 8 52.9	13.130	5	14 47 30.05	2.4096	21 26 47.8	9.502
6	13 3 5.94	2.0535	12 21 59.5	13.089	6	14 49 54.88	2.4181	21 36 14.4	9.384
7	13 5 9.33	2.0596	12 35 3.6	13.048	7	14 52 20.22	2.4266	21 45 33.9	9.265
8	13 7 13.09	2.0658	12 48 5.2	13.005	8	14 54 46.07	2.4351	21 54 46.2	9.144
9	13 9 17.22	2.0720	13 1 4.2	12.961	9	14 57 12.43	2.4436	22 3 51.2	9.021
10	13 11 21.73	2.0783	13 14 0.5	12.915	10	14 59 39.30	2.4521	22 12 48.7	8.896
11	13 13 26.62	2.0847	13 26 54.0	12.868	11	15 2 6.68	2.4606	22 21 38.7	8.770
12	13 15 31.89	2.0911	13 39 44.6	12.819	12	15 4 34.57	2.4691	22 30 21.1	8.642
13	13 17 37.55	2.0977	13 52 32.3	12.770	13	15 7 2.97	2.4775	22 38 55.7	8.511
14	13 19 43.61	2.1043	14 5 17.0	12.718	14	15 9 31.87	2.4859	22 47 22.4	8.378
15	13 21 50.07	2.1110	14 17 58.5	12.666	15	15 12 1.28	2.4944	22 55 41.1	8.244
16	13 23 56.93	2.1178	14 30 36.9	12.613	16	15 14 31.20	2.5028	23 3 51.7	8.108
17	13 26 4.20	2.1246	14 43 12.0	12.557	17	15 17 1.61	2.5110	23 11 54.1	7.971
18	13 28 11.88	2.1315	14 55 43.7	12.500	18	15 19 32.52	2.5193	23 19 48.2	7.831
19	13 30 19.98	2.1385	15 8 12.0	12.442	19	15 22 3.93	2.5277	23 27 33.8	7.688
20	13 32 28.50	2.1456	15 20 36.7	12.382	20	15 24 35.84	2.5358	23 35 10.8	7.545
21	13 34 37.45	2.1528	15 32 57.8	12.321	21	15 27 8.23	2.5439	23 42 39.2	7.400
22	13 36 46.83	2.1599	15 45 15.2	12.258	22	15 29 41.11	2.5520	23 49 58.8	7.253
23	13 38 56.64	2.1672	15 57 28.8	12.194	23	15 32 14.47	2.5601	23 57 9.5	7.103
24	13 41 6.89	2.1745	-16 9 38.5	-12.128	24	15 34 48.32	2.5681	-24 4 11.2	-6.953

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	
JULY 11.					JULY 13.				
	h m s	s	° ' "	"		h m s	s	° ' "	
0	15 34 48.32	2.5681	-24 4 11.2	-6.953	0	17 45 2.96	2.7970	-26 14 31.7	
1	15 37 22.64	2.5760	24 11 3.8	6.800	1	17 47 50.79	2.7973	26 12 28.1	
2	15 39 57.44	2.5838	24 17 47.2	6.645	2	17 50 38.63	2.7974	26 10 12.2	
3	15 42 32.70	2.5916	24 24 21.2	6.488	3	17 53 26.48	2.7973	26 7 44.0	
4	15 45 8.43	2.5993	24 30 45.8	6.330	4	17 56 14.31	2.7969	26 5 3.6	
5	15 47 44.61	2.6068	24 37 0.8	6.170	5	17 59 2.11	2.7963	26 2 10.9	
6	15 50 21.25	2.6143	24 43 6.2	6.008	6	18 1 49.87	2.7956	25 59 6.1	
7	15 52 58.33	2.6217	24 49 1.8	5.845	7	18 4 37.58	2.7947	25 55 49.0	
8	15 55 35.85	2.6290	24 54 47.6	5.681	8	18 7 25.23	2.7935	25 52 19.7	
9	15 58 13.81	2.6363	25 0 23.5	5.514	9	18 10 12.80	2.7921	25 48 38.3	
10	16 0 52.20	2.6433	25 5 49.3	5.345	10	18 13 0.28	2.7906	25 44 44.8	
11	16 3 31.01	2.6503	25 11 4.9	5.175	11	18 15 47.67	2.7889	25 40 39.2	
12	16 6 10.23	2.6571	25 16 10.3	5.003	12	18 18 34.95	2.7869	25 36 21.5	
13	16 8 49.86	2.6639	25 21 5.3	4.830	13	18 21 22.10	2.7847	25 31 51.8	
14	16 11 29.90	2.6706	25 25 49.9	4.656	14	18 24 9.11	2.7823	25 27 10.1	
15	16 14 10.33	2.6771	25 30 24.0	4.479	15	18 26 55.98	2.7798	25 22 16.5	
16	16 16 51.15	2.6834	25 34 47.4	4.301	16	18 29 42.69	2.7771	25 17 11.0	
17	16 19 32.34	2.6896	25 39 0.1	4.122	17	18 32 29.23	2.7742	25 11 53.7	
18	16 22 13.90	2.6957	25 43 2.0	3.941	18	18 35 15.59	2.7711	25 6 24.0	
19	16 24 55.82	2.7017	25 46 53.0	3.758	19	18 38 1.76	2.7678	25 0 43.8	
20	16 27 38.10	2.7075	25 50 33.0	3.575	20	18 40 47.73	2.7644	24 54 51.2	
21	16 30 20.72	2.7131	25 54 2.0	3.391	21	18 43 33.49	2.7608	24 48 47.3	
22	16 33 3.67	2.7186	25 57 19.9	3.204	22	18 46 19.03	2.7571	24 42 31.7	
23	16 35 46.95	2.7239	-26 0 26.5	-3.016	23	18 49 4.34	2.7531	-24 36 4.7	
JULY 12.					JULY 14.				
	h m s	s	° ' "	"		h m s	s	° ' "	
0	16 38 30.54	2.7291	-26 3 21.8	-2.828	0	18 51 49.40	2.7489	-24 29 26.2	
1	16 41 14.44	2.7342	26 6 5.8	2.638	1	18 54 34.21	2.7446	24 22 36.0	
2	16 43 58.64	2.7390	26 8 38.3	2.446	2	18 57 18.75	2.7401	24 15 35.7	
3	16 46 43.12	2.7436	26 10 59.3	2.254	3	19 0 3.02	2.7355	24 8 23.0	
4	16 49 27.87	2.7480	26 13 8.8	2.061	4	19 2 47.01	2.7308	24 1 0.5	
5	16 52 12.88	2.7523	26 15 6.6	1.866	5	19 5 30.71	2.7259	23 53 26.4	
6	16 54 58.15	2.7565	26 16 52.7	1.671	6	19 8 14.12	2.7209	23 45 41.5	
7	16 57 43.66	2.7604	26 18 27.1	1.474	7	19 10 57.22	2.7158	23 37 45.7	
8	17 0 29.40	2.7642	26 19 49.6	1.277	8	19 13 40.01	2.7104	23 29 39.5	
9	17 3 15.36	2.7678	26 21 0.3	1.079	9	19 16 22.47	2.7050	23 21 22.5	
10	17 6 1.53	2.7711	26 21 59.1	0.881	10	19 19 4.61	2.6995	23 12 54.7	
11	17 8 47.89	2.7743	26 22 46.0	0.681	11	19 21 46.41	2.6938	23 4 16.8	
12	17 11 34.44	2.7773	26 23 20.8	0.480	12	19 24 27.87	2.6880	22 55 28.5	
13	17 14 21.16	2.7800	26 23 43.6	0.279	13	19 27 8.97	2.6820	22 46 30.1	
14	17 17 8.04	2.7826	26 23 54.3	-0.078	14	19 29 49.71	2.6760	22 37 21.0	
15	17 19 55.07	2.7850	26 23 52.9	+0.124	15	19 32 30.09	2.6699	22 28 3.1	
16	17 22 42.24	2.7871	26 23 39.4	0.327	16	19 35 10.10	2.6638	22 18 34.8	
17	17 25 29.52	2.7890	26 23 13.7	0.529	17	19 37 49.74	2.6574	22 8 56.7	
18	17 28 16.92	2.7908	26 22 35.9	0.733	18	19 40 28.99	2.6510	21 59 9.0	
19	17 31 4.42	2.7923	26 21 45.8	0.937	19	19 43 7.86	2.6446	21 49 11.8	
20	17 33 52.00	2.7937	26 20 43.5	1.141	20	19 45 46.34	2.6380	21 39 5.5	
21	17 36 39.66	2.7948	26 19 28.9	1.345	21	19 48 24.42	2.6313	21 28 49.2	
22	17 39 27.38	2.7958	26 18 2.1	1.549	22	19 51 2.10	2.6246	21 18 24.5	
23	17 42 15.15	2.7965	26 16 23.0	1.753	23	19 53 39.37	2.6178	21 7 50.1	
24	17 45 2.96	2.7970	-26 14 31.7	+1.958	24	19 56 16.23	2.6109	-20 57 7.1	

GREENWICH MEAN TIME.

hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JULY 15.					JULY 17.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	19 56 16.23	2.5109	-20 57 7.1	+10.790	0	21 53 21.11	2.2751	-10 10 41.5	+15.302
1	19 58 52.68	2.6040	20 46 15.3	10.936	1	21 55 37.43	2.2691	9 55 22.1	15.343
2	20 1 28.71	2.5970	20 35 14.8	11.080	2	21 57 53.40	2.2632	9 40 0.3	15.383
3	20 4 4.32	2.5900	20 24 5.7	11.221	3	22 0 9.01	2.2572	9 24 36.1	15.422
4	20 6 39.51	2.5830	20 12 48.3	11.359	4	22 2 24.26	2.2513	9 9 9.7	15.457
5	20 9 14.28	2.5768	20 1 22.6	11.497	5	22 4 39.17	2.2457	8 53 41.3	15.490
6	20 11 48.81	2.5697	19 49 48.7	11.632	6	22 6 53.74	2.2400	8 38 10.9	15.523
7	20 14 22.52	2.5615	19 38 6.8	11.764	7	22 9 7.97	2.2344	8 22 38.5	15.554
8	20 16 55.99	2.5543	19 26 17.0	11.894	8	22 11 21.87	2.2289	8 7 4.4	15.582
9	20 19 29.03	2.5470	19 14 19.5	12.023	9	22 13 35.44	2.2235	7 51 28.7	15.608
10	20 22 1.63	2.5398	19 2 14.3	12.149	10	22 15 48.69	2.2182	7 35 51.5	15.633
11	20 24 33.80	2.5324	18 50 1.6	12.273	11	22 18 1.62	2.2128	7 20 12.8	15.655
12	20 27 5.52	2.5250	18 37 41.6	12.394	12	22 20 14.23	2.2076	7 4 32.9	15.676
13	20 29 36.80	2.5178	18 25 14.3	12.514	13	22 22 26.53	2.2025	6 48 51.7	15.695
14	20 32 7.65	2.5105	18 12 39.9	12.631	14	22 24 38.53	2.1975	6 33 9.5	15.713
15	20 34 38.06	2.5031	17 59 58.6	12.745	15	22 26 50.23	2.1926	6 17 26.2	15.729
16	20 37 8.02	2.4957	17 47 10.5	12.858	16	22 29 1.64	2.1877	6 1 42.0	15.743
17	20 39 37.54	2.4883	17 34 15.6	12.969	17	22 31 12.75	2.1828	5 45 57.1	15.754
18	20 42 6.62	2.4810	17 21 14.2	13.077	18	22 33 23.58	2.1782	5 30 11.5	15.766
19	20 44 35.26	2.4736	17 8 6.4	13.183	19	22 35 34.13	2.1735	5 14 25.2	15.775
20	20 47 3.45	2.4663	16 54 52.3	13.287	20	22 37 44.40	2.1689	4 58 38.5	15.782
21	20 49 31.21	2.4590	16 41 32.0	13.388	21	22 39 54.40	2.1645	4 42 51.4	15.788
22	20 51 58.53	2.4517	16 28 5.7	13.488	22	22 42 4.14	2.1601	4 27 4.0	15.792
23	20 54 25.41	2.4443	-16 14 33.5	+13.584	23	22 44 13.61	2.1558	-4 11 16.4	+15.793
JULY 16.					JULY 18.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	20 56 51.85	2.4371	-16 0 55.6	+13.679	0	22 46 22.83	2.1516	-3 55 28.8	+15.793
1	20 59 17.86	2.4298	15 47 12.0	13.772	1	22 48 31.80	2.1474	3 39 41.2	15.793
2	21 1 43.43	2.4226	15 33 23.0	13.862	2	22 50 40.52	2.1433	3 23 53.6	15.792
3	21 4 8.57	2.4154	15 19 28.6	13.950	3	22 52 49.00	2.1394	3 8 6.2	15.788
4	21 6 33.28	2.4083	15 5 29.0	14.036	4	22 54 57.25	2.1356	2 52 19.1	15.782
5	21 8 57.57	2.4012	14 51 24.3	14.119	5	22 57 5.27	2.1318	2 36 32.4	15.775
6	21 11 21.42	2.3940	14 37 14.7	14.201	6	22 59 13.06	2.1280	2 20 46.1	15.767
7	21 13 44.85	2.3871	14 23 0.2	14.280	7	23 1 20.63	2.1243	2 5 0.4	15.757
8	21 16 7.87	2.3801	14 8 41.1	14.357	8	23 3 27.98	2.1208	1 49 15.3	15.746
9	21 18 30.46	2.3730	13 54 17.4	14.433	9	23 5 35.13	2.1174	1 33 30.9	15.733
10	21 20 52.63	2.3661	13 39 49.2	14.506	10	23 7 42.07	2.1140	1 17 47.3	15.719
11	21 23 14.39	2.3593	13 25 16.7	14.576	11	23 9 48.81	2.1107	1 2 4.6	15.703
12	21 25 35.74	2.3524	13 10 40.1	14.643	12	23 11 55.35	2.1074	0 46 22.9	15.686
13	21 27 56.68	2.3457	12 55 59.5	14.710	13	23 14 1.70	2.1043	0 30 42.3	15.668
14	21 30 17.22	2.3390	12 41 14.9	14.775	14	23 16 7.87	2.1013	-0 15 2.8	15.648
15	21 32 37.36	2.3323	12 26 26.5	14.837	15	23 18 13.86	2.0983	+0 0 35.4	15.627
16	21 34 57.10	2.3257	12 11 34.5	14.897	16	23 20 19.67	2.0955	0 16 12.4	15.606
17	21 37 16.44	2.3191	11 56 38.9	14.954	17	23 22 25.32	2.0928	0 31 48.0	15.581
18	21 39 35.39	2.3127	11 41 40.0	15.010	18	23 24 30.80	2.0900	0 47 22.1	15.555
19	21 41 53.96	2.3063	11 26 37.7	15.064	19	23 26 36.12	2.0873	1 2 54.6	15.528
20	21 44 12.14	2.2998	11 11 32.3	15.115	20	23 28 41.28	2.0848	1 18 25.5	15.502
21	21 46 29.94	2.2936	10 56 23.9	15.165	21	23 30 46.29	2.0823	1 33 54.8	15.473
22	21 48 47.37	2.2873	10 41 12.5	15.213	22	23 32 51.16	2.0799	1 49 22.2	15.442
23	21 51 4.42	2.2812	10 25 58.3	15.258	23	23 34 55.88	2.0776	2 4 47.8	15.411
24	21 53 21.11	2.2751	-10 10 41.5	+15.302	24	23 37 0.47	2.0754	+2 20 11.5	+15.378

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	
JULY 19.					JULY 21.				
	h m s	s	° ' "	"		h m s	s	° ' "	
0	23 37 0.47	2.0754	+ 2 20 11.5	+15.378	0	1 15 29.18	2.0538	+13 40 13.8	
1	23 39 4.93	2.0733	2 35 33.2	15.344	1	1 17 32.44	2.0548	13 52 46.8	
2	23 41 9.26	2.0712	2 50 52.8	15.309	2	1 19 35.76	2.0559	14 5 14.9	
3	23 43 13.47	2.0693	3 6 10.3	15.273	3	1 21 39.15	2.0571	14 17 38.2	
4	23 45 17.57	2.0673	3 21 25.5	15.235	4	1 23 42.61	2.0583	14 29 56.6	
5	23 47 21.55	2.0655	3 36 38.5	15.197	5	1 25 46.15	2.0596	14 42 10.0	
6	23 49 25.43	2.0638	3 51 49.1	15.157	6	1 27 49.76	2.0608	14 54 18.5	
7	23 51 29.20	2.0621	4 6 57.3	15.116	7	1 29 53.45	2.0622	15 6 21.9	
8	23 53 32.88	2.0605	4 22 3.0	15.074	8	1 31 57.22	2.0636	15 18 20.2	
9	23 55 36.46	2.0589	4 37 6.2	15.032	9	1 34 1.08	2.0650	15 30 13.4	
10	23 57 39.95	2.0575	4 52 6.8	14.988	10	1 36 5.02	2.0664	15 42 1.4	
11	23 59 43.36	2.0562	5 7 4.7	14.942	11	1 38 9.05	2.0679	15 53 44.1	
12	0 1 46.69	2.0549	5 21 59.8	14.895	12	1 40 13.17	2.0694	16 5 21.6	
13	0 3 49.95	2.0537	5 36 52.1	14.848	13	1 42 17.38	2.0710	16 16 53.8	
14	0 5 53.13	2.0525	5 51 41.5	14.799	14	1 44 21.69	2.0727	16 28 20.6	
15	0 7 56.25	2.0515	6 6 28.0	14.750	15	1 46 26.10	2.0743	16 39 42.1	
16	0 9 59.31	2.0505	6 21 11.5	14.699	16	1 48 30.61	2.0760	16 50 58.1	
17	0 12 2.31	2.0496	6 35 51.9	14.648	17	1 50 35.22	2.0777	17 2 8.7	
18	0 14 5.26	2.0488	6 50 29.2	14.595	18	1 52 39.93	2.0794	17 13 13.8	
19	0 16 8.16	2.0479	7 5 3.3	14.541	19	1 54 44.75	2.0813	17 24 13.3	
20	0 18 11.01	2.0472	7 19 34.1	14.487	20	1 56 49.68	2.0831	17 35 7.2	
21	0 20 13.82	2.0466	7 34 1.7	14.432	21	1 58 54.72	2.0849	17 45 55.4	
22	0 22 16.60	2.0460	7 48 25.9	14.375	22	2 0 59.87	2.0868	17 56 37.9	
23	0 24 19.34	2.0455	+ 8 2 46.7	+14.318	23	2 3 5.13	2.0886	+18 7 14.8	
JULY 20.					JULY 22.				
0	0 26 22.06	2.0452	+ 8 17 4.0	+14.258	0	2 5 10.50	2.0905	+18 17 45.9	
1	0 28 24.76	2.0448	8 31 17.7	14.199	1	2 7 15.99	2.0925	18 28 11.2	
2	0 30 27.44	2.0445	8 45 27.9	14.139	2	2 9 21.60	2.0944	18 38 30.6	
3	0 32 30.10	2.0443	8 59 34.4	14.078	3	2 11 27.32	2.0964	18 48 44.2	
4	0 34 32.75	2.0441	9 13 37.2	14.015	4	2 13 33.17	2.0984	18 58 51.8	
5	0 36 35.39	2.0440	9 27 36.2	13.953	5	2 15 39.13	2.1004	19 8 53.5	
6	0 38 38.03	2.0440	9 41 31.5	13.889	6	2 17 45.22	2.1025	19 18 49.2	
7	0 40 40.67	2.0441	9 55 22.9	13.823	7	2 19 51.43	2.1046	19 28 38.9	
8	0 42 43.32	2.0443	10 9 10.3	13.758	8	2 21 57.77	2.1067	19 38 22.5	
9	0 44 45.98	2.0443	10 22 53.8	13.691	9	2 24 4.23	2.1088	19 48 0.0	
10	0 46 48.64	2.0445	10 36 33.2	13.623	10	2 26 10.82	2.1108	19 57 31.3	
11	0 48 51.32	2.0448	10 50 8.6	13.555	11	2 28 17.53	2.1129	20 6 56.4	
12	0 50 54.02	2.0452	11 3 39.8	13.485	12	2 30 24.37	2.1151	20 16 15.3	
13	0 52 56.74	2.0456	11 17 6.8	13.415	13	2 32 31.34	2.1172	20 25 28.0	
14	0 54 59.49	2.0461	11 30 29.6	13.344	14	2 34 38.43	2.1193	20 34 34.4	
15	0 57 2.27	2.0466	11 43 48.1	13.273	15	2 36 45.66	2.1215	20 43 34.4	
16	0 59 5.08	2.0472	11 57 2.3	13.200	16	2 38 53.01	2.1236	20 52 28.0	
17	1 1 7.93	2.0478	12 10 12.1	13.127	17	2 41 0.49	2.1258	21 1 15.3	
18	1 3 10.82	2.0486	12 23 17.5	13.053	18	2 43 8.10	2.1279	21 9 56.2	
19	1 5 13.76	2.0493	12 36 18.4	12.977	19	2 45 15.84	2.1302	21 18 30.6	
20	1 7 16.74	2.0501	12 49 14.7	12.901	20	2 47 23.72	2.1323	21 26 58.5	
21	1 9 19.77	2.0509	13 2 6.5	12.824	21	2 49 31.72	2.1345	21 35 19.8	
22	1 11 22.85	2.0518	13 14 53.6	12.747	22	2 51 39.86	2.1367	21 43 34.6	
23	1 13 25.99	2.0528	13 27 36.1	12.668	23	2 53 48.12	2.1388	21 51 42.8	
24	1 15 29.15	2.0538	+13 40 13.8	+12.589	24	2 55 56.51	2.1409	+21 59 44.3	

GREENWICH MEAN TIME.

our.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JULY 23.					JULY 25.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	2 55 56.51	2.1409	+21 59 44.3	+7.969	0	4 40 46.55	2.2132	+26 6 1.7	+2.158
1	2 58 5.03	2.1431	22 7 39.1	7.858	1	4 42 59.35	2.2136	26 8 7.4	2.031
2	3 0 13.68	2.1452	22 15 27.3	7.747	2	4 45 12.18	2.2140	26 10 5.4	1.903
3	3 2 22.45	2.1473	22 23 8.7	7.634	3	4 47 25.03	2.2143	26 11 55.8	1.776
4	3 4 31.35	2.1494	22 30 43.4	7.522	4	4 49 37.89	2.2145	26 13 38.5	1.648
5	3 6 40.38	2.1516	22 38 11.3	7.408	5	4 51 50.77	2.2147	26 15 13.5	1.519
6	3 8 49.54	2.1537	22 45 32.4	7.294	6	4 54 3.65	2.2148	26 16 40.8	1.392
7	3 10 58.82	2.1558	22 52 46.6	7.179	7	4 56 18.54	2.2148	26 18 0.5	1.264
8	3 13 8.23	2.1578	22 59 53.9	7.064	8	4 58 29.43	2.2148	26 19 12.5	1.136
9	3 15 17.76	2.1598	23 6 54.3	6.949	9	5 0 42.32	2.2148	26 20 16.8	1.008
10	3 17 27.41	2.1618	23 13 47.8	6.833	10	5 2 55.20	2.2146	26 21 13.4	0.880
11	3 19 37.18	2.1638	23 20 34.3	6.718	11	5 5 8.07	2.2143	26 22 2.4	0.753
12	3 21 47.07	2.1658	23 27 13.9	6.601	12	5 7 20.92	2.2141	26 22 43.7	0.624
13	3 23 57.08	2.1678	23 33 46.4	6.483	13	5 9 33.76	2.2138	26 23 17.3	0.496
14	3 26 7.21	2.1698	23 40 11.8	6.365	14	5 11 46.57	2.2133	26 23 43.2	0.368
15	3 28 17.45	2.1716	23 46 30.2	6.248	15	5 13 59.36	2.2129	26 24 1.5	0.241
16	3 30 27.80	2.1735	23 52 41.5	6.128	16	5 16 12.12	2.2123	26 24 12.1	+0.113
17	3 32 38.27	2.1754	23 58 45.6	6.009	17	5 18 24.84	2.2118	26 24 15.1	-0.014
18	3 34 48.85	2.1773	24 4 42.6	5.890	18	5 20 37.53	2.2112	26 24 10.4	0.142
19	3 36 59.54	2.1791	24 10 32.4	5.770	19	5 22 50.18	2.2104	26 23 58.1	0.269
20	3 39 10.34	2.1808	24 16 15.0	5.650	20	5 25 2.78	2.2096	26 23 38.1	0.397
21	3 41 21.24	2.1825	24 21 50.4	5.529	21	5 27 15.33	2.2088	26 23 10.5	0.523
22	3 43 32.24	2.1843	24 27 18.5	5.408	22	5 29 27.83	2.2078	26 22 35.3	0.651
23	3 45 43.35	2.1860	+24 32 39.3	+5.287	23	5 31 40.27	2.2068	+26 21 52.4	-0.778
JULY 24.					JULY 26.				
0	3 47 54.55	2.1875	+24 37 52.9	+5.166	0	5 33 52.65	2.2068	+26 21 2.0	-0.903
1	3 50 5.85	2.1892	24 42 59.2	5.043	1	5 36 4.96	2.2047	26 20 4.0	1.030
2	3 52 17.25	2.1908	24 47 58.1	4.920	2	5 38 17.21	2.2036	26 18 58.4	1.157
3	3 54 28.74	2.1923	24 52 49.6	4.797	3	5 40 29.39	2.2024	26 17 45.2	1.283
4	3 56 40.32	2.1937	24 57 33.7	4.674	4	5 42 41.50	2.2011	26 16 24.5	1.408
5	3 58 51.98	2.1951	25 2 10.5	4.551	5	5 44 53.52	2.1997	26 14 56.3	1.533
6	4 1 3.73	2.1965	25 6 39.8	4.427	6	5 47 5.46	2.1983	26 13 20.6	1.658
7	4 3 15.56	2.1979	25 11 1.7	4.303	7	5 49 17.31	2.1968	26 11 37.3	1.783
8	4 5 27.48	2.1993	25 15 16.1	4.178	8	5 51 29.08	2.1953	26 9 46.6	1.908
9	4 7 39.47	2.2004	25 19 23.1	4.054	9	5 53 40.75	2.1938	26 7 48.4	2.032
10	4 9 51.53	2.2017	25 23 22.6	3.929	10	5 55 52.33	2.1921	26 5 42.8	2.156
11	4 12 3.67	2.2029	25 27 14.6	3.803	11	5 58 3.80	2.1903	26 3 29.7	2.280
12	4 14 15.88	2.2040	25 30 59.0	3.678	12	6 0 15.17	2.1886	26 1 9.2	2.403
13	4 16 28.15	2.2050	25 34 35.9	3.553	13	6 2 26.43	2.1868	25 58 41.3	2.527
14	4 18 40.48	2.2061	25 38 5.3	3.428	14	6 4 37.58	2.1849	25 56 6.0	2.649
15	4 20 52.88	2.2071	25 41 27.2	3.301	15	6 6 48.62	2.1830	25 53 23.4	2.771
16	4 23 5.33	2.2079	25 44 41.4	3.174	16	6 8 59.54	2.1809	25 50 33.5	2.893
17	4 25 17.83	2.2088	25 47 48.1	3.048	17	6 11 10.33	2.1788	25 47 36.2	3.015
18	4 27 30.38	2.2096	25 50 47.2	2.922	18	6 13 21.00	2.1768	25 44 31.7	3.136
19	4 29 42.98	2.2103	25 53 38.7	2.795	19	6 15 31.55	2.1748	25 41 19.9	3.258
20	4 31 55.62	2.2110	25 56 22.6	2.668	20	6 17 41.97	2.1725	25 38 0.8	3.378
21	4 34 8.30	2.2117	25 58 58.8	2.540	21	6 19 52.25	2.1702	25 34 34.5	3.498
22	4 36 21.02	2.2123	26 1 27.4	2.413	22	6 22 2.39	2.1679	25 31 1.1	3.617
23	4 38 33.77	2.2128	26 3 48.4	2.286	23	6 24 12.40	2.1656	25 27 20.5	3.736
24	4 40 46.55	2.2132	+26 6 1.7	+2.158	24	6 26 22.26	2.1632	+25 23 32.8	-3.854

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JULY 27.					JULY 29.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	6 26 22.26	2.1632	+25 23 32.8	-3.854	0	8 6 45.76	2.0118	+20 12 37.0	-8.8
1	6 28 31.98	2.1608	25 19 38.0	3.973	1	8 8 46.36	2.0083	20 3 43.3	8.9
2	6 30 41.55	2.1583	25 15 36.1	4.090	2	8 10 46.76	2.0049	19 54 44.4	9.0
3	6 32 50.97	2.1557	25 11 27.2	4.208	3	8 12 46.95	2.0015	19 45 40.3	9.1
4	6 35 0.23	2.1530	25 7 11.2	4.325	4	8 14 46.94	1.9982	19 36 31.1	9.1
5	6 37 9.33	2.1504	25 2 48.2	4.441	5	8 16 46.73	1.9948	19 27 16.9	9.2
6	6 39 18.28	2.1478	24 58 18.3	4.556	6	8 18 46.31	1.9913	19 17 57.6	9.3
7	6 41 27.07	2.1451	24 53 41.5	4.671	7	8 20 45.69	1.9880	19 8 33.3	9.4
8	6 43 35.69	2.1423	24 48 57.8	4.786	8	8 22 44.87	1.9846	18 59 4.1	9.5
9	6 45 44.14	2.1396	24 44 7.2	4.900	9	8 24 43.84	1.9813	18 49 30.1	9.6
10	6 47 52.43	2.1367	24 39 9.8	5.013	10	8 26 42.62	1.9780	18 39 51.2	9.6
11	6 50 0.54	2.1338	24 34 5.6	5.126	11	8 28 41.20	1.9747	18 30 7.5	9.7
12	6 52 8.48	2.1308	24 28 54.7	5.238	12	8 30 39.58	1.9713	18 20 19.1	9.8
13	6 54 16.24	2.1279	24 23 37.0	5.351	13	8 32 37.76	1.9681	18 10 26.0	9.8
14	6 56 23.83	2.1250	24 18 12.6	5.462	14	8 34 35.75	1.9649	18 0 28.3	10.0
15	6 58 31.24	2.1219	24 12 41.6	5.573	15	8 36 33.55	1.9617	17 50 25.9	10.0
16	7 0 38.46	2.1188	24 7 3.9	5.683	16	8 38 31.15	1.9585	17 40 18.9	10.1
17	7 2 45.50	2.1158	24 1 19.7	5.792	17	8 40 28.57	1.9553	17 30 7.5	10.2
18	7 4 52.36	2.1128	23 55 28.9	5.901	18	8 42 25.79	1.9522	17 19 51.6	10.3
19	7 6 59.03	2.1096	23 49 31.6	6.009	19	8 44 22.83	1.9491	17 9 31.3	10.3
20	7 9 5.51	2.1064	23 43 27.8	6.117	20	8 46 19.68	1.9459	16 59 6.6	10.4
21	7 11 11.80	2.1033	23 37 17.6	6.223	21	8 48 16.34	1.9428	16 48 37.6	10.5
22	7 13 17.90	2.1000	23 31 1.0	6.329	22	8 50 12.82	1.9398	16 38 4.4	10.5
23	7 15 23.80	2.0968	+23 24 38.1	-6.435	23	8 52 9.12	1.9368	+16 27 26.9	-10.6
JULY 28.					JULY 30.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	7 17 29.51	2.0935	+23 18 8.8	-6.541	0	8 54 5.24	1.9338	+16 16 45.2	-10.7
1	7 19 35.02	2.0902	23 11 33.2	6.646	1	8 56 1.18	1.9308	16 5 59.4	10.7
2	7 21 40.33	2.0869	23 4 51.4	6.748	2	8 57 56.94	1.9279	15 55 9.5	10.8
3	7 23 45.45	2.0837	22 58 3.4	6.851	3	8 59 52.53	1.9251	15 44 15.5	10.8
4	7 25 50.37	2.0803	22 51 9.3	6.953	4	9 1 47.95	1.9223	15 33 17.6	10.9
5	7 27 55.08	2.0769	22 44 9.0	7.056	5	9 3 43.20	1.9194	15 22 15.7	11.0
6	7 29 59.60	2.0736	22 37 2.6	7.157	6	9 5 38.28	1.9166	15 11 9.9	11.1
7	7 32 3.91	2.0702	22 29 50.2	7.257	7	9 7 33.19	1.9138	15 0 0.3	11.1
8	7 34 8.02	2.0668	22 22 31.8	7.357	8	9 9 27.94	1.9111	14 48 46.9	11.2
9	7 36 11.92	2.0633	22 15 7.4	7.455	9	9 11 22.52	1.9084	14 37 29.7	11.3
10	7 38 15.62	2.0600	22 7 37.2	7.553	10	9 13 16.95	1.9058	14 26 8.8	11.3
11	7 40 19.12	2.0566	22 0 1.1	7.651	11	9 15 11.22	1.9032	14 14 44.3	11.4
12	7 42 22.41	2.0531	21 52 19.1	7.748	12	9 17 5.33	1.9006	14 3 16.1	11.4
13	7 44 25.49	2.0497	21 44 31.4	7.843	13	9 18 59.29	1.8981	13 51 44.3	11.5
14	7 46 28.37	2.0463	21 36 37.9	7.939	14	9 20 53.10	1.8956	13 40 9.1	11.6
15	7 48 31.04	2.0428	21 28 38.7	8.033	15	9 22 46.76	1.8932	13 28 30.4	11.6
16	7 50 33.50	2.0393	21 20 33.9	8.128	16	9 24 40.28	1.8908	13 16 48.2	11.7
17	7 52 35.76	2.0359	21 12 23.4	8.221	17	9 26 33.66	1.8884	13 5 2.7	11.7
18	7 54 37.81	2.0324	21 4 7.4	8.313	18	9 28 26.89	1.8861	12 53 13.9	11.8
19	7 56 39.65	2.0290	20 55 45.8	8.405	19	9 30 19.99	1.8838	12 41 21.7	11.8
20	7 58 41.29	2.0256	20 47 18.8	8.495	20	9 32 12.95	1.8816	12 29 26.3	11.9
21	8 0 42.72	2.0221	20 38 46.4	8.585	21	9 34 5.78	1.8793	12 17 27.7	12.0
22	8 2 43.94	2.0186	20 30 8.6	8.675	22	9 35 58.47	1.8772	12 5 26.0	12.0
23	8 4 44.95	2.0152	20 21 25.4	8.763	23	9 37 51.04	1.8752	11 53 21.2	12.1
24	8 6 45.76	2.0118	+20 12 37.0	-8.851	24	9 39 43.49	1.8731	+11 41 13.3	-12.1

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
JULY 31.					AUGUST 2.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	9 39 43.49	1.8731	+11 41 13.3	-12.157	0	11 8 16.81	1.8393	+1 14 13.9	-13.670
1	9 41 35.81	1.8711	11 29 2.4	12.206	1	11 10 7.19	1.8401	1 0 33.3	13.663
2	9 43 28.02	1.8692	11 16 48.6	12.255	2	11 11 57.62	1.8409	0 46 51.9	13.666
3	9 45 20.11	1.8672	11 4 31.8	12.303	3	11 13 48.10	1.8418	0 33 9.9	13.705
4	9 47 12.06	1.8653	10 52 12.2	12.351	4	11 15 38.64	1.8429	0 19 27.3	13.715
5	9 49 3.95	1.8636	10 39 49.7	12.398	5	11 17 29.25	1.8440	+0 5 44.1	13.725
6	9 50 55.71	1.8618	10 27 24.5	12.443	6	11 19 19.92	1.8452	-0 7 59.7	13.733
7	9 52 47.37	1.8601	10 14 56.6	12.488	7	11 21 10.67	1.8464	0 21 43.9	13.741
8	9 54 38.92	1.8584	10 2 26.0	12.533	8	11 23 1.49	1.8477	0 35 28.6	13.748
9	9 56 30.38	1.8568	9 49 52.7	12.577	9	11 24 52.39	1.8491	0 49 13.6	13.753
10	9 58 21.74	1.8553	9 37 16.8	12.619	10	11 26 43.38	1.8505	1 2 59.0	13.758
11	10 0 13.01	1.8538	9 24 38.4	12.661	11	11 28 34.45	1.8520	1 16 44.6	13.763
12	10 2 4.19	1.8523	9 11 57.5	12.702	12	11 30 25.62	1.8536	1 30 30.5	13.767
13	10 3 55.29	1.8509	8 59 14.2	12.742	13	11 32 16.88	1.8552	1 44 16.6	13.769
14	10 5 46.30	1.8496	8 46 28.5	12.782	14	11 34 8.24	1.8569	1 58 2.8	13.771
15	10 7 37.24	1.8483	8 33 40.4	12.822	15	11 35 59.71	1.8587	2 11 49.1	13.772
16	10 9 28.10	1.8471	8 20 49.9	12.860	16	11 37 51.28	1.8605	2 25 35.4	13.772
17	10 11 18.89	1.8459	8 7 57.2	12.897	17	11 39 42.97	1.8625	2 39 21.7	13.771
18	10 13 9.61	1.8448	7 55 2.3	12.933	18	11 41 34.78	1.8645	2 53 7.9	13.769
19	10 15 0.26	1.8437	7 42 5.3	12.968	19	11 43 26.71	1.8666	3 6 54.0	13.768
20	10 16 50.85	1.8427	7 29 6.1	13.004	20	11 45 18.77	1.8688	3 20 40.0	13.764
21	10 18 41.38	1.8418	7 16 4.8	13.038	21	11 47 10.96	1.8709	3 34 25.7	13.760
22	10 20 31.86	1.8409	7 3 1.5	13.072	22	11 49 3.28	1.8732	3 48 11.2	13.755
23	10 22 22.29	1.8401	+ 6 49 56.2	-13.106	23	11 50 55.74	1.8756	-4 1 56.3	-13.748
AUGUST 1.					AUGUST 3.				
0	10 24 12.67	1.8393	+ 6 36 48.9	-13.137	0	11 52 48.35	1.8780	-4 15 41.0	-13.742
1	10 26 3.01	1.8386	6 23 39.8	13.168	1	11 54 41.10	1.8805	4 29 25.3	13.734
2	10 27 53.30	1.8379	6 10 28.8	13.198	2	11 56 34.01	1.8832	4 43 9.1	13.726
3	10 29 43.56	1.8373	5 57 16.0	13.228	3	11 58 27.08	1.8858	4 56 52.4	13.717
4	10 31 33.78	1.8368	5 44 1.5	13.256	4	12 0 20.31	1.8886	5 10 35.1	13.706
5	10 33 23.97	1.8363	5 30 45.3	13.284	5	12 2 13.71	1.8913	5 24 17.1	13.694
6	10 35 14.14	1.8359	5 17 27.4	13.312	6	12 4 7.27	1.8942	5 37 58.4	13.683
7	10 37 4.28	1.8355	5 4 7.9	13.338	7	12 6 1.01	1.8972	5 51 39.0	13.669
8	10 38 54.40	1.8353	4 50 46.8	13.364	8	12 7 54.93	1.9003	6 5 18.7	13.655
9	10 40 44.51	1.8350	4 37 24.2	13.389	9	12 9 49.04	1.9033	6 18 57.6	13.640
10	10 42 34.60	1.8348	4 24 0.1	13.414	10	12 11 43.33	1.9065	6 32 35.5	13.624
11	10 44 24.69	1.8348	4 10 34.5	13.438	11	12 13 37.82	1.9098	6 46 12.5	13.606
12	10 46 14.77	1.8347	3 57 7.6	13.460	12	12 15 32.51	1.9132	6 59 48.4	13.589
13	10 48 4.85	1.8346	3 43 39.3	13.482	13	12 17 27.40	1.9165	7 13 23.2	13.570
14	10 49 54.94	1.8348	3 30 9.8	13.502	14	12 19 22.49	1.9200	7 26 56.8	13.551
15	10 51 45.03	1.8349	3 16 39.1	13.523	15	12 21 17.80	1.9236	7 40 29.3	13.531
16	10 53 35.13	1.8352	3 3 7.1	13.543	16	12 23 13.32	1.9272	7 54 0.5	13.508
17	10 55 25.25	1.8354	2 49 33.9	13.562	17	12 25 9.06	1.9309	8 7 30.3	13.486
18	10 57 15.38	1.8358	2 35 59.7	13.579	18	12 27 5.03	1.9347	8 20 58.8	13.463
19	10 59 5.54	1.8362	2 22 24.4	13.597	19	12 29 1.22	1.9385	8 34 25.9	13.438
20	11 0 55.72	1.8367	2 8 48.1	13.613	20	12 30 57.65	1.9425	8 47 51.4	13.412
21	11 2 45.94	1.8373	1 55 10.9	13.628	21	12 32 54.32	1.9465	9 1 15.3	13.385
22	11 4 36.19	1.8378	1 41 32.7	13.643	22	12 34 51.23	1.9506	9 14 37.6	13.358
23	11 6 26.48	1.8385	1 27 53.7	13.657	23	12 36 48.39	1.9548	9 27 58.3	13.330
24	11 8 16.81	1.8393	+ 1 14 13.9	-13.670	24	12 38 45.80	1.9590	-9 41 17.2	-13.300

GREENWICH MEAN TIME.

Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.	Hour.	Right Ascension.			Var. per Min.	Declination.			
AUGUST 4.									AUGUST 6.								
	h	m	s	s	°	'	''	''		h	m	s	s	°	'	''	
0	12	38	45.80	1.9590	- 9	41	17.2	-13.300	0	14	19	2.29	2.2438	-19	23	29.0	
1	12	40	43.47	1.9633	9	54	34.3	13.269	1	14	21	17.14	2.2511	19	33	54.3	
2	12	42	41.40	1.9677	10	7	49.5	13.237	2	14	23	32.42	2.2584	19	44	14.0	
3	12	44	39.59	1.9721	10	21	2.7	13.203	3	14	25	48.15	2.2658	19	54	28.0	
4	12	46	38.05	1.9767	10	34	13.9	13.170	4	14	28	4.32	2.2733	20	4	36.3	
5	12	48	36.79	1.9813	10	47	23.1	13.136	5	14	30	20.94	2.2807	20	14	38.7	
6	12	50	35.81	1.9860	11	0	30.2	13.099	6	14	32	38.00	2.2882	20	24	35.1	
7	12	52	35.11	1.9908	11	13	35.0	13.062	7	14	34	55.52	2.2957	20	34	25.5	
8	12	54	34.70	1.9957	11	26	37.6	13.024	8	14	37	13.48	2.3031	20	44	9.7	
9	12	56	34.59	2.0006	11	39	37.9	12.985	9	14	39	31.89	2.3107	20	53	47.7	
10	12	58	34.77	2.0055	11	52	35.8	12.944	10	14	41	50.76	2.3183	21	3	19.4	
11	13	0	35.25	2.0106	12	5	31.2	12.902	11	14	44	10.08	2.3258	21	12	44.6	
12	13	2	36.04	2.0158	12	18	24.0	12.858	12	14	46	29.86	2.3334	21	22	3.3	
13	13	4	37.14	2.0209	12	31	14.2	12.815	13	14	48	50.09	2.3410	21	31	15.4	
14	13	6	38.55	2.0262	12	44	1.8	12.770	14	14	51	10.78	2.3486	21	40	20.7	
15	13	8	40.28	2.0315	12	56	46.6	12.723	15	14	53	31.92	2.3562	21	49	19.3	
16	13	10	42.33	2.0369	13	9	28.6	12.676	16	14	55	53.52	2.3638	21	58	11.0	
17	13	12	44.71	2.0424	13	22	7.7	12.627	17	14	58	15.58	2.3714	22	6	55.7	
18	13	14	47.42	2.0480	13	34	43.8	12.577	18	15	0	38.09	2.3790	22	15	33.2	
19	13	16	50.47	2.0537	13	47	16.9	12.526	19	15	3	1.06	2.3866	22	24	3.5	
20	13	18	53.86	2.0593	13	59	46.9	12.473	20	15	5	24.48	2.3942	22	32	26.6	
21	13	20	57.59	2.0651	14	12	13.7	12.420	21	15	7	48.36	2.4018	22	40	42.3	
22	13	23	1.67	2.0709	14	24	37.3	12.365	22	15	10	12.70	2.4094	22	48	50.5	
23	13	25	6.10	2.0768	-14	36	57.5	-12.309	23	15	12	37.49	2.4169	-22	56	51.1	
AUGUST 5.									AUGUST 7.								
0	13	27	10.89	2.0828	-14	49	14.4	-12.252	0	15	15	2.73	2.4245	-23	4	44.0	
1	13	29	16.04	2.0888	15	1	27.7	12.193	1	15	17	28.43	2.4320	23	12	29.1	
2	13	31	21.55	2.0949	15	13	37.5	12.133	2	15	19	54.57	2.4394	23	20	6.4	
3	13	33	27.43	2.1011	15	25	43.7	12.072	3	15	22	21.16	2.4469	23	27	35.7	
4	13	35	33.68	2.1073	15	37	46.1	12.008	4	15	24	48.20	2.4543	23	34	57.0	
5	13	37	40.31	2.1137	15	49	44.7	11.945	5	15	27	15.68	2.4617	23	42	10.0	
6	13	39	47.32	2.1200	16	1	39.5	11.880	6	15	29	43.60	2.4690	23	49	14.8	
7	13	41	54.71	2.1264	16	13	30.3	11.813	7	15	32	11.96	2.4763	23	56	11.3	
8	13	44	2.49	2.1329	16	25	17.1	11.746	8	15	34	40.76	2.4837	24	2	59.3	
9	13	46	10.66	2.1395	16	36	59.8	11.677	9	15	37	10.00	2.4909	24	9	38.8	
10	13	48	19.23	2.1461	16	48	38.3	11.606	10	15	39	39.67	2.4980	24	16	9.7	
11	13	50	28.19	2.1527	17	0	12.5	11.533	11	15	42	9.76	2.5051	24	22	31.8	
12	13	52	37.55	2.1594	17	11	42.3	11.460	12	15	44	40.28	2.5122	24	28	45.1	
13	13	54	47.32	2.1662	17	23	7.7	11.385	13	15	47	11.22	2.5192	24	34	49.5	
14	13	56	57.49	2.1729	17	34	28.5	11.309	14	15	49	42.58	2.5261	24	40	44.9	
15	13	59	8.07	2.1798	17	45	44.8	11.232	15	15	52	14.35	2.5329	24	46	31.1	
16	14	1	19.07	2.1868	17	56	56.3	11.153	16	15	54	46.53	2.5397	24	52	8.2	
17	14	3	30.48	2.1937	18	8	3.1	11.073	17	15	57	19.11	2.5464	24	57	36.0	
18	14	5	42.31	2.2008	18	19	5.0	10.990	18	15	59	52.10	2.5531	25	2	54.5	
19	14	7	54.57	2.2078	18	30	1.9	10.907	19	16	2	25.48	2.5596	25	8	3.5	
20	14	10	7.25	2.2149	18	40	53.8	10.822	20	16	4	59.25	2.5660	25	13	3.0	
21	14	12	20.36	2.2222	18	51	40.5	10.735	21	16	7	33.40	2.5723	25	17	52.8	
22	14	14	33.91	2.2293	19	2	22.0	10.648	22	16	10	7.93	2.5787	25	22	32.9	
23	14	16	47.88	2.2365	19	12	58.2	10.558	23	16	12	42.84	2.5848	25	27	3.3	
24	14	19	2.29	2.2438	-19	23	29.0	-10.468	24	16	15	18.11	2.5908	-25	31	23.8	

GREENWICH MEAN TIME.

hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
AUGUST 8.					AUGUST 10.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	16 15 18.11	2.5908	-25 31 23.8	-4.258	0	18 24 5.12	2.7138	-25 26 38.0	+ 4.661
1	16 17 53.74	2.5968	25 35 34.3	4.092	1	18 26 47.90	2.7123	25 21 52.6	4.862
2	16 20 29.73	2.6028	25 39 34.8	3.924	2	18 29 30.59	2.7107	25 16 55.8	5.041
3	16 23 6.07	2.6085	25 43 25.2	3.755	3	18 32 13.18	2.7088	25 11 47.7	5.230
4	16 25 42.75	2.6142	25 47 5.4	3.584	4	18 34 55.65	2.7068	25 6 28.2	5.418
5	16 28 19.77	2.6197	25 50 35.3	3.412	5	18 37 38.00	2.7047	25 0 57.5	5.606
6	16 30 57.11	2.6250	25 53 54.8	3.239	6	18 40 20.21	2.7023	24 55 15.5	5.793
7	16 33 34.77	2.6303	25 57 4.0	3.066	7	18 43 2.28	2.6999	24 49 22.3	5.979
8	16 36 12.75	2.6355	26 0 2.7	2.890	8	18 45 44.20	2.6973	24 43 18.0	6.164
9	16 38 51.03	2.6405	26 2 50.8	2.713	9	18 48 25.96	2.6946	24 37 2.6	6.348
10	16 41 29.61	2.6454	26 5 28.3	2.536	10	18 51 7.55	2.6917	24 30 36.2	6.532
11	16 44 8.48	2.6502	26 7 55.1	2.358	11	18 53 48.96	2.6887	24 23 58.8	6.714
12	16 46 47.63	2.6548	26 10 11.2	2.178	12	18 56 30.19	2.6855	24 17 10.5	6.896
13	16 49 27.05	2.6593	26 12 16.5	1.998	13	18 59 11.22	2.6822	24 10 11.3	7.077
14	16 52 6.74	2.6637	26 14 10.9	1.815	14	19 1 52.05	2.6787	24 3 1.3	7.256
15	16 54 46.69	2.6678	26 15 54.3	1.633	15	19 4 32.66	2.6751	23 55 40.6	7.434
16	16 57 26.88	2.6718	26 17 26.8	1.450	16	19 7 13.06	2.6714	23 48 9.2	7.611
17	17 0 7.31	2.6758	26 18 48.3	1.265	17	19 9 53.23	2.6676	23 40 27.3	7.787
18	17 2 47.97	2.6795	26 19 58.6	1.079	18	19 12 33.17	2.6636	23 32 34.8	7.962
19	17 5 28.85	2.6831	26 20 57.8	0.894	19	19 15 12.86	2.6595	23 24 31.9	8.135
20	17 8 9.94	2.6865	26 21 45.9	0.708	20	19 17 52.31	2.6554	23 16 18.6	8.307
21	17 10 51.23	2.6898	26 22 22.7	0.519	21	19 20 31.51	2.6511	23 7 55.1	8.477
22	17 13 32.71	2.6928	26 22 48.2	0.331	22	19 23 10.44	2.6467	22 59 21.4	8.647
23	17 16 14.37	2.6958	-26 23 2.4	-0.143	23	19 25 49.11	2.6422	-22 50 37.5	+ 8.815
AUGUST 9.					AUGUST 11.				
0	17 18 56.21	2.6987	-26 23 5.3	+0.047	0	19 28 27.50	2.6375	-22 41 43.6	+ 8.981
1	17 21 38.21	2.7013	26 22 56.8	0.237	1	19 31 5.61	2.6328	22 32 39.8	9.146
2	17 24 20.36	2.7037	26 22 36.9	0.428	2	19 33 43.43	2.6279	22 23 26.1	9.309
3	17 27 2.65	2.7059	26 22 5.5	0.619	3	19 36 20.96	2.6230	22 14 2.7	9.471
4	17 29 45.07	2.7080	26 21 22.6	0.810	4	19 38 58.19	2.6180	22 4 29.6	9.632
5	17 32 27.61	2.7099	26 20 28.3	1.001	5	19 41 35.12	2.6129	21 54 46.9	9.790
6	17 35 10.26	2.7117	26 19 22.5	1.193	6	19 44 11.74	2.6078	21 44 54.8	9.947
7	17 37 53.01	2.7133	26 18 5.1	1.387	7	19 46 48.05	2.6025	21 34 53.3	10.102
8	17 40 35.86	2.7148	26 16 36.1	1.579	8	19 49 24.04	2.5972	21 24 42.6	10.255
9	17 43 18.78	2.7159	26 14 55.6	1.772	9	19 51 59.71	2.5918	21 14 22.7	10.408
10	17 46 1.77	2.7171	26 13 3.5	1.965	10	19 54 35.06	2.5864	21 3 53.7	10.558
11	17 48 44.83	2.7180	26 10 59.8	2.158	11	19 57 10.08	2.5808	20 53 15.7	10.707
12	17 51 27.93	2.7187	26 8 44.6	2.351	12	19 59 44.76	2.5753	20 42 28.9	10.853
13	17 54 11.07	2.7193	26 6 17.7	2.545	13	20 2 19.11	2.5696	20 31 33.4	10.997
14	17 56 54.24	2.7196	26 3 39.2	2.738	14	20 4 53.11	2.5638	20 20 29.3	11.140
15	17 59 37.42	2.7198	26 0 49.1	2.932	15	20 7 26.77	2.5581	20 9 16.6	11.282
16	18 2 20.61	2.7198	25 57 47.4	3.125	16	20 10 0.08	2.5523	19 57 55.5	11.420
17	18 5 3.79	2.7196	25 54 34.1	3.318	17	20 12 33.05	2.5465	19 46 26.2	11.557
18	18 7 46.96	2.7193	25 51 9.3	3.510	18	20 15 5.66	2.5406	19 34 48.7	11.693
19	18 10 30.11	2.7188	25 47 32.9	3.703	19	20 17 37.92	2.5347	19 23 3.1	11.826
20	18 13 13.22	2.7182	25 43 44.9	3.896	20	20 20 9.82	2.5287	19 11 9.6	11.958
21	18 15 56.29	2.7173	25 39 45.4	4.088	21	20 22 41.36	2.5228	18 59 8.2	12.088
22	18 18 39.30	2.7163	25 35 34.4	4.279	22	20 25 12.55	2.5168	18 46 59.1	12.214
23	18 21 22.25	2.7152	25 31 11.9	4.470	23	20 27 43.37	2.5107	18 34 42.5	12.339
24	18 24 5.12	2.7138	-25 26 38.0	+4.661	24	20 30 13.83	2.5047	-18 22 18.4	+12.463

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
AUGUST 12.					AUGUST 14.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	20 30 13.83	2.5047	-18 22 18.4	+12.463	0	22 23 41.96	2.2377	-6 41 21.4	+15.947
1	20 32 43.93	2.4986	18 9 46.9	12.585	1	22 25 56.09	2.2333	6 25 23.9	15.969
2	20 35 13.66	2.4925	17 57 8.2	12.704	2	22 28 9.96	2.2290	6 9 25.1	15.990
3	20 37 43.03	2.4864	17 44 22.4	12.822	3	22 30 23.57	2.2245	5 53 25.1	16.010
4	20 40 12.03	2.4803	17 31 29.6	12.937	4	22 32 36.93	2.2207	5 37 23.9	16.030
5	20 42 40.66	2.4741	17 18 30.0	13.049	5	22 34 50.05	2.2167	5 21 21.8	16.043
6	20 45 8.92	2.4680	17 5 23.7	13.161	6	22 37 2.93	2.2127	5 5 18.8	16.057
7	20 47 36.82	2.4619	16 52 10.7	13.271	7	22 39 15.57	2.2088	4 49 15.0	16.068
8	20 50 4.35	2.4558	16 38 51.2	13.378	8	22 41 27.98	2.2049	4 33 10.6	16.073
9	20 52 31.51	2.4497	16 25 25.4	13.483	9	22 43 40.16	2.2011	4 17 5.6	16.077
10	20 54 58.31	2.4436	16 11 53.3	13.586	10	22 45 52.11	2.1973	4 1 0.2	16.080
11	20 57 24.74	2.4374	15 58 15.1	13.686	11	22 48 3.84	2.1938	3 44 54.4	16.086
12	20 59 50.80	2.4313	15 44 31.0	13.784	12	22 50 15.36	2.1903	3 28 48.4	16.101
13	21 2 16.50	2.4253	15 30 41.0	13.881	13	22 52 26.67	2.1868	3 12 42.3	16.109
14	21 4 41.83	2.4192	15 16 45.3	13.975	14	22 54 37.77	2.1833	2 56 36.2	16.109
15	21 7 6.80	2.4132	15 2 44.0	14.068	15	22 56 48.67	2.1800	2 40 30.1	16.109
16	21 9 31.41	2.4073	14 48 37.2	14.158	16	22 58 59.37	2.1768	2 24 24.2	16.096
17	21 11 55.67	2.4013	14 34 25.0	14.247	17	23 1 9.88	2.1736	2 8 18.6	16.081
18	21 14 19.56	2.3953	14 20 7.6	14.332	18	23 3 20.20	2.1705	1 52 13.3	16.064
19	21 16 43.10	2.3893	14 5 45.2	14.415	19	23 5 30.34	2.1674	1 36 8.5	16.073
20	21 19 6.28	2.3834	13 51 17.8	14.498	20	23 7 40.29	2.1644	1 20 4.3	16.084
21	21 21 29.11	2.3776	13 36 45.5	14.578	21	23 9 50.07	2.1616	1 4 0.8	16.083
22	21 23 51.59	2.3718	13 22 8.5	14.655	22	23 11 59.68	2.1588	0 47 58.0	16.099
23	21 26 13.72	2.3659	-13 7 26.9	+14.730	23	23 14 9.12	2.1560	-0 31 56.1	+16.033
AUGUST 13.					AUGUST 15.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 28 35.50	2.3602	-12 52 40.9	+14.803	0	23 16 18.40	2.1533	-0 15 55.2	+16.006
1	21 30 56.94	2.3545	12 37 50.6	14.874	1	23 18 27.52	2.1508	+0 0 4.6	15.986
2	21 33 18.04	2.3488	12 22 56.0	14.944	2	23 20 36.49	2.1483	0 16 3.3	15.966
3	21 35 38.80	2.3432	12 7 57.3	15.011	3	23 22 45.31	2.1458	0 32 0.8	15.947
4	21 37 59.22	2.3376	11 52 54.7	15.075	4	23 24 53.99	2.1434	0 47 56.9	15.923
5	21 40 19.31	2.3321	11 37 48.3	15.138	5	23 27 2.52	2.1411	1 3 51.5	15.898
6	21 42 39.07	2.3266	11 22 38.1	15.199	6	23 29 10.92	2.1389	1 19 44.7	15.873
7	21 44 58.50	2.3212	11 7 24.4	15.258	7	23 31 19.19	2.1368	1 35 36.3	15.845
8	21 47 17.61	2.3158	10 52 7.2	15.314	8	23 33 27.33	2.1347	1 51 26.1	15.816
9	21 49 36.39	2.3104	10 36 46.7	15.368	9	23 35 35.35	2.1327	2 7 14.2	15.786
10	21 51 54.86	2.3052	10 21 23.0	15.421	10	23 37 43.25	2.1306	2 23 0.4	15.754
11	21 54 13.01	2.2999	10 5 56.2	15.472	11	23 39 51.04	2.1289	2 38 44.7	15.722
12	21 56 30.85	2.2948	9 50 26.4	15.520	12	23 41 58.72	2.1271	2 54 27.0	15.687
13	21 58 48.38	2.2897	9 34 53.8	15.567	13	23 44 6.20	2.1253	3 10 7.1	15.650
14	22 1 5.61	2.2847	9 19 18.4	15.611	14	23 46 13.76	2.1238	3 25 45.0	15.613
15	22 3 22.54	2.2797	9 3 40.5	15.653	15	23 48 21.14	2.1222	3 41 20.6	15.573
16	22 5 39.17	2.2748	8 48 0.1	15.693	16	23 50 28.42	2.1207	3 56 53.8	15.533
17	22 7 55.51	2.2698	8 32 17.3	15.732	17	23 52 35.62	2.1193	4 12 24.6	15.498
18	22 10 11.55	2.2650	8 16 32.2	15.768	18	23 54 42.73	2.1178	4 27 52.9	15.449
19	22 12 27.31	2.2603	8 0 45.1	15.803	19	23 56 49.76	2.1165	4 43 18.5	15.405
20	22 14 42.79	2.2557	7 44 55.9	15.836	20	23 58 56.71	2.1153	4 58 41.5	15.360
21	22 16 57.99	2.2511	7 29 4.8	15.866	21	0 1 3.59	2.1141	5 14 1.7	15.312
22	22 19 12.92	2.2465	7 13 12.0	15.894	22	0 3 10.40	2.1130	5 29 19.1	15.265
23	22 21 27.57	2.2420	6 57 17.5	15.922	23	0 5 17.15	2.1120	5 44 33.5	15.215
24	22 23 41.96	2.2377	-6 41 21.4	+15.947	24	0 7 23.84	2.1111	+5 59 44.9	+15.165

GREENWICH MEAN TIME.

hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
AUGUST 16.					AUGUST 18.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	0 7 23.84	2.1111	+ 5 59 44.9	+15.165	0	1 48 44.00	2.1302	+16 48 28.3	+11.493
1	0 9 30.48	2.1102	6 14 53.3	15.113	1	1 50 51.85	2.1316	16 59 54.9	11.394
2	0 11 37.06	2.1093	6 29 58.5	15.060	2	1 52 59.79	2.1331	17 11 15.6	11.295
3	0 13 43.59	2.1085	6 45 0.5	15.006	3	1 55 7.82	2.1345	17 22 30.3	11.195
4	0 15 50.08	2.1078	6 59 59.2	14.951	4	1 57 15.93	2.1360	17 33 39.0	11.095
5	0 17 56.53	2.1073	7 14 54.6	14.894	5	1 59 24.14	2.1376	17 44 41.7	10.994
6	0 20 2.95	2.1067	7 29 46.5	14.836	6	2 1 32.44	2.1391	17 55 38.3	10.892
7	0 22 9.33	2.1062	7 44 34.9	14.777	7	2 3 40.83	2.1406	18 6 28.7	10.789
8	0 24 15.69	2.1058	7 59 19.7	14.717	8	2 5 49.31	2.1422	18 17 13.0	10.686
9	0 26 22.02	2.1053	8 14 0.9	14.656	9	2 7 57.89	2.1438	18 27 51.0	10.582
10	0 28 28.33	2.1050	8 28 38.4	14.593	10	2 10 6.56	2.1453	18 38 22.8	10.478
11	0 30 34.62	2.1047	8 43 12.1	14.530	11	2 12 15.33	2.1470	18 48 48.3	10.372
12	0 32 40.89	2.1045	8 57 42.0	14.466	12	2 14 24.20	2.1487	18 59 7.4	10.266
13	0 34 47.16	2.1044	9 12 8.0	14.400	13	2 16 33.17	2.1503	19 9 20.2	10.160
14	0 36 53.42	2.1043	9 26 30.0	14.333	14	2 18 42.23	2.1519	19 19 26.6	10.053
15	0 38 59.67	2.1042	9 40 47.9	14.264	15	2 20 51.40	2.1537	19 29 26.5	9.944
16	0 41 5.92	2.1043	9 55 1.7	14.196	16	2 23 0.67	2.1553	19 39 19.9	9.836
17	0 43 12.18	2.1043	10 9 11.4	14.126	17	2 25 10.04	2.1570	19 49 6.8	9.727
18	0 45 18.44	2.1045	10 23 16.8	14.055	18	2 27 19.51	2.1587	19 58 47.1	9.618
19	0 47 24.72	2.1048	10 37 18.0	13.983	19	2 29 29.08	2.1603	20 8 20.9	9.508
20	0 49 31.01	2.1049	10 51 14.8	13.909	20	2 31 38.75	2.1621	20 17 48.0	9.396
21	0 51 37.31	2.1052	11 5 7.1	13.835	21	2 33 48.53	2.1638	20 27 8.4	9.284
22	0 53 43.63	2.1056	11 18 55.0	13.761	22	2 35 58.41	2.1655	20 36 22.1	9.173
23	0 55 49.98	2.1060	+11 32 38.4	+13.685	23	2 38 8.39	2.1673	+20 45 29.1	+ 9.060
AUGUST 17.					AUGUST 19.				
0	0 57 56.35	2.1064	+11 46 17.2	+13.608	0	2 40 18.48	2.1690	+20 54 29.3	+ 8.947
1	1 0 2.75	2.1069	11 59 51.3	13.530	1	2 42 28.67	2.1707	21 3 22.7	8.833
2	1 2 9.18	2.1075	12 13 20.8	13.452	2	2 44 38.96	2.1723	21 12 9.3	8.719
3	1 4 15.65	2.1081	12 26 45.5	13.371	3	2 46 49.35	2.1740	21 20 49.0	8.604
4	1 6 22.15	2.1087	12 40 5.3	13.290	4	2 48 59.84	2.1758	21 29 21.8	8.489
5	1 8 28.69	2.1094	12 53 20.3	13.208	5	2 51 10.44	2.1774	21 37 47.7	8.373
6	1 10 35.28	2.1102	13 6 30.3	13.126	6	2 53 21.13	2.1791	21 46 6.6	8.257
7	1 12 41.91	2.1109	13 19 35.4	13.043	7	2 55 31.93	2.1808	21 54 18.5	8.140
8	1 14 48.59	2.1118	13 32 35.4	12.958	8	2 57 42.83	2.1824	22 2 23.4	8.023
9	1 16 55.32	2.1127	13 45 30.3	12.873	9	2 59 53.82	2.1840	22 10 21.2	7.904
10	1 19 2.11	2.1136	13 58 20.1	12.787	10	3 2 4.91	2.1858	22 18 11.9	7.787
11	1 21 8.95	2.1145	14 11 4.7	12.699	11	3 4 16.11	2.1874	22 25 55.6	7.668
12	1 23 15.85	2.1155	14 23 44.0	12.611	12	3 6 27.40	2.1890	22 33 32.1	7.548
13	1 25 22.81	2.1165	14 36 18.0	12.523	13	3 8 38.79	2.1906	22 41 1.4	7.429
14	1 27 29.83	2.1176	14 48 46.7	12.433	14	3 10 50.27	2.1921	22 48 23.6	7.309
15	1 29 36.92	2.1187	15 1 10.0	12.343	15	3 13 1.84	2.1937	22 55 38.5	7.188
16	1 31 44.07	2.1198	15 13 27.8	12.251	16	3 15 13.51	2.1953	23 2 46.2	7.068
17	1 33 51.30	2.1211	15 25 40.1	12.159	17	3 17 25.27	2.1968	23 9 46.7	6.947
18	1 35 58.60	2.1223	15 37 46.9	12.067	18	3 19 37.12	2.1983	23 16 39.8	6.824
19	1 38 5.97	2.1235	15 49 48.1	11.973	19	3 21 49.06	2.1997	23 23 25.6	6.703
20	1 40 13.42	2.1248	16 1 43.6	11.878	20	3 24 1.08	2.2011	23 30 4.1	6.580
21	1 42 20.95	2.1261	16 13 33.4	11.783	21	3 26 13.19	2.2026	23 36 35.2	6.457
22	1 44 28.55	2.1273	16 25 17.5	11.687	22	3 28 25.39	2.2040	23 42 58.9	6.334
23	1 46 36.23	2.1288	16 36 55.8	11.590	23	3 30 37.67	2.2053	23 49 15.3	6.211
24	1 48 44.00	2.1302	+16 48 28.3	+11.493	24	3 32 50.02	2.2066	+23 55 24.2	+ 6.067

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
AUGUST 20.					AUGUST 22.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	3 32 50.02	2.2066	+23 55 24.2	+6.087	0	5 19 30.08	2.2188	+26 20 44.4	-0.068
1	3 35 2.46	2.2079	24 1 25.7	5.963	1	5 21 43.17	2.2177	26 20 36.8	0.191
2	3 37 14.97	2.2092	24 7 19.7	5.838	2	5 23 56.20	2.2166	26 20 21.5	0.318
3	3 39 27.56	2.2104	24 13 6.2	5.713	3	5 26 9.16	2.2154	26 19 58.6	0.446
4	3 41 40.22	2.2116	24 18 45.2	5.588	4	5 28 22.05	2.2142	26 19 28.0	0.573
5	3 43 52.95	2.2128	24 24 16.7	5.463	5	5 30 34.86	2.2129	26 18 49.8	0.701
6	3 46 5.76	2.2140	24 29 40.7	5.337	6	5 32 47.60	2.2116	26 18 3.9	0.828
7	3 48 18.63	2.2150	24 34 57.1	5.210	7	5 35 0.25	2.2102	26 17 10.4	0.954
8	3 50 31.56	2.2160	24 40 5.9	5.084	8	5 37 12.82	2.2088	26 16 9.4	1.080
9	3 52 44.55	2.2171	24 45 7.2	4.958	9	5 39 25.30	2.2073	26 15 0.8	1.207
10	3 54 57.61	2.2181	24 50 0.8	4.831	10	5 41 37.69	2.2057	26 13 44.6	1.333
11	3 57 10.72	2.2190	24 54 46.9	4.704	11	5 43 49.98	2.2040	26 12 20.9	1.458
12	3 59 23.89	2.2199	24 59 25.3	4.577	12	5 46 2.17	2.2024	26 10 49.6	1.584
13	4 1 37.11	2.2208	25 3 56.1	4.449	13	5 48 14.27	2.2008	26 9 10.8	1.708
14	4 3 50.38	2.2216	25 8 19.2	4.321	14	5 50 26.26	2.1989	26 7 24.6	1.833
15	4 6 3.70	2.2223	25 12 34.6	4.193	15	5 52 38.14	2.1971	26 5 30.9	1.957
16	4 8 17.06	2.2231	25 16 42.4	4.066	16	5 54 49.91	2.1953	26 3 29.8	2.081
17	4 10 30.47	2.2238	25 20 42.5	3.938	17	5 57 1.57	2.1934	26 1 21.2	2.205
18	4 12 43.91	2.2243	25 24 34.9	3.809	18	5 59 13.12	2.1914	25 59 5.2	2.328
19	4 14 57.39	2.2249	25 28 19.6	3.681	19	6 1 24.54	2.1893	25 56 41.8	2.451
20	4 17 10.90	2.2254	25 31 56.6	3.552	20	6 3 35.84	2.1873	25 54 11.1	2.573
21	4 19 24.44	2.2259	25 35 25.8	3.423	21	6 5 47.01	2.1852	25 51 33.0	2.696
22	4 21 38.01	2.2263	25 38 47.3	3.294	22	6 7 58.06	2.1831	25 48 47.6	2.818
23	4 23 51.60	2.2268	+25 42 1.1	+3.165	23	6 10 8.98	2.1808	+25 45 54.9	-2.938
AUGUST 21.					AUGUST 23.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	4 26 5.22	2.2272	+25 45 7.1	+3.036	0	6 12 19.76	2.1785	+25 42 55.0	-3.059
1	4 28 18.86	2.2274	25 48 5.4	2.907	1	6 14 30.40	2.1763	25 39 47.8	3.180
2	4 30 32.51	2.2276	25 50 55.9	2.778	2	6 16 40.91	2.1740	25 36 33.4	3.300
3	4 32 46.17	2.2278	25 53 38.7	2.648	3	6 18 51.28	2.1716	25 33 11.8	3.420
4	4 34 59.84	2.2279	25 56 13.7	2.519	4	6 21 1.50	2.1691	25 29 43.0	3.539
5	4 37 13.52	2.2280	25 58 41.0	2.390	5	6 23 11.57	2.1666	25 26 7.1	3.658
6	4 39 27.20	2.2280	26 1 0.5	2.260	6	6 25 21.49	2.1641	25 22 24.1	3.776
7	4 41 40.88	2.2279	26 3 12.2	2.130	7	6 27 31.26	2.1616	25 18 34.0	3.894
8	4 43 54.55	2.2278	26 5 16.1	2.000	8	6 29 40.88	2.1590	25 14 36.8	4.012
9	4 46 8.22	2.2277	26 7 12.2	1.871	9	6 31 50.34	2.1564	25 10 32.6	4.128
10	4 48 21.87	2.2274	26 9 0.6	1.742	10	6 33 59.65	2.1538	25 6 21.4	4.244
11	4 50 35.51	2.2273	26 10 41.2	1.613	11	6 36 8.79	2.1510	25 2 3.3	4.360
12	4 52 49.14	2.2270	26 12 14.1	1.483	12	6 38 17.77	2.1483	24 57 38.2	4.476
13	4 55 2.75	2.2266	26 13 39.2	1.353	13	6 40 26.58	2.1455	24 53 6.2	4.591
14	4 57 16.33	2.2262	26 14 56.5	1.224	14	6 42 35.23	2.1428	24 48 27.3	4.705
15	4 59 29.89	2.2257	26 16 6.1	1.095	15	6 44 43.71	2.1399	24 43 41.6	4.818
16	5 1 43.41	2.2251	26 17 7.9	0.966	16	6 46 52.02	2.1371	24 38 49.1	4.932
17	5 3 56.90	2.2245	26 18 2.0	0.838	17	6 49 0.16	2.1342	24 33 49.8	5.045
18	5 6 10.35	2.2238	26 18 48.4	0.708	18	6 51 8.12	2.1312	24 28 43.7	5.158
19	5 8 23.76	2.2232	26 19 27.0	0.579	19	6 53 15.90	2.1283	24 23 30.9	5.268
20	5 10 37.13	2.2224	26 19 57.9	0.451	20	6 55 23.51	2.1253	24 18 11.5	5.379
21	5 12 50.45	2.2215	26 20 21.1	0.322	21	6 57 30.94	2.1223	24 12 45.4	5.490
22	5 15 3.71	2.2206	26 20 36.5	0.193	22	6 59 38.18	2.1193	24 7 12.7	5.599
23	5 17 16.92	2.2198	26 20 44.3	+0.066	23	7 1 45.25	2.1163	24 1 33.5	5.708
24	5 19 30.08	2.2188	+26 20 44.4	-0.063	24	7 3 52.13	2.1132	+23 55 47.7	-5.818

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
AUGUST 24.					AUGUST 26.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	7 3 52.13	2.1132	+23 55 47.7	-5.818	0	8 41 34.93	1.9597	+17 23 37.0	-10.256
1	7 5 58.83	2.1101	23 49 55.4	5.926	1	8 43 32.42	1.9668	17 13 19.4	10.331
2	7 8 5.34	2.1069	23 43 56.6	6.033	2	8 45 29.74	1.9638	17 2 57.3	10.406
3	7 10 11.66	2.1038	23 37 51.4	6.140	3	8 47 26.88	1.9609	16 52 30.7	10.479
4	7 12 17.79	2.1007	23 31 39.8	6.247	4	8 49 23.85	1.9481	16 41 59.8	10.552
5	7 14 23.74	2.0975	23 25 21.8	6.353	5	8 51 20.65	1.9453	16 31 24.5	10.624
6	7 16 29.49	2.0943	23 18 57.5	6.458	6	8 53 17.29	1.9426	16 20 44.9	10.695
7	7 18 35.05	2.0911	23 12 26.9	6.563	7	8 55 13.76	1.9398	16 10 1.1	10.765
8	7 20 40.42	2.0878	23 5 50.0	6.666	8	8 57 10.07	1.9372	15 59 13.1	10.834
9	7 22 45.59	2.0846	22 59 7.0	6.768	9	8 59 6.22	1.9344	15 48 21.0	10.903
10	7 24 50.57	2.0814	22 52 17.8	6.871	10	9 1 2.20	1.9318	15 37 24.7	10.972
11	7 26 55.36	2.0782	22 45 22.5	6.973	11	9 2 58.03	1.9292	15 26 24.4	11.039
12	7 28 59.95	2.0748	22 38 21.0	7.075	12	9 4 53.70	1.9266	15 15 20.0	11.106
13	7 31 4.34	2.0716	22 31 13.5	7.175	13	9 6 49.22	1.9241	15 4 11.7	11.172
14	7 33 8.54	2.0683	22 24 0.0	7.275	14	9 8 44.59	1.9216	14 52 59.4	11.237
15	7 35 12.54	2.0651	22 16 40.5	7.374	15	9 10 39.81	1.9191	14 41 43.3	11.301
16	7 37 16.35	2.0618	22 9 15.1	7.473	16	9 12 34.88	1.9167	14 30 23.3	11.365
17	7 39 19.95	2.0583	22 1 43.8	7.571	17	9 14 29.81	1.9143	14 18 59.5	11.428
18	7 41 23.35	2.0551	21 54 6.6	7.668	18	9 16 24.59	1.9119	14 7 32.0	11.489
19	7 43 26.56	2.0518	21 46 23.6	7.764	19	9 18 19.24	1.9097	13 56 0.8	11.550
20	7 45 29.57	2.0485	21 38 34.9	7.860	20	9 20 13.75	1.9073	13 44 26.0	11.611
21	7 47 32.38	2.0453	21 30 40.4	7.956	21	9 22 8.12	1.9051	13 32 47.5	11.671
22	7 49 35.00	2.0419	21 22 40.2	8.051	22	9 24 2.36	1.9028	13 21 5.5	11.729
23	7 51 37.41	2.0386	+21 14 34.3	-8.144	23	9 25 56.46	1.9007	+13 9 20.0	-11.788
AUGUST 25.					AUGUST 27.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	7 53 39.63	2.0353	+21 6 22.9	-8.237	0	9 27 50.44	1.8986	+12 57 31.0	-11.845
1	7 55 41.65	2.0320	20 58 5.9	8.329	1	9 29 44.29	1.8965	12 45 36.6	11.902
2	7 57 43.47	2.0288	20 49 43.4	8.421	2	9 31 38.02	1.8945	12 33 42.8	11.958
3	7 59 45.10	2.0255	20 41 15.4	8.513	3	9 33 31.63	1.8925	12 21 43.7	12.013
4	8 1 46.53	2.0222	20 32 41.9	8.603	4	9 35 25.12	1.8905	12 9 41.3	12.067
5	8 3 47.76	2.0189	20 24 3.0	8.693	5	9 37 18.49	1.8886	11 57 35.7	12.120
6	8 5 48.80	2.0157	20 15 18.8	8.781	6	9 39 11.75	1.8868	11 45 26.9	12.173
7	8 7 49.64	2.0124	20 6 29.3	8.869	7	9 41 4.90	1.8849	11 33 15.0	12.224
8	8 9 50.29	2.0092	19 57 34.5	8.957	8	9 42 57.94	1.8832	11 21 0.0	12.276
9	8 11 50.74	2.0059	19 48 34.5	9.043	9	9 44 50.88	1.8815	11 8 41.9	12.327
10	8 13 51.00	2.0028	19 39 29.3	9.130	10	9 46 43.72	1.8798	10 56 20.8	12.376
11	8 15 51.07	1.9996	19 30 18.9	9.215	11	9 48 36.46	1.8782	10 43 56.8	12.424
12	8 17 50.95	1.9964	19 21 3.5	9.299	12	9 50 29.10	1.8766	10 31 29.9	12.473
13	8 19 50.64	1.9933	19 11 43.0	9.383	13	9 52 21.65	1.8750	10 19 0.1	12.520
14	8 21 50.14	1.9901	19 2 17.5	9.466	14	9 54 14.10	1.8735	10 6 27.5	12.566
15	8 23 49.45	1.9869	18 52 47.1	9.548	15	9 56 6.47	1.8722	9 53 52.2	12.612
16	8 25 48.57	1.9838	18 43 11.7	9.631	16	9 57 58.76	1.8708	9 41 14.1	12.657
17	8 27 47.50	1.9807	18 33 31.4	9.712	17	9 59 50.96	1.8694	9 28 33.4	12.700
18	8 29 46.25	1.9777	18 23 46.3	9.791	18	10 1 43.09	1.8682	9 15 50.1	12.743
19	8 31 44.82	1.9746	18 13 56.5	9.870	19	10 3 35.14	1.8669	9 3 4.2	12.786
20	8 33 43.20	1.9715	18 4 1.9	9.949	20	10 5 27.12	1.8658	8 50 15.8	12.828
21	8 35 41.40	1.9685	17 54 2.6	10.028	21	10 7 19.03	1.8646	8 37 24.9	12.868
22	8 37 39.42	1.9655	17 43 58.6	10.104	22	10 9 10.87	1.8634	8 24 31.6	12.908
23	8 39 37.26	1.9626	17 33 50.1	10.180	23	10 11 2.64	1.8624	8 11 35.9	12.948
24	8 41 34.93	1.9597	+17 23 37.0	-10.256	24	10 12 54.36	1.8615	+ 7 58 37.9	-12.986

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
AUGUST 28.					AUGUST 30.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	10 12 54.36	1.8615	+7 58 37.9	-12.986	0	11 42 13.27	1.8833	-2 53 13.6	-13.945
1	10 14 46.02	1.8606	7 45 37.6	13.023	1	11 44 6.32	1.8852	3 7 4.2	13.941
2	10 16 37.63	1.8598	7 32 35.1	13.060	2	11 45 59.49	1.8873	3 20 54.5	13.937
3	10 18 29.19	1.8589	7 19 30.4	13.096	3	11 47 52.79	1.8893	3 34 44.6	13.933
4	10 20 20.70	1.8581	7 6 23.6	13.132	4	11 49 46.21	1.8915	3 48 34.3	13.929
5	10 22 12.16	1.8574	6 53 14.6	13.167	5	11 51 39.77	1.8938	4 2 23.6	13.924
6	10 24 3.59	1.8568	6 40 3.6	13.199	6	11 53 33.47	1.8962	4 16 12.4	13.920
7	10 25 54.98	1.8562	6 26 50.7	13.232	7	11 55 27.31	1.8985	4 30 0.6	13.916
8	10 27 46.33	1.8557	6 13 35.8	13.264	8	11 57 21.29	1.9009	4 43 48.2	13.911
9	10 29 37.66	1.8553	6 0 19.0	13.296	9	11 59 15.42	1.9034	4 57 35.2	13.907
10	10 31 28.96	1.8548	5 47 0.3	13.326	10	12 1 9.70	1.9060	5 11 21.5	13.902
11	10 33 20.23	1.8543	5 33 39.9	13.355	11	12 3 4.14	1.9087	5 25 7.0	13.898
12	10 35 11.48	1.8541	5 20 17.7	13.384	12	12 4 58.74	1.9113	5 38 51.7	13.893
13	10 37 2.72	1.8538	5 6 53.8	13.412	13	12 6 53.50	1.9141	5 52 35.5	13.889
14	10 38 53.94	1.8536	4 53 28.3	13.438	14	12 8 48.43	1.9170	6 6 18.3	13.884
15	10 40 45.15	1.8535	4 40 1.2	13.464	15	12 10 43.54	1.9199	6 20 0.1	13.880
16	10 42 36.36	1.8534	4 26 32.6	13.490	16	12 12 38.82	1.9229	6 33 40.9	13.875
17	10 44 27.56	1.8534	4 13 2.4	13.515	17	12 14 34.29	1.9260	6 47 20.5	13.870
18	10 46 18.77	1.8535	3 59 30.8	13.538	18	12 16 29.94	1.9290	7 0 58.9	13.866
19	10 48 9.98	1.8535	3 45 57.8	13.561	19	12 18 25.77	1.9322	7 14 36.1	13.861
20	10 50 1.19	1.8537	3 32 23.5	13.583	20	12 20 21.80	1.9354	7 28 11.9	13.857
21	10 51 52.42	1.8539	3 18 47.9	13.604	21	12 22 18.02	1.9388	7 41 46.4	13.852
22	10 53 43.66	1.8542	3 5 11.0	13.625	22	12 24 14.45	1.9422	7 55 19.4	13.848
23	10 55 34.92	1.8545	+2 51 32.9	-13.644	23	12 26 11.08	1.9456	-8 8 50.9	-13.843
AUGUST 29.					AUGUST 31.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	10 57 26.20	1.8549	+2 37 53.7	-13.663	0	12 28 7.92	1.9491	-8 22 20.9	-13.838
1	10 59 17.51	1.8554	2 24 13.4	13.680	1	12 30 4.97	1.9527	8 35 49.2	13.834
2	11 1 8.85	1.8559	2 10 32.1	13.697	2	12 32 2.24	1.9563	8 49 15.9	13.830
3	11 3 0.22	1.8565	1 56 49.8	13.713	3	12 33 59.73	1.9600	9 2 40.8	13.826
4	11 4 51.63	1.8572	1 43 6.6	13.728	4	12 35 57.44	1.9638	9 16 3.8	13.822
5	11 6 43.08	1.8578	1 29 22.5	13.743	5	12 37 55.38	1.9676	9 29 25.0	13.817
6	11 8 34.57	1.8586	1 15 37.5	13.756	6	12 39 53.55	1.9715	9 42 44.2	13.813
7	11 10 26.11	1.8594	1 1 51.8	13.768	7	12 41 51.96	1.9755	9 56 1.4	13.809
8	11 12 17.70	1.8603	0 48 5.3	13.780	8	12 43 50.61	1.9795	10 9 16.5	13.804
9	11 14 9.35	1.8613	0 34 18.2	13.791	9	12 45 49.50	1.9836	10 22 29.5	13.800
10	11 16 1.05	1.8623	0 20 30.4	13.801	10	12 47 48.64	1.9878	10 35 40.2	13.795
11	11 17 52.82	1.8633	+0 6 42.1	13.810	11	12 49 48.03	1.9919	10 48 48.7	13.791
12	11 19 44.65	1.8645	-0 7 6.8	13.818	12	12 51 47.67	1.9963	11 1 54.8	13.787
13	11 21 36.56	1.8658	0 20 56.1	13.825	13	12 53 47.58	2.0007	11 14 58.5	13.782
14	11 23 28.54	1.8670	0 34 45.8	13.832	14	12 55 47.75	2.0050	11 27 59.7	13.778
15	11 25 20.60	1.8683	0 48 35.9	13.838	15	12 57 48.18	2.0094	11 40 58.3	13.773
16	11 27 12.74	1.8697	1 2 26.3	13.842	16	12 59 48.88	2.0140	11 53 54.3	13.769
17	11 29 4.96	1.8712	1 16 16.9	13.845	17	13 1 49.86	2.0187	12 6 47.6	13.764
18	11 30 57.28	1.8728	1 30 7.7	13.848	18	13 3 51.12	2.0233	12 19 38.1	13.760
19	11 32 49.69	1.8743	1 43 58.7	13.850	19	13 5 52.66	2.0280	12 32 25.8	13.755
20	11 34 42.19	1.8759	1 57 49.7	13.851	20	13 7 54.48	2.0328	12 45 10.6	13.751
21	11 36 34.80	1.8777	2 11 40.8	13.851	21	13 9 56.59	2.0377	12 57 52.4	13.746
22	11 38 27.51	1.8794	2 25 31.8	13.850	22	13 11 59.00	2.0426	13 10 31.2	13.742
23	11 40 20.33	1.8813	2 39 22.8	13.848	23	13 14 1.70	2.0475	13 23 6.9	13.737
24	11 42 13.27	1.8833	-2 53 13.6	-13.845	24	13 16 4.70	2.0525	-13 35 39.3	-13.733

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
SEPTEMBER 1.					SEPTEMBER 3.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	13 16 4.70	2.0525	-13 35 39.3	-12.513	0	15 1 16.94	2.3433	-22 9 46.3	-8.388
1	13 18 8.00	2.0576	13 48 8.5	12.458	1	15 3 37.73	2.3498	22 18 6.0	8.268
2	13 20 11.61	2.0628	14 0 34.3	12.402	2	15 5 58.91	2.3563	22 26 18.5	8.148
3	13 22 15.53	2.0679	14 12 56.7	12.344	3	15 8 20.48	2.3627	22 34 23.7	8.025
4	13 24 19.76	2.0732	14 25 15.6	12.286	4	15 10 42.43	2.3691	22 42 21.5	7.901
5	13 26 24.31	2.0785	14 37 31.0	12.226	5	15 13 4.77	2.3756	22 50 11.8	7.776
6	13 28 29.18	2.0839	14 49 42.7	12.164	6	15 15 27.50	2.3820	22 57 54.6	7.649
7	13 30 34.38	2.0893	15 1 50.7	12.103	7	15 17 50.61	2.3884	23 5 29.7	7.521
8	13 32 39.90	2.0948	15 13 55.0	12.038	8	15 20 14.11	2.3948	23 12 57.1	7.392
9	13 34 45.75	2.1003	15 25 55.3	11.973	9	15 22 37.99	2.4011	23 20 16.7	7.261
10	13 36 51.93	2.1058	15 37 51.7	11.908	10	15 25 2.24	2.4073	23 27 28.4	7.128
11	13 38 58.45	2.1114	15 49 44.2	11.840	11	15 27 26.87	2.4136	23 34 32.1	6.995
12	13 41 5.30	2.1170	16 1 32.5	11.770	12	15 29 51.87	2.4198	23 41 27.8	6.861
13	13 43 12.49	2.1228	16 13 16.6	11.700	13	15 32 17.25	2.4260	23 48 15.4	6.724
14	13 45 20.03	2.1286	16 24 56.5	11.629	14	15 34 42.99	2.4321	23 54 54.7	6.586
15	13 47 27.92	2.1344	16 36 32.1	11.556	15	15 37 9.10	2.4382	24 1 25.7	6.448
16	13 49 36.16	2.1403	16 48 3.2	11.482	16	15 39 35.57	2.4443	24 7 48.4	6.308
17	13 51 44.75	2.1462	16 59 29.9	11.407	17	15 42 2.41	2.4503	24 14 2.6	6.166
18	13 53 53.70	2.1521	17 10 52.0	11.329	18	15 44 29.60	2.4561	24 20 8.3	6.023
19	13 56 3.00	2.1581	17 22 9.4	11.251	19	15 46 57.14	2.4620	24 26 5.4	5.879
20	13 58 12.67	2.1642	17 33 22.1	11.172	20	15 49 25.04	2.4678	24 31 53.8	5.733
21	14 0 22.70	2.1702	17 44 30.0	11.092	21	15 51 53.28	2.4736	24 37 33.4	5.587
22	14 2 33.09	2.1763	17 55 33.1	11.010	22	15 54 21.87	2.4793	24 43 4.2	5.439
23	14 4 43.85	2.1824	-18 6 31.2	-10.926	23	15 56 50.79	2.4848	-24 48 26.1	-5.291
SEPTEMBER 2.					SEPTEMBER 4.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	14 6 54.98	2.1886	-18 17 24.2	-10.841	0	15 59 20.05	2.4904	-24 53 39.1	-5.141
1	14 9 6.48	2.1948	18 28 12.1	10.755	1	16 1 49.64	2.4959	24 58 43.0	4.989
2	14 11 18.35	2.2010	18 38 54.8	10.667	2	16 4 19.56	2.5013	25 3 37.8	4.837
3	14 13 30.60	2.2073	18 49 32.1	10.578	3	16 6 49.80	2.5066	25 8 23.4	4.683
4	14 15 43.23	2.2137	19 0 4.1	10.488	4	16 9 20.35	2.5118	25 12 59.7	4.528
5	14 17 56.24	2.2199	19 10 30.6	10.396	5	16 11 51.22	2.5170	25 17 26.7	4.372
6	14 20 9.62	2.2263	19 20 51.6	10.303	6	16 14 22.39	2.5220	25 21 44.3	4.214
7	14 22 23.39	2.2327	19 31 7.0	10.209	7	16 16 53.86	2.5269	25 25 52.4	4.056
8	14 24 37.54	2.2391	19 41 16.7	10.113	8	16 19 25.62	2.5318	25 29 51.0	3.897
9	14 26 52.08	2.2456	19 51 20.6	10.016	9	16 21 57.68	2.5367	25 33 40.0	3.737
10	14 29 7.01	2.2520	20 1 18.6	9.917	10	16 24 30.02	2.5413	25 37 19.4	3.576
11	14 31 22.32	2.2584	20 11 10.6	9.817	11	16 27 2.63	2.5458	25 40 49.1	3.413
12	14 33 38.02	2.2649	20 20 56.6	9.716	12	16 29 35.52	2.5504	25 44 9.0	3.249
13	14 35 54.11	2.2714	20 30 36.5	9.613	13	16 32 8.68	2.5548	25 47 19.0	3.085
14	14 38 10.59	2.2779	20 40 10.1	9.508	14	16 34 42.09	2.5589	25 50 19.2	2.920
15	14 40 27.46	2.2844	20 49 37.5	9.403	15	16 37 15.75	2.5631	25 53 9.4	2.754
16	14 42 44.72	2.2909	20 58 58.5	9.296	16	16 39 49.66	2.5672	25 55 49.7	2.588
17	14 45 2.37	2.2975	21 8 13.0	9.187	17	16 42 23.81	2.5711	25 58 19.9	2.418
18	14 47 20.42	2.3041	21 17 20.9	9.077	18	16 44 58.19	2.5749	26 0 39.9	2.249
19	14 49 38.86	2.3106	21 26 22.2	8.966	19	16 47 32.80	2.5787	26 2 49.8	2.080
20	14 51 57.69	2.3171	21 35 16.8	8.853	20	16 50 7.63	2.5823	26 4 49.5	1.910
21	14 54 16.91	2.3237	21 44 4.6	8.739	21	16 52 42.67	2.5857	26 6 39.0	1.739
22	14 56 36.53	2.3303	21 52 45.5	8.623	22	16 55 17.91	2.5890	26 8 18.2	1.567
23	14 58 56.54	2.3368	22 1 19.4	8.507	23	16 57 53.35	2.5923	26 9 47.0	1.394
24	15 1 16.94	2.3433	-22 9 46.3	-8.388	24	17 0 28.98	2.5953	-26 11 5.5	-1.223

GREENWICH MEAN TIME.

Hour.	Right Ascension.			Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.			Var. per Min.	Declination.	V J M				
SEPTEMBER 5.							SEPTEMBER 7.										
	h	m	s	s	°	'	''		h	m	s	s	°	'	''		
0	17	0	28.98	2.5953	-26	11	5.5	-1.222	0	19	6	2.14	2.5848	-23	45	14.7	+
1	17	3	4.79	2.5983	26	12	13.6	1.048	1	19	8	37.13	2.5815	23	37	55.7	;
2	17	5	40.77	2.6011	26	13	11.2	0.873	2	19	11	11.92	2.5782	23	30	26.9	;
3	17	8	16.92	2.6038	26	13	58.3	0.698	3	19	13	46.51	2.5748	23	22	48.3	;
4	17	10	53.23	2.6064	26	14	34.9	0.523	4	19	16	20.89	2.5713	23	14	59.9	;
5	17	13	29.69	2.6088	26	15	1.0	0.347	5	19	18	55.06	2.5676	23	7	1.8	;
6	17	16	6.29	2.6111	26	15	16.5	-0.170	6	19	21	29.00	2.5638	22	58	54.2	;
7	17	18	43.02	2.6133	26	15	21.4	+0.008	7	19	24	2.72	2.5601	22	50	37.0	;
8	17	21	19.88	2.6153	26	15	15.6	0.185	8	19	26	36.21	2.5563	22	42	10.3	;
9	17	23	56.85	2.6172	26	14	59.2	0.363	9	19	29	9.47	2.5523	22	33	34.2	;
10	17	26	33.94	2.6190	26	14	32.1	0.541	10	19	31	42.48	2.5482	22	24	48.8	;
11	17	29	11.13	2.6206	26	13	54.3	0.720	11	19	34	15.25	2.5442	22	15	54.1	;
12	17	31	48.41	2.6221	26	13	5.7	0.899	12	19	36	47.78	2.5400	22	6	50.2	;
13	17	34	25.78	2.6234	26	12	6.4	1.078	13	19	39	20.05	2.5358	21	57	37.2	;
14	17	37	3.22	2.6245	26	10	56.4	1.257	14	19	41	52.07	2.5314	21	48	15.2	;
15	17	39	40.72	2.6255	26	9	35.6	1.437	15	19	44	23.82	2.5270	21	38	44.3	;
16	17	42	18.28	2.6265	26	8	4.0	1.617	16	19	46	55.31	2.5227	21	29	4.5	;
17	17	44	55.90	2.6273	26	6	21.6	1.796	17	19	49	26.54	2.5182	21	19	16.0	;
18	17	47	33.56	2.6279	26	4	28.5	1.976	18	19	51	57.49	2.5136	21	9	18.8	10
19	17	50	11.25	2.6284	26	2	24.5	2.156	19	19	54	28.17	2.5091	20	59	12.9	10
20	17	52	48.97	2.6288	26	0	9.8	2.335	20	19	56	58.58	2.5045	20	48	58.5	10
21	17	55	26.70	2.6289	25	57	44.3	2.515	21	19	59	28.71	2.4998	20	38	35.7	10
22	17	58	4.44	2.6290	25	55	8.0	2.695	22	20	1	58.56	2.4952	20	28	4.5	10
23	18	0	42.18	2.6289	-25	52	20.9	+2.875	23	20	4	28.13	2.4904	-20	17	25.1	+10
SEPTEMBER 6.							SEPTEMBER 8.										
0	18	3	19.91	2.6288	-25	49	23.0	+3.055	0	20	6	57.41	2.4856	-20	6	37.5	+10
1	18	5	57.63	2.6284	25	46	14.3	3.234	1	20	9	26.40	2.4808	19	55	41.9	10
2	18	8	35.32	2.6278	25	42	54.9	3.413	2	20	11	55.11	2.4760	19	44	38.3	11
3	18	11	12.97	2.6272	25	39	24.7	3.593	3	20	14	23.52	2.4711	19	33	26.8	11
4	18	13	50.58	2.6264	25	35	43.8	3.771	4	20	16	51.64	2.4662	19	22	7.5	11
5	18	16	28.14	2.6256	25	31	52.2	3.949	5	20	19	19.46	2.4613	19	10	40.5	11
6	18	19	5.65	2.6246	25	27	49.9	4.128	6	20	21	46.99	2.4563	18	59	6.0	11
7	18	21	43.09	2.6234	25	23	36.9	4.305	7	20	24	14.22	2.4513	18	47	23.9	11
8	18	24	20.46	2.6221	25	19	13.3	4.482	8	20	26	41.15	2.4463	18	35	34.5	11
9	18	26	57.74	2.6207	25	14	39.1	4.658	9	20	29	7.78	2.4414	18	23	37.8	11
10	18	29	34.94	2.6192	25	9	54.3	4.835	10	20	31	34.12	2.4365	18	11	33.8	11
11	18	32	12.04	2.6174	25	4	58.9	5.012	11	20	34	0.16	2.4314	17	59	22.8	11
12	18	34	49.03	2.6156	24	59	52.9	5.188	12	20	36	25.89	2.4263	17	47	4.8	11
13	18	37	25.91	2.6137	24	54	36.4	5.362	13	20	38	51.32	2.4214	17	34	39.9	11
14	18	40	2.67	2.6116	24	49	9.5	5.535	14	20	41	16.46	2.4164	17	22	8.2	11
15	18	42	39.30	2.6094	24	43	32.2	5.708	15	20	43	41.29	2.4113	17	9	29.9	11
16	18	45	15.80	2.6072	24	37	44.5	5.882	16	20	46	5.82	2.4063	16	56	44.9	11
17	18	47	52.16	2.6048	24	31	46.4	6.053	17	20	48	30.05	2.4013	16	43	53.5	11
18	18	50	28.37	2.6022	24	25	38.1	6.224	18	20	50	53.98	2.3964	16	30	55.8	11
19	18	53	4.42	2.5995	24	19	19.5	6.395	19	20	53	17.62	2.3914	16	17	51.8	11
20	18	55	40.31	2.5968	24	12	50.7	6.564	20	20	55	40.95	2.3864	16	4	41.6	11
21	18	58	16.04	2.5940	24	6	11.8	6.733	21	20	58	3.99	2.3815	15	51	25.4	11
22	19	0	51.59	2.5910	23	59	22.8	6.900	22	21	0	26.73	2.3765	15	38	3.3	11
23	19	3	26.96	2.5879	23	52	23.8	7.068	23	21	2	49.17	2.3716	15	24	35.3	11
24	19	6	2.14	2.5848	-23	45	14.7	+7.234	24	21	5	11.32	2.3668	-15	11	1.6	+11

GREENWICH MEAN TIME.

hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
SEPTEMBER 9.					SEPTEMBER 11.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 5 11.32	2.3668	-15 11 1.6	+13.608	0	22 53 53.36	2.1827	-3 4 1.8	+15.982
1	21 7 33.18	2.3618	14 57 22.3	13.700	1	22 56 4.25	2.1803	2 48 2.7	15.988
2	21 9 54.74	2.3599	14 43 37.6	13.791	2	22 58 15.00	2.1780	2 32 3.3	15.992
3	21 12 16.01	2.3521	14 29 47.4	13.881	3	23 0 25.61	2.1757	2 16 3.7	15.994
4	21 14 36.99	2.3473	14 15 51.9	13.968	4	23 2 36.08	2.1734	2 0 4.0	15.995
5	21 16 57.69	2.3426	14 1 51.3	14.053	5	23 4 46.42	2.1713	1 44 4.3	15.993
6	21 19 18.10	2.3378	13 47 45.6	14.136	6	23 6 56.64	2.1693	1 28 4.8	15.990
7	21 21 38.23	2.3332	13 33 35.0	14.218	7	23 9 6.74	2.1673	1 12 5.5	15.986
8	21 23 58.08	2.3284	13 19 19.5	14.298	8	23 11 16.72	2.1653	0 56 6.5	15.980
9	21 26 17.64	2.3238	13 4 59.3	14.375	9	23 13 26.58	2.1634	0 40 7.9	15.972
10	21 28 36.93	2.3193	12 50 34.5	14.451	10	23 15 36.33	2.1617	0 24 9.9	15.963
11	21 30 55.95	2.3147	12 36 5.2	14.526	11	23 17 45.98	2.1600	-0 8 12.4	15.952
12	21 33 14.69	2.3101	12 21 31.4	14.598	12	23 19 55.53	2.1583	+0 7 44.3	15.938
13	21 35 33.16	2.3057	12 6 53.4	14.668	13	23 22 4.98	2.1567	0 23 40.2	15.924
14	21 37 51.37	2.3013	11 52 11.2	14.738	14	23 24 14.33	2.1551	0 39 35.2	15.908
15	21 40 9.31	2.2968	11 37 24.9	14.804	15	23 26 23.59	2.1537	0 55 29.2	15.891
16	21 42 26.99	2.2925	11 22 34.7	14.868	16	23 28 32.77	2.1523	1 11 22.1	15.873
17	21 44 44.41	2.2882	11 7 40.7	14.932	17	23 30 41.87	2.1509	1 27 13.9	15.852
18	21 47 1.57	2.2839	10 52 42.9	14.993	18	23 32 50.88	2.1496	1 43 4.3	15.828
19	21 49 18.48	2.2797	10 37 41.5	15.053	19	23 34 59.82	2.1484	1 58 53.3	15.806
20	21 51 35.13	2.2755	10 22 36.6	15.110	20	23 37 8.69	2.1473	2 14 40.9	15.780
21	21 53 51.54	2.2715	10 7 28.3	15.166	21	23 39 17.49	2.1462	2 30 26.9	15.753
22	21 56 7.71	2.2674	9 52 16.7	15.219	22	23 41 26.23	2.1452	2 46 11.3	15.725
23	21 58 23.63	2.2634	- 9 37 2.0	+15.271	23	23 43 34.91	2.1443	+3 1 53.9	+15.695
SEPTEMBER 10.					SEPTEMBER 12.				
0	22 0 39.32	2.2595	- 9 21 44.2	+15.321	0	23 45 43.54	2.1433	+3 17 34.7	+15.664
1	22 2 54.77	2.2556	9 6 23.5	15.369	1	23 47 52.11	2.1425	3 33 13.6	15.631
2	22 5 9.99	2.2518	8 50 59.9	15.416	2	23 50 0.64	2.1418	3 48 50.4	15.596
3	22 7 24.98	2.2479	8 35 33.6	15.461	3	23 52 9.12	2.1410	4 4 25.1	15.560
4	22 9 39.74	2.2442	8 20 4.6	15.504	4	23 54 17.56	2.1404	4 19 57.6	15.523
5	22 11 54.28	2.2405	8 4 33.1	15.544	5	23 56 25.97	2.1398	4 35 27.8	15.484
6	22 14 8.61	2.2370	7 48 59.3	15.583	6	23 58 34.34	2.1393	4 50 55.7	15.444
7	22 16 22.72	2.2334	7 33 23.1	15.621	7	0 0 42.68	2.1388	5 6 21.1	15.403
8	22 18 36.62	2.2299	7 17 44.8	15.656	8	0 2 50.99	2.1383	5 21 44.0	15.359
9	22 20 50.31	2.2265	7 2 4.4	15.690	9	0 4 59.28	2.1381	5 37 4.2	15.314
10	22 23 3.80	2.2232	6 46 22.0	15.723	10	0 7 7.56	2.1378	5 52 21.7	15.268
11	22 25 17.09	2.2198	6 30 37.7	15.753	11	0 9 15.82	2.1375	6 7 36.4	15.222
12	22 27 30.18	2.2166	6 14 51.7	15.780	12	0 11 24.06	2.1373	6 22 48.3	15.173
13	22 29 43.08	2.2134	5 59 4.1	15.807	13	0 13 32.30	2.1373	6 37 57.2	15.123
14	22 31 55.79	2.2103	5 43 14.9	15.832	14	0 15 40.53	2.1372	6 53 3.0	15.071
15	22 34 8.32	2.2073	5 27 24.3	15.854	15	0 17 48.76	2.1372	7 8 5.7	15.018
16	22 36 20.66	2.2043	5 11 32.4	15.876	16	0 19 56.99	2.1373	7 23 5.2	14.964
17	22 38 32.83	2.2013	4 55 39.2	15.896	17	0 22 5.23	2.1374	7 38 1.4	14.909
18	22 40 44.82	2.1985	4 39 44.9	15.913	18	0 24 13.48	2.1376	7 52 54.3	14.853
19	22 42 56.65	2.1958	4 23 49.6	15.929	19	0 26 21.74	2.1378	8 7 43.7	14.794
20	22 45 8.31	2.1929	4 7 53.4	15.943	20	0 28 30.01	2.1380	8 22 29.6	14.734
21	22 47 19.80	2.1903	3 51 56.5	15.955	21	0 30 38.30	2.1383	8 37 11.8	14.673
22	22 49 31.14	2.1878	3 35 58.8	15.967	22	0 32 46.61	2.1387	8 51 50.4	14.613
23	22 51 42.33	2.1852	3 20 0.5	15.975	23	0 34 54.94	2.1391	9 6 25.3	14.549
24	22 53 53.36	2.1827	- 3 4 1.8	+15.982	24	0 37 3.30	2.1396	+9 20 56.3	+14.484

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
SEPTEMBER 13.					SEPTEMBER 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	0 37 3.30	2.1396	+ 9 20 56.3	+14.484	0	2 21 1.73	2.2025	+19 20 30.8	+10.118
1	0 39 11.69	2.1402	9 35 23.4	14.418	1	2 23 13.93	2.2043	19 30 34.5	10.005
2	0 41 20.12	2.1408	9 49 46.5	14.352	2	2 25 26.24	2.2060	19 40 31.4	9.882
3	0 43 28.58	2.1413	10 4 5.6	14.283	3	2 27 38.65	2.2077	19 50 21.5	9.778
4	0 45 37.08	2.1420	10 18 20.5	14.213	4	2 29 51.16	2.2093	20 0 4.7	9.683
5	0 47 45.62	2.1427	10 32 31.2	14.143	5	2 32 3.77	2.2110	20 9 41.0	9.547
6	0 49 54.20	2.1434	10 46 37.7	14.072	6	2 34 16.48	2.2128	20 19 10.3	9.431
7	0 52 2.83	2.1443	11 0 39.8	13.998	7	2 36 29.30	2.2144	20 28 32.7	9.314
8	0 54 11.51	2.1451	11 14 37.5	13.924	8	2 38 42.21	2.2160	20 37 48.0	9.198
9	0 56 20.24	2.1459	11 28 30.7	13.849	9	2 40 55.22	2.2177	20 46 56.2	9.073
10	0 58 29.02	2.1468	11 42 19.4	13.773	10	2 43 8.33	2.2193	20 55 57.3	8.959
11	1 0 37.86	2.1478	11 56 3.4	13.694	11	2 45 21.54	2.2210	21 4 51.3	8.840
12	1 2 46.76	2.1488	12 9 42.7	13.616	12	2 47 34.85	2.2226	21 13 38.1	8.720
13	1 4 55.72	2.1499	12 23 17.3	13.536	13	2 49 48.25	2.2241	21 22 17.7	8.599
14	1 7 4.75	2.1510	12 36 47.0	13.454	14	2 52 1.74	2.2257	21 30 50.0	8.478
15	1 9 13.84	2.1521	12 50 11.8	13.373	15	2 54 15.33	2.2273	21 39 15.1	8.357
16	1 11 23.00	2.1533	13 3 31.7	13.289	16	2 56 29.01	2.2288	21 47 32.8	8.234
17	1 13 32.23	2.1544	13 16 46.5	13.205	17	2 58 42.78	2.2303	21 55 43.2	8.112
18	1 15 41.53	2.1557	13 29 56.3	13.120	18	3 0 56.65	2.2318	22 3 46.2	7.988
19	1 17 50.91	2.1569	13 43 0.9	13.033	19	3 3 10.60	2.2332	22 11 41.8	7.864
20	1 20 0.36	2.1582	13 56 0.3	12.946	20	3 5 24.63	2.2346	22 19 29.9	7.740
21	1 22 9.89	2.1595	14 8 54.4	12.858	21	3 7 38.75	2.2360	22 27 10.6	7.616
22	1 24 19.50	2.1608	14 21 43.2	12.768	22	3 9 52.95	2.2374	22 34 43.8	7.490
23	1 26 29.19	2.1622	+14 34 26.6	+12.678	23	3 12 7.24	2.2388	+22 42 9.4	+7.364
SEPTEMBER 14.					SEPTEMBER 16.				
0	1 28 38.96	2.1636	+14 47 4.5	+12.586	0	3 14 21.61	2.2402	+22 49 27.5	+7.239
1	1 30 48.82	2.1651	14 59 36.9	12.493	1	3 16 36.06	2.2414	22 56 38.1	7.113
2	1 32 58.77	2.1665	15 12 3.7	12.400	2	3 18 50.58	2.2426	23 3 41.0	6.985
3	1 35 8.80	2.1679	15 24 24.9	12.306	3	3 21 5.17	2.2438	23 10 36.3	6.858
4	1 37 18.92	2.1695	15 36 40.4	12.210	4	3 23 19.83	2.2450	23 17 23.9	6.730
5	1 39 29.14	2.1710	15 48 50.1	12.113	5	3 25 34.57	2.2462	23 24 3.9	6.603
6	1 41 39.44	2.1725	16 0 54.0	12.017	6	3 27 49.37	2.2473	23 30 36.2	6.474
7	1 43 49.84	2.1741	16 12 52.1	11.918	7	3 30 4.24	2.2483	23 37 0.8	6.346
8	1 46 0.33	2.1757	16 24 44.2	11.819	8	3 32 19.17	2.2493	23 43 17.7	6.217
9	1 48 10.92	2.1773	16 36 30.4	11.719	9	3 34 34.16	2.2508	23 49 26.8	6.087
10	1 50 21.61	2.1789	16 48 10.5	11.618	10	3 36 49.21	2.2513	23 55 28.1	5.957
11	1 52 32.39	2.1805	16 59 44.5	11.516	11	3 39 4.32	2.2523	24 1 21.6	5.827
12	1 54 43.27	2.1822	17 11 12.4	11.413	12	3 41 19.48	2.2531	24 7 7.3	5.697
13	1 56 54.25	2.1838	17 22 34.1	11.310	13	3 43 34.69	2.2539	24 12 45.2	5.567
14	1 59 5.33	2.1855	17 33 49.6	11.206	14	3 45 49.95	2.2547	24 18 15.3	5.436
15	2 1 16.51	2.1873	17 44 58.8	11.101	15	3 48 5.25	2.2554	24 23 37.5	5.304
16	2 3 27.80	2.1889	17 56 1.7	10.995	16	3 50 20.60	2.2562	24 28 51.8	5.173
17	2 5 39.18	2.1906	18 6 58.2	10.888	17	3 52 35.99	2.2568	24 33 58.2	5.042
18	2 7 50.67	2.1923	18 17 48.2	10.780	18	3 54 51.41	2.2573	24 38 56.8	4.910
19	2 10 2.26	2.1940	18 28 31.8	10.672	19	3 57 6.86	2.2578	24 43 47.4	4.778
20	2 12 13.95	2.1957	18 39 8.8	10.563	20	3 59 22.35	2.2583	24 48 30.1	4.646
21	2 14 25.74	2.1973	18 49 39.3	10.453	21	4 1 37.86	2.2587	24 53 4.9	4.514
22	2 16 37.63	2.1991	19 0 3.1	10.342	22	4 3 53.39	2.2591	24 57 31.8	4.382
23	2 18 49.63	2.2008	19 10 20.3	10.231	23	4 6 8.95	2.2595	25 1 50.7	4.248
24	2 21 1.73	2.2025	+19 20 30.8	+10.118	24	4 8 24.53	2.2598	+25 6 1.6	+4.116

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
SEPTEMBER 17.					SEPTEMBER 19.				
	h m s	s	" "	" "		h m s	s	" "	" "
0	4 8 24.53	2.2598	+25 6 1.6	+4.116	0	5 56 7.30	2.2066	+25 51 31.7	-2.150
1	4 10 40.12	2.2600	25 10 4.6	3.983	1	5 58 19.62	2.2042	25 49 19.0	2.274
2	4 12 55.73	2.2602	25 13 59.6	3.851	2	6 0 31.80	2.2018	25 46 58.8	2.398
3	4 15 11.34	2.2603	25 17 46.7	3.718	3	6 2 43.83	2.1993	25 44 31.3	2.520
4	4 17 26.96	2.2603	25 21 25.8	3.585	4	6 4 55.71	2.1967	25 41 56.4	2.643
5	4 19 42.58	2.2603	25 24 56.9	3.452	5	6 7 7.43	2.1940	25 39 14.2	2.764
6	4 21 58.20	2.2603	25 28 20.0	3.318	6	6 9 18.99	2.1914	25 36 24.7	2.886
7	4 24 13.81	2.2602	25 31 35.1	3.185	7	6 11 30.40	2.1888	25 33 27.9	3.007
8	4 26 29.42	2.2600	25 34 42.2	3.052	8	6 13 41.64	2.1860	25 30 23.9	3.128
9	4 28 45.01	2.2598	25 37 41.3	2.919	9	6 15 52.72	2.1833	25 27 12.6	3.248
10	4 31 0.59	2.2595	25 40 32.5	2.787	10	6 18 3.63	2.1804	25 23 54.2	3.367
11	4 33 16.15	2.2592	25 43 15.7	2.653	11	6 20 14.37	2.1776	25 20 28.6	3.486
12	4 35 31.69	2.2588	25 45 50.9	2.520	12	6 22 24.94	2.1748	25 16 55.9	3.604
13	4 37 47.21	2.2583	25 48 18.1	2.387	13	6 24 35.34	2.1718	25 13 16.1	3.723
14	4 40 2.69	2.2578	25 50 37.3	2.254	14	6 26 45.56	2.1689	25 9 29.2	3.840
15	4 42 18.14	2.2573	25 52 48.6	2.122	15	6 28 55.61	2.1660	25 5 35.3	3.957
16	4 44 33.56	2.2567	25 54 51.9	1.988	16	6 31 5.48	2.1630	25 1 34.4	4.073
17	4 46 48.94	2.2559	25 56 47.2	1.855	17	6 33 15.17	2.1599	24 57 26.5	4.189
18	4 49 4.27	2.2552	25 58 34.5	1.723	18	6 35 24.67	2.1568	24 53 11.7	4.304
19	4 51 19.56	2.2544	26 0 13.9	1.591	19	6 37 33.99	2.1538	24 48 50.0	4.419
20	4 53 34.80	2.2536	26 1 45.4	1.458	20	6 39 43.12	2.1507	24 44 21.4	4.533
21	4 55 49.99	2.2527	26 3 8.9	1.326	21	6 41 52.07	2.1476	24 39 46.0	4.648
22	4 58 5.12	2.2517	26 4 24.5	1.194	22	6 44 0.83	2.1444	24 35 3.7	4.761
23	5 0 20.19	2.2506	+26 5 32.2	+1.063	23	6 46 9.40	2.1412	+24 30 14.7	-4.873
SEPTEMBER 18.					SEPTEMBER 20.				
	h m s	s	" "	" "		h m s	s	" "	" "
0	5 2 35.19	2.2495	+26 6 32.0	+0.931	0	6 48 17.77	2.1379	+24 25 19.0	-4.984
1	5 4 50.13	2.2483	26 7 23.9	0.799	1	6 50 25.95	2.1348	24 20 16.6	5.096
2	5 7 4.99	2.2471	26 8 7.9	0.668	2	6 52 33.94	2.1315	24 15 7.5	5.207
3	5 9 19.78	2.2459	26 8 44.0	0.536	3	6 54 41.73	2.1283	24 9 51.8	5.317
4	5 11 34.50	2.2446	26 9 12.2	0.405	4	6 56 49.33	2.1249	24 4 29.5	5.426
5	5 13 49.13	2.2432	26 9 32.6	0.275	5	6 58 56.72	2.1216	23 59 0.7	5.535
6	5 16 3.68	2.2418	26 9 45.2	0.144	6	7 1 3.92	2.1183	23 53 25.3	5.643
7	5 18 18.14	2.2403	26 9 49.9	+0.013	7	7 3 10.92	2.1150	23 47 43.5	5.751
8	5 20 32.51	2.2387	26 9 46.8	-0.117	8	7 5 17.72	2.1117	23 41 55.2	5.858
9	5 22 46.78	2.2371	26 9 35.9	0.246	9	7 7 24.32	2.1083	23 36 0.5	5.964
10	5 25 0.96	2.2354	26 9 17.3	0.375	10	7 9 30.72	2.1049	23 29 59.5	6.070
11	5 27 15.03	2.2337	26 8 50.9	0.504	11	7 11 36.91	2.1015	23 23 52.1	6.176
12	5 29 29.00	2.2319	26 8 16.8	0.633	12	7 13 42.90	2.0981	23 17 38.4	6.280
13	5 31 42.86	2.2301	26 7 35.0	0.761	13	7 15 48.68	2.0947	23 11 18.5	6.383
14	5 33 56.61	2.2282	26 6 45.5	0.889	14	7 17 54.26	2.0913	23 4 52.4	6.487
15	5 36 10.24	2.2263	26 5 48.3	1.018	15	7 19 59.64	2.0879	22 58 20.1	6.590
16	5 38 23.76	2.2243	26 4 43.4	1.145	16	7 22 4.81	2.0845	22 51 41.6	6.693
17	5 40 37.16	2.2223	26 3 30.9	1.272	17	7 24 9.78	2.0811	22 44 57.0	6.793
18	5 42 50.43	2.2202	26 2 10.8	1.398	18	7 26 14.54	2.0777	22 38 6.4	6.893
19	5 45 3.58	2.2181	26 0 43.1	1.524	19	7 28 19.10	2.0743	22 31 9.8	6.993
20	5 47 16.60	2.2158	25 59 7.9	1.650	20	7 30 23.45	2.0708	22 24 7.2	7.093
21	5 49 29.48	2.2135	25 57 25.1	1.776	21	7 32 27.59	2.0673	22 16 58.6	7.193
22	5 51 42.22	2.2113	25 55 34.8	1.901	22	7 34 31.53	2.0639	22 9 44.1	7.291
23	5 53 54.83	2.2090	25 53 37.0	2.026	23	7 36 35.26	2.0605	22 2 23.7	7.388
24	5 56 7.30	2.2066	+25 51 31.7	-2.150	24	7 38 38.79	2.0571	+21 54 57.6	-7.485

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
SEPTEMBER 21.					SEPTEMBER 23.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	7 38 38.79	2.0671	+21 54 57.6	-7.483	0	9 13 45.32	1.9159	+14 17 9.3	-11.326
1	7 40 42.11	2.0637	21 47 25.7	7.580	1	9 15 40.21	1.9138	14 5 47.9	11.388
2	7 42 45.23	2.0603	21 39 48.0	7.676	2	9 17 34.97	1.9116	13 54 22.7	11.451
3	7 44 48.15	2.0469	21 32 4.6	7.771	3	9 19 29.60	1.9096	13 42 53.8	11.513
4	7 46 50.86	2.0435	21 24 15.5	7.865	4	9 21 24.11	1.9075	13 31 21.2	11.575
5	7 48 53.37	2.0402	21 16 20.8	7.958	5	9 23 18.50	1.9056	13 19 45.0	11.633
6	7 50 55.68	2.0368	21 8 20.5	8.051	6	9 25 12.78	1.9037	13 8 5.2	11.698
7	7 52 57.79	2.0334	21 0 14.7	8.143	7	9 27 6.94	1.9018	12 56 21.9	11.751
8	7 54 59.69	2.0300	20 52 3.4	8.234	8	9 29 0.99	1.8999	12 44 35.1	11.809
9	7 57 1.39	2.0268	20 43 46.6	8.325	9	9 30 54.93	1.8981	12 32 44.8	11.867
10	7 59 2.90	2.0234	20 35 24.4	8.415	10	9 32 48.76	1.8963	12 20 51.1	11.923
11	8 1 4.20	2.0201	20 26 56.8	8.504	11	9 34 42.49	1.8947	12 8 54.1	11.978
12	8 3 5.31	2.0168	20 18 23.9	8.593	12	9 36 36.12	1.8930	11 56 53.7	12.033
13	8 5 6.22	2.0135	20 9 45.7	8.681	13	9 38 29.65	1.8914	11 44 50.1	12.088
14	8 7 6.93	2.0103	20 1 2.2	8.768	14	9 40 23.09	1.8899	11 32 43.2	12.143
15	8 9 7.45	2.0071	19 52 13.5	8.855	15	9 42 16.44	1.8884	11 20 33.1	12.198
16	8 11 7.78	2.0038	19 43 19.6	8.942	16	9 44 9.70	1.8870	11 8 19.8	12.247
17	8 13 7.91	2.0006	19 34 20.5	9.027	17	9 46 2.88	1.8856	10 56 3.5	12.298
18	8 15 7.85	1.9974	19 25 16.4	9.111	18	9 47 55.97	1.8842	10 43 44.1	12.348
19	8 17 7.60	1.9943	19 16 7.2	9.195	19	9 49 48.98	1.8828	10 31 21.7	12.398
20	8 19 7.17	1.9913	19 6 53.0	9.278	20	9 51 41.91	1.8817	10 18 56.3	12.446
21	8 21 6.55	1.9881	18 57 33.9	9.360	21	9 53 34.78	1.8805	10 6 28.0	12.494
22	8 23 5.74	1.9850	18 48 9.8	9.443	22	9 55 27.57	1.8793	9 53 56.8	12.543
23	8 25 4.75	1.9819	+18 38 40.8	-9.523	23	9 57 20.29	1.8782	+ 9 41 22.8	-12.590
SEPTEMBER 22.					SEPTEMBER 24.				
0	8 27 3.57	1.9788	+18 29 7.0	-9.603	0	9 59 12.95	1.8772	+ 9 28 46.0	-12.636
1	8 29 2.21	1.9759	18 19 28.4	9.683	1	10 1 5.55	1.8762	9 16 6.5	12.682
2	8 31 0.68	1.9729	18 9 45.0	9.763	2	10 2 58.09	1.8753	9 3 24.2	12.727
3	8 32 58.96	1.9699	17 59 56.9	9.841	3	10 4 50.58	1.8744	8 50 39.3	12.771
4	8 34 57.07	1.9671	17 50 4.1	9.919	4	10 6 43.02	1.8736	8 37 51.7	12.814
5	8 36 55.01	1.9642	17 40 6.6	9.996	5	10 8 35.41	1.8728	8 25 1.6	12.856
6	8 38 52.77	1.9613	17 30 4.6	10.072	6	10 10 27.76	1.8721	8 12 9.0	12.898
7	8 40 50.36	1.9585	17 19 58.0	10.148	7	10 12 20.06	1.8714	7 59 13.9	12.938
8	8 42 47.79	1.9558	17 9 46.9	10.223	8	10 14 12.33	1.8709	7 46 16.4	12.978
9	8 44 45.05	1.9529	16 59 31.3	10.297	9	10 16 4.57	1.8703	7 33 16.5	13.018
10	8 46 42.14	1.9502	16 49 11.3	10.370	10	10 17 56.77	1.8698	7 20 14.2	13.057
11	8 48 39.07	1.9474	16 38 46.9	10.443	11	10 19 48.94	1.8693	7 7 9.7	13.094
12	8 50 35.83	1.9448	16 28 18.1	10.516	12	10 21 41.09	1.8689	6 54 2.9	13.132
13	8 52 32.44	1.9422	16 17 45.0	10.587	13	10 23 33.22	1.8687	6 40 53.9	13.168
14	8 54 28.89	1.9396	16 7 7.7	10.657	14	10 25 25.33	1.8684	6 27 42.8	13.203
15	8 56 25.19	1.9371	15 56 26.2	10.727	15	10 27 17.43	1.8683	6 14 29.6	13.238
16	8 58 21.34	1.9346	15 45 40.5	10.797	16	10 29 9.52	1.8681	6 1 14.3	13.271
17	9 0 17.34	1.9321	15 34 50.6	10.865	17	10 31 1.60	1.8680	5 47 57.1	13.303
18	9 2 13.19	1.9296	15 23 56.7	10.933	18	10 32 53.68	1.8679	5 34 37.9	13.336
19	9 4 8.89	1.9272	15 12 58.7	11.000	19	10 34 45.75	1.8679	5 21 16.8	13.368
20	9 6 4.45	1.9248	15 1 56.7	11.067	20	10 36 37.83	1.8681	5 7 53.8	13.398
21	9 7 59.87	1.9225	14 50 50.7	11.133	21	10 38 29.92	1.8683	4 54 29.0	13.428
22	9 9 55.15	1.9203	14 39 40.8	11.198	22	10 40 22.02	1.8685	4 41 2.4	13.458
23	9 11 50.30	1.9181	14 28 27.0	11.263	23	10 42 14.14	1.8688	4 27 34.1	13.485
24	9 13 45.32	1.9159	+14 17 9.3	-11.326	24	10 44 6.27	1.8690	+ 4 14 4.2	-13.512

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
SEPTEMBER 25.					SEPTEMBER 27.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	10 44 6.27	1.8690	+4 14 4.2	-13.512	0	12 15 22.54	1.9683	-6 48 59.5	-13.747
1	10 45 58.42	1.8694	4 0 32.7	13.538	1	12 17 20.14	1.9618	7 2 43.7	13.726
2	10 47 50.60	1.8698	3 46 59.6	13.564	2	12 19 17.95	1.9653	7 16 26.6	13.704
3	10 49 42.80	1.8703	3 33 25.0	13.589	3	12 21 15.97	1.9688	7 30 8.2	13.683
4	10 51 35.04	1.8709	3 19 48.9	13.613	4	12 23 14.21	1.9724	7 43 48.5	13.660
5	10 53 27.31	1.8716	3 6 11.5	13.635	5	12 25 12.66	1.9761	7 57 27.4	13.635
6	10 55 19.63	1.8723	2 52 32.7	13.658	6	12 27 11.34	1.9798	8 11 4.7	13.609
7	10 57 11.99	1.8730	2 38 52.5	13.680	7	12 29 10.24	1.9836	8 24 40.5	13.583
8	10 59 4.39	1.8738	2 25 11.1	13.700	8	12 31 9.37	1.9875	8 38 14.6	13.554
9	11 0 56.84	1.8747	2 11 28.5	13.719	9	12 33 8.74	1.9914	8 51 47.0	13.525
10	11 2 49.35	1.8757	1 57 44.8	13.738	10	12 35 8.34	1.9953	9 5 17.6	13.495
11	11 4 41.92	1.8767	1 44 0.0	13.756	11	12 37 8.18	1.9994	9 18 46.4	13.464
12	11 6 34.55	1.8778	1 30 14.1	13.773	12	12 39 8.27	2.0035	9 32 13.3	13.431
13	11 8 27.25	1.8788	1 16 27.2	13.789	13	12 41 8.60	2.0077	9 45 38.1	13.397
14	11 10 20.01	1.8800	1 2 39.4	13.804	14	12 43 9.19	2.0119	9 59 0.9	13.362
15	11 12 12.85	1.8813	0 48 50.7	13.818	15	12 45 10.03	2.0162	10 12 21.5	13.325
16	11 14 5.77	1.8826	0 35 1.2	13.832	16	12 47 11.13	2.0206	10 25 39.9	13.288
17	11 15 58.76	1.8839	0 21 10.9	13.844	17	12 49 12.50	2.0250	10 38 56.0	13.249
18	11 17 51.84	1.8854	+0 7 19.9	13.857	18	12 51 14.13	2.0293	10 52 9.8	13.209
19	11 19 45.01	1.8869	-0 6 31.9	13.868	19	12 53 16.02	2.0338	11 5 21.1	13.168
20	11 21 38.27	1.8885	0 20 24.2	13.876	20	12 55 18.19	2.0384	11 18 29.9	13.125
21	11 23 31.63	1.8902	0 34 17.0	13.885	21	12 57 20.63	2.0431	11 31 36.1	13.082
22	11 25 25.09	1.8918	0 48 10.4	13.893	22	12 59 23.36	2.0478	11 44 39.7	13.037
23	11 27 18.65	1.8935	-1 2 4.2	-13.899	23	13 1 26.37	2.0525	-11 57 40.5	-12.990
SEPTEMBER 26.					SEPTEMBER 28.				
0	11 29 12.31	1.8953	-1 15 58.3	-13.905	0	13 3 29.66	2.0573	-12 10 38.5	-12.943
1	11 31 6.09	1.8973	1 29 52.8	13.911	1	13 5 33.24	2.0622	12 23 33.6	12.903
2	11 32 59.98	1.8992	1 43 47.6	13.915	2	13 7 37.12	2.0671	12 36 25.7	12.843
3	11 34 53.99	1.9013	1 57 42.6	13.918	3	13 9 41.29	2.0720	12 49 14.7	12.791
4	11 36 48.13	1.9033	2 11 37.7	13.919	4	13 11 45.76	2.0770	13 2 0.6	12.738
5	11 38 42.39	1.9054	2 25 32.9	13.921	5	13 13 50.53	2.0820	13 14 43.3	12.684
6	11 40 36.78	1.9077	2 39 28.2	13.922	6	13 15 55.60	2.0872	13 27 22.7	12.629
7	11 42 31.31	1.9099	2 53 23.5	13.921	7	13 18 0.99	2.0923	13 39 58.8	12.573
8	11 44 25.97	1.9123	3 7 18.7	13.918	8	13 20 6.68	2.0975	13 52 31.4	12.514
9	11 46 20.78	1.9147	3 21 13.7	13.915	9	13 22 12.69	2.1028	14 5 0.5	12.455
10	11 48 15.73	1.9171	3 35 8.5	13.912	10	13 24 19.01	2.1080	14 17 26.0	12.394
11	11 50 10.83	1.9197	3 49 3.1	13.907	11	13 26 25.65	2.1134	14 29 47.8	12.332
12	11 52 6.09	1.9223	4 2 57.3	13.900	12	13 28 32.62	2.1188	14 42 5.8	12.268
13	11 54 1.51	1.9249	4 16 51.1	13.893	13	13 30 39.91	2.1242	14 54 20.0	12.203
14	11 55 57.08	1.9276	4 30 44.5	13.886	14	13 32 47.52	2.1297	15 6 30.2	12.137
15	11 57 52.82	1.9304	4 44 37.4	13.877	15	13 34 55.47	2.1353	15 18 36.4	12.069
16	11 59 48.73	1.9333	4 58 29.7	13.867	16	13 37 3.75	2.1406	15 30 38.5	12.000
17	12 1 44.81	1.9362	5 12 21.4	13.855	17	13 39 12.36	2.1463	15 42 36.4	11.930
18	12 3 41.07	1.9392	5 26 12.3	13.843	18	13 41 21.31	2.1520	15 54 30.1	11.858
19	12 5 37.51	1.9422	5 40 2.5	13.829	19	13 43 30.60	2.1577	16 6 19.4	11.784
20	12 7 34.13	1.9453	5 53 51.8	13.814	20	13 45 40.23	2.1633	16 18 4.2	11.710
21	12 9 30.94	1.9484	6 7 40.2	13.799	21	13 47 50.20	2.1691	16 29 14.6	11.635
22	12 11 27.94	1.9517	6 21 27.7	13.783	22	13 50 0.52	2.1749	16 41 20.4	11.558
23	12 13 25.14	1.9550	6 35 14.1	13.765	23	13 52 11.19	2.1808	16 52 51.5	11.478
24	12 15 22.54	1.9583	-6 48 59.5	-13.747	24	13 54 22.21	2.1866	-17 4 17.8	-11.398

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
SEPTEMBER 29.					OCTOBER 1.				
	h m s	s	' "	"		h m s	s	' "	"
0	13 54 22.21	2.1866	-17 4 17.8	-11.398	0	15 46 13.30	2.4677	-24 12 1.0	-5.803
1	13 56 33.58	2.1924	17 15 39.3	11.317	1	15 48 41.51	2.4726	24 17 50.2	5.757
2	13 58 45.30	2.1983	17 26 55.8	11.233	2	15 51 10.01	2.4775	24 23 30.6	5.598
3	14 0 57.37	2.2042	17 38 7.3	11.148	3	15 53 38.81	2.4824	24 29 2.0	5.469
4	14 3 9.80	2.2102	17 49 13.6	11.063	4	15 56 7.90	2.4872	24 34 24.5	5.289
5	14 5 22.59	2.2162	18 0 14.8	10.976	5	15 58 37.27	2.4918	24 39 37.9	5.166
6	14 7 35.74	2.2222	18 11 10.7	10.887	6	16 1 6.91	2.4963	24 44 42.2	4.996
7	14 9 49.25	2.2282	18 22 1.2	10.797	7	16 3 36.83	2.5008	24 49 37.3	4.843
8	14 12 3.12	2.2342	18 32 46.3	10.705	8	16 6 7.01	2.5052	24 54 23.2	4.667
9	14 14 17.35	2.2402	18 43 25.8	10.612	9	16 8 37.45	2.5095	24 58 59.7	4.511
10	14 16 31.94	2.2463	18 53 59.7	10.518	10	16 11 8.15	2.5138	25 3 26.9	4.378
11	14 18 46.90	2.2524	19 4 27.9	10.422	11	16 13 39.10	2.5179	25 7 44.7	4.218
12	14 21 2.23	2.2585	19 14 50.3	10.324	12	16 16 10.30	2.5219	25 11 53.1	4.060
13	14 23 17.92	2.2646	19 25 6.8	10.226	13	16 18 41.73	2.5258	25 15 51.9	3.901
14	14 25 33.98	2.2707	19 35 17.4	10.128	14	16 21 13.40	2.5297	25 19 41.2	3.741
15	14 27 50.40	2.2768	19 45 21.9	10.023	15	16 23 45.29	2.5333	25 23 20.8	3.579
16	14 30 7.19	2.2829	19 55 20.2	9.920	16	16 26 17.40	2.5370	25 26 50.7	3.418
17	14 32 24.35	2.2891	20 5 12.3	9.816	17	16 28 49.73	2.5405	25 30 10.9	3.264
18	14 34 41.88	2.2952	20 14 58.1	9.710	18	16 31 22.26	2.5438	25 33 21.4	3.099
19	14 36 59.77	2.3013	20 24 37.5	9.603	19	16 33 54.99	2.5472	25 36 22.0	2.938
20	14 39 18.03	2.3074	20 34 10.4	9.493	20	16 36 27.92	2.5503	25 39 12.7	2.783
21	14 41 36.66	2.3135	20 43 36.7	9.383	21	16 39 1.03	2.5533	25 41 53.6	2.598
22	14 43 55.65	2.3196	20 52 56.4	9.273	22	16 41 34.32	2.5563	25 44 24.5	2.433
23	14 46 15.01	2.3257	-21 2 9.4	-9.159	23	16 44 7.79	2.5592	-25 46 45.4	-2.266
SEPTEMBER 30.					OCTOBER 2.				
	h m s	s	' "	"		h m s	s	' "	"
0	14 48 34.73	2.3318	-21 11 15.5	-9.044	0	16 46 41.42	2.5618	-25 48 56.3	-2.096
1	14 50 54.82	2.3378	21 20 14.7	8.928	1	16 49 15.21	2.5644	25 50 57.2	1.930
2	14 53 15.27	2.3438	21 29 6.9	8.811	2	16 51 49.15	2.5668	25 52 47.9	1.761
3	14 55 36.08	2.3498	21 37 52.0	8.693	3	16 54 23.23	2.5691	25 54 28.5	1.593
4	14 57 57.25	2.3558	21 46 30.0	8.573	4	16 56 57.44	2.5713	25 55 59.0	1.423
5	15 0 18.78	2.3618	21 55 0.7	8.451	5	16 59 31.78	2.5734	25 57 19.2	1.253
6	15 2 40.67	2.3678	22 3 24.1	8.328	6	17 2 6.25	2.5754	25 58 29.3	1.083
7	15 5 2.92	2.3738	22 11 40.1	8.204	7	17 4 40.83	2.5772	25 59 29.1	0.913
8	15 7 25.52	2.3796	22 19 48.6	8.078	8	17 7 15.51	2.5788	26 0 18.7	0.741
9	15 9 48.47	2.3855	22 27 49.5	7.952	9	17 9 50.29	2.5804	26 0 58.0	0.569
10	15 12 11.78	2.3913	22 35 42.8	7.823	10	17 12 25.16	2.5819	26 1 27.0	0.397
11	15 14 35.43	2.3971	22 43 28.3	7.693	11	17 15 0.12	2.5833	26 1 45.6	0.224
12	15 16 59.43	2.4028	22 51 6.0	7.563	12	17 17 35.15	2.5843	26 1 53.9	-0.053
13	15 19 23.77	2.4085	22 58 35.8	7.430	13	17 20 10.24	2.5853	26 1 51.9	+0.120
14	15 21 48.45	2.4142	23 5 57.6	7.297	14	17 22 45.39	2.5863	26 1 39.5	0.293
15	15 24 13.47	2.4198	23 13 11.4	7.163	15	17 25 20.59	2.5871	26 1 16.7	0.466
16	15 26 38.82	2.4253	23 20 17.1	7.027	16	17 27 55.84	2.5878	26 0 43.6	0.638
17	15 29 4.51	2.4308	23 27 14.6	6.889	17	17 30 31.12	2.5882	26 0 0.1	0.812
18	15 31 30.52	2.4363	23 34 3.8	6.750	18	17 33 6.42	2.5885	25 59 6.2	0.986
19	15 33 56.86	2.4417	23 40 44.6	6.610	19	17 35 41.74	2.5888	25 58 1.8	1.159
20	15 36 23.52	2.4470	23 47 17.0	6.469	20	17 38 17.08	2.5890	25 56 47.1	1.332
21	15 38 50.50	2.4523	23 53 40.9	6.328	21	17 40 52.42	2.5899	25 55 22.0	1.505
22	15 41 17.79	2.4574	23 59 56.3	6.184	22	17 43 27.75	2.5898	25 53 46.5	1.678
23	15 43 45.39	2.4626	24 6 3.0	6.039	23	17 46 3.07	2.5895	25 52 0.6	1.851
24	15 46 13.30	2.4677	-24 12 1.0	-5.803	24	17 48 38.37	2.5891	-25 50 4.4	+2.023

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
OCTOBER 3.					OCTOBER 5.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	17 48 38.37	2.5881	-25 50 4.4	+2.023	0	19 50 15.47	2.4454	-21 3 23.1	+9.600
1	17 51 13.64	2.5875	25 47 57.8	2.197	1	19 52 42.06	2.4408	20 53 43.1	9.733
2	17 53 48.87	2.5868	25 45 40.8	2.369	2	19 55 8.36	2.4360	20 43 55.1	9.865
3	17 56 24.06	2.5861	25 43 13.5	2.542	3	19 57 34.38	2.4313	20 33 59.3	9.995
4	17 58 59.20	2.5852	25 40 35.8	2.714	4	20 0 0.12	2.4267	20 23 55.7	10.124
5	18 1 34.28	2.5841	25 37 47.8	2.885	5	20 2 25.58	2.4219	20 13 44.4	10.252
6	18 4 9.29	2.5829	25 34 49.6	3.057	6	20 4 50.75	2.4171	20 3 25.5	10.378
7	18 6 44.23	2.5817	25 31 41.0	3.228	7	20 7 15.63	2.4123	19 52 59.1	10.503
8	18 9 19.09	2.5803	25 28 22.2	3.398	8	20 9 40.23	2.4076	19 42 25.2	10.626
9	18 11 53.86	2.5788	25 24 53.2	3.568	9	20 12 4.54	2.4027	19 31 44.0	10.748
10	18 14 28.54	2.5771	25 21 14.0	3.738	10	20 14 28.55	2.3978	19 20 55.5	10.868
11	18 17 3.11	2.5753	25 17 24.6	3.908	11	20 16 52.27	2.3930	19 9 59.9	10.987
12	18 19 37.57	2.5733	25 13 25.0	4.078	12	20 19 15.71	2.3883	18 58 57.1	11.105
13	18 22 11.91	2.5713	25 9 15.3	4.246	13	20 21 38.86	2.3834	18 47 47.3	11.221
14	18 24 46.13	2.5693	25 4 55.5	4.413	14	20 24 1.72	2.3786	18 36 30.6	11.335
15	18 27 20.22	2.5670	25 0 25.7	4.580	15	20 26 24.29	2.3737	18 25 7.1	11.448
16	18 29 54.17	2.5647	24 55 45.9	4.747	16	20 28 46.56	2.3688	18 13 36.8	11.560
17	18 32 27.98	2.5623	24 50 56.1	4.913	17	20 31 8.55	2.3641	18 1 59.9	11.670
18	18 35 1.64	2.5597	24 45 56.3	5.078	18	20 33 30.25	2.3593	17 50 16.4	11.779
19	18 37 35.14	2.5570	24 40 46.7	5.243	19	20 35 51.66	2.3544	17 38 26.4	11.887
20	18 40 8.48	2.5543	24 35 27.2	5.407	20	20 38 12.78	2.3497	17 26 30.0	11.993
21	18 42 41.66	2.5515	24 29 57.9	5.569	21	20 40 33.62	2.3449	17 14 27.3	12.097
22	18 45 14.66	2.5485	24 24 18.9	5.732	22	20 42 54.17	2.3401	17 2 18.4	12.199
23	18 47 47.48	2.5454	-24 18 30.1	+5.893	23	20 45 14.43	2.3353	-16 50 3.4	+12.300
OCTOBER 4.					OCTOBER 6.				
0	18 50 20.11	2.5423	-24 12 31.7	+6.053	0	20 47 34.41	2.3307	-16 37 42.4	+12.399
1	18 52 52.55	2.5391	24 6 23.7	6.213	1	20 49 54.11	2.3260	16 25 15.5	12.498
2	18 55 24.80	2.5358	24 0 6.1	6.373	2	20 52 13.53	2.3213	16 12 42.7	12.595
3	18 57 56.84	2.5323	23 53 39.0	6.531	3	20 54 32.66	2.3166	16 0 4.1	12.690
4	19 0 28.68	2.5288	23 47 2.4	6.688	4	20 56 51.52	2.3120	15 47 19.9	12.783
5	19 3 0.30	2.5253	23 40 16.4	6.844	5	20 59 10.10	2.3074	15 34 30.1	12.876
6	19 5 31.71	2.5217	23 33 21.1	6.999	6	21 1 28.41	2.3029	15 21 34.8	12.966
7	19 8 2.90	2.5179	23 26 16.5	7.153	7	21 3 46.45	2.2984	15 8 34.2	13.054
8	19 10 33.86	2.5141	23 19 2.8	7.305	8	21 6 4.22	2.2938	14 55 28.3	13.142
9	19 13 4.59	2.5103	23 11 39.9	7.458	9	21 8 21.71	2.2893	14 42 17.2	13.228
10	19 15 35.09	2.5063	23 4 7.9	7.609	10	21 10 38.94	2.2850	14 29 0.9	13.313
11	19 18 5.35	2.5023	22 56 26.8	7.759	11	21 12 55.91	2.2806	14 15 39.7	13.395
12	19 20 35.36	2.4982	22 48 36.8	7.908	12	21 15 12.61	2.2762	14 2 13.5	13.477
13	19 23 5.13	2.4941	22 40 37.9	8.055	13	21 17 29.05	2.2719	13 48 42.5	13.556
14	19 25 34.65	2.4899	22 32 30.2	8.202	14	21 19 45.24	2.2677	13 35 6.8	13.633
15	19 28 3.92	2.4857	22 24 13.7	8.348	15	21 22 1.17	2.2634	13 21 26.5	13.709
16	19 30 32.93	2.4814	22 15 48.5	8.492	16	21 24 16.85	2.2593	13 7 41.7	13.784
17	19 33 1.69	2.4771	22 7 14.7	8.635	17	21 26 32.28	2.2552	12 53 52.4	13.858
18	19 35 30.18	2.4728	21 58 32.3	8.777	18	21 28 47.47	2.2511	12 39 58.7	13.930
19	19 37 58.40	2.4682	21 49 41.5	8.917	19	21 31 2.41	2.2470	12 26 0.8	13.999
20	19 40 26.36	2.4638	21 40 42.3	9.056	20	21 33 17.11	2.2430	12 11 58.8	14.068
21	19 42 54.05	2.4593	21 31 34.8	9.194	21	21 35 31.57	2.2391	11 57 52.7	14.135
22	19 45 21.47	2.4547	21 22 19.0	9.331	22	21 37 45.80	2.2353	11 43 42.6	14.201
23	19 47 48.61	2.4500	21 12 55.1	9.466	23	21 39 59.80	2.2313	11 29 28.6	14.265
24	19 50 15.47	2.4454	-21 3 23.1	+9.600	24	21 42 13.56	2.2275	-11 15 10.8	+14.328

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
OCTOBER 7.					OCTOBER 9.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 42 13.56	2.2275	-11 15 10.8	+14.328	0	23 25 56.73	2.1191	+ 0 54 29.2	+15.06
1	21 44 27.10	2.2238	11 0 49.3	14.388	1	23 28 3.85	2.1184	1 9 57.9	15.57
2	21 46 40.42	2.2202	10 46 24.3	14.446	2	23 30 10.94	2.1179	1 25 25.8	15.88
3	21 48 53.52	2.2166	10 31 55.8	14.503	3	23 32 18.00	2.1174	1 40 52.8	15.68
4	21 51 6.41	2.2130	10 17 23.9	14.559	4	23 34 25.03	2.1169	1 56 18.8	15.60
5	21 53 19.08	2.2094	10 2 48.7	14.614	5	23 36 32.03	2.1165	2 11 43.7	15.60
6	21 55 31.54	2.2060	9 48 10.2	14.668	6	23 38 39.01	2.1162	2 27 7.5	15.38
7	21 57 43.80	2.2027	9 33 28.6	14.718	7	23 40 45.97	2.1159	2 42 30.0	15.36
8	21 59 55.86	2.1993	9 18 44.0	14.768	8	23 42 52.92	2.1158	2 57 51.1	15.26
9	22 2 7.72	2.1960	9 3 56.5	14.816	9	23 44 59.86	2.1156	3 13 10.8	15.31
10	22 4 19.38	2.1928	8 49 6.1	14.863	10	23 47 6.79	2.1155	3 28 28.9	15.36
11	22 6 30.85	2.1897	8 34 13.0	14.907	11	23 49 13.72	2.1156	3 43 45.5	15.28
12	22 8 42.14	2.1867	8 19 17.3	14.950	12	23 51 20.66	2.1157	3 59 0.4	15.23
13	22 10 53.25	2.1836	8 4 19.0	14.993	13	23 53 27.60	2.1157	4 14 13.5	15.20
14	22 13 4.17	2.1806	7 49 18.2	15.033	14	23 55 34.54	2.1158	4 29 24.7	15.17
15	22 15 14.92	2.1777	7 34 15.1	15.071	15	23 57 41.50	2.1162	4 44 34.0	15.12
16	22 17 25.49	2.1748	7 19 9.7	15.108	16	23 59 48.48	2.1164	4 59 41.3	15.10
17	22 19 35.90	2.1721	7 4 2.1	15.143	17	0 1 55.47	2.1168	5 14 46.4	15.08
18	22 21 46.14	2.1694	6 48 52.5	15.178	18	0 4 2.49	2.1173	5 29 49.4	15.03
19	22 23 56.23	2.1668	6 33 40.8	15.211	19	0 6 9.54	2.1177	5 44 50.1	14.99
20	22 26 6.15	2.1641	6 18 27.2	15.241	20	0 8 16.61	2.1182	5 59 48.4	14.95
21	22 28 15.92	2.1617	6 3 11.9	15.270	21	0 10 23.72	2.1188	6 14 44.3	14.90
22	22 30 25.55	2.1593	5 47 54.8	15.298	22	0 12 30.86	2.1193	6 29 37.6	14.86
23	22 32 35.03	2.1568	- 5 32 36.1	+15.324	23	0 14 38.04	2.1201	+ 6 44 28.3	+14.83
OCTOBER 8.					OCTOBER 10.				
0	22 34 44.37	2.1545	- 5 17 15.9	+15.348	0	0 16 45.27	2.1208	+ 6 59 16.4	+14.78
1	22 36 53.57	2.1523	5 1 54.3	15.372	1	0 18 52.54	2.1216	7 14 1.7	14.73
2	22 39 2.64	2.1501	4 46 31.3	15.393	2	0 20 59.86	2.1225	7 28 44.1	14.68
3	22 41 11.58	2.1480	4 31 7.1	15.413	3	0 23 7.24	2.1234	7 43 23.6	14.63
4	22 43 20.40	2.1460	4 15 41.7	15.433	4	0 25 14.67	2.1243	7 58 0.0	14.58
5	22 45 29.10	2.1440	4 0 15.2	15.450	5	0 27 22.16	2.1253	8 12 33.4	14.53
6	22 47 37.68	2.1420	3 44 47.7	15.465	6	0 29 29.71	2.1264	8 27 3.6	14.47
7	22 49 46.14	2.1402	3 29 19.4	15.478	7	0 31 37.33	2.1275	8 41 30.5	14.42
8	22 51 54.50	2.1384	3 13 50.3	15.491	8	0 33 45.01	2.1286	8 55 54.1	14.36
9	22 54 2.75	2.1367	2 58 20.5	15.503	9	0 35 52.76	2.1298	9 10 14.3	14.30
10	22 56 10.90	2.1351	2 42 50.0	15.512	10	0 38 0.59	2.1312	9 24 31.0	14.24
11	22 58 18.96	2.1335	2 27 19.1	15.519	11	0 40 8.50	2.1324	9 38 44.1	14.18
12	23 0 26.92	2.1320	2 11 47.7	15.526	12	0 42 16.48	2.1337	9 52 53.6	14.12
13	23 2 34.80	2.1306	1 56 16.0	15.530	13	0 44 24.54	2.1351	10 6 59.4	14.06
14	23 4 42.59	2.1292	1 40 44.1	15.533	14	0 46 32.69	2.1366	10 21 1.3	13.99
15	23 6 50.30	2.1278	1 25 12.0	15.536	15	0 48 40.93	2.1380	10 34 59.3	13.93
16	23 8 57.93	2.1266	1 9 39.8	15.537	16	0 50 49.25	2.1394	10 48 53.4	13.86
17	23 11 5.49	2.1254	0 54 7.6	15.535	17	0 52 57.66	2.1410	11 2 43.5	13.80
18	23 13 12.98	2.1243	0 38 35.6	15.532	18	0 55 6.17	2.1427	11 16 29.5	13.73
19	23 15 20.41	2.1233	0 23 3.8	15.528	19	0 57 14.78	2.1443	11 30 11.3	13.66
20	23 17 27.78	2.1223	- 0 7 32.3	15.523	20	0 59 23.49	2.1459	11 43 48.8	13.59
21	23 19 35.09	2.1214	+ 0 7 58.9	15.516	21	1 1 32.29	2.1476	11 57 22.0	13.51
22	23 21 42.35	2.1206	0 23 29.6	15.507	22	1 3 41.20	2.1494	12 10 50.8	13.44
23	23 23 49.56	2.1198	0 38 59.7	15.497	23	1 5 50.22	2.1512	12 24 15.1	13.36
24	23 25 56.73	2.1191	+ 0 54 29.2	+15.485	24	1 7 59.34	2.1529	+12 37 34.9	+13.29

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
OCTOBER 11.					OCTOBER 13.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	1 7 59.34	2.1529	+12 37 34.9	+13.291	0	2 53 44.78	2.2543	+21 26 51.2	+8.394
1	1 10 8.57	2.1548	12 50 50.0	13.213	1	2 56 0.09	2.2561	21 35 11.2	8.271
2	1 12 17.91	2.1567	13 4 0.5	13.135	2	2 58 15.51	2.2579	21 43 23.7	8.147
3	1 14 27.37	2.1586	13 17 6.2	13.055	3	3 0 31.04	2.2597	21 51 28.8	8.023
4	1 16 36.94	2.1604	13 30 7.1	12.974	4	3 2 46.67	2.2614	21 59 26.4	7.898
5	1 18 46.62	2.1623	13 43 3.1	12.892	5	3 5 2.41	2.2632	22 7 16.5	7.773
6	1 20 56.42	2.1643	13 55 54.1	12.808	6	3 7 18.25	2.2648	22 14 59.1	7.646
7	1 23 6.34	2.1664	14 8 40.0	12.723	7	3 9 34.19	2.2665	22 22 34.0	7.519
8	1 25 16.39	2.1685	14 21 20.8	12.638	8	3 11 50.23	2.2681	22 30 1.4	7.393
9	1 27 26.56	2.1705	14 33 56.5	12.551	9	3 14 6.36	2.2697	22 37 21.1	7.265
10	1 29 36.85	2.1725	14 46 26.9	12.463	10	3 16 22.59	2.2713	22 44 33.2	7.137
11	1 31 47.26	2.1746	14 58 52.0	12.373	11	3 18 38.91	2.2727	22 51 37.5	7.008
12	1 33 57.80	2.1768	15 11 11.7	12.283	12	3 20 55.31	2.2741	22 58 34.1	6.879
13	1 36 8.47	2.1789	15 23 26.0	12.193	13	3 23 11.80	2.2755	23 5 23.0	6.749
14	1 38 19.27	2.1810	15 35 34.8	12.100	14	3 25 28.37	2.2768	23 12 4.0	6.618
15	1 40 30.19	2.1832	15 47 38.0	12.006	15	3 27 45.01	2.2780	23 18 37.2	6.488
16	1 42 41.25	2.1853	15 59 35.5	11.911	16	3 30 1.73	2.2793	23 25 2.5	6.357
17	1 44 52.43	2.1875	16 11 27.3	11.816	17	3 32 18.52	2.2804	23 31 20.0	6.226
18	1 47 3.75	2.1898	16 23 13.4	11.720	18	3 34 35.38	2.2816	23 37 29.6	6.094
19	1 49 15.20	2.1920	16 34 53.7	11.622	19	3 36 52.31	2.2827	23 43 31.3	5.962
20	1 51 26.79	2.1943	16 46 28.0	11.523	20	3 39 9.30	2.2836	23 49 25.0	5.828
21	1 53 38.51	2.1964	16 57 56.4	11.423	21	3 41 26.34	2.2845	23 55 10.7	5.696
22	1 55 50.36	2.1986	17 9 18.8	11.323	22	3 43 43.44	2.2855	24 0 48.5	5.563
23	1 58 2.34	2.2008	+17 20 35.2	+11.222	23	3 46 0.60	2.2863	+24 6 18.3	+5.429
OCTOBER 12.					OCTOBER 14.				
0	2 0 14.46	2.2032	+17 31 45.4	+11.118	0	3 48 17.80	2.2871	+24 11 40.0	+5.296
1	2 2 26.72	2.2054	17 42 49.4	11.015	1	3 50 35.05	2.2878	24 16 53.7	5.162
2	2 4 39.11	2.2076	17 53 47.2	10.911	2	3 52 52.34	2.2885	24 21 59.4	5.028
3	2 6 51.63	2.2098	18 4 38.7	10.805	3	3 55 9.67	2.2891	24 26 57.0	4.893
4	2 9 4.29	2.2121	18 15 23.8	10.698	4	3 57 27.03	2.2896	24 31 46.5	4.758
5	2 11 17.08	2.2143	18 26 2.5	10.592	5	3 59 44.42	2.2901	24 36 27.9	4.623
6	2 13 30.00	2.2165	18 36 34.8	10.483	6	4 2 1.84	2.2905	24 41 1.2	4.488
7	2 15 43.06	2.2188	18 47 0.5	10.374	7	4 4 19.28	2.2908	24 45 26.4	4.353
8	2 17 56.26	2.2210	18 57 19.7	10.264	8	4 6 36.74	2.2911	24 49 43.5	4.217
9	2 20 9.58	2.2232	19 7 32.2	10.153	9	4 8 54.21	2.2913	24 53 52.4	4.081
10	2 22 23.04	2.2254	19 17 38.1	10.042	10	4 11 11.70	2.2915	24 57 53.2	3.945
11	2 24 36.63	2.2276	19 27 37.2	9.928	11	4 13 29.19	2.2916	25 1 45.8	3.809
12	2 26 50.35	2.2298	19 37 29.5	9.815	12	4 15 46.69	2.2917	25 5 30.3	3.673
13	2 29 4.20	2.2319	19 47 15.0	9.701	13	4 18 4.19	2.2918	25 9 6.6	3.538
14	2 31 18.18	2.2341	19 56 53.6	9.586	14	4 20 21.68	2.2914	25 12 34.8	3.402
15	2 33 32.29	2.2362	20 6 25.3	9.470	15	4 22 39.16	2.2912	25 15 54.8	3.265
16	2 35 46.52	2.2383	20 15 50.0	9.353	16	4 24 56.62	2.2909	25 19 6.6	3.128
17	2 38 0.88	2.2403	20 25 7.7	9.236	17	4 27 14.07	2.2907	25 22 10.2	2.993
18	2 40 15.36	2.2423	20 34 18.3	9.118	18	4 29 31.50	2.2903	25 25 5.7	2.857
19	2 42 29.96	2.2444	20 43 21.8	8.998	19	4 31 48.90	2.2898	25 27 53.0	2.720
20	2 44 44.69	2.2464	20 52 18.1	8.879	20	4 34 6.27	2.2893	25 30 32.1	2.584
21	2 46 59.53	2.2484	21 1 7.3	8.759	21	4 36 23.61	2.2887	25 33 3.1	2.448
22	2 49 14.50	2.2504	21 9 49.2	8.638	22	4 38 40.91	2.2879	25 35 25.9	2.312
23	2 51 29.58	2.2523	21 18 23.9	8.517	23	4 40 58.16	2.2872	25 37 40.5	2.176
24	2 53 44.78	2.2543	+21 26 51.2	+ 8.394	24	4 43 15.37	2.2864	+25 39 47.0	+2.040

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
OCTOBER 15.					OCTOBER 17.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	4 43 15.37	2.2864	+25 39 47.0	+2.040	0	6 30 50.18	2.1747	+24 46 28.5	-4.006
1	4 45 32.53	2.2855	25 41 45.3	1.904	1	6 33 0.56	2.1712	24 42 19.1	4.274
2	4 47 49.63	2.2846	25 43 35.5	1.760	2	6 35 10.72	2.1676	24 38 2.8	4.520
3	4 50 6.68	2.2836	25 45 17.6	1.634	3	6 37 20.67	2.1641	24 33 39.6	4.443
4	4 52 23.66	2.2825	25 46 51.6	1.498	4	6 39 30.41	2.1605	24 29 9.6	4.555
5	4 54 40.58	2.2813	25 48 17.4	1.363	5	6 41 39.93	2.1568	24 24 32.8	4.570
6	4 56 57.42	2.2801	25 49 35.1	1.228	6	6 43 49.23	2.1533	24 19 49.2	4.731
7	4 59 14.19	2.2788	25 50 44.7	1.093	7	6 45 58.32	2.1497	24 14 58.9	4.894
8	5 1 30.88	2.2774	25 51 46.3	0.959	8	6 48 7.19	2.1460	24 10 1.9	5.000
9	5 3 47.48	2.2759	25 52 39.8	0.825	9	6 50 15.84	2.1423	24 4 58.3	5.115
10	5 6 3.99	2.2744	25 53 25.3	0.691	10	6 52 24.26	2.1385	23 59 48.1	5.225
11	5 8 20.41	2.2729	25 54 2.7	0.557	11	6 54 32.46	2.1348	23 54 31.3	5.334
12	5 10 36.74	2.2713	25 54 32.1	0.423	12	6 56 40.44	2.1311	23 49 8.0	5.443
13	5 12 52.97	2.2696	25 54 53.5	0.290	13	6 58 48.19	2.1273	23 43 38.2	5.553
14	5 15 9.09	2.2678	25 55 6.9	0.158	14	7 0 55.72	2.1236	23 38 2.0	5.657
15	5 17 25.10	2.2659	25 55 12.4	+0.025	15	7 3 3.02	2.1198	23 32 19.4	5.763
16	5 19 41.00	2.2641	25 55 9.9	-0.108	16	7 5 10.10	2.1161	23 26 30.5	5.868
17	5 21 56.79	2.2622	25 54 59.5	0.239	17	7 7 16.95	2.1123	23 20 35.3	5.973
18	5 24 12.46	2.2601	25 54 41.2	0.371	18	7 9 23.57	2.1084	23 14 33.7	6.078
19	5 26 28.00	2.2580	25 54 15.0	0.502	19	7 11 29.96	2.1047	23 8 25.9	6.183
20	5 28 43.42	2.2559	25 53 41.0	0.633	20	7 13 36.13	2.1008	23 2 12.0	6.283
21	5 30 58.71	2.2537	25 52 59.1	0.763	21	7 15 42.06	2.0970	22 55 51.9	6.388
22	5 33 13.86	2.2514	25 52 9.4	0.893	22	7 17 47.77	2.0933	22 49 25.7	6.488
23	5 35 28.88	2.2491	+25 51 11.9	-1.023	23	7 19 53.25	2.0893	+22 42 53.4	-6.588
OCTOBER 16.					OCTOBER 18.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	5 37 43.75	2.2467	+25 50 6.7	-1.152	0	7 21 58.49	2.0855	+22 36 15.1	-6.688
1	5 39 58.48	2.2443	25 48 53.7	1.281	1	7 24 3.51	2.0818	22 29 30.8	6.788
2	5 42 13.06	2.2418	25 47 33.0	1.408	2	7 26 8.30	2.0779	22 22 40.6	6.886
3	5 44 27.49	2.2392	25 46 4.7	1.536	3	7 28 12.86	2.0741	22 15 44.5	6.983
4	5 46 41.76	2.2366	25 44 28.7	1.664	4	7 30 17.19	2.0703	22 8 42.6	7.081
5	5 48 55.88	2.2339	25 42 45.0	1.791	5	7 32 21.29	2.0664	22 1 34.8	7.178
6	5 51 9.83	2.2312	25 40 53.8	1.917	6	7 34 25.16	2.0627	21 54 21.3	7.273
7	5 53 23.62	2.2284	25 38 55.0	2.043	7	7 36 28.81	2.0589	21 47 2.0	7.369
8	5 55 37.24	2.2256	25 36 48.7	2.168	8	7 38 32.23	2.0552	21 39 37.0	7.465
9	5 57 50.69	2.2228	25 34 34.8	2.293	9	7 40 35.43	2.0514	21 32 6.4	7.557
10	6 0 3.97	2.2198	25 32 13.5	2.418	10	7 42 38.40	2.0477	21 24 30.2	7.648
11	6 2 17.07	2.2168	25 29 44.7	2.542	11	7 44 41.15	2.0439	21 16 48.5	7.742
12	6 4 29.99	2.2138	25 27 8.5	2.665	12	7 46 43.67	2.0402	21 9 1.2	7.833
13	6 6 42.73	2.2108	25 24 24.9	2.788	13	7 48 45.97	2.0364	21 1 8.5	7.924
14	6 8 55.29	2.2078	25 21 34.0	2.909	14	7 50 48.04	2.0328	20 53 10.3	8.014
15	6 11 7.66	2.2046	25 18 35.8	3.031	15	7 52 49.90	2.0291	20 45 6.8	8.104
16	6 13 19.84	2.2014	25 15 30.3	3.152	16	7 54 51.53	2.0253	20 36 57.9	8.193
17	6 15 31.83	2.1982	25 12 17.6	3.273	17	7 56 52.94	2.0218	20 28 43.7	8.281
18	6 17 43.62	2.1949	25 8 57.6	3.393	18	7 58 54.14	2.0182	20 20 24.2	8.368
19	6 19 55.22	2.1917	25 5 30.5	3.512	19	8 0 55.12	2.0146	20 11 59.5	8.454
20	6 22 6.62	2.1883	25 1 56.2	3.631	20	8 2 55.89	2.0110	20 3 29.7	8.540
21	6 24 17.82	2.1849	24 58 14.8	3.748	21	8 4 56.44	2.0074	19 54 54.7	8.626
22	6 26 28.81	2.1815	24 54 26.4	3.866	22	8 6 56.78	2.0039	19 46 14.6	8.710
23	6 28 39.60	2.1781	24 50 30.9	3.983	23	8 8 56.91	2.0004	19 37 29.5	8.794
24	6 30 50.18	2.1747	+24 46 28.5	-4.098	24	8 10 56.83	1.9969	+19 28 39.3	-8.878

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
OCTOBER 19.					OCTOBER 21.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	8 10 56.83	1.9960	+19 28 39.3	-8.878	0	9 43 29.09	1.8760	+10 59 37.7	-12.076
1	8 12 56.54	1.9935	19 19 44.2	8.960	1	9 45 21.61	1.8747	10 47 31.6	12.127
2	8 14 56.05	1.9901	19 10 44.1	9.042	2	9 47 14.05	1.8734	10 35 22.5	12.176
3	8 16 55.35	1.9867	19 1 39.2	9.128	3	9 49 6.42	1.8722	10 23 10.5	12.225
4	8 18 54.45	1.9833	18 52 29.4	9.203	4	9 50 58.71	1.8710	10 10 55.5	12.274
5	8 20 53.35	1.9800	18 43 14.8	9.283	5	9 52 50.94	1.8700	9 58 37.6	12.322
6	8 22 52.05	1.9767	18 33 55.5	9.362	6	9 54 43.11	1.8690	9 46 16.9	12.368
7	8 24 50.55	1.9734	18 24 31.4	9.441	7	9 56 35.22	1.8680	9 33 53.4	12.415
8	8 26 48.86	1.9702	18 15 2.6	9.518	8	9 58 27.27	1.8671	9 21 27.1	12.461
9	8 28 46.97	1.9669	18 5 29.2	9.595	9	10 0 19.27	1.8663	9 8 58.1	12.506
10	8 30 44.89	1.9638	17 55 51.2	9.672	10	10 2 11.23	1.8656	8 56 26.4	12.551
11	8 32 42.62	1.9607	17 46 8.6	9.747	11	10 4 3.14	1.8648	8 43 52.0	12.594
12	8 34 40.17	1.9576	17 36 21.6	9.821	12	10 5 55.00	1.8641	8 31 15.1	12.637
13	8 36 37.53	1.9545	17 26 30.1	9.896	13	10 7 46.83	1.8635	8 18 35.6	12.679
14	8 38 34.71	1.9515	17 16 34.1	9.970	14	10 9 38.62	1.8629	8 5 53.6	12.721
15	8 40 31.71	1.9485	17 6 33.7	10.043	15	10 11 30.38	1.8625	7 53 9.1	12.762
16	8 42 28.53	1.9456	16 56 29.0	10.115	16	10 13 22.12	1.8621	7 40 22.2	12.802
17	8 44 25.18	1.9428	16 46 19.9	10.187	17	10 15 13.83	1.8617	7 27 32.9	12.842
18	8 46 21.66	1.9398	16 36 6.6	10.257	18	10 17 5.52	1.8614	7 14 41.2	12.881
19	8 48 17.96	1.9369	16 25 49.1	10.328	19	10 18 57.20	1.8613	7 1 47.2	12.918
20	8 50 14.09	1.9342	16 15 27.3	10.398	20	10 20 48.87	1.8611	6 48 51.0	12.956
21	8 52 10.06	1.9315	16 5 1.4	10.466	21	10 22 40.53	1.8609	6 35 52.5	12.993
22	8 54 5.87	1.9288	15 54 31.4	10.533	22	10 24 32.18	1.8608	6 22 51.8	13.029
23	8 56 1.52	1.9262	+15 43 57.4	-10.601	23	10 26 23.83	1.8609	+ 6 9 49.0	-13.064
OCTOBER 20.					OCTOBER 22.				
0	8 57 57.01	1.9236	+15 33 19.3	-10.668	0	10 28 15.49	1.8610	+ 5 56 44.1	-13.099
1	8 59 52.35	1.9210	15 22 37.2	10.734	1	10 30 7.15	1.8612	5 43 37.1	13.133
2	9 1 47.53	1.9184	15 11 51.2	10.800	2	10 31 58.83	1.8614	5 30 28.1	13.167
3	9 3 42.56	1.9160	15 1 1.2	10.865	3	10 33 50.52	1.8617	5 17 17.1	13.199
4	9 5 37.45	1.9137	14 50 7.4	10.929	4	10 35 42.23	1.8621	5 4 4.2	13.231
5	9 7 32.20	1.9113	14 39 9.7	10.993	5	10 37 33.97	1.8625	4 50 49.4	13.262
6	9 9 26.80	1.9089	14 28 8.2	11.056	6	10 39 25.73	1.8629	4 37 32.8	13.292
7	9 11 21.27	1.9067	14 17 3.0	11.118	7	10 41 17.52	1.8634	4 24 14.4	13.322
8	9 13 15.60	1.9044	14 5 54.0	11.180	8	10 43 9.34	1.8641	4 10 54.2	13.351
9	9 15 9.80	1.9023	13 54 41.4	11.240	9	10 45 1.21	1.8648	3 57 32.3	13.378
10	9 17 3.87	1.9002	13 43 25.2	11.301	10	10 46 53.12	1.8655	3 44 8.8	13.406
11	9 18 57.82	1.8981	13 32 5.3	11.361	11	10 48 45.07	1.8663	3 30 43.7	13.432
12	9 20 51.64	1.8960	13 20 41.9	11.419	12	10 50 37.07	1.8672	3 17 17.0	13.458
13	9 22 45.34	1.8941	13 9 15.0	11.478	13	10 52 29.13	1.8682	3 3 48.8	13.483
14	9 24 38.93	1.8923	12 57 44.6	11.536	14	10 54 21.25	1.8692	2 50 19.1	13.507
15	9 26 32.41	1.8908	12 46 10.7	11.593	15	10 56 13.43	1.8702	2 36 48.0	13.530
16	9 28 25.77	1.8884	12 34 33.4	11.649	16	10 58 5.67	1.8713	2 23 15.5	13.553
17	9 30 19.02	1.8867	12 22 52.8	11.704	17	10 59 57.99	1.8726	2 9 41.7	13.574
18	9 32 12.17	1.8851	12 11 8.9	11.759	18	11 1 50.38	1.8738	1 56 6.6	13.596
19	9 34 5.23	1.8834	11 59 21.7	11.813	19	11 3 42.85	1.8753	1 42 30.2	13.616
20	9 35 58.18	1.8818	11 47 31.3	11.868	20	11 5 35.41	1.8767	1 28 52.7	13.634
21	9 37 51.04	1.8803	11 35 37.6	11.922	21	11 7 28.05	1.8782	1 15 14.1	13.653
22	9 39 43.81	1.8788	11 23 40.7	11.974	22	11 9 20.79	1.8798	1 1 34.3	13.672
23	9 41 36.49	1.8773	11 11 40.7	12.025	23	11 11 13.62	1.8813	0 47 53.5	13.688
24	9 43 29.09	1.8760	+10 59 37.7	-12.076	24	11 13 6.55	1.8831	+ 0 34 11.7	-13.704

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
OCTOBER 23.					OCTOBER 25.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	11 13 6.55	1.8831	+ 0 34 11.7	-13.704	0	12 46 46.10	2.0458	-10 24 3.1	-12.21
1	11 14 59.59	1.8848	0 20 29.0	13.719	1	12 48 49.00	2.0509	10 37 20.9	13.27
2	11 16 52.73	1.8866	+ 0 6 45.4	13.733	2	12 50 52.21	2.0560	10 50 36.5	13.24
3	11 18 45.98	1.8885	- 0 6 59.0	13.747	3	12 52 55.72	2.0612	11 3 49.9	13.26
4	11 20 39.35	1.8905	0 20 44.2	13.760	4	12 54 59.55	2.0664	11 17 0.8	13.10
5	11 22 32.84	1.8925	0 34 30.2	13.772	5	12 57 3.69	2.0717	11 30 9.3	13.15
6	11 24 26.45	1.8946	0 48 16.8	13.782	6	12 59 8.15	2.0770	11 43 15.3	13.07
7	11 26 20.19	1.8968	1 2 4.0	13.792	7	13 1 12.93	2.0823	11 56 18.7	13.05
8	11 28 14.07	1.8991	1 15 51.8	13.801	8	13 3 18.03	2.0878	12 9 19.4	12.98
9	11 30 8.08	1.9014	1 29 40.1	13.809	9	13 5 23.46	2.0933	12 22 17.3	12.94
10	11 32 2.24	1.9038	1 43 28.9	13.817	10	13 7 29.23	2.0989	12 35 12.4	12.86
11	11 33 56.54	1.9063	1 57 18.1	13.823	11	13 9 35.33	2.1045	12 48 4.5	12.84
12	11 35 50.99	1.9088	2 11 7.6	13.828	12	13 11 41.77	2.1102	13 0 53.6	12.78
13	11 37 45.60	1.9114	2 24 57.4	13.833	13	13 13 48.55	2.1159	13 13 39.6	12.73
14	11 39 40.36	1.9140	2 38 47.5	13.836	14	13 15 55.68	2.1217	13 26 22.3	12.68
15	11 41 35.28	1.9168	2 52 37.7	13.838	15	13 18 3.15	2.1275	13 39 1.8	12.63
16	11 43 30.37	1.9196	3 6 28.0	13.839	16	13 20 10.98	2.1334	13 51 37.9	12.57
17	11 45 25.63	1.9225	3 20 18.4	13.840	17	13 22 19.16	2.1393	14 4 10.6	12.51
18	11 47 21.07	1.9255	3 34 8.8	13.839	18	13 24 27.69	2.1453	14 16 39.7	12.45
19	11 49 16.69	1.9285	3 47 59.1	13.838	19	13 26 36.59	2.1513	14 29 5.1	12.38
20	11 51 12.49	1.9315	4 1 49.3	13.835	20	13 28 45.85	2.1573	14 41 26.8	12.33
21	11 53 8.47	1.9347	4 15 39.3	13.832	21	13 30 55.47	2.1634	14 53 44.7	12.26
22	11 55 4.65	1.9380	4 29 29.1	13.828	22	13 33 5.46	2.1696	15 5 58.7	12.20
23	11 57 1.03	1.9413	- 4 43 18.6	-13.822	23	13 35 15.82	2.1758	-15 18 8.7	-12.15
OCTOBER 24.					OCTOBER 26.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	11 58 57.60	1.9446	- 4 57 7.7	-13.815	0	13 37 26.55	2.1820	-15 30 14.6	-12.08
1	12 0 54.38	1.9481	5 10 56.4	13.808	1	13 39 37.66	2.1883	15 42 16.3	11.99
2	12 2 51.37	1.9516	5 24 44.6	13.798	2	13 41 49.14	2.1946	15 54 13.7	11.92
3	12 4 48.57	1.9551	5 38 32.2	13.788	3	13 44 1.01	2.2009	16 6 6.8	11.84
4	12 6 45.98	1.9588	5 52 19.2	13.778	4	13 46 13.25	2.2073	16 17 55.4	11.77
5	12 8 43.62	1.9625	6 6 5.5	13.766	5	13 48 25.88	2.2138	16 29 39.5	11.69
6	12 10 41.48	1.9663	6 19 51.1	13.753	6	13 50 38.90	2.2202	16 41 18.9	11.61
7	12 12 39.57	1.9702	6 33 35.8	13.738	7	13 52 52.30	2.2266	16 52 53.6	11.53
8	12 14 37.90	1.9741	6 47 19.7	13.723	8	13 55 6.09	2.2331	17 4 23.4	11.45
9	12 16 36.46	1.9780	7 1 2.6	13.707	9	13 57 20.27	2.2396	17 15 48.2	11.37
10	12 18 35.26	1.9821	7 14 44.5	13.689	10	13 59 34.84	2.2461	17 27 8.1	11.28
11	12 20 34.31	1.9863	7 28 25.3	13.670	11	14 1 49.80	2.2527	17 38 22.9	11.20
12	12 22 33.61	1.9904	7 42 4.9	13.650	12	14 4 5.16	2.2593	17 49 32.4	11.11
13	12 24 33.16	1.9947	7 55 43.3	13.628	13	14 6 20.91	2.2658	18 0 36.6	11.02
14	12 26 32.97	1.9990	8 9 20.3	13.606	14	14 8 37.06	2.2725	18 11 35.4	10.94
15	12 28 33.04	2.0034	8 22 56.0	13.583	15	14 10 53.61	2.2792	18 22 28.7	10.84
16	12 30 33.38	2.0079	8 36 30.3	13.558	16	14 13 10.56	2.2858	18 33 16.4	10.74
17	12 32 33.99	2.0124	8 50 3.0	13.532	17	14 15 27.90	2.2923	18 43 58.5	10.65
18	12 34 34.87	2.0169	9 3 34.1	13.504	18	14 17 45.64	2.2990	18 54 34.7	10.55
19	12 36 36.02	2.0216	9 17 3.5	13.476	19	14 20 3.78	2.3057	19 5 5.0	10.45
20	12 38 37.46	2.0263	9 30 31.2	13.447	20	14 22 22.32	2.3123	19 15 29.3	10.35
21	12 40 39.18	2.0311	9 43 57.1	13.416	21	14 24 41.26	2.3190	19 25 47.6	10.25
22	12 42 41.19	2.0360	9 57 21.1	13.383	22	14 27 0.60	2.3257	19 35 59.7	10.14
23	12 44 43.50	2.0409	10 10 43.1	13.350	23	14 29 20.34	2.3323	19 46 5.5	10.04
24	12 46 46.10	2.0458	-10 24 3.1	-13.315	24	14 31 40.48	2.3390	-19 56 4.9	-9.93



GREENWICH MEAN TIME.

hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
OCTOBER 27.					OCTOBER 29.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	14 31 40.48	2.3990	-19 56 4.9	-9.937	0	16 30 50.41	2.3974	-25 21 4.8	-3.095
1	14 34 1.02	2.3457	20 5 57.9	9.828	1	16 33 26.35	2.6004	25 24 5.4	2.924
2	14 36 21.96	2.3523	20 15 44.3	9.718	2	16 36 2.46	2.6033	25 26 55.7	2.753
3	14 38 43.29	2.3588	20 25 24.0	9.605	3	16 38 38.74	2.6069	25 29 35.8	2.582
4	14 41 5.02	2.3655	20 34 56.9	9.492	4	16 41 15.17	2.6085	25 32 5.5	2.408
5	14 43 27.15	2.3721	20 44 23.0	9.378	5	16 43 51.76	2.6110	25 34 24.8	2.236
6	14 45 49.67	2.3786	20 53 42.2	9.261	6	16 46 28.49	2.6133	25 36 33.8	2.063
7	14 48 12.58	2.3852	21 2 54.3	9.143	7	16 49 5.35	2.6154	25 38 32.3	1.888
8	14 50 35.89	2.3917	21 11 59.3	9.023	8	16 51 42.34	2.6174	25 40 20.3	1.713
9	14 52 59.58	2.3981	21 20 57.0	8.901	9	16 54 19.44	2.6193	25 41 57.8	1.538
10	14 55 23.66	2.4046	21 29 47.4	8.778	10	16 56 56.65	2.6210	25 43 24.8	1.363
11	14 57 48.13	2.4110	21 38 30.4	8.654	11	16 59 33.96	2.6226	25 44 41.3	1.187
12	15 0 12.98	2.4174	21 47 5.9	8.528	12	17 2 11.36	2.6240	25 45 47.2	1.010
13	15 2 38.22	2.4238	21 55 33.7	8.400	13	17 4 48.84	2.6253	25 46 42.5	0.833
14	15 5 3.83	2.4300	22 3 53.9	8.273	14	17 7 26.39	2.6263	25 47 27.2	0.657
15	15 7 29.82	2.4363	22 12 6.3	8.141	15	17 10 4.00	2.6273	25 48 1.3	0.479
16	15 9 56.18	2.4424	22 20 10.8	8.009	16	17 12 41.66	2.6281	25 48 24.7	0.302
17	15 12 22.91	2.4486	22 28 7.4	7.876	17	17 15 19.37	2.6288	25 48 37.5	-0.124
18	15 14 50.01	2.4547	22 35 55.9	7.740	18	17 17 57.11	2.6293	25 48 39.6	+0.053
19	15 17 17.47	2.4607	22 43 36.2	7.608	19	17 20 34.88	2.6297	25 48 31.1	0.231
20	15 19 45.29	2.4667	22 51 8.3	7.466	20	17 23 12.67	2.6298	25 48 11.9	0.408
21	15 22 13.47	2.4726	22 58 32.1	7.327	21	17 25 50.46	2.6299	25 47 42.1	0.586
22	15 24 42.00	2.4783	23 5 47.5	7.186	22	17 28 28.26	2.6298	25 47 1.6	0.764
23	15 27 10.87	2.4841	-23 12 54.4	-7.043	23	17 31 6.04	2.6296	-25 46 10.4	+0.942
OCTOBER 28.					OCTOBER 30.				
0	15 29 40.09	2.4898	-23 19 52.7	-6.900	0	17 33 43.81	2.6292	-25 45 8.6	+1.119
1	15 32 9.65	2.4955	23 26 42.4	6.755	1	17 36 21.54	2.6286	25 43 56.1	1.297
2	15 34 39.55	2.5010	23 33 23.3	6.608	2	17 38 59.24	2.6279	25 42 33.0	1.474
3	15 37 9.77	2.5064	23 39 55.4	6.461	3	17 41 36.89	2.6271	25 40 59.2	1.652
4	15 39 40.32	2.5118	23 46 18.6	6.312	4	17 44 14.49	2.6261	25 39 14.8	1.828
5	15 42 11.19	2.5171	23 52 32.8	6.162	5	17 46 52.02	2.6248	25 37 19.8	2.004
6	15 44 42.37	2.5223	23 58 38.0	6.011	6	17 49 29.47	2.6236	25 35 14.3	2.180
7	15 47 13.86	2.5274	24 4 34.1	5.858	7	17 52 6.85	2.6223	25 32 58.2	2.356
8	15 49 45.66	2.5324	24 10 21.0	5.704	8	17 54 44.14	2.6207	25 30 31.6	2.532
9	15 52 17.75	2.5373	24 15 58.6	5.548	9	17 57 21.33	2.6189	25 27 54.4	2.708
10	15 54 50.14	2.5422	24 21 26.8	5.392	10	17 59 58.41	2.6171	25 25 6.7	2.882
11	15 57 22.81	2.5468	24 26 45.6	5.235	11	18 2 35.38	2.6151	25 22 8.6	3.056
12	15 59 55.75	2.5513	24 31 55.0	5.077	12	18 5 12.22	2.6129	25 19 0.1	3.228
13	16 2 28.97	2.5559	24 36 54.8	4.917	13	18 7 48.93	2.6107	25 15 41.2	3.402
14	16 5 2.46	2.5603	24 41 45.0	4.756	14	18 10 25.50	2.6083	25 12 11.9	3.574
15	16 7 36.21	2.5648	24 46 25.5	4.593	15	18 13 1.92	2.6058	25 8 32.3	3.746
16	16 10 10.21	2.5688	24 50 56.2	4.431	16	18 15 38.19	2.6032	25 4 42.4	3.917
17	16 12 44.46	2.5728	24 55 17.2	4.268	17	18 18 14.30	2.6003	25 0 42.3	4.087
18	16 15 18.94	2.5766	24 59 28.3	4.103	18	18 20 50.23	2.5974	24 56 32.0	4.256
19	16 17 53.65	2.5804	25 3 29.5	3.937	19	18 23 25.99	2.5944	24 52 11.6	4.425
20	16 20 28.59	2.5841	25 7 20.7	3.770	20	18 26 1.56	2.5913	24 47 41.0	4.593
21	16 23 3.74	2.5876	25 11 1.9	3.603	21	18 28 36.94	2.5882	24 43 0.4	4.760
22	16 25 39.10	2.5910	25 14 33.0	3.434	22	18 31 12.13	2.5848	24 38 9.8	4.926
23	16 28 14.66	2.5943	25 17 54.0	3.265	23	18 33 47.11	2.5812	24 33 9.3	5.092
24	16 30 50.41	2.5974	-25 21 4.8	-3.065	24	18 36 21.87	2.5775	-24 27 58.8	+5.267

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
OCTOBER 31.					NOVEMBER 2.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	18 36 21.87	2.5775	-24 27 58.8	+ 5.257	0	20 34 32.83	2.3321	-17 28 39.2	+11.690
1	18 38 56.41	2.5738	24 22 38.5	5.420	1	20 36 52.59	2.3265	17 16 54.8	11.788
2	18 41 30.73	2.5701	24 17 8.4	5.583	2	20 39 12.01	2.3210	17 5 4.6	11.885
3	18 44 4.82	2.5662	24 11 28.6	5.743	3	20 41 31.11	2.3157	16 53 8.6	11.981
4	18 46 38.67	2.5622	24 5 39.2	5.904	4	20 43 49.89	2.3103	16 41 6.9	12.075
5	18 49 12.28	2.5581	23 59 40.1	6.064	5	20 46 8.34	2.3048	16 28 59.6	12.168
6	18 51 45.64	2.5538	23 53 31.5	6.223	6	20 48 26.47	2.2995	16 16 46.8	12.258
7	18 54 18.74	2.5495	23 47 13.4	6.380	7	20 50 44.28	2.2942	16 4 28.6	12.348
8	18 56 51.58	2.5452	23 40 45.9	6.536	8	20 53 1.77	2.2888	15 52 5.0	12.437
9	18 59 24.16	2.5408	23 34 9.1	6.691	9	20 55 18.94	2.2836	15 39 36.2	12.523
10	19 1 56.47	2.5362	23 27 23.0	6.845	10	20 57 35.80	2.2784	15 27 2.3	12.608
11	19 4 28.50	2.5316	23 20 27.7	6.998	11	20 59 52.35	2.2733	15 14 23.3	12.691
12	19 7 0.26	2.5269	23 13 23.2	7.150	12	21 2 8.59	2.2682	15 1 39.4	12.773
13	19 9 31.73	2.5221	23 6 9.7	7.300	13	21 4 24.53	2.2631	14 48 50.6	12.853
14	19 12 2.91	2.5173	22 58 47.2	7.449	14	21 6 40.16	2.2580	14 35 57.1	12.931
15	19 14 33.80	2.5124	22 51 15.8	7.597	15	21 8 55.49	2.2530	14 22 58.9	13.008
16	19 17 4.40	2.5075	22 43 35.6	7.743	16	21 11 10.52	2.2481	14 9 56.1	13.084
17	19 19 34.70	2.5024	22 35 46.6	7.888	17	21 13 25.26	2.2432	13 56 48.8	13.158
18	19 22 4.69	2.4973	22 27 49.0	8.033	18	21 15 39.70	2.2383	13 43 37.1	13.232
19	19 24 34.37	2.4922	22 19 42.7	8.176	19	21 17 53.86	2.2337	13 30 21.0	13.303
20	19 27 3.75	2.4870	22 11 27.9	8.317	20	21 20 7.74	2.2289	13 17 0.7	13.373
21	19 29 32.81	2.4818	22 3 4.7	8.457	21	21 22 21.33	2.2242	13 3 36.3	13.441
22	19 32 1.56	2.4765	21 54 33.1	8.596	22	21 24 34.64	2.2196	12 50 7.8	13.508
23	19 34 29.99	2.4711	-21 45 53.2	+ 8.733	23	21 26 47.68	2.2150	-12 36 35.4	+13.573
NOVEMBER 1.					NOVEMBER 3.				
0	19 36 58.09	2.4657	-21 37 5.1	+ 8.869	0	21 29 0.44	2.2105	-12 22 59.1	+13.637
1	19 39 25.87	2.4603	21 28 8.9	9.003	1	21 31 12.94	2.2061	12 9 19.0	13.698
2	19 41 53.32	2.4548	21 19 4.7	9.136	2	21 33 25.17	2.2017	11 55 35.3	13.759
3	19 44 20.45	2.4494	21 9 52.6	9.268	3	21 35 37.14	2.1973	11 41 47.9	13.819
4	19 46 47.25	2.4439	21 0 32.6	9.398	4	21 37 48.85	2.1931	11 27 57.0	13.877
5	19 49 13.72	2.4384	20 51 4.8	9.528	5	21 40 0.31	2.1889	11 14 2.7	13.933
6	19 51 39.86	2.4328	20 41 29.3	9.654	6	21 42 11.52	2.1848	11 0 5.0	13.989
7	19 54 5.66	2.4273	20 31 46.3	9.780	7	21 44 22.48	2.1807	10 46 4.0	14.043
8	19 56 31.13	2.4218	20 21 55.7	9.905	8	21 46 33.20	2.1767	10 31 59.9	14.094
9	19 58 56.27	2.4162	20 11 57.7	10.028	9	21 48 43.68	2.1727	10 17 52.7	14.144
10	20 1 21.07	2.4105	20 1 52.4	10.148	10	21 50 53.92	2.1688	10 3 42.6	14.193
11	20 3 45.53	2.4048	19 51 39.9	10.268	11	21 53 3.94	2.1651	9 49 29.5	14.242
12	20 6 9.65	2.3992	19 41 20.2	10.387	12	21 55 13.73	2.1613	9 35 13.6	14.288
13	20 8 33.43	2.3936	19 30 53.5	10.503	13	21 57 23.30	2.1577	9 20 55.0	14.333
14	20 10 56.88	2.3880	19 20 19.8	10.619	14	21 59 32.65	2.1541	9 6 33.7	14.376
15	20 13 19.99	2.3823	19 9 39.2	10.733	15	22 1 41.79	2.1506	8 52 9.9	14.418
16	20 15 42.76	2.3767	18 58 51.8	10.846	16	22 3 50.72	2.1471	8 37 43.5	14.459
17	20 18 5.19	2.3711	18 47 57.7	10.957	17	22 5 59.44	2.1437	8 23 14.8	14.498
18	20 20 27.29	2.3655	18 36 57.0	11.066	18	22 8 7.96	2.1403	8 8 43.8	14.536
19	20 22 49.05	2.3598	18 25 49.8	11.173	19	22 10 16.28	2.1371	7 54 10.5	14.573
20	20 25 10.47	2.3543	18 14 36.2	11.280	20	22 12 24.41	2.1339	7 39 35.1	14.608
21	20 27 31.56	2.3488	18 3 16.2	11.385	21	22 14 32.35	2.1308	7 24 57.6	14.643
22	20 29 52.32	2.3432	17 51 50.0	11.488	22	22 16 40.11	2.1278	7 10 18.1	14.674
23	20 32 12.74	2.3376	17 40 17.6	11.590	23	22 18 47.68	2.1248	6 55 36.7	14.705
24	20 34 32.83	2.3321	-17 28 39.2	+11.690	24	22 20 55.08	2.1219	- 6 40 53.5	+14.734



GREENWICH MEAN TIME.

hr.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
NOVEMBER 4.					NOVEMBER 6.				
0	h m s	s	° ' "	"	0	h m s	s	+ ° ' "	"
0	22 20 55.08	2.1219	-6 40 53.5	+14.734	0	0 0 50.99	2.0698	+ 5 15 8.7	+14.605
1	22 23 2.31	2.1191	6 26 8.6	14.763	1	0 2 55.20	2.0706	5 29 44.0	14.572
2	22 25 9.37	2.1163	6 11 22.0	14.789	2	0 4 59.45	2.0712	5 44 17.3	14.538
3	22 27 16.27	2.1137	5 56 33.9	14.814	3	0 7 3.74	2.0719	5 58 48.5	14.501
4	22 29 23.01	2.1111	5 41 44.3	14.839	4	0 9 8.08	2.0728	6 13 17.4	14.463
5	22 31 29.60	2.1086	5 26 53.2	14.862	5	0 11 12.47	2.0736	6 27 44.1	14.425
6	22 33 36.04	2.1062	5 12 0.9	14.883	6	0 13 16.91	2.0745	6 42 8.4	14.385
7	22 35 42.34	2.1038	4 57 7.3	14.903	7	0 15 21.41	2.0756	6 56 30.3	14.344
8	22 37 48.49	2.1014	4 42 12.6	14.921	8	0 17 25.98	2.0767	7 10 49.7	14.302
9	22 39 54.51	2.0993	4 27 16.8	14.938	9	0 19 30.61	2.0778	7 25 6.5	14.258
10	22 42 0.40	2.0972	4 12 20.0	14.955	10	0 21 35.31	2.0790	7 39 20.7	14.213
11	22 44 6.17	2.0951	3 57 22.2	14.970	11	0 23 40.09	2.0803	7 53 32.1	14.168
12	22 46 11.81	2.0930	3 42 23.6	14.983	12	0 25 44.94	2.0815	8 7 40.8	14.121
13	22 48 17.33	2.0911	3 27 24.2	14.995	13	0 27 49.87	2.0828	8 21 46.6	14.073
14	22 50 22.74	2.0893	3 12 24.2	15.005	14	0 29 54.88	2.0843	8 35 49.5	14.023
15	22 52 28.04	2.0875	2 57 23.6	15.014	15	0 31 59.98	2.0858	8 49 49.4	13.973
16	22 54 33.24	2.0858	2 42 22.5	15.023	16	0 34 5.17	2.0873	9 3 46.2	13.920
17	22 56 38.34	2.0843	2 27 20.9	15.030	17	0 36 10.45	2.0888	9 17 39.8	13.867
18	22 58 43.35	2.0827	2 12 18.9	15.036	18	0 38 15.82	2.0903	9 31 30.2	13.813
19	23 0 48.26	2.0811	1 57 16.6	15.039	19	0 40 21.29	2.0921	9 45 17.3	13.758
20	23 2 53.08	2.0798	1 42 14.2	15.042	20	0 42 26.87	2.0938	9 59 1.1	13.702
21	23 4 57.83	2.0785	1 27 11.6	15.044	21	0 44 32.55	2.0956	10 12 41.5	13.643
22	23 7 2.50	2.0772	1 12 8.9	15.044	22	0 46 38.34	2.0973	10 26 18.3	13.584
23	23 9 7.09	2.0760	-0 57 6.3	+15.043	23	0 48 44.23	2.0992	+10 39 51.6	+13.524
NOVEMBER 5.					NOVEMBER 7.				
0	23 11 11.62	2.0749	-0 42 3.7	+15.042	0	0 50 50.24	2.1012	+10 53 21.2	+13.463
1	23 13 16.08	2.0739	0 27 1.3	15.038	1	0 52 56.37	2.1031	11 6 47.1	13.400
2	23 15 20.49	2.0730	-0 11 59.2	15.032	2	0 55 2.61	2.1050	11 20 9.2	13.337
3	23 17 24.84	2.0721	+0 3 2.5	15.026	3	0 57 8.97	2.1071	11 33 27.5	13.272
4	23 19 29.14	2.0713	0 18 3.9	15.018	4	0 59 15.46	2.1093	11 46 41.8	13.205
5	23 21 33.39	2.0705	0 33 4.7	15.009	5	1 1 22.08	2.1114	11 59 52.1	13.138
6	23 23 37.60	2.0698	0 48 5.0	15.000	6	1 3 28.83	2.1136	12 12 58.4	13.070
7	23 25 41.77	2.0693	1 3 4.7	14.990	7	1 5 35.71	2.1158	12 26 0.5	13.000
8	23 27 45.91	2.0687	1 18 3.7	14.977	8	1 7 42.72	2.1179	12 38 58.4	12.930
9	23 29 50.01	2.0682	1 33 1.9	14.963	9	1 9 49.86	2.1203	12 51 52.1	12.858
10	23 31 54.09	2.0678	1 47 59.2	14.948	10	1 11 57.15	2.1226	13 4 41.4	12.785
11	23 33 58.15	2.0676	2 2 55.6	14.931	11	1 14 4.57	2.1248	13 17 26.3	12.712
12	23 36 2.20	2.0673	2 17 50.9	14.913	12	1 16 12.13	2.1273	13 30 6.8	12.637
13	23 38 6.23	2.0672	2 32 45.2	14.895	13	1 18 19.84	2.1297	13 42 42.7	12.560
14	23 40 10.26	2.0671	2 47 38.3	14.874	14	1 20 27.69	2.1321	13 55 14.0	12.483
15	23 42 14.28	2.0670	3 2 30.1	14.853	15	1 22 35.69	2.1347	14 7 40.6	12.403
16	23 44 18.30	2.0671	3 17 20.7	14.831	16	1 24 43.85	2.1372	14 20 2.4	12.324
17	23 46 22.33	2.0673	3 32 9.8	14.807	17	1 26 52.15	2.1396	14 32 19.5	12.243
18	23 48 26.37	2.0674	3 46 57.5	14.783	18	1 29 0.60	2.1422	14 44 31.6	12.161
19	23 50 30.42	2.0676	4 1 43.7	14.756	19	1 31 9.21	2.1448	14 56 38.8	12.079
20	23 52 34.48	2.0679	4 16 28.2	14.728	20	1 33 17.97	2.1473	15 8 41.1	11.995
21	23 54 38.57	2.0683	4 31 11.0	14.699	21	1 35 26.89	2.1500	15 20 38.2	11.909
22	23 56 42.68	2.0688	4 45 52.1	14.670	22	1 37 35.97	2.1527	15 32 30.2	11.823
23	23 58 46.82	2.0693	5 0 31.4	14.638	23	1 39 45.21	2.1553	15 44 17.0	11.736
24	0 0 50.99	2.0698	+5 15 8.7	+14.605	24	1 41 54.61	2.1580	+15 55 58.5	+11.648

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
NOVEMBER 8.					NOVEMBER 10.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	1 41 54.61	2.1690	+15 55 58.5	+11.648	0	3 28 33.80	2.2781	+23 14 51.4	+6.319
1	1 44 4.17	2.1607	16 7 34.7	11.558	1	3 30 50.54	2.2798	23 21 6.5	6.186
2	1 46 13.89	2.1634	16 19 5.5	11.468	2	3 33 7.37	2.2813	23 27 13.9	6.063
3	1 48 23.78	2.1662	16 30 30.8	11.376	3	3 35 24.30	2.2830	23 33 13.5	5.928
4	1 50 33.83	2.1688	16 41 50.6	11.283	4	3 37 41.33	2.2845	23 39 5.2	5.797
5	1 52 44.04	2.1716	16 53 4.8	11.190	5	3 39 58.44	2.2859	23 44 49.1	5.667
6	1 54 54.42	2.1744	17 4 13.4	11.096	6	3 42 15.64	2.2873	23 50 25.2	5.538
7	1 57 4.97	2.1772	17 15 16.3	11.000	7	3 44 32.92	2.2886	23 55 53.3	5.403
8	1 59 15.68	2.1799	17 26 13.4	10.903	8	3 46 50.27	2.2898	24 1 13.5	5.271
9	2 1 26.56	2.1827	17 37 4.6	10.806	9	3 49 7.70	2.2911	24 6 25.8	5.139
10	2 3 37.60	2.1854	17 47 50.0	10.707	10	3 51 25.20	2.2922	24 11 30.1	5.008
11	2 5 48.81	2.1883	17 58 29.4	10.607	11	3 53 42.76	2.2933	24 16 26.4	4.877
12	2 8 0.19	2.1911	18 9 2.8	10.507	12	3 56 0.39	2.2943	24 21 14.7	4.738
13	2 10 11.74	2.1938	18 19 30.2	10.405	13	3 58 18.07	2.2952	24 25 55.0	4.604
14	2 12 23.45	2.1966	18 29 51.4	10.302	14	4 0 35.81	2.2960	24 30 27.2	4.479
15	2 14 35.33	2.1993	18 40 6.4	10.198	15	4 2 53.59	2.2968	24 34 51.4	4.338
16	2 16 47.37	2.2021	18 50 15.2	10.094	16	4 5 11.42	2.2975	24 39 7.5	4.201
17	2 18 59.58	2.2049	19 0 17.7	9.988	17	4 7 29.29	2.2981	24 43 15.5	4.066
18	2 21 11.96	2.2077	19 10 13.8	9.882	18	4 9 47.19	2.2986	24 47 15.4	3.939
19	2 23 24.50	2.2104	19 20 3.5	9.774	19	4 12 5.12	2.2991	24 51 7.1	3.795
20	2 25 37.21	2.2132	19 29 46.7	9.666	20	4 14 23.08	2.2995	24 54 50.8	3.660
21	2 27 50.08	2.2158	19 39 23.4	9.558	21	4 16 41.06	2.2998	24 58 26.3	3.523
22	2 30 3.11	2.2185	19 48 53.6	9.448	22	4 18 59.06	2.3001	25 1 53.6	3.388
23	2 32 16.30	2.2213	+19 58 17.1	+9.336	23	4 21 17.07	2.3002	+25 5 12.8	+3.253
NOVEMBER 9.					NOVEMBER 11.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	2 34 29.66	2.2240	+20 7 33.9	+9.224	0	4 23 35.08	2.3003	+25 8 23.8	+3.115
1	2 36 43.18	2.2266	20 16 44.0	9.112	1	4 25 53.10	2.3003	25 11 26.6	2.979
2	2 38 56.85	2.2292	20 25 47.3	8.998	2	4 28 11.12	2.3003	25 14 21.3	2.843
3	2 41 10.68	2.2318	20 34 43.8	8.884	3	4 30 29.13	2.3001	25 17 7.8	2.707
4	2 43 24.66	2.2343	20 43 33.4	8.768	4	4 32 47.13	2.2999	25 19 46.1	2.570
5	2 45 38.79	2.2368	20 52 16.0	8.653	5	4 35 5.12	2.2996	25 22 16.2	2.434
6	2 47 53.08	2.2394	21 0 51.7	8.537	6	4 37 23.08	2.2992	25 24 38.2	2.298
7	2 50 7.52	2.2419	21 9 20.4	8.419	7	4 39 41.02	2.2988	25 26 52.0	2.162
8	2 52 22.11	2.2443	21 17 42.0	8.301	8	4 41 58.93	2.2982	25 28 57.6	2.025
9	2 54 36.84	2.2468	21 25 56.5	8.182	9	4 44 16.80	2.2975	25 30 55.0	1.888
10	2 56 51.72	2.2492	21 34 3.8	8.062	10	4 46 34.63	2.2968	25 32 44.2	1.753
11	2 59 6.74	2.2515	21 42 3.9	7.942	11	4 48 52.42	2.2961	25 34 25.3	1.617
12	3 1 21.90	2.2538	21 49 56.8	7.821	12	4 51 10.16	2.2952	25 35 58.2	1.480
13	3 3 37.20	2.2561	21 57 42.4	7.698	13	4 53 27.84	2.2943	25 37 22.9	1.344
14	3 5 52.63	2.2583	22 5 20.6	7.576	14	4 55 45.47	2.2933	25 38 39.5	1.209
15	3 8 8.20	2.2606	22 12 51.5	7.453	15	4 58 3.03	2.2921	25 39 48.0	1.073
16	3 10 23.90	2.2627	22 20 15.0	7.339	16	5 0 20.52	2.2909	25 40 48.3	0.935
17	3 12 39.72	2.2648	22 27 31.0	7.204	17	5 2 37.94	2.2897	25 41 40.5	0.803
18	3 14 55.67	2.2668	22 34 39.5	7.079	18	5 4 55.28	2.2883	25 42 24.6	0.668
19	3 17 11.74	2.2688	22 41 40.5	6.953	19	5 7 12.53	2.2868	25 43 0.6	0.533
20	3 19 27.93	2.2708	22 48 33.9	6.827	20	5 9 29.70	2.2854	25 43 28.6	0.399
21	3 21 44.23	2.2726	22 55 19.7	6.701	21	5 11 46.78	2.2838	25 43 48.5	0.264
22	3 24 0.64	2.2745	23 1 58.0	6.574	22	5 14 3.76	2.2822	25 44 0.3	+0.130
23	3 26 17.17	2.2763	23 8 28.6	6.445	23	5 16 20.64	2.2805	25 44 4.1	-0.005
24	3 28 33.80	2.2781	+23 14 51.4	+6.316	24	5 18 37.42	2.2787	+25 43 59.9	-0.137



GREENWICH MEAN TIME.

NOVEMBER 12.				NOVEMBER 14.				
Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
NOVEMBER 12.				NOVEMBER 14.				
h m s	s	" ' "	" "	h m s	s	" ' "	" "	
5 18 37.42	2.2787	+25 43 59.9	-0.137	0 7 4 43.02	2.1234	+23 12 56.2	-5.923	
5 20 54.08	2.2768	25 43 47.7	0.270	1 7 6 50.30	2.1193	23 6 57.7	6.028	
5 23 10.63	2.2748	25 43 27.5	0.403	2 7 8 57.34	2.1153	23 0 52.9	6.131	
5 25 27.06	2.2728	25 42 59.4	0.535	3 7 11 4.13	2.1111	22 54 42.0	6.233	
5 27 43.37	2.2708	25 42 23.3	0.668	4 7 13 10.67	2.1069	22 48 24.9	6.335	
5 29 59.55	2.2685	25 41 39.3	0.798	5 7 15 16.96	2.1028	22 42 1.8	6.436	
5 32 15.59	2.2663	25 40 47.5	0.929	6 7 17 23.00	2.0986	22 35 32.6	6.537	
5 34 31.50	2.2640	25 39 47.8	1.060	7 7 19 28.79	2.0944	22 28 57.4	6.636	
5 36 47.27	2.2616	25 38 40.3	1.190	8 7 21 34.33	2.0903	22 22 16.3	6.734	
5 39 2.89	2.2592	25 37 25.0	1.320	9 7 23 39.62	2.0861	22 15 29.3	6.833	
5 41 18.37	2.2567	25 36 1.9	1.450	10 7 25 44.66	2.0819	22 8 36.4	6.930	
5 43 33.69	2.2540	25 34 31.0	1.579	11 7 27 49.45	2.0778	22 1 37.7	7.026	
5 45 48.85	2.2513	25 32 52.4	1.708	12 7 29 53.99	2.0736	21 54 33.3	7.122	
5 48 3.85	2.2487	25 31 6.1	1.835	13 7 31 58.28	2.0694	21 47 23.1	7.217	
5 50 18.69	2.2459	25 29 12.2	1.963	14 7 34 2.32	2.0653	21 40 7.3	7.310	
5 52 33.36	2.2431	25 27 10.6	2.089	15 7 36 6.11	2.0611	21 32 45.9	7.403	
5 54 47.86	2.2402	25 25 1.5	2.215	16 7 38 9.65	2.0569	21 25 18.9	7.496	
5 57 2.18	2.2372	25 22 44.8	2.341	17 7 40 12.94	2.0528	21 17 46.4	7.588	
5 59 16.32	2.2342	25 20 20.6	2.467	18 7 42 15.98	2.0486	21 10 8.4	7.678	
6 1 30.28	2.2311	25 17 48.8	2.592	19 7 44 18.77	2.0445	21 2 25.0	7.768	
6 3 44.05	2.2279	25 15 9.6	2.716	20 7 46 21.32	2.0404	20 54 36.2	7.858	
6 5 57.63	2.2248	25 12 22.9	2.839	21 7 48 23.62	2.0363	20 46 42.1	7.947	
6 8 11.02	2.2216	25 9 28.9	2.962	22 7 50 25.68	2.0323	20 38 42.6	8.035	
6 10 24.22	2.2183	+25 6 27.5	-3.084	23 7 52 27.50	2.0283	+20 30 37.9	-8.123	
NOVEMBER 13.				NOVEMBER 15.				
6 12 37.21	2.2149	+25 3 18.8	-3.206	0 7 54 29.07	2.0242	+20 22 28.0	-8.208	
6 14 50.01	2.2116	25 0 2.8	3.328	1 7 56 30.40	2.0202	20 14 13.0	8.293	
6 17 2.60	2.2081	24 56 39.5	3.448	2 7 58 31.49	2.0162	20 5 52.8	8.378	
6 19 14.98	2.2046	24 53 9.0	3.568	3 8 0 32.34	2.0122	19 57 27.6	8.463	
6 21 27.15	2.2011	24 49 31.4	3.687	4 8 2 32.95	2.0082	19 48 57.3	8.546	
6 23 39.11	2.1975	24 45 46.6	3.806	5 8 4 33.32	2.0043	19 40 22.1	8.628	
6 25 50.85	2.1939	24 41 54.7	3.923	6 8 6 33.46	2.0004	19 31 41.9	8.710	
6 28 2.38	2.1903	24 37 55.8	4.041	7 8 8 33.37	1.9965	19 22 56.9	8.790	
6 30 13.68	2.1865	24 33 49.8	4.158	8 8 10 33.04	1.9926	19 14 7.1	8.871	
6 32 24.76	2.1828	24 29 36.9	4.273	9 8 12 32.48	1.9888	19 5 12.4	8.951	
6 34 35.62	2.1791	24 25 17.1	4.388	10 8 14 31.69	1.9849	18 56 13.0	9.029	
6 36 46.25	2.1753	24 20 50.4	4.502	11 8 16 30.67	1.9812	18 47 8.9	9.108	
6 38 56.65	2.1714	24 16 16.9	4.616	12 8 18 29.43	1.9775	18 38 0.1	9.185	
6 41 6.82	2.1676	24 11 36.5	4.729	13 8 20 27.97	1.9738	18 28 46.7	9.261	
6 43 16.76	2.1637	24 6 49.4	4.842	14 8 22 26.28	1.9700	18 19 28.8	9.337	
6 45 26.46	2.1598	24 1 55.5	4.953	15 8 24 24.37	1.9664	18 10 6.3	9.413	
6 47 35.93	2.1558	23 56 55.0	5.063	16 8 26 22.25	1.9628	18 0 39.4	9.486	
6 49 45.16	2.1519	23 51 47.9	5.173	17 8 28 19.91	1.9593	17 51 8.0	9.560	
6 51 54.16	2.1479	23 46 34.2	5.283	18 8 30 17.36	1.9558	17 41 32.2	9.633	
6 54 2.91	2.1438	23 41 13.9	5.392	19 8 32 14.60	1.9523	17 31 52.0	9.705	
6 56 11.42	2.1398	23 35 47.2	5.499	20 8 34 11.63	1.9488	17 22 7.6	9.776	
6 58 19.69	2.1358	23 30 14.0	5.607	21 8 36 8.45	1.9453	17 12 18.9	9.847	
7 0 27.71	2.1317	23 24 34.4	5.713	22 8 38 5.07	1.9420	17 2 26.0	9.917	
7 2 35.49	2.1276	23 18 48.5	5.818	23 8 40 1.49	1.9386	16 52 28.9	9.986	
7 4 43.02	2.1234	+23 12 56.2	-5.923	24 8 41 57.70	1.9353	+16 42 27.7	-10.056	

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
NOVEMBER 16.					NOVEMBER 18.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	8 41 57.70	1.9353	+16 42 27.7	-10.054	0	10 12 0.14	1.8383	+7 33 35.9	-12.567
1	8 43 53.72	1.9321	16 32 22.4	10.123	1	10 13 50.42	1.8377	7 21 0.8	12.603
2	8 45 49.55	1.9288	16 22 13.0	10.190	2	10 15 40.66	1.8372	7 8 23.5	12.639
3	8 47 45.18	1.9256	16 11 59.6	10.256	3	10 17 30.88	1.8368	6 55 44.1	12.674
4	8 49 40.62	1.9225	16 1 42.3	10.322	4	10 19 21.07	1.8364	6 43 2.6	12.709
5	8 51 35.88	1.9195	15 51 21.0	10.388	5	10 21 11.25	1.8362	6 30 19.0	12.743
6	8 53 30.96	1.9164	15 40 55.8	10.452	6	10 23 1.41	1.8359	6 17 33.4	12.777
7	8 55 25.85	1.9134	15 30 26.8	10.515	7	10 24 51.56	1.8358	6 4 45.8	12.810
8	8 57 20.57	1.9105	15 19 54.0	10.578	8	10 26 41.71	1.8358	5 51 56.2	12.843
9	8 59 15.11	1.9076	15 9 17.4	10.641	9	10 28 31.85	1.8358	5 39 4.7	12.874
10	9 1 9.48	1.9048	14 58 37.1	10.703	10	10 30 22.00	1.8358	5 26 11.3	12.905
11	9 3 3.68	1.9019	14 47 53.1	10.763	11	10 32 12.15	1.8359	5 13 16.0	12.936
12	9 4 57.71	1.8992	14 37 5.5	10.823	12	10 34 2.31	1.8362	5 0 19.0	12.965
13	9 6 51.58	1.8965	14 26 14.3	10.883	13	10 35 52.49	1.8365	4 47 20.2	12.994
14	9 8 45.29	1.8938	14 15 19.5	10.943	14	10 37 42.69	1.8368	4 34 19.7	13.023
15	9 10 38.84	1.8913	14 4 21.2	11.001	15	10 39 32.91	1.8372	4 21 17.5	13.051
16	9 12 32.24	1.8888	13 53 19.4	11.058	16	10 41 23.15	1.8377	4 8 13.6	13.078
17	9 14 25.49	1.8863	13 42 14.2	11.115	17	10 43 13.43	1.8383	3 55 8.1	13.104
18	9 16 18.59	1.8838	13 31 5.6	11.172	18	10 45 3.75	1.8390	3 42 1.1	13.130
19	9 18 11.55	1.8815	13 19 53.6	11.228	19	10 46 54.11	1.8397	3 28 52.5	13.155
20	9 20 4.37	1.8792	13 8 38.3	11.283	20	10 48 44.51	1.8404	3 15 42.5	13.179
21	9 21 57.05	1.8768	12 57 19.7	11.337	21	10 50 34.96	1.8413	3 2 31.0	13.203
22	9 23 49.59	1.8746	12 45 57.9	11.391	22	10 52 25.47	1.8423	2 49 18.1	13.227
23	9 25 42.00	1.8725	+12 34 32.8	-11.444	23	10 54 16.03	1.8433	+2 36 3.8	-13.248
NOVEMBER 17.					NOVEMBER 19.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	9 27 34.29	1.8704	+12 23 4.6	-11.497	0	10 56 6.66	1.8443	+2 22 48.3	-13.270
1	9 29 26.45	1.8683	12 11 33.2	11.548	1	10 57 57.35	1.8454	2 9 31.4	13.293
2	9 31 18.49	1.8663	11 59 58.8	11.599	2	10 59 48.11	1.8467	1 56 13.3	13.312
3	9 33 10.41	1.8644	11 48 21.3	11.650	3	11 1 38.95	1.8480	1 42 54.0	13.333
4	9 35 2.22	1.8626	11 36 40.8	11.700	4	11 3 29.87	1.8494	1 29 33.5	13.351
5	9 36 53.92	1.8608	11 24 57.3	11.749	5	11 5 20.88	1.8508	1 16 11.9	13.368
6	9 38 45.51	1.8590	11 13 10.9	11.798	6	11 7 11.97	1.8523	1 2 49.3	13.386
7	9 40 37.00	1.8573	11 1 21.6	11.846	7	11 9 3.16	1.8539	0 49 25.6	13.403
8	9 42 28.39	1.8558	10 49 29.4	11.893	8	11 10 54.44	1.8556	0 36 1.0	13.418
9	9 44 19.69	1.8542	10 37 34.4	11.940	9	11 12 45.83	1.8573	0 22 35.4	13.434
10	9 46 10.89	1.8526	10 25 36.6	11.987	10	11 14 37.32	1.8592	+0 9 8.9	13.449
11	9 48 2.00	1.8512	10 13 36.0	12.032	11	11 16 28.93	1.8611	-0 4 18.5	13.463
12	9 49 53.03	1.8498	10 1 32.8	12.076	12	11 18 20.65	1.8630	0 17 46.6	13.475
13	9 51 43.98	1.8485	9 49 26.9	12.121	13	11 20 12.49	1.8651	0 31 15.5	13.488
14	9 53 34.85	1.8473	9 37 18.3	12.165	14	11 22 4.46	1.8673	0 44 45.1	13.499
15	9 55 25.65	1.8461	9 25 7.1	12.208	15	11 23 56.56	1.8694	0 58 15.4	13.510
16	9 57 16.38	1.8449	9 12 53.4	12.249	16	11 25 48.79	1.8717	1 11 46.3	13.520
17	9 59 7.04	1.8438	9 0 37.2	12.291	17	11 27 41.16	1.8740	1 25 17.8	13.529
18	10 0 57.64	1.8428	8 48 18.5	12.333	18	11 29 33.67	1.8764	1 38 49.8	13.538
19	10 2 48.18	1.8418	8 35 57.3	12.373	19	11 31 26.33	1.8790	1 52 22.3	13.545
20	10 4 38.66	1.8409	8 23 33.7	12.413	20	11 33 19.15	1.8816	2 5 55.2	13.553
21	10 6 29.09	1.8402	8 11 7.7	12.453	21	11 35 12.12	1.8843	2 19 28.5	13.558
22	10 8 19.48	1.8395	7 58 39.4	12.491	22	11 37 5.26	1.8870	2 33 2.1	13.563
23	10 10 9.83	1.8388	7 46 8.8	12.529	23	11 38 58.56	1.8898	2 46 36.0	13.567
24	10 12 0.14	1.8383	+ 7 33 35.9	-12.567	24	11 40 52.03	1.8927	-3 0 10.1	-13.570

GREENWICH MEAN TIME.

NOVEMBER 20.				NOVEMBER 21.				NOVEMBER 22.				NOVEMBER 23.																			
h	m	s	s	°	'	''	''	h	m	s	s	°	'	''	''	h	m	s	s	°	'	''	''	h	m	s	s	°	'	''	''
11	40	52.03	1.8927	-	3	0	10.1	-13.570	0	13	16	30.90	2.1214	-13	36	42.8	-12.518														
11	42	45.68	1.8957	3	13	44.4	13.573	13.573	1	13	18	38.38	2.1279	13	49	12.3	12.466														
11	44	39.51	1.8988	3	27	18.8	13.574	13.574	2	13	20	46.25	2.1344	14	1	38.7	12.413														
11	46	33.53	1.9018	3	40	53.3	13.575	13.575	3	13	22	54.51	2.1411	14	14	1.8	12.357														
11	48	27.73	1.9050	3	54	27.8	13.574	13.574	4	13	25	3.18	2.1478	14	26	21.5	12.300														
11	50	22.13	1.9083	4	8	2.2	13.573	13.573	5	13	27	12.25	2.1546	14	38	37.8	12.243														
11	52	16.73	1.9117	4	21	36.6	13.572	13.572	6	13	29	21.73	2.1613	14	50	50.6	12.183														
11	54	11.53	1.9151	4	35	10.8	13.569	13.569	7	13	31	31.61	2.1682	15	2	59.7	12.121														
11	56	6.54	1.9186	4	48	44.9	13.566	13.566	8	13	33	41.91	2.1752	15	15	5.1	12.058														
11	58	1.76	1.9222	5	2	18.7	13.560	13.560	9	13	35	52.63	2.1821	15	27	6.7	11.994														
11	59	57.20	1.9259	5	15	52.1	13.554	13.554	10	13	38	3.76	2.1890	15	39	4.4	11.928														
12	1	52.87	1.9297	5	29	25.2	13.548	13.548	11	13	40	15.31	2.1961	15	50	58.1	11.861														
12	3	48.76	1.9334	5	42	57.9	13.541	13.541	12	13	42	27.29	2.2032	16	2	47.7	11.792														
12	5	44.88	1.9373	5	56	30.1	13.532	13.532	13	13	44	39.69	2.2103	16	14	33.1	11.721														
12	7	41.24	1.9413	6	10	1.7	13.522	13.522	14	13	46	52.53	2.2176	16	26	14.2	11.648														
12	9	37.84	1.9454	6	23	32.7	13.512	13.512	15	13	49	5.80	2.2248	16	37	50.9	11.574														
12	11	34.69	1.9496	6	37	3.1	13.500	13.500	16	13	51	19.51	2.2321	16	49	23.1	11.499														
12	13	31.79	1.9538	6	50	32.7	13.488	13.488	17	13	53	33.65	2.2393	17	0	50.8	11.423														
12	15	29.15	1.9581	7	4	1.6	13.474	13.474	18	13	55	48.23	2.2467	17	12	13.8	11.343														
12	17	26.76	1.9623	7	17	29.6	13.459	13.459	19	13	58	3.25	2.2541	17	23	32.0	11.263														
12	19	24.63	1.9668	7	30	56.7	13.443	13.443	20	14	0	18.72	2.2616	17	34	45.3	11.180														
12	21	22.78	1.9714	7	44	22.8	13.427	13.427	21	14	2	34.64	2.2690	17	45	53.6	11.096														
12	23	21.20	1.9760	7	57	47.9	13.409	13.409	22	14	4	51.00	2.2764	17	56	56.8	11.011														
12	25	19.90	1.9807	-	8	11	11.9	-13.390	23	14	7	7.81	2.2840	-18	7	54.9	-10.924														
12	27	18.88	1.9854	-	8	24	34.7	-13.370	0	14	9	25.08	2.2916	-18	18	47.7	-10.835														
12	29	18.15	1.9903	8	37	56.3	13.348	13.348	1	14	11	42.80	2.2991	18	29	35.1	10.744														
12	31	17.71	1.9952	8	51	16.5	13.325	13.325	2	14	14	0.97	2.3066	18	40	17.0	10.652														
12	33	17.57	2.0002	9	4	35.3	13.302	13.302	3	14	16	19.59	2.3142	18	50	53.3	10.558														
12	35	17.73	2.0052	9	17	52.7	13.278	13.278	4	14	18	38.67	2.3218	19	1	23.9	10.462														
12	37	18.19	2.0103	9	31	8.6	13.252	13.252	5	14	20	58.21	2.3294	19	11	48.7	10.364														
12	39	18.97	2.0156	9	44	22.9	13.225	13.225	6	14	23	18.20	2.3370	19	22	7.6	10.264														
12	41	20.06	2.0208	9	57	35.6	13.197	13.197	7	14	25	38.65	2.3447	19	32	20.4	10.163														
12	43	21.47	2.0262	10	10	46.5	13.167	13.167	8	14	27	59.56	2.3523	19	42	27.1	10.060														
12	45	23.20	2.0316	10	23	55.6	13.136	13.136	9	14	30	20.92	2.3599	19	52	27.6	9.956														
12	47	25.26	2.0371	10	37	2.8	13.104	13.104	10	14	32	42.75	2.3676	20	2	21.8	9.849														
12	49	27.65	2.0427	10	50	8.1	13.071	13.071	11	14	35	5.03	2.3752	20	12	9.5	9.741														
12	51	30.38	2.0483	11	3	11.3	13.036	13.036	12	14	37	27.77	2.3828	20	21	50.7	9.632														
12	53	33.45	2.0541	11	16	12.4	13.000	13.000	13	14	39	50.97	2.3904	20	31	25.3	9.520														
12	55	36.87	2.0598	11	29	11.3	12.963	12.963	14	14	42	14.62	2.3980	20	40	53.1	9.406														
12	57	40.63	2.0656	11	42	8.0	12.925	12.925	15	14	44	38.73	2.4056	20	50	14.0	9.290														
12	59	44.74	2.0716	11	55	2.3	12.885	12.885	16	14	47	3.29	2.4132	20	59	27.9	9.173														
13	1	49.22	2.0777	12	7	54.2	12.844	12.844	17	14	49	28.31	2.4207	21	8	34.8	9.055														
13	3	54.06	2.0837	12	20	43.6	12.802	12.802	18	14	51	53.77	2.4282	21	17	34.5	8.934														
13	5	59.26	2.0898	12	33	30.4	12.758	12.758	19	14	54	19.69	2.4358	21	26	26.9	8.812														
13	8	4.83	2.0960	12	46	14.6	12.713	12.713	20	14	56	46.06	2.4433	21	35	11.9	8.688														
13	10	10.78	2.1023	12	58	56.0	12.667	12.667	21	14	59	12.88	2.4506	21	43	49.5	8.563														
13	12	17.10	2.1086	13	11	34.6	12.618	12.618	22	15	1	40.13	2.4579	21	52	19.4	8.434														
13	14	23.81	2.1150	13	24	10.2	12.568	12.568	23	15	4	7.83	2.4653	22	0	41.6	8.305														
13	16	30.90	2.1214	-13	36	42.8	-12.518	-12.518	24	15	6	35.97	2.4727	-22	8	56.0	-8.174														

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
NOVEMBER 24.					NOVEMBER 26.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	15 6 35.97	2.4727	-22 8 56.0	-8.174	0	17 12 0.01	2.7029	-25 41 39.0	-0.234
1	15 9 4.55	2.4799	22 17 2.5	8.042	1	17 14 42.22	2.7040	25 41 47.4	-0.047
2	15 11 33.56	2.4871	22 25 1.0	7.908	2	17 17 24.49	2.7049	25 41 44.6	+0.140
3	15 14 3.00	2.4943	22 32 51.4	7.771	3	17 20 6.81	2.7057	25 41 30.6	0.328
4	15 16 32.87	2.5013	22 40 33.5	7.633	4	17 22 49.17	2.7063	25 41 5.3	0.516
5	15 19 3.16	2.5083	22 48 7.3	7.493	5	17 25 31.56	2.7067	25 40 28.7	0.703
6	15 21 33.87	2.5153	22 55 32.7	7.353	6	17 28 13.97	2.7069	25 39 40.9	0.891
7	15 24 4.99	2.5222	23 2 49.6	7.210	7	17 30 56.39	2.7069	25 38 41.8	1.078
8	15 26 36.53	2.5290	23 9 57.9	7.066	8	17 33 38.80	2.7068	25 37 31.5	1.266
9	15 29 8.47	2.5357	23 16 57.5	6.920	9	17 36 21.20	2.7064	25 36 9.9	1.454
10	15 31 40.81	2.5423	23 23 48.3	6.772	10	17 39 3.57	2.7059	25 34 37.0	1.642
11	15 34 13.55	2.5489	23 30 30.1	6.622	11	17 41 45.91	2.7053	25 32 52.9	1.828
12	15 36 46.68	2.5554	23 37 2.9	6.472	12	17 44 28.20	2.7043	25 30 57.6	2.016
13	15 39 20.20	2.5618	23 43 26.7	6.319	13	17 47 10.43	2.7033	25 28 51.0	2.203
14	15 41 54.10	2.5681	23 49 41.2	6.164	14	17 49 52.59	2.7021	25 26 33.3	2.388
15	15 44 28.37	2.5743	23 55 46.4	6.009	15	17 52 34.68	2.7008	25 24 4.4	2.574
16	15 47 3.01	2.5804	24 1 42.3	5.853	16	17 55 16.88	2.6991	25 21 24.4	2.760
17	15 49 38.02	2.5864	24 7 28.7	5.694	17	17 57 58.57	2.6973	25 18 33.2	2.945
18	15 52 13.38	2.5923	24 13 5.6	5.536	18	18 0 40.35	2.6954	25 15 31.0	3.129
19	15 54 49.09	2.5980	24 18 32.9	5.373	19	18 3 22.02	2.6934	25 12 17.7	3.313
20	15 57 25.14	2.6036	24 23 50.4	5.211	20	18 6 3.56	2.6912	25 8 53.4	3.497
21	16 0 1.52	2.6091	24 28 58.2	5.048	21	18 8 44.96	2.6888	25 5 18.1	3.679
22	16 2 38.23	2.6146	24 33 56.1	4.882	22	18 11 26.21	2.6862	25 1 31.9	3.861
23	16 5 15.27	2.6199	-24 38 44.0	-4.715	23	18 14 7.30	2.6834	-24 57 34.8	+4.043
NOVEMBER 25.					NOVEMBER 27.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	16 7 52.62	2.6251	-24 43 21.9	-4.548	0	18 16 48.22	2.6806	-24 53 26.8	+4.223
1	16 10 30.28	2.6301	24 47 49.7	4.378	1	18 19 28.96	2.6775	24 49 8.0	4.403
2	16 13 8.23	2.6349	24 52 7.3	4.208	2	18 22 9.52	2.6743	24 44 38.5	4.581
3	16 15 46.47	2.6397	24 56 14.7	4.037	3	18 24 49.88	2.6710	24 39 58.3	4.759
4	16 18 24.99	2.6443	25 0 11.7	3.863	4	18 27 30.04	2.6676	24 35 7.4	4.936
5	16 21 3.78	2.6488	25 3 58.3	3.690	5	18 30 9.99	2.6639	24 30 6.0	5.112
6	16 23 42.84	2.6531	25 7 34.5	3.516	6	18 32 49.71	2.6601	24 24 54.0	5.287
7	16 26 22.15	2.6572	25 11 0.2	3.340	7	18 35 29.20	2.6562	24 19 31.6	5.460
8	16 29 1.70	2.6612	25 14 15.3	3.163	8	18 38 8.45	2.6521	24 13 58.8	5.633
9	16 31 41.49	2.6651	25 17 19.8	2.986	9	18 40 47.45	2.6479	24 8 15.6	5.805
10	16 34 21.51	2.6688	25 20 13.6	2.808	10	18 43 26.20	2.6437	24 2 22.2	5.975
11	16 37 1.75	2.6723	25 22 56.7	2.628	11	18 46 4.69	2.6393	23 56 18.6	6.145
12	16 39 42.19	2.6757	25 25 29.0	2.448	12	18 48 42.91	2.6347	23 50 4.8	6.313
13	16 42 22.83	2.6789	25 27 50.4	2.266	13	18 51 20.85	2.6300	23 43 41.0	6.480
14	16 45 3.66	2.6820	25 30 0.9	2.084	14	18 53 58.51	2.6253	23 37 7.2	6.645
15	16 47 44.67	2.6848	25 32 0.5	1.902	15	18 56 35.88	2.6203	23 30 23.6	6.808
16	16 50 25.84	2.6875	25 33 49.1	1.718	16	18 59 12.95	2.6153	23 23 30.2	6.972
17	16 53 7.17	2.6901	25 35 26.7	1.536	17	19 1 49.72	2.6103	23 16 27.0	7.133
18	16 55 48.65	2.6924	25 36 53.3	1.351	18	19 4 26.18	2.6050	23 9 14.2	7.293
19	16 58 30.26	2.6946	25 38 8.8	1.165	19	19 7 2.32	2.5997	23 1 51.8	7.453
20	17 1 12.00	2.6966	25 39 13.1	0.979	20	19 9 38.14	2.5943	22 54 19.9	7.609
21	17 3 53.85	2.6984	25 40 6.3	0.794	21	19 12 13.64	2.5888	22 46 38.7	7.764
22	17 6 35.81	2.7002	25 40 48.4	0.608	22	19 14 48.80	2.5833	22 38 48.2	7.919
23	17 9 17.87	2.7017	25 41 19.3	0.422	23	19 17 23.63	2.5777	22 30 48.4	8.073
24	17 12 0.01	2.7029	-25 41 39.0	-0.234	24	19 19 58.12	2.5719	-22 22 39.5	+8.223

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
NOVEMBER 28.					NOVEMBER 30.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	19 19 58.12	2.5719	-22 22 39.5	+ 8.223	0	21 16 8.41	2.2693	-13 25 58.8	+13.463
1	19 22 32.26	2.5661	22 14 21.6	8.373	1	21 18 24.40	2.2637	13 12 29.0	13.530
2	19 25 6.05	2.5602	22 5 54.8	8.521	2	21 20 40.05	2.2580	12 58 55.2	13.595
3	19 27 39.48	2.5542	21 57 19.1	8.668	3	21 22 55.36	2.2524	12 45 17.6	13.658
4	19 30 12.55	2.5482	21 48 34.7	8.812	4	21 25 10.34	2.2468	12 31 36.2	13.720
5	19 32 45.26	2.5422	21 39 41.7	8.955	5	21 27 24.98	2.2413	12 17 51.2	13.780
6	19 35 17.61	2.5361	21 30 40.1	9.097	6	21 29 39.29	2.2358	12 4 2.6	13.838
7	19 37 49.59	2.5298	21 21 30.1	9.237	7	21 31 53.28	2.2305	11 50 10.6	13.894
8	19 40 21.19	2.5236	21 12 11.7	9.375	8	21 34 6.95	2.2252	11 36 15.3	13.949
9	19 42 52.42	2.5173	21 2 45.1	9.512	9	21 36 20.30	2.2199	11 22 16.7	14.003
10	19 45 23.27	2.5110	20 53 10.3	9.647	10	21 38 33.34	2.2148	11 8 15.0	14.054
11	19 47 53.74	2.5046	20 43 27.5	9.779	11	21 40 46.07	2.2097	10 54 10.2	14.105
12	19 50 23.82	2.4982	20 33 36.8	9.911	12	21 42 58.50	2.2047	10 40 2.4	14.153
13	19 52 53.52	2.4918	20 23 38.2	10.041	13	21 45 10.63	2.1997	10 25 51.8	14.200
14	19 55 22.83	2.4853	20 13 31.9	10.168	14	21 47 22.46	2.1948	10 11 38.4	14.246
15	19 57 51.76	2.4789	20 3 18.0	10.294	15	21 49 34.00	2.1899	9 57 22.3	14.289
16	20 0 20.30	2.4723	19 52 56.6	10.418	16	21 51 45.25	2.1852	9 43 3.7	14.332
17	20 2 48.44	2.4658	19 42 27.8	10.542	17	21 53 56.22	2.1805	9 28 42.5	14.373
18	20 5 16.20	2.4593	19 31 51.6	10.663	18	21 56 6.91	2.1758	9 14 19.0	14.412
19	20 7 43.56	2.4528	19 21 8.2	10.782	19	21 58 17.32	2.1713	8 59 53.1	14.450
20	20 10 10.53	2.4462	19 10 17.8	10.899	20	22 0 27.47	2.1670	8 45 25.0	14.486
21	20 12 37.10	2.4396	18 59 20.3	11.015	21	22 2 37.36	2.1626	8 30 54.8	14.521
22	20 15 3.28	2.4331	18 48 16.0	11.128	22	22 4 46.98	2.1583	8 16 22.5	14.555
23	20 17 29.07	2.4265	-18 37 4.9	+11.241	23	22 6 56.35	2.1540	- 8 1 48.2	+14.587
NOVEMBER 29.					DECEMBER 1.				
0	20 19 54.46	2.4199	-18 25 47.1	+11.351	0	22 9 5.46	2.1498	- 7 47 12.1	+14.617
1	20 22 19.46	2.4133	18 14 22.8	11.458	1	22 11 14.33	2.1458	7 32 34.2	14.646
2	20 24 44.06	2.4068	18 2 52.1	11.565	2	22 13 22.95	2.1418	7 17 54.6	14.673
3	20 27 8.27	2.4003	17 51 15.0	11.671	3	22 15 31.34	2.1379	7 3 13.4	14.699
4	20 29 32.09	2.3938	17 39 31.6	11.774	4	22 17 39.50	2.1341	6 48 30.7	14.724
5	20 31 55.52	2.3872	17 27 42.1	11.875	5	22 19 47.43	2.1303	6 33 46.5	14.748
6	20 34 18.55	2.3807	17 15 46.6	11.974	6	22 21 55.14	2.1267	6 19 1.0	14.769
7	20 36 41.20	2.3743	17 3 45.2	12.072	7	22 24 2.63	2.1231	6 4 14.2	14.790
8	20 39 3.46	2.3678	16 51 38.0	12.168	8	22 26 9.91	2.1196	5 49 26.2	14.809
9	20 41 25.33	2.3613	16 39 25.0	12.263	9	22 28 16.98	2.1161	5 34 37.1	14.827
10	20 43 46.81	2.3549	16 27 6.5	12.354	10	22 30 23.84	2.1128	5 19 47.0	14.843
11	20 46 7.92	2.3486	16 14 42.5	12.445	11	22 32 30.51	2.1095	5 4 55.9	14.858
12	20 48 28.64	2.3422	16 2 13.1	12.534	12	22 34 36.98	2.1063	4 50 4.0	14.872
13	20 50 48.98	2.3359	15 49 38.4	12.621	13	22 36 43.27	2.1033	4 35 11.3	14.884
14	20 53 8.95	2.3297	15 36 58.6	12.706	14	22 38 49.37	2.1002	4 20 17.9	14.895
15	20 55 28.54	2.3234	15 24 13.7	12.789	15	22 40 55.29	2.0973	4 5 23.9	14.905
16	20 57 47.76	2.3173	15 11 23.9	12.871	16	22 43 1.04	2.0944	3 50 29.3	14.914
17	21 0 6.61	2.3111	14 58 29.2	12.952	17	22 45 6.62	2.0916	3 35 34.2	14.921
18	21 2 25.09	2.3049	14 45 29.7	13.030	18	22 47 12.03	2.0888	3 20 38.8	14.927
19	21 4 43.20	2.2988	14 32 25.6	13.107	19	22 49 17.28	2.0863	3 5 43.0	14.932
20	21 7 0.95	2.2929	14 19 16.9	13.182	20	22 51 22.38	2.0838	2 50 47.0	14.934
21	21 9 18.35	2.2870	14 6 3.8	13.255	21	22 53 27.33	2.0813	2 35 50.9	14.936
22	21 11 35.39	2.2811	13 52 46.3	13.327	22	22 55 32.13	2.0789	2 20 54.7	14.938
23	21 13 52.08	2.2752	13 39 24.6	13.396	23	22 57 36.80	2.0767	2 5 58.4	14.938
24	21 16 8.41	2.2693	-13 25 58.8	+13.463	24	22 59 41.33	2.0744	- 1 51 2.2	+14.938

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
DECEMBER 2.					DECEMBER 4.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	22 59 41.33	2.0744	-1 51 2.2	+14.935	0	0 38 12.26	2.0585	+ 9 41 41.0	+13.503
1	23 1 45.73	2.0723	1 36 6.2	14.932	1	0 40 15.81	2.0598	9 55 9.5	13.447
2	23 3 50.00	2.0703	1 21 10.4	14.928	2	0 42 19.43	2.0612	10 8 34.6	13.389
3	23 5 54.16	2.0683	1 6 14.8	14.923	3	0 44 23.15	2.0628	10 21 56.2	13.331
4	23 7 58.20	2.0664	0 51 19.6	14.916	4	0 46 26.96	2.0642	10 35 14.3	13.272
5	23 10 2.13	2.0646	0 36 24.9	14.908	5	0 48 30.85	2.0658	10 48 28.8	13.212
6	23 12 5.95	2.0628	0 21 30.7	14.898	6	0 50 34.85	2.0674	11 1 39.7	13.150
7	23 14 9.67	2.0613	-0 6 37.1	14.889	7	0 52 38.94	2.0690	11 14 46.8	13.085
8	23 16 13.30	2.0597	+0 8 16.0	14.878	8	0 54 43.13	2.0708	11 27 50.2	13.025
9	23 18 16.83	2.0582	0 23 8.3	14.865	9	0 56 47.43	2.0726	11 40 49.8	12.961
10	23 20 20.28	2.0568	0 37 59.8	14.851	10	0 58 51.84	2.0744	11 53 45.5	12.895
11	23 22 23.65	2.0555	0 52 50.4	14.836	11	1 0 56.36	2.0763	12 6 37.2	12.828
12	23 24 26.94	2.0543	1 7 40.1	14.820	12	1 3 1.00	2.0783	12 19 24.9	12.761
13	23 26 30.16	2.0531	1 22 28.8	14.803	13	1 5 5.75	2.0802	12 32 8.5	12.693
14	23 28 33.31	2.0520	1 37 16.4	14.784	14	1 7 10.62	2.0822	12 44 48.0	12.623
15	23 30 36.40	2.0510	1 52 2.9	14.764	15	1 9 15.61	2.0843	12 57 23.3	12.553
16	23 32 39.43	2.0501	2 6 48.1	14.743	16	1 11 20.73	2.0864	13 9 54.4	12.482
17	23 34 42.41	2.0493	2 21 32.1	14.722	17	1 13 25.98	2.0886	13 22 21.1	12.409
18	23 36 45.34	2.0484	2 36 14.7	14.699	18	1 15 31.36	2.0908	13 34 43.5	12.336
19	23 38 48.22	2.0477	2 50 56.0	14.675	19	1 17 36.87	2.0929	13 47 1.4	12.262
20	23 40 51.06	2.0471	3 5 35.7	14.649	20	1 19 42.51	2.0952	13 59 14.9	12.187
21	23 42 53.87	2.0466	3 20 13.9	14.623	21	1 21 48.29	2.0975	14 11 23.8	12.110
22	23 44 56.65	2.0461	3 34 50.5	14.596	22	1 23 54.21	2.0999	14 23 28.1	12.033
23	23 46 59.40	2.0457	+3 49 25.4	+14.568	23	1 26 0.28	2.1023	+14 35 27.7	+11.954
DECEMBER 3.					DECEMBER 5.				
0	23 49 2.13	2.0453	+4 3 58.6	+14.538	0	1 28 6.49	2.1048	+14 47 22.6	+11.875
1	23 51 4.84	2.0451	4 18 29.9	14.507	1	1 30 12.85	2.1072	14 59 12.7	11.795
2	23 53 7.54	2.0450	4 32 59.4	14.475	2	1 32 19.35	2.1096	15 10 58.0	11.714
3	23 55 10.24	2.0449	4 47 26.9	14.442	3	1 34 26.00	2.1122	15 22 38.4	11.633
4	23 57 12.93	2.0448	5 1 52.4	14.408	4	1 36 32.81	2.1148	15 34 13.9	11.549
5	23 59 15.62	2.0448	5 16 15.8	14.373	5	1 38 39.77	2.1173	15 45 44.3	11.464
6	0 1 18.31	2.0449	5 30 37.1	14.337	6	1 40 46.88	2.1199	15 57 9.6	11.379
7	0 3 21.01	2.0452	5 44 56.2	14.299	7	1 42 54.16	2.1226	16 8 29.8	11.294
8	0 5 23.73	2.0454	5 59 13.0	14.260	8	1 45 1.59	2.1252	16 19 44.9	11.208
9	0 7 26.46	2.0457	6 13 27.4	14.221	9	1 47 9.18	2.1278	16 30 54.7	11.119
10	0 9 29.21	2.0461	6 27 39.5	14.181	10	1 49 16.93	2.1306	16 41 59.2	11.031
11	0 11 31.99	2.0466	6 41 49.1	14.139	11	1 51 24.85	2.1333	16 52 58.4	10.941
12	0 13 34.80	2.0472	6 55 56.2	14.097	12	1 53 32.93	2.1360	17 3 52.1	10.850
13	0 15 37.65	2.0478	7 10 0.7	14.053	13	1 55 41.17	2.1388	17 14 40.4	10.759
14	0 17 40.53	2.0483	7 24 2.5	14.008	14	1 57 49.58	2.1416	17 25 23.2	10.667
15	0 19 43.45	2.0490	7 38 1.6	13.962	15	1 59 58.16	2.1444	17 36 0.4	10.573
16	0 21 46.41	2.0498	7 51 57.9	13.915	16	2 2 6.91	2.1472	17 46 31.9	10.478
17	0 23 49.43	2.0508	8 5 51.4	13.868	17	2 4 15.82	2.1499	17 56 57.8	10.384
18	0 25 52.50	2.0517	8 19 42.0	13.818	18	2 6 24.90	2.1528	18 7 18.0	10.288
19	0 27 55.63	2.0527	8 33 29.6	13.768	19	2 8 34.15	2.1557	18 17 32.3	10.190
20	0 29 58.82	2.0538	8 47 14.2	13.718	20	2 10 43.58	2.1585	18 27 40.8	10.093
21	0 32 2.08	2.0548	9 0 55.7	13.665	21	2 12 53.17	2.1613	18 37 43.4	9.994
22	0 34 5.40	2.0559	9 14 34.0	13.612	22	2 15 2.93	2.1641	18 47 40.1	9.894
23	0 36 8.79	2.0572	9 28 9.1	13.558	23	2 17 12.86	2.1670	18 57 30.7	9.793
24	0 38 12.26	2.0585	+9 41 41.0	+13.503	24	2 19 22.97	2.1699	+19 7 15.3	+ 9.693

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
DECEMBER 6.					DECEMBER 8.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	2 19 22.97	2.1699	+19 7 15.3	+9.693	0	4 6 27.86	2.2772	+24 41 13.9	+3.983
1	2 21 33.25	2.1727	19 16 53.8	9.590	1	4 8 44.52	2.2781	24 45 8.9	3.851
2	2 23 43.69	2.1755	19 26 26.1	9.487	2	4 11 1.23	2.2790	24 48 56.0	3.719
3	2 25 54.31	2.1784	19 35 52.2	9.383	3	4 13 18.00	2.2799	24 52 35.2	3.587
4	2 28 5.10	2.1813	19 45 12.0	9.278	4	4 15 34.82	2.2808	24 56 6.4	3.454
5	2 30 16.06	2.1841	19 54 25.5	9.173	5	4 17 51.69	2.2814	24 59 29.7	3.322
6	2 32 27.19	2.1869	20 3 32.7	9.067	6	4 20 8.59	2.2820	25 2 45.0	3.188
7	2 34 38.49	2.1898	20 12 33.5	8.959	7	4 22 25.53	2.2826	25 5 52.3	3.056
8	2 36 49.96	2.1926	20 21 27.8	8.851	8	4 24 42.50	2.2830	25 8 51.7	2.923
9	2 39 1.60	2.1953	20 30 15.6	8.742	9	4 26 59.49	2.2834	25 11 43.1	2.789
10	2 41 13.40	2.1981	20 38 56.8	8.632	10	4 29 16.51	2.2838	25 14 26.4	2.656
11	2 43 25.37	2.2009	20 47 31.4	8.522	11	4 31 33.54	2.2840	25 17 1.8	2.523
12	2 45 37.51	2.2037	20 55 59.4	8.411	12	1 33 50.59	2.2842	25 19 29.1	2.388
13	2 47 49.81	2.2063	21 4 20.7	8.298	13	4 36 7.64	2.2843	25 21 48.4	2.255
14	2 50 2.27	2.2091	21 12 35.2	8.186	14	4 38 24.70	2.2843	25 23 59.7	2.121
15	2 52 14.90	2.2118	21 20 43.0	8.073	15	4 40 41.76	2.2843	25 26 2.9	1.987
16	2 54 27.68	2.2143	21 28 43.9	7.958	16	4 42 58.81	2.2841	25 27 58.1	1.853
17	2 56 40.62	2.2170	21 36 37.9	7.843	17	4 45 15.85	2.2838	25 29 45.3	1.719
18	2 58 53.72	2.2197	21 44 25.0	7.728	18	4 47 32.87	2.2835	25 31 24.4	1.585
19	3 1 6.98	2.2223	21 52 5.2	7.611	19	4 49 49.87	2.2831	25 32 55.5	1.452
20	3 3 20.39	2.2248	21 59 38.3	7.493	20	4 52 6.84	2.2826	25 34 18.6	1.318
21	3 5 33.95	2.2273	22 7 4.4	7.376	21	4 54 23.78	2.2821	25 35 33.6	1.183
22	3 7 47.66	2.2298	22 14 23.4	7.258	22	4 56 40.69	2.2814	25 36 40.6	1.050
23	3 10 1.52	2.2322	+22 21 35.3	+7.138	23	4 58 57.55	2.2807	+25 37 39.6	+0.917
DECEMBER 7.					DECEMBER 9.				
0	3 12 15.52	2.2346	+22 28 40.0	+7.018	0	5 1 14.37	2.2799	+25 38 30.6	+0.783
1	3 14 29.67	2.2370	22 35 37.5	6.898	1	5 3 31.14	2.2790	25 39 13.6	0.649
2	3 16 43.96	2.2393	22 42 27.8	6.778	2	5 5 47.85	2.2781	25 39 48.5	0.516
3	3 18 58.38	2.2415	22 49 10.8	6.656	3	5 8 4.51	2.2771	25 40 15.5	0.383
4	3 21 12.94	2.2438	22 55 46.5	6.533	4	5 10 21.10	2.2759	25 40 34.5	0.250
5	3 23 27.63	2.2460	23 2 14.8	6.410	5	5 12 37.62	2.2747	25 40 45.5	+0.118
6	3 25 42.46	2.2482	23 8 35.7	6.287	6	5 14 54.06	2.2733	25 40 48.6	-0.015
7	3 27 57.41	2.2502	23 14 49.2	6.163	7	5 17 10.42	2.2720	25 40 43.7	0.148
8	3 30 12.48	2.2524	23 20 55.2	6.038	8	5 19 26.70	2.2706	25 40 30.9	0.279
9	3 32 27.68	2.2543	23 26 53.8	5.913	9	5 21 42.89	2.2691	25 40 10.2	0.411
10	3 34 42.99	2.2562	23 32 44.8	5.788	10	5 23 58.99	2.2675	25 39 41.6	0.543
11	3 36 58.42	2.2581	23 38 28.3	5.662	11	5 26 14.99	2.2658	25 39 5.1	0.673
12	3 39 13.96	2.2599	23 44 4.2	5.535	12	5 28 30.88	2.2640	25 38 20.8	0.804
13	3 41 29.61	2.2617	23 49 32.5	5.408	13	5 30 46.67	2.2622	25 37 28.6	0.935
14	3 43 45.36	2.2634	23 54 53.1	5.280	14	5 33 2.34	2.2602	25 36 28.6	1.065
15	3 46 1.22	2.2651	24 0 6.1	5.153	15	5 35 17.89	2.2582	25 35 20.8	1.195
16	3 48 17.17	2.2667	24 5 11.4	5.024	16	5 37 33.32	2.2562	25 34 5.2	1.324
17	3 50 33.22	2.2683	24 10 9.0	4.895	17	5 39 48.63	2.2541	25 32 41.9	1.453
18	3 52 49.36	2.2697	24 14 58.8	4.766	18	5 42 3.81	2.2518	25 31 10.8	1.583
19	3 55 5.58	2.2711	24 19 40.9	4.636	19	5 44 18.85	2.2495	25 29 32.0	1.710
20	3 57 21.89	2.2724	24 24 15.1	4.506	20	5 46 33.75	2.2472	25 27 45.6	1.838
21	3 59 38.27	2.2737	24 28 41.6	4.376	21	5 48 48.51	2.2448	25 25 51.5	1.965
22	4 1 54.73	2.2749	24 33 0.2	4.245	22	5 51 3.12	2.2423	25 23 49.8	2.092
23	4 4 11.26	2.2761	24 37 11.0	4.114	23	5 53 17.58	2.2398	25 21 40.5	2.218
24	4 6 27.86	2.2772	+24 41 13.9	+3.983	24	5 55 31.89	2.2372	+25 19 23.6	+2.344

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
DECEMBER 10.					DECEMBER 12.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	5 55 31.89	2.2372	+25 19 23.6	-2.344	0	7 38 55.04	2.0679	+21 13 49.3	-7.606
1	5 57 46.04	2.2344	25 16 59.2	2.470	1	7 40 58.39	2.0637	21 6 10.1	7.600
2	6 0 0.02	2.2316	25 14 27.2	2.595	2	7 43 1.48	2.0494	20 58 25.4	7.730
3	6 2 13.83	2.2288	25 11 47.8	2.718	3	7 45 4.32	2.0453	20 50 35.4	7.873
4	6 4 27.47	2.2259	25 9 1.0	2.843	4	7 47 6.91	2.0410	20 42 40.1	7.980
5	6 6 40.94	2.2230	25 6 6.7	2.966	5	7 49 9.24	2.0368	20 34 39.5	8.063
6	6 8 54.23	2.2200	25 3 5.1	3.088	6	7 51 11.32	2.0326	20 26 33.7	8.140
7	6 11 7.34	2.2169	24 59 56.1	3.211	7	7 53 13.15	2.0284	20 18 22.7	8.227
8	6 13 20.26	2.2138	24 56 39.8	3.332	8	7 55 14.73	2.0242	20 10 6.5	8.313
9	6 15 32.99	2.2106	24 53 16.3	3.453	9	7 57 16.05	2.0200	20 1 45.3	8.398
10	6 17 45.53	2.2073	24 49 45.5	3.573	10	7 59 17.13	2.0158	19 53 19.0	8.479
11	6 19 57.87	2.2041	24 46 7.5	3.693	11	8 1 17.95	2.0117	19 44 47.8	8.561
12	6 22 10.02	2.2008	24 42 22.4	3.812	12	8 3 18.53	2.0076	19 36 11.7	8.643
13	6 24 21.96	2.1973	24 38 30.1	3.930	13	8 5 18.86	2.0034	19 27 30.7	8.724
14	6 26 33.70	2.1939	24 34 30.8	4.048	14	8 7 18.94	1.9993	19 18 44.8	8.804
15	6 28 45.23	2.1904	24 30 24.4	4.165	15	8 9 18.78	1.9953	19 9 54.2	8.883
16	6 30 56.55	2.1868	24 26 11.0	4.281	16	8 11 18.38	1.9913	19 0 58.9	8.961
17	6 33 7.65	2.1833	24 21 50.7	4.397	17	8 13 17.73	1.9872	18 51 58.9	9.039
18	6 35 18.54	2.1797	24 17 23.4	4.512	18	8 15 16.84	1.9832	18 42 54.2	9.117
19	6 37 29.21	2.1760	24 12 49.3	4.626	19	8 17 15.71	1.9793	18 33 44.9	9.193
20	6 39 39.66	2.1723	24 8 8.3	4.740	20	8 19 14.35	1.9753	18 24 31.1	9.269
21	6 41 49.88	2.1685	24 3 20.5	4.853	21	8 21 12.75	1.9713	18 15 12.8	9.343
22	6 43 59.88	2.1648	23 58 26.0	4.964	22	8 23 10.91	1.9674	18 5 50.1	9.415
23	6 46 9.65	2.1609	+23 53 24.8	-5.076	23	8 25 8.84	1.9635	+17 56 23.0	-9.486
DECEMBER 11.					DECEMBER 13.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	6 48 19.19	2.1571	+23 48 16.9	-5.187	0	8 27 6.53	1.9596	+17 46 51.5	-9.561
1	6 50 28.50	2.1532	23 43 2.4	5.297	1	8 29 3.99	1.9558	17 37 15.7	9.632
2	6 52 37.57	2.1492	23 37 41.3	5.406	2	8 31 1.23	1.9521	17 27 35.7	9.702
3	6 54 46.40	2.1453	23 32 13.7	5.514	3	8 32 58.24	1.9483	17 17 51.5	9.772
4	6 56 55.00	2.1413	23 26 39.6	5.622	4	8 34 55.03	1.9447	17 8 3.1	9.841
5	6 59 3.36	2.1373	23 20 59.1	5.728	5	8 36 51.60	1.9410	16 58 10.6	9.909
6	7 1 11.48	2.1333	23 15 12.2	5.835	6	8 38 47.95	1.9373	16 48 14.0	9.977
7	7 3 19.35	2.1292	23 9 18.9	5.940	7	8 40 44.08	1.9337	16 38 13.4	10.043
8	7 5 26.98	2.1252	23 3 19.4	6.044	8	8 42 39.99	1.9301	16 28 8.9	10.108
9	7 7 34.37	2.1211	22 57 13.6	6.148	9	8 44 35.69	1.9266	16 18 0.4	10.174
10	7 9 41.51	2.1169	22 51 1.6	6.252	10	8 46 31.18	1.9231	16 7 48.0	10.238
11	7 11 48.40	2.1128	22 44 43.4	6.354	11	8 48 26.46	1.9197	15 57 31.8	10.301
12	7 13 55.04	2.1086	22 38 19.1	6.455	12	8 50 21.54	1.9163	15 47 11.9	10.363
13	7 16 1.43	2.1044	22 31 48.8	6.555	13	8 52 16.41	1.9128	15 36 48.2	10.426
14	7 18 7.57	2.1003	22 25 12.5	6.655	14	8 54 11.08	1.9095	15 26 20.8	10.487
15	7 20 13.46	2.0960	22 18 30.2	6.754	15	8 56 5.55	1.9063	15 15 49.8	10.548
16	7 22 19.09	2.0918	22 11 42.0	6.853	16	8 57 59.83	1.9031	15 5 15.1	10.608
17	7 24 24.47	2.0876	22 4 47.9	6.950	17	8 59 53.92	1.8998	14 54 36.9	10.667
18	7 26 29.60	2.0834	21 57 48.0	7.046	18	9 1 47.81	1.8966	14 43 55.1	10.725
19	7 28 34.48	2.0792	21 50 42.4	7.142	19	9 3 41.51	1.8935	14 33 9.9	10.783
20	7 30 39.10	2.0749	21 43 31.0	7.237	20	9 5 35.03	1.8904	14 22 21.2	10.840
21	7 32 43.47	2.0707	21 36 14.0	7.331	21	9 7 28.36	1.8874	14 11 29.1	10.896
22	7 34 47.58	2.0664	21 28 51.3	7.424	22	9 9 21.52	1.8845	14 0 35.7	10.951
23	7 36 51.44	2.0622	21 21 23.1	7.517	23	9 11 14.50	1.8816	13 49 35.0	11.006
24	7 38 55.04	2.0579	+21 13 49.3	-7.608	24	9 13 7.31	1.8788	+13 38 33.0	-11.060

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
DECEMBER 14.					DECEMBER 16.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	9 13 7.31	1.8788	+13 38 33.0	-11.060	0	10 41 3.62	1.8092	+3 58 20.4	-12.866
1	9 14 59.95	1.8759	13 27 27.8	11.113	1	10 42 52.17	1.8093	3 45 27.8	12.888
2	9 16 52.42	1.8731	13 16 19.4	11.166	2	10 44 40.74	1.8096	3 32 33.8	12.911
3	9 18 44.72	1.8703	13 5 7.9	11.218	3	10 46 29.32	1.8098	3 19 38.5	12.931
4	9 20 36.86	1.8677	12 53 53.3	11.268	4	10 48 17.92	1.8103	3 6 42.1	12.951
5	9 22 28.84	1.8651	12 42 35.7	11.319	5	10 50 6.55	1.8107	2 53 44.4	12.971
6	9 24 20.67	1.8626	12 31 15.0	11.369	6	10 51 55.20	1.8112	2 40 45.6	12.989
7	9 26 12.35	1.8601	12 19 51.4	11.418	7	10 53 43.89	1.8118	2 27 45.7	13.008
8	9 28 3.88	1.8576	12 8 24.8	11.467	8	10 55 32.61	1.8123	2 14 44.7	13.025
9	9 29 55.26	1.8552	11 56 55.4	11.514	9	10 57 21.37	1.8131	2 1 42.7	13.043
10	9 31 46.50	1.8528	11 45 23.1	11.562	10	10 59 10.18	1.8139	1 48 39.6	13.069
11	9 33 37.60	1.8505	11 33 48.0	11.608	11	11 0 59.04	1.8148	1 35 35.6	13.074
12	9 35 28.56	1.8483	11 22 10.2	11.653	12	11 2 47.96	1.8158	1 22 30.7	13.089
13	9 37 19.39	1.8461	11 10 29.6	11.698	13	11 4 36.93	1.8168	1 9 24.9	13.103
14	9 39 10.09	1.8440	10 58 46.4	11.742	14	11 6 25.97	1.8178	0 56 18.3	13.117
15	9 41 0.67	1.8420	10 47 0.6	11.786	15	11 8 15.07	1.8190	0 43 10.9	13.130
16	9 42 51.13	1.8400	10 35 12.1	11.829	16	11 10 4.25	1.8203	0 30 2.7	13.143
17	9 44 41.47	1.8380	10 23 21.1	11.872	17	11 11 53.50	1.8215	0 16 53.8	13.154
18	9 46 31.69	1.8361	10 11 27.5	11.913	18	11 13 42.83	1.8229	+0 3 44.2	13.166
19	9 48 21.80	1.8343	9 59 31.5	11.953	19	11 15 32.25	1.8244	-0 9 26.1	13.176
20	9 50 11.81	1.8326	9 47 33.1	11.994	20	11 17 21.76	1.8260	0 22 36.9	13.185
21	9 52 1.71	1.8308	9 35 32.2	12.034	21	11 19 11.37	1.8276	0 35 48.3	13.195
22	9 53 51.51	1.8293	9 23 29.0	12.073	22	11 21 1.07	1.8293	0 49 0.3	13.203
23	9 55 41.22	1.8277	+ 9 11 23.4	-12.112	23	11 22 50.88	1.8311	-1 2 12.7	-13.210
DECEMBER 15.					DECEMBER 17.				
0	9 57 30.83	1.8261	+ 8 59 15.6	-12.149	0	11 24 40.80	1.8329	-1 15 25.5	-13.217
1	9 59 20.35	1.8247	8 47 5.5	12.187	1	11 26 30.83	1.8348	1 28 38.7	13.223
2	10 1 9.79	1.8233	8 34 53.2	12.223	2	11 28 20.98	1.8368	1 41 52.3	13.229
3	10 2 59.14	1.8219	8 22 38.7	12.259	3	11 30 11.25	1.8389	1 55 6.2	13.233
4	10 4 48.42	1.8207	8 10 22.1	12.294	4	11 32 1.65	1.8411	2 8 20.3	13.238
5	10 6 37.62	1.8195	7 58 3.4	12.328	5	11 33 52.18	1.8433	2 21 34.7	13.242
6	10 8 26.76	1.8184	7 45 42.7	12.363	6	11 35 42.85	1.8457	2 34 49.3	13.244
7	10 10 15.83	1.8173	7 33 19.9	12.397	7	11 37 33.66	1.8481	2 48 4.0	13.246
8	10 12 4.83	1.8162	7 20 55.1	12.429	8	11 39 24.62	1.8506	3 1 18.8	13.248
9	10 13 53.77	1.8153	7 8 28.4	12.461	9	11 41 15.73	1.8531	3 14 33.7	13.248
10	10 15 42.66	1.8144	6 55 59.8	12.492	10	11 43 6.99	1.8557	3 27 48.6	13.248
11	10 17 31.50	1.8136	6 43 29.4	12.523	11	11 44 58.41	1.8584	3 41 3.4	13.246
12	10 19 20.29	1.8128	6 30 57.1	12.553	12	11 46 50.00	1.8613	3 54 18.1	13.244
13	10 21 9.04	1.8122	6 18 23.0	12.583	13	11 48 41.76	1.8641	4 7 32.7	13.242
14	10 22 57.75	1.8116	6 5 47.2	12.612	14	11 50 33.69	1.8670	4 20 47.1	13.238
15	10 24 46.43	1.8110	5 53 9.6	12.640	15	11 52 25.80	1.8701	4 34 1.3	13.234
16	10 26 35.07	1.8105	5 40 30.4	12.668	16	11 54 18.10	1.8732	4 47 15.2	13.229
17	10 28 23.69	1.8101	5 27 49.5	12.695	17	11 56 10.58	1.8763	5 0 28.8	13.223
18	10 30 12.28	1.8098	5 15 7.0	12.722	18	11 58 3.26	1.8797	5 13 42.0	13.217
19	10 32 0.86	1.8095	5 2 22.9	12.748	19	11 59 56.14	1.8830	5 26 54.8	13.209
20	10 33 49.42	1.8093	4 49 37.3	12.773	20	12 1 49.22	1.8864	5 40 7.1	13.201
21	10 35 37.98	1.8093	4 36 50.2	12.797	21	12 3 42.51	1.8899	5 53 18.9	13.193
22	10 37 26.53	1.8091	4 24 1.7	12.821	22	12 5 36.01	1.8935	6 6 30.2	13.183
23	10 39 15.07	1.8091	4 11 11.7	12.844	23	12 7 29.73	1.8973	6 19 40.8	13.171
24	10 41 3.62	1.8092	+ 3 58 20.4	-12.866	24	12 9 23.68	1.9010	-6 32 50.7	-13.159

GREENWICH MEAN TIME.

Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.	Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.				
DECEMBER 18.									DECEMBER 20.												
	h	m	s	s	"	'	"	"		h	m	s	s	"	'	"	"				
0	12	9	23.68	1.9010	-	6	32	50.7	-13.189	0	13	46	29.01	2.1735	-	16	31	55.2	-11.354		
1	12	11	17.85	1.9048		6	45	59.9	13.147	1	13	48	39.64	2.1809		16	43	14.4	11.286		
2	12	13	12.26	1.9088		6	59	8.3	13.133	2	13	50	50.72	2.1884		16	54	29.5	11.216		
3	12	15	6.90	1.9127		7	12	15.9	13.119	3	13	53	2.25	2.1959		17	5	40.3	11.143		
4	12	17	1.78	1.9168		7	25	22.6	13.104	4	13	55	14.23	2.2034		17	16	46.7	11.070		
5	12	18	56.91	1.9210		7	38	28.4	13.088	5	13	57	26.66	2.2111		17	27	48.7	10.995		
6	12	20	52.30	1.9253		7	51	33.2	13.071	6	13	59	39.56	2.2188		17	38	46.1	10.918		
7	12	22	47.94	1.9295		8	4	36.9	13.053	7	14	1	52.92	2.2265		17	49	38.9	10.840		
8	12	24	43.84	1.9339		8	17	39.5	13.034	8	14	4	6.74	2.2342		18	0	26.9	10.760		
9	12	26	40.01	1.9384		8	30	41.0	13.014	9	14	6	21.02	2.2420		18	11	10.1	10.679		
10	12	28	36.45	1.9430		8	43	41.2	12.993	10	14	8	35.78	2.2499		18	21	48.4	10.596		
11	12	30	33.17	1.9477		8	56	40.1	12.971	11	14	10	51.01	2.2578		18	32	21.6	10.511		
12	12	32	30.17	1.9523		9	9	37.7	12.948	12	14	13	6.71	2.2657		18	42	49.7	10.425		
13	12	34	27.45	1.9572		9	22	33.9	12.924	13	14	15	22.89	2.2736		18	53	12.6	10.337		
14	12	36	25.03	1.9621		9	35	28.6	12.899	14	14	17	39.54	2.2816		19	3	30.1	10.247		
15	12	38	22.90	1.9670		9	48	21.8	12.873	15	14	19	56.68	2.2897		19	13	42.2	10.156		
16	12	40	21.07	1.9721		10	1	13.4	12.847	16	14	22	14.30	2.2977		19	23	48.8	10.063		
17	12	42	19.55	1.9773		10	14	3.4	12.819	17	14	24	32.40	2.3058		19	33	49.8	9.968		
18	12	44	18.34	1.9824		10	26	51.7	12.790	18	14	26	50.99	2.3139		19	43	45.0	9.872		
19	12	46	17.44	1.9877		10	39	38.2	12.759	19	14	29	10.07	2.3221		19	53	34.4	9.774		
20	12	48	16.86	1.9931		10	52	22.8	12.728	20	14	31	29.64	2.3302		20	3	17.9	9.674		
21	12	50	16.61	1.9986		11	5	5.5	12.696	21	14	33	49.69	2.3383		20	12	55.3	9.573		
22	12	52	16.69	2.0041		11	17	46.3	12.663	22	14	36	10.23	2.3464		20	22	26.6	9.469		
23	12	54	17.10	2.0097		-	11	30	25.0	-12.628	23	14	38	31.26	2.3546		-	20	31	51.6	-9.364
DECEMBER 19.									DECEMBER 21.												
0	12	56	17.85	2.0153		-	11	43	1.7	-12.593	0	14	40	52.78	2.3628		-	20	41	10.3	-9.258
1	12	58	18.94	2.0211		11	55	36.1	12.555	1	14	43	14.79	2.3710		20	50	22.5	9.149		
2	13	0	20.38	2.0269		12	8	8.3	12.518	2	14	45	37.30	2.3793		20	59	28.2	9.039		
3	13	2	22.17	2.0328		12	20	38.2	12.478	3	14	48	0.30	2.3874		21	8	27.2	8.927		
4	13	4	24.32	2.0388		12	33	5.7	12.438	4	14	50	23.79	2.3956		21	17	19.4	8.813		
5	13	6	26.83	2.0448		12	45	30.7	12.395	5	14	52	47.77	2.4038		21	26	4.7	8.698		
6	13	8	29.70	2.0510		12	57	53.1	12.353	6	14	55	12.24	2.4119		21	34	43.1	8.581		
7	13	10	32.95	2.0573		13	10	13.0	12.309	7	14	57	37.20	2.4201		21	43	14.4	8.461		
8	13	12	36.58	2.0636		13	22	30.2	12.263	8	15	0	2.65	2.4283		21	51	38.4	8.339		
9	13	14	40.58	2.0698		13	34	44.6	12.216	9	15	2	28.59	2.4363		21	59	55.1	8.218		
10	13	16	44.96	2.0763		13	46	56.1	12.168	10	15	4	55.01	2.4444		22	8	4.5	8.093		
11	13	18	49.74	2.0829		13	59	4.7	12.119	11	15	7	21.92	2.4525		22	16	6.3	7.967		
12	13	20	54.91	2.0894		14	11	10.4	12.069	12	15	9	49.31	2.4606		22	24	0.5	7.839		
13	13	23	0.47	2.0961		14	23	13.0	12.017	13	15	12	17.19	2.4686		22	31	47.0	7.709		
14	13	25	6.44	2.1028		14	35	12.4	11.963	14	15	14	45.54	2.4765		22	39	25.6	7.578		
15	13	27	12.81	2.1095		14	47	8.6	11.909	15	15	17	14.37	2.4844		22	46	56.3	7.444		
16	13	29	19.58	2.1163		14	59	1.5	11.853	16	15	19	43.67	2.4923		22	54	18.9	7.308		
17	13	31	26.77	2.1233		15	10	51.0	11.796	17	15	22	13.45	2.5002		23	1	33.3	7.172		
18	13	33	34.38	2.1303		15	22	37.0	11.737	18	15	24	43.69	2.5079		23	8	39.5	7.033		
19	13	35	42.41	2.1374		15	34	19.4	11.677	19	15	27	14.40	2.5157		23	15	37.3	6.893		
20	13	37	50.87	2.1445		15	45	58.2	11.616	20	15	29	45.57	2.5233		23	22	26.6	6.751		
21	13	39	59.75	2.1517		15	57	33.3	11.553	21	15	32	17.20	2.5310		23	29	7.4	6.608		
22	13	42	9.07	2.1589		16	9	4.5	11.488	22	15	34	49.29	2.5385		23	35	39.5	6.462		
23	13	44	18.82	2.1662		16	20	31.9	11.423	23	15	37	21.82	2.5459		23	42	2.8	6.314		
24	13	46	29.01	2.1735		-	16	31	55.2	-11.354	24	15	39	54.80	2.5533		-	23	48	17.2	-6.165

GREENWICH MEAN TIME.

Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.	Hour.	Right Ascension.			Var. per Min.	Declination.			Var. per Min.
DECEMBER 22.									DECEMBER 24.								
	h	m	s	s	°	'	"	"		h	m	s	s	°	'	"	"
0	15	39	54.80	2.5533	-23	48	17.2	-6.165	0	17	48	40.64	2.7508	-25	26	31.0	+2.438
1	15	42	28.22	2.5607	23	54	22.6	6.015	1	17	51	25.69	2.7506	25	23	58.9	2.633
2	15	45	2.08	2.5679	24	0	19.0	5.863	2	17	54	10.71	2.7501	25	21	15.1	2.827
3	15	47	36.37	2.5750	24	6	6.2	5.709	3	17	56	55.70	2.7496	25	18	19.7	3.019
4	15	50	11.08	2.5820	24	11	44.1	5.553	4	17	59	40.66	2.7489	25	15	12.8	3.212
5	15	52	46.21	2.5890	24	17	12.6	5.397	5	18	2	25.57	2.7479	25	11	54.3	3.405
6	15	55	21.76	2.5959	24	22	31.7	5.238	6	18	5	10.41	2.7468	25	8	24.2	3.598
7	15	57	57.72	2.6027	24	27	41.2	5.078	7	18	7	55.18	2.7455	25	4	42.6	3.789
8	16	0	34.08	2.6093	24	32	41.0	4.916	8	18	10	39.87	2.7440	25	0	49.5	3.980
9	16	3	10.83	2.6158	24	37	31.1	4.753	9	18	13	24.46	2.7423	24	56	45.0	4.170
10	16	5	47.97	2.6222	24	42	11.3	4.588	10	18	16	8.94	2.7404	24	52	29.1	4.360
11	16	8	25.49	2.6285	24	46	41.6	4.422	11	18	18	53.31	2.7384	24	48	1.8	4.550
12	16	11	3.39	2.6348	24	51	1.9	4.254	12	18	21	37.55	2.7362	24	43	23.1	4.739
13	16	13	41.66	2.6408	24	55	12.1	4.085	13	18	24	21.65	2.7338	24	38	33.1	4.927
14	16	16	20.28	2.6467	24	59	12.1	3.914	14	18	27	5.60	2.7312	24	33	31.9	5.113
15	16	18	59.26	2.6525	25	3	1.8	3.742	15	18	29	49.39	2.7284	24	28	19.5	5.300
16	16	21	38.58	2.6582	25	6	41.1	3.568	16	18	32	33.01	2.7255	24	22	55.9	5.485
17	16	24	18.24	2.6637	25	10	10.0	3.394	17	18	35	16.45	2.7224	24	17	21.3	5.669
18	16	26	58.22	2.6690	25	13	28.4	3.219	18	18	37	59.70	2.7192	24	11	35.6	5.853
19	16	29	38.52	2.6743	25	16	36.3	3.043	19	18	40	42.75	2.7158	24	5	38.9	6.036
20	16	32	19.13	2.6793	25	19	33.5	2.864	20	18	43	25.59	2.7123	23	59	31.3	6.217
21	16	35	0.04	2.6843	25	22	20.0	2.685	21	18	46	8.22	2.7086	23	53	12.9	6.397
22	16	37	41.24	2.6890	25	24	55.7	2.504	22	18	48	50.62	2.7048	23	46	43.7	6.576
23	16	40	22.72	2.6937	-25	27	20.5	-2.323	23	18	51	32.79	2.7008	-23	40	3.8	+6.753
DECEMBER 23.									DECEMBER 25.								
0	16	43	4.48	2.6982	-25	29	34.4	-2.140	0	18	54	14.71	2.6966	-23	33	13.3	+6.930
1	16	45	46.50	2.7024	25	31	37.3	1.957	1	18	56	56.38	2.6923	23	26	12.2	7.105
2	16	48	28.77	2.7065	25	33	29.2	1.773	2	18	59	37.78	2.6878	23	19	0.7	7.278
3	16	51	11.28	2.7104	25	35	10.0	1.587	3	19	2	18.92	2.6833	23	11	38.8	7.451
4	16	53	54.02	2.7142	25	36	39.6	1.400	4	19	4	59.78	2.6787	23	4	6.6	7.623
5	16	56	36.98	2.7178	25	37	58.0	1.213	5	19	7	40.36	2.6738	22	56	24.1	7.793
6	16	59	20.15	2.7212	25	39	5.1	1.025	6	19	10	20.64	2.6689	22	48	31.5	7.960
7	17	2	3.52	2.7244	25	40	1.0	0.837	7	19	13	0.63	2.6639	22	40	28.9	8.127
8	17	4	47.08	2.7275	25	40	45.5	0.647	8	19	15	40.31	2.6588	22	32	16.3	8.292
9	17	7	30.82	2.7304	25	41	18.6	0.457	9	19	18	19.68	2.6535	22	23	53.9	8.455
10	17	10	14.73	2.7332	25	41	40.3	0.267	10	19	20	58.73	2.6481	22	15	21.7	8.618
11	17	12	58.80	2.7357	25	41	50.6	-0.076	11	19	23	37.45	2.6426	22	6	39.8	8.778
12	17	15	43.01	2.7379	25	41	49.4	+0.116	12	19	26	15.84	2.6370	21	57	48.4	8.936
13	17	18	27.35	2.7401	25	41	36.7	0.308	13	19	28	53.89	2.6313	21	48	47.5	9.093
14	17	21	11.82	2.7420	25	41	12.4	0.502	14	19	31	31.60	2.6257	21	39	37.3	9.248
15	17	23	56.39	2.7437	25	40	36.5	0.695	15	19	34	8.97	2.6198	21	30	17.8	9.402
16	17	26	41.06	2.7453	25	39	49.0	0.888	16	19	36	45.98	2.6138	21	20	49.1	9.553
17	17	29	25.82	2.7467	25	38	50.0	1.081	17	19	39	22.63	2.6078	21	11	11.4	9.703
18	17	32	10.66	2.7478	25	37	39.3	1.275	18	19	41	58.92	2.6018	21	1	24.8	9.851
19	17	34	55.56	2.7488	25	36	17.0	1.468	19	19	44	34.85	2.5958	20	51	29.3	9.998
20	17	37	40.52	2.7496	25	34	43.1	1.663	20	19	47	10.41	2.5895	20	41	25.1	10.142
21	17	40	25.51	2.7502	25	32	57.5	1.857	21	19	49	45.59	2.5832	20	31	12.3	10.283
22	17	43	10.54	2.7507	25	31	0.3	2.050	22	19	52	20.39	2.5768	20	20	51.1	10.424
23	17	45	55.59	2.7508	25	28	51.5	2.244	23	19	54	54.81	2.5705	20	10	21.4	10.563
24	17	48	40.64	2.7508	-25	26	31.0	+2.438	24	19	57	28.85	2.5641	-19	59	43.5	+10.699

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
DECEMBER 26.					DECEMBER 28.				
	h m s	s	" ' "	"		h m s	s	" ' "	"
0	19 57 28.85	2.5641	-19 59 43.5	+10.699	0	21 52 58.45	2.2578	-9 27 7.8	+14.886
1	20 0 2.50	2.5576	19 48 57.5	10.834	1	21 55 13.76	2.2525	9 12 13.5	14.925
2	20 2 35.76	2.5510	19 38 3.4	10.968	2	21 57 28.75	2.2473	8 57 16.8	14.963
3	20 5 8.62	2.5444	19 27 1.4	11.098	3	21 59 43.43	2.2420	8 42 17.9	14.998
4	20 7 41.09	2.5379	19 15 51.7	11.226	4	22 1 57.79	2.2368	8 27 17.0	15.032
5	20 10 13.17	2.5313	19 4 34.3	11.353	5	22 4 11.85	2.2318	8 12 14.1	15.064
6	20 12 44.84	2.5246	18 53 9.3	11.478	6	22 6 25.61	2.2269	7 57 9.3	15.095
7	20 15 16.12	2.5179	18 41 36.9	11.601	7	22 8 39.08	2.2220	7 42 2.7	15.124
8	20 17 46.99	2.5112	18 29 57.2	11.721	8	22 10 52.25	2.2172	7 26 54.4	15.151
9	20 20 17.46	2.5045	18 18 10.4	11.839	9	22 13 5.14	2.2124	7 11 44.6	15.176
10	20 22 47.53	2.4978	18 6 16.5	11.957	10	22 15 17.74	2.2078	6 56 33.3	15.200
11	20 25 17.19	2.4909	17 54 15.6	12.072	11	22 17 30.07	2.2032	6 41 20.6	15.222
12	20 27 46.44	2.4842	17 42 7.9	12.184	12	22 19 42.12	2.1986	6 26 6.7	15.242
13	20 30 15.29	2.4774	17 29 53.5	12.294	13	22 21 53.90	2.1942	6 10 51.6	15.261
14	20 32 43.73	2.4707	17 17 32.6	12.403	14	22 24 5.42	2.1898	5 55 35.4	15.278
15	20 35 11.77	2.4639	17 5 5.2	12.509	15	22 26 16.68	2.1856	5 40 18.3	15.293
16	20 37 39.40	2.4571	16 52 31.5	12.613	16	22 28 27.69	2.1814	5 25 0.3	15.307
17	20 40 6.62	2.4503	16 39 51.6	12.716	17	22 30 38.45	2.1773	5 9 41.5	15.319
18	20 42 33.44	2.4437	16 27 5.6	12.816	18	22 32 48.96	2.1732	4 54 22.0	15.330
19	20 44 59.86	2.4369	16 14 13.7	12.913	19	22 34 59.23	2.1693	4 39 1.9	15.339
20	20 47 25.87	2.4302	16 1 16.0	13.009	20	22 37 9.27	2.1654	4 23 41.3	15.348
21	20 49 51.48	2.4235	15 48 12.6	13.103	21	22 39 19.08	2.1616	4 8 20.2	15.353
22	20 52 16.69	2.4168	15 35 3.6	13.196	22	22 41 28.66	2.1578	3 52 58.9	15.358
23	20 54 41.50	2.4102	-15 21 49.1	+13.286	23	22 43 38.02	2.1542	-3 37 37.3	+15.361
DECEMBER 27.					DECEMBER 29.				
	h m s	s	" ' "	"		h m s	s	" ' "	"
0	20 57 59.91	2.4035	-15 8 29.3	+13.373	0	22 45 47.16	2.1506	-3 22 15.6	+15.363
1	20 59 29.92	2.3969	14 55 4.3	13.459	1	22 47 56.09	2.1472	3 6 53.8	15.363
2	21 1 53.54	2.3904	14 41 34.2	13.543	2	22 50 4.82	2.1438	2 51 32.1	15.361
3	21 4 16.77	2.3839	14 27 59.1	13.625	3	22 52 13.35	2.1406	2 36 10.5	15.358
4	21 6 39.61	2.3774	14 14 19.2	13.704	4	22 54 21.69	2.1373	2 20 49.2	15.353
5	21 9 2.06	2.3709	14 0 34.6	13.782	5	22 56 29.83	2.1341	2 5 28.1	15.348
6	21 11 24.12	2.3644	13 46 45.4	13.858	6	22 58 37.78	2.1311	1 50 7.4	15.342
7	21 13 45.79	2.3580	13 32 51.7	13.932	7	23 0 45.56	2.1282	1 34 47.1	15.333
8	21 16 7.08	2.3518	13 18 53.6	14.003	8	23 2 53.16	2.1252	1 19 27.4	15.323
9	21 18 28.00	2.3455	13 4 51.3	14.073	9	23 5 0.58	2.1223	1 4 8.4	15.311
10	21 20 48.54	2.3393	12 50 44.9	14.140	10	23 7 7.84	2.1197	0 48 50.1	15.298
11	21 23 8.71	2.3330	12 36 34.5	14.206	11	23 9 14.94	2.1171	0 33 32.6	15.285
12	21 25 28.50	2.3268	12 22 20.2	14.270	12	23 11 21.89	2.1145	0 18 15.9	15.270
13	21 27 47.93	2.3208	12 8 2.1	14.332	13	23 13 28.68	2.1120	-0 3 0.2	15.253
14	21 30 7.00	2.3148	11 53 40.4	14.391	14	23 15 35.33	2.1097	+0 12 14.5	15.236
15	21 32 25.70	2.3088	11 39 15.2	14.448	15	23 17 41.84	2.1073	0 27 28.1	15.217
16	21 34 44.05	2.3029	11 24 46.6	14.505	16	23 19 48.21	2.1050	0 42 40.5	15.196
17	21 37 2.05	2.2971	11 10 14.6	14.560	17	23 21 54.44	2.1028	0 57 51.6	15.174
18	21 39 19.70	2.2913	10 55 39.4	14.612	18	23 24 0.55	2.1008	1 13 1.4	15.151
19	21 41 37.00	2.2855	10 41 1.2	14.662	19	23 26 6.54	2.0988	1 28 9.7	15.127
20	21 43 53.96	2.2798	10 26 20.0	14.710	20	23 28 12.41	2.0969	1 43 16.6	15.102
21	21 46 10.58	2.2743	10 11 36.0	14.757	21	23 30 18.17	2.0951	1 58 21.9	15.074
22	21 48 26.87	2.2687	9 56 49.2	14.802	22	23 32 23.82	2.0933	2 13 25.5	15.047
23	21 50 42.82	2.2632	9 41 59.8	14.845	23	23 34 29.37	2.0917	2 28 27.5	15.018
24	21 52 58.54	2.2578	-9 27 7.8	+14.886	24	23 36 34.82	2.0901	+2 43 27.7	+14.988

GREENWICH MEAN TIME.

Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.	Hour.	Right Ascension.	Var. per Min.	Declination.	Var. per Min.
DECEMBER 30.					DECEMBER 31.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	23 36 34.82	2.0901	+2 43 27.7	+14.988	0	0 26 28.15	2.0744	+ 8 31 39.2	+13.924
1	23 38 40.18	2.0886	2 58 26.0	14.956	1	0 28 32.62	2.0746	8 45 32.9	13.867
2	23 40 45.45	2.0871	3 13 22.4	14.923	2	0 30 37.10	2.0748	8 59 23.2	13.806
3	23 42 50.63	2.0858	3 28 16.8	14.889	3	0 32 41.60	2.0753	9 13 9.9	13.749
4	23 44 55.74	2.0845	3 43 9.1	14.854	4	0 34 46.13	2.0758	9 26 53.1	13.689
5	23 47 0.77	2.0833	3 57 59.3	14.818	5	0 36 50.69	2.0762	9 40 32.6	13.628
6	23 49 5.73	2.0822	4 12 47.3	14.781	6	0 38 55.27	2.0767	9 54 8.4	13.565
7	23 51 10.63	2.0811	4 27 33.0	14.743	7	0 40 59.89	2.0773	10 7 40.4	13.502
8	23 53 15.46	2.0801	4 42 16.4	14.703	8	0 43 4.55	2.0780	10 21 8.6	13.438
9	23 55 20.24	2.0792	4 56 57.4	14.663	9	0 45 9.25	2.0787	10 34 33.0	13.373
10	23 57 24.96	2.0783	5 11 35.9	14.621	10	0 47 13.99	2.0794	10 47 53.4	13.307
11	23 59 29.64	2.0777	5 26 11.9	14.578	11	0 49 18.78	2.0803	11 1 9.8	13.240
12	0 1 34.28	2.0770	5 40 45.3	14.534	12	0 51 23.63	2.0813	11 14 22.2	13.173
13	0 3 38.88	2.0763	5 55 16.0	14.488	13	0 53 28.53	2.0822	11 27 30.5	13.103
14	0 5 43.44	2.0758	6 9 43.9	14.443	14	0 55 33.49	2.0832	11 40 34.6	13.033
15	0 7 47.98	2.0754	6 24 9.1	14.396	15	0 57 38.51	2.0843	11 53 34.5	12.963
16	0 9 52.49	2.0749	6 38 31.4	14.347	16	0 59 43.60	2.0854	12 6 30.1	12.891
17	0 11 56.97	2.0746	6 52 50.7	14.298	17	1 1 48.76	2.0866	12 19 21.4	12.818
18	0 14 1.44	2.0744	7 7 7.1	14.248	18	1 3 53.99	2.0878	12 32 8.3	12.745
19	0 16 5.90	2.0743	7 21 20.4	14.196	19	1 5 59.30	2.0891	12 44 50.8	12.671
20	0 18 10.35	2.0742	7 35 30.6	14.144	20	1 8 4.68	2.0903	12 57 28.8	12.596
21	0 20 14.80	2.0741	7 49 37.7	14.091	21	1 10 10.14	2.0918	13 10 2.3	12.520
22	0 22 19.24	2.0741	8 3 41.5	14.036	22	1 12 15.69	2.0933	13 22 31.2	12.443
23	0 24 23.69	2.0743	8 17 42.0	13.981	23	1 14 21.33	2.0947	13 34 55.4	12.364
24	0 26 28.15	2.0744	+8 31 39.2	+13.924	24	1 16 27.05	2.0961	+13 47 14.9	+12.285

PHASES OF THE MOON.

● New Moon	Jan.	d h m	Apr.	d h m	June	d h m	Sept.	d h m
☾ First Quarter		11 15 37.6		10 2 35.7	July	7 23 55.0	Oct.	3 23 0.5
○ Full Moon		19 20 29.0		17 17 7.5		14 16 40.0		10 19 1.1
☾ Last Quarter		27 12 35.1		24 10 38.3		21 11 33.0		18 13 8.7
● New Moon	Feb.	3 4 5.8	May	1 17 28.9	Aug.	29 14 15.4	Nov.	26 8 37.0
☾ First Quarter		10 10 20.4		9 20 47.1		6 9 5.6		2 5 50.6
○ Full Moon		18 14 28.6		17 2 11.3		13 0 0.3		9 8 18.0
☾ Last Quarter		25 21 23.8		23 17 16.4		20 0 52.8		17 10 0.5
● New Moon	Mar.	3 15 57.6	June	31 7 37.3	Sept.	28 5 24.7	Dec.	24 20 50.4
☾ First Quarter		11 6 32.9		8 11 59.0		4 16 26.5		1 13 55.5
○ Full Moon		19 5 26.7		15 9 41.7		11 8 30.9		9 0 43.9
☾ Last Quarter		26 4 22.4		22 1 16.3		18 17 35.3		17 6 6.4
● New Moon	Apr.	2 4 21.2	July	29 22 43.4	Oct.	26 19 34.1		24 8 31.2
☾ First Quarter		10 2 35.7		7 23 55.0		3 23 0.5		31 0 7.2

APOGEE.

PERIGEE.

January	d h	June	d h	January	d h	July	d h
February	16 17.1	July	30 16.2	February	4 2.3	August	14 12.3
March	13 9.4	August	27 19.5	February	1 12.1	September	11 21.3
April	12 5.4	September	24 5.0	March	29 8.7	October	9 1.4
May	9 1.7	October	20 21.6	March	26 1.2	October	6 10.5
June	6 19.7	November	18 17.2	April	20 23.6	November	31 6.8
	3 9.5	December	15 14.0	May	18 20.0	December	27 7.7
			13 8.8	June	16 2.6		25 7.7

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.
							Jan. 1	L	h m		m
Jan. 1.0	227 54 17.5	-5 9 8.9	16 21.5	59 56.21	+1.989	25.7	Jan. 1	L	8 36.8	2.52
1.5	235 13 54.7	5 0 2.5	16 27.7	60 18.98	1.795	26.2	1	U	21 7.7	2.63
2.0	242 38 55.3	4 45 49.7	16 33.2	60 39.07	1.544	26.7	2	L	9 39.9	2.72
2.5	250 8 30.3	4 26 35.6	16 37.7	60 55.81	1.238	27.2	2	U	22 12.9	2.78
3.0	257 41 39.5	4 2 34.3	16 41.2	61 8.58	0.884	27.7	3	L	10 46.5	2.81
3.5	265 17 14.5	-3 34 8.2	16 43.5	61 16.87	+0.493	28.2	3	U	23 20.1	2.79
4.0	272 54 0.7	3 1 48.1	16 44.4	61 20.30	+0.079	28.7	4	L	11 53.2	2.73
4.5	280 30 40.8	2 26 12.7	16 44.0	61 18.73	-0.344	29.2			.....	.....
5.0	288 5 56.9	1 48 6.2	16 42.2	61 12.09	0.760	0.3	5	U	0 25.5	2.65
5.5	295 38 35.1	1 8 17.0	16 39.0	61 0.59	1.152	0.8	5	L	12 56.7	2.54
6.0	303 7 27.9	-0 27 34.6	16 34.7	60 44.59	-1.506	1.3	6	U	1 26.5	2.43
6.5	310 31 36.4	+0 13 12.1	16 29.2	60 24.65	1.811	1.8	6	L	13 55.0	2.32
7.0	317 50 12.1	0 53 16.6	16 22.9	60 1.35	2.060	2.3	7	U	2 22.1	2.21
7.5	325 2 37.2	1 31 57.4	16 15.8	59 35.45	2.249	2.8	7	L	14 48.1	2.11
8.0	332 8 26.3	2 8 37.5	16 8.3	59 7.65	2.375	3.3	8	U	3 12.9	2.03
8.5	339 7 24.5	+2 42 46.7	16 0.4	58 38.71	-2.441	3.8	8	L	15 36.8	1.96
9.0	345 59 27.4	3 14 0.3	15 52.4	58 9.29	2.452	4.3	9	U	4 0.0	1.91
9.5	352 44 39.7	3 41 59.4	15 44.4	57 40.05	2.413	4.8	9	L	16 22.7	1.87
10.0	359 23 14.1	4 6 30.6	15 36.6	57 11.52	2.332	5.3	10	U	4 45.0	1.85
10.5	5 55 29.5	4 27 24.4	15 29.2	56 44.23	2.215	5.8	10	L	17 7.0	1.84
11.0	12 21 49.6	+4 44 35.5	15 22.2	56 18.49	-2.071	6.3	11	U	5 29.1	1.84
11.5	18 42 42.2	4 58 1.8	15 15.6	55 54.60	1.905	6.8	11	L	17 51.2	1.85
12.0	24 58 37.6	5 7 43.2	15 9.7	55 32.85	1.722	7.3	12	U	6 13.4	1.87
12.5	31 10 7.5	5 13 42.1	15 4.4	55 13.32	1.530	7.8	12	L	18 36.0	1.90
13.0	37 17 44.9	5 16 1.8	14 59.7	54 56.13	1.333	8.3	13	U	6 58.9	1.93
13.5	43 22 2.0	+5 14 47.5	14 55.7	54 41.31	-1.135	8.8	13	L	19 22.3	1.97
14.0	49 23 30.9	5 10 4.9	14 52.3	54 28.89	0.938	9.3	14	U	7 46.1	2.01
14.5	55 22 42.9	5 2 1.0	14 49.5	54 18.79	0.746	9.8	14	L	20 10.4	2.04
15.0	61 20 7.4	4 50 43.5	14 47.4	54 10.95	0.561	10.3	15	U	8 35.1	2.08
15.5	67 16 12.7	4 36 20.8	14 45.9	54 5.28	0.386	10.8	15	L	21 0.2	2.10
16.0	73 11 25.0	+4 19 2.6	14 44.9	54 1.65	-0.221	11.3	16	U	9 25.5	2.12
16.5	79 6 8.7	3 58 59.2	14 44.4	53 59.93	-0.067	11.8	16	L	21 50.9	2.12
17.0	85 0 46.4	3 36 22.2	14 44.4	54 0.01	+0.076	12.3	17	U	10 16.3	2.11
17.5	90 55 38.2	3 11 24.6	14 44.9	54 1.72	0.207	12.8	17	L	22 41.5	2.09
18.0	96 51 3.2	2 44 20.2	14 45.8	54 4.94	0.327	13.3	18	U	11 6.5	2.07
18.5	102 47 18.7	+2 15 24.4	14 47.0	54 9.54	+0.437	13.8	18	L	23 31.1	2.03
19.0	108 44 40.6	1 44 53.7	14 48.6	54 15.41	0.538	14.3	19	U	11 55.2	1.99
19.5	114 43 23.2	1 13 6.0	14 50.5	54 22.42	0.630	14.8			.....	.....
20.0	120 43 40.5	0 40 20.5	14 52.7	54 30.51	0.716	15.3	20	L	0 18.8	1.95
20.5	126 45 45.4	+0 6 57.3	14 55.2	54 39.59	0.796	15.8	20	U	12 41.9	1.90
21.0	132 49 50.6	-0 26 42.4	14 57.9	54 49.61	+0.872	16.3	21	L	1 4.5	1.86
21.5	138 56 8.3	1 0 16.4	15 0.9	55 0.52	0.947	16.8	21	U	13 26.6	1.83
22.0	145 4 51.3	1 33 22.1	15 4.1	55 12.34	1.021	17.3	22	L	1 48.4	1.80
22.5	151 16 12.4	2 5 36.4	15 7.6	55 25.03	1.095	17.8	22	U	14 9.9	1.78
23.0	157 30 24.7	2 36 35.9	15 11.3	55 38.61	1.170	18.3	23	L	2 31.2	1.77
23.5	163 47 42.0	-3 5 57.2	15 15.2	55 53.11	+1.247	18.8	23	U	14 52.5	1.77
24.0	170 8 18.7	-3 33 16.9	15 19.4	56 8.54	+1.324	19.3	24	L	3 13.8	1.78

GREENWICH MEAN TIME.

G. M. T.	Longitude.			Latitude.			Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.
	°	'	"	°	'	"					h	m	m	
n. 24.0	170	8	18.7	-3	33	16.9	15 19.4	56 8.54	+1.324	19.3	Jan. 24	L	3 13.8	1.78
24.5	176	32	29.5	3	58	12.2	15 23.9	56 24.88	1.401	19.8	24	U	15 35.4	1.81
25.0	183	0	29.3	4	20	20.9	15 28.6	56 42.14	1.477	20.3	25	L	3 57.3	1.84
25.5	189	32	33.0	4	39	21.2	15 33.6	57 0.31	1.550	20.8	25	U	16 19.7	1.90
26.0	196	8	54.5	4	54	53.0	15 38.7	57 19.31	1.615	21.3	26	L	4 42.9	1.97
26.5	202	49	47.0	-5	6	37.0	15 44.1	57 39.04	+1.670	21.8	26	U	17 6.9	2.04
27.0	209	35	21.4	5	14	16.0	15 49.6	57 59.34	1.711	22.3	27	L	5 31.9	2.13
27.5	216	25	46.0	5	17	35.0	15 55.3	58 20.01	1.732	22.8	27	U	17 58.0	2.22
28.0	223	21	5.3	5	16	21.8	16 0.9	58 40.79	1.727	23.3	28	L	6 25.3	2.33
28.5	230	21	19.3	5	10	27.8	16 6.5	59 1.32	1.691	23.8	28	U	18 54.0	2.43
29.0	237	26	22.3	-4	59	48.2	16 12.0	59 21.23	+1.620	24.3	29	L	7 23.8	2.52
29.5	244	36	2.6	4	44	23.4	16 17.1	59 40.07	1.510	24.8	29	U	19 54.7	2.61
30.0	251	50	1.2	4	24	19.6	16 21.8	59 57.33	1.358	25.3	30	L	8 26.5	2.67
30.5	259	7	51.7	3	59	49.1	16 25.9	60 12.47	1.161	25.8	30	U	20 58.9	2.71
31.0	266	29	0.2	3	31	11.0	16 29.3	60 25.02	0.922	26.3	31	L	9 31.4	2.69
31.5	273	52	45.3	-2	58	51.3	16 31.9	60 34.46	+0.645	26.8	31	U	22 3.6	2.66
Feb. 1.0	281	18	19.1	2	23	22.5	16 33.5	60 40.36	+0.335	27.3	Feb. 1	L	10 35.3	2.60
1.5	288	44	48.5	1	45	22.8	16 34.1	60 42.40	0.000	27.8	1	U	23 6.1	2.52
2.0	296	11	16.4	1	5	35.7	16 33.5	60 40.32	-0.347	28.3	2	L	11 35.8	2.42
2.5	303	36	44.1	-0	24	47.1	16 31.8	60 34.08	0.694	28.8			.....	...
3.0	311	0	12.8	+0	16	15.5	16 29.0	60 23.72	-1.028	29.3	3	U	0 4.3	2.33
3.5	318	20	46.4	0	56	45.3	16 25.1	60 9.49	1.339	0.3	3	L	12 31.7	2.24
4.0	325	37	32.1	1	35	57.7	16 20.3	59 51.71	1.616	0.8	4	U	0 58.1	2.15
4.5	332	49	44.1	2	13	12.4	16 14.6	59 30.87	1.850	1.3	4	L	13 23.4	2.07
5.0	339	56	43.3	2	47	54.3	16 8.2	59 7.52	2.033	1.8	5	U	1 47.9	2.02
5.5	346	57	59.2	+3	19	34.1	16 1.4	58 42.30	-2.164	2.3	5	L	14 11.8	1.97
6.0	353	53	10.0	3	47	49.2	15 54.1	58 15.78	2.242	2.8	6	U	2 35.2	1.93
6.5	0	42	2.9	4	12	22.6	15 46.7	57 48.68	2.271	3.3	6	L	14 58.2	1.91
7.0	7	24	33.6	4	33	2.7	15 39.3	57 21.49	2.232	3.8	7	U	3 21.0	1.90
7.5	14	0	46.0	4	49	44.1	15 32.1	56 54.83	2.188	4.3	7	L	15 43.7	1.90
8.0	20	30	51.2	+5	2	24.8	15 25.1	56 29.16	-2.085	4.8	8	U	4 6.5	1.90
8.5	26	55	7.1	5	11	6.4	15 18.5	56 4.91	1.950	5.3	8	L	16 29.4	1.92
9.0	33	13	56.4	5	15	53.3	15 12.3	55 42.45	1.790	5.8	9	U	4 52.6	1.95
9.5	39	27	46.5	5	16	52.1	15 6.8	55 22.02	1.610	6.3	9	L	17 16.2	1.98
10.0	45	37	8.0	5	14	10.7	15 1.8	55 3.87	1.414	6.8	10	U	5 40.1	2.00
10.5	51	42	34.3	+5	7	58.0	14 57.5	54 48.13	-1.207	7.3	10	L	18 4.3	2.03
11.0	57	44	40.0	4	58	23.8	14 53.9	54 34.92	0.994	7.8	11	U	6 29.0	2.07
11.5	63	44	1.2	4	45	38.5	14 51.0	54 24.30	0.779	8.3	11	L	18 53.9	2.09
12.0	69	41	14.2	4	29	52.7	14 48.8	54 16.23	0.565	8.8	12	U	7 19.1	2.11
12.5	75	36	54.8	4	11	17.6	14 47.3	54 10.71	0.355	9.3	12	L	19 44.5	2.12
13.0	81	31	38.1	+3	50	4.9	14 46.5	54 7.69	-0.152	9.8	13	U	8 9.9	2.12
13.5	87	25	58.6	3	26	26.6	14 46.3	54 7.03	+0.041	10.3	13	L	20 35.2	2.10
14.0	93	20	28.8	3	0	35.9	14 46.8	54 8.63	0.222	10.8	14	U	9 0.4	2.08
14.5	99	15	39.6	2	32	46.5	14 47.8	54 12.31	0.390	11.3	14	L	21 25.2	2.06
15.0	105	11	59.4	2	3	13.1	14 49.3	54 17.94	0.544	11.8	15	U	9 49.7	2.02
15.5	111	9	54.8	+1	32	11.9	14 51.3	54 25.32	+0.683	12.3	15	L	22 13.7	1.98
16.0	117	9	49.5	+1	0	0.2	14 53.8	54 34.26	+0.805	12.8	16	U	10 37.3	1.94

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.
								h m	m	
Feb. 16.0	117 9 49.5	+1 0 0.2	14 53.8	54 34.26	+0.805	12.8	Feb. 16	U	10 37.3	1.94
16.5	123 12 4.7	+0 26 56.6	14 56.6	54 44.56	0.909	13.3	16	L	23 0.4	1.90
17.0	129 16 58.6	-0 6 38.5	14 59.7	54 56.00	0.997	13.8	17	U	11 23.0	1.87
17.5	135 24 46.7	0 40 23.6	15 3.1	55 8.42	1.068	14.3	17	L	23 45.3	1.84
18.0	141 35 41.6	1 13 55.8	15 6.6	55 21.59	1.124	14.8	18	U	12 7.3	1.82
18.5	147 49 52.8	-1 46 51.0	15 10.4	55 35.33	+1.166	15.3			.....	...
19.0	154 7 27.2	2 18 44.6	15 14.3	55 49.53	1.195	15.8	19	L	0 29.0	1.81
19.5	160 28 29.1	2 49 11.0	15 18.2	56 3.96	1.212	16.3	19	U	12 50.7	1.80
20.0	166 53 0.6	3 17 45.0	15 22.2	56 18.57	1.220	16.8	20	L	1 12.3	1.81
20.5	173 21 1.4	3 44 1.4	15 26.2	56 33.22	1.221	17.3	20	U	13 34.1	1.82
21.0	179 52 29.4	-4 7 36.0	15 30.2	56 47.84	+1.215	17.8	21	L	1 56.1	1.85
21.5	186 27 21.5	4 28 5.7	15 34.1	57 2.36	1.205	18.3	21	U	14 18.5	1.88
22.0	193 5 32.9	4 45 9.6	15 38.0	57 16.75	1.193	18.8	22	L	2 41.4	1.93
22.5	199 46 58.3	4 58 28.7	15 41.9	57 31.00	1.180	19.3	22	U	15 5.0	2.00
23.0	206 31 32.6	5 7 46.9	15 45.8	57 45.06	1.164	19.8	23	L	3 29.5	2.07
23.5	213 19 9.4	-5 12 51.0	15 49.5	57 58.89	+1.145	20.3	23	U	15 54.8	2.15
24.0	220 9 43.0	5 13 31.4	15 53.2	58 12.49	1.121	20.8	24	L	4 21.2	2.24
24.5	227 3 7.4	5 9 41.9	15 56.8	58 25.78	1.092	21.3	24	U	16 48.6	2.33
25.0	233 59 16.0	5 1 20.6	16 0.4	58 38.70	1.057	21.8	25	L	5 17.1	2.42
25.5	240 58 2.3	4 48 29.7	16 3.8	58 51.12	1.010	22.3	25	U	17 46.6	2.49
26.0	247 59 18.6	-4 31 15.6	16 7.0	59 2.87	+0.949	22.8	26	L	6 16.9	2.55
26.5	255 2 56.2	4 9 49.8	16 9.9	59 13.81	0.870	23.3	26	U	18 47.8	2.59
27.0	262 8 44.5	3 44 28.0	16 12.6	59 23.69	0.772	23.8	27	L	7 19.1	2.60
27.5	269 16 30.9	3 15 31.0	16 15.0	59 32.27	0.652	24.3	27	U	19 50.3	2.59
28.0	276 25 59.2	2 43 24.0	16 16.9	59 39.24	0.508	24.8	28	L	8 21.3	2.55
28.5	283 36 50.8	-2 8 36.5	16 18.3	59 44.39	+0.341	25.3	28	U	20 51.6	2.49
29.0	290 48 43.1	1 31 42.6	16 19.1	59 47.35	+0.151	25.8	29	L	9 21.2	2.42
29.5	298 1 9.6	0 53 19.0	16 19.2	59 47.95	-0.058	26.3	29	U	21 49.9	2.35
Mar. 1.0	305 13 40.2	-0 14 5.4	16 18.7	59 45.91	0.282	26.8	Mar. 1	L	10 17.6	2.27
1.5	312 25 41.2	+0 25 17.2	16 17.4	59 41.13	0.516	27.3	1	U	22 44.3	2.19
2.0	319 36 36.8	+1 4 7.5	16 15.3	59 33.54	-0.752	27.8	2	L	11 10.2	2.12
2.5	326 45 49.3	1 41 45.5	16 12.5	59 23.12	0.984	28.3	2	U	23 35.2	2.06
3.0	333 52 40.0	2 17 33.2	16 8.9	59 9.98	1.202	28.8	3	L	11 59.6	2.01
3.5	340 56 31.1	2 50 56.2	16 4.6	58 54.35	1.400	29.3			.....	...
4.0	347 56 46.6	3 21 24.6	15 59.8	58 36.49	1.571	0.3	4	U	0 23.5	1.97
4.5	354 52 54.7	+3 48 33.7	15 54.4	58 16.75	-1.711	0.8	4	L	12 47.0	1.95
5.0	1 44 27.3	4 12 4.1	15 48.6	57 55.55	1.815	1.3	5	U	1 10.3	1.93
5.5	8 31 2.2	4 31 42.1	15 42.6	57 33.34	1.881	1.8	5	L	13 33.4	1.93
6.0	15 12 23.6	4 47 19.4	15 36.4	57 10.58	1.906	2.3	6	U	1 56.6	1.94
6.5	21 48 22.3	4 58 52.4	15 30.1	56 47.76	1.892	2.8	6	L	14 19.9	1.95
7.0	28 18 56.2	+5 6 21.8	15 24.0	56 25.29	-1.843	3.3	7	U	2 43.4	1.97
7.5	34 44 9.7	5 9 52.2	15 18.1	56 3.65	1.761	3.8	7	L	15 7.1	1.99
8.0	41 4 13.6	5 9 30.6	15 12.5	55 43.17	1.647	4.3	8	U	3 31.2	2.02
8.5	47 19 25.3	5 5 26.4	15 7.4	55 24.23	1.506	4.8	8	L	15 55.6	2.05
9.0	53 30 6.9	4 57 50.5	15 2.7	55 7.13	1.342	5.3	9	U	4 20.4	2.07
9.5	59 36 45.1	+4 46 55.0	14 58.6	54 52.10	-1.159	5.8	9	L	16 45.4	2.09
10.0	65 39 50.7	+4 32 52.5	14 55.2	54 39.36	-0.962	6.3	10	U	5 10.7	2.12

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.
	" ' "	" ' "	" "	" "	" "	d		h m	m	
Mar. 10.0	65 39 50.7	+4 32 52.5	14 55.2	54 39.36	-0.962	6.3	Mar. 10	U	5 10.7	2.12
10.5	71 39 57.2	4 15 56.0	14 52.3	54 29.05	0.754	6.8	10	L	17 36.2	2.12
11.0	77 37 41.0	3 56 18.9	14 50.2	54 21.30	0.539	7.3	11	U	6 1.7	2.12
11.5	83 33 39.8	3 34 14.4	14 48.8	54 16.17	0.319	7.8	11	L	18 27.1	2.11
12.0	89 28 32.7	3 9 56.3	14 48.1	54 13.65	-0.099	8.3	12	U	6 52.4	2.09
12.5	95 22 58.9	+2 43 38.3	14 48.2	54 13.77	+0.117	8.8	12	L	19 17.4	2.07
13.0	101 17 37.9	2 15 34.6	14 48.9	54 16.43	0.327	9.3	13	U	7 42.1	2.04
13.5	107 13 8.2	1 45 59.8	14 50.3	54 21.58	0.529	9.8	13	L	20 6.3	2.00
14.0	113 10 7.4	1 15 9.7	14 52.3	54 29.08	0.720	10.3	14	U	8 30.1	1.97
14.5	119 9 11.4	0 43 20.6	14 55.0	54 38.78	0.895	10.8	14	L	20 53.5	1.93
15.0	125 10 53.4	+0 10 50.2	14 58.2	54 50.50	+1.053	11.3	15	U	9 16.5	1.89
15.5	131 15 43.8	-0 22 2.5	15 1.8	55 3.97	1.191	11.8	15	L	21 39.0	1.87
16.0	137 24 10.3	0 54 57.0	15 6.0	55 18.99	1.307	12.3	16	U	10 1.3	1.84
16.5	143 36 35.7	1 27 31.2	15 10.4	55 35.25	1.400	12.8	16	L	22 23.3	1.83
17.0	149 53 18.8	1 59 21.8	15 15.1	55 52.49	1.468	13.3	17	U	10 45.2	1.82
17.5	156 14 33.4	-2 30 3.7	15 20.0	56 10.38	+1.510	13.8	17	L	23 7.1	1.82
18.0	162 40 27.7	2 59 11.2	15 24.9	56 28.62	1.525	14.3	18	U	11 29.1	1.84
18.5	169 11 4.4	3 26 18.0	15 29.9	56 46.88	1.514	14.8	18	L	23 51.3	1.87
19.0	175 46 20.6	3 50 57.3	15 34.8	57 4.86	1.478	15.3	19	U	12 13.9	1.90
19.5	182 26 7.6	4 12 43.4	15 39.5	57 22.28	1.420	15.8		.....	...
20.0	189 10 11.0	-4 31 11.7	15 44.1	57 38.87	+1.343	16.3	20	L	0 36.9	1.94
20.5	195 58 12.3	4 46 0.0	15 48.3	57 54.44	1.248	16.8	20	U	13 0.6	2.01
21.0	202 49 48.4	4 56 49.0	15 52.2	58 8.78	1.140	17.3	21	L	1 25.1	2.07
21.5	209 44 33.8	5 3 22.9	15 55.8	58 21.77	1.024	17.8	21	U	13 50.4	2.15
22.0	216 42 0.3	5 5 30.7	15 58.9	58 33.31	0.902	18.3	22	L	2 16.7	2.23
22.5	223 41 39.9	-5 3 5.7	16 1.6	58 43.41	+0.778	18.8	22	U	14 44.0	2.31
23.0	230 43 4.0	4 56 6.6	16 4.0	58 52.00	0.655	19.3	23	L	3 12.3	2.39
23.5	237 45 46.4	4 44 37.1	16 5.9	58 59.15	0.535	19.8	23	U	15 41.5	2.47
24.0	244 49 22.7	4 28 46.2	16 7.5	59 4.86	0.420	20.3	24	L	4 11.5	2.52
24.5	251 53 31.1	4 8 47.6	16 8.7	59 9.24	0.310	20.8	24	U	16 42.1	2.57
25.0	258 57 53.7	-3 44 59.4	16 9.5	59 12.33	+0.206	21.3	25	L	5 13.1	2.58
25.5	266 2 15.3	3 17 44.1	16 10.0	59 14.20	0.106	21.8	25	U	17 44.0	2.57
26.0	273 6 23.6	2 47 27.4	16 10.2	59 14.90	+0.009	22.3	26	L	6 14.7	2.53
26.5	280 10 8.9	2 14 38.2	16 10.1	59 14.41	-0.087	22.8	26	U	18 44.8	2.47
27.0	287 13 22.9	1 39 47.9	16 9.7	59 12.81	0.183	23.3	27	L	7 14.2	2.41
27.5	294 15 58.9	-1 3 29.8	16 8.9	59 10.02	-0.282	23.8	27	U	19 42.7	2.33
28.0	301 17 49.4	-0 26 18.5	16 7.8	59 6.02	0.385	24.3	28	L	8 10.2	2.25
28.5	308 18 46.7	+0 11 10.8	16 6.4	59 0.79	0.492	24.8	28	U	20 36.8	2.18
29.0	315 18 41.7	0 48 22.5	16 4.6	58 54.19	0.603	25.3	29	L	9 2.5	2.11
29.5	322 17 23.0	1 24 41.8	16 2.4	58 46.27	0.719	25.8	29	U	21 27.5	2.05
30.0	329 14 37.4	+1 59 35.2	15 59.9	58 36.94	-0.837	26.3	30	L	9 51.7	2.00
30.5	336 10 8.8	2 32 31.0	15 57.0	58 26.20	0.954	26.8	30	U	22 15.5	1.96
31.0	343 3 39.3	3 3 0.3	15 53.6	58 14.07	1.069	27.3	31	L	10 38.8	1.93
31.5	349 54 49.3	3 30 37.5	15 50.0	58 0.57	1.178	27.8	31	U	23 1.9	1.92
pr. 1.0	356 43 17.9	3 55 0.6	15 46.0	57 45.84	1.276	28.3	Apr. 1	L	11 24.9	1.91
1.5	3 28 44.3	+4 15 52.2	15 41.6	57 30.01	-1.359	28.8	1	U	23 47.8	1.92
2.0	10 10 48.0	+4 32 58.9	15 37.1	57 13.27	-1.427	29.3	2	L	12 10.9	1.94

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.
								h m	m	
Apr. 1.0	356 43 17.9	+3 55 0.6	15 46.0	57 45.84	-1.276	28.3	Apr. 1	L	11 24.9	1.91
1.5	3 28 44.3	4 15 52.2	15 41.6	57 30.01	1.359	28.8	1	U	23 47.8	1.92
2.0	10 10 48.0	4 32 58.9	15 37.1	57 13.27	1.427	29.3	2	L	12 10.9	1.94
2.5	16 49 11.3	4 46 12.2	15 32.3	56 55.82	1.475	0.3			.....	...
3.0	23 23 38.1	4 55 27.7	15 27.5	56 37.97	1.499	0.8	3	U	0 34.3	1.96
3.5	29 53 56.9	+5 0 45.1	15 22.6	56 19.95	-1.499	1.3	3	L	12 57.9	1.98
4.0	36 19 59.8	5 2 8.1	15 17.7	56 2.10	1.473	1.8	4	U	1 21.8	2.01
4.5	42 41 44.5	4 59 43.4	15 13.0	55 44.69	1.422	2.3	4	L	13 46.2	2.04
5.0	48 59 13.1	4 53 40.2	15 8.4	55 28.04	1.346	2.8	5	U	2 10.9	2.07
5.5	55 12 33.5	4 44 9.8	15 4.2	55 12.48	1.246	3.3	5	L	14 36.0	2.10
6.0	61 21 58.8	+4 31 25.2	15 0.3	54 58.24	-1.123	3.8	6	U	3 1.3	2.12
6.5	67 27 47.2	4 15 40.5	14 56.8	54 45.62	0.979	4.3	6	L	15 26.9	2.14
7.0	73 30 21.1	3 57 10.3	14 53.9	54 34.84	0.816	4.8	7	U	3 52.6	2.14
7.5	79 30 7.6	3 36 9.7	14 51.5	54 26.11	0.636	5.3	7	L	16 18.3	2.13
8.0	85 27 37.1	3 12 54.0	14 49.8	54 19.63	0.443	5.8	8	U	4 43.8	2.11
8.5	91 23 23.8	+2 47 38.4	14 48.6	54 15.52	-0.240	6.3	8	L	17 9.0	2.09
9.0	97 18 4.1	2 20 38.1	14 48.2	54 13.90	-0.029	6.8	9	U	5 33.9	2.06
9.5	103 12 16.6	1 52 8.7	14 48.5	54 14.84	+0.186	7.3	9	L	17 58.4	2.02
10.0	109 6 41.4	1 22 25.5	14 49.4	54 18.38	0.404	7.8	10	U	6 22.4	1.98
10.5	115 1 59.9	0 51 44.3	14 51.1	54 24.53	0.620	8.3	10	L	18 45.9	1.94
11.0	120 58 53.5	+0 20 21.2	14 53.5	54 33.25	+0.832	8.8	11	U	7 8.9	1.90
11.5	126 58 3.2	-0 11 26.5	14 56.5	54 44.47	1.036	9.3	11	L	19 31.5	1.87
12.0	133 0 9.3	0 43 21.1	15 0.2	54 58.07	1.227	9.8	12	U	7 53.8	1.84
12.5	139 5 50.1	1 15 3.5	15 4.5	55 13.84	1.402	10.3	12	L	20 15.8	1.82
13.0	145 15 41.6	1 46 13.2	15 9.4	55 31.62	1.557	10.8	13	U	8 37.6	1.81
13.5	151 30 16.0	-2 16 28.5	15 14.7	55 51.13	+1.689	11.3	13	L	20 59.3	1.81
14.0	157 50 1.0	2 45 26.2	15 20.4	56 12.04	1.793	11.8	14	U	9 21.1	1.82
14.5	164 15 19.0	3 12 41.7	15 26.4	56 34.05	1.866	12.3	14	L	21 43.1	1.84
15.0	170 46 26.4	3 37 49.3	15 32.6	56 56.71	1.905	12.8	15	U	10 5.4	1.87
15.5	177 23 31.2	4 0 22.9	15 38.8	57 19.62	1.907	13.3	15	L	22 28.1	1.92
16.0	184 6 34.1	-4 19 56.3	15 45.0	57 42.31	+1.870	13.8	16	U	10 51.5	1.98
16.5	190 55 26.7	4 36 4.1	15 51.0	58 4.33	1.793	14.3	16	L	23 15.7	2.05
17.0	197 49 51.8	4 48 23.0	15 56.7	58 25.21	1.679	14.8	17	U	11 40.8	2.13
17.5	204 49 23.9	4 56 32.2	16 2.0	58 44.52	1.531	15.3			.....	...
18.0	211 53 29.4	5 0 15.0	16 6.7	59 1.85	1.352	15.8	18	L	0 6.8	2.22
18.5	219 1 27.4	-4 59 19.8	16 10.8	59 16.85	+1.148	16.3	18	U	12 34.0	2.31
19.0	226 12 32.5	4 53 40.8	16 14.2	59 29.32	0.925	16.8	19	L	1 2.3	2.40
19.5	233 25 55.7	4 43 18.4	16 16.8	59 39.01	0.690	17.3	19	U	13 31.7	2.49
20.0	240 40 47.2	4 28 20.0	16 18.7	59 45.85	0.452	17.8	20	L	2 2.1	2.56
20.5	247 56 17.7	4 8 59.3	16 19.8	59 49.87	+0.218	18.3	20	U	14 33.2	2.61
21.0	255 11 41.4	-3 45 36.2	16 20.1	59 51.14	-0.006	18.8	21	L	3 4.8	2.64
21.5	262 26 16.8	3 18 35.8	16 19.8	59 49.80	0.214	19.3	21	U	15 36.5	2.63
22.0	269 39 28.2	2 48 27.6	16 18.7	59 46.06	0.402	19.8	22	L	4 8.0	2.60
22.5	276 50 46.6	2 15 44.5	16 17.1	59 40.23	0.567	20.3	22	U	16 39.0	2.54
23.0	283 59 50.1	1 41 1.5	16 15.0	59 32.56	0.710	20.8	23	L	5 9.1	2.47
23.5	291 6 22.0	-1 4 54.8	16 12.5	59 23.29	-0.830	21.3	23	U	17 38.3	2.39
24.0	298 10 12.0	-0 28 0.6	16 9.6	59 12.74	-0.927	21.8	24	L	6 6.4	2.29

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.
						d			h m m	
pr. 24.0	298 10 12.0	-0 28 0.6	16 9.6	59 12.74	-0.927	21.8	Apr. 24	L	6 6.4	2.29
24.5	305 11 14.9	+0 9 5.3	16 6.5	59 1.15	1.004	22.3	24	U	18 33.4	2.21
25.0	312 9 28.6	0 45 47.8	16 3.1	58 48.71	1.065	22.8	25	L	6 59.4	2.13
25.5	319 4 54.1	1 21 34.4	15 59.5	58 35.64	1.112	23.3	25	U	19 24.5	2.06
26.0	325 57 33.3	1 55 54.1	15 55.8	58 22.09	1.147	23.8	26	L	7 48.8	1.99
26.5	332 47 29.2	+2 28 18.7	15 52.0	58 8.15	-1.174	24.3	26	U	20 12.4	1.94
27.0	339 34 44.1	2 58 22.4	15 48.2	57 53.94	1.195	24.8	27	L	8 35.5	1.91
27.5	346 19 19.5	3 25 42.5	15 44.2	57 39.49	1.212	25.3	27	U	20 58.3	1.89
28.0	353 1 15.1	3 49 59.4	15 40.2	57 24.88	1.224	25.8	28	L	9 20.8	1.88
28.5	359 40 29.3	4 10 56.6	15 36.2	57 10.12	1.233	26.3	28	U	21 43.4	1.88
29.0	6 16 59.0	+4 28 21.2	15 32.2	56 55.29	-1.239	26.8	29	L	10 5.9	1.89
29.5	12 50 39.4	4 42 3.6	15 28.1	56 40.40	1.242	27.3	29	U	22 28.7	1.91
30.0	19 21 24.7	4 51 57.8	15 24.1	56 25.50	1.239	27.8	30	L	10 51.8	1.94
30.5	25 49 9.1	4 58 1.2	15 20.0	56 10.70	1.229	28.3	30	U	23 15.2	1.97
day 1.0	32 13 46.4	5 0 14.5	15 16.0	55 56.05	1.210	28.8	May 1	L	11 39.1	2.01
1.5	38 35 12.2	+4 58 41.6	15 12.1	55 41.68	-1.182	29.3			.....	...
2.0	44 53 22.6	4 53 29.0	15 8.3	55 27.71	1.142	0.3	2	U	0 3.4	2.04
2.5	51 8 17.1	4 44 46.0	15 4.7	55 14.33	1.089	0.8	2	L	12 28.1	2.08
3.0	57 19 57.1	4 32 43.9	15 1.2	55 1.66	1.021	1.3	3	U	0 53.3	2.11
3.5	63 28 27.5	4 17 35.8	14 58.0	54 49.88	0.938	1.8	3	L	13 18.7	2.13
4.0	69 33 57.1	+3 59 36.3	14 55.1	54 39.18	-0.840	2.3	4	U	1 44.4	2.14
4.5	75 36 37.9	3 39 0.7	14 52.5	54 29.77	0.726	2.8	4	L	14 10.1	2.14
5.0	81 36 45.9	3 16 5.1	14 50.4	54 21.84	0.596	3.3	5	U	2 35.8	2.13
5.5	87 34 41.3	2 51 6.4	14 48.7	54 15.55	0.450	3.8	5	L	15 1.3	2.11
6.0	93 30 47.4	2 24 21.0	14 47.4	54 11.07	0.290	4.3	6	U	3 26.5	2.08
6.5	99 25 31.5	+1 56 5.9	14 46.8	54 8.63	-0.118	4.8	6	L	15 51.3	2.04
7.0	105 19 23.8	1 26 37.9	14 46.7	54 8.31	+0.066	5.3	7	U	4 15.5	2.00
7.5	111 12 57.7	0 56 13.7	14 47.2	54 10.26	0.261	5.8	7	L	16 39.3	1.96
8.0	117 6 49.0	+0 25 10.2	14 48.4	54 14.60	0.464	6.3	8	U	5 2.5	1.91
8.5	123 1 35.9	-0 6 15.9	14 50.2	54 21.40	0.671	6.8	8	L	17 25.2	1.87
9.0	128 57 57.6	-0 37 47.2	14 52.8	54 30.71	+0.881	7.3	9	U	5 47.4	1.83
9.5	134 56 35.2	1 9 6.2	14 56.0	54 42.54	1.091	7.8	9	L	18 9.2	1.81
10.0	140 58 9.5	1 39 54.5	14 59.9	54 56.86	1.295	8.3	10	U	6 30.8	1.79
10.5	147 3 21.7	2 9 53.1	15 4.5	55 13.60	1.491	8.8	10	L	18 52.2	1.78
11.0	153 12 51.8	2 38 41.9	15 9.7	55 32.60	1.675	9.3	11	U	7 13.5	1.77
11.5	159 27 17.1	-3 5 59.5	15 15.4	55 53.75	+1.842	9.8	11	L	19 34.8	1.79
12.0	165 47 12.6	3 31 23.7	15 21.7	56 16.74	1.986	10.3	12	U	7 56.4	1.82
12.5	172 13 8.8	3 54 31.1	15 28.4	56 41.30	2.102	10.8	12	L	20 18.4	1.85
13.0	178 45 30.2	4 14 57.4	15 35.4	57 7.07	2.185	11.3	13	U	8 40.9	1.90
13.5	185 24 35.0	4 32 18.1	15 42.6	57 33.58	2.228	11.8	13	L	21 4.1	1.97
14.0	192 10 32.1	-4 46 8.8	15 49.9	58 0.36	+2.227	12.3	14	U	9 28.1	2.04
14.5	199 3 21.9	4 56 6.3	15 57.1	58 26.83	2.178	12.8	14	L	21 53.2	2.14
15.0	206 2 53.4	5 1 49.5	16 4.1	58 52.44	2.080	13.3	15	U	10 19.4	2.23
15.5	213 8 45.6	5 3 0.5	16 10.7	59 16.55	1.931	13.8	15	L	22 46.8	2.34
16.0	220 20 25.4	4 59 26.3	16 16.7	59 38.58	1.731	14.3	16	U	11 15.6	2.45
16.5	227 37 10.2	-4 50 59.6	16 22.0	59 57.94	+1.487	14.8	16	L	23 45.6	2.54
17.0	234 58 7.5	-4 37 40.2	16 26.4	60 14.12	+1.205	15.3	17	U	12 16.7	2.63

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.				Var. per Hour.
									h	m	
May	17.0	234 58 7.5	-4 37 40.2	16 26.4	60 14.12	+1.205	15.3	May 17	U	12 16.7	2.63
	17.5	242 22 18.4	4 19 35.2	16 29.8	60 26.72	0.893	15.8			.....	...
	18.0	249 48 38.4	3 56 59.9	16 32.2	60 35.46	0.562	16.3	18	L	0 48.8	2.69
	18.5	257 16 1.9	3 30 17.1	16 33.5	60 40.15	+0.222	16.8	18	U	13 21.4	2.72
	19.0	264 43 23.9	2 59 56.6	16 33.6	60 40.81	-0.113	17.3	19	L	1 54.2	2.72
	19.5	272 9 42.7	-2 26 33.8	16 32.7	60 37.52	-0.431	17.8	19	U	14 26.6	2.68
	20.0	279 34 2.7	1 50 48.4	16 30.8	60 30.56	0.723	18.3	20	L	2 58.5	2.62
	20.5	286 55 36.0	1 13 22.4	16 28.0	60 20.27	0.984	18.8	20	U	15 29.4	2.53
	21.0	294 13 43.4	-0 34 58.9	16 24.5	60 7.08	1.208	19.3	21	L	3 59.2	2.43
	21.5	301 27 53.9	+0 3 40.2	16 20.2	59 51.45	1.390	19.8	21	U	16 27.7	2.32
	22.0	308 37 46.4	+0 41 54.5	16 15.4	59 33.90	-1.530	20.3	22	L	4 55.0	2.22
	22.5	315 43 7.3	1 19 6.8	16 10.2	59 14.92	1.630	20.8	22	U	17 21.1	2.14
	23.0	322 43 50.4	1 54 43.4	16 4.8	58 54.94	1.692	21.3	23	L	5 46.3	2.06
	23.5	329 39 55.5	2 28 14.5	15 59.2	58 34.43	1.722	21.8	23	U	18 10.5	1.99
	24.0	336 31 26.8	2 59 14.5	15 53.6	58 13.74	1.724	22.3	24	L	6 34.1	1.94
	24.5	343 18 32.5	+3 27 21.6	15 48.0	57 53.17	-1.703	22.8	24	U	18 57.1	1.90
	25.0	350 1 22.6	3 52 17.9	15 42.4	57 32.94	1.663	23.3	25	L	7 19.7	1.87
	25.5	356 40 8.4	4 13 49.4	15 37.1	57 13.31	1.609	23.8	25	U	19 42.1	1.86
	26.0	3 15 2.4	4 31 45.1	15 31.9	56 54.38	1.545	24.3	26	L	8 4.4	1.86
	26.5	9 46 16.1	4 45 57.7	15 27.0	56 36.26	1.474	24.8	26	U	20 26.8	1.87
	27.0	16 14 0.8	+4 56 22.4	15 22.3	56 19.02	-1.398	25.3	27	L	8 49.4	1.89
	27.5	22 38 26.8	5 2 57.5	15 17.9	56 2.69	1.322	25.8	27	U	21 12.3	1.92
	28.0	28 59 43.4	5 5 43.8	15 13.7	55 47.26	1.246	26.3	28	L	9 35.6	1.96
	28.5	35 17 58.9	5 4 44.8	15 9.7	55 32.80	1.168	26.8	28	U	21 59.3	1.99
29.0	41 33 21.0	5 0 6.1	15 6.0	55 19.25	1.090	27.3	29	L	10 23.5	2.03	
29.5	47 45 56.3	+4 51 55.5	15 2.6	55 6.63	-1.012	27.8	29	U	22 48.1	2.07	
30.0	53 55 51.7	4 40 22.8	14 59.4	54 54.97	0.933	28.3	30	L	11 13.1	2.10	
30.5	60 3 13.7	4 25 39.6	14 56.5	54 44.26	0.851	28.8	30	U	23 38.5	2.12	
31.0	66 8 10.2	4 7 59.1	14 53.8	54 34.55	0.766	29.3	31	L	12 4.1	2.14	
31.5	72 10 49.5	3 47 36.1	14 51.5	54 25.91	0.676	0.2			.....	...
June	1.0	78 11 21.9	+3 24 45.9	14 49.4	54 18.35	-0.579	0.7	June 1	U	0 29.8	2.14
	1.5	84 9 58.4	2 59 45.3	14 47.7	54 12.02	0.475	1.2	1	L	12 55.4	2.12
	2.0	90 6 53.1	2 32 51.4	14 46.3	54 6.98	0.364	1.7	2	U	1 20.8	2.10
	2.5	96 2 22.0	2 4 22.0	14 45.3	54 3.32	0.243	2.2	2	L	13 45.8	2.07
	3.0	101 56 43.2	1 34 35.0	14 44.7	54 1.18	-0.112	2.7	3	U	2 10.4	2.03
	3.5	107 50 18.0	+1 3 48.4	14 44.6	54 0.68	+0.030	3.2	3	L	14 34.5	1.98
	4.0	113 43 29.9	0 32 20.4	14 45.0	54 1.94	0.182	3.7	4	U	2 58.0	1.93
	4.5	119 36 45.5	+0 0 29.1	14 45.8	54 5.08	0.344	4.2	4	L	15 20.9	1.89
	5.0	125 30 33.2	-0 31 27.4	14 47.2	54 10.23	0.515	4.7	5	U	3 43.3	1.84
	5.5	131 25 23.5	1 3 10.9	14 49.2	54 17.49	0.695	5.2	5	L	16 5.2	1.81
	6.0	137 21 50.8	-1 34 23.4	14 51.8	54 26.95	+0.883	5.7	6	U	4 26.7	1.78
	6.5	143 20 29.3	2 4 46.5	14 55.0	54 38.69	1.074	6.2	6	L	16 47.9	1.75
	7.0	149 21 56.0	2 34 1.1	14 58.8	54 52.74	1.267	6.7	7	U	5 8.8	1.74
	7.5	155 26 47.8	3 1 48.7	15 3.2	55 9.10	1.460	7.2	7	L	17 29.7	1.74
8.0	161 35 42.2	3 27 49.2	15 8.3	55 27.74	1.647	7.7	8	U	5 50.6	1.75	
8.5	167 49 16.5	-3 51 42.4	15 14.0	55 48.58	+1.825	8.2	8	L	18 11.7	1.77	
9.0	174 8 6.0	-4 13 7.7	15 20.3	56 11.49	+1.990	8.7	9	U	6 33.1	1.81	

GREENWICH MEAN TIME.

G. M. T.	Longitude.			Latitude.			Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.				Var. per Hour.
	"	"	"	"	"	"					"	d	h	m	
ne 9.0	174	8	6.0	-4	13	7.7	15 20.3	56 11.49	+1.990	8.7	June 9	U	6	33.1	1.81
9.5	180	32	43.7	4	31	43.4	15 27.0	56 36.26	2.135	9.2	9	L	18	55.1	1.86
10.0	187	3	39.0	4	47	7.9	15 34.2	57 2.64	2.254	9.7	10	U	7	17.7	1.92
10.5	193	41	16.0	4	58	59.6	15 41.7	57 30.23	2.341	10.2	10	L	19	41.2	2.00
11.0	200	25	52.9	5	6	57.6	15 49.5	57 58.66	2.389	10.7	11	U	8	5.7	2.09
11.5	207	17	38.8	-5	10	42.4	15 57.3	58 27.37	+2.391	11.2	11	L	20	31.4	2.19
12.0	214	16	34.3	5	9	57.0	16 5.0	58 55.82	2.341	11.7	12	U	8	58.4	2.31
12.5	221	22	29.6	5	4	28.0	16 12.5	59 23.34	2.236	12.2	12	L	21	26.8	2.42
13.0	228	35	2.7	4	54	6.6	16 19.6	59 49.27	2.074	12.7	13	U	9	56.6	2.54
13.5	235	53	40.7	4	38	50.6	16 26.0	60 12.88	1.852	13.2	13	L	22	27.7	2.64
14.0	243	17	38.6	-4	18	44.7	16 31.6	60 33.48	+1.574	13.7	14	U	10	59.9	2.71
14.5	250	46	2.0	3	54	2.1	16 36.3	60 50.47	1.249	14.2	14	L	23	32.8	2.76
15.0	258	17	47.3	3	25	3.9	16 39.8	61 3.31	0.885	14.7	15	U	12	6.1	2.77
15.5	265	51	44.9	2	52	19.9	16 42.0	61 11.60	0.493	15.2					
16.0	273	26	41.8	2	16	27.0	16 43.0	61 15.10	+0.087	15.7	16	L	0	39.3	2.74
16.5	281	1	25.0	-1	38	8.3	16 42.6	61 13.72	-0.315	16.2	16	U	13	12.0	2.69
17.0	288	34	43.4	0	58	10.7	16 41.0	61 7.61	0.700	16.7	17	L	1	43.8	2.60
17.5	296	5	32.1	-0	17	23.2	16 38.1	60 57.06	1.055	17.2	17	U	14	14.4	2.50
18.0	303	32	52.6	+0	23	25.5	16 34.1	60 42.45	1.370	17.7	18	L	2	43.8	2.39
18.5	310	55	56.4	1	3	28.8	16 29.2	60 24.38	1.636	18.2	18	U	15	11.9	2.29
19.0	318	14	4.0	+1	42	3.8	16 23.4	60 3.42	-1.848	18.7	19	L	3	38.8	2.19
19.5	325	26	46.4	2	18	32.8	16 17.1	59 40.25	2.006	19.2	19	U	16	4.6	2.11
20.0	332	33	44.1	2	52	23.4	16 10.4	59 15.50	2.111	19.7	20	L	4	29.4	2.03
20.5	339	34	46.8	3	23	9.2	16 3.4	58 49.80	2.163	20.2	20	U	16	53.4	1.98
21.0	346	29	52.0	3	50	29.8	15 56.3	58 23.71	2.175	20.7	21	L	5	16.9	1.94
21.5	353	19	4.1	+4	14	9.6	15 49.2	57 57.73	-2.148	21.2	21	U	17	39.9	1.90
22.0	0	2	33.3	4	33	58.1	15 42.3	57 32.30	2.088	21.7	22	L	6	2.6	1.89
22.5	6	40	33.3	4	49	48.9	15 35.6	57 7.74	2.000	22.2	22	U	18	25.2	1.89
23.0	13	13	21.6	5	1	39.5	15 29.2	56 44.36	1.893	22.7	23	L	6	47.9	1.89
23.5	19	41	17.7	5	9	30.0	15 23.2	56 22.35	1.773	23.2	23	U	19	10.7	1.91
24.0	26	4	42.4	+5	13	23.7	15 17.6	56 1.84	-1.645	23.7	24	L	7	33.8	1.94
24.5	32	23	56.9	5	13	25.6	15 12.5	55 42.92	1.509	24.2	24	U	19	57.2	1.97
25.0	38	39	22.6	5	9	42.4	15 7.8	55 25.64	1.370	24.7	25	L	8	21.0	2.00
25.5	44	51	20.5	5	2	23.1	15 3.5	55 10.03	1.233	25.2	25	U	20	45.2	2.03
26.0	51	0	11.1	4	51	37.6	14 59.7	54 56.04	1.098	25.7	26	L	9	9.8	2.07
26.5	57	6	13.5	+4	37	37.4	14 56.3	54 43.66	-0.967	26.2	26	U	21	34.9	2.10
27.0	63	9	46.4	4	20	34.9	14 53.4	54 32.82	0.841	26.7	27	L	10	0.2	2.11
27.5	69	11	7.3	4	0	43.8	14 50.8	54 23.47	0.718	27.2	27	U	22	25.6	2.12
28.0	75	10	33.1	3	38	18.9	14 48.7	54 15.58	0.599	27.7	28	L	10	51.1	2.12
28.5	81	8	19.7	3	13	35.9	14 46.9	54 9.07	0.485	28.2	28	U	23	16.6	2.11
29.0	87	4	43.0	+2	46	51.1	14 45.5	54 3.94	-0.373	28.7	29	L	11	41.8	2.08
29.5	92	59	58.4	2	18	21.7	14 44.5	54 0.12	0.262	29.2					
30.0	98	54	21.8	1	48	25.7	14 43.8	53 57.65	0.150	0.0	30	U	0	6.6	2.05
30.5	104	48	9.0	1	17	21.5	14 43.5	53 56.54	-0.038	0.5	30	L	12	31.0	2.01
ily 1.0	110	41	37.0	0	45	27.8	14 43.5	53 56.73	+0.076	1.0	July 1	U	0	54.9	1.97
1.5	116	35	3.1	+0	13	3.7	14 44.0	53 58.34	+0.193	1.5	1	L	13	18.3	1.92
2.0	122	28	46.0	-0	19	31.9	14 44.8	54 1.41	+0.316	2.0	2	U	1	41.0	1.87

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.				Var. per Hour.
									h m	m	
July 1.0	110 41 37.0	+0 45 27.8	14 43.5	53 56.73	+0.076	1.0	July 1	U	0 54.9	1.97	
1.5	116 35 3.1	+0 13 3.7	14 44.0	53 58.34	0.193	1.5	1	L	13 18.3	1.92	
2.0	122 28 46.0	-0 19 31.9	14 44.8	54 1.41	0.316	2.0	2	U	1 41.0	1.87	
2.5	128 23 5.8	0 51 59.2	14 46.0	54 5.95	0.446	2.5	2	L	14 3.2	1.83	
3.0	134 18 24.0	1 23 59.3	14 47.7	54 12.10	0.582	3.0	3	U	2 24.9	1.79	
3.5	140 15 3.4	-1 55 12.8	14 49.8	54 19.91	+0.723	3.5	3	L	14 46.2	1.76	
4.0	146 13 28.6	2 25 20.5	14 52.4	54 29.47	0.871	4.0	4	U	3 7.1	1.74	
4.5	152 14 5.5	2 54 3.4	14 55.6	54 40.86	1.026	4.5	4	L	15 27.9	1.72	
5.0	158 17 21.9	3 21 2.4	14 59.2	54 54.11	1.185	5.0	5	U	3 48.5	1.72	
5.5	164 23 46.3	3 45 58.5	15 3.3	55 9.30	1.348	5.5	5	L	16 9.1	1.72	
6.0	170 33 47.8	-4 8 33.0	15 8.0	55 26.45	+1.511	6.0	6	U	4 29.9	1.74	
6.5	176 47 56.9	4 28 26.8	15 13.2	55 45.54	1.671	6.5	6	L	16 51.0	1.77	
7.0	183 6 42.9	4 45 21.4	15 18.9	56 6.52	1.825	7.0	7	U	5 12.5	1.82	
7.5	189 30 34.5	4 58 58.2	15 25.1	56 29.30	1.980	7.5	7	L	17 34.7	1.88	
8.0	195 59 58.7	5 8 59.2	15 31.8	56 53.71	2.097	8.0	8	U	5 57.6	1.95	
8.5	202 35 19.5	-5 15 7.5	15 38.8	57 19.54	+2.203	8.5	8	L	18 21.5	2.04	
9.0	209 16 57.1	5 17 7.1	15 46.1	57 46.47	2.280	9.0	9	U	6 46.5	2.14	
9.5	216 5 6.7	5 14 44.1	15 53.7	58 14.12	2.322	9.5	9	L	19 12.8	2.24	
10.0	222 59 56.4	5 7 47.7	16 1.3	58 42.05	2.323	10.0	10	U	7 40.4	2.36	
10.5	230 1 27.2	4 56 10.3	16 8.8	59 9.68	2.276	10.5	10	L	20 9.4	2.47	
11.0	237 9 30.9	-4 39 49.4	16 16.1	59 36.44	+2.174	11.0	11	U	8 39.7	2.57	
11.5	244 23 49.5	4 18 48.5	16 23.0	60 1.65	2.015	11.5	11	L	21 11.1	2.66	
12.0	251 43 54.4	3 53 17.4	16 29.2	60 24.58	1.797	12.0	12	U	9 43.5	2.72	
12.5	259 9 7.1	3 23 34.0	16 34.7	60 44.58	1.523	12.5	12	L	22 16.4	2.74	
13.0	266 38 38.0	2 50 3.9	16 39.1	61 0.94	1.198	13.0	13	U	10 49.4	2.74	
13.5	274 11 29.9	-2 13 20.2	16 42.5	61 13.14	+0.828	13.5	13	L	23 22.1	2.70	
14.0	281 46 37.5	1 34 3.8	16 44.5	61 20.69	0.427	14.0	14	U	11 54.2	2.63	
14.5	289 22 50.8	0 53 0.6	16 45.2	61 23.32	+0.008	14.5			.....	.....
15.0	296 58 57.5	-0 11 0.8	16 44.6	61 20.89	-0.412	15.0	15	L	0 25.3	2.54	
15.5	304 33 45.5	+0 31 4.1	16 42.6	61 13.49	0.818	15.5	15	U	12 55.3	2.45	
16.0	312 6 5.8	+1 12 22.9	16 39.2	61 1.35	-1.196	16.0	16	L	1 24.1	2.35	
16.5	319 34 55.1	1 52 7.6	16 34.8	60 44.94	1.534	16.5	16	U	13 51.7	2.26	
17.0	326 59 17.4	2 29 34.6	16 29.3	60 24.76	1.820	17.0	17	L	2 18.3	2.17	
17.5	334 18 25.7	3 4 6.8	16 22.9	60 1.50	2.048	17.5	17	U	14 43.9	2.10	
18.0	341 31 43.0	3 35 13.5	16 15.9	59 35.85	2.217	18.0	18	L	3 8.8	2.04	
18.5	348 38 42.8	+4 2 31.6	16 8.5	59 8.52	-2.328	18.5	18	U	15 33.0	2.00	
19.0	355 39 8.8	4 25 45.0	16 0.8	58 40.20	2.382	19.0	19	L	3 56.8	1.97	
19.5	2 32 53.6	4 44 43.6	15 53.0	58 11.56	2.385	19.5	19	U	16 20.2	1.94	
20.0	9 19 58.8	4 59 23.0	15 45.2	57 43.14	2.343	20.0	20	L	4 43.5	1.94	
20.5	16 0 33.8	5 9 43.6	15 37.7	57 15.46	2.263	20.5	20	U	17 6.8	1.94	
21.0	22 34 53.8	+5 15 49.5	15 30.5	56 48.95	-2.153	21.0	21	L	5 30.2	1.96	
21.5	29 3 19.1	5 17 47.7	15 23.6	56 23.91	2.018	21.5	21	U	17 53.8	1.98	
22.0	35 26 13.7	5 15 47.5	15 17.3	56 0.62	1.863	22.0	22	L	6 17.7	2.00	
22.5	41 44 4.8	5 10 0.0	15 11.5	55 39.25	1.696	22.5	22	U	18 41.9	2.03	
23.0	47 57 21.0	5 0 37.2	15 6.2	55 19.92	1.522	23.0	23	L	7 6.5	2.06	
23.5	54 6 32.4	+4 47 52.3	15 1.5	55 2.73	-1.344	23.5	23	U	19 31.4	2.08	
24.0	60 12 8.6	+4 31 59.0	14 57.4	54 47.66	-1.165	24.0	24	L	7 56.5	2.10	

GREENWICH MEAN TIME.

J. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.	
								h m	m		
ly	24.0	60 12 8.6	+4 31 59.0	14 57.4	54 47.66	-1.165	24.0	July 24	L	7 56.5	2.10
	24.5	66 14 40.1	4 13 11.6	14 53.9	54 34.74	0.990	24.5	24	U	20 21.9	2.12
	25.0	72 14 35.7	3 51 44.9	14 50.9	54 23.88	0.820	25.0	25	L	8 47.4	2.12
	25.5	78 12 24.0	3 27 54.2	14 48.5	54 15.04	0.656	25.5	25	U	21 12.8	2.11
	26.0	84 8 31.9	3 1 55.3	14 46.6	54 8.11	0.490	26.0	26	L	9 38.1	2.09
	26.5	90 3 24.6	+2 34 4.5	14 45.2	54 3.04	-0.351	26.5	26	U	22 3.1	2.07
	27.0	95 57 26.4	2 4 38.8	14 44.3	53 59.67	0.210	27.0	27	L	10 27.8	2.04
	27.5	101 50 59.8	1 33 55.6	14 43.9	53 57.95	-0.078	27.5	27	U	22 52.0	1.99
	28.0	107 44 26.0	1 2 12.9	14 43.8	53 57.77	+0.046	28.0	28	L	11 15.7	1.95
	28.5	113 38 4.5	+0 29 49.4	14 44.2	53 59.03	0.163	28.5	28	U	23 38.9	1.91
	29.0	119 32 14.1	-0 2 55.7	14 44.9	54 1.67	+0.276	29.0	29	L	12 1.5	1.86
	29.5	125 27 12.3	0 35 42.9	14 46.0	54 5.64	0.384	29.5			.....	...
	30.0	131 23 16.0	1 8 12.4	14 47.4	54 10.86	0.487	0.4	30	U	0 23.6	1.82
	30.5	137 20 41.3	1 40 3.9	14 49.1	54 17.32	0.589	0.9	30	L	12 45.3	1.79
	31.0	143 19 44.0	2 10 57.3	14 51.2	54 25.02	0.693	1.4	31	U	1 6.5	1.76
31.5	149 20 39.7	-2 40 32.3	14 53.7	54 33.94	+0.796	1.9	31	L	13 27.5	1.74	
ug.	1.0	155 23 44.3	3 8 29.0	14 56.4	54 44.12	0.899	2.4	Aug. 1	U	1 48.2	1.72
	1.5	161 29 13.7	3 34 27.6	14 59.6	54 55.52	1.005	2.9	1	L	14 8.8	1.72
	2.0	167 37 24.3	3 58 9.3	15 3.0	55 8.24	1.114	3.4	2	U	2 29.5	1.73
	2.5	173 48 33.2	4 19 15.3	15 6.8	55 22.30	1.226	3.9	2	L	14 50.3	1.74
	3.0	180 2 57.6	-4 37 28.1	15 11.0	55 37.69	+1.340	4.4	3	U	3 11.4	1.77
	3.5	186 20 55.4	4 52 30.6	15 15.6	55 54.45	1.454	4.9	3	L	15 32.9	1.82
	4.0	192 42 44.7	5 4 7.1	15 20.5	56 12.58	1.567	5.4	4	U	3 55.0	1.87
	4.5	199 8 43.9	5 12 3.1	15 25.8	56 32.04	1.675	5.9	4	L	16 17.8	1.93
	5.0	205 39 10.6	5 16 5.5	15 31.5	56 52.74	1.776	6.4	5	U	4 41.4	2.01
	5.5	212 14 21.5	-5 16 3.1	15 37.4	57 14.59	+1.884	6.9	5	L	17 6.1	2.10
	6.0	218 54 32.3	5 11 46.9	15 43.7	57 37.41	1.936	7.4	6	U	5 31.9	2.20
	6.5	225 39 55.2	5 3 10.4	15 50.1	58 0.96	1.986	7.9	6	L	17 58.9	2.30
	7.0	232 30 40.6	4 50 10.4	15 56.6	58 24.95	2.008	8.4	7	U	6 27.1	2.40
	7.5	239 26 54.0	4 32 47.6	16 3.2	58 49.04	1.995	8.9	7	L	18 56.5	2.49
	8.0	246 28 35.6	-4 11 6.9	16 9.6	59 12.69	+1.943	9.4	8	U	7 26.9	2.57
8.5	253 35 40.0	3 45 18.9	16 15.8	59 35.48	1.847	9.9	8	L	19 58.2	2.63	
9.0	260 47 54.1	3 15 39.5	16 21.7	59 56.84	1.704	10.4	9	U	8 30.0	2.66	
9.5	268 4 57.5	2 42 31.0	16 26.9	60 16.17	1.510	10.9	9	L	21 2.0	2.66	
10.0	275 26 20.9	2 6 22.3	16 31.5	60 32.88	1.266	11.4	10	U	9 33.9	2.64	
10.5	282 51 26.8	-1 27 48.5	16 35.2	60 46.39	+0.977	11.9	10	L	22 5.3	2.58	
11.0	290 19 29.7	0 47 30.1	16 37.8	60 56.20	0.650	12.4	11	U	10 35.9	2.52	
11.5	297 49 36.3	-0 6 12.3	16 39.4	61 1.85	+0.291	12.9	11	L	23 5.7	2.44	
12.0	305 20 47.7	+0 35 16.5	16 39.7	61 3.10	-0.087	13.4	12	U	11 34.5	2.36	
12.5	312 52 0.5	1 16 7.1	16 38.8	60 59.77	0.470	13.9			.....	...
13.0	320 22 9.4	+1 55 31.0	16 36.7	60 51.87	-0.844	14.4	13	L	0 2.3	2.27	
13.5	327 50 9.3	2 32 42.8	16 33.3	60 39.60	1.196	14.9	13	U	12 29.2	2.21	
14.0	335 14 58.0	3 7 1.8	16 28.9	60 23.30	1.513	15.4	14	L	0 55.3	2.14	
14.5	342 35 38.4	3 37 53.7	16 23.5	60 3.45	1.786	15.9	14	U	13 20.7	2.09	
15.0	349 51 20.0	4 4 51.1	16 17.2	59 40.63	2.009	16.4	15	L	1 45.6	2.05	
15.5	357 1 21.6	+4 27 34.3	16 10.4	59 15.45	-2.177	16.9	15	U	14 10.0	2.02	
16.0	4 5 11.0	+4 45 51.0	16 3.1	58 48.62	-2.287	17.4	16	L	2 34.2	2.01	

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.				Var. per Hour.
									h m	m	
Aug. 16.0	4 5 11.0	+4 45 51.0	16 3.1	58 48.62	-2.287	17.4	Aug. 16	L	2 34.2	2.01	
16.5	11 2 28.6	4 59 35.7	15 55.5	58 20.77	2.343	17.9	16	U	14 58.3	2.01	
17.0	17 52 56.6	5 8 48.6	15 47.8	57 52.57	2.349	18.4	17	L	3 22.4	2.01	
17.5	24 36 38.8	5 13 35.4	15 40.2	57 24.60	2.308	18.9	17	U	15 46.5	2.02	
18.0	31 13 39.6	5 14 5.0	15 32.8	56 57.37	2.225	19.4	18	L	4 10.9	2.04	
18.5	37 44 13.6	+5 10 29.8	15 25.7	56 31.33	-2.109	19.9	18	U	16 35.5	2.06	
19.0	44 8 41.1	5 3 3.9	15 19.0	56 6.86	1.965	20.4	19	L	5 0.4	2.08	
19.5	50 27 28.3	4 52 2.8	15 12.8	55 44.25	1.799	20.9	19	U	17 25.5	2.10	
20.0	56 41 5.3	4 37 42.8	15 7.2	55 23.73	1.618	21.4	20	L	5 50.8	2.12	
20.5	62 50 5.1	4 20 20.5	15 2.3	55 5.47	1.426	21.9	20	U	18 16.4	2.13	
21.0	68 55 3.2	+4 0 12.6	14 57.9	54 49.56	-1.226	22.4	21	L	6 42.0	2.13	
21.5	74 56 35.5	3 37 35.8	14 54.2	54 36.06	1.022	22.9	21	U	19 7.6	2.13	
22.0	80 55 18.9	3 12 46.6	14 51.2	54 24.99	0.820	23.4	22	L	7 33.1	2.12	
22.5	86 51 50.1	2 46 1.5	14 48.9	54 16.34	0.623	23.9	22	U	19 58.4	2.09	
23.0	92 46 44.4	2 17 37.1	14 47.1	54 10.01	0.432	24.4	23	L	8 23.4	2.06	
23.5	98 40 36.6	+1 47 50.2	14 46.0	54 5.93	-0.248	24.9	23	U	20 47.9	2.02	
24.0	104 33 59.6	1 16 57.8	14 45.5	54 4.01	-0.074	25.4	24	L	9 11.9	1.96	
24.5	110 27 24.2	0 45 17.2	14 45.5	54 4.10	+0.098	25.9	24	U	21 35.5	1.94	
25.0	116 21 19.1	+0 13 6.4	14 46.1	54 6.07	0.238	26.4	25	L	9 58.5	1.96	
25.5	122 16 10.8	-0 19 16.3	14 47.1	54 9.75	0.376	26.9	25	U	22 21.0	1.96	
26.0	128 12 23.1	-0 51 31.9	14 48.5	54 15.04	+0.502	27.4	26	L	10 43.1	1.92	
26.5	134 10 17.4	1 23 20.6	14 50.4	54 21.75	0.615	27.9	26	U	23 4.7	1.79	
27.0	140 10 12.3	1 54 22.5	14 52.5	54 29.75	0.716	28.4	27	L	11 26.0	1.77	
27.5	146 12 23.9	2 24 16.9	14 55.0	54 38.88	0.806	28.9	27	U	23 47.1	1.75	
28.0	152 17. 6.0	2 52 43.3	14 57.8	54 49.06	0.886	29.4	28	L	12 8.0	1.74	
28.5	158 24 29.5	-3 19 20.8	15 0.8	55 0.12	+0.958	0.3			.....	.....
29.0	164 34 44.0	3 43 49.3	15 4.0	55 12.04	1.022	0.8	29	U	0 28.8	1.74	
29.5	170 47 56.5	4 5 48.7	15 7.5	55 24.67	1.079	1.3	29	L	12 49.7	1.75	
30.0	177 4 12.8	4 25 0.3	15 11.1	55 37.94	1.133	1.8	30	U	1 10.9	1.77	
30.5	183 23 36.9	4 41 6.3	15 14.9	55 51.85	1.184	2.3	30	L	13 32.3	1.80	
31.0	189 46 12.8	-4 53 50.6	15 18.8	56 6.33	+1.231	2.8	31	U	1 54.2	1.85	
31.5	196 12 3.1	5 2 59.0	15 22.9	56 21.36	1.276	3.3	31	L	14 16.7	1.90	
Sept. 1.0	202 41 11.0	5 8 19.4	15 27.2	56 36.95	1.320	3.8	Sept. 1	U	2 39.9	1.97	
1.5	209 13 39.2	5 9 42.1	15 31.6	56 53.03	1.361	4.3	1	L	15 3.9	2.04	
2.0	215 49 30.9	5 7 0.0	15 36.1	57 9.59	1.399	4.8	2	U	3 28.8	2.12	
2.5	222 28 49.4	-5 0 9.3	15 40.7	57 26.58	+1.432	5.3	2	L	15 54.7	2.20	
3.0	229 11 38.8	4 49 8.7	15 45.4	57 43.94	1.457	5.8	3	U	4 21.7	2.29	
3.5	235 58 2.6	4 34 0.9	15 50.2	58 1.55	1.474	6.3	3	L	16 49.7	2.37	
4.0	242 48 4.5	4 14 51.8	15 55.1	58 19.27	1.477	6.8	4	U	5 18.7	2.45	
4.5	249 41 47.2	3 51 51.5	15 59.9	58 36.92	1.461	7.3	4	L	17 48.5	2.51	
5.0	256 39 12.1	-3 25 14.1	16 4.6	58 54.26	+1.423	7.8	5	U	6 18.9	2.54	
5.5	263 40 18.0	2 55 18.0	16 9.2	59 10.98	1.360	8.3	5	L	18 49.6	2.56	
6.0	270 45 1.4	2 22 25.8	16 13.5	59 26.77	1.267	8.8	6	U	7 20.4	2.56	
6.5	277 53 14.1	1 47 5.1	16 17.4	59 41.24	1.141	9.3	6	L	19 51.0	2.53	
7.0	285 4 43.0	1 9 47.3	16 20.9	59 54.03	0.981	9.8	7	U	8 21.2	2.49	
7.5	292 19 9.8	-0 31 8.3	16 23.8	60 4.66	+0.788	10.3	7	L	20 50.8	2.43	
8.0	299 36 9.6	+0 8 13.0	16 26.0	60 12.81	+0.563	10.8	8	U	9 19.5	2.36	

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.
								h m	m	
Sept. 8.0	299 36 9.6	+0 8 13.0	16 26.0	60 12.81	+0.563	10.8	Sept. 8	U	9 19.5	2.36
8.5	306 55 11.0	0 47 35.1	16 27.4	60 18.05	0.308	11.3	8	L	21 47.5	2.30
9.0	314 15 35.9	1 26 14.7	16 28.0	60 20.10	+0.030	11.8	9	U	10 14.7	2.24
9.5	321 36 40.6	2 3 29.1	16 27.6	60 18.72	-0.262	12.3	9	L	22 41.2	2.18
10.0	328 57 36.2	2 38 36.8	16 26.3	60 13.78	0.560	12.8	10	U	11 7.0	2.12
10.5	336 17 30.8	+3 10 59.3	16 24.0	60 5.27	-0.856	13.3	10	L	23 32.2	2.09
11.0	343 35 30.4	3 40 2.8	16 20.7	59 53.29	1.137	13.8	11	U	11 57.2	2.07
11.5	350 50 41.7	4 5 19.0	16 16.6	59 38.08	1.393	14.3			.....	...
12.0	358 2 13.9	4 26 26.5	16 11.6	59 19.98	1.618	14.8	12	L	0 21.8	2.04
12.5	5 9 20.8	4 43 10.2	16 6.0	58 59.39	1.806	15.3	12	U	12 46.3	2.04
13.0	12 11 22.9	+4 55 22.3	15 59.8	58 36.81	-1.960	15.8	13	L	1 10.8	2.04
13.5	19 7 48.2	5 3 1.3	15 53.3	58 12.77	2.047	16.3	13	U	13 35.4	2.05
14.0	25 58 13.4	5 6 11.4	15 46.5	57 47.85	2.099	16.8	14	L	2 0.1	2.07
14.5	32 42 24.5	5 5 1.8	15 39.6	57 22.58	2.107	17.3	14	U	14 25.1	2.09
15.0	39 20 16.9	4 59 45.2	15 32.8	56 57.46	2.072	17.8	15	L	2 50.4	2.12
15.5	45 51 54.3	+4 50 37.4	15 26.1	56 33.01	-1.998	18.3	15	U	15 15.9	2.13
16.0	52 17 28.4	4 37 55.9	15 19.8	56 9.63	1.890	18.8	16	L	3 41.6	2.15
16.5	58 37 18.4	4 21 59.4	15 13.8	55 47.75	1.754	19.3	16	U	16 7.6	2.17
17.0	64 51 49.6	4 3 7.0	15 8.3	55 27.64	1.595	19.8	17	L	4 33.6	2.17
17.5	71 1 31.4	3 41 37.9	15 3.4	55 9.56	1.415	20.3	17	U	16 59.7	2.17
18.0	77 6 58.1	+3 17 51.0	14 59.1	54 53.75	-1.219	20.8	18	L	5 25.6	2.15
18.5	83 8 46.9	2 52 4.8	14 55.4	54 40.34	1.014	21.3	18	U	17 51.3	2.13
19.0	89 7 36.2	2 24 37.2	14 52.4	54 29.42	0.803	21.8	19	L	6 16.7	2.09
19.5	95 4 6.8	1 55 45.8	14 50.2	54 21.08	0.589	22.3	19	U	18 41.6	2.06
20.0	100 58 58.9	1 25 47.8	14 48.6	54 15.30	0.375	22.8	20	L	7 6.1	2.02
20.5	106 52 53.4	+0 55 0.0	14 47.7	54 12.07	-0.164	23.3	20	U	19 30.0	1.97
21.0	112 46 30.0	+0 23 39.5	14 47.5	54 11.34	+0.040	23.8	21	L	7 53.4	1.92
21.5	118 40 27.0	-0 7 56.5	14 48.0	54 13.00	0.234	24.3	21	U	20 16.2	1.88
22.0	124 35 21.3	0 39 30.8	14 49.0	54 16.93	0.417	24.8	22	L	8 38.6	1.84
22.5	130 31 46.8	1 10 45.3	14 50.7	54 22.97	0.588	25.3	22	U	21 0.5	1.81
23.0	136 30 15.1	-1 41 21.4	14 52.8	54 30.95	+0.742	25.8	23	L	9 22.1	1.79
23.5	142 31 14.7	2 11 0.3	14 55.5	54 40.71	0.879	26.3	23	U	21 43.4	1.77
24.0	148 35 9.7	2 39 21.9	14 58.6	54 51.99	0.998	26.8	24	L	10 4.5	1.75
24.5	154 42 21.3	3 6 6.1	15 2.0	55 4.59	1.099	27.3	24	U	22 25.5	1.75
25.0	160 53 5.4	3 30 52.4	15 5.8	55 18.29	1.179	27.8	25	L	10 46.6	1.77
25.5	167 7 34.2	-3 53 20.2	15 9.7	55 32.80	+1.239	28.3	25	U	23 7.9	1.78
26.0	173 25 54.8	4 13 9.3	15 13.8	55 47.96	1.282	28.8	26	L	11 29.4	1.81
26.5	179 48 10.4	4 30 0.1	15 18.1	56 3.50	1.305	29.3	26	U	23 51.4	1.85
27.0	186 14 19.5	4 43 34.5	15 22.4	56 19.20	1.311	0.2	27	L	12 13.8	1.89
27.5	192 44 16.5	4 53 36.2	15 26.6	56 34.90	1.302	0.7			.....	...
28.0	199 17 52.7	-4 59 51.1	15 30.9	56 50.40	+1.280	1.2	28	U	0 36.9	1.96
28.5	205 54 56.7	5 2 8.1	15 35.0	57 5.58	1.247	1.7	28	L	13 0.8	2.03
29.0	212 35 14.8	5 0 19.5	15 39.0	57 20.29	1.205	2.2	29	U	1 25.6	2.10
29.5	219 18 32.3	4 54 21.1	15 42.9	57 34.45	1.156	2.7	29	L	13 51.3	2.18
30.0	226 4 34.3	4 44 12.9	15 46.6	57 48.03	1.103	3.2	30	U	2 18.0	2.26
30.5	232 53 6.2	-4 29 58.8	15 50.1	58 0.94	+1.049	3.7	30	L	14 45.6	2.34
1.0	239 43 54.7	-4 11 47.2	15 53.4	58 13.17	+0.993	4.2	Oct. 1	U	3 14.2	2.41

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.
	" ' "	" ' "	" "	" "	" "	d		h m	m	
Oct. 1.0	239 43 54.7	-4 11 47.2	15 53.4	58 13.17	+0.993	4.2	Oct. 1	U	3 14.2	2.41
1.5	246 36 48.2	3 49 50.3	15 56.6	58 24.71	0.932	4.7	1	L	15 43.5	2.47
2.0	253 31 36.6	3 24 24.6	15 59.5	58 35.54	0.870	5.2	2	U	4 13.4	2.50
2.5	260 28 12.6	2 55 50.1	16 2.2	58 45.62	0.808	5.7	2	L	16 43.6	2.52
3.0	267 26 29.9	2 24 30.4	16 4.8	58 54.93	0.741	6.2	3	U	5 13.9	2.52
3.5	274 26 24.1	-1 50 52.3	16 7.1	59 3.36	+0.666	6.7	3	L	17 44.0	2.49
4.0	281 27 51.0	1 15 25.6	16 9.1	59 10.88	0.584	7.2	4	U	6 13.7	2.45
4.5	288 30 46.6	0 38 42.2	16 10.9	59 17.33	0.491	7.7	4	L	18 42.8	2.39
5.0	295 35 5.4	-0 1 16.3	16 12.3	59 22.61	0.385	8.2	5	U	7 11.2	2.33
5.5	302 40 40.6	+0 36 16.5	16 13.4	59 26.52	0.265	8.7	5	L	19 38.8	2.27
6.0	309 47 21.8	+1 13 19.8	16 14.0	59 28.90	+0.130	9.2	6	U	8 5.7	2.22
6.5	316 54 55.0	1 49 16.9	16 14.2	59 29.56	-0.021	9.7	6	L	20 32.2	2.15
7.0	324 3 2.0	2 23 31.8	16 13.9	59 28.32	0.186	10.2	7	U	8 57.4	2.09
7.5	331 11 19.8	2 55 30.1	16 13.0	59 25.04	0.362	10.7	7	L	21 22.4	2.07
8.0	338 19 20.7	3 24 39.9	16 11.5	59 19.61	0.547	11.2	8	U	9 47.0	2.04
8.5	345 26 33.4	+3 50 32.5	16 9.4	59 11.90	-0.736	11.7	8	L	22 11.3	2.02
9.0	352 32 22.3	4 12 43.7	16 6.7	59 1.94	0.923	12.2	9	U	10 35.5	2.02
9.5	359 36 10.4	4 30 54.0	16 3.4	58 49.79	1.103	12.7	9	L	22 59.8	2.02
10.0	6 37 19.9	4 44 49.7	15 59.5	58 35.52	1.270	13.2	10	U	11 24.1	2.03
10.5	13 35 13.8	4 54 22.6	15 55.1	58 19.39	1.418	13.7	10	L	23 48.6	2.06
11.0	20 29 17.5	+4 59 30.4	15 50.2	58 1.61	-1.542	14.2	11	U	12 13.5	2.09
11.5	27 19 0.4	5 0 15.9	15 45.0	57 42.49	1.689	14.7			.....	.....
12.0	34 3 57.4	4 56 47.1	15 39.6	57 22.39	1.705	15.2	12	L	0 38.7	2.11
12.5	40 43 49.9	4 49 16.1	15 33.9	57 1.70	1.738	15.7	12	U	13 4.2	2.14
13.0	47 18 25.7	4 37 58.1	15 28.2	56 40.82	1.738	16.2	13	L	1 30.0	2.17
13.5	53 47 40.5	+4 23 11.1	15 22.6	56 20.11	-1.705	16.7	13	U	13 56.2	2.19
14.0	60 11 37.0	4 5 14.8	15 17.1	56 0.00	1.640	17.2	14	L	2 22.6	2.20
14.5	66 30 24.7	3 44 29.8	15 11.9	55 40.85	1.546	17.7	14	U	14 49.0	2.20
15.0	72 44 20.3	3 21 16.9	15 7.0	55 23.01	1.425	18.2	15	L	3 15.4	2.19
15.5	78 53 45.7	2 55 57.1	15 2.6	55 6.74	1.281	18.7	15	U	15 41.7	2.17
16.0	84 59 8.1	+2 28 51.0	14 58.7	54 52.36	-1.115	19.2	16	L	4 7.6	2.14
16.5	91 0 59.1	2 0 18.1	14 55.3	54 40.06	0.932	19.7	16	U	16 33.1	2.11
17.0	96 59 54.0	1 30 37.7	14 52.6	54 30.03	0.735	20.2	17	L	4 58.2	2.06
17.5	102 56 30.4	1 0 8.0	14 50.5	54 22.46	0.528	20.7	17	U	17 22.6	2.01
18.0	108 51 28.4	+0 29 6.8	14 49.2	54 17.42	0.313	21.2	18	L	5 46.4	1.96
18.5	114 45 29.4	-0 2 8.8	14 48.5	54 14.96	-0.094	21.7	18	U	18 9.7	1.92
19.0	120 39 15.5	0 33 21.6	14 48.6	54 15.16	+0.126	22.2	19	L	6 32.4	1.87
19.5	126 33 28.8	1 4 15.0	14 49.3	54 17.97	0.342	22.7	19	U	18 54.5	1.82
20.0	132 28 50.7	1 34 31.9	14 50.8	54 23.35	0.553	23.2	20	L	7 16.2	1.79
20.5	138 26 1.6	2 3 55.1	14 52.9	54 31.20	0.755	23.7	20	U	19 37.6	1.77
21.0	144 25 40.2	-2 32 6.9	14 55.7	54 41.42	+0.946	24.2	21	L	7 58.7	1.75
21.5	150 28 22.2	2 58 49.1	14 59.1	54 53.84	1.120	24.7	21	U	20 19.7	1.75
22.0	156 34 40.3	3 23 43.0	15 3.0	55 8.22	1.275	25.2	22	L	8 40.7	1.75
22.5	162 45 3.2	3 46 29.1	15 7.4	55 24.35	1.409	25.7	22	U	21 1.7	1.76
23.0	168 59 54.7	4 6 47.7	15 12.2	55 41.94	1.517	26.2	23	L	9 23.0	1.79
23.5	175 19 33.5	-4 24 19.2	15 17.3	56 0.66	+1.599	26.7	23	U	21 44.7	1.83
24.0	181 44 12.1	-4 38 44.2	15 22.6	56 20.20	+1.651	27.2	24	L	10 6.9	1.88

GREENWICH MEAN TIME.

M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.		
								h m	m			
I.	24.0	181 44 12.1	-4 38 44.2	15 22 6	56 20.20	+1.651	27.2	Oct.	24	L	10 6.9	1.88
	24.5	188 13 56.3	4 49 44.2	15 28.1	56 40.18	1.673	27.7		24	U	22 29.8	1.94
	25.0	194 48 45.4	4 57 2.5	15 33.5	57 0.24	1.665	28.2		25	L	10 53.4	2.00
	25.5	201 28 31 9	5 0 24.0	15 38.9	57 19.99	1.624	28.7		25	U	23 17.9	2.08
	26.0	208 13 1.3	4 59 37.4	15 44.1	57 39.09	1.553	29.2		26	L	11 43.4	2.17
	26.5	215 1 53.2	-4 54 35.0	15 49.0	57 57.14	+1.454	0.1				.....	...
	27.0	221 54 42.1	4 45 13.2	15 53.6	58 13.89	1.333	0.6		27	U	0 10.0	2.26
	27.5	228 50 58.2	4 31 34.1	15 57.8	58 29.08	1.193	1.1		27	L	12 37.6	2.34
	28.0	235 50 8.9	4 13 44.5	16 1.4	58 42.47	1.087	1.6		28	U	1 6.2	2.42
	28.5	242 51 40.7	3 51 57.3	16 4.5	58 53.91	0.872	2.1		28	L	13 35.8	2.49
	29.0	249 54 59.9	-3 26 29.9	16 7.1	59 3.36	+0.702	2.6		29	U	2 6.0	2.53
	29.5	256 59 34.4	2 57 45.1	16 9.1	59 10.80	0.534	3.1		29	L	14 36.7	2.57
	30.0	264 4 55.0	2 26 10.0	16 10.6	59 16.22	0.372	3.6		30	U	3 7.6	2.57
	30.5	271 10 35.8	1 52 15.0	16 11.6	59 19.74	0.218	4.1		30	L	15 38.3	2.54
	31.0	278 16 15.0	1 16 33.3	16 12.0	59 21.48	+0.075	4.6		31	U	4 8.5	2.49
31.5	285 21 35.3	-0 39 40.1	16 12.0	59 21.57	-0.057	5.1	31	L	16 38.1	2.43		
IV.	1.0	292 26 22.9	-0 2 11.3	16 11.7	59 20.16	0.176	5.6	Nov.	1	U	5 6.9	2.36
	1.5	299 30 27.7	+0 35 16.9	16 10.9	59 17.39	0.283	6.1		1	L	17 34.8	2.29
	2.0	306 33 42.0	1 12 8.8	16 9.8	59 13.42	0.379	6.6		2	U	6 1.8	2.22
	2.5	313 36 0.2	1 47 49.8	16 8.4	59 8.34	0.466	7.1		2	L	18 28.0	2.15
	3.0	320 37 17.3	+2 21 46.9	16 6.8	59 2.25	-0.548	7.6		3	U	6 53.4	2.08
	3.5	327 37 28.5	2 53 29.7	16 4.9	58 55.19	0.625	8.1		3	L	19 18.1	2.04
	4.0	334 36 27.8	3 22 29.9	16 2.7	58 47.24	0.700	8.6		4	U	7 42.3	2.00
	4.5	341 34 7.8	3 48 22.5	16 0.3	58 38.40	0.775	9.1		4	L	20 6.2	1.98
	5.0	348 30 18.8	4 10 46.0	15 57.6	58 28.64	0.850	9.6		5	U	8 29.9	1.97
	5.5	355 24 48.8	+4 29 22.7	15 54.7	58 18.00	-0.924	10.1		5	L	20 53.5	1.97
	6.0	2 17 23.6	4 43 58.8	15 51.6	58 6.48	0.998	10.6		6	U	9 17.1	1.97
	6.5	9 7 46.7	4 54 24.8	15 48.2	57 54.05	1.072	11.1		6	L	21 40.9	1.99
	7.0	15 55 40.4	5 0 35.7	15 44.6	57 40.77	1.143	11.6		7	U	10 5.0	2.02
	7.5	22 40 45.6	5 2 31.0	15 40.7	57 26.65	1.207	12.1		7	L	22 29.5	2.06
	8.0	29 22 43.8	+5 0 14.5	15 36.7	57 11.83	-1.263	12.6		8	U	10 54.5	2.09
8.5	36 1 17.5	4 53 53.6	15 32.5	56 56.38	1.310	13.1	8	L	23 19.8	2.13		
9.0	42 36 10.5	4 43 40.0	15 28.1	56 40.45	1.343	13.6	9	U	11 45.6	2.16		
9.5	49 7 10.2	4 29 48.3	15 23.7	56 24.21	1.360	14.1			.....	...
10.0	55 34 7.1	4 12 35.7	15 19.3	56 7.88	1.358	14.6	10	L	0 11.7	2.19		
10.5	61 56 56.1	+3 52 21.5	15 14.9	55 51.70	-1.337	15.1	10	U	12 38.1	2.21		
11.0	68 15 36.5	3 29 26.1	15 10.5	55 35.88	1.294	15.6	11	L	1 4.7	2.22		
11.5	74 30 12.6	3 4 11.3	15 6.4	55 20.71	1.230	16.1	11	U	13 31.3	2.20		
12.0	80 40 53.9	2 36 58.9	15 2.5	55 6.43	1.146	16.6	12	L	1 57.6	2.18		
12.5	86 47 54.4	2 8 10.5	14 58.9	54 53.31	1.040	17.1	12	U	14 23.7	2.15		
13.0	92 51 32.7	+1 38 7.7	14 55.7	54 41.57	-0.913	17.6	13	L	2 49.3	2.11		
13.5	98 52 11.6	1 7 11.0	14 53.0	54 31.46	0.767	18.1	13	U	15 14.4	2.06		
14.0	104 50 18.5	0 35 40.2	14 50.8	54 23.22	0.604	18.6	14	L	3 38.8	2.01		
14.5	110 46 23.6	+0 3 54.6	14 49.1	54 17.03	0.425	19.1	14	U	16 2.6	1.95		
15.0	116 41 0.6	-0 27 47.7	14 48.0	54 13.06	0.234	19.6	15	L	4 25.7	1.90		
15.5	122 34 45.4	-0 59 8.9	14 47.5	54 11.46	-0.032	20.1	15	U	16 48.2	1.85		
16.0	128 28 16.4	-1 29 52.2	14 47.8	54 12.33	+0.179	20.6	16	L	5 10.2	1.81		

GREENWICH MEAN TIME.

G. M. T.	Longitude.	Latitude.	Semi-diameter.	Horizontal Parallax.	Var. per Hour.	Age.	Transit, Meridian of Greenwich.			Var. per Hour.
								h m	m	
Nov. 16.0	128 28 16.4	-1 29 52.2	14 47.8	54 12.33	+0.179	20.6	Nov. 16	L	5 10.2	1.81
16.5	134 22 13.0	1 59 40.7	14 48.7	54 15.77	0.395	21.1	16	U	17 31.6	1.77
17.0	140 17 16.3	2 28 18.0	14 50.4	54 21.82	0.614	21.6	17	L	5 52.7	1.74
17.5	146 14 7.1	2 55 27.7	14 52.7	54 30.50	0.832	22.1	17	U	18 13.5	1.73
18.0	152 13 26.5	3 20 53.1	14 55.8	54 41.78	1.045	22.6	18	L	6 34.2	1.72
18.5	158 15 54.3	-3 44 17.1	14 59.6	54 55.57	+1.260	23.1	18	U	18 54.8	1.72
19.0	164 22 9.1	4 5 22.5	15 4.0	55 11.74	1.443	23.6	19	L	7 15.6	1.74
19.5	170 32 46.5	4 23 51.6	15 9.0	55 30.14	1.619	24.1	19	U	19 36.6	1.77
20.0	176 48 18.9	4 39 26.5	15 14.5	55 50.51	1.773	24.6	20	L	7 58.1	1.81
20.5	183 9 14.4	4 51 49.2	15 20.6	56 12.60	1.902	25.1	20	U	20 20.1	1.86
21.0	189 35 55.4	-5 0 42.2	15 26.9	56 36.03	+1.999	25.6	21	L	8 42.8	1.92
21.5	196 8 37.8	5 5 49.0	15 33.6	57 0.41	2.059	26.1	21	U	21 6.3	2.00
22.0	202 47 30.2	5 6 54.5	15 40.4	57 25.29	2.080	26.6	22	L	9 30.9	2.09
22.5	209 32 33.2	5 3 46.4	15 47.2	57 50.17	2.058	27.1	22	U	21 56.6	2.19
23.0	216 23 38.2	4 56 15.5	15 53.8	58 14.51	1.991	27.6	23	L	10 23.4	2.29
23.5	223 20 28.3	-4 44 17.1	16 0.1	58 37.77	+1.879	28.1	23	U	22 51.5	2.39
24.0	230 22 36.9	4 27 51.8	16 6.0	58 59.42	1.723	28.6	24	L	11 20.8	2.48
24.5	237 29 30.3	4 7 6.3	16 11.3	59 18.93	1.525	29.1	24	U	23 51.1	2.56
25.0	244 40 27.1	3 42 13.8	16 16.0	59 35.87	1.292	0.1	25	L	12 22.3	2.62
25.5	251 54 41.2	3 13 34.0	16 19.8	59 49.84	1.032	0.6			.....	...
26.0	259 11 22.4	-2 41 33.3	16 22.7	60 0.58	+0.753	1.1	26	U	0 54.0	2.64
26.5	266 29 39.4	2 6 44.2	16 24.7	60 7.90	0.465	1.6	26	L	13 25.8	2.64
27.0	273 48 41.1	1 29 43.3	16 25.7	60 11.74	+0.178	2.1	27	U	1 57.5	2.62
27.5	281 7 38.8	0 51 11.3	16 25.8	60 12.22	-0.099	2.6	27	L	14 28.6	2.56
28.0	288 25 48.1	-0 11 50.2	16 25.1	60 9.44	0.358	3.1	28	U	2 58.9	2.49
28.5	295 42 29.7	+0 27 36.6	16 23.5	60 3.70	-0.591	3.6	28	L	15 28.3	2.40
29.0	302 57 9.9	1 6 27.8	16 21.3	59 55.38	0.795	4.1	29	U	3 56.6	2.32
29.5	310 9 21.8	1 44 3.1	16 18.4	59 44.77	0.966	4.6	29	L	16 23.9	2.23
30.0	317 18 44.2	2 19 46.2	16 15.0	59 32.32	1.105	5.1	30	U	4 50.2	2.15
30.5	324 25 1.8	2 53 4.4	16 11.2	59 18.39	1.211	5.6	30	L	17 15.6	2.08
Dec. 1.0	331 28 4.2	+3 23 28.9	16 7.1	59 3.35	-1.288	6.1	Dec. 1	U	5 40.2	2.03
1.5	338 27 45.2	3 50 35.6	16 2.8	58 47.57	1.340	6.6	1	L	18 4.3	1.99
2.0	345 24 2.0	4 14 4.9	15 58.4	58 31.29	1.368	7.1	2	U	6 28.0	1.96
2.5	352 16 54.1	4 33 41.5	15 53.9	58 14.80	1.378	7.6	2	L	18 51.4	1.95
3.0	359 6 22.5	4 49 14.4	15 49.4	57 58.27	1.374	8.1	3	U	7 14.7	1.94
3.5	5 52 29.1	+5 0 36.5	15 44.9	57 41.87	-1.360	8.6	3	L	19 38.1	1.95
4.0	12 35 16.5	5 7 44.6	15 40.5	57 25.66	1.339	9.1	4	U	8 1.6	1.97
4.5	19 14 46.5	5 10 39.0	15 36.1	57 9.75	1.313	9.6	4	L	20 25.4	1.99
5.0	25 51 0.9	5 9 23.3	15 31.9	56 54.16	1.284	10.1	5	U	8 49.5	2.03
5.5	32 24 1.4	5 4 4.3	15 27.7	56 38.95	1.254	10.6	5	L	21 14.1	2.07
6.0	38 53 49.0	+4 54 51.9	15 23.7	56 24.08	-1.223	11.1	6	U	9 39.1	2.10
6.5	45 20 24.2	4 41 58.2	15 19.7	56 9.61	1.189	11.6	6	L	22 4.6	2.14
7.0	51 43 47.9	4 25 37.8	15 15.9	55 55.53	1.155	12.1	7	U	10 30.4	2.17
7.5	58 4 1.3	4 6 7.6	15 12.2	55 41.90	1.119	12.6	7	L	22 56.6	2.19
8.0	64 21 6.1	3 43 46.0	15 8.6	55 28.71	1.078	13.1	8	U	11 22.9	2.19
8.5	70 35 5.2	+3 18 52.8	15 5.1	55 16.05	-1.031	13.6	8	L	23 49.3	2.19
9.0	76 46 3.1	+2 51 48.8	15 1.9	55 4.00	-0.976	14.1	9	U	12 15.5	2.17

GREENWICH MEAN TIME.

G. M. T.	Longitude.			Latitude.			Semi-diameter.			Horizontal Parallax.			Var. per Hour.		Age.	Transit, Meridian of Greenwich.				Var. per Hour.
	"	"	"	"	"	"	"	"	"	"	"	"	"	d		Dec.	h	m	m	
ec. 9.0	76	46	3.1	+2	51	48.8	15	1.9	55	4.00	-0.976	14.1	Dec. 9	U	12	15.5	2.17			
9.5	82	54	6.1	2	22	55.4	14	58.8	54	52.66	0.912	14.6			.....	...		
10.0	88	59	22.9	1	52	34.5	14	55.9	54	42.14	0.839	15.1	10	L	0	41.4	2.14			
10.5	95	2	4.2	1	21	7.8	14	53.3	54	32.58	0.753	15.6	10	U	13	6.9	2.10			
11.0	101	2	23.5	0	48	56.8	14	51.0	54	24.13	0.654	16.1	11	L	1	31.9	2.05			
11.5	107	0	37.1	+0	16	22.4	14	49.0	54	16.93	-0.542	16.6	11	U	13	56.2	2.00			
12.0	112	57	4.0	-0	16	15.1	14	47.5	54	11.17	0.416	17.1	12	L	2	19.9	1.94			
12.5	118	52	5.4	0	48	36.1	14	46.3	54	7.01	0.276	17.6	12	U	14	42.9	1.89			
13.0	124	46	6.3	1	20	21.7	14	45.7	54	4.61	-0.122	18.1	13	L	3	5.3	1.84			
13.5	130	39	33.5	1	51	14.2	14	45.6	54	4.14	+0.045	18.6	13	U	15	27.1	1.79			
14.0	136	32	56.2	-2	20	56.2	14	46.0	54	5.75	+0.224	19.1	14	L	3	48.3	1.75			
14.5	142	26	46.3	2	49	11.2	14	47.0	54	9.58	0.414	19.6	14	U	16	9.2	1.72			
15.0	148	21	37.3	3	15	43.1	14	48.7	54	15.71	0.612	20.1	15	L	4	29.7	1.70			
15.5	154	18	4.4	3	40	16.0	14	51.0	54	24.28	0.817	20.6	15	U	16	50.1	1.69			
16.0	160	16	44.0	4	2	34.6	14	54.0	54	35.33	1.026	21.1	16	L	5	10.4	1.69			
16.5	166	18	13.4	-4	22	23.4	14	57.7	54	48.89	+1.236	21.6	16	U	17	30.8	1.71			
17.0	172	23	10.0	4	39	27.2	15	2.1	55	4.97	1.442	22.1	17	L	5	51.4	1.73			
17.5	178	32	10.5	4	53	30.6	15	7.2	55	23.45	1.640	22.6	17	U	18	12.3	1.77			
18.0	184	45	50.7	5	4	18.6	15	12.8	55	44.27	1.826	23.1	18	L	6	33.8	1.82			
18.5	191	4	44.2	5	11	36.2	15	19.1	56	7.22	1.996	23.6	18	U	18	56.0	1.88			
19.0	197	29	21.2	-5	15	9.2	15	25.9	56	32.08	+2.142	24.1	19	L	7	19.0	1.96			
19.5	204	0	7.6	5	14	44.0	15	33.1	56	58.52	2.258	24.6	19	U	19	43.0	2.04			
20.0	210	37	24.3	5	10	9.3	15	40.6	57	26.13	2.339	25.1	20	L	8	8.1	2.14			
20.5	217	21	25.1	5	1	15.8	15	48.3	57	54.48	2.376	25.6	20	U	20	34.5	2.25			
21.0	224	12	16.0	4	47	57.5	15	56.1	58	22.96	2.365	26.1	21	L	9	2.2	2.36			
21.5	231	9	54.0	-4	30	12.7	16	3.7	58	51.01	+2.300	26.6	21	U	21	31.2	2.47			
22.0	238	14	6.7	4	8	5.4	16	11.1	59	17.94	2.178	27.1	22	L	10	1.4	2.56			
22.5	245	24	30.8	3	41	45.7	16	17.9	59	43.07	1.998	27.6	22	U	22	32.6	2.63			
23.0	252	40	33.2	3	11	30.4	16	24.1	60	5.68	1.763	28.1	23	L	11	4.6	2.68			
23.5	260	1	31.1	2	37	44.0	16	29.4	60	25.16	1.477	28.6	23	U	23	37.0	2.69			
24.0	267	26	32.7	-2	0	58.4	16	33.7	60	40.95	+1.146	29.1	24	L	12	9.3	2.68			
24.5	274	54	39.6	1	21	51.8	16	36.8	60	52.54	0.783	0.1			.....	...		
25.0	282	24	48.3	-0	41	8.2	16	38.8	60	59.66	0.401	0.6	25	U	0	41.3	2.64			
25.5	289	55	53.1	+0	0	24.7	16	39.5	61	2.14	+0.013	1.1	25	L	13	12.6	2.57			
26.0	297	26	47.5	0	41	57.5	16	38.9	61	0.02	-0.366	1.6	26	U	1	43.0	2.49			
26.5	304	56	28.0	+1	22	40.8	16	37.1	60	53.46	-0.722	2.1	26	L	14	12.3	2.39			
27.0	312	23	55.5	2	1	47.7	16	34.2	60	42.84	1.043	2.6	27	U	2	40.5	2.31			
27.5	319	48	17.5	2	38	35.3	16	30.3	60	28.60	1.322	3.1	27	L	15	7.7	2.22			
28.0	327	8	48.9	3	12	26.1	16	25.6	60	11.29	1.553	3.6	28	U	3	33.9	2.15			
28.5	334	24	53.2	3	42	49.3	16	20.2	59	51.51	1.733	4.1	28	L	15	59.3	2.09			
29.0	341	36	3.2	+4	9	20.0	16	14.3	59	29.89	-1.863	4.6	29	U	4	24.1	2.04			
29.5	348	41	59.7	4	31	40.4	16	8.1	59	6.99	1.945	5.1	29	L	16	48.3	2.00			
30.0	355	42	31.3	4	49	38.9	16	1.6	58	43.41	1.982	5.6	30	U	5	12.2	1.98			
30.5	2	37	34.3	5	3	9.4	15	55.2	58	19.60	1.980	6.1	30	L	17	35.9	1.97			
31.0	9	27	10.9	5	12	10.7	15	48.7	57	56.00	1.948	6.6	31	U	5	59.6	1.98			
31.5	16	11	28.1	+5	16	45.8	15	42.4	57	32.94	-1.890	7.1	31	L	18	23.4	1.99			

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit Meridian of Greenwich.		
	Noon.				Noon.									Noon.	Noon.
	h	m	s	s	°	'	"	"		"	"	"	h	m	s
Jan. 1	19	25	8.05	+17.640	-24	11	13.2	+34.68	0.130 8872	-1530.9	2.47	6.51	0	46	0
2	19	32	10.66	17.576	23	56	33.8	38.61	0.127 0725	1649.0	2.49	6.57	0	49	0
3	19	39	11.53	17.494	23	40	20.1	42.53	0.122 9668	1773.4	2.52	6.63	0	52	0
4	19	46	10.22	17.394	23	22	32.8	46.42	0.118 5547	1904.5	2.54	6.70	0	55	0
5	19	53	6.24	17.271	23	3	12.4	50.28	0.113 8197	2042.8	2.57	6.77	0	58	0
6	19	59	59.01	+17.123	-22	42	20.0	+54.08	0.108 7441	-2188.4	2.60	6.85	1	1	1
7	20	6	47.92	16.948	22	19	57.3	57.90	0.103 3090	2342.3	2.63	6.94	1	4	1
8	20	13	32.24	16.741	21	56	6.2	61.43	0.097 4945	2504.7	2.67	7.03	1	6	1
9	20	20	11.19	16.498	21	30	49.6	64.93	0.091 2797	2675.8	2.71	7.13	1	9	1
10	20	26	43.84	16.215	21	4	11.0	68.26	0.084 6432	2856.1	2.75	7.24	1	12	1
11	20	33	9.17	+15.887	-20	36	14.7	+71.40	0.077 5629	-3045.7	2.79	7.36	1	14	1
12	20	39	26.01	15.507	20	7	6.1	74.29	0.070 0167	3244.3	2.84	7.49	1	17	1
13	20	45	33.04	15.069	19	36	51.7	76.86	0.061 9832	3451.7	2.90	7.63	1	19	1
14	20	51	28.78	14.564	19	5	39.6	79.08	0.053 4420	3667.2	2.95	7.78	1	21	1
15	20	57	11.54	13.986	18	33	39.0	80.89	0.044 3750	3889.5	3.02	7.94	1	22	1
16	21	2	39.45	+13.326	-18	1	1.0	+82.19	0.034 7676	-4117.2	3.08	8.12	1	24	1
17	21	7	50.43	12.574	17	27	58.7	82.90	0.024 6101	4347.6	3.16	8.32	1	25	1
18	21	12	42.16	11.720	16	54	46.9	82.96	0.013 8994	4577.5	3.23	8.52	1	26	1
19	21	17	12.14	10.759	16	21	42.7	82.26	0.002 6416	4802.7	3.32	8.75	1	27	1
20	21	21	17.66	9.681	15	49	5.3	80.71	9.990 8541	5018.2	3.41	8.99	1	27	1
21	21	24	55.85	+ 8.481	-15	17	15.9	+78.24	9.978 5683	-5216.9	3.51	9.25	1	26	1
22	21	28	3.75	7.167	14	46	37.6	74.78	9.965 8323	5391.8	3.61	9.52	1	25	1
23	21	30	38.38	5.709	14	17	35.0	70.25	9.952 7141	5533.8	3.72	9.81	1	24	1
24	21	32	36.82	4.143	13	50	34.1	64.65	9.939 3038	5633.5	3.84	10.12	1	22	1
25	21	33	56.41	2.473	13	26	0.7	57.96	9.925 7154	5680.6	3.96	10.44	1	19	1
26	21	34	34.85	+ 0.719	-13	4	20.2	+50.23	9.912 0880	-5664.2	4.09	10.77	1	16	1
27	21	34	30.46	- 1.091	12	45	56.8	41.57	9.898 5858	5674.8	4.22	11.11	1	12	1
28	21	33	42.33	2.919	12	31	11.1	32.12	9.885 3952	5403.3	4.35	11.46	1	7	1
29	21	32	10.55	4.720	12	20	19.6	22.09	9.872 7207	5143.7	4.48	11.80	1	2	1
30	21	29	56.39	6.441	12	13	33.4	11.74	9.860 7784	4793.0	4.60	12.13	0	56	1
31	21	27	2.47	- 8.024	-12	10	56.9	+ 1.35	9.849 7861	-4352.6	4.72	12.44	0	49	1
Feb. 1	21	23	32.77	9.413	12	12	26.6	- 8.74	9.839 9529	3828.7	4.83	12.72	0	41	1
2	21	19	32.61	10.555	12	17	51.5	18.20	9.831 4665	3232.6	4.92	12.97	0	33	1
3	21	15	8.47	11.404	12	26	53.1	26.75	9.824 4812	2580.8	5.00	13.18	0	25	1
4	21	10	27.75	11.933	12	39	6.1	34.13	9.819 1077	1893.0	5.06	13.35	0	17	1
5	21	5	38.34	-12.128	-12	54	0.5	-40.17	9.815 4060	-1191.4	5.11	13.46	0	9	1
6	21	0	48.24	11.993	13	11	3.1	44.80	9.813 3827	- 497.9	5.13	13.52	23	51	0
7	20	56	5.10	11.553	13	29	39.8	48.01	9.812 9934	+ 167.0	5.14	13.54	23	42	6
8	20	51	35.87	10.841	13	49	17.4	49.89	9.814 1482	786.4	5.12	13.50	23	34	5
9	20	47	26.52	9.905	14	9	25.0	50.55	9.816 7216	1347.5	5.09	13.42	23	26	9
10	20	43	41.85	- 8.792	-14	29	35.4	-50.16	9.820 5632	+1842.3	5.05	13.30	23	19	7
11	20	40	25.46	7.556	14	49	25.5	48.87	9.825 5088	2267.2	4.99	13.15	23	13	0
12	20	37	39.79	6.241	15	8	36.1	46.89	9.831 3900	2623.1	4.92	12.97	23	6	9
13	20	35	26.20	4.889	15	26	52.0	44.35	9.838 0427	2911.0	4.85	12.78	23	1	2
14	20	33	45.18	3.534	15	44	1.6	41.38	9.845 3131	3138.0	4.77	12.57	22	56	2
15	20	32	36.48	- 2.199	-15	59	55.9	-38.10	9.853 0608	+3309.8	4.68	12.34	22	51	6
16	20	31	59.28	- 0.909	-16	14	28.7	-34.60	9.861 1611	+3433.0	4.60	12.11	22	47	5

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.	Var. per Hour.	Apparent Declination.	Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	h m
	h m s	s	° ' "	"			"	"	h m
Feb. 16	20 31 59.28	- 0.909	-16 14 28.7	- 34.60	9.861 1611	+3433.0	4.60	12.11	22 47.5
17	20 31 52.39	+ 0.324	16 27 35.5	30.94	9.869 5061	3514.8	4.51	11.88	22 43.9
18	20 32 14.30	1.490	16 39 13.2	27.18	9.878 0042	3561.6	4.42	11.65	22 40.8
19	20 33 3.37	2.586	16 49 19.9	23.37	9.886 5784	3579.1	4.34	11.43	22 38.1
20	20 34 17.86	3.609	16 57 54.6	19.52	9.895 1648	3572.6	4.25	11.20	22 35.7
21	20 35 56.00	+ 4.558	-17 4 56.7	- 15.66	9.903 7118	+3546.1	4.17	10.98	22 33.8
22	20 37 56.08	5.437	17 10 26.2	11.80	9.912 1782	3506.1	4.09	10.77	22 32.2
23	20 40 16.43	6.248	17 14 23.3	7.97	9.920 5313	3453.1	4.01	10.57	22 30.9
24	20 42 55.45	6.994	17 16 48.4	4.14	9.928 7456	3390.9	3.94	10.37	22 29.8
25	20 45 51.65	7.680	17 17 42.1	- 0.35	9.936 8022	3322.0	3.86	10.18	22 29.1
26	20 49 3.63	+ 8.310	-17 17 5.2	+ 3.42	9.944 6871	+3248.1	3.79	10.00	22 28.6
27	20 52 30.09	8.887	17 14 58.4	7.15	9.952 3904	3171.2	3.73	9.82	22 28.3
28	20 56 9.83	9.417	17 11 22.4	10.85	9.959 9054	3091.4	3.66	9.65	22 28.2
29	21 0 1.75	9.903	17 6 18.1	14.51	9.967 2284	3011.0	3.60	9.49	22 28.3
Mar. 1	21 4 4.84	10.348	16 59 46.3	18.14	9.974 3578	2930.2	3.54	9.34	22 28.5
2	21 8 18.18	+10.757	-16 51 47.8	+ 21.73	9.981 2937	+2849.8	3.49	9.19	22 29.0
3	21 12 40.92	11.132	16 42 23.4	25.30	9.988 0376	2770.2	3.43	9.05	22 29.6
4	21 17 12.31	11.478	16 31 33.9	28.83	9.994 5919	2691.9	3.38	8.91	22 30.3
5	21 21 51.65	11.796	16 19 20.1	32.32	0.000 9598	2615.0	3.33	8.78	22 31.1
6	21 26 38.32	12.089	16 5 42.8	35.78	0.007 1451	2539.8	3.29	8.66	22 32.0
7	21 31 31.75	+12.360	-15 50 42.7	+ 39.22	0.013 1521	+2466.4	3.24	8.54	22 33.1
8	21 36 31.44	12.611	15 34 20.5	42.62	0.018 9851	2394.8	3.20	8.42	22 34.2
9	21 41 36.92	12.843	15 16 37.0	46.00	0.024 6484	2325.0	3.16	8.31	22 35.4
10	21 46 47.79	13.060	14 57 32.8	49.35	0.030 1465	2257.1	3.12	8.21	22 36.8
11	21 52 3.69	13.263	14 37 8.6	52.67	0.035 4838	2191.0	3.08	8.11	22 38.2
12	21 57 24.30	+13.453	-14 15 25.0	+ 55.96	0.040 6646	+2126.6	3.04	8.01	22 39.6
13	22 2 49.33	13.632	13 52 22.7	59.23	0.045 6929	2063.8	3.01	7.92	22 41.2
14	22 8 18.53	13.800	13 28 2.4	62.46	0.050 5725	2002.7	2.97	7.83	22 42.8
15	22 13 51.68	13.961	13 2 24.7	65.68	0.055 3069	1942.9	2.94	7.75	22 44.5
16	22 19 28.61	14.115	12 35 30.2	68.86	0.059 8993	1884.3	2.91	7.67	22 46.2
17	22 25 9.16	+14.263	-12 7 19.5	+ 72.03	0.064 3524	+1826.8	2.88	7.59	22 48.0
18	22 30 53.21	14.407	11 37 53.3	75.16	0.068 6687	1770.3	2.85	7.51	22 49.8
19	22 36 40.64	14.546	11 7 12.1	78.27	0.072 8501	1714.4	2.82	7.44	22 51.7
20	22 42 31.38	14.683	10 35 16.6	81.35	0.076 8982	1659.1	2.80	7.37	22 53.7
21	22 48 25.39	14.818	10 2 7.5	84.40	0.080 8142	1604.2	2.77	7.31	22 55.7
22	22 54 22.63	+14.953	- 9 27 45.4	+ 87.43	0.084 5985	+1549.3	2.75	7.24	22 57.8
23	23 0 23.10	15.087	8 52 10.9	90.43	0.088 2509	1494.3	2.72	7.18	22 59.9
24	23 6 26.80	15.222	8 15 24.7	93.40	0.091 7710	1439.0	2.70	7.12	23 2.1
25	23 12 33.77	15.359	7 37 27.6	96.34	0.095 1574	1382.9	2.68	7.07	23 4.3
26	23 18 44.05	15.498	6 58 20.4	99.25	0.098 4082	1325.9	2.66	7.01	23 6.6
27	23 24 57.71	+15.641	- 6 18 3.9	+102.12	0.101 5208	+1267.7	2.64	6.96	23 8.9
28	23 31 14.84	15.787	5 36 39.0	104.95	0.104 4918	1207.8	2.63	6.92	23 11.3
29	23 37 35.53	15.938	4 54 6.8	107.73	0.107 3169	1146.0	2.61	6.87	23 13.8
30	23 43 59.90	16.094	4 10 28.3	110.47	0.109 9910	1081.9	2.59	6.83	23 16.3
31	23 50 28.07	16.255	3 25 44.8	113.15	0.112 5080	1015.1	2.58	6.79	23 18.9
r. 1	23 57 0.19	+16.423	- 2 39 57.7	+115.77	0.114 8609	+ 945.1	2.56	6.75	23 21.6
2	0 3 36.40	+16.596	- 1 53 8.4	+118.32	0.117 0415	+ 871.4	2.55	6.72	23 24.3

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Tran. Mer. c. Gr. wi
	Noon.				Noon.								
	h	m	s	s	°	'	"	"		"	"	h	
Apr. 1	23	57	0.19	+16.423	- 2	39	57.7	+115.77	0.114 8609	+ 945.1	2.56	6.75	23
2	0	3	36.40	16.596	1	53	8.4	118.32	0.117 0415	871.4	2.55	6.72	23
3	0	10	16.86	16.777	1	5	18.9	120.80	0.119 0404	793.6	2.54	6.69	23
4	0	17	1.74	16.964	- 0	16	31.1	123.18	0.120 8469	711.0	2.53	6.66	23
5	0	23	51.20	17.159	+ 0	33	12.8	125.46	0.122 4491	623.3	2.52	6.64	23
6	0	30	45.41	+17.360	+ 1	23	50.0	+127.62	0.123 8339	+ 529.8	2.51	6.62	23
7	0	37	44.51	17.567	2	15	17.4	129.64	0.124 9866	429.7	2.50	6.60	23
8	0	44	48.65	17.779	3	7	31.4	131.50	0.125 8906	322.4	2.50	6.59	23
9	0	51	57.96	17.997	4	0	28.0	133.18	0.126 5282	207.6	2.50	6.57	23
10	0	59	12.53	18.217	4	54	2.4	134.65	0.126 8805	+ 84.6	2.49	6.57	23
11	1	6	32.40	+18.439	+ 5	48	9.2	+135.88	0.126 9271	- 47.3	2.49	6.57	23
12	1	13	57.59	18.660	6	42	42.3	136.83	0.126 6462	188.4	2.50	6.57	23
13	1	21	28.04	18.877	7	37	34.6	137.47	0.126 0153	339.0	2.50	6.58	23
14	1	29	3.62	19.087	8	32	38.2	137.76	0.125 0113	499.3	2.50	6.60	..
15	1	36	44.11	19.285	9	27	44.3	137.68	0.123 6111	609.2	2.51	6.62	0
16	1	44	29.20	+19.469	+10	22	43.3	+137.17	0.121 7918	- 848.5	2.52	6.65	0
17	1	52	18.47	19.633	11	17	24.6	136.19	0.119 5315	1036.5	2.54	6.68	0
18	2	0	11.38	19.772	12	11	36.8	134.73	0.116 8101	1232.5	2.55	6.72	0
19	2	8	7.28	19.881	13	5	7.9	132.77	0.113 6098	1435.4	2.57	6.77	0
20	2	16	5.38	19.955	13	57	45.4	130.27	0.109 9161	1643.4	2.59	6.83	0
21	2	24	4.80	+19.990	+14	49	16.7	+127.25	0.105 7185	-1855.0	2.62	6.90	0
22	2	32	4.53	19.981	15	39	29.1	123.70	0.101 0108	2068.2	2.65	6.97	0
23	2	40	3.49	19.925	16	28	10.3	119.65	0.095 7917	2280.8	2.68	7.06	0
24	2	48	0.51	19.819	17	15	8.7	115.14	0.090 0649	2490.9	2.71	7.15	0
25	2	55	54.40	19.663	18	0	13.5	110.19	0.083 8392	2696.2	2.75	7.25	0
26	3	3	43.93	+19.456	+18	43	15.0	+104.88	0.077 1283	-2894.9	2.80	7.37	0
27	3	11	27.88	19.200	19	24	5.1	99.25	0.069 9501	3065.4	2.84	7.49	0
28	3	19	5.06	18.892	20	2	37.0	93.38	0.062 3261	3266.2	2.89	7.62	0
29	3	26	34.31	18.538	20	38	45.5	87.31	0.054 2810	3436.2	2.95	7.77	0
30	3	33	54.53	18.140	21	12	26.7	81.11	0.045 8418	3594.5	3.01	7.92	1
May 1	3	41	4.68	+17.700	+21	43	38.3	+ 74.85	0.037 0369	-3740.8	3.07	8.08	1
2	3	48	3.79	17.220	22	12	19.3	68.57	0.027 8956	3874.8	3.13	8.25	1
3	3	54	50.96	16.705	22	38	29.8	62.32	0.018 4478	3996.3	3.20	8.43	1
4	4	1	25.36	16.157	23	2	11.0	56.13	0.008 7233	4105.5	3.27	8.62	1
5	4	7	46.22	15.577	23	23	24.7	50.03	9.998 7513	4202.6	3.35	8.83	1
6	4	13	52.81	+14.968	+23	42	13.7	+ 44.07	9.988 5605	-4287.8	3.43	9.03	1
7	4	19	44.45	14.332	23	58	41.2	38.25	9.978 1792	4361.3	3.51	9.25	1
8	4	25	20.52	13.670	24	12	50.7	32.58	9.967 6352	4423.4	3.60	9.48	1
9	4	30	40.41	12.984	24	24	46.1	27.07	9.956 9559	4474.2	3.69	9.72	1
10	4	35	43.57	12.276	24	34	31.6	21.74	9.946 1682	4513.7	3.78	9.96	1
11	4	40	29.45	+11.545	+24	42	11.2	+ 16.59	9.935 2990	-4542.1	3.88	10.21	1
12	4	44	57.53	10.793	24	47	49.3	11.61	9.924 3753	4559.1	3.97	10.47	1
13	4	49	7.32	10.020	24	51	29.9	6.80	9.913 4248	4584.4	4.08	10.74	1
14	4	52	58.34	9.229	24	53	17.3	+ 2.17	9.902 4759	4557.6	4.18	11.02	1
15	4	56	30.15	8.420	24	53	15.6	- 2.29	9.891 5582	4538.3	4.29	11.30	1
16	4	59	42.34	+ 7.694	+24	51	28.7	- 6.59	9.880 7026	-4505.8	4.40	11.58	1
17	5	2	34.54	+ 6.754	+24	48	0.5	-10.73	9.869 9416	-4459.4	4.51	11.87	1

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.
	h	m	s	s	°	'	"	"			"	"	h m
July 17	5	2	34.54	+ 6.754	+24	48	0.5	-10.73	9.869 9416	-4459.4	4.51	11.87	1 23.1
18	5	5	6.44	5.902	24	42	54.9	14.71	9.859 3094	4398.2	4.62	12.17	1 21.7
19	5	7	17.76	5.040	24	36	15.7	18.53	9.848 8426	4321.4	4.73	12.46	1 19.9
20	5	9	8.31	4.172	24	28	6.7	22.19	9.838 5800	4227.9	4.84	12.76	1 17.8
21	5	10	37.99	3.301	24	18	31.6	25.70	9.828 5626	4116.9	4.96	13.06	1 15.3
22	5	11	46.79	+ 2.433	+24	7	34.2	-29.05	9.818 8339	-3987.2	5.07	13.35	1 12.5
23	5	12	34.82	1.571	23	55	18.6	32.22	9.809 4397	3838.0	5.18	13.65	1 9.4
24	5	13	2.32	+ 0.723	23	41	49.1	35.20	9.800 4279	3668.4	5.29	13.93	1 5.9
25	5	13	9.70	- 0.105	23	27	10.3	37.99	9.791 8484	3477.6	5.39	14.21	1 2.0
26	5	12	57.51	0.905	23	11	27.2	40.56	9.783 7525	3285.2	5.50	14.48	0 57.9
27	5	12	26.51	- 1.671	+22	54	45.3	-42.88	9.776 1925	-3031.1	5.59	14.73	0 53.4
28	5	11	37.65	2.392	22	37	10.9	44.92	9.769 2206	2775.2	5.68	14.97	0 48.7
29	5	10	32.09	3.061	22	18	50.9	46.68	9.762 8884	2498.2	5.77	15.19	0 43.7
30	5	9	11.21	3.668	21	59	52.8	48.09	9.757 2455	2200.9	5.84	15.39	0 38.4
31	5	7	36.59	4.205	21	40	25.4	49.13	9.752 3388	1885.0	5.91	15.56	0 32.9
Aug 1	5	5	50.00	- 4.665	+21	20	38.0	-49.75	9.748 2107	-1552.5	5.96	15.71	0 27.2
2	5	3	53.38	5.039	21	0	40.8	49.94	9.744 8978	1206.0	6.01	15.83	0 21.3
3	5	1	48.86	5.323	20	40	44.6	49.66	9.742 4307	848.2	6.04	15.92	0 15.3
4	4	59	38.65	5.512	20	21	0.9	48.90	9.740 8326	482.5	6.07	15.98	0 9.2
5	4	57	25.05	5.805	20	1	41.5	47.64	9.740 1183	- 112.4	6.08	16.01	0 2.1
6	4	55	10.42	- 5.599	+19	42	58.3	-45.88	9.740 2936	+ 258.2	6.07	16.00	23 50.8
7	4	52	57.08	5.497	19	25	3.2	43.63	9.741 3555	625.8	6.06	15.96	23 44.7
8	4	50	47.32	5.301	19	8	7.6	40.92	9.743 2922	986.6	6.03	15.89	23 38.7
9	4	48	43.32	5.017	18	52	22.3	37.78	9.746 0831	1337.2	5.99	15.79	23 32.9
10	4	46	47.15	4.651	18	37	57.3	34.24	9.749 7001	1674.5	5.94	15.66	23 27.2
11	4	45	0.71	- 4.208	+18	25	1.4	-30.37	9.754 1082	+1995.9	5.88	15.50	23 21.7
12	4	43	25.74	3.696	18	13	42.1	26.20	9.759 2666	2299.5	5.81	15.32	23 16.4
13	4	42	3.78	3.125	18	4	5.5	21.82	9.765 1301	2583.4	5.74	15.11	23 11.3
14	4	40	56.16	2.502	17	56	16.3	17.26	9.771 6501	2846.4	5.65	14.89	23 6.5
15	4	40	4.03	1.835	17	50	17.7	12.61	9.778 7756	3087.9	5.56	14.65	23 2.0
16	4	39	28.35	- 1.133	+17	46	11.5	- 7.91	9.786 4546	+3307.6	5.46	14.39	22 57.7
17	4	39	9.90	- 0.401	17	43	58.2	- 3.21	9.794 6349	3505.7	5.36	14.12	22 53.8
18	4	39	9.29	+ 0.353	17	43	36.8	+ 1.42	9.803 2651	3682.6	5.25	13.84	22 50.1
19	4	39	26.98	1.123	17	45	5.4	5.94	9.812 2951	3839.0	5.14	13.56	22 46.8
20	4	40	3.31	1.906	17	48	20.8	10.31	9.821 6766	3975.7	5.04	13.27	22 43.7
21	4	40	58.52	+ 2.695	+17	53	19.1	+14.50	9.831 3636	+4093.7	4.92	12.98	22 41.0
22	4	42	12.74	3.490	17	59	55.4	18.48	9.841 3126	4194.2	4.81	12.68	22 38.6
23	4	43	46.05	4.286	18	8	4.5	22.22	9.851 4828	4278.3	4.70	12.39	22 36.5
24	4	45	38.46	5.082	18	17	40.1	25.70	9.861 8361	4347.0	4.59	12.10	22 34.8
25	4	47	49.97	5.877	18	28	35.9	28.00	9.872 3367	4401.2	4.48	11.81	22 33.3
26	4	50	20.52	+ 6.668	+18	40	44.9	+31.80	9.882 9511	+4442.0	4.37	11.52	22 32.2
27	4	53	10.04	7.458	18	53	59.7	34.38	9.893 6482	4470.2	4.27	11.24	22 31.4
28	4	56	18.48	8.245	19	8	12.7	36.65	9.904 3985	4486.5	4.16	10.97	22 30.9
29	4	59	45.77	9.029	19	23	15.9	38.57	9.915 1742	4491.5	4.06	10.70	22 30.7
30	5	3	31.84	9.810	19	39	1.0	40.13	9.925 9488	4485.6	3.96	10.44	22 30.8
Sept 1	5	7	36.63	+10.589	+19	55	19.3	+41.33	9.936 6969	+4469.4	3.86	10.18	22 31.2
2	5	12	0.08	+11.365	+20	12	2.0	+42.16	9.947 3936	+4442.9	3.77	9.93	22 32.0

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	Noon.				Noon.								Noon.		h m
	h	m	s	s	°	'	"	"		"	"	"	h	m
July 1	5	7	36.63	+10.589	+19	55	19.3	+ 41.33	9.936 6969	+4469.4	3.86	10.18	22	31.2
2	5	12	0.08	11.365	20	12	2.0	42.16	9.947 3936	4442.9	3.77	9.93	22	32.0
3	5	16	42.15	12.140	20	28	59.7	42.58	9.958 0145	4406.2	3.68	9.69	22	33.0
4	5	21	42.77	12.911	20	46	2.8	42.60	9.968 5353	4359.5	3.59	9.46	22	34.4
5	5	27	1.87	13.680	21	3	1.4	42.20	9.978 9317	4302.5	3.51	9.24	22	36.1
6	5	32	39.37	+14.444	+21	19	45.0	+ 41.36	9.989 1790	+4235.2	3.42	9.02	22	38.0
7	5	38	35.13	15.202	21	36	2.9	40.06	9.999 2519	4157.1	3.35	8.82	22	40.3
8	5	44	48.99	15.951	21	51	43.9	38.28	0.009 1242	4068.0	3.27	8.62	22	42.9
9	5	51	20.70	16.689	22	6	36.6	36.02	0.018 7692	3967.6	3.20	8.43	22	45.8
10	5	58	9.93	17.411	22	20	29.1	33.27	0.028 1596	3855.8	3.13	8.25	22	48.9
11	6	5	16.27	+18.113	+22	33	9.5	+ 30.01	0.037 2673	+3732.0	3.06	8.08	22	52.4
12	6	12	39.17	18.790	22	44	25.5	26.24	0.046 0636	3596.2	3.00	7.91	22	56.1
13	6	20	17.92	19.434	22	54	5.2	21.99	0.054 5197	3448.5	2.95	7.76	23	0.0
14	6	28	11.68	20.039	23	1	56.9	17.24	0.062 6073	3289.2	2.89	7.62	23	4.2
15	6	36	19.43	20.598	23	7	49.1	12.04	0.070 2988	3118.6	2.84	7.48	23	8.6
16	6	44	39.97	+21.104	+23	11	31.3	+ 6.41	0.077 5683	+2937.7	2.79	7.36	23	13.2
17	6	53	11.93	21.549	23	12	54.0	+ 0.42	0.084 3921	2747.4	2.75	7.25	23	18.0
18	7	1	53.81	21.929	23	11	49.2	- 5.87	0.090 7497	2549.4	2.71	7.14	23	22.9
19	7	10	43.94	22.237	23	8	10.2	12.42	0.096 6242	2345.2	2.67	7.04	23	27.9
20	7	19	40.57	22.470	23	1	52.1	19.11	0.102 0031	2136.8	2.64	6.96	23	33.0
21	7	28	41.88	+22.627	+22	52	52.1	- 25.88	0.106 8788	+1926.1	2.61	6.88	23	38.1
22	7	37	46.06	22.708	22	41	9.4	32.66	0.111 2485	1715.4	2.59	6.81	23	43.3
23	7	46	51.29	22.716	22	26	44.9	39.35	0.115 1143	1506.6	2.56	6.75	23	48.5
24	7	55	55.86	22.654	22	9	41.5	45.88	0.118 4834	1301.8	2.54	6.70	23	53.6
25	8	4	58.16	22.528	21	50	3.9	52.20	0.121 3672	1102.5	2.53	6.65	23	58.6
26	8	13	56.72	+22.343	+21	27	58.1	- 58.24	0.123 7807	+ 910.0	2.51	6.62	...	...
27	8	22	50.23	22.108	21	3	31.2	63.95	0.125 7418	725.6	2.50	6.59	0	3.6
28	8	31	37.57	21.830	20	36	51.5	69.31	0.127 2709	550.1	2.49	6.56	0	8.4
29	8	40	17.80	21.517	20	8	7.5	74.29	0.128 3899	384.0	2.48	6.55	0	13.2
30	8	48	50.13	21.174	19	37	28.5	78.89	0.129 1215	227.3	2.48	6.54	0	17.8
31	8	57	13.98	+20.810	+19	5	3.7	- 83.11	0.129 4886	+ 80.2	2.48	6.53	0	22.3
Aug. 1	9	5	28.88	20.430	18	31	2.1	86.95	0.129 5138	- 57.6	2.48	6.53	0	26.6
2	9	13	34.53	20.040	17	55	32.9	90.42	0.129 2193	186.3	2.48	6.53	0	30.7
3	9	21	30.74	19.644	17	18	44.8	93.53	0.128 6262	306.5	2.48	6.54	0	34.7
4	9	29	17.41	19.246	16	40	46.1	96.30	0.127 7542	418.8	2.49	6.56	0	38.6
5	9	36	54.54	+18.849	+16	1	44.8	- 98.75	0.126 6218	- 523.6	2.50	6.57	0	42.3
6	9	44	22.19	18.456	15	21	48.4	100.90	0.125 2465	621.4	2.50	6.59	0	45.8
7	9	51	40.48	18.069	14	41	3.8	102.77	0.123 6440	713.0	2.51	6.62	0	49.1
8	9	58	49.57	17.690	13	59	37.6	104.38	0.121 8283	799.1	2.52	6.65	0	52.4
9	10	5	49.66	17.319	13	17	35.8	105.74	0.119 8122	880.2	2.53	6.68	0	55.4
10	10	12	40.97	+16.958	+12	35	4.1	-106.87	0.117 6072	- 956.7	2.55	6.71	0	58.3
11	10	19	23.74	16.608	11	52	7.8	107.79	0.115 2234	1029.2	2.56	6.75	1	1.1
12	10	25	58.22	16.267	11	8	51.7	108.52	0.112 6699	1098.2	2.58	6.79	1	3.7
13	10	32	24.64	15.937	10	25	20.3	109.07	0.109 9542	1164.4	2.59	6.83	1	6.2
14	10	38	43.27	15.617	9	41	37.9	109.44	0.107 0829	1228.0	2.61	6.88	1	8.6
15	10	44	54.35	+15.308	+ 8	57	48.3	-109.67	0.104 0616	-1289.4	2.63	6.92	1	10.8
16	10	50	58.11	+15.008	+ 8	13	55.2	-109.74	0.100 8951	-1349.1	2.65	6.98	1	12.9

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.
	h	m	s	s	°	'	"	"			"	"	h m
Aug. 16	10	50	58.11	+15.008	+ 8	13	55.2	-109.74	0.100 8951	-1349.1	2.65	6.98	1 12.9
17	10	56	54.78	14.717	7	30	2.0	109.67	0.097 5870	1407.5	2.67	7.03	1 14.9
18	11	2	44.57	14.434	6	46	11.9	109.48	0.094 1401	1464.8	2.69	7.08	1 16.8
19	11	8	27.67	14.159	6	2	28.0	109.16	0.090 5565	1521.4	2.71	7.14	1 18.6
20	11	14	4.27	13.892	5	18	53.3	108.72	0.086 8377	1577.5	2.73	7.20	1 20.3
21	11	19	34.54	+13.631	+ 4	35	30.5	-108.17	0.082 9844	-1633.5	2.76	7.27	1 21.8
22	11	24	58.61	13.375	3	52	22.2	107.50	0.078 9967	1689.5	2.78	7.34	1 23.3
23	11	30	16.61	13.125	3	9	31.1	106.73	0.074 8743	1745.8	2.81	7.41	1 24.6
24	11	35	28.64	12.878	2	26	59.8	105.86	0.070 6162	1802.7	2.84	7.48	1 25.9
25	11	40	34.79	12.635	1	44	50.7	104.88	0.066 2210	1860.1	2.87	7.55	1 27.0
26	11	45	35.10	+12.392	+ 1	3	6.3	-103.80	0.061 6870	-1918.4	2.90	7.63	1 28.1
27	11	50	29.61	12.150	+ 0	21	49.1	102.62	0.057 0120	1977.7	2.93	7.72	1 29.0
28	11	55	18.32	11.909	- 0	18	58.4	101.33	0.052 1933	2038.1	2.96	7.80	1 29.9
29	12	0	1.22	11.665	0	59	13.7	99.93	0.047 2280	2099.8	3.00	7.89	1 30.7
30	12	4	38.25	11.420	1	38	54.2	98.43	0.042 1129	2163.0	3.03	7.99	1 31.3
31	12	9	9.32	+11.169	- 2	17	57.2	- 96.81	0.036 8445	-2227.6	3.07	8.08	1 31.9
Sept. 1	12	13	34.31	10.912	2	56	19.9	95.07	0.031 4191	2293.8	3.11	8.18	1 32.4
2	12	17	53.07	10.649	3	33	59.5	93.20	0.025 8330	2361.6	3.15	8.29	1 32.7
3	12	22	5.40	10.377	4	10	52.8	91.21	0.020 0823	2431.0	3.19	8.40	1 33.0
4	12	26	11.07	10.093	4	46	56.6	89.08	0.014 1632	2501.9	3.23	8.52	1 33.1
5	12	30	9.79	+ 9.797	- 5	22	7.5	- 86.80	0.008 0719	-2574.4	3.28	8.64	1 33.2
6	12	34	1.24	9.487	5	56	21.7	84.36	0.001 8049	2648.3	3.33	8.76	1 33.1
7	12	37	45.03	9.160	6	29	35.3	81.75	9.995 3589	2723.5	3.38	8.89	1 32.8
8	12	41	20.74	8.813	7	1	44.0	78.95	9.988 7311	2799.8	3.43	9.03	1 32.5
9	12	44	47.85	8.443	7	32	43.1	75.94	9.981 9194	2876.8	3.48	9.17	1 32.0
10	12	48	5.81	+ 8.049	- 8	2	27.5	- 72.72	9.974 9225	-2954.0	3.54	9.32	1 31.3
11	12	51	13.98	7.627	8	30	51.5	69.25	9.967 7402	3031.2	3.60	9.48	1 30.5
12	12	54	11.67	7.175	8	57	49.2	65.51	9.960 3736	3107.5	3.66	9.64	1 29.5
13	12	56	58.09	6.688	9	23	13.8	61.49	9.952 8258	3182.0	3.72	9.81	1 28.3
14	12	59	32.38	6.163	9	46	58.0	57.14	9.945 1020	3253.9	3.79	9.99	1 26.9
15	13	1	53.59	+ 5.598	-10	8	53.7	- 52.44	9.937 2102	-3321.8	3.86	10.17	1 25.3
16	13	4	0.71	4.988	10	28	51.8	47.34	9.929 1617	3384.2	3.93	10.36	1 23.5
17	13	5	52.61	4.329	10	46	42.6	41.82	9.920 9723	3438.9	4.01	10.56	1 21.4
18	13	7	28.11	3.620	11	2	15.4	35.83	9.912 6631	3483.6	4.08	10.76	1 19.0
19	13	8	45.95	2.858	11	15	18.5	29.34	9.904 2610	3515.7	4.16	10.97	1 16.4
20	13	9	44.84	+ 2.040	-11	25	39.4	- 22.30	9.895 8005	-3531.7	4.24	11.19	1 13.4
21	13	10	23.46	1.168	11	33	4.4	14.68	9.887 3249	3527.6	4.33	11.41	1 10.1
22	13	10	40.50	+ 0.243	11	37	19.4	- 6.46	9.878 8876	3499.0	4.41	11.63	1 6.4
23	13	10	34.73	- 0.732	11	38	9.6	+ 2.39	9.870 5537	3440.5	4.50	11.86	1 2.4
24	13	10	5.02	1.750	11	35	20.2	11.84	9.862 4011	3346.8	4.58	12.08	0 57.9
25	13	9	10.49	- 2.800	-11	28	36.6	+ 21.88	9.854 5224	-3211.3	4.67	12.30	0 53.1
26	13	7	50.53	3.866	11	17	45.7	32.43	9.847 0254	3027.7	4.75	12.52	0 47.8
27	13	6	4.97	4.929	11	2	36.6	43.38	9.840 0331	2789.8	4.83	12.72	0 42.1
28	13	3	54.18	5.964	10	43	1.6	54.56	9.833 6826	2492.0	4.90	12.91	0 36.0
29	13	1	19.19	6.940	10	18	58.3	65.70	9.828 1231	2129.9	4.96	13.07	0 29.5
30	12	58	21.84	- 7.820	- 9	50	30.8	+ 76.51	9.823 5125	-1701.0	5.01	13.21	0 22.6
Oct. 1	12	55	4.85	- 8.570	- 9	17	51.3	+ 86.62	9.820 0117	-1205.5	5.05	13.32	0 15.5

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Paral- lax.	Transit Meridian of Greenwich.	
	h	m	s	s	°	'	"	"	Noon.	Noon.	"	"	h m	
Oct.	1	12	55	4.85	- 8.570	- 9	17	51.3	+ 86.62	9.820 0117	-1205.5	5.05	13.32	0 15.5
	2	12	51	31.84	9.148	8	41	22.0	95.60	9.817 7762	647.6	5.08	13.39	0 8.0
	3	12	47	47.38	9.518	8	1	35.3	103.00	9.816 9465	- 35.7	5.09	13.41	0 23.41
	4	12	43	56.84	9.650	7	19	14.1	108.40	9.817 6382	+ 617.9	5.08	13.39	23 44.9
	5	12	40	6.25	9.520	6	35	11.1	111.43	9.819 9328	1297.0	5.06	13.32	23 37.2
	6	12	36	22.02	- 9.119	- 5	50	26.4	+111.83	9.823 8686	+1982.2	5.01	13.20	23 29.8
	7	12	32	50.67	8.450	5	6	5.0	109.48	9.829 4352	2652.4	4.95	13.03	23 22.7
	8	12	29	38.45	7.528	4	23	12.9	104.41	9.836 5718	3287.2	4.87	12.82	23 16.0
	9	12	26	51.08	6.385	3	42	53.5	96.80	9.845 1706	3868.0	4.77	12.57	23 9.8
	10	12	24	33.42	5.059	3	6	3.9	86.98	9.855 0826	4379.4	4.66	12.29	23 4.1
	11	12	22	49.33	- 3.595	- 2	33	32.6	+ 75.36	9.866 1274	+4810.5	4.55	11.98	22 59.0
	12	12	21	41.56	2.041	2	5	57.3	62.39	9.878 1040	5155.2	4.42	11.65	22 54.5
	13	12	21	11.68	- 0.445	1	43	44.7	48.55	9.890 8020	5411.8	4.29	11.32	22 50.7
	14	12	21	20.20	+ 1.151	1	27	10.1	34.30	9.904 0120	5582.7	4.17	10.98	22 47.5
	15	12	22	6.66	2.711	1	16	18.7	20.01	9.917 5346	5673.4	4.04	10.64	22 46.0
	16	12	23	29.78	+ 4.202	- 1	11	6.8	+ 6.05	9.931 1864	+5691.8	3.91	10.31	22 43.0
	17	12	25	27.63	5.602	1	11	23.2	- 7.30	9.944 8046	5647.0	3.79	9.99	22 41.5
	18	12	27	57.83	6.896	1	16	50.9	19.85	9.958 2497	5549.1	3.68	9.69	22 40.5
	19	12	30	57.70	8.073	1	27	9.0	31.48	9.971 4059	5407.9	3.57	9.40	22 40.0
	20	12	34	24.39	9.131	1	41	53.6	42.07	9.984 1807	5232.8	3.46	9.13	22 39.9
	21	12	38	15.04	+10.070	- 2	0	39.6	- 51.59	9.996 5033	+5032.5	3.37	8.87	22 40.3
	22	12	42	26.86	10.895	2	23	1.2	60.04	0.008 3225	4814.4	3.28	8.63	22 40.7
	23	12	46	57.17	11.613	2	48	33.0	67.44	0.019 5040	4585.4	3.19	8.41	22 41.5
	24	12	51	43.52	12.233	3	16	50.3	73.85	0.030 3279	4350.7	3.11	8.21	22 42.5
	25	12	56	43.66	12.764	3	47	29.9	79.31	0.040 4865	4114.9	3.04	8.02	22 43.8
	26	13	1	55.57	+13.216	- 4	20	10.1	- 83.91	0.050 0813	+3881.4	2.98	7.84	22 45.2
	27	13	7	17.46	13.598	4	54	31.1	87.72	0.059 1210	3652.7	2.91	7.68	22 46.8
	28	13	12	47.80	13.921	5	30	14.8	90.82	0.067 6197	3430.8	2.86	7.53	22 48.5
	29	13	18	25.25	14.192	6	7	4.8	93.26	0.075 5955	3217.2	2.81	7.39	22 50.2
	30	13	24	8.66	14.419	6	44	46.5	95.13	0.083 0692	3012.5	2.76	7.27	22 52.1
	31	13	29	57.08	+14.610	- 7	23	7.0	- 96.50	0.090 0627	+2817.1	2.71	7.15	22 54.0
Nov.	1	13	35	49.69	14.770	8	1	54.6	97.40	0.096 5988	2631.3	2.67	7.05	22 56.0
	2	13	41	45.84	14.905	8	40	59.2	97.92	0.102 7005	2455.0	2.64	6.95	22 58.1
	3	13	47	44.97	15.020	9	20	11.8	98.08	0.108 3903	2288.0	2.60	6.86	23 0.1
	4	13	53	46.65	15.118	9	59	24.5	97.93	0.113 6899	2129.8	2.57	6.77	23 2.3
	5	13	59	50.51	+15.203	-10	38	30.2	- 97.51	0.118 6201	+1980.1	2.54	6.70	23 4.4
	6	14	5	56.28	15.277	11	17	22.9	96.85	0.123 2006	1838.3	2.51	6.63	23 6.6
	7	14	12	3.75	15.344	11	55	57.1	95.98	0.127 4500	1704.0	2.49	6.56	23 8.8
	8	14	18	12.75	15.405	12	34	8.0	94.91	0.131 3855	1576.7	2.47	6.50	23 11.1
	9	14	24	23.17	15.462	13	11	51.4	93.68	0.135 0232	1455.8	2.45	6.45	23 13.3
	10	14	30	34.91	+15.516	-13	49	3.4	- 92.30	0.138 3779	+1340.8	2.43	6.40	23 15.6
	11	14	36	47.94	15.569	14	25	40.7	90.78	0.141 4633	1231.2	2.41	6.35	23 17.9
	12	14	43	2.22	15.621	15	1	40.1	89.15	0.144 2919	1126.7	2.40	6.31	23 20.2
	13	14	49	17.74	15.673	15	36	58.9	87.40	0.146 8752	1026.7	2.38	6.27	23 22.6
	14	14	55	34.52	15.726	16	11	34.7	85.56	0.149 2235	930.8	2.37	6.24	23 24.9
	15	15	1	52.57	+15.779	-16	45	25.0	- 83.62	0.151 3461	+ 838.6	2.36	6.21	23 27.3
16	15	8	11.92	+15.834	-17	18	27.7	- 81.59	0.153 2517	+ 749.9	2.35	6.18	23 29.7	

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	Noon.				Noon.								
	h	m	s	s	°	'	"	"		"	"	h	m
ov. 16	15	8	11.92	+15.834	-17	18	27.7	-81.59	0.153 2517	+ 749.9	2.35	6.18	23 29.7
17	15	14	32.61	15.891	17	50	40.8	79.49	0.154 9480	664.1	2.34	6.16	23 32.1
18	15	20	54.68	15.949	18	22	2.5	77.31	0.156 4417	581.0	2.33	6.14	23 34.6
19	15	27	18.17	16.009	18	52	30.9	75.05	0.157 7388	500.3	2.32	6.12	23 37.1
20	15	33	43.12	16.071	19	22	4.4	72.72	0.158 8448	421.7	2.32	6.10	23 39.6
21	15	40	9.58	+16.135	-19	50	41.3	-70.34	0.159 7643	+ 344.9	2.31	6.09	23 42.1
22	15	46	37.58	16.200	20	18	20.2	67.90	0.160 5014	269.6	2.31	6.08	23 44.7
23	15	53	7.17	16.266	20	44	59.4	65.37	0.161 0593	195.5	2.30	6.07	23 47.2
24	15	59	38.37	16.334	21	10	37.5	62.79	0.161 4407	122.5	2.30	6.07	23 49.8
25	16	6	11.21	16.403	21	35	13.0	60.15	0.161 6480	+ 50.3	2.30	6.06	23 52.5
26	16	12	45.71	+16.473	-21	58	44.4	-57.45	0.161 6828	- 21.2	2.30	6.06	23 55.2
27	16	19	21.88	16.542	22	21	10.3	54.70	0.161 5462	92.5	2.30	6.07	23 57.8
28	16	25	59.73	16.612	22	42	29.3	51.87	0.161 2389	163.6	2.30	6.07	...
29	16	32	39.25	16.681	23	2	39.9	49.00	0.160 7610	234.7	2.31	6.08	0 0.6
30	16	39	20.43	16.750	23	21	40.9	46.07	0.160 1120	306.2	2.31	6.09	0 3.3
Dec. 1	16	46	3.24	+16.818	-23	39	30.7	-43.08	0.159 2910	- 378.1	2.31	6.10	0 6.1
2	16	52	47.66	16.884	23	56	8.0	40.02	0.158 2966	450.7	2.32	6.11	0 8.9
3	16	59	33.63	16.947	24	11	31.3	36.91	0.157 1268	524.3	2.33	6.13	0 11.7
4	17	6	21.10	17.008	24	25	39.3	33.74	0.155 7791	599.0	2.33	6.15	0 14.6
5	17	13	10.00	17.066	24	38	30.6	30.52	0.154 2503	675.2	2.34	6.17	0 17.5
6	17	20	0.24	+17.120	-24	50	3.8	-37.26	0.152 5368	- 753.0	2.35	6.19	0 20.4
7	17	26	51.72	17.169	25	0	17.5	23.90	0.150 6342	832.8	2.36	6.22	0 23.3
8	17	33	44.31	17.212	25	9	10.4	20.50	0.148 5375	914.8	2.37	6.25	0 26.2
9	17	40	37.87	17.250	25	16	41.1	17.05	0.146 2412	999.3	2.38	6.28	0 29.2
10	17	47	32.25	17.289	25	22	48.3	13.54	0.143 7389	1086.5	2.40	6.32	0 32.1
11	17	54	27.26	+17.302	-25	27	30.8	- 9.99	0.141 0234	-1176.9	2.41	6.36	0 35.1
12	18	1	22.68	17.315	25	30	47.4	6.39	0.138 0869	1270.8	2.43	6.40	0 38.1
13	18	8	18.28	17.317	25	32	36.9	- 2.73	0.134 9207	1368.4	2.45	6.45	0 41.1
14	18	15	13.79	17.307	25	32	58.2	+ 0.96	0.131 5154	1470.1	2.47	6.50	0 44.1
15	18	22	8.90	17.283	25	31	50.5	4.69	0.127 8606	1576.4	2.49	6.56	0 47.1
16	18	29	3.27	+17.245	-25	29	12.8	+ 8.45	0.123 9449	-1687.6	2.51	6.61	0 50.0
17	18	35	56.52	17.190	25	25	4.5	12.24	0.119 7560	1804.1	2.53	6.68	0 53.0
18	18	42	48.20	17.114	25	19	25.1	16.05	0.115 2805	1926.5	2.56	6.75	0 55.9
19	18	49	37.84	17.018	25	12	14.3	19.85	0.110 5041	2055.0	2.59	6.82	0 58.8
20	18	56	24.88	16.897	25	3	32.1	23.66	0.105 4114	2190.1	2.62	6.90	1 1.6
21	19	3	8.69	+16.749	-24	53	18.7	+27.45	0.099 9860	-2332.3	2.65	6.99	1 4.4
22	19	9	48.59	16.570	24	41	34.7	31.20	0.094 2103	2482.0	2.69	7.08	1 7.2
23	19	16	23.77	16.356	24	28	21.3	34.90	0.088 0660	2639.6	2.73	7.18	1 9.8
24	19	22	53.35	16.102	24	13	40.0	38.52	0.081 5339	2805.2	2.77	7.29	1 12.3
25	19	29	16.31	15.803	23	57	33.0	42.04	0.074 5942	2979.2	2.81	7.41	1 14.8
26	19	35	31.51	+15.454	-23	40	3.2	+45.42	0.067 2269	-3161.6	2.86	7.54	1 17.1
27	19	41	37.66	15.048	23	21	14.3	48.63	0.059 4119	3352.2	2.91	7.67	1 19.2
28	19	47	33.29	14.578	23	1	11.0	51.62	0.051 1300	3550.6	2.97	7.82	1 21.2
29	19	53	16.78	14.034	22	39	59.0	54.34	0.042 3632	3756.1	3.03	7.98	1 23.0
30	19	58	46.25	13.408	22	17	45.3	56.74	0.033 0959	3967.5	3.09	8.15	1 24.5
31	20	3	59.65	+12.692	-21	54	38.4	+58.76	0.023 3160	-4183.0	3.16	8.34	1 25.8
32	20	8	54.66	+11.878	-21	30	48.2	+60.35	0.013 0168	-4399.8	3.24	8.54	1 28.7

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.	Var. per Day.	Logarithm of Radius Vector.	Var. per Day.
Jan.	° ' "	° ' "	' "	° ' "	' "		
1	312 38 27.7	3 27 27.6	+ 2 5.5	-6 58 47.7	- 2 3.3	9.621 3339	-50326
2	316 8 23.7	3 32 28.0	+ 0 32.3	7 0 6.0	- 0 32.2	9.616 1735	52875
3	319 43 30.7	3 37 49.5	- 1 4.1	6 59 49.7	+ 1 6.0	9.610 7615	53352
4	323 24 9.9	3 43 32.6	2 41.7	6 57 51.6	2 51.6	9.605 1061	57739
5	327 10 43.1	3 49 37.5	4 19.2	6 54 3.9	4 45.1	9.599 2177	60006
6	331 3 32.4	3 56 4.8	- 5 54.9	-6 48 18.6	+ 6 47.0	9.593 1093	-62133
7	335 3 0.3	4 2 54.8	7 26.4	6 40 27.1	8 57.4	9.586 7971	64078
8	339 9 29.4	4 10 7.1	8 51.6	6 30 20.9	11 16.5	9.580 3014	65796
9	343 23 21.9	4 17 41.5	10 8.1	6 17 51.3	13 44.2	9.573 6469	67245
10	347 44 59.5	4 25 37.2	11 13.1	6 2 49.8	16 20.1	9.566 8632	68372
11	352 14 42.8	4 33 52.6	-12 3.9	-5 45 8.6	+19 3.6	9.559 9853	-69118
12	356 52 50.5	4 42 25.6	12 37.8	5 24 40.5	21 53.6	9.553 0547	69414
13	1 39 39.1	4 51 14.0	12 52.0	5 1 19.9	24 48.3	9.546 1197	69194
14	6 35 22.2	5 0 13.8	12 44.2	4 35 3.0	27 45.7	9.539 2354	68387
15	11 40 8.7	5 9 20.3	12 12.6	4 5 48.6	30 42.8	9.532 4643	66918
16	16 54 3.0	5 18 28.0	-11 15.9	-3 33 38.7	+33 36.0	9.525 8762	-64717
17	22 17 2.8	5 27 30.2	9 53.9	2 58 39.4	36 20.9	9.519 5473	61723
18	27 48 59.0	5 36 19.1	8 7.8	2 21 1.4	38 52.5	9.513 5600	57882
19	33 29 33.4	5 44 45.4	6 0.0	1 41 0.8	41 5.1	9.508 0001	53169
20	39 18 19.0	5 52 39.5	3 34.4	0 58 59.5	42 52.9	9.502 9557	47575
21	45 14 38.2	5 59 50.8	- 0 56.6	-0 15 25.1	+44 10.3	9.498 5135	-41131
22	51 17 42.9	6 6 8.9	+ 1 46.8	+0 29 9.3	44 52.0	9.494 7559	33897
23	57 26 34.7	6 11 23.2	4 27.8	1 14 5.6	44 53.6	9.491 7571	25974
24	63 40 4.8	6 15 24.1	6 58.1	1 58 42.1	44 12.0	9.489 5797	17496
25	69 56 55.8	6 18 3.7	9 9.7	2 42 15.0	42 46.5	9.488 2709	- 8632
26	76 15 43.2	6 19 16.2	+10 55.2	+3 24 0.8	+40 38.1	9.487 8598	+ 425
27	82 34 58.0	6 18 58.2	12 8.9	4 3 17.8	37 49.7	9.488 3555	9470
28	88 53 9.2	6 17 9.2	12 47.1	4 39 28.6	34 26.7	9.489 7469	18306
29	95 8 46.9	6 13 51.9	12 48.3	5 12 1.7	30 35.4	9.492 0032	26738
30	101 20 25.3	6 9 11.7	12 13.6	5 40 32.6	26 23.6	9.495 0756	34603
31	107 26 45.2	6 3 16.5	+11 6.1	+6 4 44.8	+21 59.4	9.498 9004	+41767
Feb.							
1	113 26 36.5	5 56 16.1	9 30.6	6 24 29.7	17 30.3	9.503 4024	48135
2	119 18 59.4	5 48 21.6	7 33.0	6 39 46.2	13 3.6	9.508 4988	53645
3	125 3 5.4	5 39 44.3	5 20.0	6 50 39.7	8 45.2	9.514 1021	58277
4	130 38 17.7	5 30 36.2	2 58.3	6 57 21.0	4 40.0	9.520 1249	62033
5	136 4 10.9	5 21 7.7	+ 0 34.0	+7 0 5.3	+ 0 51.6	9.526 4812	+64954
6	141 20 29.6	5 11 28.9	- 1 47.2	6 59 10.5	- 2 37.9	9.533 0896	67086
7	146 27 8.2	5 1 48.6	4 0.7	6 54 56.2	5 47.3	9.539 8742	68489
8	151 24 8.8	4 52 14.1	6 2.9	6 47 42.7	8 36.2	9.546 7658	69239
9	156 11 40.2	4 42 51.3	7 51.0	6 37 50.6	11 4.8	9.553 7027	69407
10	160 49 56.9	4 33 45.1	- 9 23.3	+6 25 39.5	-13 14.3	9.560 6303	+69065
11	165 19 17.1	4 24 59.0	10 38.7	6 11 28.0	15 5.8	9.567 5010	68282
12	169 40 2.4	4 16 35.7	11 36.9	5 55 33.4	16 40.7	9.574 2740	67121
13	173 52 36.5	4 8 36.7	12 18.1	5 38 11.7	18 0.4	9.580 9147	65644
14	177 57 24.2	4 1 3.1	12 42.9	5 19 37.1	19 6.7	9.587 3940	63903
15	181 54 51.4	3 53 55.5	-12 52.2	+5 0 2.3	-20 0.9	9.593 6879	+61942
16	185 45 23.9	3 47 13.7	-12 47.2	+4 39 38.8	-20 44.4	9.599 7764	+59803

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.	Var. per Day.	Logarithm of Radius Vector.	Var. per Day.
	" ' "	" ' "	' "	" ' "	' "		
16	185 45 23.9	3 47 13.7	-12 47.2	+4 39 38.8	-20 44.4	9.599 7764	+59803
17	189 29 27.4	3 40 57.6	12 29.1	4 18 36.5	21 18.7	9.605 6436	57520
18	193 7 27.4	3 35 6.4	11 59.2	3 57 4.1	21 44.8	9.611 2767	55124
19	196 39 48.3	3 29 39.4	11 19.0	3 35 9.2	22 3.9	9.616 6654	52638
20	200 6 54.1	3 24 36.0	10 29.6	3 12 58.4	22 16.8	9.621 8019	50084
21	203 29 7.8	3 19 55.0	- 9 32.7	+2 50 37.4	-22 24.3	9.626 6806	+47482
22	206 46 51.3	3 15 35.6	8 29.3	2 28 11.3	22 27.2	9.631 2971	44841
23	210 0 25.9	3 11 36.8	7 20.6	2 5 44.2	22 26.4	9.635 6482	42176
24	213 10 11.5	3 7 57.6	6 7.8	1 43 19.7	22 22.0	9.639 7320	39497
25	216 16 27.5	3 4 37.4	4 51.9	1 21 1.1	22 14.7	9.643 5475	36811
26	219 19 32.3	3 1 35.1	- 3 34.0	+0 58 51.1	-22 4.9	9.647 0943	+34124
27	222 19 43.4	2 58 50.0	2 14.8	0 36 52.1	21 52.8	9.650 3724	31439
28	225 17 17.7	2 56 21.3	- 0 55.4	+0 15 6.1	21 38.9	9.653 3823	28759
29	228 12 31.2	2 54 8.3	+ 0 23.6	-0 6 25.2	21 23.4	9.656 1244	26085
1	231 5 39.3	2 52 10.5	1 41.3	0 27 40.1	21 6.2	9.658 5998	23424
2	233 56 57.0	2 50 27.3	+ 2 57.3	-0 48 37.1	-20 47.7	9.660 8095	+20771
3	236 46 38.6	2 48 58.2	4 10.8	1 9 15.1	20 28.0	9.662 7544	18128
4	239 34 57.9	2 47 42.7	5 21.2	1 29 32.8	20 7.2	9.664 4355	15494
5	242 22 8.4	2 46 40.5	6 28.1	1 49 29.1	19 45.2	9.665 8538	12872
6	245 8 23.3	2 45 51.4	7 31.0	2 9 2.9	19 22.2	9.667 0101	10256
7	247 53 55.5	2 45 15.0	+ 8 29.3	-2 28 13.2	-18 58.2	9.667 9051	+ 7645
8	250 38 57.4	2 44 50.9	9 22.8	2 46 59.0	18 33.2	9.668 5393	5039
9	253 23 41.5	2 44 39.3	10 10.9	3 5 19.2	18 7.1	9.668 9132	+ 2439
10	256 8 20.1	2 44 40.0	10 53.4	3 23 12.8	17 39.9	9.669 0271	- 161
11	258 53 5.5	2 44 52.9	11 29.9	3 40 38.5	17 11.4	9.668 8810	2762
12	261 38 9.9	2 45 17.9	+12 0.0	-3 57 35.1	-16 41.6	9.668 4748	- 5362
13	264 23 45.4	2 45 55.1	12 23.6	4 14 1.3	16 10.5	9.667 8083	7967
14	267 10 4.3	2 46 44.8	12 40.3	4 29 55.7	15 38.0	9.666 8811	10578
15	269 57 19.2	2 47 47.0	12 49.9	4 45 16.8	15 3.8	9.665 6925	13196
16	272 45 42.6	2 49 1.9	12 52.2	5 0 2.7	14 27.7	9.664 2417	15822
17	275 35 27.4	2 50 29.8	+12 47.0	-5 14 11.6	-13 49.8	9.662 5279	-18456
18	278 26 46.7	2 52 11.0	12 34.3	5 27 41.5	13 9.6	9.660 5502	21099
19	281 19 54.0	2 54 5.9	12 13.7	5 40 29.9	12 26.9	9.658 3077	23753
20	284 15 3.1	2 56 14.7	11 45.4	5 52 34.5	11 41.7	9.655 7993	26416
21	287 12 28.3	2 58 38.1	11 9.4	6 3 52.4	10 53.5	9.653 0240	29090
22	290 12 24.3	3 1 16.5	+10 25.6	-6 14 20.5	-10 2.1	9.649 9810	-31771
23	293 15 6.5	3 4 10.5	9 34.1	6 23 55.4	9 7.1	9.646 6696	34458
24	296 20 50.6	3 7 20.5	8 35.2	6 32 33.4	8 8.2	9.643 0894	37147
25	299 29 53.2	3 10 47.4	7 29.1	6 40 10.4	7 5.0	9.639 2404	39832
26	302 42 31.3	3 14 31.7	6 16.2	6 46 41.8	5 57.0	9.635 1233	42507
27	305 59 2.7	3 18 34.2	+ 4 57.1	-6 52 2.8	- 4 44.0	9.630 7393	-45170
28	309 19 46.0	3 22 55.5	3 32.3	6 56 8.0	3 25.4	9.626 0902	47807
29	312 45 0.3	3 27 36.5	2 2.7	6 58 51.5	2 0.6	9.621 1793	50404
30	316 15 5.7	3 32 37.7	+ 0 29.2	7 0 7.0	- 0 29.3	9.616 0111	52950
31	319 50 22.6	3 37 59.7	- 1 7.1	6 59 47.7	+ 1 9.1	9.610 5917	55425
1	323 31 12.3	3 43 43.3	- 2 44.7	-6 57 46.3	+ 2 55.0	9.604 9290	-57811
2	327 17 56.6	3 49 49.0	- 4 22.2	-6 53 55.1	+ 4 48.8	9.599 0336	-60076

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.			
	°	'	"			'	"	°				'	"	
Apr.	1	323	31	12.3	3 43	43.3	- 2	44.7	-6 57	46.3	+ 2	55.0	9.604 9290	-57811
	2	327	17	56.6	3 49	49.0	4	22.2	6 53	55.1	4	48.8	9.599 0336	60076
	3	331	10	57.8	3 56	17.1	5	57.7	6 48	6.0	6	50.9	9.592 9188	62194
	4	335	10	38.3	4 3	7.7	7	29.1	6 40	10.5	9	1.5	9.586 6009	64131
	5	339	17	20.6	4 10	20.7	8	54.1	6 30	0.1	11	20.9	9.580 1001	65845
	6	343	31	27.1	4 17	55.8	-10	10.3	-6 17	26.0	+13	48.8	9.573 4412	-67284
	7	347	53	19.2	4 25	52.0	11	14.9	6 2	19.7	16	25.0	9.566 6540	68401
	8	352	23	17.6	4 34	8.0	12	5.3	5 44	33.4	19	8.8	9.559 7738	69131
	9	357	1	41.0	4 42	41.7	12	38.6	5 24	0.1	21	58.8	9.552 8423	69417
	10	1	48	45.9	4 51	30.3	12	52.1	5 0	34.2	24	53.7	9.545 9079	69179
	11	6	44	45.4	5 0	30.3	-12	43.6	-4 34	11.8	+27	51.3	9.539 0261	-68352
	12	11	49	48.7	5 9	37.0	12	11.2	4 4	51.9	30	48.3	9.532 2596	66862
	13	17	3	59.7	5 18	44.6	11	13.7	3 32	36.8	33	41.2	9.525 6782	64638
	14	22	27	16.2	5 27	46.6	9	51.0	2 57	32.4	36	25.8	9.519 3586	61617
	15	27	59	28.4	5 36	34.8	8	4.2	2 19	49.8	38	56.8	9.513 3831	57750
	16	33	40	18.3	5 45	0.4	- 5	55.8	-1 39	45.2	+41	8.8	9.507 8378	-53009
	17	39	29	18.3	5 52	53.3	3	29.8	0 57	40.6	42	55.8	9.502 8106	47390
	18	45	25	50.6	6 0	3.3	- 0	51.6	-0 14	3.8	44	12.2	9.498 3881	40921
	19	51	29	7.0	6 6	19.5	+ 1	51.8	+0 30	31.9	44	52.7	9.494 6526	33664
	20	57	38	8.3	6 11	31.6	4	32.6	1 15	28.2	44	52.9	9.491 6782	25720
	21	63	51	45.7	6 15	30.2	+ 7	2.5	+2 0	3.3	+44	10.1	9.489 5268	-17230
	22	70	8	41.5	6 18	7.3	9	13.3	2 43	33.6	42	43.2	9.488 2450	- 8358
	23	76	27	31.1	6 19	17.0	10	57.9	3 25	15.4	40	33.4	9.487 8615	+ 703
	24	82	46	45.3	6 18	56.1	12	10.6	4 4	27.3	37	44.1	9.488 3850	9746
	25	89	4	53.0	6 17	4.4	12	47.6	4 40	31.9	34	19.9	9.489 8035	18571
	26	95	20	24.7	6 13	44.6	+12	47.8	+5 12	57.8	+30	27.9	9.492 0856	+26988
	27	101	31	54.5	6 9	1.9	12	12.0	5 41	21.0	26	15.7	9.495 1821	34834
	28	107	38	3.5	6 3	4.5	11	3.6	6 5	25.1	21	51.2	9.499 0289	41974
	29	113	37	41.9	5 56	2.3	9	27.3	6 25	1.8	17	22.1	9.503 5503	48315
	30	119	29	50.2	5 48	6.3	7	29.1	6 40	10.1	12	55.6	9.508 6633	53799
May	1	125	13	40.4	5 39	28.0	+ 5	15.8	+6 50	55.7	+ 8	37.5	9.514 2807	+58405
	2	130	48	36.0	5 30	19.0	2	53.9	6 57	29.5	4	32.8	9.520 3148	62138
	3	136	14	11.7	5 20	50.0	+ 0	29.6	7 0	6.8	+ 0	44.9	9.526 6800	65031
	4	141	30	12.7	5 11	11.2	- 1	51.5	6 59	5.6	- 2	44.0	9.533 2949	67140
	5	146	36	33.5	5 1	30.9	4	4.7	6 54	45.4	5	52.8	9.540 0838	68523
	6	151	33	16.5	4 51	56.7	- 6	6.5	+6 47	26.8	- 8	41.0	9.546 9777	+69253
	7	156	20	30.8	4 42	34.4	7	54.1	6 37	30.1	11	9.0	9.553 9150	69404
	8	160	58	30.7	4 33	28.7	9	25.9	6 25	15.0	13	18.0	9.560 8414	69046
	9	165	27	34.9	4 24	43.3	10	40.7	6 11	0.1	15	9.0	9.567 7096	68251
	10	169	48	4.8	4 16	20.6	11	38.4	5 55	2.7	16	43.3	9.574 4791	67082
	11	174	0	24.3	4 8	22.5	-12	19.1	+5 37	38.5	-18	2.6	9.581 1153	+65595
	12	178	4	58.2	4 0	49.7	12	43.4	5 19	1.9	19	8.5	9.587 5893	63845
	13	182	2	12.3	3 53	42.8	12	52.2	4 59	25.5	20	2.4	9.593 8771	61879
	14	185	52	32.5	3 47	1.9	12	46.8	4 39	0.6	20	45.7	9.599 9591	59736
	15	189	36	24.6	3 40	46.5	12	28.2	4 17	57.2	21	19.6	9.605 8194	57450
16	193	14	13.8	3 34	56.1	-11	58.1	+3 56	24.0	-21	45.5	9.611 4451	+55049	
17	196	46	24.8	3 29	29.8	-11	17.6	+3 34	28.5	-22	4.4	9.616 8262	+52560	

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.	Var. per Day.	Logarithm of Radius Vector.	Var. per Day.
	° ' "	° ' "	' "	° ' "	' "		
ay	17 196 46 24.8	3 29 29.8	-11 17.6	+3 34 28.5	-22 4.4	9.616 8262	+52560
	18 200 13 21.3	3 24 27.1	10 28.0	3 12 17.3	22 17.0	9.621 9550	50006
	19 203 35 26.5	3 19 46.8	9 30.8	2 49 56.2	22 24.5	9.626 8257	47401
	20 206 53 2.1	3 15 28.0	8 27.2	2 27 29.9	22 27.4	9.631 4340	44760
	21 210 6 29.4	3 11 29.8	7 18.4	2 5 2.8	22 26.2	9.635 7770	42096
	22 213 16 8.3	3 7 51.3	- 6 5.5	+1 42 38.5	-22 21.8	9.639 8528	+39417
	23 216 22 18.2	3 4 31.6	4 49.5	1 20 20.1	22 14.5	9.643 6603	36731
	24 219 25 17.4	3 1 29.8	3 31.5	0 58 10.4	22 4.6	9.647 1990	34044
	25 222 25 23.5	2 58 45.2	2 12.4	0 36 11.7	21 52.5	9.650 4690	31357
	26 225 22 53.2	2 56 16.9	- 0 53.0	+0 14 26.1	21 38.5	9.653 4708	28678
	27 228 18 2.6	2 54 4.4	+ 0 26.0	-0 7 4.7	-21 22.7	9.656 2050	+26007
	28 231 11 7.1	2 52 7.1	1 43.7	0 28 19.0	21 5.6	9.658 6724	23344
	29 234 2 21.6	2 50 24.3	2 59.6	0 49 15.5	20 47.2	9.660 8741	20691
	30 236 52 0.4	2 48 55.6	4 13.0	1 9 52.9	20 27.4	9.662 8110	18048
	31 239 40 17.4	2 47 40.6	5 23.3	1 30 9.9	20 6.5	9.664 4842	15416
ine	1 242 27 26.0	2 46 38.8	+ 6 30.1	-1 50 5.5	-19 44.5	9.665 8946	+12793
	2 245 13 39.4	2 45 50.0	7 32.9	2 9 38.6	19 21.5	9.667 0431	10178
	3 247 59 10.3	2 45 13.9	8 31.1	2 28 48.2	18 57.5	9.667 9303	7567
	4 250 44 11.4	2 44 50.3	9 24.4	2 47 33.2	18 32.4	9.668 5568	4962
	5 253 28 55.1	2 44 39.1	10 12.3	3 5 52.6	18 6.2	9.668 9230	+ 2362
	6 256 13 33.7	2 44 40.1	+10 54.6	-3 23 45.3	-17 39.0	9.669 0292	- 238
	7 258 58 19.3	2 44 53.3	11 30.9	3 41 10.1	17 10.5	9.668 8754	2838
	8 261 43 24.3	2 45 18.6	12 0.9	3 58 5.8	16 40.7	9.668 4615	5441
	9 264 29 0.8	2 45 56.3	12 24.2	4 14 31.1	16 9.6	9.667 7873	8045
	10 267 15 21.1	2 46 46.4	12 40.7	4 30 24.5	15 36.9	9.666 8523	10655
	11 270 2 37.7	2 47 48.9	+12 50.1	-4 45 44.4	-15 2.6	9.665 6559	-13274
	12 272 51 3.2	2 49 4.2	12 52.1	5 0 29.2	14 26.6	9.664 1973	15900
	13 275 40 50.4	2 50 32.5	12 46.7	5 14 37.0	13 48.6	9.662 4757	18534
	14 278 32 12.6	2 52 14.1	12 33.7	5 28 5.6	13 8.2	9.660 4902	21178
	15 281 25 23.2	2 54 9.3	12 13.0	5 40 52.7	12 25.6	9.658 2398	23832
	16 284 20 35.9	2 56 18.6	+11 44.4	-5 52 55.9	-11 40.3	9.655 7235	-26495
	17 287 18 5.2	2 58 42.4	11 8.1	6 4 12.3	10 52.0	9.652 9403	29170
	18 290 18 5.8	3 1 21.3	10 24.1	6 14 38.8	10 0.4	9.649 8893	31851
	19 293 20 53.0	3 4 15.7	9 32.3	6 24 12.0	9 5.4	9.646 5699	34538
	20 296 26 42.6	3 7 26.2	8 33.3	6 32 48.2	8 6.3	9.642 9817	37227
	21 299 35 51.1	3 10 53.6	+ 7 27.0	-6 40 23.2	- 7 3.0	9.639 1247	-39912
	22 302 48 35.7	3 14 38.5	6 13.9	6 46 52.6	5 55.0	9.634 9996	42588
	23 306 5 14.2	3 18 41.6	4 54.6	6 52 11.4	4 41.7	9.630 6076	45249
	24 309 26 5.2	3 23 3.4	3 29.7	6 56 14.2	3 22.9	9.625 9506	47884
	25 312 51 27.6	3 27 44.8	1 59.9	6 58 55.1	1 57.9	9.621 0318	50482
	26 316 21 41.7	3 32 46.8	+ 0 26.3	-7 0 7.8	- 0 26.4	9.615 8559	-53026
	27 319 57 8.0	3 38 9.4	- 1 10.0	6 59 45.5	+ 1 12.1	9.610 4290	55499
	28 323 38 7.8	3 43 53.8	2 47.7	6 57 41.0	2 58.2	9.604 7591	57832
	29 327 25 2.9	3 50 0.1	4 25.1	6 53 46.4	4 53.3	9.598 8567	60145
	30 331 18 15.4	3 56 28.8	6 0.5	6 47 53.6	6 54.7	9.592 7352	62258
ily	1 335 18 8.0	4 3 20.1	- 7 31.7	-6 39 54.2	+ 9 8.6	9.586 4112	-64189
	2 339 25 3.1	4 10 33.8	- 8 56.5	-6 29 39.5	+11 25.2	9.579 9050	-65894

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.							
	°	'	''	°	'	''	°	'	''									
July	1	335	18	8.0	4	3	20.1	-	7	31.7	-6	39	54.2	+ 9	5.6	9.586 4112	-64189	
	2	339	25	3.1	4	10	33.8		8	56.5	6	29	39.5	11	25.2	9.579 9050	65894	
	3	343	39	23.0	4	18	9.6		10	12.4	6	17	0.9	13	53.4	9.573 2415	67327	
	4	348	1	29.2	4	26	6.3		11	16.7	6	1	50.0	16	29.8	9.566 4506	68432	
	5	352	31	42.2	4	34	22.9		12	6.5	5	43	58.8	19	13.8	9.559 5680	69151	
	6	357	10	20.9	4	42	57.2		-12	39.2	-5	23	20.4	+22	4.0	9.552 6354	-69421	
	7	1	57	41.5	4	51	46.3		12	52.2	4	59	49.2	24	59.0	9.545 7012	69170	
	8	6	53	57.1	5	0	46.5		12	42.9	4	33	21.6	27	56.5	9.538 8212	68325	
	9	11	59	16.7	5	9	53.4		12	9.8	4	3	56.4	30	53.5	9.532 0585	66811	
	10	17	13	44.2	5	19	1.2		11	11.6	3	31	36.0	33	46.3	9.525 4834	64563	
	11	22	37	16.9	5	28	2.8		-	9	48.2	-2	56	26.7	+36	30.5	9.519 1723	-61521
	12	28	9	45.2	5	36	50.6		8	0.7	2	18	39.6	39	1.0	9.513 2076	57629	
	13	33	50	50.5	5	45	15.4		5	51.7	1	38	31.1	41	12.4	9.507 6758	52860	
	14	39	40	5.0	5	53	7.3		3	25.2	0	56	23.2	42	58.7	9.502 6647	47216	
	15	45	36	50.6	6	0	15.8		-	0	46.7	-0	12	44.0	44	14.1	9.498 2609	40722
	16	51	40	18.6	6	6	30.3		+	1	56.7	+0	31	52.9	+44	53.4	9.494 5465	-33442
	17	57	49	29.8	6	11	40.5		4	37.3	1	16	49.3	44	52.4	9.491 5952	25480	
	18	64	3	14.9	6	15	36.8		7	6.8	2	1	23.2	44	8.1	9.489 4686	16974	
	19	70	20	16.1	6	18	11.3		9	16.9	2	44	50.9	42	40.0	9.488 2130	- 8092	
	20	76	39	8.4	6	19	18.4		11	0.7	3	26	28.9	40	29.0	9.487 8563	+ 972	
	21	82	58	22.7	6	18	54.9		+12	12.3	+4	5	35.7	+37	38.3	9.488 4066	+10012	
	22	89	16	27.8	6	17	0.4		12	48.2	4	41	34.1	34	13.3	9.489 8513	18829	
	23	95	31	54.2	6	13	38.0		12	47.2	5	13	53.1	30	20.7	9.492 1586	27233	
	24	101	43	16.2	6	8	53.0		12	10.4	5	42	8.7	26	7.9	9.495 2786	35060	
	25	107	49	15.3	6	2	53.5		11	1.0	6	6	4.8	21	43.0	9.499 1469	42179	
	26	113	48	41.7	5	55	49.4		+	9	24.0	+6	25	33.3	+17	14.0	9.503 6875	+48494
	27	119	40	36.4	5	47	51.9		7	25.3	6	40	33.6	12	47.6	9.508 8172	53953	
	28	125	24	11.6	5	39	12.5		5	11.5	6	51	11.4	8	29.9	9.514 4488	58533	
	29	130	58	51.3	5	30	2.8		2	49.5	6	57	37.8	4	25.5	9.520 4945	62240	
	30	136	24	10.6	5	20	33.4		+	0	25.2	7	0	8.1	+ 0	38.2	9.526 8688	65110
	31	141	39	54.7	5	10	54.1		-	1	55.7	+6	59	0.5	- 2	50.1	9.533 4904	+67195
Aug.	1	146	45	58.5	5	1	13.9		4	8.6	6	54	34.6	5	58.2	9.540 2838	68558	
	2	151	42	24.6	4	51	39.9		6	10.0	6	47	10.8	8	45.9	9.547 1804	69270	
	3	156	29	22.3	4	42	17.9		7	57.2	6	37	9.5	11	13.4	9.554 1187	69405	
	4	161	7	6.1	4	33	12.8		9	28.4	6	24	50.4	13	21.7	9.561 0445	69033	
	5	165	35	54.7	4	24	28.0		-10	42.8	+6	10	32.1	-15	12.1	9.567 9108	+68226	
	6	169	56	9.7	4	16	6.0		11	39.9	5	54	31.7	16	46.0	9.574 6773	67047	
	7	174	8	14.9	4	8	8.6		12	20.1	5	37	5.1	18	4.9	9.581 3096	65552	
	8	178	12	35.3	4	0	36.6		12	43.9	5	18	26.3	19	10.5	9.587 7788	63794	
	9	182	9	36.7	3	53	30.5		12	52.3	4	58	48.2	20	3.9	9.594 0611	61821	
	10	185	59	44.9	3	46	50.2		-12	46.4	+4	38	22.0	-20	46.9	9.600 1371	+59673	
	11	189	43	25.7	3	40	35.6		12	27.5	4	17	17.5	21	20.7	9.605 9909	57381	
	12	193	21	4.4	3	34	45.9		11	57.0	3	55	43.4	21	46.3	9.611 6097	54979	
	13	196	53	5.5	3	29	20.3		11	16.4	3	33	47.3	22	4.9	9.616 9837	52480	
	14	200	19	52.9	3	24	18.3		10	26.4	3	11	35.7	22	17.4	9.622 1052	49931	
	15	203	41	49.6	3	19	38.6		-	9	28.9	+2	49	14.3	-22	24.6	9.626 9684	+47325
16	206	59	17.3	3	15	20.4		-	8	25.1	+2	26	48.0	-22	27.4	9.631 5690	+44683	

FOR GREENWICH MEAN NOON.

Date.	Helio- centric Longitude, Mean Equinox of Date.	Var. per Day.	Reduction to Orbit.	Helio- centric Latitude.	Var. per Day.	Logarithm of Radius Vector.	Var. per Day.	
	° ' "	° ' "	' "	° ' "	' "			
g.	16	206 59 17.3	3 15 20.4	- 8 25.1	+2 26 48.0	-22 27.4	9.631 5690	+44683
	17	210 12 37.3	3 11 22.9	7 16.2	2 4 20.9	22 26.2	9.635 9042	42019
	18	213 22 9.6	3 7 44.9	6 3.1	1 41 56.7	22 21.7	9.639 9722	39339
	19	216 28 13.4	3 4 25.8	4 47.1	1 19 38.5	22 14.2	9.643 7717	36651
	20	219 31 7.1	3 1 24.5	3 29.1	0 57 29.1	22 4.2	9.647 3024	33964
	21	222 31 8.1	2 58 40.3	- 2 9.9	+0 35 30.8	-21 52.1	9.650 5645	+31278
	22	225 28 33.2	2 56 12.6	- 0 50.5	+0 13 45.6	21 38.0	9.653 5582	28598
	23	228 23 38.5	2 54 0.6	+ 0 28.4	-0 7 44.7	21 22.3	9.656 2843	25926
	24	231 16 39.4	2 52 3.7	1 46.1	0 28 58.5	21 5.1	9.658 7438	23265
	25	234 7 50.7	2 50 21.3	3 1.9	0 49 54.4	20 46.5	9.660 9376	20612
	26	236 57 26.7	2 48 33.0	+ 4 15.2	-1 10 31.1	-20 26.7	9.662 8666	+17970
	27	239 45 41.3	2 47 36.4	5 25.5	1 30 47.5	20 5.8	9.664 5319	15338
	28	242 32 48.0	2 46 37.1	6 32.2	1 50 42.4	19 43.8	9.665 9344	12714
	29	245 18 59.8	2 45 48.7	7 34.7	2 10 14.8	19 20.8	9.667 0749	10098
	30	248 4 29.5	2 45 12.9	8 32.7	2 29 23.6	18 56.7	9.667 9541	7488
	31	250 49 29.8	2 44 49.7	+ 9 25.9	-2 48 7.8	-18 31.6	9.668 5727	+ 4885
pl.	1	253 34 13.0	2 44 38.8	10 13.7	3 6 26.4	18 5.4	9.668 9310	+ 2282
	2	256 18 51.5	2 44 40.2	10 55.8	3 24 18.2	17 38.0	9.669 0292	- 318
	3	259 3 37.5	2 44 53.8	11 31.9	3 41 42.1	17 9.6	9.668 8674	2918
	4	261 48 43.2	2 45 19.6	12 1.7	3 58 36.9	16 39.8	9.668 4455	5520
	5	264 34 20.7	2 45 57.6	+12 24.8	-4 15 1.2	-16 8.6	9.667 7632	- 8126
	6	267 20 42.5	2 46 48.0	12 41.1	4 30 53.6	15 35.9	9.666 8201	10737
	7	270 8 0.9	2 47 51.0	12 50.3	4 46 12.5	15 1.6	9.665 6156	13355
	8	272 56 28.7	2 49 6.7	12 52.1	5 0 56.2	14 25.4	9.664 1489	15981
	9	275 46 18.6	2 50 35.3	12 46.5	5 15 2.7	13 47.3	9.662 4191	18617
	10	278 37 43.8	2 52 17.4	+12 33.3	-5 28 30.0	-13 7.0	9.660 4254	-21259
	11	281 30 57.9	2 54 13.1	12 12.2	5 41 15.8	12 24.2	9.658 1668	23914
	12	284 26 14.6	2 56 22.9	11 43.4	5 53 17.6	11 38.8	9.655 6423	26577
	13	287 23 48.3	2 58 47.0	11 6.9	6 4 32.5	10 50.4	9.652 8508	29253
	14	290 23 53.7	3 1 26.4	10 22.6	6 14 57.4	9 58.8	9.649 7915	31935
	15	293 26 46.2	3 4 21.2	+ 9 30.6	-6 24 28.9	- 9 3.6	9.646 4638	-34622
	16	296 32 41.6	3 7 32.3	8 31.3	6 33 3.2	8 4.4	9.642 8672	37311
	17	299 41 56.5	3 11 0.3	7 24.8	6 40 36.3	7 1.0	9.639 0019	39995
	18	302 54 48.0	3 14 45.7	6 11.5	6 47 3.6	5 52.8	9.634 8684	42672
	19	306 11 34.0	3 18 49.3	4 52.1	6 52 20.1	4 39.3	9.630 4680	45332
	20	309 32 32.9	3 23 11.8	+ 3 27.0	-6 56 20.4	- 3 20.3	9.625 8027	-47968
	21	312 58 4.1	3 27 53.9	1 57.1	6 58 58.7	1 55.2	9.620 8758	50563
	22	316 28 27.5	3 32 56.4	+ 0 23.4	7 0 8.6	- 0 23.5	9.615 6919	53105
	23	320 4 3.8	3 38 19.8	- 1 13.0	6 59 43.3	+ 1 15.4	9.610 2571	55577
	24	323 45 14.2	3 44 4.7	2 50.7	6 57 35.4	3 1.7	9.604 5796	57955
	25	327 32 20.6	3 50 11.8	- 4 28.1	-6 53 37.3	+ 4 56.0	9.598 6700	-60215
	26	331 25 45.2	3 56 41.3	6 3.4	6 47 40.7	6 58.6	9.592 5417	62324
	27	335 25 50.6	4 3 33.2	7 34.5	6 39 37.3	9 9.8	9.586 2115	64247
	28	339 32 59.1	4 10 47.6	8 59.0	6 29 18.3	11 29.7	9.579 6999	66944
	29	343 47 33.2	4 18 24.1	10 14.6	6 16 35.1	13 58.1	9.573 0318	67368
	30	348 9 54.3	4 26 21.5	-11 18.4	-6 1 19.3	+16 34.8	9.566 2373	-68463
t.	1	352 40 22.8	4 34 38.7	-12 7.8	-5 43 23.0	+19 19.0	9.559 3523	-69170

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.			Reduction to Orbit.		Heliocentric Latitude.			Var. per Day.		Logarithm of Radius Vector.		V	
	°	'	"	°	'	"	'	"	°	'	"	'	"	'	"		
Oct. 1	352	40	22.8	4	34	38.7	-12	7.8	-5	43	23.0	+19	19.0	9.559	3523	-	
2	357	19	17.5	4	43	13.4	12	40.0	5	22	39.3	22	9.4	9.552	4187		
3	2	6	54.5	4	52	2.9	12	52.3	4	59	2.7	25	4.5	9.545	4852		
4	7	3	27.0	5	1	3.6	12	42.4	4	32	29.5	28	2.0	9.538	6077		
5	12	9	3.8	5	10	10.6	12	8.4	4	2	58.9	30	58.9	9.531	8495		
6	17	23	48.4	5	19	18.2	-11	9.4	-3	30	33.1	+33	51.6	9.525	2811	-	
7	22	47	38.1	5	28	19.6	9	45.2	2	55	18.7	36	35.4	9.518	9792		
8	28	20	22.9	5	37	6.8	7	57.0	2	17	26.9	39	5.5	9.513	0264		
9	34	1	44.0	5	45	30.8	5	47.3	1	37	14.2	41	16.2	9.507	5092		
10	39	51	13.4	5	53	21.5	3	20.4	0	55	3.0	43	1.5	9.502	5154		
11	45	48	12.5	6	0	28.5	-	0	41.7	-0	11	21.5	+44	15.8	9.498	1318	-
12	51	51	52.4	6	6	41.3	+ 2	1.8	+0	33	16.6	44	53.9	9.494	4399		
13	58	1	13.5	6	11	49.3	4	42.2	1	18	12.9	44	51.7	9.491	5132		
14	64	15	6.2	6	15	43.1	7	11.1	2	2	45.5	44	6.2	9.489	4132		
15	70	32	12.4	6	18	15.1	9	20.6	2	46	10.5	42	36.6	9.488	1853	-	
16	76	51	7.1	6	19	19.3	+11	3.4	+3	27	44.4	+40	24.3	9.487	8567	+	
17	83	10	20.8	6	18	53.0	12	13.9	4	6	45.9	37	32.5	9.488	4351		
18	89	28	22.7	6	16	55.9	12	48.7	4	42	38.0	34	6.4	9.489	9073		
19	95	43	43.0	6	13	30.6	12	46.6	5	14	49.7	30	12.9	9.492	2408		
20	101	54	56.4	6	8	43.1	12	8.7	5	42	57.5	25	59.8	9.495	3854		
21	108	0	44.4	6	2	41.4	+10	58.4	+6	6	45.4	+21	34.7	9.499	2760	+	
22	113	59	57.8	5	55	35.6	9	20.5	6	26	5.5	17	5.5	9.503	8364		
23	119	51	37.8	5	47	36.5	7	21.2	6	40	57.4	12	39.4	9.508	9833		
24	125	34	57.0	5	38	56.0	5	7.2	6	51	27.2	8	22.0	9.514	6295		
25	131	9	19.7	5	29	45.3	2	45.0	6	57	46.0	4	18.1	9.520	6870		
26	136	34	21.2	5	20	15.4	+ 0	20.7	+7	0	9.2	+ 0	31.4	9.527	0704	+	
27	141	49	47.4	5	10	36.1	- 2	0.0	6	58	55.1	- 2	56.3	9.533	6988		
28	146	55	33.1	5	0	56.0	4	12.6	6	54	23.3	6	3.8	9.540	4968		
29	151	51	41.4	4	51	22.2	6	13.6	6	46	54.3	8	50.8	9.547	3957		
30	156	38	21.6	4	42	0.7	8	0.3	6	36	48.4	11	17.7	9.554	3345		
31	161	15	48.4	4	32	56.1	- 9	31.0	+6	24	25.3	-13	25.4	9.561	2594	+	
Nov. 1	165	44	20.6	4	24	12.0	10	44.8	6	10	3.6	15	15.2	9.568	1234		
2	170	4	20.0	4	15	50.8	11	41.4	5	54	0.3	16	48.8	9.574	8863		
3	174	16	10.3	4	7	54.1	12	21.1	5	36	31.1	18	7.2	9.581	5139		
4	178	20	16.6	4	0	22.9	12	44.4	5	17	50.4	19	12.2	9.587	9777		
5	182	17	4.7	3	53	17.5	-12	52.3	+4	58	10.6	-20	5.5	9.594	2540	+	
6	186	7	0.3	3	46	38.2	12	46.0	4	37	43.0	20	48.1	9.600	3234		
7	189	50	29.5	3	40	24.3	12	26.8	4	16	37.5	21	21.5	9.606	1702		
8	193	27	57.2	3	34	35.2	11	55.9	3	55	2.6	21	47.0	9.611	7817		
9	196	59	48.1	3	29	10.6	11	14.7	3	33	5.9	22	5.4	9.617	1479		
10	200	26	26.1	3	24	9.2	-10	24.7	+3	10	53.9	-22	17.7	9.622	2613	+	
11	203	48	13.9	3	19	30.2	9	27.0	2	48	32.3	22	24.7	9.627	1163		
12	207	5	33.6	3	15	14.7	8	23.1	2	26	5.9	22	27.4	9.631	7088		
13	210	18	46.2	3	11	15.7	7	13.9	2	3	38.8	22	26.1	9.636	0359		
14	213	28	11.6	3	7	38.3	6	0.8	1	41	14.8	22	21.4	9.640	0955		
15	216	34	9.1	3	4	19.8	- 4	44.7	+1	18	56.9	-22	13.9	9.643	8866	+	
16	219	36	57.1	3	1	19.0	- 3	26.6	+0	56	47.8	-22	3.9	9.647	4090	+	

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.		
	"	'	"	"	'	"	"	'	"		"		
16	219	36	57.1	3 1	19.0	- 3	26.6	+0 56	47.8	-22	3.9	9.647 4090	+33881
17	222	36	52.9	2 58	35.4	2	7.4	0 34	49.9	21	51.7	9.650 6627	31195
18	225	34	13.4	2 56	8.2	- 0	48.0	+0 13	5.1	21	37.6	9.653 6481	28515
19	228	29	14.5	2 53	56.6	+ 0	30.9	-0 8	24.7	21	21.8	9.656 3659	25843
20	231	22	11.7	2 52	0.2	1	48.5	0 29	37.9	21	4.5	9.658 8171	23182
21	234	13	19.8	2 50	18.3	+ 3	4.3	-0 50	33.2	-20	46.0	9.661 0026	+20530
22	237	2	53.0	2 48	50.5	4	17.5	1 11	9.4	20	26.2	9.662 9234	17887
23	239	51	5.3	2 47	36.3	5	27.6	1 31	25.1	20	5.1	9.664 5804	15254
24	242	38	10.0	2 46	35.3	6	34.2	1 51	19.3	19	43.1	9.665 9747	12633
25	245	24	20.2	2 45	47.3	7	36.6	2 10	51.0	19	20.1	9.667 1071	10017
26	248	9	48.8	2 45	12.0	+ 8	34.5	-2 29	59.1	-18	55.9	9.667 9782	+ 7407
27	250	54	48.3	2 44	49.1	9	27.5	2 48	42.5	18	30.7	9.668 5886	4801
28	253	39	31.2	2 44	38.7	10	15.1	3 7	0.2	18	4.5	9.668 9387	+ 2201
29	256	24	9.8	2 44	40.4	10	57.1	3 24	51.2	17	37.2	9.669 0288	- 399
30	259	8	56.1	2 44	54.4	11	33.0	3 42	14.2	17	8.7	9.668 8589	3000
1	261	54	2.6	2 45	20.6	+12	2.5	-3 59	8.1	-16	38.8	9.668 4289	- 5601
2	264	39	41.3	2 45	58.9	12	25.4	4 15	31.4	16	7.5	9.667 7385	8207
3	267	26	4.6	2 46	49.8	12	41.5	4 31	22.7	15	34.8	9.666 7872	10819
4	270	13	25.1	2 47	53.1	12	50.4	4 46	40.5	15	0.5	9.665 5745	13437
5	273	1	55.1	2 49	9.2	12	52.0	5 1	23.1	14	24.3	9.664 0996	16063
6	275	51	47.8	2 50	38.3	+12	46.2	-5 15	28.5	-13	46.1	9.662 3616	-18698
7	278	43	16.2	2 52	20.7	12	32.7	5 28	54.6	13	5.6	9.660 3597	21342
8	281	36	33.8	2 54	16.8	12	11.4	5 41	39.0	12	22.8	9.658 0928	23998
9	284	31	54.5	2 56	27.0	11	42.4	5 53	39.3	11	37.4	9.655 5598	26663
10	287	29	32.7	2 58	51.8	11	5.6	6 4	52.7	10	48.9	9.652 7599	29337
11	290	29	43.1	3 1	31.5	+10	21.1	-6 15	16.0	- 9	57.2	9.649 6922	-32018
12	293	32	41.0	3 4	26.9	9	28.9	6 24	45.8	9	1.8	9.646 3561	34705
13	296	38	42.4	3 7	38.6	8	29.3	6 33	18.3	8	2.5	9.642 7512	37394
14	299	48	3.8	3 11	7.0	7	22.6	6 40	49.4	6	58.9	9.638 8775	39079
15	303	1	2.3	3 14	53.0	6	9.2	6 47	14.5	5	50.5	9.634 7357	42756
16	306	17	55.8	3 18	57.2	+ 4	49.5	-6 52	28.7	- 4	37.0	9.630 3269	-45417
17	309	39	2.9	3 23	20.3	3	24.2	6 56	26.6	3	17.8	9.625 6533	48050
18	313	4	42.9	3 28	3.1	1	54.2	6 59	2.3	1	52.4	9.620 7183	50643
19	316	35	15.8	3 33	6.1	+ 0	20.4	7 0	9.3	- 0	20.5	9.615 5265	53184
20	320	11	2.1	3 38	30.2	- 1	16.1	6 59	40.9	+ 1	18.5	9.610 0840	55653
21	323	52	23.3	3 44	15.8	- 2	53.8	-6 57	29.7	+ 3	5.1	9.604 3991	-58027
22	327	39	41.1	3 50	23.6	4	31.1	6 53	28.0	4	59.7	9.598 4826	60281
23	331	33	17.9	3 56	53.8	6	6.3	6 47	27.6	7	2.5	9.592 3479	62385
24	335	33	36.1	4 3	46.4	7	37.2	6 39	20.1	9	14.0	9.586 0117	64304
25	339	40	58.1	4 11	1.5	9	1.5	6 28	56.7	11	34.2	9.579 4947	65994
26	343	55	46.4	4 18	38.6	-10	16.7	-6 16	8.9	+14	2.8	9.572 8221	-67407
27	348	18	22.3	4 26	36.8	11	20.2	6 0	48.3	16	39.8	9.566 0242	68491
28	352	49	6.4	4 34	54.5	12	9.1	5 42	46.9	19	24.2	9.559 1369	69185
29	357	28	17.1	4 43	29.7	12	40.7	5 21	57.9	22	14.8	9.552 2025	69422
30	2	16	10.6	4 52	19.7	12	52.3	4 58	15.8	25	10.0	9.545 2699	69137
31	7	12	59.9	5 1	20.6	-12	41.7	-4 31	37.1	+28	7.5	9.538 3951	-68254
32	12	18	53.7	.....	.....	-12	6.9	-4 2	0.9	.....	.....	9.531 6416	.....

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit Meridian of Greenwich.	
	h	m	s		°	'	"							h	m
Jan.	1	20	39	32.04	+12.800	-20	10	44.7	+46.71	0.159 5504	-567.6	5.92	6.10	2 0.4
	2	20	44	38.57	12.744	19	51	46.4	48.14	0.158 1810	573.6	5.93	6.11	2 1.6
	3	20	49	43.75	12.688	19	32	14.2	49.54	0.156 7971	579.7	5.95	6.13	2 2.7
	4	20	54	47.57	12.631	19	12	8.8	50.90	0.155 3984	585.9	5.97	6.15	2 3.8
	5	20	59	50.01	12.573	18	51	31.1	52.23	0.153 9847	592.2	5.99	6.17	2 4.9
	6	21	4	51.06	+12.515	-18	30	21.8	+53.53	0.152 5557	-598.6	6.01	6.19	2 6.0
	7	21	9	50.72	12.457	18	8	41.7	54.80	0.151 1113	605.0	6.03	6.21	2 7.0
	8	21	14	48.98	12.398	17	46	31.5	56.04	0.149 6515	611.5	6.05	6.23	2 8.0
	9	21	19	45.83	12.339	17	23	52.0	57.24	0.148 1761	618.0	6.07	6.25	2 9.0
	10	21	24	41.28	12.281	17	0	44.1	58.41	0.146 6849	624.6	6.09	6.27	2 10.0
	11	21	29	35.34	+12.224	-16	37	8.5	+59.55	0.145 1779	-631.3	6.12	6.30	2 11.0
	12	21	34	28.01	12.166	16	13	6.0	60.65	0.143 6548	638.0	6.14	6.32	2 11.9
	13	21	39	19.29	12.108	15	48	37.5	61.72	0.142 1157	644.7	6.16	6.34	2 12.8
	14	21	44	9.21	12.051	15	23	43.7	62.76	0.140 5605	651.4	6.18	6.36	2 13.7
	15	21	48	57.77	11.995	14	58	25.4	63.76	0.138 9891	658.2	6.20	6.38	2 14.6
	16	21	53	44.98	+11.940	-14	32	43.4	+64.73	0.137 4014	-665.0	6.23	6.41	2 15.4
	17	21	58	30.88	11.885	14	6	38.6	65.67	0.135 7973	671.8	6.25	6.43	2 16.2
	18	22	3	15.47	11.831	13	40	11.7	66.57	0.134 1766	678.7	6.27	6.45	2 17.0
	19	22	7	58.79	11.779	13	13	23.4	67.44	0.132 5393	685.7	6.30	6.48	2 17.8
	20	22	12	40.85	11.727	12	46	14.6	68.28	0.130 8852	692.7	6.33	6.51	2 18.6
	21	22	17	21.68	+11.676	-12	18	46.0	+69.00	0.129 2142	-699.8	6.35	6.54	2 19.3
	22	22	22	1.80	11.626	11	50	58.5	69.86	0.127 5260	707.0	6.38	6.57	2 20.0
	23	22	26	39.75	11.578	11	22	52.8	70.60	0.125 8207	714.2	6.40	6.59	2 20.7
	24	22	31	17.05	11.531	10	54	29.6	71.31	0.124 0980	721.5	6.43	6.62	2 21.4
	25	22	35	53.24	11.485	10	25	49.8	71.99	0.122 3576	728.9	6.45	6.65	2 22.0
	26	22	40	28.35	+11.441	-9	56	54.1	+72.64	0.120 5993	-736.4	6.48	6.67	2 22.6
	27	22	45	2.41	11.398	9	27	43.3	73.25	0.118 8229	744.0	6.51	6.69	2 23.3
	28	22	49	35.45	11.356	8	58	18.1	73.83	0.117 0282	751.7	6.53	6.72	2 23.9
	29	22	54	7.52	11.316	8	28	39.3	74.39	0.115 2148	759.5	6.56	6.75	2 24.5
	30	22	58	38.64	11.277	7	58	47.6	74.91	0.113 3823	767.5	6.58	6.78	2 25.1
Feb.	31	23	3	8.84	+11.240	-7	28	43.9	+75.40	0.111 5306	-775.6	6.61	6.81	2 25.6
	1	23	7	38.17	11.205	6	58	28.9	75.85	0.109 6593	783.9	6.64	6.84	2 26.1
	2	23	12	6.66	11.170	6	28	3.4	76.27	0.107 7680	792.3	6.67	6.87	2 26.7
	3	23	16	34.34	11.137	5	57	28.1	76.66	0.105 8562	800.9	6.70	6.90	2 27.2
	4	23	21	1.25	11.105	5	26	43.9	77.02	0.103 9238	809.5	6.73	6.93	2 27.7
	5	23	25	27.41	+11.075	-4	55	51.5	+77.35	0.101 9705	-818.3	6.76	6.96	2 28.2
	6	23	29	52.86	11.046	4	24	51.6	77.64	0.099 9959	827.2	6.79	6.99	2 28.7
	7	23	34	17.64	11.019	3	53	45.1	77.90	0.097 9997	836.3	6.82	7.02	2 29.2
	8	23	38	41.79	10.993	3	22	32.7	78.13	0.095 9817	845.4	6.85	7.05	2 29.7
	9	23	43	5.33	10.969	2	51	15.2	78.32	0.093 9418	854.6	6.88	7.08	2 30.2
	10	23	47	28.29	+10.946	-2	19	53.3	+78.48	0.091 8797	-863.9	6.92	7.12	2 30.6
	11	23	51	50.72	10.924	1	48	27.8	78.62	0.089 7952	873.2	6.95	7.15	2 31.0
	12	23	56	12.65	10.904	1	16	59.5	78.73	0.087 6882	882.7	6.99	7.18	2 31.4
	13	0	0	34.12	10.885	0	45	29.0	78.81	0.085 5582	892.3	7.02	7.22	2 31.8
	14	0	4	55.16	10.868	-0	13	57.0	78.85	0.083 4052	901.9	7.06	7.26	2 32.2
15	0	9	15.82	+10.853	+0	17	35.6	+78.86	0.081 2291	-911.6	7.09	7.30	2 32.6	
16	0	13	36.12	+10.839	+0	49	8.2	+78.84	0.079 0295	-921.5	7.12	7.33	2 33.0	

GREENWICH MEAN TIME.

Date.	Apparent Light Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Paral- lax.	Transit. Meridian of Greenwich.	
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	
	h	m	s	s	°	'	''	''					h	m
eb. 16	0	13	36.12	+10.839	+ 0	49	8.2	+78.84	0.079 0295	- 921.5	7.12	7.33	2	33.0
17	0	17	56.10	10.827	1	20	40.0	78.80	0.076 8061	931.4	7.16	7.37	2	33.4
18	0	22	15.81	10.816	1	52	10.4	78.73	0.074 5587	941.4	7.20	7.41	2	33.8
19	0	26	35.27	10.807	2	23	38.7	78.62	0.072 2873	951.5	7.24	7.45	2	34.2
20	0	30	54.53	10.799	2	55	4.1	78.49	0.069 9915	961.7	7.28	7.49	2	34.5
21	0	35	13.62	+10.793	+ 3	26	26.0	+78.33	0.067 6712	- 972.0	7.32	7.53	2	34.9
22	0	39	32.59	10.788	3	57	43.7	78.14	0.065 3259	982.5	7.36	7.57	2	35.3
23	0	43	51.46	10.785	4	28	56.4	77.92	0.062 9553	993.1	7.40	7.61	2	35.7
24	0	48	10.27	10.783	5	0	3.6	77.67	0.060 5591	1003.8	7.44	7.65	2	36.0
25	0	52	29.06	10.783	5	31	4.5	77.39	0.058 1370	1014.7	7.48	7.70	2	36.4
26	0	56	47.87	+10.784	+ 6	1	58.5	+77.09	0.055 6885	-1025.8	7.52	7.74	2	36.8
27	1	1	6.72	10.787	6	32	44.8	76.76	0.053 2134	1037.0	7.57	7.78	2	37.2
28	1	5	25.66	10.792	7	3	22.7	76.40	0.050 7111	1048.4	7.61	7.82	2	37.5
29	1	9	44.72	10.797	7	33	51.7	76.01	0.048 1811	1060.0	7.66	7.87	2	37.9
ir. 1	1	14	3.93	10.804	8	4	11.0	75.59	0.045 6230	1071.9	7.70	7.92	2	38.3
2	1	18	23.31	+10.811	+ 8	34	19.8	+75.14	0.043 0361	-1084.0	7.74	7.97	2	38.7
3	1	22	42.88	10.820	9	4	17.5	74.66	0.040 4201	1096.2	7.79	8.02	2	39.0
4	1	27	2.68	10.830	9	34	3.3	74.15	0.037 7744	1108.6	7.84	8.07	2	39.4
5	1	31	22.72	10.841	10	3	36.5	73.61	0.035 0987	1121.3	7.89	8.12	2	39.8
6	1	35	43.03	10.852	10	32	56.5	73.04	0.032 3923	1134.1	7.94	8.17	2	40.2
7	1	40	3.61	+10.864	+11	2	2.5	+72.45	0.029 6550	-1147.1	7.99	8.22	2	40.6
8	1	44	24.50	10.877	11	30	53.8	71.82	0.026 8862	1160.3	8.04	8.27	2	41.0
9	1	48	45.72	10.891	11	59	29.7	71.16	0.024 0855	1173.7	8.09	8.32	2	41.4
10	1	53	7.27	10.905	12	27	49.5	70.48	0.021 2525	1187.2	8.14	8.38	2	41.8
11	1	57	29.17	10.920	12	55	52.6	69.77	0.018 3869	1200.9	8.20	8.44	2	42.3
12	2	1	51.43	+10.935	+13	23	38.3	+69.03	0.015 4883	-1214.7	8.25	8.49	2	42.7
13	2	6	14.07	10.951	13	51	5.9	68.26	0.012 5564	1228.7	8.30	8.55	2	43.1
14	2	10	37.09	10.967	14	18	14.7	67.46	0.009 5907	1242.8	8.36	8.61	2	43.5
15	2	15	0.50	10.983	14	45	4.0	66.64	0.006 5911	1257.0	8.42	8.67	2	44.0
16	2	19	24.31	11.000	15	11	33.2	65.79	0.003 5571	1271.4	8.48	8.73	2	44.5
17	2	23	48.52	+11.017	+15	37	41.8	+64.91	0.000 4883	-1286.0	8.54	8.79	2	45.0
18	2	28	13.14	11.035	16	3	29.0	64.01	9.997 3842	1300.8	8.60	8.85	2	45.5
19	2	32	38.18	11.052	16	28	54.2	63.08	9.994 2446	1315.7	8.66	8.91	2	45.9
20	2	37	3.63	11.069	16	53	56.8	62.13	9.991 0690	1330.7	8.72	8.98	2	46.4
21	2	41	29.50	11.086	17	18	36.2	61.15	9.987 8572	1345.9	8.79	9.05	2	46.9
22	2	45	55.78	+11.103	+17	42	51.8	+60.14	9.984 6088	-1361.3	8.86	9.12	2	47.4
23	2	50	22.46	11.120	18	6	43.0	59.11	9.981 3232	1376.8	8.93	9.19	2	47.9
24	2	54	49.55	11.137	18	30	9.2	58.06	9.978 0000	1392.6	9.00	9.26	2	48.4
25	2	59	17.05	11.154	18	53	9.9	56.99	9.974 6386	1408.7	9.06	9.33	2	48.9
26	3	3	44.93	11.170	19	15	44.6	55.89	9.971 2383	1425.0	9.13	9.40	2	49.4
27	3	8	13.19	+11.185	+19	37	52.6	+54.77	9.967 7987	-1441.5	9.20	9.47	2	49.9
28	3	12	41.81	11.199	19	59	33.4	53.62	9.964 3192	1458.3	9.27	9.55	2	50.4
29	3	17	10.77	11.213	20	20	46.4	52.45	9.960 7990	1475.3	9.35	9.63	2	51.0
30	3	21	40.05	11.226	20	41	31.1	51.26	9.957 2374	1492.8	9.43	9.71	2	51.6
31	3	26	9.62	11.237	21	1	47.0	50.05	9.953 6337	1510.5	9.51	9.79	2	52.1
ir. 1	3	30	39.44	+11.247	+21	21	33.6	+48.82	9.949 9871	-1528.5	9.59	9.87	2	52.6
2	3	35	9.48	+11.255	+21	40	50.3	+47.57	9.946 2970	-1546.8	9.67	9.95	2	53.2

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.		Var. per Hour.	Apparent Declination.		Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	Noon.			Noon.								Noon.
	h	m s	s	"	"	"					h m	
Apr. 1	3	30	39.44	+11.247	+21 21	33.6	+48.82	9.949 9871	-1528.5	9.59	9.87	2 52.6
2	3	35	9.48	11.255	21 40	50.3	47.57	9.946 2970	1546.8	9.67	9.95	2 53.2
3	3	39	39.71	11.262	21 59	36.7	46.29	9.942 5626	1565.3	9.75	10.04	2 53.8
4	3	44	10.07	11.267	22 17	52.3	45.00	9.938 7832	1584.2	9.84	10.13	2 54.4
5	3	48	40.52	11.270	22 35	36.7	43.69	9.934 9581	1603.4	9.93	10.22	2 55.0
6	3	53	11.01	+11.270	+22 52	49.5	+42.36	9.931 0867	-1622.8	10.02	10.31	2 55.5
7	3	57	41.48	11.268	23 9	30.2	41.02	9.927 1683	1642.5	10.11	10.40	2 56.0
8	4	2	11.88	11.264	23 25	38.4	39.66	9.923 2025	1662.4	10.20	10.50	2 56.6
9	4	6	42.14	11.257	23 41	13.8	38.29	9.919 1886	1682.6	10.29	10.60	2 57.2
10	4	11	12.19	11.247	23 56	16.2	36.90	9.915 1259	1703.0	10.39	10.70	2 57.7
11	4	15	41.97	+11.234	+24 10	45.1	+35.50	9.911 0138	-1723.7	10.49	10.80	2 58.2
12	4	20	11.42	11.219	24 24	40.3	34.09	9.906 8518	1744.7	10.59	10.90	2 58.8
13	4	24	40.46	11.200	24 38	1.5	32.67	9.902 6392	1765.9	10.69	11.01	2 59.4
14	4	29	9.00	11.178	24 50	48.5	31.25	9.898 3756	1787.3	10.79	11.12	2 59.9
15	4	33	36.97	11.153	25 3	1.2	29.81	9.894 0604	1808.8	10.90	11.23	3 0.4
16	4	38	4.30	+11.124	+25 14	39.4	+28.37	9.889 6932	-1830.6	11.01	11.34	3 0.9
17	4	42	30.89	11.092	25 25	42.9	26.92	9.885 2733	1852.6	11.12	11.46	3 1.4
18	4	46	56.67	11.056	25 36	11.7	25.47	9.880 8004	1874.8	11.24	11.58	3 1.9
19	4	51	21.54	11.016	25 46	5.6	24.02	9.876 2739	1897.3	11.36	11.70	3 2.4
20	4	55	45.42	10.973	25 55	24.6	22.57	9.871 6933	1920.0	11.48	11.82	3 2.9
21	5	0	8.22	+10.926	+26 4	8.8	+21.11	9.867 0580	-1942.9	11.61	11.95	3 3.3
22	5	4	29.84	10.875	26 12	18.1	19.66	9.862 3674	1966.0	11.74	12.08	3 3.7
23	5	8	50.19	10.820	26 19	52.6	18.21	9.857 6208	1989.5	11.87	12.21	3 4.1
24	5	13	9.18	10.761	26 26	52.3	16.76	9.852 8174	2013.4	12.00	12.34	3 4.5
25	5	17	26.70	10.698	26 33	17.3	15.32	9.847 9565	2037.6	12.13	12.48	3 4.8
26	5	21	42.64	+10.630	+26 39	7.9	+13.89	9.843 0372	-2062.0	12.27	12.62	3 5.1
27	5	25	56.90	10.558	26 44	24.1	12.46	9.838 0588	2085.8	12.41	12.77	3 5.4
28	5	30	9.37	10.481	26 49	6.2	11.04	9.833 0206	2111.9	12.55	12.92	3 5.7
29	5	34	19.92	10.398	26 53	14.3	9.63	9.827 9217	2137.3	12.70	13.07	3 5.9
30	5	38	28.43	10.310	26 56	48.7	8.24	9.822 7612	2163.1	12.85	13.23	3 6.1
May 1	5	42	34.77	+10.217	+26 59	49.8	+ 6.86	9.817 5383	-2189.3	13.01	13.39	3 6.3
2	5	46	38.82	10.119	27 2	17.9	5.49	9.812 2523	2215.8	13.17	13.56	3 6.4
3	5	50	40.44	10.015	27 4	13.3	4.14	9.806 9024	2242.5	13.33	13.73	3 6.5
4	5	54	39.48	9.905	27 5	36.5	2.80	9.801 4881	2269.5	13.50	13.90	3 6.5
5	5	58	35.81	9.789	27 6	27.8	1.48	9.796 0087	2296.7	13.67	14.08	3 6.5
6	6	2	29.29	+ 9.667	+27 6	47.8	+ 0.19	9.790 4639	-2324.1	13.85	14.26	3 6.4
7	6	6	19.76	9.538	27 6	37.0	- 1.08	9.784 8531	2351.7	14.03	14.45	3 6.3
8	6	10	7.06	9.403	27 5	55.9	2.33	9.779 1759	2379.4	14.21	14.64	3 6.2
9	6	13	51.05	9.262	27 4	45.0	3.56	9.773 4321	2407.2	14.40	14.83	3 6.0
10	6	17	31.57	9.114	27 3	5.1	4.76	9.767 6215	2435.0	14.59	15.03	3 5.7
11	6	21	8.46	+ 8.959	+27 0	56.7	- 5.93	9.761 7440	-2462.9	14.79	15.23	3 5.4
12	6	24	41.54	8.797	26 58	20.4	7.08	9.755 7997	2490.7	14.99	15.44	3 5.0
13	6	28	10.64	8.627	26 55	17.0	8.19	9.749 7887	2518.4	15.20	15.66	3 4.5
14	6	31	35.60	8.451	26 51	47.2	9.27	9.743 7115	2545.9	15.42	15.88	3 3.9
15	6	34	56.25	8.268	26 47	51.7	10.33	9.737 5684	2573.2	15.64	16.10	3 3.3
16	6	38	12.42	+ 8.077	+26 43	31.3	-11.36	9.731 3602	-2600.2	15.86	16.33	3 2.6
17	6	41	23.92	+ 7.879	+26 38	46.7	-12.35	9.725 0877	-2626.8	16.09	16.57	3 1.8

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	h	m	s		"	"	"						
day 17	6	41	23.92	+7.879	+26	38	46.7	-12.35	9.725 0877	-2626.8	16.09	16.57	3 1.8
18	6	44	30.57	7.674	26	33	38.6	13.31	9.718 7519	2653.0	16.33	16.82	3 1.0
19	6	47	32.21	7.461	26	28	7.9	14.23	9.712 3538	2678.7	16.57	17.07	3 0.1
20	6	50	28.64	7.240	26	22	15.5	15.12	9.705 8946	2703.8	16.82	17.32	2 59.1
21	6	53	19.68	7.012	26	16	2.2	15.98	9.699 3758	2728.3	17.07	17.58	2 58.0
22	6	56	5.15	+6.776	+26	9	28.7	-16.80	9.692 7989	-2752.2	17.33	17.85	2 56.8
23	6	58	44.85	6.531	26	2	35.8	17.59	9.686 1656	2775.3	17.60	18.12	2 55.5
24	7	1	18.58	6.278	25	55	24.4	18.34	9.679 4779	2797.6	17.87	18.40	2 54.1
25	7	3	46.13	6.016	25	47	55.4	19.06	9.672 7379	2818.9	18.15	18.69	2 52.6
26	7	6	7.28	5.746	25	40	9.6	19.74	9.665 9482	2839.0	18.43	18.98	2 51.0
27	7	8	21.84	+5.466	+25	32	7.9	-20.39	9.659 1115	-2857.9	18.73	19.28	2 49.3
28	7	10	29.58	5.177	25	23	51.2	21.00	9.652 2313	2875.3	19.03	19.60	2 47.5
29	7	12	30.26	4.878	25	15	20.3	21.57	9.645 3112	2891.1	19.34	19.91	2 45.6
30	7	14	23.63	4.569	25	6	36.2	22.10	9.638 3554	2905.0	19.65	20.23	2 43.5
31	7	16	9.46	4.250	24	57	39.8	22.60	9.631 3686	2916.8	19.97	20.56	2 41.3
me 1	7	17	47.50	+3.920	+24	48	31.8	-23.06	9.624 3562	-2926.3	20.30	20.89	2 39.0
2	7	19	17.51	3.579	24	39	13.2	23.48	9.617 3242	2933.1	20.63	21.24	2 36.5
3	7	20	39.22	3.229	24	29	44.9	23.87	9.610 2795	2936.9	20.97	21.59	2 33.9
4	7	21	52.40	2.899	24	20	7.6	24.23	9.603 2297	2937.4	21.31	21.94	2 31.2
5	7	22	56.81	2.498	24	10	22.2	24.55	9.596 1831	2934.1	21.66	22.30	2 28.3
6	7	23	52.20	+2.117	+24	0	29.4	-24.84	9.589 1491	-2926.8	22.01	22.66	2 25.3
7	7	24	38.32	1.726	23	50	30.0	25.10	9.582 1378	2915.1	22.37	23.03	2 22.1
8	7	25	14.95	1.325	23	40	24.8	25.33	9.575 1603	2898.5	22.73	23.41	2 18.8
9	7	25	41.87	0.916	23	30	14.3	25.54	9.568 2289	2876.7	23.10	23.79	2 15.3
10	7	25	58.88	0.499	23	19	59.2	25.72	9.561 3568	2849.0	23.48	24.16	2 11.6
11	7	26	5.81	+0.076	+23	9	40.1	-25.87	9.554 5587	-2815.0	23.85	24.54	2 7.8
12	7	26	2.50	-0.353	22	59	17.5	26.00	9.547 8502	2774.3	24.22	24.92	2 3.8
13	7	25	48.83	0.787	22	48	52.0	26.12	9.541 2479	2726.4	24.59	25.31	1 59.6
14	7	25	24.72	1.224	22	38	24.0	26.22	9.534 7697	2670.8	24.95	25.69	1 55.2
15	7	24	50.11	1.661	22	27	53.8	26.30	9.528 4345	2607.2	25.32	26.06	1 50.7
16	7	24	5.02	-2.097	+22	17	21.8	-26.37	9.522 2619	-2535.2	25.68	26.44	1 46.0
17	7	23	9.51	2.529	22	6	48.2	26.43	9.516 2726	2454.5	26.03	26.80	1 41.2
18	7	22	3.69	2.955	21	56	13.3	26.48	9.510 4877	2364.8	26.38	27.16	1 36.1
19	7	20	47.74	3.373	21	45	37.3	26.52	9.504 9289	2266.0	26.72	27.52	1 30.9
20	7	19	21.89	3.780	21	35	0.6	26.54	9.499 6179	2158.2	27.06	27.85	1 25.6
21	7	17	46.44	-4.172	+21	24	23.4	-26.56	9.494 5768	-2041.2	27.38	28.18	1 20.1
22	7	16	1.76	4.548	21	13	46.1	26.55	9.489 8276	1915.0	27.68	28.49	1 14.4
23	7	14	8.30	4.904	21	3	9.2	26.52	9.485 3922	1779.7	27.96	28.78	1 8.6
24	7	12	6.57	5.237	20	52	33.1	26.48	9.481 2920	1635.7	28.22	29.05	1 2.6
25	7	9	57.13	5.545	20	41	58.4	26.40	9.477 5476	1483.3	28.47	29.30	0 56.5
26	7	7	40.64	-5.824	+20	31	26.0	-26.29	9.474 1785	-1323.0	28.70	29.53	0 50.3
27	7	5	17.82	6.072	20	20	56.7	26.15	9.471 2028	1155.5	28.90	29.74	0 44.0
28	7	2	49.47	6.285	20	10	31.4	25.96	9.468 6371	981.5	29.07	29.91	0 37.6
29	7	0	16.43	6.462	20	0	11.4	25.71	9.466 4963	801.7	29.21	30.06	0 31.2
30	6	57	39.58	6.602	19	49	57.9	25.40	9.464 7928	617.2	29.32	30.18	0 24.7
aly 1	6	54	59.87	-6.701	+19	39	52.5	-25.03	9.463 5367	-429.0	29.41	30.26	0 18.1
2	6	52	18.27	-6.759	+19	29	56.7	-24.00	9.462 7354	-238.3	29.46	30.32	0 11.5

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.	Var. per Hour.	Apparent Declination.	Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi- diam- eter.	Hor. Paral- ax.
	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.
	h m s	s	° ' "	"			"	"
July 1	6 54 59.87	-6.701	+19 39 52.5	-25.03	9.463 5367	- 429.0	29.41	30.26
2	6 52 18.27	6.759	19 29 56.7	24.60	9.462 7354	238.3	29.46	30.32
3	6 49 35.77	6.775	19 20 12.1	24.10	9.462 3937	- 46.3	29.48	30.34
4	6 46 53.38	6.750	19 10 40.6	23.51	9.462 5133	+ 145.8	29.46	30.34
5	6 44 12.10	6.684	19 1 24.1	22.85	9.463 0928	336.8	29.42	30.30
6	6 41 32.90	-6.576	+18 52 24.4	-22.11	9.464 1284	+ 525.6	29.36	30.22
7	6 38 56.76	6.429	18 43 43.4	21.29	9.465 6133	711.0	29.27	30.12
8	6 36 24.60	6.245	18 35 22.9	20.40	9.467 5379	891.9	29.14	29.99
9	6 33 57.29	6.026	18 27 24.6	19.44	9.469 8902	1067.3	28.97	29.83
10	6 31 35.65	5.773	18 19 50.2	18.41	9.472 6559	1236.3	28.78	29.64
11	6 29 20.46	-5.489	+18 12 41.5	-17.31	9.475 8185	+1398.0	28.58	29.42
12	6 27 12.42	5.177	18 5 59.6	16.17	9.479 3599	1551.8	28.35	29.18
13	6 25 12.15	4.841	17 59 45.6	14.99	9.483 2604	1697.2	28.10	28.92
14	6 23 20.20	4.484	17 54 0.3	13.78	9.487 4991	1833.6	27.82	28.64
15	6 21 37.04	4.109	17 48 44.4	12.54	9.492 0541	1960.7	27.54	28.34
16	6 20 3.09	-3.718	+17 43 58.4	-11.28	9.496 9030	+2078.4	27.24	28.03
17	6 18 38.68	3.315	17 39 42.7	10.03	9.502 0228	2186.5	26.92	27.70
18	6 17 24.04	2.903	17 35 57.1	8.78	9.507 3906	2285.1	26.58	27.36
19	6 16 19.37	2.485	17 32 41.5	7.54	9.512 9838	2374.3	26.23	27.01
20	6 15 24.77	2.064	17 29 55.3	6.33	9.518 7801	2454.5	25.89	26.65
21	6 14 40.29	-1.642	+17 27 37.8	- 5.14	9.524 7582	+2525.9	25.54	26.29
22	6 14 5.94	1.221	17 25 48.3	3.99	9.530 8975	2588.9	25.18	25.92
23	6 13 41.67	0.803	17 24 25.9	2.89	9.537 1786	2644.0	24.82	25.54
24	6 13 27.37	-0.389	17 23 29.4	1.83	9.543 5830	2691.7	24.45	25.17
25	6 13 22.94	+0.019	17 22 57.7	- 0.82	9.550 0932	2732.3	24.09	24.80
26	6 13 28.21	+0.419	+17 22 49.5	+ 0.13	9.556 6931	+2766.5	23.73	24.42
27	6 13 43.01	0.812	17 23 3.3	1.02	9.563 3677	2794.6	23.37	24.05
28	6 14 7.15	1.198	17 23 37.7	1.84	9.570 1030	2817.2	23.00	23.68
29	6 14 40.41	1.574	17 24 31.1	2.60	9.576 8861	2834.6	22.64	23.31
30	6 15 22.59	1.940	17 25 42.1	3.30	9.583 7054	2847.4	22.29	22.95
31	6 16 13.44	+2.206	+17 27 8.9	+ 3.93	9.590 5501	+2855.8	21.95	22.59
Aug. 1	6 17 12.72	2.643	17 28 50.0	4.49	9.597 4103	2860.3	21.61	22.24
2	6 18 20.21	2.980	17 30 43.7	4.98	9.604 2770	2861.3	21.27	21.89
3	6 19 35.65	3.306	17 32 48.3	5.40	9.611 1421	2859.1	20.93	21.55
4	6 20 58.81	3.623	17 35 2.3	5.76	9.617 9984	2854.0	20.60	21.21
5	6 22 29.46	+3.930	+17 37 24.0	+ 6.05	9.624 8392	+2846.3	20.28	20.88
6	6 24 7.36	4.227	17 39 51.9	6.27	9.631 6587	2836.3	19.96	20.55
7	6 25 52.28	4.515	17 42 24.2	6.42	9.638 4516	2824.2	19.65	20.23
8	6 27 44.00	4.793	17 44 59.4	6.51	9.645 2131	2810.2	19.35	19.92
9	6 29 42.29	5.063	17 47 36.0	6.53	9.651 9391	2794.5	19.05	19.61
10	6 31 46.95	+5.324	+17 50 12.4	+ 6.49	9.658 6257	+2777.4	18.76	19.31
11	6 33 57.77	5.577	17 52 47.0	6.38	9.665 2694	2758.8	18.47	19.02
12	6 36 14.55	5.821	17 55 18.4	6.22	9.671 8670	2739.0	18.19	18.73
13	6 38 37.10	6.057	17 57 45.2	6.00	9.678 4156	2718.0	17.92	18.45
14	6 41 5.21	6.284	18 0 6.0	5.72	9.684 9127	2696.0	17.65	18.17
15	6 43 38.69	+6.504	+18 2 19.3	+ 5.38	9.691 3559	+2673.1	17.39	17.91
16	6 46 17.36	+6.716	+18 4 23.8	+ 4.99	9.697 7430	+2649.4	17.14	17.64

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	Noon.				Noon.									
	h	m	s	s	°	'	"	"	Noon.	Noon.	Noon.	Noon.	h	m
Aug. 16	6	46	17.36	+ 6.716	+18	4	23.8	+ 4.90	9.697 7430	+2649.4	17.14	17.64	21	7.0
17	6	49	1.03	6.921	18	6	18.4	4.55	9.704 0723	2624.9	16.89	17.39	21	5.9
18	6	51	49.52	7.118	18	8	1.8	4.05	9.710 3423	2599.9	16.65	17.14	21	4.8
19	6	54	42.64	7.307	18	9	32.7	3.51	9.716 5516	2574.4	16.41	16.90	21	3.8
20	6	57	40.21	7.480	18	10	50.1	2.93	9.722 6993	2548.6	16.18	16.66	21	2.9
21	7	0	42.05	+ 7.664	+18	11	53.0	+ 2.31	9.728 7847	+2522.5	15.96	16.43	21	2.1
22	7	3	48.01	7.832	18	12	40.4	1.64	9.734 8072	2496.2	15.74	16.20	21	1.3
23	7	6	57.91	7.993	18	13	11.3	0.93	9.740 7663	2469.7	15.52	15.98	21	0.6
24	7	10	11.59	8.147	18	13	24.6	+ 0.18	9.746 6618	2443.2	15.31	15.76	20	59.9
25	7	13	28.91	8.295	18	13	19.6	- 0.60	9.752 4936	2416.7	15.11	15.55	20	59.3
26	7	16	49.71	+ 8.437	+18	12	55.5	- 1.42	9.758 2619	+2390.3	14.91	15.35	20	58.7
27	7	20	13.85	8.573	18	12	11.5	2.27	9.763 9668	2363.9	14.72	15.15	20	58.2
28	7	23	41.19	8.704	18	11	6.9	3.14	9.769 6086	2337.7	14.53	14.96	20	57.8
29	7	27	11.59	8.829	18	9	40.8	4.04	9.775 1877	2311.6	14.34	14.77	20	57.4
30	7	30	44.92	8.948	18	7	52.7	4.97	9.780 7045	2285.8	14.16	14.58	20	57.1
31	7	34	21.05	+ 9.062	+18	5	41.9	- 5.93	9.786 1596	+2260.2	13.98	14.40	20	56.8
Sept. 1	7	37	59.86	9.171	18	3	7.8	6.92	9.791 5536	2234.8	13.81	14.22	20	56.5
2	7	41	41.24	9.276	18	0	9.9	7.92	9.796 8871	2209.8	13.64	14.05	20	56.3
3	7	45	25.07	9.376	17	56	47.7	8.94	9.802 1609	2185.1	13.47	13.88	20	56.1
4	7	49	11.24	9.472	17	53	0.3	9.99	9.807 3757	2160.7	13.31	13.71	20	56.0
5	7	52	59.65	+ 9.563	+17	48	48.2	-11.05	9.812 5323	+2136.5	13.15	13.55	20	55.9
6	7	56	50.20	9.650	17	44	10.0	12.13	9.817 6313	2112.7	13.00	13.39	20	55.8
7	8	0	42.79	9.732	17	39	5.7	13.23	9.822 6734	2089.1	12.85	13.24	20	55.8
8	8	4	37.33	9.811	17	33	34.7	14.35	9.827 6594	2065.9	12.70	13.09	20	55.8
9	8	8	33.73	9.887	17	27	36.9	15.48	9.832 5900	2042.9	12.56	12.94	20	55.8
10	8	12	31.91	+ 9.960	+17	21	11.8	-16.62	9.837 4657	+2020.1	12.42	12.80	20	55.8
11	8	16	31.79	10.029	17	14	19.1	17.77	9.842 2869	1997.6	12.28	12.66	20	55.9
12	8	20	33.28	10.094	17	6	58.6	18.93	9.847 0542	1975.2	12.15	12.52	20	56.0
13	8	24	36.29	10.156	16	59	10.1	20.10	9.851 7681	1953.0	12.02	12.39	20	56.1
14	8	28	40.75	10.215	16	50	53.5	21.28	9.856 4290	1931.0	11.89	12.26	20	56.3
15	8	32	46.58	+10.270	+16	42	8.6	-22.46	9.861 0374	+1909.3	11.77	12.13	20	56.5
16	8	36	53.69	10.322	16	32	55.3	23.65	9.865 5937	1887.7	11.65	12.00	20	56.7
17	8	41	2.02	10.371	16	23	13.6	24.83	9.870 0985	1866.3	11.53	11.87	20	56.9
18	8	45	11.48	10.416	16	13	3.4	26.02	9.874 5524	1845.2	11.41	11.75	20	57.1
19	8	49	22.00	10.459	16	2	24.7	27.21	9.878 9558	1824.3	11.30	11.63	20	57.3
20	8	53	33.51	+10.499	+15	51	17.5	-28.39	9.883 3093	+1803.7	11.19	11.51	20	57.6
21	8	57	45.95	10.536	15	39	42.1	29.56	9.887 6136	1783.3	11.08	11.40	20	57.9
22	9	1	59.25	10.571	15	27	38.5	30.73	9.891 8692	1763.1	10.97	11.29	20	58.2
23	9	6	13.34	10.603	15	15	6.8	31.90	9.896 0768	1743.2	10.86	11.18	20	58.5
24	9	10	28.17	10.632	15	2	7.2	33.06	9.900 2370	1723.6	10.76	11.07	20	58.8
25	9	14	43.67	+10.659	+14	48	39.9	-34.21	9.904 3505	+1704.3	10.66	10.97	20	59.1
26	9	18	59.79	10.684	14	34	45.1	35.35	9.908 4180	1685.3	10.56	10.87	20	59.5
27	9	23	16.48	10.707	14	20	23.0	36.48	9.912 4401	1666.5	10.46	10.77	20	59.9
28	9	27	33.69	10.728	14	5	33.9	37.60	9.916 4175	1648.1	10.36	10.67	21	0.2
29	9	31	51.38	10.746	13	50	18.1	38.71	9.920 3510	1629.9	10.27	10.57	21	0.5
30	9	35	9.49	+10.763	+13	34	35.8	-39.81	9.924 2412	+1612.0	10.18	10.47	21	0.9
Oct. 1	9	40	28.00	+10.779	+13	18	27.5	-40.89	9.928 0890	+1594.5	10.09	10.38	21	1.3

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Paralax.	Transit, Meridian of Greenwich.		
	h	m	s		°	'	"							h	m
Oct.	1	9	40	28.00	+10.779	+13	18	27.5	-40.89	9.928 0890	+1594.5	10.09	10.38	21 1.3	
	2	9	44	46.86	10.793	13	1	53.4	41.95	9.931 8950	1577.3	10.00	10.29	21 1.6	
	3	9	49	6.04	10.805	12	44	53.8	43.01	9.935 6599	1560.3	9.91	10.20	21 2.0	
	4	9	53	25.51	10.816	12	27	29.0	44.05	9.939 3844	1543.5	9.82	10.11	21 2.4	
	5	9	57	45.25	10.827	12	9	39.5	45.07	9.943 0692	1527.1	9.74	10.03	21 2.8	
	6	10	2	5.22	+10.837	+11	51	25.6	-46.08	9.946 7149	+1511.0	9.66	9.95	21 3.2	
	7	10	6	25.42	10.846	11	32	47.7	47.07	9.950 3221	1495.1	9.58	9.87	21 3.6	
	8	10	10	45.81	10.854	11	13	46.2	48.05	9.953 8914	1479.4	9.50	9.79	21 4.0	
	9	10	15	6.39	10.861	10	54	21.5	49.01	9.957 4232	1463.9	9.42	9.71	21 4.4	
	10	10	19	27.14	10.868	10	34	34.0	49.95	9.960 9180	1448.5	9.34	9.63	21 4.8	
	11	10	23	48.05	+10.874	+10	14	24.1	-50.87	9.964 3761	+1433.3	9.27	9.55	21 5.2	
	12	10	28	9.10	10.880	9	53	52.4	51.77	9.967 7978	1418.2	9.20	9.48	21 5.6	
	13	10	32	30.30	10.886	9	32	59.3	52.65	9.971 1835	1403.3	9.13	9.40	21 6.0	
	14	10	36	51.63	10.891	9	11	45.3	53.51	9.974 5335	1388.5	9.06	9.33	21 6.4	
	15	10	41	13.08	10.896	8	50	11.1	54.34	9.977 8482	1373.8	8.99	9.26	21 6.8	
	16	10	45	34.63	+10.901	+	8	28	17.1	-55.15	9.981 1279	+1359.3	8.92	9.19	21 7.3
	17	10	49	56.29	10.905	8	6	3.8	55.94	9.984 3730	1344.9	8.86	9.12	21 7.7	
	18	10	54	18.05	10.909	7	43	31.9	56.71	9.987 5836	1330.6	8.79	9.05	21 8.1	
	19	10	58	39.92	10.913	7	20	42.0	57.45	9.990 7802	1316.6	8.73	8.98	21 8.5	
	20	11	3	1.89	10.917	6	57	34.6	58.16	9.993 9032	1302.6	8.67	8.92	21 9.0	
	21	11	7	23.95	+10.921	+	6	34	10.4	-58.85	9.997 0129	+1288.8	8.61	8.86	21 9.4
	22	11	11	46.10	10.925	6	10	30.0	59.51	0.000 0896	1275.2	8.55	8.80	21 9.8	
	23	11	16	8.36	10.929	5	46	34.0	60.15	0.003 1338	1261.7	8.49	8.74	21 10.2	
	24	11	20	30.72	10.934	5	22	23.1	60.76	0.006 1457	1248.3	8.43	8.68	21 10.7	
	25	11	24	53.19	10.939	4	57	57.9	61.34	0.009 1259	1235.2	8.37	8.62	21 11.1	
	26	11	29	15.79	+10.944	+	4	33	19.0	-61.89	0.012 0746	+1222.1	8.31	8.56	21 11.5
	27	11	33	38.51	10.949	4	8	27.2	62.42	0.014 9923	1209.3	8.26	8.50	21 11.9	
	28	11	38	1.37	10.955	3	43	23.1	62.92	0.017 8794	1196.7	8.20	8.44	21 12.4	
	29	11	42	24.37	10.962	3	18	7.4	63.39	0.020 7366	1184.3	8.14	8.38	21 12.9	
	30	11	46	47.53	10.969	2	52	40.7	63.83	0.023 5642	1172.1	8.09	8.33	21 13.3	
	31	11	51	10.87	+10.977	+	2	27	3.8	-64.24	0.026 3626	+1160.0	8.04	8.28	21 13.7
Nov.	1	11	55	34.41	10.985	2	1	17.2	64.63	0.029 1323	1148.2	7.99	8.23	21 14.2	
	2	11	59	58.16	10.994	1	35	21.5	65.00	0.031 8738	1136.5	7.94	8.18	21 14.7	
	3	12	4	22.14	11.004	1	9	17.5	65.33	0.034 5875	1125.0	7.89	8.13	21 15.2	
	4	12	8	46.38	11.016	0	43	5.9	65.63	0.037 2739	1113.7	7.84	8.08	21 15.7	
	5	12	13	10.91	+11.028	+	0	16	47.3	-65.91	0.039 9332	+1102.5	7.79	8.03	21 16.1
	6	12	17	35.74	11.041	-	0	9	37.5	66.16	0.042 5657	1091.4	7.75	7.98	21 16.5
	7	12	22	0.90	11.056	0	36	8.0	66.38	0.045 1719	1080.5	7.70	7.93	21 17.0	
	8	12	26	26.42	11.072	1	2	43.6	66.57	0.047 7520	1069.6	7.65	7.88	21 17.5	
	9	12	30	52.34	11.089	1	29	23.4	66.73	0.050 3062	1058.9	7.61	7.83	21 18.0	
	10	12	35	18.68	+11.107	-	1	56	6.7	-66.87	0.052 8348	+1048.3	7.57	7.79	21 18.5
	11	12	39	45.46	11.125	2	22	52.9	66.97	0.055 3379	1037.7	7.53	7.75	21 19.0	
	12	12	44	12.70	11.145	2	49	41.2	67.04	0.057 8157	1027.1	7.48	7.70	21 19.5	
	13	12	48	40.43	11.166	3	16	30.8	67.06	0.060 2682	1016.7	7.44	7.65	21 20.1	
	14	12	53	8.69	11.189	3	43	21.1	67.10	0.062 6958	1006.3	7.40	7.61	21 20.7	
	15	12	57	37.50	+11.213	-	4	10	11.3	-67.08	0.065 0985	+ 996.0	7.36	7.57	21 21.2
	16	13	2	6.90	+11.237	-	4	37	0.6	-67.03	0.067 4767	+ 985.8	7.32	7.53	21 21.7

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	Noon.				Noon.								Noon.		Noon.
	h	m	s	s	°	'	"	"	Noon.	Noon.	Noon.	Noon.	h	m
Nov. 16	13	2	6.90	+11.237	- 4	37	0.6	-67.03	0.067 4767	+985.8	7.32	7.53	21	21.7
17	13	6	36.90	11.263	5	3	48.2	66.94	0.069 8304	975.7	7.28	7.49	21	22.3
18	13	11	7.53	11.290	5	30	33.5	66.82	0.072 1600	965.6	7.24	7.45	21	22.9
19	13	15	38.81	11.318	5	57	15.6	66.67	0.074 4655	955.7	7.20	7.41	21	23.5
20	13	20	10.78	11.347	6	23	53.7	66.49	0.076 7472	945.8	7.16	7.37	21	24.1
21	13	24	43.46	+11.377	- 6	50	27.1	-66.28	0.079 0052	+935.9	7.13	7.33	21	24.7
22	13	29	16.87	11.408	7	16	55.0	66.04	0.081 2396	926.2	7.09	7.29	21	25.3
23	13	33	51.04	11.440	7	43	16.6	65.76	0.083 4508	916.5	7.05	7.25	21	25.9
24	13	38	25.99	11.473	8	9	31.1	65.45	0.085 6389	907.0	7.01	7.21	21	26.6
25	13	43	1.75	11.507	8	35	37.7	65.10	0.087 8042	897.5	6.98	7.18	21	27.3
26	13	47	38.34	+11.542	- 9	1	35.6	-64.72	0.089 9471	+888.2	6.95	7.15	21	28.0
27	13	52	15.78	11.578	9	27	24.0	64.31	0.092 0678	879.0	6.91	7.11	21	28.7
28	13	56	54.10	11.615	9	53	2.1	63.86	0.094 1666	870.0	6.87	7.08	21	29.4
29	14	1	33.32	11.653	10	18	29.1	63.38	0.096 2438	861.1	6.84	7.05	21	30.1
30	14	6	13.46	11.692	10	43	44.4	62.87	0.098 2998	852.3	6.81	7.02	21	30.8
Dec. 1	14	10	54.55	+11.732	-11	8	47.0	-62.33	0.100 3350	+843.7	6.78	6.99	21	31.6
2	14	15	36.62	11.773	11	33	36.2	61.76	0.102 3496	835.2	6.75	6.95	21	32.4
3	14	20	19.68	11.815	11	58	11.3	61.15	0.104 3438	826.7	6.72	6.92	21	33.1
4	14	25	3.76	11.858	12	22	31.4	60.51	0.106 3179	818.4	6.69	6.89	21	33.9
5	14	29	48.89	11.902	12	46	35.7	59.84	0.108 2722	810.2	6.66	6.86	21	34.8
6	14	34	35.08	+11.947	-13	10	23.5	-59.14	0.110 2070	+802.1	6.63	6.83	21	35.7
7	14	39	22.36	11.993	13	33	54.0	58.40	0.112 1223	794.0	6.60	6.80	21	36.5
8	14	44	10.75	12.040	13	57	6.4	57.63	0.114 0183	786.0	6.57	6.77	21	37.3
9	14	49	0.26	12.087	14	19	59.9	56.82	0.115 8952	778.1	6.54	6.74	21	38.2
10	14	53	50.92	12.135	14	42	33.7	55.98	0.117 7532	770.2	6.51	6.71	21	39.1
11	14	58	42.74	+12.183	-15	4	46.9	-55.11	0.119 5923	+762.4	6.49	6.68	21	40.1
12	15	3	35.72	12.232	15	26	38.9	54.21	0.121 4126	754.6	6.46	6.65	21	41.1
13	15	8	29.88	12.281	15	48	8.8	53.27	0.123 2143	746.8	6.43	6.62	21	42.0
14	15	13	25.24	12.331	16	9	15.9	52.30	0.124 9975	739.2	6.40	6.59	21	43.0
15	15	18	21.79	12.381	16	29	59.2	51.30	0.126 7623	731.5	6.38	6.57	21	44.0
16	15	23	19.54	+12.431	-16	50	18.1	-50.27	0.128 5088	+723.9	6.36	6.55	21	45.0
17	15	28	18.49	12.481	17	10	11.7	49.20	0.130 2370	716.3	6.33	6.52	21	46.1
18	15	33	18.64	12.531	17	29	39.3	48.10	0.131 9471	708.8	6.30	6.49	21	47.2
19	15	38	19.99	12.581	17	48	40.1	46.97	0.133 6391	701.3	6.28	6.46	21	48.3
20	15	43	22.53	12.631	18	7	13.3	45.80	0.135 3132	693.8	6.26	6.44	21	49.4
21	15	48	26.26	+12.680	-18	25	18.2	-44.60	0.136 9694	+686.4	6.24	6.42	21	50.6
22	15	53	31.17	12.729	18	42	54.0	43.37	0.138 6079	679.0	6.21	6.39	21	51.8
23	15	58	37.23	12.777	19	0	0.0	42.12	0.140 2288	671.8	6.18	6.36	21	52.9
24	16	3	44.44	12.824	19	16	35.5	40.83	0.141 8323	664.5	6.16	6.34	21	54.1
25	16	8	52.78	12.870	19	32	39.7	39.51	0.143 4186	657.4	6.14	6.32	21	55.3
26	16	14	2.22	+12.916	-19	48	12.0	-38.17	0.144 9879	+650.3	6.12	6.30	21	56.5
27	16	19	12.74	12.961	20	3	11.7	36.80	0.146 5403	643.4	6.09	6.27	21	57.8
28	16	24	24.33	13.005	20	17	38.2	35.40	0.148 0762	636.6	6.07	6.25	21	59.1
29	16	29	36.95	13.047	20	31	30.7	33.98	0.149 5957	629.8	6.05	6.23	22	0.4
30	16	34	50.58	13.088	20	44	48.8	32.53	0.151 0992	623.1	6.03	6.21	22	1.7
31	16	40	5.19	+13.128	-20	57	31.8	-31.05	0.152 5868	+616.6	6.01	6.19	22	3.0
32	16	45	20.74	+13.167	-21	9	39.0	-29.55	0.154 0588	+610.2	5.99	6.17	22	4.3

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.		
	"	'	"	"	"	"	"	"	"	"	"		
Jan.	1	345	23	20.2	1 35 14.4	+0	3.4	-3	23 37.3	-0	3.2	9.861 7336	-473
	3	348	33	51.5	1 35 16.9	-0	16.6	3	23 24.9	+0	15.6	9.861 6353	506
	5	351	44	28.0	1 35 19.5	0	36.5	3	22 35.1	0	34.3	9.861 5300	544
	7	354	55	9.8	1 35 22.2	0	55.9	3	21 7.9	0	52.9	9.861 4178	577
	9	358	5	57.0	1 35 25.0	1	14.6	3	19 3.6	1	11.4	9.861 2992	606
	11	1	16	49.7	1 35 27.8	-1	32.4	-3	16 22.6	+1	29.7	9.861 1744	-639
	13	4	27	48.0	1 35 30.6	1	49.1	3	13 5.2	1	47.7	9.861 0438	666
	15	7	38	52.0	1 35 33.4	2	4.4	3	9 12.0	2	5.4	9.860 9079	692
	17	10	50	1.7	1 35 36.3	2	18.2	3	4 43.6	2	22.8	9.860 7671	715
	19	14	1	17.3	1 35 39.3	2	30.3	2	59 40.8	2	39.8	9.860 6218	737
	21	17	12	38.8	1 35 42.3	-2	40.6	-2	54 4.5	+2	56.4	9.860 4723	-757
	23	20	24	6.3	1 35 45.3	2	48.9	2	47 55.6	3	12.4	9.860 3192	774
	25	23	35	39.9	1 35 48.4	2	55.1	2	41 15.2	3	27.9	9.860 1630	788
	27	26	47	19.8	1 35 51.5	2	59.1	2	34 4.5	3	42.7	9.860 0041	800
	29	29	59	5.9	1 35 54.6	3	0.9	2	26 24.8	3	56.9	9.859 8430	810
Feb.	31	33	10	58.2	1 35 57.8	-3	0.5	-2	18 17.5	+4	10.4	9.859 6802	-817
	2	36	22	57.0	1 36 1.0	2	57.8	2	9 43.9	4	23.1	9.859 5163	822
	4	39	35	2.3	1 36 4.3	2	52.9	2	0 45.7	4	35.0	9.859 3516	824
	6	42	47	14.2	1 36 7.6	2	45.8	1	51 24.4	4	46.1	9.859 1867	824
	8	45	59	32.7	1 36 10.9	2	36.6	1	41 41.8	4	56.3	9.859 0222	821
	10	49	11	58.0	1 36 14.3	-2	25.5	-1	31 39.7	+5	5.6	9.858 8586	-815
	12	52	24	30.2	1 36 17.8	2	12.5	1	21 19.9	5	14.0	9.858 6963	807
	14	55	37	9.3	1 36 21.3	1	57.9	1	10 44.3	5	21.4	9.858 5359	796
	16	58	49	55.3	1 36 24.8	1	41.8	0	59 55.0	5	27.8	9.858 3779	783
	18	62	2	48.4	1 36 28.3	1	24.4	0	48 53.9	5	33.2	9.858 2227	768
	20	65	15	48.7	1 36 31.9	-1	5.9	-0	37 43.0	+5	37.5	9.858 0710	-749
	22	68	28	56.1	1 36 35.5	0	46.5	0	26 24.6	5	40.7	9.857 9232	729
	24	71	42	10.7	1 36 39.1	0	26.6	0	15 0.7	5	42.9	9.857 7796	706
	26	74	55	32.5	1 36 42.7	-0	6.3	-0	3 33.5	5	44.1	9.857 6408	681
	28	78	9	1.5	1 36 46.3	+0	14.1	+0	7 54.9	5	44.1	9.857 5074	653
Mar.	1	81	22	37.7	1 36 49.9	+0	34.3	+0	19 22.1	+5	42.9	9.857 3797	-624
	3	84	36	20.9	1 36 53.4	0	54.1	0	30 46.0	5	40.7	9.857 2580	593
	5	87	50	11.2	1 36 56.9	1	13.2	0	42 4.4	5	37.5	9.857 1428	559
	7	91	4	8.4	1 37 0.3	1	31.4	0	53 15.2	5	33.1	9.857 0345	524
	9	94	18	12.4	1 37 3.6	1	48.4	1	4 16.1	5	27.6	9.856 9334	487
	11	97	32	23.0	1 37 6.9	+2	4.1	+1	15 5.0	+5	21.1	9.856 8398	-449
	13	100	46	40.0	1 37 10.0	2	18.1	1	25 39.8	5	13.5	9.856 7541	408
	15	104	1	3.1	1 37 13.0	2	30.5	1	35 58.4	5	4.9	9.856 6766	367
	17	107	15	32.1	1 37 15.9	2	40.9	1	45 58.8	4	55.3	9.856 6075	324
	19	110	30	6.6	1 37 18.6	2	49.2	1	55 39.1	4	44.8	9.856 5470	281
	21	113	44	46.3	1 37 21.1	+2	55.4	+2	4 57.3	+4	33.3	9.856 4953	-236
	23	116	59	30.9	1 37 23.4	2	59.4	2	13 51.6	4	20.9	9.856 4526	191
	25	120	14	19.8	1 37 25.4	3	1.0	2	22 20.2	4	7.6	9.856 4191	145
	27	123	29	12.5	1 37 27.2	3	0.3	2	30 21.5	3	53.5	9.856 3948	98
	29	126	44	8.6	1 37 28.8	2	57.3	2	37 53.9	3	38.7	9.856 3798	52
Apr.	31	129	59	7.6	1 37 30.1	+2	52.0	+2	44 55.9	+3	23.2	9.856 3742	-4
	2	133	14	8.8	1 37 31.0	+2	44.5	+2	51 26.1	+3	6.9	9.856 3781	+43

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.	
	°	'	"	°	'	°	'	"	'	"		
Apr. 2	133	14	8.8	1 37	31.0	+2	44.5	+2 51	26.1	+3 6.9	9.856 3781	+ 43
4	136	29	11.6	1 37	31.7	2	34.9	2 57	23.2	2 50.1	9.856 3914	90
6	139	44	15.5	1 37	32.1	2	23.3	3 2	46.1	2 32.7	9.856 4140	136
8	142	59	19.8	1 37	32.1	2	9.9	3 7	33.8	2 14.9	9.856 4459	182
10	146	14	23.8	1 37	31.8	1	54.8	3 11	45.3	1 56.5	9.856 4869	228
12	149	29	26.8	1 37	31.1	+1	38.2	+3 15	19.7	+1 37.8	9.856 5370	+273
14	152	44	28.1	1 37	30.1	1	20.4	3 18	16.5	1 18.9	9.856 5959	317
16	155	59	27.1	1 37	28.7	1	1.5	3 20	35.1	0 59.6	9.856 6636	360
18	159	14	23.0	1 37	27.0	0	41.8	3 22	15.0	0 40.2	9.856 7397	401
20	162	29	15.1	1 37	24.9	0	21.7	3 23	15.9	0 20.7	9.856 8240	442
22	165	44	2.7	1 37	22.5	+0	1.3	+3 23	37.8	+0 1.2	9.856 9163	+481
24	168	58	45.2	1 37	19.8	-0	19.2	3 23	20.6	-0 18.4	9.857 0162	518
26	172	13	21.8	1 37	16.8	0	39.4	3 22	24.4	0 37.8	9.857 1234	533
28	175	27	52.0	1 37	13.4	0	59.1	3 20	49.4	0 57.1	9.857 2375	587
30	178	42	15.2	1 37	9.7	1	18.0	3 18	36.0	1 16.2	9.857 3582	619
May 2	181	56	30.7	1 37	5.7	-1	35.9	+3 15	44.8	-1 34.9	9.857 4851	+649
4	185	10	38.0	1 37	1.5	1	52.6	3 12	16.3	1 53.4	9.857 6178	677
6	188	24	36.6	1 36	57.1	2	7.8	3 8	11.2	2 11.5	9.857 7559	703
8	191	38	26.1	1 36	52.4	2	21.4	3 3	30.4	2 29.1	9.857 8988	726
10	194	52	6.0	1 36	47.5	2	33.2	2 58	15.0	2 46.2	9.858 0482	747
12	198	5	36.0	1 36	42.4	-2	43.1	+2 52	26.0	-3 2.7	9.858 1976	+766
14	201	18	55.7	1 36	37.2	2	50.9	2 46	4.6	3 18.6	9.858 3524	782
16	204	32	4.9	1 36	31.9	2	56.5	2 39	12.0	3 33.9	9.858 5102	796
18	207	45	3.4	1 36	26.5	2	59.9	2 31	49.6	3 48.4	9.858 6705	807
20	210	57	51.1	1 36	21.1	3	1.0	2 23	58.9	4 2.1	9.858 8328	816
22	214	10	27.8	1 36	15.6	-2	59.9	+2 15	41.5	-4 15.1	9.858 9966	+822
24	217	22	53.5	1 36	10.1	2	56.5	2 6	59.0	4 27.2	9.859 1613	825
26	220	35	8.2	1 36	4.6	2	50.9	1 57	53.1	4 38.5	9.859 3264	826
28	223	47	12.1	1 35	59.2	2	43.2	1 48	25.5	4 48.9	9.859 4915	824
30	226	59	5.2	1 35	53.9	2	33.4	1 38	38.1	4 58.4	9.859 6560	820
June 1	230	10	47.7	1 35	48.6	-2	21.7	+1 28	32.7	-5 6.9	9.859 8193	+813
3	233	22	19.8	1 35	43.5	2	8.3	1 18	11.3	5 14.4	9.859 9810	804
5	236	33	41.8	1 35	38.5	1	53.3	1 7	35.8	5 20.9	9.860 1407	792
7	239	44	54.0	1 35	33.7	1	37.0	0 56	48.3	5 26.4	9.860 2978	778
9	242	55	56.8	1 35	29.1	1	19.4	0 45	50.7	5 31.0	9.860 4517	761
11	246	6	50.6	1 35	24.7	-1	0.9	+0 34	45.0	-5 34.5	9.860 6021	+742
13	249	17	35.9	1 35	20.6	0	41.6	0 23	33.4	5 37.0	9.860 7485	721
15	252	28	13.1	1 35	16.7	0	21.8	0 12	17.9	5 38.4	9.860 8905	698
17	255	38	42.6	1 35	13.0	-0	1.8	+0 1	0.5	5 38.8	9.861 0276	672
19	258	49	5.1	1 35	9.6	+0	18.2	-0 10	16.6	5 38.2	9.861 1593	645
21	261	59	21.0	1 35	6.5	+0	38.0	-0 21	31.4	-5 36.5	9.861 2854	+616
23	265	9	30.9	1 35	3.6	0	57.4	0 32	41.9	5 33.8	9.861 4055	585
25	268	19	35.3	1 35	1.0	1	16.0	0 43	46.0	5 30.1	9.861 5191	551
27	271	29	34.9	1 34	56.7	1	33.7	0 54	41.1	5 25.4	9.861 6259	517
29	274	39	30.2	1 34	56.7	1	50.2	1 5	27.3	5 19.8	9.861 7257	481
July 1	277	49	21.8	1 34	55.0	+2	5.4	-1 16	0.5	-5 13.2	9.861 8181	+443
3	280	59	10.3	1 34	53.6	+2	19.0	-1 26	19.5	-5 5.6	9.861 9028	+404

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.						
	°	'	"	°	'	"	°	'	"	'	"						
July	1	277	49	21.8	1	34	55.0	+2	5.4	-1	16	0.5	-5	13.2	9.861 8181	+443	
	3	280	59	10.3	1	34	53.6	2	19.0	1	26	19.5	5	5.6	9.861 9028	404	
	5	284	8	56.3	1	34	52.5	2	30.9	1	36	22.5	4	57.2	9.861 9796	364	
	7	287	18	40.3	1	34	51.6	2	41.0	1	46	7.8	4	47.9	9.862 0483	323	
	9	290	28	22.8	1	34	51.0	2	49.2	1	55	33.5	4	37.7	9.862 1087	281	
	11	293	38	4.4	1	34	50.7	+2	55.2	-2	4	37.9	-4	26.6	9.862 1605	+238	
	13	296	47	45.7	1	34	50.7	2	59.2	2	13	19.5	4	14.8	9.862 2037	194	
	15	299	57	27.2	1	34	50.9	3	0.9	2	21	36.7	4	2.2	9.862 2381	150	
	17	303	7	9.3	1	34	51.3	3	0.5	2	29	28.0	3	48.9	9.862 2636	105	
	19	306	16	52.4	1	34	51.9	2	57.8	2	36	51.9	3	34.9	9.862 2801	60	
	21	309	26	37.1	1	34	52.8	+2	53.0	-2	43	47.2	-3	20.3	9.862 2876	+ 15	
	23	312	36	23.7	1	34	53.9	2	46.1	2	50	12.6	3	5.1	9.862 2860	- 30	
	25	315	46	12.7	1	34	55.2	2	37.2	2	56	7.0	2	49.3	9.862 2754	76	
	27	318	56	4.4	1	34	56.6	2	26.4	3	1	29.2	2	32.9	9.862 2557	121	
	29	322	5	59.1	1	34	58.2	2	13.7	3	6	18.3	2	16.1	9.862 2271	165	
	31	325	15	57.2	1	35	0.0	+1	59.5	-3	10	33.4	-1	58.9	9.862 1896	-209	
	Aug.	2	328	25	59.0	1	35	1.9	1	43.7	3	14	13.7	1	41.3	9.862 1434	253
		4	331	36	4.7	1	35	3.9	1	26.7	3	17	18.5	1	23.4	9.862 0885	206
		6	334	46	14.5	1	35	6.0	1	8.7	3	19	47.2	1	5.2	9.862 0252	339
8		337	56	28.7	1	35	8.2	0	49.8	3	21	39.4	0	46.8	9.861 9535	379	
10		341	6	47.5	1	35	10.6	+0	30.3	-3	22	54.7	-0	28.3	9.861 8737	-418	
12		344	17	11.1	1	35	13.0	+0	10.4	3	23	32.7	-0	9.7	9.861 7862	457	
14		347	27	39.6	1	35	15.5	-0	9.7	3	23	33.3	+0	9.0	9.861 6910	494	
16		350	38	13.2	1	35	18.1	0	29.6	3	22	56.5	0	27.7	9.861 5885	530	
18		353	48	52.0	1	35	20.7	0	49.2	3	21	42.4	0	46.4	9.861 4790	564	
20		356	59	36.2	1	35	23.4	-1	8.1	-3	19	51.1	+1	4.9	9.861 3629	-596	
Sept.	22	0	10	25.8	1	35	26.2	1	26.3	3	17	22.8	1	23.3	9.861 2405	627	
	24	3	21	20.9	1	35	29.0	1	43.4	3	14	18.1	1	41.4	9.861 1121	656	
	26	6	32	21.7	1	35	31.8	1	59.2	3	10	37.4	1	59.2	9.860 9781	683	
	28	9	43	28.3	1	35	34.7	2	18.6	3	6	21.3	2	16.8	9.860 8390	707	
	30	12	54	40.7	1	35	37.6	-2	26.3	-3	1	30.4	+2	34.0	9.860 6952	-730	
	1	16	5	59.0	1	35	40.6	2	37.2	2	56	5.7	2	50.7	9.860 5470	751	
	3	19	17	23.3	1	35	43.6	2	46.2	2	50	8.1	3	6.8	9.860 3950	769	
	5	22	28	53.6	1	35	46.7	2	53.2	2	43	38.7	3	22.4	9.860 2396	785	
	7	25	40	30.1	1	35	49.8	2	58.0	2	36	38.6	3	37.5	9.860 0813	798	
	9	28	52	12.8	1	35	52.9	-3	0.6	-2	29	9.0	+3	51.9	9.859 9206	-809	
Oct.	11	32	4	1.9	1	35	56.1	3	0.9	2	21	11.2	4	5.7	9.859 7579	817	
	13	35	15	57.4	1	35	59.4	2	59.0	2	12	46.7	4	18.7	9.859 5938	823	
	15	38	27	59.4	1	36	2.7	2	54.8	2	3	57.0	4	30.9	9.859 4288	827	
	17	41	40	8.0	1	36	6.0	2	48.5	1	54	43.6	4	42.3	9.859 2633	827	
	19	44	52	23.2	1	36	9.3	-2	40.1	-1	45	8.4	+4	52.8	9.859 0980	-825	
	21	48	4	45.2	1	36	12.7	2	29.6	1	35	13.0	5	2.5	9.858 9333	821	
	23	51	17	14.0	1	36	16.1	2	17.3	1	24	59.2	5	11.2	9.858 7698	814	
	25	54	29	49.8	1	36	19.6	2	3.2	1	14	29.0	5	18.9	9.858 6079	804	
	27	57	42	32.6	1	36	23.1	1	47.6	1	3	44.3	5	25.7	9.858 4482	792	
	29	60	55	22.5	1	36	26.7	-1	30.7	-0	52	47.1	+5	31.4	9.858 2912	-777	
1	64	8	19.5	1	36	30.3	-1	12.5	-0	41	39.5	+5	36.0	9.858 1373	-760		

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.					
	°	'	"	°	'	"	°	'	"	'	"					
pt.	1	64	8	19.5	1	36	30.3	-1	12.5	-0	41	39.5	+5	36.0	9.858 1373	-760
	3	67	21	23.7	1	36	33.9	0	53.4	0	30	23.6	5	39.7	9.857 9871	741
	5	70	34	35.1	1	36	37.5	0	33.7	0	19	1.4	5	42.3	9.857 8411	719
	7	73	47	53.8	1	36	41.2	-0	13.5	-0	7	35.1	5	43.8	9.857 6997	695
	9	77	1	19.8	1	36	44.8	+0	6.9	+0	3	53.1	5	44.2	9.857 5633	669
	11	80	14	53.0	1	36	48.4	+0	27.2	+0	15	20.9	+5	43.5	9.857 4324	-640
	13	83	28	33.3	1	36	52.0	0	47.2	0	26	46.2	5	41.6	9.857 3075	609
	15	86	42	20.8	1	36	55.5	1	6.6	0	38	6.7	5	38.7	9.857 1889	577
	17	89	56	15.3	1	36	59.0	1	25.1	0	49	20.4	5	34.8	9.857 0770	542
	19	93	10	16.7	1	37	2.4	1	42.6	1	0	25.0	5	29.7	9.856 9722	505
	21	96	24	24.8	1	37	5.7	+1	58.7	+1	11	18.4	+5	23.5	9.856 8749	-467
	23	99	38	39.4	1	37	8.9	2	13.4	1	21	58.4	5	16.3	9.856 7853	428
	25	102	53	0.3	1	37	12.0	2	26.4	1	32	22.9	5	8.0	9.856 7037	387
	27	106	7	27.3	1	37	14.9	2	37.5	1	42	29.9	4	58.8	9.856 6305	345
	29	109	22	0.0	1	37	17.7	2	46.5	1	52	17.5	4	48.6	9.856 5657	302
	31	112	36	38.1	1	37	20.3	+2	53.5	+2	1	43.6	+4	37.4	9.856 5098	-257
iov.	2	115	51	21.1	1	37	22.7	2	58.2	2	10	46.5	4	25.3	9.856 4628	213
	4	119	6	8.7	1	37	24.9	3	0.7	2	19	24.4	4	12.4	9.856 4249	166
	6	122	21	0.5	1	37	26.8	3	0.8	2	27	35.5	3	58.6	9.856 3963	120
	8	125	35	55.9	1	37	28.5	2	58.6	2	35	18.2	3	44.0	9.856 3770	72
	10	128	50	54.3	1	37	29.9	+2	54.1	+2	42	31.0	+3	28.7	9.856 3671	-26
	12	132	5	55.2	1	37	31.0	2	47.4	2	49	12.6	3	12.7	9.856 3666	+21
	14	135	20	58.1	1	37	31.8	2	38.5	2	55	21.5	2	56.1	9.856 3755	68
	16	138	36	2.3	1	37	32.3	2	27.6	3	0	56.6	2	38.9	9.856 3938	115
	18	141	51	7.1	1	37	32.4	2	14.8	3	5	56.7	2	21.2	9.856 4215	162
	20	145	6	11.9	1	37	32.2	+2	0.2	+3	10	21.0	+2	3.0	9.856 4584	+208
	22	148	21	16.0	1	37	31.7	1	44.2	3	14	8.6	1	44.4	9.856 5045	253
	24	151	36	18.8	1	37	30.9	1	26.7	3	17	18.7	1	25.5	9.856 5595	297
	26	154	51	19.5	1	37	29.7	1	8.2	3	19	50.7	1	6.4	9.856 6233	341
	28	158	6	17.4	1	37	28.1	0	48.8	3	21	44.2	0	47.1	9.856 6957	383
	30	161	21	11.8	1	37	26.2	+0	28.8	+3	22	58.9	+0	27.6	9.856 7765	+424
Dec.	2	164	36	2.0	1	37	23.9	+0	8.4	3	23	34.5	+0	8.0	9.856 8653	464
	4	167	50	47.3	1	37	21.3	-0	12.1	3	23	31.0	-0	11.5	9.856 9619	502
	6	171	5	27.0	1	37	18.4	0	32.4	3	22	48.4	0	31.0	9.857 0660	539
	8	174	20	0.6	1	37	15.1	0	52.3	3	21	27.0	0	50.3	9.857 1772	573
	10	177	34	27.3	1	37	11.5	-1	11.5	+3	19	27.1	-1	9.5	9.857 2952	+606
	12	180	48	46.6	1	37	7.7	1	29.8	3	16	49.0	1	28.5	9.857 4196	637
	14	184	2	57.9	1	37	3.6	1	46.9	3	13	33.4	1	47.1	9.857 5500	666
	16	187	17	0.7	1	36	59.2	2	2.7	3	9	41.0	2	5.3	9.857 6859	693
	18	190	30	54.6	1	36	54.6	2	16.9	3	5	12.6	2	23.0	9.857 8270	717
	20	193	44	39.0	1	36	49.8	-2	29.3	+3	0	9.2	-2	40.3	9.857 9727	+739
	22	196	58	13.6	1	36	44.8	2	39.9	2	54	31.8	2	57.0	9.858 1226	759
	24	200	11	38.1	1	36	39.6	2	48.4	2	48	21.5	3	13.1	9.858 2762	777
	26	203	24	52.2	1	36	34.4	2	54.8	2	41	39.6	3	28.6	9.858 4331	792
	28	206	37	55.6	1	36	29.0	2	59.0	2	34	27.5	3	43.4	9.858 5927	804
	30	209	50	48.2	1	36	23.6	-3	0.9	+2	26	46.5	-3	57.4	9.858 7545	+814
	32	213	3	29.8	1	36	18.1	-3	0.5	+2	18	38.2	-4	10.7	9.858 9181	+821

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit Meridian of Greenwich.
	h	m	s		°	'	"							h	m
				noon.				noon.					
Jan.	1	10	12 48.01	+0.073	+14	50 16.4	+ 5.86	9.916 9873	-1501.2	6.11	10.65	15 31.0	
	2	10	12 48.23	-0.054	14	52 45.3	6.55	9.913 3960	1491.4	6.16	10.74	15 27.0	
	3	10	12 45.41	0.182	14	55 30.9	7.25	9.909 8299	1480.2	6.22	10.83	15 23.0	
	4	10	12 39.50	0.311	14	58 33.3	7.95	9.906 2920	1467.7	6.27	10.92	15 18.9	
	5	10	12 30.48	0.441	15	1 52.3	8.64	9.902 7859	1453.8	6.32	11.00	15 14.8	
	6	10	12 18.32	-0.572	+15	5 28.0	+ 9.33	9.899 3150	-1438.4	6.37	11.09	15 10.7	
	7	10	12 3.01	0.704	15	9 20.1	10.01	9.895 8828	1421.5	6.42	11.18	15 6.4	
	8	10	11 44.53	0.836	15	13 28.7	10.70	9.892 4931	1403.1	6.47	11.27	15 2.2	
	9	10	11 22.87	0.969	15	17 53.4	11.37	9.889 1493	1383.2	6.51	11.35	14 57.9	
	10	10	10 58.03	1.101	15	22 34.2	12.03	9.885 8550	1361.8	6.57	11.44	14 53.5	
	11	10	10 30.00	-1.234	+15	27 30.7	+12.68	9.882 6139	-1338.8	6.62	11.53	14 49.0	
	12	10	9 58.78	1.367	15	32 42.7	13.32	9.879 4298	1314.3	6.67	11.62	14 44.6	
	13	10	9 24.39	1.499	15	38 9.8	13.94	9.876 3064	1288.2	6.72	11.70	14 40.0	
	14	10	8 46.82	1.631	15	43 51.6	14.55	9.873 2477	1260.5	6.76	11.78	14 35.5	
	15	10	8 6.09	1.763	15	49 47.8	15.14	9.870 2575	1231.1	6.81	11.86	14 30.8	
	16	10	7 22.22	-1.893	+15	55 57.9	+15.70	9.867 3397	-1200.1	6.86	11.95	14 26.1	
	17	10	6 35.24	2.022	16	2 21.4	16.25	9.864 4984	1167.4	6.91	12.03	14 21.4	
	18	10	5 45.17	2.150	16	8 57.9	16.78	9.861 7376	1133.0	6.95	12.11	14 16.6	
	19	10	4 52.04	2.277	16	15 46.7	17.28	9.859 0615	1096.9	6.99	12.18	14 11.8	
	20	10	3 55.90	2.401	16	22 47.3	17.76	9.856 4740	1059.1	7.03	12.25	14 6.9	
	21	10	2 56.79	-2.524	+16	29 59.1	+18.21	9.853 9793	-1019.6	7.07	12.32	14 1.9	
	22	10	1 54.78	2.644	16	37 21.4	18.64	9.851 5815	978.4	7.11	12.39	13 56.9	
	23	10	0 49.91	2.761	16	44 53.4	19.02	9.849 2846	935.5	7.15	12.46	13 51.9	
	24	9	59 42.26	2.876	16	52 34.4	19.38	9.847 0925	890.9	7.19	12.52	13 46.8	
	25	9	58 31.91	2.986	17	0 23.6	19.71	9.845 0095	844.6	7.22	12.58	13 41.7	
	26	9	57 18.94	-3.093	+17	8 20.2	+20.00	9.843 0396	-796.7	7.25	12.64	13 36.5	
	27	9	56 3.44	3.197	17	16 23.1	20.24	9.841 1866	747.2	7.28	12.69	13 31.3	
	28	9	54 45.51	3.296	17	24 31.5	20.45	9.839 4544	696.0	7.31	12.74	13 26.1	
	29	9	53 25.27	3.390	17	32 44.4	20.62	9.837 8468	643.4	7.34	12.79	13 20.8	
	30	9	52 2.84	3.479	17	41 0.8	20.74	9.836 3672	589.4	7.36	12.83	13 15.5	
	31	9	50 38.35	-3.561	+17	49 19.5	+20.82	9.835 0189	-534.0	7.39	12.87	13 10.1	
Feb.	1	9	49 11.95	3.638	17	57 39.6	20.85	9.833 8051	477.3	7.41	12.91	13 4.8	
	2	9	47 43.79	3.708	18	5 59.8	20.83	9.832 7287	419.5	7.43	12.94	12 59.3	
	3	9	46 14.03	3.771	18	14 19.1	20.77	9.831 7921	360.8	7.44	12.97	12 53.9	
	4	9	44 42.85	3.827	18	22 36.3	20.66	9.830 9974	301.2	7.46	12.99	12 48.5	
	5	9	43 10.41	-3.875	+18	30 50.3	+20.50	9.830 3470	-240.8	7.47	13.01	12 43.0	
	6	9	41 36.90	3.916	18	39 0.0	20.30	9.829 8418	180.1	7.48	13.03	12 37.5	
	7	9	40 2.50	3.949	18	47 4.2	20.05	9.829 4829	119.0	7.48	13.03	12 32.0	
	8	9	38 27.40	3.974	18	55 2.0	19.76	9.829 2709	-57.6	7.48	13.03	12 26.5	
	9	9	36 51.79	3.992	19	2 52.2	19.42	9.829 2063	+ 3.8	7.48	13.04	12 21.0	
	10	9	35 15.85	-4.001	+19	10 34.0	+19.05	9.829 2889	+ 65.1	7.48	13.04	12 15.5	
	11	9	33 39.78	4.003	19	18 6.3	18.64	9.829 5185	126.2	7.48	13.03	12 9.9	
	12	9	32 3.76	3.997	19	25 28.4	18.20	9.829 8944	187.0	7.47	13.02	12 4.4	
	13	9	30 27.99	3.983	19	32 39.4	17.72	9.830 4157	247.3	7.47	13.01	11 58.9	
	14	9	28 52.64	3.961	19	39 38.6	17.21	9.831 0809	307.0	7.46	12.99	11 53.4	
	15	9	27 17.90	-3.932	+19	46 25.3	+16.67	9.831 8885	+ 365.9	7.44	12.96	11 47.9	
	16	9	25 43.94	-3.896	+19	52 58.8	+16.11	9.832 8367	+ 424.1	7.42	12.93	11 42.4	

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	Noon.				Noon.								
	h	m	s	s	"	"	"					h	m
b. 16	9	25	43.94	-3.896	+19	52	58.8	+16.11	9.832 8367	+ 424.1	7.42	12.93	11 42.4
17	9	24	10.94	3.853	19	59	18.6	15.53	9.833 9234	481.3	7.40	12.90	11 37.0
18	9	22	39.07	3.802	20	5	24.1	14.92	9.835 1462	537.5	7.38	12.86	11 31.5
19	9	21	8.50	3.745	20	11	14.8	14.30	9.836 5027	592.7	7.36	12.82	11 26.1
20	9	19	39.38	3.681	20	16	50.3	13.66	9.837 9901	646.6	7.33	12.78	11 20.7
21	9	18	11.87	-3.611	+20	22	10.2	+13.00	9.839 6056	+ 699.4	7.31	12.74	11 15.3
22	9	16	46.12	3.535	20	27	14.2	12.33	9.841 3460	750.8	7.28	12.69	11 10.0
23	9	15	22.26	3.452	20	32	2.0	11.65	9.843 2083	800.9	7.25	12.63	11 4.7
24	9	14	0.44	3.365	20	36	33.4	10.97	9.845 1891	849.5	7.22	12.57	10 59.4
25	9	12	40.78	3.272	20	40	48.3	10.27	9.847 2848	896.7	7.18	12.51	10 54.2
26	9	11	23.41	-3.174	+20	44	46.5	+ 9.57	9.849 4920	+ 942.4	7.14	12.45	10 49.0
27	9	10	8.45	3.072	20	48	27.9	8.87	9.851 8069	986.5	7.10	12.38	10 43.8
28	9	8	56.01	2.964	20	51	52.4	8.17	9.854 2258	1029.0	7.06	12.31	10 38.7
29	9	7	46.19	2.853	20	55	0.0	7.46	9.856 7450	1069.9	7.02	12.24	10 33.7
lar. 1	9	6	39.10	2.737	20	57	50.7	6.76	9.859 3601	1109.0	6.98	12.17	10 28.6
2	9	5	34.83	-2.618	+21	0	24.4	+ 6.05	9.862 0670	+1146.4	6.94	12.10	10 23.7
3	9	4	33.47	2.495	21	2	41.3	5.35	9.864 8614	1182.0	6.90	12.02	10 18.7
4	9	3	35.08	2.370	21	4	41.4	4.66	9.867 7391	1215.7	6.85	11.94	10 13.9
5	9	2	39.74	2.242	21	6	24.9	3.97	9.870 6956	1247.7	6.80	11.85	10 9.0
6	9	1	47.48	2.112	21	7	52.0	3.29	9.873 7266	1277.8	6.75	11.77	10 4.3
7	9	0	58.37	-1.980	+21	9	2.8	+ 2.62	9.876 8278	+1306.1	6.70	11.68	9 59.5
8	9	0	12.44	1.847	21	9	57.7	1.96	9.879 9947	1332.7	6.66	11.60	9 54.9
9	8	59	29.71	1.714	21	10	36.9	1.31	9.883 2233	1357.5	6.61	11.51	9 50.2
10	8	58	50.20	1.579	21	11	0.7	0.67	9.886 5095	1380.7	6.56	11.43	9 45.7
11	8	58	13.93	1.444	21	11	9.2	+ 0.04	9.889 8492	1402.1	6.51	11.34	9 41.2
12	8	57	40.90	-1.309	+21	11	2.9	- 0.57	9.893 2385	+1422.0	6.46	11.25	9 36.7
13	8	57	11.10	1.174	21	10	42.1	1.17	9.896 6735	1440.3	6.41	11.16	9 32.3
14	8	56	44.54	1.040	21	10	7.0	1.76	9.900 1506	1457.1	6.35	11.07	9 28.0
15	8	56	21.19	0.906	21	9	17.9	2.33	9.903 6663	1472.4	6.30	10.98	9 23.7
16	8	56	1.04	0.773	21	8	15.2	2.89	9.907 2170	1486.3	6.25	10.90	9 19.4
17	8	55	44.06	-0.642	+21	6	59.1	- 3.44	9.910 7995	+1498.9	6.20	10.81	9 15.2
18	8	55	30.23	0.511	21	5	30.0	3.98	9.914 4109	1510.3	6.15	10.72	9 11.1
19	8	55	19.51	0.382	21	3	48.2	4.50	9.918 0480	1520.5	6.10	10.63	9 7.0
20	8	55	11.88	0.254	21	1	54.0	5.01	9.921 7082	1529.5	6.05	10.54	9 3.0
21	8	55	7.29	0.128	20	59	47.6	5.52	9.925 3889	1537.5	6.00	10.45	8 59.0
22	8	55	5.71	-0.004	+20	57	29.3	- 6.01	9.929 0875	+1544.5	5.95	10.36	8 55.0
23	8	55	7.11	+0.120	20	54	59.4	6.49	9.932 8016	1550.5	5.90	10.27	8 51.1
24	8	55	11.44	0.241	20	52	18.1	6.96	9.936 5290	1555.5	5.85	10.19	8 47.3
25	8	55	18.66	0.361	20	49	25.6	7.42	9.940 2675	1559.7	5.80	10.10	8 43.5
26	8	55	28.74	0.479	20	46	22.1	7.87	9.944 0150	1563.0	5.75	10.02	8 39.7
27	8	55	41.62	+0.595	+20	43	7.8	- 8.32	9.947 7694	+1565.5	5.70	9.93	8 36.0
28	8	55	57.28	0.710	20	39	42.8	8.76	9.951 5290	1567.2	5.65	9.84	8 32.4
29	8	56	15.68	0.823	20	36	7.2	9.20	9.955 2916	1568.1	5.60	9.76	8 28.8
30	8	56	36.76	0.934	20	32	21.4	9.62	9.959 0555	1568.3	5.55	9.67	8 25.2
31	8	57	0.48	1.043	20	28	25.4	10.04	9.962 8187	1567.6	5.50	9.59	8 21.7
ir. 1	8	57	26.81	+1.151	+20	24	19.4	-10.45	9.966 5796	+1566.3	5.46	9.51	8 18.2
2	8	57	55.70	+1.256	+20	20	3.6	-10.86	9.970 3365	+1564.3	5.41	9.43	8 14.3

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Paral-lax.	Transit, Meridian of Green-wich.	
	h	m	s		"	'	"							h	m	s
Apr.	1	8	57	26.81	+1.151	+20	24	19.4	-10.45	9.966 5796	+1566.3	5.46	9.51	8 18.2
	2	8	57	55.70	1.256	20	20	3.6	10.86	9.970 3365	1564.3	5.41	9.43	8 14.8
	3	8	58	27.09	1.360	20	15	38.0	11.26	9.974 0876	1561.5	5.37	9.35	8 11.4
	4	8	59	0.94	1.461	20	11	2.9	11.66	9.977 8314	1558.2	5.32	9.27	8 8.0
	5	8	59	37.20	1.560	20	6	18.3	12.05	9.981 5664	1554.2	5.28	9.19	8 4.7
	6	9	0	15.81	+1.657	+20	1	24.5	-12.43	9.985 2912	+1549.7	5.23	9.11	8 1.4
	7	9	0	56.74	1.752	19	56	21.5	12.81	9.989 0046	1544.7	5.18	9.03	7 58.2
	8	9	1	39.91	1.845	19	51	9.6	13.18	9.992 7053	1539.2	5.14	8.96	7 55.0
	9	9	2	25.29	1.936	19	45	48.9	13.55	9.996 3923	1533.2	5.10	8.88	7 51.8
	10	9	3	12.82	2.024	19	40	19.4	13.91	0.000 0645	1526.8	5.05	8.80	7 48.7
	11	9	4	2.44	+2.110	+19	34	41.4	-14.26	0.003 7208	+1520.0	5.01	8.72	7 45.6
	12	9	4	54.10	2.195	19	28	54.9	14.61	0.007 3604	1512.9	4.97	8.65	7 42.5
	13	9	5	47.76	2.276	19	23	0.1	14.96	0.010 9825	1505.5	4.92	8.58	7 39.5
	14	9	6	43.35	2.356	19	16	57.0	15.30	0.014 5864	1497.7	4.88	8.51	7 36.5
	15	9	7	40.83	2.434	19	10	45.8	15.63	0.018 1714	1489.7	4.84	8.44	7 33.5
	16	9	8	40.14	+2.509	+19	4	26.7	-15.96	0.021 7370	+1481.6	4.80	8.37	7 30.6
	17	9	9	41.25	2.583	18	57	59.7	16.29	0.025 2827	1473.2	4.76	8.30	7 27.7
	18	9	10	44.10	2.654	18	51	24.9	16.61	0.028 8081	1464.6	4.72	8.23	7 24.8
	19	9	11	48.64	2.724	18	44	42.4	16.93	0.032 3128	1456.0	4.68	8.16	7 21.9
	20	9	12	54.85	2.793	18	37	52.2	17.25	0.035 7966	1447.2	4.64	8.10	7 19.1
	21	9	14	2.67	+2.859	+18	30	54.4	-17.57	0.039 2592	+1438.3	4.61	8.03	7 16.3
	22	9	15	12.06	2.924	18	23	48.9	17.88	0.042 7003	1429.3	4.57	7.97	7 13.5
	23	9	16	22.99	2.987	18	16	36.0	18.19	0.046 1197	1420.2	4.54	7.91	7 10.8
	24	9	17	35.43	3.049	18	9	15.6	18.51	0.049 5171	1411.0	4.51	7.85	7 8.1
	25	9	18	49.34	3.110	18	1	47.7	18.82	0.052 8924	1401.7	4.47	7.79	7 5.4
	26	9	20	4.69	+3.169	+17	54	12.4	-19.12	0.056 2452	+1392.3	4.44	7.73	7 2.7
	27	9	21	21.44	3.227	17	46	29.7	19.43	0.059 5752	1382.7	4.40	7.67	7 0.0
	28	9	22	39.56	3.283	17	38	39.6	19.74	0.062 8821	1373.0	4.37	7.61	6 57.4
	29	9	23	59.03	3.339	17	30	42.2	20.04	0.066 1657	1363.3	4.33	7.55	6 54.8
	30	9	25	19.81	3.392	17	22	37.5	20.35	0.069 4258	1353.4	4.30	7.50	6 52.2
May	1	9	26	41.86	+3.445	+17	14	25.5	-20.65	0.072 6619	+1343.4	4.27	7.44	6 49.7
	2	9	28	5.15	3.496	17	6	6.3	20.95	0.075 8740	1333.3	4.24	7.39	6 47.1
	3	9	29	29.66	3.546	16	57	39.9	21.25	0.079 0617	1323.1	4.21	7.34	6 44.6
	4	9	30	55.35	3.595	16	49	6.4	21.54	0.082 2250	1312.9	4.18	7.29	6 42.1
	5	9	32	22.19	3.642	16	40	25.9	21.83	0.085 3635	1302.5	4.15	7.23	6 39.6
	6	9	33	50.14	+3.688	+16	31	38.4	-22.12	0.088 4772	+1292.2	4.12	7.18	6 37.1
	7	9	35	19.19	3.732	16	22	43.9	22.42	0.091 5660	1281.8	4.09	7.13	6 34.7
	8	9	36	49.29	3.776	16	13	42.5	22.70	0.094 6297	1271.3	4.06	7.08	6 32.2
	9	9	38	20.43	3.818	16	4	34.3	22.98	0.097 6683	1260.9	4.04	7.03	6 29.8
	10	9	39	52.56	3.859	15	55	19.4	23.26	0.100 6818	1250.4	4.01	6.98	6 27.4
	11	9	41	25.66	+3.899	+15	45	57.8	-23.54	0.103 6702	+1239.9	3.98	6.93	6 25.0
	12	9	42	59.70	3.938	15	36	29.5	23.82	0.106 6334	1229.5	3.95	6.88	6 22.7
	13	9	44	34.66	3.975	15	26	54.6	24.09	0.109 5717	1219.1	3.92	6.83	6 20.3
	14	9	46	10.51	4.012	15	17	13.3	24.36	0.112 4850	1208.7	3.90	6.79	6 18.0
	15	9	47	47.22	4.047	15	7	25.5	24.62	0.115 3734	1198.3	3.87	6.75	6 15.7
	16	9	49	24.76	+4.082	+14	57	31.3	-24.89	0.118 2371	+1188.1	3.85	6.70	6 13.4
	17	9	51	3.13	+4.115	+14	47	30.7	-25.15	0.121 0763	+1177.9	3.82	6.65	6 11.1

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.
	h	m	s	s	°	'	"	"			"	"	h m
lay 17	9	51	3.13	+4.115	+14	47	30.7	-25.15	0.121 0763	+1177.9	3.82	6 65	6 11.1
18	9	52	42.28	4.148	14	37	23.9	25.41	0.123 8913	1167.9	3.79	6.61	6 8.8
19	9	54	22.21	4.180	14	27	10.8	25.67	0.126 6823	1157.9	3.77	6.57	6 6.5
20	9	56	2.89	4.210	14	16	51.5	25.93	0.129 4494	1148.0	3.75	6.53	6 4.2
21	9	57	44.31	4.241	14	6	26.0	26.19	0.132 1928	1138.2	3.73	6.49	6 2.0
22	9	59	26.46	+4.271	+13	55	54.4	-26.45	0.134 9127	+1128.5	3.70	6.45	5 59.8
23	10	1	9.32	4.300	13	45	16.6	26.70	0.137 6094	1118.7	3.68	6.41	5 57.6
24	10	2	52.87	4.329	13	34	32.8	26.96	0.140 2827	1109.1	3.66	6.37	5 55.3
25	10	4	37.11	4.357	13	23	42.7	27.21	0.142 9330	1099.5	3.63	6.33	5 53.1
26	10	6	22.01	4.385	13	12	46.6	27.46	0.145 5601	1089.8	3.61	6.29	5 50.9
27	10	8	7.57	+4.412	+13	1	44.4	-27.72	0.148 1642	+1080.3	3.59	6.25	5 48.8
28	10	9	53.78	4.438	12	50	36.2	27.97	0.150 7454	1070.7	3.57	6.22	5 46.6
29	10	11	40.61	4.464	12	39	22.0	28.21	0.153 3036	1061.1	3.55	6.18	5 44.4
30	10	13	28.06	4.490	12	28	1.9	28.46	0.155 8389	1051.6	3.53	6.15	5 42.3
31	10	15	16.11	4.515	12	16	35.9	28.70	0.158 3513	1042.1	3.51	6.11	5 40.2
une 1	10	17	4.76	+4.539	+12	5	4.1	-28.94	0.160 8408	+1032.6	3.49	6.08	5 38.0
2	10	18	53.98	4.562	11	53	26.6	29.18	0.163 3076	1023.1	3.47	6.04	5 35.9
3	10	20	43.76	4.586	11	41	43.4	29.42	0.165 7516	1013.6	3.45	6.01	5 33.8
4	10	22	34.10	4.609	11	29	54.5	29.65	0.168 1730	1004.2	3.43	5.97	5 31.7
5	10	24	24.97	4.631	11	18	0.1	29.88	0.170 5719	994.9	3.41	5.94	5 29.6
6	10	26	16.37	+4.652	+11	6	0.2	-30.11	0.172 9484	+ 985.5	3.39	5.91	5 27.5
7	10	28	8.28	4.673	10	53	54.9	30.33	0.175 3025	976.2	3.37	5.88	5 25.5
8	10	30	0.69	4.694	10	41	44.2	30.55	0.177 6344	967.0	3.35	5.84	5 23.4
9	10	31	53.58	4.714	10	29	28.3	30.77	0.179 9442	957.8	3.33	5.81	5 21.3
10	10	33	46.95	4.733	10	17	7.2	30.99	0.182 2321	948.7	3.32	5.78	5 19.3
11	10	35	40.78	+4.752	+10	4	41.0	-31.20	0.184 4983	+ 939.7	3.30	5.75	5 17.3
12	10	37	35.06	4.771	9	52	9.7	31.41	0.186 7430	930.8	3.29	5.72	5 15.2
13	10	39	29.79	4.790	9	39	33.4	31.61	0.188 9663	922.0	3.27	5.69	5 13.2
14	10	41	24.96	4.807	9	26	52.3	31.81	0.191 1686	913.3	3.25	5.66	5 11.2
15	10	43	20.55	4.825	9	14	6.3	32.02	0.193 3501	904.7	3.23	5.63	5 9.2
16	10	45	16.56	+4.842	+ 9	1	15.5	-32.21	0.195 5111	+ 896.1	3.21	5.60	5 7.2
17	10	47	12.98	4.860	8	48	20.0	32.41	0.197 6517	887.7	3.20	5.58	5 5.2
18	10	49	9.82	4.876	8	35	19.8	32.60	0.199 7723	879.4	3.19	5.55	5 3.2
19	10	51	7.05	4.893	8	22	15.0	32.80	0.201 8731	871.2	3.17	5.53	5 1.2
20	10	53	4.69	4.910	8	9	5.5	32.99	0.203 9543	863.1	3.16	5.50	4 59.2
21	10	55	2.72	+4.926	+ 7	55	51.5	-33.18	0.206 0161	+ 855.0	3.15	5.48	4 57.2
22	10	57	1.16	4.943	7	42	32.9	33.37	0.208 0585	847.0	3.13	5.45	4 55.3
23	10	58	59.99	4.960	7	29	9.8	33.55	0.210 0817	839.0	3.12	5.43	4 53.3
24	11	0	59.22	4.976	7	15	42.3	33.74	0.212 0857	831.0	3.10	5.40	4 51.4
25	11	2	58.84	4.992	7	2	10.5	33.91	0.214 0707	823.1	3.09	5.38	4 49.4
26	11	4	58.85	+5.009	+ 6	48	34.4	-34.09	0.216 0368	+ 815.3	3.07	5.35	4 47.5
27	11	6	59.25	5.025	6	34	54.1	34.27	0.217 9840	807.4	3.06	5.33	4 45.5
28	11	9	0.03	5.040	6	21	9.6	34.44	0.219 9125	799.7	3.04	5.30	4 43.6
29	11	11	1.19	5.056	6	7	20.9	34.61	0.221 8224	791.9	3.03	5.28	4 41.7
30	11	13	2.72	5.071	5	53	28.3	34.77	0.223 7135	784.1	3.02	5.26	4 39.8
ly 1	11	15	4.62	+5.087	+ 5	39	31.7	-34.94	0.225 5861	+ 776.4	3.01	5.24	4 37.9
2	11	17	6.90	+5.103	+ 5	25	31.3	-35.10	0.227 4401	+ 768.6	2.99	5.21	4 36.0

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	h	m	s	s	°	'	"	"	Noon.	Noon.	Noon.	Noon.	h m	
July	1	11	15	4.62	+5.087	+5	39	31.7	-34.94	0.225 5861	+776.4	3.01	5.24	4 37.9
	2	11	17	6.90	5.103	5	25	31.3	35.10	0.227 4401	768.6	2.99	5.21	4 36.0
	3	11	19	9.55	5.118	5	11	27.1	35.25	0.229 2756	761.0	2.98	5.19	4 34.1
	4	11	21	12.56	5.133	4	57	19.2	35.40	0.231 0927	753.3	2.97	5.17	4 32.2
	5	11	23	15.93	5.148	4	43	7.7	35.55	0.232 8916	745.8	2.96	5.15	4 30.3
	6	11	25	19.66	+5.163	+4	28	52.7	-35.70	0.234 6724	+738.2	2.94	5.13	4 28.4
	7	11	27	23.74	5.177	4	14	34.3	35.84	0.236 4352	730.8	2.93	5.11	4 26.6
	8	11	29	28.17	5.192	4	0	12.5	35.97	0.238 1803	723.4	2.92	5.09	4 24.7
	9	11	31	32.95	5.206	3	45	47.5	36.11	0.239 9076	716.0	2.91	5.07	4 22.8
	10	11	33	38.08	5.221	3	31	19.4	36.23	0.241 6173	708.8	2.90	5.05	4 21.0
	11	11	35	43.55	+5.235	+3	16	48.3	-36.36	0.243 3098	+701.6	2.89	5.03	4 19.1
	12	11	37	49.36	5.249	3	2	14.2	36.48	0.244 9852	694.5	2.88	5.01	4 17.3
	13	11	39	55.51	5.263	2	47	37.2	36.60	0.246 6437	687.6	2.86	4.99	4 15.5
	14	11	42	2.00	5.278	2	32	57.4	36.71	0.248 2856	680.7	2.85	4.97	4 13.6
	15	11	44	8.84	5.292	2	18	14.9	36.83	0.249 9110	673.9	2.84	4.95	4 11.8
	16	11	46	16.02	+5.306	+2	3	29.7	-36.94	0.251 5203	+667.2	2.83	4.93	4 10.0
	17	11	48	23.54	5.321	1	48	42.0	37.04	0.253 1135	660.6	2.82	4.91	4 8.2
	18	11	50	31.41	5.335	1	33	51.8	37.14	0.254 6909	654.0	2.81	4.89	4 6.4
	19	11	52	39.63	5.350	1	18	59.1	37.25	0.256 2527	647.5	2.80	4.88	4 4.6
	20	11	54	48.22	5.365	1	4	3.9	37.35	0.257 7989	641.0	2.79	4.86	4 2.8
	21	11	56	57.16	+5.380	+0	49	6.5	-37.44	0.259 3296	+634.6	2.78	4.85	4 1.0
	22	11	59	6.47	5.396	0	34	6.8	37.53	0.260 8451	628.2	2.77	4.83	3 59.2
	23	12	1	16.15	5.411	0	19	4.9	37.62	0.262 3452	621.9	2.76	4.82	3 57.4
	24	12	3	26.20	5.427	+0	4	0.9	37.71	0.263 8302	615.6	2.75	4.80	3 55.6
	25	12	5	36.63	5.442	-0	11	5.0	37.79	0.265 3000	609.3	2.74	4.78	3 53.9
	26	12	7	47.43	+5.458	-0	26	12.8	-37.86	0.266 7547	+603.0	2.73	4.76	3 52.1
	27	12	9	58.61	5.474	0	41	22.5	37.94	0.268 1944	596.7	2.72	4.75	3 50.4
	28	12	12	10.18	5.490	0	56	33.9	38.01	0.269 6190	590.5	2.71	4.73	3 48.6
	29	12	14	22.13	5.506	1	11	46.9	38.07	0.271 0288	584.3	2.71	4.72	3 46.9
	30	12	16	34.47	5.522	1	27	1.4	38.14	0.272 4237	578.1	2.70	4.70	3 45.1
31	12	18	47.20	+5.539	-1	42	17.4	-38.19	0.273 8038	+572.0	2.69	4.69	3 43.4	
Aug.	1	12	21	0.32	5.555	1	57	34.7	38.25	0.275 1692	565.9	2.68	4.67	3 41.7
	2	12	23	13.84	5.572	2	12	53.2	38.29	0.276 5199	559.8	2.67	4.66	3 40.0
	3	12	25	27.76	5.588	2	28	12.8	38.34	0.277 8561	553.7	2.66	4.64	3 38.3
	4	12	27	42.07	5.605	2	43	33.3	38.37	0.279 1779	547.7	2.66	4.63	3 36.6
	5	12	29	56.78	+5.621	-2	58	54.7	-38.40	0.280 4853	+541.8	2.65	4.61	3 34.9
	6	12	32	11.89	5.638	3	14	16.8	38.43	0.281 7785	535.9	2.64	4.60	3 33.2
	7	12	34	27.40	5.655	3	29	39.6	38.46	0.283 0575	530.0	2.63	4.58	3 31.5
	8	12	36	43.31	5.671	3	45	2.8	38.48	0.284 3226	524.2	2.62	4.57	3 29.8
	9	12	38	59.63	5.689	4	0	26.5	38.49	0.285 5738	518.5	2.62	4.56	3 28.2
	10	12	41	16.36	+5.706	-4	15	50.5	-38.50	0.286 8115	+512.9	2.61	4.55	3 26.5
	11	12	43	33.51	5.723	4	31	14.6	38.51	0.288 0357	507.3	2.60	4.53	3 24.8
	12	12	45	51.07	5.741	4	46	38.8	38.51	0.289 2466	501.8	2.59	4.52	3 23.2
	13	12	48	9.06	5.758	5	2	3.0	38.51	0.290 4445	496.4	2.59	4.51	3 21.6
	14	12	50	27.47	5.776	5	17	27.1	38.50	0.291 6296	491.2	2.58	4.49	3 19.9
	15	12	52	46.32	+5.795	-5	32	50.9	-38.49	0.292 8021	+485.9	2.57	4.48	3 18.3
	16	12	55	5.61	+5.813	-5	48	14.5	-38.47	0.293 9620	+480.7	2.57	4.47	3 16.7

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	h	m	s	''	°	'	''	''	Noon.	Noon.	Noon.	Noon.	h m
Aug. 16	12	55	5.61	+5.813	- 5	48	14.5	-38.47	0.293 9620	+480.7	2.57	4.47	3 16.7
17	12	57	25.34	5.831	6	3	37.6	38.45	0.295 1095	475.5	2.56	4.46	3 15.1
18	12	59	45.52	5.851	6	19	0.3	38.43	0.296 2446	470.4	2.55	4.45	3 13.5
19	13	2	6.17	5.870	6	34	22.3	38.40	0.297 3676	465.4	2.55	4.44	3 11.9
20	13	4	27.28	5.890	6	49	43.7	38.37	0.298 4784	460.3	2.54	4.43	3 10.3
21	13	6	48.88	+5.910	- 7	5	4.2	-38.34	0.299 5771	+455.3	2.54	4.42	3 8.7
22	13	9	10.95	5.930	7	20	23.8	38.29	0.300 6637	450.2	2.53	4.41	3 7.1
23	13	11	33.51	5.950	7	35	42.3	38.25	0.301 7382	445.2	2.52	4.39	3 5.6
24	13	13	56.57	5.971	7	50	59.6	38.19	0.302 8007	440.2	2.51	4.38	3 4.0
25	13	16	20.12	5.992	8	6	15.6	38.14	0.303 8513	435.2	2.51	4.37	3 2.5
26	13	18	44.18	+6.013	- 8	21	30.2	-38.07	0.304 8899	+430.3	2.50	4.36	3 0.9
27	13	21	8.74	6.034	8	36	43.2	38.01	0.305 9167	425.4	2.50	4.35	2 59.4
28	13	23	33.82	6.056	8	51	54.5	37.93	0.306 9317	420.4	2.49	4.34	2 57.9
29	13	25	59.41	6.077	9	7	4.0	37.85	0.307 9348	415.5	2.49	4.33	2 56.4
30	13	28	25.53	6.099	9	22	11.5	37.77	0.308 9263	410.7	2.48	4.32	2 54.9
31	13	30	52.17	+6.121	- 9	37	16.9	-37.68	0.309 9061	+405.8	2.47	4.31	2 53.4
Sept. 1	13	33	19.35	6.143	9	52	20.0	37.58	0.310 8742	401.0	2.47	4.30	2 51.9
2	13	35	47.05	6.165	10	7	20.7	37.47	0.311 8309	396.2	2.46	4.29	2 50.4
3	13	38	15.29	6.188	10	22	18.8	37.36	0.312 7761	391.5	2.46	4.28	2 48.9
4	13	40	44.07	6.210	10	37	14.2	37.25	0.313 7099	386.8	2.45	4.28	2 47.5
5	13	43	13.38	+6.233	-10	52	6.8	-37.13	0.314 6326	+382.1	2.45	4.27	2 46.0
6	13	45	43.25	6.256	11	6	56.4	37.00	0.315 5441	377.5	2.44	4.26	2 44.6
7	13	48	13.66	6.279	11	21	42.9	36.87	0.316 4448	373.0	2.44	4.25	2 43.1
8	13	50	44.63	6.302	11	36	26.1	36.73	0.317 3347	368.6	2.43	4.24	2 41.7
9	13	53	16.15	6.325	11	51	5.8	36.58	0.318 2140	364.2	2.43	4.23	2 40.3
10	13	55	48.24	+6.349	-12	5	42.0	-36.43	0.319 0829	+359.9	2.42	4.22	2 38.9
11	13	58	20.90	6.373	12	20	14.4	36.27	0.319 9415	355.6	2.42	4.21	2 37.5
12	14	0	54.14	6.397	12	34	43.1	36.11	0.320 7899	351.4	2.41	4.20	2 36.1
13	14	3	27.95	6.421	12	49	7.7	35.94	0.321 6284	347.3	2.41	4.20	2 34.7
14	14	6	2.36	6.446	13	3	28.3	35.77	0.322 4569	343.2	2.40	4.19	2 33.4
15	14	8	37.36	+6.471	-13	17	44.6	-35.59	0.323 2757	+339.2	2.40	4.18	2 32.0
16	14	11	12.97	6.496	13	31	56.5	35.40	0.324 0849	335.1	2.39	4.17	2 30.7
17	14	13	49.18	6.522	13	46	3.9	35.21	0.324 8844	331.1	2.39	4.16	2 29.3
18	14	16	26.02	6.548	14	0	6.6	35.01	0.325 6744	327.2	2.38	4.16	2 28.0
19	14	19	3.48	6.574	14	14	4.4	34.80	0.326 4549	323.2	2.38	4.15	2 26.7
20	14	21	41.57	+6.600	-14	27	57.2	-34.59	0.327 2258	+319.2	2.38	4.14	2 25.4
21	14	24	20.29	6.627	14	41	44.9	34.38	0.327 9873	315.3	2.37	4.13	2 24.1
22	14	26	59.65	6.653	14	55	27.3	34.15	0.328 7393	311.4	2.37	4.12	2 22.8
23	14	29	39.65	6.680	15	9	4.3	33.92	0.329 4819	307.5	2.36	4.12	2 21.5
24	14	32	20.30	6.707	15	22	35.6	33.68	0.330 2152	303.6	2.36	4.11	2 20.3
25	14	35	1.60	+6.735	-15	36	1.1	-33.44	0.330 9391	+299.7	2.35	4.10	2 19.0
26	14	37	43.56	6.762	15	49	20.6	33.18	0.331 6537	295.8	2.35	4.10	2 17.8
27	14	40	26.17	6.789	16	2	33.9	32.92	0.332 3590	292.0	2.35	4.09	2 16.6
28	14	43	9.44	6.817	16	15	40.9	32.66	0.333 0551	288.1	2.34	4.08	2 15.3
29	14	45	53.37	6.844	16	28	41.4	32.38	0.333 7420	284.3	2.34	4.08	2 14.1
30	14	48	37.97	+6.872	-16	41	35.2	-32.10	0.334 4197	+280.5	2.34	4.07	2 12.9
Oct. 1	14	51	23.23	+6.900	-16	54	22.1	-31.81	0.335 0884	+276.7	2.34	4.07	2 11.7

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit Meridian of Greenwich.	
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	
	h	m	s	s	°	'	"	"			"	"	h	m
Oct. 1	14	51	23.23	+6.900	-16	54	22.1	-31.81	0.335 0884	+276.7	2.34	4.07	2	11.7
2	14	54	9.15	6.927	17	7	2.0	31.51	0.335 7481	273.0	2.33	4.06	2	10.6
3	14	56	55.74	6.955	17	19	34.6	31.21	0.336 3989	269.3	2.32	4.05	2	9.4
4	14	59	42.99	6.982	17	31	59.9	30.90	0.337 0409	265.7	2.32	4.04	2	8.3
5	15	2	30.90	7.010	17	44	17.5	30.57	0.337 6744	262.2	2.32	4.04	2	7.1
6	15	5	19.48	+7.038	-17	56	27.4	-30.25	0.338 2994	+258.7	2.31	4.03	2	6.0
7	15	8	8.73	7.066	18	8	29.3	29.91	0.338 9160	255.2	2.31	4.03	2	4.9
8	15	10	58.64	7.094	18	20	23.1	29.57	0.339 5244	251.8	2.31	4.02	2	3.7
9	15	13	49.22	7.121	18	32	8.6	29.22	0.340 1248	248.5	2.31	4.02	2	2.6
10	15	16	40.47	7.149	18	43	45.8	28.87	0.340 7173	245.2	2.30	4.01	2	1.6
11	15	19	32.39	+7.177	-18	55	14.4	-28.51	0.341 3019	+242.0	2.30	4.01	2	0.5
12	15	22	24.99	7.206	19	6	34.1	28.14	0.341 8789	238.8	2.30	4.00	1	59.4
13	15	25	18.27	7.234	19	17	44.9	27.76	0.342 4482	235.7	2.30	4.00	1	58.4
14	15	28	12.23	7.262	19	28	46.6	27.38	0.343 0101	232.6	2.29	3.99	1	57.3
15	15	31	6.87	7.291	19	39	38.9	26.98	0.343 5645	229.5	2.29	3.99	1	56.3
16	15	34	2.20	+7.320	-19	50	21.7	-26.59	0.344 1117	+226.5	2.28	3.98	1	55.3
17	15	36	58.20	7.348	20	0	54.9	26.18	0.344 6515	223.4	2.28	3.98	1	54.3
18	15	39	54.89	7.376	20	11	18.3	25.77	0.345 1841	220.4	2.28	3.97	1	53.3
19	15	42	52.26	7.405	20	21	31.7	25.35	0.345 7096	217.4	2.28	3.97	1	52.3
20	15	45	50.31	7.433	20	31	34.9	24.92	0.346 2278	214.4	2.27	3.96	1	51.3
21	15	48	49.04	+7.461	-20	41	27.7	-24.48	0.346 7388	+211.4	2.27	3.96	1	50.4
22	15	51	48.45	7.490	20	51	9.9	24.04	0.347 2425	208.4	2.27	3.95	1	49.4
23	15	54	48.54	7.517	21	0	41.4	23.59	0.347 7391	205.5	2.26	3.94	1	48.5
24	15	57	49.29	7.545	21	10	2.0	23.13	0.348 2285	202.5	2.26	3.94	1	47.5
25	16	0	57.71	7.573	21	19	11.5	22.66	0.348 7109	199.5	2.26	3.93	1	46.6
26	16	3	52.79	+7.600	-21	28	9.8	-22.19	0.349 1863	+196.6	2.26	3.93	1	45.7
27	16	6	55.53	7.628	21	36	56.5	21.71	0.349 6546	193.7	2.26	3.93	1	44.8
28	16	9	58.92	7.655	21	45	31.7	21.22	0.350 1160	190.8	2.25	3.92	1	43.9
29	16	13	2.95	7.681	21	53	55.0	20.72	0.350 5705	187.9	2.25	3.92	1	43.1
30	16	16	7.61	7.707	22	2	6.3	20.22	0.351 0181	185.1	2.25	3.91	1	42.2
31	16	19	12.90	+7.733	-22	10	5.5	-19.71	0.351 4588	+182.2	2.25	3.91	1	41.3
Nov. 1	16	22	18.81	7.759	22	17	52.3	19.19	0.351 8928	179.5	2.25	3.91	1	40.5
2	16	25	25.32	7.784	22	25	26.5	18.66	0.352 3202	176.7	2.24	3.91	1	39.7
3	16	28	32.43	7.809	22	32	48.1	18.13	0.352 7411	174.1	2.24	3.90	1	38.8
4	16	31	40.14	7.833	22	39	56.9	17.60	0.353 1557	171.5	2.24	3.90	1	38.0
5	16	34	48.42	+7.857	-22	46	52.8	-17.05	0.353 5641	+168.9	2.24	3.89	1	37.2
6	16	37	57.28	7.881	22	53	35.5	16.50	0.353 9664	166.4	2.24	3.89	1	36.4
7	16	41	6.70	7.904	23	0	4.9	15.95	0.354 3629	164.0	2.23	3.89	1	35.7
8	16	44	16.69	7.927	23	6	20.9	15.38	0.354 7535	161.6	2.23	3.88	1	34.9
9	16	47	27.22	7.950	23	12	23.3	14.81	0.355 1385	159.2	2.23	3.88	1	34.1
10	16	50	38.30	+7.973	-23	18	11.9	-14.24	0.355 5179	+156.9	2.23	3.87	1	33.3
11	16	53	49.91	7.995	23	23	46.7	13.66	0.355 8918	154.7	2.22	3.87	1	32.6
12	16	57	2.05	8.017	23	29	7.4	13.07	0.356 2603	152.4	2.22	3.87	1	31.9
13	17	0	14.71	8.038	23	34	13.9	12.47	0.356 6234	150.1	2.22	3.87	1	31.1
14	17	3	27.87	8.059	23	39	6.1	11.87	0.356 9812	148.0	2.22	3.86	1	30.4
15	17	6	41.53	+8.079	-23	43	43.9	-11.27	0.357 3338	+145.8	2.22	3.86	1	29.7
16	17	9	55.67	+8.099	-23	48	7.2	-10.66	0.357 6812	+143.7	2.22	3.86	1	29.0

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.
	h	m	s	s	°	'	''	''			''	''	h m
Sov. 16	17	9	55.67	+8.099	-23	48	7.2	-10.66	0.357 6812	+143.7	2.22	3.86	1 29.0
17	17	13	10.28	8.119	23	52	15.8	10.05	0.358 0235	141.5	2.22	3.86	1 28.3
18	17	16	25.36	8.138	23	56	9.5	9.43	0.358 3606	139.4	2.21	3.85	1 27.6
19	17	19	40.89	8.156	23	59	48.3	8.80	0.358 6927	137.3	2.21	3.85	1 26.9
20	17	22	56.86	8.174	24	3	12.0	8.17	0.359 0196	135.2	2.21	3.84	1 26.2
21	17	26	13.24	+8.191	-24	6	20.5	-7.54	0.359 3415	+133.0	2.21	3.84	1 25.6
22	17	29	30.04	8.208	24	9	13.7	6.90	0.359 6582	130.9	2.20	3.84	1 24.9
23	17	32	47.24	8.225	24	11	51.5	6.25	0.359 9698	128.8	2.20	3.84	1 24.3
24	17	36	4.82	8.240	24	14	13.8	5.60	0.360 2763	126.6	2.20	3.83	1 23.6
25	17	39	22.76	8.255	24	16	20.4	4.95	0.360 5777	124.6	2.20	3.83	1 22.9
26	17	42	41.04	+8.269	-24	18	11.4	-4.30	0.360 8742	+122.5	2.20	3.83	1 22.3
27	17	45	59.65	8.282	24	19	46.6	3.64	0.361 1657	120.4	2.20	3.83	1 21.7
28	17	49	18.57	8.294	24	21	6.0	2.98	0.361 4522	118.4	2.20	3.83	1 21.1
29	17	52	37.78	8.306	24	22	9.5	2.31	0.361 7340	116.4	2.19	3.82	1 20.5
30	17	55	57.27	8.317	24	22	56.9	1.64	0.362 0111	114.5	2.19	3.82	1 19.8
Dec. 1	17	59	17.01	+8.327	-24	23	28.3	-0.97	0.362 2835	+112.6	2.19	3.82	1 19.2
2	18	2	36.99	8.337	24	23	43.5	-0.30	0.362 5515	110.7	2.19	3.82	1 18.6
3	18	5	57.19	8.346	24	23	42.6	+0.38	0.362 8151	108.9	2.19	3.82	1 18.0
4	18	9	17.59	8.354	24	23	25.4	1.05	0.363 0744	107.2	2.19	3.82	1 17.4
5	18	12	38.18	8.361	24	22	52.0	1.73	0.363 3297	105.5	2.19	3.81	1 16.8
6	18	15	58.94	+8.368	-24	22	2.3	+2.41	0.363 5810	+103.9	2.19	3.81	1 16.2
7	18	19	19.85	8.374	24	20	56.3	3.09	0.363 8284	102.3	2.19	3.81	1 15.6
8	18	22	40.91	8.380	24	19	33.9	3.77	0.364 0720	100.7	2.18	3.81	1 15.0
9	18	26	2.09	8.385	24	17	55.1	4.46	0.364 3119	99.2	2.18	3.80	1 14.4
10	18	29	23.38	8.389	24	15	59.9	5.14	0.364 5482	97.7	2.18	3.80	1 13.8
11	18	32	44.76	+8.392	-24	13	48.3	+5.83	0.364 7809	+96.2	2.18	3.80	1 13.3
12	18	36	6.22	8.396	24	11	20.2	6.51	0.365 0101	94.8	2.18	3.80	1 12.7
13	18	39	27.75	8.398	24	8	35.7	7.20	0.365 2359	93.4	2.18	3.80	1 12.1
14	18	42	49.32	8.400	24	5	34.8	7.88	0.365 4582	91.9	2.17	3.79	1 11.5
15	18	46	10.93	8.401	24	2	17.4	8.57	0.365 6771	90.5	2.17	3.79	1 10.9
16	18	49	32.56	+8.401	-23	58	43.6	+9.25	0.365 8927	+89.1	2.17	3.79	1 10.3
17	18	52	54.19	8.401	23	54	53.4	9.94	0.366 1050	87.7	2.17	3.79	1 9.8
18	18	56	15.80	8.400	23	50	46.7	10.62	0.366 3139	86.4	2.17	3.79	1 9.2
19	18	59	37.38	8.398	23	46	23.7	11.30	0.366 5196	85.0	2.17	3.78	1 8.6
20	19	2	58.92	8.396	23	41	44.3	11.98	0.366 7220	83.6	2.17	3.78	1 8.0
21	19	6	20.40	+8.393	-23	36	48.7	+12.66	0.366 9211	+82.3	2.17	3.78	1 7.4
22	19	9	41.80	8.390	23	31	36.8	13.33	0.367 1170	80.9	2.17	3.78	1 6.8
23	19	13	3.10	8.385	23	26	8.7	14.00	0.367 3095	79.5	2.17	3.78	1 6.2
24	19	16	24.29	8.380	23	20	24.6	14.67	0.367 4987	78.1	2.17	3.77	1 5.7
25	19	19	45.36	8.375	23	14	24.3	15.34	0.367 6846	76.7	2.17	3.77	1 5.1
26	19	23	6.28	+8.368	-23	8	8.1	+16.01	0.367 8671	+75.4	2.17	3.77	1 4.5
27	19	26	27.03	8.361	23	1	36.0	16.67	0.368 0465	74.1	2.16	3.77	1 3.9
28	19	29	47.60	8.353	22	54	48.1	17.32	0.368 2228	72.8	2.16	3.77	1 3.3
29	19	33	7.98	8.345	22	47	44.5	17.98	0.368 3961	71.6	2.16	3.77	1 2.7
30	19	36	28.14	8.335	22	40	25.2	18.62	0.368 5664	70.4	2.16	3.77	1 2.1
31	19	39	48.08	+8.326	-22	32	50.5	+19.27	0.368 7339	+69.2	2.16	3.77	1 1.5
32	19	43	7.78	....	-22	25	0.4	....	0.368 8986	....	2.16	3.76	1 0.8

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.
	°	'	"	'	"	°	'	"	"		
Jan.	1	122	26	13.2	27	1.9	+29.2	+1 46 28.0	+14.8	0.214 8775	+1834
	3	123	20	14.3	26	59.2	27.8	1 46 56.8	14.0	0.215 2394	1786
	5	124	14	10.1	26	56.6	26.4	1 47 24.0	13.2	0.215 5917	1738
	7	125	8	0.8	26	54.1	24.9	1 47 49.6	12.4	0.215 9344	1689
	9	126	1	46.5	26	51.6	23.4	1 48 13.6	11.6	0.216 2675	1641
	11	126	55	27.4	26	49.2	+21.8	+1 48 36.0	+10.8	0.216 5908	+1592
	13	127	49	3.5	26	46.9	20.3	1 48 56.8	10.0	0.216 9044	1543
	15	128	42	35.0	26	44.7	18.7	1 49 16.0	9.2	0.217 2081	1494
	17	129	36	2.2	26	42.5	17.2	1 49 33.5	8.4	0.217 5020	1445
	19	130	29	25.2	26	40.4	15.6	1 49 49.4	7.6	0.217 7860	1395
	21	131	22	44.0	26	38.4	+14.0	+1 50 3.7	+ 6.8	0.218 0602	+1346
	23	132	15	58.9	26	36.5	12.4	1 50 16.4	6.0	0.218 3243	1296
25	133	9	10.0	26	34.7	10.7	1 50 27.6	5.2	0.218 5785	1246	
27	134	2	17.5	26	32.9	9.1	1 50 37.2	4.4	0.218 8227	1196	
29	134	55	21.5	26	31.2	7.4	1 50 45.1	3.6	0.219 0569	1146	
31	135	48	22.1	26	29.5	+ 5.8	+1 50 51.4	+ 2.8	0.219 2810	+1095	
Feb.	2	136	41	19.5	26	28.0	4.2	1 50 56.2	2.0	0.219 4950	1045
	4	137	34	13.9	26	26.5	2.5	1 50 59.4	1.2	0.219 6989	994
	6	138	27	5.4	26	25.0	+ 0.9	1 51 1.0	+ 0.4	0.219 8926	943
	8	139	19	54.1	26	23.7	- 0.8	1 51 1.0	- 0.4	0.220 0761	892
	10	140	12	40.3	26	22.5	- 2.4	+1 50 59.4	- 1.2	0.220 2495	+ 841
	12	141	5	24.0	26	21.3	4.1	1 50 56.3	2.0	0.220 4126	790
	14	141	58	5.4	26	20.2	5.7	1 50 51.6	2.7	0.220 5655	739
	16	142	50	44.6	26	19.1	7.4	1 50 45.4	3.5	0.220 7081	688
	18	143	43	21.8	26	18.1	9.0	1 50 37.6	4.3	0.220 8405	636
	20	144	35	57.1	26	17.2	-10.6	+1 50 28.3	- 5.0	0.220 9626	+ 584
	22	145	28	30.7	26	16.4	12.2	1 50 17.5	5.8	0.221 0743	533
	24	146	21	2.8	26	15.7	13.8	1 50 5.0	6.6	0.221 1758	482
26	147	13	33.5	26	15.0	15.4	1 49 51.1	7.4	0.221 2670	430	
28	148	6	2.9	26	14.4	17.0	1 49 35.6	8.1	0.221 3478	378	
Mar.	1	148	58	31.2	26	13.9	-18.5	+1 49 18.7	- 8.9	0.221 4183	+ 327
	3	149	50	58.6	26	13.5	20.0	1 49 0.2	9.7	0.221 4785	275
	5	150	43	25.1	26	13.1	21.6	1 48 40.1	10.4	0.221 5282	223
	7	151	35	51.0	26	12.8	23.0	1 48 18.6	11.2	0.221 5677	171
	9	152	28	16.3	26	12.6	24.5	1 47 55.5	11.9	0.221 5967	119
	11	153	20	41.3	26	12.4	-26.0	+1 47 30.9	-12.7	0.221 6154	68
	13	154	13	6.1	26	12.4	27.4	1 47 4.9	13.4	0.221 6238	+ 16
	15	155	5	30.8	26	12.4	28.8	1 46 37.4	14.1	0.221 6217	- 36
	17	155	57	55.6	26	12.4	30.2	1 46 8.4	14.9	0.221 6093	88
	19	156	50	20.6	26	12.6	31.5	1 45 37.9	15.6	0.221 5865	140
	21	157	42	46.0	26	12.8	-32.8	+1 45 5.9	-16.4	0.221 5533	- 192
	23	158	35	11.9	26	13.1	34.1	1 44 32.4	17.1	0.221 5098	243
25	159	27	38.5	26	13.5	35.4	1 43 57.5	17.8	0.221 4560	295	
27	160	20	5.9	26	14.0	36.6	1 43 21.2	18.5	0.221 3918	347	
29	161	12	34.3	26	14.5	37.8	1 42 43.4	19.3	0.221 3172	399	
31	162	5	3.9	26	15.1	-38.9	+1 42 4.1	-20.0	0.221 2323	- 450	
Apr.	2	162	57	34.7	26	15.7	-40.0	+1 41 23.4	-20.7	0.221 1371	- 502

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.			
	°	'	''			°	'	''						
Apr.	2	162	57	34.7	26	15.7	-40.0	+1	41	23.4	-20.7	0.221 1371	- 502	
	4	163	50	6.9	26	16.5	41.1	1	40	41.2	21.4	0.221 0316	553	
	6	164	42	40.6	26	17.3	42.2	1	39	57.6	22.2	0.220 9158	605	
	8	165	35	16.1	26	18.2	43.2	1	39	12.6	22.9	0.220 7897	656	
	10	166	27	53.5	26	19.2	44.1	1	38	26.1	23.6	0.220 6533	708	
	12	167	20	32.9	26	20.2	-45.0	+1	37	38.3	-24.3	0.220 5067	- 759	
	14	168	13	14.5	26	21.3	45.9	1	36	49.0	25.0	0.220 3498	810	
	16	169	5	58.3	26	22.5	46.8	1	35	58.3	25.7	0.220 1827	861	
	18	169	58	44.7	26	23.8	47.6	1	35	6.2	26.4	0.220 0053	912	
	20	170	51	33.6	26	25.1	48.3	1	34	12.8	27.1	0.219 8178	963	
	22	171	44	25.3	26	26.6	-49.0	+1	33	18.0	-27.8	0.219 6202	-1013	
	May	24	172	37	19.9	26	28.1	49.7	1	32	21.8	28.5	0.219 4124	1064
26		173	30	17.6	26	29.7	50.3	1	31	24.2	29.1	0.219 1945	1114	
28		174	23	18.6	26	31.3	50.8	1	30	25.2	29.8	0.218 9666	1165	
30		175	16	22.8	26	33.0	51.4	1	29	25.0	30.5	0.218 7286	1215	
2		176	9	30.7	26	34.8	-51.8	+1	28	23.3	-31.2	0.218 4805	-1265	
4		177	2	42.1	26	36.7	52.3	1	27	20.3	31.8	0.218 2225	1315	
6		177	55	57.4	26	38.6	52.6	1	26	15.9	32.5	0.217 9545	1365	
8		178	49	16.6	26	40.6	53.0	1	25	10.3	33.1	0.217 6765	1414	
10		179	42	40.0	26	42.8	53.2	1	24	3.3	33.8	0.217 3887	1464	
12		180	36	7.7	26	44.9	-53.4	+1	22	55.1	-34.5	0.217 0911	-1513	
14		181	29	39.7	26	47.2	53.6	1	21	45.4	35.1	0.216 7836	1562	
June		16	182	23	16.4	26	49.5	53.7	1	20	34.6	35.8	0.216 4664	1611
	18	183	16	57.7	26	51.9	53.8	1	19	22.4	36.4	0.216 1394	1659	
	20	184	10	44.0	26	54.4	53.8	1	18	9.0	37.0	0.215 8028	1707	
	22	185	4	35.3	26	56.9	-53.7	+1	16	54.3	-37.6	0.215 4565	-1756	
	24	185	58	31.7	26	59.5	53.6	1	15	38.4	38.2	0.215 1006	1804	
	26	186	52	33.5	27	2.2	53.5	1	14	21.3	38.9	0.214 7351	1851	
	28	187	46	40.7	27	5.0	53.3	1	13	2.8	39.5	0.214 3601	1898	
	30	188	40	53.5	27	7.9	53.0	1	11	43.2	40.1	0.213 9757	1945	
	1	189	35	12.2	27	10.8	-52.7	+1	10	22.3	-40.7	0.213 5820	-1992	
	3	190	29	36.7	27	13.8	52.4	1	9	0.2	41.3	0.213 1788	2039	
	July	5	191	24	7.4	27	16.9	52.0	1	7	37.0	41.9	0.212 7665	2085
		7	192	18	44.3	27	20.0	51.6	1	6	12.5	42.5	0.212 3449	2131
9		193	13	27.6	27	23.3	51.1	1	4	46.9	43.1	0.211 9141	2177	
11		194	8	17.4	27	26.6	-50.5	+1	3	20.1	-43.7	0.211 4743	-2222	
13		195	3	13.9	27	30.0	49.8	1	1	52.2	44.2	0.211 0255	2266	
15		195	58	17.2	27	33.4	49.1	1	0	23.1	44.8	0.210 5678	2311	
17		196	53	27.5	27	37.0	48.4	0	58	52.9	45.4	0.210 1011	2355	
19		197	48	45.0	27	40.6	47.6	0	57	21.7	45.9	0.209 6257	2399	
21		198	44	9.8	27	44.2	-46.8	+0	55	49.3	-46.5	0.209 1416	-2442	
23		199	39	42.0	27	48.0	45.9	0	54	15.9	47.0	0.208 6488	2485	
25		200	35	21.8	27	51.8	44.9	0	52	41.3	47.5	0.208 1474	2528	
27		201	31	9.3	27	55.7	43.9	0	51	5.7	48.1	0.207 6376	2570	
29	202	27	4.7	27	59.7	42.9	0	49	29.1	48.6	0.207 1193	2612		
Aug.	1	203	23	8.1	28	3.8	-41.8	+0	47	51.5	-49.1	0.206 5928	-2653	
	3	204	19	19.7	28	7.9	-40.7	+0	46	12.8	-49.6	0.206 0581	-2694	

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.
	°	'	"	'	"	°	'	"	"		
July	1	203	23	8.1	28 3.8	-41.8	+0	47 51.5	-49.1	0.206 5928	-2653
	3	204	19	19.7	28 7.9	40.7	0	46 12.8	49.6	0.206 0581	2694
	5	205	15	39.6	28 12.1	39.5	0	44 33.2	50.0	0.205 5152	2734
	7	206	12	8.1	28 16.4	38.3	0	42 52.6	50.5	0.204 9643	2774
	9	207	8	45.1	28 20.7	37.0	0	41 11.1	51.0	0.204 4055	2813
	11	208	5	30.9	28 25.1	-35.7	+0	39 28.6	-51.5	0.203 8390	-2852
	13	209	2	25.6	28 29.6	34.4	0	37 45.2	51.9	0.203 2647	2890
	15	209	59	29.4	28 34.2	33.0	0	36 0.9	52.4	0.202 6828	2928
	17	210	56	42.4	28 38.8	31.6	0	34 15.7	52.8	0.202 0935	2965
	19	211	54	4.7	28 43.5	30.1	0	32 29.7	53.2	0.201 4968	3002
	21	212	51	36.5	28 48.3	-28.6	+0	30 42.8	-53.6	0.200 8928	-3038
	23	213	49	18.0	28 53.2	27.0	0	28 55.1	54.0	0.200 2818	3073
	25	214	47	9.3	28 58.1	25.5	0	27 6.6	54.4	0.199 6637	3108
	27	215	45	10.4	29 3.1	23.9	0	25 17.3	54.8	0.199 0387	3142
29	216	43	21.7	29 8.2	22.2	0	23 27.3	55.2	0.198 4070	3175	
31	217	41	43.1	29 13.3	-20.5	+0	21 36.6	-55.6	0.197 7688	-3206	
Aug.	2	218	40	14.9	29 18.5	18.8	0	19 45.1	55.9	0.197 1240	3240
	4	219	38	57.2	29 23.8	17.1	0	17 52.9	56.2	0.196 4730	3271
	6	220	37	50.0	29 29.1	15.3	0	16 0.1	56.5	0.195 8158	3301
	8	221	36	53.5	29 34.5	13.6	0	14 6.7	56.8	0.195 1527	3330
	10	222	36	8.0	29 40.0	-11.8	+0	12 12.7	-57.1	0.194 4836	-3360
	12	223	35	33.4	29 45.5	9.9	0	10 18.1	57.4	0.193 8089	3388
	14	224	35	10.0	29 51.1	8.1	0	8 22.9	57.7	0.193 1286	3415
	16	225	34	57.9	29 56.7	6.2	0	6 27.3	57.9	0.192 4429	3442
	18	226	34	57.0	30 2.5	4.4	0	4 31.2	58.2	0.191 7520	3467
	20	227	35	7.8	30 8.3	- 2.5	+0	2 34.6	-58.4	0.191 0561	-3492
	22	228	35	30.1	30 14.1	- 0.6	+0	0 37.6	58.6	0.190 3554	3515
	24	229	36	4.1	30 20.0	+ 1.3	-0	1 19.8	58.8	0.189 6500	3538
	26	230	36	50.1	30 26.0	3.2	0	3 17.6	59.0	0.188 9401	3560
	28	231	37	48.0	30 32.0	5.1	0	5 15.7	59.1	0.188 2260	3581
30	232	36	57.9	30 38.0	+ 7.0	-0	7 14.0	-59.2	0.187 5078	-3601	
Sept.	1	233	40	20.1	30 44.2	8.9	0	9 12.7	59.4	0.186 7857	3620
	3	234	41	54.6	30 50.4	10.8	0	11 11.5	59.5	0.186 0599	3638
	5	235	43	41.5	30 56.6	12.7	0	13 10.5	59.6	0.185 3306	3655
	7	236	45	40.9	31 2.8	14.5	0	15 9.7	59.6	0.184 5981	3670
	9	237	47	52.9	31 9.2	+16.4	-0	17 9.0	-59.6	0.183 8625	-3685
	11	238	50	17.6	31 15.6	18.3	0	19 8.3	59.6	0.183 1242	3698
	13	239	52	55.1	31 22.0	20.1	0	21 7.6	59.7	0.182 3832	3711
	15	240	55	45.5	31 28.4	21.9	0	23 7.0	59.7	0.181 6398	3722
	17	241	58	48.9	31 35.0	23.7	0	25 6.3	59.6	0.180 8943	3732
	19	243	2	5.4	31 41.5	+25.4	-0	27 5.4	-59.6	0.180 1470	-3741
	21	244	5	35.0	31 48.1	27.2	0	29 4.5	59.5	0.179 3980	3748
	23	245	9	17.8	31 54.7	28.9	0	31 3.4	59.4	0.178 6476	3755
	25	246	13	13.8	32 1.4	30.6	0	33 2.0	59.2	0.177 8961	3760
	27	247	17	23.2	32 8.1	32.2	0	35 0.4	59.1	0.177 1437	3764
29	248	21	46.1	32 14.8	+33.8	-0	36 58.5	-58.9	0.176 3907	-3766	
Oct.	1	249	26	22.3	32 21.5	+35.3	-0	38 56.1	-58.7	0.175 6373	-3767

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.
	°	'	"	'	"	°	'	"	"		
Oct.	1	249	26	22.3	32	21.5	+35.3	-0 38 56.1	-58.7	0.175 6373	-3767
	3	250	31	12.1	32	28.3	36.8	0 40 53.4	58.5	0.174 8839	3766
	5	251	36	15.5	32	35.1	38.3	0 42 50.1	58.2	0.174 1307	3765
	7	252	41	32.5	32	41.9	39.7	0 44 46.4	58.0	0.173 3780	3762
	9	253	47	3.1	32	48.7	41.0	0 46 42.0	57.7	0.172 6260	3758
	11	254	52	47.4	32	55.6	+42.3	-0 48 37.1	-57.4	0.171 8750	-3752
	13	255	58	45.4	33	2.4	43.6	0 50 31.5	57.0	0.171 1254	3744
	15	257	4	57.2	33	9.3	44.8	0 52 25.1	56.6	0.170 3775	3735
	17	258	11	22.7	33	16.2	45.9	0 54 18.0	56.2	0.169 6314	3725
	19	259	18	2.0	33	23.1	46.9	0 56 10.1	55.8	0.168 8876	3713
	21	260	24	55.1	33	30.0	+47.9	-0 58 1.3	-55.3	0.168 1463	-3699
Nov.	23	261	32	1.9	33	36.8	48.8	0 59 51.5	54.8	0.167 4079	3684
	25	262	39	22.5	33	43.7	49.7	1 1 40.7	54.3	0.166 6726	3668
	27	263	46	56.8	33	50.6	50.4	1 3 28.8	53.8	0.165 9409	3649
	29	264	54	44.7	33	57.4	51.2	1 5 15.9	53.2	0.165 2129	3629
	31	266	2	46.5	34	4.3	+51.8	-1 7 1.8	-52.6	0.164 4891	-3608
	2	267	11	1.8	34	11.1	52.3	1 8 46.4	52.0	0.163 7697	3585
	4	268	19	30.9	34	17.9	52.8	1 10 29.8	51.4	0.163 0550	3560
	6	269	28	13.5	34	24.7	53.1	1 12 11.8	50.7	0.162 3455	3534
	8	270	37	9.6	34	31.4	53.4	1 13 52.4	49.9	0.161 6414	3506
	10	271	46	19.2	34	38.1	+53.6	-1 15 31.5	-49.2	0.160 9431	-3476
	12	272	55	42.1	34	44.8	53.8	1 17 9.1	48.4	0.160 2509	3445
	14	274	5	18.5	34	51.5	53.8	1 18 45.1	47.6	0.159 5651	3412
	16	275	15	8.0	34	58.0	53.7	1 20 19.5	46.8	0.158 8861	3377
	18	276	25	10.6	35	4.6	53.6	1 21 52.2	45.9	0.158 2142	3341
	20	277	35	26.3	35	11.1	+53.4	-1 23 23.1	-45.0	0.157 5498	-3302
	22	278	45	54.9	35	17.5	53.0	1 24 52.2	44.1	0.156 8932	3263
	24	279	56	36.4	35	23.9	52.6	1 26 19.5	43.1	0.156 2447	3221
	26	281	7	30.5	35	30.2	52.1	1 27 44.7	42.1	0.155 6048	3178
	28	282	18	37.2	35	36.4	51.5	1 29 8.0	41.1	0.154 9736	3133
30	283	29	56.3	35	42.6	+50.8	-1 30 29.2	-40.1	0.154 3515	-3086	
Dec.	2	284	41	27.7	35	48.7	50.0	1 31 48.3	39.0	0.153 7390	3038
	4	285	53	11.1	35	54.7	49.2	1 33 5.2	37.9	0.153 1363	2988
	6	287	5	6.6	36	0.6	48.2	1 34 19.9	36.8	0.152 5438	2936
	8	288	17	13.7	36	6.5	47.2	1 35 32.4	35.6	0.151 9617	2883
	10	289	29	32.5	36	12.3	+46.0	-1 36 42.5	-34.4	0.151 3905	-2828
	12	290	42	2.7	36	17.9	44.8	1 37 50.2	33.2	0.150 8305	2771
	14	291	54	44.1	36	23.4	43.5	1 38 55.4	32.0	0.150 2820	2713
	16	293	7	36.4	36	28.9	42.1	1 39 58.2	30.8	0.149 7452	2653
	18	294	20	39.6	36	34.2	40.7	1 40 58.4	29.5	0.149 2206	2592
	20	295	33	53.3	36	39.4	+39.1	-1 41 56.0	-28.1	0.148 7084	-2529
	22	296	47	17.3	36	44.5	37.5	1 42 50.9	26.8	0.148 2089	2465
	24	298	0	51.3	36	49.5	35.9	1 43 43.2	25.4	0.147 7225	2399
26	299	14	35.2	36	54.4	34.1	1 44 32.7	24.0	0.147 2494	2331	
28	300	28	28.7	36	59.1	32.3	1 45 19.4	22.6	0.146 7900	2262	
30	301	42	31.6	37	3.7	+30.4	-1 46 3.3	-21.2	0.146 3445	-2192	
32	302	56	43.4	37	8.1	+28.5	-1 46 44.3	-19.8	0.145 9131	-2120	

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Paral-lax.	Transit, Meridian of Green-wich.	
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.		
	h	m	s	s	°	'	"	"			"	"	h	m
Jan. 1	23	33	35.59	+1.317	-4	12	53.6	+ 9.04	0.712 7957	+530.3	18.23	1.70	4	53.6
2	23	34	7.45	1.338	4	9	14.8	9.18	0.714 0635	526.2	18.18	1.70	4	50.2
3	23	34	39.83	1.360	4	5	32.8	9.32	0.715 3214	522.1	18.13	1.70	4	46.8
4	23	35	12.73	1.381	4	1	47.5	9.45	0.716 5693	517.8	18.08	1.69	4	43.4
5	23	35	46.13	1.402	3	57	59.0	9.59	0.717 8069	513.5	18.03	1.69	4	40.1
6	23	36	20.03	+1.423	-3	54	7.3	+ 9.72	0.719 0340	+509.1	17.98	1.68	4	36.7
7	23	36	54.42	1.443	3	50	12.5	9.84	0.720 2504	504.6	17.92	1.68	4	33.3
8	23	37	29.29	1.463	3	46	14.8	9.97	0.721 4558	499.9	17.87	1.67	4	30.0
9	23	38	4.64	1.483	3	42	13.9	10.10	0.722 6500	495.2	17.82	1.67	4	26.6
10	23	38	40.45	1.502	3	38	10.1	10.22	0.723 8330	490.5	17.78	1.66	4	23.3
11	23	39	16.72	+1.521	-3	34	3.5	+10.34	0.725 0046	+485.8	17.73	1.66	4	20.0
12	23	39	53.44	1.539	3	29	54.0	10.45	0.726 1646	480.9	17.68	1.65	4	16.7
13	23	40	30.61	1.558	3	25	41.7	10.57	0.727 3129	476.0	17.63	1.65	4	13.3
14	23	41	8.21	1.575	3	21	26.7	10.68	0.728 4494	471.1	17.59	1.65	4	10.0
15	23	41	46.23	1.593	3	17	9.0	10.79	0.729 5740	466.1	17.54	1.64	4	6.7
16	23	42	24.67	+1.610	-3	12	48.6	+10.90	0.730 6865	+461.0	17.50	1.64	4	3.4
17	23	43	3.53	1.628	3	8	25.6	11.01	0.731 7868	455.9	17.45	1.53	4	0.2
18	23	43	42.79	1.644	3	4	0.1	11.11	0.732 8749	450.8	17.41	1.63	3	56.9
19	23	44	22.45	1.661	2	59	32.1	11.22	0.733 9506	445.6	17.37	1.62	3	53.6
20	23	45	2.50	1.677	2	55	1.6	11.32	0.735 0139	440.4	17.32	1.62	3	50.3
21	23	45	42.95	+1.693	-2	50	28.6	+11.43	0.736 0646	+435.2	17.28	1.62	3	47.1
22	23	46	23.77	1.709	2	45	53.2	11.52	0.737 1027	429.9	17.24	1.61	3	43.8
23	23	47	4.96	1.724	2	41	15.5	11.62	0.738 1281	424.6	17.20	1.61	3	40.6
24	23	47	46.52	1.739	2	36	35.5	11.71	0.739 1407	419.2	17.16	1.60	3	37.3
25	23	48	28.45	1.754	2	31	53.2	11.81	0.740 1404	413.8	17.12	1.60	3	34.1
26	23	49	10.73	+1.769	-2	27	8.7	+11.90	0.741 1270	+408.4	17.08	1.60	3	30.9
27	23	49	53.36	1.784	2	22	22.0	11.99	0.742 1006	402.9	17.04	1.59	3	27.6
28	23	50	36.34	1.798	2	17	33.1	12.08	0.743 0610	397.4	17.01	1.59	3	24.4
29	23	51	19.65	1.812	2	12	42.1	12.17	0.744 0081	391.8	16.97	1.59	3	21.2
30	23	52	3.30	1.825	2	7	49.0	12.25	0.744 9418	386.2	16.93	1.58	3	18.0
31	23	52	47.27	+1.839	-2	2	53.9	+12.34	0.745 8619	+380.6	16.90	1.58	3	14.8
Feb. 1	23	53	31.57	1.852	1	57	56.7	12.42	0.746 7685	374.9	16.86	1.58	3	11.6
2	23	54	16.18	1.865	1	52	57.6	12.50	0.747 6613	369.1	16.83	1.57	3	8.4
3	23	55	1.10	1.878	1	47	56.7	12.58	0.748 5403	363.4	16.79	1.57	3	5.2
4	23	55	46.32	1.890	1	42	53.9	12.65	0.749 4055	357.6	16.76	1.57	3	2.1
5	23	56	31.84	+1.903	-1	37	49.4	+12.73	0.750 2536	+351.7	16.73	1.56	2	58.9
6	23	57	17.64	1.914	1	32	43.1	12.80	0.751 0936	345.8	16.70	1.56	2	55.7
7	23	58	3.72	1.926	1	27	35.2	12.87	0.751 9164	339.9	16.66	1.56	2	52.5
8	23	58	50.08	1.937	1	22	25.5	12.94	0.752 7250	334.0	16.63	1.53	2	49.4
9	23	59	36.71	1.948	1	17	14.2	13.00	0.753 5195	328.1	16.60	1.55	2	46.2
10	0	0	23.59	+1.959	-1	12	1.4	+13.07	0.754 2996	+322.1	16.57	1.55	2	43.1
11	0	1	10.74	1.970	1	6	47.0	13.13	0.755 0655	316.2	16.54	1.55	2	39.9
12	0	1	58.13	1.980	1	1	31.1	13.19	0.755 8171	310.2	16.51	1.54	2	36.8
13	0	2	45.77	1.990	0	56	13.8	13.25	0.756 5543	304.2	16.49	1.54	2	33.6
14	0	3	33.64	1.999	0	50	55.2	13.30	0.757 2772	298.2	16.46	1.54	2	30.5
15	0	4	21.74	+2.009	-0	45	35.2	+13.36	0.757 9857	+292.2	16.43	1.54	2	27.4
16	0	5	10.07	+2.018	-0	40	13.9	+13.41	0.758 6797	+286.2	16.41	1.53	2	24.2

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.		
	h	m	s		°	'	"							h	m
Feb.	16	0	5	10.07	+2.018	-0	40	13.9	+13.41	0.758 6797	+286.2	16.41	1.53	2 24.2	
	17	0	5	58.62	2.027	0	34	51.4	13.46	0.759 3593	280.1	16.38	1.53	2 21.1	
	18	0	6	47.38	2.036	0	29	27.6	13.52	0.760 0244	274.1	16.36	1.53	2 18.0	
	19	0	7	36.36	2.045	0	24	2.6	13.56	0.760 6751	268.1	13.33	1.53	2 14.9	
	20	0	8	25.54	2.053	0	18	36.5	13.61	0.761 3113	262.1	16.31	1.53	2 11.8	
	21	0	9	14.92	+2.062	-0	13	9.3	+13.66	0.751 9330	+256.0	16.28	1.52	2 8.6	
	22	0	10	4.50	2.070	0	7	41.0	13.70	0.762 5402	250.0	16.26	1.52	2 5.5	
	23	0	10	54.27	2.078	-0	2	11.6	13.75	0.763 1329	243.9	16.24	1.52	2 2.4	
	24	0	11	44.23	2.085	+0	3	18.8	13.79	0.763 7109	237.8	16.22	1.52	1 59.3	
	25	0	12	34.37	2.093	0	8	50.1	13.83	0.764 2744	231.8	16.20	1.52	1 56.2	
	26	0	13	24.69	+2.100	+0	14	22.4	+13.86	0.764 8233	+225.6	16.18	1.51	1 53.1	
	27	0	14	15.19	2.108	0	19	55.6	13.90	0.765 3575	219.5	16.16	1.51	1 50.0	
	28	0	15	5.85	2.114	0	25	29.7	13.94	0.765 8769	213.4	16.14	1.51	1 46.9	
	29	0	15	56.68	2.121	0	31	4.6	13.97	0.765 3816	207.2	16.12	1.51	1 43.9	
	Mar.	1	0	16	47.67	2.128	0	36	40.3	14.00	0.766 8715	201.1	16.10	1.51	1 40.8
		2	0	17	38.81	+2.134	+0	42	16.8	+14.03	0.767 3466	+194.8	16.08	1.50	1 37.7
		3	0	18	30.10	2.140	0	47	53.9	14.06	0.767 8067	188.6	16.06	1.50	1 34.6
		4	0	19	21.54	2.146	0	53	31.7	14.09	0.768 2518	182.4	16.05	1.50	1 31.5
		5	0	20	13.11	2.151	0	59	10.1	14.11	0.768 6820	176.1	16.03	1.50	1 28.4
		6	0	21	4.81	2.157	1	4	49.1	14.13	0.769 0972	169.9	16.02	1.50	1 25.4
		7	0	21	56.64	+2.162	+1	10	28.5	+14.15	0.769 4974	+163.6	16.00	1.50	1 22.3
		8	0	22	48.59	2.167	1	16	8.5	14.18	0.769 8827	157.4	15.99	1.50	1 19.2
		9	0	23	40.65	2.172	1	21	48.9	14.19	0.770 2530	151.2	15.97	1.49	1 16.2
		10	0	24	32.83	2.176	1	27	29.7	14.21	0.770 6084	145.0	15.96	1.49	1 13.1
		11	0	25	25.11	2.180	1	33	10.8	14.22	0.770 9489	138.8	15.95	1.49	1 10.0
12		0	26	17.49	+2.185	+1	38	52.3	+14.23	0.771 2744	+132.5	15.94	1.49	1 7.0	
13		0	27	9.97	2.189	1	44	34.0	14.24	0.771 5850	126.3	15.92	1.49	1 3.9	
14		0	28	2.54	2.192	1	50	16.0	14.26	0.771 8807	120.1	15.91	1.49	1 0.8	
15		0	28	55.20	2.196	1	55	58.3	14.26	0.772 1616	113.9	15.90	1.49	0 57.8	
16		0	29	47.94	2.199	2	1	40.7	14.27	0.772 4276	107.8	15.89	1.49	0 54.7	
17		0	30	40.76	+2.202	+2	7	23.2	+14.28	0.772 6789	+101.6	15.88	1.49	0 51.7	
18		0	31	33.65	2.205	2	13	5.9	14.28	0.772 9153	95.4	15.88	1.49	0 48.6	
19		0	32	26.61	2.208	2	18	48.6	14.28	0.773 1370	89.3	15.87	1.48	0 45.6	
20		0	33	19.64	2.211	2	24	31.4	14.28	0.773 3439	83.1	15.86	1.48	0 42.5	
21		0	34	12.73	2.213	2	30	14.2	14.28	0.773 5361	77.0	15.85	1.48	0 39.5	
22		0	35	5.88	+2.216	+2	35	57.0	+14.28	0.773 7136	+70.9	15.85	1.48	0 36.4	
23		0	35	59.08	2.218	2	41	39.8	14.28	0.773 8763	64.7	15.84	1.48	0 33.4	
24		0	36	52.34	2.220	2	47	22.5	14.28	0.774 0243	58.6	15.84	1.48	0 30.3	
25		0	37	45.65	2.222	2	53	5.1	14.27	0.774 1575	52.4	15.83	1.48	0 27.3	
26	0	38	39.00	2.224	2	58	47.5	14.26	0.774 2759	46.3	15.83	1.48	0 24.2		
27	0	39	32.39	+2.225	+3	4	29.8	+14.26	0.774 3796	+40.1	15.82	1.48	0 21.2		
28	0	40	25.82	2.227	3	10	11.9	14.25	0.774 4685	33.9	15.82	1.48	0 18.1		
29	0	41	19.28	2.228	3	15	53.8	14.24	0.774 5425	27.7	15.82	1.48	0 15.1		
30	0	42	12.77	2.229	3	21	35.4	14.23	0.774 6016	21.5	15.82	1.48	0 12.0		
31	0	43	6.28	2.230	3	27	16.6	14.21	0.774 6459	15.3	15.81	1.48	0 9.0		
Apr.	1	0	43	59.81	+2.231	+3	32	57.5	+14.20	0.774 6752	+9.1	15.81	1.48	0 5.9	
	2	0	44	53.35	+2.231	+3	38	38.0	+14.18	0.774 6897	+2.9	15.81	1.48	0 2.8	

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	h	m	s		°	'	"							h	m
Apr.	1	0	43	59.81	+2.231	+3	32	57.5	+14.20	0.774 6752	+ 9.1	15.81	1.48	0 5.9
	2	0	44	53.35	2.231	3	38	38.0	14.18	0.774 6897	+ 2.9	15.81	1.48	{ 0 2.9 23 56.9
	3	0	45	46.91	2.231	3	44	18.0	14.16	0.774 6893	- 3.3	15.81	1.48	23 56.8
	4	0	46	40.46	2.231	3	49	57.6	14.14	0.774 6741	9.4	15.81	1.48	23 53.8
	5	0	47	34.01	2.231	3	55	36.7	14.12	0.774 6441	15.6	15.81	1.48	23 50.7
	6	0	48	27.55	+2.231	+4	1	15.2	+14.09	0.774 5994	- 21.7	15.82	1.48	23 47.7
	7	0	49	21.09	2.230	4	6	53.1	14.07	0.774 5399	27.8	15.82	1.48	23 44.6
	8	0	50	14.60	2.229	4	12	30.5	14.04	0.774 4658	33.9	15.82	1.48	23 41.6
	9	0	51	8.10	2.229	4	18	7.2	14.01	0.774 3770	40.1	15.82	1.48	23 38.5
	10	0	52	1.57	2.227	4	23	43.1	13.98	0.774 2735	46.2	15.83	1.48	23 35.5
	11	0	52	55.01	+2.226	+4	29	18.4	+13.95	0.774 1554	- 52.3	15.83	1.48	23 32.4
	12	0	53	48.41	2.224	4	34	52.9	13.92	0.774 0227	58.3	15.84	1.48	23 29.4
	13	0	54	41.78	2.223	4	40	26.6	13.89	0.773 8755	64.4	15.84	1.48	23 26.3
	14	0	55	35.12	2.221	4	45	59.6	13.86	0.773 7138	70.4	15.85	1.48	23 23.3
	15	0	56	28.41	2.219	4	51	31.7	13.82	0.773 5377	76.4	15.85	1.48	23 20.2
	16	0	57	21.64	+2.217	+4	57	2.9	+13.78	0.773 3472	- 82.4	15.86	1.48	23 17.2
	17	0	58	14.82	2.215	5	2	33.3	13.75	0.773 1423	88.4	15.87	1.48	23 14.1
	18	0	59	7.95	2.213	5	8	2.8	13.71	0.772 9231	94.3	15.88	1.49	23 11.1
	19	1	0	1.02	2.210	5	13	31.3	13.67	0.772 6896	100.3	15.89	1.49	23 8.0
	20	1	0	54.03	2.207	5	18	58.8	13.63	0.772 4418	106.2	15.90	1.43	23 5.0
	21	1	1	46.97	+2.205	+5	24	25.4	+13.59	0.772 1797	-112.2	15.90	1.49	23 1.9
	22	1	2	39.85	2.201	5	29	51.0	13.54	0.771 9032	118.2	15.92	1.49	22 58.9
	23	1	3	32.64	2.198	5	35	15.5	13.50	0.771 6125	124.1	15.93	1.49	22 55.8
	24	1	4	25.36	2.195	5	40	38.9	13.45	0.771 3074	130.1	15.94	1.49	22 52.8
	25	1	5	18.00	2.191	5	46	1.2	13.41	0.770 9880	136.1	15.95	1.49	22 49.7
	26	1	6	10.55	+2.188	+5	51	22.4	+13.36	0.770 6543	-142.0	15.95	1.49	22 46.6
	27	1	7	3.01	2.184	5	56	42.5	13.31	0.770 3063	148.0	15.97	1.49	22 43.6
	28	1	7	55.38	2.180	6	2	1.3	13.26	0.769 9440	153.9	15.99	1.50	22 40.5
	29	1	8	47.64	2.175	6	7	18.8	13.20	0.769 5674	159.9	16.00	1.50	22 37.4
	30	1	9	39.80	2.171	6	12	35.1	13.15	0.769 1765	165.8	16.01	1.50	22 34.4
May	1	1	10	31.85	+2.166	+6	17	50.1	+13.10	0.768 7713	-171.8	16.03	1.50	22 31.3
	2	1	11	23.78	2.161	6	23	3.7	13.04	0.768 3520	177.7	16.04	1.50	22 28.2
	3	1	12	15.59	2.156	6	28	15.9	12.98	0.767 9184	183.6	16.06	1.50	22 25.2
	4	1	13	7.27	2.151	6	33	26.7	12.92	0.767 4706	189.5	16.08	1.50	22 22.1
	5	1	13	58.82	2.145	6	38	36.1	12.86	0.767 0088	195.3	16.09	1.50	22 19.0
	6	1	14	50.24	+2.139	+6	43	44.0	+12.80	0.766 5330	-201.1	16.11	1.51	22 15.9
	7	1	15	41.51	2.133	6	48	50.4	12.74	0.766 0433	207.0	16.13	1.51	22 12.8
	8	1	16	32.34	2.127	6	53	55.3	12.67	0.765 5396	212.8	16.15	1.51	22 9.8
	9	1	17	23.62	2.121	6	58	58.6	12.60	0.765 0221	218.5	16.17	1.51	22 6.7
	10	1	18	14.44	2.114	7	4	0.3	12.54	0.764 4908	224.3	16.19	1.51	22 3.6
	11	1	19	5.10	+2.108	+7	9	0.4	+12.47	0.763 9457	-230.0	16.21	1.52	22 0.5
	12	1	19	55.60	2.101	7	13	58.9	12.40	0.763 3869	235.7	16.23	1.52	21 57.4
	13	1	20	45.93	2.093	7	18	55.7	12.33	0.762 8144	241.4	16.25	1.52	21 54.3
	14	1	21	36.08	2.086	7	23	50.8	12.26	0.762 2284	247.0	16.27	1.52	21 51.2
	15	1	22	26.06	2.079	7	28	44.2	12.19	0.761 6289	252.6	16.30	1.52	21 48.1
	16	1	23	15.86	+2.071	+7	33	35.8	+12.11	0.761 0159	-258.2	16.32	1.53	21 45.0
	17	1	24	5.48	+2.063	+7	38	25.7	+12.04	0.760 3894	-263.8	16.34	1.53	21 41.9

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.
	h	m	s	s	°	'	"	"			"	"	h m
May	17	1 24	5.48	+2.063	+ 7 38	25.7	+12.04	0.760 3894	-263.8	16.34	1.53	21 41.9	
	18	1 24	54.90	2.055	7 43	13.9	11.97	0.759 7495	269.4	16.36	1.53	21 38.7	
	19	1 25	44.13	2.047	7 48	0.3	11.89	0.759 0961	275.0	16.39	1.53	21 35.6	
	20	1 26	33.17	2.039	7 52	44.8	11.82	0.758 4294	280.6	16.42	1.53	21 32.5	
	21	1 27	22.00	2.030	7 57	27.5	11.74	0.757 7493	286.1	16.44	1.54	21 29.4	
	22	1 28	10.63	+2.022	+ 8 2	8.3	+11.66	0.756 0559	-291.7	16.47	1.54	21 26.2	
	23	1 28	59.05	2.013	8 6	47.2	11.58	0.756 3492	297.2	16.49	1.54	21 23.1	
	24	1 29	47.25	2.004	8 11	24.2	11.50	0.755 6293	302.8	16.52	1.55	21 20.0	
	25	1 30	35.22	1.994	8 15	59.1	11.41	0.754 8960	308.3	16.55	1.55	21 16.8	
	26	1 31	22.96	1.984	8 20	32.1	11.33	0.754 1495	313.8	16.58	1.55	21 13.7	
	27	1 32	10.47	+1.975	+ 8 25	3.1	+11.25	0.753 3897	-319.3	16.61	1.55	21 10.6	
28	1 32	57.75	1.965	8 29	31.9	11.16	0.752 6168	324.8	16.64	1.56	21 7.4		
29	1 33	44.77	1.954	8 33	58.7	11.07	0.751 8308	330.2	16.67	1.56	21 4.2		
30	1 34	31.54	1.943	8 38	23.4	10.98	0.751 0317	335.6	16.70	1.56	21 1.1		
31	1 35	18.05	1.933	8 42	45.9	10.89	0.750 2197	341.0	16.73	1.56	20 57.9		
June	1	1 36	4.30	+1.921	+ 8 47	6.2	+10.80	0.749 3947	-346.4	16.76	1.57	20 54.8	
	2	1 36	50.27	1.910	8 51	24.3	10.71	0.748 5570	351.7	16.79	1.57	20 51.6	
	3	1 37	35.97	1.898	8 55	40.2	10.61	0.747 7065	357.0	16.83	1.57	20 48.4	
	4	1 38	21.39	1.886	8 59	53.8	10.52	0.746 8434	362.2	16.86	1.58	20 45.2	
	5	1 39	6.51	1.874	9 4	5.1	10.42	0.745 9678	367.4	16.89	1.58	20 42.0	
	6	1 39	51.34	+1.862	+ 9 8	14.1	+10.33	0.745 0797	-372.6	16.93	1.58	20 38.9	
	7	1 40	35.87	1.849	9 12	20.7	10.23	0.744 1793	377.7	16.96	1.59	20 35.7	
	8	1 41	20.10	1.836	9 16	25.0	10.13	0.743 2666	382.8	17.00	1.59	20 32.5	
	9	1 42	4.02	1.823	9 20	26.9	10.03	0.742 3417	387.9	17.03	1.59	20 29.2	
	10	1 42	47.62	1.810	9 24	26.4	9.93	0.741 4047	392.9	17.07	1.60	20 26.0	
	11	1 43	30.89	+1.796	+ 9 28	23.4	+ 9.83	0.740 4557	-397.9	17.11	1.60	20 22.8	
	12	1 44	13.84	1.783	9 32	18.0	9.72	0.739 4948	402.8	17.15	1.60	20 19.6	
	13	1 44	56.45	1.769	9 36	10.1	9.62	0.738 5221	407.7	17.19	1.61	20 16.3	
	14	1 45	38.73	1.754	9 39	59.7	9.51	0.737 5377	412.6	17.22	1.61	20 13.1	
	15	1 46	20.66	1.740	9 43	46.8	9.41	0.736 5416	417.5	17.26	1.61	20 9.9	
	16	1 47	2.25	+1.725	+ 9 47	31.4	+ 9.30	0.735 5339	-422.3	17.30	1.62	20 6.6	
	17	1 47	43.48	1.710	9 51	13.4	9.19	0.734 5147	427.0	17.34	1.62	20 3.4	
	18	1 48	24.35	1.695	9 54	52.9	9.09	0.733 4841	431.8	17.39	1.63	20 0.1	
	19	1 49	4.86	1.680	9 58	29.7	8.98	0.732 4422	436.5	17.43	1.63	19 56.8	
	20	1 49	45.00	1.665	10 2	3.9	8.87	0.731 3889	441.2	17.47	1.63	19 53.6	
	21	1 50	24.76	+1.649	+10 5	35.4	+ 8.76	0.730 3245	-445.8	17.51	1.64	19 50.3	
22	1 51	4.13	1.632	10 9	4.2	8.64	0.729 2489	450.5	17.56	1.64	19 47.0		
23	1 51	43.11	1.616	10 12	30.3	8.53	0.728 1622	455.1	17.60	1.65	19 43.7		
24	1 52	21.69	1.599	10 15	53.6	8.41	0.727 0644	459.7	17.64	1.65	19 40.4		
25	1 52	59.86	1.582	10 19	14.2	8.30	0.725 9558	464.1	17.69	1.65	19 37.1		
26	1 53	37.61	+1.564	+10 22	31.9	+ 8.18	0.724 8365	-468.6	17.74	1.66	19 33.8		
27	1 54	14.94	1.546	10 25	46.8	8.06	0.723 7066	472.9	17.78	1.66	19 30.5		
28	1 54	51.84	1.528	10 28	58.8	7.94	0.722 5664	477.2	17.83	1.67	19 27.2		
29	1 55	28.29	1.510	10 32	7.9	7.82	0.721 4159	481.5	17.88	1.67	19 23.8		
30	1 56	4.31	1.491	10 35	14.1	7.70	0.720 2552	485.7	17.92	1.68	19 20.5		
July	1	1 56	39.87	+1.472	+10 38	17.3	+ 7.57	0.719 0845	-489.8	17.97	1.68	19 17.1	
	2	1 57	14.98	+1.453	+10 41	17.6	+ 7.45	0.717 9040	-493.9	18.02	1.69	19 13.8	

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	h	m	s		°	'	"							h	m
July	1	1 56	39.87	+1.472	+10 38	17.3	+7.57	0.719 0845	-489.8	17.97	1.68	19 17.1	
	2	1 57	14.98	1.453	10 41	17.6	7.45	0.717 9040	493.9	18.02	1.69	19 13.8	
	3	1 57	49.62	1.434	10 44	14.8	7.32	0.716 7138	497.9	18.07	1.69	19 10.4	
	4	1 58	23.79	1.414	10 47	9.1	7.20	0.715 5142	501.8	18.12	1.69	19 7.0	
	5	1 58	57.47	1.393	10 50	0.2	7.07	0.714 3053	505.6	18.17	1.70	19 3.3	
	6	1 59	30.67	+1.373	+10 52	48.3	+6.94	0.713 0873	-509.4	18.22	1.70	19 0.3	
	7	2 0	0 3.37	1.352	10 55	33.3	6.81	0.711 8604	513.0	18.27	1.71	18 56.9	
	8	2 0	35.58	1.331	10 58	15.2	6.68	0.710 6247	516.6	18.33	1.71	18 53.5	
	9	2 1	7.27	1.310	11 0	54.0	6.55	0.709 3806	520.1	18.38	1.72	18 50.1	
	10	2 1	38.45	1.289	11 3	29.6	6.42	0.708 1282	523.6	18.43	1.72	18 46.7	
	11	2 2	9.12	+1.267	+11 6	2.0	+6.29	0.706 8675	-526.9	18.48	1.73	18 43.2	
	12	2 2	39.26	1.245	11 8	31.3	6.15	0.705 5989	530.2	18.54	1.73	18 39.8	
	13	2 3	8.86	1.223	11 10	57.4	6.02	0.704 3225	533.4	18.59	1.74	18 36.3	
	14	2 3	37.94	1.200	11 13	20.3	5.89	0.703 0385	536.6	18.65	1.74	18 32.9	
	15	2 4	6.47	1.177	11 15	39.9	5.75	0.701 7470	539.7	18.70	1.75	18 29.4	
	16	2 4	34.44	+1.154	+11 17	56.2	+5.61	0.700 4482	-542.6	18.76	1.75	18 25.9	
	17	2 5	1.86	1.131	11 20	9.2	5.47	0.699 1424	545.5	18.82	1.76	18 22.5	
	18	2 5	28.72	1.107	11 22	18.9	5.33	0.697 8297	548.4	18.87	1.76	18 19.0	
	19	2 5	55.00	1.083	11 24	25.3	5.20	0.696 5102	551.1	18.93	1.77	18 15.5	
	20	2 6	20.70	1.059	11 26	28.3	5.05	0.695 1843	553.8	18.99	1.78	18 11.9	
	21	2 6	45.81	+1.034	+11 28	27.9	+4.91	0.693 8521	-556.4	19.05	1.78	18 8.4	
	22	2 7	10.33	1.009	11 30	24.1	4.77	0.692 5139	558.8	19.11	1.79	18 4.9	
	23	2 7	34.24	0.984	11 32	16.8	4.62	0.691 1698	561.2	19.16	1.79	18 1.3	
	24	2 7	57.55	0.958	11 34	6.0	4.48	0.689 8203	563.4	19.22	1.80	17 57.8	
	25	2 8	20.23	0.932	11 35	51.7	4.33	0.688 4655	565.5	19.28	1.80	17 54.2	
	26	2 8	42.28	+0.906	+11 37	33.8	+4.18	0.687 1058	-567.5	19.34	1.81	17 50.6	
	27	2 9	3.70	0.879	11 39	12.4	4.04	0.685 7414	569.4	19.41	1.82	17 47.0	
	28	2 9	24.47	0.852	11 40	47.5	3.89	0.684 3727	571.2	19.47	1.82	17 43.5	
	29	2 9	44.60	0.825	11 42	18.9	3.73	0.682 9999	572.8	19.53	1.83	17 39.9	
	30	2 10	4.07	0.798	11 43	46.7	3.58	0.681 6234	574.3	19.59	1.83	17 36.2	
	31	2 10	22.88	+0.770	+11 45	10.8	+3.43	0.680 2435	-575.6	19.65	1.84	17 32.6	
Aug.	1	2 10	41.02	0.742	11 46	31.3	3.28	0.678 8607	576.8	19.72	1.84	17 29.0	
	2	2 10	58.48	0.713	11 47	48.2	3.13	0.677 4752	577.8	19.78	1.85	17 25.3	
	3	2 11	15.26	0.685	11 49	1.3	2.97	0.676 0875	578.6	19.84	1.86	17 21.7	
	4	2 11	31.34	0.656	11 50	10.7	2.81	0.674 6978	579.3	19.91	1.86	17 18.0	
	5	2 11	46.74	+0.627	+11 51	16.4	+2.66	0.673 3066	-579.9	19.97	1.87	17 14.3	
	6	2 12	1.44	0.598	11 52	18.3	2.50	0.671 9142	580.3	20.03	1.87	17 10.6	
	7	2 12	15.45	0.569	11 53	16.5	2.35	0.670 5209	580.6	20.10	1.88	17 6.9	
	8	2 12	28.75	0.540	11 54	11.0	2.19	0.669 1272	580.8	20.16	1.89	17 3.2	
	9	2 12	41.35	0.510	11 55	1.8	2.04	0.667 7334	580.7	20.23	1.89	16 59.4	
	10	2 12	53.22	+0.480	+11 55	48.7	+1.88	0.666 3398	-580.5	20.29	1.90	16 55.7	
	11	2 13	4.38	0.450	11 56	31.9	1.72	0.664 9469	580.2	20.36	1.90	16 51.9	
	12	2 13	14.81	0.419	11 57	11.2	1.56	0.663 5549	579.7	20.42	1.91	16 48.2	
	13	2 13	24.51	0.389	11 57	46.8	1.40	0.662 1644	579.1	20.49	1.92	16 44.4	
	14	2 13	33.47	0.358	11 58	18.5	1.24	0.660 7755	578.3	20.55	1.92	16 40.6	
	15	2 13	41.70	+0.327	+11 58	46.4	+1.08	0.659 3887	-577.3	20.62	1.93	16 36.8	
	16	2 13	49.18	+0.296	+11 59	10.4	+0.92	0.658 0045	-576.1	20.69	1.93	16 33.0	

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.
	h	m	s	s	°	'	"	"			"	"	h m
Aug. 16	2	13	49.18	+0.296	+11	59	10.4	+0.92	0.658 0045	-576.1	20.69	1.93	16 33.0
17	2	13	55.92	0.265	11	59	30.5	0.76	0.656 6233	574.8	20.75	1.94	16 29.1
18	2	14	1.90	0.234	11	59	46.8	0.60	0.655 2455	573.3	20.82	1.95	16 25.3
19	2	14	7.13	0.202	11	59	59.2	0.43	0.653 8715	571.6	20.88	1.95	16 21.5
20	2	14	11.60	0.170	12	0	7.6	0.27	0.652 5018	569.7	20.95	1.96	16 17.6
21	2	14	15.30	+0.138	+12	0	12.2	+0.11	0.651 1370	-567.6	21.02	1.97	16 13.7
22	2	14	18.24	0.106	12	0	12.8	-0.06	0.649 7774	565.3	21.08	1.97	16 9.8
23	2	14	20.40	0.074	12	0	9.4	0.22	0.648 4236	562.8	21.15	1.98	16 5.9
24	2	14	21.79	0.042	12	0	2.1	0.39	0.647 0762	560.0	21.21	1.98	16 2.0
25	2	14	22.41	+0.010	11	59	50.9	0.55	0.645 7356	557.1	21.28	1.99	15 58.1
26	2	14	22.25	-0.023	+11	59	35.7	-0.72	0.644 4024	-553.9	21.34	2.00	15 54.1
27	2	14	21.31	0.055	11	59	16.5	0.88	0.643 0772	550.4	21.41	2.00	15 50.2
28	2	14	19.59	0.088	11	58	53.5	1.04	0.641 7604	546.8	21.47	2.01	15 46.2
29	2	14	17.09	0.120	11	58	26.5	1.21	0.640 4527	542.9	21.54	2.01	15 42.2
30	2	14	13.81	0.153	11	57	55.6	1.37	0.639 1547	538.8	21.60	2.02	15 38.2
31	2	14	9.75	-0.185	+11	57	20.8	-1.53	0.637 8669	-534.4	21.67	2.03	15 34.2
Sept. 1	2	14	4.92	0.218	11	56	42.1	1.69	0.636 5899	529.8	21.73	2.03	15 30.2
2	2	13	59.31	0.250	11	55	59.6	1.85	0.635 3243	524.9	21.80	2.04	15 26.2
3	2	13	52.94	0.281	11	55	13.2	2.01	0.634 0706	519.8	21.86	2.04	15 22.1
4	2	13	45.80	0.313	11	54	23.0	2.17	0.632 8293	514.5	21.92	2.05	15 18.1
5	2	13	37.90	-0.345	+11	53	29.0	-2.33	0.631 6010	-509.0	21.98	2.06	15 14.0
6	2	13	29.24	0.376	11	52	31.2	2.49	0.630 3863	503.2	22.04	2.06	15 9.9
7	2	13	19.83	0.408	11	51	29.6	2.64	0.629 1857	497.2	22.10	2.07	15 5.8
8	2	13	9.67	0.439	11	50	24.3	2.80	0.627 9999	490.9	22.17	2.07	15 1.7
9	2	12	58.76	0.470	11	49	15.3	2.95	0.626 8294	484.5	22.23	2.08	14 57.6
10	2	12	47.11	-0.500	+11	48	2.6	-3.11	0.625 6747	-477.8	22.28	2.08	14 53.5
11	2	12	34.74	0.531	11	46	46.2	3.26	0.624 5363	470.9	22.34	2.09	14 49.3
12	2	12	21.64	0.561	11	45	26.2	3.41	0.623 4147	463.8	22.40	2.09	14 45.2
13	2	12	7.81	0.591	11	44	2.7	3.55	0.622 3105	456.4	22.46	2.10	14 41.0
14	2	11	53.27	0.620	11	42	35.6	3.70	0.621 2243	448.8	22.52	2.11	14 36.8
15	2	11	38.03	-0.650	+11	41	5.0	-3.85	0.620 1567	-440.9	22.57	2.11	14 32.6
16	2	11	22.08	0.679	11	39	30.9	3.99	0.619 1083	432.8	22.62	2.12	14 28.4
17	2	11	5.44	0.708	11	37	53.3	4.14	0.618 0796	424.4	22.68	2.12	14 24.2
18	2	10	48.12	0.736	11	36	12.3	4.28	0.617 0713	415.8	22.73	2.13	14 20.0
19	2	10	30.12	0.764	11	34	28.0	4.41	0.616 0839	407.0	22.78	2.13	14 15.7
20	2	10	11.45	-0.791	+11	32	40.4	-4.55	0.615 1181	-397.9	22.83	2.14	14 11.5
21	2	9	52.13	0.818	11	30	49.5	4.69	0.614 1744	388.5	22.88	2.14	14 7.2
22	2	9	32.17	0.845	11	28	55.4	4.82	0.613 2534	378.9	22.93	2.14	14 3.0
23	2	9	11.58	0.871	11	26	58.2	4.95	0.612 3558	369.0	22.98	2.15	13 58.7
24	2	8	50.37	0.896	11	24	57.9	5.07	0.611 4822	359.0	23.02	2.15	13 54.5
25	2	8	28.55	-0.921	+11	22	54.7	-5.19	0.610 6330	-348.6	23.07	2.16	13 50.1
26	2	8	6.15	0.945	11	20	48.6	5.31	0.609 8090	338.0	23.11	2.16	13 45.8
27	2	7	43.17	0.969	11	18	39.6	5.43	0.609 0107	327.2	23.15	2.17	13 41.5
28	2	7	19.63	0.992	11	16	27.9	5.54	0.608 2385	316.2	23.20	2.17	13 37.2
29	2	6	55.55	1.015	11	14	13.5	5.65	0.607 4930	305.0	23.24	2.17	13 32.8
30	2	6	30.94	-1.036	+11	11	56.5	-5.76	0.606 7748	-293.5	23.28	2.18	13 28.5
Oct. 1	2	6	5.84	-1.056	+11	9	37.0	-5.86	0.606 0843	-281.9	23.31	2.18	13 24.1

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	
	h	m	s	s	°	'	"	"			"	"	h	m
Oct. 1	2	6	5.84	-1.056	+11	9	37.0	-5.86	0.606 0843	-281.9	23.31	2.18	13	24.1
2	2	5	40.25	1.076	11	7	15.2	5.96	0.605 4220	270.0	23.35	2.18	13	19.8
3	2	5	14.19	1.095	11	4	51.1	6.05	0.604 7883	258.0	23.38	2.19	13	15.4
4	2	4	47.68	1.114	11	2	24.9	6.14	0.604 1836	245.9	23.42	2.19	13	11.0
5	2	4	20.74	1.131	10	59	56.5	6.23	0.603 6084	233.5	23.45	2.19	13	6.6
6	2	3	53.39	-1.148	+10	57	26.1	-6.31	0.603 0629	-221.1	23.48	2.20	13	2.2
7	2	3	25.66	1.163	10	54	53.8	6.38	0.602 5475	208.4	23.50	2.20	12	57.8
8	2	2	57.56	1.178	10	52	19.8	6.45	0.602 0626	195.6	23.53	2.20	12	53.4
9	2	2	29.11	1.193	10	49	44.1	6.52	0.601 6086	182.7	23.55	2.20	12	49.0
10	2	2	0.33	1.206	10	47	6.8	6.58	0.601 1858	169.7	23.58	2.21	12	44.6
11	2	1	31.24	-1.218	+10	44	28.1	-6.64	0.600 7944	-156.5	23.60	2.21	12	40.2
12	2	1	1.86	1.230	10	41	48.0	6.70	0.600 4347	143.2	23.62	2.21	12	35.8
13	2	0	32.22	1.240	10	39	6.6	6.75	0.600 1069	129.9	23.64	2.21	12	31.4
14	2	0	2.33	1.250	10	36	24.1	6.79	0.599 8113	116.4	23.65	2.21	12	26.9
15	1	59	32.21	1.259	10	33	40.5	6.83	0.599 5483	102.8	23.67	2.21	12	22.5
16	1	59	1.89	-1.267	+10	30	56.1	-6.87	0.599 3180	-89.1	23.68	2.21	12	18.1
17	1	58	31.39	1.274	10	28	10.9	6.90	0.599 1207	75.3	23.69	2.22	12	13.6
18	1	58	0.74	1.280	10	25	25.0	6.92	0.598 9567	61.4	23.70	2.22	12	9.2
19	1	57	29.95	1.285	10	22	38.6	6.94	0.598 8261	47.4	23.71	2.22	12	4.7
20	1	56	59.05	1.290	10	19	51.9	6.95	0.598 7291	33.4	23.71	2.22	12	0.3
21	1	56	28.06	-1.293	+10	17	4.8	-6.96	0.598 6658	-19.3	23.72	2.22	11	55.9
22	1	55	57.01	1.295	10	14	17.6	6.97	0.598 6363	-5.3	23.72	2.22	11	51.4
23	1	55	25.92	1.296	10	11	30.4	6.96	0.598 6406	+8.8	23.72	2.22	11	47.0
24	1	54	54.83	1.296	10	8	43.4	6.95	0.598 6789	23.0	23.71	2.22	11	42.5
25	1	54	23.74	1.295	10	5	56.6	6.94	0.598 7512	37.2	23.71	2.22	11	38.1
26	1	53	52.69	-1.293	+10	3	10.3	-6.92	0.598 8575	+51.4	23.70	2.22	11	33.6
27	1	53	21.71	1.289	10	0	24.5	6.89	0.598 9979	65.5	23.70	2.22	11	29.2
28	1	52	50.81	1.285	9	57	39.4	6.86	0.599 1721	79.6	23.69	2.22	11	24.8
29	1	52	20.02	1.280	9	54	55.2	6.82	0.599 3802	93.7	23.68	2.21	11	20.3
30	1	51	49.38	1.274	9	52	11.9	6.78	0.599 6220	107.7	23.66	2.21	11	15.9
31	1	51	18.89	-1.266	+9	49	29.8	-6.73	0.599 8973	+121.6	23.65	2.21	11	11.4
Nov. 1	1	50	48.60	1.258	9	46	48.9	6.68	0.600 2059	135.5	23.63	2.21	11	7.0
2	1	50	18.51	1.249	9	44	9.4	6.61	0.600 5475	149.2	23.61	2.21	11	2.5
3	1	49	48.66	1.239	9	41	31.5	6.55	0.600 9220	162.8	23.59	2.21	10	58.1
4	1	49	19.06	1.228	9	38	55.2	6.48	0.601 3290	176.3	23.57	2.20	10	53.7
5	1	48	49.74	-1.216	+9	36	20.6	-6.40	0.601 7683	+189.7	23.55	2.20	10	49.3
6	1	48	20.72	1.203	9	33	47.9	6.32	0.602 2396	203.0	23.52	2.20	10	44.9
7	1	47	52.03	1.189	9	31	17.2	6.24	0.602 7425	216.1	23.49	2.20	10	40.5
8	1	47	23.67	1.174	9	28	48.5	6.15	0.603 2768	229.1	23.46	2.19	10	36.1
9	1	46	55.68	1.159	9	26	22.1	6.05	0.603 8420	241.9	23.43	2.19	10	31.7
10	1	46	28.06	-1.143	+9	23	58.1	-5.95	0.604 4378	+254.6	23.40	2.19	10	27.3
11	1	46	0.84	1.126	9	21	36.5	5.85	0.605 0639	267.1	23.37	2.19	10	22.9
12	1	45	34.04	1.108	9	19	17.5	5.74	0.605 7198	279.5	23.33	2.18	10	18.6
13	1	45	7.68	1.089	9	17	1.1	5.63	0.606 4052	291.7	23.30	2.18	10	14.2
14	1	44	41.77	1.070	9	14	47.5	5.51	0.607 1197	303.7	23.26	2.18	10	9.8
15	1	44	16.34	-1.050	+9	12	36.8	-5.39	0.607 8630	+315.6	23.22	2.17	10	5.5
16	1	43	51.39	-1.029	+9	10	29.0	-5.26	0.608 6346	+327.3	23.18	2.17	10	1.1

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	h	m	s	s	°	'	"	"	Noon.	Noon.	Noon.	Noon.	h m
N. 16	1	43	51.39	-1.029	+9	10	29.0	-5.26	0.608 6346	+327.3	23.18	2.17	10 1.1
17	1	43	26.96	1.007	9	8	24.3	5.13	0.609 4340	338.8	23.13	2.16	9 56.8
18	1	43	3.05	0.985	9	6	22.8	4.99	0.610 2608	350.1	23.09	2.16	9 52.5
19	1	42	39.69	0.962	9	4	24.6	4.86	0.611 1145	361.3	23.04	2.15	9 48.2
20	1	42	16.88	0.938	9	2	29.7	4.71	0.611 9947	372.2	23.00	2.15	9 43.9
21	1	41	54.66	-0.914	+9	0	38.4	-4.56	0.612 9008	+382.9	22.95	2.15	9 39.6
22	1	41	33.02	0.889	8	58	50.6	4.41	0.613 8323	393.3	22.90	2.14	9 35.3
23	1	41	11.99	0.864	8	57	6.5	4.26	0.614 7886	403.6	22.85	2.14	9 31.0
24	1	40	51.58	0.838	8	55	26.1	4.10	0.615 7693	413.6	22.80	2.13	9 26.7
25	1	40	31.80	0.811	8	53	49.5	3.94	0.616 7737	423.3	22.75	2.13	9 22.5
26	1	40	12.68	-0.783	+8	52	16.8	-3.78	0.617 801?	+432.8	22.69	2.12	9 18.2
27	1	39	54.22	0.755	8	50	48.1	3.61	0.618 8512	442.1	22.64	2.12	9 14.0
28	1	39	36.44	0.726	8	49	23.4	3.44	0.619 9230	451.1	22.58	2.11	9 9.8
29	1	39	19.85	0.698	8	48	2.9	3.27	0.621 0160	459.8	22.52	2.11	9 5.6
30	1	39	2.96	0.668	8	46	46.5	3.10	0.622 1296	468.2	22.47	2.10	9 1.4
ec. 1	1	38	47.27	-0.639	+8	45	34.3	-2.92	0.623 2631	+476.4	22.41	2.10	8 57.2
2	1	38	32.30	0.609	8	44	26.4	2.74	0.624 4160	484.3	22.35	2.09	8 53.0
3	1	38	18.04	0.579	8	43	22.8	2.56	0.625 5875	491.9	22.29	2.08	8 48.9
4	1	38	4.52	0.548	8	42	23.5	2.38	0.626 7771	499.3	22.23	2.08	8 44.7
5	1	37	51.74	0.517	8	41	28.5	2.20	0.627 9840	506.4	22.17	2.07	8 40.6
6	1	37	39.70	-0.486	+8	40	38.0	-2.01	0.629 2076	+513.3	22.10	2.07	8 36.4
7	1	37	28.40	0.455	8	39	51.9	1.83	0.630 4475	519.9	22.04	2.06	8 32.3
8	1	37	17.86	0.424	8	39	10.2	1.64	0.631 7030	526.3	21.98	2.06	8 28.2
9	1	37	8.07	0.392	8	38	33.0	1.46	0.632 9733	532.3	21.91	2.05	8 24.1
10	1	36	59.05	0.360	8	38	0.3	1.27	0.634 2580	538.2	21.85	2.04	8 20.0
11	1	36	50.79	-0.328	+8	37	32.1	-1.08	0.635 5565	+543.8	21.78	2.04	8 16.0
12	1	36	43.30	0.296	8	37	8.4	0.89	0.636 8682	549.2	21.72	2.03	8 11.9
13	1	36	36.58	0.264	8	36	49.3	0.70	0.638 1925	554.4	21.65	2.02	8 7.9
14	1	36	30.64	0.231	8	36	34.7	0.51	0.639 5289	559.3	21.59	2.02	8 3.9
15	1	36	25.48	0.199	8	36	24.8	0.32	0.640 8767	563.9	21.52	2.01	7 59.8
16	1	36	21.11	-0.166	+8	36	19.4	-0.13	0.642 2355	+568.4	21.45	2.01	7 55.9
17	1	36	17.51	0.134	8	36	18.6	+0.06	0.643 6048	572.6	21.38	2.00	7 51.9
18	1	36	14.70	0.101	8	36	22.4	0.26	0.644 9838	576.6	21.32	1.99	7 47.9
19	1	36	12.68	0.068	8	36	30.9	0.45	0.646 3721	580.3	21.25	1.99	7 43.9
20	1	36	11.44	0.035	8	36	43.9	0.64	0.647 7691	583.8	21.18	1.98	7 40.0
21	1	36	10.99	-0.002	+8	37	1.5	+0.83	0.649 1741	+587.0	21.11	1.97	7 36.0
22	1	36	11.33	+0.031	8	37	23.7	1.02	0.650 5867	590.1	21.04	1.97	7 32.1
23	1	36	12.47	0.064	8	37	50.5	1.21	0.652 006?	592.8	20.97	1.96	7 28.2
24	1	36	14.39	0.097	8	38	21.9	1.40	0.653 4321	595.4	20.90	1.95	7 24.3
25	1	36	17.11	0.130	8	38	57.9	1.59	0.654 8639	597.7	20.84	1.95	7 20.4
26	1	36	20.61	+0.162	+8	39	38.4	+1.78	0.656 3009	+599.8	20.77	1.94	7 16.6
27	1	36	24.90	0.195	8	40	23.5	1.97	0.657 7426	601.6	20.70	1.94	7 12.7
28	1	36	29.97	0.228	8	41	13.1	2.16	0.659 1885	603.2	20.63	1.93	7 8.9
29	1	36	35.83	0.260	8	42	7.2	2.35	0.660 6379	604.6	20.56	1.92	7 5.0
30	1	36	42.46	0.292	8	43	5.7	2.53	0.662 0903	605.7	20.49	1.92	7 1.2
31	1	36	49.86	+0.324	+8	44	8.7	+2.71	0.663 5452	+606.7	20.42	1.91	6 57.4
32	1	36	53.03	...	+8	45	15.9	...	0.665 0022	...	20.36	1.90	6 53.6

FOR GREENWICH MEAN NOON.

Date.	Helio- centric Longitude, Mean Equinox of Date.	Var. per Day.	Reduction to Orbit.	Helio- centric Latitude.	Var. per Day.	Logarithm of Radius Vector.	Var. per Day.		
	° ' "	' "	"	° ' "	"				
Jan.	3	3 22 1.6	5 29.51	+5.8	-1 18 3.9	-0.82	0.695 1165	-53.3	
	7	3 43 59.7	5 29.54	5.5	1 18 7.1	0.77	0.695 0956	51.3	
	11	4 5 57.9	5 29.57	5.1	1 18 10.1	0.72	0.695 0755	49.3	
	15	4 27 56.3	5 29.61	4.8	1 18 12.8	0.67	0.695 0562	47.3	
	19	4 49 54.8	5 29.64	4.5	1 18 15.4	0.62	0.695 0377	45.3	
	23	5 11 53.4	5 29.66	+4.1	-1 18 17.8	-0.57	0.695 0199	-43.3	
	27	5 33 52.1	5 29.68	3.8	1 18 20.0	0.52	0.695 0030	41.3	
Feb.	31	5 55 50.9	5 29.70	3.4	1 18 22.0	0.48	0.694 9869	39.3	
	4	6 17 49.7	5 29.73	3.1	1 18 23.8	0.43	0.694 9716	37.3	
	8	6 39 48.7	5 29.75	2.8	1 18 25.4	0.38	0.694 9570	35.3	
	12	7 1 47.8	5 29.77	+2.4	-1 18 26.9	-0.33	0.694 9433	-33.3	
	16	7 23 46.9	5 29.79	2.1	1 18 28.1	0.28	0.694 9304	31.3	
	20	7 45 46.1	5 29.81	1.7	1 18 29.1	0.24	0.694 9183	29.3	
	24	8 7 45.4	5 29.83	1.4	1 18 30.0	0.19	0.694 9070	27.2	
	28	8 29 44.7	5 29.85	1.0	1 18 30.7	0.14	0.694 8965	25.1	
	Mar.	3	8 51 44.2	5 29.86	+0.7	-1 18 31.1	-0.09	0.694 8869	-23.1
		7	9 13 43.6	5 29.87	+0.4	1 18 31.4	-0.05	0.694 8781	21.1
11		9 35 43.1	5 29.88	0.0	1 18 31.5	0.00	0.694 8700	19.1	
15		9 57 42.7	5 29.89	-0.3	1 18 31.4	+0.05	0.694 8628	17.0	
19		10 19 42.3	5 29.90	0.7	1 18 31.1	0.10	0.694 8564	15.0	
23		10 41 41.9	5 29.90	-1.0	-1 18 30.6	+0.15	0.694 8508	-13.0	
27		11 3 41.5	5 29.91	1.4	1 18 29.9	0.20	0.694 8460	10.9	
Apr.	31	11 25 41.2	5 29.92	1.7	1 18 29.0	0.25	0.694 8421	8.9	
	4	11 47 40.9	5 29.93	2.1	1 18 27.9	0.30	0.694 8389	6.9	
	8	12 9 40.6	5 29.93	2.4	1 18 26.6	0.34	0.694 8366	4.9	
	12	12 31 40.3	5 29.93	-2.7	-1 18 25.2	+0.39	0.694 8350	-2.8	
	16	12 53 40.1	5 29.93	3.1	1 18 23.5	0.43	0.694 8343	-0.8	
	20	13 15 39.8	5 29.93	3.4	1 18 21.7	0.48	0.694 8344	+1.3	
	24	13 37 39.5	5 29.93	3.8	1 18 19.7	0.53	0.694 8353	3.3	
May	28	13 59 39.2	5 29.93	4.1	1 18 17.4	0.58	0.694 8370	5.3	
	2	14 21 38.9	5 29.93	-4.4	-1 18 15.0	+0.63	0.694 8396	+7.3	
	6	14 43 38.6	5 29.92	4.8	1 18 12.4	0.68	0.694 8429	9.3	
	10	15 5 38.3	5 29.91	5.1	1 18 9.6	0.73	0.694 8470	11.4	
	14	15 27 37.9	5 29.90	5.5	1 18 6.6	0.78	0.694 8520	13.5	
	18	15 49 37.5	5 29.90	5.8	1 18 3.4	0.82	0.694 8578	15.5	
	22	16 11 37.1	5 29.89	-6.1	-1 18 0.0	+0.87	0.694 8644	+17.6	
June	26	16 33 36.6	5 29.88	6.5	1 17 56.5	0.91	0.691 8719	19.6	
	30	16 55 36.1	5 29.86	6.8	1 17 52.7	0.96	0.694 8801	21.7	
	3	17 17 35.5	5 29.84	7.1	1 17 48.8	1.01	0.694 8892	23.7	
	7	17 39 34.8	5 29.83	7.5	1 17 44.6	1.06	0.694 8991	25.7	
	11	18 1 34.1	5 29.82	-7.8	-1 17 40.3	+1.11	0.694 9098	+27.7	
	15	18 23 33.4	5 29.80	8.1	1 17 35.7	1.16	0.694 9213	29.7	
	19	18 45 32.5	5 29.78	8.4	1 17 31.0	1.20	0.694 9335	31.7	
July	23	19 7 31.6	5 29.76	8.8	1 17 26.1	1.25	0.694 9466	33.7	
	27	19 29 30.6	5 29.74	9.1	1 17 21.0	1.30	0.694 9605	35.8	
	1	19 51 29.5	5 29.72	-9.4	-1 17 15.7	+1.34	0.694 9752	+37.8	
	5	20 13 28.4	5 29.70	-9.7	-1 17 10.3	+1.39	0.694 9907	+39.8	

FOR GREENWICH MEAN NOON.

Data.	Heliocentric Longitude, Mean Equinox of Date.	Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.	Var. per Day.	Logarithm of Radius Vector.	Var. per Day.	
	° ' "	' "	"	° ' "	"			
July	1	19 51 29.5	5 29.72	- 9.4	-1 17 15.7	+1.34	0.694 9752	+ 37.8
	5	20 13 28.4	5 29.70	9.7	1 17 10.3	1.39	0.694 9907	39.8
	9	20 35 27.1	5 29.67	10.0	1 17 4.6	1.44	0.695 0070	41.8
	13	20 57 25.7	5 29.64	10.4	1 16 58.8	1.49	0.695 0242	43.8
	17	21 19 24.2	5 29.62	10.7	1 16 52.7	1.53	0.695 0421	45.8
	21	21 41 22.7	5 29.59	-11.0	-1 16 46.5	+1.58	0.695 0608	+ 47.8
	25	22 3 21.0	5 29.56	11.3	1 16 40.1	1.62	0.695 0803	49.7
	29	22 25 19.1	5 29.53	11.6	1 16 33.5	1.67	0.695 1006	51.7
Aug.	2	22 47 17.2	5 29.50	11.9	1 16 26.7	1.72	0.695 1216	53.7
	6	23 9 15.1	5 29.46	12.2	1 16 19.7	1.76	0.695 1435	55.7
	10	23 31 12.9	5 29.42	-12.5	-1 16 12.6	+1.81	0.695 1662	+ 57.7
	14	23 53 10.5	5 29.39	12.8	1 16 5.3	1.86	0.695 1897	59.7
	18	24 15 8.0	5 29.36	13.1	1 15 57.7	1.91	0.695 2140	61.7
	22	24 37 5.4	5 29.32	13.4	1 15 50.0	1.95	0.695 2391	63.7
	26	24 59 2.5	5 29.28	13.7	1 15 42.1	1.99	0.695 2650	65.7
	30	25 20 59.6	5 29.23	-14.0	-1 15 34.1	+2.04	0.695 2916	+ 67.6
Sept.	3	25 42 56.4	5 29.19	14.3	1 15 25.8	2.09	0.695 3191	69.6
	7	26 4 53.1	5 29.15	14.6	1 15 17.3	2.14	0.695 3473	71.5
	11	26 26 49.6	5 29.10	14.9	1 15 8.7	2.18	0.695 3763	73.5
	15	26 48 45.9	5 29.06	15.2	1 14 59.9	2.22	0.695 4061	75.5
	19	27 10 42.1	5 29.01	-15.5	-1 14 50.9	+2.27	0.695 4367	+ 77.5
	23	27 32 38.0	5 28.96	15.8	1 14 41.7	2.32	0.695 4681	79.4
	27	27 54 33.8	5 28.91	16.0	1 14 32.3	2.37	0.695 5002	81.4
	Oct.	1	28 16 29.3	5 28.86	16.3	1 14 22.7	2.41	0.695 5332	83.3
	5	28 38 24.7	5 28.81	16.6	1 14 13.0	2.45	0.695 5669	85.2
	9	29 0 19.8	5 28.75	-16.8	-1 14 3.1	+2.50	0.695 6013	+ 87.1
	13	29 22 14.7	5 28.70	17.1	1 13 53.0	2.54	0.695 6366	89.1
	17	29 44 9.4	5 28.65	17.4	1 13 42.8	2.58	0.695 6726	90.9
	21	30 6 3.9	5 28.60	17.6	1 13 32.4	2.62	0.695 7093	92.9
	25	30 27 58.2	5 28.54	17.9	1 13 21.8	2.67	0.695 7469	94.8
	29	30 49 52.2	5 28.48	-18.1	-1 13 11.0	+2.72	0.695 7852	+ 96.7
	Nov.	2	31 11 46.0	5 28.41	18.4	1 13 0.0	2.77	0.695 8243	98.6
	6	31 33 39.5	5 28.35	18.6	1 12 48.9	2.81	0.695 8641	100.5
	10	31 55 32.8	5 28.30	18.9	1 12 37.5	2.86	0.695 9047	102.5
	14	32 17 25.9	5 28.23	19.1	1 12 26.0	2.89	0.695 9461	104.4
	18	32 39 18.7	5 28.16	-19.4	-1 12 14.4	+2.94	0.695 9882	+106.2
	22	33 1 11.2	5 28.09	19.6	1 12 2.5	2.99	0.696 0311	108.1
	26	33 23 3.4	5 28.02	19.8	1 11 50.5	3.02	0.696 0747	110.0
	30	33 44 55.4	5 27.96	20.0	1 11 38.4	3.06	0.696 1191	111.9
	Dec.	4	34 6 47.1	5 27.90	20.3	1 11 26.0	3.11	0.696 1642	113.8
	8	34 28 38.6	5 27.82	-20.5	-1 11 13.5	+3.15	0.696 2101	+115.6
	12	34 50 29.7	5 27.75	20.7	1 11 0.8	3.20	0.696 2567	117.4
	16	35 12 20.6	5 27.68	20.9	1 10 47.9	3.24	0.696 3040	119.2
	20	35 34 11.2	5 27.60	21.2	1 10 34.9	3.28	0.696 3521	121.1
	24	35 56 1.4	5 27.52	21.4	1 10 21.7	3.32	0.696 4009	123.0
	28	36 17 51.4	5 27.45	-21.6	-1 10 8.3	+3.36	0.696 4505	+124.8
	32	36 39 41.0	5 27.38	-21.8	-1 9 54.8	+3.40	0.696 5008	+126.6

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	
	h	m	s	s	°	'	"	"			"	"	h	m
Jan. 1	6	57	33.82	-0.886	+22	18	3.2	+1.48	0.905 3597	- 21.9	9.63	1.10	12	16.1
2	6	57	12.54	0.887	22	18	38.8	1.48	0.905 3158	14.6	9.63	1.10	12	11.8
3	6	56	51.24	0.888	22	19	14.3	1.48	0.905 2893	7.4	9.63	1.10	12	7.5
4	6	56	29.92	0.889	22	19	49.7	1.47	0.905 2802	- 0.2	9.63	1.10	12	3.2
5	6	56	8.59	0.889	22	20	25.0	1.47	0.905 2884	+ 7.0	9.63	1.10	11	59.0
6	6	55	47.27	-0.888	+22	21	0.2	+1.46	0.905 3140	+ 14.3	9.63	1.09	11	54.7
7	6	55	25.97	0.887	22	21	35.3	1.46	0.905 3559	21.5	9.63	1.09	11	50.4
8	6	55	4.71	0.885	22	22	10.2	1.45	0.905 4171	28.7	9.63	1.09	11	46.1
9	6	54	43.49	0.883	22	22	44.9	1.44	0.905 4945	35.8	9.63	1.09	11	41.8
10	6	54	22.33	0.880	22	23	19.4	1.43	0.905 5850	42.9	9.63	1.09	11	37.5
11	6	54	1.24	-0.877	+22	23	53.7	+1.42	0.905 7006	+ 50.1	9.63	1.09	11	33.3
12	6	53	40.24	0.873	22	24	27.8	1.41	0.905 8293	57.1	9.63	1.09	11	29.0
13	6	53	19.33	0.869	22	25	1.6	1.41	0.905 9749	64.2	9.62	1.09	11	24.7
14	6	52	58.53	0.864	22	25	35.3	1.40	0.905 1373	71.2	9.62	1.09	11	20.4
15	6	52	37.86	0.859	22	26	8.6	1.38	0.906 3165	78.1	9.61	1.09	11	16.2
16	6	52	17.32	-0.853	+22	26	41.7	+1.37	0.906 5124	+ 85.0	9.61	1.09	11	11.9
17	6	51	56.92	0.847	22	27	14.4	1.36	0.906 7247	91.9	9.60	1.09	11	7.6
18	6	51	36.68	0.840	22	27	46.8	1.34	0.906 9535	98.7	9.60	1.09	11	3.3
19	6	51	16.60	0.833	22	28	18.9	1.33	0.907 1986	105.5	9.59	1.09	10	59.1
20	6	50	56.70	0.825	22	28	50.7	1.32	0.907 4598	112.2	9.59	1.09	10	54.8
21	6	50	36.99	-0.817	+22	29	22.2	+1.30	0.907 7370	+118.8	9.58	1.09	10	50.6
22	6	50	17.47	0.809	22	29	53.3	1.29	0.908 0300	125.4	9.57	1.09	10	46.3
23	6	49	58.17	0.800	22	30	24.1	1.28	0.908 3388	131.9	9.56	1.09	10	42.1
24	6	49	39.08	0.790	22	30	54.5	1.26	0.908 6631	138.4	9.56	1.09	10	37.8
25	6	49	20.23	0.781	22	31	24.5	1.24	0.909 0029	144.7	9.55	1.09	10	33.6
26	6	49	1.61	-0.770	+22	31	54.2	+1.23	0.909 3579	+151.1	9.54	1.08	10	29.3
27	6	48	43.25	0.760	22	32	23.5	1.21	0.909 7281	157.4	9.53	1.08	10	25.1
28	6	48	25.15	0.748	22	32	52.4	1.20	0.910 1133	163.6	9.52	1.08	10	20.9
29	6	48	7.33	0.737	22	33	20.9	1.18	0.910 5134	169.7	9.52	1.08	10	16.7
30	6	47	49.79	0.725	22	33	49.0	1.16	0.910 9280	175.7	9.51	1.08	10	12.4
31	6	47	32.53	-0.713	+22	34	16.7	+1.14	0.911 3570	+181.7	9.50	1.08	10	8.2
Feb. 1	6	47	15.58	0.700	22	34	43.9	1.13	0.911 8002	187.6	9.49	1.08	10	4.0
2	6	46	58.95	0.686	22	35	10.8	1.11	0.912 2573	193.3	9.48	1.08	9	59.8
3	6	46	42.63	0.673	22	35	37.1	1.09	0.912 7281	199.0	9.47	1.08	9	55.6
4	6	46	26.65	0.659	22	36	3.1	1.07	0.913 2124	204.6	9.45	1.08	9	51.4
5	6	46	11.01	-0.644	+22	36	28.6	+1.05	0.913 7100	+210.0	9.44	1.07	9	47.2
6	6	45	55.72	0.630	22	36	53.6	1.03	0.914 2206	215.4	9.43	1.07	9	43.0
7	6	45	40.79	0.615	22	37	18.2	1.01	0.914 7440	220.7	9.42	1.07	9	38.9
8	6	45	26.22	0.599	22	37	42.3	0.99	0.915 2798	225.8	9.41	1.07	9	34.7
9	6	45	12.03	0.583	22	38	5.9	0.97	0.915 8278	230.8	9.40	1.07	9	30.5
10	6	44	58.22	-0.567	+22	38	29.1	+0.95	0.916 3878	+235.7	9.39	1.07	9	26.4
11	6	44	44.80	0.551	22	38	51.7	0.93	0.916 9593	240.5	9.38	1.07	9	22.2
12	6	44	31.78	0.534	22	39	13.9	0.91	0.917 5422	245.2	9.36	1.07	9	18.1
13	6	44	19.15	0.518	22	39	35.8	0.90	0.918 1362	249.7	9.35	1.06	9	13.9
14	6	44	6.93	0.500	22	39	56.9	0.88	0.918 7409	254.2	9.34	1.06	9	9.8
15	6	43	55.13	-0.483	+22	40	17.7	+0.86	0.919 3563	+258.5	9.32	1.06	9	5.7
16	6	43	43.74	-0.466	+22	40	38.0	+0.84	0.919 9819	+262.7	9.31	1.06	9	1.5

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	
	h	m	s	s	°	'	"	"			"	"	h	m
Feb. 16	6	43	43.74	-0.466	+22	40	38.0	+0.84	0.919 9819	+262.7	9.31	1.06	9	1.5
17	6	43	32.77	0.448	22	40	57.8	0.81	0.920 6175	266.9	9.30	1.06	8	57.4
18	6	43	22.23	0.430	22	41	17.1	0.79	0.921 2629	270.9	9.29	1.05	8	53.3
19	6	43	12.12	0.412	22	41	36.0	0.77	0.921 9176	274.7	9.27	1.05	8	49.2
20	6	43	2.45	0.394	22	41	54.3	0.75	0.922 5815	278.5	9.26	1.05	8	45.2
21	6	42	53.22	-0.375	+22	42	12.2	+0.74	0.923 2542	+282.1	9.25	1.05	8	41.1
22	6	42	44.43	0.357	22	42	29.6	0.71	0.923 9356	285.6	9.23	1.05	8	37.0
23	6	42	36.09	0.338	22	42	46.5	0.69	0.924 6253	289.1	9.22	1.04	8	32.9
24	6	42	28.21	0.319	22	43	2.9	0.67	0.925 3231	292.4	9.20	1.04	8	28.9
25	6	42	20.78	0.300	22	43	18.8	0.65	0.926 0287	295.6	9.19	1.04	8	24.8
26	6	42	13.82	-0.280	+22	43	34.3	+0.63	0.926 7419	+298.7	9.17	1.04	8	20.8
27	6	42	7.32	0.261	22	43	49.2	0.61	0.927 4624	301.7	9.16	1.04	8	16.7
28	6	42	1.28	0.242	22	44	3.7	0.59	0.928 1899	304.5	9.14	1.03	8	12.7
29	6	41	55.71	0.222	22	44	17.7	0.57	0.928 9241	307.3	9.13	1.03	8	8.7
Mar. 1	6	41	50.62	0.202	22	44	31.2	0.55	0.929 6648	309.9	9.11	1.03	8	4.7
2	6	41	46.01	-0.182	+22	44	44.3	+0.53	0.930 4116	+312.4	9.09	1.03	8	0.7
3	6	41	41.87	0.162	22	44	56.8	0.51	0.931 1642	314.8	9.08	1.03	7	56.7
4	6	41	38.22	0.142	22	45	8.8	0.49	0.931 9224	317.0	9.06	1.03	7	52.7
5	6	41	35.05	0.122	22	45	20.3	0.47	0.932 6858	319.1	9.05	1.03	7	48.7
6	6	41	32.37	0.101	22	45	31.3	0.45	0.933 4541	321.1	9.03	1.03	7	44.7
7	6	41	30.18	-0.081	+22	45	41.8	+0.43	0.934 2271	+323.0	9.01	1.02	7	40.7
8	6	41	28.47	0.061	22	45	51.8	0.41	0.935 0045	324.7	9.00	1.02	7	36.8
9	6	41	27.25	0.041	22	46	1.3	0.39	0.935 7858	326.4	8.98	1.02	7	32.8
10	6	41	26.52	-0.020	22	46	10.3	0.36	0.936 5710	327.9	8.97	1.02	7	28.9
11	6	41	26.27	0.000	22	46	18.8	0.34	0.937 3595	329.2	8.95	1.02	7	25.0
12	6	41	26.51	+0.020	+22	46	26.8	+0.32	0.938 1512	+330.5	8.93	1.02	7	21.0
13	6	41	27.24	0.041	22	46	34.3	0.30	0.938 9459	331.7	8.92	1.02	7	17.1
14	6	41	28.46	0.061	22	46	41.3	0.28	0.939 7432	332.7	8.90	1.01	7	13.2
15	6	41	30.16	0.081	22	46	47.8	0.26	0.940 5428	333.6	8.88	1.01	7	9.3
16	6	41	32.35	0.101	22	46	53.8	0.24	0.941 3446	334.5	8.86	1.01	7	5.4
17	6	41	35.01	+0.121	+22	46	59.3	+0.22	0.942 1483	+335.2	8.85	1.01	7	1.5
18	6	41	38.16	0.141	22	47	4.2	0.20	0.942 9537	335.9	8.83	1.01	6	57.7
19	6	41	41.78	0.161	22	47	8.7	0.18	0.943 7604	336.4	8.81	1.00	6	53.8
20	6	41	45.88	0.181	22	47	12.7	0.16	0.944 5683	336.8	8.80	1.00	6	49.9
21	6	41	50.46	0.201	22	47	16.2	0.13	0.945 3772	337.2	8.78	1.00	6	46.1
22	6	41	55.52	+0.221	+22	47	19.1	+0.11	0.946 1868	+337.4	8.76	1.00	6	42.2
23	6	42	1.05	0.240	22	47	21.6	0.09	0.946 9968	337.5	8.75	1.00	6	38.4
24	6	42	7.05	0.260	22	47	23.6	0.07	0.947 8070	337.6	8.73	0.99	6	34.6
25	6	42	13.53	0.280	22	47	25.0	0.05	0.948 6173	337.6	8.72	0.99	6	30.7
26	6	42	20.47	0.299	22	47	25.9	0.03	0.949 4273	337.4	8.70	0.99	6	26.9
27	6	42	27.88	+0.319	+22	47	26.3	+0.01	0.950 2369	+337.2	8.68	0.99	6	23.1
28	6	42	35.76	0.338	22	47	26.2	-0.02	0.951 0459	336.9	8.67	0.99	6	19.3
29	6	42	44.10	0.357	22	47	25.5	0.04	0.951 8540	336.5	8.65	0.98	5	15.5
30	6	42	52.90	0.376	22	47	24.3	0.06	0.952 6611	336.0	8.34	0.98	6	11.8
31	6	43	2.16	0.395	22	47	22.6	0.08	0.953 4667	335.3	8.62	0.98	6	8.0
Apr. 1	6	43	11.88	+0.414	+22	47	20.3	-0.11	0.954 2707	+334.6	8.40	0.98	6	4.2
2	6	43	22.05	+0.433	+22	47	17.5	-0.13	0.955 0729	+333.8	8.59	0.98	6	0.4

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	h	m	s	"	°	'	"	"	Noon.	Noon.	"	"	h m
Apr. 1	6	43	11.88	+0.414	+22	47	20.3	-0.11	0.954 2707	+334.6	8.60	0.98	6 4.2
2	6	43	22.05	0.433	22	47	17.5	0.13	0.955 0729	333.8	8.59	0.98	6 0.4
3	6	43	32.67	0.452	22	47	14.2	0.15	0.955 8730	332.9	8.57	0.97	5 56.7
4	6	43	43.74	0.471	22	47	10.3	0.17	0.956 6708	331.9	8.56	0.97	5 52.9
5	6	43	55.26	0.489	22	47	5.9	0.20	0.957 4662	330.9	8.54	0.97	5 49.2
6	6	44	7.22	+0.507	+22	47	0.9	-0.22	0.958 2589	+329.7	8.53	0.97	5 45.5
7	6	44	19.61	0.525	22	46	55.4	0.24	0.959 0488	328.5	8.51	0.97	5 41.7
8	6	44	32.43	0.543	22	46	49.3	0.27	0.959 8355	327.1	8.50	0.96	5 38.0
9	6	44	45.69	0.561	22	46	42.6	0.29	0.960 6189	325.7	8.48	0.96	5 34.3
10	6	44	59.37	0.579	22	46	35.4	0.31	0.961 3988	324.2	8.47	0.96	5 30.6
11	6	45	13.47	+0.596	+22	46	27.6	-0.34	0.962 1751	+322.6	8.45	0.96	5 26.9
12	6	45	27.98	0.613	22	46	19.3	0.36	0.962 9475	321.0	8.44	0.95	5 23.2
13	6	45	42.91	0.631	22	46	10.4	0.38	0.963 7159	319.3	8.42	0.95	5 19.5
14	6	45	58.25	0.647	22	46	0.9	0.41	0.964 4801	317.5	8.41	0.96	5 15.9
15	6	46	13.99	0.664	22	45	50.8	0.43	0.965 2400	315.7	8.39	0.96	5 12.2
16	6	46	30.12	+0.680	+22	45	40.2	-0.45	0.965 9954	+313.8	8.38	0.95	5 8.5
17	6	46	46.65	0.697	22	45	29.0	0.50	0.966 7462	311.8	8.36	0.95	5 4.9
18	6	47	3.58	0.713	22	45	17.2	0.53	0.967 4922	309.8	8.35	0.95	5 1.2
19	6	47	20.88	0.729	22	45	4.8	0.53	0.968 2334	307.8	8.33	0.95	4 57.6
20	6	47	38.57	0.745	22	44	51.9	0.55	0.968 9694	305.6	8.32	0.95	4 53.9
21	6	47	56.64	+0.761	+22	44	38.4	-0.58	0.969 7003	+303.4	8.31	0.95	4 50.3
22	6	48	15.09	0.776	22	44	24.3	0.60	0.970 4258	301.1	8.29	0.95	4 46.7
23	6	48	33.90	0.792	22	44	9.6	0.63	0.971 1458	298.8	8.28	0.94	4 43.1
24	6	48	53.08	0.807	22	43	54.3	0.65	0.971 8602	296.5	8.27	0.94	4 39.5
25	6	49	12.63	0.822	?2	43	38.4	0.67	0.972 5689	294.1	8.26	0.94	4 35.9
26	6	49	32.53	+0.837	+22	43	21.9	-0.70	0.973 2718	+291.6	8.24	0.94	4 32.3
27	6	49	52.79	0.851	22	43	4.7	0.73	0.973 9685	289.0	8.23	0.94	4 28.7
28	6	50	13.39	0.866	22	42	47.0	0.75	0.974 5591	286.4	8.22	0.93	4 25.1
29	6	50	34.35	0.880	22	42	28.6	0.78	0.975 3433	283.8	8.20	0.93	4 21.5
30	6	50	55.64	0.894	22	42	9.6	0.81	0.976 0211	281.0	8.19	0.93	4 17.9
May 1	6	51	17.28	+0.908	+22	41	49.9	-0.83	0.976 6922	+278.2	8.18	0.93	4 14.3
2	6	51	39.24	0.922	22	41	29.7	0.86	0.977 3566	275.4	8.17	0.93	4 10.8
3	6	52	1.53	0.936	22	41	8.8	0.88	0.978 0142	272.5	8.15	0.93	4 7.2
4	6	52	24.15	0.949	22	40	47.3	0.91	0.978 6648	269.6	8.14	0.93	4 3.7
5	6	52	47.08	0.962	22	40	25.1	0.94	0.979 3083	266.6	8.13	0.93	4 0.1
6	6	53	10.33	+0.975	+22	40	2.3	-0.96	0.979 9445	+263.6	8.12	0.92	3 56.6
7	6	53	33.88	0.988	22	39	38.9	0.99	0.980 5734	260.5	8.11	0.92	3 53.0
8	6	53	57.74	1.000	22	39	14.8	1.02	0.981 1948	257.4	8.09	0.92	3 49.5
9	6	54	21.89	1.012	22	38	50.1	1.04	0.981 8087	254.2	8.08	0.92	3 45.9
10	6	54	46.33	1.024	22	38	24.7	1.07	0.982 4149	251.0	8.07	0.92	3 42.4
11	6	55	11.06	+1.036	+22	37	58.7	-1.10	0.983 0134	+247.8	8.06	0.92	3 38.9
12	6	55	36.07	1.048	22	37	32.0	1.13	0.983 6041	244.5	8.05	0.92	3 35.4
13	6	56	1.35	1.059	22	37	4.7	1.15	0.984 1869	241.2	8.04	0.91	3 31.9
14	6	56	26.91	1.070	22	36	36.8	1.18	0.984 7617	237.8	8.03	0.91	3 28.4
15	6	56	52.73	1.081	22	36	8.2	1.21	0.985 3285	234.5	8.02	0.91	3 24.9
16	6	57	18.81	+1.092	+22	35	38.9	-1.23	0.985 8871	+231.1	8.00	0.91	3 21.4
17	6	57	45.15	+1.103	+22	35	9.0	-1.26	0.986 4376	+227.6	7.99	0.91	3 17.9

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.	Var. per Hour.	Apparent Declination.	Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.		
	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.				
	h m s	s	° ' "	"			"	"	h m		
May	17	6 57 45.15	+1.103	+22 35 9.0	-1.26	0.986 4376	+227.6	7.99	0.91	3 17.9	
	18	6 58 11.74	1.113	22 34 38.5	1.29	0.986 9798	224.2	7.98	0.90	3 14.4	
	19	6 58 38.58	1.123	22 34 7.3	1.31	0.987 5138	220.8	7.97	0.90	3 10.9	
	20	6 59 5.66	1.133	22 33 35.4	1.34	0.988 0394	217.3	7.96	0.90	3 7.4	
	21	6 59 32.97	1.143	22 33 2.9	1.37	0.988 5566	213.7	7.95	0.90	3 3.9	
	22	7 0 0.52	+1.153	+22 32 29.8	-1.39	0.989 0652	+210.1	7.94	0.90	3 0.5	
	23	7 0 28.31	1.163	22 31 56.0	1.42	0.989 5653	206.5	7.94	0.90	2 57.0	
	24	7 0 56.32	1.172	22 31 21.5	1.45	0.990 0566	202.9	7.93	0.90	2 53.5	
	25	7 1 24.55	1.181	22 30 46.3	1.48	0.990 5392	199.3	7.92	0.90	2 50.1	
	26	7 1 53.00	1.190	22 30 10.5	1.51	0.991 0130	195.6	7.91	0.89	2 46.6	
	27	7 2 21.66	+1.199	+22 29 34.0	-1.53	0.991 4779	+191.8	7.90	0.89	2 43.1	
	28	7 2 50.54	1.207	22 28 56.9	1.56	0.991 9337	188.0	7.90	0.89	2 39.7	
	29	7 3 19.61	1.215	22 28 19.1	1.59	0.992 3805	184.3	7.89	0.89	2 36.2	
	30	7 3 48.88	1.224	22 27 40.6	1.62	0.992 8181	180.4	7.88	0.89	2 32.8	
	31	7 4 18.34	1.231	22 27 1.5	1.65	0.993 2466	176.6	7.87	0.89	2 29.4	
	June	1	7 4 47.99	+1.239	+22 26 21.6	-1.68	0.993 6658	+172.7	7.87	0.89	2 25.9
		2	7 5 17.83	1.247	22 25 41.1	1.70	0.994 0756	168.8	7.86	0.89	2 22.5
		3	7 5 47.84	1.254	22 25 0.0	1.73	0.994 4760	164.9	7.85	0.89	2 19.0
		4	7 6 18.02	1.261	22 24 18.2	1.75	0.994 8670	160.9	7.85	0.89	2 15.6
		5	7 6 48.37	1.268	22 23 35.8	1.78	0.995 2485	157.0	7.84	0.89	2 12.2
		6	7 7 18.88	+1.275	+22 22 52.7	-1.81	0.995 6205	+153.0	7.83	0.89	2 8.8
		7	7 7 49.55	1.281	22 22 9.0	1.83	0.995 9829	149.0	7.82	0.89	2 5.3
		8	7 8 20.37	1.287	22 21 24.7	1.86	0.996 3358	145.0	7.82	0.89	2 1.9
		9	7 8 51.34	1.293	22 20 39.7	1.89	0.996 6790	141.0	7.81	0.89	1 58.5
		10	7 9 22.45	1.299	22 19 54.1	1.91	0.997 0126	137.0	7.80	0.89	1 55.1
		11	7 9 53.70	+1.305	+22 19 7.8	-1.94	0.997 3364	+132.9	7.80	0.89	1 51.7
		12	7 10 25.08	1.310	22 18 20.9	1.97	0.997 6505	128.9	7.79	0.89	1 48.3
		13	7 10 56.58	1.315	22 17 33.4	1.99	0.997 9550	124.8	7.79	0.89	1 44.8
		14	7 11 28.21	1.320	22 16 45.3	2.02	0.998 2496	120.7	7.78	0.89	1 41.4
		15	7 11 59.95	1.325	22 15 56.6	2.04	0.998 5345	116.7	7.77	0.88	1 38.0
		16	7 12 31.81	+1.330	+22 15 7.3	-2.07	0.998 8096	+112.6	7.77	0.88	1 34.6
17		7 13 3.79	1.335	22 14 17.3	2.10	0.999 0749	108.5	7.76	0.88	1 31.2	
18		7 13 35.87	1.339	22 13 26.7	2.12	0.999 3303	104.4	7.76	0.88	1 27.8	
19		7 14 8.05	1.343	22 12 35.5	2.15	0.999 5759	100.3	7.75	0.88	1 24.4	
20		7 14 40.33	1.347	22 11 43.7	2.17	0.999 8115	96.1	7.75	0.88	1 21.0	
21		7 15 12.70	+1.351	+22 10 51.3	-2.19	1.000 0372	+92.0	7.74	0.88	1 17.6	
22		7 15 45.17	1.354	22 9 58.4	2.22	1.000 2529	87.8	7.74	0.88	1 14.2	
23		7 16 17.71	1.358	22 9 4.8	2.24	1.000 4586	83.6	7.74	0.88	1 10.9	
24		7 16 50.34	1.361	22 8 10.7	2.27	1.000 6542	79.4	7.74	0.88	1 7.5	
25		7 17 23.05	1.364	22 7 15.9	2.29	1.000 8397	75.2	7.73	0.88	1 4.1	
26		7 17 55.83	+1.367	+22 6 20.6	-2.32	1.001 0151	+71.0	7.73	0.88	1 0.7	
27		7 18 28.68	1.370	22 5 24.7	2.34	1.001 1803	66.7	7.73	0.88	0 57.3	
28		7 19 1.59	1.372	22 4 28.3	2.36	1.001 3353	62.5	7.72	0.88	0 53.9	
29		7 19 34.55	1.375	22 3 31.3	2.39	1.001 4801	58.2	7.72	0.88	0 50.5	
30		7 20 7.57	1.377	22 2 33.8	2.41	1.001 6146	53.9	7.72	0.88	0 47.1	
July	1	7 20 40.63	+1.379	+22 1 35.7	-2.43	1.001 7389	+49.7	7.72	0.88	0 43.7	
	2	7 21-13.74	+1.380	+22 0 37.1	-2.45	1.001 8530	+45.4	7.71	0.88	0 40.4	

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	h	m	s	''	°	'	''	''	Noon.	Noon.	''	''	h m
July 1	7	20	40.63	+1.379	+22	1	35.7	-2.43	1.001 7389	+ 49.7	7.72	0.88	0 43.7
2	7	21	13.74	1.380	22	0	37.1	2.45	1.001 8530	45.4	7.71	0.88	0 40.4
3	7	21	46.88	1.381	21	59	38.0	2.48	1.001 9567	41.1	7.71	0.88	0 37.0
4	7	22	20.06	1.383	21	58	38.3	2.50	1.002 0502	36.8	7.71	0.88	0 33.6
5	7	22	53.27	1.384	21	57	38.2	2.51	1.002 1333	32.5	7.71	0.87	0 30.2
6	7	23	26.50	+1.385	+21	56	37.6	-2.54	1.002 2061	+ 28.2	7.71	0.87	0 26.9
7	7	23	59.74	1.385	21	55	36.5	2.56	1.002 2686	23.9	7.70	0.87	0 23.5
8	7	24	33.00	1.386	21	54	34.9	2.58	1.002 3209	19.6	7.70	0.87	0 20.1
9	7	25	6.27	1.386	21	53	32.9	2.59	1.002 3628	15.3	7.70	0.87	0 16.7
10	7	25	39.54	1.386	21	52	30.4	2.61	1.002 3945	11.1	7.70	0.87	0 13.3
11	7	26	12.82	+1.386	+21	51	27.4	-2.63	1.002 4160	+ 6.8	7.70	0.87	0 9.9
12	7	26	46.08	1.386	21	50	24.1	2.65	1.002 4272	+ 2.5	7.70	0.87	0 6.6
13	7	27	19.34	1.385	21	49	20.3	2.67	1.002 4281	- 1.8	7.70	0.87	0 3.2
14	7	27	52.58	1.385	21	48	16.1	2.69	1.002 4188	6.0	7.70	0.87	23 56.4
15	7	28	25.81	1.384	21	47	11.4	2.70	1.002 3992	10.3	7.71	0.87	23 53.0
16	7	28	59.02	+1.383	+21	46	6.4	-2.72	1.002 3695	- 14.5	7.71	0.87	23 49.6
17	7	29	32.21	1.382	21	45	1.0	2.73	1.002 3295	18.8	7.71	0.87	23 46.3
18	7	30	5.37	1.381	21	43	55.2	2.75	1.002 2794	23.0	7.71	0.87	23 42.9
19	7	30	38.50	1.380	21	42	49.0	2.76	1.002 2191	27.3	7.71	0.87	23 39.5
20	7	31	11.59	1.378	21	41	42.5	2.78	1.002 1485	31.5	7.71	0.87	23 36.1
21	7	31	44.64	+1.376	+21	40	35.7	-2.79	1.002 0677	- 35.8	7.71	0.87	23 32.7
22	7	32	17.65	1.374	21	39	28.5	2.81	1.001 9766	40.1	7.72	0.87	23 29.3
23	7	32	50.60	1.372	21	38	20.9	2.82	1.001 8752	44.4	7.72	0.87	23 26.0
24	7	33	23.51	1.370	21	37	13.1	2.83	1.001 7636	48.7	7.72	0.87	23 22.6
25	7	33	56.35	1.367	21	36	4.9	2.85	1.001 6416	53.0	7.72	0.88	23 19.2
26	7	34	29.13	+1.365	+21	34	56.4	-2.86	1.001 5094	- 57.2	7.72	0.88	23 15.8
27	7	35	1.85	1.362	21	33	47.7	2.87	1.001 3670	61.5	7.73	0.88	23 12.4
28	7	35	34.49	1.358	21	32	38.7	2.88	1.001 2143	65.8	7.73	0.88	23 9.0
29	7	36	7.05	1.355	21	31	29.5	2.89	1.001 0514	70.0	7.73	0.88	23 5.6
30	7	36	39.53	1.351	21	30	20.1	2.90	1.000 8782	74.3	7.73	0.88	23 2.2
31	7	37	11.92	+1.348	+21	29	10.4	-2.91	1.000 6949	- 78.5	7.74	0.88	22 58.8
Aug. 1	7	37	44.23	1.344	21	28	0.5	2.91	1.000 5013	82.8	7.74	0.88	22 55.4
2	7	38	16.43	1.340	21	26	50.5	2.92	1.000 2976	87.0	7.75	0.88	22 52.0
3	7	38	48.53	1.336	21	25	40.3	2.93	1.000 0837	91.2	7.75	0.88	22 48.6
4	7	39	20.53	1.331	21	24	29.9	2.94	0.999 8598	95.4	7.75	0.88	22 45.2
5	7	39	52.41	+1.326	+21	23	19.4	-2.94	0.999 6258	- 99.6	7.76	0.88	22 41.8
6	7	40	24.18	1.321	21	22	8.8	2.94	0.999 3819	103.7	7.76	0.88	22 38.4
7	7	40	55.83	1.316	21	20	58.1	2.95	0.999 1280	107.8	7.77	0.88	22 35.0
8	7	41	27.35	1.311	21	19	47.8	2.95	0.998 8643	112.0	7.77	0.88	22 31.6
9	7	41	58.74	1.305	21	18	36.4	2.95	0.998 5906	116.1	7.77	0.88	22 28.2
10	7	42	30.00	+1.300	+21	17	25.5	-2.96	0.998 3071	-120.2	7.78	0.88	22 24.8
11	7	43	1.13	1.294	21	16	14.5	2.96	0.998 0138	124.3	7.78	0.88	22 21.3
12	7	43	32.11	1.288	21	15	3.5	2.96	0.997 7107	128.3	7.79	0.88	22 17.9
13	7	44	2.95	1.282	21	13	52.4	2.96	0.997 3980	132.3	7.79	0.88	22 14.5
14	7	44	33.64	1.276	21	12	41.4	2.96	0.997 0756	136.3	7.80	0.89	22 11.1
15	7	45	4.18	+1.269	+21	11	30.4	-2.96	0.996 7436	-140.3	7.80	0.89	22 7.7
16	7	45	34.57	+1.263	+21	10	19.4	-2.96	0.996 4020	-144.4	7.81	0.89	22 4.2

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.		Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	Noon.				Noon.					Noon.	Noon.				Noon.
	h	m	s	s	°	'	"	"	Noon.	Noon.	"	"	"	h	m
Aug. 16	7	45	34.57	+1.263	+21	10	19.4	-2.96	0.996 4020	-144.4	7.81	0.89	0.89	22	4.2
17	7	46	4.79	1.256	21	9	8.5	2.95	0.996 0507	148.4	7.81	0.89	0.89	22	0.8
18	7	46	34.85	1.249	21	7	57.6	2.95	0.995 6899	152.3	7.82	0.89	0.89	21	57.3
19	7	47	4.74	1.242	21	6	46.8	2.95	0.995 3195	156.3	7.83	0.89	0.89	21	53.9
20	7	47	34.46	1.235	21	5	36.1	2.94	0.994 9396	160.3	7.84	0.89	0.89	21	50.5
21	7	48	4.00	+1.227	+21	4	25.5	-2.94	0.994 5501	-164.3	7.84	0.89	0.89	21	47.0
22	7	48	33.35	1.219	21	3	15.0	2.93	0.994 1512	168.2	7.85	0.89	0.89	21	43.6
23	7	49	2.52	1.211	21	2	4.7	2.93	0.993 7428	172.1	7.86	0.89	0.89	21	40.1
24	7	49	31.49	1.203	21	0	54.6	2.92	0.993 3251	176.0	7.87	0.90	0.90	21	36.7
25	7	50	0.26	1.195	20	59	44.7	2.91	0.992 8981	179.9	7.88	0.90	0.90	21	33.2
26	7	50	28.83	+1.186	+20	58	35.0	-2.90	0.992 4618	-183.7	7.88	0.90	0.90	21	29.7
27	7	50	57.19	1.178	20	57	25.6	2.89	0.992 0163	187.5	7.89	0.90	0.90	21	26.3
28	7	51	25.35	1.169	20	56	16.4	2.88	0.991 5616	191.3	7.90	0.90	0.90	21	22.8
29	7	51	53.28	1.159	20	55	7.4	2.87	0.991 0980	195.1	7.91	0.90	0.90	21	19.3
30	7	52	20.99	1.150	20	53	58.8	2.85	0.990 6253	198.8	7.92	0.90	0.90	21	15.9
31	7	52	48.47	+1.140	+20	52	50.5	-2.84	0.990 1437	-202.5	7.93	0.90	0.90	21	12.4
Sept. 1	7	53	15.73	1.131	20	51	42.6	2.82	0.989 6533	206.1	7.94	0.90	0.90	21	8.9
2	7	53	42.74	1.120	20	50	35.0	2.81	0.989 1542	209.8	7.95	0.90	0.90	21	5.4
3	7	54	9.51	1.110	20	49	27.7	2.79	0.988 6464	213.4	7.95	0.91	0.91	21	1.9
4	7	54	36.04	1.100	20	48	20.9	2.78	0.988 1300	217.0	7.96	0.91	0.91	20	58.4
5	7	55	2.32	+1.090	+20	47	14.5	-2.76	0.987 6050	-220.5	7.97	0.91	0.91	20	54.9
6	7	55	28.34	1.079	20	46	8.6	2.74	0.987 0717	223.9	7.98	0.91	0.91	20	51.4
7	7	55	54.11	1.068	20	45	3.1	2.72	0.986 5301	227.4	7.99	0.91	0.91	20	47.9
8	7	56	19.61	1.057	20	43	58.1	2.70	0.985 9802	230.8	8.00	0.91	0.91	20	44.4
9	7	56	44.84	1.046	20	42	53.6	2.68	0.985 4221	234.2	8.01	0.91	0.91	20	40.9
10	7	57	9.81	+1.035	+20	41	49.7	-2.65	0.984 8560	-237.5	8.02	0.91	0.91	20	37.4
11	7	57	34.50	1.023	20	40	46.2	2.63	0.984 2819	240.8	8.03	0.91	0.91	20	33.9
12	7	57	58.92	1.011	20	39	43.3	2.61	0.983 7000	244.1	8.04	0.91	0.91	20	30.3
13	7	58	23.05	1.000	20	38	41.0	2.59	0.983 1102	247.4	8.06	0.92	0.92	20	26.8
14	7	58	46.90	0.988	20	37	39.2	2.56	0.982 5127	250.5	8.07	0.92	0.92	20	23.2
15	7	59	10.45	+0.975	+20	36	38.1	-2.53	0.981 9076	-253.7	8.08	0.92	0.92	20	19.7
16	7	59	33.71	0.963	20	35	37.6	2.51	0.981 2949	256.9	8.09	0.92	0.92	20	16.1
17	7	59	56.68	0.951	20	34	37.8	2.48	0.980 6747	260.0	8.10	0.92	0.92	20	12.6
18	8	0	19.34	0.938	20	33	38.7	2.45	0.980 0470	263.0	8.11	0.92	0.92	20	9.0
19	8	0	41.69	0.925	20	32	40.2	2.42	0.979 4121	266.0	8.12	0.92	0.92	20	5.5
20	8	1	3.73	+0.911	+20	31	42.4	-2.39	0.978 7700	-269.0	8.14	0.92	0.92	20	1.9
21	8	1	25.44	0.898	20	30	45.4	2.36	0.978 1209	271.9	8.15	0.92	0.92	19	58.3
22	8	1	46.84	0.885	20	29	49.2	2.32	0.977 4648	274.8	8.16	0.92	0.92	19	54.7
23	8	2	7.90	0.871	20	28	53.8	2.29	0.976 8018	277.6	8.17	0.93	0.93	19	51.2
24	8	2	28.64	0.857	20	27	59.2	2.26	0.976 1321	280.4	8.18	0.93	0.93	19	47.6
25	8	2	49.03	+0.843	+20	27	5.5	-2.22	0.975 4557	-283.2	8.20	0.93	0.93	19	44.0
26	8	3	9.09	0.829	20	26	12.6	2.19	0.974 7729	285.8	8.21	0.93	0.93	19	40.4
27	8	3	28.80	0.814	20	25	20.5	2.15	0.974 0837	288.4	8.22	0.93	0.93	19	36.8
28	8	3	48.15	0.799	20	24	29.4	2.11	0.973 3884	291.0	8.23	0.93	0.93	19	33.2
29	8	4	7.15	0.784	20	23	39.2	2.07	0.972 6871	293.4	8.25	0.93	0.93	19	29.5
30	8	4	25.79	+0.769	+20	22	49.9	-2.03	0.971 9799	-295.9	8.26	0.94	0.94	19	25.9
Oct. 1	8	4	44.07	+0.754	+20	22	1.6	-1.99	0.971 2670	-298.4	8.28	0.94	0.94	19	22.2

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	Noon.				Noon.	Noon.							Noon.	Noon.	Noon.	h	m
	h	m	s	s	°	'	"	"		"	"			
Oct. 1	8	4	44.07	+0.754	+20	22	1.6	-1.99	0.971 2670	-298.4	8.28	0.94	19	22.2
2	8	5	1.98	0.739	20	21	14.3	1.95	0.970 5485	300.5	8.29	0.94	19	18.6
3	8	5	19.52	0.723	20	20	28.0	1.91	0.969 8246	302.7	8.30	0.94	19	15.0
4	8	5	36.68	0.707	20	19	42.7	1.86	0.969 0955	304.9	8.32	0.94	19	11.3
5	8	5	53.47	0.691	20	18	58.5	1.82	0.968 3613	306.9	8.33	0.95	19	7.7
6	8	6	9.87	+0.675	+20	18	15.3	-1.78	0.967 6222	-308.9	8.35	0.95	19	4.0
7	8	6	25.89	0.659	20	17	33.2	1.73	0.966 8784	310.9	8.36	0.95	19	0.3
8	8	6	41.52	0.643	20	16	52.1	1.69	0.966 1300	312.8	8.37	0.95	18	56.6
9	8	6	56.76	0.627	20	16	12.2	1.64	0.965 3770	314.6	8.39	0.95	18	53.0
10	8	7	11.60	0.610	20	15	33.4	1.59	0.964 6198	316.3	8.40	0.95	18	49.3
11	8	7	26.05	+0.594	+20	14	55.7	-1.55	0.963 8586	-318.0	8.42	0.95	18	45.6
12	8	7	40.09	0.577	20	14	19.2	1.50	0.963 0934	319.6	8.43	0.95	18	41.9
13	8	7	53.73	0.560	20	13	43.8	1.45	0.962 3245	321.1	8.45	0.96	18	38.2
14	8	8	6.96	0.543	20	13	9.7	1.40	0.961 5519	322.6	8.46	0.96	18	34.4
15	8	8	19.78	0.525	20	12	36.7	1.35	0.960 7759	324.0	8.48	0.96	18	30.7
16	8	8	32.18	+0.508	+20	12	5.0	-1.30	0.959 9967	-325.3	8.49	0.96	18	27.0
17	8	8	44.16	0.490	20	11	34.5	1.24	0.959 2143	326.6	8.51	0.96	18	23.3
18	8	8	55.72	0.473	20	11	5.3	1.19	0.958 4290	327.8	8.53	0.96	18	19.5
19	8	9	6.85	0.455	20	10	37.4	1.14	0.957 6410	328.9	8.54	0.96	18	15.8
20	8	9	17.55	0.437	20	10	10.7	1.08	0.956 8505	329.9	8.56	0.97	18	12.0
21	8	9	27.82	+0.419	+20	9	45.4	-1.03	0.956 0577	-330.8	8.57	0.97	18	8.2
22	8	9	37.65	0.400	20	9	21.4	0.97	0.955 2628	331.6	8.59	0.97	18	4.4
23	8	9	47.04	0.382	20	8	58.7	0.92	0.954 4661	332.3	8.61	0.97	18	0.6
24	8	9	55.98	0.363	20	8	37.4	0.86	0.953 6677	333.0	8.62	0.97	17	56.9
25	8	10	4.48	0.345	20	8	17.5	0.80	0.952 8679	333.5	8.64	0.98	17	53.1
26	8	10	12.53	+0.326	+20	7	58.9	-0.74	0.952 0670	-333.9	8.65	0.98	17	49.3
27	8	10	20.12	0.307	20	7	41.8	0.69	0.951 2651	334.3	8.67	0.98	17	45.5
28	8	10	27.27	0.288	20	7	26.0	0.63	0.950 4626	334.5	8.69	0.98	17	41.7
29	8	10	33.96	0.269	20	7	11.7	0.56	0.949 6596	334.6	8.70	0.98	17	37.8
30	8	10	40.19	0.250	20	6	58.9	0.50	0.948 8565	334.6	8.72	0.99	17	34.0
31	8	10	45.96	+0.231	+20	6	47.5	-0.45	0.948 0535	-334.5	8.73	0.99	17	30.2
Nov. 1	8	10	51.27	0.212	20	6	37.5	0.39	0.947 2508	334.3	8.75	0.99	17	26.3
2	8	10	56.12	0.192	20	6	28.8	0.33	0.946 4487	334.0	8.77	0.99	17	22.4
3	8	11	0.50	0.173	20	6	21.7	0.26	0.945 6474	333.6	8.78	0.99	17	18.6
4	8	11	4.42	0.154	20	6	16.1	0.21	0.944 8473	333.1	8.80	1.00	17	14.7
5	8	11	7.88	+0.135	+20	6	11.8	-0.15	0.944 0484	-332.5	8.81	1.00	17	10.8
6	8	11	10.88	0.115	20	6	9.1	0.08	0.943 2512	331.8	8.83	1.00	17	6.9
7	8	11	13.41	0.096	20	6	7.8	-0.02	0.942 4558	331.0	8.85	1.00	17	3.0
8	8	11	15.47	0.076	20	6	8.0	+0.04	0.941 6624	330.1	8.86	1.00	16	59.2
9	8	11	17.07	0.057	20	6	9.7	0.10	0.940 8714	329.1	8.88	1.01	16	55.2
10	8	11	18.20	+0.037	+20	6	12.8	+0.16	0.940 0829	-328.0	8.89	1.01	16	51.3
11	8	11	18.86	+0.018	20	6	17.4	0.22	0.939 2972	326.7	8.91	1.01	16	47.4
12	8	11	19.06	-0.002	20	6	23.5	0.28	0.938 5146	325.4	8.93	1.01	16	43.4
13	8	11	18.78	0.021	20	6	31.0	0.34	0.937 7354	323.9	8.94	1.01	16	39.5
14	8	11	18.04	0.041	20	6	40.0	0.41	0.936 9597	322.4	8.96	1.02	16	35.5
15	8	11	16.83	-0.060	+20	6	50.5	+0.47	0.936 1878	-320.7	8.97	1.02	16	31.6
16	8	11	15.15	-0.080	+20	7	2.4	+0.53	0.935 4201	-318.9	8.99	1.02	16	27.6

SATURN, 1916.

191

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Logarithm of Distance from Earth.	Var. per Hour.	Polar Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	h m
	h	m	s	s	°	'	"	"			"	"	h m
Nov. 16	8	11	15.15	-0.080	+20	7	2.4	+0.53	0.935 4201	-318.9	8.99	1.02	16 27.6
17	8	11	13.01	0.099	20	7	15.9	0.59	0.934 6569	317.0	9.01	1.02	16 23.7
18	8	11	10.39	0.119	20	7	30.8	0.65	0.933 8983	315.0	9.02	1.02	16 19.7
19	8	11	7.31	0.138	20	7	47.2	0.71	0.933 1448	312.9	9.04	1.03	16 15.7
20	8	11	3.76	0.158	20	8	5.1	0.78	0.932 3966	310.6	9.05	1.03	16 11.7
21	8	10	59.74	-0.177	+20	8	24.4	+0.84	0.931 6539	-308.2	9.07	1.03	16 7.7
22	8	10	55.27	0.196	20	8	45.2	0.90	0.930 9172	305.7	9.08	1.03	16 3.7
23	8	10	50.33	0.216	20	9	7.4	0.96	0.930 1866	303.1	9.10	1.03	15 59.6
24	8	10	44.92	0.235	20	9	31.1	1.01	0.929 4625	300.3	9.11	1.04	15 55.6
25	8	10	39.06	0.254	20	9	56.1	1.07	0.928 7452	297.4	9.13	1.04	15 51.6
26	8	10	32.75	-0.272	+20	10	22.6	+1.13	0.928 0350	-294.4	9.14	1.04	15 47.6
27	8	10	25.99	0.291	20	10	50.5	1.19	0.927 3323	291.2	9.15	1.04	15 43.5
28	8	10	18.78	0.310	20	11	19.8	1.25	0.926 6374	287.9	9.17	1.04	15 39.4
29	8	10	11.12	0.328	20	11	50.5	1.31	0.925 9505	284.5	9.18	1.04	15 35.4
30	8	10	3.03	0.346	20	12	22.5	1.36	0.925 2719	281.0	9.20	1.04	15 31.3
Dec. 1	8	9	54.50	-0.365	+20	12	55.8	+1.41	0.924 6019	-277.3	9.21	1.04	15 27.2
2	8	9	45.53	0.383	20	13	30.4	1.47	0.923 9409	273.5	9.22	1.05	15 23.2
3	8	9	36.14	0.400	20	14	6.3	1.52	0.923 2889	269.7	9.24	1.05	15 19.1
4	8	9	26.33	0.418	20	14	43.5	1.58	0.922 6464	265.7	9.25	1.05	15 15.0
5	8	9	16.10	0.435	20	15	21.9	1.63	0.922 0135	261.6	9.27	1.05	15 10.9
6	8	9	5.47	-0.452	+20	16	1.5	+1.68	0.921 3906	-257.4	9.28	1.05	15 6.7
7	8	8	54.42	0.469	20	16	42.4	1.73	0.920 7780	253.1	9.29	1.05	15 2.6
8	8	8	42.98	0.485	20	17	24.4	1.78	0.920 1758	248.7	9.30	1.05	14 58.5
9	8	8	31.14	0.502	20	18	7.6	1.82	0.919 5843	244.2	9.32	1.06	14 54.4
10	8	8	18.90	0.518	20	18	51.9	1.87	0.919 0038	239.5	9.33	1.06	14 50.2
11	8	8	6.29	-0.533	+20	19	37.3	+1.91	0.918 4345	-234.8	9.34	1.06	14 46.1
12	8	7	53.30	0.549	20	20	23.8	1.96	0.917 8767	230.0	9.35	1.06	14 41.9
13	8	7	39.93	0.565	20	21	11.4	2.00	0.917 3306	225.0	9.36	1.06	14 37.8
14	8	7	26.20	0.580	20	22	0.0	2.05	0.916 7965	220.0	9.38	1.07	14 33.6
15	8	7	12.11	0.595	20	22	49.7	2.09	0.916 2747	214.8	9.39	1.07	14 29.4
16	8	6	57.66	-0.609	+20	23	40.3	+2.13	0.915 7654	-209.5	9.40	1.07	14 25.3
17	8	6	42.87	0.623	20	24	31.9	2.17	0.915 2689	204.1	9.41	1.07	14 21.1
18	8	6	27.74	0.637	20	25	24.4	2.21	0.914 7855	198.6	9.42	1.07	14 16.9
19	8	6	12.28	0.651	20	26	17.8	2.24	0.914 3154	193.0	9.43	1.07	14 12.7
20	8	5	56.50	0.664	20	27	12.1	2.28	0.913 8589	187.4	9.44	1.07	14 8.5
21	8	5	40.40	-0.677	+20	28	7.2	+2.31	0.913 4161	-181.6	9.45	1.07	14 4.3
22	8	5	23.99	0.690	20	29	3.2	2.35	0.912 9873	175.7	9.46	1.08	14 0.1
23	8	5	7.28	0.702	20	29	59.9	2.38	0.912 5728	169.7	9.47	1.08	13 55.9
24	8	4	50.29	0.714	20	30	57.4	2.41	0.912 1727	163.6	9.48	1.08	13 51.7
25	8	4	33.02	0.725	20	31	55.6	2.44	0.911 7873	157.5	9.49	1.08	13 47.5
26	8	4	15.48	-0.736	+20	32	54.5	+2.47	0.911 4168	-151.2	9.50	1.08	13 43.2
27	8	3	57.69	0.746	20	33	54.0	2.49	0.911 0614	144.9	9.51	1.08	13 39.0
28	8	3	39.65	0.757	20	34	54.0	2.51	0.910 7212	138.5	9.51	1.08	13 34.8
29	8	3	21.37	0.766	20	35	54.6	2.54	0.910 3966	132.0	9.52	1.08	13 30.5
30	8	3	2.87	0.775	20	36	55.7	2.56	0.910 0876	125.5	9.52	1.08	13 26.3
31	8	2	44.16	-0.784	+20	37	57.3	+2.58	0.909 7943	-118.9	9.53	1.08	13 22.1
32	8	2	25.24		+20	38	59.3	..	0.909 5168	..	9.54	1.09	13 17.8

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.		
	"	'	"	"	"	"	'	"	"		"		
Jan.	7	103	7	35.3	2	14.48	-32.7	-0	25	33.3	+5.76	0.955 3942	+31.3
	15	103	25	31.1	2	14.47	31.8	0	24	47.2	5.76	0.955 4196	32.1
	23	103	43	26.8	2	14.45	30.8	0	24	1.1	5.77	0.955 4456	32.9
	31	104	1	22.3	2	14.44	29.9	0	23	14.9	5.78	0.955 4722	33.6
Feb.	8	104	19	17.8	2	14.43	28.9	0	22	28.7	5.78	0.955 4994	34.4
	16	104	37	13.1	2	14.41	-27.9	-0	21	42.5	+5.78	0.955 5273	+35.2
	24	104	55	8.3	2	14.39	26.9	0	20	56.2	5.79	0.955 5557	35.9
Mar.	3	105	13	3.4	2	14.37	26.0	0	20	9.9	5.79	0.955 5847	36.6
	11	105	30	58.3	2	14.35	25.0	0	19	23.6	5.79	0.955 6142	37.3
	19	105	48	53.0	2	14.34	24.0	0	18	37.3	5.79	0.955 6444	38.1
	27	106	6	47.7	2	14.33	-23.0	-0	17	50.9	+5.80	0.955 6752	+38.8
Apr.	4	106	24	42.2	2	14.31	22.0	0	17	4.5	5.80	0.955 7065	39.6
	12	106	42	36.6	2	14.29	21.0	0	16	18.1	5.80	0.955 7385	40.3
	20	107	0	30.8	2	14.26	20.0	0	15	31.7	5.81	0.955 7710	41.1
	28	107	18	24.8	2	14.24	19.0	0	14	45.2	5.81	0.955 8042	41.8
May	6	107	36	18.7	2	14.23	-18.0	-0	13	58.7	+5.81	0.955 8379	+42.6
	14	107	54	12.5	2	14.21	17.0	0	13	12.2	5.81	0.955 8723	43.4
	22	108	12	6.1	2	14.19	16.0	0	12	25.7	5.81	0.955 9073	44.1
	30	108	29	59.5	2	14.16	15.0	0	11	39.2	5.81	0.955 9428	44.8
June	7	108	47	52.7	2	14.14	14.0	0	10	52.7	5.82	0.955 9789	45.6
	15	109	5	45.8	2	14.12	-13.0	-0	10	6.1	+5.82	0.956 0157	+46.3
	23	109	23	38.7	2	14.10	12.0	0	9	19.6	5.82	0.956 0530	47.1
July	1	109	41	31.4	2	14.08	11.0	0	8	33.1	5.82	0.956 0910	47.8
	9	109	59	24.0	2	14.06	10.0	0	7	46.5	5.82	0.956 1295	48.6
	17	110	17	16.4	2	14.04	9.0	0	7	0.0	5.82	0.956 1687	49.3
	25	110	35	8.6	2	14.01	- 8.0	-0	6	13.4	+5.82	0.956 2084	+50.1
Aug.	2	110	53	0.6	2	13.99	7.0	0	5	26.9	5.82	0.956 2488	50.8
	10	111	10	52.4	2	13.97	6.0	0	4	40.3	5.82	0.956 2897	51.6
	18	111	28	44.1	2	13.95	4.9	0	3	53.8	5.82	0.956 3313	52.3
	26	111	46	35.6	2	13.92	3.9	0	3	7.2	5.82	0.956 3734	53.0
Sept.	3	112	4	26.9	2	13.90	- 2.9	-0	2	20.7	+5.82	0.956 4161	+53.7
	11	112	22	18.0	2	13.87	1.9	0	1	34.1	5.82	0.956 4594	54.4
	19	112	40	8.9	2	13.84	- 0.9	0	0	47.6	5.82	0.956 5032	55.2
	27	112	57	59.5	2	13.82	+ 0.1	-0	0	1.0	5.82	0.956 5477	55.9
Oct.	5	113	15	50.0	2	13.80	1.1	+0	0	45.5	5.81	0.956 5927	56.6
	13	113	33	40.3	2	13.77	+ 2.2	+0	1	32.0	+5.81	0.956 6382	+57.3
	21	113	51	30.3	2	13.74	3.2	0	2	18.5	5.81	0.956 6844	58.1
	29	114	9	20.1	2	13.72	4.2	0	3	5.0	5.81	0.956 7312	58.8
Nov.	6	114	27	9.8	2	13.69	5.2	0	3	51.5	5.81	0.956 7785	59.4
	14	114	44	59.2	2	13.66	6.2	0	4	37.9	5.81	0.956 8263	60.1
	22	115	2	48.4	2	13.64	+ 7.2	+0	5	24.4	+5.81	0.956 8747	+60.9
Dec.	30	115	20	37.4	2	13.61	8.2	0	6	10.8	5.80	0.956 9237	61.6
	8	115	38	26.1	2	13.58	9.2	0	6	57.2	5.80	0.956 9732	62.3
	16	115	56	14.7	2	13.55	10.2	0	7	43.6	5.79	0.957 0233	62.9
	24	116	14	2.9	2	13.52	11.2	0	8	29.9	5.79	0.957 0739	63.6
	32	116	31	51.0	2	13.49	+12.2	+0	9	16.3	+5.79	0.957 1250	+64.3
	40	116	49	38.8	2	13.46	+13.2	+0	10	2.6	+5.79	0.957 1767	+65.0

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Day.	Apparent Declination.			Var. per Day.	Logarithm of Distance from Earth.	Var. per Day.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.	
	h	m	s	s	°	'	"	"	Noon.	Noon.	Noon.	Noon.	h m	
Jan.	1	21	5	30.73	+12.157	-17	20	39.6	+53.26	1.316 7273	+2045.1	1.62	0.42	2 25.9
	5	21	6	20.15	12.543	17	17	2.9	55.05	1.317 5041	1836.8	1.61	0.42	2 11.0
	9	21	7	11.01	12.880	17	13	19.5	56.61	1.318 1960	1621.3	1.61	0.42	1 56.1
	13	21	8	3.13	13.170	17	9	30.3	57.96	1.318 8005	1401.2	1.61	0.42	1 41.2
	17	21	8	56.31	13.410	17	5	36.1	59.13	1.319 3164	1177.0	1.61	0.42	1 26.4
Feb.	21	21	9	50.35	+13.607	-17	1	37.5	+60.12	1.319 7416	+ 948.8	1.61	0.42	1 11.5
	25	21	10	45.10	13.759	16	57	35.3	60.94	1.320 0751	718.3	1.60	0.42	0 56.7
	29	21	11	40.36	13.864	16	53	30.3	61.54	1.320 3159	484.9	1.60	0.42	0 41.9
	2	21	12	35.95	13.921	16	49	23.3	61.94	1.320 4627	248.9	1.60	0.42	0 27.1
	6	21	13	31.67	13.931	16	45	15.1	62.10	1.320 5149	+ 11.9	1.60	0.42	0 12.3
	10	21	14	27.33	+13.888	-16	41	6.8	+62.03	1.320 4724	- 223.8	1.60	0.42	23 53.8
	14	21	15	22.71	13.797	16	36	59.1	61.77	1.320 3362	456.8	1.60	0.42	23 39.0
	18	21	16	17.65	13.666	16	32	52.9	61.31	1.320 1074	686.9	1.60	0.42	23 24.2
Mar.	22	21	17	11.98	13.490	16	28	48.9	60.64	1.319 7871	914.0	1.61	0.42	23 9.3
	26	21	18	5.51	13.271	16	24	48.1	59.74	1.319 3766	1138.4	1.61	0.42	22 54.5
	1	21	18	58.09	+13.009	-16	20	51.2	+58.66	1.318 8769	-1359.1	1.61	0.42	22 39.6
	5	21	19	49.52	12.698	16	16	59.1	57.35	1.318 2900	1574.4	1.61	0.42	22 24.7
	9	21	20	39.62	12.345	16	13	12.7	55.80	1.317 6183	1782.5	1.61	0.42	22 9.8
	13	21	21	28.23	11.953	16	9	33.0	54.04	1.316 8651	1982.2	1.62	0.43	21 54.9
	17	21	22	15.19	11.522	16	6	0.6	52.13	1.316 0337	2173.4	1.62	0.43	21 40.0
	21	21	23	0.36	+11.057	-16	2	36.2	+50.04	1.315 1275	-2356.3	1.62	0.43	21 25.0
Apr.	25	21	23	43.60	10.558	15	59	20.5	47.77	1.314 1498	2531.0	1.63	0.43	21 10.0
	29	21	24	24.78	10.025	15	56	14.3	45.29	1.313 1039	2696.9	1.63	0.43	20 54.9
	2	21	25	3.75	9.453	15	53	18.4	42.64	1.311 9938	2851.1	1.63	0.43	20 39.8
	6	21	25	40.36	8.890	15	50	33.4	39.81	1.310 8246	2993.1	1.63	0.43	20 24.7
	10	21	26	14.51	+ 8.219	-15	48	0.1	+36.83	1.309 6010	-3122.4	1.64	0.43	20 9.5
	14	21	26	46.08	7.562	15	45	38.9	33.73	1.308 3284	3238.4	1.65	0.43	19 54.3
	18	21	27	14.98	6.884	15	43	30.4	30.53	1.307 0120	3341.2	1.65	0.43	19 39.0
	22	21	27	41.13	6.188	15	41	34.8	27.22	1.305 6572	3430.8	1.66	0.44	19 23.7
May	26	21	28	4.46	5.471	15	39	52.8	23.78	1.304 2691	3507.5	1.66	0.44	19 8.4
	30	21	28	24.87	+ 4.731	-15	38	24.7	+20.24	1.302 8532	-3569.3	1.67	0.44	18 53.0
	4	21	28	42.29	3.975	15	37	11.0	16.61	1.301 4159	3614.0	1.67	0.44	18 37.5
	8	21	28	56.66	3.211	15	36	11.9	12.93	1.299 9642	3642.1	1.68	0.44	18 22.1
	12	21	29	7.97	2.442	15	35	27.6	9.24	1.298 5044	3653.7	1.69	0.44	18 6.5
	16	21	29	16.19	1.669	15	34	58.0	5.55	1.297 0434	3649.0	1.69	0.44	17 50.9
	20	21	29	21.32	+ 0.896	-15	34	43.2	+ 1.85	1.295 5872	-3629.5	1.70	0.45	17 35.3
	24	21	29	23.36	+ 0.124	15	34	43.2	- 1.85	1.294 1420	3593.4	1.70	0.45	17 19.6
June	28	21	29	22.31	- 0.649	15	34	58.0	5.53	1.292 7148	3539.8	1.71	0.45	17 3.8
	1	21	29	18.18	1.414	15	35	27.4	9.18	1.291 3125	3469.0	1.71	0.45	16 48.0
	5	21	29	11.02	2.164	15	36	11.3	12.74	1.289 9421	3379.3	1.72	0.45	16 32.1
	9	21	29	0.89	- 2.896	-15	37	9.1	-16.14	1.288 6113	-3272.6	1.72	0.45	16 16.2
	13	21	28	47.88	3.604	15	38	20.3	19.46	1.287 3261	3150.7	1.73	0.45	16 0.3
	17	21	28	32.09	4.288	15	39	44.6	22.64	1.286 0928	3013.4	1.74	0.46	15 44.3
	21	21	28	13.61	4.947	15	41	21.2	25.68	1.284 9174	2861.2	1.74	0.46	15 28.2
	25	21	27	52.55	5.578	15	43	9.7	28.56	1.283 8059	2693.2	1.74	0.46	15 12.2
July	29	21	27	29.03	- 6.177	-15	45	9.4	-31.25	1.282 7649	-2509.3	1.75	0.46	14 56.0
	3	21	27	3.19	- 6.734	-15	47	19.4	-33.71	1.281 8004	-2311.0	1.75	0.46	14 39.9

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Day.	Apparent Declination.			Var. per Day.	Logarithm of Distance from Earth.	Var. per Day.	Semi-diameter.	Hor. Parallax.	Transit Meridian of Greenwich.	
	h	m	s	s	°	'	"	"	Noon.	Noon.	"	"	h m	
July	3	21	27	3.19	- 6.734	-15	47	19.4	-33.71	1.281 8004	-2311.0	1.75	0.46	14 39.9
	7	21	26	35.22	7.244	15	49	38.8	35.96	1.280 9178	2100.2	1.76	0.46	14 23.7
	11	21	26	5.30	7.708	15	52	6.7	37.92	1.280 1218	1877.4	1.76	0.46	14 7.4
	15	21	25	33.62	8.122	15	54	41.9	39.64	1.279 4172	1645.0	1.76	0.46	13 51.2
	19	21	25	0.39	8.488	15	57	23.5	41.14	1.278 8069	1404.6	1.76	0.46	13 34.9
	23	21	24	25.78	- 8.806	-16	0	10.7	-42.39	1.278 2948	-1154.3	1.77	0.47	13 18.6
Aug.	27	21	23	50.02	9.064	16	3	2.2	43.32	1.277 8846	895.5	1.77	0.47	13 2.3
	31	21	23	13.35	9.260	16	5	56.9	43.96	1.277 5793	630.1	1.77	0.47	12 45.9
	4	21	22	36.02	9.395	16	8	53.5	44.30	1.277 3810	361.2	1.77	0.47	12 29.6
	8	21	21	58.27	9.468	16	11	50.9	44.34	1.277 2906	- 90.5	1.77	0.47	12 13.2
	12	21	21	20.36	- 9.478	-16	14	47.8	-44.08	1.277 3087	+ 180.8	1.77	0.47	11 56.9
	16	21	20	42.53	9.427	16	17	43.2	43.57	1.277 4351	450.8	1.77	0.47	11 40.5
	20	21	20	5.02	9.319	16	20	36.0	42.77	1.277 6692	719.5	1.77	0.47	11 24.2
	24	21	19	28.06	9.148	16	23	25.0	41.70	1.278 0105	986.6	1.77	0.47	11 7.9
	28	21	18	51.92	8.913	16	26	9.2	40.35	1.278 4579	1249.3	1.77	0.47	10 51.5
	Sept.	1	21	18	16.84	- 8.614	-16	28	47.4	-38.71	1.279 0090	+1504.7	1.76	0.46	10 35.2
5		21	17	43.09	8.254	16	31	18.5	36.80	1.279 6605	1750.9	1.76	0.46	10 18.9
9		21	17	10.88	7.844	16	33	41.5	34.68	1.280 4084	1986.7	1.76	0.46	10 2.7
13		21	16	40.41	7.381	16	35	55.7	32.37	1.281 2484	2211.7	1.75	0.46	9 46.4
17		21	16	11.90	6.869	16	38	0.2	29.84	1.282 1763	2425.9	1.75	0.46	9 30.2
21		21	15	45.52	- 6.310	-16	39	54.2	-27.14	1.283 1875	+2626.3	1.75	0.46	9 14.1
Oct.	25	21	15	21.48	5.705	16	41	37.1	24.24	1.284 2771	2816.8	1.74	0.46	8 58.0
	29	21	14	59.94	5.056	16	43	7.9	21.15	1.285 4389	2989.5	1.74	0.46	8 41.9
	3	21	14	41.08	4.369	16	44	26.1	17.92	1.286 6665	3145.9	1.73	0.45	8 25.9
	7	21	14	25.03	3.653	16	45	31.1	14.60	1.287 9533	3284.4	1.73	0.45	8 9.9
	11	21	14	11.89	- 2.914	-16	46	22.8	-11.22	1.289 2918	+3405.9	1.72	0.45	7 53.9
	15	21	14	1.75	2.152	16	47	0.7	7.71	1.290 6758	3510.8	1.72	0.45	7 38.0
	19	21	13	54.70	1.370	16	47	24.4	4.15	1.292 0962	3598.9	1.71	0.45	7 22.2
	23	21	13	50.81	- 0.571	16	47	33.8	- 0.54	1.293 5526	3669.8	1.71	0.45	7 6.4
	27	21	13	50.15	+ 0.241	16	47	28.6	+ 3.15	1.295 0313	3720.8	1.70	0.45	6 50.7
	31	21	13	52.75	+ 1.061	-16	47	8.6	+ 6.84	1.296 5267	+3752.6	1.69	0.44	6 35.0
Nov.	4	21	13	58.64	1.890	16	46	33.9	10.51	1.298 0309	3765.5	1.69	0.44	6 19.4
	8	21	14	7.78	2.688	16	45	44.6	14.13	1.299 5368	3761.0	1.68	0.44	6 3.8
	12	21	14	20.14	3.491	16	44	40.9	17.73	1.301 0375	3739.9	1.68	0.44	5 48.3
	16	21	14	35.70	4.287	16	43	22.8	21.30	1.302 5264	3702.0	1.67	0.44	5 32.8
	20	21	14	54.42	+ 5.070	-16	41	50.6	+24.81	1.303 9969	+3647.9	1.66	0.44	5 17.4
	24	21	15	16.24	5.837	16	40	4.4	28.28	1.305 4422	3575.8	1.66	0.44	5 2.0
Dec.	28	21	15	41.09	6.583	16	38	4.5	31.63	1.306 8553	3486.9	1.65	0.43	4 46.7
	2	21	16	8.87	7.301	16	35	51.5	34.88	1.308 2297	3388.1	1.65	0.43	4 31.4
	6	21	16	39.46	7.999	16	33	25.6	38.01	1.309 5598	3304.2	1.64	0.43	4 16.2
	10	21	17	12.74	+ 8.645	-16	30	47.6	+40.99	1.310 8394	+3132.7	1.64	0.43	4 1.1
	14	21	17	48.58	9.272	16	27	57.8	43.87	1.312 0644	2989.9	1.63	0.43	3 45.9
	18	21	18	26.87	9.866	16	24	56.8	46.61	1.313 2296	2834.1	1.63	0.43	3 30.8
	22	21	19	7.46	10.425	16	21	45.1	49.21	1.314 3301	2666.6	1.63	0.43	3 15.8
	26	21	19	50.22	10.946	16	18	23.3	51.67	1.315 3613	2487.0	1.62	0.43	3 0.8
	30	21	20	34.97	+11.421	-16	14	52.0	+53.93	1.316 3183	+2297.6	1.62	0.43	2 45.8
	34	21	21	21.53	....	-16	11	12.3	....	1.317 1981	....	1.62	0.43	2 30.8

FOR GREENWICH MEAN NOON.

Data.	Helio- centric Longitude, Mean Equinox of Date.	Var per Day.	Reduction to Orbit.	Helio- centric Latitude.	Var per Day.	Logarithm of Radius Vector.	Var. per Day.	
	° ' "	"	"	° ' "	"			
Jan.	1	315 17 38.6	39.30	+7.8	-0 40 48.8	-0.25	1.299 4672	+21.6
	11	315 24 11.6	39.30	7.8	0 40 51.3	0.25	1.299 4888	21.5
	21	315 30 44.6	39.30	7.8	0 40 53.8	0.25	1.299 5102	21.4
Feb.	31	315 37 17.5	39.29	+7.8	-0 40 56.3	-0.25	1.299 5315	+21.3
	10	315 43 50.4	39.28	7.8	0 40 58.8	0.25	1.299 5528	21.2
	20	315 50 23.2	39.28	7.7	0 41 1.3	0.25	1.299 5740	21.2
Mar.	1	315 56 56.0	39.28	+7.7	-0 41 3.7	-0.25	1.299 5952	+21.1
	11	316 3 28.7	39.27	7.7	0 41 6.2	0.24	1.299 6162	21.0
	21	316 10 1.4	39.26	7.7	0 41 8.6	0.24	1.299 6372	20.9
Apr.	31	316 16 34.0	39.26	+7.6	-0 41 11.1	-0.24	1.299 6581	+20.9
	10	316 23 6.6	39.26	7.6	0 41 13.5	0.24	1.299 6789	20.8
	20	316 29 39.2	39.25	7.6	0 41 15.9	0.24	1.299 6997	20.8
May	30	316 36 11.7	39.25	+7.6	-0 41 18.3	-0.24	1.299 7204	+20.7
	10	316 42 44.1	39.24	7.6	0 41 20.7	0.24	1.299 7410	20.6
	20	316 49 16.5	39.24	7.5	0 41 23.1	0.24	1.299 7615	20.5
June	30	316 55 48.9	39.24	+7.5	-0 41 25.5	-0.24	1.299 7819	+20.4
	9	317 2 21.2	39.23	7.5	0 41 27.9	0.24	1.299 8023	20.3
	19	317 8 53.4	39.22	7.5	0 41 30.3	0.23	1.299 8226	20.2
July	29	317 15 25.6	39.22	+7.5	-0 41 32.6	-0.23	1.299 8428	+20.2
	9	317 21 57.8	39.21	7.4	0 41 34.9	0.23	1.299 8630	20.1
	19	317 28 29.9	39.21	7.4	0 41 37.2	0.23	1.299 8831	20.1
Aug.	29	317 35 2.0	39.20	+7.4	-0 41 39.6	-0.23	1.299 9031	+20.0
	8	317 41 34.0	39.20	7.4	0 41 41.9	0.23	1.299 9231	19.9
	18	317 48 6.0	39.19	7.4	0 41 44.2	0.23	1.299 9429	19.8
Sept.	28	317 54 37.9	39.19	+7.3	-0 41 46.5	-0.23	1.299 9627	+19.8
	7	318 1 9.8	39.19	7.3	0 41 48.8	0.23	1.299 9825	19.7
	17	318 7 41.7	39.18	7.3	0 41 51.0	0.23	1.300 0022	19.6
Oct.	27	318 14 13.5	39.18	+7.3	-0 41 53.3	-0.22	1.300 0217	+19.5
	7	318 20 45.2	39.17	7.2	0 41 55.5	0.22	1.300 0412	19.5
	17	318 27 16.9	39.17	7.2	0 41 57.8	0.22	1.300 0607	19.4
Nov.	27	318 33 48.6	39.16	+7.2	-0 42 0.0	-0.22	1.300 0801	+19.4
	6	318 40 20.2	39.16	7.2	0 42 2.3	0.22	1.300 0994	19.3
	16	318 46 51.7	39.15	7.1	0 42 4.5	0.22	1.300 1186	19.2
Dec.	26	318 53 23.2	39.15	+7.1	-0 42 6.7	-0.22	1.300 1378	+19.1
	6	318 59 54.7	39.14	7.1	0 42 8.9	0.22	1.300 1569	19.0
	16	319 6 26.1	39.14	7.1	0 42 11.1	0.22	1.300 1759	19.0
	26	319 12 57.5	39.13	+7.1	-0 42 13.2	-0.22	1.300 1949	+18.9
	36	319 19 28.8	39.13	+7.0	-0 42 15.4	-0.22	1.300 2137	+18.8

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Day.	Apparent Declination.			Var. per Day.	Logarithm of Distance from Earth.	Var. per Day.	Semi-diameter.	Hor. Parallax.	
	Noon.			Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	Noon.	
	h	m	s	s	°	'	"	"	Noon.		"	"	
Jan.	1	8	16	10.61	-6.357	+19	27	15.0	+21.00	1.463 8600	- 970.9	1.33	0.30
	5	8	15	44.73	6.577	19	28	40.4	21.69	1.463 5064	795.8	1.33	0.30
	9	8	15	18.05	6.753	19	30	8.3	22.24	1.463 2240	616.1	1.33	0.30
	13	8	14	50.77	6.880	19	31	38.1	22.63	1.463 0140	433.0	1.33	0.30
	17	8	14	23.07	6.963	19	33	9.1	22.86	1.462 8779	247.7	1.33	0.30
Feb.	21	8	13	55.12	-7.003	+19	34	40.8	+22.96	1.462 8159	- 62.1	1.33	0.30
	25	8	13	27.10	6.998	19	36	12.6	22.92	1.462 8282	+ 123.5	1.33	0.30
	29	8	12	59.19	6.949	19	37	44.0	22.73	1.462 9147	309.4	1.33	0.30
	2	8	12	31.57	6.853	19	39	14.3	22.41	1.463 0756	494.4	1.33	0.30
	6	8	12	4.43	6.709	19	40	43.1	21.95	1.463 3097	675.6	1.33	0.30
	10	8	11	37.95	-6.522	+19	42	9.7	+21.32	1.463 6154	+ 852.0	1.33	0.30
	14	8	11	12.31	6.290	19	43	33.5	20.57	1.463 9905	1022.2	1.33	0.30
	18	8	10	47.68	6.021	19	44	54.1	19.72	1.464 4323	1185.7	1.33	0.30
Mar.	22	8	10	24.19	5.716	19	46	11.1	18.76	1.464 9382	1342.9	1.33	0.30
	26	8	10	2.00	5.374	19	47	24.0	17.70	1.465 5056	1492.3	1.32	0.30
	1	8	9	41.24	-5.001	+19	48	32.5	+16.53	1.466 1309	+1633.4	1.32	0.30
	5	8	9	22.04	4.591	19	49	36.1	15.25	1.466 8111	1765.4	1.32	0.30
	9	8	9	4.55	4.150	19	50	34.4	13.89	1.467 5418	1886.7	1.32	0.30
	13	8	8	48.87	3.685	19	51	27.1	12.47	1.468 3189	1996.3	1.32	0.30
	17	8	8	35.09	3.201	19	52	14.1	10.99	1.469 1373	2094.7	1.31	0.30
	21	8	8	23.28	-2.703	+19	52	54.9	+ 9.46	1.469 9932	+2182.2	1.31	0.30
Apr.	25	8	8	13.49	2.194	19	53	29.7	7.88	1.470 8816	2259.0	1.31	0.30
	29	8	8	5.83	1.648	19	53	58.0	6.25	1.471 7989	2324.5	1.31	0.30
	2	8	8	0.32	1.101	19	54	19.7	4.60	1.472 7396	2377.9	1.30	0.30
	6	8	7	57.02	-0.549	19	54	34.8	2.92	1.473 6995	2418.7	1.30	0.30
	10	8	7	55.93	+0.006	+19	54	43.1	+ 1.22	1.474 6729	+2446.8	1.30	0.30
	14	8	7	57.07	0.564	19	54	44.6	- 0.46	1.475 6553	2462.5	1.29	0.29
	18	8	8	0.44	1.120	19	54	39.4	2.15	1.476 6414	2467.0	1.29	0.29
	22	8	8	6.02	1.667	19	54	27.4	3.84	1.477 6276	2462.1	1.29	0.29
May	26	8	8	13.77	2.211	19	54	8.7	5.51	1.478 6096	2445.8	1.28	0.29
	30	8	8	23.70	+2.752	+19	53	43.3	- 7.18	1.479 5827	+2417.7	1.28	0.29
	4	8	8	35.77	3.281	19	53	11.3	8.81	1.480 5423	2379.0	1.28	0.29
	8	8	8	49.93	3.795	19	52	32.8	10.42	1.481 4845	2329.5	1.28	0.29
	12	8	9	6.11	4.293	19	51	47.9	12.01	1.482 4045	2269.5	1.27	0.29
	16	8	9	24.25	4.773	19	50	56.8	13.52	1.483 2990	2201.5	1.27	0.29
	20	8	9	44.27	+5.233	+19	49	59.8	-15.00	1.484 1646	+2125.2	1.27	0.29
	24	8	10	6.09	5.675	19	48	56.9	16.43	1.484 9980	2040.5	1.27	0.29
June	28	8	10	29.65	6.100	19	47	48.4	17.82	1.485 7959	1947.5	1.26	0.29
	1	8	10	54.86	6.502	19	46	34.4	19.16	1.486 5549	1845.8	1.26	0.29
	5	8	11	21.63	6.876	19	45	15.2	20.42	1.487 2716	1737.2	1.26	0.29
	9	8	11	49.84	+7.226	+19	43	51.1	-21.61	1.487 9438	+1622.2	1.26	0.29
	13	8	12	19.40	7.546	19	42	22.4	22.72	1.488 5686	1501.2	1.26	0.29
	17	8	12	50.18	7.842	19	40	49.4	23.77	1.489 1441	1375.7	1.25	0.29
	21	8	13	22.10	8.113	19	39	12.3	24.75	1.489 6685	1245.6	1.25	0.29
	25	8	13	55.04	8.354	19	37	31.5	25.65	1.490 1399	1110.1	1.25	0.28
July	29	8	14	28.89	+8.567	+19	35	47.2	-26.50	1.490 5560	+ 970.1	1.25	0.28
	3	8	15	3.54	+8.751	+19	33	59.7	-27.23	1.490 9155	+ 826.4	1.25	0.28

GREENWICH MEAN TIME.

Date.	Apparent Right Ascension.			Var. per Day.	Apparent Declination.			Var. per Day.	Logarithm of Distance from Earth.	Var. per Day.	Semi-diameter.	Hor. Parallax.	Transit, Meridian of Greenwich.		
	h	m	s		°	'	"							h	m
July	3	8	15	3.54	+8.751	+19	33	59.7	-27.23	1.490 9155	+ 826.4	1.25	0.28	1 30.1	
	7	8	15	38.86	8.903	19	32	9.5	27.86	1.491 2167	679.0	1.25	0.28	1 15.0	
	11	8	16	14.72	9.023	19	30	17.0	28.40	1.491 4585	536.2	1.25	0.28	0 59.8	
	15	8	16	51.00	9.113	19	28	22.5	28.83	1.491 6409	380.7	1.25	0.28	0 44.7	
	19	8	17	27.58	9.174	19	26	26.5	29.20	1.491 7629	229.6	1.25	0.28	0 29.6	
	23	8	18	4.35	+9.206	+19	24	29.1	-29.47	1.491 8244	+ 76.7	1.25	0.28	0 14.5	
	27	8	18	41.19	9.206	19	22	30.9	29.63	1.491 8241	- 77.6	1.25	0.28	23 55.6	
	31	8	19	17.96	9.174	19	20	32.2	29.71	1.491 7623	231.6	1.25	0.28	23 40.5	
	Aug.	4	8	19	54.54	9.110	19	18	33.4	29.63	1.491 6389	384.7	1.25	0.28	23 25.3
		8	8	20	30.80	9.014	19	16	35.3	29.46	1.491 4547	536.4	1.25	0.28	23 10.2
12		8	21	6.61	+8.885	+19	14	37.9	-29.20	1.491 2101	- 685.6	1.25	0.28	22 55.1	
16		8	21	41.85	8.733	19	12	41.9	28.83	1.490 9065	832.3	1.25	0.28	22 39.9	
20		8	22	16.43	8.550	19	10	47.4	28.37	1.490 5446	977.1	1.25	0.28	22 24.8	
24		8	22	50.21	8.335	19	8	55.1	27.78	1.490 1252	1119.2	1.25	0.28	22 9.6	
28		8	23	23.07	8.089	19	7	5.3	27.07	1.489 6497	1257.9	1.25	0.29	21 54.4	
Sept.		1	8	23	54.89	+7.814	+19	5	18.7	-26.26	1.489 1195	-1391.8	1.25	0.29	21 39.2
	5	8	24	25.54	7.509	19	3	35.4	25.34	1.488 5371	1519.6	1.26	0.29	21 24.0	
	9	8	24	54.93	7.179	19	1	56.1	24.30	1.487 9046	1641.8	1.26	0.29	21 8.7	
	13	8	25	22.94	6.825	19	0	21.1	23.19	1.487 2245	1757.6	1.26	0.29	20 53.5	
	17	8	25	49.50	6.446	18	58	50.7	21.99	1.486 4993	1867.6	1.26	0.29	20 38.2	
	21	8	26	14.48	+6.042	+18	57	25.3	-20.66	1.485 7313	-1970.7	1.26	0.29	20 22.8	
	25	8	26	37.80	5.614	18	56	5.5	19.25	1.484 9237	2066.6	1.27	0.29	20 7.5	
	29	8	26	59.36	5.163	18	54	51.4	17.75	1.484 0791	2154.0	1.27	0.29	19 52.1	
	Oct.	3	8	27	19.07	4.688	18	53	43.6	16.13	1.483 2018	2231.0	1.27	0.29	19 36.7
		7	8	27	36.84	4.197	18	52	42.4	14.47	1.482 2956	2298.6	1.27	0.29	19 21.3
11		8	27	52.63	+3.693	+18	51	47.9	-12.76	1.481 3642	-2356.9	1.28	0.29	19 5.8	
15		8	28	6.37	3.176	18	51	0.4	10.97	1.480 4114	2405.1	1.28	0.29	18 50.3	
19		8	28	18.02	2.643	18	50	20.2	9.12	1.479 4415	2443.3	1.28	0.29	18 34.8	
23		8	28	27.50	2.096	18	49	47.5	7.22	1.478 4582	2471.0	1.28	0.29	18 19.2	
27		8	28	34.78	1.542	18	49	22.5	5.28	1.477 4664	2486.0	1.29	0.29	18 3.6	
31		8	28	39.83	+0.983	+18	49	5.3	- 3.31	1.476 4711	-2488.2	1.29	0.29	17 47.9	
Nov.		4	8	28	42.64	+0.421	18	48	56.0	- 1.32	1.475 4774	2478.5	1.29	0.29	17 32.2
		8	8	28	43.20	-0.140	18	48	54.7	+ 0.64	1.474 4899	2457.0	1.30	0.30	17 16.5
	12	8	28	41.53	0.696	18	49	1.1	2.60	1.473 5134	2423.2	1.30	0.30	17 0.8	
	16	8	28	37.64	1.247	18	49	15.5	4.57	1.472 5529	2377.8	1.30	0.30	16 45.0	
	20	8	28	31.56	-1.792	+18	49	37.6	+ 6.49	1.471 6128	-2320.1	1.31	0.30	16 29.1	
	24	8	28	23.31	2.331	18	50	7.3	8.39	1.470 6984	2249.7	1.31	0.30	16 13.3	
	28	8	28	12.94	2.852	18	50	44.6	10.24	1.469 8147	2166.1	1.31	0.30	15 57.4	
	Dec.	2	8	28	0.53	3.350	18	51	29.1	12.00	1.468 9672	2069.9	1.31	0.30	15 41.4
		6	8	27	46.17	3.826	18	52	20.4	13.66	1.468 1602	1963.3	1.32	0.30	15 25.4
		10	8	27	29.95	-4.279	+18	53	18.2	+15.23	1.467 3978	-1846.2	1.32	0.30	15 9.4
14		8	27	11.97	4.706	18	54	22.1	16.72	1.466 6846	1718.8	1.32	0.30	14 53.4	
18		8	26	52.34	5.105	18	55	31.8	18.12	1.466 0240	1582.1	1.32	0.30	14 37.3	
22		8	26	31.17	5.474	18	56	46.9	19.38	1.465 4202	1435.0	1.32	0.30	14 21.3	
26		8	26	8.60	5.804	18	58	6.7	20.51	1.464 8772	1278.7	1.33	0.30	14 5.2	
30		8	25	44.79	-6.095	+18	59	30.8	+21.82	1.464 3982	-1115.1	1.33	0.30	13 49.0	
34		8	25	19.89	...	+19	0	58.6	...	1.463 9859	...	1.33	0.30	13 32.8	

FOR GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Var. per Day.	Reduction to Orbit.	Heliocentric Latitude.			Var. per Day.	Logarithm of Radius Vector.	Var. per Day.	
	°	'	"	"	"	°	'	"	"		"	
Jan.	1	121	8	52.6	21.73	-16.5	0	17	59.3	+0.66	1.477 2821	+4.8
	11	121	12	29.9	21.73	16.5	0	17	52.7	0.66	1.477 2868	4.8
	21	121	16	7.2	21.73	16.4	0	17	46.1	0.66	1.477 2916	4.8
Feb.	31	121	19	44.5	21.73	-16.3	-0	17	39.5	+0.66	1.477 2963	+4.8
	10	121	23	21.8	21.73	16.2	0	17	32.8	0.66	1.477 3011	4.8
	20	121	26	59.1	21.73	16.0	0	17	26.2	0.66	1.477 3058	4.8
Mar.	1	121	30	36.4	21.73	-16.0	-0	17	19.5	+0.66	1.477 3106	+4.8
	11	121	34	13.7	21.73	15.9	0	17	12.9	0.66	1.477 3153	4.8
	21	121	37	51.1	21.73	15.8	0	17	6.2	0.66	1.477 3201	4.8
Apr.	31	121	41	28.4	21.73	-15.7	-0	16	59.6	+0.66	1.477 3248	+4.8
	10	121	45	5.7	21.73	15.5	0	16	53.0	0.66	1.477 3296	4.8
	20	121	48	43.0	21.73	15.4	0	16	46.4	0.66	1.477 3344	4.8
May	30	121	52	20.4	21.73	-15.4	-0	16	39.7	+0.66	1.477 3392	+4.8
	10	121	55	57.7	21.73	15.3	0	16	33.1	0.66	1.477 3440	4.8
	20	121	59	35.1	21.73	15.2	0	16	26.4	0.66	1.477 3488	4.8
June	30	122	3	12.4	21.73	-15.0	-0	16	19.8	+0.66	1.477 3536	+4.8
	9	122	6	49.8	21.73	14.9	0	16	13.1	0.66	1.477 3584	4.8
	19	122	10	27.1	21.73	14.9	0	16	6.5	0.66	1.477 3632	4.8
July	29	122	14	4.5	21.73	-14.8	-0	15	59.8	+0.66	1.477 3681	+4.8
	9	122	17	41.8	21.73	14.6	0	15	53.2	0.66	1.477 3729	4.8
	19	122	21	19.2	21.74	14.5	0	15	46.5	0.66	1.477 3777	4.8
Aug.	29	122	24	56.5	21.74	-14.5	-0	15	39.9	+0.66	1.477 3825	+4.8
	8	122	28	33.9	21.74	14.4	0	15	33.2	0.66	1.477 3873	4.8
	18	122	32	11.3	21.74	14.3	0	15	26.6	0.66	1.477 3921	4.8
Sept.	28	122	35	48.7	21.74	-14.2	-0	15	19.9	+0.66	1.477 3970	+4.8
	7	122	39	26.0	21.74	14.0	0	15	13.3	0.66	1.477 4018	4.8
	17	122	43	3.4	21.74	13.9	0	15	6.6	0.66	1.477 4066	4.8
Oct.	27	122	46	40.8	21.74	-13.9	-0	15	0.0	+0.66	1.477 4114	+4.8
	7	122	50	18.2	21.74	13.8	0	14	53.3	0.66	1.477 4163	4.8
	17	122	53	55.5	21.74	13.6	0	14	46.7	0.66	1.477 4211	4.8
Nov.	27	122	57	32.9	21.74	-13.5	-0	14	40.0	+0.66	1.477 4259	+4.8
	6	123	1	10.3	21.74	13.5	0	14	33.4	0.66	1.477 4307	4.8
	16	123	4	47.7	21.74	13.4	0	14	26.7	0.67	1.477 4356	4.8
Dec.	26	123	8	25.1	21.74	-13.3	-0	14	20.1	+0.67	1.477 4404	+4.8
	6	123	12	2.5	21.74	13.1	0	14	13.4	0.67	1.477 4453	4.8
	16	123	15	39.9	21.74	13.0	0	14	6.7	0.67	1.477 4501	4.8
	26	123	19	17.3	21.74	-12.9	-0	14	0.0	+0.67	1.477 4550	+4.8
36	123	22	54.7	21.74	-12.8	-0	13	53.4	+0.67	1.477 4598	+4.8	

PART II.

**ASTRONOMICAL EPHEMERIS FOR THE
MERIDIAN OF WASHINGTON.**

200 FORMULÆ FOR THE REDUCTION OF STARS, 1916.

The constants of precession, nutation and aberration adopted by the *Conférence Internationale des Étoiles Fondamentales* which met in Paris in May, 1896, are given on page xviii, and together with the notation of BESSEL are used in the formulæ which follow.

BESSELIAN STAR-NUMBERS.

<i>Terms of Long Period.</i>	<i>Terms of Short Period.</i>
$A = \tau - 0.342\ 20 \sin \Omega$	$-0.004\ 05 \sin 2 \mathcal{C}$
$+ 0.004\ 15 \sin 2 \Omega$	$+0.000\ 23 \sin (\mathcal{C} + \Gamma')$
$- 0.025\ 26 \sin 2 L$	$+0.001\ 34 \sin (\mathcal{C} - \Gamma')$
$+ 0.002\ 51 \sin (L - \Gamma)$	$-0.000\ 68 \sin (2 \mathcal{C} - \Omega)$
$- 0.000\ 99 \sin (3 L - \Gamma)$	$-0.000\ 52 \sin (3 \mathcal{C} - \Gamma')$
$+ 0.000\ 42 \sin (L + \Gamma)$	$+0.000\ 30 \sin (\mathcal{C} - 2 L + \Gamma')$
$+ 0.000\ 25 \sin (2 L - \Omega)$	$+0.000\ 12 \sin 2 (\mathcal{C} - L)$
"	"
$B = - 9.210 \cos \Omega$	$-0.088 \cos 2 \mathcal{C}$
$+ 0.090 \cos 2 \Omega$	$-0.018 \cos (2 \mathcal{C} - \Omega)$
$- 0.552 \cos 2 L$	$-0.011 \cos (3 \mathcal{C} - \Gamma')$
$- 0.022 \cos (3 L - \Gamma)$	$+0.005 \cos (\mathcal{C} + \Gamma')$
$+ 0.009 \cos (L + \Gamma)$	
$+ 0.007 \cos (2 L - \Omega)$	
$C = -20.4700 \cos \omega \cos \odot$	
$D = -20.4700 \sin \odot$	
$E = - 0.0417 \sin \Omega + 0''.0005 \sin 2 \Omega - 0''.0031 \sin 2 L$	

BESSEL'S Star-Constants.

$a = 3^{\circ}.072\ 63 + 1^{\circ}.336\ 37 \sin \alpha_0 \tan \delta_0$	$a' = 20''.0455 \cos \alpha_0$
$b = \frac{1}{15} \cos \alpha_0 \tan \delta_0$	$b' = -\sin \alpha_0$
$c = \frac{1}{15} \cos \alpha_0 \sec \delta_0$	$c' = \tan \omega \cos \delta_0 - \sin \alpha_0 \sin \delta_0$
$d = \frac{1}{15} \sin \alpha_0 \sec \delta_0$	$d' = \cos \alpha_0 \sin \delta_0$

Formulæ for Reduction to Apparent Position.

$$\alpha = \alpha_0 + \tau\mu + Aa + Bb + Cc + Dd + \frac{1}{15}E \quad (\text{in time})$$

$$\delta = \delta_0 + \tau\mu' + Aa' + Bb' + Cc' + Dd' \quad (\text{in arc})$$

INDEPENDENT STAR-NUMBERS.

$$f + f' = + 46''.0895 A + E \quad (\text{in arc})$$

$$= + 3^{\circ}.07263 A + \frac{1}{15}E \quad (\text{in time})$$

$$f' = - 0^{\circ}.0124 \sin 2 \mathcal{C} + 0^{\circ}.0041 \sin (\mathcal{C} - \Gamma') + 0^{\circ}.0007 \sin (\mathcal{C} + \Gamma')$$

$$- 0^{\circ}.0021 \sin (2 \mathcal{C} - \Omega) - 0^{\circ}.0016 \sin (3 \mathcal{C} - \Gamma')$$

$$+ 0^{\circ}.0009 \sin (\mathcal{C} - 2 L + \Gamma') + 0^{\circ}.0004 \sin 2 (\mathcal{C} - L)$$

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

$$g \cos G = 20''.0455 A \quad h \cos H = D$$

Formulæ for Reduction to Apparent Position.

$$\alpha = \alpha_0 + f + f' + \tau\mu + \frac{1}{15} g \sin (G + \alpha_0) \tan \delta_0 + \frac{1}{15} h \sin (H + \alpha_0) \sec \delta_0 \quad (\text{in time})$$

$$\delta = \delta_0 + \tau\mu' + g \cos (G + \alpha_0) + h \cos (H + \alpha_0) \sin \delta_0 + i \cos \delta_0 \quad (\text{in arc})$$

In the above formulæ,

τ denotes the time reckoned in units of one year, from the beginning of the Besselian fictitious year (1916, January 0^d.975, Washington mean time),

α_0, δ_0 , the star's mean R. A. and Decl. at the beginning of the fictitious year,
 α, δ , the star's apparent right ascension and declination at the time τ ,
 μ, μ' , the annual proper motion in right ascension and declination,

\odot , the Sun's true longitude,
 L , the Sun's mean longitude,
 Ω , the longitude of the Moon's ascending node,

ω , the obliquity of the ecliptic,
 Γ , the long. of the Sun's perigee,
 Γ' , the long. of the Moon's perigee,
 \mathcal{C} , the Moon's mean longitude.

The independent star-numbers are more convenient than BESSEL'S, when only one or two apparent positions of a star are required, or when BESSEL'S star-constants are not known with sufficient accuracy.

In using the star-constants of the *British Association Catalogue*, $a, b, c, d, a', b', c', d'$, with the star-numbers of this Ephemeris, the quantities to be computed are $Ac, Bd, Ca, Db, -Ac', -Bd', -Ca', -Db'$.

In the computation of the Besselian star-numbers given for Washington mean midnight of each day of the year, on pages 202-205, the short-period terms—that is, the terms involving the Moon's mean longitude—have been included.

In the computation of the independent star-numbers, pages 206-213, the short-period terms have been included in the two columns headed G and $\text{Log } g$. The quantities f and f' give separately the effect of the long-period and short-period terms. f' differs but slightly from the quantity $-0''.1866 \sin 2 \zeta + 0''.0622 \sin (\zeta - \Gamma)$ given on page 37 of the *Procès-Verbaux* of the Paris Conference of 1896, which quantity that conference decided should be omitted in the reduction of stars from mean to apparent place.

In computing the ephemerides of the circumpolar stars in this volume, all short-period terms have been included. The quantity f' , which was omitted from the ephemerides of the circumpolar stars given in the *American Ephemeris and Nautical Almanac* for the years 1900 to 1915, inclusive, is now included in these ephemerides in accordance with the decision of the *Congrès International des Éphémérides Astronomiques* held at Paris in October, 1911. See page 43 of *Procès-Verbaux* of that Congress.

In the computation of the ephemerides of the ten-day stars, no short-period terms have been included. These terms attain two maxima and two minima during the tropical month. At maximum and minimum they may amount in right ascension to $\pm 0''.008 \tan \delta$, and in declination to $\pm 0''.13$. For computing the effect of these terms for the correction of the positions of stars interpolated from the ten-day ephemerides, the following formulæ may be used, in which $\Delta\alpha$ and $\Delta\delta$ denote the effect of the short-period terms in right ascension and declination, respectively, and $\delta''\psi$ and $\delta''\omega$, the sum of the short-period terms of the nutation in longitude and obliquity:

$$\begin{aligned} \Delta\alpha &= D_{\psi}\alpha \delta''\psi + D_{\omega}\alpha \delta''\omega \\ \Delta\delta &= D_{\psi}\delta \delta''\psi + D_{\omega}\delta \delta''\omega \end{aligned}$$

The values of $\delta''\psi$ and of $\delta''\omega$ for Washington mean midnight are given for each day of the year on pages 215-216, and have been computed as follows:

$$\delta''\psi = 50''.37 A_2 \qquad \delta''\omega = -B_2$$

in which A_2 and B_2 are the sums of the short-period terms given in the expressions for A and B on page 200.

The quantities $D_{\psi}\alpha, D_{\omega}\alpha, D_{\psi}\delta,$ and $D_{\omega}\delta$ are given for each ten-day star on pages 316-513, and have been computed by means of the following formulæ:

$$\begin{aligned} D_{\psi}\alpha &= \frac{1}{18} (\cos \omega + \sin \alpha \tan \delta \sin \omega) & D_{\omega}\alpha &= -\frac{1}{18} \cos \alpha \tan \delta \\ D_{\psi}\delta &= \cos \alpha \sin \omega & D_{\omega}\delta &= \sin \alpha \end{aligned}$$

In the *Star List of the American Ephemeris* for the years 1910 and 1911 and in the *American Ephemeris and Nautical Almanac* for the years 1912 to 1915, inclusive, the value used for the derivative of the right ascension with reference to ψ was

$$D'_{\psi}\alpha = \frac{1}{18} \sin \alpha \tan \delta \sin \omega$$

and the addition of the term $\frac{1}{18} \cos \omega$ is made in accordance with the above-mentioned decision of the *Congrès International des Éphémérides Astronomiques* of 1911 with reference to the quantity f' .

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hr.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hr.)	Log A.	Log B.	Log C.	Log D.		
Jan. 0	+9.41507	-0.7284	-0.48985	+1.30516	Feb. 15	+9.62468	-0.7601	-1.19336	+1.05624		
1	9.42344	0.7247	0.53382	1.30380	16	9.62787	0.7637	1.19838	1.04458		
2	9.43318	0.7222	0.57362	1.30230	17	9.63034	0.7676	1.20321	1.03247		
3	9.44352	0.7217	0.60995	1.30065	18	9.63202	0.7711	1.20785	1.01968		
4	9.45345	0.7233	0.64335	1.29886	19	9.63297	0.7738	1.21230	1.00678		
h					h						
(7.0)	5	+9.46216	-0.7267	-0.67423	+1.29693	(10.0)	20	+9.63348	-0.7753	-1.21658	+0.99314
	6	9.46916	0.7311	0.70294	1.29485	21	9.63391	0.7752	1.22068	0.97893	
	7	9.47426	0.7354	0.72973	1.29262	22	9.63477	0.7736	1.22460	0.96410	
	8	9.47776	0.7387	0.75483	1.29024	23	9.63641	0.7710	1.22836	0.94861	
	9	9.48028	0.7404	0.77842	1.28771	24	9.63911	0.7680	1.23195	0.93242	
	10	+9.48256	-0.7403	-0.80067	+1.28502	25	+9.64282	-0.7654	-1.23538	+0.91547	
	11	9.48522	0.7387	0.82170	1.28218	26	9.64733	0.7642	1.23865	0.89770	
	12	9.48875	0.7362	0.84162	1.27919	27	9.65206	0.7648	1.24176	0.87904	
	13	9.49331	0.7333	0.86054	1.27604	28	9.65653	0.7672	1.24471	0.85941	
	14	9.49885	0.7307	0.87853	1.27272	29	9.66018	0.7709	1.24751	0.83872	
	15	+9.50509	-0.7291	-0.89566	+1.26924	Mar. 1	+9.66275	-0.7751	-1.25015	+0.81666	
	16	9.51171	0.7287	0.91202	1.26560	2	9.66424	0.7788	1.25265	0.79372	
	17	9.51833	0.7296	0.92764	1.26179	3	9.66486	0.7813	1.25500	0.76915	
	18	9.52461	0.7318	0.94259	1.25781	4	9.66503	0.7822	1.25720	0.74297	
	19	9.53026	0.7351	0.95690	1.25365	5	9.66525	0.7814	1.25926	0.71496	
h					h						
(8.0)	20	+9.53504	-0.7390	-0.97063	+1.24932	(11.0)	6	+9.66587	-0.7793	-1.26118	+0.68495
	21	9.53881	0.7430	0.98379	1.24480	7	9.66718	0.7764	1.26296	0.65256	
	22	9.54157	0.7466	0.99644	1.24010	8	9.66923	0.7733	1.26459	0.61743	
	23	9.54353	0.7493	1.00859	1.23521	9	9.67187	0.7708	1.26609	0.57909	
	24	9.54507	0.7504	1.02028	1.23013	10	9.67496	0.7691	1.26745	0.53692	
	25	+9.54669	-0.7500	-1.03152	+1.22485	11	+9.67823	-0.7685	-1.26867	+0.49009	
	26	9.54900	0.7480	1.04235	1.21937	12	9.68140	0.7691	1.26976	0.43748	
	27	9.55247	0.7452	1.05278	1.21368	13	9.68431	0.7707	1.27071	0.37750	
	28	9.55725	0.7424	1.06282	1.20777	14	9.68676	0.7730	1.27153	0.30777	
	29	9.56318	0.7405	1.07251	1.20165	15	9.68864	0.7757	1.27222	0.22457	
	30	+9.56984	-0.7403	-1.08185	+1.19530	16	+9.68989	-0.7782	-1.27277	+0.12146	
	31	9.57655	0.7420	1.09086	1.18872	17	9.69052	0.7801	1.27319	9.98590	
Feb. 1	9.58263	0.7456	1.09955	1.18190	18	9.69071	0.7809	1.27348	9.78771		
2	9.58751	0.7503	1.10793	1.17484	19	9.69078	0.7802	1.27364	+9.41272		
3	9.59102	0.7552	1.11601	1.16753	20	9.69108	0.7779	1.27368	-8.98189		
h					h						
(9.0)	4	+9.59327	-0.7594	-1.12382	+1.15995	(12.0)	21	+9.69197	-0.7744	-1.27358	-9.65348
	5	9.59460	0.7622	1.13134	1.15210	22	9.69375	0.7703	1.27334	9.90542	
	6	9.59553	0.7632	1.13861	1.14397	23	9.69648	0.7663	1.27298	0.06368	
	7	9.59667	0.7627	1.14562	1.13556	24	9.70002	0.7634	1.27249	0.17927	
	8	9.59838	0.7609	1.15238	1.12684	25	9.70396	0.7621	1.27187	0.27032	
	9	+9.60083	-0.7586	-1.15890	+1.11781	26	+9.70779	-0.7626	-1.27112	-0.34542	
	10	9.60408	0.7564	1.16519	1.10845	27	9.71107	0.7647	1.27024	0.40928	
	11	9.60799	0.7549	1.17125	1.09875	28	9.71347	0.7676	1.26923	0.46480	
	12	9.61229	0.7544	1.17709	1.08870	29	9.71488	0.7703	1.26808	0.51389	
	13	9.61670	0.7552	1.18272	1.07827	30	9.71548	0.7720	1.26681	0.55785	
	14	+9.62090	-0.7571	-1.18814	+1.06746	31	+9.71559	-0.7722	-1.26540	-0.59762	
	15	+9.62468	-0.7601	-1.19336	+1.05624	Apr. 1	+9.71562	-0.7706	-1.26386	-0.63392	

FOR WASHINGTON MEAN MIDNIGHT.

Star Day. (Sid. Hr.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hr.)	Log A.	Log B.	Log C.	Log D.			
pr. 1	+9.71562	-0.7706	-1.26366	-0.63392	May 17	+9.80422	-0.6711	-1.01070	-1.23432			
	2	9.71598	0.7875	1.26218		0.66729	18	9.80901	0.6667	0.99930	1.23899	
	3	9.71694	0.7634	1.26037		0.69813	19	9.81196	0.6646	0.98746	1.24348	
	4	9.71857	0.7588	1.25843		0.72679	20	9.81573	0.6649	0.97517	1.24780	
	5	9.72086	0.7546	1.25635		0.75354	21	9.81894	0.6668	0.96241	1.25196	
h (13.0)	6	+9.72360	-0.7512	-1.25413	-0.77860	h (16.0)	22	+9.82138	-0.6695	-0.94913	-1.25595	
	7	9.72661	0.7489	1.25178	0.80215		23	9.82307	0.6717	0.93531	1.25979	
	8	9.72960	0.7479	1.24928	0.82436		24	9.82416	0.6725	0.92092	1.26347	
	9	9.73240	0.7480	1.24664	0.84536		25	9.82494	0.6713	0.90591	1.26700	
	10	9.73485	0.7490	1.24386	0.86525		26	9.82581	0.6679	0.89024	1.27038	
	11	+9.73680	-0.7504	-1.24094	-0.88414		27	+9.82699	-0.6628	-0.87386	-1.27361	
	12	9.73824	0.7519	1.23787	0.90210		28	9.82871	0.6568	0.85672	1.27670	
	13	9.73917	0.7528	1.23465	0.91922		29	9.83100	0.6507	0.83875	1.27964	
	14	9.73971	0.7529	1.23128	0.93555		30	9.83373	0.6453	0.81969	1.28244	
	15	9.74002	0.7514	1.22776	0.95118		31	9.83678	0.6414	0.80005	1.28510	
h (14.0)	16	+9.74046	-0.7484	-1.22409	-0.96612	June 1	+9.83994	-0.6390	-0.77914	-1.28762		
	17	9.74140	0.7438	1.22026	0.98043		2	9.84302	0.6383	0.75704	1.29001	
	18	9.74306	0.7384	1.21627	0.99416		3	9.84586	0.6391	0.73364	1.29226	
	19	9.74559	0.7328	1.21212	1.00734		4	9.84838	0.6409	0.70880	1.29438	
	20	9.74890	0.7280	1.20780	1.02000		5	9.85047	0.6431	0.68231	1.29637	
	21	+9.75271	-0.7248	-1.20332	-1.03217		h (17.0)	6	+9.85215	-0.6452	-0.65399	-1.29823
	22	9.75666	0.7236	1.19866	1.04389			7	9.85345	0.6464	0.62358	1.29996
	23	9.76007	0.7243	1.19383	1.05517			8	9.85449	0.6463	0.59075	1.30156
	24	9.76286	0.7262	1.18882	1.06604			9	9.85546	0.6444	0.55512	1.30303
	25	9.76477	0.7284	1.18363	1.07651			10	9.85663	0.6406	0.51618	1.30438
26	+9.76588	-0.7298	-1.17825	-1.08661	11	+9.85825		-0.6353	-0.47328	-1.30560		
27	9.76646	0.7297	1.17268	1.09636	12	9.86048		0.6292	0.42555	1.30670		
28	9.76684	0.7277	1.16691	1.10576	13	9.86336		0.6235	0.37180	1.30768		
29	9.76744	0.7239	1.16094	1.11484	14	9.86678		0.6192	0.31033	1.30853		
30	9.76851	0.7187	1.15476	1.12361	15	9.87050		0.6172	0.23857	1.30926		
lay 1	+9.77018	-0.7130	-1.14838	-1.13208	16	+9.87415	-0.6179	-0.15242	-1.30987			
	2	9.77251	0.7073	1.14177		1.14026	17	9.87741	0.6209	0.04470	1.31036	
	3	9.77531	0.7024	1.13494		1.14816	18	9.88005	0.6252	9.90099	1.31073	
	4	9.77840	0.6988	1.12787		1.15579	19	9.88196	0.6293	9.68454	1.31098	
	5	9.78156	0.6966	1.12057		1.16317	20	9.88331	0.6322	-9.23315	1.31110	
h (15.0)	6	+9.78458	-0.6958	-1.11302	-1.17030	h (18.0)	21	+9.88427	-0.6330	+9.15095	-1.31111	
	7	9.78732	0.6960	1.10521	1.17719		22	9.88513	0.6315	9.65721	1.31099	
	8	9.78963	0.6970	1.09714	1.18384		23	9.88621	0.6280	9.88458	1.31076	
	9	9.79149	0.6982	1.08879	1.19027		24	9.88767	0.6232	0.03296	1.31040	
	10	9.79290	0.6991	1.08016	1.19648		25	9.88964	0.6180	0.14326	1.30992	
	11	+9.79393	-0.6991	-1.07124	-1.20248		26	+9.89202	-0.6134	+0.23105	-1.30933	
	12	9.79472	0.6977	1.06200	1.20827		27	9.89469	0.6102	0.30393	1.30861	
	13	9.79555	0.6945	1.05245	1.21386		28	9.89754	0.6088	0.36622	1.30777	
	14	9.79670	0.6897	1.04256	1.21926		29	9.90032	0.6093	0.42058	1.30680	
	15	9.79848	0.6836	1.03231	1.22446		30	9.90293	0.6114	0.46877	1.30572	
16	+9.80098	-0.6770	-1.02170	-1.22948	July 1	+9.90530	-0.6146	+0.51204	-1.30451			
17	+9.80422	-0.6711	-1.01070	-1.23432		2	+9.90724	-0.6185	+0.55127	-1.30318		

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hr.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hr.)	Log A.	Log B.	Log C.	Log D.
July 1	+9.90530	-0.6146	+0.51204	-1.30451	Aug. 16	+9.97610	-0.6599	+1.18134	-1.08090
2	9.90724	0.6185	0.55127	1.30318	17	9.97665	0.6576	1.18656	1.07070
3	9.90881	0.6224	0.58714	1.30172	18	9.97754	0.6542	1.19159	1.06013
4	9.91003	0.6256	0.62016	1.30014	19	9.97880	0.6509	1.19645	1.04917
h	9.91097	0.6276	0.65073	1.29843	h	9.98038	0.6484	1.20113	1.03779
(19.0) 6	+9.91180	-0.6278	+0.67917	-1.29659	(22.0) 21	+9.98214	-0.6473	+1.20565	-1.02597
7	9.91268	0.6260	0.70575	1.29462	22	9.98394	0.6479	1.21000	1.01369
8	9.91387	0.6226	0.73069	1.29253	23	9.98565	0.6500	1.21418	1.00092
9	9.91554	0.6182	0.75415	1.29030	24	9.98717	0.6534	1.21821	0.98763
10	9.91775	0.6136	0.77630	1.28795	25	9.98843	0.6575	1.22208	0.97379
11	+9.92052	-0.6103	+0.79726	-1.28546	26	+9.98938	-0.6619	+1.22579	-0.95935
12	9.92362	0.6090	0.81713	1.28283	27	9.99000	0.6659	1.22935	0.94428
13	9.92677	0.6105	0.83603	1.28006	28	9.99038	0.6690	1.23277	0.92854
14	9.92969	0.6144	0.85402	1.27716	29	9.99056	0.6706	1.23603	0.91207
15	9.93212	0.6199	0.87118	1.27412	30	9.99069	0.6706	1.23915	0.89481
16	+9.93395	-0.6258	+0.88758	-1.27093	31	+9.99093	-0.6688	+1.24212	-0.87670
17	9.93518	0.6307	0.90326	1.26760	Sept. 1	9.99144	0.6657	1.24496	0.85767
18	9.93602	0.6337	0.91829	1.26412	2	9.99238	0.6618	1.24765	0.83762
19	9.93666	0.6343	0.93270	1.26048	3	9.99378	0.6581	1.25020	0.81646
h	9.93741	0.6328	0.94653	1.25670	h	9.99554	0.6557	1.25261	0.79408
(20.0) 21	+9.93843	-0.6297	+0.95982	-1.25276	(23.0) 5	+9.99756	-0.6553	+1.25489	-0.77034
22	9.93985	0.6269	0.97261	1.24866	6	9.99952	0.6572	1.25704	0.74509
23	9.94168	0.6224	0.98491	1.24440	7	0.00124	0.6610	1.25905	0.71813
24	9.94382	0.6201	0.99676	1.23998	8	0.00254	0.6658	1.26092	0.68924
25	9.94610	0.6195	1.00819	1.23538	9	0.00334	0.6705	1.26267	0.66815
26	+9.94839	-0.6206	+1.01920	-1.23061	10	+0.00370	-0.6739	+1.26429	-0.62450
27	9.95055	0.6234	1.02983	1.22567	11	0.00380	0.6753	1.26577	0.58786
28	9.95246	0.6275	1.04008	1.22055	12	0.00384	0.6744	1.26713	0.54769
29	9.95407	0.6322	1.04999	1.21524	13	0.00404	0.6716	1.26835	0.50326
30	9.95535	0.6371	1.05955	1.20974	14	0.00457	0.6675	1.26945	0.45359
31	+9.95628	-0.6414	+1.06880	-1.20405	15	+0.00546	-0.6630	+1.27043	-0.39731
Aug. 1	9.95694	0.6447	1.07773	1.19815	16	0.00668	0.6591	1.27127	0.33245
2	9.95740	0.6463	1.08637	1.19206	17	0.00812	0.6563	1.27199	0.25597
3	9.95787	0.6461	1.09472	1.18575	18	0.00966	0.6551	1.27258	0.16287
4	9.95853	0.6442	1.10280	1.17922	h	0.01114	0.6555	1.27304	0.04394
h	9.95956	-0.6410	+1.11061	-1.17247	(0.0) 20	+0.01247	-0.6572	+1.27338	-9.87931
(21.0) 6	9.96105	0.6374	1.11817	1.16548	21	0.01355	0.6598	1.27359	9.61050
7	9.96304	0.6345	1.12548	1.15826	22	0.01438	0.6627	1.27368	-8.76340
8	9.96542	0.6333	1.13255	1.15079	23	0.01493	0.6654	1.27364	+9.46553
9	9.96793	0.6345	1.13939	1.14306	24	0.01522	0.6674	1.27347	9.80775
10	+9.97034	-0.6380	+1.14601	-1.13507	25	+0.01533	-0.6682	+1.27317	+9.99676
11	9.97239	0.6434	1.15240	1.12680	26	0.01536	0.6672	1.27274	0.12800
12	9.97390	0.6494	1.15859	1.11825	27	0.01545	0.6645	1.27219	0.22858
13	9.97490	0.6548	1.16457	1.10939	28	0.01577	0.6602	1.27151	0.31013
14	9.97545	0.6587	1.17036	1.10022	29	0.01645	0.6549	1.27070	0.37869
15	+9.97577	-0.6604	+1.17594	-1.09073	30	+0.01754	-0.6494	+1.26975	+0.43780
16	+9.97610	-0.6599	+1.18134	-1.08090	Oct. 1	+0.01906	-0.6448	+1.26868	+0.48974

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hr.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hr.)	Log A.	Log B.	Log C.	Log D.
Oct. 1	+0.01906	-0.6448	+1.26868	+0.48974	Nov. 16	+0.06732	-0.5398	+1.03719	+1.22203
2	0.02083	0.6420	1.26748	0.53603	17	0.06813	0.5406	1.02625	1.22738
3	0.02267	0.6415	1.26614	0.57776	18	0.06876	0.5404	1.01488	1.23253
h 4	0.02436	0.6432	1.26466	0.61573	h 19	0.06927	0.5384	1.00306	1.23749
(1.0) 5	0.02570	0.6463	1.26306	0.65054	(4.0) 20	0.06979	0.5343	0.99076	1.24226
6	+0.02657	-0.6497	+1.26132	+0.68266	21	+0.07042	-0.5279	+0.97793	+1.24685
7	0.02702	0.6521	1.25944	0.71247	22	0.07131	0.5198	0.96463	1.25126
8	0.02718	0.6526	1.25742	0.74025	23	0.07257	0.5106	0.95074	1.25549
9	0.02721	0.6509	1.25526	0.76625	24	0.07422	0.5017	0.93623	1.25955
10	0.02734	0.6468	1.25296	0.79068	25	0.07616	0.4946	0.92108	1.26343
11	+0.02778	-0.6411	+1.25051	+0.81369	26	+0.07832	-0.4903	+0.90524	+1.26715
12	0.02855	0.6347	1.24792	0.83544	27	0.08046	0.4894	0.88865	1.27071
13	0.02969	0.6284	1.24518	0.85604	28	0.08238	0.4915	0.87125	1.27410
14	0.03111	0.6232	1.24230	0.87559	29	0.08395	0.4952	0.85298	1.27734
15	0.03265	0.6197	1.23926	0.89418	30	0.08511	0.4989	0.83376	1.28041
16	+0.03421	-0.6179	+1.23606	+0.91190	Dec. 1	+0.08590	-0.5010	+0.81350	+1.28333
17	0.03563	0.6177	1.23271	0.92881	2	0.08646	0.5003	0.79210	1.28609
18	0.03685	0.6186	1.22920	0.94497	3	0.08699	0.4963	0.76945	1.28870
19	0.03783	0.6201	1.22552	0.96044	h 4	0.08768	0.4894	0.74540	1.29117
h 20	0.03856	0.6216	1.22168	0.97525	(5.0) 5	0.08863	0.4806	0.71979	1.29348
(2.0) 21	+0.03906	-0.6224	+1.21767	+0.98946	6	+0.08996	-0.4713	+0.69242	+1.29564
22	0.03935	0.6220	1.21349	1.00310	7	0.09155	0.4630	0.66306	1.29766
23	0.03957	0.6200	1.20913	1.01620	8	0.09333	0.4567	0.63141	1.29954
24	0.03981	0.6161	1.20460	1.02880	9	0.09520	0.4532	0.59712	1.30127
25	0.04025	0.6103	1.19988	1.04092	10	0.09702	0.4525	0.55973	1.30286
26	+0.04098	-0.6031	+1.19497	+1.05260	11	+0.09870	-0.4540	+0.51866	+1.30430
27	0.04212	0.5954	1.18987	1.06384	12	0.10017	0.4570	0.47312	1.30561
28	0.04367	0.5883	1.18457	1.07468	13	0.10139	0.4605	0.42208	1.30677
29	0.04552	0.5829	1.17906	1.08513	14	0.10240	0.4638	0.36406	1.30780
30	0.04751	0.5800	1.17336	1.09521	15	0.10322	0.4659	0.29690	1.30869
31	+0.04940	-0.5797	+1.16744	+1.10493	16	+0.10388	-0.4663	+0.21722	+1.30944
Nov. 1	0.05101	0.5815	1.16130	1.11432	17	0.10451	0.4643	0.11938	1.31005
2	0.05222	0.5842	1.15493	1.12338	18	0.10520	0.4599	9.99266	1.31052
3	0.05299	0.5863	1.14834	1.13213	19	0.10608	0.4532	9.81273	1.31086
h 4	0.05344	0.5866	1.14150	1.14058	h 20	0.10726	0.4452	+9.49960	1.31106
(3.0) 5	+0.05372	-0.5844	+1.13441	+1.14874	(6.0) 21	+0.10879	-0.4371	-8.25547	+1.31112
6	0.05406	0.5795	1.12707	1.15662	22	0.11063	0.4306	9.54657	1.31104
7	0.05461	0.5723	1.11947	1.16424	23	0.11272	0.4271	9.83630	1.31083
8	0.05551	0.5638	1.11159	1.17160	24	0.11483	0.4275	0.00848	1.31048
9	0.05676	0.5552	1.10342	1.17870	25	0.11681	0.4315	0.13135	1.30999
10	+0.05830	-0.5477	+1.09495	+1.18556	26	+0.11851	-0.4380	-0.22691	+1.30936
11	0.06002	0.5420	1.08618	1.19219	27	0.11982	0.4453	0.30508	1.30859
12	0.06179	0.5385	1.07709	1.19859	28	0.12074	0.4511	0.37118	1.30769
13	0.06346	0.5370	1.06766	1.20477	29	0.12141	0.4542	0.42842	1.30664
14	0.06497	0.5372	1.05787	1.21073	30	0.12197	0.4537	0.47885	1.30546
15	+0.06626	-0.5384	+1.04772	+1.21648	31	+0.12259	-0.4498	-0.52391	+1.30413
16	+0.06732	-0.5398	+1.03719	+1.22203	32	+0.12342	-0.4435	-0.56460	+1.30267

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sidereal Hour.)	r	f		G		H		Log g.	Log h.	i	Log i.				
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.								
	y	s	s	°	'	h	m	°	'	h	m	''			
Jan. 0	-0.0013	+0.819	-0.018	314	15.2	20	57.0	351	18.1	23	25.2	0.87334	1.31019	-1.34	-0.1271
1	+0.0014	0.831	0.014	315	3.1	21	0.2	350	21.7	23	21.4	0.87559	1.30998	1.48	0.1711
2	0.0042	0.843	-0.007	315	51.4	21	3.4	349	25.2	23	17.7	0.87932	1.30975	1.62	0.2109
3	0.0069	0.854	+0.001	316	34.5	21	6.3	348	28.7	23	13.9	0.88444	1.30949	1.77	0.2472
4	0.0097	0.866	0.009	317	7.1	21	8.5	347	32.1	23	10.1	0.89050	1.30922	1.91	0.2806
h	0.0124	+0.878	+0.015	317	28.0	21	9.9	346	35.5	23	6.4	0.89676	1.30893	-2.05	-0.3115
(7.0)	0.0151	0.889	0.018	317	38.6	21	10.6	345	38.7	23	2.6	0.90256	1.30862	2.19	0.3402
7	0.0179	0.901	0.017	317	41.6	21	10.8	344	41.9	22	58.8	0.90733	1.30829	2.33	0.3670
8	0.0206	0.912	0.013	317	42.5	21	10.8	343	45.0	22	55.0	0.91071	1.30795	2.47	0.3921
9	0.0234	0.924	+0.007	317	45.8	21	11.1	342	48.0	22	51.2	0.91285	1.30758	2.60	0.4157
10	0.0261	+0.935	0.000	317	54.9	21	11.7	341	51.0	22	47.4	0.91409	1.30718	-2.74	-0.4379
11	0.0288	0.947	-0.005	318	11.6	21	12.8	340	53.8	22	43.6	0.91485	1.30678	2.88	0.4590
12	0.0316	0.958	0.009	318	35.6	21	14.4	339	56.5	22	39.8	0.91569	1.30636	3.01	0.4789
13	0.0343	0.969	0.010	319	4.8	21	16.3	338	59.1	22	35.9	0.91702	1.30593	3.15	0.4978
14	0.0370	0.980	0.009	319	36.4	21	18.4	338	1.6	22	32.1	0.91914	1.30547	3.28	0.5158
15	0.0398	+0.991	-0.006	320	7.2	21	20.5	337	4.1	22	28.3	0.92210	1.30500	-3.40	-0.5329
16	0.0425	1.002	-0.001	320	34.7	21	22.3	336	6.4	22	24.4	0.92586	1.30451	3.54	0.5493
17	0.0452	1.013	+0.003	320	56.6	21	23.8	335	8.5	22	20.6	0.93019	1.30401	3.67	0.5649
18	0.0480	1.024	0.007	321	12.4	21	24.8	334	10.6	22	16.7	0.93486	1.30350	3.80	0.5799
19	0.0507	1.034	0.010	321	21.6	21	25.4	333	12.5	22	12.8	0.93958	1.30297	3.93	0.5942
h	0.0535	+1.045	+0.011	321	25.0	21	25.7	332	14.3	22	9.0	0.94402	1.30243	-4.05	-0.6079
(8.0)	0.0562	1.055	0.009	321	23.8	21	25.6	331	15.9	22	5.1	0.94791	1.30188	4.18	0.6211
21	0.0589	1.066	+0.006	321	20.5	21	25.4	330	17.4	22	1.2	0.95100	1.30131	4.30	0.6337
22	0.0617	1.076	0.000	321	18.0	21	25.2	329	18.8	21	57.3	0.95322	1.30073	4.42	0.6459
23	0.0644	1.086	-0.006	321	19.4	21	25.3	328	20.0	21	53.3	0.95461	1.30014	4.55	0.6576
24	0.0672	+1.097	-0.012	321	27.5	21	25.8	327	21.1	21	49.4	0.95542	1.29954	-4.66	-0.6688
25	0.0699	1.107	0.017	321	43.8	21	26.9	326	22.0	21	45.5	0.95609	1.29893	4.78	0.6796
26	0.0726	1.117	0.018	322	7.9	21	28.5	325	22.7	21	41.5	0.95718	1.29832	4.90	0.6900
27	0.0754	1.127	0.016	322	36.8	21	30.5	324	23.3	21	37.6	0.95912	1.29769	5.01	0.7001
28	0.0781	1.137	0.010	323	6.8	21	32.5	323	23.7	21	33.6	0.96221	1.29706	5.13	0.7098
29	0.0808	+1.146	-0.003	323	33.1	21	34.2	322	24.0	21	29.6	0.96639	1.29642	-5.24	-0.7191
30	0.0836	1.156	+0.005	323	52.0	21	35.5	321	24.1	21	25.6	0.97135	1.29577	5.35	0.7281
Feb. 1	0.0863	1.165	0.012	324	1.2	21	36.1	320	24.0	21	21.6	0.97655	1.29512	5.46	0.7368
2	0.0891	1.175	0.016	324	1.7	21	36.1	319	23.8	21	17.6	0.98140	1.29446	5.56	0.7452
3	0.0918	1.184	0.016	323	56.5	21	35.8	318	23.4	21	13.6	0.98540	1.29381	5.67	0.7533
h	0.0945	+1.193	+0.014	323	49.2	21	35.3	317	22.8	21	9.5	0.98833	1.29315	-5.77	-0.7611
(9.0)	0.0973	1.202	0.008	323	43.8	21	34.9	316	22.1	21	5.5	0.99016	1.29249	5.87	0.7686
6	0.1000	1.211	+0.002	323	43.3	21	34.9	315	21.2	21	1.4	0.99113	1.29182	5.97	0.7759
7	0.1028	1.220	-0.004	323	49.7	21	35.3	314	20.2	20	57.3	0.99168	1.29116	6.07	0.7829
8	0.1055	1.229	0.008	324	2.7	21	36.2	313	19.0	20	53.3	0.99220	1.29050	6.16	0.7896
9	0.1082	+1.238	-0.010	324	20.6	21	37.4	312	17.6	20	49.2	0.99302	1.28984	-6.25	-0.7962
10	0.1110	1.246	0.009	324	41.0	21	38.7	311	16.1	20	45.1	0.99443	1.28919	6.35	0.8025
11	0.1137	1.255	0.006	325	1.2	21	40.1	310	14.4	20	41.0	0.99654	1.28853	6.44	0.8085
12	0.1164	1.263	-0.002	325	18.9	21	41.3	309	12.5	20	36.8	0.99928	1.28787	6.52	0.8144
13	0.1192	1.272	+0.002	325	32.4	21	42.2	308	10.5	20	32.7	1.00253	1.28723	6.61	0.8200
14	0.1219	+1.280	+0.006	325	40.7	21	42.7	307	8.4	20	28.6	1.00600	1.28659	-6.69	-0.8254
15	0.1246	+1.288	+0.009	325	43.9	21	42.9	306	6.1	20	24.4	1.00951	1.28596	-6.77	-0.8306

FOR WASHINGTON MEAN MIDNIGHT.

Star Day. (Sideral Hour.)	τ	f	f'	G		H		Log ρ .	Log h .	i	Log i .	
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
		y	s	s	° ' "	h m	° ' "	h m				
Feb. 15	0.1246	+1.288	+0.009	325 43.9	21 42.9	306 6.1	20 24.4	1.00951	1.28596	-6.77	-0.8306	
16	0.1274	1.296	0.011	325 42.2	21 42.8	305 3.6	20 20.2	1.01284	1.28533	6.85	0.8356	
17	0.1301	1.304	0.010	325 37.2	21 42.5	304 1.0	20 16.1	1.01574	1.28472	6.93	0.8405	
18	0.1329	1.312	0.008	325 30.2	21 42.0	302 58.3	20 11.9	1.01803	1.28411	7.00	0.8451	
19	0.1356	1.320	+0.003	325 23.7	21 41.6	301 55.4	20 7.7	1.01955	1.28352	7.07	0.8496	
h (10.0)	20	0.1383	+1.327	-0.064	325 20.1	21 41.3	300 52.3	20 3.5	1.02037	1.28293	-7.14	-0.8538
21	0.1411	1.335	0.010	325 22.1	21 41.5	299 49.1	19 59.3	1.02063	1.28236	7.21	0.8580	
22	0.1438	1.342	0.015	325 31.0	21 42.1	298 45.8	19 55.1	1.02069	1.28180	7.28	0.8619	
23	0.1466	1.350	0.017	325 46.9	21 43.1	297 42.3	19 50.8	1.02101	1.28124	7.34	0.8656	
24	0.1493	1.357	0.016	326 7.9	21 44.5	296 38.6	19 46.6	1.02189	1.28070	7.40	0.8692	
25	0.1520	+1.364	-0.012	326 30.7	21 46.0	295 34.9	19 42.3	1.02367	1.28018	-7.46	-0.8726	
26	0.1548	1.372	-0.005	326 51.4	21 47.4	294 31.0	19 38.1	1.02647	1.27968	7.52	0.8759	
27	0.1575	1.379	+0.003	327 6.4	21 48.4	293 27.0	19 33.8	1.02997	1.27920	7.57	0.8790	
28	0.1602	1.386	0.010	327 13.9	21 48.9	292 22.9	19 29.5	1.03383	1.27873	7.62	0.8820	
29	0.1630	1.393	0.015	327 13.7	21 48.9	291 18.7	19 25.2	1.03749	1.27827	7.67	0.8848	
Mar. 1	0.1657	+1.400	+0.016	327 7.9	21 48.5	290 14.4	19 21.0	1.04053	1.27783	-7.72	-0.8874	
2	0.1685	1.407	0.014	326 59.9	21 48.0	289 10.0	19 16.7	1.04268	1.27742	7.76	0.8899	
3	0.1712	1.413	0.009	326 53.1	21 47.5	288 5.5	19 12.4	1.04385	1.27702	7.80	0.8923	
4	0.1739	1.420	+0.003	326 50.4	21 47.4	287 1.0	19 8.1	1.04425	1.27664	7.84	0.8945	
h (1.0)	5	0.1767	1.427	-0.003	326 54.2	21 47.6	285 56.3	19 3.8	1.04415	1.27628	7.88	0.8965
6	0.1794	+1.434	-0.008	327 4.1	21 48.3	284 51.5	18 59.4	1.04396	1.27595	-7.91	-0.8984	
7	0.1822	1.440	0.010	327 19.3	21 49.3	283 46.8	18 55.1	1.04404	1.27564	7.95	0.9002	
8	0.1849	1.447	0.010	327 37.5	21 50.5	282 41.9	18 50.8	1.04462	1.27535	7.98	0.9019	
9	0.1876	1.453	0.008	327 56.2	21 51.8	281 37.0	18 46.5	1.04577	1.27508	8.01	0.9034	
10	0.1904	1.460	-0.004	328 13.1	21 52.9	280 32.1	18 42.1	1.04753	1.27483	8.03	0.9047	
11	0.1931	+1.466	+0.001	328 26.8	21 53.8	279 27.2	18 37.8	1.04975	1.27461	-8.05	-0.9059	
12	0.1958	1.473	0.005	328 35.8	21 54.4	278 22.2	18 33.5	1.05221	1.27441	8.07	0.9070	
13	0.1986	1.479	0.009	328 40.5	21 54.7	277 17.2	18 29.1	1.05476	1.27423	8.09	0.9080	
14	0.2013	1.486	0.011	328 40.8	21 54.7	276 12.2	18 24.8	1.05718	1.27408	8.11	0.9088	
15	0.2040	1.492	0.011	328 38.0	21 54.5	275 7.2	18 20.5	1.05928	1.27395	8.12	0.9095	
16	0.2068	+1.498	+0.009	328 33.5	21 54.2	274 2.2	18 16.1	1.06087	1.27385	-8.13	-0.9100	
17	0.2095	1.505	+0.004	328 29.0	21 53.9	272 57.2	18 11.8	1.06185	1.27377	8.14	0.9105	
18	0.2123	1.511	-0.001	328 27.1	21 53.8	271 52.3	18 7.5	1.06219	1.27371	8.14	0.9108	
19	0.2150	1.517	0.007	328 29.9	21 54.0	270 47.4	18 3.2	1.06204	1.27368	8.15	0.9109	
20	0.2177	1.524	0.013	328 38.8	21 54.6	269 42.4	17 58.8	1.06166	1.27369	8.15	0.9110	
h (12.0)	21	0.2205	+1.530	-0.016	328 54.1	21 55.6	268 37.6	17 54.5	1.06137	1.27370	-8.15	-0.9109
22	0.2232	1.536	0.016	329 14.9	21 57.0	267 32.7	17 50.2	1.06158	1.27374	8.14	0.9106	
23	0.2260	1.543	0.013	329 38.1	21 58.5	266 28.0	17 45.9	1.06258	1.27381	8.13	0.9102	
24	0.2287	1.549	-0.007	330 0.4	22 0.0	265 23.3	17 41.6	1.06448	1.27390	8.12	0.9098	
25	0.2314	1.555	+0.001	330 18.3	22 1.2	264 18.6	17 37.2	1.06712	1.27402	8.11	0.9091	
26	0.2342	+1.562	+0.008	330 29.6	22 2.0	263 14.0	17 32.9	1.07014	1.27416	-8.10	-0.9084	
27	0.2369	1.568	0.014	330 33.6	22 2.2	262 9.5	17 28.6	1.07314	1.27432	8.08	0.9075	
28	0.2396	1.574	0.016	330 32.0	22 2.1	261 5.0	17 24.3	1.07565	1.27451	8.06	0.9065	
29	(.2424	1.581	0.015	330 27.5	22 1.8	260 0.7	17 20.0	1.07738	1.27472	8.04	0.9054	
30	(.2451	1.587	0.011	330 23.7	22 1.6	258 56.4	17 15.8	1.07825	1.27495	8.02	0.9041	
31	0.2479	+1.594	+0.005	330 23.4	22 1.6	257 52.3	17 11.5	1.07838	1.27520	-7.99	-0.9027	
Apr. 1	0.2506	+1.600	-0.002	330 28.8	22 1.9	256 48.3	17 7.2	1.07803	1.27548	-7.96	-0.9001	

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sidereal Hour.)	τ	f	f'	G		H		Log ρ .	Log h .	i	Log t .		
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
Apr.	1	0.2506	+1.600	-0.002	330 28.8	22 1.9	256 48.3	17 7.2	1.07803	1.27548	-7.96	-0.9011	
	2	0.2533	1.607	0.007	330 40.7	22 2.7	255 44.4	17 3.0	1.07754	1.27577	7.93	0.8994	
	3	0.2561	1.614	0.010	330 57.9	22 3.9	254 40.6	16 58.7	1.07729	1.27609	7.90	0.8976	
	4	0.2588	1.620	0.011	331 18.4	22 5.2	253 37.0	16 54.5	1.07749	1.27643	7.87	0.8957	
	5	0.2616	1.627	0.009	331 40.0	22 6.7	252 33.5	16 50.2	1.07830	1.27679	7.83	0.8936	
	h (13.0)	6	0.2643	+1.634	-0.005	332 0.2	22 8.0	251 30.1	16 46.0	1.07968	1.27717	-7.79	-0.8914
	7	0.2670	1.640	-0.001	332 17.5	22 9.2	250 26.9	16 41.8	1.08152	1.27757	7.75	0.8891	
	8	0.2698	1.647	+0.004	332 30.6	22 10.0	249 23.9	16 37.6	1.08365	1.27798	7.70	0.8866	
	9	0.2725	1.654	0.007	332 39.4	22 10.6	248 21.0	16 33.4	1.08588	1.27841	7.65	0.8839	
	10	0.2752	1.661	0.010	332 44.2	22 10.9	247 18.3	16 29.2	1.08801	1.27886	7.60	0.8811	
h (14.0)	11	0.2780	+1.668	+0.010	332 45.7	22 11.0	246 15.8	16 25.1	1.08986	1.27933	-7.55	-0.8782	
	12	0.2807	1.675	0.009	332 45.6	22 11.0	245 13.4	16 20.9	1.09131	1.27981	7.50	0.8751	
	13	0.2834	1.682	+0.005	332 45.3	22 11.0	244 11.2	16 16.7	1.09226	1.28030	7.45	0.8719	
	14	0.2862	1.689	0.000	332 47.0	22 11.1	243 9.2	16 12.6	1.09269	1.28080	7.39	0.8686	
	15	0.2889	1.697	-0.006	332 52.9	22 11.5	242 7.4	16 8.5	1.09262	1.28133	7.33	0.8650	
	16	0.2917	+1.704	-0.012	333 4.1	22 12.3	241 5.8	16 4.4	1.09233	1.28186	-7.27	-0.8614	
	17	0.2944	1.711	0.015	333 21.5	22 13.4	240 4.3	16 0.3	1.09217	1.28241	7.20	0.8575	
	18	0.2971	1.719	0.016	333 44.0	22 14.9	239 3.1	15 56.2	1.09241	1.28297	7.14	0.8535	
	19	0.2999	1.726	0.014	334 9.4	22 16.6	238 2.0	15 52.1	1.09338	1.28354	7.07	0.8494	
	h (14.0)	20	0.3026	1.734	0.008	334 34.4	22 18.3	237 1.1	15 48.1	1.09517	1.28412	7.00	0.8451
h (14.0)	21	0.3054	+1.742	-0.001	334 55.7	22 19.7	236 0.5	15 44.0	1.09771	1.28470	-6.93	-0.8406	
	22	0.3081	1.749	+0.007	335 10.9	22 20.7	235 0.0	15 40.0	1.10067	1.28530	6.85	0.8359	
	23	0.3108	1.757	0.013	335 19.5	22 21.3	233 59.7	15 36.0	1.10367	1.28590	6.78	0.8311	
	24	0.3136	1.765	0.017	335 22.1	22 21.5	232 59.6	15 32.0	1.10631	1.28651	6.70	0.8261	
	25	0.3163	1.773	0.017	335 21.3	22 21.4	231 59.7	15 28.0	1.10827	1.28713	6.62	0.8209	
	26	0.3190	+1.781	+0.013	335 20.4	22 21.4	231 0.0	15 24.0	1.10944	1.28775	-6.54	-0.8155	
	27	0.3218	1.789	0.007	335 22.5	22 21.5	230 0.5	15 20.0	1.10989	1.28837	6.46	0.8100	
	28	0.3245	1.798	+0.001	335 29.6	22 22.0	229 1.2	15 16.1	1.10986	1.28900	6.37	0.8042	
	29	0.3273	1.806	-0.005	335 42.8	22 22.9	228 2.1	15 12.1	1.10970	1.28963	6.28	0.7982	
	30	0.3300	1.814	0.009	336 1.1	22 24.1	227 3.2	15 8.2	1.10973	1.29026	6.19	0.7920	
May	1	0.3327	+1.823	-0.011	336 22.9	22 25.5	226 4.5	15 4.3	1.11019	1.29090	-6.10	-0.7856	
	2	0.3355	1.832	0.010	336 46.0	22 27.1	225 6.0	15 0.4	1.11126	1.29153	6.01	0.7790	
	3	0.3382	1.840	0.007	337 7.9	22 28.5	224 7.7	14 56.5	1.11289	1.29216	5.92	0.7722	
	4	0.3410	1.849	-0.002	337 26.7	22 29.8	223 9.6	14 52.6	1.11497	1.29280	5.82	0.7651	
	h (15.0)	5	0.3437	1.858	+0.002	337 41.7	22 30.8	222 11.7	14 48.8	1.11736	1.29343	5.73	0.7578
	6	0.3464	+1.867	+0.006	337 52.4	22 31.5	221 14.0	14 44.9	1.11982	1.29406	-5.63	-0.7503	
	7	0.3492	1.876	0.009	337 59.2	22 31.9	220 16.4	14 41.1	1.12222	1.29468	5.53	0.7425	
	8	0.3519	1.885	0.010	338 2.8	22 32.2	219 19.1	14 37.3	1.12434	1.29530	5.43	0.7344	
	9	0.3546	1.894	0.009	338 4.6	22 32.3	218 22.0	14 33.5	1.12611	1.29592	5.32	0.7261	
	10	0.3574	1.903	0.006	338 6.0	22 32.4	217 25.0	14 29.7	1.12745	1.29653	5.22	0.7174	
h (15.0)	11	0.3601	+1.913	+0.001	338 8.9	22 32.6	216 28.3	14 25.9	1.12834	1.29714	-5.11	-0.7085	
	12	0.3628	1.922	-0.005	338 14.9	22 33.0	215 31.7	14 22.1	1.12881	1.29774	5.00	0.6993	
	13	0.3656	1.932	0.011	338 25.8	22 33.7	214 35.4	14 18.4	1.12910	1.29834	4.89	0.6897	
	14	0.3683	1.941	0.015	338 42.0	22 34.8	213 39.2	14 14.6	1.12945	1.29892	4.78	0.6798	
	15	0.3711	1.951	0.017	339 2.9	22 36.2	212 43.1	14 10.9	1.13021	1.29949	4.67	0.6696	
	16	0.3738	+1.961	-0.016	339 26.3	22 37.7	211 47.3	14 7.2	1.13158	1.30006	-4.56	-0.6590	
	17	0.3765	+1.971	-0.011	339 50.3	22 39.3	210 51.7	14 3.4	1.13370	1.30063	-4.45	-0.6480	

FOR WASHINGTON MEAN MIDNIGHT.

Star Day. Sideral Hour.)	r	f		G		H		Log g.	Log h.	i	Log i.		
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
May	17	0.3765	+1.971	-0.011	339 50.3	22 39.3	210 51.7	14 3.4	1.13370	1.30063	-4.45	-0.6480	
	18	0.3793	1.981	-0.004	340 11.1	22 40.7	209 56.2	13 59.7	1.13654	1.30118	4.33	0.6366	
	19	0.3820	1.991	+0.004	340 26.2	22 41.7	209 0.8	13 56.1	1.13980	1.30172	4.21	0.6247	
	20	0.3848	2.001	0.012	340 35.1	22 42.3	208 5.6	13 52.4	1.14318	1.30224	4.10	0.6124	
	21	0.3875	2.011	0.017	340 38.2	22 42.5	207 10.5	13 48.7	1.14625	1.30276	3.98	0.5997	
	(16.0)	22	0.3902	+2.021	+0.018	340 37.6	22 42.5	206 15.6	13 45.0	1.14872	1.30326	-3.86	-0.5864
	23	0.3930	2.031	0.015	340 36.3	22 42.4	205 20.9	13 41.4	1.15047	1.30375	3.74	0.5726	
	24	0.3957	2.042	0.010	340 37.0	22 42.5	204 26.3	13 37.8	1.15152	1.30423	3.62	0.5582	
	25	0.3984	2.052	+0.003	340 42.0	22 42.8	203 31.8	13 34.1	1.15208	1.30470	3.49	0.5432	
	26	0.4012	2.062	-0.003	340 52.5	22 43.5	202 37.4	13 30.5	1.15249	1.30515	3.37	0.5275	
	27	0.4039	+2.073	-0.008	341 7.7	22 44.5	201 43.2	13 26.9	1.15301	1.30559	-3.24	-0.5111	
28	0.4067	2.083	0.010	341 26.4	22 45.8	200 49.0	13 23.3	1.15392	1.30602	3.12	0.4940		
29	0.4094	2.094	0.010	341 46.2	22 47.1	199 55.0	13 19.7	1.15538	1.30642	2.99	0.4760		
30	0.4121	2.105	-0.008	342 5.1	22 48.3	199 1.2	13 16.1	1.15734	1.30682	2.87	0.4572		
31	0.4149	2.116	-0.003	342 21.3	22 49.4	198 7.4	13 12.5	1.15973	1.30720	2.74	0.4373		
June	1	0.4176	+2.127	+0.001	342 33.8	22 50.3	197 13.8	13 8.9	1.16241	1.30756	-2.61	-0.4164	
	2	0.4204	2.137	0.005	342 42.2	22 50.8	196 20.2	13 5.3	1.16514	1.30791	2.48	0.3943	
	3	0.4231	2.148	0.009	342 46.9	22 51.1	195 26.7	13 1.8	1.16779	1.30824	2.35	0.3709	
	4	0.4258	2.159	0.010	342 48.6	22 51.2	194 33.4	12 58.2	1.17025	1.30855	2.22	0.3461	
	5	0.4286	2.170	0.010	342 48.3	22 51.2	193 40.1	12 54.7	1.17235	1.30884	2.09	0.3196	
	(17.0)	6	0.4313	+2.181	+0.007	342 47.4	22 51.2	192 46.9	12 51.1	1.17406	1.30912	-1.96	-0.2913
	7	0.4340	2.192	+0.002	342 47.4	22 51.2	191 53.8	12 47.6	1.17536	1.30938	1.82	0.2608	
	8	0.4368	2.203	-0.003	342 50.0	22 51.3	191 0.8	12 44.1	1.17630	1.30962	1.69	0.2280	
	9	0.4395	2.215	0.010	342 56.4	22 51.8	190 7.9	12 40.5	1.17702	1.30985	1.56	0.1924	
	10	0.4422	2.226	0.015	343 7.4	22 52.5	189 15.0	12 37.0	1.17777	1.31006	1.42	0.1534	
	11	0.4450	+2.237	-0.018	343 22.5	22 53.5	188 22.2	12 33.5	1.17881	1.31025	-1.29	-0.1106	
12	0.4477	2.248	0.018	343 40.5	22 54.7	187 29.4	12 30.0	1.18037	1.31042	1.16	0.0628		
13	0.4505	2.259	0.014	343 58.7	22 55.9	186 36.7	12 26.4	1.18258	1.31057	1.02	0.0091		
14	0.4532	2.271	-0.007	344 14.8	22 57.0	185 44.0	12 22.9	1.18543	1.31071	0.89	9.9476		
15	0.4559	2.282	+0.001	344 26.5	22 57.8	184 51.4	12 19.4	1.18873	1.31082	0.75	9.8758		
16	0.4587	+2.293	+0.009	344 32.4	22 58.2	183 58.8	12 15.9	1.19217	1.31092	-0.62	-9.7897		
17	0.4614	2.304	0.015	344 33.1	22 58.2	183 6.3	12 12.4	1.19541	1.31100	0.48	9.6820		
18	0.4642	2.316	0.018	344 29.8	22 58.0	182 13.8	12 8.9	1.19817	1.31106	0.35	9.5383		
19	0.4669	2.327	0.017	344 25.2	22 57.7	181 21.2	12 5.4	1.20024	1.31110	0.21	9.3218		
20	0.4696	2.338	0.013	344 22.1	22 57.5	180 28.7	12 1.9	1.20170	1.31112	-0.07	-8.8704		
(18.0)	21	0.4724	+2.350	+0.006	344 22.3	22 57.5	179 36.2	11 58.4	1.20265	1.31112	+0.06	+8.7882	
22	0.4751	2.361	0.000	344 27.2	22 57.8	178 43.7	11 54.9	1.20333	1.31110	0.20	9.2945		
23	0.4778	2.372	-0.006	344 36.6	22 58.4	177 51.2	11 51.4	1.20409	1.31107	0.33	9.5218		
24	0.4806	2.384	0.009	344 49.2	22 59.3	176 58.7	11 47.9	1.20511	1.31101	0.47	9.6702		
25	0.4833	2.395	0.009	345 3.4	23 0.2	176 6.2	11 44.4	1.20660	1.31093	0.60	9.7805		
26	0.4861	+2.406	-0.008	345 17.0	23 1.1	175 13.7	11 40.9	1.20853	1.31083	+0.74	+9.8683		
27	0.4888	2.418	-0.004	345 28.4	23 1.9	174 21.0	11 37.4	1.21082	1.31073	0.87	9.9412		
28	0.4915	2.429	0.000	345 36.5	23 2.4	173 28.4	11 33.9	1.21340	1.31060	1.01	0.0035		
29	0.4943	2.440	+0.005	345 40.9	23 2.7	172 35.7	11 30.4	1.21604	1.31044	1.14	0.0578		
30	0.4970	2.451	0.008	345 41.9	23 2.8	171 43.1	11 26.9	1.21862	1.31027	1.28	0.1060		
July	1	0.4998	+2.463	+0.011	345 40.4	23 2.7	170 50.4	11 23.4	1.22101	1.31008	+1.41	+0.1493	
	2	0.5025	+2.474	+0.011	345 36.6	23 2.4	169 57.6	11 19.8	1.22310	1.30988	+1.54	+0.1885	

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sidereal Hour.)	τ	f	f'	G		H		Log g .	Log h .	i	Log i .	
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
	y	s	s	"	'	"	'			"		
July	1	0.4998	+2.463	+0.011	345 40.4	23 2.7	170 50.4	11 23.4	1.22101	1.31008	+1.41	+0.1493
	2	0.5025	2.474	0.011	345 36.6	23 2.4	169 57.6	11 19.8	1.22310	1.30988	1.54	0.1885
	3	0.5052	2.485	0.009	345 32.1	23 2.1	169 4.8	11 16.3	1.22482	1.30966	1.68	0.2244
	4	0.5080	2.496	+0.004	345 28.3	23 1.9	168 11.9	11 12.8	1.22616	1.30942	1.81	0.2574
	5	0.5107	2.507	-0.001	345 26.3	23 1.8	167 19.0	11 9.3	1.22717	1.30916	1.94	0.2880
h (19.0)	6	0.5134	+2.518	-0.007	345 27.5	23 1.8	166 26.0	11 5.7	1.22796	1.30888	+2.07	+0.3164
	7	0.5162	2.529	0.013	345 32.5	23 2.2	165 32.9	11 2.2	1.22867	1.30858	2.20	0.3430
	8	0.5189	2.540	0.017	345 41.3	23 2.8	164 39.8	10 58.7	1.22958	1.30827	2.33	0.3680
	9	0.5216	2.551	0.019	345 52.9	23 3.5	163 46.6	10 55.1	1.23088	1.30795	2.46	0.3914
	10	0.5244	2.561	0.016	346 5.4	23 4.4	162 53.3	10 51.6	1.23270	1.30761	2.59	0.4136
	11	0.5271	+2.572	-0.011	346 16.6	23 5.1	162 0.0	10 48.0	1.23512	1.30725	+2.72	+0.4345
	12	0.5299	2.583	-0.003	346 24.5	23 5.6	161 6.5	10 44.4	1.23798	1.30688	2.85	0.4544
	13	0.5326	2.594	+0.005	346 27.6	23 5.8	160 12.9	10 40.9	1.24103	1.30648	2.97	0.4733
	14	0.5353	2.604	0.012	346 25.8	23 5.7	159 19.3	10 37.3	1.24401	1.30608	3.10	0.4913
	15	0.5381	2.615	0.016	346 20.3	23 5.4	158 25.5	10 33.7	1.24662	1.30566	3.22	0.5084
	16	0.5408	+2.625	+0.016	346 12.9	23 4.9	157 31.6	10 30.1	1.24866	1.30523	+3.35	+0.5248
	17	0.5436	2.636	0.014	346 6.1	23 4.4	156 37.6	10 26.5	1.25011	1.30478	3.47	0.5405
	18	0.5463	2.646	0.008	346 2.1	23 4.1	155 43.5	10 22.9	1.25107	1.30432	3.59	0.5556
	19	0.5490	2.656	+0.002	346 2.1	23 4.1	154 49.2	10 19.3	1.25171	1.30384	3.72	0.5700
h (20.0)	20	0.5518	2.666	-0.004	346 6.3	23 4.4	153 54.8	10 15.7	1.25230	1.30336	3.84	0.5838
	21	0.5545	+2.677	-0.008	346 13.9	23 4.9	153 0.3	10 12.0	1.25308	1.30286	+3.96	+0.5971
	22	0.5572	2.687	0.009	346 23.3	23 5.6	152 5.6	10 8.4	1.25424	1.30235	4.07	0.6099
	23	0.5600	2.697	0.008	346 32.9	23 6.2	151 10.9	10 4.7	1.25578	1.30182	4.19	0.6222
	24	0.5627	2.707	-0.005	346 40.8	23 6.7	150 15.9	10 1.1	1.25769	1.30129	4.31	0.6340
	25	0.5655	2.717	0.000	346 46.0	23 7.1	149 20.7	9 57.4	1.25981	1.30075	4.42	0.6455
	26	0.5682	+2.727	+0.004	346 48.0	23 7.2	148 25.5	9 53.7	1.26204	1.30019	+4.53	+0.6565
	27	0.5709	2.736	0.008	346 46.9	23 7.1	147 30.1	9 50.0	1.26423	1.29963	4.65	0.6671
	28	0.5737	2.746	0.011	346 43.1	23 6.9	146 34.6	9 46.3	1.26626	1.29906	4.76	0.6774
	29	0.5764	2.756	0.011	346 37.6	23 6.5	145 38.8	9 42.6	1.26803	1.29849	4.87	0.6873
	30	0.5792	2.765	0.010	346 31.2	23 6.1	144 42.9	9 38.9	1.26950	1.29790	4.98	0.6968
	31	0.5819	+2.774	+0.007	346 25.1	23 5.7	143 46.9	9 35.1	1.27062	1.29730	+5.08	+0.7061
Aug.	1	0.5846	2.784	+0.001	346 20.6	23 5.4	142 50.6	9 31.4	1.27141	1.29670	5.19	0.7150
	2	0.5874	2.793	-0.005	346 18.2	23 5.2	141 54.2	9 27.6	1.27195	1.29610	5.29	0.7236
	3	0.5901	2.802	0.011	346 19.4	23 5.3	140 57.7	9 23.8	1.27238	1.29548	5.40	0.7320
	4	0.5928	2.811	0.016	346 24.1	23 5.6	140 0.9	9 20.1	1.27290	1.29496	5.50	0.7401
h (21.0)	5	0.5956	+2.820	-0.018	346 31.6	23 6.1	139 4.0	9 16.3	1.27370	1.29425	+5.60	+0.7479
	6	0.5983	2.829	0.018	346 40.7	23 6.7	138 6.9	9 12.5	1.27492	1.29362	5.69	0.7554
	7	0.6010	2.838	0.013	346 49.3	23 7.3	137 9.6	9 8.6	1.27665	1.29301	5.79	0.7628
	8	0.6038	2.847	-0.007	346 55.6	23 7.7	136 12.2	9 4.8	1.27884	1.29238	5.89	0.7698
	9	0.6065	2.855	+0.001	346 57.9	23 7.9	135 14.5	9 1.0	1.28128	1.29175	5.98	0.7767
	10	0.6093	+2.864	+0.009	346 55.9	23 7.7	134 16.7	8 57.1	1.28375	1.29112	+6.07	+0.7833
	11	0.6120	2.872	0.014	346 50.2	23 7.3	133 18.7	8 53.2	1.28597	1.29049	6.16	0.7897
	12	0.6147	2.881	0.015	346 42.3	23 6.8	132 20.6	8 49.4	1.28772	1.28987	6.25	0.7959
	13	0.6175	2.889	0.014	346 34.3	23 6.3	131 22.2	8 45.5	1.28896	1.28924	6.34	0.8018
	14	0.6202	2.897	0.009	346 28.4	23 5.9	130 23.6	8 41.6	1.28969	1.28863	6.42	0.8076
	15	0.6230	+2.905	+0.003	346 25.9	23 5.7	129 24.9	8 37.7	1.29008	1.28800	+6.51	+0.8132
	16	0.6257	+2.914	-0.003	346 27.5	23 5.8	128 26.0	8 33.7	1.29037	1.28739	+6.59	+0.8186

FOR WASHINGTON MEAN MIDNIGHT.

Star Day. Sideral Hour.)	r	f		f'		G		H		Log g.	Log h.	i	Log i.
		In Time.	s	In Time.	s	In Arc.	In Time.	In Arc.	In Time.				
	y	s	s	° ' "	h m	° ' "	h m						
Aug. 16	0.6257	+2.914	-0.003	346 27.5	23 5.8	128 26.0	8 33.7	1.29037	1.28739	+6.59	+0.8186		
17	0.6284	2.922	0.007	346 32.6	23 6.2	127 26.8	8 29.8	1.29076	1.28678	6.67	0.8238		
18	0.6312	2.930	0.009	346 40.1	23 6.7	126 27.5	8 25.8	1.29143	1.28618	6.74	0.8289		
19	0.6339	2.937	0.008	346 48.3	23 7.2	125 28.0	8 21.9	1.29244	1.28558	6.82	0.8337		
h (22.0)	20 0.6366	2.945	0.005	346 55.4	23 7.7	124 28.3	8 17.9	1.29381	1.28499	6.89	0.8384		
21	0.6394	+2.953	-0.001	347 0.3	23 8.0	123 28.3	8 13.9	1.29543	1.28440	+6.96	+0.8429		
22	0.6421	2.960	+0.004	347 2.5	23 8.2	122 28.2	8 9.9	1.29716	1.28383	7.04	0.8473		
23	0.6449	2.968	0.008	347 1.7	23 8.1	121 28.0	8 5.9	1.29890	1.28326	7.10	0.8514		
24	0.6476	2.975	0.011	346 58.6	23 7.9	120 27.5	8 1.8	1.30051	1.28270	7.17	0.8555		
25	0.6503	2.982	0.012	346 53.5	23 7.6	119 26.8	7 57.8	1.30191	1.28216	7.23	0.8594		
26	0.6531	+2.990	+0.011	346 47.5	23 7.2	118 26.0	7 53.7	1.30304	1.28162	+7.30	+0.8631		
27	0.6558	2.997	0.008	346 41.6	23 6.8	117 25.0	7 49.7	1.30385	1.28110	7.36	0.8666		
28	0.6586	3.004	+0.004	346 36.8	23 6.5	116 23.8	7 45.6	1.30437	1.28059	7.41	0.8700		
29	0.6613	3.011	-0.002	346 34.1	23 6.3	115 22.5	7 41.5	1.30463	1.28009	7.47	0.8733		
30	0.6640	3.018	0.008	346 34.4	23 6.3	114 20.9	7 37.4	1.30475	1.27960	7.52	0.8764		
Sept. 1	0.6668	+3.025	-0.014	346 38.0	23 6.5	113 19.3	7 33.3	1.30488	1.27914	+7.58	+0.8794		
2	0.6695	3.032	0.017	346 44.4	23 7.0	112 17.4	7 29.2	1.30520	1.27869	7.62	0.8822		
3	0.6722	3.039	0.017	346 53.0	23 7.5	111 15.4	7 25.0	1.30588	1.27825	7.67	0.8849		
h (23.0)	4 0.6750	3.046	0.014	347 1.8	23 8.1	110 13.3	7 20.9	1.30703	1.27783	7.72	0.8875		
5	0.6777	3.052	0.009	347 9.0	23 8.6	109 11.0	7 16.7	1.30858	1.27741	7.76	0.8899		
6	0.6804	+3.059	-0.001	347 13.2	23 8.9	108 8.6	7 12.6	1.31047	1.27703	+7.80	+0.8922		
7	0.6832	3.066	+0.006	347 13.3	23 8.9	107 6.0	7 8.4	1.31243	1.27668	7.84	0.8943		
8	0.6859	3.072	0.012	347 9.7	23 8.6	106 3.3	7 4.2	1.31428	1.27633	7.88	0.8963		
9	0.6887	3.079	0.014	347 3.7	23 8.2	105 0.5	7 0.0	1.31573	1.27600	7.91	0.8982		
10	0.6914	3.085	0.014	346 56.9	23 7.8	103 57.6	6 55.8	1.31672	1.27569	7.94	0.8999		
11	0.6941	+3.092	+0.010	346 51.6	23 7.4	102 54.6	6 51.6	1.31724	1.27541	+7.97	+0.9016		
12	0.6969	3.098	+0.004	346 49.3	23 7.3	101 51.4	6 47.4	1.31741	1.27514	8.00	0.9030		
13	0.6996	3.104	-0.002	346 50.9	23 7.4	100 48.1	6 43.2	1.31740	1.27489	8.02	0.9044		
14	0.7024	3.111	0.007	346 56.2	23 7.7	99 44.7	6 39.0	1.31744	1.27466	8.05	0.9056		
15	0.7051	3.117	0.010	347 4.2	23 8.3	98 41.3	6 34.8	1.31774	1.27447	8.07	0.9067		
16	0.7078	+3.123	-0.009	347 13.4	23 8.9	97 37.7	6 30.5	1.31837	1.27429	+8.09	+0.9077		
17	0.7106	3.130	0.007	347 22.2	23 9.5	96 34.0	6 26.3	1.31933	1.27413	8.10	0.9085		
18	0.7133	3.136	-0.003	347 29.3	23 10.0	95 30.3	6 22.0	1.32058	1.27400	8.12	0.9093		
19	0.7160	3.142	+0.002	347 33.9	23 10.3	94 26.5	6 17.8	1.32199	1.27388	8.13	0.9098		
h (0.0)	20 0.7188	3.148	0.007	347 35.6	23 10.4	93 22.7	6 13.5	1.32342	1.27380	8.13	0.9103		
21	0.7215	+3.154	+0.010	347 35.1	23 10.3	92 18.7	6 9.2	1.32477	1.27374	+8.14	+0.9106		
22	0.7242	3.161	0.012	347 32.5	23 10.2	91 14.7	6 5.0	1.32591	1.27369	8.15	0.9109		
23	0.7270	3.167	0.012	347 29.0	23 9.9	90 10.6	6 0.7	1.32685	1.27368	8.15	0.9110		
24	0.7297	3.173	0.010	347 25.4	23 9.7	89 6.5	5 56.4	1.32750	1.27369	8.15	0.9109		
25	0.7325	3.179	+0.005	347 22.6	23 9.5	88 2.4	5 52.2	1.32787	1.27373	8.14	0.9107		
26	0.7352	+3.185	0.000	347 21.5	23 9.4	86 58.3	5 47.9	1.32801	1.27378	+8.14	+0.9104		
27	0.7379	3.192	-0.006	347 23.2	23 9.5	85 54.1	5 43.6	1.32799	1.27385	8.13	0.9100		
28	0.7407	3.198	0.012	347 27.9	23 9.9	84 49.9	5 39.3	1.32794	1.27396	8.12	0.9095		
29	0.7434	3.204	0.015	347 35.6	23 10.4	83 45.7	5 35.0	1.32805	1.27409	8.11	0.9088		
30	0.7462	3.210	0.017	347 45.5	23 11.0	82 41.6	5 30.8	1.32846	1.27424	8.09	0.9080		
Oct. 1	0.7489	+3.216	-0.015	347 56.2	23 11.8	81 37.4	5 26.5	1.32926	1.27441	+8.07	+0.9070		
	1 0.7516	+3.223	-0.010	348 6.0	23 12.4	80 33.3	5 22.2	1.33052	1.27460	+8.05	+0.9060		

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sidereal Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .
		In Time.		In Time.		In Arc.	In Time.	In Arc.	In Time.				
		y	s	s	$''$	h	m	$''$	$''$	h	m	$''$	
Oct.	1	0.7516	+3.223	-0.010	348 6.0	23 12.4	80 33.3	5 22.2	1.33052	1.27460	+8.05	+0.9060	
	2	0.7544	3.229	-0.003	348 13.3	23 12.9	79 29.2	5 18.0	1.33209	1.27483	8.03	0.9048	
	3	0.7571	3.235	+0.004	348 17.0	23 13.1	78 25.1	5 13.7	1.33383	1.27508	8.01	0.9034	
h	4	0.7598	3.242	0.010	348 17.0	23 13.1	77 21.1	5 9.4	1.33552	1.27534	7.98	0.9019	
(1.0)	5	0.7626	3.248	0.014	348 14.2	23 12.9	76 17.1	5 5.1	1.33694	1.27563	7.95	0.9003	
	6	0.7653	+3.254	+0.014	348 10.2	23 12.7	75 13.2	5 0.9	1.33792	1.27593	+7.92	+0.8986	
	7	0.7681	3.261	0.011	348 7.1	23 12.5	74 9.3	4 56.6	1.33845	1.27626	7.88	0.8967	
	8	0.7708	3.267	+0.006	348 6.5	23 12.4	73 5.5	4 52.4	1.33863	1.27661	7.85	0.8947	
	9	0.7735	3.274	0.000	348 9.3	23 12.6	72 1.8	4 48.1	1.33858	1.27698	7.81	0.8925	
	10	0.7763	3.281	-0.006	348 15.9	23 13.1	70 58.2	4 43.9	1.33853	1.27737	7.77	0.8902	
	11	0.7790	+3.287	-0.010	348 25.5	23 13.7	69 54.6	4 39.6	1.33872	1.27777	+7.72	+0.8878	
	12	0.7818	3.294	0.010	348 36.9	23 14.5	68 51.1	4 35.4	1.33920	1.27820	7.68	0.8852	
	13	0.7845	3.301	0.008	348 48.0	23 15.2	67 47.7	4 31.2	1.34006	1.27864	7.63	0.8824	
	14	0.7872	3.308	-0.005	348 57.8	23 15.9	66 44.5	4 27.0	1.34124	1.27911	7.58	0.8796	
	15	0.7900	3.315	0.000	349 5.4	23 16.4	65 41.3	4 22.7	1.34259	1.27959	7.53	0.8765	
	16	0.7927	+3.322	+0.005	349 10.3	23 16.7	64 38.1	4 18.5	1.34403	1.28008	+7.47	+0.8733	
	17	0.7954	3.329	0.009	349 12.7	23 16.8	63 35.1	4 14.3	1.34540	1.28059	7.41	0.8700	
	18	0.7982	3.336	0.011	349 13.1	23 16.9	62 32.3	4 10.2	1.34661	1.28112	7.35	0.8665	
	19	0.8009	3.343	0.012	349 12.4	23 16.8	61 29.5	4 6.0	1.34760	1.28165	7.29	0.8628	
h	20	0.8036	3.350	0.010	349 11.3	23 16.7	60 26.9	4 1.8	1.34836	1.28221	7.23	0.8590	
(2.0)	21	0.8064	+3.358	+0.006	349 10.8	23 16.7	59 24.3	3 57.6	1.34887	1.28278	+7.16	+0.8549	
	22	0.8091	3.365	+0.001	349 11.7	23 16.8	58 21.9	3 53.5	1.34914	1.28336	7.09	0.8508	
	23	0.8119	3.372	-0.004	349 15.0	23 17.0	57 19.6	3 49.3	1.34928	1.28394	7.02	0.8464	
	24	0.8146	3.380	0.010	349 21.0	23 17.4	56 17.5	3 45.2	1.34938	1.28454	6.95	0.8419	
	25	0.8173	3.388	0.014	349 29.9	23 18.0	55 15.6	3 41.0	1.34960	1.28516	6.87	0.8372	
	26	0.8201	+3.395	-0.016	349 41.0	23 18.7	54 13.7	3 36.9	1.35008	1.28576	+6.80	+0.8322	
	27	0.8228	3.403	0.015	349 53.3	23 19.6	53 12.0	3 32.8	1.35094	1.28638	6.72	0.8271	
	28	0.8256	3.411	0.011	350 5.0	23 20.3	52 10.3	3 28.7	1.35223	1.28702	6.63	0.8218	
	29	0.8283	3.419	-0.005	350 14.7	23 21.0	51 8.9	3 24.6	1.35387	1.28765	6.55	0.8163	
	30	0.8310	3.427	+0.003	350 21.1	23 21.4	50 7.7	3 20.5	1.35572	1.28829	6.47	0.8106	
	31	0.8338	+3.436	+0.010	350 23.9	23 21.6	49 6.6	3 16.4	1.35754	1.28894	+6.38	+0.8047	
Nov.	1	0.8365	3.444	0.014	350 23.6	23 21.6	48 5.6	3 12.4	1.35916	1.28958	6.29	0.7986	
	2	0.8392	3.452	0.015	350 21.8	23 21.5	47 4.8	3 8.3	1.36041	1.29023	6.20	0.7922	
	3	0.8420	3.461	0.013	350 20.0	23 21.3	46 4.2	3 4.3	1.36122	1.29090	6.10	0.7856	
h	4	0.8447	3.469	0.008	350 20.2	23 21.3	45 3.6	3 0.2	1.36167	1.29155	6.01	0.7788	
(3.0)	5	0.8475	+3.478	+0.002	350 23.4	23 21.6	44 3.3	2 56.2	1.36188	1.29221	+5.91	+0.7717	
	6	0.8502	3.487	-0.004	350 30.3	23 22.0	43 3.1	2 52.2	1.36207	1.29286	5.81	0.7643	
	7	0.8529	3.496	0.009	350 40.2	23 22.7	42 3.1	2 48.2	1.36242	1.29352	5.71	0.7567	
	8	0.8557	3.505	0.011	350 51.9	23 23.5	41 3.2	2 44.2	1.36307	1.29417	5.61	0.7489	
	9	0.8584	3.514	0.010	351 4.0	23 24.3	40 3.5	2 40.2	1.36408	1.29482	5.50	0.7407	
	10	0.8612	+3.523	-0.006	351 14.9	23 25.0	39 4.0	2 36.3	1.36540	1.29547	+5.40	+0.7322	
	11	0.8639	3.532	-0.002	351 23.7	23 25.6	38 4.6	2 32.3	1.36696	1.29611	5.29	0.7234	
	12	0.8666	3.541	+0.003	351 29.8	23 26.0	37 5.3	2 28.4	1.36861	1.29675	5.18	0.7144	
	13	0.8694	3.551	0.008	351 33.4	23 26.2	36 6.1	2 24.4	1.37021	1.29738	5.07	0.7049	
	14	0.8721	3.560	0.011	351 34.9	23 26.3	35 7.1	2 20.5	1.37169	1.29800	4.96	0.6951	
	15	0.8748	+3.570	+0.012	351 35.1	23 26.3	34 8.3	2 16.6	1.37298	1.29861	+4.84	+0.6850	
	16	0.8776	+3.580	+0.010	351 34.7	23 26.3	33 9.6	2 12.6	1.37405	1.29923	+4.73	+0.6745	

FOR WASHINGTON MEAN MIDNIGHT.

Star Day. (Sidereal Hour.)	τ	f	f'	G		H		Log g .	Log h .	i	Log t .
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	s	s	" "	h m	" "	h m			"	
Nov. 16	0.8776	+3.580	+0.010	351 34.7	23 26.3	33 9.6	2 12.6	1.37405	1.29923	+4.73	+0.6745
17	0.8803	3.589	0.007	351 34.6	23 26.3	32 11.0	2 8.7	1.37486	1.29983	4.61	0.6635
18	0.8830	3.599	+0.003	351 35.6	23 26.4	31 12.5	2 4.8	1.37547	1.30042	4.49	0.6522
h 19	0.8858	3.609	-0.003	351 38.5	23 26.6	30 14.2	2 0.9	1.37593	1.30100	4.37	0.6403
(4.0) 20	0.8885	3.620	0.009	351 43.7	23 26.9	29 16.0	1 57.1	1.37635	1.30157	4.25	0.6280
21	0.8913	+3.630	-0.014	351 51.5	23 27.4	28 17.9	1 53.2	1.37684	1.30212	+4.12	+0.6152
22	0.8940	3.640	0.017	352 1.5	23 28.1	27 20.0	1 49.3	1.37755	1.30268	4.00	0.6019
23	0.8967	3.650	0.017	352 12.8	23 28.9	26 22.2	1 45.5	1.37861	1.30321	3.87	0.5880
24	0.8995	3.661	0.013	352 23.7	23 29.6	25 24.5	1 41.6	1.38008	1.30372	3.74	0.5735
25	0.9022	3.671	-0.007	352 33.1	23 30.2	24 26.9	1 37.8	1.38186	1.30422	3.62	0.5584
26	0.9050	+3.682	0.000	352 39.6	23 30.6	23 29.4	1 34.0	1.38391	1.30472	+3.49	+0.5425
27	0.9077	3.693	+0.008	352 42.6	23 30.8	22 32.0	1 30.1	1.38600	1.30520	3.36	0.5259
28	0.9104	3.703	0.013	352 42.5	23 30.8	21 34.7	1 26.3	1.38792	1.30566	3.22	0.5085
29	0.9132	3.714	0.016	352 40.3	23 30.7	20 37.6	1 22.5	1.38953	1.30611	3.09	0.4902
30	0.9159	3.725	0.015	352 37.7	23 30.5	19 40.5	1 18.7	1.39074	1.30653	2.96	0.4710
Dec. 1	0.9186	+3.736	+0.011	352 36.5	23 30.4	18 43.5	1 14.9	1.39155	1.30695	+2.82	+0.4508
2	0.9214	3.747	+0.005	352 37.8	23 30.5	17 46.7	1 11.1	1.39208	1.30734	2.69	0.4294
3	0.9241	3.758	-0.002	352 42.3	23 30.8	16 49.9	1 7.3	1.39254	1.30772	2.55	0.4067
h 4	0.9269	3.769	0.007	352 49.9	23 31.3	15 53.2	1 3.5	1.39311	1.30807	2.41	0.3827
(1.0) 5	0.9296	3.781	0.010	352 59.2	23 31.9	14 56.6	0 59.8	1.39391	1.30842	2.28	0.3571
6	0.9323	+3.792	-0.010	353 9.3	23 32.6	14 0.0	0 56.0	1.39509	1.30874	+2.14	+0.3297
7	0.9351	3.803	0.007	353 18.5	23 33.2	13 3.5	0 52.2	1.39654	1.30904	2.00	0.3003
8	0.9378	3.815	-0.003	353 25.8	23 33.7	12 7.1	0 48.5	1.39821	1.30932	1.86	0.2687
9	0.9406	3.826	+0.002	353 30.6	23 34.0	11 10.8	0 44.7	1.40001	1.30959	1.72	0.2344
10	0.9433	3.838	0.007	353 32.9	23 34.2	10 14.5	0 41.0	1.40180	1.30983	1.57	0.1970
11	0.9460	+3.849	+0.010	353 33.0	23 34.2	9 18.2	0 37.2	1.40348	1.31005	+1.43	+0.1559
12	0.9488	3.861	0.012	353 31.7	23 34.1	8 22.0	0 33.5	1.40497	1.31026	1.29	0.1104
13	0.9515	3.872	0.011	353 29.6	23 34.0	7 25.8	0 29.7	1.40622	1.31044	1.15	0.0594
14	0.9542	3.884	0.008	353 27.6	23 33.8	6 29.6	0 26.0	1.40725	1.31060	1.00	0.0013
15	0.9570	3.895	+0.004	353 26.4	23 33.8	5 33.5	0 22.2	1.40809	1.31074	0.86	9.9342
16	0.9597	+3.907	-0.002	353 26.7	23 33.8	4 37.4	0 18.5	1.40875	1.31085	+0.72	+9.8545
17	0.9624	3.919	0.008	353 29.0	23 33.9	3 41.3	0 14.8	1.40935	1.31095	0.57	9.7566
18	0.9652	3.930	0.013	353 33.5	23 34.2	2 45.2	0 11.0	1.40997	1.31102	0.43	9.6299
19	0.9679	3.942	0.017	353 40.1	23 34.7	1 49.2	0 7.3	1.41076	1.31108	0.28	9.4500
h 20	0.9707	3.954	0.018	353 48.0	23 35.2	0 53.1	0 3.5	1.41183	1.31111	+0.14	+9.1369
(6.0) 21	0.9734	+3.966	-0.016	353 56.1	23 35.7	359 57.0	23 59.8	1.41325	1.31112	-0.01	-7.8927
22	0.9761	3.977	0.011	354 3.0	23 36.2	359 1.0	23 56.1	1.41500	1.31110	0.15	9.1838
23	0.9789	3.989	-0.003	354 7.5	23 36.5	358 4.8	23 52.3	1.41702	1.31107	0.30	9.4736
24	0.9816	4.001	+0.005	354 8.8	23 36.6	357 8.6	23 48.6	1.41912	1.31102	0.44	9.6457
25	0.9844	4.012	0.011	354 7.3	23 36.5	356 12.5	23 44.8	1.42112	1.31095	0.59	9.7686
26	0.9871	+4.024	+0.015	354 3.4	23 36.2	355 16.3	23 41.1	1.42287	1.31084	-0.73	-9.8642
27	0.9898	4.036	0.016	353 58.5	23 35.9	354 20.1	23 37.3	1.42426	1.31072	0.88	9.9424
28	0.9926	4.047	0.013	353 54.4	23 35.6	353 23.9	23 33.6	1.42522	1.31058	1.02	0.0084
29	0.9953	4.059	0.007	353 52.4	23 35.5	352 27.6	23 29.8	1.42592	1.31041	1.16	0.0657
30	0.9980	4.070	+0.001	353 53.3	23 35.6	351 31.3	23 26.1	1.42647	1.31023	1.31	0.1161
31	1.0008	+4.082	-0.005	353 57.0	23 35.8	350 34.9	23 22.3	1.42704	1.31003	-1.45	-0.1612
32	1.0035	+4.094	-0.008	354 2.9	23 36.2	349 38.5	23 18.6	1.42779	1.30980	-1.59	-0.2111

214 BESSELIAN AND INDEPENDENT STAR-NUMBERS, 1916.

FOR WASHINGTON SIDEREAL TWELVE HOURS.

Mean Solar Date.	Log A ₁ .	Log B ₁ .	Log C.	Log D.	f	G ₁	H	Log g ₁ .	Log h.	Log i.	
Jan.	0.72	+9.4261	-0.7301	-0.5001	+1.3049	+0.822	314 52	351 6	0.8796	1.3101	-0.1373
	10.70	9.4834	0.7326	0.8049	1.2845	0.936	318 28	341 40	0.9111	1.3071	0.4422
	20.67	9.5314	0.7394	0.9729	1.2486	1.047	321 9	332 5	0.9419	1.3023	0.6101
	30.64	9.5714	0.7487	1.0831	1.1944	1.147	323 7	322 16	0.9704	1.2963	0.7204
Feb.	9.61	9.6046	0.7586	1.1596	1.1168	1.239	324 35	312 11	0.9955	1.2898	0.7969
	19.59	+9.6323	-0.7674	-1.2127	+1.0056	+1.320	325 45	301 50	1.0170	1.2835	-0.8500
	29.56	9.6557	0.7733	1.2477	0.8375	1.393	326 49	291 15	1.0351	1.2782	0.8849
Mar.	10.53	9.6762	0.7754	1.2675	+0.5355	1.460	327 55	280 30	1.0502	1.2748	0.9048
	20.50	9.6947	0.7729	1.2737	-8.9881	1.524	329 9	269 42	1.0630	1.2737	0.9110
	30.48	9.7125	0.7655	1.2668	0.5569	1.587	330 36	258 58	1.0744	1.2749	0.9041
	9.45	+9.7304	-0.7534	-1.2468	-0.8443	+1.654	332 15	248 24	1.0854	1.2784	-0.8840
Apr.	19.42	9.7489	0.7371	1.2125	1.0063	1.726	334 6	238 7	1.0969	1.2835	0.8497
	29.40	9.7685	0.7176	1.1616	1.1139	1.805	336 5	228 8	1.1096	1.2896	0.7989
	9.37	9.7892	0.6961	1.0899	1.1894	1.893	338 4	218 29	1.1238	1.2958	0.7272
May	19.34	9.8107	0.6743	0.9894	1.2428	1.989	339 59	209 9	1.1398	1.3016	0.6266
	29.31	+9.8327	-0.6541	-0.8422	-1.2791	+2.091	341 42	200 5	1.1572	1.3064	-0.4795
June	8.29	9.8547	0.6372	0.5981	1.3012	2.201	343 11	191 12	1.1757	1.3096	0.2354
	18.26	9.8763	0.6251	-9.9402	1.3107	2.313	344 22	182 26	1.1946	1.3110	-9.5775
	28.23	9.8969	0.6188	+0.3504	1.3080	2.426	345 16	173 42	1.2134	1.3106	+9.9876
July	8.20	9.9163	0.6184	0.7235	1.2932	2.537	345 54	164 55	1.2316	1.3084	0.3608
	18.18	+9.9341	-0.6231	+0.9135	-1.2653	+2.643	346 18	156 1	1.2487	1.3045	+0.5508
	28.15	9.9502	0.6315	1.0365	1.2224	2.743	346 32	146 54	1.2644	1.2993	0.6738
	7.12	9.9646	0.6418	1.1228	1.1610	2.835	346 39	137 31	1.2785	1.2932	0.7600
Aug.	17.10	9.9772	0.6521	1.1845	1.0749	2.918	346 43	127 51	1.2910	1.2870	0.8218
	27.07	9.9883	0.6604	1.2278	0.9509	2.994	346 48	117 51	1.3020	1.2813	0.8651
	6.04	+9.9982	-0.6651	+1.2561	-0.7569	+3.063	346 57	107 35	1.3116	1.2768	+0.8933
Sept.	16.01	0.0072	0.6650	1.2709	-0.3653	3.127	347 13	97 5	1.3201	1.2742	0.9082
	25.99	0.0157	0.6591	1.2730	+0.0655	3.188	347 37	86 27	1.3280	1.2738	0.9102
	5.96	0.0242	0.6470	1.2623	0.6656	3.251	348 11	75 48	1.3355	1.2758	0.8995
Oct.	15.93	0.0330	0.6284	1.2379	0.9020	3.318	348 53	65 14	1.3433	1.2798	0.8752
	25.90	+0.0425	-0.6040	+1.1979	+1.0457	+3.391	349 42	54 51	1.3516	1.2854	+0.8352
Nov.	4.88	0.0528	0.5746	1.1389	1.1437	3.472	350 35	44 41	1.3608	1.2918	0.7761
	14.85	0.0641	0.5422	1.0544	1.2128	3.564	351 28	34 47	1.3710	1.2982	0.6917
	24.82	0.0762	0.5094	0.9314	1.2608	3.664	352 18	25 6	1.3821	1.3039	0.5687
Dec.	4.79	0.0889	0.4795	0.7381	1.2919	3.773	353 0	15 37	1.3941	1.3082	0.3754
	14.77	+0.1018	-0.4560	+0.3471	+1.3081	+3.887	353 34	6 15	1.4066	1.3106	+9.9844
	24.74	0.1146	0.4417	-0.0413	1.3104	4.004	353 57	356 55	1.4191	1.3110	-9.6785
	34.71	+0.1270	-0.4380	-0.6425	+1.2989	+4.119	354 10	347 34	1.4313	1.3092	-0.2798

$E = +0^m.002$

The above numbers give the same reductions from mean to apparent place as are employed in computing the apparent places of the fixed stars, given on pages 316 to 513, from the mean places, given on pages 217 to 230. In order to render exact interpolation possible through intervals of *one day*, all short period terms have been omitted.

TERMS OF SHORT PERIOD IN THE NUTATION, 1916. 215

FOR WASHINGTON MEAN MIDNIGHT.

Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$
Jan. 0	-0.29	-0.02	Feb. 15	+0.15	-0.05	Apr. 1	-0.03	+0.10	May 17	-0.18	-0.08
1	0.23	0.07	16	0.18	-0.02	2	0.12	0.07	18	-0.06	0.10
2	-0.12	0.10	17	0.17	+0.02	3	0.17	+0.03	19	+0.07	0.10
3	+0.01	0.11	18	0.12	0.06	4	0.18	-0.02	20	0.19	0.08
4	0.15	0.09	19	+0.04	0.09	5	0.15	0.05	21	0.27	-0.03
5	+0.25	-0.05	20	-0.06	+0.10	6	-0.09	-0.08	22	+0.29	+0.02
6	0.29	0.00	21	0.16	0.09	7	-0.02	0.09	23	0.25	0.07
7	0.28	+0.05	22	0.24	0.06	8	+0.06	0.09	24	0.17	0.10
8	0.21	0.09	23	0.28	+0.01	9	0.12	0.07	25	+0.06	0.10
9	0.11	0.10	24	0.27	-0.04	10	0.16	-0.04	26	-0.05	0.09
10	+0.01	+0.10	25	-0.20	-0.08	11	+0.17	0.00	27	-0.13	+0.06
11	-0.08	0.07	26	-0.08	0.10	12	0.14	+0.04	28	0.17	+0.01
12	0.14	+0.03	27	+0.04	0.10	13	+0.09	0.07	29	0.16	-0.03
13	0.16	-0.01	28	0.16	0.08	14	0.00	0.09	30	0.12	0.07
14	0.14	0.05	29	0.24	-0.03	15	-0.10	0.10	31	-0.06	0.09
15	-0.09	-0.08	Mar. 1	+0.26	+0.02	16	-0.19	+0.08	June 1	+0.02	-0.09
16	-0.02	0.09	2	0.23	0.07	17	0.25	+0.04	2	0.09	0.08
17	+0.05	0.09	3	0.15	0.10	18	0.27	0.00	3	0.14	0.06
18	0.11	0.07	4	+0.05	0.10	19	0.23	-0.05	4	0.17	-0.02
19	0.16	-0.04	5	-0.05	0.09	20	0.14	0.09	5	0.16	+0.02
20	+0.17	0.00	6	-0.13	+0.06	21	-0.01	-0.10	6	+0.12	+0.05
21	0.15	+0.04	7	0.16	+0.02	22	+0.11	0.10	7	+0.04	0.08
22	+0.09	0.07	8	0.16	-0.03	23	0.22	0.06	8	-0.06	0.09
23	0.00	0.10	9	0.13	0.06	24	0.27	-0.02	9	0.16	0.09
24	-0.10	0.10	10	-0.06	0.09	25	0.27	+0.04	10	0.24	0.07
25	-0.20	+0.08	11	+0.01	-0.09	26	+0.21	+0.08	11	-0.29	+0.03
26	0.28	+0.04	12	0.08	0.08	27	0.12	0.10	12	0.29	-0.02
27	0.30	0.00	13	0.14	0.06	28	+0.01	0.10	13	0.23	0.07
28	0.26	-0.05	14	0.17	-0.03	29	-0.09	0.08	14	-0.12	0.10
29	0.17	0.09	15	0.17	+0.01	30	0.15	+0.04	15	+0.01	0.10
30	-0.04	-0.11	16	+0.14	+0.05	May 1	-0.18	0.00	16	+0.14	-0.09
31	+0.09	0.10	17	+0.07	0.08	2	0.16	-0.04	17	0.24	-0.05
Feb. 1	0.20	0.06	18	-0.02	0.10	3	0.11	0.08	18	0.29	0.00
2	0.26	-0.02	19	0.12	0.09	4	-0.04	0.09	19	0.27	+0.05
3	0.27	+0.04	20	0.21	0.07	5	+0.04	0.09	20	0.21	0.09
4	+0.22	+0.08	21	-0.26	+0.03	6	+0.10	-0.08	21	+0.11	+0.10
5	0.13	0.10	22	0.26	-0.02	7	0.15	0.05	22	0.00	0.10
6	+0.03	0.10	23	0.21	0.07	8	0.16	-0.01	23	-0.09	0.07
7	-0.06	0.08	24	-0.11	0.10	9	0.15	+0.03	24	0.15	+0.03
8	0.13	+0.05	25	+0.02	0.10	10	0.10	0.06	25	0.16	-0.02
9	-0.16	0.00	26	+0.14	-0.09	11	+0.02	+0.09	26	-0.13	-0.06
10	0.15	-0.04	27	0.23	-0.05	12	-0.08	0.10	27	-0.07	0.08
11	0.11	0.07	28	0.27	0.00	13	0.18	0.08	28	+0.01	0.09
12	-0.04	0.09	29	0.25	+0.05	14	0.25	0.05	29	0.08	0.09
13	+0.03	0.09	30	0.18	0.09	15	0.28	+0.01	30	0.14	0.07
14	+0.10	-0.08	31	+0.08	+0.10	16	-0.26	-0.04	July 1	+0.17	-0.03
15	+0.15	-0.05	Apr. 1	-0.03	+0.10	17	-0.18	-0.08	2	+0.17	-0.03

216 TERMS OF SHORT PERIOD IN THE NUTATION, 1916.

FOR WASHINGTON MEAN MIDNIGHT.

Date.	$\delta''\phi$	$\delta''\omega$	Date.	$\delta''\phi$	$\delta''\omega$	Date.	$\delta''\phi$	$\delta''\omega$	Date.	$\delta''\phi$	$\delta''\omega$
July 1	0.17	-0.03	Aug. 16	-0.05	+0.09	Oct. 1	-0.16	-0.09	Nov. 16	+0.17	+0.02
2	0.17	0.00	17	0.12	0.05	2	-0.05	0.10	17	0.12	0.06
3	0.14	+0.04	18	0.15	+0.01	3	+0.07	0.09	18	+0.04	0.08
4	+0.07	0.07	19	0.14	-0.04	4	0.17	0.06	19	-0.05	0.09
5	-0.02	0.09	20	0.09	0.07	5	0.23	-0.01	20	0.15	0.08
6	-0.12	+0.09	21	-0.02	-0.09	6	+0.23	+0.04	21	-0.23	+0.06
7	0.22	0.08	22	+0.06	0.09	7	0.18	0.08	22	0.27	+0.02
8	0.29	+0.04	23	0.13	0.08	8	+0.09	0.10	23	0.27	-0.02
9	0.30	-0.01	24	0.17	0.05	9	-0.01	0.10	24	0.22	0.06
10	0.27	0.05	25	0.19	-0.02	10	0.10	0.08	25	-0.12	0.09
11	-0.18	-0.09	26	+0.18	+0.02	11	-0.16	+0.04	26	0.00	-0.10
12	-0.06	0.10	27	0.14	0.06	12	0.17	-0.01	27	+0.13	0.08
13	+0.08	0.09	28	+0.06	0.08	13	0.14	0.05	28	0.22	-0.05
14	0.19	0.06	29	-0.03	0.09	14	-0.08	0.08	29	0.26	0.00
15	0.26	-0.01	30	0.13	0.09	15	0.00	0.09	30	0.25	+0.05
16	+0.27	+0.04	31	-0.22	+0.06	16	+0.08	-0.09	Dec. 1	+0.18	+0.09
17	0.22	0.08	Sept. 1	0.28	+0.02	17	0.15	0.07	2	+0.08	0.10
18	0.14	0.10	2	0.28	-0.02	18	0.18	-0.04	3	-0.03	0.09
19	+0.03	0.10	3	0.23	0.06	19	0.19	0.00	4	0.12	0.06
20	-0.06	0.08	4	0.14	0.09	20	0.16	+0.04	5	0.16	+0.02
21	-0.13	+0.04	5	-0.02	-0.10	21	+0.11	+0.07	6	-0.16	-0.02
22	0.15	-0.01	6	+0.10	0.08	22	+0.02	0.09	7	0.12	0.06
23	0.13	0.05	7	0.19	-0.05	23	-0.07	0.09	8	-0.05	0.09
24	-0.07	0.08	8	0.24	0.00	24	0.17	0.08	9	+0.03	0.09
25	0.00	0.09	9	0.22	+0.05	25	0.24	0.05	10	0.11	0.08
26	+0.07	-0.09	10	+0.16	+0.09	26	-0.27	+0.01	11	+0.16	-0.06
27	0.14	0.07	11	+0.07	0.10	27	0.25	-0.04	12	0.19	-0.02
28	0.18	0.04	12	-0.03	0.09	28	0.18	0.08	13	0.18	+0.01
29	0.19	-0.01	13	0.11	0.07	29	-0.08	0.10	14	0.14	0.05
30	0.16	+0.03	14	0.16	+0.02	30	+0.05	0.10	15	+0.07	0.08
31	+0.11	+0.07	15	-0.15	-0.02	31	+0.16	-0.07	16	-0.03	+0.09
Aug. 1	+0.02	0.09	16	0.11	0.06	Nov. 1	0.23	-0.03	17	0.13	0.09
2	-0.08	0.09	17	-0.05	0.09	2	0.25	+0.02	18	0.22	0.07
3	0.18	0.08	18	+0.03	0.09	3	0.21	0.07	19	0.28	+0.03
4	0.26	0.05	19	0.11	0.08	4	0.13	0.10	20	0.29	-0.01
5	-0.30	+0.01	20	+0.16	-0.06	5	+0.03	+0.10	21	-0.26	-0.05
6	0.29	-0.04	21	0.19	-0.03	6	-0.07	0.09	22	0.17	0.08
7	0.22	0.08	22	0.19	+0.01	7	0.15	0.05	23	-0.05	0.10
8	-0.11	0.10	23	0.16	0.05	8	0.17	+0.01	24	+0.07	0.09
9	+0.02	0.10	24	+0.09	0.07	9	0.16	-0.04	25	0.18	0.06
10	+0.14	-0.07	25	0.00	+0.09	10	-0.10	-0.07	26	+0.25	-0.01
11	0.22	-0.03	26	-0.10	0.09	11	-0.03	0.09	27	0.26	+0.04
12	0.25	+0.02	27	0.19	0.07	12	+0.06	0.09	28	0.21	0.08
13	0.22	0.07	28	0.25	+0.04	13	0.13	0.08	29	0.12	0.10
14	0.15	0.10	29	0.27	-0.01	14	0.17	0.05	30	+0.02	0.10
15	+0.05	+0.10	30	-0.24	-0.05	15	+0.19	-0.01	31	-0.08	+0.08
16	-0.05	+0.09	Oct. 1	-0.16	-0.09	16	+0.17	+0.02	32	-0.14	+0.04

MEAN PLACES OF TEN-DAY STARS, 1916. 217

FOR JANUARY 0^h.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Vari- ation.		Declination.			Annual Vari- ation.		
			h	m	s	s	s	"	"	"	"	"	
33 Piscium	4.7	K0	0	1	2.184	+3.0714	-0.0006	-	6	10	38.90	+20.136	+0.091
α Andromedæ (<i>Alpheratz</i>)	2.2	A0p	0	4	2.546	3.0962	+0.0107	+28	37	36.11	19.880	-0.163	
β Cassiopeïæ	2.4	F5	0	4	41.242	3.1856	+0.0680	+58	41	11.42	19.861	-0.180	
ϵ Phœnicis	3.9	K0	0	5	9.038	3.0510	+0.0006	-46	12	39.56	19.848	-0.193	
22 Andromedæ	5.1	F0	0	5	57.008	3.1101	+0.0021	+45	36	17.41	20.034	-0.004	
γ Pegasi	2.9	B2	0	8	54.507	+3.0866	+0.0003	+14	42	59.83	+20.020	-0.010	
σ Andromedæ	4.5	A2	0	13	56.123	3.1279	-0.0044	+36	19	10.37	19.962	-0.047	
ζ Ceti	3.8	K0	0	15	8.902	3.0569	-0.0013	-	9	17	22.15	19.972	-0.030
ξ Tucanæ	4.3	F8	0	15	42.336	3.1470	+0.2739	-65	22	5.12	21.170	+1.172	
44 Piscium	6.0	G5	0	21	5.761	3.0744	-0.0014	+1	28	28.25	19.937	-0.023	
β Hydri	2.9	G0	0	21	21.425	+3.1985	+0.6975	-77	43	38.37	+20.277	+0.318	
α Phœnicis	2.4	K0	0	22	8.145	2.9722	+0.0188	-42	45	43.75	19.549	-0.403	
12 Ceti	6.0	K5	0	25	45.133	3.0622	+0.0011	-	4	25	16.57	19.919	0.000
13 Ceti	5.2	G0	0	30	55.429	3.0871	+0.0273	-	4	3	18.18	19.846	-0.017
ζ Cassiopeïæ	3.7	B2	0	32	17.061	3.3292	+0.0036	+53	26	5.23	19.840	-0.007	
π Andromedæ	4.4	B3	0	32	23.421	+3.1980	+0.0019	+33	15	25.61	+19.846	0.000	
ϵ Andromedæ	4.5	G5	0	34	6.788	3.1646	-0.0172	+28	51	20.97	19.570	-0.254	
δ Andromedæ	3.5	K0	0	34	49.946	3.2023	+0.0110	+30	24	4.85	19.717	-0.097	
α Cassiopeïæ (<i>Schedir</i>)	†	var.	K0	0	35	43.885	3.3875	+0.0063	+56	4	36.64	19.771	-0.032
μ Phœnicis	4.6	K0	0	37	21.444	2.8391	-0.0046	-46	32	46.93	19.748	-0.032	
β Ceti	2.2	K0	0	39	22.431	+3.0124	+0.0160	-18	26	50.64	+19.792	+0.041	
σ Cassiopeïæ	4.7	B2	0	40	2.285	3.3318	+0.0028	+47	49	29.55	19.734	-0.006	
21 Cassiopeïæ	5.6	A2	0	40	4.601	3.9077	-0.0050	+74	31	44.93	19.713	-0.026	
ζ Andromedæ	4.3	K0	0	42	52.972	3.1750	-0.0073	+23	48	37.52	19.618	-0.078	
η Cassiopeïæ	†	3.6	F8	0	44	0.577	3.6142	+0.1432	+57	22	16.35	19.201	-0.476
δ Piscium	4.6	K5	0	44	19.361	+3.1102	+0.0055	+7	7	41.35	+19.628	-0.044	
λ Hydri	5.0	K5	0	45	41.158	2.1007	+0.0426	-75	22	49.23	19.648	-0.001	
20 Ceti	4.9	K0	0	48	42.811	3.0642	-0.0005	-	1	36	0.06	19.591	-0.003
γ Cassiopeïæ	2.2	B0p	0	51	37.632	3.5987	+0.0036	+60	15	43.70	19.534	-0.005	
μ Andromedæ	3.9	A2	0	52	5.138	3.3214	+0.0132	+38	2	38.24	19.560	+0.030	
α Sculptoris	4.4	B5	0	54	33.480	+2.8904	-0.0018	-29	48	41.17	+19.468	-0.013	
ϵ Piscium	4.4	K0	0	58	34.919	3.1113	-0.0054	+7	26	17.32	19.420	+0.026	
β Phœnicis	†	3.4	K0	1	2	20.127	2.6796	-0.0057	-47	10	7.34	19.284	-0.024
μ Cassiopeïæ	5.3	G5	1	2	40.235	3.9705	+0.3918	+54	30	31.99	17.746	-1.555	
η Ceti	3.6	K0	1	4	21.845	3.0175	+0.0143	-10	37	37.79	19.134	-0.125	
β Andromedæ	2.4	Ma	1	5	1.411	+3.3511	+0.0148	+35	10	31.73	+19.127	-0.117	
τ Piscium	4.7	K0	1	7	1.793	3.2975	+0.0056	+29	38	38.39	19.106	-0.029	
ζ Piscium	†	5.6	A5	1	9	20.465	3.1320	+0.0096	+7	7	53.28	19.083	-0.052
κ Tucanæ	†	5.0	F8	1	12	55.270	2.0394	+0.0744	-69	19	20.40	19.128	+0.089
f Piscium	5.3	A2	1	13	27.895	3.0927	-0.0033	+3	10	20.65	18.999	-0.025	
v Piscium	4.7	A2	1	14	50.728	+3.2910	+0.0016	+26	49	22.39	+18.977	-0.008	
θ Ceti	3.8	K0	1	19	49.446	2.9978	-0.0057	-8	36	59.31	18.627	-0.215	
δ Cassiopeïæ	2.8	A5	1	20	18.542	3.9014	+0.0406	+59	47	57.48	18.790	-0.037	
γ Phœnicis	3.4	K5	1	24	43.107	2.6076	-0.0029	-43	44	54.70	18.466	-0.225	
38 Cassiopeïæ	6.0	F5	1	24	57.396	4.4170	+0.0263	+69	49	58.33	18.612	-0.072	
η Piscium	3.7	G5	1	26	59.130	+3.2060	+0.0015	+14	54	47.45	+18.616	-0.003	
40 Cassiopeïæ	5.5	K0	1	31	46.572	4.7352	-0.0011	+72	36	45.24	18.458	-0.002	
v Andromedæ	4.2	G0	1	31	51.637	3.5103	-0.0153	+40	59	8.80	18.080	-0.377	
π Piscium	5.6	F0	1	32	38.574	3.1767	-0.0049	+11	42	43.88	18.464	+0.034	
v Persei	3.8	K0	1	32	49.688	3.6680	+0.0064	+48	12	10.96	18.304	-0.119	
α Eridani (<i>Achernar</i>)	0.6	B5	1	34	35.215	+2.2363	+0.0104	-57	39	47.99	+18.322	-0.041	
ω Cassiopeïæ	5.5	A0p	1	36	6.007	4.4028	+0.0088	+67	37	7.51	18.307	-0.002	
ν Piscium	4.7	K0	1	37	3.497	3.1198	-0.0015	+5	3	46.67	18.278	+0.003	
ϕ Persei	4.2	B0p	1	38	23.218	3.7449	+0.0031	+50	15	57.89	18.210	-0.015	
τ Ceti	3.6	K0	1	40	9.908	2.7866	-0.1198	-16	22	45.85	19.020	+0.859	
σ Piscium	4.5	K0	1	40	57.351	+3.1651	+0.0049	+8	44	7.28	+18.177	+0.045	
ϵ Sculptoris	†	5.4	F0	1	41	42.486	+2.8045	+0.0052	-25	28	18.88	+18.052	-0.051

13 Ceti, dup. 5^m.5, 6^m.2, 0^h.3
 ϵ Cassiop. var. irreg. 2^m.2, 2^m.8
 δ Cassiop. comp. 7^m.6, 4^h. s. pr.

β Phœnicis, dup. 4^m.1, 4^m.1, 1^h.
 ζ Piscium, star 6^m.5, 24^h n. f.

κ Tucanæ, comp. 7^m, 6^h n.
 ϵ Sculptoris, comp. 9^m, 5^h n. f.

218 MEAN PLACES OF TEN-DAY STARS, 1916.

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spectr- um.	Right Ascension.			Annual Variation.		Declination.			Annual Variation.	
			h	m	s	s	s	°	'	"	"	"
ζ Ceti	3.9	K0	1 47	18.824		+2.9601	+0.0020	-10 44	58.29		+17.861	-0.027
α Trianguli	3.6	F5	1 48	17.332		3.4136	+0.0015	+29 10	12.50		17.618	-0.231
ε Cassiopeiae	3.4	B3	1 48	20.201		4.2854	+0.0053	+63 15	25.37		17.832	-0.015
ξ Piscium	4.8	K0	1 49	12.319		3.1038	+0.0015	+ 2 46	23.92		17.833	+0.021
β Arietis	2.7	A5	1 49	59.749		3.3085	+0.0064	+20 23	52.37		17.670	-0.111
ψ Phœnicis	4.4	Mb	1 50	16.598		+2.4036	-0.124	-46 42	50.53		+17.665	-0.104
ν Ceti	4.2	K5	1 56	2.792		2.8257	+0.0082	-21 29	3.65		17.522	-0.008
α Hydri	3.0	F0	1 56	6.963		1.8818	+0.0277	-61 58	41.94		17.554	+0.027
50 Cassiopeiae	4.1	A0	1 56	13.963		5.0629	-0.0092	+72 0	55.96		17.542	+0.020
γ Andromedæ pr.	2.3	K0	1 58	44.191		3.6716	+0.0046	+41 55	38.10		17.364	-0.051
γ Andromedæ seq.	5.1	A	Δα + 0.842			....	....	Δδ + 4.58			....	....
α Arietis	2.2	K2	2 2	26.052		+3.3763	+0.0139	+23 3	56.89		+17.108	-0.144
β Trianguli	3.1	A5	2 4	32.403		3.5618	+0.0126	+34 35	25.87		17.114	-0.044
55 Cassiopeiae	6.2	F5	2 7	52.281		4.6696	-0.0020	+66 7	53.27		17.003	-0.002
6 Persei	5.4	K0	2 8	0.582		3.9740	+0.0368	+50 40	34.43		16.832	-0.167
ξ ¹ Ceti	4.5	G5	2 8	32.733		+3.1770	-0.0012	+ 8 27	11.13		+16.958	-0.016
μ Fornacis	5.2	A0	2 9	12.269		2.6378	-0.0037	-31 7	3.96		16.921	-0.022
γ Trianguli	4.1	A0	2 12	18.931		3.5587	+0.0040	+33 27	33.48		16.745	-0.052
67 Ceti	5.7	G5	2 12	47.543		2.9907	+0.0054	- 6 48	31.69		16.663	-0.110
φ Eridani	3.8	B8	2 13	30.414		2.1412	+0.0062	-51 54	2.59		16.711	-0.029
ο Ceti (<i>Mira</i>)	var.	Md	2 15	6.121		+3.0292	+0.0002	- 3 21	30.26		+16.434	-0.229
κ Fornacis	5.4	F5	2 18	41.901		2.7448	+0.0138	-24 11	51.70		16.408	-0.077
δ Hydri	4.3	A2	2 20	14.958		1.0586	-0.0097	-69 2	28.91		16.427	+0.020
ε Cassiopeiae	4.6	A5p	2 22	7.604		4.9043	-0.0003	+67 1	32.18		16.323	+0.010
ξ ² Ceti	4.3	A0	2 23	41.431		3.1865	+0.0025	+ 8 5	2.97		16.226	-0.007
σ Ceti	4.8	F5	2 28	6.275		+2.8415	-0.0063	-15 36	45.35		+15.901	-0.102
36 H. Cassiopeiae	5.3	K0	2 30	0.986		5.6404	-0.0052	+72 27	6.78		15.920	+0.017
ν Ceti	5.0	G5	2 31	27.821		+3.1452	-0.0025	+ 5 13	38.55		15.806	-0.018
μ Hydri	5.3	K0	2 33	25.067		-1.3486	+0.0426	-79 28	33.79		15.681	-0.038
ν Arietis	5.4	A2	2 34	2.605		+3.4022	+0.0001	+21 35	55.63		15.664	-0.021
δ Ceti	4.0	B2	2 35	10.534		+3.0732	+0.0011	- 0 1	59.38		+15.628	+0.004
ε Hydri	4.3	B9	2 38	17.548		0.9142	+0.0169	-68 37	36.20		15.456	+0.005
θ Persei	4.2	G0	2 38	27.276		4.0838	+0.0353	+48 52	26.40		15.355	-0.087
γ Ceti seq.	3.7	A0	2 38	56.770		3.1060	-0.0096	+ 2 52	56.70		15.264	-0.151
π Ceti	4.4	B5	2 40	7.415		2.8538	-0.0012	-14 12	49.84		15.337	-0.012
μ Ceti	4.4	A5	2 40	23.914		+3.2395	+0.0188	+ 9 45	36.78		+15.308	-0.025
η Persei	3.9	K0	2 44	33.586		4.3583	+0.0041	+55 32	52.02		15.085	-0.012
41 Arietis	3.7	B8	2 45	2.107		3.5251	+0.0050	+26 54	54.20		14.958	-0.111
β Fornacis	4.5	K0	2 45	34.504		2.5121	+0.0080	-32 45	29.75		15.193	+0.156
σ Arietis	5.5	B5	2 46	51.120		3.3082	+0.0016	-14 44	11.38		+14.920	-0.034
τ ² Eridani	4.8	K0	2 47	13.613		+2.7200	-0.0044	-21 20	58.54		+14.925	-0.017
τ Persei	4.1	G0p	2 48	17.574		4.2370	+0.0008	+52 25	10.56		14.876	-0.003
η Eridani	4.0	K0	2 52	19.399		2.9302	+0.0060	- 9 13	54.52		14.426	-0.213
ε Arietis (<i>mean</i>)	4.6	A2	2 54	24.310		3.4256	-0.0009	+21 0	18.17		14.506	-0.010
47 H. Cephei	5.7	Ma	2 54	51.755		7.8531	-0.0102	+79 5	18.03		14.498	+0.010
θ Eridani	3.4	A2	2 55	4.687		+2.2767	-0.0025	-40 38	26.84		+14.500	+0.024
α Ceti	2.8	Ma	2 57	53.189		3.1333	-0.0009	+ 3 45	39.08		14.226	-0.078
τ ³ Eridani	4.2	A3	2 58	41.300		2.6449	-0.0104	-23 57	10.96		14.211	-0.044
γ Persei	3.1	G0p	2 58	42.207		4.3286	+0.0010	+53 10	42.50		14.250	-0.004
ρ Persei	var.	Mb	2 59	47.281		3.8356	+0.0116	+38 30	55.88		14.072	-0.115
μ Horologii	5.2	F0	3 1	37.770		+1.4078	-0.0123	- 60 3	46.89		+14.019	-0.054
θ Hydri	5.5	B8	3 2	4.223		0.1009	+0.0034	-72 13	49.75		14.060	+0.014
β Persei (<i>Algol</i>)	var.	B8	3 2	41.830		3.8938	+0.0008	+40 37	58.42		14.005	-0.002
δ Arietis	4.5	K0	3 6	49.362		3.4263	+0.0110	+19 24	35.44		13.747	+0.001
12 Eridani	4.0	F8	3 8	30.108		2.5467	+0.0241	-29 19	3.72		14.275	+0.636
48 H. Cephei	5.5	F0	3 9	36.856		+7.5042	+0.0204	+77 25	39.91		+13.512	-0.055
ζ Arietis	5.0	A0	3 10	4.187		+3.4438	-0.0019	+20 44	1.81		+13.456	-0.082

• Ceti, var., 3.314, 1^m.7-9^m.6, star 9^m.18
 • Cassiopeiae, triple, 7^m, 8^m, 2^m, 8^m
 γ Ceti, comp. 6^m.2, 2^m.7 pr.

η Persei, star 8^m.5, 28^m n. pr.
 ε Arietis, dup., 5^m.2, 5^m.6, 1^m.2
 θ Eridani, comp. 4^m.4, 1^m.8

β Persei, var. irreg., 3^m.4-4^m.2
 β Persei, var. 2^d.87, 2^m.1-3^m.2
 12 Eridani, comp. 7^m, 1^m.4 n. pr.

MEAN PLACES OF TEN-DAY STARS, 1916. 219

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Variation.		Declination.			Annual Variation.	Annual P. M.
			h	m	s	s	s	°	'	"		
38 G. Horologii	† 5.7	N	3	10	25.278	+1.5148	-.0005	-57	38	9.11	+13.509	-0.006
ζ Eridani	4.9	A3	3	11	45.116	2.9124	-.0008	-9	7	51.61	13.482	+0.053
ρ Arietis	5.2	B3	3	16	22.469	3.4595	+0.0023	+20	50	41.90	13.093	-0.033
ε Eridani	4.3	G5	3	16	34.358	+2.3980	+0.2808	-43	23	25.47	13.871	+0.757
ι Hydri	5.5	F2	3	18	1.586	-1.5516	+0.0352	-77	41	44.73	13.057	+0.040
α Persei	1.9	F5	3	18	19.065	+4.2695	+0.0030	+49	33	47.48	+12.969	-0.028
ο Tauri	3.8	G5	3	20	17.438	3.2255	-.0046	+8	44	2.54	12.792	-0.074
2 H. Camelopardalis	4.4	A0	3	22	15.401	4.8380	+0.0027	+59	38	55.40	12.734	+0.001
ξ Tauri	3.8	B8	3	22	36.879	3.2485	+0.0040	+9	26	25.64	12.662	-0.046
ζ Tauri	4.3	K0	3	26	13.995	3.3092	+0.0016	+12	38	58.64	12.465	+0.002
ε Eridani	† 3.8	K0p	3	28	58.316	+2.8253	-.0660	-9	44	30.51	+12.300	+0.026
ρ ² Eridani	4.3	B8	3	30	4.554	2.6483	+0.0023	-21	54	50.59	12.159	-0.039
δ Persei	3.1	B5	3	36	56.244	4.2604	+0.0035	+47	31	11.99	11.680	-0.036
δ Eridani	3.7	K0	3	39	13.421	2.8730	-.0081	-10	2	49.84	12.284	+0.731
ν Persei	3.9	F5	3	39	28.910	4.0672	-.0004	+42	18	51.41	11.535	0.000
5 H. Camelopardalis	4.7	A0	3	41	28.175	+6.2856	+0.0059	+71	4	29.21	+11.335	-0.057
η Tauri (<i>Alcyone</i>)	† 3.0	B5	3	42	29.281	3.5618	+0.0016	+23	50	46.45	11.269	-0.050
ρ ⁴ Eridani	4.3	F8	3	43	14.014	2.5806	-.0115	-23	29	47.47	10.783	-0.481
γ Eridani	4.2	K0	3	46	18.679	+2.2451	-.0036	-36	27	13.90	11.013	-0.028
ζ Hydri	3.2	Ma	3	48	31.478	-0.9642	+0.0096	-74	29	47.94	10.996	+0.117
ζ Persei	2.9	B1	3	48	50.870	+3.7658	+0.0010	+31	38	6.39	+10.841	-0.014
9 H. Camelopardalis	† 5.2	K0p	3	49	57.839	5.0947	+0.0003	+60	51	50.38	10.756	-0.017
ε Persei	† 3.0	B0	3	52	12.766	4.0195	+0.0031	+39	46	5.65	10.580	-0.027
ξ Persei	4.0	Oe5	3	53	30.643	3.8871	+0.0012	+35	33	1.17	10.493	-0.017
γ Eridani	3.2	K5	3	54	6.591	2.7985	+0.0047	-13	44	48.28	10.355	-0.110
λ Tauri	† var.	B3	3	56	1.481	+3.3216	+0.0002	+12	15	13.87	+10.311	-0.011
δ Reticuli	4.4	Ma	3	57	24.627	0.9410	-.0020	-61	38	12.59	10.216	-0.002
ν Tauri	3.9	A0	3	58	41.191	3.1897	+0.0008	+5	45	25.40	10.117	-0.005
Δ Tauri	† 4.5	K0	3	59	43.595	3.5434	+0.0069	+21	51	11.97	9.985	-0.058
c Persei	4.0	B3p	4	2	33.497	4.3474	+0.0042	+47	29	21.59	9.796	-0.032
p Tauri	5.6	F0	4	5	42.728	+3.6494	-.0024	+26	15	45.53	+9.545	-0.042
ο ¹ Eridani	4.1	F5	4	7	45.861	2.9274	+0.0007	-7	3	20.77	9.515	+0.086
μ Tauri	4.3	B3	4	10	58.288	3.2557	+0.0016	+8	40	58.24	9.150	-0.024
α Horologii	3.8	K0	4	11	13.084	1.9874	+0.0040	-42	30	4.63	8.931	-0.230
α Reticuli	3.4	G5	4	13	20.306	0.7652	+0.0048	-62	41	2.04	9.040	+0.044
γ Tauri	3.9	K0	4	15	0.665	+3.4117	+0.0083	+15	25	32.48	+8.839	-0.026
δ Tauri	3.9	K0	4	18	5.298	3.4570	+0.0075	+17	20	47.12	8.592	-0.030
ν ² Eridani	4.1	K5	4	20	52.886	+2.2529	+0.0052	-34	12	41.02	8.444	+0.042
δ Mense	5.6	K0	4	23	37.125	-4.1448	+0.0042	-80	24	42.07	8.255	+0.072
ε Tauri	3.6	K0	4	23	42.585	+3.5008	+0.0082	+18	59	42.29	8.142	-0.034
m Persei	† 6.1	F0	4	27	30.041	+4.2153	+0.0012	+42	53	8.12	+7.876	+0.004
α Tauri (<i>Aldebaran</i>)	1.1	K5	4	31	5.918	3.4401	+0.0047	+16	20	28.92	7.393	-0.189
ν Eridani	4.1	B2	4	32	7.236	2.9958	-.0005	-3	31	23.92	7.499	0.000
α Doradus	3.5	A0p	4	32	10.814	1.2948	+0.0067	-55	13	6.35	7.484	-0.011
53 Eridani	4.0	K0	4	34	19.901	2.7456	-.0081	-14	28	2.58	7.166	-0.154
ρ Tauri	4.3	B5	4	37	12.093	+3.5987	+0.0007	+22	47	48.28	+7.066	-0.020
Groombridge 848	6.0	F0	4	37	30.341	8.0214	+0.0095	+75	47	25.25	6.916	-0.144
α Celi	4.5	F2	4	37	51.195	1.9300	-.0149	-42	1	26.21	6.925	-0.106
4 Camelopardalis	5.4	A2	4	41	0.023	4.9870	+0.0062	+56	36	33.72	6.625	-0.148
μ Eridani	4.2	B5	4	41	18.093	2.9988	+0.0011	-3	24	27.84	6.740	-0.009
π ² Orionis	3.3	F8	4	45	16.727	+3.2552	+0.0312	+6	48	56.31	+6.444	+0.023
9 Camelopardalis	4.4	B0	4	45	41.488	5.9488	+0.0038	+66	12	5.88	6.391	+0.005
ι Tauri	5.1	F0	4	46	27.503	3.5077	+0.0059	+18	41	52.33	6.288	-0.035
π ⁴ Orionis	3.9	B3	4	49	52.504	3.1241	+0.0002	+2	18	14.77	6.043	+0.005
ε Aurigæ	2.9	K2	4	51	31.252	3.9040	+0.0009	+33	2	3.02	5.879	-0.021
ε Aurigæ	† var.	F5p	4	55	56.319	+4.3014	+0.0012	+43	42	0.60	+5.517	-0.013
β Camelopardalis	4.2	G0	4	55	56.349	+5.3260	-.0004	+60	19	15.57	+5.519	-0.011

28 Horologii, remarkable purplish red star.
 ε Eridani, comp. 8^m, 8^s, 7^m

η Tauri, quad., comps. 6^m 3, 7^m 6, 8^m 2, 11^m 7, 18^m 1, 19^m 0^m
 9 H. Camelop., comp. 8^m, 1^m, 9 n. f.
 ε Persei, comp. 8^m, 8^s, 6 n. f.

λ Tauri, var., 34.95, 3^m 3^m 4^m 2
 Δ Tauri, star 6^m 5 f. 3^m, 27^m 0^m s.
 m Persei, star 6^m, 11^m 5^m s. pr.
 ε Aurigæ, var. irreg., 3^m 9^m 4^m 5^m.

220 MEAN PLACES OF TEN-DAY STARS, 1916.

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Vari- ation.	Annual P. M.	Declination.			Annual Vari- ation.	Annual P. M.
			h	m	s	s	s	°	'	"	"	"
ζ Aurigæ	3.9	K0p	4 56	36.212	+ 4.1897	+0013	+40 57	15.99	+5.453	-0.022		
ι Tauri	4.7	A5	4 58	4.422	3.5848	+0056	+21 28	15.14	5.301	-0.049		
11 Orionis	4.6	B9	4 59	46.076	3.4267	+0013	+15 17	17.13	5.172	-0.036		
η Aurigæ	3.3	B3	5 0	37.321	4.2043	+0039	+41 7	19.26	5.064	-0.071		
ε Leporis	3.3	K5	5 1	54.273	2.5385	+0012	-22 28	59.19	4.963	-0.064		
β Eridani	2.9	A2	5 3	43.198	+ 2.9492	-0056	- 5 11	38.82	+4.799	-0.074		
μ Aurigæ	4.8	A3	5 7	40.639	4.1018	-0020	+38 23	10.05	4.457	-0.080		
19 H. Camelopardalis	5.2	F8	5 8	41.347	9.8354	-0281	+79 8	14.63	4.606	+0.155		
μ Leporis	3.3	A0p	5 9	9.467	2.6940	+0027	-16 18	14.84	4.383	-0.028		
α Aurigæ (Capella)	0.2	G0	5 10	28.877	4.4288	+0086	+45 54	49.80	3.869	-0.429		
β Orionis (Rigel)	† 0.3	B8p	5 10	30.009	+ 2.8823	.0000	- 8 17	52.14	+4.296	0.000		
λ Aurigæ	4.8	G0	5 13	13.803	4.2178	+0461	+40 1	32.22	3.403	-0.859		
τ Orionis	3.7	B5	5 13	31.639	2.9125	-0009	- 6 56	3.50	4.032	-0.005		
ο Columbae	4.9	K0	5 14	27.134	2.1588	+0027	-34 58	36.96	3.606	-0.352		
γ Orionis (Bellatrix)	1.7	B2	5 20	37.494	3.2170	-0004	+ 6 16	28.16	3.410	-0.017		
β Tauri	1.8	B8	5 20	58.844	+ 3.7914	+0025	+28 32	15.30	+3.220	-0.177		
17 Camelopardalis	5.8	K5	5 22	13.983	5.6600	+0003	+62 59	54.93	3.281	-0.007		
β Leporis	3.0	G0	5 24	38.769	2.5703	.0000	-20 49	32.17	2.991	-0.089		
χ Aurigæ	4.9	B1	5 27	15.567	3.9040	+0006	+32 7	51.48	2.841	-0.013		
δ Orionis	† 2.5	B0	5 27	42.873	3.0643	.0000	- 0 21	37.50	2.812	-0.002		
Groombridge 966	6.4	K5	5 28	29.055	+ 8.0094	-0002	+74 59	25.67	+2.765	+0.017		
α Leporis	2.7	F0	5 29	1.511	2.6457	+0003	-17 52	53.95	2.701	0.000		
φ ¹ Orionis	4.5	B0	5 30	12.485	3.2926	-0002	+ 9 26	0.76	2.583	-0.015		
ι Orionis	† 2.9	Oe5	5 31	19.425	2.9342	+0001	- 5 57	51.16	2.499	-0.002		
ε Orionis	1.8	B0	5 31	57.032	3.0436	.0000	- 1 15	16.65	2.448	+0.001		
ζ Tauri	3.0	B3	5 32	37.435	+ 3.5850	+0006	+21 5	32.05	+2.357	-0.032		
ζ Orionis	† 2.0	B0	5 36	31.200	3.0270	+0005	- 1 59	10.51	2.036	-0.014		
α Columbae	2.8	B5p	5 36	36.437	2.1725	+0006	-34 7	6.00	2.004	-0.038		
ο Aurigæ	5.5	A0	5 39	23.462	4.6453	-0018	+49 47	26.62	1.782	-0.018		
ζ Leporis	3.7	A2	5 43	8.926	2.7179	-0013	-14 51	8.79	1.472	-0.001		
κ Orionis	2.2	B0	5 43	46.341	+ 2.8449	+0001	- 9 41	55.07	+1.415	-0.003		
δ Doradus	4.5	A5	5 44	37.210	0.1022	-0081	-65 46	1.35	1.343	-0.001		
ν Aurigæ	4.2	K0	5 45	40.041	4.1574	-0001	+39 7	30.42	1.266	+0.013		
δ Leporis	3.9	K0	5 47	42.504	2.5796	+0162	-20 53	7.54	0.426	-0.649		
α Orionis (Betelgeux)	† var.	Ma	5 50	37.435	3.2479	+0020	+ 7 23	32.49	0.829	+0.009		
η Leporis	3.8	F5	5 52	34.729	+ 2.7323	-0028	-14 10	56.06	+0.790	+0.141		
δ Aurigæ	3.9	K0	5 52	36.694	4.9419	+0118	+54 16	47.15	0.528	-0.118		
β Aurigæ	2.1	A0p	5 53	22.062	4.4018	-0038	+44 56	24.64	0.574	-0.006		
θ Aurigæ	† 2.7	A0p	5 53	59.593	4.0917	+0047	+37 12	28.13	+0.435	-0.091		
1 Geminorum	4.3	G5	5 59	0.858	3.6475	+0002	+23 16	7.86	-0.023	-0.109		
1 G. Puppis	† 6.2	F8	6 2	3.356	+ 1.7258	-0088	-45 2	9.85	+0.045	+0.225		
ν Orionis	4.4	B2	6 2	46.584	3.4264	+0012	+14 46	46.06	-0.268	-0.025		
22 H. Camelopardalis	4.7	A0	6 9	35.607	6.6183	+0026	+69 21	4.42	0.953	-0.114		
η Geminorum	† var.	Ma	6 9	48.476	3.6227	-0039	+22 31	55.79	0.874	-0.016		
2 Lyncis	4.4	A0	6 12	12.906	5.2985	+0012	+59 2	34.56	1.038	+0.030		
ζ Canis Majoris	3.1	B3	6 17	5.227	+ 2.3018	-0006	-30 1	32.51	-1.517	-0.023		
μ Geminorum	3.2	Ma	6 17	52.755	3.6307	+0046	+22 33	27.98	1.677	-0.114		
φ ¹ Aurigæ	5.1	K2	6 18	25.912	4.6259	+0029	+49 19	55.64	1.614	-0.004		
β Canis Majoris	2.0	B1	6 19	0.013	2.6416	-0006	-17 54	48.02	1.656	+0.004		
8 Monocerotis	† 4.5	A5	6 19	19.045	3.1802	-0004	+ 4 38	11.22	1.679	+0.009		
α Argus (Canopus)	-0.9	F0	6 22	5.233	+ 1.3319	+0022	-52 38	58.12	-1.920	+0.009		
10 Monocerotis	5.0	B3	6 23	48.754	2.9641	+0010	- 4 42	33.46	2.073	+0.006		
ν Geminorum	4.1	B5	6 23	58.542	3.5629	-0005	+20 15	58.87	2.109	-0.016		
8 Lyncis	6.0	G0	6 30	1.113	5.4919	-0267	+61 33	23.74	2.894	-0.276		
ξ ² Canis Majoris	4.5	A0	6 31	32.170	2.5157	+0022	-22 53	49.14	2.715	+0.035		
23 H. Camelopardalis	5.6	F8	6 31	55.274	+10.2973	-0277	+79 39	29.35	-3.416	-0.633		
51 Aurigæ	5.7	K0	6 32	50.375	+ 4.1596	-0020	+39 27	57.77	-2.975	-0.113		

β Orionis, comp. 8^m.0, 9^s.5 s. p.
 ζ Orionis, star 6^m.9, 52^s.6 n.
 ι Orionis, comp. 7^m.3, 11^s.5 s. f.

ζ Orionis, comp. 4^m.2, 2^s.4 s. f.
 α Orionis, red star, var. irreg. 1^m.0-
 1^m.4.
 θ Aurigæ, comp. 7^m.5, 2^s.5, n. p.

1 Puppis, star, 5^m.8, 160^s.7 s. f.
 η Gem., var. 23^d.4, 3^m.2-4^m.2, comp.
 8^m.8, 1^s.2 n. p.
 8 Monoc., star 6^m.5, 13^s.7 n. f.

MEAN PLACES OF TEN-DAY STARS, 1916. 221

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Vari- ation.	Annual P. M.	Declination.			Annual Vari- ation.	Annual P. M.
			h	m	s	s	s	"	"	"	"	"
γ Geminorum	1.9	A0	6	32	51.596	+3.4670	+0.0033	+16	28	18.98	-2.912	-0.048
ν Argus	3.2	B8	6	35	11.546	1.8367	+0.0008	-43	7	18.49	3.085	-0.019
δ Monocerotis	4.7	Oe5	6	36	21.140	3.3047	.0000	+9	58	27.69	3.174	-0.008
ϵ Geminorum	3.2	G5	6	38	45.897	3.6928	-0.0001	+25	12	55.35	3.302	-0.018
ζ Geminorum	3.4	F5	6	40	34.528	3.3684	-0.0076	+12	59	13.76	3.373	-0.193
η Aurigæ	5.3	G0	6	40	41.291	+4.3297	+0.0018	+43	39	44.08	-3.380	+0.160
α Canis Majoris (<i>Sirius</i>)	† 1.6	A0	6	41	26.790	2.6434	-0.0373	-16	36	0.58	4.812	-1.207
18 Monocerotis	4.7	K0	6	43	28.835	3.1281	-0.0020	+2	30	18.00	3.796	-0.016
43 Camelopardalis	5.1	B5	6	44	39.362	6.4880	+0.0021	+68	59	16.09	3.869	+0.012
θ Geminorum	3.6	A2	6	47	15.287	3.9581	+0.0010	+34	3	49.17	4.154	-0.050
α Pictoris	3.3	A5	6	47	19.858	+0.6176	-0.0105	-61	51	4.03	-3.873	+0.238
τ Argus	2.8	K0	6	47	51.096	1.4883	+0.0025	-50	30	52.06	4.262	-0.107
15 Lyncis	† 4.5	K0	6	50	0.597	5.2067	+0.0021	+58	32	3.62	4.469	-0.130
θ Canis Majoris	4.2	K2	6	50	17.260	2.7879	-0.0091	-11	55	56.87	4.370	-0.007
ϵ Canis Majoris	† 1.6	B1	6	55	19.459	2.3574	-0.0001	-28	51	25.31	4.789	+0.003
ζ Geminorum	† var.	G0	6	59	7.687	+3.5006	-0.0002	+20	41	40.18	-5.122	-0.007
ω Canis Majoris	3.1	B5p	6	59	31.015	2.5048	-0.0008	-23	42	35.14	5.142	+0.005
γ Canis Majoris	4.1	B5	6	59	57.505	2.7148	+0.0003	-15	30	30.09	5.194	-0.010
δ Canis Majoris	2.0	F8	7	4	68.493	2.4381	-0.0015	-26	15	32.77	5.604	+0.003
63 Aurigæ	5.1	K2	7	5	52.857	4.1327	+0.0052	+39	27	31.38	5.686	-0.003
51 Geminorum	5.3	Mb	7	8	32.969	+3.4480	+0.0019	+16	18	8.93	-5.948	-0.042
γ^2 Volantis	† 3.9	K0	7	9	27.782	-0.5015	+0.0004	-70	21	45.79	5.905	+0.078
λ Geminorum	3.6	A2	7	13	16.021	+3.4502	-0.0029	+16	41	34.15	6.345	-0.045
π Argus	2.7	K5	7	14	10.561	2.1189	-0.0008	-36	56	46.56	6.385	-0.010
δ Geminorum	† 3.5	F0	7	15	6.499	+3.5864	-0.0010	+22	8	16.82	6.467	-0.015
δ Volantis	4.0	F5	7	16	52.978	-0.0196	+0.0004	-67	48	12.73	-6.605	-0.006
ι Geminorum	3.9	K0	7	20	30.708	+3.7303	-0.0086	+27	57	57.79	6.086	-0.088
η Canis Majoris	2.4	B5p	7	20	46.397	2.3738	+0.0003	-29	8	18.70	6.912	+0.007
Groombridge 1308	5.8	K0	7	22	9.238	6.2741	+0.0018	+68	38	19.97	7.078	-0.045
β Canis Minoris	3.1	B8	7	22	35.794	3.2554	-0.0032	+8	27	34.04	7.116	-0.047
ρ Geminorum	4.2	F0	7	23	42.652	+3.8630	+0.0118	+31	57	9.91	-6.977	+0.183
σ Argus	† 3.3	K5	7	26	33.898	1.9016	-0.0072	-43	7	50.87	7.212	+0.180
α^2 Geminorum (<i>Castor</i>)	2.0	A0	7	29	14.569	3.8330	-0.0144	+32	4	26.76	7.692	-0.082
α^1 Geminorum	2.8	A0	$\Delta\alpha$	-	0.259	.....	.....	$\Delta\delta$	-	4.13	.....	.....
25 Monocerotis	5.2	F5	7	33	6.082	2.9819	-0.0066	-3	55	21.06	7.899	+0.022
α Can. Min. (<i>Procyon</i>)	† 0.5	F5	7	34	54.334	+3.1420	-0.0471	+5	26	27.47	-9.103	-1.037
24 Lyncis	5.0	A2	7	35	54.485	5.0932	-0.0042	+58	54	29.69	8.202	-0.056
κ Geminorum	† 3.7	G5	7	39	22.749	3.6204	-0.0014	+24	36	1.18	8.482	-0.060
β Geminorum (<i>Pollux</i>)	1.2	K0	7	40	10.693	3.6756	-0.0470	+28	13	48.17	8.541	-0.055
4 Puppis	5.1	F2	7	42	4.799	2.7636	-0.0003	-14	21	31.95	8.638	-0.002
ζ Argus	3.5	G0	7	45	45.688	+2.5232	-0.0004	-24	38	53.64	-8.925	0.000
ϕ Geminorum	5.0	A2	7	48	21.559	3.6765	-0.0020	+26	59	3.30	9.155	-0.027
26 Lyncis	5.7	K0	7	48	36.153	4.3811	-0.0022	+47	47	0.54	9.153	-0.006
Groombridge 1374	5.6	K0	7	50	10.049	7.2422	-0.0023	+74	8	38.80	9.306	-0.037
χ Argus	3.6	B3	7	54	38.618	1.5259	-0.0043	-52	45	24.32	9.600	+0.006
ω Cancri	5.9	K0	7	55	51.041	+3.6338	+0.0003	+25	37	25.16	-9.711	-0.004
χ Geminorum	5.0	K0	7	58	21.749	3.6902	-0.0012	+28	1	50.57	9.951	-0.053
27 Lyncis	4.9	A2	8	2	8.868	4.5295	-0.0032	+51	44	59.99	10.188	-0.003
ρ Argus	2.9	F5	8	3	57.982	2.5546	-0.0065	-24	3	40.92	10.299	+0.052
3 H. Ursæ Majoris	5.5	G5	8	4	28.232	6.0107	+0.0002	+68	43	22.22	10.355	+0.005
γ Argus	† 2.2	Oap	8	6	56.697	+1.8498	-0.0003	-47	5	19.21	-10.555	-0.011
ζ Cancri (<i>mean</i>)	† 4.7	G0	8	7	23.779	3.1444	+0.0051	+17	54	7.45	10.706	-0.129
Bradley 1147	5.7	G5	8	9	1.463	7.6181	+0.0077	+76	0	53.87	10.706	-0.008
20 Puppis	5.0	G5	8	9	28.314	2.7580	-0.0009	-15	32	3.85	10.731	+0.001
β Cancri	3.8	K2	8	11	57.660	3.2556	-0.0035	+9	26	42.90	10.967	-0.052
31 Lyncis	4.4	K5	8	17	5.535	+4.1205	+0.0015	+43	27	31.09	-11.388	-0.100
δ Cancri	5.9	F0	8	18	33.377	+3.4390	-0.0038	+18	36	9.73	-11.425	-0.031

18 Monoc., comp. 8^m.8, 2^m.9 s. pr.
 15 Lyncis, dup., 4^m.9, 6^m.2, 0^m.7.
 ϵ Can. Maj., comp. 9^m.7, 8^m.5 f.
 ζ Gem., var., 10^m.15, 3^m.7-4^m.3.

γ^2 Volantis, comp. 5^m.8, 12^m.9 n. pr. ; γ Argus, star 5^m, 42^m.5 s. pr.
 δ Gem., comp. 8^m.7, 7^m.0 s. pr. ; ζ Cancri, triple; binary 5^m.8, 6^m.3, 1^m
 σ Argus, star 8^m, 22^m.4 n. f. with comp. 6^m.0, 6^m.4 s. f.
 κ Gem., comp. 8^m.5, 6^m.6 s. pr. ;

Positions given for *Sirius* and *Procyon* are those of the centers of their orbits. Corrections given on page xii to be applied to reduce to the positions of the stars.

222 MEAN PLACES OF TEN-DAY STARS, 1916.

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Vari- ation.		Declination.			Annual Vari- ation.	
			h	m	s	s	s	°	'	"	"	"
ε Argus	1.7	K0p	8 20	47.481	+1.2337	-.0042	-59 14	20.02	-11.547	+0.0085		
30 Monocerotis	4.0	A0	8 21	27.868	+2.9996	-.0039	- 3 37	53.80	11.622	-0.0209		
θ Chamaeleontis	4.3	K0	8 23	10.871	-1.7489	-.0451	-77 12	50.51	11.707	+0.0177		
o Urse Majoris	3.5	G0	8 23	17.919	+5.0114	-.0160	+61 0	0.62	11.845	-0.112		
Groombridge 1450	6.0	K0	8 27	27.627	3.9090	-.0082	+38 18	19.40	12.205	-0.179		
γ Cancri	5.5	B5p	8 27	51.235	+3.4742	-.0025	+20 43	38.24	-12.108	-0.085		
Groombridge 1446	6.3	K0	8 30	23.950	6.7426	-.0043	+73 55	28.86	12.348	-0.117		
δ Hydræ	4.2	A0	8 33	12.642	3.1781	-.0048	+ 5 59	50.75	12.439	-0.014		
σ Hydræ	4.5	K0	8 34	22.106	3.1382	-.0008	+ 3 38	13.72	12.516	-0.013		
γ Cancri	4.7	A0	8 38	25.678	3.4767	-.0071	+21 46	16.99	12.822	-0.043		
δ Cancri	4.2	K0	8 39	54.842	+3.4137	-.0009	+18 27	49.59	-13.119	-0.240		
α Pyxidis	3.7	B2	8 40	12.973	2.4110	-.0003	-32 52	58.79	12.889	+0.011		
τ Cancri	4.2	G5	8 41	37.098	3.6377	-.0006	+29 4	4.64	13.044	-0.081		
ε Hydræ	3.5	F8	8 42	19.761	3.1797	-.0127	+ 6 43	40.04	13.089	-0.048		
δ Argus	2.0	A0	8 42	22.850	1.6517	-.0035	-54 24	1.33	13.144	-0.100		
σ ² Cancri (mean)	5.5	K0	8 49	7.423	+3.0678	+0.0034	+30 53	54.01	-13.507	-0.021		
ζ Hydræ	3.3	K0	8 50	57.329	3.1744	-.0060	+ 6 15	57.40	13.597	+0.007		
τ Urse Majoris	3.1	A5	8 53	27.836	4.1223	-.0435	+48 22	20.25	14.013	-0.249		
α Cancri	4.3	A3	8 53	53.709	3.2844	+0.0024	+12 11	0.76	13.833	-0.042		
b ¹ Carinae	5.1	B3	8 54	55.031	1.4681	-.0034	-58 54	17.78	13.875	-0.019		
κ Urse Majoris	3.7	A0	8 57	53.888	+4.1102	-.0027	+47 29	22.42	-14.110	-0.067		
σ ² Urse Majoris	4.9	F8	9 3	1.322	5.3208	-.0003	+67 28	35.96	14.426	-0.086		
κ Cancri	5.1	B8	9 3	11.972	3.2526	-.0012	+11 0	24.87	14.384	-0.013		
λ Argus	2.2	K5	9 4	54.344	2.2062	-.0015	-43 5	35.32	14.481	-0.007		
θ Hydræ	3.8	A0	9 9	59.736	3.1235	+0.0088	+ 2 40	9.65	15.091	-0.312		
β Argus	1.8	A0	9 12	16.995	+0.6696	-.0310	-69 22	16.01	-14.820	+0.094		
83 Cancri	6.6	F5	9 14	17.778	3.3535	-.0076	+18 3	43.50	15.167	-0.136		
τ Argus	2.2	F0	9 14	50.386	1.6040	-.0055	-58 55	20.51	15.055	+0.006		
40 Lynceis	3.3	K5	9 15	56.542	3.6632	-.0178	+34 44	54.51	15.113	+0.012		
θ Pyxidis	4.9	Ma	9 17	46.232	2.6514	-.0048	-25 36	28.15	15.262	-0.032		
α Hydræ	2.2	K2	9 23	27.602	+2.9486	-.0010	- 8 17	37.92	-15.516	+0.033		
h Urse Majoris	3.8	F0	9 24	55.424	4.7642	+0.0183	+63 25	47.95	15.605	+0.024		
d Urse Majoris	4.6	G0	9 27	4.820	5.3585	-.0112	+70 12	1.73	15.675	+0.071		
θ Urse Majoris	3.3	F8	9 27	14.885	4.0298	-.1026	+52 3	39.40	16.298	-0.543		
ψ Argus	3.6	F5	9 27	23.322	2.3594	-.0181	-40 5	55.75	15.725	+0.038		
ξ Leonis	5.1	G5	9 27	25.210	+3.2368	-.0063	+11 40	20.74	-15.848	-0.084		
10 Leonis Minoris	4.6	G5	9 29	4.967	3.6849	+0.0011	+36 46	16.43	15.875	-0.021		
o Leonis	3.8	F5p	9 36	40.165	3.2049	-.0096	+10 16	30.54	16.285	-0.033		
θ Antike	5.0	F5	9 40	27.407	2.6731	-.0036	-27 23	3.84	16.414	+0.029		
ε Leonis	3.1	G0p	9 41	5.182	3.4108	-.0034	+24 9	41.52	16.497	-0.022		
v Argus	3.2	F0	9 45	0.188	+1.5008	-.0025	-64 40	56.03	-16.683	-0.017		
v Urse Majoris	3.9	F0	9 45	1.743	4.2913	-.0382	+59 26	4.34	16.826	-0.157		
6 Sextantis	6.0	A3	9 47	0.112	3.0245	+0.0011	- 3 50	56.80	16.792	-0.028		
μ Leonis	4.1	K0	9 47	59.338	3.4169	-.0171	+26 24	11.38	16.865	-0.054		
Groombridge 1586	6.0	K0	9 50	54.168	5.4283	-.0197	+73 16	46.76	17.008	-0.060		
19 Leonis Minoris	5.2	F5	9 52	32.714	+3.6847	-.0112	+41 27	22.69	-17.047	-0.022		
φ Argus	3.7	B5	9 53	54.658	2.1017	-.0033	-54 10	4.00	17.108	-0.020		
π Leonis	4.9	Ma	9 55	46.547	3.1721	-.0029	+ 8 26	51.90	17.199	-0.027		
η Leonis	3.6	A0p	10 2	45.224	3.2728	-.0022	+17 10	22.03	17.483	-0.004		
α Leonis (Regulus)	1.3	B8	10 3	54.023	3.1981	-.0169	+12 22	41.53	17.530	-0.002		
λ Hydræ	3.8	K0	10 6	29.579	+2.9247	-.0137	-11 56	18.16	-17.724	-0.088		
q Velorum	4.1	A2	10 11	12.373	2.5130	-.0153	-41 42	19.48	17.797	+0.032		
32 Urse Majoris	5.7	A3	10 11	57.046	4.3922	-.0140	+65 31	40.72	17.871	-0.012		
ζ Leonis	3.6	F0	10 12	1.296	3.3421	+0.0014	+23 50	11.01	17.870	-0.009		
λ Urse Majoris	3.5	A0	10 12	2.266	3.6307	-.0142	+43 20	3.86	17.900	-0.038		
γ Leonis pr.	2.6	K0	10 15	20.627	+3.3114	+0.0212	+20 16	0.85	-18.143	-0.152		
μ Urse Majoris	3.2	K5	10 17	19.861	+3.5855	-.0069	+41 55	20.79	-18.040	+0.027		

• Cancri, star 6^m.6, 30^m.6 n. pr.
 δ Hydræ, triple; binary 3^m.5, 6^m.8,
 0^m.2, with comp. 7^m.8, 3^m.3
 ♁ Argus, comp. 5^m, 2^m.s.

σ² Cancri, dup. 5^m.9, 6^m.4, 1^m.4
 b¹ Carinae, comp. 7^m.2, 5^m.f.
 σ² Urs. Maj., binary 4^m.9, 8^m, 1^m.3

ψ Argus, dup. 3^m.8, 6^m.0, 0^m.8
 v Argus, comp. 6^m.0, 4^m.9 s. f.
 γ Leonis, comp. 3^m.8, 3^m.7 s. f.

MEAN PLACES OF TEN-DAY STARS, 1916. 223

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Vari- ation.		Declination.			Annual Vari- ation.	
			h	m	s	s	s	°	'	"	"	"
30 H. Ursæ Majoris	4.9	A0	10 18	5.802	+4.3608	-.0024	+65 59	30.34	-18.114	-0.018		
μ Hydre	4.1	K5	10 22	1.636	2.9006	-.0089	-16 24	25.35	18.321	-0.079		
31 Leonis Minoris	4.4	K0	10 23	1.899	3.4788	-.0094	+37 8	16.80	18.390	-0.112		
α Antlæ	4.4	K5	10 23	18.372	2.7425	-.0060	-30 38	24.24	18.311	-0.023		
36 Ursæ Majoris	4.8	F5	10 25	15.712	3.8601	-.0208	+56 24	42.15	18.396	-0.039		
9 H. Draconis	5.0	G5	10 27	59.569	+5.1818	-.0084	+76 8	46.50	-18.461	-0.009		
ρ Leonis	3.8	B0p	10 28	23.397	3.1615	-.0004	+ 9 44	21.40	18.469	-0.003		
33 Sextantis	6.4	K0	10 37	7.785	3.0519	-.0100	- 1 17	57.93	18.859	-0.110		
41 Leonis Minoris	5.0	A2	10 38	51.109	3.2689	-.0084	+23 37	42.71	18.798	+0.009		
6 Argus	3.0	B0	10 39	57.356	2.1326	-.0043	-63 57	16.84	18.862	-0.027		
42 Leonis Minoris	5.4	B9	10 41	11.871	+3.3423	-.0024	+31 7	30.24	-18.914	-0.041		
η Argus	var.	Pec.	10 41	47.913	2.3210	-.0002	-59 14	33.68	18.899	-0.009		
μ Argus	2.8	G5	10 43	9.184	2.5738	+0.0066	-48 58	34.92	19.010	-0.061		
l Leonis	5.3	A0	10 44	50.630	3.1564	+0.0001	+10 59	23.67	19.010	-0.033		
δ ² Chamæleontis	4.6	B3	10 45	0.424	0.5631	-.0192	-80 5	49.65	18.986	-0.004		
ν Hydre	3.3	Ma	10 45	28.732	+2.9683	+0.0061	-15 45	12.88	-18.784	+0.211		
46 Leonis Minoris	3.9	K0	10 48	37.110	3.3633	+0.0074	+34 40	5.07	19.364	-0.283		
54 Leonis	4.5	A0	10 51	4.066	3.2529	-.0060	+25 11	53.08	19.164	-0.018		
z Antlæ	4.7	K0	10 52	48.311	2.7962	+0.0112	-36 41	9.55	19.328	-0.138		
Groombridge 1706	6.3	G5	10 53	16.364	4.8857	-.0265	+78 13	13.78	19.237	-0.035		
α Crateris	4.2	K0	10 55	40.816	+2.9207	-.0327	-17 51	5.11	-19.153	+0.108		
d Leonis	5.0	K0	10 56	13.381	3.0992	+0.0004	+ 4 4	7.38	19.297	-0.022		
β Ursæ Majoris	2.4	A0	10 56	46.955	3.6400	+0.0105	+56 49	58.62	19.262	+0.026		
α Ursæ Majoris	2.0	K0	10 58	33.405	3.7778	-.0164	+62 12	17.10	19.400	-0.071		
χ Leonis	4.7	F0	11 0	41.109	3.0961	-.0234	+ 7 47	25.80	19.418	-0.041		
ρ ¹ Leonis	5.7	K0	11 2	37.184	+3.0613	-.0253	+ 2 24	42.76	-19.501	-0.080		
φ Ursæ Majoris	3.2	K0	11 4	56.853	3.3848	-.0063	+44 57	16.31	19.503	-0.033		
ρ Crateris	4.5	A2	11 7	31.477	2.9477	.0000	-22 22	1.77	19.629	-0.106		
δ Leonis	2.6	A2	11 9	38.629	3.1951	+0.0108	+20 59	2.71	19.704	-0.141		
6 Leonis	3.4	A0	11 9	50.010	3.1504	-.0049	+15 53	19.97	19.652	-0.085		
ν Ursæ Majoris	3.7	K0	11 13	56.750	+3.2478	-.0018	+33 33	10.36	-19.616	+0.026		
ζ Crateris	3.8	K0	11 15	8.378	2.9975	-.0088	-14 19	25.72	19.468	+0.195		
σ Leonis	4.1	A0	11 16	48.365	3.0950	-.0062	+ 6 29	23.80	19.703	-0.013		
π Centauri	4.3	B5	11 17	10.273	2.7264	-.0041	-54 1	49.95	19.710	-0.013		
z Leonis	4.0	F5	11 19	32.763	3.1286	+0.0103	+10 59	31.49	19.817	-0.083		
τ Leonis	5.2	K0	11 23	37.070	+3.0857	+0.0008	+ 3 19	8.48	-19.810	-0.016		
λ Draconis	4.1	Ma	11 26	26.035	3.5653	-.0072	+69 47	41.40	19.852	-0.021		
ξ Hydre	3.7	G5	11 28	52.058	2.9464	-.0158	-31 23	34.10	19.915	-0.055		
λ Centauri	3.3	B9	11 31	53.892	2.7506	-.0073	-62 33	17.95	19.922	-0.027		
ν Leonis	4.5	K0	11 32	38.870	3.0716	.0000	- 0 21	35.47	19.864	+0.039		
π Chamæleontis	5.7	F0	11 33	47.279	+2.4536	-.0323	-75 25	53.52	-19.937	-0.023		
3 Draconis	5.5	K0	11 37	48.021	3.3723	-.0080	+67 12	35.51	19.917	+0.035		
ζ Crateris	4.9	G5	11 40	30.191	3.0378	+0.0018	-17 53	1.28	20.014	-0.041		
χ Ursæ Majoris	3.8	K0	11 41	37.269	3.1797	-.0128	+48 14	42.70	19.961	+0.020		
β Leonis (<i>Denebola</i>)	2.2	A2	11 44	46.591	3.0623	-.0341	+15 2	30.04	20.120	-0.118		
β Virginis	3.8	F8	11 46	19.185	+3.1262	+0.0494	+ 2 14	17.45	-20.284	-0.275		
Groombridge 1830	6.5	G5	11 48	8.543	3.4674	+0.0001	+38 19	17.90	25.802	-5.783		
γ Ursæ Majoris	2.5	A0	11 49	25.184	3.1696	+0.0115	+54 9	42.49	20.020	+0.004		
α Virginis	4.6	A3	11 56	34.106	3.0742	-.0009	+ 7 4	57.80	20.075	-0.032		
ο Virginis	4.2	G5	12 0	55.851	3.0570	-.0148	+ 9 11	57.96	20.013	+0.032		
δ Centauri	2.9	B3p	12 3	59.891	+3.0956	-.0050	-50 15	17.12	-20.072	-0.030		
e Corvi	3.2	K0	12 5	48.125	3.0813	-.0051	-22 9	9.56	20.036	+0.003		
4 H. Draconis	5.1	A5	12 8	16.804	2.8465	+0.0028	+78 4	58.72	20.013	+0.019		
δ Crucis	3.1	B3	12 10	40.888	3.1755	+0.0021	-58 16	55.26	20.062	-0.038		
δ Ursæ Majoris	3.4	A2	12 11	16.633	2.9844	+0.0150	+57 29	57.52	20.016	+0.005		
γ Corvi	2.8	B8	12 11	29.023	+3.0618	-.0114	-17 4	31.83	-20.004	+0.017		
2 Canum Venaticorum †	5.8	K5	12 11	55.340	+3.0158	+0.0038	+41 7	39.33	-20.064	-0.046		

† Argus, var., irreg., 1st 6-6th 6
 μ Argus, comp. 7th, 2nd 2 n. f.

δ Cham., star 5^m 5 pr. 32nd 256th n.
 54 Leonis, comp. 6^m 3, 6th 4 s. f.

α Leonis, comp. 6^m 8, 2nd 6 n. f.
 2 Can. Ven., star 8^m, 11th 6 s. pr.

224 MEAN PLACES OF TEN-DAY STARS, 1916.

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Vari- ation.		Declination.	Annual Vari- ation.
			h	m	s	s	s		
β Chamæleonis	4.4	B5	12 13 23.374			+3.4496	-0.188	-78 50 44.94	-19.994
η Virginis	4.0	A0	12 15 36.498			3.0694	-0.036	-0 12 0.28	20.026
α^1 Crucis	1.6	B1	12 21 54.868			3.3127	-0.064	-62 38 1.43	19.993
α^2 Crucis	2.1		$\Delta\alpha + 0.630$					$\Delta\delta - 1.89$	
20 Comæ	5.7	A2	12 25 30.199			3.0182	+0.036	+21 21 40.14	19.957
δ Corvi	3.1	A0	12 25 30.964			+3.1013	-0.140	-16 2 52.41	-20.070
γ Crucis	1.6	Mb	12 26 29.724			3.3040	-0.028	-56 38 34.07	20.172
8 Canum Venaticorum	4.3	G0	12 29 45.482			2.8562	-0.017	+41 48 49.41	19.597
κ Draconis	3.9	B5p	12 29 54.348			2.5771	-0.112	+70 15 4.12	19.865
β Corvi	2.8	G5	12 29 58.260			3.1456	-0.008	-22 55 56.47	19.936
24 Comæ seq.	5.2	K0	12 30 55.021			+3.0106	-0.007	+18 50 21.36	-19.850
α Muscæ	2.9	B3	12 32 9.530			3.5426	-0.088	-68 40 22.30	19.877
χ Virginis	4.8	K0	12 34 54.542			3.0938	-0.056	-7 32 0.49	19.844
γ Centauri	2.4	A0	12 36 52.657			3.2951	-0.196	-48 29 55.28	19.806
γ Virginis (mean)	2.9	F0	12 37 24.250			3.0398	-0.365	-0 59 19.84	19.775
ρ Virginis	5.0	A0	12 37 38.011			+3.0372	+0.058	+10 41 53.77	-19.882
76 Ursæ Majoris	5.9	A0	12 37 54.021			2.6311	-0.065	+63 10 26.67	19.790
β Crucis	1.5	B1	12 42 48.163			3.4830	-0.064	-59 13 47.41	19.730
31 Comæ	5.1	G0	12 47 36.483			2.9239	-0.022	+27 59 51.16	19.639
n Centauri	4.3	A5	12 48 46.748			3.3132	+0.060	-39 43 20.14	19.628
ε Ursæ Majoris (Alioth)	1.7	A0p	12 50 20.288			+2.6479	+0.138	+56 24 56.04	-19.576
δ Virginis	3.7	Ma	12 51 22.287			3.0208	-0.318	+3 51 13.40	19.604
α Canum Venat. seq.	2.9	A0p	12 52 6.046			2.8104	-0.203	+38 46 18.47	19.481
δ Muscæ	3.6	K2	12 56 28.181			4.0741	+0.046	-71 5 45.69	19.471
ε Virginis	3.0	K0	12 57 59.727			2.9865	-0.186	+11 24 37.35	19.392
θ Virginis	4.4	A0	13 5 35.932			+3.1033	-0.029	-5 5 26.99	-19.270
43 Comæ	4.3	G0	13 7 57.316			2.8025	-0.599	+28 18 13.34	18.292
20 Canum Venaticorum	4.7	F0	13 13 46.752			2.6955	-0.094	+41 0 52.61	19.001
γ Hydræ	3.3	G5	13 14 21.082			3.2557	+0.046	-22 43 43.15	19.052
τ Centauri	2.9	A2	13 15 52.103			3.3620	-0.294	-36 16 10.35	19.054
ζ^1 Ursæ Maj. (Mizar)	2.4	A0p	13 20 32.827			+2.4220	+0.153	+55 21 49.53	-18.849
ζ^2 Ursæ Majoris	4.0	A0	$\Delta\alpha + 0.916$					$\Delta\delta - 12.40$	
α Virginis (Spica)	1.2	B2	13 20 45.933			3.1572	-0.028	-10 43 23.35	18.846
Groombridge 2001	6.1	K5	13 23 59.391			1.5244	+0.012	+72 49 38.63	18.733
70 Virginis	5.2	G5	13 24 19.293			2.9340	-0.168	+14 13 37.52	19.288
ζ Virginis	3.4	A2	13 30 24.680			+3.0546	-0.195	-0 10 0.30	-18.466
17 H. Canum Venaticorum	5.0	F0	13 31 2.891			2.6816	+0.073	+37 36 45.03	18.488
ε Centauri	2.6	B1	13 34 33.348			3.7808	-0.039	-53 2 23.50	18.403
m Virginis	5.2	Ma	13 37 12.055			3.1453	-0.073	-8 16 46.32	18.237
τ Boötis	4.5	F5	13 43 16.220			2.8508	-0.341	+17 52 29.81	18.018
η Ursæ Majoris (Alkaid)	1.9	B3	13 44 13.973			+2.3679	-0.118	+49 43 55.60	-18.030
89 Virginis	5.1	K0	13 45 18.232			3.2542	-0.077	-17 42 58.11	18.007
ζ Centauri	3.1	B2p	13 50 17.497			3.7261	-0.070	-46 52 31.56	17.833
η Boötis	2.8	G0	13 50 41.111			2.8567	-0.044	+18 49 6.09	18.116
θ Apodis	var.	Mb	13 57 5.955			5.7429	-0.293	-76 23 31.31	17.514
11 Boötis	6.1	A3	13 57 22.007			+2.7215	-0.060	+27 47 30.50	-17.469
τ Virginis	4.3	A2	13 57 22.216			3.0514	+0.010	+1 57 2.06	17.503
β Centauri	0.9	B1	13 57 53.025			4.2066	-0.033	-59 58 6.04	17.485
π Hydræ	3.5	K0	14 1 35.034			3.4096	+0.031	-26 16 41.74	17.436
θ Centauri	2.3	K0	14 1 43.998			3.5199	-0.0437	-35 57 26.03	17.808
α Draconis	3.6	A0	14 2 6.929			+1.6245	-0.071	+64 46 37.27	-17.255
d Boötis	4.8	F5	14 6 34.127			2.7370	-0.014	+25 29 20.44	17.143
κ Virginis	4.3	K0	14 8 24.758			+3.1969	+0.006	-9 52 59.74	16.848
4 Ursæ Minoris	5.0	K0	14 9 9.331			-0.2801	-0.108	+77 56 31.80	16.920
τ Virginis	4.2	F5	14 11 36.449			+3.1426	-0.013	-5 36 0.56	17.258
α Boötis (Arcturus)	0.2	K0	14 11 49.765			+2.7355	-0.0780	+19 37 9.21	-18.823
λ Boötis	4.3	A0	14 13 11.522			+2.2831	-0.172	+46 28 24.87	-16.604

δ Corvi, star 8^m, 21" 4 s. pr.
 γ Crucis, star 6^m, 85" n. f.
 24 Comæ, star 6^m, 20" 0 pr.
 γ Cent., dup., 3^m, 1, 3^m, 1' 7"

γ Virginis, binary, 3^m, 7, 3^m, 0' 2,
 P=328"
 α Can. Ven., star 5^m, 19' 8 s. pr.
 θ Virginis, comp. 9^m, 7' 1 n. pr.

ζ^1 Urs. Maj., star Alcor 4^m,
 222" n.
 θ Apodis, var. irreg., 5^m, 5-6^m

MEAN PLACES OF TEN-DAY STARS, 1916. 225

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Vari- ation.		Declination.	Annual Vari- ation.		
			h	m	s	s	s		"	"	
λ Virginis	4.6	A2	14 14	33.671		+3.2409	-.0024	-12 59	6.04	-16.668	+0.021
2 Libræ	6.3	K0	14 18	54.254		3.2238	-.0014	-11 19	51.36	16.542	-0.067
θ Boötis	4.1	F8	14 22	20.286		2.0433	-.0254	+52 14	18.90	16.707	-0.405
φ Boötis	5.4	A5	14 22	32.913		2.7901	-.0052	+19 36	14.39	16.277	+0.015
φ Virginis	5.0	K0	14 23	52.369		+3.0890	-.0090	- 1 51	6.92	16.228	-0.004
5 Ursæ Minoris	4.4	K2	14 27	41.140		-0.1616	+0.0222	+76 4	10.14	-16.004	+0.021
ρ Boötis	3.8	K0	14 28	12.622		+2.6865	-.0073	+30 44	22.61	15.884	+0.114
γ Boötis	3.0	F0	14 28	41.783		2.4171	-.0091	+38 40	30.73	15.827	+0.145
η Centauri	2.6	B3p	14 30	10.026		3.7973	-.0032	-41 47	21.99	15.926	-0.032
σ Boötis	4.5	F0	14 31	1.423		2.0131	+0.0150	+30 6	34.32	15.724	+0.125
α Centauri	0.1	G0	14 33	52.996		+4.0554	-.4861	-60 29	21.74	-14.971	+0.723
33 Boötis	5.4	A0	14 35	42.735		2.2341	-.0056	+44 45	59.17	15.638	-0.043
α Apodis	3.8	K5	14 37	21.667		7.2994	-.0088	-78 41	21.95	15.527	-0.024
μ Virginis	4.0	F5	14 38	37.891		3.1587	+0.0071	- 5 17	37.04	15.754	-0.322
ε Boötis	2.7	K0p	14 41	19.114		2.6203	-.0035	+27 25	39.84	15.272	+0.009
109 Virginis	3.8	A0	14 42	0.055		+3.0312	-.0074	+ 2 14	46.45	-15.277	-0.035
8 Libræ	5.3	F5	14 46	2.248		3.3134	-.0073	-15 38	54.95	15.085	-0.074
α Libræ	2.9	A2	14 46	13.694		3.3139	-.0078	-15 41	36.13	15.076	-0.077
Groombridge 2164	5.7	K2	14 49	18.404		+1.5202	-0.0165	+59 38	5.92	14.702	+0.118
β Ursæ Minoris	2.2	K5	14 50	56.263		-0.2036	-.0065	+74 29	55.53	14.721	+0.003
ξ Libræ	5.6	K0	14 52	12.430		+3.2506	-.0006	-11 4	16.88	-14.649	-0.001
Piazzi 221	5.8	A0	14 52	15.264		2.8298	-.0021	+14 47	6.49	14.656	-0.011
β Lupi	2.8	B2p	14 53	1.265		3.9135	-.0070	-42 47	47.39	14.662	-0.062
δ Libræ	var.	A0	14 56	28.892		3.2014	-.0051	- 8 11	10.73	14.405	-0.015
β Boötis	3.6	G5	14 58	46.922		2.2600	-.0036	+40 43	16.74	14.289	-0.040
γ Scorpis	3.4	Ma	14 59	9.007		+3.5050	-.0056	-24 57	8.92	-14.274	-0.048
ψ Boötis	4.7	K0	15 0	50.764		2.5704	-.0133	+27 16	28.36	14.136	-0.014
c Boötis	5.0	F0	15 3	36.691		2.6347	+0.0136	+25 11	44.23	14.134	-0.184
ζ Lupi	3.5	K0	15 6	14.526		4.2923	-.0126	-51 46	48.79	13.849	-0.066
ι Libræ	4.7	A0p	15 7	25.778		3.4143	-.0031	-19 28	28.82	13.761	-0.063
3 Serpentis	5.4	K0	15 11	0.727		+2.9800	-.0017	+ 5 15	1.88	-13.482	-0.005
γ Trianguli Australis	3.1	A0	15 11	2.806		5.5541	-.0137	-68 22	13.66	13.517	-0.042
δ Boötis	3.5	K0	15 12	6.987		2.4193	+0.0075	+33 37	39.12	13.531	-0.125
β Libræ	2.7	B8	15 12	29.068		+3.2249	-.0066	- 9 4	25.32	13.406	-0.024
γ Ursæ Minoris	3.1	A2	15 20	51.174		-0.1150	-.0020	+72 7	58.30	12.815	+0.013
μ Boötis pr.	4.5	F0	15 21	19.029		+2.2664	-.0121	+37 40	16.22	-12.715	+0.081
r ¹ Serpentis	5.5	Ma	15 21	53.543		2.7800	-.0024	+15 43	21.54	12.782	-0.024
ι Draconis	3.5	K0	15 23	3.659		1.3335	+0.0014	+59 15	35.64	12.669	+0.010
32 Libræ	5.9	K0	15 23	30.975		3.3789	+0.0006	-16 25	28.01	12.692	-0.043
β Coronæ Borealis	3.7	Fp	15 24	21.949		2.4788	-.0130	+29 23	40.60	12.512	+0.078
r ¹ Boötis	5.2	K5	15 27	54.726		+2.1552	+0.0016	+41 7	7.70	-12.361	-0.014
γ Lupi (mean)	3.0	B3	15 29	32.242		3.9872	-.0020	-40 53	7.75	12.284	-0.049
γ Libræ	4.0	K0	15 30	49.503		3.3525	+0.0047	-14 30	36.17	12.139	+0.006
α Coronæ Borealis	2.3	A0	15 31	7.852		2.5395	+0.0090	+26 59	48.03	12.224	-0.100
ζ Coronæ Borealis seq.	5.1	B8	15 36	12.892		2.2596	-.0005	+36 54	28.51	11.779	-0.012
α Serpentis	2.8	K0	15 40	7.749		+2.9581	+0.0089	+ 6 41	20.94	-11.446	+0.042
β Serpentis	3.7	A2	15 42	18.645		2.7685	+0.0054	+15 41	2.06	11.387	-0.055
κ Serpentis	4.3	K5	15 44	57.464		2.6996	-.0035	+18 24	0.59	11.239	-0.099
μ Serpentis	3.6	A0	15 45	14.077		3.1285	-.0038	- 3 10	26.23	11.148	-0.028
12 H. Draconis	5.1	A2	15 45	22.961		0.9074	+0.0047	+62 51	31.84	11.177	-0.068
ε Serpentis	3.8	A0	15 46	37.636		+2.9884	+0.0081	+ 4 43	47.80	-10.948	+0.070
ζ Ursæ Minoris	4.3	A2	15 47	1.892		-2.2017	+0.0082	+78 3	12.36	10.992	-0.004
β Trianguli Australis	3.0	F0	15 47	43.747		+5.2580	-.0290	-63 10	21.58	11.345	-0.408
λ Libræ	5.1	B3	15 48	27.273		3.4775	-.0017	-19 55	1.09	10.930	-0.046
γ Serpentis	3.9	F8	15 52	34.337		2.7698	+0.0212	+15 56	6.11	11.809	-1.289
π Scorpis	3.0	B2p	15 53	46.018		+3.6239	-.0010	-25 52	23.56	-10.539	-0.048
ε Coronæ Borealis	4.2	K0	15 54	6.526		+2.4823	-.0066	+27 7	13.44	-10.533	-0.067

† Virginis, comp. 9^m, 4^l.5 s. f. † Libræ, var., 2^d.33, 4^m.8-6^m.2 † γ Lupi, binary 3^m.7, 3^m.9, 0^l.4
 † Boötis, comp. 3^m.1, 2^l.8 n. pr. † Boötis, star 6^m.7, 108^l.8 s. † Cor. Bor., comp. 6^m.0, 6^l.2 n. pr.

† Centauri, dup., 0^m.3, 1^m.7; companion s. pr. The position given is that of the center of gravity of the system.
 Corrections given on page xii remain to be applied to reduce to the position of α² Centauri.

226 MEAN PLACES OF TEN-DAY STARS, 1916.

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spectr- um.	Right Ascension.			Annual Vari- ation.	Annual P. M.	Declination.			Annual Vari- ation.	Annual P. M.
			h	m	s	s	s	°	'	"	"	"
δ Scorpii	2.5	B1p	15	55	21.789	+3.5424	-.0011	-22	23	0.78	-10.406	-0.035
θ Draconis	4.1	F8	16	0	18.856	1.1218	-.0391	+58	47	21.45	9.660	+0.330
β Scorpii	2.9	B1	16	0	32.956	3.4837	-.0011	-19	34	34.99	10.009	-0.028
κ Scorpii	5.3	G5	16	4	16.932	2.7051	-.0039	+17	16	11.16	9.720	-0.023
Groombridge 2320	5.4	A0	16	6	5.318	0.1532	-.0074	+68	1	52.50	9.506	+0.063
φ Hercules	4.3	A0	16	6	7.374	+1.8998	-.0017	+45	9	16.64	-9.519	+0.036
δ ¹ Apodis	4.8	Mb	16	7	44.863	8.8568	-.0050	-78	29	10.94	9.495	-0.056
δ Ophiuchi	3.0	Ma	16	9	56.514	3.1416	-.0081	-3	28	43.81	9.405	-0.144
σ Coronæ Bor. seq.	5.8	G0	16	11	31.942	+2.2469	-.0223	+34	4	15.60	9.208	-0.071
19 Ursæ Minoris	5.5	B8	16	13	12.164	-1.7471	+0.0007	+76	5	22.09	8.999	+0.008
γ ² Normæ	4.1	K0	16	13	32.721	+4.4724	-.0216	-49	57	2.23	-9.043	-0.064
ε Ophiuchi	3.3	K0	16	13	52.498	3.1719	+0.0054	-4	29	18.92	8.917	+0.037
σ Scorpii	3.1	B1	16	16	4.779	3.6417	-.0011	-25	23	32.01	8.820	-0.039
τ Hercules	3.9	B5	16	17	12.953	1.8032	+0.0001	+46	30	46.11	8.662	+0.029
γ Hercules	3.8	F0	16	18	12.831	+2.6455	-.0034	+19	20	58.45	8.576	+0.037
γ Ursæ Minoris	5.0	F0	16	19	56.590	-1.7893	-.0231	+75	56	57.77	-8.324	+0.352
γ Apodis	3.9	K0	16	20	31.517	+9.1065	-.0409	-78	42	38.92	8.512	-0.063
ω Hercules	4.5	Ap	16	21	32.083	2.7619	-.0028	+14	13	33.19	8.409	-0.059
η Draconis	2.9	G5	16	22	51.082	0.8080	-.0020	+61	42	14.65	8.167	+0.058
α Scorpii (Antares)	1.2	Map	16	24	15.249	3.6743	-.0006	-26	14	47.60	8.161	-0.028
β Hercules	2.8	K0	16	26	36.454	+2.5775	-.0076	+21	40	18.47	-7.909	-0.025
λ Ophiuchi	3.8	A0	16	26	40.530	+3.0240	-.0022	+2	10	0.96	8.018	-0.079
Δ Draconis	5.0	B8p	16	28	8.454	-0.1293	-.0048	+68	56	59.63	7.785	+0.036
τ Scorpii	2.9	B0	16	30	39.012	+3.7298	-.0013	-28	2	33.99	7.652	-0.034
σ Hercules	4.2	A0	16	31	23.682	1.9335	-.0006	+42	36	34.34	7.532	+0.026
ζ Ophiuchi	2.7	B0	16	32	31.894	+3.3009	+0.0007	-10	23	52.23	-7.444	+0.022
24 Scorpii	5.0	K0	16	36	42.753	3.4666	-.0017	-17	34	49.68	7.129	-0.304
ζ Hercules	3.0	G0	16	38	7.157	2.2614	-.0364	+31	45	15.50	6.620	+0.380
α Trianguli Australis	1.9	K2	16	39	45.431	6.3244	+0.0028	-68	52	30.55	6.925	-0.049
η Hercules	3.6	K0	16	40	0.928	2.0568	+0.0031	+39	4	52.71	6.948	-0.093
Groombridge 2377	4.9	F0	16	43	42.208	+1.1374	+0.0046	+56	55	53.99	-6.489	+0.062
ε Scorpii	2.4	K0	16	44	43.148	3.8799	-.0505	-34	8	30.98	6.781	-0.264
49 Hercules	6.4	A0	16	48	15.353	2.7302	+0.0010	+15	6	51.28	6.187	-0.014
ε ¹ Aræ	4.2	K2	16	52	52.977	4.7714	-.0011	-53	1	58.16	5.806	-0.017
κ Ophiuchi	3.4	K0	16	53	41.476	2.8383	-.0199	+9	30	17.13	5.730	-0.011
30 Ophiuchi	5.0	K0	16	56	37.836	+3.1630	-.0018	-4	5	51.02	-5.548	-0.076
ε Hercules	3.9	A0	16	57	4.510	2.2946	-.0036	+31	2	57.72	5.412	+0.033
d Hercules	5.3	A2	16	58	30.204	2.2121	-.0016	+33	41	20.81	5.223	-0.309
η Ophiuchi	2.6	A0	17	5	33.513	3.4375	+0.0017	-15	37	18.62	4.626	+0.091
η Scorpii	3.4	F2	17	6	8.027	4.2924	+0.0023	-43	7	47.17	4.974	-0.306
ζ Draconis	3.2	B5	17	8	32.474	+0.1691	-.0021	+65	49	4.72	-4.446	+0.018
α Hercules	var.	Mb	17	10	48.996	2.7345	-.0008	+14	29	6.70	4.239	+0.029
δ Hercules	3.2	A0	17	11	34.833	2.4632	-.0019	+24	56	14.97	4.362	-0.158
π Hercules	3.4	K2	17	12	7.227	2.0685	-.0025	+36	54	11.30	4.158	-0.901
θ Ophiuchi	3.4	B3	17	16	50.939	3.6818	-.0006	-24	55	0.35	3.788	-0.036
w Hercules	5.4	G0	17	17	30.923	+2.2430	+0.0095	+32	34	30.02	-4.741	-1.047
β Aræ	2.3	K2	17	18	18.843	4.9811	-.0004	-55	27	6.14	3.653	-0.027
δ Ophiuchi	4.8	F0	17	21	14.287	3.6609	-.0009	-24	5	57.17	3.512	-0.137
σ Ophiuchi	4.4	K0	17	22	20.777	2.9757	+0.0002	+4	12	45.16	3.271	+0.008
δ Aræ	3.8	B8	17	23	30.632	5.4060	-.0098	-60	36	55.76	3.298	-0.120
α Aræ	3.0	B3p	17	25	20.740	+4.6330	-.0036	-49	48	39.11	-3.103	-0.083
λ Hercules	4.5	K0	17	27	20.598	2.4241	+0.0018	+26	10	23.59	2.828	+0.018
λ Scorpii	1.7	B2	17	27	54.161	4.0710	-.0004	-37	2	36.78	2.826	-0.027
β Draconis	3.0	G0	17	28	32.038	1.3543	-.0017	+52	21	47.19	2.735	+0.009
α Ophiuchi	2.1	A5	17	31	2.073	2.7838	+0.0080	+12	37	12.90	2.762	-0.285
ξ Serpentis	3.6	A5	17	32	46.509	+3.4330	-.0038	-15	20	47.56	-2.436	-0.060
z Hercules	3.8	B3	17	37	5.633	+1.6936	+0.0003	+46	3	1.81	-1.997	+0.003

β Scorpii, comp. 5^m.1, 13^m.3 n. f.
 κ Hercules, star 6^m.5, 20^m.7 n. f.
 σ Cor. Bor., comp. 6^m.7, 4^m.6 s. pr.
 σ Scorpii, star 8^m.21^m pr.
 γ Draconis, comp. 8^m.37^m.4 s. f.

α Scorpii, comp. 7^m.33^m.2 pr.
 λ Ophiuchi, comp. 6^m.1, 1^m.2 n. f.
 ζ Hercules, binary, 3^m.0, 6^m.0, 1^m
 η Oph., binary, 3^m.2, 3^m.7, 0^m.5

α Hercules, var. irreg., 3^m.1-3^m.9, dup.
 comp. 6^m.47^m.6 s. f.
 δ Hercules, binary, comp. 8^m, 12^m
 s. pr.

MEAN PLACES OF TEN-DAY STARS, 1916. 227

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Variation.	Annual P. M.	Declination.			Annual Variation.	Annual P. M.
			h	m	s	s	s	"	"	"	"	"
α Draconis	4.9	F5	17	37	26.494	-0.3541	+0.0014	+68	47	48.67	-1.652	+0.318
β Pavonis	3.6	K0	17	37	29.038	+5.8815	-0.0028	-64	41	7.02	2.046	-0.080
γ Ophiuchi	2.9	K0	17	39	19.350	2.9629	-0.0026	+ 4	36	5.45	1.649	+0.158
δ Scorpii	3.1	F5p	17	41	42.557	4.1948	+0.0006	-40	5	44.12	1.606	-0.008
μ Herculis	3.5	G5	17	43	10.225	+2.3471	-0.0238	+27	46	8.64	2.220	-0.749
ψ Draconis	4.9	F5	17	43	25.732	-1.0740	+0.0023	+72	11	25.40	-1.716	-0.268
ϕ Ophiuchi	3.7	A0	17	43	40.805	+3.0073	-0.0016	+ 2	44	16.87	1.499	-0.073
ζ Herculis	5.5	F2	17	52	1.889	2.4207	+0.0013	+26	3	45.44	0.691	+0.006
η Draconis	3.9	K0	17	52	4.646	+1.0381	+0.0131	+56	53	7.86	0.616	+0.077
θ Draconis	5.0	F5	17	53	12.489	-2.0900	+0.0116	+76	58	29.06	0.351	+0.243
ι Herculis	4.0	K0	17	53	22.320	+2.0571	+0.0006	+37	15	39.49	-0.575	+0.004
κ Ophiuchi	3.5	K0	17	54	24.092	3.3019	-0.0006	- 9	45	51.32	0.609	-0.120
λ Herculis	3.8	K0	17	54	30.046	2.3315	+0.0072	+29	15	22.39	0.499	-0.018
μ Draconis	2.4	K5	17	54	39.325	1.3925	-0.0006	+51	29	53.85	0.491	-0.024
ν Ophiuchi	3.9	B5p	17	56	26.297	3.0049	+0.0008	+ 2	56	4.98	0.324	-0.013
ξ Aræ	3.9	B1	18	0	5.496	+4.6639	-0.0010	-50	5	54.75	-0.042	-0.050
η Sagittarii	3.1	K0	18	0	24.630	3.8520	-0.0055	-30	25	34.40	0.162	-0.198
θ Ophiuchi	4.1	K0	18	1	12.528	3.0316	+0.0177	+ 2	31	4.89	-1.016	-1.122
ι Ophiuchi	3.7	A2	18	3	22.004	2.8433	-0.0045	+ 9	33	4.03	+0.381	+0.087
κ Herculis	3.8	A0	18	4	15.919	2.3394	-0.0002	+28	45	0.57	0.375	+0.002
λ Sagittarii	4.0	B8p	18	8	44.356	+3.5870	-0.0004	-21	4	54.61	+0.763	-0.002
μ Sagittarii	3.2	Mb	18	11	56.636	4.0597	-0.0109	-36	47	16.04	0.892	-0.152
ν Groombridge 2533	5.4	B5	18	13	1.984	1.8652	-0.0006	+42	7	48.39	1.138	-0.001
ξ Draconis	5.0	F5	18	13	24.805	0.3456	+0.0035	+64	22	7.11	1.198	+0.026
θ Sagittarii	2.8	K0	18	15	36.982	3.8406	+0.0023	-29	51	53.67	1.331	-0.034
η Serpentis	3.4	K0	18	16	57.745	+3.1028	-0.0378	- 2	55	17.24	+0.790	-0.692
ζ Sagittarii	2.0	A0	18	18	35.774	3.9814	-0.0041	-34	25	31.06	1.502	-0.122
η Herculis	3.9	K0	18	20	7.085	2.5559	+0.0139	+21	43	50.07	1.496	-0.261
α Telescopii	3.8	B3	18	20	44.715	+4.4499	-0.0017	-46	0	57.43	1.744	-0.068
χ Draconis	3.7	F8	18	22	34.431	-1.0786	+0.1176	+72	41	47.81	1.599	-0.372
λ Sagittarii	2.9	K0	18	22	47.209	+3.7027	-0.0033	-25	28	9.43	+1.791	-0.199
ε Serpentis	5.4	G5	18	25	18.673	3.1215	+0.0015	- 2	2	25.95	2.174	-0.035
1 Aquilæ	4.1	K0	18	30	38.155	3.2646	-0.0013	- 8	18	13.41	2.356	-0.315
ζ Pavonis	4.1	K0	18	33	13.415	7.0195	-0.0057	-71	30	6.93	2.731	-0.165
α Lyre (Vega)	0.1	A0	18	34	5.663	2.0314	+0.0178	+38	42	17.36	3.251	+0.280
2 Aquilæ	4.7	F0	18	37	40.531	+3.2866	+0.0020	- 9	8	1.93	+3.275	-0.006
φ Sagittarii	3.3	B8	18	40	24.515	3.7487	+0.0034	-27	4	41.31	3.510	-0.006
110 Herculis	4.3	F5	18	42	2.740	2.5804	-0.0019	+20	27	54.20	3.313	-0.344
6 Aquilæ	4.5	G0	18	42	43.048	3.1829	-0.0009	- 4	50	19.26	3.092	-0.023
λ Pavonis	4.4	B2	18	44	26.221	5.5658	-0.0030	-62	17	6.89	3.840	-0.022
β Lyre	var.	B2p	18	46	58.704	+2.2147	+0.0004	+33	15	52.03	+4.075	-0.005
60 Draconis	5.4	A0	18	49	5.505	-1.9205	-0.0031	+75	20	6.80	4.312	+0.051
ο Draconis	4.8	K0	18	49	57.842	+0.8881	+0.0116	+59	17	7.39	4.359	+0.023
θ Sagittarii	2.1	B3	18	50	3.394	3.7200	-0.0003	-26	24	7.93	4.269	-0.075
σ Serpentis pr.	4.5	A5	18	52	2.600	2.9822	+0.0027	+ 4	5	36.22	4.541	+0.028
R Lyre	var.	Mb	18	52	46.762	+1.8260	+0.0026	+43	50	5.54	+4.654	+0.078
γ Lyre	3.3	A0	18	55	48.054	2.2435	-0.0006	+32	34	24.91	4.827	-0.006
ε Aquilæ	4.2	K0	18	55	48.579	2.7221	-0.0042	+14	57	11.98	4.752	-0.081
ζ Sagittarii	2.7	A2	18	57	16.066	3.8178	-0.0024	-30	0	5.20	4.938	-0.019
η Aquilæ	3.0	A0	19	1	32.941	2.7569	-0.0008	+13	44	15.90	5.220	-0.099
λ Aquilæ	3.6	A0	19	1	47.467	+3.1834	-0.0020	- 5	0	33.46	+5.257	-0.083
α Coronæ Australis	4.1	A2	19	3	45.474	4.0830	+0.0051	-38	2	11.72	5.387	-0.118
ε Lyre	5.1	B5	19	4	18.278	2.1413	+0.0005	+35	58	4.02	5.545	-0.006
κ Sagittarii	3.0	F2	19	4	46.144	3.5688	-0.0005	-21	9	29.17	5.554	-0.036
ψ Sagittarii	4.9	F5	19	10	23.449	3.6801	+0.0025	-25	24	8.98	6.025	-0.035
δ Draconis	3.2	K0	19	12	32.392	+0.0221	+0.0175	+67	30	49.52	+6.327	+0.088
δ Sagittarii	5.0	K0	19	12	43.247	+3.5109	-0.0015	-19	6	12.12	+6.238	-0.017

φ Draconis, star 6=1, 30".4 n. f.
70 Ophiuchi, comp. 6=, 2".1 s.

β Lyre, var., 12^d.9, 3=4=1, star 7=, 40" s. f.
ο Draco, star 7=6, 32".1 n. pr.

θ Serpentis, star 5=4, 22" 2 s. f.
R Lyre, var., 46^d.4, 4=0=7.
ζ Sag., binary, 3=4, 3=6, 0".5.

228 MEAN PLACES OF TEN-DAY STARS, 1916.

FOR JANUARY 0^h.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Vari- ation.	Annual P. M.	Declination.			Annual Vari- ation.
			h	m	s	s	s	°	'	"	"
θ Lyræ	4.5	K0	19	13	27.107	+2.0808	-.0015	+37	59	0.86	+ 6.321
ω Aquilæ	5.1	A5	19	13	52.420	2.8158	-.0002	+11	26	35.12	6.364
κ Cygni	4.0	K0	19	15	9.742	+1.3878	+0.0072	+53	12	46.93	6.578
τ Draconis	4.6	K0	19	17	10.673	-1.1362	-.0312	+73	11	59.63	6.733
δ Aquilæ	3.4	F0	19	21	15.794	+3.0249	+0.0168	+ 2	56	47.17	7.041
β Cygni	3.2	K0p	19	27	20.007	+2.4189	-.0002	+27	46	56.96	+ 7.445
ι Cygni	3.9	A2	19	27	35.322	1.5133	+0.0023	+51	33	1.31	7.604
μ Aquilæ	4.6	K0	19	29	59.182	2.9312	+0.0145	+ 7	11	59.58	7.524
h Sagittarii	4.7	B9	19	31	35.806	3.6530	+0.0045	-25	4	11.96	7.773
κ Aquilæ	5.0	B0	19	32	22.409	3.2288	+0.0005	- 7	12	54.00	7.864
θ Cygni	4.6	F5	19	34	11.354	+1.6089	-.0024	+50	1	33.80	+ 8.259
54 Sagittarii	5.4	K0	19	35	54.728	3.4386	+0.0046	-16	29	12.42	8.099
β Sagittæ	4.4	K0	19	37	16.549	2.6939	+0.0001	+17	16	50.45	8.223
15 Cygni	5.0	K0	19	41	14.869	2.1640	+0.0068	+37	9	3.39	8.611
f Sagittarii	5.1	K0	19	41	27.794	3.5014	-.0099	-19	57	50.06	8.499
γ Aquilæ	2.8	K2	19	42	15.965	+2.8519	+0.0007	+10	24	27.84	+ 8.648
δ Cygni	3.0	A0	19	42	21.021	1.8760	+0.0055	+44	55	30.53	8.702
δ Sagittæ	3.8	Map	19	43	38.540	2.6748	+0.0004	+18	19	34.84	8.776
α Aquilæ (<i>Altair</i>)	0.9	A5	19	46	41.097	2.9271	+0.0360	+ 8	38	44.21	9.376
η Aquilæ	var.	G0	19	48	11.663	+3.0567	+0.0005	+ 0	47	21.24	9.107
ε Draconis	4.0	K0	19	48	27.939	-0.1881	+0.0170	+70	3	14.24	+ 9.164
ι Sagittarii	4.2	K0	19	49	28.069	+4.1429	-.0017	-42	5	23.95	9.259
ι Pavonis	4.1	A0	19	50	53.723	6.9856	+0.0112	-73	8	0.88	9.206
β Aquilæ	3.9	K0	19	51	11.228	2.9468	+0.0025	+ 6	11	46.21	8.867
γ Sagittæ	3.7	K5	19	55	1.264	2.6673	+0.0041	+19	15	47.78	9.668
ε Sagittarii	4.6	Mb	19	57	29.714	+3.6927	+0.0023	-27	56	39.49	+ 9.846
τ Aquilæ	5.6	K0	20	0	2.205	2.9308	+0.0010	+ 7	2	25.31	10.055
θ Aquilæ	3.4	A0	20	6	58.275	3.0959	+0.0020	- 1	4	17.03	10.552
ο Cygni seq.	4.0	K0p	20	10	59.242	+1.8901	+0.0014	+46	29	9.86	10.848
κ Cephei	4.4	B9	20	11	44.499	-1.9670	+0.0025	+77	27	32.26	10.924
24 Vulpeculæ	5.4	K0	20	13	11.441	+2.5673	+0.0017	+24	24	42.01	+10.993
α ² Capricorni	3.8	K0	20	13	23.716	3.3303	+0.0040	-12	48	21.57	11.028
β Capricorni	3.2	G0p	20	16	17.627	3.3732	+0.0030	-15	2	50.73	11.237
α Pavonis	2.1	B3	20	19	0.575	4.7637	-.0000	-57	0	19.20	11.334
γ Cygni	2.3	F8p	20	19	12.795	2.1527	+0.0004	+39	59	14.03	11.442
π Capricorni	5.2	B8	20	22	30.878	+3.4362	+0.0004	-18	29	15.96	+11.675
ρ Capricorni	5.0	F0	20	24	4.266	3.4245	-.0013	-18	5	31.78	11.767
41 Cygni	4.1	F5	20	25	57.846	2.4516	+0.0014	+30	5	15.56	11.919
θ Cephei	4.3	A5	20	28	10.504	1.0116	+0.0066	+62	42	41.18	12.058
ε Delphini	4.0	B5	20	29	12.011	+2.8664	+0.0007	+11	1	1.28	12.122
Groombridge 3241	6.4	K2	20	30	22.763	-0.2394	-.0047	+72	14	49.78	+12.211
α Indi	3.2	K0	20	31	39.731	+4.2294	+0.0027	-47	35	7.61	12.371
β Delphini	3.7	F5	20	33	36.640	2.8138	+0.0082	+14	18	8.02	12.417
v Capricorni	5.3	Ma	20	35	16.187	3.4180	-.0018	-18	26	6.01	12.559
α Delphini	3.9	B8	20	35	44.201	2.7868	+0.0047	+15	36	55.00	12.614
β Pavonis	3.6	A5	20	37	24.239	+5.4420	-.0079	-66	30	22.61	+12.707
α Cygni (<i>Deneb</i>)	1.3	A2p	20	38	34.074	2.0447	+0.0004	+44	58	46.61	12.786
δ Delphini	4.5	A2	20	39	32.244	2.8008	-.0014	+14	46	20.78	12.804
ψ Capricorni	4.3	F8	20	41	7.495	3.5565	-.0041	-25	34	24.00	12.812
γ Delphini seq.	4.5	G5	20	42	45.664	2.7832	-.0023	+15	49	15.31	12.873
ε Cygni	2.6	K0	20	42	48.741	+2.4275	+0.0294	+33	39	18.08	+13.399
ε Aquarii	3.8	A0	20	43	7.805	3.2492	+0.0017	- 9	48	14.23	13.063
η Cephei	3.6	K0	20	43	35.002	1.2244	+0.0132	+61	30	44.08	13.943
μ Aquarii	4.8	A3	20	48	7.468	3.2377	+0.0025	- 9	17	57.56	13.383
β Indi	3.7	K0	20	48	15.267	4.7108	+0.0018	-58	46	18.40	13.421
32 Vulpeculæ	5.2	K2	20	50	58.781	+2.5563	-.0003	+27	44	15.30	+13.610

β Cygni, star 5^m.4, 34'' 7 n. f.
 δ Cygni, comp. 8^m.1'' 6 n. pr.
 η Aquilæ, var. 74.18, 3^m.7-4^m.4
 ε Draconis, comp. 7^m.6, 3'' 1 n.

ο Cygni, star 5^m.0 pr. 19^m, 270'' n.,
 star 7^m.3 f. 1^m, 96'' s.
 κ Cephei, comp. 8^m.7'' 5 s. f.
 α² Capricorn., α¹ Capricorn. 4^m.6 pr. 24^m,
 137'' n.

β Capricorn., star 6^m.2 pr. 14^m, 1
 = Capricorn., comp. 9^m.3'' 4 s. 1
 = Capricorn., comp. 7^m.6, 2'' 8 s
 β Delphini, binary 4^m.1, 5^m.4,
 γ Delphini, comp. 5^m.5, 11'' 2

MEAN PLACES OF TEN-DAY STARS, 1916. 229

FOR JANUARY 0^h.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Vari- ation.		Declination.			Annual Vari- ation.	Annual P. M.
			h	m	s	s	s	"	"	"		
220 H ¹ . Draconis	5.6	K0	20	51	26.354	-2.6315	-.0105	+80	14	16.73	+13.610	-0.025
γ Cygni	4.0	A0	20	54	2.454	+2.2356	+0.0088	+40	50	35.39	13.783	-0.018
α Octantis	5.2	F2	20	54	35.039	7.3790	-.0007	-77	20	44.90	13.446	-0.389
γ Microscopii	4.7	G5	20	56	8.573	3.6863	-.0004	-32	35	12.49	13.929	-0.004
θ Capricorni	4.2	A0	21	1	13.626	3.3753	+0.0051	-17	34	2.73	14.184	-0.066
ξ Cygni	3.9	K5	21	1	52.493	+2.1813	+0.0099	+43	35	32.37	+14.298	+0.008
η Cygni pr.	5.6	K5	21	3	7.780	2.6853	+0.3496	+38	20	8.51	17.615	+3.249
η Cygni seq.	6.3	K5	Δα	+1.501		...	...	Δδ	-15.48		...	...
γ Aquarii	4.5	K0	21	5	1.177	+3.2699	+0.0057	-11	42	44.50	14.475	-0.006
Bradley 2777	5.9	A	21	7	12.344	-1.1432	+0.0102	+77	47	9.47	14.642	+0.029
3 Piscis Australis	5.6	K5	21	8	18.644	+3.5632	+0.0075	-27	57	45.42	+14.573	-0.106
ζ Cygni	3.4	K0	21	9	21.624	2.5521	-.0002	+29	52	54.35	14.680	-0.061
α Cygni	3.8	F0	21	11	26.242	2.3940	+0.0141	+37	41	10.81	15.297	+0.434
ε Equulei	4.1	F8p	21	11	37.506	2.9992	+0.0034	+4	53	59.81	14.789	-0.085
ε Cygni	4.3	A0p	21	14	6.946	2.3548	-.0001	+39	2	32.10	15.023	+0.003
θ Microscopii	4.9	A2p	21	15	23.444	+3.8444	+0.0028	-41	9	55.14	+15.098	+0.005
α Cephei	2.6	A5	21	16	34.588	1.4349	+0.0224	+62	13	45.72	15.211	+0.050
γ Capricorni	4.3	K0	21	17	34.307	3.3440	+0.0022	-17	11	34.54	15.222	+0.004
1 Pegasi	4.2	K0	21	18	12.090	2.7741	+0.0075	+19	26	40.38	15.318	+0.064
γ Pavonis	4.3	F8	21	19	30.871	4.9096	+0.0154	-65	44	50.38	16.112	+0.784
ξ Capricorni	3.9	G5p	21	21	52.463	+3.4301	+0.0004	-22	46	32.88	+15.480	+0.020
ζ Cygni	5.3	K0	21	26	20.928	2.2127	+0.0050	+46	10	11.31	15.812	+0.105
β Aquarii	3.1	G0	21	27	8.282	3.1598	+0.0012	-5	56	28.85	15.739	-0.011
β Cephei	3.3	B1	21	27	34.947	0.7857	+0.0026	+70	11	30.44	15.779	+0.005
ξ Aquarii	4.8	A5	21	33	16.894	3.1956	+0.0075	-8	13	53.34	16.053	-0.023
74 Cygni	5.1	A5	21	33	34.888	+2.4034	+0.0003	+40	2	8.40	+16.101	+0.009
γ Capricorni	3.8	F0p	21	35	26.349	3.3271	+0.0129	-17	2	32.07	16.171	-0.017
ε Pegasi	2.5	K0	21	40	3.607	2.9461	+0.0016	+9	29	21.56	16.423	0.000
11 Cephei	4.8	K0	21	40	41.728	0.8878	+0.0221	+70	55	27.95	16.548	+0.093
δ Capricorni	3.0	A5	21	42	24.384	3.3140	+0.0176	-16	30	32.51	16.243	-0.297
μ Cygni	4.3	B3	21	43	41.324	+2.2146	+0.0099	+48	55	13.83	+16.002	-0.001
π Capricorni	5.2	F0	21	48	43.068	3.2729	+0.0204	-13	56	52.27	16.846	+0.001
γ Gruis	3.2	B8	21	48	50.774	3.6408	+0.0077	-37	45	38.01	16.830	-0.021
16 Pegasi	5.0	B3	21	49	14.353	2.7285	+0.0005	+25	31	46.33	16.876	+0.006
79 Draconis	6.6	A0	21	51	48.529	0.7183	+0.0100	+73	18	16.99	17.006	+0.016
ε Indi	4.7	K5	21	56	56.495	+4.6089	+0.4784	-57	7	54.26	+14.652	-2.573
21 Pegasi	5.7	F2	21	56	59.793	2.9222	+0.0038	+12	43	1.36	17.174	-0.054
α Aquarii	3.2	G0	22	1	28.213	3.0820	+0.0010	-0	43	42.04	17.422	-0.002
ι Aquarii	4.4	B8	22	1	54.120	3.2424	+0.0022	-14	16	39.78	17.381	-0.062
20 Cephei	5.4	K5	22	2	27.298	1.8228	+0.0032	+62	22	31.67	17.518	+0.051
α Gruis	2.2	B5	22	2	56.683	+3.7932	+0.0110	-47	22	6.74	+17.313	-0.174
ι Pegasi	4.0	F5	22	3	5.985	2.7915	+0.0222	+24	56	3.68	17.514	+0.020
θ Pegasi	3.7	A0	22	5	57.779	3.0267	+0.0187	+5	47	3.19	17.650	+0.036
ζ Pegasi	4.4	F5	22	6	15.333	2.6627	-.0003	+32	45	56.25	17.608	-0.018
ξ Cephei	3.6	K0	22	7	56.287	2.0782	+0.0018	+57	47	12.95	17.707	+0.010
24 Cephei	5.0	G5	22	8	11.728	+1.1575	+0.0044	+71	55	37.91	+17.710	+0.004
θ Aquarii	4.3	K0	22	12	24.128	3.1671	+0.0074	-8	12	6.99	17.858	-0.019
α Tucanae	2.9	K2	22	12	45.362	4.1340	-.0118	-60	40	42.90	17.856	-0.035
γ Aquarii	4.0	A0	22	17	19.086	3.0901	+0.0081	-1	48	39.31	18.082	+0.015
31 Pegasi	4.9	B3p	22	17	23.007	2.9530	+0.0010	+11	46	53.43	18.076	+0.007
3 Lacertae	4.6	K0	22	20	15.280	+2.3558	-.0007	+51	48	28.38	+17.988	-0.188
π Aquarii	4.6	B1	22	20	59.227	3.0637	+0.0004	+0	57	2.49	18.203	-0.001
ε Aquarii	4.9	A0	22	26	12.213	3.1770	-.0000	-11	6	29.24	18.364	-0.026
α Lacertae	3.8	A0	22	27	49.732	2.4682	+0.0157	+49	51	0.97	18.460	+0.014
ν Aquarii	5.3	F5	22	30	6.015	3.2849	+0.0148	-21	8	20.46	18.369	-0.154
226 B. Cephei	5.7	A0	22	30	48.168	+1.0645	-.0052	+75	47	36.47	+18.546	0.000

γ Cygni, comp. 7^m, 0^s.8

ι Cygni, star 6^m 7^s 10^s, 420^s.

β Cephei, star 8^m, 13^s.3 s. pr.

230 MEAN PLACES OF TEN-DAY STARS, 1916.

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Variation.		Declination.			Annual Variation.
			h	m	s	s	s	°	'	"	
77 Aquarii	4.1	B8	22 31	2.420	+3.0832	+0.0057	- 0	33	2.80	+18.501	
10 Lacertæ	4.9	Oe5	22 35	29.414	2.6891	+0.0011	+38	36	45.76	18.687	
ε Piscis Australis	4.2	B8	22 36	0.724	3.3225	+0.0008	-27	28	56.21	18.703	
ζ Pegasi	3.6	B8	22 37	16.334	2.9915	+0.0054	+10	23	32.93	18.740	
β Gruis	2.2	Mb	22 37	39.444	3.5956	+0.0133	-47	19	27.71	18.739	
77 Pegasi	3.1	G0	22 39	3.756	+2.8093	+0.0011	+29	46	53.28	+18.771	
λ Pegasi	4.1	K0	22 42	28.996	2.8870	+0.0037	+23	7	23.87	18.901	
ε Gruis	3.7	A2	22 43	29.198	3.6376	+0.0093	-51	45	31.65	18.880	
τ Aquarii	4.2	K5	22 45	8.778	3.1790	-0.0008	-14	2	10.37	18.953	
μ Pegasi	3.7	K0	22 45	56.855	2.8933	+0.0110	+24	9	27.86	18.966	
z Cephei	3.7	K0	22 46	41.181	+2.1283	-0.0111	+65	45	30.08	+18.903	
λ Aquarii	3.8	Ma	22 48	13.982	3.1309	+0.0002	- 8	1	36.81	19.106	
ρ Indi	6.1	G5	22 48	49.737	4.2140	-0.0133	-70	31	22.17	19.140	
δ Aquarii	3.5	A2	22 50	11.621	3.1862	-0.0034	-16	16	4.20	19.097	
α Pisc. Aust. (<i>Fomalhaut</i>)	1.3	A3	22 53	0.729	3.3207	+0.0252	-30	4	4.01	19.024	
o Andromedæ	3.6	B5p	22 58	3.161	+2.7548	+0.0020	+41	52	27.39	+19.308	
β Pegasi	var.	Ma	22 59	42.002	2.9053	+0.0146	+27	37	36.74	19.401	
α Pegasi (<i>Markab</i>)	2.6	A0	23 0	34.516	2.9864	+0.0040	+14	45	11.08	19.336	
55 Pegasi	4.7	Ma	23 2	46.322	3.0209	+0.0003	+ 8	57	19.55	19.412	
c ² Aquarii	3.8	K0	23 4	58.174	3.2019	+0.0032	-21	37	43.16	19.512	
π Cephei	4.6	G5	23 5	13.335	+1.8997	+0.0023	+74	55	59.63	+19.443	
z Gruis	4.1	K0	23 5	36.516	3.4067	+0.0121	-45	42	7.14	19.452	
59 Pegasi	5.2	A3	23 7	29.692	3.0278	-0.0007	+ 8	15	49.65	19.526	
5 H ¹ , Cassiopeiæ	5.6	K2	23 9	14.017	2.8791	+0.2535	+56	42	16.13	19.854	
φ Aquarii	4.4	Ma	23 9	58.342	3.1071	+0.0015	- 6	30	7.44	19.375	
ψ Aquarii	4.5	K0	23 11	29.521	+3.1448	+0.0250	- 9	32	43.58	+19.593	
γ Tucanæ	4.1	F2	23 12	32.033	3.5189	-0.0057	-58	41	48.44	19.678	
γ Piscium	3.8	K0	23 12	48.622	3.1094	+0.0502	+ 2	49	23.30	19.643	
γ Sculptoris	4.5	K0	23 14	17.440	3.2447	+0.0002	-32	59	23.46	19.582	
o Cephei	4.9	G5	23 15	10.218	2.4522	+0.0113	+67	39	6.39	19.681	
τ Pegasi	4.6	A5	23 16	28.620	+2.9659	+0.0018	+23	16	49.19	+19.673	
b ¹ Aquarii	4.2	K0	23 18	33.608	3.1529	-0.0099	-20	33	33.70	19.629	
4 Cassiopeiæ	5.2	K5	23 21	5.941	2.6508	-0.0004	+61	49	17.45	19.748	
v Pegasi	4.6	G0	23 21	11.076	2.9907	+0.0134	+22	56	29.14	19.789	
κ Piscium	4.9	A2p	23 22	37.584	3.0752	+0.0056	+ 0	47	44.38	19.687	
θ Piscium	4.4	G5	23 23	42.376	+3.0420	-0.0088	+ 5	55	2.99	+19.754	
70 Pegasi	4.7	K0	23 24	54.306	3.0322	+0.0040	+12	17	49.25	19.846	
β Sculptoris	4.5	B9	23 28	28.231	3.2244	+0.0071	-38	16	59.26	19.862	
72 Pegasi (<i>mean</i>)	5.2	K2	23 29	46.957	2.9711	+0.0035	+30	51	42.00	19.862	
λ Andromedæ	4.0	K0	23 33	26.900	2.9285	+0.0158	+46	0	10.72	19.491	
z Andromedæ	4.3	B8	23 34	0.732	+2.9351	+0.0025	+42	48	10.65	+19.916	
z Piscium	4.3	G0	23 35	37.741	3.0844	+0.0246	+ 5	10	15.28	19.496	
γ Cephei	3.4	K0	23 35	53.418	2.4395	-0.0173	+77	9	48.73	20.092	
κ Andromedæ	4.3	A0	23 36	15.986	2.9477	+0.0078	+43	52	7.22	19.914	
ω ² Aquarii	4.6	A0	23 38	22.031	3.1127	+0.0063	-15	0	33.66	19.894	
z ¹ Aquarii	5.3	B8	23 39	50.782	+3.1144	+0.0019	-18	44	35.88	+19.962	
ψ Andromedæ	5.1	K0	23 41	52.003	2.9640	+0.0005	+45	57	13.62	19.975	
41 H. Cephei	5.0	A0	23 43	53.121	2.8501	+0.0024	+67	20	23.90	19.986	
δ Sculptoris	4.6	A0	23 44	33.113	3.1276	+0.0059	-28	35	42.75	19.867	
φ Pegasi	5.2	Ma	23 48	12.732	3.0482	-0.0013	+18	39	13.42	19.980	
ρ Cassiopeiæ	4.8	F8p	23 50	10.729	+2.9821	-0.0022	+57	1	55.46	+20.029	
Groombridge 4163	6.6	B9	23 50	43.583	2.8808	-0.0040	+73	56	34.20	20.024	
ω Piscium	4.0	F5	23 54	59.818	3.0796	+0.0102	+ 6	23	53.99	19.933	
ε Tucanæ	4.7	B9	23 55	33.604	3.1385	+0.0076	-66	2	39.06	20.034	
30 Piscium	4.7	Mb	23 57	39.136	3.0771	+0.0030	- 6	28	51.21	20.007	
2 Ceti	4.6	A0	23 59	26.264	+3.0752	+0.0015	-17	48	13.25	+20.032	

β Pegasi, var. irreg., 2^m.2-2^m.7
 τ Cephei, comp. 7^m, 0^m.9 f.

ψ Aquarii, star 8^m.5, 49^m.4 n. p.
 o Cephei, comp. 8^m, 2^m.9 s. p.

72 Pegasi, binary, 6^m.0, 6^m.0, 0

MEAN PLACES OF CIRCUMPOLAR STARS, 1916. 231

FOR JANUARY 0^d.975, WASHINGTON MEAN TIME.

Name of Star.	Magni- tude.	Spec- trum.	Right Ascension.			Annual Variation.		Declination.	Annual Variation.	Annual P. M.
			h	m	s	s	s			
13 H. Cephei	4.5	K0	0	57	1.657	+ 7.6349	+.0729	+85 48 25.87	+19.424	-0.004
α Urse Min. (<i>Polaris</i>)	2.1	F8	1	29	44.254	+28.7793	+.1465	+88 51 25.03	+18.530	+0.002
4 G. Octantis	5.6	K0	1	42	6.102	- 3.7682	+.0086	-85 11 39.58	+18.116	+0.028
Groombridge 750	6.7	F8	4	9	44.952	+17.5995	+.0128	+85 20 1.04	+ 9.318	+0.042
Groombridge 944	6.4	K0	5	34	54.014	+18.7661	+.0130	+85 9 28.07	+ 2.187	-0.004
31 G. Mensse	6.2	A0	5	46	26.439	-11.6839	-.0124	-84 49 48.17	+ 1.272	+0.087
ζ Mensse	5.6	A2	6	47	3.489	- 4.9433	-.0037	-80 43 34.16	- 4.005	+0.082
51 H. Cephei	5.3	Ma	7	1	34.861	+29.2025	-.0577	+87 11 0.11	- 5.356	-0.035
25 H. Camelopardalis	5.1	Mb	7	13	29.477	+12.8200	+.0132	+82 34 36.50	- 6.365	-0.047
7 G. Octantis	6.4	F5	7	16	40.555	-20.2494	-.0146	-86 54 0.14	- 6.576	+0.005
Groombridge 1119	7.0	A0	8	14	48.311	+60.2322	-.0408	+88 53 11.43	-11.105	+0.017
ζ Octantis	5.4	A3	9	9	6.085	- 8.1380	-.1147	-85 19 42.77	-14.683	+0.043
1 H. Draconis	4.6	K0	9	25	12.930	+ 8.7932	-.0059	+81 41 57.18	-15.672	-0.027
ζ Chamæleonis	5.2	B3	9	36	24.003	- 1.6544	-.0121	-80 33 50.61	-16.219	+0.019
30 H. Camelopardalis	5.3	F5	10	20	57.259	+ 7.5763	-.0463	+82 59 12.27	-18.194	+0.009
η Octantis	6.3	A0	10	59	55.642	- 0.3598	-.0573	-84 8 31.24	-19.366	-0.005
Bradley 1672	6.3	F0	12	14	28.053	+ 0.3686	-.0718	+88 9 56.03	-19.947	+0.058
ϵ Octantis	5.4	K0	12	46	1.183	+ 5.9648	+.0365	-84 40 2.72	-19.619	+0.024
32 H. Camelop. seq.	5.3	A2	12	48	29.976	+ 0.4408	-.0184	+83 52 10.05	-19.582	+0.016
κ Octantis	5.6	A2	13	27	5.514	+ 9.0989	-.0763	-85 21 23.59	-18.639	-0.024
δ Octantis	4.1	K2	14	13	18.531	+ 9.2573	-.0510	-83 17 4.27	-16.763	-0.014
Groombridge 2283	7.2	K0	15	4	0.607	-19.4646	-.0066	+87 33 24.43	-13.894	+0.031
ρ Octantis	5.7	A2	15	23	43.237	+13.3505	+.0842	-84 11 17.84	-12.554	+0.080
ϵ Urse Minoris	4.4	G5	16	54	31.741	- 6.2545	+.0057	+82 10 38.40	- 5.650	-0.001
59 G. Apodis	5.9	Mb	17	15	43.730	+11.1646	+.0086	-80 47 2.69	- 3.887	-0.039
δ Urse Minoris	4.4	A0	17	59	20.805	-19.4980	+0.0176	+86 36 51.19	- 0.009	+0.048
χ Octantis	5.2	K0	18	5	36.163	+35.7319	-.0972	-87 39 52.21	+ 0.364	-0.126
λ Urse Minoris	6.6	Mb	19	3	51.560	-71.8229	-.1100	+89 0 56.70	+ 5.519	+0.006
σ Octantis	5.5	F0	19	26	7.189	+95.2774	+1.087	-89 13 35.99	+ 7.356	-0.001
76 Draconis	5.7	A0	20	48	44.660	- 4.1628	+.0131	+82 13 16.38	+13.486	+0.025
λ Octantis	5.4	G0p	21	38	10.025	+ 9.5240	+.0389	-83 6 23.31	+16.315	-0.012
ν Octantis	5.7	K0	22	15	56.333	+12.3885	-.0400	-86 23 45.22	+18.089	+0.074
β Octantis	4.3	F0	22	37	32.703	+ 6.3165	-.0303	-81 49 21.11	+18.764	+0.002
39 H. Cephei	5.6	F0	23	27	44.392	- 0.2642	+.0638	+86 50 39.03	+19.867	+0.020
γ^1 Octantis	5.1	G5	23	47	12.813	+ 3.6130	-.0248	-82 29 8.43	+20.003	-0.012

ϵ Urse Min., star 9^m, 18^s s. pr.

| 32 H. Camelop., star 5^m, 19^s.8 s. pr. |

| λ Octantis, binary, 5^m.5, 8^m.0, 3^s.2 n. f.

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			♋ Octantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			♋ Chamaeleontis. Mag. 5.2			♐ H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Jan.	h m ° ' "		Jan.	h m ° ' "		Jan.	h m ° ' "		Jan.	h m ° ' "		Jan.	h m ° ' "	
	8 16	+88 53		9 9	-85 19		9 25	+81 41		9 36	-80 33		10 21	+82 58
0.6	17.56	4.27	0.6	13.87	30.42	0.6	24.08	42.59	0.6	27.67	37.61	0.7	8.04	52.69
1.6	18.23	4.47	1.6	14.02	30.80	1.6	24.22	42.70	1.6	27.78	37.98	1.7	8.21	52.77
2.6	18.96	4.69	2.6	14.14	31.19	2.6	24.35	42.83	2.6	27.88	38.36	2.6	8.39	52.84
3.6	19.75	4.93	3.6	14.24	31.58	3.6	24.50	42.97	3.6	27.96	38.73	3.6	8.58	52.92
4.6	20.56	5.18	4.6	14.34	31.96	4.6	24.65	43.14	4.6	28.02	39.10	4.6	8.78	53.00
5.6	21.36	5.46	5.6	14.40	32.30	5.6	24.81	43.32	5.6	28.08	39.48	5.6	8.98	53.10
6.6	22.09	5.77	6.6	14.48	32.63	6.6	24.96	43.54	6.6	28.14	39.82	6.6	9.18	53.24
7.5	22.73	6.10	7.6	14.56	32.94	7.6	25.10	43.78	7.6	28.20	40.13	7.6	9.38	53.41
8.5	23.26	6.42	8.6	14.64	33.27	8.6	25.21	44.02	8.6	28.25	40.44	8.6	9.54	53.59
9.5	23.70	6.75	9.6	14.74	33.58	9.6	25.32	44.27	9.6	28.32	40.75	9.6	9.69	53.78
10.5	24.04	7.05	10.6	14.85	33.92	10.6	25.41	44.51	10.6	28.40	41.06	10.6	9.83	53.97
11.5	24.37	7.33	11.6	14.97	34.28	11.6	25.51	44.74	11.6	28.48	41.41	11.6	9.97	54.15
12.5	24.67	7.62	12.6	15.08	34.66	12.6	25.59	44.96	12.6	28.56	41.78	12.6	10.10	54.35
13.5	24.99	7.89	13.6	15.19	35.04	13.6	25.67	45.16	13.6	28.63	42.14	13.6	10.22	54.51
14.5	25.36	8.15	14.6	15.28	35.46	14.6	25.76	45.36	14.6	28.69	42.54	14.6	10.35	54.66
15.5	25.76	8.41	15.6	15.35	35.86	15.6	25.86	45.56	15.6	28.76	42.96	15.6	10.50	54.81
16.5	26.18	8.69	16.6	15.41	36.27	16.6	25.96	45.76	16.6	28.81	43.35	16.6	10.64	54.97
17.5	26.61	8.98	17.6	15.46	36.65	17.6	26.07	45.98	17.6	28.86	43.74	17.6	10.79	55.14
18.5	27.05	9.28	18.6	15.48	37.05	18.6	26.18	46.21	18.6	28.90	44.13	18.6	10.95	55.32
19.5	27.48	9.59	19.6	15.50	37.41	19.6	26.29	46.47	19.6	28.94	44.51	19.6	11.11	55.51
20.5	27.84	9.91	20.6	15.52	37.78	20.6	26.40	46.74	20.6	28.98	44.87	20.6	11.27	55.73
21.5	28.15	10.27	21.6	15.54	38.12	21.6	26.50	47.03	21.6	29.00	45.22	21.6	11.42	55.97
22.5	28.38	10.62	22.5	15.55	38.45	22.6	26.58	47.32	22.6	29.03	45.57	22.6	11.56	56.24
23.5	28.53	10.96	23.5	15.58	38.80	23.6	26.65	47.62	23.6	29.06	45.91	23.6	11.68	56.50
24.5	28.59	11.32	24.5	15.62	39.15	24.6	26.70	47.92	24.6	29.10	46.26	24.6	11.79	56.76
25.5	28.60	11.64	25.5	15.67	39.52	25.5	26.76	48.20	25.6	29.14	46.63	25.6	11.88	57.01
26.5	28.60	11.94	26.5	15.71	39.89	26.5	26.80	48.46	26.6	29.18	47.01	26.6	11.96	57.26
27.5	28.60	12.22	27.5	15.75	40.32	27.5	26.85	48.71	27.6	29.23	47.42	27.6	12.06	57.49
28.5	28.64	12.50	28.5	15.77	40.75	28.5	26.90	48.94	28.5	29.27	47.84	28.6	12.15	57.69
29.5	28.76	12.76	29.5	15.78	41.19	29.5	26.96	49.18	29.5	29.30	48.29	29.6	12.25	57.89
30.5	28.93	13.03	30.5	15.78	41.62	30.5	27.04	49.40	30.5	29.32	48.73	30.6	12.36	58.08
31.5	29.13	13.30	31.5	15.73	42.05	31.5	27.13	49.64	31.5	29.33	49.17	31.6	12.49	58.28
51.42	+51.41		12.27	-12.23		6.92	+6.85		6.10	-6.02		8.18	+8.12	
8 ^h 14 ^m	48°.311		9 ^h 9 ^m	6°.085		9 ^h 25 ^m	12°.930		9 ^h 36 ^m	24°.003		10 ^h 20 ^m	57°.259	
+88° 53'	11''.43		-85° 19'	42''.77		+81° 41'	57''.18		-80° 33'	50''.61		+82° 59'	12''.27	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

7 Octantis. Mag. 6.3			Bradley 1678. Mag. 6.3			ι Octantis. Mag. 5.4			22 H. Camelop. seq. Mag. 5.3			κ Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Jan.	h m s	° ' "	Jan.	h m s	° ' "	Jan.	h m s	° ' "	Jan.	h m s	° ' "	Jan.	h m s	° ' "
0.7	57.62	16.46	0.7	43.13	30.10	0.8	58.34	48.72	0.8	32.63	43.39	0.8	0.11	10.70
1.7	57.84	16.75	1.7	43.73	30.05	1.8	58.64	48.81	1.8	32.82	43.27	1.8	0.46	10.73
2.7	58.05	17.04	2.7	44.36	29.99	2.7	58.94	48.95	2.8	33.01	43.14	2.8	0.81	10.78
3.7	58.24	17.33	3.7	45.05	29.91	3.7	59.22	49.11	3.7	33.23	43.01	3.8	1.15	10.87
4.7	58.42	17.62	4.7	45.78	29.83	4.7	59.47	49.29	4.7	33.45	42.88	4.8	1.46	10.96
5.7	58.56	17.90	5.7	46.56	29.77	5.7	59.72	49.45	5.7	33.69	42.77	5.8	1.74	11.06
6.7	58.72	18.17	6.7	47.35	29.75	6.7	59.94	49.59	6.7	33.93	42.67	6.8	2.02	11.16
7.7	58.87	18.42	7.7	48.15	29.75	7.7	60.17	49.71	7.7	34.17	42.62	7.8	2.29	11.23
8.7	59.02	18.65	8.7	48.90	29.79	8.7	60.39	49.81	8.7	34.40	42.59	8.8	2.55	11.27
9.7	59.19	18.87	9.7	49.61	29.84	9.7	60.62	49.90	9.7	34.63	42.59	9.8	2.83	11.31
10.7	59.38	19.12	10.7	50.27	29.89	10.7	60.88	49.99	10.7	34.83	42.59	10.8	3.13	11.35
11.7	59.56	19.39	11.7	50.88	29.97	11.7	61.15	50.09	11.7	35.02	42.59	11.8	3.44	11.39
12.6	59.76	19.67	12.7	51.47	30.02	12.7	61.42	50.22	12.7	35.21	42.60	12.8	3.77	11.43
13.6	59.95	19.96	13.7	52.04	30.06	13.7	61.70	50.38	13.7	35.40	42.60	13.7	4.10	11.50
14.6	60.13	20.28	14.7	52.63	30.11	14.7	61.98	50.54	14.7	35.59	42.60	14.7	4.44	11.60
15.6	60.31	20.61	15.7	53.24	30.14	15.7	62.26	50.72	15.7	35.78	42.58	15.7	4.78	11.72
16.6	60.48	20.93	16.7	53.88	30.19	16.7	62.52	50.92	16.7	35.98	42.55	16.7	5.10	11.86
17.6	60.63	21.27	17.7	54.55	30.22	17.7	62.77	51.13	17.7	36.20	42.53	17.7	5.42	12.01
18.6	60.77	21.62	18.7	55.24	30.24	18.7	63.01	51.35	18.7	36.42	42.52	18.7	5.71	12.16
19.6	60.89	21.94	19.7	55.98	30.31	19.7	63.24	51.57	19.7	36.65	42.52	19.7	5.99	12.31
20.6	61.01	22.26	20.7	56.70	30.39	20.7	63.45	51.78	20.7	36.88	42.53	20.7	6.26	12.46
21.6	61.13	22.57	21.7	57.42	30.48	21.7	63.66	51.98	21.7	37.11	42.57	21.7	6.53	12.61
22.6	61.25	22.87	22.7	58.13	30.61	22.7	63.87	52.16	22.7	37.34	42.65	22.7	6.78	12.74
23.6	61.37	23.17	23.7	58.81	30.74	23.7	64.08	52.35	23.7	37.55	42.73	23.7	7.05	12.88
24.6	61.50	23.45	24.7	59.43	30.90	24.7	64.30	52.53	24.7	37.75	42.82	24.7	7.31	13.01
25.6	61.64	23.77	25.7	60.01	31.07	25.7	64.54	52.71	25.7	37.95	42.93	25.7	7.61	13.12
26.6	61.79	24.10	26.7	60.54	31.24	26.7	64.79	52.90	26.7	38.12	43.03	26.7	7.92	13.25
27.6	61.94	24.46	27.7	61.05	31.38	27.7	65.06	53.12	27.7	38.30	43.13	27.7	8.25	13.41
28.6	62.09	24.83	28.7	61.54	31.50	28.7	65.33	53.38	28.7	38.47	43.19	28.7	8.58	13.59
29.6	62.23	25.22	29.7	62.07	31.61	29.7	65.57	53.66	29.7	38.64	43.24	29.7	8.91	13.80
30.6	62.35	25.63	30.7	62.63	31.71	30.7	65.82	53.95	30.7	38.82	43.29	30.7	9.22	14.04
31.6	62.45	26.04	31.6	63.24	31.81	31.7	66.05	54.26	31.7	39.03	43.35	31.7	9.52	14.29
9.79	-9.74		31.12	+31.10		10.75	-10.71		9.35	+9.30		12.34	-12.30	
10 ^h 59 ^m 55 ^s .642			12 ^h 14 ^m 28 ^s .053			12 ^h 46 ^m 1 ^s .183			12 ^h 48 ^m 29 ^s .976			13 ^h 27 ^m 5 ^s .514		
-84° 8' 31".24			+88° 9' 56".03			-84° 40' 2".72			+83° 52' 10".05			-85° 21' 23".59		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Octantis. Mag. 4.1			Groombridge 2283. Mag. 7.2			ρ Octantis. Mag. 5.7			ε Ursæ Minoris. Mag. 4.4			59 G. Apodis. Mag. 5.9		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Jan.	h m	° '	Jan.	h m	° '	Jan.	h m	° '	Jan.	h m	° '	Jan.	h m	° '
	14 13	-83 16		15 3	+87 32		15 23	-84 11		16 54	+82 10		17 15	-80 46
	s	"		s	"		s	"		s	"		s	"
0.8	13.64	53.26	0.8	42.15	60.59	0.9	35.54	10.31	0.9	21.80	22.92	0.9	38.26	62.20
1.8	13.89	53.23	1.8	42.43	60.33	1.9	35.80	10.13	1.9	21.85	22.61	1.9	38.38	61.90
2.8	14.13	53.21	2.8	42.72	60.06	2.9	36.06	10.01	2.9	21.88	22.27	2.9	38.51	61.63
3.8	14.37	53.22	3.8	43.03	59.79	3.9	36.32	9.89	3.9	21.92	21.91	3.9	38.64	61.38
4.8	14.59	53.26	4.8	43.38	59.51	4.9	36.57	9.81	4.9	21.97	21.55	4.9	38.76	61.15
5.8	14.83	53.30	5.8	43.78	59.22	5.8	36.81	9.74	5.9	22.02	21.18	5.9	38.88	60.93
6.8	15.01	53.31	6.8	44.21	58.96	6.8	37.02	9.66	6.9	22.10	20.81	6.9	38.99	60.72
7.8	15.21	53.33	7.8	44.66	58.71	7.8	37.22	9.58	7.9	22.18	20.46	7.9	39.09	60.55
8.8	15.39	53.31	8.8	45.14	58.49	8.8	37.43	9.47	8.9	22.27	20.13	8.9	39.18	60.33
9.8	15.58	53.28	9.8	45.59	58.31	9.8	37.63	9.35	9.9	22.35	19.81	9.9	39.26	60.08
10.8	15.79	53.25	10.8	46.03	58.14	10.8	37.85	9.23	10.9	22.44	19.53	10.9	39.36	59.81
11.8	16.01	53.23	11.8	46.42	57.98	11.8	38.08	9.08	11.9	22.53	19.26	11.9	39.45	59.54
12.8	16.24	53.21	12.8	46.84	57.84	12.8	38.33	8.94	12.9	22.62	19.00	12.9	39.57	59.26
13.8	16.48	53.21	13.8	47.23	57.69	13.8	38.59	8.82	13.9	22.70	18.74	13.9	39.70	58.99
14.8	16.71	53.24	14.8	47.60	57.52	14.8	38.86	8.71	14.9	22.78	18.47	14.9	39.84	58.73
15.8	16.96	53.27	15.8	47.99	57.35	15.8	39.13	8.63	15.9	22.86	18.20	15.9	39.97	58.49
16.8	17.19	53.33	16.8	48.39	57.17	16.8	39.40	8.57	16.9	22.94	17.92	16.9	40.11	58.28
17.8	17.43	53.41	17.8	48.82	56.99	17.8	39.67	8.54	17.9	23.03	17.61	17.9	40.26	58.08
18.8	17.66	53.49	18.8	49.27	56.80	18.8	39.92	8.52	18.9	23.12	17.30	18.9	40.40	57.88
19.8	17.86	53.58	19.8	49.75	56.62	19.8	40.17	8.50	19.9	23.23	16.99	19.9	40.54	57.72
20.8	18.06	53.68	20.8	50.25	56.45	20.8	40.41	8.48	20.9	23.34	16.69	20.9	40.67	57.56
21.8	18.26	53.77	21.8	50.77	56.30	21.8	40.64	8.45	21.9	23.46	16.40	21.9	40.79	57.40
22.8	18.45	53.86	22.8	51.30	56.16	22.8	40.85	8.42	22.9	23.58	16.12	22.9	40.91	57.23
23.8	18.64	53.91	23.8	51.83	56.05	23.8	41.09	8.39	23.9	23.71	15.87	23.9	41.03	57.04
24.8	18.84	53.96	24.8	52.34	55.97	24.8	41.31	8.33	24.9	23.83	15.62	24.9	41.15	56.85
25.7	19.05	54.02	25.8	52.83	55.90	25.8	41.56	8.26	25.9	23.96	15.41	25.9	41.27	56.65
26.7	19.29	54.07	26.8	53.28	55.83	26.8	41.82	8.21	26.9	24.07	15.20	26.9	41.40	56.43
27.7	19.53	54.14	27.8	53.72	55.77	27.8	42.09	8.17	27.9	24.18	15.02	27.9	41.55	56.20
28.7	19.78	54.26	28.8	54.13	55.72	28.8	42.38	8.13	28.9	24.29	14.83	28.9	41.72	55.99
29.7	20.03	54.39	29.8	54.53	55.62	29.8	42.69	8.13	29.8	24.40	14.61	29.9	41.89	55.80
30.7	20.28	54.57	30.8	54.97	55.50	30.8	42.99	8.17	30.8	24.52	14.38	30.9	42.06	55.63
31.7	20.51	54.74	31.8	55.42	55.37	31.8	43.28	8.22	31.8	24.64	14.13	31.9	42.24	55.50
8.55	-8.49		23.39	+23.36		9.87	-9.82		7.34	+7.27		6.24	-6.16	
14 ^h 13 ^m 18 ^s .531			15 ^h 4 ^m 0 ^s .607			15 ^h 23 ^m 43 ^s .237			16 ^h 54 ^m 31 ^s .741			17 ^h 15 ^m 43 ^s .730		
-83° 17' 4".27			+87° 33' 24".43			-84° 11' 17".84			+82° 10' 38".40			-80° 47' 2".69		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

♁ Ursae Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursae Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.
h m	° '	"	h m	° '	"	h m	° '	"	h m	° '	"	h m	° '	"
Jan. 17 58	+86 36		Jan. 18 5	-87 39		Jan. 19 2	+89 0		Jan. 19 25	-89 13		Jan. 20 48	+82 13	
0.9 52.98	42.45		0.9 12.67	54.70		1.0 8.38	55.32		1.0 3.13	43.37		1.1 33.38	26.77	
1.9 52.94	42.13		1.9 12.95	54.34		2.0 7.93	55.06		2.0 3.31	42.95		2.1 33.28	26.57	
2.9 52.91	41.81		2.9 13.28	54.00		3.0 7.43	54.77		3.0 3.63	42.56		3.1 33.18	26.36	
3.9 52.86	41.47		3.9 13.63	53.68		4.0 6.91	54.45		4.0 4.05	42.18		4.1 33.07	26.13	
4.9 52.84	41.10		4.9 13.98	53.39		5.0 6.41	54.11		5.0 4.51	41.86		5.1 32.96	25.87	
5.9 52.84	40.74		5.9 14.32	53.10		6.0 5.99	53.75		6.0 4.95	41.52		6.1 32.85	25.31	
6.9 52.87	40.35		6.9 14.61	52.83		6.9 5.66	53.39		7.0 5.30	41.21		7.1 32.74	25.29	
7.9 52.92	39.97		7.9 14.87	52.57		7.9 5.45	53.03		8.0 5.57	40.92		8.1 32.65	24.95	
8.9 53.01	39.62		8.9 15.11	52.28		8.9 5.35	52.66		9.0 5.76	40.59		9.1 32.56	24.64	
9.9 53.11	39.30		9.9 15.35	51.98		9.9 5.34	52.33		10.0 5.89	40.26		10.1 32.49	24.34	
10.9 53.23	38.99		10.9 15.60	51.67		10.9 5.37	52.02		11.0 6.03	39.90		11.1 32.43	24.03	
11.9 53.33	38.70		11.9 15.87	51.33		11.9 5.41	51.72		12.0 6.22	39.52		12.1 32.37	23.74	
12.9 53.43	38.42		12.9 16.17	50.99		12.9 5.42	51.43		12.9 6.48	39.12		13.1 32.32	23.47	
13.9 53.52	38.14		13.9 16.52	50.64		13.9 5.40	51.14		13.9 6.86	38.73		14.1 32.26	23.20	
14.9 53.60	37.86		14.9 16.89	50.30		14.9 5.36	50.85		14.9 7.34	38.34		15.0 32.21	22.94	
15.9 53.68	37.57		15.9 17.30	49.98		15.9 5.28	50.55		15.9 7.92	37.96		16.0 32.16	22.69	
16.9 53.77	37.26		16.9 17.72	49.69		16.9 5.21	50.23		16.9 8.60	37.60		17.0 32.09	22.43	
17.9 53.85	36.94		17.9 18.15	49.40		17.9 5.13	49.90		17.9 9.33	37.23		18.0 32.02	22.13	
18.9 53.95	36.60		18.9 18.59	49.15		18.9 5.09	49.58		18.9 10.08	36.88		19.0 31.96	21.82	
19.9 54.07	36.25		19.9 19.02	48.91		19.9 5.09	49.24		19.9 10.84	36.57		20.0 31.90	21.50	
20.9 54.21	35.90		20.9 19.42	48.67		20.9 5.15	48.88		20.9 11.56	36.28		21.0 31.83	21.14	
21.9 54.37	35.56		21.9 19.81	48.43		21.9 5.31	48.52		21.9 12.25	35.97		22.0 31.77	20.78	
22.9 54.55	35.22		22.9 20.18	48.18		22.9 5.55	48.17		22.9 12.88	35.65		23.0 31.73	20.42	
23.9 54.75	34.91		23.9 20.54	47.92		23.9 5.87	47.83		23.9 13.46	35.33		24.0 31.70	20.07	
24.9 54.95	34.62		24.9 20.91	47.67		24.9 6.25	47.51		24.9 14.02	34.99		25.0 31.68	19.75	
25.9 55.16	34.34		25.9 21.28	47.39		25.9 6.64	47.22		25.9 14.60	34.64		26.0 31.67	19.43	
26.9 55.35	34.11		26.9 21.69	47.07		26.9 7.04	46.94		26.9 15.24	34.28		27.0 31.66	19.13	
27.9 55.54	33.88		27.9 22.14	46.77		27.9 7.39	46.66		27.9 16.01	33.91		28.0 31.64	18.84	
28.9 55.70	33.65		28.9 22.66	46.48		28.9 7.66	46.38		28.9 16.91	33.52		29.0 31.63	18.57	
29.9 55.85	33.40		29.9 23.21	46.21		29.9 7.88	46.11		29.9 17.97	33.15		30.0 31.62	18.31	
30.9 56.00	33.15		30.9 23.79	45.96		30.9 8.06	45.84		30.9 19.16	32.80		31.0 31.58	18.02	
31.9 56.17	32.87		31.9 24.37	45.76		31.9 8.24	45.54		31.9 20.40	32.46		32.0 31.54	17.70	
16.91 +16.88			24.53 -24.51			58.11 +58.11			74.14 -74.14			7.39 +7.32		
17 ^h 59 ^m 20 ^s .805			18 ^h 5 ^m 36 ^s .163			19 ^h 3 ^m 51 ^s .560			19 ^h 26 ^m 7 ^s .189			20 ^h 48 ^m 44 ^s .660		
+86° 36' 51".19			-87° 39' 52".21			+89° 0' 56".70			-89° 13' 35".99			+82° 13' 16".38		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ ¹ Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Jan.	h m ° ' "		Jan.	h m ° ' "		Jan.	h m ° ' "		Jan.	h m ° ' "		Jan.	h m ° ' "	
	21 38	-83 6		22 15	-86 23		22 37	-81 49		23 27	+86 50		23 47	-82 29
	s "			s "			s "			s "			s "	
1.1	6.92	36.69	1.1	52.12	59.54	1.2	31.91	35.75	1.2	30.51	62.88	1.2	14.19	23.41
2.1	6.83	36.35	2.1	51.87	59.21	2.2	31.80	35.48	2.2	30.17	62.87	2.2	14.03	23.23
3.1	6.76	36.01	3.1	51.66	58.88	3.2	31.70	35.19	3.2	29.81	62.86	3.2	13.88	23.03
4.1	6.71	35.67	4.1	51.48	58.56	4.2	31.61	34.89	4.2	29.41	62.86	4.2	13.75	22.81
5.1	6.66	35.34	5.1	51.33	58.25	5.2	31.53	34.64	5.2	29.00	62.84	5.2	13.62	22.61
6.1	6.62	35.05	6.1	51.17	57.97	6.1	31.46	34.39	6.2	28.56	62.78	6.2	13.50	22.41
7.1	6.57	34.78	7.1	51.01	57.72	7.1	31.39	34.14	7.2	28.13	62.68	7.2	13.39	22.25
8.1	6.50	34.50	8.1	50.83	57.47	8.1	31.30	33.92	8.2	27.69	62.58	8.2	13.26	22.10
9.1	6.42	34.24	9.1	50.64	57.21	9.1	31.22	33.71	9.2	27.30	62.46	9.2	13.12	21.96
10.1	6.34	33.95	10.1	50.42	56.94	10.1	31.11	33.48	10.2	26.93	62.33	10.2	12.97	21.80
11.1	6.25	33.64	11.1	50.19	56.66	11.1	31.00	33.24	11.2	26.59	62.20	11.2	12.82	21.63
12.1	6.16	33.31	12.1	49.95	56.38	12.1	30.88	32.97	12.2	26.27	62.07	12.2	12.66	21.46
13.1	6.07	32.98	13.1	49.72	56.06	13.1	30.77	32.70	13.2	25.98	61.95	13.2	12.50	21.27
14.1	6.00	32.63	14.1	49.50	55.72	14.1	30.67	32.40	14.2	25.68	61.83	14.2	12.34	21.04
15.1	5.94	32.26	15.1	49.31	55.38	15.1	30.57	32.08	15.2	25.36	61.73	15.2	12.20	20.81
16.1	5.89	31.89	16.1	49.13	55.04	16.1	30.48	31.77	16.2	25.04	61.63	16.2	12.05	20.57
17.1	5.85	31.53	17.1	48.99	54.69	17.1	30.41	31.44	17.2	24.69	61.52	17.2	11.92	20.33
18.1	5.83	31.16	18.1	48.87	54.33	18.1	30.36	31.11	18.2	24.33	61.42	18.2	11.81	20.06
19.1	5.82	30.82	19.1	48.76	54.00	19.1	30.30	30.81	19.1	23.96	61.29	19.2	11.70	19.80
20.1	5.80	30.48	20.1	48.66	53.67	20.1	30.25	30.52	20.1	23.59	61.12	20.2	11.60	19.55
21.1	5.78	30.17	21.1	48.55	53.34	21.1	30.20	30.22	21.1	23.21	60.96	21.2	11.49	19.31
22.1	5.75	29.85	22.1	48.45	53.05	22.1	30.14	29.93	22.1	22.84	60.76	22.2	11.39	19.09
23.1	5.72	29.53	23.1	48.33	52.74	23.1	30.08	29.64	23.1	22.50	60.56	23.2	11.28	18.85
24.1	5.68	29.24	24.1	48.20	52.45	24.1	30.01	29.37	24.1	22.16	60.34	24.1	11.16	18.64
25.1	5.64	28.92	25.1	48.04	52.13	25.1	29.92	29.08	25.1	21.87	60.12	25.1	11.03	18.41
26.1	5.60	28.55	26.1	47.86	51.79	26.1	29.84	28.78	26.1	21.59	59.90	26.1	10.89	18.18
27.1	5.54	28.19	27.1	47.71	51.43	27.1	29.75	28.44	27.1	21.35	59.70	27.1	10.75	17.91
28.1	5.50	27.80	28.1	47.57	51.05	28.1	29.68	28.08	28.1	21.11	59.50	28.1	10.62	17.63
29.0	5.49	27.38	29.1	47.47	50.63	29.1	29.62	27.70	29.1	20.88	59.33	29.1	10.49	17.30
30.0	5.49	26.96	30.1	47.38	50.23	30.1	29.57	27.31	30.1	20.61	59.18	30.1	10.38	16.98
31.0	5.51	26.56	31.1	47.33	49.81	31.1	29.54	26.92	31.1	20.33	59.03	31.1	10.29	16.64
32.0	5.54	26.17	32.1	47.31	49.41	32.1	29.53	26.52	32.1	20.02	58.85	32.1	10.20	16.28
8.33	-8.27		15.92	-15.89		7.03	-6.96		18.20	+18.17		7.65	-7.58	
21 ^h 38 ^m 10 ^s .025			22 ^h 15 ^m 56 ^s .333			22 ^h 37 ^m 32 ^s .703			23 ^h 27 ^m 44 ^s .392			23 ^h 47 ^m 12 ^s .813		
-83° 6' 23".31			-86° 23' 45".22			-81° 49' 21".11			+86° 50' 39".03			-82° 29' 8".43		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

43 H. Cephei. Mag. 4.5			α Ursae Minoris. (Polaris.) Mag. 2.1			4 G. Octantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
	h m ° '			h m ° '			h m ° '			h m ° '			h m ° '	
Feb.	0 56	+85 48	Feb.	1 28	+88 51	Feb.	1 41	-85 11	Feb.	4 9	+85 20	Feb.	5 35	+85 9
	s "	" "		s "	" "		s "	" "		s "	" "		s "	" "
0.2	52.30	52.14	0.2	79.77	52.99	0.2	65.14	50.09	0.3	56.09	26.97	0.4	11.71	47.77
1.2	52.03	52.08	1.2	78.73	52.99	1.2	64.89	49.87	1.3	55.91	27.16	1.4	11.59	48.04
2.2	51.74	52.00	2.2	77.61	52.94	2.2	64.66	49.65	2.3	55.69	27.35	2.4	11.45	48.31
3.2	51.44	51.90	3.2	76.44	52.89	3.2	64.43	49.45	3.3	55.46	27.52	3.4	11.29	48.58
4.2	51.14	51.77	4.2	75.26	52.82	4.2	64.20	49.27	4.3	55.19	27.68	4.4	11.11	48.85
5.2	50.85	51.61	5.2	74.11	52.72	5.2	63.98	49.09	5.3	54.93	27.83	5.4	10.91	49.09
6.2	50.57	51.42	6.2	73.02	52.58	6.2	63.74	48.94	6.3	54.65	27.92	6.4	10.71	49.29
7.2	50.32	51.22	7.2	72.01	52.44	7.2	63.48	48.79	7.3	54.40	28.00	7.4	10.50	49.48
8.2	50.08	51.03	8.2	71.09	52.31	8.2	63.21	48.64	8.3	54.16	28.05	8.3	10.29	49.64
9.2	49.88	50.84	9.2	70.22	52.16	9.2	62.93	48.47	9.3	53.93	28.09	9.3	10.10	49.79
10.2	49.68	50.66	10.2	69.38	52.01	10.2	62.65	48.28	10.3	53.70	28.14	10.3	9.91	49.94
11.1	49.49	50.50	11.2	68.55	51.89	11.2	62.38	48.07	11.3	53.49	28.20	11.3	9.75	50.08
12.1	49.29	50.34	12.2	67.71	51.75	12.2	62.10	47.85	12.3	53.28	28.26	12.3	9.58	50.24
13.1	49.08	50.19	13.2	66.83	51.65	13.2	61.86	47.59	13.3	53.06	28.35	13.3	9.41	50.41
14.1	48.85	50.03	14.2	65.91	51.52	14.2	61.62	47.35	14.3	52.84	28.43	14.3	9.25	50.60
15.1	48.61	49.85	15.2	64.95	51.40	15.2	61.39	47.08	15.3	52.61	28.54	15.3	9.07	50.80
16.1	48.37	49.68	16.2	63.95	51.26	16.2	61.17	46.80	16.3	52.36	28.62	16.3	8.87	50.99
17.1	48.13	49.50	17.2	62.93	51.14	17.2	60.98	46.56	17.3	52.10	28.69	17.3	8.66	51.18
18.1	47.88	49.29	18.2	61.90	50.97	18.2	60.78	46.31	18.3	51.83	28.76	18.3	8.43	51.37
19.1	47.63	49.06	19.1	60.89	50.77	19.2	60.58	46.06	19.3	51.54	28.81	19.3	8.19	51.55
20.1	47.38	48.82	20.1	59.91	50.57	20.2	60.37	45.83	20.3	51.25	28.82	20.3	7.98	51.69
21.1	47.18	48.55	21.1	59.01	50.34	21.2	60.15	45.61	21.3	50.96	28.83	21.3	7.70	51.79
22.1	46.98	48.28	22.1	58.19	50.09	22.2	59.92	45.38	22.3	50.69	28.80	22.3	7.42	51.87
23.1	46.82	48.02	23.1	57.47	49.87	23.1	59.68	45.15	23.2	50.45	28.76	23.3	7.20	51.97
24.1	46.67	47.77	24.1	56.82	49.64	24.1	59.43	44.92	24.2	50.22	28.72	24.3	6.98	52.04
25.1	46.54	47.54	25.1	56.21	49.45	25.1	59.18	44.64	25.2	50.00	28.67	25.3	6.79	52.11
26.1	46.41	47.33	26.1	55.57	49.26	26.1	58.93	44.31	26.2	49.80	28.67	26.3	6.60	52.18
27.1	46.26	47.15	27.1	54.90	49.08	27.1	58.70	43.99	27.2	49.60	28.65	27.3	6.42	52.28
28.1	46.09	46.95	28.1	54.16	48.94	28.1	58.51	43.65	28.2	49.37	28.69	28.3	6.23	52.39
29.1	45.92	46.74	29.1	53.35	48.77	29.1	58.32	43.31	29.2	49.15	28.69	29.3	6.04	52.52
30.1	45.72	46.51	30.1	52.50	48.57	30.1	58.17	42.99	30.2	48.88	28.71	30.3	5.81	52.65
31.1	45.51	46.26	31.1	51.63	48.34	31.1	58.01	42.66	31.2	48.62	28.70	31.3	5.57	52.78
13.70	+13.66		50.45	+50.44		11.94	-11.90		12.31	+12.27		11.86	+11.82	
0 ^h 57 ^m	1 ^s .657		1 ^h 29 ^m 44 ^s .254			1 ^h 42 ^m 6 ^s .102			4 ^h 9 ^m 44 ^s .952			5 ^h 34 ^m 54 ^s .014		
+85° 48'	25''.87		+88° 51'	25''.03		-85° 11'	39''.58		+85° 20'	1''.04		+85° 9'	28''.07	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

31 G. Mensee. Mag. 6.2			ζ Mensee. Mag. 5.6			51 H. Cephei. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Octantis. Mag. 6.4		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
	h m . '		h m . '			h m . '			h m . '			h m . '		
Feb.	5 46	-84 49	Feb.	6 47	-80 43	Feb.	7 2	+87 11	Feb.	7 13	+82 34	Feb.	7 16	-86 54
	s "	" "		s "	" "		s "	" "		s "	" "		s "	" "
0.4	33.18	55.82	0.4	8.47	39.94	0.4	12.56	10.87	0.4	44.78	45.40	0.4	53.69	4.25
1.4	32.93	56.01	1.4	8.37	40.22	1.4	12.51	11.19	1.4	44.77	45.72	1.4	53.37	4.55
2.4	32.69	56.20	2.4	8.27	40.49	2.4	12.43	11.52	2.4	44.76	46.04	2.4	53.08	4.84
3.4	32.46	56.35	3.4	8.16	40.73	3.4	12.31	11.86	3.4	44.73	46.38	3.4	52.80	5.12
4.4	32.24	56.52	4.4	8.06	40.97	4.4	12.15	12.19	4.4	44.68	46.71	4.4	52.53	5.38
5.4	32.03	56.71	5.4	7.97	41.24	5.4	11.94	12.50	5.4	44.62	47.01	5.4	52.29	5.66
6.4	31.81	56.92	6.4	7.87	41.51	6.4	11.71	12.79	6.4	44.53	47.30	6.4	52.05	5.97
7.4	31.59	57.14	7.4	7.79	41.82	7.4	11.48	13.06	7.4	44.44	47.57	7.4	51.82	6.28
8.4	31.37	57.36	8.4	7.69	42.13	8.4	11.23	13.31	8.4	44.37	47.81	8.4	51.57	6.61
9.4	31.14	57.59	9.4	7.58	42.44	9.4	11.00	13.56	9.4	44.29	48.04	9.4	51.30	6.96
10.4	30.89	57.81	10.4	7.48	42.76	10.4	10.79	13.78	10.4	44.22	48.27	10.4	51.02	7.30
11.3	30.62	58.04	11.4	7.37	43.08	11.4	10.59	14.01	11.4	44.17	48.49	11.4	50.71	7.63
12.3	30.35	58.24	12.4	7.24	43.36	12.4	10.41	14.24	12.4	44.11	48.73	12.4	50.38	7.95
13.3	30.08	58.40	13.4	7.12	43.62	13.4	10.22	14.49	13.4	44.05	48.97	13.4	50.03	8.25
14.3	29.81	58.55	14.4	7.00	43.87	14.4	10.04	14.76	14.4	44.00	49.24	14.4	49.67	8.54
15.3	29.54	58.70	15.4	6.87	44.10	15.4	9.84	15.02	15.4	43.94	49.50	15.4	49.31	8.81
16.3	29.27	58.81	16.4	6.74	44.31	16.4	9.62	15.30	16.4	43.86	49.79	16.4	48.95	9.05
17.3	29.02	58.91	17.4	6.62	44.51	17.4	9.39	15.59	17.4	43.78	50.08	17.4	48.60	9.29
18.3	28.77	59.02	18.4	6.50	44.71	18.4	9.11	15.87	18.4	43.70	50.35	18.4	48.26	9.54
19.3	28.52	59.13	19.4	6.38	44.91	19.4	8.80	16.14	19.4	43.59	50.63	19.4	47.93	9.77
20.3	28.28	59.26	20.4	6.26	45.13	20.4	8.48	16.39	20.4	43.47	50.87	20.4	47.61	10.02
21.3	28.04	59.41	21.4	6.16	45.36	21.4	8.14	16.62	21.4	43.34	51.12	21.4	47.29	10.26
22.3	27.78	59.55	22.4	6.03	45.60	22.4	7.79	16.81	22.4	43.22	51.32	22.4	46.98	10.54
23.3	27.51	59.73	23.4	5.90	45.85	23.4	7.45	17.01	23.4	43.09	51.52	23.4	46.65	10.83
24.3	27.24	59.89	24.4	5.78	46.11	24.4	7.13	17.17	24.4	43.00	51.69	24.4	46.29	11.13
25.3	26.95	60.03	25.4	5.64	46.36	25.4	6.85	17.32	25.4	42.89	51.84	25.4	45.91	11.42
26.3	26.66	60.13	26.4	5.50	46.61	26.4	6.60	17.49	26.4	42.80	52.01	26.4	45.49	11.71
27.3	26.34	60.26	27.3	5.35	46.81	27.4	6.35	17.68	27.4	42.72	52.20	27.4	45.06	11.95
28.3	26.03	60.35	28.3	5.20	46.99	28.4	6.11	17.87	28.4	42.65	52.42	28.4	44.60	12.19
29.3	25.74	60.39	29.3	5.05	47.15	29.4	5.84	18.10	29.4	42.57	52.64	29.4	44.17	12.38
30.3	25.45	60.41	30.3	4.90	47.29	30.3	5.54	18.33	30.4	42.47	52.88	30.4	43.73	12.55
31.3	25.17	60.44	31.3	4.76	47.42	31.3	5.21	18.56	31.4	42.34	53.11	31.4	43.32	12.73
11.10	-11.06		6.21	-6.13		20.38	+20.36		7.74	+7.68		18.51	-18.48	
5 ^h 46 ^m	26°.439		6 ^h 47 ^m	3°.489		7 ^h 1 ^m	34°.861		7 ^h 13 ^m	29°.477		7 ^h 16 ^m	40°.555	
-84° 49'	48''.17		-80° 43'	34''.16		+87° 11'	0''.11		+82° 34'	36''.50		-86° 54'	0''.14	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Brookbridge 1119. Mag. 7.0			♆ Octantis. Mag. 5.4			♁ H. Draconis. Mag. 4.6			♄ Chamaeleontis. Mag. 5.2			♂ H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Feb.	h m	° ' "	Feb.	h m	° ' "	Feb.	h m	° ' "	Feb.	h m	° ' "	Feb.	h m	° ' "
	8 16	+88 53		9 9	-85 19		9 25	+81 41		9 36	-80 33		10 21	+82 58
	s	"		s	"		s	"		s	"		s	"
0.5	29.13	13.30	0.5	15.73	42.05	0.5	27.13	49.64	0.5	29.33	49.17	0.6	12.49	58.28
1.5	29.33	13.62	1.5	15.68	42.44	1.5	27.21	49.92	1.5	29.34	49.59	1.6	12.62	58.51
2.5	29.49	13.96	2.5	15.61	42.82	2.5	27.29	50.22	2.5	29.33	49.97	2.6	12.76	58.77
3.5	29.56	14.32	3.5	15.56	43.19	3.5	27.35	50.54	3.5	29.32	50.35	3.6	12.87	59.05
4.5	29.53	14.68	4.5	15.51	43.52	4.5	27.40	50.86	4.5	29.32	50.72	4.6	12.97	59.34
5.5	29.38	15.02	5.5	15.47	43.88	5.5	27.43	51.19	5.5	29.31	51.07	5.6	13.06	59.64
6.5	29.16	15.36	6.5	15.45	44.24	6.5	27.45	51.51	6.5	29.32	51.44	6.6	13.12	59.95
7.5	28.88	15.67	7.5	15.43	44.61	7.5	27.45	51.81	7.5	29.33	51.80	7.6	13.18	60.25
8.5	28.58	15.95	8.5	15.42	45.00	8.5	27.46	52.11	8.5	29.35	52.20	8.5	13.22	60.53
9.5	28.28	16.23	9.5	15.40	45.42	9.5	27.47	52.39	9.5	29.36	52.61	9.5	13.26	60.80
10.5	28.02	16.51	10.5	15.35	45.83	10.5	27.47	52.66	10.5	29.37	53.03	10.5	13.31	61.07
11.5	27.78	16.78	11.5	15.31	46.26	11.5	27.50	52.93	11.5	29.37	53.45	11.5	13.37	61.31
12.4	27.58	17.05	12.5	15.24	46.65	12.5	27.52	53.20	12.5	29.36	53.88	12.5	13.43	61.58
13.4	27.40	17.33	13.5	15.15	47.06	13.5	27.54	53.47	13.5	29.35	54.30	13.5	13.51	61.85
14.4	27.22	17.62	14.5	15.06	47.45	14.5	27.57	53.76	14.5	29.33	54.72	14.5	13.57	62.13
15.4	27.03	17.94	15.5	14.95	47.83	15.5	27.59	54.06	15.5	29.30	55.11	15.5	13.64	62.41
16.4	26.81	18.27	16.5	14.84	48.20	16.5	27.62	54.38	16.5	29.26	55.50	16.5	13.71	62.70
17.4	26.54	18.59	17.5	14.72	48.55	17.5	27.64	54.70	17.5	29.23	55.87	17.5	13.77	63.02
18.4	26.18	18.93	18.5	14.61	48.88	18.5	27.64	55.02	18.5	29.19	56.22	18.5	13.82	63.35
19.4	25.74	19.28	19.5	14.51	49.21	19.5	27.64	55.36	19.5	29.16	56.59	19.5	13.86	63.67
20.4	25.25	19.59	20.5	14.42	49.54	20.5	27.62	55.70	20.5	29.13	56.93	20.5	13.87	64.02
21.4	24.66	19.88	21.5	14.32	49.90	21.5	27.58	56.03	21.5	29.11	57.29	21.5	13.88	64.36
22.4	24.06	20.17	22.5	14.25	50.26	22.5	27.54	56.33	22.5	29.09	57.66	22.5	13.88	64.68
23.4	23.45	20.41	23.5	14.17	50.63	23.5	27.51	56.61	23.5	29.07	58.07	23.5	13.88	64.98
24.4	22.87	20.65	24.5	14.08	51.05	24.5	27.47	56.87	24.5	29.05	58.48	24.5	13.88	65.26
25.4	22.36	20.87	25.5	13.98	51.46	25.5	27.46	57.12	25.5	29.02	58.91	25.5	13.87	65.53
26.4	21.92	21.09	26.4	13.84	51.88	26.5	27.44	57.37	26.5	28.98	59.33	26.5	13.88	65.77
27.4	21.52	21.33	27.4	13.69	52.27	27.5	27.43	57.63	27.5	28.93	59.77	27.5	13.91	66.04
28.4	21.14	21.58	28.4	13.51	52.65	28.5	27.42	57.91	28.5	28.87	60.16	28.5	13.95	66.31
29.4	20.72	21.87	29.4	13.33	53.00	29.5	27.42	58.19	29.5	28.81	60.54	29.5	13.98	66.59
30.4	20.25	22.15	30.4	13.15	53.32	30.4	27.41	58.51	30.5	28.74	60.90	30.5	14.00	66.90
31.4	19.68	22.45	31.4	12.98	53.64	31.4	27.37	58.83	31.5	28.67	61.22	31.5	14.01	67.25
51.54	+51.53		12.28	-12.24		6.93	+6.85		6.10	-6.02		8.19	+8.13	
8 ^h 14 ^m	48 ^s .311		9 ^h 9 ^m	6 ^s .085		9 ^h 25 ^m	12 ^s .930		9 ^h 36 ^m	24 ^s .003		10 ^h 20 ^m	57 ^s .259	
+98°	53' 11".43		-85°	19' 42".77		+81°	41' 57".18		-80°	33' 50".61		+82°	59' 12".27	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

77 Octantis. Mag. 6.3			Bradley 1672. Mag. 6.3			1 Octantis. Mag. 5.4			32 H. Camelop. seq. Mag. 5.3			κ Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Feb.	h m . '		Feb.	h m . '		Feb.	h m . '		Feb.	h m . '		Feb.	h m . '	
	11 0	-84 8		12 15	+88 9		12 46	-84 38		12 48	+83 51		13 27	-85 21
	s	"		s	"		s	"		s	"		s	"
0.6	2.45	26.04	0.6	3.24	31.81	0.7	6.05	54.26	0.7	39.03	43.35	0.7	9.52	14.29
1.6	2.54	26.42	1.6	3.88	31.90	1.7	6.25	54.57	1.7	39.25	43.41	1.7	9.81	14.54
2.6	2.62	26.80	2.6	4.55	32.04	2.7	6.44	54.86	2.7	39.47	43.50	2.7	10.04	14.79
3.6	2.68	27.14	3.6	5.22	32.21	3.7	6.62	55.14	3.7	39.68	43.61	3.7	10.29	15.03
4.6	2.76	27.49	4.6	5.85	32.40	4.7	6.79	55.40	4.7	39.89	43.75	4.7	10.51	15.22
5.6	2.84	27.82	5.6	6.46	32.61	5.7	6.97	55.63	5.7	40.09	43.92	5.7	10.76	15.42
6.6	2.92	28.15	6.6	6.97	32.83	6.7	7.17	55.87	6.7	40.27	44.10	6.7	11.02	15.61
7.6	3.03	28.51	7.6	7.45	33.06	7.7	7.37	56.12	7.7	40.44	44.26	7.7	11.29	15.78
8.6	3.13	28.88	8.6	7.87	33.30	8.6	7.60	56.36	8.7	40.59	44.44	8.7	11.56	15.98
9.6	3.25	29.25	9.6	8.29	33.49	9.6	7.83	56.64	9.6	40.73	44.61	9.7	11.86	16.21
10.6	3.34	29.65	10.6	8.70	33.69	10.6	8.06	56.95	10.6	40.89	44.78	10.7	12.15	16.44
11.6	3.43	30.06	11.6	9.13	33.89	11.6	8.28	57.26	11.6	41.04	44.93	11.7	12.45	16.72
12.6	3.52	30.46	12.6	9.58	34.08	12.6	8.48	57.58	12.6	41.20	45.08	12.7	12.72	16.98
13.6	3.58	30.88	13.6	10.04	34.27	13.6	8.67	57.92	13.6	41.36	45.23	13.7	13.00	17.26
14.6	3.63	31.29	14.6	10.54	34.49	14.6	8.86	58.25	14.6	41.54	45.39	14.7	13.24	17.55
15.6	3.68	31.70	15.6	11.05	34.67	15.6	9.03	58.60	15.6	41.72	45.54	15.7	13.48	17.85
16.6	3.71	32.09	16.6	11.57	34.90	16.6	9.18	58.94	16.6	41.90	45.72	16.7	13.70	18.15
17.6	3.74	32.48	17.6	12.08	35.14	17.6	9.32	59.27	17.6	42.08	45.91	17.7	13.91	18.44
18.5	3.76	32.84	18.6	12.57	35.42	18.6	9.46	59.58	18.6	42.25	46.14	18.7	14.11	18.71
19.5	3.79	33.20	19.6	13.04	35.68	19.6	9.59	59.89	19.6	42.41	46.36	19.6	14.30	18.95
20.5	3.82	33.56	20.6	13.46	35.95	20.6	9.74	60.19	20.6	42.56	46.61	20.6	14.52	19.21
21.5	3.86	33.92	21.6	13.81	36.24	21.6	9.91	60.48	21.6	42.69	46.87	21.6	14.74	19.46
22.5	3.92	34.29	22.6	14.11	36.54	22.6	10.08	60.77	22.6	42.81	47.14	22.6	14.98	19.72
23.5	3.98	34.67	23.6	14.39	36.81	23.6	10.26	61.09	23.6	42.92	47.38	23.6	15.23	19.99
24.5	4.04	35.09	24.6	14.62	37.10	24.6	10.45	61.43	24.6	43.03	47.63	24.6	15.50	20.28
25.5	4.09	35.53	25.6	14.89	37.32	25.6	10.64	61.80	25.6	43.13	47.82	25.6	15.76	20.59
26.5	4.12	35.98	26.6	15.17	37.56	26.6	10.82	62.17	26.6	43.26	48.03	26.6	16.01	20.92
27.5	4.14	36.42	27.6	15.49	37.78	27.6	10.98	62.59	27.6	43.38	48.22	27.6	16.25	21.30
28.5	4.13	36.86	28.6	15.85	38.02	28.6	11.11	62.98	28.6	43.51	48.42	28.6	16.45	21.66
29.5	4.11	37.29	29.6	16.24	38.26	29.6	11.22	63.37	29.6	43.66	48.63	29.6	16.63	22.02
30.5	4.09	37.68	30.6	16.63	38.54	30.6	11.32	63.75	30.6	43.80	48.87	30.6	16.81	22.37
31.5	4.07	38.06	31.6	17.00	38.84	31.6	11.41	64.11	31.6	43.94	49.14	31.6	16.96	22.70
9.80	-9.75		31.14	+31.12		10.76	-10.71		9.35	+9.30		12.35	-12.31	
10 ^h 59 ^m	55°.642		12 ^h 14 ^m	28°.053		12 ^h 46 ^m	1°.183		12 ^h 48 ^m	29°.976		13 ^h 27 ^m	5°.514	
-84° 8'	31''.24		+88° 9'	56''.03		-84° 40'	2''.72		+83° 52'	10''.05		-85° 21'	23''.59	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

♄ Octantis. Mag. 4.1			Groombridge 2333. Mag. 7.2			ρ Octantis. Mag. 5.7			ε Ursæ Minoris. Mag. 4.4			50 G. Apodis. Mag. 5.9		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
h m	° '		h m	° '		h m	° '		h m	° '		h m	° '	
Feb. 14 13	-83 16		Feb. 15 3	+87 32		Feb. 15 23	-84 11		Feb. 16 54	+82 10		Feb. 17 15	-80 46	
	s	"		s	"		s	"		s	"		s	"
0.7	20.51	54.74	0.8	55.42	55.37	0.8	43.28	8.22	0.8	24.64	14.13	0.9	42.24	55.50
1.7	20.73	54.94	1.8	55.91	55.26	1.8	43.55	8.30	1.8	24.76	13.87	1.9	42.41	55.39
2.7	20.93	55.13	2.8	56.45	55.15	2.8	43.80	8.38	2.8	24.89	13.62	2.9	42.57	55.30
3.7	21.12	55.30	3.8	57.00	55.06	3.8	44.05	8.45	3.8	25.02	13.37	3.8	42.72	55.21
4.7	21.31	55.46	4.8	57.56	55.00	4.8	44.28	8.49	4.8	25.17	13.15	4.8	42.86	55.10
5.7	21.49	55.60	5.8	58.12	54.97	5.8	44.50	8.53	5.8	25.33	12.94	5.8	42.99	54.98
6.7	21.69	55.73	6.8	58.65	54.96	6.8	44.73	8.54	6.8	25.47	12.78	6.8	43.13	54.84
7.7	21.89	55.85	7.7	59.15	54.97	7.8	44.99	8.56	7.8	25.62	12.63	7.8	43.27	54.68
8.7	22.11	56.00	8.7	59.63	55.00	8.8	45.25	8.58	8.8	25.75	12.50	8.8	43.42	54.52
9.7	22.33	56.12	9.7	60.09	55.02	9.8	45.53	8.61	9.8	25.91	12.37	9.8	43.58	54.36
10.7	22.56	56.29	10.7	60.54	55.04	10.8	45.81	8.65	10.8	26.04	12.25	10.8	43.75	54.21
11.7	22.79	56.46	11.7	60.99	55.05	11.8	46.09	8.72	11.8	26.18	12.13	11.8	43.92	54.09
12.7	23.01	56.68	12.7	61.44	55.04	12.7	46.38	8.80	12.8	26.31	11.99	12.8	44.10	53.97
13.7	23.23	56.90	13.7	61.91	55.03	13.7	46.66	8.90	13.8	26.45	11.83	13.8	44.29	53.87
14.7	23.44	57.14	14.7	62.41	55.02	14.7	46.93	9.02	14.8	26.59	11.68	14.8	44.46	53.82
15.7	23.63	57.38	15.7	62.92	55.01	15.7	47.18	9.15	15.8	26.74	11.51	15.8	44.63	53.75
16.7	23.81	57.61	16.7	63.45	55.01	16.7	47.43	9.28	16.8	26.90	11.35	16.8	44.80	53.71
17.7	23.99	57.84	17.7	63.99	55.03	17.7	47.67	9.41	17.8	27.06	11.20	17.8	44.96	53.67
18.7	24.16	58.06	18.7	64.54	55.06	18.7	47.90	9.55	18.8	27.23	11.06	18.8	45.11	53.64
19.7	24.33	58.27	19.7	65.09	55.12	19.7	48.12	9.66	19.8	27.40	10.95	19.8	45.25	53.59
20.7	24.50	58.46	20.7	65.62	55.20	20.7	48.35	9.77	20.8	27.56	10.86	20.8	45.40	53.51
21.7	24.68	58.65	21.7	66.13	55.30	21.7	48.58	9.84	21.8	27.73	10.80	21.8	45.55	53.42
22.7	24.87	58.85	22.7	66.60	55.42	22.7	48.83	9.92	22.8	27.89	10.76	22.8	45.71	53.34
23.7	25.08	59.06	23.7	67.04	55.54	23.7	49.10	10.02	23.8	28.05	10.74	23.8	45.88	53.24
24.7	25.29	59.29	24.7	67.47	55.65	24.7	49.37	10.13	24.8	28.20	10.71	24.8	46.05	53.14
25.7	25.50	59.54	25.7	67.87	55.74	25.7	49.66	10.26	25.8	28.34	10.67	25.8	46.24	53.07
26.7	25.71	59.81	26.7	68.27	55.81	26.7	49.95	10.41	26.8	28.49	10.62	26.8	46.44	53.02
27.7	25.92	60.12	27.7	68.69	55.88	27.7	50.23	10.60	27.8	28.62	10.54	27.8	46.64	53.00
28.7	26.11	60.43	28.7	69.14	55.94	28.7	50.50	10.82	28.8	28.76	10.46	28.8	46.83	53.02
29.7	26.27	60.75	29.7	69.63	56.00	29.7	50.74	11.03	29.8	28.93	10.37	29.8	47.02	53.03
30.6	26.42	61.04	30.7	70.14	56.08	30.7	50.96	11.24	30.8	29.10	10.30	30.8	47.18	53.06
31.6	26.57	61.33	31.7	70.65	56.19	31.7	51.18	11.42	31.8	29.27	10.23	31.8	47.34	53.11
8.55	-8.49		23.38	+23.36		9.87	-9.82		7.34	+7.27		6.24	-6.16	
14 ^h 13 ^m 18 ^s .531	15 ^h 4 ^m 0 ^s .607		15 ^h 23 ^m 43 ^s .237	16 ^h 54 ^m 31 ^s .741		17 ^h 15 ^m 43 ^s .730								
-83° 17'	4'' .27		+87° 33' 24'' .43	-84° 11' 17'' .84		+82° 10' 38'' .40						-80° 47' 2'' .69		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Ursæ Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursæ Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
	h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "
Feb.	17 58	+86 36	Feb.	18 5	-87 39	Feb.	19 2	+89 0	Feb.	19 25	-89 13	Feb.	20 48	+82 13
	s	"		s	"		s	"		s	"		s	"
0.9	56.17	32.87	0.9	24.37	45.76	0.9	8.24	45.54	0.9	20.40	32.46	1.0	31.54	17.70
1.9	56.35	32.55	1.9	24.93	45.57	1.9	8.47	45.21	1.9	21.64	32.15	2.0	31.51	17.36
2.9	56.55	32.24	2.9	25.47	45.38	2.9	8.78	44.87	2.9	22.83	31.87	2.9	31.49	17.01
3.9	56.78	31.94	3.9	25.98	45.19	3.9	9.22	44.52	3.9	23.93	31.59	3.9	31.47	16.65
4.9	57.04	31.65	4.9	26.45	45.02	4.9	9.76	44.19	4.9	24.91	31.31	4.9	31.46	16.28
5.9	57.31	31.39	5.9	26.90	44.81	5.9	10.39	43.89	5.9	25.84	31.03	5.9	31.47	15.93
6.9	57.59	31.16	6.9	27.35	44.58	6.9	11.08	43.60	6.9	26.72	30.73	6.9	31.50	15.59
7.9	57.87	30.93	7.9	27.81	44.34	7.9	11.78	43.32	7.9	27.63	30.41	7.9	31.52	15.26
8.9	58.14	30.74	8.9	28.31	44.09	8.9	12.48	43.07	8.9	28.63	30.08	8.9	31.55	14.94
9.9	58.40	30.56	9.9	28.84	43.84	9.9	13.14	42.83	9.9	29.71	29.74	9.9	31.58	14.61
10.9	58.65	30.37	10.9	29.40	43.60	10.9	13.76	42.59	10.9	30.88	29.41	10.9	31.61	14.35
11.9	58.91	30.19	11.9	30.00	43.37	11.9	14.35	42.35	11.9	32.15	29.08	11.9	31.64	14.07
12.9	59.15	29.98	12.9	30.60	43.16	12.9	14.92	42.10	12.9	33.50	28.76	12.9	31.66	13.77
13.8	59.40	29.77	13.9	31.23	42.97	13.9	15.50	41.84	13.9	34.92	28.44	13.9	31.68	13.46
14.8	59.67	29.55	14.9	31.85	42.82	14.9	16.09	41.57	14.9	36.36	28.16	14.9	31.70	13.14
15.8	59.94	29.32	15.8	32.45	42.67	15.9	16.71	41.28	15.9	37.82	27.89	15.9	31.72	12.82
16.8	60.21	29.09	16.8	33.04	42.53	16.9	17.39	41.01	16.9	39.24	27.64	16.9	31.74	12.48
17.8	60.52	28.85	17.8	33.61	42.40	17.9	18.13	40.73	17.9	40.62	27.39	17.9	31.77	12.15
18.8	60.84	28.62	18.8	34.17	42.28	18.9	18.96	40.45	18.9	41.95	27.15	18.9	31.80	11.77
19.8	61.18	28.43	19.8	34.69	42.16	19.9	19.87	40.20	19.9	43.20	26.92	19.9	31.85	11.44
20.8	61.52	28.26	20.8	35.20	42.00	20.9	20.83	39.96	20.9	44.41	26.66	20.9	31.90	11.09
21.8	61.87	28.11	21.8	35.74	41.82	21.9	21.82	39.73	21.9	45.63	26.38	21.9	31.97	10.77
22.8	62.21	27.97	22.8	36.29	41.65	22.9	22.81	39.52	22.9	46.87	26.10	22.9	32.04	10.46
23.8	62.54	27.87	23.8	36.88	41.45	23.9	23.77	39.33	23.9	48.20	25.80	23.9	32.12	10.19
24.8	62.84	27.78	24.8	37.51	41.27	24.9	24.66	39.17	24.9	49.66	25.50	24.9	32.20	9.93
25.8	63.13	27.66	25.8	38.19	41.11	25.9	25.48	38.98	25.9	51.26	25.21	25.9	32.26	9.68
26.8	63.42	27.54	26.8	38.89	40.96	26.9	26.24	38.80	26.9	52.98	24.94	26.9	32.32	9.44
27.8	63.70	27.40	27.8	39.61	40.85	27.9	26.98	38.60	27.9	54.77	24.68	27.9	32.38	9.18
28.8	63.98	27.24	28.8	40.31	40.78	28.9	27.75	38.38	28.9	56.58	24.44	28.9	32.43	8.91
29.8	64.30	27.09	29.8	40.97	40.72	29.9	28.58	38.16	29.9	58.35	24.24	29.9	32.48	8.58
30.8	64.63	26.95	30.8	41.61	40.67	30.9	29.49	37.93	30.9	60.04	24.05	30.9	32.54	8.26
31.8	64.99	26.77	31.8	42.21	40.60	31.8	30.51	37.72	31.9	61.61	23.86	31.9	32.62	7.94
16.90	+16.87		24.51	-24.49		57.96	+57.95		73.88	-73.87		7.39	+7.32	
17 ^h 59 ^m	20°.805		18 ^h 5 ^m	36°.163		19 ^h 3 ^m	51°.560		19 ^h 26 ^m	7°.189		20 ^h 48 ^m	44°.600	
+86° 36'	51''.19		-87° 39'	52''.21		+89° 0'	56''.70		-89° 13'	35''.99		+82° 13'	16''.33	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ^1 Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
	h m	° '		h m	° '		h m	° '		h m	° '		h m	° '
Feb.	21 38	-83 6	Feb.	22 15	-86 23	Feb.	22 37	-81 49	Feb.	23 27	+86 50	Feb.	23 47	-82 29
	s	"		s	"		s	"		s	"		s	"
1.0	5.54	26.17	1.1	47.31	49.41	1.1	29.53	26.52	1.1	20.02	58.85	1.1	10.20	16.28
2.0	5.58	25.81	2.1	47.30	49.04	2.1	29.52	26.16	2.1	19.70	58.66	2.1	10.12	15.94
3.0	5.62	25.46	3.1	47.29	48.66	3.1	29.51	25.82	3.1	19.38	58.44	3.1	10.06	15.62
4.0	5.64	25.12	4.1	47.27	48.32	4.1	29.48	25.49	4.1	19.06	58.18	4.1	9.99	15.33
5.0	5.66	24.81	5.1	47.22	47.98	5.1	29.44	25.16	5.1	18.77	57.91	5.1	9.90	15.05
6.0	5.66	24.48	6.0	47.17	47.67	6.1	29.41	24.86	6.1	18.51	57.64	6.1	9.81	14.76
7.0	5.65	24.13	7.0	47.08	47.31	7.1	29.35	24.54	7.1	18.29	57.35	7.1	9.71	14.49
8.0	5.64	23.76	8.0	47.00	46.94	8.1	29.30	24.20	8.1	18.08	57.08	8.1	9.60	14.21
9.0	5.64	23.39	9.0	46.91	46.58	9.1	29.25	23.83	9.1	17.90	56.81	9.1	9.48	13.90
10.0	5.63	22.98	10.0	46.84	46.19	10.1	29.20	23.46	10.1	17.74	56.55	10.1	9.38	13.57
11.0	5.65	22.57	11.0	46.79	45.75	11.1	29.17	23.06	11.1	17.57	56.31	11.1	9.28	13.21
12.0	5.69	22.16	12.0	46.77	45.34	12.0	29.15	22.67	12.1	17.39	56.08	12.1	9.19	12.86
13.0	5.73	21.76	13.0	46.76	44.92	13.0	29.14	22.27	13.1	17.21	55.84	13.1	9.12	12.51
14.0	5.78	21.36	14.0	46.79	44.51	14.0	29.14	21.87	14.1	17.00	55.59	14.1	9.06	12.14
15.0	5.84	20.99	15.0	46.83	44.12	15.0	29.14	21.48	15.1	16.78	55.35	15.1	8.99	11.76
15.9	5.91	20.61	16.0	46.87	43.74	16.0	29.15	21.09	16.1	16.56	55.08	16.1	8.94	11.39
16.9	5.97	20.27	17.0	46.92	43.37	17.0	29.16	20.73	17.1	16.34	54.81	17.1	8.90	11.06
17.9	6.04	19.93	18.0	46.98	43.01	18.0	29.17	20.39	18.1	16.11	54.51	18.1	8.85	10.71
18.9	6.09	19.59	19.0	47.02	42.69	19.0	29.17	20.04	19.1	15.91	54.21	19.1	8.81	10.39
19.9	6.15	19.25	20.0	47.04	42.32	20.0	29.17	19.70	20.1	15.73	53.89	20.1	8.75	10.06
20.9	6.19	18.92	21.0	47.05	41.97	21.0	29.16	19.36	21.1	15.59	53.56	21.1	8.68	9.74
21.9	6.22	18.56	22.0	47.05	41.61	22.0	29.15	19.00	22.1	15.48	53.22	22.1	8.61	9.42
22.9	6.25	18.19	23.0	47.04	41.23	23.0	29.13	18.62	23.1	15.39	52.90	23.1	8.52	9.09
23.9	6.29	17.80	24.0	47.05	40.83	24.0	29.11	18.22	24.0	15.33	52.62	24.1	8.44	8.72
24.9	6.34	17.38	24.9	47.07	40.41	25.0	29.11	17.80	25.0	15.27	52.35	25.1	8.38	8.31
25.9	6.42	16.97	25.9	47.11	39.97	26.0	29.12	17.38	26.0	15.19	52.10	26.1	8.33	7.90
26.9	6.51	16.56	26.9	47.20	39.52	27.0	29.15	16.93	27.0	15.10	51.84	27.1	8.29	7.48
27.9	6.61	16.14	27.9	47.32	39.08	28.0	29.20	16.52	28.0	14.98	51.60	28.1	8.27	7.06
28.9	6.72	15.77	28.9	47.48	38.69	29.0	29.25	16.11	29.0	14.85	51.33	29.1	8.26	6.65
29.9	6.84	15.42	29.9	47.61	38.32	30.0	29.29	15.73	30.0	14.71	51.03	30.0	8.25	6.26
30.9	6.95	15.09	30.9	47.75	37.99	30.9	29.34	15.38	31.0	14.57	50.71	31.0	8.25	5.88
31.9	7.04	14.77	31.9	47.87	37.65	31.9	29.38	15.04	32.0	14.46	50.35	32.0	8.24	5.51
8.33	-8.27		15.91	-15.88		7.03	-6.96		18.19	+18.16		7.65	-7.58	
21 ^h 38 ^m	10° 02'		22 ^h 15 ^m	56° 33'		22 ^h 37 ^m	32° 70'		23 ^h 27 ^m	44° 39'		23 ^h 47 ^m	12° 81'	
-83° 6'	23'' 31		-86° 23'	45'' 22		-81° 49'	21'' 11		+86° 50'	39'' 03		-82° 29'	8'' 43	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

43 H. Cephei. Mag. 4.5			α Urae Minoris. (Polaris.) Mag. 2.1			4 G. Octantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
	h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "
Mar.	0 56	+85 48	Mar.	1 28	+88 51	Mar.	1 41	-85 11	Mar.	4 9	+85 20	Mar.	5 34	+85 9
	s	"		s	"		s	"		s	"		s	"
0.1	45.92	46.74	0.1	53.35	48.77	0.1	58.32	43.31	0.2	49.15	28.69	0.3	66.04	52.52
1.1	45.72	46.51	1.1	52.50	48.57	1.1	58.17	42.99	1.2	48.88	28.71	1.3	65.81	52.65
2.1	45.51	46.26	2.1	51.63	48.34	2.1	58.01	42.66	2.2	48.62	28.70	2.3	65.57	52.78
3.1	45.32	45.99	3.1	50.78	48.10	3.1	57.85	42.38	3.2	48.33	28.68	3.3	65.29	52.88
4.1	45.14	45.70	4.1	50.00	47.83	4.1	57.68	42.09	4.2	48.04	28.61	4.3	65.03	52.95
5.1	44.99	45.38	5.1	49.30	47.56	5.1	57.49	41.81	5.2	47.77	28.53	5.3	64.75	52.99
6.1	44.86	45.06	6.1	48.68	47.26	6.1	57.29	41.55	6.2	47.50	28.41	6.3	64.48	53.00
7.1	44.75	44.76	7.1	48.15	46.98	7.1	57.09	41.28	7.2	47.26	28.31	7.3	64.23	53.00
8.1	44.67	44.47	8.1	47.68	46.70	8.1	56.88	41.01	8.2	47.03	28.18	8.3	63.99	52.98
9.1	44.59	44.19	9.1	47.23	46.45	9.1	56.68	40.68	9.2	46.81	28.08	9.3	63.76	52.97
10.1	44.50	43.91	10.1	46.79	46.20	10.1	56.48	40.35	10.2	46.60	27.97	10.3	63.54	52.98
11.1	44.42	43.65	11.1	46.32	45.95	11.1	56.29	39.98	11.2	46.39	27.87	11.3	63.33	52.99
12.1	44.32	43.39	12.1	45.82	45.70	12.1	56.13	39.63	12.2	46.17	27.78	12.3	63.12	53.01
13.1	44.22	43.12	13.1	45.28	45.46	13.1	55.97	39.25	13.2	45.96	27.72	13.3	62.90	53.02
14.1	44.11	42.84	14.1	44.72	45.21	14.1	55.84	38.88	14.2	45.72	27.63	14.3	62.67	53.06
15.1	43.98	42.57	15.1	44.12	44.93	15.1	55.71	38.53	15.2	45.49	27.54	15.3	62.44	53.10
16.1	43.85	42.27	16.1	43.53	44.65	16.1	55.60	38.19	16.2	45.23	27.45	16.3	62.18	53.12
17.1	43.74	41.96	17.1	42.95	44.37	17.1	55.48	37.84	17.2	44.97	27.35	17.2	61.91	53.13
18.1	43.63	41.63	18.1	42.40	44.06	18.1	55.35	37.51	18.2	44.70	27.22	18.2	61.64	53.11
19.0	43.54	41.30	19.1	41.92	43.74	19.1	55.23	37.19	19.2	44.46	27.06	19.2	61.36	53.08
20.0	43.49	40.97	20.1	41.53	43.42	20.1	55.10	36.88	20.2	44.21	26.89	20.2	61.09	53.03
21.0	43.44	40.62	21.1	41.25	43.08	21.1	54.94	36.58	21.2	43.98	26.68	21.2	60.83	52.94
22.0	43.44	40.29	22.1	41.04	42.76	22.1	54.78	36.27	22.2	43.77	26.47	22.2	60.59	52.84
23.0	43.45	39.98	23.1	40.89	42.47	23.1	54.62	35.91	23.2	43.59	26.28	23.2	60.36	52.74
24.0	43.45	39.70	24.1	40.76	42.18	24.1	54.46	35.53	24.2	43.42	26.09	24.2	60.18	52.65
25.0	43.45	39.43	25.1	40.60	41.91	25.1	54.32	35.14	25.2	43.27	25.94	25.2	59.98	52.56
26.0	43.44	39.18	26.1	40.40	41.67	26.1	54.20	34.73	26.2	43.11	25.78	26.2	59.80	52.50
27.0	43.41	38.92	27.0	40.12	41.42	27.1	54.10	34.30	27.2	42.93	25.66	27.2	59.61	52.46
28.0	43.36	38.65	28.0	39.79	41.16	28.1	54.02	33.89	28.2	42.74	25.53	28.2	59.38	52.43
29.0	43.31	38.36	29.0	39.42	40.87	29.1	53.96	33.51	29.2	42.51	25.38	29.2	59.15	52.40
30.0	43.26	38.04	30.0	39.07	40.55	30.1	53.90	33.13	30.2	42.29	25.20	30.2	58.90	52.33
31.0	43.21	37.69	31.0	38.78	40.23	31.0	53.84	32.80	31.2	42.06	24.99	31.2	58.63	52.24
13.69	+13.66		50.37	+50.36		11.94	-11.89		12.31	+12.27		11.86	+11.82	
0 ^h 57 ^m	1°.657		1 ^h 29 ^m	44°.254		1 ^h 42 ^m	6°.102		4 ^h 9 ^m	44°.952		5 ^h 34 ^m	54°.014	
+85° 48'	25''.87		+88° 51'	25''.03		-85° 11'	39''.58		+85° 20'	1''.04		+85° 9'	28''.07	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

51 G. Mensse. Mag. 6.2			ζ Mensse. Mag. 5.6			51 H. Cephei. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Octantis. Mag. 6.4		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Mar.	h m s	° ' "	Mar.	h m s	° ' "	Mar.	h m s	° ' "	Mar.	h m s	° ' "	Mar.	h m s	° ' "
	5 46	-84 50		6 47	-80 43		7 1	+87 11		7 13	+82 34		7 16	-86 54
0.3	25.74	0.39	0.3	5.05	47.15	0.4	65.84	18.10	0.4	42.57	52.64	0.4	44.17	12.38
1.3	25.45	0.41	1.3	4.90	47.29	1.3	65.54	18.33	1.4	42.47	52.88	1.4	43.73	12.55
2.3	25.17	0.44	2.3	4.76	47.42	2.3	65.21	18.56	2.4	42.34	53.11	2.4	43.32	12.73
3.3	24.91	0.49	3.3	4.62	47.54	3.3	64.84	18.80	3.4	42.21	53.34	3.4	42.94	12.90
4.3	24.65	0.56	4.3	4.49	47.70	4.3	64.43	18.98	4.3	42.06	53.54	4.4	42.56	13.09
5.3	24.39	0.63	5.3	4.36	47.86	5.3	64.02	19.13	5.3	41.91	53.72	5.3	42.20	13.30
6.3	24.13	0.71	6.3	4.22	48.04	6.3	63.60	19.27	6.3	41.75	53.86	6.3	41.82	13.53
7.3	23.86	0.81	7.3	4.09	48.24	7.3	63.18	19.41	7.3	41.60	54.00	7.3	41.44	13.76
8.3	23.57	0.91	8.3	3.95	48.43	8.3	62.81	19.52	8.3	41.46	54.14	8.3	41.03	13.99
9.3	23.28	0.99	9.3	3.80	48.61	9.3	62.44	19.61	9.3	41.33	54.26	9.3	40.62	14.22
10.3	22.97	1.05	10.3	3.66	48.78	10.3	62.09	19.74	10.3	41.20	54.37	10.3	40.18	14.45
11.3	22.66	1.09	11.3	3.50	48.93	11.3	61.75	19.86	11.3	41.09	54.49	11.3	39.73	14.64
12.3	22.37	1.11	12.3	3.34	49.08	12.3	61.42	19.97	12.3	40.98	54.63	12.3	39.25	14.82
13.3	22.07	1.12	13.3	3.18	49.18	13.3	61.08	20.11	13.3	40.85	54.77	13.3	38.79	14.97
14.3	21.77	1.11	14.3	3.03	49.26	14.3	60.71	20.25	14.3	40.72	54.92	14.3	38.32	15.11
15.3	21.49	1.07	15.3	2.87	49.34	15.3	60.34	20.39	15.3	40.60	55.07	15.3	37.86	15.25
16.3	21.20	1.03	16.3	2.72	49.40	16.3	59.94	20.53	16.3	40.45	55.22	16.3	37.42	15.36
17.3	20.93	0.99	17.3	2.57	49.46	17.3	59.52	20.68	17.3	40.30	55.36	17.3	36.99	15.47
18.3	20.67	0.97	18.3	2.42	49.54	18.3	59.07	20.80	18.3	40.12	55.51	18.3	36.56	15.60
19.2	20.40	0.96	19.3	2.28	49.62	19.3	58.62	20.90	19.3	39.95	55.61	19.3	36.15	15.73
20.2	20.13	0.97	20.3	2.14	49.72	20.3	58.15	20.95	20.3	39.78	55.70	20.3	35.75	15.87
21.2	19.87	1.01	21.3	2.00	49.83	21.3	57.69	21.01	21.3	39.60	55.77	21.3	35.34	16.04
22.2	19.58	1.02	22.3	1.86	49.97	22.3	57.26	21.02	22.3	39.45	55.81	22.3	34.91	16.22
23.2	19.29	1.03	23.3	1.70	50.10	23.3	56.86	21.02	23.3	39.30	55.85	23.3	34.46	16.39
24.2	18.98	1.02	24.3	1.53	50.20	24.3	56.49	21.05	24.3	39.17	55.88	24.3	33.98	16.55
25.2	18.67	1.00	25.3	1.36	50.29	25.3	56.14	21.08	25.3	39.04	55.91	25.3	33.47	16.69
26.2	18.36	0.93	26.3	1.20	50.34	26.3	55.81	21.12	26.3	38.93	55.96	26.3	32.94	16.79
27.2	18.06	0.85	27.3	1.04	50.38	27.3	55.45	21.16	27.3	38.81	56.00	27.3	32.44	16.89
28.2	17.77	0.74	28.3	0.87	50.37	28.3	55.09	21.24	28.3	38.67	56.11	28.3	31.93	16.92
29.2	17.49	0.63	29.3	0.72	50.36	29.3	54.68	21.32	29.3	38.53	56.21	29.3	31.46	16.96
30.2	17.22	0.54	30.3	0.56	50.36	30.3	54.25	21.38	30.3	38.37	56.30	30.3	31.00	17.01
31.2	16.97	0.44	31.3	0.42	50.35	31.3	53.79	21.42	31.3	38.19	56.36	31.3	30.57	17.04
11.11	-11.06		6.21	-6.13		20.39	+20.37		7.75	+7.68		18.52	-18.49	
5 ^h 46 ^m 26 ^s .439			6 ^h 47 ^m 3 ^s .489			7 ^h 1 ^m 34 ^s .861			7 ^h 13 ^m 29 ^s .477		7 ^h 16 ^m 40 ^s .555			
-84° 49' 48".17			-80° 43' 34".16			+87° 11' 0".11			+82° 34' 36".50		-86° 54' 0".14			

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			ζ Octantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			ζ Chameleontis. Mag. 5.2			30 H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Mar.	h m 8 15	° ' +88 53	Mar.	h m 9 9	° ' -85 19	Mar.	h m 9 25	° ' +81 41	Mar.	h m 9 36	° ' -80 34	Mar.	h m 10 21	° ' +82 50
0.4	80.72	21.87	0.4	13.33	53.00	0.5	27.42	58.19	0.5	28.81	0.54	0.5	13.98	6.59
1.4	80.25	22.15	1.4	13.15	53.32	1.4	27.41	58.51	1.5	28.74	0.90	1.5	14.00	6.90
2.4	79.68	22.45	2.4	12.98	53.64	2.4	27.37	58.83	2.5	28.67	1.22	2.5	14.01	7.25
3.4	79.01	22.74	3.4	12.83	53.95	3.4	27.33	59.16	3.5	28.61	1.56	3.5	14.01	7.59
4.4	78.25	23.02	4.4	12.68	54.24	4.4	27.28	59.49	4.4	28.55	1.89	4.5	13.98	7.92
5.4	77.43	23.27	5.4	12.55	54.55	5.4	27.21	59.78	5.4	28.50	2.23	5.5	13.94	8.27
6.4	76.59	23.50	6.4	12.41	54.90	6.4	27.13	60.06	6.4	28.45	2.59	6.5	13.90	8.59
7.4	75.75	23.73	7.4	12.27	55.24	7.4	27.05	60.34	7.4	28.41	2.96	7.5	13.85	8.88
8.4	74.93	23.92	8.4	12.14	55.61	8.4	26.99	60.57	8.4	28.35	3.33	8.5	13.80	9.16
9.4	74.16	24.11	9.4	11.98	55.99	9.4	26.92	60.80	9.4	28.30	3.71	9.5	13.75	9.44
10.4	73.42	24.29	10.4	11.80	56.37	10.4	26.87	61.04	10.4	28.24	4.10	10.5	13.72	9.71
11.4	72.72	24.47	11.4	11.62	56.71	11.4	26.80	61.29	11.4	28.17	4.48	11.5	13.68	9.98
12.4	72.04	24.67	12.4	11.42	57.06	12.4	26.76	61.54	12.4	28.09	4.82	12.5	13.65	10.26
13.4	71.35	24.88	13.4	11.22	57.39	13.4	26.71	61.81	13.4	28.01	5.18	13.5	13.63	10.54
14.4	70.63	25.11	14.4	11.01	57.67	14.4	26.66	62.08	14.4	27.92	5.53	14.5	13.62	10.82
15.4	69.89	25.34	15.4	10.77	57.97	15.4	26.59	62.36	15.4	27.83	5.85	15.5	13.58	11.13
16.4	69.08	25.56	16.4	10.57	58.25	16.4	26.53	62.64	16.4	27.74	6.14	16.4	13.53	11.45
17.4	68.22	25.78	17.4	10.36	58.51	17.4	26.44	62.93	17.4	27.65	6.42	17.4	13.48	11.77
18.4	67.27	26.01	18.4	10.16	58.77	18.4	26.35	63.21	18.4	27.57	6.70	18.4	13.42	12.09
19.4	66.26	26.20	19.4	9.97	59.04	19.4	26.26	63.48	19.4	27.48	7.00	19.4	13.33	12.41
20.4	65.23	26.38	20.4	9.78	59.32	20.4	26.14	63.72	20.4	27.42	7.32	20.4	13.24	12.71
21.3	64.18	26.53	21.4	9.61	59.63	21.4	26.03	63.94	21.4	27.35	7.64	21.4	13.14	12.96
22.3	63.16	26.67	22.4	9.43	59.94	22.4	25.92	64.14	22.4	27.28	7.97	22.4	13.05	13.25
23.3	62.20	26.78	23.4	9.23	60.27	23.4	25.82	64.32	23.4	27.20	8.34	23.4	12.95	13.48
24.3	61.30	26.88	24.4	9.01	60.60	24.4	25.73	64.50	24.4	27.12	8.69	24.4	12.87	13.69
25.3	60.48	26.99	25.4	8.78	60.92	25.4	25.65	64.67	25.4	27.02	9.03	25.4	12.81	13.92
26.3	59.70	27.12	26.4	8.53	61.23	26.4	25.59	64.86	26.4	26.92	9.37	26.4	12.75	14.14
27.3	58.91	27.26	27.4	8.26	61.49	27.4	25.52	65.06	27.4	26.80	9.67	27.4	12.69	14.37
28.3	58.09	27.40	28.4	7.99	61.72	28.4	25.44	65.28	28.4	26.70	9.95	28.4	12.63	14.64
29.3	57.18	27.57	29.4	7.74	61.95	29.4	25.35	65.50	29.4	26.58	10.20	29.4	12.56	14.92
30.3	56.19	27.71	30.4	7.49	62.15	30.4	25.25	65.74	30.4	26.47	10.44	30.4	12.47	15.20
31.3	55.13	27.86	31.4	7.25	62.36	31.4	25.14	65.99	31.4	26.36	10.68	31.4	12.37	15.49
51.64	+51.63	12.29	-12.25	6.93	+6.86	6.10	-6.02	8.19	+8.13					
8 ^h 14 ^m	48°.311	9 ^h 9 ^m	6°.085	9 ^h 25 ^m	12°.930	9 ^h 36 ^m	24°.003	10 ^h 20 ^m	57°.259					
+88° 53'	11''.43	-85° 19'	42''.77	+81° 41'	57''.18	-80° 33'	50''.61	+82° 59'	12''.27					

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

7 Octantis. Mag. 6.3			Bradley 1672. Mag. 6.3			2 Octantis. Mag. 5.4			38 H. Camelop. seq. Mag. 5.3			κ Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Mar.	h m	° '	Mar.	h m	° '	Mar.	h m	° '	Mar.	h m	° '	Mar.	h m	° '
	s	"		s	"		s	"		s	"		s	"
0.5	4.11	37.29	0.6	16.24	38.26	0.6	11.22	3.37	0.6	43.66	48.63	0.6	16.63	22.02
1.5	4.09	37.68	1.6	16.63	38.54	1.6	11.32	3.75	1.6	43.80	48.87	1.6	16.81	22.37
2.5	4.07	38.06	2.6	17.00	38.84	2.6	11.41	4.11	2.6	43.94	49.14	2.6	16.96	22.70
3.5	4.05	38.42	3.6	17.31	39.15	3.6	11.51	4.46	3.6	44.07	49.42	3.6	17.10	23.01
4.5	4.03	38.78	4.6	17.57	39.48	4.6	11.61	4.78	4.6	44.18	49.74	4.6	17.28	23.31
5.5	4.04	39.14	5.6	17.77	39.81	5.6	11.75	5.11	5.6	44.27	50.05	5.6	17.46	23.59
6.5	4.05	39.51	6.6	17.92	40.13	6.6	11.87	5.44	6.6	44.34	50.36	6.6	17.66	23.87
7.5	4.06	39.90	7.6	18.04	40.45	7.6	12.00	5.78	7.6	44.40	50.65	7.6	17.86	24.19
8.5	4.07	40.31	8.6	18.13	40.75	8.6	12.14	6.15	8.6	44.46	50.94	8.6	18.08	24.51
9.5	4.08	40.73	9.5	18.25	41.03	9.6	12.29	6.52	9.6	44.54	51.22	9.6	18.28	24.85
10.5	4.07	41.16	10.5	18.37	41.32	10.6	12.42	6.92	10.6	44.62	51.49	10.6	18.48	25.21
11.5	4.04	41.59	11.5	18.50	41.58	11.6	12.53	7.33	11.6	44.69	51.75	11.6	18.67	25.58
12.5	4.01	42.01	12.5	18.68	41.85	12.6	12.62	7.72	12.6	44.78	52.02	12.6	18.83	25.95
13.5	3.96	42.40	13.5	18.85	42.13	13.6	12.71	8.14	13.6	44.86	52.29	13.6	18.98	26.34
14.5	3.90	42.79	14.5	19.04	42.42	14.6	12.77	8.54	14.6	44.95	52.56	14.6	19.13	26.73
15.5	3.84	43.18	15.5	19.23	42.73	15.6	12.83	8.93	15.6	45.05	52.83	15.6	19.25	27.09
16.5	3.77	43.55	16.5	19.40	43.05	16.5	12.89	9.30	16.6	45.13	53.14	16.6	19.35	27.47
17.5	3.71	43.89	17.5	19.54	43.38	17.5	12.93	9.65	17.5	45.19	53.46	17.6	19.46	27.80
18.5	3.65	44.25	18.5	19.64	43.71	18.5	12.98	10.01	18.5	45.25	53.78	18.6	19.57	28.13
19.5	3.60	44.60	19.5	19.68	44.06	19.5	13.04	10.35	19.5	45.30	54.12	19.6	19.70	28.46
20.5	3.55	44.95	20.5	19.67	44.43	20.5	13.12	10.70	20.5	45.32	54.46	20.6	19.84	28.78
21.5	3.52	45.30	21.5	19.61	44.76	21.5	13.21	11.06	21.5	45.33	54.81	21.6	19.99	29.10
22.5	3.49	45.70	22.5	19.52	45.08	22.5	13.31	11.43	22.5	45.34	55.13	22.6	20.14	29.46
23.5	3.46	46.11	23.5	19.42	45.37	23.5	13.41	11.83	23.5	45.34	55.43	23.6	20.31	29.83
24.5	3.41	46.53	24.5	19.34	45.65	24.5	13.49	12.24	24.5	45.35	55.71	24.6	20.47	30.24
25.5	3.35	46.96	25.5	19.29	45.92	25.5	13.56	12.68	25.5	45.36	55.97	25.6	20.62	30.65
26.4	3.26	47.37	26.5	19.30	46.19	26.5	13.62	13.10	26.5	45.40	56.24	26.6	20.73	31.07
27.4	3.16	47.76	27.5	19.33	46.46	27.5	13.64	13.54	27.5	45.45	56.50	27.5	20.82	31.49
28.4	3.05	48.14	28.5	19.37	46.76	28.5	13.65	13.94	28.5	45.49	56.78	28.5	20.88	31.89
29.4	2.93	48.48	29.5	19.39	47.08	29.5	13.65	14.33	29.5	45.53	57.08	29.5	20.94	32.26
30.4	2.82	48.80	30.5	19.38	47.41	30.5	13.65	14.68	30.5	45.55	57.41	30.5	21.00	32.63
31.4	2.72	49.12	31.5	19.32	47.76	31.5	13.65	15.04	31.5	45.56	57.77	31.5	21.06	32.98
9.80	-9.75		31.18	+31.16		10.76	-10.72		9.36	+9.30		12.35	-12.31	
10 ^h 59 ^m 55 ^s .642			12 ^h 14 ^m 28 ^s .053			12 ^h 46 ^m 1 ^s .183			12 ^h 48 ^m 29 ^s .976			13 ^h 27 ^m 5 ^s .514		
-84° 8' 31".24			+88° 9' 56".03			-84° 40' 2".72			+83° 52' 10".05			-85° 21' 23".59		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Octantis. Mag. 4.1			Groombridge 2233. Mag. 7.2			ρ Octantis. Mag. 5.7			ε Ursæ Minoris. Mag. 4.4			59 G. Apodis. Mag. 5.9		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
	h m	° '		h m	° '		h m	° '		h m	° '		h m	° '
Mar.	14 13	-83 17	Mar.	15 4	+87 32	Mar.	15 23	-84 11	Mar.	16 54	+82 10	Mar.	17 15	-80 46
	s	"		s	"		s	"		s	"		s	"
0.7	26.27	0.75	0.7	9.63	56.00	0.7	50.74	11.03	0.8	28.93	10.37	0.8	47.02	53.03
1.6	26.42	1.04	1.7	10.14	56.08	1.7	50.96	11.24	1.8	29.10	10.30	1.8	47.18	53.06
2.6	26.57	1.33	2.7	10.65	56.19	2.7	51.18	11.42	2.8	29.27	10.23	2.8	47.34	53.11
3.6	26.71	1.59	3.7	11.16	56.33	3.7	51.39	11.59	3.8	29.45	10.20	3.8	47.49	53.12
4.6	26.86	1.82	4.7	11.65	56.50	4.7	51.61	11.75	4.8	29.62	10.20	4.8	47.64	53.11
5.6	27.02	2.07	5.7	12.11	56.68	5.7	51.83	11.89	5.8	29.78	10.23	5.8	47.79	53.08
6.6	27.19	2.32	6.7	12.53	56.86	6.7	52.06	12.04	6.8	29.94	10.26	6.8	47.95	53.04
7.6	27.37	2.58	7.7	12.92	57.07	7.7	52.31	12.20	7.7	30.10	10.32	7.8	48.12	53.01
8.6	27.55	2.84	8.7	13.31	57.26	8.7	52.56	12.37	8.7	30.26	10.35	8.8	48.30	52.98
9.6	27.73	3.14	9.7	13.67	57.43	9.7	52.82	12.55	9.7	30.41	10.40	9.8	48.48	52.96
10.6	27.91	3.43	10.7	14.04	57.60	10.7	53.07	12.73	10.7	30.56	10.45	10.8	48.67	52.93
11.6	28.08	3.76	11.7	14.41	57.76	11.7	53.32	12.95	11.7	30.71	10.48	11.8	48.86	53.01
12.6	28.24	4.08	12.7	14.80	57.91	12.7	53.57	13.19	12.7	30.86	10.51	12.7	49.05	53.07
13.6	28.39	4.41	13.7	15.21	58.06	13.7	53.80	13.44	13.7	31.01	10.53	13.7	49.23	53.13
14.6	28.53	4.76	14.7	15.62	58.22	14.7	54.01	13.70	14.7	31.17	10.54	14.7	49.40	53.21
15.6	28.65	5.09	15.6	16.04	58.40	15.7	54.21	13.95	15.7	31.34	10.58	15.7	49.56	53.30
16.6	28.77	5.42	16.6	16.48	58.58	16.7	54.41	14.20	16.7	31.50	10.61	16.7	49.72	53.38
17.6	28.88	5.72	17.6	16.92	58.78	17.7	54.60	14.44	17.7	31.67	10.67	17.7	49.87	53.47
18.6	29.00	6.02	18.6	17.33	59.01	18.7	54.78	14.67	18.7	31.84	10.75	18.7	50.02	53.52
19.6	29.12	6.31	19.6	17.72	59.27	19.7	54.97	14.87	19.7	32.00	10.86	19.7	50.17	53.58
20.6	29.25	6.59	20.6	18.07	59.53	20.6	55.17	15.07	20.7	32.16	10.98	20.7	50.31	53.62
21.6	29.39	6.88	21.6	18.38	59.80	21.6	55.39	15.28	21.7	32.31	11.12	21.7	50.48	53.64
22.6	29.54	7.18	22.6	18.68	60.06	22.6	55.61	15.49	22.7	32.45	11.27	22.7	50.65	53.68
23.6	29.70	7.51	23.6	18.93	60.30	23.6	55.85	15.72	23.7	32.59	11.41	23.7	50.83	53.71
24.6	29.84	7.86	24.6	19.18	60.54	24.6	56.09	15.98	24.7	32.72	11.55	24.7	51.02	53.79
25.6	30.00	8.22	25.6	19.44	60.75	25.6	56.33	16.26	25.7	32.85	11.66	25.7	51.22	53.88
26.6	30.14	8.61	26.6	19.73	60.95	26.6	56.54	16.58	26.7	32.99	11.76	26.7	51.40	54.02
27.6	30.25	9.00	27.6	20.04	61.15	27.6	56.75	16.89	27.7	33.13	11.85	27.7	51.59	54.16
28.6	30.34	9.38	28.6	20.36	61.37	28.6	56.93	17.21	28.7	33.27	11.95	28.7	51.75	54.31
29.6	30.42	9.73	29.6	20.70	61.60	29.6	57.10	17.50	29.7	33.42	12.05	29.7	51.90	54.46
30.6	30.50	10.07	30.6	21.05	61.86	30.6	57.25	17.79	30.7	33.57	12.17	30.7	52.04	54.58
31.6	30.58	10.39	31.6	21.37	62.15	31.6	57.41	18.05	31.7	33.72	12.33	31.7	52.18	54.70
8.55	-8.49		23.39	+23.37		9.87	-9.82		7.34	+7.27		6.24	-6.16	
14 ^h 13 ^m	18°.531		15 ^h 4 ^m	0°.607		15 ^h 23 ^m	43°.237		16 ^h 54 ^m	31°.741		17 ^h 15 ^m	43°.730	
-83° 17'	4'".27		+87° 33'	24'".43		-84° 11'	17'".84		+82° 10'	38'".40		-80° 47'	2'".69	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

♄ Ursa Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursa Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "	
Mar. 17 59	+86 36		Mar. 18 5	-87 39		Mar. 19 2	+89 0		Mar. 19 25	-89 13		Mar. 20 48	+82 13	
0.8	4.30	27.09	0.8	40.97	40.72	0.9	28.58	38.16	0.9	58.35	24.24	0.9	32.48	8.58
1.8	4.63	26.95	1.8	41.61	40.67	1.9	29.49	37.93	1.9	60.04	24.05	1.9	32.54	8.26
2.8	4.99	26.77	2.8	42.21	40.60	2.8	30.51	37.72	2.9	61.61	23.86	2.9	32.62	7.94
3.8	5.36	26.64	3.8	42.78	40.52	3.8	31.62	37.52	3.9	63.11	23.66	3.9	32.70	7.62
4.8	5.75	26.54	4.8	43.34	40.43	4.8	32.79	37.33	4.9	64.53	23.45	4.9	32.79	7.32
5.8	6.13	26.48	5.8	43.90	40.32	5.8	33.98	37.18	5.9	65.95	23.23	5.9	32.89	7.05
6.8	6.51	26.42	6.8	44.50	40.20	6.8	35.17	37.04	6.9	67.41	23.01	6.9	33.00	6.80
7.8	6.88	26.38	7.8	45.12	40.08	7.8	36.32	36.90	7.9	68.94	22.76	7.9	33.11	6.58
8.8	7.21	26.36	8.8	45.77	39.96	8.8	37.42	36.78	8.8	70.57	22.52	8.9	33.22	6.35
9.8	7.56	26.33	9.8	46.45	39.85	9.8	38.47	36.67	9.8	72.29	22.29	9.9	33.32	6.13
10.8	7.88	26.30	10.8	47.14	39.77	10.8	39.49	36.55	10.8	74.09	22.06	10.9	33.42	5.91
11.8	8.20	26.26	11.8	47.84	39.72	11.8	40.48	36.43	11.8	75.94	21.85	11.9	33.52	5.69
12.8	8.54	26.21	12.8	48.54	39.69	12.8	41.48	36.31	12.8	77.82	21.66	12.9	33.62	5.46
13.8	8.87	26.15	13.8	49.22	39.66	13.8	42.50	36.18	13.8	79.70	21.50	13.9	33.72	5.22
14.8	9.21	26.09	14.8	49.88	39.65	14.8	43.56	36.04	14.8	81.55	21.35	14.9	33.81	4.97
15.8	9.58	26.02	15.8	50.53	39.65	15.8	44.66	35.90	15.8	83.36	21.20	15.9	33.91	4.71
16.8	9.96	25.95	16.8	51.15	39.65	16.8	45.83	35.75	16.8	85.12	21.07	16.9	34.02	4.45
17.8	10.34	25.90	17.8	51.75	39.65	17.8	47.07	35.62	17.8	86.79	20.95	17.9	34.14	4.19
18.8	10.75	25.90	18.8	52.33	39.63	18.8	48.35	35.51	18.8	88.40	20.82	18.9	34.26	3.95
19.8	11.14	25.90	19.8	52.91	39.59	19.8	49.67	35.43	19.8	89.98	20.67	19.9	34.39	3.73
20.8	11.52	25.95	20.8	53.50	39.55	20.8	50.99	35.38	20.8	91.58	20.49	20.9	34.53	3.53
21.8	11.90	26.02	21.8	54.12	39.49	21.8	52.28	35.32	21.8	93.23	20.31	21.9	34.68	3.36
22.7	12.25	26.08	22.8	54.77	39.43	22.8	53.50	35.31	22.8	94.98	20.12	22.9	34.81	3.21
23.7	12.59	26.15	23.8	55.47	39.39	23.8	54.64	35.29	23.8	96.84	19.95	23.9	34.95	3.07
24.7	12.90	26.21	24.7	56.20	39.37	24.8	55.70	35.27	24.8	98.84	19.78	24.9	35.08	2.94
25.7	13.21	26.26	25.7	56.94	39.37	25.8	56.72	35.24	25.8	100.91	19.64	25.9	35.20	2.80
26.7	13.52	26.26	26.7	57.67	39.42	26.8	57.73	35.19	26.8	103.02	19.52	26.9	35.32	2.63
27.7	13.84	26.28	27.7	58.38	39.48	27.8	58.77	35.13	27.8	105.09	19.42	27.9	35.43	2.46
28.7	14.18	26.29	28.7	59.04	39.55	28.8	59.87	35.07	28.8	107.07	19.35	28.9	35.55	2.28
29.7	14.54	26.31	29.7	59.66	39.61	29.8	61.08	35.00	29.8	108.93	19.29	29.8	35.68	2.08
30.7	14.92	26.35	30.7	60.25	39.65	30.8	62.38	34.94	30.8	110.70	19.22	30.8	35.82	1.88
31.7	15.31	26.43	31.7	60.82	39.70	31.8	63.73	34.92	31.8	112.39	19.14	31.8	35.96	1.70
16.90	+16.87		24.50	-24.48		57.88	+57.87		73.70	-73.69		7.39	+7.32	
17 ^h 59 ^m	20°.905		18 ^h 5 ^m	36°.163		19 ^h 3 ^m	51°.560		19 ^h 26 ^m	7°.189		20 ^h 48 ^m	44°.660	
+86° 36'	51''.19		-87° 39'	52''.21		+89° 0'	56''.70		-89° 13'	35''.99		+82° 13'	16''.98	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ^1 Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Mar.	h m	° '	Mar.	h m	° '	Mar.	h m	° '	Mar.	h m	° '	Mar.	h m	° '
	21 38	-83 6		22 15	-86 23		22 37	-81 49		23 27	+86 50		23 47	-82 28
	s	"		s	"		s	"		s	"		s	"
0.9	6.84	15.42	0.9	47.61	38.32	1.0	29.29	15.73	1.0	14.71	51.03	1.0	8.25	66.26
1.9	6.95	15.09	1.9	47.75	37.99	1.9	29.34	15.38	2.0	14.57	50.71	2.0	8.25	65.88
2.9	7.04	14.77	2.9	47.87	37.65	2.9	29.38	15.04	3.0	14.46	50.35	3.0	8.24	65.51
3.9	7.13	14.45	3.9	47.97	37.29	3.9	29.40	14.69	4.0	14.38	50.00	4.0	8.21	65.18
4.9	7.20	14.14	4.9	48.05	36.91	4.9	29.42	14.34	5.0	14.33	49.66	5.0	8.16	64.84
5.9	7.27	13.82	5.9	48.10	36.55	5.9	29.44	13.97	6.0	14.32	49.32	6.0	8.13	64.47
6.9	7.34	13.45	6.9	48.17	36.18	6.9	29.45	13.61	7.0	14.33	48.99	7.0	8.08	64.11
7.9	7.42	13.06	7.9	48.25	35.79	7.9	29.47	13.22	8.0	14.35	48.67	8.0	8.04	63.74
8.9	7.50	12.69	8.9	48.34	35.40	8.9	29.50	12.80	9.0	14.38	48.38	9.0	8.00	63.34
9.9	7.61	12.31	9.9	48.45	34.99	9.9	29.53	12.40	10.0	14.40	48.10	10.0	7.98	62.93
10.9	7.72	11.91	10.9	48.59	34.58	10.9	29.58	11.98	11.0	14.41	47.82	11.0	7.97	62.51
11.9	7.85	11.54	11.9	48.75	34.17	11.9	29.64	11.58	12.0	14.41	47.52	12.0	7.97	62.09
12.9	7.98	11.20	12.9	48.93	33.78	12.9	29.71	11.19	13.0	14.41	47.24	13.0	7.97	61.66
13.9	8.11	10.85	13.9	49.12	33.39	13.9	29.78	10.80	13.9	14.39	46.95	14.0	7.98	61.25
14.9	8.25	10.53	14.9	49.32	33.04	14.9	29.87	10.42	14.9	14.37	46.63	15.0	8.01	60.87
15.9	8.39	10.22	15.9	49.51	32.70	15.9	29.94	10.07	15.9	14.35	46.31	16.0	8.03	60.48
16.9	8.52	9.93	16.9	49.71	32.36	16.9	30.00	9.74	16.9	14.34	45.98	17.0	8.05	60.12
17.9	8.64	9.63	17.9	49.89	32.03	17.9	30.07	9.39	17.9	14.36	45.64	18.0	8.06	59.75
18.9	8.75	9.35	18.9	50.04	31.71	18.9	30.12	9.06	18.9	14.41	45.28	18.9	8.07	59.40
19.9	8.86	9.04	19.9	50.18	31.38	19.9	30.17	8.73	19.9	14.49	44.95	19.9	8.07	59.04
20.9	8.96	8.71	20.9	50.32	31.04	20.9	30.22	8.38	20.9	14.61	44.61	20.9	8.06	58.68
21.9	9.06	8.38	21.9	50.45	30.69	21.9	30.26	8.01	21.9	14.74	44.29	21.9	8.06	58.31
22.9	9.18	8.04	22.9	50.61	30.30	22.9	30.31	7.62	22.9	14.88	44.00	22.9	8.06	57.91
23.9	9.31	7.68	23.9	50.78	29.91	23.9	30.38	7.20	23.9	15.02	43.73	23.9	8.06	57.49
24.9	9.46	7.30	24.9	50.99	29.51	24.9	30.46	6.80	24.9	15.15	43.46	24.9	8.08	57.05
25.9	9.62	6.95	25.9	51.23	29.12	25.9	30.56	6.39	25.9	15.26	43.21	25.9	8.12	56.61
26.9	9.80	6.62	26.9	51.50	28.75	26.9	30.66	6.00	26.9	15.34	42.94	26.9	8.17	56.18
27.9	9.99	6.33	27.9	51.78	28.41	27.9	30.77	5.63	27.9	15.40	42.68	27.9	8.23	55.77
28.9	10.17	6.05	28.9	52.05	28.09	28.9	30.89	5.29	28.9	15.46	42.39	28.9	8.29	55.38
29.9	10.32	5.80	29.9	52.31	27.80	29.9	31.00	4.97	29.9	15.54	42.07	29.9	8.35	55.00
30.9	10.47	5.56	30.9	52.54	27.51	30.9	31.11	4.66	30.9	15.64	41.75	30.9	8.40	54.64
31.9	10.61	5.30	31.9	52.75	27.21	31.9	31.18	4.36	31.9	15.79	41.43	31.9	8.44	54.31
8.33	-8.27	15.89	-15.86	7.03	-6.96	18.18	+18.15	7.64	-7.58					
21 ^h 38 ^m	10 ^a .025	22 ^h 15 ^m	56 ^a .333	22 ^h 37 ^m	32 ^a .703	23 ^h 27 ^m	44 ^a .392	23 ^h 47 ^m	12 ^a .813					
-83° 6'	23''.31	-86° 23'	45''.22	-81° 49'	21''.11	+86° 50'	39''.03	-82° 29'	8''.43					

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

43 H. Cephei. Mag. 4.5			α Ursae Minoris. (Polaris.) Mag. 2.1			4 G. Octantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Apr.	h m ° ' 0 56 +85 48		Apr.	h m ° ' 1 28 +88 51		Apr.	h m ° ' 1 41 -85 11		Apr.	h m ° ' 4 9 +85 20		Apr.	h m ° ' 5 34 +85 9	
	s " " "			s " " "			s " " "			s " " "			s " " "	
0.0	43.21 37.69	0.0	38.78 40.23	0.0	53.84 32.80	0.2	42.06 24.99	0.2	58.63 52.24					
1.0	43.20 37.35	1.0	38.57 39.89	1.0	53.75 32.47	1.1	41.84 24.77	1.2	58.37 52.14					
2.0	43.22 37.00	2.0	38.46 39.52	2.0	53.66 32.13	2.1	41.64 24.54	2.2	58.11 52.00					
3.0	43.26 36.65	3.0	38.44 39.17	3.0	53.55 31.80	3.1	41.45 24.25	3.2	57.87 51.85					
4.0	43.31 36.31	4.0	38.47 38.83	4.0	53.44 31.45	4.1	41.29 23.99	4.2	57.64 51.68					
5.0	43.38 36.00	5.0	38.56 38.52	5.0	53.34 31.09	5.1	41.14 23.74	5.2	57.44 51.50					
5.9	43.45 35.71	6.0	38.66 38.23	6.0	53.24 30.71	6.1	41.00 23.50	6.2	57.25 51.35					
6.9	43.52 35.43	7.0	38.75 37.93	7.0	53.15 30.31	7.1	40.87 23.27	7.2	57.07 51.20					
7.9	43.58 35.15	8.0	38.80 37.64	8.0	53.07 29.89	8.1	40.74 23.05	8.2	56.89 51.05					
8.9	43.63 34.87	9.0	38.83 37.36	9.0	53.02 29.48	9.1	40.61 22.83	9.2	56.74 50.92					
9.9	43.68 34.60	10.0	38.83 37.07	10.0	52.98 29.07	10.1	40.45 22.62	10.2	56.52 50.79					
10.9	43.71 34.30	11.0	38.80 36.79	11.0	52.96 28.69	11.1	40.31 22.42	11.2	56.32 50.67					
11.9	43.75 34.00	12.0	38.76 36.48	12.0	52.95 28.29	12.1	40.14 22.23	12.2	56.11 50.55					
12.9	43.78 33.71	13.0	38.73 36.16	13.0	52.93 27.91	13.1	39.97 21.99	13.2	55.89 50.42					
13.9	43.82 33.39	13.9	38.73 35.86	14.0	52.92 27.54	14.1	39.81 21.74	14.2	55.66 50.28					
14.9	43.87 33.07	14.9	38.79 35.53	15.0	52.89 27.21	15.1	39.64 21.48	15.2	55.43 50.10					
15.9	43.96 32.72	15.9	38.92 35.18	16.0	52.86 26.86	16.1	39.49 21.18	16.2	55.21 49.89					
16.9	44.06 32.38	16.9	39.15 34.85	17.0	52.83 26.52	17.1	39.35 20.89	17.2	55.01 49.68					
17.9	44.20 32.09	17.9	39.47 34.50	17.9	52.77 26.18	18.1	39.25 20.56	18.2	54.82 49.44					
18.9	44.34 31.80	18.9	39.87 34.18	18.9	52.72 25.81	19.1	39.16 20.25	19.2	54.65 49.19					
19.9	44.51 31.52	19.9	40.29 33.90	19.9	52.67 25.43	20.1	39.10 19.96	20.2	54.50 48.95					
20.9	44.67 31.27	20.9	40.72 33.62	20.9	52.63 25.02	21.1	39.04 19.68	21.2	54.38 48.72					
21.9	44.82 31.03	21.9	41.09 33.35	21.9	52.61 24.58	22.1	38.98 19.44	22.1	54.26 48.52					
22.9	44.93 30.80	22.9	41.41 33.11	22.9	52.60 24.17	23.1	38.93 19.21	23.1	54.14 48.34					
23.9	45.04 30.59	23.9	41.66 32.88	23.9	52.63 23.74	24.1	38.84 18.98	24.1	54.01 48.16					
24.9	45.15 30.35	24.9	41.86 32.60	24.9	52.68 23.32	25.1	38.76 18.73	25.1	53.86 48.00					
25.9	45.24 30.08	25.9	42.05 32.32	25.9	52.72 22.95	26.1	38.65 18.48	26.1	53.67 47.82					
26.9	45.34 29.79	26.9	42.28 32.00	26.9	52.77 22.58	27.1	38.53 18.22	27.1	53.49 47.60					
27.9	45.47 29.49	27.9	42.59 31.70	27.9	52.81 22.24	28.1	38.42 17.91	28.1	53.30 47.38					
28.9	45.61 29.19	28.9	42.99 31.38	28.9	52.83 21.91	29.1	38.32 17.61	29.1	53.12 47.13					
29.9	45.79 28.91	29.9	43.48 31.07	29.9	52.83 21.56	30.1	38.24 17.26	30.1	52.97 46.84					
30.9	45.97 28.63	30.9	44.03 30.76	30.9	52.84 21.22	31.1	38.19 16.93	31.1	52.81 46.54					
13.68	+13.65	50.25	+50.24	11.93	-11.89	12.31	+12.27	11.86	+11.82					
0 ^h 57 ^m 1 ^s .657	1 ^h 29 ^m 44 ^s .254	1 ^h 42 ^m 6 ^s .102	4 ^h 9 ^m 44 ^s .952	5 ^h 34 ^m 54 ^s .014										
+85° 48' 25".87	+88° 51' 25".03	-85° 11' 39".58	+85° 20' 1".04	+85° 9' 28".07										

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

81 G. Mensse. Mag. 6.2			C Mensse. Mag. 5.6			51 H. Cephei. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Octantis. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Apr.	h m 5 46	° ' " -84 49	Apr.	h m 6 46	° ' " -80 43	Apr.	h m 7 1	° ' " +87 11	Apr.	h m 7 13	° ' " +82 34	Apr.	h m 7 16	° ' " -86 54
0.2	16.97	60.44	0.3	60.42	50.35	0.3	53.79	21.42	0.3	38.19	56.36	0.3	30.57	17.04
1.2	16.72	60.38	1.3	60.27	50.38	1.3	53.30	21.44	1.3	38.01	56.39	1.3	30.15	17.11
2.2	16.47	60.32	2.3	60.13	50.41	2.3	52.82	21.41	2.3	37.82	56.39	2.3	29.73	17.21
3.2	16.20	60.27	3.2	59.98	50.47	3.3	52.35	21.39	3.3	37.65	56.39	3.3	29.32	17.30
4.2	15.93	60.23	4.2	59.84	50.53	4.3	51.92	21.33	4.3	37.48	56.34	4.3	28.85	17.42
5.2	15.65	60.18	5.2	59.69	50.58	5.3	51.49	21.28	5.3	37.33	56.32	5.3	28.40	17.51
6.2	15.36	60.10	6.2	59.54	50.60	6.3	51.11	21.20	6.3	37.19	56.28	6.3	27.94	17.60
7.2	15.08	60.01	7.2	59.37	50.61	7.3	50.72	21.16	7.3	37.05	56.23	7.3	27.45	17.67
8.2	14.80	59.90	8.2	59.22	50.60	8.2	50.35	21.13	8.3	36.91	56.22	8.3	26.95	17.72
9.2	14.52	59.77	9.2	59.05	50.58	9.2	49.98	21.10	9.3	36.78	56.21	9.3	26.45	17.73
10.2	14.24	59.64	10.2	58.88	50.55	10.2	49.60	21.07	10.2	36.64	56.20	10.3	25.94	17.75
11.2	13.97	59.47	11.2	58.73	50.48	11.2	49.22	21.05	11.2	36.50	56.20	11.2	25.47	17.74
12.2	13.72	59.30	12.2	58.58	50.40	12.2	48.82	21.04	12.2	36.36	56.20	12.2	25.00	17.73
13.2	13.47	59.12	13.2	58.43	50.32	13.2	48.40	21.01	13.2	36.19	56.19	13.2	24.53	17.70
14.2	13.23	58.97	14.2	58.29	50.24	14.2	47.96	20.97	14.2	36.01	56.19	14.2	24.10	17.68
15.2	13.01	58.82	15.2	58.15	50.17	15.2	47.49	20.91	15.2	35.84	56.14	15.2	23.67	17.68
16.2	12.77	58.71	16.2	58.01	50.14	16.2	47.03	20.83	16.2	35.68	56.08	16.2	23.24	17.68
17.2	12.53	58.60	17.2	57.88	50.10	17.2	46.59	20.72	17.2	35.50	55.99	17.2	22.83	17.70
18.2	12.29	58.48	18.2	57.74	50.07	18.2	46.16	20.58	18.2	35.34	55.86	18.2	22.40	17.73
19.2	12.03	58.36	19.2	57.59	50.06	19.2	45.77	20.44	19.2	35.19	55.73	19.2	21.96	17.77
20.2	11.76	58.23	20.2	57.44	50.03	20.2	45.41	20.29	20.2	35.06	55.60	20.2	21.49	17.79
21.2	11.49	58.10	21.2	57.29	49.99	21.2	45.09	20.14	21.2	34.96	55.49	21.2	20.99	17.80
22.2	11.22	57.92	22.2	57.13	49.92	22.2	44.77	20.00	22.2	34.84	55.38	22.2	20.49	17.79
23.2	10.96	57.72	23.2	56.97	49.83	23.2	44.48	19.90	23.2	34.73	55.29	23.2	19.98	17.75
24.2	10.71	57.49	24.2	56.82	49.69	24.2	44.17	19.80	24.2	34.62	55.22	24.2	19.48	17.66
25.1	10.47	57.25	25.2	56.67	49.55	25.2	43.82	19.72	25.2	34.48	55.16	25.2	19.00	17.58
26.1	10.25	57.02	26.2	56.53	49.38	26.2	43.45	19.65	26.2	34.34	55.09	26.2	18.56	17.47
27.1	10.05	56.79	27.2	56.40	49.23	27.2	43.03	19.54	27.2	34.18	55.00	27.2	18.13	17.39
28.1	9.85	56.60	28.2	56.26	49.11	28.2	42.62	19.40	28.2	34.03	54.90	28.2	17.74	17.31
29.1	9.65	56.41	29.2	56.14	48.99	29.2	42.19	19.22	29.2	33.87	54.75	29.2	17.35	17.27
30.1	9.45	56.24	30.2	56.02	48.91	30.2	41.78	19.03	30.2	33.71	54.61	30.2	16.95	17.22
31.1	9.23	56.06	31.2	55.89	48.82	31.2	41.40	18.84	31.2	33.56	54.42	31.2	16.54	17.19
11.10	-11.06		6.21	-6.13		20.39	+20.37		7.75	+7.68		18.52	-18.49	
5 ^h 46 ^m 26 ^s .439			6 ^h 47 ^m 3 ^s .489			7 ^h 1 ^m 34 ^s .861			7 ^h 13 ^m 29 ^s .477			7 ^h 16 ^m 40 ^s .555		
-84° 49' 48".17			-80° 43' 34".16			+87° 11' 0".11			+82° 34' 36".50			-86° 54' 0".14		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			ζ Octantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			ζ Chamæleontis. Mag. 5.2			30 H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Apr.	h m	° '	Apr.	h m	° '	Apr.	h m	° '	Apr.	h m	° '	Apr.	h m	° '
	8 15	+88 53		9 8	-85 20		9 25	+81 42		9 36	-80 34		10 21	+82 59
	s	"		s	"		s	"		s	"		s	"
0.3	55.13	27.86	0.4	67.25	2.36	0.4	25.14	5.99	0.4	26.36	10.68	0.4	12.37	15.49
1.3	53.98	28.00	1.4	67.03	2.58	1.4	25.00	6.21	1.4	26.27	10.92	1.4	12.25	15.78
2.3	52.82	28.09	2.4	66.82	2.82	2.4	24.86	6.41	2.4	26.18	11.18	2.4	12.12	16.05
3.3	51.65	28.15	3.4	66.62	3.07	3.4	24.73	6.59	3.4	26.08	11.45	3.4	11.98	16.29
4.3	50.52	28.21	4.3	66.39	3.33	4.4	24.59	6.74	4.4	25.99	11.73	4.4	11.84	16.51
5.3	49.44	28.27	5.3	66.16	3.58	5.4	24.44	6.88	5.4	25.90	12.02	5.4	11.72	16.71
6.3	48.41	28.30	6.3	65.92	3.85	6.4	24.35	7.01	6.4	25.80	12.31	6.4	11.61	16.91
7.3	47.42	28.35	7.3	65.67	4.11	7.4	24.25	7.14	7.4	25.69	12.59	7.4	11.49	17.09
8.3	46.47	28.39	8.3	65.40	4.34	8.3	24.14	7.27	8.4	25.58	12.86	8.4	11.38	17.28
9.3	45.53	28.46	9.3	65.13	4.56	9.3	24.04	7.41	9.4	25.45	13.11	9.4	11.28	17.47
10.3	44.59	28.52	10.3	64.85	4.76	10.3	23.94	7.55	10.4	25.33	13.34	10.4	11.18	17.68
11.3	43.63	28.59	11.3	64.56	4.96	11.3	23.83	7.71	11.3	25.20	13.57	11.4	11.08	17.90
12.3	42.63	28.65	12.3	64.29	5.11	12.3	23.72	7.88	12.3	25.08	13.76	12.4	10.97	18.12
13.3	41.58	28.73	13.3	64.00	5.27	13.3	23.59	8.05	13.3	24.96	13.96	13.4	10.85	18.33
14.3	40.47	28.81	14.3	63.74	5.43	14.3	23.46	8.20	14.3	24.83	14.16	14.4	10.72	18.56
15.3	39.30	28.85	15.3	63.50	5.56	15.3	23.32	8.36	15.3	24.72	14.34	15.4	10.57	18.78
16.3	38.10	28.87	16.3	63.25	5.73	16.3	23.16	8.48	16.3	24.61	14.52	16.4	10.42	18.98
17.3	36.88	28.88	17.3	63.02	5.91	17.3	23.02	8.58	17.3	24.50	14.72	17.4	10.25	19.17
18.3	35.70	28.84	18.3	62.78	6.09	18.3	22.87	8.66	18.3	24.40	14.95	18.4	10.10	19.32
19.3	34.57	28.80	19.3	62.54	6.30	19.3	22.72	8.72	19.3	24.29	15.18	19.4	9.94	19.46
20.3	33.53	28.74	20.3	62.28	6.51	20.3	22.59	8.77	20.3	24.18	15.41	20.4	9.79	19.57
21.3	32.58	28.69	21.3	62.00	6.71	21.3	22.48	8.81	21.3	24.06	15.64	21.4	9.65	19.66
22.3	31.68	28.62	22.3	61.71	6.90	22.3	22.36	8.85	22.3	23.93	15.87	22.3	9.52	19.76
23.3	30.80	28.60	23.3	61.40	7.05	23.3	22.26	8.91	23.3	23.80	16.06	23.3	9.41	19.88
24.3	29.92	28.58	24.3	61.09	7.18	24.3	22.16	8.99	24.3	23.65	16.21	24.3	9.30	20.01
25.3	28.98	28.58	25.3	60.78	7.27	25.3	22.05	9.08	25.3	23.52	16.35	25.3	9.18	20.16
26.2	27.97	28.58	26.3	60.49	7.36	26.3	21.91	9.16	26.3	23.37	16.48	26.3	9.05	20.32
27.2	26.87	28.57	27.3	60.21	7.44	27.3	21.78	9.26	27.3	23.24	16.58	27.3	8.90	20.49
28.2	25.71	28.54	28.3	59.94	7.52	28.3	21.63	9.34	28.3	23.11	16.68	28.3	8.73	20.65
29.2	24.52	28.50	29.3	59.70	7.61	29.3	21.47	9.40	29.3	23.01	16.81	29.3	8.56	20.79
30.2	23.33	28.40	30.3	59.45	7.72	30.3	21.31	9.44	30.3	22.89	16.93	30.3	8.37	20.91
31.2	22.18	28.30	31.3	59.21	7.84	31.3	21.16	9.45	31.3	22.78	17.09	31.3	8.18	21.01
51.68	+51.67	12.30	-12.25	6.93	+6.86	6.10	-6.02	8.19	+8.13					
9 ^h 14 ^m	48 ^s .311	9 ^h 9 ^m	6 ^s .085	9 ^h 25 ^m	12 ^s .930	9 ^h 36 ^m	24 ^s .003	10 ^h 20 ^m	57 ^s .259					
+88° 53'	11''43	-85° 19'	42''77	+81° 41'	57''18	-80° 33'	50''61	+82° 59'	12''27					

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

77 Octantis. Mag. 6.3			Bradley 1672. Mag. 6.3			2 Octantis. Mag. 5.4			32 H. Camelop. seq. Mag. 5.3			κ Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Apr.	h m	° ' "	Apr.	h m	° ' "	Apr.	h m	° ' "	Apr.	h m	° ' "	Apr.	h m	° ' "
	10 59	-84 8		12 15	+88 9		12 46	-84 40		12 48	+83 51		13 27	-85 21
	s	" "		s	" "		s	" "		s	" "		s	" "
0.4	62.72	49.12	0.5	19.32	47.76	0.5	13.65	15.04	0.5	45.56	57.77	0.5	21.06	32.98
1.4	62.63	49.43	1.5	19.19	48.12	1.5	13.67	15.38	1.5	45.56	58.13	1.5	21.13	33.31
2.4	62.55	49.75	2.5	19.00	48.47	2.5	13.70	15.72	2.5	45.53	58.47	2.5	21.22	33.64
3.4	62.49	50.09	3.5	18.77	48.79	3.5	13.74	16.09	3.5	45.49	58.81	3.5	21.32	33.98
4.4	62.41	50.45	4.5	18.52	49.11	4.5	13.79	16.45	4.5	45.45	59.15	4.5	21.42	34.35
5.4	62.34	50.82	5.5	18.28	49.39	5.5	13.84	16.84	5.5	45.41	59.46	5.5	21.53	34.70
6.4	62.25	51.19	6.5	18.03	49.67	6.5	13.87	17.24	6.5	45.37	59.76	6.5	21.63	35.08
7.4	62.16	51.55	7.5	17.83	49.94	7.5	13.89	17.66	7.5	45.34	60.04	7.5	21.72	35.49
8.4	62.05	51.92	8.5	17.64	50.21	8.5	13.90	18.06	8.5	45.31	60.33	8.5	21.78	35.90
9.4	61.92	52.27	9.5	17.45	50.47	9.5	13.90	18.47	9.5	45.30	60.61	9.5	21.83	36.30
10.4	61.78	52.61	10.5	17.30	50.74	10.5	13.87	18.85	10.5	45.29	60.88	10.5	21.86	36.71
11.4	61.64	52.93	11.5	17.14	51.02	11.5	13.84	19.24	11.5	45.28	61.17	11.5	21.88	37.10
12.4	61.49	53.23	12.5	16.97	51.32	12.5	13.80	19.62	12.5	45.24	61.47	12.5	21.88	37.49
13.4	61.35	53.52	13.5	16.79	51.61	13.5	13.75	19.98	13.5	45.22	61.80	13.5	21.89	37.86
14.4	61.21	53.80	14.5	16.56	51.92	14.5	13.71	20.32	14.5	45.19	62.13	14.5	21.88	38.20
15.4	61.08	54.07	15.4	16.27	52.24	15.5	13.66	20.66	15.5	45.14	62.47	15.5	21.89	38.53
16.4	60.97	54.35	16.4	15.95	52.56	16.5	13.65	20.99	16.5	45.06	62.80	16.5	21.92	38.87
17.4	60.86	54.65	17.4	15.57	52.85	17.5	13.63	21.32	17.5	44.98	63.13	17.5	21.96	39.20
18.4	60.76	54.96	18.4	15.15	53.14	18.5	13.63	21.67	18.5	44.89	63.43	18.5	22.01	39.54
19.4	60.65	55.27	19.4	14.72	53.38	19.5	13.63	22.03	19.5	44.79	63.72	19.5	22.06	39.90
20.4	60.52	55.59	20.4	14.30	53.64	20.5	13.64	22.42	20.5	44.70	63.99	20.5	22.11	40.30
21.4	60.39	55.93	21.4	13.91	53.86	21.5	13.62	22.83	21.5	44.61	64.23	21.5	22.16	40.71
22.4	60.25	56.26	22.4	13.58	54.06	22.4	13.58	23.24	22.4	44.55	64.46	22.5	22.17	41.12
23.4	60.09	56.59	23.4	13.28	54.27	23.4	13.52	23.65	23.4	44.49	64.70	23.5	22.17	41.53
24.4	59.91	56.88	24.4	13.00	54.50	24.4	13.44	24.03	24.4	44.43	64.95	24.5	22.13	41.94
25.4	59.73	57.14	25.4	12.72	54.75	25.4	13.36	24.41	25.4	44.38	65.22	25.5	22.08	42.32
26.4	59.55	57.38	26.4	12.39	55.02	26.4	13.26	24.73	26.4	44.30	65.48	26.5	22.03	42.69
27.4	59.38	57.60	27.4	12.04	55.29	27.4	13.17	25.05	27.4	44.22	65.79	27.5	21.97	43.02
28.4	59.22	57.82	28.4	11.63	55.57	28.4	13.08	25.36	28.4	44.13	66.10	28.5	21.93	43.34
29.4	59.08	58.05	29.4	11.17	55.84	29.4	13.03	25.66	29.4	44.01	66.40	29.5	21.89	43.64
30.4	58.95	58.30	30.4	10.65	56.10	30.4	12.96	25.97	30.4	43.88	66.70	30.5	21.88	43.97
31.4	58.81	58.54	31.4	10.09	56.34	31.4	12.92	26.28	31.4	43.76	66.99	31.5	21.88	44.28
9.81	-9.76		31.22	+31.20		10.77	-10.72		9.36	+9.31		12.36	-12.32	
10 ^h 59 ^m	55°.642		12 ^h 14 ^m	28°.053		12 ^h 46 ^m	1°.183		12 ^h 48 ^m	29°.976		13 ^h 27 ^m	5°.514	
-84° 8'	31''.24		+88° 9'	56''.03		-84° 40'	2''.72		+83° 52'	10''.05		-85° 21'	23''.59	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Octantis. Mag. 4.1		Groombridge 3333. Mag. 7.2			ρ Octantis. Mag. 5.7			ε Ursae Minoris. Mag. 4.4			59 G. Apodis. Mag. 5.9		
Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
h m 14 13	° ' -83 17	Apr.	h m 15 4	° ' +87 33	Apr.	h m 15 23	° ' -84 11	Apr.	h m 16 54	° ' +82 10	Apr.	h m 17 15	° ' -80 46
s 30.58	" 10.39	0.6	s 21.37	" 2.15	0.6	s 57.41	" 18.05	0.7	s 33.72	" 12.33	0.7	s 52.18	" 54.70
30.67	10.71	1.6	21.66	2.44	1.6	57.56	18.30	1.7	33.88	12.51	1.7	52.32	54.81
30.76	11.02	2.6	21.91	2.76	2.6	57.73	18.55	2.7	34.03	12.73	2.7	52.46	54.90
30.87	11.33	3.6	22.13	3.07	3.6	57.91	18.80	3.7	34.16	12.95	3.7	52.61	54.98
30.99	11.65	4.6	22.32	3.37	4.6	58.10	19.05	4.7	34.28	13.17	4.7	52.77	55.05
31.11	11.99	5.6	22.48	3.67	5.6	58.30	19.31	5.7	34.40	13.38	5.7	52.94	55.15
31.22	12.36	6.6	22.64	3.96	6.6	58.50	19.59	6.7	34.52	13.59	6.7	53.12	55.27
31.33	12.72	7.6	22.83	4.23	7.6	58.69	19.90	7.7	34.63	13.79	7.7	53.28	55.42
31.42	13.10	8.6	23.00	4.49	8.6	58.87	20.22	8.7	34.75	13.99	8.7	53.45	55.58
31.50	13.49	9.6	23.18	4.75	9.6	59.04	20.55	9.7	34.87	14.17	9.7	53.61	55.75
31.57	13.86	10.6	23.39	5.01	10.6	59.19	20.88	10.7	34.99	14.34	10.7	53.77	55.94
31.63	14.25	11.6	23.60	5.28	11.6	59.34	21.21	11.7	35.12	14.52	11.7	53.92	56.14
31.68	14.62	12.6	23.82	5.55	12.6	59.47	21.54	12.6	35.25	14.71	12.7	54.06	56.35
31.73	14.97	13.6	24.03	5.84	13.6	59.58	21.86	13.6	35.38	14.91	13.7	54.20	56.53
31.77	15.31	14.6	24.24	6.15	14.6	59.70	22.16	14.6	35.50	15.13	14.7	54.32	56.71
31.82	15.63	15.6	24.41	6.48	15.6	59.83	22.45	15.6	35.62	15.38	15.7	54.44	56.87
31.88	15.96	16.6	24.55	6.82	16.6	59.95	22.73	16.6	35.74	15.64	16.7	54.56	57.03
31.94	16.27	17.6	24.65	7.17	17.6	60.09	23.00	17.6	35.85	15.92	17.6	54.70	57.15
32.02	16.59	18.6	24.72	7.51	18.6	60.24	23.26	18.6	35.94	16.21	18.6	54.84	57.29
32.10	16.95	19.6	24.74	7.85	19.6	60.40	23.57	19.6	36.03	16.50	19.6	54.99	57.43
32.18	17.31	20.6	24.76	8.16	20.6	60.56	23.88	20.6	36.12	16.79	20.6	55.16	57.60
32.25	17.70	21.5	24.79	8.44	21.6	60.72	24.20	21.6	36.20	17.05	21.6	55.32	57.79
32.32	18.10	22.5	24.82	8.71	22.6	60.88	24.55	22.6	36.28	17.30	22.6	55.48	58.01
32.36	18.52	23.5	24.87	8.97	23.6	61.02	24.92	23.6	36.36	17.52	23.6	55.64	58.26
32.39	18.91	24.5	24.96	9.24	24.6	61.13	25.31	24.6	36.45	17.74	24.6	55.78	58.51
32.41	19.28	25.5	25.05	9.51	25.6	61.22	25.66	25.6	36.55	17.95	25.6	55.91	58.77
32.42	19.65	26.5	25.16	9.82	26.5	61.30	25.99	26.6	36.65	18.22	26.6	56.02	59.01
32.43	19.98	27.5	25.24	10.13	27.5	61.37	26.33	27.6	36.75	18.48	27.6	56.12	59.22
32.43	20.31	28.5	25.30	10.48	28.5	61.44	26.63	28.6	36.84	18.78	28.6	56.23	59.42
32.45	20.63	29.5	25.31	10.82	29.5	61.53	26.92	29.6	36.93	19.09	29.6	56.34	59.61
32.48	20.94	30.5	25.30	11.17	30.5	61.62	27.20	30.6	37.00	19.42	30.6	56.45	59.78
32.51	21.25	31.5	25.26	11.53	31.5	61.73	27.50	31.6	37.07	19.74	31.6	56.58	59.98
6	-8.50	23.41	+23.39	9.88	-9.83	7.34	+7.27	6.24	-6.16				
13 ^m	18°.531	15 ^h 4 ^m	0°.607	15 ^h 23 ^m	43°.237	16 ^h 54 ^m	31°.741	17 ^h 15 ^m	43°.730				
17'	4''.27	+87° 33'	24''.43	-84° 11'	17''.84	+82° 10'	38''.40	-80° 47'	2''.69				

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Ursae Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursae Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.
Apr.	h m 17 59	° ' " +86 36	Apr.	h m 18 6	° ' " -87 39	Apr.	h m 19 3	° ' " +89 0	Apr.	h m 19 26	° ' " -89 13	Apr.	h m 20 48	° ' " +82 13
0.7	15.31	26.43	0.7	0.82	39.70	0.8	3.73	34.92	0.8	52.39	19.14	0.8	35.96	1.70
1.7	15.69	26.51	1.7	1.38	39.75	1.8	5.09	34.92	1.8	54.03	19.05	1.8	36.12	1.56
2.7	16.08	26.64	2.7	1.97	39.77	2.8	6.44	34.95	2.8	55.69	18.95	2.8	36.29	1.43
3.7	16.43	26.78	3.7	2.56	39.77	3.8	7.76	34.99	3.8	57.40	18.83	3.8	36.45	1.33
4.7	16.77	26.90	4.7	3.20	39.78	4.8	9.02	35.03	4.8	59.19	18.72	4.8	36.61	1.24
5.7	17.10	27.05	5.7	3.85	39.81	5.8	10.21	35.08	5.8	61.08	18.61	5.8	36.77	1.16
6.7	17.42	27.21	6.7	4.53	39.85	6.8	11.34	35.13	6.8	63.03	18.51	6.8	36.92	1.09
7.7	17.72	27.32	7.7	5.21	39.92	7.8	12.46	35.18	7.8	65.02	18.42	7.8	37.06	1.01
8.7	18.01	27.45	8.7	5.88	40.00	8.7	13.54	35.21	8.8	67.05	18.36	8.8	37.20	0.92
9.7	18.31	27.56	9.7	6.54	40.08	9.7	14.62	35.25	9.8	69.08	18.31	9.8	37.34	0.83
10.7	18.62	27.65	10.7	7.19	40.20	10.7	15.73	35.27	10.8	71.08	18.29	10.8	37.49	0.73
11.7	18.94	27.75	11.7	7.81	40.33	11.7	16.88	35.30	11.8	73.02	18.28	11.8	37.62	0.63
12.7	19.27	27.86	12.7	8.40	40.46	12.7	18.06	35.34	12.8	74.92	18.28	12.8	37.77	0.53
13.7	19.62	27.98	13.7	8.97	40.60	13.7	19.30	35.38	13.8	76.72	18.28	13.8	37.92	0.42
14.7	19.96	28.13	14.7	9.52	40.71	14.7	20.58	35.44	14.7	78.45	18.27	14.8	38.08	0.32
15.7	20.31	28.29	15.7	10.04	40.81	15.7	21.89	35.52	15.7	80.12	18.26	15.8	38.26	0.24
16.7	20.64	28.49	16.7	10.58	40.89	16.7	23.20	35.61	16.7	81.78	18.23	16.8	38.42	0.18
17.7	20.97	28.71	17.7	11.13	40.97	17.7	24.47	35.73	17.7	83.47	18.18	17.8	38.60	0.15
18.7	21.26	28.93	18.7	11.72	41.05	18.7	25.67	35.86	18.7	85.23	18.13	18.8	38.78	0.15
19.7	21.54	29.16	19.7	12.33	41.12	19.7	26.78	36.00	19.7	87.10	18.09	19.8	38.95	0.17
20.7	21.79	29.38	20.7	12.98	41.21	20.7	27.80	36.14	20.7	89.08	18.03	20.8	39.11	0.21
21.7	22.03	29.58	21.7	13.65	41.33	21.7	28.76	36.28	21.7	91.14	18.01	21.8	39.26	0.24
22.7	22.26	29.77	22.7	14.32	41.48	22.7	29.68	36.41	22.7	93.25	18.00	22.8	39.40	0.25
23.7	22.50	29.95	23.7	14.97	41.65	23.7	30.60	36.52	23.7	95.33	18.03	23.8	39.54	0.25
24.7	22.75	30.10	24.7	15.57	41.84	24.7	31.57	36.62	24.7	97.34	18.09	24.8	39.68	0.24
25.7	23.02	30.25	25.7	16.13	42.04	25.7	32.63	36.71	25.7	99.24	18.16	25.8	39.83	0.21
26.7	23.30	30.45	26.7	16.64	42.23	26.7	33.74	36.82	26.7	101.00	18.24	26.8	39.99	0.18
27.6	23.60	30.65	27.7	17.11	42.40	27.7	34.93	36.94	27.7	102.66	18.30	27.8	40.16	0.16
28.6	23.90	30.89	28.7	17.59	42.55	28.7	36.14	37.08	28.7	104.25	18.35	28.8	40.33	0.17
29.6	24.19	31.12	29.6	18.07	42.70	29.7	37.33	37.26	29.7	105.82	18.37	29.8	40.50	0.20
30.6	24.46	31.40	30.6	18.56	42.82	30.7	38.49	37.46	30.7	107.44	18.39	30.8	40.68	0.25
31.6	24.70	31.68	31.6	19.07	42.95	31.7	39.58	37.68	31.7	109.10	18.41	31.8	40.86	0.33
16.91	+16.88		24.50	-24.48		57.87	+57.86		73.62	-73.61		7.38	+7.32	
17 ^h 59 ^m 20 ^s .805			18 ^h 5 ^m 36 ^s .163			19 ^h 3 ^m 51 ^s .560			19 ^h 26 ^m 7 ^s .189			20 ^h 48 ^m 44 ^s .660		
+86° 36' 51".19			-87° 39' 52".21			+89° 0' 56".70			-89° 13' 35".99			+82° 13' 16".38		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ ¹ Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Apr.	h m s	° ' "	Apr.	h m s	° ' "	Apr.	h m s	° ' "	Apr.	h m s	° ' "	Apr.	h m s	° ' "
	21 38	-83 5		22 15	-86 23		22 37	-81 48		23 27	+86 50		23 47	-82 28
0.9	10.61	65.30	0.9	52.75	27.21	0.9	31.18	64.36	0.9	15.79	41.43	0.9	8.44	54.31
1.9	10.75	65.03	1.9	52.95	26.90	1.9	31.24	64.05	1.9	15.97	41.12	1.9	8.46	53.97
2.9	10.87	64.75	2.9	53.14	26.59	2.9	31.31	63.72	2.9	16.17	40.80	2.9	8.48	53.63
3.9	11.00	64.47	3.9	53.33	26.28	3.9	31.39	63.39	3.9	16.40	40.52	3.9	8.51	53.26
4.9	11.14	64.18	4.9	53.54	25.94	4.9	31.47	63.04	4.9	16.63	40.25	4.9	8.54	52.88
5.9	11.29	63.86	5.9	53.77	25.60	5.9	31.56	62.68	5.9	16.86	40.00	5.9	8.59	52.48
6.9	11.46	63.56	6.9	54.01	25.26	6.9	31.65	62.31	6.9	17.08	39.75	6.9	8.63	52.07
7.9	11.64	63.28	7.9	54.29	24.92	7.9	31.77	61.96	7.9	17.28	39.52	7.9	8.69	51.66
8.9	11.81	63.00	8.9	54.58	24.60	8.9	31.89	61.60	8.9	17.47	39.27	8.9	8.77	51.25
9.9	12.00	62.74	9.9	54.88	24.29	9.9	32.02	61.26	9.9	17.65	39.03	9.9	8.85	50.86
10.9	12.19	62.49	10.9	55.20	24.00	10.9	32.15	60.94	10.9	17.82	38.78	10.9	8.94	50.48
11.9	12.38	62.29	11.9	55.51	23.73	11.9	32.27	60.64	11.9	17.99	38.52	11.9	9.03	50.12
12.8	12.57	62.08	12.9	55.81	23.47	12.9	32.41	60.35	12.9	18.17	38.24	12.9	9.11	49.78
13.8	12.75	61.88	13.9	56.10	23.22	13.9	32.52	60.07	13.9	18.36	37.97	13.9	9.19	49.43
14.8	12.91	61.67	14.9	56.38	22.98	14.9	32.63	59.82	14.9	18.59	37.69	14.9	9.26	49.09
15.8	13.06	61.47	15.9	56.64	22.74	15.9	32.73	59.56	15.9	18.84	37.42	15.9	9.33	48.77
16.8	13.22	61.28	16.9	56.88	22.49	16.9	32.83	59.28	16.9	19.12	37.17	16.9	9.39	48.46
17.8	13.36	61.04	17.9	57.12	22.23	17.9	32.93	58.99	17.9	19.44	36.93	17.9	9.45	48.12
18.8	13.52	60.79	18.9	57.37	21.94	18.9	33.03	58.69	18.9	19.76	36.72	18.9	9.51	47.76
19.8	13.70	60.58	19.9	57.64	21.63	19.9	33.14	58.35	19.9	20.08	36.52	19.9	9.58	47.37
20.8	13.88	60.26	20.9	57.94	21.32	20.9	33.27	58.02	20.9	20.38	36.35	20.9	9.66	46.99
21.8	14.08	60.01	21.8	58.27	21.03	21.9	33.40	57.69	21.9	20.67	36.18	21.9	9.76	46.61
22.8	14.31	59.78	22.8	58.62	20.74	22.9	33.55	57.36	22.9	20.92	36.02	22.9	9.87	46.22
23.8	14.53	59.57	23.8	59.00	20.49	23.9	33.71	57.06	23.9	21.17	35.84	23.9	10.00	45.84
24.8	14.74	59.38	24.8	59.37	20.23	24.9	33.88	56.79	24.9	21.41	35.66	24.9	10.12	45.49
25.8	14.95	59.23	25.8	59.72	20.03	25.9	34.03	56.57	25.9	21.64	35.45	25.9	10.23	45.16
26.8	15.15	59.10	26.8	60.06	19.84	26.9	34.17	56.35	26.9	21.90	35.24	26.9	10.35	44.87
27.8	15.33	58.96	27.8	60.37	19.67	27.8	34.31	56.14	27.9	22.19	35.02	27.9	10.46	44.59
28.8	15.49	58.82	28.8	60.66	19.49	28.8	34.43	55.91	28.9	22.51	34.81	28.9	10.55	44.31
29.8	15.65	58.66	29.8	60.94	19.28	29.8	34.53	55.70	29.9	22.87	34.60	29.9	10.64	44.02
30.8	15.82	58.48	30.8	61.21	19.07	30.8	34.65	55.45	30.9	23.24	34.40	30.9	10.73	43.72
31.8	16.00	58.31	31.8	61.50	18.84	31.8	34.77	55.18	31.9	23.61	34.23	31.9	10.81	43.41
8.32	-8.26		15.88	-15.85		7.02	-6.95		18.16	+18.13		7.64	-7.58	
21 ^h 38 ^m	10°.025		22 ^h 15 ^m	56°.333		22 ^h 37 ^m	32°.703		23 ^h 27 ^m	44°.392		23 ^h 47 ^m	12°.813	
-83° 6'	23''.31		-86° 23'	45''.22		-81° 49'	21''.11		+86° 50'	39''.03		-82° 29'	8''.43	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

43 H. Cephei. Mag. 4.5			α Ursæ Minoris. (Polaris.) Mag. 2.1			4 G. Octantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
h m	° '		h m	° '		h m	° '		h m	° '		h m	° '	
May 0 56	+85 48		May 1 28	+88 51		May 1 41	-85 11		May 4 9	+85 20		May 5 34	+85 9	
0.9	45.97	28.63	0.9	44.03	30.76	0.9	52.84	21.22	1.1	38.19	16.93	1.1	52.81	46.54
1.9	46.20	28.37	1.9	44.65	30.47	1.9	52.84	20.88	2.1	38.15	16.59	2.1	52.69	46.25
2.9	46.41	28.13	2.9	45.30	30.20	2.9	52.84	20.52	3.1	38.14	16.27	3.1	52.58	45.97
3.9	46.63	27.90	3.9	45.92	29.93	3.9	52.86	20.14	4.1	38.13	15.95	4.1	52.49	45.69
4.9	46.82	27.70	4.9	46.52	29.69	4.9	52.89	19.78	5.1	38.13	15.67	5.1	52.39	45.43
5.9	47.02	27.50	5.9	47.10	29.46	5.9	52.94	19.37	6.1	38.13	15.41	6.1	52.30	45.18
6.9	47.20	27.30	6.9	47.63	29.23	6.9	53.00	18.98	7.0	38.11	15.14	7.1	52.21	44.95
7.9	47.38	27.10	7.9	48.14	29.00	7.9	53.09	18.58	8.0	38.08	14.86	8.1	52.11	44.69
8.9	47.55	26.87	8.9	48.62	28.75	8.9	53.18	18.20	9.0	38.05	14.60	9.1	52.01	44.46
9.9	47.72	26.65	9.9	49.10	28.50	9.9	53.28	17.82	10.0	38.01	14.31	10.1	51.90	44.23
10.9	47.89	26.41	10.9	49.60	28.24	10.9	53.38	17.49	11.0	37.98	14.05	11.1	51.77	44.03
11.9	48.07	26.19	11.9	50.13	27.97	11.9	53.47	17.15	12.0	37.93	13.74	12.1	51.64	43.76
12.9	48.27	25.95	12.9	50.75	27.69	12.9	53.55	16.84	13.0	37.90	13.41	13.1	51.51	43.47
13.9	48.50	25.72	13.9	51.43	27.40	13.9	53.63	16.53	14.0	37.89	13.09	14.1	51.41	43.15
14.9	48.74	25.49	14.9	52.21	27.15	14.9	53.71	16.22	15.0	37.89	12.74	15.1	51.32	42.85
15.9	49.01	25.28	15.9	53.07	26.90	15.9	53.78	15.90	16.0	37.94	12.39	16.1	51.27	42.51
16.9	49.30	25.10	16.9	53.96	26.67	16.9	53.83	15.57	17.0	37.99	12.06	17.1	51.22	42.17
17.9	49.57	24.96	17.9	54.87	26.48	17.9	53.88	15.21	18.0	38.08	11.75	18.1	51.20	41.85
18.9	49.84	24.83	18.9	55.75	26.31	18.9	53.95	14.83	19.0	38.16	11.47	19.1	51.20	41.56
19.9	50.10	24.70	19.9	56.57	26.16	19.9	54.03	14.44	20.0	38.25	11.21	20.1	51.18	41.31
20.9	50.33	24.58	20.9	57.32	25.99	20.9	54.16	14.06	21.0	38.30	10.97	21.1	51.17	41.06
21.9	50.55	24.45	21.9	57.99	25.82	21.9	54.30	13.68	22.0	38.36	10.72	22.1	51.14	40.80
22.9	50.76	24.29	22.9	58.64	25.64	22.9	54.45	13.36	23.0	38.40	10.45	23.1	51.09	40.55
23.9	50.97	24.13	23.9	59.29	25.45	23.9	54.61	13.03	24.0	38.40	10.18	24.1	51.03	40.28
24.9	51.18	23.95	24.9	60.01	25.22	24.9	54.75	12.73	24.9	38.44	9.87	25.1	50.96	40.00
25.9	51.42	23.78	25.9	60.81	24.99	25.9	54.88	12.45	25.9	38.46	9.56	26.1	50.90	39.68
26.9	51.70	23.60	26.9	61.68	24.75	26.9	55.01	12.20	26.9	38.51	9.23	27.1	50.84	39.36
27.9	51.98	23.44	27.9	62.63	24.54	27.9	55.11	11.92	27.9	38.59	8.89	28.1	50.80	39.02
28.9	52.30	23.29	28.9	63.65	24.36	28.9	55.22	11.65	28.9	38.68	8.56	29.0	50.80	38.66
29.9	52.62	23.16	29.9	64.70	24.19	29.9	55.32	11.36	29.9	38.78	8.22	30.0	50.80	38.31
30.8	52.93	23.06	30.9	65.74	24.04	30.9	55.45	11.07	30.9	38.90	7.92	31.0	50.83	37.97
31.8	53.22	22.98	31.9	66.75	23.90	31.9	55.57	10.75	31.9	39.04	7.63	32.0	50.86	37.68
13.68	+13.64		50.15	+50.14		11.92	-11.88		12.30	+12.26		11.86	+11.81	
0 ^h 57 ^m	1°.657		1 ^h 29 ^m	44°.254		1 ^h 42 ^m	6°.102		4 ^h 9 ^m	44°.952		5 ^h 34 ^m	54°.014	
+85° 48'	25''.87		+88° 51'	25''.03		-85° 11'	39''.58		+85° 20'	1''.04		+85° 9'	28''.07	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

31 G. Mensae. Mag. 6.2			♄ Mensae. Mag. 5.6			51 H. Cephei. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Octantis. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
May	h m 5 46	° ' " -84 49	May	h m 6 46	° ' " -80 43	May	h m 7 1	° ' " +87 11	May	h m 7 13	° ' " +82 34	May	h m 7 16	° ' " -86 54
	s 23	" "		s 55.89	" "		s 41.40	" "		s 33.56	" "		s 16.54	" "
1.1	9.23	56.06	1.2	55.89	48.82	1.2	41.40	18.84	1.2	33.56	54.42	1.2	16.54	17.19
2.1	9.01	55.91	2.2	55.76	48.73	2.2	41.05	18.62	2.2	33.42	54.24	2.2	16.13	17.16
3.1	8.79	55.72	3.2	55.62	48.63	3.2	40.72	18.41	3.2	33.29	54.05	3.2	15.70	17.13
4.1	8.57	55.53	4.2	55.49	48.52	4.2	40.42	18.22	4.2	33.19	53.85	4.2	15.25	17.05
5.1	8.35	55.31	5.2	55.35	48.38	5.2	40.13	18.03	5.2	33.08	53.68	5.2	14.79	16.97
6.1	8.12	55.09	6.2	55.21	48.22	6.2	39.86	17.83	6.2	32.98	53.52	6.2	14.34	16.89
7.1	7.91	54.82	7.2	55.07	48.04	7.2	39.58	17.68	7.2	32.88	53.37	7.2	13.88	16.76
8.1	7.71	54.56	8.2	54.95	47.86	8.2	39.29	17.50	8.2	32.78	53.21	8.2	13.46	16.62
9.1	7.52	54.28	9.2	54.81	47.65	9.2	39.01	17.34	9.2	32.66	53.07	9.2	13.02	16.48
10.1	7.34	53.99	10.1	54.69	47.45	10.2	38.69	17.17	10.2	32.54	52.92	10.2	12.61	16.32
11.1	7.17	53.72	11.1	54.57	47.25	11.2	38.37	16.99	11.2	32.41	52.78	11.2	12.23	16.16
12.1	7.00	53.46	12.1	54.46	47.05	12.2	38.03	16.81	12.2	32.28	52.61	12.2	11.85	16.00
13.1	6.85	53.22	13.1	54.35	46.88	13.2	37.68	16.61	13.2	32.15	52.41	13.2	11.50	15.86
14.1	6.68	53.00	14.1	54.25	46.73	14.1	37.34	16.35	14.2	32.02	52.21	14.2	11.16	15.76
15.1	6.51	52.79	15.1	54.14	46.57	15.1	37.03	16.08	15.2	31.89	51.97	15.2	10.80	15.65
16.1	6.34	52.57	16.1	54.03	46.42	16.1	36.74	15.81	16.2	31.79	51.72	16.2	10.43	15.56
17.1	6.16	52.35	17.1	53.92	46.27	17.1	36.51	15.51	17.1	31.69	51.46	17.2	10.03	15.46
18.1	5.98	52.11	18.1	53.79	46.11	18.1	36.30	15.23	18.1	31.63	51.20	18.1	9.62	15.35
19.1	5.79	51.85	19.1	53.67	45.92	19.1	36.12	14.98	19.1	31.56	50.94	19.1	9.20	15.22
20.1	5.60	51.57	20.1	53.55	45.70	20.1	35.97	14.73	20.1	31.51	50.72	20.1	8.78	15.05
21.1	5.41	51.25	21.1	53.42	45.48	21.1	35.80	14.51	21.1	31.45	50.52	21.1	8.35	14.86
22.1	5.26	50.92	22.1	53.32	45.20	22.1	35.61	14.30	22.1	31.37	50.33	22.1	7.96	14.66
23.1	5.12	50.59	23.1	53.21	44.94	23.1	35.40	14.07	23.1	31.29	50.13	23.1	7.58	14.43
24.1	4.99	50.28	24.1	53.11	44.67	24.1	35.16	13.87	24.1	31.20	49.94	24.1	7.24	14.20
25.1	4.89	49.98	25.1	53.02	44.42	25.1	34.89	13.64	25.1	31.09	49.72	25.1	6.92	14.00
26.1	4.77	49.69	26.1	52.93	44.19	26.1	34.62	13.37	26.1	30.99	49.47	26.1	6.62	13.81
27.1	4.66	49.45	27.1	52.85	43.97	27.1	34.37	13.10	27.1	30.88	49.21	27.1	6.33	13.62
28.1	4.54	49.19	28.1	52.76	43.77	28.1	34.13	12.79	28.1	30.79	48.92	28.1	6.05	13.47
29.1	4.41	48.94	29.1	52.68	43.57	29.1	33.93	12.47	29.1	30.71	48.62	29.1	5.73	13.31
30.1	4.28	48.70	30.1	52.59	43.37	30.1	33.74	12.13	30.1	30.66	48.32	30.1	5.41	13.15
31.0	4.15	48.43	31.1	52.50	43.14	31.1	33.60	11.85	31.1	30.59	48.03	31.1	5.08	12.97
32.0	4.02	48.14	32.1	52.40	42.92	32.1	33.49	11.53	32.1	30.54	47.75	32.1	4.74	12.79
11.10	-11.05		6.21	-6.13		20.38	+20.36		7.74	+7.68		18.52	-18.49	
5 ^h 46 ^m 26 ^s .439			6 ^h 47 ^m 3 ^s .489			7 ^h 1 ^m 34 ^s .861			7 ^h 13 ^m 29 ^s .477		7 ^h 16 ^m 40 ^s .555			
-84° 49' 48".17			-80° 43' 34".16			+87° 11' 0".11			+82° 34' 36".50		-86° 54' 0".14			

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			ζ Octantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			ζ Chamseleontis. Mag. 5.2			30 H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
May	h m 8 14	° ' " +88 53	May	h m 9 8	° ' " -85 20	May	h m 9 25	° ' " +81 42	May	h m 9 36	° ' " -80 34	May	h m 10 21	° ' " +82 59
1.2	82.18	28.30	1.3	59.21	7.84	1.3	21.16	9.45	1.3	22.78	17.09	1.3	8.18	21.01
2.2	81.07	28.17	2.3	58.95	7.97	2.3	21.00	9.46	2.3	22.68	17.24	2.3	8.01	21.09
3.2	80.03	28.04	3.3	58.69	8.10	3.3	20.86	9.45	3.3	22.55	17.40	3.3	7.85	21.15
4.2	79.07	27.93	4.3	58.41	8.22	4.3	20.73	9.41	4.3	22.42	17.54	4.3	7.70	21.21
5.2	78.14	27.81	5.3	58.13	8.33	5.3	20.61	9.39	5.3	22.29	17.70	5.3	7.54	21.26
6.2	77.25	27.70	6.3	57.83	8.43	6.3	20.49	9.38	6.3	22.16	17.81	6.3	7.41	21.31
7.2	76.37	27.61	7.3	57.52	8.48	7.3	20.38	9.39	7.3	22.02	17.92	7.3	7.27	21.37
8.2	75.49	27.50	8.3	57.21	8.53	8.3	20.26	9.38	8.3	21.87	17.99	8.3	7.13	21.43
9.2	74.58	27.42	9.3	56.92	8.57	9.3	20.14	9.37	9.3	21.73	18.05	9.3	6.99	21.49
10.2	73.65	27.34	10.2	56.62	8.56	10.3	20.01	9.40	10.3	21.59	18.11	10.3	6.84	21.58
11.2	72.65	27.24	11.2	56.34	8.57	11.3	19.87	9.42	11.3	21.45	18.15	11.3	6.68	21.67
12.2	71.62	27.14	12.2	56.07	8.57	12.3	19.73	9.43	12.3	21.33	18.19	12.3	6.51	21.74
13.2	70.54	27.01	13.2	55.80	8.58	13.3	19.58	9.41	13.3	21.20	18.23	13.3	6.33	21.81
14.2	69.47	26.87	14.2	55.56	8.62	14.2	19.43	9.37	14.3	21.09	18.28	14.3	6.15	21.86
15.2	68.41	26.69	15.2	55.32	8.65	15.2	19.27	9.30	15.3	20.98	18.35	15.3	5.96	21.87
16.2	67.41	26.50	16.2	55.07	8.71	16.2	19.12	9.22	16.3	20.86	18.44	16.3	5.78	21.87
17.2	66.50	26.27	17.2	54.80	8.77	17.2	18.98	9.11	17.2	20.75	18.53	17.3	5.61	21.84
18.2	65.68	26.06	18.2	54.54	8.83	18.2	18.87	8.99	18.2	20.62	18.62	18.3	5.46	21.78
19.2	64.95	25.86	19.2	54.25	8.88	19.2	18.76	8.88	19.2	20.49	18.69	19.3	5.31	21.72
20.2	64.28	25.67	20.2	53.93	8.91	20.2	18.66	8.77	20.2	20.35	18.76	20.3	5.17	21.68
21.2	63.60	25.48	21.2	53.63	8.91	21.2	18.56	8.67	21.2	20.20	18.80	21.3	5.04	21.64
22.2	62.91	25.31	22.2	53.32	8.87	22.2	18.46	8.61	22.2	20.05	18.82	22.3	4.91	21.63
23.2	62.14	25.16	23.2	53.03	8.82	23.2	18.35	8.55	23.2	19.91	18.78	23.3	4.77	21.63
24.2	61.31	25.00	24.2	52.74	8.76	24.2	18.22	8.50	24.2	19.77	18.74	24.3	4.62	21.65
25.2	60.40	24.84	25.2	52.48	8.68	25.2	18.09	8.44	25.2	19.64	18.71	25.3	4.46	21.65
26.2	59.46	24.65	26.2	52.24	8.63	26.2	17.95	8.35	26.2	19.53	18.67	26.3	4.28	21.64
27.2	58.51	24.42	27.2	52.01	8.59	27.2	17.80	8.22	27.2	19.42	18.65	27.3	4.09	21.61
28.2	57.60	24.20	28.2	51.77	8.56	28.2	17.66	8.09	28.2	19.30	18.64	28.2	3.90	21.57
29.2	56.74	23.95	29.2	51.54	8.55	29.2	17.52	7.96	29.2	19.20	18.66	29.2	3.72	21.49
30.2	55.96	23.68	30.2	51.31	8.53	30.2	17.39	7.78	30.2	19.08	18.67	30.2	3.55	21.40
31.2	55.25	23.42	31.2	51.05	8.50	31.2	17.28	7.62	31.2	18.96	18.67	31.2	3.40	21.30
32.2	54.61	23.14	32.2	50.78	8.47	32.2	17.17	7.45	32.2	18.83	18.66	32.2	3.25	21.18
51.66	+51.65	12.30	-12.26	6.93	+6.86	6.10	-6.02	8.19	+8.13					
8 ^h 14 ^m 48 ^s .311	9 ^h 9 ^m 6 ^s .085	9 ^h 25 ^m 12 ^s .930	9 ^h 36 ^m 24 ^s .003	10 ^h 20 ^m 57 ^s .259										
+88° 53' 11".43	-85° 19' 42".77	+81° 41' 57".18	-80° 33' 50".61	+82° 59' 12".27										

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

7 Octantis. Mag. 6.3			Bradley 1672. Mag. 6.3			1 Octantis. Mag. 5.4			32 H. Camelop. seq. Mag. 5.3			K Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
May	h m 10 59	° ' -84 8	May	h m 12 14	° ' +88 9	May	h m 12 46	° ' -84 40	May	h m 12 48	° ' +83 52	May	h m 13 27	° ' -85 21
	s 58.81	" 58.54		s 70.09	" 56.34		s 12.92	" 26.28		s 43.76	" 6.99		s 21.88	" 44.28
2.3	58.69	58.81	2.4	69.56	56.55	2.4	12.87	26.60	2.4	43.62	7.23	2.5	21.87	44.64
3.3	58.53	59.07	3.4	69.03	56.73	3.4	12.82	26.95	3.4	43.49	7.48	3.4	21.87	45.00
4.3	58.38	59.34	4.4	68.51	56.92	4.4	12.76	27.30	4.4	43.35	7.71	4.4	21.86	45.36
5.3	58.21	59.59	5.4	68.03	57.10	5.4	12.68	27.65	5.4	43.24	7.93	5.4	21.82	45.74
6.3	58.03	59.83	6.4	67.57	57.28	6.4	12.59	28 00	6.4	43.13	8.13	6.4	21.76	46.10
7.3	57.85	60.06	7.4	67.13	57.44	7.4	12.49	28.34	7.4	43.02	8.34	7.4	21.70	46.47
8.3	57.65	60.29	8.4	66.70	57.62	8.4	12.37	28.68	8.4	42.93	8.57	8.4	21.61	46.83
9.3	57.46	60.48	9.4	66.27	57.82	9.4	12.24	29.00	9.4	42.82	8.80	9.4	21.51	47.18
10.3	57.26	60.67	10.4	65.82	58.03	10.4	12.11	29.30	10.4	42.71	9.04	10.4	21.40	47.50
11.3	57.07	60.84	11.4	65.35	58.22	11.4	11.97	29.59	11.4	42.59	9.28	11.4	21.29	47.81
12.3	56.88	60.99	12.4	64.84	58.43	12.4	11.85	29.86	12.4	42.46	9.54	12.4	21.19	48.11
13.3	56.70	61.14	13.4	64.28	58.64	13.4	11.73	30.12	13.4	42.32	9.80	13.4	21.09	48.38
14.3	56.55	61.31	14.4	63.68	58.85	14.4	11.63	30.37	14.4	42.15	10.04	14.4	21.02	48.67
15.3	56.39	61.49	15.4	63.02	59.03	15.4	11.54	30.63	15.4	41.98	10.28	15.4	20.96	48.97
16.3	56.24	61.69	16.4	62.36	59.17	16.4	11.45	30.94	16.4	41.80	10.47	16.4	20.91	49.28
17.3	56.08	61.90	17.4	61.71	59.29	17.4	11.37	31.24	17.4	41.64	10.63	17.4	20.86	49.60
18.3	55.91	62.12	18.4	61.09	59.39	18.4	11.29	31.56	18.4	41.48	10.77	18.4	20.81	49.93
19.3	55.73	62.32	19.4	60.50	59.48	19.4	11.17	31.88	19.4	41.34	10.90	19.4	20.73	50.29
20.3	55.53	62.51	20.4	59.97	59.56	20.4	11.04	32.19	20.4	41.20	11.05	20.4	20.62	50.64
21.3	55.31	62.69	21.3	59.46	59.65	21.4	10.89	32.52	21.4	41.05	11.18	21.4	20.50	51.01
22.3	55.09	62.83	22.3	58.97	59.77	22.4	10.72	32.80	22.4	40.92	11.32	22.4	20.36	51.35
23.3	54.87	62.95	23.3	58.48	59.90	23.4	10.55	33.06	23.4	40.80	11.50	23.4	20.20	51.65
24.3	54.67	63.05	24.3	57.94	60.03	24.4	10.37	33.30	24.4	40.66	11.68	24.4	20.03	51.92
25.3	54.46	63.13	25.3	57.35	60.18	25.4	10.22	33.51	25.4	40.49	11.88	25.4	19.87	52.18
26.3	54.28	63.21	26.3	56.71	60.32	26.4	10.07	33.71	26.4	40.32	12.06	26.4	19.74	52.42
27.3	54.10	63.30	27.3	56.03	60.46	27.4	9.93	33.89	27.4	40.13	12.25	27.4	19.63	52.66
28.3	53.93	63.42	28.3	55.32	60.55	28.4	9.80	34.13	28.4	39.94	12.41	28.4	19.52	52.90
29.3	53.77	63.56	29.3	54.61	60.65	29.3	9.68	34.37	29.4	39.74	12.55	29.4	19.42	53.15
30.3	53.60	63.68	30.3	53.89	60.72	30.3	9.56	34.61	30.3	39.55	12.68	30.4	19.32	53.42
31.3	53.42	63.80	31.3	53.22	60.78	31.3	9.43	34.85	31.3	39.36	12.79	31.4	19.20	53.69
32.3	53.23	63.91	32.3	52.55	60.82	32.3	9.30	35.11	32.3	39.17	12.87	32.4	19.07	53.96
9.81	-9.76		31.25	+31.24		10.78	-10.73		9.36	+9.31		12.37	-12.33	
10 ^h 59 ^m	55 ^s .642		12 ^h 14 ^m	28 ^s .053		12 ^h 46 ^m	1 ^s .183		12 ^h 48 ^m	29 ^s .976		13 ^h 27 ^m	5 ^s .514	
-84° 8'	31'' .24		+88° 9'	56'' .03		-84° 40'	2'' .72		+83° 52'	10'' .05		-85° 21'	23'' .59	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Octantis. Mag. 4.1			Groombridge 2288. Mag. 7.2			ρ Octantis. Mag. 5.7			ϵ Ursæ Minoris. Mag. 4.4			59 G. Apo Mag. 5.	
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.
May	h m	° '	May	h m	° '	May	h m	° '	May	h m	° '	May	h m
	14 13	-83 17		15 4	+87 33		15 24	-84 11		16 54	+82 10		17 15
	s	" "		s	" "		s	" "		s	" "		s
1.5	32.51	21.25	1.5	25.26	11.53	1.5	1.73	27.50	1.6	37.07	19.74	1.6	56.58
2.5	32.56	21.57	2.5	25.18	11.88	2.5	1.85	27.81	2.6	37.13	20.07	2.6	56.71
3.5	32.60	21.92	3.5	25.09	12.19	3.5	1.96	28.13	3.6	37.19	20.39	3.6	56.84
4.5	32.63	22.28	4.5	25.00	12.51	4.5	2.06	28.46	4.6	37.25	20.70	4.6	56.98
5.5	32.65	22.66	5.5	24.92	12.79	5.5	2.17	28.82	5.6	37.30	20.99	5.6	57.10
6.5	32.66	23.03	6.5	24.85	13.07	6.5	2.26	29.18	6.6	37.36	21.25	6.6	57.24
7.5	32.66	23.41	7.5	24.80	13.36	7.5	2.33	29.54	7.6	37.42	21.52	7.6	57.35
8.5	32.65	23.78	8.5	24.75	13.63	8.5	2.39	29.90	8.6	37.47	21.79	8.6	57.46
9.5	32.62	24.14	9.5	24.72	13.93	9.5	2.44	30.27	9.6	37.52	22.06	9.6	57.56
10.5	32.59	24.49	10.5	24.69	14.24	10.5	2.48	30.62	10.6	37.58	22.36	10.6	57.66
11.5	32.57	24.82	11.5	24.64	14.55	11.5	2.51	30.97	11.6	37.65	22.66	11.6	57.74
12.5	32.53	25.11	12.5	24.57	14.88	12.5	2.54	31.28	12.6	37.70	22.97	12.6	57.83
13.5	32.50	25.41	13.5	24.47	15.22	13.5	2.57	31.58	13.6	37.75	23.32	13.6	57.91
14.4	32.49	25.70	14.5	24.33	15.57	14.5	2.61	31.87	14.6	37.80	23.68	14.6	57.99
15.4	32.48	26.01	15.5	24.16	15.91	15.5	2.67	32.17	15.6	37.83	24.05	15.6	58.09
16.4	32.48	26.33	16.5	23.95	16.23	16.5	2.75	32.47	16.6	37.85	24.41	16.6	58.18
17.4	32.48	26.65	17.5	23.72	16.54	17.5	2.83	32.79	17.6	37.86	24.76	17.6	58.31
18.4	32.50	27.02	18.5	23.48	16.81	18.5	2.90	33.12	18.6	37.88	25.10	18.6	58.43
19.4	32.50	27.37	19.5	23.26	17.06	19.5	2.97	33.48	19.5	37.89	25.40	19.6	58.54
20.4	32.47	27.75	20.5	23.05	17.30	20.5	3.02	33.86	20.5	37.90	25.70	20.6	58.65
21.4	32.43	28.12	21.5	22.88	17.54	21.5	3.05	34.23	21.5	37.91	25.98	21.6	58.76
22.4	32.38	28.48	22.5	22.72	17.79	22.5	3.07	34.60	22.5	37.92	26.24	22.6	58.83
23.4	32.30	28.80	23.5	22.58	18.06	23.5	3.06	34.96	23.5	37.94	26.53	23.6	58.90
24.4	32.23	29.09	24.5	22.42	18.33	24.5	3.04	35.29	24.5	37.97	26.84	24.5	58.96
25.4	32.17	29.38	25.5	22.25	18.64	25.5	3.02	35.59	25.5	38.00	27.17	25.5	59.02
26.4	32.10	29.62	26.5	22.03	18.96	26.5	3.00	35.87	26.5	38.02	27.52	26.5	59.08
27.4	32.05	29.89	27.4	21.79	19.27	27.5	3.00	36.16	27.5	38.02	27.89	27.5	59.13
28.4	32.00	30.15	28.4	21.50	19.59	28.5	3.01	36.45	28.5	38.02	28.27	28.5	59.20
29.4	31.97	30.42	29.4	21.19	19.89	29.5	3.03	36.72	29.5	38.02	28.64	29.5	59.28
30.4	31.93	30.71	30.4	20.88	20.17	30.5	3.05	37.03	30.5	38.00	29.00	30.5	59.36
31.4	31.90	31.01	31.4	20.56	20.42	31.5	3.07	37.34	31.5	37.98	29.34	31.5	59.44
32.4	31.85	31.32	32.4	20.24	20.66	32.4	3.08	37.68	32.5	37.96	29.63	32.5	59.51
8.56	-8.50		23.44	+23.41		9.88	-9.83		7.34	+7.28		6.24	-
14 ^h 13 ^m	18° 53'		15 ^h 4 ^m	0° 6.607		15 ^h 23 ^m	43° 237		16 ^h 54 ^m	31° 741		17 ^h 15 ^m	4
-83° 17'	4'' 27		+87° 33'	24'' 43		-84° 11'	17'' 84		+82° 10'	38'' 40		-80° 47'	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Ursae Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursae Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "	
May 17 59	+86 36		May 18 6	-87 39		May 19 3	+89 0		May 19 27	-89 13		May 20 48	+82 13	
1.6	24.70	31.68	1.6	19.07	42.95	1.7	39.58	37.68	1.7	49.10	18.41	1.8	40.86	0.33
2.6	24.93	31.97	2.6	19.62	43.08	2.7	40.60	37.88	2.7	50.86	18.41	2.8	41.03	0.43
3.6	25.13	32.24	3.6	20.17	43.23	3.7	41.54	38.08	3.7	52.67	18.44	3.8	41.19	0.53
4.6	25.33	32.51	4.6	20.74	43.40	4.7	42.43	38.28	4.7	54.53	18.49	4.8	41.35	0.63
5.6	25.52	32.75	5.6	21.31	43.58	5.7	43.29	38.48	5.7	56.43	18.53	5.7	41.50	0.71
6.6	25.71	33.00	6.6	21.87	43.78	6.7	44.12	38.67	6.7	58.32	18.62	6.7	41.65	0.78
7.6	25.90	33.24	7.6	22.39	44.01	7.7	44.96	38.85	7.7	60.19	18.72	7.7	41.79	0.85
8.6	26.10	33.46	8.6	22.89	44.25	8.7	45.83	39.03	8.7	61.99	18.84	8.7	41.93	0.92
9.6	26.30	33.69	9.6	23.37	44.49	9.7	46.72	39.20	9.7	63.75	18.98	9.7	42.08	0.99
10.6	26.51	33.93	10.6	23.81	44.73	10.7	47.66	39.38	10.7	65.38	19.11	10.7	42.23	1.07
11.6	26.73	34.17	11.6	24.22	44.96	11.7	48.63	39.57	11.7	66.93	19.25	11.7	42.39	1.14
12.6	26.95	34.45	12.6	24.62	45.18	12.7	49.62	39.77	12.7	68.43	19.37	12.7	42.56	1.23
13.6	27.16	34.74	13.6	25.02	45.38	13.7	50.62	39.99	13.7	69.87	19.47	13.7	42.72	1.33
14.6	27.35	35.06	14.6	25.42	45.57	14.6	51.58	40.25	14.7	71.34	19.56	14.7	42.89	1.46
15.6	27.52	35.38	15.6	25.85	45.75	15.6	52.47	40.52	15.7	72.84	19.66	15.7	43.06	1.63
16.6	27.67	35.73	16.6	26.30	45.93	16.6	53.28	40.80	16.7	74.43	19.72	16.7	43.22	1.81
17.6	27.78	36.06	17.6	26.79	46.11	17.6	53.98	41.07	17.7	76.11	19.80	17.7	43.37	1.99
18.6	27.88	36.39	18.6	27.30	46.32	18.6	54.59	41.34	18.7	77.88	19.89	18.7	43.52	2.19
19.6	27.97	36.67	19.6	27.82	46.56	19.6	55.13	41.61	19.7	79.72	20.01	19.7	43.66	2.36
20.6	28.06	36.95	20.6	28.31	46.81	20.6	55.67	41.87	20.6	81.54	20.17	20.7	43.78	2.53
21.6	28.16	37.20	21.6	28.77	47.09	21.6	56.23	42.10	21.6	83.31	20.35	21.7	43.91	2.69
22.6	28.28	37.46	22.6	29.19	47.38	22.6	56.84	42.32	22.6	84.96	20.54	22.7	44.03	2.84
23.6	28.40	37.72	23.6	29.56	47.68	23.6	57.52	42.55	23.6	86.46	20.73	23.7	44.17	2.96
24.6	28.54	37.99	24.6	29.90	47.95	24.6	58.26	42.79	24.6	87.84	20.91	24.7	44.30	3.10
25.6	28.68	38.30	25.6	30.18	48.22	25.6	59.06	43.04	25.6	89.12	21.09	25.7	44.45	3.26
26.6	28.82	38.63	26.6	30.47	48.45	26.6	59.84	43.31	26.6	90.34	21.25	26.7	44.60	3.44
27.6	28.94	38.97	27.6	30.78	48.69	27.6	60.58	43.61	27.6	91.59	21.41	27.7	44.76	3.65
28.6	29.04	39.34	28.6	31.10	48.89	28.6	61.25	43.92	28.6	92.87	21.55	28.7	44.92	3.87
29.6	29.10	39.70	29.6	31.45	49.12	29.6	61.84	44.24	29.6	94.22	21.69	29.7	45.06	4.10
30.6	29.16	40.06	30.6	31.81	49.34	30.6	62.36	44.57	30.6	95.63	21.83	30.7	45.20	4.34
31.6	29.21	40.40	31.6	32.19	49.57	31.6	62.81	44.88	31.6	97.10	21.99	31.7	45.34	4.59
32.6	29.24	40.74	32.6	32.56	49.84	32.6	63.20	45.19	32.6	98.59	22.16	32.7	45.47	4.83
16.91	+16.88		24.52	-24.50		57.95	+57.94		73.66	-73.65		7.38	+7.32	
17 ^h 59 ^m	20°.805		18 ^h 5 ^m 36".163			19 ^h 3 ^m 51".560			19 ^h 26 ^m 7".189			20 ^h 48 ^m 44".660		
+86° 36'	51".19		-87° 39'	52".21		+89° 0'	56".70		-89° 13'	35".99		+82° 13'	16".38	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			υ Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ^1 Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
May	h m ° ' s		May	h m ° ' s		May	h m ° ' s		May	h m ° ' s		May	h m ° ' s	
	21 38 -83 5			22 16 -86 23			22 37 -81 48			23 27 +86 50			23 47 -82 28	
1.8	16.00 58.31	1.8	1.50 18.84	1.8	34.77 55.18	1.9	23.61 34.23	1.9	10.81 43.41					
2.8	16.17 58.10	2.8	1.79 18.61	2.8	34.91 54.94	2.9	23.99 34.10	2.9	10.90 43.10					
3.8	16.35 57.93	3.8	2.12 18.38	3.8	35.04 54.69	3.9	24.36 33.96	3.9	11.00 42.78					
4.8	16.56 57.75	4.8	2.45 18.15	4.8	35.18 54.42	4.9	24.70 33.85	4.9	11.13 42.43					
5.8	16.78 57.59	5.8	2.82 17.94	5.8	35.35 54.16	5.9	25.04 33.74	5.9	11.26 42.10					
6.8	17.00 57.44	6.8	3.19 17.75	6.8	35.51 53.92	6.9	25.36 33.61	6.9	11.39 41.77					
7.8	17.22 57.32	7.8	3.57 17.57	7.8	35.67 53.70	7.9	25.66 33.48	7.9	11.53 41.46					
8.8	17.43 57.22	8.8	3.95 17.42	8.8	35.84 53.51	8.8	25.97 33.36	8.9	11.68 41.18					
9.8	17.63 57.11	9.8	4.34 17.26	9.8	36.00 53.33	9.8	26.28 33.23	9.9	11.83 40.91					
10.8	17.84 57.03	10.8	4.70 17.14	10.8	36.16 53.18	10.8	26.59 33.08	10.9	11.97 40.66					
11.8	18.03 56.98	11.8	5.04 17.01	11.8	36.31 53.01	11.8	26.92 32.94	11.9	12.10 40.42					
12.8	18.22 56.91	12.8	5.37 16.89	12.8	36.46 52.85	12.8	27.28 32.81	12.9	12.21 40.18					
13.8	18.39 56.82	13.8	5.69 16.77	13.8	36.59 52.69	13.8	27.67 32.67	13.9	12.32 39.94					
14.8	18.56 56.73	14.8	5.98 16.63	14.8	36.72 52.51	14.8	28.08 32.57	14.8	12.43 39.70					
15.8	18.73 56.61	15.8	6.29 16.48	15.8	36.86 52.34	15.8	28.50 32.47	15.8	12.55 39.44					
16.8	18.92 56.48	16.8	6.61 16.31	16.8	36.99 52.14	16.8	28.94 32.41	16.8	12.68 39.17					
17.7	19.10 56.35	17.8	6.94 16.14	17.8	37.14 51.94	17.8	29.36 32.38	17.8	12.81 38.90					
18.7	19.33 56.22	18.8	7.32 15.96	18.8	37.32 51.71	18.8	29.75 32.35	18.8	12.94 38.58					
19.7	19.56 56.11	19.8	7.71 15.79	19.8	37.49 51.50	19.8	30.13 32.32	19.8	13.09 38.28					
20.7	19.79 56.03	20.8	8.14 15.65	20.8	37.67 51.32	20.8	30.47 32.30	20.8	13.27 38.00					
21.7	20.03 55.98	21.8	8.54 15.54	21.8	37.86 51.16	21.8	30.79 32.28	21.8	13.45 37.74					
22.7	20.25 55.95	22.8	8.95 15.45	22.8	38.05 51.03	22.8	31.12 32.24	22.8	13.61 37.52					
23.7	20.46 55.94	23.8	9.34 15.40	23.8	38.21 50.93	23.8	31.45 32.18	23.8	13.77 37.32					
24.7	20.64 55.93	24.8	9.69 15.34	24.8	38.37 50.83	24.8	31.81 32.11	24.8	13.93 37.13					
25.7	20.83 55.93	25.8	10.03 15.29	25.8	38.52 50.76	25.8	32.20 32.04	25.8	14.08 36.95					
26.7	21.00 55.93	26.7	10.35 15.24	26.8	38.66 50.67	26.8	32.61 31.97	26.8	14.21 36.78					
27.7	21.17 55.90	27.7	10.66 15.18	27.8	38.80 50.57	27.8	33.05 31.93	27.8	14.34 36.61					
28.7	21.34 55.86	28.7	10.97 15.10	28.8	38.93 50.44	28.8	33.49 31.92	28.8	14.46 36.42					
29.7	21.52 55.81	29.7	11.29 15.01	29.8	39.07 50.31	29.8	33.93 31.92	29.8	14.59 36.22					
30.7	21.71 55.76	30.7	11.62 14.92	30.8	39.23 50.19	30.8	34.38 31.94	30.8	14.74 36.01					
31.7	21.90 55.72	31.7	11.98 14.83	31.8	39.39 50.07	31.8	34.79 31.97	31.8	14.88 35.79					
32.7	22.11 55.70	32.7	12.35 14.76	32.7	39.57 49.94	32.8	35.18 32.02	32.8	15.04 35.58					
8.32	-8.26	15.87	-15.84	7.02	-6.95	18.15	+18.13	7.64	-7.57					
21 ^h 38 ^m 10 ^s .025	22 ^h 15 ^m 56 ^s .333	22 ^h 37 ^m 32 ^s .703	23 ^h 27 ^m 44 ^s .302	23 ^h 47 ^m 12 ^s .813										
-83° 6' 23".31	-86° 23' 45".22	-81° 49' 21".11	+86° 50' 39".03	-82° 29' 8".43										

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

43 H. Cephei. Mag. 4.5			α Ursae Minoris. (Polaris.) Mag. 2.1			4 G. Octantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
June	h m 0 56	° ' +85 48	June	h m 1 29	° ' +88 51	June	h m 1 41	° ' -85 11	June	h m 4 9	° ' +85 20	June	h m 5 34	° ' +85 9
0.8	53.22	22.98	0.9	6.75	23.90	0.9	55.57	10.75	0.9	39.04	7.63	1.0	50.86	37.68
1.8	53.52	22.91	1.9	7.73	23.78	1.9	55.71	10.43	1.9	39.17	7.35	2.0	50.90	37.38
2.8	53.80	22.84	2.9	8.66	23.67	2.9	55.87	10.11	2.9	39.30	7.11	3.0	50.93	37.08
3.8	54.06	22.75	3.9	9.54	23.55	3.9	56.05	9.79	3.9	39.40	6.86	4.0	50.94	36.82
4.8	54.32	22.67	4.9	10.40	23.42	4.9	56.23	9.49	4.9	39.51	6.62	5.0	50.96	36.56
5.8	54.57	22.59	5.9	11.24	23.30	5.9	56.43	9.21	5.9	39.60	6.36	6.0	50.98	36.31
6.8	54.82	22.51	6.9	12.08	23.16	6.9	56.61	8.93	6.9	39.69	6.11	7.0	50.99	36.03
7.8	55.07	22.41	7.8	12.95	23.01	7.9	56.81	8.69	7.9	39.78	5.85	8.0	50.99	35.73
8.8	55.34	22.31	8.8	13.87	22.87	8.9	57.00	8.44	8.9	39.87	5.56	9.0	50.99	35.41
9.8	55.64	22.19	9.8	14.86	22.71	9.9	57.17	8.23	9.9	39.99	5.26	10.0	51.00	35.09
10.8	55.96	22.09	10.8	15.93	22.56	10.9	57.32	8.00	10.9	40.13	4.95	11.0	51.02	34.75
11.8	56.29	22.02	11.8	17.08	22.45	11.8	57.48	7.75	11.9	40.27	4.64	12.0	51.08	34.39
12.8	56.63	21.98	12.8	18.27	22.34	12.8	57.62	7.54	12.9	40.45	4.34	13.0	51.15	34.04
13.8	56.98	21.96	13.8	19.48	22.24	13.8	57.76	7.29	13.9	40.64	4.06	14.0	51.25	33.70
14.8	57.32	21.95	14.8	20.67	22.19	14.8	57.94	7.03	14.9	40.86	3.81	15.0	51.36	33.39
15.8	57.66	21.96	15.8	21.82	22.15	15.8	58.11	6.73	15.9	41.06	3.59	15.9	51.49	33.10
16.8	57.95	21.99	16.8	22.87	22.12	16.8	58.31	6.45	16.9	41.27	3.41	16.9	51.60	32.82
17.8	58.24	22.03	17.8	23.86	22.09	17.8	58.51	6.17	17.9	41.46	3.19	17.9	51.71	32.57
18.8	58.50	22.05	18.8	24.78	22.06	18.8	58.74	5.92	18.9	41.61	2.99	18.9	51.80	32.32
19.8	58.76	22.04	19.8	25.70	22.01	19.8	59.00	5.69	19.9	41.76	2.78	19.9	51.86	32.08
20.8	59.03	22.01	20.8	26.65	21.96	20.8	59.23	5.48	20.9	41.90	2.55	20.9	51.92	31.80
21.8	59.31	21.97	21.8	27.65	21.88	21.8	59.46	5.32	21.9	42.05	2.32	21.9	51.98	31.50
22.8	59.62	21.94	22.8	28.73	21.79	22.8	59.65	5.16	22.9	42.22	2.05	22.9	52.05	31.18
23.8	59.95	21.91	23.8	29.88	21.70	23.8	59.86	5.01	23.9	42.39	1.78	23.9	52.13	30.85
24.8	60.29	21.91	24.8	31.10	21.63	24.8	60.04	4.86	24.9	42.59	1.50	24.9	52.23	30.51
25.8	60.66	21.93	25.8	32.36	21.60	25.8	60.21	4.69	25.9	42.82	1.26	25.9	52.35	30.17
26.8	61.01	21.97	26.8	33.61	21.57	26.8	60.39	4.51	26.9	43.05	1.00	26.9	52.49	29.85
27.8	61.35	22.03	27.8	34.83	21.57	27.8	60.59	4.31	27.9	43.30	0.77	27.9	52.65	29.56
28.8	61.68	22.11	28.8	36.01	21.60	28.8	60.81	4.11	28.9	43.53	0.57	28.9	52.81	29.27
29.8	61.99	22.19	29.8	37.15	21.64	29.8	61.04	3.92	29.9	43.78	0.38	29.9	52.96	29.00
30.8	62.28	22.26	30.8	38.22	21.65	30.8	61.27	3.73	30.9	44.00	0.21	30.9	53.11	28.76
31.8	62.57	22.34	31.8	39.26	21.67	31.8	61.51	3.54	31.9	44.22	0.03	31.9	53.26	28.52
13.67	+13.64		50.10	+50.09		11.91	-11.87		12.29	+12.25		11.85	+11.81	
0 ^h 57 ^m	1 ^s .657		1 ^h 29 ^m	44 ^s .254		1 ^h 42 ^m	6 ^s .102		4 ^h 9 ^m	44 ^s .952		5 ^h 34 ^m	54 ^s .014	
+85° 48'	25''.87		+88° 51'	25''.03		-85° 11'	39''.58		+85° 20'	1''.04		+85° 9'	28''.07	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

31 G. Mensse. Mag. 6.2			ζ Mensse. Mag. 5.6			51 H. Cepheid. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Octantis. Mag. 6.4		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
	h m ° '			h m ° '			h m ° '			h m ° '			h m ° '	
June	5 46	-84 49	June	6 46	-80 43	June	7 1	+87 11	June	7 13	+82 34	June	7 15	-86 54
	s	"		s	"		s	"		s	"		s	"
1.0	4.02	48.14	1.1	52.40	42.92	1.1	33.49	11.53	1.1	30.54	47.75	1.1	64.74	12.79
2.0	3.89	47.83	2.1	52.30	42.69	2.1	33.38	11.24	2.1	30.50	47.48	2.1	64.40	12.57
3.0	3.78	47.50	3.1	52.21	42.41	3.1	33.28	10.96	3.1	30.47	47.22	3.1	64.05	12.35
4.0	3.67	47.18	4.1	52.13	42.11	4.1	33.18	10.69	4.1	30.44	46.98	4.1	63.72	12.11
5.0	3.57	46.84	5.1	52.04	41.81	5.1	33.06	10.44	5.1	30.38	46.73	5.1	63.42	11.86
6.0	3.49	46.50	6.1	51.96	41.50	6.1	32.93	10.20	6.1	30.33	46.48	6.1	63.13	11.60
7.0	3.41	46.16	7.1	51.89	41.18	7.1	32.79	9.92	7.1	30.28	46.25	7.1	62.85	11.32
8.0	3.35	45.83	8.1	51.83	40.90	8.1	32.64	9.66	8.1	30.22	46.00	8.1	62.60	11.06
9.0	3.30	45.52	9.1	51.77	40.62	9.1	32.50	9.37	9.1	30.16	45.73	9.1	62.37	10.81
10.0	3.24	45.23	10.1	51.71	40.33	10.1	32.32	9.05	10.1	30.09	45.44	10.1	62.14	10.57
11.0	3.18	44.94	11.1	51.66	40.10	11.1	32.17	8.74	11.1	30.02	45.12	11.1	61.93	10.35
12.0	3.11	44.68	12.1	51.60	39.86	12.1	32.07	8.38	12.1	29.98	44.80	12.1	61.71	10.15
13.0	3.03	44.41	13.1	51.54	39.62	13.1	32.00	8.01	13.1	29.96	44.45	13.1	61.47	9.96
14.0	2.95	44.12	14.1	51.48	39.39	14.1	31.99	7.66	14.1	29.95	44.10	14.1	61.19	9.76
15.0	2.87	43.81	15.0	51.40	39.12	15.1	31.99	7.32	15.1	29.94	43.75	15.1	60.91	9.53
16.0	2.78	43.50	16.0	51.32	38.82	16.1	32.03	6.98	16.1	29.96	43.46	16.1	60.63	9.28
17.0	2.71	43.17	17.0	51.27	38.51	17.1	32.06	6.69	17.1	29.98	43.17	17.1	60.33	9.00
17.9	2.66	42.80	18.0	51.21	38.18	18.1	32.09	6.41	18.1	29.98	42.89	18.1	60.07	8.72
18.9	2.61	42.42	19.0	51.15	37.83	19.1	32.09	6.14	19.1	29.99	42.65	19.1	59.83	8.39
19.9	2.59	42.07	20.0	51.10	37.50	20.0	32.05	5.88	20.1	29.98	42.41	20.1	59.63	8.06
20.9	2.58	41.73	21.0	51.05	37.16	21.0	32.00	5.60	21.1	29.95	42.14	21.1	59.45	7.77
21.9	2.58	41.40	22.0	51.02	36.84	22.0	31.94	5.29	22.0	29.91	41.86	22.1	59.31	7.47
22.9	2.58	41.08	23.0	51.00	36.56	23.0	31.87	4.95	23.0	29.88	41.53	23.0	59.17	7.23
23.9	2.58	40.80	24.0	50.97	36.28	24.0	31.82	4.59	24.0	29.87	41.19	24.0	59.03	6.97
24.9	2.57	40.54	25.0	50.94	36.02	25.0	31.81	4.24	25.0	29.86	40.85	25.0	58.89	6.72
25.9	2.56	40.27	26.0	50.91	35.76	26.0	31.83	3.85	26.0	29.87	40.49	26.0	58.74	6.48
26.9	2.52	39.99	27.0	50.88	35.47	27.0	31.88	3.49	27.0	29.88	40.13	27.0	58.56	6.25
27.9	2.51	39.68	28.0	50.84	35.18	28.0	31.96	3.15	28.0	29.91	39.80	28.0	58.38	5.96
28.9	2.50	39.36	29.0	50.81	34.88	29.0	32.04	2.81	29.0	29.95	39.48	29.0	58.21	5.72
29.9	2.49	39.02	30.0	50.78	34.55	30.0	32.15	2.50	30.0	29.99	39.17	30.0	58.03	5.42
30.9	2.49	38.69	31.0	50.74	34.22	31.0	32.25	2.20	31.0	30.02	38.88	31.0	57.87	5.10
31.9	2.50	38.32	32.0	50.72	33.86	32.0	32.35	1.92	32.0	30.06	38.61	32.0	57.73	4.77
11.09	-11.05		6.21	-6.12		20.36	+20.34		7.74	+7.68		18.51	-18.48	
5 ^h 46 ^m	26°.439		6 ^h 47 ^m	3°.489		7 ^h 1 ^m	34°.861		7 ^h 13 ^m	29°.477		7 ^h 16 ^m	40°.555	
-84° 49'	48''.17		-80° 43'	34''.16		+87° 11'	0''.11		+82° 34'	36''.50		-86° 54'	0''.14	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			ζ Octantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			ζ Chamseleontis. Mag. 5.2			30 H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
June	h m 8 14	° ' +88 53	June	h m 9 8	° ' -85 20	June	h m 9 25	° ' +81 42	June	h m 9 36	° ' -80 34	June	h m 10 20	° ' +82 59
	s "	" "		s "	" "		s "	" "		s "	" "		s "	" "
1.2	54.61	23.14	1.2	50.78	8.47	1.2	17.17	7.45	1.2	18.83	18.66	1.2	63.25	21.18
2.1	54.01	22.91	2.2	50.51	8.42	2.2	17.07	7.28	2.2	18.71	18.64	2.2	63.10	21.07
3.1	53.44	22.68	3.2	50.24	8.34	3.2	16.97	7.12	3.2	18.57	18.61	3.2	62.97	20.97
4.1	52.88	22.45	4.2	49.95	8.26	4.2	16.88	6.97	4.2	18.44	18.57	4.2	62.84	20.90
5.1	52.30	22.23	5.2	49.68	8.15	5.2	16.79	6.82	5.2	18.31	18.50	5.2	62.70	20.81
6.1	51.70	22.01	6.2	49.41	8.02	6.2	16.69	6.69	6.2	18.17	18.41	6.2	62.57	20.73
7.1	51.06	21.80	7.2	49.15	7.88	7.2	16.58	6.56	7.2	18.04	18.30	7.2	62.43	20.67
8.1	50.38	21.57	8.2	48.91	7.75	8.2	16.47	6.43	8.2	17.92	18.18	8.2	62.27	20.60
9.1	49.67	21.33	9.2	48.68	7.61	9.2	16.34	6.28	9.2	17.81	18.07	9.2	62.11	20.52
10.1	48.93	21.07	10.2	48.46	7.50	10.2	16.21	6.11	10.2	17.70	17.97	10.2	61.94	20.41
11.1	48.22	20.77	11.2	48.26	7.40	11.2	16.09	5.93	11.2	17.60	17.88	11.2	61.76	20.29
12.1	47.57	20.44	12.2	48.07	7.29	12.2	15.98	5.70	12.2	17.50	17.82	12.2	61.60	20.15
13.1	46.99	20.13	13.2	47.85	7.23	13.2	15.87	5.46	13.2	17.39	17.75	13.2	61.45	19.97
14.1	46.51	19.81	14.2	47.62	7.15	14.2	15.78	5.21	14.2	17.29	17.70	14.2	61.30	19.76
15.1	46.15	19.47	15.2	47.38	7.06	15.2	15.69	4.95	15.2	17.19	17.64	15.2	61.17	19.57
16.1	45.85	19.15	16.1	47.12	6.98	16.2	15.64	4.70	16.2	17.05	17.57	16.2	61.06	19.36
17.1	45.58	18.87	17.1	46.85	6.83	17.2	15.58	4.47	17.2	16.93	17.48	17.2	60.95	19.17
18.1	45.31	18.61	18.1	46.60	6.67	18.2	15.52	4.26	18.2	16.80	17.35	18.2	60.85	18.99
19.1	45.00	18.34	19.1	46.35	6.48	19.2	15.45	4.06	19.2	16.67	17.21	19.2	60.74	18.85
20.1	44.61	18.09	20.1	46.11	6.26	20.1	15.37	3.87	20.2	16.56	17.02	20.2	60.62	18.71
21.1	44.15	17.82	21.1	45.90	6.08	21.1	15.27	3.68	21.2	16.44	16.84	21.2	60.49	18.56
22.1	43.65	17.55	22.1	45.71	5.87	22.1	15.18	3.46	22.2	16.34	16.67	22.2	60.35	18.43
23.1	43.13	17.25	23.1	45.52	5.69	23.1	15.07	3.24	23.1	16.24	16.49	23.2	60.20	18.25
24.1	42.63	16.93	24.1	45.35	5.51	24.1	14.97	3.00	24.1	16.16	16.33	24.2	60.04	18.07
25.1	42.18	16.58	25.1	45.18	5.36	25.1	14.88	2.72	25.1	16.07	16.19	25.2	59.88	17.86
26.1	41.81	16.24	26.1	45.01	5.20	26.1	14.78	2.45	26.1	15.99	16.07	26.2	59.74	17.63
27.1	41.52	15.89	27.1	44.82	5.05	27.1	14.72	2.15	27.1	15.90	15.94	27.2	59.61	17.39
28.1	41.30	15.54	28.1	44.63	4.88	28.1	14.65	1.85	28.1	15.80	15.80	28.2	59.50	17.15
29.1	41.13	15.19	29.1	44.43	4.71	29.1	14.59	1.55	29.1	15.70	15.87	29.2	59.40	16.90
30.1	41.00	14.86	30.1	44.22	4.52	30.1	14.54	1.28	30.1	15.60	15.49	30.2	59.30	16.66
31.1	40.90	14.55	31.1	44.01	4.30	31.1	14.50	1.01	31.1	15.49	15.31	31.2	59.21	16.42
32.1	40.80	14.26	32.1	43.80	4.06	32.1	14.46	0.77	32.1	15.39	15.09	32.2	59.11	16.21
51.56	+51.55	12.30	-12.26	6.93	+6.86	6.10	-6.02	8.19	+8.13					
9 ^h 14 ^m	48 ^s .311	9 ^h 9 ^m	6 ^s .085	9 ^h 25 ^m	12 ^s .930	9 ^h 36 ^m	24 ^s .003	10 ^h 20 ^m	57 ^s .259					
+86° 53'	11''.43	-85° 19'	42''.77	+81° 41'	57''.18	-80° 33'	50''.61	+82° 59'	12''.27					

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

77 Octantis. Mag. 6.3			Bradley 1678. Mag. 6.3			1 Octantis. Mag. 5.4			32 H. Camelop. seq. Mag. 5.3			κ Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
June	h m	° ' "	June	h m	° ' "	June	h m	° ' "	June	h m	° ' "	June	h m	° ' "
	10 59	-84 9		12 14	+88 10		12 46	-84 40		12 48	+83 52		13 27	-85 21
	s	"		s	"		s	"		s	"		s	"
1.3	53.23	3.91	1.3	52.55	0.82	1.3	9.30	35.11	1.3	39.17	12.87	1.4	19.07	53.96
2.3	53.04	4.02	2.3	51.93	0.85	2.3	9.13	35.36	2.3	39.00	12.96	2.4	18.93	54.26
3.3	52.81	4.12	3.3	51.34	0.87	3.3	8.95	35.60	3.3	38.88	13.04	3.4	18.78	54.55
4.3	52.59	4.19	4.3	50.76	0.91	4.3	8.78	35.85	4.3	38.69	13.14	4.4	18.60	54.83
5.3	52.38	4.25	5.3	50.19	0.96	5.3	8.59	36.05	5.3	38.53	13.22	5.4	18.41	55.07
6.3	52.16	4.30	6.3	49.63	1.01	6.3	8.39	36.25	6.3	38.38	13.32	6.4	18.21	55.32
7.2	51.94	4.33	7.3	49.04	1.08	7.3	8.19	36.40	7.3	38.20	13.43	7.4	18.02	55.54
8.2	51.73	4.35	8.3	48.43	1.12	8.3	7.99	36.56	8.3	38.03	13.56	8.4	17.82	55.74
9.2	51.54	4.36	9.3	47.77	1.18	9.3	7.80	36.71	9.3	37.84	13.69	9.3	17.62	55.92
10.2	51.35	4.36	10.3	47.06	1.24	10.3	7.63	36.83	10.3	37.65	13.81	10.3	17.46	56.12
11.2	51.17	4.39	11.3	46.32	1.26	11.3	7.48	36.98	11.3	37.42	13.90	11.3	17.31	56.30
12.2	51.01	4.43	12.3	45.56	1.27	12.3	7.33	37.14	12.3	37.22	13.96	12.3	17.16	56.49
13.2	50.84	4.48	13.3	44.81	1.25	13.3	7.18	37.31	13.3	37.01	14.02	13.3	17.02	56.71
14.2	50.66	4.54	14.3	44.08	1.21	14.3	7.04	37.49	14.3	36.80	14.04	14.3	16.89	56.96
15.2	50.48	4.61	15.3	43.39	1.15	15.3	6.88	37.69	15.3	36.60	14.04	15.3	16.73	57.17
16.2	50.28	4.66	16.3	42.75	1.07	16.3	6.70	37.90	16.3	36.41	14.03	16.3	16.56	57.44
17.2	50.05	4.70	17.3	42.16	1.00	17.3	6.50	38.09	17.3	36.24	14.01	17.3	16.37	57.68
18.2	49.83	4.71	18.3	41.60	0.95	18.3	6.29	38.26	18.3	36.09	14.00	18.3	16.14	57.91
19.2	49.60	4.69	19.3	41.05	0.93	19.3	6.06	38.41	19.3	35.93	14.01	19.3	15.91	58.12
20.2	49.38	4.64	20.3	40.46	0.89	20.3	5.83	38.51	20.3	35.75	14.03	20.3	15.66	58.30
21.2	49.17	4.58	21.3	39.84	0.89	21.3	5.62	38.60	21.3	35.57	14.08	21.3	15.43	58.44
22.2	48.98	4.52	22.3	39.18	0.87	22.3	5.41	38.68	22.3	35.38	14.13	22.3	15.22	58.56
23.2	48.81	4.46	23.3	38.47	0.86	23.3	5.22	38.76	23.3	35.17	14.16	23.3	15.02	58.66
24.2	48.64	4.41	24.3	37.73	0.82	24.3	5.04	38.82	24.3	34.95	14.20	24.3	14.83	58.80
25.2	48.48	4.37	25.3	36.97	0.76	25.3	4.86	38.91	25.3	34.72	14.20	25.3	14.65	58.92
26.2	48.32	4.33	26.3	36.22	0.67	26.3	4.71	39.01	26.3	34.50	14.18	26.3	14.48	59.05
27.2	48.15	4.32	27.2	35.50	0.58	27.3	4.54	39.12	27.3	34.30	14.15	27.3	14.30	59.19
28.2	47.97	4.29	28.2	34.82	0.48	28.3	4.36	39.24	28.3	34.09	14.09	28.3	14.12	59.36
29.2	47.78	4.25	29.2	34.17	0.35	29.3	4.17	39.35	29.3	33.90	14.03	29.3	13.91	59.53
30.2	47.58	4.21	30.2	33.56	0.22	30.3	3.97	39.44	30.3	33.71	13.96	30.3	13.69	59.68
31.2	47.38	4.13	31.2	32.97	0.11	31.3	3.74	39.52	31.3	33.54	13.89	31.3	13.46	59.82
32.2	47.17	4.06	32.2	32.40	0.01	32.3	3.52	39.59	32.3	33.37	13.82	32.3	13.21	59.96
9.81	-9.76		31.26	+31.25		10.78	-10.73		9.37	+9.31		12.38	-12.34	
10 ^h 59 ^m	55°.642		12 ^h 14 ^m	28°.053		12 ^h 46 ^m	1°.183		12 ^h 48 ^m	29°.976		13 ^h 27 ^m	5°.514	
-84° 8'	31''.24		+88° 9'	56''.03		-84° 40'	2''.72		+83° 52'	10''.05		-85° 21'	23''.59	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Octantis. Mag. 4.1			Groombridge 2283. Mag. 7.2			ρ Octantis. Mag. 5.7			ε Ursæ Minoris. Mag. 4.4			59 G. Apodis. Mag. 5.9		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
June	h m "	" "	June	h m "	" "	June	h m "	" "	June	h m "	" "	June	h m "	" "
	14 13	-83 17		15 4	+87 33		15 24	-84 11		16 54	+82 10		17 15	-80 47
	s	"		s	"		s	"		s	"		s	"
1.4	31.85	31.32	1.4	20.24	20.66	1.4	3.08	37.68	1.5	37.96	29.63	1.5	59.51	7.90
2.4	31.80	31.63	2.4	19.94	20.89	2.4	3.09	38.02	2.5	37.94	29.98	2.5	59.58	8.21
3.4	31.72	31.95	3.4	19.64	21.11	3.4	3.07	38.37	3.5	37.92	30.28	3.5	59.65	8.53
4.4	31.64	32.25	4.4	19.35	21.33	4.4	3.04	38.72	4.5	37.90	30.57	4.5	59.72	8.84
5.4	31.55	32.54	5.4	19.09	21.56	5.4	3.00	39.06	5.5	37.87	30.85	5.5	59.76	9.16
6.4	31.45	32.83	6.4	18.83	21.80	6.4	2.95	39.37	6.5	37.86	31.15	6.5	59.81	9.48
7.4	31.34	33.08	7.4	18.57	22.02	7.4	2.89	39.67	7.5	37.84	31.46	7.5	59.84	9.79
8.4	31.23	33.33	8.4	18.28	22.28	8.4	2.82	39.96	8.5	37.82	31.77	8.5	59.86	10.09
9.4	31.13	33.58	9.4	17.97	22.55	9.4	2.76	40.24	9.5	37.80	32.11	9.5	59.88	10.36
10.4	31.03	33.79	10.4	17.64	22.82	10.4	2.70	40.50	10.5	37.77	32.47	10.5	59.91	10.61
11.4	30.96	34.00	11.4	17.26	23.08	11.4	2.66	40.75	11.5	37.73	32.83	11.5	59.94	10.86
12.4	30.89	34.21	12.4	16.85	23.34	12.4	2.64	41.01	12.5	37.68	33.17	12.5	59.99	11.10
13.4	30.83	34.46	13.4	16.41	23.58	13.4	2.62	41.27	13.5	37.62	33.52	13.5	60.04	11.35
14.4	30.76	34.72	14.4	15.97	23.79	14.4	2.60	41.56	14.5	37.55	33.86	14.5	60.09	11.61
15.4	30.70	35.00	15.4	15.53	23.98	15.4	2.58	41.88	15.5	37.49	34.17	15.5	60.15	11.91
16.4	30.62	35.29	16.4	15.11	24.14	16.4	2.55	42.20	16.5	37.42	34.46	16.5	60.21	12.22
17.4	30.50	35.58	17.4	14.71	24.28	17.4	2.49	42.52	17.5	37.35	34.71	17.5	60.26	12.54
18.4	30.38	35.84	18.4	14.35	24.42	18.4	2.42	42.85	18.5	37.29	34.97	18.5	60.28	12.88
19.4	30.25	36.08	19.4	14.00	24.58	19.4	2.33	43.16	19.5	37.24	35.23	19.5	60.30	13.22
20.3	30.13	36.30	20.4	13.65	24.77	20.4	2.22	43.46	20.5	37.19	35.50	20.5	60.31	13.54
21.3	29.99	36.50	21.4	13.29	24.97	21.4	2.11	43.71	21.5	37.14	35.80	21.5	60.30	13.84
22.3	29.85	36.66	22.4	12.90	25.17	22.4	2.01	43.94	22.5	37.08	36.11	22.5	60.30	14.12
23.3	29.73	36.81	23.4	12.48	25.39	23.4	1.91	44.16	23.5	37.02	36.45	23.5	60.29	14.37
24.3	29.62	36.98	24.4	12.03	25.61	24.4	1.82	44.37	24.4	36.94	36.78	24.5	60.29	14.62
25.3	29.53	37.16	25.4	11.54	25.82	25.4	1.75	44.59	25.4	36.86	37.12	25.5	60.30	14.86
26.3	29.44	37.33	26.4	11.04	26.01	26.4	1.68	44.82	26.4	36.77	37.43	26.5	60.31	15.11
27.3	29.33	37.51	27.4	10.54	26.17	27.4	1.61	45.06	27.4	36.68	37.74	27.5	60.33	15.36
28.3	29.22	37.70	28.4	10.05	26.31	28.4	1.53	45.32	28.4	36.59	38.03	28.5	60.34	15.65
29.3	29.11	37.90	29.4	9.57	26.46	29.4	1.45	45.59	29.4	36.49	38.30	29.5	60.36	15.95
30.3	28.99	38.10	30.4	9.10	26.54	30.4	1.35	45.85	30.4	36.39	38.56	30.4	60.36	16.25
31.3	28.85	38.30	31.4	8.65	26.65	31.4	1.24	46.13	31.4	36.30	38.80	31.4	60.37	16.56
32.3	28.71	38.49	32.4	8.22	26.76	32.4	1.12	46.38	32.4	36.22	39.03	32.4	60.36	16.87
8.56	-8.50		23.46	+23.44		9.89	-9.84		7.35	+7.28		6.25	-6.17	
14 ^h 13 ^m	18 ^s .531		15 ^h 4 ^m	0 ^s .607		15 ^h 23 ^m	43 ^s .237		16 ^h 54 ^m	31 ^s .741		17 ^h 15 ^m	43 ^s .730	
-83° 17'	4''27		+87° 33'	24''43		-84° 11'	17''84		+82° 10'	38''40		-80° 47'	2''69	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

♄ Ursæ Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursæ Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.
	h m	° '		h m	° '		h m	° '		h m	° '		h m	° '
June	17 59	+86 36	June	18 6	-87 39	June	19 4	+89 0	June	19 28	-89 13	June	20 48	+82 13
	s	"		s	"		s	"		s	"		s	"
1.6	29.24	40.74	1.6	32.56	49.84	1.6	3.20	45.19	1.6	38.59	22.16	1.7	45.47	4.83
2.6	29.25	41.05	2.6	32.92	50.12	2.6	3.57	45.48	2.6	40.08	22.35	2.7	45.59	5.07
3.5	29.28	41.34	3.6	33.26	50.43	3.6	3.93	45.76	3.6	41.54	22.55	3.7	45.70	5.29
4.5	29.31	41.63	4.6	33.58	50.74	4.6	4.29	46.04	4.6	42.92	22.77	4.7	45.80	5.50
5.5	29.34	41.92	5.5	33.87	51.06	5.6	4.70	46.32	5.6	44.26	23.02	5.7	45.91	5.71
6.5	29.38	42.19	6.5	34.11	51.37	6.6	5.11	46.59	6.6	45.49	23.27	6.7	46.03	5.91
7.5	29.43	42.50	7.5	34.33	51.68	7.6	5.57	46.86	7.6	46.63	23.51	7.7	46.15	6.13
8.5	29.47	42.81	8.5	34.53	51.97	8.6	6.05	47.14	8.6	47.68	23.74	8.7	46.27	6.35
9.5	29.52	43.14	9.5	34.70	52.24	9.6	6.52	47.45	9.6	48.67	23.96	9.7	46.39	6.59
10.5	29.56	43.50	10.5	34.89	52.51	10.6	6.98	47.78	10.6	49.64	24.17	10.6	46.53	6.85
11.5	29.56	43.86	11.5	35.09	52.76	11.6	7.39	48.12	11.6	50.63	24.37	11.6	46.65	7.14
12.5	29.54	44.24	12.5	35.32	52.99	12.6	7.71	48.47	12.6	51.67	24.55	12.6	46.78	7.45
13.5	29.50	44.62	13.5	35.58	53.24	13.6	7.92	48.83	13.6	52.81	24.73	13.6	46.89	7.76
14.5	29.45	44.97	14.5	35.86	53.50	14.6	8.02	49.19	14.6	54.05	24.93	14.6	46.99	8.10
15.5	29.35	45.31	15.5	36.15	53.78	15.6	8.05	49.53	15.6	55.35	25.14	15.6	47.09	8.42
16.5	29.25	45.63	16.5	36.44	54.08	16.6	8.03	49.85	16.6	56.65	25.37	16.6	47.18	8.72
17.5	29.17	45.91	17.5	36.70	54.40	17.6	8.02	50.14	17.6	57.91	25.63	17.6	47.26	9.01
18.5	29.11	46.19	18.5	36.90	54.75	18.6	8.04	50.44	18.6	59.08	25.90	18.6	47.33	9.29
19.5	29.05	46.46	19.5	37.06	55.10	19.6	8.14	50.73	19.6	60.10	26.20	19.6	47.41	9.53
20.5	29.01	46.75	20.5	37.17	55.43	20.5	8.30	51.02	20.6	60.98	26.48	20.6	47.49	9.80
21.5	28.98	47.07	21.5	37.25	55.75	21.5	8.49	51.32	21.6	61.73	26.76	21.6	47.59	10.06
22.5	28.94	47.40	22.5	37.30	56.04	22.5	8.71	51.64	22.6	62.39	27.04	22.6	47.69	10.32
23.5	28.90	47.74	23.5	37.36	56.32	23.5	8.90	52.00	23.6	63.03	27.29	23.6	47.79	10.62
24.5	28.82	48.13	24.5	37.44	56.58	24.5	9.04	52.37	24.6	63.70	27.51	24.6	47.89	10.94
25.5	28.73	48.51	25.5	37.54	56.83	25.5	9.11	52.73	25.6	64.42	27.73	25.6	47.99	11.30
26.5	28.61	48.87	26.5	37.66	57.09	26.5	9.07	53.10	26.5	65.19	27.96	26.6	48.06	11.66
27.5	28.48	49.21	27.5	37.79	57.37	27.5	8.97	53.45	27.5	66.02	28.20	27.6	48.16	12.02
28.5	28.33	49.53	28.5	37.93	57.66	28.5	8.80	53.80	28.5	66.88	28.44	28.6	48.22	12.37
29.5	28.18	49.83	29.5	38.05	57.96	29.5	8.59	54.15	29.5	67.74	28.70	29.6	48.28	12.71
30.5	28.03	50.15	30.5	38.15	58.28	30.5	8.35	54.47	30.5	68.57	28.99	30.6	48.34	13.04
31.5	27.88	50.43	31.5	38.23	58.62	31.5	8.14	54.79	31.5	69.35	29.29	31.6	48.40	13.37
32.5	27.74	50.71	32.5	38.28	58.96	32.5	7.94	55.09	32.5	70.06	29.60	32.6	48.45	13.67
16.92	+16.89		24.54	-24.52		58.10	+58.09		73.80	-73.80		7.39	+7.32	
17 ^h 59 ^m	20°.805		18 ^h 5 ^m 36°.163			19 ^h 3 ^m 51°.560			19 ^h 26 ^m 7°.189			20 ^h 48 ^m	44°.660	
+86° 36'	51''.19		-87° 39'	52''.21		+89° 0'	56''.70		-89° 13'	35''.99		+82° 13'	16''.38	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ ¹ Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
June	h m ° '	° '	June	h m ° '	° '	June	h m ° '	° '	June	h m ° '	° '	June	h m ° '	° '
	21 38	-83 5		22 16	-86 23		22 37	-81 48		23 27	+86 50		23 47	-82 28
	s	"		s	"		s	"		s	"		s	"
1.7	22.11	55.70	1.7	12.35	14.76	1.7	39.57	49.94	1.8	35.18	32.02	1.8	15.04	35.58
2.7	22.32	55.70	2.7	12.74	14.69	2.7	39.74	49.83	2.8	35.56	32.07	2.8	15.22	35.38
3.7	22.53	55.69	3.7	13.14	14.63	3.7	39.93	49.75	3.8	35.92	32.10	3.8	15.40	35.20
4.7	22.75	55.71	4.7	13.54	14.62	4.7	40.11	49.69	4.8	36.26	32.13	4.8	15.58	35.02
5.7	22.96	55.77	5.7	13.95	14.63	5.7	40.29	49.64	5.8	36.61	32.15	5.8	15.76	34.87
6.7	23.16	55.84	6.7	14.31	14.64	6.7	40.46	49.62	6.8	36.96	32.16	6.8	15.94	34.72
7.7	23.34	55.91	7.7	14.67	14.66	7.7	40.62	49.60	7.8	37.33	32.16	7.8	16.10	34.62
8.7	23.52	55.98	8.7	15.01	14.68	8.7	40.78	49.57	8.8	37.72	32.18	8.8	16.26	34.51
9.7	23.69	56.03	9.7	15.33	14.70	9.7	40.92	49.56	9.8	38.13	32.21	9.8	16.41	34.40
10.7	23.85	56.09	10.7	15.64	14.71	10.7	41.06	49.53	10.8	38.55	32.26	10.8	16.56	34.30
11.7	24.01	56.14	11.7	15.94	14.70	11.7	41.19	49.49	11.8	38.99	32.32	11.8	16.70	34.19
12.7	24.18	56.16	12.7	16.25	14.69	12.7	41.33	49.44	12.8	39.44	32.40	12.8	16.84	34.07
13.7	24.35	56.18	13.7	16.57	14.68	13.7	41.48	49.37	13.8	39.88	32.52	13.8	16.99	33.93
14.7	24.53	56.19	14.7	16.92	14.65	14.7	41.65	49.32	14.7	40.31	32.65	14.8	17.15	33.77
15.7	24.73	56.21	15.7	17.29	14.63	15.7	41.83	49.25	15.7	40.70	32.79	15.8	17.33	33.62
16.7	24.94	56.25	16.7	17.69	14.62	16.7	42.01	49.21	16.7	41.06	32.95	16.8	17.52	33.46
17.7	25.16	56.34	17.7	18.09	14.64	17.7	42.20	49.18	17.7	41.40	33.08	17.8	17.70	33.33
18.7	25.37	56.42	18.7	18.49	14.70	18.7	42.39	49.18	18.7	41.73	33.19	18.8	17.90	33.24
19.7	25.57	56.55	19.7	18.88	14.79	19.7	42.57	49.21	19.7	42.05	33.30	19.7	18.10	33.16
20.7	25.75	56.70	20.7	19.22	14.88	20.7	42.72	49.27	20.7	42.38	33.38	20.7	18.28	33.11
21.7	25.90	56.83	21.7	19.55	14.98	21.7	42.87	49.32	21.7	42.76	33.47	21.7	18.44	33.07
22.7	26.05	56.95	22.7	19.83	15.07	22.7	43.01	49.38	22.7	43.16	33.56	22.7	18.59	33.05
23.6	26.19	57.06	23.7	20.11	15.16	23.7	43.14	49.44	23.7	43.57	33.66	23.7	18.74	33.02
24.6	26.33	57.18	24.7	20.39	15.23	24.7	43.27	49.48	24.7	44.00	33.79	24.7	18.88	32.97
25.6	26.47	57.27	25.7	20.67	15.29	25.7	43.40	49.51	25.7	44.42	33.94	25.7	19.03	32.92
26.6	26.62	57.36	26.7	20.96	15.34	26.7	43.54	49.53	26.7	44.84	34.11	26.7	19.18	32.86
27.6	26.79	57.46	27.7	21.28	15.39	27.7	43.69	49.55	27.7	45.23	34.29	27.7	19.34	32.80
28.6	26.96	57.57	28.7	21.61	15.48	28.7	43.85	49.57	28.7	45.61	34.48	28.7	19.51	32.73
29.6	27.13	57.69	29.7	21.95	15.56	29.7	44.02	49.61	29.7	45.97	34.67	29.7	19.69	32.67
30.6	27.31	57.82	30.7	22.30	15.64	30.7	44.19	49.66	30.7	46.30	34.88	30.7	19.88	32.63
31.6	27.49	57.97	31.7	22.65	15.75	31.7	44.35	49.73	31.7	46.62	35.07	31.7	20.06	32.62
32.6	27.65	58.15	32.6	22.99	15.89	32.7	44.50	49.81	32.7	46.93	35.25	32.7	20.24	32.61
8.32	-8.26		15.87	-15.84		7.02	-6.95		18.15	+18.13		7.64	-7.57	
21 ^h 38 ^m	10 ^s .025		22 ^h 15 ^m	56 ^s .333		22 ^h 37 ^m	32 ^s .703		23 ^h 27 ^m	44 ^s .392		23 ^h 47 ^m	12 ^s .813	
-83° 6'	23'' .31		-86° 23'	45'' .22		-81° 49'	21'' .11		+86° 50'	39'' .03		-82° 29'	8'' .43	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

43 H. Cephei. Mag. 4.5			α Ursæ Minoris. (Polaris.) Mag. 2.1			4 G. Octantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
July	h m ° ' "		July	h m ° ' "		July	h m ° ' "		July	h m ° ' "		July	h m ° ' "	
	0 57	+85 48		1 29	+88 51		1 42	-85 11		4 9	+85 19		5 34	+85 9
0.8	2.28	22.26	0.8	38.22	21.65	0.8	1.27	3.73	0.9	44.00	60.21	0.9	53.11	28.76
1.8	2.57	22.34	1.8	39.26	21.67	1.8	1.51	3.54	1.9	44.22	60.03	1.9	53.26	28.52
2.8	2.85	22.41	2.8	40.28	21.69	2.8	1.78	3.36	2.9	44.42	59.86	2.9	53.39	28.28
3.8	3.12	22.48	3.8	41.26	21.71	3.8	2.04	3.22	3.9	44.62	59.70	3.9	53.52	28.03
4.8	3.40	22.52	4.8	42.26	21.71	4.8	2.29	3.09	4.9	44.81	59.52	4.9	53.66	27.78
5.8	3.68	22.56	5.8	43.30	21.71	5.8	2.54	2.99	5.9	45.01	59.33	5.9	53.77	27.52
6.7	3.99	22.61	6.8	44.39	21.70	6.8	2.78	2.90	6.9	45.22	59.12	6.9	53.89	27.25
7.7	4.30	22.66	7.8	45.55	21.70	7.8	3.00	2.81	7.9	45.44	58.90	7.9	54.03	26.94
8.7	4.63	22.73	8.8	46.79	21.70	8.8	3.22	2.74	8.9	45.68	58.68	8.9	54.17	26.63
9.7	4.99	22.83	9.8	48.07	21.75	9.8	3.42	2.64	9.9	45.95	58.48	9.9	54.35	26.33
10.7	5.35	22.95	10.8	49.38	21.80	10.8	3.61	2.54	10.9	46.23	58.27	10.9	54.55	26.04
11.7	5.69	23.09	11.8	50.67	21.89	11.8	3.83	2.41	11.9	46.53	58.09	11.9	54.78	25.75
12.7	6.03	23.26	12.8	51.91	21.99	12.8	4.05	2.27	12.9	46.85	57.95	12.9	55.01	25.51
13.7	6.35	23.44	13.8	53.05	22.12	13.8	4.29	2.14	13.9	47.14	57.83	13.9	55.24	25.26
14.7	6.63	23.62	14.8	54.17	22.24	14.8	4.55	2.01	14.9	47.43	57.74	14.9	55.46	25.07
15.7	6.91	23.78	15.7	55.18	22.35	15.8	4.83	1.88	15.9	47.68	57.66	15.9	55.67	24.87
16.7	7.16	23.94	16.7	56.16	22.45	16.8	5.11	1.79	16.9	47.93	57.56	16.9	55.86	24.68
17.7	7.42	24.07	17.7	57.13	22.54	17.8	5.38	1.72	17.9	48.17	57.44	17.9	56.03	24.48
18.7	7.69	24.18	18.7	58.15	22.60	18.8	5.64	1.71	18.9	48.39	57.31	18.9	56.21	24.28
19.7	7.98	24.29	19.7	59.24	22.68	19.7	5.89	1.70	19.8	48.63	57.16	19.9	56.37	24.01
20.7	8.29	24.43	20.7	60.40	22.75	20.7	6.12	1.69	20.8	48.89	57.02	20.9	56.54	23.74
21.7	8.62	24.56	21.7	61.64	22.82	21.7	6.35	1.69	21.8	49.16	56.84	21.9	56.76	23.47
22.7	8.95	24.71	22.7	62.88	22.92	22.7	6.56	1.66	22.8	49.45	56.69	22.9	56.99	23.19
23.7	9.28	24.89	23.7	64.14	23.04	23.7	6.77	1.65	23.8	49.77	56.55	23.9	57.20	22.93
24.7	9.61	25.08	24.7	65.38	23.18	24.7	6.99	1.61	24.8	50.07	56.45	24.9	57.45	22.70
25.7	9.92	25.28	25.7	66.57	23.33	25.7	7.22	1.57	25.8	50.39	56.35	25.9	57.70	22.48
26.7	10.21	25.51	26.7	67.71	23.49	26.7	7.47	1.52	26.8	50.71	56.27	26.9	57.96	22.27
27.7	10.49	25.73	27.7	68.78	23.65	27.7	7.72	1.48	27.8	51.01	56.21	27.9	58.21	22.06
28.7	10.76	25.96	28.7	69.80	23.81	28.7	7.99	1.46	28.8	51.30	56.16	28.9	58.46	21.81
29.7	11.01	26.18	29.7	70.78	23.99	29.7	8.26	1.45	29.8	51.58	56.12	29.9	58.70	21.73
30.7	11.25	26.39	30.7	71.73	24.15	30.7	8.54	1.45	30.8	51.86	56.06	30.9	58.93	21.58
31.7	11.49	26.57	31.7	72.68	24.30	31.7	8.81	1.48	31.8	52.10	56.00	31.9	59.14	21.43
13.68	+13.64		50.10	+50.09		11.91	-11.87		12.29	+12.25		11.84	+11.80	
0 ^h 57 ^m	1°.657		1 ^h 29 ^m	44°.254		1 ^h 42 ^m	6°.102		4 ^h 9 ^m	44°.952		5 ^h 34 ^m	54°.614	
+85° 48'	25''.87		+88° 51'	25''.03		-85° 11'	39''.58		+85° 20'	1''.04		+85° 9'	28''.07	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

31 G. Mensæ. Mag. 6.2			ζ Mensæ. Mag. 5.6			51 H. Cephei. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Octantis. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
July	h m 5 46	° ' -84 49	July	h m 6 46	° ' -80 43	July	h m 7 1	° ' +87 10	July	h m 7 13	° ' +82 34	July	h m 7 15	° ' -86 53
	s "	" "		s "	" "		s "	" "		s "	" "		s "	" "
0.9	2.49	38.69	1.0	50.74	34.22	1.0	32.25	62.20	1.0	30.02	38.88	1.0	57.87	65.10
1.9	2.50	38.32	2.0	50.72	33.86	2.0	32.35	61.92	2.0	30.06	38.61	2.0	57.73	64.77
2.9	2.53	37.96	3.0	50.71	33.53	3.0	32.44	61.63	3.0	30.10	38.32	3.0	57.59	64.45
3.9	2.58	37.61	3.9	50.69	33.17	4.0	32.49	61.37	4.0	30.11	38.06	4.0	57.49	64.11
4.9	2.61	37.27	4.9	50.69	32.83	5.0	32.56	61.08	5.0	30.13	37.79	5.0	57.40	63.78
5.9	2.66	36.94	5.9	50.69	32.49	6.0	32.61	60.76	6.0	30.14	37.50	6.0	57.34	63.47
6.9	2.72	36.64	6.9	50.69	32.17	7.0	32.65	60.44	7.0	30.15	37.18	7.0	57.30	63.16
7.9	2.77	36.36	7.9	50.69	31.87	7.9	32.71	60.10	8.0	30.17	36.84	8.0	57.25	62.86
8.9	2.83	36.10	8.9	50.70	31.59	8.9	32.80	59.75	9.0	30.20	36.48	9.0	57.21	62.61
9.9	2.88	35.84	9.9	50.70	31.33	9.9	32.91	59.39	10.0	30.24	36.12	10.0	57.15	62.35
10.9	2.92	35.57	10.9	50.70	31.05	10.9	33.07	59.02	10.9	30.29	35.76	10.9	57.07	62.07
11.9	2.95	35.29	11.9	50.69	30.77	11.9	33.26	58.64	11.9	30.37	35.41	11.9	56.99	61.83
12.9	2.98	34.98	12.9	50.69	30.48	12.9	33.50	58.29	12.9	30.46	35.07	12.9	56.88	61.55
13.9	3.01	34.66	13.9	50.68	30.16	13.9	33.74	57.96	13.9	30.55	34.77	13.9	56.78	61.24
14.9	3.06	34.32	14.9	50.67	29.80	14.9	33.98	57.67	14.9	30.65	34.48	14.9	56.68	60.91
15.9	3.13	33.98	15.9	50.68	29.44	15.9	34.19	57.38	15.9	30.74	34.22	15.9	56.62	60.57
16.9	3.21	33.64	16.9	50.69	29.06	16.9	34.38	57.11	16.9	30.79	33.95	16.9	56.58	60.22
17.9	3.30	33.31	17.9	50.72	28.72	17.9	34.55	56.85	17.9	30.85	33.69	17.9	56.58	59.87
18.9	3.41	33.02	18.9	50.75	28.37	18.9	34.70	56.58	18.9	30.91	33.40	18.9	56.61	59.55
19.9	3.51	32.73	19.9	50.78	28.06	19.9	34.83	56.25	19.9	30.96	33.09	19.9	56.66	59.25
20.9	3.62	32.47	20.9	50.81	27.78	20.9	34.97	55.92	20.9	31.00	32.78	20.9	56.70	58.97
21.9	3.73	32.24	21.9	50.85	27.51	21.9	35.15	55.58	21.9	31.06	32.43	21.9	56.75	58.71
22.9	3.83	32.01	22.9	50.89	27.24	22.9	35.36	55.22	22.9	31.14	32.08	22.9	56.80	58.47
23.9	3.93	31.77	23.9	50.92	26.95	23.9	35.59	54.88	23.9	31.23	31.73	23.9	56.83	58.20
24.9	4.02	31.52	24.9	50.95	26.68	24.9	35.85	54.55	24.9	31.33	31.40	24.9	56.84	57.94
25.9	4.11	31.25	25.9	50.98	26.41	25.9	36.13	54.22	25.9	31.42	31.07	25.9	56.85	57.66
26.9	4.21	30.98	26.9	51.01	26.09	26.9	36.43	53.92	26.9	31.56	30.78	26.9	56.87	57.35
27.9	4.31	30.70	27.9	51.04	25.78	27.9	36.72	53.64	27.9	31.66	30.49	27.9	56.90	57.03
28.9	4.44	30.40	28.9	51.07	25.45	28.9	37.01	53.36	28.9	31.77	30.22	28.9	56.93	56.72
29.9	4.56	30.10	29.9	51.11	25.13	29.9	37.30	53.12	29.9	31.88	29.98	29.9	56.98	56.38
30.9	4.69	29.80	30.9	51.16	24.79	30.9	37.58	52.86	30.9	31.98	29.71	30.9	57.07	56.05
31.9	4.84	29.51	31.9	51.21	24.47	31.9	37.82	52.62	31.9	32.07	29.45	31.9	57.16	55.70
11.09	-11.04		6.20	-6.12		20.34	+20.32		7.74	+7.67		18.49	-18.46	
5 ^h 46 ^m	26°.439		6 ^h 47 ^m	3°.489		7 ^h 1 ^m	34°.861		7 ^h 13 ^m	29°.477		7 ^h 16 ^m	40°.555	
-84° 49'	48".17		-80° 43'	34".16		+87° 11'	0".11		+82° 34'	36".50		-86° 54'	0".14	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			ζ Octantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			ζ Chamaeleontis. Mag. 5.2			30 H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
July	h m 8 14	° ' " +88 53	July	h m 9 8	° ' " -85 19	July	h m 9 25	° ' " +81 41	July	h m 9 36	° ' " -80 34	July	h m 10 20	° ' " +82 50
	s "	" "		s "	" "		s "	" "		s "	" "		s "	" "
1.1	40.90	14.55	1.1	44.01	64.30	1.1	14.50	61.01	1.1	15.49	15.31	1.2	59.21	16.42
2.1	40.80	14.26	2.1	43.80	64.06	2.1	14.46	60.77	2.1	15.39	15.09	2.2	59.11	16.21
3.1	40.66	13.97	3.1	43.61	63.83	3.1	14.41	60.51	3.1	15.29	14.87	3.2	59.02	16.01
4.1	40.50	13.68	4.1	43.42	63.56	4.1	14.35	60.26	4.1	15.19	14.64	4.1	58.92	15.80
5.1	40.31	13.39	5.1	43.25	63.32	5.1	14.29	60.03	5.1	15.09	14.40	5.1	58.82	15.61
6.1	40.08	13.08	6.1	43.10	63.06	6.1	14.22	59.79	6.1	15.00	14.16	6.1	58.70	15.39
7.1	39.83	12.76	7.1	42.95	62.83	7.1	14.15	59.52	7.1	14.93	13.93	7.1	58.57	15.16
8.0	39.58	12.43	8.1	42.82	62.60	8.1	14.08	59.23	8.1	14.87	13.72	8.1	58.44	14.92
9.0	39.37	12.06	9.1	42.71	62.38	9.1	14.00	58.92	9.1	14.79	13.51	9.1	58.32	14.65
10.0	39.24	11.67	10.1	42.58	62.19	10.1	13.94	58.59	10.1	14.73	13.30	10.1	58.21	14.37
11.0	39.20	11.28	11.1	42.45	61.99	11.1	13.89	58.24	11.1	14.66	13.12	11.1	58.11	14.06
12.0	39.27	10.90	12.1	42.30	61.81	12.1	13.87	57.90	12.1	14.59	12.94	12.1	58.02	13.74
13.0	39.44	10.53	13.1	42.13	61.60	13.1	13.85	57.56	13.1	14.51	12.78	13.1	57.95	13.41
14.0	39.65	10.18	14.1	41.96	61.36	14.1	13.84	57.22	14.1	14.42	12.56	14.1	57.90	13.12
15.0	39.89	9.85	15.1	41.79	61.10	15.1	13.83	56.91	15.1	14.34	12.33	15.1	57.84	12.81
16.0	40.09	9.53	16.1	41.63	60.82	16.1	13.83	56.62	16.1	14.25	12.05	16.1	57.80	12.53
17.0	40.22	9.24	17.1	41.49	60.53	17.1	13.81	56.33	17.1	14.16	11.78	17.1	57.74	12.23
18.0	40.29	8.94	18.1	41.35	60.21	18.1	13.78	56.06	18.1	14.09	11.50	18.1	57.66	12.04
19.0	40.30	8.62	19.1	41.25	59.92	19.1	13.75	55.75	19.1	14.03	11.23	19.1	57.58	11.77
20.0	40.28	8.29	20.1	41.16	59.63	20.1	13.71	55.44	20.1	13.99	10.93	20.1	57.48	11.51
21.0	40.27	7.93	21.1	41.08	59.35	21.1	13.64	55.11	21.1	13.93	10.66	21.1	57.38	11.21
22.0	40.30	7.56	22.0	41.01	59.11	22.1	13.61	54.78	22.1	13.89	10.41	22.1	57.28	10.89
23.0	40.40	7.19	23.0	40.96	58.86	23.1	13.58	54.41	23.1	13.84	10.17	23.1	57.19	10.57
24.0	40.58	6.79	24.0	40.87	58.64	24.1	13.56	54.05	24.1	13.80	9.94	24.1	57.12	10.24
25.0	40.83	6.41	25.0	40.78	58.36	25.1	13.55	53.72	25.1	13.75	9.69	25.1	57.06	9.90
25.9	41.14	6.06	26.0	40.68	58.12	26.0	13.55	53.34	26.1	13.70	9.46	26.1	57.01	9.54
26.9	41.50	5.72	27.0	40.59	57.85	27.0	13.56	52.99	27.1	13.65	9.21	27.1	56.96	9.21
27.9	41.89	5.37	28.0	40.49	57.56	28.0	13.56	52.68	28.1	13.60	8.94	28.1	56.93	8.89
28.9	42.29	5.04	29.0	40.42	57.24	29.0	13.58	52.35	29.0	13.54	8.64	29.1	56.89	8.56
29.9	42.66	4.71	30.0	40.37	56.92	30.0	13.59	52.03	30.0	13.48	8.34	30.1	56.86	8.24
30.9	43.01	4.40	31.0	40.32	56.60	31.0	13.60	51.71	31.0	13.43	8.02	31.1	56.83	7.95
31.9	43.33	4.10	32.0	40.27	56.26	32.0	13.60	51.42	32.0	13.38	7.69	32.1	56.79	7.65
51.44 +51.43			12.29 -12.25			6.93 +6.85			6.10 -6.02			8.19 +8.13		
8 ^h 14 ^m 48 ^s .311			9 ^h 9 ^m 6 ^s .085			9 ^h 25 ^m 12 ^s .930			9 ^h 36 ^m 24 ^s .003			10 ^h 20 ^m 57 ^s .259		
+88° 53' 11".43			-85° 19' 42".77			+81° 41' 57".18			-80° 33' 50".61			+82° 59' 12".27		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

7 Octantis. Mag. 6.3			Bradley 1672. Mag. 6.3			z Octantis. Mag. 5.4			32 H. Camelop. seq. Mag. 5.3			κ Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
July	h m ° '	° '	July	h m ° '	° '	July	h m ° '	° '	July	h m ° '	° '	July	h m ° '	° '
	10 59	-84 8		12 14	+88 9		12 45	-84 40		12 48	+83 52		13 27	-85 21
1.2	47.38	64.13	1.2	32.97	60.11	1.3	63.74	39.52	1.3	33.54	13.89	1.3	13.46	59.82
2.2	47.17	64.06	2.2	32.40	60.01	2.3	63.52	39.59	2.3	33.37	13.82	2.3	13.21	59.96
3.2	46.96	63.95	3.2	31.84	59.90	3.3	63.28	39.64	3.3	33.20	13.77	3.3	12.96	60.07
4.2	46.76	63.82	4.2	31.27	59.81	4.2	63.05	39.68	4.3	33.03	13.73	4.3	12.70	60.16
5.2	46.57	63.70	5.2	30.67	59.70	5.2	62.82	39.69	5.2	32.84	13.69	5.3	12.45	60.23
6.2	46.38	63.56	6.2	30.05	59.62	6.2	62.59	39.69	6.2	32.66	13.66	6.3	12.19	60.29
7.2	46.21	63.41	7.2	29.39	59.53	7.2	62.40	39.68	7.2	32.46	13.63	7.3	11.96	60.34
8.2	46.06	63.27	8.2	28.69	59.40	8.2	62.20	39.67	8.2	32.23	13.59	8.3	11.74	60.37
9.2	45.91	63.16	9.2	27.97	59.28	9.2	62.02	39.67	9.2	32.02	13.52	9.3	11.54	60.41
10.2	45.76	63.05	10.2	27.25	59.10	10.2	61.86	39.67	10.2	31.80	13.42	10.3	11.35	60.47
11.2	45.63	62.95	11.2	26.55	58.93	11.2	61.68	39.71	11.2	31.59	13.30	11.3	11.17	60.54
12.2	45.47	62.88	12.2	25.88	58.70	12.2	61.52	39.76	12.2	31.39	13.14	12.3	10.98	60.64
13.2	45.30	62.80	13.2	25.27	58.48	13.2	61.33	39.81	13.2	31.20	12.98	13.3	10.76	60.74
14.1	45.11	62.71	14.2	24.72	58.25	14.2	61.10	39.86	14.2	31.02	12.80	14.3	10.54	60.84
15.1	44.93	62.58	15.2	24.22	58.05	15.2	60.89	39.89	15.2	30.86	12.65	15.2	10.27	60.93
16.1	44.72	62.41	16.2	23.72	57.86	16.2	60.65	39.91	16.2	30.71	12.49	16.2	10.01	61.00
17.1	44.52	62.23	17.2	23.23	57.70	17.2	60.41	39.86	17.2	30.56	12.37	17.2	9.74	61.03
18.1	44.35	62.03	18.2	22.70	57.52	18.2	60.18	39.80	18.2	30.38	12.26	18.2	9.46	61.02
19.1	44.20	61.83	19.2	22.14	57.37	19.2	59.94	39.72	19.2	30.21	12.15	19.2	9.21	60.99
20.1	44.05	61.63	20.2	21.53	57.22	20.2	59.75	39.64	20.2	30.01	12.05	20.2	8.97	60.96
21.1	43.92	61.44	21.2	20.87	57.06	21.2	59.56	39.54	21.2	29.81	11.91	21.2	8.74	60.95
22.1	43.81	61.28	22.2	20.21	56.86	22.2	59.39	39.47	22.2	29.60	11.78	22.2	8.54	60.93
23.1	43.69	61.08	23.2	19.54	56.63	23.2	59.22	39.42	23.2	29.39	11.64	23.2	8.34	60.92
24.1	43.55	60.92	24.2	18.91	56.39	24.2	59.05	39.37	24.2	29.19	11.45	24.2	8.14	60.93
25.1	43.43	60.76	25.2	18.31	56.16	25.2	58.88	39.30	25.2	29.00	11.25	25.2	7.93	60.93
26.1	43.29	60.59	26.2	17.75	55.89	26.2	58.69	39.26	26.2	28.81	11.07	26.2	7.71	60.94
27.1	43.14	60.41	27.2	17.24	55.61	27.2	58.49	39.21	27.2	28.65	10.83	27.2	7.48	60.94
28.1	42.99	60.21	28.2	16.76	55.37	28.2	58.28	39.16	28.2	28.49	10.62	28.2	7.24	60.93
29.1	42.84	60.00	29.2	16.29	55.12	29.2	58.06	39.07	29.2	28.35	10.41	29.2	6.98	60.89
30.1	42.68	59.77	30.2	15.84	54.87	30.2	57.84	38.98	30.2	28.19	10.21	30.2	6.70	60.86
31.1	42.53	59.53	31.2	15.40	54.64	31.2	57.61	38.87	31.2	28.04	10.02	31.2	6.44	60.78
32.1	42.38	59.27	32.2	14.95	54.40	32.2	57.39	38.74	32.2	27.89	9.83	32.2	6.17	60.71
9.81	-9.76		31.25	+31.23		10.78	-10.73		9.37	+9.31		12.38	-12.34	
10 ^h 59 ^m	55°.642		12 ^h 14 ^m	28°.053		12 ^h 46 ^m	1°.183		12 ^h 48 ^m	29°.976		13 ^h 27 ^m	5°.514	
-84° 8'	31''.24		+88° 9'	56''.03		-84° 40'	2''.72		+83° 52'	10''.05		-85° 21'	23''.59	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Octantis. Mag. 4.1			Groombridge 2283. Mag. 7.2			ρ Octantis. Mag. 5.7			ϵ Ursæ Minoris. Mag. 4.4			59 G. Apodis. Mag. 5.9		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
July	h m	° ' "	July	h m	° ' "	July	h m	° ' "	July	h m	° ' "	July	h m	° ' "
	14 13	-83 17		15 3	+87 33		15 23	-84 11		16 54	+82 10		17 15	-80 47
	s	" "		s	" "		s	" "		s	" "		s	" "
1.3	28.85	38.30	1.4	68.65	26.65	1.4	61.24	46.13	1.4	36.30	38.80	1.4	60.37	16.56
2.3	28.71	38.49	2.4	68.22	26.76	2.4	61.12	46.38	2.4	36.22	39.03	2.4	60.36	16.87
3.3	28.55	38.65	3.3	67.79	26.87	3.4	60.99	46.63	3.4	36.13	39.27	3.4	60.33	17.18
4.3	28.39	38.81	4.3	67.37	26.99	4.4	60.85	46.85	4.4	36.05	39.52	4.4	60.30	17.48
5.3	28.23	38.93	5.3	66.95	27.12	5.4	60.70	47.06	5.4	35.96	39.78	5.4	60.26	17.77
6.3	28.07	39.04	6.3	66.50	27.26	6.4	60.55	47.24	6.4	35.86	40.05	6.4	60.22	18.02
7.3	27.92	39.13	7.3	66.02	27.41	7.4	60.40	47.42	7.4	35.77	40.32	7.4	60.18	18.27
8.3	27.77	39.23	8.3	65.51	27.55	8.3	60.27	47.59	8.4	35.67	40.63	8.4	60.15	18.50
9.3	27.65	39.31	9.3	64.98	27.71	9.3	60.15	47.76	9.4	35.55	40.93	9.4	60.13	18.72
10.3	27.54	39.43	10.3	64.40	27.82	10.3	60.05	47.93	10.4	35.43	41.21	10.4	60.11	18.95
11.3	27.43	39.56	11.3	63.82	27.92	11.3	59.95	48.12	11.4	35.31	41.48	11.4	60.10	19.18
12.3	27.31	39.69	12.3	63.25	27.99	12.3	59.85	48.33	12.4	35.18	41.73	12.4	60.10	19.43
13.3	27.18	39.85	13.3	62.69	28.02	13.3	59.75	48.54	13.4	35.04	41.94	13.4	60.09	19.70
14.3	27.04	40.00	14.3	62.16	28.04	14.3	59.63	48.77	14.4	34.91	42.14	14.4	60.08	20.00
15.3	26.89	40.15	15.3	61.66	28.06	15.3	59.49	48.99	15.4	34.79	42.31	15.4	60.05	20.31
16.3	26.72	40.27	16.3	61.18	28.07	16.3	59.32	49.20	16.4	34.67	42.48	16.4	60.01	20.61
17.3	26.55	40.36	17.3	60.71	28.11	17.3	59.15	49.40	17.4	34.55	42.67	17.4	59.96	20.89
18.3	26.36	40.42	18.3	60.25	28.18	18.3	58.97	49.56	18.4	34.44	42.86	18.4	59.89	21.15
19.3	26.19	40.49	19.3	59.77	28.24	19.3	58.79	49.70	19.4	34.32	43.09	19.4	59.81	21.39
20.3	26.03	40.52	20.3	59.24	28.32	20.3	58.62	49.82	20.4	34.20	43.33	20.4	59.74	21.61
21.3	25.87	40.53	21.3	58.69	28.40	21.3	58.46	49.92	21.4	34.06	43.59	21.4	59.68	21.79
22.3	25.74	40.55	22.3	58.12	28.49	22.3	58.32	50.01	22.4	33.93	43.84	22.4	59.63	21.98
23.3	25.60	40.58	23.3	57.52	28.54	23.3	58.17	50.12	23.4	33.78	44.07	23.4	59.57	22.15
24.3	25.48	40.61	24.3	56.92	28.57	24.3	58.04	50.24	24.4	33.63	44.29	24.4	59.53	22.34
25.3	25.34	40.65	25.3	56.34	28.59	25.3	57.90	50.38	25.4	33.48	44.48	25.4	59.49	22.56
26.2	25.19	40.72	26.3	55.76	28.58	26.3	57.76	50.51	26.4	33.33	44.66	26.4	59.44	22.79
27.2	25.04	40.78	27.3	55.20	28.56	27.3	57.60	50.64	27.4	33.18	44.82	27.4	59.39	23.03
28.2	24.88	40.84	28.3	54.67	28.53	28.3	57.43	50.78	28.4	33.03	44.96	28.4	59.34	23.27
29.2	24.71	40.88	29.3	54.15	28.50	29.3	57.25	50.93	29.4	32.88	45.09	29.4	59.27	23.52
30.2	24.53	40.91	30.3	53.64	28.46	30.3	57.06	51.06	30.4	32.74	45.23	30.4	59.19	23.76
31.2	24.34	40.91	31.3	53.15	28.45	31.3	56.86	51.17	31.3	32.60	45.37	31.4	59.10	24.01
32.2	24.15	40.90	32.3	52.65	28.44	32.3	56.66	51.24	32.3	32.47	45.52	32.4	59.01	24.22
8.56	-8.50		23.47	+23.45		9.89	-9.84		7.35	+7.28		6.25	-6.17	
14 ^h 13 ^m	18 ^s .531		15 ^h 3 ^m	0 ^s .607		15 ^h 23 ^m	43 ^s .237		16 ^h 54 ^m	31 ^s .741		17 ^h 15 ^m	43 ^s .730	
-83° 17'	4''.27		+87° 33'	24''.43		-84° 11'	17''.84		+82° 10'	38''.40		-80° 47'	2''.69	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Ursae Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursae Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
July	h m	° ' "	July	h m	° ' "	July	h m	° ' "	July	h m	° ' "	July	h m	° ' "
	17 59	+86 36		18 6	-87 39		19 3	+89 0		19 29	-89 13		20 48	+82 13
1.5	27.88	50.43	1.5	38.23	58.62	1.5	68.14	54.79	1.5	9.35	29.29	1.6	48.40	13.37
2.5	27.74	50.71	2.5	38.28	58.96	2.5	67.94	55.09	2.5	10.06	29.60	2.6	48.45	13.67
3.5	27.61	50.98	3.5	38.29	59.30	3.5	67.77	55.38	3.5	10.67	29.92	3.6	48.50	13.97
4.5	27.48	51.27	4.5	38.27	59.63	4.5	67.62	55.70	4.5	11.17	30.24	4.6	48.58	14.27
5.5	27.36	51.56	5.5	38.22	59.94	5.5	67.51	56.01	5.5	11.58	30.55	5.6	48.61	14.57
6.5	27.24	51.87	6.5	38.15	60.24	6.5	67.41	56.33	6.5	11.92	30.83	6.6	48.68	14.89
7.5	27.11	52.20	7.5	38.08	60.52	7.5	67.30	56.67	7.5	12.20	31.12	7.6	48.74	15.20
8.5	26.95	52.52	8.5	38.02	60.79	8.5	67.15	57.03	8.5	12.47	31.38	8.6	48.81	15.57
9.4	26.78	52.88	9.5	37.97	61.05	9.5	66.91	57.40	9.5	12.79	31.63	9.6	48.87	15.95
10.4	26.58	53.22	10.5	37.97	61.29	10.5	66.58	57.77	10.5	13.19	31.88	10.6	48.93	16.34
11.4	26.35	53.56	11.4	37.98	61.54	11.5	66.15	58.14	11.5	13.68	32.14	11.6	48.97	16.74
12.4	26.11	53.88	12.4	38.02	61.82	12.5	65.61	58.50	12.5	14.24	32.40	12.6	49.01	17.14
13.4	25.84	54.16	13.4	38.07	62.12	13.5	65.02	58.84	13.5	14.84	32.68	13.6	49.03	17.52
14.4	25.59	54.42	14.4	38.07	62.44	14.5	64.41	59.15	14.5	15.41	33.00	14.6	49.04	17.89
15.4	25.34	54.66	15.4	38.05	62.76	15.5	63.83	59.43	15.5	15.89	33.31	15.6	49.05	18.23
16.4	25.11	54.88	16.4	37.98	63.11	16.5	63.29	59.73	16.5	16.25	33.63	16.6	49.06	18.55
17.4	24.92	55.12	17.4	37.84	63.44	17.5	62.83	60.00	17.5	16.46	33.98	17.5	49.08	18.87
18.4	24.72	55.38	18.4	37.67	63.74	18.5	62.43	60.32	18.5	16.52	34.30	18.5	49.10	19.18
19.4	24.52	55.66	19.4	37.49	64.02	19.5	62.07	60.64	19.5	16.47	34.60	19.5	49.13	19.52
20.4	24.30	55.95	20.4	37.29	64.29	20.5	61.68	60.98	20.5	16.39	34.89	20.5	49.17	19.88
21.4	24.08	56.27	21.4	37.11	64.53	21.5	61.26	61.32	21.5	16.29	35.17	21.5	49.20	20.26
22.4	23.85	56.59	22.4	36.95	64.76	22.5	60.76	61.67	22.5	16.22	35.43	22.5	49.23	20.65
23.4	23.57	56.89	23.4	36.80	65.00	23.5	60.19	62.01	23.5	16.23	35.68	23.5	49.25	21.05
24.4	23.30	57.18	24.4	36.67	65.24	24.5	59.52	62.35	24.5	16.28	35.94	24.5	49.26	21.45
25.4	22.99	57.45	25.4	36.55	65.49	25.5	58.80	62.68	25.5	16.37	36.21	25.5	49.26	21.85
26.4	22.68	57.70	26.4	36.42	65.76	26.4	58.05	63.00	26.5	16.47	36.49	26.5	49.26	22.22
27.4	22.39	57.95	27.4	36.28	66.05	27.4	57.26	63.30	27.5	16.54	36.79	27.5	49.25	22.60
28.4	22.09	58.18	28.4	36.12	66.33	28.4	56.46	63.60	28.5	16.57	37.10	28.5	49.23	22.96
29.4	21.80	58.40	29.4	35.93	66.62	29.4	55.69	63.88	29.5	16.55	37.44	29.5	49.22	23.29
30.4	21.51	58.60	30.4	35.71	66.92	30.4	54.94	64.16	30.5	16.41	37.76	30.5	49.20	23.63
31.4	21.23	58.80	31.4	35.44	67.22	31.4	54.23	64.42	31.5	16.16	38.09	31.5	49.18	23.96
32.4	20.96	59.02	32.4	35.15	67.51	32.4	53.55	64.69	32.4	15.83	38.41	32.5	49.16	24.29
16.94	+16.91		24.57	-24.55		58.26	+58.25		74.02	-74.01		7.39	+7.32	
17 ^h 50 ^m	20°.805		18 ^h 5 ^m	36°.163		19 ^h 3 ^m	51°.560		19 ^h 26 ^m	7°.189		20 ^h 48 ^m	44°.660	
+86° 36'	51°'.19		-87° 39'	52°'.21		+89° 0'	56°'.70		-89° 13'	35°'.99		+82° 13'	16°'.38	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ^1 Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
	h m ° '		h m ° '			h m ° '			h m ° '			h m ° '		
July	21 38	-83 5	July	22 16	-86 23	July	22 37	-81 48	July	23 27	+86 50	July	23 47	-82 28
	s	"		s	"		s	"		s	"		s	"
1.6	27.49	57.97	1.7	22.65	15.75	1.7	44.35	49.73	1.7	46.62	35.07	1.7	20.06	32.62
2.6	27.65	58.15	2.6	22.99	15.89	2.7	44.50	49.81	2.7	46.93	35.25	2.7	20.24	32.61
3.6	27.81	58.33	3.6	23.32	16.04	3.7	44.67	49.92	3.7	47.24	35.40	3.7	20.43	32.62
4.6	27.97	58.53	4.6	23.63	16.20	4.7	44.81	50.06	4.7	47.55	35.56	4.7	20.60	32.65
5.6	28.11	58.73	5.6	23.91	16.37	5.7	44.96	50.19	5.7	47.88	35.72	5.7	20.77	32.69
6.6	28.23	58.93	6.6	24.18	16.53	6.7	45.09	50.32	6.7	48.23	35.89	6.7	20.92	32.73
7.6	28.34	59.12	7.6	24.43	16.70	7.7	45.20	50.46	7.7	48.60	36.07	7.7	21.07	32.78
8.6	28.45	59.31	8.6	24.67	16.85	8.6	45.31	50.57	8.7	48.98	36.26	8.7	21.21	32.82
9.6	28.57	59.46	9.6	24.90	16.99	9.6	45.42	50.67	9.7	49.38	36.48	9.7	21.35	32.85
10.6	28.69	59.62	10.6	25.15	17.11	10.6	45.55	50.75	10.7	49.76	36.73	10.7	21.50	32.87
11.6	28.83	59.76	11.6	25.41	17.22	11.6	45.69	50.84	11.7	50.13	37.00	11.7	21.64	32.88
12.6	28.97	59.90	12.6	25.70	17.34	12.6	45.83	50.91	12.7	50.48	37.28	12.7	21.80	32.87
13.6	29.12	60.04	13.6	26.02	17.47	13.6	45.98	51.01	13.7	50.78	37.57	13.7	21.99	32.88
14.6	29.28	60.23	14.6	26.34	17.61	14.6	46.13	51.13	14.7	51.06	37.85	14.7	22.17	32.90
15.6	29.44	60.45	15.6	26.66	17.79	15.6	46.29	51.27	15.7	51.30	38.11	15.7	22.35	32.94
16.6	29.58	60.69	16.6	26.97	17.98	16.6	46.44	51.43	16.7	51.55	38.36	16.7	22.54	33.01
17.6	29.72	60.93	17.6	27.25	18.21	17.6	46.58	51.60	17.7	51.82	38.58	17.7	22.71	33.10
18.6	29.83	61.20	18.6	27.49	18.43	18.6	46.70	51.79	18.7	52.10	38.80	18.7	22.86	33.21
19.6	29.92	61.44	19.6	27.70	18.67	19.6	46.80	51.99	19.7	52.40	39.03	19.7	23.01	33.34
20.6	30.00	61.68	20.6	27.90	18.90	20.6	46.90	52.18	20.6	52.72	39.27	20.7	23.14	33.47
21.6	30.07	61.92	21.6	28.07	19.10	21.6	46.99	52.36	21.6	53.06	39.52	21.7	23.26	33.58
22.6	30.15	62.11	22.6	28.25	19.30	22.6	47.09	52.53	22.6	53.40	39.78	22.7	23.39	33.69
23.6	30.24	62.31	23.6	28.45	19.49	23.6	47.18	52.69	23.6	53.73	40.07	23.7	23.52	33.78
24.6	30.33	62.52	24.6	28.65	19.67	24.6	47.29	52.83	24.6	54.04	40.39	24.7	23.66	33.87
25.6	30.43	62.73	25.6	28.87	19.86	25.6	47.40	52.99	25.6	54.33	40.70	25.7	23.80	33.96
26.6	30.54	62.95	26.6	29.09	20.05	26.6	47.52	53.15	26.6	54.59	41.02	26.6	23.95	34.06
27.6	30.65	63.17	27.6	29.33	20.26	27.6	47.64	53.33	27.6	54.84	41.34	27.6	24.10	34.17
28.6	30.75	63.42	28.6	29.58	20.48	28.6	47.76	53.53	28.6	55.06	41.64	28.6	24.26	34.29
29.6	30.86	63.70	29.6	29.81	20.72	29.6	47.88	53.75	29.6	55.26	41.94	29.6	24.42	34.42
30.5	30.95	63.98	30.6	30.03	20.99	30.6	47.99	53.98	30.6	55.46	42.24	30.6	24.58	34.57
31.5	31.04	64.28	31.6	30.23	21.27	31.6	48.10	54.22	31.6	55.68	42.52	31.6	24.72	34.75
32.5	31.10	64.58	32.6	30.41	21.54	32.6	48.19	54.48	32.6	55.91	42.78	32.6	24.87	34.92
8.32	-8.26		15.87	-15.84		7.02	-6.95		18.16	+18.14		7.64	-7.57	
21 ^h 38 ^m 10 ^s .025			22 ^h 15 ^m 56 ^s .333			22 ^h 37 ^m 32 ^s .703			23 ^h 27 ^m 44 ^s .392			23 ^h 47 ^m 12 ^s .813		
-83° 6' 23".31			-86° 23' 45".22			-81° 49' 21".11			+86° 50' 39".03			-82° 29' 8".43		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

43 H. Cephei. Mag. 4.5			α Ursae Minoris. (Polaris.) Mag. 2.1			4 G. Octantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Declin- ation.	Wash. Mean Time.	Right Ascen- sion.	Declin- ation.	Wash. Mean Time.	Right Ascen- sion.	Declin- ation.	Wash. Mean Time.	Right Ascen- sion.	Declin- ation.	Wash. Mean Time.	Right Ascen- sion.	Declin- ation.
Aug.	h m 0 57 s	° ' +85 48 "	Aug.	h m 1 30 s	° ' +88 51 "	Aug.	h m 1 42 s	° ' -85 11 "	Aug.	h m 4 9 s	° ' +85 19 "	Aug.	h m 5 34 s	° ' +85 9 "
0.7	11.49	26.57	0.7	12.68	24.30	0.7	8.81	1.48	0.8	52.10	56.00	0.9	59.14	21.43
1.7	11.74	26.76	1.7	13.64	24.44	1.7	9.07	1.53	1.8	52.37	55.92	1.9	59.35	21.26
2.7	11.99	26.94	2.7	14.64	24.58	2.7	9.32	1.60	2.8	52.63	55.84	2.9	59.55	21.07
3.7	12.26	27.12	3.7	15.72	24.73	3.7	9.56	1.68	3.8	52.90	55.76	3.9	59.77	20.86
4.7	12.54	27.31	4.7	16.85	24.88	4.7	9.79	1.76	4.8	53.20	55.65	4.9	60.00	20.64
5.7	12.86	27.52	5.7	18.02	25.05	5.7	9.99	1.82	5.8	53.52	55.56	5.9	60.25	20.42
6.7	13.17	27.76	6.7	19.23	25.22	6.7	10.19	1.88	6.8	53.84	55.49	6.9	60.53	20.20
7.7	13.46	28.03	7.7	20.42	25.44	7.7	10.41	1.95	7.8	54.19	55.45	7.9	60.82	20.00
8.7	13.76	28.33	8.7	21.58	25.67	8.7	10.63	1.96	8.8	54.53	55.40	8.9	61.14	19.81
9.7	14.04	28.62	9.7	22.68	25.93	9.7	10.85	1.98	9.8	54.89	55.40	9.9	61.44	19.68
10.7	14.29	28.93	10.7	23.68	26.20	10.7	11.09	2.02	10.8	55.23	55.42	10.8	61.74	19.56
11.6	14.51	29.24	11.7	24.59	26.45	11.7	11.36	2.05	11.8	55.55	55.46	11.8	62.05	19.46
12.6	14.72	29.52	12.7	25.45	26.69	12.7	11.62	2.11	12.8	55.84	55.49	12.8	62.32	19.36
13.6	14.92	29.78	13.7	26.29	26.93	13.7	11.83	2.19	13.8	56.12	55.51	13.8	62.58	19.25
14.6	15.12	30.03	14.7	27.15	27.14	14.7	12.14	2.28	14.8	56.39	55.50	14.8	62.81	19.13
15.6	15.35	30.27	15.7	28.06	27.33	15.7	12.38	2.42	15.8	56.67	55.49	15.8	63.06	18.99
16.6	15.59	30.51	16.7	29.04	27.52	16.7	12.61	2.58	16.8	56.96	55.45	16.8	63.30	18.82
17.6	15.85	30.76	17.7	30.09	27.73	17.7	12.80	2.74	17.8	57.27	55.40	17.8	63.57	18.65
18.6	16.12	31.04	18.7	31.17	27.96	18.7	12.99	2.88	18.8	57.59	55.37	18.8	63.85	18.47
19.6	16.39	31.32	19.6	32.26	28.20	19.7	13.18	3.03	19.8	57.93	55.35	19.8	64.14	18.32
20.6	16.64	31.62	20.6	33.35	28.46	20.7	13.37	3.16	20.8	58.26	55.36	20.8	64.46	18.18
21.6	16.89	31.95	21.6	34.38	28.74	21.7	13.57	3.28	21.8	58.62	55.40	21.8	64.78	18.07
22.6	17.13	32.28	22.6	35.33	29.02	22.7	13.77	3.41	22.8	58.96	55.44	22.8	65.10	17.96
23.6	17.35	32.60	23.6	36.24	29.32	23.7	13.99	3.53	23.8	59.29	55.49	23.8	65.42	17.89
24.6	17.54	32.93	24.6	37.08	29.62	24.6	14.22	3.66	24.8	59.61	55.57	24.8	65.73	17.81
25.6	17.72	33.26	25.6	37.87	29.92	25.6	14.44	3.79	25.7	59.93	55.64	25.8	66.02	17.76
26.6	17.89	33.58	26.6	38.61	30.20	26.6	14.68	3.93	26.7	60.22	55.72	26.8	66.31	17.71
27.6	18.06	33.88	27.6	39.36	30.46	27.6	14.91	4.12	27.7	60.50	55.79	27.8	66.58	17.66
28.6	18.22	34.18	28.6	40.09	30.73	28.6	15.13	4.30	28.7	60.78	55.87	28.8	66.85	17.60
29.6	18.40	34.48	29.6	40.85	30.98	29.6	15.34	4.50	29.7	61.05	55.92	29.8	67.12	17.53
30.6	18.58	34.77	30.6	41.66	31.23	30.6	15.53	4.74	30.7	61.34	55.96	30.8	67.38	17.45
31.6	18.78	35.06	31.6	42.52	31.48	31.6	15.71	4.96	31.7	61.63	56.00	31.8	67.66	17.35
13.68	+13.65	50.16	+50.15	11.91	-11.87	12.29	+12.25	11.84	+11.80					
0 ^h 57 ^m	1 ^s .657	1 ^h 29 ^m	44 ^s .254	1 ^h 42 ^m	6 ^s .102	4 ^h 9 ^m	44 ^s .952	5 ^h 34 ^m	54 ^s .014					
+85° 48'	25'' .87	+88° 51'	25'' .03	-85° 11'	39'' .58	+85° 20'	1'' .04	+85° 9'	28'' .07					

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

81 G. Mensae. Mag. 6.2			ζ Mensae. Mag. 5.6			51 H. Cephei. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Ootantis. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Aug.	h m 5 46	° ' -84 49	Aug.	h m 6 46	° ' -80 43	Aug.	h m 7 1	° ' +87 10	Aug.	h m 7 13	° ' +82 34	Aug.	h m 7 15	° ' -86 53
	s 4.84	" 29.51		s 51.21	" 24.47		s 37.82	" 52.62		s 32.07	" 29.45		s 57.16	" 55.70
0.9	5.01	29.25	0.9	51.27	24.15	0.9	38.07	52.34	0.9	32.16	29.19	0.9	57.29	55.37
1.9	5.18	29.00	2.9	51.34	23.86	2.9	38.30	52.06	2.9	32.24	28.92	2.9	57.43	55.05
2.9	5.34	28.77	3.9	51.40	23.57	3.9	38.53	51.77	3.9	32.32	28.64	3.9	57.58	54.77
4.9	5.50	28.58	4.9	51.47	23.32	4.9	38.80	51.45	4.9	32.41	28.33	4.9	57.73	54.50
5.9	5.65	28.39	5.9	51.54	23.08	5.9	39.07	51.12	5.9	32.51	28.00	5.9	57.88	54.26
6.9	5.79	28.19	6.9	51.60	22.86	6.9	39.40	50.80	6.9	32.64	27.67	6.9	58.01	54.02
7.9	5.93	28.01	7.9	51.67	22.62	7.9	39.76	50.48	7.9	32.78	27.34	7.9	58.12	53.78
8.9	6.06	27.78	8.9	51.72	22.35	8.9	40.16	50.18	8.9	32.92	27.05	8.9	58.22	53.50
9.9	6.19	27.55	9.9	51.77	22.08	9.9	40.57	49.90	9.9	33.09	26.76	9.9	58.30	53.24
10.9	6.33	27.31	10.9	51.83	21.78	10.9	40.99	49.66	10.9	33.26	26.51	10.9	58.39	52.96
11.9	6.47	27.05	11.9	51.89	21.47	11.9	41.39	49.43	11.9	33.41	26.26	11.9	58.51	52.63
12.8	6.65	26.77	12.9	51.97	21.16	12.9	41.77	49.21	12.9	33.55	26.05	12.9	58.65	52.31
13.8	6.84	26.54	13.9	52.04	20.85	13.9	42.11	48.99	13.9	33.68	25.83	13.9	58.82	51.99
14.8	7.05	26.33	14.9	52.13	20.57	14.9	42.44	48.76	14.9	33.80	25.60	14.9	59.02	51.68
15.8	7.24	26.14	15.9	52.22	20.33	15.9	42.75	48.52	15.9	33.92	25.35	15.9	59.25	51.42
16.8	7.44	25.97	16.9	52.32	20.09	16.9	43.06	48.24	16.9	34.01	25.09	16.9	59.49	51.17
17.8	7.64	25.82	17.9	52.41	19.89	17.9	43.38	47.97	17.9	34.15	24.80	17.9	59.73	50.94
18.8	7.84	25.68	18.9	52.50	19.69	18.9	43.74	47.69	18.9	34.27	24.51	18.9	59.96	50.72
19.8	8.02	25.56	19.9	52.59	19.49	19.9	44.14	47.38	19.9	34.41	24.21	19.9	60.18	50.52
20.8	8.20	25.42	20.9	52.67	19.30	20.9	44.55	47.10	20.9	34.57	23.91	20.9	60.38	50.33
21.8	8.37	25.27	21.9	52.77	19.10	21.9	44.98	46.86	21.9	34.74	23.66	21.9	60.58	50.09
22.8	8.55	25.11	22.9	52.85	18.87	22.9	45.44	46.62	22.9	34.91	23.41	22.9	60.77	49.86
23.8	8.74	24.94	23.9	52.93	18.64	23.9	45.89	46.39	23.9	35.09	23.18	23.9	60.97	49.61
24.8	8.93	24.76	24.9	53.03	18.39	24.9	46.34	46.19	24.9	35.26	22.98	24.9	61.19	49.34
25.8	9.12	24.59	25.9	53.12	18.16	25.9	46.77	46.00	25.9	35.43	22.79	25.9	61.42	49.07
26.8	9.35	24.41	26.9	53.22	17.92	26.9	47.19	45.82	26.9	35.58	22.60	26.9	61.67	48.79
27.8	9.57	24.23	27.8	53.32	17.67	27.9	47.61	45.64	27.9	35.73	22.40	27.9	61.91	48.55
28.8	9.80	24.08	28.8	53.43	17.43	28.9	47.99	45.44	28.9	35.88	22.20	28.9	62.20	48.30
29.8	10.03	23.95	29.8	53.56	17.24	29.9	48.38	45.26	29.9	36.02	22.00	29.9	62.52	48.05
30.8	10.27	23.84	30.8	53.68	17.03	30.9	48.74	45.07	30.9	36.16	21.78	30.9	62.84	47.81
31.8	10.51	23.76	31.8	53.79	16.88	31.9	49.13	44.84	31.9	36.30	21.55	31.9	63.16	47.63
11.08	-11.04		6.20	-6.12		20.33	+20.30		7.74	+7.67		18.48	-18.45	
5 ^h 46 ^m	26°.439		6 ^h 47 ^m	3°.489		7 ^h 1 ^m	34°.861		7 ^h 13 ^m	29°.477		7 ^h 16 ^m	40°.555	
-84° 49'	48''.17		-80° 43'	34''.16		+87° 11'	0''.11		+82° 34'	36''.50		-86° 54'	0''.14	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			ζ Octantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			ζ Chamseleontis. Mag. 5.2			30 H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Aug.	h m 8 14	° ' +88 52	Aug.	h m 9 8	° ' -85 19	Aug.	h m 9 25	° ' +81 41	Aug.	h m 9 36	° ' -80 33	Aug.	h m 10 20	° ' +82 58
	s "	" "		s "	" "		s "	" "		s "	" "		s "	" "
0.9	43.33	64.10	1.0	40.27	56.26	1.0	13.60	51.42	1.0	13.38	67.69	1.1	56.79	67.65
1.9	43.61	63.78	2.0	40.22	55.94	2.0	13.60	51.11	2.0	13.34	67.36	2.1	56.74	67.36
2.9	43.86	63.46	3.0	40.14	55.61	3.0	13.59	50.79	3.0	13.32	67.04	3.1	56.69	67.05
3.9	44.10	63.13	4.0	40.07	55.32	4.0	13.58	50.47	4.0	13.30	66.74	4.1	56.63	66.75
4.9	44.35	62.78	5.0	40.05	55.02	5.0	13.56	50.13	5.0	13.29	66.44	5.1	56.57	66.41
5.9	44.67	62.41	6.0	40.04	54.74	6.0	13.55	49.76	6.0	13.27	66.15	6.1	56.50	66.05
6.9	45.08	62.04	7.0	40.04	54.50	7.0	13.56	49.38	7.0	13.26	65.92	7.1	56.45	65.67
7.9	45.58	61.63	8.0	40.02	54.23	8.0	13.59	48.97	8.0	13.24	65.67	8.1	56.44	65.26
8.9	46.19	61.25	8.9	39.98	53.97	9.0	13.63	48.58	9.0	13.23	65.42	9.0	56.42	64.87
9.9	46.87	60.90	9.9	39.93	53.70	10.0	13.69	48.20	10.0	13.20	65.14	10.0	56.42	64.49
10.9	47.58	60.57	10.9	39.88	53.39	11.0	13.74	47.84	11.0	13.16	64.85	11.0	56.43	64.11
11.9	48.28	60.25	11.9	39.83	53.08	12.0	13.80	47.50	12.0	13.13	64.54	12.0	56.45	63.76
12.9	48.92	59.96	12.9	39.79	52.74	12.9	13.86	47.19	13.0	13.11	64.23	13.0	56.47	63.42
13.9	49.51	59.67	13.9	39.78	52.42	13.9	13.88	46.88	14.0	13.09	63.88	14.0	56.47	63.10
14.9	50.02	59.38	14.9	39.79	52.06	14.9	13.91	46.57	15.0	13.07	63.54	15.0	56.46	62.78
15.9	50.48	59.06	15.9	39.82	51.73	15.9	13.92	46.25	15.9	13.07	63.21	16.0	56.43	62.47
16.9	50.94	58.75	16.9	39.86	51.41	16.9	13.94	45.91	16.9	13.07	62.89	17.0	56.40	62.13
17.9	51.43	58.40	17.9	39.91	51.12	17.9	13.95	45.54	17.9	13.09	62.60	18.0	56.37	61.77
18.9	51.97	58.03	18.9	39.97	50.85	18.9	13.99	45.15	18.9	13.11	62.30	19.0	56.35	61.38
19.9	52.57	57.68	19.9	40.02	50.57	19.9	14.02	44.77	19.9	13.13	62.02	20.0	56.34	61.01
20.9	53.26	57.33	20.9	40.07	50.30	20.9	14.07	44.38	20.9	13.15	61.74	21.0	56.34	60.61
21.9	54.01	56.99	21.9	40.11	50.05	21.9	14.12	44.00	21.9	13.16	61.46	22.0	56.34	60.22
22.9	54.82	56.66	22.9	40.13	49.77	22.9	14.20	43.62	22.9	13.17	61.19	23.0	56.37	59.83
23.9	55.65	56.35	23.9	40.16	49.48	23.9	14.28	43.28	23.9	13.17	60.89	24.0	56.41	59.45
24.9	56.49	56.06	24.9	40.19	49.18	24.9	14.36	42.93	24.9	13.17	60.58	25.0	56.46	59.08
25.9	57.33	55.78	25.9	40.22	48.86	25.9	14.44	42.61	25.9	13.18	60.26	26.0	56.50	58.73
26.9	58.13	55.52	26.9	40.26	48.52	26.9	14.49	42.30	26.9	13.18	59.94	26.9	56.53	58.39
27.9	58.90	55.24	27.9	40.32	48.19	27.9	14.56	41.99	27.9	13.20	59.61	27.9	56.56	58.05
28.9	59.63	54.97	28.9	40.40	47.85	28.9	14.62	41.67	28.9	13.23	59.26	28.9	56.58	57.72
29.9	60.33	54.70	29.9	40.49	47.53	29.9	14.66	41.34	29.9	13.26	58.92	29.9	56.60	57.39
30.9	60.99	54.40	30.9	40.59	47.24	30.9	14.71	41.02	30.9	13.30	58.58	30.9	56.61	57.05
31.9	61.68	54.09	31.9	40.72	46.94	31.9	14.76	40.69	31.9	13.34	58.29	31.9	56.61	56.68
51.30	+51.29		12.29	-12.24		6.92	+6.85		6.10	-6.02		8.19	+8.13	
8 ^h 14 ^m	48°.311		9 ^h 9 ^m	6°.085		9 ^h 25 ^m	12°.930		9 ^h 36 ^m	24°.003		10 ^h 20 ^m	57°.259	
+68° 53'	11''.43		-85° 19'	42''.77		+81° 41'	57''.18		-80° 33'	50''.61		+82° 59'	12''.27	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

7 Octantis. Mag. 6.3			Bradley 1672. Mag. 6.3			2 Octantis. Mag. 5.4			33 H. Camelop. seq. Mag. 5.3			K Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Aug.	h m 10 59	° ' " -84 8	Aug.	h m 12 14	° ' " +88 9	Aug.	h m 12 45	° ' " -84 40	Aug.	h m 12 48	° ' " +83 52	Aug.	h m 13 26	° ' " -85 21
1.1	42.38	59.27	1.2	14.95	54.40	1.2	57.39	38.74	1.2	27.89	9.83	1.2	66.17	60.71
2.1	42.25	59.01	2.1	14.48	54.17	2.2	57.19	38.59	2.2	27.73	9.66	2.2	65.91	60.62
3.1	42.14	58.73	3.1	13.96	53.96	3.2	56.99	38.42	3.2	27.56	9.48	3.2	65.67	60.51
4.1	42.03	58.48	4.1	13.39	53.74	4.2	56.80	38.24	4.2	27.37	9.32	4.2	65.43	60.39
5.1	41.95	58.23	5.1	12.84	53.48	5.2	56.64	38.08	5.2	27.19	9.12	5.2	65.23	60.29
6.1	41.87	58.00	6.1	12.26	53.21	6.2	56.49	37.95	6.2	27.00	8.90	6.2	65.04	60.19
7.1	41.79	57.78	7.1	11.70	52.90	7.2	56.35	37.82	7.2	26.81	8.64	7.2	64.86	60.12
8.1	41.70	57.58	8.1	11.17	52.58	8.2	56.21	37.70	8.2	26.63	8.37	8.2	64.67	60.07
9.1	41.61	57.38	9.1	10.69	52.24	9.2	56.03	37.59	9.2	26.48	8.08	9.2	64.48	60.00
10.1	41.50	57.16	10.1	10.28	51.91	10.1	55.87	37.48	10.2	26.33	7.79	10.2	64.26	59.96
11.1	41.37	56.93	11.1	9.92	51.58	11.1	55.68	37.40	11.1	26.20	7.49	11.2	64.04	59.91
12.1	41.25	56.69	12.1	9.59	51.28	12.1	55.49	37.26	12.1	26.08	7.21	12.2	63.79	59.82
13.1	41.12	56.41	13.1	9.27	50.99	13.1	55.28	37.10	13.1	25.96	6.93	13.2	63.52	59.70
14.1	41.02	56.09	14.1	8.92	50.70	14.1	55.08	36.91	14.1	25.83	6.69	14.2	63.27	59.55
15.1	40.92	55.78	15.1	8.56	50.44	15.1	54.88	36.69	15.1	25.70	6.45	15.2	63.03	59.38
16.1	40.86	55.50	16.1	8.13	50.17	16.1	54.72	36.47	16.1	25.55	6.22	16.2	62.80	59.19
17.1	40.80	55.21	17.1	7.68	49.87	17.1	54.58	36.24	17.1	25.40	5.99	17.2	62.61	59.03
18.1	40.75	54.92	18.1	7.21	49.56	18.1	54.43	36.01	18.1	25.22	5.72	18.2	62.42	58.85
19.0	40.71	54.65	19.1	6.73	49.24	19.1	54.30	35.81	19.1	25.05	5.46	19.2	62.24	58.68
20.0	40.66	54.40	20.1	6.26	48.89	20.1	54.18	35.61	20.1	24.90	5.17	20.2	62.07	58.54
21.0	40.61	54.15	21.1	5.85	48.53	21.1	54.06	35.42	21.1	24.75	4.85	21.1	61.90	58.39
22.0	40.56	53.88	22.1	5.47	48.17	22.1	53.93	35.24	22.1	24.61	4.53	22.1	61.72	58.24
23.0	40.50	53.62	23.1	5.14	47.82	23.1	53.78	35.05	23.1	24.48	4.20	23.1	61.54	58.08
24.0	40.44	53.36	24.1	4.84	47.44	24.1	53.64	34.86	24.1	24.38	3.86	24.1	61.34	57.95
25.0	40.36	53.08	25.1	4.58	47.11	25.1	53.48	34.64	25.1	24.28	3.55	25.1	61.14	57.76
26.0	40.28	52.77	26.1	4.34	46.77	26.1	53.31	34.43	26.1	24.17	3.24	26.1	60.91	57.58
27.0	40.23	52.44	27.1	4.12	46.43	27.1	53.14	34.21	27.1	24.07	2.98	27.1	60.68	57.41
28.0	40.17	52.11	28.1	3.88	46.12	28.1	52.99	33.96	28.1	23.98	2.63	28.1	60.47	57.20
29.0	40.12	51.78	29.1	3.61	45.81	29.1	52.84	33.69	29.1	23.88	2.34	29.1	60.26	56.95
30.0	40.09	51.44	30.1	3.33	45.48	30.1	52.69	33.41	30.1	23.76	2.06	30.1	60.06	56.73
31.0	40.08	51.11	31.1	3.02	45.18	31.1	52.57	33.11	31.1	23.63	1.78	31.1	59.89	56.48
32.0	40.08	50.78	32.1	2.66	44.85	32.1	52.47	32.82	32.1	23.50	1.48	32.1	59.74	56.22
9.81	-9.76		31.21	+31.20		10.78	-10.73		9.36	+9.31		12.38	-12.34	
10 ^h 59 ^m	55°.642		12 ^h 14 ^m	28°.053		12 ^h 46 ^m	1°.183		12 ^h 48 ^m	29°.976		13 ^h 27 ^m	5°.514	
-84° 8'	81''.24		+88° 9'	56''.03		-84° 40'	2''.72		+83° 52'	10''.05		-85° 21'	23''.59	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Octantis. Mag. 4.1			Groombridge 9283. Mag. 7.2			ρ Octantis. Mag. 5.7			ε Ursæ Minoris. Mag. 4.4			59 G. Apodis. Mag. 5.9		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Aug.	h m 14 13 s	° -83 17 "	Aug.	h m 15 3 s	° +87 33 "	Aug.	h m 15 23 s	° -84 11 "	Aug.	h m 16 54 s	° +82 10 "	Aug.	h m 17 15 s	° -80 47 "
1.2	24.15	40.90	1.3	52.65	28.44	1.3	56.66	51.24	1.3	32.47	45.52	1.4	59.01	24.22
2.2	23.97	40.86	2.3	52.15	28.43	2.3	56.45	51.31	2.3	32.33	45.68	2.4	58.91	24.43
3.2	23.79	40.83	3.3	51.62	28.45	3.3	56.25	51.36	3.3	32.19	45.85	3.4	58.81	24.60
4.2	23.62	40.76	4.3	51.08	28.45	4.3	56.06	51.40	4.3	32.04	46.02	4.4	58.71	24.76
5.2	23.47	40.70	5.3	50.50	28.46	5.3	55.89	51.42	5.3	31.88	46.20	5.3	58.63	24.90
6.2	23.33	40.64	6.3	49.88	28.45	6.3	55.73	51.45	6.3	31.71	46.38	6.3	58.55	25.03
7.2	23.20	40.59	7.3	49.25	28.42	7.3	55.58	51.48	7.3	31.54	46.54	7.3	58.48	25.15
8.2	23.07	40.57	8.2	48.63	28.35	8.3	55.42	51.54	8.3	31.36	46.68	8.3	58.42	25.32
9.2	22.94	40.56	9.2	48.02	28.25	9.3	55.28	51.62	9.3	31.18	46.79	9.3	58.36	25.50
10.2	22.80	40.56	10.2	47.45	28.13	10.3	55.12	51.71	10.3	31.01	46.88	10.3	58.30	25.69
11.2	22.64	40.56	11.2	46.91	28.01	11.3	54.94	51.79	11.3	30.84	46.94	11.3	58.22	25.90
12.2	22.47	40.54	12.2	46.37	27.90	12.3	54.76	51.87	12.3	30.68	47.00	12.3	58.14	26.11
13.2	22.28	40.50	13.2	45.88	27.80	13.2	54.54	51.93	13.3	30.52	47.06	13.3	58.03	26.30
14.2	22.09	40.42	14.2	45.38	27.69	14.2	54.32	51.95	14.3	30.36	47.13	14.3	57.91	26.48
15.2	21.91	40.31	15.2	44.88	27.63	15.2	54.11	51.96	15.3	30.20	47.21	15.3	57.79	26.63
16.2	21.75	40.19	16.2	44.37	27.56	16.2	53.90	51.92	16.3	30.05	47.32	16.3	57.67	26.75
17.2	21.59	40.07	17.2	43.80	27.50	17.2	53.70	51.88	17.3	29.88	47.45	17.3	57.56	26.86
18.2	21.45	39.93	18.2	43.22	27.42	18.2	53.51	51.83	18.3	29.70	47.57	18.3	57.46	26.94
19.2	21.31	39.80	19.2	42.62	27.35	19.2	53.34	51.79	19.3	29.53	47.69	19.3	57.36	27.02
20.2	21.18	39.69	20.2	42.01	27.26	20.2	53.18	51.75	20.3	29.35	47.81	20.3	57.26	27.10
21.2	21.06	39.59	21.2	41.42	27.12	21.2	53.02	51.73	21.3	29.15	47.88	21.3	57.18	27.19
22.2	20.93	39.49	22.2	40.84	27.00	22.2	52.85	51.71	22.3	28.97	47.93	22.3	57.08	27.30
23.2	20.79	39.39	23.2	40.27	26.83	23.2	52.68	51.70	23.3	28.78	47.96	23.3	57.00	27.43
24.2	20.64	39.29	24.2	39.73	26.67	24.2	52.50	51.69	24.3	28.61	47.98	24.3	56.90	27.54
25.2	20.48	39.18	25.2	39.21	26.51	25.2	52.30	51.68	25.3	28.43	47.99	25.3	56.79	27.66
26.2	20.31	39.06	26.2	38.72	26.33	26.2	52.10	51.66	26.3	28.26	48.00	26.3	56.67	27.79
27.2	20.14	38.94	27.2	38.24	26.16	27.2	51.90	51.63	27.3	28.09	48.01	27.3	56.55	27.91
28.2	19.97	38.77	28.2	37.77	26.00	28.2	51.68	51.57	28.3	27.92	48.01	28.3	56.42	28.02
29.2	19.81	38.60	29.2	37.29	25.85	29.2	51.46	51.49	29.3	27.75	48.03	29.3	56.28	28.09
30.2	19.65	38.40	30.2	36.80	25.71	30.2	51.25	51.39	30.3	27.58	48.06	30.3	56.15	28.16
31.2	19.50	38.19	31.2	36.29	25.59	31.2	51.04	51.27	31.3	27.41	48.11	31.3	56.01	28.19
32.1	19.36	37.98	32.2	35.74	25.47	32.2	50.85	51.14	32.3	27.24	48.15	32.3	55.88	28.21
8.56	-8.50		23.47	+23.45		9.89	-9.84		7.35	+7.28		6.25	-6.17	
14 ^h 13 ^m 18 ^s .531			15 ^h 3 ^m 0 ^s .607			15 ^h 23 ^m 43 ^s .237			16 ^h 54 ^m 31 ^s .741			17 ^h 15 ^m 43 ^s .730		
-83° 17'	4'' ^{.27}		+87° 33'	21'' ^{.43}		-84° 11'	17'' ^{.84}		+82° 10'	38'' ^{.40}		-80° 47'	2'' ^{.69}	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Ursæ Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursæ Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7			
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	
Aug.	h m ° ' "	Aug.	h m ° ' "	Aug.	h m ° ' "	Aug.	h m ° ' "	Aug.	h m ° ' "	Aug.	h m ° ' "	Aug.	h m ° ' "	Aug.	h m ° ' "
	17 59 +86 36		18 6 -87 40		19 3 +89 1		19 28 -89 13		20 48 +82 13						
1.4	20.96 59.02	1.4	35.15 7.51	1.4	53.55 4.69	1.4	75.83 38.41	1.5	49.16 24.29						
2.4	20.69 59.25	2.4	34.84 7.76	2.4	52.90 4.98	2.4	75.42 38.72	2.5	49.15 24.63						
3.4	20.42 59.49	3.4	34.52 7.99	3.4	52.25 5.28	3.4	74.92 39.01	3.5	49.14 24.99						
4.4	20.14 59.76	4.4	34.21 8.20	4.4	51.56 5.60	4.4	74.41 39.29	4.5	49.14 25.35						
5.4	19.83 60.02	5.4	33.91 8.40	5.4	50.83 5.91	5.4	73.92 39.55	5.5	49.13 25.75						
6.4	19.52 60.28	6.4	33.64 8.59	6.4	50.01 6.23	6.4	73.48 39.79	6.5	49.12 26.15						
7.4	19.16 60.53	7.4	33.40 8.79	7.4	49.09 6.57	7.4	73.14 40.02	7.5	49.09 26.56						
8.4	18.79 60.78	8.4	33.19 9.01	8.4	48.06 6.88	8.4	72.87 40.27	8.5	49.06 26.98						
9.4	18.40 60.97	9.4	32.99 9.24	9.4	46.97 7.16	9.4	72.67 40.54	9.5	49.02 27.38						
10.4	18.01 61.17	10.4	32.77 9.48	10.4	45.84 7.43	10.4	72.46 40.82	10.5	48.97 27.76						
11.4	17.63 61.33	11.4	32.52 9.74	11.4	44.72 7.69	11.4	72.19 41.12	11.5	48.91 28.12						
12.4	17.26 61.48	12.4	32.23 10.01	12.4	43.65 7.93	12.4	71.83 41.45	12.5	48.84 28.45						
13.4	16.93 61.62	13.4	31.89 10.27	13.4	42.65 8.17	13.4	71.32 41.76	13.5	48.78 28.79						
14.4	16.60 61.78	14.4	31.51 10.51	14.4	41.72 8.41	14.4	70.65 42.07	14.5	48.73 29.11						
15.3	16.28 61.96	15.4	31.11 10.72	15.4	40.84 8.65	15.4	69.87 42.36	15.5	48.68 29.43						
16.3	15.96 62.15	16.4	30.69 10.91	16.4	39.96 8.92	16.4	69.03 42.62	16.5	48.64 29.76						
17.3	15.63 62.34	17.3	30.28 11.08	17.4	39.06 9.19	17.4	68.15 42.88	17.5	48.61 30.12						
18.3	15.27 62.56	18.3	29.89 11.23	18.4	38.10 9.48	18.4	67.31 43.09	18.5	48.57 30.50						
19.3	14.90 62.77	19.3	29.53 11.37	19.4	37.06 9.78	19.4	66.54 43.30	19.5	48.52 30.89						
20.3	14.49 62.97	20.3	29.18 11.52	20.4	35.95 10.07	20.4	65.81 43.52	20.5	48.47 31.28						
21.3	14.09 63.17	21.3	28.84 11.67	21.4	34.78 10.33	21.4	65.12 43.75	21.5	48.40 31.66						
22.3	13.68 63.33	22.3	28.51 11.84	22.4	33.56 10.56	22.4	64.46 43.97	22.4	48.33 32.04						
23.3	13.27 63.46	23.3	28.16 12.02	23.4	32.30 10.80	23.4	63.78 44.23	23.4	48.25 32.40						
24.3	12.86 63.61	24.3	27.80 12.20	24.4	31.06 11.02	24.4	63.08 44.49	24.4	48.16 32.74						
25.3	12.46 63.71	25.3	27.42 12.39	25.4	29.83 11.23	25.4	62.32 44.75	25.4	48.07 33.06						
26.3	12.07 63.81	26.3	27.01 12.58	26.4	28.62 11.43	26.4	61.46 45.02	26.4	47.96 33.37						
27.3	11.70 63.91	27.3	26.57 12.77	27.4	27.45 11.61	27.4	60.54 45.31	27.4	47.89 33.67						
28.3	11.32 64.01	28.3	26.09 12.94	28.4	26.32 11.82	28.4	59.51 45.57	28.4	47.81 33.97						
29.3	10.96 64.12	29.3	25.59 13.10	29.4	25.22 12.01	29.4	58.39 45.81	29.4	47.73 34.29						
30.3	10.59 64.24	30.3	25.10 13.25	30.4	24.14 12.23	30.4	57.19 46.04	30.4	47.66 34.60						
31.3	10.22 64.38	31.3	24.60 13.36	31.4	23.04 12.45	31.4	55.97 46.26	31.4	47.58 34.92						
32.3	9.84 64.53	32.3	24.10 13.45	32.3	21.93 12.67	32.4	54.74 46.46	32.4	47.51 35.27						
16.95	+16.92	24.59	-24.57	58.41	+58.40	74.26	-74.25	7.39	+7.32						
17 ^h 59 ^m	20°.805	18 ^h 5 ^m	36°.163	19 ^h 3 ^m	51°.560	19 ^h 26 ^m	7°.189	20 ^h 48 ^m	44°.660						
+86° 36'	51''.19	-87° 39'	52''.21	+89° 0'	56''.70	-89° 13'	35''.99	+82° 13'	16''.38						

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ^1 Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Aug.	h m s	° ' "	Aug.	h m s	° ' "	Aug.	h m s	° ' "	Aug.	h m s	° ' "	Aug.	h m s	° ' "
	21 38	-83 6		22 16	-86 23		22 37	-81 48		23 27	+86 50		23 47	-82 28
1.5	31.10	4.58	1.6	30.41	21.54	1.6	49.19	54.48	1.6	55.91	42.78	1.6	24.87	34.92
2.5	31.15	4.88	2.6	30.56	21.82	2.6	48.28	54.74	2.6	56.13	43.06	2.6	24.99	35.12
3.5	31.20	5.16	3.6	30.69	22.10	3.6	48.35	55.00	3.6	56.38	43.33	3.6	25.10	35.32
4.5	31.24	5.45	4.6	30.80	22.37	4.6	48.40	55.25	4.6	56.65	43.63	4.6	25.20	35.53
5.5	31.27	5.69	5.6	30.90	22.61	5.6	48.47	55.49	5.6	56.92	43.95	5.6	25.31	35.72
6.5	31.31	5.93	6.6	31.01	22.84	6.6	48.53	55.70	6.6	57.20	44.29	6.6	25.40	35.89
7.5	31.35	6.16	7.6	31.14	23.06	7.6	48.60	55.90	7.6	57.45	44.65	7.6	25.52	36.04
8.5	31.42	6.37	8.5	31.28	23.28	8.6	48.69	56.09	8.6	57.68	45.03	8.6	25.64	36.19
9.5	31.49	6.60	9.5	31.46	23.50	9.6	48.79	56.28	9.6	57.88	45.41	9.6	25.77	36.33
10.5	31.56	6.85	10.5	31.64	23.73	10.6	48.88	56.49	10.6	58.05	45.80	10.6	25.90	36.47
11.5	31.64	7.13	11.5	31.82	24.01	11.6	48.98	56.72	11.6	58.18	46.17	11.6	26.04	36.65
12.5	31.71	7.42	12.5	31.99	24.28	12.6	49.08	56.98	12.6	58.31	46.52	12.6	26.19	36.84
13.5	31.77	7.74	13.5	32.14	24.60	13.6	49.16	57.26	13.6	58.44	46.85	13.6	26.32	37.06
14.5	31.80	8.06	14.5	32.26	24.91	14.5	49.22	57.55	14.6	58.58	47.17	14.6	26.43	37.29
15.5	31.81	8.38	15.5	32.34	25.22	15.5	49.27	57.85	15.6	58.74	47.48	15.6	26.53	37.54
16.5	31.82	8.68	16.5	32.39	25.54	16.5	49.32	58.14	16.6	58.92	47.80	16.6	26.61	37.80
17.5	31.81	8.98	17.5	32.43	25.83	17.5	49.35	58.42	17.6	59.12	48.14	17.6	26.69	38.05
18.5	31.80	9.26	18.5	32.46	26.09	18.5	49.38	58.68	18.6	59.33	48.49	18.6	26.76	38.30
19.5	31.80	9.51	19.5	32.50	26.35	19.5	49.41	58.92	19.6	59.54	48.85	19.6	26.83	38.53
20.5	31.80	9.76	20.5	32.54	26.61	20.5	49.45	59.17	20.6	59.72	49.24	20.6	26.91	38.74
21.5	31.81	10.02	21.5	32.60	26.87	21.5	49.49	59.41	21.6	59.88	49.64	21.6	26.99	38.96
22.5	31.83	10.29	22.5	32.67	27.13	22.5	49.53	59.66	22.6	60.01	50.03	22.6	27.09	39.18
23.5	31.85	10.55	23.5	32.75	27.39	23.5	49.59	59.92	23.6	60.12	50.42	23.6	27.18	39.40
24.5	31.87	10.84	24.5	32.83	27.67	24.5	49.64	60.19	24.6	60.21	50.80	24.6	27.27	39.63
25.5	31.89	11.15	25.5	32.90	27.98	25.5	49.69	60.47	25.6	60.28	51.17	25.6	27.37	39.86
26.5	31.90	11.46	26.5	32.97	28.30	26.5	49.74	60.77	26.5	60.34	51.53	26.6	27.47	40.13
27.5	31.90	11.78	27.5	33.01	28.62	27.5	49.78	61.09	27.5	60.41	51.90	27.6	27.57	40.41
28.5	31.88	12.11	28.5	33.03	28.95	28.5	49.80	61.42	28.5	60.48	52.25	28.6	27.65	40.70
29.5	31.85	12.43	29.5	33.05	29.29	29.5	49.82	61.75	29.5	60.56	52.58	29.6	27.71	41.00
30.5	31.81	12.76	30.5	33.02	29.62	30.5	49.83	62.07	30.5	60.65	52.92	30.6	27.76	41.31
31.5	31.75	13.06	31.5	32.97	29.93	31.5	49.82	62.39	31.5	60.76	53.26	31.6	27.81	41.62
32.5	31.69	13.34	32.5	32.92	30.23	32.5	49.81	62.69	32.5	60.89	53.63	32.5	27.85	41.92
8.33	-8.27	15.88	-15.85	7.02	-6.95	18.18	+18.15	7.64	-7.57					
21 ^h 38 ^m	10 ^o .025	22 ^h 15 ^m	56 ^o .333	22 ^h 37 ^m	32 ^o .703	23 ^h 27 ^m	44 ^o .392	23 ^h 47 ^m	12 ^o .813					
-83° 6'	23''.31	-86° 23'	45''.22	-81° 49'	21''.11	+86° 50'	39''.03	-82° 29'	8''.43					

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

48 H. Cephei. Mag. 4.5			α Ursae Minoris. (Polaris). Mag. 2.1			4 G. Ootantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Sept.	h m ° ' "		Sept.	h m ° ' "		Sept.	h m ° ' "		Sept.	h m ° ' "		Sept.	h m ° ' "	
	0 57	+85 48		1 30	+88 51		1 42	-85 11		4 10	+85 19		5 35	+85 9
	s "			s "			s "			s "			s "	
0.6	18.78	35.06	0.6	42.52	31.48	0.6	15.71	4.96	0.7	1.63	56.00	0.8	7.66	17.35
1.6	18.98	35.36	1.6	43.44	31.75	1.6	15.87	5.21	1.7	1.95	56.03	1.8	7.94	17.24
2.6	19.21	35.68	2.6	44.38	32.03	2.6	16.02	5.40	2.7	2.28	56.07	2.8	8.27	17.14
3.6	19.44	36.02	3.6	45.33	32.35	3.6	16.16	5.61	3.7	2.63	56.13	3.8	8.59	17.03
4.6	19.65	36.40	4.6	46.25	32.68	4.6	16.31	5.79	4.7	2.99	56.22	4.8	8.94	16.97
5.6	19.84	36.78	5.6	47.11	33.03	5.6	16.49	5.96	5.7	3.35	56.35	5.8	9.30	16.93
6.6	20.01	37.18	6.6	47.87	33.39	6.6	16.66	6.12	6.7	3.69	56.48	6.8	9.65	16.92
7.6	20.15	37.58	7.6	48.55	33.75	7.6	16.84	6.30	7.7	4.03	56.63	7.8	9.99	16.92
8.6	20.28	37.96	8.6	49.16	34.09	8.6	17.04	6.49	8.7	4.32	56.79	8.8	10.30	16.94
9.6	20.38	38.32	9.6	49.71	34.43	9.6	17.24	6.71	9.7	4.61	56.94	9.8	10.60	16.96
10.6	20.49	38.65	10.6	50.26	34.76	10.6	17.43	6.95	10.7	4.87	57.09	10.8	10.88	16.96
11.6	20.62	38.98	11.6	50.85	35.06	11.6	17.59	7.23	11.7	5.14	57.21	11.8	11.15	16.95
12.6	20.76	39.29	12.6	51.50	35.35	12.6	17.74	7.50	12.7	5.42	57.31	12.8	11.43	16.94
13.6	20.91	39.60	13.6	52.23	35.64	13.6	17.88	7.80	13.7	5.71	57.40	13.8	11.71	16.90
14.6	21.09	39.93	14.6	52.99	35.95	14.6	17.98	8.08	14.7	6.03	57.48	14.8	12.02	16.84
15.6	21.26	40.29	15.6	53.78	36.27	15.6	18.09	8.34	15.7	6.34	57.58	15.8	12.34	16.79
16.6	21.43	40.66	16.6	54.55	36.60	16.6	18.20	8.62	16.7	6.67	57.72	16.7	12.67	16.77
17.5	21.58	41.05	17.6	55.28	36.96	17.6	18.30	8.85	17.7	7.01	57.85	17.7	13.01	16.76
18.5	21.72	41.45	18.6	55.95	37.35	18.6	18.42	9.09	18.7	7.34	58.03	18.7	13.35	16.76
19.5	21.83	41.84	19.6	56.54	37.71	19.6	18.55	9.35	19.7	7.66	58.21	19.7	13.69	16.79
20.5	21.93	42.23	20.6	57.08	38.09	20.6	18.68	9.59	20.7	7.95	58.40	20.7	14.03	16.94
21.5	22.02	42.62	21.6	57.55	38.48	21.6	18.81	9.83	21.7	8.25	58.59	21.7	14.35	16.91
22.5	22.10	43.01	22.6	57.96	38.85	22.6	18.95	10.09	22.7	8.53	58.79	22.7	14.64	16.88
23.5	22.15	43.38	23.6	58.35	39.20	23.6	19.09	10.37	23.7	8.78	58.99	23.7	14.93	17.06
24.5	22.20	43.73	24.6	58.74	39.55	24.6	19.21	10.66	24.7	9.03	59.18	24.7	15.22	17.11
25.5	22.26	44.08	25.5	59.14	39.88	25.6	19.32	10.97	25.7	9.29	59.35	25.7	15.49	17.15
26.5	22.35	44.42	26.5	59.58	40.19	26.6	19.42	11.30	26.7	9.54	59.50	26.7	15.77	17.23
27.5	22.42	44.77	27.5	60.04	40.52	27.6	19.51	11.63	27.7	9.81	59.66	27.7	16.05	17.26
28.5	22.52	45.11	28.5	60.58	40.84	28.6	19.57	11.96	28.7	10.08	59.82	28.7	16.34	17.27
29.5	22.64	45.48	29.5	61.14	41.21	29.6	19.61	12.29	29.7	10.37	59.97	29.7	16.66	17.28
30.5	22.75	45.86	30.5	61.72	41.58	30.5	19.66	12.59	30.6	10.68	60.15	30.7	16.97	17.32
31.5	22.85	46.26	31.5	62.27	41.97	31.5	19.69	12.88	31.6	11.00	60.35	31.7	17.32	17.37
13.69	+13.66		50.27	+50.26		11.91	-11.87		12.29	+12.25		11.84	+11.80	
0 ^h 57 ^m	1° 85'		1 ^h 29 ^m	44° 25'		1 ^h 42 ^m	6° 10'		4 ^h 9 ^m	44° 95'		5 ^h 34 ^m	54° 01'	
+85° 48'	25'' .87		+88° 51'	25'' .03		-85° 11'	39'' .58		+85° 20'	1'' .04		+85° 9'	28'' .87	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

31 G. Menasse. Mag. 6.2			5 Mensae. Mag. 5.6			51 H. Cephei. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Octantis. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.
Sept.	h m 5 46	° ' -84 48	Sept.	h m 6 46	° ' -80 43	Sept.	h m 7 1	° ' +87 10	Sept.	h m 7 13	° ' +82 34	Sept.	h m 7 16	° ' -86 53
	s	"		s	"		s	"		s	"		s	"
0.8	10.51	23.76	0.8	53.79	16.88	0.9	49.13	44.84	0.9	36.30	21.55	0.9	3.16	47.63
1.8	10.72	23.71	1.8	53.91	16.75	1.8	49.54	44.61	1.9	36.45	21.30	1.9	3.48	47.49
2.8	10.92	23.66	2.8	54.02	16.61	2.8	49.99	44.37	2.9	36.63	21.07	2.9	3.78	47.33
3.8	11.15	23.61	3.8	54.13	16.50	3.8	50.46	44.14	3.8	36.80	20.81	3.9	4.06	47.19
4.8	11.34	23.52	4.8	54.23	16.38	4.8	50.98	43.90	4.8	36.99	20.57	4.8	4.33	47.04
5.8	11.54	23.45	5.8	54.33	16.23	5.8	51.51	43.71	5.8	37.20	20.37	5.8	4.58	46.87
6.8	11.73	23.35	6.8	54.44	16.07	6.8	52.05	43.53	6.8	37.41	20.16	6.8	4.83	46.69
7.8	11.94	23.25	7.8	54.54	15.88	7.8	52.58	43.39	7.8	37.61	20.02	7.8	5.10	46.46
8.8	12.17	23.13	8.8	54.66	15.70	8.8	53.09	43.26	8.8	37.81	19.87	8.8	5.38	46.25
9.8	12.40	23.03	9.8	54.78	15.51	9.8	53.57	43.14	9.8	38.00	19.75	9.8	5.70	46.04
10.8	12.65	22.95	10.8	54.91	15.35	10.8	54.01	43.02	10.8	38.15	19.61	10.8	6.03	45.84
11.8	12.90	22.89	11.8	55.03	15.22	11.8	54.44	42.88	11.8	38.31	19.44	11.8	6.39	45.65
12.8	13.15	22.86	12.8	55.17	15.09	12.8	54.86	42.71	12.8	38.46	19.27	12.8	6.78	45.52
13.8	13.38	22.86	13.8	55.31	15.02	13.8	55.29	42.54	13.8	38.64	19.09	13.8	7.15	45.39
14.8	13.64	22.87	14.8	55.43	14.96	14.8	55.75	42.36	14.8	38.81	18.90	14.8	7.54	45.29
15.8	13.86	22.90	15.8	55.57	14.90	15.8	56.25	42.17	15.8	39.00	18.70	15.8	7.90	45.19
16.8	14.08	22.92	16.8	55.71	14.85	16.8	56.75	41.98	16.8	39.18	18.50	16.8	8.24	45.09
17.8	14.30	22.93	17.8	55.81	14.80	17.8	57.29	41.82	17.8	39.39	18.30	17.8	8.57	45.00
18.7	14.52	22.93	18.8	55.93	14.71	18.8	57.84	41.68	18.8	39.60	18.15	18.8	8.89	44.89
19.7	14.73	22.93	19.8	56.06	14.64	19.8	58.40	41.55	19.8	39.83	18.00	19.8	9.22	44.78
20.7	14.95	22.91	20.8	56.18	14.55	20.8	58.94	41.45	20.8	40.02	17.89	20.8	9.55	44.65
21.7	15.18	22.90	21.8	56.30	14.44	21.8	59.47	41.38	21.8	40.23	17.79	21.8	9.88	44.51
22.7	15.42	22.88	22.8	56.43	14.35	22.8	59.99	41.30	22.8	40.43	17.69	22.8	10.25	44.38
23.7	15.67	22.87	23.8	56.57	14.25	23.8	60.48	41.24	23.8	40.62	17.60	23.8	10.62	44.23
24.7	15.91	22.88	24.8	56.70	14.17	24.8	60.97	41.17	24.8	40.80	17.52	24.8	11.00	44.10
25.7	16.17	22.92	25.8	56.84	14.11	25.8	61.43	41.09	25.8	40.98	17.44	25.8	11.42	44.01
26.7	16.44	22.97	26.8	56.99	14.08	26.8	61.89	41.00	26.8	41.16	17.31	26.8	11.84	43.96
27.7	16.68	23.04	27.8	57.13	14.07	27.8	62.35	40.89	27.8	41.32	17.19	27.8	12.26	43.91
28.7	16.92	23.14	28.8	57.28	14.09	28.8	62.82	40.78	28.8	41.50	17.06	28.8	12.68	43.87
29.7	17.15	23.27	29.8	57.42	14.13	29.8	63.33	40.65	29.8	41.69	16.92	29.8	13.09	43.85
30.7	17.37	23.38	30.8	57.56	14.16	30.8	63.86	40.53	30.8	41.89	16.77	30.8	13.47	43.86
31.7	17.58	23.49	31.8	57.68	14.21	31.8	64.43	40.41	31.8	42.11	16.63	31.8	13.84	43.87
11.08	-11.04		6.20	-6.12		20.31	+20.29		7.73	+7.67		18.47	-18.44	
5 ^h 46 ^m	26° 43'		6 ^h 47 ^m	3° 48'		7 ^h 1 ^m	34° 86'		7 ^h 13 ^m	29° 47'		7 ^h 16 ^m	40° 55'	
-84° 49'	48'' .17		-80° 43'	34'' .16		+87° 11'	0'' .11		+82° 34'	36'' .50		-86° 54'	0'' .14	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			ζ Ootantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			ζ Chamseleontis. Mag. 5.2			30 H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Sept.	h m	° ' "	Sept.	h m	° ' "	Sept.	h m	° ' "	Sept.	h m	° ' "	Sept.	h m	° ' "
	8 15	+88 52		9 8	-85 18		9 25	+81 41		9 36	-80 33		10 20	+82 56
0.9	1.68	54.09	0.9	40.72	46.94	0.9	14.76	40.69	0.9	13.34	58.29	0.9	56.61	56.68
1.9	2.40	53.77	1.9	40.85	46.68	1.9	14.82	40.33	1.9	13.39	58.01	1.9	56.62	56.39
2.9	3.18	53.44	2.9	40.95	46.44	2.9	14.87	39.95	2.9	13.44	57.75	2.9	56.64	55.91
3.9	4.06	53.12	3.9	41.07	46.19	3.9	14.96	39.56	3.9	13.49	57.50	3.9	56.68	55.50
4.9	5.03	52.79	4.9	41.18	45.96	4.9	15.04	39.17	4.9	13.54	57.26	4.9	56.73	55.09
5.9	6.09	52.47	5.9	41.27	45.71	5.9	15.14	38.81	5.9	13.58	56.99	5.9	56.81	54.67
6.9	7.19	52.19	6.9	41.35	45.44	6.9	15.26	38.46	6.9	13.61	56.72	6.9	56.89	54.28
7.9	8.29	51.95	7.9	41.43	45.18	7.9	15.37	38.12	7.9	13.65	56.45	7.9	56.97	53.90
8.9	9.36	51.71	8.9	41.51	44.87	8.9	15.49	37.80	8.9	13.68	56.14	8.9	57.06	53.54
9.9	10.36	51.48	9.9	41.61	44.55	9.9	15.59	37.52	9.9	13.71	55.83	9.9	57.12	53.20
10.9	11.28	51.25	10.9	41.74	44.23	10.9	15.68	37.23	10.9	13.76	55.50	10.9	57.19	52.88
11.9	12.15	51.02	11.9	41.89	43.95	11.9	15.76	36.93	11.9	13.82	55.19	11.9	57.25	52.54
12.9	12.99	50.77	12.9	42.06	43.67	12.9	15.82	36.62	12.9	13.89	54.88	12.9	57.29	52.20
13.9	13.83	50.51	13.9	42.23	43.43	13.9	15.91	36.30	13.9	13.97	54.61	13.9	57.33	51.84
14.9	14.72	50.23	14.9	42.42	43.21	14.9	15.99	35.96	14.9	14.05	54.37	14.9	57.37	51.47
15.9	15.68	49.94	15.9	42.59	42.99	15.9	16.07	35.33	15.9	14.14	54.14	15.9	57.42	51.10
16.9	16.69	49.65	16.9	42.77	42.79	16.9	16.18	35.25	16.9	14.22	53.90	16.9	57.50	50.71
17.9	17.80	49.37	17.9	42.92	42.58	17.9	16.28	34.89	17.9	14.28	53.67	17.9	57.58	50.30
18.9	18.94	49.13	18.9	43.08	42.35	18.9	16.41	34.55	18.9	14.35	53.44	18.9	57.67	49.82
19.8	20.11	48.88	19.9	43.22	42.15	19.9	16.54	34.23	19.9	14.42	53.20	19.9	57.77	49.55
20.8	21.28	48.65	20.9	43.38	41.92	20.9	16.68	33.93	20.9	14.48	52.95	20.9	57.88	49.19
21.8	22.46	48.46	21.9	43.52	41.67	21.9	16.80	33.64	21.9	14.55	52.68	21.9	57.98	48.84
22.8	23.61	48.27	22.9	43.69	41.40	22.9	16.93	33.35	22.9	14.62	52.41	22.9	58.09	48.51
23.8	24.73	48.08	23.9	43.87	41.15	23.9	17.04	33.08	23.9	14.70	52.13	23.9	58.20	48.18
24.8	25.81	47.92	24.9	44.04	40.91	24.9	17.15	32.82	24.9	14.78	51.87	24.9	58.29	47.88
25.8	26.83	47.73	25.9	44.24	40.63	25.9	17.26	32.56	25.9	14.87	51.61	25.9	58.38	47.56
26.8	27.82	47.52	26.9	44.46	40.42	26.9	17.36	32.29	26.9	14.96	51.36	26.9	58.47	47.24
27.8	28.81	47.33	27.9	44.69	40.23	27.9	17.47	32.00	27.9	15.06	51.11	27.9	58.54	46.91
28.8	29.83	47.11	28.9	44.92	40.03	28.9	17.57	31.70	28.9	15.17	50.89	28.9	58.61	46.56
29.8	30.88	46.88	29.9	45.16	39.89	29.9	17.68	31.38	29.9	15.28	50.71	29.9	58.70	46.19
30.8	32.02	46.65	30.9	45.39	39.74	30.9	17.81	31.06	30.9	15.40	50.52	30.9	58.79	45.81
31.8	33.25	46.42	31.9	45.61	39.59	31.9	17.94	30.74	31.9	15.51	50.37	31.9	58.90	45.42
51.19	+51.18		12.28	-12.24		6.92	+6.85		6.10	-6.02		8.18	+8.12	
8 ^h 14 ^m 48 ^s .311			9 ^h 9 ^m 6 ^s .085			9 ^h 25 ^m 12 ^s .930			9 ^h 38 ^m 24 ^s .003			10 ^h 20 ^m 57 ^s .259		
+88° 53' 11".43			-85° 19' 42".77			+81° 41' 57".18			-80° 33' 50".61			+82° 59' 12".27		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

7 Octantis. Mag. 6.3			Bradley 1672. Mag. 6.3			z Octantis. Mag. 5.4			32 H. Camelop. seq. Mag. 5.3			κ Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
	h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "
Sept.	10 59	-84 8	Sept.	12 13	+88 9	Sept.	12 45	-84 40	Sept.	12 48	+83 51	Sept.	13 26	-85 21
	s	" "		s	" "		s	" "		s	" "		s	" "
1.0	40.08	50.78	1.1	62.66	44.85	1.1	52.47	32.82	1.1	23.50	61.48	1.1	59.74	56.22
2.0	40.09	50.49	2.1	62.30	44.50	2.1	52.39	32.55	2.1	23.37	61.17	2.1	59.59	55.97
3.0	40.10	50.19	3.1	61.96	44.13	3.1	52.31	32.31	3.1	23.23	60.85	3.1	59.46	55.73
4.0	40.11	49.93	4.1	61.64	43.75	4.1	52.24	32.07	4.1	23.11	60.49	4.1	59.35	55.54
5.0	40.11	49.67	5.1	61.38	43.33	5.1	52.16	31.85	5.1	23.01	60.11	5.1	59.23	55.33
5.9	40.10	49.41	6.1	61.16	42.92	6.1	52.07	31.63	6.1	22.91	59.71	6.1	59.09	55.15
6.9	40.09	49.15	7.0	61.01	42.48	7.1	51.97	31.41	7.1	22.84	59.30	7.1	58.94	54.95
7.9	40.06	48.86	8.0	60.91	42.11	8.1	51.85	31.17	8.1	22.78	58.92	8.1	58.76	54.77
8.9	40.03	48.55	9.0	60.82	41.74	9.1	51.72	30.91	9.1	22.72	58.57	9.1	58.59	54.54
9.9	40.02	48.22	10.0	60.72	41.36	10.1	51.60	30.62	10.1	22.67	58.22	10.1	58.40	54.30
10.9	40.02	47.87	11.0	60.60	41.04	11.1	51.50	30.29	11.1	22.59	57.89	11.1	58.25	54.01
11.9	40.03	47.53	12.0	60.43	40.70	12.1	51.40	29.98	12.1	22.51	57.58	12.1	58.08	53.74
12.9	40.07	47.19	13.0	60.23	40.37	13.1	51.34	29.65	13.1	22.42	57.28	13.1	57.95	53.43
13.9	40.12	46.86	14.0	60.00	40.01	14.1	51.29	29.33	14.1	22.33	56.95	14.1	57.85	53.14
14.9	40.18	46.57	15.0	59.77	39.64	15.0	51.25	29.04	15.1	22.22	56.59	15.1	57.77	52.84
15.9	40.24	46.28	16.0	59.55	39.24	16.0	51.21	28.75	16.0	22.13	56.23	16.1	57.69	52.56
16.9	40.31	46.00	17.0	59.36	38.83	17.0	51.19	28.47	17.0	22.04	55.83	17.1	57.62	52.29
17.9	40.36	45.73	18.0	59.22	38.41	18.0	51.15	28.21	18.0	21.97	55.46	18.1	57.54	52.06
18.9	40.40	45.46	19.0	59.12	38.00	19.0	51.11	27.94	19.0	21.91	55.04	19.1	57.45	51.80
19.9	40.44	45.19	20.0	59.06	37.59	20.0	51.06	27.68	20.0	21.86	54.63	20.1	57.36	51.55
20.9	40.48	44.90	21.0	59.05	37.18	21.0	51.01	27.40	21.0	21.83	54.24	21.1	57.25	51.30
21.9	40.52	44.59	22.0	59.05	36.79	22.0	50.95	27.11	22.0	21.79	53.86	22.1	57.14	51.03
22.9	40.56	44.28	23.0	59.08	36.41	23.0	50.89	26.80	23.0	21.76	53.47	23.1	57.01	50.74
23.9	40.60	43.97	24.0	59.09	36.04	24.0	50.83	26.47	24.0	21.74	53.12	24.1	56.90	50.45
24.9	40.65	43.65	24.9	59.10	35.66	25.0	50.77	26.15	25.0	21.71	52.76	25.1	56.80	50.12
25.9	40.72	43.31	25.9	59.10	35.31	26.0	50.73	25.81	26.0	21.68	52.43	26.0	56.70	49.79
26.9	40.80	42.98	26.9	59.07	34.97	27.0	50.71	25.45	27.0	21.63	52.09	27.0	56.62	49.47
27.9	40.90	42.69	27.9	58.98	34.62	28.0	50.71	25.11	28.0	21.59	51.73	28.0	56.57	49.13
28.9	41.02	42.40	28.9	58.90	34.25	29.0	50.72	24.77	29.0	21.52	51.37	29.0	56.54	48.80
29.9	41.14	42.11	29.9	58.81	33.87	30.0	50.76	24.45	30.0	21.46	51.00	30.0	56.54	48.49
30.9	41.26	41.86	30.9	58.75	33.46	31.0	50.80	24.15	31.0	21.42	50.59	31.0	56.53	48.19
31.9	41.36	41.64	31.9	58.72	33.05	32.0	50.83	23.88	32.0	21.37	50.16	32.0	56.53	47.91
9.81	-9.75		31.16	+31.15		10.77	-10.73		9.36	+9.30		12.37	-12.33	
10 ^h 59 ^m	55°.642		12 ^h 14 ^m	28°.053		12 ^h 46 ^m	1°.183		12 ^h 48 ^m	29°.976		13 ^h 27 ^m	5°.514	
-84° 8'	31''.24		+88° 9'	56''.03		-84° 40'	2''.72		+83° 52'	10''.05		-85° 21'	23''.59	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Octantis. Mag. 4.1			Groombridge 2283. Mag. 7.2			ρ Octantis. Mag. 5.7			ϵ Ursae Minoris. Mag. 4.4			59 G. Apodis. Mag. 5.9		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Sept.	h m ° ' "		Sept.	h m ° ' "		Sept.	h m ° ' "		Sept.	h m ° ' "		Sept.	h m ° ' "	
	14 13 -83 17		Sept.	15 3 +87 33		Sept.	15 23 -84 11		Sept.	16 54 +82 10		Sept.	17 15 -80 47	
1.1	19.36 37.98		1.2	35.74 25.47		1.2	50.85 51.14		1.3	27.24 48.15		1.3	55.88 28.21	
2.1	19.24 37.78		2.2	35.18 25.33		2.2	50.68 51.01		2.3	27.06 48.21		2.3	55.77 28.22	
3.1	19.14 37.58		3.2	34.60 25.18		3.2	50.53 50.88		3.3	26.87 48.23		3.3	55.66 28.22	
4.1	19.04 37.40		4.2	34.02 25.00		4.2	50.38 50.77		4.3	26.67 48.25		4.3	55.56 28.24	
5.1	18.94 37.23		5.2	33.45 24.76		5.2	50.24 50.68		5.2	26.48 48.24		5.3	55.47 28.28	
6.1	18.82 37.08		6.2	32.90 24.52		6.2	50.09 50.61		6.2	26.28 48.21		6.3	55.39 28.32	
7.1	18.70 36.94		7.2	32.39 24.26		7.2	49.92 50.54		7.2	26.09 48.15		7.3	55.29 28.39	
8.1	18.57 36.79		8.2	31.91 24.01		8.2	49.74 50.46		8.2	25.91 48.07		8.3	55.17 28.46	
9.1	18.42 36.61		9.2	31.47 23.78		9.2	49.54 50.37		9.2	25.73 47.99		9.3	55.05 28.51	
10.1	18.28 36.41		10.2	31.04 23.56		10.2	49.34 50.26		10.2	25.56 47.91		10.2	54.92 28.53	
11.1	18.13 36.19		11.2	30.60 23.33		11.2	49.14 50.12		11.2	25.39 47.86		11.2	54.78 28.57	
12.1	18.00 35.93		12.2	30.15 23.12		12.2	48.93 49.95		12.2	25.22 47.83		12.2	54.62 28.56	
13.1	17.88 35.67		13.2	29.68 22.95		13.2	48.75 49.76		13.2	25.05 47.80		13.2	54.48 28.50	
14.1	17.77 35.40		14.1	29.18 22.77		14.2	48.59 49.55		14.2	24.87 47.79		14.2	54.35 28.45	
15.1	17.68 35.14		15.1	28.66 22.56		15.2	48.44 49.36		15.2	24.69 47.78		15.2	54.24 28.40	
16.1	17.60 34.89		16.1	28.13 22.34		16.2	48.30 49.16		16.2	24.50 47.75		16.2	54.13 28.33	
17.1	17.52 34.66		17.1	27.60 22.11		17.2	48.16 48.98		17.2	24.31 47.70		17.2	54.03 28.27	
18.1	17.44 34.44		18.1	27.10 21.86		18.2	48.03 48.82		18.2	24.12 47.62		18.2	53.93 28.22	
19.1	17.36 34.22		19.1	26.61 21.57		19.1	47.90 48.66		19.2	23.93 47.54		19.2	53.82 28.18	
20.1	17.26 34.00		20.1	26.16 21.30		20.1	47.75 48.51		20.2	23.74 47.42		20.2	53.71 28.15	
21.1	17.17 33.77		21.1	25.72 21.01		21.1	47.59 48.35		21.2	23.56 47.30		21.2	53.59 28.13	
22.1	17.06 33.55		22.1	25.32 20.72		22.1	47.42 48.18		22.2	23.38 47.17		22.2	53.47 28.10	
23.1	16.95 33.29		23.1	24.93 20.42		23.1	47.25 48.01		23.2	23.22 47.02		23.2	53.35 28.07	
24.1	16.84 33.02		24.1	24.55 20.15		24.1	47.07 47.81		24.2	23.06 46.90		24.2	53.21 28.03	
25.1	16.73 32.75		25.1	24.18 19.88		25.1	46.90 47.61		25.2	22.89 46.78		25.2	53.08 27.96	
26.1	16.63 32.45		26.1	23.80 19.63		26.1	46.73 47.37		26.2	22.73 46.67		26.2	52.93 27.87	
27.1	16.54 32.14		27.1	23.40 19.38		27.1	46.58 47.13		27.2	22.57 46.57		27.2	52.79 27.77	
28.1	16.47 31.83		28.1	22.99 19.14		28.1	46.43 46.88		28.2	22.40 46.48		28.2	52.66 27.64	
29.1	16.41 31.52		29.1	22.56 18.89		29.1	46.30 46.61		29.2	22.22 46.40		29.2	52.54 27.49	
30.1	16.36 31.22		30.1	22.10 18.64		30.1	46.19 46.36		30.2	22.04 46.30		30.2	52.43 27.34	
31.1	16.33 30.94		31.1	21.64 18.35		31.1	46.10 46.11		31.2	21.86 46.20		31.2	52.34 27.21	
32.1	16.30 30.68		32.1	21.19 18.04		32.1	46.01 45.87		32.2	21.67 46.06		32.2	52.25 27.07	
8.56	-8.50		23.45	+23.43		9.89	-9.84		7.35	+7.28		6.25	-6.17	
14 ^h 13 ^m 18 ^s .531			15 ^h 3 ^m 0 ^s .607			15 ^h 23 ^m 43 ^s .237			16 ^h 54 ^m 31 ^s .741		17 ^h 15 ^m 43 ^s .730			
-83° 17' 4".27			+87° 33' 24".43			-84° 11' 17".84			+82° 10' 38".40		-80° 47' 2".69			

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Ursæ Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursæ Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Sept.	h m s	° ' "	Sept.	h m s	° ' "	Sept.	h m s	° ' "	Sept.	h m s	° ' "	Sept.	h m s	° ' "
	17 58	+86 37		18 6	-87 40		19 2	+89 1		19 28	-89 13		20 48	+82 13
1.3	69.84	4.53	1.3	24.10	13.45	1.3	81.93	12.67	1.4	54.74	46.46	1.4	47.51	35.27
2.3	69.43	4.68	2.3	23.65	13.53	2.3	80.75	12.90	2.4	53.58	46.63	2.4	47.44	35.83
3.3	69.01	4.83	3.3	23.22	13.60	3.3	79.45	13.14	3.4	52.49	46.79	3.4	47.35	36.00
4.3	68.56	4.97	4.3	22.83	13.67	4.3	78.08	13.36	4.4	51.49	46.95	4.4	47.25	36.38
5.3	68.10	5.06	5.3	22.45	13.76	5.3	76.64	13.58	5.4	50.57	47.12	5.4	47.14	36.74
6.3	67.64	5.12	6.3	22.08	13.87	6.3	75.13	13.77	6.4	49.69	47.31	6.4	47.02	37.08
7.3	67.18	5.18	7.3	21.68	14.00	7.3	73.64	13.93	7.3	48.76	47.52	7.4	46.90	37.40
8.3	66.74	5.22	8.3	21.25	14.14	8.3	72.18	14.08	8.3	47.77	47.73	8.4	46.79	37.69
9.3	66.32	5.24	9.3	20.79	14.27	9.3	70.79	14.22	9.3	46.65	47.96	9.4	46.66	37.97
10.3	65.91	5.27	10.3	20.28	14.38	10.3	69.47	14.36	10.3	45.41	48.18	10.4	46.55	38.23
11.3	65.53	5.31	11.3	19.74	14.47	11.3	68.22	14.50	11.3	44.01	48.38	11.4	46.44	38.50
12.3	65.14	5.37	12.3	19.18	14.54	12.3	67.00	14.66	12.3	42.57	48.55	12.4	46.34	38.78
13.3	64.75	5.46	13.3	18.63	14.58	13.3	65.78	14.84	13.3	41.06	48.72	13.4	46.23	39.08
14.3	64.34	5.55	14.3	18.10	14.60	14.3	64.51	15.02	14.3	39.60	48.84	14.4	46.13	39.39
15.3	63.91	5.63	15.3	17.61	14.61	15.3	63.18	15.20	15.3	38.19	48.95	15.4	46.03	39.72
16.3	63.48	5.71	16.3	17.14	14.61	16.3	61.78	15.38	16.3	36.86	49.07	16.4	45.92	40.05
17.3	63.01	5.77	17.3	16.68	14.62	17.3	60.31	15.55	17.3	35.59	49.17	17.4	45.80	40.36
18.3	62.55	5.83	18.3	16.24	14.63	18.3	58.80	15.70	18.3	34.35	49.28	18.4	45.66	40.66
19.3	62.09	5.85	19.3	15.80	14.65	19.3	57.25	15.83	19.3	33.13	49.41	19.4	45.53	40.95
20.2	61.62	5.86	20.3	15.35	14.68	20.3	55.71	15.96	20.3	31.89	49.55	20.4	45.39	41.23
21.2	61.18	5.84	21.3	14.87	14.73	21.3	54.19	16.05	21.3	30.61	49.68	21.4	45.25	41.48
22.2	60.75	5.81	22.2	14.38	14.77	22.3	52.70	16.14	22.3	29.28	49.82	22.4	45.10	41.71
23.2	60.32	5.77	23.2	13.87	14.81	23.3	51.25	16.22	23.3	27.86	49.97	23.4	44.95	41.93
24.2	59.91	5.74	24.2	13.32	14.84	24.3	49.85	16.29	24.3	26.35	50.11	24.4	44.82	42.15
25.2	59.51	5.70	25.2	12.77	14.86	25.3	48.49	16.36	25.3	24.78	50.25	25.4	44.68	42.37
26.2	59.12	5.70	26.2	12.20	14.84	26.3	47.16	16.44	26.3	23.14	50.34	26.4	44.54	42.60
27.2	58.73	5.68	27.2	11.62	14.81	27.3	45.84	16.53	27.3	21.45	50.42	27.4	44.42	42.83
28.2	58.32	5.69	28.2	11.06	14.75	28.3	44.50	16.63	28.3	19.78	50.49	28.3	44.29	43.09
29.2	57.89	5.72	29.2	10.54	11.66	29.3	43.11	16.74	29.3	18.15	50.53	29.3	44.17	43.36
30.2	57.45	5.73	30.2	10.06	14.58	30.3	41.65	16.86	30.3	16.59	50.55	30.3	44.03	43.64
31.2	57.00	5.73	31.2	9.61	14.50	31.3	40.10	16.97	31.3	15.14	50.56	31.3	43.90	43.93
32.2	56.52	5.73	32.2	9.18	14.44	32.3	38.48	17.07	32.3	13.81	50.59	32.3	43.75	44.21
16.95	+16.92		24.60	-24.58		58.52	+58.51		74.44	-74.43		7.39	+7.33	
17 ^h 59 ^m	20°.805		18 ^h 5 ^m 36".163			19 ^h 3 ^m 51".560			19 ^h 26 ^m 7".189			20 ^h 48 ^m 44".660		
+86° 36'	51".19		-87° 39'	52".21		+89° 0'	56".70		-89° 13'	35".99		+82° 13'	16".38	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ^1 Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
	h m	° '		h m	° '		h m	° '		h m	° '		h m	° '
Sept.	21 38	-83 6	Sept.	22 16	-86 23	Sept.	22 37	-81 49	Sept.	23 28	+86 50	Sept.	23 47	-82 23
	s	"		s	"		s	"		s	"		s	"
1.5	31.69	13.34	1.5	32.92	30.23	1.5	49.81	2.69	1.5	0.89	53.63	1.5	27.85	41.92
2.5	31.64	13.60	2.5	32.85	30.51	2.5	49.80	2.97	2.5	1.02	54.02	2.5	27.87	42.19
3.5	31.60	13.85	3.5	32.80	30.77	3.5	49.79	3.22	3.5	1.13	54.42	3.5	27.91	42.44
4.4	31.56	14.08	4.5	32.77	31.02	4.5	49.79	3.47	4.5	1.22	54.84	4.5	27.95	42.69
5.4	31.54	14.30	5.5	32.76	31.27	5.5	49.81	3.71	5.5	1.28	55.27	5.5	28.00	42.94
6.4	31.53	14.58	6.5	32.76	31.54	6.5	49.82	3.97	6.5	1.31	55.70	6.5	28.06	43.17
7.4	31.52	14.84	7.5	32.77	31.84	7.5	49.85	4.24	7.5	1.31	56.12	7.5	28.13	43.42
8.4	31.50	15.13	8.5	32.78	32.15	8.5	49.87	4.53	8.5	1.29	56.51	8.5	28.20	43.70
9.4	31.46	15.45	9.5	32.77	32.47	9.5	49.89	4.84	9.5	1.26	56.89	9.5	28.26	44.00
10.4	31.41	15.76	10.5	32.72	32.80	10.5	49.89	5.18	10.5	1.23	57.25	10.5	28.31	44.31
11.4	31.33	16.08	11.5	32.64	33.14	11.5	49.87	5.52	11.5	1.23	57.59	11.5	28.34	44.64
12.4	31.24	16.37	12.5	32.53	33.45	12.5	49.83	5.84	12.5	1.25	57.95	12.5	28.35	44.96
13.4	31.16	16.66	13.4	32.40	33.74	13.5	49.78	6.16	13.5	1.29	58.30	13.5	28.36	45.30
14.4	31.06	16.92	14.4	32.26	34.03	14.5	49.74	6.46	14.5	1.34	58.68	14.5	28.36	45.63
15.4	30.97	17.15	15.4	32.12	34.31	15.5	49.69	6.74	15.5	1.40	59.07	15.5	28.35	45.91
16.4	30.87	17.38	16.4	31.99	34.55	16.5	49.65	7.00	16.5	1.43	59.48	16.5	28.34	45.20
17.4	30.79	17.60	17.4	31.88	34.80	17.5	49.62	7.25	17.5	1.44	59.90	17.5	28.34	46.48
18.4	30.73	17.83	18.4	31.77	35.06	18.5	49.58	7.51	18.5	1.43	60.31	18.5	28.35	46.75
19.4	30.66	18.07	19.4	31.68	35.33	19.4	49.56	7.77	19.5	1.39	60.74	19.5	28.37	47.03
20.4	30.59	18.32	20.4	31.58	35.59	20.1	49.54	8.04	20.5	1.33	61.14	20.5	28.39	47.31
21.4	30.52	18.59	21.4	31.49	35.87	21.4	49.51	8.33	21.5	1.24	61.51	21.5	28.40	47.61
22.4	30.44	18.86	22.4	31.39	36.16	22.4	49.47	8.63	22.5	1.15	61.90	22.5	28.42	47.91
23.4	30.35	19.13	23.4	31.27	36.46	23.4	49.43	8.94	23.5	1.05	62.28	23.5	28.43	48.23
24.4	30.25	19.40	24.4	31.13	36.77	24.4	49.39	9.25	24.5	0.95	62.64	24.5	28.43	48.55
25.4	30.14	19.67	25.4	30.96	37.08	25.4	49.34	9.57	25.5	0.87	62.99	25.5	28.43	48.89
26.4	30.02	19.95	26.4	30.78	37.38	26.4	49.27	9.88	26.5	0.81	63.34	26.5	28.40	49.23
27.4	29.89	20.21	27.4	30.58	37.67	27.4	49.19	10.18	27.5	0.76	63.70	27.5	28.36	49.57
28.4	29.75	20.44	28.4	30.35	37.95	28.4	49.11	10.46	28.5	0.72	64.07	28.5	28.32	49.91
29.4	29.61	20.64	29.4	30.12	38.19	29.4	49.02	10.72	29.5	0.68	64.43	29.5	28.27	50.23
30.4	29.48	20.83	30.4	29.91	38.41	30.4	48.94	10.96	30.5	0.64	64.82	30.5	28.23	50.51
31.4	29.37	21.00	31.4	29.70	38.61	31.4	48.87	11.19	31.4	0.58	65.24	31.5	28.18	50.75
32.4	29.26	21.16	32.4	29.50	38.80	32.4	48.81	11.41	32.4	0.50	65.66	32.5	28.13	51.04
8.33	-8.27		15.89	-15.86		7.03	-6.96		18.20	+18.17		7.64	-7.57	
21 ^h 38 ^m 10 ^s .025			22 ^h 15 ^m 56 ^s .333			22 ^h 37 ^m 32 ^s .703			23 ^h 27 ^m 44 ^s .392			23 ^h 47 ^m 12 ^s .813		
-83° 6' 23".31			-86° 23' 45".22			-81° 49' 21".11			+86° 50' 39".03			-82° 29' 8".43		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

43 H. Cephei. Mag. 4.5			α Ursae Minoris. (Polaris.) Mag. 2.1			4 G. Octantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Oct.	h m s	° ' "	Oct.	h m s	° ' "	Oct.	h m s	° ' "	Oct.	h m s	° ' "	Oct.	h m s	° ' "
	0 57	+85 48		1 31	+88 51		1 42	-85 11		4 10	+85 20		5 35	+85 9
0.5	22.75	45.86	0.5	1.72	41.58	0.5	19.66	12.59	0.6	10.68	0.15	0.7	16.97	17.32
1.5	22.85	46.26	1.5	2.27	41.97	1.5	19.69	12.88	1.6	11.00	0.35	1.7	17.32	17.37
2.5	22.95	46.68	2.5	2.77	42.37	2.5	19.74	13.15	2.6	11.32	0.56	2.7	17.67	17.45
3.5	23.01	47.12	3.5	3.19	42.79	3.5	19.80	13.41	3.6	11.62	0.82	3.7	18.01	17.53
4.5	23.05	47.54	4.5	3.51	43.21	4.5	19.86	13.67	4.6	11.91	1.09	4.7	18.36	17.67
5.5	23.06	47.96	5.5	3.74	43.63	5.5	19.95	13.94	5.6	12.19	1.36	5.7	18.68	17.81
6.5	23.07	48.36	6.5	3.92	44.00	6.5	20.03	14.22	6.8	12.42	1.63	6.7	18.97	17.95
7.5	23.07	48.75	7.5	4.06	44.38	7.5	20.11	14.55	7.6	12.65	1.88	7.7	19.25	18.09
8.5	23.06	49.08	8.5	4.24	44.73	8.5	20.16	14.88	8.6	12.87	2.12	8.7	19.52	18.22
9.5	23.07	49.43	9.5	4.46	45.07	9.5	20.20	15.24	9.6	13.09	2.33	9.7	19.78	18.32
10.5	23.11	49.77	10.5	4.74	45.41	10.5	20.22	15.58	10.6	13.32	2.53	10.7	20.05	18.41
11.5	23.16	50.12	11.5	5.08	45.77	11.5	20.22	15.94	11.6	13.56	2.73	11.7	20.32	18.46
12.5	23.20	50.48	12.5	5.45	46.13	12.5	20.20	16.28	12.6	13.83	2.94	12.7	20.62	18.54
13.5	23.25	50.87	13.5	5.81	46.51	13.5	20.18	16.61	13.6	14.11	3.16	13.7	20.92	18.63
14.5	23.30	51.28	14.5	6.14	46.90	14.5	20.16	16.92	14.6	14.38	3.39	14.7	21.24	18.74
15.5	23.32	51.69	15.5	6.41	47.30	15.5	20.15	17.23	15.6	14.64	3.66	15.7	21.57	18.87
16.5	23.33	52.10	16.5	6.61	47.71	16.5	20.14	17.52	16.6	14.92	3.92	16.7	21.89	19.01
17.5	23.33	52.50	17.5	6.72	48.13	17.5	20.15	17.80	17.6	15.16	4.22	17.7	22.20	19.18
18.5	23.29	52.91	18.5	6.77	48.54	18.5	20.14	18.10	18.6	15.39	4.52	18.7	22.49	19.36
19.5	23.24	53.30	19.5	6.80	48.93	19.5	20.16	18.38	19.6	15.61	4.82	19.7	22.77	19.56
20.5	23.18	53.68	20.5	6.74	49.31	20.5	20.17	18.71	20.6	15.81	5.11	20.7	23.04	19.75
21.5	23.13	54.04	21.5	6.68	49.68	21.5	20.17	19.02	21.6	16.00	5.40	21.7	23.29	19.93
22.5	23.06	54.38	22.5	6.63	50.04	22.5	20.16	19.35	22.6	16.18	5.70	22.6	23.53	20.11
23.5	23.01	54.71	23.5	6.60	50.40	23.5	20.12	19.71	23.6	16.35	5.96	23.6	23.77	20.29
24.4	22.96	55.04	24.5	6.62	50.74	24.5	20.08	20.06	24.6	16.53	6.22	24.6	24.01	20.44
25.4	22.93	55.39	25.5	6.66	51.07	25.5	20.02	20.43	25.6	16.73	6.48	25.6	24.26	20.59
26.4	22.92	55.74	26.5	6.76	51.44	26.5	19.93	20.77	26.6	16.94	6.72	26.6	24.53	20.71
27.4	22.91	56.10	27.5	6.89	51.81	27.5	19.85	21.10	27.6	17.16	6.95	27.6	24.80	20.86
28.4	22.90	56.48	28.5	7.00	52.19	28.5	19.75	21.41	28.6	17.40	7.24	28.6	25.09	21.02
29.4	22.87	56.90	29.5	7.07	52.60	29.5	19.66	21.70	29.6	17.63	7.54	29.6	25.40	21.20
30.4	22.83	57.30	30.5	7.07	53.01	30.5	19.58	21.96	30.8	17.87	7.86	30.6	25.70	21.41
31.4	22.75	57.70	31.4	6.96	53.44	31.5	19.50	22.23	31.6	18.08	8.21	31.6	25.99	21.64
13.70	+13.66		50.40	+50.39		11.92	-11.88		12.29	+12.25		11.84	+11.80	
0 ^h 57 ^m	1° 657'		1 ^h 29 ^m	44° 254'		1 ^h 42 ^m	6° 102'		4 ^h 9 ^m	44° 952'		5 ^h 34 ^m	54° 014'	
+85° 48'	25'' .87		+88° 51'	25'' .03		-85° 11'	39'' .58		+85° 20'	1'' .04		+85° 9'	28'' .07	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

31 G. Mensae. Mag. 6.2			ζ Mensae. Mag. 5.6			51 H. Cephei. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Octantis. Mag. 6.4		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Oct.	h m ° ' "		Oct.	h m ° ' "		Oct.	h m ° ' "		Oct.	h m ° ' "		Oct.	h m ° ' "	
	5 46	-84 49		6 46	-80 43		7 2	+87 10		7 13	+82 34		7 16	-86 53
	s " "			s " "			s " "			s " "			s " "	
0.7	17.37	23.38	0.8	57.56	14.16	0.8	3.86	40.53	0.8	41.89	16.77	0.8	13.47	43.86
1.7	17.58	23.49	1.8	57.68	14.21	1.8	4.43	40.41	1.8	42.11	16.63	1.8	13.84	43.87
2.7	17.78	23.58	2.8	57.81	14.21	2.8	5.02	40.32	2.8	42.35	16.52	2.8	14.17	43.88
3.7	17.98	23.66	3.7	57.93	14.23	3.8	5.62	40.28	3.8	42.59	16.44	3.8	14.51	43.82
4.7	18.21	23.72	4.7	58.06	14.22	4.8	6.22	40.23	4.8	42.82	16.39	4.8	14.84	43.73
5.7	18.41	23.77	5.7	58 18	14 21	5.8	6.79	40.24	5.8	43.04	16.35	5.8	15.20	43.73
6.7	18.63	23.82	6.7	58.31	14.19	6.8	7.32	40.22	6.8	43.25	16.33	6.8	15.58	43.63
7.7	18.87	23.90	7.7	58.46	14.18	7.7	7.83	40.21	7.8	43.44	16.31	7.8	15.99	43.62
8.7	19.11	24.02	8.7	58.59	14.20	8.7	8.31	40.21	8.8	43.63	16.28	8.8	16.40	43.58
9.7	19.36	24.15	9.7	58.74	14.24	9.7	8.78	40.18	9.7	43.80	16.23	9.8	16.84	43.58
10.7	19.59	24.32	10.7	58.88	14.31	10.7	9.25	40.14	10.7	43.99	16.17	10.7	17.28	43.61
11.7	19.82	24.50	11.7	59.03	14.42	11.7	9.74	40.09	11.7	44.17	16.08	11.7	17.71	43.67
12.7	20.04	24.69	12.7	59.17	14.56	12.7	10.25	40.03	12.7	44.36	16.00	12.7	18.13	43.74
13.7	20.23	24.89	13.7	59.31	14.67	13.7	10.79	39.97	13.7	44.58	15.93	13.7	18.52	43.82
14.7	20.43	25.07	14.7	59.43	14.78	14.7	11.36	39.91	14.7	44.80	15.87	14.7	18.89	43.90
15.7	20.62	25.24	15.7	59.56	14.89	15.7	11.93	39.90	15.7	45.02	15.81	15.7	19.27	43.96
16.7	20.81	25.41	16.7	59.69	15.00	16.7	12.50	39.89	16.7	45.25	15.77	16.7	19.62	44.01
17.7	21.01	25.57	17.7	59.81	15.08	17.7	13.07	39.92	17.7	45.47	15.77	17.7	19.98	44.06
18.7	21.20	25.71	18.7	59.94	15.15	18.7	13.63	39.95	18.7	45.69	15.79	18.7	20.34	44.09
19.7	21.39	25.85	19.7	60.06	15.24	19.7	14.17	40.00	19.7	45.89	15.82	19.7	20.71	44.14
20.7	21.60	26.00	20.7	60.19	15.31	20.7	14.69	40.07	20.7	46.10	15.86	20.7	21.10	44.17
21.7	21.82	26.18	21.7	60.32	15.41	21.7	15.20	40.14	21.7	46.29	15.88	21.7	21.51	44.23
22.7	22.04	26.36	22.7	60.46	15.54	22.7	15.67	40.20	22.7	46.48	15.91	22.7	21.91	44.28
23.7	22.24	26.55	23.7	60.60	15.67	23.7	16.13	40.24	23.7	46.68	15.92	23.7	22.34	44.36
24.6	22.44	26.78	24.7	60.74	15.81	24.7	16.59	40.27	24.7	46.84	15.94	24.7	22.76	44.47
25.6	22.65	27.03	25.7	60.87	15.98	25.7	17.06	40.30	25.7	47.02	15.94	25.7	23.19	44.61
26.6	22.83	27.30	26.7	61.01	16.20	26.7	17.56	40.31	26.7	47.20	15.94	26.7	23.59	44.74
27.6	23.01	27.58	27.7	61.13	16.42	27.7	18.06	40.31	27.7	47.41	15.92	27.7	23.97	44.83
28.6	23.16	27.84	28.7	61.26	16.62	28.7	18.61	40.32	28.7	47.63	15.91	28.7	24.33	45.10
29.6	23.31	28.10	29.7	61.36	16.80	29.7	19.18	40.37	29.7	47.85	15.91	29.7	24.66	45.24
30.6	23.45	28.34	30.7	61.46	17.00	30.7	19.76	40.42	30.7	48.08	15.96	30.7	24.97	45.41
31.6	23.59	28.56	31.7	61.57	17.18	31.7	20.34	40.52	31.7	48.32	16.01	31.7	25.29	45.55
11.08	-11.04		6.20	-6.12		20.31	+20.28		7.73	+7.67		18.46	-18.44	
5 ^h 46 ^m	26° 43' 49"		6 ^h 47 ^m	3° 48' 49"		7 ^h 1 ^m	34° 8' 16"		7 ^h 13 ^m	29° 47' 47"		7 ^h 16 ^m	40° 55' 55"	
-84° 49'	48'' 17		-80° 43'	34'' 16		+87° 11'	0'' 11		+82° 34'	36'' 50		-86° 54'	0'' 14	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			ζ Octantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			ζ Chamæleontis. Mag. 5.2			30 H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
h m s	° ' "		h m s	° ' "		h m s	° ' "		h m s	° ' "		h m s	° ' "	
Oct. 8 15	+88 52		Oct. 9 8	-85 19		Oct. 9 25	+81 41		Oct. 9 36	-80 33		Oct. 10 20	+82 58	
0.8	32.02	46.65	0.9	45.39	39.74	0.9	17.81	31.06	0.9	15.40	50.52	0.9	58.79	45.81
1.8	33.25	46.42	1.9	45.61	39.59	1.9	17.94	30.74	1.9	15.51	50.37	1.9	58.90	45.42
2.8	34.54	46.21	2.9	45.81	39.46	2.9	18.09	30.42	2.9	15.60	50.21	2.9	59.04	45.04
3.8	35.90	46.01	3.8	46.01	39.32	3.9	18.24	30.11	3.9	15.70	50.04	3.9	59.18	44.68
4.8	37.27	45.86	4.8	46.20	39.16	4.9	18.42	29.83	4.9	15.78	49.85	4.9	59.33	44.34
5.8	38.61	45.71	5.8	46.38	38.97	5.9	18.58	29.59	5.9	15.87	49.63	5.9	59.48	44.01
6.8	39.91	45.57	6.8	46.58	38.78	6.9	18.74	29.36	6.9	15.97	49.44	6.9	59.63	43.70
7.8	41.11	45.47	7.8	46.79	38.58	7.8	18.88	29.13	7.9	16.07	49.22	7.9	59.77	43.42
8.8	42.24	45.34	8.8	47.02	38.40	8.8	19.01	28.92	8.9	16.17	49.02	8.9	59.90	43.14
9.8	43.32	45.20	9.8	47.26	38.23	9.8	19.13	28.70	9.9	16.29	48.83	9.9	60.00	42.86
10.8	44.40	45.05	10.8	47.53	38.09	10.8	19.25	28.44	10.9	16.42	48.65	10.9	60.10	42.56
11.8	45.50	44.88	11.8	47.81	37.99	11.8	19.37	28.19	11.8	16.55	48.51	11.9	60.20	42.24
12.8	46.65	44.71	12.8	48.08	37.88	12.8	19.50	27.92	12.8	16.69	48.38	12.9	60.32	41.92
13.8	47.86	44.53	13.8	48.35	37.81	13.8	19.64	27.65	13.8	16.82	48.28	13.9	60.45	41.59
14.8	49.15	44.37	14.8	48.60	37.73	14.8	19.79	27.37	14.8	16.94	48.18	14.9	60.59	41.25
15.8	50.48	44.22	15.8	48.85	37.65	15.8	19.95	27.12	15.8	17.06	48.07	15.9	60.74	40.92
16.8	51.84	44.09	16.8	49.09	37.57	16.8	20.12	26.87	16.8	17.18	47.97	16.9	60.89	40.60
17.8	53.22	43.99	17.8	49.33	37.49	17.8	20.30	26.63	17.8	17.29	47.85	17.9	61.07	40.31
18.8	54.58	43.89	18.8	49.56	37.39	18.8	20.47	26.44	18.8	17.41	47.74	18.9	61.24	40.02
19.8	55.92	43.83	19.8	49.79	37.30	19.8	20.64	26.24	19.8	17.52	47.61	19.9	61.41	39.75
20.8	57.22	43.76	20.8	50.03	37.18	20.8	20.80	26.05	20.8	17.63	47.49	20.9	61.56	39.50
21.8	58.48	43.70	21.8	50.28	37.09	21.8	20.95	25.87	21.8	17.75	47.35	21.8	61.72	39.26
22.8	59.69	43.65	22.8	50.54	36.98	22.8	21.10	25.71	22.8	17.88	47.22	22.8	61.88	39.01
23.8	60.85	43.59	23.8	50.81	36.91	23.8	21.25	25.54	23.8	18.02	47.12	23.8	62.01	38.78
24.8	31.98	43.50	24.8	51.10	36.85	24.8	21.39	25.36	24.8	18.16	47.02	24.8	62.15	38.53
25.8	63.13	43.42	25.8	51.38	36.80	25.8	21.52	25.18	25.8	18.31	46.94	25.8	62.29	38.27
26.7	64.29	43.32	26.8	51.70	36.79	26.8	21.68	24.96	26.8	18.46	46.88	26.8	62.43	38.00
27.7	65.53	43.23	27.8	51.99	36.80	27.8	21.82	24.75	27.8	18.61	46.85	27.8	62.58	37.72
28.7	66.85	43.11	28.8	52.28	36.81	28.8	22.00	24.52	28.8	18.75	46.84	28.8	62.74	37.42
29.7	68.23	43.02	29.8	52.54	36.84	29.8	22.17	24.30	29.8	18.90	46.86	29.8	62.92	37.13
30.7	69.67	42.96	30.8	52.78	36.86	30.8	22.33	24.10	30.8	19.02	46.85	30.8	63.11	36.85
31.7	71.14	42.90	31.8	53.02	36.86	31.8	22.56	23.94	31.8	19.15	46.83	31.8	63.31	36.58
51.11	+51.10		12.27	-12.23		6.92	+6.85		6.10	-6.02		8.18	+8.12	
8 ^h 14 ^m 48 ^s .311			9 ^h 9 ^m 6 ^s .085			9 ^h 25 ^m 12 ^s .930			9 ^h 36 ^m 24 ^s .003			10 ^h 20 ^m 57 ^s .259		
+88° 53' 11".43			-85° 19' 42".77			+81° 41' 57".18			-80° 33' 50".61			+82° 59' 12".27		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

7 Octantis. Mag. 6.3			Bradley 1672. Mag. 6.3			1 Octantis. Mag. 5.4			32 H. Camelop. seq. Mag. 5.3			κ Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Oct.	h m	° ' "	Oct.	h m	° ' "	Oct.	h m	° ' "	Oct.	h m	° ' "	Oct.	h m	° ' "
	10 59	-84 8		12 13	+88 9		12 45	-84 40		12 48	+83 51		13 26	-85 21
0.9	41.26	41.86	0.9	58.75	33.46	1.0	50.80	24.15	1.0	21.42	50.59	1.0	56.53	48.19
1.9	41.36	41.64	1.9	58.72	33.05	2.0	50.83	23.88	2.0	21.37	50.16	2.0	56.53	47.91
2.9	41.47	41.42	2.9	58.75	32.62	2.9	50.86	23.62	3.0	21.36	49.73	3.0	56.52	47.65
3.9	41.57	41.20	3.9	58.83	32.18	3.9	50.87	23.35	3.9	21.36	49.31	4.0	56.49	47.39
4.9	41.65	40.95	4.9	58.98	31.74	4.9	50.88	23.09	4.9	21.36	48.88	5.0	56.44	47.13
5.9	41.72	40.68	5.9	59.17	31.34	5.9	50.87	22.81	5.9	21.39	48.47	6.0	56.39	46.85
6.9	41.81	40.38	6.9	59.35	30.98	6.9	50.86	22.50	6.9	21.42	48.08	7.0	56.34	46.55
7.9	41.91	40.09	7.9	59.51	30.59	7.9	50.86	22.18	7.9	21.43	47.71	8.0	56.28	46.22
8.9	42.01	39.79	8.9	59.65	30.25	8.9	50.86	21.84	8.9	21.44	47.36	9.0	56.26	45.86
9.9	42.15	39.51	9.9	59.75	29.90	9.9	50.91	21.50	9.9	21.43	47.00	10.0	56.25	45.51
10.9	42.30	39.24	10.9	59.79	29.54	10.9	50.97	21.17	10.9	21.41	46.65	11.0	56.25	45.17
11.9	42.45	39.00	11.9	59.83	29.18	11.9	51.05	20.82	11.9	21.40	46.29	12.0	56.30	44.82
12.9	42.61	38.76	12.9	59.87	28.81	12.9	51.13	20.51	12.9	21.38	45.91	12.9	56.36	44.49
13.9	42.78	38.54	13.9	59.95	28.39	13.9	51.23	20.22	13.9	21.37	45.50	13.9	56.41	44.20
14.9	42.93	38.36	14.9	60.06	27.98	14.9	51.32	19.94	14.9	21.37	45.09	14.9	56.47	43.82
15.9	43.09	38.16	15.9	60.22	27.59	15.9	51.40	19.67	15.9	21.39	44.67	15.9	56.52	43.64
16.9	43.24	37.97	16.9	60.43	27.17	16.9	51.47	19.42	16.9	21.43	44.26	16.9	56.57	43.34
17.9	43.37	37.77	17.9	60.67	26.77	17.9	51.55	19.14	17.9	21.47	43.84	17.9	56.60	43.06
18.9	43.51	37.55	18.9	60.94	26.40	18.9	51.61	18.87	18.9	21.52	43.43	18.9	56.62	42.79
19.9	43.64	37.33	19.9	61.24	26.01	19.9	51.68	18.59	19.9	21.58	43.05	19.9	56.65	42.49
20.9	43.77	37.10	20.9	61.51	25.67	20.9	51.74	18.31	20.9	21.64	42.67	20.9	56.63	42.17
21.9	43.92	36.87	21.9	61.83	25.33	21.9	51.80	17.99	21.9	21.69	42.30	21.9	56.69	41.85
22.9	44.07	36.65	22.9	62.11	24.99	22.9	51.88	17.68	22.9	21.74	41.96	22.9	56.74	41.53
23.9	44.25	36.42	23.9	62.35	24.67	23.9	51.96	17.35	23.9	21.80	41.61	23.9	56.79	41.20
24.9	44.44	36.21	24.9	62.58	24.34	24.9	52.06	17.04	24.9	21.84	41.27	24.9	56.88	40.87
25.9	44.63	36.01	25.9	62.77	24.00	25.9	52.20	16.74	25.9	21.86	40.91	25.9	56.97	40.53
26.9	44.84	35.84	26.9	62.96	23.64	26.9	52.35	16.45	26.9	21.89	40.54	26.9	57.10	40.20
27.9	45.05	35.70	27.9	63.16	23.27	27.9	52.50	16.16	27.9	21.92	40.16	27.9	57.23	39.91
28.9	45.25	35.56	28.9	63.39	22.88	28.9	52.66	15.94	28.9	21.97	39.74	28.9	57.37	39.64
29.9	45.45	35.45	29.9	63.68	22.49	29.9	52.80	15.72	29.9	22.02	39.33	29.9	57.51	39.40
30.9	45.64	35.34	30.9	64.00	22.10	30.9	52.96	15.51	30.9	22.10	38.92	30.9	57.64	39.15
31.8	45.81	35.22	31.9	64.42	21.70	31.9	53.09	15.31	31.9	22.19	38.49	31.9	57.75	38.91
9.80	-9.75		31.10	+31.09		10.77	-10.72		9.35	+9.30		12.37	-12.33	
10 ^h 59 ^m	55°.642		12 ^h 14 ^m	28°.053		12 ^h 46 ^m	1°.183		12 ^h 48 ^m	29°.976		13 ^h 27 ^m	5°.514	
-84°	8' 31".24		+88°	9' 56".03		-84°	40' 2".72		+83°	52' 10".05		-85°	21' 23".59	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Octantis. Mag. 4.1			Groombridge 2283. Mag. 7.2			ρ Octantis. Mag. 5.7			ε Ursæ Minoris. Mag. 4.4			59 G. Apodis. Mag. 5.9		
Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.
Oct.	h m	° '	Oct.	h m	° '	Oct.	h m	° '	Oct.	h m	° '	Oct.	h m	° '
	14 13	-83 17		15 3	+87 33		15 23	-84 11		16 54	+82 10		17 15	-80 47
	s	"		s	"		s	"		s	"		s	"
1.1	16.33	30.94	1.1	21.64	18.35	1.1	46.10	46.11	1.2	21.86	46.20	1.2	52.34	27.21
2.1	16.30	30.68	2.1	21.19	18.04	2.1	46.01	45.87	2.2	21.67	46.06	2.2	52.25	27.07
3.1	16.27	30.43	3.1	20.75	17.73	3.1	45.92	45.69	3.2	21.48	45.90	3.2	52.16	26.96
4.1	16.23	30.18	4.1	20.34	17.36	4.1	45.83	45.47	4.2	21.30	45.70	4.2	52.08	26.88
5.1	16.17	29.94	5.1	20.00	17.02	5.1	45.71	45.27	5.2	21.13	45.48	5.2	51.98	26.81
6.1	16.11	29.69	6.1	19.69	16.66	6.1	45.59	45.05	6.2	20.97	45.26	6.2	51.86	26.73
7.0	16.04	29.42	7.1	19.39	16.32	7.1	45.47	44.82	7.2	20.82	45.05	7.2	51.74	26.64
8.0	15.97	29.11	8.1	19.10	16.01	8.1	45.31	44.57	8.2	20.66	44.85	8.2	51.61	26.51
9.0	15.90	28.77	9.1	18.81	15.72	9.1	45.18	44.30	9.2	20.52	44.68	9.2	51.48	26.34
10.0	15.86	28.44	10.1	18.50	15.43	10.1	45.07	44.00	10.2	20.36	44.53	10.2	51.36	26.16
11.0	15.83	28.10	11.1	18.15	15.15	11.1	44.96	43.68	11.2	20.20	44.37	11.2	51.25	25.97
12.0	15.82	27.75	12.1	17.79	14.87	12.1	44.89	43.36	12.1	20.05	44.24	12.2	51.15	25.76
13.0	15.82	27.44	13.1	17.42	14.56	13.1	44.82	43.05	13.1	19.88	44.08	13.2	51.05	25.54
14.0	15.83	27.12	14.1	17.05	14.25	14.1	44.76	42.75	14.1	19.71	43.91	14.2	50.96	25.33
15.0	15.83	26.85	15.1	16.69	13.91	15.1	44.71	42.47	15.1	19.55	43.70	16.2	50.88	25.15
16.0	15.84	26.56	16.1	16.35	13.55	16.1	44.66	42.20	16.1	19.38	43.48	16.2	50.80	24.97
17.0	15.84	26.28	17.1	16.05	13.17	17.1	44.61	41.94	17.1	19.22	43.25	17.2	50.72	24.78
18.0	15.83	26.00	18.1	15.78	12.81	18.1	44.53	41.69	18.1	19.07	42.99	18.1	50.64	24.62
19.0	15.82	25.72	19.1	15.53	12.44	19.1	44.46	41.43	19.1	18.96	42.73	19.1	50.55	24.46
20.0	15.80	25.43	20.0	15.32	12.06	20.1	44.38	41.16	20.1	18.79	42.47	20.1	50.45	24.29
21.0	15.79	25.12	21.0	15.11	11.72	21.1	44.29	40.89	21.1	18.65	42.21	21.1	50.35	24.10
22.0	15.77	24.80	22.0	14.92	11.38	22.1	44.21	40.58	22.1	18.52	41.97	22.1	50.25	23.91
23.0	15.76	24.48	23.0	14.73	11.03	23.1	44.13	40.27	23.1	18.40	41.73	23.1	50.14	23.69
24.0	15.75	24.15	24.0	14.52	10.72	24.1	44.06	39.95	24.1	18.27	41.51	24.1	50.04	23.45
24.9	15.77	23.81	25.0	14.30	10.41	25.0	44.01	39.59	25.1	18.14	41.29	25.1	49.94	23.19
25.9	15.80	23.46	26.0	14.06	10.09	26.0	43.98	39.24	26.1	18.01	41.07	26.1	49.86	22.93
26.9	15.84	23.12	27.0	13.80	9.78	27.0	43.96	38.90	27.1	17.86	40.85	27.1	49.78	22.66
27.9	15.90	22.79	28.0	13.52	9.44	28.0	43.96	38.57	28.1	17.72	40.62	28.1	49.72	22.37
28.9	15.96	22.50	29.0	13.25	9.07	29.0	43.97	38.27	29.1	17.57	40.38	29.1	49.67	22.12
29.9	16.04	22.24	30.0	13.00	8.68	30.0	43.98	37.98	30.1	17.43	40.13	30.1	49.62	21.87
30.9	16.10	21.99	31.0	12.80	8.28	31.0	44.00	37.73	31.1	17.29	39.82	31.1	49.58	21.64
31.9	16.16	21.73	32.0	12.64	7.86	32.0	44.00	37.46	32.1	17.16	39.50	32.1	49.54	21.44
8.56	-8.50		23.43	+23.41		9.89	-9.84		7.35	+7.28		6.25	-6.17	
14 ^h 13 ^m	18 ^s .531		15 ^h 4 ^m	0 ^s .607		15 ^h 23 ^m	43 ^s .237		16 ^h 54 ^m	31 ^s .741		17 ^h 15 ^m	43 ^s .730	
-83° 17'	4".27		+87° 33'	24".43		-84° 11'	17".84		+82° 10'	38".40		-80° 47'	2".69	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Ursa Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursa Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Oct.	h m 17 58	° ' " +86 37	Oct.	h m 18 5	° ' " -87 40	Oct.	h m 19 1	° ' " +89 1	Oct.	h m 19 27	° ' " -89 13	Oct.	h m 20 48	° ' " +82 13
1.2	57.00	5.73	1.2	69.61	14.50	1.3	100.10	16.97	1.3	75.14	50.56	1.3	43.90	43.93
2.2	56.52	5.73	2.2	69.18	14.44	2.3	98.48	17.07	2.3	73.81	50.59	2.3	43.75	44.21
3.2	56.04	5.68	3.2	68.77	14.36	3.3	96.81	17.16	3.3	72.52	50.63	3.3	43.58	44.46
4.2	55.57	5.59	4.2	68.35	14.33	4.3	95.14	17.21	4.3	71.24	50.69	4.3	43.41	44.69
5.2	55.12	5.50	5.2	67.91	14.31	5.3	93.50	17.22	5.3	69.92	50.76	5.3	43.24	44.89
6.2	54.69	5.38	6.2	67.43	14.29	6.3	91.92	17.22	6.3	68.50	50.84	6.3	43.08	45.08
7.2	54.27	5.27	7.2	66.91	14.25	7.2	90.43	17.23	7.3	66.96	50.91	7.3	42.92	45.24
8.2	53.87	5.17	8.2	66.37	14.18	8.2	89.02	17.24	8.3	65.31	50.96	8.3	42.76	45.39
9.2	53.49	5.09	9.2	65.82	14.07	9.2	87.65	17.26	9.3	63.57	50.98	9.3	42.61	45.56
10.2	53.11	5.03	10.2	65.27	13.93	10.2	86.30	17.28	10.3	61.79	50.99	10.3	42.47	45.74
11.2	52.72	4.97	11.2	64.74	13.78	11.2	84.93	17.34	11.3	60.04	50.97	11.3	42.32	45.94
12.2	52.31	4.94	12.2	64.25	13.62	12.2	83.52	17.39	12.3	58.35	50.93	12.3	42.18	46.14
13.2	51.88	4.88	13.2	63.79	13.47	13.2	82.03	17.46	13.2	56.75	50.86	13.3	42.03	46.36
14.2	51.44	4.80	14.2	63.36	13.32	14.2	80.49	17.50	14.2	55.24	50.81	14.3	41.88	46.57
15.2	51.00	4.74	15.2	62.95	13.19	15.2	78.90	17.53	15.2	53.79	50.78	15.3	41.71	46.77
16.2	50.55	4.64	16.2	62.55	13.05	16.2	77.28	17.53	16.2	52.40	50.73	16.3	41.54	46.96
17.2	50.11	4.52	17.2	62.14	12.92	17.2	75.67	17.53	17.2	51.00	50.69	17.3	41.37	47.11
18.2	49.68	4.37	18.2	61.73	12.82	18.2	74.08	17.49	18.2	49.57	50.66	18.3	41.19	47.25
19.2	49.27	4.20	19.2	61.29	12.71	19.2	72.52	17.45	19.2	48.12	50.64	19.3	41.01	47.38
20.2	48.89	4.04	20.2	60.83	12.59	20.2	71.01	17.39	20.2	46.61	50.61	20.3	40.83	47.49
21.2	48.50	3.88	21.2	60.36	12.45	21.2	69.55	17.32	21.2	45.04	50.59	21.3	40.66	47.59
22.2	48.13	3.72	22.2	59.88	12.30	22.2	68.16	17.25	22.2	43.39	50.57	22.3	40.49	47.68
23.2	47.77	3.56	23.2	59.39	12.14	23.2	66.81	17.19	23.2	41.69	50.52	23.3	40.33	47.77
24.2	47.42	3.41	24.2	58.90	11.96	24.2	65.49	17.15	24.2	39.97	50.44	24.3	40.17	47.88
25.2	47.06	3.28	25.2	58.42	11.75	25.2	64.15	17.13	25.2	38.26	50.34	25.3	40.02	48.00
26.2	46.69	3.18	26.2	57.98	11.51	26.2	62.79	17.10	26.2	36.59	50.23	26.3	39.86	48.13
27.1	46.30	3.06	27.2	57.57	11.26	27.2	61.38	17.07	27.2	35.00	50.10	27.3	39.70	48.27
28.1	45.90	2.93	28.2	57.22	11.02	28.2	59.90	17.05	28.2	33.53	49.95	28.3	39.54	48.42
29.1	45.50	2.79	29.1	56.88	10.79	29.2	58.33	17.01	29.2	32.19	49.79	29.3	39.37	48.56
30.1	45.07	2.61	30.1	56.58	10.57	30.2	56.72	16.95	30.2	30.92	49.65	30.3	39.19	48.68
31.1	44.65	2.43	31.1	56.29	10.37	31.2	55.10	16.87	31.2	29.72	49.53	31.3	39.01	48.79
32.1	44.25	2.20	32.1	55.99	10.19	32.2	53.50	16.76	32.2	28.49	49.43	32.3	38.81	48.87
16.95	+16.92		24.60	-24.58		58.56	+58.55		74.49	-74.48		7.40	+7.33	
17 ^h 59 ^m	20°.805		18 ^h 5 ^m	36°.163		19 ^h 3 ^m	51°.560		19 ^h 26 ^m	7°.189		20 ^h 48 ^m	44°.660	
+86° 36'	51''.19		-87° 39'	52''.21		+89° 0'	56''.70		-89° 13'	35''.99		+82° 13'	16''.38	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ ¹ Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.
Oct.	h m	° '	Oct.	h m	° '	Oct.	h m	° '	Oct.	h m	° '	Oct.	h m	° '
	21 38	-83 6		22 16	-86 23		22 37	-81 49		23 27	+86 51		23 47	-82 28
	s	"		s	"		s	"		s	"		s	"
1.4	29.37	21.00	1.4	29.70	38.61	1.4	48.87	11.19	1.4	60.58	5.24	1.5	28.18	50.78
2.4	29.26	21.16	2.4	29.50	38.80	2.4	48.81	11.41	2.4	60.50	5.66	2.5	28.13	51.04
3.4	29.16	21.34	3.4	29.34	39.00	3.4	48.74	11.63	3.4	60.38	6.09	3.5	28.11	51.30
4.4	29.06	21.53	4.4	29.20	39.22	4.4	48.69	11.86	4.4	60.23	6.51	4.5	28.10	51.56
5.4	28.97	21.74	5.4	29.04	39.46	5.4	48.63	12.11	5.4	60.05	6.89	5.5	28.08	51.83
6.4	28.86	21.97	6.4	28.87	39.71	6.4	48.58	12.37	6.4	59.86	7.26	6.5	28.05	52.12
7.4	28.74	22.19	7.4	28.68	39.98	7.4	48.51	12.65	7.4	59.68	7.61	7.4	28.02	52.43
8.4	28.61	22.42	8.4	28.45	40.25	8.4	48.43	12.93	8.4	59.51	7.94	8.4	27.98	52.76
9.4	28.45	22.65	9.4	28.20	40.51	9.4	48.33	13.22	9.4	59.37	8.27	9.4	27.92	53.09
10.4	28.28	22.85	10.4	27.92	40.76	10.4	48.22	13.49	10.4	59.25	8.60	10.4	27.84	53.42
11.3	28.11	23.02	11.4	27.62	40.97	11.4	48.10	13.74	11.4	59.14	8.93	11.4	27.76	53.74
12.3	27.93	23.17	12.4	27.34	41.16	12.4	47.98	13.96	12.4	59.03	9.29	12.4	27.66	54.03
13.3	27.78	23.31	13.4	27.05	41.34	13.4	47.86	14.15	13.4	58.91	9.66	13.4	27.58	54.29
14.3	27.64	23.42	14.4	26.78	41.50	14.4	47.76	14.33	14.4	58.78	10.04	14.4	27.50	54.55
15.3	27.49	23.52	15.4	26.52	41.66	15.4	47.66	14.54	15.4	58.62	10.42	15.4	27.42	54.80
16.3	27.36	23.66	16.4	26.28	41.84	16.4	47.56	14.73	16.4	58.44	10.79	16.4	27.36	55.04
17.3	27.23	23.80	17.4	26.05	42.01	17.4	47.47	14.91	17.4	58.23	11.16	17.4	27.29	55.30
18.3	27.10	23.93	18.4	25.83	42.19	18.4	47.38	15.12	18.4	58.00	11.51	18.4	27.23	55.56
19.3	26.96	24.08	19.4	25.57	42.38	19.4	47.29	15.35	19.4	57.76	11.86	19.4	27.17	55.82
20.3	26.82	24.23	20.3	25.32	42.58	20.4	47.19	15.57	20.4	57.51	12.19	20.4	27.10	56.10
21.3	26.67	24.39	21.3	25.06	42.79	21.4	47.09	15.78	21.4	57.26	12.51	21.4	27.01	56.38
22.3	26.50	24.54	22.3	24.78	42.98	22.4	46.97	16.00	22.4	57.02	12.80	22.4	26.93	56.67
23.3	26.33	24.68	23.3	24.47	43.17	23.4	46.85	16.23	23.4	56.79	13.09	23.4	26.83	56.96
24.3	26.15	24.81	24.3	24.15	43.35	24.4	46.71	16.44	24.4	56.59	13.37	24.4	26.72	57.25
25.3	25.96	24.91	25.3	23.81	43.52	25.4	46.57	16.63	25.4	56.39	13.68	25.4	26.60	57.53
26.3	25.76	25.01	26.3	23.46	43.65	26.3	46.43	16.80	26.4	56.20	14.00	26.4	26.48	57.78
27.3	25.58	25.06	27.3	23.11	43.74	27.3	46.28	16.95	27.4	56.02	14.32	27.4	26.35	58.02
28.3	25.41	25.11	28.3	22.78	43.84	28.3	46.14	17.09	28.4	55.82	14.67	28.4	26.22	58.23
29.3	25.25	25.13	29.3	22.47	43.93	29.3	46.02	17.21	29.4	55.60	15.03	29.4	26.11	58.43
30.3	25.10	25.17	30.3	22.18	43.99	30.3	45.91	17.31	30.4	55.35	15.38	30.4	26.01	58.60
31.3	24.96	25.20	31.3	21.92	44.05	31.3	45.81	17.42	31.4	55.07	15.72	31.4	25.92	58.78
32.3	24.84	25.26	32.3	21.65	44.15	32.3	45.71	17.55	32.4	54.76	16.04	32.4	25.82	58.96
8.33	-8.27	15.90	-15.87	7.03	-6.96	18.21	+18.19	7.64	-7.58					
21 ^h 38 ^m	10°.025	22 ^h 15 ^m	56°.333	22 ^h 37 ^m	32°.703	23 ^h 27 ^m	44°.392	23 ^h 47 ^m	12°.813					
-83° 6'	23''.31	-86° 23'	45''.22	-81° 49'	21''.11	+86° 50'	39''.03	-82° 29'	8''.43					

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

43 H. Cephei. Mag. 4.5			α Ursae Minoris. (Polaris.) Mag. 2.1			4 G. Octantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Nov.	h m ° ' "		Nov.	h m ° ' "		Nov.	h m ° ' "		Nov.	h m ° ' "		Nov.	h m ° ' "	
	0 57	+85 48		1 30	+88 51		1 42	-85 11		4 10	+85 20		5 35	+85 9
0.4	22.75	57.70	0.4	66.96	53.44	0.5	19.50	22.23	0.6	18.08	8.21	0.6	25.99	21.64
1.4	22.65	58.09	1.4	66.76	53.86	1.5	19.45	22.50	1.6	18.27	8.56	1.6	26.28	21.91
2.4	22.52	58.47	2.4	66.49	54.25	2.5	19.40	22.78	2.6	18.44	8.93	2.6	26.52	22.18
3.4	22.40	58.82	3.4	66.17	54.62	3.5	19.35	23.07	3.6	18.59	9.26	3.6	26.75	22.41
4.4	22.27	59.15	4.4	65.86	54.97	4.5	19.27	23.39	4.6	18.72	9.59	4.6	26.97	22.66
5.4	22.16	59.47	5.4	65.59	55.30	5.4	19.19	23.72	5.6	18.84	9.88	5.6	27.16	22.88
6.4	22.05	59.77	6.4	65.37	55.63	6.4	19.09	24.06	6.5	18.96	10.15	6.6	27.36	23.09
7.4	21.96	60.08	7.4	65.21	55.96	7.4	18.95	24.39	7.5	19.11	10.42	7.6	27.58	23.27
8.4	21.91	60.39	8.4	65.10	56.29	8.4	18.82	24.72	8.5	19.28	10.70	8.6	27.80	23.46
9.4	21.83	60.73	9.4	65.00	56.65	9.4	18.66	25.02	9.5	19.45	10.97	9.6	28.04	23.64
10.4	21.75	61.07	10.4	64.86	57.01	10.4	18.51	25.31	10.5	19.62	11.29	10.6	28.28	23.86
11.4	21.66	61.44	11.4	64.67	57.38	11.4	18.36	25.58	11.5	19.80	11.60	11.6	28.54	24.08
12.4	21.56	61.80	12.4	64.42	57.76	12.4	18.22	25.82	12.5	19.96	11.94	12.6	28.79	24.32
13.4	21.42	62.15	13.4	64.10	58.14	13.4	18.09	26.06	13.5	20.11	12.30	13.6	29.03	24.59
14.4	21.28	62.50	14.4	63.69	58.52	14.4	17.97	26.30	14.5	20.25	12.66	14.6	29.26	24.87
15.4	21.11	62.82	15.4	63.23	58.89	15.4	17.84	26.57	15.5	20.35	13.03	15.6	29.46	25.16
16.4	20.94	63.13	16.4	62.72	59.22	16.4	17.72	26.83	16.5	20.46	13.39	16.6	29.66	25.46
17.4	20.75	63.43	17.4	62.20	59.56	17.4	17.60	27.09	17.5	20.55	13.72	17.6	29.84	25.75
18.4	20.57	63.72	18.4	61.66	59.88	18.4	17.46	27.33	18.5	20.62	14.06	18.6	30.01	26.03
19.4	20.40	64.00	19.4	61.15	60.20	19.4	17.32	27.66	19.5	20.69	14.40	19.6	30.16	26.31
20.4	20.22	64.26	20.4	60.67	60.48	20.4	17.15	27.95	20.5	20.76	14.71	20.6	30.31	26.56
21.4	20.07	64.53	21.4	60.22	60.77	21.4	16.98	28.25	21.5	20.83	15.00	21.6	30.48	26.81
22.4	19.94	64.79	22.4	59.82	61.06	22.4	16.79	28.54	22.5	20.91	15.30	22.6	30.65	27.04
23.4	19.80	65.06	23.4	59.46	61.38	23.4	16.56	28.79	23.5	21.02	15.60	23.6	30.83	27.28
24.4	19.68	65.36	24.4	59.11	61.69	24.4	16.35	29.03	24.5	21.13	15.91	24.6	31.02	27.51
25.4	19.54	65.68	25.4	58.73	62.04	25.4	16.13	29.23	25.5	21.26	16.22	25.6	31.24	27.77
26.4	19.38	66.00	26.4	58.28	62.39	26.4	15.94	29.42	26.5	21.37	16.59	26.6	31.45	28.05
27.4	19.20	66.33	27.4	57.76	62.75	27.4	15.74	29.60	27.5	21.48	16.96	27.6	31.65	28.36
28.4	19.01	66.65	28.4	57.12	63.11	28.4	15.56	29.76	28.5	21.56	17.34	28.5	31.84	28.69
29.3	18.78	66.95	29.4	56.40	63.46	29.4	15.39	29.94	29.5	21.61	17.72	29.5	32.00	29.03
30.3	18.54	67.22	30.4	55.64	63.75	30.4	15.23	30.12	30.5	21.65	18.11	30.5	32.14	29.37
31.3	18.30	67.45	31.4	54.85	64.05	31.4	15.05	30.34	31.5	21.66	18.45	31.5	32.25	29.71
13.71	+13.67		50.55	+50.54		11.93	-11.89		12.30	+12.26		11.84	+11.80	
0 ^h 57 ^m	1° 657'		1 ^h 29 ^m	44° 254'		1 ^h 42 ^m	6° 102'		4 ^h 9 ^m	44° 952'		5 ^h 34 ^m	54° 014'	
+85° 48'	25'' .87		+88° 51'	25'' .03		-85° 11'	39'' .58		+85° 20'	1'' .04		+85° 9'	28'' .07	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

31 G. Mensse. Mag. 6.2			C Mensse. Mag. 5.6			51 H. Cephei. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Octantis. Mag. 6.4		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Nov.	h m 5 46	° ' " -84 48	Nov.	h m 6 47	° ' " -80 43	Nov.	h m 7 2	° ' " +87 10	Nov.	h m 7 13	° ' " +82 34	Nov.	h m 7 16	° ' " -86 53
0.6	23.59	28.56	0.7	1.57	17.18	0.7	20.34	40.52	0.7	48.32	16.01	0.7	25.29	45.55
1.6	23.73	28.76	1.7	1.38	17.32	1.7	20.91	40.65	1.7	48.54	16.11	1.7	25.60	45.65
2.6	23.90	28.97	2.7	1.79	17.48	2.7	21.43	40.78	2.7	48.75	16.21	2.7	25.93	45.76
3.6	24.07	29.19	3.7	1.90	17.65	3.7	21.92	40.92	3.7	48.95	16.31	3.7	26.29	45.87
4.6	24.24	29.43	4.7	2.03	17.83	4.7	22.38	41.04	4.7	49.12	16.43	4.7	26.67	46.01
5.6	24.42	29.70	5.7	2.16	18.02	5.7	22.81	41.15	5.7	49.30	16.52	5.7	27.06	46.18
6.6	24.57	29.98	6.7	2.28	18.25	6.7	23.23	41.25	6.7	49.47	13.59	6.7	27.44	46.35
7.6	24.73	30.31	7.7	2.40	18.51	7.7	23.68	41.32	7.7	49.63	16.63	7.7	27.83	46.50
8.6	24.88	30.64	8.6	2.51	18.80	8.7	24.14	41.40	8.7	49.81	16.68	8.7	28.20	46.81
9.6	25.01	30.98	9.6	2.62	19.09	9.7	24.60	41.47	9.7	49.99	16.73	9.7	28.53	47.05
10.6	25.11	31.30	10.6	2.72	19.36	10.7	25.11	41.56	10.7	50.19	16.79	10.7	28.85	47.28
11.6	25.22	31.60	11.6	2.82	19.34	11.7	25.62	41.66	11.7	50.40	16.88	11.7	29.15	47.53
12.6	25.32	31.89	12.6	2.91	19.89	12.7	26.13	41.80	12.7	50.62	16.97	12.7	29.44	47.76
13.6	25.43	32.18	13.6	3.00	20.16	13.6	26.65	41.94	13.7	50.83	17.09	13.7	29.71	47.98
14.6	25.53	32.46	14.6	3.09	20.40	14.6	27.14	42.11	14.7	51.03	17.23	14.7	29.99	48.17
15.6	25.63	32.73	15.6	3.18	20.63	15.6	27.62	42.29	15.6	51.22	17.40	15.7	30.27	48.38
16.6	25.75	33.00	16.6	3.28	20.85	16.6	28.09	42.48	16.6	51.40	17.56	16.6	30.56	48.58
17.6	25.86	33.29	17.6	3.37	21.11	17.6	28.51	42.67	17.6	51.57	17.70	17.6	30.88	48.81
18.6	25.99	33.57	18.6	3.47	21.34	18.6	28.92	42.85	18.6	51.73	17.86	18.6	31.19	49.02
19.6	26.11	33.88	19.6	3.57	21.62	19.6	29.30	43.04	19.6	51.88	18.03	19.6	31.50	49.23
20.6	26.22	34.21	20.6	3.67	21.91	20.6	29.68	43.21	20.6	52.04	18.18	20.6	31.82	49.49
21.6	26.31	34.56	21.6	3.76	22.23	21.6	30.06	43.38	21.6	52.18	18.32	21.6	32.14	49.76
22.6	26.40	34.94	22.6	3.84	22.56	22.6	30.46	43.52	22.6	52.36	18.45	22.6	32.44	50.05
23.6	26.49	35.31	23.6	3.93	22.90	23.6	30.87	43.66	23.6	52.52	18.57	23.6	32.72	50.36
24.6	26.54	35.69	24.6	4.01	23.27	24.6	31.29	43.81	24.6	52.69	18.69	24.6	32.96	50.68
25.6	26.58	36.03	25.6	4.07	23.61	25.6	31.76	43.96	25.6	52.89	18.81	25.6	33.18	50.99
26.6	26.61	36.38	26.6	4.13	23.94	26.6	32.24	44.14	26.6	53.07	18.94	26.6	33.37	51.30
27.6	26.64	36.71	27.6	4.20	24.24	27.6	32.72	44.35	27.6	53.28	19.13	27.6	33.55	51.57
28.6	26.69	37.01	28.6	4.25	24.52	28.6	33.18	44.58	28.6	53.46	19.32	28.6	33.73	51.85
29.6	26.71	37.29	29.6	4.30	24.81	29.6	33.60	44.82	29.6	53.65	19.56	29.6	33.92	52.08
30.5	26.75	37.60	30.6	4.37	25.09	30.6	33.98	45.09	30.6	53.80	19.78	30.6	34.13	52.32
31.5	26.81	37.91	31.6	4.43	25.37	31.6	34.33	45.35	31.6	53.94	20.03	31.6	34.35	52.60
11.08	-11.04		6.20	-6.12		20.31	+20.29		7.73	+7.67		18.47	-18.45	
5 ^h 46 ^m 26 ^s .439			6 ^h 47 ^m 3 ^s .489			7 ^h 1 ^m 34 ^s .861			7 ^h 13 ^m 29 ^s .477			7 ^h 16 ^m 40 ^s .555		
-84° 49' 48".17			-80° 43' 34".16			+87° 11' 0".11			+82° 34' 36".50			-86° 54' 0".14		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			ζ Octantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			ζ Chamseleontis. Mag. 5.2			30 H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Nov.	h m	° ' "	Nov.	h m	° ' "	Nov.	h m	° ' "	Nov.	h m	° ' "	Nov.	h m	° ' "
	8 16	+88 52		9 8	-85 19		9 25	+81 41		9 36	-80 33		10 21	+82 58
	s	"		s	"		s	"		s	"		s	"
0.7	11.14	42.90	0.8	53.02	36.86	0.8	22.56	23.94	0.8	19.15	46.83	0.8	3.31	36.58
1.7	12.60	42.89	1.8	53.25	36.85	1.8	22.76	23.79	1.8	19.27	46.79	1.8	3.51	36.34
2.7	13.98	42.89	2.8	53.49	36.85	2.8	22.95	23.66	2.8	19.39	46.75	2.8	3.72	36.13
3.7	15.29	42.91	3.8	53.76	36.83	3.8	23.13	23.56	3.8	19.52	46.70	3.8	3.91	35.94
4.7	16.52	42.93	4.8	54.02	36.80	4.8	23.29	23.46	4.8	19.65	46.64	4.8	4.09	35.76
5.7	17.68	42.94	5.8	54.30	36.78	5.8	23.44	23.35	5.8	19.79	46.61	5.8	4.24	35.59
6.7	18.80	42.94	6.8	54.61	36.82	6.8	23.59	23.23	6.8	19.94	46.60	6.8	4.40	35.42
7.7	19.91	42.92	7.8	54.92	36.87	7.8	23.73	23.10	7.8	20.10	46.62	7.8	4.55	35.21
8.7	21.08	42.89	8.8	55.22	36.94	8.8	23.88	22.95	8.8	20.26	46.66	8.8	4.70	34.98
9.7	22.30	42.85	9.7	55.51	37.03	9.8	24.06	22.80	9.8	20.41	46.71	9.8	4.87	34.76
10.7	23.58	42.83	10.7	55.80	37.14	10.8	24.23	22.65	10.8	20.56	46.77	10.8	5.06	34.52
11.7	24.91	42.81	11.7	56.07	37.23	11.8	24.40	22.50	11.8	20.71	46.84	11.8	5.24	34.32
12.7	26.27	42.81	12.7	56.32	37.33	12.8	24.60	22.39	12.8	20.85	46.92	12.8	5.44	34.11
13.7	27.64	42.84	13.7	56.57	37.42	13.7	24.78	22.28	13.8	20.98	46.97	13.8	5.65	33.92
14.7	29.00	42.90	14.7	56.81	37.49	14.7	24.98	22.19	14.8	21.11	47.03	14.8	5.86	33.74
15.7	30.33	42.96	15.7	57.06	37.55	15.7	25.17	22.13	15.8	21.24	47.07	15.8	6.07	33.59
16.7	31.61	43.05	16.7	57.30	37.62	16.7	25.36	22.08	16.7	21.37	47.12	16.8	6.28	33.45
17.7	32.85	43.14	17.7	57.57	37.68	17.7	25.53	22.03	17.7	21.50	47.16	17.8	6.48	33.33
18.7	34.02	43.23	18.7	57.83	37.77	18.7	25.71	22.02	18.7	21.64	47.23	18.8	6.68	33.22
19.7	35.14	43.31	19.7	58.10	37.85	19.7	25.86	21.99	19.7	21.78	47.29	19.8	6.86	33.12
20.7	36.22	43.40	20.7	58.38	37.96	20.7	26.01	21.95	20.7	21.93	47.38	20.8	7.03	33.02
21.7	37.30	43.45	21.7	58.67	38.09	21.7	26.16	21.90	21.7	22.08	47.46	21.8	7.19	32.90
22.7	38.37	43.49	22.7	58.96	38.26	22.7	26.32	21.85	22.7	22.23	47.58	22.8	7.37	32.76
23.7	39.49	43.54	23.7	59.25	38.43	23.7	26.48	21.77	23.7	22.39	47.72	23.8	7.55	32.61
24.7	40.68	43.59	24.7	59.52	38.62	24.7	26.66	21.69	24.7	22.54	47.88	24.8	7.74	32.45
25.7	41.93	43.64	25.7	59.77	38.83	25.7	26.84	21.62	25.7	22.68	48.06	25.8	7.94	32.30
26.7	43.25	43.72	26.7	60.00	39.03	26.7	27.03	21.56	26.7	22.81	48.23	26.8	8.16	32.15
27.7	44.61	43.80	27.7	60.22	39.22	27.7	27.23	21.51	27.7	22.94	48.41	27.7	8.39	32.02
28.7	45.93	43.93	28.7	60.43	39.40	28.7	27.44	21.51	28.7	23.06	48.57	28.7	8.61	31.92
29.7	47.22	44.06	29.7	60.65	39.55	29.7	27.64	21.51	29.7	23.17	48.72	29.7	8.84	31.84
30.7	48.42	44.23	30.7	60.86	39.71	30.7	27.82	21.56	30.7	23.29	48.85	30.7	9.06	31.78
31.6	49.52	44.40	31.7	61.09	39.86	31.7	28.00	21.60	31.7	23.42	48.99	31.7	9.26	31.73
51.10	+51.09		12.27	-12.23		6.92	+6.85		6.10	-6.02		8.18	+8.12	
8 ^h 14 ^m 48 ^s .311			9 ^h 9 ^m 6 ^s .085			9 ^h 25 ^m 12 ^s .930			9 ^h 36 ^m 24 ^s .003		10 ^h 20 ^m 57 ^s .259			
+88° 53' 11".43			-85° 19' 42".77			+81° 41' 57".18			-80° 33' 50".61		+82° 59' 12".27			

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

7 Octantis. Mag. 6.3			Bradley 1672. Mag. 6.3			2 Octantis. Mag. 5.4			32 H. Camelop. seq. Mag. 5.3			κ Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.
Nov.	h m s	° ' "	Nov.	h m s	° ' "	Nov.	h m s	° ' "	Nov.	h m s	° ' "	Nov.	h m s	° ' "
	10 59	-84 8		12 14	+88 9		12 45	-84 40		12 48	+83 51		13 26	-85 21
0.8	45.81	35.22	0.9	4.42	21.70	0.9	53.09	15.31	0.9	22.19	38.49	0.9	57.75	38.91
1.8	45.97	35.08	1.9	4.86	21.31	1.9	53.20	15.10	1.9	22.30	38.11	1.9	57.84	38.67
2.8	46.13	34.96	2.9	5.32	20.99	2.9	53.31	14.86	2.9	22.41	37.72	2.9	57.92	38.40
3.8	46.30	34.79	3.9	5.75	20.67	3.9	53.42	14.60	3.9	22.52	37.37	3.9	58.01	38.13
4.8	46.49	34.62	4.9	6.18	20.35	4.9	53.55	14.32	4.9	22.61	37.05	4.9	58.10	37.82
5.8	46.69	34.44	5.9	6.56	20.06	5.9	53.69	14.04	5.9	22.70	36.73	5.9	58.23	37.50
6.8	46.92	34.30	6.9	6.90	19.75	6.9	53.86	13.78	6.9	22.78	36.42	6.9	58.37	37.18
7.8	47.14	34.18	7.9	7.20	19.47	7.9	54.05	13.51	7.9	22.85	36.10	7.9	58.55	36.90
8.8	47.38	34.08	8.9	7.51	19.16	8.9	54.25	13.25	8.9	22.91	35.76	8.9	58.73	36.61
9.8	47.62	34.03	9.9	7.82	18.84	9.9	54.45	13.02	9.9	22.99	35.39	9.9	58.93	36.33
10.8	47.85	33.96	10.9	8.19	18.51	10.9	54.65	12.83	10.9	23.07	35.03	10.9	59.12	36.09
11.8	48.07	33.89	11.9	8.59	18.17	11.9	54.86	12.64	11.9	23.17	34.66	11.9	59.32	35.86
12.8	48.28	33.85	12.9	9.05	17.82	12.9	55.04	12.45	12.9	23.29	34.30	12.9	59.50	35.63
13.8	48.48	33.80	13.9	9.54	17.50	13.9	55.23	12.27	13.9	23.42	33.94	13.9	59.68	35.41
14.8	48.68	33.74	14.9	10.07	17.18	14.9	55.40	12.08	14.9	23.56	33.57	14.9	59.85	35.19
15.8	48.88	33.69	15.9	10.62	16.89	15.9	55.57	11.89	15.9	23.69	33.23	15.9	60.00	34.97
16.8	49.07	33.61	16.9	11.16	16.61	16.9	55.73	11.71	16.9	23.83	32.89	16.9	60.16	34.76
17.8	49.27	33.53	17.9	11.71	16.33	17.9	55.90	11.50	17.9	23.98	32.61	17.9	60.31	34.50
18.8	49.46	33.46	18.9	12.24	16.09	18.9	56.07	11.30	18.9	24.12	32.30	18.9	60.49	34.24
19.8	49.70	33.40	19.8	12.75	15.84	19.9	56.26	11.10	19.9	24.26	32.01	19.9	60.67	33.98
20.8	49.94	33.34	20.8	13.23	15.60	20.9	56.47	10.89	20.9	24.38	31.74	20.9	60.87	33.73
21.8	50.17	33.29	21.8	13.67	15.38	21.9	56.69	10.68	21.9	24.48	31.47	21.9	61.09	33.50
22.8	50.43	33.29	22.8	14.10	15.14	22.9	56.93	10.51	22.9	24.60	31.18	22.9	61.33	33.27
23.8	50.68	33.23	23.8	14.55	14.86	23.9	57.18	10.35	23.9	24.71	30.88	23.9	61.59	33.06
24.8	50.93	33.31	24.8	15.00	14.59	24.9	57.43	10.23	24.9	24.84	30.55	24.9	61.86	32.87
25.8	51.18	33.37	25.8	15.49	14.31	25.9	57.70	10.14	25.9	24.97	30.23	25.9	62.13	32.72
26.8	51.41	33.43	26.8	16.05	14.03	26.9	57.93	10.02	26.9	25.12	29.89	26.9	62.37	32.57
27.8	51.62	33.50	27.8	16.65	13.74	27.8	58.16	9.94	27.9	25.29	29.55	27.9	62.61	32.45
28.8	51.82	33.56	28.8	17.30	13.45	28.8	58.37	9.87	28.8	25.48	29.23	28.9	62.83	32.32
29.8	52.02	33.59	29.8	18.00	13.22	29.8	58.57	9.77	29.8	25.66	28.94	29.9	63.03	32.17
30.8	52.22	33.60	30.8	18.66	13.00	30.8	58.76	9.66	30.8	25.85	28.66	30.9	63.23	32.00
31.8	52.43	33.61	31.8	19.31	12.81	31.8	58.97	9.52	31.8	26.03	28.42	31.9	63.45	31.82
9.80	-9.75		31.05	+31.04		10.77	-10.72		9.35	+9.29		12.36	-12.32	
10 ^h 59 ^m	55°.642		12 ^h 14 ^m	28°.053		12 ^h 46 ^m	1°.183		12 ^h 48 ^m	29°.976		13 ^h 27 ^m	5°.514	
-84°	8' 31".24		+88° 9'	56".03		-84° 40'	2".72		+83° 52'	10".05		-85° 21'	23".59	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Octantis. Mag. 4.1			Groombridge 2223. Mag. 7.2			ρ Octantis. Mag. 5.7			ϵ Ursae Minoris. Mag. 4.4			59 G. Apodis. Mag. 5.9		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
	h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "
Nov.	14 13	-83 17	Nov.	15 3	+87 32	Nov.	15 23	-84 11	Nov.	16 54	+82 10	Nov.	17 15	-80 47
	s	"		s	"		s	"		s	"		s	"
0.9	16.16	21.73	1.0	12.64	67.86	1.0	44.00	37.46	1.1	17.16	39.50	1.1	49.54	21.44
1.9	16.19	21.47	2.0	12.51	67.45	2.0	43.98	37.20	2.1	17.05	39.15	2.1	49.47	21.24
2.9	16.22	21.19	3.0	12.41	67.05	3.0	43.95	36.92	3.1	16.94	38.82	3.1	49.41	21.03
3.9	16.25	20.90	4.0	12.33	66.68	4.0	43.92	36.62	4.1	16.83	38.51	4.1	49.33	20.80
4.9	16.28	20.57	5.0	12.25	66.34	5.0	43.90	36.30	5.1	16.73	38.22	5.1	49.25	20.53
5.9	16.32	20.25	6.0	12.17	65.98	6.0	43.88	35.97	6.1	16.64	37.95	6.1	49.18	20.27
6.9	16.39	19.91	6.9	12.05	65.66	7.0	43.88	35.62	7.1	16.54	37.70	7.1	49.11	19.96
7.9	16.47	19.58	7.9	11.91	65.35	8.0	43.91	35.26	8.1	16.42	37.47	8.1	49.05	19.65
8.9	16.56	19.26	8.9	11.75	65.03	9.0	43.95	34.92	9.1	16.31	37.21	9.1	49.00	19.33
9.9	16.67	18.96	9.9	11.60	64.65	10.0	44.00	34.56	10.1	16.20	36.94	10.1	48.98	19.01
10.9	16.78	18.68	10.9	11.45	64.29	11.0	44.06	34.26	11.1	16.09	36.65	11.1	48.96	18.71
11.9	16.89	18.42	11.9	11.35	63.91	11.9	44.12	33.96	12.1	15.98	36.34	12.1	48.94	18.43
12.9	16.99	18.17	12.9	11.25	63.51	12.9	44.18	33.66	13.1	15.88	36.01	13.1	48.91	18.16
13.9	17.09	17.93	13.9	11.19	63.11	13.9	44.24	33.39	14.1	15.77	35.66	14.1	48.89	17.90
14.9	17.18	17.69	14.9	11.17	62.71	14.9	44.28	33.12	15.1	15.69	35.31	15.1	48.86	17.64
15.9	17.27	17.44	15.9	11.16	62.32	15.9	44.32	32.84	16.1	15.61	34.96	16.1	48.82	17.39
16.9	17.35	17.17	16.9	11.19	61.93	16.9	44.35	32.56	17.0	15.54	34.61	17.1	48.79	17.13
17.9	17.43	16.90	17.9	11.23	61.54	17.9	44.38	32.25	18.0	15.47	34.26	18.1	48.75	16.85
18.9	17.51	16.63	18.9	11.27	61.19	18.9	44.42	31.95	19.0	15.40	33.92	19.1	48.71	16.58
19.9	17.60	16.36	19.9	11.30	60.85	19.9	44.46	31.62	20.0	15.34	33.58	20.1	48.66	16.26
20.9	17.71	16.07	20.9	11.32	60.54	20.9	44.52	31.29	21.0	15.27	33.28	21.1	48.64	15.94
21.9	17.83	15.76	21.9	11.34	60.20	21.9	44.60	30.94	22.0	15.21	32.99	22.1	48.62	15.69
22.9	17.97	15.49	22.9	11.32	59.88	22.9	44.69	30.59	23.0	15.14	32.70	23.0	48.61	15.24
23.9	18.12	15.22	23.9	11.29	59.54	23.9	44.81	30.27	24.0	15.06	32.42	24.0	48.60	14.88
24.9	18.29	14.99	24.9	11.26	59.18	24.9	44.94	29.97	25.0	14.99	32.11	25.0	48.62	14.55
25.9	18.45	14.78	25.9	11.25	58.81	25.9	45.07	29.69	26.0	14.91	31.78	26.0	48.65	14.25
26.9	18.60	14.59	26.9	11.27	58.41	26.9	45.20	29.44	27.0	14.84	31.42	27.0	48.67	13.95
27.9	18.76	14.42	27.9	11.31	58.01	27.9	45.32	29.22	28.0	14.77	31.03	28.0	48.70	13.69
28.9	18.90	14.25	28.9	11.41	57.61	28.9	45.43	28.98	29.0	14.72	30.62	29.0	48.72	13.43
29.9	19.02	14.06	29.9	11.55	57.22	29.9	45.54	28.73	30.0	14.68	30.22	30.0	48.73	13.17
30.9	19.15	13.86	30.9	11.71	56.85	30.9	45.62	28.47	31.0	14.64	29.84	31.0	48.73	12.91
31.9	19.27	13.64	31.9	11.89	56.50	31.9	45.70	28.21	32.0	14.62	29.49	32.0	48.72	12.61
8.56	-8.50		23.40	+23.38		9.88	-9.83		7.35	+7.28		6.25	-6.17	
14 ^h 13 ^m	18 ^s .531		15 ^h 3 ^m	0 ^s .607		15 ^h 23 ^m	43 ^s .237		16 ^h 54 ^m	31 ^s .741		17 ^h 15 ^m	43 ^s .730	
-83° 17'	4''.27		+87° 33'	24''.43		-84° 11'	17''.84		+82° 10'	38''.40		-80° 47'	2''.69	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Ursae Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursae Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.
	h m s	° ' "		h m s	° ' "		h m s	° ' "		h m s	° ' "		h m s	° ' "
Nov.	17 58	+86 36	Nov.	18 5	-87 40	Nov.	19 1	+89 1	Nov.	19 26	-89 13	Nov.	20 48	+82 13
1.1	44.25	62.20	1.1	55.99	10.19	1.2	53.50	16.76	1.2	88.49	49.43	1.3	38.81	48.87
2.1	43.87	61.96	2.1	55.66	10.01	2.2	51.98	16.63	2.2	87.22	49.32	2.3	38.62	48.91
3.1	43.52	61.72	3.1	55.30	9.82	3.2	50.55	16.49	3.2	85.85	49.24	3.2	38.43	48.94
4.1	43.20	61.48	4.1	54.90	9.62	4.2	49.20	16.37	4.2	84.36	49.12	4.2	38.26	48.96
5.1	42.88	61.27	5.1	54.48	9.40	5.2	47.93	16.23	5.2	82.79	48.99	5.2	38.09	48.98
6.1	42.58	61.07	6.1	54.07	9.15	6.2	46.72	16.12	6.2	81.19	48.83	6.2	37.93	49.01
7.1	42.27	60.89	7.1	53.68	8.87	7.2	45.48	16.03	7.2	79.60	48.65	7.2	37.78	49.06
8.1	41.96	60.71	8.1	53.33	8.57	8.2	44.23	15.93	8.2	78.07	48.45	8.2	37.62	49.10
9.1	41.62	60.54	9.1	53.02	8.26	9.2	42.92	15.84	9.2	76.65	48.22	9.2	37.46	49.17
10.1	41.27	60.36	10.1	52.75	7.96	10.2	41.56	15.75	10.2	75.34	48.01	10.2	37.29	49.25
11.1	40.92	60.15	11.1	52.50	7.66	11.2	40.15	15.65	11.2	74.11	47.79	11.2	37.12	49.31
12.1	40.57	59.92	12.1	52.27	7.41	12.2	38.71	15.52	12.2	72.98	47.58	12.2	36.95	49.35
13.1	40.23	59.68	13.1	52.05	7.15	13.1	37.27	15.38	13.2	71.86	47.40	13.2	36.77	49.38
14.1	39.89	59.41	14.1	51.84	6.90	14.1	35.86	15.21	14.2	70.76	47.23	14.2	36.59	49.38
15.1	39.58	59.14	15.1	51.60	6.66	15.1	34.50	15.03	15.2	69.64	47.02	15.2	36.40	49.35
16.1	39.28	58.85	16.1	51.35	6.41	16.1	33.19	14.85	16.2	68.48	46.83	16.2	36.22	49.32
17.1	38.99	58.56	17.1	51.09	6.16	17.1	31.95	14.65	17.2	67.27	46.68	17.2	36.04	49.26
18.1	38.73	58.27	18.1	50.81	5.90	18.1	30.77	14.46	18.2	66.02	46.48	18.2	35.87	49.19
19.1	38.49	57.99	19.1	50.52	5.64	19.1	29.64	14.26	19.1	64.72	46.27	19.2	35.71	49.13
20.1	38.25	57.75	20.1	50.24	5.34	20.1	28.56	14.08	20.1	63.41	46.05	20.2	35.55	49.07
21.1	38.00	57.50	21.1	49.97	5.02	21.1	27.50	13.89	21.1	62.09	45.81	21.2	35.41	49.02
22.1	37.76	57.28	22.1	49.73	4.68	22.1	26.43	13.72	22.1	60.82	45.54	22.2	35.25	49.01
23.1	37.50	57.05	23.1	49.54	4.34	23.1	25.33	13.57	23.1	59.64	45.25	23.2	35.09	48.98
24.1	37.23	56.84	24.1	49.38	3.98	24.1	24.17	13.42	24.1	58.58	44.95	24.2	34.94	48.97
25.1	36.95	56.59	25.1	49.28	3.64	25.1	22.94	13.25	25.1	57.66	44.65	25.2	34.77	48.94
26.1	36.66	56.31	26.1	49.21	3.31	26.1	21.66	13.08	26.1	56.85	44.35	26.2	34.61	48.91
27.1	36.37	56.03	27.1	49.16	3.00	27.1	20.34	12.86	27.1	56.15	44.06	27.2	34.44	48.87
28.1	36.10	55.71	28.1	49.11	2.71	28.1	19.06	12.64	28.1	55.47	43.81	28.2	34.26	48.80
29.1	35.85	55.36	29.1	49.03	2.43	29.1	17.85	12.41	29.1	54.75	43.57	29.2	34.08	48.72
30.1	35.61	55.02	30.1	48.93	2.16	30.1	16.71	12.14	30.1	53.96	43.34	30.2	33.90	48.59
31.1	35.42	54.68	31.1	48.80	1.89	31.1	15.69	11.87	31.1	53.07	43.09	31.2	33.73	48.44
32.0	35.24	54.36	32.1	48.65	1.59	32.1	14.77	11.59	32.1	52.11	42.83	32.2	33.58	48.29
16.94	+16.91	24.58	-24.56	58.52	+58.51	74.39	-74.38	7.40	+7.33					
17 ^h 59 ^m 20 ^s .805	18 ^h 5 ^m 36 ^s .163	19 ^h 3 ^m 51 ^s .560	19 ^h 26 ^m 7 ^s .189	20 ^h 48 ^m 44 ^s .660										
+86° 36' 51".19	-87° 39' 52".21	+89° 0' 56".70	-89° 13' 35".99	+82° 13' 16".38										

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ ¹ Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
	h m ° ' "			h m ° ' "			h m ° ' "			h m ° ' "			h m ° ' "	
Nov. 21 38	-83 6		Nov. 22 16	-86 23		Nov. 22 37	-81 49		Nov. 23 27	+86 51		Nov. 23 47	-82 28	
1.3	24.84 25.26		1.3	21.65 44.15		1.3	45.71 17.55		1.4	54.76 16.04		1.4	25.82 58.96	
2.3	24.70 25.33		2.3	21.39 44.24		2.3	45.60 17.69		2.4	54.43 16.35		2.4	25.73 59.17	
3.3	24.55 25.41		3.3	21.12 44.37		3.3	45.47 17.85		3.4	54.10 16.62		3.4	25.63 59.40	
4.3	24.37 25.49		4.3	20.81 44.51		4.3	45.35 17.99		4.4	53.78 16.86		4.4	25.52 59.64	
5.3	24.19 25.58		5.3	20.47 44.63		5.3	45.21 18.15		5.4	53.49 17.10		5.4	25.40 59.89	
6.3	23.99 25.64		6.3	20.10 44.75		6.3	45.06 18.29		6.4	53.22 17.34		6.4	25.25 60.11	
7.3	23.79 25.63		7.3	19.73 44.83		7.3	44.89 18.42		7.3	52.97 17.59		7.4	25.11 60.34	
8.3	23.59 25.67		8.3	19.34 44.89		8.3	44.74 18.52		8.3	52.73 17.85		8.4	24.96 60.53	
9.3	23.40 25.65		9.3	18.97 44.93		9.3	44.58 18.60		9.3	52.49 18.13		9.4	24.80 60.71	
10.3	23.22 25.62		10.3	18.62 44.94		10.3	44.43 18.65		10.3	52.22 18.41		10.4	24.65 60.86	
11.3	23.06 25.57		11.3	18.27 44.96		11.3	44.28 18.70		11.3	51.94 18.70		11.4	24.51 61.01	
12.3	22.90 25.53		12.3	17.95 44.95		12.3	44.15 18.74		12.3	51.63 18.97		12.4	24.37 61.15	
13.3	22.75 25.50		13.3	17.65 44.97		13.3	44.02 18.79		13.3	51.31 19.24		13.3	24.24 61.29	
14.3	22.59 25.50		14.3	17.36 45.01		14.3	43.89 18.85		14.3	50.97 19.50		14.3	24.12 61.42	
15.3	22.44 25.48		15.3	17.05 45.04		15.3	43.77 18.90		15.3	50.60 19.74		15.3	24.00 61.57	
16.2	22.29 25.46		16.3	16.74 45.08		16.3	43.65 18.97		16.3	50.23 19.97		16.3	23.88 61.72	
17.2	22.12 25.46		17.3	16.43 45.11		17.3	43.51 19.05		17.3	49.85 20.17		17.3	23.74 61.86	
18.2	21.95 25.46		18.3	16.10 45.13		18.3	43.37 19.12		18.3	49.49 20.36		18.3	23.60 62.05	
19.2	21.77 25.44		19.3	15.75 45.16		19.3	43.23 19.18		19.3	49.15 20.55		19.3	23.47 62.21	
20.2	21.58 25.40		20.3	15.38 45.19		20.3	43.07 19.25		20.3	48.81 20.72		20.3	23.31 62.37	
21.2	21.40 25.35		21.3	15.01 45.20		21.3	42.90 19.30		21.3	48.48 20.90		21.3	23.13 62.52	
22.2	21.20 25.27		22.3	14.62 45.17		22.3	42.73 19.31		22.3	48.18 21.08		22.3	22.96 62.66	
23.2	21.01 25.17		23.3	14.23 45.12		23.3	42.57 19.30		23.3	47.90 21.28		23.3	22.79 62.76	
24.2	20.83 25.04		24.3	13.86 45.03		24.3	42.41 19.28		24.3	47.59 21.51		24.3	22.61 62.83	
25.2	20.67 24.90		25.2	13.52 44.94		25.3	42.26 19.23		25.3	47.27 21.73		25.3	22.45 62.89	
26.2	20.53 24.76		26.2	13.19 44.85		26.3	42.12 19.17		26.3	46.93 21.95		26.3	22.31 62.94	
27.2	20.38 24.63		27.2	12.91 44.74		27.3	42.00 19.11		27.3	46.55 22.17		27.3	22.16 62.96	
28.2	20.25 24.50		28.2	12.62 44.67		28.3	41.88 19.06		28.3	46.15 22.37		28.3	22.02 63.03	
29.2	20.13 24.40		29.2	12.34 44.60		29.3	41.77 19.03		29.3	45.73 22.56		29.3	21.90 63.07	
30.2	19.99 24.29		30.2	12.06 44.54		30.3	41.64 19.01		30.3	45.30 22.71		30.3	21.76 63.13	
31.2	19.85 24.22		31.2	11.75 44.49		31.2	41.51 19.01		31.3	44.88 22.83		31.3	21.62 63.21	
32.2	19.68 24.14		32.2	11.43 44.44		32.2	41.37 19.00		32.3	44.49 22.93		32.3	21.46 63.29	
8.33	-8.27		15.91	-15.88		7.03	-6.96		18.23	+18.20		7.04	-7.88	
21 ^h 38 ^m 10 ^s .025			22 ^h 15 ^m 56 ^s .333			22 ^h 37 ^m 32 ^s .703			23 ^h 27 ^m 44 ^s .392		23 ^h 47 ^m 12 ^s .813			
-83° 6' 23".31			-86° 23' 45".22			-81° 49' 21".11			+86° 50' 39".03		-82° 29' 8".43			

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

43 H. Cephei. Mag. 4.5			α Urae Minoris. (Polaris.) Mag. 2.1			4 G. Octantis. Mag. 5.6			Groombridge 750. Mag. 6.7			Groombridge 944. Mag. 6.4		
Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.
Dec.	h m ° ' "	° ' "	Dec.	h m ° ' "	° ' "	Dec.	h m ° ' "	° ' "	Dec.	h m ° ' "	° ' "	Dec.	h m ° ' "	° ' "
	0 57	+85 49		1 30	+88 52		1 42	-85 11		4 10	+85 20		5 35	+85 9
0.3	18.54	7.22	0.4	55.64	3.75	0.4	15.23	30.12	0.5	21.65	18.11	0.5	32.14	29.37
1.3	18.30	7.45	1.4	54.85	4.05	1.4	15.05	30.34	1.5	21.66	18.45	1.5	32.25	29.71
2.3	18.06	7.67	2.4	54.09	4.32	2.4	14.86	30.57	2.5	21.66	18.79	2.5	32.35	30.02
3.3	17.84	7.87	3.4	53.39	4.55	3.4	14.65	30.81	3.5	21.66	19.11	3.5	32.47	30.31
4.3	17.65	8.06	4.4	52.76	4.78	4.4	14.42	31.05	4.5	21.67	19.39	4.5	32.55	30.58
5.3	17.46	8.27	5.4	52.18	5.04	5.4	14.19	31.28	5.5	21.70	19.69	5.5	32.65	30.83
6.3	17.28	8.50	6.4	51.61	5.28	6.4	13.93	31.48	6.5	21.74	19.99	6.5	32.78	31.09
7.3	17.10	8.73	7.3	51.05	5.56	7.4	13.66	31.66	7.5	21.78	20.30	7.5	32.90	31.36
8.3	16.92	8.97	8.3	50.44	5.83	8.4	13.42	31.80	8.5	21.83	20.61	8.5	33.05	31.66
9.3	16.72	9.21	9.3	49.77	6.10	9.4	13.17	31.93	9.5	21.87	20.95	9.5	33.19	31.97
10.3	16.49	9.44	10.3	49.04	6.39	10.4	12.94	32.08	10.5	21.89	21.30	10.5	33.32	32.28
11.3	16.25	9.66	11.3	48.22	6.67	11.3	12.72	32.18	11.5	21.90	21.65	11.5	33.43	32.62
12.3	15.98	9.87	12.3	47.35	6.91	12.3	12.50	32.31	12.4	21.89	22.01	12.5	33.53	32.97
13.3	15.71	10.08	13.3	46.43	7.16	13.3	12.29	32.44	13.4	21.85	22.37	13.5	33.62	33.31
14.3	15.43	10.28	14.3	45.49	7.39	14.3	12.08	32.58	14.4	21.81	22.73	14.5	33.67	33.66
15.3	15.15	10.45	15.3	44.54	7.62	15.3	11.85	32.72	15.4	21.75	23.06	15.5	33.72	34.00
16.3	14.88	10.60	16.3	43.60	7.82	16.3	11.62	32.86	16.4	21.70	23.39	16.5	33.76	34.34
17.3	14.62	10.73	17.3	42.69	8.01	17.3	11.38	33.02	17.4	21.63	23.68	17.5	33.79	34.65
18.3	14.37	10.84	18.3	41.82	8.18	18.3	11.13	33.17	18.4	21.56	23.97	18.5	33.82	34.92
19.3	14.13	10.97	19.3	41.01	8.35	19.3	10.86	33.31	19.4	21.51	24.25	19.5	33.86	35.23
20.3	13.91	11.11	20.3	40.24	8.51	20.3	10.57	33.42	20.4	21.47	24.53	20.5	33.90	35.50
21.3	13.69	11.25	21.3	39.50	8.70	21.3	10.27	33.53	21.4	21.44	24.80	21.5	33.96	35.77
22.3	13.47	11.41	22.3	38.76	8.92	22.3	9.98	33.60	22.4	21.43	25.09	22.5	34.04	36.05
23.3	13.25	11.59	23.3	37.96	9.14	23.3	9.70	33.66	23.4	21.42	25.40	23.5	34.13	36.37
24.3	13.01	11.77	24.3	37.10	9.37	24.3	9.43	33.70	24.4	21.38	25.75	24.5	34.20	36.70
25.3	12.73	11.93	25.3	36.14	9.62	25.3	9.18	33.70	25.4	21.34	26.09	25.5	34.26	37.06
26.3	12.44	12.09	26.3	35.10	9.83	26.3	8.94	33.72	26.4	21.26	26.44	26.5	34.31	37.43
27.3	12.13	12.23	27.3	34.00	10.02	27.3	8.70	33.76	27.4	21.17	26.79	27.5	34.33	37.80
28.3	11.81	12.33	28.3	32.88	10.17	28.3	8.47	33.80	28.4	21.05	27.11	28.5	34.32	38.15
29.3	11.50	12.40	29.3	31.78	10.30	29.3	8.23	33.85	29.4	20.92	27.41	29.5	34.28	38.48
30.3	11.21	12.45	30.3	30.70	10.40	30.3	7.96	33.94	30.4	20.79	27.67	30.5	34.24	38.80
31.3	10.94	12.49	31.3	29.73	10.50	31.3	7.69	34.01	31.4	20.66	27.91	31.5	34.20	39.06
13.72	+13.68		50.65	+50.64		11.93	-11.89		12.31	+12.27		11.85	+11.81	
0 ^h 57 ^m	1° 657		1 ^h 29 ^m	44° 254		1 ^h 42 ^m	6° 102		4 ^h 9 ^m	44° 952		5 ^h 34 ^m	54° 014	
+85° 48'	25'' .87		+88° 51'	25'' .03		-85° 11'	39'' .58		+85° 20'	1'' .04		+85° 9'	28'' .07	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

31 G. Mensæ. Mag. 6.2			ζ Mensæ. Mag. 5.6			51 H. Cephei. Mag. 5.3			25 H. Camelop. Mag. 5.1			7 G. Octar Mag. 6.	
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.
Dec.	h m ° '		Dec.	h m ° '		Dec.	h m ° '		Dec.	h m ° '		Dec.	h m ° '
	5 46	-84 49	Dec.	6 47	-80 43	Dec.	7 2	+87 10	Dec.	7 13	+82 34	Dec.	7 16
	s "	" "		s "	" "		s "	" "		s "	" "		s "
0.5	26.75	37.60	0.6	4.37	25.09	0.6	33.98	45.09	0.6	53.80	19.78	0.6	34.13
1.5	26.81	37.91	1.6	4.43	25.37	1.6	34.33	45.35	1.6	53.94	20.03	1.6	34.35
2.5	26.87	38.23	2.6	4.50	25.68	2.6	34.65	45.60	2.6	54.08	20.24	2.6	34.58
3.5	26.93	38.59	3.6	4.57	26.01	3.6	34.94	45.83	3.6	54.21	20.44	3.6	34.83
4.5	26.97	38.97	4.6	4.64	26.39	4.6	35.23	46.03	4.6	54.32	20.63	4.6	35.07
5.5	27.00	39.36	5.6	4.70	26.77	5.6	35.55	46.23	5.6	54.44	20.81	5.6	35.28
6.5	27.01	39.76	6.6	4.76	27.14	6.6	35.88	46.42	6.6	54.59	20.99	6.6	35.47
7.5	27.01	40.15	7.6	4.81	27.53	7.6	36.23	46.61	7.6	54.73	21.17	7.6	35.65
8.5	27.00	40.52	8.6	4.84	27.90	8.6	36.59	46.83	8.6	54.88	21.35	8.6	35.79
9.5	26.98	40.89	9.6	4.89	28.27	9.6	36.96	47.06	9.6	55.04	21.56	9.6	35.91
10.5	26.96	41.23	10.6	4.92	28.62	10.6	37.31	47.33	10.6	55.19	21.79	10.6	36.02
11.5	26.93	41.56	11.6	4.94	28.95	11.6	37.67	47.59	11.6	55.34	22.02	11.6	36.14
12.5	26.91	41.87	12.6	4.97	29.29	12.6	38.01	47.88	12.6	55.48	22.29	12.6	36.24
13.5	26.90	42.17	13.6	5.00	29.61	13.6	38.30	48.17	13.6	55.62	22.57	13.6	36.35
14.5	26.89	42.49	14.6	5.03	29.93	14.6	38.58	48.48	14.6	55.73	22.84	14.6	36.48
15.5	26.87	42.81	15.5	5.07	30.27	15.6	38.82	48.79	15.6	55.83	23.12	15.6	36.61
16.5	26.87	43.14	16.5	5.09	30.60	16.6	39.06	49.08	16.6	55.93	23.39	16.6	36.74
17.5	26.85	43.51	17.5	5.12	30.97	17.6	39.25	49.36	17.6	56.02	23.64	17.6	36.88
18.5	26.82	43.88	18.5	5.15	31.33	18.6	39.45	49.62	18.6	56.11	23.88	18.6	37.01
19.5	26.79	44.26	19.5	5.18	31.73	19.5	39.66	49.87	19.6	56.20	24.12	19.6	37.12
20.5	26.75	44.65	20.5	5.19	32.14	20.5	39.88	50.11	20.6	56.28	24.35	20.6	37.22
21.5	26.67	45.04	21.5	5.21	32.56	21.5	40.12	50.35	21.6	56.39	24.56	21.6	37.28
22.5	26.59	45.41	22.5	5.22	32.97	22.5	40.38	50.58	22.5	56.52	24.77	22.6	37.32
23.5	26.50	45.77	23.5	5.21	33.36	23.5	40.66	50.85	23.5	56.64	25.01	23.5	37.32
24.5	26.40	46.11	24.5	5.20	33.73	24.5	40.95	51.15	24.5	56.77	25.27	24.5	37.32
25.5	26.30	46.41	25.5	5.19	34.08	25.5	41.22	51.45	25.5	56.89	25.55	25.5	37.28
26.5	26.20	46.70	26.5	5.17	34.41	26.5	41.46	51.79	26.5	57.00	25.88	23.5	37.21
27.5	26.11	46.99	27.5	5.16	34.75	27.5	41.66	52.13	27.5	57.10	26.20	27.5	37.27
28.5	26.03	47.30	28.5	5.15	35.06	28.5	41.83	52.48	28.5	57.18	26.53	28.5	37.27
29.5	25.96	47.61	29.5	5.15	35.39	29.5	41.95	52.82	29.5	57.23	26.84	29.5	37.30
30.5	25.88	47.95	30.5	5.15	35.76	30.5	42.05	53.14	30.5	57.29	27.14	30.5	37.34
31.5	25.81	48.31	31.5	5.15	36.15	31.5	42.13	53.42	31.5	57.32	27.41	31.5	37.37
11.08	-11.04		6.20	-6.12		20.33	+20.30		7.74	+7.67		18.49	-11.04
5 ^h 46 ^m	26°.439		6 ^h 47 ^m	3°.489		7 ^h 1 ^m	34°.861		7 ^h 13 ^m	29°.477		7 ^h 16 ^m	41°.171
-84° 49' 48".17			-80° 43' 34".16			+87° 11' 0".11			+82° 34' 36".50			-86° 54' 48".17	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

Groombridge 1119. Mag. 7.0			ζ Octantis. Mag. 5.4			1 H. Draconis. Mag. 4.6			ζ Chamaeleontis. Mag. 5.2			30 H. Camelop. Mag. 5.3		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Dec.	h m ° ' "	h m ° ' "	Dec.	h m ° ' "	h m ° ' "	Dec.	h m ° ' "	h m ° ' "	Dec.	h m ° ' "	h m ° ' "	Dec.	h m ° ' "	h m ° ' "
0.7	48.42	44.23	0.7	0.86	39.71	0.7	27.82	21.56	0.7	23.29	48.85	0.7	9.06	31.78
1.6	49.52	44.40	1.7	1.09	39.86	1.7	28.00	21.60	1.7	23.42	48.99	1.7	9.26	31.73
2.6	50.53	44.55	2.7	1.33	40.03	2.7	28.15	21.65	2.7	23.55	49.13	2.7	9.45	31.70
3.6	51.49	44.70	3.7	1.61	40.20	3.7	28.30	21.69	3.7	23.69	49.29	3.7	9.63	31.67
4.6	52.42	44.83	4.7	1.87	40.42	4.7	28.44	21.72	4.7	23.83	49.46	4.7	9.81	31.64
5.6	53.38	44.94	5.7	2.13	40.65	5.7	28.59	21.73	5.7	23.98	49.67	5.7	9.98	31.59
6.6	54.35	45.06	6.7	2.38	40.93	6.7	28.74	21.72	6.7	24.12	49.90	6.7	10.15	31.53
7.6	55.40	45.17	7.7	2.63	41.19	7.7	28.92	21.73	7.7	24.26	50.14	7.7	10.34	31.45
8.6	56.50	45.29	8.7	2.85	41.46	8.7	29.09	21.73	8.7	24.40	50.38	8.7	10.53	31.38
9.6	57.61	45.44	9.7	3.05	41.72	9.7	29.26	21.76	9.7	24.51	50.62	9.7	10.74	31.33
10.6	58.74	45.61	10.7	3.25	41.98	10.7	29.44	21.80	10.7	24.62	50.86	10.7	10.96	31.30
11.6	59.86	45.79	11.7	3.44	42.22	11.7	29.63	21.86	11.7	24.74	51.10	11.7	11.18	31.28
12.6	60.95	45.98	12.7	3.62	42.44	12.7	29.80	21.94	12.7	24.85	51.33	12.7	11.40	31.26
13.6	61.99	46.21	13.7	3.80	42.68	13.7	29.97	22.05	13.7	24.96	51.53	13.7	11.61	31.27
14.6	62.96	46.44	14.6	3.99	42.90	14.7	30.13	22.19	14.7	25.07	51.74	14.7	11.81	31.31
15.6	63.87	46.67	15.6	4.18	43.14	15.7	30.29	22.31	15.7	25.17	51.96	15.7	12.02	31.36
16.6	64.72	46.90	16.6	4.38	43.38	16.7	30.44	22.43	16.7	25.29	52.18	16.7	12.20	31.42
17.6	65.51	47.13	17.6	4.61	43.63	17.7	30.58	22.56	17.7	25.40	52.40	17.7	12.38	31.48
18.6	66.27	47.34	18.6	4.81	43.90	18.6	30.72	22.68	18.7	25.53	52.64	18.7	12.55	31.53
19.6	67.02	47.54	19.6	5.02	44.19	19.6	30.85	22.78	19.7	25.65	52.92	19.7	12.72	31.57
20.6	67.80	47.72	20.6	5.23	44.51	20.6	30.98	22.87	20.7	25.77	53.21	20.7	12.88	31.59
21.6	68.62	47.92	21.6	5.43	44.86	21.6	31.13	22.92	21.6	25.89	53.53	21.7	13.06	31.60
22.6	69.50	48.10	22.6	5.61	45.19	22.6	31.28	23.00	22.6	26.00	53.86	22.7	13.24	31.61
23.6	70.45	48.29	23.6	5.76	45.56	23.6	31.44	23.11	23.6	26.11	54.19	23.7	13.44	31.62
24.6	71.43	48.50	24.6	5.90	45.89	24.6	31.62	23.21	24.6	26.21	54.52	24.7	13.65	31.63
25.6	72.41	48.73	25.6	6.02	46.22	25.6	31.79	23.34	25.6	26.30	54.84	25.7	13.87	31.67
26.6	73.33	49.00	26.6	6.14	46.51	26.6	31.97	23.48	26.6	26.38	55.14	26.7	14.09	31.74
27.6	74.19	49.28	27.6	6.26	46.81	27.6	32.12	23.67	27.6	26.45	55.42	27.7	14.29	31.84
28.6	74.94	49.57	28.6	6.39	47.10	28.6	32.26	23.87	28.6	26.54	55.69	28.7	14.48	31.98
29.6	75.59	49.85	29.6	6.53	47.37	29.6	32.39	24.07	29.6	26.62	55.97	29.7	14.66	32.12
30.6	76.16	50.13	30.6	6.68	47.68	30.6	32.50	24.27	30.6	26.72	56.27	30.7	14.81	32.25
31.6	76.68	50.38	31.6	6.86	47.99	31.6	32.61	24.46	31.6	26.82	56.57	31.7	14.97	32.37
51.14	+51.13	12.28	-12.24	6.92	+6.85	6.10	-6.02	8.18	+8.12					
8 ^h 14 ^m 48 ^s .311	9 ^h 9 ^m 6 ^s .085	9 ^h 25 ^m 12 ^s .930	9 ^h 36 ^m 21 ^s .003	10 ^h 20 ^m 57 ^s .259										
+88° 53' 11".43	-85° 19' 42".77	+81° 41' 57".18	-80° 33' 50".61	+82° 59' 12".27										

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

7 Octantis. Mag. 6.3			Bradley 1672. Mag. 6.3			1 Octantis. Mag. 5.4			32 H. Camelop. seq. Mag. 5.3			κ Octantis. Mag. 5.6		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Dec.	h m	° ' "	Dec.	h m	° ' "	Dec.	h m	° ' "	Dec.	h m	° ' "	Dec.	h m	° ' "
	10 59	-84 8		12 14	+88 9		12 45	-84 40		12 48	+83 51		13 27	-85 21
	s	"		s	"		s	"		s	"		s	"
0.8	52.22	33.60	0.8	18.66	13.00	0.8	58.76	9.66	0.8	25.85	28.66	0.9	3.23	32.00
1.8	52.43	33.61	1.8	19.31	12.81	1.8	58.97	9.52	1.8	26.03	28.42	1.9	3.45	31.82
2.8	52.65	33.62	2.8	19.92	12.63	2.8	59.19	9.38	2.8	26.20	28.22	2.9	3.67	31.65
3.8	52.89	33.65	3.8	20.49	12.46	3.8	59.43	9.25	3.8	26.35	28.00	3.9	3.92	31.45
4.8	53.14	33.69	4.8	21.01	12.30	4.8	59.69	9.11	4.8	26.50	27.78	4.9	4.19	31.25
5.8	53.41	33.76	5.8	21.53	12.12	5.8	59.96	9.02	5.8	26.64	27.55	5.9	4.48	31.08
6.8	53.67	33.85	6.8	22.03	11.92	6.8	60.24	8.94	6.8	26.78	27.31	6.9	4.77	30.94
7.7	53.91	33.97	7.8	22.58	11.72	7.8	60.52	8.89	7.8	26.94	27.05	7.8	5.08	30.83
8.7	54.16	34.10	8.8	23.16	11.51	8.8	60.79	8.84	8.8	27.11	26.80	8.8	5.37	30.72
9.7	54.38	34.23	9.8	23.79	11.28	9.8	61.04	8.81	9.8	27.29	26.55	9.8	5.66	30.62
10.7	54.60	34.37	10.8	24.45	11.09	10.8	61.29	8.80	10.8	27.48	26.29	10.8	5.94	30.55
11.7	54.80	34.49	11.8	25.15	10.90	11.8	61.54	8.77	11.8	27.68	26.04	11.8	6.20	30.48
12.7	55.00	34.59	12.8	25.87	10.74	12.8	61.77	8.72	12.8	27.88	25.82	12.8	6.45	30.38
13.7	55.22	34.70	13.8	26.59	10.58	13.8	62.00	8.71	13.8	28.09	25.61	13.8	6.70	30.29
14.7	55.40	34.80	14.8	27.31	10.45	14.8	62.22	8.67	14.8	28.30	25.42	14.8	6.94	30.21
15.7	55.61	34.90	15.8	28.02	10.35	15.8	62.45	8.63	15.8	28.51	25.26	15.8	7.20	30.10
16.7	55.83	35.01	16.8	28.70	10.25	16.8	62.69	8.59	16.8	28.71	25.10	16.8	7.46	30.00
17.7	56.06	35.12	17.8	29.35	10.17	17.8	62.95	8.55	17.8	28.89	24.96	17.8	7.74	29.89
18.7	56.29	35.25	18.8	29.96	10.08	18.8	63.22	8.49	18.8	29.08	24.82	18.8	8.03	29.78
19.7	56.52	35.40	19.8	30.55	9.98	19.8	63.49	8.49	19.8	29.26	24.68	19.8	8.34	29.68
20.7	56.77	35.58	20.8	31.12	9.88	20.8	63.78	8.49	20.8	29.42	24.51	20.8	8.67	29.61
21.7	57.00	35.78	21.8	31.71	9.74	21.8	64.09	8.52	21.8	29.59	24.34	21.8	9.01	29.57
22.7	57.24	36.01	22.8	32.33	9.62	22.8	64.38	8.57	22.8	29.77	24.17	22.8	9.35	29.56
23.7	57.46	36.24	23.8	32.98	9.49	23.8	64.66	8.66	23.8	29.98	23.98	23.8	9.68	29.57
24.7	57.66	36.47	24.8	33.68	9.36	24.8	64.94	8.75	24.8	30.18	23.78	24.8	9.98	29.60
25.7	57.85	36.71	25.8	34.44	9.25	25.8	65.18	8.84	25.8	30.41	23.60	25.8	10.27	29.63
26.7	58.02	36.92	26.7	35.22	9.18	26.8	65.42	8.92	26.8	30.65	23.45	26.8	10.56	29.66
27.7	58.20	37.12	27.7	36.01	9.09	27.8	65.65	8.99	27.8	30.89	23.34	27.8	10.81	29.67
28.7	58.37	37.30	28.7	36.77	9.06	28.8	65.88	9.03	28.8	31.12	23.24	28.8	11.08	29.65
29.7	58.56	37.47	29.7	37.49	9.04	29.8	66.11	9.07	29.8	31.32	23.15	29.8	11.35	29.64
30.7	58.76	37.66	30.7	38.16	9.03	30.8	66.38	9.12	30.8	31.53	23.09	30.8	11.63	29.60
31.7	58.98	37.88	31.7	38.79	9.03	31.8	66.64	9.16	31.8	31.72	23.04	31.8	11.96	29.57
9.80	-9.75		31.02	+31.01		10.76	-10.72		9.35	+9.29		12.36	-12.82	
10 ^h 59 ^m	55°.642		12 ^h 14 ^m	28°.053		12 ^h 46 ^m	1°.183		12 ^h 48 ^m	29°.976		13 ^h 27 ^m	5°.514	
-84° 8'	31''.24		+88° 9'	56''.03		-84° 40'	2''.72		+83° 52'	10''.05		-85° 21'	23''.59	

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Octantis. Mag. 4.1			Groombridge 2283. Mag. 7.2			ρ Octantis. Mag. 5.7			ε Ursæ Minoris. Mag. 4.4			59 G. Apodis. Mag. 5.9		
Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.	Wash. Mean Time.	Right Ascension.	Declination.
Dec.	h m	° ' "	Dec.	h m	° ' "	Dec.	h m	° ' "	Dec.	h m	° ' "	Dec.	h m	° ' "
	14 13	-83 17		15 3	+87 32		15 23	-84 11		16 54	+82 10		17 15	-80 47
0.9	19.15	13.86	0.9	11.71	56.85	0.9	45.62	28.47	1.0	14.64	29.84	1.0	48.73	12.91
1.9	19.27	13.64	1.9	11.89	56.50	1.9	45.70	28.21	2.0	14.62	29.49	2.0	48.72	12.61
2.9	19.40	13.40	2.9	12.04	56.18	2.9	45.79	27.92	3.0	14.60	29.15	3.0	48.71	12.29
3.9	19.54	13.15	3.9	12.20	55.88	3.9	45.91	27.61	4.0	14.57	28.82	4.0	48.71	11.94
4.9	19.71	12.91	4.9	12.31	55.58	4.9	46.03	27.29	4.9	14.54	28.51	5.0	48.73	11.58
5.9	19.88	12.69	5.9	12.42	55.27	5.9	46.18	26.97	5.9	14.51	28.20	6.0	48.75	11.22
6.9	20.07	12.49	6.9	12.52	54.96	6.9	46.35	23.68	6.9	14.47	27.88	7.0	48.79	10.87
7.9	20.27	12.31	7.9	12.61	54.63	7.9	46.52	26.40	7.9	14.44	27.56	8.0	48.83	10.54
8.9	20.46	12.15	8.9	12.73	54.28	8.9	46.70	26.14	8.9	14.41	27.22	9.0	48.88	10.22
9.9	20.65	12.01	9.9	12.85	53.92	9.9	46.87	25.92	9.9	14.39	26.86	9.9	48.94	9.93
10.9	20.83	11.86	10.9	13.05	53.55	10.9	47.04	25.70	10.9	14.37	26.48	10.9	48.99	9.65
11.9	21.00	11.73	11.9	13.27	53.19	11.9	47.20	25.50	11.9	14.36	26.08	11.9	49.04	9.38
12.9	21.16	11.61	12.9	13.51	52.82	12.9	47.35	25.29	12.9	14.35	25.69	12.9	49.10	9.11
13.9	21.32	11.47	13.9	13.77	52.45	13.9	47.50	25.08	13.9	14.36	25.30	13.9	49.14	8.84
14.9	21.48	11.33	14.9	14.05	52.17	14.9	47.63	24.86	14.9	14.37	24.92	14.9	49.17	8.55
15.9	21.65	11.18	15.9	14.33	51.86	15.9	47.77	24.64	15.9	14.39	24.55	15.9	49.20	8.26
16.9	21.82	11.02	16.9	14.62	51.58	16.9	47.91	24.38	16.9	14.40	24.19	16.9	49.24	7.97
17.9	21.99	10.86	17.9	14.90	51.31	17.9	48.08	24.12	17.9	14.42	23.86	17.9	49.28	7.65
18.9	22.18	10.69	18.9	15.15	51.04	18.9	48.25	23.87	18.9	14.44	23.55	18.9	49.32	7.32
19.8	22.38	10.53	19.9	15.39	50.79	19.9	48.43	23.62	19.9	14.45	23.24	19.9	49.38	6.99
20.8	22.60	10.40	20.9	15.61	50.53	20.9	48.65	23.39	20.9	14.46	22.93	20.9	49.46	6.65
21.8	22.82	10.29	21.9	15.82	50.24	21.9	48.87	23.17	21.9	14.47	22.60	21.9	49.55	6.32
22.8	23.05	10.22	22.9	16.04	49.93	22.9	49.10	22.98	22.9	14.49	22.28	22.9	49.63	6.01
23.8	23.28	10.16	23.9	16.29	49.62	23.9	49.33	22.82	23.9	14.49	21.93	23.9	49.73	5.72
24.8	23.50	10.12	24.9	16.56	49.30	24.9	49.57	22.68	24.9	14.52	21.56	24.9	49.84	5.46
25.8	23.70	10.08	25.9	16.86	48.97	25.9	49.78	22.55	25.9	14.55	21.17	25.9	49.94	5.22
26.8	23.89	10.05	26.9	17.22	48.65	26.9	49.98	22.42	26.9	14.58	20.78	26.9	50.02	5.00
27.8	24.08	10.00	27.9	17.61	48.36	27.9	50.16	22.28	27.9	14.62	20.40	27.9	50.10	4.77
28.8	24.26	9.93	28.9	18.00	48.09	28.9	50.34	22.11	28.9	14.68	20.04	28.9	50.17	4.51
29.8	24.44	9.85	29.9	18.39	47.86	29.9	50.53	21.94	29.9	14.74	19.70	29.9	50.24	4.25
30.8	24.63	9.76	30.9	18.77	47.63	30.9	50.72	21.76	30.9	14.80	19.38	30.9	50.31	3.96
31.8	24.85	9.66	31.9	19.12	47.42	31.9	50.93	21.57	31.9	14.86	19.09	31.9	50.39	3.65
8.55	-8.50	23.37	+23.35	9.88	-9.83	7.34	+7.28	6.24	-6.16					
14 ^h 13 ^m 18 ^s .531	15 ^h 3 ^m 0 ^s .607	15 ^h 23 ^m 43 ^s .237	16 ^h 54 ^m 31 ^s .741	17 ^h 15 ^m 43 ^s .730										
-83° 17' 4".27	+87° 33' 24".43	-84° 11' 17".84	+82° 10' 38".40	-80° 47' 2".69										

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

δ Ursae Minoris. Mag. 4.4			χ Octantis. Mag. 5.2			λ Ursae Minoris. Mag. 6.6			σ Octantis. Mag. 5.5			76 Draconis. Mag. 5.7		
Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.	Wash. Mean Time.	Right Ascen- sion.	Decli- nation.
Dec.	h m 17 58 s	° ' +86 36 "	Dec.	h m 18 5 s	° ' -87 39 "	Dec.	h m 19 0 s	° ' +89 1 "	Dec.	h m 19 26 s	° ' -89 13 "	Dec.	h m 20 48 s	° ' +82 13 "
1.1	35.42	54.68	1.1	48.80	61.89	1.1	75.69	11.87	1.1	53.07	43.09	1.2	33.73	48.44
2.0	35.24	54.36	2.1	48.65	61.59	2.1	74.77	11.59	2.1	52.11	42.83	2.2	33.58	48.29
3.0	35.07	54.05	3.1	48.49	61.28	3.1	73.92	11.35	3.1	51.09	42.56	3.2	33.43	48.14
4.0	34.92	53.77	4.0	48.35	60.92	4.1	73.10	11.12	4.1	50.07	42.26	4.2	33.29	48.03
5.0	34.75	53.50	5.0	48.24	60.55	5.1	72.26	10.90	5.1	49.13	41.94	5.2	33.16	47.93
6.0	34.59	53.24	6.0	48.18	60.17	6.1	71.39	10.68	6.1	48.29	41.61	6.2	33.03	47.83
7.0	34.40	52.97	7.0	48.16	59.80	7.1	70.46	10.47	7.1	47.54	41.27	7.2	32.89	47.73
8.0	34.21	52.68	8.0	48.17	59.44	8.1	69.49	10.25	8.1	46.92	40.93	8.2	32.74	47.64
9.0	34.02	52.38	9.0	48.21	59.09	9.1	68.51	10.04	9.1	46.41	40.60	9.2	32.59	47.53
10.0	33.83	52.06	10.0	48.26	58.75	10.1	67.51	9.78	10.1	45.95	40.27	10.1	32.43	47.40
11.0	33.65	51.72	11.0	48.31	58.44	11.1	66.55	9.52	11.1	45.53	39.97	11.1	32.28	47.25
12.0	33.49	51.36	12.0	48.36	58.15	12.1	65.63	9.21	12.1	45.11	39.67	12.1	32.13	47.09
13.0	33.34	51.01	13.0	48.40	57.85	13.1	64.78	8.91	13.1	44.65	39.38	13.1	31.98	46.91
14.0	33.23	50.67	14.0	48.42	57.53	14.1	63.99	8.60	14.1	44.17	39.09	14.1	31.83	46.71
15.0	33.13	50.32	15.0	48.42	57.22	15.1	63.27	8.29	15.1	43.63	38.80	15.1	31.68	46.51
16.0	33.05	49.97	16.0	48.42	56.92	16.1	62.64	7.99	16.1	43.07	38.50	16.1	31.55	46.29
17.0	32.98	49.63	17.0	48.41	56.60	17.1	62.05	7.71	17.1	42.47	38.19	17.1	31.42	46.07
18.0	32.92	49.31	18.0	48.42	56.24	18.1	61.50	7.40	18.1	41.90	37.85	18.1	31.30	45.86
19.0	32.86	49.01	19.0	48.47	55.88	19.0	60.97	7.14	19.1	41.34	37.50	19.1	31.19	45.66
20.0	32.79	48.73	20.0	48.54	55.50	20.0	60.41	6.87	20.1	40.88	37.12	20.1	31.09	45.48
20.9	32.72	48.43	21.0	48.68	55.12	21.0	59.82	6.61	21.1	40.52	36.75	21.1	30.97	45.31
21.9	32.64	48.13	22.0	48.82	54.74	22.0	59.17	6.35	22.1	40.32	36.36	22.1	30.85	45.15
22.9	32.55	47.82	22.9	49.00	54.38	23.0	58.47	6.09	23.1	40.25	35.96	23.1	30.73	44.99
23.9	32.46	47.50	23.9	49.25	54.03	24.0	57.72	5.80	24.1	40.30	35.60	24.1	30.60	44.81
24.9	32.36	47.15	24.9	49.49	53.71	25.0	56.98	5.49	25.0	40.41	35.26	25.1	30.47	44.60
25.9	32.26	46.78	25.9	49.73	53.41	26.0	56.30	5.17	26.0	40.52	34.93	26.1	30.34	44.38
26.9	32.20	46.37	26.9	49.94	53.12	27.0	55.71	4.82	27.0	40.58	34.61	27.1	30.20	44.13
27.9	32.15	45.98	27.9	50.11	52.85	28.0	55.22	4.47	28.0	40.55	34.31	28.1	30.08	43.84
28.9	32.14	45.61	28.9	50.25	52.55	29.0	54.86	4.13	29.0	40.43	34.00	29.1	29.97	43.55
29.9	32.16	45.28	29.9	50.39	52.24	30.0	54.59	3.81	30.0	40.25	33.67	30.1	29.87	43.28
30.9	32.20	44.94	30.9	50.53	51.91	31.0	54.37	3.48	31.0	40.04	33.32	31.1	29.77	43.01
31.9	32.24	44.64	31.9	50.69	51.53	32.0	54.17	3.20	32.0	39.88	32.96	32.1	29.69	42.76
16.93	+16.90		24.55	-24.53		58.41	+58.40		74.17	-74.16		7.40	+7.33	
17 ^h 59 ^m 20 ^s .805			18 ^h 5 ^m 36 ^s .163			19 ^h 3 ^m 51 ^s .560			19 ^h 26 ^m 7 ^s .189			20 ^h 48 ^m 44 ^s .660		
+86° 36' 51".19			-87° 39' 52".21			+89° 0' 56".70			-89° 13' 35".99			+82° 13' 16".38		

CIRCUMPOLAR STARS.

FOR THE UPPER TRANSIT AT WASHINGTON.

λ Octantis. Mag. 5.4			ν Octantis. Mag. 5.7			β Octantis. Mag. 4.3			39 H. Cephei. Mag. 5.6			γ ¹ Octantis. Mag. 5.1		
Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.	Wash. Mean Time.	Right Ascen- sion.	Declina- tion.
Dec.	h m	° ' "	Dec.	h m	° ' "	Dec.	h m	° ' "	Dec.	h m	° ' "	Dec.	h m	° ' "
	21 38	-83 6		22 16	-86 23		22 37	-81 49		23 27	+86 51		23 47	-82 29
	s	"		s	"		s	"		s	"		s	"
1.2	19.85	24.22	1.2	11.75	44.49	1.2	41.51	19.01	1.3	44.88	22.83	1.3	21.62	3.21
2.2	19.68	24.14	2.2	11.43	44.44	2.2	41.37	19.00	2.3	44.49	22.93	2.3	21.46	3.30
3.2	19.60	24.03	3.2	11.06	44.38	3.2	41.21	18.98	3.3	44.12	23.03	3.3	21.29	3.38
4.2	19.32	23.90	4.2	10.69	44.31	4.2	41.05	18.95	4.3	43.77	23.13	4.3	21.11	3.45
5.2	19.14	23.75	5.2	10.32	44.20	5.2	40.88	18.89	5.3	43.44	23.24	5.3	20.93	3.51
6.2	18.97	23.57	6.2	9.96	44.06	6.2	40.72	18.80	6.3	43.12	23.36	6.3	20.74	3.54
7.2	18.81	23.38	7.2	9.60	43.92	7.2	40.56	18.70	7.3	42.79	23.49	7.3	20.56	3.54
8.2	18.66	23.17	8.2	9.26	43.74	8.2	40.41	18.57	8.3	42.44	23.63	8.3	20.38	3.54
9.2	18.53	22.95	9.2	8.95	43.57	9.2	40.28	18.45	9.3	42.06	23.77	9.3	20.22	3.51
10.2	18.39	22.74	10.2	8.67	43.42	10.2	40.15	18.33	10.3	41.67	23.90	10.3	20.08	3.47
11.2	18.27	22.54	11.2	8.38	43.26	11.2	40.03	18.21	11.3	41.26	24.02	11.3	19.93	3.43
12.2	18.16	22.36	12.2	8.11	43.11	12.2	39.91	18.09	12.3	40.83	24.10	12.3	19.79	3.41
13.2	18.04	22.18	13.2	7.86	42.97	13.2	39.79	17.97	13.2	40.40	24.17	13.3	19.64	3.40
14.2	17.92	22.03	14.2	7.59	42.83	14.2	39.66	17.87	14.2	39.97	24.23	14.3	19.50	3.38
15.2	17.79	21.87	15.2	7.29	42.70	15.2	39.54	17.79	15.2	39.54	24.26	15.3	19.35	3.37
16.2	17.64	21.69	16.2	6.98	42.56	16.2	39.41	17.70	16.2	39.12	24.29	16.3	19.19	3.36
17.2	17.50	21.50	17.2	6.67	42.42	17.2	39.26	17.60	17.2	38.73	24.30	17.3	19.01	3.35
18.2	17.36	21.30	18.2	6.35	42.27	18.2	39.11	17.48	18.2	38.36	24.28	18.3	18.84	3.34
19.2	17.20	21.08	19.2	6.01	42.09	19.2	38.96	17.35	19.2	38.01	24.30	19.2	18.66	3.31
20.2	17.05	20.84	20.2	5.67	41.88	20.2	38.82	17.18	20.2	37.67	24.33	20.2	18.47	3.26
21.2	16.91	20.58	21.2	5.35	41.63	21.2	38.67	16.98	21.2	37.32	24.37	21.2	18.29	3.18
22.2	16.78	20.29	22.2	5.06	41.38	22.2	38.53	16.77	22.2	36.98	24.43	22.2	18.12	3.06
23.2	16.68	20.00	23.2	4.80	41.12	23.2	38.41	16.56	23.2	36.61	24.49	23.2	17.95	2.93
24.1	16.60	19.70	24.2	4.56	40.84	24.2	38.31	16.33	24.2	36.21	24.55	24.2	17.81	2.79
25.1	16.52	19.42	25.2	4.35	40.60	25.2	38.22	16.11	25.2	35.79	24.58	25.2	17.67	2.66
26.1	16.44	19.17	26.2	4.15	40.35	26.2	38.13	15.90	26.2	35.35	24.59	26.2	17.55	2.53
27.1	16.37	18.92	27.2	3.93	40.14	27.2	38.04	15.70	27.2	34.90	24.60	27.2	17.42	2.40
28.1	16.28	18.69	28.2	3.71	39.94	28.2	37.94	15.51	28.2	34.46	24.56	28.2	17.28	2.29
29.1	16.18	18.45	29.2	3.48	39.73	29.2	37.82	15.34	29.2	34.03	24.49	29.2	17.14	2.19
30.1	16.08	18.21	30.2	3.22	39.51	30.2	37.69	15.17	30.2	33.63	24.42	30.2	16.98	2.10
31.1	15.96	17.96	31.2	2.94	39.29	31.2	37.57	14.99	31.2	33.28	24.35	31.2	16.80	2.01
32.1	15.83	17.67	32.1	2.64	39.06	32.2	37.43	14.78	32.2	32.94	24.28	32.2	16.63	1.91
8.33	-8.27		15.90	-15.87		7.03	-6.96		18.24	+18.21		7.65	-7.58	
21 ^h 38 ^m	10°.025		22 ^h 15 ^m	56°.333		22 ^h 37 ^m	32°.703		23 ^h 27 ^m	44°.392		23 ^h 47 ^m	12°.813	
-83° 6'	23''.31		-86° 23'	45''.22		-81° 49'	21''.11		+86° 50'	39''.03		-82° 29'	8''.43	

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	33 Piscium. Mag. 4.7		α Andromedæ. (Alpheratz.) Mag. 2.2		β Cassiopeæ. Mag. 2.4		ϵ Phœnicis. Mag. 3.9	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 0 1	° ' " - 6 10	h m 0 4	° ' " +28 37	h m 0 4	° ' " +58 41	h m 0 5	° ' " -46 12
	s	"	s	"	s	"	s	"
Jan. 0.2	2.843	37.03	2.970	50.08	41.151	33.48	9.974	49.66
10.2	2.743 ¹⁰⁰	37.56 ⁵³	2.839 ¹³¹	49.21 ⁸⁷	40.851 ³⁰⁰	32.80 ⁶⁸	9.779 ¹⁹⁵	49.28 ³⁵
20.2	2.650 ⁹³	38.00 ⁴⁴	2.714 ¹²⁵	48.07 ¹¹⁴	40.563 ²⁸⁸	31.60 ¹²⁰	9.598 ¹⁸¹	48.45 ⁸³
30.1	2.568 ⁸²	38.30 ³⁰	2.602 ¹¹²	46.73 ¹³⁴	40.298 ²⁶⁵	29.93 ¹⁶⁷	9.440 ¹⁵⁸	47.17 ¹²⁸
Feb. 9.1	2.501 ⁶⁷	38.44 ¹⁴	2.507 ⁹⁵	45.24 ¹⁴⁹	40.071 ²²⁷	27.86 ²⁰⁷	9.307 ¹³³	45.49 ¹⁶⁸
	46	4	70	159	181	236	100	205
19.1	2.455	38.40	2.437	43.65	39.890	25.50	9.207	43.44
29.1	2.434 ²¹	38.18 ²²	2.398 ³⁹	42.05 ¹⁰⁰	39.770 ¹²⁰	22.91 ²⁵⁹	9.144 ⁶³	41.07 ²³⁷
Mar. 10.0	2.444 ¹⁰	37.74 ⁴⁴	2.394 ⁴	40.52 ¹⁵³	39.718 ⁵²	20.23 ²⁶⁸	9.123 ²¹	38.42 ²⁶⁵
20.0	2.487 ⁴³	37.06 ⁶⁸	2.432 ³⁸	39.13 ¹³⁹	39.740 ²²	17.56 ²⁶⁷	9.148 ²⁵	35.56 ²⁸⁶
30.0	2.567 ⁸⁰	36.15 ⁹¹	2.515 ⁸³	37.95 ¹¹⁸	39.842 ¹⁰²	15.03 ²⁵³	9.222 ⁷⁴	32.53 ³⁰³
	118	115	130	90	182	231	125	312
Apr. 9.0	2.685	35.00	2.645	37.05	40.024	12.72	9.347	29.41
18.9	2.843 ¹⁵⁸	33.61 ¹³⁹	2.821 ¹⁷⁶	36.48 ⁵⁷	40.282 ²⁵⁸	10.74 ¹⁹⁸	9.524 ¹⁷⁷	26.25 ³¹⁶
28.9	3.039 ¹⁹⁶	32.02 ¹⁵⁹	3.041 ²²⁰	36.28 ²⁰	40.612 ³³⁰	9.17 ¹⁵⁷	9.751 ²²⁷	23.10 ³¹⁵
May 8.9	3.271 ²³²	30.23 ¹⁷⁹	3.301 ²⁶⁰	36.47 ¹⁹	41.004 ³⁹²	8.06 ¹¹¹	10.026 ²⁷⁵	20.06 ³⁰⁴
18.8	3.532 ²⁶¹	28.30 ¹⁹³	3.596 ²⁹⁵	37.05 ⁵⁸	41.448 ⁴⁴⁴	7.45 ⁶¹	10.344 ³¹⁸	17.17 ²⁸⁹
	288	205	322	95	485	8	353	266
28.8	3.820	26.25	3.918	38.00	41.933	7.37	10.697	14.51
June 7.8	4.128 ³⁰⁸	24.13 ²¹²	4.258 ³⁴⁰	39.33 ¹³³	42.444 ⁵¹¹	7.82 ⁴⁵	11.077 ³⁹⁰	12.12 ²³⁹
17.8	4.446 ³¹⁸	22.02 ²¹¹	4.610 ³⁵²	40.98 ¹⁶⁵	42.967 ⁵²³	8.79 ⁹⁷	11.477 ⁴⁰⁰	10.08 ³⁰⁴
27.7	4.767 ³²¹	19.96 ²⁰⁶	4.962 ³⁵²	42.91 ¹⁹³	43.490 ⁵²³	10.25 ¹⁴⁶	11.885 ⁴⁰⁸	8.44 ¹⁶⁴
July 7.7	5.082 ³¹⁵	17.99 ¹⁹⁷	5.306 ³⁴⁴	45.08 ²¹⁷	43.999 ⁵⁰⁹	12.17 ¹⁹²	12.291 ⁴⁰⁶	7.23 ¹²¹
	302	182	329	235	481	231	391	75
17.7	5.384	16.17	5.635	47.43	44.480	14.48	12.682	6.48
27.7	5.665 ²⁸¹	14.53 ¹⁶⁴	5.940 ³⁰⁵	49.90 ²⁴⁷	44.925 ⁴⁴⁵	17.15 ²⁶⁷	13.050 ³⁶⁸	6.22 ²⁶
Aug. 6.6	5.920 ²⁵⁵	13.12 ¹⁴¹	6.215 ²⁷⁵	52.43 ²⁵³	45.323 ³⁹⁸	20.11 ²⁹⁶	13.386 ³³⁶	6.43 ²¹
16.6	6.142 ²²²	11.97 ¹¹⁵	6.454 ²³⁹	54.98 ²⁵⁵	45.667 ³⁴⁴	23.28 ³¹⁷	13.679 ²⁹³	7.10 ⁶⁷
26.6	6.328 ¹⁸⁶	11.07 ⁹⁰	6.655 ²⁰¹	57.49 ²⁵¹	45.953 ²⁸⁶	26.62 ³³⁴	13.924 ²⁴⁵	8.22 ¹¹²
	150	59	160	241	223	342	189	150
Sept. 5.5	6.478	10.48	6.815	59.90	46.176	30.04	14.113	9.72
15.5	6.585 ¹⁰⁷	10.15 ³³	6.933 ¹¹⁸	62.18 ²²⁸	46.336 ¹⁶⁰	33.48 ³⁴⁴	14.247 ¹³⁴	11.54 ¹⁸²
25.5	6.656 ⁷¹	10.05 ¹⁰	7.011 ⁷⁸	64.29 ²¹¹	46.431 ⁹⁶	36.88 ³⁴⁰	14.323 ⁷⁸	13.63 ²⁰⁹
Oct. 5.5	6.689 ³³	10.19 ¹⁴	7.051 ⁴⁰	66.19 ¹⁹⁰	46.464 ³³	40.16 ³²⁸	14.344 ²¹	15.86 ²²³
15.4	6.691 ²	10.55 ³⁶	7.056 ⁵	67.86 ¹⁶⁷	46.438 ²⁶	43.24 ³⁰⁸	14.310 ³⁴	18.17 ³³¹
	29	50	28	142	82	285	81	228
25.4	6.662	11.05	7.028	69.28	46.356	46.09	14.229	20.45
Nov. 4.4	6.610 ⁵²	11.65 ⁶⁰	6.974 ⁵⁴	70.42 ¹¹⁴	46.223 ¹³³	48.61 ²⁵²	14.107 ¹²²	22.59 ²¹⁴
14.4	6.537 ⁷³	12.36 ⁷¹	6.894 ⁸⁰	71.27 ⁸⁵	46.043 ¹⁸⁰	50.76 ²¹⁵	13.951 ¹⁵⁶	24.53 ¹⁹⁴
24.3	6.452 ⁸⁵	13.12 ⁷⁶	6.797 ⁹⁷	71.81 ⁵⁴	45.823 ²²⁰	52.48 ¹⁷²	13.770 ¹⁸¹	26.16 ¹⁶³
Dec. 4.3	6.354 ⁹⁸	13.88 ⁷⁶	6.683 ¹¹⁴	72.03 ²²	45.570 ²⁵³	53.72 ¹²⁴	13.571 ¹⁹⁹	27.42 ¹²⁶
	105	74	124	10	278	72	208	85
14.3	6.249	14.62	6.559	71.93	45.292	54.44	13.363	28.27
24.2	6.142 ¹⁰⁷	15.31 ⁶⁹	6.428 ¹³¹	71.52 ⁴¹	44.998 ²⁹⁴	54.63 ¹⁹	13.153 ²¹⁰	28.67 ⁴⁰
34.2	6.038 ¹⁰⁴	15.91 ⁶⁰	6.294 ¹³⁴	70.79 ⁷³	44.696 ³⁰²	54.27 ³⁶	12.947 ²⁰⁶	28.60 ⁷
Mean Place	2.184	38.90	2.546	36.11	41.242	11.42	9.038	39.56
Sec δ , Tan δ	1.006	-0.108	1.140	+0.546	1.924	+1.645	1.445	-1.043
$D\psi\alpha$, $D_{\omega}\alpha$	+0.06	+0.01	+0.06	-0.04	+0.06	-0.11	+0.06	+0.07
$D\delta$, $D_{\omega}\delta$	+0.4	0.0	+0.4	0.0	+0.4	0.0	+0.4	0.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	22 Andromedæ. Mag. 5.1		γ Pegasi. Mag. 2.9		σ Andromedæ. Mag. 4.5		ι Ceti. Mag. 3.8	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 0 5	° ' " +45 36	h m 0 8	° ' " +14 42	h m 0 13	° ' " +36 19	h m 0 15	° ' " - 9 16
	s	"	s	"	s	"	s	"
Jan. 0.2	57.232	36.43	55.081	69.24	56.546	27.00	9.662	81.06
10.2	57.038 ¹⁹⁴	35.63 ⁸⁰	54.973 ¹⁰⁸	68.45 ⁷⁹	56.393 ¹⁵³	26.21 ⁷⁹	9.556 ¹⁰⁶	81.58 ⁵²
20.2	56.851 ¹⁸⁷	34.41 ¹²²	54.869 ¹⁰⁴	67.55 ⁹⁰	56.242 ¹⁵¹	25.10 ¹¹¹	9.455 ¹⁰¹	81.95 ³⁷
30.2	56.681 ¹⁷⁰	32.83 ¹⁵⁸	54.774 ⁹⁵	66.58 ⁹⁷	56.103 ¹³⁹	23.69 ¹⁴¹	9.364 ⁹¹	82.15 ²⁰
Feb. 9.1	56.534 ¹⁴⁷	30.95 ¹⁸⁸	54.696 ⁷⁸	65.57 ¹⁰¹	55.982 ¹²¹	22.05 ¹⁶⁴	9.286 ⁷⁸	82.17 ²
19.1	56.420 ¹¹⁴	28.84 ²¹¹	54.636 ⁶⁰	64.58 ⁹⁹	55.887 ⁹⁵	20.25 ¹⁸⁰	9.227 ⁵⁹	81.99 ¹⁸
29.1	56.348 ⁷²	26.61 ²²³	54.604 ³²	63.66 ⁹²	55.827 ⁶⁰	18.39 ¹⁸⁶	9.193 ³⁴	81.60 ³⁹
Mar. 10.0	56.324 ²⁴	24.35 ²²⁶	54.602 ²	62.88 ⁷⁸	55.805 ²²	16.52 ¹⁸⁷	9.186 [—]	80.98 ⁶²
20.0	56.353 ²⁹	22.17 ²¹⁸	54.637 ³⁵	62.27 ⁶¹	55.829 ²⁴	14.76 ¹⁷⁶	9.214 ²⁸	80.13 ⁸⁵
30.0	56.440 ⁸⁷	20.15 ²⁰²	54.711 ⁷⁴	61.90 ³⁷	55.904 ⁷⁵	13.18 ¹⁵⁸	9.279 ⁶⁵	79.04 ¹⁰⁹
Apr. 9.0	56.588 ¹⁴⁸	18.39 ¹⁷⁶	54.827 ¹¹⁶	61.80 ¹⁰	56.029 ¹²⁵	11.85 ¹³³	9.382 ¹⁰³	77.73 ¹³¹
18.9	56.792 ²⁰⁴	16.95 ¹⁴⁴	54.986 ¹⁵⁹	61.99 ¹⁹	56.205 ¹⁷⁶	10.85 ¹⁰⁰	9.525 ¹⁴³	76.18 ¹⁵⁵
28.9	57.051 ²⁵⁹	15.92 ¹⁰³	55.185 ¹⁹⁹	62.50 ⁵¹	56.431 ²²⁶	10.21 ⁶⁴	9.709 ¹⁸⁴	74.44 ¹⁷⁴
May 8.9	57.358 ³⁰⁷	15.33 ⁵⁹	55.420 ²³⁵	63.32 ⁸²	56.700 ²⁶⁹	9.98 ²³	9.930 ²²¹	72.53 ¹⁹¹
18.8	57.707 ³⁴⁹	15.20 ¹³	55.690 ²⁷⁰	64.46 ¹¹⁴	57.007 ³⁰⁷	10.16 ¹⁸	10.184 ²⁵⁴	70.49 ²⁰⁴
28.8	58.088 ³⁸¹	15.56 ³⁶	55.986 ²⁹⁶	65.87 ¹⁴¹	57.346 ³³⁹	10.79 ⁶³	10.466 ²⁸²	68.35 ²¹⁴
June 7.8	58.492 ⁴⁰⁴	16.38 ⁸²	56.300 ³¹⁴	67.54 ¹⁶⁷	57.706 ³⁶⁰	11.82 ¹⁰³	10.769 ³⁰³	66.18 ²¹⁷
17.8	58.906 ⁴¹⁴	17.66 ¹²⁸	56.627 ³²⁷	69.41 ¹⁸⁷	58.079 ³⁷³	13.21 ¹³⁹	11.085 ³¹⁶	64.03 ²¹⁵
27.7	59.322 ⁴¹⁶	19.35 ¹⁶⁹	56.956 ³²⁹	71.43 ²⁰²	58.453 ³⁷⁴	14.97 ¹⁷⁶	11.407 ³²²	61.95 ²⁰⁸
July 7.7	59.727 ⁴⁰⁵	21.40 ²⁰⁵	57.279 ³²³	73.58 ²¹⁵	58.821 ³⁶⁸	17.03 ²⁰⁶	11.726 ³¹⁹	60.00 ¹⁹⁵
17.7	60.113 ³⁸⁶	23.78 ²³⁸	57.589 ³¹⁰	75.77 ²¹⁹	59.175 ³⁵⁴	19.36 ²³³	12.033 ³⁰⁷	58.21 ¹⁷⁹
27.7	60.470 ³⁵⁷	26.43 ²⁶⁵	57.879 ²⁹⁰	77.97 ²²⁰	59.504 ³²⁹	21.87 ²⁵¹	12.324 ²⁹¹	56.66 ¹⁵⁵
Aug. 6.6	60.790 ³²⁰	29.26 ²⁸³	58.140 ²⁶¹	80.10 ²¹³	59.801 ²⁹⁷	24.53 ²⁶⁶	12.588 ²⁶⁴	55.34 ¹³²
16.6	61.070 ²⁸⁰	32.24 ²⁹⁸	58.371 ²³¹	82.15 ²⁰⁵	60.064 ²⁶³	27.22 ²⁶⁹	12.823 ²³⁵	54.31 ¹⁰³
26.6	61.302 ²³²	35.31 ³⁰⁷	58.566 ¹⁹⁵	84.06 ¹⁹¹	60.286 ²²²	29.97 ²⁷⁵	13.022 ¹⁹⁹	53.57 ⁷⁴
Sept. 5.5	61.487 ¹⁸⁵	38.38 ³⁰⁷	58.722 ¹⁵⁶	85.80 ¹⁷⁴	60.466 ¹⁸⁰	32.68 ²⁷¹	13.022 ¹⁶¹	53.57 ⁴⁵
15.5	61.622 ¹³⁵	41.40 ³⁰²	58.840 ¹¹⁸	87.35 ¹⁵⁵	60.601 ¹³⁵	35.32 ²⁶⁴	13.183 ¹²²	53.12 ¹⁵
25.5	61.709 ⁸⁷	44.32 ²⁹²	58.920 ⁸⁰	88.68 ¹³³	60.695 ⁹⁴	37.81 ²⁴⁹	13.305 ⁸⁴	52.97 ¹¹
Oct. 5.5	61.748 ³⁹	47.08 ²⁷⁶	58.966 ⁴⁶	89.78 ¹¹⁰	60.747 ⁵²	40.12 ²³¹	13.439 ⁴⁹	53.08 ³⁵
15.4	61.743 ⁵	49.62 ²⁵⁴	58.978 ¹²	90.66 ⁸⁸	60.760 ¹³	42.22 ²¹⁰	13.451 ¹³	53.98 ⁵⁵
25.4	61.699 ⁴⁴	51.92 ²³⁰	58.960 ¹⁸	91.31 ⁶⁵	60.738 ²²	44.07 ¹⁸⁵	13.433 ¹⁸	54.69 ⁷¹
Nov. 4.4	61.617 ⁸²	53.89 ¹⁹⁷	58.918 ⁴²	91.74 ⁴³	60.685 ⁵³	45.62 ¹⁵⁵	13.391 ⁴²	55.50 ⁸¹
14.4	61.502 ¹¹⁵	55.51 ¹⁶²	58.854 ⁶⁴	91.94 ²⁰	60.603 ⁸²	46.87 ¹²⁵	13.326 ⁶⁵	56.38 ⁸⁸
24.3	61.362 ¹⁴⁰	56.75 ¹²⁴	58.773 ⁸¹	91.95 ¹	60.498 ¹⁰⁵	47.78 ⁹¹	13.245 ⁸¹	57.27 ⁸⁹
Dec. 4.3	61.198 ¹⁶⁴	57.56 ⁸¹	58.680 ⁹³	91.74 ²¹	60.372 ¹²⁶	48.32 ⁵⁴	13.151 ⁹⁴	58.15 ⁸⁸
14.3	61.018 ¹⁸⁰	57.93 ³⁷	58.576 ¹⁰⁴	91.35 ³⁹	60.234 ¹³⁸	48.32 ¹⁹	13.048 ¹⁰³	58.97 ⁸²
24.2	60.827 ¹⁹¹	57.84 ⁹	58.466 ¹¹⁰	90.78 ⁵⁷	60.085 ¹⁴⁹	48.31 ²⁰	12.940 ¹⁰⁸	59.69 ⁷²
34.2	60.630 ¹⁹⁷	57.30 ⁵⁴	58.354 ¹¹²	90.05 ⁷³	59.929 ¹⁵⁶	47.73 ⁵⁸	12.830 ¹¹⁰	60.30 ⁶¹
Mean Place	57.008	17.41	54.507	59.83	56.123	10.37	8.902	82.15
Sec δ, Tan δ	1.430	+1.022	1.034	+0.263	1.241	+0.735	1.013	-0.164
Dφ α, D _α α	+0.06	-0.07	+0.06	-0.02	+0.06	-0.05	+0.06	+0.01
Dφ δ, D _α δ	+0.4	0.0	+0.4	0.0	+0.4	+0.1	+0.4	+0.1

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ζ Tucanae. Mag. 4.3		44 Piscium. Mag. 6.0		β Hydrī. Mag. 2.9		α Phœnicis. Mag. 2.4	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 0 15	° ' " -65 21	h m 0 21	° ' " + 1 28	h m 0 21	° ' " -77 43	h m 0 22	° ' " -42 45
	a	"	a	"	a	"	a	"
Jan. 0.2	43.62	78.50	6.493	33.26	23.38	52.78	9.166	52.75
10.2	43.22 40	77.69 81	6.389 104	32.60 66	22.46 92	51.74 104	8.980 186	52.64 11
20.2	42.84 38	76.32 137	6.289 100	31.97 63	21.61 85	50.11 163	8.804 176	52.08 56
30.2	42.50 34	74.41 191	6.196 93	31.41 56	20.84 77	47.94 217	8.645 159	51.08 100
Feb. 9.1	42 21	29 24 72.05 236 277	6.115 81 61	30.94 47 36	20.16 68 56	45.29 265 307	8.506 139 111	49.68 140 179
19.1	41.97 17	69.28 312	6.054 40	30.58 19	19.60 43	42.22 338	8.395 78	47.89 212
29.1	41.80 10	66.16 337	6.014 11	30.39 2	19.17 27	38.84 364	8.317 41	45.77 242
Mar. 10.0	41.70 2	62.79 359	6.003 24	30.37 19	18.90 14	35.20 379	8.276 2	43.35 268
20.0	41.68 6	59.20 367	6.027 60	30.56 43	18.76 2	31.41 388	8.278 49	40.67 286
30.0	41.74 14	55.53 373	6.087 99	30.99 68	18.78 18	27.53 387	8.327 99	37.81 301
Apr. 9.0	41.88 21	51.80 368	6.186 140	31.67 92	18.96 33	23.66 379	8.426 148	34.80 306
18.9	42.09 30	48.12 356	6.326 180	32.59 120	19.29 48	19.87 361	8.574 197	31.72 311
28.9	42.39 38	44.56 339	6.506 218	33.79 142	19.77 63	16.26 338	8.771 245	28.61 304
May 8.9	42.77 51	41.17 310	6.724 262	35.21 164	20.40 75	12.88 306	9.016 289	25.57 296
18.9	43.21 278	38.07 278	6.976 278	36.85 181	21.15 86	9.82 267	9.305 324	22.62 276
28.8	43.72 55	35.29 238	7.254 302	38.66 194	22.01 96	7.15 224	9.629 356	19.86 251
June 7.8	44.27 58	32.91 193	7.556 314	40.60 203	22.97 102	4.91 175	9.985 375	17.35 220
17.8	44.85 60	30.98 143	7.870 320	42.63 208	23.99 107	3.16 121	10.360 388	15.15 186
27.7	45.45 60	29.55 89	8.190 317	44.71 205	25.06 108	1.95 66	10.748 388	13.29 143
July 7.7	46.05 59	28.66 35	8.507 307	46.76 198	26.14 107	1.29 7	11.136 380	11.86 100
17.7	46.64 57	28.31 20	8.814 289	48.74 186	27.21 101	1.22 51	11.516 360	10.86 52
27.7	47.21 51	28.51 75	9.103 265	50.60 170	28.22 94	1.73 106	11.876 332	10.34 5
Aug. 6.6	47.72 45	29.26 127	9.368 236	52.30 151	29.16 84	2.79 158	12.208 295	10.29 42
16.6	48.17 39	30.53 173	9.604 201	53.81 128	30.00 71	4.37 205	12.503 252	10.71 57
26.6	48.56 30	32.26 215	9.805 166	55.09 103	30.71 54	6.42 245	12.755 203	11.58 128
Sept. 5.6	48.86 21	34.41 247	9.971 127	56.12 78	31.25 37	8.87 274	12.958 151	12.86 164
15.5	49.07 10	36.88 269	10.098 93	56.90 53	31.62 19	11.61 296	13.109 97	14.50 192
25.5	49.17 2	39.57 282	10.191 55	57.43 30	31.81 0	14.57 305	13.206 44	16.42 213
Oct. 5.5	49.19 7	42.39 283	10.246 22	57.73 8	31.81 19	17.62 302	13.250 6	18.55 224
15.4	49.12 16	45.22 273	10.268 6	57.81 10	31.62 37	20.64 288	13.244 50	20.79 226
25.4	48.96 24	47.95 249	10.262 33	57.71 29	31.25 53	23.52 260	13.194 92	23.05 217
Nov. 4.4	48.72 30	50.44 218	10.229 53	57.42 41	30.72 67	26.12 222	13.102 127	25.22 202
14.4	48.42 36	52.62 176	10.176 73	57.01 51	30.05 79	28.34 176	12.975 152	27.24 175
24.3	48.06 39	54.38 127	10.103 85	56.50 61	29.26 88	30.10 121	12.823 173	28.99 144
Dec. 4.3	47.67 42	55.65 73	10.018 96	55.89 66	28.38 93	31.31 61	12.650 186	30.43 106
14.3	47.25 43	56.38 16	9.922 103	55.23 68	27.45 94	31.92 1	12.464 192	31.49 63
24.3	46.82 42	56.54 45	9.819 107	54.55 69	26.51 94	31.91 64	12.272 192	32.12 18
34.2	46.40	56.09	9.712	53.86	25.57	31.27	12.080	32.30
Mean Place	42.336	65.12	5.761	28.25	21.425	38.37	8.145	43.75
Sec δ, Tan δ	2.399	-2.180	1.000	+0.026	4.703	-4.596	1.362	-0.925
Dψ α, Dω α	+0.06	+0.15	+0.06	0.00	+0.05	+0.31	+0.06	+0.06
Dψ δ, Dω δ,	+0.4	+0.1	+0.4	+0.1	+0.4	+0.1	+0.4	+0.1

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	13 Ceti. Mag. 6.0		13 Ceti. Mag. 5.2		ζ Cassiopeiae. Mag. 3.7		π Andromedæ. Mag. 4.4	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 0 25	° ' " -4 24	h m 0 30	° ' " -4 2	h m 0 32	° ' " +53 26	h m 0 32	° ' " +33 15
Jan. 0.2	45.927	73.56	56.251	74.95	17.451	26.88	24.028	41.74
10.2	45.821 ¹⁰⁶	74.16 ⁶⁰	56.146 ¹⁰⁶	75.55 ⁶⁰	17.203 ²⁴⁸	26.46 ⁴²	23.883 ¹⁴⁵	41.08 ⁶⁶
20.2	45.719 ¹⁰²	74.66 ⁵⁰	56.042 ¹⁰⁴	76.07 ⁵²	16.955 ²⁴⁸	25.54 ⁹²	23.737 ¹⁴⁶	40.13 ⁹⁶
30.2	45.623 ⁹⁴	75.04 ³⁸	55.944 ⁹⁸	76.46 ³⁹	16.719 ²³⁶	24.18 ¹³⁶	23.598 ¹³⁹	38.90 ¹²³
Feb. 9.1	45.539 ⁸⁶	75.27 ²²	55.858 ⁸⁶	76.71 ²⁵	16.506 ²¹³	22.42 ¹⁷⁶	23.474 ¹²⁴	37.46 ¹⁴⁴
19.1	45.473 ⁶⁶	75.35 ⁸	55.788 ⁷⁰	76.80 ⁹	16.327 ¹⁷⁹	20.35 ²⁰⁷	23.370 ¹⁰⁴	35.88 ¹⁵⁸
29.1	45.429 ⁴⁴	75.24 ¹¹	55.741 ⁴⁷	76.71 ⁹	16.194 ¹³³	18.06 ²²⁹	23.297 ⁷³	34.19 ¹⁶⁹
Mar. 10.1	45.414 ¹⁵	74.91 ³³	55.721 ²⁰	76.41 ³⁰	16.115 ⁷⁹	15.64 ²⁴²	23.259 ³⁸	32.51 ¹⁶⁸
20.0	45.431 ¹⁷	74.36 ⁵⁵	55.734 ¹³	75.86 ⁵⁵	16.098 ¹⁷	13.19 ²⁴⁵	23.264 ⁵	30.93 ¹⁵⁸
30.0	45.486 ⁵⁵	73.58 ⁷⁸	55.784 ⁵⁰	75.12 ⁷⁴	16.151 ⁵³	10.83 ²³⁶	23.316 ⁵²	29.49 ¹⁴⁴
Apr. 9.0	45.578 ⁹²	72.55 ¹⁰³	55.872 ⁸⁸	74.12 ¹⁰⁰	16.273 ¹²²	8.66 ²¹⁷	23.418 ¹⁰²	28.29 ¹²⁰
18.9	45.713 ¹³⁵	71.28 ¹²⁷	56.002 ¹³⁰	72.88 ¹²⁴	16.466 ¹⁹³	6.77 ¹⁸⁹	23.570 ¹⁵²	27.37 ⁹²
28.9	45.888 ¹⁷⁵	69.79 ¹⁴⁹	56.174 ¹⁷²	71.41 ¹⁴⁷	16.725 ²⁵⁹	5.22 ¹⁵⁵	23.771 ²⁰¹	26.80 ⁵⁷
May 8.9	46.100 ²¹²	68.09 ¹⁷⁰	56.382 ²⁰⁸	69.74 ¹⁶⁷	17.046 ³²¹	4.09 ¹¹³	24.019 ²⁴⁸	26.61 ¹⁹
18.9	46.348 ²⁴⁸	66.23 ¹⁸⁶	56.626 ²⁴⁴	67.88 ¹⁸⁶	17.419 ³⁷³	3.42 ⁶⁷	24.304 ²⁸⁵	26.81 ²⁰
28.8	46.623 ²⁷⁵	64.23 ²⁰⁰	56.899 ²⁷³	65.91 ¹⁹⁷	17.836 ⁴¹⁷	2.33 ¹⁹	24.625 ³²¹	27.40 ⁵⁹
June 7.8	46.922 ²⁹⁹	62.15 ²⁰⁸	57.196 ²⁹⁷	63.83 ²⁰⁸	17.836 ⁴⁴⁹	3.23 ³⁰	24.625 ³⁴⁵	27.40 ⁹⁷
17.8	47.234 ³¹²	60.04 ²¹¹	57.507 ³¹¹	61.73 ²¹⁰	18.285 ⁴⁴⁹	3.53 ⁷⁹	24.970 ³⁶⁰	28.37 ¹³⁴
27.8	47.554 ³²⁰	57.95 ²⁰⁹	57.828 ³²¹	59.63 ²¹⁰	18.751 ⁴⁶⁶	4.32 ¹²⁵	25.330 ³⁶⁷	29.71 ¹⁶⁶
July 7.7	47.872 ³¹⁸	55.94 ²⁰¹	58.146 ³¹⁸	57.61 ²⁰²	19.225 ⁴⁷⁴	5.57 ¹⁶⁸	25.697 ³⁶⁴	31.37 ¹⁹⁴
17.7	48.180 ³⁰⁸	54.04 ¹⁹⁰	58.458 ³¹²	57.61 ¹⁸⁹	19.695 ⁴⁵²	7.25 ²⁰⁷	26.061 ³⁵²	33.31 ²¹⁸
27.7	48.473 ²⁹³	52.34 ¹⁷⁰	58.458 ²⁹⁵	55.72 ¹⁷³	20.147 ⁴²⁷	9.32 ²⁴⁰	26.413 ³³²	35.49 ²³⁵
Aug. 6.6	48.741 ²⁶⁸	50.82 ¹⁵²	58.753 ²⁷²	53.99 ¹⁵²	20.574 ³⁹¹	11.72 ²⁷⁰	26.745 ³⁰⁶	37.84 ²⁴⁸
16.6	48.981 ²⁴⁰	49.56 ¹²⁶	59.025 ²⁴³	52.47 ¹²⁷	20.965 ³⁴⁹	14.42 ²⁹⁰	27.051 ²⁷³	40.32 ²⁵⁴
26.6	49.187 ²⁰⁶	48.56 ¹⁰⁰	59.268 ²¹²	51.20 ¹⁰²	21.314 ³⁰¹	17.32 ³⁰⁹	27.324 ²³⁷	42.86 ²⁵⁶
Sept. 5.6	49.356 ¹⁶⁹	47.85 ⁷¹	59.480 ¹⁷⁴	50.18 ⁷⁵	21.615 ²⁴⁸	20.41 ³¹⁶	27.561 ¹⁹⁷	45.42 ²⁵³
15.5	49.489 ¹³³	47.40 ⁴⁵	59.654 ¹³⁸	49.43 ⁴⁶	21.863 ¹⁹⁵	23.57 ³²¹	27.758 ¹⁵⁶	47.95 ²⁴⁴
25.5	49.585 ⁹⁶	47.23 ¹⁷	59.792 ¹⁰⁰	48.97 ²⁰	22.058 ¹³⁹	26.78 ³¹⁷	27.914 ¹¹⁵	50.39 ²³¹
Oct. 5.5	49.644 ⁵⁹	47.29 ⁶	59.892 ⁶⁶	48.77 ⁴	22.197 ⁸⁶	29.95 ³⁰⁸	28.029 ⁷⁵	52.70 ²¹⁴
15.5	49.644 ²⁵	47.29 ⁶	59.958 ⁶⁶	48.81 ⁴	22.283 ³⁴	33.03 ²⁰³	28.104 ³⁸	54.84 ¹⁹⁶
25.4	49.669 ⁴	47.57 ²⁸	59.990 ³²	49.08 ⁴⁵	22.317 ¹⁷	35.96 ²⁷²	28.142 ³	56.80 ¹⁷¹
Nov. 4.4	49.665 ³¹	48.02 ⁵⁹	59.991 ²⁵	49.53 ⁵⁷	22.300 ⁶³	38.68 ²⁴⁵	28.146 ²⁹	58.51 ¹⁴⁶
14.4	49.634 ⁵³	48.61 ⁷⁰	59.966 ⁴⁷	50.10 ⁷⁰	22.237 ¹⁰⁸	41.13 ²¹²	28.117 ⁵⁶	59.97 ¹¹⁸
24.3	49.581 ⁷²	49.31 ⁷⁵	59.919 ⁶⁸	50.80 ⁷⁵	22.129 ¹⁴⁴	43.25 ¹⁷⁵	28.061 ⁸³	61.15 ⁸⁷
Dec. 4.3	49.509 ⁸⁵	50.06 ⁷⁸	59.851 ⁸²	51.55 ⁷⁸	21.985 ¹⁸¹	45.00 ¹³²	27.978 ¹⁰³	62.02 ⁵⁴
14.3	49.424 ⁹⁷	50.84 ⁷⁷	59.769 ⁹⁴	52.33 ⁷⁷	21.804 ²¹⁰	46.32 ⁸⁶	27.875 ¹²²	62.56 ²¹
24.3	49.327 ¹⁰⁴	51.61 ⁷²	59.675 ¹⁰²	53.10 ⁷⁴	21.594 ²³¹	47.18 ³⁶	27.753 ¹³⁶	62.77 ¹³
34.2	49.223 ¹⁰⁷	52.33 ⁶⁷	59.573 ¹⁰⁷	53.84 ⁶⁸	21.363 ²⁴⁶	47.54 ¹³	27.617 ¹⁴⁴	62.64 ⁴⁷
34.2	49.116	53.00	59.466	54.52	21.117	47.41	27.473	62.17
Mean Place	45.133	76.57	55.429	78.18	17.061	5.23	23.421	25.61
Sec δ, Tan δ	1.003	-0.077	1.002	-0.071	1.679	+1.348	1.196	+0.656
Dψ α, D _m α	+0.06	+0.01	+0.06	0.00	+0.07	-0.09	+0.06	-0.04
Dψ δ, D _m δ	+0.4	+0.1	+0.4	+0.1	+0.4	+0.1	+0.4	+0.1

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Andromedæ. Mag. 4.5		δ Andromedæ. Mag. 3.5		α Cassiopeïæ. (Schedir.) Var. 2.2-2.8		μ Phœnicis. Mag. 4.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 0 34	° ' +28 51	h m 0 34	° ' +30 24	h m 0 35	° ' +56 4	h m 0 37	° ' -46 32
	s	"	s	"	s	"	s	"
Jan. 0.2	7.439 ¹³⁴	35.73 ⁶⁸	50.593 ¹³⁷	20.13 ⁶⁶	44.278 ²⁷²	58.95 ³⁵	22.601 ²¹³	56.55 ⁵
10.2	7.305 ¹³⁵	35.05 ⁹⁸	50.456 ¹³⁸	19.47 ⁹³	44.006 ²⁷³	58.60 ⁸⁶	22.388 ²⁰⁵	56.50 ⁵³
20.2	7.170 ¹²⁹	34.12 ¹¹⁶	50.318 ¹³³	18.54 ¹¹⁷	43.733 ²⁶⁰	57.74 ¹³²	22.183 ¹⁹²	55.97 ¹⁰¹
30.2	7.041 ¹¹⁵	32.96 ¹³⁴	50.185 ¹¹⁸	17.37 ¹³⁶	43.473 ²³⁷	56.42 ¹⁷⁴	21.991 ¹⁷³	54.96 ¹⁴⁵
Feb. 9.1	6.926 ⁹⁷	31.62 ¹⁴⁴	50.067 ¹⁰⁰	16.01 ¹⁴⁰	43.236 ²⁰¹	54.68 ²⁰⁸	21.819 ¹⁴⁴	53.51 ¹⁸⁶
19.1	6.829 ⁶⁸	30.18 ¹⁵⁰	49.967 ⁷¹	14.52 ¹⁵⁶	43.035 ¹⁸²	52.60 ²³³	21.675 ¹¹¹	51.65 ²²³
29.1	6.761 ³⁵	28.68 ¹⁴⁷	49.896 ³⁶	12.96 ¹⁵⁴	42.883 ⁹³	50.27 ²⁴⁸	21.564 ⁷²	49.42 ²⁶⁵
Mar. 10.1	6.726 ⁶	27.21 ¹³⁸	49.860 ⁴	11.42 ¹⁴⁵	42.790 ²⁷	47.79 ²⁵²	21.492 ²⁶	46.87 ²⁸⁰
20.0	6.731 ⁴⁹	25.83 ¹²⁰	49.864 ⁴⁹	9.97 ¹²⁹	42.763 ⁴⁶	45.27 ²⁴⁶	21.466 ²²	44.07 ³⁰²
30.0	6.780 ⁹⁷	24.63 ⁹⁸	49.913 ⁹⁷	8.68 ¹⁰⁵	42.809 ¹²¹	42.81 ²²⁹	21.488 ⁷⁴	41.05 ³¹⁷
Apr. 9.0	6.877 ¹⁴⁴	23.65 ⁶⁷	50.010 ¹⁴⁷	7.63 ⁷⁶	42.930 ¹⁹⁷	40.52 ²⁰¹	21.562 ¹²⁹	37.88 ³²⁵
18.9	7.021 ¹⁹²	22.98 ³⁵	50.157 ¹⁹⁵	6.87 ⁴⁴	43.127 ²⁶⁸	38.51 ¹⁶⁸	21.691 ¹⁸¹	34.63 ³²⁷
28.9	7.213 ²³⁵	22.63 ⁰	50.352 ²³⁹	6.43 ⁷	43.395 ³³³	36.83 ¹²⁷	21.872 ²³³	31.36 ³²²
May 8.9	7.448 ²⁷⁵	22.63 ³⁸	50.591 ²⁷⁷	6.36 ³¹	43.728 ³⁹⁰	35.56 ⁸¹	22.105 ²⁸²	28.14 ³⁰⁶
18.9	7.723 ³⁰⁷	23.01 ⁷⁵	50.868 ³¹²	6.67 ⁶⁹	44.118 ⁴³⁷	34.75 ³²	22.387 ³²³	25.06 ²⁹¹
28.8	8.030 ³³¹	23.76 ¹¹⁰	51.180 ³³⁶	7.36 ¹⁰⁴	44.555 ⁴⁶⁹	34.43 ¹⁷	22.710 ³⁵⁷	22.15 ²⁶⁵
June 7.8	8.361 ³⁴⁷	24.86 ¹⁴²	51.516 ³⁵²	8.40 ¹³⁸	45.024 ⁴⁹²	34.60 ⁶⁷	23.067 ³⁸⁵	19.50 ²³²
17.8	8.708 ³⁵⁵	26.28 ¹⁷²	51.868 ³⁵⁹	9.78 ¹⁷⁰	45.516 ⁴⁹⁹	35.27 ¹¹⁵	23.452 ³⁹⁹	17.18 ¹⁹⁴
27.8	9.063 ³⁵¹	28.00 ¹⁹⁶	52.227 ³⁵⁷	11.48 ¹⁹⁴	46.015 ⁴⁹⁴	36.42 ¹⁰⁰	23.851 ⁴⁰⁶	15.24 ¹⁵²
July 7.7	9.414 ³⁴¹	29.96 ²¹⁶	52.584 ³⁴⁵	13.42 ²¹⁷	46.509 ⁴⁸⁰	38.02 ²⁰⁰	24.257 ³⁹⁸	13.72 ¹⁰⁴
17.7	9.755 ³²³	32.12 ²³⁰	52.929 ³³⁷	15.59 ²³⁰	46.989 ⁴⁵¹	40.02 ²³⁶	24.655 ³⁸³	12.68 ⁵⁶
27.7	10.078 ²⁹⁶	34.42 ²³⁸	53.256 ³⁰¹	17.89 ²⁴¹	47.440 ⁴¹⁶	42.38 ²⁶⁷	25.038 ³⁵⁷	12.12 ⁴
Aug. 6.6	10.374 ²⁶⁶	36.80 ²⁴²	53.557 ²⁶⁹	20.30 ²⁴⁶	47.856 ³⁷¹	45.05 ²⁹⁰	25.395 ³²¹	12.08 ⁴⁴
16.6	10.640 ²³¹	39.22 ²³⁹	53.826 ²³⁶	22.76 ²⁴⁵	48.227 ³²²	47.95 ³¹⁰	25.716 ²⁷⁸	12.52 ⁹³
26.6	10.871 ¹⁹²	41.61 ²³⁴	54.062 ¹⁹⁶	25.21 ²⁴⁰	48.549 ²⁶⁷	51.05 ³²¹	25.994 ²²⁷	13.45 ¹³⁶
Sept. 5.6	11.063 ¹⁵³	43.95 ²²³	54.257 ¹⁶⁶	27.61 ²³⁰	48.816 ²¹²	54.26 ³²⁶	26.221 ¹⁷⁵	14.81 ¹⁷⁵
15.5	11.216 ¹¹⁴	46.18 ²⁰⁷	54.413 ¹¹⁷	29.91 ²¹⁶	49.028 ¹⁵¹	57.52 ³²⁶	26.396 ¹¹⁹	16.56 ²⁶⁷
25.5	11.330 ⁷⁵	48.25 ¹⁹¹	54.530 ⁷⁷	32.07 ¹⁹⁹	49.179 ⁹⁴	60.78 ³¹⁸	26.515 ⁶²	18.63 ²²⁷
Oct. 5.5	11.405 ⁴¹	50.16 ¹⁶⁹	54.607 ⁴²	34.06 ¹⁷⁹	49.273 ³⁹	63.96 ³⁰³	26.577 ⁹	20.90 ²⁴²
15.5	11.446 ⁵	51.85 ¹⁴⁷	54.649 ⁸	35.85 ¹⁵⁶	49.312 ¹⁵	66.99 ²⁸⁴	26.586 ⁴³	23.32 ²⁴⁵
25.4	11.451 ²⁴	53.32 ¹²¹	54.657 ²⁴	37.41 ¹³¹	49.297 ⁶⁵	69.83 ²⁵⁸	26.543 ⁸⁸	25.77 ²⁸⁶
Nov. 4.4	11.427 ⁵¹	54.53 ⁹⁵	54.633 ⁵⁰	38.72 ¹⁰⁴	49.232 ¹¹⁴	72.41 ²²⁵	26.455 ¹²⁸	28.13 ²²⁰
14.4	11.376 ⁷⁵	55.48 ⁶⁷	54.583 ⁷⁶	39.76 ⁷⁴	49.118 ¹⁵⁶	74.66 ¹⁸⁹	26.327 ¹⁶¹	30.33 ¹⁹⁴
24.3	11.301 ⁹⁵	56.15 ³⁸	54.507 ⁹⁶	40.50 ⁴⁵	48.962 ¹⁹⁴	76.55 ¹⁴⁵	26.166 ¹⁸⁵	32.27 ¹⁶⁰
Dec. 4.3	11.206 ¹¹²	56.53 ⁷	54.411 ¹¹⁴	40.95 ¹³	48.768 ²²⁷	78.00 ⁹⁸	25.981 ²⁰⁴	33.87 ¹²⁰
14.3	11.094 ¹²⁴	56.60 ²³	54.297 ¹³⁷	41.08 ¹⁹	48.541 ²⁵³	78.98 ⁴⁶	25.777 ²¹⁴	35.07 ⁷⁵
24.3	10.970 ¹³⁴	56.37 ⁵³	54.170 ¹³⁷	40.89 ⁴⁸	48.288 ²⁶⁸	79.44 ⁴	25.563 ²¹⁸	35.82 ²⁷
34.2	10.836	55.84	54.033	40.41	48.020	79.40	25.345	36.09
Mean Place	6.788	20.97	49.946	4.85	43.885	36.64	21.444	46.93
Sec δ, Tan δ	1.142	+0.551	1.160	+0.587	1.792	+1.487	1.454	-1.055
D _α , D _α " δ	+0.06 +0.4	-0.04 +0.1	+0.06 +0.4	-0.04 +0.2	+0.07 +0.4	-0.10 +0.2	+0.06 +0.4	+0.07 +0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Ceti. Mag. 2.2		ο Cassiopeiæ. Mag. 4.7		21 Cassiopeiæ. Mag. 5.6		ζ Andromedæ. Mag. 4.3	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	0 39	-18 26	0 40	+47 49	0 40	+74 31	0 42	+23 48
	s	"	s	"	s	"	s	"
Jan. 0.3	23.380	52.18 48	2.836	49.98 42	4.51	70.44 7	53.721	50.79 65
10.2	23.260 ¹²⁰	52.66 21	2.629 ²⁰⁷	49.56 42	3.82	70.51 7	53.597 ¹²⁴	50.14 65
20.2	23.142 ¹¹⁸	52.87 21	2.420 ²⁰⁹	48.69 87	3.12	69.95 56	53.471 ¹²⁶	49.29 85
30.2	23.030 ¹¹²	52.84 3	2.218 ²⁰²	47.41 128	2.46	68.82 113	53.349 ¹²²	48.27 102
Feb. 9.1	22.929 ¹⁰¹	52.53 31	2.033 ¹⁸⁵	45.78 163	1.86	67.14 168	53.237 ¹¹²	47.10 117
	85	58	156	190	53	215	95	123
19.1	22.844 ⁶¹	51.95 85	1.877 ¹¹⁹	43.88 211	1.33	64.99 252	53.142 ⁷⁰	45.87 125
29.1	22.783 ³³	51.10 111	1.758 ⁷³	41.77 222	0.92	62.47 278	53.072 ³⁹	44.62 120
Mar. 10.1	22.750 ³	49.99 136	1.685 ¹⁸	39.55 222	0.65	59.69 293	53.033 ³	43.42 110
20.0	22.747 ³⁷	48.63 162	1.667 ⁴²	37.33 212	0.51	56.76 286	53.030 ³⁹	42.32 92
30.0	22.784 ⁷⁷	47.01 183	1.709 ¹⁰⁴	35.21 195	0.52	53.80 296	53.069 ⁸⁶	41.40 69
Apr. 9.0	22.861 ¹¹⁹	45.18 205	1.813 ¹⁶⁷	33.26 167	0.70	50.94 265	53.155 ¹³¹	40.71 42
19.0	22.980 ¹⁶²	43.13 218	1.980 ²²⁸	31.59 133	1.03	48.29 236	53.286 ¹⁷⁸	40.29 10
28.9	23.142 ²⁰²	40.95 231	2.208 ²⁸⁵	30.26 96	1.50	45.93 196	53.464 ²²¹	40.19 23
May 8.9	23.344 ²³⁸	38.64 239	2.493 ³³⁴	29.30 51	2.11	43.97 150	53.685 ²⁵⁹	40.42 57
18.9	23.582 ²⁷²	36.25 241	2.827 ³⁷³	28.79 5	2.82	42.47 99	53.944 ²⁹³	40.99 90
28.8	23.854 ²⁹⁷	33.84 238	3.200 ⁴⁰⁵	28.74 41	3.62	41.48 45	54.237 ³¹⁶	41.89 122
June 7.8	24.151 ³¹⁵	31.46 228	3.605 ⁴²⁴	29.15 86	4.48	41.03 10	54.553 ³³⁵	43.11 150
17.8	24.466 ³²⁸	29.18 213	4.029 ⁴³³	30.01 129	5.39	41.13 64	54.888 ³⁴²	44.61 176
27.8	24.792 ³²⁸	27.05 194	4.462 ⁴³⁰	31.30 169	6.32	41.77 117	55.230 ³⁴²	46.37 194
July 7.7	25.120 ³²²	25.11 167	4.892 ⁴¹⁸	32.99 204	7.25	42.94 168	55.572 ³³⁴	48.31 211
17.7	25.442 ³⁰⁶	23.44 138	5.310 ³⁹⁵	35.03 234	8.14	44.62 214	55.906 ³¹⁸	50.42 220
27.7	25.748 ²⁸⁵	22.06 105	5.705 ³⁶⁵	37.37 259	8.99	46.76 256	56.224 ²⁹³	52.62 224
Aug. 6.7	26.033 ²⁵⁷	21.01 70	6.070 ³²⁹	39.96 278	9.77	49.31 291	56.517 ²⁶⁵	54.86 224
16.6	26.290 ²²⁴	20.31 35	6.399 ²⁸⁵	42.74 291	10.47	52.22 320	56.782 ²³³	57.10 219
26.6	26.514 ¹⁸⁸	19.96 1	6.684 ²⁴⁰	45.65 297	11.06	55.42 344	57.015 ¹⁹⁵	59.29 209
Sept. 5.6	26.702 ¹⁴⁹	19.97 34	6.924 ¹⁹¹	48.62 299	11.56	58.86 359	57.210 ¹⁵⁹	61.38 196
15.5	26.851 ¹⁰⁹	20.31 65	7.115 ¹⁴³	51.61 295	11.96	62.45 368	57.369 ¹²¹	63.34 181
25.5	26.960 ⁷⁰	20.96 89	7.258 ⁹⁵	54.56 284	12.23	66.13 369	57.490 ⁸⁴	65.15 160
Oct. 5.5	27.030 ³⁴	21.85 111	7.353 ⁴⁸	57.40 269	12.38	69.82 364	57.574 ⁵⁰	66.75 141
15.5	27.064 ¹	22.96 124	7.401 ⁴	60.09 248	12.41	73.46 348	57.624 ¹⁷	68.16 119
25.4	27.065 ²⁹	24.20 133	7.405 ³⁸	62.57 221	12.33	76.94 327	57.641 ¹²	69.35 96
Nov. 4.4	27.036 ⁵⁴	25.53 134	7.367 ⁷⁶	64.78 192	12.14	80.21 296	57.629 ³⁷	70.31 71
14.4	26.982 ⁷⁷	26.87 130	7.291 ¹¹¹	66.70 156	11.82	83.17 258	57.592 ⁶²	71.02 47
24.4	26.905 ⁹⁴	28.17 118	7.180 ¹⁴²	68.26 117	11.41	85.75 213	57.530 ⁸²	71.49 21
Dec. 4.3	26.811 ¹⁰⁶	29.35 105	7.038 ¹⁶⁹	69.43 74	10.91	87.88 160	57.448 ⁹⁹	71.70 3
14.3	26.705 ¹¹⁷	30.40 86	6.869 ¹⁸⁸	70.17 30	10.33	89.48 104	57.349 ¹¹³	71.67 29
24.3	26.588 ¹²²	31.26 63	6.681 ²⁰³	70.47 17	9.69	90.52 43	57.236 ¹²³	71.38 29
34.2	26.466	31.89	6.478	70.30	9.01	90.95	57.113	70.86 52
an Place	22.431	50.64	2.285	29.55	4.601	44.93	52.972	37.52
δ, Tan δ	1.054	-0.334	1.490	+1.104	3.750	+3.615	1.093	+0.441
α, D _α α	+0.06	+0.02	+0.07	-0.07	+0.08	-0.24	+0.06	-0.33
δ, D _δ δ	+0.4	+0.2	+0.4	+0.2	+0.4	+0.2	+0.4	+0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	7 Cassiopeæ. Mag. 3.6		δ Piscium. Mag. 4.6		λ Hydrî. Mag. 5.0		90 Ceti. Mag. 4.9	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 0 43	° ' " +57 22	h m 0 44	° ' " + 7 7	h m 0 45	° ' " -75 22	h m 0 48	° ' " - 1 35
	s	"	s	"	s	"	s	"
Jan. 0.3	61.062	39.09	20.205	48.83	43.33	63.02	43.723	55.61
10.2	60.782 ²⁸⁰	38.84 ²⁵	20.097 ¹⁰⁸	48.16 ⁶⁷	42.54 ⁷⁹	62.40 ⁶²	43.616 ¹⁰⁷	56.26 ⁶⁵
20.2	60.498 ²⁸⁴	38.09 ⁷⁵	19.989 ¹⁰⁸	47.46 ⁷⁰	41.77 ⁷⁷	61.17 ¹²³	43.507 ¹⁰⁹	56.83 ⁵⁷
30.2	60.224 ²⁷⁴	36.85 ¹²⁴	19.884 ¹⁰⁵	46.77 ⁶⁹	41.05 ⁷²	59.38 ¹⁷⁹	43.401 ¹⁰⁶	57.32 ⁴⁹
Feb. 9.1	59.972 ²⁵²	35.16 ¹⁶⁹	19.787 ⁹⁷	46.11 ⁶⁶	40.40 ⁶⁵	57.07 ²³¹	43.303 ⁹⁸	57.67 ³⁵
	216	202	82	58	58	276	83	20
19.1	59.756 ¹⁶⁸	33.14	19.705 ⁵⁹	45.53 ⁴⁸	39.84 ⁴⁶	54.31 ³¹⁴	43.220 ⁶³	57.87 ⁴
29.1	59.588 ¹⁰⁸	30.84 ²³⁰	19.646 ³³	45.05 ³⁴	39.38 ³⁴	51.17 ³⁴⁶	43.157 ³⁶	57.91 ¹⁷
Mar. 10.1	59.480 ³⁹	28.34 ²⁵⁰	19.613 ¹	44.71 ¹⁴	39.04 ²³	47.71 ³⁶⁵	43.121 ⁶	57.74 ³⁶
20.0	59.441 ³⁵	25.80 ²⁵⁴	19.612 ³⁸	44.57 ⁷	38.81 ⁹	44.06 ³⁷⁹	43.115 ³¹	57.38 ⁶⁰
30.0	59.476 ¹¹²	23.29 ²³⁷	19.650 ⁷⁸	44.64 ³¹	38.72 ⁴	40.27 ³⁸⁶	43.146 ⁷¹	56.78 ⁸³
Apr. 9.0	59.588	20.92	19.728	44.95	38.76	36.41	43.217	55.95
19.0	59.781 ¹⁹³	18.80 ²¹²	19.848 ¹²⁰	45.51 ⁵⁶	38.93 ¹⁷	32.59 ³⁸²	43.331 ¹¹⁴	54.86 ¹⁰⁹
28.9	60.048 ²⁶⁷	17.01 ¹⁷⁹	20.011 ¹⁶³	46.35 ⁸⁴	39.23 ³⁰	28.87 ³⁷²	43.485 ¹⁵⁴	53.55 ¹³¹
May 8.9	60.383 ³³⁵	15.61 ¹⁴⁰	20.214 ²⁰³	47.45 ¹¹⁰	39.04 ⁴³	25.35 ³⁵⁷	43.679 ¹⁹⁴	52.03 ¹⁵²
18.9	60.778 ³⁹⁵	14.66 ⁹⁵	20.452 ²³⁸	48.79 ¹³⁴	39.66 ⁵⁶	22.08 ³²⁷	43.909 ²³⁰	50.30 ¹⁷³
	445	47	271	157	66	292	263	187
28.8	61.223	14.19	20.723	50.36	40.88	19.16	44.172	48.43
June 7.8	61.707 ⁴⁸⁴	14.22 ³	21.017 ²⁹⁴	52.10 ¹⁷⁴	41.63 ⁷⁵	16.64 ²⁵²	44.460 ²⁸⁸	46.44 ¹⁹⁰
17.8	62.213 ⁵⁰⁶	14.74 ⁵²	21.330 ³¹³	53.99 ¹⁸⁹	42.45 ⁸²	14.58 ²⁰⁶	44.766 ³⁰⁶	44.38 ²⁰⁶
27.8	62.731 ⁵¹⁸	15.75 ¹⁰¹	21.651 ³²¹	55.98 ¹⁹⁹	43.32 ⁸⁷	13.02 ¹⁵⁶	45.083 ³¹⁷	42.207 ²⁰¹
July 7.7	63.247 ⁵¹⁶	17.21 ¹⁴⁶	21.973 ³²²	58.02 ²⁰⁴	44.22 ⁹⁰	12.00 ¹⁰²	45.401 ³¹⁸	40.27 ²⁰⁴
	501	187	315	202	90	43	314	193
17.7	63.748	19.08	22.288	60.04	45.12	11.57	45.715	38.34
27.7	64.224 ⁴⁷⁶	21.34 ²²⁶	22.588 ³⁰⁰	62.00 ¹⁹⁶	45.99 ⁸⁷	11.74 ¹⁷	46.013 ²⁹⁸	36.55 ¹⁷⁹
Aug. 6.7	64.664 ⁴⁴⁰	23.92 ²⁵⁸	22.868 ²⁸⁰	63.85 ¹⁸⁵	46.82 ⁸³	12.47 ⁷³	46.293 ²⁸⁰	34.95 ¹⁶⁰
16.6	65.062 ³⁹⁸	26.74 ²⁸²	23.120 ²⁵²	65.55 ¹⁷⁰	47.57 ⁷⁵	13.75 ¹²⁸	46.547 ²⁵⁴	33.56 ¹³⁹
26.6	65.408 ³⁴⁸	29.78 ³⁰⁴	23.340 ²²⁰	67.07 ¹⁵²	48.22 ⁶⁵	15.54 ¹⁷⁹	46.769 ²²²	32.42 ¹¹⁴
	294	317	188	132	62	224	190	88
Sept. 5.6	65.702	32.95	23.528	68.39	48.74	17.78	46.959	31.54
15.5	65.937 ²³⁵	36.20 ³²⁵	23.679 ¹⁵¹	69.47 ¹⁰⁸	49.13 ³⁹	20.39 ²⁶¹	47.113 ¹⁵⁴	30.95 ⁵⁹
25.5	66.113 ¹⁷⁶	39.45 ³²⁵	23.795 ¹¹⁶	70.33 ⁸⁶	49.37 ²⁴	23.27 ²⁸⁸	47.231 ¹¹⁸	30.62 ³³
Oct. 5.5	66.230 ¹¹⁷	42.65 ³²⁰	23.876 ⁸¹	70.95 ⁶²	49.45 ⁸	26.32 ³⁰⁵	47.313 ⁸²	30.52 ¹⁰
15.5	66.289 ⁵⁹	45.73 ³⁰⁸	23.924 ⁴⁸	71.35 ⁴⁰	49.38 ⁷	29.40 ³⁰⁸	47.364 ⁵¹	30.65 ¹³
	2	290	17	19	23	301	18	33
25.4	66.291	48.63	23.941	71.54	49.15	32.41	47.382	30.98
Nov. 4.4	66.241 ⁵⁰	51.28 ²⁶⁵	23.932 ⁹	71.55 ¹⁶	48.76 ³⁹	35.21 ²⁸⁰	47.374 ⁸	31.47 ⁴⁹
14.4	66.139 ¹⁰²	53.62 ²³⁴	23.898 ³⁴	71.39 ³¹	48.26 ⁶⁰	37.71 ²⁶⁰	47.341 ³³	32.07 ⁶⁰
24.4	65.991 ¹⁴⁸	55.59 ¹⁹⁷	23.843 ⁵⁵	71.08 ³¹	47.65 ⁶¹	39.79 ²⁰⁸	47.287 ⁵⁴	32.78 ⁷¹
Dec. 4.3	65.802 ¹⁸⁹	57.15 ¹⁵⁶	23.770 ⁷³	70.66 ⁴²	46.95 ⁷⁰	41.37 ¹⁵⁸	47.213 ⁷⁴	33.51 ⁷³
	226	110	87	53	76	101	86	76
14.3	65.576	58.25	23.683	70.13	46.19	42.38	47.127	34.27
24.3	65.321 ²⁵⁵	58.83 ⁵⁸	23.585 ⁹⁸	69.53 ⁶⁰	45.40 ⁷⁹	42.78 ⁴⁰	47.028 ⁹⁹	35.01 ⁷⁴
34.2	65.045 ²⁷⁶	58.90 ⁷	23.479 ¹⁰⁶	68.87 ⁶⁶	44.59 ⁸¹	42.57 ²¹	46.921 ¹⁰⁷	35.70 ⁶⁹
Mean Place	60.577	16.35	19.361	41.35	41.158	49.23	42.811	60.06
Sec δ, Tan δ	1.855	+1.563	1.008	+0.125	3.961	-3.833	1.000	-0.028
Dψ α, Dα α	+0.07	-0.10	+0.06	-0.01	+0.04	+0.26	+0.06	0.00
γ, Dα δ	+0.4	+0.2	+0.4	+0.2	+0.4	+0.2	+0.4	+0.2

APPARENT PLACES OF STARS, 1916.

323

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Cassiopeiae. Mag. 2.2		μ Andromedæ. Mag. 3.9		α Sculptoris. Mag. 4.4		ε Piscium. Mag. 4.4	
	Right Ascension.	Declina- -tion.	Right Ascension.	Declina- -tion.	Right Ascension.	Declina- -tion.	Right Ascension.	Declina- -tion.
	h m 0 51	° ' " +60 15	h m 0 52	° ' " +38 2	h m 0 54	° ' " -29 48	h m 0 58	° ' " + 7 26
	s	"	s	"	s	"	s	"
Jan. 0.3	38.19	67.11	5.882	56.15	34.590	45.99	35.851	25.16
10.2	37.87 ³²	67.03 ⁸	5.723 ¹⁵⁹	55.71 ⁴⁴	34.444 ¹⁴⁶	46.41 ⁴²	35.743 ¹⁰⁸	24.51 ⁶⁵
20.2	37.55 ³²	66.41 ⁶²	5.558 ¹⁶⁵	54.90 ⁸¹	34.297 ¹⁴⁷	46.46 ⁵	35.631 ¹¹²	23.83 ⁶⁸
30.2	37.23 ³²	65.29 ¹¹²	5.397 ¹⁶¹	53.78 ¹¹²	34.155 ¹⁴²	46.14 ³²	35.519 ¹¹²	23.16 ⁶⁷
Feb. 9.2	36.94 ²⁹	63.70 ¹⁵⁹	5.246 ¹⁵¹	52.40 ¹³⁸	34.024 ¹³¹	45.47 ⁶⁷	35.415 ¹⁰⁴	22.51 ⁶⁵
	25	199	130	161	113	103	92	58
19.1	36.69 ²¹	61.71 ²²⁸	5.116 ¹⁰²	50.79 ¹⁷⁴	33.911 ⁹²	44.44 ¹³⁶	35.323 ⁷²	21.93 ⁴⁸
29.1	36.48 ¹⁴	59.43 ²⁵⁰	5.014 ⁶⁵	49.05 ¹⁸¹	33.819 ⁶¹	43.08 ¹⁶⁷	35.251 ⁴⁷	21.45 ³⁴
Mar. 10.1	36.34 ⁶	56.93 ²⁶⁰	4.949 ²¹	47.24 ¹⁷⁸	33.758 ²⁷	41.41 ¹⁹⁵	35.204 ¹⁵	21.11 ¹⁶
20.0	36.28 ²	54.33 ²⁵⁸	4.928 ²⁸	45.46 ¹⁶⁶	33.731 ¹²	39.46 ²²²	35.189 ²³	20.95 ⁴
30.0	36.30 ⁹	51.75 ²⁴⁷	4.956 ⁸²	43.80 ¹⁵⁰	33.743 ⁵⁶	37.24 ²⁴¹	35.212 ⁶⁴	20.99 ²⁸
Apr. 9.0	36.39 ¹⁹	49.28 ²²⁴	5.038 ¹³⁷	42.30 ¹²²	33.799 ¹⁰¹	34.83 ²⁶⁰	35.276 ¹⁰⁷	21.27 ⁵²
19.0	36.58 ²⁶	47.04 ¹⁹⁵	5.175 ¹⁹¹	41.08 ⁹²	33.900 ¹⁴⁷	32.23 ²⁷⁰	35.383 ¹⁴⁹	21.79 ⁸⁰
28.9	36.84 ³⁶	45.09 ¹⁵⁸	5.366 ²⁴⁰	40.16 ⁵⁴	34.047 ¹⁹¹	29.53 ²⁷⁸	35.532 ¹⁹⁰	22.59 ¹⁰⁴
May 8.9	37.19 ⁴¹	43.54 ¹¹³	5.606 ²⁸⁶	39.62 ¹⁶	34.238 ²³²	26.75 ²⁷⁹	35.722 ²²⁹	23.63 ¹³⁰
18.9	37.60 ⁴⁷	42.41 ⁶⁴	5.892 ³²³	39.46 ²⁴	34.470 ²⁷⁰	23.96 ²⁷³	35.951 ²⁶²	24.93 ¹⁵¹
28.9	38.07 ⁵¹	41.77 ¹⁵	6.215 ³⁵³	39.70 ⁶⁵	34.740 ³⁰¹	21.23 ²⁶¹	36.213 ²⁸⁹	26.44 ¹⁷¹
June 7.8	38.58 ⁵³	41.62 ³⁶	6.568 ³⁷³	40.35 ¹⁰⁴	35.041 ³²³	18.62 ²⁴³	36.502 ³⁰⁸	28.15 ¹⁸⁴
17.8	39.11 ⁵⁵	41.98 ⁸⁵	6.941 ³⁸³	41.39 ¹³⁸	35.364 ³³⁸	16.19 ²¹⁹	36.810 ³¹⁹	29.99 ¹⁹⁶
27.8	39.66 ⁵⁵	42.83 ¹³²	7.324 ³⁸⁵	42.77 ¹⁷³	35.702 ³⁴⁴	14.00 ¹⁹⁰	37.129 ³²²	31.94 ¹⁹⁹
July 7.7	40.21 ⁵⁴	44.15 ¹⁷⁷	7.709 ³⁷⁶	44.50 ¹⁹⁹	36.046 ³⁴⁰	12.10 ¹⁵⁴	37.451 ³¹⁷	33.93 ²⁰⁰
17.7	40.75 ⁵¹	45.92 ²¹⁶	8.085 ³⁵⁸	46.49 ²²³	36.386 ³²⁹	10.56 ¹¹⁶	37.768 ³⁰⁴	35.93 ¹⁹³
27.7	41.26 ⁴⁸	48.08 ²⁵⁰	8.443 ³³⁵	48.72 ²⁴⁰	36.715 ³¹⁰	9.40 ⁷⁴	38.072 ²⁸⁷	37.86 ¹⁸⁴
Aug. 6.7	41.74 ⁴³	50.58 ²⁷⁹	8.778 ³⁰³	51.12 ²⁵³	37.025 ²⁸³	8.66 ³¹	38.359 ²⁶⁰	39.70 ¹⁶⁹
16.6	42.17 ³⁷	53.37 ³⁰³	9.081 ²⁶⁷	53.65 ²⁶⁰	37.308 ²⁴⁹	8.35 ¹¹	38.619 ²³³	41.39 ¹⁵²
26.6	42.54 ³³	56.40 ³¹⁸	9.348 ²²⁹	56.25 ²⁶¹	37.557 ²¹¹	8.46 ⁵²	38.852 ¹⁹⁸	42.91 ¹³¹
Sept. 5.6	42.87 ²⁶	59.58 ³²⁹	9.577 ¹⁸⁸	58.86 ²⁵⁷	37.768 ¹⁷⁰	8.98 ⁹²	39.050 ¹⁶⁵	44.22 ¹⁰⁸
15.6	43.13 ²⁰	62.87 ³³³	9.765 ¹⁴⁶	61.43 ²⁴⁹	37.938 ¹²⁷	9.90 ¹²⁵	39.215 ¹²⁹	45.30 ⁸⁷
25.5	43.33 ¹⁴	66.20 ³²⁹	9.911 ¹⁰⁴	63.92 ²³⁷	38.065 ⁸⁵	11.15 ¹⁵³	39.344 ⁹⁰	46.17 ⁶²
Oct. 5.5	43.47 ⁷	69.49 ³²¹	10.015 ⁶⁵	66.29 ²¹⁹	38.150 ⁴⁴	12.68 ¹⁷³	39.440 ⁶³	46.79 ⁴¹
15.5	43.54 ¹	72.70 ³⁰³	10.080 ²⁷	68.48 ²⁰⁰	38.194 ⁵	14.41 ¹⁸⁴	39.503 ³¹	47.20 ¹⁹
25.4	43.55 ⁶	75.73 ²⁸²	10.107 ⁸	70.48 ¹⁷⁶	38.199 ³⁰	16.25 ¹⁹⁰	39.534 ⁴	47.39 ²
Nov. 4.4	43.49 ¹⁰	78.55 ²⁵²	10.099 ⁴¹	72.24 ¹⁴⁹	38.169 ⁶¹	18.15 ¹⁸⁵	39.538 ²²	47.41 ¹⁴
14.4	43.39 ¹⁶	81.07 ²¹⁵	10.058 ⁷¹	73.73 ¹¹⁷	38.108 ⁸⁷	20.00 ¹⁷³	39.516 ⁴³	47.27 ³⁰
24.4	43.23 ²¹	83.22 ¹⁷⁴	9.987 ⁹⁷	74.90 ⁸⁵	38.021 ¹¹⁰	21.73 ¹⁵³	39.473 ⁶⁵	46.97 ⁴¹
Dec. 4.3	43.02 ²⁵	84.96 ¹²⁸	9.890 ¹²²	75.75 ⁵⁰	37.911 ¹²⁶	23.26 ¹²⁹	39.408 ⁸⁰	46.56 ⁵¹
14.3	42.77 ²⁸	86.24 ⁷⁷	9.768 ¹⁴⁰	76.25 ¹³	37.785 ¹³⁹	24.55 ¹⁰⁰	39.328 ⁹⁵	46.05 ⁵⁹
24.3	42.49 ³¹	87.01 ²³	9.628 ¹⁵⁶	76.38 ²⁴	37.646 ¹⁴⁷	25.55 ⁶⁵	39.233 ¹⁰⁵	45.46 ⁶⁵
34.3	42.18	87.24	9.472	76.14	37.499	26.20	39.128	44.81
Mean Place	37.632	43.70	5.138	38.24	33.480	41.17	34.919	17.32
Sec δ, Tan δ	2.016	+1.751	1.270	+0.783	1.153	-0.573	1.008	+0.131
D _φ α, D _ω α	+0.07	-0.11	+0.07	-0.05	+0.06	+0.04	+0.06	-0.01
D _φ δ, D _ω δ	+0.4	+0.2	+0.4	+0.2	+0.4	+0.2	+0.4	+0.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Phoenicis. Mag. 3.4		μ Cassiopeiæ. Mag. 5.3		η Ceti. Mag. 3.6		β Andromedæ. Mag. 2.4	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 1 2	° ' " -47 9	h m 1 2	° ' " +54 30	h m 1 4	° ' " -10 37	h m 1 5	° ' " +35 10
Jan. 0.3	21.461	76.52	40.997	54.31	22.891	36.22	2.281	48.93
10.2	21.236 ²²⁵	76.74 ²²	40.756 ²⁴¹	54.18 ¹³	22.778 ¹¹³	36.86 ⁶⁴	2.134 ¹⁴⁷	48.54 ³⁹
20.2	21.012 ²²⁴	76.46 ²⁸	40.505 ²⁵¹	53.58 ⁶⁰	22.662 ¹¹⁶	37.34 ⁴⁸	1.978 ¹⁵⁶	47.83 ⁷¹
30.2	20.797 ²¹⁵	75.68 ⁷⁸	40.257 ²⁴⁸	52.51 ¹⁰⁷	22.546 ¹¹⁶	37.61 ²⁷	1.822 ¹⁵⁶	46.84 ⁹⁹
Feb. 9.2	20.596 ²⁰¹	74.44 ¹²⁴	40.023 ²³⁴	51.01 ¹⁶⁰	22.436 ¹¹⁰	37.68 ⁷	1.673 ¹⁴⁹	45.58 ¹²⁶
	176	169	206	187	98	16	132	145
19.1	20.420	72.75	39.817	49.14	22.338	37.52	1.541	44.13
29.1	20.271 ¹⁴⁹	70.66 ²⁰⁹	39.651 ¹⁶⁶	47.00 ²¹⁴	22.260 ⁷⁸	37.13 ³⁹	1.434 ¹⁰⁷	42.55 ¹⁵⁸
Mar. 10.1	20.160 ¹¹¹	68.22 ²⁴⁴	39.536 ¹¹⁵	44.66 ²³⁴	22.206 ⁵⁴	36.50 ⁶³	1.361 ⁷³	40.91 ¹⁶⁴
20.0	20.093 ⁶⁷	65.49 ²⁷³	39.481 ⁵⁵	42.24 ²⁴²	22.183 ²³	35.63 ⁸⁷	1.328 ³³	39.28 ¹⁶³
30.0	20.075 ¹⁸	62.50 ²⁹⁹	39.496 ¹⁵	39.82 ²⁴²	22.196 ¹³	34.51 ¹¹²	1.343 ¹⁵	37.76 ¹⁵²
	33	316	86	231	52	135	66	136
Apr. 9.0	20.108	59.34	39.582	37.51	22.248	33.16	1.409	36.40
19.0	20.197 ⁸⁹	56.05 ³²⁹	39.743 ¹⁶¹	35.43 ²⁰⁸	22.342 ⁹⁴	31.57 ¹⁵⁹	1.527 ¹¹⁸	35.29 ¹¹¹
28.9	20.344 ¹⁴⁷	52.72 ³³³	39.977 ²³⁴	33.63 ¹⁸⁰	22.479 ¹³⁷	29.79 ¹⁷⁸	1.699 ¹⁷²	34.48 ⁸¹
May 8.9	20.543 ¹⁹⁹	49.40 ³³²	40.276 ²⁹⁹	32.19 ¹⁴⁴	22.658 ¹⁷⁹	27.84 ¹⁹⁵	1.920 ²²¹	34.00 ⁴⁸
18.9	20.795 ²⁵²	46.17 ³²³	40.638 ³⁶²	31.16 ¹⁰³	22.875 ²¹⁷	25.73 ²¹¹	2.187 ²⁶⁷	33.89 ¹¹
	298	305	411	58	252	219	306	26
28.9	21.093	43.12	41.049	30.58	23.127	23.54	2.493	34.15
June 7.8	21.432 ³³⁹	40.29 ²⁸³	41.500 ⁴⁵¹	30.48 ¹⁰	23.406 ²⁷⁹	21.31 ²²³	2.829 ³³⁶	34.80 ⁶⁵
17.8	21.800 ³⁶⁸	37.77 ²⁵²	41.980 ⁴⁹⁰	30.84 ³⁶	23.708 ³⁰²	19.09 ²²²	3.188 ³⁵⁹	35.80 ¹⁰⁰
27.8	22.191 ³⁹¹	35.62 ²¹⁵	42.476 ⁴⁹⁶	31.66 ⁸²	24.022 ³¹⁴	16.94 ²¹⁵	3.560 ³⁷²	37.14 ¹³⁴
July 7.7	22.594 ⁴⁰³	33.89 ¹⁷³	42.973 ⁴⁹⁷	32.93 ¹²⁷	24.342 ³²⁰	14.91 ²⁰³	3.935 ³⁷⁵	38.79 ¹⁶⁵
	403	127	490	166	318	186	370	190
17.7	22.997	32.62	43.463	34.59	24.660	13.05	4.305	40.69
27.7	23.389 ³⁹²	31.86 ⁷⁶	43.933 ⁴⁷⁰	36.64 ²⁰⁵	24.966 ³⁰⁶	11.42 ¹⁶³	4.659 ³⁵⁴	42.81 ²¹²
Aug. 6.7	23.761 ³⁷²	31.60 ²⁶	44.374 ⁴⁴¹	38.99 ²³⁵	25.256 ²⁹⁰	10.05 ¹³⁷	4.994 ³³⁵	45.07 ²²⁶
16.6	24.102 ³⁴¹	31.88 ²⁸	44.780 ⁴⁰⁶	41.59 ²⁹⁰	25.521 ²⁶⁵	8.99 ¹⁰⁶	5.299 ³⁰⁵	47.45 ²³⁸
26.6	24.405 ³⁰³	32.66 ⁷⁸	45.142 ³⁶²	44.40 ²⁸¹	25.758 ²³⁷	8.24 ⁷⁵	5.572 ²⁷³	49.88 ²⁴³
	258	125	313	295	204	43	237	244
Sept. 5.6	24.663 ²⁰⁶	33.91 ¹⁶⁸	45.455 ²⁶²	47.35 ³⁰⁴	25.962 ¹⁶⁹	7.81 ¹¹	5.809 ¹⁹⁹	52.32 ²⁴⁰
15.6	24.869 ¹⁵³	35.59 ²⁰³	45.717 ²⁰⁹	50.39 ³⁰⁷	26.131 ¹³³	7.70 ²⁰	6.008 ¹⁵⁸	54.72 ²³²
25.5	25.022 ⁹⁵	37.62 ²²⁹	45.926 ¹⁵⁵	53.46 ³⁰¹	26.264 ⁹⁷	7.90 ⁴⁶	6.166 ¹¹⁹	57.04 ²¹⁹
Oct. 5.5	25.117 ⁴²	39.91 ²⁴⁸	46.081 ¹⁰²	56.47 ²⁹³	26.361 ⁶³	8.36 ⁷⁰	6.285 ⁸¹	59.23 ²⁰²
15.5	25.159 ¹¹	42.39 ²⁵⁷	46.183 ⁴⁸	59.40 ²⁷⁷	26.424 ³⁰	9.06 ⁸⁸	6.366 ⁴⁶	61.25 ¹⁸⁵
25.4	25.148	44.96	46.231	62.17	26.454	9.94	6.412	63.10
Nov. 4.4	25.088 ⁶⁰	47.49 ²⁵³	46.228 ³	64.72 ²⁵⁵	26.455 ¹	10.95 ¹⁰¹	6.422 ¹⁰	64.71 ¹⁶¹
14.4	24.984 ¹⁰⁴	49.89 ²⁴⁰	46.177 ⁵¹	67.00 ²²⁸	26.428 ²⁷	12.04 ¹⁰⁹	6.399 ²³	66.07 ¹³⁶
24.4	24.843 ¹⁴¹	52.06 ²¹⁷	46.080 ⁹⁷	68.93 ¹⁹³	26.379 ⁴⁹	13.16 ¹¹²	6.347 ⁵²	67.16 ¹⁰⁹
Dec. 4.3	24.670 ¹⁷³	53.91 ¹⁸⁵	45.942 ¹³⁸	70.50 ¹⁵⁷	26.309 ⁷⁰	14.25 ¹⁰⁹	6.266 ⁸¹	67.94 ⁷⁸
	197	147	177	114	87	102	104	48
14.3	24.473	55.38	45.765	71.64	26.222	15.27	6.162	68.42
24.3	24.258 ²¹⁵	56.41 ¹⁰³	45.558 ²⁰⁷	72.31 ⁶⁷	26.122 ¹⁰⁰	16.18 ⁹¹	6.036 ¹²⁶	68.55 ¹³
34.3	24.033 ²²⁵	56.96 ⁵⁵	45.326 ²³²	72.48 ¹⁷	26.011 ¹¹¹	16.94 ⁷⁶	5.894 ¹⁴²	68.34 ²¹
Mean Place	20.127	67.34	40.235	31.99	21.845	37.79	1.411	31.73
Sec δ , Tan δ	1.471	-1.079	1.723	+1.403	1.017	-0.188	1.223	+0.705
$D_{\psi} \alpha$, $D_{\omega} \alpha$	+0.05	+0.07	+0.07	-0.09	+0.06	+0.01	+0.07	-0.05
$D_{\psi} \delta$, $D_{\omega} \delta$	+0.4	+0.3	+0.4	+0.3	+0.4	+0.3	+0.4	+0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ Piscium. Mag. 4.7			♅ Piscium. Mag. 5.6			♁ Tucanae. Mag. 5.0			♃ Piscium. Mag. 5.3		
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.
	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "
	1 7	+29 38	1 9	+ 7 7	1 12	-69 18	1 13	+ 3 10				
Jan. 0.3	2.697	53.88	21.462	61.16	57.35	92.96	28.932	27.20				
10.2	2.564 ¹³³	53.44 ⁴⁴	21.355 ¹⁰⁷	60.53 ⁶³	56.79 ⁵⁶	92.88 ⁸	28.826 ¹⁰⁶	26.53 ⁶⁷				
20.2	2.423 ¹⁴¹	52.72 ⁷²	21.241 ¹¹⁴	59.86 ⁶⁷	56.25 ⁵⁴	92.18 ⁷⁰	28.713 ¹¹³	25.90 ⁶³				
30.2	2.282 ¹⁴¹	51.78 ⁹⁴	21.128 ¹¹³	59.19 ⁶⁷	55.73 ⁵²	90.91 ¹²⁷	28.598 ¹¹⁵	25.33 ⁵⁷				
Feb. 9.2	2.146 ¹³⁶	50.63 ¹¹⁵	21.019 ¹⁰⁹	58.57 ⁶²	55.24 ⁴⁹	89.09 ¹⁸²	28.489 ¹⁰⁹	24.82 ⁵¹				
19.1	2.026 ¹²⁰	49.34 ¹²⁹	20.920 ⁹⁹	58.01 ⁵⁶	54.80 ⁴⁴	86.78 ²³¹	28.388 ¹⁰¹	24.41 ⁴¹				
29.1	1.927 ⁹⁹	47.96 ¹³⁸	20.841 ⁷⁹	57.57 ⁴⁴	54.42 ³⁸	84.03 ²⁷⁵	28.305 ⁸³	24.15 ²⁶				
Mar. 10.1	1.860 ⁶⁷	46.56 ¹⁴⁰	20.786 ⁵⁵	57.26 ³¹	54.11 ³¹	80.93 ³¹⁰	28.246 ⁶⁹	24.04 ¹¹				
20.1	1.830 ³⁰	45.20 ¹³⁶	20.763 ²³	57.12 ¹⁴	53.89 ²²	77.54 ³³⁹	28.217 ²⁹	24.12 ⁸				
30.0	1.844 ¹⁴	43.99 ¹²¹	20.774 ¹¹	57.17 ⁵	53.76 ¹³	73.93 ³⁶¹	28.226 ⁹	24.40 ²⁸				
Apr. 9.0	1.905 ⁶¹	42.94 ¹⁰⁵	20.827 ⁵³	57.45 ²⁸	53.72 ⁴	70.21 ³⁷²	28.272 ⁴⁶	24.92 ⁵²				
19.0	2.016 ¹¹¹	42.14 ⁸⁰	20.923 ⁹⁶	57.97 ⁵²	53.78 ⁶	66.42 ³⁷⁹	28.360 ⁸⁸	25.69 ⁷⁷				
28.9	2.177 ¹⁶¹	41.61 ⁵³	21.063 ¹⁴⁰	58.75 ⁷⁸	53.95 ¹⁷	62.66 ³⁷⁶	28.495 ¹³⁵	26.69 ¹⁰⁰				
May 8.9	2.384 ²⁰⁷	41.41 ²⁰	21.244 ¹⁸¹	59.78 ¹⁰³	54.21 ²⁶	59.02 ³⁶⁴	28.670 ¹⁷⁵	27.93 ¹²⁴				
18.9	2.638 ²⁵⁴	41.58 ¹⁷	21.464 ²²⁰	61.05 ¹²⁷	54.56 ³⁵	55.55 ³⁴⁷	28.884 ²¹⁴	29.38 ¹⁴⁵				
28.9	2.928 ²⁹⁰	42.07 ⁴⁹	21.720 ²⁵⁶	62.53 ¹⁴⁸	55.00 ⁴⁴	52.35 ³²⁰	29.133 ²⁴⁹	31.04 ¹⁶⁶				
June 7.8	3.247 ³¹⁹	42.92 ⁸⁵	22.002 ²⁸²	64.23 ¹⁷⁰	55.52 ⁵²	49.50 ²⁸⁵	29.412 ²⁷⁹	32.85 ¹⁸¹				
17.8	3.587 ³⁴⁰	44.09 ¹¹⁷	22.305 ³⁰³	66.06 ¹⁸³	56.10 ⁵⁸	47.05 ²⁴⁵	29.710 ²⁹⁸	34.77 ¹⁹²				
27.8	3.942 ³⁵⁵	45.54 ¹⁴⁵	22.622 ³¹⁷	67.97 ¹⁹¹	56.73 ⁶³	45.06 ¹⁹⁹	30.021 ³¹¹	36.73 ¹⁹⁶				
July 7.8	4.299 ³⁵⁷	47.27 ¹⁷³	22.944 ³²²	69.93 ¹⁹⁶	57.39 ⁶⁶	43.60 ¹⁴⁶	30.339 ³¹⁸	38.71 ¹⁹⁸				
17.7	4.652 ³⁵³	49.19 ¹⁹²	23.264 ³²⁰	71.88 ¹⁹⁵	58.06 ⁶⁷	42.69 ⁹¹	30.657 ³¹⁸	40.66 ¹⁹⁵				
27.7	4.993 ³⁴¹	51.29 ²¹⁰	23.572 ³⁰⁸	73.79 ¹⁹¹	58.72 ⁶⁶	42.36 ³³	30.964 ³⁰⁷	42.52 ¹⁸⁶				
Aug. 6.7	5.313 ³²⁰	53.48 ²¹⁹	23.863 ²⁹¹	75.61 ¹⁸²	59.36 ⁶⁴	42.62 ²⁶	31.254 ²⁰⁰	44.22 ¹⁷⁰				
16.6	5.606 ²⁹³	55.74 ²²⁶	24.129 ²⁶⁶	77.27 ¹⁶⁶	59.95 ⁵⁹	43.46 ⁸⁴	31.523 ²⁰⁹	45.75 ¹⁵³				
26.6	5.868 ²⁶²	58.01 ²²⁷	24.369 ²⁴⁰	78.75 ¹⁴⁸	60.48 ⁵³	44.84 ¹³⁸	31.764 ²⁴¹	47.09 ¹³⁴				
Sept. 5.6	6.096 ²²⁸	60.25 ²²⁴	24.576 ²⁰⁷	80.04 ¹²⁹	60.93 ⁴⁵	46.74 ¹⁹⁰	31.974 ²¹⁰	48.18 ¹⁰⁹				
15.6	6.288 ¹⁹²	62.40 ²¹⁵	24.750 ¹⁷⁴	81.09 ¹⁰⁵	61.29 ³⁶	49.07 ²³³	32.151 ¹⁷⁷	49.02 ⁸⁴				
25.5	6.442 ¹⁵⁴	64.44 ²⁰⁴	24.892 ¹⁴²	81.90 ⁸¹	61.55 ²⁶	51.73 ²⁶⁶	32.294 ¹⁴³	49.63 ⁶¹				
Oct. 5.5	6.559 ¹¹⁷	66.35 ¹⁹¹	24.998 ¹⁰⁶	82.50 ⁶⁰	61.70 ¹⁵	54.65 ²⁹²	32.403 ¹⁰⁹	49.98 ³⁵				
15.5	6.639 ⁸⁰	68.07 ¹⁷²	25.072 ⁷⁴	82.89 ³⁹	61.74 ⁴	57.71 ³⁰⁶	32.480 ⁷⁷	50.10 ¹²				
25.5	6.685 ⁴⁶	69.59 ¹⁵²	25.116 ⁴⁴	83.06 ¹⁷	61.66 ⁸	60.79 ³⁰⁸	32.526 ⁴⁶	50.01 ⁹				
Nov. 4.4	6.699 ¹⁴	70.90 ¹³¹	25.132 ¹⁶	83.03 ³	61.48 ¹⁸	63.78 ²⁹⁹	32.542 ¹⁶	49.76 ²⁶				
14.4	6.682 ¹⁷	71.97 ¹⁰⁷	25.120 ¹²	82.85 ¹⁸	61.21 ²⁷	66.52 ²⁷⁴	32.533 ⁹	49.36 ⁴⁰				
24.4	6.638 ⁴⁴	72.78 ⁸¹	25.085 ³⁵	82.53 ³²	60.85 ³⁶	68.91 ²³⁹	32.499 ³⁴	48.86 ⁵⁰				
Dec. 4.3	6.567 ⁷¹	73.33 ⁵⁵	25.029 ⁵⁶	82.10 ⁴³	60.42 ⁴³	70.89 ¹⁹⁸	32.443 ⁵⁶	48.26 ⁶⁰				
14.3	6.475 ⁹²	73.59 ²⁶	24.952 ⁷⁷	81.57 ⁵³	59.93 ⁴⁹	72.37 ¹⁴⁵	32.369 ⁷⁴	47.58 ⁶⁸				
24.3	6.363 ¹¹²	73.58 ¹	24.864 ⁸⁸	80.98 ⁵⁹	59.40 ⁵³	73.28 ⁹¹	32.279 ⁹⁰	46.91 ⁶⁷				
34.3	6.235 ¹²⁸	73.28 ³⁰	24.760 ¹⁰⁴	80.34 ⁶⁴	58.85 ⁵⁵	73.60 ³²	32.177 ¹⁰²	46.23 ⁶⁸				
Mean Place	1.793	38.39	20.465	53.28	55.270	80.40	27.895	20.65				
Sec δ, Tan δ	1.151	+0.569	1.008	+0.125	2.831	-2.649	1.002	+0.055				
D _♄ , D _♁	+0.07	-0.04	+0.06	-0.01	+0.04	+0.18	+0.06	0.00				
D _♂ , D _♁	+0.4	+0.3	+0.4	+0.3	+0.4	+0.3	+0.4	+0.3				

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♈ Piscium. Mag. 4.7		♄ Ceti. Mag. 3.8		♁ Cassiopeiæ. Mag. 2.8		♌ Phœnicis. Mag. 3.4	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m l 14	° ' " +26 49	h m l 19	° ' " - 8 36	h m l 20	° ' " +59 47	h m l 24	° ' " -43 44
	° ' "	"	° ' "	"	° ' "	"	° ' "	"
Jan. 0.3	51.701	37.05	50.570	56.77	19.534	80.96	44.535	62.54
10.3	51.575 ¹²⁶	36.62 ⁴³	50.459 ¹¹¹	57.47 ⁷⁰	19.235 ²⁹⁹	81.20 ²⁴	44.328 ²⁰⁷	63.06 ⁵²
20.2	51.440 ¹³⁵	35.94 ⁶⁸	50.340 ¹¹⁹	58.02 ⁵⁵	18.920 ³¹⁵	80.92 ²⁸	44.115 ²¹³	63.10 ⁴
30.2	51.302 ¹³⁸	35.07 ⁸⁷	50.219 ¹²¹	58.39 ³⁷	18.601 ³¹⁹	80.12 ⁸⁰	43.905 ²¹⁰	62.67 ⁴³
Feb. 9.2	51.168 ¹³⁴	34.02 ¹⁰⁵	50.103 ¹¹⁶	58.56 ¹⁷	18.296 ³⁰⁵	78.85 ¹²⁷	43.703 ²⁰²	61.76 ⁹¹
19.1	51.048 ¹²⁰	32.84 ¹¹⁸	49.995 ¹⁰⁸	58.52 ⁴	18.016 ²⁸⁰	77.15 ¹⁷⁰	43.518 ¹⁸⁵	60.40 ¹³⁶
29.1	50.947 ¹⁰¹	31.59 ¹²⁵	49.904 ⁹¹	58.26 ²⁶	17.780 ²³⁶	75.10 ²⁰⁵	43.357 ¹⁶¹	58.61 ¹⁷⁹
Mar. 10.1	50.875 ⁷²	30.34 ¹²⁵	49.837 ⁶⁷	57.77 ⁴⁹	17.599 ¹⁸¹	72.80 ²³⁰	43.229 ¹²⁸	56.47 ²¹⁴
20.1	50.839 ³⁶	29.15 ¹¹⁹	49.799 ³⁸	57.04 ⁷³	17.486 ¹¹³	70.34 ²⁴⁶	43.138 ⁹¹	53.98 ²⁴⁹
30.0	50.845 ⁶	28.07 ¹⁰⁸	49.796 ³	56.07 ⁹⁷	17.452 ³⁴	67.82 ²⁵²	43.092 ⁴⁶	51.23 ²⁷⁵
Apr. 9.0	50.897 ⁵²	27.17 ⁹⁰	49.832 ³⁶	54.85 ¹²²	17.501 ⁴⁹	65.35 ²⁴⁷	43.097 ⁵	48.24 ²³⁹
19.0	50.998 ¹⁰¹	26.52 ⁶⁵	49.911 ⁷⁹	53.42 ¹⁴³	17.635 ¹³⁴	63.04 ²³¹	43.153 ⁵⁶	45.10 ³¹⁴
29.0	51.149 ¹⁵¹	26.13 ³⁹	50.033 ¹²²	51.75 ¹⁶⁷	17.852 ²¹⁷	60.97 ²⁰⁷	43.264 ¹¹¹	41.86 ³²⁴
May 8.9	51.346 ¹⁹⁷	26.06 ⁷	50.198 ¹⁶⁵	49.91 ¹⁸⁴	18.150 ²⁹⁸	59.24 ¹⁷³	43.428 ¹⁶⁴	38.59 ³²⁷
18.9	51.586 ²⁴⁰	26.32 ²⁶	50.403 ²⁰⁵	47.91 ²⁰⁰	18.520 ³⁷⁰	57.88 ¹³⁶	43.644 ²¹⁶	35.36 ³²³
28.9	51.864 ²⁷⁸	26.90 ⁵⁸	50.642 ²³⁹	45.79 ²¹²	18.952 ⁴³²	56.96 ⁹²	43.908 ²⁶⁴	32.25 ³¹¹
June 7.8	52.173 ³⁰⁹	27.80 ⁹⁰	50.913 ²⁷¹	43.62 ²¹⁷	19.433 ⁴⁸¹	56.51 ⁴⁵	44.213 ³⁰⁵	29.32 ²⁸³
17.8	52.504 ³³¹	29.01 ¹²¹	51.206 ²⁹³	41.42 ²²⁰	19.951 ⁵¹⁸	56.53 ²	44.550 ³³⁷	26.65 ²⁶⁷
27.8	52.849 ³⁴⁵	30.48 ¹⁴⁷	51.516 ³¹⁰	39.29 ²¹³	20.493 ⁵⁴²	57.04 ⁵¹	44.914 ³⁶⁴	24.30 ²³⁵
July 7.8	53.200 ³⁵¹	32.19 ¹⁷¹	51.833 ³¹⁷	37.24 ²⁰⁵	21.043 ⁵⁵⁰	58.01 ⁹⁷	45.292 ³⁷⁸	22.34 ¹⁹⁶
17.7	53.547 ³⁴⁷	34.07 ¹⁸⁸	52.150 ³¹⁷	35.34 ¹⁹⁰	21.591 ⁵⁴⁸	59.41 ¹⁴⁰	45.676 ³⁸⁴	20.81 ¹⁵³
27.7	53.883 ³³⁶	36.10 ²⁰³	52.457 ³⁰⁷	33.66 ¹⁶⁸	22.121 ⁵³⁰	61.23 ¹⁸²	46.054 ³⁷⁸	19.77 ¹⁰⁴
Aug. 6.7	54.201 ³¹⁸	38.22 ²¹²	52.751 ²⁹⁴	32.22 ¹⁴⁴	22.626 ⁵⁰⁵	63.41 ²¹⁸	46.419 ³⁶⁵	19.23 ⁵⁴
16.7	54.494 ²⁹³	40.37 ²¹⁵	53.023 ²⁷²	31.06 ¹¹⁶	23.094 ⁴⁶⁸	65.90 ²⁴⁹	46.758 ³³⁹	19.20 ³
26.6	54.758 ²⁶⁴	42.52 ²¹⁵	53.268 ²⁴⁵	30.21 ⁸⁵	23.517 ⁴²³	68.65 ²⁷⁵	47.065 ³⁰⁷	19.70 ⁵⁰
Sept. 5.6	54.989 ²³¹	44.61 ²⁰⁹	53.482 ²¹⁴	29.66 ⁵⁵	23.888 ³⁷¹	71.60 ²⁹⁵	47.333 ²⁶⁸	20.69 ⁹⁹
15.6	55.185 ¹⁹⁶	46.61 ²⁰⁰	53.665 ¹⁸³	29.44 ²²	24.205 ³¹⁷	74.69 ³⁰⁹	47.556 ²²³	22.11 ¹⁴²
25.5	55.344 ¹⁵⁹	48.49 ¹⁸⁸	53.812 ¹⁴⁷	29.52 ⁸	24.463 ²⁵⁸	77.86 ³¹⁷	47.731 ¹⁷⁵	23.94 ¹⁵³
Oct. 5.5	55.467 ¹²³	50.22 ¹⁷³	53.924 ¹¹²	29.89 ³⁷	24.660 ¹⁹⁷	81.05 ³¹⁹	47.856 ¹²⁵	26.10 ²¹⁶
15.5	55.557 ⁹⁰	51.76 ¹⁵⁴	54.002 ⁷⁸	30.49 ⁶⁰	24.796 ¹³⁶	84.20 ³¹⁵	47.929 ⁷³	28.47 ²³⁷
25.5	55.611 ⁵⁴	53.12 ¹³⁶	54.049 ⁴⁷	31.29 ⁸⁰	24.870 ⁷⁴	87.23 ³⁰³	47.953 ²⁴	30.98 ²⁵¹
Nov. 4.4	55.634 ²³	54.26 ¹¹⁴	54.065 ¹⁶	32.23 ⁹⁴	24.884 ¹⁴	90.09 ²⁸⁶	47.930 ²³	33.53 ²⁵⁵
14.4	55.628 ⁶	55.19 ⁹³	54.054 ¹¹	33.27 ¹⁰⁴	24.838 ⁴⁶	92.71 ²⁶²	47.864 ⁶⁶	36.00 ²⁴⁷
24.4	55.593 ³⁵	55.88 ⁶⁹	54.018 ³⁶	34.36 ¹⁰⁹	24.734 ¹⁰⁴	95.03 ²³²	47.759 ¹⁰⁵	38.31 ²³¹
Dec. 4.4	55.532 ⁶¹	56.33 ⁴⁵	53.960 ⁵⁸	35.44 ¹⁰⁶	24.577 ¹⁵⁷	96.97 ¹⁹⁴	47.621 ¹³⁸	40.34 ²⁰³
14.3	55.449 ⁸³	56.52 ¹⁹	53.881 ⁷⁹	36.46 ¹⁰²	24.370 ²⁰⁷	98.49 ¹⁵²	47.455 ¹⁶⁶	42.03 ¹⁶⁰
24.3	55.345 ¹⁰⁴	56.47 ⁵	53.787 ⁹⁴	37.40 ⁹⁴	24.120 ²⁵⁰	99.55 ¹⁰⁶	47.267 ¹⁸⁸	43.32 ¹²⁹
34.3	55.224 ¹²¹	56.16 ³¹	53.680 ¹⁰⁷	38.22 ⁸²	23.836 ²⁸⁴	100.10 ⁵⁵	47.064 ²⁰³	44.16 ⁸⁴
Mean Place	50.728	22.39	49.446	59.31	18.542	57.48	43.107	54.70
Sec δ, Tan δ	1.121	+0.506	1.011	-0.151	1.988	+1.718	1.384	-0.957
D _ψ α, D _ω α	+0.06	-0.03	+0.06	+0.01	+0.08	-0.11	+0.05	+0.06
D _ψ δ, D _ω δ	+0.4	+0.3	+0.4	+0.3	+0.4	+0.3	+0.4	+0.4

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	π Piscium. Mag. 5.6			υ Persei. Mag. 3.8			α Eridani. (Achernar.) Mag. 0.6			ω Cassiopeie. Mag. 5.5		
	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.
	h m	° ' "	° ' "	h m	° ' "	° ' "	h m	° ' "	° ' "	h m	° ' "	° ' "
	l 32	+11 42	l 32	+48 12	l 34	-57 39	l 36	+67 37				
	s	"	s	"	s	"	s	"				
Jan. 0.3	39.703	53.60	50.812	31.82	36.991	58.33	7.34	32.26				
10.3	39.597 ¹⁰⁶	53.04 ⁵⁶	50.617 ¹⁹⁵	31.92 ¹⁰	36.665 ³²⁶	58.76 ⁴³	6.93 ⁴¹	32.88 ⁶²				
20.2	39.480 ¹¹⁷	52.40 ⁶⁴	50.404 ²¹³	31.59 ³³	36.333 ³³²	58.64 ¹²	6.47 ⁴⁶	32.94 ⁶				
30.2	39.358 ¹²³	51.72 ⁶⁸	50.185 ²¹⁹	30.85 ⁷⁴	36.003 ³³⁰	57.96 ⁶⁸	6.01 ⁴⁶	32.43 ⁵¹				
Feb. 9.2	39.235 ¹²³	51.04 ⁶⁸	49.969 ²¹⁶	29.71 ¹¹⁴	35.686 ³¹⁷	56.74 ¹²²	5.57 ⁴⁴	31.37 ¹⁰⁶				
19.2	39.121 ¹¹⁴	50.38 ⁶⁶	49.768 ²⁰¹	28.24 ¹⁴⁷	35.394 ²⁹²	55.01 ¹⁷³	5.16 ⁴¹	29.83 ¹⁵⁴				
29.1	39.022 ⁹⁹	49.78 ⁶⁰	49.594 ¹⁷⁴	26.49 ¹⁷⁵	35.134 ²⁶⁰	52.83 ²¹⁸	4.80 ³⁶	27.85 ¹⁹⁸				
Mar. 10.1	38.945 ⁷⁷	49.25 ⁵³	49.458 ¹³⁶	24.55 ¹⁹⁴	34.917 ²¹⁷	50.24 ²⁵⁹	4.51 ²⁹	25.54 ²³¹				
20.1	38.899 ⁴⁶	48.85 ⁴⁰	49.370 ⁸⁸	22.50 ²⁰⁵	34.750 ¹⁶⁷	47.31 ²⁹³	4.31 ²⁰	22.98 ²⁵⁶				
30.0	38.890 ⁹	48.65 ²⁰	49.339 ³¹	20.43 ²⁰⁷	34.642 ¹⁰⁸	44.10 ³²¹	4.20 ¹¹	20.30 ²⁶⁸				
Apr. 9.0	38.920 ³⁰	48.63 ²	49.370 ³¹	18.44 ¹⁹⁹	34.599 ⁴³	40.69 ³⁴¹	4.20 ⁰	17.60 ²⁷⁰				
19.0	38.995 ⁷⁵	48.83 ²⁰	49.467 ⁹⁷	16.60 ¹⁸⁴	34.623 ²⁴	37.13 ³⁵⁶	4.33 ¹³	14.99 ²⁶¹				
29.0	39.114 ¹¹⁹	49.30 ⁴⁷	49.629 ¹⁶²	15.00 ¹⁶⁰	34.718 ⁹⁵	33.51 ³⁶²	4.56 ²³	12.56 ²⁴³				
May 8.9	39.279 ¹⁶⁵	50.04 ⁷⁴	49.854 ²²⁵	13.72 ¹²⁸	34.882 ¹⁶⁴	29.92 ³⁵⁹	4.89 ³³	10.42 ²¹⁴				
18.9	39.483 ²⁰⁴	51.00 ⁹⁶	50.137 ²⁸³	12.77 ⁹⁵	35.116 ²³⁴	26.42 ³⁵⁰	5.32 ⁴³	8.63 ¹⁷⁹				
28.9	39.726 ²⁴³	52.21 ¹²¹	50.472 ³³⁵	12.23 ⁵⁴	35.411 ²⁹⁵	23.10 ³³²	5.85 ⁵³	7.26 ¹³⁷				
June 7.9	40.000 ²⁷⁴	53.62 ¹⁴¹	50.847 ³⁷⁵	12.10 ¹³	35.763 ³⁵²	20.03 ³⁰⁷	6.43 ⁵⁸	6.35 ⁹¹				
17.8	40.298 ²⁹⁸	55.24 ¹⁶²	51.255 ⁴⁰⁸	12.39 ²⁹	36.163 ⁴⁰⁰	17.29 ²⁷⁴	7.07 ⁶⁴	5.92 ⁴³				
27.8	40.613 ³¹⁵	56.99 ¹⁷⁵	51.684 ⁴²⁹	13.10 ⁷¹	36.600 ⁴³⁷	14.93 ²³⁶	7.75 ⁶⁸	6.00 ⁸				
July 7.8	40.936 ³²³	58.81 ¹⁸²	52.123 ⁴³⁹	14.20 ¹¹⁰	37.061 ⁴⁶¹	13.04 ¹⁸⁹	8.44 ⁶⁹	6.57 ⁵⁷				
17.7	41.259 ³¹⁷	60.70 ¹⁸⁸	52.562 ⁴²⁹	15.65 ¹⁷⁹	37.536 ⁴⁷⁴	11.66 ⁸⁵	9.14 ⁶⁸	7.62 ¹⁵⁰				
27.7	41.576 ³⁰²	62.58 ¹⁸⁴	52.991 ⁴⁰⁹	17.44 ²⁰⁸	38.010 ⁴⁶⁰	10.81 ²⁷	9.82 ⁶⁶	9.12 ¹⁹²				
Aug. 6.7	41.878 ²⁸²	64.42 ¹⁷⁴	53.400 ³⁸³	19.52 ²³⁰	38.470 ⁴³⁴	10.54 ²⁹	10.48 ⁶¹	11.04 ²²⁹				
16.7	42.160 ²⁵⁸	66.16 ¹⁵⁹	53.783 ³⁵⁰	21.82 ²⁴⁹	38.904 ³⁹⁶	10.83 ⁸⁶	11.09 ⁵⁷	13.33 ²⁶⁴				
26.6	42.418 ²³⁰	67.75 ¹⁴²	54.133 ³¹¹	24.31 ²⁶³	39.300 ³⁴⁷	11.69 ¹³⁹	11.66 ⁵⁰	15.97 ²⁸⁹				
Sept. 5.6	42.648 ¹⁹⁸	69.17 ¹²⁴	54.444 ²⁶⁹	26.94 ²⁷⁰	39.647 ²⁹¹	13.08 ¹⁸⁷	12.16 ⁴⁴	18.86 ³¹¹				
15.6	42.846 ¹⁶⁴	70.41 ¹⁰³	54.713 ²²⁶	29.64 ²⁷²	39.938 ²²⁵	14.95 ²²⁹	12.60 ³⁶	21.97 ³²⁵				
25.6	43.010 ¹³⁴	71.44 ⁸³	54.939 ¹⁸⁰	32.36 ²⁶⁹	40.163 ¹⁵⁸	17.24 ²⁶¹	12.96 ²⁹	25.22 ³³⁵				
Oct. 5.5	43.144 ⁹⁹	72.27 ⁶²	55.119 ¹³⁵	35.05 ²⁶³	40.321 ⁸⁷	19.85 ²⁸³	13.25 ²¹	28.57 ³³⁶				
15.5	43.243 ⁶⁹	72.89 ⁴²	55.254 ⁸⁹	37.68 ²⁵⁰	40.408 ¹⁷	22.68 ²⁹⁴	13.46 ¹²	31.93 ³³¹				
25.5	43.312 ⁴⁰	73.31 ²³	55.343 ⁴⁵	40.18 ²³³	40.425 ⁵²	25.62 ²⁹⁵	13.58 ³	35.24 ³¹⁹				
Nov. 4.4	43.352 ¹⁰	73.54 ⁸	55.388 ¹	42.51 ²¹⁰	40.373 ¹¹⁵	28.57 ²⁸²	13.61 ⁴	38.43 ²⁹⁸				
14.4	43.362 ¹⁴	73.62 ¹⁰	55.389 ⁴²	44.61 ¹⁸⁴	40.258 ¹⁷²	31.39 ²⁵⁸	13.57 ¹²	41.41 ³⁷¹				
24.4	43.348 ⁴¹	73.52 ²⁴	55.347 ⁸³	46.45 ¹⁵²	40.086 ²²²	33.97 ²²⁵	13.45 ²⁰	44.12 ³³⁸				
Dec. 4.4	43.307 ⁶³	73.28 ³⁶	55.264 ¹²¹	47.97 ¹¹⁶	39.864 ²⁶⁴	36.22 ¹⁸³	13.25 ²⁸	46.50 ¹⁹⁶				
14.3	43.244 ⁸³	72.92 ⁴⁵	55.143 ¹⁵⁵	49.13 ⁷⁷	39.600 ²⁹⁷	38.05 ¹³⁵	12.97 ³⁴	48.45 ¹⁴⁷				
24.3	43.161 ⁹⁹	72.47 ⁵⁵	54.988 ¹⁸³	49.90 ³⁵	39.303 ³¹⁹	39.40 ⁸¹	12.63 ³⁹	49.92 ⁹⁴				
34.3	43.062	71.92	54.805	50.25	38.984	40.21	12.24	50.86				
Mean Place	38.574	43.88	49.688	10.96	35.215	47.99	6.007	7.51				
Sec δ , Tan δ	1.021	+0.207	1.500	+1.119	1.869	-1.580	2.627	+2.429				
$D\psi\alpha$, $D\omega\alpha$	+0.06	-0.01	+0.07	-0.07	+0.04	+0.10	+0.09	-0.15				
$D\psi\delta$, $D\omega\delta$	+0.4	+0.4	+0.4	+0.4	+0.4	+0.4	+0.4	+0.4				

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Sculptoris. Mag. 5.4		ζ Ceti. Mag. 3.9		α Trianguli. Mag. 3.6		ε Cassiopeie. Mag. 3.4	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 1 41	° ' " -25 27	h m 1 47	° ' " -10 44	h m 1 48	° ' " +29 10	h m 1 48	° ' " +63 15
	s	"	s	"	s	"	s	"
Jan. 0.3	43.824	81.37	20.108	56.02	18.559	27.97	21.67	49.25
10.3	43.688 ¹³⁶	82.17 ⁸⁰	19.998 ¹¹⁰	56.84 ⁸²	18.436 ¹²³	27.76 ²¹	21.34 ³³	49.91 ⁶⁶
20.2	43.541 ¹⁴⁷	82.66 ⁴⁹	19.874 ¹²⁴	57.45 ⁶¹	18.297 ¹³⁹	27.30 ⁴⁶	20.98 ³⁶	50.03 ¹²
30.2	43.390 ¹⁵¹	82.79 ¹³	19.745 ¹²⁹	57.86 ⁴¹	18.148 ¹⁴⁹	26.61 ⁶⁹	20.61 ³⁷	49.61 ⁴²
Feb. 9.2	43.239 ¹⁵¹	82.56 ²³	19.614 ¹³¹	58.04 ¹⁸	17.997 ¹⁵¹	25.73 ⁸⁸	20.24 ³⁷	48.68 ⁹³
	143	58	126	4	144	105	35	141
19.2	43.096	81.98	19.489	58.00	17.853	24.68	19.89	47.27
29.1	42.971 ¹²⁵	81.07 ⁹¹	19.377 ¹¹²	57.71 ²⁹	17.723 ¹³⁰	23.50 ¹¹⁸	19.58 ³¹	45.45 ¹⁸²
Mar. 10.1	42.866 ¹⁰⁵	79.81 ¹²⁶	19.285 ⁹²	57.17 ⁵⁴	17.620 ¹⁰³	22.27 ¹²³	19.33 ²⁵	43.29 ²¹⁶
20.1	42.793 ⁷³	78.25 ¹⁶⁶	19.220 ⁶⁵	56.37 ⁸⁰	17.549 ⁷¹	21.04 ¹²³	19.14 ¹⁹	40.90 ²³⁹
30.1	42.755 ³⁸	76.40 ¹⁸⁵	19.189 ³¹	55.33 ¹⁰⁴	17.519 ³⁰	19.88 ¹¹⁶	19.05 ⁹	38.38 ²⁵²
	3	211	8	129	17	104	1	256
Apr. 9.0	42.758	74.29	19.197	54.04	17.536	18.84	19.04	35.82
19.0	42.804 ⁴⁶	71.97 ²³²	19.247 ⁵⁰	52.52 ¹⁵²	17.602 ⁶⁶	17.99 ⁸⁵	19.12 ⁸	33.34 ²⁴⁵
29.0	42.898 ⁹⁴	69.47 ²⁵⁰	19.340 ⁹³	50.77 ¹⁷⁵	17.720 ¹¹⁸	17.37 ⁶²	19.30 ¹⁷	31.03 ²³¹
May 8.9	43.037 ¹³⁹	66.83 ²⁶⁴	19.478 ¹³⁸	48.85 ¹⁹²	17.888 ¹⁶⁸	17.03 ³⁴	19.57 ²⁸	28.99 ²⁰⁴
18.9	43.221 ¹⁸⁴	64.12 ²⁷¹	19.659 ¹⁸¹	46.76 ²⁰⁹	18.104 ²¹⁶	16.97 ⁶	19.93 ³⁶	27.28 ¹⁷¹
	226	273	219	218	258	26	44	132
28.9	43.447	61.39	19.878	44.58	18.362	17.23	20.37	25.96
June 7.9	43.708 ²⁶¹	58.71 ²⁶⁸	20.130 ²⁵²	42.33 ²²⁵	18.656 ²⁹⁴	17.81 ⁵⁸	20.86 ⁴⁹	25.07 ⁸⁹
17.8	43.998 ²⁹⁰	56.15 ²⁵⁶	20.409 ²⁷⁹	40.08 ²²⁵	18.978 ³²²	18.68 ⁸⁷	21.41 ⁵⁵	24.65 ⁴²
27.8	44.311 ³¹³	53.76 ²³⁹	20.709 ³⁰⁰	37.88 ²²⁰	19.321 ³⁴³	19.84 ¹¹⁶	21.99 ⁵⁸	24.69 ⁴
July 7.8	44.636 ³²⁵	51.61 ²¹⁵	21.021 ³¹²	35.79 ²⁰⁹	19.675 ³⁵⁴	21.23 ¹³⁹	22.59 ⁶⁰	25.21 ⁵²
	330	187	316	193	356	162	61	96
17.8	44.966 ³²⁸	49.74 ¹⁵⁰	21.337 ³¹³	33.86 ¹⁷⁰	20.031 ³⁵⁰	22.85 ¹⁷⁸	23.20 ⁶⁰	26.19 ¹⁴⁰
27.7	45.294 ³¹⁷	48.24 ¹¹³	21.650 ³⁰²	32.16 ¹⁴⁵	20.381 ³³⁹	24.63 ¹⁸⁹	23.80 ⁵⁸	27.59 ¹⁸¹
Aug. 6.7	45.611 ²⁹⁷	47.11 ⁷⁰	21.952 ²⁸⁵	30.71 ¹¹⁴	20.720 ³¹⁹	26.52 ¹⁹⁷	24.38 ⁵⁵	29.40 ²¹⁶
16.7	45.908 ²⁷⁴	46.41 ²⁸	22.237 ²⁶²	29.57 ⁸³	21.039 ²⁹³	28.49 ²⁰⁰	24.93 ⁵¹	31.56 ²⁴⁵
26.6	46.182 ²⁴³	46.13 ¹⁵	22.499 ²³⁶	28.75 ⁴²	21.332 ²⁶⁵	30.49 ¹⁹⁹	25.44 ⁴⁶	34.04 ²⁷³
Sept. 5.6	46.425	46.28	22.735	28.27	21.597	32.48	25.90	36.76
15.6	46.634 ²⁰⁹	46.85 ⁵⁷	22.939 ²⁰⁴	28.13 ¹⁴	21.830 ²³³	34.43 ¹⁹⁵	26.30 ⁴⁰	39.69 ²⁸³
25.6	46.806 ¹⁷²	47.79 ⁹⁴	23.111 ¹⁷²	28.32 ¹⁹	22.029 ¹⁹⁹	36.28 ¹⁸⁵	26.64 ³⁴	42.77 ³⁰⁶
Oct. 5.5	46.941 ¹³⁵	49.08 ¹²⁹	23.250 ¹³⁹	28.80 ⁴³	22.194 ¹⁶⁵	38.02 ¹⁷⁴	26.92 ²⁸	45.93 ³¹⁶
15.5	47.038 ⁹⁷	50.64 ¹⁵⁶	23.356 ¹⁰⁶	29.56 ⁷⁶	22.324 ¹³⁰	39.61 ¹⁵⁹	27.14 ²²	49.10 ³¹⁷
	59	175	73	96	96	144	14	314
25.5	47.097	52.39	23.429	30.52	22.420	41.05	27.28	52.24
Nov. 4.5	47.121 ²⁴	54.26 ¹⁸⁷	23.471 ⁴²	31.66 ¹¹⁴	22.483 ⁶³	42.32 ¹²⁷	27.35 ⁷	55.25 ³⁰¹
14.4	47.112 ⁹	56.18 ¹⁹²	23.484 ¹³	32.89 ¹²³	22.513 ³⁰	43.39 ¹⁰⁷	27.36 ¹	58.09 ²⁸⁴
24.4	47.073 ³⁹	58.05 ¹⁸⁷	23.468 ¹⁶	34.16 ¹²⁷	22.511 ²	44.25 ⁸⁶	27.30 ⁶	60.68 ²⁵⁹
Dec. 4.4	47.005 ⁶⁸	59.81 ¹⁷⁶	23.427 ⁴¹	35.42 ¹²⁶	22.478 ³³	44.89 ⁶⁴	27.15 ¹⁵	62.95 ²⁷
	93	156	65	118	62	42	19	190
14.3	46.912	61.37	23.362	36.60	22.416	45.31	26.96	64.85
24.3	46.798 ¹¹⁴	62.70 ¹³³	23.277 ⁸⁵	37.68 ¹⁰⁸	22.328 ⁸⁸	45.47 ¹⁶	26.70 ²⁶	66.29 ¹⁴⁴
34.3	46.668 ¹³⁰	63.73 ¹⁰³	23.173 ¹⁰⁴	38.62 ⁹⁴	22.216 ¹¹²	45.39 ⁸	26.40 ³⁰	67.25 ⁹⁶
Mean Place	42.486	78.88	18.824	58.29	17.332	12.50	20.201	25.37
Sec δ, Tan δ	1.108	-0.476	1.018	-0.190	1.145	+0.558	2.222	+1.985
Dψ a, Dω a	+0.06	+0.03	+0.06	+0.01	+0.07	-0.03	+0.08	-0.12
Dψ δ, Dω δ	+0.4	+0.4	+0.4	+0.5	+0.4	+0.5	+0.4	+0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♋ Piscium. Mag. 4.8			♈ Arietis. Mag. 2.7			♏ Phœnicis. Mag. 4.4			♉ Ceti. Mag. 4.2		
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	1	49	+ 2 46	1	49	+20 23	1	50	-46 42	1	56	-21 28
	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 0.3	13.568	30.74		60.982	65.06		18.227	58.29		4.177	64.62	
10.3	13.466 ¹⁰²	30.06 ⁶⁸		60.873 ¹⁰⁹	64.68 ³⁸		18.001 ²²⁶	59.07 ⁷⁸		4.051 ¹²⁶	65.54 ⁹²	
20.2	13.351 ¹¹⁵	29.43 ⁶³		60.748 ¹²⁵	64.15 ⁵³		17.764 ²³⁷	59.35 ²⁸		3.912 ¹³⁹	66.15 ⁶¹	
30.2	13.228 ¹²³	28.86 ⁵⁷		60.615 ¹³³	63.47 ⁶⁸		17.523 ²⁴¹	59.12 ²³		3.765 ¹⁴⁷	66.44 ²⁹	
Feb. 9.2	13.102 ¹²⁶	28.37 ⁴⁹		60.479 ¹³⁶	62.69 ⁷⁸		17.286 ²³⁷	58.38 ⁷⁴		3.617 ¹⁴⁸	66.41 ³	
19.2	12.983 ¹¹⁹	27.99 ³⁸		60.347 ¹³²	61.84 ⁸⁵		17.061 ²²⁵	57.17 ¹²¹		3.473 ¹⁴⁴	66.05 ³⁶	
29.1	12.874 ¹⁰⁹	27.75 ²⁴		60.231 ¹¹⁶	60.96 ⁸⁸		16.858 ²⁰³	55.50 ¹⁶⁷		3.343 ¹³⁰	65.36 ⁶⁹	
Mar. 10.1	12.786 ⁸⁸	27.65 ¹⁰		60.135 ⁹⁶	60.08 ⁸⁸		16.685 ¹⁷³	53.42 ²⁰⁸		3.232 ¹¹¹	64.36 ¹⁰⁰	
20.1	12.725 ⁶¹	27.73 ⁸		60.070 ⁶⁵	59.27 ⁸¹		16.548 ¹³⁷	50.97 ²⁴⁵		3.149 ⁸³	63.05 ¹³¹	
30.1	12.698 ²⁷	28.02 ²⁹		60.043 ²⁷	58.57 ⁷⁰		16.457 ⁹¹	48.22 ²⁷⁵		3.100 ⁴⁹	61.45 ¹⁶⁰	
Apr. 9.0	12.710	28.51		60.058	58.03		16.416	45.21		3.091	59.60	
19.0	12.764 ⁵⁴	29.24 ⁷³		60.119 ⁶¹	57.69 ³⁴		16.430 ¹⁴	42.01 ³²⁰		3.125 ³⁴	57.50 ²¹⁰	
29.0	12.864 ¹⁰⁰	30.20 ⁹⁶		60.228 ¹⁰⁹	57.58 ¹¹		16.501 ⁷¹	38.69 ³³²		3.204 ⁷⁹	55.21 ²²⁹	
May 8.9	13.006 ¹⁴²	31.39 ¹¹⁹		60.384 ¹⁵⁶	57.74 ¹⁶		16.631 ¹³⁰	35.31 ³³⁸		3.330 ¹²⁶	52.77 ²⁴⁴	
18.9	13.191 ¹⁸⁵	32.78 ¹³⁹		60.586 ²⁰²	58.17 ⁴³		16.818 ¹⁸⁷	31.95 ³³⁶		3.500 ¹⁷⁰	50.21 ²⁵⁶	
28.9	13.414 ²²³	34.37 ¹⁵⁹		60.828 ²⁴²	58.88 ⁷¹		17.056 ²³⁸	28.68 ³²⁷		3.712 ²¹²	47.61 ²⁶⁰	
June 7.9	13.671 ²⁵⁷	36.10 ¹⁷³		61.103 ²⁷⁵	59.84 ⁹⁶		17.342 ²⁸⁶	25.59 ³⁰⁹		3.960 ²⁴⁸	45.02 ²⁵⁹	
17.8	13.953 ²⁸²	37.95 ¹⁸⁵		61.406 ³⁰³	61.04 ¹²⁰		17.667 ³²⁵	22.73 ²⁸⁶		4.237 ²⁷⁷	42.49 ²⁵³	
27.8	14.256 ³⁰³	39.86 ¹⁹¹		61.728 ³²²	62.46 ¹⁴²		18.025 ³⁵⁸	20.20 ²⁵³		4.538 ³⁰¹	40.10 ²³⁹	
July 7.8	14.569 ³¹³	41.78 ¹⁹²		62.062 ³³⁴	64.06 ¹⁶⁰		18.404 ³⁷⁹	18.06 ²¹⁴		4.854 ³¹⁶	37.91 ²¹⁹	
17.8	14.885 ³¹⁶	43.67 ¹⁸⁹		62.398 ³³⁶	65.77 ¹⁷¹		18.794 ³⁹⁰	16.35 ¹⁷¹		5.177 ³²³	35.97 ¹⁹⁴	
27.7	15.198 ³¹³	45.47 ¹⁸⁰		62.731 ³³³	67.58 ¹⁸¹		19.187 ³⁹³	15.13 ¹²²		5.499 ³²²	34.34 ¹⁶³	
Aug. 6.7	15.500 ³⁰²	47.13 ¹⁶⁶		63.051 ³²⁰	69.42 ¹⁸⁴		19.571 ³⁸⁴	14.44 ⁶⁹		5.812 ³¹³	33.07 ¹²⁷	
16.7	15.785 ²⁸⁵	48.62 ¹⁴⁹		63.352 ³⁰¹	71.25 ¹⁸³		19.937 ³⁶⁶	14.28 ¹⁶		6.109 ²⁹⁷	32.18 ⁸⁹	
26.6	16.047 ²⁶²	49.88 ¹²⁶		63.631 ²⁷⁹	73.03 ¹⁷⁸		20.274 ³³⁷	14.67 ³⁹		6.385 ²⁷⁶	31.70 ⁴⁸	
Sept. 5.6	16.284	50.92		63.882	74.73		20.575	15.58		6.633	31.64	
15.6	16.490 ²⁰⁶	51.70 ⁷⁸		64.103 ²²¹	76.30 ¹⁵⁷		20.833 ²⁵⁸	16.99 ¹⁴¹		6.850 ²¹⁷	31.99 ³⁵	
25.6	16.666 ¹⁷⁶	52.23 ⁵³		64.293 ¹⁹⁰	77.73 ¹⁴³		21.043 ²¹⁰	18.84 ¹⁸⁵		7.034 ¹⁸⁴	32.72 ⁷³	
Oct. 5.5	16.810 ¹⁴⁴	52.51 ²⁸		64.450 ¹⁵⁷	79.00 ¹²⁷		21.203 ¹⁶⁰	21.06 ²²²		7.182 ¹⁴⁸	33.79 ¹⁰⁷	
15.5	16.923 ¹¹³	52.56 ⁵		64.574 ⁹⁴	80.09 ¹⁰⁹		21.311 ¹⁰⁸	23.55 ²⁴⁹		7.294 ¹¹²	35.13 ¹³⁴	
25.5	17.004 ⁸¹	52.56 ¹⁷		64.667 ⁹³	81.01 ⁹²		21.366 ⁵⁵	26.22 ²⁶⁷		7.371 ⁷⁷	36.71 ¹⁵⁸	
Nov. 4.5	17.057 ⁵³	52.39 ³⁵		64.667 ⁶¹	81.01 ⁷³		21.366 ³	26.22 ²⁷³		7.371 ⁴³	36.71 ¹⁷³	
14.4	17.057 ²³	52.04 ⁴⁷		64.728 ³⁰	81.74 ⁵⁵		21.369 ⁴⁶	28.95 ²⁷⁰		7.414 ¹⁰	38.44 ¹⁷⁹	
24.4	17.080 ³	51.57 ⁶⁰		64.758 ³	82.29 ³⁸		21.323 ⁹⁰	31.65 ²⁵⁴		7.424 ²¹	40.23 ¹⁷⁸	
Dec. 4.4	17.077 ³⁰	50.97 ⁶⁶		64.761 ²⁷	82.67 ²⁰		21.233 ¹³⁰	34.19 ²³¹		7.403 ⁴⁸	42.01 ¹⁷⁰	
14.3	17.047 ⁵²	50.31 ⁷²		64.734 ⁵²	82.87 ³		21.103 ¹⁶⁶	36.50 ¹⁹⁷		7.355 ⁷⁶	43.71 ¹⁵⁵	
24.3	16.995 ⁷⁶	49.59 ⁷³		64.682 ⁷⁹	82.90 ¹⁵		20.937 ¹⁹⁴	38.47 ¹⁵⁷		7.279 ⁹⁸	45.26 ¹³⁶	
34.3	16.919 ⁹⁴	48.86 ⁷²		64.603 ⁹⁹	82.75 ³²		20.743 ²¹⁸	40.04 ¹¹¹		7.181 ¹¹⁹	46.62 ¹¹⁰	
34.3	16.825	48.14		64.504	82.43		20.525	41.15		7.062	47.72	
Mean Place	12.319	23.92		59.749	52.37		16.598	50.53		2.792	63.65	
Sec δ, Tan δ	1.001	+0.048		1.067	+0.372		1.458	-1.062		1.075	-0.394	
D _φ α, D _ω α	+0.06	0.00		+0.07	-0.02		+0.05	+0.06		+0.06	+0.02	
D _φ δ, D _ω δ	+0.4	+0.5		+0.4	+0.5		+0.4	+0.5		+0.3	+0.5	

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Hydr. Mag. 3.0		50 Cassiopeiæ. Mag. 4.1		γ Andromedæ <i>pr.</i> Mag. 2.3		α Arietis. Mag. 2.2	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m l 56	° ' -61 58	h m l 56	° ' +72 0	h m l 58	° ' +41 55	h m l 2	° ' +23 3
	s	"	s	"	s	"	s	"
Jan. 0.3	9.07	52.19 67	15.89	81.01 99	45.548	57.13 18	27.372	70.42 29
10.3	8.68 39	52.86 9	15.37 52	82.00 40	45.393 155	57.31 18	27.263 109	70.13 46
20.3	8.27 41	52.95 51	14.81 56	82.40 18	45.218 175	57.12 19	27.137 126	69.67 61
30.2	7.86 41	52.44 51	14.22 59	82.22 18	45.029 189	56.58 54	27.000 137	69.06 76
Feb. 9.2	7.47 39	51.38 106	13.64 58	81.46 76	44.835 194	55.70 88	26.857 143	68.30 85
19.2	7.10 37	49.79 159	13.09 55	80.16 130	44.648 187	54.53 117	26.716 141	67.45 92
29.1	6.76 34	47.71 208	12.60 49	78.38 178	44.480 168	53.12 141	26.588 128	66.53 94
Mar. 10.1	6.46 30	45.20 251	12.18 42	76.20 218	44.339 141	51.51 161	26.482 106	65.59 92
20.1	6.21 25	42.32 288	11.86 32	73.70 250	44.237 102	49.81 170	26.404 78	64.67 92
30.1	6.03 18	39.12 320	11.67 19	71.01 269	44.183 54	48.08 173	26.364 40	63.84 83
Apr. 9.0	5.92 3	35.68 344	11.60 7	68.23 278	44.185 2	46.41 167	26.366 2	63.16 68
19.0	5.89 3	32.09 359	11.68 8	65.47 276	44.243 58	44.85 156	26.416 50	62.64 52
29.0	5.93 4	28.42 367	11.89 21	62.84 263	44.362 119	43.50 135	26.515 99	62.35 29
May 9.0	6.07 14	24.74 368	12.23 34	60.43 241	44.540 178	42.41 109	26.662 147	62.30 5
18.9	6.27 20	21.13 361	12.70 47	58.33 210	44.774 234	41.63 79	26.856 194	62.54 24
28.9	6.55 28	17.69 344	12.70 57	58.33 172	44.774 284	41.63 45	26.856 235	62.54 49
June 7.9	6.90 35	14.47 322	13.27 67	56.61 128	45.058 325	41.18 8	27.091 272	63.03 78
17.8	6.90 40	14.47 289	13.94 74	55.33 82	45.383 360	41.10 28	27.363 303	63.81 102
27.8	7.30 45	11.58 250	14.68 79	54.51 33	45.743 385	41.38 64	27.666 322	64.83 126
July 7.8	7.75 49	9.08 205	15.47 83	54.18 18	46.128 400	42.02 98	27.988 336	66.09 144
17.8	8.24 52	7.03 155	16.30 84	54.36 67	46.528 405	43.00 130	28.324 342	67.53 161
27.7	8.76 52	5.48 100	17.14 84	55.03 115	46.933 399	44.30 158	28.666 339	69.14 172
Aug. 6.7	9.28 52	4.48 40	17.98 82	56.18 160	47.332 389	45.88 181	29.005 339	70.86 178
16.7	9.80 49	4.08 18	18.80 77	57.78 202	47.721 370	47.69 201	29.324 312	72.64 180
26.7	10.29 47	4.26 76	19.57 73	59.80 238	48.091 342	49.70 217	29.646 292	74.44 178
36.7	10.76 41	5.02 133	20.30 66	62.18 271	48.433 311	51.87 227	29.938 264	76.22 172
Sept. 5.6	11.17 36	6.35 184	20.96 58	64.89 297	48.744 278	54.14 232	30.202 236	77.94 162
15.6	11.53 27	8.19 229	21.54 49	67.86 317	49.022 240	56.46 233	30.438 205	79.56 151
25.6	11.80 22	10.48 266	22.03 41	71.03 333	49.262 202	58.79 232	30.643 173	81.07 137
Oct. 5.5	12.02 13	13.14 291	22.44 32	74.36 339	49.464 162	61.11 234	30.816 141	82.44 120
15.5	12.15 5	16.05 308	22.76 21	77.75 341	49.626 122	63.35 212	30.957 108	83.64 105
25.5	12.20 3	19.13 310	22.97 10	81.16 335	49.748 82	65.47 199	31.065 76	84.69 88
Nov. 4.5	12.17 12	22.23 300	23.07 1	84.51 819	49.830 42	67.46 181	31.141 46	85.57 70
14.4	12.05 17	25.23 280	23.06 11	87.70 297	49.872 3	69.27 158	31.187 14	86.27 53
24.4	11.88 24	28.03 248	22.95 21	90.67 266	49.875 36	70.85 134	31.201 16	86.80 35
Dec. 4.4	11.64 30	30.51 206	22.74 31	93.33 227	49.839 74	72.19 104	31.185 44	87.15 16
14.4	11.34 34	32.57 159	22.43 41	95.60 183	49.765 109	73.23 71	31.141 73	87.31 1
24.3	11.00 38	34.16 105	22.02 47	97.43 131	49.656 139	73.94 37	31.068 96	87.30 20
34.3	10.62 38	35.21 105	21.55 47	98.74 131	49.517 139	74.31 37	30.972 96	87.10 20
Mean Place	6.963	41.94	13.963	55.96	44.191	38.10	26.052	56.89
Sec δ , Tan δ	2.128	-1.879	3.240	+3.082	1.344	+0.898	1.087	+0.426
$D\psi\alpha$, $D_\omega\alpha$	+0.04	+0.11	+0.10	-0.18	+0.07	-0.05	+0.07	-0.02
$D\psi\delta$, $D_\omega\delta$	+0.3	+0.5	+0.3	+0.5	+0.3	+0.5	+0.3	+0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Trianguli. Mag. 3.1		δ Cassiopeiæ. Mag. 6.2		ϵ Persei. Mag. 5.4		ξ Ceti. Mag. 4.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 2 4	° ' " +34 35	h m 2 7	° ' " +66 7	h m 2 8	° ' " +50 40	h m 2 8	° ' " + 8 27
	s	"	s	"	s	"	s	"
Jan. 0.3	33.772	42.82	54.17	77.23	2.112	55.44	34.083	19.94
10.3	33.644 ¹²⁸	42.85 ³	53.82 ³⁵	78.18 ⁹⁵	1.922 ¹⁹⁰	55.94 ⁵⁰	33.987 ⁹⁶	19.35 ⁵⁹
20.3	33.495 ¹⁴⁹	42.57 ²⁸	53.42 ⁴⁰	78.60 ⁴²	1.704 ²¹⁸	56.01 ⁷	33.872 ¹¹⁵	18.75 ⁶⁰
30.2	33.332 ¹⁶³	42.03 ⁵⁴	53.00 ⁴²	78.47 ¹³	1.469 ²³⁵	55.64 ³⁷	33.747 ¹²⁵	18.16 ⁵⁹
Feb. 9.2	33.163 ¹⁶⁹	41.22 ⁸¹	52.57 ⁴³	77.80 ⁶⁷	1.227 ²⁴²	54.86 ⁷⁸	33.615 ¹³²	17.59 ⁵⁷
19.2	32.999 ¹⁶⁴	40.19 ¹⁰³	52.16 ⁴¹	76.62 ¹¹⁸	0.992 ²³⁵	53.70 ¹¹⁶	33.485 ¹³⁰	17.07 ⁵²
29.1	32.848 ¹⁵¹	38.97 ¹²²	51.78 ³⁸	74.98 ¹⁶⁴	0.777 ²¹⁵	52.21 ¹⁴⁹	33.365 ¹²⁰	16.63 ⁴⁴
Mar. 10.1	32.722 ¹²⁶	37.63 ¹³⁴	51.46 ³²	72.95 ²⁰³	0.594 ¹⁸³	50.45 ¹⁷⁶	33.262 ¹⁰³	16.30 ³³
20.1	32.628 ⁹⁴	36.24 ¹³⁹	51.21 ²⁵	70.65 ²³⁰	0.456 ¹³⁸	48.51 ¹⁹⁴	33.185 ⁷⁷	16.10 ²⁰
30.1	32.578 ⁵⁰	34.85 ¹³⁹	51.06 ¹⁵	68.14 ²⁵¹	0.373 ⁸³	46.46 ²⁰⁵	33.141 ⁴⁴	16.05 ⁵
Apr. 9.0	32.575 ³	33.54 ¹³¹	50.99 ⁷	65.53 ²⁶¹	0.354 ¹⁹	44.41 ²⁰⁵	33.136 ⁵	16.20 ¹⁵
19.0	32.627 ⁵²	32.38 ¹¹⁶	51.03 ⁴	62.96 ²⁶⁷	0.402 ⁴⁸	42.43 ¹⁹⁸	33.174 ³⁸	16.56 ³⁶
29.0	32.732 ¹⁰⁵	31.41 ⁹⁷	51.18 ¹⁵	60.50 ²⁴⁶	0.520 ¹¹⁸	40.61 ¹⁸²	33.257 ⁸³	17.13 ⁵⁷
May 9.0	32.891 ¹⁵⁹	30.71 ⁷⁰	51.45 ²⁷	58.24 ²³⁶	0.708 ¹⁸⁸	39.04 ¹⁵⁷	33.386 ¹²⁹	17.95 ⁸²
18.9	33.101 ²¹⁰	30.28 ⁴³	51.80 ³⁵	56.28 ¹⁹⁶	0.960 ²⁵²	37.75 ¹²⁹	33.558 ¹⁷²	18.98 ¹⁰³
28.9	33.358 ²⁶⁷	30.17 ¹¹	52.24 ⁴⁴	54.67 ¹⁶¹	1.271 ³¹¹	36.80 ⁹⁶	33.770 ²¹²	20.22 ¹²⁴
June 7.9	33.656 ²⁹⁸	30.38 ²¹	52.75 ⁵¹	53.47 ¹²⁰	1.633 ³⁶²	36.24 ⁵⁶	34.018 ²⁴⁸	21.64 ¹⁴²
17.8	33.985 ³²⁹	30.91 ⁵³	53.33 ⁵⁸	52.72 ⁷⁵	2.036 ⁴⁰³	36.07 ¹⁷	34.294 ²⁷⁶	23.22 ¹⁵⁸
27.8	34.338 ³⁵³	31.76 ⁸⁵	53.95 ⁶²	52.43 ²⁹	2.468 ⁴³²	36.31 ²⁴	34.592 ²⁹⁸	24.91 ¹⁶⁹
July 7.8	34.705 ³⁶⁷	32.89 ¹¹³	54.60 ⁶⁵	52.61 ¹⁸	2.922 ⁴⁶⁴	36.93 ⁶²	34.904 ³¹²	26.67 ¹⁷⁶
17.8	35.079 ³⁷⁴	34.28 ¹³⁹	55.27 ⁶⁷	53.26 ⁶⁵	3.383 ⁴⁶¹	37.94 ¹⁰¹	35.224 ³²⁰	28.45 ¹⁷⁸
27.7	35.450 ³⁷¹	35.88 ¹⁶⁰	55.94 ⁶⁷	54.35 ¹⁰⁹	3.842 ⁴⁵⁹	39.28 ¹³⁴	35.541 ³¹⁷	30.20 ¹⁷⁵
Aug. 6.7	35.811 ³⁶¹	37.66 ¹⁷⁸	56.59 ⁶⁵	55.87 ¹⁵²	4.289 ⁴⁴⁷	40.95 ¹⁶⁷	35.849 ³⁰⁸	31.86 ¹⁶⁶
16.7	36.153 ³⁴²	39.56 ¹⁹⁰	57.21 ⁶²	57.76 ¹⁸⁹	4.718 ⁴²⁹	42.89 ¹⁹⁴	36.146 ²⁹⁷	33.42 ¹⁵⁶
26.7	36.474 ³²¹	41.56 ²⁰⁰	57.80 ⁵⁹	60.01 ²²⁵	5.118 ⁴⁰⁰	45.06 ²¹⁷	36.422 ²⁷⁶	34.83 ¹⁴¹
Sept. 5.6	36.766 ²⁹²	43.60 ²⁰⁴	58.35 ⁵⁵	62.55 ²⁵⁴	5.486 ³⁶⁸	47.41 ²³⁵	36.673 ²⁵¹	36.04 ¹²¹
15.6	37.027 ²⁶¹	45.65 ²⁰⁵	58.83 ⁴⁸	65.33 ²⁷⁸	5.816 ³³⁰	49.89 ²⁴⁸	36.898 ²²⁵	37.05 ¹⁰¹
25.6	37.254 ²²⁷	47.66 ²⁰¹	59.25 ⁴²	68.30 ²⁹⁷	6.105 ²⁸⁹	52.48 ²⁵⁹	37.094 ¹⁹⁶	37.83 ⁷⁸
Oct. 5.5	37.447 ¹⁹³	49.60 ¹⁹⁴	59.61 ³⁶	71.41 ³¹¹	6.349 ²⁴⁴	55.09 ²⁶¹	37.258 ¹⁶⁴	38.39 ⁵⁶
15.5	37.604 ¹⁵⁷	51.45 ¹⁸⁵	59.88 ²⁷	74.58 ³¹⁷	6.547 ¹⁹⁸	57.67 ²⁵⁸	37.393 ¹³⁵	38.74 ³⁵
25.5	37.725 ¹²¹	53.17 ¹⁷²	60.08 ²⁰	77.77 ³¹⁹	6.699 ¹⁶²	60.21 ²⁵⁴	37.393 ¹⁰⁵	38.74 ¹⁵
Nov. 4.5	37.811 ⁸⁶	54.73 ¹⁵⁶	60.21 ¹³	80.89 ³¹²	6.803 ¹⁰⁴	62.65 ²⁴⁴	37.498 ⁷³	38.89 ⁵
14.4	37.862 ⁵¹	56.12 ¹³⁹	60.26 ⁵	83.86 ²⁹⁷	6.857 ⁵⁴	64.92 ²²⁷	37.571 ⁴⁶	38.84 ²¹
24.4	37.876 ¹⁴	57.30 ¹¹⁸	60.23 ³	86.65 ²⁷⁹	6.864 ⁷	66.97 ²⁰⁵	37.617 ¹⁶	38.63 ³²
Dec. 4.4	37.855 ²¹	58.28 ⁹⁸	60.11 ¹²	89.14 ²⁴⁹	6.823 ⁴¹	68.77 ¹⁸⁰	37.633 ¹²	38.31 ⁴³
14.4	37.802 ⁵³	59.00 ⁷²	60.11 ²⁰	91.28 ²¹⁴	6.823 ⁸⁹	68.77 ¹⁴⁷	37.621 ³⁸	37.88 ⁵⁰
24.3	37.716 ⁸⁶	59.46 ⁴⁶	59.65 ²⁶	93.01 ¹⁷³	6.602 ¹³²	71.37 ¹¹³	37.520 ⁶³	36.82 ⁵⁶
34.3	37.600 ¹¹⁶	59.64 ¹⁸	59.33 ³²	94.26 ¹²⁵	6.431 ¹⁷¹	72.10 ⁷³	37.433 ⁸⁷	36.22 ⁶⁰
Mean Place	32.403	25.87	52.281	53.27	0.582	34.43	32.733	11.13
Sec δ , Tan δ	1.215	+0.690	2.472	+2.261	1.578	+1.221	1.011	+0.149
$D_{\phi} \alpha$, $D_{\alpha} \alpha$	+0.07	-0.04	+0.09	-0.13	+0.08	-0.07	+0.06	-0.01
$D_{\phi} \delta$, $D_{\alpha} \delta$	+0.3	+0.5	+0.3	+0.5	+0.3	+0.5	+0.3	+0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	μ Fornacis. Mag. 5.2		γ Trianguli. Mag. 4.1		67 Ceti. Mag. 5.7		ϕ Eridani. Mag. 3.8	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 2 9	° ' -31 6	h m 2 12	° ' +33 27	h m 2 12	° ' - 6 48	h m 2 13	° ' -51 53
	s	"	s	"	s	"	s	"
Jan. 0.3	13.796	67.39	20.355	50.00	48.945	27.80	32.291	70.59
10.3	13.647 ¹⁴⁹	68.42 ¹⁰³	20.232 ¹²³	50.04 ⁴	48.845 ¹⁰⁰	28.67 ⁸⁷	32.029 ²⁶²	71.61 ¹⁰²
20.3	13.482 ¹⁶⁵	69.07 ⁶⁵	20.089 ¹⁴³	49.80 ²⁴	48.726 ¹¹⁹	29.37 ⁷⁰	31.749 ²⁸⁰	72.10 ⁴⁹
30.2	13.308 ¹⁷⁴	69.32 ²⁵	19.929 ¹⁶⁰	49.31 ⁴⁹	48.596 ¹³⁰	29.91 ⁵⁴	31.460 ²⁸⁹	72.04 ⁶
Feb. 9.2	13.131 ¹⁷⁷	69.16 ¹⁶	19.762 ¹⁶⁷	48.55 ⁷⁶	48.460 ¹³⁶	30.26 ³⁵	31.170 ²⁹⁰	71.45 ⁵⁹
19.2	12.956 ¹⁷⁵	68.58 ⁵⁸	19.598 ¹⁶⁴	47.59 ⁹⁶	48.326 ¹³⁴	30.39 ¹³	30.889 ²⁸¹	70.34 ¹¹¹
29.2	12.796 ¹⁶⁰	67.63 ⁹⁵	19.445 ¹⁵³	46.45 ¹¹⁴	48.200 ¹²⁶	30.32 ⁷	30.629 ²⁹⁰	68.74 ¹⁶⁰
Mar. 10.1	12.655 ¹⁴¹	66.29 ¹³⁴	19.315 ¹³⁰	45.19 ¹²⁶	48.092 ¹⁰⁸	30.02 ³⁰	30.396 ²³³	66.69 ²⁰⁵
20.1	12.543 ¹¹²	64.60 ¹⁶⁹	19.216 ⁹⁹	43.88 ¹³¹	48.008 ⁸⁴	29.49 ⁵³	30.203 ¹⁹³	64.25 ²⁴⁴
30.1	12.467 ⁷⁶	62.59 ²⁰⁷	19.158 ⁵⁸	42.56 ¹³²	47.954 ¹³²	28.72 ⁷⁷	30.055 ¹⁴⁸	61.47 ²⁷⁸
Apr. 9.0	12.431 ³⁶	60.32 ²²¹	19.147 ¹¹	41.32 ¹²⁴	47.939 ¹⁵	27.71 ¹⁰¹	29.962 ⁹³	58.39 ³⁰⁸
19.0	12.441 ¹⁰	57.79 ²⁵³	19.188 ⁴¹	40.22 ¹¹⁰	47.965 ²⁶	26.46 ¹²⁵	29.929 ³³	55.11 ³²⁸
29.0	12.498 ⁵⁷	55.08 ²⁷¹	19.284 ⁹⁶	39.30 ⁹²	48.036 ⁷¹	25.00 ¹⁴⁶	29.956 ²⁷	51.68 ³⁴³
May 9.0	12.605 ¹⁰⁷	52.23 ²⁸⁵	19.432 ¹⁴⁸	38.62 ⁶⁸	48.151 ¹¹⁵	23.32 ¹⁶⁸	30.050 ⁹⁴	48.18 ³⁵⁰
18.9	12.761 ¹⁵⁶	49.30 ²⁹³	19.632 ²⁰⁰	38.22 ⁴⁰	48.310 ¹⁵⁹	21.48 ¹⁸⁴	30.206 ¹⁵⁶	44.68 ³⁵⁰
28.9	12.962 ²⁰¹	46.36 ²⁹⁴	19.880 ²⁴⁸	38.12 ¹⁰	48.510 ²⁰⁰	19.50 ¹⁹⁸	30.423 ²¹⁷	41.26 ³⁴²
June 7.9	13.204 ²⁴²	43.47 ²⁸⁹	20.167 ²⁸⁷	38.34 ²²	48.744 ²³⁴	17.43 ²⁰⁷	30.695 ²⁷²	38.00 ³²⁶
17.9	13.480 ²⁷⁶	40.71 ²⁷⁶	20.488 ³²¹	38.85 ⁵¹	49.009 ²⁶⁵	15.30 ²¹³	31.015 ³²⁰	35.00 ³⁰⁰
27.8	13.784 ³⁰⁴	38.16 ²⁵⁵	20.834 ³⁴⁶	39.67 ⁸²	49.297 ²⁸⁸	13.20 ²¹⁰	31.377 ³⁶²	32.30 ²⁷⁰
July 7.8	14.107 ³²³	35.85 ²³¹	21.196 ³⁶²	40.77 ¹¹⁰	49.601 ³⁰⁴	11.15 ²⁰⁵	31.769 ³⁹²	30.00 ²³⁰
17.8	14.441 ³³⁴	33.89 ¹⁹⁶	21.565 ³⁶⁹	42.10 ¹³³	49.912 ³¹¹	9.22 ¹⁹³	32.180 ⁴¹¹	28.14 ¹⁸⁶
27.7	14.778 ³³⁷	32.30 ¹⁵⁹	21.933 ³⁶⁸	43.64 ¹⁵⁴	50.225 ³¹³	7.46 ¹⁷⁶	32.600 ⁴²⁰	26.79 ¹³⁵
Aug. 6.7	15.110 ³³²	31.14 ¹¹⁶	22.292 ³⁵⁹	45.36 ¹⁷²	50.530 ³⁰⁵	5.93 ¹⁶³	33.018 ⁴¹⁸	25.98 ⁸¹
16.7	15.428 ³¹⁸	30.43 ⁷¹	22.634 ³⁴²	47.19 ¹⁸³	50.822 ²⁹²	4.67 ¹²⁶	33.422 ⁴⁰⁴	25.74 ²⁴
26.7	15.725 ²⁹⁷	30.20 ²³	22.956 ³²²	49.11 ¹⁹²	51.096 ²⁷⁴	3.69 ⁹⁸	33.802 ³⁸⁰	26.06 ³²
Sept. 5.6	15.995 ²⁷⁰	30.44 ²⁴	23.251 ²⁹⁵	51.06 ¹⁹⁵	51.346 ²⁵⁰	3.04 ⁶⁵	34.149 ³⁴⁷	26.97 ⁹¹
15.6	16.234 ²³⁹	31.15 ⁷¹	23.516 ²⁶⁵	53.02 ¹⁹⁶	51.569 ²²³	2.72 ³²	34.453 ³⁰⁴	28.40 ¹⁴³
25.6	16.437 ²⁰³	32.30 ¹¹⁵	23.750 ²³⁴	54.94 ¹⁹²	51.763 ¹⁹⁴	2.70 ²	34.709 ²⁵⁶	30.29 ¹⁸⁹
Oct. 5.6	16.602 ¹⁶⁵	33.81 ¹⁵¹	23.949 ¹⁹⁹	56.79 ¹⁸⁵	51.926 ¹⁶³	2.99 ²⁹	34.910 ²⁰¹	32.60 ²³¹
15.5	16.728 ¹²⁶	35.64 ¹⁸³	24.113 ¹⁶⁴	58.54 ¹⁷⁵	52.059 ¹³³	3.55 ⁵⁶	35.055 ¹⁴⁵	35.23 ²⁶³
25.5	16.815 ⁸⁷	37.71 ²⁰⁷	24.242 ¹²⁹	60.17 ¹⁶³	52.159 ¹⁰⁰	4.34 ⁷⁹	35.140 ⁸⁵	38.07 ²⁸⁴
Nov. 4.5	16.864 ⁴⁹	39.92 ²²¹	24.337 ⁹⁶	61.66 ¹⁴⁹	52.229 ⁷⁰	5.30 ⁹⁶	35.167 ²⁷	41.02 ²⁹⁵
14.4	16.874 ¹⁰	42.18 ²²⁶	24.396 ⁵⁹	62.98 ¹³²	52.270 ⁴¹	6.39 ¹⁰⁹	35.137 ³⁰	43.97 ²⁹⁵
24.4	16.849 ²⁵	44.41 ²²³	24.419 ²³	64.10 ¹¹²	52.280 ¹⁰	7.56 ¹¹⁷	35.053 ⁸⁴	46.77 ²⁸⁰
Dec. 4.4	16.790 ⁵⁹	46.50 ²⁰⁹	24.407 ¹²	65.02 ⁹²	52.263 ¹⁷	8.75 ¹¹⁹	34.919 ¹³⁴	49.35 ²⁵⁸
14.4	16.702 ⁸⁸	48.40 ¹⁹⁰	24.362 ⁴⁵	65.71 ⁶⁹	52.219 ⁴⁴	9.89 ¹¹⁴	34.740 ¹⁷⁹	51.60 ²²⁵
24.3	16.585 ¹¹⁷	50.02 ¹⁶²	24.284 ⁷⁸	66.16 ⁴⁵	52.150 ⁶⁹	10.97 ¹⁰⁸	34.523 ²¹⁷	53.42 ¹⁸²
34.3	16.446 ¹³⁹	51.30 ¹²⁸	24.175 ¹⁰⁹	66.33 ¹⁷	52.059 ⁹¹	11.94 ⁹⁷	34.273 ²⁵⁰	54.78 ¹³⁶
Mean Place	12.269	63.96	18.931	33.48	47.543	31.69	30.414	62.59
Soc δ , Tan δ	1.168	-0.604	1.199	+0.661	1.007	-0.119	1.620	-1.275
$D\psi\alpha$, $D\omega\alpha$	+0.05	+0.03	+0.07	-0.04	+0.06	+0.01	+0.04	+0.07
$D\psi\delta$, $D\omega\delta$	+0.3	+0.5	+0.3	+0.5	+0.3	+0.5	+0.3	+0.6

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ Ceti. (Mira). Var. 1.7-9.6		♋ Fornacis. Mag. 5.4		♁ Hydr. Mag. 4.3		♑ Cassiopeiz. Mag. 4.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '
	2 15	- 3 21	2 18	-24 11	2 20	-69 1	2 22	+67 1
	s	"	s	"	s	"	s	"
Jan. 0.3	7.526	25.26	43.417	52.98	17.71	98.99	9.81	55.88
10.3	7.428 ⁹⁸	26.07 ⁸¹	43.290 ¹²⁷	54.07 ¹⁰⁰	17.17 ⁵⁴	99.91 ⁹²	9.45 ³⁶	57.03 ¹¹⁵
20.3	7.313 ¹¹⁵	26.76 ⁶⁹	43.146 ¹⁴⁴	54.83 ⁷⁶	16.60 ⁵⁷	100.22 ³¹	9.04 ⁴¹	57.63 ⁶⁰
30.2	7.185 ¹²⁸	27.33 ⁵⁷	42.990 ¹⁵⁶	55.25 ⁴²	16.01 ⁵⁹	99.93 ²⁹	8.60 ⁴⁴	57.69 ⁶
Feb. 9.2	7.050 ¹³⁵	27.73 ⁴⁰	42.828 ¹⁶²	55.30 ⁵	15.43 ⁵⁸	99.05 ⁸⁸	8.15 ⁴⁵	57.20 ⁴⁹
19.2	6.917 ¹³³	27.98 ²⁵	42.667 ¹⁶¹	55.00 ³⁰	14.87 ⁵⁶	97.60 ¹⁴⁵	7.71 ⁴⁴	56.20 ¹⁰⁰
29.2	6.791 ¹²⁶	28.02 ⁴	42.516 ¹⁵¹	54.34 ⁶⁶	14.35 ⁵²	95.64 ¹⁹⁶	7.30 ⁴¹	54.70 ¹⁵⁰
Mar. 10.1	6.683 ¹⁰⁸	27.88 ¹⁴	42.383 ¹³³	53.35 ⁹⁹	13.88 ⁴⁷	93.22 ²⁴²	6.95 ³⁵	52.82 ¹⁸⁸
20.1	6.598 ⁸⁵	27.52 ³⁶	42.275 ¹⁰⁸	52.01 ¹³⁴	13.47 ⁴¹	90.40 ²⁸²	6.66 ²⁹	50.59 ²²³
30.1	6.545 ⁵³	26.94 ⁵⁸	42.200 ⁷⁵	50.37 ¹⁶⁴	13.15 ³²	87.26 ³¹⁴	6.47 ¹⁹	48.16 ²⁴³
Apr. 9.0	6.530 ¹⁵	26.14 ⁸⁰	42.164 ⁶	48.47 ¹⁹⁰	12.91 ²⁴	83.84 ³⁴²	6.37 ¹⁰	45.57 ²⁵⁹
19.0	6.555 ²⁵	25.10 ¹⁰⁴	42.170 ⁶	46.30 ²¹⁷	12.76 ¹⁵	80.24 ³⁶⁰	6.38 ¹	42.98 ²⁵⁹
29.0	6.625 ⁷⁰	23.84 ¹²⁶	42.223 ⁵³	43.93 ²³⁷	12.72 ⁴	76.52 ³⁷²	6.50 ¹²	40.45 ²⁶³
May 9.0	6.740 ¹¹⁵	22.38 ¹⁴⁶	42.323 ¹⁰⁰	41.38 ²⁵⁵	12.79 ⁷	72.78 ³⁷⁴	6.73 ²³	38.10 ²³⁵
18.9	6.898 ¹⁵⁸	20.73 ¹⁶⁵	42.470 ¹⁴⁷	38.73 ²⁶⁵	12.95 ¹⁶	69.11 ³⁶⁷	7.07 ³⁴	36.02 ²⁰⁸
28.9	7.097 ¹⁹⁹	18.91 ¹⁸²	42.659 ¹⁸⁹	36.03 ²⁷⁰	13.22 ²⁷	65.57 ³⁵⁴	7.49 ⁴²	34.27 ¹⁷⁵
June 7.9	7.332 ²³⁵	16.99 ¹⁹²	42.889 ²³⁰	33.33 ²⁷⁰	13.58 ³⁶	62.25 ³³²	8.00 ⁵¹	32.89 ¹³⁸
17.9	7.597 ²⁶⁵	14.99 ²⁰⁰	43.153 ²⁶⁴	30.70 ²⁶³	14.02 ⁴⁴	59.25 ³⁰⁰	8.58 ⁵⁸	31.91 ⁹⁸
27.8	7.884 ²⁸⁷	12.96 ²⁰³	43.443 ²⁹⁰	28.21 ²⁴⁹	14.53 ⁵¹	56.61 ²⁶⁴	9.21 ⁶³	31.42 ⁴⁹
July 7.8	8.187 ³⁰³	10.98 ¹⁹⁸	43.754 ³¹¹	25.92 ²²⁹	15.11 ⁵⁸	54.42 ²¹⁹	9.88 ⁶⁷	31.38 ⁴
17.8	8.498 ³¹¹	9.10 ¹⁸⁸	44.075 ³²¹	23.90 ²⁰²	15.72 ⁶¹	52.72 ¹⁷⁰	10.57 ⁶⁹	31.80 ⁴²
27.7	8.811 ³¹³	7.35 ¹⁷⁵	44.399 ³²⁴	22.21 ¹⁶⁹	16.36 ⁶⁴	51.58 ¹¹⁴	11.26 ⁶⁹	32.69 ⁸⁹
Aug. 6.7	9.116 ³⁰⁵	5.78 ¹⁵⁷	44.719 ³²⁰	20.88 ¹³³	17.01 ⁶⁵	51.04 ⁵⁴	11.94 ⁶⁸	33.98 ¹²⁹
16.7	9.408 ²⁹²	4.44 ¹³⁴	45.027 ³⁰⁸	19.96 ⁹²	17.64 ⁶³	51.10 ⁶	12.61 ⁶⁷	35.68 ¹⁷⁰
26.7	9.681 ²⁷³	3.37 ¹⁰⁷	45.317 ²⁹⁰	19.47 ⁴⁹	18.24 ⁰	51.73 ⁶³	13.23 ⁶²	37.75 ²⁰⁷
Sept. 5.6	9.932 ²⁵¹	2.60 ⁷⁷	45.582 ²⁶⁵	19.43 ⁴	18.79 ⁵⁵	53.00 ¹²⁷	13.23 ⁵⁸	37.75 ²³⁷
15.6	10.158 ²²⁶	2.12 ⁴⁸	45.820 ²³⁸	19.82 ³⁹	19.28 ⁴⁹	54.80 ¹⁸⁰	13.81 ⁵³	40.12 ²⁶⁴
25.6	10.353 ¹⁹⁵	1.94 ¹⁸	46.025 ²⁰⁵	20.63 ⁸¹	19.28 ⁴⁰	54.80 ²²⁸	14.34 ⁴⁷	42.76 ²⁸⁷
Oct. 5.6	10.519 ¹⁶⁶	2.05 ¹¹	46.196 ¹⁷¹	21.82 ¹¹⁹	19.68 ³¹	57.08 ²⁶⁹	14.81 ⁴⁰	45.63 ³⁰¹
15.5	10.655 ¹³⁶	2.42 ³⁷	46.332 ¹³⁶	23.31 ¹⁴⁹	19.99 ²⁰	59.77 ³⁰⁰	15.21 ³³	48.64 ³¹³
25.5	10.760 ¹⁰⁵	3.01 ⁵⁹	46.431 ⁹⁹	25.06 ¹⁷⁵	20.19 ¹⁰	62.77 ³¹⁷	15.54 ²⁵	51.77 ³¹⁷
Nov. 4.5	10.834 ⁷⁴	3.01 ⁷⁸	46.431 ⁶⁵	25.06 ¹⁹¹	20.29 ¹	65.94 ³²⁵	15.79 ¹⁷	54.94 ³¹²
14.4	10.878 ⁴⁴	3.79 ⁹⁰	46.496 ²⁹	26.97 ²⁰⁰	20.28 ¹¹	69.19 ³¹⁹	15.96 ⁸	58.06 ³⁰²
24.4	10.893 ¹⁵	4.69 ⁹⁹	46.525 ³	28.97 ²⁰¹	20.17 ²²	72.38 ³⁰¹	16.04 ⁰	61.08 ²⁸⁴
Dec. 4.4	10.880 ¹³	5.68 ¹⁰³	46.522 ³⁶	30.98 ¹⁹³	19.95 ³¹	75.39 ²⁷⁰	16.04 ⁹	63.92 ²⁶¹
14.4	10.842 ³⁸	6.71 ¹⁰³	46.486 ⁶⁵	32.91 ¹⁷⁸	19.64 ⁴⁰	78.09 ²³²	15.95 ¹⁷	66.53 ²²⁸
24.3	10.777 ⁶⁵	7.74 ⁹⁷	46.421 ⁹²	34.69 ¹⁵⁷	19.24 ⁴⁶	80.41 ¹⁸³	15.78 ²⁵	68.81 ¹⁸⁹
34.3	10.690 ⁸⁷	8.71 ⁹¹	46.329 ¹¹⁷	36.26 ¹²⁹	18.78 ⁵²	82.24 ¹³⁰	15.53 ³²	70.70 ¹⁴²
	10.690	9.62	46.212	37.55	18.26	83.54	15.21	72.12
Mean Place	6.121	30.26	41.901	51.70	14.958	88.91	7.604	32.18
Sec δ, Tan δ	1.002	-0.059	1.096	-0.449	2.795	-2.610	2.562	+2.359
D _α δ, D _α α	+0.06	0.00	+0.05	+0.02	+0.02	+0.14	+0.10	-0.13
D _β δ, D _β β	+0.3	+0.6	+0.3	+0.6	+0.3	+0.6	+0.3	+0.6

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ξ^2 Ceti. Mag. 4.3		σ Ceti. Mag. 4.8		36 H. Cassiopeiae. Mag. 5.3		ν Ceti. Mag. 5.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 2 23	° ' + 8 5	h m 2 28	° ' -15 36	h m 2 29	° ' +72 27	h m 2 31	° ' + 5 13
	s	"	s	"	s	"	s	"
Jan. 0.3	42.870	11.68	7.787	43.97	63.78	30.92	29.301	46.36
10.3	42.779	11.09	7.679	45.02	63.30	32.30	29.211	45.69
20.3	42.667	10.50	7.551	45.83	62.76	33.14	29.101	45.06
30.2	42.541	9.92	7.410	46.38	62.16	33.41	28.974	44.48
Feb. 9.2	42.406	9.37	7.260	46.65	61.55	33.10	28.840	43.96
19.2	42.270	8.88	7.110	46.62	60.95	32.22	28.703	43.52
29.2	42.141	8.46	6.967	46.30	60.40	30.82	28.571	43.20
Mar. 10.1	42.029	8.14	6.839	45.69	59.90	28.97	28.452	43.01
20.1	41.939	7.96	6.734	44.80	59.50	26.74	28.357	42.95
30.1	41.882	7.93	6.660	43.62	59.20	24.22	28.295	43.07
Apr. 9.1	41.863	8.09	6.623	42.18	59.03	21.54	28.268	43.37
19.0	41.886	8.44	6.627	40.48	59.01	18.79	28.282	43.88
29.0	41.954	9.00	6.676	38.57	59.12	16.09	28.341	44.61
May 9.0	42.069	9.80	6.771	36.46	59.37	13.53	28.445	45.55
18.9	42.227	10.80	6.911	34.20	59.77	11.19	28.594	46.71
28.9	42.428	12.02	7.093	31.85	60.27	9.17	28.784	48.04
June 7.9	42.664	13.41	7.315	29.43	60.89	7.52	29.013	49.54
17.9	42.932	14.95	7.568	27.04	61.59	6.29	29.273	51.19
27.8	43.222	16.61	7.846	24.71	62.36	5.51	29.556	52.90
July 7.8	43.531	18.33	8.147	22.50	63.19	5.21	29.859	54.66
17.8	43.847	20.06	8.457	20.49	64.06	5.39	30.172	56.41
27.8	44.164	21.77	8.771	18.74	64.94	6.04	30.486	58.12
Aug. 6.7	44.476	23.39	9.081	17.27	65.80	7.15	30.796	59.70
16.7	44.775	24.90	9.381	16.14	66.64	8.69	31.095	61.15
26.7	45.058	26.25	9.663	15.39	67.44	10.63	31.379	62.43
Sept. 5.6	45.318	27.41	9.925	15.02	68.19	12.92	31.642	63.47
15.6	45.554	28.36	10.161	15.04	68.88	15.53	31.881	64.29
25.6	45.762	29.08	10.369	15.45	69.50	18.39	32.092	64.86
Oct. 5.6	45.942	29.58	10.546	16.19	70.02	21.46	32.276	65.19
15.5	46.091	29.86	10.690	17.25	70.46	24.67	32.432	65.29
25.5	46.211	29.95	10.802	18.56	70.79	27.96	32.557	65.19
Nov. 4.5	46.301	29.86	10.882	20.04	71.01	31.25	32.653	64.90
14.5	46.361	29.62	10.929	21.66	71.13	34.48	32.719	64.47
24.4	46.391	29.26	10.945	23.32	71.13	37.55	32.754	63.91
Dec. 4.4	46.394	28.80	10.930	24.97	71.01	40.40	32.762	63.29
14.4	46.367	28.27	10.886	26.52	70.78	42.93	32.739	62.61
24.3	46.313	27.70	10.815	27.92	70.45	45.07	32.689	61.92
34.3	46.232	27.09	10.718	29.13	70.02	46.75	32.612	61.22
Mean Place	41.431	2.97	6.275	45.35	60.986	6.78	27.821	38.55
Sec δ , Tan δ	1.010	+0.142	1.038	-0.279	3.318	+3.164	1.004	+0.092
$D\psi\alpha$, $D\omega\alpha$	+0.06	-0.01	+0.06	+0.01	+0.11	-0.17	+0.06	-0.01
$D\psi\delta$, $D\omega\delta$	+0.3	+0.6	+0.3	+0.6	+0.3	+0.6	+0.3	+0.6

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	μ Hydr. Mag. 5.3		ν Arietis. Mag. 5.4		δ Ceti. Mag. 4.0		ε Hydr. Mag. 4.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 2 33	° ' -79 27	h m 2 34	° ' +21 35	h m 2 35	° ' - 0 1	h m 2 38	° ' -68 36
Jan. 0.3	29.92	103.95	4.131	68.43	12.038	53.19	20.42	105.45
10.3	28.75	104.86	4.038	68.21	11.949	53.99	19.90	106.63
20.3	27.52	105.17	3.920	67.87	11.838	54.68	19.34	107.22
30.2	26.26	104.88	3.785	67.39	11.712	55.28	18.76	107.20
Feb. 9.2	25.01	104.00	3.638	66.80	11.575	55.76	18.18	106.80
19.2	23.80	102.54	3.489	66.10	11.485	56.09	17.61	105.43
29.2	22.66	100.57	3.345	65.36	11.301	56.26	17.07	103.73
Mar. 10.1	21.61	98.14	3.217	64.57	11.180	56.28	16.57	101.54
20.1	20.70	95.32	3.114	63.81	11.081	56.09	16.13	98.92
30.1	19.92	92.16	3.045	63.12	11.012	55.72	15.77	95.94
Apr. 9.1	19.31	88.76	3.016	62.52	10.980	55.13	15.48	92.67
19.0	18.89	85.16	3.033	62.07	10.988	54.32	15.30	89.17
29.0	18.64	81.46	3.098	61.81	11.040	53.29	15.21	85.52
May 9.0	18.60	77.75	3.212	61.76	11.138	52.05	15.22	81.81
18.9	18.75	74.09	3.374	61.96	11.279	50.61	15.33	78.12
28.9	19.09	70.58	3.581	62.39	11.463	49.00	15.56	74.54
June 7.9	19.63	67.29	3.827	63.07	11.685	47.27	15.87	71.13
17.9	20.32	64.31	4.106	63.96	11.939	45.43	16.27	67.99
27.8	21.16	61.71	4.412	65.08	12.217	43.54	16.74	65.19
July 7.8	22.13	59.54	4.736	66.36	12.513	41.66	17.28	62.82
17.8	23.21	57.89	5.070	67.78	12.823	39.82	17.86	60.94
27.8	24.35	56.79	5.406	69.30	13.134	38.09	18.48	59.59
Aug. 6.7	25.52	56.29	5.738	70.88	13.441	36.52	19.12	58.82
16.7	26.69	56.38	6.060	72.48	13.740	35.14	19.75	58.66
26.7	27.81	57.08	6.363	74.05	14.023	34.00	20.35	59.12
Sept. 5.6	28.84	58.38	6.647	75.55	14.285	33.11	20.92	60.17
15.6	29.77	60.22	6.905	76.97	14.525	32.52	21.43	61.79
25.6	30.55	62.55	7.137	78.27	14.737	32.20	21.86	63.93
Oct. 5.6	31.14	65.28	7.330	79.43	14.923	32.15	22.20	66.51
15.5	31.55	68.33	7.511	80.45	15.078	32.36	22.44	69.44
25.5	31.72	71.55	7.653	81.33	15.204	32.78	22.59	72.60
Nov. 4.5	31.69	74.85	7.768	82.04	15.301	33.39	22.63	75.88
14.5	31.43	78.08	7.841	82.61	15.367	34.15	22.57	79.14
24.4	30.96	81.13	7.889	83.04	15.403	35.01	22.40	82.27
Dec. 4.4	30.28	83.88	7.903	83.32	15.411	35.92	22.12	85.15
14.4	29.43	86.23	7.883	83.45	15.388	36.84	21.77	87.66
24.3	28.43	88.08	7.834	83.45	15.338	37.74	21.34	89.73
34.3	27.31	89.39	7.755	83.31	15.261	38.60	20.85	91.27
Mean Place	25.067	93.79	2.605	55.63	10.534	59.38	17.548	96.20
Sec δ, Tan δ	5.473	-5.382	1.076	+0.396	1.000	-0.001	2.744	-2.555
D _α , D _α	-0.03	+0.28	+0.07	-0.02	+0.06	0.00	+0.02	+0.13
D _δ , D _δ	+0.3	+0.6	+0.3	+0.6	+0.3	+0.6	+0.3	+0.6

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	θ Persei. Mag. 4.2		γ Ceti seq. Mag. 3.7		π Ceti. Mag. 4.4		μ Ceti. Mag. 4.4	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 2 38	° ' " +48 52	h m 2 38	° ' " + 2 52	h m 2 40	° ' " -14 12	h m 2 40	° ' " + 9 45
	s "	"	s "	"	s "	"	s "	"
Jan. 0.3	29.105	46.24 70	58.289	63.78	8.978	47.87	25.447	45.96
10.3	28.947 ¹⁵⁸	46.94 32	58.203 ⁸⁶	63.06 ⁷²	8.878 ¹⁰⁰	48.96 ¹⁰⁹	25.363 ⁸⁴	45.42 ⁵⁴
20.3	28.754 ¹⁹³	47.26 32	58.095 ¹⁰⁸	62.39 ⁶⁷	8.754 ¹²⁴	49.83 ⁸⁷	25.256 ¹⁰⁷	44.86 ⁵⁶
30.3	28.535 ²¹⁹	47.18 8	57.969 ¹²⁶	61.79 ⁶⁰	8.615 ¹³⁹	50.44 ⁶¹	25.130 ¹²⁶	44.31 ⁵⁵
Feb. 9.2	28.301 ²³⁴	46.71 47	57.832 ¹³⁷	61.29 ⁶⁰	8.465 ¹⁵⁰	50.77 ³³	24.993 ¹³⁷	43.77 ⁵⁴
	28.301 ²³⁷	46.71 86	57.832 ¹⁴¹	61.29 ⁴⁰	8.465 ¹⁵²	50.77 ⁷	24.993 ¹⁴²	43.77 ⁵⁰
19.2	28.064	45.85	57.691	60.89	8.313	50.84	24.851	43.27
29.2	27.838 ²²⁶	44.66 119	57.556 ¹³⁵	60.63 ²⁶	8.165 ¹⁴⁸	50.61 ²³	24.714 ¹³⁷	42.82 ⁴⁵
Mar. 10.1	27.637 ²⁰¹	43.18 148	57.434 ¹²²	60.51 ¹²	8.030 ¹³⁶	50.11 ⁵⁰	24.591 ¹²³	42.45 ³⁷
20.1	27.473 ¹⁶⁴	41.48 170	57.332 ¹⁰²	60.55 ⁴	7.918 ¹¹²	49.31 ⁸⁰	24.490 ¹⁰¹	42.20 ²⁵
30.1	27.358 ¹¹⁵	39.65 183	57.261 ⁷¹	60.78 ²³	7.835 ⁸³	48.24 ¹⁰⁷	24.419 ⁷¹	42.08 ¹²
	27.358 ⁵⁹	39.65 190	57.261 ³⁵	60.78 ⁴²	7.835 ⁴⁸	48.24 ¹²³	24.419 ³⁴	42.08 ⁵
Apr. 9.1	27.299	37.75	57.226	61.20	7.787	46.91	24.385	42.13
19.0	27.307 ⁸	35.88 187	57.231 ⁵	61.83 ⁶³	7.780 ⁷	45.32 ¹⁶⁹	24.393 ⁸	42.37 ²⁴
29.0	27.380 ⁷³	34.10 178	57.281 ⁵⁰	62.67 ⁸⁴	7.818 ³⁸	43.51 ¹⁸¹	24.446 ⁵³	42.80 ⁴³
May 9.0	27.523 ¹⁴³	32.52 158	57.377 ⁹⁶	63.73 ¹⁰⁶	7.902 ⁸⁴	41.50 ²⁰¹	24.546 ¹⁰⁰	43.45 ⁶⁵
19.0	27.730 ²⁰⁷	31.16 136	57.516 ¹³⁹	64.99 ¹²⁶	8.031 ¹²⁹	39.33 ²¹⁷	24.691 ¹⁴⁵	44.31 ⁸⁶
	27.730 ²⁶⁸	31.16 106	57.516 ¹⁸³	64.99 ¹⁴³	8.031 ¹⁷²	39.33 ²²⁸	24.691 ¹⁸⁸	44.31 ¹⁰⁶
28.9	27.998	30.10	57.699	66.42	8.203	37.05	24.879	45.37
June 7.9	28.319 ³²¹	29.37 73	57.919 ²²⁰	68.02 ¹⁸⁰	8.414 ²¹¹	34.70 ²³⁵	25.105 ²²⁶	46.62 ¹²⁵
17.9	28.687 ³⁶⁸	28.98 39	58.172 ²⁵³	69.71 ¹⁶⁹	8.659 ²⁴⁵	32.34 ²³⁶	25.364 ²⁵⁹	48.02 ¹⁴⁰
27.8	29.090 ⁴⁰³	28.95 3	58.450 ²⁷⁸	71.49 ¹⁷⁸	8.931 ²⁷²	30.03 ²³¹	25.649 ²⁸⁵	49.55 ¹⁵³
July 7.8	29.517 ⁴²⁷	29.30 35	58.747 ²⁹⁷	73.29 ¹⁸⁰	9.224 ²⁹³	27.85 ²¹⁸	25.953 ³⁰⁴	51.16 ¹⁶¹
	29.517 ⁴⁴⁵	29.30 69	58.747 ³⁰⁹	73.29 ¹⁷⁷	9.224 ³⁰⁷	27.85 ²⁰²	25.953 ³¹⁵	51.16 ¹⁶⁵
17.8	29.962	29.99	59.056	75.06	9.531	25.83	26.268	52.81
27.8	30.411 ⁴⁴⁹	31.00 101	59.368 ³¹²	76.75 ¹⁶⁹	9.842 ³¹¹	24.03 ¹⁸⁰	26.586 ³¹⁸	54.43 ¹⁶²
Aug. 6.7	30.855 ⁴⁴⁴	32.33 133	59.678 ³¹⁰	78.32 ¹⁵⁷	10.152 ³¹⁰	22.53 ¹⁶⁰	26.901 ³¹⁵	56.00 ¹⁵⁷
16.7	31.287 ⁴³²	33.93 160	59.977 ²⁹⁹	79.73 ¹⁴¹	10.453 ³⁰¹	21.35 ¹¹⁸	27.207 ³⁰⁶	57.48 ¹⁴⁸
26.7	31.700 ⁴¹³	35.75 182	60.262 ²⁸⁵	80.92 ¹¹⁹	10.740 ²⁸⁷	20.54 ⁸¹	27.498 ²⁹¹	58.81 ¹³³
	31.700 ³⁸⁵	35.75 200	60.262 ²⁶⁵	80.92 ⁹⁷	10.740 ²⁶⁶	20.54 ⁴⁵	27.498 ²⁷²	58.81 ¹¹⁵
Sept. 5.7	32.085	37.75	60.527	81.89	11.006	20.09	27.770	59.96
15.6	32.440 ³⁵⁵	39.92 217	60.770 ²⁴³	82.59 ⁷⁰	11.251 ²⁴⁵	20.03 ⁶	28.018 ²⁴⁸	60.93 ⁹⁷
25.6	32.759 ³¹⁹	42.18 226	60.987 ²¹⁷	83.04 ⁴⁵	11.467 ²¹⁶	20.36 ³³	28.241 ²²³	61.68 ⁷⁵
Oct. 5.6	33.042 ²⁸³	44.51 233	61.176 ¹⁸⁹	83.23 ¹⁹	11.654 ¹⁸⁷	21.03 ⁶⁷	28.438 ¹⁹⁷	62.22 ⁵⁴
15.5	33.282 ²⁴⁰	46.86 235	61.336 ¹⁶⁰	83.18 ⁵	11.810 ¹⁵⁶	22.01 ⁹⁸	28.605 ¹⁶⁷	62.56 ³⁴
	33.282 ¹⁹⁷	46.86 234	61.336 ¹³²	83.18 ²⁷	11.810 ¹²⁵	22.01 ¹²⁵	28.605 ¹³⁹	62.56 ¹⁴
25.5	33.479	49.20	61.468	82.91	11.935	23.26	28.744	62.70
Nov. 4.5	33.630 ¹⁵¹	51.46 226	61.569 ¹⁰¹	82.46 ⁴⁵	12.028 ⁹³	24.70 ¹⁴⁴	28.852 ¹⁰⁸	62.67 ³
14.5	33.734 ¹⁰⁴	53.62 216	61.640 ⁷¹	81.87 ⁵⁹	12.089 ⁶¹	26.27 ¹⁵⁷	28.930 ⁷⁸	62.49 ¹⁸
24.4	33.791 ⁵⁷	55.62 200	61.683 ⁴³	81.16 ⁷¹	12.117 ²⁸	27.90 ¹⁶³	28.979 ⁴⁹	62.19 ³⁰
Dec. 4.4	33.797 ⁶	57.42 180	61.694 ¹¹	80.38 ⁷⁸	12.115 ²	29.53 ¹⁶³	28.996 ¹⁷	61.80 ³⁹
	33.797 ⁴³	57.42 155	61.694 ¹⁸	80.38 ⁸⁰	12.115 ³³	29.53 ¹⁵⁵	28.996 ¹³	61.80 ⁴⁶
14.4	33.754	58.97	61.676	79.58	12.082	31.08	28.983	61.34
24.4	33.663 ⁹¹	60.22 126	61.630 ⁴⁶	78.77 ⁸¹	12.020 ⁶²	32.51 ¹⁴⁸	28.941 ⁴²	60.82 ⁵²
34.3	33.528 ¹³⁵	61.13 91	61.556 ⁷⁴	77.99 ⁷⁸	11.932 ⁸⁸	33.75 ¹²⁴	28.870 ⁷¹	60.27 ⁵⁵
Mean Place	27.276	26.40	56.770	56.70	7.415	49.84	28.914	36.78
Sec δ , Tan δ	1.520	+1.146	1.001	+0.050	1.031	-0.253	1.015	+0.172
$D_{\psi} \alpha$, $D_{\omega} \alpha$	+0.08	-0.06	+0.06	0.00	+0.06	+0.01	+0.06	-0.01
$D_{\psi} \delta$, $D_{\omega} \delta$	+0.3	+0.6	+0.3	+0.6	+0.3	+0.6	+0.3	+0.6

APPARENT PLACES OF STARS, 1916.

339

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	7 Persei. Mag. 3.9		41 Arietis. Mag. 3.7		β Fornacis. Mag. 4.5		σ Arietis. Mag. 5.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 2 44	° ' " +55 32	h m 2 45	° ' " +26 54	h m 2 45	° ' " -32 44	h m 2 46	° ' " +14 44
	s	"	s	"	s	"	s	"
Jan. 0.3	35.645	73.00	3.732	68.35	36.222	92.59	52.697	22.00
10.3	35.451 ¹⁹⁴	73.98 ⁹⁸	3.639 ⁹³	68.35 ⁰	36.079 ¹⁴³	93.97 ¹³⁸	52.615 ⁸²	21.60 ⁴⁰
20.3	35.216 ²³⁵	74.54 ⁵⁶	3.518 ¹²¹	68.15 ²⁰	35.912 ¹⁶⁷	94.95 ⁹⁸	52.507 ¹⁰⁸	21.14 ⁴⁶
30.3	34.949 ²⁶⁷	74.64 ¹⁰	3.376 ¹⁴²	67.79 ³⁶	35.728 ¹⁸⁴	95.51 ⁵⁶	52.380 ¹²⁷	20.65 ⁴⁹
Feb. 9.2	34.664 ²⁸⁵	74.30 ³⁴	3.220 ¹⁵⁶	67.25 ⁵⁴	35.534 ¹⁹⁴	95.63 ¹²	52.239 ¹⁴¹	20.11 ⁵⁴
	289	79	160	70	196	30	145	57
19.2	34.375	73.51	3.060	66.55	35.338	95.33	52.094	19.54
29.2	34.098 ²⁷⁷	72.33 ¹¹⁸	2.903 ¹⁵⁷	65.73 ⁸²	35.147 ¹⁹¹	94.60 ⁷³	51.951 ¹⁴³	18.99 ⁵⁵
Mar. 10.1	33.850 ²⁴⁸	70.79 ¹⁵⁴	2.761 ¹⁴²	64.83 ⁹⁰	34.972 ¹⁷⁵	93.46 ¹¹⁴	51.821 ¹³⁰	18.48 ⁵¹
20.1	33.643 ²⁰⁷	68.98 ¹⁸¹	2.645 ¹¹⁶	63.89 ⁹⁴	34.821 ¹⁵¹	91.94 ¹⁵²	51.714 ¹⁰⁷	18.03 ⁴⁵
30.1	33.492 ¹⁵¹	66.97 ²⁰¹	2.563 ⁸²	62.96 ⁹³	34.702 ¹¹⁹	90.08 ¹⁸⁶	51.637 ⁷⁷	17.66 ³⁷
	84	213	41	86	80	219	39	21
Apr. 9.1	33.408	64.84	2.522	62.10	34.622	87.89	51.598	17.45
19.0	33.396 ¹²	62.69 ²¹⁵	2.528 ⁶	61.35 ⁷⁵	34.588 ³⁴	85.42 ²⁴⁷	51.599 ¹	17.38 ⁷
29.0	33.462 ¹⁶⁶	60.62 ²⁰⁷	2.584 ⁵⁶	60.76 ⁵⁹	34.601 ¹³	82.74 ²⁶⁸	51.648 ⁹⁷	17.51 ¹³
May 9.0	33.607 ¹⁴⁵	58.69 ¹⁹³	2.692 ¹⁰⁸	60.36 ⁴⁰	34.664 ⁶³	79.88 ²⁸⁶	51.745 ⁴⁹	17.86 ³⁵
19.0	33.826 ²¹⁹	56.98 ¹⁷¹	2.849 ¹⁵⁷	60.20 ¹⁶	34.778 ¹¹⁴	76.91 ²⁹⁷	51.886 ¹⁴¹	18.40 ⁵⁴
	291	143	206	8	163	301	187	77
28.9	34.117	55.55	3.054	60.28	34.941	73.90	52.073	19.17
June 7.9	34.469 ³⁵²	54.45 ¹¹⁰	3.301 ²⁴⁷	60.62 ³⁴	35.148 ²⁰⁷	70.91 ²⁹⁹	52.299 ²²⁶	20.13 ⁹⁶
17.9	34.875 ⁴⁰⁶	53.72 ⁷³	3.583 ²⁸²	61.20 ⁵⁸	35.396 ²⁴⁸	68.01 ²⁹⁰	52.559 ²⁶⁰	21.29 ¹¹⁶
27.8	35.324 ⁴⁴⁹	53.38 ³⁴	3.894 ³¹¹	62.02 ⁸²	35.676 ²⁸⁰	65.28 ²⁷³	52.845 ²⁸⁶	22.59 ¹³⁰
July 7.8	35.805 ⁴⁸¹	53.41 ³	4.226 ³³²	63.05 ¹⁰⁸	35.983 ³⁰⁷	62.81 ²⁴⁷	53.153 ³⁰⁸	24.00 ¹⁴¹
	500	43	343	122	324	217	319	148
17.8	36.305	53.84	4.569	64.27	36.307	60.64	53.472	25.48
27.8	36.813 ⁵⁰⁶	54.65 ⁸¹	4.918 ³⁴⁹	65.63 ¹³⁶	36.641 ³³⁴	58.84 ¹⁸⁰	53.795 ³²³	27.04 ¹⁵⁶
Aug. 6.7	37.318 ⁵⁰⁶	55.81 ¹¹⁶	5.263 ³⁴⁵	67.10 ¹⁴⁷	36.977 ³³⁶	57.47 ¹³⁷	54.117 ³²²	28.57 ¹⁵³
16.7	37.811 ⁴⁹⁸	57.29 ¹⁴⁸	5.600 ³³⁷	68.64 ¹⁵⁴	37.307 ³³⁰	56.56 ⁹¹	54.430 ³¹³	30.05 ¹⁴⁸
26.7	38.284 ⁴⁷³	59.07 ¹⁷⁸	5.921 ³²¹	70.21 ¹⁵⁷	37.622 ³¹⁵	56.15 ⁴¹	54.728 ²⁹⁸	31.44 ¹³⁹
	445	203	300	156	294	9	279	128
Sept. 5.7	38.729	61.10	6.221	71.77	37.916	56.24	55.007	32.72
15.6	39.140 ⁴¹¹	63.32 ²²²	6.498 ²⁷⁷	73.29 ¹⁵²	38.184 ²⁶⁸	56.83 ⁵⁹	55.264 ²⁵⁷	33.82 ¹¹⁰
25.6	39.512 ³⁷²	65.71 ²³⁹	6.748 ²⁵⁰	74.75 ¹⁴⁶	38.422 ²³⁸	57.90 ¹⁰⁷	55.497 ²³³	34.78 ⁹⁶
Oct. 5.6	39.840 ³²⁸	68.21 ²⁵⁰	6.970 ²²²	76.11 ¹³⁶	38.626 ²⁰⁴	59.40 ¹⁵⁰	55.702 ²⁰⁵	35.55 ⁷⁷
15.5	40.121 ²⁸¹	70.80 ²⁵⁹	7.162 ¹⁹²	77.37 ¹²⁶	38.791 ¹⁶⁶	61.25 ¹⁸⁵	55.881 ¹⁷⁹	36.14 ⁵⁹
	290	261	159	113	128	216	148	43
25.5	40.351 ¹⁷⁷	73.41 ²⁵⁶	7.321 ¹²⁸	78.50 ¹⁰¹	38.919 ⁸⁹	63.41 ²³⁴	56.029 ¹¹⁷	36.57 ²⁵
Nov. 4.5	40.528 ¹²¹	75.97 ²⁴⁹	7.449 ⁹⁶	79.51 ⁸⁸	39.008 ⁴⁹	65.75 ²⁴⁶	56.146 ⁸⁹	36.82 ¹²
14.5	40.649 ⁶⁴	78.46 ²³⁵	7.545 ⁶⁰	80.39 ⁷³	39.057 ¹⁰	68.21 ²⁴⁷	56.235 ⁵⁶	36.94 ²
24.4	40.713 ³	80.81 ²¹⁴	7.605 ²⁶	81.12 ⁵⁹	39.067 ⁴²	70.68 ²³⁸	56.291 ²⁴	36.92 ¹¹
Dec. 4.4	40.716 ⁸⁴	82.95 ¹⁹⁰	7.631 ¹⁰	81.71 ⁴²	39.038 ⁶⁴	73.06 ²¹⁹	56.315 ⁶	36.81 ²²
14.4	40.662 ¹¹²	84.85 ¹⁵⁷	7.621 ⁴⁴	82.13 ²⁶	38.974 ⁹⁸	75.25 ¹⁹⁵	56.309 ³⁷	36.59 ³¹
24.4	40.550 ¹⁰⁶	86.42 ¹²²	7.577 ⁷⁷	82.39 ⁹	38.876 ¹³⁰	77.20 ¹⁶²	56.272 ⁷⁰	36.28 ³¹
34.3	40.384	87.64	7.500	82.48	38.746	78.82	56.202	35.91 ³⁷
Mean Place	33.586	52.02	2.107	54.20	34.504	89.75	51.120	11.38
Sec δ, Tan δ	1.768	+1.458	1.122	+0.508	1.189	-0.643	1.034	+0.263
D _α , D _α α	+0.09	-0.07	+0.07	-0.03	+0.05	+0.03	+0.07	-0.01
D _δ , D _δ δ	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ Eridani. Mag. 4.8		♁ Persel. Mag. 4.1		♁ Eridani. Mag. 4.0		♁ Arietis (mean). Mag. 4.6	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 2 47	° ' -21 20	h m 2 48	° ' +52 25	h m 2 52	° ' - 9 13	h m 2 54	° ' +21 0
	s	"	s	"	s	"	s	"
Jan. 0.3	15.245	58.43	19.589	30.80	21.002	50.96	25.959	30.49
10.3	15.133 ¹¹²	59.69 ¹²⁶	19.419 ¹⁷⁰	31.71 ⁹¹	20.913 ⁸⁹	52.02 ¹⁰⁶	25.876 ⁸³	30.32 ¹⁷
20.3	14.999 ¹³⁴	60.65 ⁹⁶	19.209 ²¹⁰	32.22 ⁵¹	20.799 ¹¹⁴	52.90 ⁸⁸	25.766 ¹¹⁰	30.01 ³¹
30.3	14.847 ¹⁵²	61.29 ⁶⁴	18.969 ²⁴⁰	32.30 ⁸	20.666 ¹³³	53.57 ⁶⁷	25.634 ¹³²	29.61 ⁴⁰
Feb. 9.2	14.683 ¹⁶⁴	61.58 ²⁹	18.709 ²⁶⁰	31.96 ³⁴	20.521 ¹⁴⁵	54.02 ⁴⁵	25.488 ¹⁴⁶	29.10 ⁵¹
19.2	14.516 ¹⁶⁷	61.54 ⁴	18.444 ²⁶⁵	31.21 ⁷⁵	20.371 ¹⁵⁰	54.23 ²¹	25.334 ¹⁵⁴	28.51 ⁵⁹
29.2	14.354 ¹⁶²	61.15 ³⁹	18.190 ²⁶⁴	30.08 ¹¹³	20.223 ¹⁴⁸	54.20 ³	25.183 ¹⁵¹	27.84 ⁶⁷
Mar. 10.2	14.204 ¹⁵⁰	60.41 ⁷⁴	17.959 ²³¹	28.63 ¹⁴⁵	20.086 ¹³⁷	53.91 ²⁹	25.042 ¹⁴¹	27.18 ⁶⁶
20.1	14.076 ¹²⁸	59.35 ¹⁰⁶	17.767 ¹⁹²	26.91 ¹⁷²	19.970 ¹¹⁶	53.38 ⁵³	24.926 ¹¹⁶	26.50 ⁶⁸
30.1	13.977 ⁹⁹	57.99 ¹³⁶	17.626 ¹⁴¹	25.02 ¹⁸⁹	19.881 ⁸⁹	52.60 ⁷⁸	24.840 ⁸⁶	25.85 ⁶⁵
Apr. 9.1	13.914 ⁶³	56.33 ¹⁶⁶	17.546 ⁸⁰	23.02 ²⁰⁰	19.827 ⁵⁴	51.57 ¹⁰³	24.793 ⁴⁷	25.31 ⁵⁴
19.0	13.893 ²¹	54.41 ¹⁹²	17.533 ¹³	21.01 ²⁰¹	19.813 ¹⁴	50.28 ¹²⁹	24.789 ⁴	24.88 ⁴³
29.0	13.918 ²⁶	52.24 ²¹⁷	17.593 ⁶⁰	19.07 ¹⁹⁴	19.843 ³⁰	48.78 ¹⁵⁰	24.832 ⁴³	24.63 ⁶
May 9.0	13.989 ⁷¹	49.90 ²³⁴	17.727 ¹³⁴	17.28 ¹⁷⁹	19.918 ⁷⁵	47.07 ¹⁷¹	24.926 ⁹⁴	24.57 ²⁵
19.0	14.107 ¹¹⁸	47.41 ²⁴⁹	17.930 ²⁰³	15.71 ¹⁵⁷	20.038 ¹²⁰	45.19 ¹⁸⁸	25.067 ¹⁴¹	24.73 ¹⁶
28.9	14.269 ¹⁶²	44.81 ²⁶⁰	18.200 ²⁷⁰	14.41 ¹³⁰	20.201 ¹⁶⁸	43.17 ²⁰²	25.254 ¹⁸⁷	25.11 ³⁸
June 7.9	14.473 ²⁰⁴	42.19 ²⁶²	18.529 ³²⁹	13.42 ⁹⁹	20.404 ²⁰⁸	41.04 ²¹³	25.483 ²²⁹	25.69 ⁵⁸
17.9	14.713 ²⁴⁰	39.61 ²⁵⁸	18.909 ³⁸⁰	12.79 ⁶³	20.641 ²³⁷	38.88 ²¹⁶	25.747 ²⁶⁴	26.51 ⁸²
27.9	14.983 ²⁷⁰	37.11 ²⁶⁰	19.328 ⁴¹⁹	12.53 ²⁶	20.906 ²⁶⁵	36.73 ²¹⁵	26.039 ²⁹²	27.51 ¹⁰⁰
July 7.8	15.275 ²⁹²	34.78 ²⁸³	19.777 ⁴⁴⁹	12.65 ¹²	21.193 ²⁸⁷	34.65 ²⁰⁶	26.354 ³¹⁵	28.69 ¹¹⁸
17.8	15.583 ³⁰⁶	32.88 ²¹⁰	20.245 ⁴⁶⁸	13.12 ⁴⁷	21.495 ³⁰²	32.69 ¹⁹⁶	26.681 ³²⁷	29.98 ¹²⁹
27.8	15.899 ³¹⁶	30.85 ¹⁸³	20.721 ⁴⁷⁶	13.95 ⁸²	21.803 ³⁰⁸	30.91 ¹⁷⁸	27.015 ³³⁴	31.39 ¹⁴¹
Aug. 6.7	16.215 ³¹⁶	29.38 ¹⁴⁷	21.196 ⁴⁷⁵	15.11 ¹¹⁶	22.110 ³⁰⁷	29.38 ¹⁵³	27.348 ³³³	32.84 ¹⁴⁵
16.7	16.523 ³⁰⁸	28.29 ¹⁰⁹	21.661 ⁴⁶⁵	16.56 ¹⁴⁵	22.410 ³⁰⁰	28.12 ¹²⁶	27.674 ³²⁶	34.30 ¹⁴⁶
26.7	16.819 ²⁹⁶	27.61 ⁶⁸	22.106 ⁴⁴⁵	18.28 ¹⁷²	22.699 ²⁸⁹	27.18 ⁹⁴	27.983 ³⁰⁹	35.74 ¹⁴⁴
Sept. 5.7	17.096 ²⁷⁷	27.37 ²⁴	22.527 ⁴²¹	20.23 ¹⁹⁵	22.971 ³⁷²	26.58 ⁶⁰	28.277 ²⁹⁴	37.12 ¹³⁸
15.6	17.348 ²⁵²	27.56 ¹⁹	22.916 ³⁸⁹	22.36 ²¹³	23.220 ²⁴⁹	26.33 ²⁵	28.549 ²⁷²	38.40 ¹²⁶
25.6	17.574 ²²⁶	28.18 ⁶²	23.268 ³⁵²	24.63 ²²⁷	23.444 ²²⁴	26.44 ¹¹	28.796 ²⁴⁷	39.67 ¹¹⁷
Oct. 5.6	17.769 ¹⁹⁵	29.17 ⁹⁹	23.581 ³¹³	27.01 ²³⁸	23.642 ¹⁹⁸	26.86 ⁴²	29.016 ²²⁰	40.61 ¹⁰⁴
15.6	17.932 ¹⁶³	30.52 ¹³⁵	23.851 ²⁷⁰	29.44 ²⁴³	23.810 ¹⁶⁸	27.60 ⁷⁴	29.209 ¹⁹³	41.52 ⁹¹
25.5	18.061 ¹²⁹	32.15 ¹⁶³	24.075 ²²⁴	31.89 ²⁴⁵	23.949 ¹³⁹	27.60 ⁹⁹	29.371 ¹⁶²	42.27 ⁷⁵
Nov. 4.5	18.158 ⁹⁷	33.98 ¹⁸³	24.251 ¹⁷⁶	34.30 ²⁴¹	24.057 ¹⁰⁸	28.59 ¹²⁰	29.371 ¹³¹	42.27 ⁶³
14.5	18.220 ⁶²	35.94 ¹⁹⁶	24.375 ¹²⁴	36.63 ²³³	24.057 ⁷⁷	29.79 ¹³⁴	29.502 ¹⁰¹	42.90 ⁴⁹
24.4	18.247 ²⁷	37.94 ²⁰⁰	24.445 ⁷⁰	38.81 ²¹⁸	24.134 ⁴⁶	31.13 ¹⁴²	29.603 ⁶⁷	43.39 ²⁶
Dec. 4.4	18.242 ⁵	39.91 ¹⁹⁷	24.461 ¹⁶	40.82 ²⁰¹	24.180 ¹⁴	32.55 ¹⁴⁴	29.670 ³⁴	43.75 ²³
14.4	18.203 ³⁹	41.77 ¹⁸⁶	24.422 ³⁹	42.58 ¹⁷⁶	24.194 ¹⁸	33.99 ¹⁴¹	29.704 ¹	43.98 ¹²
24.4	18.133 ⁷⁰	43.44 ¹⁶⁷	24.328 ⁹⁴	44.05 ¹⁴⁷	24.176 ⁴⁶	35.40 ¹³²	29.705 ³³	44.10 ⁰
34.3	18.036 ⁹⁷	44.90 ¹⁴⁶	24.184 ¹⁴⁴	45.17 ¹¹²	24.130 ⁷⁷	36.72 ¹¹⁸	29.672 ⁶⁶	44.10 ¹²
34.3	18.036	44.90	24.184	45.17	24.053	37.90	29.606	43.98
Mean Place	13.613	58.54	17.574	10.56	19.399	54.52	24.310	18.17
Sec δ, Tan δ	1.074	-0.391	1.640	+1.299	1.013	-0.163	1.071	+0.384
D _ψ α, D _ω α	+0.05	+0.02	+0.08	-0.06	+0.06	+0.01	+0.07	-0.02
D _ψ δ, D _ω δ	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	47 H. Cephei. Mag. 5.7		θ Eridani. Mag. 3.4		α Ceti. Mag. 2.8		τ ² Eridani. Mag. 4.2	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 2 54	° ' +79 5	h m 2 55	° ' -40 37	h m 2 57	° ' + 3 45	h m 2 58	° ' -23 56
	s "	"	s "	"	s "	"	s "	"
Jan. 0.3	56.64	41.75	6.551	91.15	54.807	46.41	42.998	71.31
10.3	55.89	43.59	6.379	92.67	54.729	45.69	42.885	72.68
20.3	55.02	44.90	6.180	93.75	54.627	45.01	42.747	73.74
30.3	54.05	45.63	5.961	94.35	54.502	44.41	42.591	74.46
Feb. 9.2	53.04	45.75	5.731	94.46	54.364	43.90	42.419	74.81
19.2	52.01	45.25	5.498	94.08	54.219	43.48	42.241	74.80
29.2	51.03	44.18	5.270	93.24	54.075	43.20	42.068	74.42
Mar. 10.2	50.14	42.58	5.058	91.95	53.942	43.04	41.906	73.66
20.1	49.38	40.52	4.871	90.23	53.828	43.03	41.764	72.58
30.1	48.79	38.11	4.718	88.14	53.742	43.20	41.650	71.15
Apr. 9.1	48.38	35.41	4.606	85.70	53.690	43.54	41.571	69.42
19.0	48.18	32.57	4.541	82.99	53.678	44.09	41.536	87.41
29.0	48.20	29.68	4.528	80.06	53.710	44.85	41.544	65.17
May 9.0	48.45	26.84	4.571	76.94	53.790	45.81	41.601	62.74
19.0	48.89	24.18	4.671	73.72	53.914	46.97	41.705	60.15
28.9	49.55	21.74	4.822	70.46	54.061	48.31	41.855	57.48
June 7.9	50.38	19.64	5.023	67.26	54.287	49.79	42.047	54.76
17.9	51.37	17.92	5.289	64.20	54.527	51.41	42.279	52.08
27.9	52.49	16.63	5.553	61.32	54.796	53.10	42.542	49.52
July 7.8	53.72	15.79	5.869	58.74	55.085	54.82	42.830	47.12
17.8	55.01	15.44	6.207	56.50	55.389	56.53	43.135	44.95
27.8	56.35	15.58	6.561	54.68	55.699	58.16	43.451	43.10
Aug. 6.7	57.70	16.20	6.918	53.33	56.010	59.70	43.769	41.59
16.7	59.04	17.29	7.271	52.49	56.313	61.07	44.083	40.48
26.7	60.34	18.83	7.613	52.18	56.605	62.24	44.383	39.81
Sept. 5.7	61.57	20.78	7.935	52.43	56.880	63.20	44.668	39.60
15.6	62.73	23.09	8.228	53.22	57.135	63.90	44.930	39.84
25.6	63.78	25.75	8.490	54.52	57.366	64.35	45.166	40.52
Oct. 5.6	64.71	28.68	8.714	56.28	57.571	64.54	45.373	41.62
15.6	65.48	31.83	8.897	58.44	57.751	64.50	45.547	43.07
25.5	66.11	35.14	9.038	60.90	57.901	64.24	45.689	44.84
Nov. 4.5	66.57	38.59	9.133	63.58	58.022	63.80	45.796	46.81
14.5	66.84	41.93	9.183	66.36	58.115	63.21	45.867	48.94
24.4	66.93	45.26	9.188	69.14	58.175	62.50	45.902	51.10
Dec. 4.4	66.82	48.43	9.149	71.81	58.205	61.74	45.903	53.23
14.4	66.51	51.33	9.068	74.27	58.204	60.94	45.869	55.26
24.4	66.02	53.89	8.947	76.43	58.170	60.13	45.802	57.08
34.3	65.35	56.03	8.791	78.23	58.107	59.35	45.705	58.66
Mean Place	51.755	18.03	4.687	86.84	53.189	39.08	41.300	70.96
Sec δ, Tan δ	5.285	+5.190	1.317	-0.858	1.002	+0.066	1.094	-0.444
Dφ α, D _m α	+0.16	-0.25	+0.05	+0.04	+0.06	0.00	+0.05	+0.02
Dφ δ, D _m δ	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Persei. Mag. 3.1		ρ Persei. Var. 3.4-4.2		μ Horologii. Mag. 5.2		θ Hydr. Mag. 5.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 2 58	° ' " +53 10	h m 2 59	° ' " +38 30	h m 3 1	° ' " -60 3	h m 3 2	° ' " -72 13
	s	"	s	"	s	"	s	"
Jan. 0.3	44.358	62.48	49.129	72.63	40.22	54.16	7.71	58.13
10.3	44.194 ¹⁶⁴	63.50 ¹⁰²	49.024 ¹⁰⁵	73.12 ⁴⁹	39.89 ³³	55.74 ¹⁸⁸	7.09 ⁶²	59.60 ¹⁴⁷
20.3	43.985 ²⁰⁹	64.13 ⁶³	48.885 ¹³⁹	73.32 ²⁰	39.52 ³⁷	56.79 ¹⁰⁵	6.41 ⁶⁸	60.48 ⁸⁸
30.3	43.744 ²⁴¹	64.33 ²⁰	48.717 ¹⁶⁸	73.24 ⁸	39.13 ³⁹	57.26 ⁴⁷	5.69 ⁷²	60.78 ³⁰
Feb. 9.2	43.479 ²⁶⁵	64.11 ²²	48.532 ¹⁸⁵	72.86 ³⁸	38.72 ⁴¹	57.16 ¹⁰	4.96 ⁷³	60.48 ³⁰
19.2	43.206 ²⁷³	63.47 ⁶⁴	48.338 ¹⁹⁴	72.21 ⁶⁵	38.81 ⁴¹	56.50 ⁶⁶	4.23 ⁷³	59.60 ⁸⁸
29.2	42.941 ²⁶⁵	62.44 ¹⁰³	48.147 ¹⁹¹	71.32 ⁸⁹	37.91 ⁴⁰	55.29 ¹²¹	3.53 ⁷⁰	58.16 ¹⁴⁴
Mar. 10.2	42.696 ²⁴⁵	61.07 ¹³⁷	47.972 ¹⁷⁵	70.21 ¹¹¹	37.53 ³⁸	53.58 ¹⁷¹	2.87 ⁶⁶	56.23 ¹⁹³
20.1	42.489 ²⁰⁷	59.42 ¹⁶⁵	47.822 ¹⁵⁰	68.95 ¹²⁶	37.19 ³⁴	51.40 ²¹⁸	2.27 ⁶⁰	53.84 ²³⁹
30.1	42.332 ¹⁵⁷	57.57 ¹⁸⁵	47.710 ¹¹²	67.60 ¹³⁵	36.91 ²⁸	48.82 ²⁵⁸	1.75 ⁵²	51.06 ²⁷⁸
Apr. 9.1	42.236 ⁹⁶	55.59 ¹⁹⁸	47.644 ⁶⁶	66.21 ¹³⁹	36.68 ²³	45.89 ²⁹³	1.33 ⁴²	47.94 ³¹²
19.0	42.207 ²⁹	53.57 ²⁰²	47.631 ¹³	64.86 ¹³⁵	36.51 ¹⁷	42.69 ³³⁰	1.01 ³²	44.58 ³³⁶
29.0	42.251 ⁴⁴	51.59 ¹⁹⁸	47.675 ⁴⁴	63.61 ¹²⁵	36.43 ⁸	39.27 ³⁴²	0.80 ²¹	41.02 ³⁵⁶
May 9.0	42.369 ¹¹⁸	49.74 ¹⁸⁵	47.776 ¹⁰¹	62.52 ¹⁰⁹	36.42 ¹	35.70 ³⁵⁷	0.71 ⁹	37.36 ²⁶⁶
19.0	42.561 ¹⁹²	48.09 ¹⁶⁵	47.935 ¹⁵⁹	61.63 ⁸⁹	36.49 ⁷	32.09 ³⁶¹	0.76 ⁵	33.68 ²⁶⁶
28.9	42.820 ²⁶⁹	46.69 ¹⁴⁰	48.147 ²¹²	61.00 ⁶³	36.63 ¹⁴	28.50 ³⁵⁹	0.92 ¹⁶	30.06 ³⁶²
June 7.9	43.141 ³²¹	45.59 ¹¹⁰	48.408 ²⁶¹	60.62 ³⁸	36.85 ²²	25.02 ³⁴⁸	1.19 ²⁷	28.60 ³⁴⁶
17.9	43.515 ³⁷⁴	44.83 ⁷⁶	48.712 ³⁰⁴	60.54 ⁸	37.14 ²⁹	21.73 ³²⁹	1.58 ³⁹	23.35 ³²⁵
27.9	43.932 ⁴¹⁷	44.43 ⁴⁰	49.048 ³³⁶	60.75 ²¹	37.48 ³⁴	18.73 ³⁰⁰	2.07 ⁴⁹	20.42 ²⁹³
July 7.8	44.382 ⁴⁶⁰	44.39 ⁴	49.411 ³⁶³	61.23 ⁴⁸	37.89 ⁴¹	16.09 ²⁶⁴	2.64 ⁵⁷	17.89 ²⁵³
17.8	44.71 ⁴⁷¹	44.39 ³³	49.411 ³⁷⁸	61.23 ⁷⁶	37.89 ⁴⁴	16.09 ²²²	2.64 ⁶⁵	17.89 ²⁰⁶
27.8	44.853 ⁴⁸²	44.72 ⁶⁸	49.789 ³⁸⁷	61.99 ¹⁰⁰	38.33 ⁴⁷	13.87 ¹⁷²	3.29 ⁶⁰	15.81 ¹⁵⁵
Aug. 6.7	45.335 ⁴⁸⁴	45.40 ¹⁰¹	50.176 ³⁸⁸	62.99 ¹²²	38.80 ⁴⁸	12.15 ¹¹⁷	3.98 ⁷²	14.26 ⁹⁶
16.7	45.819 ⁴⁷⁶	46.41 ¹³²	50.564 ³⁸⁰	64.21 ¹³⁹	39.28 ⁴⁸	10.98 ⁵⁸	4.70 ⁷⁴	13.28 ³⁹
26.7	46.295 ⁴⁶⁰	47.73 ¹⁶⁰	50.944 ³⁶⁶	65.60 ¹⁵⁴	39.77 ⁴⁷	10.40 ⁴	5.44 ⁷²	12.89 ²³
36.7	46.755 ⁴³⁶	49.33 ¹⁸³	51.310 ³⁴⁶	67.14 ¹⁶⁶	40.24 ⁴⁵	10.44 ⁶³	6.16 ⁶⁹	13.12 ⁸⁵
Sept. 5.7	47.191 ⁴⁰⁶	51.16 ²⁰³	51.656 ³²⁴	68.80 ¹⁷²	40.69 ⁴⁰	11.07 ¹²⁴	6.85 ⁶³	13.97 ¹⁴⁵
15.6	47.597 ³⁷²	53.19 ²¹⁹	51.980 ²⁹⁵	70.52 ¹⁷⁸	41.09 ³⁷	12.31 ¹⁷⁸	7.48 ⁵⁵	15.42 ¹⁹⁹
25.6	47.969 ³³³	55.38 ²³¹	52.275 ²⁶⁵	72.28 ¹⁷⁷	41.46 ³¹	14.09 ²²⁸	8.03 ⁴⁵	17.41 ²⁴⁷
Oct. 5.6	48.302 ²⁹¹	57.69 ²³⁸	52.544 ²³⁴	74.05 ¹⁷⁵	41.77 ²⁴	16.37 ²⁶⁹	8.48 ³⁵	19.88 ²⁶⁵
15.6	48.593 ²⁴⁴	60.07 ²⁴²	52.770 ¹⁹⁸	75.80 ¹⁷⁰	42.01 ¹⁸	19.06 ³⁰⁰	8.83 ²³	22.73 ³¹⁵
25.5	48.837 ¹⁹⁸	62.49 ²⁴⁰	52.972 ¹⁶²	77.50 ¹⁶³	42.19 ¹⁰	22.06 ³¹⁹	9.06 ¹¹	25.88 ³³¹
Nov. 4.5	49.033 ¹⁴³	64.89 ²³⁴	53.134 ¹²³	79.13 ¹⁵⁴	42.29 ²	25.25 ³²⁶	9.17 ⁴	29.19 ³³⁵
14.5	49.176 ⁸⁸	67.23 ²²³	53.257 ⁸³	80.67 ¹⁴¹	42.31 ⁵	28.51 ³²²	9.13 ¹⁶	32.54 ³²⁷
24.4	49.264 ³²	69.46 ²⁰⁶	53.340 ⁴¹	82.08 ¹²⁶	42.26 ¹³	31.73 ³⁰⁴	8.97 ²⁸	35.81 ³⁰⁵
Dec. 4.4	49.296 ²⁶	71.52 ¹⁸⁴	53.381 ⁰	83.34 ¹⁰⁷	42.13 ¹⁹	34.77 ²⁷⁷	8.69 ⁴⁰	38.86 ²⁷⁴
14.4	49.270 ⁸²	73.36 ¹⁵⁶	53.381 ⁴³	84.41 ⁸⁷	41.94 ²⁵	37.54 ²³⁸	8.29 ⁶⁰	41.60 ²³²
24.4	49.188 ¹³⁶	74.92 ¹²²	53.338 ⁸⁵	85.28 ⁶²	41.69 ³¹	39.92 ¹⁹³	7.79 ⁵⁸	43.92 ¹⁸²
34.3	49.052	76.14	53.253	85.90	41.38	41.85	7.21	45.74
Mean Place	42.207	42.50	47.281	55.88	37.770	46.89	4.223	49.75
Sec δ , Tan δ	1.669	+1.336	1.278	+0.796	2.004	-1.736	3.276	-3.120
$D\psi\alpha$, $D_\omega\alpha$	+0.09	-0.06	+0.08	-0.04	+0.03	+0.03	0.00	+0.15
$D\psi\delta$, $D_\omega\delta$	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Persei. (Algol.) Var. 2.1-3.2		δ Arietis. Mag. 4.5		13 Eridani. Mag. 4.0		48 H. Cephei. Mag. 5.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 3 2	° ' " +40 37	h m 3 6	° ' " +19 24	h m 3 8	° ' " -29 18	h m 3 9	° ' " +77 25
Jan. 0.4	43.733	75.59	51.077	47.10	31.891	65.14	41.68	62.71
10.3	43.624 ¹⁰⁹	76.17	51.002 ⁷⁵	46.89	31.789 ¹²²	66.66 ¹⁵²	41.09 ⁵⁹	64.66 ¹⁹⁵
20.3	43.480 ¹⁴⁴	76.45 ²⁸	50.899 ¹⁰³	46.59	31.621 ¹⁴⁸	67.82 ¹¹⁶	40.37 ⁷²	66.09 ¹⁴³
30.3	43.306 ¹⁷⁴	76.44 ¹	50.771 ¹²⁸	46.21	31.449 ¹⁷²	68.59 ⁷⁷	39.56 ⁸¹	66.96 ⁸⁷
Feb. 9.2	43.113 ¹⁹⁸	76.11 ³³	50.626 ¹⁴⁵	45.74	31.264 ¹⁸⁵	68.95 ³⁶	38.70 ⁸⁶	67.24 ²⁸
19.2	42.911 ²⁰²	75.49 ⁶²	50.473 ¹⁵³	45.21	31.071 ¹⁹³	68.90 ⁵	37.82 ⁸⁸	66.93 ³¹
29.2	42.711 ²⁰⁰	74.60 ⁸⁹	50.318 ¹⁵⁵	44.62	30.880 ¹⁹¹	68.45 ⁴⁵	36.96 ⁸⁶	66.04 ⁸⁹
Mar. 10.2	42.526 ¹⁸⁵	73.47 ¹¹³	50.174 ¹⁴⁴	44.02	30.699 ¹⁸¹	67.59 ⁸⁶	36.17 ⁷⁹	64.60 ¹⁴⁴
20.1	42.368 ¹⁵⁸	72.17 ¹³⁰	50.061 ¹²³	43.42	30.539 ¹⁶⁰	66.35 ¹²⁴	35.48 ⁶⁹	62.71 ¹⁸⁹
30.1	42.249 ¹¹⁹	70.75 ¹⁴²	49.955 ⁹⁶	42.88	30.407 ¹³²	64.75 ¹⁶⁰	34.91 ⁵⁷	60.42 ²²⁹
Apr. 9.1	42.176 ⁷³	69.29 ¹⁴⁶	49.897 ⁵⁸	42.42	30.310 ⁹⁷	62.83 ¹⁹²	34.51 ⁴⁰	57.85 ²⁵⁷
19.1	42.158 ¹⁸	67.84 ¹⁴⁵	49.882 ¹⁵	42.08	30.255 ⁵⁵	60.61 ²²²	34.30 ²¹	55.09 ²⁷⁶
29.0	42.197 ³⁹	66.48 ¹³⁶	49.913 ⁸¹	41.91	30.247 ⁸	58.15 ²⁴⁶	34.26 ⁴	52.26 ²⁸³
May 9.0	42.298 ¹⁰¹	65.28 ¹²⁰	49.994 ⁸¹	41.92	30.278 ⁴¹	55.48 ²⁶⁷	34.42 ¹⁶	49.45 ²⁸¹
19.0	42.456 ¹⁵⁸	64.26 ¹⁰²	50.122 ¹²⁸	42.14	30.389 ⁹¹	52.67 ²⁸¹	34.76 ³⁴	46.76 ²⁶⁹
28.9	42.670 ²¹⁴	63.49 ⁷⁷	50.297 ¹⁷⁵	42.55	30.518 ¹⁸⁹	49.78 ²⁸⁹	35.29 ⁵³	44.30 ²⁴⁶
June 7.9	42.934 ²⁶⁴	62.99 ⁵⁰	50.513 ²¹⁶	43.19	30.702 ¹⁸⁴	46.87 ²⁹¹	35.99 ⁷⁰	42.12 ²¹⁸
17.9	43.242 ³⁰⁸	62.79 ²⁰	50.767 ²⁵⁴	44.01	30.927 ²²⁵	44.01 ²⁸⁶	36.82 ⁸³	40.28 ¹⁸⁴
27.9	43.585 ³⁴³	62.89 ¹⁰	51.049 ²⁸²	45.01	31.187 ²⁸⁰	41.27 ²⁷⁴	37.77 ⁹⁵	38.85 ¹⁴³
July 7.8	43.954 ³⁶⁹	63.27 ³⁸	51.355 ³⁰⁶	46.17	31.474 ²⁸⁷	38.74 ²⁶³	38.82 ¹⁰⁵	37.87 ⁹⁸
17.8	44.341 ³⁸⁷	63.94 ⁶⁷	51.676 ³²¹	47.44	31.782 ³⁰⁶	36.47 ²²⁷	39.96 ¹¹⁴	37.36 ⁵¹
27.8	44.737 ³⁹⁶	64.86 ⁹²	52.004 ³²⁸	48.79	32.103 ³²¹	34.53 ¹⁹⁴	41.13 ¹¹⁷	37.32 ⁴
Aug. 6.8	45.134 ³⁹⁷	66.02 ¹¹⁶	52.334 ³³⁰	50.17	32.429 ³²⁶	32.99 ¹⁵⁴	42.32 ¹¹⁹	37.73 ⁴¹
16.7	45.525 ³⁹¹	67.38 ¹³⁶	52.658 ³²⁴	51.55	32.753 ³²⁴	31.89 ¹¹⁰	43.51 ¹¹⁹	38.62 ⁸⁹
26.7	45.902 ³⁷⁷	68.90 ¹⁵²	52.971 ³¹³	52.90	33.067 ³¹⁴	31.25 ⁶⁴	44.68 ¹¹⁷	39.94 ¹³²
Sept. 5.7	46.259 ³⁵⁷	70.55 ¹⁶⁵	53.267 ²⁹⁶	54.17	33.365 ²⁹⁸	31.12 ¹³	45.79 ¹¹¹	41.69 ¹⁷⁶
15.6	46.593 ³³⁴	72.30 ¹⁷⁵	53.545 ²⁷⁸	55.33	33.642 ²⁷⁷	31.47 ³⁵	46.85 ¹⁰⁶	43.80 ²¹¹
25.6	46.899 ³⁰⁶	74.10 ¹⁸⁰	53.799 ²⁶⁴	56.37	33.892 ²⁶⁰	32.30 ⁸³	47.82 ⁹⁷	46.26 ²⁴⁶
Oct. 5.6	47.175 ²⁷⁶	75.93 ¹⁸³	54.029 ²³⁰	57.28	34.112 ²²⁰	33.58 ¹²⁸	48.70 ⁸⁸	49.00 ²⁷⁴
15.6	47.417 ²⁴²	77.77 ¹⁸⁴	54.231 ²⁰²	58.04	34.301 ¹⁸⁹	35.25 ¹⁶⁷	49.45 ⁷⁵	51.99 ²⁹⁹
25.5	47.624 ²⁰⁷	79.57 ¹⁸⁰	54.404 ¹⁷³	58.66	34.453 ¹⁵²	37.22 ¹⁹⁷	50.07 ⁶²	55.15 ³¹⁶
Nov. 4.5	47.794 ¹⁷⁰	81.31 ¹⁷⁴	54.549 ¹⁴⁵	59.15	34.588 ¹¹⁵	39.44 ²²²	50.55 ⁴⁸	58.42 ³²⁷
14.5	47.923 ¹²⁹	82.96 ¹⁶⁵	54.662 ¹¹³	59.51	34.646 ⁷⁸	41.81 ²³⁷	50.87 ³²	61.73 ³³¹
24.5	48.011 ⁸⁸	84.49 ¹⁵³	54.742 ⁸⁰	59.74	34.686 ⁴⁰	44.22 ²⁴¹	51.02 ¹⁵	65.00 ³²⁷
Dec. 4.4	48.056 ⁴⁵	85.88 ¹³⁹	54.790 ⁴⁸	59.87	34.689 ³	46.60 ²³⁸	51.01 ¹	68.13 ³¹³
14.4	48.056 ⁰	87.07 ¹¹⁹	54.802 ¹²	59.90	34.654 ³⁵	48.84 ²²⁴	50.81 ²⁰	71.05 ²⁹²
24.4	48.012 ⁴⁴	88.06 ⁹⁹	54.778 ²⁴	59.83	34.582 ⁷²	50.86 ²⁰²	50.46 ³⁵	73.65 ²⁶⁰
34.3	47.925 ⁸⁷	88.78 ⁷²	54.721 ⁵⁷	59.67	34.476 ¹⁰⁶	52.60 ¹⁷⁴	49.95 ⁵¹	75.86 ²²¹
Mean Place	41.830	58.42	49.362	35.44	30.108	63.72	36.856	39.91
Sec δ , Tan δ	1.318	+0.858	1.060	+0.352	1.147	-0.561	4.596	+4.486
$D\psi\alpha$, $D\omega\alpha$	+0.08	-0.04	+0.07	-0.02	+0.05	+0.03	+0.15	-0.20
$D\psi\delta$, $D\omega\delta$	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ Arietis. Mag. 5.0		♁ G. Horologii Mag. 5.7		♄ Eridani. Mag. 4.9		♈ Arietis. Mag. 5.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 3 10 s	° ' " +20 44 "	h m 3 10 s	° ' " -57 37 "	h m 3 11 s	° ' " - 9 7 "	h m 3 16 s	° ' " +20 50 "
Jan. 0.4	5.928	13.76	27.665	75.65	46.805	47.87	24.246	53.74
10.3	5.854 ⁷⁴	13.61 ¹⁵	27.370 ²⁹⁵	77.37 ¹⁷²	46.724 ⁸¹	49.00 ¹¹³	24.174 ⁷²	53.60 ¹⁴
20.3	5.751 ¹⁰³	13.34 ²⁷	27.039 ³³¹	78.56 ¹¹⁹	46.617 ¹⁰⁷	49.95 ⁹⁵	24.075 ⁹⁹	53.36 ²⁴
30.3	5.622 ¹²⁹	13.00 ³⁴	26.678 ³⁶¹	79.19 ⁶³	46.487 ¹³⁰	50.69 ⁷⁴	23.948 ¹²⁷	53.03 ³³
Feb. 9.2	5.476 ¹⁴⁶	12.55 ⁴⁵	26.302 ³⁷⁶	79.25 ⁶	46.340 ¹⁴⁷	51.20 ⁵¹	23.802 ¹⁴⁶	52.60 ⁴³
19.2	5.319 ¹⁵⁷	12.02 ⁵³	25.921 ³⁸¹	78.75 ⁵⁰	46.185 ¹⁵⁵	51.48 ²⁸	23.646 ¹⁵⁶	52.10 ⁵⁰
29.2	5.162 ¹⁵⁷	11.42 ⁶⁰	25.548 ³⁷³	77.71 ¹⁰⁴	46.029 ¹⁴⁶	51.51 ³	23.488 ¹⁵⁸	51.53 ⁵⁷
Mar. 10.2	5.016 ¹⁴⁶	10.81 ⁶¹	25.196 ³⁵²	76.16 ¹⁵⁵	45.883 ¹⁴⁸	51.29 ²²	23.338 ¹⁵⁰	50.93 ⁶⁰
20.1	4.888 ¹²⁸	10.17 ⁶⁴	24.877 ³¹⁹	74.14 ²⁰²	45.753 ¹³⁰	50.82 ⁴⁷	23.206 ¹³²	50.31 ⁶²
30.1	4.790 ⁹⁸	9.58 ⁵⁹	24.601 ²⁷⁶	71.70 ²⁴⁴	45.649 ¹⁰⁴	50.09 ⁷³	23.102 ¹⁰⁴	49.73 ⁵⁸
Apr. 9.1	4.729 ¹⁸	9.04 ⁵⁴	24.379 ²²²	68.90 ²⁸⁰	45.577 ⁷²	49.11 ⁹⁸	23.036 ⁶⁶	49.21 ⁵²
19.1	4.711 ¹⁸	8.63 ⁴¹	24.219 ¹⁶⁰	65.80 ³¹⁰	45.546 ³¹	47.88 ¹²³	23.012 ²⁴	48.80 ⁴¹
29.1	4.737 ²⁶	8.38 ²⁵	24.128 ⁹¹	62.47 ³³³	45.557 ¹¹	46.44 ¹⁴⁴	23.033 ²¹	48.54 ²⁶
May 9.0	4.815 ⁷⁸	8.29 ⁹	24.108 ²⁰	58.97 ³⁵⁰	45.612 ⁵⁵	44.79 ¹⁶⁵	23.105 ⁷²	48.44 ¹⁰
19.0	4.942 ¹²⁷	8.41 ¹²	24.163 ⁵⁵	55.41 ³⁵⁶	45.714 ¹⁰²	42.95 ¹⁸⁴	23.225 ¹²⁰	48.53 ⁹
28.9	5.114 ¹⁷²	8.74 ³³	24.291 ¹²⁸	51.84 ³⁵⁷	45.859 ¹⁴⁵	40.97 ¹⁹⁸	23.392 ¹⁶⁷	48.83 ³⁰
June 7.9	5.329 ²¹⁵	9.26 ⁵²	24.491 ²⁰⁰	48.36 ³⁴⁸	46.045 ¹⁸⁶	38.88 ³⁰⁹	23.602 ²¹⁰	49.33 ⁵⁰
17.9	5.580 ²⁵¹	10.02 ⁷⁶	24.754 ²⁶³	45.05 ³³¹	46.267 ²²²	36.74 ²¹⁴	23.850 ²⁴⁸	50.03 ⁷⁰
27.9	5.863 ²⁸³	10.94 ⁹²	25.076 ³²²	42.00 ³⁰⁵	46.519 ²⁵²	34.60 ²¹⁴	24.128 ²⁷⁸	50.91 ⁸⁸
July 7.8	6.169 ³⁰⁶	12.02 ¹⁰⁸	25.449 ³⁷³	39.28 ²⁷²	46.795 ²⁷⁶	32.52 ²⁰⁶	24.432 ³⁰⁴	51.95 ¹⁰⁴
17.8	6.492 ³²³	13.21 ¹¹⁹	25.860 ⁴¹¹	36.98 ²⁹⁰	47.088 ²⁹³	30.56 ¹⁹⁸	24.751 ³¹⁹	53.12 ¹¹⁷
27.8	6.822 ³³⁰	14.52 ¹³¹	26.299 ⁴³⁹	35.15 ¹⁸³	47.391 ³⁰³	28.77 ¹⁷⁹	25.080 ³²⁹	54.36 ¹²⁴
Aug. 6.8	7.154 ³³²	15.86 ¹³⁴	26.754 ⁴⁵⁵	33.85 ¹³⁰	47.699 ³⁰⁸	27.21 ¹⁵⁶	25.411 ³³¹	55.67 ¹³¹
16.7	7.480 ³²⁶	17.22 ¹³⁶	27.213 ⁴⁵⁹	33.14 ⁷¹	48.000 ³⁰¹	25.92 ¹²⁹	25.739 ³²⁸	57.00 ¹³³
26.7	7.796 ³¹⁶	18.56 ¹³⁴	27.662 ⁴⁴⁹	33.02 ¹²	48.292 ²⁹²	24.95 ⁹⁷	26.058 ³¹⁹	58.29 ¹²⁹
Sept. 5.7	8.095 ²⁹⁹	19.85 ¹²⁹	28.091 ⁴²⁹	33.53 ⁵¹	48.570 ²⁷⁸	24.32 ⁶³	26.360 ³⁰²	59.53 ¹²⁴
15.6	8.378 ²⁸³	21.02 ¹¹⁷	28.489 ³⁹⁸	34.62 ¹⁰⁹	48.831 ²⁶¹	24.04 ²⁸	26.646 ²⁸⁶	60.67 ¹¹⁴
25.6	8.635 ²⁵⁷	22.09 ¹⁰⁷	28.844 ³⁵⁵	36.28 ¹⁶⁶	49.068 ²³⁷	24.14 ¹⁰	26.909 ²⁶³	61.73 ¹⁰⁶
Oct. 5.6	8.870 ²³⁵	23.05 ⁹⁶	29.149 ³⁰⁵	38.44 ²¹⁶	49.281 ²¹³	24.57 ⁴³	27.148 ²³⁹	62.66 ⁹³
15.6	9.076 ²⁰⁶	23.86 ⁸¹	29.395 ²⁴⁶	41.04 ²⁶⁰	49.466 ¹⁸⁵	25.30 ⁷³	27.361 ²¹³	63.43 ⁷⁷
25.5	9.256 ¹⁸⁰	24.54 ⁶⁸	29.576 ¹⁸¹	43.95 ²⁹¹	49.623 ¹⁵⁷	26.31 ¹⁰¹	27.547 ¹⁸⁶	64.10 ⁶⁷
Nov. 4.5	9.405 ¹⁴⁹	25.08 ⁵⁴	29.691 ¹¹⁵	47.10 ³¹⁵	49.751 ¹²⁸	27.53 ¹²²	27.702 ¹⁵⁵	64.63 ⁵³
14.5	9.522 ¹¹⁷	25.52 ⁴⁴	29.735 ⁴⁴	50.35 ³²⁵	49.846 ⁹⁵	28.92 ¹³⁹	27.826 ¹²⁴	65.05 ⁴²
24.5	9.607 ⁸⁵	25.84 ³²	29.711 ²⁴	53.57 ³²²	49.910 ⁶²	30.38 ¹⁴⁶	27.917 ⁹¹	65.36 ²¹
Dec. 4.4	9.658 ⁵¹	26.03 ¹⁹	29.618 ⁹³	56.65 ³⁰⁸	49.942 ³⁴	31.88 ⁶⁴	27.972 ⁵⁵	65.55 ¹⁹
14.4	9.671 ¹⁸	26.14 ¹¹	29.461 ¹⁵⁷	59.49 ²⁸⁴	49.941 ¹	33.36 ¹⁴⁸	27.993 ²¹	65.65 ¹⁰
24.4	9.651 ²⁰	26.13 ¹	29.246 ²¹⁵	61.96 ²⁴⁷	49.908 ³³	34.74 ¹³⁸	27.979 ¹⁴	65.66 ¹
34.3	9.595 ⁵⁶	26.02 ¹¹	28.977 ²⁶⁹	64.01 ²⁰⁵	49.843 ⁶⁵	36.00 ¹²⁶	27.928 ⁵¹	65.64 ²
Mean Place	4.187	1.81	25.278	69.11	45.116	51.61	22.469	41.90
Sec δ, Tan δ	1.069	+0.379	1.868	-1.578	1.013	-0.161	1.070	+0.381
Dψ α, Dω α	+0.07	-0.02	+0.03	+0.07	+0.06	+0.01	+0.07	-0.02
Dψ δ, Dω δ	+0.3	+0.7	+0.3	+0.7	+0.3	+0.7	+0.3	+0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ϵ Eridani. Mag. 4.3		ζ Hydri. Mag. 5.5		α Persei. Mag. 1.9		θ Tauri. Mag. 3.8	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	" ' "	h m	" ' "	h m	" ' "	h m	" ' "
	3 16	-43 22	3 17	-77 41	3 18	+49 33	3 20	+ 8 44
	s	"	s	"	s	"	s	"
Jan. 0.4	36.362	89.54	66.42	52.55	21.305	65.90	19.176	11.09
10.3	36.194 ¹⁶⁸	91.29 ¹⁷⁵	65.50 ⁹²	54.16 ¹⁶¹	21.180 ¹²⁵	66.92 ¹⁰²	19.111 ⁶⁵	10.51 ⁵⁸
20.3	35.995 ¹⁹⁹	92.58 ¹²⁹	64.48 ¹⁰²	55.21 ¹⁰⁵	21.008 ¹⁷²	67.60 ⁶⁸	19.017 ⁹⁴	9.94 ⁵⁷
30.3	35.771 ²²⁴	93.39 ⁸¹	63.41 ¹⁰⁷	55.66 ⁴⁵	20.799 ²⁰⁹	67.92 ³²	18.897 ¹²⁰	9.39 ⁵⁵
Feb. 9.3	35.530 ²⁴¹	93.70 ³¹	62.31 ¹¹⁰	55.52 ¹⁴	20.564 ²³⁵	67.84 ⁸	18.759 ¹³⁸	8.89 ⁵⁰
19.2	35.281 ²⁴⁹	93.51 ¹⁹	61.21 ¹¹⁰	54.80 ⁷²	20.315 ²⁴⁹	67.40 ⁴⁴	18.610 ¹⁴⁹	8.89 ⁴⁵
29.2	35.034 ²⁴⁷	92.81 ⁷⁰	60.13 ¹⁰⁸	53.52 ¹²⁸	20.066 ²⁴⁹	66.58 ⁸²	18.459 ¹⁵¹	8.44 ³⁸
Mar. 10.2	34.800 ²³⁴	91.63 ¹¹⁸	59.12 ¹⁰¹	51.73 ¹⁷⁹	19.831 ²³⁵	65.44 ¹¹⁴	18.314 ¹⁴⁵	8.06 ³⁰
20.1	34.588 ²¹²	90.02 ¹⁶¹	58.18 ⁹⁴	49.49 ²²⁴	19.626 ²⁰⁵	64.03 ¹⁴¹	18.186 ¹²⁸	7.76 ¹⁹
30.1	34.408 ¹⁸⁰	88.00 ²⁰²	57.35 ⁸³	46.83 ²⁶⁶	19.463 ¹⁶³	62.40 ¹⁶³	18.083 ¹⁰³	7.57 ⁷
Apr. 9.1	34.270 ¹³⁸	85.62 ²³⁸	56.64 ⁷¹	43.84 ²⁹⁹	19.352 ¹¹¹	60.64 ¹⁷⁶	18.014 ⁶⁹	7.57 ⁷
19.1	34.178 ⁹²	82.92 ²⁷⁰	56.08 ⁵⁶	40.58 ³²⁶	19.304 ⁴⁸	58.83 ¹⁸¹	17.984 ³⁰	7.82 ²⁵
29.0	34.139 ³⁹	79.96 ²⁹⁶	55.68 ⁴⁰	37.13 ³⁴⁵	19.321 ¹⁷	57.03 ¹⁸⁰	17.998 ¹⁴	8.24 ⁴²
May 9.0	34.155 ¹⁶	76.81 ³¹⁵	55.44 ²⁴	33.53 ³⁶⁰	19.408 ⁸⁷	55.34 ¹⁶⁹	18.058 ⁶⁰	8.86 ⁶²
19.0	34.228 ⁷³	73.54 ³²⁷	55.37 ⁷	29.89 ³⁶⁴	19.562 ¹⁵⁴	53.79 ¹⁵⁵	18.165 ¹⁰⁷	9.66 ⁸⁰
29.0	34.359 ¹³¹	70.21 ³³³	55.47 ¹⁰	26.30 ³⁵⁹	19.782 ²²⁰	52.46 ¹³³	18.316 ¹⁵¹	9.66 ⁹⁹
June 7.9	34.543 ¹⁸⁴	66.91 ³³⁰	55.75 ²⁸	22.83 ³⁴⁷	20.062 ²⁸⁰	51.40 ¹⁰⁶	18.508 ¹⁹²	10.65 ¹¹⁶
17.9	34.776 ²³³	63.72 ³¹⁹	56.19 ⁴⁴	19.59 ³²⁴	20.394 ³³²	50.64 ⁷⁶	18.736 ²²⁸	11.81 ¹²⁹
27.9	35.053 ²⁷⁷	60.72 ³⁰⁰	56.78 ⁵⁹	16.62 ²⁹⁷	20.768 ³⁷⁴	50.19 ²⁶⁰	18.996 ²⁶⁰	13.10 ¹⁴⁰
July 7.8	35.366 ³¹³	57.96 ²⁷⁶	57.50 ⁷²	14.02 ²⁶⁰	21.178 ⁴¹⁰	50.08 ¹¹	19.278 ²⁸²	14.50 ¹⁴⁸
17.8	35.708 ³⁴²	55.57 ²³⁹	57.50 ⁸³	11.87 ²¹⁵	21.433 ⁴³³	50.08 ²¹	19.278 ³⁰¹	15.98 ¹⁵⁰
27.8	36.068 ³⁶⁰	53.58 ¹⁹⁹	58.33 ⁹²	10.22 ¹⁶⁵	21.611 ⁴⁴⁹	50.29 ⁵²	19.579 ³⁰⁹	17.48 ¹⁴⁹
Aug. 6.8	36.068 ³⁷¹	53.58 ¹⁵¹	59.25 ⁹⁸	10.22 ¹⁰⁸	22.060 ⁴⁵⁴	50.81 ⁸³	19.888 ³¹³	18.97 ¹⁴³
16.7	36.439 ³⁷²	52.07 ¹⁰⁰	60.23 ¹⁰¹	9.14 ⁴⁸	22.514 ⁴⁵⁰	51.64 ¹¹¹	20.201 ³¹⁰	20.40 ¹³²
26.7	36.811 ³⁶⁵	51.07 ⁴³	61.24 ¹⁰¹	8.66 ⁹	22.964 ⁴³⁸	52.75 ¹³⁵	20.511 ³⁰⁰	21.72 ¹¹⁷
Sept. 5.7	37.176 ³⁴⁹	50.64 ¹²	62.25 ⁹⁷	8.75 ⁷⁴	23.402 ⁴²¹	54.10 ¹⁵⁷	20.811 ²⁸⁸	22.89 ¹⁰⁰
15.7	37.525 ³²⁵	50.76 ⁶⁹	63.22 ⁹⁰	9.49 ¹³⁶	23.823 ³⁹⁷	55.67 ¹⁷⁵	21.099 ²⁷¹	23.89 ⁷⁹
25.6	37.850 ²⁹⁶	51.45 ¹²⁴	64.12 ⁸¹	10.85 ¹⁸⁸	24.220 ³⁶⁹	57.42 ¹⁸⁹	21.370 ²⁴⁹	24.68 ⁵⁹
Oct. 5.6	38.146 ²⁶¹	52.69 ¹⁷³	64.93 ⁶⁸	12.73 ²⁴⁰	24.589 ³³⁶	59.31 ²⁰¹	21.619 ²²⁸	25.27 ³⁷
15.6	38.407 ²¹⁹	54.42 ²¹⁶	65.61 ⁵³	15.13 ²⁸⁰	24.925 ²⁹⁸	61.32 ²¹⁰	21.847 ²⁰²	25.64 ¹⁵
25.5	38.626 ¹⁷⁶	56.58 ²⁵¹	66.14 ³⁶	17.93 ³¹¹	25.223 ²⁵⁹	63.42 ²¹³	22.049 ¹⁷⁵	25.79 ⁴
Nov. 4.5	38.802 ¹³⁰	59.09 ²⁷⁴	66.50 ¹⁸	21.04 ³³⁰	25.482 ²¹⁵	65.55 ²¹³	22.224 ¹⁴⁸	25.75 ²¹
14.5	38.932 ⁸¹	61.83 ²⁹⁰	66.68 ²	24.34 ³³⁷	25.697 ¹⁶⁹	67.68 ²⁰⁸	22.372 ¹¹⁷	25.54 ³⁴
24.5	39.013 ³³	64.73 ²⁹³	66.66 ²¹	27.71 ³³²	25.866 ¹¹⁸	69.76 ²⁰²	22.489 ⁸⁷	25.20 ⁴⁶
Dec. 4.4	39.046 ¹⁵	67.66 ²⁸⁸	66.45 ³⁹	31.03 ³¹³	25.984 ⁶⁵	71.78 ¹⁸⁹	22.576 ⁵⁴	24.74 ⁵⁴
14.4	39.031 ⁶²	70.52 ²⁶⁶	66.06 ⁵⁷	34.16 ²⁸⁴	26.049 ¹¹	73.67 ¹⁶⁹	22.630 ²⁰	24.20 ⁵⁸
24.4	38.969 ¹⁰⁶	73.18 ²³⁹	65.49 ⁷²	37.00 ²⁴⁵	26.060 ⁹⁸	75.36 ¹⁴⁹	22.650 ¹⁴	23.62 ⁶¹
34.4	38.863 ¹⁴⁷	75.57 ²⁰²	64.77 ⁸⁵	39.45 ¹⁹⁵	26.015 ⁹⁸	76.85 ¹¹⁹	22.636 ⁴⁷	23.01 ⁶¹
Mean Place	34.358	85.47	61.586	44.73	19.065	47.48	17.438	2.54
Sec δ , Tan δ	1.376	-0.945	4.691	-4.584	1.542	+1.174	1.012	+0.154
$D\delta_a, D\alpha_a$	+0.04	+0.04	-0.03	+0.20	+0.08	-0.05	+0.06	-0.01
$D\delta_\delta, D\alpha_\delta$	+0.3	+0.8	+0.3	+0.8	+0.3	+0.8	+0.3	+0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ H. Camelop. Mag. 4.4		♁ Tauri. Mag. 3.8		♋ Tauri. Mag. 4.3		♁ Eridani. Mag. 3.8	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 3 22	° ' " +59 38	h m 3 22	° ' " + 9 26	h m 3 26	° ' " +12 38	h m 3 28	° ' " - 9 44
	s	"	s	"	s	"	s	"
Jan. 0.4	18.102	75.37	38.629	34.35	15.777	68.14	60.064	26.96
10.3	17.920 ¹⁸²	76.82 ¹⁴⁵	38.565 ⁶⁴	33.79 ⁵⁶	15.716 ⁶¹	67.70 ⁴⁴	59.987 ⁷⁷	28.17 ¹²¹
20.3	17.679 ²⁴¹	77.86 ¹⁰⁴	38.473 ⁹²	33.24 ⁵⁵	15.625 ⁹¹	67.24 ⁴⁶	59.881 ¹⁰⁶	29.19 ¹⁰²
30.3	17.391 ²⁸⁸	78.46 ⁶⁰	38.354 ¹¹⁹	32.71 ⁵³	15.506 ¹¹⁹	66.78 ⁴⁶	59.751 ¹³⁰	29.99 ⁸⁰
Feb. 9.3	17.069 ³²²	78.60 ¹⁴	38.217 ¹³⁷	32.22 ⁴⁹	15.387 ¹³⁹	66.31 ⁴⁷	59.602 ¹⁴⁹	30.55 ⁵⁶
	338	34	149	45	151	45	159	31
19.2	16.731	78.26	38.068	31.77	15.216	65.86	59.443	30.86
29.2	16.393 ³³⁸	77.47 ⁷⁹	37.916 ¹⁶²	31.38 ³⁹	15.061 ¹⁵⁵	65.43 ⁴³	59.280 ¹⁶³	30.92 ⁶
Mar. 10.2	16.074 ³¹⁹	76.26 ¹²¹	37.770 ¹⁴⁶	31.06 ⁸²	14.913 ¹⁴⁸	65.04 ³⁹	59.123 ¹⁵⁷	30.72 ²⁰
20.1	15.794 ²⁸⁰	74.69 ¹⁵⁷	37.642 ¹²⁸	30.85 ²¹	14.780 ¹³³	64.72 ³²	58.981 ¹⁴²	30.26 ⁴⁶
30.1	15.566 ²²⁸	72.84 ¹⁸⁵	37.538 ¹⁰⁴	30.75 ¹⁰	14.673 ¹⁰⁷	64.50 ²²	58.865 ¹¹⁶	29.54 ⁷²
	161	208	71	5	73	11	85	97
Apr. 9.1	15.405	70.76	37.467	30.80	14.600	64.39	58.780	28.57
19.1	15.321 ⁸⁴	68.57 ²¹⁹	37.435 ³²	31.01 ²¹	14.566 ³⁴	64.40 ¹	58.732 ⁴⁸	27.35 ¹²²
29.0	15.322 ¹	66.34 ²²³	37.448 ¹³	31.38 ³⁷	14.576 ¹⁰	64.60 ²⁰	58.727 ⁵	27.35 ¹⁴⁶
May 9.0	15.409 ⁸⁷	64.16 ²¹⁸	37.506 ⁵⁸	31.95 ⁵⁷	14.633 ⁵⁷	64.97 ³⁷	58.768 ⁴¹	24.23 ¹⁶⁶
19.0	15.582 ¹⁷³	62.13 ²⁰³	37.611 ¹⁰⁵	32.71 ⁷⁶	14.738 ¹⁰⁵	65.53 ⁵⁶	58.854 ⁸⁶	22.40 ¹⁸³
	255	184	149	94	149	75	131	196
29.0	15.837	60.29	37.760	33.65	14.887	66.28	58.985	20.42
June 7.9	16.168 ³³¹	58.72 ¹⁵⁷	37.951 ¹⁹¹	34.76 ¹¹¹	15.078 ¹⁹¹	67.19 ⁹¹	59.157 ¹⁷²	18.34 ²⁰⁶
17.9	16.564 ³⁹⁶	57.46 ¹²⁶	38.178 ²²⁷	36.01 ¹²⁵	15.306 ²²⁸	68.26 ¹⁰⁷	59.367 ²¹⁰	16.20 ²¹⁴
27.9	17.018 ⁴⁵⁴	56.54 ⁹²	38.437 ²⁵⁹	37.37 ¹³⁶	15.567 ²⁶¹	69.48 ¹²²	59.608 ²⁴¹	14.07 ²¹³
July 7.8	17.516 ⁴⁹⁸	56.00 ⁵⁴	38.721 ²⁸⁴	38.81 ¹⁴⁴	15.851 ²⁸⁴	70.78 ¹³⁰	59.875 ²⁶⁷	12.00 ²⁰⁷
	531	17	300	147	303	137	285	196
17.8	18.047	55.83	39.021	40.28	16.154	72.15	60.160	10.04
27.8	18.598 ⁵⁵¹	56.05 ²²	39.331 ³¹⁰	41.75 ¹⁴⁷	16.467 ³¹³	73.53 ¹³⁸	60.457 ²⁹⁷	8.25 ¹⁷⁹
Aug. 6.8	19.160 ⁵⁶²	56.63 ⁵⁸	39.645 ³¹⁴	43.16 ¹⁴¹	16.783 ³¹⁵	74.88 ¹³⁵	60.760 ³⁰³	6.71 ¹⁵⁴
16.7	19.720 ⁵⁶⁰	57.56 ⁹³	39.956 ³¹¹	44.47 ¹³¹	17.098 ³¹⁶	76.17 ¹²⁹	61.061 ³⁰¹	5.45 ¹²⁶
26.7	20.268 ⁵⁴⁸	58.83 ¹²⁷	40.258 ³⁰²	45.64 ¹¹⁷	17.404 ³⁰⁶	77.35 ¹¹⁸	61.355 ²⁹⁴	4.49 ⁹⁶
	528	158	289	100	295	106	281	60
Sept. 5.7	20.796	60.41	40.547	46.64	17.699	78.41	61.636	3.89
15.7	21.296 ⁵⁰⁰	62.23 ¹⁸²	40.821 ²⁷⁴	47.46 ⁸²	17.977 ²⁷⁸	79.29 ⁸⁸	61.902 ²⁶⁶	3.66 ²³
25.6	21.762 ⁴⁶⁶	64.30 ²⁰⁷	41.072 ²⁵¹	48.06 ⁶⁰	18.234 ²⁵⁷	79.99 ⁷⁰	62.147 ²⁴⁵	3.79 ¹³
Oct. 5.6	22.186 ⁴²⁴	66.56 ²²⁶	41.302 ²³⁰	48.45 ³⁹	18.470 ²³⁶	80.51 ⁵²	62.367 ²²⁰	4.26 ⁴⁷
15.6	22.564 ³⁷⁸	68.97 ²⁴¹	41.507 ²⁰⁵	48.63 ¹⁸	18.681 ²¹¹	80.85 ³⁴	62.563 ¹⁹⁶	5.07 ⁸¹
	325	251	179	0	186	15	169	109
25.5	22.889	71.48	41.686	48.63	18.867	81.00	62.732	6.16
Nov. 4.5	23.158 ²⁶⁹	74.06 ²⁵⁸	41.836 ¹⁵⁰	48.46 ¹⁷	19.024 ¹⁵⁷	81.02 ²	62.870 ¹³⁸	7.46 ¹³⁰
14.5	23.365 ²⁰⁷	76.63 ²⁵⁷	41.955 ¹¹⁹	48.15 ³¹	19.150 ¹²⁶	80.90 ¹²	62.977 ¹⁰⁷	8.93 ¹⁴⁷
24.5	23.505 ¹⁴⁰	79.15 ²⁵²	42.045 ⁹⁰	47.73 ⁴²	19.247 ⁹⁷	80.66 ²⁴	63.052 ⁷⁵	10.50 ¹⁵⁷
Dec. 4.4	23.573 ⁷¹	81.56 ²⁴¹	42.102 ⁵⁷	47.23 ⁵⁰	19.309 ⁶²	80.35 ³¹	63.095 ⁴³	12.10 ¹⁶⁰
	3	221	22	55	27	37	7	157
14.4	23.573	83.77	42.124	46.68	19.336	79.98	63.102	13.67
24.4	23.498 ⁷⁵	85.74 ¹⁹⁷	42.112 ¹²	46.10 ⁵⁸	19.328 ⁸	79.56 ⁴²	63.075 ²⁷	15.16 ¹⁴⁹
34.4	23.353 ¹⁴⁵	87.39 ¹⁶⁵	42.067 ⁴⁵	45.51 ⁵⁹	19.286 ⁴²	79.11 ⁴⁵	63.016 ⁵⁹	16.50 ¹³⁴
Mean Place	15.401	55.40	36.879	25.64	13.995	58.64	58.316	30.51
Sec δ, Tan δ	1.979	+1.708	1.014	+0.166	1.025	+0.224	1.014	-0.172
Dψ α, Dα α	+0.10	-0.07	+0.06	-0.01	+0.06	-0.01	+0.06	+0.01
Dψ δ, Dα δ	+0.3	+0.8	+0.3	+0.8	+0.2	+0.8	+0.2	+0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	π^{δ} Eridani. Mag. 4.3		δ Persei. Mag. 3.1		δ Eridani. Mag. 3.7		γ Persei. Mag. 3.9	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 3 30	° ' " -21 54	h m 3 36	° ' " +47 31	h m 3 39	° ' " -10 2	h m 3 39	° ' " +42 18
	s "	"	s "	"	s "	"	s "	"
Jan. 0.4	6.368	49.83	58.591	29.11	15.222	46.15	31.137	67.39
10.3	6.272 ⁹¹	51.37 ¹⁵⁴	58.491 ¹⁰⁰	30.17 ¹⁰⁶	15.154 ⁶⁸	47.42 ¹²⁷	31.055 ⁸²	68.25 ⁸⁶
20.3	6.148 ¹²⁴	52.63 ¹²⁶	58.344 ¹⁴⁷	30.92 ⁷⁵	15.057 ⁹⁷	48.49 ¹⁰⁷	30.929 ¹²⁶	68.84 ⁵⁹
30.3	6.001 ¹⁴⁷	53.58 ⁹⁵	58.157 ¹⁸⁷	31.35 ⁴³	14.931 ¹²⁸	49.34 ⁸⁵	30.765 ¹⁶⁴	69.14 ³⁰
Feb. 9.3	5.834 ¹⁶⁷	54.17 ⁵⁹	57.938 ²¹⁹	31.42 ⁷	14.786 ¹⁴⁵	49.95 ⁶¹	30.572 ¹⁹³	69.14 ⁰
19.2	5.656 ¹⁷⁸	54.41 ²⁴	57.702 ²³⁶	31.44 ²⁸	14.627 ¹⁵⁹	50.31 ³⁶	30.361 ²¹¹	68.84 ³⁰
29.2	5.475 ¹⁸¹	54.28 ¹³	57.460 ²⁴²	31.14 ⁶⁴	14.462 ¹⁶⁵	50.41 ¹⁰	30.143 ²¹⁸	68.24 ⁶⁰
Mar. 10.2	5.300 ¹⁷⁵	53.81 ⁴⁷	57.226 ²³⁴	30.50 ⁹⁴	14.302 ¹⁶⁰	50.24 ¹⁷	29.933 ²¹⁰	67.38 ⁸⁶
20.2	5.142 ¹⁵⁸	52.98 ⁸³	57.017 ²⁰⁹	29.56 ¹²²	14.154 ¹⁴⁸	49.82 ⁴²	29.743 ¹⁹⁰	66.29 ¹⁰⁹
30.1	5.006 ¹³⁶	51.81 ¹¹⁷	56.844 ¹⁷³	28.34 ¹⁴⁴	14.030 ¹²⁴	49.13 ⁶⁹	29.586 ¹⁵⁷	65.02 ¹²⁷
Apr. 9.1	4.904 ¹⁰²	50.35 ¹⁴⁶	56.718 ¹²⁸	26.90 ¹⁵⁸	14.030 ⁹⁵	49.13 ⁹³	29.586 ¹¹⁴	65.02 ¹³⁸
19.1	4.839 ⁶⁵	48.58 ¹⁷⁷	56.650 ⁶⁸	25.32 ¹⁶⁸	13.935 ⁵⁸	48.20 ¹²⁰	29.472 ⁶³	63.64 ¹⁴³
29.0	4.819 ²⁰	46.55 ²⁰³	56.644 ⁶	23.64 ¹⁶⁷	13.877 ¹⁷	47.00 ¹⁴¹	29.409 ⁴	62.21 ¹⁴²
May 9.0	4.845 ²⁶	44.33 ²²²	56.704 ⁶⁰	21.97 ¹⁶¹	13.860 ²⁸	45.59 ¹⁶⁶	29.405 ⁵⁵	60.79 ¹³⁵
19.0	4.918 ⁷³	41.92 ²⁴¹	56.830 ¹²⁶	20.36 ¹⁴⁸	13.888 ⁷⁴	43.93 ¹⁸³	29.460 ¹¹⁷	59.44 ¹²⁰
29.0	5.037 ¹¹⁹	39.36 ²⁵⁶	57.020 ¹⁹⁰	18.88 ¹³¹	13.962 ¹¹⁹	42.10 ¹⁹⁷	29.577 ¹⁷⁵	58.24 ¹⁰⁴
June 7.9	5.201 ¹⁶⁴	36.75 ²⁶¹	57.269 ²⁴⁹	17.57 ¹⁰⁷	14.081 ¹⁶¹	40.13 ²¹⁰	29.752 ²³⁰	57.20 ⁸⁰
17.9	5.404 ²⁰³	34.15 ²⁶⁰	57.570 ³⁰¹	16.50 ⁸¹	14.242 ²⁰⁰	38.03 ²¹⁵	29.982 ²⁷⁹	56.40 ⁵⁷
27.9	5.641 ²³⁷	31.60 ²⁵⁵	57.918 ³⁴⁸	15.69 ⁵³	14.442 ²³¹	35.88 ²¹⁵	30.261 ²⁹¹	55.83 ³⁰
July 7.9	5.909 ²⁶⁸	29.19 ²⁴¹	58.300 ³⁸²	15.16 ²³	14.673 ²⁶¹	33.73 ²¹⁰	30.582 ³⁵⁴	55.53 ⁴
17.8	6.198 ²⁸⁹	26.98 ²²¹	58.711 ⁴¹¹	14.93 ⁷	14.934 ²⁸⁰	31.63 ²⁰⁰	30.936 ³⁷⁹	55.49 ²⁴
27.8	6.500 ³⁰²	25.02 ¹⁹⁶	58.711 ⁴²⁸	15.00 ³⁷	15.214 ²⁹⁴	29.63 ¹⁸²	31.315 ³⁹⁶	55.73 ⁴⁹
Aug. 6.8	6.811 ³¹¹	23.40 ¹⁶²	59.139 ⁴³⁶	15.37 ⁶⁴	15.508 ³⁰¹	27.81 ¹⁶⁰	31.711 ⁴⁰⁴	56.22 ⁷³
16.7	7.122 ³¹¹	22.14 ¹²⁶	59.575 ⁴³⁷	16.01 ⁹⁰	15.809 ³⁰³	26.21 ¹³²	32.115 ⁴⁰⁴	56.95 ⁹³
26.7	7.426 ³⁰⁴	21.31 ⁸³	60.012 ⁴³¹	16.91 ¹¹³	16.112 ²⁹⁷	24.89 ¹⁰¹	32.519 ³⁹⁷	57.88 ¹¹³
Sept. 5.7	7.720 ²⁹⁴	20.93 ³⁸	60.443 ⁴¹⁷	18.04 ¹³³	16.409 ²⁸⁷	23.88 ⁶⁵	32.916 ³⁸⁶	59.01 ¹²⁷
15.7	7.997 ²⁷⁷	20.03 ⁷	60.860 ³⁹⁷	19.37 ¹⁵¹	16.696 ²⁷³	23.23 ²⁸	33.302 ³⁶⁹	60.28 ¹⁴⁰
25.6	7.997 ²⁵⁵	21.00 ⁵¹	61.257 ³⁷³	20.88 ¹⁶⁵	16.969 ²⁵⁴	22.95 ⁸	33.671 ³⁴⁵	61.68 ¹⁵⁰
Oct. 5.6	8.252 ²³¹	21.51 ⁹⁴	61.630 ³⁴⁵	22.53 ¹⁷⁶	17.223 ²³³	23.03 ⁴⁵	34.016 ³²¹	63.18 ¹⁵⁸
15.6	8.483 ²⁰²	22.45 ¹³³	61.975 ³¹²	24.29 ¹⁸⁵	17.456 ²⁰⁷	23.48 ⁷⁸	34.337 ²⁹¹	64.76 ¹⁶²
25.6	8.685 ¹⁷²	23.78 ¹⁶⁶	62.287 ²⁷⁶	26.14 ¹⁹⁰	17.663 ¹⁸²	24.26 ¹⁰⁷	34.628 ²⁵⁸	66.38 ¹⁶⁶
Nov. 4.5	8.857 ¹⁴⁰	25.44 ¹⁹²	62.563 ²³⁶	28.04 ¹⁹²	17.845 ¹⁵³	25.33 ¹³⁰	34.886 ²²²	68.04 ¹⁶³
14.5	8.997 ¹⁰⁷	27.36 ²⁰⁹	62.799 ¹⁹²	29.96 ¹⁹¹	17.993 ¹²²	26.63 ¹⁴⁷	35.108 ¹⁸³	69.67 ¹⁶¹
24.5	9.104 ⁷⁰	29.45 ²¹⁸	62.991 ¹⁴⁴	31.87 ¹⁸⁸	18.120 ⁹¹	28.10 ¹⁵⁹	35.291 ¹⁴⁰	71.28 ¹⁵⁶
Dec. 4.4	9.174 ³⁴	31.63 ²¹⁹	63.135 ⁹³	33.73 ¹⁷⁶	18.211 ⁵⁶	29.69 ¹⁶³	35.431 ⁹³	72.84 ¹⁴⁷
14.4	9.208 ²	33.82 ²¹¹	63.228 ³⁹	35.49 ¹⁶²	18.267 ²¹	31.32 ¹⁶¹	35.524 ⁴⁵	74.31 ¹³⁴
24.4	9.206 ³⁸	35.93 ¹⁹⁶	63.267 ¹⁶	37.11 ¹⁴⁵	18.288 ¹⁴	32.93 ¹⁵²	35.569 ⁵	75.65 ¹¹⁷
34.4	9.168 ⁷⁶	37.89 ¹⁷⁸	63.251 ⁶⁹	38.56 ¹²⁰	18.274 ⁴⁸	34.45 ¹⁴⁰	35.564 ⁵⁵	76.82 ⁹⁸
	9.092	39.65	63.182	39.76	18.226	35.85	35.509	77.80
Mean Place	4.554	50.59	56.244	11.99	13.421	49.84	28.910	51.41
Sec δ , Tan δ	1.078	-0.402	1.481	+1.092	1.015	-0.177	1.353	+0.911
D_{α} , D_{α}	+0.05	+0.02	+0.08	-0.04	+0.06	+0.01	+0.08	-0.04
D_{δ} , D_{δ}	+0.2	+0.8	+0.2	+0.8	+0.2	+0.8	+0.2	+0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	5 H. Camelop. Mag. 4.7			7 Tauri. (Alyone.) Mag. 3.0			τ ⁶ Eridani. Mag. 4.3			g Erid Mag.	
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.	
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m
	3	41	+71 4	3	42	+23 50	3	43	-23 29	3	46
	s	"	"	s	"	"	s	"	"	s	"
Jan. 0.4	32.31	49.46		31.220	58.31		15.883	46.78		20.683	
10.4	32.01 ³⁰	51.48 ²⁰²		31.177 ⁵²	58.35 ⁴		15.794 ⁸⁹	48.48 ¹⁷⁰		20.559 ¹²⁴	
20.3	31.62 ³⁹	53.07 ¹⁵⁹		31.087 ⁹⁰	58.29 ⁶		15.673 ¹²¹	49.89 ¹⁴¹		20.399 ¹⁶⁰	
30.3	31.15 ⁴⁷	54.17 ¹¹⁰		30.965 ¹²²	58.12 ¹⁷		15.525 ¹⁴⁸	50.96 ¹⁰⁷		20.209 ¹⁹⁰	
Feb. 9.3	30.62 ⁵³	54.75 ⁵⁸		30.820 ¹⁴⁵	57.83 ²⁹		15.355 ¹⁷⁰	51.66 ⁷⁰		19.995 ²¹⁴	
19.2	30.06 ⁵⁶	54.76 ¹		30.657 ¹⁶³	57.43 ⁴⁰		15.171 ¹⁸⁴	52.00 ³⁴		19.768 ²²⁷	
29.2	29.49 ⁵⁷	54.24 ⁵²		30.488 ¹⁶⁹	56.94 ⁴⁹		14.982 ¹⁸⁹	51.97 ³		19.536 ²³²	
Mar 10.2	28.94 ⁵⁵	53.20 ¹⁰⁴		30.324 ¹⁶⁴	56.38 ⁵⁶		14.797 ¹⁸⁵	51.54 ⁴³		19.309 ²²⁷	
20.2	28.44 ⁵⁰	51.69 ¹⁵¹		30.178 ¹⁵¹	55.76 ⁶²		14.626 ¹⁷¹	50.77 ⁷⁷		19.098 ²¹¹	
30.1	28.02 ⁴²	49.79 ¹⁹⁰		30.049 ¹²⁴	55.12 ⁶⁴		14.478 ¹⁴⁸	49.64 ¹¹³		18.911 ¹⁸⁷	
Apr. 9.1	27.69 ³³	47.56 ²²³		29.959 ⁹⁰	54.51 ⁶¹		14.360 ¹¹⁸	48.20 ¹⁴⁴		18.758 ¹⁵³	
19.1	27.48 ²¹	45.11 ²⁴⁵		29.909 ⁵⁰	53.96 ⁵⁵		14.281 ⁷⁹	46.45 ¹⁷⁵		18.646 ¹¹²	
29.1	27.40 ⁸	42.51 ²⁶⁰		29.906 ³	53.51 ⁴⁵		14.245 ³⁶	44.42 ²⁰³		18.581 ⁶⁵	
May 9.0	27.43 ³	39.89 ²⁶²		29.952 ⁴⁶	53.19 ³²		14.254 ⁹	42.18 ²²⁴		18.566 ¹⁵	
19.0	27.61 ¹⁸	37.34 ²⁶⁵		30.050 ⁹⁸	53.04 ¹⁵		14.312 ⁵⁸	39.74 ²⁴⁴		18.604 ³⁸	
29.0	27.92 ³¹	34.92 ²⁴²		30.196 ¹⁴⁶	53.06 ²		14.417 ¹⁰⁵	37.17 ²⁵⁷		18.695 ⁹¹	
June 7.9	28.33 ⁴¹	32.74 ²¹⁸		30.386 ¹⁹⁰	53.28 ²²		14.566 ¹⁴⁹	34.52 ²⁶⁵		18.836 ¹⁴¹	
17.9	28.86 ⁵⁸	30.84 ¹⁹⁰		30.618 ²³²	53.68 ⁴⁰		14.757 ¹⁹¹	31.87 ²⁶⁵		19.024 ¹⁸⁸	
27.9	29.47 ⁶¹	29.28 ¹⁵⁶		30.884 ²⁶⁶	54.26 ⁵⁸		14.984 ²²⁷	29.28 ²⁵⁹		19.254 ²³⁰	
July 7.9	30.17 ⁷⁰	28.10 ¹¹⁸		31.178 ²⁹⁴	55.02 ⁷⁶		15.242 ²⁵⁸	26.82 ²⁴⁶		19.521 ²⁶⁷	
17.8	30.92 ⁷⁵	27.32 ⁷⁸		31.493 ³¹⁵	55.90 ⁸⁸		15.523 ²⁸¹	24.55 ²²⁷		19.816 ²⁹⁵	
27.8	31.73 ⁸¹	26.96 ³⁶		31.821 ³²⁸	56.90 ¹⁰⁰		15.821 ²⁹⁸	22.56 ¹⁹⁹		20.133 ³¹⁷	
Aug. 6.8	32.56 ⁸³	27.03 ⁷		32.156 ³³⁵	57.97 ¹⁰⁷		16.131 ³¹⁰	20.90 ¹⁶⁶		20.463 ³³⁰	
16.8	33.40 ⁸⁴	27.51 ⁴⁸		32.491 ³³⁵	59.08 ¹¹¹		16.442 ³¹¹	19.62 ¹²⁸		20.800 ³³⁷	
26.7	34.23 ⁸³	28.41 ⁹⁰		32.821 ³³⁰	60.21 ¹¹³		16.749 ³⁰⁷	18.76 ⁸⁶		21.135 ³³⁵	
Sept. 5.7	35.04 ⁸¹	29.70 ¹²⁹		33.141 ³²⁰	61.30 ¹⁰⁹		17.049 ³⁰⁰	18.36 ⁴⁰		21.462 ³²⁷	
15.7	35.81 ⁷⁷	31.35 ¹⁶⁵		33.445 ³⁰⁴	62.35 ¹⁰⁵		17.333 ²⁸⁴	18.43 ⁷		21.772 ³¹⁰	
25.6	36.54 ⁷³	33.33 ¹⁹⁸		33.732 ²⁸⁷	63.33 ⁹⁸		17.597 ²⁶⁴	18.97 ⁵⁴		22.061 ²⁸⁹	
Oct. 5.6	37.22 ⁶⁸	35.59 ²²⁶		33.997 ²⁶⁵	64.22 ⁸⁹		17.838 ²⁴¹	19.95 ⁹⁸		22.323 ²⁶²	
15.6	37.83 ⁶¹	38.12 ²⁵³		34.239 ²⁴²	65.02 ⁸⁰		18.052 ²¹⁴	21.33 ¹³⁸		22.555 ²³²	
25.6	38.37 ⁵⁴	40.84 ²⁷²		34.454 ²¹⁵	65.71 ⁶⁹		18.238 ¹⁸⁶	23.07 ¹⁷⁴		22.750 ¹⁹⁵	
Nov. 4.5	38.81 ⁴⁴	43.71 ²⁸⁷		34.642 ¹⁸⁸	66.31 ⁶⁰		18.390 ¹⁵²	25.09 ²⁰²		22.907 ¹⁵⁷	
14.5	39.14 ³³	46.68 ²⁹⁷		34.797 ¹⁵⁵	66.82 ⁵¹		18.509 ¹¹⁹	27.29 ²²⁰		23.023 ¹¹⁶	
24.5	39.38 ²⁴	49.64 ²⁹⁶		34.919 ¹²²	67.25 ⁴³		18.591 ⁸²	29.60 ²³¹		23.096 ⁷³	
Dec. 4.5	39.50 ¹²	52.54 ²⁹⁰		35.005 ⁸⁶	67.59 ³⁴		18.637 ⁴⁶	31.93 ²³³		23.124 ²⁸	
14.4	39.51 ¹	55.32 ²⁷⁸		35.053 ⁴⁸	67.84 ²⁵		18.643 ⁶	34.18 ²²⁵		23.108 ¹⁶	
24.4	39.39 ¹²	57.88 ²⁵⁶		35.061 ⁸	68.02 ¹⁸		18.612 ³¹	36.29 ²¹¹		23.048 ⁶⁰	
34.4	39.15 ²⁴	60.09 ²²¹		35.029 ³²	68.10 ⁸		18.544 ⁶⁸	38.18 ¹⁸⁹		22.946 ¹⁰²	
Mean Place	28.175	29.21		29.281	46.45		14.014	47.47		18.679	
Sec δ, Tan δ	3.084	+2.917		1.093	+0.442		1.090	-0.434		1.243	
$D\psi\alpha, D_w\alpha$	+0.12	-0.11		+0.07	-0.02		+0.05	+0.02		+0.04	
$\delta, \delta, D_w\delta$	+0.2	+0.8		+0.2	+0.8		+0.2	+0.8		+0.2	

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Hydr. Mag. 3.2		ζ Persei. Mag. 2.9		θ H. Camelop. Mag. 5.2		ε Persei. Mag. 3.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '
	3 48	-74 29	3 48	+31 38	3 49	+60 51	3 52	+39 46
	"	"	"	"	"	"	"	"
Jan. 0.4	35.74	53.92	52.953	19.75	60.96	68.86	15.024	20.50
10.4	35.09 ⁶⁵	55.99 ²⁰⁷	52.897 ⁵⁶	20.16 ⁴¹	60.80 ¹⁵	70.56 ¹⁷⁰	14.960 ⁶⁴	21.29 ⁷⁹
20.3	34.33 ⁷⁶	57.54 ¹⁵⁵	52.803 ⁹⁴	20.40 ²⁴	60.58 ²²	71.89 ¹³³	14.851 ¹⁰⁹	21.87 ⁵⁸
30.3	33.51 ⁸²	58.53 ⁹⁹	52.673 ¹³⁰	20.47 ⁷	60.31 ²⁷	72.81 ⁹²	14.703 ¹⁴⁸	22.19 ³²
Feb. 9.3	32.65 ⁸⁶	58.93 ⁴⁰	52.514 ¹⁵⁰	20.35 ¹²	59.98 ³³	73.29 ⁴⁸	14.524 ¹⁷⁹	22.25 ⁶
19.2	31.77 ⁸⁸	58.75 ¹⁸	52.338 ¹⁷⁶	20.03 ³²	59.63 ³⁵	73.28 ¹	14.324 ²⁰⁰	22.02 ²³
29.2	30.89 ⁸⁸	58.01 ⁷⁴	52.153 ¹⁸⁵	19.54 ⁴⁹	59.27 ³⁶	72.82 ⁴⁶	14.114 ²¹⁰	21.54 ⁴⁸
Mar. 10.2	30.03 ⁸⁶	56.73 ¹²⁸	51.972 ¹⁸¹	18.88 ⁶⁶	58.92 ³⁵	71.90 ⁹²	13.908 ²⁰⁶	20.80 ⁷⁴
20.2	29.23 ⁸⁰	54.95 ¹⁷⁸	51.806 ¹⁶⁶	18.09 ⁷⁹	58.59 ³³	70.59 ¹³¹	13.719 ¹⁸⁹	19.86 ⁹⁴
30.1	28.51 ⁷²	52.71 ²²⁴	51.667 ¹³⁹	17.22 ⁸⁷	58.32 ²⁷	68.93 ¹⁶⁶	13.560 ¹⁵⁹	18.76 ¹¹⁰
Apr. 9.1	27.87 ⁶⁴	50.08 ²⁶³	51.563 ¹⁰⁴	16.30 ⁹²	58.11 ²¹	67.02 ¹⁹¹	13.439 ¹²¹	17.52 ¹²⁴
19.1	27.33 ⁵⁴	47.11 ²⁹⁷	51.503 ⁶⁰	15.38 ⁹²	57.97 ¹⁴	64.90 ²¹²	13.367 ⁷²	16.24 ¹²⁶
29.1	26.92 ⁴¹	43.89 ³²²	51.494 ⁹	14.51 ⁸⁷	57.93 ⁴	62.69 ²²¹	13.349 ¹⁸	14.96 ¹²⁸
May 9.0	26.64 ²⁸	40.46 ³⁴³	51.536 ⁴²	13.75 ⁷⁶	57.96 ³	60.47 ²²²	13.389 ⁴⁰	13.76 ¹²⁰
19.0	26.49 ¹⁵	36.91 ³⁵⁵	51.633 ⁹⁷	13.12 ⁶³	58.09 ¹³	58.32 ²¹⁵	13.489 ¹⁰⁰	12.66 ¹¹⁰
29.0	26.48 ¹	33.32 ³⁵⁹	51.782 ¹⁴⁹	12.66 ⁴⁶	58.30 ²¹	56.30 ²⁰²	13.645 ¹⁵⁶	11.72 ⁹⁴
June 7.9	26.61 ¹³	29.79 ³⁵³	51.979 ¹⁹⁷	12.41 ²⁵	58.59 ²⁹	54.49 ¹⁸¹	13.854 ²⁰⁹	10.99 ⁷³
17.9	26.89 ²⁸	26.39 ³⁴⁰	52.220 ²⁴¹	12.35 ⁶	58.97 ³⁸	52.94 ¹⁵⁵	14.113 ²⁵⁹	10.47 ⁵²
27.9	27.29 ⁴⁰	23.22 ³¹⁷	52.497 ²⁷⁷	12.51 ¹⁶	59.40 ⁴³	51.71 ¹²³	14.413 ³⁰⁰	10.19 ²⁸
July 7.9	27.80 ⁵¹	20.34 ²⁸⁸	52.807 ³¹⁰	12.86 ³⁵	59.88 ⁴⁸	50.79 ⁹²	14.746 ³³³	10.15 ⁴
17.8	28.43 ⁶³	17.86 ²⁴⁸	53.138 ³³¹	13.41 ⁵⁵	60.41 ⁵³	50.24 ⁵⁵	15.107 ³⁶¹	10.36 ²¹
27.8	29.13 ⁷⁰	15.84 ²⁰²	53.487 ³⁴⁹	14.13 ⁷²	60.97 ⁵⁶	50.05 ¹⁹	15.484 ³⁷⁷	10.79 ⁴³
Aug. 6.8	29.90 ⁷⁷	14.34 ¹⁵⁰	53.843 ³⁵⁶	14.99 ⁸⁶	61.54 ⁵⁷	50.23 ¹⁸	15.873 ³⁸⁹	11.43 ⁶⁴
16.8	30.71 ⁸¹	13.43 ⁹¹	54.200 ³⁵⁷	15.96 ⁹⁷	62.12 ⁵⁸	50.75 ⁵²	16.264 ³⁹¹	12.26 ⁸³
26.7	31.53 ⁸²	13.12 ³¹	54.552 ³⁵²	17.02 ¹⁰⁶	62.70 ⁵⁸	51.62 ⁸⁷	16.651 ³⁶⁷	13.25 ⁹⁹
Sept. 5.7	32.34 ⁸¹	13.44 ³²	54.896 ³⁴⁴	18.13 ¹¹¹	63.27 ⁵⁷	52.81 ¹¹⁹	17.029 ³⁷⁸	14.38 ¹¹³
15.7	33.12 ⁷⁸	14.40 ⁹⁶	55.225 ³²⁹	19.27 ¹¹⁴	63.81 ⁵⁴	54.28 ¹⁴⁷	17.392 ³⁶³	15.61 ¹²³
25.6	33.84 ⁷²	15.94 ¹⁵⁴	55.535 ³¹⁰	20.42 ¹¹⁵	64.33 ⁵²	56.02 ¹⁷⁴	17.736 ³⁴⁴	16.92 ¹³¹
Oct. 5.6	34.46 ⁶²	18.03 ²⁰⁹	55.825 ²⁹⁰	21.55 ¹¹³	64.81 ⁴⁸	57.99 ¹⁹⁷	18.057 ³²¹	18.29 ¹³⁷
15.6	34.99 ⁵³	20.62 ²⁵⁹	56.089 ²⁶⁴	22.65 ¹¹⁰	65.25 ⁴⁴	60.16 ²¹⁷	18.351 ²⁹⁴	19.70 ¹⁴¹
25.6	35.39 ⁴⁰	23.59 ²⁹⁷	56.328 ²³⁹	23.71 ¹⁰⁶	65.64 ³⁹	62.48 ²³²	18.615 ²⁶⁴	21.13 ¹⁴³
Nov. 4.5	35.64 ²⁵	26.83 ³²⁴	56.535 ²⁰⁷	24.72 ¹⁰¹	65.96 ³²	64.91 ²⁴³	18.847 ²³²	22.56 ¹⁴³
14.5	35.77 ¹³	30.23 ³⁴⁰	56.709 ¹⁷⁴	25.68 ⁹⁶	66.23 ²⁷	67.41 ²⁵⁰	19.041 ¹⁹⁴	23.97 ¹⁴¹
24.5	35.73 ⁴	33.66 ³⁴³	56.847 ¹³⁸	26.57 ⁸⁹	66.43 ²⁰	69.91 ²⁵⁰	19.193 ¹⁵²	25.34 ¹³⁷
Dec. 4.5	35.54 ¹⁹	37.01 ³³⁸	56.946 ⁹⁹	27.38 ⁸¹	66.56 ¹³	72.37 ²⁴⁶	19.302 ¹⁰⁹	26.64 ¹³⁰
14.4	35.20 ³⁴	40.14 ³¹³	57.002 ⁵⁶	28.09 ⁷¹	66.61 ⁵	74.70 ²³³	19.364 ⁶²	27.83 ¹¹⁹
24.4	34.73 ⁴⁷	42.95 ²⁸¹	57.014 ¹²	28.70 ⁶¹	66.58 ³	76.83 ²¹³	19.376 ¹²	28.90 ¹⁰⁷
34.4	34.15 ⁵⁸	45.34 ²³⁹	56.983 ³¹	29.19 ⁴⁹	66.48 ¹⁰	78.71 ¹⁸⁸	19.340 ³⁶	29.79 ⁸⁹
Mean Place	31.478	47.94	50.870	6.39	57.839	50.38	12.766	5.65
Sec δ, Tan δ	3.740	-3.604	1.175	+0.616	2.054	+1.794	1.301	+0.832
D _α α, D _α α	-0.02	+0.13	+0.07	-0.02	+0.10	-0.06	+0.08	-0.03
D _δ δ, D _δ δ	+0.2	+0.8	+0.2	+0.8	+0.2	+0.8	+0.2	+0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ξ Persei. Mag. 4.0			γ Eridani. Mag. 3.2			λ Tauri. Var. 3.3-4.2			δ Beticuli. Mag. 4.4		
	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	3	53	+35 33	3	54	-13 44	3	56	+12 15	3	57	-61 37
	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 0.4	32.821	15.12	61	8.454	45.32	149	3.400	22.68	46	27.44	77.27	229
10.4	32.765	15.73	42	8.391	46.81	126	3.359	22.22	46	27.14	79.56	178
20.3	32.667	16.15	20	8.296	48.06	101	3.282	21.76	46	26.78	81.34	126
30.3	32.531	16.35	2	8.170	49.07	72	3.173	21.32	44	26.37	82.60	70
Feb. 9.3	32.364	16.34	1	8.022	49.79	45	3.040	20.89	43	25.93	83.30	14
19.3	32.178	16.08		7.856	50.24		2.889	20.48	41	25.47	83.44	43
29.2	31.983	15.62	46	7.684	50.38	14	2.729	20.11	37	25.01	83.01	98
Mar. 10.2	31.790	14.94	68	7.513	50.23	15	2.570	19.78	33	24.56	82.03	149
20.2	31.612	14.09	85	7.354	49.79	44	2.422	19.51	27	24.13	80.54	197
30.1	31.462	13.12	97	7.215	49.05	74	2.296	19.32	19	23.74	78.57	239
			106			100			9			
Apr. 9.1	31.349	12.06		7.105	48.05		2.199	19.23		23.40	76.18	
19.1	31.281	10.97	109	7.031	46.76	129	2.140	19.27	4	23.12	73.43	275
29.1	31.264	9.91	106	6.998	45.22	154	2.123	19.45	18	22.91	70.37	306
May 9.0	31.302	8.92	99	7.009	43.47	175	2.152	19.79	34	22.78	67.08	329
19.0	31.397	8.06	86	7.066	41.52	198	2.227	20.29	50	22.73	63.61	347
			69			211			67			355
29.0	31.546	7.37	52	7.168	39.41		2.348	20.96		22.76	60.06	
June 7.9	31.745	6.85	29	7.314	37.21	220	2.513	21.79	83	22.87	56.52	354
17.9	31.991	6.56	8	7.498	34.95	226	2.717	22.78	97	23.06	53.06	346
27.9	32.275	6.48	8	7.718	32.69	226	2.954	23.85	109	23.33	49.79	327
July 7.9	32.593	6.63	15	7.967	30.49	220	3.220	25.03	118	23.66	46.79	300
			35			206			124			266
17.8	32.937	6.98		8.230	28.43		3.507	26.27		24.05	44.13	
27.8	33.296	7.53	55	8.527	26.55	188	3.810	27.51	124	24.49	41.91	222
Aug. 6.8	33.665	8.26	73	8.825	24.93	162	4.121	28.73	122	24.96	40.18	173
16.8	34.037	9.13	87	9.128	23.61	132	4.434	29.87	114	25.45	39.01	117
26.7	34.406	10.12	99	9.428	22.63	98	4.744	30.92	105	25.95	38.43	56
			109			60			90			6
Sept. 5.7	34.765	11.21		9.720	22.03		5.045	31.82		26.44	38.49	
15.7	35.109	12.38	117	10.000	21.84	19	5.336	32.56	74	26.92	39.18	69
25.6	35.437	13.59	121	10.263	22.05	21	5.611	33.12	56	27.36	40.49	131
Oct. 5.6	35.742	14.81	122	10.507	22.65	60	5.866	33.50	38	27.76	42.36	167
15.6	36.023	16.04	123	10.726	23.61	96	6.101	33.68	18	28.10	44.75	239
			123			129			3			261
25.6	36.275	17.27		10.922	24.90		6.312	33.71		28.38	47.56	
Nov. 4.5	36.497	18.47	120	11.087	26.43	163	6.498	33.59	12	28.59	50.70	314
14.5	36.684	19.62	115	11.223	28.17	174	6.656	33.34	25	28.72	54.05	336
24.5	36.832	20.73	111	11.325	30.02	185	6.781	33.00	34	28.77	57.47	342
Dec. 4.5	36.939	21.77	104	11.393	31.92	190	6.873	32.58	42	28.73	60.86	339
			95			187			48			323
14.4	37.002	22.72		11.423	33.79		6.929	32.13		28.62	64.09	
24.4	37.018	23.56	84	11.417	35.57	178	6.946	31.65	48	28.43	67.04	295
34.4	36.987	24.24	68	11.375	37.18	161	6.925	31.17	48	28.16	69.62	268
Mean Place	30.643	1.17		6.591	48.28		1.481	13.87		24.627	72.59	
Sec δ, Tan δ	1.229	+0.715		1.029	-0.245		1.024	+0.217		2.105	-1.852	
Dψ α, Dω α	+0.08	-0.03		+0.06	+0.01		+0.07	-0.01		+0.02	+0.06	
Dψ δ, Dω δ	+0.2	+0.9		+0.2	+0.9		+0.2	+0.9		+0.2	+0.9	

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Tauri. Mag. 3.9		α Tauri. Mag. 4.5		c Persei. Mag. 4.0		ρ Tauri. Mag. 5.6	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 3 58	° ' " + 5 45	h m 3 59	° ' " +21 51	h m 4 2	° ' " +47 29	h m 4 5	° ' " +26 15
Jan. 0.4	43.087	32.70	45.809	22.84	36.050	37.25	44.826	57.05
10.4	43.047 ⁴⁰	31.95 ⁷⁵	45.570 ³⁹	22.78 ⁶	35.980 ⁷⁰	38.44 ¹¹⁹	44.789 ³⁷	57.26 ²¹
20.3	42.970 ⁷⁷	31.27 ⁶⁸	45.492 ⁷⁸	22.68 ¹⁰	35.856 ¹²⁴	39.38 ⁹⁴	44.712 ⁷⁷	57.35 ⁹
30.3	42.865 ¹⁰⁵	30.66 ⁶¹	45.361 ¹¹¹	22.51 ¹⁷	35.685 ¹⁷¹	40.01 ⁶³	44.598 ¹¹⁴	57.33 ²
Feb. 9.3	42.731 ¹³⁴	30.13 ⁵³	45.242 ¹³⁹	22.24 ²⁷	35.477 ²⁰⁸	40.31 ³⁰	44.456 ¹⁴²	57.19 ¹⁴
19.3	42.581 ¹⁵⁰	29.70 ⁴³	45.084 ¹⁵⁸	21.91 ³³	35.243 ²³⁴	40.28 ³	44.291 ¹⁶⁵	56.92 ²⁷
29.2	42.422 ¹⁵⁹	29.36 ³⁴	44.915 ¹⁶⁶	21.51 ⁴⁰	34.998 ²⁴⁵	39.89 ³⁹	44.115 ¹⁷⁶	56.54 ³⁸
Mar. 10.2	42.264 ¹⁵⁸	29.15 ²¹	44.748 ¹⁶⁷	21.05 ⁴⁶	34.755 ²⁴³	39.18 ⁷¹	43.940 ¹⁷⁵	56.04 ⁵⁰
20.2	42.116 ¹⁴⁸	29.05 ¹⁰	44.592 ¹⁵⁶	20.54 ⁵¹	34.528 ²²⁷	38.18 ¹⁰⁰	43.775 ¹⁶⁵	55.46 ⁵⁸
30.1	41.989 ¹²⁷	29.08 ³	44.459 ¹³³	20.08 ⁵¹	34.333 ¹⁹⁵	36.93 ¹²⁵	43.632 ¹⁴³	54.82 ⁶⁴
Apr. 9.1	41.889 ¹⁰⁰	29.28 ²⁰	44.357 ¹⁰²	19.54 ⁴⁹	34.181 ¹⁵²	35.49 ¹⁴⁴	43.522 ¹¹⁰	54.17 ⁶⁵
19.1	41.826 ⁶³	29.63 ³⁵	44.293 ⁶⁴	19.12 ⁴²	34.082 ⁹⁹	33.93 ¹⁵⁶	43.452 ⁷⁰	53.54 ⁶³
29.1	41.804 ²²	30.15 ⁵²	44.274 ¹⁹	18.78 ³⁴	34.043 ³⁹	32.31 ¹⁶²	43.427 ²⁵	52.97 ⁵⁷
May 9.0	41.827 ²³	30.86 ²⁸	44.302 ²⁸	18.57 ²¹	34.069 ²⁶	30.71 ¹⁸⁰	43.451 ²⁴	52.49 ⁴⁸
19.0	41.895 ⁶⁸	31.73 ⁸⁷	44.381 ⁷⁹	18.48 ⁹	34.161 ⁹²	29.18 ¹⁵³	43.525 ⁷⁴	52.14 ³⁵
29.0	42.009 ¹¹⁴	32.77 ¹⁰⁴	44.508 ¹²⁷	18.57 ⁹	34.317 ¹⁵⁶	27.78 ¹⁴⁰	43.649 ¹²⁴	51.95 ¹⁹
June 8.0	42.165 ¹⁵⁶	33.96 ¹¹⁹	44.679 ¹⁷¹	18.83 ²⁶	34.534 ²¹⁷	26.58 ¹²⁰	43.821 ¹⁷²	51.92 ³
17.9	42.360 ¹⁹⁶	35.27 ¹³¹	44.892 ²¹³	19.25 ⁴²	34.807 ²⁷³	25.58 ¹⁰⁰	44.036 ²¹⁵	52.08 ¹⁶
27.9	42.588 ²²⁶	36.67 ¹⁴⁰	45.141 ²⁴⁹	19.82 ⁵⁷	35.129 ³²²	24.84 ⁷⁴	44.288 ²⁵²	52.40 ³²
July 7.9	42.845 ²⁵⁷	38.11 ¹⁴⁴	45.421 ²⁸⁰	20.55 ⁷³	35.490 ³⁶¹	24.36 ⁴⁸	44.572 ²⁸⁴	52.89 ⁴⁹
17.8	43.123 ²⁷⁸	39.57 ¹⁴⁶	45.723 ³⁰²	21.39 ⁸⁴	35.884 ³⁹⁴	24.17 ¹⁹	44.880 ³⁰⁸	53.51 ⁶²
27.8	43.417 ²⁹⁴	40.99 ¹⁴²	46.040 ³¹⁷	22.32 ⁹³	36.301 ⁴¹⁷	24.23 ⁶	45.205 ³²⁵	54.26 ⁷⁵
Aug. 6.8	43.721 ³⁰⁴	42.32 ¹³³	46.366 ³²⁶	23.31 ⁹⁹	36.731 ⁴³⁰	24.57 ³⁴	45.540 ³³⁵	55.10 ⁸⁴
16.8	44.025 ³⁰⁴	43.51 ¹¹⁹	46.697 ³³¹	24.32 ¹⁰¹	37.167 ⁴³⁶	25.15 ⁵⁸	45.879 ³³⁹	56.01 ⁹¹
26.7	44.328 ³⁰³	44.55 ¹⁰⁴	47.024 ³²⁷	25.33 ¹⁰¹	37.602 ⁴³⁵	25.97 ⁸²	46.217 ³³⁸	56.94 ⁹⁸
Sept. 5.7	44.624 ²⁹⁶	45.38 ⁸³	47.344 ³²⁰	26.33 ⁹⁶	37.602 ⁴²⁷	25.97 ¹⁰¹	46.217 ³³²	56.94 ⁹⁴
15.7	44.909 ²⁸⁵	45.38 ⁶⁰	47.344 ³⁰⁸	26.29 ⁸⁸	38.029 ³⁹⁵	26.98 ¹²¹	46.549 ³¹⁹	57.88 ⁹²
25.7	45.178 ²⁶⁹	45.98 ³⁷	47.652 ²⁹²	27.17 ⁸⁸	38.441 ⁴¹²	28.19 ¹³⁶	46.868 ³⁰⁷	58.80 ⁸⁶
Oct. 5.6	45.429 ²⁵¹	46.35 ¹²	47.944 ²⁷⁴	27.98 ⁸¹	38.836 ³⁹²	29.55 ¹⁴⁹	47.175 ²⁸⁷	59.66 ⁸²
15.6	45.660 ²³¹	46.47 ¹¹	48.218 ²⁵¹	28.68 ⁶⁰	39.207 ³⁴²	31.04 ¹⁶²	47.462 ²⁶⁵	60.48 ⁷⁵
25.6	45.867 ²⁰⁷	46.36 ³³	48.469 ²²⁹	29.28 ⁵¹	39.549 ³⁰⁸	32.66 ¹⁶⁹	47.727 ²⁴²	61.23 ⁶⁸
Nov. 4.5	45.867 ¹⁸²	46.03 ⁴⁹	48.698 ²⁰⁰	29.79 ⁴¹	39.857 ²⁷²	34.35 ¹⁷⁴	47.969 ²¹⁵	61.91 ⁶¹
14.5	46.049 ¹⁵³	45.54 ⁶⁴	48.898 ¹⁷³	30.20 ³²	40.129 ²²⁸	36.09 ¹⁷⁸	48.184 ¹⁸⁴	62.52 ⁵⁷
24.5	46.202 ¹²²	44.90 ⁷⁶	49.070 ¹³⁹	30.52 ²²	40.357 ¹⁸³	37.87 ¹⁷⁷	48.368 ¹⁵⁰	63.09 ⁴⁹
Dec. 4.5	46.324 ⁹⁰	44.14 ⁸²	49.209 ¹⁰³	30.74 ¹³	40.540 ¹³²	39.64 ¹⁶³	48.518 ¹¹⁴	63.58 ⁴⁴
14.4	46.414 ⁵³	43.32 ⁸⁴	49.312 ⁶⁵	30.93 ¹³	40.672 ⁷⁵	41.36 ¹⁶³	48.632 ⁷³	64.02 ³⁷
24.4	46.467 ¹⁶	42.48 ⁸⁴	49.377 ²⁴	31.06 ⁵	40.747 ¹⁹	42.99 ¹⁵⁰	48.705 ³⁰	64.39 ³²
34.4	46.483 ²¹	41.64 ⁸⁰	49.401 ¹⁸	31.11 ¹	40.766 ³⁸	44.49 ¹³²	48.735 ¹²	64.71 ²³
34.4	46.462	40.84	49.383	31.10	40.728	45.81	48.723	64.94
Mean Place	41.191	25.40	43.595	11.97	33.497	21.59	42.728	45.53
Sec δ, Tan δ	1.005	+0.101	1.077	+0.401	1.480	+1.091	1.115	+0.494
Dψ α, Dω α	+0.06	0.00	+0.07	-0.01	+0.09	-0.04	+0.07	-0.02
Dψ δ, Dω δ	+0.2	+0.9	+0.2	+0.9	+0.2	+0.9	+0.2	+0.9

APPARENT PLACES OF STARS, 1916.

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♁ Eridani. Mag. 4.1		♃ Tauri. Mag. 4.3		♋ Horologi. Mag. 3.8		♌ Beteull. Mag. 3.4	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 4 7	° ' - 7 2	h m 4 10	° ' + 8 40	h m 4 11	° ' -42 29	h m 4 13	° ' -62 40
Jan. 0.4	47.763	76.33	60.246	65.93	15.262	66.46	23.23	65.95
10.4	47.718 ⁴⁵	77.63 ¹³⁰	60.215 ³¹	65.30 ⁶³	15.131 ¹³¹	68.79 ²³³	22.94 ²⁹	68.41 ²⁴⁶
20.3	47.637 ⁸¹	78.76 ¹¹³	60.146 ⁶⁹	64.70 ⁶⁰	14.958 ¹⁷³	70.71 ¹⁹²	22.58 ³⁶	70.41 ³⁰⁰
30.3	47.525 ¹¹²	79.69 ⁹³	60.045 ¹⁰¹	64.16 ⁵⁴	14.748 ²¹⁰	72.18 ¹⁴⁷	22.17 ⁴¹	71.90 ¹⁴⁹
Feb. 9.3	47.388 ¹³⁷	80.41 ⁷²	59.915 ¹³⁰	63.68 ⁴⁸	14.509 ²³⁹	73.17 ⁹⁹	21.72 ⁴⁵	72.82 ⁹²
19.3	47.233 ¹⁵⁵	80.91 ⁵⁰	59.765 ¹⁵⁰	63.27 ⁴¹	14.250 ²⁵⁹	73.66 ⁴⁹	21.24 ⁴⁸	73.18 ³⁶
29.2	47.066 ¹⁶⁷	81.17 ²⁶	59.604 ¹⁶¹	62.93 ³⁴	13.981 ²⁶⁹	73.65 ¹	20.75 ⁴⁹	72.98 ²⁰
Mar. 10.2	46.900 ¹⁶⁶	81.20 ³	59.443 ¹⁶¹	62.67 ²⁶	13.713 ²⁶⁸	73.14 ⁵¹	20.26 ⁴⁹	72.22 ⁷⁶
20.2	46.742 ¹⁵⁸	80.97 ²³	59.291 ¹⁵²	62.50 ¹⁷	13.458 ²⁵⁵	72.16 ⁹⁶	19.80 ⁴⁶	70.94 ¹²⁸
30.2	46.602 ¹⁴⁰	80.52 ⁴⁵	59.157 ¹³⁴	62.44 ⁶	13.225 ²³³	70.74 ¹⁴²	19.37 ⁴³	69.18 ¹⁷⁶
Apr. 9.1	46.490 ⁷⁸	79.82 ⁷⁰	59.050 ¹⁰⁷	62.50 ⁶	13.026 ¹⁹⁹	68.89 ¹⁸⁵	18.99 ³⁸	66.95 ²²³
19.1	46.412 ³⁹	78.89 ⁹³	58.978 ⁷²	62.70 ²⁰	12.867 ¹⁸⁹	66.66 ²²³	18.67 ³²	64.35 ²⁶⁰
29.1	46.373 ⁵	77.72 ¹¹⁷	58.946 ³²	63.05 ³⁵	12.755 ¹¹²	64.11 ²⁵⁵	18.42 ²⁵	61.41 ²⁹⁴
May 9.0	46.378 ⁵	76.35 ¹³⁷	58.960 ¹⁴	63.56 ⁵¹	12.695 ⁶	61.30 ²⁸¹	18.26 ¹⁶	58.21 ²³⁰
19.0	46.428 ⁵⁰	74.78 ¹⁶⁷	59.018 ⁵³	64.24 ⁶⁸	12.691 ⁴	58.27 ³⁰³	18.17 ⁹	54.82 ³³⁹
29.0	46.521 ⁹⁸	73.06 ¹⁷²	59.123 ¹⁰⁵	65.08 ⁸⁴	12.744 ⁵³	55.11 ³¹⁶	18.16 ¹	51.31 ³⁵¹
June 8.0	46.658 ¹³⁷	71.21 ¹⁸⁵	59.271 ¹⁴⁸	66.06 ⁹⁸	12.851 ¹⁰⁷	51.89 ³²²	18.24 ⁸	47.78 ³⁵³
17.9	46.836 ¹⁷⁸	69.27 ¹⁹⁴	59.459 ¹⁸⁸	67.17 ¹¹¹	13.010 ¹⁵⁹	48.69 ³²⁰	18.40 ¹⁶	44.31 ³⁴⁷
27.9	47.048 ²¹²	67.31 ¹⁹⁶	59.681 ²²²	68.38 ¹²¹	13.219 ²⁰⁹	45.58 ³¹¹	18.65 ²⁵	40.98 ³³³
July 7.9	47.289 ²⁴¹	65.36 ¹⁹⁶	59.933 ²⁶²	69.64 ¹²⁶	13.470 ²⁵¹	42.64 ²⁹⁴	18.96 ³¹	37.90 ³⁰⁶
17.9	47.554 ²⁶⁵	63.49 ¹⁸⁷	60.208 ²⁷⁵	70.95 ¹³¹	13.757 ²⁸⁷	40.00 ²⁶⁴	19.33 ³⁷	35.12 ²⁷⁸
27.8	47.836 ²⁸²	61.75 ¹⁷⁴	60.499 ²⁹¹	72.23 ¹²⁸	14.073 ³¹⁶	37.67 ²³³	19.76 ⁴³	32.77 ²³⁵
Aug. 6.8	48.129 ²⁹³	60.22 ¹⁵³	60.800 ³⁰¹	73.45 ¹²²	14.411 ³³⁸	35.78 ¹⁸⁹	20.23 ⁴⁷	30.91 ¹⁸⁶
16.8	48.428 ²⁹⁹	58.92 ¹³⁰	61.107 ³⁰⁷	74.58 ¹¹³	14.762 ³⁵¹	34.38 ¹⁴⁰	20.72 ⁴⁹	29.57 ¹³⁴
26.7	48.726 ²⁹⁸	57.90 ¹⁰²	61.413 ³⁰⁶	75.57 ⁹⁹	15.117 ³⁵⁵	33.49 ⁸⁹	21.24 ⁶²	28.83 ⁷⁴
Sept. 5.7	49.018 ²⁹²	57.21 ⁶⁹	61.713 ³⁰⁰	76.37 ⁸⁰	15.467 ³⁵⁰	33.18 ³¹	21.75 ⁵¹	28.72 ¹¹
15.7	49.301 ²⁸³	56.86 ³⁵	62.004 ²⁹¹	76.99 ⁶²	15.808 ³⁴¹	33.45 ²⁷	22.25 ⁵⁰	29.25 ⁵³
25.7	49.570 ²⁶⁹	56.86 ⁰	62.282 ²⁷⁸	77.38 ³⁹	16.131 ³²³	34.30 ⁸⁵	22.72 ⁴⁷	30.40 ¹¹⁵
Oct. 5.6	49.820 ²⁶⁰	57.22 ³⁶	62.544 ²⁶²	77.57 ¹⁹	16.429 ²⁹⁶	35.71 ¹⁴¹	23.15 ⁴³	32.13 ¹⁷³
15.6	50.051 ²³¹	57.90 ⁶⁸	62.786 ²⁴²	77.54 ³	16.695 ²⁶⁸	37.62 ¹⁹¹	23.53 ³⁸	34.42 ²²⁹
25.6	50.257 ²⁰⁶	58.87 ⁹⁷	63.007 ²²¹	77.33 ²¹	16.928 ²³³	39.96 ²³⁴	23.84 ³¹	37.16 ²⁷⁴
Nov. 4.6	50.439 ¹⁸²	60.09 ¹²²	63.203 ¹⁹⁶	76.95 ³⁸	17.118 ¹⁹⁰	42.67 ²⁷¹	24.08 ²⁴	40.26 ³¹⁰
14.5	50.592 ¹⁵³	61.49 ¹⁴⁰	63.370 ¹⁶⁷	76.44 ⁵¹	17.264 ¹⁴⁶	45.61 ²⁹⁴	24.24 ¹⁶	43.60 ³³⁴
24.5	50.712 ¹²⁰	63.01 ¹⁸²	63.507 ¹³⁷	75.82 ⁶²	17.362 ⁹⁸	48.71 ³¹⁰	24.32 ⁸	47.06 ³⁴⁶
Dec. 4.5	50.799 ⁸⁷	64.59 ¹⁵⁸	63.610 ¹⁰³	75.15 ⁶⁷	17.409 ⁴⁷	51.83 ³¹²	24.32 ⁰	50.52 ³⁴⁶
14.4	50.851 ⁵²	66.17 ¹⁵⁸	63.678 ⁶⁸	74.45 ⁷⁰	17.405 ⁴	54.85 ³⁰²	24.23 ⁹	53.86 ³³⁴
24.4	50.864 ¹³	67.69 ¹⁵²	63.708 ³⁰	73.74 ⁷¹	17.351 ⁵⁴	57.69 ²⁸⁴	24.05 ¹⁸	56.95 ³⁰⁹
34.4	50.840 ²⁴	69.10 ¹⁴¹	63.698 ¹⁰	73.06 ⁶⁸	17.249 ¹⁰²	60.25 ²⁵⁶	23.80 ²⁵	59.70 ²⁷³
Mean Place	45.861	80.77	58.288	58.24	13.084	64.63	20.306	62.04
Sec δ, Tan δ	1.008	-0.124	1.012	+0.153	1.356	-0.916	2.179	-1.936
D _φ α, D _ω α	+0.06	0.00	+0.06	0.00	+0.04	+0.03	+0.02	+0.06
D _φ δ, D _ω δ	+0.2	+0.9	+0.2	+0.9	+0.2	+0.9	+0.2	+0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Tauri. Mag. 3.9		δ Tauri. Mag. 3.9		ν ^s Eridani. Mag. 4.1		δ Mensae. Mag. 5.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "
	4 15	+15 25	4 18	+17 20	4 20	-34 12	4 23	-80 24
Jan. 0.4	2.684	41.47	7.351	56.41	54.962	41.33	43.77	46.10
10.4	2.659 ²⁵	41.14 ³³	7.327 ²⁴	56.17 ²⁴	54.873 ⁸⁹	43.57 ²²⁴	42.76 ¹⁰¹	48.54 ²⁴⁴
20.3	2.593 ⁶⁶	40.81 ³³	7.263 ⁶⁴	55.92 ²⁵	54.742 ¹³¹	45.46 ¹⁸⁹	41.57 ¹¹⁹	50.49 ¹⁹⁶
30.3	2.494 ⁹⁹	40.48 ³³	7.164 ⁹⁰	55.65 ²⁷	54.575 ¹⁶⁷	46.96 ¹⁵⁰	40.26 ¹³¹	51.93 ¹⁴⁴
Feb. 9.3	2.365 ¹²⁹	40.14 ³⁴	7.034 ¹³⁰	55.34 ³¹	54.378 ¹⁹⁷	48.04 ¹⁸⁷	38.85 ¹⁴¹	52.81 ⁸⁸
	151	35	152	30	217	62	148	35
19.3	2.214	39.79	6.882	55.04	54.161	48.66	37.37	53.16
29.2	2.052 ¹⁶²	39.45 ³⁴	6.717 ¹⁶⁵	54.70 ³⁴	53.931 ²³⁰	48.82 ¹⁶	35.87 ¹⁵⁰	52.93 ²³
Mar. 10.2	1.887 ¹⁶⁵	39.11 ³⁴	6.551 ¹⁶⁶	54.35 ³⁵	53.701 ²³⁰	48.52 ³⁰	34.39 ¹⁴⁸	52.16 ⁷⁷
20.2	1.730 ¹⁵⁷	38.80 ³¹	6.391 ¹⁶⁰	54.01 ³⁴	53.479 ²²²	47.80 ⁷²	32.96 ¹⁴³	50.86 ¹³⁰
30.2	1.592 ¹³⁸	38.53 ²⁷	6.250 ¹⁴¹	53.68 ³³	53.276 ²⁰³	46.64 ¹¹⁶	31.62 ¹³⁴	49.11 ¹⁷⁵
	110	20	113	27	174	154	121	222
Apr. 9.1	1.482	38.33	6.137	53.41	53.102	45.10	30.41	46.89
19.1	1.408 ⁷⁴	38.22 ¹¹	6.060 ⁷⁷	53.21 ²⁰	52.964 ¹³⁸	43.19 ¹⁹¹	29.33 ¹⁰⁸	44.33 ²⁵⁶
29.1	1.375 ³³	38.21 ¹	6.025 ³⁵	53.10 ¹¹	52.868 ⁹⁶	40.98 ²²¹	28.43 ⁹⁰	41.44 ²⁸⁹
May 9.0	1.387 ¹²	38.34 ¹³	6.036 ¹¹	53.12 ⁵	52.820 ⁴⁸	38.47 ²⁵¹	27.73 ⁷⁰	38.30 ³¹⁴
19.0	1.446 ⁵⁹	38.62 ²⁸	6.093 ⁵⁷	53.27 ¹⁵	52.821 ¹	35.74 ²⁷³	27.23 ⁵⁰	34.99 ³³¹
	106	42	105	31	54	288	27	342
29.0	1.552	39.04	6.198	53.58	52.875	32.86	26.96	31.57
June 8.0	1.703 ¹⁵¹	39.61 ⁵⁷	6.348 ¹⁵⁰	54.03 ⁴⁵	52.978 ¹⁰³	29.89 ²⁹⁷	26.90 ⁶	28.13 ³⁴⁴
17.9	1.894 ¹⁹¹	40.33 ⁷²	6.538 ¹⁹⁰	54.62 ⁵⁹	53.129 ¹⁵¹	26.90 ²⁹⁹	27.07 ¹⁷	24.74 ³³⁹
27.9	2.122 ²²⁸	41.17 ⁸⁴	6.766 ²²⁸	55.35 ⁷³	53.323 ¹⁹⁴	23.96 ²⁹⁴	27.45 ³⁸	21.51 ³²³
July 7.9	2.381 ²⁵⁹	42.10 ⁹³	7.025 ²⁵⁹	56.19 ⁸⁴	53.557 ²³⁴	21.17 ²⁷⁹	28.04 ⁵⁹	18.54 ²⁹⁷
	280	101	282	91	265	258	79	269
17.9	2.661	43.11	7.307	57.10	53.822	18.59	28.83	15.85
27.8	2.962 ³⁰¹	44.16 ¹⁰⁵	7.609 ³⁰²	58.06 ⁹⁶	54.114 ²⁹²	16.30 ²²⁹	29.77 ⁹⁴	13.60 ²²⁵
Aug. 6.8	3.272 ³¹⁰	45.21 ¹⁰⁵	7.921 ³¹²	59.04 ⁹⁸	54.424 ³¹⁰	14.38 ¹⁰²	30.85 ¹⁰⁸	11.81 ¹⁷⁹
16.8	3.587 ³¹⁵	46.21 ¹⁰⁰	8.239 ³¹⁸	60.00 ⁹⁶	54.746 ³²²	12.89 ¹⁴⁹	32.04 ¹¹⁹	10.54 ¹²⁷
26.7	3.903 ³¹⁶	47.15 ⁹⁴	8.557 ³¹⁸	60.90 ⁹⁰	55.073 ³²⁷	11.90 ⁹⁹	33.29 ¹²⁵	9.85 ⁶⁹
	310	83	314	82	326	48	127	6
Sept. 5.7	4.213	47.98	8.871	61.72	55.399	11.42	34.56	9.79
15.7	4.514 ²⁰¹	48.67 ⁶⁹	9.176 ²⁰⁵	62.42 ⁷⁰	55.715 ³¹⁶	11.49 ⁷	35.82 ¹²⁶	10.37 ⁵⁸
25.7	4.802 ²⁹⁸	49.22 ⁵⁵	9.469 ²⁹³	63.00 ⁵⁸	56.018 ³⁰³	12.09 ⁶⁰	37.01 ¹¹⁹	11.57 ¹²⁰
Oct. 5.6	5.075 ²⁷³	49.63 ⁴¹	9.746 ²⁷⁷	63.45 ⁴⁵	56.301 ²⁸³	13.23 ¹¹⁴	38.10 ¹⁰⁹	13.34 ¹⁷⁷
15.6	5.327 ²⁵²	49.86 ²³	10.004 ²⁵⁸	63.75 ³⁰	56.558 ²⁵⁷	14.86 ¹⁶³	39.05 ⁹⁵	15.61 ²²⁷
	232	11	238	17	228	206	76	277
25.6	5.559	49.97	10.242	63.92	56.786	16.92	39.81	18.38
Nov. 4.6	5.766 ²⁰⁷	49.95 ²	10.454 ²¹²	63.99 ⁷	56.980 ¹⁹⁴	19.33 ²⁴¹	40.37 ⁵⁶	21.46 ³⁰⁸
14.5	5.944 ¹⁷⁸	49.82 ¹³	10.639 ¹⁸⁵	63.96 ³	57.137 ¹⁵⁷	22.00 ²⁸⁷	40.69 ³²	24.79 ³³³
24.5	6.092 ¹⁴⁸	49.59 ²³	10.792 ¹⁵³	63.86 ¹⁰	57.253 ¹¹⁶	24.83 ²⁸³	40.76 ⁷	28.23 ³⁴⁴
Dec. 4.5	6.205 ¹¹³	49.32 ²⁷	10.910 ¹¹⁸	63.70 ¹⁶	57.326 ⁷³	27.71 ²⁸³	40.58 ¹⁸	31.65 ³⁴²
	76	31	81	19	27	268	43	333
14.4	6.281	49.01	10.991	63.51	57.353	30.54	40.15	34.98
24.4	6.317 ³⁶	48.68 ³³	11.031 ⁴⁰	63.29 ²²	57.334 ¹⁹	33.23 ²⁶⁹	39.48 ⁶⁷	38.04 ³⁰⁶
34.4	6.314 ³	48.34 ³⁴	11.031 ⁰	63.04 ²⁵	57.268 ⁶⁶	35.67 ²⁴⁴	38.59 ⁸⁹	40.74 ²⁷⁰
Mean Place	0.665	32.48	5.298	47.12	52.886	41.02	37.125	42.07
Sec δ, Tan δ	1.038	+0.276	1.048	+0.312	1.209	-0.680	6.002	-5.918
D _γ δ, D _α α	+0.07	-0.01	+0.07	-0.01	+0.04	+0.02	-0.08	+0.16
D _δ δ, D _α δ	+0.2	+0.9	+0.2	+0.9	+0.2	+0.9	+0.2	+0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Tauri. Mag. 3.6		m Persei. Mag. 6.1		α Tauri. (Aldebaran.) Mag. 1.1		γ Eridani. Mag. 4.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 4 23	° ' " +18 59	h m 4 27	° ' " +42 53	h m 4 31	° ' " +16 20	h m 4 32	° ' " - 3 31
	s	"	s	"	s	"	s	"
Jan. 0.4	44.677	51.71	32.613	21.50	8.012	37.57	9.217	18.91
10.4	44.658 ¹⁹	51.56 ¹⁵	32.579 ³⁴	22.57 ¹⁰⁷	7.999 ¹³	37.28 ²⁹	9.194 ²³	20.16 ¹²⁵
20.4	44.597 ⁶¹	51.38 ¹⁸	32.493 ⁸⁶	23.46 ⁸⁹	7.944 ⁵⁵	37.00 ²⁸	9.131 ⁶³	21.25 ¹⁰⁹
30.3	44.501 ⁹⁶	51.18 ²⁰	32.358 ¹³⁵	24.11 ⁶⁵	7.853 ⁹¹	36.71 ²⁹	9.035 ⁹⁶	22.19 ⁹⁴
Feb. 9.3	44.372 ¹²⁹	50.93 ²⁵	32.183 ¹⁷⁵	24.51 ⁴⁰	7.728 ¹²⁵	36.41 ³⁰	8.907 ¹²⁸	22.93 ⁷⁴
19.3	44.220 ¹⁵²	50.65 ²⁸	31.977 ²⁰⁶	24.61 ¹⁰	7.580 ¹⁴⁸	36.11 ³⁰	8.757 ¹⁵⁰	23.48 ⁵⁵
29.2	44.053 ¹⁶⁷	50.33 ³²	31.755 ²²²	24.44 ¹⁷	7.415 ¹⁶⁵	35.80 ³¹	8.592 ¹⁶⁵	23.84 ³⁶
Mar. 10.2	43.883 ¹⁷⁰	49.98 ³⁵	31.528 ²²⁷	23.98 ⁴⁶	7.246 ¹⁶⁹	35.49 ³¹	8.423 ¹⁶⁹	23.98 ¹⁴
20.2	43.721 ¹⁶²	49.62 ³⁶	31.311 ²¹⁷	23.25 ⁷³	7.084 ¹⁶²	35.19 ³⁰	8.260 ¹⁶³	23.92 ⁶
30.2	43.576 ¹⁴⁵	49.27 ³⁵	31.117 ¹⁹⁴	22.29 ⁹⁶	6.937 ¹⁴⁷	34.92 ²⁷	8.111 ¹⁴⁹	23.63 ²⁹
Apr. 9.1	43.459 ¹¹⁷	48.93 ³⁴	30.958 ¹⁵⁹	21.17 ¹¹²	6.816 ¹²¹	34.70 ²²	7.987 ¹²⁴	23.14 ⁴⁹
19.1	43.377 ⁸²	48.67 ²⁶	30.844 ¹¹⁴	19.89 ¹²⁸	6.730 ⁸⁶	34.55 ¹⁵	7.893 ⁹⁴	22.43 ⁷¹
29.1	43.337 ⁴⁰	48.48 ¹⁹	30.784 ⁶⁰	18.55 ¹³⁴	6.683 ⁴⁷	34.49 ⁶	7.837 ⁵⁶	21.53 ⁹⁰
May 9.1	43.343 ⁶	48.40 ⁸	30.782 ²	17.21 ¹³⁴	6.681 ²	34.54 ⁵	7.824 ¹³	20.41 ¹¹²
19.0	43.396 ⁵³	48.44 ⁴	30.840 ⁵⁸	15.92 ¹²⁹	6.725 ⁴⁴	34.73 ¹⁹	7.854 ³⁰	19.12 ¹²⁹
29.0	43.497 ¹⁰¹	48.63 ¹⁹	30.956 ¹¹⁶	14.71 ¹²¹	6.817 ⁹²	35.05 ⁸²	7.929 ⁷⁵	17.66 ¹⁴⁶
June 8.0	43.643 ¹⁴⁶	48.97 ³⁴	31.131 ¹⁷⁵	13.64 ¹⁰⁷	6.953 ¹³⁶	35.51 ⁴⁶	8.047 ¹¹⁸	16.07 ¹⁵⁹
17.9	43.831 ¹⁸⁸	49.44 ⁴⁷	31.359 ²²⁸	12.74 ⁹⁰	7.132 ¹⁷⁹	36.10 ⁵⁹	8.205 ¹⁵⁸	14.38 ¹⁶⁹
27.9	44.057 ²²⁶	50.05 ⁶¹	31.635 ²⁷⁶	12.04 ⁷⁰	7.347 ²¹⁵	36.82 ⁷²	8.399 ¹⁹⁴	12.64 ¹⁷⁴
July 7.9	44.314 ²⁵⁷	50.77 ⁷²	31.951 ³¹⁶	11.55 ⁴⁹	7.595 ²⁴⁸	37.63 ⁸¹	8.625 ²²⁶	10.89 ¹⁷⁵
17.9	44.595 ²⁸¹	51.59 ⁸²	32.300 ³⁴⁹	11.30 ²⁵	7.867 ²⁷²	38.51 ⁸⁸	8.877 ²⁵²	9.19 ¹⁷⁰
27.8	44.897 ³⁰²	52.46 ⁸⁷	32.675 ³⁷⁵	11.26 ⁴	8.159 ²⁹²	39.43 ⁹²	9.147 ²⁷⁰	7.60 ¹⁵⁹
Aug. 6.8	45.210 ³¹³	53.36 ⁹⁰	33.067 ³⁹²	11.43 ¹⁷	8.466 ³⁰⁷	40.35 ⁹²	9.432 ²⁸⁵	6.15 ¹⁴⁵
16.8	45.530 ³²⁰	54.25 ⁸⁹	33.470 ⁴⁰³	11.82 ³⁹	8.779 ³¹³	41.25 ⁹⁰	9.726 ²⁹⁴	4.91 ¹²⁴
26.8	45.851 ³²¹	55.11 ⁸⁶	33.875 ⁴⁰⁵	12.37 ⁵⁵	9.095 ³¹⁶	42.08 ⁸³	10.021 ²⁹⁵	3.91 ¹⁰⁰
Sept. 5.7	46.169 ³¹⁸	55.90 ⁷⁹	34.278 ⁴⁰³	13.11 ⁷⁴	9.408 ³¹³	42.80 ⁷²	10.316 ²⁹⁵	3.21 ⁷⁰
15.7	46.479 ³¹⁰	56.58 ⁶⁸	34.673 ³⁹⁵	13.98 ⁸⁷	9.714 ³⁰⁶	43.42 ⁶²	10.605 ²⁸⁹	2.81 ⁴⁰
25.7	46.776 ²⁹⁷	57.16 ⁵⁸	35.055 ³⁸²	14.96 ⁹⁸	10.011 ²⁹⁷	43.89 ⁴⁷	10.883 ²⁷⁸	2.75 ⁶
Oct. 5.6	47.059 ²⁸³	57.62 ⁴⁶	35.418 ³⁶³	16.08 ¹¹²	10.293 ²⁸²	44.23 ³⁴	11.147 ²⁶⁴	3.01 ²⁶
15.6	47.324 ²⁶⁵	57.97 ³⁵	35.760 ³⁴²	17.28 ¹²⁰	10.559 ²⁶⁶	44.42 ¹⁹	11.395 ²⁴⁸	3.58 ⁵⁷
25.6	47.569 ²⁴⁵	58.19 ²²	36.076 ³¹⁶	18.55 ¹²⁷	10.805 ²⁴⁶	44.48 ⁶	11.623 ²²⁸	4.43 ⁸⁵
Nov. 4.6	47.789 ²²⁰	58.32 ¹³	36.359 ²⁸³	19.90 ¹³⁵	11.027 ²²²	44.42 ⁶	11.827 ²⁰⁴	5.51 ¹⁰⁸
14.5	47.982 ¹⁹³	58.36 ⁴	36.607 ²⁴⁸	21.28 ¹³⁸	11.223 ¹⁹⁶	44.27 ¹⁵	12.005 ¹⁷⁸	6.78 ¹²⁷
24.5	48.142 ¹⁶⁰	58.33 ³	36.813 ²⁰⁶	22.68 ¹⁴⁰	11.388 ¹⁶⁵	44.04 ²³	12.153 ¹⁴⁸	8.18 ¹⁴⁰
Dec. 4.5	48.267 ¹²⁵	58.26 ⁷	36.974 ¹⁶¹	24.07 ¹³⁹	11.519 ¹³¹	43.78 ²⁶	12.267 ¹¹⁴	9.65 ¹⁴⁷
14.5	48.355 ⁸⁸	58.16 ¹⁰	37.083 ¹⁰⁹	25.42 ¹³⁵	11.612 ⁹⁸	43.78 ³⁰	12.344 ⁷⁷	11.12 ¹⁴⁷
24.4	48.402 ⁴⁷	58.02 ¹⁴	37.137 ⁵⁴	26.69 ¹²⁷	11.664 ⁵²	43.18 ³⁰	12.382 ³⁸	12.56 ¹⁴⁴
34.4	48.406 ⁴	57.87 ¹⁵	37.135 ²	27.82 ¹¹³	11.674 ¹⁰	42.87 ³¹	12.381 ¹	13.90 ¹³⁴
Mean Place	42.585	42.29	30.041	8.12	5.918	28.92	7.236	23.92
Sec δ, Tan δ	1.058	+0.344	1.365	+0.929	1.042	+0.293	1.002	-0.062
Dψ α, Dω α	+0.07	-0.01	+0.08	-0.02	+0.07	-0.01	+0.06	0.00
Dψ δ, Dω δ	+0.2	+0.9	+0.2	+0.9	+0.2	+0.9	+0.1	+0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Doradus. Mag. 3.5		53 Eridani. Mag. 4.0		τ Tauri. Mag. 4.3		Groombridge 848. Mag. 6.0	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 4 32	° ' -55 12	h m 4 34	° ' -14 27	h m 4 37	° ' +22 47	h m 4 37	° ' +75 47
	" "	" "	" "	" "	" "	" "	" "	" "
Jan. 0.4	13.407 ¹⁸⁹	68.66 ²⁶⁶	21.887 ³⁶	59.47 ¹⁷¹	14.286	57.84 ⁶	36.81 ²⁴	41.50 ²⁵⁶
10.4	13.218 ²⁴⁷	71.32 ²²⁴	21.851 ⁷⁴	61.18 ¹⁵¹	14.278	57.90 ¹	36.57 ³⁹	44.06 ²²³
20.4	12.971 ²⁹⁶	73.56 ¹⁷⁶	21.777 ¹¹⁰	62.69 ¹²⁴	14.226	57.91 ⁴	36.18 ⁵³	46.29 ¹⁸²
30.3	12.675 ³³⁴	75.32 ¹²⁴	21.667 ¹⁴⁰	63.93 ⁹⁷	14.134	57.87 ¹¹	35.65 ⁶⁴	48.11 ¹³⁴
Feb. 9.3	12.341 ³⁶⁴	76.56 ⁷⁰	21.527 ¹⁶³	64.90 ⁶⁶	14.007	57.76 ¹⁷	35.01 ⁷⁴	49.45 ⁸⁰
19.3	11.977 ³⁷⁸	77.26 ¹⁵	21.364 ¹⁷⁷	65.56 ³⁶	13.855	57.59 ²⁶	34.27 ⁷⁷	50.25 ²⁵
29.3	11.599 ³⁸¹	77.41 ³⁹	21.187 ¹⁸²	65.92 ⁶	13.685	57.33 ³²	33.50 ⁷⁹	50.50 ³³
Mar. 10.2	11.218 ³⁷⁰	77.02 ⁹²	21.005 ¹⁷⁷	65.98 ²⁵	13.507	57.01 ³⁸	32.71 ⁷⁵	50.17 ⁸⁶
20.2	10.848 ³⁴⁴	76.10 ¹⁴³	20.828 ¹⁶¹	65.73 ⁵⁵	13.337	56.63 ⁴²	31.96 ⁶⁸	49.31 ¹³⁷
30.2	10.504 ³¹⁰	74.67 ¹⁸⁷	20.667 ¹³⁹	65.18 ⁸⁵	13.181	56.21 ⁴³	31.28 ⁶⁰	47.94 ¹⁸²
Apr. 9.1	10.194 ²⁶²	72.80 ²²⁹	20.528 ¹⁰⁶	64.33 ¹¹³	13.053	55.78 ⁴²	30.68 ⁴⁸	46.12 ²¹⁸
19.1	9.932 ²⁰⁸	70.51 ²⁶⁶	20.422 ⁶⁹	63.20 ¹³⁹	12.958	55.36 ³⁷	30.20 ³³	43.94 ²⁴⁵
29.1	9.724 ¹⁴⁴	67.85 ²⁹⁶	20.353 ²⁷	61.81 ¹⁶³	12.905	54.99 ²⁹	29.87 ¹⁶	41.49 ²⁶⁵
May 9.1	9.580 ⁷⁹	64.89 ³¹⁹	20.326 ¹⁷	60.18 ¹⁸³	12.899	54.70 ¹⁸	29.71 ⁰	38.84 ²⁷⁴
19.0	9.501 ⁹	61.70 ³³³	20.343 ⁶³	58.35 ²⁰⁰	12.941	54.52 ⁸	29.71 ¹⁶	36.10 ²⁷³
29.0	9.492 ⁶⁰	58.37 ³⁴³	20.406 ¹⁰⁷	56.35 ²¹⁵	13.031	54.44 ⁶	29.87 ³⁴	33.37 ²⁶⁶
June 8.0	9.552 ¹²⁷	54.94 ³⁴³	20.513 ¹⁴⁷	54.20 ²²⁰	13.168	54.50 ²¹	30.21 ⁴⁸	30.71 ²⁴⁹
18.0	9.679 ¹⁹⁵	51.51 ³³³	20.660 ¹⁸⁵	52.00 ²²⁴	13.349	54.71 ³³	30.69 ⁶²	28.22 ²²⁶
27.9	9.874 ²⁵²	48.18 ³¹³	20.845 ²¹⁹	49.76 ²¹⁹	13.569	55.04 ⁴⁵	31.31 ⁷⁴	25.96 ¹⁹⁶
July 7.9	10.126 ³⁰⁴	45.05 ²⁸⁸	21.064 ²⁴⁵	47.57 ²⁰⁸	13.822	55.49 ⁵⁷	32.05 ⁸⁷	24.00 ¹⁶⁴
17.9	10.430 ³⁴⁹	42.17 ²⁵¹	21.309 ²⁶⁹	45.49 ¹⁹¹	14.101	56.06 ⁶⁴	32.92 ⁹⁵	22.36 ¹²⁶
27.8	10.779 ³⁸⁴	39.66 ²⁰⁷	21.578 ²⁸²	43.58 ¹⁶⁷	14.403	56.70 ⁷¹	33.87 ¹⁰¹	21.10 ⁸⁷
Aug. 6.8	11.163 ⁴⁰⁹	37.59 ¹⁵⁶	21.860 ²⁹³	41.91 ¹⁴⁰	14.719	57.41 ⁷²	34.88 ¹⁰⁶	20.23 ⁴⁷
16.8	11.572 ⁴²⁵	36.03 ¹⁰⁰	22.153 ²⁹⁷	40.51 ¹⁰⁴	15.043	58.13 ⁷¹	35.94 ¹⁰⁹	19.76 ⁴
26.8	11.997 ⁴²⁹	35.03 ³⁸	22.450 ²⁹⁸	39.47 ⁶⁶	15.371	58.84 ⁶⁸	37.03 ¹¹¹	19.72 ³⁸
Sept. 5.7	12.426 ⁴²³	34.65 ²³	22.748 ²⁹⁰	38.81 ²⁶	15.698	59.52 ⁶⁴	38.14 ¹⁰⁹	20.10 ⁷⁹
15.7	12.849 ⁴⁰⁵	34.88 ⁸⁷	23.038 ²⁸¹	38.55 ¹⁷	16.019	60.16 ⁵⁷	39.23 ¹⁰⁶	20.89 ¹¹⁸
25.7	13.254 ³⁷⁹	35.75 ¹⁴⁷	23.319 ²⁶⁶	38.72 ⁵⁷	16.330	60.73 ⁴⁸	40.29 ¹⁰¹	22.07 ¹⁵⁶
Oct. 5.7	13.633 ³⁴²	37.22 ²⁰³	23.585 ²⁴⁸	39.29 ⁹⁶	16.627	61.21 ⁴¹	41.30 ⁹⁶	23.63 ¹⁹⁰
15.6	13.975 ²⁹⁷	39.25 ²⁵²	23.833 ²²⁸	40.25 ¹³¹	16.909	61.62 ³²	42.26 ⁸⁷	25.53 ²²³
25.6	14.272 ²⁴⁴	41.77 ²⁹³	24.061 ²⁰¹	41.56 ¹⁶³	17.170	61.94 ²⁵	43.13 ⁷⁶	27.76 ²⁵⁰
Nov. 4.6	14.516 ¹⁸⁴	44.70 ³²¹	24.262 ¹⁷³	43.19 ¹⁸³	17.409	62.19 ¹⁹	43.89 ⁶⁴	30.26 ²⁷¹
14.5	14.700 ¹²¹	47.91 ³³⁸	24.435 ¹⁴³	45.02 ¹⁹⁹	17.619	62.38 ¹⁶	44.53 ⁵¹	32.97 ²⁸⁸
24.5	14.821 ⁵³	51.29 ³⁴⁵	24.578 ¹⁰⁶	47.01 ²⁰⁷	17.799	62.54 ¹²	45.04 ³⁶	35.85 ²⁹⁶
Dec. 4.5	14.874 ¹⁷	54.74 ³³⁸	24.684 ⁶⁸	49.08 ²⁰⁷	17.943	62.66 ¹⁰	45.40 ¹⁰	38.81 ²⁹⁷
14.5	14.857 ⁸⁵	58.12 ³²⁰	24.752 ²⁹	51.15 ¹⁹⁹	18.047	62.76 ⁸	45.59 ³	41.78 ²⁸⁸
24.4	14.772 ¹⁵¹	61.32 ²⁹¹	24.781 ¹³	53.14 ¹⁸⁶	18.108	62.84 ⁴	45.62 ¹³	44.66 ²⁷¹
34.4	14.621	64.23	24.768	55.00	18.125	62.88	45.49	47.37
Mean Place	10.814	66.35	19.901	62.58	12.093	-48.28	30.341	25.25
Sec δ, Tan δ	1.753	-1.440	1.033	-0.258	1.085	+0.420	4.075	+3.950
D _φ α, D _ω α	+0.03	+0.03	+0.05	+0.01	+0.07	-0.01	+0.16	-0.03
D _φ δ, D _ω δ	+0.1	+0.9	+0.1	+0.9	+0.1	+0.9	+0.1	+0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Coeli. Mag. 4.5		ϵ Camelop. Mag. 5.4		μ Eridani. Mag. 4.2		π^3 Orionis. Mag. 3.3	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 4 37	° ' " -42 0	h m 4 41	° ' " +56 36	h m 4 41	° ' " - 3 24	h m 4 45	° ' " + 6 48
Jan. 0.4	53.428	86.97	3.342	47.95	20.098	22.89	18.788	62.91
10.4	53.326 ¹⁰²	89.53 ²⁵⁶	3.294 ⁴⁸	49.74 ¹⁷⁹	20.082 ¹⁶	24.17 ¹²⁸	18.783 ⁵	62.10 ⁸¹
20.4	53.175 ¹⁵¹	91.71 ²¹⁸	3.173 ¹²¹	51.28 ¹⁵⁴	20.026 ⁵⁶	25.29 ¹¹²	18.739 ⁴⁴	61.40 ⁷⁰
30.3	52.982 ¹⁹³	93.47 ¹⁷⁶	2.985 ¹⁸⁸	52.52 ¹²⁴	19.934 ⁹²	26.26 ⁹⁷	18.655 ⁸⁴	60.77 ⁶³
Feb. 9.3	52.754 ²²⁸	94.76 ¹²⁹	2.743 ²⁴²	53.40 ⁸⁸	19.811 ¹²³	27.02 ⁷⁶	18.539 ¹¹⁶	60.25 ⁵²
19.3	52.500 ²⁵⁴	95.57 ⁸¹	2.459 ²⁸⁴	53.90 ⁵⁰	19.663 ¹⁴⁸	27.60 ⁵⁸	18.398 ¹⁴¹	59.81 ⁴⁴
29.3	52.230 ²⁷⁰	95.88 ³¹	2.147 ³¹²	53.98 ⁸	19.499 ¹⁶⁴	27.98 ³⁸	18.240 ¹⁵⁸	59.48 ³³
Mar. 10.2	51.957 ²⁷³	95.69 ¹⁹	1.828 ³¹⁹	53.64 ³⁴	19.330 ¹⁶⁹	28.15 ¹⁷	18.074 ¹⁶⁶	59.25 ²³
20.2	51.691 ²⁶⁶	95.02 ⁶⁷	1.519 ³⁰⁹	52.90 ⁷⁴	19.164 ¹⁶⁶	28.11 ⁴	17.912 ¹⁶²	59.12 ¹³
30.2	51.443 ²⁴⁸	93.89 ¹¹³	1.235 ²⁸⁴	51.80 ¹¹⁰	19.011 ¹³³	27.85 ²⁶	17.763 ¹⁴⁹	59.12 ⁰
Apr. 9.1	51.222 ²²¹	92.32 ¹⁵⁷	0.996 ²³⁹	50.39 ¹⁴¹	18.882 ¹²⁹	27.39 ⁴⁶	17.636 ¹²⁷	59.24 ¹²
19.1	51.038 ¹⁸⁴	90.35 ¹⁹⁷	0.814 ¹⁸²	48.72 ¹⁶⁷	18.781 ¹⁰¹	26.71 ⁶⁸	17.539 ⁹⁷	59.51 ²⁷
29.1	50.898 ¹⁴⁰	88.03 ²³²	0.697 ¹¹⁷	46.88 ¹⁸⁴	18.719 ⁶²	25.84 ⁸⁷	17.480 ⁵⁹	59.91 ⁴⁰
May 9.1	50.808 ⁹⁰	85.41 ²⁶²	0.656 ⁴¹	44.93 ¹⁹⁵	18.697 ²²	24.76 ¹⁰⁸	17.463 ¹⁷	60.45 ⁵⁴
19.0	50.772 ³⁶	82.53 ²⁸⁸	0.691 ³⁵	42.95 ¹⁹⁸	18.719 ²²	23.50 ¹²⁶	17.490 ²⁷	61.16 ⁷¹
29.0	50.791 ¹⁹	79.48 ³⁰⁵	0.805 ¹¹⁴	41.01 ¹⁹⁴	18.785 ⁶⁶	22.08 ¹⁴²	17.561 ⁷¹	62.00 ⁸⁴
June 8.0	50.865 ⁷⁴	76.32 ³¹⁶	0.995 ¹⁹⁰	39.16 ¹⁸⁵	18.895 ¹¹⁰	20.53 ¹⁵⁵	17.677 ¹¹⁶	62.97 ⁹⁷
18.0	50.992 ¹²⁷	73.14 ³¹⁸	1.254 ²⁵⁹	37.48 ¹⁶⁸	19.045 ¹⁵⁰	18.87 ¹⁶⁶	17.833 ¹⁵⁶	64.05 ¹⁰⁸
27.9	51.168 ¹⁷⁶	70.02 ³¹²	1.580 ³²⁶	35.99 ¹⁴⁹	19.231 ¹⁸⁶	17.16 ¹⁷¹	18.025 ¹⁹²	65.23 ¹¹⁸
July 7.9	51.389 ²²¹	67.03 ²⁹⁹	1.960 ³⁸⁰	34.75 ¹²⁴	19.450 ²¹⁹	15.44 ¹⁷²	18.250 ²²⁵	66.44 ¹²¹
17.9	51.650 ²⁶¹	64.26 ²⁷⁷	2.388 ⁴²⁸	33.76 ⁹⁹	19.245 ²⁴⁵	15.44 ¹⁶⁶	18.250 ²⁵³	66.44 ¹²⁵
27.8	51.944 ²⁹⁴	61.81 ²⁴⁵	2.853 ⁴⁶⁵	33.07 ⁶⁹	19.695 ²⁶⁷	13.78 ¹⁵⁸	18.503 ²⁷²	67.69 ¹²⁰
Aug. 6.8	52.263 ³¹⁹	59.74 ²⁰⁷	3.346 ⁴⁹³	33.07 ⁴⁰	19.962 ²⁶⁷	12.20 ¹⁶⁸	18.775 ²⁷²	68.89 ¹¹⁴
16.8	52.600 ³³⁷	58.13 ¹⁶¹	3.857 ⁵¹¹	32.67 ¹⁰	20.243 ²⁸¹	10.76 ¹⁴⁴	19.062 ²⁸⁷	70.08 ¹⁰²
26.8	52.948 ³⁴⁸	57.03 ¹¹⁰	4.379 ⁵²²	32.57 ¹⁹	20.534 ²⁹¹	9.54 ¹²²	19.360 ²⁹⁸	71.05 ⁸⁶
Sept. 5.7	53.298 ³⁵⁰	54.49 ⁵⁴	4.902 ⁵²³	32.76 ⁴⁷	20.829 ²⁹⁶	8.56 ⁶⁹	19.661 ³⁰²	71.91 ⁶⁸
15.7	53.643 ³⁴⁵	56.53 ⁴	4.902 ⁵¹⁷	33.23 ⁷⁴	21.125 ²⁹⁰	7.87 ⁴¹	19.963 ²⁹⁷	72.59 ⁴⁸
25.7	53.976 ³³³	57.17 ⁶⁴	5.419 ⁵⁰³	33.97 ⁹⁹	21.415 ²⁹⁰	7.46 ⁵	20.290 ²⁹⁷	73.07 ²³
Oct. 5.7	54.291 ³¹⁵	58.39 ¹²²	5.922 ⁴⁸³	34.96 ¹²⁴	21.696 ²⁸¹	7.41 ²⁷	20.550 ²⁹⁰	73.30 ¹
15.6	54.580 ²⁸⁹	60.13 ¹⁷⁴	6.405 ⁴⁵⁷	36.20 ¹⁴⁵	21.966 ²⁷⁰	7.68 ⁸⁵	20.829 ²⁷⁹	73.29 ²¹
25.6	54.888 ²⁵⁸	62.35 ²²²	6.862 ⁴²³	37.65 ¹⁶⁵	22.219 ²⁵³	8.26 ⁸⁵	21.090 ²⁴⁷	73.08 ⁴²
Nov. 4.6	54.838 ²²⁰	62.35 ²⁸²	7.285 ³⁸²	39.30 ¹⁸¹	22.453 ²¹²	9.11 ¹¹⁰	21.337 ²²³	72.66 ⁶⁰
14.5	55.058 ¹⁷⁸	64.97 ²⁹²	7.667 ³³⁴	41.11 ¹⁹⁵	22.665 ¹⁸⁶	10.21 ¹²⁹	21.560 ¹⁹⁹	72.06 ⁷⁴
24.5	55.236 ¹³¹	67.89 ³⁰⁹	8.001 ²⁷⁶	43.06 ²⁰⁴	22.851 ¹⁵⁶	11.50 ¹⁴¹	21.759 ¹⁶⁸	71.32 ⁸⁵
Dec. 4.5	55.367 ⁸³	70.98 ³¹⁹	8.277 ¹⁴⁴	45.10 ²⁰⁹	23.007 ¹²³	12.91 ¹⁴⁹	21.927 ¹³⁸	70.47 ⁹⁰
14.5	55.450 ³¹	74.17 ³¹⁵	8.492 ¹⁴⁴	47.19 ²⁰⁹	23.129 ⁸⁶	14.40 ¹⁵⁰	22.065 ⁹⁹	69.57 ⁹¹
24.4	55.481 ²²	77.32 ³⁰²	8.636 ⁷²	49.28 ²⁰²	23.215 ⁴⁸	15.90 ¹⁴⁷	22.164 ⁶¹	68.86 ⁹⁰
34.4	55.459 ⁷⁶	80.34 ²⁷⁵	8.708 ⁶	51.30 ¹⁸⁹	23.263 ⁶	17.37 ¹³⁷	22.225 ¹⁷	67.76 ⁸⁵
Mean Place	51.195	86.21	0.023	33.72	18.093	27.84	16.727	56.31
Sec δ , Tan δ	1.346	-0.901	1.818	+1.517	1.002	-0.060	1.007	+0.120
$D\phi_a$, $D\omega_a$	+0.04	+0.02	+0.10	-0.03	+0.06	0.00	+0.06	0.00
$D\phi_\delta$, $D\omega_\delta$	+0.1	+0.9	+0.1	+0.9	+0.1	+0.9	+0.1	+0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	9 Camelop. Mag. 4.4		ι Tauri. Mag. 5.1		π ⁵ Orionis. Mag. 3.9		ι Aurigæ. Mag. 2.9	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 4 45	° ' +66 12	h m 4 46	° ' +18 41	h m 4 49	° ' + 2 18	h m 4 51	° ' +33 2
	" "	" "	" "	" "	" "	" "	" "	" "
Jan. 0.4	45.81	20.67	29.680	60.83	54.556	20.54	33.686	13.44
10.4	45.72 9	22.91 224	29.678 2	60.66 17	54.552 4	19.51 103	33.690 4	14.06 62
20.4	45.55 17	24.88 197	29.634 44	60.48 18	54.506 46	18.59 92	33.642 48	14.58 52
30.3	45.26 29	26.48 160	29.550 84	60.30 18	54.422 84	17.80 79	33.548 94	14.99 41
Feb. 9.3	44.91 35	27.67 119	29.431 119	60.10 20	54.306 116	17.15 65	33.414 134	15.24 25
	41	74	146	21	142	51	167	10
19.3	44.50	28.41	29.285	59.89	54.164	16.64	33.247	15.34
29.3	44.06 44	28.64 23	29.121 164	59.63 26	54.003 161	16.27 87	33.060 187	15.26 8
Mar. 10.2	43.60 46	28.39 25	28.948 173	59.35 28	53.834 169	16.06 6	32.863 197	14.99 27
20.2	43.16 44	27.66 73	28.778 170	59.06 29	53.670 164	16.00 21	32.670 193	14.56 43
30.2	42.75 41	26.48 118	28.624 154	58.77 29	53.516 154	16.09 9	32.491 179	13.98 58
	38	157	130	27	131	27	152	70
Apr. 9.2	42.40	24.91	28.494 98	58.50 23	53.385 102	16.36 42	32.339 115	13.28 78
19.1	42.12 18	23.02 189	28.396 59	58.27 17	53.283 65	16.78 59	32.224 72	12.50 82
29.1	41.94 9	20.88 229	28.337 16	58.10 7	53.218 24	17.37 78	32.152 22	11.68 82
May 9.1	41.85 1	18.59 238	28.321 31	58.03 3	53.194 19	18.15 93	32.130 29	10.86 78
19.0	41.86 11	16.21 238	28.352 79	58.06 16	53.213 64	19.08 108	32.159 83	10.08 69
29.0	41.97	13.83	28.431 124	58.22 28	53.277 106	20.16 122	32.242 133	9.39 59
June 8.0	42.20 23	11.53 230	28.555 167	58.50 28	53.383 148	21.38 132	32.375 182	8.80 46
18.0	42.51 31	9.38 215	28.722 205	58.89 52	53.531 185	22.70 140	32.557 225	8.34 31
27.9	42.91 48	7.43 195	28.927 238	59.41 61	53.716 215	24.10 142	32.782 263	8.03 16
July 7.9	43.39 54	5.75 141	29.165 285	60.02 70	53.931 242	25.52 142	33.045 295	7.87 2
17.9	43.93 60	4.34 107	29.430 287	60.72 75	54.173 266	26.94 136	33.340 319	7.85 12
27.9	44.53 64	3.27 73	29.717 303	61.47 75	54.439 280	28.30 126	33.659 337	7.97 25
Aug. 6.8	45.17 68	2.54 38	30.020 313	62.22 75	54.719 291	29.56 109	33.996 351	8.22 36
16.8	45.85 69	2.16 3	30.333 317	62.97 70	55.010 297	30.65 109	34.347 357	8.58 44
26.8	46.54 68	2.13 33	30.650 318	63.67 64	55.307 297	31.58 93	34.704 357	9.02 52
Sept. 5.7	47.22 69	2.46 68	30.968 315	64.31 53	55.604 294	32.25 41	35.061 354	9.54 56
15.7	47.91 67	3.14 100	31.283 307	64.84 44	55.898 286	32.66 15	35.415 346	10.10 60
25.7	48.58 65	4.14 133	31.590 294	65.28 32	56.184 276	32.81 13	35.761 334	10.70 62
Oct. 5.7	49.23 61	5.47 163	31.884 280	65.60 20	56.460 261	32.68 39	36.095 319	11.32 64
15.6	49.84 57	7.10 188	32.164 262	65.80 9	56.721 244	32.29 64	36.414 299	11.96 66
25.6	50.41 51	8.98 212	32.426 230	65.89 0	56.965 223	31.65 84	36.713 276	12.62 67
Nov. 4.6	50.92 44	11.10 231	32.665 214	65.89 8	57.188 198	30.81 100	36.989 247	13.29 68
14.5	51.36 36	13.41 246	32.879 185	65.81 14	57.386 168	29.81 112	37.236 210	13.97 71
24.5	51.72 27	15.87 254	33.064 149	65.67 16	57.554 137	28.69 120	37.446 173	14.68 71
Dec. 4.5	51.99 18	18.41 256	33.213 110	65.51 18	57.691 100	27.49 120	37.619 129	15.39 69
14.5	52.17 8	20.97 249	33.323 69	65.33 19	57.791 59	26.29 116	37.748 81	16.08 67
24.4	52.25 3	23.46 235	33.392 26	65.14 20	57.850 19	25.13 110	37.829 31	16.75 64
34.4	52.22	25.81	33.418	64.94	57.869	24.03	37.860	17.39
Mean Place	41.488	5.88	27.503	52.33	52.504	14.77	31.252	3.02
Sec δ, Tan δ	2.478	+2.268	1.056	+0.338	1.001	+0.040	1.193	+0.650
D _φ α, D _ω α	+0.12	-0.05	+0.07	-0.01	+0.06	0.00	+0.08	-0.01
D _φ δ, D _ω δ	+0.1	+0.9	+0.1	+0.9	+0.1	+1.0	+0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Aurigæ. Var. 3.0-4.5		β Camelop. Mag. 4.2		ζ Aurigæ. Mag. 3.9		ι Tauri. Mag. 4.7	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	°
	4 55	+43 42	4 55	+60 19	4 56	+40 57	4 58	+21
	s	"	s	"	s	"	s	"
Jan. 0.4	59.081	12.16	60.09	28.95	38.884	27.13	6.674	23.55
10.4	59.081 ⁰	13.35 ¹¹⁹	60.06 ³	30.96 ²⁰¹	38.886 ²	28.20 ¹⁰⁷	6.685 ¹¹	23.53
20.4	59.022 ⁵⁹	14.40 ¹⁰⁵	59.94 ¹²	32.76 ¹⁸⁰	38.892 ⁵⁴	29.12 ⁹²	6.649 ³⁶	23.50
30.3	58.909 ¹¹³	15.27 ⁸⁷	59.74 ²⁰	34.25 ¹⁴⁹	38.725 ¹⁰⁷	29.86 ⁷⁴	6.572 ⁷⁷	23.45
Feb. 9.3	58.749 ¹⁶⁰	15.89 ⁶²	59.48 ²⁶	35.38 ¹¹³	38.577 ¹⁴⁸	30.40 ⁵⁴	6.457 ¹¹⁵	23.37
19.3	58.552 ¹⁹⁷	16.25 ³⁶	59.17 ³¹	36.11 ⁷³	38.391 ¹⁸⁶	30.70 ³⁰	6.312 ¹⁴⁵	23.24
29.3	58.329 ²²³	16.33 ⁸	58.82 ³⁵	36.40 ²⁹	38.179 ²¹²	30.74 ⁴	6.145 ¹⁶⁷	23.06
Mar. 10.2	58.096 ²³³	16.11 ²²	58.46 ³⁶	36.24 ¹⁶	37.957 ²²²	30.53 ²¹	5.969 ¹⁷⁶	22.83
20.2	57.865 ²³¹	15.63 ⁴⁸	58.10 ³⁶	35.65 ⁵⁹	37.738 ²¹⁹	30.06 ⁴⁷	5.794 ¹⁷⁵	22.53
30.2	57.652 ²¹³	14.87 ⁷⁶	57.76 ³⁴	34.65 ¹⁰⁰	37.536 ²⁰²	29.37 ⁶⁹	5.633 ¹⁶¹	22.22
Apr. 9.2	57.468 ¹⁸⁴	13.91 ⁹⁶	57.48 ²⁸	33.31 ¹³⁴	37.361 ¹⁷⁵	28.49 ⁸⁸	5.492 ¹⁴¹	21.89
19.1	57.325 ¹⁴³	12.76 ¹¹⁵	57.25 ²³	33.31 ¹⁶⁶	37.361 ¹³⁵	28.49 ¹⁰⁵	5.492 ¹⁰⁷	21.89
29.1	57.325 ⁹²	12.76 ¹²⁶	57.25 ¹⁶	31.65 ¹⁸⁹	37.226 ⁸⁹	27.44 ¹¹³	5.385 ⁶⁹	21.57
May 9.1	57.233 ³⁶	11.50 ¹³³	57.09 ⁸	29.76 ²⁰⁴	37.137 ³⁵	26.31 ¹¹⁹	5.316 ²⁵	21.28
19.0	57.197 ²²	10.17 ¹³⁴	57.01 ⁰	27.72 ²¹²	37.102 ²³	25.12 ¹¹⁹	5.291 ²¹	21.07
29.0	57.219 ⁸³	8.83 ¹³⁰	57.01 ¹⁰	25.60 ²¹³	37.125 ⁸²	23.93 ¹¹⁶	5.312 ⁷⁰	20.93
June 8.0	57.302 ¹⁴²	7.53 ¹²⁰	57.11 ¹⁷	23.47 ²⁰⁶	37.207 ¹³⁶	22.77 ¹⁰⁶	5.382 ¹¹⁵	20.89
18.0	57.444 ¹⁹⁷	6.33 ¹⁰⁸	57.28 ²⁵	21.41 ¹⁹⁴	37.343 ¹⁸⁹	21.71 ⁹³	5.497 ¹⁵⁹	20.96
27.9	57.641 ²⁴⁸	5.25 ⁹³	57.53 ³³	19.47 ¹⁷⁷	37.532 ²³⁸	20.78 ⁷⁷	5.656 ¹⁹⁹	21.16
July 7.9	57.889 ²⁹²	4.32 ⁷⁴	57.86 ³⁹	17.70 ¹⁵³	37.770 ²⁸¹	20.01 ⁶⁸	5.855 ²³³	21.46
17.9	58.181 ³²⁸	3.58 ⁵⁶	58.25 ⁴⁶	16.17 ¹²⁷	38.051 ³¹⁷	19.38 ⁴²	6.068 ²⁶³	21.87
27.9	58.509 ³⁶⁰	3.02 ³⁶	58.70 ⁴⁹	14.90 ¹⁰¹	38.368 ³⁴⁵	18.96 ²⁴	6.351 ²⁸⁶	22.36
Aug. 6.8	58.869 ³⁸¹	2.66 ¹⁵	59.19 ⁵³	13.89 ⁷⁰	38.713 ³⁶⁶	18.72 ⁸	6.637 ³⁰⁴	22.92
16.8	59.250 ³⁹⁸	2.51 ²	59.72 ⁵⁵	13.19 ³⁹	39.079 ³⁸³	18.64 ⁹	6.941 ³¹⁵	23.52
26.8	59.648 ⁴⁰⁶	2.53 ²²	60.27 ⁵⁸	12.80 ⁸	39.462 ³⁹²	18.73 ²⁶	7.256 ³²¹	24.12
Sept. 5.7	60.054 ⁴⁰⁹	2.75 ³⁸	60.85 ⁵⁷	12.72 ²³	39.854 ³⁹⁴	18.99 ³⁹	7.577 ³²⁴	24.70
15.7	60.463 ⁴⁰⁷	3.13 ⁵³	61.42 ⁵⁸	12.95 ⁵³	40.248 ³⁹¹	19.38 ⁶¹	7.901 ³²¹	25.24
25.7	60.870 ³⁹⁷	3.66 ⁶⁸	62.00 ⁵⁵	13.48 ⁸²	40.639 ³⁸⁴	19.89 ⁶⁵	8.222 ³¹⁵	25.72
Oct. 5.7	61.267 ³⁸⁷	4.34 ⁸¹	62.55 ⁵⁵	14.30 ¹¹⁰	41.023 ³⁷⁰	20.54 ⁷⁶	8.537 ³⁰⁴	26.09
15.6	61.654 ³⁶⁹	5.15 ⁹²	63.10 ⁵²	15.40 ¹³⁵	41.393 ³⁵⁷	21.30 ⁸⁴	8.841 ²⁹²	26.40
25.6	62.023 ³⁴⁶	6.07 ¹⁰³	63.62 ⁴⁸	16.75 ¹⁶⁰	41.750 ³³³	22.14 ⁹²	9.133 ²⁷⁵	26.61
Nov. 4.6	62.369 ³¹⁹	7.10 ¹¹³	64.10 ⁴⁴	18.35 ¹⁸⁰	42.083 ³⁰⁸	23.06 ¹⁰⁰	9.408 ²⁵⁴	26.74
14.6	62.688 ²⁸⁶	8.23 ¹²²	64.54 ⁴⁰	20.15 ¹⁹⁸	42.391 ²⁷⁵	24.06 ¹⁰⁶	9.662 ²²⁹	26.81
24.5	62.974 ²⁴⁵	9.45 ¹²⁸	64.94 ³⁵	22.13 ²¹³	42.666 ²³⁶	25.12 ¹¹⁴	9.891 ¹⁹⁶	26.82
Dec. 4.5	63.219 ¹⁹⁹	10.73 ¹³²	65.27 ²³	24.26 ²²¹	42.902 ¹⁹⁴	26.26 ¹¹⁷	10.089 ¹⁶⁴	26.79
14.5	63.418 ¹⁴⁷	12.05 ¹³³	65.52 ¹⁹	26.47 ²²⁵	43.096 ¹⁴⁶	27.43 ¹¹⁵	10.253 ¹²⁵	26.75
24.4	63.565 ⁹¹	13.38 ¹³²	65.71 ⁹	28.72 ²²⁰	43.242 ⁹¹	28.58 ¹¹⁵	10.378 ⁸²	26.71
34.4	63.656 ³²	14.70 ¹²⁴	65.80 ¹	30.94 ²¹²	43.333 ³⁶	29.73 ¹⁰⁹	10.460 ³⁶	26.66
34.4	63.688	15.94	65.81	33.04	43.369	30.82	10.496	26.62
Mean Place	56.319	0.60	56.349	15.57	36.212	15.99	4.422	15.14
Sec δ, Tan δ	1.383	+0.956	2.020	+1.755	1.324	+0.868	1.075	+0.39
Dψ α, Dω α	+0.09	-0.02	+0.11	-0.03	+0.08	-0.02	+0.07	-0.01
Dψ δ, Dω δ	+0.1	+1.0	+0.1	+1.0	+0.1	+1.0	+0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	11 Orionis. Mag. 4.6		7 Aurigæ. Mag. 3.3		ε Leporis. Mag. 3.3		β Eridani. Mag. 2.9	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	4 59	+15 17	5 0	+41 7	5 1	-22 28	5 3	- 5 11
	s	"	s	"	s	"	s	"
Jan. 0.4	48.256	24.59	40.018	30.16	56.342	56.95	45.254	34.35
10.4	48.265	24.23	40.026	31.23	56.316	59.13	45.255	35.79
20.4	48.232	23.89	39.976	32.18	56.246	61.06	45.213	37.08
30.4	48.157	23.58	39.874	32.95	56.137	62.68	45.131	38.17
Feb. 9.3	48.045	23.29	39.725	33.53	55.994	63.97	45.015	39.07
19.3	47.904	23.03	39.541	33.86	55.822	64.91	44.872	39.74
29.3	47.745	22.80	39.330	33.94	55.631	65.46	44.708	40.20
Mar. 10.2	47.575	22.57	39.108	33.76	55.431	65.65	44.535	40.43
20.2	47.406	22.35	38.887	33.33	55.231	65.46	44.362	40.43
30.2	47.248	22.15	38.682	32.65	55.043	64.90	44.200	40.21
Apr. 9.2	47.112	22.01	38.504	31.78	54.875	64.00	44.057	39.76
19.1	47.006	21.94	38.365	30.76	54.735	62.75	43.942	39.08
29.1	46.936	21.93	38.273	29.62	54.632	61.20	43.861	38.20
May 9.1	46.908	22.03	38.234	28.42	54.569	59.38	43.820	37.11
19.1	46.927	22.23	38.252	27.21	54.551	57.30	43.819	35.84
29.0	46.990	22.56	38.328	26.06	54.577	55.05	43.864	34.40
June 8.0	47.099	22.99	38.460	24.98	54.650	52.64	43.951	32.83
18.0	47.249	23.54	38.646	24.02	54.766	50.15	44.080	31.14
27.9	47.438	24.18	38.882	23.20	54.923	47.63	44.246	29.41
July 7.9	47.660	24.91	39.159	22.55	55.115	45.17	44.445	27.67
17.9	47.911	25.70	39.474	22.07	55.341	42.82	44.673	25.97
27.9	48.185	26.51	39.818	21.78	55.593	40.67	44.925	24.37
Aug. 6.8	48.476	27.30	40.183	21.66	55.865	38.78	45.194	22.93
16.8	48.778	28.04	40.564	21.70	56.153	37.22	45.476	21.70
26.8	49.088	28.71	40.954	21.91	56.451	36.05	45.766	20.72
Sept. 5.8	49.400	29.29	41.348	22.26	56.753	35.31	46.059	20.04
15.7	49.708	29.75	41.740	22.73	57.053	35.04	46.351	19.68
25.7	50.011	30.05	42.126	23.32	57.349	35.26	46.638	19.66
Oct. 5.7	50.307	30.19	42.501	24.03	57.635	35.95	46.916	20.00
15.6	50.588	30.20	42.858	24.83	57.905	37.10	47.182	20.66
25.6	50.853	30.08	43.196	25.72	58.155	38.67	47.430	21.62
Nov. 4.6	51.098	29.82	43.507	26.69	58.383	40.60	47.660	22.85
14.6	51.319	29.48	43.789	27.73	58.583	42.81	47.864	24.28
24.5	51.511	29.09	44.033	28.83	58.748	45.22	48.039	25.85
Dec. 4.5	51.669	28.65	44.232	29.98	58.876	47.75	48.183	27.52
14.5	51.788	28.21	44.383	31.15	58.962	50.29	48.289	29.20
24.5	51.869	27.79	44.478	32.30	59.006	52.77	48.355	30.83
34.4	51.903	27.39	44.519	33.40	59.007	55.09	48.379	32.37
Mean Place	46.076	17.13	37.321	19.26	54.273	59.19	43.198	38.82
Sec δ, Tan δ	1.037	+0.273	1.328	+0.873	1.082	-0.414	1.004	-0.091
D _φ α, D _ω α	+0.07	0.00	+0.08	-0.02	+0.05	+0.01	+0.06	0.00
D _φ δ, D _ω δ	+0.1	+1.0	+0.1	+1.0	+0.1	+1.0	+0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	μ Aurigæ. Mag. 4.8		19 H. Camelop. Mag. 5.2		μ Leporis. Mag. 3.3		α Aurigæ. (Capella). Mag. 0.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 5 7	° ' " +38 23	h m 5 8	° ' " +79 8	h m 5 9	° ' " -16 17	h m 5 10	° ' " +45 54
	s	"	s	"	s	"	s	"
Jan. 0.4	43.282	20.13	50.28	28.13	11.529	71.80	31.802	60.53
10.4	43.300	21.06	50.08	30.96	11.520	73.77	31.818	61.86
20.4	43.262	21.90	49.67	33.52	11.468	75.52	31.771	63.05
30.4	43.172	22.59	49.06	35.72	11.376	77.01	31.665	64.07
Feb. 9.3	43.036	23.11	48.28	37.48	11.245	78.20	31.508	64.86
19.3	42.862	23.42	47.37	38.74	11.091	79.10	31.309	65.38
29.3	42.664	23.52	46.37	39.43	10.914	79.68	31.081	65.61
Mar. 10.2	42.450	23.38	45.33	39.55	10.727	79.92	30.838	65.54
20.2	42.238	23.03	44.29	39.08	10.538	79.84	30.594	65.14
30.2	42.039	22.46	43.31	38.08	10.360	79.43	30.363	64.46
Apr. 9.2	41.866	21.70	42.42	36.56	10.200	78.72	30.162	63.54
19.1	41.725	20.80	41.69	34.62	10.069	77.71	30.000	62.40
29.1	41.633	19.81	41.11	32.31	9.970	76.42	29.887	61.11
May 9.1	41.590	18.76	40.73	29.73	9.913	74.87	29.829	59.71
19.1	41.601	17.70	40.56	26.97	9.896	73.11	29.833	58.27
29.0	41.667	16.68	40.59	24.13	9.923	71.15	29.898	56.84
June 8.0	41.788	15.74	40.84	21.29	9.996	69.03	30.024	55.46
18.0	41.961	14.90	41.29	18.54	10.109	66.83	30.208	54.18
27.9	42.181	14.21	41.95	15.94	10.262	64.58	30.447	53.05
July 7.9	42.444	13.65	42.77	13.57	10.452	62.38	30.731	52.07
17.9	42.741	13.24	43.74	11.49	10.672	60.24	31.056	51.27
27.9	43.067	13.01	44.87	9.74	10.917	58.26	31.415	50.67
Aug. 6.8	43.417	12.91	46.10	8.35	11.183	56.52	31.800	50.26
16.8	43.781	12.96	47.41	7.36	11.464	55.04	32.204	50.06
26.8	44.156	13.13	48.79	6.78	11.754	53.92	32.620	50.04
Sept. 5.8	44.535	13.43	50.20	6.63	12.050	53.18	33.043	50.22
15.7	44.913	13.83	51.62	6.90	12.346	52.85	33.466	50.55
25.7	45.286	14.32	53.04	7.60	12.636	52.96	33.884	51.06
Oct. 5.7	45.651	14.89	54.41	8.72	12.919	53.51	34.291	51.73
15.6	46.000	15.53	55.72	10.23	13.190	54.48	34.683	52.54
25.6	46.332	16.26	56.93	12.11	13.442	55.85	35.055	53.48
Nov. 4.6	46.639	17.04	58.03	14.34	13.672	57.53	35.399	54.55
14.6	46.918	17.89	58.99	16.87	13.879	59.49	35.711	55.75
24.5	47.161	18.80	59.77	19.63	14.054	61.63	35.983	57.04
Dec. 4.5	47.363	19.75	60.37	22.55	14.193	63.89	36.208	58.41
14.5	47.519	20.73	60.76	25.58	14.295	66.17	36.379	59.81
24.5	47.622	21.71	60.92	28.60	14.355	68.38	36.492	61.22
34.4	47.670	22.65	60.86	31.53	14.372	70.49	36.543	62.59
Mean Place	40.639	10.05	41.347	14.63	9.467	74.84	28.877	49.80
Sec δ , Tan δ	1.276	+0.792	5.307	+5.213	1.042	-0.292	1.437	+1.033
$D\psi\alpha$, $D\omega\alpha$	+0.08	-0.01	+0.20	-0.08	+0.05	0.00	+0.09	-0.01
$D\psi\delta$, $D\omega\delta$	+0.1	+1.0	+0.1	+1.0	+0.1	+1.0	+0.1	+1.0

APPARENT PLACES OF STARS, 1916.

361

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Orionis. (Rigel). Mag. 0.3			λ Aurigæ. Mag. 4.8			τ Orionis. Mag. 3.7			\circ Columbæ. Mag. 4.9		
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.
	h	m	°	h	m	°	h	m	°	h	m	°
	5	10	- 8 17	5	13	+40 1	5	13	- 6 55	5	14	-34 58
	"	"	"	"	"	"	"	"	"	"	"	"
Jan. 0.4	32.073		48.13	16.521		42.10	33.710		59.34	29.318		35.74
10.4	32.076	3	49.74	16.545	24	43.12	33.716	6	60.90	29.276	42	38.42
20.4	32.036	40	51.18	16.511	34	44.02	33.680	36	62.30	29.185	91	40.81
30.4	31.955	81	52.41	16.423	84	44.80	33.603	77	63.49	29.049	136	42.83
Feb. 9.3	31.839	116	53.42	16.288	135	45.40	33.491	112	64.47	28.873	176	44.46
		144			173			141			207	
19.3	31.695		54.17	16.115		45.78	33.350		65.21	28.666		45.65
29.3	31.530	165	54.68	15.912	203	45.93	33.186	164	65.72	28.438	228	46.38
Mar. 10.3	31.354	176	54.93	15.696	216	45.83	33.012	174	65.98	28.197	241	46.66
20.2	31.177	177	54.93	15.478	218	45.49	32.837	175	66.00	27.955	242	46.48
30.2	31.010	167	54.67	15.272	206	44.92	32.671	166	65.77	27.723	232	45.86
		149			181			150			211	
Apr. 9.2	30.861		54.17	15.091		44.14	32.521		65.31	27.512		44.81
19.1	30.739	122	53.41	14.945	146	43.21	32.399	122	64.61	27.329	183	43.36
29.1	30.651	88	52.43	14.846	99	42.16	32.309	90	63.69	27.183	146	41.53
May 9.1	30.600	51	51.22	14.796	50	41.03	32.258	51	62.55	27.081	102	39.37
19.1	30.591	9	49.82	14.802	6	39.87	32.248	10	61.23	27.024	57	36.95
		37			61			34			8	
29.0	30.628		48.24	14.863		38.74	32.282		59.74	27.016		34.29
June 8.0	30.707	79	46.52	14.981	118	37.68	32.358	76	58.10	27.058	42	31.48
18.0	30.826	119	44.71	15.151	170	36.71	32.477	119	56.36	27.149	91	28.57
28.0	30.984	158	42.84	15.370	219	35.87	32.634	157	54.57	27.287	138	25.66
July 7.9	31.175	191	40.97	15.634	264	35.17	32.823	160	52.77	27.466	179	22.81
		222			300			221			219	
17.9	31.397		39.15	15.934		34.64	33.044		51.02	27.685		20.10
27.9	31.643	246	37.45	16.262	328	34.26	33.288	244	49.38	27.937	252	17.63
Aug. 6.8	31.908	265	35.92	16.617	355	34.04	33.552	264	47.89	28.215	278	15.47
16.8	32.187	279	34.61	16.988	371	33.96	33.829	277	46.63	28.515	300	13.69
26.8	32.475	288	33.59	17.370	382	34.03	34.117	288	45.62	28.830	315	12.37
		292			387			292			323	
Sept. 5.8	32.767		32.90	17.757		34.23	34.409		44.93	29.153		11.55
15.7	33.060	293	32.55	18.147	390	34.54	34.701	292	44.58	29.479	326	11.27
25.7	33.348	268	32.56	18.530	383	34.96	34.990	289	44.58	29.801	322	11.55
Oct. 5.7	33.629	281	32.96	18.906	376	35.49	35.272	282	44.95	30.114	313	12.41
15.6	33.898	269	33.72	19.268	362	36.11	35.542	270	45.67	30.410	296	13.79
		252			344			254			275	
25.6	34.150		34.80	19.612		36.81	35.796		46.69	30.685		15.67
Nov. 4.6	34.383	233	36.16	19.933	321	37.61	36.032	236	48.01	30.932	247	17.98
14.6	34.591	208	37.76	20.224	291	38.48	36.243	211	49.54	31.147	215	20.63
24.5	34.772	181	39.51	20.479	255	39.43	36.427	184	51.24	31.323	176	23.53
Dec. 4.5	34.919	147	41.36	20.693	214	40.43	36.577	160	53.02	31.457	134	26.59
		110			166			114			88	
14.5	35.029		43.23	20.859		41.48	36.691		54.83	31.545		29.67
24.5	35.099	70	45.05	20.971	112	42.53	36.765	74	56.59	31.582	37	32.67
34.4	35.128	27	46.78	21.029	58	43.56	36.796	31	58.25	31.571	11	35.52
Mean Place	30.009		52.14	13.803		32.22	31.639		63.50	27.134		36.96
Sec δ , Tan δ	1.011		-0.146	1.306		+0.840	1.007		-0.122	1.220		-0.699
$D_p \alpha$, $D_w \alpha$	+0.06		0.00	+0.08		-0.01	+0.06		0.00	+0.04		+0.01
$D_p \delta$, $D_w \delta$	+0.1		+1.0	+0.1		+1.0	+0.1		+1.0	+0.1		+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Orionis. (Bellatrix.) Mag. 1.7		β Tauri. Mag. 1.8		17 Camelop. Mag. 5.8		β Leporis. Mag. 3.0	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	5 20	+ 6 16	5 20	+28 32	5 22	+62 59	5 24	-20 49
	s	"	s	"	s	"	s	"
Jan. 0.4	39.645	33.75	61.290	23.41	18.22	66.15	40.863	29.47
10.4	39.669 ²⁴	32.85 ⁹⁰	61.324 ³⁴	23.78 ³⁷	18.23 ¹	68.37 ²²²	40.861 ²	31.72 ²²⁵
20.4	39.649 ²⁰	32.04 ⁸¹	61.306 ¹⁸	24.13 ³⁵	18.14 ⁹	70.41 ²⁰⁴	40.813 ⁴⁸	33.73 ²⁰¹
30.4	39.587 ⁶²	31.36 ⁶⁸	61.241 ⁶⁵	24.44 ³¹	17.96 ¹⁸	72.19 ¹⁷⁸	40.723 ⁹⁰	35.46 ¹⁷³
Feb. 9.3	39.487 ¹⁰⁰	30.79 ⁵⁷	61.132 ¹⁰⁹	24.66 ²²	17.69 ²⁷	73.64 ¹⁴⁵	40.595 ¹²⁸	36.89 ¹⁴³
19.3	39.356 ¹³¹	30.32 ⁴⁷	60.988 ¹⁴⁴	24.79 ¹³	17.37 ³²	74.70 ¹⁰⁶	40.435 ¹⁸⁰	37.95 ¹⁰⁶
29.3	39.202 ¹⁵⁴	29.97 ³⁵	60.816 ¹⁷²	24.81 ²	17.00 ³⁷	75.33 ⁶³	40.253 ¹⁸²	38.67 ⁷²
Mar. 10.3	39.034 ¹⁶⁸	29.75 ²²	60.631 ¹⁸⁵	24.71 ¹⁰	16.60 ⁴⁰	75.50 ¹⁷	40.058 ¹⁹⁵	39.02 ³⁵
20.2	38.864 ¹⁷⁰	29.62 ¹³	60.442 ¹⁸⁹	24.47 ²⁴	16.20 ⁴⁰	75.21 ²⁹	39.860 ¹⁹⁸	39.02 ⁰
30.2	38.703 ¹⁶¹	29.62 ⁰	60.261 ¹⁸¹	24.13 ³⁴	15.82 ³⁸	74.48 ⁷³	39.668 ¹⁷²	38.65 ³⁷
Apr. 9.2	38.558 ¹⁴⁵	29.62 ¹¹	60.102 ¹⁵⁹	24.13 ⁴³	15.82 ³⁵	74.48 ¹¹⁴	39.668 ¹⁰⁴	38.65 ⁷¹
19.1	38.440 ¹¹⁸	29.73 ²⁵	60.102 ¹²⁹	23.70 ⁵¹	15.47 ²⁹	73.34 ¹⁵⁰	39.494 ¹⁵⁰	37.94 ¹⁰⁵
29.1	38.440 ⁸⁵	29.98 ³⁷	59.973 ⁹²	23.19 ⁵⁵	15.18 ²¹	71.84 ¹⁷⁹	39.344 ¹¹⁷	36.89 ¹²⁴
May 9.1	38.355 ⁴⁸	30.35 ⁵¹	59.881 ⁴⁸	22.64 ⁵⁶	14.97 ¹³	70.05 ²⁰²	39.227 ⁷⁸	35.55 ¹⁶⁴
19.1	38.307 ⁴	30.86 ⁶⁶	59.833 ¹	22.08 ⁵³	14.84 ⁶	68.03 ²¹⁶	39.149 ³⁷	33.91 ¹⁸⁵
29.0	38.303 ³⁹	31.52 ⁷⁷	59.834 ⁵⁰	21.55 ⁴⁸	14.78 ⁴	65.87 ²²⁴	39.112 ⁸	32.03 ²⁰⁹
June 8.0	38.342 ⁸²	32.29 ⁹⁰	59.884 ⁹⁸	21.07 ⁴⁰	14.82 ¹²	63.63 ²²⁴	39.120 ⁵²	29.94 ²²⁵
18.0	38.424 ¹²³	33.19 ¹⁰⁰	59.982 ¹⁴⁵	20.67 ³²	14.94 ²³	61.39 ²¹⁷	39.172 ⁹⁴	27.69 ²³⁵
28.0	38.547 ¹⁶¹	34.19 ¹⁰⁷	60.127 ¹⁸⁷	20.35 ²⁰	15.17 ³⁰	59.22 ²⁰⁴	39.266 ¹³⁶	25.34 ²⁴⁰
July 7.9	38.708 ¹⁹⁵	35.26 ¹¹²	60.314 ²²⁶	20.15 ¹⁰	15.47 ³⁷	57.18 ¹⁸⁷	39.402 ¹⁷⁴	22.94 ²²⁷
17.9	38.903 ²²⁴	36.38 ¹¹³	60.540 ²⁶⁸	20.05 ¹	15.84 ⁴⁴	55.31 ¹⁶⁵	39.576 ²⁰⁶	20.57 ²²⁹
27.9	39.127 ²⁵⁰	37.51 ¹⁰⁹	60.798 ²⁸⁷	20.04 ⁸	16.28 ⁵⁰	53.66 ¹⁴⁰	39.782 ²³⁵	18.28 ²¹¹
Aug. 6.8	39.377 ²⁶⁷	38.60 ¹⁰³	61.085 ³⁰⁷	20.12 ¹⁶	16.78 ⁵⁴	52.26 ¹¹¹	40.017 ²⁵⁸	16.17 ¹⁹⁰
16.8	39.644 ²⁸³	39.63 ⁹⁰	61.392 ³²²	20.28 ²³	17.32 ⁵⁷	51.15 ⁸¹	40.275 ²⁷⁹	14.27 ¹⁵⁸
26.8	39.927 ²⁹²	40.53 ⁷⁴	61.714 ³³⁴	20.51 ²⁶	17.89 ⁶¹	50.34 ⁵¹	40.550 ²⁸⁵	12.69 ¹²¹
Sept. 5.8	40.219 ²⁹⁶	41.27 ⁵⁶	62.048 ³³⁹	20.77 ²⁷	18.50 ⁶¹	49.83 ¹⁹	40.839 ²⁹⁷	11.48 ⁸²
15.7	40.515 ²⁹⁹	41.83 ³⁴	62.387 ³⁴¹	21.04 ²⁸	19.11 ⁶³	49.64 ¹⁰	41.136 ²⁹⁸	10.66 ³⁶
25.7	40.814 ²⁹⁶	42.17 ¹¹	62.728 ³³⁸	21.32 ²⁸	19.74 ⁶²	49.74 ⁴⁶	41.435 ²⁹⁶	10.30 ¹³
Oct. 5.7	41.110 ²⁹⁰	42.28 ¹⁴	63.066 ³³²	21.60 ²⁶	20.36 ⁶¹	50.20 ⁷⁶	41.733 ²⁹²	10.42 ⁵⁸
15.7	41.400 ²⁸¹	42.14 ³⁶	63.398 ³²²	21.86 ²⁴	20.97 ⁵⁹	50.96 ¹⁰⁶	42.025 ²⁸¹	11.00 ¹⁰⁵
25.6	41.681 ²⁶⁷	41.78 ⁵⁷	63.720 ³⁰⁶	22.10 ²⁴	21.56 ⁵⁶	52.01 ¹³³	42.306 ²⁶³	12.05 ¹⁴⁷
Nov. 4.6	41.948 ²⁴⁹	41.21 ⁷⁷	64.026 ²⁸⁸	22.34 ²³	22.12 ⁵²	53.34 ¹⁵⁹	42.569 ²⁴⁵	13.52 ¹⁵³
14.6	42.197 ²²⁸	40.44 ⁹⁰	64.314 ²⁶⁴	22.57 ²⁶	22.64 ⁴⁶	54.93 ¹⁸³	42.814 ²¹⁸	15.35 ²¹⁵
24.5	42.425 ²⁰⁰	39.54 ¹⁰⁰	64.578 ²³⁴	22.82 ²⁶	23.10 ⁴¹	56.76 ²⁰⁴	43.032 ¹⁸⁹	17.50 ²³⁶
Dec. 4.5	42.625 ¹⁶⁹	38.54 ¹⁰⁶	64.812 ¹⁹⁸	23.08 ²⁸	23.51 ³³	58.80 ²¹⁹	43.221 ¹⁵²	19.86 ²⁵⁰
14.5	42.794 ¹³³	37.48 ¹⁰⁶	65.010 ¹⁵⁷	23.36 ³²	23.84 ²⁸	60.99 ²²⁹	43.373 ¹¹²	22.36 ²⁵⁴
24.5	42.927 ⁹³	36.42 ¹⁰⁴	65.167 ¹¹¹	23.68 ³⁴	24.07 ¹⁶	63.28 ²³²	43.485 ⁷⁰	24.90 ²⁵⁰
34.4	43.020 ⁴⁹	35.38 ⁹⁷	65.278 ⁶²	24.02 ³⁶	24.23 ⁶	65.60 ²²⁷	43.555 ²⁴	27.40 ²⁵⁸
34.4	43.069	34.41	65.340	24.38	24.29	67.87	43.579	29.78
Mean Place	37.494	28.16	58.844	15.30	13.983	54.93	38.769	32.17
Sec δ , Tan δ	1.006	+0.110	1.138	+0.544	2.203	+1.963	1.070	-0.380
$D\psi\alpha$, $D_\omega\alpha$	+0.06	0.00	+0.08	-0.01	+0.11	-0.02	+0.05	0.00
$D\psi\delta$, $D_\omega\delta$	+0.1	+1.0	+0.1	+1.0	+0.1	+1.0	+0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	χ Aurigæ. Mag. 4.9		δ Orionis. Mag. 2.5		Groombridge 966. Mag. 6.4		α Leporis. Mag. 2.7	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 5 27	° ' " +32 7	h m 5 27	° ' " - 0 21	h m 5 28	° ' " +74 59	h m 5 29	° ' " -17 52
	s	"	s	"	s	"	s	"
Jan. 0.5	18.114	59.57	44.995	32.80	36.04	36.99	3.605	50.95
10.4	18.153 ³⁹	60.15 ⁵⁸	45.020 ²⁵	34.08 ¹²⁸	36.00 ⁴	39.73 ²⁷⁴	3.612 ⁷	53.08 ²¹³
20.4	18.140 ¹³	60.72 ⁵⁷	45.001 ¹⁹	35.22 ¹¹⁴	35.78 ²²	42.26 ²⁵³	3.573 ³⁹	55.01 ¹⁹³
30.4	18.074 ⁶⁶	61.21 ⁴⁹	44.940 ⁶¹	36.21 ⁹⁹	35.42 ³⁶	44.50 ²²⁴	3.491 ⁸²	56.67 ¹⁶⁶
Feb. 9.3	17.965 ¹⁰⁹	61.60 ³⁹	44.841 ⁹⁹	37.03 ⁸²	34.93 ⁴⁹	46.34 ¹⁸⁴	3.370 ¹²¹	58.04 ¹³⁷
	17.965 ¹⁴⁷	61.60 ²⁷	44.841 ¹³¹	37.03 ⁶³	34.93 ⁶¹	46.34 ¹⁴⁰	3.370 ¹⁵¹	58.04 ¹⁰⁴
19.3	17.818	61.87 ¹³	44.710 ¹⁵⁴	37.66 ⁴⁶	34.32 ⁷⁰	47.74 ⁸⁹	3.219 ¹⁷⁶	59.08 ⁷¹
29.3	17.642 ¹⁷⁶	62.00 ⁵	44.556 ¹⁶⁹	38.12 ²⁷	33.62 ⁷⁸	48.63 ³⁴	3.043 ¹⁸⁹	59.79 ³⁷
Mar. 10.3	17.450 ¹⁹²	61.95 ²⁰	44.387 ¹⁷²	38.39 ¹⁰	32.89 ⁷⁴	48.97 ²⁰	2.854 ¹⁹³	60.16 ⁴
20.2	17.253 ¹⁹⁰	61.75 ³⁵	44.215 ¹⁶⁶	38.49 ⁸	32.15 ⁷¹	48.77 ⁷⁴	2.661 ¹⁸⁷	60.20 ³⁰
30.2	17.063 ¹⁶⁸	61.40 ⁴⁹	44.049 ¹⁸⁰	38.41 ²⁷	31.44 ⁶⁶	48.03 ¹²⁴	2.474 ¹⁷⁰	59.90 ⁶³
Apr. 9.2	16.895 ¹⁴⁰	60.91 ⁵⁸	43.899 ¹²⁴	38.14 ⁴⁴	30.78 ⁵⁷	46.79 ¹⁶⁹	2.304 ¹⁴⁶	59.27 ⁹⁸
19.2	16.755 ¹⁰⁰	60.33 ⁶⁶	43.775 ⁹⁴	37.70 ⁶³	30.21 ⁴⁵	45.10 ²⁰⁶	2.158 ¹¹⁴	58.34 ¹²⁴
29.1	16.655 ⁵⁵	59.67 ⁷¹	43.681 ⁵⁵	37.07 ⁷⁹	29.76 ³¹	43.04 ²³⁵	2.044 ⁷⁶	57.10 ¹⁵⁰
May 9.1	16.600 ⁷	58.96 ⁷¹	43.626 ¹⁵	36.28 ⁹⁶	29.45 ¹⁷	40.69 ²⁵⁷	1.968 ³⁶	55.60 ¹⁷⁵
19.1	16.593 ⁴⁴	58.25 ⁶⁸	43.611 ²⁸	35.32 ¹¹²	29.28 ²	38.12 ²⁶⁸	1.932 ⁸	53.85 ¹⁹⁴
29.0	16.637 ⁹³	57.57 ⁶¹	43.639 ⁷⁰	34.20 ¹²⁴	29.26 ¹⁴	35.44 ²⁷³	1.940 ⁵²	51.91 ²¹²
June 8.0	16.730 ¹⁴²	56.96 ⁵⁴	43.709 ¹¹¹	32.96 ¹³⁵	29.40 ²⁹	32.71 ²⁶⁹	1.992 ⁹³	49.79 ²²¹
18.0	16.872 ¹⁸⁶	56.42 ⁴⁵	43.820 ¹⁴⁹	31.61 ¹⁴¹	29.69 ⁴³	30.02 ²⁵⁷	2.085 ¹³³	47.58 ²²⁷
28.0	17.058 ²²⁶	55.97 ³⁴	43.969 ¹⁸²	30.20 ¹⁴⁴	30.12 ⁵⁷	27.45 ²³⁹	2.218 ¹⁷¹	45.31 ²²⁵
July 7.9	17.284 ²⁶²	55.63 ²⁴	44.151 ²¹⁴	28.76 ¹⁴³	30.69 ⁶⁹	25.06 ²¹⁵	2.389 ²⁰⁴	43.06 ²¹⁹
17.9	17.546 ²⁸⁹	55.39 ¹²	44.365 ²³⁸	27.33 ¹³⁵	31.38 ⁷⁹	22.91 ¹⁸⁸	2.593 ²³⁰	40.87 ²⁰²
27.9	17.835 ³¹³	55.27 ³	44.603 ²⁵⁹	25.98 ¹²⁴	32.17 ⁸⁸	21.03 ¹⁵⁵	2.823 ²⁵⁵	38.85 ¹⁸¹
Aug. 6.9	18.148 ³³¹	55.24 ³	44.862 ²⁷³	24.74 ¹⁰⁷	33.05 ⁹⁴	19.48 ¹²⁰	3.078 ²⁷¹	37.04 ¹⁵³
16.8	18.479 ³⁴³	55.27 ¹⁴	45.135 ²⁸⁵	23.67 ⁸⁷	33.99 ¹⁰⁰	18.28 ⁸²	3.349 ²⁸⁵	35.51 ¹¹⁹
26.8	18.822 ³⁵¹	55.41 ¹⁷	45.420 ²⁹¹	22.80 ⁶²	34.99 ¹⁰⁴	17.46 ⁴⁴	3.634 ²⁹²	34.32 ⁸³
Sept. 5.8	19.173 ³⁵³	55.58 ²⁰	45.711 ²⁹⁴	22.18 ³³	36.03 ¹⁰⁵	17.02 ³	3.926 ²⁹⁷	33.49 ³⁴
15.7	19.526 ³⁵²	55.78 ²⁴	46.005 ²⁹²	21.85 ⁴	37.08 ¹⁰⁶	16.99 ³⁷	4.223 ²⁹⁶	33.15 ⁸
25.7	19.878 ³⁴⁶	56.02 ²⁶	46.297 ²⁸⁷	21.81 ²⁷	38.14 ¹⁰⁴	17.36 ⁷⁶	4.519 ²⁹⁰	33.23 ⁵³
Oct. 5.7	20.224 ³³⁶	56.28 ³⁰	46.584 ²⁷⁹	22.08 ⁵⁵	39.18 ¹⁰⁰	18.12 ¹¹⁶	4.809 ²⁸⁰	33.76 ⁹⁶
15.7	20.560 ³²³	56.58 ³¹	46.863 ²⁶⁶	22.63 ⁸⁴	40.18 ⁹⁴	19.28 ¹⁵²	5.089 ²⁶⁵	34.72 ¹³⁸
25.6	20.883 ³⁰²	56.89 ³⁶	47.129 ²⁴⁹	23.47 ¹⁰⁶	41.12 ⁸⁸	20.80 ¹⁸⁶	5.354 ²⁴⁸	36.10 ¹⁷³
Nov. 4.6	21.185 ²⁷⁸	57.25 ³⁷	47.378 ²²⁸	24.53 ¹²⁵	42.00 ⁷⁸	22.66 ²¹⁹	5.602 ²²²	37.83 ²⁰³
14.6	21.463 ²⁵⁰	57.62 ⁴⁴	47.606 ²⁰¹	25.78 ¹³⁹	42.78 ⁶⁵	24.85 ²⁴⁴	5.824 ¹⁹³	39.86 ²²⁴
24.6	21.713 ²¹²	58.06 ⁵⁰	47.807 ¹⁶⁰	27.17 ¹⁴⁶	43.43 ⁵⁴	27.29 ²⁶⁶	6.017 ¹⁵⁹	42.10 ²³⁷
Dec. 4.5	21.925 ¹⁶⁶	58.56 ⁵³	47.976 ¹³⁴	28.63 ¹⁴⁸	43.97 ³⁸	29.95 ²⁷⁸	6.176 ¹²⁰	44.47 ²⁴¹
14.5	22.091 ¹²³	59.09 ⁵⁵	48.110 ⁹⁴	30.11 ¹⁴⁵	44.35 ²¹	32.73 ²⁸³	6.296 ⁷⁷	46.88 ²³⁸
24.5	22.214 ⁷⁰	59.64 ⁵⁶	48.204 ⁵¹	31.56 ¹³⁷	44.56 ⁶	35.56 ²⁸⁰	6.373 ³³	49.26 ²²⁶
34.4	22.284	60.20	48.255	32.93	44.62	38.36	6.406	51.52
Mean Place	15.567	51.48	42.873	37.50	29.055	25.67	1.511	53.95
Sec δ, Tan δ	1.181	+0.628	1.000	-0.006	3.862	+3.730	1.050	-0.323
D _φ α, D _ω α	+0.08	-0.01	+0.06	0.00	+0.16	-0.03	+0.05	0.00
D _φ δ, D _ω δ	+0.1	+1.0	+0.1	+1.0	+0.1	+1.0	+0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ϕ^1 Orionis. Mag. 4.5		ι Orionis. Mag. 2.9		ϵ Orionis. Mag. 1.8		ζ Tauri. Mag. 3.0	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 5 30	° ' " + 9 26	h m 5 31	° ' " - 5 57	h m 5 31	° ' " - 1 15	h m 5 32	° ' " +21 5
Jan. 0.5	14.679	6.39	21.529	47.06	59.156	12.12	39.780	38.74
10.4	14.714 ³⁵	5.65 ⁷⁴	21.553 ²⁴	48.65 ¹⁵⁹	59.184 ²⁸	13.46 ¹³⁴	39.824 ⁴⁴	38.66 ⁸
20.4	14.703 ¹¹	4.99 ⁶⁶	21.531 ²²	50.07 ¹⁴²	59.168 ¹⁶	14.66 ¹²⁰	39.818 ⁶	38.63 ³
30.4	14.649 ⁵⁴	4.43 ⁵⁶	21.468 ⁶³	51.30 ¹²³	59.109 ⁵⁹	15.70 ¹⁰⁴	39.766 ⁵²	38.61 ²
Feb. 9.3	14.557 ⁹²	3.95 ⁴⁸	21.365 ¹⁰³	52.32 ¹⁰²	59.013 ⁹⁶	16.56 ⁸⁶	39.672 ⁹⁴	38.59 ²
19.3	14.430 ¹²⁷	3.57 ³⁸	21.232 ¹³³	53.10 ⁷⁸	58.883 ¹³⁰	17.22 ⁶⁶	39.541 ¹³¹	38.55 ⁴
29.3	14.279 ¹⁵¹	3.28 ²⁹	21.074 ¹⁵⁸	53.66 ⁵⁶	58.729 ¹⁵⁴	17.71 ⁴⁹	39.383 ¹⁵⁶	38.48 ⁷
Mar. 10.3	14.112 ¹⁶⁷	3.07 ²¹	20.902 ¹⁷²	53.98 ³²	58.560 ¹⁶⁹	18.00 ²⁹	39.210 ¹⁷³	38.38 ¹⁰
20.2	13.942 ¹⁷⁰	2.94 ¹³	20.726 ¹⁷⁶	54.07 ⁹	58.387 ¹⁷³	18.10 ¹⁰	39.031 ¹⁷⁹	38.23 ¹⁵
30.2	13.778 ¹⁶⁴	2.90 ⁴	20.555 ¹⁷¹	53.92 ¹⁵	58.221 ¹⁶⁸	18.02 ⁸	38.859 ¹⁷²	38.04 ¹⁹
Apr. 9.2	13.629 ¹⁴⁹	2.94 ⁴	20.555 ¹⁵⁵	53.92 ³⁷	58.221 ¹⁵³	18.02 ²⁸	38.859 ¹⁵⁵	38.04 ²²
19.2	13.506 ¹²³	2.94 ¹⁴	20.400 ¹³⁰	53.55 ⁶⁰	58.068 ¹²⁷	17.74 ⁴⁶	38.704 ¹²⁸	37.82 ²²
29.1	13.415 ⁹¹	3.08 ²⁵	20.270 ¹⁰¹	52.95 ⁸²	57.941 ⁹⁷	17.28 ⁶⁵	38.576 ⁹⁵	37.60 ²²
May 9.1	13.415 ⁵³	3.33 ³⁵	20.169 ⁶²	52.13 ¹⁰²	57.844 ⁵⁹	16.63 ⁸³	38.481 ⁵⁵	37.38 ¹⁹
19.1	13.362 ¹¹	3.68 ⁴⁷	20.107 ²³	51.11 ¹²³	57.785 ¹⁹	15.80 ⁹⁹	38.426 ¹⁰	37.19 ¹³
29.0	13.351 ³²	4.15 ⁵⁸	20.084 ²⁰	49.88 ¹³⁸	57.766 ²⁴	14.81 ¹¹⁵	38.416 ³⁶	37.06 ⁷
June 8.0	13.383 ⁷⁵	4.73 ⁶⁹	20.104 ⁶²	48.50 ¹⁵²	57.790 ⁶⁵	13.66 ¹²⁸	38.452 ⁸²	36.99 ¹
18.0	13.458 ¹¹⁷	5.42 ⁷⁹	20.166 ¹⁰³	46.98 ¹⁶⁴	57.855 ¹⁰⁷	12.38 ¹³⁷	38.534 ¹²⁵	37.00 ⁹
28.0	13.575 ¹⁵⁶	6.21 ⁸⁶	20.269 ¹⁴⁰	45.34 ¹⁷⁰	57.962 ¹⁴³	11.01 ¹⁴⁵	38.659 ¹⁶⁷	37.09 ¹⁸
July 7.9	13.731 ¹⁹⁰	7.07 ⁹¹	20.409 ¹⁷⁶	43.64 ¹⁷¹	58.105 ¹⁷⁹	9.56 ¹⁴⁷	38.826 ²⁰²	37.27 ²⁶
17.9	13.921 ²²¹	7.98 ⁹²	20.585 ²⁰⁶	41.93 ¹⁶⁶	58.284 ²¹⁰	8.09 ¹⁴⁶	39.028 ²³⁴	37.53 ³²
27.9	14.142 ²⁴⁶	8.90 ⁹²	20.791 ²³²	40.27 ¹⁵⁸	58.494 ²³⁴	6.63 ¹³⁸	39.262 ²⁶²	37.85 ³⁶
Aug. 6.9	14.388 ²⁶⁶	9.82 ⁸⁶	21.023 ²⁶⁴	38.69 ¹⁴⁴	58.728 ²⁵⁶	5.25 ¹²⁷	39.524 ²⁸²	38.21 ³⁸
16.8	14.654 ²⁸¹	10.68 ⁷⁷	21.277 ²⁶⁹	37.25 ¹²²	58.984 ²⁷¹	3.98 ¹⁰⁸	39.806 ²⁹⁸	38.59 ³⁸
26.8	14.935 ²⁹²	11.45 ⁶⁴	21.546 ²⁸²	36.03 ⁹⁶	59.255 ²⁸³	2.90 ⁸⁸	40.104 ³¹²	38.97 ³⁵
Sept. 5.8	15.227 ²⁹⁹	12.09 ⁴⁸	21.828 ²⁸⁹	35.05 ⁶⁷	59.538 ²⁸⁹	2.02 ⁶²	40.416 ³¹⁷	39.32 ²⁹
15.7	15.526 ³⁰²	12.57 ²⁹	22.117 ²⁹²	34.38 ³⁵	59.827 ²⁹⁸	1.40 ³³	40.733 ³²¹	39.61 ²²
25.7	15.828 ³⁰⁰	12.86 ¹⁰	22.409 ²⁹¹	34.03 ⁰	60.120 ²⁹³	1.07 ³	41.054 ³²⁰	39.83 ¹⁴
Oct. 5.7	16.128 ²⁹⁶	12.96 ¹¹	22.700 ²⁸⁶	34.03 ³⁵	60.413 ²⁸⁸	1.04 ²⁹	41.374 ³¹⁶	39.97 ³
15.7	16.424 ²⁸⁸	12.85 ³²	22.986 ²⁷⁹	34.38 ⁷¹	60.701 ²⁸⁰	1.33 ⁶⁰	41.690 ³⁰⁷	40.02 ⁴
25.6	16.712 ²⁷⁶	12.53 ⁵⁰	23.265 ²⁶⁶	35.09 ¹⁰¹	60.981 ²⁶⁸	1.93 ⁸⁶	41.997 ²⁹⁶	39.98 ¹¹
Nov. 4.6	16.988 ²⁵⁸	12.03 ⁶⁷	23.531 ²⁴⁸	36.10 ¹³⁰	61.249 ²⁵¹	2.79 ¹¹²	42.293 ²⁸⁰	39.87 ¹⁸
14.6	17.246 ²³⁹	11.36 ⁷⁸	23.779 ²²⁸	37.40 ¹⁵²	61.500 ²³⁰	3.91 ¹³⁰	42.573 ²⁵⁷	39.69 ²⁰
24.6	17.485 ²¹²	10.58 ⁸⁶	24.007 ²⁰⁰	38.92 ¹⁶⁹	61.730 ²⁰⁴	5.21 ¹⁴⁴	42.830 ²³¹	39.49 ²³
Dec. 4.5	17.697 ¹⁸⁰	9.72 ⁹¹	24.207 ¹⁶⁹	40.61 ¹⁷⁷	61.934 ¹⁷³	6.65 ¹⁵²	43.061 ¹⁹⁸	39.26 ²²
14.5	17.877 ¹⁴⁶	8.81 ⁹⁰	24.376 ¹³¹	42.38 ¹⁸¹	62.107 ¹³⁸	8.17 ¹⁵⁶	43.259 ¹⁶⁰	39.04 ¹⁹
24.5	18.023 ¹⁰⁵	7.91 ⁸⁸	24.507 ⁹³	44.19 ¹⁷⁸	62.245 ⁹⁶	9.72 ¹⁵¹	43.419 ¹¹⁷	38.85 ¹⁵
34.4	18.128 ⁶⁰	7.03 ⁸¹	24.600 ⁴⁹	45.97 ¹⁶⁷	62.341 ⁵⁴	11.23 ¹⁴³	43.536 ⁷¹	38.70 ¹²
34.4	18.188 ⁶⁰	6.22 ⁸¹	24.649 ⁴⁹	47.64 ¹⁶⁷	62.395 ⁵⁴	12.66 ¹⁴³	43.607 ⁷¹	38.58 ¹²
Mean Place	12.485	0.76	19.425	51.16	57.032	16.65	37.435	32.05
Sec δ , Tan δ	1.014	+0.166	1.005	-0.104	1.000	-0.022	1.072	+0.386
$D\psi\alpha$, $D_{\omega}\alpha$	+0.07	0.00	+0.06	0.00	+0.06	0.00	+0.07	0.00
$D\psi\delta$, $D_{\omega}\delta$	+0.1	+1.0	0.0	+1.0	0.0	+1.0	0.0	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ζ Orionis. Mag. 2.0		α Columbæ. Mag. 2.8		ο Aurigæ. Mag. 5.5		ζ Leporis. Mag. 3.7	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 5 36	° ' " - 1 58	h m 5 36	° ' " -34 6	h m 5 39	° ' " +49 47	h m 5 43	° ' " -14 50
	s	"	s	"	s	"	s	"
Jan. 0.5	33.326	66.13	38.634	64.08	26.710	35.30	11.031	65.50
10.4	33.357 ³¹	67.53 ¹⁴⁰	38.617 ¹⁷	66.88 ²⁸⁰	26.762 ⁵²	36.89 ¹⁵⁹	11.055 ²⁴	67.56 ²⁰⁶
20.4	33.344 ¹³	68.79 ¹²⁶	38.549 ⁶⁸	69.40 ²⁵²	26.744 ¹⁸	38.39 ¹⁵⁰	11.033 ²²	69.44 ¹⁸⁸
30.4	33.288 ⁵⁶	69.87 ¹⁰⁸	38.433 ¹¹⁶	71.60 ²²⁰	26.658 ⁸⁶	39.74 ¹³⁵	10.966 ⁶⁷	71.07 ¹⁶³
Feb. 9.3	33.194 ⁹⁴	70.76 ⁸⁹	38.275 ¹⁵⁸	73.41 ¹⁸¹	26.510 ¹⁴⁸	40.87 ¹¹³	10.860 ¹⁰⁶	72.44 ¹³⁷
19.3	33.066 ¹²⁸	71.47 ⁷¹	38.082 ¹⁹³	74.82 ¹⁴¹	26.312 ¹⁹⁸	41.75 ⁸⁸	10.720 ¹⁴⁰	73.50 ¹⁰⁶
29.3	32.914 ¹⁵²	71.97 ⁵⁰	37.862 ²²⁰	75.77 ⁹⁵	26.076 ²³⁶	42.31 ⁵⁶	10.554 ¹⁶⁶	74.25 ⁷⁵
Mar. 10.3	32.745 ¹⁶⁹	72.28 ³¹	37.627 ²³⁵	76.27 ⁵⁰	25.814 ²⁶²	42.54 ¹⁰	10.373 ¹⁸¹	74.69 ⁴⁴
20.2	32.571 ¹⁷⁴	72.40 ¹²	37.387 ²⁴⁰	76.32 ⁵	25.545 ²⁶⁹	42.44 ¹⁰	10.184 ¹⁸⁹	74.82 ¹³
30.2	32.404 ¹⁶⁷	72.31 ⁹	37.152 ²³⁵	75.92 ⁴⁰	25.284 ²⁶¹	42.00 ⁴⁴	10.001 ¹⁸³	74.63 ¹⁹
Apr. 9.2	32.250 ¹⁵⁴	72.02 ²⁹	36.934 ²¹⁸	75.09 ⁸³	25.044 ²⁴⁰	41.25 ⁷⁵	9.831 ¹⁷⁰	74.15 ⁴⁸
19.2	32.120 ¹³⁰	71.55 ⁴⁷	36.740 ¹⁹⁴	73.86 ¹²³	24.841 ²⁰³	40.23 ¹⁰²	9.682 ¹⁴⁹	73.36 ⁷⁹
29.1	32.020 ¹⁰⁰	70.88 ⁶⁷	36.581 ¹⁵⁹	72.24 ¹⁶²	24.685 ¹⁵⁶	38.98 ¹²⁵	9.565 ¹¹⁷	72.30 ¹⁰⁶
May 9.1	31.957 ⁶³	70.04 ⁸⁴	36.462 ¹¹⁹	70.28 ¹⁹⁶	24.585 ¹⁰⁰	37.55 ¹⁴³	9.483 ⁸²	70.99 ¹³¹
19.1	31.934 ²³	69.03 ¹⁰¹	36.386 ⁷⁶	68.02 ²²⁶	24.547 ³⁸	36.01 ¹⁵⁴	9.441 ⁴²	69.43 ¹⁵⁶
29.0	31.952 ¹⁸	67.85 ¹¹⁸	36.358 ²⁸	65.51 ²⁵¹	24.571 ²⁴	34.41 ¹⁶⁰	9.439 ²	67.68 ¹⁷⁵
June 8.0	32.012 ⁶⁰	66.55 ¹³⁰	36.378 ²⁰	62.81 ²⁷⁰	24.661 ⁹⁰	32.79 ¹⁶²	9.482 ⁴³	65.77 ¹⁹¹
18.0	32.113 ¹⁰¹	65.15 ¹⁴⁰	36.445 ⁶⁷	60.00 ²⁸¹	24.813 ¹⁵²	31.22 ¹⁵⁷	9.565 ⁸³	63.74 ²⁰³
28.0	32.252 ¹³⁹	63.68 ¹⁴⁷	36.559 ¹¹⁴	57.13 ²⁸⁷	25.024 ²¹¹	29.74 ¹⁴⁸	9.688 ¹²³	61.65 ²⁰⁹
July 7.9	32.427 ¹⁷⁵	62.19 ¹⁴⁹	36.716 ¹⁵⁷	54.30 ²⁸³	25.289 ²⁶⁵	28.38 ¹³⁶	9.848 ¹⁰⁰	59.55 ²¹⁰
17.9	32.632 ²⁰⁵	60.72 ¹⁴⁷	36.912 ¹⁹⁶	51.59 ²⁷¹	25.600 ³¹¹	27.17 ¹²¹	9.848 ¹⁹¹	57.51 ²⁰⁴
27.9	32.862 ²³⁰	59.32 ¹⁴⁰	37.142 ²³⁰	49.07 ²⁵²	25.953 ³⁵³	26.12 ¹⁰⁵	10.039 ²²¹	57.51 ¹⁹²
Aug. 6.9	33.115 ²⁵³	58.04 ¹²⁸	37.403 ²⁶¹	46.84 ²²³	26.339 ³⁸⁶	25.28 ⁸⁴	10.260 ²⁴⁴	55.59 ¹⁷¹
16.8	33.384 ²⁶⁹	56.94 ¹¹⁰	37.687 ²⁸⁴	44.95 ¹⁸⁹	26.750 ⁴¹¹	24.64 ⁶⁴	10.504 ²⁶³	53.88 ¹⁴⁸
26.8	33.664 ²⁸⁰	56.05 ⁸⁹	37.991 ³⁰⁴	43.50 ¹⁴⁵	27.181 ⁴³¹	24.19 ⁴⁵	10.767 ²⁷⁸	52.40 ¹¹⁶
Sept. 5.8	33.952 ²⁸⁸	55.43 ⁶²	37.991 ³¹⁵	43.50 ⁹⁶	27.181 ⁴⁴⁵	24.19 ²⁴	11.045 ²⁸⁷	51.24 ⁷⁹
15.7	34.245 ²⁹³	55.10 ³³	38.306 ³²³	42.54 ⁴³	27.626 ⁴⁵¹	23.95 ⁵	11.332 ²⁹³	50.45 ⁴⁰
25.7	34.538 ²⁹³	55.08 ²	38.629 ³²³	42.11 ¹³	28.077 ⁴⁵³	23.90 ¹⁸	11.625 ²⁹⁵	50.05 ²
Oct. 5.7	34.827 ²⁸⁹	55.40 ³²	39.952 ³¹⁸	42.24 ⁶⁸	28.530 ⁴⁴⁸	24.08 ³⁵	11.920 ²⁹¹	50.07 ⁴⁶
15.7	35.108 ²⁸¹	56.01 ⁶¹	39.270 ³⁰⁶	42.92 ¹²⁴	28.978 ⁴³⁸	24.43 ⁵⁶	12.211 ²⁸⁵	50.53 ⁸⁸
25.6	35.378 ²⁷⁰	56.01 ⁸⁹	39.576 ²⁸⁹	44.16 ¹⁷⁴	29.416 ⁴²¹	24.99 ⁷⁵	12.496 ²⁷²	51.41 ¹²⁸
Nov. 4.6	35.378 ²⁵³	56.90 ¹¹⁶	39.865 ²⁸⁶	45.90 ²²⁰	29.837 ³⁹⁷	25.74 ⁹⁴	12.768 ²⁵⁵	52.69 ¹⁶²
14.6	35.631 ²³⁴	58.06 ¹³⁴	40.131 ²³⁸	48.10 ²⁵⁷	30.234 ³⁶⁵	26.68 ¹¹²	13.023 ²³⁵	54.31 ¹⁹¹
24.6	35.865 ²⁰⁷	59.40 ¹⁴⁹	40.369 ²⁰¹	50.67 ²⁸⁵	30.599 ³²⁶	27.80 ¹²⁷	13.258 ²⁰⁶	56.22 ²¹²
Dec. 4.5	36.072 ¹⁷⁶	60.89 ¹⁵⁸	40.570 ¹⁶¹	53.52 ³⁰³	30.925 ²⁷⁸	29.07 ¹⁴¹	13.464 ¹⁷⁵	58.34 ²²⁵
14.5	36.248 ¹⁴¹	62.47 ¹⁶¹	40.731 ¹¹⁴	56.55 ³¹¹	31.203 ²²²	30.48 ¹⁵²	13.639 ¹³⁶	60.59 ²³¹
24.5	36.389 ¹⁰¹	64.08 ¹⁵⁷	40.845 ⁶⁴	59.66 ³⁰⁸	31.425 ¹⁵⁹	32.00 ¹⁵⁸	13.775 ⁹⁶	62.90 ²²⁸
34.4	36.490 ⁵⁶	65.65 ¹⁴⁹	40.909 ¹³	62.72 ²⁹³	31.584 ⁹¹	33.58 ¹⁵⁹	13.871 ⁵⁰	65.18 ²¹⁹
34.4	36.546	67.14	40.922	65.65	31.675	35.17	13.921	67.37
Mean Place	31.200	70.51	36.497	66.00	23.462	26.62	8.926	68.79
Sec δ, Tan δ	1.001	-0.035	1.208	-0.677	1.549	+1.183	1.035	-0.265
D _φ α, D _ω α	+0.06	0.00	+0.04	0.00	+0.09	-0.01	+0.05	0.00
D _φ δ, D _ω δ	0.0	+1.0	0.0	+1.0	0.0	+1.0	0.0	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	κ Orionis. Mag. 2.2		δ Doradus. Mag. 4.5		ν Aurigæ. Mag. 4.2		δ Lepus Mag. 4.1
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.
	h m 5 43	° ' " - 9 41	h m 5 44	° ' " -65 45	h m 5 45	° ' " +39 7	h m 5 47
	s	"	s	"	s	"	s
Jan. 0.5	48.451	51.41	40.53	60.22	42.843	37.81	44.620
10.4	48.482 ³¹	53.23 ¹⁸²	40.35 ¹⁸	63.58 ³³⁶	42.904 ⁶¹	38.80 ⁹⁹	44.640 ²⁰
20.4	48.467 ¹⁵	54.88 ¹⁶⁵	40.08 ²⁷	66.64 ³⁰⁶	42.906 ²	39.75 ⁹⁵	44.613 ²⁷
30.4	48.408 ⁵⁹	56.31 ¹⁴³	39.72 ³⁶	69.32 ²⁶⁸	42.851 ⁵⁵	40.63 ⁸⁸	44.540 ⁷³
Feb. 9.4	48.310 ⁹⁸	57.50 ¹¹⁹	39.29 ⁴³	71.55 ²²³	42.743 ¹⁰⁸	41.38 ⁷⁵	44.427 ¹¹³
	133	94	50	171	153	59	147
19.3	48.177	58.44 ⁶⁶	38.79	73.26	42.590	41.97	44.280
29.3	48.019 ¹⁵⁸	59.10 ⁴¹	38.25 ⁵⁴	74.47 ¹²¹	42.404 ¹⁸⁶	42.36 ³⁹	44.104 ¹⁷⁶
Mar 10.3	47.845 ¹⁷⁴	59.51 ¹²	37.69 ⁵⁶	75.11 ⁶⁴	42.195 ²⁰⁹	42.53 ¹⁷	43.912 ¹⁹²
20.2	47.664 ¹⁸¹	59.63 ¹⁴	37.12 ⁵⁷	75.20 ⁹	41.977 ²¹⁸	42.47 ⁶	43.714 ¹⁹⁸
30.2	47.487 ¹⁷⁷	59.49 ³⁹	36.56 ⁵⁶	74.75 ⁴⁵	41.764 ²¹³	42.17 ³⁰	43.518 ¹⁹⁶
	162		54	96	196	50	183
Apr. 9.2	47.325	59.10	36.02	73.79	41.568	41.67	43.335
19.2	47.183 ¹⁴²	58.44 ⁶⁶	35.52 ⁵⁰	72.33 ¹⁴⁶	41.402 ¹⁶⁶	40.97 ⁷⁰	43.175 ¹⁶⁰
29.1	47.072 ¹¹¹	57.55 ⁸⁹	35.07 ⁴⁵	70.42 ¹⁹¹	41.275 ¹²⁷	40.13 ⁸⁴	43.045 ¹³⁰
May 9.1	46.997 ⁷⁵	56.42 ¹¹³	34.70 ³⁷	68.08 ²³⁴	41.193 ⁸²	39.18 ⁹⁵	42.949 ⁹⁶
19.1	46.961 ³⁶	55.09 ¹³³	34.40 ³⁰	65.41 ²⁶⁷	41.162 ³¹	38.15 ¹⁰³	42.894 ⁵⁵
	5	152	22	298	23	105	13
29.1	46.966	53.57	34.18	62.43	41.185	37.10	42.881
June 8.0	47.012 ⁴⁶	51.90 ¹⁶⁷	34.05 ¹³	59.25 ³¹⁸	41.262 ⁷⁷	36.05 ¹⁰⁵	42.911 ³⁰
18.0	47.100 ⁸⁸	50.12 ¹⁷⁸	34.01 ⁴	55.92 ³³³	41.391 ¹²⁹	35.05 ¹⁰⁰	42.985 ⁷⁴
28.0	47.227 ¹²⁷	48.28 ¹⁸⁴	34.07 ⁶	52.55 ³³⁷	41.570 ¹⁷⁹	34.13 ⁹²	43.099 ¹¹⁴
July 7.9	47.389 ¹⁶²	46.42 ¹⁸⁶	34.21 ¹⁴	49.24 ³¹⁸	41.793 ²²³	33.31 ⁸²	43.252 ¹⁵³
	194	182	23		264	71	185
17.9	47.583	44.60	34.44	46.06	42.057	32.60	43.437
27.9	47.805 ²²²	42.90 ¹⁷⁰	34.75 ³¹	43.11 ²⁹⁵	42.354 ²⁹⁷	32.00 ⁶⁰	43.655 ²¹⁸
Aug. 6.9	48.049 ²⁴⁴	41.35 ¹⁵⁵	35.14 ³⁹	40.49 ²¹⁹	42.678 ³²⁴	31.52 ⁴⁸	43.897 ²⁴²
16.8	48.312 ²⁶³	40.02 ¹³³	35.58 ⁴⁴	38.30 ²⁶²	43.026 ³⁴⁸	31.16 ³⁶	44.161 ²⁶⁴
26.8	48.588 ²⁷⁶	38.97 ¹⁰⁵	36.08 ⁵⁰	36.59 ¹⁷¹	43.389 ³⁶³	30.93 ²³	44.440 ²⁷⁹
	285	72	54	113	374	14	291
Sept. 5.8	48.873	38.25	36.62	35.46	43.763	30.79	44.731
15.8	49.165 ²⁰²	37.88 ³⁷	37.18 ⁵⁶	34.95 ⁵¹	44.144 ³⁸¹	30.76 ³	45.029 ²⁹⁸
25.7	49.457 ²⁹²	37.89 ¹	37.74 ⁵⁶	35.08 ¹³	44.527 ³⁸³	30.83 ⁷	45.329 ³⁰⁰
Oct. 5.7	49.747 ²⁹⁰	38.29 ⁴⁰	38.30 ⁵⁶	35.86 ⁷⁸	44.907 ³⁸⁰	31.00 ¹⁷	45.627 ²⁹⁸
15.7	50.030 ²⁸³	39.07 ⁷⁸	38.84 ⁵⁴	37.31 ¹⁴⁵	45.280 ³⁷³	31.27 ²⁷	45.918 ²⁹¹
	272	114	49	204	361	37	279
25.6	50.302	40.21	39.33	39.35	45.641	31.64	46.197
Nov. 4.6	50.558 ²⁵⁶	41.65 ¹⁴⁴	39.76 ⁴³	41.90 ²⁵⁵	45.983 ³⁴²	32.10 ⁴⁶	46.458 ²⁶¹
14.6	50.794 ²³⁶	43.36 ¹⁷¹	40.13 ³⁷	44.90 ³⁰⁰	46.300 ³¹⁷	32.67 ⁵⁷	46.697 ²³⁹
24.6	51.002 ²⁰⁸	45.24 ¹⁸⁸	40.41 ²⁸	48.27 ³³⁷	46.587 ²⁸⁷	33.36 ⁶⁹	46.906 ²⁰⁹
Dec. 4.5	51.180 ¹⁷⁸	47.24 ²⁰⁰	40.60 ¹⁹	51.84 ³⁵⁷	46.835 ²⁴⁸	34.14 ⁷⁸	47.082 ¹⁷⁶
	143	205	9	369	202	87	137
14.5	51.323	49.29	40.69	55.53	47.037	35.01	47.219
24.5	51.423 ¹⁰⁰	51.31 ²⁰²	40.68 ¹	59.19 ³⁶⁶	47.187 ¹⁵⁰	35.94 ⁹³	47.314 ⁹⁵
34.5	51.479 ⁵⁶	53.24 ¹⁹³	40.56 ¹²	62.71 ³⁵²	47.282 ⁹⁵	36.90 ⁹⁶	47.361 ⁴⁷
Mean Place	46.341	55.07	37.210	61.35	40.041	30.42	42.504
Sec δ, Tan δ	1.015	-0.171	2.436	-2.222	1.289	+0.813	1.070
<i>Dφ a, Dω a</i>	+0.06	0.00	0.00	+0.01	+0.08	0.00	+0.05
<i>Dφ δ, Dω δ</i>	0.0	+1.0	0.0	+1.0	0.0	+1.0	0.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Orionis. (Betelgeuz.) Var. 1.0-1.4		γ Leporis. Mag. 3.8		δ Aurigæ. Mag. 3.9		β Aurigæ. Mag. 2.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 5 50	" ' " + 7 23	h m 5 52	" ' " -14 10	h m 5 52	" ' " +54 16	h m 5 53	" ' " +44 56
	s	"	s	"	s	"	s	"
Jan. 0.5	39.646	37.25	36.840	52.73	40.285	54.94	25.118	31.81
10.4	39.700 ⁵⁴	36.34 ⁹¹	36.873 ³³	54.80 ²⁰⁷	40.356 ⁷¹	56.76 ¹⁸²	25.190 ⁷²	33.13 ¹³²
20.4	39.707 ⁷	35.53 ⁸¹	36.860 ¹³	56.69 ¹⁸⁹	40.348 ⁸	58.52 ¹⁷⁶	25.195 ⁵	34.41 ¹²⁸
30.4	39.666 ⁴¹	34.85 ⁶⁸	36.802 ⁵⁸	58.34 ¹⁶⁵	40.264 ⁸⁴	60.11 ¹⁵⁹	25.138 ⁵⁷	35.58 ¹¹⁷
Feb. 9.4	39.584 ⁸²	34.28 ⁵⁷	36.704 ⁹⁸	59.73 ¹³⁹	40.110 ¹⁵⁴	61.51 ¹⁴⁰	25.022 ¹¹⁶	36.62 ¹⁰⁴
	117	44	134	110	212	111	166	83
19.3	39.467	33.84 ³⁴	36.570	60.83 ⁷⁹	39.898	62.62 ⁷⁸	24.856	37.45 ⁵⁸
29.3	39.323 ¹⁴⁴	33.50 ²¹	36.409 ¹⁶¹	61.62 ⁴⁹	39.639 ²⁵⁹	63.40 ⁷⁸	24.650 ²⁰⁶	38.03 ³⁰
Mar. 10.3	39.159 ¹⁶⁴	33.29 ¹³	36.230 ¹⁷⁹	62.11 ¹⁷	39.351 ²⁸⁸	63.82 ⁴²	24.420 ²³⁰	38.33 ³⁰
20.3	38.988 ¹⁷¹	33.16 ²	36.044 ¹⁸⁶	62.28 ¹⁴	39.351 ³⁰¹	63.86 ⁴	24.178 ²⁴²	38.35 ²
30.2	38.821 ¹⁶⁷	33.14 ⁹	35.860 ¹⁸⁴	62.14 ⁴²	39.050 ²⁹⁸	63.52 ³⁴	24.178 ²³⁸	38.07 ²⁸
	155	20	172	73	277	70	221	54
Apr. 9.2	38.666 ¹³³	33.23 ²⁰	35.688 ¹⁵¹	61.72 ⁷³	38.475 ²³⁹	62.82 ¹⁰²	23.719 ¹⁹²	37.53 ⁷⁹
19.2	38.533 ¹⁰³	33.43 ³⁰	35.537 ¹²²	60.99 ⁹⁹	38.236 ¹⁹¹	61.80 ¹³⁰	23.527 ¹⁵⁰	36.74 ¹⁰⁰
29.1	38.430 ⁶⁸	33.73 ⁴²	35.415 ⁸⁸	60.00 ¹²⁵	38.045 ¹³³	60.50 ¹⁵³	23.377 ¹⁰¹	35.74 ¹¹⁷
May 9.1	38.362 ²⁷	34.15 ⁵³	35.327 ⁴⁹	58.75 ¹⁴⁸	37.912 ⁶⁸	58.97 ¹⁷⁰	23.276 ⁴⁶	34.57 ¹²⁷
19.1	38.335 ¹³	34.68 ⁶⁵	35.278 ⁸	57.27 ¹⁶⁹	37.844 ¹	57.27 ¹⁸⁰	23.230 ¹¹	33.30 ¹³⁴
29.1	38.348	35.33 ⁷⁶	35.270	55.58 ¹⁸⁵	37.845	55.47 ¹⁸⁴	23.241 ⁶⁹	31.96 ¹³⁷
June 8.0	38.404 ⁵⁶	36.09 ⁸⁴	35.304 ³⁴	53.73 ¹⁹⁶	37.917 ⁷²	53.63 ¹⁸⁴	23.310 ¹²⁷	30.59 ¹³⁴
18.0	38.500 ⁹⁶	36.93 ⁹¹	35.379 ⁷⁵	51.77 ²⁰⁴	38.057 ¹⁴⁰	51.79 ¹⁸⁴	23.437 ¹⁸⁰	29.25 ¹²⁸
28.0	38.635 ¹³⁵	37.84 ⁹⁵	35.494 ¹¹⁵	49.73 ²⁰⁴	38.262 ²⁰⁵	50.02 ¹⁷⁷	23.617 ¹⁶⁶	27.97 ¹¹⁸
July 7.9	38.805 ¹⁷⁰	38.79 ⁹⁶	35.646 ¹⁵²	47.69 ²⁰⁰	38.528 ²⁶⁶	48.36 ¹⁶⁶	23.847 ²³⁰	26.79 ¹⁰⁷
	202	96	183	200	319	153	274	107
17.9	39.007 ²²⁹	39.75 ⁹³	35.829 ²¹⁴	45.69 ¹⁸⁹	38.847 ³⁶⁶	46.83 ¹³⁶	24.121 ³¹²	25.72 ⁸⁴
27.9	39.236 ²⁵¹	40.68 ⁸⁶	36.043 ²³⁷	43.80 ¹⁷⁰	39.213 ⁴⁰⁶	45.47 ¹¹⁶	24.433 ³⁴⁵	24.78 ⁹⁰
Aug. 6.9	39.487 ²⁶⁸	41.54 ⁷⁵	36.280 ²⁵⁸	42.10 ¹⁴⁶	39.619 ⁴³⁹	44.31 ⁹⁵	24.778 ³⁶⁹	23.98 ⁶³
16.8	39.755 ²⁸²	42.29 ⁶²	36.538 ²⁷³	40.64 ¹¹⁶	40.058 ⁴⁶³	43.36 ⁷²	25.147 ³⁸⁹	23.35 ⁴⁹
26.8	40.037 ²⁹¹	42.91 ⁴³	36.811 ²⁸⁵	39.48 ⁸⁰	40.521 ⁴⁸⁰	42.64 ⁵¹	25.536 ⁴⁰⁵	22.86 ³³
Sept. 5.8	40.328 ²⁹⁷	43.34 ²³	37.096 ²⁹¹	38.68 ⁴²	41.001 ⁴⁹²	42.13 ²⁵	25.941 ⁴¹²	22.53 ¹⁷
15.8	40.625 ³⁰⁰	43.57 ⁰	37.387 ²⁹⁴	38.26 ⁰	41.493 ⁴⁹⁸	41.88 ³	26.353 ⁴¹⁶	22.36 ²
25.7	40.925 ²⁹⁸	43.57 ²³	37.681 ²⁹³	38.26 ⁴⁴	41.991 ⁴⁹⁶	41.85 ²³	26.769 ⁴¹⁶	22.34 ¹³
Oct. 5.7	41.223 ²⁹³	43.34 ⁴⁴	37.974 ²⁸⁸	38.70 ⁸⁴	42.487 ⁴⁸⁶	42.08 ⁴⁵	27.185 ³⁹⁵	22.47 ⁴⁴
15.7	41.516 ²⁸⁴	42.90 ⁶⁵	38.262 ²⁷⁷	39.54 ¹²⁴	42.973 ⁴⁷¹	42.53 ⁷¹	27.594 ³⁹⁵	22.76 ⁴⁴
25.6	41.800 ²⁷¹	42.25 ⁸³	38.539 ²⁶¹	40.78 ¹⁵⁹	43.444 ⁴⁴⁷	43.24 ⁹³	27.989 ³⁷⁸	23.20 ⁶¹
Nov. 4.6	42.071 ²⁵¹	41.42 ⁹⁶	38.800 ²⁴¹	42.37 ¹⁸⁷	43.891 ⁴¹⁴	44.17 ¹¹⁷	28.367 ³⁵²	23.81 ⁷⁷
14.6	42.322 ²²⁸	40.46 ¹⁰⁶	39.041 ²¹⁵	44.24 ²¹¹	44.305 ³⁷²	45.34 ¹³⁶	28.719 ³¹⁷	24.58 ⁹¹
24.6	42.550 ¹⁹⁹	39.40 ¹¹⁰	39.256 ¹⁸⁴	46.35 ²²³	44.677 ³²⁰	46.70 ¹⁵⁵	29.036 ²⁷⁷	25.49 ¹⁰⁵
Dec. 4.5	42.749 ¹⁶²	38.30 ¹¹⁰	39.440 ¹⁴⁶	48.58 ²³⁰	44.997 ²⁵⁹	48.25 ¹⁷⁰	29.313 ²²⁷	26.54 ¹¹⁸
14.5	42.911 ¹²³	37.20 ¹⁰⁶	39.586 ¹⁰⁵	50.88 ²²⁸	45.256 ¹⁸⁹	49.95 ¹⁷⁹	29.540 ¹⁷⁰	27.72 ¹²⁶
24.5	43.034 ⁷⁸	36.14 ⁹⁹	39.691 ⁵⁹	53.16 ²¹⁷	45.445 ¹¹⁵	51.74 ¹⁸²	29.710 ¹⁰⁹	28.98 ¹³⁰
34.5	43.112	35.15	39.750	55.33	45.560	53.56	29.819	30.28
Mean Place	37.435	32.49	34.729	56.06	36.694	47.15	22.062	24.64
Sec δ , Tan δ	1.008	+0.130	1.031	-0.253	1.712	+1.391	1.413	+0.998
$D_{\delta} \alpha$, $D_{\alpha} \alpha$	+0.06	0.00	+0.05	0.00	+0.10	0.00	+0.09	0.00
$D_{\delta} \delta$, $D_{\alpha} \delta$	0.0	+1.0	0.0	+1.0	0.0	+1.0	0.0	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♉ Aurigæ. Mag. 2.7		♊ Geminorum. Mag. 4.3		♋ G. Puppis. Mag. 6.2		♌ Orionis. Mag. 4.4	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "
	5 53	+37 12	5 59	+23 16	6 2	-45 1	6 2	+14 46
	s	"	s	"	s	"	s	"
Jan. 0.5	62.358	34.75	3.292	13.28	5.721	67.52	48.893	50.80
10.4	62.430 ⁷²	35.62 ⁸⁷	3.363 ⁷¹	13.29 ¹	5.704 ¹⁷	70.76 ³²⁴	48.963 ⁷⁰	50.29 ⁵¹
20.4	62.442 ¹²	36.48 ⁸⁶	3.382 ¹⁹	13.36 ⁷	5.625 ⁷⁹	73.74 ²⁹⁸	48.983 ²⁰	49.88 ⁴¹
30.4	62.397 ⁴⁵	37.29 ⁸¹	3.351 ³¹	13.46 ¹⁰	5.490 ¹³⁵	76.40 ²⁶⁶	48.955 ²⁸	49.55 ³³
Feb. 9.4	62.300 ⁹⁷	37.99 ⁷⁰	3.273 ⁷⁸	13.58 ¹²	5.303 ¹⁸⁷	78.66 ²²⁶	48.883 ⁷²	49.30 ²⁵
	142	58	117	11	230	181	111	19
19.3	62.158	38.57	3.156	13.69	5.073	80.47	48.772	49.11
29.3	61.980 ¹⁷⁸	38.97 ⁴⁰	3.008 ¹⁴⁸	13.76 ⁷	4.808 ²⁶⁵	81.81 ¹³⁴	48.631 ¹⁴¹	48.97 ¹⁴
Mar. 10.3	61.779 ²⁰¹	39.17 ²⁰	2.837 ¹⁷¹	13.78 ²	4.522 ²⁸⁶	82.65 ⁸⁴	48.468 ¹⁶³	48.86 ¹¹
20.3	61.568 ²¹¹	39.16 ¹	2.656 ¹⁸¹	13.74 ⁴	4.226 ²⁹⁶	82.99 ³⁴	48.296 ¹⁷²	48.78 ⁹
30.2	61.360 ²⁰⁸	38.94 ²²	2.477 ¹⁷⁹	13.64 ¹⁰	3.930 ²⁹⁶	82.83 ¹⁶	48.125 ¹⁷¹	48.73 ⁵
	194	42	166	16	283	66	160	3
Apr. 9.2	61.166	38.52	2.311	13.48	3.647	82.17	47.965	48.70
19.2	61.001 ¹⁶⁵	37.93 ⁵⁹	2.166 ¹⁴⁵	13.27 ²¹	3.388 ²⁵⁹	81.05 ¹¹²	47.826 ¹³⁹	48.72 ²
29.1	60.872 ¹²⁹	37.19 ⁷⁴	2.054 ¹¹²	13.02 ²⁵	3.162 ²²⁶	79.49 ¹⁵⁶	47.716 ¹¹⁰	48.78 ⁶
May 9.1	60.786 ⁸⁶	36.34 ⁸⁵	1.979 ⁷⁵	12.78 ²⁴	2.974 ¹⁸⁸	77.53 ¹⁹⁶	47.641 ⁷⁵	48.88 ¹⁰
19.1	60.750 ³⁶	35.42 ⁹²	1.946 ³⁸	12.55 ²³	2.835 ¹³⁹	75.22 ²³¹	47.606 ³⁵	49.05 ¹⁷
	15	95	11	21	89	262	7	25
29.1	60.765	34.47	1.957	12.34	2.746	72.60	47.613	49.30
June 8.0	60.832 ⁶⁷	33.53 ⁹⁴	2.014 ⁵⁷	12.17 ¹⁷	2.709 ³⁷	69.76 ²⁸⁴	47.661 ⁴⁸	49.61 ³¹
18.0	60.950 ¹¹⁸	32.62 ⁹¹	2.115 ¹⁰¹	12.06 ¹¹	2.727 ¹⁸	66.74 ³⁰²	47.753 ⁹²	49.99 ²⁸
28.0	61.117 ¹⁶⁷	31.77 ⁸⁵	2.257 ¹⁴²	12.01 ⁵	2.798 ⁷¹	63.65 ³⁰⁹	47.884 ¹³¹	50.43 ⁴⁴
July 8.0	61.327 ²¹⁰	31.00 ⁷⁷	2.438 ¹⁸¹	12.01 ⁰	2.920 ¹²²	60.55 ³¹⁰	48.051 ¹⁶⁷	50.92 ⁴⁹
	249	67	216	5	171	299	200	51
17.9	61.576	30.33	2.654	12.06	3.091	57.56	48.251	51.43
27.9	61.858 ²⁸²	29.76 ⁵⁷	2.897 ²⁴³	12.15 ⁹	3.308 ²¹⁷	54.73 ²⁸³	48.478 ²²⁷	51.94 ⁵¹
Aug. 6.9	62.169 ³¹¹	29.29 ⁴⁷	3.166 ²⁶⁹	12.27 ¹²	3.564 ²⁵⁶	52.18 ²⁵⁵	48.730 ²⁶²	52.42 ⁴⁵
16.8	62.502 ³³³	28.92 ³⁷	3.454 ²⁸⁸	12.39 ¹²	3.853 ²⁸⁹	50.00 ²¹⁸	49.000 ²⁷⁰	52.85 ⁴³
26.8	62.853 ³⁵¹	28.64 ²⁸	3.759 ³⁰⁵	12.48 ⁹	4.172 ³¹⁹	48.26 ¹⁷⁴	49.286 ²⁸⁶	53.19 ³⁴
	362	18	316	6	341	124	296	21
Sept. 5.8	63.215	28.46	4.075	12.54	4.513	47.02	49.582	53.40
15.8	63.586 ³⁷¹	28.35 ¹¹	4.397 ³²²	12.55 ¹	4.869 ³⁵⁶	46.35 ⁶⁷	49.888 ³⁰⁶	53.49 ⁹
25.7	63.959 ³⁷³	28.33 ²	4.724 ³²⁷	12.50 ⁵	5.232 ³⁶³	46.28 ⁷	50.196 ³⁰⁸	53.43 ⁶
Oct. 5.7	64.332 ³⁷³	28.38 ⁵	5.050 ³²⁶	12.38 ¹²	5.595 ³⁶³	46.83 ⁵⁵	50.506 ³¹⁰	53.21 ²²
15.7	64.700 ³⁶⁸	28.51 ¹³	5.371 ³²¹	12.20 ¹⁸	5.948 ³⁵³	47.99 ¹¹⁶	50.811 ³⁰⁵	52.85 ³⁶
	356	22	314	25	339	174	300	49
25.7	65.056	28.73	5.685	11.95	6.287	49.73	51.111	52.36
Nov. 4.6	65.397 ³⁴¹	29.04 ³¹	5.985 ³⁰⁰	11.69 ²⁶	6.600 ³¹³	51.99 ²²⁶	51.398 ²⁸⁷	51.76 ⁶⁰
14.6	65.716 ³¹⁹	29.45 ⁴¹	6.268 ²⁸³	11.42 ²⁷	6.881 ²⁸¹	54.70 ²⁷¹	51.668 ²⁴⁷	51.08 ⁶⁶
24.6	66.005 ²⁸⁹	29.96 ⁵¹	6.526 ²⁵⁸	11.16 ²⁶	7.121 ²⁴⁰	57.77 ³⁰⁷	51.915 ²⁷⁰	50.35 ⁷³
Dec. 4.5	66.257 ²⁵²	30.57 ⁶¹	6.752 ²²⁶	10.94 ²²	7.314 ¹⁹³	61.08 ³³¹	52.132 ²¹⁷	49.61 ⁷⁴
	209	72	190	17	138	344	183	69
14.5	66.466	31.29	6.942	10.77	7.452	64.52	52.315	48.92
24.5	66.624 ¹⁵⁸	32.08 ⁷⁹	7.089 ¹⁴⁷	10.66 ¹¹	7.532 ⁸⁰	67.98 ³⁴⁶	52.457 ¹⁴²	48.27 ⁶⁵
34.5	66.728 ¹⁰⁴	32.92 ⁸⁴	7.185 ⁹⁶	10.62 ⁴	7.552 ²⁰	71.35 ³³⁷	52.552 ⁹⁵	47.69 ⁵⁸
Mean Place	59.593	28.13	0.858	7.86	3.356	69.85	46.584	46.06
Sec δ, Tan δ	1.256	+0.759	1.089	+0.430	1.415	-1.001	1.034	+0.264
Dψ α, Dω α	+0.08	0.00	+0.07	0.00	+0.03	0.00	+0.07	0.00
Dψ δ, Dω δ	0.0	+1.0	0.0	+1.0	0.0	+1.0	0.0	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	22 H. Camelop. Mag. 4.7		7 Geminorum. Var. 3.2-4.2		2 Lyncis. Mag. 4.4		♃ Canis Majoris. Mag. 3.1	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	6 9	+69 20	6 9	+22 31	6 12	+59 2	6 17	-30 1
	s	"	s	"	s	"	s	"
Jan. 0.5	41.24	71.19	50.915	60.55	16.981	40.66	7.394	29.49
10.5	41.35 ¹¹	73.73 ²⁵⁴	50.996 ⁸¹	60.50 ⁵	17.085 ¹⁰⁴	42.73 ²⁰⁷	7.429 ³⁵	32.37 ²⁸⁸
20.4	41.33 ²	76.21 ²⁴⁸	51.025 ²⁹	60.53 ³	17.099 ¹⁴	44.76 ²⁰³	7.412 ¹⁷	35.03 ²⁶⁶
30.4	41.18 ¹⁵	78.52 ²³¹	51.004 ²¹	60.60 ⁷	17.026 ⁷³	46.66 ¹⁹⁰	7.344 ⁶⁸	37.43 ²⁴⁰
Feb. 9.4	40.90 ²⁸	80.54 ²⁰²	50.935 ⁶⁹	60.71 ¹¹	16.871 ¹⁵⁵	48.36 ¹⁷⁰	7.230 ¹¹⁴	39.48 ²⁰⁵
19.3	40.54 ³⁶	82.23 ¹⁶⁹	50.824 ¹¹¹	60.82 ¹¹	16.645 ²²⁶	49.78 ¹⁴²	7.075 ¹⁶⁵	41.16 ¹⁶⁸
29.3	40.10 ⁴⁴	83.49 ¹²⁶	50.681 ¹⁴³	60.91 ⁹	16.361 ²⁸⁴	50.86 ¹⁰⁸	6.888 ¹⁸⁷	42.45 ¹²⁹
Mar. 10.3	39.60 ⁵⁰	84.29 ⁸⁰	50.514 ¹⁶⁷	60.96 ⁶	16.037 ³²⁴	51.55 ⁶⁹	6.678 ²¹⁰	43.32 ⁸⁷
20.3	39.07 ⁵³	84.60 ³¹	50.335 ¹⁷⁹	60.96 ⁰	15.692 ³⁴⁵	51.84 ²⁹	6.457 ²²¹	43.77 ⁴⁵
30.2	38.54 ⁵³	84.39 ²¹	50.156 ¹⁷⁹	60.91 ⁵	15.346 ³⁴⁶	51.70 ¹⁴	6.233 ²²⁴	43.79 ²
Apr. 9.2	38.04 ⁵⁰	83.70 ⁶⁹	49.988 ¹⁶⁸	60.80 ¹¹	15.015 ³⁸¹	51.15 ⁵⁵	6.020 ²¹³	43.39 ⁴⁰
19.2	37.58 ⁴⁶	82.56 ¹¹⁴	49.839 ¹⁴⁹	60.64 ¹⁶	14.719 ²⁹⁶	50.23 ⁹²	5.823 ¹⁹⁷	42.58 ⁸¹
29.2	37.19 ³⁹	81.00 ¹⁵⁶	49.721 ¹¹⁸	60.46 ¹⁸	14.471 ²⁴⁸	48.96 ¹²⁷	5.654 ¹⁶⁹	41.40 ¹¹⁸
May 9.1	36.89 ³⁰	79.11 ¹⁸⁹	49.639 ⁸²	60.26 ²⁰	14.285 ¹⁸⁶	47.40 ¹⁵⁶	5.518 ¹⁸⁶	39.86 ¹⁵⁴
19.1	36.70 ¹⁹	76.92 ²¹⁹	49.598 ⁴¹	60.07 ¹⁹	14.167 ¹¹⁸	45.62 ¹⁷⁸	5.419 ⁹⁹	38.02 ¹⁸⁴
29.1	36.60 ¹⁰	74.55 ²³⁷	49.599 ¹	59.89 ¹⁸	14.126 ⁴¹	43.67 ¹⁹⁵	5.363 ⁵⁶	35.89 ²¹³
June 8.0	36.62 ²	72.05 ²⁶⁰	49.645 ⁴⁶	59.76 ¹³	14.162 ³⁶	41.61 ²⁰⁶	5.350 ¹³	33.54 ²³⁵
18.0	36.75 ¹³	69.50 ²⁵⁵	49.735 ⁹⁰	59.68 ⁸	14.273 ¹¹¹	39.52 ²⁰⁹	5.382 ³²	31.03 ²⁵¹
28.0	37.00 ²⁵	66.96 ²⁵⁴	49.866 ¹³¹	59.64 ⁴	14.460 ¹⁸⁷	37.44 ²⁰⁸	5.458 ⁷⁶	28.41 ²⁶²
July 8.0	37.34 ³⁴	64.51 ²⁴⁵	50.036 ¹⁷⁰	59.65 ¹	14.718 ²⁶⁸	35.43 ²⁰¹	5.575 ¹¹⁷	25.77 ²⁶⁴
17.9	37.77 ⁴³	62.20 ²³¹	50.240 ²⁰⁴	59.69 ⁴	15.038 ³²⁰	33.54 ¹⁸⁹	5.731 ¹⁵⁶	23.19 ²⁵⁸
27.9	38.29 ⁵²	60.09 ²¹¹	50.473 ²³³	59.77 ⁸	15.416 ³⁷⁸	31.81 ¹⁷³	5.921 ¹⁹⁰	20.75 ²⁴⁴
Aug. 6.9	38.88 ⁵⁹	58.19 ¹⁹⁰	50.733 ²⁶⁰	59.85 ⁸	15.842 ⁴²⁶	30.27 ¹⁵⁴	6.145 ²²⁴	18.52 ²²³
16.9	39.53 ⁶⁵	56.59 ¹⁶⁰	51.012 ²⁷⁹	59.93 ⁸	16.308 ⁴⁶⁶	28.93 ¹³⁴	6.394 ²⁴⁹	16.57 ¹⁹⁵
26.8	40.25 ⁷²	55.27 ¹³²	51.308 ²⁹⁶	59.97 ⁴	16.809 ⁵⁰¹	27.84 ¹⁰⁹	6.667 ²⁷³	15.00 ¹⁵⁷
Sept. 5.8	40.99 ⁷⁴	54.27 ¹⁰⁰	51.618 ³¹⁰	59.97 ⁰	17.336 ⁵²⁷	26.99 ⁸⁵	6.958 ²⁹¹	13.86 ¹¹⁴
15.8	41.77 ⁷⁸	53.62 ⁶⁵	51.936 ³¹⁸	59.91 ⁶	17.881 ⁵⁴⁵	26.41 ⁵⁸	7.264 ³⁰⁶	13.21 ⁶⁵
25.7	42.56 ⁷⁹	53.32 ³⁰	52.259 ³²³	59.77 ¹⁴	18.437 ⁵⁶⁶	26.11 ³⁰	7.577 ³¹³	13.08 ¹³
Oct. 5.7	43.35 ⁷⁹	53.39 ⁷	52.584 ³²⁵	59.56 ²¹	18.996 ⁵⁶⁹	26.08 ³	7.893 ³¹⁶	13.50 ⁴²
15.7	44.13 ⁷⁸	53.81 ⁴²	52.907 ³²³	59.28 ²⁸	19.550 ⁵⁵⁴	26.35 ²⁷	8.206 ³¹³	14.46 ⁹⁶
25.7	44.89 ⁷⁶	54.62 ⁸¹	53.224 ³¹⁷	58.95 ³³	20.090 ⁵⁴⁰	26.90 ⁵⁵	8.511 ³⁰⁵	15.93 ¹⁴⁷
Nov. 4.6	45.61 ⁷²	55.78 ¹¹⁶	53.530 ³⁰⁶	58.58 ³⁷	20.609 ⁵¹⁹	27.75 ⁸⁵	8.801 ²⁹⁰	17.87 ¹⁹⁴
14.6	46.28 ⁶⁷	57.28 ¹⁵⁰	53.818 ²⁸⁸	58.20 ³⁸	21.093 ⁴⁸⁴	28.88 ¹¹³	9.069 ²⁶⁸	20.20 ²³³
24.6	46.88 ⁶⁰	59.10 ¹⁸²	54.083 ²⁶⁵	57.84 ³⁶	21.531 ⁴⁸⁸	30.26 ¹³⁸	9.309 ²⁴⁰	22.89 ²⁶⁹
Dec. 4.6	47.39 ⁵¹	61.20 ²¹⁰	54.320 ²³⁷	57.52 ³²	21.914 ³⁸³	31.89 ¹⁶³	9.514 ²⁰⁵	25.78 ²⁸⁹
14.5	47.81 ⁴²	63.51 ²³¹	54.519 ¹⁹⁹	57.26 ²⁶	22.230 ³¹⁶	33.71 ¹⁸²	9.677 ¹⁶³	28.80 ³⁰²
24.5	48.11 ³⁰	65.97 ²⁴⁶	54.675 ¹⁵⁶	57.08 ¹⁸	22.469 ²⁸⁹	35.67 ¹⁹⁶	9.792 ¹¹⁵	31.85 ³⁰⁵
34.5	48.28 ¹⁷	68.51 ²⁵⁴	54.784 ¹⁰⁹	56.97 ¹¹	22.624 ¹⁵⁵	37.71 ²⁰⁴	9.859 ⁶⁷	34.82 ²⁹⁷
Mean Place	35.607	64.42	48.476	55.79	12.906	34.56	5.227	32.51
Sec δ, Tan δ	2.836	+2.654	1.082	+0.415	1.944	+1.667	1.155	-0.578
D _α α, D _α α	+0.13	+0.01	+0.07	0.00	+0.11	+0.01	+0.05	0.00
D _δ δ, D _δ δ	0.0	+1.0	0.0	+1.0	0.0	+1.0	0.0	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	μ Geminorum. Mag. 3.2		ψ^1 Aurigæ. Mag. 5.1		β Canis Majoris. Mag. 2.0		δ Monocerotis. Mag. 4.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '
	6 17	+22 33	6 18	+49 19	6 19	-17 54	6 19	+ 4 38
	s	"	s	"	s	"	s	"
Jan. 0.5	55.203	32.26	29.262	60.79	2.136	44.80	21.259	14.91
10.5	55.293	32.20	29.371	62.34	2.191	47.18	21.336	13.75
20.4	55.331	32.21	29.406	63.89	2.197	49.36	21.366	12.72
30.4	55.316	32.29	29.371	65.37	2.155	51.31	21.348	11.83
Feb. 9.4	55.254	32.40	29.268	66.72	2.068	52.98	21.285	11.11
19.3	55.149	32.53	29.106	67.87	1.943	54.34	21.185	10.54
29.3	55.010	32.65	28.896	68.77	1.787	55.37	21.051	10.11
Mar. 10.3	54.846	32.73	28.654	69.36	1.609	56.07	20.896	9.84
20.3	54.668	32.76	28.390	69.64	1.419	56.42	20.727	9.70
30.2	54.489	32.73	28.125	69.60	1.227	56.45	20.557	9.68
Apr. 9.2	54.319	32.65	27.873	69.21	1.043	56.14	20.396	9.79
19.2	54.168	32.52	27.647	68.52	0.877	55.51	20.252	10.04
29.2	54.046	32.36	27.458	67.57	0.735	54.58	20.134	10.40
May 9.1	53.959	32.17	27.318	66.38	0.625	53.36	20.047	10.89
19.1	53.910	31.98	27.233	65.02	0.552	51.89	19.996	11.50
29.1	53.905	31.81	27.207	63.52	0.518	50.18	19.985	12.23
June 8.0	53.944	31.66	27.242	61.94	0.524	48.29	20.014	13.06
18.0	54.027	31.55	27.340	60.33	0.570	46.26	20.082	13.91
28.0	54.150	31.49	27.495	58.72	0.657	44.13	20.189	14.95
July 8.0	54.312	31.46	27.705	57.18	0.782	41.98	20.330	15.95
17.9	54.509	31.46	27.964	55.72	0.941	39.88	20.505	16.95
27.9	54.735	31.49	28.268	54.37	1.131	37.87	20.708	17.91
Aug. 6.9	54.989	31.52	28.611	53.15	1.349	36.03	20.936	18.79
16.9	55.263	31.54	28.985	52.10	1.590	34.45	21.184	19.54
26.8	55.555	31.52	29.387	51.20	1.851	33.17	21.449	20.14
Sept. 5.8	55.862	31.46	29.808	50.48	2.127	32.24	21.728	20.54
15.8	56.178	31.34	30.245	49.93	2.415	31.73	22.016	20.70
25.7	56.501	31.14	30.692	49.57	2.711	31.66	22.312	20.62
Oct. 5.7	56.826	30.86	31.143	49.41	3.010	32.05	22.610	20.27
15.7	57.151	30.52	31.593	49.45	3.307	32.90	22.908	19.69
25.7	57.472	30.13	32.033	49.71	3.598	34.18	23.201	18.86
Nov. 4.6	57.781	29.70	32.458	50.17	3.878	35.84	23.485	17.83
14.6	58.076	29.26	32.860	50.86	4.139	37.85	23.754	16.64
24.6	58.349	28.85	33.228	51.75	4.377	40.11	24.001	15.34
Dec. 4.6	58.592	28.48	33.554	52.84	4.583	42.55	24.221	13.98
14.5	58.799	28.17	33.830	54.12	4.753	45.08	24.409	12.61
24.5	58.965	27.96	34.045	55.53	4.882	47.62	24.556	11.29
34.5	59.082	27.83	34.193	57.03	4.964	50.09	24.659	10.04
Mean Place	52.755	27.98	25.912	55.64	0.013	48.02	19.045	11.22
Sec δ , Tan δ	1.083	+0.415	1.534	+1.164	1.051	-0.323	1.003	+0.081
$D\psi\alpha$, $D_\omega\alpha$	+0.07	0.00	+0.09	+0.01	+0.05	0.00	+0.06	0.00
$D\psi\delta$, $D_\omega\delta$	0.0	+1.0	0.0	+1.0	0.0	+1.0	0.0	+1.0

APPARENT PLACES OF STARS, 1916.

371

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Argus. (Canopus.) Mag. -0.9		10 Monocerotis. Mag. 5.0		ν Geminorum. Mag. 4.1		δ Lyncis. Mag. 6.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 6 22	" ' -52 38	h m 6 23	" ' - 4 42	h m 6 23	" ' +20 15	h m 6 30	" ' +61 33
	s	"	s	"	s	"	s	"
Jan. 0.5	7.784	55.00	50.906	30.09	60.955	62.73	5.53	28.11
10.5	7.770 ¹⁴	58.50 ³⁵⁰	50.979 ⁷³	31.79 ¹⁷⁰	61.047 ⁹²	62.52 ²¹	5.67 ¹⁴	30.28 ²¹⁷
20.4	7.683 ⁸⁷	61.78 ³²⁸	51.005 ²⁶	33.34 ¹⁵⁵	61.090 ⁴³	62.39 ¹³	5.72 ⁵	32.44 ²¹⁶
30.4	7.528 ¹⁵⁵	64.76 ²⁹⁸	50.983 ²²	34.72 ¹³⁸	61.082 ⁸	62.34 ⁵	5.66 ⁶	34.51 ²⁰⁷
Feb. 9.4	7.313 ²¹⁵	67.35 ²⁵⁹	50.918 ⁶⁵	35.87 ¹¹⁵	61.025 ⁵⁷	62.35 ¹	5.52 ¹⁴	36.41 ¹⁹⁰
	268	215	105	94	98	5	24	163
19.4	7.045	69.50	50.813	36.81	60.927	62.40	5.28	38.04
29.3	6.735 ³¹⁰	71.17 ¹⁶⁷	50.677 ¹³⁶	37.51 ⁷⁰	60.793 ¹³⁴	62.46 ⁶	4.99 ²⁹	39.34 ¹³⁰
Mar. 10.3	6.396 ³³⁹	72.33 ¹¹⁶	50.518 ¹⁵⁹	37.99 ⁴⁸	60.633 ¹⁶⁰	62.52 ⁶	4.65 ³⁴	40.27 ⁹³
20.3	6.040 ³⁵⁶	72.97 ⁶⁴	50.347 ¹⁷¹	38.23 ²⁴	60.460 ¹⁷³	62.55 ³	4.28 ³⁷	40.76 ⁴⁹
30.2	5.681 ³⁵⁹	73.08 ¹¹	50.172 ¹⁷⁵	38.27 ⁴	60.283 ¹⁷⁷	62.56 ¹	3.90 ³⁸	40.82 ⁶
	348	40	166	20	168	4	37	39
Apr. 9.2	5.333	72.68	50.006	38.07	60.115	62.52	3.53	40.43
19.2	5.005 ³²⁸	71.77 ⁹¹	49.856 ¹⁵⁰	37.68 ³⁹	59.964 ¹⁵¹	62.47 ⁵	3.19 ³⁴	39.63 ⁸⁰
29.2	4.710 ²⁹⁵	70.40 ¹³⁷	49.730 ¹²⁶	37.08 ⁶⁰	59.840 ¹²⁴	62.39 ⁸	2.89 ³⁰	38.45 ¹¹⁸
May 9.1	4.456 ²⁵⁴	68.57 ¹⁸³	49.634 ⁹⁶	36.28 ⁸⁰	59.748 ⁹²	62.31 ⁸	2.66 ²³	36.94 ¹⁵¹
19.1	4.250 ²⁰⁶	66.35 ²²²	49.574 ⁶⁰	35.30 ⁹⁸	59.696 ⁵²	62.23 ⁸	2.51 ¹⁵	35.16 ¹⁷⁸
	151	256	22	115	10	5	9	199
29.1	4.099	63.79	49.552	34.15	59.686	62.18	2.42	33.17
June 8.1	4.006 ⁹³	60.97 ²⁸²	49.570 ¹⁸	32.87 ¹²⁸	59.718 ³²	62.15 ³	2.42 ⁰	31.02 ²¹⁵
18.0	3.974 ³²	57.92 ³⁰⁵	49.628 ⁵⁸	31.49 ¹³⁸	59.793 ⁷⁵	62.16 ¹	2.50 ⁸	28.79 ²²³
28.0	4.002 ²⁸	54.76 ³¹⁶	49.722 ⁹⁴	30.02 ¹⁴⁷	59.908 ¹¹⁵	62.22 ⁶	2.66 ¹⁶	26.55 ²²⁴
July 8.0	4.091 ⁸⁹	51.57 ³¹⁹	49.852 ¹³⁰	28.52 ¹⁵⁰	60.062 ¹⁵⁴	62.30 ⁸	2.90 ²⁴	24.34 ²²¹
	147	314	163	148	187	10	30	212
17.9	4.238	48.43	50.015	27.04	60.249	62.40	3.20	22.22
27.9	4.441 ²⁰³	45.44 ²⁹⁹	50.207 ¹⁹²	25.63 ¹⁴¹	60.467 ²¹⁸	62.52 ¹²	3.57 ³⁷	20.22 ²⁰⁰
Aug. 6.9	4.694 ²⁵³	42.69 ²⁷⁵	50.425 ²¹⁸	24.33 ¹³⁰	60.710 ²⁴³	62.63 ¹¹	4.00 ⁴³	18.39 ¹⁸³
16.9	4.992 ²⁹⁸	40.30 ²³⁹	50.664 ²³⁹	23.23 ¹¹⁰	60.976 ²⁶⁶	62.71 ⁸	4.47 ⁴⁷	16.77 ¹⁶²
26.8	5.329 ³³⁷	38.33 ¹⁹⁷	50.922 ²⁵⁸	22.33 ⁹⁰	61.260 ²⁸⁴	62.74 ³	4.99 ⁵²	15.37 ¹⁴⁰
	368	146	271	62	298	4	54	115
Sept. 5.8	5.697	36.87	51.193	21.71	61.558	62.70	5.53	14.22
15.8	6.089 ³⁹²	35.99 ⁸⁸	51.476 ²⁸³	21.40 ³¹	61.868 ³¹⁰	62.58 ¹²	6.11 ⁵⁸	13.33 ⁸⁹
25.8	6.496 ⁴⁰⁷	35.71 ²⁸	51.766 ²⁹⁰	21.42 ²	62.185 ³¹⁷	62.34 ²⁴	6.69 ⁵⁸	12.75 ⁵⁸
Oct. 5.7	6.908 ⁴¹²	36.07 ³⁶	52.061 ²⁹⁵	21.79 ³⁷	62.505 ³²⁰	62.03 ³¹	7.29 ⁶⁰	12.46 ²⁹
15.7	7.316 ⁴⁰⁸	37.09 ¹⁰²	52.355 ²⁹⁴	22.50 ⁷¹	62.826 ³²¹	61.62 ⁴¹	7.89 ⁶⁰	12.48 ²
	392	162	290	103	317	49	59	34
25.7	7.708	38.71	52.645	23.53	63.143	61.13	8.48	12.82
Nov. 4.6	8.075 ³⁶⁷	40.91 ²²⁰	52.925 ²⁸⁰	24.85 ¹³²	63.450 ³⁰⁷	60.59 ⁵⁴	9.05 ⁵⁷	13.49 ⁶⁷
14.6	8.407 ³³²	43.61 ²⁷⁰	53.190 ²⁶⁵	26.40 ¹⁵⁵	63.744 ²⁹⁴	60.02 ⁵⁷	9.59 ⁵⁴	14.46 ⁹⁷
24.6	8.693 ²⁸⁶	46.72 ³¹¹	53.435 ²⁴⁵	28.14 ¹⁷⁴	64.016 ²⁷²	59.45 ⁵⁷	10.09 ⁵⁰	15.76 ¹³⁰
Dec. 4.6	8.922 ²²⁹	50.12 ³⁴⁰	53.652 ²¹⁷	29.99 ¹⁸⁵	64.260 ²⁴⁴	58.92 ⁵³	10.53 ⁴⁴	17.33 ¹⁵⁷
	169	360	184	189	209	46	36	180
14.5	9.091	53.72	53.836	31.88	64.469	58.46	10.89	19.13
24.5	9.190 ⁹⁹	57.38 ³⁶⁶	53.979 ¹⁴³	33.76 ¹⁸⁸	64.638 ¹⁶⁹	58.07 ³⁹	11.18 ²⁹	21.13 ²⁰⁰
34.5	9.219 ²⁹	60.98 ³⁶⁰	54.079 ¹⁰⁰	35.56 ¹⁸⁰	64.759 ¹²¹	57.79 ²⁸	11.37 ¹⁹	23.26 ²¹³
n Place	5.233	58.12	48.754	33.46	58.542	58.87	1.113	23.74
δ , Tan δ	1.648	-1.310	1.003	-0.082	1.066	+0.369	2.100	+1.846
D_{α}	+0.03	-0.01	+0.06	0.00	+0.07	0.00	+0.11	+0.02
D_{δ}	0.0	+1.0	0.0	+1.0	0.0	+1.0	-0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ξ^2 Canis Majoris. Mag. 4.5		α H. Camelop. Mag. 5.6		δ Aurigæ. Mag. 5.7		γ Geminorum. Mag. 1.9	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 6 31	° ' " -22 53	h m 6 31	° ' " +79 39	h m 6 32	° ' " +39 27	h m 6 32	° ' " +16 28
	s	"	s	"	s	"	s	"
Jan. 0.5	34.299	45.88	65.89	33.94	53.291	61.40	53.955	22.30
10.5	34.360 ⁶¹	48.53 ²⁶⁵	66.10 ²¹	36.86 ²⁹²	53.410 ¹¹⁹	62.34 ⁹⁴	54.055 ¹⁰⁰	21.82 ⁴⁸
20.4	34.371 ¹¹	51.00 ²⁴⁷	66.08 ²	39.74 ²⁸⁸	53.466 ⁵⁶	63.35 ¹⁰¹	54.105 ⁵⁰	21.46 ³⁶
30.4	34.332 ³⁹	53.22 ²²²	65.80 ²⁸	42.48 ²⁷⁴	53.461 ⁵	64.36 ¹⁰¹	54.103 ²	21.20 ²⁶
Feb. 9.4	34.247 ⁸⁵	55.15 ¹⁹³	65.30 ⁵⁰	44.95 ²⁴⁷	53.396 ⁶⁵	65.32 ⁹⁶	54.055 ⁴⁸	21.02 ¹⁸
19.4	34.120 ¹²⁷	56.75 ¹⁶⁰	64.59 ⁷¹	47.08 ²¹³	53.278 ¹¹⁸	66.18 ⁸⁶	53.963 ⁹²	20.93 ⁹
29.3	33.960 ¹⁶⁰	57.99 ¹²⁴	63.71 ⁸⁸	48.75 ¹⁶⁷	53.117 ¹⁶¹	66.89 ⁷¹	53.835 ¹²⁸	20.89 ⁴
Mar. 10.3	33.776 ¹⁸⁴	58.85 ⁸⁶	62.72 ⁹⁹	49.92 ¹¹⁷	52.925 ¹⁹²	67.42 ⁵³	53.683 ¹⁵²	20.88 ¹
20.3	33.579 ¹⁹⁷	59.36 ⁵¹	61.65 ¹⁰⁷	50.55 ⁶³	52.711 ²¹⁴	67.72 ³⁰	53.514 ¹⁶⁹	20.89 ¹
30.2	33.377 ²⁰²	59.48 ¹²	60.55 ¹¹⁰	50.60 ⁵	52.493 ²¹⁸	67.80 ⁸	53.341 ¹⁷³	20.91 ²
Apr. 9.2	33.180 ¹⁹⁷	59.22 ²⁸	59.47 ¹⁰⁸	50.09 ⁵¹	52.283 ²¹⁰	67.63 ¹⁷	53.175 ¹⁶⁶	20.93 ²
19.2	33.000 ¹⁸⁰	58.63 ⁵⁹	58.47 ¹⁰⁰	49.04 ¹⁰⁵	52.091 ¹⁹²	67.25 ³⁸	53.024 ¹⁵¹	20.96 ³
29.2	32.844 ¹⁵⁶	57.68 ⁹⁵	57.58 ⁸⁹	47.49 ¹⁵⁵	51.931 ¹⁶⁰	66.66 ⁵⁷	52.899 ¹²⁵	21.01 ⁵
May 9.1	32.718 ¹²⁶	56.41 ¹²⁷	56.84 ⁷⁴	45.51 ¹⁹⁸	51.809 ¹²²	65.91 ⁷⁷	52.804 ⁹⁵	21.07 ⁶
19.1	32.626 ⁹²	54.85 ¹⁵⁶	56.27 ⁵⁷	43.18 ²³³	51.732 ⁷⁷	65.02 ⁸⁹	52.747 ⁵⁷	21.16 ⁹
29.1	32.573 ⁵³	53.05 ¹⁸⁰	55.89 ³⁸	40.55 ²⁶³	51.704 ²⁸	64.02 ¹⁰⁰	52.729 ¹⁸	21.29 ¹³
June 8.1	32.561 ¹²	51.03 ²⁰²	55.73 ¹⁶	37.73 ²⁸²	51.727 ²³	62.96 ¹⁰⁶	52.753 ²⁴	21.47 ¹⁸
18.0	32.590 ²⁹	48.84 ²¹⁹	55.77 ⁴	34.79 ²⁹⁴	51.801 ⁷⁴	61.87 ¹⁰⁹	52.818 ⁶⁵	21.68 ²¹
28.0	32.660 ⁷⁰	46.55 ²²⁹	56.03 ²⁶	31.80 ²⁹⁹	51.925 ¹²⁴	60.78 ¹⁰⁹	52.921 ¹⁰³	21.94 ²⁶
July 8.0	32.768 ¹⁰⁸	44.22 ²³³	56.48 ⁴⁵	28.84 ²⁹⁶	52.094 ¹⁶⁹	59.71 ¹⁰⁷	53.061 ¹⁴⁰	22.22 ²⁸
17.9	32.912 ¹⁴⁴	41.92 ²³⁰	57.14 ⁶⁶	26.00 ²⁸⁴	52.306 ²¹²	58.69 ¹⁰²	53.236 ¹⁷⁵	22.51 ²⁹
27.9	33.091 ¹⁷⁹	39.72 ²²⁰	57.97 ⁸³	23.33 ²⁶⁷	52.556 ²⁵⁰	57.72 ⁹⁷	53.441 ²⁰⁵	22.79 ²⁸
Aug. 6.9	33.300 ²⁰⁹	37.71 ²⁰¹	58.97 ¹⁰⁰	20.88 ²⁴⁵	52.838 ²⁸²	56.83 ⁸⁹	53.671 ²³⁰	23.03 ²⁴
16.9	33.533 ²³³	35.94 ¹⁷⁷	60.11 ¹¹⁴	18.72 ²¹⁶	53.150 ³¹²	56.02 ⁸¹	53.925 ²⁵⁴	23.23 ²⁰
26.8	33.790 ²⁵⁷	34.49 ¹⁴⁵	61.36 ¹²⁵	16.86 ¹⁸⁶	53.484 ³³⁴	55.30 ⁷²	54.197 ²⁷²	23.34 ¹¹
36.8	33.930 ²⁷⁵	33.44 ¹⁰⁵	62.71 ¹³⁵	15.37 ¹⁴⁹	53.838 ³⁵⁴	54.65 ⁶⁶	54.484 ²⁸⁷	23.35 ¹
Sept. 5.8	34.065 ²⁸⁹	32.81 ⁶³	64.14 ¹⁴³	14.26 ¹¹¹	54.207 ³⁶⁹	54.08 ⁵⁷	54.783 ²⁹⁹	23.24 ¹¹
15.8	34.354 ²⁹⁹	32.66 ¹⁵	65.62 ¹⁴⁸	13.56 ⁷⁰	54.586 ³⁷⁹	53.61 ⁴⁷	55.092 ³⁰⁹	22.99 ²⁵
25.8	34.653 ³⁰⁵	33.00 ³⁴	67.12 ¹⁵⁰	13.28 ²⁸	54.971 ³⁸⁵	53.24 ³⁷	55.405 ³¹³	22.61 ³⁸
Oct. 5.7	34.958 ³⁰⁵	33.84 ⁸⁴	68.62 ¹⁵⁰	13.45 ¹⁷	55.359 ³⁸⁸	52.98 ²⁶	55.720 ³¹⁵	22.09 ⁶³
15.7	35.263 ³⁰⁰	33.84 ¹³¹	68.62 ¹⁴⁷	13.45 ⁶¹	55.359 ³⁸⁴	52.98 ¹⁴	55.720 ³¹³	22.09 ⁵²
25.7	35.563 ²⁹¹	35.15 ¹⁷⁵	70.09 ¹⁴⁰	14.06 ¹⁰⁵	55.743 ³⁷⁴	52.84 ¹	56.033 ³⁰⁴	21.46 ⁷²
Nov. 4.6	35.854 ²⁷³	36.90 ²¹²	71.49 ¹³⁰	15.11 ¹⁴⁸	56.117 ³⁵⁷	52.83 ¹³	56.337 ²⁹³	20.74 ⁷⁹
14.6	36.127 ²⁴⁸	39.02 ²⁴²	72.79 ¹¹⁷	16.59 ¹⁸⁷	56.474 ³³³	52.96 ³¹	56.630 ²⁷³	19.95 ⁶⁰
24.6	36.375 ²¹⁸	41.44 ²⁶⁵	73.96 ¹⁰²	18.46 ²²³	56.807 ³⁰⁰	53.27 ⁴⁵	56.903 ²⁴⁶	19.15 ⁷⁸
Dec. 4.6	36.593 ¹⁸⁰	44.09 ²⁷⁶	74.98 ⁸³	20.69 ²⁵³	57.107 ²⁵⁸	53.72 ⁶²	57.149 ²¹³	18.37 ⁷³
14.5	36.773 ¹³⁸	46.85 ²⁸⁰	75.81 ⁵⁹	23.22 ²⁷⁵	57.365 ²⁰⁹	54.34 ⁷⁷	57.362 ¹⁷²	17.64 ⁶⁶
24.5	36.911 ⁹¹	49.65 ²⁷⁴	76.40 ³⁶	25.97 ²⁸⁷	57.574 ¹⁵³	55.11 ⁸⁸	57.534 ¹²⁸	16.98 ⁵⁵
34.5	37.002	52.39	76.76	28.84	57.727	55.99	57.662	16.43
Mean Place	32.170	49.14	55.274	29.35	50.375	57.77	51.596	18.98
Sec δ , Tan δ	1.085	-0.422	5.571	+5.481	1.295	+0.823	1.043	+0.296
$D\psi \alpha$, $D_{\omega} \alpha$	+0.05	0.00	+0.20	+0.05	+0.08	+0.01	+0.07	0.00
$D\psi \delta$, $D_{\omega} \delta$	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ Argus. Mag. 3.2		♁ Monocerotis. Mag. 4.7		♋ Geminorum. Mag. 3.2		♊ Geminorum. Mag. 3.4	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 6 35	° ' " -43 6	h m 6 36	° ' " + 9 58	h m 6 38	° ' " +25 12	h m 6 40	° ' " +12 59
	s "	"	s "	"	s "	"	s "	"
Jan. 0.5	13.850	74.94	23.415	30.81	48.416	58.39	36.840	16.69
10.5	13.882 ³²	78.32 ³³⁸	23.513 ⁹⁸	29.92 ⁸⁹	48.529 ¹¹³	58.44 ⁵	36.945 ¹⁰⁵	15.97 ⁷²
20.4	13.853 ²⁹	81.51 ³¹⁹	23.562 ⁴⁹	29.17 ⁷⁵	48.589 ⁶⁹	58.60 ¹⁶	36.999 ⁵⁴	15.38 ⁵⁹
30.4	13.764 ⁸⁹	84.41 ²⁹⁰	23.562 ⁰	28.54 ⁶³	48.594 ⁵	58.84 ²⁴	37.004 ⁵	14.90 ⁴⁸
Feb. 9.4	13.619 ¹⁴⁵	86.95 ²⁵⁴	23.515 ⁴⁷	28.04 ⁵⁰	48.548 ⁴⁶	59.11 ²⁷	36.961 ⁴³	14.55 ³⁵
19.4	13.426 ¹⁹³	89.10 ²¹⁵	23.426 ⁸⁹	27.66 ³⁸	48.456 ⁹²	59.40 ²⁹	36.875 ⁸⁶	14.31 ²⁴
29.3	13.196 ²³⁰	90.80 ¹⁷⁰	23.301 ¹²⁵	27.41 ²⁵	48.325 ¹³¹	59.67 ²⁷	36.752 ¹²³	14.15 ¹⁶
Mar. 10.3	12.936 ²⁶⁰	92.03 ¹²³	23.153 ¹⁴⁸	27.25 ¹⁶	48.166 ¹⁵⁹	59.89 ²²	36.603 ¹⁴⁹	14.06 ⁹
20.3	12.660 ²⁷⁶	92.78 ⁷⁵	22.987 ¹⁶⁶	27.18 ⁷	47.989 ¹⁷⁷	60.05 ¹⁶	36.439 ¹⁶⁴	14.03 ³
30.3	12.378 ²⁸²	93.03 ²⁵	22.818 ¹⁶⁹	27.18 ⁰	47.806 ¹⁸³	60.12 ⁷	36.268 ¹⁷¹	14.04 ¹
Apr. 9.2	12.102 ²⁷⁶	92.80 ²³	22.655 ¹⁶³	27.25 ⁷	47.629 ¹⁷⁷	60.11 ¹	36.103 ¹⁶⁵	14.10 ⁶
19.2	11.843 ²⁵⁹	92.09 ⁷¹	22.505 ¹⁵⁰	27.39 ¹⁴	47.469 ¹⁶⁰	60.02 ⁹	35.952 ¹⁵¹	14.20 ¹⁰
29.2	11.609 ²³⁴	90.92 ¹¹⁷	22.380 ¹²⁵	27.62 ²³	47.332 ¹³⁷	59.85 ¹⁷	35.825 ¹²⁷	14.34 ¹⁴
May 9.1	11.410 ¹⁹⁹	89.34 ¹⁵⁸	22.285 ⁹⁵	27.91 ²⁹	47.229 ¹⁰³	59.61 ²⁴	35.726 ⁹⁶	14.52 ¹⁸
19.1	11.251 ¹⁵⁹	87.37 ¹⁹⁷	22.225 ⁶⁰	28.27 ³⁶	47.164 ⁸⁵	59.34 ²⁷	35.664 ⁶²	14.77 ²⁵
29.1	11.137 ¹¹⁴	85.08 ²²⁹	22.203 ²²	28.71 ⁴⁴	47.141 ²³	59.05 ²⁹	35.639 ²⁵	15.06 ²⁹
June 8.1	11.071 ⁶⁶	82.49 ²⁵⁹	22.221 ¹⁸	29.22 ⁵¹	47.161 ²⁰	58.75 ³⁰	35.655 ¹⁶	15.40 ³⁴
18.0	11.055 ¹⁶	79.71 ²⁷⁸	22.278 ⁵⁷	29.79 ⁵⁷	47.224 ⁶³	58.46 ²⁹	35.710 ⁵⁵	15.79 ³⁹
28.0	11.089 ³⁴	76.78 ²⁹³	22.373 ⁹⁵	30.41 ⁶²	47.329 ¹⁰⁵	58.18 ²⁸	35.803 ⁹³	16.22 ⁴³
July 8.0	11.173 ⁸⁴	73.89 ²⁹⁸	22.504 ¹³¹	31.06 ⁶⁵	47.473 ¹⁴¹	57.92 ²⁶	35.933 ¹³⁰	16.67 ⁴⁵
18.0	11.305 ¹³²	70.85 ²⁹⁵	22.669 ¹⁶⁵	31.71 ⁶⁵	47.653 ¹⁸⁰	57.70 ²²	36.096 ¹⁶³	17.13 ⁴⁶
27.9	11.482 ¹⁷⁷	68.01 ²⁸⁴	22.862 ¹⁹³	32.33 ⁶²	47.865 ²¹²	57.47 ²³	36.289 ¹⁹³	17.56 ⁴³
Aug. 6.9	11.700 ²¹⁸	65.40 ²⁶¹	23.083 ²²¹	32.89 ⁵⁶	48.105 ²⁴⁰	57.25 ²²	36.509 ²²⁰	17.95 ³⁹
16.9	11.954 ²⁵⁴	63.08 ²³²	23.324 ²⁴¹	33.36 ⁴⁷	48.370 ²⁶⁵	57.01 ²⁴	36.751 ²⁴²	18.26 ³¹
26.8	12.242 ²⁸⁸	61.16 ¹⁹²	23.586 ²⁶²	33.70 ³⁴	48.654 ²⁸⁴	56.76 ²⁵	37.014 ²⁶³	18.45 ¹⁹
Sept. 5.8	12.557 ³¹⁵	59.71 ¹⁴⁵	23.862 ²⁷⁶	33.88 ¹⁸	48.957 ³⁰³	56.47 ²⁹	37.014 ²⁷⁷	18.53 ⁸
15.8	12.892 ³³⁵	58.79 ⁹²	24.150 ²⁸⁸	33.89 ¹	49.272 ³¹⁵	56.13 ³⁴	37.581 ²⁹⁰	18.44 ⁹
25.8	13.243 ³⁵¹	58.45 ³¹	24.448 ²⁹⁸	33.68 ²¹	49.597 ³²⁵	55.75 ³⁸	37.882 ³⁰¹	18.19 ²⁵
Oct. 5.7	13.601 ³⁵⁸	58.71 ²⁶	24.753 ³⁰⁵	33.29 ³⁹	49.929 ³³²	55.32 ⁴³	38.190 ³⁰⁸	17.77 ⁴²
15.7	13.959 ³⁵⁸	59.59 ⁸⁸	25.058 ³⁰⁵	32.70 ⁵⁹	50.264 ³³⁵	54.85 ⁴⁷	38.500 ³¹⁰	17.17 ⁶⁰
25.7	14.308 ³⁴⁹	61.07 ¹⁴⁸	25.361 ³⁰³	31.91 ⁷⁹	50.598 ³³¹	54.36 ⁴⁹	38.809 ³⁰⁹	16.42 ⁷⁵
Nov. 4.7	14.642 ³³⁴	63.10 ²⁰³	25.658 ²⁹⁷	30.98 ⁹³	50.924 ³²⁶	53.86 ⁵⁰	39.111 ³⁰²	15.55 ⁸⁷
14.6	14.951 ³⁰⁹	65.60 ²⁵⁰	25.943 ²⁸⁵	29.94 ¹⁰⁴	51.238 ³¹⁴	53.39 ⁴⁷	39.403 ²⁹²	14.59 ⁹⁶
24.6	15.225 ²⁷⁴	68.53 ²⁹³	26.208 ²⁶⁵	28.82 ¹¹²	51.531 ²⁹³	52.97 ⁴²	39.676 ²⁷³	13.58 ¹⁰¹
Dec. 4.6	15.458 ²³³	71.74 ³²¹	26.449 ²⁴¹	27.67 ¹¹⁵	51.797 ²⁶⁶	52.62 ³⁵	39.923 ²⁴⁷	12.57 ¹⁰¹
14.5	15.642 ¹⁸⁴	75.14 ³⁴⁰	26.657 ²⁰⁸	26.55 ¹¹²	52.030 ²³³	52.38 ²⁴	40.138 ²¹⁵	11.59 ⁹⁸
24.5	15.770 ¹²⁸	78.64 ³⁵⁰	26.826 ¹⁶⁹	25.48 ¹⁰⁷	52.219 ¹⁸⁹	52.24 ¹⁴	40.314 ¹⁷⁶	10.68 ⁹¹
34.5	15.839 ⁶⁹	82.10 ³⁴⁶	26.951 ¹²⁵	24.51 ⁹⁷	52.361 ¹⁴²	52.21 ³	40.445 ¹³¹	9.88 ⁸⁰
Mean Place	11.546	78.49	21.140	27.69	45.897	55.35	34.528	13.76
Sec δ, Tan δ	1.370	-0.936	1.015	+0.176	1.105	+0.471	1.026	+0.231
D _α , D _α α	+0.04	-0.01	+0.07	0.00	+0.07	+0.01	+0.07	0.00
D _δ , D _δ δ	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ψ^s Aurigæ. Mag. 5.3		α Canis Majoris. (Sirius.) Mag. -1.6		18 Monocerotis. Mag. 4.7		48 Camelop. Mag. 5.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 6 40	° ' " +43 39	h m 6 41	° ' " -16 35	h m 6 43	° ' " + 2 30	h m 6 44	° ' " +68 5
Jan. 0.5	44.384	47.09	28.765	58.06	31.036	20.89	45.05	19.03
10.5	44.517 ¹³³	48.29 ¹²⁰	28.838 ⁷³	60.49 ²⁴³	31.135 ⁹⁹	19.53 ¹³⁶	45.25 ²⁰	21.52 ²⁴
20.4	44.584 ⁶⁷	49.53 ¹²⁴	28.862 ²⁴	62.74 ²²⁵	31.185 ⁵⁰	18.31 ¹²²	45.32 ⁷	24.03 ²⁵
30.4	44.584 ⁰	50.78 ¹²⁵	28.837 ²⁵	64.76 ²⁰²	31.187 ²	17.26 ¹⁰⁵	45.26 ⁶	26.46 ²⁴
Feb. 9.4	44.522 ⁶²	51.97 ¹¹⁹	28.766 ⁷¹	66.50 ¹⁷⁴	31.142 ⁴⁵	16.38 ⁸⁸	45.07 ¹⁹	28.72 ²³
19.4	44.402 ¹²⁰	53.05 ¹⁰⁸	28.655 ¹¹¹	67.96 ¹⁴⁶	31.055 ⁸⁷	15.69 ⁶⁹	44.78 ²⁹	30.70 ¹⁹
29.3	44.234 ¹⁶⁸	53.95 ⁹⁰	28.509 ¹⁴⁶	69.09 ¹¹³	30.934 ¹²¹	15.16 ⁵³	44.40 ³⁸	32.32 ¹⁰
Mar. 10.3	44.030 ²⁰⁴	54.63 ⁶⁸	28.338 ¹⁷¹	69.09 ⁸¹	30.787 ¹⁴⁷	14.81 ³⁵	43.95 ⁴⁵	33.52 ¹³⁰
20.3	43.804 ²²⁶	55.07 ⁴⁴	28.154 ¹⁸⁴	70.38 ⁴⁸	30.623 ¹⁶⁴	14.62 ¹⁹	43.45 ⁵⁰	34.26 ⁷⁴
30.3	43.570 ²³⁴	55.22 ¹⁵	27.964 ¹⁹⁰	70.53 ¹⁵	30.454 ¹⁶⁹	14.58 ⁴	42.93 ⁵²	34.50 ²⁴
Apr. 9.2	43.341 ²²⁹	55.10 ¹²	27.780 ¹⁸⁴	70.36 ¹⁷	30.290 ¹⁶⁴	14.88 ¹⁰	42.93 ⁵¹	34.25 ²⁵
19.2	43.132 ²⁰⁹	54.72 ³⁸	27.611 ¹⁹⁹	69.90 ⁴⁶	30.138 ¹⁵²	14.94 ²⁶	41.94 ⁴⁸	33.52 ⁷³
29.2	42.952 ¹⁸⁰	54.10 ⁶²	27.463 ¹⁴⁸	69.12 ⁷⁸	30.009 ¹²⁹	15.32 ³⁸	41.51 ⁴³	32.34 ¹¹⁵
May 9.1	42.812 ¹⁴⁰	53.25 ⁸⁵	27.345 ¹¹⁸	68.08 ¹⁰⁴	29.908 ¹⁰¹	15.84 ⁵²	41.15 ³⁶	30.75 ¹⁵⁹
19.1	42.719 ⁹³	52.23 ¹⁰²	27.261 ⁸⁴	66.77 ¹³¹	29.841 ⁶⁷	16.50 ⁶⁶	40.88 ²⁷	28.84 ¹⁹¹
29.1	42.675 ⁴⁴	51.06 ¹¹⁷	27.214 ⁴⁷	65.25 ¹⁵²	29.811 ³⁰	17.27 ⁷⁷	40.72 ¹⁶	28.64 ²²⁰
June 8.1	42.688 ¹³	49.80 ¹²⁶	27.207 ⁷	63.54 ¹⁷¹	29.818 ⁷	18.14 ⁸⁷	40.65 ⁷	24.25 ²³⁹
18.0	42.753 ⁶⁵	48.48 ¹³²	27.239 ³²	61.69 ¹⁸⁵	29.863 ⁴⁵	19.09 ⁹⁵	40.68 ³	21.73 ²⁵²
28.0	42.870 ¹¹⁷	47.14 ¹³⁴	27.309 ⁷⁰	59.74 ¹⁹⁵	29.946 ⁸³	20.10 ¹⁰¹	40.83 ¹⁵	19.14 ²⁵⁹
July 8.0	43.038 ¹⁶⁸	45.82 ¹³²	27.417 ¹⁰⁸	57.75 ¹⁹⁹	30.065 ¹¹⁹	21.15 ¹⁰⁵	41.07 ²⁴	16.56 ²⁵⁸
18.0	43.251 ²¹³	44.53 ¹²⁹	27.559 ¹⁴²	55.79 ¹⁹⁶	30.216 ¹⁵¹	22.19 ¹⁰⁴	41.42 ³⁵	14.04 ²⁵³
27.9	43.506 ²⁵⁵	43.31 ¹²²	27.734 ¹⁷⁵	53.91 ¹⁸⁸	30.396 ¹⁸⁰	23.19 ¹⁰⁰	41.85 ⁴³	11.64 ²⁴⁰
Aug. 6.9	43.797 ²⁹¹	42.18 ¹¹³	27.937 ²⁰³	52.20 ¹⁷¹	30.604 ²⁰⁸	24.09 ⁹⁰	42.36 ⁵¹	9.40 ²²⁴
16.9	44.118 ³²¹	41.12 ¹⁰⁶	28.963 ²²⁶	50.71 ¹⁴⁹	30.833 ²²⁹	24.86 ⁷⁷	42.94 ⁵⁸	7.37 ²⁰⁸
26.8	44.466 ³⁴⁸	40.17 ⁹⁵	28.413 ²⁴⁸	49.51 ¹²⁰	31.082 ²⁴⁹	25.46 ⁶⁰	43.58 ⁶⁴	5.62 ¹⁷⁸
37.0	44.466 ³⁷⁰	39.34 ⁸³	28.267 ²⁶⁷	48.65 ⁸⁶	31.349 ²⁶⁷	25.85 ³⁹	43.58 ⁶⁹	4.13 ¹⁶⁸
Sept. 5.8	44.836 ³⁸⁸	38.63 ⁷¹	28.678 ²⁸¹	48.18 ⁴⁷	31.628 ²⁷⁹	25.99 ¹⁴	44.27 ⁷³	2.94 ¹¹⁷
15.8	45.224 ⁴⁰¹	38.04 ⁵⁹	28.959 ²⁹⁰	48.14 ⁴	31.918 ²⁹⁰	25.86 ¹³	45.00 ⁷⁶	2.10 ⁷⁶
25.8	45.625 ⁴⁰⁹	37.58 ⁴⁶	29.249 ²⁹⁷	48.55 ⁴¹	32.214 ²⁹⁶	25.46 ⁴⁰	46.54 ⁷⁸	1.61 ⁷⁸
Oct. 5.7	46.034 ⁴¹¹	37.29 ²⁹	29.546 ²⁹⁹	49.40 ⁸⁵	32.514 ³⁰⁰	24.77 ⁶⁹	46.54 ⁷⁸	1.50 ⁷⁸
15.7	46.445 ⁴⁰⁹	37.29 ¹⁴	29.845 ²⁹⁶	49.40 ¹²⁹	32.514 ²⁹⁸	24.77 ⁹²	47.32 ⁷⁷	1.50 ⁷⁷
25.7	46.854 ⁴⁰⁰	37.15 ³	30.141 ²⁸⁷	50.69 ¹⁶⁶	32.812 ²⁹³	23.85 ¹¹⁷	48.09 ⁷⁵	1.76 ⁷⁵
Nov. 4.7	47.254 ³⁸³	37.18 ²³	30.428 ²⁷²	52.35 ²⁰¹	33.105 ²⁸²	22.68 ¹⁴⁸	48.84 ⁷²	2.41 ⁷²
14.6	47.637 ³⁵⁸	37.41 ⁴²	30.700 ²⁵⁰	54.36 ²²⁷	33.387 ²⁶³	21.34 ¹⁸⁴	49.56 ⁶⁵	3.44 ⁶⁵
24.6	47.995 ³²⁴	37.83 ⁶³	30.950 ²²²	56.63 ²⁴⁵	33.650 ²³⁹	19.86 ¹⁵⁵	50.21 ⁵⁷	4.83 ⁵⁷
Dec. 4.6	48.319 ²⁸⁰	38.46 ⁸⁰	31.172 ¹⁸⁸	59.08 ²⁵⁶	33.889 ²⁰⁶	18.31 ¹⁵⁷	50.78 ⁵⁰	6.56 ⁵⁰
14.5	48.599 ²²⁸	39.26 ⁹⁶	31.360 ¹⁴⁷	61.64 ²⁵⁸	34.095 ¹⁶⁹	16.74 ¹⁵³	51.28 ³⁸	8.59 ³⁸
24.5	48.827 ¹⁶⁹	40.24 ¹¹¹	31.507 ¹⁰¹	64.22 ²⁵¹	34.264 ¹²⁴	15.21 ¹⁴⁵	51.66 ²⁷	10.85 ²⁷
34.5	48.996	41.35	31.608	66.73	34.388	13.76	51.93	13.28
Mean Place	41.291	44.08	26.790	60.58	28.835	18.00	39.362	16.09
Sec δ , Tan δ	1.382	+0.954	1.044	-0.298	1.001	+0.044	2.789	+2.603
$D\psi a, D_{\omega} a$	+0.09	+0.01	+0.05	0.00	+0.06	0.00	+0.13	+0.03
$D\psi \delta, D_{\omega} \delta$	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	θ Geminorum. Mag. 3.6		α Pictoris. Mag. 3.3		γ Argus. Mag. 2.8		15 Lyncis. Mag. 4.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 6 47 s	° ' +34 3	h m 6 47 s	° ' -61 50	h m 6 47 s	° ' -50 30	h m 6 50 s	° ' +58 31
Jan. 0.5	18.032 ¹³²	51.60 ⁵⁹	22.77 ⁰	59.51 ³⁷²	53.539 ³²	47.87 ³⁶⁰	4.714 ¹⁷²	65.86 ¹⁹⁸
10.5	18.164 ⁷²	52.19 ⁶⁸	22.77 ¹¹	63.23 ³⁵⁵	53.571 ³⁰	51.47 ³⁴¹	4.886 ⁸²	67.84 ²⁰³
20.5	18.236 ¹³	52.87 ⁷⁴	22.66 ¹⁹	66.78 ³³⁰	53.532 ¹⁰⁵	54.88 ³¹⁶	4.968 ⁹	69.87 ²⁰¹
30.4	18.249 ⁴³	53.61 ⁷⁴	22.47 ²⁷	70.08 ²⁹⁴	53.427 ¹⁶⁸	58.04 ²⁸³	4.959 ⁹⁶	71.88 ¹⁸⁸
Feb. 9.4	18.206 ⁹⁵	54.35 ⁶⁹	22.20 ³⁴	73.02 ²⁵⁴	53.259 ²²³	60.87 ²⁴¹	4.863 ¹⁷⁵	73.76 ¹⁶⁹
19.4	18.111 ¹³⁹	55.04 ⁶²	21.86 ³⁹	75.56 ²⁰⁷	53.036 ²⁶⁹	63.28 ¹⁹⁶	4.688 ²⁴²	75.45 ¹⁴¹
29.3	17.972 ¹⁷¹	55.66 ⁴⁹	21.47 ⁴⁴	77.63 ¹⁵⁷	52.767 ³⁰³	65.24 ¹⁴⁸	4.446 ²⁹²	76.86 ¹⁰⁸
Mar. 10.3	17.801 ¹⁹²	56.15 ³⁴	21.03 ⁴⁷	79.20 ¹⁰⁵	52.464 ³²⁴	66.72 ⁹⁷	4.154 ³²⁵	77.94 ⁶⁹
20.3	17.609 ²⁰⁰	56.49 ¹⁶	20.56 ⁴⁸	80.25 ⁵¹	52.140 ³³³	67.69 ⁴⁶	3.829 ³³⁹	78.63 ²⁸
30.3	17.409 ¹⁹⁷	56.65 ¹	20.08 ⁴⁷	80.76 ³	51.807 ³³¹	68.15 ⁶	3.490 ³³⁷	78.91 ¹³
Apr. 9.2	17.212 ¹⁸⁰	56.64 ²⁰	19.61 ⁴⁶	80.73 ⁵⁴	51.476 ³¹⁴	68.09 ⁵⁶	3.153 ³¹³	78.78 ⁵³
19.2	17.032 ¹⁵⁵	56.44 ³⁵	19.15 ⁴³	80.19 ¹⁰⁷	51.162 ²⁹¹	67.53 ¹⁰⁵	2.840 ²⁷⁸	78.25 ⁹¹
29.2	16.877 ¹²⁰	56.09 ⁵⁰	18.72 ³⁸	79.12 ¹⁵⁴	50.871 ²⁵⁵	66.48 ¹⁶⁰	2.562 ²²⁷	77.34 ¹²⁶
May 9.2	16.757 ⁸⁰	55.59 ⁶¹	18.34 ³³	77.58 ¹⁹⁷	50.616 ²¹³	64.98 ¹⁹¹	2.335 ¹⁶⁷	76.09 ¹⁵⁴
19.1	16.677 ³⁶	54.98 ⁷¹	18.01 ²⁷	75.61 ²³⁷	50.403 ¹⁶⁵	63.07 ²²⁹	2.168 ⁹⁸	74.55 ¹⁷⁷
29.1	16.641 ¹⁰	54.27 ⁷⁶	17.74 ²⁰	73.24 ²⁷⁰	50.238 ¹¹²	60.78 ²⁶⁰	2.070 ²⁸	72.78 ¹⁹⁵
June 8.1	16.651 ⁵⁷	53.51 ⁸⁰	17.54 ¹²	70.54 ²⁹⁷	50.126 ⁵⁸	58.18 ²⁸⁴	2.042 ⁴⁶	70.83 ²⁰⁶
18.0	16.708 ¹⁰²	52.71 ⁸¹	17.42 ⁵	67.57 ³¹³	50.068 ¹	55.34 ³⁰²	2.088 ¹¹⁷	68.77 ²¹⁴
28.0	16.810 ¹⁴⁶	51.90 ⁸¹	17.37 ³	64.44 ³²⁴	50.069 ⁵⁵	52.32 ³⁰⁸	2.205 ¹⁸⁷	66.63 ²¹⁴
July 8.0	16.956 ¹⁸⁴	51.09 ⁷⁸	17.40 ¹⁰	61.20 ³²³	50.124 ¹¹¹	49.24 ³¹⁰	2.392 ²⁵¹	64.49 ²⁰⁸
18.0	17.140 ²²¹	50.31 ⁷⁶	17.50 ¹⁷	57.97 ³¹⁵	50.235 ¹⁶⁵	46.14 ²⁹⁸	2.643 ³¹¹	62.41 ²⁰²
27.9	17.361 ²⁵²	49.55 ⁷³	17.67 ²⁵	54.82 ²⁹³	50.400 ²¹⁶	43.16 ²⁸⁶	2.954 ³⁶⁵	60.39 ¹⁸⁹
Aug. 6.9	17.613 ²⁸⁰	48.82 ⁶⁸	17.92 ³²	51.89 ²⁶⁴	50.616 ²⁶¹	40.36 ²⁴⁹	3.319 ⁴¹²	58.50 ¹⁷⁴
16.9	17.893 ³⁰⁴	48.14 ⁶⁶	18.24 ³⁷	49.25 ²²⁵	50.877 ³⁰²	37.87 ²¹¹	3.731 ⁴⁵³	56.76 ¹⁵⁴
26.9	18.197 ³²²	47.48 ⁶³	18.61 ⁴³	47.00 ¹⁷⁰	51.179 ³³⁷	35.76 ¹⁶⁵	4.184 ⁴⁸⁶	55.22 ¹³⁵
Sept. 5.8	18.519 ³³⁹	46.85 ⁶⁰	19.04 ⁴⁶	45.24 ¹²²	51.516 ³⁶⁵	34.11 ¹¹¹	4.670 ⁵¹⁵	53.87 ¹¹⁰
15.8	18.858 ³⁵²	46.25 ⁵⁷	19.50 ⁵⁰	44.02 ⁶⁰	51.881 ³⁹⁶	33.00 ⁵²	5.185 ⁵³⁵	52.77 ⁸⁶
25.8	19.210 ³⁶⁰	45.68 ⁵²	20.00 ⁵⁰	43.42 ⁵	52.267 ³⁹⁸	32.48 ¹²	5.720 ⁵⁴⁷	51.91 ⁵⁸
Oct. 5.7	19.570 ³⁶⁴	45.16 ⁴⁸	20.50 ⁵¹	43.47 ⁷¹	52.665 ³⁹⁹	32.60 ⁷⁵	6.267 ⁵⁵¹	51.33 ⁰
15.7	19.934 ³⁸⁴	44.68 ⁴⁰	21.01 ⁵⁰	44.18 ¹³⁷	53.064 ³⁹⁴	33.35 ¹³⁹	6.821 ⁵⁵¹	51.03 ³¹
25.7	20.298 ³⁵⁸	44.28 ³²	21.51 ⁴⁸	45.55 ¹⁹⁹	53.458 ³⁷⁷	34.74 ¹⁹⁷	7.372 ⁵³⁸	51.34 ⁶³
Nov. 4.7	20.656 ³⁴⁵	43.96 ¹⁹	21.99 ⁴³	47.54 ²⁵³	53.835 ³⁴⁸	36.71 ²⁵⁰	7.910 ⁵¹⁶	51.97 ⁹⁴
14.6	21.001 ³²⁵	43.77 ⁸	22.42 ³⁶	50.07 ³⁰¹	54.183 ³¹¹	39.21 ²⁹⁶	8.426 ⁴⁸¹	52.91 ¹²⁴
24.6	21.326 ²⁹⁵	43.69 ⁷	22.78 ²²	53.08 ³³⁶	54.494 ²⁶²	42.17 ³²⁹	8.907 ³⁷⁴	54.15 ¹⁹⁰
Dec. 4.6	21.621 ²⁵⁹	43.76 ²¹	23.09 ²²	56.44 ³⁶³	54.756 ²⁰⁶	45.46 ³⁵⁴	9.341 ³⁷⁴	54.15 ¹⁹⁰
14.6	21.880 ²¹³	43.97 ³⁷	23.31 ¹⁴	60.07 ³⁷⁶	54.962 ¹⁴²	49.00 ³⁶⁶	9.715 ³⁰³	55.65 ¹⁷⁴
24.5	22.093 ¹⁶²	44.34 ⁵¹	23.45 ⁶	63.83 ³⁷⁸	55.104 ⁷⁶	52.66 ³⁶⁶	10.018 ²²¹	57.39 ¹⁹⁰
34.5	22.255	44.85	23.51	67.61	55.180	56.32	10.239	59.29
Mean Place	15.287	49.17	19.858	64.03	51.096	52.06	0.597	63.62
Sec δ , Tan δ	1.207	+0.676	2.119	-1.869	1.572	-1.214	1.916	+1.634
$D_p \alpha$, $D_m \alpha$	+0.08	+0.01	+0.01	-0.03	+0.03	-0.02	+0.10	+0.02
$D_p \delta$, $D_m \delta$	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	θ Canis Majoris. Mag. 4.2		ϵ Canis Majoris. Mag. 1.6		ζ Geminorum. Var. 3.7-4.3		α Canis Majoris Mag. 3.1	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 6 50	° ' -11 55	h m 6 55	° ' -28 51	h m 6 59	° ' +20 41	h m 6 59	° ' -23
	s	"	s	"	s	"	s	"
Jan. 0.5	19.378	53.82	21.590	21.67	10.119	41.99	33.120	31.69
10.5	19.470	56.01	21.670	24.65	10.249	41.71	33.211	34.46
20.5	19.513	58.04	21.696	27.48	10.327	41.55	33.249	37.08
30.4	19.507	59.87	21.669	30.06	10.352	41.51	33.236	39.49
Feb. 9.4	19.454	61.45	21.592	32.36	10.325	41.57	33.174	41.62
19.4	19.361	62.77	21.470	34.31	10.251	41.69	33.067	43.43
29.3	19.231	63.80	21.310	35.89	10.137	41.85	32.924	44.89
Mar. 10.3	19.075	64.54	21.122	37.08	9.993	42.02	32.752	45.99
20.3	18.902	65.00	20.916	37.85	9.828	42.18	32.561	46.72
30.3	18.722	65.17	20.700	38.21	9.654	42.31	32.362	47.05
Apr. 9.2	18.545	65.06	20.488	38.18	9.482	42.41	32.164	47.03
19.2	18.382	64.68	20.287	37.73	9.322	42.46	31.976	46.63
29.2	18.238	64.03	20.105	36.89	9.183	42.47	31.808	45.88
May 9.2	18.121	63.14	19.952	35.69	9.072	42.44	31.665	44.79
19.1	18.037	62.01	19.832	34.15	8.996	42.39	31.555	43.41
29.1	17.987	60.69	19.749	32.33	8.958	42.33	31.481	41.75
June 8.1	17.975	59.19	19.704	30.25	8.959	42.26	31.444	39.86
18.0	18.002	57.55	19.702	27.97	9.001	42.20	31.446	37.78
28.0	18.066	55.81	19.741	25.55	9.082	42.15	31.488	35.57
July 8.0	18.165	54.03	19.820	23.06	9.201	42.09	31.569	33.28
18.0	18.299	52.26	19.938	20.57	9.356	42.04	31.687	31.05
27.9	18.464	50.56	20.092	18.16	9.541	41.97	31.839	28.80
Aug. 6.9	18.657	49.00	20.279	15.92	9.756	41.87	32.022	26.76
16.9	18.875	47.62	20.498	13.92	9.995	41.73	32.235	24.95
26.9	19.115	46.50	20.743	12.25	10.257	41.52	32.472	23.40
Sept. 5.8	19.374	45.69	21.013	10.96	10.537	41.24	32.733	22.23
15.8	19.648	45.22	21.300	10.13	10.834	40.87	33.012	21.49
25.8	19.934	45.14	21.604	9.80	11.143	40.40	33.305	21.22
Oct. 5.7	20.228	45.48	21.918	10.00	11.462	39.83	33.610	21.42
15.7	20.526	46.23	22.236	10.74	11.787	39.18	33.920	22.15
25.7	20.824	47.36	22.554	12.00	12.114	38.44	34.230	23.36
Nov. 4.7	21.116	48.86	22.863	13.75	12.438	37.67	34.534	25.02
14.6	21.396	50.66	23.158	15.93	12.752	36.88	34.825	27.10
24.6	21.657	52.71	23.429	18.48	13.049	36.12	35.096	29.50
Dec. 4.6	21.893	54.93	23.672	21.30	13.324	35.41	35.339	32.16
14.6	22.096	57.25	23.876	24.29	13.566	34.79	35.547	34.97
24.5	22.259	59.58	24.035	27.37	13.769	34.28	35.713	37.86
34.5	22.378	61.85	24.146	30.43	13.927	33.91	35.833	40.71
Mean Place	17.260	56.87	19.459	25.31	7.687	40.18	31.015	35.14
Sec δ , Tan δ	1.022	-0.211	1.142	-0.551	1.089	+0.378	1.092	-0.42
$D\phi a, D\omega a$	+0.06	0.00	+0.05	-0.01	+0.07	+0.01	+0.05	-0.01
$D\phi \delta, D\omega \delta$	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Canis Majoris. Mag. 4.1		δ Canis Majoris. Mag. 2.0		63 Aurigæ. Mag. 5.1		51 Geminorum. Mag. 5.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 6 59	° ' " -15 30	h m 7 4	° ' " -26 15	h m 7 5	° ' " +39 27	h m 7 8	° ' " +16 18
Jan. 0.5	59.609 ⁹⁹	26.97 ²⁴¹	60.601 ⁹³	29.12 ²⁹²	55.789 ¹⁶⁰	32.22 ⁸⁸	35.321 ¹³⁵	10.37 ⁶⁰
10.5	59.708 ⁴⁹	29.38 ²²⁵	60.694 ⁴¹	32.04 ²⁷⁶	55.949 ⁹⁶	33.10 ⁹⁸	35.456 ⁸⁴	9.77 ⁴⁶
20.5	59.757 ²	31.63 ²⁰⁴	60.735 ¹²	34.80 ²⁵⁴	56.045 ³⁴	34.08 ¹⁰¹	35.540 ⁸³	9.31 ³²
30.4	59.755 ⁴⁸	33.67 ¹⁷⁰	60.723 ⁶³	37.34 ²²⁵	56.079 ²⁹	35.12 ¹⁰⁶	35.573 ¹⁸	8.99 ¹⁸
Feb. 9.4	59.707 ⁹²	35.46 ¹⁵⁰	60.660 ¹⁰⁷	39.59 ¹⁹⁵	56.050 ⁸⁷	36.18 ¹⁰²	35.555 ⁶⁵	8.81 ⁸
19.4	59.615 ¹²⁸	36.96 ¹²⁰	60.553 ¹⁴⁵	41.54 ¹⁵⁸	55.963 ¹³⁶	37.20 ⁹¹	35.490 ¹⁰⁵	8.73 ⁰
29.4	59.487 ¹⁵⁷	38.16 ⁸⁹	60.408 ¹⁷⁶	43.12 ¹¹⁹	55.827 ¹⁷⁵	38.11 ⁷⁵	35.385 ¹³⁵	8.73 ⁶
Mar. 10.3	59.330 ¹⁷⁴	39.05 ⁵⁸	60.232 ¹⁰⁵	44.31 ⁸¹	55.652 ²⁰⁰	38.86 ⁵⁶	35.250 ¹⁵⁷	8.79 ⁹
20.3	59.156 ¹⁸³	39.63 ²⁵	60.037 ²⁰⁵	45.12 ⁴²	55.452 ²¹⁴	39.42 ³⁴	35.093 ¹⁶⁹	8.88 ¹¹
30.3	58.973 ¹⁸²	39.88 ⁵	59.832 ²⁰⁵	45.54 ⁴	55.238 ²¹³	39.76 ¹¹	34.924 ¹⁶⁷	8.99 ¹²
Apr. 9.2	58.971 ¹⁷⁰	39.83 ³⁶	59.627 ¹⁹⁵	45.58 ³⁶	55.025 ²⁰¹	39.87 ¹⁴	34.757 ¹⁵⁸	9.11 ¹³
19.2	58.621 ¹⁵²	39.47 ⁶⁵	59.432 ¹⁷⁶	45.22 ⁷⁴	54.824 ¹⁷⁷	39.73 ³⁵	34.599 ¹³⁹	9.24 ¹²
29.2	58.469 ¹²⁶	38.82 ⁹²	59.256 ¹⁵¹	44.48 ¹⁰⁸	54.647 ¹⁴⁶	39.38 ⁵⁶	34.460 ¹¹³	9.36 ¹²
May 9.2	58.343 ⁹⁶	37.90 ¹¹⁸	59.105 ¹¹⁹	43.40 ¹⁴⁰	54.501 ¹⁰⁵	38.82 ⁷⁴	34.347 ⁸⁰	9.48 ¹²
19.1	58.247 ⁶⁰	36.72 ¹⁴⁰	58.986 ⁸³	42.00 ¹⁶⁹	54.396 ⁶⁰	38.08 ⁸⁹	34.267 ⁴⁵	9.60 ¹⁴
29.1	58.187 ²³	35.32 ¹⁶¹	58.903 ⁴⁷	40.31 ¹⁹⁴	54.336 ¹³	37.19 ¹⁰⁰	34.222 ⁷	9.74 ¹⁵
June 8.1	58.164 ¹³	33.71 ¹⁷⁵	58.856 ⁶	38.37 ²¹⁵	54.323 ⁸⁴	36.19 ¹⁰⁹	34.215 ³²	9.89 ¹⁶
18.1	58.177 ⁵²	31.96 ¹⁸⁶	58.850 ³⁴	36.22 ²²⁸	54.359 ³⁶	35.10 ¹¹⁴	34.247 ⁷¹	10.05 ¹⁷
28.0	58.229 ⁶⁸	30.10 ¹⁹²	58.884 ⁷²	33.94 ²³⁶	54.443 ¹³⁰	33.96 ¹¹⁶	34.318 ¹⁰⁶	10.22 ¹⁸
July 8.0	58.317 ¹²³	28.18 ¹⁰²	58.956 ¹¹¹	31.58 ²³⁷	54.573 ¹⁷³	32.80 ¹¹⁷	34.424 ¹⁴⁰	10.40 ¹⁷
18.0	58.440 ¹⁵⁵	26.26 ¹⁸⁵	59.067 ¹⁴⁵	29.21 ²³⁰	54.746 ²¹²	31.63 ¹¹⁶	34.564 ¹⁷²	10.57 ¹⁴
27.9	58.595 ¹⁸⁴	24.41 ¹⁷¹	59.212 ¹⁷⁹	26.91 ²¹⁵	54.958 ²⁴⁸	30.47 ¹¹²	34.736 ²⁰¹	10.71 ⁹
Aug. 6.9	58.779 ²¹¹	22.70 ¹⁵²	59.391 ²⁰⁷	24.76 ¹⁹³	55.206 ²⁷⁹	29.35 ¹⁰⁸	34.937 ²²⁵	10.80 ³
16.9	58.990 ²³⁴	21.18 ¹²⁵	59.598 ²³⁵	22.83 ¹⁶²	55.485 ³⁰⁸	28.27 ¹⁰³	35.162 ²⁴⁷	10.83 ⁷
26.9	59.224 ²⁶⁵	19.93 ⁹¹	59.833 ²⁶⁰	21.21 ¹²⁵	55.793 ³³⁰	27.24 ⁹⁸	35.409 ²⁶⁸	10.76 ¹⁸
Sept. 5.8	59.479 ²⁷²	18.99 ⁵⁵	60.093 ²⁸⁰	19.96 ⁸²	56.123 ³⁵²	26.26 ⁹¹	35.677 ²⁸³	10.58 ³¹
15.8	59.751 ²⁸⁵	18.44 ¹⁴	60.373 ²⁹⁵	19.14 ³⁴	56.475 ³⁶⁹	25.35 ⁸³	35.960 ²⁹⁸	10.27 ⁴⁵
25.8	60.036 ²⁰⁶	18.30 ²⁹	60.668 ³⁰⁹	18.80 ¹⁷	56.844 ³⁸⁰	24.52 ⁷³	36.258 ³⁰⁹	9.82 ⁵⁹
Oct. 5.8	60.332 ³⁰¹	18.59 ⁷³	60.977 ³¹⁴	18.97 ⁶⁸	57.224 ³⁸⁸	23.79 ⁶⁴	36.567 ³¹⁶	9.23 ⁷³
15.7	60.633 ³⁰²	19.32 ¹¹⁶	61.291 ³¹⁵	19.65 ¹²¹	57.612 ³⁹²	23.15 ⁵¹	36.883 ³²⁰	8.50 ⁸⁴
25.7	60.935 ²⁹⁸	20.48 ¹⁵⁵	61.606 ³¹⁰	20.86 ¹⁶⁷	58.004 ³⁸⁸	22.64 ³⁷	37.203 ³¹⁸	7.66 ⁹⁴
Nov. 4.7	61.233 ²⁸⁷	22.03 ¹⁸⁸	61.916 ²⁹⁷	22.53 ²¹⁰	58.392 ³⁷⁸	22.27 ¹⁹	37.521 ³⁰⁹	6.72 ⁹⁹
14.6	61.520 ²⁶⁸	23.91 ²¹⁷	62.213 ²⁷⁸	24.63 ²⁴⁶	58.770 ³⁵⁸	22.08 ¹	37.830 ²⁹⁶	5.73 ¹⁰¹
24.6	61.788 ²⁴³	26.08 ²³⁶	62.491 ²⁴⁹	27.09 ²⁷³	59.128 ³³¹	22.07 ¹⁹	38.126 ²⁷⁵	4.72 ⁹⁸
Dec. 4.6	62.031 ²¹⁰	28.44 ²⁴⁹	62.740 ²¹³	29.82 ²⁹⁰	59.459 ²⁹³	22.26 ³⁹	38.401 ²⁴³	3.74 ⁹³
14.6	62.241 ¹⁷¹	30.93 ²⁵²	62.953 ¹⁷²	32.72 ²⁹⁹	59.752 ²⁴⁶	22.65 ⁵⁹	38.644 ²⁰⁶	2.81 ⁸¹
24.5	62.412 ¹²⁶	33.45 ²⁴⁹	63.125 ¹²³	35.71 ²⁹⁸	59.998 ¹⁹⁴	23.24 ⁷⁷	38.850 ¹⁶⁰	2.00 ⁸⁹
34.5	62.538	35.94	63.248	38.69	60.192	24.01	39.010	1.31
Mean Place	57.506	30.09	58.493	32.77	52.857	31.38	32.969	8.93
Sec δ, Tan δ	1.038	-0.277	1.115	-0.493	1.295	+0.823	1.042	+0.292
D _α , D _α α	+0.05	0.00	+0.05	-0.01	+0.08	+0.02	+0.08	+0.01
D _δ , D _δ δ	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0	-0.1	+1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ^2 Volantis. Mag. 3.9			λ Geminorum. Mag. 3.6			π Argus. Mag. 2.7			δ Geminorum. Mag. 3.5		
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '	h m	° '	h m	° '
	7 9	-70 21	7 13	+16 41	7 14	-36 56	7 15	+22 8				
	s	"	s	"	s	"	s	"				
Jan. 0.5	31.36	39.81	18.378	35.31	12.721	42.14	8.951	17.60				
10.5	31.36 ⁰	43.62 ³⁸¹	18.518 ¹⁴⁰	34.72 ⁵⁹	12.813 ⁹²	45.47 ³³³	9.099 ¹⁴⁸	17.36 ²⁴				
20.5	31.23 ¹³	47.32 ³⁷⁰	18.607 ⁸⁹	34.28 ⁴⁴	12.848 ³⁵	48.68 ³²¹	9.193 ⁹⁴	17.25 ¹¹				
30.4	30.97 ²⁶	50.84 ³⁵²	18.644 ³⁷	33.98 ³⁰	12.824 ²⁴	51.66 ²⁹⁸	9.234 ⁴¹	17.28 ³				
Feb. 9.4	30.60 ³⁷	54.05 ³²¹	18.630 ¹⁴	33.82 ¹⁶	12.745 ⁷⁹	54.36 ²⁷⁰	9.222 ¹²	17.42 ¹⁴				
19.4	30.14 ⁴⁶	56.89 ²⁸⁴	18.569 ⁶¹	33.76 ⁶	12.616 ¹²⁹	56.72 ²³⁶	9.161 ⁶¹	17.63 ²¹				
29.4	29.59 ⁵⁵	59.32 ²⁴³	18.466 ¹⁰³	33.78 ²	12.445 ¹⁷¹	58.67 ¹⁹⁵	9.057 ¹⁰⁴	17.89 ²⁶				
Mar. 10.3	28.97 ⁶²	61.26 ¹⁹⁴	18.333 ¹³³	33.86 ⁸	12.240 ²⁰⁵	60.21 ¹⁵⁴	8.921 ¹³⁶	18.16 ²⁷				
20.3	28.31 ⁶⁶	62.71 ¹⁴⁵	18.177 ¹⁵⁶	33.97 ¹¹	12.014 ²²⁶	61.30 ¹⁰⁹	8.760 ¹⁶¹	18.40 ²⁴				
30.3	27.63 ⁶⁸	63.60 ⁶⁹	18.009 ¹⁶⁸	34.10 ¹³	11.774 ²⁴⁰	61.94 ⁶⁴	8.587 ¹⁷³	18.61 ²¹				
Apr. 9.3	26.94 ⁶⁹	63.98 ³⁸	17.842 ¹⁶⁷	34.23 ¹³	11.532 ²⁴²	62.12 ¹⁸	8.414 ¹⁷³	18.77 ¹⁶				
19.2	26.26 ⁶⁸	63.82 ¹⁶	17.683 ¹⁵⁹	34.36 ¹³	11.299 ²³³	61.86 ²⁶	8.250 ¹⁶⁴	18.86 ⁹				
29.2	25.61 ⁶⁵	63.14 ⁶⁸	17.542 ¹⁴¹	34.48 ¹²	11.085 ²¹⁴	61.15 ⁷¹	8.104 ¹⁴⁶	18.89 ³				
May 9.2	25.01 ⁶⁰	61.94 ¹²⁰	17.427 ¹¹⁵	34.60 ¹²	10.894 ¹⁹¹	60.03 ¹¹²	7.985 ¹¹⁹	18.87 ²				
19.1	24.47 ⁵⁴	60.28 ¹⁶⁶	17.344 ⁸³	34.71 ¹¹	10.737 ¹⁵⁷	58.52 ¹⁶¹	7.898 ⁸⁷	18.80 ⁷				
29.1	24.01 ⁴⁶	58.19 ²⁰⁹	17.296 ⁴⁸	34.83 ¹²	10.616 ¹²¹	56.68 ¹⁵⁴	7.846 ⁵²	18.69 ¹¹				
June 8.1	23.64 ³⁷	55.73 ²⁴⁶	17.286 ¹⁰	34.97 ¹⁴	10.536 ⁸⁰	54.52 ²¹⁶	7.834 ¹²	18.56 ¹³				
18.1	23.36 ²⁸	52.96 ²⁷⁷	17.134 ²⁸	35.10 ¹³	10.497 ³⁹	52.13 ²³⁹	7.862 ²⁸	18.40 ¹⁶				
28.0	23.18 ¹⁸	49.95 ³⁰¹	17.379 ⁶⁵	35.25 ¹⁵	10.502 ⁵	49.53 ²⁶⁰	7.929 ⁶⁷	18.24 ¹⁶				
July 8.0	23.10 ⁴	46.78 ³¹⁷	17.481 ¹⁰²	35.39 ¹⁴	10.550 ⁴⁸	46.84 ²⁶⁹	8.034 ¹⁰⁵	18.06 ¹⁵				
18.0	23.14 ⁴	43.56 ³²²	17.617 ¹³⁶	35.52 ¹³	10.641 ⁹¹	44.12 ²⁷²	8.173 ¹³⁹	17.86 ²⁰				
28.0	23.29 ¹⁵	40.39 ³¹⁷	17.785 ¹⁶⁸	35.63 ¹¹	10.774 ¹³³	41.45 ²⁶⁷	8.345 ¹⁷²	17.65 ²¹				
Aug. 6.9	23.54 ²⁵	37.35 ³⁰⁴	17.981 ¹⁹⁶	35.68 ⁵	10.946 ¹⁷²	38.94 ²⁵¹	8.548 ²⁰³	17.39 ²⁶				
16.9	23.89 ³⁵	34.54 ²⁸¹	18.203 ²²²	35.67 ¹	11.154 ²⁰⁸	36.65 ²²⁹	8.775 ²²⁷	17.09 ³⁰				
26.9	24.34 ⁴⁵	32.09 ²⁴⁵	18.447 ²⁴⁴	35.56 ¹¹	11.393 ²³⁹	34.68 ¹⁹⁷	9.028 ²⁵³	16.73 ³⁶				
Sept. 5.8	24.86 ⁵²	30.09 ²⁰⁰	18.712 ²⁶⁵	35.33 ²³	11.664 ²⁷¹	33.11 ¹⁵⁷	9.301 ²⁷³	16.29 ⁴⁴				
15.8	25.46 ⁶⁰	28.59 ¹⁵⁰	18.994 ²⁸²	34.98 ³⁵	11.960 ²⁹⁶	32.01 ¹¹⁰	9.591 ²⁹⁰	15.77 ⁵²				
25.8	26.11 ⁶⁵	27.68 ⁹¹	19.290 ²⁹⁶	34.50 ⁴⁸	12.276 ³¹⁶	31.44 ⁵⁷	9.898 ³⁰⁷	15.17 ⁶⁰				
Oct. 5.8	26.79 ⁶⁸	27.41 ²⁷	19.599 ³⁰⁹	33.88 ⁶²	12.607 ³³¹	31.45 ¹	10.217 ³¹⁹	14.47 ⁷⁰				
15.7	27.48 ⁶⁹	27.80 ³⁹	19.916 ³¹⁷	33.11 ⁷⁷	12.947 ³⁴⁰	32.02 ⁵⁷	10.544 ³²⁷	13.70 ⁷⁷				
25.7	28.16 ⁶⁸	28.88 ¹⁰⁸	20.236 ³²⁰	32.24 ⁸⁷	13.289 ⁸⁴²	33.18 ¹¹⁶	10.876 ³³²	13.07 ⁸²				
Nov. 4.7	28.82 ⁶⁶	30.58 ¹⁷⁰	20.557 ³²¹	31.28 ⁹⁶	13.626 ³³⁷	34.89 ¹⁷¹	11.208 ³³²	12.88 ⁸⁵				
14.7	29.42 ⁶⁰	32.86 ²²⁸	20.870 ³¹³	30.28 ¹⁰⁰	13.948 ³²²	37.10 ²²¹	11.532 ³²⁴	12.03 ⁸⁶				
24.6	29.94 ⁵²	35.67 ²⁸¹	21.189 ²⁹⁹	29.26 ¹⁰²	14.247 ²⁹⁹	39.73 ²⁶³	11.842 ³¹⁰	11.17 ⁸⁰				
Dec. 4.6	30.38 ⁴⁴	38.90 ³²³	21.447 ²⁷⁸	28.27 ⁹⁹	14.514 ²⁶⁷	42.71 ²⁹⁸	12.132 ²⁹⁰	9.64 ⁷³				
14.6	30.70 ³²	42.45 ³⁶⁵	21.695 ²⁴⁸	27.35 ⁹²	14.741 ²²⁷	45.92 ³²¹	12.390 ²⁵⁸	9.01 ⁶³				
24.5	30.91 ²¹	46.19 ³⁷⁴	21.906 ²¹¹	26.54 ⁸¹	14.921 ¹⁸⁰	49.27 ³³⁵	12.611 ²²¹	8.51 ⁵⁰				
34.5	30.99 ⁸	50.02 ³⁸³	22.073 ¹⁶⁷	25.86 ⁶⁸	15.048 ¹²⁷	52.65 ³³⁸	12.786 ¹⁷⁵	8.16 ³⁵				
Mean Place	27.782	45.79	16.021	34.15	10.561	46.56	6.499	16.82				
Sec δ , Tan δ	2.975	-2.803	1.044	+0.300	1.251	-0.752	1.080	+0.407				
$D\psi\alpha$, $D_\alpha\alpha$	-0.01	-0.06	+0.07	+0.01	+0.04	-0.02	+0.07	+0.01				
$D\psi\delta$, $D_\alpha\delta$	-0.1	+1.0	-0.1	+0.9	-0.1	+0.9	-0.1	+0.9				

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ Volantis. Mag. 4.0		♊ Geminorum. Mag. 3.9		♁ Canis Majoris. Mag. 2.4		Groombridge 1308. Mag. 5.8	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 7 16	° ' " -67 47	h m 7 20	° ' " +27 57	h m 7 20	° ' " -29 8	h m 7 22	° ' " +68 38
	s	"	s	"	s	"	s	"
Jan. 0.5	56.23	66.48	33.282	57.92	48.490	14.70	14.89	18.75
10.5	56.27 ⁴	70.32 ³⁸⁴	33.442 ¹⁶⁰	58.01 ⁹	48.598 ¹⁰⁸	17.76 ³⁰⁶	15.18 ²⁹	21.11 ²³⁶
20.5	56.18 ⁹	74.07 ³⁷⁵	33.547 ¹⁰⁵	58.27 ²⁶	48.653 ⁵⁵	20.71 ²⁹⁵	15.34 ¹⁶	23.59 ²⁴⁸
30.4	55.99 ¹⁹	77.63 ³⁵⁶	33.594 ⁴⁷	58.64 ³⁷	48.652 ¹	23.45 ²⁷⁴	15.37 ³	26.09 ²⁶⁰
Feb. 9.4	55.69 ³⁰	80.90 ³²⁷	33.587 ⁷	59.10 ⁴⁶	48.600 ⁵²	25.92 ²⁴⁷	15.28 ⁹	28.51 ²⁴²
	59	293	60	51	100	214	21	222
19.4	55.30	83.83	33.527	59.61	48.500	28.06	15.07	30.73
29.4	54.84 ⁴⁶	86.33 ²⁵⁰	33.422 ¹⁰⁵	60.12 ⁵¹	48.360 ¹⁴⁰	29.84 ¹⁷⁸	14.75 ³²	32.70 ¹⁹⁷
Mar. 10.3	54.30 ⁵⁴	88.37 ²⁰⁴	33.282 ¹⁴⁰	60.60 ⁴⁸	48.187 ¹⁷³	31.25 ¹⁴¹	14.35 ⁴⁰	34.29 ¹⁵⁹
20.3	53.73 ⁵⁷	89.90 ¹⁶³	33.115 ¹⁶⁷	61.01 ⁴¹	47.992 ¹⁹⁵	32.25 ¹⁰⁰	13.90 ⁴⁵	35.46 ¹¹⁷
30.3	53.14 ⁵⁹	90.91 ¹⁰¹	32.935 ¹⁸⁰	61.33 ³²	47.783 ²⁰⁹	32.84 ⁵⁹	13.40 ⁶⁰	36.17 ⁷¹
	60	47	183	19	210	18	51	21
Apr. 9.3	52.54	91.38	32.752	61.52	47.573	33.02	12.89	36.38
19.2	51.94 ⁶⁰	91.31 ⁷	32.578 ¹⁷⁴	61.59 ⁷	47.369 ²⁰⁴	32.79 ²³	12.40 ⁴⁹	36.10 ²⁸
29.2	51.37 ⁵⁷	90.72 ⁵⁹	32.423 ¹⁵⁵	61.54 ⁵	47.181 ¹⁸⁸	32.18 ⁶¹	11.94 ⁴⁶	35.34 ⁷⁶
May 9.2	50.84 ⁵³	89.62 ¹¹⁰	32.294 ¹²⁹	61.38 ¹⁶	47.016 ¹⁶⁵	31.19 ⁹⁹	11.54 ⁴⁰	34.14 ¹²⁰
19.1	50.38 ⁴⁶	88.05 ¹⁵⁷	32.197 ⁹⁷	61.11 ²⁷	46.880 ¹³⁶	29.86 ¹³³	11.22 ³²	32.54 ¹⁶⁰
	41	202	58	35	101	165	25	193
29.1	49.97	86.03	32.139	60.76	46.779	28.21	10.97	30.61
June 8.1	49.63 ³⁴	83.64 ²³⁹	32.120 ¹⁹	60.35 ⁴¹	46.716 ⁶³	26.29 ¹⁹²	10.82 ¹⁵	28.39 ²²²
18.1	49.38 ²⁵	80.92 ²⁷²	32.143 ²³	59.88 ⁴⁷	46.691 ²⁵	24.14 ²¹⁵	10.76 ⁶	25.97 ²⁴²
28.0	49.23 ¹⁵	77.94 ²⁹⁸	32.206 ⁶³	59.37 ⁵¹	46.705 ¹⁴	21.84 ²³⁰	10.80 ⁴	23.39 ²⁵⁸
July 8.0	49.16 ⁷	74.82 ³¹²	32.309 ¹⁰³	58.84 ⁵³	46.758 ⁵³	19.43 ²⁴¹	10.96 ¹⁶	20.73 ²⁶⁶
	3	321	140	56	91	244	24	267
18.0	49.19	71.61	32.449	58.28	46.849	16.99	11.20	18.06
28.0	49.32 ¹³	68.43 ³¹⁸	32.624 ¹⁷⁵	57.70 ⁵⁸	46.978 ¹²⁹	14.60 ²³⁹	11.53 ³³	15.42 ²⁶⁴
Aug. 6.9	49.54 ²²	65.38 ³⁰⁵	32.830 ²⁰⁶	57.10 ⁶⁰	47.142 ¹⁶⁴	12.34 ²²⁶	11.94 ⁴¹	12.89 ²⁵³
16.9	49.84 ³⁰	62.55 ²⁸³	33.063 ²³³	56.47 ⁶³	47.339 ¹⁹⁷	10.31 ²⁰³	12.44 ⁶⁰	10.49 ²⁴⁰
26.9	50.24 ⁴⁰	60.06 ²⁴⁹	33.323 ²⁶⁰	55.82 ⁶⁵	47.564 ²²⁵	8.55 ¹⁷⁶	13.00 ⁵⁶	8.28 ²²¹
	46	207	282	70	263	140	62	198
Sept. 5.8	50.70	57.99	33.605	55.12	47.817	7.15	13.62	6.30
15.8	51.23 ⁵³	56.44 ¹⁵⁵	33.907 ³⁰²	54.38 ⁷⁴	48.092 ²⁷⁵	6.19 ⁹⁶	14.29 ⁶⁷	4.59 ¹⁷¹
25.8	51.81 ⁵⁸	55.47 ⁹⁷	34.225 ³¹⁸	53.62 ⁷⁶	48.387 ²⁹⁵	5.72 ⁴⁷	15.00 ⁷¹	3.17 ¹⁴²
Oct. 5.8	52.42 ⁶¹	55.13 ³⁴	34.556 ³³¹	52.82 ⁸⁰	48.698 ³¹¹	5.78 ⁶	15.74 ⁷⁴	2.10 ¹⁰⁷
15.7	53.04 ⁶²	55.45 ³²	34.898 ³⁴²	52.01 ⁸¹	49.017 ³¹⁹	6.36 ⁵⁸	16.50 ⁷⁶	1.38 ⁷²
	63	99	347	81	324	112	77	33
25.7	53.67	56.44	35.245	51.20	49.341	7.48	17.27	1.05
Nov. 4.7	54.27 ⁶⁰	58.07 ¹⁶³	35.593 ³⁴⁸	50.43 ⁷⁷	49.662 ³²¹	9.10 ¹⁶²	18.04 ⁷⁷	1.12 ⁷
14.7	54.83 ⁵⁶	60.30 ²²³	35.935 ³⁴²	49.72 ⁷¹	49.971 ³⁰⁹	11.18 ²⁰⁸	18.77 ⁷³	1.59 ⁴⁷
24.6	55.32 ⁴⁹	63.06 ²⁷⁶	36.262 ³²⁷	49.11 ⁶¹	50.263 ²⁹²	13.65 ²⁴⁷	19.47 ⁷⁰	2.49 ⁹⁰
Dec. 4.6	55.73 ⁴¹	66.27 ³²¹	36.568 ³⁰⁶	48.61 ⁵⁰	50.528 ²⁶⁵	16.43 ²⁷⁸	20.11 ⁶⁴	3.79 ¹³⁰
	32	353	274	35	229	299	57	166
14.6	56.05	69.80	36.842	48.26	50.757	19.42	20.68	5.45
24.5	56.27 ²²	73.55 ³⁷⁵	37.078 ²³⁶	48.09 ¹⁷	50.946 ¹⁸⁹	22.53 ³¹¹	21.14 ⁴⁶	7.42 ¹⁹⁷
34.5	56.38 ¹¹	77.39 ³⁸⁴	37.267 ¹⁸⁹	48.08 ¹	51.085 ¹³⁹	25.65 ³¹²	21.50 ³⁶	9.66 ²²⁴
Mean Place	52.978	72.73	30.708	57.79	46.397	18.70	9.238	19.97
Sec δ, Tan δ	2.647	-2.451	1.133	+0.531	1.145	-0.557	2.746	+2.556
Δφ α, Δα α	0.00	-0.05	+0.07	+0.01	+0.05	-0.01	+0.13	+0.06
Δφ δ, Δα δ	-0.1	+0.9	-0.1	+0.9	-0.1	+0.9	-0.1	+0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Canis Minoris. Mag. 3.1		ρ Geminorum. Mag. 4.2		σ Argus. Mag. 3.3		α^2 Geminorum. (Castor.) Mag. 2.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 7 22	° ' " + 8 27	h m 7 23	° ' " +31 56	h m 7 26	° ' " -43 7	h m 7 29	° ' " +32
	s	"	s	"	s	"	s	"
Jan. 0.5	38.030	35.23	45.328	69.59	36.103	45.71	17.243	26.01
10.5	38.172	34.11	45.497	69.94	36.205	49.24	17.417	26.34
20.5	38.264	33.13	45.610	70.43	36.243	52.68	17.556	26.82
30.5	38.305	32.32	45.663	71.04	36.219	55.93	17.594	27.43
Feb. 9.4	38.297	31.69	45.657	71.75	36.135	58.89	17.693	28.13
19.4	38.242	31.21	45.598	72.47	35.996	61.51	17.539	28.87
29.4	38.149	30.88	45.491	73.16	35.810	63.73	17.436	29.58
Mar. 10.3	38.022	30.70	45.347	73.79	35.587	65.53	17.295	30.24
20.3	37.873	30.62	45.175	74.32	35.336	66.86	17.124	30.80
30.3	37.712	30.64	44.988	74.72	35.070	67.71	16.938	31.22
Apr. 9.3	37.549	30.75	44.797	74.95	34.800	68.09	16.747	31.48
19.2	37.393	30.94	44.615	75.02	34.535	67.98	16.563	31.58
29.2	37.253	31.21	44.450	74.93	34.287	67.40	16.397	31.51
May 9.2	37.137	31.53	44.314	74.68	34.063	66.37	16.255	31.28
19.2	37.049	31.93	44.211	74.30	33.870	64.93	16.148	30.91
29.1	36.994	32.38	44.147	73.80	33.714	63.09	16.079	30.42
June 8.1	36.975	32.89	44.124	73.21	33.599	60.91	16.050	29.81
18.1	36.992	33.44	44.143	72.54	33.529	58.46	16.063	29.13
28.0	37.044	34.03	44.205	71.80	33.505	55.79	16.118	28.39
July 8.0	37.131	34.62	44.308	71.03	33.528	52.98	16.213	27.60
18.0	37.252	35.21	44.449	70.24	33.598	50.12	16.349	26.77
28.0	37.402	35.75	44.627	69.42	33.714	47.29	16.520	25.92
Aug. 6.9	37.581	36.22	44.838	68.59	33.874	44.57	16.725	25.05
16.9	37.786	36.59	45.078	67.75	34.075	42.08	16.958	24.16
26.9	38.014	36.80	45.345	66.90	34.316	39.90	17.221	23.26
Sept. 5.9	38.261	36.86	45.635	66.05	34.591	38.12	17.506	22.35
15.8	38.529	36.71	45.947	65.18	34.898	36.81	17.815	21.42
25.8	38.811	36.37	46.277	64.31	35.229	36.03	18.140	20.50
Oct. 5.8	39.105	35.80	46.620	63.45	35.580	35.84	18.482	19.58
15.7	39.411	35.00	46.976	62.61	35.943	36.27	18.836	18.68
25.7	39.721	34.00	47.337	61.83	36.311	37.30	19.197	17.83
Nov. 4.7	40.032	32.84	47.699	61.12	36.674	38.92	19.560	17.06
14.7	40.337	31.55	48.054	60.51	37.023	41.09	19.916	16.41
24.6	40.630	30.17	48.396	60.03	37.348	43.74	20.261	15.88
Dec. 4.6	40.904	28.76	48.714	59.72	37.639	46.77	20.585	15.51
14.6	41.149	27.36	49.003	59.57	37.887	50.08	20.877	15.33
24.6	41.359	26.03	49.250	59.61	38.084	53.58	21.129	15.34
34.5	41.526	24.81	49.449	59.85	38.222	57.14	21.333	15.55
Mean Place	35.794	34.04	42.652	69.91	33.898	50.87	14.569	26.76
Sec δ , Tan δ	1.011	+0.149	1.178	+0.624	1.370	-0.937	1.180	+0.627
$D\psi a, D\omega a$	+0.07	0.00	+0.08	+0.01	+0.05	-0.02	+0.08	+0.02
$D\psi \delta, D\omega \delta$	-0.1	+0.9	-0.1	+0.9	-0.1	+0.9	-0.2	+0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	25 Monocerotis. Mag. 5.2			α Canis Minoris. (Procyon.) Mag. 0.5				24 Lyncis. Mag. 5.0			κ Geminorum. Mag. 3.7				
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.		Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.		
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	7	33	- 3 55	7	34	+ 5 26	7	35	+58 54	7	39	+24 35			
	s	"	"	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 0.5	8.192	141	19.23	56.463	146	28.21	58.630	255	27.14	183	25.224	176	60.23	19	
10.5	8.333	92	21.12	56.609	97	26.84	58.885	165	28.97	200	25.400	122	60.04	1	
20.5	8.425	43	22.86	56.706	46	25.64	59.050	71	30.97	208	25.522	67	60.03	15	
30.5	8.468	7	24.41	56.752	3	24.61	59.121	22	33.05	207	25.589	12	60.18	28	
Feb. 9.4	8.461	52	25.76	56.749	49	23.76	59.099	108	35.12	197	25.601	40	60.46	36	
19.4	8.409	92	26.87	56.700	91	23.11	58.991	187	37.09	179	25.561	87	60.82	42	
29.4	8.317	125	27.76	56.609	123	22.64	58.804	251	38.88	151	25.474	125	61.24	43	
Mar. 10.4	8.192	147	28.40	56.486	143	22.32	58.553	327	40.39	118	25.349	151	61.67	41	
20.3	8.045	161	28.84	56.341	160	22.17	58.255	340	41.57	80	25.198	170	62.08	35	
30.3	7.884	165	29.04	56.181	163	22.13	57.928	39	42.37	39	25.028	174	62.43	28	
Apr. 9.3	7.719	160	29.05	56.018	157	22.21	57.588	334	42.76	2	24.854	168	62.71	18	
19.2	7.559	146	28.84	55.861	143	22.40	57.254	310	42.74	44	24.686	155	62.89	9	
29.2	7.413	124	28.46	55.718	120	22.69	56.944	273	42.30	84	24.531	133	62.98	0	
May 9.2	7.289	98	27.90	55.598	94	23.07	56.671	224	41.46	119	24.398	103	62.98	9	
19.2	7.191	67	27.17	55.504	61	23.53	56.447	167	40.27	149	24.295	69	62.89	16	
29.1	7.124	34	26.29	55.443	28	24.06	56.280	102	38.78	177	24.226	32	62.73	24	
June 8.1	7.090	1	25.27	55.415	8	24.67	56.178	34	37.01	198	24.194	6	62.49	29	
18.1	7.089	35	24.15	55.423	41	25.33	56.144	33	35.03	214	24.200	43	62.20	33	
28.1	7.124	68	22.94	55.464	77	26.02	56.177	103	32.89	223	24.243	82	61.87	37	
July 8.0	7.192	100	21.70	55.541	109	26.72	56.280	169	30.66	229	24.325	117	61.50	41	
18.0	7.292	132	20.45	55.650	139	27.41	56.449	232	28.37	228	24.442	151	61.09	46	
28.0	7.424	161	19.27	55.789	168	28.04	56.681	290	26.09	226	24.593	182	60.63	50	
Aug. 6.9	7.585	186	18.16	55.957	193	28.60	56.971	343	23.83	217	24.775	210	60.13	55	
16.9	7.771	212	17.19	56.150	218	29.04	57.314	392	21.66	204	24.985	236	59.58	62	
26.9	7.983	233	16.44	56.368	238	29.32	57.706	435	19.62	190	25.221	261	58.96	70	
Sept. 5.9	8.216	254	15.91	56.606	259	29.42	58.141	472	17.72	170	25.482	281	58.26	76	
15.8	8.470	271	15.67	56.865	274	29.30	58.613	505	16.02	149	25.763	301	57.50	83	
25.8	8.741	286	15.74	57.139	289	28.94	59.118	531	14.53	124	26.064	317	56.67	90	
Oct. 5.8	9.027	296	16.14	57.428	299	28.33	59.649	549	13.29	97	26.381	329	55.77	96	
15.8	9.323	305	16.89	57.727	308	27.48	60.198	560	12.32	65	26.710	339	54.81	98	
25.7	9.628	305	17.96	58.035	308	26.39	60.758	560	11.67	32	27.049	342	53.83	100	
Nov. 4.7	9.933	300	19.32	58.343	304	25.10	61.318	552	11.35	1	27.391	339	52.83	96	
14.7	10.233	290	20.94	58.647	293	23.65	61.870	527	11.36	39	27.730	330	51.87	89	
24.6	10.523	270	22.76	58.940	275	22.09	62.397	492	11.75	75	28.060	309	50.98	78	
Dec. 4.6	10.793	244	24.72	59.215	247	20.47	62.889	442	12.50	111	28.369	284	50.20	64	
14.6	11.037	208	26.74	59.462	213	18.85	63.331	377	13.61	141	28.653	247	49.56	48	
24.6	11.245	167	28.77	59.675	171	17.29	63.708	303	15.02	170	28.900	203	49.08	31	
34.5	11.412		30.73	59.846		15.83	64.011		16.72		29.103		48.77		
Mean Place	6.082		21.06	54.334		27.47	54.485		29.69		22.749		61.18		
Sec δ , Tan δ	1.002		-0.069	1.005		+0.095	1.936		+1.657		1.100		+0.458		
$D_{\psi} \alpha$, $D_{\omega} \alpha$	+0.06		0.00	+0.06		0.00	+0.10		+0.04		+0.07		+0.01		
$D_{\psi} \delta$, $D_{\omega} \delta$	-0.2		+0.9	-0.2		+0.9	-0.2		+0.9		-0.2		+0.9		

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Geminorum. (Pollux.) Mag. 1.2			δ Puppis. Mag. 5.1		ϵ Argus. Mag. 3.5		ϕ Geminorum. Mag. 5.0	
	Right Ascension.	Declina- tion.		Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '	
	7 40	+28 13	7 42	-14 21	7 45	-24 38	7 48	+26 58	
	s	"	s	"	s	"	s	"	
Jan. 0.5	13.251	46.88	6.843	29.26	47.715	49.83	24.075	61.52	
10.5	13.431 ¹⁸⁰	46.91 ³	6.985 ¹⁴²	31.73 ²⁴⁷	47.855 ¹⁴⁰	52.79 ²⁹⁶	24.263 ¹⁸⁸	61.45 ⁷	
20.5	13.556 ¹²⁵	47.14 ²³	7.077 ⁹²	34.06 ²³³	47.943 ⁸⁸	55.63 ²⁸⁴	24.396 ¹³³	61.57 ¹²	
30.5	13.625 ⁶⁹	47.50 ³⁶	7.119 ⁴²	36.20 ²¹⁴	47.977 ³⁴	58.29 ²⁶⁶	24.473 ⁷⁷	61.85 ²⁶	
Feb. 9.4	13.636 ¹¹	47.98 ⁴⁸	7.111 ⁸	38.11 ¹⁹¹	47.959 ¹⁸	60.70 ²⁴¹	24.494 ²¹	62.26 ⁴¹	
	43	56	55	166	67	213	33	51	
19.4	13.593	48.54	7.056	39.77	47.892	62.83	24.461	62.77	
29.4	13.503 ⁹⁰	49.13 ⁵⁹	6.961 ⁹⁵	41.14 ¹³⁷	47.783 ¹⁰⁹	64.64 ¹⁸¹	24.380 ⁸¹	63.32 ⁵⁵	
Mar. 10.4	13.374 ¹²⁹	49.70 ⁵⁷	6.832 ¹²⁹	42.20 ¹⁰⁶	47.640 ¹⁴³	66.09 ¹⁴⁵	24.259 ¹²¹	63.87 ⁵⁵	
20.3	13.215 ¹⁵⁹	50.21 ⁵¹	6.878 ¹⁵⁴	42.97 ⁷⁷	47.469 ¹⁷¹	67.17 ¹⁰⁸	24.109 ¹⁵⁰	64.38 ⁵¹	
30.3	13.040 ¹⁷⁵	50.64 ⁴³	6.509 ¹⁶⁹	43.44 ⁴⁷	47.283 ¹⁸⁶	67.87 ⁷⁰	23.941 ¹⁶⁸	64.82 ⁴⁴	
	182	31	173	15	192	33	175	35	
Apr. 9.3	12.858	50.95	6.336	43.59	47.091	68.20	23.766	65.17	
19.2	12.681 ¹⁷⁷	51.12 ¹⁷	6.167 ¹⁶⁹	43.46 ¹³	46.901 ¹⁹⁰	68.17 ³	23.593 ¹⁷³	65.40 ²²	
29.2	12.520 ¹⁶¹	51.17 ⁵	6.009 ¹⁵⁸	43.04 ⁴²	46.723 ¹⁷⁸	67.77 ⁴⁰	23.432 ¹⁶¹	65.51 ¹¹	
May 9.2	12.380 ¹⁴⁰	51.09 ⁸	5.871 ¹³⁸	42.37 ⁶⁷	46.565 ¹⁵⁸	67.01 ⁷⁶	23.293 ¹³⁹	65.50 ¹	
19.2	12.272 ¹⁰⁸	50.89 ²⁰	5.758 ¹¹³	41.45 ⁹²	46.430 ¹³⁵	65.93 ¹⁰⁸	23.183 ¹¹⁰	65.37 ¹³	
	74	30	83	115	106	136	77	24	
29.1	12.198	50.59	5.675	40.30	46.325	64.57	23.106	65.13	
June 8.1	12.161 ³⁷	50.19 ⁴⁰	5.623 ⁵²	38.95 ¹³⁵	46.254 ⁷¹	62.93 ¹⁶⁴	23.064 ⁴²	64.81 ³²	
18.1	12.163 ²	49.72 ⁴⁷	5.605 ¹⁸	37.42 ¹⁵³	46.217 ³⁷	61.08 ¹⁸⁵	23.060 ⁴	64.43 ³⁶	
28.1	12.206 ⁴³	49.19 ⁵³	5.622 ¹⁷	35.77 ¹⁶⁶	46.215 ²	59.04 ²⁰⁴	23.095 ³⁵	63.95 ⁴⁸	
July 8.0	12.288 ⁸²	48.61 ⁵⁸	5.673 ⁵¹	34.06 ¹⁷¹	46.251 ³⁶	56.91 ²¹³	23.169 ⁷⁴	63.42 ⁵³	
	118	64	84	175	72	218	109	56	
18.0	12.406	47.97	5.757	32.31	46.323	54.73	23.278	62.86	
28.0	12.559 ¹⁵³	47.30 ⁶⁷	5.873 ¹¹⁶	30.60 ¹⁷¹	46.429 ¹⁰⁶	52.56 ²¹⁷	23.420 ¹⁴²	62.23 ⁶³	
Aug. 6.9	12.744 ¹⁸⁵	46.58 ⁷²	6.020 ¹⁴⁷	28.99 ¹⁶¹	46.568 ¹³⁹	50.50 ²⁰⁶	23.595 ¹⁷⁵	61.55 ⁶⁶	
16.9	12.959 ²¹⁵	45.83 ⁷⁵	6.196 ¹⁷⁶	27.53 ¹⁴⁶	46.741 ¹⁷³	48.60 ¹⁹⁰	23.801 ²⁰⁶	60.82 ⁷³	
26.9	13.200 ²⁴¹	45.04 ⁷⁹	6.398 ²⁰²	26.31 ¹²²	46.943 ²⁰²	46.96 ¹⁶⁴	24.035 ²³⁴	60.04 ⁷⁸	
	267	84	227	93	228	132	260	85	
Sept. 5.9	13.467	44.20	6.625	25.38	47.171	45.64	24.295	59.19	
15.8	13.755 ²⁸⁸	43.31 ⁸⁹	6.873 ²⁴⁸	24.79 ⁵⁹	47.426 ²⁵⁵	44.70 ⁹⁴	24.576 ²⁸¹	58.27 ⁹²	
25.8	14.063 ³⁰⁸	42.38 ⁹³	7.141 ²⁶⁸	24.59 ²⁰	47.702 ²⁷⁶	44.22 ⁴⁸	24.876 ³⁰⁰	57.32 ⁹⁵	
Oct. 5.8	14.388 ³²⁵	41.42 ⁹⁶	7.429 ²⁸⁸	24.79 ²⁰	47.998 ²⁹⁶	44.21 ¹	25.194 ³¹⁸	56.32 ¹⁰⁰	
15.8	14.726 ³³⁸	40.44 ⁹⁸	7.728 ²⁹⁹	25.42 ⁶³	48.308 ³¹⁰	44.71 ⁵⁰	25.528 ³³⁴	55.27 ¹⁰⁶	
	346	97	307	106	318	100	346	104	
25.7	15.072	39.47	8.035	26.48	48.626	45.71	25.874	54.23	
Nov. 4.7	15.423 ³⁵¹	38.53 ⁹⁴	8.344 ³⁰⁹	27.93 ¹⁴⁵	48.947 ³²¹	47.19 ¹⁴⁸	26.224 ³⁵⁰	53.20 ¹⁰³	
14.7	15.772 ³⁴⁹	37.66 ⁸⁷	8.650 ³⁰⁶	29.73 ¹⁸⁰	49.263 ³¹⁶	49.11 ¹⁹²	26.571 ³⁴⁷	52.23 ⁹⁷	
24.6	16.110 ³³⁸	36.90 ⁷⁶	8.945 ²⁹⁵	31.84 ²¹¹	49.565 ³⁰²	51.41 ²³⁰	26.909 ³³⁸	51.36 ⁸⁷	
Dec. 4.6	16.429 ³¹⁹	36.27 ⁶³	9.219 ²⁷⁴	34.16 ²³²	49.847 ²⁸²	54.02 ²⁶¹	27.230 ³²¹	50.61 ⁷⁵	
	290	46	247	248	261	282	296	57	
14.6	16.719	35.81	9.466	36.64	50.098	56.84	27.526	50.04	
24.6	16.972 ²⁵³	35.54 ²⁷	9.678 ²¹²	39.18 ²⁵⁴	50.312 ²¹⁴	59.79 ²⁹⁵	27.785 ²⁵⁹	49.66 ²⁸	
34.5	17.180 ²⁰⁸	35.45 ⁹	9.846 ¹⁶⁸	41.71 ²⁵³	50.479 ¹⁶⁷	62.77 ²⁹⁸	27.999 ²¹⁴	49.46 ²⁰	
Mean Place	10.693	48.17	4.799	31.95	45.688	53.64	21.559	63.30	
Sec δ , Tan δ	1.135	+0.537	1.032	-0.256	1.100	-0.459	1.122	+0.509	
$D\psi\alpha$, $D_{\alpha}\alpha$	+0.07	+0.02	+0.05	-0.01	+0.05	-0.01	+0.07	+0.02	
$D\psi\delta$, $D_{\delta}\delta$	-0.2	+0.9	-0.2	+0.9	-0.2	+0.9	-0.2	+0.9	

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	26 Lyncis. Mag. 5.7		Groombridge 1374. Mag. 5.6		χ Argus. Mag. 3.6		ω Cancri Mag. 5.9	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 7 48	° ' " +47 46	h m 7 50	° ' " +74 8	h m 7 54	° ' " -52 45	h m 7 55	° ' " +25 37
	s	"	s	"	s	"	s	"
Jan. 0.6	39.423	57.21	17.28	34.40	40.918	17.45	53.512	23.01
10.5	39.653 ²³⁰	58.39 ¹¹⁸	17.72 ⁴⁴	36.84 ²⁴⁴	41.055 ¹³⁷	21.23 ³⁷⁸	53.705 ¹⁹³	22.83 ¹⁸
20.5	39.815 ¹⁶²	59.76 ¹³⁷	18.00 ²⁸	39.49 ²⁶⁵	41.119 ⁶⁴	24.97 ³⁷⁴	53.846 ¹⁴¹	22.83 ⁰
30.5	39.903 ⁸⁸	61.25 ¹⁴⁹	18.11 ¹¹	42.21 ²⁷²	41.108 ¹¹	28.59 ³⁶²	53.930 ⁸⁴	23.02 ¹⁹
Feb. 9.4	39.919 ¹⁶	62.82 ¹⁵⁷	18.05 ⁶	44.90 ²⁶⁹	41.025 ⁸³	31.98 ³³⁹	53.958 ²⁸	23.36 ³⁴
	55	155	21	255	151	308	26	43
19.4	39.864	64.37	17.84	47.45	40.874	35.06	53.932	23.79
29.4	39.747 ¹¹⁷	65.83 ¹⁴⁶	17.46 ³⁸	49.77 ²³²	40.665 ²⁰⁹	37.78 ²⁷²	53.860 ⁷²	24.29 ⁵⁰
Mar. 10.4	39.578 ¹⁶⁹	67.13 ¹³⁰	16.97 ⁴⁹	51.73 ¹⁹⁶	40.409 ²⁵⁶	40.09 ²³¹	53.747 ¹¹³	24.81 ⁵²
20.3	39.369 ²⁰⁹	68.20 ¹⁰⁷	16.39 ⁵⁸	53.28 ¹⁵⁵	40.115 ²⁹⁴	41.93 ¹⁸⁴	53.603 ¹⁴⁴	25.32 ⁵¹
30.3	39.134 ²⁴⁷	69.00 ⁸⁰	15.74 ⁶⁵	54.35 ¹⁰⁷	39.797 ³¹⁸	43.28 ¹³⁵	53.439 ¹⁶⁴	25.78 ⁴⁶
	247	50	69	56	331	85	172	37
Apr. 9.3	38.887	69.50	15.05	54.91	39.466	44.13	53.267	26.15
19.3	38.642 ²⁴⁵	69.68 ¹⁸	14.36 ⁶⁹	54.94 ³	39.135 ³³¹	44.48 ³⁵	53.096 ¹⁷¹	26.41 ²⁶
29.2	38.414 ²²⁸	69.54 ¹⁴	13.70 ⁶⁶	54.42 ⁵²	38.813 ³²²	44.30 ¹⁸	52.936 ¹⁶⁰	26.56 ¹⁵
May 9.2	38.213 ²⁰¹	69.09 ⁴⁵	13.10 ⁶⁰	53.42 ¹⁰⁰	38.512 ³⁰¹	43.63 ⁶⁷	52.797 ¹³⁹	26.62 ⁶
19.2	38.047 ¹⁶⁶	68.33 ⁷⁶	12.57 ⁵³	51.95 ¹⁴⁷	38.240 ²⁷²	42.48 ¹¹⁵	52.686 ¹¹¹	26.57 ⁵
	122	100	43	187	236	159	81	16
29.1	37.925 ⁷⁵	67.33 ¹²⁴	12.14 ³¹	50.08 ²²³	38.004 ¹⁹⁵	40.89 ²⁰⁰	52.605 ⁴⁷	26.41 ²⁶
June 8.1	37.850 ²⁴	66.09 ¹⁴²	11.83 ²⁰	47.85 ²⁵²	37.809 ¹⁴⁶	38.89 ²³⁴	52.558 ⁹	26.15 ³³
18.1	37.826 ²⁷	64.67 ¹⁵⁷	11.63 ⁷	45.33 ²⁷³	37.663 ⁹⁴	36.55 ²⁶⁴	52.549 ²⁷	25.82 ³⁷
28.1	37.853 ⁸⁰	63.10 ¹⁶⁸	11.56 ⁶	42.60 ²⁸⁷	37.569 ⁴¹	33.91 ²⁸³	52.576 ⁶⁴	25.45 ⁴⁶
July 8.0	37.933 ¹²⁹	61.42 ¹⁷⁵	11.62 ²⁰	39.73 ²⁹⁵	37.528 ¹⁵	31.08 ²⁹⁷	52.640 ¹⁰¹	24.99 ⁵²
18.0	38.062 ¹⁷⁶	59.67 ¹⁸⁰	11.82 ³¹	36.78 ²⁹⁷	37.543 ⁷⁰	28.11 ³⁰⁰	52.741 ¹³⁴	24.47 ⁵⁵
28.0	38.238 ²²⁰	57.87 ¹⁸⁰	12.13 ⁴³	33.81 ²⁹²	37.613 ¹²⁶	25.11 ²⁹⁵	52.875 ¹⁶⁶	23.92 ⁶³
Aug. 7.0	38.458 ²⁹⁰	56.07 ¹⁷⁹	12.56 ⁵⁴	30.89 ²⁸²	37.739 ¹⁸¹	22.16 ²⁷⁸	53.041 ¹⁹⁷	23.29 ⁷⁰
16.9	38.718 ²⁶⁶	54.28 ¹⁷³	13.10 ⁶⁵	28.07 ²⁶⁴	37.920 ²³⁴	19.38 ²⁵¹	53.238 ²²³	22.59 ⁷⁵
26.9	39.016 ³³¹	52.55 ¹⁶⁶	13.75 ⁷³	25.43 ²⁴³	38.154 ²⁸²	16.87 ²¹⁵	53.461 ²⁵⁰	21.84 ⁸⁴
Sept. 5.9	39.347 ³⁶³	50.89 ¹⁵⁷	14.48 ⁸¹	23.00 ²¹⁷	38.436 ³²⁶	14.72 ¹⁷¹	53.711 ²⁷³	21.00 ⁹⁰
15.8	39.710 ³⁸⁹	49.32 ¹⁴⁵	15.29 ⁸⁸	20.83 ¹⁸⁸	38.762 ³⁶⁵	13.01 ¹¹⁸	53.984 ²⁹⁴	20.10 ⁹⁹
25.8	40.099 ⁴¹¹	47.87 ¹³²	16.17 ⁹⁴	18.95 ¹⁵¹	39.127 ³⁹⁶	11.83 ⁵⁹	54.278 ³¹²	19.11 ¹⁰⁴
Oct. 5.8	40.510 ⁴²⁹	46.55 ¹¹²	17.11 ⁹⁷	17.44 ¹¹³	39.523 ⁴¹⁷	11.24 ⁵	54.590 ³²⁷	18.07 ¹⁰⁹
15.8	40.939 ⁴⁴²	45.43 ⁹³	18.08 ¹⁰⁰	16.31 ⁷¹	39.940 ⁴²⁹	11.29 ⁶⁹	54.917 ³⁴¹	16.98 ¹¹²
25.7	41.381 ⁴⁴⁷	44.50 ⁶⁹	19.08 ⁹⁹	15.60 ²⁸	40.369 ⁴²⁹	11.98 ¹³³	55.258 ³⁴⁷	15.86 ¹¹¹
Nov. 4.7	41.828 ⁴⁴³	43.81 ⁴⁴	20.07 ⁹⁹	15.32 ¹⁹	40.798 ⁴¹⁸	13.31 ¹⁹⁴	55.605 ³⁴⁶	14.75 ¹⁰⁶
14.7	42.271 ⁴²⁹	43.37 ¹⁵	21.06 ⁹⁴	15.51 ⁶⁷	41.216 ³⁹³	15.25 ²⁴⁹	55.951 ³⁴⁰	13.69 ⁹⁸
24.7	42.700 ⁴⁰⁶	43.22 ⁴⁵	22.00 ⁷⁸	16.18 ¹⁵⁶	41.609 ³⁰⁸	17.74 ³³²	56.291 ²⁹⁷	12.71 ⁸⁵
Dec. 4.6	43.106 ³⁷⁰	43.38 ⁴⁵	22.87 ⁸⁷	17.31 ¹¹³	41.966 ³⁰⁸	20.69 ³³²	56.614 ²⁸⁷	11.86 ⁶⁸
14.6	43.476 ³²⁵	43.83 ⁷⁵	23.65 ⁶⁷	18.87 ¹⁹⁵	42.274 ²⁴⁹	24.01 ³⁶⁰	56.911 ²⁶³	11.18 ⁵¹
24.6	43.801 ²⁶⁷	44.58 ¹⁰¹	24.32 ⁵²	20.82 ²²⁸	42.523 ¹⁸²	27.61 ³⁷⁴	57.174 ²²¹	10.67 ³³
34.5	44.068	45.59	24.84	23.10	42.705	31.35	57.395	10.34
Mean Place	36.163	60.54	10.049	38.80	38.618	24.32	51.041	25.16
Dec. J. Tan δ	1.488	+1.102	3.660	+3.521	1.652	-1.315	1.109	+0.480
Day, Day α	+0.09	+0.03	+0.14	+0.11	+0.03	-0.04	+0.07	+0.02
Day, Day δ	-0.2	+0.9	-0.2	+0.9	-0.2	+0.9	-0.2	+0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	χ Geminorum. Mag. 5.0		γ Lynceis. Mag. 4.9		ρ Argus. Mag. 2.9		β H. Ursæ Mag.
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.
	h m 7 58	° ' +28 1	h m 8 2	° ' +51 44	h m 8 3	° ' -24 3	h m 8 4
	s	"	s	"	s	"	s
Jan. 0.6	24.270	48.00	12.350	55.13	59.965	37.14	33.78
10.5	24.470 ²⁰⁰	47.95 ⁵	12.614 ²⁶⁴	56.44 ¹³¹	60.124 ¹⁵⁹	40.09 ²⁹⁵	34.17 ³⁹
20.5	24.616 ¹⁴⁶	48.10 ¹⁵	12.803 ¹⁸⁹	57.99 ¹⁵⁵	60.233 ¹⁰⁹	42.96 ²⁸⁷	34.44 ²⁷
30.5	24.704 ⁸⁸	48.43 ³³	12.914 ¹¹¹	59.70 ¹⁷¹	60.287 ⁵⁴	45.66 ²⁷⁰	34.58 ¹⁴
Feb. 9.5	24.735 ³¹	48.90 ⁴⁷	12.944 ³⁰	61.48 ¹⁷⁸	60.289 ²	48.12 ²⁴⁶	34.59 ¹
	23	57	45	178	47	220	11
19.4	24.712	49.47	12.899	63.26	60.242	50.32	34.48
29.4	24.639 ⁷³	50.09 ⁶²	12.784 ¹¹⁵	64.94 ¹⁶⁸	60.150 ⁹²	52.21 ¹⁸⁹	34.24 ²⁴
Mar. 10.4	24.524 ¹¹⁵	50.72 ⁶³	12.611 ¹⁷³	66.46 ¹⁵²	60.020 ¹³⁰	53.75 ¹⁵⁴	33.92 ³²
20.3	24.379 ¹⁴⁵	51.31 ⁵⁹	12.391 ²²⁰	67.74 ¹²⁸	59.862 ¹⁵⁸	54.94 ¹¹⁰	33.51 ⁴¹
30.3	24.212 ¹⁶⁷	51.83 ⁵²	12.138 ²⁵³	68.73 ⁹⁹	59.687 ¹⁷⁵	55.76 ⁸²	33.05 ⁴⁶
	176	41	268	65	186	46	50
Apr. 9.3	24.036	52.24	11.870	69.38	59.501	56.22	32.55
19.3	23.861 ¹⁷⁵	52.52 ²⁸	11.601 ²⁶⁹	69.68 ³⁰	59.316 ¹⁸⁵	56.31 ⁹	32.05 ⁵⁰
29.2	23.698 ¹⁶³	52.67 ¹⁵	11.345 ²⁵⁶	69.62 ⁶	59.139 ¹⁷⁷	56.04 ²⁷	31.56 ⁴⁹
May 9.2	23.554 ¹⁴⁴	52.68 ¹	11.112 ²³³	69.20 ⁴²	58.979 ¹⁶⁰	55.43 ⁶¹	31.11 ⁴⁵
19.2	23.438 ¹¹⁶	52.57 ¹¹	10.917 ¹⁹⁵	68.44 ⁷⁶	58.840 ¹³⁹	54.50 ⁹³	30.72 ³⁹
	85	24	153	106	111	124	32
29.2	23.353 ⁵⁰	52.33 ³⁵	10.764 ¹⁰³	67.38 ¹³²	58.729 ⁸²	53.26 ¹⁵⁰	30.40 ²⁵
June 8.1	23.303 ¹²	51.98 ⁴⁴	10.661 ⁵¹	66.06 ¹⁵⁶	58.647 ⁵⁰	51.76 ¹⁷⁴	30.15 ¹⁵
18.1	23.291 ²⁶	51.54 ⁵²	10.610 ⁵	64.50 ¹⁷⁴	58.597 ¹⁵	50.02 ¹⁹¹	30.00 ⁷
28.1	23.317 ⁶³	51.02 ⁵⁹	10.615 ⁵⁹	62.76 ¹⁸⁸	58.582 ²⁰	48.11 ²⁰⁴	29.93 ³
July 8.0	23.380 ¹⁰⁰	50.43 ⁶⁶	10.674 ¹¹²	60.88 ¹⁹⁸	58.602 ⁵⁵	46.07 ²¹²	29.96 ¹³
18.0	23.480	49.77	10.786	58.90	58.657	43.95	30.09
28.0	23.614 ¹³⁴	49.04 ⁷³	10.950 ¹⁶⁴	56.86 ²⁰⁴	58.745 ⁸⁸	41.85 ²¹⁰	30.31 ²²
Aug. 7.0	23.781 ¹⁶⁷	48.27 ⁷⁷	11.162 ²¹²	54.79 ²⁰⁷	58.867 ¹²²	39.83 ²⁰²	30.62 ³¹
16.9	23.979 ¹⁹⁸	47.43 ⁸⁴	11.420 ²⁵⁸	52.74 ²⁰⁵	59.022 ¹⁵⁵	37.95 ¹⁸⁸	30.62 ³⁸
26.9	24.204 ²²⁵	46.54 ⁸⁹	11.720 ³⁰⁰	50.73 ²⁰¹	59.206 ¹⁸⁴	36.31 ¹⁶⁴	31.47 ⁴⁷
	252	95	339	194	215	133	53
Sept. 5.9	24.456	45.59	12.059	48.79	59.421	34.98	32.00
15.8	24.731 ²⁷⁵	44.58 ¹⁰¹	12.432 ³⁷³	46.96 ¹⁸³	59.662 ²⁴¹	34.00 ⁹⁸	32.60 ⁶⁰
25.8	25.030 ²⁹⁹	43.50 ¹⁰⁸	12.838 ⁴⁰⁶	45.28 ¹⁶⁸	59.929 ²⁶⁷	33.45 ⁵⁵	33.26 ⁶⁶
Oct. 5.8	25.346 ³¹⁶	42.39 ¹¹¹	13.271 ⁴³³	43.76 ¹⁵²	60.216 ²⁸⁷	33.38 ⁷	33.96 ⁷⁰
15.8	25.680 ³³⁴	41.26 ¹¹³	13.726 ⁴⁵⁵	42.44 ¹³²	60.522 ³⁰⁶	33.79 ⁴¹	34.69 ⁷³
	346	113	471	107	317	91	76
25.7	26.026	40.13	14.197	41.37	60.839	34.70	35.45
Nov. 4.7	26.380 ³⁵⁴	39.04 ¹⁰⁹	14.677 ⁴⁸⁰	40.56 ⁸¹	61.163 ³²⁴	36.09 ¹³⁹	36.22 ⁷⁷
14.7	26.733 ³⁵³	38.01 ¹⁰³	15.156 ⁴⁷⁹	40.05 ⁵¹	61.485 ³²²	37.92 ¹⁸³	36.99 ⁷⁷
24.7	27.079 ³⁴⁶	37.09 ⁹²	15.624 ⁴⁶⁸	39.87 ¹⁸	61.797 ³¹²	40.17 ²²⁵	37.73 ⁷⁴
Dec. 4.6	27.410 ³³¹	36.32 ⁷⁷	16.070 ⁴⁴⁶	40.04 ¹⁷	62.091 ²⁹⁴	42.72 ²⁵⁵	38.43 ⁷⁰
	305	60	409	50	266	277	64
14.6	27.715	35.72	16.479	40.54	62.357	45.49	39.07
24.6	27.985 ²⁷⁰	35.32 ⁴⁰	16.840 ³⁶¹	41.38 ⁸⁴	62.588 ²³¹	48.41 ²⁹²	39.62 ⁵⁵
34.5	28.212 ²²⁷	35.13 ¹⁹	17.141 ³⁰¹	42.54 ¹¹⁶	62.776 ¹⁸⁸	51.38 ²⁹⁷	40.07 ⁴⁵
Mean Place	21.749	50.57	8.868	59.99	57.982	40.92	28.232
Sec δ , Tan δ	1.133	+0.532	1.615	+1.268	1.095	-0.447	2.755
$D\psi \alpha$, $D\omega \alpha$	+0.07	+0.02	+0.09	+0.04	+0.05	-0.02	+0.12
$D\psi \delta$, $D\omega \delta$	-0.2	+0.9	-0.2	+0.9	-0.2	+0.9	-0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Argus. Mag. 2.2		ζ Cancri (mean). Mag. 4.7			Bradley 1147. Mag. 5.7		20 Puppis. Mag. 5.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	
	h m 8 6	° ' " -47 5	h m 8 7	° ' " +17 53	h m 8 9	° ' " +76 0	h m 8 9	° ' " -15 31	
Jan. 0.6	58.831 ¹⁵⁹	12.52 ³⁶⁸	26.092 ¹⁹⁵	65.46 ⁷⁴	9.43 ⁵⁵	47.34 ²³⁹	30.293 ¹⁶⁹	61.28 ²⁵⁸	
10.5	58.990 ⁹⁰	16.20 ³⁶⁶	26.287 ¹⁴⁵	64.72 ⁵⁰	9.98 ³⁷	49.73 ²⁶⁵	30.462 ¹²¹	63.86 ²⁴⁷	
20.5	59.080 ²⁵	19.86 ³⁵⁴	26.432 ⁸⁹	64.22 ³²	10.35 ¹⁹	52.38 ²⁷⁷	30.583 ⁶⁹	66.33 ²³⁰	
30.5	59.105 ⁴³	23.40 ³³⁴	26.521 ³⁸	63.90 ¹⁴	10.54 ¹	55.15 ²⁷⁹	30.652 ¹⁸	68.63 ²⁰⁸	
Feb. 9.5	59.062 ¹⁰⁴	26.74 ³⁰⁴	26.559 ¹³	63.76 ²	10.53 ¹⁹	57.94 ²⁶⁹	30.670 ³⁰	70.71 ¹⁸³	
19.4	58.958 ¹⁵⁸	29.78 ²⁶⁹	26.546 ⁵⁸	63.74 ¹³	10.34 ³⁶	60.63 ²⁴⁹	30.640 ⁷⁵	72.54 ¹⁵³	
29.4	58.800 ²⁰⁵	32.47 ²³⁰	26.488 ⁹⁹	63.87 ²²	9.98 ⁵¹	63.12 ²¹⁷	30.565 ¹¹¹	74.07 ¹²⁴	
Mar. 10.4	58.595 ²⁴⁰	34.77 ¹⁸⁶	26.389 ¹³¹	64.09 ²⁹	9.47 ⁶⁴	65.29 ¹⁷⁶	30.454 ¹³⁸	75.31 ⁹⁴	
20.3	58.355 ²⁶⁵	36.63 ¹³⁸	26.258 ¹⁴⁷	64.38 ³¹	8.83 ⁷¹	67.05 ¹³¹	30.316 ¹⁵⁷	76.25 ⁶²	
30.3	58.090 ²⁷⁸	38.01 ⁹³	26.111 ¹⁵⁸	64.69 ³⁰	8.12 ⁷⁷	68.36 ⁷⁹	30.159 ¹⁶⁸	76.87 ³²	
Apr. 9.3	57.812 ²⁸¹	38.94 ⁴²	25.953 ¹⁶¹	64.99 ²⁸	7.35 ⁷⁹	69.15 ²⁶	29.991 ¹⁶⁸	77.19 ³	
19.3	57.531 ²⁷⁴	39.36 ⁷	25.792 ¹⁴⁹	65.27 ²⁴	6.56 ⁷⁷	69.41 ²⁸	29.823 ¹⁵⁹	77.22 ²⁷	
29.2	57.257 ²⁵⁶	39.29 ⁵⁵	25.643 ¹³³	65.51 ²⁴	5.79 ⁷²	69.13 ⁸¹	29.664 ¹⁴⁶	76.95 ⁵³	
May 9.2	57.001 ²³⁴	38.74 ¹⁰¹	25.510 ¹⁰⁸	65.75 ¹⁶	5.07 ⁶⁴	68.32 ¹³¹	29.518 ¹²³	76.42 ⁸¹	
19.2	56.767 ²⁰¹	37.73 ¹⁴⁴	25.402 ⁸⁴	65.91 ¹³	4.43 ⁵⁴	67.01 ¹⁷⁵	29.395 ⁹⁹	75.61 ¹⁰⁴	
29.2	56.566 ¹⁶⁵	36.29 ¹⁸³	25.318 ⁴⁹	66.04 ¹⁰	3.89 ⁴³	65.26 ²¹⁵	29.296 ⁶⁹	74.57 ¹²⁵	
June 8.1	56.401 ¹²⁵	34.46 ²¹⁹	25.269 ¹⁷	66.14 ⁴	3.46 ³⁰	63.11 ²⁴⁷	29.227 ³⁹	73.32 ¹⁴³	
18.1	56.276 ⁸⁰	32.27 ²⁴⁶	25.252 ¹⁷	66.18 ³	3.16 ¹⁷	60.64 ²⁷²	29.188 ⁷	71.89 ¹⁵⁸	
28.1	56.196 ³⁴	29.81 ²⁶⁸	25.269 ⁵³	66.21 ⁴	2.99 ¹	57.92 ²⁹²	29.181 ²⁶	70.31 ¹⁶⁸	
July 8.0	56.162 ¹⁴	27.13 ²⁸¹	25.322 ⁸³	66.17 ⁸	2.98 ¹²	55.00 ³⁰⁵	29.207 ⁵⁸	68.63 ¹⁷²	
18.0	56.176 ⁶²	24.32 ²⁸⁶	25.405 ¹¹⁴	66.09 ¹⁵	3.10 ²⁶	51.95 ³⁰⁹	29.265 ⁹⁰	66.91 ¹⁷⁰	
28.0	56.238 ¹¹⁰	21.46 ²⁸²	25.519 ¹⁴⁶	65.94 ²⁴	3.36 ⁴¹	48.86 ³⁰⁹	29.355 ¹²¹	65.21 ¹⁶¹	
Aug. 7.0	56.348 ¹⁵⁸	18.64 ²⁶⁶	25.665 ¹⁷⁴	65.70 ³⁰	3.77 ⁵³	45.77 ³⁰⁰	29.476 ¹⁵¹	63.60 ¹⁴⁹	
16.9	56.506 ²⁰⁵	15.98 ²⁴⁴	25.839 ²⁰²	65.40 ⁴³	4.30 ⁶⁵	42.77 ²⁸⁷	29.627 ¹⁷⁹	62.11 ¹²⁶	
26.9	56.711 ²⁴⁸	13.54 ²⁰⁹	26.041 ²²⁶	64.97 ⁵⁶	4.95 ⁷⁶	39.90 ²⁶⁸	29.806 ²⁰⁷	60.85 ¹⁰¹	
Sept. 5.9	56.959 ²⁸⁹	11.45 ¹⁶⁷	26.267 ²⁵¹	64.41 ⁶⁸	5.71 ⁸⁵	37.22 ²⁴⁴	30.013 ²³¹	59.84 ⁶⁶	
15.9	57.248 ³²³	9.78 ¹¹⁶	26.518 ²⁷³	63.73 ⁸¹	6.56 ⁹⁵	34.78 ²¹⁴	30.244 ²⁵⁷	59.18 ²⁹	
25.8	57.571 ³⁵⁵	8.62 ⁶⁰	26.791 ²⁹⁰	62.92 ⁹⁸	7.51 ¹⁰¹	32.64 ¹⁸⁰	30.501 ²⁷⁶	58.89 ¹¹	
Oct. 5.8	57.926 ³⁷⁷	8.02 ¹	27.081 ³¹⁰	61.94 ¹⁰⁸	8.52 ¹⁰⁷	30.84 ¹⁴²	30.777 ²⁹⁴	59.00 ⁵⁵	
15.8	58.303 ³⁹¹	8.03 ⁶³	27.391 ³²²	60.86 ¹²⁰	9.59 ¹¹⁰	29.42 ⁹⁹	31.071 ³⁰⁸	59.55 ⁹⁸	
25.7	58.694 ³⁹⁷	8.66 ¹²⁵	27.713 ³³¹	59.66 ¹²⁴	10.69 ¹¹¹	28.43 ⁵⁴	31.379 ³¹⁴	60.53 ¹³⁸	
Nov. 4.7	59.091 ³⁹¹	9.91 ¹⁸⁴	28.044 ³³¹	58.42 ¹³⁰	11.80 ¹¹¹	27.89 ⁶	31.693 ³¹⁶	61.91 ¹⁷⁶	
14.7	59.482 ³⁷⁴	11.75 ²³⁹	28.375 ³²⁸	57.12 ¹³⁰	12.91 ¹⁰⁷	27.83 ⁴⁴	32.009 ³⁰⁷	63.67 ²⁰⁹	
24.7	59.856 ³⁴⁴	14.14 ²⁸⁴	28.703 ³¹²	55.82 ¹²³	13.98 ¹⁰¹	28.27 ⁹³	32.316 ²⁹³	65.76 ²³⁴	
Dec. 4.6	60.200 ³⁰⁵	16.98 ³²¹	29.015 ²⁹²	54.59 ¹¹⁴	14.99 ⁹²	29.20 ¹⁴⁰	32.609 ²⁶⁸	68.10 ²⁵¹	
14.6	60.505 ²⁵⁵	20.19 ³⁴⁹	29.307 ²⁵⁸	53.45 ¹⁰²	15.91 ⁷⁸	30.60 ¹⁸⁴	32.877 ²³⁷	70.61 ²⁶¹	
24.6	60.760 ¹⁹⁷	23.68 ³⁶⁴	29.565 ²²²	52.43 ⁸³	16.69 ⁶⁵	32.44 ²²⁰	33.114 ¹⁹⁵	73.22 ²⁶²	
34.6	60.957	27.32	29.787	51.60	17.34	34.64	33.309	75.84	
Mean Place	56.697	19.21	23.797	67.45	1.463	53.87	28.314	63.85	
Δ _α , Δ _δ , Tan Δ	1.469	-1.076	1.050	+0.323	4.138	+4.015	1.038	-0.278	
Δ _α , Δ _δ , Δ	+0.04	-0.04	+0.07	+0.01	+0.15	+0.14	+0.05	-0.01	
Δ _α , Δ _δ , Δ	-0.2	+0.9	-0.2	+0.8	-0.2	+0.8	-0.2	+0.8	

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Cancri. Mag. 3.8		γ Lyncls. Mag. 4.4		δ^1 Cancri. Mag. 5.9		ϵ Argus. Mag. 1.7	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion
	h m 8 11	° ' " + 9 26	h m 8 17	° ' " +43 27	h m 8 18	° ' " +18 35	h m 8 20	° ' " -59
Jan. 0.6	59.822	41.79	8.519	25.48	35.655	66.99	49.850	11.58
10.5	60.012 ¹⁹⁰	40.55 ¹²⁴	8.772 ²⁵³	26.26 ⁷⁸	35.861 ²⁰⁶	66.28 ⁷¹	50.039 ¹⁸⁹	15.41
20.5	60.153 ¹⁴¹	39.49 ¹⁰⁶	8.962 ¹⁹⁰	27.27 ¹⁰¹	36.018 ¹⁵⁷	65.77 ⁵¹	50.142 ¹⁰³	19.30
30.5	60.243 ⁹⁰	38.62 ⁸⁷	9.086 ¹²⁴	28.50 ¹²³	36.121 ¹⁰³	65.46 ³¹	50.158 ¹⁶	23.12
Feb. 9.5	60.282 ³⁹	37.97 ⁶⁵	9.139 ⁵³	29.85 ¹³⁵	36.170 ⁴⁹	65.34 ¹²	50.091 ⁶⁷	26.78
19.4	60.271 ¹¹	37.49 ⁴⁸	9.126 ¹³	31.26 ¹⁴¹	36.167 ³	65.39 ⁵	49.943 ¹⁴⁸	30.19
29.4	60.215 ⁵⁶	37.19 ³⁰	9.052 ⁷⁴	32.67 ¹⁴¹	36.118 ⁴⁹	65.57 ¹⁸	49.725 ²¹⁸	33.28
Mar. 10.4	60.122 ⁹³	37.04 ¹⁵	8.924 ¹²⁸	33.99 ¹³²	36.027 ⁹¹	65.85 ²⁸	49.446 ²⁷⁹	35.98
20.4	59.999 ¹²³	37.01 ³	8.755 ¹⁶⁹	35.16 ¹¹⁷	35.904 ¹²³	66.18 ³³	49.118 ³²⁸	38.25
30.3	59.856 ¹⁴³	37.10 ⁹	8.556 ¹⁹⁹	36.13 ⁹⁷	35.760 ¹⁴⁴	66.54 ³⁶	48.755 ³⁶³	40.04
Apr. 9.3	59.703 ¹⁵³	37.27 ²⁴	8.339 ²²⁰	36.85 ⁴⁵	35.604 ¹⁵⁹	66.90 ³³	48.370 ³⁹⁵	41.34
19.3	59.550 ¹⁴⁶	37.51 ²⁹	8.119 ²¹¹	37.30 ¹⁵	35.445 ¹⁵¹	67.23 ³⁰	47.975 ³⁹²	42.12
29.2	59.404 ¹³⁰	37.80 ³³	7.908 ¹⁹⁴	37.45 ¹³⁰	35.294 ¹⁸⁷	67.53 ²⁸	47.583 ³⁷⁷	42.37
May 9.2	59.274 ¹⁰⁷	38.13 ³⁷	7.714 ¹⁶⁴	37.31 ⁴⁰	35.157 ¹¹⁴	67.76 ¹⁹	47.206 ³⁵²	42.10
19.2	59.167 ⁸³	38.50 ⁴⁰	7.550 ¹⁸⁰	36.91 ⁶⁹	35.043 ⁸⁸	67.95 ¹⁴	46.854 ³¹⁹	41.32
29.2	59.084 ⁵²	38.90 ⁴³	7.420 ⁹²	36.22 ⁹¹	34.955 ⁵⁸	68.09 ⁸	46.535 ²⁷⁶	40.06
June 8.1	59.032 ²⁰	39.33 ⁴⁴	7.328 ⁴⁸	35.31 ¹¹²	34.897 ²⁶	68.17 ³	46.259 ²²⁸	38.34
18.1	59.012 ¹¹	39.77 ⁴⁴	7.280 ³	34.19 ¹³⁰	34.871 ⁸	68.20 ³	46.031 ¹⁷³	36.22
28.1	59.023 ⁴³	40.21 ⁴³	7.277 ⁴²	32.89 ¹⁴⁴	34.879 ⁷⁴	68.17 ⁹	45.858 ¹¹³	33.76
July 8.1	59.066 ⁷⁵	40.64 ³⁹	7.319 ⁸⁶	31.45 ¹⁵⁶	34.920 ¹⁴	68.08 ¹⁴	45.745 ⁴⁸	31.03
18.0	59.141 ¹⁰⁵	41.03 ³⁴	7.405 ¹²⁹	29.89 ¹⁶⁶	34.994 ¹⁰⁵	67.94 ²³	45.697 ¹⁶	28.10
28.0	59.246 ¹³⁴	41.37 ²⁵	7.534 ¹⁶⁹	28.23 ¹⁷¹	35.099 ¹³⁵	67.71 ²⁹	45.713 ⁸³	25.07
Aug. 7.0	59.380 ¹⁶²	41.62 ¹⁵	7.703 ²⁰⁸	26.52 ¹⁷⁴	35.234 ¹⁶⁴	67.42 ³⁹	45.796 ¹⁵²	22.04
16.9	59.542 ¹⁸⁸	41.77 ²	7.911 ²⁴⁵	24.78 ¹⁷⁶	35.398 ¹⁹¹	67.03 ⁵¹	45.948 ²¹⁷	19.11
26.9	59.730 ²¹⁴	41.79 ¹⁷	8.156 ²⁷⁹	23.02 ¹⁷⁴	35.589 ²¹⁹	66.52 ⁶²	46.165 ²⁸¹	16.36
Sept. 5.9	59.944 ²³⁶	41.62 ³⁵	8.435 ³¹¹	21.28 ¹⁷²	35.808 ²⁴²	65.90 ⁷⁷	46.446 ³⁴⁰	13.94
15.9	60.180 ²⁵⁹	41.27 ⁵⁵	8.746 ³⁴⁰	19.56 ¹⁶⁴	36.050 ²⁶⁶	65.13 ⁹⁰	46.786 ³⁹²	11.91
25.8	60.439 ²⁷⁸	40.72 ⁷⁷	9.086 ³⁶⁵	17.92 ¹⁵⁸	36.316 ²⁸⁷	64.23 ¹⁰²	47.178 ⁴³⁶	10.38
Oct. 5.8	60.717 ²⁹⁶	39.95 ⁹⁸	9.451 ³⁸⁷	16.34 ¹⁴⁵	36.603 ³⁰⁶	63.21 ¹¹⁶	47.614 ⁴⁷⁰	9.42
15.8	61.013 ³¹⁰	38.97 ¹¹⁸	9.838 ⁴⁰⁷	14.89 ¹³⁰	36.909 ³²⁰	62.05 ¹²⁶	48.084 ⁴⁹²	9.08
25.8	61.323 ³¹⁸	37.79 ¹³⁵	10.245 ⁴¹⁷	13.59 ¹¹⁰	37.229 ³³⁰	60.79 ¹³²	48.576 ⁵⁰¹	9.38
Nov. 4.7	61.641 ³²¹	36.44 ¹⁴⁷	10.662 ⁴²¹	12.49 ⁸⁸	37.559 ³³⁶	59.47 ¹³⁶	49.077 ⁴⁹²	10.36
14.7	61.962 ³¹⁷	34.97 ¹⁵⁵	11.083 ⁴¹⁶	11.61 ⁶²	37.895 ³²¹	58.11 ¹³⁵	49.569 ⁴⁷¹	11.97
24.7	62.279 ³⁰³	33.42 ¹⁵⁵	11.499 ³⁹⁹	10.99 ³²	38.226 ³²¹	56.76 ¹²⁷	50.040 ⁴³³	14.18
Dec. 4.6	62.582 ²⁸³	31.84 ¹⁵⁵	11.898 ³⁷³	10.67 ³	38.547 ²⁹⁸	55.49 ¹¹⁸	50.473 ³⁷⁹	16.92
14.6	62.865 ²⁵²	30.29 ¹⁴⁶	12.271 ³³⁴	10.64 ²⁹	38.845 ²⁶⁹	54.31 ¹⁰³	50.852 ³¹⁶	20.11
24.6	63.117 ²¹⁴	28.83 ¹³⁵	12.605 ²⁸⁴	10.93 ⁶⁰	39.114 ²³⁰	53.28 ⁸³	51.168 ²³⁹	23.64
34.6	63.331	27.48	12.889	11.53	39.344	52.45	51.407	27.38
Mean Place	57.660	42.90	5.535	31.09	33.377	69.73	47.481	20.02
Sec δ , Tan δ	1.014	+0.166	1.378	+0.948	1.055	+0.337	1.955	-1.68
$D\phi a$, $D_m a$	+0.06	+0.01	+0.08	+0.04	+0.07	+0.01	+0.02	-0.06
$D\phi \delta$, $D_m \delta$	-0.2	+0.8	-0.2	+0.8	-0.2	+0.8	-0.2	+0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	30 Monocerotis. Mag. 4.0		θ Chamaeleontis. Mag. 4.3		ο Ursae Majoris. Mag. 3.5		Groombridge 1450. Mag. 6.0	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 8 21	° ' " - 3 37	h m 8 23	° ' " -77 12	h m 8 23	° ' " +60 59	h m 8 27	° ' " +38 17
	s	"	s	"	s	"	s	"
Jan. 0.6	29.879	53.27	14.97	40.53	22.14	53.06	30.374	73.48
10.5	30.065 ¹⁸⁶	55.28 ²⁰¹	15.25 ²⁸	44.31 ³⁷⁸	22.49 ³⁵	54.72 ¹⁶⁶	30.624 ²⁵⁰	73.88 ⁴⁰
20.5	30.206 ¹⁴¹	57.14 ¹⁸⁶	15.34 ⁹	48.20 ³⁸⁹	22.75 ²⁶	56.65 ¹⁹³	30.816 ¹⁹²	74.55 ⁶⁷
30.5	30.296 ⁹⁰	58.82 ¹⁶⁸	15.23 ¹¹	52.09 ³⁸⁹	22.91 ¹⁶	58.78 ²¹³	30.946 ¹³⁰	75.44 ⁸⁹
Feb. 9.5	30.335 ³⁹	60.29 ¹⁴⁷	14.94 ²⁹	55.86 ³⁷⁷	22.96 ⁵	61.01 ²²³	31.012 ⁶⁶	76.49 ¹⁰⁵
19.4	30.327 ⁸	61.51 ¹²²	14.49 ⁴⁵	59.42 ³⁵⁶	22.93 ³	63.24 ²²³	31.014 ²	77.66 ¹¹⁷
29.4	30.274 ⁵³	62.51 ¹⁰⁰	13.88 ⁶¹	62.71 ³²⁹	22.80 ¹³	65.37 ²¹³	30.959 ⁵⁵	78.86 ¹²⁰
Mar. 10.4	30.184 ⁹⁰	63.27 ⁷⁶	13.14 ⁷⁴	65.65 ²⁹⁴	22.60 ²⁰	67.32 ¹⁹⁵	30.853 ¹⁰⁶	80.02 ¹¹⁶
20.4	30.064 ¹²⁰	63.81 ⁵⁴	12.30 ⁸⁴	68.17 ²⁵²	22.33 ²⁷	68.99 ¹⁶⁷	30.707 ¹⁴⁶	81.10 ¹⁰⁸
30.3	29.925 ¹²⁹	64.11 ³⁰	11.37 ⁹³	70.24 ²⁰⁷	22.02 ³¹	70.31 ¹³²	30.531 ¹⁷⁶	82.03 ⁹³
Apr. 9.3	29.773 ¹⁵²	64.22 ¹¹	10.89 ⁹⁸	71.83 ¹⁵⁹	21.67 ³⁵	71.25 ⁹⁴	30.339 ¹⁹²	82.76 ⁷³
19.3	29.620 ¹⁵³	64.14 ⁸	9.38 ¹⁰¹	72.90 ¹⁰⁷	21.31 ³⁶	71.76 ⁵¹	30.141 ¹⁹⁶	83.27 ⁵¹
29.2	29.473 ¹⁴⁷	63.87 ²⁷	8.36 ¹⁰²	73.43 ⁵³	20.96 ³⁵	71.82 ⁶	29.948 ¹⁹³	83.54 ²⁷
May 9.2	29.339 ¹³⁴	63.44 ⁴³	7.36 ¹⁰⁰	73.42 ¹	20.63 ³³	71.45 ³⁷	29.771 ¹⁷⁷	83.58 ⁴
19.2	29.226 ¹¹³	62.85 ⁵⁹	6.41 ⁹⁶	72.89 ⁵³	20.34 ²⁹	70.65 ⁸⁰	29.619 ¹⁵²	83.36 ²²
29.2	29.135 ⁹¹	62.11 ⁷⁴	5.52 ⁸⁹	71.86 ¹⁰³	20.10 ²⁴	69.46 ¹¹⁹	29.497 ¹²²	82.91 ⁴⁵
June 8.1	29.072 ⁶³	61.25 ⁸⁶	4.71 ⁸¹	70.34 ¹⁵²	19.91 ¹⁹	67.93 ¹⁵³	29.410 ⁸⁷	82.25 ⁶⁶
18.1	29.038 ³⁴	60.29 ⁹⁶	4.01 ⁷⁰	68.37 ¹⁹⁷	19.78 ¹³	66.09 ¹⁸⁴	29.360 ⁵⁰	81.40 ⁸⁵
28.1	29.034 ⁴	59.25 ¹⁰⁴	3.44 ⁵⁷	66.03 ²³⁴	19.72 ⁶	63.99 ²¹⁰	29.351 ⁹	80.39 ¹⁰¹
July 8.1	29.061 ²⁷	58.17 ¹⁰⁸	3.00 ⁴⁴	63.36 ²⁶⁷	19.74 ²	61.71 ²²⁸	29.383 ³²	79.21 ¹¹⁸
18.0	29.119 ⁵⁸	57.08 ¹⁰⁹	2.72 ²⁸	60.46 ²⁹⁰	19.82 ⁸	59.26 ²⁴⁵	29.454 ⁷¹	77.93 ¹²⁸
28.0	29.206 ⁸⁷	56.02 ¹⁰⁶	2.60 ¹²	57.40 ³⁰⁶	19.82 ¹⁴	56.73 ²⁵³	29.454 ¹¹⁰	77.93 ¹⁴⁰
Aug. 7.0	29.322 ¹¹⁶	55.04 ⁹⁸	2.64 ⁴	54.29 ³¹¹	20.17 ²¹	54.13 ²⁶⁰	29.564 ¹⁴⁸	76.53 ¹⁴⁶
16.9	29.466 ¹⁴⁴	54.19 ⁸⁵	2.85 ²¹	51.25 ³⁰⁴	20.17 ²⁷	51.56 ²⁵⁷	29.712 ¹⁸²	75.07 ¹⁵³
26.9	29.638 ¹⁷²	53.52 ⁶⁷	3.23 ³⁸	48.35 ²⁹⁰	20.44 ³²	49.02 ²⁵⁴	29.894 ²¹⁷	73.54 ¹⁵⁸
Sept. 5.9	29.835 ¹⁹⁷	53.06 ⁴⁶	3.77 ⁵⁴	45.72 ²⁶³	20.76 ³⁸	49.02 ²⁴⁴	30.111 ²⁴⁹	71.96 ¹⁶¹
15.9	30.069 ²²⁴	52.88 ¹⁸	3.77 ⁶⁸	45.72 ²²⁵	21.14 ⁴⁴	46.58 ²³⁰	30.360 ²⁷⁹	70.35 ¹⁶¹
25.8	30.304 ²⁴⁶	53.00 ¹²	4.45 ⁸¹	43.47 ¹⁷⁹	21.58 ⁴⁸	44.28 ²¹²	30.639 ³⁰⁹	68.74 ¹⁶¹
Oct. 5.8	30.573 ²⁶⁹	53.42 ⁴²	5.26 ⁹¹	41.68 ¹²⁴	22.06 ⁵²	42.16 ¹⁹⁰	30.948 ³³³	67.13 ¹⁵⁷
15.8	30.859 ²⁸⁶	54.18 ⁷⁶	6.17 ⁹⁹	40.44 ⁶³	22.58 ⁵⁵	40.26 ¹⁶³	31.281 ³⁵⁸	65.56 ¹⁵¹
25.8	31.161 ³⁰²	55.27 ¹⁰⁹	7.16 ¹⁰³	39.81 ³	23.13 ⁵⁷	38.63 ¹³²	31.639 ³⁷⁵	64.05 ¹⁴¹
Nov. 4.7	31.472 ³¹¹	55.27 ¹³⁸	8.19 ¹⁰⁴	39.84 ⁶⁸	23.70 ⁵⁹	37.31 ⁹⁸	32.014 ³⁸⁹	62.64 ¹²⁸
14.7	31.786 ³¹⁴	56.65 ¹⁶⁶	9.23 ¹⁰¹	40.52 ¹³⁶	24.29 ⁵⁹	36.33 ⁵⁹	32.403 ³⁹⁵	61.36 ¹⁰⁹
24.7	32.098 ³¹²	58.31 ¹⁸⁷	10.24 ⁹⁵	41.88 ¹⁹⁶	24.88 ⁵⁹	35.74 ¹⁹	32.798 ³⁹³	60.27 ⁸⁸
Dec. 4.6	32.396 ²⁹⁸	60.18 ²⁰¹	11.19 ⁸⁴	43.84 ²⁵³	25.47 ⁵⁶	35.55 ²⁵	33.191 ³⁸⁰	59.39 ⁶³
14.6	32.676 ²⁸⁰	62.19 ²¹²	12.03 ⁷²	46.37 ³⁰²	26.03 ⁵¹	35.80 ⁶⁶	33.571 ³⁵⁷	58.76 ³⁵
24.6	32.924 ²⁴⁸	64.31 ²¹¹	12.75 ⁵⁶	49.39 ³⁴⁰	26.54 ⁴⁶	36.46 ¹⁰⁸	33.928 ³²³	58.41 ⁷
34.6	33.135 ²¹¹	66.42 ²⁰⁷	13.31 ³⁹	52.79 ³⁶⁷	27.00 ⁴⁰	37.54 ¹⁴⁴	34.251 ²⁷⁸	58.34 ²⁴
34.6	33.135 ²¹¹	68.49 ²⁰⁷	13.70 ³⁹	56.46 ³⁶⁷	27.40 ⁴⁰	38.98 ¹⁴⁴	34.529 ²⁷⁸	58.58 ²⁴
Mean Place	27.868	53.80	10.871	50.51	17.919	60.62	27.627	79.40
Sec δ, Tan δ	1.002	-0.063	4.519	-4.407	2.063	+1.804	1.274	+0.790
Dφ α, Dα α	+0.06	0.00	-0.03	-0.17	+0.10	+0.07	+0.08	+0.03
Dφ δ, Dα δ	-0.2	+0.8	-0.2	+0.8	-0.2	+0.8	-0.2	+0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	77 Cancri. Mag. 5.5		Groombridge 1446. Mag. 6.3		δ Hydre. Mag. 4.2		σ Hydre. Mag. 4.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 8 27	° ' " +20 43	h m 8 30	° ' " +73 55	h m 8 33	° ' " + 5 59	h m 8 34	° ' " + 3 37
Jan. 0.6	53.528	34.63	30.80	20.02	14.706	49.25	24.141	72.59
10.6	53.746 ²¹⁸	34.01 ⁶²	31.36 ⁵⁶	22.18 ²¹⁶	14.912 ²⁰⁶	47.73 ¹⁵²	24.345 ²⁰⁴	70.95 ¹⁶⁴
20.5	53.913 ¹⁶⁷	33.60 ⁴¹	31.77 ⁴¹	24.63 ²⁴⁵	15.071 ¹⁵⁹	46.41 ¹³²	24.503 ¹⁵⁸	69.49 ¹⁴⁶
30.5	54.028 ¹¹⁵	33.41 ¹⁹	32.02 ²⁵	27.28 ²⁶⁵	15.179 ¹⁰⁸	45.28 ¹¹⁸	24.612 ¹⁰⁹	68.20 ¹²⁶
Feb. 9.5	54.088 ⁶	33.40 ¹	32.09 ⁷	30.01 ²⁷³	15.237 ⁵⁸	44.37 ⁹¹	24.669 ⁵⁷	67.15 ¹⁰⁵
19.4	54.094 ⁶⁰	33.57 ¹⁷	32.00 ⁹	32.71 ²⁷⁰	15.245 ⁸	43.67 ⁷⁰	24.677 ⁸	66.29 ⁸⁶
29.4	54.052 ⁴²	33.88 ³¹	31.75 ²⁵	35.26 ²⁵⁵	15.206 ³⁹	43.16 ⁵¹	24.639 ³⁸	65.68 ⁶¹
Mar. 10.4	53.967 ⁸⁵	34.27 ³⁹	31.37 ³⁸	37.58 ²³²	15.129 ⁷⁷	42.85 ³¹	24.564 ⁷⁵	65.22 ⁴⁶
20.4	53.849 ¹¹⁸	34.71 ⁴⁴	30.88 ⁴⁹	39.54 ¹⁹⁶	15.019 ¹¹⁰	42.70 ¹⁵	24.455 ¹⁰⁹	64.97 ²⁵
30.3	53.708 ¹⁴¹	35.16 ⁴⁵	30.29 ⁵⁹	41.07 ¹⁵³	14.889 ¹³⁰	42.70 ⁰	24.325 ¹³⁰	64.88 ⁹
Apr. 9.3	53.552 ¹⁵⁶	35.59 ⁴³	29.65 ⁶⁴	42.13 ¹⁰⁶	14.744 ¹⁴⁵	42.81 ¹¹	24.184 ¹⁴¹	64.94 ⁶
19.3	53.393 ¹⁵⁹	35.97 ³⁸	28.98 ⁶⁷	42.68 ⁵⁵	14.596 ¹⁴⁸	43.02 ²¹	24.037 ¹⁴⁷	65.11 ¹⁷
29.3	53.239 ¹⁵⁴	36.30 ³³	28.31 ⁶⁷	42.69 ¹	14.453 ¹⁴³	43.32 ³⁰	23.893 ¹⁴⁴	65.41 ³⁰
May 9.2	53.099 ¹⁴⁰	36.54 ²⁴	27.68 ⁶³	42.18 ⁵¹	14.320 ¹³³	43.69 ³⁷	23.761 ¹³²	65.79 ³⁸
19.2	52.980 ¹¹⁹	36.71 ¹⁷	27.09 ⁵⁹	41.17 ¹⁰¹	14.207 ¹¹³	44.13 ⁴⁴	23.646 ¹¹⁵	66.27 ⁴⁸
29.2	52.886 ⁹⁴	36.81 ¹⁰	26.58 ⁵¹	39.69 ¹⁴⁸	14.116 ⁹¹	44.62 ⁴⁹	23.553 ⁹³	66.82 ⁵⁵
June 8.1	52.822 ⁶⁴	36.82 ¹	26.16 ⁴²	37.80 ¹⁸⁹	14.052 ⁶⁴	45.16 ⁵⁴	23.488 ⁶⁵	67.41 ⁵⁹
18.1	52.789 ³³	36.76 ⁶	25.86 ³⁰	35.53 ²²⁷	14.014 ³⁸	45.72 ⁵⁶	23.450 ³⁸	68.07 ⁶⁶
28.1	52.788 ³	36.63 ¹³	25.66 ²⁰	32.97 ²⁵⁶	14.009 ⁵	46.29 ⁵⁷	23.439 ¹¹	68.75 ⁶⁸
July 8.1	52.822 ³⁴	36.42 ²¹	25.58 ⁸	30.16 ²⁸¹	14.032 ²³	46.86 ⁵⁷	23.462 ²³	69.43 ⁶⁶
18.0	52.887 ⁶⁵	36.14 ²⁸	25.62 ⁴	27.20 ²⁹⁶	14.085 ⁵⁸	47.40 ⁵⁴	23.511 ⁴⁹	70.10 ⁶⁷
28.0	52.984 ⁹⁷	35.77 ³⁷	25.79 ¹⁷	24.12 ³⁰⁸	14.167 ⁸²	47.88 ⁴⁸	23.592 ⁸¹	70.74 ⁶⁴
Aug. 7.0	53.112 ¹²⁸	35.33 ⁴⁴	26.07 ²⁸	21.02 ³¹⁰	14.278 ¹¹¹	48.29 ⁴¹	23.699 ¹⁰⁷	71.26 ⁵²
17.0	53.270 ¹⁶⁸	34.78 ⁵⁵	26.47 ⁴⁰	17.94 ³⁰⁸	14.417 ¹³⁹	48.58 ²⁹	23.836 ¹³⁷	71.68 ⁴²
26.9	53.454 ¹⁸⁴	34.11 ⁶⁷	26.97 ⁵⁰	14.95 ²⁹⁹	14.584 ¹⁶⁷	48.72 ¹⁴	23.999 ¹⁶³	71.95 ²⁷
Sept. 5.9	53.667 ²¹³	33.34 ⁷⁷	27.58 ⁶¹	12.09 ²⁸⁶	14.776 ¹⁹²	48.67 ⁵	24.192 ¹⁹³	72.01 ⁶
15.9	53.905 ²³⁸	32.45 ⁸⁹	28.27 ⁶⁹	9.44 ²⁶⁵	14.995 ²¹⁹	48.42 ²⁵	24.409 ²¹⁷	71.86 ¹⁵
25.8	54.168 ²⁶³	31.43 ¹⁰²	29.04 ⁷⁷	7.03 ²⁴¹	15.237 ²⁴²	47.92 ⁵⁰	24.647 ²³⁸	71.45 ⁴¹
Oct. 5.8	54.453 ²⁸⁵	30.28 ¹¹⁵	29.90 ⁸⁶	4.94 ²⁰⁹	15.502 ²⁶⁵	47.20 ⁷²	24.911 ²⁶⁴	70.80 ⁶⁵
15.8	54.760 ³⁰⁷	29.03 ¹²⁵	30.80 ⁹⁰	3.20 ¹⁷⁴	15.789 ²⁸⁷	46.21 ⁹⁹	25.195 ²⁸⁴	69.87 ⁹³
25.8	55.082 ³²²	27.71 ¹³²	31.74 ⁹⁴	1.86 ¹³⁴	16.091 ³⁰²	45.01 ¹²⁰	25.496 ³⁰¹	68.69 ¹¹⁸
Nov. 4.7	55.416 ³³⁴	26.33 ¹³⁸	32.71 ⁹⁷	0.96 ⁹⁰	16.406 ³¹⁵	43.58 ¹⁴³	25.810 ³¹⁴	67.27 ¹⁴²
14.7	55.756 ³⁴⁰	24.94 ¹³⁹	33.70 ⁹⁹	0.52 ⁴⁴	16.726 ³²⁰	42.00 ¹⁵⁸	26.129 ³¹⁹	65.66 ¹⁶¹
24.7	56.096 ³⁴⁰	23.59 ¹³⁵	34.65 ⁹⁵	0.58 ⁶	17.047 ³²¹	40.30 ¹⁷⁰	26.448 ³¹⁹	63.91 ¹⁷⁵
Dec. 4.7	56.424 ³²⁸	22.32 ¹²⁷	35.57 ⁹²	1.14 ⁵⁶	17.357 ³¹⁰	38.53 ¹⁷⁷	26.758 ³¹⁰	62.07 ¹⁸⁴
14.6	56.733 ³⁰⁹	19.47 ¹¹²	37.80 ⁸⁵	5.65 ¹⁰⁶	18.142 ²⁹²	33.45 ¹⁷⁷	27.539 ²⁸⁹	56.66 ¹⁸⁶
24.6	57.013 ²⁸⁰	20.23 ⁹⁷	37.18 ⁷⁶	3.71 ¹⁵²	17.915 ²⁶⁶	35.05 ¹⁷¹	27.312 ²⁶⁵	58.38 ¹⁸³
34.6	57.254 ²⁴¹	19.47 ⁷⁶	37.80 ⁶²	5.65 ¹⁹⁴	18.142 ²²⁷	33.45 ¹⁶⁰	27.539 ²²⁷	56.66 ¹⁷²
Mean Place	51.235	38.24	23.950	28.86	12.642	50.75	22.106	73.72
Sec δ, Tan δ	1.069	+0.378	3.611	+3.470	1.005	+0.105	1.002	+0.064
Dψ α, Dω α	+0.07	+0.02	+0.13	+0.14	+0.06	0.00	+0.06	0.00
Dψ δ, Dω δ	-0.2	+0.8	-0.2	+0.8	-0.2	+0.8	-0.2	+0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Cancri. Mag. 4.7		δ Cancri. Mag. 4.2		α Pyxidis. Mag. 3.7		ι Cancri. Mag. 4.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 8 38	° ' " +21 45	h m 8 39	° ' " +18 27	h m 8 40	° ' " -32 52	h m 8 41	° ' " +29 3
Jan. 0.6	27.956	72.59	57.058	45.64	14.855	53.49	39.525	58.89
10.6	28.185	71.97	57.283	44.81	15.053	56.78	39.769	58.68
20.5	28.364	71.58	57.460	44.22	15.199	60.06	39.962	58.73
30.5	28.490	71.42	57.586	43.84	15.287	63.24	40.097	59.02
Feb. 9.5	28.561	71.47	57.657	43.68	15.319	66.23	40.176	59.51
19.4	28.580	71.71	57.675	43.71	15.297	68.98	40.197	60.17
29.4	28.549	72.07	57.644	43.89	15.225	71.43	40.164	60.94
Mar. 10.4	28.471	72.52	57.571	44.18	15.109	73.54	40.085	61.75
20.4	28.359	73.03	57.462	44.56	14.960	75.28	39.968	62.57
30.3	28.222	73.55	57.330	44.97	14.784	76.62	39.823	63.33
Apr. 9.3	28.070	74.05	57.182	45.39	14.593	77.57	39.659	63.99
19.3	27.912	74.50	57.029	45.79	14.396	78.10	39.490	64.53
29.3	27.758	74.87	56.878	46.15	14.199	78.22	39.324	64.93
May 9.2	27.615	75.15	56.739	46.45	14.012	77.93	39.169	65.16
19.2	27.491	75.33	56.619	46.69	13.842	77.24	39.034	65.23
29.2	27.391	75.43	56.522	46.87	13.692	76.19	38.924	65.14
June 8.1	27.319	75.43	56.452	46.99	13.569	74.80	38.843	64.89
18.1	27.277	75.34	56.410	47.03	13.476	73.11	38.794	64.40
28.1	27.268	75.17	56.401	47.01	13.414	71.16	38.779	63.96
July 8.1	27.291	74.89	56.423	46.92	13.387	69.01	38.798	63.30
18.0	27.346	74.54	56.475	46.75	13.394	66.73	38.851	62.53
28.0	27.432	74.09	56.559	46.48	13.437	64.38	38.939	61.66
Aug. 7.0	27.550	73.55	56.673	46.13	13.517	62.05	39.060	60.68
17.0	27.697	72.90	56.815	45.67	13.634	59.83	39.212	59.61
26.9	27.874	72.14	56.986	45.09	13.788	57.80	39.395	58.43
Sept. 5.9	28.078	71.27	57.185	44.37	13.977	56.04	39.608	57.18
15.9	28.309	70.28	57.410	43.51	14.201	54.62	39.849	55.84
25.8	28.567	69.16	57.661	42.50	14.458	53.64	40.118	54.44
Oct. 5.8	28.847	67.93	57.935	41.35	14.744	53.13	40.413	52.98
15.8	29.150	66.60	58.233	40.07	15.056	53.17	40.730	51.49
25.8	29.470	65.20	58.547	38.69	15.387	53.74	41.069	50.00
Nov. 4.7	29.805	63.76	58.876	37.23	15.732	54.85	41.422	48.54
14.7	30.148	62.32	59.213	35.73	16.081	56.49	41.784	47.17
24.7	30.491	60.92	59.551	34.25	16.427	58.62	42.146	45.92
Dec. 4.7	30.826	59.62	59.880	32.83	16.757	61.15	42.500	44.84
14.6	31.142	58.48	60.191	31.52	17.062	64.01	42.836	43.97
24.6	31.432	57.49	60.477	30.38	17.334	67.13	43.142	43.34
34.6	31.683	56.68	60.725	29.43	17.561	70.38	43.411	42.96
Mean Place	25.678	76.99	54.842	49.59	12.973	58.79	37.098	64.64
Sec δ, Tan δ	1.077	+0.399	1.054	+0.334	1.191	-0.647	1.144	+0.556
Dφ α, D _ω α	+0.07	+0.02	+0.07	+0.01	+0.05	-0.03	+0.07	+0.02
Dφ δ, D _ω δ	-0.3	+0.8	-0.3	+0.8	-0.3	+0.8	-0.3	+0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Hydræ. Mag. 3.5		δ Argus. Mag. 2.0		σ² Cancri (mean). Mag. 5.5		ζ Hydræ. Mag. 3.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 8 42 s	° ' " + 6 43 "	h m 8 42 s	° ' " -54 23 "	h m 8 49 s	° ' " +30 53 "	h m 8 50 s	° ' " + 6 15 "
Jan. 0.6	21.804	38.05	24.956	52.76	9.867	47.45	59.342	55.13
10.6	22.017 ²¹³	36.55 ¹⁵⁰	25.176 ²²⁰	56.51 ³⁷⁵	10.121 ²⁵⁴	47.31 ¹⁴	59.563 ²²¹	53.58 ¹⁵⁵
20.5	22.185 ¹⁶⁸	35.23 ¹³²	25.322 ¹⁴⁶	60.34 ³⁸³	10.324 ²⁰⁸	47.44 ¹³	59.739 ¹⁷⁶	52.21 ¹⁵⁷
30.5	22.304 ¹¹⁹	34.12 ¹¹¹	25.392 ⁷⁰	64.14 ³⁸⁰	10.471 ¹⁴⁷	47.82 ³⁸	59.865 ¹²⁶	51.06 ¹¹⁵
Feb. 9.5	22.371 ⁶⁷	33.22 ⁹⁰	25.384 ⁸	67.82 ³⁶⁸	10.558 ⁸⁷	48.41 ⁵⁹	59.941 ⁷⁶	50.12 ⁹⁴
19.5	22.388 ¹⁷	32.55 ⁶⁷	25.305 ⁷⁹	71.27 ³⁴⁵	10.588 ³⁰	49.18 ⁷⁷	59.966 ²⁵	49.41 ⁷¹
29.4	22.359 ²⁹	32.08 ⁴⁷	25.159 ¹⁴⁶	74.44 ³¹⁷	10.563 ²⁵	50.04 ⁸⁶	59.944 ²²	48.90 ⁵¹
Mar. 10.4	22.289 ⁷⁰	31.80 ²⁸	24.956 ²⁰³	77.26 ²⁸²	10.489 ⁷⁴	50.97 ⁹³	59.881 ⁶³	48.59 ³¹
20.4	22.188 ¹⁰¹	31.67 ¹³	24.706 ²⁵⁰	79.66 ²⁴⁰	10.376 ¹¹³	51.88 ⁹¹	59.786 ⁹⁵	48.45 ¹⁴
30.3	22.061 ¹²⁷	31.68 ¹	24.420 ²⁸⁶	81.61 ¹⁹⁵	10.233 ¹⁴³	52.74 ⁸⁶	59.664 ¹²²	48.45 ¹⁰
Apr. 9.3	21.921 ¹⁴⁰	31.82 ¹⁴	24.109 ³¹¹	83.09 ¹⁴⁸	10.070 ¹⁶³	53.48 ⁷⁴	59.528 ¹³⁶	48.57 ¹²
19.3	21.775 ¹⁴⁶	32.06 ²⁴	23.786 ³²³	84.08 ⁹⁹	9.899 ¹⁷¹	54.10 ⁶²	59.385 ¹⁴³	48.81 ²⁴
29.3	21.631 ¹⁴⁴	32.37 ³¹	23.461 ³²⁵	84.54 ⁴⁶	9.729 ¹⁷⁰	54.55 ⁴⁵	59.243 ¹⁴²	49.12 ³¹
May 9.2	21.498 ¹³³	32.74 ³⁷	23.145 ³¹⁶	84.50 ⁴	9.570 ¹⁵⁹	54.81 ²⁶	59.110 ¹³³	49.50 ³⁸
19.2	21.382 ¹¹⁶	33.17 ⁴³	22.846 ²⁹⁹	83.97 ⁵³	9.429 ¹⁴¹	54.90 ⁹	58.993 ¹¹⁷	49.94 ⁴⁴
29.2	21.287 ⁹⁵	33.64 ⁴⁷	22.572 ²⁷⁴	82.94 ¹⁰³	9.312 ¹¹⁷	54.79 ¹¹	58.896 ⁹⁷	50.42 ⁴⁸
June 8.2	21.218 ⁶⁹	34.14 ⁵⁰	22.332 ²⁴⁰	81.47 ¹⁴⁷	9.223 ⁸⁹	54.50 ²⁹	58.823 ⁷³	50.93 ⁵¹
18.1	21.175 ⁴³	34.67 ⁵³	22.129 ²⁰³	79.59 ¹⁸⁸	9.166 ⁵⁷	54.06 ⁴⁴	58.775 ⁴⁸	51.47 ⁵⁴
28.1	21.162 ¹³	35.20 ⁵³	21.972 ¹⁵⁷	77.35 ²²⁴	9.143 ²³	53.45 ⁶¹	58.756 ¹⁹	52.01 ⁵⁴
July 8.1	21.178 ¹⁶	35.71 ⁵¹	21.863 ¹⁰⁹	74.80 ²⁵⁵	9.155 ¹²	52.71 ⁷⁴	58.764 ⁸	52.54 ⁵³
18.0	21.224 ⁴⁶	36.20 ⁴⁹	21.806 ⁵⁷	72.06 ²⁷⁴	9.201 ⁴⁶	51.84 ⁸⁷	58.802 ³⁸	53.04 ⁵⁰
28.0	21.299 ⁷⁵	36.62 ⁴²	21.805 ¹	69.17 ²⁸⁹	9.282 ⁸¹	50.85 ⁹⁹	58.869 ⁶⁷	53.47 ⁴³
Aug. 7.0	21.401 ¹⁰²	36.96 ³⁴	21.861 ⁵⁶	66.24 ²⁹³	9.396 ¹¹⁴	49.74 ¹¹¹	58.962 ⁹³	53.82 ³⁵
17.0	21.533 ¹³²	37.17 ²¹	21.973 ¹¹¹	63.37 ²⁸⁷	9.541 ¹⁴⁵	48.53 ¹²¹	59.085 ¹²¹	54.04 ²²
26.9	21.692 ¹⁵⁹	37.24 ⁷	22.144 ¹⁷²	60.67 ²⁷⁰	9.719 ¹⁷⁸	47.23 ¹³⁰	59.236 ¹⁵³	54.13 ⁹
Sept. 5.9	21.877 ¹⁸⁵	37.14 ¹⁰	22.373 ²²⁹	58.23 ²⁴⁴	9.928 ²⁰⁹	45.85 ¹³⁸	59.236 ¹⁷⁷	54.13 ¹¹
15.9	22.089 ²¹²	36.82 ³²	22.655 ²⁸²	56.16 ²⁰⁷	9.928 ²³⁸	45.85 ¹⁴⁶	59.413 ²⁰⁵	54.02 ³²
25.9	22.325 ²³⁶	36.28 ⁵⁴	22.989 ³³⁴	54.56 ¹⁶⁰	10.166 ²⁶⁸	44.39 ¹⁵²	59.618 ²²⁹	53.70 ⁵³
Oct. 5.8	22.586 ²⁶¹	35.49 ⁷⁹	22.989 ³⁷⁶	53.48 ¹⁰⁸	10.434 ²⁶⁸	42.87 ¹⁵²	59.847 ²⁵⁶	53.17 ⁷⁹
15.8	22.868 ²⁸²	34.48 ¹⁰¹	23.365 ⁴¹²	53.00 ⁴⁸	10.728 ²⁹⁴	41.31 ¹⁵⁶	60.103 ²⁷⁷	52.33 ¹⁰³
25.8	23.169 ³⁰¹	33.23 ¹²⁵	23.777 ⁴³⁹	53.00 ¹⁴	11.047 ³¹⁹	39.73 ¹⁵⁶	60.380 ²⁹⁹	51.35 ¹²⁶
Nov. 4.7	23.169 ³¹³	33.23 ¹⁴⁴	24.216 ⁴⁵⁴	53.14 ⁸⁰	11.387 ³⁵⁷	38.17 ¹⁵²	60.679 ³¹³	50.09 ¹⁴⁶
14.7	23.482 ³²¹	31.79 ¹⁶¹	24.670 ⁴⁵⁶	53.94 ¹⁴⁴	11.744 ³⁶⁷	36.65 ¹⁴¹	60.992 ³²²	48.63 ¹⁶⁴
24.7	23.803 ³²³	30.18 ¹⁷²	25.126 ⁴⁴³	55.38 ²⁰³	12.111 ³⁶⁹	35.24 ¹²⁷	61.314 ³²⁴	46.99 ¹⁷⁵
Dec. 4.7	24.126 ³¹⁴	28.46 ¹⁷⁸	25.569 ⁴¹⁹	57.41 ²⁵⁷	12.480 ³⁶¹	33.97 ¹⁰⁸	61.638 ³¹⁸	45.24 ¹⁸²
14.6	24.440 ²⁹⁷	26.68 ¹⁷⁷	25.988 ³⁷⁹	59.98 ³⁰⁴	12.841 ³⁴⁵	32.89 ⁸⁶	61.956 ³⁰²	43.42 ¹⁸¹
24.6	24.737 ²⁷¹	24.91 ¹⁷¹	26.367 ³²⁵	63.02 ³⁴⁰	13.186 ³¹⁶	32.03 ⁵⁹	62.258 ²⁷⁷	41.61 ¹⁷⁶
34.6	25.008 ²³⁷	23.20 ¹⁵⁹	26.692 ²⁶³	66.42 ³⁶⁴	13.502 ²⁷⁹	31.44 ³¹	62.535 ²⁴³	39.85 ¹⁶⁵
34.6	25.245 ²³⁷	21.61 ¹⁵⁹	26.955 ²⁶³	70.06 ³⁶⁴	13.781 ²⁷⁹	31.13 ³¹	62.778 ²⁴³	38.20 ¹⁶⁵
Mean Place	19.761	40.04	22.850	61.33	7.423	54.01	57.329	57.40
Sec δ, Tan δ	1.007	+0.118	1.718	-1.397	1.166	+0.598	1.006	+0.110
Dφ α, Dω α	+0.06	+0.01	+0.03	-0.06	+0.07	+0.03	+0.06	0.00
Dφ δ, Dω δ	-0.3	+0.8	-0.3	+0.8	-0.3	+0.7	-0.3	+0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♌ Ursæ Majoris. Mag. 3.1		♋ Cancrī. Mag. 4.3		♌ Carinæ. Mag. 5.1		♋ Ursæ Majoris. Mag. 3.7	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 8 53	° ' +48 21	h m 8 53	° ' +12 10	h m 8 54	° ' -58 54	h m 8 57	° ' +47 28
Jan. 0.6	30.912	70.93	55.784	57.20	57.177	8.27	56.897	72.81
10.6	31.225 ³¹³	71.72 ⁷⁹	56.013 ²²⁹	55.97 ¹²³	57.431 ²⁵⁴	12.03 ³⁷⁶	57.211 ³¹⁴	73.52 ⁷¹
20.5	31.474 ²⁴⁹	72.84 ¹¹²	56.197 ¹⁸⁴	54.94 ¹⁰³	57.604 ¹⁷³	15.90 ³⁸⁷	57.464 ²⁵³	74.57 ¹⁰⁵
30.5	31.651 ¹⁷⁷	74.22 ¹³⁸	56.332 ¹³⁵	54.14 ⁸⁰	57.693 ⁸⁹	19.79 ³⁸⁹	57.647 ¹⁸³	75.89 ¹³²
Feb. 9.5	31.754 ¹⁰³	75.81 ¹⁵⁹	56.414 ⁸²	53.56 ⁵⁸	57.696 ³	23.59 ³⁸⁰	57.757 ¹¹⁰	77.43 ¹⁵⁴
19.5	31.785 ³¹	77.52 ¹⁷¹	56.444 ³⁰	53.20 ³⁶	57.619 ⁷⁷	27.21 ³⁶²	57.794 ³⁷	79.11 ¹⁶⁸
29.4	31.744 ⁴¹	79.27 ¹⁷⁵	56.427 ¹⁷	53.03 ¹⁷	57.466 ¹⁵³	30.56 ³³⁵	57.762 ³²	80.83 ¹⁷²
Mar. 10.4	31.641 ¹⁰³	80.96 ¹⁶⁹	56.367 ⁶⁰	53.03 ⁰	57.249 ²¹⁷	33.58 ³⁰²	57.667 ⁹⁵	82.51 ¹⁶⁸
20.4	31.485 ¹⁵⁶	82.52 ¹⁵⁶	56.273 ⁹⁴	53.15 ¹²	56.980 ²⁶⁹	36.21 ²⁶³	57.521 ¹⁴⁶	84.09 ¹⁵⁸
30.4	31.290 ¹⁹⁵	83.89 ¹⁹⁷	56.152 ¹²¹	53.39 ²⁴	56.663 ³¹⁷	38.41 ²²⁰	57.334 ¹⁸⁷	85.47 ¹³⁸
Apr. 9.3	31.066 ²²⁴	84.99 ¹¹⁰	56.016 ¹³⁶	53.68 ²⁹	56.316 ³⁴⁷	40.12 ¹⁷¹	57.119 ²¹⁵	86.60 ¹¹³
19.3	30.829 ²³⁷	85.78 ⁷⁹	55.871 ¹⁴⁵	54.02 ³⁴	55.952 ³⁶⁴	41.36 ¹²⁴	56.890 ²²⁹	87.44 ⁸⁴
29.3	30.591 ²³⁸	86.26 ⁴⁸	55.728 ¹⁴³	54.39 ³⁷	55.583 ³⁰⁹	42.06 ⁷⁰	56.659 ²³¹	87.96 ⁵²
May 9.2	30.363 ²²⁸	86.38 ¹²	55.593 ¹³⁵	54.77 ³⁸	55.217 ³⁶⁶	42.25 ¹⁹	56.437 ²²²	88.14 ¹⁸
19.2	30.157 ²⁰⁶	86.16 ²²	55.475 ¹¹⁸	55.15 ³⁸	54.866 ³⁵¹	41.93 ³²	56.235 ²⁰²	87.98 ¹⁶
29.2	29.981 ¹⁴²	85.60 ⁵⁶	55.376 ⁹⁹	55.50 ³⁵	54.539 ³²⁷	41.10 ⁸³	56.061 ¹⁷⁴	87.50 ⁴⁸
June 8.2	29.839 ¹⁰¹	84.74 ⁸⁶	55.301 ⁷⁵	55.84 ³⁴	54.244 ²⁹⁵	39.78 ¹³²	55.921 ¹⁴⁰	86.70 ⁸⁰
18.1	29.738 ⁵⁷	83.58 ¹¹⁸	55.252 ⁴⁹	56.16 ³²	53.989 ²⁵⁵	38.04 ¹⁷⁴	55.820 ¹⁰¹	85.60 ¹¹⁰
28.1	29.681 ¹²	82.17 ¹⁴¹	55.232 ²⁰	56.43 ²⁷	53.781 ²⁰⁸	35.90 ²¹⁴	55.761 ⁵⁹	84.26 ¹³⁴
July 8.1	29.669 ³³	80.54 ¹⁶³	55.240 ⁸	56.65 ²²	53.625 ¹⁵⁶	33.43 ²⁴⁷	55.746 ¹⁵	82.69 ¹⁵⁷
18.1	29.702 ¹⁸¹	78.73 ¹⁸¹	55.278 ³⁸	56.82 ¹⁷	53.526 ⁹⁹	30.71 ²⁷²	55.775 ²⁹	80.94 ¹⁷⁵
28.0	29.781 ⁷⁹	76.77 ¹⁹⁶	55.346 ⁶⁸	56.91 ⁹	53.489 ³⁷	27.80 ²⁹¹	55.848 ⁷³	79.02 ¹⁹²
Aug. 7.0	29.905 ¹²⁴	74.68 ²⁰⁹	55.441 ⁹⁵	56.90 ¹	53.516 ²⁷	24.83 ²⁹⁷	55.966 ¹¹⁸	76.99 ²⁰³
17.0	30.073 ¹⁶⁸	72.52 ²¹⁶	55.565 ¹²⁴	56.78 ¹²	53.609 ⁹³	21.88 ²⁹⁵	56.126 ¹⁸⁰	74.85 ²¹⁴
26.9	30.282 ²⁰⁹	70.32 ²²⁰	55.717 ¹⁵²	56.51 ²⁷	53.770 ¹⁶¹	19.06 ²⁸²	56.327 ²⁰¹	72.67 ²¹⁸
Sept. 5.9	30.533 ²⁵¹	68.10 ²²²	55.896 ¹⁷⁹	56.08 ⁴³	53.996 ²²⁶	16.47 ²⁵⁹	56.569 ²⁴²	70.47 ²²⁰
15.9	30.822 ²⁸⁹	65.90 ²²⁰	56.103 ²⁰⁷	55.46 ⁶²	54.288 ²⁹²	14.21 ²²⁶	56.849 ²⁸⁰	68.27 ²²⁰
25.9	31.148 ³²⁶	63.77 ²¹³	56.335 ²³²	54.66 ⁸⁰	54.638 ³⁵⁰	12.40 ¹⁸¹	57.167 ³¹⁸	66.12 ²¹⁵
Oct. 5.8	31.509 ³⁶¹	61.72 ²⁰⁵	56.594 ²⁵⁹	53.67 ⁹⁹	55.042 ⁴⁰⁴	11.09 ¹³¹	57.519 ³⁵²	64.06 ²⁰⁶
15.8	31.902 ³⁹³	59.81 ¹⁹¹	56.875 ²⁸¹	52.47 ¹²⁰	55.489 ⁴⁴⁷	10.39 ⁷⁰	57.904 ³⁸⁵	62.12 ¹⁹⁴
25.8	32.320 ⁴¹⁸	58.09 ¹⁷²	57.178 ³⁰³	51.11 ¹³⁶	55.969 ⁴⁸⁰	10.31 ⁸	58.315 ⁴¹¹	60.35 ¹⁷⁷
Nov. 4.8	32.760 ⁴⁴⁰	56.58 ¹⁵¹	57.496 ³¹⁸	49.59 ¹⁵²	56.469 ⁵⁰⁰	10.89 ⁵⁸	58.746 ⁴³¹	58.80 ¹⁵⁵
14.7	33.212 ⁴⁵²	55.36 ¹²²	57.824 ³²⁸	47.97 ¹⁶²	56.975 ⁵⁰⁶	12.12 ¹²³	59.193 ⁴⁴⁷	57.51 ¹²⁹
24.7	33.666 ⁴⁵⁴	54.44 ⁹²	58.155 ³³¹	46.30 ¹⁶⁷	57.469 ⁴⁹⁴	13.97 ¹⁸⁵	59.643 ⁴⁵⁰	56.53 ⁹⁸
Dec. 4.7	34.111 ⁴⁴⁵	53.88 ⁵⁶	58.480 ³²⁵	44.63 ¹⁶⁷	57.938 ⁴⁶⁹	16.38 ²⁴¹	60.084 ⁴⁴¹	55.89 ⁶⁴
14.6	34.536 ⁴²⁵	53.69 ¹⁹	58.789 ³⁰⁹	43.02 ¹⁶¹	58.365 ⁴²⁷	19.31 ²⁹³	60.507 ⁴²³	55.62 ²⁷
24.6	34.925 ³⁸⁹	53.88 ¹⁹	59.075 ²⁸⁶	41.51 ¹⁵¹	58.734 ³⁶⁹	22.63 ³³²	60.896 ³⁸⁹	55.74 ¹²
34.6	35.268 ³⁴³	54.45 ⁵⁷	59.327 ²⁵²	40.16 ¹³⁵	59.037 ³⁰³	26.24 ³⁶¹	61.240 ³⁴⁴	56.22 ⁴⁸
Mean Place	27.836	80.25	53.709	60.76	55.031	17.78	53.888	82.42
Sec δ, Tan δ	1.505	+1.125	1.023	+0.216	1.936	-1.658	1.480	+1.091
D _δ α, D _α α	+0.08	+0.05	+0.07	+0.01	+0.03	-0.08	+0.08	+0.05
D _δ δ, D _α δ	-0.3	+0.7	-0.3	+0.7	-0.3	+0.7	-0.3	+0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	σ^2 Ursae Majoris. Mag. 4.9		κ Cancri. Mag. 5.1		λ Argus. Mag. 2.2		θ Hydræ. Mag. 3.8	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 9 3	° ' +67 28	h m 9 3	° ' +11 0	h m 9 4	° ' -43 5	h m 9 9	° ' + 2 39
	s	"	s	"	s	"	s	"
Jan. 0.6	6.20	24.03	13.998	21.11	56.174	27.97	61.644	67.40
10.6	6.69 ⁴⁹	25.65 ¹⁶²	14.234 ²³⁶	19.77 ¹³⁴	56.409 ²³⁵	31.49 ³⁵²	61.880 ²⁸⁶	65.59 ¹⁸¹
20.6	7.09 ⁴⁰	27.65 ²⁰⁰	14.425 ¹⁹¹	18.65 ¹¹²	56.587 ¹⁷⁸	35.07 ³⁵⁶	62.071 ¹⁹¹	63.96 ¹⁶³
30.5	7.37 ²⁸	29.93 ²²⁸	14.567 ¹⁴²	17.75 ⁹⁰	56.702 ¹¹⁵	38.64 ³⁵⁷	62.214 ¹⁴³	62.52 ¹⁴⁴
Feb. 9.5	7.51 ¹⁴	32.40 ²⁴⁷	14.657 ⁹⁰	17.08 ⁶⁷	56.754 ⁵²	42.07 ³⁴²	62.306 ⁹²	61.32 ¹²⁰
19.5	7.55 ⁴	34.95 ²⁵⁵	14.697 ⁴⁰	16.63 ⁴⁵	56.745 ⁹	45.32 ³²⁵	62.348 ⁴²	60.34 ⁹⁸
29.4	7.46 ⁹	37.47 ²⁵²	14.688 ⁹	16.39 ²⁴	56.879 ⁶⁶	48.30 ²⁰⁸	62.344 ⁴	59.60 ⁷⁴
Mar. 10.4	7.27 ¹⁹	39.86 ²³⁹	14.637 ⁵¹	16.32 ⁷	56.563 ¹¹⁶	50.94 ²⁰⁴	62.298 ⁴⁶	59.07 ⁵³
20.4	6.97 ³⁶	42.00 ²¹⁴	14.550 ⁸⁷	16.40 ⁸	56.405 ¹⁵⁸	53.22 ²²⁸	62.217 ⁸¹	58.74 ³³
30.4	6.61 ³⁰	43.81 ¹⁸¹	14.436 ¹¹⁴	16.59 ¹⁹	56.215 ¹⁹⁰	55.10 ¹⁸⁸	62.109 ¹⁰⁸	58.60 ¹¹⁴
Apr. 9.3	6.19 ⁴²	45.24 ¹⁴³	14.305 ¹³¹	16.87 ²⁸	56.001 ²¹⁴	56.54 ¹⁴⁴	61.983 ¹²⁶	58.60 ⁰
19.3	5.74 ⁴⁵	46.21 ⁹⁷	14.164 ¹⁴¹	17.21 ³⁴	55.776 ²²⁵	57.53 ⁹⁹	61.847 ¹³⁶	58.75 ¹⁵
29.3	5.28 ⁴⁶	46.70 ⁴⁹	14.023 ¹⁴¹	17.59 ³⁸	55.545 ²³¹	58.07 ⁵⁴	61.710 ¹³⁷	59.02 ²⁷
May 9.3	4.83 ⁴⁵	46.68 ²	13.889 ¹³⁴	17.99 ⁴⁰	55.318 ²²⁷	58.15 ⁸	61.579 ¹³¹	59.39 ³⁷
19.2	4.40 ⁴³	46.19 ⁴⁹	13.770 ¹¹⁹	18.39 ⁴⁰	55.103 ²¹⁵	57.76 ³⁹	61.460 ¹¹⁹	59.84 ⁴⁵
29.2	4.02 ³⁸	45.24 ⁹⁵	13.668 ¹⁰²	18.79 ⁴⁰	54.905 ¹⁹⁸	56.94 ⁸²	61.357 ¹⁰³	59.84 ⁵³
June 8.2	3.70 ³²	43.84 ¹⁴⁰	13.589 ⁷⁹	19.17 ³⁸	54.731 ¹⁷⁴	55.70 ¹²⁴	61.275 ⁸²	60.37 ⁵⁶
18.1	3.44 ²⁶	42.04 ¹⁸⁰	13.534 ⁵⁵	19.53 ³⁶	54.585 ¹⁴⁶	54.09 ¹⁶¹	61.217 ⁵⁸	60.95 ⁶³
28.1	3.26 ¹⁸	39.90 ²¹⁴	13.507 ²⁷	19.86 ³³	54.471 ¹¹⁴	52.16 ¹⁹³	61.184 ³³	61.58 ⁶⁶
July 8.1	3.15 ¹¹	37.48 ²⁴²	13.507 ⁰	20.14 ²⁸	54.392 ⁷⁹	49.93 ²²³	61.176 ⁸	62.24 ⁶⁶
18.1	3.12 ³	34.82 ²⁶⁶	13.536 ²⁹	20.34 ²⁰	54.352 ⁴⁰	47.51 ²⁴²	61.197 ²¹	62.90 ⁶⁴
28.0	3.17 ⁵	31.98 ²⁸⁴	13.594 ⁵⁸	20.48 ¹⁴	54.350 ²	44.94 ²⁶⁷	61.244 ⁴⁷	63.54 ⁵⁹
Aug. 7.0	3.32 ¹⁵	29.03 ²⁹⁵	13.679 ⁸⁵	20.53 ⁵	54.392 ⁴²	42.33 ²⁶¹	61.319 ⁷⁵	64.13 ⁵⁰
17.0	3.54 ²⁰	26.02 ³⁰¹	13.793 ¹¹⁴	20.45 ⁸	54.478 ⁸⁶	39.77 ²⁵⁶	61.319 ¹⁰²	64.63 ²⁹
27.0	3.84 ³²	23.00 ³⁰²	13.935 ¹⁴²	20.22 ²³	54.609 ¹³¹	37.34 ²⁴²	61.421 ¹³¹	65.02 ³³
Sept. 5.9	4.21 ³⁷	20.04 ²⁹⁶	13.935 ¹⁷⁰	20.22 ³⁹	54.609 ¹⁷⁴	37.34 ²¹⁹	61.552 ¹⁵⁹	65.25 ⁵
15.9	4.21 ⁴⁴	20.04 ²⁸⁵	14.105 ¹⁹⁸	19.83 ⁵⁸	54.783 ²¹⁹	35.15 ¹⁸⁸	61.711 ¹⁸⁶	65.30 ¹⁹
25.9	4.65 ⁵¹	17.19 ²⁶⁹	14.303 ²²⁵	19.25 ⁷⁹	55.002 ²⁶¹	33.27 ¹⁴⁶	61.897 ²¹⁵	65.11 ⁴²
Oct. 5.8	5.16 ⁵⁸	14.50 ²⁴⁶	14.528 ²⁵¹	18.46 ⁹⁹	55.263 ²⁹⁹	31.81 ⁹⁸	62.112 ²⁴²	64.69 ⁷⁰
15.8	5.74 ⁶²	12.04 ²¹⁸	14.779 ²⁷⁵	17.47 ¹¹⁹	55.562 ³³³	30.83 ⁴¹	62.354 ²⁶⁷	63.99 ⁹⁶
25.8	6.36 ⁶⁷	9.86 ¹⁸⁷	15.054 ²⁰⁸	16.28 ¹³⁷	55.895 ³⁶¹	30.42 ¹⁵	62.621 ²⁹⁰	63.03 ¹²⁴
Nov. 4.8	7.03 ⁷⁰	7.99 ¹⁴⁷	15.352 ³¹⁴	14.91 ¹⁵³	56.256 ³⁸¹	30.57 ⁷⁵	62.911 ³⁰⁸	61.79 ¹⁴⁸
14.7	7.73 ⁷²	6.52 ¹⁰⁵	15.666 ³²⁶	13.38 ¹⁶⁷	56.637 ³⁹⁰	31.32 ¹⁸⁵	63.219 ³²¹	60.31 ¹⁶⁹
24.7	8.45 ⁷³	5.47 ⁵⁸	15.992 ³³¹	11.71 ¹⁷²	57.027 ³⁸⁸	32.67 ¹⁹¹	63.540 ³²⁵	58.62 ¹⁸⁵
Dec. 4.7	9.18 ⁷¹	4.89 ¹⁰	16.323 ³²⁶	9.99 ¹⁷⁴	57.415 ³⁷⁶	34.58 ²⁴¹	63.865 ³⁰⁹	56.77 ²⁰⁰
14.6	9.89 ⁶⁸	4.79 ⁴¹	16.649 ³¹²	8.25 ¹⁷⁰	57.791 ³⁵¹	36.99 ²⁸⁴	64.187 ³⁰⁹	54.82 ¹⁹⁶
24.6	10.57 ⁶¹	5.20 ⁹¹	16.961 ²⁹¹	6.55 ¹⁵⁹	58.142 ³¹⁴	39.83 ³¹⁸	64.496 ²⁸⁷	52.82 ¹⁹⁷
34.6	11.18 ⁵⁴	6.11 ¹³⁶	17.252 ²⁸⁶	4.96 ¹⁴⁵	58.456 ²⁶⁸	43.01 ³⁴¹	64.783 ²⁵⁵	50.85 ¹⁹⁷
	11.72 ⁵⁴	7.47 ¹³⁶	17.508 ²⁸⁶	3.51 ¹⁴⁵	58.724 ²⁶⁸	46.42 ³⁴¹	65.038 ²⁵⁵	48.97 ¹⁸⁸
Mean Place	1.322	35.96	11.972	24.87	54.344	35.32	59.736	69.65
Sec δ , Tan δ	2.610	+2.411	1.019	+0.194	1.369	-0.936	1.001	+0.047
$D_{\psi} a$, $D_{\omega} a$	+0.11	+0.12	+0.06	+0.01	+0.04	-0.04	+0.06	0.00
$D_{\psi} \delta$, $D_{\omega} \delta$	-0.3	+0.7	-0.3	+0.7	-0.3	+0.7	-0.3	+0.7

APPARENT PLACES OF STARS, 1916.

393

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Argus. Mag. 1.8		$\delta\delta$ Canori. Mag. 6.6		γ Argus. Mag. 2.2		ϵ Lynceis. Mag. 3.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 9 12	° ' " -69 22	h m 9 14	° ' " +18 3	h m 9 14	° ' " -58 55	h m 9 15	° ' " +34 44
	s	"	s	"	s	"	s	"
Jan. 0.6	19.47	4.77	19.864	37.72	52.391	10.46	58.979	45.38
10.6	19.83 ³⁶	8.45 ³⁶⁸	20.118 ²⁵⁴	36.71 ¹⁰¹	52.682 ²⁹¹	14.13 ³⁶⁷	59.266 ²⁸⁷	45.28 ¹⁰
20.6	20.06 ²³	12.33 ³⁸⁸	20.327 ²⁰⁹	35.96 ⁷⁵	52.896 ²¹⁴	17.97 ³⁹⁴	59.503 ²³⁷	45.51 ²³
30.5	20.19 ¹³	16.29 ³⁹⁶	20.485 ¹⁵⁸	35.46 ⁵⁰	53.026 ¹³⁰	21.86 ³⁸⁹	59.683 ¹⁸⁰	46.02 ⁵¹
Feb. 9.5	20.21 ²	20.24 ³⁹⁵	20.591 ¹⁰⁶	35.21 ²⁵	53.072 ⁴⁶	25.70 ³⁸⁴	59.804 ¹²¹	46.80 ⁷⁸
19.5	20.10 ¹¹	24.08 ³⁸⁴	20.644 ⁵³	35.18 ⁸	53.036 ³⁶	29.41 ³⁷¹	59.863 ⁵⁹	47.78 ⁹⁸
29.4	19.89 ²¹	27.70 ³⁶²	20.647 ³	35.35 ¹⁷	52.925 ¹¹¹	32.89 ³⁴⁸	59.863 ⁰	48.89 ¹¹¹
Mar. 10.4	19.58 ³¹	31.06 ³³⁶	20.604 ⁴³	35.66 ³¹	52.745 ¹⁸⁰	36.07 ³¹⁸	59.811 ⁵²	50.09 ¹²⁰
20.4	19.19 ³⁹	34.06 ³⁰⁰	20.523 ⁸¹	36.08 ⁴²	52.506 ²³⁹	38.89 ²⁸²	59.715 ⁹⁶	51.27 ¹¹⁸
30.4	18.74 ⁴⁵	36.64 ²⁵⁸	20.412 ¹¹¹	36.58 ⁵⁰	52.222 ⁵⁰	41.30 ²⁴¹	59.582 ¹³³	52.40 ¹¹³
Apr. 9.3	18.23 ⁵¹	38.79 ²¹⁵	20.281 ¹³¹	37.10 ⁵²	52.222 ³²¹	41.30 ¹⁹⁶	59.582 ¹⁵⁸	52.40 ¹⁰¹
19.3	17.68 ⁵⁵	40.44 ¹⁶⁵	20.140 ¹⁴¹	37.62 ⁵²	51.558 ³⁴³	44.73 ¹⁴⁷	59.253 ¹⁷¹	54.26 ⁸⁵
29.3	17.12 ⁵⁶	41.57 ¹¹³	20.140 ¹⁴⁵	37.62 ⁴⁸	51.558 ³⁵⁷	44.73 ⁹⁷	59.253 ¹⁷⁶	54.26 ⁶⁴
May 9.3	16.55 ⁵⁷	42.18 ⁶¹	19.995 ¹³⁸	38.10 ⁴⁴	51.201 ³⁵⁷	45.70 ⁴⁴	59.077 ¹⁷⁰	54.90 ⁴³
19.2	15.98 ⁵⁷	42.24 ⁶	19.857 ¹²⁶	38.54 ³⁶	50.843 ³⁴⁸	46.14 ⁷	58.907 ¹⁵⁷	55.33 ¹⁹
29.2	15.45 ⁵³	41.76 ⁴⁸	19.731 ¹¹⁰	38.90 ²⁸	50.495 ³³¹	46.07 ⁵⁷	58.750 ¹³⁸	55.52 ⁴
June 8.2	14.95 ⁵⁰	40.77 ⁹⁹	19.621 ⁸⁸	39.18 ²⁰	50.164 ³⁰⁴	45.50 ¹⁰⁷	58.612 ¹¹¹	55.48 ²⁷
18.1	14.49 ⁴⁶	39.30 ¹⁴⁷	19.533 ⁶²	39.38 ¹²	49.860 ²⁶⁹	44.43 ¹⁵²	58.501 ⁸³	55.21 ⁴⁹
28.1	14.10 ³⁹	37.39 ¹⁹¹	19.471 ³⁶	39.50 ²	49.591 ²²⁸	42.91 ¹⁹⁴	58.418 ⁵³	54.72 ⁷¹
July 8.1	13.78 ³²	35.08 ²³¹	19.435 ⁸	39.52 ⁷	49.363 ¹⁸¹	40.97 ²²⁹	58.365 ¹⁸	54.01 ⁸⁸
18.1	13.55 ²³	32.44 ²⁶⁴	19.427 ²¹	39.45 ¹⁷	49.182 ¹²⁷	38.68 ²⁵⁹	58.347 ¹⁶	53.13 ¹⁰⁶
28.0	13.40 ¹⁵	29.58 ²⁸⁶	19.448 ⁴⁸	39.28 ²⁹	49.055 ⁶⁸	36.09 ²⁷⁹	58.363 ⁴⁸	52.07 ¹²⁴
Aug. 7.0	13.35 ⁵	26.57 ³⁰¹	19.496 ⁷⁹	38.99 ⁴⁰	48.987 ⁵	33.30 ²⁹²	58.411 ⁸⁴	50.83 ¹³⁶
17.0	13.39 ⁴	26.57 ³⁰⁶	19.575 ¹⁰⁷	38.59 ⁵²	48.982 ⁵⁹	30.38 ²⁹²	58.495 ¹¹⁸	49.47 ¹⁵⁰
27.0	13.39 ⁴	23.51 ³⁰⁶	19.682 ¹⁰⁷	38.07 ⁵²	49.041 ⁵⁹	27.45 ²⁹³	58.613 ¹¹⁸	47.97 ¹⁵⁰
Sept. 5.9	13.54 ²⁶	20.50 ²⁸²	19.817 ¹³⁵	37.40 ⁶⁷	49.168 ¹²⁷	24.59 ²⁸⁶	58.763 ¹⁵⁰	46.35 ¹⁶²
15.9	13.80 ³⁵	17.68 ²⁵⁵	19.817 ¹⁶⁴	37.40 ⁸²	49.168 ¹⁹⁶	24.59 ²⁶⁶	58.763 ¹⁸⁵	46.35 ¹⁷⁰
25.9	14.15 ⁴⁵	15.13 ²¹⁶	19.961 ¹⁹⁴	36.58 ⁹⁷	49.364 ²⁶¹	21.93 ²³⁷	58.948 ²¹⁹	44.65 ¹⁷⁹
Oct. 5.8	14.60 ⁵³	12.97 ²¹⁶	20.175 ²²⁴	35.61 ¹¹⁴	49.625 ³²⁵	19.56 ¹⁹⁷	59.167 ²⁵¹	42.86 ¹⁸⁴
15.8	15.13 ⁶⁰	11.30 ¹⁶⁷	20.399 ²⁵¹	34.47 ¹²⁹	49.950 ³⁸²	17.59 ¹⁴⁹	59.418 ²⁸¹	41.02 ¹⁸⁷
25.8	15.73 ⁶⁶	10.18 ¹¹²	20.650 ²⁷⁶	33.18 ¹⁴⁴	50.332 ⁴³²	16.10 ⁹²	59.699 ³¹³	39.15 ¹⁸⁸
Nov. 4.8	16.39 ⁷⁰	9.69 ⁴⁹	20.926 ³⁰²	31.74 ¹⁵⁵	50.764 ⁴⁷¹	15.18 ³¹	60.012 ³³⁸	37.27 ¹⁸³
14.7	17.09 ⁷⁰	9.85 ¹⁶	21.228 ³²¹	30.19 ¹⁰⁶	51.235 ⁴⁹⁹	14.87 ³⁴	60.350 ³⁶¹	35.44 ¹⁷⁶
24.7	17.79 ⁶⁸	10.68 ⁸³	21.549 ³³⁴	28.53 ¹⁶⁹	51.734 ⁵¹⁰	15.21 ¹⁰⁰	60.711 ³⁷⁶	33.68 ¹⁶¹
Dec. 4.7	18.17 ⁶⁶	12.18 ¹⁵⁰	21.883 ³⁴¹	26.84 ¹⁶⁹	52.244 ⁵⁰⁸	16.21 ¹⁰⁰	61.087 ³⁷⁶	32.07 ¹⁶¹
14.7	19.13 ⁶⁰	14.28 ²¹⁰	22.224 ³⁴⁰	25.15 ¹⁶²	52.752 ⁴⁸⁷	17.83 ¹⁶²	61.471 ³⁸⁴	30.63 ¹⁴⁴
24.6	20.25 ⁵²	20.07 ³¹²	22.564 ³²⁸	23.53 ¹⁵¹	53.239 ⁴⁵²	20.05 ²⁷⁴	61.854 ³⁷⁰	29.43 ⁹⁴
34.6	20.67 ⁴²	23.58 ³⁵¹	22.892 ³⁰⁵	22.02 ¹¹⁴	53.691 ⁴⁰¹	22.79 ³¹⁸	62.224 ³⁴⁵	28.49 ⁶²
			23.197 ²⁷⁶	20.66 ¹³⁶	54.092 ³⁴¹	25.97 ³⁵⁰	62.569 ³¹⁰	27.87 ⁶²
			23.473	19.52	54.433	29.47	62.879	27.57 ⁸⁰
Mean Place	16.995	16.01	17.778	43.50	50.386	20.51	56.542	54.51
Sec δ , Tan δ	2.838	-2.657	1.051	+0.326	1.937	-1.659	1.217	+0.694
$D\psi\alpha$, $D\omega\alpha$	+0.01	-0.13	+0.07	+0.02	+0.08	-0.08	+0.07	+0.03
$D\psi\delta$, $D\omega\delta$	-0.3	+0.7	-0.3	+0.7	-0.3	+0.7	-0.3	+0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	θ Pyxidid. Mag. 4.9		α Hydre. Mag. 2.2		h Ursæ Majoris. Mag. 3.8		d Ursæ Majoris. Mag. 4.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 9 17	° ' -25 36	h m 9 23	° ' - 8 17	h m 9 24	° ' +63 25	h m 9 27	° ' +70 11
	s	"	s	"	s	"	s	"
Jan. 0.6	47.956 ²⁸⁶	24.19 ³⁰¹	29.372 ²⁴⁰	38.04 ²³⁵	59.49 ⁴⁸	34.21 ¹²⁶	9.98 ⁵⁹	47.90 ¹⁵²
10.6	48.192 ¹⁸⁹	27.20 ³⁰²	29.612 ¹⁹⁷	40.39 ²²⁴	59.97 ³⁹	35.47 ¹⁶⁶	10.57 ⁴⁸	48.82 ¹⁹²
20.6	48.381 ¹³⁷	30.22 ²⁹³	29.809 ¹⁵⁰	42.63 ²⁰⁷	60.36 ²⁹	37.13 ²⁰¹	11.05 ³⁷	50.74 ²²⁹
30.5	48.518 ⁸⁴	33.15 ²⁷⁸	29.959 ⁹⁹	44.70 ¹⁸⁸	60.65 ¹⁸	39.14 ²²⁶	11.42 ²³	53.03 ²⁵²
Feb. 9.5	48.602 ³¹	35.93 ²⁵⁶	30.058 ⁵⁰	46.58 ¹⁶⁵	60.83 ⁸	41.40 ²⁴⁰	11.64 ¹⁰	55.55 ²⁸⁵
19.5	48.633 ¹⁸	38.49 ²³⁰	30.108 ³	48.23 ¹⁴⁰	60.91 ²	43.80 ²⁴⁵	11.74 ⁵	58.20 ²⁶⁸
29.5	48.615 ⁶²	40.79 ²⁰¹	30.111 ³⁹	49.63 ¹¹³	60.89 ¹²	46.25 ²³⁹	11.69 ¹⁷	60.88 ²⁵⁶
Mar. 10.4	48.553 ⁹⁸	42.80 ¹⁶⁸	30.072 ⁷⁵	50.76 ⁸⁸	60.77 ²⁰	48.64 ²²²	11.52 ²⁸	63.46 ²⁴⁰
20.4	48.455 ¹²⁸	44.48 ¹³⁵	29.997 ¹⁰²	51.64 ⁶²	60.57 ²⁷	50.86 ¹⁹⁵	11.24 ³⁸	65.86 ²⁰⁷
30.4	48.327 ¹⁴⁷	45.83 ⁹⁹	29.895 ¹²³	52.26 ⁴⁰	60.30 ³³	52.81 ¹⁶²	10.86 ⁴⁵	67.93 ¹⁷⁰
Apr. 9.3	48.180 ¹⁶⁰	46.82 ⁶³	29.772 ¹³⁴	52.66 ¹⁵	59.97 ³⁶	54.43 ¹²²	10.41 ⁵⁰	69.63 ¹²⁶
19.3	48.020 ¹⁶⁴	47.45 ²⁷	29.638 ¹³⁷	52.81 ⁶	59.61 ³⁸	55.65 ⁷⁷	9.91 ⁵²	70.89 ⁷⁷
29.3	47.856 ¹⁶¹	47.72 ⁶	29.501 ¹³⁴	52.75 ²⁷	59.23 ³⁸	56.42 ³²	9.39 ⁵²	71.66 ²⁷
May 9.3	47.695 ¹⁵¹	47.66 ⁴¹	29.367 ¹²⁴	52.48 ⁴⁶	58.85 ³⁶	56.74 ¹⁶	8.87 ⁵¹	71.93 ²⁵
19.2	47.544 ¹³⁷	47.25 ⁷³	29.243 ¹¹⁰	52.02 ⁶³	58.49 ³²	56.58 ⁶²	8.36 ⁴⁸	71.68 ⁷⁵
29.2	47.407 ¹¹⁸	46.52 ¹⁰³	29.133 ⁹³	51.39 ⁷⁸	58.17 ²⁹	55.96 ¹⁰⁶	7.88 ⁴¹	70.93 ¹²²
June 8.2	47.289 ⁹⁶	45.49 ¹³⁰	29.040 ⁷¹	50.61 ⁹¹	57.88 ²⁴	54.90 ¹⁴⁶	7.47 ³⁵	69.71 ¹⁶⁶
18.2	47.193 ⁷⁰	44.19 ¹⁵³	28.969 ⁴⁹	49.70 ¹⁰³	57.64 ¹⁸	53.44 ¹⁸⁴	7.12 ²⁸	68.05 ²⁰⁷
28.1	47.123 ⁴⁰	42.66 ¹⁷²	28.920 ²⁴	48.67 ¹¹⁰	57.46 ¹²	51.60 ²¹⁴	6.84 ²⁰	65.98 ²²⁸
July 8.1	47.083 ¹⁷	40.94 ¹⁸⁵	28.896 ¹	47.57 ¹¹⁴	57.34 ⁶	49.46 ²⁴²	6.64 ¹¹	63.60 ²⁶⁸
18.1	47.066 ¹⁷	39.09 ¹⁹³	28.897 ²⁹	46.43 ¹¹⁵	57.28 ¹	47.04 ²⁶⁵	6.53 ²	60.92 ²⁸⁰
28.0	47.063 ⁸¹	37.16 ¹⁹⁴	28.926 ⁵⁵	45.28 ¹⁰⁹	57.29 ⁸	44.39 ²⁸⁰	6.51 ⁸	58.02 ³⁰⁷
Aug. 7.0	47.130 ⁴⁷	35.22 ¹⁸⁷	28.981 ⁸⁴	44.19 ⁹⁹	57.37 ¹⁶	41.59 ²⁹¹	6.59 ¹⁶	54.95 ³¹⁷
17.0	47.211 ¹¹⁵	33.35 ¹⁷²	29.065 ¹¹⁴	43.20 ⁸⁵	57.53 ²¹	38.68 ²⁹⁶	6.75 ²⁶	51.78 ³²¹
27.0	47.326 ¹⁴⁹	31.63 ¹⁵²	29.179 ¹⁴²	42.35 ⁶³	57.74 ²⁷	35.70 ²⁹⁷	7.01 ³⁴	48.57 ³¹⁹
Sept. 5.9	47.475 ¹⁸²	30.11 ¹²²	29.321 ¹⁷³	41.72 ³⁹	58.01 ³⁵	32.73 ²⁹³	7.35 ⁴³	45.38 ³¹²
15.9	47.657 ²¹⁶	28.89 ⁸⁶	29.494 ²⁰³	41.33 ⁸	58.36 ⁴⁰	29.80 ²⁸²	7.78 ⁵¹	42.26 ²⁹⁶
25.9	47.873 ²⁴⁹	28.03 ⁴⁴	29.697 ²³¹	41.25 ²⁵	58.76 ⁴⁶	26.98 ²⁶⁴	8.29 ⁵⁸	39.30 ²⁷⁷
Oct. 5.9	48.122 ²⁷⁸	27.59 ²	29.928 ²⁵⁸	41.50 ⁵⁹	59.22 ⁵¹	24.34 ²⁴⁴	8.87 ⁶⁵	36.53 ²⁴⁹
15.8	48.400 ³⁰⁵	27.61 ⁵⁰	30.186 ²⁸⁶	42.09 ⁹⁵	59.73 ⁵⁵	21.90 ²¹⁴	9.52 ⁷⁰	34.04 ²¹⁸
25.8	48.705 ³²⁴	28.11 ¹⁰⁰	30.472 ³⁰⁵	43.04 ¹³¹	60.28 ⁶¹	19.76 ¹⁸¹	10.22 ⁷⁶	31.86 ¹⁷⁹
Nov. 4.8	49.029 ³³⁸	29.11 ¹⁴⁷	30.777 ³¹⁹	44.35 ¹⁶³	60.89 ⁶²	17.95 ¹⁴³	10.98 ⁷⁹	30.07 ¹³⁵
14.7	49.387 ³⁴¹	30.58 ¹⁸⁹	31.096 ³²⁵	45.98 ¹⁹⁰	61.51 ⁶³	16.52 ⁹⁹	11.77 ⁸⁰	28.72 ⁸⁷
24.7	49.708 ³³⁷	32.47 ²²⁹	31.421 ³²⁴	47.88 ²¹³	62.14 ⁶⁰	15.53 ⁵¹	12.57 ⁷⁷	27.85 ²⁶
Dec. 4.7	50.045 ³²¹	34.76 ²⁶¹	31.745 ³¹²	50.01 ²²⁸	62.77 ⁶⁰	15.02 ¹	13.37 ⁷⁷	27.49 ¹⁸
14.7	50.366 ²⁹⁵	37.37 ²⁸⁴	32.057 ²⁹¹	52.29 ²³⁶	63.37 ⁵⁷	15.01 ⁴⁹	14.14 ⁷²	27.67 ⁷¹
24.6	50.661 ²⁸⁰	40.21 ²⁹⁶	32.348 ²⁶¹	54.65 ²³⁷	63.94 ⁵¹	15.50 ⁹⁷	14.86 ⁶⁴	28.38 ¹²¹
34.6	50.921	43.17	32.609	57.02	64.45	16.47	15.50	29.59
Mean Place	46.232	28.15	27.602	37.92	55.424	47.95	4.820	61.73
Sec δ , Tan δ	1.109	-0.479	1.011	-0.146	2.235	+1.999	2.952	+2.778
$D_{\psi} \alpha$, $D_{\omega} \alpha$	+0.05	-0.02	+0.06	-0.01	+0.09	+0.10	+0.11	+0.15
$D_{\psi} \delta$, $D_{\omega} \delta$	-0.3	+0.7	-0.3	+0.6	-0.3	+0.6	-0.3	+0.6

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	θ Ursae Majoris. Mag. 3.3		ϕ Argus. Mag. 3.6		ξ Leonis. Mag. 5.1		10 Leonis Minoris. Mag. 4.6	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 9 27	° ' " +52 3	h m 9 27	° ' " -40 5	h m 9 27	° ' " +11 39	h m 9 29	° ' " +36 45
	s "	"	s "	"	s "	"	s "	"
Jan. 0.6	17.970	26.71	25.022	48.69	27.150	75.71	7.397	65.99
10.6	18.337 ³⁶⁷	27.40 ⁶⁰	25.281 ²⁵⁹	52.08 ³³⁰	27.405 ²⁶⁵	74.31 ¹⁴⁰	7.702 ³⁰⁵	65.91 ⁸
20.6	18.642 ³⁰⁶	28.49 ¹⁰⁹	25.486 ²⁰⁵	55.55 ³⁴⁷	27.619 ²¹⁴	73.14 ¹¹⁷	7.958 ²⁵⁶	66.18 ²⁷
30.5	18.875 ²³³	29.91 ¹⁴²	25.633 ¹⁴⁷	59.03 ³⁴⁶	27.785 ¹⁰⁶	72.21 ⁹³	8.157 ¹⁹⁹	66.77 ⁵⁹
Feb. 9.5	19.032 ¹⁵⁷	31.61 ¹⁷⁰	25.719 ⁸⁶	62.42 ³³⁹	27.900 ¹¹⁵	71.53 ⁶⁸	8.294 ¹³⁷	67.63 ⁸⁶
	77	189	28	322	64	45	76	108
19.5	19.109	33.50	25.747	65.64	27.964	71.08	8.370	68.71
29.5	19.108 ¹	35.48 ¹⁹⁶	25.718 ²⁹	68.61 ²⁹⁷	27.979 ¹⁵	70.86 ²²	8.386 ¹⁶	69.95 ¹²⁴
Mar. 10.4	19.038 ⁷⁰	37.46 ¹⁹⁸	25.640 ⁷⁸	71.28 ²⁶⁷	27.949 ³⁰	70.83 ³	8.346 ⁴⁰	71.27 ¹³²
20.4	18.905 ¹³³	39.35 ¹⁸⁹	25.519 ¹²¹	73.62 ²³⁴	27.882 ⁶⁷	70.95 ¹²	8.259 ⁸⁷	72.60 ¹³³
30.4	18.720 ¹⁸⁵	41.05 ¹⁷⁰	25.364 ¹⁵⁵	75.57 ¹⁹⁵	27.785 ⁹⁷	71.22 ²⁷	8.133 ¹²⁶	73.87 ¹²⁷
	222	146	182	155	119	35	163	113
Apr. 9.3	18.498	42.51	25.182	77.12	27.666	71.57	7.980	75.00
19.3	18.253 ²⁴⁵	43.66 ¹¹⁵	24.985 ¹⁹⁷	78.24 ¹¹²	27.536 ¹³⁰	71.97 ⁴⁰	7.809 ¹⁷¹	75.98 ⁹⁸
29.3	17.996 ²⁶⁷	44.46 ⁸⁰	24.780 ²⁰⁵	78.93 ⁶⁹	27.401 ¹³⁵	72.39 ⁴²	7.631 ¹⁷⁸	76.73 ⁷⁵
May 9.3	17.741 ²⁵⁵	44.87 ⁴¹	24.575 ²⁰⁶	79.18 ²⁵	27.268 ¹³³	72.84 ⁴⁵	7.455 ¹⁷⁶	77.26 ⁵³
19.2	17.498 ²⁴³	44.93 ⁶	24.376 ¹⁹⁹	79.00 ¹⁸	27.146 ¹²²	73.29 ⁴⁵	7.291 ¹⁶⁴	77.52 ²⁶
	219	36	186	60	108	42	147	1
29.2	17.279	44.57	24.190	78.40	27.038	73.71	7.144	77.53
June 8.2	17.089 ¹⁹⁰	43.85 ⁷²	24.024 ¹⁶⁶	77.38 ¹⁰²	26.949 ⁸⁰	74.09 ³⁸	7.021 ¹²³	77.28 ²⁵
18.2	16.936 ¹⁵³	42.78 ¹⁰⁷	23.880 ¹⁴⁴	76.01 ¹³⁷	26.881 ⁶⁸	74.44 ³⁵	6.924 ⁹⁷	76.78 ⁵⁰
28.1	16.824 ¹¹²	41.40 ¹³⁸	23.762 ¹¹⁸	74.28 ¹⁷³	26.837 ⁴⁴	74.74 ³⁰	6.858 ⁶⁶	76.04 ⁷⁴
July 8.1	16.755 ⁶⁹	39.71 ¹⁶⁹	23.675 ⁸⁷	72.28 ²⁰⁰	26.819 ¹⁸	74.97 ²³	6.825 ³³	75.10 ⁹⁴
	23	192	55	222	8	15	1	116
18.1	16.732	37.79	23.620	70.06	26.827	75.12	6.824	73.94
28.0	16.756 ²⁴	35.65 ²¹⁴	23.602 ¹⁸	67.69 ²³⁷	26.862 ³⁵	75.19 ⁷	6.859 ³⁵	72.61 ¹³³
Aug. 7.0	16.827 ⁷¹	33.35 ²³⁰	23.622 ³⁰	65.24 ²⁴⁵	26.924 ⁶²	75.15 ⁴	6.928 ¹⁰³	71.12 ¹⁴⁹
17.0	16.945 ¹¹⁸	30.91 ²⁴⁴	23.683 ⁶¹	62.80 ²⁴⁴	27.014 ⁹⁰	74.97 ¹⁸	7.031 ⁶⁹	69.49 ¹⁶³
27.0	17.110 ¹⁶⁵	28.38 ²⁵³	23.786 ¹⁰³	60.46 ²³⁴	27.133 ¹¹⁹	74.65 ³²	7.168 ¹³⁷	67.72 ¹⁷⁷
	211	259	145	213	146	49	174	187
Sept. 5.9	17.321	25.79	23.931	58.33	27.279	74.16	7.342	65.85
15.9	17.578 ²⁶⁷	23.20 ²⁵⁹	24.119 ¹⁸⁸	56.47 ¹⁸⁶	27.456 ¹⁷⁷	73.47 ⁶⁹	7.550 ²⁰⁸	63.90 ¹⁹⁵
25.9	17.879 ³⁰¹	20.66 ²⁶⁴	24.350 ²³¹	54.99 ¹⁴⁸	27.662 ²⁰⁶	72.59 ⁸⁸	7.792 ²⁴²	61.89 ²⁰¹
Oct. 5.9	18.223 ³⁴⁴	18.19 ²⁴⁷	24.621 ²⁷¹	53.96 ¹⁰³	27.895 ²³³	71.50 ¹⁰⁹	8.068 ²⁷⁶	59.86 ²⁰³
15.8	18.607 ³⁸⁴	15.86 ²³³	24.929 ³⁰⁶	53.44 ⁵²	28.158 ²⁶³	70.22 ¹²⁸	8.377 ³⁰⁹	57.83 ²⁰³
	418	214	340	5	287	147	338	198
25.8	19.025	13.72	25.269	53.49	28.445	68.75	8.715	55.85
Nov. 4.8	19.474 ⁴⁴⁹	11.82 ¹⁹⁰	25.631 ³⁶²	54.10 ⁶¹	28.754 ³⁰⁹	67.11 ¹⁶⁴	9.077 ³⁶²	53.97 ¹⁸⁸
14.7	19.944 ⁴⁷⁰	10.22 ¹⁶⁰	26.009 ³⁷⁸	55.29 ¹¹⁹	29.078 ³²⁴	65.36 ¹⁷⁵	9.458 ³⁸¹	52.24 ¹⁷³
24.7	20.426 ⁴⁸²	8.96 ¹²⁶	26.392 ³⁸³	57.02 ¹⁷³	29.411 ³³³	63.55 ¹⁸¹	9.850 ³⁹²	50.71 ¹⁵²
Dec. 4.7	20.907 ⁴⁸¹	8.10 ⁸⁶	26.769 ³⁷⁷	59.26 ²²⁴	29.741 ³³⁰	61.72 ¹⁸³	10.243 ³⁹³	49.44 ¹²⁷
	468	46	357	268	327	178	383	98
14.7	21.375	7.64	27.126	61.94	30.068	59.94	10.626	48.46
24.6	21.813 ⁴³⁸	7.63 ¹	27.454 ³²⁸	64.96 ³⁰²	30.373 ³⁰⁵	58.28 ¹⁶⁶	10.986 ³⁶⁰	47.81 ⁶⁵
34.6	22.210 ³⁹⁷	8.05 ⁴²	27.742 ²⁸⁸	68.23 ³²⁷	30.648 ²⁷⁵	56.76 ¹⁵²	11.315 ³²⁹	47.52 ²⁹
Mean Place	14.885	39.40	23.322	55.75	25.210	80.74	4.967	76.43
Sec δ , Tan δ	1.626	+1.283	1.307	-0.842	1.021	+0.207	1.248	+0.747
$D_{\phi} \alpha$, $D_{\omega} \alpha$	+0.08	+0.07	+0.05	-0.04	+0.06	+0.01	+0.07	+0.04
$D_{\phi} \delta$, $D_{\omega} \delta$	-0.3	+0.6	-0.3	+0.6	-0.3	+0.6	-0.3	+0.6

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♁ Leonis. Mag. 3.8		♁ Antlim. Mag. 5.0		♁ Leonis. Mag. 3.1		♁ Argus. Mag. 3.2	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 9 36	° ' +10 16	h m 9 40	° ' -27 22	h m 9 41	° ' +24 9	h m 9 44	° ' -64 40
	s	"	s	"	s	"	s	"
Jan. 0.6	42.047 ²⁶¹	25.44 ¹⁵⁰	29.090 ²⁶⁸	59.58 ³⁰³	7.255 ²⁸⁴	32.89 ⁸²	62.12 ³⁸	44.47 ³⁵²
10.6	42.308 ²²⁰	23.94 ¹²⁹	29.288 ²¹³	62.60 ³⁰⁶	7.539 ²⁴¹	32.07 ⁵²	62.50 ³¹	47.99 ³⁷⁶
20.6	42.528 ¹⁷³	22.65 ¹⁰⁴	29.501 ¹⁶³	65.66 ³⁰¹	7.780 ¹⁹²	31.55 ²¹	62.81 ²¹	51.75 ³⁰¹
30.5	42.701 ¹²⁴	21.61 ⁷⁸	29.664 ¹¹⁰	68.67 ²⁹⁰	7.972 ⁸⁴	31.34 ⁶	63.02 ¹¹	55.66 ²⁹⁵
Feb. 9.5	42.825 ⁷³	20.83 ⁵⁵	29.774 ⁵⁷	71.57 ²⁷⁰	8.109 ³²	31.40 ³²	63.13 ¹	59.61 ³⁸⁹
19.5	42.898 ²⁴	20.28 ³¹	29.831 ⁶	74.27 ²⁴⁶	8.193 ³⁰	31.72 ⁵³	63.14 ⁷	63.50 ³⁷³
29.5	42.922 ²²	19.97 ¹¹	29.837 ⁴⁰	76.73 ²¹⁷	8.223 ¹⁹	32.25 ⁶⁸	63.07 ¹⁶	67.23 ³⁵¹
Mar. 10.4	42.900 ⁵⁹	19.86 ⁶	29.797 ⁷⁹	78.90 ¹⁸⁷	8.204 ¹⁵⁴	32.93 ⁸³	62.91 ²³	70.74 ³²⁰
20.4	42.841 ⁸⁸	19.92 ²¹	29.718 ¹¹⁰	80.77 ¹⁵⁴	8.143 ⁹⁵	33.71 ⁷⁸	62.68 ³⁰	73.94 ²⁸⁴
30.4	42.753 ¹¹³	20.13 ³⁰	29.608 ¹³⁴	82.31 ¹¹⁸	8.048 ¹²¹	34.54 ⁸²	62.38 ³⁵	76.78 ²⁴³
Apr. 9.4	42.640 ¹²⁶	20.43 ³⁹	29.474 ¹⁴⁹	83.49 ⁸³	7.927 ¹³⁷	35.36 ⁷⁸	62.03 ³⁹	79.21 ¹⁹⁶
19.3	42.514 ¹³¹	20.82 ⁴³	29.325 ¹⁵⁷	84.32 ⁴⁸	7.790 ¹⁴⁴	36.14 ⁶⁸	61.64 ⁴¹	81.17 ¹⁴⁸
29.3	42.383 ¹⁸⁰	21.25 ⁴⁵	29.168 ¹⁶⁸	84.80 ¹²	7.646 ¹⁴⁴	36.82 ⁵⁸	61.23 ⁴³	82.65 ⁹⁶
May 9.3	42.253 ¹²¹	21.70 ⁴⁶	29.010 ¹⁵³	84.92 ²³	7.502 ¹³⁷	37.40 ⁴⁴	60.80 ⁴³	83.61 ⁴⁴
19.2	42.132 ¹¹⁰	22.16 ⁴⁵	28.857 ¹⁴³	84.69 ⁵⁷	7.365 ¹²²	37.84 ²⁹	60.37 ⁴²	84.05 ¹⁰
29.2	42.022 ⁹²	22.61 ⁴⁴	28.714 ¹²⁷	84.12 ⁸⁷	7.243 ¹⁰⁴	38.13 ¹⁴	59.95 ⁴⁰	83.95 ⁶¹
June 8.2	41.930 ⁷¹	23.05 ⁴⁰	28.587 ¹⁰⁹	83.25 ¹¹⁷	7.139 ⁸³	38.27 ¹	59.55 ³⁷	83.34 ¹¹²
18.2	41.859 ⁶⁰	23.45 ³⁵	28.478 ⁸⁷	82.08 ¹⁴²	7.056 ⁵⁸	38.26 ¹⁸	59.18 ³³	82.22 ¹⁵⁹
28.1	41.809 ²⁴	23.80 ²¹	28.391 ³⁵	80.66 ¹⁶⁵	6.998 ⁸¹	38.08 ⁴⁷	58.85 ²⁸	80.63 ²⁰⁰
July 8.1	41.785 ¹	24.10 ¹⁴	28.329 ⁷	79.01 ¹⁸⁰	6.967 ²³	37.75 ⁶⁴	58.57 ²³	78.63 ²³⁶
18.1	41.784 ²⁷	24.31 ¹⁴	28.294 ⁷	77.21 ¹⁹¹	6.962 ²³	37.28 ⁶⁴	58.34 ¹⁶	76.27 ²⁶⁸
28.1	41.811 ⁵²	24.45 ³	28.287 ²⁴	75.30 ¹⁹⁴	6.985 ⁸²	36.64 ⁷⁸	58.18 ⁹	73.61 ²⁸⁴
Aug. 7.0	41.863 ⁸⁰	24.48 ¹⁰	28.311 ⁵⁷	73.36 ¹⁹²	7.037 ⁵²	35.86 ⁹³	58.09 ¹	70.77 ²⁹⁶
17.0	41.943 ¹⁰⁹	24.38 ²⁷	28.368 ⁹⁰	71.44 ¹⁸¹	7.119 ¹¹²	34.93 ¹⁰⁶	58.08 ⁷	67.81 ²⁹⁷
27.0	42.052 ¹³⁶	24.11 ⁴³	28.458 ¹²⁶	69.63 ¹⁶⁰	7.231 ¹⁴²	33.85 ¹²⁵	58.15 ¹⁶	64.84 ²⁸⁵
Sept. 5.9	42.188 ¹⁶⁷	23.68 ⁶³	28.584 ¹⁶³	68.03 ¹³⁶	7.373 ¹⁷⁵	32.60 ¹³⁸	58.31 ²⁴	61.99 ²⁶⁴
15.9	42.355 ¹⁹⁷	23.05 ⁸³	28.747 ¹⁹⁹	66.67 ¹⁰⁰	7.548 ²⁰⁶	31.22 ¹⁵²	58.55 ³²	59.35 ²³¹
25.9	42.552 ²²⁶	22.22 ¹⁰⁵	28.946 ²³⁴	65.67 ⁶¹	7.754 ²³⁷	29.70 ¹⁶⁵	58.87 ⁴²	57.04 ¹⁸⁹
Oct. 5.9	42.778 ²⁵⁶	21.17 ¹²⁷	29.180 ²⁶⁹	65.06 ¹⁶	7.991 ²⁶⁹	28.05 ¹⁷⁶	59.29 ⁴⁷	55.15 ¹³⁶
15.8	43.034 ²⁸¹	19.90 ¹⁴⁶	29.449 ²⁹⁰	64.90 ³²	8.260 ²⁹⁸	26.29 ¹⁸²	59.76 ⁵³	53.79 ⁷⁹
25.8	43.315 ³⁰⁴	18.44 ¹⁶⁵	29.748 ³²²	65.22 ⁸²	8.558 ³²¹	24.47 ¹⁸⁶	60.29 ⁵⁷	53.00 ¹⁵
Nov. 4.8	43.619 ³²¹	16.79 ¹⁷⁷	30.070 ³⁴⁰	66.04 ¹³²	8.879 ³⁴⁰	22.61 ¹⁸⁵	60.86 ⁶⁰	52.85 ⁵¹
14.8	43.940 ³³¹	15.02 ¹⁸⁵	30.410 ³⁴⁹	67.36 ¹⁷⁷	9.219 ³⁵⁴	20.76 ¹⁷⁸	61.46 ⁶¹	53.36 ¹¹⁷
24.7	44.271 ³³⁴	13.17 ¹⁸⁹	30.759 ³⁴⁷	69.13 ²¹⁸	9.573 ³⁵⁶	18.98 ¹⁶⁶	62.07 ⁵⁹	54.53 ¹⁷⁹
Dec. 4.7	44.605 ³²⁶	11.28 ¹⁸⁵	31.106 ³³⁷	71.31 ²⁵²	9.929 ³⁴⁸	17.32 ¹⁴⁹	62.66 ⁵⁶	56.32 ²³⁸
14.7	44.931 ³⁰⁷	9.43 ¹⁷⁶	31.443 ³¹³	73.83 ²⁷⁸	10.277 ³³²	15.83 ¹²⁶	63.22 ⁵¹	58.70 ²⁶⁸
24.6	45.238 ²⁸¹	7.67 ¹⁶¹	31.756 ²⁸²	76.61 ²⁹⁷	10.609 ³⁰⁴	14.57 ⁹⁹	63.73 ⁴⁵	61.58 ³²⁹
34.6	45.519	6.06	32.038	79.58	10.913	13.58	64.18	64.87
Mean Place	40.165	30.54	27.407	63.84	5.182	41.52	60.188	56.03
Sec δ, Tan δ	1.016	+0.181	1.126	-0.518	1.096	+0.449	2.339	-2.114
D _ψ α, D _ω α	+0.06	+0.01	+0.05	-0.03	+0.07	+0.02	+0.03	-0.12
D _ψ δ, D _ω δ	-0.3	+0.6	-0.3	+0.6	-0.3	+0.6	-0.3	+0.6

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ν Ursæ Majoris. Mag. 3.9		ε Sextantis. Mag. 6.0		μ Leonis. Mag. 4.1		Groombridge 1586. Mag. 6.0	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 9 45	° ' " +59 25	h m 9 47	° ' " -3 50	h m 9 47	° ' " +26 23	h m 9 50	° ' " +73 16
Jan. 0.6	5.215	49.24	1.815	58.66	61.416	61.86	59.74	29.98
10.6	5.664 449	50.11 87	2.074 289	60.84 218	61.710 294	61.11 75	60.47 73	31.34 136
20.6	6.043 379	51.43 132	2.294 220	62.89 205	61.960 250	60.67 44	61.08 61	33.18 184
30.6	6.340 297	53.13 170	2.469 175	64.77 188	62.161 201	60.56 11	61.56 48	35.42 224
Feb. 9.5	6.548 208	55.14 201	2.595 126	66.43 166	62.309 148	60.75 19	61.89 33	37.97 255
19.5	6.663 115	57.36 222	2.872 77	68.43 144	62.400 91	61.18 43	62.05 16	40.69 272
29.5	6.686 23	59.68 232	2.701 29	67.87 117	62.400 37	61.18 66	62.05 1	40.69 281
Mar. 10.4	6.621 65	62.02 234	2.687 14	69.04 94	62.437 12	61.84 81	62.06 13	43.50 275
20.4	6.478 143	64.25 223	2.636 51	69.98 69	62.425 12	62.65 91	61.93 13	46.25 275
30.4	6.271 207	66.28 203	2.553 83	70.67 69	62.369 56	63.55 96	61.65 28	48.84 259
Apr. 9.4	6.011 260	68.08 175	2.450 103	71.14 24	62.277 92	64.50 93	61.25 40	51.17 233
19.3	5.715 296	69.44 141	2.330 120	71.38 6	62.157 137	65.43 86	60.75 56	53.14 153
29.3	5.400 315	70.45 101	2.204 126	71.44 11	62.020 146	66.29 76	60.19 61	54.67 106
May 9.3	5.078 322	71.04 59	2.078 126	71.33 28	61.874 147	67.05 63	59.58 63	55.72 52
19.2	4.767 293	71.17 32	1.958 110	71.05 42	61.727 141	67.68 29	58.95 62	56.24 0
29.2	4.474 262	70.85 74	1.848 96	70.63 55	61.586 128	68.15 47	58.33 60	56.24 53
June 8.2	4.212 223	70.11 116	1.752 78	70.08 66	61.458 110	68.44 12	57.73 55	55.71 105
18.2	3.989 179	68.95 154	1.674 59	69.42 66	61.348 90	68.56 5	57.18 49	54.66 152
28.1	3.810 128	67.41 187	1.615 37	68.67 75	61.258 66	68.51 25	56.69 40	53.14 195
July 8.1	3.682 75	65.54 218	1.578 13	67.85 86	61.192 41	68.26 41	56.29 31	51.19 234
18.1	3.607 20	63.36 242	1.565 12	66.99 88	61.151 12	67.85 59	55.98 23	48.85 267
28.1	3.587 37	60.94 264	1.565 36	66.11 86	61.139 17	67.26 76	55.75 13	46.18 298
Aug. 7.0	3.624 96	58.30 278	1.577 64	65.25 80	61.156 44	66.50 91	55.62 1	43.23 315
17.0	3.719 153	55.52 289	1.613 92	64.45 69	61.200 75	65.59 107	55.61 9	40.08 330
27.0	3.872 210	52.63 294	1.677 121	63.76 56	61.275 106	64.52 124	55.70 20	36.78 338
Sept. 5.9	4.082 267	49.69 295	1.769 153	63.20 38	61.381 136	63.28 138	55.90 31	33.40 340
15.9	4.349 322	46.74 289	1.890 183	62.82 13	61.517 170	61.90 153	56.21 40	30.00 335
25.9	4.671 378	43.85 278	2.043 214	62.69 14	61.687 203	60.37 166	56.61 51	26.65 323
Oct. 5.9	5.049 428	41.07 261	2.226 273	62.83 42	61.890 234	58.71 177	57.12 60	23.42 304
15.8	5.477 473	38.46 239	2.440 273	63.25 75	62.124 267	56.94 186	57.72 77	20.38 281
25.8	5.950 512	36.07 209	2.685 323	64.00 107	62.391 297	55.08 192	58.42 77	17.57 248
Nov. 4.8	6.462 544	33.98 175	2.958 306	65.07 137	62.688 322	53.16 193	59.19 84	15.09 209
14.8	7.006 560	32.23 134	3.254 316	66.44 166	63.010 342	51.23 190	60.03 88	13.00 166
24.7	7.566 565	30.89 89	3.570 326	68.10 188	63.352 357	49.33 181	60.91 92	11.34 116
Dec. 4.7	8.131 554	30.00 41	3.896 328	69.98 208	63.709 361	47.52 166	61.83 92	10.18 64
14.7	8.685 525	29.59 8	4.224 323	72.06 219	64.070 355	45.86 147	62.75 90	9.54 6
24.6	9.210 480	29.67 58	4.547 304	74.25 224	64.425 340	44.39 122	63.65 85	9.48 50
34.6	9.690	30.25	4.851 278	76.49 222	64.765 312	43.17 94	64.50 78	9.98 105
Mean Place	1.743	64.34	0.112	56.80	59.338	71.38	54.168	46.76
Sec δ, Tan δ	1.966	+1.693	1.002	-0.067	1.116	+0.496	3.475	+3.328
Dψ α, Dω α	+0.09	+0.09	+0.06	0.00	+0.07	+0.03	+0.11	+0.19
Dψ δ, Dω δ	-0.3	+0.6	-0.3	+0.5	-0.3	+0.5	-0.3	+0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	19 Leonis Minoris. Mag. 5.2		φ Argus. Mag. 3.7		π Leonis. Mag. 4.9		77 Leonis. Mag. 3.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 9 52	° ' " +41 26	h m 9 53	° ' " -54 9	h m 9 55	° ' " + 8 26	h m 10 2	° ' " +17 9
Jan. 0.6	35.152	69.74	56.302	53.94	48.324	46.45	47.077	73.95
10.6	35.493 ³⁴¹	69.70 ⁴	56.636 ³³⁴	57.39 ³⁴⁵	48.597 ²⁷³	44.80 ¹⁶⁵	47.365 ²⁸⁸	72.69 ¹²⁶
20.6	35.785 ²⁹²	70.07 ³⁷	56.907 ²⁷¹	61.04 ³⁶⁵	48.833 ²³⁶	43.25 ¹⁴⁵	47.614 ²⁴⁹	71.68 ¹⁰¹
30.6	36.019 ²³⁴	70.81 ⁷⁴	57.107 ²⁰⁰	64.81 ³⁷⁷	49.023 ¹⁹⁰	42.16 ¹¹⁹	47.818 ²⁰⁴	70.97 ⁷¹
Feb. 9.5	36.192 ¹⁷³	71.87 ¹⁰⁶	57.234 ¹²⁷	68.60 ³⁷⁹	49.164 ¹⁴¹	41.21 ⁹⁶	47.972 ¹⁵⁴	70.54 ⁴³
19.5	36.299 ¹⁰⁷	73.17 ¹³⁰	57.290 ⁵⁶	72.31 ³⁷¹	49.255 ⁹¹	40.53 ⁶⁸	48.075 ¹⁰³	70.39 ¹⁵
29.5	36.343 ⁴⁴	74.67 ¹⁵⁰	57.271 ¹⁹	75.84 ³⁵³	49.297 ⁴²	40.08 ⁴⁵	48.126 ⁵¹	70.47 ⁸
Mar. 10.4	36.325 ¹⁸	76.27 ¹⁶⁰	57.191 ⁸⁰	79.15 ³³¹	49.294 ³	39.86 ²²	48.131 ⁵	70.78 ³¹
20.4	36.254 ⁷¹	77.88 ¹⁶¹	57.053 ¹³⁸	82.14 ²⁹⁹	49.252 ⁴²	39.83 ³	48.094 ³⁷	71.23 ⁴⁵
30.4	36.139 ¹¹⁵	79.14 ¹⁵⁶	56.868 ¹⁸⁵	84.77 ²⁶³	49.178 ⁷⁴	39.97 ¹⁴	48.022 ⁷²	71.80 ⁵⁷
Apr. 9.4	35.990 ¹⁴⁹	80.87 ¹⁴³	56.644 ²²⁴	87.00 ²²³	49.080 ⁹⁸	40.24 ²⁷	47.923 ⁹⁹	72.44 ⁶⁴
19.3	35.816 ¹⁷⁴	82.10 ¹²³	56.391 ²⁵³	88.79 ¹⁷⁹	48.965 ¹¹⁵	40.60 ³⁶	47.806 ¹¹⁷	73.10 ⁶⁶
29.3	35.630 ¹⁸⁶	83.10 ¹⁰⁰	56.120 ²⁷¹	90.10 ¹³¹	48.842 ¹²³	41.02 ⁴²	47.680 ¹²⁶	73.75 ⁶⁵
May 9.3	35.440 ¹⁹⁰	83.82 ⁷²	55.839 ²⁸¹	90.94 ⁸⁴	48.717 ¹²⁵	41.49 ⁴⁷	47.550 ¹³⁰	74.36 ⁶¹
19.3	35.256 ¹⁸⁴	84.24 ⁴²	55.557 ²⁸²	91.28 ³⁴	48.598 ¹¹⁹	41.98 ⁴⁹	47.425 ¹²⁵	74.90 ⁵⁴
29.2	35.086 ¹⁷⁰	84.35 ¹¹	55.281 ²⁷⁶	91.13 ¹⁵	48.488 ¹¹⁰	42.47 ⁴⁰	47.309 ¹¹⁶	75.36 ⁴⁶
June 8.2	34.934 ¹⁵²	84.15 ²⁰	55.019 ²⁶²	90.49 ⁶⁴	48.391 ⁹⁷	42.95 ⁴⁸	47.206 ¹⁰³	75.72 ³⁶
18.2	34.806 ¹²⁶	83.63 ⁵²	54.778 ²⁴¹	89.39 ¹¹⁰	48.313 ⁷⁸	43.41 ⁴⁶	47.119 ⁸⁷	75.96 ²⁴
28.1	34.711 ⁹⁷	82.83 ⁸⁰	54.566 ²¹²	87.85 ¹⁵⁴	48.253 ⁶⁰	43.84 ⁴³	47.054 ⁶⁵	76.10 ¹⁴
July 8.1	34.645 ⁶⁶	81.75 ¹⁰⁸	54.386 ¹⁸⁰	85.95 ¹⁹⁰	48.215 ³⁸	44.21 ³⁷	47.009 ⁴⁵	76.13 ³
18.1	34.613 ³²	80.44 ¹³¹	54.245 ¹⁴¹	83.71 ²²⁴	48.200 ¹⁶	44.51 ³⁰	46.988 ²¹	76.02 ¹¹
28.1	34.614 ¹	78.88 ¹⁵⁶	54.149 ⁹⁶	81.20 ²⁵¹	48.208 ⁸	44.72 ²¹	46.991 ³	75.77 ²⁵
Aug. 7.0	34.652 ³⁸	77.14 ¹⁷⁴	54.104 ⁴⁵	78.52 ²⁶⁸	48.242 ³⁴	44.83 ¹¹	47.021 ³⁰	75.38 ³⁹
17.0	34.727 ⁷⁵	75.22 ¹⁹²	54.110 ⁶	75.76 ²⁷⁶	48.302 ⁶⁰	44.81 ²	47.077 ⁵⁶	74.83 ⁵⁵
27.0	34.839 ¹¹²	73.14 ²⁰⁶	54.174 ⁶⁴	73.01 ²⁷⁵	48.390 ⁸⁸	44.63 ¹⁸	47.162 ⁸⁵	74.12 ⁷¹
Sept. 6.0	34.989 ¹⁵⁰	70.95 ²¹⁹	54.298 ¹²⁴	70.37 ²⁶⁴	48.507 ¹¹⁷	44.27 ³⁶	47.276 ¹¹⁴	73.23 ⁸⁹
15.9	35.177 ¹⁸⁸	68.67 ²²⁸	54.484 ¹⁸⁶	67.95 ²⁴²	48.654 ¹⁴⁷	43.71 ⁵⁶	47.421 ¹⁴⁵	72.17 ¹⁰⁶
25.9	35.404 ²²⁷	66.34 ²³³	54.729 ²⁴⁵	65.86 ²⁰⁹	48.833 ¹⁷⁹	42.92 ⁷⁹	47.599 ¹⁷⁸	70.91 ¹²⁶
Oct. 5.9	35.670 ²⁶⁶	63.99 ²³⁵	55.031 ³⁰²	64.19 ¹⁶⁷	49.044 ²¹¹	41.91 ¹⁰¹	47.809 ²¹⁰	69.48 ¹⁴³
15.8	35.973 ³⁰³	61.66 ²³³	55.388 ³⁵⁷	63.01 ¹¹⁸	49.284 ²⁴⁰	40.67 ¹²⁴	48.052 ¹⁴⁶	67.87 ¹⁶¹
25.8	36.312 ³³⁹	59.40 ²²⁶	55.790 ⁴⁰²	62.40 ⁶¹	49.555 ²⁷¹	39.21 ¹⁴⁶	48.325 ²⁷³	66.13 ¹⁷⁴
Nov. 4.8	36.679 ³⁶⁷	57.29 ²¹¹	56.228 ⁴³⁸	62.41 ¹	49.851 ²⁹⁶	37.55 ¹⁶⁶	48.626 ³⁰¹	64.27 ¹⁸⁶
14.8	37.072 ³⁹³	55.34 ¹⁸⁵	56.690 ⁴⁶²	63.04 ⁶³	50.167 ³¹⁶	35.74 ¹⁸¹	48.948 ³²²	62.34 ¹⁹³
24.7	37.479 ⁴⁰⁷	53.65 ¹⁶⁹	57.164 ⁴⁷⁴	64.30 ¹²⁶	50.496 ³²⁹	33.82 ¹⁹²	49.286 ³³⁸	60.40 ¹⁹⁴
Dec. 4.7	37.895 ⁴¹⁶	52.24 ¹⁴¹	57.634 ⁴⁷⁰	66.17 ¹⁸⁷	50.830 ³³⁴	31.85 ¹⁹⁷	49.630 ³⁴⁴	58.50 ¹⁹⁰
14.7	38.304 ⁴⁰⁹	51.18 ¹⁰⁶	58.083 ⁴⁴⁹	68.56 ²³⁹	51.161 ³³¹	29.89 ¹⁹⁶	49.973 ³⁴³	56.70 ¹⁸⁰
24.7	38.695 ³⁹¹	50.51 ⁶⁷	58.500 ⁴¹⁷	71.43 ²⁸⁷	51.476 ³¹⁵	28.00 ¹⁸⁹	50.302 ³²⁰	55.07 ¹⁶³
34.6	39.057 ³⁶²	50.24 ²⁷	58.869 ³⁶⁹	74.68 ³²⁵	51.767 ²⁹¹	26.24 ¹⁷⁶	50.607 ³⁰⁶	53.65 ¹⁴²
Mean Place	32.714	82.69	54.658	64.00	46.547	51.90	45.224	82.03
Sec δ, Tan δ	1.334	+0.883	1.708	-1.385	1.011	+0.148	1.047	+0.309
D _p α, D _α α	+0.07	+0.05	+0.04	-0.08	+0.06	+0.01	+0.06	+0.02
D _α δ, D _α δ	-0.3	+0.5	-0.3	+0.5	-0.3	+0.5	-0.3	+0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Leonis. (Regulus.) Mag. 1.3		λ Hydræ. Mag. 3.8		η Velorum. Mag. 4.1		32 Ursæ Majoris. Mag. 5.7	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 10 3	° +12 22	h m 10 6	° -11 56	h m 10 11	° -41 42	h m 10 11	° +65 31
Jan. 0.6	55.806	34.68	31.139	18.27	13.838	11.81	60.85	22.78
10.6	56.089 ²⁸³	33.18 ¹⁵⁰	31.412 ²⁷³	20.77 ²⁵⁰	14.149 ³¹¹	15.02 ³²¹	61.41 ⁵⁶	23.62 ⁵⁴
20.6	56.334 ²⁴⁵	31.92 ¹²⁶	31.648 ²³⁶	23.22 ²⁴⁵	14.412 ²⁶³	18.41 ³³⁹	61.90 ⁴⁹	24.96 ¹³⁴
30.6	56.534 ³⁰⁰	30.92 ¹⁰⁰	31.838 ¹⁹⁰	25.54 ²³²	14.619 ²⁰⁷	21.87 ³⁴⁶	62.30 ⁴⁰	26.75 ¹⁷⁹
Feb. 9.5	56.685 ¹⁵¹	30.20 ⁷²	31.980 ¹⁴²	27.69 ²¹⁵	14.768 ¹⁴⁹	25.32 ³⁴⁵	62.59 ²⁹	28.89 ²¹⁴
19.5	56.786 ¹⁰¹	29.74 ⁴⁶	32.073 ⁹³	29.62 ¹⁹³	14.856 ⁸⁸	28.67 ³³⁵	62.78 ¹⁹	31.31 ²⁴²
29.5	56.837 ⁵¹	29.74 ²⁰	32.073 ⁴⁵	29.62 ¹⁶⁹	14.856 ³²	28.67 ³¹⁷	62.78 ⁷	31.31 ²⁵⁷
Mar. 10.5	56.842 ⁵	29.55 ¹	32.120 ²	31.31 ¹⁴⁴	14.888 ²¹	31.84 ²⁹³	62.85 ³	33.88 ²⁶⁰
20.4	56.807 ³⁵	29.75 ²⁰	32.082 ³⁸	32.75 ¹¹⁶	14.867 ⁶⁹	34.77 ²⁶⁴	62.82 ¹³	36.48 ²⁵³
30.4	56.738 ⁶⁹	30.09 ³⁴	32.012 ⁷⁰	33.91 ⁹¹	14.798 ¹¹⁰	37.41 ²³¹	62.69 ²²	39.01 ²³⁷
Apr. 9.4	56.644 ⁹⁴	30.09 ⁴⁴	32.012 ⁹³	34.82 ⁶⁴	14.688 ¹⁴⁰	39.72 ¹⁹⁴	62.47 ³⁰	41.38 ²⁰⁷
19.3	56.644	30.53	31.919	35.46 ³⁹	14.548	41.66 ¹⁵⁴	62.17 ³⁴	43.45 ¹⁷⁴
29.3	56.531 ¹¹³	31.03 ⁵⁰	31.808 ¹¹¹	35.85 ¹⁵	14.382 ¹⁰⁶	43.20 ¹¹³	61.83 ³⁹	45.19 ¹³³
May 9.3	56.409 ¹²²	31.57 ⁵⁴	31.685 ¹²³	36.00 ¹⁵	14.201 ¹⁸¹	44.33 ⁷¹	61.44 ⁴⁰	46.52 ⁸⁹
19.3	56.284 ¹²⁵	32.11 ⁵⁴	31.560 ¹²⁵	35.93 ⁷	14.010 ¹⁹¹	45.04 ²⁸	61.04 ⁴¹	47.41 ³⁷
29.2	56.162 ¹¹²	32.64 ⁴⁹	31.437 ¹¹⁶	35.64 ⁴⁸	13.817 ¹⁸⁹	45.32 ¹⁶	60.63 ³⁹	47.78 ¹³
June 8.2	56.050 ¹⁰¹	33.13 ⁴⁴	31.321 ¹⁰⁶	35.16 ⁶⁸	13.628 ¹⁸⁰	45.16 ⁵⁸	60.24 ³⁷	47.65 ⁶⁰
18.2	55.949 ⁸⁴	33.57 ³⁷	31.215 ⁹¹	34.48 ⁸³	13.448 ¹⁶⁵	44.58 ⁹⁷	59.87 ³³	47.05 ¹⁰⁷
28.2	55.865 ⁶⁴	33.94 ³¹	31.124 ⁷⁴	33.65 ⁹⁷	13.283 ¹⁴⁷	43.61 ¹³⁵	59.54 ²⁹	45.98 ¹⁵⁰
July 8.1	55.801 ⁴⁵	34.25 ²¹	31.050 ⁵⁶	32.68 ¹⁰⁸	13.136 ¹²³	42.26 ¹⁶⁸	59.25 ²³	44.48 ¹⁹²
18.1	55.756 ²¹	34.46 ¹¹	30.994 ³⁴	31.60 ¹¹⁵	13.013 ⁹⁷	40.58 ¹⁹⁴	59.02 ¹⁷	42.56 ²²⁸
28.1	55.735 ¹	34.57 ¹	30.960 ¹¹	30.45 ¹¹⁹	12.916 ⁶⁶	38.64 ²¹⁸	58.85 ¹⁰	40.30 ²⁵⁷
Aug. 7.0	55.736 ²⁸	34.58 ¹²	30.949 ¹⁴	29.26 ¹¹⁶	12.850 ³⁰	36.46 ²³¹	58.75 ⁴	37.73 ²⁸³
17.0	55.764 ⁵³	34.46 ²⁷	30.963 ⁴⁰	28.10 ¹¹⁰	12.820 ⁸	34.15 ²³⁸	58.71 ³	34.90 ³⁰³
27.0	55.817 ⁸¹	34.19 ⁴²	31.003 ⁷¹	27.00 ⁹⁹	12.828 ⁵⁰	31.77 ²³⁶	58.74 ¹⁰	31.87 ³¹⁶
Sept. 6.0	55.898 ¹¹¹	33.77 ⁶⁰	31.074 ¹⁰⁰	26.01 ⁸¹	12.878 ⁹⁴	29.41 ²²⁵	58.84 ¹⁸	28.71 ³²³
15.9	56.009 ¹⁴¹	33.17 ⁸¹	31.174 ¹³³	25.20 ⁵⁸	12.972 ¹⁴¹	27.16 ²⁰³	59.02 ²⁵	25.48 ³²⁹
25.9	56.150 ¹⁷³	32.36 ¹⁰⁰	31.307 ¹⁶⁶	24.62 ²⁹	13.113 ¹⁸⁸	25.13 ¹⁷³	59.27 ³²	22.19 ³²³
Oct. 5.9	56.323 ²⁰⁵	31.36 ¹²²	31.473 ²⁰¹	24.33 ²	13.301 ²³⁴	23.40 ¹³⁴	59.59 ³⁹	18.96 ³¹²
15.9	56.528 ²³⁷	30.14 ¹⁴¹	31.674 ²³³	24.35 ³⁹	13.535 ²⁸⁰	22.06 ⁸⁷	59.98 ⁴⁶	15.84 ²⁹⁸
25.8	56.765 ²⁶⁸	28.73 ¹⁶¹	31.907 ²⁶⁶	24.74 ⁷⁶	13.815 ³²¹	21.17 ³⁹	60.44 ⁵³	12.86 ²⁷⁰
Nov. 4.8	57.033 ²⁹⁵	27.12 ¹⁷⁶	32.173 ²⁹¹	25.50 ¹¹³	14.136 ³⁵⁵	20.80 ¹⁸	60.97 ⁵⁷	10.16 ²⁴⁰
14.8	57.328 ³¹⁶	25.36 ¹⁸⁸	32.464 ³¹⁵	26.63 ¹⁴⁹	14.491 ³⁸⁰	20.98 ⁷⁶	61.54 ⁶²	7.76 ²⁰³
24.7	57.644 ³³¹	23.48 ¹⁹⁴	32.779 ³²⁸	28.12 ¹⁸⁰	14.871 ³⁹⁶	21.74 ¹³¹	62.16 ⁶⁵	5.73 ¹⁶¹
Dec. 4.7	57.975 ³³⁸	21.54 ¹⁹⁶	33.107 ³³⁴	29.92 ²⁰⁹	15.267 ³⁹⁹	23.05 ¹⁸⁵	62.81 ⁶⁷	4.12 ¹¹¹
14.7	58.313 ³³⁶	19.58 ¹⁹¹	33.441 ³³⁰	32.01 ²²⁹	15.666 ³⁹⁰	24.90 ²³³	63.48 ⁶⁶	3.01 ⁵⁷
24.7	58.649 ³²³	17.67 ¹⁷⁹	33.771 ³¹⁵	34.30 ²⁴³	16.056 ³⁷⁰	27.23 ²⁷⁴	64.14 ⁶⁴	2.44 ⁶
34.6	58.972 ²⁹⁹	15.88 ¹⁶²	34.086 ²⁹¹	36.73 ²⁴⁹	16.426 ³³⁵	29.97 ³⁰⁶	64.78 ⁶¹	2.38 ⁵²
34.6	59.271	14.26	34.377	39.22	16.761	33.03	65.39	2.90
Mean Place	54.023	41.53	29.579	18.16	12.373	19.48	57.046	40.72
Sec δ , Tan δ	1.024	+0.219	1.022	-0.212	1.340	-0.891	2.413	+2.196
$D_{\delta} \alpha$, $D_{\alpha} \alpha$	+0.06	+0.01	+0.06	-0.01	+0.05	-0.05	+0.09	+0.13
$D_{\delta} \delta$, $D_{\alpha} \delta$	-0.3	+0.5	-0.3	+0.5	-0.4	+0.5	-0.4	+0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ζ Leonis. Mag. 3.6			λ Ursæ Majoris. Mag. 3.5			γ Leonis <i>pr.</i> Mag. 2.6			μ Ursæ Majoris. Mag. 3.2		
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.
	h	m	°	h	m	°	h	m	°	h	m	°
	10	12	+23 49	10	12	+43 19	10	15	+20 15	10	17	+41 54
	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 0.7	3.201	60.75	101	4.637	49.18	11	22.457	51.35	22.147	66.05	22	
10.6	3.506 ⁸⁰⁵	59.74	101	5.000 ³⁶³	49.07	11	22.757 ³⁰⁰	60.16	22.508 ³⁶¹	65.83	22	
20.6	3.773 ²⁶⁷	59.05	69	5.318 ³¹⁸	49.39	32	23.021 ²⁶⁴	49.25	22.825 ³¹⁷	66.04	21	
30.6	3.994 ²²¹	58.69	36	5.579 ²⁶¹	50.12	73	23.241 ²²⁰	48.66	23.088 ²⁶³	66.67	63	
Feb. 9.5	4.163 ¹⁶⁹	58.63	6	5.779 ²⁰⁰	51.21	109	23.411 ¹⁷⁰	48.39	23.291 ²⁰³	67.64	97	
	116	25		132	137		118	0	138	120		
19.5	4.279	58.88		5.911	52.58		23.529	48.39	23.429	68.93		
29.5	4.342	59.37	49	5.980	54.18	160	23.595	48.66	23.503	70.45	153	
Mar. 10.5	4.356 ¹⁴	60.06	69	5.985 ⁵	55.90	172	23.613 ¹⁸	49.14	23.516	72.13	163	
20.4	4.324 ³²	60.88	82	5.932 ⁵³	57.67	177	23.588 ²⁵	49.77	23.473	73.85	172	
30.4	4.256 ⁶⁸	61.80	92	5.831 ¹⁰¹	59.41	174	23.526 ⁶²	50.52	23.382	75.56	171	
	98	93		138	160		90	80	130	150		
Apr. 9.4	4.158	62.73		5.698	61.01		23.436	51.32	23.252	77.15		
19.4	4.039	63.64	91	5.525	62.44	143	23.324	52.13	23.094	78.59	144	
29.3	3.908	64.48	84	5.340	63.61	117	23.200	52.90	22.918	79.79	120	
May 9.3	3.773	65.21	73	5.147	64.51	90	23.071	53.59	22.733	80.74	95	
19.3	3.639	65.81	60	4.955	65.09	58	22.943	54.19	22.549	81.37	63	
	127	46		182	24		119	49	177	31		
29.2	3.512	66.27		4.773	65.33		22.824	54.68	22.372	81.68		
June 8.2	3.400	66.55	28	4.607	65.25	8	22.715	55.04	22.210	81.67	1	
18.2	3.303	66.67	12	4.461	64.83	42	22.621	55.25	22.067	81.33	34	
28.2	3.227	66.61	6	4.343	64.09	74	22.547	55.32	21.949	80.67	66	
July 8.1	3.171	66.36	25	4.252	63.08	106	22.493	55.23	21.858	79.72	95	
	31	41		58	132		32	25	60	128		
18.1	3.140	65.95		4.194	61.71		22.461	54.98	21.798	78.47		
28.1	3.133	65.36	59	4.169	60.12	159	22.452	54.57	21.769	76.98	149	
Aug. 7.0	3.153	64.59	77	4.180	58.30	182	22.471	54.01	21.773	75.23	175	
17.0	3.201	63.65	94	4.226	56.27	203	22.515	53.26	21.814	73.29	194	
27.0	3.278	62.53	112	4.312	54.08	219	22.588	52.35	21.891	71.16	213	
	109	129		124	234		103	110	116	228		
Sept. 6.0	3.387	61.24		4.436	51.74		22.691	51.25	22.007	68.88		
15.9	3.527	59.78	146	4.601	49.29	245	22.826	49.98	22.162	66.49	239	
25.9	3.702	58.15	163	4.808	46.78	251	22.996	48.52	22.358	64.01	248	
Oct. 5.9	3.911	56.39	176	5.056	44.23	255	23.198	46.90	22.596	61.48	263	
15.9	4.154	54.50	189	5.345	41.70	253	23.433	45.13	22.873	58.96	262	
	275	198		327	246		269	189	317	247		
25.8	4.429	52.52		5.672	39.24		23.702	43.24	23.190	56.49		
Nov. 4.8	4.735	50.48	204	6.034	36.92	222	24.001	41.26	23.542	54.13	296	
14.8	5.064	48.44	204	6.426	34.79	213	24.323	39.24	23.924	51.95	218	
24.7	5.412	46.46	198	6.838	32.90	189	24.663	37.23	24.328	50.00	195	
Dec. 4.7	5.769	44.58	188	7.261	31.33	157	25.018	35.29	24.743	48.34	166	
	355	169		423	120		349	180	417	128		
14.7	6.124	42.89		7.684	30.13		25.362	33.49	25.160	47.06		
24.7	6.468	41.42	147	8.093	29.32	81	25.701	31.89	25.563	46.15	91	
34.6	6.790	40.23	119	8.476	28.95	37	26.018	30.52	25.942	45.67	48	
Mean Place	1.296	71.01		2.266	63.86		20.627	60.85	19.861	80.79		
Sec δ, Tan δ	1.093	+0.442		1.375	+0.943		1.066	+0.369	1.344	+0.898		
$D_{\mu} a, D_{\mu} a$	+0.07	+0.03		+0.07	+0.06		+0.07	+0.02	+0.07	+0.05		
$D_{\mu} \delta, D_{\mu} \delta$	-0.4	+0.5		-0.4	+0.5		-0.4	+0.4	-0.4	+0.4		

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	80 H. Ursae Majoris. Mag. 4.9		μ Hydrae. Mag. 4.1		31 Leonis Minoris. Mag. 4.4		α Antliae. Mag. 4.4	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	10 18	+65 58	10 22	-16 24	10 23	+37 7	10 23	-30 38
	s	"	s	"	s	"	s	"
Jan. 0.7	9.58	71.86	3.099	24.47	4.011	62.72	19.776	19.36
10.6	10.16 ⁶⁸	72.64 ⁷⁸	3.384 ²⁶⁵	27.10 ²⁶³	4.357 ³⁴⁶	62.23 ⁴⁹	20.076 ³⁰⁰	22.33 ²⁹⁷
20.6	10.66 ⁵⁰	73.95 ¹³¹	3.633 ²⁴⁹	29.72 ²⁶²	4.663 ³⁰⁶	62.16 ⁷	20.336 ²⁶⁰	25.41 ³⁰⁸
30.6	11.08 ⁴³	75.71 ¹⁷⁶	3.838 ²⁰⁶	32.21 ²⁶²	4.918 ²⁵⁵	62.48 ³²	20.548 ²¹²	28.51 ³¹⁰
Feb. 9.5	11.40 ³²	77.84 ²¹³	3.995 ¹⁵⁷	34.64 ²⁴⁰	5.118 ²⁰⁰	63.17 ⁶⁰	20.708 ¹⁶⁰	31.54 ³⁰³
19.5	11.59 ¹⁹	80.25 ²⁴¹	4.104 ¹⁰⁰	36.83 ²¹⁹	5.257 ¹³⁰	64.17 ¹⁰⁰	20.816 ¹⁰⁸	34.44 ²⁹⁰
29.5	11.68 ⁹	82.84 ²⁵⁰	4.164 ⁶⁰	38.80 ¹⁹⁷	5.396 ⁷⁰	65.43 ¹²⁶	20.872 ⁵⁶	37.16 ²⁷²
Mar. 10.5	11.66 ²	85.48 ²⁶⁴	4.180 ¹⁶	40.51 ¹⁷¹	5.358 ²²	66.85 ¹⁴²	20.880 ⁸	39.63 ²⁴⁷
20.4	11.54 ¹²	88.06 ²⁵⁸	4.155 ²⁶	41.96 ¹⁴⁵	5.328 ³⁰	68.37 ¹⁵²	20.844 ³⁶	41.82 ²¹⁹
30.4	11.32 ²²	90.47 ²⁴¹	4.098 ⁸⁷	43.13 ¹¹⁷	5.252 ⁷⁶	69.91 ¹⁸⁴	20.773 ⁷¹	43.71 ¹⁸⁹
Apr. 9.4	11.03 ²⁰	92.62 ²¹⁵	4.014 ⁸⁴	44.03 ⁹⁰	5.140 ¹¹³	71.89 ¹⁴⁸	20.672 ¹⁰¹	45.26 ¹⁵⁵
19.4	10.69 ³⁴	94.41 ¹⁷⁹	3.910 ¹⁰⁴	44.64 ⁶¹	5.001 ¹³⁰	72.74 ¹³⁶	20.549 ¹²³	46.46 ¹²⁰
29.3	10.30 ³⁰	95.81 ¹⁴⁰	3.793 ¹¹⁷	44.99 ⁸⁵	4.846 ¹⁵⁵	73.91 ¹¹⁷	20.411 ¹³⁸	47.31 ⁸⁵
May 9.3	9.89 ⁴¹	96.74 ⁹⁸	3.670 ¹²³	45.08 ⁹	4.680 ¹⁶⁶	74.86 ⁹⁵	20.264 ¹⁴⁷	47.81 ⁵⁰
19.3	9.47 ⁴²	97.19 ⁴⁵	3.546 ¹²⁴	44.91 ¹⁷	4.515 ¹⁶⁵	75.55 ⁶⁰	20.115 ¹⁴⁹	47.95 ¹⁴
29.2	9.07 ⁴⁰	97.14 ⁵	3.427 ¹¹⁹	44.52 ³⁰	4.356 ¹⁵⁰	75.97 ⁴²	19.968 ¹⁴⁷	47.73 ²²
June 8.2	8.69 ³⁸	96.60 ⁵⁴	3.315 ¹¹²	43.90 ⁶²	4.209 ¹⁴⁷	76.08 ¹¹	19.829 ¹³⁹	47.18 ⁵⁵
18.2	8.34 ³⁵	95.59 ¹⁰¹	3.214 ¹⁰¹	43.09 ⁸¹	4.079 ¹³⁰	75.91 ¹⁷	19.700 ¹²⁹	46.30 ⁸⁸
28.2	8.04 ³⁰	94.13 ¹⁴⁶	3.128 ⁸⁶	42.10 ⁹⁹	3.972 ¹⁰⁷	75.45 ⁴⁶	19.588 ¹¹²	45.13 ¹¹⁷
July 8.1	7.80 ²⁴	92.26 ¹⁸⁷	3.060 ⁹⁸	40.95 ¹¹⁵	3.887 ⁸⁸	74.71 ⁷⁴	19.492 ⁹⁶	43.69 ¹⁴⁴
18.1	7.61 ¹⁹	90.02 ²²⁴	3.011 ⁴⁹	39.70 ¹²⁵	3.831 ⁵⁶	73.71 ¹⁰⁰	19.419 ⁷³	42.05 ¹⁶⁴
28.1	7.49 ¹²	87.46 ²⁵⁶	2.984 ²⁷	38.39 ¹³¹	3.803 ²⁸	72.46 ¹²⁵	19.369 ⁵⁰	40.25 ¹⁸⁰
Aug. 7.1	7.43 ⁶	84.64 ²⁸²	2.980 ⁴	37.05 ¹³⁴	3.804 ¹	70.98 ¹⁴⁸	19.349 ²⁰	38.34 ¹⁹¹
17.0	7.45 ²	81.60 ³⁰⁴	3.005 ²⁵	35.75 ¹³⁰	3.838 ⁸⁴	69.29 ¹⁶⁹	19.359 ¹⁰	36.40 ¹⁹⁴
27.0	7.54 ⁹	78.41 ³¹⁹	3.057 ⁵²	34.56 ¹¹⁹	3.906 ⁶⁸	67.41 ¹⁸³	19.402 ⁴³	34.51 ¹⁸⁹
Sept. 6.0	7.70 ¹⁶	75.13 ³²⁸	3.141 ⁸⁴	33.51 ¹⁰⁵	4.010 ¹⁰⁴	65.35 ²⁰⁶	19.484 ⁸²	32.73 ¹⁷⁸
15.9	7.94 ²⁴	71.82 ³³¹	3.259 ¹¹⁸	32.69 ⁸²	4.150 ¹⁴⁰	63.17 ²¹⁸	19.604 ¹²⁰	31.18 ¹⁵⁵
25.9	8.25 ³¹	68.54 ³²⁸	3.413 ¹⁶⁴	32.13 ⁵⁶	4.329 ¹⁷⁹	60.86 ²³¹	19.765 ¹⁶¹	29.90 ¹²⁸
Oct. 5.9	8.63 ³⁸	65.35 ³¹⁹	3.603 ¹⁹⁰	31.91 ²²	4.548 ²¹⁹	58.48 ²³⁸	19.968 ²⁰³	28.98 ⁹²
15.9	9.08 ⁴⁵	62.33 ³⁰²	3.829 ²²⁶	32.06 ¹⁵	4.806 ²⁵⁸	56.06 ²⁴²	20.211 ²⁴³	28.47 ⁵¹
25.8	9.60 ⁵²	59.54 ²⁷⁹	4.089 ²⁶⁰	32.60 ⁵⁴	5.101 ²⁶⁵	53.65 ²⁴¹	20.490 ²⁷⁹	28.43 ⁴
Nov. 4.8	10.17 ⁵⁷	57.06 ²⁴⁸	4.379 ²⁹⁰	33.53 ⁹⁸	5.431 ³⁸⁰	51.31 ²⁸⁴	20.804 ³¹⁴	28.87 ⁴⁴
14.8	10.79 ⁶²	54.95 ²¹¹	4.693 ³¹⁴	34.87 ¹³⁴	5.790 ³⁵⁹	49.08 ²²³	21.143 ³³⁹	29.83 ⁹⁶
24.8	11.45 ⁶⁶	53.27 ¹⁶⁸	5.024 ³³¹	36.57 ¹⁷⁰	6.171 ³⁸¹	47.05 ²⁰³	21.501 ³⁵⁸	31.27 ¹⁴⁴
Dec. 4.7	12.13 ⁶⁸	52.08 ¹¹⁹	5.363 ³³⁹	38.59 ²⁰²	6.564 ³⁹³	45.27 ¹⁷⁸	21.865 ³⁶⁴	33.16 ¹⁸⁹
14.7	12.80 ⁶⁷	51.43 ⁶⁵	5.701 ³³⁸	40.87 ²²⁸	6.960 ³⁹⁶	43.79 ¹⁴⁸	22.227 ³⁶²	35.45 ²²⁹
24.7	13.45 ⁶⁵	51.32 ¹¹	6.026 ³²⁵	43.34 ²⁴⁷	7.345 ³⁸⁵	42.67 ¹¹²	22.572 ³⁴⁵	38.06 ²⁶¹
34.6	14.07 ⁶²	51.76 ⁴⁴	6.328 ³⁰²	45.94 ²⁶⁰	7.708 ³⁶³	41.94 ⁷³	22.892 ³²⁰	40.91 ²⁸⁵
Mean Place	5.802	90.34	1.636	25.35	1.899	76.80	18.372	24.24
Sec. δ, Tan δ	2.458	+2.245	1.042	-0.294	1.254	+0.757	1.163	-0.592
D _φ α, D _ω α	+0.09	+0.14	+0.06	-0.02	+0.07	+0.05	+0.05	-0.04
D _φ δ, D _ω δ	-0.4	+0.4	-0.4	+0.4	-0.4	+0.4	-0.4	+0.4

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	36 Urae Majoris. Mag. 4.8			9 H. Draconis. Mag. 5.0			ρ Leonis. Mag. 3.8			33 Sextantis. Mag. 6.4		
	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	10	25	+56 24	10	27	+76 8	10	28	+ 9 43	10	37	- 1
	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 0.7	18.566	24.32	65.29	26.51	25.024	74.29	9.269	61.99				
10.6	19.025 ⁴⁵⁹	24.65 ⁸³	66.22 ⁹³	27.53 ¹⁰²	25.320 ²⁹⁶	72.60 ¹⁶⁹	9.562 ²⁹³	64.13				
20.6	19.490 ⁴⁰⁵	25.47 ⁸²	67.04 ⁸²	29.10 ¹⁵⁷	25.581 ²⁶¹	71.11 ¹⁴⁹	9.823 ²⁶¹	66.13				
30.6	19.767 ³³⁷	26.76 ¹²⁹	67.70 ⁶⁶	31.15 ²⁰⁶	25.800 ²¹⁹	69.90 ¹²¹	10.043 ²²⁰	67.96				
Feb. 9.6	20.028 ²⁶¹	28.44 ¹⁶⁸	68.21. ⁵¹	33.58 ²⁴³	25.973 ¹⁷³	68.95 ⁹⁵	10.219 ¹⁷⁶	69.55				
	177	198	33	271	125	66	128					
19.5	20.205 ⁹³	30.42	68.54.	36.29	26.098	68.29	10.347	70.90				
29.5	20.298	32.64 ²²²	68.68	39.17 ²⁸⁸	26.174	67.88	10.428	71.99				
Mar. 10.5	20.308 ¹⁰	34.96 ²³²	68.64	42.09 ²⁹²	26.204 ³⁰	67.73 ¹⁵	10.465 ³⁷	72.84				
20.4	20.244 ⁶⁴	37.28 ²³²	68.42 ²²	44.93 ²⁸⁴	26.193 ¹¹	67.78 ⁵	10.462 ³	73.43				
30.4	20.113 ¹⁸¹	39.51 ²²³	68.04 ³⁸	47.55 ²⁶²	26.148 ⁴⁵	68.02 ²⁴	10.424 ³⁸	73.80				
	187	204	50	234	74	36	66					
Apr. 9.4	19.926	41.55	67.54	49.89	26.074	68.38	10.358	73.97				
19.4	19.696 ²³⁰	43.31 ¹⁷⁶	66.92 ⁶²	51.83 ¹⁹⁴	25.980 ⁹⁴	68.84 ⁴⁶	10.272 ⁸⁶	73.97				
29.3	19.436 ²⁶⁰	44.75 ¹⁴⁴	66.22 ⁷⁰	53.32 ¹⁴⁹	25.872 ¹⁰⁸	69.37 ⁵³	10.172 ¹⁰⁰	73.80				
May 9.3	19.161 ²⁷⁵	45.80 ¹⁰⁵	65.47 ⁷⁵	54.29 ⁹⁷	25.757 ¹¹⁵	69.92 ⁵⁵	10.064 ¹⁰⁸	73.51				
19.3	18.881 ²⁸⁰	46.43 ⁶³	64.70 ⁷⁷	54.72 ⁴³	25.641 ¹¹⁶	70.49 ⁵⁷	9.954 ¹¹⁰	73.11				
	273	20	77	11	110	54	108					
29.3	18.608	46.63	63.93	54.61	25.531	71.03	9.846	72.61				
June 8.2	18.352 ²⁵⁶	46.39 ²⁴	63.21 ⁷²	53.96 ⁶⁵	25.428 ¹⁰³	71.55 ⁵²	9.745 ¹⁰¹	72.04				
18.2	18.119 ²³³	45.71 ⁶⁸	62.53 ⁶⁸	52.79 ¹¹⁷	25.338 ⁹⁰	72.02 ⁴⁷	9.653 ⁹²	71.42				
28.2	17.918 ²⁰¹	44.62 ¹⁰⁹	61.91 ⁶²	51.12 ¹⁶⁷	25.263 ⁷⁵	72.42 ⁴⁰	9.573 ⁸⁰	70.75				
July 8.1	17.753 ¹⁶⁵	43.15 ¹⁴⁷	61.39 ⁵²	49.01 ²¹¹	25.204 ⁵⁹	72.77 ³⁵	9.510 ⁶³	70.07				
	123	181	42	252	39	24	47					
18.1	17.630	41.34	60.97	46.49	25.165	73.01	9.463	69.39				
28.1	17.550 ⁸⁰	39.20 ²¹⁴	60.67 ³⁰	43.65 ²⁸⁴	25.147 ¹⁸	73.13	9.436 ²⁷	68.75				
Aug. 7.1	17.518 ³²	36.80 ²⁴⁰	60.47 ²⁰	40.51 ³¹⁴	25.151 ⁴	73.15	9.429 ⁷	68.18				
17.0	17.535 ¹⁷	34.15 ²⁶⁵	60.39 ⁸	37.17 ³³⁴	25.181 ³⁰	73.02 ¹³	9.447 ¹⁸	67.70				
27.0	17.603 ⁶⁸	31.34 ²⁸¹	60.46 ⁷	33.67 ³⁵⁰	25.236 ⁵⁵	72.71 ³¹	9.490 ⁴³	67.35				
	120	295	18	358	86	48	74					
Sept. 6.0	17.723	28.39	60.64	30.09	25.322	72.23	9.564	67.19				
16.0	17.898 ¹⁷⁵	25.35 ³⁰⁴	60.95 ³¹	26.49 ³⁶⁰	25.437 ¹¹⁵	71.54 ⁶⁹	9.669 ¹⁰⁵	67.23				
25.9	18.128 ²³⁰	22.29 ³⁰⁶	61.41 ⁴⁶	22.97 ³⁵²	25.587 ¹⁵⁰	70.64 ⁹⁰	9.805 ¹³⁶	67.53				
Oct. 5.9	18.413 ²⁸⁵	19.26 ³⁰³	61.97 ⁵⁶	19.57 ³⁴⁰	25.769 ¹⁸²	69.50 ¹¹⁴	9.978 ¹⁷³	68.08				
15.9	18.751 ³³⁸	16.33 ²⁹³	62.65 ⁶⁸	16.38 ³¹⁹	25.986 ²¹⁷	68.15 ¹³⁵	10.185 ²⁰⁷	68.93				
	390	278	80	292	250	157	242					
25.8	19.141	13.55	63.45	13.46	26.236	66.58	10.427	70.07				
Nov. 4.8	19.576 ⁴³⁵	10.99 ²⁵⁶	64.34 ⁸⁹	10.90 ²⁵⁶	26.516 ²⁸⁰	64.83 ¹⁷⁵	10.699 ²⁷²	71.48				
14.8	20.050 ⁴⁷⁴	8.73 ²²⁶	65.31 ⁹⁷	8.77 ²¹³	26.822 ³⁰⁶	62.93 ¹⁹⁰	10.999 ³⁰⁰	73.17				
24.8	20.555 ⁵⁰⁵	6.83 ¹⁹⁰	66.34 ¹⁰³	7.12 ¹⁶⁵	27.147 ³²⁵	60.92 ²⁰¹	11.318 ³¹⁹	75.07				
Dec. 4.7	21.076 ⁵²¹	5.35 ¹⁴⁸	67.40 ¹⁰⁶	6.02 ¹¹⁰	27.482 ³³⁵	58.86 ²⁰⁶	11.650 ³³²	77.14				
	524	102	107	53	338	203	334					
14.7	21.600	4.33	68.47	5.49	27.820	56.83	11.984	79.31				
24.7	22.111 ⁵¹¹	3.83 ⁵⁰	69.50 ¹⁰³	5.57 ⁸	28.149 ³²⁹	54.87 ¹⁹⁶	12.310 ³²⁶	81.52				
34.7	22.591 ⁴⁸⁰	3.85 ²	70.48 ⁹⁸	6.25 ⁶⁸	28.458 ³⁰⁹	53.05 ¹⁸²	12.618 ³⁰⁸	83.65				
Mean Place	15.712	42.15	59.569	46.50	23.397	81.40	7.785	57.93				
Sec δ, Tan δ	1.808	+1.505	4.175	+4.055	1.014	+0.172	1.000	-0.02				
$D\psi\alpha, D\omega\alpha$	+0.08	+0.09	+0.10	+0.25	+0.06	+0.01	+0.06	0.00				
$D\psi\delta, D\omega\delta$	-0.4	+0.4	-0.4	+0.4	-0.4	+0.4	-0.4	+0.4				

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	41 Leonis Minoris. Mag. 5.0		θ Argus. Mag. 3.0		42 Leonis Minoris. Mag. 5.4		γ Argus. Var. 1.6-6.6	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	10 38	+23 37	10 39	-63 57	10 41	+31 6	10 41	-59 14
	s	"	s	"	s	"	s	"
Jan. 0.7	52.853	31.17	58.74	4.56	13.730	76.58	49.233	22.17
10.6	53.173 ³²⁰	29.99 ¹¹⁸	59.23 ⁴⁹	7.64 ³⁰⁸	14.069 ³³⁹	75.68 ⁹⁰	49.673 ⁴⁴⁰	25.26 ³⁰⁹
20.6	53.460 ²⁸⁷	29.15 ⁸⁴	59.64 ⁴¹	11.07 ³⁴³	14.372 ³⁰³	75.19 ⁴⁹	50.050 ³⁷⁷	28.68 ³⁴²
30.6	53.703 ²⁴³	28.65 ⁵⁰	59.97 ³³	14.75 ³⁶⁸	14.631 ²⁵⁹	75.09 ¹⁰	50.357 ³⁰⁷	32.32 ³⁶⁴
Feb. 9.6	53.898 ¹⁹⁵	28.50 ¹⁵	60.22 ²⁵	18.58 ³⁸³	14.839 ²⁰⁸	75.36 ²⁷	50.587 ²³⁰	36.09 ³⁷⁷
	144	17	15	388	153	61	151	381
19.5	54.042	28.67	60.37	22.46	14.992	75.97	50.738	39.90
29.5	54.132 ⁹⁰	29.11 ⁴⁴	60.45 ⁸	26.31 ³⁸⁵	15.090 ⁹⁸	76.85 ⁸⁸	50.812 ⁷⁴	43.66 ³⁷⁶
Mar. 10.5	54.174 ²	29.79 ⁶⁸	60.43 ²	30.03 ³⁷²	15.133 ⁴³	77.97 ¹¹²	50.811 ¹	47.28 ³⁶²
20.4	54.172 ⁴	30.64 ⁸⁵	60.33 ¹⁰	33.56 ³⁵³	15.128 ⁵	79.53 ¹²⁶	50.743 ⁶⁸	50.67 ³³⁹
30.4	54.128 ⁴⁴	31.61 ⁹⁷	60.16 ¹⁷	36.80 ³²⁴	15.080 ⁴⁸	80.57 ¹³⁴	50.613 ¹³⁰	53.79 ³¹²
	76	102	23	290	84	135	183	278
Apr. 9.4	54.052	32.63	59.93	39.70	14.996	81.92	50.430	56.57
19.4	53.953 ⁹⁹	33.65 ¹⁰²	59.65 ²⁸	42.22 ²⁵²	14.885 ¹¹¹	83.20 ¹²⁸	50.203 ²²⁷	58.96 ²³⁹
29.3	53.835 ¹¹⁸	34.62 ⁹⁷	59.34 ³¹	44.30 ²⁰⁸	14.756 ¹²⁹	84.37 ¹¹⁷	49.942 ²⁶¹	60.93 ¹⁹⁷
May 9.3	53.709 ¹²⁶	35.50 ⁸⁸	58.99 ³⁵	45.92 ¹⁶²	14.616 ¹⁴⁰	85.33 ¹⁰¹	49.657 ²⁸⁵	62.43 ¹⁵⁰
19.3	53.580 ¹²⁹	36.24 ⁷⁴	58.62 ³⁷	47.03 ¹¹¹	14.472 ¹⁴⁴	86.20 ⁸²	49.354 ³⁰³	63.44 ¹⁰¹
	126	60	38	61	142	59	310	52
29.3	53.454	36.84	58.24	47.64	14.330	86.79	49.044	63.96
June 8.2	53.336 ¹¹⁸	37.27 ⁴³	57.86 ³⁸	47.73 ⁹	14.197 ¹³³	87.13 ³⁴	48.733 ³¹¹	63.96 ⁰
18.2	53.230 ¹⁰⁶	37.50 ²⁸	57.49 ³⁷	47.29 ⁴⁴	14.077 ¹²⁰	87.23 ¹⁰	48.432 ³⁰¹	63.47 ⁴⁹
28.2	53.138 ⁹²	37.55 ⁵	57.14 ³⁵	46.35 ⁹⁴	13.972 ¹⁰⁵	87.06 ¹⁷	48.146 ²⁸⁶	62.50 ⁹⁷
July 8.1	53.066 ⁷²	37.40 ¹⁵	56.81 ³³	44.94 ¹⁴¹	13.886 ⁸⁶	86.66 ⁴⁰	47.886 ²⁰⁰	61.08 ¹⁴²
	54	34	28	185	63	67	228	183
18.1	53.012 ³⁰	37.06	56.53 ²⁴	43.09	13.823 ⁴⁰	85.99	47.658 ¹⁸⁷	59.25 ²¹⁸
28.1	52.982 ⁸	36.53 ⁵³	56.29 ¹⁷	40.88 ²²¹	13.783 ¹⁴	85.10 ⁸⁹	47.471 ¹⁴⁰	57.07 ²⁴⁶
Aug. 7.1	52.974 ¹⁹	35.79 ⁷⁴	56.12 ¹¹	38.36 ²⁵²	13.769 ¹⁵	83.97 ¹¹³	47.331 ⁸⁴	54.61 ²⁶⁷
17.0	52.993 ⁴⁷	34.86 ¹¹³	56.01 ³	35.63 ²⁷³	13.784 ⁴³	82.63 ¹³⁴	47.247 ²¹	51.94 ²⁷⁷
27.0	53.040 ⁷⁸	33.73 ¹³¹	55.98 ⁴	32.77 ²⁸⁶	13.827 ⁷⁸	81.07 ¹⁵⁶	47.226 ⁴⁸	49.17 ²⁷⁸
Sept. 6.0	53.118 ¹¹¹	32.42 ¹⁵⁰	56.02 ¹³	29.89 ²⁷⁰	13.905 ¹¹³	79.33 ¹⁹²	47.274 ¹¹⁸	46.39 ²⁶⁸
16.0	53.229 ¹⁴⁵	30.92 ¹⁶⁹	56.15 ²²	27.10 ²⁵⁸	14.018 ¹⁵⁰	77.41 ²⁰⁹	47.392 ¹⁹³	43.71 ²⁴⁶
25.9	53.374 ¹⁸²	29.23 ¹⁸⁵	56.37 ³¹	24.52 ²²⁷	14.168 ¹⁸⁶	75.32 ²²⁰	47.585 ²⁶⁷	41.25 ²¹⁵
Oct. 5.9	53.556 ²¹⁹	27.38 ¹⁹⁹	56.68 ³⁸	22.25 ¹⁸⁵	14.354 ²²⁷	73.12 ²³⁰	47.852 ³³⁹	39.10 ¹⁷³
15.9	53.775 ²⁵⁴	25.39 ²¹⁰	57.06 ⁴⁶	20.40 ¹³⁶	14.581 ²⁶⁴	70.82 ²³⁵	48.191 ⁴⁰²	37.37 ¹²⁴
25.8	54.029	23.29	57.52	19.04	14.845	68.47	48.593	36.13
Nov. 4.8	54.315 ²⁸⁶	21.13 ²¹⁶	58.04 ⁵²	18.25 ⁷⁹	15.144 ²⁹⁹	66.11 ²³⁶	49.051 ⁴⁵⁸	35.46 ⁶⁷
14.8	54.632 ³¹⁷	18.95 ²¹⁸	58.61 ⁵⁷	18.08 ¹⁷	15.475 ³³¹	63.81 ²³⁰	49.553 ⁵⁰²	35.41 ⁵
24.8	54.970 ³³⁸	16.81 ²¹⁴	59.21 ⁶⁰	18.56 ⁴⁸	15.831 ³⁵⁶	61.63 ²¹⁸	50.082 ⁵²⁹	35.98 ⁵⁷
Dec. 4.7	55.324 ³⁵⁶	14.77 ²⁰⁴	59.82 ⁶¹	19.69 ¹¹³	16.201 ³⁷⁰	59.62 ²⁰¹	50.623 ⁵⁴¹	37.18 ¹²⁰
	354	188	60	173	376	176	534	180
14.7	55.680	12.89	60.42	21.42	16.577	57.86	51.157	58.98
24.7	56.031 ³⁵¹	11.25 ¹⁶⁴	61.00 ⁵⁸	22.73 ²³¹	16.947 ³⁷⁰	56.40 ¹⁴⁶	51.668 ⁵¹¹	41.34 ²³⁶
34.7	56.365 ³³⁴	9.88 ¹³⁷	61.52 ⁵²	26.53 ²⁸⁰	17.301 ³⁵⁴	55.29 ¹¹¹	52.139 ⁴⁷¹	44.15 ²⁸¹
Mean Place	51.109	42.71	57.356	16.84	11.871	90.24	47.913	33.68
Sec δ, Tan δ	1.091	+0.437	2.278	-2.046	1.168	+0.604	1.955	-1.680
D _φ α, D _ω α	+0.07	+0.03	+0.04	-0.13	+0.07	+0.04	+0.05	-0.11
D _φ δ, D _ω δ	-0.4	+0.3	-0.4	+0.3	-0.4	+0.3	-0.4	+0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	μ Argus. Mag. 2.8		ζ Leonis. Mag. 5.3		δ^2 Chamæleon. Mag. 4.6		γ Hydre. Mag. 3.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 10 43	° ' " -48 58	h m 10 44	° ' " +10 58	h m 10 44	° ' " -80 5	h m 10 45	° ' " -15 45
Jan. 0.7	10.458	25.50	52.184	75.55	62.31	35.39	30.078	12.61
10.6	10.830 ³⁷²	28.58 ³⁰⁸	52.490 ³⁰⁶	73.84 ¹⁷¹	63.39 ¹⁰⁸	38.19 ²⁸⁰	30.379 ³⁰¹	15.17 ²⁵⁶
20.6	11.154 ³²⁴	31.91 ³³³	52.764 ²⁷⁴	72.37 ¹⁴⁷	64.30 ⁹¹	41.46 ³²⁷	30.647 ²⁶⁸	17.72 ²⁵⁵
30.6	11.420 ²⁶⁶	35.43 ³⁵²	52.999 ²³⁵	71.17 ¹²⁰	65.01 ⁷¹	45.05 ³⁵⁹	30.873 ²⁰⁸	20.21 ²⁴⁹
Feb. 9.6	11.626 ²⁰⁶	39.02 ³⁵⁹	53.188 ¹⁸⁹	70.25 ⁹²	65.53 ⁵²	48.86 ³⁸¹	31.055 ¹⁸²	22.57 ²³⁶
19.5	11.767 ¹⁴¹	42.59 ³⁵⁷	53.329 ¹⁴¹	69.64 ⁶¹	65.82 ²⁹	52.82 ³⁹⁶	31.190 ¹³⁵	24.72 ²¹⁵
29.5	11.845 ⁷⁸	46.05 ³⁴⁶	53.422 ⁹³	69.31 ³³	65.91 ⁹	56.81 ³⁹⁹	31.277 ⁸⁷	26.67 ¹⁹⁵
Mar. 10.5	11.863 ¹⁸	49.36 ³³¹	53.468 ⁴⁶	69.22 ⁹	65.79 ¹²	60.75 ³⁹⁴	31.319 ⁴²	28.37 ¹⁷⁰
20.5	11.827 ³⁶	52.41 ³⁰⁵	53.473 ⁵	69.35 ¹³	65.47 ³²	64.57 ³⁸²	31.322 ³	29.82 ¹⁴⁵
30.4	11.742 ⁸⁵	55.19 ²⁷⁸	53.441 ³²	69.67 ³²	64.97 ⁵⁰	68.13 ³⁵⁶	31.288 ³⁴	30.99 ¹¹⁷
Apr. 9.4	11.617 ¹²⁵	57.62 ²⁴³	53.380 ⁶¹	70.12 ⁴⁵	64.32 ⁶⁵	71.45 ³³²	31.225 ⁶³	31.91 ⁹²
19.4	11.459 ¹⁵⁸	59.67 ²⁰⁵	53.296 ⁸⁴	70.66 ⁵⁴	63.52 ⁸⁰	74.39 ²⁹⁴	31.141 ⁸⁴	32.55 ⁶⁴
29.3	11.275 ¹⁸⁴	61.32 ¹⁶⁵	53.197 ⁹⁹	71.26 ⁶⁰	62.61 ⁹¹	76.91 ²⁵²	31.041 ¹⁰⁰	32.94 ³⁹
May 9.3	11.074 ²⁰¹	62.54 ¹²²	53.089 ¹⁰⁸	71.88 ⁶²	61.60 ¹⁰¹	78.98 ²⁰⁷	30.930 ¹¹¹	33.08 ¹⁴
19.3	10.860 ²¹⁴	63.30 ⁷⁶	52.977 ¹¹²	72.50 ⁶²	60.52 ¹⁰⁸	80.55 ¹⁵⁷	30.816 ¹¹⁴	32.99 ⁹
29.3	10.642 ²¹⁸	63.61 ³¹	52.867 ¹¹⁰	73.09 ⁵⁹	59.40 ¹¹²	81.59 ¹⁰⁴	30.701 ¹¹⁵	32.66 ³³
June 8.2	10.425 ²¹⁷	63.45 ¹⁶	52.763 ¹⁰⁴	73.63 ⁵⁴	58.25 ¹¹⁵	82.06 ⁴⁷	30.590 ¹¹¹	32.14 ⁷²
18.2	10.217 ²⁰⁸	62.85 ⁶⁰	52.668 ⁹⁵	74.11 ⁴⁸	57.14 ¹¹¹	82.02 ⁴	30.488 ¹⁰²	31.42 ⁵²
28.2	10.021 ¹⁹⁶	61.82 ¹⁰³	52.585 ⁸³	74.51 ⁴⁰	56.05 ¹⁰⁹	81.39 ⁶³	30.396 ⁶³	30.53 ⁸⁹
July 8.2	9.844 ¹⁷⁷	60.40 ¹⁴²	52.519 ⁶⁶	74.81 ³⁰	55.04 ¹⁰¹	80.25 ¹¹⁴	30.316 ⁸⁰	29.49 ¹⁰⁴
18.1	9.692 ¹²³	58.62 ¹⁷⁸	52.468 ⁵¹	75.00 ¹⁹	54.13 ⁹¹	78.63 ¹⁶²	30.254 ⁶²	28.34 ¹¹⁵
28.1	9.569 ⁸⁶	56.54 ²⁰⁸	52.437 ³¹	75.08 ⁸	53.35 ⁷⁸	76.54 ²⁰⁹	30.211 ⁴³	27.13 ¹²¹
Aug. 7.1	9.483 ⁴⁵	54.24 ²³⁰	52.426 ¹¹	75.03 ⁵	52.72 ⁶³	74.12 ²⁴²	30.189 ²²	25.89 ¹²⁴
17.0	9.438 ¹⁵	51.79 ²⁴⁵	52.440 ¹⁴	74.81 ²²	52.28 ⁴⁴	71.37 ²⁷⁵	30.192 ³	24.68 ¹²¹
27.0	9.439 ¹	49.27 ²⁵²	52.479 ³⁹	74.43 ³⁸	52.05 ²³	68.44 ²⁹³	30.222 ³⁰	23.55 ¹¹³
Sept. 6.0	9.491 ⁵²	46.78 ²⁴⁹	52.548 ⁶⁰	73.86 ⁵⁷	52.02 ³	65.40 ³⁰⁴	30.284 ⁶²	22.55 ¹⁰⁰
16.0	9.598 ¹⁰⁷	44.41 ²³⁷	52.647 ⁹⁹	73.07 ⁷⁹	52.23 ²¹	62.38 ³⁰²	30.380 ⁹⁶	21.75 ⁸⁰
25.9	9.762 ¹⁶⁴	42.29 ²¹²	52.780 ¹³³	72.08 ⁹⁹	52.66 ⁴³	59.50 ²⁸⁸	30.511 ¹³¹	21.20 ⁵⁵
Oct. 5.9	9.982 ²²⁰	40.50 ¹⁷⁹	52.948 ¹⁶⁸	70.85 ¹²³	53.33 ⁶⁷	56.86 ²⁸⁴	30.681 ¹⁷⁰	20.97 ¹⁰
15.9	10.259 ²⁷⁷	39.11 ¹³⁹	53.152 ²⁰⁴	69.42 ¹⁴³	54.19 ⁸⁶	54.59 ²²⁷	30.888 ²⁰⁷	21.07 ¹⁰
25.9	10.588 ³²⁹	38.22 ⁸⁹	53.389 ²³⁷	67.77 ¹⁶⁵	55.23 ¹⁰⁴	52.78 ¹⁸¹	31.131 ²⁴³	21.55 ⁴⁸
Nov. 4.8	10.962 ³⁷⁴	37.87 ³⁵	53.661 ²⁷²	65.94 ¹⁸³	56.43 ¹²⁰	51.53 ¹²⁵	31.409 ²⁷⁸	22.42 ⁸⁷
14.8	11.372 ⁴¹⁰	38.11 ²⁴	53.961 ³⁰⁰	63.97 ¹⁹⁷	57.73 ¹³⁰	50.89 ⁶⁴	31.715 ³⁰⁶	23.67 ¹³⁵
24.8	11.807 ⁴³⁵	38.94 ⁸³	54.282 ³²¹	61.90 ²⁰⁷	59.11 ¹³⁸	50.91 ²	32.041 ³⁰⁶	25.29 ¹⁶²
Dec. 4.7	12.253 ⁴⁴⁶	40.36 ¹⁴²	54.618 ³³⁶	59.80 ²¹⁰	60.51 ¹⁴⁰	51.56 ⁶⁵	32.380 ³³⁹	27.21 ¹⁹²
14.7	12.696 ⁴⁴³	42.33 ¹⁹⁷	54.958 ³⁴⁰	67.73 ²⁰⁷	61.87 ¹³⁶	52.91 ¹³⁵	32.723 ³⁴³	29.42 ²²¹
24.7	13.123 ⁴²⁷	44.76 ²⁴³	55.293 ³³⁵	55.74 ¹⁹⁹	63.16 ¹²⁹	54.85 ¹⁸⁴	33.057 ³³⁴	31.80 ²³⁸
34.7	13.519 ³⁹⁶	47.61 ²⁸⁵	55.611 ³¹⁸	53.91 ¹⁸³	64.32 ¹¹⁶	57.31 ²⁴⁶	33.574 ³¹⁷	34.31 ²⁵¹
Mean Place	9.184	34.92	50.630	83.67	60.424	49.65	28.732	12.88
Sec δ , Tan δ	1.524	-1.149	1.019	+0.194	5.817	-5.729	1.039	-0.282
$D\psi \alpha$, $D\psi \alpha$	+0.05	-0.07	+0.06	+0.01	+0.01	-0.36	+0.06	-0.02
$D\psi \delta$, $D\psi \delta$	-0.4	+0.3	-0.4	+0.3	-0.4	+0.3	-0.4	+0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	46 Leonis Minoris. Mag. 3.9		54 Leonis. Mag. 4.5		Antliae. Mag. 4.7		Groombridge 1706. Mag. 6.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 10 48	° ' " +34 39	h m 10 51	° ' " +25 11	h m 10 52	° ' " -36 41	h m 10 53	° ' " +78 12
Jan. 0.7	38.986	50.14	5.759	40.52	49.535	3.22	22.19	51.91
10.6	39.338 ³⁵²	49.33 ⁸¹	6.090 ³³¹	39.33 ¹¹⁹	49.872 ³³⁷	6.13 ²⁹¹	23.30 ¹¹¹	52.67 ⁷⁶
20.6	39.656 ³¹⁸	48.95 ³⁸	6.386 ²⁹⁶	38.48 ⁸⁵	50.170 ²⁹⁸	9.24 ³¹¹	24.30 ¹⁰⁰	54.02 ¹³⁵
30.6	39.929 ²⁷³	48.98 ³	6.642 ²⁵⁶	38.00 ⁴⁸	50.422 ²⁵²	12.43 ³¹⁹	25.16 ⁸⁶	55.89 ¹⁸⁷
Feb. 9.6	40.151 ²²²	49.40 ⁴²	6.850 ²⁰⁸	37.91 ⁹	50.624 ²⁰²	15.64 ³²¹	25.82 ⁶⁶	58.20 ²³¹
19.5	40.317 ¹⁶⁶	50.18 ⁷⁸	7.008 ¹⁵⁸	38.14 ²³	50.772 ¹⁴⁸	18.79 ³¹⁵	26.30 ⁴⁸	60.85 ²⁶⁶
29.5	40.426 ¹⁰⁹	51.26 ¹⁰⁸	7.113 ¹⁰⁵	38.65 ⁵¹	50.864 ⁹²	21.81 ³⁰²	26.57 ²⁷	63.73 ²⁸⁸
Mar. 10.5	40.480 ⁵⁴	52.55 ¹²⁹	7.168 ⁵⁵	39.44 ⁷⁹	50.907 ⁴³	24.61 ²⁸⁰	26.62 ⁵	66.70 ²⁹⁷
20.5	40.481 ¹	53.99 ¹⁴⁴	7.176 ⁸	40.38 ⁹⁴	50.904 ³	27.17 ²⁵⁶	26.47 ¹⁵	69.65 ²⁹⁵
30.4	40.437 ⁴⁴	55.51 ¹⁵²	7.142 ³⁴	41.46 ¹⁰⁸	50.860 ⁴⁴	29.47 ²³⁰	26.12 ³⁵	72.46 ²⁸¹
Apr. 9.4	40.355 ⁸²	57.02 ¹⁵¹	7.076 ⁶⁶	42.60 ¹¹⁴	50.780 ⁸⁰	31.43 ¹⁹⁶	25.60 ⁵²	75.01 ²⁵⁵
19.4	40.242 ¹¹³	58.46 ¹⁴⁴	6.982 ⁹⁴	43.73 ¹¹³	50.673 ¹⁰⁷	33.05 ¹⁶²	24.94 ⁶⁶	77.20 ²¹⁹
29.3	40.109 ¹³³	59.76 ¹³⁰	6.871 ¹¹¹	44.80 ¹⁰⁷	50.546 ¹²⁷	34.31 ¹²⁶	24.15 ⁷⁹	78.96 ¹⁷⁶
May 9.3	39.963 ¹⁴⁶	60.87 ¹¹¹	6.747 ¹²⁴	45.76 ⁹⁶	50.403 ¹⁴³	35.21 ⁹⁰	23.30 ⁸⁵	80.24 ¹²⁸
19.3	39.811 ¹³²	61.76 ⁸⁹	6.620 ¹²⁷	46.59 ⁸³	50.251 ¹⁵²	35.72 ⁵¹	22.39 ⁹¹	80.98 ⁷⁴
29.3	39.661 ¹⁵⁰	62.38 ⁶²	6.492 ¹²⁸	47.26 ⁶⁷	50.095 ¹⁵⁶	35.84 ¹²	21.47 ⁹²	81.17 ¹⁹
June 8.2	39.516 ¹⁴⁵	62.72 ³⁴	6.370 ¹²²	47.72 ⁴⁶	49.940 ¹⁵⁵	35.59 ²⁵	20.56 ⁹¹	80.80 ³⁷
18.2	39.384 ¹³²	62.79 ⁷	6.258 ¹¹²	48.00 ²⁸	49.791 ¹⁴⁹	34.97 ⁶²	19.69 ⁸⁷	79.87 ⁹³
28.2	39.267 ¹¹⁷	62.56 ²³	6.159 ⁹⁹	48.06 ⁶	49.651 ¹⁴⁰	34.01 ⁹⁶	18.90 ⁷⁹	78.44 ¹⁴³
July 8.2	39.169 ⁹⁸	62.06 ⁵⁰	6.077 ⁸²	47.90 ¹⁶	49.526 ¹²⁵	32.73 ¹²⁸	18.18 ⁷²	76.52 ¹⁹²
18.1	39.094 ⁷⁵	61.27 ⁷⁹	6.013 ⁶⁴	47.53 ³⁷	49.419 ¹⁰⁷	31.16 ¹⁵⁷	17.57 ⁶¹	74.17 ²³⁵
28.1	39.042 ⁵²	60.23 ¹⁰⁴	5.970 ⁴³	46.95 ⁵⁸	49.334 ⁸⁵	29.39 ¹⁷⁷	17.08 ⁴⁹	71.43 ²⁷⁴
Aug. 7.1	39.018 ²⁴	58.93 ¹³⁰	5.950 ²⁰	46.15 ⁸⁰	49.275 ⁵⁹	27.44 ¹⁹⁵	16.72 ³⁶	68.36 ³⁰⁷
17.0	39.022 ⁴	57.39 ¹⁵⁴	5.955 ⁵	45.15 ¹⁰⁰	49.248 ²⁷	25.40 ²⁰⁴	16.49 ²³	65.04 ³³²
27.0	39.058 ³⁶	55.64 ¹⁷⁵	5.989 ³⁴	43.93 ¹²²	49.255 ⁴⁷	23.32 ²⁰⁸	16.41 ⁸	61.51 ³⁵³
Sept. 6.0	39.127 ⁶⁹	53.69 ¹⁹⁵	6.053 ⁶⁴	42.52 ¹⁴¹	49.302 ⁷	21.31 ²⁰¹	16.48 ⁷	57.86 ³⁶⁵
16.0	39.234 ¹⁰⁷	51.55 ²¹⁴	6.151 ⁹⁸	40.90 ¹⁶²	49.392 ⁹⁰	19.44 ¹⁸⁷	16.70 ²²	54.1 ³⁷⁰
25.9	39.377 ¹⁴³	49.27 ²²⁸	6.283 ¹³²	39.10 ¹⁸⁰	49.528 ¹³⁶	17.81 ¹⁶³	17.07 ³⁷	50.47 ³⁶⁹
Oct. 5.9	39.562 ¹⁸⁵	46.88 ²³⁹	6.454 ¹⁷¹	37.15 ¹⁹⁵	49.710 ¹⁸²	16.50 ¹³¹	17.60 ⁵³	46.88 ³⁵⁹
15.9	39.787 ²²⁵	44.41 ²⁴⁷	6.661 ²⁰⁷	35.04 ²¹¹	49.939 ²²⁹	15.57 ⁹³	18.28 ⁶⁸	43.46 ³⁴²
25.9	40.052 ²⁶⁵	41.90 ²⁵¹	6.906 ²⁴⁵	32.84 ²²⁰	50.213 ²⁷⁴	15.09 ⁴⁸	19.09 ⁸¹	40.28 ³¹⁸
Nov. 4.8	40.355 ³⁰³	39.42 ²⁴⁸	7.188 ²⁸²	30.57 ²²⁷	50.526 ³¹³	15.13 ⁴	20.03 ⁹⁴	37.45 ²⁸³
14.8	40.689 ³³⁴	37.02 ²⁴⁰	7.500 ³¹²	28.29 ²²⁸	50.874 ³⁴⁸	15.67 ⁵⁴	21.08 ¹⁰⁵	35.02 ²⁴³
*24.8	41.051 ³⁶²	34.76 ²²⁶	7.838 ³³⁸	26.07 ²²²	51.246 ³⁷²	16.73 ¹⁰⁶	22.22 ¹¹⁴	33.06 ¹⁹⁶
Dec. 4.7	41.431 ³⁸⁰	32.71 ²⁰⁵	8.192 ³⁵¹	23.95 ²¹²	51.631 ³⁸⁵	18.30 ¹⁵⁷	23.41 ¹¹⁹	31.65 ¹⁴¹
14.7	41.817 ³⁸⁶	30.97 ¹⁷⁴	8.553 ³⁶¹	22.03 ¹⁹²	52.018 ³⁸⁷	20.32 ²⁰²	24.63 ¹²²	30.81 ⁸⁴
24.7	42.200 ³⁸³	29.53 ¹⁴⁴	8.910 ³⁵⁷	20.34 ¹⁶⁹	52.396 ³⁷⁸	22.75 ²⁴³	25.83 ¹²⁰	30.58 ²³
34.7	42.565 ³⁶⁵	28.49 ¹⁰⁴	9.252 ³⁴²	18.95 ¹³⁹	52.752 ³⁵⁶	25.49 ²⁷⁴	26.99 ¹¹⁶	30.99 ⁴¹
Mean Place	37.110	65.07	4.066	53.08	48.311	9.55	16.364	73.78
Sec δ , Tan δ	1.216	+0.692	1.105	+0.470	1.247	-0.745	4.896	+4.793
$D_{\delta} \alpha$, $D_{\alpha} \alpha$	+0.07	+0.04	+0.07	+0.03	+0.06	-0.05	+0.10	+0.31
$D_{\delta} \delta$, $D_{\alpha} \delta$	-0.4	+0.3	-0.4	+0.3	-0.4	+0.3	-0.4	+0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Crateris. Mag. 4.2		d Leonis. Mag. 5.0		β Ursæ Majoris. Mag. 2.4		α Ursæ Majori Mag. 2.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 10 55	° ' -17 51	h m 10 56	° ' + 4 3	h m 10 56	° ' +56 49	h m 10 58	° ' +62
	s	"	s	"	s	"	s	"
Jan. 0.7	42.098	4.39	14.806	61.04	49.492	38.65	36.26	56.25
10.7	42.407 ³⁰⁹	6.98 ²⁵⁹	15.112 ³⁰⁶	59.04 ²⁰⁰	49.978 ⁴⁸⁶	38.65 ⁰	36.82 ⁵⁶	56.42
20.6	42.683 ²⁷⁶	9.58 ²⁶⁰	15.389 ²⁷⁷	57.24 ¹⁸⁰	50.419 ⁴⁴¹	39.19 ⁵⁴	37.32 ⁵⁰	57.15
30.6	42.919 ²³⁶	12.14 ²⁵⁶	15.628 ²³⁹	55.67 ¹⁵⁷	50.799 ³⁸⁰	40.24 ¹⁰⁵	37.75 ⁴³	58.41
Feb. 9.6	43.110 ¹⁹¹	14.59 ²⁴⁵	15.824 ¹⁹⁶	54.34 ¹³³	51.109 ³¹⁰	41.74 ¹⁵⁰	38.10 ³⁵	60.12
	144	228	149	103	230	188	26	
19.5	43.254 ⁹⁶	16.87 ²⁰⁶	15.973 ¹⁰²	53.31 ⁸⁰	51.339 ¹⁴⁷	43.62 ²¹⁷	38.36 ¹⁶	62.22
29.5	43.350 ⁵²	18.93 ¹⁸⁵	16.075 ⁵⁸	52.51 ⁵²	51.486 ⁶⁵	45.79 ²³⁶	38.52 ⁷	64.59
Mar. 10.5	43.402 ¹⁰	20.78 ¹⁵⁷	16.133 ¹⁶	51.99 ²⁷	51.551 ¹⁴	48.15 ²⁴³	38.59 ²	67.16
20.5	43.412 ²⁵	22.35 ¹³¹	16.149 ²⁰	51.72 ⁸	51.537 ⁸⁵	50.58 ²⁴¹	38.57 ¹²	69.77
30.4	43.387 ⁵⁵	23.66 ¹⁰⁴	16.129 ⁴⁸	51.64 ¹¹	51.452 ¹⁴⁶	52.99 ²²⁸	38.45 ¹⁸	72.31
Apr. 9.4	43.332	24.70	16.081	51.75	51.306	55.27	38.27	74.71
19.4	43.253 ⁷⁹	25.47 ⁷⁷	16.008 ⁷³	52.02 ²⁷	51.108 ¹⁹⁸	57.30 ²⁰³	38.03 ²⁴	76.85
29.4	43.156 ⁹⁷	25.98 ⁵¹	15.919 ⁸⁹	52.39 ³⁷	50.873 ²³⁵	59.05 ¹⁷⁵	37.74 ²⁹	78.66
May 9.3	43.049 ¹⁰⁷	26.22 ²⁴	15.819 ¹⁰⁰	52.85 ⁴⁶	50.611 ²⁶²	60.45 ¹⁴⁰	37.42 ³²	80.08
19.3	42.936 ¹¹³	26.22 ⁰	15.715 ¹⁰⁴	53.37 ⁵²	50.336 ²⁷⁵	61.44 ⁹⁹	37.08 ³⁴	81.05
	115	24	105	55	278	55	34	
29.3	42.821	25.98	15.610	53.92	50.058	61.99	36.74	81.56
June 8.2	42.707 ¹¹⁴	25.52 ⁴⁶	15.508 ¹⁰²	54.49 ⁵⁷	49.786 ²⁷²	62.09 ¹⁰	36.40 ³⁴	81.58
18.2	42.600 ¹⁰⁷	24.84 ⁶⁸	15.413 ⁹⁵	55.06 ⁵⁷	49.531 ²⁵⁵	61.73 ³⁶	36.08 ³²	81.12
28.2	42.501 ⁹⁹	23.98 ⁸⁶	15.329 ⁸⁴	55.62 ⁵⁶	49.297 ²³⁴	60.94 ⁷⁹	35.78 ³⁰	80.19
July 8.2	42.415 ⁸⁶	22.95 ¹⁰³	15.258 ⁷¹	56.14 ⁵²	49.093 ²⁰⁴	59.73 ¹²¹	35.52 ²⁶	78.81
	72	116	58	46	169	162	22	
18.1	42.343 ⁵⁴	21.79 ¹²⁵	15.200 ⁴⁰	56.60 ³⁹	48.924 ¹³¹	58.11 ¹⁹⁶	35.30 ¹⁷	77.02
28.1	42.289 ³⁴	20.54 ¹²⁹	15.160 ¹⁹	56.99 ²⁸	48.793 ⁸⁸	56.15 ²²⁹	35.13 ¹²	74.85
Aug. 7.1	42.255 ⁸	19.25 ¹²⁸	15.141 ¹	57.27 ¹⁷	48.705 ⁴³	53.86 ²⁵⁸	35.01 ⁷	72.34
17.1	42.247 ¹⁸	17.97 ¹²²	15.142 ²⁸	57.44 ²	48.662 ⁷	51.28 ²⁸¹	34.94 ⁰	69.56
27.0	42.265 ⁵⁰	16.75 ¹¹¹	15.170 ⁵⁶	57.46 ¹⁸	48.669 ⁶⁰	48.47 ³⁰⁰	34.94 ⁵	66.53
Sept. 6.0	42.315	15.64	15.226	57.28	48.729	45.47	34.99	63.34
16.0	42.399 ⁸⁴	14.73 ⁹¹	15.312 ⁸⁶	56.91 ³⁷	48.843 ¹¹⁴	42.34 ³¹³	35.10 ¹¹	60.02
25.9	42.521 ¹²²	14.06 ⁶⁷	15.433 ¹²¹	56.30 ⁶¹	49.015 ¹⁷²	39.14 ³²⁰	35.29 ¹⁹	56.64
Oct. 5.9	42.680 ¹⁵⁹	13.70 ³⁶	15.588 ¹⁵⁵	55.46 ⁸⁴	49.245 ²³⁰	35.91 ³²³	35.54 ²⁵	53.27
15.9	42.879 ¹⁹⁹	13.67 ³	15.779 ¹⁹¹	54.34 ¹¹²	49.534 ²⁸⁹	32.73 ³¹⁸	35.86 ³²	49.97
	237	35	228	136	345	305	40	
25.9	43.116	14.02	16.007	52.98	49.879	29.68	36.26	46.82
Nov. 4.8	43.387 ²⁷¹	14.77 ⁷⁵	16.269 ²⁶²	51.37 ¹⁶¹	50.278 ³⁹⁹	26.81 ²⁸⁷	36.71 ⁴⁵	43.90
14.8	43.691 ³⁰⁴	15.92 ¹¹⁵	16.559 ²⁹⁰	49.56 ¹⁸¹	50.725 ⁴⁴⁷	24.20 ²⁶¹	37.21 ⁵⁰	41.28
24.8	44.017 ³²⁶	17.45 ¹⁵³	16.874 ³¹⁵	47.58 ¹⁹⁸	51.211 ⁴⁸⁶	21.94 ²²⁶	37.76 ⁵⁵	39.04
Dec. 4.8	44.358 ³⁴¹	19.32 ¹⁸⁷	17.205 ³³¹	45.47 ²¹¹	51.722 ⁵¹¹	20.08 ¹⁸⁶	38.34 ⁵⁸	37.24
	346	215	336	215	526	139	59	
14.7	44.704	21.47	17.541	43.32	52.248	18.69	38.93	35.94
24.7	45.042 ³³⁸	23.85 ²³⁸	17.874 ³³³	41.19 ²¹³	52.771 ⁵²³	17.81 ⁸⁸	39.53 ⁶⁰	35.19
34.7	45.365 ³²³	26.36 ²⁵¹	18.191 ³¹⁷	39.14 ²⁰⁵	53.274 ⁵⁰³	17.48 ³³	40.10 ⁵⁷	35.01
Mean Place	40.816	5.11	13.381	67.38	46.955	58.62	33.405	77.10
Sec δ , Tan δ	1.050	-0.322	1.003	+0.071	1.828	+1.530	2.144	+1.891
$D\psi \alpha$, $D\omega \alpha$	+0.06	-0.02	+0.06	0.00	+0.07	+0.10	+0.07	+0.12
$D\psi \delta$, $D\omega \delta$	-0.4	+0.3	-0.4	+0.3	-0.4	+0.3	-0.4	+0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	χ Leonis. Mag. 4.7		ρ^4 Leonis. Mag. 5.7		ψ Ursa Majoris. Mag. 3.2		β Crateris. Mag. 4.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 11 0 s	' " + 7 46 "	h m 11 2 s	' " + 2 24 "	h m 11 4 s	' " +44 56 "	h m 11 7 s	' " -22 21 "
Jan. 0.7	42.543	78.12	38.562	36.77	58.847	58.12	32.673	59.82
10.7	42.853 ⁸¹⁰	76.24 ¹⁸⁸	38.873 ³¹¹	34.70 ²⁰⁷	59.250 ⁴⁰³	57.57 ⁵⁵	32.994 ³²¹	62.46 ²⁶⁴
20.6	43.135 ²⁸³	74.59 ¹⁶⁵	39.150 ²⁷⁷	32.83 ¹⁸⁷	59.618 ³⁶⁸	57.52 ⁵	33.284 ²⁹⁰	65.17 ²⁷¹
30.6	43.378 ²⁴³	73.17 ¹⁴²	39.392 ²⁴²	31.16 ¹⁶⁷	59.939 ³²¹	57.96 ⁴⁹	33.534 ²⁵⁰	67.88 ²⁷¹
Feb. 9.6	43.579 ³⁰¹	72.05 ¹¹²	39.590 ¹⁹⁸	29.73 ¹⁴³	60.204 ²⁸⁵	58.85 ⁸⁸	33.740 ²⁰⁶	70.52 ²⁶⁴
19.5	43.733 ¹⁵⁴	71.22 ⁸³	39.744 ¹⁵⁴	28.57 ¹¹⁶	60.407 ²⁰³	60.13 ¹²⁸	33.898 ¹⁵⁸	73.02 ²⁵⁰
29.5	43.840 ¹⁰⁷	70.66 ⁵⁶	39.851 ⁶⁷	27.66 ⁹¹	60.545 ¹³⁸	61.73 ¹⁶⁰	34.009 ¹¹¹	75.35 ²³³
Mar. 10.5	43.902 ⁶²	70.37 ²⁹	39.913 ¹⁰²	27.03 ⁶³	60.619 ⁷⁴	63.55 ¹⁸²	34.074 ⁶⁵	77.44 ²⁰⁹
20.5	43.922 ²⁰	70.31 ⁶	39.937 ²⁴	26.65 ³⁸	60.632 ¹³	65.53 ¹⁹⁸	34.096 ²²	79.30 ¹⁸⁶
30.4	43.905 ¹⁷	70.45 ¹⁴	39.922 ¹⁵	26.50 ¹⁵	60.590 ⁴²	67.55 ²⁰²	34.082 ¹⁴	80.88 ¹⁵⁸
Apr. 9.4	43.859 ⁴⁶	70.77 ³²	39.878 ⁴⁴	26.51 ¹	60.501 ⁸⁹	69.53 ¹⁹⁸	34.037 ⁴⁵	82.20 ¹³²
19.4	43.788 ⁷¹	71.20 ⁴³	39.811 ⁶⁷	26.70 ¹⁹	60.373 ¹²⁸	71.38 ¹⁸⁵	33.965 ⁷²	83.22 ¹⁰²
29.4	43.700 ⁸⁸	71.72 ⁵²	39.726 ⁸⁵	27.03 ³³	60.216 ¹⁵⁷	73.02 ¹⁶⁴	33.875 ⁹⁰	83.96 ⁷⁴
May 9.3	43.601 ⁹⁹	72.29 ⁵⁷	39.630 ⁹⁶	27.42 ³⁹	60.039 ¹⁷⁷	74.40 ¹³⁸	33.772 ¹⁰³	84.43 ⁴⁷
19.3	43.495 ¹⁰⁶	72.89 ⁶⁰	39.528 ¹⁰²	27.92 ⁵⁰	59.852 ¹⁸⁷	75.48 ¹⁰⁸	33.659 ¹¹³	84.60 ¹⁷
29.3	43.389 ¹⁰⁶	73.49 ⁶⁰	39.423 ¹⁰⁵	28.47 ⁵⁵	59.661 ¹⁹¹	76.20 ⁷²	33.541 ¹¹⁸	84.51 ⁹
June 8.2	43.286 ¹⁰³	74.07 ⁵⁸	39.322 ¹⁰¹	29.05 ⁵⁸	59.474 ¹⁸⁷	76.57 ³⁷	33.425 ¹¹⁶	84.16 ³⁵
18.2	43.189 ⁹⁷	74.61 ⁵⁴	39.226 ⁹⁶	29.63 ⁵⁸	59.297 ¹⁷⁷	76.57 ⁰	33.311 ¹¹⁴	83.55 ⁶¹
28.2	43.102 ⁸⁷	75.10 ⁴⁹	39.140 ⁸⁶	30.22 ⁵⁹	59.136 ¹⁶¹	78.19 ³⁸	33.205 ¹⁰⁶	82.72 ⁸³
July 8.2	43.028 ⁷⁴	75.52 ⁴²	39.064 ⁷⁶	30.77 ⁵⁵	58.993 ¹⁴³	75.44 ⁷⁵	33.108 ⁹⁷	81.69 ¹⁰³
18.1	42.967 ⁶¹	75.85 ³³	39.002 ⁶²	31.28 ⁵¹	58.876 ¹¹⁷	74.34 ¹¹⁰	33.024 ⁸⁴	80.50 ¹¹⁹
28.1	42.923 ⁴⁴	76.07 ²²	38.956 ⁴⁶	31.74 ⁴⁶	58.784 ⁹²	72.92 ¹⁴²	32.958 ⁶⁶	79.16 ¹³⁴
Aug. 7.1	42.900 ²³	76.18 ¹¹	38.930 ²⁶	32.10 ³⁶	58.723 ⁶¹	71.18 ¹⁷⁴	32.911 ⁴⁷	77.75 ¹⁴¹
17.1	42.897 ³	76.14 ⁴	38.925 ⁵	32.35 ²⁵	58.695 ²⁸	69.16 ²⁰²	32.889 ²²	76.31 ¹⁴⁴
27.0	42.921 ²⁴	75.92 ²²	38.946 ²¹	32.44 ⁹	58.703 ⁸	66.91 ²²⁵	32.893 ⁴	74.89 ¹⁴²
Sept. 6.0	42.971 ⁵⁰	75.53 ³⁹	38.993 ⁴⁷	32.38 ⁶	58.748 ⁴⁵	64.44 ²⁴⁷	32.931 ³⁸	73.57 ¹³²
16.0	43.053 ⁸²	74.93 ⁶⁰	39.074 ⁸¹	32.11 ²⁷	58.837 ⁸⁹	61.79 ²⁶⁵	33.004 ⁷³	72.42 ¹¹⁵
25.9	43.169 ¹¹⁶	74.11 ⁸²	39.185 ¹¹¹	31.58 ⁵³	58.970 ¹³³	59.01 ²⁷⁸	33.116 ¹¹²	71.49 ⁹³
Oct. 5.9	43.320 ¹⁵¹	73.04 ¹⁰⁷	39.337 ¹⁵²	30.81 ⁷⁷	59.150 ¹⁸⁰	56.14 ²⁸⁷	33.268 ¹⁵²	70.86 ⁶⁸
15.9	43.507 ¹⁸⁷	71.74 ¹³⁰	39.522 ¹⁸⁵	29.78 ¹⁰³	59.378 ²²⁸	53.23 ²⁹¹	33.462 ¹⁹⁴	70.57 ²⁹
25.9	43.732 ²²⁵	70.25 ¹⁴⁹	39.745 ²²³	28.50 ¹²⁸	59.653 ²⁷⁵	50.35 ²⁸⁸	33.696 ²³⁴	70.67 ¹⁰
Nov. 4.8	43.991 ²⁵⁹	68.51 ¹⁷⁴	39.999 ²⁵⁴	26.95 ¹⁵⁵	59.972 ³¹⁹	47.56 ²⁷⁹	33.968 ²⁷²	71.19 ⁵²
14.8	44.280 ²⁸⁹	66.59 ¹⁹²	40.288 ²⁸⁹	25.16 ¹⁷⁹	60.332 ³⁶⁰	44.93 ²⁶³	34.274 ³⁰⁶	72.12 ⁹³
24.8	44.594 ³¹⁴	64.54 ²⁰⁵	40.601 ³¹³	23.21 ¹⁹⁵	60.725 ³⁹³	42.53 ²⁴⁰	34.604 ³³⁰	73.48 ¹³⁶
Dec. 4.8	44.925 ³³¹	62.36 ²¹⁸	40.928 ³²⁷	21.12 ²⁰⁹	61.142 ⁴¹⁷	40.43 ²¹⁰	34.952 ³⁴⁸	75.21 ¹⁷³
14.7	45.263 ³³⁸	60.22 ²¹⁴	41.264 ³³⁶	18.95 ²¹⁷	61.571 ⁴²⁹	38.71 ¹⁷²	35.306 ³⁵⁴	77.29 ²⁰⁸
24.7	45.598 ³³⁵	58.14 ²⁰⁸	41.598 ³³⁴	16.78 ²¹⁷	62.001 ⁴³⁰	37.41 ¹³⁰	35.655 ³⁴⁹	79.62 ²³³
34.7	45.919 ³²¹	56.17 ¹⁹⁷	41.918 ³²⁰	14.66 ²¹²	62.416 ⁴¹⁵	36.58 ⁸³	35.989 ³³⁴	82.17 ²⁵⁵
Mean Place	41.109	85.80	37.184	42.76	56.853	76.31	31.477	61.77
Sec δ , Tan δ	1.009	+0.137	1.001	+0.042	1.413	+0.998	1.081	-0.412
$D\phi_a, D_\alpha a$	+0.06	+0.01	+0.06	0.00	+0.07	+0.06	+0.06	-0.03
$D\phi_\delta, D_\delta \delta$	-0.4	+0.3	-0.4	+0.2	-0.4	+0.2	-0.4	+0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	δ Leonis. Mag. 2.6		θ Leonis. Mag. 3.4		ν Ursae Majoris. Mag. 3.7		δ Crateris. Mag. 3.8	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 11 9	° ' " +20 58	h m 11 9	° ' " +15 52	h m 11 13	° ' " +38 32	h m 11 15	° ' " -14 19
Jan. 0.7	40.149	50.59	51.470	89.40	58.421	54.47	9.575	26.50
10.7	40.480 ³³¹	49.12 ¹⁴⁷	51.794 ³²⁴	87.76 ¹⁶⁴	58.782 ³⁶¹	53.48 ¹⁰⁴	9.892 ³¹⁷	28.96 ²⁴⁶
20.6	40.782 ³⁰²	47.99 ¹¹³	52.088 ²⁹⁴	86.41 ¹³⁵	59.114 ³³²	52.82 ⁶¹	10.181 ²⁸⁹	31.42 ²⁴⁹
30.6	41.046 ²⁶⁴	47.21 ⁷⁸	52.346 ²⁵⁸	85.37 ¹⁰⁴	59.405 ²⁹¹	52.64 ¹⁸	10.433 ²⁵²	33.81 ²²⁶
Feb. 9.6	41.267 ²²¹	46.78 ⁴³	52.561 ²¹⁵	84.67 ⁷⁰	59.649 ²⁴⁴	52.89 ²⁵	10.642 ²⁰⁹	36.06 ²²⁷
19.6	41.439 ¹⁷²	46.71 ⁷	52.729 ¹⁶⁸	84.30 ³⁷	59.840 ¹⁹¹	53.52 ⁶³	10.807 ¹⁶⁵	38.16 ²⁰⁸
29.5	41.562 ¹²³	46.95 ²⁴	52.849 ¹²⁰	84.23 ⁷	59.975 ¹³⁵	54.49 ⁹⁷	10.925 ¹¹⁸	40.04 ¹⁸⁸
Mar. 10.5	41.636 ⁷⁴	47.45 ⁵⁰	52.922 ⁷³	84.43 ²⁰	60.057 ⁸²	55.73 ¹²⁴	11.000 ⁷⁵	41.68 ¹⁶⁴
20.5	41.665 ²⁹	48.19 ⁷⁴	52.952 ³⁰	84.86 ⁴³	60.087 ³⁰	57.16 ¹⁴³	11.033 ³³	43.07 ¹³⁹
30.4	41.653 ¹²	49.08 ⁸⁹	52.942 ¹⁰	85.47 ⁶¹	60.071 ¹⁶	58.70 ¹⁵⁴	11.030 ³	44.20 ¹¹³
Apr. 9.4	41.608 ⁴⁵	50.07 ⁹⁹	52.900 ⁴²	86.22 ⁷⁵	60.015 ⁵⁶	60.29 ¹⁵⁹	10.996 ³⁴	45.09 ⁸⁹
19.4	41.535 ⁷³	51.10 ¹⁰³	52.832 ⁶⁸	87.04 ⁸²	59.927 ⁸⁸	61.83 ¹⁵⁴	10.938 ⁵⁸	45.72 ⁶³
29.4	41.442 ⁹³	52.12 ¹⁰²	52.745 ⁸⁷	87.88 ⁸⁴	59.814 ¹¹³	63.28 ¹⁴⁵	10.859 ⁷⁹	46.13 ⁴¹
May 9.3	41.336 ¹⁰⁶	53.09 ⁹⁷	52.644 ¹⁰¹	88.71 ⁸³	59.684 ¹³⁰	64.55 ¹²⁷	10.768 ⁹¹	46.30 ¹⁷
19.3	41.221 ¹¹⁵	53.96 ⁸⁷	52.536 ¹⁰⁸	89.50 ⁷⁹	59.543 ¹⁴¹	65.83 ¹⁰⁸	10.667 ¹⁰¹	46.26 ⁴
29.3	41.104 ¹¹⁷	54.70 ⁷⁴	52.425 ¹¹¹	90.69 ⁶⁹	59.399 ¹⁴⁴	66.46 ⁸³	10.562 ¹⁰⁵	46.01 ²⁵
June 8.3	40.989 ¹¹⁵	55.29 ⁵⁹	52.316 ¹⁰⁹	70.19 ⁸⁰	59.399 ¹⁴²	66.46 ⁵⁶	10.562 ¹⁰⁶	46.01 ⁴³
18.2	40.880 ¹⁰⁹	55.72 ⁴³	52.214 ¹⁰²	70.79 ⁶⁰	59.257 ¹⁴²	67.02 ²⁷	10.456 ¹⁰⁶	45.58 ⁶¹
28.2	40.781 ⁹⁹	55.95 ²³	52.119 ⁹⁵	71.28 ⁴⁹	59.121 ¹³⁶	67.29 ¹	10.353 ¹⁰³	44.97 ⁷⁶
July 8.2	40.694 ⁸⁷	56.01 ⁶	52.036 ⁸³	71.63 ²⁰	58.995 ¹¹⁰	67.28 ³¹	10.256 ⁸⁹	44.21 ⁸⁹
18.1	40.622 ⁵⁴	55.86 ³⁵	51.969 ⁵²	71.83 ⁴	58.885 ⁹⁵	66.97 ⁶¹	10.167 ⁷⁸	43.32 ⁹⁹
28.1	40.565 ³⁵	55.51 ³⁵	51.917 ³³	71.87 ¹¹	58.790 ⁷³	66.36 ⁸⁸	10.089 ⁶¹	42.33 ¹⁰⁶
Aug. 7.1	40.533 ¹¹	54.96 ⁵⁵	51.884 ¹⁰	71.76 ³⁰	58.717 ⁵¹	65.48 ¹¹⁶	10.028 ⁴⁴	41.27 ¹⁰⁹
17.1	40.522 ¹⁵	54.20 ⁷⁶	51.874 ¹⁵	71.46 ⁴⁸	58.666 ²⁴	64.32 ¹⁴⁰	9.984 ²²	40.18 ¹⁰⁸
27.0	40.537 ⁴²	53.23 ¹¹⁹	51.889 ⁴²	70.93 ⁶⁸	58.642 ⁴	62.92 ¹⁶⁷	9.962 ²	39.10 ¹⁰¹
Sept. 6.0	40.579 ⁷⁶	52.04 ¹³⁸	51.931 ⁷⁴	70.30 ⁸⁸	58.646 ³⁷	61.25 ¹⁸⁸	9.964 ³³	38.09 ⁸⁹
16.0	40.655 ¹¹¹	50.66 ¹⁶⁰	52.005 ¹⁰⁹	69.42 ¹¹⁰	58.683 ⁷³	59.37 ²⁰⁹	9.997 ⁶⁶	37.20 ⁷¹
26.0	40.766 ¹⁴⁸	49.06 ¹⁷⁹	52.114 ¹⁴⁵	68.32 ¹³⁰	58.756 ¹¹¹	57.28 ²²⁶	10.063 ¹⁰²	36.49 ⁴⁹
Oct. 5.9	40.914 ¹⁸⁵	47.27 ¹⁹⁷	52.259 ¹⁸²	67.02 ¹⁵¹	58.867 ¹⁵¹	55.02 ²⁴²	10.165 ¹³⁹	36.00 ²⁰
15.9	41.099 ²²⁶	45.30 ²¹¹	52.441 ²²⁰	65.51 ¹⁷³	59.018 ¹⁹⁴	52.60 ²⁵³	10.304 ¹⁸⁰	35.80 ¹¹
25.9	41.325 ²⁶²	43.19 ²²²	52.661 ²⁵⁷	63.78 ¹⁸⁹	59.212 ²²⁶	50.07 ²⁸⁰	10.484 ²²⁰	35.91 ⁴⁵
Nov. 4.8	41.587 ³²²	40.97 ²²²	52.918 ²⁵⁷	61.89 ²⁰⁶	59.448 ²⁷⁷	47.47 ²⁸⁰	10.704 ²⁵⁷	36.36 ⁸³
14.8	41.882 ³⁹⁵	38.69 ²²⁸	53.207 ²⁸⁹	59.83 ²¹⁵	59.725 ³¹⁴	44.87 ²⁵⁴	10.961 ²⁹⁰	37.19 ¹¹⁹
24.8	42.204 ³²²	36.41 ²²⁸	53.524 ³¹⁷	57.68 ²²¹	60.039 ³⁴⁶	42.33 ²⁴⁴	11.251 ³¹⁷	38.38 ¹⁵⁴
Dec. 4.8	42.547 ³⁴³	34.19 ²²²	53.859 ³³⁵	55.47 ²²⁰	60.385 ³⁸⁷	39.89 ²²⁴	11.568 ³³³	39.92 ¹⁸³
14.7	42.900 ³⁵¹	32.11 ¹⁹⁰	54.204 ³⁴⁴	53.27 ²¹²	60.752 ³⁸⁰	37.65 ¹⁹⁸	11.903 ³⁴³	41.75 ²¹⁰
24.7	43.251 ³⁴¹	30.21 ¹⁶³	54.548 ³³³	51.15 ¹⁹⁹	61.132 ³⁸²	35.67 ¹⁶⁵	12.246 ³⁴¹	43.85 ²²⁹
34.7	43.592	28.58	54.881	49.16 ¹⁷⁸	61.514 ³⁷¹	34.02 ¹²⁸	12.587 ³²⁹	46.14 ²⁴⁰
34.7	43.592	28.58	54.881	47.38	61.885	32.74	12.916	48.54
Mean Place	38.629	62.71	50.010	79.97	56.750	70.36	8.378	25.72
Sec δ , Tan δ	1.071	+0.383	1.039	+0.285	1.200	+0.663	1.032	-0.255
$D\psi\alpha$, $D\omega\alpha$	+0.06	+0.02	+0.06	+0.02	+0.06	+0.04	+0.06	-0.02
$D\psi\delta$, $D\omega\delta$	-0.4	+0.2	-0.4	+0.2	-0.4	+0.2	-0.4	+0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	σ Leonis. Mag. 4.1		π Centauri. Mag. 4.3		ι Leonis. Mag. 4.0		τ Leonis. Mag. 5.2	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	11 16	+ 6 28	11 17	-54 1	11 19	+10 58	11 23	+ 3 18
	s	"	s	"	s	"	s	"
Jan. 0.7	49.697	76.02	11.296	39.43	34.115	82.16	38.336	61.56
10.7	50.013 ³¹⁶	74.07 ¹⁹⁵	11.735 ⁴³⁹	42.20 ²⁷⁷	34.438 ³²³	80.33 ¹⁸³	38.655 ³¹⁹	59.51 ²⁰⁵
20.6	50.304 ²⁹¹	72.32 ¹⁷⁵	12.129 ³⁹⁴	45.33 ³¹³	34.733 ²⁹⁵	78.75 ¹⁵⁸	38.947 ²⁹²	57.63 ¹⁸⁸
30.6	50.559 ²⁵⁵	70.81 ¹⁵¹	12.467 ³³⁸	48.70 ³³⁷	34.993 ²⁶⁰	77.45 ¹³⁰	39.206 ²⁵⁹	55.97 ¹⁶⁶
Feb. 9.6	50.773 ²¹⁴	69.58 ¹²³	12.741 ²⁷⁴	52.24 ³⁵⁴	35.213 ²²⁰	76.44 ¹⁰¹	39.425 ²¹⁹	54.55 ¹⁴²
19.6	50.943 ¹⁷⁰	68.63 ⁹⁵	12.950 ²⁰⁹	55.85 ³⁶¹	35.388 ¹⁷⁵	75.75 ⁶⁹	39.600 ¹⁷⁵	53.42 ¹¹³
29.5	51.066 ¹²³	67.99 ⁶⁴	13.091 ¹⁴¹	59.45 ³⁶⁰	35.516 ¹²⁸	75.36 ³⁹	39.729 ¹²⁹	52.56 ⁸⁶
Mar. 10.5	51.145 ⁷⁹	67.60 ³⁹	13.168 ⁷⁷	62.94 ³⁴⁹	35.599 ⁸³	75.26 ¹⁵	39.814 ⁸⁵	51.99 ⁵⁷
20.5	51.181 ³⁶	67.48 ¹²	13.183 ¹⁵	66.27 ³³³	35.640 ⁴¹	75.41 ¹⁰	39.860 ⁴⁶	51.66 ³³
30.4	51.182 ¹	67.56 ⁸	13.142 ⁴¹	69.36 ³⁰⁹	35.642 ²	75.75 ³⁴	39.867 ⁷	51.55 ¹¹
Apr. 9.4	51.150 ³²	67.82 ²⁶	13.052 ⁹⁰	72.17 ²⁸¹	35.612 ³⁰	76.24 ⁴⁹	39.842 ²⁵	51.64 ⁹
19.4	51.093 ⁵⁷	68.22 ⁴⁰	12.919 ¹³³	74.65 ²⁴⁸	35.556 ⁵⁶	76.86 ⁶²	39.792 ⁵⁰	51.90 ²⁶
29.4	51.017 ⁷⁶	68.71 ⁴⁹	12.749 ¹⁷⁰	76.74 ²⁰⁹	35.479 ⁷⁷	77.54 ⁶⁸	39.722 ⁷⁰	52.27 ³⁷
May 9.3	50.927 ⁹⁰	69.28 ⁵⁷	12.555 ¹⁹⁶	78.43 ¹⁶⁹	35.389 ⁹⁰	78.27 ⁷³	39.638 ⁸⁴	52.74 ⁴⁷
19.3	50.829 ⁹⁸	69.88 ⁶⁰	12.334 ²¹⁹	79.67 ¹²⁴	35.289 ¹⁰⁰	78.97 ⁷⁰	39.544 ⁹⁴	53.28 ⁵⁴
29.3	50.728 ¹⁰¹	70.50 ⁶²	12.100 ²³⁴	80.45 ⁷⁸	35.186 ¹⁰³	79.66 ⁶⁹	39.446 ⁹⁸	53.86 ⁵⁸
June 8.3	50.627 ¹⁰¹	71.10 ⁶⁰	11.858 ²⁴²	80.76 ³¹	35.083 ¹⁰³	80.29 ⁶³	39.347 ⁹⁹	54.45 ⁵⁹
18.2	50.530 ⁹⁷	71.68 ⁵⁸	11.614 ²⁴⁴	80.60 ¹⁶	34.983 ¹⁰⁹	80.85 ⁵⁶	39.250 ⁹⁷	55.04 ⁵⁹
28.2	50.439 ⁹¹	72.21 ⁵³	11.375 ²³⁹	79.98 ⁶²	34.890 ⁹³	81.31 ⁴⁶	39.159 ⁹¹	55.62 ⁵⁸
July 8.2	50.358 ⁸¹	72.68 ⁴⁷	11.147 ²²⁸	78.91 ¹⁰⁷	34.807 ⁸³	81.67 ³⁶	39.076 ⁸³	56.16 ⁵⁴
18.1	50.290 ⁶⁸	73.06 ³⁸	10.939 ²⁰⁸	77.43 ¹⁴⁸	34.737 ⁷⁰	81.89 ²²	39.006 ⁷⁰	56.65 ⁴⁹
28.1	50.236 ⁵⁴	73.34 ²⁸	10.757 ¹⁸²	75.60 ¹⁸³	34.681 ⁵⁶	81.99 ¹⁰	38.948 ⁵⁸	57.06 ⁴¹
Aug. 7.1	50.199 ³⁷	73.51 ¹⁷	10.609 ¹⁴⁸	73.45 ²¹⁵	34.642 ³⁹	81.94 ⁵	38.905 ⁴³	57.37 ³¹
17.1	50.183 ¹⁶	73.54 ³	10.502 ¹⁰⁷	71.07 ²³⁸	34.624 ¹⁸	81.72 ²²	38.883 ²²	57.55 ¹⁸
27.0	50.190 ⁷	73.40 ¹⁴	10.444 ⁵⁸	68.55 ²⁵²	34.629 ⁵	81.33 ³⁹	38.884 ¹	57.60 ⁵
Sept. 6.0	50.226 ³⁶	73.07 ³³	10.443 ¹	65.96 ²⁵⁹	34.663 ³⁴	80.74 ⁵⁹	38.913 ²⁹	57.45 ¹⁵
16.0	50.292 ⁶⁶	72.55 ⁵²	10.501 ⁵⁸	63.41 ²⁵⁵	34.727 ⁶⁴	79.93 ⁸¹	38.972 ⁵⁰	57.11 ³⁴
26.0	50.391 ⁹⁹	71.79 ⁷⁶	10.624 ¹²³	61.01 ²⁴⁰	34.823 ⁹⁶	78.91 ¹⁰²	39.064 ⁹²	56.55 ⁵⁶
Oct. 5.9	50.526 ¹³⁵	70.79 ¹⁰⁰	10.816 ¹⁹²	58.87 ²¹⁴	34.957 ¹³⁴	77.64 ¹²⁷	39.193 ¹²⁹	55.73 ⁸²
15.9	50.700 ¹⁷⁴	69.55 ¹²⁴	11.073 ²⁵⁷	57.07 ¹⁸⁰	35.130 ¹⁷³	76.16 ¹⁴⁸	39.360 ¹⁶⁷	54.65 ¹⁰⁸
25.9	50.912 ²¹²	68.07 ¹⁴⁸	11.394 ³²¹	55.71 ¹³⁶	35.342 ²¹²	74.46 ¹⁷⁰	39.566 ²⁰⁶	53.32 ¹³³
Nov. 4.8	51.160 ²⁴⁸	66.36 ¹⁷¹	11.774 ³⁸⁰	54.86 ⁸⁵	35.589 ²⁴⁷	72.58 ¹⁸⁸	39.809 ²⁴³	51.74 ¹⁵⁸
14.8	51.440 ²⁸⁰	64.46 ¹⁹⁰	12.202 ⁴²⁸	54.57 ²⁹	35.869 ²⁸⁰	70.54 ²⁰⁴	40.085 ²⁷⁶	49.95 ¹⁷⁹
24.8	51.748 ³⁰⁸	62.41 ²⁰⁵	12.665 ⁴⁶³	54.87 ³⁰	36.178 ³⁰⁹	68.39 ²¹⁵	40.390 ³⁰⁵	47.97 ¹⁹⁸
Dec. 4.8	52.075 ³²⁷	60.26 ²¹⁵	13.152 ⁴⁸⁷	55.78 ⁹¹	36.506 ³²⁸	66.19 ²²⁰	40.714 ³²⁴	45.85 ²¹²
14.7	52.412 ³³⁷	58.08 ²¹⁸	13.645 ⁴⁹³	57.26 ¹⁴⁸	36.846 ³⁴⁰	64.02 ²¹⁷	41.050 ³³⁶	43.68 ²¹⁷
24.7	52.749 ³³⁷	55.95 ²¹³	14.130 ⁴⁸⁵	59.28 ²⁰²	37.187 ³⁴¹	61.93 ²⁰⁹	41.383 ³³³	41.49 ²¹⁹
34.7	53.076 ³²⁷	53.92 ²⁰³	14.591 ⁴⁶¹	61.77 ²⁴⁹	37.518 ³³¹	59.99 ¹⁹⁴	41.714 ³³¹	39.39 ²¹⁰
Mean Place	48.365	83.80	10.273	49.95	32.763	91.49	37.070	68.48
Sec δ, Tan δ	1.006	+0.114	1.702	-1.378	1.019	+0.194	1.002	+0.058
D _φ α, D _m α	+0.06	+0.01	+0.05	-0.09	+0.06	+0.01	+0.06	0.00
D _φ δ, D _m δ	-0.4	+0.2	-0.4	+0.2	-0.4	+0.2	-0.4	+0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	λ Draconis. Mag. 4.1		ϵ Hydræ. Mag. 3.7		λ Centauri. Mag. 3.3		υ Leonis. Mag. 4.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '
	11 26	+69 46	11 28	-31 23	11 31	-62 33	11 32	- 0 21
	s	"	s	"	s	"	s	"
Jan. 0.7	29.13	78.12	53.092	29.65	54.76	5.80	40.059	41.39
10.7	29.86 ⁷³	78.20 ⁸	53.440 ³⁴⁸	32.29 ²⁶⁴	55.30 ⁵⁴	8.36 ²⁵⁶	40.380 ³²¹	43.53 ²¹⁴
20.6	30.54 ⁶⁸	78.88 ⁶⁸	53.759 ³¹⁹	35.10 ²⁸¹	55.80 ⁶⁰	11.33 ²⁹⁷	40.676 ²⁹⁶	45.55 ²⁰²
30.6	31.14 ⁶⁰	80.14 ¹²⁶	54.039 ²⁸⁰	38.00 ²⁹⁰	56.23 ⁴³	14.63 ³³⁰	40.940 ²⁶⁴	47.38 ¹⁸³
Feb. 9.6	31.65 ⁵¹	81.92 ¹⁷⁸	54.275 ²³⁶	40.92 ²⁹²	56.57 ⁸⁴	18.18 ³⁵⁵	41.165 ²⁵⁵	48.98 ¹⁶⁰
	38	221	187	286	28	369	182	135
19.6	32.03 ²⁷	84.13	54.462 ¹³⁷	43.78	56.85 ²⁰	21.87	41.347 ¹³⁷	50.33 ¹⁰⁷
29.5	32.30 ¹⁵	86.68 ²⁵⁵	54.599 ⁹⁰	46.53 ²⁷⁵	57.05 ¹¹	25.62 ³⁷⁵	41.484 ⁹⁵	51.40 ⁸¹
Mar. 10.5	32.45	89.43 ²⁷⁵	54.689 ⁴⁷	49.10 ²³⁶	57.16 ⁴	29.34 ³⁷²	41.579 ⁵³	52.21 ⁵⁶
20.5	32.46 ¹	92.29 ²⁸⁶	54.736 ⁵	51.46 ²¹⁰	57.20 ³	32.95 ³⁶¹	41.632 ¹⁶	52.77 ³¹
30.5	32.36 ¹⁰	95.13 ²⁸⁴	54.741 ³¹	53.56 ¹⁸⁴	57.17 ¹¹	36.37 ³⁴²	41.648 ¹⁵	53.08 ¹¹
Apr. 9.4	32.16	97.83	54.710	55.40	57.06	39.54	41.633	53.19
19.4	31.87 ²⁹	100.28 ²⁴⁵	54.651 ⁵⁹	56.93 ¹⁵³	56.90 ¹⁶	42.40 ²⁸⁶	41.592 ⁴¹	53.12 ⁷
29.4	31.49 ³⁸	102.40 ²¹²	54.568 ⁸³	58.16 ¹²³	56.70 ²⁰	44.91 ²⁵¹	41.530 ⁶²	52.89 ²³
May 9.3	31.06 ⁴³	104.11 ¹⁷¹	54.466 ¹⁰²	59.07 ⁹¹	56.45 ²⁵	47.00 ²⁰⁹	41.452 ⁷⁸	52.55 ³⁴
19.3	30.59 ⁴⁷	105.37 ¹²⁶	54.349 ¹¹⁷	59.64 ⁵⁷	56.17 ²⁸	48.65 ¹⁶⁵	41.364 ⁸⁸	52.11 ⁴⁴
	50	78	125	26	31	118	94	51
29.3	30.09	106.13 ²³	54.224 ¹³⁰	59.90 ⁸	55.86 ³³	49.83 ⁶⁸	41.270 ⁹⁷	51.60 ⁵⁷
June 8.3	29.59 ⁵⁰	106.36 ²⁹	54.094 ¹³²	59.82 ³⁸	55.53 ³⁴	50.51 ¹⁸	41.173 ⁹⁶	51.03 ⁶⁰
18.2	29.09 ⁵⁰	106.07 ⁸¹	53.962 ¹²⁹	59.44 ⁷⁰	55.19 ³³	50.69 ³³	41.077 ⁹³	50.43 ⁶¹
28.2	28.62 ⁴⁷	105.26 ¹³¹	53.833 ¹²³	58.74 ⁹⁸	54.86 ³³	50.36 ⁸¹	40.984 ⁸⁶	49.82 ⁶²
July 8.2	28.19 ³⁹	103.95 ¹⁷⁷	53.710 ¹¹¹	57.76 ¹²³	54.53 ³¹	49.55 ¹²⁹	40.898 ⁷⁶	49.20 ⁵⁸
18.2	27.80	102.18	53.599 ⁹⁶	56.53 ¹⁴⁴	54.22 ²⁷	48.26 ¹⁷²	40.822 ⁶⁴	48.62 ⁵⁵
28.1	27.47 ³³	99.97 ²²¹	53.503 ⁷⁷	55.09 ¹⁶¹	53.95 ²⁴	46.54 ²⁰⁹	40.758 ⁴⁹	48.07 ⁴⁷
Aug. 7.1	27.20 ²⁷	97.38 ²⁵⁹	53.426 ⁵⁵	53.48 ¹⁷¹	53.71 ¹⁸	44.45 ²³⁹	40.709 ²⁹	47.60 ³⁷
17.1	27.00 ²⁰	94.46 ²⁹²	53.371 ²⁵	51.77 ¹⁷⁶	53.53 ¹³	42.06 ²⁶²	40.680 ⁹	47.23 ²⁴
27.0	26.88 ³	91.27 ³¹⁹	53.346 ¹¹	50.01 ¹⁷²	53.40 ⁴	39.44 ²⁷⁵	40.671 ²⁰	46.99 ⁸
Sept. 6.0	26.85	87.87	53.357	48.29	53.36	36.69	40.691	46.91
16.0	26.90 ⁵	84.30 ³⁵⁷	53.405 ⁴⁸	46.68 ¹⁶¹	53.39 ³	33.92 ²⁷⁷	40.739 ⁴⁸	47.03 ¹²
26.0	27.04 ¹⁴	80.67 ³⁶³	53.497 ⁹²	45.25 ¹⁴³	53.50 ¹¹	31.23 ²⁶⁹	40.823 ⁸⁴	47.38 ³⁵
Oct. 5.9	27.27 ²³	77.01 ³⁶⁶	53.634 ¹³⁷	44.09 ¹¹⁶	53.69 ¹⁹	28.74 ²⁴⁹	40.943 ¹²⁰	47.98 ⁶⁰
15.9	27.60 ³³	73.44 ³⁵⁷	53.818 ¹⁸⁴	43.25 ⁸⁴	53.98 ²⁹	26.56 ²¹⁸	41.103 ¹⁶⁰	48.84 ⁸⁶
	42	344	230	43	36	178	199	114
25.9	28.02	70.00	54.048	42.82	54.34	24.78	41.302	49.98
Nov. 4.9	28.53 ⁵¹	66.80 ³²⁰	54.322 ²⁷⁴	42.81 ¹	54.79 ⁴⁵	23.48 ¹³⁰	41.538 ²³⁶	51.39 ¹⁴¹
14.8	29.12 ⁵⁹	63.90 ²⁹⁰	54.635 ³¹³	43.27 ⁴⁶	55.31 ⁵²	22.74 ⁷⁴	41.810 ²⁷²	53.06 ¹⁶⁷
24.8	29.78 ⁶⁶	61.41 ²⁴⁹	54.978 ³⁴³	44.20 ⁹³	55.86 ⁵⁵	22.60 ¹⁴	42.111 ³⁰¹	54.94 ¹⁸⁸
Dec. 4.8	30.49 ⁷¹	59.38 ²⁰³	55.343 ³⁶⁵	45.59 ¹³⁹	56.45 ⁵⁹	23.09 ⁴⁹	42.433 ³²²	57.01 ²⁰⁷
	75	150	375	181	60	110	336	216
14.7	31.24	57.88	55.718	47.40	57.05	24.19	42.769	59.17
24.7	32.00 ⁷⁶	56.98 ⁹⁰	56.092 ³⁷⁴	49.57 ²¹⁷	57.65 ⁶⁰	25.88 ¹⁶⁹	43.106 ³³⁷	61.37 ²²⁰
34.7	32.74 ⁷⁴	56.68 ³⁰	56.453 ³⁶¹	52.05 ²⁴⁸	58.22 ⁵⁷	28.11 ²²³	43.435 ³²⁹	63.56 ²¹⁹
Mean Place	26.035	101.40	52.058	34.10	53.892	17.95	38.870	35.47
Sec δ , Tan δ	2.895	+2.717	1.172	-0.610	2.170	-1.926	1.000	-0.006
$D\psi \alpha$, $D\omega \alpha$	+0.07	+0.18	+0.06	-0.04	+0.05	-0.13	+0.06	0.00
$D\psi \delta$, $D\omega \delta$	-0.4	+0.1	-0.4	+0.1	-0.4	+0.1	-0.4	+0.1

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	π Chamæleonis. Mag. 5.7			3 Draconis. Mag. 5.5			ζ Crateris. Mag. 4.9			χ Ursæ Majoris. Mag. 3.8		
	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	11	33	-75 25	11	37	+67 11	11	40	-17 53	11	41	+48 14
	s	"	s	"	"	s	"	"	s	"	"	
Jan. 0.7	48.02	39.52	50.55	71.94	31.228	1.37	39.001	22.08	81			
10.7	48.92	41.84	51.32	71.78	31.562	3.82	39.436	21.27	26			
20.7	49.73	44.68	51.94	72.26	31.870	6.32	39.844	21.01	28			
30.6	50.43	47.92	52.50	73.30	32.144	8.78	40.212	21.29	79			
Feb. 9.6	51.01	51.47	52.97	74.89	32.378	11.17	40.528	22.08	125			
19.6	51.45	55.22	53.36	76.94	32.569	13.42	40.785	23.33				
29.5	51.75	59.11	53.63	79.35	32.716	15.49	40.976	24.97	164			
Mar. 10.5	51.91	63.04	53.80	82.02	32.819	17.34	41.102	26.91	194			
20.5	51.93	66.90	53.84	84.82	32.879	18.96	41.164	29.06	215			
30.5	51.82	70.64	53.79	87.64	32.903	20.32	41.164	31.31	227			
Apr. 9.4	51.60	74.16	53.64	90.37	32.894	21.43	41.110	33.58				
19.4	51.26	77.40	53.40	92.88	32.858	22.31	41.010	35.74	216			
29.4	50.83	80.29	53.10	95.10	32.798	22.93	40.872	37.74	200			
May 9.4	50.31	82.78	52.74	96.94	32.722	23.31	40.704	39.49	175			
19.3	49.71	84.81	52.34	98.35	32.634	23.46	40.516	40.94	145			
29.3	49.06	86.36	51.91	99.28	32.536	23.39	40.315	42.03	109			
June 8.3	48.38	87.39	51.48	99.71	32.434	23.10	40.109	42.73	70			
18.2	47.67	87.87	51.04	99.62	32.328	22.62	39.905	43.02	29			
28.2	46.96	87.80	50.63	99.02	32.225	21.96	39.707	42.91	11			
July 8.2	46.27	87.20	50.24	97.92	32.125	21.14	39.523	42.38	53			
18.2	45.61	86.07	49.88	96.34	32.033	20.16	39.357	41.46	92			
28.1	45.02	84.46	49.57	94.33	31.953	19.10	39.212	40.14	132			
Aug. 7.1	44.51	82.40	49.31	91.91	31.887	17.97	39.094	38.46	168			
17.1	44.09	79.99	49.12	89.15	31.841	16.81	39.006	36.45	201			
27.1	43.79	77.28	48.99	86.09	31.819	15.70	38.954	34.15	230			
Sept. 6.0	43.63	74.38	48.93	82.79	31.826	14.64	38.941	31.57	258			
16.0	43.63	71.39	48.95	79.31	31.865	13.74	38.972	28.78	279			
26.0	43.77	68.43	49.05	75.71	31.942	13.05	39.050	25.80	298			
Oct. 5.9	44.07	65.63	49.23	72.08	32.060	12.61	39.178	22.70	310			
15.9	44.53	63.08	49.50	68.47	32.218	12.48	39.359	19.53	317			
25.9	45.15	60.91	49.86	64.99	32.421	12.68	39.595	16.36	317			
Nov. 4.9	45.90	59.20	50.30	61.69	32.665	13.24	39.883	13.27	309			
14.8	46.75	58.05	50.82	58.68	32.945	14.20	40.219	10.31	296			
24.8	47.69	57.50	51.40	56.03	33.256	15.51	40.598	7.57	274			
Dec. 4.8	48.69	57.61	52.03	53.82	33.591	17.17	41.012	5.14	243			
14.8	49.70	58.36	52.70	52.12	33.937	19.13	41.448	3.09	205			
24.7	50.69	59.76	53.38	50.99	34.288	21.32	41.896	1.48	161			
34.7	51.63	61.74	54.06	50.47	34.628	23.68	42.337	0.36	112			
Mean Place	47.279	53.52	48.021	95.51	30.191	1.28	37.269	42.70				
Sec δ, Tan δ	3.977	-3.849	2.581	+2.379	1.051	-0.323	1.501	+1.120				
D _φ α, D _ω α	+0.05	-0.25	+0.07	+0.16	+0.06	-0.02	+0.06	+0.07				
D _φ δ, D _ω δ	-0.4	+0.1	-0.4	+0.1	-0.4	+0.1	-0.4	+0.1				

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Leonis. (Denebola.) Mag. 2.2		β Virginis. Mag. 3.8		Groombridge 1830. Mag. 6.5		γ Ursae Majoris. Mag. 2.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 11 44	° ' +15 1	h m 11 46	° ' + 2 13	h m 11 48	° ' +38 18	h m 11 49	° ' +54 8
	s	"	s	"	s	"	s	"
Jan. 0.7	47.825	78.57	20.313	70.28	10.019	59.37	26.990	80.37
10.7	48.159 ³³⁴	76.76 ¹⁸¹	20.641 ³²⁸	68.18 ²¹⁰	10.417 ³⁹⁸	58.03 ¹³⁴	27.473 ⁴⁸³	79.66 ⁷¹
20.7	48.470 ⁸¹¹	75.23 ¹⁵³	20.946 ³⁰⁵	66.22 ¹⁹⁶	10.791 ³⁷⁴	57.19 ⁸⁴	27.928 ⁴⁵⁵	79.54 ¹²
30.6	48.751 ²⁸¹	74.03 ¹²⁰	21.222 ²⁷⁶	64.48 ¹⁷⁴	11.131 ³⁴⁰	56.83 ³⁶	28.341 ⁴¹³	79.98 ⁴⁴
Feb. 9.6	48.993 ²⁴²	73.18 ⁸⁵	21.460 ²³⁸	62.98 ¹⁵⁰	11.426 ²⁹⁵	56.96 ¹³	28.699 ³⁵⁸	80.97 ⁹⁹
19.6	49.192 ¹⁹⁹	72.66 ⁵²	21.656 ¹⁹⁶	61.75 ¹²³	11.672 ²⁴⁶	57.52 ⁵⁶	28.992 ²⁰³	82.43 ¹⁴⁶
29.6	49.345 ¹⁵³	72.48 ¹⁸	21.809 ¹⁵³	60.81 ⁹⁴	11.861 ¹⁸⁹	58.48 ⁹⁶	29.213 ²²¹	84.29 ¹⁸⁶
Mar. 10.5	49.453 ¹⁰⁸	72.61 ¹³	21.918 ¹⁰⁹	60.15 ⁶⁶	11.994 ¹³³	59.77 ¹²⁹	29.359 ¹⁴⁶	86.48 ²¹⁹
20.5	49.517 ⁶⁴	72.99 ³⁸	21.966 ⁶⁸	59.75 ⁴⁰	12.073 ⁷⁹	61.29 ¹⁵²	29.434 ⁷⁵	88.86 ²³⁸
30.5	49.542 ²⁵	73.59 ⁶⁰	22.017 ³¹	59.59 ¹⁶	12.101 ²⁸	62.99 ¹⁷⁰	29.438 ⁴	91.34 ²⁴⁸
Apr. 9.4	49.532 ¹⁰	74.36 ⁷⁷	22.017 ⁰	59.62 ³	12.083 ¹⁸	64.74 ¹⁷⁵	29.379 ⁵⁹	93.82 ²⁴⁸
19.4	49.494 ³⁸	75.23 ⁸⁷	21.987 ³⁰	59.84 ²²	12.028 ⁵⁵	66.46 ¹⁷²	29.265 ¹¹⁴	96.20 ²³⁸
29.4	49.431 ⁶³	76.15 ⁹²	21.937 ⁵⁰	60.19 ³⁵	11.939 ⁸⁹	68.10 ¹⁶⁴	29.105 ¹⁶⁰	98.36 ²¹⁶
May 9.4	49.351 ⁸⁰	77.09 ⁹⁴	21.868 ⁶⁹	60.64 ⁴⁵	11.826 ¹¹³	69.57 ¹⁴⁷	28.909 ¹⁹⁶	100.26 ¹⁹⁰
19.3	49.259 ⁹²	77.99 ⁹⁰	21.788 ⁸⁰	61.16 ⁵²	11.697 ¹²⁹	70.80 ¹²³	28.685 ²²⁴	101.81 ¹⁸⁵
29.3	49.158 ¹⁰¹	78.82 ⁸³	21.699 ⁸⁹	61.73 ⁵⁷	11.554 ¹⁴³	71.78 ⁹⁸	28.445 ²⁴⁰	102.97 ¹¹⁶
June 8.3	49.054 ¹⁰⁴	79.55 ⁷³	21.606 ⁸³	62.33 ⁶⁰	11.408 ¹⁴⁶	72.48 ⁶⁵	28.197 ²⁴⁸	103.70 ⁷³
18.3	48.949 ¹⁰⁵	80.16 ⁶¹	21.512 ⁹⁴	62.94 ⁶¹	11.261 ¹⁴⁷	72.76 ³³	27.948 ²⁴⁹	103.99 ²⁹
28.2	48.847 ¹⁰²	80.65 ⁴⁹	21.419 ⁸³	63.53 ⁵⁹	11.117 ¹⁴⁴	72.75 ¹	27.705 ²⁴³	103.83 ¹⁶
July 8.2	48.750 ⁹⁷	80.98 ³⁸	21.331 ⁹⁸	64.09 ⁵⁶	10.984 ¹³³	72.39 ³⁶	27.475 ²³⁰	103.21 ⁶²
18.2	48.662 ⁸⁸	81.13 ¹⁵	21.250 ⁸¹	64.60 ⁵¹	10.862 ¹²²	71.68 ⁷¹	27.265 ²¹⁰	102.16 ¹⁰⁵
28.1	48.587 ⁷⁵	81.11 ²	21.180 ⁷⁰	65.04 ⁴⁴	10.757 ¹⁰⁵	70.63 ¹⁰⁵	27.079 ¹⁸⁶	100.69 ¹⁴⁷
Aug. 7.1	48.526 ⁶¹	80.90 ²¹	21.123 ⁵⁷	65.39 ³⁵	10.673 ⁸⁴	69.27 ¹³⁶	26.924 ¹⁵⁵	98.85 ¹⁸⁴
17.1	48.483 ⁴²	80.51 ³⁹	21.083 ⁴⁰	65.61 ²²	10.611 ⁶²	67.58 ¹⁶⁰	26.803 ¹²¹	96.63 ²²²
27.1	48.463 ²⁰	79.90 ⁶¹	21.066 ¹⁷	65.70 ⁹	10.579 ³²	65.60 ¹⁹⁸	26.721 ⁸²	94.10 ²⁵³
Sept. 6.0	48.468 ⁵	79.08 ⁸²	21.072 ⁶	65.62 ⁸	10.578 ¹	63.36 ²²⁴	26.684 ³⁷	91.90 ²⁸⁰
16.0	48.504 ³⁶	78.04 ¹⁰⁴	21.110 ³⁸	65.33 ²⁹	10.614 ³⁶	60.88 ²⁴⁸	26.696 ¹²	88.27 ³⁰³
26.0	48.574 ⁷⁰	76.76 ¹²⁸	21.181 ⁷¹	64.82 ⁵¹	10.690 ⁷⁶	58.19 ²⁶⁹	26.762 ⁶⁶	85.07 ³³⁰
Oct. 6.0	48.681 ¹⁰⁷	75.26 ¹⁵⁰	21.289 ¹⁰⁸	64.06 ⁷⁶	10.811 ¹²¹	55.32 ²⁸⁷	26.885 ¹²³	81.75 ³²²
15.9	48.829 ¹⁴⁸	73.54 ¹⁷²	21.436 ¹⁴⁷	63.05 ¹⁰¹	10.977 ¹⁶⁶	52.34 ²⁹⁸	27.068 ¹⁸³	78.38 ³³⁷
25.9	49.016 ¹⁸⁷	71.63 ¹⁹¹	21.624 ¹⁸⁸	61.77 ¹²⁸	11.192 ²¹⁵	49.28 ³⁰⁶	27.311 ²⁴³	75.02 ³³⁶
Nov. 4.9	49.243 ²²⁷	69.53 ²¹⁰	21.851 ²²⁷	60.24 ¹⁵³	11.453 ²⁶¹	46.22 ³⁰⁶	27.614 ³⁰³	71.76 ²³⁶
14.8	49.509 ²⁶⁶	67.32 ²²¹	22.115 ²⁶⁴	58.48 ¹⁷⁶	11.759 ³⁰⁶	43.21 ³⁰¹	27.973 ³⁵⁹	68.69 ³⁰⁷
24.8	49.806 ²⁹⁷	65.03 ²²⁹	22.411 ²⁹⁶	56.52 ¹⁹⁶	12.102 ³⁴³	40.33 ²⁹⁸	28.381 ⁴⁰⁸	65.86 ²⁸³
Dec. 4.8	50.128 ³²²	62.72 ²³¹	22.730 ³¹⁹	54.42 ²¹⁰	12.477 ³⁷⁵	37.68 ²⁶⁵	28.830 ⁴⁴⁹	63.39 ²⁴⁷
14.8	50.467 ³³⁹	60.46 ²²⁶	23.064 ³³⁴	52.22 ²²⁰	12.873 ³⁹⁶	35.90 ²³⁸	29.306 ⁴⁷⁶	61.33 ²⁰⁶
24.7	50.811 ³⁴⁴	58.34 ²¹²	23.403 ³³⁹	50.02 ²²⁰	13.278 ⁴⁰⁵	33.30 ²⁰⁰	29.797 ⁴⁹¹	59.75 ¹⁵⁸
34.7	51.150 ³³⁹	56.39 ¹⁹⁵	23.738 ³³⁵	47.86 ²¹⁶	13.682 ⁴⁰⁴	31.70 ¹⁶⁰	30.285 ⁴⁸⁸	58.72 ¹⁰³
Mean Place	46.591	90.04	19.185	77.45	8.543	77.90	25.184	102.49
Sec δ , Tan δ	1.035	+0.269	1.001	+0.039	1.275	+0.790	1.708	+1.384
$D_{\psi} \alpha$, $D_{\omega} \alpha$	+0.06	+0.02	+0.06	0.00	+0.06	+0.05	+0.06	+0.09
$D_{\psi} \delta$, $D_{\omega} \delta$	-0.4	+0.1	-0.4	+0.1	-0.4	+0.1	-0.4	0.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	π Virginis. Mag. 4.6		\omicron Virginis. Mag. 4.2		δ Centauri. Mag. 2.9		ϵ Corvi. Mag. 3.2	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	11 56	+ 7 4	12 0	+ 9 11	12 3	-50 15	12 5	-22 9
	s	"	s	"	s	"	s	"
Jan. 0.7	35.205	48.69	56.939	48.01	60.583	7.89	48.996	8.68
10.7	35.536 ³³¹	46.67 ²⁰²	57.272 ³³³	46.02 ¹⁹⁹	61.034 ⁴⁵¹	10.20 ²³¹	49.344 ³⁴⁸	11.04 ²³⁶
20.7	35.847 ³¹¹	44.85 ¹⁸²	57.586 ³¹⁴	44.27 ¹⁷⁵	61.454 ⁴²⁰	12.88 ²⁶⁸	49.672 ³²⁸	13.51 ²⁴⁷
30.6	36.130 ²⁸³	43.29 ¹⁵⁶	57.872 ²⁸⁶	42.77 ¹⁵⁰	61.833 ³⁷⁹	15.86 ²⁹⁸	49.968 ²⁹⁶	16.02 ²⁵¹
Feb. 9.6	36.376 ²⁴⁶	42.02 ¹²⁷	58.122 ²⁵⁰	41.59 ¹¹⁸	62.162 ³²⁹	19.04 ³¹⁸	50.228 ²⁶⁰	18.50 ²⁴⁸
	205	98	209	87	273	329	219	238
19.6	36.581	41.04	58.331	40.72	62.435	22.33	50.447	20.88
29.6	36.744 ¹⁶³	40.38 ⁶⁶	58.498 ¹⁶⁷	40.18 ⁵⁴	62.651 ²¹⁶	25.67 ³³⁴	50.622 ¹⁷⁵	23.12 ²²⁴
Mar. 10.5	36.863 ¹¹⁹	40.01 ³⁷	58.621 ¹²³	39.95 ²³	62:809 ¹⁵⁸	28.98 ³³¹	50.754 ¹³²	25.17 ²⁰⁵
20.5	36.940 ⁷⁷	39.92 ⁹	58.703 ⁸²	39.98 ³	62.910 ¹⁰¹	32.18 ³²⁰	50.845 ⁹¹	27.03 ¹⁸⁶
30.5	36.980 ⁴⁰	40.06 ¹⁴	58.746 ⁴³	40.26 ²⁸	62.958 ⁴⁸	35.20 ³⁰²	50.896 ⁵¹	28.64 ¹⁶¹
	6	34	9	47	1	282	17	138
Apr. 9.5	36.986	40.40	58.755	40.73	62.957	38.02	50.913	30.02
19.4	36.963 ²³	40.89 ⁴⁹	58.734 ²¹	41.34 ⁶¹	62.912 ⁴⁵	40.56 ²⁵⁴	50.900 ¹³	31.15 ¹¹³
29.4	36.917 ⁴⁶	41.49 ⁶⁰	58.690 ⁴⁴	42.06 ⁷²	62.829 ⁸³	42.79 ²²³	50.862 ³⁸	32.03 ⁸⁸
May 9.4	36.851 ⁶⁶	42.16 ⁶⁷	58.626 ⁶⁴	42.82 ⁷⁶	62.712 ¹¹⁷	44.68 ¹⁸⁹	50.804 ⁵⁸	32.66 ⁶³
19.3	36.773 ⁷⁸	42.88 ⁷²	58.548 ⁷⁸	43.61 ⁷⁹	62.568 ¹⁴⁴	46.19 ¹⁵¹	50.727 ⁷⁷	33.05 ³⁹
	88	70	88	77	169	110	89	11
29.3	36.685	43.58	58.460	44.38	62.399	47.29	50.638	33.19
June 8.3	36.590 ⁹⁵	44.27 ⁶⁹	58.366 ⁹⁴	45.12 ⁷⁴	62.213 ¹⁸⁶	47.98 ⁶⁹	50.538 ¹⁰⁰	33.11 ⁸
18.3	36.493 ⁹⁷	44.92 ⁶⁵	58.267 ⁹⁹	45.78 ⁶⁶	62.014 ¹⁹⁹	48.22 ²⁴	50.433 ¹⁰⁵	32.78 ³³
28.2	36.396 ⁹⁷	45.50 ⁵⁸	58.169 ⁹⁸	46.36 ⁵⁸	61.808 ²⁰⁶	48.05 ¹⁷	50.323 ¹¹⁰	32.25 ⁵³
July 8.2	36.303 ⁹³	46.01 ⁵¹	58.073 ⁹⁶	46.84 ⁴⁸	61.600 ²⁰⁸	47.44 ⁶¹	50.213 ¹¹⁰	31.51 ⁷⁴
	87	40	91	36	202	101	106	90
18.2	36.216	46.41	57.982	47.20	61.398	46.43	50.107	30.61
28.2	36.137 ⁷⁹	46.69 ²⁸	57.901 ⁸¹	47.42 ²²	61.209 ¹⁸⁹	45.05 ¹⁷⁸	50.009 ⁹⁸	29.56 ¹⁰⁵
Aug. 7.1	36.072 ⁶⁵	46.85 ¹⁶	57.832 ⁶⁹	47.49 ⁷	61.041 ¹⁶⁸	43.33 ¹³²	49.922 ⁸⁷	28.40 ¹¹⁶
17.1	36.023 ⁴⁹	46.85 ⁰	57.778 ⁵⁴	47.40 ⁹	60.900 ¹⁴¹	41.34 ¹⁹⁹	49.853 ⁶⁹	27.17 ¹²³
27.1	35.995 ²⁸	46.68 ¹⁷	57.745 ³³	47.13 ²⁷	60.796 ¹⁰⁴	39.13 ²²¹	49.804 ⁴⁹	25.92 ¹²⁵
	5	36	9	47	59	232	19	120
Sept. 6.0	35.990	46.32	57.736	46.66	60.737	36.81	49.785	24.72
16.0	36.016 ²⁶	45.76 ⁵⁶	57.757 ²¹	45.96 ⁷⁰	60.730 ⁷	34.45 ²³⁶	49.798 ¹³	23.60 ¹¹²
26.0	36.076 ⁶⁰	44.96 ⁸⁰	57.810 ⁵³	45.05 ⁹¹	60.781 ⁵¹	32.15 ²³⁰	49.849 ⁵¹	22.65 ⁹⁵
Oct. 6.0	36.171 ⁹⁵	43.93 ¹⁰³	57.900 ⁹⁰	43.89 ¹¹⁶	60.896 ¹¹⁵	30.02 ²¹³	49.941 ⁹²	21.94 ⁷¹
15.9	36.306 ¹³⁵	42.65 ¹²⁸	58.031 ¹³¹	42.49 ¹⁴⁰	61.076 ¹⁸⁰	28.13 ¹⁸⁹	50.078 ¹³⁷	21.49 ⁴⁵
	175	152	173	163	246	152	184	11
25.9	36.481	41.13	58.204	40.86	61.322	26.61	50.262	21.38
Nov. 4.9	36.698 ²¹⁷	39.38 ¹⁷⁵	58.417 ²¹³	39.02 ¹⁸⁴	61.629 ³⁰⁷	25.50 ¹¹¹	50.491 ²²⁹	21.63 ²⁵
14.9	36.953 ²⁵⁵	37.44 ¹⁹⁴	58.669 ²⁵²	37.00 ²⁰²	61.992 ³⁶³	24.90 ⁶⁰	50.761 ²⁷⁰	22.28 ⁶⁵
24.8	37.241 ²⁸⁸	35.34 ²¹⁰	58.954 ²⁸⁵	34.84 ²¹⁶	62.402 ⁴¹⁰	24.81 ⁴⁹	51.066 ³⁰⁵	23.31 ¹⁰³
Dec. 4.8	37.556 ³¹⁵	33.15 ²¹⁹	59.268 ³¹⁴	32.60 ²²⁴	62.846 ⁴⁴⁴	25.30 ⁴⁹	51.399 ³³³	24.69 ¹³⁸
	332	223	330	226	465	102	352	174
14.8	37.888	30.92	59.598	30.34	63.311	26.32	51.751	26.43
24.7	38.227 ³³⁹	28.72 ²²⁰	59.938 ³⁴⁰	28.14 ²²⁰	63.782 ⁴⁷¹	27.88 ¹⁵⁶	52.109 ³⁵⁸	28.46 ²⁰³
31.7	38.563 ³³⁶	26.63 ²⁰⁹	60.275 ³³⁷	26.07 ²⁰⁷	64.244 ⁴⁶²	29.91 ²⁰³	52.464 ³⁵⁵	30.69 ²²³
Mean Place	34.106	57.80	55.851	57.96	59.891	17.12	48.125	9.56
Sec δ , Tan δ	1.008	+0.124	1.013	+0.162	1.564	-1.203	1.080	-0.407
$D_{\phi} \alpha, D_{\omega} \alpha$	+0.06	+0.01	+0.06	+0.01	+0.06	-0.08	+0.06	-0.03
$D_{\phi} \delta, D_{\omega} \delta$	-0.4	0.0	-0.4	0.0	-0.4	0.0	-0.4	0.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	4 H. Draconis. Mag. 5.1		δ Crucis. Mag. 3.1		δ Ursæ Majoris. Mag. 3.4		γ C Mag	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	
	h m 12 8	° ' " +78 4	h m 12 10	° ' " -58 16	h m 12 11	° ' " +57 29	h m 12 11	
	s	"	s	"	s	"	s	
Jan. 0.7	20.05	33.05	41.439	44.31	18.259	34.04	29.889	
10.7	21.22 117	32.80 25	41.968 529	46.46 215	18.779 520	33.19 85	30.232 343	
20.7	22.33 111	33.21 41	42.461 493	49.04 258	19.276 497	32.93 26	30.556 324	
30.6	23.36 103	34.24 103	42.909 448	51.98 294	19.735 459	33.27 34	30.850 294	
Feb. 9.6	24.27 91	35.85 161	43.300 391	55.19 321	20.142 407	34.18 91	31.110 260	
19.6	25.03 76	37.97 212	43.626 326	58.59 340	20.484 342	35.62 144	31.330 220	
29.6	25.59 56	40.51 254	43.885 259	62.09 350	20.753 269	37.51 189	31.508 178	
Mar. 10.5	25.97 38	43.33 282	44.076 191	65.61 352	20.943 190	39.75 224	31.644 136	
20.5	26.14 17	46.35 302	44.201 125	69.07 346	21.057 114	42.23 248	31.740 96	
30.5	26.12 2	49.40 305	44.261 60	72.40 333	21.092 35	44.86 263	31.798 58	
Apr. 9.5	25.90 22	52.39 299	44.261 0	75.55 315	21.057 35	47.52 266	31.821 23	
19.4	25.50 40	55.19 280	44.207 54	78.44 289	20.959 98	50.08 256	31.816 5	
29.4	24.96 54	57.69 250	44.103 104	81.03 259	20.805 154	52.47 239	31.783 32	
May 9.4	24.28 68	59.81 212	43.956 147	83.27 224	20.605 200	54.59 212	31.733 51	
19.3	23.48 80	61.49 168	43.773 183	85.13 186	20.371 234	56.38 179	31.664 69	
29.3	22.63 85	62.67 118	43.556 217	86.56 143	20.110 261	57.77 139	31.582 82	
June 8.3	21.72 91	63.81 64	43.314 242	87.54 98	19.834 276	58.73 96	31.490 92	
18.3	20.79 93	63.40 9	43.053 261	88.06 52	19.550 284	59.24 51	31.392 98	
28.2	19.87 92	62.93 47	42.781 272	88.10 4	19.267 283	59.26 2	31.289 103	
July 8.2	18.98 89	61.92 101	42.507 274	87.68 42	18.992 275	58.80 46	31.186 103	
18.2	18.14 84	60.39 153	42.237 270	86.79 89	18.733 259	57.87 93	31.085 101	
28.2	17.39 75	58.38 201	41.981 256	85.46 133	18.495 238	56.50 137	30.990 95	
Aug. 7.1	16.71 68	55.93 245	41.749 232	83.75 171	18.285 210	54.70 180	30.905 85	
17.1	16.13 58	53.09 284	41.552 197	81.70 205	18.111 174	52.50 220	30.838 67	
27.1	15.67 46	49.91 318	41.401 151	79.39 231	17.976 135	49.96 254	30.790 48	
Sept. 6.0	15.36 31	46.46 345	41.304 97	76.90 249	17.888 88	47.12 284	30.768 22	
16.0	15.17 19	42.80 366	41.270 34	74.30 260	17.851 37	44.01 311	30.777 9	
26.0	15.13 4	39.01 379	41.309 39	71.74 256	17.872 21	40.71 330	30.820 43	
Oct. 6.0	15.26 13	35.16 385	41.425 116	69.28 246	17.954 82	37.26 345	30.906 86	
15.9	15.55 29	31.33 383	41.621 196	67.05 223	18.104 150	33.73 353	31.034 128	
25.9	15.99 44	27.61 372	41.896 275	65.14 191	18.319 215	30.22 351	31.207 173	
Nov. 4.9	16.60 61	24.09 352	42.245 349	63.65 149	18.603 284	26.78 344	31.425 218	
14.9	17.35 75	20.84 325	42.663 418	62.65 100	18.950 347	23.50 328	31.683 258	
24.8	18.25 90	17.98 286	43.137 474	62.20 45	19.355 405	20.49 301	31.978 295	
Dec. 4.8	19.25 100	15.57 241	43.653 516	62.33 13	19.811 456	17.81 268	32.299 321	
14.8	20.35 110	13.71 186	44.195 542	63.05 72	20.304 493	15.56 225	32.640 341	
24.7	21.50 115	12.43 128	44.746 551	64.34 129	20.818 514	13.80 176	32.990 350	
34.7	22.67 117	11.79 64	45.287 541	66.16 182	21.339 521	12.59 121	33.338 348	
Mean Place	16.804	58.72	40.888	55.26	16.633	57.52	29.023	
Sec δ, Tan δ	4.841	+4.736	1.902	-1.618	1.861	+1.570	1.046	
$D_{\psi} \alpha, D_{\omega} \alpha$	+0.06	+0.32	+0.06	-0.11	+0.06	+0.10	+0.06	
$D_{\psi} \delta, D_{\omega} \delta$	-0.4	0.0	-0.4	0.0	-0.4	0.0	-0.4	

APPARENT PLACES OF STARS, 1916.

415

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ϵ Canum Venat. Mag. 5.8		β Chamaeleontis. Mag. 4.4		γ Virginis. Mag. 4.0		α Crucis. Mag. 1.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 12 11	° ' +41 6	h m 12 13	° ' -78 50	h m 12 15	° ' - 0 12	h m 12 21	° ' -62 37
	s	"	s	"	s	"	s	"
Jan. 0.7	56.644	79.34	23.17	90.91	37.439	7.29	55.25	49.80
10.7	57.047 ⁹⁰³	78.03 ¹³¹	24.42 ¹²⁵	32.66 ¹⁷⁵	37.773 ³⁸⁴	9.43 ²¹⁴	55.85 ⁶⁰	51.74 ¹⁹⁴
20.7	57.432 ³⁸⁵	77.23 ⁸⁰	25.58 ¹¹⁶	34.95 ²²⁹	38.090 ³¹⁷	11.47 ²⁰⁴	56.41 ⁵⁶	54.16 ²⁴²
30.7	57.787 ³⁵⁵	76.95 ²⁸	26.63 ¹⁰⁵	37.72 ²⁷⁷	38.380 ²⁹⁰	13.32 ¹⁸⁵	56.92 ⁵¹	56.97 ²⁸¹
Feb. 9.6	58.102 ³¹⁵	77.19 ²⁴	27.54 ⁹¹	40.89 ⁸¹⁷	88.637 ²⁵⁷	14.94 ¹⁶²	57.37 ⁴⁵	60.11 ³¹⁴
19.6	58.368 ²⁶⁶	77.91 ⁷²	28.29 ⁷⁵	44.38 ³⁴⁹	88.856 ²¹⁹	16.30 ¹³⁶	57.76 ³⁹	63.47 ³³⁶
29.6	58.580 ²¹²	79.07 ¹¹⁶	28.89 ⁶⁰	48.07 ³⁰⁹	39.035 ¹⁷⁹	17.38 ¹⁰⁸	58.07 ³¹	66.99 ³⁵²
Mar. 10.5	58.737 ¹⁵⁷	80.60 ¹⁵³	29.31 ⁴²	51.90 ³⁸³	39.173 ¹³⁸	18.18 ⁸⁰	58.31 ²⁴	70.56 ³⁵⁷
20.5	58.837 ¹⁰⁰	82.40 ¹⁸⁰	29.55 ²⁴	55.78 ³⁸⁸	39.270 ⁹⁷	18.73 ⁵⁵	58.47 ¹⁶	74.13 ³⁵⁷
30.5	58.884 ⁴⁷	84.39 ¹⁹⁹	29.62 ⁷	59.61 ³⁸³	39.329 ⁵⁹	19.01 ²⁸	58.55 ⁸	77.59 ³⁴⁶
Apr. 9.5	58.882 ²	86.48 ²⁰⁹	29.63 ⁹	63.33 ³⁷²	39.355 ²⁶	19.08 ⁷	58.57 ²	80.90 ³³¹
19.4	58.837 ⁴⁵	88.58 ²¹⁰	29.63 ²⁴	63.33 ³⁵¹	39.355 ²	19.08 ¹⁰	58.57 ⁵	80.90 ³⁰⁹
29.4	58.754 ⁸³	90.60 ²⁰²	29.63 ³⁹	66.84 ³²⁶	39.353 ²⁸	18.98 ³⁷	58.52 ¹⁰	83.99 ²⁸¹
May 9.4	58.642 ¹¹²	92.46 ¹⁸⁶	28.37 ⁵³	70.10 ²⁹¹	39.325 ⁴⁸	18.71 ³⁹	58.42 ¹⁵	86.80 ²⁴⁸
19.4	58.507 ¹³⁵	94.09 ¹⁶³	28.37 ⁶⁵	73.01 ²⁵³	39.277 ⁶³	18.32 ⁴⁹	58.27 ²¹	89.28 ²¹⁰
29.3	58.355 ¹⁵²	95.45 ¹³⁶	27.72 ⁷⁴	75.54 ²⁰⁸	39.214 ⁷⁷	17.83 ⁵⁵	58.06 ²⁴	91.38 ¹⁶⁸
June 8.3	58.192 ¹⁶³	96.45 ¹⁰³	26.98 ⁸²	77.62 ¹⁵⁹	39.137 ⁸⁵	17.28 ⁵⁹	57.82 ²⁸	93.06 ¹²²
18.3	58.023 ¹⁶⁹	96.48 ⁶⁷	26.16 ⁸⁹	79.21 ¹⁰⁷	39.052 ⁹²	16.69 ⁶²	57.54 ³⁰	94.28 ⁷⁵
28.2	58.023 ¹⁶⁸	97.15 ³¹	25.27 ⁹⁸	80.28 ⁵³	38.960 ⁹⁴	16.07 ⁶²	57.24 ³²	95.03 ²⁶
July 8.2	57.855 ¹⁶³	97.46 ⁶	24.34 ⁹⁴	80.81 ³	38.866 ⁹⁶	15.45 ⁶⁰	56.92 ³³	95.29 ²³
18.2	57.692 ¹⁵⁵	97.40 ⁴⁴	23.40 ⁹²	80.78 ⁵⁸	38.770 ⁹³	14.85 ⁵⁷	56.59 ³³	95.06 ⁷²
28.2	57.537 ¹⁴³	96.96 ⁸³	22.48 ⁸⁷	80.20 ¹¹²	38.677 ⁸⁷	14.28 ⁶²	56.26 ³²	94.34 ¹¹⁸
Aug. 7.1	57.394 ¹²⁴	96.13 ¹¹⁹	21.61 ⁸⁰	79.08 ¹⁶²	38.590 ⁷⁶	13.76 ⁴⁴	55.94 ²⁹	93.16 ¹⁶¹
17.1	57.270 ¹⁰⁴	94.94 ¹⁵⁴	20.81 ⁷⁰	77.46 ²⁰⁵	38.514 ⁶⁴	13.32 ³⁴	55.65 ²⁵	91.55 ¹⁹⁹
27.1	57.166 ⁷⁶	93.40 ¹⁸⁵	20.11 ⁵⁵	75.41 ²⁴⁵	38.450 ⁶⁵	12.98 ²⁰	55.40 ²⁰	89.56 ²²⁹
Sept. 6.1	57.090 ⁴⁵	91.55 ²¹⁵	19.56 ³⁹	72.96 ²⁷²	38.405 ²¹	12.78 ⁵	55.20 ¹⁴	87.27 ²⁵²
16.0	57.045 ⁸	89.40 ²⁴²	19.17 ²²	70.24 ²⁹³	38.384 ⁶	12.73 ¹⁴	55.06 ⁷	84.75 ²⁶⁶
26.0	57.037 ³³	86.98 ²⁶⁶	18.95 ⁰	67.31 ³⁰¹	38.390 ⁴⁰	12.87 ³⁴	54.99 ¹	82.09 ²⁶⁹
Oct. 6.0	57.070 ⁷⁹	84.32 ²⁸⁵	18.95 ²⁰	64.30 ²⁹⁸	38.430 ⁷⁸	13.21 ⁵⁸	55.00 ¹¹	79.40 ²⁶¹
15.9	57.149 ¹²⁷	81.47 ²⁹⁶	19.15 ⁴²	61.32 ²⁸⁴	38.508 ¹¹⁶	13.79 ⁸⁴	55.11 ¹⁹	76.79 ²⁴³
25.9	57.276 ¹⁷⁸	78.49 ³⁰⁸	19.57 ⁶¹	58.48 ²⁵⁶	38.626 ¹⁶⁰	14.63 ¹¹²	55.30 ²⁸	74.36 ²¹⁴
Nov. 4.9	57.454 ²²⁹	75.41 ³⁰⁹	20.18 ⁸¹	55.92 ²¹⁸	38.786 ²⁰³	15.75 ¹³⁷	55.58 ³⁷	72.22 ¹⁷⁵
14.9	57.683 ²⁷⁸	72.32 ³⁰²	20.99 ⁹⁹	53.74 ¹⁷¹	38.989 ²⁴²	17.12 ¹⁶³	55.95 ⁴⁵	70.47 ¹²⁷
24.8	57.961 ³²³	69.30 ²⁹¹	21.98 ¹¹²	52.03 ¹¹⁵	39.231 ²⁷⁷	18.75 ¹⁸⁴	56.40 ⁵³	69.20 ⁷⁴
Dec. 4.8	58.284 ³⁵⁹	66.39 ²⁹⁹	23.10 ¹²²	50.88 ⁵⁵	39.508 ³⁰⁸	20.59 ²⁰¹	56.93 ⁵⁷	68.46 ¹⁶
14.8	58.643 ³⁸⁵	63.70 ²⁴⁰	24.32 ¹²⁸	50.33 ¹⁰	39.816 ³²⁷	22.60 ²¹⁵	57.50 ⁶⁰	68.30 ⁴⁵
24.8	59.028 ⁴⁰³	61.30 ²⁰³	25.60 ¹²⁸	50.43 ⁷³	40.143 ³³⁷	24.75 ²¹⁹	58.10 ⁶²	68.75 ¹⁰⁴
34.7	59.431 ⁴⁰⁶	59.27 ¹⁵⁹	26.91 ¹²⁸	51.16 ¹³⁵	40.480 ³³⁷	26.94 ²¹⁸	58.72 ⁶⁰	69.79 ¹⁵⁹
Mean Place	55.340	99.33	23.374	44.94	36.498	0.28	54.868	61.43
Sec δ , Tan δ	1.327	+0.873	5.171	-5.073	1.000	-0.003	2.176	-1.933
$D_{\psi\alpha}$, $D_{\alpha\alpha}$	+0.06	+0.06	+0.07	-0.34	+0.06	0.00	+0.06	-0.13
$D_{\psi\delta}$, $D_{\delta\delta}$	-0.4	-0.1	-0.4	-0.1	-0.4	-0.1	-0.4	-0.1

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	20 Comae. Mag. 5.7		δ Corvi. Mag. 3.1		γ Crucis. Mag. 1.6		8 Canum V. Mag. 4.3		D
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	
	h m 12 25	° ' +21 21	h m 12 25	° ' -16 2	h m 12 26	° ' -56 38	h m 12 29	° ' +	
Jan. 0.7	31.210	25.52	31.758	54.01	30.167	23.73	46.629	28	
10.7	31.560 ³⁵⁰	23.66 ¹⁸⁶	32.103 ³⁴⁵	56.26 ²²⁵	30.688 ⁵²¹	25.72 ¹⁹⁹	47.035 ⁴⁰⁶	27	
20.7	31.896 ³³⁶	22.16 ¹⁵⁰	32.432 ³²⁹	58.56 ²³⁰	31.181 ⁴⁹³	28.14 ²⁴²	47.427 ³⁹²	26	
30.7	32.208 ³¹²	21.05 ¹¹¹	32.734 ³⁰²	60.85 ²²⁹	31.633 ⁴⁵²	30.91 ²⁷⁷	47.792 ³⁶⁵	25	
Feb. 9.6	32.487 ²⁷⁹	20.33 ⁷²	33.004 ²⁷⁰	63.07 ²²²	32.034 ⁴⁰¹	33.99 ³⁰⁸	48.122 ³³⁰	26	
19.6	32.727 ²⁴⁰	20.03 ³⁰	33.237 ²³³	65.14 ²⁰⁷	32.378 ³⁴⁴	37.25 ³²⁶	48.405 ²⁸³	26	
29.6	32.924 ¹⁹⁷	20.12 ⁹	33.428 ¹⁹¹	67.05 ¹⁹¹	32.658 ²⁸⁰	40.62 ³³⁷	48.635 ²³⁰	27	
Mar. 10.6	33.076 ¹⁵²	20.55 ⁴³	33.578 ¹⁵⁰	68.75 ¹⁷⁰	32.875 ²¹⁷	44.04 ³⁴²	48.812 ¹⁷⁷	29	
20.5	33.184 ¹⁰⁸	21.31 ⁷⁶	33.688 ¹¹⁰	70.24 ¹⁴⁹	33.029 ¹⁵⁴	47.43 ³³⁹	48.933 ¹²¹	31	
30.5	33.251 ⁶⁷	22.30 ⁹⁹	33.760 ⁷²	71.49 ¹²⁵	33.120 ⁹¹	50.69 ³²⁶	49.000 ⁶⁷	33	
Apr. 9.5	33.279 ²⁸	23.49 ¹¹⁹	33.799 ³⁹	72.52 ¹⁰³	33.154 ³⁴	53.79 ³¹⁰	49.017 ¹⁷	35	
19.4	33.274 ⁵	24.78 ¹²⁹	33.807 ⁸	73.31 ⁷⁹	33.135 ¹⁹	56.68 ²⁸⁹	48.989 ²⁸	37	
29.4	33.241 ³³	26.13 ¹³⁵	33.790 ¹⁷	73.89 ⁵⁸	33.068 ⁶⁷	59.28 ²⁶⁰	48.921 ⁶⁸	39	
May 9.4	33.184 ⁵⁷	27.46 ¹³³	33.751 ³⁹	74.27 ³⁸	32.956 ¹¹²	61.56 ²²⁸	48.822 ⁹⁹	41	
19.4	33.106 ⁷⁸	28.72 ¹²⁶	33.693 ⁵⁸	74.44 ¹⁷	32.806 ¹⁵⁰	63.48 ¹⁹²	48.694 ¹²⁸	43	
29.3	33.015 ⁹¹	29.87 ¹¹⁵	33.619 ⁷⁴	74.43 ¹	32.623 ¹⁸³	65.00 ¹⁵²	48.547 ¹⁴⁷	45	
June 8.3	32.913 ¹⁰²	30.87 ¹⁰⁰	33.534 ⁸⁵	74.23 ²⁰	32.411 ²¹²	66.09 ¹⁰⁹	48.385 ¹⁶²	46	
18.3	32.805 ¹⁰⁸	31.69 ⁸²	33.440 ⁹⁴	73.88 ³⁵	32.177 ²³⁴	66.73 ⁶⁴	48.214 ¹⁷¹	47	
28.3	32.692 ¹¹³	32.30 ⁶¹	33.340 ¹⁰⁰	73.38 ⁵⁰	31.929 ²⁴⁸	66.92 ¹⁹	48.038 ¹⁷⁶	47	
July 8.2	32.578 ¹¹⁴	32.69 ³⁹	33.236 ¹⁰⁴	72.73 ⁶⁵	31.672 ²⁵⁷	66.65 ²⁷	47.863 ¹⁷⁵	47	
18.2	32.467 ¹¹¹	32.84 ¹⁵	33.133 ¹⁰³	71.97 ⁷⁶	31.415 ²⁵⁷	65.92 ⁷³	47.693 ¹⁷⁰	47	
28.2	32.362 ¹⁰⁵	32.76 ⁸	33.034 ⁹⁹	71.12 ⁸⁵	31.167 ²⁴⁸	64.76 ¹¹⁶	47.534 ¹⁵⁹	46	
Aug. 7.1	32.267 ⁹⁵	32.41 ³⁵	32.942 ⁹²	70.20 ⁹²	30.936 ²³¹	63.21 ¹⁵⁵	47.389 ¹⁴⁵	45	
17.1	32.187 ⁸⁰	31.81 ⁶⁰	32.866 ⁷⁶	69.26 ⁹⁴	30.735 ²⁰¹	61.33 ¹⁸⁸	47.263 ¹²⁶	44	
27.1	32.126 ⁶¹	30.96 ⁸⁵	32.806 ⁶⁰	68.33 ⁹³	30.573 ¹⁶²	59.15 ²¹⁸	47.161 ¹⁰²	42	
Sept. 6.1	32.087 ³⁹	29.84 ¹¹²	32.772 ³⁴	67.46 ⁸⁷	30.460 ¹¹³	56.79 ²³⁶	47.090 ⁷¹	40	
16.0	32.079 ⁸	28.48 ¹³⁶	32.766 ⁶	66.71 ⁷⁵	30.407 ⁵³	54.31 ²⁴⁸	47.053 ³⁷	37	
26.0	32.104 ²⁵	26.86 ¹⁶²	32.797 ³¹	66.11 ⁶⁰	30.420 ¹³	51.80 ²⁵¹	47.058 ⁵	35	
Oct. 6.0	32.168 ⁶⁴	25.02 ¹⁸⁴	32.867 ⁷⁰	65.73 ³⁸	30.505 ⁸⁵	49.38 ²⁴²	47.110 ⁵²	32	
16.0	32.273 ¹⁰⁵	22.94 ²⁰⁸	32.981 ¹¹⁴	65.62 ¹¹	30.670 ¹⁶⁵	47.17 ²²¹	47.210 ¹⁰⁰	29	
25.9	32.422 ¹⁴⁹	20.69 ²²⁵	33.141 ¹⁶⁰	65.80 ¹⁸	30.912 ²⁴²	45.24 ¹⁹³	47.363 ¹⁵³	26	
Nov. 4.9	32.616 ¹⁹⁴	18.28 ²⁴¹	33.345 ²⁰⁴	66.30 ⁵⁰	31.228 ³¹⁶	43.70 ¹⁵⁴	47.568 ²⁰⁵	23	
14.9	32.852 ²³⁶	15.76 ²⁵²	33.592 ²⁴⁷	67.15 ⁸⁵	31.614 ³⁸⁶	42.62 ¹⁰⁸	47.826 ²⁵⁸	20	
24.8	33.129 ²⁷⁷	13.20 ²⁵⁶	33.876 ²⁸⁴	68.33 ¹¹⁸	32.057 ⁴⁴³	42.06 ⁵⁶	48.131 ³⁰⁵	17	
Dec. 4.8	33.438 ³⁰⁹	10.67 ²⁵³	34.191 ³¹⁵	69.84 ¹⁵¹	32.545 ⁴⁸⁸	42.07 ¹	48.476 ³⁴⁵	14	
14.8	33.771 ³³³	8.23 ²⁴⁴	34.528 ³³⁷	71.62 ¹⁷⁸	33.065 ⁵²⁰	42.65 ⁵⁸	48.852 ³⁷⁶	11	
24.8	34.118 ³⁴⁷	5.96 ²²⁷	34.875 ³⁴⁷	73.62 ²⁰⁰	33.599 ⁵³⁴	43.78 ¹¹³	49.250 ³⁹⁸	9	
34.7	34.470 ³⁵²	3.95 ²⁰¹	35.224 ³⁴⁹	75.79 ²¹⁷	34.128 ⁵²⁹	45.44 ¹⁶⁶	49.655 ⁴⁰⁵	7	
Mean Place	30.199	40.14	30.964	52.41	29.724	34.07	45.482	49	
Sec δ, Tan δ	1.074	+0.391	1.040	-0.288	1.819	-1.519	1.342	+0	
Dψ α, Dω α	+0.06	+0.03	+0.06	-0.02	+0.07	-0.10	+0.06	+0	
Dψ δ, Dω δ	-0.4	-0.1	-0.4	-0.1	-0.4	-0.1	-0.4	-0	

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	κ Draconis. Mag. 3.9		β Corvi. Mag. 2.8		24 Comae seq. Mag. 5.2		α Muscae. Mag. 2.9	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 12 29	° ' " +70 14	h m 12 29	° ' " -22 55	h m 12 30	° ' " +18 49	h m 12 32	° ' " -68 40
	s	"	s	"	s	"	s	"
Jan. 0.7	56.13	38.43	58.990	55.79	55.978	67.45	9.63	9.83
10.7	56.88 ⁷⁵	37.67 ⁷⁶	59.346 ³⁵⁶	58.02 ²²³	56.325 ³⁴⁷	65.52 ¹⁹³	10.36 ⁷³	11.53 ¹⁷⁰
20.7	57.62 ⁷⁴	37.57 ¹⁰	59.687 ³⁴¹	60.38 ²³⁶	56.660 ³³⁵	63.93 ¹⁵⁹	11.06 ⁷⁰	13.74 ²²¹
30.7	58.31 ⁶⁹	38.12 ⁵⁵	60.001 ³¹⁴	62.80 ²⁴²	56.970 ³¹⁰	62.70 ¹²³	11.70 ⁶⁴	16.40 ²⁶⁶
Feb. 9.6	58.94 ⁶³	39.27 ¹¹⁵	60.282 ²⁸¹	65.21 ²⁴¹	57.249 ²⁷⁹	61.86 ⁸⁴	12.28 ⁵⁸	19.43 ³⁰³
	53	172	242	234	241	46	49	332
19.6	59.47	40.99	60.524	67.55	57.490	61.40	12.77	22.75
29.6	59.90 ⁴³	43.18 ²¹⁹	60.725 ²⁰¹	69.77 ²²²	57.690 ²⁰⁰	61.34 ⁶	13.17 ⁴⁰	26.27 ³⁵²
Mar. 10.6	60.20 ³⁰	45.74 ²⁵⁶	60.884 ¹⁵⁹	71.81 ²⁰⁴	57.846 ¹⁵⁶	61.64 ³⁰	13.48 ³¹	29.91 ³⁶⁴
20.5	60.40 ²⁰	48.55 ²⁸¹	61.002 ¹¹⁸	73.68 ¹⁸⁷	57.959 ¹¹³	62.24 ⁶⁰	13.69 ²¹	33.58 ³⁶⁷
30.5	60.47 ⁷	51.50 ²⁹⁵	61.082 ⁸⁰	75.33 ¹⁶⁵	58.032 ⁷³	63.10 ⁸⁶	13.82 ¹³	37.20 ³⁶²
	5	298	46	143	35	105	4	350
Apr. 9.5	60.42	54.48	61.128	76.76	58.067	64.15	13.86	40.70
19.4	60.26 ¹⁶	57.35 ²⁸⁷	61.141 ¹³	77.95 ¹¹⁹	58.069 ²	65.34 ¹¹⁹	13.82 ⁴	44.02 ³³²
29.4	59.99 ²⁷	60.01 ²⁶⁶	61.126 ¹⁵	78.91 ⁹⁶	58.043 ²⁶	66.59 ¹²⁵	13.70 ¹²	47.08 ³⁰⁶
May 9.4	59.65 ³⁴	62.37 ²³⁶	61.088 ³⁸	79.63 ⁷²	57.993 ⁵⁰	67.85 ¹²⁶	13.50 ²⁰	49.83 ²⁷⁵
19.4	59.25 ⁴⁰	64.35 ¹⁹⁸	61.031 ⁵⁷	80.12 ⁴⁹	57.923 ⁷⁰	69.06 ¹²¹	13.24 ²⁶	52.21 ²³⁸
	47	154	76	25	84	112	31	197
29.3	58.78	65.89	60.955	80.37	57.839	70.18	12.93	54.18
June 8.3	58.28 ⁵⁰	66.94 ¹⁰⁵	60.867 ⁸⁸	80.40 ³	57.743 ⁹⁶	71.17 ⁹⁹	12.57 ³⁶	55.70 ¹⁵²
18.3	57.76 ⁵²	67.47 ⁵³	60.767 ¹⁰⁰	80.19 ²¹	57.638 ¹⁰⁵	72.01 ⁸⁴	12.17 ⁴⁰	56.73 ¹⁰³
28.3	57.23 ⁵³	67.46 ¹⁰⁷	60.660 ¹⁰⁷	79.79 ⁴⁰	57.529 ¹⁰⁹	72.66 ⁶⁵	11.74 ⁴³	57.25 ⁵²
July 8.2	56.71 ⁵²	66.93 ⁵³	60.548 ¹¹²	79.18 ⁶¹	57.418 ¹¹¹	73.11 ⁴⁵	11.30 ⁴⁴	57.24 ¹
	50	106	113	80	109	23	44	51
18.2	56.21	65.88	60.435	78.38	57.309	73.34	10.86	56.73
28.2	55.74 ⁴⁷	64.33 ¹⁵⁵	60.326 ¹⁰⁹	77.44 ⁹⁴	57.205 ¹⁰⁴	73.36 ²	10.42 ⁴⁴	55.71 ¹⁰²
Aug. 7.1	55.31 ⁴³	62.31 ²⁰²	60.225 ¹⁰¹	76.37 ¹⁰⁷	57.108 ⁹⁷	73.12 ²⁴	10.02 ⁴⁰	54.22 ¹⁴⁹
17.1	54.94 ³⁷	59.87 ²⁴⁴	60.137 ⁸⁸	75.20 ¹¹⁷	57.026 ⁸²	72.66 ⁴⁶	9.67 ³⁵	52.33 ¹⁸⁹
27.1	54.63 ³¹	57.05 ²⁸²	60.069 ⁶⁸	74.00 ¹²⁰	56.962 ⁶⁴	71.94 ⁷²	9.37 ³⁰	50.06 ²²⁷
	24	315	44	117	41	96	21	256
Sept. 6.1	54.39	53.90	60.025	72.83	56.921	70.98	9.16	47.50
16.0	54.24 ¹⁵	50.48 ³⁴²	60.014 ¹¹	71.71 ¹¹²	56.908 ¹³	69.77 ¹²¹	9.03 ¹³	44.77 ²⁷³
26.0	54.17 ⁷	46.88 ³⁶⁰	60.040 ²⁶	70.72 ⁹⁹	56.929 ²¹	68.31 ¹⁴⁶	9.00 ³	41.95 ²⁸²
Oct. 6.0	54.20 ³	43.13 ³⁷⁵	60.108 ⁶⁸	69.93 ⁷⁹	56.986 ⁵⁷	66.60 ¹⁷¹	9.09 ⁹	39.15 ²⁸⁰
16.0	54.33 ¹⁸	39.33 ³⁸⁰	60.222 ¹¹⁴	69.39 ⁵⁴	57.085 ⁹⁹	64.67 ¹⁹³	9.30 ²¹	36.50 ²⁶⁵
	24	378	161	23	143	214	32	241
25.9	54.57	35.55	60.383	69.16	57.228	62.53	9.62	34.09
Nov. 4.9	54.91 ³⁴	31.89 ³⁶⁶	60.592 ²⁰⁹	69.28 ¹²	57.415 ¹⁸⁷	60.23 ²³⁰	10.05 ⁴³	32.04 ²⁰⁵
14.9	55.34 ⁴³	28.45 ³⁴⁴	60.845 ²⁵³	69.75 ⁴⁷	57.646 ²³¹	57.81 ²⁴²	10.58 ⁵³	30.45 ¹⁵⁹
24.8	55.88 ⁵⁴	25.30 ³¹⁵	61.138 ²⁹³	70.60 ⁸⁵	57.916 ²⁷⁰	55.31 ²⁵⁰	11.19 ⁶¹	29.38 ¹⁰⁷
Dec. 4.8	56.49 ⁶¹	22.54 ²⁷⁶	61.462 ³²⁴	71.83 ¹²³	58.220 ³⁰⁴	52.81 ²⁵⁰	11.88 ⁶⁹	28.90 ⁴⁸
	69	229	348	157	327	243	74	12
14.8	57.18	20.25	61.810	73.40	58.547	50.38	12.62	29.02
24.8	57.90 ⁷²	18.51 ¹⁷⁴	62.170 ³⁶⁰	75.26 ¹⁸⁶	58.890 ³⁴³	48.09 ²²⁹	13.37 ⁷⁵	29.75 ⁷³
34.7	58.67 ⁷⁷	17.38 ¹¹³	62.530 ³⁶⁰	77.36 ²¹⁰	59.238 ³⁴⁸	46.03 ²⁰⁶	14.11 ⁷⁴	31.07 ¹³²
Mean Place	54.348	64.12	58.260	56.47	55.021	81.36	9.530	22.30
Sec δ , Tan δ	2.958	+2.785	1.086	-0.423	1.057	+0.341	2.750	-2.561
$D\phi\alpha$, $D\alpha\alpha$	+0.05	+0.18	+0.06	-0.03	+0.06	+0.02	+0.07	-0.17
$D\phi\delta$, $D\alpha\delta$	-0.4	-0.1	-0.4	-0.1	-0.4	-0.1	-0.4	-0.1

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	χ Virginis. Mag. 4.8			γ Centauri. Mag. 2.4			γ Virginis (<i>mean</i>). Mag. 2.9			ρ Virginis. Mag. 5.0		
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	12	34	- 7 32	12	36	-48 29	12	37	- 0 59	12	37	+10
	s		"	s		"	s		"	s		"
Jan. 0.7	55.329		5.27	53.135		47.04	25.056		27.01	38.877		42.47
10.7	55.668 ³³⁹	7.45 ²¹⁵	53.591 ⁴⁵⁶	49.02 ¹⁹⁸	25.392 ³³⁶	29.16 ²¹⁵	39.217 ³⁴⁰		40.43			
20.7	55.993 ³²⁵	9.60 ²¹⁵	54.025 ⁴³⁴	51.37 ²³⁵	25.716 ³²⁴	31.20 ²⁰⁴	39.545 ³²⁸		38.61			
30.7	56.295 ³⁰²	11.66 ²⁰⁶	54.427 ⁴⁰²	54.03 ²⁶⁶	26.016 ³⁰⁰	33.07 ¹⁸⁷	39.850 ³⁰⁵		37.08			
Feb. 9.6	56.566 ²⁷¹	13.56 ¹⁹⁰	54.788 ³⁶¹	56.92 ²⁸⁹	26.287 ²⁷¹	34.72 ¹⁶⁵	40.127 ²⁷⁷		35.88			
		236 ¹⁶⁹		312 ³⁰⁴		236 ¹⁴¹		240 ²⁰⁰				
19.6	56.802	15.25	55.100	59.96	26.523	36.13	40.367		35.02			
29.6	56.998 ¹⁹⁶	16.72 ¹⁴⁷	55.360 ²⁶⁰	63.08 ³¹²	26.720 ¹⁹⁷	37.25 ¹¹²	40.567 ²⁰⁰		34.49			
Mar. 10.6	57.156 ¹⁵⁸	17.94 ¹²²	55.567 ²⁰⁷	66.20 ³¹²	26.877 ¹⁵⁷	38.11 ⁸⁶	40.727 ¹⁶⁰		34.31			
20.5	57.274 ¹¹⁸	18.91 ⁹⁷	55.721 ¹⁵⁴	69.25 ³⁰⁵	26.996 ¹¹⁹	38.69 ⁵⁸	40.846 ¹¹⁹		34.44			
30.5	57.355 ⁸¹	19.64 ⁷³	55.824 ¹⁰³	72.19 ²⁹⁴	27.077 ⁸¹	39.01 ³²	40.927 ⁸¹		34.81			
		49 ⁵¹		55 ²⁷⁷		49 ¹⁰		46 ⁴⁶				
Apr. 9.5	57.404	20.15	55.879	74.96	27.126	39.11	40.973		35.40			
19.4	57.422 ¹⁸	20.43 ²⁸	55.889 ¹⁰	77.49 ²⁵³	27.143 ¹⁷	39.02 ⁹	40.986 ¹³		36.17			
29.4	57.413 ⁹	20.54 ¹¹	55.859 ³⁰	79.78 ²²⁹	27.135 ⁸	38.76 ²⁶	40.973 ¹³		37.04			
May 9.4	57.381 ³²	20.49 ⁵	55.793 ⁶⁶	81.76 ¹⁸⁸	27.103 ³²	38.38 ³⁵	40.937 ³⁶		37.97			
19.4	57.332 ⁴⁹	20.28 ²¹	55.695 ⁹⁸	83.40 ¹⁶⁴	27.053 ⁶⁰	37.90 ⁴⁸	40.881 ⁵⁶		38.92			
		66 ³¹		128 ¹²⁹		66 ⁵⁶		72 ⁷²				
29.3	57.266	19.97	55.567	84.69	26.987	37.34	40.809		39.85			
June 8.3	57.189 ⁷⁷	19.55 ⁴²	55.417 ¹⁵⁰	85.61 ⁹²	26.909 ⁷⁸	36.74 ⁶⁰	40.725 ⁸⁴		40.72			
18.3	57.102 ⁸⁷	19.04 ⁵¹	55.245 ¹⁷²	86.12 ⁵¹	26.822 ⁸⁷	36.12 ⁶²	40.632 ⁹³		41.51			
28.3	57.008 ⁹⁴	18.47 ⁵⁷	55.060 ¹⁸⁴	86.22 ¹⁰	26.729 ⁹³	35.50 ⁶²	40.534 ⁹⁸		42.19			
July 8.2	56.910 ⁹⁸	17.84 ⁶³	54.866 ¹⁹⁴	85.91 ³¹	26.631 ⁹⁶	34.88 ⁷²	40.432 ¹⁰²		42.74			
		90 ⁶⁵		198 ⁷⁰		99 ⁵⁸		103 ¹⁰³				
18.2	56.811	17.19	54.668	85.21	26.532	34.30	40.329		43.15			
28.2	56.715 ⁹⁶	16.52 ⁶⁷	54.475 ¹⁹³	84.14 ¹⁰⁷	26.435 ⁹⁷	33.77 ⁵³	40.229 ¹⁰⁰		43.40			
Aug. 7.1	56.626 ⁸⁹	15.85 ⁶⁷	54.293 ¹⁸²	82.72 ¹⁴²	26.345 ⁹⁰	33.31 ⁴⁶	40.138 ⁹¹		43.48			
17.1	56.549 ⁷⁷	15.25 ⁶⁰	54.131 ¹⁶²	81.01 ¹⁷¹	26.266 ⁷⁹	32.95 ³⁶	40.057 ⁸¹		43.37			
27.1	56.487 ⁶²	14.71 ⁵⁴	53.999 ¹³²	79.06 ¹⁹⁵	26.203 ⁶³	32.71 ²⁴	39.993 ⁶⁴		43.06			
		40 ⁴⁴		96 ²¹²		9 ⁹		44 ⁴⁴				
Sept. 6.1	56.447	14.27	53.903	76.94	26.161	32.62	39.949		42.54			
16.0	56.435 ¹²	14.00 ²⁷	53.856 ⁴⁷	74.73 ²²¹	26.147 ¹⁴	32.70 ⁸	39.933 ¹⁶		41.78			
26.0	56.457 ²²	13.90 ¹⁰	53.862 ⁶	72.53 ²²⁰	26.164 ¹⁷	32.99 ²⁹	39.950 ¹⁷		40.80			
Oct. 6.0	56.516 ⁵⁹	14.03 ¹³	53.928 ⁶⁶	70.44 ²⁰⁹	26.219 ⁵⁵	33.51 ⁵²	40.002 ⁵²		39.57			
16.0	56.617 ¹⁰¹	14.40 ³⁷	54.058 ¹³⁰	68.52 ¹⁹²	26.315 ⁹⁶	34.29 ⁷⁸	40.094 ⁹²		38.10			
		144 ⁶⁶		198 ¹⁶²		138 ¹⁰³		137 ¹³⁷				
25.9	56.761	15.06	54.256	66.90	26.453	35.32	40.231		36.39			
Nov. 4.9	56.961 ¹⁹⁰	16.00 ⁹⁴	54.517 ²⁶¹	65.65 ¹²⁵	26.636 ¹⁸³	36.62 ¹³⁰	40.412 ¹⁸¹		34.48			
14.9	57.182 ²³¹	17.24 ¹²⁴	54.838 ³²¹	64.83 ⁸²	26.861 ²²⁵	38.18 ¹⁵⁶	40.635 ²²³		32.37			
24.8	57.452 ²⁷⁰	18.75 ¹⁵¹	55.211 ³⁷³	64.49 ³⁴	27.125 ²⁶⁴	39.95 ¹⁷⁷	40.897 ²⁶²		30.13			
Dec. 4.8	57.754 ³⁰²	20.50 ¹⁷⁵	55.627 ⁴¹⁶	64.67 ¹⁸	27.420 ²⁹⁵	41.91 ¹⁹⁶	41.193 ²⁹⁶		27.82			
		324 ¹⁹⁵		445 ⁴⁶¹		318 ²¹⁰		319 ³¹⁹				
14.8	58.078	22.45	56.072	65.38	27.738	44.61	41.512		25.49			
24.8	58.416 ³³⁸	24.54 ²⁰⁹	56.533 ⁴⁶¹	66.59 ¹²¹	28.071 ³³³	46.17 ²¹⁶	41.847 ³³⁵		23.21			
34.7	58.757 ³⁴¹	26.70 ²¹⁶	56.994 ⁴⁶¹	68.28 ¹⁶⁹	28.408 ³³⁷	48.34 ²¹⁷	42.187 ³⁴⁰		21.07			
Mean Place	54.542	0.49	52.657	55.28	24.250	19.84	38.011		53.77			
Sec δ , Tan δ	1.009	-0.132	1.509	-1.131	1.000	-0.017	1.018		+0.18			
$D\psi \alpha$, $D\omega \alpha$	+0.06	-0.01	+0.07	-0.07	+0.06	0.00	+0.06		+0.01			
$D\psi \delta$, $D\omega \delta$	-0.4	-0.2	-0.4	-0.2	-0.4	-0.2	-0.4		-0.2			

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	76 Ursae Majoris. Mag. 5.9		β Crucis. Mag. 1.5		31 Comae. Mag. 5.1		η Centauri. Mag. 4.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 12 37	° ' " +63 9	h m 12 42	° ' " -59 13	h m 12 47	° ' " +27 59	h m 12 48	° ' " -39 43
	s	"	s	"	s	"	s	"
Jan. 0.8	55.40	61.65	48.424	36.84	37.372	34.03	47.242	14.54
10.7	55.99 ⁵⁹	60.62 ¹⁰³	48.986 ⁵⁶²	38.56 ¹⁷²	37.737 ³⁶⁵	32.17 ¹⁸⁶	47.654 ⁴¹²	16.50 ¹⁹⁶
20.7	56.58 ⁵⁹	60.22 ⁴⁰	49.523 ⁵³⁷	40.76 ²²⁰	38.089 ³⁵²	30.71 ¹⁴⁶	48.050 ³⁰⁶	18.77 ²²⁷
30.7	57.12 ⁶⁴	60.45 ²³	50.022 ⁴⁹⁹	43.35 ²⁵⁹	38.421 ³³²	29.69 ¹⁰²	48.421 ³⁷¹	21.28 ²⁵¹
Feb. 9.6	57.62 ⁵⁰	61.30 ⁸⁵	50.471 ⁴⁴⁹	46.26 ²⁹¹	38.724 ³⁰³	29.14 ⁵⁵	48.756 ³³⁵	23.95 ²⁶⁷
	42	142	391	316	267	9	294	276
19.6	58.04	62.72	50.862	49.42	38.991	29.05	49.050	26.71
29.6	58.40 ³⁶	64.62 ¹⁹⁰	51.189 ³²⁷	52.74 ³³²	39.215 ²²⁴	29.41 ³⁶	49.299 ²⁴⁹	29.49 ²⁷⁸
Mar. 10.6	58.66 ²⁸	66.94 ²³²	51.451 ²³²	56.13 ³³⁹	39.394 ¹⁷⁹	30.16 ⁷⁵	49.503 ²⁰⁴	32.24 ²⁷⁵
20.5	58.84 ¹⁶	69.56 ²⁶²	51.647 ¹⁹⁶	59.53 ³⁴⁰	39.528 ¹³⁴	31.26 ¹¹⁰	49.660 ¹⁵⁷	34.90 ²⁶⁶
30.5	58.92 ⁸	72.36 ²⁸⁰	51.776 ¹²⁹	62.86 ³³³	39.618 ⁹⁰	32.62 ¹³⁶	49.773 ¹¹³	37.41 ²⁵¹
	0	286	69	320	49	156	71	234
Apr. 9.5	58.92	75.22	51.845	66.06	39.667	34.18	49.844	39.75
19.5	58.83 ⁹	78.03 ²⁸¹	51.854 ⁹	69.07 ³⁰¹	39.678 ¹¹	35.87 ¹⁶⁹	49.878 ³⁴	41.87 ²¹²
29.4	58.67 ¹⁶	80.68 ²⁶⁵	51.809 ⁴⁵	71.83 ²⁷⁶	39.656 ²²	37.58 ¹⁷¹	49.877 ¹	43.76 ¹⁸⁹
May 9.4	58.46 ²¹	83.09 ²⁴¹	51.713 ⁹⁰	74.29 ²⁴⁶	39.607 ⁴⁹	39.27 ¹⁶⁹	49.844 ³³	45.36 ¹⁶⁰
19.4	58.19 ²⁷	85.16 ²⁰⁷	51.573 ¹⁴⁰	76.41 ²¹²	39.533 ⁷⁴	40.85 ¹⁵⁸	49.782 ⁶²	46.69 ¹³³
	31	167	181	174	98	143	80	101
29.3	57.88	86.83	51.392	78.15	39.440	42.28	49.696	47.70
June 8.3	57.54 ³⁴	88.05 ¹²²	51.175 ²¹⁷	79.47 ¹³²	39.333 ¹⁰⁷	43.51 ¹²³	49.587 ¹⁰⁹	48.38 ⁶⁸
18.3	57.18 ³⁶	88.79 ⁷⁴	50.930 ²⁴⁵	80.34 ⁸⁷	39.213 ¹²⁰	44.51 ¹⁰⁰	49.461 ¹²⁶	48.73 ³⁵
28.3	56.81 ³⁷	89.04 ²⁵	50.662 ²⁶⁸	80.75 ⁴¹	39.086 ¹²⁷	45.23 ⁷²	49.320 ¹⁴¹	48.75 ²
July 8.2	56.45 ³⁶	88.76 ²⁸	50.381 ²⁸¹	80.69 ⁶	38.955 ¹³¹	45.68 ⁴⁵	49.168 ¹⁵²	48.42 ³³
	36	77	286	52	181	14	156	66
18.2	56.09	87.99	50.095	80.17	38.824	45.82	49.012	47.76
28.2	55.75 ³⁴	86.73 ¹²⁶	49.813 ²⁸²	79.19 ⁹⁸	38.696 ¹²⁸	45.65 ¹⁷	48.855 ¹⁵⁷	46.80 ⁹⁶
Aug. 7.2	55.44 ³¹	85.00 ¹⁷³	49.548 ²⁶⁵	77.80 ¹³⁹	38.577 ¹¹⁹	45.19 ⁴⁶	48.706 ¹⁴⁹	45.56 ¹²⁴
17.1	55.17 ²⁷	82.85 ²¹⁵	49.308 ²⁴⁰	76.03 ¹⁷⁷	38.470 ¹⁰⁷	44.40 ⁷⁹	48.570 ¹³⁶	44.09 ¹⁴⁷
27.1	54.94 ²³	80.30 ²⁵⁵	49.107 ²⁰¹	73.93 ²¹⁰	38.380 ⁹⁰	43.31 ¹⁰⁹	48.457 ¹¹³	42.42 ¹⁶⁷
	18	290	151	233	66	138	83	179
Sept. 6.1	54.76 ¹²	77.40 ³¹⁸	48.956 ⁸⁹	71.60 ²⁵⁰	38.314 ³⁸	41.93 ¹⁸⁷	48.374 ⁴⁷	40.63 ¹⁸⁴
16.0	54.64 ⁵	74.22 ³⁴¹	48.867 ¹⁹	69.10 ²⁵⁰	38.276 ⁵	40.26 ¹⁹³	48.327 ⁰	38.79 ¹⁸¹
26.0	54.59 ²	70.81 ³⁶⁰	48.848 ⁶⁰	66.54 ²⁵²	38.271 ³⁵	38.33 ²²⁰	48.327 ⁵⁰	36.94 ¹⁶⁹
Oct. 6.0	54.61 ⁹	67.21 ³⁷⁰	48.908 ¹⁴⁴	64.02 ²³⁸	38.306 ⁷⁸	36.13 ²⁴⁰	48.377 ¹⁰⁵	35.29 ¹⁵¹
16.0	54.70 ¹⁸	63.51 ³⁷⁰	49.052 ²²⁸	61.64 ²¹¹	38.384 ¹²⁵	33.73 ²⁵⁹	48.482 ¹⁶³	33.78 ¹²³
25.9	54.88	59.81	49.280	69.53	38.509	31.14	48.645	32.55
Nov. 4.9	55.14 ²⁶	56.16 ³⁶⁵	49.590 ³¹⁰	57.76 ¹⁷⁷	38.683 ¹⁷⁴	28.42 ²⁷²	48.866 ²²¹	31.66 ⁸⁹
14.9	55.47 ³³	52.67 ³⁴⁰	49.978 ³⁸⁸	56.42 ¹³⁴	38.904 ²²¹	25.62 ²⁸⁰	49.141 ²⁷⁵	31.17 ⁴⁹
24.9	55.90 ⁴³	49.42 ³²⁵	50.431 ⁴⁵³	55.59 ⁸³	39.168 ²⁶⁴	22.81 ²⁸¹	49.466 ³²⁵	31.12 ⁵
Dec. 4.8	56.38 ⁴⁸	46.52 ²⁹⁰	50.938 ⁵⁰⁷	55.29 ³⁰	39.469 ³⁰¹	20.07 ²⁷⁴	49.830 ³⁶⁴	31.53 ⁴¹
	53	246	545	29	331	259	304	88
14.8	56.91	44.04	51.483	55.58	39.800	17.48	50.224	32.41
24.8	57.48 ⁵⁷	42.07 ¹⁹⁷	52.048 ⁵⁶⁵	56.43 ⁸⁵	40.152 ³⁵²	15.10 ²³⁸	50.634 ⁴¹⁰	33.73 ¹³²
34.7	58.06 ⁵⁸	40.68 ¹³⁹	52.616 ⁵⁶⁸	57.82 ¹³⁹	40.512 ³⁶⁰	13.04 ²⁰⁶	51.048 ⁴¹⁴	35.45 ¹⁷²
Mean Place	54.021	86.67	48.163	47.41	36.483	51.16	46.748	20.14
Sec δ , Tan δ	2.215	+1.977	1.955	-1.679	1.133	+0.532	1.300	-0.831
$D\phi_a, D\alpha_a$	+0.05	+0.13	+0.07	-0.11	+0.06	+0.03	+0.07	-0.05
$D\phi_\delta, D\alpha_\delta$	-0.4	-0.2	-0.4	-0.2	-0.4	-0.2	-0.4	-0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Ursæ Majoris. (Alioth.) Mag. 1.7		δ Virginis. Mag. 3.7		α Can. Ven. seq. Mag. 2.9		δ Muscæ. Mag. 3.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 12 50	° ' " +56 24	h m 12 51	° ' " + 3 50	h m 12 52	° ' " +38 45	h m 12 56	° ' " -71 5
Jan. 0.8	21.363	31.90	23.035	64.24	6.960	58.22	27.86	33.45
10.7	21.869 ⁶⁰⁶	30.56 ¹³⁴	23.372 ³³⁷	62.12 ²¹²	7.353 ³⁹³	56.50 ¹⁷²	28.69 ⁸³	34.71 ¹²⁶
20.7	22.365 ⁴⁹⁶	29.82 ⁷⁴	23.700 ³²⁸	60.15 ¹⁹⁷	7.739 ³⁸⁶	55.28 ¹²²	29.50 ⁸¹	36.55 ¹⁹⁴
30.7	22.838 ⁴⁷³	29.70 ¹²	24.007 ³⁰⁷	58.41 ¹⁷⁴	8.103 ³⁶⁴	54.58 ⁷⁰	30.26 ⁷⁶	38.87 ²⁷²
Feb. 9.6	23.271 ³⁷⁹	30.20 ⁵⁰	24.287 ²⁸⁰	56.92 ¹⁴⁹	8.437 ³³⁴	54.42 ¹⁶	30.95 ⁶⁹	41.62 ²³⁵
19.6	23.650 ³¹⁷	31.26 ¹⁰⁶	24.533 ²⁴⁶	55.74 ¹¹⁸	8.731 ²⁹⁴	54.78 ³⁶	31.56 ⁶¹	44.71 ³⁰⁹
29.6	23.967 ³⁴⁸	32.85 ¹⁵⁹	24.743 ²¹⁰	54.85 ⁸⁹	8.978 ²⁴⁷	55.63 ⁸⁵	32.08 ⁵²	48.04 ³³³
Mar. 10.6	24.215 ¹⁷⁵	34.88 ²⁰³	24.913 ¹⁷⁰	54.28 ⁵⁷	9.176 ¹⁹⁸	56.91 ¹²⁸	32.49 ⁴¹	51.56 ³⁵²
20.5	24.390 ¹⁰¹	37.23 ²³⁵	25.044 ¹³¹	54.00 ²⁸	9.322 ¹⁴⁶	58.55 ¹⁶⁴	32.82 ³³	55.17 ³⁶¹
30.5	24.491 ³³	39.83 ²⁷²	25.139 ⁶⁰	53.97 ²¹	9.417 ⁴⁸	60.45 ²⁰⁸	33.04 ¹²	58.79 ³⁵⁵
Apr. 9.5	24.524 ³³	42.55 ²⁷²	25.199 ²⁹	54.18 ³⁹	9.465 ⁴	62.53 ²¹⁶	33.16 ³	62.34 ³⁴³
19.5	24.491 ⁹³	45.27 ²⁶²	25.228 ³	54.57 ⁵⁴	9.469 ³⁶	64.69 ²¹⁶	33.19 ⁷	65.77 ³²³
29.4	24.398 ¹⁴⁴	47.89 ²⁴³	25.231 ²²	55.11 ⁶⁴	9.433 ⁶⁹	66.85 ²⁰⁵	33.12 ¹⁵	69.00 ²⁹⁵
May 9.4	24.254 ¹⁸⁶	50.32 ²¹⁵	25.209 ⁴²	55.75 ⁷²	9.364 ⁹⁶	68.90 ¹⁹⁰	32.97 ²³	71.95 ²⁶³
19.4	24.068 ²²³	52.47 ¹⁸¹	25.167 ⁵⁹	56.47 ⁷⁵	9.268 ¹²²	70.80 ¹⁶⁶	32.74 ³¹	74.58 ²²⁶
29.3	23.845 ²⁴⁹	54.28 ¹⁴²	25.108 ⁷⁴	57.22 ⁷⁴	9.146 ¹³⁸	72.46 ¹⁴⁰	32.43 ³⁷	76.84 ¹⁸²
June 8.3	23.596 ²⁶⁷	55.70 ⁹⁷	25.034 ⁸⁴	57.96 ⁷²	9.008 ¹⁵³	73.86 ¹⁰⁶	32.06 ⁴²	78.66 ¹³⁶
18.3	23.329 ²⁸⁷	56.67 ⁵⁰	24.950 ⁹⁴	58.68 ⁶⁸	8.855 ¹⁶¹	74.92 ⁷¹	31.64 ⁴⁷	80.02 ⁸⁷
28.3	23.052 ²⁸²	57.17 ²	24.856 ⁹⁹	59.36 ⁶¹	8.694 ¹⁶⁷	76.63 ³⁴	31.17 ⁵⁰	80.89 ³⁴
July 8.2	22.770 ²⁷⁸	57.19 ⁴⁵	24.757 ¹⁰³	59.97 ⁵⁴	8.527 ¹⁶⁵	75.97 ³	30.67 ⁵¹	81.23 ¹⁸
18.2	22.492 ²⁶⁷	56.74 ⁹³	24.654 ¹⁰²	60.51 ⁴⁴	8.362 ¹⁶¹	75.94 ⁴³	30.16 ⁵¹	81.05 ⁶⁸
28.2	22.225 ²⁴⁹	55.81 ¹⁴⁰	24.552 ⁹⁸	60.95 ³²	8.201 ¹⁵²	75.51 ⁸⁰	29.65 ⁴⁸	80.37 ¹²⁰
Aug. 7.2	21.976 ²²⁴	54.41 ¹⁸²	24.454 ⁸⁸	61.27 ¹⁷	8.049 ¹³⁸	74.71 ¹¹⁸	29.17 ⁴⁴	79.17 ¹⁶⁶
17.1	21.752 ¹⁹⁴	52.59 ²²²	24.366 ⁷⁴	61.44 ³	7.911 ¹¹⁷	73.53 ¹⁵³	28.73 ³⁸	77.51 ²⁰⁶
27.1	21.558 ¹⁵³	50.37 ²⁵⁹	24.292 ⁵⁴	61.47 ¹⁶	7.794 ⁹¹	72.00 ¹⁸⁶	28.35 ³¹	75.45 ²⁴⁰
Sept. 6.1	21.405 ¹⁰⁸	47.78 ²⁹⁰	24.238 ²⁸	61.31 ³⁵	7.703 ⁵⁹	70.14 ²¹⁸	28.04 ²¹	73.05 ²⁶⁶
16.0	21.297 ⁵⁵	44.88 ³¹⁷	24.210 ³	60.96 ⁵⁶	7.644 ²²	67.96 ²⁴⁶	27.83 ¹⁰	70.39 ²⁸⁰
26.0	21.242 ⁵	41.71 ³³⁸	24.213 ³⁸	60.40 ⁸¹	7.622 ²²	65.50 ²⁷⁰	27.73 ³	67.59 ²⁸⁶
Oct. 6.0	21.247 ⁶⁸	38.33 ³⁶⁴	24.251 ⁸⁰	59.59 ¹⁰⁶	7.644 ⁷⁰	62.80 ²⁹⁰	27.76 ¹⁵	64.73 ²⁷⁸
16.0	21.315 ¹³⁸	34.79 ³⁶⁰	24.331 ¹²⁴	58.53 ¹²⁹	7.714 ¹²¹	59.90 ³⁰⁶	27.91 ²⁸	61.95 ²⁸⁰
25.9	21.453 ²⁰⁷	31.19 ³⁶⁰	24.455 ¹⁶⁸	57.24 ¹⁵⁵	7.835 ¹⁷⁴	56.84 ³¹³	28.19 ⁴²	59.35 ²³¹
Nov. 4.9	21.660 ²⁷⁶	27.59 ³⁴⁹	24.623 ²¹³	55.69 ¹⁷⁷	8.009 ²²⁷	53.71 ³¹⁵	28.61 ⁵⁵	57.04 ¹⁹¹
14.9	21.936 ³⁴⁰	24.10 ³³²	24.836 ²⁵²	53.92 ¹⁹⁶	8.236 ²⁷⁵	50.56 ³⁰⁸	29.16 ⁶⁴	55.13 ¹⁴²
24.9	22.276 ³⁹⁸	20.78 ³⁰³	25.088 ²⁸⁵	51.96 ²¹²	8.511 ³¹⁸	47.48 ²⁹⁴	29.80 ⁷³	53.71 ⁸⁶
Dec. 4.8	22.674 ⁴⁴⁶	17.75 ²⁶⁷	25.373 ³¹³	49.84 ²¹⁹	8.829 ³⁵³	44.54 ²⁸⁹	30.53 ⁷⁹	52.83 ²⁹
14.8	23.120 ⁴⁷⁹	15.08 ²²¹	25.686 ³²⁹	47.65 ²²²	9.182 ³⁷⁷	41.85 ²³⁹	31.32 ⁸³	52.54 ³¹
24.8	23.599 ⁴⁹⁹	12.87 ¹⁶⁹	26.015 ³³⁶	45.43 ²¹⁷	9.559 ³⁸⁹	39.46 ¹⁹⁸	32.15 ⁸⁴	52.85 ⁹²
34.7	24.098	11.18	26.351	43.26	9.948	37.48	32.99	53.77
Mean Place	20.288	56.04	22.287	73.40	6.046	78.47	28.181	45.69
Sec δ, Tan δ	1.808	+1.506	1.002	+0.067	1.283	+0.803	3.088	-2.921
Dψ α, Dω α	+0.05	+0.10	+0.06	0.00	+0.06	+0.05	+0.08	-0.19
Dψ δ, Dω δ	-0.4	-0.2	-0.4	-0.2	-0.4	-0.2	-0.4	-0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington on Time.	ε Virginis. Mag. 3.0		θ Virginis. Mag. 4.4		43 Comæ. Mag. 4.3		20 Canum Venat. Mag. 4.7	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 12 57 s	° ' +11 24 "	h m 13 5 s	° ' - 5 5 "	h m 13 7 s	° ' +28 17 "	h m 13 13 s	° ' +41 0 "
un. 0.8	60.467 ³⁴⁰	25.44 ²⁰⁸	36.556 ³⁴¹	33.22 ²¹¹	58.051 ³⁶¹	55.85 ¹⁹⁶	47.475 ³⁹⁷	31.60 ¹⁸⁷
10.7	60.807 ³³³	23.36 ¹⁸⁵	36.897 ³³³	35.33 ²⁰⁷	58.412 ³⁵⁴	53.89 ¹⁵⁶	47.872 ³⁹⁵	29.73 ¹³⁶
20.7	61.140 ³¹³	21.51 ¹⁵⁵	37.230 ³¹⁴	37.40 ¹⁹⁵	58.766 ³⁴⁰	52.33 ¹¹¹	48.267 ³⁸¹	28.37 ⁸¹
30.7	61.453 ²⁸⁷	19.96 ¹²²	37.544 ²⁸⁹	39.35 ¹⁷⁸	59.106 ³¹²	51.22 ⁶³	48.648 ³⁵³	27.56 ²⁶
'eb. 9.7	61.740 ²⁵⁴	18.74 ⁸⁷	37.833 ²⁵⁸	41.13 ¹⁵⁵	59.418 ²⁸⁰	50.59 ¹⁵	49.001 ³¹⁷	27.30 ²⁹
19.6	61.994 ²¹⁷	17.87 ⁵¹	38.091 ²²²	42.68 ¹³²	59.698 ²⁴⁰	50.44 ³¹	49.318 ²⁷⁴	27.50 ⁸²
29.6	62.211 ¹⁷⁸	17.36 ¹⁵	38.313 ¹⁸⁵	44.00 ¹⁰⁵	59.938 ¹⁹⁷	50.75 ⁷⁴	49.592 ²²⁵	28.41 ¹²⁸
mar. 10.6	62.389 ¹⁴⁰	17.21 ¹⁶	38.498 ¹⁴⁸	45.05 ⁷⁹	60.135 ¹⁵³	51.49 ¹¹⁰	49.817 ¹⁷⁵	29.89 ¹⁶⁷
20.6	62.529 ¹⁰⁰	17.37 ⁴³	38.646 ¹¹²	45.84 ⁵⁵	60.288 ¹¹⁰	52.59 ¹⁴⁰	49.992 ¹²⁴	31.36 ¹⁹⁷
30.5	62.629 ⁶⁵	17.80 ⁶⁷	38.753 ⁷⁸	46.39 ³²	60.398 ⁶⁹	53.99 ¹⁶³	50.116 ⁷⁵	33.33 ²²⁰
Apr. 9.5	62.694 ³²	18.47 ⁸⁴	38.836 ⁴⁸	46.71 ¹²	60.467 ³¹	55.62 ¹⁷⁷	50.191 ²⁷	35.53 ²³⁰
19.5	62.726 ⁴	19.31 ⁹⁶	38.884 ²⁰	46.83 ⁶	60.498 ³	57.39 ¹⁸²	50.218 ¹⁵	37.83 ²³²
29.4	62.730 ²¹	20.27 ¹⁰³	38.904 ⁵	46.77 ²²	60.495 ³⁴	59.21 ¹⁸²	50.203 ⁵²	40.15 ²²⁵
May 9.4	62.709 ⁴²	21.30 ¹⁰⁵	38.899 ²⁷	46.55 ³²	60.461 ⁶⁰	61.03 ¹⁷⁴	50.151 ⁸⁶	42.40 ²¹⁰
19.4	62.667 ⁶¹	22.35 ¹⁰²	38.872 ⁴⁵	46.23 ⁴²	60.401 ⁸²	62.77 ¹⁵⁸	50.065 ¹¹⁴	44.50 ¹⁸⁸
29.4	62.606 ⁷⁶	23.37 ⁹⁶	38.827 ⁶²	45.81 ⁵⁰	60.319 ¹⁰⁰	64.35 ¹⁴¹	49.951 ¹³⁷	46.38 ¹⁶⁰
June 8.3	62.530 ⁸⁹	24.33 ⁸⁸	38.765 ⁷⁷	45.31 ⁵⁵	60.219 ¹¹⁶	65.76 ¹¹⁶	49.814 ¹⁵⁴	47.98 ¹²⁶
18.3	62.441 ⁹⁸	25.21 ⁷⁵	38.688 ⁸⁷	44.76 ⁵⁹	60.103 ¹²⁷	66.92 ⁹¹	49.660 ¹⁶⁹	49.24 ⁹²
28.3	62.343 ¹⁰⁴	25.96 ⁶²	38.601 ⁹⁷	44.17 ⁶⁰	59.976 ¹³⁴	67.83 ⁶⁰	49.491 ¹⁷⁸	50.16 ⁵³
July 8.3	62.239 ¹⁰⁸	26.58 ⁴⁷	38.504 ¹⁰³	43.57 ⁶¹	59.842 ¹³⁸	68.43 ³⁰	49.313 ¹⁸²	50.69 ¹¹
18.2	62.131 ¹⁰⁸	27.05 ²⁸	38.401 ¹⁰⁴	42.96 ⁵⁹	59.704 ¹³⁹	68.73 ⁰	49.131 ¹⁸¹	50.80 ²⁹
28.2	62.023 ¹⁰⁵	27.33 ¹¹	38.297 ¹⁰³	42.37 ⁵⁶	59.565 ¹³⁴	68.72 ³⁴	48.950 ¹⁷⁵	50.51 ⁶⁹
Aug. 7.2	61.918 ⁹⁵	27.44 ⁹	38.194 ⁹⁶	41.81 ⁴⁹	59.431 ¹²⁵	68.39 ⁶⁶	48.775 ¹⁶³	49.82 ¹⁰⁹
17.1	61.823 ⁸²	27.35 ³⁰	38.098 ⁸⁴	41.32 ⁴¹	59.306 ¹¹⁰	67.73 ⁹⁷	48.612 ¹⁴⁷	48.73 ¹⁴⁸
27.1	61.741 ⁶²	27.05 ⁵²	38.014 ⁶⁴	40.91 ²⁹	59.196 ⁹⁰	66.76 ¹²⁹	48.465 ¹²¹	47.25 ¹⁸³
Sept. 6.1	61.679 ³⁶	26.53 ⁷⁶	37.950 ⁴⁰	40.62 ¹⁴	59.106 ⁶²	65.47 ¹⁵⁹	48.344 ⁹²	45.42 ²¹⁸
16.1	61.643 ⁷	25.77 ⁹⁹	37.910 ⁸	40.48 ³	59.044 ²⁹	63.88 ¹⁸⁷	48.252 ⁵⁴	43.24 ²⁴⁸
26.0	61.636 ³⁰	24.78 ¹²⁵	37.902 ²⁸	40.51 ²⁵	59.015 ⁹	62.01 ²¹⁵	48.198 ⁹	40.76 ²⁷⁵
Oct. 6.0	61.666 ⁷²	23.53 ¹⁴⁹	37.930 ⁶⁹	40.76 ⁴⁹	59.024 ⁵³	59.86 ²³⁷	48.189 ³⁸	38.01 ²⁹⁸
16.0	61.738 ¹¹⁵	22.04 ¹⁷³	37.999 ¹¹⁴	41.25 ⁷⁵	59.077 ⁹⁹	57.49 ²⁵⁸	48.227 ⁹²	35.03 ³¹⁵
25.9	61.853 ¹⁶⁰	20.31 ¹⁹⁴	38.113 ¹⁶¹	42.00 ¹⁰¹	59.176 ¹⁴⁹	54.91 ²⁷³	48.319 ¹⁴⁷	31.88 ³²⁴
Nov. 4.9	62.013 ²⁰⁶	18.37 ²¹³	38.274 ²⁰⁵	43.01 ¹²⁹	59.325 ¹⁹⁸	52.18 ²⁸²	48.466 ²⁰²	28.64 ³²⁸
14.9	62.219 ²⁴⁶	16.24 ²²⁶	38.479 ²⁴⁷	44.30 ¹⁵⁴	59.523 ²⁴⁴	49.56 ²⁸⁵	48.668 ²⁵⁶	25.36 ³²²
24.9	62.465 ²⁸²	13.98 ²³⁵	38.726 ²⁸¹	45.84 ¹⁷⁵	59.767 ²⁸⁴	46.51 ²⁶⁶	48.924 ³⁰³	22.14 ³⁰⁷
Dec. 4.8	62.747 ³¹⁰	11.63 ²³⁶	39.007 ³¹²	47.59 ¹⁹³	60.051 ³¹⁸	43.70 ²⁶⁶	49.227 ³⁴³	19.07 ²⁸⁶
14.8	63.057 ³²⁹	9.27 ²³²	39.319 ³²⁹	49.52 ²⁰⁴	60.369 ³⁴²	41.04 ²⁴⁶	49.570 ³⁷²	16.21 ²⁵³
24.8	63.386 ³³⁸	6.95 ²¹⁷	39.648 ³³⁸	51.56 ²¹²	60.711 ³⁵⁶	38.58 ²¹⁵	49.942 ³⁹¹	13.68 ²¹⁴
34.8	63.724	4.78	39.986	53.68	61.067	36.43	50.333	11.54
Mean Place	59.727	37.35	35.932	26.99	57.316	73.34	46.752	52.61
sec δ, Tan δ	1.020	+0.202	1.004	-0.089	1.136	+0.538	1.325	+0.870
½ α, D _α α	+0.06	+0.01	+0.06	-0.01	+0.06	+0.03	+0.05	+0.06
½ δ, D _δ δ	-0.4	-0.3	-0.4	-0.3	-0.4	-0.3	-0.4	-0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Hydre. Mag. 3.3		ι Centauri. Mag. 2.9		ζ^1 Ursæ Majoris. (Mizar) Mag. 2.4		α Virginis. (Spica). Mag. 1.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 13 14	° ' -22 43	h m 13 15	° ' -36 16	h m 13 20	° ' +55 21	h m 13 20	° ' -10 43
	s	"	s	"	s	"	s	"
Jan. 0.8	21.564	43.44	52.470	6.37	33.494	25.39	46.446	27.86
10.7	21.927 ³⁶³	45.39 ¹⁹⁵	52.871 ⁴⁰¹	8.12 ¹⁷⁵	33.979 ⁴⁸⁵	23.68 ¹⁷¹	46.791 ³⁴⁵	29.90 ²⁰⁴
20.7	22.282 ³⁵⁵	47.50 ²¹¹	53.264 ³⁹³	10.16 ²⁰⁴	34.467 ⁴⁸⁸	22.56 ¹¹²	47.130 ³³⁹	31.96 ²⁰⁶
30.7	22.619 ³³⁷	49.67 ²¹⁷	53.637 ³⁷³	12.41 ²²⁵	34.941 ⁴⁷⁴	22.08 ⁴⁸	47.454 ³²⁴	33.97 ²⁰¹
Feb. 9.7	22.930 ³¹¹	51.86 ²¹⁹	53.981 ³⁴⁴	14.81 ²⁴⁰	35.384 ⁴⁴³	22.22 ¹⁴	47.754 ³⁰⁰	35.86 ¹⁸⁹
19.6	23.210 ²⁸⁰	53.99 ²¹³	54.290 ³⁰⁹	17.30 ²⁴⁹	35.784 ⁴⁰⁰	22.97 ⁷⁵	48.024 ²⁷⁰	37.60 ¹⁷⁴
29.6	23.454 ²⁴⁴	56.04 ²⁰⁵	54.560 ²⁷⁰	19.82 ²⁵²	36.131 ³⁴⁷	24.29 ¹³²	48.262 ²³⁸	39.13 ¹⁵³
Mar. 10.6	23.660 ²⁰⁶	57.96 ¹⁹²	54.789 ²²⁹	22.30 ²⁴⁸	36.415 ²⁸⁴	26.10 ¹⁸¹	48.463 ²⁰¹	40.45 ¹³²
20.6	23.827 ¹⁶⁷	59.71 ¹⁷⁵	54.976 ¹⁸⁷	24.70 ²⁴⁰	36.634 ²¹⁹	28.31 ²²¹	48.628 ¹⁶⁵	41.54 ¹⁰⁹
30.5	23.957 ¹³⁰	61.27 ¹⁵⁶	55.121 ¹⁴⁵	26.98 ²²⁸	36.784 ¹⁶⁰	30.83 ²⁵²	48.757 ¹²⁹	42.40 ⁸⁶
Apr. 9.5	24.053 ⁹⁶	62.64 ¹³⁷	55.226 ¹⁰⁵	29.09 ²¹¹	36.865 ⁸¹	33.52 ²⁶⁹	48.854 ⁹⁷	43.03 ⁶³
19.5	24.116 ⁶³	63.80 ¹¹⁶	55.295 ⁶⁹	31.03 ¹⁹⁴	36.883 ¹⁸	36.31 ²⁷⁹	48.919 ⁶⁵	43.47 ⁴⁴
29.4	24.148 ³²	64.76 ⁹⁶	55.328 ³³	32.75 ¹⁷²	36.841 ⁴²	39.06 ²⁷⁵	48.956 ³⁷	43.72 ²⁵
May 9.4	24.154 ⁶	65.51 ⁷⁵	55.330 ²	34.25 ¹⁵⁰	36.743 ⁹⁸	41.68 ²⁶²	48.966 ¹⁰	43.80 ⁸
19.4	24.134 ²⁰	66.07 ⁵⁶	55.302 ²⁸	35.49 ¹²⁴	36.598 ¹⁴⁵	44.08 ²⁴⁰	48.952 ¹⁴	43.74 ⁶
29.4	24.093 ⁴¹	66.43 ³⁶	55.248 ⁵⁴	36.48 ⁹⁹	36.413 ¹⁸⁵	46.18 ²¹⁰	48.919 ³³	43.55 ¹⁹
June 8.3	24.031 ⁶²	66.58 ¹⁵	55.167 ⁸¹	37.18 ⁷⁰	36.194 ²¹⁹	47.92 ¹⁷⁴	48.866 ⁵³	43.25 ³⁰
18.3	23.951 ⁸⁰	66.54 ⁴	55.066 ¹⁰¹	37.60 ⁴²	35.949 ²⁴⁵	49.25 ¹³³	48.796 ⁷⁰	42.86 ³⁹
28.3	23.856 ⁹⁵	66.31 ²³	54.945 ¹²¹	37.71 ¹¹	35.684 ²⁶⁵	50.13 ⁸⁸	48.711 ⁸⁵	42.38 ⁴⁵
July 8.3	23.749 ¹⁰⁷	65.91 ⁴⁰	54.810 ¹³⁵	37.53 ¹⁸	35.409 ²⁷⁵	50.55 ⁴²	48.615 ⁹⁶	41.84 ⁵⁴
18.2	23.632 ¹¹⁷	65.33 ⁵⁸	54.664 ¹⁴⁶	37.07 ⁴⁶	35.128 ²⁸¹	50.46 ⁹	48.510 ¹⁰⁵	41.24 ⁶⁰
28.2	23.512 ¹²⁰	64.59 ⁷⁴	54.513 ¹⁵¹	36.32 ⁷⁵	34.848 ²⁸⁰	49.90 ⁵⁶	48.400 ¹¹⁰	40.61 ⁶³
Aug. 7.2	23.393 ¹¹⁹	63.73 ⁸⁶	54.363 ¹⁵⁰	35.32 ¹⁰⁰	34.578 ²⁷⁰	48.87 ¹⁰³	48.289 ¹¹¹	39.96 ⁶⁵
17.1	23.280 ¹¹³	62.76 ⁹⁷	54.221 ¹⁴²	34.08 ¹²⁴	34.325 ²⁵³	47.38 ¹⁴⁹	48.184 ¹⁰⁵	39.32 ⁶⁴
27.1	23.179 ¹⁰¹	61.73 ¹⁰³	54.095 ¹²⁶	32.68 ¹⁴⁰	34.096 ²²⁹	45.45 ¹⁹³	48.088 ⁹⁶	38.71 ⁶¹
Sept. 6.1	23.099 ⁸⁰	60.68 ¹⁰⁵	53.992 ¹⁰³	31.14 ¹⁵⁴	33.900 ¹⁹⁶	43.14 ²³¹	48.011 ⁷⁷	38.18 ⁵³
16.1	23.045 ⁵⁴	59.66 ¹⁰²	53.922 ⁷⁰	29.54 ¹⁶⁰	33.743 ¹⁵⁷	40.45 ²⁶⁹	47.957 ⁵⁴	37.74 ⁴¹
26.0	23.027 ¹⁸	58.72 ⁹⁴	53.892 ³⁰	27.94 ¹⁶⁰	33.637 ¹⁰⁶	37.45 ³⁰⁰	47.935 ²²	37.47 ²⁷
Oct. 6.0	23.048 ²¹	57.93 ⁷⁹	53.909 ¹⁷	26.42 ¹⁵²	33.586 ⁶¹	34.19 ³²⁶	47.949 ¹⁴	37.36 ¹¹
16.0	23.115 ⁶⁷	57.33 ⁶⁰	53.979 ⁷⁰	25.05 ¹³⁷	33.597 ¹¹	30.72 ³⁴⁷	48.005 ⁵⁶	37.49 ¹³
26.0	23.231 ¹¹⁶	56.99 ³⁴	54.104 ¹²⁵	23.92 ¹¹³	33.674 ¹⁹⁶	27.13 ³⁵⁹	48.107 ¹⁰²	37.86 ³⁷
Nov. 4.9	23.398 ¹⁶⁷	56.94 ⁵	54.287 ¹⁸³	23.09 ⁸³	33.823 ¹⁴⁹	23.49 ³⁶⁴	48.257 ¹⁵⁰	38.51 ⁶⁵
14.9	23.614 ²¹⁶	57.22 ²⁸	54.527 ²⁴⁰	22.60 ⁴⁹	34.042 ²¹⁹	19.87 ³⁶²	48.453 ¹⁹⁶	39.44 ⁶³
24.9	23.875 ²⁶¹	57.84 ⁶²	54.817 ²⁹⁰	22.52 ⁸	34.330 ²⁸⁸	16.40 ³⁴⁷	48.693 ²⁴⁰	40.65 ¹²¹
Dec. 4.8	24.175 ³⁰⁰	58.80 ⁹⁶	55.149 ³³²	22.86 ³⁴	34.679 ³⁴⁹	13.13 ³²⁷	48.970 ²⁷⁷	42.11 ¹⁴⁶
14.8	24.505 ³³⁰	60.09 ¹²⁹	55.515 ³⁶⁶	23.61 ⁷⁵	35.083 ⁴⁰⁴	10.19 ²⁹⁴	49.279 ³⁰⁹	43.81 ¹⁷⁰
24.8	24.857 ³⁵²	61.67 ¹⁵⁸	55.904 ³⁸⁹	24.77 ¹¹⁶	35.528 ⁴⁴⁵	7.67 ²⁵²	49.609 ³³⁰	45.68 ¹⁵⁷
34.8	25.218 ³⁶¹	63.47 ¹⁸⁰	56.305 ⁴⁰¹	26.30 ¹⁵³	36.001 ⁴⁷³	5.63 ²⁰⁴	49.950 ³⁴¹	47.66 ¹⁹⁸
Mean Place	21.082	43.15	52.103	10.35	32.827	49.53	45.933	23.35
Sec δ , Tan δ	1.084	-0.419	1.240	-0.734	1.759	+1.447	1.018	-0.189
$D\phi \alpha$, $D\omega \alpha$	+0.06	-0.03	+0.07	-0.05	+0.05	+0.09	+0.06	-0.01
$D\phi \delta$, $D\omega \delta$	-0.4	-0.3	-0.4	-0.3	-0.4	-0.3	-0.4	-0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	89 Virginis. Mag. 5.1		ζ Centauri. Mag. 3.1		7 Boötis. Mag. 2.8		θ Apodis. Var. 5.5-6.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 13 45	° ' -17 42	h m 13 50	° ' -46 52	h m 13 50	° ' +18 48	h m 13 57	° ' -76 23
	s "	"	s "	"	s "	"	s "	"
Jan. 0.8	18.577	60.68	17.523	25.81	41.525	51.30	4.20	20.31
10.8	18.930 ³⁸³	62.52 ¹⁸⁴	17.981 ⁴⁵⁸	26.77 ¹¹⁶	41.864 ³³⁹	49.08 ²²²	5.34 ¹¹⁴	20.55 ²⁴
20.7	19.279 ³⁴⁹	64.45 ¹⁹³	18.437 ⁴⁵⁶	28.31 ¹⁵⁴	42.205 ³⁴¹	47.14 ¹⁹⁴	6.48 ¹¹⁴	21.40 ⁸⁵
30.7	19.619 ³⁴⁰	66.42 ¹⁹⁷	18.880 ⁴⁴³	30.17 ¹⁸⁶	42.539 ³³⁴	45.57 ¹⁵⁷	7.60 ¹¹²	22.79 ¹³⁹
Feb. 9.7	19.939 ³²⁰	68.35 ¹⁹³	19.299 ⁴¹⁹	32.33 ²¹⁶	42.856 ³¹⁷	44.40 ¹¹⁷	8.66 ¹⁰⁶	24.67 ¹⁸⁸
	29.2	186	386	235	291	74	100	233
19.7	20.231	70.21	19.685	34.68	43.147	43.66	9.66	27.00
29.6	20.493 ²⁶²	71.95 ¹⁷⁴	20.033 ³⁴⁸	37.19 ²⁵¹	43.407 ²⁶⁰	43.36 ³⁰	10.56 ⁹⁰	29.71 ²⁷¹
Mar. 10.6	20.722 ²²⁹	73.51 ¹⁵⁶	20.339 ³⁰⁶	39.80 ²⁶¹	43.633 ²²⁶	43.48 ¹²	11.36 ⁸⁰	32.72 ³⁰¹
20.6	20.916 ¹⁹⁴	74.90 ¹³⁹	20.600 ²⁶¹	42.42 ²⁶²	43.824 ¹⁹¹	43.97 ⁴⁹	12.04 ⁶⁸	35.95 ³²³
30.6	21.075 ¹⁵⁹	76.10 ¹²⁰	20.816 ²¹⁶	45.02 ²⁶⁰	43.977 ¹⁵³	44.82 ⁸⁵	12.60 ⁵⁶	39.37 ³⁴²
	126	101	171	253	117	112	42	346
Apr. 9.5	21.201	77.11	20.987	47.55	44.094	45.94	13.02	42.83
19.5	21.296	77.93	21.114	49.97	44.176	47.26	13.31	46.33
29.5	21.360 ⁶⁴	78.56 ⁶³	21.199 ⁸⁵	52.24 ²²⁷	44.226 ⁵⁰	48.73 ¹⁴⁷	13.47 ¹⁶	49.75 ³⁴²
May 9.4	21.396 ³⁶	79.02 ⁴⁶	21.243 ⁴⁴	54.32 ²⁰⁸	44.245 ¹⁹	50.27 ¹⁵⁴	13.49 ²	53.03 ³²⁸
19.4	21.405 ⁹	79.32 ³⁰	21.246 ³	56.18 ¹⁸⁶	44.238 ⁷	51.82 ¹⁵⁵	13.38 ¹¹	56.13 ³¹⁰
	15	15	36	180	34	150	24	285
29.4	21.390	79.47	21.210	57.78	44.204	53.32	13.14	58.98
June 8.4	21.352 ³⁸	79.47 ⁰	21.139 ⁷¹	59.09 ¹³¹	44.148 ⁵⁶	54.72 ¹⁴⁰	12.79 ³⁵	61.46 ²⁴⁸
18.3	21.294 ⁵⁸	79.33 ¹⁴	21.035 ¹⁰⁴	60.10 ¹⁰¹	44.071 ⁷⁷	55.98 ¹²⁶	12.32 ⁴⁷	63.56 ²¹⁰
28.3	21.215 ⁷⁹	79.06 ²⁷	20.901 ¹³⁴	60.77 ⁶⁷	43.977 ⁹⁴	57.04 ¹⁰⁶	11.76 ⁵⁶	65.23 ¹⁶⁷
July 8.3	21.119 ⁹⁶	78.68 ³⁸	20.741 ¹⁸⁰	61.09 ³²	43.868 ¹⁰⁹	57.91 ⁸⁷	11.12 ⁶⁴	66.43 ¹²⁰
	108	50	180	2	123	123	70	66
18.3	21.011	78.18	20.561	61.07	43.745	58.54	10.42	67.09
28.2	20.892 ¹¹⁹	77.58 ⁶⁰	20.366 ¹⁹⁵	60.67 ⁴⁰	43.616 ¹²⁹	58.93 ⁶³	9.68 ⁷⁴	67.23 ¹⁴
Aug. 7.2	20.769 ¹²³	76.99 ⁶⁹	20.165 ²⁰¹	59.92 ⁷⁵	43.482 ¹³⁴	59.04 ¹¹	8.93 ⁷⁵	68.83 ⁴⁰
17.2	20.648 ¹²¹	76.15 ⁷⁴	19.967 ¹⁹⁸	58.84 ¹⁰⁸	43.350 ¹³²	58.89 ¹⁵	8.20 ⁷³	65.89 ⁹⁴
27.1	20.534 ¹¹⁴	75.38 ⁷⁷	19.780 ¹⁸⁷	57.48 ¹³⁶	43.225 ¹²⁵	58.46 ⁴³	7.51 ⁶⁹	64.46 ¹⁴³
	100	77	163	162	110	72	61	189
Sept. 6.1	20.434	74.61	19.617	55.86	43.115	57.74	6.90	62.57
16.1	20.358 ⁷⁶	73.89 ⁷²	19.488 ¹²⁹	54.06 ¹⁸⁰	43.024 ⁹¹	56.75 ⁹⁹	6.40 ⁵⁰	60.29 ²²⁸
26.1	20.310 ⁴⁸	73.25 ⁶⁴	19.403 ⁸⁵	52.14 ¹⁹²	42.961 ⁶³	55.46 ¹²⁹	6.03 ³⁷	57.69 ²⁶⁰
Oct. 6.0	20.300 ¹⁰	72.74 ⁵¹	19.370 ³³	50.18 ¹⁹⁶	42.932 ²⁹	53.90 ¹⁵⁶	5.81 ²²	54.99 ²⁸⁰
16.0	20.333 ³³	72.42 ³²	19.398 ²⁶	48.28 ¹⁹⁰	42.944 ¹²	52.08 ¹⁸²	5.76 ⁵	51.96 ²⁹³
	81	11	95	177	56	208	14	292
26.0	20.414	72.31	19.493	46.51	43.000	50.00	5.90	49.04
Nov. 5.0	20.545 ¹³¹	72.47 ¹⁶	19.655 ¹⁶²	44.96 ¹⁵⁵	43.104 ¹⁰⁴	47.72 ²²⁸	6.22 ³²	46.24 ²⁸⁰
14.9	20.725 ¹⁸⁰	72.91 ⁴⁴	19.886 ²³¹	43.72 ¹²⁴	43.257 ¹⁵³	45.25 ²⁴⁷	6.73 ⁵¹	43.68 ²⁵⁶
24.9	20.953 ²²⁸	73.65 ⁷⁴	20.180 ²⁹⁴	42.84 ⁸⁸	43.458 ²⁰¹	42.66 ²⁵⁹	7.41 ⁶⁸	41.48 ²²⁰
Dec. 4.9	21.223 ²⁷⁰	74.67 ¹⁰²	20.530 ³⁵⁰	42.36 ⁴⁸	43.702 ²⁴⁴	40.02 ²⁶⁴	8.23 ⁸²	39.70 ¹⁷⁸
	306	130	396	2	281	263	95	126
14.8	21.529	75.97	20.926	42.34	43.983	37.39	9.18	38.44
24.6	21.859 ³³⁰	77.52 ¹⁵⁵	21.355 ⁴²⁹	42.77 ⁴³	44.294 ³¹¹	34.86 ²⁵³	10.23 ¹⁰⁵	37.72 ⁷²
34.8	22.205 ³⁴⁶	79.25 ¹⁷³	21.806 ⁴⁵¹	43.64 ⁸⁷	44.624 ³³⁰	32.50 ²³⁶	11.34 ¹¹¹	37.60 ¹²
Mean Place	18.232	58.11	17.497	31.56	41.111	66.09	5.955	31.31
Sec δ, Tan δ	1.050	-0.320	1.463	-1.068	1.056	+0.341	4.251	-4.132
D _α , D _α α	+0.06	-0.02	+0.07	-0.06	+0.06	+0.02	+0.11	-0.24
D _δ , D _δ δ	-0.4	-0.4	-0.4	-0.5	-0.4	-0.5	-0.3	-0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	11 Boötis. Mag. 6.1		7 Virginis. Mag. 4.3		β Centauri. Mag. 0.9		π Hydræ. Mag. 3.5	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	" '	h m	" '	h m	" '	h m	" '
	13 57	+27 46	13 57	+ 1 56	13 57	-59 57	14 1	-26
	s	"	s	"	s	"	s	"
Jan. 0.8	22.367	73.05	22.570	52.73	52.660	57.48	35.239	41.91
10.8	22.716 ³⁴⁹	70.78 ²²⁷	22.902 ³³²	50.63 ²¹⁰	53.250 ⁵⁹⁰	58.18 ⁷⁰	35.607 ³⁶⁸	43.46
20.7	23.071 ³⁵⁵	68.89 ¹⁸⁹	23.236 ³³⁴	48.65 ¹⁹⁸	53.840 ⁵⁹⁰	59.37 ¹¹⁹	35.977 ³⁷⁰	45.20
30.7	23.418 ³⁴⁷	67.45 ¹⁴⁴	23.562 ³²⁶	46.86 ¹⁷⁹	54.417 ⁵⁷⁷	61.01 ¹⁶⁴	36.337 ³⁶⁰	47.07
Feb. 9.7	23.750 ³³²	66.48 ⁹⁷	23.872 ³¹⁰	45.31 ¹⁵⁵	54.966 ⁵⁴⁹	63.04 ²⁰³	36.680 ³⁴³	49.01
19.7	24.057 ³⁰⁷	66.03 ⁴⁵	24.159 ²⁸⁷	44.04 ¹²⁷	55.476 ⁵¹⁰	65.39 ²³⁵	36.998 ³¹⁸	50.97
29.6	24.335 ²⁷⁸	66.06 ³	24.416 ²⁵⁷	43.06 ⁹⁸	55.939 ⁴⁶³	68.01 ²⁶²	37.287 ²⁸⁹	52.89
Mar. 10.6	24.576 ²⁴¹	66.57 ⁵¹	24.644 ²²⁸	42.40 ⁶⁶	56.349 ⁴¹⁰	70.83 ²⁸²	37.542 ²⁵⁵	54.74
20.6	24.778 ²⁰²	67.49 ⁹²	24.837 ¹⁹³	42.05 ³⁵	56.702 ³⁵³	73.78 ²⁹⁵	37.763 ²²¹	56.48
30.6	24.941 ¹⁶³	68.79 ¹³⁰	24.997 ¹⁶⁰	41.97 ⁸	56.994 ²⁹²	76.79 ³⁰¹	37.950 ¹⁸⁷	58.07
Apr. 9.5	25.064 ¹²³	70.39 ¹⁶⁰	25.124 ¹²⁷	42.15 ¹⁸	57.225 ²³¹	79.81 ³⁰²	38.102 ¹⁵²	59.53
19.5	25.150 ⁸⁶	72.19 ¹⁸⁰	25.221 ⁹⁷	42.54 ³⁹	57.397 ¹⁷²	82.79 ²⁹⁸	38.220 ¹¹⁸	60.82
29.5	25.200 ⁵⁰	74.11 ¹⁹²	25.287 ⁶⁶	43.10 ⁵⁶	57.508 ¹¹¹	85.65 ²⁸⁶	38.307 ⁸⁷	61.94
May 9.4	25.216 ¹⁶	76.09 ¹⁹⁸	25.327 ⁴⁰	43.79 ⁶⁹	57.559 ⁵¹	88.35 ²⁷⁰	38.362 ⁵⁵	62.89
19.4	25.201 ¹⁵	78.04 ¹⁹⁵	25.340 ¹³	44.57 ⁷⁸	57.552 ⁷	90.83 ²⁴⁸	38.388 ²⁶	63.65
29.4	25.159 ⁴²	79.90 ¹⁸⁶	25.329 ¹¹	45.40 ⁸³	57.490 ⁶²	93.04 ²²¹	38.387 ¹	64.25
June 8.4	25.090 ⁶⁹	81.59 ¹⁶⁹	25.295 ³⁴	46.23 ⁸³	57.374 ¹¹⁶	94.95 ¹⁹¹	38.357 ³⁰	64.67
18.3	24.999 ⁹¹	83.08 ¹⁴⁹	25.241 ⁵⁴	47.06 ⁸³	57.209 ¹⁶⁵	96.50 ¹⁵⁵	38.304 ⁵³	64.89
28.3	24.887 ¹¹²	84.32 ¹²⁴	25.167 ⁷⁴	47.84 ⁷⁸	57.000 ²⁰⁹	97.67 ¹¹⁷	38.226 ⁷⁸	64.94
July 8.3	24.760 ¹²⁷	85.28 ⁹⁶	25.078 ⁸⁹	48.55 ⁷¹	56.753 ²⁴⁷	98.41 ⁷⁴	38.128 ⁹⁸	64.81
18.3	24.620 ¹⁴⁰	85.93 ⁶⁵	24.975 ¹⁰³	49.20 ⁸⁵	56.477 ²⁷⁶	98.72 ³¹	38.013 ¹¹⁵	64.48
28.2	24.471 ¹⁴⁹	86.26 ³³	24.861 ¹¹⁴	49.75 ⁵⁵	56.181 ²⁹⁶	98.58 ¹⁴	37.884 ¹²⁹	63.98
Aug. 7.2	24.317 ¹⁵⁴	86.26 ⁰	24.741 ¹²⁰	50.19 ⁴⁴	55.874 ³⁰⁷	97.99 ⁵⁹	37.747 ¹³⁷	63.32
17.2	24.165 ¹⁵²	85.91 ³⁵	24.621 ¹²⁰	50.50 ³¹	55.573 ³⁰¹	96.97 ¹⁰²	37.609 ¹³⁸	62.52
27.1	24.020 ¹⁴⁵	85.21 ⁷⁰	24.507 ¹¹⁴	50.66 ¹⁶	55.287 ²⁸⁶	95.56 ¹⁴¹	37.477 ¹³²	61.60
Sept. 6.1	23.888 ¹³²	84.18 ¹⁰³	24.404 ¹⁰³	50.66 ⁰	55.034 ²⁵³	93.78 ¹⁷⁸	37.358 ¹¹⁹	60.60
16.1	23.779 ¹⁰⁹	82.83 ¹³⁵	24.319 ⁸⁵	50.47 ¹⁹	54.827 ²⁰⁷	91.71 ²⁰⁷	37.358 ⁹⁷	59.57
26.1	23.698 ⁸¹	81.15 ¹⁶⁸	24.262 ⁵⁷	50.09 ³⁸	54.681 ¹⁴⁶	89.43 ²²⁸	37.196 ⁶⁵	58.54
Oct. 6.0	23.651 ⁴⁷	79.16 ¹⁹⁹	24.238 ²⁴	49.48 ⁶¹	54.605 ⁷⁶	87.00 ²⁴³	37.168 ²⁸	57.59
16.0	23.646 ⁵	76.90 ²²⁰	24.253 ¹⁵	48.64 ⁸⁴	54.612 ⁷	84.56 ²⁴⁴	37.185 ¹⁷	56.76
26.0	23.689 ⁴³	74.39 ²⁵¹	24.312 ⁵⁹	48.10 ¹⁰⁸	54.708 ⁹⁶	82.18 ²³⁸	37.253 ⁶⁸	56.12
Nov. 5.0	23.782 ⁹³	71.69 ²⁷⁰	24.418 ¹⁰⁶	46.24 ¹³²	54.896 ¹⁸⁸	79.99 ²¹⁹	37.375 ¹²²	55.70
14.9	23.927 ¹⁴⁵	68.83 ²⁸⁶	24.571 ¹⁵³	44.68 ¹⁵⁶	55.174 ²⁷⁸	78.05 ¹⁹⁴	37.549 ¹⁷⁴	55.57
24.9	24.122 ¹⁹⁵	65.90 ²⁹³	24.771 ²⁰⁰	42.91 ¹⁷⁷	55.537 ³⁶³	76.48 ¹⁵⁷	37.775 ²²⁶	55.75
Dec. 4.9	24.364 ²⁴²	62.96 ²⁹⁴	25.014 ²¹³	40.98 ¹⁹³	55.975 ⁴³⁸	75.34 ¹¹⁴	38.048 ²⁷³	56.25
14.8	24.645 ²⁸¹	60.09 ²⁸⁷	25.291 ²⁷⁷	38.92 ²⁰⁶	56.475 ⁵⁰⁰	74.68 ⁶⁶	38.360 ³¹²	57.07
24.8	24.961 ³¹⁶	57.39 ²⁷⁰	25.597 ³⁰⁶	36.79 ²¹³	57.022 ⁵⁴⁷	74.52 ¹⁶	38.701 ³⁴¹	58.20
34.8	25.298 ³³⁷	54.95 ²⁴⁴	25.920 ³²³	34.69 ²¹⁰	57.600 ⁵⁷⁸	74.89 ³⁷	39.061 ³⁶⁰	59.58
Mean Place	22.007	90.50	22.216	62.06	53.025	66.04	35.034	41.74
Sec δ, Tan δ	1.130	+0.527	1.001	+0.034	1.998	-1.730	1.115	-0.49
$D\phi a, D\omega a$	+0.05	+0.03	+0.06	0.00	+0.08	-0.10	+0.07	-0.03
$D\phi \delta, D\omega \delta$	-0.3	-0.5	-0.3	-0.5	-0.3	-0.5	-0.3	-0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	θ Centauri. Mag. 2.3		α Draconis. Mag. 3.6		δ Boötis. Mag. 4.8		κ Virginis. Mag. 4.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 14 1	° ' -35 57	h m 14 2	° ' +64 45	h m 14 6	° ' +25 28	h m 14 8	° ' - 9 52
	s	"	s	"	s	"	s	"
Jan. 0.8	44.113	23.33	6.85	72.14	34.425	63.71	25.020	65.28
10.8	44.512 ³⁹⁹	24.65 ¹³²	7.42 ⁵⁷	70.13 ²⁰¹	34.767 ³⁴²	61.40 ²³¹	25.357 ³³⁷	67.15 ¹⁸⁷
20.8	44.911 ³⁹⁹	26.27 ¹⁶²	8.02 ⁶⁰	68.73 ¹⁴⁰	35.115 ³⁴⁸	59.45 ¹⁹⁵	25.698 ³⁴¹	69.03 ¹⁸⁸
30.7	45.302 ³⁹¹	28.11 ¹⁸⁴	8.62 ⁶⁰	67.98 ⁷⁵	35.460 ³⁴⁵	57.91 ¹⁵⁴	26.031 ³³³	70.86 ¹⁸³
Feb. 9.7	45.673 ³⁷¹	30.12 ²⁰¹	9.20 ⁵⁸	67.91 ⁷	35.790 ³³⁰	56.84 ¹⁰⁷	26.351 ³²⁰	72.59 ¹⁷³
	344	213	54	57	308	59	297	156
19.7	46.017	32.25	9.74	68.48	36.098	56.25	26.648	74.15
29.6	46.329 ³¹²	34.44 ²¹⁹	10.23 ⁴⁹	69.69 ¹²¹	36.377 ²⁷⁹	56.15 ¹⁰	26.917 ²⁶⁹	75.52 ¹³⁷
Mar. 10.6	46.607 ²⁷⁸	36.63 ²¹⁹	10.66 ⁴³	71.46 ¹⁷⁷	36.622 ²⁴⁵	56.52 ³⁷	27.158 ²⁴¹	76.67 ¹¹⁵
20.6	46.847 ²⁴⁰	33.79 ²¹⁶	11.01 ³⁵	73.70 ²²⁴	36.831 ²⁰⁹	57.32 ⁸⁰	27.366 ²⁰⁸	77.61 ⁹⁴
30.6	47.048 ²⁰¹	40.86 ²⁰⁷	11.26 ²⁵	76.33 ²⁶³	37.001 ¹⁷⁰	58.49 ¹¹⁷	27.542 ¹⁷⁶	78.31 ⁷⁰
	164	197	17	288	133	147	145	49
Apr. 9.5	47.212	42.83	11.43	79.21	37.134	59.96	27.687	78.80
19.5	47.340 ¹²⁸	44.68 ¹⁸⁵	11.52 ⁹	82.24 ³⁰³	37.231 ⁹⁷	61.66 ¹⁷⁰	27.800 ¹¹³	79.08 ²⁸
29.5	47.432 ⁹²	46.36 ¹⁶⁸	11.51 ¹	85.29 ³⁰⁵	37.292 ⁶¹	63.50 ¹⁸⁴	27.885 ⁸⁵	79.20 ¹²
May 9.5	47.489 ⁵⁷	47.87 ¹⁵¹	11.43 ⁸	88.28 ²⁹⁹	37.320 ²⁸	65.40 ¹⁹⁰	27.941 ⁵⁶	79.17 ³
19.4	47.513 ²⁴	49.19 ¹³²	11.26 ¹⁷	91.08 ²⁸⁰	37.318 ²	67.31 ¹⁹¹	27.970 ²⁹	79.01 ¹⁶
	7	110	23	252	31	182	4	28
29.4	47.506	50.29	11.03	93.60	37.287	69.13	27.974	78.73
June 8.4	47.467 ³⁹	51.18 ⁸⁹	10.74 ²⁹	95.76 ²¹⁶	37.230 ⁵⁷	70.82 ¹⁶⁹	27.952 ²²	78.38 ³⁵
18.3	47.399 ⁶⁸	51.82 ⁶⁴	10.41 ³³	97.52 ¹⁷⁶	37.149 ⁸¹	72.33 ¹⁵¹	27.909 ⁴³	77.96 ⁴²
28.3	47.305 ⁹⁴	52.21 ³⁹	10.03 ³⁸	98.83 ¹³¹	37.048 ¹⁰¹	73.60 ¹²⁷	27.843 ⁶⁶	77.48 ⁴⁸
July 8.3	47.186 ¹¹⁹	52.33 ¹²	9.63 ⁴⁰	99.64 ⁸¹	36.927 ¹²¹	74.62 ¹⁰²	27.759 ⁸⁴	76.96 ⁵²
	137	15	43	29	134	72	100	54
18.3	47.049	52.18	9.20	99.93	36.793	75.34	27.659	76.42
28.2	46.897 ¹⁵²	51.78 ⁴⁰	8.76 ⁴¹	99.71 ²²	36.648 ¹⁴⁵	75.77 ¹⁰	27.545 ⁴³	75.86 ⁵⁶
Aug. 7.2	46.737 ¹⁶⁰	51.12 ⁶⁶	8.33 ⁴³	98.96 ⁷⁵	36.498 ¹⁵⁰	75.87 ⁴⁰	27.423 ¹²²	75.29 ⁵⁷
17.2	46.576 ¹⁶¹	50.23 ⁸⁹	7.90 ⁴³	97.71 ¹²⁵	36.347 ¹⁵¹	75.64 ²³	27.299 ¹²⁴	74.75 ⁵⁴
27.2	46.421 ¹⁵⁵	49.12 ¹¹¹	7.50 ⁴⁰	95.98 ¹⁷³	36.201 ¹⁴⁶	75.08 ⁵⁶	27.180 ¹¹⁹	74.24 ⁵¹
	139	126	36	219	134	90	110	45
Sept. 6.1	46.282	47.86	7.14	93.79	36.067	74.18	27.070	73.79
16.1	46.170 ¹¹²	46.48 ¹³⁸	6.81 ³³	91.18 ²⁶¹	35.954 ¹¹³	72.96 ¹²²	26.978 ⁹²	73.43 ³⁶
26.1	46.092 ⁷⁸	45.04 ¹⁴⁴	6.55 ²⁶	88.21 ²⁹⁷	35.866 ⁸⁸	71.43 ¹⁵³	26.913 ⁶⁵	73.20 ²³
Oct. 6.0	46.057 ³⁵	43.61 ¹⁴³	6.36 ¹⁹	84.93 ³²⁸	35.813 ⁵³	69.60 ¹⁸³	26.882 ³¹	73.13 ⁷
16.0	46.072 ¹⁵	42.27 ¹³⁴	6.24 ¹²	81.39 ³⁵⁴	35.801 ¹²	67.47 ²¹³	26.890 ⁸	73.24 ¹¹
	72	119	3	371	34	236	54	33
26.0	46.144	41.08	6.21	77.68	35.835	65.11	26.944	73.57
Nov. 5.0	46.274 ¹³⁰	40.10 ⁹⁸	6.26 ⁵	73.87 ³⁸¹	35.918 ⁸³	62.51 ²⁶⁰	27.046 ¹⁰²	74.14 ⁵⁷
14.9	46.464 ¹⁹⁰	39.41 ⁶⁹	6.41 ¹⁵	70.05 ³⁸²	36.052 ¹³⁴	59.76 ²⁷⁵	27.197 ¹⁵¹	74.98 ⁸⁴
24.9	46.709 ²⁴⁵	39.06 ³⁵	6.66 ²⁵	66.33 ³⁷²	36.237 ¹⁸⁵	56.91 ²⁸⁵	27.396 ¹⁹⁹	76.07 ¹⁰⁹
Dec. 4.9	47.005 ²⁹⁶	39.05 ¹	7.01 ³⁵	62.80 ³⁵³	36.469 ²³²	54.03 ²⁸⁸	27.639 ²⁴³	77.38 ¹³¹
	338	37	42	324	274	283	279	153
14.9	47.343	39.42	7.43	59.56	36.743	51.20	27.918	78.91
24.8	47.712 ³⁶⁹	40.17 ⁷⁵	7.92 ⁴⁹	56.73 ²⁸³	37.050 ³⁰⁷	48.50 ²⁷⁰	28.228 ³¹⁰	80.61 ¹⁷⁰
34.8	48.101 ³⁸⁹	41.28 ¹¹¹	8.46 ⁵⁴	54.40 ²³³	37.379 ³²⁹	46.04 ²⁴⁶	28.556 ³²⁸	82.42 ¹⁸¹
Mean Place	43.998	26.03	6.929	97.27	34.127	80.44	24.758	59.74
Sec δ , Tan δ	1.235	-0.726	2.346	+2.122	1.108	+0.477	1.015	-0.174
$D\phi \alpha$, $D_{\omega} \alpha$	+0.07	-0.04	+0.03	+0.12	+0.05	+0.03	+0.06	-0.01
$D\phi \delta$, $D_{\omega} \delta$	-0.3	-0.5	-0.3	-0.5	-0.3	-0.5	-0.3	-0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	4 Ursae Minoris. Mag. 5.0		ι Virginis. Mag. 4.2		α Boötis. (Arcturus.) Mag. 0.2		λ Boötis. Mag. 4.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '
	14 9	+77 55	14 11	- 5 36	14 11	+19 36	14 13	+46 27
	s	"	s	"	s	"	s	"
Jan. 0.8	8.10	65.77	36.707	7.54	50.040	54.23	11.641	62.99
	10.3	9.13	37.040	9.49	50.370	51.88	12.039	60.68
	20.3	10.21	37.376	11.42	50.708	49.83	12.450	58.87
	30.7	11.32	37.707	13.24	51.042	48.15	12.862	57.63
Feb. 9.7	12.41	10.9	38.024	14.91	51.363	46.87	13.262	56.99
	19.7	13.45	38.319	16.39	51.662	46.03	13.638	56.99
	29.6	14.38	38.588	17.62	51.935	45.65	13.980	57.57
Mar. 10.6	15.20	8.2	38.828	18.61	52.176	45.70	14.280	58.71
	20.6	15.85	39.036	19.33	52.382	46.15	14.534	60.35
	30.6	16.34	39.212	19.81	52.553	46.97	14.737	62.40
Apr. 9.5	16.63	12	39.357	20.05	52.690	48.09	14.889	64.76
	19.5	16.75	39.471	20.10	52.791	49.44	14.989	67.34
	29.5	16.68	39.556	19.97	52.859	50.95	15.039	70.03
May 9.5	16.42	26	39.613	19.68	52.897	52.55	15.042	72.72
	19.4	16.01	39.643	19.30	52.904	54.17	15.001	75.32
	29.4	15.45	39.648	18.82	52.884	55.76	14.919	77.76
June 8.4	14.75	70	39.627	18.29	52.839	57.25	14.800	79.95
	18.3	13.95	39.585	17.72	52.770	58.60	14.649	81.83
	28.3	13.06	39.520	17.12	52.681	59.76	14.472	83.34
July 8.3	12.12	94	39.438	16.53	52.573	60.71	14.272	84.44
	18.3	11.13	39.338	15.95	52.448	61.41	14.053	85.12
	28.2	10.12	39.226	15.39	52.313	61.87	13.822	85.35
Aug. 7.2	9.12	100	39.104	14.88	52.171	62.04	13.587	85.13
	17.2	8.15	38.980	14.42	52.027	61.93	13.353	84.45
	27.2	7.23	38.860	14.04	51.886	61.54	13.127	83.32
Sept. 6.1	6.38	76	38.748	13.77	51.757	60.84	12.918	81.76
	16.1	5.62	38.655	13.62	51.646	59.86	12.734	79.79
	26.1	4.99	38.587	13.61	51.560	58.56	12.584	77.45
Oct. 6.0	4.48	51	38.552	13.79	51.506	56.98	12.476	74.76
	16.0	4.12	38.556	14.17	51.492	55.13	12.418	71.77
	26.0	3.94	38.605	14.78	51.523	53.02	12.417	68.55
Nov. 5.0	3.92	2	38.701	15.62	51.601	50.68	12.475	65.15
	14.9	4.09	38.846	16.72	51.730	48.15	12.597	61.66
	24.9	4.45	39.035	18.04	51.908	45.50	12.733	58.15
Dec. 4.9	4.98	53	39.274	19.58	52.132	42.77	13.028	54.72
	14.9	5.68	39.547	21.31	52.396	40.05	13.328	51.47
	24.8	6.53	39.851	23.16	52.693	37.41	13.674	48.51
	34.8	7.49	40.173	25.09	53.012	34.94	14.053	45.93
Mean Place	9.331	91.80	36.449	0.56	49.765	69.21	11.522	84.87
Sec δ, Tan δ	4.785	+4.680	1.005	-0.098	1.062	+0.356	1.452	+1.053
Dφ α, Dω α	-0.01	+0.26	+0.06	-0.01	+0.06	+0.02	+0.05	+0.06
Dφ δ, Dω δ	-0.3	-0.5	-0.3	-0.5	-0.3	-0.5	-0.3	-0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	λ Virginis. Mag. 4.6			ζ Librae. Mag. 6.3			θ Boötis. Mag. 4.1			f Boötis. Mag. 5.4		
	Right Ascension.	Declina- tion.		Right Ascension.	Declina- tion.		Right Ascension.	Declina- tion.		Right Ascension.	Declina- tion.	
	h m	° '		h m	° '		h m	° '		h m	° '	
	14 14	-12 59		14 18	-11 19		14 22	+52 13		14 22	+19 35	
	s	"	s	s	"	s	"	s	"	s	"	"
Jan. 0.8	33.889	10.65	54.455	56.55	20.223	56.14	33.118	59.48				
10.8	34.229 ³⁴⁰	12.44 ¹⁷⁹	54.792 ³³⁷	58.36 ¹⁸¹	20.645 ⁴²²	53.75 ²³⁹	33.447 ³²⁹	57.15 ²³³				
20.8	34.571 ³⁴²	14.24 ¹⁸⁰	55.135 ³⁴³	60.19 ¹⁸³	21.089 ⁴⁴⁴	51.91 ¹⁸⁴	33.785 ³³⁸	55.12 ²⁰³				
30.7	34.910 ³³⁹	16.06 ¹⁸²	55.471 ³³⁶	61.98 ¹⁷⁹	21.535 ⁴⁴⁶	50.67 ¹²⁴	34.121 ³³⁶	53.44 ¹⁶⁸				
Feb. 9.7	35.234 ³²⁴	17.81 ¹⁷⁵	55.794 ³²³	63.69 ¹⁷¹	21.974 ⁴³⁹	50.05 ⁶²	34.445 ³²⁴	52.18 ¹²⁶				
19.7	35.537 ³⁰³	19.41 ¹⁶⁰	56.096 ³⁰²	65.26 ¹⁵⁷	22.390 ⁴¹⁶	50.09 ⁴	34.751 ³⁰⁶	51.36 ⁸²				
29.7	35.813 ²⁷⁶	20.86 ¹⁴⁵	56.375 ²⁷⁹	66.65 ¹³⁹	22.771 ³⁸¹	50.75 ⁶⁶	35.031 ²⁸⁰	51.00 ³⁶				
Mar. 10.6	36.062 ²⁴⁹	22.13 ¹²⁷	56.624 ²⁴⁹	67.84 ¹¹⁹	23.108 ³³⁷	51.99 ¹²⁴	35.281 ²⁵⁰	51.08 ⁸				
20.6	36.276 ²¹⁴	23.19 ¹⁰⁶	56.842 ²¹⁸	68.81 ⁹⁷	23.394 ²⁸⁶	53.75 ¹⁷⁶	35.499 ²¹⁸	51.57 ⁴⁹				
30.6	36.461 ¹⁸⁵	24.05 ⁸⁶	57.029 ¹⁸⁷	69.56 ⁷⁵	23.623 ²²⁹	55.93 ²¹⁸	35.682 ¹⁸³	52.43 ⁸⁶				
Apr. 9.5	36.615 ¹⁵⁴	24.70 ⁶⁵	57.184 ¹⁵⁵	70.11 ⁵⁵	23.796 ¹⁷³	58.45 ²⁵²	35.830 ¹⁴⁸	53.60 ¹¹⁷				
19.5	36.737 ¹²²	25.18 ⁴⁸	57.310 ¹²⁶	70.46 ³⁵	23.910 ¹¹⁴	61.18 ²⁷³	35.945 ¹¹⁵	55.01 ¹⁴¹				
29.5	36.828 ⁹¹	25.47 ²⁹	57.405 ⁹⁵	70.65 ¹⁹	23.967 ⁵⁷	64.03 ²⁸⁵	36.026 ⁸¹	56.61 ¹⁶⁰				
May 9.5	36.893 ⁶⁵	25.62 ¹⁵	57.472 ⁶⁷	70.68 ³	23.968 ¹	66.88 ²⁸⁵	36.076 ⁵⁰	58.30 ¹⁶⁹				
19.4	36.927 ³⁴	25.61 ¹	57.511 ³⁹	70.59 ⁹	23.917 ⁵¹	69.65 ²⁷⁷	36.096 ²⁰	60.01 ¹⁷¹				
29.4	36.939 ¹²	25.51 ¹⁰	57.525 ¹⁴	70.40 ¹⁹	23.819 ⁹⁸	72.23 ²⁵⁸	36.086 ¹⁰	61.70 ¹⁶⁹				
June 8.4	36.922 ¹⁷	25.30 ²¹	57.511 ¹⁴	70.11 ²⁹	23.678 ¹⁴¹	74.55 ²³²	36.050 ³⁶	63.29 ¹⁵⁹				
18.4	36.880 ⁴²	25.00 ³⁰	57.474 ³⁷	69.75 ³⁶	23.499 ¹⁷⁹	76.53 ¹⁹⁸	35.990 ⁶⁰	64.75 ¹⁴⁶				
28.3	36.820 ⁶⁰	24.64 ³⁶	57.415 ⁵⁹	69.33 ⁴²	23.286 ²¹³	78.13 ¹⁶⁰	35.907 ⁸³	66.04 ¹²⁹				
July 8.3	36.736 ⁸⁴	24.19 ⁴⁵	57.334 ⁸¹	68.85 ⁴⁸	23.047 ²³⁹	79.30 ¹¹⁷	35.804 ¹⁰³	67.11 ¹⁰⁷				
18.3	36.635 ¹⁰¹	23.69 ⁵⁰	57.235 ⁹⁹	68.34 ⁵¹	22.785 ²⁶²	80.02 ⁷²	35.683 ¹²¹	67.93 ⁸²				
28.2	36.519 ¹¹⁶	23.15 ⁵⁴	57.121 ¹¹⁴	67.81 ⁵³	22.511 ²⁷⁴	80.26 ²⁴	35.550 ¹³³	68.49 ⁵⁶				
Aug. 7.2	36.397 ¹²²	22.58 ⁵⁷	56.999 ¹²²	67.26 ⁵⁵	22.228 ²⁸³	80.01 ²⁵	35.407 ¹⁴³	68.78 ²⁹				
17.2	36.270 ¹²⁷	22.00 ⁵⁸	56.870 ¹²⁹	66.72 ⁵⁴	21.946 ²⁸²	79.29 ⁷²	35.260 ¹⁴⁷	68.79 ¹				
27.2	36.144 ¹²⁶	21.43 ⁵⁷	56.744 ¹²⁶	66.19 ⁵³	21.673 ²⁷³	78.09 ¹²⁰	35.115 ¹⁴⁵	68.51 ²⁸				
Sept. 6.1	36.029 ¹¹⁵	20.87 ⁵⁶	56.627 ¹¹⁷	65.71 ⁴⁸	21.419 ²⁵⁴	76.43 ¹⁶⁶	34.980 ¹³⁵	67.93 ⁵⁸				
16.1	35.933 ⁹⁶	20.40 ⁴⁷	56.528 ⁹⁹	65.32 ³⁹	21.190 ²²⁹	74.35 ²⁰⁸	34.862 ¹¹⁸	67.04 ⁸⁹				
26.1	35.862 ⁷¹	20.02 ³⁸	56.454 ⁷⁴	65.03 ²⁹	20.999 ¹⁹¹	71.88 ²⁴⁷	34.769 ⁹³	65.86 ¹¹⁸				
Oct. 6.1	35.826 ³⁶	19.79 ²³	56.413 ⁴¹	64.87 ¹⁶	20.852 ¹⁴⁷	69.05 ²⁸³	34.708 ⁶¹	64.37 ¹⁴⁹				
16.0	35.828 ²	19.73 ⁶	56.412 ¹	64.90 ³	20.761 ⁹¹	65.91 ³¹⁴	34.684 ²⁴	62.60 ¹⁷⁷				
26.0	35.877 ⁴⁹	19.85 ¹²	56.455 ⁴³	65.14 ²⁴	20.730 ³¹	62.53 ³³⁸	34.704 ²⁰	60.57 ²⁰³				
Nov. 5.0	35.975 ⁹⁸	20.23 ³⁸	56.547 ⁹²	65.61 ⁴⁷	20.765 ³⁵	58.97 ³⁵⁶	34.773 ⁶⁹	58.31 ²²⁶				
14.9	36.123 ¹⁴⁸	20.85 ⁶²	56.689 ¹⁴²	66.33 ⁷²	20.872 ¹⁰⁷	55.32 ³⁶⁵	34.893 ¹²⁰	55.86 ²⁴⁵				
24.9	36.319 ¹⁰⁶	21.75 ⁹⁰	56.880 ¹⁹¹	67.30 ⁹⁷	21.048 ¹⁷⁶	51.67 ³⁶⁵	35.062 ¹⁶⁹	53.26 ²⁶⁰				
Dec. 4.9	36.561 ²⁴²	22.86 ¹¹¹	57.116 ²³⁶	68.51 ¹²¹	21.293 ²⁴⁵	48.12 ³⁵⁵	35.279 ²¹⁷	50.59 ²⁶⁷				
14.9	36.841 ²⁸⁰	24.23 ¹³⁷	57.392 ²⁷⁶	69.93 ¹⁴²	21.599 ³⁰⁶	44.75 ³³⁷	35.536 ²⁵⁷	47.92 ²⁶⁷				
24.8	37.149 ³⁰⁸	25.79 ¹⁵⁶	57.698 ³⁰⁶	71.53 ¹⁶⁰	21.958 ³⁵⁹	41.70 ³⁰⁵	35.826 ²⁹⁰	45.31 ²⁶¹				
34.8	37.479 ³³⁰	27.49 ¹⁷⁰	58.024 ³²⁶	73.26 ¹⁷³	22.359 ⁴⁰¹	39.05 ²⁶⁵	36.142 ³¹⁶	42.86 ²⁴⁵				
Mean Place	33.671	6.04	54.254	51.36	20.286	78.90	32.913	74.39				
Sec δ , Tan δ	1.026	-0.231	1.020	-0.200	1.632	+1.291	1.061	+0.356				
$D\psi\alpha$, $D_{\omega}\alpha$	+0.06	-0.01	+0.07	-0.01	+0.04	+0.07	+0.06	+0.02				
$D\psi\delta$, $D_{\omega}\delta$	-0.3	-0.6	-0.3	-0.6	-0.3	-0.6	-0.3	-0.6				

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ϕ Virginis. Mag. 5.0		5 Ursæ Minoris. Mag. 4.4		ρ Boötis. Mag. 3.8		γ Boötis. Mag. 3.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 14 23	° ' " - 1 51	h m 14 27	° ' " +76 3	h m 14 28	° ' " +30 43	h m 14 28	° ' " +38 39
Jan. 0.8	52.572	15.20	39.60	44.76	12.743	64.69	41.839	70.88
10.8	52.898 ³²⁶	17.19 ¹⁹⁹	40.47 ⁸⁷	42.65 ²¹¹	13.083 ³⁴⁰	62.26 ²⁴³	42.199 ³⁶⁰	68.42 ²⁴⁶
20.8	53.229 ³³¹	19.10 ¹⁹¹	41.41 ⁹⁴	41.15 ¹⁵⁰	13.437 ³⁵⁴	60.22 ²⁰⁴	42.572 ³⁷³	66.41 ²⁰¹
30.7	53.558 ³²⁹	20.88 ¹⁷⁸	42.37 ⁹⁶	40.31 ⁸⁴	13.790 ³⁵³	58.63 ¹⁵⁹	42.949 ³⁷⁷	64.91 ¹⁵⁰
Feb. 9.7	53.876 ³¹⁸	22.47 ¹⁵⁹	43.34 ⁹⁷	40.16 ¹⁵	14.135 ³⁴⁵	57.55 ¹⁰⁸	43.317 ³⁶⁸	63.98 ⁹³
19.7	54.174	23.82	44.27	40.68	14.461	56.99	43.665	63.62
29.7	54.448 ²⁷⁴	24.90 ¹⁰⁸	45.12 ⁸⁵	41.83 ¹¹⁵	14.761 ³⁰⁰	56.96 ³	43.988 ³²³	63.84 ²²
Mar. 10.6	54.694 ²⁴⁶	25.70 ⁸⁰	45.88 ⁷⁶	43.58 ¹⁷⁵	15.030 ²⁶⁹	57.46 ⁵⁰	44.274 ²⁸⁶	64.61 ⁷⁷
20.6	54.911 ²¹⁷	26.22 ⁵²	46.51 ⁶³	45.83 ²²⁵	15.264 ²³⁴	58.41 ⁹⁵	44.522 ²⁴⁸	65.88 ¹²⁷
30.6	55.096 ¹⁸⁵	26.46 ²⁴	47.01 ⁵⁰	48.50 ²⁶⁷	15.459 ¹⁹⁵	59.78 ¹³⁷	44.728 ²⁰⁶	67.58 ¹⁷⁰
Apr. 9.6	55.250 ¹⁵⁴	26.46 ⁰	47.34 ³³	51.46 ²⁹⁶	15.615 ¹⁵⁶	61.49 ¹⁷¹	44.890 ¹⁶²	69.62 ²⁰⁴
19.5	55.374 ¹²⁴	26.24 ²²	47.52 ¹⁸	54.57 ³¹¹	15.734 ¹¹⁹	63.44 ¹⁹⁵	45.009 ¹¹⁹	71.91 ²²⁹
29.5	55.469 ⁹⁵	25.85 ³⁹	47.54 ²	57.75 ³¹⁸	15.814 ⁸⁰	65.57 ²¹³	45.086 ⁷⁷	74.35 ²⁴⁴
May 9.5	55.535 ⁶⁶	25.32 ⁵³	47.40 ¹⁴	60.89 ³¹⁴	15.859 ⁴⁵	67.78 ²²¹	45.121 ³⁵	76.87 ²⁵²
19.4	55.574 ³⁹	24.68 ⁶⁴	47.12 ²⁸	63.85 ²⁹⁶	15.869 ¹⁰	69.99 ²²¹	45.118 ³	79.35 ²⁴⁸
29.4	55.586 ¹²	23.97 ⁷¹	46.70 ⁴²	66.55 ²⁷⁰	15.847 ²²	72.10 ²¹¹	45.078 ⁴⁰	81.72 ²³⁷
June 8.4	55.572 ¹⁴	23.23 ⁷⁴	46.16 ⁵⁴	68.90 ²³⁵	15.795 ⁵²	74.08 ¹⁹⁸	45.003 ⁷⁵	83.88 ²¹⁶
18.4	55.536 ³⁶	22.48 ⁷⁵	45.51 ⁶⁵	70.85 ¹⁹⁵	15.714 ⁸¹	75.86 ¹⁷⁸	44.898 ¹⁰⁵	85.81 ¹⁹³
28.3	55.477 ⁵⁹	21.75 ⁷³	44.79 ⁷²	72.34 ¹⁴⁹	15.609 ¹⁰⁵	77.37 ¹⁵¹	44.767 ¹³¹	87.42 ¹⁶¹
July 8.3	55.397 ⁸⁰	21.06 ⁶⁹	43.99 ⁸⁰	73.34 ¹⁰⁰	15.481 ¹²⁸	78.60 ¹²³	44.610 ¹⁵⁷	88.69 ¹²⁷
18.3	55.299 ⁹⁸	20.41 ⁶⁵	43.15 ⁸⁴	73.79 ⁴⁵	15.335 ¹⁴⁶	79.50 ⁹⁰	44.436 ¹⁷⁴	89.58 ⁸⁹
28.3	55.186 ¹¹³	19.83 ⁵⁸	42.28 ⁸⁷	73.73 ⁶	15.173 ¹⁶²	80.05 ⁵⁵	44.246 ¹⁹⁰	90.08 ⁵⁰
Aug. 7.2	55.063 ¹²³	19.33 ⁵⁰	41.40 ⁸⁸	73.12 ⁶¹	15.004 ¹⁶⁹	80.23 ¹⁸	44.046 ²⁰⁰	90.15 ⁷
17.2	54.936 ¹²⁷	18.92 ⁴¹	40.54 ⁸⁶	71.98 ¹¹⁴	14.830 ¹⁷⁴	80.05 ¹⁸	43.844 ²⁰²	89.81 ³⁴
27.2	54.809 ¹²⁷	18.64 ²⁸	39.71 ⁸³	70.35 ¹⁶³	14.659 ¹⁷¹	79.49 ⁵⁶	43.646 ¹⁹⁸	89.05 ⁷⁶
Sept. 6.1	54.692 ¹¹⁷	18.47 ¹⁷	38.93 ⁷⁸	68.24 ²¹¹	14.498 ¹⁶¹	78.57 ⁹²	43.458 ¹⁸⁸	87.87 ¹¹⁸
16.1	54.589 ¹⁰³	18.46 ¹	38.22 ⁷¹	65.70 ²⁵⁴	14.354 ¹⁴⁴	77.28 ¹²⁹	43.291 ¹⁶⁷	86.29 ¹⁵⁸
26.1	54.511 ⁷⁸	18.63 ¹⁷	37.60 ⁶²	62.77 ²⁹³	14.236 ¹¹⁸	75.63 ¹⁶⁵	43.151 ¹⁴⁰	84.34 ¹⁹⁵
Oct. 6.1	54.462 ⁴⁹	18.98 ³⁵	37.10 ⁵⁰	59.50 ³²⁷	14.152 ⁸⁴	73.66 ¹⁹⁷	43.048 ¹⁰³	82.05 ²²⁹
16.0	54.453 ⁹	19.55 ⁵⁷	36.72 ³⁸	55.97 ³⁵³	14.108 ⁴⁴	71.39 ²²⁷	42.988 ²²⁷	79.43 ²⁶²
26.0	54.486 ³³	19.55 ⁸⁰	36.72 ²⁴	55.97 ³⁷¹	14.108 ²	71.39 ²⁵⁶	42.988 ⁶⁰	79.43 ²⁶⁸
Nov. 5.0	54.486 ⁸¹	20.35 ¹⁰⁴	36.48 ⁸	52.26 ³⁸⁴	14.110 ⁵⁴	68.83 ²⁷⁸	42.978 ⁴⁶	76.55 ³¹¹
15.0	54.567 ¹³¹	21.39 ¹²⁸	36.40 ⁸	48.42 ³⁸⁴	14.164 ¹⁰⁷	66.05 ²⁹⁴	43.024 ¹⁶¹	73.44 ³²⁴
24.9	54.698 ¹⁷⁸	22.67 ¹⁴⁸	36.48 ⁸	44.58 ³⁷⁷	14.271 ¹⁶²	63.11 ³⁰⁶	43.126 ¹⁰²	70.20 ³³²
Dec. 4.9	54.876 ²²³	24.15 ¹⁷⁰	36.72 ²⁴	40.81 ³⁸⁰	14.433 ²¹²	60.05 ³⁰⁸	43.287 ²¹⁶	66.88 ³³⁰
14.9	55.099 ²⁶¹	25.85 ¹⁸³	37.13 ⁴¹	37.21 ³³⁰	14.645 ²⁵⁸	56.97 ³⁰⁰	43.503 ²⁶⁶	63.58 ³²⁰
24.8	55.360 ²⁹³	27.68 ¹⁹³	37.68 ⁷⁰	33.91 ²⁹³	14.903 ²⁹⁶	53.97 ²⁸⁶	43.769 ³⁰⁹	60.38 ²⁹⁷
34.8	55.653 ³¹⁵	29.61 ¹⁹⁸	38.38 ⁸⁰	30.98 ²⁴³	15.199 ³²⁵	51.11 ²⁶¹	44.078 ³⁴²	57.41 ²⁶⁷
34.8	55.968 ³¹⁵	31.59 ¹⁹⁸	39.18 ⁸⁰	28.55 ²⁴³	15.524 ³²⁵	48.50 ²⁶¹	44.420 ³⁴²	54.74 ²⁶⁷
Mean Place	52.369	6.92	41.140	70.14	12.622	82.61	41.783	90.73
Sec δ , Tan δ	1.001	-0.032	4.152	+4.030	1.163	+0.595	1.281	+0.800
$D\phi a, D\alpha a$	+0.06	0.00	0.00	+0.22	+0.05	+0.03	+0.05	+0.04
$D\phi \delta, D\alpha \delta$	-0.3	-0.6	-0.3	-0.6	-0.3	-0.6	-0.3	-0.6

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	7 Centauri. Mag. 2.6		σ Boötis. Mag. 4.5		α ² Centauri. Mag. 0.3		33 Boötis. Mag. 5.4	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 14 30	° ' " -41 47	h m 14 31	° ' " +30 6	h m 14 33	° ' " -60 29	h m 14 35	° ' " +44 45
	s	"	s	"	s	"	s	"
Jan. 0.8	9.919	18.58	1.526	16.61	53.10	8.11	42.657	38.20
10.8	10.338 419	19.43 85	1.865 339	14.17 244	53.68 58	8.30 28	43.032 375	35.69 251
20.8	10.766 428	20.61 118	2.217 352	12.11 206	54.27 59	9.14 75	43.425 393	33.67 202
30.7	11.191 425	22.08 147	2.569 352	10.50 161	54.86 59	10.34 120	43.825 400	32.19 148
Feb. 9.7	11.602 411	23.80 172	2.912 343	9.39 111	55.43 57	11.95 161	44.219 394	31.31 88
	388	190	326	60	54	197	377	28
19.7	11.990	25.70	3.238	8.79	55.97	13.92	44.596	31.03
29.7	12.350 360	27.73 203	3.540 302	8.73 6	56.47 50	16.17 225	44.944 348	31.37 34
Mar. 10.6	12.677 327	29.85 212	3.810 270	9.18 45	56.92 45	18.66 249	45.257 313	32.28 91
20.6	12.968 291	32.00 215	4.046 236	10.10 92	57.32 40	21.31 265	45.528 271	33.72 144
30.6	13.221 253	34.15 215	4.243 197	11.43 133	57.66 34	24.07 276	45.754 226	35.60 188
	214	209	160	169	27	282	178	223
Apr. 9.6	13.435	36.24	4.403	13.12	57.93	26.89	45.932	37.83
19.5	13.611 176	38.26 202	4.526 123	15.04 192	58.15 22	29.71 282	46.062 130	40.34 251
29.5	13.749 138	40.19 193	4.610 84	17.15 211	58.31 16	32.48 277	46.143 81	43.00 266
May 9.5	13.847 98	41.98 179	4.658 48	19.33 218	58.41 10	35.12 264	46.178 35	45.71 271
19.4	13.907 60	43.60 182	4.673 15	21.53 220	58.44 3	37.61 249	46.169 9	48.39 268
	22	144	19	213	2	228	51	254
29.4	13.929	45.04	4.654	23.66	58.42	39.89	46.118	50.93
June 8.4	13.913 16	46.27 123	4.607 47	25.63 197	58.34 8	41.90 201	46.028 90	53.28 235
18.4	13.862 51	47.27 100	4.531 76	27.42 179	58.20 14	43.62 172	45.903 125	55.34 206
28.3	13.776 86	48.00 73	4.430 101	28.94 152	58.01 19	45.00 138	45.747 156	57.06 172
July 8.3	13.659 117	48.47 47	4.306 124	30.18 124	57.76 25	45.98 98	45.566 181	58.41 135
	143	17	144	93	28	58	205	95
18.3	13.516	48.64	4.162	31.11	57.48	46.56	45.361	59.36
28.3	13.350 166	48.50 14	4.005 157	31.68 57	57.18 30	46.72 16	45.140 221	59.86 50
Aug. 7.2	13.169 181	48.08 42	3.837 168	31.90 22	56.85 33	46.43 29	44.907 233	59.91 5
17.2	12.981 188	47.36 72	3.664 173	31.75 15	56.52 33	45.70 73	44.671 236	59.51 40
27.2	12.796 185	46.38 98	3.494 170	31.24 51	56.19 33	44.56 114	44.440 231	58.65 86
	173	123	162	89	30	152	219	129
Sept. 6.1	12.623	45.15	3.332	30.35	55.89	43.04	44.221	57.36
16.1	12.472 151	43.74 141	3.188 144	29.10 125	55.64 25	41.19 185	44.021 200	55.64 172
26.1	12.357 115	42.19 155	3.069 119	27.49 161	55.44 20	39.07 212	43.851 170	53.52 212
Oct. 6.1	12.284 73	40.57 162	2.983 86	25.57 192	55.30 14	36.76 231	43.719 132	51.02 250
16.0	12.264 20	38.95 162	2.938 45	23.33 224	55.24 6	34.36 240	43.634 85	48.22 280
	40	154	1	251	3	241	32	309
26.0	12.304	37.41	2.937	20.82	55.27	31.95	43.602	45.13
Nov. 5.0	12.407 103	36.02 139	2.989 52	18.08 274	55.39 12	29.64 231	43.629 27	41.83 330
15.0	12.575 168	34.86 116	3.095 106	15.17 291	55.62 23	27.55 209	43.719 90	38.40 343
24.9	12.807 232	34.00 86	3.253 158	12.13 304	55.93 31	25.73 182	43.871 152	34.90 350
Dec. 4.9	13.096 289	33.46 54	3.462 209	9.08 305	56.32 39	24.28 145	44.083 212	31.45 245
	339	16	257	301	46	101	269	333
14.9	13.435	33.30	3.719	6.07	56.78	23.27	44.352	28.12
24.8	13.812 377	33.52 22	4.012 293	3.22 285	57.30 52	22.73 54	44.669 317	25.04 308
34.8	14.219 407	34.12 60	4.336 324	0.61 261	57.86 56	22.67 6	45.024 355	22.29 275
Mean Place	10.026	21.99	1.423	34.32	52.996	21.74	42.735	59.17
Sec δ, Tan δ	1.341	-0.894	1.156	+0.580	2.030	-1.767	1.408	+0.992
D _α α, D _α α	+0.08	-0.05	+0.05	+0.03	+0.09	-0.09	+0.04	+0.05
D _δ δ, D _δ δ	-0.3	-0.6	-0.3	-0.6	-0.3	-0.6	-0.3	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Apodis. Mag. 3.8			μ Virginis. Mag. 4.0			ϵ Boötis. Mag. 2.7			109 Vir Mag.	
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.	
	h	m	°	h	m	°	h	m	°	h	m
	14	37	-78	14	38	- 5	14	41	+27	14	42
	s	"	"	s	"	"	s	"	"	s	"
Jan. 0.8	18.73		12.48	38.013		44.35	19.162		23.01		0.169
10.8	20.04	131	12.07	38.337	324	46.23	19.491	329	20.54	247	0.486
20.8	21.40	136	12.22	38.670	333	48.08	19.833	342	18.42	212	0.813
30.8	22.77	137	12.93	39.001	331	49.83	20.179	346	16.72	170	1.141
Feb. 9.7	24.12	135	14.17	39.324	323	51.42	20.518	339	15.50	122	1.460
		129			305			323		70	
19.7	25.41		15.90	39.629		52.83	20.841		14.80		1.763
29.7	26.62	121	18.05	39.913	284	53.99	21.141	300	14.59	21	2.045
Mar. 10.6	27.74	112	20.59	40.171	258	54.90	21.414	273	14.89	30	2.301
20.6	28.72	98	23.42	40.401	230	55.55	21.654	240	15.66	77	2.531
30.6	29.57	85	26.49	40.601	200	55.95	21.857	203	16.84	118	2.730
		71			170			169		154	
Apr. 9.6	30.28		29.74	40.771		56.11	22.026		18.38		2.898
19.5	30.84	56	33.08	40.912	141	56.07	22.159	133	20.18	180	3.038
29.5	31.23	39	36.47	41.024	112	55.85	22.256	97	22.18	200	3.148
May 9.5	31.45	22	39.81	41.106	82	55.50	22.318	62	24.28	210	3.229
19.4	31.51	6	43.04	41.162	56	55.03	22.347	29	26.42	214	3.282
		11			27			6		207	
29.4	31.40		46.08	41.189		54.48	22.341		28.49		3.307
June 8.4	31.13	27	48.88	41.191	2	53.89	22.305	36	30.45	196	3.306
18.4	30.71	42	51.36	41.165	26	53.26	22.242	63	32.24	179	3.278
28.3	30.14	57	53.46	41.116	49	52.63	22.151	91	33.79	155	3.226
July 8.3	29.46	68	55.12	41.042	74	52.01	22.037	114	35.09	130	3.150
		79			92			134		99	
18.3	28.67		56.33	40.950		51.41	21.903		36.08		3.055
28.3	27.81	86	57.00	40.838	112	50.85	21.753	150	36.75	67	2.941
Aug. 7.2	26.90	91	57.14	40.715	123	50.34	21.590	163	37.09	34	2.816
17.2	25.97	93	56.73	40.585	130	49.89	21.422	168	37.06	3	2.683
27.2	25.07	90	55.77	40.453	132	49.52	21.253	169	36.68	38	2.548
		84			126			163		72	
Sept. 6.1	24.23		54.33	40.327		49.26	21.090		35.96		2.418
16.1	23.49	74	52.39	40.216	111	49.11	20.944	146	34.87	109	2.303
26.1	22.88	61	50.08	40.127	89	49.11	20.821	123	33.43	144	2.208
Oct. 6.1	22.44	44	47.43	40.068	69	49.28	20.730	91	31.66	177	2.143
16.0	22.19	25	44.58	40.046	22	49.64	20.675	55	29.59	207	2.115
		4			22			9		235	
26.0	22.15		41.61	40.068		50.21	20.666		27.24		2.129
Nov. 5.0	22.33	18	38.65	40.137	69	51.02	20.709	43	24.64	260	2.190
15.0	22.75	42	35.81	40.256	119	52.05	20.804	95	21.86	278	2.299
24.9	23.36	61	33.22	40.424	168	53.32	20.951	147	18.95	291	2.458
Dec. 4.9	24.20	84	30.97	40.637	213	54.78	21.149	198	15.97	298	2.662
		102			254			243		295	
14.9	25.22		29.15	40.891		56.43	21.392		13.02		2.908
24.8	26.36	114	27.82	41.178	287	58.20	21.675	283	10.19	283	3.186
34.8	27.62	126	27.03	41.490	312	60.04	21.988	313	7.57	262	3.491
Mean Place	21.667		21.95	37.891		37.04	19.114		39.84		0.055
Sec δ , Tan δ	5.101		-5.001	1.004		-0.093	1.127		+0.519		1.001
$D\phi \alpha$, $D\omega \alpha$	+0.14		-0.26	+0.06		0.00	+0.05		+0.03		+0.06
$D\phi \delta$, $D\omega \delta$	-0.3		-0.6	-0.3		-0.6	-0.3		-0.6		-0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	8 Libræ. Mag. 5.3		α Libræ. Mag. 2.9		Groombridge 2164. Mag. 5.7		β Ursæ Minoris. Mag. 2.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 14 46	° ' " -15 38	h m 14 46	° ' " -15 41	h m 14 49	° ' " +59 37	h m 14 50	° ' " +74 29
	s	"	s	"	s	"	s	"
Jan. 0.8	2.302	59.21	13.749	40.38	17.790	42.91	54.33	31.21
10.8	2.636 ³³⁴	60.76 ¹⁵⁵	14.082 ³³³	41.92 ¹⁵⁴	18.246 ⁴⁵⁶	40.35 ²⁵⁶	55.08 ⁷⁵	28.81 ²⁴⁰
20.8	2.980 ³⁴⁴	62.39 ¹⁶³	14.425 ³⁴³	43.54 ¹⁶²	18.738 ⁴⁹²	38.34 ²⁰¹	55.89 ⁸¹	27.01 ¹⁸⁰
30.8	3.322 ³⁴²	64.03 ¹⁶⁴	14.768 ³⁴³	45.18 ¹⁶⁴	19.247 ⁵⁰⁹	36.94 ¹⁴⁰	56.76 ⁸⁷	25.83 ¹¹⁸
Feb. 9.7	3.657 ³³⁵	65.63 ¹⁶⁰	15.102 ³³⁴	46.79 ¹⁶¹	19.758 ⁵¹¹	36.19 ⁷⁵	57.64 ⁸⁶	25.33 ⁵⁰
	319	152	320	152	494	7	88	19
19.7	3.976	67.15	15.422	48.31	20.252	36.12	58.50	25.52
29.7	4.274 ²⁹⁸	68.55 ¹⁴⁰	15.719 ²⁹⁷	49.71 ¹⁴⁰	20.718 ⁴⁶⁶	36.70 ⁵⁸	59.31 ⁸¹	26.36 ⁸⁴
Mar. 10.6	4.546 ²⁷²	69.77 ¹²²	15.991 ²⁷²	50.94 ¹²³	21.138 ⁴²⁰	37.90 ¹²⁰	60.04 ⁷³	27.84 ¹⁴⁸
20.6	4.790 ²⁴⁴	70.84 ¹⁰⁷	16.235 ²⁴⁴	52.01 ¹⁰⁷	21.505 ³⁶⁷	39.67 ¹⁷⁷	60.68 ⁶⁴	29.86 ²⁰²
30.6	5.005 ²¹⁵	71.72 ⁸⁸	16.451 ²¹⁶	52.89 ⁸⁸	21.810 ³⁰⁵	41.92 ²²⁵	61.19 ⁵¹	32.34 ²⁴⁸
	185	70	186	70	237	262	39	283
Apr. 9.6	5.190	72.42	16.637	53.59	22.047	44.54	61.58	35.17
19.5	5.347 ¹⁵⁷	72.95 ⁵³	16.793 ¹⁵⁶	54.13 ⁵⁴	22.214 ¹⁶⁷	47.42 ²⁸⁸	61.83 ²⁵	38.24 ³⁰⁷
29.5	5.473 ¹²⁶	73.32 ³⁷	16.919 ¹²⁶	54.51 ³⁸	22.310 ⁹⁶	50.48 ³⁰⁶	61.92 ⁹	41.43 ³¹⁹
May 9.5	5.570 ⁹⁷	73.56 ²⁴	17.017 ⁹⁸	54.74 ²³	22.336 ²⁶	53.57 ³⁰⁹	61.89 ³	44.63 ³²⁰
19.5	5.638 ⁶⁸	73.68 ¹²	17.084 ⁶⁷	54.85 ¹¹	22.293 ⁴³	56.59 ³⁰²	61.72 ¹⁷	47.71 ³⁰⁸
	38	1	40	1	105	287	30	289
29.4	5.676 ⁹	73.67 ⁹	17.124 ¹⁰	54.86 ⁹	22.188 ¹⁶⁴	59.46 ²⁶⁰	61.42 ⁴³	50.60 ²⁵⁹
June 8.4	5.685 ¹⁶	73.58 ¹⁸	17.134 ¹⁸	54.77 ¹⁸	22.024 ²¹⁷	62.06 ²²⁹	60.99 ⁵²	53.19 ²²³
18.4	5.669 ⁴⁶	73.40 ²⁴	17.116 ⁴⁴	54.59 ²⁶	21.807 ²⁶⁴	64.35 ¹⁹¹	60.47 ⁶¹	55.42 ¹⁸⁰
28.3	5.623 ⁶⁹	73.16 ³⁴	17.072 ⁷¹	54.33 ³²	21.543 ³⁰⁴	66.26 ¹⁴⁷	59.86 ⁶⁸	57.22 ¹³³
July 8.3	5.554 ⁹³	72.82 ³⁹	17.001 ⁹²	54.01 ³⁹	21.239 ³³⁵	67.73 ¹⁰⁰	59.18 ⁷⁴	58.55 ⁸³
18.3	5.461 ¹¹³	72.43 ⁴⁴	16.909 ¹¹³	53.62 ⁴⁴	20.904 ³⁵⁹	68.73 ⁵⁰	58.44 ⁷⁷	59.38 ³⁰
28.3	5.348 ¹²⁷	71.99 ⁵¹	16.796 ¹²⁷	53.18 ⁵⁰	20.545 ³⁷⁴	69.23 ¹	57.67 ⁸⁰	59.68 ²³
Aug. 7.2	5.221 ¹³⁶	71.48 ⁵³	16.669 ¹³⁷	52.68 ⁵³	20.171 ³⁷⁹	69.22 ⁵²	56.87 ⁸⁰	59.45 ⁷⁶
17.2	5.085 ¹³⁹	70.95 ⁵⁴	16.532 ¹³⁸	52.15 ⁵⁵	19.792 ³⁷⁴	68.70 ¹⁰²	56.07 ⁷⁸	58.69 ¹²⁸
27.2	4.946 ¹³³	70.41 ⁵⁷	16.394 ¹³⁴	51.60 ⁵⁵	19.418 ³⁵⁸	67.68 ¹⁵¹	55.29 ⁷⁵	57.41 ¹⁷⁷
Sept. 6.2	4.813 ¹¹⁹	69.84 ⁵¹	16.260 ¹¹⁸	51.05 ⁵³	19.060 ³³²	66.17 ¹⁹⁷	54.54 ⁷⁰	55.64 ²²³
16.1	4.694 ⁹⁶	69.33 ⁴⁶	16.142 ⁹⁸	50.52 ⁴⁷	18.728 ²⁹²	64.20 ²⁴¹	53.84 ⁶²	53.41 ²⁶⁵
26.1	4.598 ⁶⁵	68.87 ³⁷	16.044 ⁶⁵	50.05 ³⁷	18.436 ²⁴³	61.79 ²⁷⁸	53.22 ⁵³	50.76 ³⁰³
Oct. 6.1	4.533 ²⁸	68.50 ²³	15.979 ²⁷	49.68 ²³	18.193 ¹⁸¹	59.01 ³¹³	52.69 ⁴¹	47.73 ³³²
16.0	4.505 ¹⁸	68.27 ⁶	15.952 ¹⁷	49.45 ⁶	18.012 ¹¹³	55.88 ³⁴²	52.28 ³⁰	44.41 ³⁵⁹
26.0	4.523 ⁶⁷	68.21 ¹⁴	15.969 ⁶⁸	49.39 ¹⁴	17.899 ³⁵	52.46 ³⁶¹	51.98 ¹⁶	40.82 ³⁷⁵
Nov. 5.0	4.590 ¹¹⁸	68.35 ³⁷	16.037 ¹¹⁹	49.53 ³⁶	17.864 ⁴⁸	48.85 ³⁷³	51.82 ²	37.07 ³⁸³
15.0	4.708 ¹⁷¹	68.72 ⁶¹	16.156 ¹⁶⁹	49.89 ⁶¹	17.912 ¹³³	45.12 ³⁷⁷	51.80 ¹⁴	33.24 ³⁸¹
24.9	4.879 ²¹⁷	69.33 ⁸⁶	16.325 ²⁰⁰	50.50 ⁸⁵	18.045 ²¹⁵	41.35 ³⁷⁰	51.94 ²⁹	29.43 ³⁷⁰
Dec. 4.9	5.096 ²⁶⁰	70.19 ¹⁰⁷	16.543 ²⁶⁰	51.35 ¹⁰⁹	18.260 ²⁹⁵	37.65 ³⁵⁰	52.23 ⁴¹	25.73 ³⁴⁶
14.9	5.356 ²⁹⁴	71.26 ¹²⁹	16.803 ²⁹⁵	52.44 ¹²⁷	18.555 ³⁶⁵	34.15 ³²³	52.67 ⁵⁷	22.27 ³¹²
24.9	5.650 ³²²	72.55 ¹⁴⁵	17.098 ³²⁰	53.71 ¹⁴⁴	18.920 ⁴²⁵	30.92 ²⁸³	53.24 ⁶⁸	19.15 ²⁷⁰
34.8	5.972	74.00	17.418	55.15	19.345	28.09	53.92	16.45
Mean Place	2.248	54.95	13.694	36.13	18.404	65.92	56.263	55.53
Sec δ, Tan δ	1.039	-0.280	1.039	-0.281	1.978	+1.707	3.741	+3.605
D _φ α, D _ω α	+0.07	-0.01	+0.07	-0.01	+0.03	+0.08	0.00	+0.18
D _φ δ, D _ω δ	-0.3	-0.7	-0.3	-0.7	-0.3	-0.7	-0.3	-0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ξ° Libræ. Mag. 5.6		Piazzi 221. Mag. 5.8		β Lupi. Mag. 2.8		δ Libræ. Var. 4.8-6.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 14 52	° ' " -11 4	h m 14 52	° ' " +14 46	h m 14 53	° ' " -42 47	h m 14 56	° ' " - 8 11
Jan. 0.8	12.473	22.57	15.305	53.25	1.030	44.52	28.924	17.31
10.8	12.799 ³⁹⁶	24.21 ¹⁸⁴	15.617 ³¹²	50.93 ²³²	1.446 ⁴¹⁶	45.09 ⁵⁷	29.243 ³¹⁹	19.04 ¹⁷³
20.8	13.134 ³³⁵	25.90 ¹⁰⁰	15.942 ³²⁵	48.86 ²⁰⁷	1.876 ⁴³⁰	45.98 ⁶⁰	29.574 ³³¹	20.78 ¹⁷⁴
30.8	13.470 ³³⁰	27.56 ¹⁰⁶	16.271 ³²⁹	47.08 ¹⁷⁸	2.308 ⁴⁸²	47.17 ¹¹⁹	29.907 ³³³	22.43 ¹⁶⁵
Feb. 9.7	13.799 ³²⁶	29.12 ¹⁵⁶	16.595 ³²⁴	45.64 ¹⁴⁴	2.732 ⁴²⁴	48.62 ¹⁴⁵	30.233 ³²⁶	23.96 ¹⁵⁵
19.7	14.114 ³¹⁵	30.54 ¹⁴²	16.904 ³⁰⁰	44.62 ¹⁰²	3.138 ⁴⁰⁶	50.28 ¹⁶⁶	30.546 ³¹³	25.36 ¹³⁸
29.7	14.409 ²⁹⁵	31.80 ¹²⁶	17.194 ²⁹⁰	44.02 ⁶⁰	3.520 ³⁸²	52.09 ¹⁸¹	30.840 ²⁹⁴	26.54 ¹¹⁸
Mar. 10.7	14.679 ²⁷⁰	32.87 ¹⁰⁷	17.459 ²⁶⁵	43.84 ¹⁸	3.872 ³⁵²	54.01 ¹⁹²	31.110 ²⁷⁰	27.49 ⁹⁵
20.6	14.923 ²⁴⁴	33.72 ⁸⁵	17.697 ²³⁸	44.06 ²²	4.191 ³¹⁹	55.99 ¹⁹⁶	31.354 ²⁴⁴	28.21 ⁷²
30.6	15.138 ²¹⁵	34.35 ⁶³	17.904 ²⁰⁷	44.67 ⁶¹	4.476 ²⁸⁵	58.01 ²⁰²	31.571 ²¹⁷	28.69 ⁴⁸
Apr. 9.6	15.325 ¹⁸⁷	34.79 ⁴⁴	18.080 ¹⁷⁶	45.58 ⁹¹	4.723 ²⁴⁷	60.01 ²⁰⁰	31.760 ¹⁸⁹	28.96 ²⁷
19.5	15.483 ¹⁵⁸	35.04 ²⁵	18.225 ¹⁴⁵	46.78 ¹²⁰	4.931 ²⁰⁶	61.97 ¹⁹⁶	31.919 ¹⁵⁹	29.03 ⁷
29.5	15.612 ¹²⁹	35.12 ⁸	18.338 ¹¹³	48.16 ¹³⁸	5.101 ¹⁷⁰	63.86 ¹⁸⁹	32.061 ¹³²	29.03 ⁹
May 9.5	15.712 ¹⁰⁰	35.06 ⁶	18.420 ⁸²	49.68 ¹⁵²	5.231 ¹³⁰	65.65 ¹⁷⁹	32.153 ¹⁰²	28.94 ²⁵
19.5	15.784 ⁷²	34.89 ¹⁷	18.473 ⁵³	51.28 ¹⁰⁰	5.323 ⁹²	67.31 ¹⁶⁶	32.226 ⁷³	28.69 ³⁵
29.4	15.827 ⁴³	34.62 ²⁷	18.495 ²²	52.88 ¹⁶⁰	5.373 ⁵⁰	68.83 ¹⁶²	32.271 ⁴⁵	28.34 ⁴⁵
June 8.4	15.841 ¹⁴	34.29 ³³	18.490 ⁵	54.44 ¹⁵⁶	5.383 ¹⁰	70.17 ¹³⁴	32.288 ¹⁷	27.89 ⁴⁵
18.4	15.828 ¹³	33.90 ³⁹	18.456 ³⁴	55.90 ¹⁴⁶	5.353 ³⁰	71.29 ¹¹²	32.276 ¹²	27.41 ⁵⁴
28.4	15.788 ⁴⁰	33.46 ⁴⁴	18.396 ⁶⁰	57.23 ¹³³	5.285 ⁶⁸	72.19 ⁹⁰	32.239 ³⁷	26.87 ⁵⁶
July 8.3	15.722 ⁶⁶	33.00 ⁴⁶	18.312 ⁸⁴	58.37 ¹¹⁴	5.182 ¹⁰³	72.82 ⁶³	32.239 ⁶⁵	26.31 ⁵⁶
18.3	15.632 ⁹⁰	32.51 ⁴⁹	18.206 ¹⁰⁶	59.33 ⁹⁶	5.047 ¹³⁵	73.82 ⁸⁵	32.174 ⁹⁰	25.75 ⁵⁵
28.3	15.523 ¹⁰⁹	32.01 ⁵⁰	18.206 ¹²⁴	59.33 ⁷³	5.047 ¹⁶³	73.17 ⁷	32.084 ¹⁰⁷	25.20 ⁵⁴
Aug. 7.2	15.398 ¹²⁵	32.01 ⁵⁰	18.082 ¹³⁸	60.06 ⁵⁰	4.884 ¹⁸²	73.24 ²³	31.977 ¹²⁴	24.66 ⁵¹
17.2	15.264 ¹⁸⁴	31.51 ⁴⁹	17.944 ¹⁴⁷	60.56 ²⁴	4.702 ¹⁹⁵	73.01 ⁵²	31.853 ¹³⁵	24.15 ⁴⁸
27.2	15.127 ¹³⁷	31.02 ⁴⁸	17.797 ¹⁴⁹	60.80 ¹	4.507 ¹⁹⁶	72.49 ⁸¹	31.718 ¹³⁸	23.67 ⁴¹
Sept. 6.2	14.993 ¹³⁴	30.54 ⁴³	17.648 ¹⁴⁵	60.79 ²⁹	4.309 ¹⁹⁰	71.68 ¹⁰⁶	31.580 ¹³⁴	23.26 ³⁴
16.1	14.993 ¹²²	30.11 ³⁵	17.503 ¹³³	60.50 ⁵⁷	4.119 ¹⁷¹	70.60 ¹²⁸	31.446 ¹²⁴	22.92 ²⁶
26.1	14.871 ⁹⁸	29.76 ²⁷	17.370 ¹¹¹	59.93 ⁸⁵	3.948 ¹⁴¹	69.32 ¹⁴⁶	31.322 ¹⁰²	22.66 ¹⁴
Oct. 6.1	14.773 ⁷⁰	29.49 ¹⁴	17.259 ⁸⁴	59.08 ¹¹²	3.807 ¹⁰⁰	67.86 ¹⁵⁷	31.220 ⁷⁴	22.52 ¹
16.1	14.703 ³⁴	29.35 ²	17.175 ⁴⁸	57.96 ¹⁴¹	3.707 ⁴⁷	66.29 ¹⁶¹	31.146 ³⁸	22.53 ¹⁷
26.0	14.669 ¹¹	29.37 ²⁰	17.127 ⁶	56.55 ¹⁶⁸	3.660 ⁹	64.68 ¹⁵⁸	31.108 ⁵	22.70 ³⁷
Nov. 5.0	14.680 ⁵⁹	29.57 ⁴¹	17.121 ⁴¹	54.87 ¹⁹²	3.669 ⁷⁴	63.10 ¹⁴⁸	31.113 ⁵⁵	23.07 ⁵⁷
15.0	14.739 ¹⁰⁹	29.98 ⁶⁴	17.162 ⁹¹	52.95 ²¹⁶	3.743 ¹⁴²	61.62 ¹³⁰	31.168 ¹⁰¹	23.64 ⁸¹
24.9	14.848 ¹⁶⁰	30.62 ⁸⁶	17.253 ¹⁴²	50.79 ²³²	3.885 ²⁰⁶	60.32 ¹⁰⁴	31.269 ¹⁵³	24.45 ¹⁰³
Dec. 4.9	15.008 ²⁰⁸	31.48 ¹⁰⁰	17.395 ¹⁸⁸	48.47 ²⁴⁴	4.091 ²⁶⁸	59.28 ⁷⁴	31.422 ²⁰¹	25.48 ¹²⁴
14.9	15.216 ²⁴⁹	32.57 ¹³⁰	17.583 ²³³	46.03 ²⁵¹	4.359 ³²¹	58.54 ⁴²	31.623 ²⁴²	26.72 ¹⁴³
24.9	15.465 ²⁸⁴	33.87 ¹⁴⁵	17.816 ²⁶⁰	43.52 ²⁴⁹	4.680 ³⁶⁷	58.12 ⁴	31.865 ²⁸⁰	28.14 ¹⁵⁸
34.8	15.749 ³¹²	35.32 ¹⁵⁹	18.085 ²⁹⁷	41.03 ²³⁹	5.047 ³⁹⁹	58.08 ³²	32.145 ³⁰⁴	29.72 ¹⁶⁶
34.8	16.061	36.91	18.382	38.64	5.446	58.40	32.449	31.38
Mean Place	12.430	16.88	15.264	66.49	1.265	47.39	28.892	10.73
Sec δ , Tan δ	1.019	-0.196	1.034	+0.264	1.363	-0.926	1.010	-0.144
$D\psi\alpha$, $D\omega\alpha$	+0.07	-0.01	+0.06	+0.01	+0.08	-0.04	+0.06	-0.01
$D\psi\delta$, $D\omega\delta$	-0.3	-0.7	-0.3	-0.7	-0.3	-0.7	-0.3	-0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Boötis. Mag. 3.6		γ Scorpii. Mag. 3.4		ψ Boötis. Mag. 4.7		ϵ Boötis. Mag. 5.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 14 58	° ' " +40 42	h m 14 59	° ' " -24 57	h m 15 0	° ' " +27 15	h m 15 3	° ' " +25 11
	s "	"	s "	"	s "	"	s "	"
Jan. 0.8	46.702	57.28	8.952	10.78	50.683	71.99	36.609	28.43
10.8	47.047 ⁸⁴⁵	54.62 ²⁶⁶	9.300 ³⁴⁸	11.93 ¹¹⁵	51.000 ³¹⁷	69.45 ²⁶⁴	36.923 ³¹⁴	25.91 ²⁵²
20.8	47.414 ³⁶⁷	52.39 ²²³	9.659 ³⁵⁹	13.25 ¹³²	51.334 ³³⁴	67.24 ²²¹	37.253 ³³⁰	23.69 ²²²
30.8	47.791 ³⁷⁷	50.67 ¹⁷²	10.021 ³⁶²	14.68 ¹⁴³	51.675 ³⁴¹	65.44 ¹⁸⁰	37.592 ³³⁹	21.87 ¹⁸²
Feb. 9.7	48.167 ³⁷⁶	49.51 ¹¹⁶	10.375 ³⁵⁴	16.18 ¹⁶⁰	52.014 ³³⁹	64.10 ¹³⁴	37.928 ³³⁶	20.50 ¹³⁷
19.7	48.532 ³⁶⁵	48.95 ⁵⁶	10.716 ³⁴¹	17.71 ¹⁵³	52.342 ³²⁸	63.27 ⁸³	38.251 ³²³	19.61 ⁸⁹
29.7	48.875 ³⁴³	49.00 ⁵	11.038 ³²²	19.21 ¹⁶⁰	52.649 ³⁰⁷	62.96 ³¹	38.558 ³⁰⁷	19.23 ³⁸
Mar. 10.7	49.189 ³¹⁴	49.62 ⁶²	11.334 ²⁹⁶	20.65 ¹⁴⁴	52.933 ²⁸⁴	63.16 ²⁰	38.841 ²⁸³	19.35 ¹²
20.6	49.470 ²⁸¹	50.78 ¹¹⁶	11.603 ²⁶⁹	22.00 ¹³⁵	53.187 ²⁵⁴	63.85 ⁶⁹	39.094 ²⁵³	19.95 ⁶⁰
30.6	49.710 ²⁴⁰	52.42 ¹⁶⁴	11.844 ²⁴¹	23.25 ¹²⁵	53.408 ²²¹	64.98 ¹¹³	39.316 ²²²	20.97 ¹⁰²
Apr. 9.6	49.909 ¹⁹⁹	54.45 ²⁰³	12.055 ²¹¹	24.37 ¹¹²	53.595 ¹⁸⁷	66.48 ¹⁵⁰	39.506 ¹⁹⁰	22.38 ¹⁴¹
19.5	50.064 ¹⁵⁵	56.79 ²³⁴	12.236 ¹⁸¹	25.37 ¹⁰⁰	53.747 ¹⁵²	68.27 ¹⁷⁹	39.660 ¹⁵⁴	24.07 ¹⁶⁹
29.5	50.176 ¹¹²	59.34 ²⁵⁵	12.385 ¹⁴⁹	26.25 ⁸⁸	53.864 ¹¹⁷	70.28 ²⁰¹	39.782 ¹²²	25.97 ¹⁹⁰
May 9.5	50.245 ⁶⁹	61.99 ²⁶⁵	12.503 ¹¹⁸	27.00 ⁷⁵	53.946 ⁸²	72.43 ²¹⁵	39.868 ⁸⁶	28.04 ²⁰⁷
19.5	50.271 ²⁶	64.65 ²⁶⁶	12.590 ⁸⁷	27.64 ⁶⁴	53.994 ⁴⁸	74.62 ²¹⁹	39.921 ⁵³	30.15 ²¹¹
29.4	50.257 ¹⁴	67.23 ²⁵⁸	12.645 ⁵⁵	28.16 ⁵²	54.008 ¹⁴	76.78 ²¹⁶	39.942 ²¹	32.24 ²⁰⁹
June 8.4	50.205 ⁵²	69.66 ²⁴³	12.668 ²³	28.56 ⁴⁰	53.989 ¹⁹	78.84 ²⁰⁶	39.931 ¹¹	34.24 ²⁰⁰
18.4	50.116 ⁸⁹	71.85 ²¹⁹	12.659 ⁹	28.82 ²⁶	53.940 ⁴⁹	80.75 ¹⁹¹	39.888 ⁴³	36.10 ¹⁸⁶
28.4	49.994 ¹²²	73.76 ¹⁹¹	12.621 ³⁸	28.97 ¹⁵	53.862 ⁷⁸	82.43 ¹⁶⁸	39.817 ⁷¹	37.76 ¹⁶⁶
July 8.3	49.841 ¹⁵³	75.33 ¹⁵⁷	12.552 ⁶⁹	28.99 ²	53.756 ¹⁰⁶	83.88 ¹⁴⁵	39.721 ⁹⁶	39.18 ¹⁴²
18.3	49.665 ¹⁷⁶	76.52 ¹¹⁹	12.457 ⁹⁵	28.87 ¹²	53.628 ¹²⁸	85.02 ¹¹⁴	39.598 ¹²³	40.31 ¹¹³
28.3	49.467 ¹⁹⁶	77.30 ⁷⁸	12.338 ¹¹⁹	28.60 ²⁷	53.479 ¹⁴⁹	85.84 ⁸²	39.456 ¹⁴²	41.16 ⁸⁵
Aug. 7.2	49.252 ²¹⁵	77.65 ³⁵	12.202 ¹³⁶	28.21 ³⁹	53.314 ¹⁶⁵	86.33 ¹⁴	39.298 ¹⁵⁸	41.66 ⁵⁰
17.2	49.030 ²²²	77.57 ⁸	12.064 ¹⁴⁸	27.70 ⁵¹	53.141 ¹⁷³	86.47 ⁴⁹	39.129 ¹⁶⁹	41.85 ¹⁹
27.2	48.806 ²²⁴	77.05 ⁵²	11.902 ¹⁵²	27.08 ⁶²	52.964 ¹⁷⁷	86.24 ²³	38.957 ¹⁷²	41.67 ¹⁸
Sept. 6.2	48.589 ²¹⁷	76.11 ⁹⁴	11.753 ¹⁴⁹	26.34 ⁷⁴	52.792 ¹⁷²	86.24 ⁵⁹	38.957 ¹⁶⁹	41.67 ⁵⁰
16.1	48.387 ²⁰²	74.72 ¹³⁹	11.617 ¹³⁶	25.56 ⁷⁸	52.632 ¹⁶⁰	84.71 ⁹⁴	38.788 ¹⁵⁷	41.17 ⁸⁷
26.1	48.209 ¹⁷⁸	72.93 ¹⁷⁹	11.505 ¹¹²	24.75 ⁸¹	52.492 ¹⁴⁰	83.41 ¹³⁰	38.631 ¹³⁷	40.30 ¹²¹
Oct. 6.1	48.064 ¹⁴⁵	70.76 ²¹⁷	11.424 ⁸¹	23.95 ⁸⁰	52.381 ¹¹¹	81.76 ¹⁶⁵	38.494 ¹⁰⁸	39.09 ¹⁵⁵
16.1	47.961 ¹⁰³	68.23 ²⁵³	11.384 ⁴⁰	23.23 ⁷²	52.307 ⁷⁴	79.80 ¹⁹⁶	38.314 ⁷²	37.54 ¹⁸⁶
26.0	47.908 ⁵³	65.41 ²⁸²	11.390 ⁶	22.62 ⁶¹	52.278 ²⁹	77.53 ²²⁷	38.285 ²⁹	35.68 ²¹⁶
Nov. 5.0	47.910 ²	62.32 ³⁰⁹	11.449 ⁵⁹	22.62 ⁴⁶	52.278 ¹⁹	77.53 ²⁵³	38.285 ¹⁸	33.52 ²⁴²
15.0	47.971 ⁶¹	59.06 ³²⁶	11.562 ¹¹³	22.16 ²³	52.297 ⁷¹	75.00 ²⁷³	38.303 ⁷¹	31.10 ²⁶⁵
24.9	48.091 ¹²⁰	55.69 ³³⁷	11.730 ¹⁶⁸	21.93 ²	52.368 ¹²⁵	72.27 ²⁸⁹	38.374 ¹²⁵	28.45 ²⁸⁰
Dec. 4.9	48.091 ¹⁸⁰	55.69 ³⁴⁰	11.730 ²²⁰	21.91 ²⁵	52.493 ¹⁷⁶	69.38 ²⁹⁶	38.499 ¹⁷⁵	25.65 ²⁸⁹
14.9	48.271 ²³⁷	52.29 ³³³	11.950 ²⁶⁵	22.16 ⁵⁰	52.669 ²²⁵	66.42 ²⁹⁷	38.674 ²²²	22.76 ²⁸⁹
24.9	48.508 ²⁸²	48.96 ³¹³	12.215 ³⁰⁴	22.66 ⁷⁷	52.894 ²⁶⁶	63.45 ²⁸⁷	38.896 ²⁶³	19.87 ²⁸³
34.8	48.790 ³²⁴	45.83 ²⁸⁷	12.519 ³³¹	23.43 ¹⁰⁰	53.160 ²⁹⁹	60.58 ²⁶⁸	39.159 ²⁹⁶	17.04 ²⁶³
	49.114	42.96	12.850	24.43	53.459	57.90	39.455	14.39 ²⁶⁵
Mean Place	46.922	76.74	9.007	8.92	50.764	88.36	36.691	44.23
Sec δ , Tan δ	1.319	+0.861	1.103	-0.465	1.125	+0.516	1.105	+0.470
$D\phi a$, $D\alpha a$	+0.05	+0.04	+0.07	-0.02	+0.05	+0.02	+0.05	+0.02
$D\phi \delta$, $D\alpha \delta$	-0.3	-0.7	-0.3	-0.7	-0.3	-0.7	-0.3	-0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ Lupi. Mag. 3.5		♃ Libræ. Mag. 4.7		♏ Serpentis. Mag. 5.4		♋ Triang. Aust. Mag. 3.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 15 6	° ' " -51 46	h m 15 7	° ' " -19 28	h m 15 11	° ' " + 5 14	h m 15 11	° ' " -68 22
Jan. 0.9	14.027	44.51	25.722	32.34	0.693	51.46	1.38	6.94
10.8	14.497	44.59	26.052	33.62	0.997	49.39	2.10	6.36
20.8	14.989	45.06	26.397	35.02	1.314	47.44	2.86	6.27
30.8	15.486	45.91	26.745	36.48	1.637	45.68	3.64	6.67
Feb. 9.7	15.978	47.10	27.089	37.95	1.958	44.18	4.41	7.54
19.7	16.455	48.58	27.420	39.38	2.287	42.99	5.17	8.85
29.7	16.907	50.32	27.733	40.73	2.561	42.14	5.89	10.55
Mar. 10.7	17.329	52.24	28.025	41.98	2.834	41.62	6.57	12.58
20.6	17.715	54.34	28.291	43.08	3.082	41.45	7.20	14.90
30.6	18.062	56.53	28.529	44.04	3.303	41.62	7.76	17.46
Apr. 9.6	18.366	58.80	28.739	44.86	3.497	42.07	8.25	20.18
19.6	18.626	61.08	28.921	45.52	3.661	42.77	8.65	23.02
29.5	18.841	63.35	29.073	46.05	3.798	43.68	8.99	25.93
May 9.5	19.008	65.56	29.194	46.46	3.904	44.73	9.24	28.84
19.5	19.125	67.67	29.286	46.75	3.981	45.89	9.40	31.69
29.4	19.193	69.66	29.347	46.93	4.030	47.09	9.48	34.42
June 8.4	19.211	71.47	29.377	47.02	4.049	48.30	9.46	36.97
18.4	19.180	73.05	29.377	47.03	4.040	49.45	9.36	39.28
28.4	19.100	74.39	29.345	46.94	4.003	50.55	9.17	41.30
July 8.3	18.974	75.43	29.285	46.78	3.939	51.55	8.91	42.96
18.3	18.809	76.15	29.200	46.52	3.850	52.43	8.58	44.22
28.3	18.608	76.53	29.089	46.19	3.740	53.16	8.19	45.05
Aug. 7.3	18.381	76.56	28.961	45.78	3.613	53.74	7.76	45.42
17.2	18.138	76.21	28.820	45.30	3.474	54.15	7.31	45.30
27.2	17.888	75.49	28.673	44.76	3.329	54.37	6.84	44.69
Sept. 6.2	17.645	74.44	28.528	44.18	3.186	54.40	6.39	43.61
16.1	17.423	73.08	28.393	43.59	3.051	54.22	5.98	42.09
26.1	17.234	71.45	28.280	43.01	2.935	53.83	5.62	40.19
Oct. 6.1	17.093	69.63	28.195	42.49	2.844	53.20	5.34	37.96
16.1	17.009	67.68	28.147	42.05	2.787	52.34	5.15	35.49
26.0	16.993	65.69	28.145	41.76	2.771	51.23	5.08	32.87
Nov. 5.0	17.053	63.74	28.193	41.62	2.801	49.89	5.13	30.22
15.0	17.190	61.92	28.293	41.69	2.879	48.32	5.30	27.65
25.0	17.404	60.33	28.446	41.99	3.008	46.55	5.60	25.23
Dec. 4.9	17.691	59.01	28.650	42.51	3.186	44.62	6.01	23.09
14.9	18.044	58.03	28.899	43.28	3.404	42.57	6.54	21.31
24.9	18.450	57.43	29.185	44.26	3.662	40.46	7.15	19.93
34.8	18.899	57.23	29.501	45.44	3.948	38.36	7.83	19.02
Mean Place	14.526	48.79	25.778	28.82	0.727	61.88	2.806	13.66
Séc δ, Tan δ	1.616	-1.270	1.061	-0.354	1.004	+0.092	2.714	-2.522
D ψ α , D ω α	+0.03	-0.06	+0.07	-0.02	+0.06	0.00	+0.11	-0.11
D ψ δ , D ω δ	-0.3	-0.7	-0.3	-0.7	-0.3	-0.7	-0.3	-0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	δ Boötis. Mag. 3.5		β Libras. Mag. 2.7		γ Ursae Minoris. Mag. 3.1		μ Boötis pr. Mag. 4.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 15 12	° ' +33 37	h m 15 12	° ' - 9 4	h m 15 20	° ' +72 7	h m 15 21	° ' +37 39
	s	"	s	"	s	"	s	"
Jan. 0.9	6.764	21.60	29.027	31.77	48.93	35.68	18.682	58.19
10.8	7.084 ³²⁰	18.93 ²⁶⁷	29.340 ³¹³	33.30 ¹⁶²	49.53 ⁶⁰	32.06 ²⁷²	19.002 ³²⁰	55.43 ²⁷⁶
20.8	7.425 ³⁴¹	16.63 ²³⁰	29.667 ³²⁷	35.03 ¹⁰⁴	50.22 ⁶⁹	30.77 ²¹⁹	19.348 ³⁴⁶	53.06 ²³⁷
30.8	7.778 ³⁵³	14.77 ¹⁸⁶	29.999 ³³²	36.62 ¹⁶⁹	50.96 ⁷⁴	29.18 ¹⁵⁹	19.707 ³⁵⁹	51.16 ¹⁹⁰
Feb. 9.7	8.129 ³⁵¹	13.43 ¹³⁴	30.327 ³²⁸	38.11 ¹⁴⁹	51.73 ⁷⁷	28.26 ⁹²	20.069 ³⁶²	49.80 ¹³⁶
	344	80	318	134	76	25	356	80
19.7	8.473	12.63 ²³	30.645	39.45	52.49	28.01	20.425	49.00
29.7	8.800 ³²⁷	12.40 ²³	30.945 ³⁰⁰	40.59 ¹¹⁴	53.23 ⁷⁴	28.46 ⁴⁵	20.766 ³⁴¹	48.80 ²⁰
Mar. 10.7	9.102 ³⁰²	12.73 ³³	31.225 ²⁸⁰	41.52 ⁹³	53.92 ⁶⁹	29.55 ¹⁰⁹	21.083 ³¹⁷	49.17 ³⁷
20.6	9.375 ²⁷³	13.58 ⁸⁵	31.481 ²⁵⁶	42.22 ⁷⁰	54.54 ⁶²	31.24 ¹⁶⁹	21.372 ²⁸⁰	50.11 ⁹⁴
30.6	9.615 ²⁴⁰	14.91 ¹³³	31.712 ²³¹	42.70 ⁴⁸	55.06 ⁵²	33.45 ²²¹	21.626 ²⁵⁴	51.54 ¹⁴³
	204	173	202	26	43	264	217	186
Apr. 9.6	9.819	16.64	31.914	42.96	55.49	36.09	21.843	53.40
19.6	9.985 ¹⁶⁶	18.70 ²⁰⁶	32.089 ¹⁷⁵	43.03 ⁷	55.80 ³¹	39.04 ²⁹⁵	22.021 ¹⁷⁸	55.59 ²¹⁹
29.5	10.113 ¹²⁸	20.97 ²²⁷	32.237 ¹⁴⁸	42.94 ⁹	55.98 ¹⁸	42.19 ³¹⁵	22.260 ¹³⁹	58.03 ²⁴⁴
May 9.5	10.204 ⁹¹	23.39 ²⁴²	32.355 ¹¹⁸	42.70 ²⁴	56.05 ⁷	45.43 ³²⁴	22.158 ⁹⁸	60.63 ²⁶⁰
19.5	10.256 ⁵²	25.87 ²⁴⁸	32.445 ⁹⁰	42.36 ³⁴	56.00 ⁵	48.65 ³²²	22.314 ⁵⁶	63.28 ²⁶⁵
	15	243	59	42	16	307	17	260
29.4	10.271	28.30	32.504	41.94	55.84	51.72	22.331	65.88
June 8.4	10.250 ²¹	30.63 ²³³	32.534 ³⁰	41.47 ⁴⁷	55.56 ²⁸	54.59 ²⁶⁷	22.309 ²²	68.38 ²⁵⁰
18.4	10.195 ⁵⁵	32.77 ²¹⁴	32.536 ²	40.95 ⁵²	55.17 ³⁹	57.15 ²⁵⁶	22.250 ⁵⁹	70.69 ²³¹
28.4	10.108 ⁸⁷	34.68 ¹⁹¹	32.508 ²⁸	40.42 ⁵³	54.71 ⁴⁶	59.33 ²¹⁸	22.156 ⁹⁴	72.75 ²⁰⁶
July 8.3	9.990 ¹¹⁸	36.29 ¹⁶¹	32.452 ⁵⁶	39.88 ⁵⁴	54.17 ⁵⁴	61.08 ¹⁷⁵	22.028 ¹²⁸	74.50 ¹⁷⁵
	143	129	82	53	61	128	156	141
18.3	9.847	37.58	32.370	39.35	53.56	62.36	21.872	75.91
28.3	9.680 ¹⁶⁷	38.51 ⁹³	32.266 ¹⁰⁴	38.83 ⁵²	52.91 ⁶⁵	63.14 ⁷⁸	21.692 ¹⁸⁰	76.93 ¹⁰²
Aug. 7.3	9.497 ¹⁸³	39.05 ⁵⁴	32.143 ¹²³	38.33 ⁵⁰	52.22 ⁶⁹	63.40 ²⁶	21.492 ²⁰⁰	77.55 ⁶²
17.2	9.302 ¹⁹⁵	39.20 ¹⁵	32.008 ¹³⁵	37.87 ⁴⁶	51.51 ⁷¹	63.13 ²⁷	21.278 ²¹⁴	77.75 ²⁰
27.2	9.103 ¹⁹⁹	38.95 ²⁵	31.865 ¹⁴³	37.45 ⁴²	50.80 ⁷¹	62.33 ⁸⁰	21.059 ²¹⁹	77.52 ²³
	197	66	141	35	60	130	217	66
Sept. 6.2	8.906	38.29	31.724	37.10	50.11	61.03	20.842	76.86
16.1	8.720 ¹⁸⁶	37.23 ¹⁰⁶	31.592 ¹³²	36.83 ²⁷	49.45 ⁶⁶	59.23 ¹⁸⁰	20.636 ²⁰⁶	75.78 ¹⁰⁸
26.1	8.556 ¹⁶⁴	35.79 ¹⁴⁴	31.479 ¹¹³	36.66 ¹⁷	48.85 ⁶⁰	56.97 ²²⁶	20.449 ¹⁸⁷	74.28 ¹⁵⁰
Oct. 6.1	8.419 ¹³⁷	33.96 ¹⁸³	31.393 ⁸⁶	36.61 ⁵	48.32 ⁵³	54.30 ²⁶⁷	20.291 ¹⁵⁸	72.40 ¹⁸⁸
16.1	8.321 ⁹⁸	31.79 ²¹⁷	31.341 ⁵²	36.72 ¹¹	47.87 ⁴⁵	51.25 ³⁰⁵	20.171 ¹²⁰	70.14 ²²⁶
	53	249	10	29	35	335	74	269
26.0	8.268	29.30	31.331	37.01	47.52	47.90	20.097	67.55
Nov. 5.0	8.265 ³	26.55 ²⁷⁵	31.369 ³⁸	37.50 ⁴⁹	47.30 ²²	44.31 ³⁵⁹	20.075 ²²	64.69 ²⁸⁶
15.0	8.318 ⁵³	23.57 ²⁹⁸	31.456 ⁸⁷	38.21 ⁷¹	47.20 ¹⁰	40.57 ³⁷⁴	20.109 ³⁴	61.59 ³¹⁰
25.0	8.426 ¹⁰⁸	20.44 ³¹³	31.595 ¹³⁹	39.13 ⁹²	47.23 ³	36.77 ³⁸⁰	20.204 ⁹⁵	58.35 ³²⁴
Dec. 4.9	8.590 ¹⁶⁴	17.25 ³¹⁹	31.781 ¹⁸⁶	40.26 ¹¹³	47.41 ¹⁸	33.00 ³⁷⁷	20.355 ¹⁵¹	55.04 ³³¹
	215	317	231	131	30	380	206	328
14.9	8.805	14.08	32.012	41.57	47.71	29.40	20.561	51.76
24.9	9.065 ²⁶⁰	11.04 ³⁰⁴	32.280 ²⁶⁸	43.04 ¹⁴⁷	48.14 ⁴³	26.04 ³³⁶	20.816 ²⁵⁵	48.60 ³¹⁶
34.8	9.363 ²⁹⁸	8.20 ²⁸⁴	32.576 ²⁹⁶	44.60 ¹⁵⁶	48.67 ⁵³	23.06 ²⁹⁸	21.112 ²⁹⁶	45.67 ²⁹³
Mean Place	6.987	39.12	29.068	25.32	51.174	58.30	19.029	76.22
Sec δ , Tan δ	1.201	+0.665	1.013	-0.160	3.258	+3.101	1.263	+0.772
$D_{\phi} \alpha$, $D_{\alpha} \alpha$	+0.05	+0.03	+0.06	-0.01	0.00	+0.13	+0.05	+0.03
$D_{\phi} \delta$, $D_{\alpha} \delta$	-0.3	-0.7	-0.3	-0.7	-0.3	-0.8	-0.3	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ 1 Serpentis. Mag. 5.5			ζ Draconis. Mag. 3.5			32 Libræ. Mag. 5.9			β Coronæ Borealis. Mag. 3.7						
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.				
	h	m	°	h	m	°	h	m	°	h	m	°				
	15	21	+15	42	15	23	+59	15	15	23	-16	25	15	24	+29	23
	s	"	"	"	s	"	"	"	"	s	"	"	s	"	"	"
Jan. 0.9	53.418		68.51		2.625		14.29		30.867		32.59		21.697		24.40	
10.8	53.714 ²⁹⁶		66.15 ²³⁶		3.037 ⁴¹²		11.43 ²⁸⁶		31.185 ³¹⁸		33.89 ¹³⁰		22.001 ³⁰⁴		21.74 ²⁶⁶	
20.8	54.028 ³¹⁴		64.02 ²¹³		3.494 ⁴⁵⁷		9.08 ²³⁵		31.518 ³³³		35.28 ¹³⁹		22.327 ³²⁶		19.41 ²³³	
30.8	54.351 ³²³		62.17 ¹⁸⁵		3.981 ⁴⁸⁷		7.30 ¹⁷⁸		31.859 ³⁴¹		36.69 ¹⁴¹		22.665 ³³⁸		17.49 ¹⁹²	
Feb. 9.8	54.675 ³²⁴		60.68 ¹⁴⁹		4.481 ⁵⁰⁰		6.15 ¹¹⁵		32.198 ³³⁹		38.08 ¹³⁹		23.005 ³⁴⁰		16.04 ¹⁴⁵	
	315		109		495		47		328		132		335		92	
19.7	54.990		59.59		4.976		5.68		32.526		39.40		23.340		15.12	
29.7	55.290 ³⁰⁰		58.93 ⁶⁶		5.456 ⁴⁸⁰		5.89 ²¹		32.841 ³¹⁵		40.61 ¹²¹		23.660 ³²⁰		14.73 ³⁹	
Mar. 10.7	55.571 ²⁸¹		58.71 ²²		5.902 ⁴⁴⁶		6.73 ⁸⁴		33.136 ²⁹⁵		41.68 ¹⁰⁷		23.958 ²⁹⁸		14.88 ¹⁵	
20.6	55.828 ²⁵⁷		58.92 ²¹		6.305 ⁴⁰³		8.18 ¹⁴⁵		33.408 ²⁷²		42.60 ⁹²		24.231 ²⁷³		15.54 ⁶⁶	
30.6	56.059 ²³¹		59.53 ⁶¹		6.655 ³⁵⁰		10.18 ²⁰⁰		33.655 ²⁴⁷		43.35 ⁷⁵		24.474 ²⁴³		16.68 ¹¹⁴	
	201		95		289		243		220		59		210		154	
Apr. 9.6	56.260		60.48		6.944		12.61		33.875		43.94		24.684		18.22	
19.6	56.432 ¹⁷²		61.73 ¹²⁵		7.169 ²²⁵		15.39 ²⁷⁸		34.068 ¹⁹³		44.36 ⁴²		24.860 ¹⁷⁶		20.08 ¹⁸⁶	
29.5	56.574 ¹⁴²		63.20 ¹⁴⁷		7.325 ¹⁵⁶		18.40 ³⁰¹		34.233 ¹⁶⁵		44.66 ³⁰		25.002 ¹⁴²		22.20 ²¹²	
May 9.5	56.684 ¹¹⁰		64.85 ¹⁶⁵		7.411 ⁸⁶		21.54 ³¹⁴		34.369 ¹³⁶		44.84 ¹⁸		25.107 ¹⁰⁵		24.47 ²²⁷	
19.5	56.764 ⁸⁰		66.57 ¹⁷²		7.430 ¹⁹		24.69 ³¹⁵		34.475 ¹⁰⁶		44.90 ⁶		25.176 ⁶⁹		26.82 ²³⁵	
	49		176		50		305		75		3		34		235	
29.5	56.813		68.33		7.380		27.74		34.550		44.87		25.210		29.17	
June 8.4	56.830 ¹⁷		70.06 ¹⁷³		7.269 ¹¹¹		30.62 ²⁸⁸		34.594 ⁴⁴		44.78 ⁹		25.210 ⁰		31.44 ²²⁷	
18.4	56.816 ¹⁴		71.68 ¹⁶²		7.098 ¹⁷¹		33.22 ²⁶⁰		34.607 ¹³		44.62 ¹⁶		25.174 ³⁶		33.55 ²¹¹	
28.4	56.774 ⁴²		73.19 ¹⁵¹		6.873 ²²⁵		35.49 ²²⁷		34.589 ¹⁸		44.41 ²¹		25.106 ⁶⁸		35.46 ¹⁹¹	
July 8.3	56.703 ⁷¹		74.53 ¹³⁴		6.599 ²⁷⁴		37.36 ¹⁸⁷		34.540 ⁴⁹		44.14 ²⁷		25.008 ⁹⁸		37.11 ¹⁶⁵	
	97		112		314		143		78		31		126		136	
18.3	56.606		75.65		6.285		38.79		34.462		43.83		24.882		38.47	
28.3	56.486 ¹²⁰		76.56 ⁹¹		5.937 ³⁴⁸		39.75 ⁹⁶		34.359 ¹⁰³		43.47 ³⁶		24.732 ¹⁵⁰		39.50 ¹⁰³	
Aug. 7.3	56.347 ¹³⁹		77.20 ⁶⁴		5.565 ³⁷²		40.21 ⁴⁶		34.235 ¹²⁴		43.07 ⁴⁰		24.562 ¹⁷⁰		40.17 ⁶⁷	
17.2	56.196 ¹⁵¹		77.60 ⁴⁰		5.178 ³⁸⁷		40.16 ⁵		34.096 ¹³⁹		42.63 ⁴⁴		24.379 ¹⁸³		40.48 ³¹	
27.2	56.037 ¹⁵⁹		77.71 ¹¹		4.787 ³⁹¹		39.61 ⁵⁵		33.948 ¹⁴⁸		42.16 ⁴⁷		24.189 ¹⁹⁰		40.41 ⁷	
	159		18		386		108		148		47		190		44	
Sept. 6.2	55.878		77.53		4.401		38.53		33.800		41.69		23.999		39.97	
16.2	55.727 ¹⁵¹		77.07 ⁴⁶		4.034 ³⁶⁷		36.98 ¹⁵⁵		33.660 ¹⁴⁰		41.22 ⁴⁷		23.818 ¹⁸¹		39.13 ⁸⁴	
26.1	55.592 ¹³⁵		76.31 ⁷⁶		3.698 ³³⁶		34.95 ²⁰³		33.536 ¹²⁴		40.79 ⁴³		23.655 ¹⁶³		37.92 ¹²¹	
Oct. 6.1	55.483 ¹⁰⁹		75.26 ¹⁰⁵		3.404 ²⁹⁴		32.49 ²⁴⁶		33.440 ⁹⁶		40.43 ³⁶		23.518 ¹³⁷		36.34 ¹⁵⁸	
16.1	55.407 ⁷⁶		73.92 ¹³⁴		3.165 ²³⁹		29.66 ²⁸³		33.379 ⁶¹		40.15 ²⁸		23.417 ¹⁰¹		34.43 ¹⁹¹	
	36		162		175		318		18		14		60		225	
26.0	55.371		72.30		2.990		26.48		33.361		40.01		23.357		32.18	
Nov. 5.0	55.380 ⁹		70.42 ¹⁸⁸		2.890 ¹⁰⁰		23.03 ³⁴⁵		33.391 ³⁰		40.05 ⁴		23.347 ¹⁰		29.66 ²⁵²	
15.0	55.439 ⁵⁹		68.30 ²¹²		2.870 ²⁰		19.40 ³⁶³		33.474 ⁸³		40.27 ²²		23.389 ⁴²		26.91 ²⁷⁵	
25.0	55.549 ¹¹⁰		66.00 ²³⁰		2.935 ⁶⁵		15.66 ³⁷⁴		33.608 ¹³⁴		40.70 ⁴³		23.486 ⁹⁷		23.98 ²⁹³	
Dec. 4.9	55.709 ¹⁶⁰		63.56 ²⁴⁴		3.084 ¹⁴⁹		11.92 ³⁷⁴		33.792 ¹⁸⁴		41.35 ⁶⁵		23.636 ¹⁵⁰		20.96 ³⁰²	
	205		251		233		364		230		86		201		304	
14.9	55.914		61.05		3.317		8.28		34.022		42.21		23.837		17.92	
24.9	56.159 ²⁴⁵		58.53 ²⁵²		3.625 ³⁰⁸		4.87 ³⁴¹		34.293 ²⁷¹		43.26 ¹⁰⁵		24.083 ²⁴⁶		14.95 ²⁹⁷	
34.9	56.438 ²⁷⁹		56.10 ²⁴³		3.999 ³⁷⁴		1.78 ³⁰⁹		34.594 ³⁰¹		44.46 ¹²⁰		24.365 ²⁸²		12.16 ²⁷⁹	
Mean Place	53.543		81.54		3.659		35.64		30.975		28.01		21.949		40.60	
Sec δ , Tan δ	1.039		+0.281		1.956		+1.681		1.043		-0.295		1.148		+0.563	
$D\psi \alpha$, $D\omega \alpha$	+0.06		+0.01		+0.03		+0.07		+0.07		-0.01		+0.05		+0.02	
$D\psi \delta$, $D\omega \delta$	-0.3		-0.8		-0.3		-0.8		-0.3		-0.3		-0.2		-0.8	

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ν^1 Boötis. Mag. 5.2		γ Lupi (mean). Mag. 3.0		γ Libræ. Mag. 4.0		α Coronæ Borealis. Mag. 2.3	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	15 27	+41 6	15 29	-40 53	15 30	-14 30	15 31	+26 59
	s	"	s	"	s	"	s	"
Jan. 0.9	54.267	49.28	31.886	6.61	49.373	41.34	7.585	32.57
10.8	54.559	46.45	32.273	6.86	49.684	42.67	7.882	29.94
20.8	54.940	44.02	32.682	7.40	50.012	44.07	8.202	27.60
30.8	55.308	42.08	33.099	8.22	50.348	45.47	8.534	25.65
Feb. 9.8	55.682	40.70	33.517	9.26	50.683	46.84	8.870	24.16
19.7	56.051	39.89	33.925	10.51	51.011	48.12	9.201	23.16
29.7	56.406	39.70	34.317	11.90	51.325	49.25	9.518	22.69
Mar. 10.7	56.739	40.12	34.689	13.41	51.619	50.24	9.816	22.73
20.7	57.042	41.11	35.032	14.99	51.894	51.06	10.090	23.28
30.6	57.311	42.61	35.346	16.62	52.143	51.69	10.335	24.30
Apr. 9.6	57.542	44.55	35.629	18.27	52.368	52.16	10.550	25.72
19.6	57.731	46.84	35.878	19.91	52.566	52.45	10.733	27.48
29.5	57.878	49.40	36.092	21.52	52.735	52.61	10.882	29.48
May 9.5	57.982	52.11	36.268	23.08	52.877	52.64	10.996	31.67
19.5	58.043	54.88	36.406	24.56	52.989	52.58	11.075	33.94
29.5	58.060	57.62	36.503	25.95	53.070	52.43	11.120	36.22
June 8.4	58.036	60.24	36.558	27.22	53.120	52.21	11.130	38.43
18.4	57.972	62.67	36.571	28.33	53.138	51.94	11.106	40.50
28.4	57.870	64.83	36.543	29.29	53.124	51.63	11.048	42.39
July 8.4	57.734	66.69	36.474	30.03	53.080	51.29	10.961	44.04
18.3	57.566	68.18	36.367	30.56	53.007	50.93	10.845	45.42
28.3	57.372	69.27	36.228	30.83	52.908	50.53	10.705	46.48
Aug. 7.3	57.156	69.94	36.061	30.86	52.786	50.12	10.543	47.21
17.2	56.926	70.17	35.874	30.61	52.649	49.69	10.367	47.59
27.2	56.689	69.95	35.677	30.11	52.501	49.25	10.182	47.61
Sept. 6.2	56.452	69.29	35.478	29.35	52.352	48.82	9.997	47.26
16.2	56.226	68.18	35.290	28.36	52.210	48.42	9.819	46.53
26.1	56.020	66.64	35.125	27.18	52.084	48.06	9.658	45.44
Oct. 6.1	55.844	64.69	34.994	25.86	51.983	47.79	9.522	44.01
16.1	55.705	62.37	34.908	24.44	51.917	47.61	9.419	42.22
26.1	55.614	59.70	34.876	23.01	51.892	47.58	9.358	40.11
Nov. 5.0	55.576	56.74	34.904	21.62	51.914	47.71	9.344	37.72
15.0	55.596	53.56	34.996	20.35	51.987	48.03	9.382	35.08
25.0	55.677	50.22	35.153	19.26	52.113	48.56	9.473	32.27
Dec. 4.9	55.821	46.81	35.374	18.40	52.288	49.30	9.619	29.34
14.9	56.021	43.43	35.651	17.83	52.510	50.23	9.813	26.38
24.9	56.272	40.18	35.977	17.55	52.771	51.34	10.051	23.47
34.9	56.569	37.17	36.342	17.58	53.064	52.58	10.328	20.72
Mean Place	54.726	67.70	32.242	7.75	49.503	36.17	7.852	48.03
Sec δ , Tan δ	1.327	+0.873	1.323	-0.866	1.033	-0.259	1.122	+0.509
$D\psi \alpha$, $D\omega \alpha$	+0.04	+0.04	+0.08	-0.04	+0.07	-0.01	+0.05	+0.02
$D\psi \delta$, $D\omega \delta$	-0.2	-0.8	-0.2	-0.8	-0.2	-0.8	-0.2	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ζ Cor. Bor. seq. Mag. 5.1		α Serpentis. Mag. 2.8		β Serpentis. Mag. 3.7		κ Serpentis. Mag. 4.3	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	15 36	+36 53	15 40	+ 6 40	15 42	+15 40	15 44	+18 23
	s	"	s	"	s	"	s	"
Jan. 0.9	12.452	71.22	7.577	70.43	18.418	49.45	57.203	47.44
10.9	12.760 ³⁰⁸	68.41 ²⁸¹	7.863 ²⁸⁶	68.35 ²⁰⁸	18.701 ²⁸³	47.08 ²³⁷	57.484 ²⁸¹	44.99 ²⁴⁵
20.8	13.094 ³³⁴	65.95 ²⁴⁶	8.169 ³⁰⁶	66.38 ¹⁹⁷	19.006 ³⁰⁵	44.92 ²¹⁶	57.789 ³⁰⁵	42.76 ²²³
30.8	13.445 ³⁵¹	63.95 ²⁰⁰	8.485 ³¹⁶	64.63 ¹⁷⁵	19.323 ³¹⁷	43.02 ¹⁹⁰	58.107 ³¹⁸	40.83 ¹⁹³
Feb. 9.8	13.802 ³⁵⁷	62.46 ¹⁴⁹	8.803 ³¹⁸	63.12 ¹⁵¹	19.644 ³²¹	41.48 ¹⁵⁴	58.429 ³²²	39.27 ¹⁵⁶
	354	91	314	118	316	113	318	113
19.7	14.156	61.55	9.117	61.94	19.960	40.35	58.747	38.14
29.7	14.499 ³⁴³	61.21 ³⁴	9.418 ³⁰¹	61.11 ⁸³	20.265 ³⁰⁵	39.64 ⁷¹	59.055 ³⁰⁸	37.46 ⁶⁸
Mar. 10.7	14.821 ³²²	61.46 ²⁵	9.703 ²⁸⁵	60.63 ⁴⁸	20.555 ²⁹⁰	39.37 ²⁷	59.347 ²⁹²	37.25 ²¹
20.7	15.117 ²⁹⁶	62.28 ⁸²	9.968 ²⁸⁵	60.53 ¹⁰	20.823 ²⁶⁸	39.54 ¹⁷	59.620 ²⁷³	37.49 ²⁴
30.6	15.382 ²⁶⁵	63.61 ¹³³	10.210 ¹³³	60.77 ²⁴	21.068 ²⁴⁵	40.12 ⁵⁸	59.867 ²⁴⁷	38.17 ⁶⁸
	231	177	216	55	218	94	220	105
Apr. 9.6	15.613	65.38	10.426	61.32	21.286	41.06	60.087	39.22
19.6	15.808 ¹⁹⁵	67.51 ²¹³	10.617 ¹⁹¹	62.15 ⁸³	21.477 ¹⁹¹	42.31 ¹²⁵	60.280 ¹⁹³	40.59 ¹³⁷
29.6	15.962 ¹⁵⁴	69.92 ²⁴¹	10.780 ¹⁶³	63.19 ¹⁰⁴	21.638 ¹⁶¹	43.81 ¹⁵⁰	60.443 ¹⁶³	42.22 ¹⁶³
May 9.5	16.078 ¹¹⁶	72.49 ²⁵⁷	10.914 ¹³⁴	64.40 ¹²¹	21.769 ¹⁸¹	45.49 ¹⁶⁸	60.574 ¹³¹	44.03 ¹⁸¹
19.5	16.153 ⁷⁵	75.15 ²⁶⁶	11.018 ¹⁰⁴	65.72 ¹³²	21.869 ¹⁰⁰	47.27 ¹⁷⁸	60.675 ¹⁰¹	45.95 ¹⁹²
	33	265	74	136	67	183	67	196
29.5	16.186	77.80	11.092	67.08	21.936	49.10	60.742	47.91
June 8.4	16.182 ⁴	80.37 ²⁵⁷	11.136 ⁴⁴	68.46 ¹³⁸	21.971 ³⁵	50.90 ¹⁸⁰	60.776 ³⁴	49.84 ¹⁹³
18.4	16.139 ⁴³	82.76 ²³⁹	11.147 ¹¹	69.79 ¹³³	21.975 ⁴	52.63 ¹⁷³	60.778 ²	51.69 ¹⁸⁵
28.4	16.059 ⁸⁰	84.93 ²¹⁷	11.128 ¹⁹	71.05 ¹²⁶	21.947 ²⁸	54.23 ¹⁶⁰	60.747 ³¹	53.40 ¹⁷¹
July 8.4	15.944 ¹¹⁵	86.79 ¹⁸⁶	11.080 ⁴⁸	72.19 ¹¹⁴	21.887 ⁶⁰	55.67 ¹⁴⁴	60.685 ⁶²	54.93 ¹⁵³
	145	155	78	101	87	123	91	132
18.3	15.799 ¹⁷³	88.34 ¹¹⁶	11.002 ¹⁰²	73.20 ⁸⁶	21.800 ¹¹⁴	56.90 ¹⁰²	60.594 ¹¹⁸	56.25 ¹⁰⁶
28.3	15.626 ¹⁹⁵	89.50 ⁷⁷	10.900 ¹²⁵	74.06 ⁶⁷	21.686 ¹³⁵	57.92 ⁷⁶	60.476 ¹⁴⁰	57.31 ⁷⁹
Aug. 7.3	15.431 ²¹⁰	90.27 ³⁶	10.775 ¹⁴¹	74.73 ⁵⁰	21.551 ¹⁵²	58.68 ⁵⁰	60.336 ¹⁵⁶	58.10 ⁵²
17.3	15.221 ²²⁰	90.63 ⁷	10.634 ¹⁵¹	75.23 ²⁹	21.399 ¹⁶⁴	59.18 ²²	60.180 ¹⁶⁹	58.62 ²¹
27.2	15.001 ²²⁰	90.56 ⁵⁰	10.483 ¹⁵⁴	75.52 ⁹	21.235 ¹⁶⁵	59.40 ⁶	60.011 ¹⁷¹	58.83 ¹⁰
Sept. 6.2	14.781	90.06	10.329	75.61	21.070	59.34	59.840	58.73
16.2	14.567 ²¹⁴	89.13 ⁹³	10.179 ¹⁵⁰	75.47 ¹⁴	20.909 ¹⁶¹	58.98 ³⁶	59.674 ¹⁶⁶	58.33 ⁴⁰
26.1	14.372 ¹⁹⁵	87.79 ¹³⁴	10.043 ¹³⁶	75.11 ³⁶	20.762 ¹⁴⁷	58.33 ⁶⁵	59.520 ¹⁵⁴	57.60 ⁷³
Oct. 6.1	14.203 ¹⁶⁹	86.03 ¹⁷⁶	9.931 ¹¹²	74.50 ⁶¹	20.638 ¹²⁴	57.38 ⁹⁵	59.390 ¹³⁰	56.55 ¹⁰⁵
16.1	14.070 ¹³³	83.92 ²¹¹	9.849 ⁸²	73.66 ⁵⁴	20.543 ⁹⁵	56.13 ¹²⁵	59.289 ¹⁰¹	55.20 ¹³⁵
	89	246	43	110	55	154	61	166
26.1	13.981	81.46	9.806	72.56	20.488	54.59	59.228	53.54
Nov. 5.0	13.943 ³⁸	78.68 ²⁷⁸	9.805 ¹	71.23 ¹³³	20.478 ¹⁰	52.79 ¹⁸⁰	59.212 ¹⁶	51.62 ¹⁹²
15.0	13.961 ¹⁸	75.68 ³⁰⁰	9.855 ⁵⁰	69.66 ¹⁵⁷	20.517 ³⁹	50.74 ²⁰⁵	59.244 ³²	49.44 ²¹⁸
25.0	14.036 ⁷⁵	72.50 ³¹⁸	9.954 ⁹⁹	67.89 ¹⁷⁷	20.606 ⁸⁰	48.49 ²²⁵	59.328 ⁸⁴	47.07 ²³⁷
Dec. 5.0	14.169 ¹³³	69.22 ³²⁸	10.102 ¹⁴⁸	65.96 ¹⁹³	20.745 ¹³⁹	46.10 ²³⁹	59.462 ¹³⁴	44.54 ²⁵³
	189	327	194	205	186	249	183	261
14.9	14.358	65.95	10.296	63.91	20.931	43.61	59.645	41.93
24.9	14.597 ²³⁹	62.77 ³¹⁸	10.529 ²³³	61.78 ²¹³	21.161 ²³⁰	41.11 ²⁵⁰	59.870 ²²⁵	39.33 ²⁶⁰
34.9	14.879 ²⁸²	59.79 ²⁹⁸	10.796 ²⁶⁷	59.67 ²¹¹	21.424 ²⁶³	38.67 ²⁴⁴	60.131 ²⁶¹	36.80 ²⁵³
Mean Place	12.892	88.51	7.749	80.94	18.645	62.06	57.464	60.59
Sec δ, Tan δ	1.250	+0.751	1.007	+0.117	1.039	+0.281	1.053	+0.333
Dψ α, Dω α	+0.04	+0.03	+0.06	0.00	+0.05	+0.01	+0.05	+0.01
Dψ δ, Dω δ	-0.2	-0.8	-0.2	-0.8	-0.2	-0.8	-0.2	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	μ Serpentis. Mag. 3.6		12 H. Draconis. Mag. 5.1		ϵ Serpentis. Mag. 3.8		ζ Ursæ Minoris. Mag. 4.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 15 45	" ' " - 3 10	h m 15 45	" ' " +62 51	h m 15 46	" ' " + 4 43	h m 15 46	" ' " +78 2
	s	"	s	"	s	"	s	"
Jan. 0.9	13.906	34.30	21.40	11.45	37.443	37.84	57.36	51.20
10.9	14.194 ²⁸⁸	36.02 ¹⁷²	21.81 ⁴¹	8.45 ³⁰⁰	37.725 ²⁸²	35.83 ²⁰¹	58.11 ⁷⁵	48.33 ²⁸⁷
20.8	14.503 ³⁰⁹	37.69 ¹⁶⁷	22.28 ⁴⁷	5.92 ²⁵³	38.029 ³⁰⁴	33.93 ¹⁹⁰	58.99 ⁸⁸	45.97 ²³⁶
30.8	14.821 ³¹⁸	39.27 ¹⁵⁸	22.79 ⁵¹	3.94 ¹⁹⁸	38.343 ³¹⁴	32.21 ¹⁷²	59.98 ⁹⁹	44.16 ¹⁸¹
Feb. 9.8	15.142 ³²¹	40.69 ¹⁴²	23.33 ⁵⁴	2.59 ¹³⁵	38.660 ³¹⁷	30.72 ¹⁴⁹	61.04 ¹⁰⁶	42.99 ¹¹⁷
	316	120	54	69	314	118	108	49
19.7	15.458	41.89	23.87	1.90	38.974	29.54	62.12	42.50
29.7	15.762 ³⁰⁴	42.86 ⁹⁷	24.40 ⁵³	1.90 ⁰	39.276 ³⁰²	28.68 ⁸⁶	63.20 ¹⁰⁸	42.68 ¹⁸
Mar. 10.7	16.052 ²⁹⁰	43.54 ⁶⁸	24.91 ⁵¹	2.56 ⁶⁶	39.564 ²⁸⁸	28.16 ⁵²	64.23 ¹⁰³	43.52 ⁸⁴
20.7	16.323 ²⁷¹	43.96 ⁴²	25.38 ⁴⁷	3.86 ¹³⁰	39.833 ²⁶⁹	28.00 ¹⁶	65.18 ⁹⁵	44.99 ¹⁴⁷
30.6	16.571 ²⁴⁸	44.09 ¹³	25.79 ⁴¹	5.72 ¹⁸⁶	40.079 ²⁴⁶	28.17 ¹⁷	66.01 ⁸³	47.01 ²⁰²
	225	12	35	234	222	47	68	247
Apr. 9.6	16.796	43.97	26.14	8.06	40.301	28.64	66.69	49.48
19.6	16.995 ¹⁹⁹	43.63 ³⁴	26.42 ²⁸	10.79 ²⁷³	40.498 ¹⁹⁷	29.38 ⁷⁴	67.22 ⁵³	52.31 ²⁸³
29.6	17.167 ¹⁷²	43.11 ⁵²	26.62 ²⁰	13.81 ³⁰²	40.667 ¹⁶⁹	30.33 ⁹⁵	67.57 ³⁵	55.40 ³⁰⁹
May 9.5	17.313 ¹⁴⁶	42.43 ⁶⁸	26.75 ¹³	16.99 ³¹⁸	40.809 ¹⁴²	31.45 ¹¹²	67.73 ¹⁶	58.63 ³²³
19.5	17.429 ¹¹⁶	41.65 ⁷⁸	26.80 ⁵	20.22 ³²³	40.920 ¹¹¹	32.68 ¹²³	67.72 ¹	61.88 ³²⁵
	87	84	2	318	81	129	21	316
29.5	17.516 ⁵⁵	40.81 ⁸⁷	26.78 ¹⁰	23.40 ³⁰⁴	41.001 ⁵²	33.97 ¹²⁹	67.51 ³⁷	65.04 ³⁰¹
June 8.4	17.571 ²¹	39.94 ⁸⁷	26.68 ¹⁷	26.44 ²⁸¹	41.053 ¹⁹	35.26 ¹²⁷	67.14 ⁵²	68.05 ²⁷⁴
18.4	17.595 ⁷	39.07 ⁸⁵	26.51 ²⁴	29.25 ²⁴⁹	41.072 ¹³	36.53 ¹²⁰	66.62 ⁶⁸	70.79 ²⁴⁰
28.4	17.588 ³⁹	38.22 ⁸⁰	26.27 ³⁰	31.74 ²¹¹	41.059 ⁴³	37.73 ¹¹⁰	65.94 ⁸¹	73.19 ²⁰⁰
July 8.4	17.549 ⁶⁹	37.42 ⁷³	25.97 ³⁶	33.85 ¹⁶⁹	41.016 ⁷²	38.83 ⁹⁹	65.13 ⁹¹	75.19 ¹⁵⁶
18.3	17.480	36.69	25.61	35.54	40.944	39.82	64.22	76.75
28.3	17.386 ⁹⁴	36.03 ⁶⁶	25.22 ³⁹	36.77 ¹²³	40.846 ⁹⁸	40.66 ⁸⁴	63.23 ⁹⁹	77.82 ¹⁰⁷
Aug. 7.3	17.268 ¹¹⁸	35.46 ⁵⁷	24.80 ⁴²	37.50 ⁷³	40.723 ¹²³	41.33 ⁶⁷	62.17 ¹⁰⁶	78.39 ⁵⁷
17.3	17.133 ¹³⁵	34.98 ⁴⁸	24.35 ⁴⁵	37.72 ²²	40.585 ¹³⁸	41.85 ⁵²	61.06 ¹¹¹	78.43 ⁴
27.2	16.986 ¹⁴⁷	34.61 ³⁷	23.89 ⁴⁶	37.42 ³⁰	40.435 ¹⁵⁰	42.18 ³³	59.95 ¹¹¹	77.95 ⁴⁸
	151	24	46	82	155	13	111	99
Sept. 6.2	16.835	34.37	23.43	36.60	40.280	42.31	58.84	76.96
16.2	16.688 ¹⁴⁷	34.25 ¹²	22.98 ⁴⁵	35.27 ¹³³	40.129 ¹⁵¹	42.24 ⁷	57.77 ¹⁰⁷	75.48 ¹⁴⁸
26.1	16.554 ¹³⁴	34.28 ³	22.56 ⁴²	33.46 ¹⁸¹	39.991 ¹³⁸	41.95 ²⁹	56.76 ¹⁰¹	73.52 ¹⁹⁶
Oct. 6.1	16.443 ¹¹¹	34.48 ²⁰	22.19 ³⁷	31.19 ²²⁷	39.876 ¹¹⁵	41.45 ⁵⁰	55.84 ⁹²	71.12 ²⁴⁰
16.1	16.363 ⁸⁰	34.85 ³⁷	21.87 ³²	28.51 ²⁶⁸	39.790 ⁸⁰	40.71 ⁷⁴	55.03 ⁸¹	68.34 ²⁷⁸
	42	56	25	305	48	96	66	314
26.1	16.321	35.41	21.62	25.46	39.742	39.75	54.37	65.20
Nov. 5.0	16.324 ³	36.19 ⁷⁸	21.45 ¹⁷	22.11 ³³⁵	39.737 ⁵	38.53 ¹²²	53.86 ⁵¹	61.80 ³⁴⁰
15.0	16.375 ⁵¹	37.16 ⁹⁷	21.36 ⁹	18.53 ³⁵⁸	39.781 ⁴¹	37.10 ¹⁴³	53.53 ³³	58.19 ³⁶¹
25.0	16.477 ¹⁰²	38.35 ¹¹⁹	21.37 ¹	14.81 ³⁷²	39.877 ⁹⁶	35.46 ¹⁸⁴	53.40 ¹⁸¹	54.48 ³⁷¹
Dec. 5.0	16.627 ¹⁵⁰	39.71 ¹³⁶	21.47 ¹⁰	11.05 ³⁷⁶	40.020 ¹⁴³	33.65 ¹⁸¹	53.46 ⁶	50.76 ³⁷²
	197	152	19	370	188	194	28	362
14.9	16.824	41.23	21.66	7.35	40.208	31.71	53.74	47.14
24.9	17.060 ²³⁶	42.87 ¹⁶⁴	21.95 ²⁹	3.84 ³⁵¹	40.438 ²³⁰	29.70 ²⁰¹	54.20 ⁴⁶	43.73 ³⁴¹
34.9	17.329 ²⁶⁹	44.56 ¹⁶⁹	22.32 ³⁷	0.62 ³²²	40.702 ²⁶⁴	27.68 ²⁰²	54.84 ⁶⁴	40.63 ³¹⁰
Mean Place	14.077	26.23	22.961	31.84	37.636	47.80	61.892	72.36
Sec δ , Tan δ	1.002	-0.055	2.192	+1.951	1.003	+0.083	4.830	+4.725
$D\psi \alpha$, $D\omega \alpha$	+0.06	0.00	+0.02	+0.07	+0.06	0.00	-0.04	+0.17
$D\psi \delta$, $D\omega \delta$	-0.2	-0.8	-0.2	-0.8	-0.2	-0.8	-0.2	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Triang. Aust. Mag. 3.0		λ Libræ. Mag. 5.1		γ Serpentis. Mag. 3.9		π Scorpii. Mag. 3.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 15 47	° ' " -63 10	h m 15 48	° ' " -19 55	h m 15 52	° ' " +15 55	h m 15 53	° ' " -25 52
	s " "	" "	s " "	" "	s " "	" "	s " "	" "
Jan. 0.9	42.54	17.41	27.059	5.17	34.061	53.71	45.752	26.40
10.9	43.11	16.55	27.369	6.18	34.336	51.29	46.071	27.10
20.8	43.72	16.11	27.699	7.30	34.636	49.08	46.411	27.95
30.8	44.36	16.09	28.040	8.48	34.949	47.14	46.765	28.92
Feb. 9.8	45.01	16.50	28.382	9.66	35.268	45.54	47.122	29.97
19.7	45.67	17.31	28.721	10.81	35.585	44.34	47.474	31.05
29.7	46.30	18.48	29.048	11.92	35.892	43.57	47.817	32.14
Mar. 10.7	46.90	19.97	29.360	12.90	36.186	43.25	48.145	33.20
20.7	47.47	21.76	29.652	13.79	36.461	43.37	48.453	34.20
30.6	48.00	23.79	29.922	14.54	36.712	43.91	48.739	35.12
Apr. 9.6	48.47	26.01	30.168	15.15	36.939	44.81	49.001	35.97
19.6	48.89	28.37	30.388	15.66	37.139	46.04	49.237	36.74
29.6	49.25	30.85	30.581	16.04	37.309	47.52	49.444	37.42
May 9.5	49.54	33.38	30.746	16.33	37.450	49.19	49.622	38.03
19.5	49.77	35.92	30.879	16.52	37.559	50.97	49.768	38.56
29.5	49.93	38.41	30.982	16.66	37.636	52.81	49.880	39.03
June 8.4	50.01	40.80	31.052	16.72	37.682	54.64	49.957	39.43
18.4	50.01	43.04	31.087	16.72	37.694	56.39	49.999	39.75
28.4	49.94	45.05	31.088	16.67	37.673	58.01	50.004	39.99
July 8.4	49.80	46.80	31.055	16.58	37.621	59.49	49.974	40.16
18.3	49.59	48.24	30.990	16.41	37.538	60.76	49.908	40.24
28.3	49.33	49.30	30.895	16.19	37.428	61.80	49.811	40.21
Aug. 7.3	49.01	49.97	30.774	15.90	37.295	62.59	49.685	40.06
17.3	48.66	50.20	30.634	15.55	37.144	63.12	49.540	39.80
27.2	48.29	50.00	30.479	15.16	36.981	63.36	49.378	39.43
Sept. 6.2	47.91	49.35	30.321	14.69	36.811	63.32	49.211	38.95
16.2	47.55	48.27	30.167	14.22	36.647	62.97	49.049	38.38
26.1	47.22	46.80	30.027	13.73	36.494	62.32	48.899	37.74
Oct. 6.1	46.95	44.98	29.912	13.26	36.362	61.38	48.775	37.07
16.1	46.74	42.88	29.829	12.84	36.260	60.14	48.685	36.39
26.1	46.62	40.60	29.788	12.51	36.196	58.59	48.636	35.76
Nov. 5.0	46.59	38.20	29.795	12.31	36.175	56.78	48.639	35.21
15.0	46.67	35.80	29.853	12.26	36.203	54.73	48.694	34.79
25.0	46.85	33.48	29.965	12.40	36.282	52.47	48.806	34.54
Dec. 5.0	47.13	31.36	30.129	12.73	36.411	50.05	48.972	34.48
14.9	47.51	29.49	30.342	13.27	36.588	47.54	49.189	34.63
24.9	47.98	27.96	30.599	14.00	36.808	45.00	49.451	34.99
34.9	48.51	26.82	30.888	14.90	37.064	42.53	49.749	35.54
Mean Place	43.747	21.58	27.273	1.09	34.337	66.11	46.018	23.56
Sec δ , Tan δ	2.216	-1.978	1.064	-0.362	1.040	+0.285	1.111	-0.485
$D\psi\alpha$, $D_w\alpha$	+0.10	-0.07	+0.07	-0.01	+0.05	+0.01	+0.07	-0.02
$D\psi\delta$, $D_w\delta$	-0.2	-0.8	-0.2	-0.8	-0.2	-0.8	-0.2	-0.9

APPARENT PLACES OF STARS, 1916.

443

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Coronæ Borealis. Mag. 4.2		δ Scorpii. Mag. 2.5		θ Draconis. Mag. 4.1		β Scorpii. Mag. 2.9	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 15 54	° ' +27 6	h m 15 55	° ' -22 23	h m 16 0	° ' +58 46	h m 16 0	° ' -19 34
	s	"	s	"	s	"	s	"
Jan. 0.9	6.128	58.76	21.538	4.42	17.422	62.41	32.702	39.33
10.9	6.406 ²⁷⁸	56.08 ²⁶⁸	21.849 ³¹¹	5.27 ⁸⁵	17.776 ³⁵⁴	59.31 ³¹⁰	33.004 ³⁰²	40.27 ⁹⁴
20.8	6.713 ³⁰⁷	53.65 ²⁴³	22.181 ³³²	6.24 ⁹⁷	18.186 ⁴¹⁰	56.63 ²⁶⁸	33.327 ³²³	41.31 ¹⁰⁴
30.8	7.035 ³²²	51.61 ²⁰⁴	22.524 ³⁴³	7.29 ¹⁰⁵	18.636 ⁴⁵⁰	54.48 ²¹⁵	33.663 ³³⁶	42.41 ¹¹⁰
Feb. 9.8	7.365 ³³⁰	50.00 ¹⁶¹	22.872 ³⁴⁸	8.39 ¹¹⁰	19.112 ⁴⁷⁶	52.93 ¹⁵⁵	34.004 ³⁴¹	43.52 ¹¹¹
19.8	7.696 ³³¹	48.87 ¹¹³	23.216 ³⁴⁴	9.49 ¹¹⁰	19.598 ⁴⁸⁶	52.03 ⁹⁰	34.342 ³³⁸	44.60 ¹⁰⁸
29.7	8.018 ³²²	48.27 ⁶⁰	23.551 ³³⁵	10.55 ¹⁰⁶	20.079 ⁴⁸¹	51.81 ²²	34.671 ³²⁹	45.61 ¹⁰¹
Mar. 10.7	8.323 ³⁰⁵	48.21 ⁶	23.871 ³²⁰	11.54 ⁹⁹	20.542 ⁴⁶³	52.27 ⁴⁶	34.987 ³¹⁶	46.53 ⁹²
20.7	8.610 ²⁸⁷	48.66 ⁴⁵	24.172 ³⁰¹	12.44 ⁹⁰	20.973 ⁴³¹	53.35 ¹⁰⁸	35.285 ²⁹⁸	47.33 ⁸⁰
30.6	8.871 ²⁶¹	49.60 ⁹⁴	24.452 ²⁸⁰	13.24 ⁸⁰	21.362 ³⁸⁹	55.03 ¹⁶⁸	35.563 ²⁷⁸	47.99 ⁶⁶
Apr. 9.6	9.105 ²³⁴	50.97 ¹³⁷	24.708 ²⁵⁶	13.92 ⁶⁸	21.700 ³³	57.22 ²¹⁹	35.817 ²⁵⁴	48.53 ⁵⁴
19.6	9.308 ²⁰³	52.70 ¹⁷³	24.939 ²³¹	14.51 ⁵⁹	21.979 ²⁷⁹	59.83 ²⁶¹	36.048 ²³¹	48.95 ⁴²
29.6	9.479 ¹⁷¹	54.72 ²⁰²	25.142 ²⁰³	15.00 ⁴⁹	22.196 ²¹⁷	62.75 ²⁹²	36.252 ²⁰⁴	49.26 ³¹
May 9.5	9.617 ¹³⁸	56.93 ²²¹	25.316 ¹⁷⁴	15.40 ⁴⁰	22.347 ¹⁵¹	65.89 ³¹⁴	36.428 ¹⁷⁶	49.47 ²¹
19.5	9.720 ¹⁰³	59.26 ²³³	25.461 ¹⁴⁵	15.72 ³²	22.430 ⁸³	69.11 ³²²	36.575 ¹⁴⁷	49.61 ¹⁴
29.5	9.787 ⁶⁷	61.63 ²³⁷	25.572 ¹¹¹	15.97 ²⁵	22.446 ¹⁶	72.33 ³²²	36.575 ¹¹⁴	49.61 ⁸
June 8.5	9.818 ³¹	63.95 ²³²	25.649 ⁷⁷	16.17 ²⁰	22.394 ⁵²	75.45 ³¹²	36.689 ⁸⁰	49.69 ²
18.4	9.813 ⁵	66.17 ²²²	25.692 ⁴³	16.30 ¹³	22.279 ¹¹⁵	78.36 ²⁹¹	36.769 ⁴⁷	49.71 ³
28.4	9.773 ⁴⁰	68.21 ²⁰⁴	25.698 ⁶	16.37 ⁷	22.102 ¹⁷⁷	81.00 ²⁶⁴	36.816 ¹⁰	49.68 ⁷
July 8.4	9.699 ⁷⁴	70.03 ¹⁸²	25.669 ²⁹	16.38 ¹	21.870 ²³²	83.30 ²³⁰	36.826 ²⁵	49.61 ¹²
18.3	9.593 ¹⁰⁶	71.58 ¹⁵⁵	25.606 ⁶³	16.32 ⁶	21.590 ²⁸⁰	85.20 ¹⁹⁰	36.801 ⁵⁸	49.49 ¹⁶
28.3	9.460 ¹³³	72.82 ¹²⁴	25.513 ⁹³	16.19 ¹³	21.265 ³²⁵	86.66 ¹⁴⁶	36.743 ⁸⁹	49.33 ²¹
Aug. 7.3	9.301 ¹⁵⁹	73.75 ⁹³	25.513 ¹²¹	16.19 ¹³	21.265 ³²⁵	86.66 ¹⁴⁶	36.654 ⁸⁹	49.12 ²¹
17.3	9.301 ¹⁷⁷	73.75 ⁵⁷	25.392 ¹⁴²	15.97 ²²	20.905 ³⁶⁰	87.64 ⁹⁸	36.537 ¹¹⁷	48.85 ²⁷
27.2	9.124 ¹⁸⁸	74.32 ²⁰	25.250 ¹⁵⁶	15.67 ³⁰	20.520 ³⁸⁵	88.13 ⁴	36.537 ¹³⁸	48.54 ³¹
Sept. 6.2	8.936 ¹⁹⁴	74.52 ¹⁸	25.094 ¹⁶³	15.30 ⁴⁴	20.119 ⁴⁰¹	88.09 ⁵⁴	36.399 ¹⁵³	48.18 ⁴⁰
16.2	8.742 ¹⁷⁰	74.34 ⁵⁵	25.094 ¹⁶³	15.30 ⁴⁴	20.119 ⁴⁰¹	88.09 ⁵⁴	36.246 ¹⁶⁰	48.18 ⁴⁰
26.2	8.552 ¹⁹⁰	73.79 ⁹¹	24.931 ¹⁵⁹	14.86 ⁵⁰	19.715 ³⁹⁵	87.55 ¹⁰⁵	36.086 ¹⁵⁸	47.78 ⁴⁴
Oct. 6.1	8.375 ¹⁷⁷	72.88 ⁹¹	24.772 ¹⁴⁶	14.36 ⁵⁴	19.320 ³⁹⁵	86.50 ¹⁵¹	35.928 ¹⁴⁶	47.34 ⁴⁵
16.1	8.375 ¹⁵⁵	72.88 ¹²⁹	24.626 ¹²²	13.82 ⁵⁵	18.945 ³⁷⁵	84.96 ²⁰¹	35.782 ¹²³	46.89 ⁴³
26.1	8.220 ¹²³	71.59 ¹⁶⁵	24.504 ⁸⁹	13.27 ⁵²	18.604 ²⁹⁵	82.95 ²⁴⁴	35.659 ⁹³	46.46 ³⁸
Nov. 5.0	8.097 ⁸⁴	69.94 ¹⁹⁸	24.415 ⁴⁹	12.75 ⁴⁵	18.309 ²³⁶	80.51 ²⁸²	35.566 ⁵¹	46.08 ³⁰
15.0	8.013 ⁴⁰	67.96 ²²⁸	24.366 ¹	12.30 ³⁵	18.073 ¹⁶⁸	77.69 ³¹⁹	35.515 ⁶	45.78 ¹⁹
25.0	7.973 ¹²	65.68 ²⁵⁵	24.367 ⁵³	11.95 ²¹	17.905 ⁹²	74.50 ³⁴⁴	35.509 ⁴⁷	45.59 ⁶
Dec. 5.0	7.985 ⁶⁵	63.13 ²⁷⁵	24.420 ¹⁰⁸	11.74 ⁴	17.813 ¹⁰	71.06 ³⁶¹	35.556 ¹⁰⁰	45.53 ¹²
14.9	8.050 ¹¹⁹	60.38 ²⁸⁸	24.528 ¹⁶⁰	11.70 ¹⁶	17.803 ⁷⁶	67.45 ³⁷⁰	35.656 ¹⁵¹	45.65 ³²
24.9	8.169 ¹⁶⁹	57.50 ²⁹⁵	24.688 ²⁰⁹	11.86 ³⁵	17.879 ¹⁶¹	63.75 ³⁶⁸	35.807 ²⁰²	45.97 ⁴⁹
34.9	8.338 ²¹⁷	54.55 ²⁹³	24.897 ²⁵⁴	12.21 ⁵⁴	18.040 ²⁴⁰	60.07 ³⁵⁴	36.009 ²⁴⁴	46.46 ⁶⁸
	8.555 ²⁵⁶	51.62 ²⁹⁰	25.151 ²⁸⁹	12.75 ⁷⁴	18.280 ³¹³	56.53 ³³⁰	36.253 ²⁷⁹	47.14 ⁸⁴
	8.811	48.82	25.440	13.49	18.593	53.23	36.532	47.98
Mean Place	6.526	73.44	21.789	0.78	18.856	81.45	32.956	34.99
Sec δ, Tan δ	1.123	+0.512	1.081	-0.412	1.929	+1.650	1.061	-0.356
Dψ α, Dω α	+0.05	+0.02	+0.07	-0.01	+0.02	+0.06	+0.07	-0.01
Dψ δ, Dω δ	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	κ Herculis. Mag. 5.3		Groombridge 2890. Mag. 5.4		φ Herculis. Mag. 4.3		δ ¹ Apodis. Mag. 4.8	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 16 4	° ' +17 15	h m 16 6	° ' +68 1	h m 16 6	° ' +45 8	h m 16 7	° ' -78 29
Jan. 0.9	16.589	58.80	2.90	33.16	6.525	59.57	40.97	6.39
10.9	16.856 ²⁶⁷	56.37 ²⁴³	3.33 ⁴³	30.04 ³¹²	6.819 ²⁹⁴	56.52 ³⁰⁵	42.08 ¹¹¹	4.70 ¹⁶⁹
20.8	17.149 ²⁹³	54.14 ²²³	3.84 ⁵¹	27.36 ²⁶⁸	7.151 ³²²	53.83 ²⁶⁹	43.31 ¹²³	3.47 ¹²³
30.8	17.457 ³⁰⁸	52.19 ¹⁹⁵	4.41 ⁵⁷	25.22 ²¹⁴	7.513 ³⁶²	51.60 ²²³	44.62 ¹³¹	2.76 ⁷¹
Feb. 9.8	17.773 ³¹⁶	50.59 ¹⁶⁰	5.02 ⁶¹	23.70 ¹⁵²	7.891 ³⁷⁸	49.91 ¹⁶⁹	45.98 ¹³⁶	2.54 ²²
19.8	18.089	49.40	5.66	22.83	8.274	48.82	47.37	2.79
29.7	18.399 ³¹⁰	48.65 ⁷⁵	6.30 ⁶⁴	22.65 ¹⁸	8.653 ³⁷⁹	48.37 ⁴⁵	48.74 ¹³⁷	3.54 ⁷⁵
Mar. 10.7	18.697 ²⁹⁶	48.36 ²⁹	6.91 ⁶¹	23.14 ⁴⁹	9.019 ³⁶⁶	48.54 ¹⁷	50.07 ¹³³	4.71 ¹¹⁷
20.7	18.976 ²⁷⁹	48.53 ¹⁷	7.48 ⁵⁷	24.30 ¹¹⁶	9.361 ³⁴²	49.32 ⁷⁸	51.34 ¹²⁷	6.30 ¹⁵⁹
30.6	19.236 ²⁸⁰	49.12 ⁵⁹	8.00 ⁵²	26.03 ¹⁷³	9.674 ³¹³	50.68 ¹³⁶	52.52 ¹¹⁸	8.26 ¹⁹⁶
Apr. 9.6	19.470	50.11	8.45	28.29	9.953	52.53	53.60	10.54
19.6	19.678 ²⁰⁸	51.42 ¹³¹	8.82 ³⁷	30.97 ²⁶⁸	10.192 ²³⁹	54.82 ²²⁹	54.56 ⁹⁶	13.07 ²⁵³
29.6	19.858 ¹⁸⁰	53.01 ¹⁵⁹	9.09 ²⁷	33.95 ²⁹⁸	10.388 ¹⁹⁶	57.42 ²⁶⁰	55.38 ⁸²	15.83 ²⁷⁶
May 9.5	20.011 ¹⁵³	54.80 ¹⁷⁹	9.28 ¹⁹	37.16 ³²¹	10.539 ¹⁵¹	60.25 ²⁸³	56.05 ⁶⁷	18.74 ²⁹¹
19.5	20.130 ¹¹⁹	56.72 ¹⁹²	9.36 ⁸	40.44 ³²⁸	10.643 ¹⁰⁴	63.21 ²⁹⁶	56.56 ⁵¹	21.75 ³⁰¹
29.5	20.218 ⁸⁸	58.69 ¹⁹⁷	9.35 ¹	43.73 ³²⁹	10.699 ⁵⁶	66.20 ²⁹⁹	56.90 ³⁴	24.76 ³⁰¹
June 8.5	20.272 ⁵⁴	60.66 ¹⁹⁷	9.24 ¹¹	46.91 ³¹⁸	10.707 ⁸	69.13 ²⁹³	57.06 ¹⁶	27.73 ²⁹⁷
18.4	20.291 ¹⁹	62.55 ¹⁸⁹	9.04 ²⁰	49.86 ²⁹⁵	10.669 ³⁸	71.91 ²⁷⁸	57.05 ¹	30.57 ²⁸⁴
28.4	20.275 ¹⁶	64.32 ¹⁷⁷	8.76 ²⁸	52.55 ²⁶⁹	10.585 ⁸⁴	74.45 ²⁵⁴	56.85 ²⁰	33.23 ²⁶⁶
July 8.4	20.228 ⁷⁸	65.93 ¹⁶¹	8.40 ³⁶	54.88 ²³³	10.459 ¹²⁶	76.71 ²²⁶	56.49 ³⁶	35.62 ²³⁹
18.3	20.150	67.33	7.96	56.80	10.292	78.63	55.97	37.68
28.3	20.040 ¹¹⁰	68.50 ¹¹⁷	7.48 ⁴⁸	58.27 ¹⁴⁷	10.091 ²⁰¹	80.14 ¹⁵¹	55.31 ⁶⁶	39.34 ¹⁶⁶
Aug. 7.3	19.908 ¹³²	69.41 ⁹¹	6.94 ⁵⁴	59.25 ⁹⁸	9.861 ²⁸⁰	81.24 ¹¹⁰	54.53 ⁷⁸	40.55 ¹²¹
17.3	19.754 ¹⁵⁴	70.03 ⁶²	6.37 ⁵⁷	59.72 ⁴⁷	9.607 ²⁵⁴	81.88 ⁶⁴	53.67 ⁸⁶	41.28 ⁷³
27.2	19.586 ¹⁶⁸	70.38 ³⁵	5.79 ⁵⁸	59.67 ⁵	9.339 ²⁶⁸	82.06 ¹⁸	52.75 ⁹²	41.46 ¹⁵
Sept. 6.2	19.413	70.40	5.19	59.09	9.064	81.76	51.81	41.09
16.2	19.240 ¹⁷³	70.13 ²⁷	4.61 ⁵⁸	57.99 ¹¹⁰	8.793 ²⁷¹	80.99 ⁷⁷	50.89 ⁹²	40.21 ⁸⁸
26.2	19.078 ¹⁶²	69.55 ⁵⁸	4.06 ⁵⁵	56.41 ¹⁵⁸	8.536 ²⁵⁷	79.76 ¹²³	50.04 ⁸⁵	38.81 ¹⁴⁰
Oct. 6.1	18.935 ¹⁴³	68.64 ⁹¹	3.55 ⁶¹	54.33 ²⁰⁸	8.303 ²³³	78.07 ¹⁶⁹	49.30 ⁷⁴	36.93 ¹⁸⁸
16.1	18.821 ¹¹⁴	67.44 ¹²⁰	3.10 ⁴⁵	51.83 ²⁵⁰	8.106 ¹⁹⁷	75.96 ²¹¹	48.69 ⁶¹	34.63 ²³⁰
26.1	18.745 ⁷⁶	65.93 ¹⁵¹	2.72 ³⁸	48.93 ²⁹⁰	7.953 ¹⁵³	73.45 ²⁵¹	48.26 ⁴³	32.03 ²⁶⁰
Nov. 5.0	18.711 ³⁴	64.15 ¹⁷⁸	2.44 ²⁸	45.69 ³²⁴	7.852 ¹⁰¹	70.62 ²⁸³	48.02 ²⁴	29.19 ²⁸⁴
15.0	18.726 ¹⁵	62.09 ²⁰⁶	2.25 ¹⁹	42.19 ³⁵⁰	7.811 ⁴¹	67.50 ³¹²	48.01 ¹	26.24 ²⁸⁶
25.0	18.790 ⁶⁴	59.84 ²²⁵	2.18 ⁷	38.54 ³⁶⁵	7.833 ²²	64.17 ³³³	48.22 ²¹	23.26 ²⁸⁶
Dec. 5.0	18.905 ¹¹⁵	57.42 ²⁴²	2.22 ⁴	34.79 ³⁷⁵	7.921 ⁸⁸	60.71 ³⁴⁶	48.65 ⁴³	20.41 ²⁸⁵
14.9	19.070	54.90	2.37	31.08	8.071	57.23	49.30	17.77
24.9	19.277 ²⁰⁷	52.36 ²⁵⁴	2.64 ²⁷	27.51 ³⁵⁷	8.281 ²¹⁰	53.82 ³⁴¹	50.14 ⁸⁴	15.40 ²³⁷
34.9	19.524 ²⁴⁷	49.88 ²⁴⁸	3.01 ³⁷	24.19 ³³²	8.545 ²⁶⁴	50.61 ³²¹	51.15 ¹⁰¹	13.44 ¹⁹⁶
Mean Place	16.932	71.16	5.318	52.50	7.374	76.64	44.863	10.94
Sec δ, Tan δ	1.047	+0.311	2.672	+2.478	1.418	+1.005	5.011	-4.910
Dψ α, Dω α	+0.05	+0.01	0.00	+0.08	+0.04	+0.03	+0.18	-0.16
Dψ δ, Dω δ	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	δ Ophiuchi. Mag. 3.0		σ Cor. Bor. seq. Mag. 5.8		19 Ursæ Minoris. Mag. 5.5		γ^2 Normæ. Mag. 4.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 16 9	° ' " - 3 28	h m 16 11	° ' " +34 3	h m 16 13	° ' " +76 4	h m 16 13	° ' " -49 57
	s	"	s	"	s	"	s	"
Jan. 0.9	56.253	51.71	31.335	60.45	7.75	62.97	32.018	1.22
10.9	56.525 ²⁷²	53.34 ¹⁶³	31.605 ²⁷⁰	57.57 ²⁸⁸	8.32 ⁵⁷	59.87 ³¹⁰	32.420 ⁴⁰²	0.61 ⁶¹
20.8	56.820 ²⁹⁵	54.93 ¹⁵⁹	31.907 ³⁰²	54.98 ²⁵⁹	9.03 ⁷¹	57.22 ²⁶⁵	32.858 ⁴³⁸	0.32 ²⁹
30.8	57.131 ³¹¹	56.44 ¹⁵¹	32.232 ³²⁵	52.79 ²¹⁹	9.84 ⁸¹	55.10 ²¹²	33.319 ⁴⁶¹	0.33 ¹
Feb. 9.8	57.447 ³¹⁶	57.79 ¹³⁵	32.571 ³³⁹	51.05 ¹⁷⁴	10.73 ⁸⁹	53.58 ¹⁵²	33.792 ⁴⁷³	0.66 ³³
19.8	57.763 ³¹⁶	58.92 ¹¹³	32.913 ³⁴²	49.85 ¹²⁰	11.67 ⁹⁴	52.72 ⁸⁶	34.267 ⁴⁷⁵	1.26 ⁶⁰
29.7	58.071 ³⁰⁸	59.83 ⁹¹	33.251 ³³⁸	49.24 ⁶¹	12.61 ⁹⁴	52.53 ¹⁹	34.735 ⁴⁶⁸	2.11 ⁸⁵
Mar. 10.7	58.369 ²⁹⁸	60.46 ⁶³	33.577 ³²⁶	49.22 ²	13.53 ⁹²	53.03 ⁵⁰	35.188 ⁴⁵³	3.17 ¹⁰⁶
20.7	58.651 ²⁸²	60.82 ³⁶	33.884 ³⁰⁷	49.72 ⁵⁰	14.40 ⁸⁷	54.16 ¹¹³	35.620 ⁴³²	4.44 ¹²⁷
30.7	58.914 ²⁶³	60.91 ⁹	34.168 ²⁸⁴	50.78 ¹⁰⁶	15.18 ⁷⁸	55.89 ¹⁷³	36.026 ⁴⁰⁶	5.86 ¹⁴²
Apr. 9.6	59.157 ²⁴³	60.74 ¹⁷	34.424 ²⁵⁶	52.31 ¹⁵³	15.86 ⁰⁸	58.13 ²²⁴	36.403 ³⁷⁷	7.41 ¹⁵⁵
19.6	59.376 ²¹⁹	60.36 ³⁸	34.649 ²²⁵	54.26 ¹⁹⁵	16.41 ⁵⁵	60.80 ²⁶⁷	36.745 ³⁴²	9.07 ¹⁶⁶
29.6	59.570 ¹⁹⁴	59.78 ⁵⁸	34.840 ¹⁹¹	56.49 ²²³	16.81 ⁴⁰	63.79 ²⁹⁹	37.051 ³⁰⁶	10.79 ¹⁷²
May 9.5	59.739 ¹⁶⁹	59.05 ⁷³	34.995 ¹⁵⁵	58.98 ²⁴⁹	17.06 ²⁵	66.98 ³¹⁹	37.313 ²⁶²	12.57 ¹⁷⁸
19.5	59.880 ¹⁴¹	58.22 ⁸³	35.111 ¹¹⁶	61.61 ²⁶³	17.16 ¹⁰	70.26 ³²⁸	37.530 ²¹⁷	14.35 ¹⁷⁸
29.5	59.989 ⁷⁷	57.33 ⁸⁹	35.189 ⁷⁸	64.29 ²⁶⁸	17.10 ⁶	73.54 ³²⁸	37.699 ¹⁶⁹	16.13 ¹⁷⁸
June 8.5	60.066 ⁴⁶	56.40 ⁹³	35.225 ³⁶	66.93 ²⁶⁴	16.88 ²²	76.71 ³¹⁷	37.816 ¹¹⁷	17.85 ¹⁷²
18.4	60.112 ¹¹	55.48 ⁹²	35.224 ¹	69.48 ²⁵⁵	16.53 ³⁵	79.68 ²⁹⁷	37.880 ⁶⁴	19.47 ¹⁶²
28.4	60.123 ¹¹	54.59 ⁸⁹	35.180 ⁴⁴	71.82 ²³⁴	16.04 ⁴⁹	82.36 ²⁶⁸	37.889 ⁹	20.97 ¹⁵⁰
July 8.4	60.101 ²²	53.75 ⁸⁴	35.100 ⁸⁰	73.93 ²¹¹	15.43 ⁶¹	84.70 ²³⁴	37.845 ⁴⁴	22.29 ¹³²
18.4	60.047 ⁵⁴	52.98 ⁷⁷	34.984 ¹¹⁶	75.73 ¹⁸⁰	14.70 ⁷³	86.63 ¹⁹³	37.748 ⁹⁷	23.40 ¹¹¹
28.3	59.963 ⁸⁴	52.31 ⁶⁷	34.834 ¹⁵⁰	77.21 ¹⁴⁸	13.89 ⁸¹	88.12 ¹⁴⁹	37.605 ¹⁴³	24.26 ⁸⁶
Aug. 7.3	59.852 ¹¹¹	51.71 ⁶⁰	34.660 ¹⁷⁴	78.35 ¹¹⁴	13.01 ⁸⁸	89.11 ⁹⁷	37.420 ¹⁸⁵	24.83 ⁵⁷
17.3	59.720 ¹³²	51.22 ⁴⁹	34.462 ¹⁹⁸	79.08 ⁷³	12.07 ⁹⁴	89.58 ⁴	37.201 ²¹⁹	25.08 ²⁵
27.2	59.573 ¹¹⁷	50.83 ³⁹	34.247 ²¹⁵	79.38 ³⁰	11.11 ⁹⁶	89.54 ⁴	36.960 ²¹¹	25.02 ⁶
Sept. 6.2	59.418 ¹⁵⁵	50.58 ²³	34.026 ²²¹	79.28 ¹⁰	10.14 ⁹⁷	88.99 ⁵⁵	36.707 ²⁵³	24.62 ⁴⁰
16.2	59.262 ¹⁵⁶	50.44 ¹⁴	33.809 ²¹⁷	78.74 ⁵⁴	9.18 ⁹⁶	87.92 ¹⁰⁷	36.457 ²⁵⁰	23.88 ⁷⁴
26.2	59.116 ¹⁴⁶	50.44 ⁰	33.601 ²⁰⁸	77.81 ⁹³	8.27 ⁹¹	86.36 ¹⁵⁶	36.222 ²³⁵	22.85 ¹⁰³
Oct. 6.1	58.990 ¹²⁶	50.60 ¹⁶	33.411 ¹⁹⁰	76.44 ¹³⁷	7.41 ⁸⁶	84.33 ²⁰³	36.019 ²⁰³	21.54 ¹³¹
16.1	58.891 ⁹⁹	50.02 ³²	33.253 ¹⁵⁸	74.69 ¹⁷⁵	6.65 ⁷⁶	81.86 ²⁴⁷	35.858 ¹⁶¹	20.01 ¹³³
26.1	58.829 ⁶²	51.43 ⁵¹	33.135 ¹¹⁸	72.56 ²¹³	6.00 ⁶⁵	79.01 ²⁸⁵	35.755 ¹⁰³	18.32 ¹⁰⁹
Nov. 5.1	58.809 ²⁰	52.14 ⁷¹	33.061 ⁷⁴	70.10 ²⁴⁶	5.47 ⁵³	75.83 ³¹⁸	35.718 ³⁷	16.55 ¹⁷⁷
15.0	58.837 ²⁸	53.03 ⁸⁹	33.041 ²⁰	67.36 ²⁷⁴	5.10 ³⁷	72.38 ³⁴⁵	35.753 ³⁵	14.77 ¹⁷⁸
25.0	58.914 ⁷⁷	54.13 ¹¹⁰	33.078 ³⁷	64.40 ²⁹⁶	4.90 ²⁰	68.76 ³⁶²	35.863 ¹¹⁰	13.05 ¹⁷²
Dec. 5.0	59.041 ¹²⁷	55.40 ¹²⁷	33.168 ⁹⁰	61.28 ³¹²	4.86 ⁴	65.07 ³⁶⁹	36.048 ¹⁸⁵	11.48 ¹⁵⁷
14.9	59.216 ¹⁷⁵	56.82 ¹⁴²	33.315 ¹⁴⁷	58.10 ³¹⁸	4.99 ¹³	61.39 ³⁶⁸	36.302 ²⁵⁴	10.10 ¹³⁸
24.9	59.432 ²¹⁶	58.35 ¹⁵³	33.513 ¹⁹⁸	54.96 ³¹⁴	5.31 ³²	57.86 ³⁵³	36.620 ³¹⁸	8.99 ¹¹¹
34.9	59.683 ²⁵¹	59.94 ¹⁵⁹	33.758 ²⁴⁵	51.95 ³⁰¹	5.78 ⁴⁷	54.59 ³²⁷	36.992 ³⁷²	8.17 ⁸²
Mean Place	56.514	43.81	31.942	75.60	12.164	82.09	32.721	2.23
Sec δ , Tan δ	1.002	-0.061	1.207	+0.676	4.158	+4.037	1.554	-1.190
$D_{\phi} \alpha$, $D_{\omega} \alpha$	+0.06	0.00	+0.05	+0.02	-0.03	+0.12	+0.09	-0.04
$D_{\phi} \delta$, $D_{\omega} \delta$	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Ophiuchi. Mag. 3.3		σ Scorpii. Mag. 3.1		τ Herculis. Mag. 3.9		γ Herculis. Mag. 3.8	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '
	16 13	- 4 29	16 16	-25 23	16 17	+46 30	16 18	+19 20
	s	"	s	"	s	"	s	"
Jan. 0.9	52.226	26.58	4.447	35.42	11.977	29.54	12.407	46.13
10.9	52.496 ²⁷⁰	28.15 ¹⁸⁷	4.751 ³⁰⁴	35.97 ⁵⁵	12.262 ²⁸⁵	26.42 ³¹²	12.664 ²⁵⁷	43.64 ²⁴⁹
20.8	52.790 ²⁹⁴	29.69 ¹⁵⁴	5.078 ³²⁷	36.68 ⁷¹	12.589 ³²⁷	23.65 ²⁷⁷	12.948 ²⁸⁴	41.34 ²³⁰
30.8	53.100 ³¹⁰	31.14 ¹⁴⁵	5.420 ³⁴²	37.48 ⁸⁰	12.948 ³⁵⁹	21.33 ²³²	13.252 ³⁰⁴	39.33 ²⁰¹
Feb. 9.8	53.417 ³¹⁷	32.46 ¹³²	5.772 ³⁶²	38.35 ⁸⁷	13.327 ³⁷⁹	19.55 ¹⁷⁸	13.566 ³¹⁴	37.68 ¹⁶⁵
19.8	53.733 ³¹⁶	33.57 ¹¹¹	6.123 ³⁵¹	39.25 ⁹⁰	13.715 ³⁸⁸	18.37 ¹¹⁸	13.883 ³¹⁷	36.45 ¹²³
29.7	54.044 ³¹¹	34.47 ⁹⁰	6.468 ³⁴⁵	40.15 ⁹⁰	14.101 ³⁸⁶	17.82 ⁵⁵	14.195 ³¹²	35.67 ⁷⁸
Mar. 10.7	54.342 ²⁹⁸	35.10 ⁶³	6.802 ³³⁴	41.02 ⁸⁷	14.477 ³⁷⁶	17.92 ¹⁰	14.497 ³⁰²	35.37 [—]
20.7	54.627 ²⁸⁵	35.47 ³⁷	7.121 ³¹⁹	41.84 ⁸²	14.831 ³⁵⁴	18.64 ⁷²	14.785 ²⁸⁸	35.55 ¹⁸
30.7	54.893 ²⁶⁶	35.57 ¹⁰	7.420 ²⁹⁹	42.59 ⁷⁵	15.159 ³²⁸	19.94 ¹³⁰	15.052 ²⁶⁷	36.18 ⁶³
Apr. 9.6	55.139 ²⁴⁶	35.42 ¹⁵	7.698 ²⁷⁸	43.27 ⁶⁸	15.453 ²⁹⁴	21.77 ¹⁸⁸	15.298 ²⁴⁶	37.23 ¹⁰⁵
19.6	55.363 ²²⁴	35.07 ³⁵	7.953 ²⁵⁵	43.86 ⁵⁹	15.707 ²⁵⁴	24.03 ²²⁶	15.518 ²³⁰	38.61 ¹³⁸
29.6	55.562 ¹⁹⁹	34.53 ⁵⁴	8.180 ²²⁷	44.40 ⁵⁴	15.919 ²¹²	26.65 ²⁰²	15.712 ¹⁹⁴	40.30 ¹⁶⁹
May 9.5	55.735 ¹⁷³	33.84 ⁶⁹	8.379 ¹⁹⁹	44.87 ⁴⁷	16.085 ¹⁶⁶	29.51 ²⁸⁶	15.875 ¹⁶³	42.20 ¹⁹⁰
19.5	55.880 ¹⁴⁵	33.05 ⁷⁹	8.547 ¹⁶⁸	45.30 ⁴³	16.203 ¹¹⁸	32.51 ³⁰⁰	16.006 ¹³¹	44.24 ²⁰⁴
29.5	55.994 ¹¹⁴	32.19 ⁸⁶	8.683 ¹³⁶	45.67 ³⁷	16.272 ⁶⁹	35.57 ³⁰⁶	16.105 ⁹⁹	46.36 ²¹²
June 8.5	56.076 ⁸²	31.31 ⁸⁸	8.783 ¹⁰⁰	45.99 ³²	16.291 ¹⁹	38.57 ³⁰⁰	16.169 ⁶⁴	48.46 ²¹⁰
18.4	56.126 ⁵⁰	30.43 ⁸⁸	8.846 ⁶³	46.27 ²⁸	16.261 ³⁰	41.45 ²⁸⁸	16.198 ²⁹	50.50 ²⁰⁴
28.4	56.141 ¹⁵	29.57 ⁸⁶	8.871 ²⁵	46.48 ²¹	16.183 ⁷⁸	44.10 ²⁶⁵	16.192 ⁶	52.43 ¹⁹³
July 8.4	56.122 ¹⁹	28.76 ⁸¹	8.857 ¹⁴	46.65 ¹⁷	16.059 ¹²⁴	46.47 ²³⁷	16.150 ⁴²	54.19 ¹⁷⁶
18.4	56.072 ⁵⁰	26.02 ⁷⁴	8.808 ⁴⁹	46.76 ¹¹	15.894 ¹⁶⁵	48.50 ²⁰³	16.075 ⁷⁵	55.72 ¹⁵³
28.3	55.990 ⁸²	27.36 ⁶⁶	8.723 ⁸⁵	46.78 ²	15.690 ²⁰⁴	50.15 ¹⁶⁵	15.969 ¹⁰⁶	57.01 ¹²⁹
Aug. 7.3	55.881 ¹⁰⁹	26.77 ⁵⁹	8.607 ¹¹⁶	46.71 ⁷	15.465 ²³⁵	51.37 ¹²³	15.836 ¹³³	58.04 ¹⁰³
17.3	55.750 ¹³¹	26.28 ⁴⁹	8.466 ¹⁴¹	46.54 ¹⁷	15.195 ²⁶⁰	52.14 ⁷⁷	15.682 ¹⁵⁴	58.77 ⁷³
27.2	55.604 ¹⁴⁶	25.89 ³⁹	8.306 ¹⁶⁰	46.26 ²⁸	14.916 ²⁷⁹	52.45 ³¹	15.509 ¹⁷³	59.20 ⁴³
Sept. 6.2	55.448 ¹⁵⁶	25.62 ¹⁶	8.137 ¹⁶⁹	45.89 ³⁷	14.629 ²⁸⁷	52.27 ¹⁸	15.329 ¹⁸⁰	59.30 ¹⁰
16.2	55.292 ¹⁵⁶	25.46 ¹⁶	7.967 ¹⁷⁰	45.43 ⁴⁶	14.344 ²⁸⁵	51.61 ⁶⁶	15.148 ¹⁸¹	59.08 ²²
26.2	55.145 ¹⁴⁷	25.43 ³	7.809 ¹⁵⁸	44.90 ⁵³	14.070 ²⁷⁴	50.48 ¹¹⁸	14.977 ¹⁷¹	58.52 ⁵⁶
Oct. 6.1	55.017 ¹²⁸	25.54 ¹¹	7.669 ¹⁴⁰	44.32 ⁵⁸	13.821 ²⁴⁹	48.89 ¹⁵⁹	14.822 ¹⁵⁵	57.65 ⁸⁷
16.1	54.916 ¹⁰¹	25.82 ²⁸	7.562 ¹⁰⁷	43.72 ⁶⁰	13.605 ²¹⁶	46.86 ²⁰³	14.695 ¹²⁷	56.44 ¹²¹
26.1	54.851 ⁶⁵	26.26 ⁴⁴	7.494 ⁶⁸	43.14 ⁵⁸	13.432 ¹⁷³	44.42 ²⁴⁴	14.602 ⁹³	54.92 ¹³²
Nov. 5.1	54.829 ²²	26.89 ⁶³	7.473 ²¹	42.62 ⁵²	13.311 ¹²¹	41.63 ²⁷⁹	14.552 ⁸⁰	53.11 ¹⁸¹
15.0	54.854 ²⁵	27.71 ⁸²	7.505 ³²	42.21 ⁴¹	13.250 ⁶¹	38.54 ³⁰⁹	14.550 ²	51.02 ²⁰⁹
25.0	54.928 ¹²⁵	28.72 ¹⁰¹	7.592 ⁸⁷	41.94 ²⁷	13.254 ⁴	35.22 ³³²	14.599 ¹⁰⁹	48.72 ²³⁰
Dec. 5.0	55.053 ⁷⁴	29.92 ¹²⁰	7.735 ¹⁴³	41.82 ¹²	13.323 ⁶⁹	31.76 ³⁴⁶	14.699 ⁴⁹	46.24 ²⁴⁸
14.9	55.224 ¹⁷¹	31.26 ¹³⁴	7.929 ¹⁹⁴	41.88 ⁶	13.458 ¹³⁵	28.25 ³⁵¹	14.847 ¹⁴⁸	46.24 ²⁶⁰
24.9	55.437 ²¹³	32.72 ¹⁴⁶	8.170 ²⁴¹	42.14 ²⁶	13.655 ¹⁹⁷	24.80 ³⁴⁵	15.041 ¹⁹⁴	43.64 ²⁶¹
34.9	55.688 ²⁵¹	34.25 ¹⁵³	8.449 ²⁷⁹	42.57 ⁴³	13.907 ²⁵²	21.53 ³²⁷	15.274 ²³³	41.03 ²⁶¹
Mean Place	52.498	18.92	4.779	32.01	12.953	46.11	12.831	58.45
Sec δ, Tan δ	1.003	-0.079	1.107	-0.475	1.453	+1.054	1.060	+0.351
Dψ a, Dω a	+0.06	0.00	+0.07	-0.01	+0.04	+0.03	+0.05	+0.01
Dψ δ, Dω δ	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Ursæ Minoris. Mag. 5.0		γ Apodis. Mag. 3.9		ω Herculis. Mag. 4.5		γ Draconis. Mag. 2.9	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 16 19	° ' " +75 56	h m 16 20	° ' " -78 42	h m 16 21	° ' " +14 13	h m 16 22	° ' " +61 41
	s "	"	s "	"	s "	"	s "	"
Jan. 0.9	52.03	39.21	27.44	35.14	31.695	21.94	49.18	57.00
10.9	52.57 ⁵⁴	36.10 ³¹¹	28.53 ¹⁰⁹	33.28 ¹⁸⁶	31.950 ²⁶⁵	19.62 ²³²	49.52 ³⁴	53.75 ³²⁵
20.9	53.25 ⁶⁶	33.40 ²⁷⁰	29.75 ¹²²	31.87 ¹⁴¹	32.230 ²⁸⁰	17.48 ²¹⁴	49.92 ⁴⁰	50.90 ²⁸⁵
30.8	54.04 ⁷⁹	31.21 ²¹⁹	31.06 ¹³¹	30.95 ⁹²	32.530 ³⁰⁰	15.56 ¹⁹²	50.37 ⁴⁵	48.56 ²³⁴
Feb. 9.8	54.91 ⁸⁷	29.61 ¹⁶⁰	32.44 ¹³⁸	30.51 ⁴⁴	32.840 ³¹⁰	13.96 ¹⁸⁰	50.87 ⁵⁰	46.77 ¹⁷⁹
	54.91 ⁹¹	29.61 ⁹⁴	32.44 ¹⁴⁰	30.51 ⁵	32.840 ³¹¹	13.96 ¹²²	50.87 ⁵¹	46.77 ¹¹²
19.8	55.82	28.67	33.84	30.56	33.151	12.74	51.38	45.65
29.7	56.75 ⁹⁸	28.40 ²⁷	35.25 ¹⁴¹	31.08 ⁵²	33.460 ³⁰⁹	11.92 ⁸²	51.90 ⁵²	45.19 ⁴⁶
Mar. 10.7	57.67 ⁹²	28.81 ⁴¹	36.63 ¹³⁸	32.06 ⁹⁶	33.758 ²⁹⁸	11.54 ²⁸	52.41 ⁵¹	45.41 ²²
20.7	58.54 ⁸⁷	29.87 ¹⁰⁶	37.95 ¹³²	33.44 ¹³⁸	34.044 ²⁸⁶	11.60 ⁶	52.89 ⁴⁸	46.31 ⁹⁰
30.7	59.33 ⁷⁹	31.52 ¹⁶⁵	39.20 ¹²⁵	35.21 ¹⁷⁷	34.310 ²⁶⁶	12.06 ⁴⁶	53.34 ⁴⁵	47.79 ¹⁴⁸
	59.33 ⁶⁸	31.52 ²¹⁸	39.20 ¹¹³	35.21 ²¹²	34.310 ²⁴⁵	12.06 ⁸⁵	53.34 ³⁹	47.79 ²⁰⁶
Apr. 9.6	60.01	33.70	40.33	37.83	34.555	12.91	53.73	49.84
19.6	60.57 ⁵⁶	36.32 ²⁶²	41.36 ¹⁰³	39.72 ²³⁹	34.777 ²²²	14.10 ¹¹⁹	54.07 ³⁴	52.36 ²⁵²
29.6	61.00 ⁴³	39.28 ²⁹⁶	42.25 ⁸⁹	42.35 ²⁶³	34.973 ¹⁹⁶	15.55 ¹⁴⁵	54.33 ²⁶	55.22 ²⁸⁶
May 9.6	61.27 ²⁷	42.45 ³¹⁷	43.00 ⁷⁵	45.16 ²⁸¹	35.141 ¹⁶⁸	17.21 ¹⁶⁶	54.52 ¹⁹	58.34 ³¹²
19.5	61.39 ¹²	45.74 ³²⁹	43.57 ⁵⁷	48.09 ²⁹³	35.279 ¹³⁸	19.01 ¹⁸⁰	54.65 ¹³	61.60 ³²⁶
	61.39 ³	45.74 ³³⁰	43.57 ⁴⁰	48.09 ²⁹⁷	35.279 ¹⁰⁶	19.01 ¹⁸⁸	54.65 ⁵	61.60 ³³⁰
29.5	61.36	49.04	43.97	51.06	35.385	20.89	54.70	64.90
June 8.5	61.17 ¹⁹	52.25 ³²¹	44.19 ²²	54.04 ²⁹⁸	35.456 ⁷¹	22.77 ¹⁸⁸	54.67 ³	68.14 ³²⁴
18.4	60.84 ³³	55.27 ³⁰²	44.23 ⁴	56.91 ²⁸⁷	35.494 ³⁸	24.61 ¹⁸⁴	54.58 ⁹	71.21 ³⁰⁷
28.4	60.38 ⁴⁶	58.03 ²⁷⁶	44.09 ¹⁴	59.62 ²⁷¹	35.499 ⁵	26.35 ¹⁷⁴	54.41 ¹⁷	74.06 ²⁸⁵
July 8.4	59.79 ⁵⁹	60.45 ²⁴²	43.76 ³³	62.09 ²⁴⁷	35.468 ³¹	27.94 ¹⁵⁹	54.17 ²⁴	76.58 ²⁵²
	59.79 ⁷⁰	60.45 ²⁰²	43.76 ⁴⁸	62.09 ²¹⁶	35.468 ⁶⁵	27.94 ¹⁴¹	54.17 ³⁰	76.58 ²¹⁵
18.4	59.09	62.47	43.28	64.25	35.403	29.35	53.87	78.73
28.3	58.30 ⁷⁹	64.05 ¹⁵⁸	42.64 ⁶⁴	66.04 ¹⁷⁹	35.309 ⁹⁴	30.55 ¹²⁰	53.52 ³⁵	80.46 ¹⁷³
Aug. 7.3	57.43 ⁸⁷	65.15 ¹¹⁰	41.87 ⁷⁷	67.39 ¹³⁵	35.185 ¹²⁴	31.52 ⁹⁷	53.13 ³⁹	81.73 ¹²⁷
17.3	56.51 ⁹²	65.75 ⁶⁰	41.01 ⁸⁶	68.27 ⁸⁸	35.041 ¹⁴⁴	32.22 ⁷⁰	52.71 ⁴²	82.50 ⁷⁷
27.3	55.56 ⁹⁶	65.84 ⁹	40.08 ⁹³	68.63 ³⁶	34.878 ¹⁶³	32.67 ⁴⁵	52.26 ⁴⁵	82.76 ²⁶
	55.56 ⁹⁷	65.84 ⁴³	40.08 ⁹⁶	68.63 ¹⁹	34.878 ¹⁷²	32.67 ¹⁶	52.26 ⁴⁶	82.76 ²⁵
Sept. 6.2	54.59	65.41	39.12	68.44	34.706	32.83	51.80	82.51
16.2	53.64 ⁹⁵	64.45 ⁹⁶	38.17 ⁹⁵	67.70 ⁷⁴	34.534 ¹⁷²	32.70 ¹³	51.35 ⁴⁵	81.73 ⁷⁸
26.2	52.72 ⁹²	62.98 ¹⁴⁷	37.27 ⁹⁰	66.44 ¹²⁶	34.370 ¹⁶⁴	32.29 ⁴¹	50.91 ⁴⁴	80.45 ¹²⁸
Oct. 6.1	51.86 ⁸⁶	61.05 ¹⁹³	36.47 ⁸⁰	64.70 ¹⁷⁴	34.221 ¹⁴⁹	31.58 ⁷¹	50.50 ⁴¹	78.68 ¹⁷⁷
16.1	51.08 ⁷⁸	58.69 ²³⁶	35.81 ⁶⁶	62.53 ²¹⁷	34.099 ¹²²	30.58 ¹⁰⁰	50.14 ³⁶	76.44 ²²⁴
	51.08 ⁶⁷	58.69 ²⁷⁸	35.81 ⁸⁰	62.53 ²⁵⁵	34.099 ⁸⁷	30.58 ¹³⁰	50.14 ³¹	76.44 ²⁶⁶
26.1	50.41	55.91	35.31	59.98	34.012	29.28	49.83	73.78
Nov. 5.1	49.87 ⁵⁴	52.79 ³¹²	35.02 ²⁹	57.20 ²⁷⁸	33.966 ⁴⁶	27.70 ¹⁵⁸	49.61 ²²	70.76 ³⁰²
15.0	49.47 ⁴⁰	49.42 ³³⁷	34.93 ⁹	54.26 ²⁹⁴	33.967 ¹	25.88 ¹⁸²	49.45 ¹⁶	67.44 ³³²
25.0	49.24 ²³	45.84 ³⁶⁸	35.09 ¹⁶	51.27 ²⁹⁹	34.017 ⁵⁰	23.84 ²⁰⁴	49.38 ⁷	63.88 ³⁵⁶
Dec. 5.0	49.18 ⁶	42.16 ³⁶⁸	35.46 ³⁷	48.35 ²⁹²	34.117 ¹⁰⁰	21.63 ²²¹	49.40 ²	60.20 ³⁶⁸
	49.18 ¹¹	42.16 ³⁶⁶	35.46 ⁵⁹	48.35 ²⁷⁵	34.117 ¹⁴⁹	21.63 ²³⁴	49.40 ¹¹	60.20 ³⁷⁰
14.9	49.29	38.50	36.05	45.60	34.266	19.29	49.51	56.50
24.9	49.57 ²⁸	34.96 ³⁵⁴	36.87 ⁸²	43.13 ²⁴⁷	34.460 ¹⁹⁴	16.91 ²³⁸	49.73 ²²	52.88 ³⁶²
34.9	50.01 ⁴⁴	31.65 ³³¹	37.85 ⁹⁸	41.01 ²¹²	34.691 ²³¹	14.55 ²³⁶	50.02 ²⁹	49.47 ³⁴¹
Mean Place	56.530	57.77	31.517	38.92	32.083	33.19	51.082	74.65
Sec δ, Tan δ	4.118	+3.995	5.110	-5.010	1.031	+0.253	2.109	+1.857
Dφ α, Dω α	-0.03	+0.11	+0.18	-0.14	+0.05	+0.01	+0.02	+0.05
Dφ δ, Dω δ	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Scorpii. (Antares.) Mag. 1.2		β Herculis. Mag. 2.8		λ Ophiuchi. Mag. 3.8		A Draconis. Mag. 5.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 16 24	" ' -26 14	h m 16 26	" ' +21 39	h m 16 26	" ' + 2 9	h m 16 28	" ' +68 56
	s 14.891	" 51.02	s 35.968	" 66.06	s 40.198	" 52.10	s 5.58	" 41.98
Jan. 0.9	14.891 ²⁹⁸	51.48 ⁴⁶	35.968 ²⁵¹	66.06 ²⁵⁷	40.198 ²⁵⁶	52.10 ¹⁸²	5.58 ³⁹	41.98 ³²⁵
10.9	15.189 ³²⁵	52.07 ⁵⁹	36.219 ²⁷⁹	63.49 ²³⁸	40.454 ²⁸¹	50.28 ¹⁷⁵	5.97 ⁴⁸	38.73 ²⁸⁵
20.9	15.514 ³⁴¹	52.79 ⁷²	36.498 ³⁰¹	61.11 ²⁰⁷	40.735 ²⁹⁸	48.53 ¹⁶⁰	6.45 ⁵⁵	35.88 ²³⁵
30.8	15.855 ³⁵²	53.58 ⁷⁹	36.799 ³¹²	59.04 ¹⁷⁰	41.033 ³⁰⁸	46.93 ¹⁴¹	7.00 ⁶¹	33.53 ¹⁷⁸
Feb. 9.8	16.207 ³⁵³	54.40 ⁸²	37.111 ³¹⁸	57.34 ¹²⁷	41.341 ³¹¹	45.52 ¹¹⁴	7.61 ⁶⁵	31.75 ¹¹³
19.8	16.560 ³⁴⁹	55.23 ⁸³	37.429 ³¹⁵	56.07 ⁸⁰	41.652 ³⁰⁶	44.38 ⁸⁵	8.26 ⁶⁶	30.62 ⁴⁵
29.7	16.909 ³³⁷	55.23 ⁸³	37.744 ³⁰⁵	55.27 ³⁰	41.958 ²⁹⁹	43.53 ⁵⁴	8.92 ⁶²	30.17 ²³
Mar. 10.7	17.246 ³²⁴	56.04 ⁷⁶	38.049 ²⁰⁰	54.97 ¹⁷⁸	42.257 ²⁰⁴	42.99 ²⁰	9.56 ⁶⁴	30.40 ⁹¹
20.7	17.570 ³⁰⁶	56.80 ⁷⁰	38.342 ²⁷⁵	55.17 ⁶⁷	42.543 ²⁸⁶	42.79 ¹³	10.18 ⁵⁷	31.31 ¹⁵²
30.7	17.876 ²⁸⁶	57.50 ⁶⁵	38.617 ²⁵²	55.84 ¹¹⁰	42.812 ²⁵⁰	42.92 ⁴¹	10.75 ⁵⁰	32.83 ²⁰⁶
Apr. 9.6	18.162 ²⁶³	58.15 ⁵⁹	38.869 ²²⁹	56.94 ¹⁴⁶	43.062 ²²⁸	43.33 ⁶⁸	11.25 ⁴³	34.89 ²⁵⁴
19.6	18.425 ²³⁸	58.74 ⁵³	39.098 ²⁰⁰	58.40 ¹⁷⁸	43.290 ²⁰⁴	44.01 ⁹⁰	11.68 ³⁴	37.43 ²⁸⁸
29.6	18.663 ²⁰⁹	59.27 ⁴⁸	39.298 ¹⁷⁰	60.18 ²⁰¹	43.494 ¹⁷⁹	44.91 ¹⁰⁷	12.02 ²³	40.31 ³¹⁵
May 9.6	18.872 ¹⁷⁸	59.75 ⁴³	39.468 ¹³⁹	62.19 ²¹⁶	43.673 ¹⁵⁰	45.98 ¹²⁰	12.25 ¹⁴	43.46 ³³¹
19.5	19.050 ¹⁴⁶	60.18 ³⁹	39.607 ¹⁰⁵	64.35 ²²⁴	43.823 ¹²⁰	47.18 ¹²⁶	12.39 ⁴	46.77 ³³⁴
29.5	19.196 ¹⁰⁹	60.57 ³⁶	39.712 ⁶⁹	66.59 ²²⁴	43.943 ⁸⁹	48.44 ¹²⁹	12.43 ⁶	50.11 ³²⁷
June 8.5	19.305 ⁷¹	60.93 ³²	39.781 ³³	68.83 ²¹⁷	44.032 ⁵⁵	49.73 ¹²⁷	12.37 ¹⁶	53.38 ³¹²
18.4	19.376 ³³	61.25 ²⁷	39.814 ²	71.00 ²⁰⁵	44.087 ²⁰	51.00 ¹²²	12.21 ²⁷	56.50 ²⁸⁸
28.4	19.409 ⁷	61.52 ²²	39.812 ⁴⁰	73.05 ¹⁸⁷	44.107 ¹³	52.22 ¹¹³	11.94 ³⁴	59.38 ²⁵⁶
July 8.4	19.402 ⁴⁴	61.74 ¹⁴	39.772 ⁷⁴	74.92 ¹⁶⁵	44.094 ⁴⁸	53.35 ¹⁰²	11.60 ⁴²	61.94 ²¹⁸
18.4	19.358 ⁸²	61.88 ⁷	39.698 ¹⁰⁷	76.57 ¹⁴⁰	44.046 ⁷⁹	54.37 ⁹⁰	11.18 ⁴⁹	64.12 ¹⁷⁵
28.3	19.276 ¹¹⁴	61.95 ²	39.591 ¹³⁵	77.97 ¹¹¹	43.967 ¹⁰⁸	55.27 ⁷⁴	10.69 ⁵⁵	65.87 ¹²⁹
Aug. 7.3	19.162 ¹³⁹	61.93 ¹²	39.456 ¹⁵⁹	79.08 ⁸⁰	43.859 ¹³¹	56.01 ⁶⁰	10.14 ⁵⁹	67.16 ⁷⁹
17.3	19.023 ¹⁶¹	61.81 ²³	39.297 ¹⁷⁶	79.88 ⁴⁹	43.728 ¹⁴⁸	56.61 ⁴³	9.55 ⁶¹	67.95 ²⁸
27.3	18.862 ¹⁷²	61.58 ³⁴	39.121 ¹⁸⁶	80.37 ¹⁴	43.580 ¹⁶⁰	57.04 ²⁵	8.94 ⁶³	68.23 ²⁵
Sept. 6.2	18.690 ¹⁷³	61.24 ⁴³	38.935 ¹⁸⁸	80.51 ²⁰	43.420 ¹⁶¹	57.29 ⁷	8.31 ⁶³	67.98 ⁷⁷
16.2	18.517 ¹⁶⁴	60.81 ⁵²	38.747 ¹⁸⁰	80.31 ⁵⁶	43.259 ¹⁵⁵	57.36 ¹¹	7.68 ⁶¹	67.21 ¹²⁸
26.2	18.353 ¹⁴⁵	60.29 ⁵⁸	38.567 ¹⁶³	79.75 ⁸⁹	43.104 ¹³⁹	57.25 ³²	7.07 ⁵⁷	65.93 ¹⁷⁷
Oct. 6.1	18.208 ¹¹⁴	59.71 ⁶¹	38.404 ¹³⁹	78.86 ¹²⁴	42.965 ¹¹³	56.93 ⁵³	6.50 ⁵²	64.16 ²²⁴
16.1	18.094 ⁷⁵	59.10 ⁶⁰	38.265 ¹⁰³	77.62 ¹⁵⁷	42.852 ⁷⁹	56.40 ⁷⁴	5.98 ⁴⁴	61.92 ²⁶⁶
26.1	18.019 ²⁸	58.50 ⁵⁶	38.162 ⁶¹	76.05 ¹⁸⁶	42.773 ³⁸	55.66 ⁹⁶	5.54 ³⁶	59.26 ³⁰³
Nov. 5.1	17.991 ²⁴	57.94 ⁴⁷	38.101 ¹⁵	74.19 ²¹⁶	42.735 ⁸	54.70 ¹¹⁷	5.18 ²⁵	56.23 ³³³
15.0	18.015 ⁸⁰	57.47 ³⁵	38.086 ³⁶	72.03 ²³⁸	42.743 ⁵⁶	53.53 ¹³⁶	4.93 ¹⁴	52.90 ³⁵⁶
25.0	18.095 ¹³⁴	57.12 ¹⁹	38.122 ⁸⁸	69.65 ²⁵⁷	42.799 ¹⁰⁶	52.17 ¹⁵⁵	4.79 ³	49.34 ³⁶⁹
Dec. 5.0	18.229 ¹⁸⁷	56.93 ²	38.210 ¹³⁸	67.08 ²⁶⁷	42.905 ¹⁵³	50.62 ¹⁶⁹	4.76 ⁹	45.65 ³⁷²
15.0	18.416 ²³⁴	56.91 ¹⁷	38.348 ¹⁸⁶	64.41 ²⁷⁰	43.058 ¹⁹⁷	48.93 ¹⁷⁸	4.85 ²²	41.93 ³⁶²
24.9	18.650 ²⁷⁵	57.08 ³³	38.534 ²²⁶	61.71 ²⁶⁵	43.255 ²³³	47.15 ¹⁸¹	5.07 ³²	38.31 ³⁴¹
34.9	18.925	57.41	38.760	59.06	43.488	45.34	5.39	34.90
Mean Place	15.249	47.60	36.454	78.47	40.530	60.96	8.454	59.63
Sec δ , Tan δ	1.115	-0.493	1.076	+0.397	1.001	+0.038	2.783	+2.598
$D\psi \alpha$, $D\omega \alpha$	+0.07	-0.01	+0.05	+0.01	+0.06	0.00	0.00	+0.07
$D\psi \delta$, $D\omega \delta$	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9	-0.2	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	τ Scorpii. Mag. 2.9		σ Herculis. Mag. 4.2		ζ Ophiuchi. Mag. 2.7		24 Scorpii. Mag. 5.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 16 30	° ' " -28 2	h m 16 31	° ' " +42 36	h m 16 32	° ' " -10 23	h m 16 36	° ' " -17 34
Jan. 0.9	38.625	37.22	22.746	19.14	31.569	58.69	42.406	54.87
10.9	38.922 ²⁹⁷	37.54 ³²	23.007 ²⁶¹	16.02 ³¹²	31.832 ²⁶³	59.90 ¹²¹	42.677 ²⁷¹	55.69 ⁸²
20.9	39.247 ³²⁵	38.01 ⁴⁷	23.309 ³⁰²	13.22 ²⁸⁰	32.121 ²⁸⁹	61.13 ¹²³	42.975 ²⁹⁸	56.58 ⁸⁹
30.8	39.590 ³⁴³	38.60 ⁵⁹	23.643 ³³⁴	10.83 ²³⁹	32.430 ³⁰⁹	62.32 ¹¹⁹	43.291 ³¹⁶	57.51 ⁹³
Feb. 9.8	39.945 ³⁵⁵	39.29 ⁶⁹	23.998 ³⁵⁵	8.94 ¹⁸⁹	32.746 ³¹⁶	63.44 ¹¹²	43.617 ³²⁶	58.42 ⁹¹
19.8	40.302 ³⁵⁷	40.03 ⁷⁴	24.364 ³⁶⁶	7.63 ¹³¹	33.066 ³²⁰	64.43 ⁹⁹	43.948 ³³¹	59.28 ⁸⁶
29.7	40.657 ³⁵⁵	40.79 ⁷⁶	24.731 ³⁶⁷	6.92 ⁷¹	33.383 ³¹⁷	65.25 ⁸²	44.276 ³²⁸	60.05 ⁷⁷
Mar. 10.7	41.001 ³⁴⁴	41.56 ⁷⁷	25.091 ³⁶⁰	6.84 [—]	33.691 ³⁰⁸	65.88 ⁶³	44.597 ³²¹	60.70 ⁶⁵
20.7	41.332 ³³¹	42.30 ⁷⁴	25.435 ³⁴⁴	7.38 ⁵⁴	33.988 ²⁹⁷	66.31 ⁴³	44.905 ³⁰⁸	61.23 ⁵³
30.7	41.648 ³¹⁶	43.00 ⁷⁰	25.756 ³²¹	8.50 ¹¹²	34.270 ²⁸²	66.52 ²¹	45.200 ²⁹⁵	61.62 ³⁹
Apr. 9.6	41.942 ²⁹⁴	43.67 ⁶⁷	26.049 ²⁹³	10.15 ¹⁶⁵	34.533 ²⁶³	66.54 ²	45.476 ²⁷⁶	61.87 ²⁵
19.6	42.214 ²⁷²	44.29 ⁶²	26.308 ²⁵⁹	12.25 ²¹⁰	34.777 ²⁴⁴	66.38 ¹⁶	45.731 ²⁵⁵	62.01 ¹⁴
29.6	42.461 ²⁴⁷	44.87 ⁵⁸	26.529 ²²¹	14.73 ²⁴⁸	34.997 ²²⁰	66.06 ³²	45.964 ²³³	62.04 ³
May 9.6	42.679 ²¹⁸	45.41 ⁵⁴	26.710 ¹⁸¹	17.47 ²⁷⁴	35.192 ¹⁹⁵	65.63 ⁴³	46.170 ²⁰⁶	61.98 ⁶
19.5	42.867 ¹⁸⁸	45.92 ⁵¹	26.847 ¹³⁷	20.38 ²⁹¹	35.358 ¹⁶⁶	65.12 ⁵¹	46.349 ¹⁷⁹	61.86 ¹²
29.5	43.020 ¹⁵³	46.39 ⁴⁷	26.939 ⁹²	23.36 ²⁹⁸	35.496 ¹³⁸	64.55 ⁵⁷	46.497 ¹⁴⁸	61.70 ¹⁶
June 8.5	43.137 ¹¹⁷	46.84 ⁴⁵	26.983 ⁴⁴	26.33 ²⁰⁷	35.600 ¹⁰⁴	63.94 ⁶¹	46.610 ¹¹³	61.50 ²⁰
18.4	43.216 ⁷⁹	47.24 ⁴⁰	26.983 ⁰	29.20 ²⁸⁷	35.669 ⁶⁹	63.34 ⁶⁰	46.689 ⁷⁹	61.29 ²¹
28.4	43.255 ³⁰	47.61 ³⁷	26.935 ⁴⁸	31.88 ²⁶⁸	35.704 ³⁵	62.74 ⁶⁰	46.731 ⁴²	61.08 ²¹
July 8.4	43.254 ¹	47.92 ³¹	26.842 ⁹³	34.33 ²⁴⁵	35.703 ¹	62.17 ⁵⁷	46.736 ⁵	60.86 ²²
18.4	43.213 ⁴¹	48.15 ²³	26.707 ¹³⁵	34.33 ²¹²	35.703 ³⁷	62.17 ⁵³	46.736 ³³	60.86 ²²
28.3	43.135 ⁷⁸	48.30 ¹⁵	26.534 ¹⁷³	36.45 ¹⁷⁷	35.666 ⁷¹	61.64 ⁵⁰	46.703 ⁶⁹	60.64 ²³
Aug. 7.3	43.022 ¹¹³	48.30 ⁶	26.327 ²⁰⁷	38.22 ¹³⁶	35.595 ¹⁰¹	61.14 ⁴⁴	46.634 ¹⁰⁰	60.41 ²⁴
17.3	42.882 ¹⁴⁰	48.36 ⁶	26.094 ²³³	39.58 ⁹⁶	35.494 ¹²⁷	60.70 ⁴⁰	46.534 ¹²⁸	60.17 ²⁷
27.3	42.719 ¹⁶³	48.30 ¹⁷	26.094 ²⁵⁴	40.54 ⁴⁹	35.367 ¹⁴⁵	60.30 ³⁶	46.406 ¹⁴⁸	59.90 ²⁷
Sept. 6.2	42.545 ¹⁷⁴	48.13 ³¹	25.840 ²⁶⁴	41.03 ³	35.222 ¹⁵⁸	59.94 ³⁰	46.258 ¹⁶¹	59.63 ²⁹
16.2	42.368 ¹⁷⁷	47.40 ⁴²	25.576 ²⁶⁶	41.06 ⁴⁴	35.064 ¹⁶¹	59.64 ²³	46.097 ¹⁶⁵	59.34 ³⁰
26.2	42.199 ¹⁶⁹	47.40 ⁵²	25.310 ²⁵⁷	40.62 ⁹⁰	34.903 ¹⁵⁴	59.41 ¹⁶	45.932 ¹⁶⁰	59.04 ³⁰
Oct. 6.1	42.047 ¹⁵²	46.88 ⁶⁰	25.053 ²³⁹	39.72 ¹³⁶	34.749 ¹³⁹	59.25 ⁸	45.772 ¹⁴⁴	58.74 ²⁸
16.1	41.926 ¹²¹	46.28 ⁶⁵	24.814 ²⁰⁸	38.36 ¹⁸⁰	34.610 ¹¹²	59.17 ²	45.628 ¹¹⁶	58.46 ²⁴
26.1	41.844 ⁸²	45.63 ⁶⁷	24.606 ¹⁶⁹	36.56 ²²¹	34.498 ⁷⁸	59.19 ¹⁴	45.512 ⁸²	58.22 ¹⁸
Nov. 5.1	41.844 ³⁵	44.96 ⁶⁵	24.437 ¹²¹	34.35 ²⁵⁸	34.420 ³⁶	59.33 ²⁹	45.430 ⁴⁰	58.04 ¹⁰
15.0	41.809 ¹⁷	44.31 ⁵⁸	24.316 ⁶⁶	31.77 ²⁸⁸	34.384 ¹¹	59.62 ⁴⁴	45.390 ¹⁰	57.94 ²
25.0	41.826 ⁷³	43.73 ⁴⁷	24.250 ⁷	28.89 ³¹⁶	34.395 ⁶¹	60.06 ⁶¹	45.400 ⁶¹	57.96 ¹⁶
Dec. 5.0	41.899 ¹²⁹	43.26 ³²	24.243 ⁵⁷	25.73 ³³¹	34.456 ¹¹¹	60.67 ⁶⁸	45.461 ¹¹³	58.12 ³²
15.0	42.028 ¹⁸³	42.94 ¹⁷	24.300 ¹¹⁸	22.42 ³⁴⁰	34.567 ¹⁵⁹	61.45 ⁹²	45.574 ¹⁶³	58.44 ⁴⁶
24.9	42.211 ²³²	42.77 ¹	24.418 ¹⁷⁶	19.02 ³³⁸	34.726 ²⁰⁴	62.37 ¹⁰⁵	45.737 ²⁰⁸	58.90 ⁶¹
34.9	42.443 ²⁷³	42.78 ¹⁹	24.594 ²³⁰	15.64 ³²³	34.930 ²⁴¹	63.42 ¹¹⁵	45.945 ²⁴⁷	59.51 ⁷⁴
Mean Place	39.012	33.99	23.682	34.34	31.894	52.23	42.753	49.68
Sec δ , Tan δ	1.133	-0.533	1.358	+0.920	1.017	-0.184	1.049	-0.317
$D_{\phi} \alpha$, $D_{\omega} \alpha$	+0.07	-0.01	+0.04	+0.02	+0.07	0.00	+0.07	-0.01
$D_{\phi} \delta$, $D_{\omega} \delta$	-0.2	-0.9	-0.2	-0.9	-0.1	-0.9	-0.1	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ζ Herculis. Mag. 3.0		α Triang. Aust. Mag. 1.9		γ Herculis. Mag. 3.6		Groombridge 2377. Mag. 4.9	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m s	" ' "	h m s	" ' "	h m s	" ' "	h m s	" ' "
	16 38	+31 44	16 39	-68 52	16 40	+39 4	16 43	+56 55
Jan. 0.9	6.458	62.11	43.51	28.66	0.047	38.49	40.495	38.32
10.9	6.702 ²⁴⁴	59.22 ²⁸⁰	44.11 ⁶⁰	26.94 ¹⁷²	0.295 ²⁴⁸	35.41 ³⁰⁸	40.775 ²⁸⁰	34.99 ³³³
20.9	6.978 ²⁷⁶	56.60 ²⁶²	44.79 ⁶⁸	25.58 ¹³⁶	0.581 ²⁸⁶	32.61 ²⁸⁰	41.116 ³⁴¹	32.00 ²⁹⁹
30.8	7.282 ³⁰⁴	54.32 ²²⁸	45.52 ⁷³	24.64 ⁹⁴	0.899 ³¹⁸	30.21 ²⁴⁰	41.506 ³⁹⁰	29.47 ²⁵³
Feb. 9.8	7.603 ³²¹	52.47 ¹⁸⁵	46.29 ⁷⁷	24.12 ⁵²	1.238 ³³⁹	28.27 ¹⁹⁴	41.933 ⁴²⁷	27.46 ²⁰¹
19.8	7.933 ³³⁰	51.12 ¹³⁵	47.09 ⁸⁰	24.01 ¹¹	1.589 ³⁵¹	26.89 ¹³⁸	42.384 ⁴⁵¹	26.07 ¹³⁹
29.8	8.264 ³³¹	50.30 ⁸²	47.88 ⁷⁹	24.32 ³¹	1.941 ³⁵²	26.09 ⁸⁰	42.844 ⁴⁶⁰	25.34 ⁷³
Mar. 10.7	8.589 ³²⁵	50.07 ²³	48.67 ⁷⁹	25.01 ⁶⁹	2.288 ³⁴⁷	25.90 ¹⁹	43.300 ⁴⁵⁶	25.27 ⁷
20.7	8.902 ³¹³	50.40 ³³	49.43 ⁷⁶	26.07 ¹⁰⁶	2.622 ³³⁴	26.31 ⁴¹	43.740 ⁴⁴⁰	25.88 ⁶¹
30.7	9.196 ²⁹⁴	51.27 ⁸⁷	50.16 ⁷³	27.45 ¹³⁸	2.937 ³¹⁵	27.30 ⁹⁹	44.152 ⁴¹²	27.12 ¹²⁴
Apr. 9.6	9.468 ²⁷²	52.63 ¹³⁶	50.84 ⁶⁸	29.14 ¹⁶⁹	3.227 ²⁹⁰	28.82 ¹⁵²	44.529 ³⁷⁷	28.92 ¹⁸⁰
19.6	9.712 ²⁴⁴	54.41 ¹⁷⁸	51.47 ⁶³	31.08 ¹⁹⁴	3.486 ²⁵⁰	30.80 ¹⁹⁸	44.860 ³³¹	31.23 ²³¹
29.6	9.928 ²¹⁴	56.55 ²¹⁴	52.02 ⁵⁵	33.25 ²¹⁷	3.711 ²²⁵	33.13 ²³³	45.137 ²⁷⁷	33.93 ²⁷⁰
May 9.6	10.108 ¹⁸²	58.96 ²⁴¹	52.50 ⁴⁸	35.59 ²³⁴	3.900 ¹⁸⁹	35.76 ²⁶³	45.357 ²²⁰	36.94 ³⁰¹
19.5	10.253 ¹⁴⁵	61.55 ²⁵⁹	52.91 ⁴¹	38.06 ²⁴⁷	4.047 ¹⁴⁷	38.57 ²⁸¹	45.515 ¹⁵⁸	40.13 ³¹⁹
29.5	10.360 ¹⁰⁷	64.22 ²⁶⁷	53.22 ³¹	40.60 ²⁵⁴	4.152 ¹⁰⁵	41.48 ²⁹¹	45.609 ⁹⁴	43.42 ³²⁹
June 8.5	10.428 ⁶⁸	66.91 ²⁶⁹	53.44 ²²	43.15 ²⁵⁵	4.214 ⁶²	44.39 ²⁹¹	45.639 ³⁰	46.70 ³²⁸
18.5	10.456 ²⁸	69.51 ²⁶⁰	53.54 ¹⁰	45.66 ²⁵¹	4.230 ¹⁶	47.21 ²⁸²	45.602 ³⁷	49.87 ³¹⁷
28.4	10.443 ¹³	71.98 ²⁴⁷	53.56 ²	48.06 ²⁴⁰	4.202 ²⁸	49.87 ²⁶⁶	45.500 ¹⁰²	52.85 ²⁹⁸
July 8.4	10.390 ⁵³	74.25 ²²⁷	53.48 ⁸	50.29 ²²³	4.131 ⁷¹	52.30 ²⁴³	45.340 ¹⁶⁰	55.55 ²⁷⁰
18.4	10.300 ⁹⁰	76.24 ¹⁹⁹	53.30 ¹⁸	52.26 ¹⁹⁷	4.018 ¹¹³	54.45 ²¹⁵	45.123 ²¹⁷	57.94 ²³⁹
28.3	10.173 ¹²⁷	77.93 ¹⁶⁹	53.03 ²⁷	53.93 ¹⁶⁷	3.866 ¹⁵²	56.25 ¹⁸⁰	44.855 ²⁶⁸	59.93 ¹⁹⁹
Aug. 7.3	10.015 ¹⁵⁸	79.29 ¹³⁶	52.67 ³⁶	55.24 ¹³¹	3.682 ¹⁸⁴	57.68 ¹⁴³	44.542 ³¹³	61.48 ¹⁵⁵
17.3	9.831 ¹⁸⁴	80.27 ⁹⁸	52.25 ⁴²	56.14 ⁹⁰	3.469 ²¹³	58.71 ¹⁰³	44.194 ³⁴⁸	62.56 ¹⁰⁸
27.3	9.626 ²⁰⁵	80.86 ⁵⁹	51.79 ⁴⁶	56.60 ⁴⁶	3.236 ²³³	59.31 ⁶⁰	43.819 ³⁷⁵	63.16 ⁶⁰
Sept. 6.2	9.409 ²¹⁷	81.05 ¹⁹	51.29 ⁵⁰	56.57 ³	2.990 ²⁴⁶	59.46 ¹⁵	43.430 ³⁸⁹	63.25 ⁹
16.2	9.190 ²¹⁹	80.82 ²³	50.80 ⁴⁹	56.07 ⁵⁰	2.740 ²⁵⁰	59.15 ³¹	43.036 ³⁹⁴	62.82 ⁴³
26.2	8.977 ²¹³	80.17 ⁶⁵	50.31 ⁴⁹	55.10 ⁹⁷	2.497 ²⁴³	58.40 ⁷⁵	42.651 ³⁸⁵	61.87 ⁹⁵
Oct. 6.2	8.779 ¹⁹⁸	79.12 ¹⁰⁵	49.89 ⁴²	53.68 ¹⁴²	2.270 ²²⁷	57.20 ¹²⁰	42.289 ³⁶²	60.43 ¹⁴⁴
16.1	8.607 ¹⁷²	77.68 ¹⁴⁴	49.52 ³⁷	51.85 ¹⁸³	2.071 ¹⁹⁹	55.56 ¹⁶⁴	41.961 ³²⁸	58.52 ¹⁹¹
26.1	8.470 ¹³⁷	75.84 ¹⁸⁴	49.24 ²⁸	52.26 ²¹⁶	1.908 ¹⁶³	53.52 ²⁰⁴	41.681 ²⁸⁰	56.16 ²³⁶
Nov. 5.1	8.375 ⁹⁵	73.66 ²¹⁸	49.06 ¹⁸	49.69 ¹⁸	1.908 ¹¹⁷	53.52 ²⁴⁰	41.681 ²²²	56.16 ²⁷⁶
15.0	8.331 ⁴⁴	71.17 ²⁴⁹	49.00 ⁶	47.29 ²⁴⁰	1.791 ⁶⁵	51.12 ²⁷⁴	41.459 ¹⁵⁵	53.40 ³¹¹
25.0	8.339 ⁸	68.43 ²⁷⁴	49.07 ⁷	44.71 ²⁵⁸	1.726 ⁸	48.38 ³⁰¹	41.304 ⁷⁸	50.29 ³³⁷
Dec. 5.0	8.401 ⁶²	65.50 ²⁹³	49.27 ²⁰	42.07 ²⁶⁴	1.718 ⁵²	45.37 ³¹⁹	41.226 ²	46.92 ³⁵⁷
15.0	8.518 ¹¹⁷	62.45 ³⁰⁵	49.27 ³²	39.49 ²⁴⁷	1.770 ¹¹⁰	42.18 ³²⁸	41.228 ⁸³	43.35 ³⁶⁴
24.9	8.687 ¹⁶⁹	59.41 ³⁰⁴	50.03 ⁴⁴	37.02 ²²⁵	1.880 ¹⁶⁵	38.90 ³²⁹	41.311 ¹⁶¹	39.71 ³⁶¹
34.9	8.902 ²¹⁵	56.44 ²⁹⁷	50.57 ⁵⁴	34.77 ¹⁹⁵	2.045 ²¹⁷	35.61 ³¹⁸	41.472 ²³⁶	36.10 ³⁴⁵
Mean Place	7.157	75.50	45.431	30.55	0.928	52.71	42.208	53.99
Sec δ, Tan δ	1.176	+0.619	2.775	-2.589	1.288	+0.812	1.833	+1.536
$D\phi \alpha, D\omega \alpha$	+0.05	+0.01	+0.13	-0.06	+0.04	+0.02	+0.02	+0.03
$D\phi \delta, D\omega \delta$	-0.1	-0.9	-0.1	-0.9	-0.1	-0.9	-0.1	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Scorpil. Mag. 2.4			49 Herculis. Mag. 6.4			ε ¹ Arse. Mag. 4.2			κ Ophiuchi. Mag. 3.4		
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	16	44	-34 8	16	48	+15 6	16	52	-53 1	16	53	+ 9 29
	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 0.9	42.672	33.59	10	14.860	40.74	233	52.084	58.59	116	41.017	67.60	208
10.9	42.972	33.49	7	15.092	38.41	218	52.464	57.43	88	41.246	65.52	198
20.9	43.304	33.56	7	15.355	36.23	196	52.890	56.55	88	41.505	63.54	180
30.8	43.660	33.81	25	15.640	34.27	196	53.352	55.98	57	41.786	61.74	153
Feb. 9.8	44.023	34.20	39	15.939	32.62	165	53.836	55.70	28	42.081	60.21	122
	375	50	50	308	128	497	497	1	303	303	122	122
19.8	44.403	34.70		16.247	31.34		54.333	55.69		42.384	58.99	85
29.8	44.777	35.29	59	16.555	30.48	86	54.834	55.98	29	42.689	58.14	47
Mar. 10.7	45.145	35.94	65	16.857	30.05	43	55.328	56.51	53	42.990	57.67	6
20.7	45.501	36.65	71	17.151	30.06	1	55.810	57.28	77	43.282	57.61	32
30.7	45.842	37.38	73	17.431	30.52	46	56.273	58.26	98	43.561	57.93	69
	322	75	75	262	86	439	439	119	283	283	69	69
Apr. 9.7	46.164	38.13		17.693	31.38		56.712	59.45		43.824	58.62	100
19.6	46.463	38.89	76	17.935	32.59	121	57.121	60.79	134	44.069	59.62	129
29.6	46.738	39.67	78	18.152	34.09	150	57.495	62.28	149	44.232	60.91	149
May 9.6	46.983	40.45	78	18.344	35.83	174	57.828	63.89	161	44.489	62.40	164
19.5	47.195	41.23	78	18.506	37.73	190	58.116	65.58	169	44.658	64.04	173
	177	78	78	131	199	236	236	176	140	140	173	173
29.5	47.372	42.01		18.637	39.72		58.352	67.34		44.798	65.77	176
June 8.5	47.510	42.78	77	18.735	41.73	201	58.534	69.11	177	44.904	67.53	174
18.5	47.607	43.52	74	18.796	43.72	190	58.658	70.87	176	44.975	69.27	165
28.4	47.659	44.22	70	18.820	45.61	189	58.721	72.55	168	45.010	70.92	155
July 8.4	47.667	44.87	65	18.808	47.37	176	58.721	74.13	158	45.010	72.47	140
	36	55	55	48	157	60	60	143	38	38	140	140
18.4	47.631	45.42		18.760	48.94		58.661	75.56		44.972	73.87	123
28.4	47.553	45.87	45	18.678	50.31	137	58.545	76.77	121	44.900	75.10	101
Aug. 7.3	47.437	46.17	30	18.564	51.42	111	58.373	77.73	96	44.796	76.11	80
17.3	47.290	46.33	16	18.424	52.30	88	58.158	78.41	68	44.665	76.91	58
27.3	47.115	46.32	1	18.262	52.89	59	57.908	78.75	34	44.513	77.49	33
	189	20	20	174	31	272	272	1	168	168	33	33
Sept. 6.2	46.926	46.12		18.088	53.20		57.636	78.76		44.345	77.82	9
16.2	46.731	45.75	37	17.909	53.22	2	57.355	78.40	36	44.171	77.91	17
26.2	46.542	45.21	54	17.732	52.92	30	57.080	77.69	71	44.001	77.74	43
Oct. 6.2	46.372	44.51	70	17.571	52.33	59	56.829	76.65	104	43.843	77.31	70
16.1	46.229	43.70	81	17.430	51.44	89	56.614	75.33	132	43.707	76.61	95
	102	89	89	108	120	163	163	158	106	106	95	95
26.1	46.127	42.81		17.322	50.24		56.451	73.75		43.601	75.66	121
Nov. 5.1	46.072	41.89	92	17.252	48.76	148	56.352	71.99	176	43.533	74.45	145
15.1	46.074	40.98	91	17.226	47.01	175	56.325	70.12	187	43.509	73.00	169
25.0	46.134	40.13	85	17.249	45.03	198	56.376	68.22	190	43.533	71.31	185
Dec. 5.0	46.252	39.40	73	17.322	42.85	218	56.506	66.36	186	43.605	69.46	201
	175	59	59	122	230	208	208	175	121	121	201	201
15.0	46.427	38.81		17.444	40.55		56.714	64.61		43.726	67.45	208
24.9	46.656	38.38	43	17.612	38.17	238	56.994	63.05	156	43.891	65.37	210
34.9	46.928	38.15	23	17.820	35.81	236	57.337	61.71	134	44.097	63.27	210
Mean Place	43.148	30.98		15.353	51.28		52.977	58.16		41.476	77.13	
Sec δ, Tan δ	1.209	-0.678		1.036	+0.270		1.663	-1.329		1.014	+0.167	
D _φ α, D _ω α	+0.08	-0.01		+0.05	+0.01		+0.09	-0.03		+0.06	0.00	
D _φ δ, D _ω δ	-0.1	-0.9		-0.1	-1.0		-0.1	-1.0		-0.1	-1.0	

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	30 Ophiuchi. Mag. 5.0		ε Herculis. Mag. 3.9		δ Herculis. Mag. 5.3		γ Ophiuchi. Mag. 2.6	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "
	16 56	- 4 5	16 57	+31 2	16 58	+33 40	17 5	-15 37
	s	"	s	"	s	"	s	"
Jan. 0.9	37.440	53.44	3.744	45.48	29.373	68.37	33.108	24.34
10.9	37.678 ²³⁸	59.87 ¹⁴³	3.969 ²²⁵	42.57 ²⁰¹	29.508 ²²⁵	65.39 ²⁹⁸	33.352 ²⁴⁴	25.11 ⁷⁷
20.9	37.944 ²⁶⁶	61.27 ¹⁴⁰	4.231 ²⁶²	39.90 ²⁶⁷	29.859 ²⁶¹	62.64 ²⁷⁵	33.626 ²⁷⁴	25.92 ⁸¹
30.8	38.230 ²⁸⁶	62.60 ¹³³	4.520 ²⁸⁹	37.54 ²³⁶	30.153 ²⁹⁴	60.23 ²⁴¹	33.923 ²⁹⁷	26.75 ⁸³
Feb. 9.8	38.532 ³⁰²	63.78 ¹¹⁸	4.831 ³¹¹	35.60 ¹⁹⁴	30.467 ³¹⁴	58.25 ¹⁹⁸	34.235 ³¹²	27.54 ⁷⁹
	308	100	323	146	328	149	319	70
19.8	38.840	64.78	5.154	34.14	30.795	56.76	34.554	28.24
29.8	39.149 ³⁰⁹	65.54 ⁷⁶	5.482 ³²⁸	33.22 ⁹²	31.129 ³³⁴	55.82 ⁹⁴	34.877 ³²³	28.85 ⁶¹
Mar. 10.7	39.453 ³⁰⁴	66.05 ⁵¹	5.807 ³²⁵	32.85 ³⁷	31.462 ³³³	55.46 ³⁶	35.196 ³¹⁹	29.33 ⁴⁸
20.7	39.751 ²⁹⁸	66.29 ²⁴	6.124 ³¹⁷	33.04 ¹⁹	31.785 ³²³	55.66 ²⁰	35.509 ³¹³	29.65 ³²
30.7	40.037 ²⁸⁶	66.27 ²	6.426 ³⁰²	33.79 ⁷⁵	32.094 ³⁰⁹	56.45 ⁷⁹	35.811 ³⁰²	29.81 ¹⁶
	271	28	284	124	288	129	289	3
Apr. 9.7	40.308	65.99	6.710	35.03	32.382	57.74	36.100	29.84
19.6	40.560 ²⁵²	65.50 ⁴⁹	6.969 ²⁵⁹	36.72 ¹⁶⁹	32.646 ²⁶⁴	59.50 ¹⁷⁶	36.373 ²⁷³	29.73 ¹¹
29.6	40.793 ²³³	64.80 ⁷⁰	7.201 ²³²	38.79 ²⁰⁷	32.883 ²³⁷	61.64 ²¹⁴	36.625 ²⁵²	29.50 ²³
May 9.6	41.001 ²⁰⁸	63.96 ⁸⁴	7.402 ²⁰¹	41.14 ²³⁵	33.087 ²⁰⁴	64.06 ²⁴²	36.854 ²²⁹	29.20 ³⁰
19.5	41.183 ¹⁸²	63.02 ⁹⁴	7.568 ¹⁶⁶	43.70 ²⁵⁶	33.253 ¹⁶⁶	66.71 ²⁶⁵	37.057 ²⁰³	28.84 ³⁶
	153	101	129	268	130	277	172	39
29.5	41.336	62.01	7.697	46.38	33.383	69.48	37.229	28.45
June 8.5	41.457 ¹²¹	60.96 ¹⁰⁵	7.788 ⁹¹	49.08 ²⁷⁰	33.471 ⁸⁸	72.28 ²⁸⁰	37.370 ¹⁴¹	28.05 ⁴⁰
18.5	41.544 ⁸⁷	59.93 ¹⁰³	7.837 ⁴⁹	51.75 ²⁶⁷	33.518 ⁴⁷	75.04 ²⁷⁶	37.474 ¹⁰⁴	27.65 ⁴⁰
28.4	41.594 ⁵⁰	58.94 ⁹⁹	7.845 ⁸	54.28 ²⁵³	33.522 ⁴	77.66 ²⁶²	37.541 ⁶⁷	27.27 ³⁸
July 8.4	41.607 ¹³	58.01 ⁹³	7.811 ³⁴	56.64 ²³⁶	33.482 ⁴⁰	80.10 ²⁴⁴	37.568 ²⁷	26.91 ³⁶
	23	85	74	210	79	217	12	32
18.4	41.584	57.16	7.737	58.74	33.403	82.27	37.556	26.59
28.4	41.525 ⁵⁹	56.42 ⁷⁴	7.625 ¹¹²	60.57 ¹⁸³	33.285 ¹¹⁸	84.18 ¹⁹¹	37.507 ⁴⁹	26.30 ²⁹
Aug. 7.3	41.435 ⁹⁰	55.78 ⁶⁴	7.480 ¹⁴⁵	62.07 ¹⁵⁰	33.130 ¹⁵⁵	85.74 ¹⁵⁶	37.421 ⁸⁶	26.02 ²⁸
17.3	41.316 ¹¹⁹	55.24 ⁵⁴	7.304 ¹⁷⁶	63.21 ¹¹⁴	32.947 ¹⁸³	86.91 ¹¹⁷	37.305 ¹¹⁶	25.77 ²⁵
27.3	41.174 ¹⁴²	54.82 ⁴²	7.107 ¹⁹⁷	63.96 ⁷⁵	32.740 ²⁰⁷	87.70 ⁷⁹	37.164 ¹⁴¹	25.53 ²⁴
	157	31	214	36	221	37	158	22
Sept. 6.2	41.017	54.51	6.893	64.32	32.519	88.07	37.006	25.31
16.2	40.853 ¹⁶⁴	54.34 ¹⁷	6.673 ²²⁰	64.27 ⁵	32.289 ²³⁰	88.00 ⁷	36.838 ¹⁶⁸	25.09 ²²
26.2	40.692 ¹⁶¹	54.30 ⁴	6.455 ²¹⁸	63.81 ⁴⁶	32.060 ²²⁹	87.53 ⁴⁷	36.672 ¹⁶⁶	24.88 ²¹
Oct. 6.2	40.542 ¹⁵⁰	54.39 ⁹	6.252 ²⁰³	62.94 ⁸⁷	31.848 ²¹²	86.62 ⁹¹	36.517 ¹⁵⁵	24.71 ¹⁷
16.1	40.415 ¹²⁷	54.64 ²⁵	6.070 ¹⁸²	61.66 ¹²⁸	31.656 ¹⁹²	85.28 ¹³⁴	36.384 ¹³³	24.57 ¹⁴
	98	40	149	168	150	173	102	8
26.1	40.317	55.04	5.921	59.98	31.497	83.55	36.282	24.49
Nov. 5.1	40.259 ⁵⁸	55.61 ⁵⁷	5.812 ¹⁰⁹	57.95 ²⁰³	31.379 ¹¹⁸	81.44 ²¹¹	36.218 ⁶⁴	24.49 ⁰
15.1	40.244 ¹⁵	56.37 ⁵⁶	5.749 ⁶³	55.60 ²³⁵	31.309 ⁷⁰	79.00 ²⁴⁴	36.201 ¹⁷	24.59 ¹⁰
25.0	40.277 ³³	57.28 ⁹¹	5.739 ¹⁰	52.96 ²⁶⁴	31.292 ¹⁷	76.29 ²⁷¹	36.233 ³²	24.82 ²³
Dec. 5.0	40.359 ⁸²	58.36 ¹⁰⁸	5.782 ⁴³	50.13 ²⁸³	31.331 ³⁹	73.35 ²⁹⁴	36.315 ⁸²	25.17 ³⁵
	130	123	99	298	91	306	133	48
15.0	40.489	59.59	5.881	47.15	31.422	70.29	36.448	25.65
24.9	40.663 ¹⁷⁴	60.92 ¹³³	6.030 ¹⁴⁹	44.13 ³⁰²	31.569 ¹⁴⁷	67.18 ³¹¹	36.626 ¹⁷⁸	26.25 ⁶⁰
34.9	40.877 ²¹⁴	62.31 ¹³⁹	6.226 ¹⁹⁶	41.17 ²⁹⁶	31.762 ¹⁹³	64.12 ³⁰⁶	36.846 ²²⁰	26.96 ⁷¹
Mean Place	37.836	51.02	4.510	57.72	30.204	80.81	33.513	18.62
Sec δ, Tan δ	1.003	-0.072	1.167	+0.602	1.202	+0.667	1.039	-0.280
$D\phi a, D\omega a$	+0.06	0.00	+0.05	+0.01	+0.04	+0.01	+0.07	0.00
$D\phi \delta, D\omega \delta$	-0.1	-1.0	-0.1	-1.0	-0.1	-1.0	-0.1	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	77 Scorpil. Mag. 3.4		ζ Draconis. Mag. 3.2		α Herculis. Var. 3.1-3.9		δ Herculis. Mag. 3.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 17 6	° ' -43 7	h m 17 8	° ' +65 48	h m 17 10	° ' +14 28	h m 17 11	° ' +24 55
	s	"	s	"	s	"	s	"
Jan. 0.9	7.378	49.31 75	29.62	50.73	48.441	57.09	34.131	64.20
10.9	7.690 ³¹²	48.56 75	29.90 ²⁸	47.30 ³⁴³	48.654 ²¹³	54.80 ²²⁹	34.341 ²¹⁰	61.49 ²⁷¹
20.9	8.042 ³⁵²	48.01 55	30.26 ³⁶	44.16 ³¹⁴	48.900 ²⁴⁶	52.66 ²¹⁴	34.585 ²⁴⁴	58.97 ²⁵²
30.9	8.423 ³⁸¹	47.68 33	30.70 ⁴⁴	41.43 ²⁷³	49.170 ²⁷⁰	50.71 ¹⁹⁵	34.859 ²⁷⁴	56.72 ²²⁵
Feb. 9.8	8.826 ⁴⁰³	47.55 ¹³	31.20 ⁵⁰	39.22 ²²¹	49.458 ²⁸⁸	49.06 ¹⁶⁶	35.153 ²⁹⁴	54.81 ¹⁹¹
	414	6	54	163	298	130	308	147
19.8	9.240	47.61	31.74	37.59	49.756	47.75	35.461	53.34
29.8	9.659 ⁴¹⁹	47.86 25	32.31 ⁵⁷	36.63 ⁹⁶	50.062 ³⁰⁶	46.83 ⁹²	35.775 ³¹⁴	52.35 ⁹⁹
Mar. 10.7	10.076 ⁴¹⁷	48.26 40	32.89 ⁵⁸	36.33 ³⁰	50.364 ³⁰²	46.36 ³	36.089 ³¹⁴	51.89 ⁴⁶
20.7	10.484 ⁴⁰⁸	48.80 54	33.47 ⁵⁸	36.73 ⁴⁰	50.662 ²⁹⁸	46.33 ⁴⁷	36.396 ³⁰⁷	51.94 ⁵
30.7	10.878 ³⁹⁴	49.48 68	34.01 ⁵⁴	37.77 ¹⁰⁴	50.949 ²⁸⁷	46.73 ⁴⁰	36.694 ²⁹⁸	52.51 ⁵⁷
	378	78	51	165	274	91	283	104
Apr. 9.7	11.256	50.26	34.52	39.42	51.223	47.54	36.977	53.55
19.6	11.611 ³⁵⁵	51.14 88	34.97 ⁴⁵	41.61 ²¹⁹	51.479 ²⁵⁶	48.72 ¹¹⁸	37.239 ²⁶²	55.02 ¹⁴⁷
29.6	11.940 ³²⁹	52.12 98	35.35 ³⁸	44.24 ²⁶³	51.714 ²³⁵	50.20 ¹⁴⁸	37.478 ²³⁹	56.85 ¹⁸³
May 9.6	12.237 ²⁹⁷	53.18 106	35.66 ³¹	47.23 ²⁹⁹	51.924 ²¹⁰	51.93 ¹⁷³	37.690 ²¹²	58.98 ²¹³
19.6	12.500 ²⁶³	54.30 112	35.88 ²²	50.45 ³²²	52.108 ¹⁸⁴	53.83 ¹⁹⁰	37.870 ¹⁸⁰	61.31 ²³³
	222	119	13	336	152	201	148	246
29.5	12.722 ¹⁷⁸	55.49 120	36.01 ⁵	53.81 ³⁴⁰	52.260 ¹¹⁸	55.84 ²⁰⁶	38.018 ¹¹¹	63.77 ²⁵¹
June 8.5	12.900 ¹³¹	56.69 121	36.06 ³	57.21 ³⁴⁰	52.378 ⁸³	57.90 ²⁰³	38.129 ⁷²	66.28 ²⁴⁸
18.5	13.031 ⁸⁰	57.90 117	36.03 ¹⁴	60.55 ³¹⁹	52.461 ⁴⁶	59.93 ¹⁹⁷	38.201 ³²	68.76 ²⁴⁰
28.4	13.111 ²⁸	59.07 113	35.89 ²²	63.74 ²⁹⁵	52.507 ⁷	61.90 ¹⁸⁴	38.233 ⁸	71.16 ²²⁴
July 8.4	13.139 ²³	60.20 103	35.67 ²⁹	66.69 ²⁶⁴	52.514 ³¹	63.74 ¹⁶⁶	38.225 ⁴⁷	73.40 ²⁰³
18.4	13.116 ⁷⁴	61.23 90	35.38 ³⁶	69.33 ²²⁸	52.483 ⁶⁸	65.40 ¹⁴⁷	38.178 ⁸⁷	75.43 ¹⁷⁸
28.4	13.042 ¹²⁰	62.13 72	35.02 ⁴³	71.61 ¹⁸⁵	52.415 ¹⁰¹	66.87 ¹²⁴	38.091 ¹²¹	77.21 ¹⁴⁹
Aug. 7.3	12.922 ¹⁶⁰	62.85 52	34.59 ⁴⁹	73.46 ¹⁴¹	52.314 ¹³²	68.11 ⁹⁸	37.970 ¹⁵¹	78.70 ¹¹⁷
17.3	12.762 ¹⁹²	63.37 29	34.10 ⁵²	74.87 ⁹¹	52.182 ¹⁵⁴	69.09 ⁷¹	37.819 ¹⁷⁷	79.87 ⁸³
27.3	12.570 ²¹⁵	63.66 5	33.58 ⁵⁴	75.78 ⁴⁰	52.028 ¹⁷³	69.80 ⁴⁴	37.642 ¹⁹⁴	80.70 ⁴⁹
Sept. 6.3	12.355 ²²⁶	63.71 23	33.04 ⁵⁶	76.18 ¹³	51.855 ¹⁸¹	70.24 ¹⁴	37.448 ²⁰²	81.19 ¹⁰
16.2	12.129 ²²⁴	63.48 48	32.48 ⁵⁶	76.05 ⁶⁴	51.674 ¹⁸¹	70.38 ¹⁶	37.246 ²⁰³	81.29 ²⁷
26.2	11.905 ²⁰⁷	63.00 74	31.92 ⁵³	75.41 ¹¹⁸	51.493 ¹⁷⁰	70.22 ⁴⁵	37.043 ¹⁹²	81.02 ⁶⁵
Oct. 6.2	11.698 ¹⁸⁰	62.26 95	31.39 ⁴⁹	74.23 ¹⁶⁶	51.323 ¹⁵²	69.77 ⁷⁶	36.851 ¹⁷³	80.37 ¹⁰²
16.1	11.518 ¹³⁹	61.31 115	30.90 ⁴⁴	72.57 ²¹⁴	51.171 ¹²³	69.01 ¹⁰⁴	36.678 ¹⁴⁴	79.35 ¹³⁸
26.1	11.379 ⁸⁸	60.16 127	30.46 ³⁸	70.43 ²⁵⁸	51.048 ⁸⁷	67.97 ¹³⁵	36.534 ¹⁰⁶	77.97 ¹⁷³
Nov. 5.1	11.291 ³⁰	58.89 134	30.08 ³⁰	67.85 ²⁹⁷	50.961 ⁴⁴	66.62 ¹⁶²	36.428 ⁶²	76.24 ²⁰⁵
15.1	11.261 ³⁵	57.55 136	29.78 ²⁰	64.88 ³²⁸	50.917 ²	65.00 ¹⁸⁵	36.366 ¹⁴	74.19 ²³¹
25.0	11.296 ¹⁰¹	56.19 133	29.58 ⁰	61.60 ³⁵⁰	50.919 ⁵¹	63.15 ²⁰⁶	36.352 ³⁷	71.88 ²⁵⁵
Dec. 5.0	11.397 ¹⁶⁷	54.86 121	29.48 ⁰	58.10 ³⁶³	50.970 ¹⁰⁰	61.09 ²²⁰	36.389 ⁸⁸	69.33 ²⁶⁹
15.0	11.564 ²²⁶	53.65 108	29.48 ¹¹	54.47 ³⁶⁵	51.070 ¹⁴⁶	58.89 ²²⁹	36.477 ¹³⁷	66.64 ²⁷⁶
25.0	11.790 ²⁸⁰	52.57 90	29.59 ²¹	50.82 ³⁵⁴	51.216 ¹⁸⁷	56.60 ²³⁰	36.614 ¹⁸³	63.88 ²⁷⁴
34.9	12.070	51.67	29.80	47.28	51.403	54.30	36.797	61.14
Mean Place	8.027	47.17	32.474	64.72	48.996	66.70	34.833	74.97
Sec δ, Tan δ	1.370	-0.937	2.441	+2.227	1.033	+0.258	1.103	+0.465
Dφ α, Dω α	+0.09	-0.01	0.00	+0.03	+0.05	0.00	+0.05	+0.01
Dφ δ, Dω δ	-0.1	-1.0	-0.1	-1.0	-0.1	-1.0	-0.1	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	π Herculis. Mag. 3.4		θ Ophiuchi. Mag. 3.4		ω Herculis. Mag. 5.4		β Aree. Mag. 2.8	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 17 12	° ' " +36 53	h m 17 16	° ' " -24 55	h m 17 17	° ' " +32 34	h m 17 18	° ' " -55 27
	s	"	s	"	s	"	s	"
Jan. 0.9	6.257	59.40	50.484	4.97	30.044	18.85	17.822	7.56
10.9	6.467 ²¹⁰	56.33 ³⁰⁷	50.735 ²⁵¹	5.16 ¹⁹	30.249 ²⁰⁵	15.87 ²⁹⁸	18.185 ³⁶³	6.06 ¹⁵⁰
20.9	6.720 ²⁵³	53.47 ²⁸⁶	51.017 ²⁸²	5.44 ²⁸	30.494 ²⁴⁵	13.08 ²⁷⁹	18.603 ⁴¹⁸	4.81 ¹²⁵
30.9	7.007 ²⁸⁷	50.95 ²⁵²	51.326 ³⁰⁹	5.79 ³⁵	30.768 ²⁷⁴	10.60 ²⁴⁸	19.063 ⁴⁰⁰	3.83 ⁹⁸
Feb. 9.8	7.320 ³¹³	48.85 ²¹⁰	51.651 ³²⁵	6.19 ⁴⁰	31.069 ³⁰¹	8.50 ²¹⁰	19.555 ⁴⁹²	3.15 ⁶⁸
19.8	7.650	47.25 ¹⁶⁰	51.986 ³³⁵	6.49 ⁴¹	31.387 ³¹⁸	6.90 ¹⁶⁰	20.066 ⁵¹¹	2.74 ⁴¹
29.8	7.989 ³³⁹	46.21 ¹⁰⁴	52.327 ³⁴¹	6.60 ⁴⁰	31.987 ³²⁷	6.90 ¹⁰⁹	20.066 ⁵²²	2.74 ¹¹
Mar. 10.8	8.330 ³⁴¹	45.77 ⁴⁴	52.667 ³⁴⁰	7.00 ⁴⁰	31.714 ³²⁷	5.81 ⁵²	20.588 ⁵²³	2.63 ¹⁶
20.7	8.665 ³⁵⁵	45.92 ¹⁵	53.002 ³³⁵	7.36 ³⁶	32.042 ³²⁸	5.29 ⁵	21.111 ⁵¹⁷	2.79 ⁴²
30.7	8.988 ³²³	46.66 ⁷⁴	53.327 ³²⁵	7.67 ³¹	32.367 ³²⁵	5.34 ⁵	21.628 ⁵⁰⁴	3.21 ⁶⁷
Apr. 9.7	9.292 ³⁰⁴	46.66 ¹²⁷	53.327 ³¹⁴	7.93 ²⁶	32.679 ³¹²	5.96 ⁶²	22.132 ⁴⁸³	3.88 ⁹⁰
19.6	9.574 ²⁸²	47.93 ¹⁷⁷	53.641 ²⁹⁶	8.13 ¹⁶	32.979 ²⁷⁶	7.11 ¹⁶⁰	22.615 ⁴⁵⁶	4.78 ¹¹¹
29.6	9.826 ²⁵²	49.70 ²¹⁸	53.937 ²⁷⁸	8.29 ¹²	33.255 ²⁵¹	8.71 ²⁰³	23.071 ⁴²⁶	5.89 ¹³⁰
May 9.6	10.045 ²¹⁹	51.88 ²⁵¹	54.215 ²⁵⁴	8.41 ¹⁰	33.506 ²²⁰	10.74 ²³⁴	23.497 ³⁸⁴	7.19 ¹⁴⁶
19.6	10.228 ¹⁸³	54.39 ²⁷³	54.469 ²²⁸	8.51 ⁹	33.726 ¹⁸⁹	13.08 ²⁵⁸	23.881 ³³⁹	8.65 ¹⁶²
29.5	10.372 ¹⁰¹	57.12 ²⁸⁹	54.697 ¹⁹⁶	8.60 ⁹	33.915 ¹⁶⁰	15.66 ²⁷²	24.220 ²⁸⁷	10.27 ¹⁷²
June 8.5	10.473 ⁵⁶	60.01 ²⁰³	54.893 ¹⁶¹	8.69 ¹¹	34.065 ¹¹¹	18.38 ²⁷⁹	24.507 ²²⁹	11.99 ¹⁸⁰
18.5	10.529 ¹¹	62.94 ²⁰³	55.054 ¹²³	8.80 ¹⁸	34.176 ⁶⁹	21.17 ²⁷⁶	24.736 ¹⁶⁸	13.79 ¹⁸³
28.5	10.540 ³⁴	65.85 ²⁹¹	55.177 ⁸³	8.93 ¹³	34.245 ²⁷	23.93 ²⁶⁶	24.904 ¹⁰¹	15.62 ¹⁸¹
July 8.4	10.506 ⁷⁸	68.64 ²⁷⁹	55.260 ⁴⁰	9.06 ¹⁵	34.272 ¹⁸	26.59 ²⁴⁹	25.005 ³⁴	17.43 ¹⁷⁵
18.4	10.428	71.25 ²³⁷	55.300 ¹	9.21 ¹⁴	34.254 ⁹⁰	29.08 ²²⁸	25.039 ³²	19.18 ¹⁶²
28.4	10.308 ¹²⁰	73.62 ²⁰⁶	55.299 ⁴⁴	9.35 ¹²	34.194 ¹⁰²	31.36 ¹⁹⁹	25.007 ⁹⁹	20.80 ¹⁴⁶
Aug. 7.3	10.150 ¹⁵⁸	75.68 ¹⁷²	55.255 ⁸³	9.47 ⁹	34.092 ¹³⁸	33.35 ¹⁶⁷	24.908 ¹⁵⁹	22.26 ¹²²
17.3	9.960 ¹⁹⁰	77.40 ¹³⁵	55.172 ¹¹⁸	9.56 ⁴	33.954 ¹⁷²	35.02 ¹³¹	24.749 ²¹²	23.48 ⁹⁴
27.3	9.743 ²¹⁷	78.75 ⁹⁵	55.054 ¹⁴⁶	9.60 ²	33.782 ¹⁹⁸	36.33 ⁹²	24.537 ²⁵⁶	24.42 ⁶⁵
Sept. 6.3	9.508 ²³⁵	79.70 ⁵⁰	54.908 ¹⁶⁷	9.58 ¹⁰	33.584 ²¹⁵	37.25 ⁵⁴	24.281 ²⁸⁵	25.07 ²⁸
16.2	9.263 ²⁴⁵	80.20 ⁷	54.741 ¹⁷⁷	9.48 ¹⁹	33.369 ²²⁷	37.79 ¹¹	23.996 ³⁰³	25.35 ⁹
26.2	9.019 ²⁴⁴	80.27 ³⁸	54.564 ¹⁷⁸	9.29 ²⁵	33.142 ²²⁸	37.90 ³¹	23.693 ³⁰³	25.26 ⁴⁶
Oct. 6.2	8.786 ²³³	79.89 ⁸²	54.386 ¹⁶⁷	9.04 ³⁴	32.914 ²¹⁷	37.59 ⁷⁵	23.390 ²⁸⁷	24.80 ⁵³
16.2	8.574 ¹⁸⁰	79.07 ¹²⁷	54.219 ¹⁴⁷	8.70 ³⁹	32.697 ¹⁹⁹	36.84 ¹¹⁶	23.103 ²⁶⁴	23.97 ¹¹⁸
26.1	8.394 ¹⁴²	77.80 ¹⁶⁹	54.072 ¹¹⁵	8.31 ⁴¹	32.498 ¹⁶⁸	35.68 ¹⁵⁷	22.849 ²⁰⁶	22.79 ¹⁴⁷
Nov. 5.1	8.252 ⁹²	76.11 ²⁰⁹	53.957 ⁷⁵	7.90 ⁴²	32.330 ¹³²	34.11 ¹⁹⁵	22.644 ¹⁴³	21.32 ¹⁷²
15.1	8.160 ⁴¹	74.02 ²⁴⁴	53.882 ²⁸	7.48 ⁴⁰	32.198 ⁸⁵	32.16 ²³⁰	22.501 ⁷	19.60 ¹⁸⁹
25.0	8.119 ¹⁶	71.58 ²⁷⁴	53.854 ²⁴	7.08 ³³	32.113 ³⁴	29.86 ²⁶⁰	22.429 ⁹²	17.71 ¹⁹⁹
Dec. 5.0	8.135 ⁷²	68.84 ²⁹⁶	53.878 ⁷⁷	6.75 ²³	32.079 ¹⁹	27.26 ²⁸³	22.438 ⁹¹	15.72 ²⁰¹
15.0	8.207 ¹²⁸	65.86 ³¹³	53.955 ¹³⁰	6.52 ¹⁴	32.098 ⁷²	24.43 ²⁹⁹	22.529 ¹⁷¹	13.71 ¹⁹⁶
25.0	8.335 ¹⁸⁰	62.73 ³¹⁹	54.085 ¹⁷⁹	6.38 ³	32.170 ¹²⁵	21.44 ³⁰⁶	22.700 ²⁵¹	11.75 ¹⁸⁴
34.9	8.515	59.54 ³¹⁴	54.264 ²²³	6.35 ¹⁰	32.295 ¹⁷⁴	18.38 ³⁰³	22.951 ³²⁰	9.91 ¹⁶⁶
		56.40	54.487	6.45	32.469	15.35	23.271	8.26
Mean Place	7.227	71.30	50.939	0.35	30.923	30.02	18.843	6.14
Sec δ , Tan δ	1.250	+0.751	1.103	-0.465	1.187	+0.639	1.764	-1.452
$D\psi \alpha$, $D\omega \alpha$	+0.04	+0.01	+0.07	-0.01	+0.04	+0.01	+0.10	-0.02
$D\psi \delta$, $D\omega \delta$	-0.1	-1.0	-0.1	-1.0	-0.1	-1.0	-0.1	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	δ Ophiuchi. Mag. 4.3		σ Ophiuchi. Mag. 4.4		δ Aras. Mag. 3.8		α Aras. Mag. 3.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 17 21	° ' -24 5	h m 17 22	° ' + 4 12	h m 17 23	° ' -60 36	h m 17 25	° ' -49 48
	s	"	s	"	s	"	s	"
Jan. 0.9	13.832	61.96	20.285	37.10	29.35	57.03	19.912	41.37
10.9	14.075 ²⁴³	62.16 ²⁰	20.494 ²⁰⁹	35.34 ¹⁷⁶	29.75 ⁴⁰	55.23 ¹⁸⁰	20.231 ³¹⁹	40.11 ¹²⁶
20.9	14.354 ²⁷⁹	62.46 ³⁰	20.734 ²⁴⁰	33.64 ¹⁷⁰	30.21 ⁴⁶	53.70 ¹⁵³	20.599 ³⁶⁸	39.05 ¹⁰⁶
30.9	14.654 ³⁰⁰	62.82 ³⁶	20.999 ²⁶⁵	32.08 ¹⁵⁶	30.72 ⁵¹	52.47 ¹²³	21.005 ⁴⁰⁶	38.22 ⁸³
Feb. 9.8	14.976 ³²²	63.22 ⁴⁰	21.282 ²⁸³	30.71 ¹³⁷	31.27 ⁵⁵	51.54 ⁹³	21.439 ⁴³⁴	37.63 ⁵⁹
	332	40	294	111	58	59	452	34
19.8	15.308	63.62	21.576	29.60	31.85	50.95	21.891	37.29
29.8	15.644 ³³⁶	63.97 ³⁵	21.876 ³⁰⁰	28.80 ⁸⁰	32.45 ⁶⁰	50.68 ²⁷	22.353 ⁴⁶²	37.17 ¹²
Mar. 10.8	15.982 ³³⁸	64.31 ³⁴	22.177 ³⁰¹	28.33 ⁴⁷	33.04 ⁵⁹	50.72 ⁴	22.818 ⁴⁶⁵	37.27 ¹⁰
20.7	16.317 ³³⁵	64.60 ²⁹	22.474 ²⁹⁷	28.21 ¹²	33.63 ⁵⁹	51.07 ³⁵	23.279 ⁴⁶¹	37.59 ³²
30.7	16.641 ³²⁴	64.83 ²³	22.764 ²⁹⁰	28.44 ²³	34.21 ⁵⁸	51.72 ⁶⁵	23.725 ⁴⁴⁹	38.10 ⁵¹
	313	14	278	56	56	93	435	70
Apr. 9.7	16.954	64.97	23.042	29.00	34.77	52.65	24.163	38.80
19.6	17.254 ³⁰⁰	65.07 ¹⁰	23.305 ²⁶³	29.85 ⁸⁵	35.29 ⁵²	53.84 ¹¹⁹	24.576 ⁴¹³	39.66 ⁸⁶
29.6	17.532 ²⁷⁸	65.13 ⁶	23.550 ²⁴⁵	30.95 ¹¹⁰	35.78 ⁴⁹	55.25 ¹⁴¹	24.961 ³⁸⁵	40.69 ¹⁰³
May 9.6	17.787 ²⁵⁵	65.16 ³	23.773 ²²³	32.25 ¹³⁰	36.22 ⁴⁴	56.87 ¹⁶²	25.314 ³⁵³	41.87 ¹¹⁸
19.6	18.015 ²²⁸	65.19 ³	23.970 ¹⁹⁷	33.69 ¹⁴⁴	36.81 ³⁹	58.66 ¹⁷⁹	25.628 ³¹⁴	43.17 ¹³⁰
	200	1	169	154	33	192	269	140
29.5	18.215	65.20	24.139	35.23	36.94	60.58	25.897	44.57
June 8.5	18.378 ¹⁶³	65.26 ⁶	24.277 ¹³⁸	36.81 ¹⁵⁸	37.20 ²⁶	62.60 ²⁰²	26.117 ²²⁰	46.05 ¹⁴⁸
18.5	18.506 ¹²⁸	65.33 ⁷	24.379 ¹⁰²	38.37 ¹⁵⁶	37.39 ¹⁹	64.67 ²⁰⁷	26.284 ¹⁶⁷	47.57 ¹⁵²
28.5	18.592 ⁸⁶	65.39 ⁶	24.445 ⁶⁶	39.88 ¹⁵¹	37.51 ¹²	66.73 ²⁰⁶	26.392 ¹⁰⁸	49.09 ¹⁵²
July 8.4	18.637 ⁴⁵	65.48 ⁹	24.473 ²⁸	41.29 ¹⁴¹	37.54 ³	68.72 ¹⁹⁹	26.440 ⁴⁸	50.57 ¹⁴⁸
	2	10	10	130	4	187	11	138
18.4	18.639	65.58	24.463	42.59	37.50	70.59	26.429	51.95
28.4	18.597 ⁴²	65.67 ⁹	24.416 ⁴⁷	43.73 ¹¹⁴	37.39 ¹¹	72.27 ¹⁶⁸	26.358 ⁷¹	53.21 ¹²⁶
Aug. 7.3	18.517 ⁸⁰	65.76 ⁹	24.333 ⁸³	44.71 ⁹⁸	37.20 ¹⁹	73.71 ¹⁴⁴	26.233 ¹²⁵	54.28 ¹⁰⁷
17.3	18.402 ¹¹⁵	65.79 ⁴	24.219 ¹¹⁴	45.51 ⁸⁰	36.94 ²⁶	74.85 ¹¹⁴	26.058 ¹⁷⁵	55.13 ⁸⁵
27.3	18.258 ¹⁴⁴	65.75 ⁴	24.080 ¹³⁹	46.11 ⁶⁰	36.64 ³⁰	75.64 ⁷⁹	25.844 ²¹⁴	55.70 ⁵⁷
	163	8	158	41	33	40	244	28
Sept. 6.3	18.095	65.67	23.922	46.52	36.31	76.04	25.600	55.98
16.2	17.918 ¹⁷⁷	65.51 ¹⁶	23.752 ¹⁷⁰	46.72 ²⁰	35.95 ³⁶	76.04 ⁰	25.339 ²⁶¹	55.95 ³
26.2	17.741 ¹⁷⁷	65.27 ²⁴	23.581 ¹⁷¹	46.72 ⁰	35.59 ³⁶	75.61 ⁴³	25.077 ²⁶²	55.58 ³⁷
Oct. 6.2	17.573 ¹⁶⁸	64.97 ³⁰	23.420 ¹⁶¹	46.49 ²³	35.24 ³⁵	74.77 ⁸⁴	24.826 ²⁵¹	54.89 ⁶⁹
16.2	17.426 ¹⁴⁷	64.63 ³⁴	23.274 ¹⁴⁶	46.06 ⁴³	34.93 ³¹	73.54 ¹²³	24.603 ²²³	53.91 ⁹⁸
	116	35	118	66	24	158	181	124
26 1	17.310	64.28	23.156	45.40	34.69	71.96	24.422	52.67
Nov. 5.1	17.233 ⁷⁷	63.90 ³⁸	23.073 ⁸³	44.52 ⁸⁸	34.50 ¹⁹	70.10 ¹⁸⁶	24.293 ¹²⁹	51.21 ¹⁴⁶
15.1	17.199 ³⁴	63.56 ³⁴	23.030 ⁴³	43.42 ¹¹⁰	34.40 ¹⁰	68.02 ²⁰⁸	24.228 ⁶⁵	49.59 ¹⁶²
25.0	17.220 ²¹	63.29 ²⁷	23.033 ³	42.13 ¹²⁹	34.39 ¹	65.80 ²²²	24.234 ⁶	47.90 ¹⁶⁰
Dec. 5.0	17.292 ⁷²	63.09 ²⁰	23.083 ⁵⁰	40.66 ¹⁴⁷	34.47 ⁸	63.53 ²²⁷	24.311 ⁷⁷	46.18 ¹⁷²
	125	11	98	162	17	224	151	166
15.0	17.417	62.98	23.181	39.04	34.64	61.29	24.462	44.52
25.0	17.591 ¹⁷⁴	63.00 ²	23.323 ¹⁴²	37.33 ¹⁷¹	34.91 ²⁷	59.17 ²¹²	24.680 ²¹⁸	42.96 ¹⁵⁶
34.9	17.808 ²¹⁷	63.14 ¹⁴	23.506 ¹⁸³	35.57 ¹⁷⁸	35.26 ³⁵	57.21 ¹⁹⁶	24.961 ²⁸¹	41.55 ¹⁴¹
Mean Place	14.287	57.17	20.777	45.16	30.632	55.76	20.740	39.11
Sec δ , Tan δ	1.096	-0.447	1.003	+0.074	2.038	-1.776	1.549	-1.184
$D_{\phi} \alpha$, $D_{\omega} \alpha$	+0.07	-0.01	+0.06	0.00	+0.11	-0.02	+0.09	-0.01
$D_{\phi} \delta$, $D_{\omega} \delta$	-0.1	-1.0	-0.1	-1.0	-0.1	-1.0	-0.1	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	λ Herculis. Mag. 4.5		λ Scorpii. Mag. 1.7		β Draconis. Mag. 3.0		α Ophiuchi. Mag. 2.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 17 27	° ' " +26 10	h m 17 27	° ' " -37 2	h m 17 28	° ' " +52 21	h m 17 31	° ' " +12 36
	s	"	s	"	s	"	s	"
Jan. 1.0	19.826	13.57	53.587	40.34	30.335	35.55	1.490	64.26
10.9	20.019 ¹⁹³	10.84 ²⁷³	53.854 ²⁶⁷	39.76 ⁵⁸	30.536 ²⁰¹	32.14 ³⁴¹	1.686 ¹⁹⁶	62.10 ²¹⁶
20.9	20.253 ²³⁴	8.26 ²⁵⁸	54.161 ³⁰⁷	39.32 ⁴⁴	30.796 ²⁶⁰	28.97 ³¹⁷	1.915 ²²⁹	60.04 ²⁰⁶
30.9	20.513 ²⁶⁰	5.93 ²³³	54.496 ³³⁵	39.03 ²⁹	31.108 ³¹²	26.14 ²⁸³	2.172 ²⁵⁷	58.15 ¹⁸⁹
Feb. 9.8	20.798 ²⁸⁵	3.97 ¹⁹⁶	54.856 ³⁶⁰	38.88 ¹⁵	31.463 ³⁵⁵	23.77 ²³⁷	2.448 ²⁷⁶	56.53 ¹⁶²
	303	156	373	3	385	182	290	130
19.8	21.101	2.41	55.229	38.85	31.848	21.95	2.738	55.23
29.8	21.413 ³¹²	1.36 ¹⁰⁵	55.610 ³⁸¹	38.93 ⁸	32.254 ⁴⁰⁶	20.74 ¹²¹	3.037 ²⁹⁹	54.29 ⁹⁴
Mar. 10.8	21.727 ³¹⁴	0.82 ⁵⁴	55.993 ³⁸³	39.10 ¹⁷	32.669 ⁴¹⁵	20.17 ⁵⁷	3.338 ³⁰¹	53.78 ⁵¹
20.7	22.040 ³¹³	0.82 ⁰	56.372 ³⁷⁹	39.36 ²⁶	33.082 ⁴¹³	20.27 ¹⁰	3.637 ²⁹⁹	53.70 ⁸
30.7	22.344 ³⁰⁴	1.34 ⁵²	56.743 ³⁷¹	39.68 ³²	33.483 ⁴⁰¹	21.02 ⁷⁵	3.929 ²⁹²	54.03 ³³
	291	100	359	40	380	135	282	74
Apr. 9.7	22.635	2.34	57.102	40.08	33.863	22.37	4.211	54.77
19.7	22.909 ²⁷⁴	3.79 ¹⁴⁵	57.444 ³⁴²	40.54 ⁴⁶	34.213 ³⁵⁰	24.29 ¹⁹²	4.479 ²⁶⁸	55.87 ¹¹⁰
29.6	23.160 ²⁵¹	5.64 ¹⁸⁵	57.766 ³²²	41.06 ⁵²	34.526 ³¹³	26.66 ²³⁷	4.727 ²⁴⁸	57.27 ¹⁴⁰
May 9.6	23.385 ²²⁵	7.80 ²¹⁶	58.062 ²⁹⁶	41.59 ³⁴	34.795 ²⁶⁹	29.42 ²⁷⁶	4.955 ²²⁸	58.94 ¹⁶⁷
19.6	23.581 ¹⁹⁶	10.19 ²³⁹	58.328 ²⁶⁶	42.31 ⁶⁶	35.014 ²¹⁹	32.47 ³⁰⁵	5.156 ²⁰¹	60.78 ¹⁸⁴
	161	252	231	72	165	323	171	196
29.5	23.742	12.71	58.559	43.03	35.179	35.70	5.327	62.74
June 8.5	23.869 ¹²⁷	15.32 ²⁶¹	58.752 ¹⁹³	43.79 ⁷⁶	35.287 ¹⁰⁸	39.02 ³³²	5.467 ¹⁴⁰	64.75 ²⁰¹
18.5	23.956 ⁸⁷	17.90 ²⁵⁸	58.900 ¹⁴⁸	44.59 ⁸⁰	35.334 ⁴⁷	42.33 ³³¹	5.571 ¹⁰⁴	66.76 ²⁰¹
28.5	24.001 ⁴⁵	20.42 ²⁵²	59.003 ¹⁰³	45.41 ⁸²	35.322 ¹²	45.54 ³⁰²	5.636 ⁶⁵	68.70 ¹⁹⁴
July 8.4	24.006 ⁵	22.79 ²³⁷	59.057 ⁵⁴	46.21 ⁸⁰	35.250 ⁷²	48.56 ³²¹	5.663 ²⁷	70.54 ¹⁸⁴
	37	217	4	77	129	277	13	168
18.4	23.969	24.96	59.061	46.98	35.121	51.33	5.650	72.22
28.4	23.893 ⁷⁶	26.89 ¹⁹³	59.017 ⁴⁴	47.67 ⁶⁹	34.938 ¹⁸³	53.77 ²⁴⁴	5.600 ⁵⁰	73.71 ¹⁴⁹
Aug. 7.4	23.778 ¹¹⁵	28.53 ¹⁶⁴	58.928 ⁸⁹	48.27 ⁶⁰	34.705 ²³³	55.85 ²⁰⁵	5.513 ⁸⁷	74.98 ¹²⁷
17.3	23.629 ¹⁴⁹	29.85 ¹³²	58.797 ¹³¹	48.74 ⁴⁷	34.430 ²⁷⁵	57.50 ¹⁶⁸	5.393 ¹²⁰	76.03 ¹⁰⁵
27.3	23.454 ¹⁷⁵	30.82 ⁹⁷	58.632 ¹⁶⁵	49.04 ³⁰	34.120 ³¹⁰	58.70 ¹²⁰	5.248 ¹⁴⁵	76.81 ⁷⁸
	194	63	189	13	334	73	167	53
Sept. 6.3	23.260	31.45	58.443	49.17	33.786	59.43	5.081	77.34
16.2	23.054 ²⁰⁶	31.68 ²³	58.240 ²⁰³	49.09 ⁸	33.437 ³⁴⁹	59.65 ²²	4.904 ¹⁷⁷	77.58 ²⁴
26.2	22.845 ²⁰⁹	31.53 ¹⁵	58.033 ²⁰⁷	48.80 ²⁹	33.086 ³⁵¹	59.37 ²⁸	4.723 ¹⁸¹	77.55 ³
Oct. 6.2	22.646 ¹⁹⁹	31.00 ⁵³	57.836 ¹⁹⁷	48.33 ⁴⁷	32.744 ³⁴²	58.57 ⁸⁰	4.549 ¹⁷⁴	77.22 ³³
16.2	22.461 ¹⁵⁵	30.09 ⁹¹	57.661 ¹⁷⁵	47.66 ⁶⁷	32.425 ³¹⁹	57.28 ¹²⁹	4.391 ¹⁵⁸	76.60 ⁶²
	156	131	142	80	286	178	132	89
26.1	22.305	28.78	57.519	46.86	32.139	55.50	4.259	75.71
Nov. 5.1	22.184 ¹²¹	27.12 ¹⁶⁶	57.421 ⁹⁸	45.93 ⁹³	31.899 ²⁴⁰	53.27 ²²³	4.160 ⁹⁹	74.53 ¹¹⁸
15.1	22.105 ⁷⁹	25.13 ¹⁹⁹	57.376 ⁴⁵	44.94 ⁹⁹	31.714 ¹⁸⁵	50.63 ²⁶⁴	4.102 ⁵⁸	73.09 ¹⁴⁴
25.1	22.073 ³²	22.88 ²²⁵	57.387 ¹¹	43.92 ¹⁰²	31.593 ¹²¹	47.64 ²⁹⁵	4.088 ¹⁴	71.40 ¹⁶⁹
Dec. 5.0	22.092 ¹⁹	20.36 ²⁵²	57.458 ⁷¹	42.93 ⁹⁹	31.540 ⁵³	44.39 ³²⁹	4.122 ³⁴	69.52 ¹⁸⁸
	71	269	129	93	17	343	82	265
15.0	22.163	17.67	57.587	42.00	31.557	40.96	4.204	67.47
25.0	22.281 ¹¹⁸	14.92 ²⁷⁵	57.773 ¹⁸⁶	41.18 ⁸²	31.648 ⁹¹	37.44 ³⁵²	4.331 ¹²⁷	65.32 ²¹⁵
34.9	22.447 ¹⁶⁶	12.13 ²⁷⁹	58.010 ²³⁷	40.50 ⁶⁸	31.806 ¹⁵⁸	33.97 ³⁴⁷	4.501 ¹⁷⁰	63.15 ²¹⁷
Mean Place	20.598	23.59	54.161	36.78	32.038	47.19	2.073	72.90
Sec δ , Tan δ	1.114	+0.491	1.253	-0.755	1.637	+1.296	1.025	+0.224
$D\psi \alpha$, $D\omega \alpha$	+0.05	0.00	+0.08	-0.01	+0.03	+0.01	+0.06	0.00
$D\psi \delta$, $D\omega \delta$	-0.1	-1.0	-0.1	-1.0	-0.1	-1.0	-0.1	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ξ Serpentis. Mag. 3.6		ζ Herculis. Mag. 3.8		ω Draconis. Mag. 4.9		γ Pavonis. Mag. 3.6	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 17 32	° ' " -15 20	h m 17 37	° ' " +46 2	h m 17 37	° ' " +68 47	h m 17 37	° ' " -64 41
	s	"	s	"	s	"	s	"
Jan. 1.0	46.062	53.39	4.230	51.19	22.85	37.43	27.46	8.79
10.9	46.283 ²²¹	54.05 ⁶⁶	4.415 ¹⁸⁵	47.87 ³³²	23.07 ²²	33.94 ³⁴⁹	27.88 ⁴²	6.69 ²¹⁰
20.9	46.535 ²⁵²	54.74 ⁶⁹	4.651 ²³⁶	44.77 ³¹⁰	23.40 ³³	30.66 ³²⁸	28.37 ⁴⁹	4.84 ¹⁸⁵
30.9	46.812 ²⁷⁷	55.42 ⁶⁸	4.932 ²⁸¹	41.97 ²⁸⁰	23.82 ⁴²	27.74 ²⁹²	28.92 ⁵⁵	3.28 ¹⁵⁶
Feb. 9.8	47.109 ²⁹⁷	56.07 ⁶⁵	5.252 ³²⁰	39.60 ²³⁷	24.32 ⁵⁰	25.28 ²⁴⁶	29.53 ⁶¹	2.04 ¹²⁴
19.8	47.109 ³⁰⁹	56.07 ⁵⁶	5.252 ³⁴⁷	39.60 ¹⁸⁴	24.32 ⁵⁸	25.28 ¹⁹¹	29.53 ⁶⁵	2.04 ⁹¹
19.8	47.418	56.63	5.599	37.76	24.90	23.37	30.18	1.13
29.8	47.734 ³¹⁶	57.09 ⁴⁶	5.963 ³⁶⁴	36.48 ¹²⁸	25.51 ⁶¹	22.08 ¹²⁹	30.84 ⁶⁶	0.58 ⁵⁵
Mar. 10.8	48.051 ³¹⁷	57.39 ³⁰	6.337 ³⁷⁴	35.83 ⁶⁵	26.15 ⁶⁴	21.45 ⁶³	31.52 ⁶⁸	0.38 ²⁰
20.7	48.367 ³¹⁶	57.56 ¹⁷	6.712 ³⁷⁵	35.83 ⁰	26.79 ⁶⁴	21.51 ⁶	32.19 ⁶⁷	0.52 ¹⁴
30.7	48.676 ³⁰⁹	57.57 ¹	7.079 ³⁶⁷	36.45 ⁶²	27.42 ⁶³	22.23 ⁷²	32.85 ⁶⁶	0.99 ⁴⁷
Apr. 9.7	48.976	57.44	7.429	37.67	28.01	23.58	33.48	1.78
19.7	49.263 ²⁸⁷	57.17 ²⁷	7.756 ³²⁷	39.43 ¹⁷⁶	28.56 ⁵⁵	25.52 ¹⁹⁴	34.09 ⁶¹	2.87 ¹⁰⁹
29.6	49.533 ²⁷⁰	56.80 ³⁷	8.052 ²⁹⁶	41.67 ²²⁴	29.04 ⁴⁸	27.95 ²⁴³	34.67 ⁵⁸	4.22 ¹³⁵
May 9.6	49.783 ²⁵⁰	56.35 ⁴⁵	8.313 ²⁶¹	44.30 ²⁶³	29.43 ³⁹	30.77 ²⁸²	35.19 ⁵²	5.83 ¹⁶¹
19.6	50.008 ²²⁵	55.86 ⁴⁹	8.532 ²¹⁹	47.21 ²⁹¹	29.74 ³¹	33.92 ³¹⁵	35.65 ⁴⁶	7.65 ¹⁸²
29.5	50.205 ¹⁹⁷	55.34 ⁵²	8.705 ¹⁷³	50.33 ³¹²	29.94 ²⁰	33.92 ³³⁴	35.65 ³⁹	7.65 ¹⁹⁹
June 8.5	50.370 ¹⁶⁵	54.82 ⁵²	8.830 ¹²⁵	53.54 ³²¹	30.06 ¹²	37.26 ³⁴⁴	36.04 ³²	9.64 ²¹³
18.5	50.500 ¹³⁰	54.32 ⁵⁰	8.902 ⁷²	56.76 ³²²	30.07 ¹	40.70 ³⁴⁴	36.36 ²⁴	11.77 ²²¹
28.5	50.592 ⁹²	53.87 ⁴⁵	8.921 ¹⁹	59.91 ³¹⁵	29.98 ⁹	44.14 ³⁴⁴	36.60 ¹⁵	13.98 ²²²
July 8.4	50.642 ⁵⁰	53.46 ⁴¹	8.886 ³⁵	62.88 ²⁹⁷	29.77 ²¹	47.50 ³³⁶	36.75 ¹⁵	16.20 ²¹⁹
18.4	50.642 ¹⁰	53.46 ³⁶	8.886 ⁸⁷	62.88 ²⁷⁵	29.77 ²⁸	50.69 ³¹⁹	36.80 ⁵	18.39 ²¹⁹
28.4	50.652 ³¹	53.10 ³¹	8.799 ¹³⁶	65.63 ²⁴⁴	29.49 ³⁸	50.69 ²⁹²	36.80 ³	18.39 ²⁰⁷
Aug. 7.4	50.621 ⁶⁹	52.79 ³¹	8.663 ¹³⁶	68.07 ²⁴⁴	29.11 ³⁸	53.61 ²⁶⁰	36.77 ¹²	20.46 ¹⁹²
17.3	50.552 ¹⁰³	52.52 ²⁷	8.479 ¹⁸⁴	70.17 ²¹⁰	28.65 ⁴⁶	56.21 ²⁸⁰	36.65 ¹²	22.38 ¹⁹²
27.3	50.449 ¹³²	52.31 ²¹	8.258 ²²¹	71.88 ¹⁷¹	28.85 ⁵²	58.44 ²²³	36.44 ²¹	24.04 ¹⁶⁶
Sept. 6.3	50.317 ¹⁵⁴	52.11 ²⁰	8.001 ²⁵⁷	73.15 ¹²⁷	28.13 ⁵²	60.24 ¹⁸⁰	36.17 ²⁷	25.40 ¹³⁶
16.2	50.163	51.94	7.721	73.15 ⁸²	27.55 ⁵⁸	61.57 ¹³³	36.17 ³⁴	25.40 ¹⁰³
26.2	49.995 ¹⁶⁸	51.78 ¹⁶	7.426 ²⁹⁶	73.97 ³⁶	26.93 ⁶⁴	62.41 ⁸⁴	35.83 ³⁹	26.43 ⁶¹
Oct. 6.2	49.825 ¹⁷⁰	51.65 ¹³	7.126 ³⁰⁰	74.33 ¹⁵	26.29 ⁶⁴	62.41 ³³	35.44 ⁴¹	27.04 ¹⁸
16.2	49.662 ¹⁶³	51.53 ¹²	6.832 ²⁹⁴	74.18 ¹⁵	25.64 ⁶⁵	62.74 ²⁰	35.03 ⁴¹	27.22 ¹⁸
26.1	49.515 ¹⁴⁷	51.45 ⁸	6.557 ²⁷⁵	74.18 ⁶³	25.64 ⁶⁵	62.54 ⁷³	34.60 ⁴³	28.94 ²⁸
Nov. 5.1	49.396 ⁸³	51.41 ³	6.313 ²⁰⁵	73.55 ¹¹³	25.00 ⁶⁴	61.81 ¹²⁴	34.60 ⁴¹	28.94 ⁷³
15.1	49.313 ⁴¹	51.44 ¹¹	6.108 ¹⁵⁷	72.42 ¹⁶⁰	24.40 ⁶⁰	60.57 ¹⁷⁵	34.19 ⁴¹	28.21 ⁷³
25.1	49.272 ⁶	51.55 ²¹	5.951 ¹⁰¹	70.82 ²⁰⁴	23.84 ⁴⁹	58.82 ²²³	33.82 ³⁷	25.04 ¹¹⁷
Dec. 5.0	49.278 ⁵⁵	51.76 ³¹	5.850 ³⁹	70.82 ²⁰⁴	23.35 ⁴⁹	56.59 ²²³	33.82 ³²	25.04 ¹⁵⁵
15.0	49.333 ¹⁰⁵	52.07 ⁴²	5.811 ²³	68.78 ²⁴⁵	22.42 ²⁰	53.94 ²⁶⁵	33.50 ²⁴	23.49 ¹⁸⁹
25.0	49.333 ¹⁰⁵	52.07 ⁴²	5.811 ²³	66.33 ²⁴⁵	22.94 ⁴¹	58.82 ²²³	33.26 ²⁴	21.60 ¹⁸⁹
34.9	49.438 ¹⁵¹	52.49 ⁵¹	5.834 ¹⁴⁷	63.53 ²⁸⁰	22.62 ³²	50.92 ³⁰²	33.10 ¹⁶	19.43 ²¹⁷
	49.589 ¹⁹³	53.00 ⁵¹	6.067 ¹⁴⁷	63.53 ²⁸⁰	22.22 ²⁰	50.92 ³⁰²	33.04 ⁶	17.07 ²³⁶
	49.782	53.60 ⁶⁰	6.067 ¹⁴⁷	60.45 ³⁰⁸	22.42 ²⁰	47.62 ³³⁰	33.04 ⁶	17.07 ²³⁶
				60.45 ³²⁸	22.42 ⁹	47.62 ³⁵¹	33.10 ¹⁶	14.62 ²⁴⁵
				57.17	22.33	44.11	33.26	12.16
				53.80 ³³⁷	22.35 ²	40.52 ³⁵⁹	33.52 ²⁶	9.76 ²⁴⁰
				50.43 ³³⁷	22.50 ¹⁵	36.95 ³⁵⁷	33.87 ³⁵	7.51 ²²⁵
Mean Place	46.509	47.56	5.633	61.81	26.494	48.67	29.038	7.02
Sec δ, Tan δ	1.037	-0.274	1.441	+1.037	2.765	+2.577	2.339	-2.114
Dφ α, Dα α	+0.07	0.00	+0.03	+0.01	-0.01	+0.02	+0.11	-0.01
Dφ δ, Dα δ	0.0	-1.0	0.0	-1.0	0.0	-1.0	0.0	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Ophiuchi. Mag. 2.9			ι^1 Scorpii. Mag. 3.1			μ Herculis. Mag. 3.5			ψ Draconis. Mag. 4.9		
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.
	h	m	'	h	m	'	h	m	'	h	m	'
	17	39	+ 4 35	17	41	-40 5	17	43	+27 45	17	43	+72 10
	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 1.0	18.826	57.81	41.930	47.87	9.379	59.45	21.20	74.75				
10.9	19.019 ¹⁹³	56.07 ¹⁷⁴	42.191 ²⁶¹	47.01 ⁸⁶	9.556 ¹⁷⁷	56.64 ²⁸¹	21.41 ²¹	71.25 ³⁵⁰				
20.9	19.245 ²²⁶	54.40 ¹⁶⁷	42.494 ³⁰³	46.31 ⁷⁰	9.772 ²¹⁶	53.99 ²⁶⁵	21.75 ³⁴	67.95 ³³⁰				
30.9	19.498 ²⁵³	52.85 ¹⁵⁵	42.830 ³³⁶	45.74 ⁵⁷	10.022 ²⁵⁰	51.57 ²⁴²	22.21 ⁴⁶	64.99 ²⁹⁶				
Feb. 9.9	19.770 ²⁷²	51.50 ¹³⁵	43.193 ³⁶³	45.33 ⁴¹	10.297 ²⁷⁵	49.49 ²⁰⁸	22.79 ⁵⁸	62.47 ²⁵²				
	287	109	381	27	294	165	65	197				
19.8	20.057	50.41	43.574	45.06	10.591	47.84	23.44	60.50				
29.8	20.352 ²⁹⁵	49.62 ⁷⁹	43.965 ³⁹¹	44.93 ¹³	10.900 ³⁰⁹	46.66 ¹¹⁸	24.14 ⁷⁰	59.14 ¹³⁶				
Mar. 10.8	20.651 ²⁹⁹	49.16 ⁴⁶	44.361 ³⁹⁶	44.91 ²	11.214 ³¹⁴	46.01 ⁶⁵	24.88 ⁷⁴	58.42 ⁷²				
20.7	20.949 ²⁹⁸	49.06 ¹⁰	44.756 ³⁹⁵	45.01 ¹⁰	11.529 ³¹⁵	45.90 ¹¹	25.63 ⁷⁵	58.40 ²				
30.7	21.242 ²⁹³	49.32 ²⁶	45.147 ³⁹¹	45.22 ²¹	11.839 ³¹⁰	46.33 ⁴³	26.36 ⁷³	59.03 ⁶³				
	284	59	379	31	300	96	70	127				
Apr. 9.7	21.526	49.91	45.526	45.53	12.139	47.29	27.06	60.30				
19.7	21.798 ²⁷²	50.79 ⁸⁸	45.890 ³⁶⁴	45.94 ⁴¹	12.423 ²⁸⁴	48.69 ¹⁴⁰	27.70 ⁶⁴	62.16 ¹⁸⁶				
29.6	22.053 ²⁵⁵	51.94 ¹¹⁵	46.234 ³⁴⁴	46.45 ⁵¹	12.686 ²⁶³	50.51 ¹⁸²	28.25 ⁵⁵	64.51 ²³⁵				
May 9.6	22.289 ²³⁶	53.30 ¹³⁶	46.553 ³¹⁹	47.05 ⁶⁰	12.926 ²⁴⁰	52.67 ²¹⁶	28.71 ⁴⁶	67.28 ²⁷⁷				
19.6	22.500 ²¹¹	54.80 ¹⁵⁰	46.842 ²⁸⁹	47.76 ⁷¹	13.136 ²¹⁰	55.07 ²⁴⁰	29.07 ³⁶	70.37 ³⁰⁹				
	184	161	254	79	177	259	25	330				
29.6	22.684	56.41	47.096	48.55	13.313	57.66	29.32	73.67				
June 8.5	22.836 ¹⁵²	58.07 ¹⁶⁶	47.310 ²¹⁴	49.41 ⁸⁶	13.454 ¹⁴¹	60.32 ²⁶⁶	29.44 ¹²	77.09 ³⁴²				
18.5	22.954 ¹¹⁸	59.70 ¹⁶³	47.479 ¹⁶⁹	50.33 ⁹²	13.554 ¹⁰⁰	63.01 ²⁶⁹	29.45 ¹²	80.52 ³⁴³				
28.5	23.035 ⁸¹	61.29 ¹⁵⁹	47.599 ¹²⁰	51.29 ⁹⁶	13.613 ⁵⁹	65.62 ²⁶¹	29.33 ¹²	83.88 ³³⁶				
July 8.4	23.076 ⁴¹	62.79 ¹⁵⁰	47.669 ⁷⁰	52.26 ⁹⁷	13.628 ¹⁵	68.11 ²⁴⁹	29.09 ²⁴	87.07 ³¹⁹				
	4	137	17	94	27	230	35	295				
18.4	23.080	64.16	47.686	53.20	13.601	70.41	28.74	90.02				
28.4	23.043 ³⁷	65.37 ¹²¹	47.652 ³⁴	54.08 ⁸⁸	13.531 ⁷⁰	72.46 ²⁰⁵	28.28 ⁴⁶	92.65 ²⁶³				
Aug. 7.4	22.970 ⁷³	66.43 ¹⁰⁶	47.569 ⁸³	54.86 ⁷⁸	13.422 ¹⁰⁹	74.24 ¹⁷⁸	27.74 ⁵⁴	94.92 ²²⁷				
17.3	22.863 ¹⁰⁷	67.29 ⁸⁶	47.441 ¹²⁸	55.49 ⁶³	13.279 ¹⁴³	75.70 ¹⁴⁶	27.11 ⁶³	96.77 ¹⁸⁵				
27.3	22.730 ¹³³	67.96 ⁶⁷	47.275 ¹⁶⁶	55.96 ⁴⁷	13.105 ¹⁷⁴	76.81 ¹¹¹	26.42 ⁶⁹	98.17 ¹⁴⁰				
	156	47	193	26	196	74	74	91				
Sept. 6.3	22.574	68.43	47.082	56.22	12.909	77.55	25.68	99.08				
16.3	22.405 ¹⁶⁹	68.69 ²⁶	46.869 ²¹³	56.27 ⁵	12.698 ²¹¹	77.91 ³⁶	24.91 ⁷⁷	99.48 ⁴⁰				
26.2	22.232 ¹⁷³	68.74 ⁵	46.652 ²¹⁷	56.08 ¹⁹	12.483 ²¹⁵	77.88 ³	24.13 ⁷⁸	99.35 ¹³				
Oct. 6.2	22.064 ¹⁶⁸	68.57 ¹⁷	46.441 ¹⁹¹	55.67 ⁴¹	12.273 ²¹⁰	77.44 ⁴⁴	23.36 ⁷⁷	98.70 ⁶⁵				
16.2	21.913 ¹⁵¹	68.18 ³⁹	46.249 ²¹²	55.03 ⁶⁴	12.078 ¹⁹⁵	76.60 ⁸⁴	22.62 ⁷⁴	97.52 ¹¹⁸				
	128	61	160	83	171	123	69	168				
26.1	21.785	67.57	46.089	54.20	11.907	75.37	21.93	95.84				
Nov. 5.1	21.689 ⁹⁶	66.74 ⁸³	45.973 ¹¹⁶	53.22 ⁹⁸	11.769 ¹³⁸	73.77 ¹⁶⁰	21.32 ⁶¹	93.69 ²¹⁵				
15.1	21.633 ⁵⁶	65.69 ¹⁰⁵	45.908 ⁶⁵	52.12 ¹¹⁰	11.673 ⁹⁶	71.82 ¹⁹⁵	20.80 ⁵²	91.10 ²⁵⁹				
25.1	21.621 ¹²	64.43 ¹²⁶	45.901 ⁷	50.94 ¹¹⁸	11.622 ⁵¹	69.56 ²²⁶	20.40 ⁴⁰	88.13 ²⁹⁷				
Dec. 5.0	21.655 ³⁴	63.00 ¹⁴³	45.955 ⁵¹	49.77 ¹¹⁷	11.622 ⁰	67.04 ²⁵²	20.11 ²⁹	84.87 ³²⁶				
	81	157	116	114	51	270	15	349				
15.0	21.736	61.43	46.071	48.63	11.673	64.34	19.96	81.38				
25.0	21.862 ¹²⁶	59.74 ¹⁶⁹	46.245 ¹⁷⁴	47.56 ¹⁰⁷	11.773 ¹⁰⁰	61.53 ²⁸¹	19.95 ¹	77.81 ³⁵⁷				
35.0	22.029 ¹⁶⁷	58.01 ¹⁷³	46.474 ²²⁹	46.60 ⁹⁶	11.920 ¹⁴⁷	58.70 ²⁸³	20.08 ¹³	74.24 ³⁵⁷				
Mean Place	19.350	65.45	42.557	44.12	10.225	68.64	25.732	85.40				
Sec δ , Tan δ	1.003	+0.080	1.307	-0.842	1.130	+0.526	3.269	+3.112				
$D\psi \alpha, D\omega \alpha$	+0.06	0.00	+0.08	0.00	+0.05	0.00	-0.02	+0.01				
$D\psi \delta, D\omega \delta$	0.0	-1.0	0.0	-1.0	0.0	-1.0	0.0	-1.0				

APPARENT PLACES OF STARS, 1916.

459

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Ophiuchi. Mag. 3.7		89 Herculis. Mag. 5.5		ξ Draconis. Mag. 3.9		85 Draconis. Mag. 5.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 17 43	° ' " + 2 44	h m 17 52	° ' " +26 3	h m 17 52	° ' " +56 52	h m 17 53	° ' " +76 58
	s	"	s	"	s	"	s	"
Jan. 1.0	40.288	9.51	1.059	36.89	2.497	58.24	5.88	19.47
10.9	40.478 ¹⁹⁰	7.88 ¹⁶³	1.227 ¹⁶⁸	34.18 ²⁷¹	2.664 ¹⁶⁷	54.76 ³⁴⁸	6.09 ²¹	16.01 ³⁴⁶
20.9	40.702 ²²⁴	6.30 ¹⁵⁸	1.435 ²⁰⁸	31.61 ²⁵⁷	2.902 ²³⁸	51.46 ³³⁰	6.47 ³⁸	12.73 ³²⁸
30.9	40.953 ²⁵¹	4.84 ¹⁴⁶	1.676 ²⁴¹	29.26 ²³⁵	3.202 ³⁰⁰	48.47 ²⁹⁹	7.02 ⁵⁵	9.76 ²⁹⁷
Feb. 9.9	41.223 ²⁷⁰	3.55 ¹²⁹	1.945 ²⁶⁹	27.22 ²⁰⁴	3.557 ³⁵⁵	45.91 ²⁵⁶	7.73 ⁷¹	7.20 ²⁵⁶
	285	104	288	163	397	206	82	204
19.8	41.508	2.51 ⁷⁵	2.233	25.59	3.954	43.85	8.55	5.16
29.8	41.803 ²⁹⁵	1.76 ⁸⁴	2.536 ³⁰³	24.42 ¹¹⁷	4.381 ⁴²⁷	42.40 ¹⁴⁵	9.47 ⁹²	3.72 ¹⁴⁴
Mar. 10.8	42.101 ²⁹⁶	1.32 ⁴⁴	2.846 ³¹⁰	23.76 ⁶⁶	4.829 ⁴⁴⁸	41.59 ⁸¹	10.43 ⁹⁶	2.91 ⁸¹
20.7	42.400 ²⁹⁹	1.21 ¹¹	3.159 ³¹³	23.62 ¹⁴	5.282 ⁴⁶³	41.44 ¹⁵	11.42 ⁹⁹	2.77 ¹⁴
30.7	42.694 ²⁹⁴	1.44 ²³	3.468 ³⁰⁹	24.01 ³⁹	5.728 ⁴⁴⁶	41.97 ⁵³	12.40 ⁹⁸	3.31 ⁵⁴
	286	54	300	90	432	115	93	116
Apr. 9.7	42.980	1.98	3.768	24.91	6.160	43.12	13.33	4.47
19.7	43.254 ²⁷⁴	2.82 ⁸⁴	4.055 ²⁸⁷	26.27 ¹³⁶	6.562 ⁴⁰²	44.86 ¹⁷⁴	14.19 ⁸⁶	6.21 ¹⁷⁴
29.6	43.512 ²⁵⁸	3.91 ¹⁰⁹	4.324 ²⁶⁹	28.04 ¹⁷⁷	6.927 ³⁶⁵	47.12 ²²⁶	14.95 ⁷⁶	8.47 ²²⁶
May 9.6	43.751 ²³⁹	5.18 ¹²⁷	4.569 ²⁴⁵	30.15 ²¹¹	7.246 ³¹⁹	49.81 ²⁶⁹	15.57 ⁶²	11.16 ²⁶⁹
19.6	43.966 ¹⁸⁹	6.60 ¹⁵²	4.787 ²¹⁸	32.51 ²³⁶	7.512 ²⁶⁶	52.83 ³⁰²	16.06 ⁴⁹	14.18 ³⁰²
	286	189	187	255	207	325	32	325
29.6	44.155	8.12	4.974	35.06	7.719	56.08	16.38	17.43
June 8.5	44.313 ¹⁵⁸	9.69 ¹⁵⁷	5.125 ¹⁵¹	37.70 ²⁶⁴	7.863 ¹⁴⁴	59.47 ³³⁹	16.55 ¹⁷	20.82 ³³⁹
18.5	44.436 ¹²³	11.24 ¹⁵⁵	5.237 ¹¹²	40.36 ²⁶⁶	7.940 ⁷	62.90 ³⁴³	16.55 ⁰	24.25 ³⁴³
28.5	44.522 ⁸⁶	12.75 ¹⁵¹	5.307 ⁷⁰	42.96 ²⁶⁰	7.947 ⁷⁰	66.27 ³³⁷	16.39 ¹⁶	27.63 ³³⁷
July 8.4	44.571 ⁸	14.16 ¹⁴¹	5.334 ²⁷	45.45 ²⁴⁹	7.887 ⁶⁰	69.50 ³²³	16.05 ³⁴	30.86 ³²³
	—	129	15	232	127	301	48	300
18.4	44.579	15.45	5.319	47.77	7.760	72.51	15.57	33.86
28.4	44.548 ³¹	16.60 ¹¹⁵	5.261 ⁵⁸	49.86 ²⁰⁹	7.570 ¹⁹⁰	75.22 ²⁷¹	14.95 ⁶²	36.58 ²⁷²
Aug. 7.4	44.479 ⁶⁹	17.59 ⁹⁹	5.165 ⁹⁶	51.68 ¹⁸²	7.322 ²⁴⁸	77.60 ²³⁸	14.19 ⁷⁶	38.96 ²³⁸
17.3	44.378 ¹⁰¹	18.41 ⁸²	5.031 ¹³⁴	53.18 ¹⁵⁰	7.023 ²⁹⁹	79.57 ¹⁹⁷	13.33 ⁸⁶	40.93 ¹⁹⁷
27.3	44.246 ¹³²	19.04 ⁶³	4.866 ¹⁶⁵	54.35 ¹¹⁷	6.681 ³⁴²	81.10 ¹⁵³	12.38 ⁹⁵	42.46 ¹⁵³
	152	45	187	82	374	105	103	106
Sept. 6.3	44.094	19.49	4.679	55.17	6.307	82.15	11.35	43.52
16.3	43.927 ¹⁶⁷	19.74 ²⁵	4.476 ²⁰³	55.62 ⁴⁵	5.910 ³⁹⁷	82.70 ⁵⁵	10.29 ¹⁰⁶	44.08 ⁵⁶
26.2	43.755 ¹⁷²	19.80 ⁶	4.266 ²¹⁰	55.68 ⁶	5.506 ⁴⁰⁴	82.74 ⁴	9.20 ¹⁰⁹	44.12 ⁴
Oct. 6.2	43.589 ¹⁶⁶	19.65 ¹⁵	4.059 ²⁰⁷	55.35 ³³	5.107 ³⁹⁹	82.24 ⁵⁰	8.13 ¹⁰⁷	43.64 ⁴⁸
16.2	43.436 ¹⁵³	19.31 ³⁴	3.866 ¹⁹³	54.63 ⁷²	4.725 ³⁸²	81.24 ¹⁰⁰	7.09 ¹⁰⁴	42.64 ¹⁰⁰
	128	54	170	110	350	152	98	151
26.1	43.308	18.77	3.696	53.53	4.375	79.72	6.11	41.13
Nov. 5.1	43.210 ⁹⁸	18.01 ⁷⁶	3.557 ¹³⁹	52.07 ¹⁴⁶	4.068 ³⁰⁷	77.73 ¹⁹⁹	5.22 ⁸⁹	39.15 ¹⁹⁸
15.1	43.152 ⁵⁸	17.05 ⁹⁶	3.458 ⁹⁹	50.25 ¹⁸²	3.817 ²⁵¹	75.28 ²⁴⁵	4.45 ⁷⁷	36.71 ²⁴⁴
25.1	43.138 ¹⁴	15.89 ¹¹⁶	3.403 ⁵⁵	48.12 ²¹³	3.631 ¹⁸⁶	72.46 ²⁸²	3.83 ⁶²	33.91 ²⁸⁰
Dec. 5.0	43.169 ³¹	14.58 ¹³¹	3.397 ⁶	45.75 ²³⁷	3.516 ¹¹⁵	69.31 ³¹⁵	3.36 ⁴⁷	30.77 ³¹⁴
	79	146	44	258	37	338	28	386
15.0	43.248	13.12	3.441	43.17	3.479	65.93	3.08	27.41
25.0	43.372 ¹²⁴	11.55 ¹⁵⁷	3.535 ⁹⁴	40.48 ²⁶⁹	3.521 ⁴²	62.41 ³⁵²	2.98 ¹⁰	23.91 ³⁵⁰
35.0	43.537 ¹⁶⁵	9.94 ¹⁶¹	3.674 ¹³⁹	37.76 ²⁷²	3.640 ¹¹⁹	58.90 ³⁵¹	3.06 ⁸	20.41 ³⁵⁰
Mean Place	40.805	16.87	1.889	45.44	4.646	67.86	12.489	29.06
Sec δ, Tan δ	1.001	+0.048	1.113	+0.489	1.830	+1.533	4.436	+4.322
D _φ α, D _α α	+0.06	0.00	+0.05	0.00	+0.02	0.00	-0.05	+0.01
D _φ δ, D _α δ	0.0	-1.0	0.0	-1.0	0.0	-1.0	0.0	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	θ Herculis. Mag. 4.0		ν Ophiuchi. Mag. 3.5		ξ Herculis. Mag. 3.8		γ Draconis. Mag. 2.4	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 17 53	° ' " +37 15	h m 17 54	° ' " - 9 45	h m 17 54	° ' " +29 14	h m 17 54	° ' " +51 29
	s	"	s	"	s	"	s	"
Jan. 1.0	21.202	30.53	23.620	57.58	29.142	73.85	37.560	44.58
10.9	21.365 ¹⁶³	27.44 ³⁰⁹	23.812 ¹⁹²	58.47 ⁸⁹	29.307 ¹⁶⁵	71.02 ²⁸³	37.722 ¹⁶²	41.16 ³⁴²
20.9	21.575 ²¹⁰	24.50 ²⁹⁴	24.039 ²²⁷	59.36 ⁸⁹	29.514 ²⁰⁷	68.33 ²⁶⁹	37.943 ²²¹	37.92 ³²⁴
30.9	21.823 ²⁴⁸	21.83 ²⁶⁷	24.293 ²⁵⁴	60.20 ⁸⁴	29.754 ²⁴⁰	65.88 ²⁴⁵	38.219 ²⁷⁶	34.97 ²⁹⁵
Feb. 9.9	22.105 ²⁸²	19.52 ²³¹	24.568 ²⁷⁵	60.96 ⁷⁶	30.023 ²⁶⁹	63.76 ²¹²	38.542 ³²³	32.43 ²⁵⁴
	308	186	290	62	291	171	359	204
19.8	22.413	17.66	24.858	61.58	30.314	62.05	38.901	30.39
29.8	22.737 ³²⁴	16.34 ¹³²	25.159 ³⁰¹	62.04 ²⁶	30.621 ³⁰⁷	60.82 ¹²³	39.286 ³⁸⁵	28.94 ¹⁴⁵
Mar. 10.8	23.072 ³³⁵	15.58 ⁷⁶	25.466 ³⁰⁷	62.30 ⁴⁶	30.937 ³¹⁶	60.12 ⁷⁰	39.688 ⁴⁰²	28.10 ⁸⁴
20.8	23.411 ³³⁹	15.43 ¹⁵	25.773 ³⁰⁷	62.37 ⁷	31.255 ³¹⁸	59.96 ¹⁶	40.096 ⁴⁰⁸	27.93 ¹⁷
30.7	23.746 ³³⁵	15.88 ⁴⁵	26.077 ³⁰⁴	62.20 ¹⁷	31.570 ³¹⁵	60.36 ⁴⁰	40.498 ⁴⁰²	28.42 ⁴⁹
	326	101	299	35	306	92	390	110
Apr. 9.7	24.072	16.89	26.376	61.85	31.876	61.28	40.888	29.52
19.7	24.380 ³⁰⁸	18.44 ¹⁵⁵	26.665 ²⁸⁹	61.32 ⁵³	32.169 ²⁹³	62.68 ¹⁴⁰	41.255 ³⁶⁷	31.20 ¹⁶⁸
29.6	24.667 ²⁸⁷	20.44 ²⁰⁰	26.940 ²⁷⁵	60.63 ⁶⁹	32.444 ²⁷⁵	64.51 ¹⁸³	41.590 ³³⁶	33.39 ²¹⁹
May 9.6	24.926 ²⁵⁹	22.81 ²³⁷	27.197 ²⁵⁷	59.84 ⁷⁹	32.693 ²⁴⁹	66.70 ²¹⁹	41.887 ²⁹⁷	36.00 ²⁶¹
19.6	25.152 ²²⁶	25.50 ²⁶⁹	27.433 ²³⁶	58.97 ⁸⁷	32.914 ²²¹	69.15 ²⁴⁵	42.139 ²⁵²	38.96 ²⁹⁶
	190	289	209	92	189	266	202	318
29.6	25.342	28.39	27.642	58.05	33.103	71.81	42.341	42.14
June 8.5	25.490 ¹⁴⁸	31.40 ³⁰¹	27.820 ¹⁷⁸	57.14 ⁹¹	33.255 ¹⁵²	74.57 ²⁷⁶	42.488 ¹⁴⁷	45.45 ³³¹
18.5	25.593 ¹⁰³	34.44 ³⁰⁴	27.965 ¹⁴⁵	56.25 ⁸⁹	33.367 ¹¹²	77.35 ²⁷⁸	42.576 ⁸⁸	48.82 ³³⁷
28.5	25.649 ⁸	37.44 ³⁰⁰	28.072 ⁶⁷	55.41 ⁸⁴	33.436 ⁶⁹	80.10 ²⁷⁵	42.604 ²⁸	52.13 ³³¹
July 8.4	25.657 ⁵⁶	40.30 ²⁸⁶	28.139 ¹⁰⁷	54.64 ⁷⁷	33.461 ²⁵	82.71 ²⁶¹	42.573 ³¹	55.31 ³¹⁸
	39	267	25	68	19	243	92	296
18.4	25.618	42.97	28.164	53.96	33.442	85.14	42.481	58.27
28.4	25.533 ⁸⁵	45.38 ²⁴¹	28.148 ¹⁶	53.36 ⁶⁰	33.380 ⁶²	87.34 ²²⁰	42.333 ¹⁴⁸	60.95 ²⁶⁸
Aug. 7.4	25.403 ¹³⁰	47.48 ²¹⁰	28.093 ⁵⁵	52.86 ⁵⁰	33.276 ¹⁰⁴	89.27 ¹⁹³	42.132 ²⁰¹	63.30 ²³⁵
17.3	25.235 ¹⁶⁸	49.23 ¹⁷⁵	28.003 ⁹⁰	52.45 ⁴¹	33.137 ¹³⁹	90.86 ¹⁵⁹	41.885 ²⁴⁷	65.26 ¹⁹⁶
27.3	25.033 ²⁰²	50.59 ¹³⁶	27.881 ¹²²	62.12 ³³	32.965 ¹⁷²	92.11 ¹²⁵	41.599 ²⁸⁶	66.79 ¹⁵³
	226	96	146	23	196	88	317	106
Sept. 6.3	24.807	51.55	27.735	51.89	32.789	92.99	41.282	67.85
16.3	24.564 ²⁴³	52.07 ⁵²	27.572 ¹⁶³	51.73 ¹⁶	32.557 ²¹²	93.48 ⁴⁹	40.946 ³³⁶	68.42 ⁵⁷
26.2	24.314 ²⁵⁰	52.13 ⁶	27.403 ¹⁶⁹	51.64 ⁹	32.338 ²¹⁹	93.56 ⁸	40.601 ³⁴⁵	68.50 ⁸
Oct. 6.2	24.066 ²⁴⁸	51.74 ³⁹	27.237 ¹⁶⁶	51.63 ¹	32.121 ²¹⁷	93.23 ³³	40.259 ³⁴²	68.07 ⁴³
16.2	23.833 ²³³	50.90 ⁸⁴	27.084 ¹⁵³	51.70 ⁷	31.919 ²⁰²	92.49 ⁷⁴	39.933 ³²⁶	67.11 ⁹⁶
	209	129	129	15	181	115	298	145
26.1	23.624	49.61	26.955	51.85	31.738	91.34	39.635	65.66
Nov. 5.1	23.449 ¹⁷⁵	47.39 ¹⁷²	26.856 ⁹⁹	52.12 ²⁷	31.590 ¹⁴⁸	89.80 ¹⁵⁴	39.377 ²⁵⁸	63.74 ¹⁹²
15.1	23.316 ¹⁸³	45.78 ²¹¹	26.798 ⁵⁸	52.49 ³⁷	31.481 ¹⁰⁹	87.92 ¹⁸⁸	39.168 ²⁰⁹	61.39 ²³⁵
25.1	23.231 ⁸⁵	43.31 ²⁴⁷	26.783 ¹⁵	52.97 ⁴⁸	31.417 ⁶⁴	85.70 ²²²	39.017 ¹⁵¹	58.64 ²⁷⁵
Dec. 5.0	23.199 ³²	40.57 ²⁷⁴	26.814 ³¹	53.56 ⁵⁹	31.402 ¹⁵	83.21 ²⁴⁹	38.931 ⁸⁶	55.58 ³⁰⁶
	23	297	79	71	87	268	19	330
15.0	23.222	37.60	26.893	54.27	31.439	80.53	38.912	52.28
25.0	23.300 ⁷⁸	34.50 ³¹⁰	27.018 ¹²⁵	55.06 ⁷⁹	31.527 ⁸⁸	77.72 ²⁸¹	38.964 ⁵²	48.85 ³⁴³
35.0	23.431 ¹³¹	31.38 ³¹²	27.185 ¹⁶⁷	55.91 ⁸⁵	31.662 ¹³⁵	74.68 ²⁸⁴	39.082 ¹¹⁸	45.40 ³⁴⁵
Mean Place	22.320	39.49	24.092	51.32	30.046	82.39	39.325	53.85
Sec δ , Tan δ	1.257	+0.761	1.015	-0.172	1.146	+0.560	1.608	+1.257
$D\phi a, D\alpha a$	+0.04	0.00	+0.07	0.00	+0.05	0.00	+0.03	0.00
$D\phi \delta, D\alpha \delta$	0.0	-1.0	0.0	-1.0	0.0	-1.0	0.0	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	67 Ophiuchi. Mag. 3.9		θ Arae. Mag. 3.9		γ Sagittarii. Mag. 3.1		70 Ophiuchi. Mag. 4.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 17 56	° ' " + 2 55	h m 18 0	° ' " -50 5	h m 18 0	° ' " -30 25	h m 18 1	° ' " + 2 30
	s	"	s	"	s	"	s	"
Jan. 1.0	25.762	57.95	4.653	58.53	24.106	39.35	11.991	58.01
10.9	25.941 ¹⁷⁹	56.35 ¹⁶⁰	4.926 ²⁷³	57.00 ¹⁵³	24.323 ²¹⁷	38.96 ³⁹	12.166 ¹⁷⁵	56.42 ¹⁵⁹
20.9	26.154 ²¹³	54.79 ¹⁵⁶	5.252 ³²⁶	55.61 ¹³⁹	24.579 ²⁵⁶	38.65 ³¹	12.375 ²⁰⁹	54.87 ¹⁵⁵
30.9	26.394 ²⁴⁰	53.34 ¹⁴⁵	5.622 ³⁷⁰	54.41 ¹²⁰	24.866 ²⁸⁷	38.42 ²³	12.614 ²³⁹	53.43 ¹⁴⁴
Feb. 9.9	26.657 ²⁶³	52.09 ¹²⁵	6.027 ⁴⁰⁵	53.41 ¹⁰⁰	25.179 ³¹³	38.24 ¹⁸	12.874 ²⁶⁰	52.16 ¹²⁷
19.8	26.936 ²⁷⁹	51.06 ¹⁰³	6.458 ⁴³¹	52.62 ⁷⁹	25.509 ³³⁰	38.12 ¹²	13.151 ²⁷⁷	51.13 ¹⁰³
29.8	27.226 ²⁹⁰	50.32 ⁷⁴	6.907 ⁴⁴⁹	52.03 ⁵⁹	25.851 ³⁴²	38.02 ¹⁰	13.439 ²⁸⁸	50.37 ⁷⁶
Mar. 10.8	27.522 ²⁹⁶	49.89 ⁴³	7.367 ⁴⁶⁰	51.66 ³⁷	26.202 ³⁵¹	37.94 ⁵	13.734 ²⁹⁵	49.92 ⁴⁵
20.8	27.820 ²⁹⁸	49.80 ⁹	7.829 ⁴⁶²	51.51 ¹⁵	26.555 ³⁵³	37.87 ⁷	14.033 ²⁹⁹	49.81 ¹¹
30.7	28.116 ²⁹⁶	50.05 ²⁵	8.290 ⁴⁶¹	51.55 ⁴	26.904 ³⁴⁹	37.80 ⁷	14.329 ²⁹⁶	50.03 ²²
Apr. 9.7	28.406 ²⁹⁰	50.63 ⁵⁸	8.742 ⁴⁵²	51.81 ²⁶	27.249 ³⁴⁵	37.75 ⁵	14.622 ²⁹³	50.57 ⁵⁴
19.7	28.686 ²⁸⁰	51.48 ⁸⁵	9.180 ⁴³⁸	52.25 ⁴⁴	27.584 ³³⁵	37.72 ³	14.903 ²⁸¹	51.40 ⁸³
29.6	28.952 ²⁶⁶	52.60 ¹¹²	9.597 ⁴¹⁷	52.89 ⁶⁴	27.904 ³²⁰	37.72 ⁰	15.172 ²⁶⁹	52.48 ¹⁰⁸
May 9.6	29.200 ²⁴⁸	53.92 ¹³²	9.988 ³⁹¹	53.72 ⁸³	28.205 ³⁰¹	37.76 ⁴	15.425 ²⁵³	53.76 ¹²⁸
19.6	29.426 ²²⁶	55.38 ¹⁴⁶	10.342 ³⁵⁴	54.73 ¹⁰¹	28.483 ²⁷⁸	37.86 ¹⁰	15.654 ²²⁹	55.19 ¹⁴³
29.6	29.625 ¹⁹⁹	56.95 ¹⁵⁷	10.658 ³¹⁶	55.88 ¹¹⁵	28.730 ²⁴⁷	37.86 ¹⁶	15.857 ²⁰³	56.72 ¹⁵³
June 8.5	29.793 ¹⁶⁸	58.56 ¹⁶¹	10.925 ²⁶⁷	57.17 ¹²⁹	28.942 ²¹²	38.02 ²⁴	16.032 ¹⁷⁵	58.30 ¹⁵⁸
18.5	29.929 ¹³⁶	60.16 ¹⁶⁰	11.139 ²¹⁴	58.57 ¹⁴⁰	29.116 ¹⁷⁴	38.26 ²⁹	16.173 ¹⁴¹	59.86 ¹⁵⁶
28.5	30.027 ⁹⁸	61.71 ¹⁵⁵	11.297 ¹⁵⁸	60.04 ¹⁴⁷	29.247 ¹³¹	38.55 ³⁶	16.173 ¹⁰²	61.37 ¹⁵¹
July 8.5	30.085 ⁵⁸	63.18 ¹⁴⁷	11.393 ⁹⁶	61.54 ¹⁵⁰	29.333 ⁸⁶	39.32 ⁴¹	16.275 ⁶⁴	62.80 ¹⁴³
18.4	30.103 ¹⁸	64.53 ¹³⁵	11.426 ³³	63.02 ¹⁴⁸	29.371 ³⁸	39.32 ⁴³	16.339 ²⁴	64.10 ¹³⁰
28.4	30.081 ²²	65.72 ¹¹⁹	11.395 ³¹	64.40 ¹³⁸	29.361 ¹⁰	40.20 ⁴⁵	16.344 ¹⁹	65.27 ¹¹⁷
Aug. 7.4	30.020 ⁶¹	66.76 ¹⁰⁴	11.306 ⁸⁹	65.67 ¹²⁷	29.305 ⁵⁶	40.63 ³⁸	16.288 ⁵⁶	66.28 ¹⁰¹
17.3	29.927 ⁹³	67.62 ⁸⁶	11.161 ¹⁴⁵	66.77 ¹¹⁰	29.207 ⁹⁸	41.01 ³³	16.195 ⁹³	67.11 ⁸³
27.3	29.801 ¹²⁶	68.29 ⁶⁷	10.967 ¹⁹⁴	67.65 ⁸⁸	29.073 ¹³⁴	41.31 ³⁰	16.074 ¹²¹	67.76 ⁶⁵
Sept. 6.3	29.652 ¹⁴⁹	68.78 ⁴⁹	10.736 ²³¹	68.23 ⁵⁸	28.909 ¹⁶⁴	41.51 ²⁰	16.074 ¹⁴⁷	67.76 ⁴⁶
16.3	29.486 ¹⁶⁶	69.07 ²⁹	10.480 ²⁵⁶	68.53 ³⁰	28.727 ¹⁸²	41.59 ⁸	15.927 ¹⁶⁵	68.22 ²⁷
26.2	29.314 ¹⁷²	69.17 ¹⁰	10.211 ²⁶⁹	68.50 ³	28.535 ¹⁹²	41.55 ⁴	15.762 ¹⁶⁵	68.49 ⁷
Oct. 6.2	29.145 ¹⁶⁹	69.07 ¹⁰	9.946 ²⁶⁵	68.16 ³⁴	28.346 ¹⁸⁹	41.55 ¹⁹	15.591 ¹⁷¹	68.56 ¹³
16.2	28.988 ¹⁵⁷	68.75 ³²	9.701 ²⁴⁵	67.47 ⁶⁹	28.346 ¹⁷⁵	41.36 ³¹	15.423 ¹⁶⁸	68.43 ³²
26.2	28.853 ¹³⁵	68.24 ⁵¹	9.489 ²¹²	66.49 ⁹⁸	28.171 ¹⁵⁰	41.05 ⁴³	15.267 ¹³⁹	68.11 ⁵³
Nov. 5.1	28.748 ¹⁰⁵	67.51 ⁷³	9.322 ¹⁶⁷	65.24 ¹²⁵	28.021 ¹¹⁴	40.62 ⁵³	15.128 ¹⁰⁷	67.58 ⁷²
15.1	28.681 ⁶⁷	66.59 ⁹²	9.214 ¹⁰⁸	63.78 ¹⁴⁶	27.907 ⁷⁰	40.09 ⁵⁸	15.021 ⁷⁰	66.86 ⁹²
25.1	28.656 ²⁵	65.46 ¹¹³	9.168 ⁴⁶	62.16 ¹⁶²	27.837 ²⁰	39.51 ⁶²	14.951 ²⁸	65.94 ¹¹²
Dec. 5.0	28.676 ²⁰	64.18 ¹²⁸	9.195 ²⁷	60.43 ¹⁷³	27.817 ³²	38.89 ⁶²	14.923 ¹⁸	64.82 ¹²⁷
15.0	28.743 ⁶⁷	62.75 ¹⁴³	9.293 ⁹⁸	58.69 ¹⁷⁴	27.849 ⁸⁷	38.27 ⁵⁸	14.941 ⁶⁴	63.55 ¹⁴²
25.0	28.854 ¹¹¹	61.22 ¹⁵³	9.460 ¹⁶⁷	56.98 ¹⁷¹	27.936 ¹³⁸	37.69 ⁵²	15.005 ¹⁰⁸	62.13 ¹⁵³
35.0	29.007 ¹⁵³	59.63 ¹³⁹	9.693 ²³³	55.35 ¹⁶³	28.074 ¹⁸⁷	37.17 ⁴⁵	15.113 ¹⁴⁸	60.60 ¹⁵³
					28.261	36.72	15.261	59.03 ¹⁵⁷
Mean Place	26.297	64.98	5.496	54.75	24.630	34.40	12.528	64.89
Sec δ , Tan δ	1.001	+0.051	1.559	-1.196	1.160	-0.587	1.001	+0.044
$D\psi \alpha$, $D_w \alpha$	+0.06	0.00	+0.09	0.00	+0.08	0.00	+0.06	0.00
$D\psi \delta$, $D_w \delta$	0.0	-1.0	0.0	-1.0	0.0	-1.0	0.0	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	72 Ophiuchi. Mag. 3.7		o Herculis. Mag. 3.8		μ Sagittarii. Mag. 4.0		77 Sagittarii. Mag. 3.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 18 3	° ' " + 9 32	h m 18 4	° ' " +28 44	h m 18 8	° ' " -21 4	h m 18 11	° ' " -36 47
	s	"	s	"	s	"	s	"
Jan. 1.0	21.402	56.86	15.007	52.69	43.877	60.20	56.053	20.94
11.0	21.570 ¹⁶⁸	54.93 ¹⁹³	15.162 ¹⁵⁵	49.89 ²⁸⁰	44.070 ¹⁹³	60.33 ¹³	56.271 ²¹⁸	20.10 ⁸⁴
20.9	21.773 ²⁰³	53.06 ¹⁸⁷	15.358 ¹⁹⁶	47.21 ²⁶⁸	44.299 ²²⁹	60.51 ¹⁸	56.530 ²⁵⁹	19.35 ⁷⁵
30.9	22.004 ²³¹	51.35 ¹⁷¹	15.589 ²³¹	44.75 ²⁴⁶	44.558 ²⁵⁹	60.70 ¹⁹	56.825 ²⁹⁵	18.70 ⁶⁵
Feb. 9.9	22.259 ²⁵⁵	49.84 ¹⁵¹	15.850 ²⁶¹	42.61 ²¹⁴	44.841 ²⁸³	60.88 ¹⁸	57.148 ³²³	18.14 ⁵⁶
	273	122	284	174	302	14	347	47
19.8	22.532	48.62	16.134	40.87	45.143	61.02	57.495	17.67
29.8	22.818 ²⁸⁶	47.73 ⁸⁹	16.436 ³⁰²	39.61 ¹²⁶	45.457 ³¹⁴	61.10 ⁸	57.855 ³⁶⁰	17.29 ³³
Mar. 10.8	23.112 ²⁹⁴	47.22 ⁵¹	16.747 ³¹¹	38.86 ²¹	45.778 ³²¹	61.10 ⁰	58.226 ³⁷¹	16.98 ³¹
20.8	23.409 ²⁹⁷	47.11 ¹¹	17.064 ³¹⁷	38.65 ²¹	46.104 ³²⁶	61.01 ⁹	58.602 ³⁷⁶	16.77 ²¹
30.7	23.705 ²⁹⁶	47.40 ²⁹	17.379 ³¹⁵	39.00 ³⁵	46.429 ³²⁵	60.83 ¹⁸	58.979 ³⁷⁷	16.61 ¹⁶
	291	67	308	87	321	28	372	7
Apr. 9.7	23.996	48.07	17.687	39.87	46.750	60.55	59.351	16.54
19.7	24.278 ²⁸²	49.08 ¹⁰¹	17.985 ²⁹⁸	41.22 ¹³⁵	47.064 ³¹⁴	60.22 ³³	59.713 ³⁶²	16.55 ¹
29.7	24.546 ²⁶⁸	50.40 ¹³²	18.265 ²⁸⁰	43.01 ¹⁷⁹	47.364 ³⁰⁰	59.84 ³⁸	60.061 ³⁴⁸	16.65 ¹⁰
May 9.6	24.796 ²⁵⁰	51.98 ¹⁵⁸	18.522 ²⁵⁷	45.17 ²¹⁶	47.648 ²⁸⁴	59.43 ⁴¹	60.391 ³³⁰	16.86 ²¹
19.6	25.024 ²²⁸	53.74 ¹⁷⁶	18.752 ²³⁰	47.59 ²⁴²	47.911 ²⁶³	59.02 ⁴¹	60.695 ³⁰⁴	17.17 ³¹
	201	189	198	264	237	39	273	41
29.6	25.225	55.63	18.950	50.23	48.148	58.63	60.968	17.58
June 8.5	25.395 ¹⁷⁰	57.59 ¹⁹⁶	19.112 ¹⁶²	52.98 ²⁷⁵	48.353 ²⁰⁵	58.29 ³⁴	61.207 ²³⁹	18.10 ⁵²
18.5	25.531 ¹³⁶	59.55 ¹⁹⁶	19.234 ¹²²	55.77 ²⁷⁹	48.522 ¹⁶⁹	58.00 ²⁹	61.404 ¹⁹⁷	18.71 ⁶¹
28.5	25.629 ⁹⁸	61.47 ¹⁹²	19.314 ⁸⁰	58.53 ²⁷⁶	48.653 ¹³¹	57.78 ²²	61.556 ¹⁵²	19.41 ⁷⁰
July 8.5	25.687 ⁵⁸	63.30 ¹⁸³	19.349 ³⁵	61.16 ²⁶³	48.740 ⁸⁷	57.63 ¹⁵	61.658 ¹⁰²	20.15 ⁷⁴
	18	168	9	248	44	9	50	78
18.4	25.705	64.98	19.340	63.64	48.784	57.54	61.708	20.93
28.4	25.681 ²⁴	66.50 ¹⁵²	19.287 ⁵³	65.89 ²²⁵	48.783 ¹	57.50 ⁴	61.706 ²	21.71 ⁷⁵
Aug. 7.4	25.619 ⁶²	67.83 ¹³³	19.193 ⁹⁴	67.87 ¹⁹⁸	48.739 ⁴⁴	57.50 ⁰	61.654 ⁵²	22.46 ⁷⁸
17.4	25.522 ⁹⁷	68.95 ¹¹²	19.060 ¹³³	69.53 ¹⁶⁶	48.655 ⁸⁴	57.53 ³	61.556 ⁹⁸	23.11 ⁶⁵
27.3	25.392 ¹³⁰	69.83 ⁸⁸	18.894 ¹⁶⁶	70.86 ¹³³	48.535 ¹²⁰	57.56 ³	61.417 ¹³⁹	23.67 ⁵⁶
	153	63	191	96	146	3	172	42
Sept. 6.3	25.239	70.46	18.703	71.82	48.389	57.59	61.245	24.09
16.3	25.068 ¹⁷¹	70.85 ³⁹	18.493 ²¹⁰	72.38 ⁵⁶	48.222 ¹⁶⁷	57.59 ⁰	61.050 ¹⁹⁵	24.32 ²³
26.2	24.891 ¹⁷⁷	70.97 ¹²	18.276 ²¹⁷	72.55 ¹⁷	48.045 ¹⁷⁷	57.55 ⁴	60.843 ²⁰⁷	24.37 ⁵
Oct. 6.2	24.716 ¹⁷⁵	70.84 ¹³	18.061 ²¹⁵	72.32 ²³	47.869 ¹⁷⁶	57.47 ⁸	60.635 ²⁰⁸	24.21 ¹⁶
16.2	24.549 ¹⁶⁷	70.45 ³⁹	17.856 ²⁰⁵	71.67 ⁶⁵	47.706 ¹⁶³	57.36 ¹¹	60.440 ¹⁹⁵	23.86 ³⁵
	145	67	184	105	141	14	170	53
26.2	24.404	69.78	17.672	70.62	47.565	57.22	60.270	23.33
Nov. 5.1	24.289 ¹¹⁵	68.87 ⁹¹	17.519 ¹⁵³	69.19 ¹⁴³	47.455 ¹¹⁰	57.06 ¹⁶	60.136 ¹³⁴	22.62 ⁷¹
15.1	24.210 ⁷⁹	67.70 ¹¹⁷	17.404 ¹¹⁵	67.39 ¹⁸⁰	47.385 ⁷⁰	56.91 ¹⁵	60.047 ⁸⁹	21.79 ⁸³
25.1	24.173 ³⁷	66.32 ¹³⁸	17.333 ⁷¹	65.25 ²¹⁴	47.359 ²⁶	56.79 ¹²	60.009 ¹⁸	20.86 ⁹³
Dec. 5.1	24.180 ⁷	64.71 ¹⁶¹	17.310 ²³	62.85 ²⁴⁰	47.382 ²³	56.71 ⁸	60.028 ³⁹	19.89 ⁹⁷
	54	176	27	263	73	3	75	99
15.0	24.234	62.95	17.337	60.22	47.455	56.68	60.103	18.90
25.0	24.332 ⁹⁸	61.08 ¹⁸⁷	17.414 ⁷⁷	57.46 ²⁷⁶	47.575 ¹²⁰	56.71 ³	60.235 ¹³²	17.94 ⁹⁶
35.0	24.472 ¹⁴⁰	59.16 ¹⁹²	17.539 ¹²⁵	54.66 ²⁸⁰	47.740 ¹⁶⁵	56.80 ⁹	60.419 ¹⁸⁴	17.05 ⁸⁹
Mean Place	22.004	64.03	15.919	60.57	44.356	54.61	56.636	16.04
Sec δ, Tan δ	1.014	+0.168	1.141	+0.549	1.071	-0.386	1.248	-0.748
$D\psi\alpha, D_w\alpha$	+0.06	0.00	+0.05	0.00	+0.07	0.00	+0.08	0.00
$D\psi\delta, D_w\delta$	0.0	-1.0	0.0	-1.0	0.0	-1.0	0.0	-1.0

APPARENT PLACES OF STARS, 1916.

463

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	Groombridge 2533. Mag. 5.4			36 Draconis. Mag. 5.0			δ Sagittarii. Mag. 2.8			γ Serpentis. Mag. 3.4		
	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	18	13	+42 7	18	13	+64 21	18	15	-29 51	18	16	- 2 55
	s	"	s	"	s	"	s	"	s	"	"	
Jan. 1.0	0.644	40.88	21.72	59.59	36.465	58.95	57.232	23.52				
11.0	0.781 ¹³⁷	37.68 ³²⁰	21.84 ¹²	56.07 ³⁵²	36.664 ¹⁹⁹	58.52 ⁴³	57.396 ¹⁰⁴	24.74 ¹²²				
20.9	0.970 ¹⁸⁹	34.60 ³⁰⁸	22.06 ²²	52.67 ³⁴⁰	36.902 ²³⁸	58.14 ³⁸	57.595 ¹⁹⁹	25.93 ¹¹⁰				
30.9	1.204 ²³⁴	31.75 ²⁸⁵	22.37 ³¹	49.55 ³¹²	37.174 ²⁷²	57.82 ³²	57.822 ²²⁷	27.05 ¹¹²				
Feb. 9.9	1.478 ²⁷⁴	29.26 ²⁴⁹	22.76 ³⁹	46.80 ²⁷⁵	37.474 ³⁰⁰	57.54 ²⁸	58.074 ²⁵²	28.03 ⁹⁸				
19.8	1.783 ³⁰⁵	27.22 ²⁰⁴	23.20 ⁴⁴	44.53 ²²⁷	37.792 ³¹⁸	57.30 ²⁴	58.343 ²⁶⁹	28.83 ⁸⁰				
29.8	2.112 ³²⁹	25.70 ¹⁵²	23.70 ⁵⁰	42.83 ¹⁷⁰	38.126 ³³⁴	57.08 ²²	58.627 ²⁸⁴	29.40 ⁵⁷				
Mar. 10.8	2.457 ³⁴⁵	24.77 ⁹³	24.23 ⁵³	41.77 ¹⁰⁶	38.469 ³⁴³	56.86 ²²	58.919 ²⁹²	29.71 ³¹				
20.8	2.812 ³⁵⁵	24.44 ³³	24.78 ⁵⁵	41.37 ⁴⁰	38.818 ³⁴⁹	56.64 ²²	59.217 ²⁹⁸	29.75 ⁴				
30.7	3.166 ³⁵⁴	24.73 ²⁹	25.33 ⁵⁵	41.64 ²⁷	39.167 ³⁴⁹	56.43 ²¹	59.516 ²⁹⁹	29.50 ²⁵				
Apr. 9.7	3.514 ³⁴⁸	25.62 ⁸⁹	25.86 ⁵³	42.58 ⁹⁴	39.514 ³⁴⁷	56.23 ²⁰	59.812 ²⁹⁶	28.99 ⁵¹				
19.7	3.849 ³³⁵	27.09 ¹⁴⁷	26.37 ⁵¹	44.12 ¹⁵⁴	39.853 ³³⁹	56.05 ¹⁸	60.101 ²⁸⁹	28.23 ⁷⁶				
29.7	4.162 ³¹³	29.05 ¹⁹⁶	26.84 ⁴⁷	46.21 ²⁰⁹	40.179 ³²⁶	55.90 ¹⁵	60.380 ²⁷⁹	27.27 ⁹⁶				
May 9.6	4.448 ²⁸⁶	31.42 ²³⁷	27.25 ⁴¹	48.77 ²⁵⁶	40.488 ³⁰⁹	55.79 ¹¹	60.643 ²⁶³	26.13 ¹¹⁴				
19.6	4.700 ²⁵²	34.15 ²⁷³	27.58 ³³	51.72 ²⁹⁵	40.775 ²⁸⁷	55.74 ⁵	60.888 ²⁴⁵	24.88 ¹²⁵				
29.6	4.914 ²¹⁴	37.13 ²⁹⁸	27.85 ²⁷	54.94 ³²²	41.034 ²⁵⁹	55.77 ³	61.107 ²¹⁹	23.55 ¹³³				
June 8.5	5.084 ¹⁷⁰	40.27 ³¹⁴	28.05 ²⁰	58.35 ³⁴¹	41.260 ²²⁶	55.88 ¹¹	61.298 ¹⁹¹	22.20 ¹³⁵				
18.5	5.206 ¹²²	43.48 ³²¹	28.16 ¹¹	61.85 ³⁵⁰	41.450 ¹⁹⁰	56.07 ¹⁹	61.455 ¹⁵⁷	20.87 ¹³³				
28.5	5.279 ⁷³	46.67 ³¹⁹	28.18 ²	65.34 ³⁴⁹	41.596 ¹⁴⁶	56.35 ²⁸	61.575 ¹²⁰	19.58 ¹²⁹				
July 8.5	5.299 ²⁰	49.76 ³⁰⁹	28.11 ⁷	68.74 ³⁴⁰	41.697 ¹⁰¹	56.69 ³⁴	61.656 ⁸¹	18.40 ¹¹⁸				
18.4	5.267 ³²	52.67 ²⁹¹	27.95 ¹⁶	71.96 ³²²	41.750 ⁵³	57.08 ³⁹	61.695 ³⁹	17.31 ¹⁰⁹				
28.4	5.185 ⁸²	55.34 ²⁶⁷	27.72 ²³	74.91 ²⁹⁵	41.755 ⁵	57.50 ⁴²	61.694 ¹	16.34 ⁹⁷				
Aug. 7.4	5.054 ¹³¹	57.72 ²³⁸	27.41 ³¹	77.55 ²⁶⁴	41.713 ⁴²	57.92 ⁴²	61.651 ⁴³	15.52 ⁸²				
17.4	4.880 ¹⁷⁴	59.75 ²⁰³	27.04 ³⁷	79.81 ²²⁶	41.628 ⁸⁵	58.32 ⁴⁰	61.570 ⁸¹	14.85 ⁶⁷				
27.3	4.668 ²¹²	61.38 ¹⁶³	26.61 ⁴³	81.64 ¹⁸³	41.504 ¹²⁴	58.67 ³⁵	61.457 ¹¹³	14.31 ⁵⁴				
Sept. 6.3	4.427 ²⁴¹	62.59 ¹²¹	26.13 ⁴⁸	83.01 ¹³⁷	41.348 ¹⁵⁶	58.93 ²⁶	61.317 ¹⁴⁰	13.93 ³⁸				
16.3	4.163 ²⁶⁴	63.35 ⁷⁶	25.62 ⁵¹	83.88 ⁸⁷	41.171 ¹⁷⁷	59.09 ¹⁶	61.157 ¹⁶⁰	13.70 ²³				
26.2	3.889 ²⁷⁴	63.65 ³⁰	25.09 ⁵³	84.24 ³⁶	40.982 ¹⁸⁹	59.13 ⁴	60.988 ¹⁶⁹	13.60 ¹⁰				
Oct. 6.2	3.614 ²⁷⁵	63.47 ¹⁸	24.56 ⁵³	84.06 ¹⁸	40.792 ¹⁹⁰	59.04 ⁹	60.818 ¹⁷⁰	13.65 ⁵				
16.2	3.351 ²⁶³	62.80 ⁶⁷	24.05 ⁵¹	83.35 ⁷¹	40.612 ¹⁸⁰	58.81 ²³	60.658 ¹⁶⁰	13.85 ²⁰				
26.2	3.107 ²⁴⁴	61.66 ¹¹⁴	23.57 ⁴⁸	82.11 ¹²⁴	40.456 ¹⁵⁶	58.47 ³⁴	60.517 ¹⁴¹	14.20 ³⁵				
Nov. 5.1	2.896 ²¹¹	60.06 ¹⁶⁰	23.13 ⁴⁴	80.36 ¹⁷⁵	40.333 ¹²³	58.02 ⁴⁵	60.403 ¹¹⁴	14.68 ⁴⁸				
15.1	2.726 ¹⁷⁰	58.03 ²⁰³	22.75 ³⁸	78.14 ²²²	40.250 ⁸³	57.50 ⁵²	60.324 ⁷⁹	15.34 ⁶⁶				
25.1	2.603 ¹²³	55.63 ²⁴⁰	22.44 ³¹	75.48 ²⁶⁶	40.215 ³⁵	56.93 ⁵⁷	60.286 ³⁸	16.13 ⁷⁹				
Dec. 5.1	2.534 ⁶⁹	52.88 ²⁷⁵	22.22 ²²	72.46 ³⁰²	40.232 ¹⁷	56.34 ⁵⁹	60.293 ⁷	17.06 ⁹³				
15.0	2.522 ¹²	49.88 ³⁰⁰	22.10 ¹²	69.17 ³²⁹	40.301 ⁶⁹	55.77 ⁵⁷	60.344 ⁵¹	18.12 ¹⁰⁶				
25.0	2.569 ⁴⁷	46.72 ³¹⁶	22.07 ³	65.69 ³⁴⁸	40.422 ¹²¹	55.23 ⁵⁴	60.438 ⁹⁴	19.27 ¹¹⁵				
35.0	2.671 ¹⁰²	43.51 ³²¹	22.13 ⁶	62.15 ³⁵⁴	40.591 ¹⁶⁹	54.74 ⁴⁹	60.576 ¹³⁸	20.47 ¹²⁰				
Mean Place	1.984	48.39	24.805	67.11	36.982	53.67	57.745	17.24				
Sec δ, Tan δ	1.348	+0.904	2.312	+2.084	1.153	-0.574	1.001	-0.051				
D _ψ α, D _ω α	+0.04	0.00	+0.01	-0.01	+0.08	0.00	+0.06	0.00				
D _ψ δ, D _ω δ	0.0	-1.0	0.0	-1.0	0.0	-1.0	0.0	-1.0				

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Sagittarii. Mag. 2.0		109 Herculis. Mag. 3.9		α Telescopii. Mag. 3.8		χ Draconis. Mag. 3.7	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '
	18 18	-34 25	18 20	+21 43	18 20	-46 0	18 22	+72 41
	s	"	s	"	s	"	s	"
Jan. 1.0	35.219	36.23	6.294	43.34	43.988	62.26	29.43	41.38
11.0	35.424 ²⁰⁵	35.51 ⁷²	6.436 ¹⁴²	40.85 ²⁴⁹	44.217 ²²⁹	60.83 ¹⁴³	29.53 ¹⁰	37.86 ³⁵²
20.9	35.670 ²⁴⁶	34.85 ⁶⁶	6.618 ¹⁸²	38.45 ²⁴⁰	44.497 ²⁸⁰	59.50 ¹³³	29.77 ²⁴	34.44 ³⁴²
30.9	35.951 ²⁸¹	34.27 ⁵⁸	6.834 ²¹⁶	36.23 ²²²	44.821 ³²⁴	58.31 ¹¹⁹	30.13 ³⁶	31.26 ³¹⁸
Feb. 9.9	36.262 ³¹¹	33.76 ⁵¹	7.078 ²⁴⁴	34.26 ¹⁹⁷	45.179 ³⁵⁸	57.25 ¹⁰⁶	30.62 ⁴⁹	28.42 ²⁸⁴
	331	45	268	161	384	90	58	235
19.9	36.593	33.31	7.346	32.65	45.563	56.35	31.20	26.07
29.8	36.942 ³⁴⁹	32.93 ³⁸	7.630 ²⁸⁴	31.45 ¹²⁰	45.970 ⁴⁰⁷	55.62 ⁷³	31.88 ⁶⁸	24.25 ¹⁸²
Mar. 10.8	37.300 ³⁵⁸	32.60 ³³	7.927 ²⁹⁷	30.72 ⁷³	46.389 ⁴¹⁹	55.04 ⁵⁸	32.61 ⁷³	23.05 ¹²⁰
20.8	37.665 ³⁶⁵	32.31 ²⁹	8.232 ³⁰⁵	30.47 ²⁵	46.815 ⁴²⁶	54.63 ⁴¹	33.37 ⁷⁶	22.53 ⁵²
30.7	38.031 ³⁶⁶	32.09 ²²	8.537 ³⁰⁵	30.73 ²⁶	47.244 ⁴²⁹	54.41 ²²	34.14 ⁷⁷	22.66 ¹³
	364	17	302	74	426	7	75	79
Apr. 9.7	38.395	31.92	8.839	31.47	47.670	54.34	34.89	23.45
19.7	38.750 ³⁵⁵	31.80 ¹²	9.134 ²⁹⁵	32.66 ¹¹⁹	48.087 ⁴¹⁷	54.44 ¹⁰	35.61 ⁷²	24.88 ¹⁴³
29.7	39.094 ³⁴⁴	31.76 ⁴	9.416 ²⁸²	34.25 ¹⁵⁹	48.488 ⁴⁰¹	54.73 ²⁹	36.25 ⁶⁴	26.85 ¹⁹⁷
May 9.6	39.420 ³²⁶	31.81 ⁵	9.679 ²⁶³	36.17 ¹⁹²	48.869 ³⁸¹	55.18 ⁴⁵	36.83 ⁵⁸	26.85 ²⁴⁶
19.6	39.722 ³⁰²	31.95 ¹⁴	9.920 ²⁴¹	38.37 ²²⁰	49.221 ³⁵²	55.82 ⁶⁴	37.30 ⁴⁷	32.15 ²⁸⁴
	274	25	212	238	318	79	37	317
29.6	39.996	32.20	10.132	40.75	49.539	56.61	37.67	35.32
June 8.6	40.235 ²³⁹	32.55 ³⁵	10.312 ¹⁸⁰	43.25 ²⁵⁰	49.816 ²⁷⁷	57.56 ⁹⁵	37.91 ²⁴	38.68 ³³⁶
18.5	40.435 ²⁰⁰	32.99 ⁴⁴	10.456 ¹⁴⁴	45.80 ²⁵⁵	50.045 ²²⁹	58.63 ¹⁰⁷	38.04 ¹³	42.16 ³⁴⁸
28.5	40.590 ¹⁵⁵	33.52 ⁵³	10.560 ¹⁰⁴	48.32 ²⁵²	50.221 ¹⁷⁶	59.82 ¹¹⁹	38.04 ⁰	45.65 ³⁴⁹
July 8.5	40.697 ¹⁰⁷	34.12 ⁶⁰	10.621 ⁶¹	50.75 ²⁴³	50.341 ¹²⁰	61.06 ¹²⁴	37.92 ¹²	49.06 ³⁴¹
	57	65	17	229	62	128	26	326
18.4	40.754	34.77	10.638	53.04	50.403	62.34	37.66	52.32
28.4	40.760 ⁶	35.44 ⁶⁷	10.613 ²⁵	55.12 ²⁰⁸	50.403 ⁰	63.59 ¹²⁵	37.29 ³⁷	55.34 ³⁰²
Aug. 7.4	40.717 ⁴³	36.09 ⁶⁵	10.546 ⁶⁷	56.97 ¹⁸⁵	50.345 ⁵⁸	64.76 ¹¹⁷	36.82 ⁴⁷	58.06 ²⁷²
17.4	40.628 ⁸⁹	36.69 ⁶⁰	10.440 ¹⁰⁶	58.55 ¹⁵⁸	50.234 ¹¹¹	65.83 ¹⁰⁷	36.25 ⁵⁷	60.43 ²³⁷
27.3	40.497 ¹³¹	37.20 ⁵¹	10.302 ¹³⁸	59.82 ¹²⁷	50.074 ¹⁶⁰	66.73 ⁹⁰	35.60 ⁶⁵	62.38 ¹⁹⁵
	164	40	167	96	199	88	72	150
Sept. 6.3	40.333	37.60	10.135	60.78	49.875	67.41	34.88	63.88
16.3	40.146 ¹⁸⁷	37.84 ²⁴	9.949 ¹⁸⁶	61.40 ⁶²	49.648 ²²⁷	67.85 ⁴⁴	34.12 ⁷⁶	64.90 ¹⁰²
26.3	39.947 ¹⁹⁹	37.92 ⁸	9.752 ¹⁹⁷	61.66 ²⁶	49.405 ²⁴³	68.01 ¹⁶	33.32 ⁸⁰	65.39 ⁴⁹
Oct. 6.2	39.745 ²⁰²	37.83 ⁹	9.554 ¹⁹⁸	61.57 ⁹	49.160 ²⁴⁵	67.87 ¹⁴	32.52 ⁸⁰	65.36 ³
16.2	39.555 ¹⁹⁰	37.55 ²⁸	9.365 ¹⁸⁹	61.12 ⁴⁵	48.927 ²³³	67.45 ⁴²	31.73 ⁷⁹	64.80 ⁵⁶
	168	44	171	81	207	71	75	109
26.2	39.387	37.11	9.194	60.31	48.720	66.74	30.98	63.71
Nov. 5.1	39.255 ¹³²	36.52 ⁵⁹	9.049 ¹⁴⁵	59.15 ¹¹⁶	48.552 ¹⁶⁸	65.78 ⁹⁶	30.28 ⁷⁰	62.10 ¹⁶¹
15.1	39.164 ⁹¹	35.81 ⁷¹	8.940 ¹⁰⁹	57.65 ¹⁵⁰	48.433 ¹¹⁹	64.59 ¹¹⁹	29.67 ⁶¹	60.01 ²⁰⁹
25.1	39.123 ⁴¹	35.02 ⁷⁹	8.872 ⁶⁸	55.85 ¹⁸⁰	48.372 ⁶¹	63.24 ¹³⁵	29.15 ⁵²	57.47 ²⁵⁴
Dec. 5.1	39.135 ¹²	34.18 ⁸⁴	8.848 ²⁴	53.78 ²⁰⁷	48.375 ³	61.78 ¹⁴⁶	28.75 ⁴⁰	54.55 ²⁹²
	68	84	23	226	66	153	26	321
15.0	39.203	33.34	8.871	51.52	48.441	60.25	28.49	51.34
25.0	39.325 ¹²²	32.51 ⁸³	8.940 ⁶⁹	49.10 ²⁴²	48.572 ¹³¹	58.72 ¹⁵³	28.35 ¹⁴	47.91 ³⁴³
35.0	39.497 ¹⁷²	31.73 ⁷⁸	9.055 ¹¹⁵	46.63 ²⁴⁷	48.763 ¹⁹¹	57.24 ¹⁴⁸	28.35 ⁰	44.40 ³⁵¹
Mean Place	35.774	31.06	7.085	50.07	44.715	57.43	34.431	47.81
Sec δ, Tan δ	1.212	-0.685	1.076	+0.399	1.440	-1.036	3.362	+3.209
$D\psi \alpha, D\omega \alpha$	+0.08	0.00	+0.05	0.00	+0.09	+0.01	-0.02	-0.02
$D\psi \delta, D\omega \delta$	0.0	-1.0	0.0	-1.0	0.0	-1.0	0.0	-1.0

APPARENT PLACES OF STARS, 1916.

465

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	λ Sagittarii. Mag. 2.9		ϵ Serpentis. Mag. 5.4		ι Aquilae. Mag. 4.1		ζ Pavonis. Mag. 4.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 18 22	° ' " -25 28	h m 18 25	° ' " - 2 2	h m 18 30	° ' " - 8 18	h m 18 33	° ' " -71 29
	s	"	s	"	s	"	s	"
Jan. 1.0	46.717	14.99	18.152	32.05	37.662	19.33	11.16	71.62
11.0	46.901 ¹⁸⁴	14.80 ¹⁹	18.307 ¹⁵⁵	33.29 ¹²⁴	37.818 ¹⁵⁶	20.18 ⁸⁵	11.53 ³⁷	68.85 ²⁷⁷
20.9	47.124 ²²³	14.64 ¹⁶	18.499 ¹⁹²	34.49 ¹²⁰	38.011 ¹⁹³	21.02 ⁸⁴	12.01 ⁴⁸	66.23 ²⁶²
30.9	47.379 ²⁵⁵	14.51 ¹³	18.720 ²²¹	35.61 ¹¹²	38.233 ²²²	21.79 ⁷⁷	12.59 ⁵⁸	63.80 ²⁴³
Feb. 9.9	47.660 ²⁸¹	14.39 ¹²	18.967 ²⁴⁷	36.59 ⁹⁸	38.480 ²⁴⁷	22.47 ⁶⁸	13.27 ⁶⁸	61.64 ²¹⁶
	303	12	264	80	267	54	75	186
19.9	47.963	14.27	19.231	37.39	38.747	23.01	14.02	59.78
29.8	48.280 ³¹⁷	14.12 ¹⁵	19.512 ²⁸¹	37.94 ⁵⁵	39.031 ²⁸⁴	23.36 ³⁵	14.52 ⁸⁰	58.26 ¹⁵²
Mar. 10.8	48.608 ³²⁸	13.93 ¹⁹	19.802 ²⁹⁰	38.23 ²⁹	39.324 ²⁹³	23.48 ¹²	15.66 ⁸⁴	57.11 ¹¹⁵
20.8	48.941 ³³³	13.69 ²⁴	20.097 ²⁹⁵	38.23 ⁰	39.626 ³⁰²	23.40 ⁸	16.54 ⁸⁸	56.34 ⁷⁷
30.7	49.277 ³³⁶	13.41 ²⁸	20.397 ³⁰⁰	37.96 ²⁷	39.931 ³⁰⁶	23.10 ³⁰	17.41 ⁸⁷	55.95 ³⁹
	335	31	296	57	304	51	87	1
Apr. 9.7	49.612	13.10	20.695	37.39	40.235	22.59	18.28	55.94
19.7	49.940 ³²⁸	12.77 ³³	20.988 ²⁹³	36.58 ⁸¹	40.536 ³⁰¹	21.86 ⁷³	19.15 ⁸⁷	56.32 ³⁸
29.7	50.257 ³¹⁷	12.43 ³⁴	21.269 ²⁸¹	35.54 ¹⁰⁴	40.825 ²⁸⁹	20.98 ⁸⁸	19.97 ⁸²	57.07 ⁷⁵
May 9.6	50.558 ³⁰¹	12.10 ³³	21.539 ²⁷⁰	34.34 ¹²⁰	41.103 ²⁷⁸	19.99 ⁹⁹	20.74 ⁷⁷	58.19 ¹¹²
19.6	50.840 ²⁸²	11.81 ²⁹	21.788 ²⁴⁹	33.01 ¹³³	41.362 ²⁵⁹	18.91 ¹⁰⁸	21.45 ⁷¹	59.62 ¹⁴³
	256	23	225	141	235	112	63	174
29.6	51.095	11.58	22.013	31.60	41.597	17.79	22.08	61.36
June 8.6	51.319 ²²⁴	11.41 ¹⁷	22.211 ¹⁹⁸	30.17 ¹⁴³	41.806 ²⁰⁹	16.64 ¹¹⁵	22.62 ⁵⁴	63.36 ²⁰⁰
18.5	51.509 ¹⁹⁰	11.32 ⁹	22.376 ¹⁶⁵	28.72 ¹⁴⁵	41.980 ¹⁷⁴	15.54 ¹¹⁰	23.05 ⁴³	65.56 ²²⁰
28.5	51.657 ¹⁴⁸	11.31 ¹	22.504 ¹²⁸	27.35 ¹³⁷	42.120 ¹⁴⁰	14.52 ¹⁰²	23.38 ³³	67.91 ²³⁵
July 8.5	51.763 ¹⁰⁶	11.38 ⁷	22.593 ⁸⁹	26.06 ¹²⁹	42.217 ⁹⁷	13.59 ⁹³	23.58 ²⁰	70.34 ²⁴³
	58	14	47	117	56	84	8	245
18.4	51.821 ¹²	11.52 ¹⁹	22.640 ⁶	24.89 ¹⁰⁵	42.273 ¹³	12.75 ⁷⁴	23.66 ⁶	72.79 ²³⁸
28.4	51.833 ³⁴	11.71 ²³	22.646 ³⁸	23.84 ⁹¹	42.286 ²⁹	12.01 ⁶²	23.60 ¹⁷	75.17 ²²³
Aug. 7.4	51.799 ⁷⁷	11.94 ²³	22.608 ⁷³	22.93 ⁷³	42.257 ⁶⁹	11.39 ⁴⁹	23.43 ²⁹	77.40 ²⁰⁰
17.4	51.722 ¹¹⁴	12.17 ²³	22.535 ¹⁰⁹	22.20 ⁶⁰	42.188 ¹⁰⁴	10.90 ³⁷	23.14 ³⁹	79.40 ¹⁶⁹
27.3	51.608 ¹⁴⁶	12.40 ¹⁹	22.426 ¹³⁶	21.60 ⁴⁴	42.084 ¹³¹	10.53 ²⁶	22.75 ⁴⁹	81.09 ¹³³
Sept. 6.3	51.462	12.59	22.290	21.16	41.953	10.27	22.26	82.42
16.3	51.294 ¹⁶⁸	12.72 ¹³	22.135 ¹⁵⁵	20.87 ²⁹	41.798 ¹⁵⁵	10.11 ¹⁶	21.72 ⁵⁴	83.32 ⁹⁰
26.3	51.113 ¹⁸¹	12.77 ⁵	21.967 ¹⁶⁸	20.75 ¹²	41.632 ¹⁶⁶	10.04 ⁷	21.14 ⁵⁸	83.74 ⁴²
Oct. 6.2	50.930 ¹⁸³	12.74 ³	21.797 ¹⁷⁰	20.79 ⁴	41.462 ¹⁷⁰	10.07 ³	20.54 ⁶⁰	83.65 ⁹
16.2	50.758 ¹⁷²	12.63 ¹¹	21.635 ¹⁶²	20.98 ¹⁹	41.303 ¹⁵⁹	10.20 ¹³	19.96 ⁵⁸	83.06 ⁵⁹
	154	20	143	33	146	20	54	110
26.2	50.604	12.43	21.492	21.31	41.157	10.40	19.42	81.96
Nov. 5.1	50.481 ¹²³	12.16 ²⁷	21.375 ¹¹⁷	21.80 ⁴⁹	41.038 ¹¹⁹	10.72 ³²	18.96 ⁴⁶	80.39 ¹⁵⁷
15.1	50.397 ⁸⁴	11.85 ³¹	21.291 ⁸⁴	22.45 ⁶⁵	40.952 ⁸⁶	11.13 ⁴¹	18.60 ³⁶	78.41 ¹⁹⁸
25.1	50.358 ³⁹	11.52 ³³	21.249 ⁴²	23.24 ⁹⁵	40.909 ⁴³	11.63 ⁵⁰	18.34 ²⁶	76.09 ²³²
Dec. 5.1	50.368 ¹⁰	11.19 ³³	21.248 ¹	24.19 ⁰⁹	40.907 ²	12.24 ⁶¹	18.21 ¹³	73.50 ²⁵⁹
	60	31	44	106	45	70	2	276
15.0	50.428	10.88	21.292	25.25	40.952	12.94	18.23	70.74
25.0	50.537 ¹⁰⁹	10.60 ²⁸	21.380 ⁸⁸	26.40 ¹¹⁵	41.038 ⁸⁶	13.72 ⁷⁸	18.37 ¹⁴	67.90 ²⁸⁴
35.0	50.692 ¹⁵⁵	10.37 ²³	21.510 ¹³⁰	27.61 ¹²¹	41.169 ¹³¹	14.53 ⁸¹	18.64 ²⁷	65.07 ²⁸³
Mean Place	47.209	9.43	18.673	25.95	38.155	13.41	13.415	66.93
Sec δ , Tan δ	1.108	-0.476	1.001	-0.036	1.011	-0.146	3.152	-2.989
$D\phi \alpha$, $D\omega \alpha$	+0.07	0.00	+0.06	0.00	+0.06	0.00	+0.14	+0.03
$D\phi \delta$, $D\omega \delta$	0.0	-1.0	0.0	-1.0	+0.1	-1.0	+0.1	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Lyrae. (Vega.) Mag. 0.1		2 Aquilae. Mag. 4.7		ϕ Sagittarii. Mag. 3.3		110 Herculis. Mag. 4.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 18 34	° ' +38 41	h m 18 37	° ' - 9 7	h m 18 40	° ' -27 4	h m 18 42	° ' +20 27
	s	"	s	"	s	"	s	"
Jan. 1.0	4.418	71.60	40.044	67.76	24.025	47.06	1.957	48.75
11.0	4.533 ¹¹⁵	68.52 ³⁰⁸	40.195 ¹⁵¹	68.52 ⁷⁶	24.192 ¹⁶⁷	46.69 ³⁷	2.078 ¹²¹	46.37 ²³⁸
20.9	4.696 ¹⁶³	65.53 ²⁹⁹	40.380 ¹⁸⁵	69.26 ⁷⁴	24.399 ²⁰⁷	46.34 ³⁵	2.238 ¹⁶⁰	44.05 ²³²
30.9	4.904 ²⁰⁸	62.73 ²⁸⁰	40.597 ²¹⁷	69.94 ⁶⁸	24.641 ²⁴²	46.00 ³⁴	2.433 ¹⁹⁵	41.89 ²¹⁶
Feb. 9.9	5.152 ²⁴⁸	60.24 ²⁴⁹	40.840 ²⁴³	70.54 ⁶⁰	24.911 ²⁷⁰	45.68 ³²	2.659 ²²⁶	39.95 ¹⁹⁴
19.9	5.430 ²⁷⁸	58.15 ²⁰⁹	41.104 ²⁶⁴	71.00 ⁴⁶	25.204 ²⁹³	45.35 ³³	2.910 ²⁵¹	38.33 ¹⁶²
29.8	5.736 ³⁰⁶	56.55 ¹⁶⁰	41.384 ²⁸⁰	71.28 ²⁸	25.517 ³¹³	45.00 ³⁵	3.181 ²⁷¹	37.11 ¹²²
Mar. 10.8	6.061 ³²⁵	55.50 ¹⁰⁵	41.676 ²⁹²	71.37 ⁹	25.842 ³²⁵	44.63 ³⁷	3.467 ²⁸⁶	36.32 ⁷⁹
20.8	6.398 ³³⁷	55.05 ⁴⁵	41.976 ³⁰⁰	71.25 ¹²	26.176 ³³⁴	44.22 ⁴¹	3.764 ²⁹⁷	36.01 ³¹
30.8	6.741 ³⁴³	55.19 ¹⁴	42.282 ³⁰⁶	70.90 ³⁵	26.516 ³⁴⁰	43.79 ⁴³	4.067 ³⁰³	36.19 ¹⁸
Apr. 9.7	7.083 ³⁴²	55.92 ⁷³	42.586 ³⁰⁴	70.35 ⁵⁵	26.856 ³⁴⁰	43.33 ⁴⁶	4.371 ³⁰⁴	36.84 ⁶⁵
19.7	7.416 ³³³	57.21 ¹²⁹	42.888 ³⁰²	69.61 ⁷⁴	27.194 ³³⁸	42.88 ⁴⁵	4.671 ³⁰⁰	37.94 ¹¹⁰
29.7	7.733 ³¹⁷	59.01 ¹⁸⁰	43.182 ²⁹⁴	68.73 ⁸⁸	27.523 ³²⁹	42.44 ⁴⁴	4.962 ²⁹¹	39.45 ¹⁵¹
May 9.6	8.030 ²⁹⁷	61.24 ²²³	43.464 ²⁸²	67.73 ¹⁰⁰	27.839 ³¹⁶	42.03 ⁴¹	5.238 ²⁷⁶	41.29 ¹⁸⁴
19.6	8.297 ²⁶⁷	63.84 ²⁶⁰	43.728 ²⁶⁴	66.64 ¹⁰⁹	28.136 ²⁹⁷	41.68 ³⁵	5.493 ²⁵⁵	43.43 ²¹⁴
29.6	8.532 ²³⁵	66.71 ²⁸⁷	43.970 ²⁴²	65.52 ¹¹²	28.410 ²⁷⁴	41.41 ²⁷	5.724 ²³¹	45.76 ²³³
June 8.6	8.725 ¹⁹³	69.77 ³⁰⁶	44.184 ²¹⁴	64.39 ¹¹³	28.653 ²⁴³	41.22 ¹⁹	5.924 ²⁰⁰	48.23 ²⁴⁷
18.5	8.875 ¹⁵⁰	72.92 ³¹⁵	44.367 ¹⁸³	63.30 ¹⁰⁹	28.860 ²⁰⁷	41.13 ⁹	6.088 ¹⁶⁴	50.76 ²⁵³
28.5	8.978 ¹⁰³	76.08 ³¹⁶	44.513 ¹⁴⁶	62.28 ¹⁰²	29.028 ¹⁶⁸	41.15 ²	6.214 ¹²⁶	53.29 ²⁵³
July 8.5	9.030 ⁵²	79.17 ³⁰⁹	44.619 ¹⁰⁶	61.35 ⁹³	29.151 ¹²³	41.26 ¹¹	6.297 ⁸³	55.74 ²⁴⁵
18.5	9.032 ²	82.12 ²⁹⁵	44.682 ⁶³	60.54 ⁸¹	29.228 ⁷⁷	41.46 ²⁰	6.337 ⁴⁰	58.06 ²³²
28.4	8.983 ⁴⁹	84.87 ²⁷⁵	44.702 ²⁰	59.82 ⁷²	29.257 ²⁹	41.74 ²⁸	6.333 ⁴	60.20 ²¹⁴
Aug. 7.4	8.886 ⁹⁷	87.34 ²⁴⁷	44.680 ⁶²	59.24 ⁵⁸	29.237 ²⁰	42.06 ³²	6.286 ⁴⁷	62.13 ¹⁹³
17.4	8.745 ¹⁴¹	89.50 ²¹⁶	44.617 ²³	58.77 ⁴⁷	29.173 ⁶⁴	42.40 ³⁴	6.199 ⁸⁷	63.79 ¹⁶⁶
27.3	8.564 ¹⁸¹	91.29 ¹⁷⁹	44.518 ⁹⁹	58.42 ³⁵	29.068 ¹⁰⁵	42.73 ³³	6.075 ¹²⁴	65.18 ¹³⁹
Sept. 6.3	8.351 ²¹³	92.70 ¹⁴¹	44.389 ¹²⁹	58.18 ²⁴	28.930 ¹³⁸	43.03 ³⁰	5.921 ¹⁵⁴	66.25 ¹⁰⁷
16.3	8.114 ²³⁷	93.67 ⁹⁷	44.238 ¹⁵¹	58.03 ¹⁵	28.765 ¹⁶⁵	43.26 ²³	5.745 ¹⁷⁶	66.99 ⁷⁴
26.3	7.863 ²⁵¹	94.20 ⁵³	44.072 ¹⁶⁶	57.97 ⁶	28.585 ¹⁵⁰	43.41 ¹⁵	5.554 ¹⁹¹	67.41 ⁴²
Oct. 6.2	7.607 ²⁵⁶	94.27 ⁷	43.903 ¹⁶⁹	57.99 ²	28.399 ¹⁸⁶	43.46 ⁵	5.358 ¹⁹⁶	67.47 ⁶
16.2	7.357 ²⁵⁰	93.87 ⁴⁰	43.741 ¹⁶²	58.09 ¹⁰	28.218 ¹⁸¹	43.41 ⁵	5.168 ¹⁹⁰	67.17 ³⁰
26.2	7.124 ²³³	93.00 ⁸⁷	43.594 ¹⁴⁷	58.28 ¹⁹	28.056 ¹⁶²	43.41 ¹⁶	4.992 ¹⁷⁶	66.53 ⁶⁴
Nov. 5.2	6.918 ²⁰⁶	91.68 ¹³²	43.473 ¹²¹	58.56 ²⁸	27.923 ¹³³	43.25 ²⁷	4.841 ¹⁵¹	65.55 ⁹⁸
15.1	6.749 ¹⁶⁹	89.92 ¹⁷⁶	43.383 ⁹⁰	58.93 ³⁷	27.825 ⁹⁸	42.98 ³²	4.720 ¹²¹	64.23 ¹³²
25.1	6.622 ¹²⁷	87.77 ²¹⁵	43.333 ⁵⁰	59.38 ⁴⁵	27.769 ⁵⁶	42.66 ³⁹	4.638 ⁸²	62.60 ¹⁶³
Dec. 5.1	6.543 ⁷⁹	85.27 ²⁵⁰	43.326 ⁷	59.92 ⁵⁴	27.761 ⁸	42.27 ⁴¹	4.638 ⁴¹	60.72 ¹⁸⁸
15.0	6.517 ²⁶	82.50 ²⁷⁷	43.363 ³⁷	60.54 ⁶²	27.803 ⁴²	41.86 ⁴³	4.597 ³	60.72 ²¹²
25.0	6.545 ²⁸	79.54 ²⁹⁶	43.444 ⁸¹	61.24 ⁷⁰	27.895 ⁹²	41.01 ⁴²	4.648 ⁴⁸	56.33 ²²⁷
35.0	6.626 ⁸¹	76.48 ³⁰⁶	43.567 ¹²³	61.98 ⁷⁴	28.032 ¹³⁷	40.61 ⁴⁰	4.741 ⁹³	53.97 ²³⁶
Mean Place	5.663	77.36	40.531	61.93	24.515	41.31	2.740	54.20
Sec δ , Tan δ	1.281	+0.801	1.013	-0.161	1.123	-0.511	1.067	+0.373
$D\phi\alpha$, $D\omega\alpha$	+0.04	-0.01	+0.07	0.00	+0.07	+0.01	+0.05	0.00
$D\phi\delta$, $D\omega\delta$	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	6 Aquilæ. Mag. 4.5		λ Pavonis. Mag. 4.4		β Lyræ. Var. 3.4-4.1		50 Draconis. Mag. 5.4	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 18 42	° ' " - 4 50	h m 18 44	° ' " -62 16	h m 18 46	° ' " +33 15	h m 18 48	° ' " +75 19
	s	"	s	"	s	"	s	"
Jan. 1.0	42.542	24.98	24.92	72.39	57.626	47.19	59.33	63.40
11.0	42.685 ¹⁴³	25.98	25.17	69.98 ²⁴¹	57.730 ¹⁰⁴	44.32 ²⁸⁷	59.32 ¹	59.95 ³⁴⁵
21.0	42.863 ¹⁷⁸	26.96	25.50	67.65 ²³³	57.880 ¹⁵⁰	41.49 ²⁸³	59.48 ¹⁶	56.52 ³⁴³
30.9	43.071 ²⁰⁸	27.88	25.90	65.49 ²¹⁶	58.070 ¹⁹⁰	38.85 ²⁶⁴	59.80 ³²	53.24 ³²⁸
Feb. 9.9	43.306 ²³⁵	28.66	26.37	63.51 ¹⁹⁸	58.297 ²²⁷	36.46 ²³⁹	60.26 ⁴⁶	50.27 ²⁹⁷
	255	63	51	173	259	201	61	256
19.9	43.561	29.29	26.88	61.78	58.556	34.45	60.87	47.71
29.8	43.834 ²⁷³	29.70	27.43	60.31 ¹⁴⁷	58.840 ²⁸⁴	32.38 ¹⁵⁷	61.58 ⁷¹	45.64 ²⁰⁷
Mar. 10.8	44.120 ²⁸⁶	29.88	28.02	59.13 ¹¹⁸	59.144 ³⁰⁴	31.83 ¹⁰⁵	62.38 ⁸⁰	44.14 ¹⁵⁰
20.8	44.414 ²⁹⁴	29.80	28.62	58.24 ⁸⁹	59.462 ³¹⁸	31.34 ⁴⁹	63.24 ⁸⁶	43.27 ⁸⁷
30.8	44.714 ³⁰⁰	29.46	29.23	57.67 ⁵⁷	59.787 ³²⁵	31.41 ⁷	64.12 ⁸⁸	43.07 ²⁰
	301	59	62	26	327	63	88	47
Apr. 9.7	45.015	28.87	29.85	57.41	60.114	32.04	65.00	43.54
19.7	45.314 ²⁹⁹	28.05	30.45	57.47 ⁶	60.436 ³²²	33.21 ¹¹⁷	65.86 ⁸⁶	44.62 ¹⁰⁸
29.7	45.606 ²⁹²	27.04	31.04	57.86 ³⁹	60.747 ³¹¹	34.87 ¹⁶⁶	66.65 ⁷⁹	46.29 ¹⁶⁷
May 9.7	45.886 ²⁸⁰	25.88	31.60	58.57 ⁷¹	61.041 ²⁹⁴	36.96 ²⁰⁹	67.37 ⁷²	48.50 ²²¹
19.6	46.149 ²⁶³	24.60	32.13	59.56 ⁹⁹	61.310 ²⁶⁹	39.39 ²⁴³	67.98 ⁶¹	51.15 ²⁶⁵
	240	134	47	128	241	270	49	301
29.6	46.389	23.26	32.60	60.84	61.551	42.09	68.47	54.16
June 8.6	46.603 ²¹⁴	21.90	33.02	62.37 ¹⁵³	61.756 ²⁰⁵	44.99 ²⁹⁰	68.83 ³⁶	57.43 ³²⁷
18.5	46.787 ¹⁸⁴	20.57	33.37	64.11 ¹⁷⁴	61.921 ¹⁶⁵	47.99 ³⁰⁰	69.05 ²²	60.87 ³⁴⁴
28.5	46.932 ¹⁴⁵	19.29	33.63	66.01 ¹⁹⁰	62.043 ¹²²	51.01 ³⁰²	69.12 ⁷	64.40 ³⁵³
July 8.5	47.039 ¹⁰⁷	18.10	33.82	68.02 ²⁰¹	62.117 ⁷⁴	53.98 ²⁹⁷	69.05 ⁷	67.91 ³⁵¹
	64	107	11	206	27	283	23	343
18.5	47.103	17.03	33.93	70.08	62.144	56.81	68.82	71.34
28.4	47.125 ²²	16.09	33.94	72.12 ²⁰⁴	62.122 ²²	59.47 ²⁶⁶	68.46 ³⁶	74.58 ³²⁴
Aug. 7.4	47.105 ²⁰	15.28	33.86	74.08 ¹⁹⁶	62.053 ⁶⁹	61.88 ²⁴¹	67.96 ⁵⁰	77.56 ²⁹⁸
17.4	47.042 ⁶³	14.62	33.71	75.87 ¹⁷⁹	61.940 ¹¹³	63.99 ²¹¹	67.34 ⁶²	80.25 ²⁶⁹
27.4	46.946 ⁹⁶	14.10	33.47	77.43 ¹⁵⁶	61.788 ¹⁵²	65.77 ¹⁷⁸	66.61 ⁷³	82.56 ²³¹
	127	37	29	125	184	142	81	189
Sept. 6.3	46.819	13.73	33.18	78.68	61.604	67.19	65.80	84.45
16.3	46.670 ¹⁴⁹	13.48	32.83	79.59 ⁹¹	61.394 ²¹⁰	68.21 ¹⁰²	64.92 ⁸⁸	85.91 ¹⁴⁶
26.3	46.505 ¹⁶⁵	13.37	32.46	80.10 ⁵¹	61.169 ²²⁵	68.81 ⁶⁰	63.99 ⁹³	86.85 ⁹⁴
Oct. 6.2	46.337 ¹⁶⁸	13.39	32.07	80.17 ⁷	60.937 ²³²	68.98 ¹⁷	63.04 ⁹⁵	87.29 ⁴⁴
16.2	46.173 ¹⁶⁴	13.52	31.68	79.79 ³⁸	60.709 ²²⁸	68.72 ²⁶	62.09 ⁹⁵	87.18 ¹¹
	148	29	35	81	212	71	92	65
26.2	46.025	13.81	31.33	78.98	60.497	68.01	61.17	86.53
Nov. 5.2	45.900 ¹²⁵	14.18	31.02	77.74 ¹²⁴	60.306 ¹⁹¹	66.88 ¹¹³	60.30 ⁸⁷	85.36 ¹¹⁷
15.1	45.808 ⁹²	14.69	30.77	76.14 ¹⁶⁰	60.149 ¹⁵⁷	65.33 ¹⁵⁵	59.50 ⁸⁰	83.64 ¹⁷²
25.1	45.755 ⁵³	15.34	30.61	74.22 ¹⁹²	60.031 ¹¹⁸	63.41 ¹⁹²	58.81 ⁶⁹	81.47 ²¹⁷
Dec. 5.1	45.739 ¹⁶	16.09	30.52	72.05 ²¹⁷	59.957 ⁷⁴	61.14 ²²⁷	58.24 ⁵⁷	78.86 ²⁶¹
	31	86	1	233	26	255	43	298
15.1	45.770	16.95	30.53	69.72	59.931	58.59	57.81	75.88
25.0	45.844 ⁷⁴	17.89	30.63	67.28 ²⁴⁴	59.955 ²⁴	55.86 ²⁷³	57.53 ²⁸	72.63 ³²⁵
35.0	45.959 ¹¹⁵	18.87	30.83	64.82 ²⁴⁶	60.027 ⁷²	53.00 ²⁸⁶	57.42 ¹¹	69.23 ³⁴⁰
Mean Place	43.048	19.26	26.221	66.89	58.704	52.03	65.505	66.80
Sec δ, Tan δ	1.004	-0.085	2.150	-1.904	1.196	+0.656	3.950	+3.821
Dψ α, Dω α	+0.06	0.00	+0.11	+0.02	+0.04	-0.01	-0.04	-0.05
Dψ δ, Dω δ	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ Draconis. Mag. 4.8		♊ Sagittarii. Mag. 2.1		♎ Serpentis <i>pr.</i> Mag. 4.5		♄ Lyrae. Var. 4.0-4.7	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 18 49	° ' +59 16	h m 18 50	° ' -26 24	h m 18 52	° ' + 4 5	h m 18 52	° ' +43 49
	s	"	s	"	s	"	s	"
Jan. 1.0	55.238	63.60	2.915	13.81	2.033	30.89	45.291	61.51
11.0	55.350 ⁶²	60.15 ³⁴⁵	3.071 ¹⁵⁶	13.44 ³⁷	2.159 ¹²⁶	29.40 ¹⁴⁹	45.376 ⁸⁵	58.33 ³¹⁵
21.0	55.492 ¹⁴²	56.74 ³⁴¹	3.268 ¹⁹⁷	13.09 ³⁵	2.320 ¹⁶¹	27.94 ¹⁴⁶	45.515 ¹³⁹	55.19 ³¹⁴
30.9	55.707 ²¹⁵	53.50 ³²⁴	3.498 ²³⁰	12.74 ³⁵	2.512 ¹⁹²	26.57 ¹³⁷	45.704 ¹⁸⁹	52.23 ²⁹⁶
Feb. 9.9	55.993 ²⁸⁶	50.57 ²⁹³	3.759 ²⁶¹	12.39 ³⁵	2.733 ²²¹	25.38 ¹¹⁹	45.939 ²³⁵	49.55 ²⁶⁸
19.9	56.339 ³⁴⁶	48.04 ²⁵³	4.043 ²⁸⁴	12.02 ³⁷	2.976 ²⁴³	24.40 ⁹⁸	46.213 ²⁷⁴	47.25 ²³⁰
29.8	56.735 ³⁹⁶	46.02 ²⁰²	4.347 ³⁰⁴	11.62 ⁴⁰	3.239 ²⁶³	23.70 ⁷⁰	46.520 ³⁰⁷	45.43 ¹⁸²
Mar. 10.8	57.171 ⁴³⁶	44.59 ¹⁴³	4.665 ³¹⁸	11.19 ⁴³	3.516 ²⁷⁷	23.31 ³⁹	46.852 ³³²	44.15 ¹²⁸
20.8	57.632 ⁴⁶¹	43.79 ⁸⁰	4.994 ³²⁹	10.71 ⁴⁸	3.803 ²⁸⁷	23.25 ³⁰	47.203 ³⁵¹	43.48 ⁶⁷
30.8	58.108 ⁴⁷⁶	43.66 ¹³	5.330 ³³⁶	10.20 ⁵¹	4.098 ²⁹⁵	23.55 ²⁰	47.565 ³⁶²	43.44 ⁴
Apr. 9.7	58.586 ⁴⁷⁸	44.19 ⁵³	5.668 ³³⁸	9.66 ⁵⁴	4.396 ²⁹⁸	24.18 ⁶³	47.928 ³⁶³	44.00 ⁵⁶
19.7	59.053 ⁴⁶⁷	45.35 ¹¹⁶	6.005 ³³⁷	9.11 ⁵⁵	4.692 ²⁹⁶	25.12 ⁹⁴	48.287 ³⁵⁹	45.15 ¹¹⁵
29.7	59.495 ⁴⁴²	47.10 ¹⁷⁵	6.336 ³³¹	8.57 ⁵⁴	4.982 ²⁹⁰	26.35 ¹²³	48.631 ³⁴⁴	46.85 ¹⁷⁰
May 9.7	59.902 ⁴⁰⁷	49.36 ²²⁶	6.656 ³²⁰	8.06 ⁵¹	5.262 ²⁸⁰	27.79 ¹⁴⁴	48.956 ³²⁵	49.03 ²¹⁸
19.6	60.264 ³⁶²	52.07 ²⁷¹	6.957 ³⁰¹	7.61 ⁴⁵	5.524 ²⁶²	29.43 ¹⁶⁴	49.251 ²⁹⁵	51.61 ²⁵⁸
29.6	60.571 ³⁰⁷	55.13 ³⁰⁶	7.237 ²⁸⁰	7.24 ³⁷	5.766 ²⁴²	31.17 ¹⁷⁴	49.511 ²⁸⁰	54.51 ²⁹⁰
June 8.6	60.816 ²⁴⁵	58.44 ³³¹	7.487 ²⁵⁰	6.97 ²⁷	5.981 ²¹⁵	32.99 ¹⁸²	49.729 ²¹⁸	57.64 ³¹³
18.5	60.993 ¹⁷⁷	61.91 ³⁴⁷	7.702 ²¹⁵	6.81 ¹⁶	6.164 ¹⁸³	34.81 ¹⁸²	49.901 ¹⁷²	60.91 ³²⁷
28.5	61.096 ¹⁰³	65.45 ³⁵⁴	7.878 ¹⁷⁶	6.75 ⁶	6.311 ¹⁴⁷	36.60 ¹⁷⁹	50.022 ¹²¹	64.23 ³³²
July 8.5	61.126 ³⁰	68.97 ³⁵²	8.011 ¹²³	6.80 ⁵	6.419 ¹⁰⁸	38.30 ¹⁷⁰	50.089 ⁶⁷	67.52 ³²⁹
18.5	61.079 ⁴⁷	72.39 ³⁴²	8.096 ⁸⁵	6.95 ¹⁵	6.485 ⁶⁶	39.88 ¹⁵⁸	50.101 ¹²	70.69 ³¹⁷
28.4	60.959 ¹²⁰	75.61 ³²²	8.134 ³⁸	7.19 ²⁴	6.508 ²³	41.32 ¹⁴⁴	50.059 ⁴²	73.67 ²⁹
Aug. 7.4	60.768 ¹⁹¹	78.57 ²⁹⁶	8.123 ¹¹	7.48 ²⁹	6.488 ²⁰	42.59 ¹²⁷	49.962 ⁹⁷	76.41 ²⁷¹
17.4	60.513 ²⁵⁵	81.21 ²⁶⁴	8.067 ⁵⁶	7.81 ³³	6.428 ⁶⁰	43.66 ¹⁰⁷	49.817 ¹⁴⁵	78.84 ²⁴³
27.4	60.201 ³¹²	83.47 ²²⁶	7.970 ⁹⁷	8.15 ³⁴	6.333 ⁹⁵	44.54 ⁸⁸	49.629 ¹⁸⁸	80.91 ²⁰⁷
Sept. 6.3	59.841 ³⁶⁰	85.31 ¹⁸⁴	7.836 ¹³⁴	8.15 ³²	6.333 ¹²⁷	44.54 ⁶⁶	49.629 ²²⁷	80.91 ¹⁶⁷
16.3	59.443 ³⁹⁸	86.69 ¹³⁸	7.676 ¹⁶⁰	8.47 ²⁵	6.206 ¹⁵⁰	45.20 ⁴⁷	49.402 ²⁵⁵	82.58 ¹²⁴
26.3	59.021 ⁴²²	87.57 ⁸⁸	7.498 ¹⁷⁸	8.72 ¹⁹	6.056 ¹⁶⁶	45.67 ²⁴	49.147 ²⁷⁴	83.82 ⁷
Oct. 6.2	58.588 ⁴³³	87.93 ³⁶	7.313 ¹⁸⁵	8.91 ¹⁰	5.890 ¹⁷²	45.91 ⁴	48.873 ²⁸²	84.60 ³¹
16.2	58.157 ⁴³¹	87.76 ¹⁷	7.133 ¹⁸⁰	9.01 ⁰	5.718 ¹⁶⁷	45.95 ¹⁷	48.591 ²⁸⁰	84.91 ¹⁹
26.2	57.742 ⁴¹⁵	87.76 ⁷¹	7.133 ¹⁶³	9.01 ¹⁰	5.551 ¹⁵⁵	45.78 ³⁸	48.311 ²⁶⁶	84.72 ⁶
Nov. 5.2	57.742 ³⁸⁴	87.05 ¹²⁵	6.970 ¹⁴⁰	8.91 ¹⁹	5.396 ¹³³	45.40 ⁵⁹	48.045 ²⁴³	84.04 ¹¹⁶
15.1	57.359 ³⁴⁰	85.80 ¹⁷⁶	6.830 ¹⁰³	8.72 ²⁸	5.263 ¹⁰³	44.81 ⁷⁹	47.802 ²⁰⁷	82.88 ¹⁶⁴
25.1	57.018 ²⁸⁴	84.04 ²²³	6.727 ⁶²	8.44 ³³	5.160 ⁶⁷	44.02 ⁹⁶	47.595 ¹⁶⁶	81.24 ²⁰⁷
Dec. 5.1	56.734 ²²¹	81.81 ²⁶⁵	6.665 ¹⁶	8.11 ³⁷	5.093 ²⁷	43.04 ¹¹⁶	47.429 ⁶³	79.17 ²⁴⁶
15.1	56.513 ¹⁴⁸	79.16 ³⁰⁰	6.649 ³²	7.74 ³⁹	5.066 ¹⁵	41.88 ¹³⁰	47.311 ⁶³	76.71 ²⁷⁶
25.0	56.365 ⁷⁰	76.16 ³²⁶	6.681 ⁸⁹	7.35 ³⁹	5.081 ⁵⁷	40.58 ¹⁴¹	47.248 ⁸	73.95 ³⁰¹
35.0	56.295 ¹⁰	72.90 ³⁴⁰	6.761 ¹²⁷	6.96 ³⁹	5.138 ⁹⁹	39.17 ¹⁴⁷	47.240 ⁴⁸	70.94 ²⁷⁶
35.0	56.305	69.50	6.888	6.57 ³⁹	5.237	37.70	47.288	67.80 ³¹⁴
Mean Place	57.842	67.39	3.394	7.93	2.600	36.22	46.762	65.54
Sec δ , Tan δ	1.958	+1.683	1.116	-0.496	1.003	+0.071	1.386	+0.960
$D\psi\alpha$, $D\omega\alpha$	+0.02	-0.02	+0.07	+0.01	+0.06	0.00	+0.04	-0.01
$D\psi\delta$, $D\omega\delta$	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0

APPARENT PLACES OF STARS, 1916.

469

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Lyræ. Mag. 3.3		ε Aquilæ. Mag. 4.2		ζ Sagittari. Mag. 2.7		ζ Aquilæ. Mag. 3.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 18 55	° ' " +32 34	h m 18 55	° ' " +14 56	h m 18 57	° ' " -30 0	h m 19 1	° ' " +13 44
	s	"	s	"	s	"	s	"
Jan. 1.0	46.993	20.72	47.885	67.14	15.579	11.22	32.267	11.30
11.0	47.087 ⁹⁴	17.89 ²⁸³	47.998 ¹¹³	65.08 ²⁰⁶	15.732 ¹⁵³	10.60 ⁶²	32.374 ¹⁰⁷	9.31 ¹⁹⁰
21.0	47.227 ¹⁴⁰	15.11 ²⁷⁸	48.147 ¹⁴⁹	63.06 ²⁰²	15.926 ¹⁹⁴	9.99 ⁶¹	32.518 ¹⁴⁴	7.36 ¹⁹⁶
30.9	47.409 ¹⁸²	12.48 ²⁶³	48.330 ¹⁸³	61.16 ¹⁹⁰	16.156 ²³⁰	9.39 ⁶⁰	32.697 ¹⁷⁹	5.52 ¹⁸⁴
Feb. 9.9	47.627 ²¹⁸	10.10 ²³⁸	48.544 ²¹⁴	59.47 ¹⁶⁹	16.418 ²⁶²	8.80 ⁵⁹	32.907 ²¹⁰	3.89 ¹⁶³
19.9	47.877 ²⁵⁰	8.07 ²⁰³	48.782 ²³⁸	58.05 ¹⁴²	16.705 ²⁸⁷	8.21 ⁵⁹	33.141 ²³⁴	2.50 ¹³⁹
29.8	48.153 ²⁷⁶	6.48 ¹⁵⁹	49.042 ²⁶⁰	56.98 ¹⁰⁷	17.014 ³⁰⁹	7.62 ⁵⁹	33.397 ²⁵⁶	1.47 ¹⁰³
Mar. 10.8	48.452 ²⁹⁹	5.39 ¹⁰⁹	49.318 ²⁷⁶	56.30 ⁶⁸	17.338 ³²⁴	7.02 ⁶⁰	33.670 ²⁷³	0.81 ⁶⁶
20.8	48.765 ³¹³	4.85 ⁵⁴	49.607 ²⁸⁹	56.05 ²⁵	17.675 ³³⁷	6.42 ⁶⁰	33.956 ²⁸⁶	0.57 ²⁴
30.8	49.087 ³²²	4.88 ³	49.903 ²⁹⁶	56.23 ¹⁸	18.020 ³⁴⁵	5.83 ⁵⁹	34.250 ²⁹⁴	0.76 ¹⁹
	326	58	300	62	349	59	300	61
Apr. 9.7	49.413	5.46	50.203	56.85	18.369	5.24	34.550	1.37
19.7	49.736 ³²³	6.57 ¹¹¹	50.501 ²⁹⁸	57.87 ¹⁰²	18.718 ³⁴⁹	4.68 ⁵⁶	34.849 ²⁹⁹	2.38 ¹⁰¹
29.7	50.050 ³¹⁴	8.17 ¹⁶⁰	50.793 ²⁹²	59.26 ¹³⁹	19.061 ³⁴³	4.16 ⁵²	35.143 ²⁹⁴	3.75 ¹³⁷
May 9.7	50.347 ²⁹⁷	10.21 ²⁰⁴	51.074 ²⁸¹	60.98 ¹⁷²	19.393 ³³²	3.71 ⁴⁵	35.426 ²⁸³	5.43 ¹⁶⁸
19.6	50.624 ²⁷⁷	12.59 ²³⁸	51.336 ²⁶²	62.93 ¹⁹⁵	19.709 ³¹⁶	3.35 ³⁶	35.693 ²⁶⁷	7.36 ¹⁹³
29.6	50.871 ²⁴⁷	15.27 ²⁶⁸	51.577 ²⁴¹	65.09 ²¹⁶	20.001 ²⁹²	3.11 ²⁴	35.939 ²⁴⁶	9.48 ²¹²
June 8.6	51.084 ²¹³	18.13 ²⁸⁶	51.789 ²¹²	67.37 ²²⁸	20.265 ²⁶⁴	2.97 ¹⁴	36.156 ²¹⁷	11.72 ²²⁴
18.5	51.259 ¹⁷⁵	21.11 ²⁹⁸	51.969 ¹⁸⁰	69.71 ²³⁴	20.493 ²²⁸	2.95 ²	36.342 ¹⁸⁶	14.00 ²²⁸
28.5	51.390 ¹³¹	24.13 ³⁰²	52.112 ¹⁴³	72.02 ²³¹	20.682 ¹⁸⁹	3.07 ¹²	36.491 ¹⁴⁹	16.28 ²²⁸
July 8.5	51.475 ⁸⁵	27.10 ²⁹⁷	52.214 ¹⁰²	74.26 ²²⁴	20.826 ¹⁴⁴	3.31 ²⁴	36.599 ¹⁰⁸	18.50 ²²²
18.5	51.513 ³⁸	29.95 ²⁸⁵	52.273 ⁵⁹	76.41 ²¹⁵	20.921 ⁹⁵	3.65 ³⁴	36.665 ⁶⁶	20.59 ²⁰⁹
28.4	51.502 ¹¹	32.62 ²⁶⁷	52.289 ¹⁶	78.39 ¹⁹⁸	20.966 ⁴⁵	4.08 ⁴³	36.687 ²²	22.53 ¹⁹⁴
Aug. 7.4	51.443 ⁵⁹	35.07 ²⁴⁵	52.261 ²⁸	80.16 ¹⁷⁷	20.961 ⁵	4.56 ⁴⁸	36.666 ⁶¹	24.27 ¹⁷⁴
17.4	51.340 ¹⁰³	37.23 ²¹⁶	52.193 ⁶⁸	81.70 ¹⁵⁴	20.909 ⁵²	5.07 ⁵¹	36.603 ²³	25.79 ¹⁵²
27.4	51.198 ¹⁴²	39.07 ¹⁸⁴	52.088 ¹⁰⁵	82.98 ¹²⁸	20.814 ⁹⁵	5.57 ⁵⁰	36.504 ⁹⁹	27.05 ¹²⁶
	177	147	136	101	134	45	132	101
Sept. 6.3	51.021	40.54	51.952	83.99	20.680	6.02	36.372	28.06
16.3	50.817 ²⁰⁴	41.63 ¹⁰⁹	51.790 ¹⁶²	84.70 ⁷¹	20.518 ¹⁶²	6.41 ³⁹	36.215 ¹⁵⁷	28.78 ⁷²
26.3	50.598 ²¹⁹	42.31 ⁶⁸	51.614 ¹⁷⁶	85.13 ⁴³	20.336 ¹⁸²	6.69 ²⁸	36.042 ¹⁷³	29.22 ⁴⁴
Oct. 6.2	50.370 ²²⁸	42.56 ²⁵	51.430 ¹⁸⁴	85.25 ¹²	20.146 ¹⁹⁰	6.84 ¹⁵	35.861 ¹⁸¹	29.36 ¹⁴
16.2	50.144 ²²⁶	42.38 ¹⁸	51.249 ¹⁸¹	85.06 ¹⁹	19.958 ¹⁸⁸	6.86 ²	35.682 ¹⁷⁹	29.20 ¹⁶
	212	61	168	48	173	12	167	44
26.2	49.932	41.77	51.081	84.58	19.785	6.74	35.515	28.76
Nov. 5.2	49.741 ¹⁹¹	40.73 ¹⁰⁴	50.933 ¹⁴⁸	83.78 ⁸⁰	19.637 ¹⁴⁸	6.47 ²⁷	35.367 ¹⁴⁸	28.01 ⁷⁵
15.1	49.581 ¹⁶⁰	39.27 ¹⁴⁶	50.815 ¹¹⁸	82.69 ¹⁰⁹	19.523 ¹¹⁴	6.09 ³⁸	35.249 ¹¹⁸	26.99 ¹⁰²
25.1	49.459 ¹²²	37.44 ¹⁸³	50.732 ⁸³	81.34 ¹³⁵	19.452 ⁷¹	5.62 ⁴⁷	35.164 ⁸⁵	25.70 ¹²⁹
Dec. 5.1	49.379 ⁸⁰	35.26 ²¹⁸	50.689 ⁴³	79.74 ¹⁶⁰	19.427 ²⁵	5.06 ⁵⁶	35.118 ⁴⁶	24.18 ¹⁵²
	33	246	1	180	24	60	4	173
15.1	49.346	32.80	50.688	77.94	19.451	4.46	35.114	22.45
25.0	49.362 ¹⁶	30.12 ²⁶⁸	50.730 ⁴²	75.99 ¹⁹⁵	19.525 ⁷⁴	3.84 ⁶²	35.154 ⁴⁰	20.58 ¹⁸⁷
35.0	49.426 ⁶⁴	27.33 ²⁷⁹	50.814 ⁸⁴	73.96 ²⁰³	19.646 ¹²¹	3.21 ⁶³	35.233 ⁷⁹	18.62 ¹⁹⁶
Mean Place	48.054	24.91	48.579	71.98	16.066	5.20	32.941	15.90
Sec δ, Tan δ	1.187	+0.639	1.035	+0.267	1.155	-0.577	1.029	+0.244
Dψ α, Dω α	+0.04	-0.01	+0.05	0.00	+0.08	+0.01	+0.05	0.00
Dψ δ, Dω δ	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	λ Aquilæ. Mag. 3.6		α Coronæ Australis. Mag. 4.1		ϵ Lyre. Mag. 5.1		π Sagittarii. Mag. 3.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 19 1	° ' " - 5 0	h m 19 3	° ' " -38 2	h m 19 4	° ' " +35 57	h m 19 4	° ' " -21 9
Jan. 1.0	46.973	38.80	44.930	18.01	17.114	60.64	45.692	35.05
11.0	47.096 ¹²³	39.74 ⁹⁴	45.086 ¹⁵⁶	16.86 ¹¹⁵	17.195 ⁸¹	57.73 ²⁹¹	45.827 ¹³⁵	34.97 ⁸
21.0	47.256 ¹⁶⁰	40.65 ⁹¹	45.288 ²⁰²	15.75 ¹¹¹	17.323 ¹²⁸	54.84 ²⁸⁹	46.001 ¹⁷⁴	34.87 ¹⁰
30.9	47.446 ¹⁹⁰	41.48 ⁸⁸	45.531 ²⁴³	14.65 ¹¹⁰	17.496 ¹⁷⁸	52.09 ²⁷⁵	46.208 ²⁰⁷	34.75 ¹²
Feb. 9.9	47.665 ²¹⁹	42.19 ⁷¹	45.808 ³⁰⁷	13.60 ¹⁰⁶	17.708 ²¹²	49.60 ²⁴⁰	46.444 ²³⁶	34.59 ¹⁶
19.9	47.907 ²⁴²	42.75 ⁵⁶	46.116 ³⁷⁸	12.60 ¹⁰⁰	17.955 ²⁴⁷	47.45 ²¹⁵	46.707 ²⁶³	34.36 ²³
29.9	48.169 ²⁶²	43.11 ³⁶	46.447 ³³¹	11.66 ⁹⁴	18.231 ²⁷⁶	45.74 ¹⁷¹	46.988 ²⁸¹	34.06 ³⁰
Mar. 10.8	48.446 ²⁷⁷	43.22 ¹¹	46.798 ³⁵¹	10.78 ⁸⁸	18.532 ³⁰¹	44.53 ¹²¹	47.287 ²⁹⁹	33.66 ⁴⁰
20.8	48.735 ²⁸⁹	43.07 ¹⁵	47.163 ³⁶⁵	9.97 ⁸¹	18.850 ³¹⁸	43.87 ⁶⁶	47.597 ³¹⁰	33.17 ⁴⁹
30.8	49.032 ²⁹⁷	42.68 ³⁹	47.539 ³⁷⁶	9.25 ⁷²	19.180 ³³⁰	43.80 ⁷	47.917 ³²⁰	32.59 ⁵⁸
Apr. 9.7	49.333 ³⁰¹	42.03 ⁶⁵	47.920 ³⁸¹	8.62 ⁶³	19.515 ³³⁵	44.31 ⁵¹	48.242 ³²⁵	31.92 ⁶⁷
19.7	49.635 ³⁰²	41.16 ⁸⁷	48.301 ³⁸¹	8.09 ⁵³	19.848 ³³³	45.37 ¹⁰⁶	48.568 ³²⁶	31.18 ⁷⁴
29.7	49.934 ²⁹⁹	40.09 ¹⁰⁷	48.677 ³⁷⁶	7.69 ⁴⁰	20.173 ³²⁵	46.94 ¹⁵⁷	48.890 ³²²	30.42 ⁷⁶
May 9.7	50.223 ²⁸⁹	38.86 ¹²³	49.043 ³⁶⁶	7.44 ²⁵	20.482 ³⁰⁹	48.97 ²⁰³	49.204 ³¹⁴	29.64 ⁷⁸
19.6	50.498 ²⁷⁵	37.53 ¹³³	49.390 ³⁴⁷	7.33 ¹¹	20.769 ²⁸⁷	51.37 ²⁴⁰	49.502 ²⁹⁸	28.88 ⁷⁶
29.6	50.752 ²⁵⁴	36.13 ¹⁴⁰	49.713 ³²³	7.39 ⁶	21.028 ²⁸⁹	54.09 ²⁷²	49.782 ²⁸⁰	28.18 ⁷⁰
June 8.6	50.982 ²³⁰	34.72 ¹⁴¹	50.005 ²⁹²	7.63 ²⁴	21.251 ²²³	57.04 ²⁹⁵	50.034 ²⁵²	27.55 ⁶³
18.6	51.181 ¹⁹⁹	33.33 ¹³⁹	50.259 ²⁸⁴	8.02 ³⁹	21.435 ¹⁸⁴	60.11 ³⁰⁷	50.254 ²²⁰	27.01 ⁵⁴
28.5	51.343 ¹⁶²	32.00 ¹³³	50.468 ²⁰⁹	8.57 ⁵⁵	21.574 ¹³⁹	63.24 ³¹³	50.436 ¹⁸²	26.58 ⁴³
July 8.5	51.467 ¹²⁴	30.77 ¹²³	50.629 ¹⁶¹	9.26 ⁶⁹	21.865 ⁹¹	66.34 ³¹⁰	50.578 ¹⁴²	26.27 ³¹
18.5	51.549 ⁸²	29.66 ¹¹¹	50.737 ¹⁰⁸	10.06 ⁸⁰	21.707 ⁴²	69.33 ²⁹⁹	50.674 ⁹⁶	26.09 ¹⁸
28.4	51.587 ³⁸	28.67 ⁹⁹	50.791 ⁵⁴	10.94 ⁸⁸	21.698 ⁹	72.17 ²⁸⁴	50.724 ⁵⁰	26.01 ⁸
Aug. 7.4	51.582 ⁵	27.84 ⁸³	50.789 ²	11.85 ⁹¹	21.640 ⁵⁸	74.77 ²⁶⁰	50.727 ³	26.03 ²
17.4	51.536 ⁴⁶	27.16 ⁶⁸	50.734 ⁵⁵	12.75 ⁹⁰	21.536 ¹⁰⁴	77.10 ²³³	50.685 ⁴²	26.13 ¹⁰
27.4	51.451 ⁸⁵	26.63 ⁸³	50.631 ¹⁰³	13.60 ⁸⁵	21.389 ¹⁴⁷	79.09 ¹⁹⁹	50.601 ⁸⁴	26.28 ¹⁵
Sept. 6.3	51.334 ¹¹⁷	26.24 ³⁹	50.487 ¹⁴⁴	14.35 ⁷⁵	21.207 ¹⁸²	80.71 ¹⁶²	50.481 ¹²⁰	26.46 ¹⁸
16.3	51.192 ¹⁴²	26.00 ²⁴	50.309 ¹⁷⁸	14.96 ⁶¹	20.996 ²¹¹	81.94 ¹²³	50.335 ¹⁴⁶	26.65 ¹⁹
26.3	51.032 ¹⁶⁰	25.89 ¹¹	50.109 ²⁰⁰	15.40 ⁴⁴	20.767 ²²⁹	82.75 ⁸¹	50.167 ¹⁶⁸	26.82 ¹⁷
Oct. 6.3	50.865 ¹⁶⁷	25.90 ¹	49.896 ²¹³	15.63 ²³	20.528 ²³⁹	83.12 ³⁷	49.992 ¹⁷⁵	26.96 ¹⁴
16.2	50.701 ¹⁶⁴	26.03 ¹³	49.688 ²⁰⁸	15.65 ²	20.289 ²³⁹	83.03 ⁹	49.819 ¹⁷³	27.05 ⁹
26.2	50.548 ¹⁵³	26.29 ²⁶	49.492 ¹⁹⁶	15.43 ²²	20.061 ²²⁸	82.49 ⁵⁴	49.658 ¹⁶¹	27.10 ⁵
Nov. 5.2	50.415 ¹³³	26.29 ³⁷	49.492 ¹⁶⁹	15.43 ⁴²	20.061 ²⁰⁷	82.49 ⁹⁹	49.658 ¹⁴⁰	27.10 ⁰
15.1	50.313 ¹⁰²	27.15 ⁴⁹	49.190 ¹³³	14.37 ⁶⁴	19.677 ¹⁷⁷	80.08 ¹⁴³	49.411 ¹⁰⁷	27.05 ⁵
25.1	50.245 ⁶⁸	27.75 ⁶⁰	49.101 ⁸⁹	13.57 ⁸⁰	19.536 ¹⁴¹	78.25 ¹⁸²	49.341 ⁷⁰	26.98 ⁷
Dec. 5.1	50.217 ²⁸	28.46 ⁷¹	49.062 ³⁹	12.63 ⁹⁴	19.439 ⁹⁷	76.05 ²²⁰	49.313 ²⁸	26.89 ⁹
15.1	50.230 ¹³	29.26 ⁸⁰	49.077 ¹⁵	11.59 ¹⁰⁴	19.389 ⁵⁰	73.55 ²⁵⁰	49.330 ¹⁷	26.89 ⁹
25.0	50.286 ⁵⁶	30.14 ⁸⁸	49.146 ⁶⁹	10.48 ¹¹¹	19.388 ¹	70.82 ²⁷³	49.392 ⁶²	26.71 ⁹
35.0	50.381 ⁹⁵	31.05 ⁹¹	49.268 ¹²²	9.34 ¹¹⁴	19.437 ⁴⁹	67.95 ²⁸⁷	49.498 ¹⁰⁶	26.61 ¹⁰
Mean Place	47.467	33.46	45.474	11.72	18.278	64.02	46.144	29.17
Sec δ , Tan δ	1.004	-0.088	1.270	-0.782	1.235	+0.726	1.072	-0.387
$D\psi \alpha, D\omega \alpha$	+0.06	0.00	+0.08	+0.01	+0.04	-0.01	+0.07	+0.01
$D\psi \delta, D\omega \delta$	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0

APPARENT PLACES OF STARS, 1916.

471

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ Sagittarii. Mag. 4.9		♁ Draconis. Mag. 3.2		♃ Sagittarii. Mag. 5.0		♄ Lyrae. Mag. 4.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 19 10	° ' " -25 24	h m 19 12	° ' " +67 30	h m 19 12	° ' " -19 6	h m 19 13	° ' " +37 58
	s	"	s	"	s	"	s	"
Jan. 1.0	22.998	15.03	28.61	48.47	42.808	17.93	25.874	58.34
11.0	23.130 ¹³²	14.66 ³⁷	28.60 ¹	45.06 ³⁴¹	42.932 ¹²⁴	17.95 ²	25.942 ⁶⁸	55.39 ²⁹⁵
21.0	23.303 ¹⁷³	14.28 ³⁸	28.68 ⁸	41.61 ³⁴⁵	43.096 ¹⁶⁴	17.95 ⁰	26.059 ¹¹⁷	52.45 ²⁹⁴
30.9	23.511 ²⁰⁸	13.88 ⁴⁰	28.87 ¹⁹	38.27 ³³⁴	43.292 ¹⁹⁶	17.91 ⁴	26.221 ¹⁶²	49.63 ²⁸²
Feb. 9.9	23.750 ²³⁹	13.45 ⁴³	29.17 ³⁰	35.18 ³⁰⁹	43.517 ²²⁵	17.82 ⁹	26.425 ²⁰⁴	47.05 ²⁵⁸
19.9	24.016 ²⁶⁶	12.99 ⁴⁶	29.17 ³⁸	35.18 ²⁷⁴	43.517 ²⁵²	17.82 ¹⁷	26.425 ²⁴⁰	47.05 ²²⁵
29.9	24.302 ²⁸⁶	12.48 ⁵¹	30.01 ⁴⁶	32.44 ²²⁸	43.769 ²⁷¹	17.65 ²⁸	26.665 ²⁷⁵	44.80 ¹⁸¹
Mar. 10.8	24.608 ³⁰⁶	12.48 ⁵¹	30.01 ⁴⁶	30.16 ¹⁷²	44.040 ²⁷¹	17.37 ²⁸	26.940 ²⁷⁵	42.99 ¹³¹
20.8	24.926 ³¹⁸	11.91 ⁵⁷	30.55 ⁵⁴	28.44 ¹¹¹	44.330 ²⁹⁰	16.99 ³⁸	27.240 ³⁰⁰	41.68 ⁷⁵
30.8	25.255 ³²⁹	11.29 ⁶²	31.12 ⁵⁷	27.33 ⁴⁵	44.634 ³⁰⁴	16.49 ⁵⁰	27.560 ³²⁰	40.93 ¹⁶
Apr. 9.7	25.589 ³³⁴	10.62 ⁶⁷	31.72 ⁶⁰	26.88 ²⁰	44.947 ³¹³	15.88 ⁶¹	27.894 ³³⁴	40.77 ⁴²
19.7	25.926 ³³⁷	9.91 ⁷³	32.34 ⁶¹	27.08 ⁸⁶	45.267 ³²²	15.15 ⁸⁰	28.236 ³⁴²	41.19 ¹⁰⁰
29.7	26.260 ³³⁴	9.18 ⁷²	32.95 ⁵⁸	27.94 ¹⁴⁸	45.589 ³²⁰	14.35 ⁸⁵	28.578 ³³⁴	42.19 ¹⁶²
May 9.7	26.585 ³²⁵	8.46 ⁶⁹	33.53 ⁵³	29.42 ²⁰³	45.909 ³¹²	13.50 ⁸⁹	28.912 ³²¹	43.71 ²⁰⁰
19.6	26.895 ²⁹¹	7.77 ⁶⁴	34.06 ⁴⁸	31.45 ²⁵²	46.221 ²⁹⁸	12.61 ⁸⁸	29.233 ²⁹⁸	45.71 ²⁴⁰
29.6	27.186 ²⁶⁴	7.13 ⁵⁶	34.54 ⁴²	33.97 ²⁹²	46.519 ²⁸⁰	11.73 ⁸⁵	29.531 ²⁷⁰	48.11 ²⁷³
June 8.6	27.450 ²³³	6.57 ⁴⁵	34.96 ³⁴	36.89 ³²²	46.799 ²⁵⁴	10.88 ⁷⁸	29.801 ²³⁵	50.84 ²⁹⁷
18.6	27.683 ¹⁹⁴	6.12 ³⁴	35.30 ²⁴	40.11 ³⁴⁵	47.053 ²²³	10.10 ⁶⁸	30.036 ¹⁹⁵	53.31 ³¹²
28.5	27.877 ¹⁵¹	5.78 ²⁰	35.54 ¹⁵	43.56 ³⁵⁷	47.276 ¹⁸⁹	9.42 ⁵⁸	30.231 ¹⁴⁹	56.93 ³¹⁹
July 8.5	28.028 ¹⁰⁵	5.58 ⁸	35.69 ⁴	47.13 ³⁶¹	47.465 ¹⁴⁶	8.84 ⁴⁶	30.380 ¹⁰⁰	60.12 ³¹⁹
18.5	28.133 ⁵⁶	5.50 ⁴	35.73 ⁴	50.74 ³⁵⁵	47.611 ¹⁰⁸	8.38 ³⁴	30.480 ⁴⁹	63.31 ³⁰⁹
28.4	28.189 ⁹	5.54 ¹⁶	35.69 ¹⁵	54.29 ³⁴²	47.714 ⁵⁶	8.04 ²⁰	30.529 ⁴	66.40 ²⁹⁴
Aug. 7.4	28.198 ³⁸	5.70 ²⁵	35.54 ²⁴	57.71 ³²²	47.770 ¹⁰	7.84 ¹⁰	30.525 ⁵	69.34 ²⁷²
17.4	28.160 ⁸²	5.95 ³¹	35.30 ²⁴	60.93 ²⁹²	47.780 ³⁵	7.74 ⁰	30.471 ¹⁰²	72.06 ²⁴⁵
27.4	28.078 ¹¹⁹	6.26 ³⁴	34.98 ³²	63.85 ²⁶⁹	47.745 ⁷⁶	7.74 ⁷	30.369 ¹⁴⁶	74.51 ²¹²
Sept. 6.3	27.959 ¹⁴⁸	6.60 ³⁵	34.56 ⁴⁸	66.44 ²¹⁹	47.689 ¹¹⁴	7.81 ¹²	30.223 ¹⁸⁴	76.63 ¹⁷⁵
16.3	27.811 ¹⁷⁰	6.95 ³³	34.08 ⁵²	68.63 ¹⁷⁵	47.555 ¹⁴¹	7.93 ¹⁵	30.039 ²¹³	78.38 ¹³⁶
26.3	27.641 ¹⁸¹	7.28 ²⁶	33.56 ⁵⁷	70.38 ¹²⁷	47.414 ¹⁶²	8.08 ¹⁶	29.826 ²³⁵	79.74 ⁹⁵
Oct. 6.3	27.460 ¹⁶⁷	7.54 ²⁰	32.99 ⁵⁹	71.65 ⁷⁶	47.252 ¹⁷¹	8.24 ¹⁶	29.591 ²⁴⁶	80.69 ⁴⁹
16.2	27.280 ¹⁴⁷	7.74 ¹¹	32.40 ⁵⁹	72.41 ²²	47.081 ¹⁷²	8.40 ¹³	29.345 ²⁴⁷	81.18 ²
26.2	27.113 ¹⁴⁷	7.85 ¹	31.80 ⁵⁹	72.63 ³³	46.909 ¹⁶⁰	8.53 ¹⁰	29.098 ²³⁸	81.20 ⁴⁴
Nov. 5.2	26.966 ¹¹⁵	7.86 ⁸	31.21 ⁵⁶	72.30 ⁸⁸	46.749 ¹⁴¹	8.63 ⁷	28.860 ²¹⁸	80.76 ⁹⁰
15.1	26.851 ⁷⁸	7.78 ¹⁷	30.65 ⁵²	71.42 ¹⁴³	46.608 ¹¹¹	8.70 ⁴	28.642 ¹⁹¹	79.86 ¹³⁶
25.1	26.773 ³⁴	7.61 ²⁵	30.13 ⁴⁴	69.99 ¹⁹³	46.497 ⁷⁵	8.74 ³	28.451 ¹⁵⁴	78.50 ¹⁷⁸
Dec. 5.1	26.739 ¹²	7.36 ²⁹	29.69 ³⁸	68.06 ²⁴¹	46.422 ³⁴	8.77 ¹	28.297 ¹¹¹	76.72 ²¹⁷
15.1	26.751 ⁸⁸	7.07 ³³	29.31 ²⁹	65.65 ²⁷⁹	46.388 ⁹	8.78 ²	28.186 ⁶⁵	74.55 ²⁴⁹
25.0	26.809 ¹⁰²	6.74 ³⁶	29.02 ¹⁹	62.86 ³¹³	46.397 ⁵³	8.80 ¹	28.121 ¹⁶	72.06 ²⁷⁴
35.0	26.911 ¹⁰²	6.38 ³⁷	28.83 ⁹	59.73 ³³³	46.450 ⁹⁷	8.81 ²	28.105 ³⁸	69.32 ²⁸⁹
	26.911	6.01	28.74	56.40	46.547	8.83	28.141	66.43
Mean Place	23.449	8.98	32.392	49.52	43.247	12.12	27.107	60.86
Sec δ, Tan δ	1.107	-0.475	2.615	+2.416	1.058	-0.346	1.269	+0.781
Dψ a, Dα a	+0.07	+0.01	0.00	-0.05	+0.07	+0.01	+0.04	-0.02
Dψ δ, Dα δ	+0.1	-1.0	+0.1	-1.0	+0.1	-1.0	+0.1	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ω Aquilæ. Mag. 5.1		κ Cygni. Mag. 4.0		τ Draconis. Mag. 4.6		δ Aquilæ. Mag. 3.4	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 19 13	° ' " +11 26	h m 19 15	° ' " +53 12	h m 19 17	° ' " +73 11	h m 19 21	° ' " + 2 56
Jan. 1.0	51.784	31.00	7.719	45.45	5.35	59.36	15.259	42.79
11.0	51.881 ⁹⁷	29.17 ¹⁸³	7.754 ³⁵	42.16 ³²⁹	5.27 ⁸	55.98 ³³⁸	15.356 ⁹⁷	41.46 ¹³³
21.0	52.015 ¹³⁴	27.37 ¹⁸⁰	7.856 ¹⁰²	38.84 ³³²	5.33 ⁶	52.55 ³⁴³	15.491 ¹³⁵	40.15 ¹³¹
30.9	52.184 ¹⁶⁹	25.68 ¹⁶⁹	8.021 ¹⁶⁵	35.65 ³¹⁹	5.53 ²⁰	49.21 ³³⁴	15.658 ¹⁶⁷	38.93 ¹²²
Feb. 9.9	52.383 ¹⁹⁹	24.16 ¹⁵²	8.246 ²²⁵	32.70 ²⁹⁵	5.87 ³⁴	46.09 ³¹²	15.853 ¹⁹⁵	37.85 ¹⁰⁸
19.9	52.607 ²²⁴	22.89 ¹²⁷	8.525 ²⁷⁹	30.10 ²⁰⁰	6.34 ⁴⁷	43.30 ²⁷⁹	16.076 ²²³	36.97 ⁸⁸
29.9	52.854 ²⁴⁷	21.93 ⁹⁶	8.851 ³²⁶	27.96 ²¹⁴	6.91 ⁵⁷	40.96 ²³⁴	16.320 ²⁴⁴	36.36 ⁶¹
Mar. 10.8	53.120 ²⁶⁶	21.33 ⁶⁰	9.215 ³⁶⁴	26.36 ¹⁶⁰	7.57 ⁶⁶	39.16 ¹⁸⁰	16.583 ²⁶³	36.04 ³²
20.8	53.401 ²⁸¹	21.12 ²¹	9.608 ³⁹³	25.38 ⁹⁸	8.30 ⁷³	37.95 ¹²¹	16.861 ²⁷⁸	36.03 ¹
30.8	53.692 ²⁹¹	21.32 ²⁰	10.020 ⁴¹²	25.02 ³⁶	9.07 ⁷⁷	37.41 ⁵⁴	17.150 ²⁸⁹	36.37 ³⁴
Apr. 9.8	53.990 ²⁹⁸	21.93 ⁶¹	10.441 ⁴²¹	25.31 ²⁹	9.85 ⁷⁸	37.51 ¹⁰	17.447 ²⁹⁷	37.03 ⁶⁶
19.7	54.290 ³⁰⁰	22.91 ⁹⁸	10.861 ⁴²⁰	26.24 ⁹³	10.63 ⁷⁸	38.27 ⁷⁶	17.747 ³⁰⁰	37.98 ⁹⁵
29.7	54.587 ²⁹⁷	24.24 ¹³³	11.268 ⁴⁰⁷	27.75 ¹⁵¹	11.38 ⁷⁵	39.65 ¹³⁸	18.046 ²⁹⁹	39.22 ¹²⁴
May 9.7	54.875 ²⁸⁸	25.87 ¹⁶³	11.654 ³⁸⁶	29.80 ²⁰⁵	12.07 ⁶⁹	41.58 ¹⁹³	18.339 ²⁹³	40.68 ¹⁴⁶
19.6	55.150 ²⁷⁵	27.73 ¹⁸⁶	12.008 ³⁵⁴	32.32 ²⁵²	12.69 ⁶²	44.01 ²⁴³	18.619 ²⁸⁰	42.33 ¹⁶⁵
29.6	55.403 ²⁵³	29.79 ²⁰⁶	12.321 ³¹³	35.21 ²⁸⁹	13.20 ⁵¹	46.85 ²⁸⁴	18.880 ²⁶¹	44.09 ¹⁷⁶
June 8.6	55.632 ²²⁹	31.95 ²¹⁶	12.585 ²⁶⁴	38.40 ³¹⁹	13.62 ⁴²	50.02 ³¹⁷	19.119 ²³⁹	45.92 ¹⁸³
18.6	55.829 ¹⁹⁷	34.16 ²²¹	12.795 ²¹⁰	41.79 ³³⁹	13.91 ²⁹	53.42 ³⁴⁰	19.327 ²⁰⁸	47.77 ¹⁸⁵
28.5	55.990 ¹⁶¹	36.36 ²²⁰	12.944 ¹⁴⁹	45.28 ³⁴⁹	14.08 ¹⁷	56.98 ³⁵⁶	19.501 ¹⁷⁴	49.58 ¹⁸¹
July 8.5	56.112 ¹²²	38.50 ²¹⁴	13.029 ⁸⁵	48.80 ³⁵²	14.13 ⁵	60.57 ³⁵⁹	19.637 ¹³⁶	51.31 ¹⁷³
18.5	56.191 ⁷⁹	40.53 ²⁰³	13.050 ²¹	52.25 ³⁴⁵	14.03 ¹⁰	64.12 ³⁵⁵	19.732 ⁹⁵	52.92 ¹⁶¹
28.5	56.227 ³⁶	42.41 ¹⁸⁸	13.003 ⁴⁷	55.56 ³³¹	13.81 ²²	67.57 ³⁴⁵	19.782 ⁵⁰	54.39 ¹⁴⁷
Aug. 7.4	56.219 ⁸	44.09 ¹⁶⁸	12.894 ¹⁰⁹	58.65 ³⁰⁹	13.47 ³⁴	70.82 ³²⁵	19.788 ⁶	55.69 ¹³⁰
17.4	56.170 ⁴⁹	45.57 ¹⁴⁸	12.725 ¹⁶⁹	61.46 ²⁸¹	13.02 ⁴⁵	73.81 ²⁹⁹	19.753 ³⁵	56.79 ¹¹⁰
27.4	56.082 ⁸⁸	46.80 ¹²³	12.502 ²²³	63.92 ²⁴⁶	12.45 ⁵⁷	76.46 ²⁶⁵	19.678 ⁷⁵	57.71 ⁹²
Sept. 6.3	55.960 ¹²²	47.79 ⁹⁹	12.232 ²⁷⁰	65.99 ²⁰⁷	11.81 ⁶⁴	78.74 ²²⁸	19.569 ¹⁰⁹	58.41 ⁷⁰
16.3	55.813 ¹⁴⁷	48.51 ⁷²	11.924 ³⁰⁸	67.63 ¹⁶⁴	11.10 ⁷¹	80.58 ¹⁸⁴	19.434 ¹³⁵	58.92 ⁵¹
26.3	55.646 ¹⁶⁷	48.97 ⁴⁶	11.590 ³³⁴	68.80 ¹¹⁷	10.33 ⁷⁷	81.96 ¹³⁸	19.279 ¹⁵⁵	59.22 ³⁰
Oct. 6.3	55.470 ¹⁷⁶	49.15 ¹⁸	11.239 ³⁵¹	69.47 ⁶⁷	9.52 ⁸¹	82.84 ⁸⁸	19.112 ¹⁶⁷	59.32 ¹⁰
16.2	55.295 ¹⁷⁵	49.06 ⁹	10.887 ³⁵²	69.63 ¹⁶	8.70 ⁸²	83.18 ³⁴	18.946 ¹⁶⁶	59.23 ⁹
26.2	55.130 ¹⁶⁵	48.69 ³⁷	10.543 ³⁴⁴	69.25 ³⁸	8.00 ⁸⁰	83.18 ²¹	18.946 ¹⁵⁸	59.23 ³⁰
Nov. 5.2	54.981 ¹⁴⁹	48.69 ⁶⁴	10.543 ³²⁴	69.25 ⁹⁰	7.90 ⁷⁸	82.97 ⁷⁶	18.788 ¹⁴²	58.93 ⁴⁸
15.2	54.860 ¹²¹	47.15 ⁹⁰	9.929 ²⁹⁰	66.92 ¹⁴³	7.12 ⁷⁸	82.21 ⁷⁶	18.646 ¹⁴²	58.45 ⁴⁸
25.1	54.771 ⁸⁹	45.99 ¹¹⁶	9.682 ²⁴⁷	65.01 ¹⁹¹	6.40 ⁷²	80.90 ¹³¹	18.532 ¹¹⁴	57.77 ⁶⁸
Dec. 5.1	54.719 ⁵²	44.62 ¹³⁷	9.486 ¹⁹⁶	62.66 ²³⁵	5.76 ⁶⁴	79.08 ¹⁸²	18.448 ⁸⁴	56.93 ⁸⁴
15.1	54.708 ¹¹	43.06 ¹⁵⁶	9.350 ¹³⁶	60.93 ²⁷³	5.20 ⁵⁶	76.77 ²³¹	18.400 ⁴⁸	55.92 ¹⁰¹
25.0	54.733 ³⁰	41.34 ¹⁷²	9.276 ⁷⁴	58.89 ³⁰⁴	4.77 ⁴³	74.05 ²⁷²	18.392 ⁸	54.77 ¹¹⁵
35.0	54.808 ⁷⁰	39.55 ¹⁷⁹	9.270 ⁶	53.67 ³²²	4.46 ³¹	70.99 ³⁰⁶	18.424 ³²	53.52 ¹²⁵
Mean Place	52.420	35.12	9.742	46.93	10.673	59.63	15.794	47.17
Sec δ , Tan δ	1.020	+0.202	1.670	+1.337	3.460	+3.312	1.001	+0.051
$D\psi \alpha, D\omega \alpha$	+0.06	0.00	+0.03	-0.03	-0.02	-0.07	+0.06	0.00
$D\psi \delta, D\omega \delta$	+0.1	-0.9	+0.1	-0.9	+0.1	-0.9	+0.1	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Cygni. Mag. 3.2		ϵ Cygni. Mag. 3.9		μ Aquilæ. Mag. 4.6		h Sagittarii. Mag. 4.7	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 19 27	° ' " +27 46	h m 19 27	° ' " +51 32	h m 19 29	° ' " + 7 11	h m 19 31	° ' " -25 4
	s	"	s	"	s	"	s	"
Jan. 1.0	19.086	54.81	33.426	60.96	58.613	55.86	35.392	18.14
11.0	19.153 ⁶⁷	52.27 ²⁵⁴	33.447 ²¹	57.74 ³²²	58.699 ⁸⁶	54.31 ¹⁵⁵	35.501 ¹⁰⁹	17.74 ⁴⁰
21.0	19.262 ¹⁰⁹	49.73 ²⁵⁴	33.531 ⁸⁴	54.48 ³²⁶	58.821 ¹²²	52.79 ¹⁵²	35.651 ¹⁵⁰	17.30 ⁴⁴
31.0	19.410 ¹⁴⁸	47.29 ²⁴⁴	33.678 ¹⁴⁷	51.31 ³¹⁷	58.977 ¹⁵⁶	51.34 ¹⁴⁵	35.836 ¹⁸⁵	16.82 ⁴⁸
Feb. 9.9	19.594 ¹⁸⁴	45.05 ²²⁴	33.881 ²⁰³	48.35 ²⁹⁶	59.163 ¹⁸⁶	50.05 ¹²⁰	36.053 ²¹⁷	16.29 ⁵³
19.9	19.812 ²¹⁸	43.10 ¹⁹⁵	34.138 ²⁵⁷	45.73 ²⁶²	59.376 ²¹³	48.99 ¹⁰⁶	36.298 ²⁴⁵	15.71 ⁵⁸
29.9	20.058 ²⁴⁶	41.53 ¹⁵⁷	34.441 ³⁰³	43.53 ¹²⁰	59.613 ²³⁷	48.20 ⁷⁹	36.568 ²⁷⁰	15.07 ⁶⁴
Mar. 10.8	20.329 ²⁷¹	40.41 ¹¹²	34.784 ³⁴³	41.86 ¹⁶⁷	59.871 ²⁵⁸	47.73 ¹¹	36.858 ²⁹⁰	14.35 ⁷²
20.8	20.619 ²⁹⁰	39.78 ⁶³	35.158 ³⁷⁴	40.76 ¹¹⁰	60.144 ²⁷³	47.62 ¹¹	37.166 ³⁰⁸	13.57 ⁷⁸
30.8	20.925 ³⁰⁶	39.68 ¹⁰	35.554 ³⁹⁶	40.31 ⁴⁵	60.430 ²⁸⁶	47.87 ²⁵	37.486 ³²⁰	12.74 ⁸³
Apr. 9.8	21.239 ³¹⁴	40.10 ⁴²	35.962 ⁴⁰⁸	40.49 ¹⁸	60.726 ²⁹⁶	48.48 ⁶¹	37.817 ³³¹	11.86 ⁸⁸
19.7	21.558 ³¹⁹	41.03 ⁹³	36.372 ⁴¹⁰	41.29 ⁸⁰	61.026 ³⁰⁰	49.43 ⁹⁵	38.153 ³³⁶	10.96 ⁹⁰
29.7	21.873 ³¹⁵	42.45 ¹⁴²	36.773 ⁴⁰¹	42.69 ¹⁴⁰	61.325 ²⁹⁹	50.71 ¹²⁸	38.489 ³³⁶	10.06 ⁹⁰
May 9.7	22.179 ³⁰⁶	44.28 ¹⁸³	37.158 ³⁸⁵	44.65 ¹⁹⁶	61.620 ²⁹⁵	52.26 ¹⁵⁵	38.822 ³³³	9.19 ⁸⁷
19.7	22.471 ²⁹²	46.48 ²²⁰	37.515 ³⁵⁷	47.07 ²⁴²	61.903 ²⁸³	54.01 ¹⁷⁵	39.143 ³²¹	8.38 ⁸¹
29.6	22.739 ²⁶⁸	48.97 ²⁴⁹	37.835 ³²⁰	49.87 ²⁸⁰	62.168 ²⁶⁵	55.92 ¹⁹¹	39.446 ³⁰³	7.67 ⁷¹
June 8.6	22.980 ²⁴¹	51.66 ²⁶⁹	38.111 ²⁷⁶	53.00 ³¹³	62.410 ²⁴²	57.93 ²⁰¹	39.728 ²⁸⁰	7.07 ⁶⁰
18.6	23.186 ²⁰⁶	54.49 ²⁸³	38.336 ²²⁵	56.34 ³³⁴	62.622 ²¹²	59.99 ²⁰⁶	39.975 ²⁴⁹	6.60 ⁴⁷
28.5	23.353 ¹⁶⁷	57.38 ²⁸⁹	38.504 ¹⁶⁸	59.81 ³⁴⁷	62.801 ¹⁷⁹	62.02 ²⁰³	40.188 ²¹³	6.27 ³³
July 8.5	23.476 ¹²³	60.25 ²⁸⁷	38.609 ¹⁰⁵	63.32 ³⁵¹	62.942 ¹⁴¹	63.99 ¹⁹⁷	40.359 ¹⁷¹	6.11 ¹⁶
18.5	23.554 ⁷⁸	63.05 ²⁸⁰	38.653 ⁴⁴	66.79 ³⁴⁷	63.040 ⁹⁸	65.86 ¹⁸⁷	40.484 ¹²⁵	6.08 ³
28.5	23.584 ³⁰	65.69 ²⁶⁴	38.633 ²⁰	70.14 ³³⁵	63.095 ⁵⁵	67.58 ¹⁷²	40.562 ⁷⁸	6.19 ¹¹
Aug. 7.4	23.566 ¹⁸	68.15 ²⁴⁶	38.550 ⁸³	73.29 ³¹⁵	63.106 ¹¹	69.10 ¹⁵²	40.590 ²⁸	6.42 ²³
17.4	23.504 ⁶²	70.34 ²¹⁹	38.407 ¹⁴³	76.16 ²⁸⁷	63.075 ³¹	70.44 ¹³⁴	40.570 ²⁰	6.73 ³¹
27.4	23.399 ¹⁰⁵	72.27 ¹⁹³	38.211 ¹⁹⁶	78.72 ²⁵⁶	63.003 ⁷²	71.55 ¹¹¹	40.505 ⁶⁵	7.10 ³⁷
Sept. 6.4	23.259 ¹⁴⁰	73.86 ¹⁵⁹	37.967 ²⁴⁴	80.90 ²¹⁸	62.897 ¹⁰⁶	72.44 ⁸⁹	40.400 ¹⁰⁵	7.50 ⁴⁰
16.3	23.088 ¹⁷¹	75.10 ¹²⁴	37.685 ²⁸²	82.66 ¹⁷⁶	62.763 ¹³⁴	73.09 ⁶⁵	40.264 ¹³⁶	7.89 ³⁹
26.3	22.896 ¹⁹²	75.98 ⁸⁸	37.374 ³¹¹	83.97 ¹³¹	62.609 ¹⁵⁴	73.52 ⁴³	40.102 ¹⁶²	8.25 ³⁶
Oct. 6.3	22.692 ²⁰⁴	76.47 ⁴⁹	37.046 ³²⁸	84.78 ⁸¹	62.441 ¹⁶⁸	73.69 ¹⁷	39.927 ¹⁷⁵	8.54 ²⁹
16.2	22.485 ²⁰⁷	76.56 ⁹	36.711 ³³⁵	85.09 ³¹	62.271 ¹⁷⁰	73.63 ⁶	39.748 ¹⁷⁹	8.75 ²¹
26.2	22.284 ²⁰¹	76.24 ³²	36.383 ³²⁸	84.88 ²¹	62.110 ¹⁶¹	73.33 ³⁰	39.578 ¹⁷⁰	8.87 ¹²
Nov. 5.2	22.100 ¹⁸⁴	75.52 ⁷²	36.073 ³¹⁰	84.13 ⁷⁵	61.963 ¹⁴⁷	72.81 ⁵²	39.424 ¹⁵⁴	8.88 ¹
15.2	21.941 ¹⁵⁹	74.41 ¹¹¹	35.791 ²⁸²	82.87 ¹²⁶	61.840 ¹²³	72.06 ⁷⁵	39.299 ¹²⁵	8.80 ⁸
25.1	21.812 ¹²⁹	72.93 ¹⁴⁸	35.548 ²⁴³	81.11 ¹⁷⁶	61.747 ⁹³	71.10 ⁹⁶	39.206 ⁹³	8.63 ¹⁷
Dec. 5.1	21.720 ⁹²	71.11 ¹⁸²	35.353 ¹⁹⁵	78.91 ²²⁰	61.690 ⁵⁷	69.94 ¹¹⁶	39.155 ⁵¹	8.38 ²⁵
15.1	21.671 ⁴⁹	69.00 ²¹¹	35.212 ¹⁴¹	76.30 ²⁶¹	61.672 ¹⁸	68.63 ¹³¹	39.147 ⁸	8.08 ³⁰
25.1	21.664 ⁷	66.67 ²³³	35.130 ⁸²	73.39 ²⁹¹	61.692 ²⁰	67.20 ¹⁴³	39.183 ³⁶	7.73 ³⁵
35.0	21.702 ³⁸	64.19 ²⁴⁸	35.111 ¹⁹	70.25 ³¹⁴	61.751 ⁵⁹	65.69 ¹⁵¹	39.263 ⁸⁰	7.35 ³⁸
Mean Place	20.007	56.96	35.322	61.31	59.182	59.58	35.806	11.96
Sec δ , Tan δ	1.130	+0.527	1.608	+1.259	1.008	+0.126	1.104	-0.468
$D\phi\alpha$, $D\omega\alpha$	+0.05	-0.01	+0.03	-0.03	+0.06	0.00	+0.07	+0.01
$D\phi\delta$, $D\omega\delta$	+0.1	-0.9	+0.1	-0.9	+0.2	-0.9	+0.2	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	κ Aquilæ. Mag. 5.0		θ Cygni. Mag. 4.6		δ Sagittarii. Mag. 5.4		β Sagittæ. Mag. 4.4	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 19 32	° ' " - 7 12	h m 19 34	° ' " +50 1	h m 19 35	° ' " -16 29	h m 19 37	° ' " +17 16
Jan. 1.0	21.962	58.86	9.565	33.99	54.321	17.98	15.850	47.99
11.0	22.058 ⁹⁶	59.55 ⁶⁹	9.581 ¹⁶	30.83 ³¹⁶	54.421 ¹⁰⁰	18.11 ¹³	15.919 ⁶⁹	45.95 ²⁰⁴
21.0	22.189 ¹³¹	60.22 ⁶⁷	9.657 ⁷⁶	27.62 ³²¹	54.556 ¹³⁵	18.19 ³	16.027 ¹⁰⁸	43.90 ²⁰⁵
31.0	22.353 ¹⁶⁴	60.82 ⁶⁰	9.793 ¹³⁶	24.48 ³¹⁴	54.726 ¹⁷⁰	18.22 ⁸	16.168 ¹⁴¹	41.97 ¹⁹³
Feb. 9.9	22.547 ¹⁹⁴	61.31 ⁴⁹	9.986 ¹⁹³	21.54 ²⁹⁴	54.925 ¹⁹⁹	18.16 ⁶	16.345 ¹⁷⁷	40.20 ¹⁷⁷
19.9	22.767 ²²⁰	61.65 ³⁴	10.229 ²⁴³	18.92 ²⁶²	55.153 ²²⁸	18.01 ¹⁵	16.548 ²⁰³	38.65 ¹⁵⁵
29.9	23.009 ²⁴²	61.79 ¹⁴	10.519 ²⁹⁰	16.72 ²²⁰	55.404 ²⁵¹	17.72 ²⁹	16.780 ²³²	37.46 ¹¹⁹
Mar. 10.8	23.272 ²⁶³	61.74 ⁵	10.847 ³²⁸	15.02 ¹⁷⁰	55.674 ²⁷⁰	17.31 ⁴¹	17.034 ²⁵⁴	36.64 ⁸²
20.8	23.549 ²⁷⁷	61.44 ³⁰	11.207 ³⁶⁰	13.90 ¹¹²	55.962 ²⁸⁸	16.74 ⁵⁷	17.309 ²⁷⁵	36.25 ³⁹
30.8	23.840 ²⁹¹	60.92 ⁵²	11.590 ³⁸³	13.41 ⁴⁹	56.264 ³⁰²	16.02 ⁷²	17.597 ²⁸⁸	36.29 ⁴
Apr. 9.8	24.141 ³⁰¹	60.16 ⁷⁶	11.987 ³⁹⁷	13.54 ¹³	56.576 ³¹²	15.17 ⁸⁵	17.896 ²⁹⁹	36.79 ⁵⁰
19.7	24.447 ³⁰⁶	59.20 ⁹⁶	12.388 ⁴⁰¹	14.23 ⁷⁵	56.894 ³¹⁸	14.23 ⁹⁴	18.202 ³⁰⁶	37.72 ⁹³
29.7	24.753 ³⁰⁶	58.06 ¹¹⁴	12.782 ³⁹⁴	15.64 ¹³⁵	57.213 ³¹⁹	13.18 ¹⁰⁵	18.506 ³⁰⁴	39.04 ¹³²
May 9.7	25.054 ³⁰¹	56.79 ¹²⁷	13.163 ³⁸¹	17.54 ¹⁹⁰	57.529 ³¹⁶	12.07 ¹¹¹	18.807 ³⁰¹	40.72 ¹⁶⁸
19.7	25.346 ²⁹²	55.43 ¹³⁶	13.517 ³⁵⁴	19.91 ²³⁷	57.833 ³⁰⁴	10.97 ¹¹⁰	19.093 ²⁸⁶	42.71 ¹⁹⁹
29.6	25.621 ²⁷⁵	54.01 ¹⁴²	13.838 ³²¹	22.67 ²⁷⁶	58.123 ²⁹⁰	9.88 ¹⁰⁹	19.361 ²⁶⁸	44.92 ²²¹
June 8.6	25.874 ²⁵³	52.58 ¹⁴³	14.118 ²⁸⁰	25.76 ³⁰⁹	58.390 ²⁶⁷	8.86 ¹⁰²	19.608 ²⁴⁷	47.30 ²³⁸
18.6	26.098 ²²⁴	51.19 ¹³⁹	14.348 ²³⁰	29.07 ³³¹	58.631 ²⁴¹	7.92 ⁹⁴	19.823 ²¹⁵	49.77 ²⁴⁷
28.5	26.291 ¹⁹³	49.87 ¹³²	14.525 ¹⁷⁷	32.51 ³⁴⁴	58.835 ²⁰⁴	7.10 ⁸²	20.001 ¹⁷⁸	52.27 ²⁵⁰
July 8.5	26.445 ¹⁵⁴	48.67 ¹²⁰	14.643 ¹¹⁸	36.01 ³⁵⁰	59.000 ¹⁶⁵	6.41 ⁶⁹	20.143 ¹⁴²	54.74 ²⁴⁷
18.5	26.556 ¹¹¹	47.59 ¹⁰⁸	14.699 ⁵⁶	39.47 ³⁴⁶	59.123 ¹²³	5.85 ⁵⁶	20.239 ⁹⁶	57.12 ²³⁸
28.5	26.624 ⁶⁸	46.65 ⁹⁴	14.693 ⁶	42.83 ³³⁶	59.199 ⁷⁶	5.45 ⁴⁰	20.291 ⁵²	59.36 ²²⁴
Aug. 7.4	26.647 ²³	45.87 ⁷⁸	14.626 ⁶⁷	45.99 ³¹⁶	59.230 ³¹	5.19 ²⁶	20.297 ⁶	61.41 ²⁰⁵
17.4	26.626 ²¹	45.25 ⁶²	14.501 ¹²⁵	48.89 ²⁹⁰	59.213 ¹⁷	5.05 ¹⁴	20.260 ³⁷	63.25 ¹⁸⁴
27.4	26.564 ⁶²	44.78 ⁴⁷	14.322 ¹⁷⁹	51.49 ²⁶⁰	59.155 ⁵⁸	5.03 ²	20.184 ⁷⁶	64.81 ¹⁵⁶
Sept. 6.4	26.467 ⁹⁷	44.45 ³³	14.096 ²²⁶	53.71 ²²²	59.059 ⁹⁶	5.08 ⁵	20.071 ¹¹³	66.11 ¹³⁰
16.3	26.340 ¹²⁷	44.27 ¹⁸	13.831 ²⁶⁵	55.52 ¹⁸¹	58.932 ¹²⁷	5.21 ¹³	19.928 ¹⁴³	67.13 ¹⁰²
26.3	26.192 ¹⁴⁸	44.20 ⁷	13.538 ²⁹³	56.89 ¹³⁷	58.781 ¹⁵¹	5.37 ¹⁶	19.763 ¹⁶⁵	67.83 ⁷⁰
Oct. 6.3	26.031 ¹⁶¹	44.24 ⁴	13.225 ³¹³	57.78 ⁸⁹	58.617 ¹⁶⁴	5.56 ¹⁹	19.586 ¹⁷⁷	68.20 ³⁷
16.2	25.867 ¹⁶⁴	44.38 ¹⁴	12.905 ³²⁰	58.16 ³⁸	58.449 ¹⁶⁸	5.76 ²⁰	19.405 ¹⁸¹	68.28 ⁸
26.2	25.710 ¹⁵⁷	44.62 ²⁴	12.591 ³¹⁴	58.02 ¹⁴	58.287 ¹⁶²	5.95 ¹⁹	19.229 ¹⁷⁶	68.02 ²⁶
Nov. 5.2	25.568 ¹⁴²	44.94 ³²	12.293 ²⁹⁸	57.36 ⁶⁶	58.142 ¹⁴⁵	6.13 ¹⁸	19.065 ¹⁶⁴	67.43 ⁵⁹
15.2	25.452 ¹¹⁶	45.34 ⁴⁰	12.020 ²⁷³	56.19 ¹¹⁷	58.022 ¹²⁰	6.30 ¹⁷	18.925 ¹⁴⁰	66.54 ⁸⁹
25.1	25.367 ⁸⁵	45.83 ⁴⁹	11.785 ²³⁵	54.52 ¹⁶⁷	57.934 ⁸⁸	6.47 ¹⁷	18.817 ¹⁰⁸	65.36 ¹¹⁸
Dec. 5.1	25.316 ⁵¹	46.38 ⁵⁵	11.594 ¹⁹¹	52.39 ²¹³	57.883 ⁵¹	6.62 ¹⁵	18.742 ⁷⁵	63.90 ¹⁴⁶
15.1	25.305 ¹¹	47.00 ⁶²	11.456 ¹³⁸	49.87 ²⁵²	57.871 ¹²	6.77 ¹⁵	18.703 ³⁹	62.20 ¹⁷⁰
25.1	25.334 ²⁹	47.67 ⁶⁷	11.373 ⁸³	47.03 ²⁸⁴	57.901 ³⁰	6.91 ¹⁴	18.705 ²	60.32 ¹⁸⁸
35.0	25.403 ⁶⁹	48.37 ⁷⁰	11.350 ²³	43.95 ³⁰⁸	57.973 ⁷²	7.04 ¹³	18.746 ⁴¹	58.33 ¹⁹⁹
Mean Place	22.409	54.00	11.354	33.80	54.728	12.42	16.549	50.45
Sec δ , Tan δ	1.008	-0.127	1.557	+1.193	1.043	-0.296	1.047	+0.311
$D\psi a$, $D_w a$	+0.06	0.00	+0.03	-0.03	+0.07	+0.01	+0.05	-0.01
$D\psi \delta$, $D_w \delta$	+0.2	-0.9	+0.2	-0.9	+0.2	-0.9	+0.2	-0.9

APPARENT PLACES OF STARS, 1916.

475

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	15 Cygni. Mag. 5.0		<i>f</i> Sagittarii. Mag. 5.1		γ Aquilæ. Mag. 2.8		δ Cygni. Mag. 3.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 19 41	° ' " +37 8	h m 19 41	° ' " -19 57	h m 19 42	° ' " +10 24	h m 19 42	° ' " +44 55
	s	"	s	"	s	"	s	"
Jan. 1.0	13.695	63.11	27.402	55.89	15.375	24.97	19.526	31.07
11.0	13.732 ³⁷	60.30 ²⁸¹	27.497 ⁹⁵	55.78 ¹¹	15.446 ⁷¹	23.30 ¹⁶⁷	19.545 ¹⁹	28.04 ³⁰³
21.0	13.816 ⁸⁴	57.46 ²⁸⁴	27.629 ¹³²	55.63 ¹⁵	15.554 ¹⁰⁸	21.63 ¹⁶⁷	19.618 ⁷³	24.96 ³⁰⁸
31.0	13.946 ¹³⁰	54.68 ²⁷⁸	27.797 ¹⁶⁸	55.41 ²²	15.695 ¹⁴¹	20.04 ¹⁵⁹	19.743 ¹²⁵	21.95 ³⁰¹
Feb. 9.9	14.118 ¹⁷²	52.09 ²⁵⁹	27.997 ²⁰⁰	55.13 ²⁸	15.868 ¹⁷³	18.61 ¹⁴³	19.919 ¹⁷⁶	19.11 ²⁸⁴
19.9	14.331 ²¹³	49.79 ¹⁹¹	28.223 ²³⁰	54.76 ³⁷	16.070 ²⁰²	17.41 ¹²⁰	20.141 ²²²	16.57 ²⁵⁴
29.9	14.578 ²⁴⁷	47.88 ¹⁰¹	28.475 ²⁵²	54.29 ⁴⁷	16.296 ²²⁶	16.48 ⁹³	20.405 ²⁶⁴	14.44 ²¹³
Mar. 10.9	14.856 ²⁷⁸	46.43 ¹⁴⁵	28.748 ²⁷³	53.71 ⁵⁸	16.544 ²⁴⁸	15.90 ⁵⁸	20.706 ³⁰¹	12.78 ¹⁶⁶
20.8	15.160 ³⁰⁴	45.52 ⁹¹	29.038 ²⁹⁰	53.00 ⁷¹	16.813 ²⁶⁹	15.69 ²¹	21.035 ³²⁹	11.68 ¹¹⁰
30.8	15.482 ³²²	45.16 ³⁶	29.344 ³⁰⁶	52.19 ⁸¹	17.095 ²⁸²	15.88 ¹⁹	21.388 ³⁵³	11.19 ⁴⁹
Apr. 9.8	15.818 ³³⁶	45.38 ²²	29.661 ³¹⁷	51.29 ⁹⁰	17.389 ²⁹⁴	16.46 ⁵⁸	21.754 ³⁶⁶	11.30 ¹¹
19.7	16.160 ³⁴²	46.16 ⁷⁸	29.984 ³²³	50.31 ⁹⁸	17.690 ³⁰¹	17.40 ⁹⁴	22.127 ³⁷³	12.01 ⁷¹
29.7	16.501 ³⁴¹	47.49 ¹³³	30.309 ³²⁵	49.27 ¹⁰⁴	17.992 ³⁰²	18.69 ¹²⁹	22.498 ³⁷¹	13.30 ¹²⁹
May 9.7	16.833 ³³²	49.30 ¹⁸¹	30.630 ³²¹	48.24 ¹⁰³	18.290 ²⁹⁸	20.29 ¹⁶⁰	22.858 ³⁶⁰	15.13 ¹⁸³
19.7	17.149 ³¹⁶	51.54 ²²⁴	30.946 ³¹⁶	47.19 ¹⁰⁵	18.579 ²⁸⁹	22.12 ¹⁸³	23.198 ³⁴⁰	17.42 ²²⁹
29.6	17.441 ²⁹²	54.15 ²⁶¹	31.243 ²⁹⁷	46.21 ⁹⁸	18.852 ²⁷³	24.15 ²⁰³	23.510 ³¹²	20.10 ²⁶⁸
June 8.6	17.702 ²⁶¹	57.02 ²⁸⁷	31.519 ²⁷⁶	45.31 ⁹⁰	19.100 ²⁴⁸	26.30 ²¹⁵	23.786 ²⁷⁶	23.09 ²⁹⁹
18.6	17.925 ²²³	60.09 ³⁰⁷	31.766 ²⁴⁷	44.52 ⁷⁹	19.321 ²²¹	28.51 ²²¹	24.019 ²³³	26.30 ³²¹
28.6	18.106 ¹⁸¹	63.26 ³¹⁷	31.979 ²¹³	43.88 ⁶⁴	19.509 ¹⁸⁸	30.73 ²²²	24.204 ¹⁸⁵	29.65 ³³⁵
July 8.5	18.241 ¹³⁵	66.47 ³²¹	32.153 ¹⁷⁴	43.37 ⁵¹	19.658 ¹⁴⁹	32.89 ²¹⁶	24.336 ¹³²	33.05 ³⁴⁰
18.5	18.325 ⁸⁴	69.63 ³¹⁶	32.283 ¹³⁰	43.01 ²⁶	19.765 ¹⁰⁷	34.94 ²⁰⁵	24.412 ⁷⁹	36.42 ³³⁷
28.5	18.357 ³²	72.66 ³⁰³	32.367 ⁸⁴	42.80 ⁸	19.828 ⁶³	36.86 ¹⁹²	24.431 ¹⁹	39.69 ³²⁷
Aug. 7.4	18.337 ²⁰	75.52 ²⁸⁶	32.403 ³⁶	42.72 ¹	19.847 ¹⁹	38.59 ¹⁷³	24.393 ³⁸	42.77 ³⁰⁸
17.4	18.268 ⁶⁹	78.12 ²⁶⁰	32.392 ¹¹	42.77 ⁵	19.822 ²⁵	40.13 ¹⁵⁴	24.300 ⁹³	45.61 ²⁸⁴
27.4	18.152 ¹¹⁶	80.45 ²³³	32.337 ⁵⁵	42.91 ¹⁴	19.757 ⁶⁵	41.44 ¹³¹	24.156 ¹⁴⁴	48.15 ²⁵⁴
Sept. 6.4	17.996 ¹⁵⁶	82.42 ¹⁹⁷	32.244 ⁹³	43.13 ²²	19.656 ¹⁰¹	42.50 ¹⁰⁶	23.969 ¹⁸⁷	50.34 ²¹⁹
16.3	17.806 ¹⁹⁰	84.02 ¹⁶⁰	32.117 ¹²⁷	43.38 ²⁵	19.525 ¹³¹	43.30 ⁸⁰	23.744 ²²⁵	52.14 ¹⁸⁰
26.3	17.590 ²¹⁶	85.22 ¹²⁰	31.967 ¹⁵⁰	43.65 ²⁷	19.372 ¹⁵³	43.85 ⁵⁵	23.490 ²⁵⁴	53.50 ¹³⁶
Oct. 6.3	17.359 ²³¹	85.98 ⁷⁶	31.800 ¹⁶⁷	43.92 ²⁷	19.205 ¹⁶⁷	44.13 ²⁸	23.219 ²⁷¹	54.40 ⁹⁰
16.3	17.121 ²³⁸	86.30 ³²	31.629 ¹⁷¹	44.16 ²⁴	19.034 ¹⁷¹	44.16 ³	22.940 ²⁷⁹	54.83 ⁴³
26.2	16.886 ²³⁵	86.15 ¹⁵	31.464 ¹⁶⁵	44.36 ²⁰	18.868 ¹⁶⁶	43.91 ²⁵	22.664 ²⁷⁶	54.75 ⁸
Nov. 5.2	16.666 ²²⁰	85.54 ⁶¹	31.314 ¹⁵⁰	44.50 ¹⁴	18.715 ¹⁵³	43.42 ⁴⁹	22.403 ²⁶¹	54.17 ⁵⁸
15.2	16.468 ¹⁹⁸	84.47 ¹⁰⁷	31.189 ¹²⁵	44.59 ⁹	18.584 ¹³¹	42.66 ⁷⁶	22.164 ²³⁹	53.09 ¹⁰⁸
25.1	16.302 ¹⁶⁶	82.97 ¹⁵⁰	31.093 ⁹⁶	44.64 ⁵	18.482 ¹⁰²	41.67 ⁹⁹	21.958 ²⁰⁶	51.53 ¹⁵⁶
Dec. 5.1	16.172 ¹³⁰	81.08 ¹⁸⁹	31.036 ⁵⁷	44.65 ¹	18.413 ⁶⁹	40.46 ¹²¹	21.793 ¹⁶⁵	49.54 ¹⁹⁹
15.1	16.085 ⁸⁷	78.83 ²²⁵	31.019 ¹⁷	44.62 ³	18.380 ³³	39.06 ¹⁴⁰	21.673 ¹²⁰	47.16 ²³⁸
25.1	16.043 ⁴²	76.29 ²⁵⁴	31.045 ²⁶	44.56 ⁶	18.387 ⁷	37.51 ¹⁵⁵	21.604 ⁶⁹	44.45 ²⁷¹
35.0	16.049 ⁶	73.56 ²⁷³	31.112 ⁶⁷	44.47 ⁹	18.431 ⁴⁴	35.87 ¹⁶⁴	21.588 ¹⁶	41.54 ²⁹¹
Mean Place	14.869	63.39	27.794	50.06	15.965	27.84	21.021	30.53
Sec δ , Tan δ	1.255	+0.758	1.064	-0.363	1.017	+0.184	1.412	+0.997
$D\psi \alpha$, $D\omega \alpha$	+0.04	-0.02	+0.07	+0.01	+0.06	-0.01	+0.04	-0.03
$D\psi \delta$, $D\omega \delta$	+0.2	-0.9	+0.2	-0.9	+0.2	-0.9	+0.2	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	δ Sagittæ. Mag. 3.8		α Aquilæ. (Alair.) Mag. 0.9		γ Aquilæ. Var. 3.7-4.4		ϵ Draconis. Mag. 4.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 19 43	° ' " +18 19	h m 19 46	° ' " + 8 38	h m 19 48	° ' " + 0 47	h m 19 48	° ' " +70 2
Jan. 1.0	37.834	32.86	40.533	41.23	11.187	17.57	23.64	77.33
11.0	37.896 62	30.80 206	40.605 72	39.68 155	11.260 73	16.44 113	23.50 14	74.08 325
21.0	37.994 98	28.73 207	40.713 108	38.13 155	11.370 110	15.34 110	23.50 0	70.70 338
31.0	38.130 136	26.74 199	40.854 141	36.67 146	11.511 141	14.31 103	23.60 10	67.33 337
Feb. 9.9	38.300 170	24.91 183	41.028 174	35.36 131	11.684 173	13.42 89	23.82 22	64.10 323
19.9	38.500 200	23.34 157	41.229 201	34.28 108	11.885 201	12.71 71	24.16 34	61.13 297
29.9	38.726 226	22.09 125	41.455 226	33.47 81	12.109 224	12.23 48	24.60 44	58.55 258
Mar. 10.9	38.977 251	21.22 87	41.704 249	32.97 50	12.355 246	12.03 20	25.12 52	56.45 210
20.8	39.248 271	20.78 44	41.972 268	32.85 12	12.621 266	12.12 9	25.71 59	54.92 153
30.8	39.535 287	20.78 0	42.254 282	33.10 25	12.902 281	12.51 39	26.35 64	54.01 91
Apr. 9.8	39.834 299	21.25 47	42.548 294	33.72 62	13.194 292	13.21 73	27.03 68	53.74 27
19.7	40.140 306	22.16 91	42.849 301	34.71 99	13.494 300	14.19 98	27.71 68	54.13 39
29.7	40.448 308	23.48 132	43.152 303	36.01 130	13.797 303	15.44 125	28.38 67	55.16 103
May 9.7	40.749 301	25.16 168	43.452 300	37.61 160	14.097 300	16.89 145	29.02 64	56.78 162
19.7	41.041 292	27.16 200	43.741 289	39.43 182	14.390 293	18.52 163	29.61 59	58.94 216
29.6	41.315 274	29.38 222	44.016 275	41.43 200	14.668 278	20.26 174	30.14 53	61.56 262
June 8.6	41.565 250	31.79 241	44.268 252	43.55 212	14.924 256	22.06 180	30.59 45	64.57 301
18.6	41.785 220	34.31 252	44.491 223	45.71 216	15.155 231	23.87 181	30.93 34	67.87 330
28.6	41.971 186	36.86 255	44.683 192	47.86 215	15.353 198	25.65 178	31.18 25	71.38 351
July 8.5	42.116 145	39.39 253	44.835 152	49.95 209	15.514 161	27.34 169	31.32 14	75.01 363
18.5	42.219 103	41.83 244	44.946 111	51.94 199	15.633 119	28.91 157	31.36 4	78.67 366
28.5	42.277 58	44.14 231	45.013 67	53.79 185	15.710 77	30.34 143	31.27 9	82.27 360
Aug. 7.4	42.288 11	46.26 212	45.035 22	55.44 165	15.742 32	31.59 125	31.09 18	85.74 347
17.4	42.256 32	48.16 190	45.015 20	56.91 147	15.730 12	32.67 108	30.80 29	89.00 326
27.4	42.182 74	49.81 165	44.954 61	58.14 123	15.678 52	33.54 97	30.41 39	91.98 298
Sept. 6.4	42.072 110	51.19 138	44.857 97	59.14 100	15.589 89	34.21 67	29.94 47	94.62 264
16.3	41.932 140	52.26 107	44.730 127	59.89 75	15.469 120	34.70 49	29.40 54	96.87 225
26.3	41.768 164	53.02 76	44.581 149	60.40 51	15.327 142	34.99 29	28.80 60	98.68 161
Oct. 6.3	41.591 177	53.47 45	44.417 164	60.65 25	15.169 158	35.10 11	28.17 63	100.00 132
16.3	41.408 183	53.59 12	44.250 167	60.67 2	15.006 163	35.04 6	27.51 66	100.80 80
26.2	41.230 178	53.37 22	44.087 163	60.42 25	14.848 158	34.79 25	26.84 67	101.06 26
Nov. 5.2	41.066 164	52.83 54	43.937 150	59.95 47	14.701 147	34.39 40	26.19 65	100.75 31
15.2	40.922 144	51.96 87	43.810 127	59.23 72	14.577 124	33.82 57	25.58 61	99.88 67
25.1	40.807 115	50.78 118	43.709 101	58.30 93	14.480 97	33.11 71	25.02 50	98.45 143
Dec. 5.1	40.726 81	49.34 144	43.642 67	57.16 114	14.418 64	32.26 85	24.52 56	96.50 195
15.1	40.681 45	47.64 170	43.611 31	55.86 130	14.388 28	31.30 96	24.11 41	94.09 241
25.1	40.675 6	45.75 189	43.619 8	54.43 143	14.399 11	30.24 106	23.80 31	91.29 280
35.0	40.710 35	43.74 201	43.664 45	52.90 153	14.446 47	29.13 111	23.59 21	88.17 312
Mean Place	38.540	34.84	41.097	44.21	11.663	21.24	27.939	74.24
Sec δ , Tan δ	1.053	+0.331	1.012	+0.152	1.000	+0.014	2.932	+2.756
$D\psi\alpha, D\alpha\alpha$	+0.05	-0.01	+0.06	0.00	+0.06	0.00	0.00	-0.08
$D\psi\delta, D\alpha\delta$	+0.2	-0.9	+0.2	-0.9	+0.2	-0.9	+0.2	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♄ Sagittarii. Mag. 4.2		♃ Pavois. Mag. 4.1		♉ Aquilæ. Mag. 3.9		♋ Sagittæ. Mag. 3.7	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 19 49	° ' " -42 5	h m 19 50	° ' " -73 7	h m 19 51	° ' " + 6 11	h m 19 55	° ' " +19 15
	s	"	s	"	s	"	s	"
Jan. 1.1	27.587	31.57	51.70	69.75	10.704	43.26	0.562	46.57
11.0	27.687 ¹⁰⁰	30.08 ¹⁴⁹	51.81 ¹¹	66.69 ³⁰⁶	10.770 ⁶⁶	41.83 ¹⁴³	0.610 ⁴⁸	44.51 ²⁰⁶
21.0	27.836 ¹⁴⁹	28.53 ¹⁵⁵	52.06 ²⁵	63.59 ³¹⁰	10.872 ¹⁰²	40.41 ¹⁴²	0.698 ⁸⁸	42.43 ²⁰⁸
31.0	28.030 ¹⁹⁴	26.95 ¹⁵⁸	52.44 ³⁸	60.52 ³⁰⁷	11.007 ¹³⁵	39.06 ¹³⁵	0.822 ¹²⁴	40.42 ²⁰¹
Feb. 9.9	28.265 ²³⁵	25.37 ¹⁵⁸	52.93 ⁴⁹	57.54 ²⁹⁸	11.174 ¹⁶⁷	37.86 ¹²⁰	0.980 ¹⁵⁸	38.56 ¹⁸⁶
19.9	28.537 ²⁷²	23.80 ¹⁵⁷	53.53 ⁶⁰	54.74 ²⁸⁰	11.369 ¹⁹⁵	36.86 ¹⁰⁰	1.168 ¹⁸⁸	36.94 ¹⁶²
29.9	28.842 ³⁰⁵	22.28 ¹⁵²	54.22 ⁶⁹	52.17 ²⁵⁷	11.590 ²²¹	36.12 ⁷⁴	1.387 ²¹⁹	35.64 ¹³⁰
Mar. 10.9	29.174 ³³²	20.82 ¹⁴⁶	54.99 ⁷⁷	49.87 ²³⁰	11.832 ²⁴²	35.68 ⁴⁴	1.630 ²⁴³	34.71 ⁹³
20.8	29.531 ³⁵⁷	19.44 ¹³⁸	55.82 ⁸³	47.89 ¹⁹⁸	12.095 ²⁶³	35.59 ⁹	1.896 ²⁶⁴	34.21 ⁵⁰
30.8	29.905 ³⁷⁴	18.15 ¹²⁹	56.70 ⁸⁸	46.28 ¹⁶¹	12.374 ²⁷⁹	35.85 ²⁶	2.180 ²⁸⁶	34.16 ⁵
Apr. 9.8	30.295 ³⁹⁰	17.00 ¹¹⁵	57.62 ⁹²	45.04 ¹²⁴	12.665 ²⁹¹	36.47 ⁶²	2.477 ²⁹⁷	34.57 ⁴¹
19.7	30.695 ⁴⁰⁰	16.00 ¹⁰⁰	58.55 ⁹³	44.22 ⁸²	12.965 ³⁰⁰	37.41 ⁹⁴	2.785 ³⁰⁸	35.44 ⁸⁷
29.7	31.097 ⁴⁰²	15.16 ⁸⁴	59.48 ⁹³	43.82 ⁴⁰	13.268 ³⁰³	38.68 ¹²⁷	3.094 ³⁰⁹	36.72 ¹²⁸
May 9.7	31.496 ³⁹⁹	14.53 ⁶³	60.38 ⁹⁰	43.82 ⁰	13.568 ³⁰⁰	40.20 ¹⁵²	3.400 ³⁰⁶	38.38 ¹⁶⁶
19.7	31.885 ³⁸⁹	14.10 ⁴³	61.26 ⁸⁸	44.27 ⁴⁵	13.860 ²⁹²	41.94 ¹⁷⁴	3.698 ²⁹⁸	40.37 ¹⁹⁹
29.6	32.255 ³⁷⁰	13.91 ¹⁹	62.08 ⁸²	45.12 ⁸⁵	14.139 ²⁷⁹	43.83 ¹⁸⁹	3.980 ²⁸²	42.60 ²²³
June 8.6	32.598 ³⁴³	13.94 ³	62.83 ⁷⁵	46.37 ¹²⁵	14.395 ²⁵⁶	45.83 ²⁰⁰	4.238 ²⁵⁸	45.02 ²⁴²
18.6	32.907 ³⁰⁹	14.22 ²⁸	63.50 ⁶⁷	47.98 ¹⁶¹	14.625 ²³⁰	47.86 ²⁰³	4.469 ²³¹	47.58 ²⁵⁶
28.6	33.175 ²⁶⁸	14.72 ⁵⁰	64.04 ⁵⁴	49.89 ¹⁹¹	14.822 ¹⁹⁷	49.89 ²⁰³	4.664 ¹⁹⁶	50.18 ²⁶⁰
July 8.5	33.394 ²¹⁹	15.44 ⁷²	64.48 ⁴⁴	52.07 ²¹⁸	14.982 ¹⁶⁰	51.86 ¹⁹⁷	4.820 ¹⁵⁶	52.76 ²⁵⁸
18.5	33.559 ¹⁶⁵	16.33 ⁸⁹	64.79 ³¹	54.43 ²³⁶	15.100 ¹¹⁸	53.72 ¹⁸⁶	4.933 ¹¹³	55.27 ²⁶¹
28.5	33.667 ¹⁰⁸	17.37 ¹⁰⁴	64.96 ¹⁷	56.92 ²⁴⁹	15.100 ⁷⁵	55.42 ¹⁷⁰	4.933 ⁶⁸	55.27 ²³⁹
Aug. 7.4	33.714 ⁴⁷	18.52 ¹¹⁵	64.97 ¹	59.44 ²⁵²	15.175 ³¹	55.42 ¹⁵⁴	5.001 ²²	57.66 ²²⁰
17.4	33.703 ¹¹	19.72 ¹²⁰	64.97 ¹¹	59.44 ²⁴⁶	15.206 ¹³	56.96 ¹³⁴	5.023 ²³	59.86 ²⁰⁰
27.4	33.636 ⁶⁷	20.92 ¹²⁰	64.86 ²⁵	61.90 ²³³	15.193 ⁵⁵	58.30 ¹¹³	5.000 ⁶⁵	61.86 ¹⁷⁴
Sept. 6.4	33.636 ¹¹⁷	20.92 ¹¹²	64.61 ⁸⁹	64.23 ²⁰⁷	15.138 ⁹⁰	59.43 ⁹¹	4.935 ¹⁰³	63.60 ¹⁴⁷
16.3	33.519 ¹⁵⁹	22.04 ¹⁰²	64.22 ⁴⁸	66.30 ¹⁷⁶	15.048 ¹²²	60.34 ⁶⁷	4.832 ¹³⁴	65.07 ¹¹⁷
26.3	33.360 ¹⁹²	23.06 ⁸⁵	63.74 ⁵⁶	68.06 ¹³⁶	14.926 ¹⁴⁴	61.01 ⁴⁵	4.698 ¹⁵⁹	66.24 ⁸⁵
Oct. 6.3	33.168 ²¹⁶	23.91 ⁶⁴	63.18 ⁶³	69.42 ⁸⁹	14.782 ¹⁵⁹	61.46 ²¹	4.529 ¹⁷⁴	67.09 ⁵⁴
16.3	32.952 ²²⁴	24.55 ³⁹	62.55 ⁶⁵	70.31 ³⁹	14.623 ¹⁶⁶	61.67 ⁰	4.365 ¹⁸²	67.63 ²⁰
26.2	32.728 ²²⁰	24.94 ¹¹	61.90 ⁶⁶	70.70 ¹⁴	14.457 ¹⁶²	61.67 ²⁴	4.183 ¹⁷⁹	67.83 ¹⁵
Nov. 5.2	32.508 ²⁰³	25.05 ¹⁷	61.24 ⁶²	70.56 ⁶⁹	14.295 ¹⁵⁰	61.43 ⁴⁵	4.004 ¹⁶⁷	67.68 ⁴⁷
15.2	32.305 ¹⁷⁵	24.88 ⁴⁵	60.62 ⁵⁷	69.87 ¹²²	14.145 ¹²⁸	60.98 ⁶⁷	3.837 ¹⁴⁸	67.21 ⁸⁰
25.1	32.130 ¹³⁸	24.43 ⁷¹	60.05 ⁴⁹	68.65 ¹⁷⁰	14.017 ¹⁰³	60.31 ⁸⁶	3.689 ¹²²	66.41 ¹¹³
Dec. 5.1	31.992 ⁹²	23.72 ⁹⁴	59.56 ³⁶	66.95 ²¹⁴	13.914 ⁷⁰	59.45 ¹⁰⁴	3.567 ⁹¹	65.28 ¹⁴⁰
15.1	31.900 ⁴²	22.78 ¹¹⁵	59.20 ²⁵	64.81 ²⁵¹	13.844 ³⁴	58.41 ¹²¹	3.476 ⁵⁴	63.88 ¹⁶⁷
25.1	31.858 ¹⁰	21.63 ¹³¹	58.95 ¹²	62.30 ²⁷⁸	13.810 ²	57.20 ¹³³	3.422 ¹⁶	62.21 ¹⁸⁶
35.0	31.868 ⁶¹	20.32 ¹⁴³	58.83 ¹	59.52 ²⁹⁹	13.812 ⁴¹	55.87 ¹⁴⁰	3.406 ²³	60.35 ²⁰⁰
35.0	31.929 ⁶¹	18.89 ¹⁴³	58.84 ¹	56.53 ²⁹⁹	13.853 ⁴¹	54.47 ¹⁴⁰	3.429 ²³	58.35 ²⁰⁰
Mean Place	28.069	23.95	53.723	60.88	11.228	46.21	1.264	47.78
Sec δ, Tan δ	1.348	-0.903	3.446	-3.298	1.006	+0.108	1.060	+0.350
Dψ α, Dα α	+0.08	+0.03	+0.14	+0.10	+0.06	0.00	+0.05	-0.01
Dψ δ, Dα δ	+0.2	-0.9	+0.2	-0.9	+0.2	-0.9	+0.2	-0.9

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	c Sagittarii. Mag. 4.6		τ Aquilæ. Mag. 5.6		θ Aquilæ. Mag. 3.4		ο Cygni seq. Mag. 4.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '
	19 57	-27 56	20 0	+ 7 2	20 6	- 1 4	20 10	+46 28
	s	"	s	"	s	"	s	"
Jan. 1.1	29.353	46.08	1.688	22.82	57.853	20.33	57.734	73.18
11.0	29.436 ⁸³	45.44 ⁶⁴	1.743 ⁵⁵	21.39 ¹⁴³	57.911 ⁵⁸	21.30 ⁹⁷	57.712 ²²	70.27 ²⁹¹
21.0	29.559 ¹²³	44.73 ⁷¹	1.837 ⁹⁴	19.96 ¹⁴³	58.002 ⁹¹	22.24 ⁹⁴	57.745 ³³	67.25 ³⁰²
31.0	29.719 ¹⁶⁰	43.96 ⁷⁷	1.962 ¹²⁵	18.61 ¹³⁵	58.128 ¹²⁶	23.11 ⁸⁷	57.831 ⁸⁶	64.22 ³⁰³
Feb. 10.0	29.913 ¹⁹⁴	43.14 ⁸²	2.120 ¹⁵⁸	17.39 ¹²²	58.284 ¹⁵⁶	23.85 ⁷⁴	57.970 ¹³⁰	61.31 ²⁹¹
19.9	30.139 ²²⁶	42.25 ⁸⁹	2.308 ¹⁸⁸	16.38 ¹⁰¹	58.468 ¹⁸⁴	24.42 ⁵⁷	58.159 ¹⁸⁹	58.64 ²⁶⁷
29.9	30.393 ²⁵⁴	41.31 ⁹⁴	2.521 ²¹³	15.62 ⁷⁶	58.679 ²¹¹	24.77 ³⁵	58.395 ²³⁶	56.33 ²³¹
Mar. 10.9	30.670 ²⁷⁷	40.30 ¹⁰¹	2.759 ²³⁸	15.17 ⁴⁵	58.913 ²³⁴	24.87 ¹⁰	58.674 ²⁷⁹	54.45 ¹⁸⁸
20.8	30.969 ²⁹⁹	39.25 ¹⁰⁵	3.018 ²⁵⁹	15.05 ²⁵	59.169 ²⁵⁶	24.69 ¹⁸	58.990 ³¹⁶	53.10 ¹³⁵
30.8	31.285 ³¹⁶	38.18 ¹⁰⁹	3.294 ²⁷⁶	15.30 ²⁵	59.442 ²⁷³	24.22 ⁴⁷	59.335 ³⁴⁵	52.32 ⁷⁸
Apr. 9.8	31.615 ³³⁰	37.05 ¹¹¹	3.581 ²⁸⁷	15.91 ⁶¹	59.730 ²⁸⁸	23.46 ⁷⁶	59.701 ³⁶⁶	52.14 ¹⁸
19.8	31.956 ³⁴¹	35.95 ¹¹⁰	3.881 ³⁰⁰	16.87 ⁹⁶	60.029 ²⁹⁹	22.44 ¹⁰²	60.082 ³⁸¹	52.58 ⁴⁴
29.7	32.301 ³⁴⁵	34.88 ¹⁰⁷	4.184 ³⁰³	18.14 ¹²⁷	60.335 ³⁰⁶	21.16 ¹²⁸	60.466 ³⁸⁴	53.60 ¹⁰²
May 9.7	32.646 ³⁴⁵	33.87 ¹⁰¹	4.488 ³⁰⁴	19.67 ¹⁵³	60.640 ³⁰⁵	19.70 ¹⁴⁶	60.846 ³⁸⁰	55.17 ¹⁵⁷
19.7	32.984 ³³⁸	32.95 ⁹²	4.783 ²⁹⁵	21.45 ¹⁷⁸	60.941 ³⁰¹	18.07 ¹⁶³	61.212 ³⁶⁶	57.25 ²⁰⁸
29.7	33.308 ³²⁴	32.15 ⁸⁰	5.064 ²⁸¹	23.39 ¹⁹⁴	61.230 ²⁸⁹	16.34 ¹⁷³	61.554 ³⁴²	59.76 ²⁵¹
June 8.6	33.610 ³⁰²	31.51 ⁶⁴	5.325 ²⁶¹	25.43 ²⁰⁴	61.500 ²⁷⁰	14.56 ¹⁷⁸	61.863 ³⁰⁹	62.62 ²⁸⁶
18.6	33.885 ²⁷⁵	31.03 ⁴⁸	5.561 ²³⁶	27.55 ²¹²	61.745 ²⁴⁵	12.78 ¹⁷⁸	62.133 ²⁷⁰	65.76 ³¹⁴
28.6	34.125 ²⁴⁰	30.73 ³⁰	5.765 ²⁰⁴	29.63 ²⁰⁸	61.960 ²¹⁵	11.05 ¹⁷³	62.356 ²²³	69.09 ³³³
July 8.5	34.326 ²⁰¹	30.61 ¹²	5.931 ¹⁶⁶	31.67 ²⁰⁴	62.138 ¹⁷⁸	9.41 ¹⁶⁴	62.527 ¹⁷¹	72.52 ²⁴³
18.5	34.480 ¹⁵⁴	30.67 ⁶	6.057 ¹²⁶	33.60 ¹⁹³	62.277 ¹³⁹	7.89 ¹⁵²	62.641 ¹¹⁴	75.97 ³⁴⁵
28.5	34.585 ¹⁰⁵	30.90 ²³	6.139 ⁸²	35.40 ¹⁸⁰	62.372 ⁹⁵	6.51 ¹³⁸	62.697 ⁵⁶	79.37 ³⁴⁰
Aug. 7.5	34.640 ⁵⁵	31.26 ³⁶	6.179 ⁴⁰	37.02 ¹⁶²	62.422 ⁵⁰	5.32 ¹¹⁹	62.693 ⁴	82.63 ³³⁶
17.4	34.645 ⁵	31.73 ⁴⁷	6.173 ⁶	38.43 ¹⁴¹	62.428 ⁶	4.31 ¹⁰¹	62.633 ⁶⁰	85.69 ³⁰⁶
27.4	34.601 ⁴⁴	32.28 ⁵⁵	6.127 ⁴⁶	39.64 ¹²¹	62.392 ³⁶	3.48 ⁸³	62.518 ¹¹⁵	88.50 ²⁶¹
Sept. 6.4	34.513 ⁸⁸	32.87 ⁵⁹	6.040 ⁸⁷	40.64 ¹⁰⁰	62.317 ⁷⁵	2.86 ⁶²	62.354 ¹⁶⁴	90.98 ²⁴⁸
16.4	34.389 ¹²⁴	33.46 ⁵⁹	5.924 ¹¹⁶	41.38 ⁷⁴	62.209 ¹⁰⁸	2.41 ⁴⁵	62.148 ²⁰⁶	93.09 ²¹¹
26.3	34.236 ¹⁵³	34.01 ⁵⁵	5.784 ¹⁴⁰	41.89 ⁵¹	62.077 ¹³²	2.15 ²⁶	61.910 ²²⁸	94.80 ¹⁷¹
Oct. 6.3	34.064 ¹⁷²	34.48 ⁴⁷	5.626 ¹⁵⁸	42.16 ²⁷	61.927 ¹⁵⁰	2.05 ¹⁰	61.646 ²⁶⁴	96.06 ¹²⁶
16.3	33.883 ¹⁸¹	34.85 ³⁷	5.463 ¹⁶³	42.22 ⁶	61.769 ¹⁵⁸	2.12 ⁷	61.369 ²⁷⁷	96.84 ⁷⁸
26.2	33.705 ¹⁷⁸	35.08 ²³	5.301 ¹⁶²	42.03 ¹⁹	61.612 ¹⁵⁷	2.35 ²³	61.088 ²⁶¹	97.12 ²⁶
Nov. 5.2	33.541 ¹⁶⁴	35.19 ¹¹	5.150 ¹⁵¹	41.61 ⁴²	61.465 ¹⁴⁷	2.71 ³⁶	60.815 ²⁷³	96.90 ²²
15.2	33.398 ¹⁴³	35.15 ⁴	5.018 ¹³²	40.97 ⁶⁴	61.336 ¹²⁹	3.21 ⁵⁰	60.560 ²⁵⁵	96.17 ⁷³
25.2	33.287 ¹¹¹	34.96 ¹⁹	4.913 ¹⁰⁵	40.13 ⁸⁴	61.232 ¹⁰⁴	3.83 ⁶²	60.330 ²³⁰	94.93 ¹³⁴
Dec. 5.1	33.213 ⁷⁴	34.66 ³⁰	4.836 ⁷⁷	39.10 ¹⁰³	61.159 ⁷³	4.58 ⁷⁵	60.136 ¹⁹⁴	93.22 ¹⁷¹
15.1	33.180 ³³	34.24 ⁴²	4.794 ⁴²	37.91 ¹¹⁹	61.119 ⁴⁰	5.42 ⁸⁴	59.983 ¹⁵³	91.08 ²¹⁴
25.1	33.189 ⁹	33.73 ⁵¹	4.788 ⁶	36.57 ¹³⁴	61.114 ⁵	6.33 ⁹¹	59.876 ¹⁰⁷	88.57 ²⁵¹
35.1	33.242 ⁵³	33.13 ⁶⁰	4.819 ³¹	35.19 ¹³⁸	61.147 ³³	7.29 ⁹⁶	59.821 ⁵⁵	85.80 ²⁷⁷
Mean Place	29.714	39.49	2.205	25.31	58.275	17.03	59.242	69.86
Sec δ, Tan δ	1.132	-0.530	1.008	+0.124	1.000	-0.019	1.453	+1.054
Dφ α, Dα α	+0.07	+0.02	+0.06	0.00	+0.06	0.00	+0.04	-0.04
Dφ δ, Dα δ	+0.2	-0.9	+0.2	-0.9	+0.2	-0.9	+0.2	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	κ Cephei. Mag. 4.4		ϵ Vulpeculae. Mag. 5.4		α^2 Capricorni. Mag. 3.8		β Capricorni. Mag. 3.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 20 11	° ' +77 27	h m 20 13	° ' +24 24	h m 20 13	° ' -12 48	h m 20 16	° ' -15 2
	s	"	s	"	s	"	s	"
Jan. 1.1	37.36	38.38	10.677	42.62	23.381	26.33	17.309	55.76
11.0	36.98 ³⁸	35.32 ³⁰⁶	10.702 ²⁵	40.41 ²²¹	23.440 ⁵⁹	26.59 ²⁶	17.366 ⁵⁷	55.88 ¹²
21.0	36.80 ¹⁸	32.07 ³²⁵	10.765 ⁶³	38.15 ²²⁶	23.533 ⁹³	26.81 ²²	17.458 ⁹²	55.94 ⁶
31.0	36.80 ⁰	28.74 ³³³	10.867 ¹⁰²	35.93 ²²²	23.661 ¹²⁸	26.94 ¹³	17.585 ¹²⁷	55.92 ²
Feb. 10.0	37.00 ²⁰	25.47 ³²⁷	11.004 ¹³⁷	33.85 ²⁰⁸	23.821 ¹⁶⁰	26.96 ²	17.744 ¹⁶⁹	55.80 ¹²
	38	308	173	186	188	11	187	26
19.9	37.38	22.39	11.177	31.99	24.009	26.85	17.931	55.54
29.9	37.93 ⁵⁵	19.62 ²⁷⁷	11.382 ²⁰⁵	30.44 ¹⁵⁵	24.224 ²¹⁵	26.58 ²⁷	18.146 ²¹⁵	55.14 ⁴⁰
Mar. 10.9	38.65 ⁷²	17.27 ²³⁵	11.615 ²³³	29.28 ¹¹⁶	24.463 ²³⁹	26.14 ⁴⁴	18.385 ²³⁹	54.58 ⁵⁶
20.8	39.48 ⁸³	15.42 ¹⁸⁵	11.875 ²⁶⁰	28.55 ⁷³	24.724 ²⁶¹	25.50 ⁶⁴	18.647 ²⁶²	53.85 ⁷³
30.8	40.41 ⁹³	14.16 ¹²⁶	12.157 ²⁸²	28.31 ²⁴	25.003 ²⁷⁹	24.68 ⁸²	18.928 ²⁸¹	52.96 ⁸⁹
	100	64	300	24	296	98	298	104
Apr. 9.8	41.41	13.52	12.457	28.55	25.299	23.70	19.226	51.92
19.8	42.43 ¹⁰²	13.53 ¹	12.768 ³¹¹	29.27 ⁷²	25.607 ³⁰⁸	22.55 ¹¹⁵	19.536 ³¹⁰	50.75 ¹¹⁷
29.7	43.46 ¹⁰³	14.17 ⁶⁴	13.086 ³¹⁸	30.46 ¹¹⁹	25.922 ³¹⁵	21.28 ¹²⁷	19.853 ³¹⁷	49.48 ¹²⁷
May 9.7	44.44 ⁹⁸	15.42 ¹²⁵	13.403 ³¹⁷	32.08 ¹⁶²	26.239 ³¹⁷	19.93 ¹³⁵	20.173 ³²⁰	48.14 ¹³⁴
19.7	45.37 ⁹³	17.22 ¹⁸⁰	13.712 ³⁰⁹	34.06 ¹⁹⁸	26.552 ³¹³	18.52 ¹⁴¹	20.490 ³¹⁷	46.78 ¹³⁶
	83	232	296	228	302	140	305	135
29.7	46.20	19.54	14.008	36.34	26.854	17.12	20.795	45.43
June 8.6	46.91 ⁷¹	22.29 ²⁷⁵	14.283 ²⁷⁵	38.88 ²⁵⁴	27.140 ²⁸⁶	15.76 ¹³⁶	21.085 ²⁹⁰	44.14 ¹²⁹
18.6	47.47 ⁵⁶	25.39 ³¹⁰	14.528 ²⁴⁵	41.57 ²⁰⁹	27.401 ²⁶¹	14.47 ¹²⁹	21.350 ²⁶⁵	42.95 ¹¹⁹
28.6	47.90 ⁴³	28.75 ³³⁶	14.740 ²¹²	44.35 ²⁷⁸	27.632 ²³¹	13.30 ¹¹⁷	21.586 ²³⁶	41.87 ¹⁰⁶
July 8.5	48.16 ²⁶	32.31 ³⁵⁶	14.911 ¹⁷¹	47.16 ²⁸¹	27.826 ¹⁹⁴	12.26 ¹⁰⁴	21.786 ²⁰⁰	40.94 ⁹³
	8	364	128	277	153	88	158	75
18.5	48.24	35.95	15.039	49.93	27.979	11.38	21.944	40.19
28.5	48.16 ⁸	39.60 ³⁶⁵	15.121 ⁸²	52.59 ²⁶⁶	28.088 ¹⁰⁹	10.68 ⁷⁰	22.057 ¹¹³	39.60 ⁵⁹
Aug. 7.5	47.92 ²⁴	43.19 ³⁵⁹	15.156 ³⁵	55.09 ²⁵⁰	28.151 ⁶³	10.14 ⁵⁴	22.124 ⁶⁷	39.18 ⁴²
17.4	47.50 ⁴²	46.62 ³⁴³	15.145 ⁵¹	57.39 ²³⁰	28.168 ¹⁷	9.77 ³⁷	22.145 ²¹	38.94 ²⁴
27.4	46.94 ⁵⁶	49.84 ³²²	15.089 ⁵⁶	59.43 ²⁰⁴	28.141 ²⁷	9.56 ²¹	22.121 ²⁴	38.84 ¹⁰
	69	294	96	176	68	8	66	3
Sept. 6.4	46.25	52.78	14.993	61.19	28.073	9.48	22.055	38.87
16.4	45.43 ⁸²	55.37 ²⁵⁹	14.863 ¹³⁰	62.65 ¹⁴⁶	27.971 ¹⁰²	9.51 ³	21.955 ¹⁰⁰	39.00 ¹³
26.3	44.51 ⁹²	57.55 ²¹⁸	14.705 ¹⁵⁸	63.78 ¹¹³	27.841 ¹³⁰	9.64 ¹³	21.826 ¹²⁹	39.22 ²²
Oct. 6.3	43.52 ⁹⁹	59.29 ¹⁷⁴	14.528 ¹⁷⁷	64.55 ⁷⁷	27.693 ¹⁴⁸	9.84 ²⁰	21.678 ¹⁴⁸	39.48 ²⁶
16.3	42.48 ¹⁰⁴	60.54 ¹²⁵	14.342 ¹⁸⁶	64.95 ⁴⁰	27.534 ¹⁵⁹	10.10 ²⁶	21.519 ¹⁵⁹	39.78 ³⁰
	107	71	187	3	158	28	160	30
26.2	41.41	61.25	14.155	64.98	27.376	10.38	21.359	40.08
Nov. 5.2	40.34 ¹⁰⁷	61.41 ¹⁶	13.975 ¹⁸⁰	64.64 ³⁴	27.227 ¹⁴⁹	10.69 ³¹	21.208 ¹⁵¹	40.38 ³⁰
15.2	39.31 ¹⁰³	60.99 ⁴²	13.813 ¹⁶²	63.92 ⁷²	27.096 ¹³¹	11.00 ³¹	21.074 ¹³⁴	40.67 ²⁹
25.2	38.33 ⁹⁸	60.00 ⁹⁹	13.672 ¹⁴¹	62.84 ¹⁰⁸	26.990 ¹⁰⁶	11.33 ³³	20.966 ¹⁰⁸	40.94 ²⁷
Dec. 5.1	37.43 ⁹⁰	58.46 ¹⁵⁴	13.562 ¹¹⁰	61.44 ¹⁴⁰	26.915 ⁷⁵	11.65 ³²	20.888 ⁷⁸	41.18 ²⁴
	77	205	76	171	40	33	44	22
15.1	36.66	56.41	13.486	59.73	26.875	11.98	20.844	41.40
25.1	36.02 ⁶⁴	53.91 ²⁵⁰	13.446 ⁴⁰	57.78 ¹⁹⁵	26.870 ⁵	12.29 ³¹	20.838 ⁶	41.59 ¹⁹
35.1	35.54 ⁴⁸	51.04 ²⁸⁷	13.443 ³	55.64 ²¹⁴	26.903 ³³	12.57 ²⁸	20.869 ³¹	41.74 ¹⁵
Mean Place	44.499	32.26	11.441	42.01	23.716	21.57	17.627	50.73
Sec δ , Tan δ	4.606	+4.496	1.098	+0.454	1.026	-0.227	1.035	-0.269
$D\psi\alpha$, $D_{\omega}\alpha$	-0.04	-0.16	+0.05	-0.02	+0.07	+0.01	+0.07	+0.01
$D\psi\delta$, $D_{\omega}\delta$	+0.2	-0.8	+0.2	-0.8	+0.2	-0.8	+0.2	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Pavonis. Mag. 2.1		γ Cygni. Mag. 2.3		π Capricorni. Mag. 5.2		ρ Capricorni. Mag. 5.0	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "
	20 18	-57 0	20 19	+39 58	20 22	-18 29	20 24	-18 5
Jan. 1.1	59.913	28.70	11.602	77.26	30.585	21.43	3.979	37.17
11.0	59.966 ⁵³	28.40 ²³⁰	11.588 ¹⁴	74.55 ²⁷¹	30.638 ⁵³	21.33 ¹⁰	4.029 ⁵⁰	37.10 ⁷
21.0	60.086 ¹²⁰	23.97 ²⁴³	11.623 ³⁵	71.74 ²⁸¹	30.724 ⁸⁶	21.17 ¹⁶	4.115 ⁸⁶	36.94 ¹⁶
31.0	60.271 ¹⁸⁵	21.47 ²⁵⁰	11.705 ⁸²	68.92 ²⁸²	30.847 ¹²³	20.91 ²⁶	4.236 ¹²¹	36.71 ²⁸
Feb. 10.6	60.516 ²⁴⁵	18.96 ²⁵¹	11.834 ¹²⁹	66.20 ²⁷²	31.003 ¹⁵⁶	20.54 ³⁷	4.389 ¹⁵³	36.37 ³⁴
19.9	60.817 ³⁰¹	16.50 ²⁴⁶	12.006 ¹⁷²	63.73 ²⁴⁷	31.188 ¹⁸⁵	20.07 ⁴⁷	4.573 ¹⁸⁴	35.91 ⁴⁶
29.9	61.168 ³⁵¹	14.12 ²³⁸	12.221 ²¹⁵	61.58 ²¹⁵	31.401 ²¹³	19.46 ⁶¹	4.784 ²¹¹	35.32 ⁵⁹
Mar. 10.9	61.563 ³⁹⁵	11.88 ²²⁴	12.473 ²⁵²	59.84 ¹⁷⁴	31.641 ²⁴⁰	18.73 ⁷³	5.020 ²³⁶	34.58 ⁷⁴
20.9	61.998 ⁴³⁵	9.82 ²⁰⁶	12.758 ²⁸⁵	58.60 ¹²⁴	31.902 ²⁶¹	17.84 ⁸⁹	5.282 ²⁶²	33.71 ⁸⁷
30.8	62.464 ⁴⁶⁶	7.96 ¹⁸⁶	13.072 ³¹⁴	57.90 ⁷⁰	32.188 ²⁸⁶	16.82 ¹⁰²	5.562 ²⁸⁰	32.69 ¹⁰²
Apr. 9.8	62.957 ⁴⁹³	6.36 ¹⁶⁰	13.408 ³³⁶	57.78 ¹²	32.488 ³⁰⁰	15.67 ¹¹⁵	5.862 ³⁰⁰	31.55 ¹¹⁴
19.8	63.468 ⁵¹¹	5.02 ¹³⁴	13.759 ³⁵¹	58.25 ⁴⁷	32.800 ³¹²	14.44 ¹²³	6.174 ³¹²	30.31 ¹²⁴
29.7	63.990 ⁵²²	3.99 ¹⁰³	14.115 ³⁵⁶	59.26 ¹⁰¹	33.122 ³²²	13.14 ¹³⁰	6.495 ³²¹	29.00 ¹³¹
May 9.7	64.514 ⁵²⁴	3.29 ⁷⁰	14.470 ³⁵⁵	60.81 ¹⁵⁵	33.449 ³²⁷	11.79 ¹³⁵	6.820 ³²⁵	27.66 ¹³⁴
19.7	65.030 ⁵¹⁶	2.94 ³⁵	14.815 ³⁴⁵	62.82 ²⁰¹	33.774 ³²⁵	10.47 ¹³²	7.143 ³²³	26.32 ¹³⁴
29.7	65.526 ⁴⁹⁶	2.93 ¹	15.143 ³²⁸	65.25 ²⁴³	34.088 ³¹⁴	9.21 ¹²⁶	7.458 ³¹⁵	25.02 ¹³⁰
June 8.6	65.993 ⁴⁶⁷	3.28 ³⁵	15.443 ³⁰⁰	68.01 ²⁷⁶	34.385 ²⁹⁷	8.01 ¹²⁰	7.755 ²⁹⁷	23.81 ¹²¹
18.6	66.418 ⁴²⁵	3.97 ⁶⁹	15.708 ²⁶⁵	71.03 ³⁰²	34.659 ²⁷⁴	6.94 ¹⁰⁷	8.030 ²⁷⁵	22.71 ¹¹⁰
28.6	66.791 ³⁷³	4.99 ¹⁰²	15.933 ²²⁵	74.23 ³²⁰	34.905 ²⁴⁶	6.01 ⁹⁵	8.275 ²⁴⁵	21.75 ⁹⁶
July 8.6	67.105 ³¹⁴	6.29 ¹³⁰	16.112 ¹⁷⁹	77.51 ³²⁸	35.112 ²⁰⁷	5.26 ⁷³	8.483 ²⁰⁸	20.96 ⁷⁹
18.5	67.349 ²⁴⁴	7.85 ¹⁵⁶	16.240 ¹²⁸	80.82 ³³¹	35.278 ¹⁶⁶	4.68 ⁵⁸	8.651 ¹⁶⁸	20.36 ⁶⁰
28.5	67.519 ¹⁷⁰	9.61 ¹⁷⁶	16.315 ⁷⁵	84.06 ³²⁴	35.402 ¹²⁴	4.28 ⁴⁰	8.774 ¹²³	19.93 ⁴³
Aug. 7.5	67.610 ⁹¹	11.49 ¹⁸⁸	16.336 ²¹	87.16 ³¹⁰	35.475 ⁷³	4.06 ²²	8.850 ⁷⁶	19.69 ²⁴
17.4	67.622 ¹²	13.43 ¹⁹⁴	16.304 ³²	90.08 ²⁹²	35.502 ²⁷	4.00 ⁶	8.879 ²⁹	19.60 ⁹
27.4	67.557 ⁶⁵	15.36 ¹⁹³	16.221 ⁸³	92.75 ²⁶⁷	35.484 ¹⁸	4.09 ⁹	8.861 ¹⁸	19.66 ⁶
Sept. 6.4	67.419 ¹³⁸	17.19 ¹⁸³	16.093 ¹²⁸	95.11 ²³⁶	35.422 ⁶²	4.28 ¹⁹	8.801 ⁶⁰	19.84 ¹⁸
16.4	67.218 ²⁰¹	18.85 ¹⁶⁶	15.924 ¹⁶⁹	97.12 ²⁰¹	35.323 ⁹⁹	4.57 ²⁹	8.706 ⁹⁵	20.13 ²⁹
26.3	66.965 ²⁵³	20.27 ¹⁴²	15.724 ²⁰⁰	98.74 ¹⁶²	35.197 ¹²⁶	4.91 ³⁴	8.579 ¹²⁷	20.46 ³³
Oct. 6.3	66.673 ²⁹²	21.37 ¹¹⁰	15.502 ²²²	99.94 ¹²⁰	35.048 ¹⁴⁹	5.29 ³⁸	8.431 ¹⁴⁸	20.83 ³⁷
16.3	66.358 ³¹⁵	22.10 ⁷³	15.265 ²³⁷	100.70 ⁷⁶	34.886 ¹⁶²	5.67 ³⁸	8.272 ¹⁵⁹	21.19 ³⁶
26.3	66.037 ³²¹	22.43 ³³	15.025 ²⁴⁰	100.99 ²⁹	34.725 ¹⁶¹	6.01 ³⁴	8.111 ¹⁶¹	21.54 ³⁵
Nov. 5.2	65.727 ³¹⁰	22.34 ⁹	14.790 ²³⁵	100.80 ¹⁹	34.570 ¹⁵⁵	6.31 ³⁰	7.956 ¹⁵⁵	21.85 ³¹
15.2	65.443 ²⁸⁴	21.81 ⁵³	14.572 ²¹⁸	100.14 ⁶⁶	34.434 ¹³⁶	6.55 ²⁴	7.818 ¹³⁸	22.11 ²⁶
25.2	65.199 ²⁴⁴	20.87 ⁹⁴	14.376 ¹⁹⁶	99.00 ¹¹⁴	34.321 ¹¹³	6.73 ¹⁸	7.705 ¹¹³	22.31 ²⁰
Dec. 5.1	65.007 ¹⁹²	19.53 ¹³⁴	14.211 ¹⁶⁵	97.42 ¹⁵⁸	34.238 ⁸³	6.88 ¹⁵	7.621 ⁸⁴	22.46 ¹⁵
15.1	64.876 ¹³¹	17.85 ¹⁶⁸	14.084 ¹²⁷	95.44 ¹⁹⁸	34.189 ⁴⁹	6.96 ⁸	7.571 ⁵⁰	22.56 ¹⁰
25.1	64.810 ⁶⁶	15.89 ¹⁹⁶	13.997 ⁸⁷	93.13 ²³¹	34.177 ¹²	6.96 ⁰	7.558 ¹³	22.59 ³
35.1	64.815 ⁵	13.69 ²²⁰	13.955 ⁴²	90.53 ²⁶⁰	34.203 ²⁶	6.90 ⁶	7.581 ²³	22.56 ³
Mean Place	60.575	19.20	12.795	74.03	30.878	15.96	4.266	31.78
Sec δ , Tan δ	1.836	-1.540	1.305	+0.839	1.054	-0.334	1.052	-0.327
$D\psi a, D_{\omega} a$	+0.09	+0.06	+0.04	-0.03	+0.07	+0.01	+0.07	+0.01
$D\psi \delta, D_{\omega} \delta$	+0.2	-0.8	+0.2	-0.8	+0.2	-0.8	+0.2	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	41 Cygai. Mag. 4.1		θ Cephei. Mag. 4.3		ε Delphini. Mag. 4.0		Groombridge 3241. Mag. 6.4	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 20 25	° ' +30 5	h m 20 28	° ' +62 42	h m 20 29	° ' +11 0	h m 20 30	° ' +72 14
	s	"	s	"	s	"	s	"
Jan. 1.1	56.983	17.90	7.73	47.95	11.516	60.71	18.09	57.62
11.0	56.985 ²	15.53 ²³⁷	7.60 ¹³	44.95 ³⁰⁰	11.542 ²⁶	59.17 ¹⁵⁴	17.81 ²⁸	54.63 ²⁹⁹
21.0	57.028 ⁴³	13.08 ²⁴⁵	7.54 ⁶	41.75 ³²⁰	11.603 ⁶¹	57.62 ¹⁵⁵	17.66 ¹⁵	51.44 ³¹⁹
31.0	57.111 ⁸³	10.66 ²⁴²	7.57 ³	38.47 ³²⁸	11.697 ⁹⁴	56.11 ¹⁵¹	17.64 ²	48.12 ³³²
Feb. 10.0	57.234 ¹²³	8.32 ²³⁴	7.68 ¹¹	35.24 ³²³	11.825 ¹²⁸	54.72 ¹³⁹	17.75 ¹¹	44.83 ³²⁹
19.9	57.394 ¹⁶⁰	6.21 ²¹¹	7.88 ²⁰	32.19 ³⁰⁵	11.984 ¹⁵⁹	53.54 ¹¹⁸	18.00 ²⁵	41.68 ³¹⁵
29.9	57.590 ¹⁹⁶	4.41 ¹⁸⁰	8.16 ²⁸	29.44 ²⁷⁵	12.171 ¹⁸⁷	52.59 ⁹⁶	18.37 ³⁷	38.81 ²⁸⁷
Mar. 10.9	57.819 ²²⁹	2.98 ¹⁴³	8.52 ³⁶	27.10 ²³⁴	12.386 ²¹⁵	51.97 ⁶²	18.85 ⁴⁸	36.34 ²⁴⁷
20.9	58.078 ²⁵⁹	2.02 ⁹⁶	8.93 ⁴¹	25.26 ¹⁸⁴	12.626 ²⁴⁰	51.71 ²⁶	19.43 ⁵⁸	34.35 ¹⁹⁹
30.8	58.363 ²⁸⁵	1.54 ⁴⁸	9.39 ⁴⁶	24.00 ¹²⁶	12.889 ²⁶³	51.82 ¹¹	20.08 ⁶⁵	32.94 ¹⁴¹
	306	6	50	64	280	48	72	80
Apr. 9.8	58.669	1.60	9.89	23.36	13.169	52.30	20.80	32.14
19.8	58.989 ³²⁰	2.17 ⁵⁷	10.41 ⁵²	23.36 ⁰	13.464 ²⁹⁵	53.18 ⁸⁸	21.55 ⁷⁵	31.95 ¹⁹
29.7	59.318 ³²⁹	3.24 ¹⁰⁷	10.95 ⁵⁴	24.00 ⁶⁴	13.770 ³⁰⁶	54.41 ¹²³	22.30 ⁷⁵	32.42 ⁴⁷
May 9.7	59.648 ³³⁰	4.78 ¹⁵⁴	11.48 ⁵³	25.25 ¹²⁵	14.078 ³⁰⁸	55.96 ¹⁵⁵	23.05 ⁷⁵	33.50 ¹⁰⁸
19.7	59.971 ³²³	6.73 ¹⁹⁵	11.99 ⁵¹	27.06 ¹⁸¹	14.383 ³⁰⁵	57.77 ¹⁸¹	23.76 ⁷¹	35.18 ¹⁶⁸
	310	233	47	233	296	204	66	221
29.7	60.281	9.06	12.46	29.39	14.679	59.81	24.42	37.39
June 8.6	60.570 ²⁸⁹	11.66 ²⁶⁰	12.88 ⁴²	32.15 ²⁷⁶	14.958 ²⁷⁹	61.99 ²¹⁸	25.00 ⁵⁸	40.04 ²⁶⁵
18.6	60.830 ²⁶⁰	14.47 ²⁸¹	13.24 ³⁶	35.27 ³¹²	15.214 ²⁵⁶	64.26 ²²⁷	25.49 ⁴⁹	43.07 ³⁰³
28.6	61.056 ²²⁸	17.42 ²⁹⁵	13.54 ³⁰	38.65 ³³⁸	15.439 ²²⁵	66.57 ²³¹	25.88 ³⁹	46.41 ³³⁴
July 8.6	61.240 ¹⁸⁴	20.42 ³⁰⁰	13.76 ²²	42.24 ³⁵⁹	15.631 ¹⁹²	68.84 ²²⁷	26.16 ²⁸	49.95 ³⁵⁴
	139	300	14	367	150	220	15	368
18.5	61.379	23.42	13.90	45.91	15.781	71.04	26.31	53.63
28.5	61.470 ⁹¹	26.34 ²⁹²	13.96 ⁶	49.60 ³⁰⁹	15.889 ¹⁰⁸	73.11 ²⁰⁷	26.35 ⁴	57.35 ³⁷²
Aug. 7.5	61.513 ⁴³	29.12 ²⁷⁸	13.94 ²	53.22 ³⁶²	15.951 ⁶²	75.02 ¹⁹¹	26.26 ⁹	61.02 ³⁶⁷
17.4	61.506 ⁷	31.70 ²⁵⁸	13.82 ¹²	56.69 ³⁴⁷	15.969 ¹⁸	76.72 ¹⁷⁰	26.06 ²⁰	64.58 ³⁵⁶
27.4	61.454 ⁵²	34.05 ²³⁵	13.64 ¹⁸	59.95 ³²⁶	15.944 ²⁵	78.22 ¹⁵⁰	25.74 ³²	67.94 ³³⁶
	95	205	26	297	65	125	42	310
Sept. 6.4	61.359	36.10	13.38	62.92	15.879	79.47	25.32	71.04
16.4	61.228 ¹³¹	37.84 ¹⁷⁴	13.06 ³²	65.54 ²⁶²	15.780 ⁹⁹	80.47 ¹⁰⁰	24.81 ⁵¹	73.82 ²⁷⁸
26.3	61.066 ¹⁶²	39.23 ¹³⁹	12.69 ³⁷	67.77 ²²³	15.653 ¹²⁷	81.21 ⁷⁴	24.22 ⁵⁹	76.21 ²³⁹
Oct. 6.3	60.881 ¹⁸⁵	40.24 ¹⁰¹	12.28 ⁴¹	69.54 ¹⁷⁷	15.506 ¹⁴⁷	81.69 ⁴⁸	23.57 ⁶⁵	78.15 ¹⁹⁴
16.3	60.686 ¹⁹⁵	40.85 ⁶¹	11.84 ⁴⁴	70.82 ¹²⁸	15.348 ¹⁵⁸	81.91 ²²	22.87 ⁷⁰	79.62 ¹⁴⁷
	201	21	40	75	162	5	72	92
26.3	60.485	41.06	11.38	71.57	15.186	81.86	22.15	80.54
Nov. 5.2	60.291 ¹⁹⁴	40.85 ²¹	10.93 ⁴⁵	71.77 ²⁰	15.030 ¹⁵⁶	81.55 ³¹	21.42 ⁷³	80.91 ³⁷
15.2	60.110 ¹⁸¹	40.23 ⁶²	10.49 ⁴⁴	71.40 ³⁷	14.888 ¹⁴²	80.99 ⁵⁶	20.71 ⁷¹	80.70 ²¹
25.2	59.951 ¹⁵⁹	39.22 ¹⁰¹	10.08 ⁴¹	70.46 ⁹⁴	14.767 ¹²¹	80.18 ⁸¹	20.03 ⁶⁸	79.91 ⁷⁹
Dec. 5.1	59.820 ¹³¹	37.80 ¹⁴²	9.71 ³⁷	68.98 ¹⁴⁸	14.672 ⁹⁵	79.16 ¹⁰²	19.41 ⁶²	78.55 ¹³⁶
	98	175	32	200	65	122	55	189
15.1	59.722	36.05	9.39	66.98	14.607	77.94	18.86	76.66
25.1	59.659 ⁶³	34.02 ²⁰³	9.13 ²⁶	64.53 ²⁴⁵	14.575 ³²	76.56 ¹³⁸	18.40 ⁴⁶	74.30 ²³⁶
35.1	59.635 ²⁴	31.76 ²²⁶	8.94 ¹⁹	61.73 ²⁸⁰	14.577 ²	75.07 ¹⁴⁹	18.05 ³⁵	71.51 ²⁷⁹
Mean Place	57.846	15.56	10.504	41.18	12.011	61.28	22.763	49.78
Sec δ, Tan δ	1.156	+0.579	2.181	+1.939	1.019	+0.195	3.280	+3.124
D _φ a, D _α a	+0.05	-0.02	+0.02	-0.08	+0.06	-0.01	0.00	-0.13
D _φ δ, D _α δ	+0.2	-0.8	+0.2	-0.8	+0.2	-0.8	+0.2	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Indi. Mag. 3.2		β Delphini. Mag. 3.7		ν Capricorni. Mag. 5.3		α Delphini. Mag. 3.9	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 20 31	° ' " -47 34	h m 20 33	° ' " +14 17	h m 20 35	° ' " -18 25	h m 20 35	° ' " +15 36
	s	"	s	"	s	"	s	"
Jan. 1.1	39.337	76.74	36.112	68.23	15.934	71.36	43.659	55.55
11.1	39.376 ³⁹	74.94 ¹⁸⁰	36.131 ¹⁹	66.55 ¹⁶⁸	15.973 ³⁹	71.26 ¹⁰	43.675 ¹⁶	53.82 ¹⁷³
21.0	39.468 ⁹²	73.00 ¹⁹⁴	36.185 ⁵⁴	64.84 ¹⁷¹	16.048 ⁷⁵	71.08 ¹⁸	43.725 ⁵⁰	52.05 ¹⁷⁷
31.0	39.612 ¹⁴⁴	70.96 ²⁰⁴	36.274 ⁸⁹	63.17 ¹⁶⁷	16.157 ¹⁰⁹	70.78 ³⁰	43.810 ⁸⁵	50.32 ¹⁷³
Feb. 10.0	39.802 ¹⁹⁰	68.85 ²¹¹	36.394 ¹²⁰	61.62 ¹⁵⁵	16.298 ¹⁴¹	70.39 ³⁹	43.929 ¹¹⁹	48.71 ¹⁶¹
19.9	40.036 ²³⁴	66.73 ²¹²	36.548 ¹⁵⁴	60.25 ¹³⁷	16.471 ¹⁷³	69.87 ⁵²	44.080 ¹⁵¹	47.28 ¹⁴³
29.9	40.312 ²⁷⁶	64.64 ²⁰⁹	36.731 ¹⁸³	59.16 ¹⁰⁹	16.672 ²⁰¹	69.21 ⁶⁶	44.261 ¹⁸¹	46.12 ¹¹⁶
Mar. 10.9	40.625 ³¹³	62.59 ²⁰⁵	36.944 ²¹³	58.38 ⁷⁸	16.899 ²²⁷	68.41 ⁸⁰	44.472 ²¹¹	45.28 ⁸⁴
20.9	40.972 ³⁴⁷	60.63 ¹⁹⁶	37.183 ²³⁹	57.98 ⁴⁰	17.152 ²⁵³	67.46 ⁹⁵	44.709 ²³⁷	44.82 ⁴⁶
30.8	41.346 ³⁷⁴	58.79 ¹⁸⁴	37.444 ²⁶¹	57.96 ²	17.427 ²⁷⁵	66.38 ¹⁰⁸	44.971 ²⁶²	44.77 ⁵
Apr. 9.8	41.746 ⁴⁰⁰	57.11 ¹⁶⁸	37.725 ²⁸¹	58.37 ⁴¹	17.720 ²⁹³	65.16 ¹²²	45.252 ²⁸¹	45.13 ³⁶
19.8	42.164 ⁴¹⁸	55.61 ¹⁵⁰	38.021 ²⁹⁶	59.18 ⁸¹	18.031 ³¹¹	63.85 ¹³¹	45.548 ²⁹⁶	45.91 ⁷⁸
29.8	42.595 ⁴³¹	54.34 ¹²⁷	38.328 ³⁰⁷	60.37 ¹¹⁹	18.352 ³²¹	62.48 ¹³⁷	45.856 ³⁰⁸	47.09 ¹¹⁸
May 9.7	43.031 ⁴³⁶	53.31 ¹⁰³	38.639 ³¹¹	61.92 ¹⁵⁵	18.679 ³²⁷	61.06 ¹⁴²	46.167 ³¹¹	48.63 ¹⁵⁴
19.7	43.465 ⁴³⁴	52.57 ⁷⁴	38.946 ³⁰⁷	63.75 ¹⁸³	19.005 ³²⁶	59.66 ¹⁴⁰	46.478 ³¹¹	50.47 ¹⁸⁴
29.7	43.887 ⁴²²	52.11 ⁴⁶	39.245 ²⁹⁹	65.84 ²⁰⁹	19.324 ³¹⁹	58.31 ¹³⁵	46.777 ²⁹⁹	52.57 ²¹⁰
June 8.6	44.287 ⁴⁰⁰	51.96 ¹⁵	39.528 ²⁸³	68.09 ²²⁵	19.628 ³⁰⁴	57.04 ¹²⁷	47.061 ²⁸⁴	54.86 ²²⁹
18.6	44.658 ³⁷¹	52.13 ¹⁷	39.786 ²⁵⁸	70.47 ²³⁸	19.911 ²⁸³	55.91 ¹¹³	47.321 ²⁶⁰	57.28 ²⁴²
28.6	44.988 ³³⁰	52.59 ⁴⁶	40.016 ¹⁹³	72.91 ²⁴⁴	20.164 ²⁵³	54.91 ¹⁰⁰	47.552 ²³¹	59.76 ²⁴⁸
July 8.6	45.270 ²⁸²	53.35 ⁷⁶	40.209 ²³⁰	75.33 ²⁴²	20.383 ²¹⁹	54.08 ⁸³	47.747 ¹⁹⁵	62.24 ²⁴⁸
18.5	45.497 ²²⁷	54.37 ¹⁰²	40.362 ¹⁵³	77.69 ²³⁶	20.561 ¹⁷⁸	53.46 ⁶²	47.901 ¹⁵⁴	64.67 ²⁴³
28.5	45.664 ¹⁶⁷	55.61 ¹²⁴	40.472 ¹¹⁰	79.94 ²²⁵	20.695 ¹³⁴	53.02 ⁴⁴	48.012 ¹¹¹	66.98 ²³¹
Aug. 7.5	45.767 ¹⁰³	57.01 ¹⁴⁰	40.537 ⁶⁵	82.02 ²⁰⁸	20.782 ⁸⁷	52.77 ²⁵	48.078 ⁶⁶	69.14 ²¹⁶
17.5	45.803 ³⁶	58.53 ¹⁵²	40.557 ²⁰	83.92 ¹⁹⁰	20.821 ³⁹	52.70 ⁷	48.099 ²¹	71.11 ¹⁹⁷
27.4	45.777 ²⁶	60.11 ¹⁵⁸	40.533 ²⁴	85.58 ¹⁶⁶	20.814 ⁷	52.78 ⁸	48.076 ²³	72.84 ¹⁷³
Sept. 6.4	45.689 ⁸⁸	61.65 ¹⁵⁴	40.469 ⁶⁴	87.01 ¹⁴³	20.764 ⁵⁰	53.00 ²²	48.012 ⁶⁴	74.35 ¹⁵¹
16.4	45.548 ¹⁴¹	63.12 ¹⁴⁷	40.370 ⁹⁹	88.16 ¹¹⁵	20.675 ⁸⁹	53.32 ³²	47.914 ⁹⁸	75.56 ¹²¹
26.3	45.362 ¹⁸⁶	64.42 ¹³⁰	40.243 ¹²⁷	89.04 ⁸⁸	20.555 ¹²⁰	53.69 ³⁷	47.786 ¹²⁸	76.51 ⁹⁵
Oct. 6.3	45.144 ²¹⁸	65.49 ¹⁰⁷	40.096 ¹⁴⁷	89.63 ⁵⁹	20.413 ¹⁴²	54.10 ⁴¹	47.638 ¹⁴⁸	77.15 ⁶⁴
16.3	44.906 ²³⁸	66.29 ⁸⁰	39.935 ¹⁶¹	89.94 ³¹	20.257 ¹⁵⁶	54.51 ⁴¹	47.476 ¹⁶²	77.49 ³⁴
26.3	44.660 ²⁴⁶	66.78 ⁴⁹	39.771 ¹⁶⁴	89.96 ²	20.097 ¹⁶⁰	54.90 ³⁹	47.311 ¹⁶⁵	77.55 ⁶
Nov. 5.2	44.419 ²⁴¹	66.92 ¹⁴	39.612 ¹⁵⁹	89.68 ²⁸	19.942 ¹⁵⁵	55.25 ³⁵	47.150 ¹⁶¹	77.30 ²⁵
15.2	44.199 ²²⁰	66.71 ²¹	39.465 ¹⁴⁷	89.13 ⁵⁵	19.801 ¹⁴¹	55.54 ²⁹	47.001 ¹⁴⁹	76.76 ⁵⁴
25.2	44.008 ¹⁹¹	66.15 ⁵⁶	39.339 ¹²⁶	88.30 ⁸³	19.684 ¹¹⁷	55.77 ²³	46.871 ¹³⁰	75.92 ⁸⁴
Dec. 5.2	43.858 ¹⁵⁰	65.26 ⁸⁹	39.237 ¹⁰²	87.22 ¹²⁹	19.593 ⁹¹	55.92 ¹⁵	46.768 ¹⁰³	74.83 ¹⁰⁹
15.1	43.755 ¹⁰³	64.07 ¹¹⁹	39.166 ⁷¹	85.93 ¹²⁹	19.536 ⁵⁷	56.02 ¹⁰	46.393 ⁷⁵	73.50 ¹³³
25.1	43.703 ⁵²	62.61 ¹⁴⁶	39.127 ³⁹	84.44 ¹⁴⁹	19.513 ²³	56.04 ²	46.650 ⁴³	71.98 ¹⁵²
35.1	43.705 ²	60.92 ¹⁶⁹	39.122 ⁵	82.81 ¹⁶³	19.526 ¹³	55.99 ⁵	46.642 ⁸	70.30 ¹⁶⁸
Mean Place	39.731	67.61	36.640	68.02	16.187	66.01	44.201	55.00
Sec δ , Tan δ	1.483	-1.095	1.032	+0.255	1.054	-0.333	1.039	+0.280
$D\phi\alpha$, $D\omega\alpha$	+0.08	+0.04	+0.06	-0.01	+0.07	+0.01	+0.06	-0.01
$D\phi\delta$, $D\omega\delta$	+0.2	-0.8	+0.2	-0.8	+0.2	-0.8	+0.3	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Pavonis. Mag. 3.6		α Cygni. (Deneb.) Mag. 1.3		δ Delphini. Mag. 4.5		ψ Capricorni. Mag. 4.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 20 37	° ' -66 30	h m 20 38	° ' +44 58	h m 20 39	° ' +14 46	h m 20 41	° ' -25 34
	s	"	s	"	s	"	s	"
Jan. 1.1	23.28	33.31	32.736	52.20	31.727	21.37	7.271	30.45
11.1	23.26 ²	30.59 ²⁷²	32.687 ⁴⁰	49.50 ²⁷⁰	31.740 ¹³	19.70 ¹⁶⁷	7.305 ³⁴	29.93 ⁵²
21.0	23.34 ⁸	27.70 ²⁸⁹	32.688 ¹	46.63 ²⁸⁷	31.787 ⁴⁷	17.99 ¹⁷¹	7.377 ⁷²	29.29 ⁶⁴
31.0	23.52 ¹⁸	24.71 ²⁹⁹	32.739 ⁵¹	43.71 ²⁹²	31.869 ⁸²	16.32 ¹⁶⁷	7.485 ¹⁰⁸	28.54 ⁷⁵
Feb. 10.0	23.78 ²⁶	21.69 ³⁰²	32.842 ¹⁰³	40.85 ²⁸⁶	31.984 ¹¹⁵	14.75 ¹⁵⁷	7.627 ¹⁴²	27.69 ⁸⁵
19.9	24.13 ³⁵	18.73 ²⁹⁶	32.994 ¹⁵²	38.18 ²⁶⁷	32.131 ¹⁴⁷	13.37 ¹³⁸	7.802 ¹⁷⁵	26.73 ⁹⁶
29.9	24.54 ⁴¹	15.87 ²⁸⁶	33.194 ²⁰⁰	35.79 ²³⁹	32.309 ¹⁷⁸	12.26 ¹¹¹	8.007 ²⁰⁵	25.66 ¹⁰⁷
Mar. 10.9	25.02 ⁴⁸	13.17 ²⁷⁰	33.440 ²⁴⁶	33.81 ¹⁹⁸	32.517 ²⁰⁸	11.46 ⁸⁰	8.240 ²³³	24.48 ¹¹⁸
20.9	25.56 ⁵⁴	10.70 ²⁴⁷	33.724 ²⁸⁴	32.30 ¹⁵¹	32.751 ²³⁴	11.02 ⁴⁴	8.500 ²⁸⁰	23.22 ¹²⁶
30.8	26.14 ⁵⁸	8.49 ²²¹	34.044 ³²⁰	31.34 ⁹⁶	33.009 ²⁵⁸	10.98 ⁴	8.784 ²⁸⁴	21.89 ¹³³
Apr. 9.8	26.77 ⁶³	6.57 ¹⁹²	34.393 ³⁴⁹	30.94 ⁴⁰	33.287 ²⁷⁸	11.36 ³⁸	9.089 ³⁰⁵	20.50 ¹³⁹
19.8	27.43 ⁶⁶	5.00 ¹⁵⁷	34.760 ³⁶⁷	31.14 ²⁰	33.582 ²⁹⁵	12.14 ⁷⁸	9.410 ³²¹	19.07 ¹⁴³
29.8	28.11 ⁶⁸	3.81 ¹¹⁹	35.139 ³⁷⁹	31.93 ⁷⁹	33.888 ³⁰⁶	13.31 ¹¹⁷	9.744 ³³⁴	17.65 ¹⁴²
May 9.7	28.79 ⁶⁸	3.01 ⁸⁰	35.520 ³⁸¹	33.27 ¹³⁴	34.199 ³¹¹	14.84 ¹⁵³	10.085 ³⁴¹	16.27 ¹³⁸
19.7	29.47 ⁶⁸	2.63 ³⁸	35.893 ³⁷³	35.13 ¹⁸⁶	34.508 ³⁰⁹	16.66 ¹⁸²	10.426 ³⁴¹	14.97 ¹³⁰
29.7	30.13 ⁶⁶	2.67 ⁴	36.250 ³⁵⁷	37.44 ²³¹	34.808 ³⁰⁰	16.66 ²⁰⁸	10.426 ³³⁵	14.97 ¹¹⁹
June 8.6	30.75 ⁶²	3.14 ⁴⁷	36.581 ²³¹	40.13 ²⁶⁹	35.093 ²⁸⁵	18.74 ²²⁶	10.761 ³²⁰	13.78 ¹⁰⁴
18.6	31.32 ⁵⁷	3.98 ⁸⁴	36.877 ²⁹⁶	43.14 ³⁰¹	35.355 ²⁶²	21.00 ²³⁹	11.081 ²⁹⁹	11.87 ⁸⁷
28.6	31.83 ⁵¹	5.23 ¹²⁵	37.131 ²⁵⁴	46.36 ³²²	35.589 ²³⁴	23.39 ²⁴⁵	11.380 ²⁷⁰	11.87 ⁶⁶
July 8.6	32.26 ⁴³	6.82 ¹⁵⁹	37.336 ²⁰⁵	49.73 ³³⁷	35.787 ¹⁹⁸	25.84 ²⁴⁵	11.650 ²³⁴	10.74 ⁴⁷
18.5	32.60 ³⁴	8.70 ¹⁸⁸	37.489 ¹⁵³	53.16 ³⁴³	35.946 ¹⁵⁹	28.29 ²³⁹	11.884 ¹⁹²	10.51 ²³
28.5	32.83 ²³	10.80 ²¹⁰	37.585 ⁹⁶	56.57 ³⁴¹	36.063 ¹¹⁷	30.68 ¹¹⁷	12.076 ¹⁴⁶	10.51 ⁴
Aug. 7.5	32.97 ¹⁴	13.06 ²²⁶	37.624 ³⁹	59.89 ³³²	36.132 ⁶⁹	32.97 ²²⁹	12.222 ¹⁴⁶	10.47 ¹⁷
17.5	33.01 ⁴	15.39 ²³³	37.606 ¹⁸	63.06 ³¹⁷	36.157 ²⁵	35.08 ²¹¹	12.320 ⁹⁸	10.64 ³⁷
27.4	32.94 ⁷	17.73 ²³⁴	37.533 ⁷³	65.99 ²⁹³	36.138 ¹⁹	37.02 ¹⁹⁴	12.367 ¹⁷¹	10.97 ³³
Sept. 6.4	32.76 ¹⁸	19.96 ²²³	37.409 ¹²⁴	68.64 ²⁸⁵	36.079 ⁵⁹	38.73 ¹⁴⁷	12.365 ⁴⁸	11.45 ⁵⁸
16.4	32.49 ²⁷	21.99 ²⁰³	37.242 ¹⁶⁷	70.96 ²³²	35.985 ⁹⁴	40.20 ¹¹⁹	12.317 ⁸⁹	12.03 ⁶⁴
26.3	32.16 ³³	23.75 ¹⁷⁶	37.037 ²⁰⁵	72.90 ¹⁹⁴	35.985 ¹²⁴	41.39 ⁹³	12.228 ¹²³	12.67 ⁶⁶
Oct. 6.3	31.76 ⁴⁰	25.15 ¹⁴⁰	36.805 ²³²	74.42 ¹⁵²	35.861 ¹⁴⁵	42.32 ⁶³	12.105 ¹⁴⁸	13.33 ⁶⁴
16.3	31.32 ⁴⁴	26.13 ⁹⁸	36.554 ²⁵¹	75.49 ¹⁰⁷	35.716 ¹⁵⁹	42.95 ³⁴	11.957 ¹⁶⁴	13.97 ⁵⁸
26.3	30.86 ⁴⁶	26.63 ⁵⁰	36.293 ²⁶¹	76.07 ⁵⁸	35.557 ¹⁶⁴	43.29 ⁵	11.793 ¹⁶⁹	14.55 ⁴⁸
Nov. 5.2	30.40 ⁴⁶	26.62 ¹	36.305 ²⁵⁸	76.16 ⁹	35.393 ¹⁵⁹	43.34 ²⁵	11.624 ¹⁶⁴	15.03 ³⁷
15.2	29.97 ⁴³	26.10 ⁵²	35.787 ²⁴⁸	75.74 ⁴²	35.234 ¹⁴⁸	43.09 ⁵²	11.460 ¹⁵²	15.40 ²²
25.2	29.58 ³⁹	25.08 ¹⁰²	35.559 ²²⁸	74.82 ⁹²	35.086 ¹³⁰	42.57 ⁸⁰	11.308 ¹²⁸	15.62 ⁹
Dec. 5.2	29.25 ³³	23.60 ¹⁴⁸	35.359 ²⁰⁰	73.42 ¹⁴⁰	34.956 ¹⁰⁴	41.77 ¹⁰⁶	11.180 ¹⁰¹	15.71 ⁵
15.1	29.00 ²⁵	21.69 ¹⁹¹	35.194 ¹⁶⁵	71.57 ¹⁸⁵	34.852 ⁷⁶	40.71 ¹²⁸	11.079 ⁶⁶	15.66 ²⁰
25.1	28.84 ¹⁶	19.40 ²²⁹	35.069 ¹²⁵	69.33 ²²⁴	34.776 ⁴⁵	39.43 ¹⁴⁷	11.013 ³¹	15.46 ³⁴
35.1	28.77 ⁷	16.82 ²⁵⁸	34.989 ⁸⁰	66.78 ²⁵⁵	34.731 ¹⁰	37.96 ¹⁶³	10.982 ⁶	15.12 ⁴⁴
Mean Place	24.239	22.61	34.074	46.61	32.244	20.78	7.495	24.00
Sec δ , Tan δ	2.509	-2.301	1.414	+0.999	1.034	+0.264	1.108	-0.479
$D\psi \alpha$, $D_{\omega} \alpha$	+0.11	+0.10	+0.04	-0.04	+0.06	-0.01	+0.07	+0.02
$D\psi \delta$, $D_{\omega} \delta$	+0.3	-0.8	+0.3	-0.8	+0.3	-0.8	+0.3	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Delphini seq. Mag. 4.5		ε Cygni. Mag. 2.6		ε Aquarii. Mag. 3.8		77 Cephei. Mag. 3.6	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	20 42	+15 49	20 42	+33 39	20 43	- 9 47	20 43	+61 30
	s	"	s	"	s	"	s	"
Jan. 1.1	45.139	16.29	47.836	22.24	7.542	78.01	32.47	52.28
11.1	45.149 10	14.58 171	47.816 20	19.87 237	7.571 29	78.40 39	32.32 15	49.43 285
21.0	45.191 42	12.82 176	47.836 20	17.37 250	7.634 63	78.73 33	32.24 8	46.33 310
31.0	45.270 79	11.09 173	47.898 62	14.84 253	7.728 94	78.96 23	32.24 0	43.13 320
Feb. 10.0	45.381 111	9.47 162	48.002 104	12.39 245	7.855 127	79.08 12	32.33 9	39.94 319
	143	144	142	226	156	3	16	304
19.9	45.524	8.03	48.144	10.13	8.011	79.05	32.49	36.90
29.9	45.699 175	6.85 118	48.327 183	8.16 197	8.195 184	78.84 21	32.75 26	34.11 279
Mar. 10.9	45.905 206	5.99 86	48.547 220	6.55 161	8.407 212	78.44 40	33.06 31	31.71 240
20.9	46.137 232	5.50 49	48.800 253	5.39 116	8.644 237	77.82 62	33.44 38	29.79 192
30.8	46.393 256	5.41 9	49.082 282	4.73 66	8.905 261	76.99 83	33.87 43	28.43 136
	279	34	307	14	279	103	47	78
Apr. 9.8	46.672	5.75	49.389	4.59	9.184	75.96	34.34	27.65
19.8	46.967 295	6.51 76	49.715 326	4.99 40	9.480 296	74.72 124	34.85 51	27.52 13
29.8	47.275 308	7.65 114	50.052 337	5.91 92	9.789 309	73.34 138	35.36 51	28.02 50
May 9.7	47.587 312	9.16 151	50.394 342	7.34 143	10.104 315	71.84 150	35.88 52	29.13 111
19.7	47.898 311	10.98 182	50.733 339	9.21 187	10.420 316	70.26 158	36.38 50	30.80 167
	302	209	326	227	309	160	48	223
29.7	48.200	13.07	51.059	11.48	10.729	68.66	36.86	33.03
June 8.6	48.488 288	15.36 229	51.365 306	14.07 259	11.026 297	67.06 160	37.30 44	35.69 266
18.6	48.753 265	17.77 241	51.645 230	16.91 284	11.302 276	65.52 154	37.68 38	38.74 335
28.6	48.989 236	20.25 248	51.889 244	19.92 301	11.551 249	64.09 143	38.00 32	42.07 333
July 8.6	49.190 201	22.75 250	52.092 203	23.04 312	11.766 215	62.78 131	38.24 24	45.63 356
	161	243	158	313	177	113	17	368
18.5	49.351 118	25.18	52.250	26.17	11.943	61.65	38.41	49.31
28.5	49.469 72	27.52 234	52.360 110	29.25 308	12.077 134	60.68 97	38.51 10	53.03 372
Aug. 7.5	49.541 27	29.60 217	52.419 59	32.23 298	12.166 89	59.92 76	38.52 7	56.71 368
17.5	49.568 27	31.68 199	52.427 8	35.04 281	12.209 43	59.33 49	38.45 1	60.26 355
27.4	49.551 17	33.45 177	52.387 40	37.61 257	12.209 0	58.92 51	38.31 14	63.63 337
	58	152	84	231	43	22	22	311
Sept. 6.4	49.493	34.97	52.303	39.92	12.166	58.70	38.09	66.74
16.4	49.400 93	36.23 126	52.178 125	41.90 198	12.085 81	58.62 8	37.81 28	69.53 279
26.3	49.277 123	37.20 97	52.021 157	43.53 163	11.974 111	58.67 5	37.48 33	71.93 240
Oct. 6.3	49.132 145	37.88 68	51.840 181	44.79 126	11.842 132	58.83 16	37.11 37	73.89 196
16.3	48.973 159	38.26 38	51.643 197	45.64 85	11.695 147	59.09 26	36.71 40	75.38 149
	164	8	205	42	152	31	43	97
26.3	48.809	38.34	51.438	46.06	11.543	59.40	36.28	76.35
Nov. 5.2	48.648 161	38.12 22	51.235 203	46.06 0	11.395 148	59.77 37	35.86 42	76.77 42
15.2	48.498 150	37.60 52	51.042 193	45.62 44	11.260 135	60.17 40	35.44 42	76.63 14
25.2	48.368 130	36.79 81	50.869 173	44.74 88	11.145 115	60.59 42	35.04 40	75.92 71
Dec. 5.2	48.259 109	35.74 106	50.719 150	43.45 129	11.053 92	61.03 44	34.68 36	74.65 127
	78	131	119	167	60	45	32	179
15.1	48.181	34.43	50.600	41.78	10.993	61.48	34.36	72.86
25.1	48.133 48	32.93 150	50.516 84	39.78 200	10.965 28	61.92 44	34.11 25	70.60 226
35.1	48.119 14	31.27 166	50.468 48	37.53 225	10.969 4	62.34 42	33.91 20	67.95 265
Mean Place	45.664	15.31	48.741	18.08	7.805	74.23	35.002	44.08
Sec δ, Tan δ	1.039	+0.283	1.202	+0.666	1.015	-0.173	2.097	+1.843
Dψ α, Dω α	+0.06	-0.01	+0.05	-0.03	+0.06	+0.01	+0.02	-0.06
Dω δ	+0.3	-0.8	+0.3	-0.8	+0.3	-0.8	+0.3	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	μ Aquarii. Mag. 4.8		β Indi. Mag. 3.7		32 Vulpeculae. Mag. 5.2		220 H ¹ Draconis. Mag. 5.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '
	20 48	- 9 17	20 48	-58 45	20 50	+27 44	20 51	+80 14
	s	"	s	"	s	"	s	"
Jan. 1.1	7.217	61.14	14.721	88.99	58.059	18.98	17.54	27.33
11.1	7.241 ²⁴	61.55 ⁴¹	14.714 ⁷	86.65 ²³⁴	58.042 ¹⁷	16.84 ²¹⁴	16.85 ⁶⁹	24.63 ²⁷⁰
21.0	7.299 ⁵⁸	61.90 ³⁵	14.777 ⁶³	84.12 ²⁵³	58.063 ²¹	14.59 ²²⁵	16.38 ⁴⁷	21.63 ³⁰⁰
31.0	7.388 ⁸⁹	62.15 ²⁵	14.907 ¹³⁰	81.46 ²⁰⁶	58.122 ⁵⁹	12.32 ²²⁷	16.15 ²³	18.41 ³²²
Feb. 10.0	7.509 ¹²¹	62.29 ¹⁴	15.102 ¹⁹⁵	78.75 ²⁷¹	58.217 ⁹⁵	10.13 ²¹⁹	16.15 ⁰	15.15 ³²⁶
	151	1	256	274	134	201	27	320
20.0	7.660	62.28	15.358	76.01	58.351	8.12	16.42	11.95
29.9	7.840 ¹⁸⁰	62.08 ²⁰	15.670 ³¹²	73.33 ²⁶⁸	58.521 ¹⁷⁰	6.37 ¹⁷⁵	16.91 ⁴⁹	8.96 ²⁹⁹
Mar. 10.9	8.047 ²⁰⁷	61.68 ⁴⁰	16.033 ³⁶³	70.76 ²⁵⁷	58.726 ²⁰⁵	4.97 ¹⁴⁰	17.63 ⁷²	6.28 ²⁶⁸
20.9	8.279 ²³²	61.07 ⁶¹	16.445 ⁴¹²	68.33 ²⁴³	58.962 ²³⁶	3.98 ⁹⁹	18.53 ⁹⁰	4.03 ²²⁵
30.8	8.536 ²⁵⁷	60.24 ⁸³	16.895 ⁴⁵⁰	66.09 ²²⁴	59.227 ²⁶⁵	3.46 ⁵²	19.60 ¹⁰⁷	2.30 ¹⁷³
	277	104	486	199	290	3	120	119
Apr. 9.8	8.813	59.20	17.381	64.10	59.517	3.43	20.80	1.11
19.8	9.107 ²⁹⁴	57.97 ¹²³	17.894 ⁵¹³	62.37 ¹⁷³	59.826 ³⁰⁹	3.90 ⁴⁷	22.06 ¹²⁶	0.56 ⁵⁵
29.8	9.415 ³⁰⁸	56.58 ¹³⁹	18.427 ⁵³³	60.95 ¹⁴²	60.149 ³²³	4.86 ⁹⁶	23.36 ¹³⁰	0.65 ⁹
May 9.7	9.729 ³¹⁴	55.06 ¹⁵²	18.970 ⁵⁴³	59.89 ¹⁰⁶	60.477 ³²⁸	6.27 ¹⁴¹	24.65 ¹²⁹	1.33 ⁶⁸
19.7	10.044 ³¹⁵	53.46 ¹⁶⁰	19.510 ⁵⁴⁰	59.19 ⁷⁰	60.805 ³²⁸	8.10 ¹⁸³	25.90 ¹²⁵	2.62 ¹²⁹
	311	164	529	32	318	218	114	185
29.7	10.355	51.82	20.039	58.87	61.123	10.28	27.04	4.47
June 8.7	10.652 ²⁹⁷	50.19 ¹⁶³	20.546 ⁵⁰⁷	58.94 ⁷	61.425 ³⁰²	12.76 ²⁴⁸	28.08 ¹⁰⁴	6.82 ²³⁵
18.6	10.931 ²⁷⁹	48.62 ¹⁵⁷	21.017 ⁴⁷¹	59.38 ⁴⁴	61.703 ²⁷⁸	15.45 ²⁶⁹	28.97 ⁸⁹	9.58 ²⁷⁶
28.6	11.182 ²⁵¹	47.14 ¹⁴⁸	21.439 ⁴²²	60.21 ⁸³	61.949 ²⁴⁶	18.29 ²⁸⁴	29.67 ⁷⁰	12.69 ³¹¹
July 8.6	11.400 ²¹⁸	45.79 ¹³⁵	21.804 ³⁶⁵	61.38 ¹¹⁷	62.157 ²⁰⁸	21.21 ²⁹²	30.19 ⁵²	16.07 ³³⁸
	181	118	298	147	167	293	31	358
18.5	11.581 ¹³⁸	44.61 ¹⁰¹	22.102 ²²¹	62.85 ¹⁷³	62.324 ¹²¹	24.14 ²⁸⁷	30.50 ¹¹	19.65 ³⁶⁹
28.5	11.719 ⁹⁵	43.60 ⁸²	22.323 ¹⁴¹	64.58 ¹⁹²	62.445 ⁷²	27.01 ²⁷⁶	30.61 ¹¹	23.34 ³⁷¹
Aug. 7.5	11.814 ⁴⁸	42.78 ⁶¹	22.464 ⁵⁸	66.50 ²⁰⁴	62.517 ²⁵	29.77 ²⁵⁷	30.50 ³¹	27.05 ³⁶⁵
17.5	11.862 ³	42.17 ⁴⁴	22.522 ²⁴	68.54 ²⁰⁸	62.542 ²²	32.34 ²³⁶	30.19 ⁵²	30.70 ³⁵¹
27.4	11.865 ³⁹	41.73 ²⁵	22.498 ¹⁰⁴	70.62 ²⁰⁵	62.520 ⁶⁶	34.70 ²¹⁰	29.67 ⁷¹	34.21 ³³³
Sept. 6.4	11.826	41.48	22.394	72.67	62.454	36.80	28.96	37.54
16.4	11.750 ⁷⁶	41.37 ¹¹	22.220 ¹⁷⁴	74.59 ¹⁹²	62.350 ¹⁰⁴	38.61 ¹⁸¹	28.10 ⁸⁶	40.58 ³⁰⁴
26.4	11.644 ¹⁰⁶	41.41 ⁴	21.982 ²³⁸	76.29 ¹⁷⁰	62.214 ¹³⁶	40.08 ¹⁴⁷	27.08 ¹⁰²	43.29 ²⁷¹
Oct. 6.3	11.514 ¹³⁰	41.56 ¹⁵	21.698 ²⁸⁴	77.71 ¹⁴²	62.053 ¹⁶¹	41.20 ¹¹²	25.92 ¹¹⁶	45.60 ²³¹
16.3	11.369 ¹⁴⁵	41.82 ²⁶	21.379 ³¹⁹	78.78 ¹⁰⁷	61.876 ¹⁷⁷	41.95 ⁷⁵	24.68 ¹²⁴	47.48 ¹⁸⁸
	150	31	335	64	184	36	131	133
26.3	11.219	42.13	21.044	79.42	61.692	42.31	23.37	48.81
Nov. 5.2	11.071 ¹⁴⁸	42.50 ³⁷	20.709 ³³⁵	79.64 ²²	61.508 ¹⁸⁴	42.29 ²	22.02 ¹³⁵	49.65 ⁸⁴
15.2	10.935 ¹³⁶	42.91 ⁴¹	20.393 ³¹⁶	79.41 ²³	61.334 ¹⁷⁴	41.87 ⁸⁰	20.67 ¹³⁵	49.90 ²⁵
25.2	10.818 ¹¹⁷	43.35 ⁴⁴	20.107 ²⁸⁶	78.71 ⁷⁰	61.177 ¹⁸⁷	41.07 ⁸⁰	19.35 ¹³²	49.57 ³³
Dec. 5.2	10.725 ⁹³	43.81 ⁴⁶	19.866 ¹⁸⁴	77.58 ¹¹³	61.041 ¹⁸⁶	39.89 ¹¹⁸	18.11 ¹²⁴	48.64 ⁹³
	64	47	184	153	107	152	113	149
15.1	10.661	44.28	19.682	76.05	60.934	38.37	16.98	47.15
25.1	10.629 ³²	44.74 ⁴⁶	19.559 ¹²³	74.16 ¹⁸⁹	60.859 ⁷⁵	36.57 ¹⁸⁰	15.98 ¹⁰⁰	45.14 ²⁰¹
35.1	10.628 ¹	45.18 ⁴⁴	19.504 ⁵⁵	71.97 ²¹⁹	60.818 ⁴¹	34.53 ²⁰⁴	15.15 ⁸³	42.72 ²⁴²
Mean Place	7.468	57.56	15.267	78.40	58.781	15.30	26.354	16.73
Sec δ , Tan δ	1.013	-0.164	1.928	-1.649	1.130	+0.526	5.899	+5.814
$D\psi\alpha$, $D\omega\alpha$	+0.06	+0.01	+0.09	+0.07	+0.05	-0.02	-0.05	-0.26
$D\psi\delta$, $D\omega\delta$	+0.3	-0.7	+0.3	-0.7	+0.3	-0.7	+0.3	-0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Cygni. Mag. 4.0		α Octantis. Mag. 5.2		γ Microscopii. Mag. 4.7		θ Capricorni. Mag. 4.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 20 54	° ' " +40 50	h m 20 54	° ' " -77 20	h m 20 56	° ' " -32 34	h m 21 1	° ' " -17 33
	s	"	s	"	s	"	s	"
Jan. 1.1	1.357	41.64	33.00	56.63	8.396	80.09	13.459	67.68
11.1	1.305 ⁵²	39.12 ²⁵²	32.82 ¹⁸	53.54 ³⁰⁹	8.413 ¹⁷	79.17 ⁹²	13.473 ¹⁴	67.61 ⁷
21.0	1.297 ⁸	36.44 ²⁶⁸	32.81 ¹	50.25 ³²⁹	8.470 ⁵⁷	78.09 ¹⁰⁶	13.520 ⁴⁷	67.44 ¹⁷
31.0	1.335 ³⁸	33.69 ²⁷⁵	32.96 ¹⁵	46.84 ³⁴¹	8.563 ⁹³	76.87 ¹²²	13.601 ⁸¹	67.14 ³⁰
Feb. 10.0	1.420 ⁸⁵	30.99 ²⁷⁰	33.29 ³³	43.39 ³⁴⁵	8.695 ¹³²	75.54 ¹³³	13.714 ¹¹³	66.73 ⁴¹
20.0	1.551 ¹³¹	28.44 ²⁵⁵	33.77 ⁴⁸	39.99 ³⁴⁰	8.863 ¹⁶⁸	74.11 ¹⁴³	13.858 ¹⁴⁴	66.18 ⁵⁶
29.9	1.727 ¹⁷⁶	26.15 ¹²⁹	34.39 ⁶²	36.71 ³²⁸	9.064 ²⁰¹	72.59 ¹⁵²	14.033 ¹⁷⁵	65.47 ⁷¹
Mar. 10.9	1.946 ²¹⁹	24.23 ²⁹²	35.15 ⁷⁶	33.63 ³⁰⁸	9.296 ²³²	70.99 ¹⁶⁰	14.237 ²⁰⁴	64.60 ⁸⁷
20.9	2.205 ²⁵⁹	22.75 ¹⁴⁸	36.02 ⁸⁷	30.80 ²⁸³	9.559 ²⁶³	69.34 ¹⁶⁵	14.467 ²³⁰	63.58 ¹⁰²
30.9	2.498 ²⁹³	21.79 ⁹⁶	36.99 ⁹⁷	28.28 ²⁵²	9.848 ²⁸⁹	67.68 ¹⁶⁶	14.724 ²⁵⁷	62.39 ¹¹⁹
Apr. 9.8	2.820 ³²²	21.38 ⁴¹	38.03 ¹⁰⁴	26.13 ²¹⁵	10.163 ³¹⁵	66.01 ¹⁶⁷	15.003 ²⁷⁹	61.07 ¹³²
19.8	3.166 ³⁴⁶	21.53 ¹⁵	39.15 ¹¹²	24.37 ¹⁷⁶	10.497 ³³⁴	64.39 ¹⁶²	15.302 ²⁹⁹	59.65 ¹⁴²
29.8	3.525 ³⁵⁹	22.24 ⁷¹	40.29 ¹¹⁴	23.04 ¹³³	10.848 ³⁵¹	62.83 ¹⁵⁶	15.616 ³¹⁴	58.14 ¹⁵¹
May 9.7	3.891 ³⁶⁶	23.49 ¹²⁵	41.45 ¹¹⁶	22.18 ⁸⁶	11.207 ³⁵⁹	61.38 ¹⁴⁵	15.940 ³²⁴	56.58 ¹⁵⁶
19.7	4.254 ³⁶³	25.25 ¹⁷⁶	42.61 ¹¹⁶	21.79 ³⁹	11.570 ³⁶³	60.07 ¹³¹	16.267 ³²⁷	55.02 ¹⁵⁶
29.7	4.604 ³⁵⁰	27.45 ²²⁰	43.74 ¹¹³	21.88 ⁹	11.928 ³⁵⁸	58.94 ¹¹³	16.591 ³²⁴	53.50 ¹⁵²
June 8.7	4.935 ³³¹	30.03 ²⁵⁸	44.81 ¹⁰⁷	22.45 ⁵⁷	12.273 ³⁴⁵	58.02 ⁹²	16.905 ³¹⁴	52.07 ¹⁴³
18.6	5.235 ³⁰⁰	32.90 ²⁸⁷	45.80 ⁹⁹	23.48 ¹⁰³	12.599 ³²⁶	57.35 ⁶⁷	17.200 ²⁹⁵	50.75 ¹³²
28.6	5.499 ²⁶⁴	36.02 ³¹²	46.68 ⁸⁸	24.93 ¹⁴⁵	12.895 ²⁹⁶	56.92 ⁴³	17.470 ²⁷⁰	49.60 ¹¹⁵
July 8.6	5.719 ²²⁰	39.27 ³²⁵	47.42 ⁷⁴	26.77 ¹⁸⁴	13.155 ²⁰⁷	56.75 ¹⁷	17.709 ²³⁹	48.62 ⁹⁸
18.5	5.891 ¹¹⁹	42.59 ³³²	48.03 ⁴³	28.94 ²⁴³	13.372 ¹⁶⁸	56.82 ³³	17.909 ¹⁵⁷	47.85 ⁵⁶
28.5	6.010 ⁶⁶	45.91 ³²⁴	48.46 ²⁵	31.37 ²⁶²	13.540 ¹¹⁸	57.15 ⁵⁴	18.066 ¹¹²	47.29 ³⁶
Aug. 7.5	6.076 ¹¹	49.15 ³⁰⁹	48.71 ⁷	33.99 ²⁷²	13.658 ⁶⁵	57.69 ⁷²	18.178 ⁶⁴	46.93 ¹⁵
17.5	6.087 ⁴²	52.24 ²⁸⁸	48.78 ¹¹	36.71 ²⁶⁸	13.723 ¹¹	58.41 ⁸⁷	18.242 ¹⁷	46.78 ³
27.4	6.045 ⁹⁰	55.12 ²⁶²	48.67 ³¹	39.39 ²⁵⁸	13.734 ³⁸	59.28 ⁹⁵	18.259 ²⁷	46.81 ¹⁹
Sept. 6.4	5.955 ¹³⁴	57.74 ²³²	48.36 ⁴⁷	41.97 ²³⁸	13.696 ⁸³	60.23 ⁹⁹	18.232 ⁶⁷	47.00 ³⁰
16.4	5.821 ¹⁷¹	60.06 ¹⁹⁴	47.89 ⁶¹	44.35 ²⁰⁷	13.613 ¹²²	61.22 ⁹⁸	18.165 ¹⁰⁰	47.30 ⁴⁰
26.4	5.650 ¹⁹⁹	62.00 ¹⁵⁶	47.28 ⁷⁴	46.42 ¹⁶⁸	13.491 ¹⁵¹	62.20 ⁹¹	18.065 ¹²⁸	47.70 ⁴⁶
Oct. 6.3	5.451 ²¹⁹	63.56 ¹¹²	46.54 ⁸³	48.10 ¹²¹	13.340 ¹⁷²	63.11 ⁷⁹	17.937 ¹⁴⁴	48.16 ⁴⁸
16.3	5.232 ²³⁰	64.68 ⁶⁷	45.71 ⁸⁸	49.31 ⁶⁷	13.168 ¹⁸¹	63.90 ⁶²	17.793 ¹⁵²	48.64 ⁴⁷
26.3	5.002 ²³¹	65.35 ²⁰	44.83 ⁹⁰	49.98 ¹²	12.987 ¹⁷⁹	64.52 ⁴⁶	17.641 ¹⁵²	49.11 ⁴⁵
Nov. 5.2	4.771 ²²⁴	65.55 ²⁸	43.93 ⁸⁷	50.10 ⁵⁰	12.808 ¹⁶⁸	64.98 ²³	17.489 ¹⁴³	49.56 ⁴⁰
15.2	4.547 ²⁰⁷	65.27 ⁷²	43.06 ⁸²	49.60 ¹⁰⁶	12.640 ¹⁴⁹	65.21 ¹	17.346 ¹²⁵	49.96 ³³
25.2	4.340 ¹⁸⁴	64.50 ¹⁷⁷	42.24 ⁷¹	48.54 ¹⁶²	12.491 ¹²⁰	65.22 ²²	17.221 ¹⁰²	50.29 ²⁴
Dec. 5.2	4.156 ¹⁵⁴	63.28 ¹⁶⁶	41.53 ⁶⁰	46.92 ²¹²	12.371 ⁸⁷	65.00 ⁴³	17.119 ⁷⁵	50.53 ¹⁸
15.1	4.002 ¹¹⁹	61.62 ²⁰⁵	40.93 ⁴⁶	44.80 ²⁸⁵	12.284 ⁵¹	64.57 ⁶⁴	17.044 ⁴³	50.71 ⁸
25.1	3.883 ⁷⁹	59.57 ²³⁵	40.47 ²⁹	42.25 ²⁹⁰	12.233 ¹²	63.93 ⁸¹	17.001 ¹⁰	50.79 ⁰
35.1	3.804	57.22	40.18	39.35	12.221	63.12	16.991	50.79
Mean Place	2.454	35.39	35.039	44.90	8.573	72.49	13.626	62.73
Sec δ , Tan δ	1.322	+0.865	4.564	-4.453	1.187	-0.639	1.049	-0.317
$D\psi \alpha$, $D\omega \alpha$	+0.04	-0.04	+0.15	+0.20	+0.07	+0.03	+0.07	+0.02
$D\psi \delta$, $D\omega \delta$	+0.3	-0.7	+0.3	-0.7	+0.3	-0.7	+0.3	-0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ξ Cygni. Mag. 3.9			61 Cygni Pr. Mag. 5.6			γ Aquarii. Mag. 4.5			Bradley 2777. Mag. 5.9		
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	21	1	+43 35	21	3	+38 19	21	5	-11 42	21	7	+77 46
	s	"	s	"	s	"	s	"	s	"	"	
Jan. 1.1	51.323	39.71	6.798	74.81	0.998	48.23	5.73	81.57				
11.1	51.253 ⁷⁰	37.19 ²⁵²	6.759 ³⁹	72.50 ²³¹	1.007 ⁹	48.48 ²⁵	5.15 ⁵⁸	78.98 ²⁵⁹				
21.0	51.230 ²³	34.49 ²⁷⁰	6.760 ¹	70.03 ²⁴⁷	1.050 ⁴³	48.65 ¹⁷	4.73 ⁴²	76.05 ²⁹³				
31.0	51.254 ²⁴	31.69 ²⁸⁰	6.805 ⁴⁵	67.48 ²⁵⁵	1.124 ⁷⁴	48.72 ⁷	4.50 ²³	72.89 ³¹⁶				
Feb. 10.0	51.326 ⁷²	28.91 ²⁷⁸	6.894 ⁸⁹	64.98 ²⁵⁰	1.229 ¹⁰⁵	48.67 ⁵	4.46 ⁴	69.63 ³²⁶				
20.0	51.448 ¹²²	26.28 ²⁶³	7.028 ¹³⁴	62.62 ²³⁶	1.364 ¹³⁵	48.46 ²¹	4.62 ¹⁶	66.41 ³²²				
29.9	51.618 ¹⁷⁰	23.88 ²⁴⁰	7.205 ¹⁷⁷	60.52 ²¹⁰	1.530 ¹⁶⁶	48.08 ³⁸	4.97 ³⁵	63.36 ³⁰⁵				
Mar. 10.9	51.834 ²¹⁶	21.84 ²⁰⁴	7.423 ²¹⁸	58.78 ¹⁷⁴	1.723 ¹⁹³	47.51 ⁵⁷	5.49 ⁵²	60.58 ²⁷⁸				
20.9	52.093 ²⁵⁹	20.23 ¹⁶¹	7.680 ²⁵⁷	57.47 ¹³¹	1.945 ²²²	46.73 ⁷⁸	6.19 ⁷⁰	58.20 ²³⁸				
30.9	52.389 ²⁹⁶	19.13 ¹¹⁰	7.972 ²⁹²	56.65 ⁸²	2.192 ²⁴⁷	45.76 ⁹⁷	7.01 ⁸²	56.33 ¹⁸⁷				
Apr. 9.8	52.717 ³²⁸	18.57 ⁵⁶	8.292 ³²⁰	56.36 ²⁹	2.462 ²⁷⁰	44.59 ¹¹⁷	7.95 ⁹⁴	55.00 ¹³³				
19.8	53.070 ³⁵³	18.60 ³	8.636 ³⁴⁴	56.63 ²⁷	2.752 ²⁹⁰	43.26 ¹³³	8.96 ¹⁰¹	54.28 ⁷²				
29.8	53.440 ³⁷⁰	19.19 ⁵⁹	8.995 ³⁵⁰	57.44 ⁸¹	3.058 ³⁰⁶	41.78 ¹⁴⁸	10.01 ¹⁰⁵	54.19 ⁹				
May 9.7	53.817 ³⁷⁷	20.34 ¹¹⁵	9.361 ³⁶⁶	58.79 ¹³⁵	3.374 ³¹⁶	40.20 ¹⁵⁸	11.08 ¹⁰⁷	54.73 ⁵⁴				
19.7	54.193 ³⁷⁶	22.00 ¹⁶⁶	9.727 ³⁶⁶	60.62 ¹⁸³	3.695 ³²¹	38.55 ¹⁶⁵	12.12 ¹⁰⁴	55.87 ¹¹⁴				
29.7	54.558 ³⁶⁵	24.14 ²¹⁴	10.083 ³⁵⁸	62.88 ²²⁶	4.012 ³¹⁷	36.89 ¹⁶⁶	13.10 ⁹⁸	57.57 ¹⁷⁰				
June 8.7	54.902 ³⁴⁴	26.67 ²⁵³	10.420 ³³⁷	65.52 ²⁶⁴	4.319 ³⁰⁷	35.28 ¹⁶¹	13.99 ⁸⁹	59.79 ²²²				
18.6	55.217 ³¹⁵	29.53 ²⁸⁶	10.730 ³¹⁰	68.44 ²⁹²	4.610 ²⁹¹	33.73 ¹⁵⁵	14.78 ⁷⁹	62.46 ²⁶⁷				
28.6	55.494 ²⁷⁷	32.65 ³¹²	11.006 ²⁷⁶	71.59 ³¹⁵	4.875 ²⁶⁵	32.29 ¹⁴⁴	15.43 ⁶⁵	65.51 ³⁰⁵				
July 8.6	55.727 ²³³	35.95 ³³⁰	11.240 ³³⁰	74.87 ³²⁸	5.110 ²³⁵	31.00 ¹²⁹	15.94 ⁵¹	68.85 ³³⁴				
18.6	55.910 ¹⁸³	39.32 ³³⁷	11.426 ¹⁸⁶	78.22 ³³⁵	5.307 ¹⁹⁷	29.90 ¹¹⁰	16.29 ³⁵	72.42 ³⁵⁷				
28.5	56.039 ¹²⁹	42.72 ³⁴⁰	11.563 ¹³⁷	81.56 ³³⁴	5.463 ¹⁵⁶	28.99 ⁹¹	16.46 ¹⁷	76.11 ³⁶⁹				
Aug. 7.5	56.113 ⁷⁴	46.06 ³³⁴	11.648 ⁸⁵	84.82 ³²⁶	5.574 ¹¹¹	28.28 ⁷¹	16.48 ²	79.86 ³⁷⁵				
17.5	56.131 ¹⁸	49.27 ³²¹	11.680 ³²	87.93 ³¹¹	5.639 ⁶⁵	27.77 ⁵¹	16.31 ¹⁷	83.59 ³⁷³				
27.4	56.093 ³⁸	52.27 ³⁰⁰	11.660 ²⁰	90.84 ²⁹¹	5.658 ¹⁹	27.46 ³¹	15.99 ³²	87.21 ³⁶²				
Sept. 6.4	56.005 ⁸⁸	55.04 ²⁷⁷	11.593 ⁶⁷	93.48 ²⁶⁴	5.634 ²⁴	27.33 ¹³	15.52 ⁴⁷	90.65 ³⁴⁴				
16.4	55.871 ¹³⁴	57.49 ²⁴⁵	11.483 ¹¹⁰	95.83 ²³⁵	5.572 ⁶²	27.35 ²	14.91 ⁶¹	93.85 ³²⁰				
26.4	55.698 ¹⁷³	59.59 ²¹⁰	11.338 ¹⁴⁵	97.81 ¹⁹⁸	5.477 ⁹⁵	27.50 ¹⁵	14.16 ⁷⁵	96.71 ²⁸⁶				
Oct. 6.3	55.493 ²⁰⁵	61.29 ¹⁷⁰	11.163 ¹⁷⁵	99.42 ¹⁶¹	5.355 ¹²²	27.76 ²⁶	13.31 ⁸⁵	99.20 ²⁴⁹				
16.3	55.267 ²²⁶	62.56 ¹²⁷	10.969 ¹⁹⁴	100.61 ¹¹⁹	5.218 ¹³⁷	28.10 ³⁴	12.37 ⁹⁴	101.25 ²⁰⁶				
26.3	55.027 ²⁴⁰	63.38 ⁸²	10.764 ²⁰⁵	101.36 ⁷⁵	5.071 ¹⁴⁷	28.48 ³⁸	11.37 ¹⁰⁰	102.82 ¹⁵⁷				
Nov. 5.3	54.784 ²⁴³	63.71 ³³	10.556 ²⁰⁸	101.66 ³⁰	4.925 ¹⁴⁶	28.90 ⁴²	10.33 ¹⁰⁴	103.85 ¹⁰³				
15.2	54.547 ²³⁷	63.54 ¹⁷	10.350 ²⁰⁰	101.49 ¹⁷	4.786 ¹³⁹	29.32 ⁴²	9.28 ¹⁰⁵	104.30 ⁴⁵				
25.2	54.323 ²²⁴	62.88 ⁶⁶	10.169 ¹⁸⁷	100.86 ⁶³	4.665 ¹²¹	29.75 ⁴³	8.25 ¹⁰³	104.17 ¹³				
Dec. 5.2	54.123 ²⁰⁰	61.73 ¹¹⁵	10.006 ¹⁶³	99.79 ¹⁰⁷	4.564 ¹⁰¹	30.16 ⁴¹	7.26 ⁹⁹	103.44 ⁷³				
15.1	53.952 ¹⁷¹	60.13 ¹⁶⁰	9.869 ¹³⁷	98.29 ¹⁵⁰	4.491 ⁷³	30.54 ³⁸	6.35 ⁹¹	102.13 ¹³¹				
25.1	53.814 ¹³⁸	58.13 ²⁰⁰	9.766 ¹⁰³	96.44 ¹⁸⁵	4.446 ⁴⁵	30.89 ³⁵	5.54 ⁸¹	100.28 ¹⁸⁵				
35.1	53.717 ⁹⁷	55.79 ²³⁴	9.701 ⁶⁵	94.27 ²¹⁷	4.433 ¹³	31.19 ³⁰	4.87 ⁶⁷	97.94 ²³⁴				
Mean Place	52.493	32.37	7.780	68.51	1.177	44.50	12.344	69.47				
Sec δ, Tan δ	1.381	+0.952	1.275	+0.791	1.021	-0.207	4.728	+4.621				
D _ψ α, D _ω α	+0.04	-0.05	+0.05	-0.04	+0.06	+0.01	-0.02	-0.22				
D _ψ δ, D _ω δ	+0.3	-0.7	+0.3	-0.7	+0.3	-0.7	+0.3	-0.7				

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	3 Piscis Australis. Mag. 5.6		ζ Cygni. Mag. 3.4		τ Cygni. Mag. 3.8		α Equulei. Mag. 4.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 21 8	° ' / -27 57	h m 21 9	° ' / +29 52	h m 21 11	° ' / +37 40	h m 21 11	° ' / + 4 53
	s	"	s	"	s	"	s	"
Jan. 1.1	18.522	52.27	20.925	59.70	25.335	77.83	37.223	59.87
11.1	18.528 ⁶	51.63 ⁶⁴	20.887 ³⁸	57.59 ²¹¹	25.276 ⁵⁹	75.54 ²²⁹	37.218 ⁵	58.78 ¹⁰⁹
21.1	18.570 ⁴²	50.82 ⁸¹	20.886 ¹	55.34 ²²⁵	25.257 ¹⁹	73.07 ²⁴⁷	37.244 ²⁶	57.67 ¹¹¹
31.0	18.647 ⁷⁷	49.88 ⁹⁴	20.922 ³⁶	53.04 ²³⁰	25.281 ²⁴	70.50 ²⁵⁷	37.302 ⁵⁸	56.62 ¹⁰⁵
Feb. 10.0	18.760 ¹¹³	48.80 ¹⁰⁸	20.997 ⁷⁵	50.79 ²¹⁵	25.348 ⁶⁷	67.95 ²⁵⁵	37.390 ⁸⁸	55.67 ⁹⁵
20.0	18.906 ¹⁴⁶	47.61 ¹¹⁹	21.111 ¹¹⁴	48.69 ¹¹⁴	25.458 ¹¹⁰	65.54 ²⁴¹	37.510 ¹²⁰	54.88 ⁷⁹
29.9	19.085 ¹⁷⁹	46.28 ¹³³	21.263 ¹⁵²	46.81 ¹⁸⁸	25.612 ¹⁵⁴	63.36 ²¹⁸	37.660 ¹⁵⁰	54.31 ⁵⁷
Mar. 10.9	19.296 ²¹¹	44.85 ¹⁴³	21.451 ¹⁸⁸	45.28 ¹⁵³	25.808 ¹⁹⁶	61.50 ¹⁸⁶	37.839 ¹⁷⁹	54.00 ³¹
20.9	19.536 ²⁴⁰	43.33 ¹⁵²	21.675 ²²⁴	44.14 ¹¹⁴	26.042 ²³⁴	60.07 ¹⁴³	38.047 ²⁰⁸	53.98 ²
30.9	19.805 ²⁶⁹	41.74 ¹⁵⁹	21.932 ²⁵⁷	43.45 ⁶⁹	26.313 ²⁷¹	59.10 ⁹⁷	38.282 ²³⁵	54.29 ³¹
Apr. 9.8	20.099 ²⁹⁴	40.10 ¹⁶⁴	22.215 ²⁸³	43.25 ²⁰	26.616 ³⁰³	58.67 ⁴³	38.542 ²⁶⁰	54.93 ⁶⁴
19.8	20.416 ³¹⁷	38.44 ¹⁶⁶	22.523 ³⁰⁸	43.56 ³¹	26.942 ³²⁶	58.77 ¹⁰	38.822 ²⁸⁰	55.88 ⁹⁵
29.8	20.748 ³³²	36.80 ¹⁶⁴	22.847 ³²⁴	44.36 ⁸⁰	27.287 ³⁴⁵	59.41 ⁶⁴	39.119 ²⁹⁷	57.14 ¹²⁶
May 9.8	21.091 ³⁴³	35.22 ¹⁵⁸	23.180 ³³³	45.64 ¹²⁸	27.643 ³⁵⁶	60.57 ¹¹⁶	39.427 ³⁰⁸	58.66 ¹⁵²
19.7	21.442 ³⁵¹	33.74 ¹⁴⁸	23.516 ³³⁶	47.36 ¹⁷²	28.000 ³⁵⁷	62.23 ¹⁶⁶	39.739 ³¹²	60.42 ¹⁷⁶
29.7	21.790 ³⁴⁸	32.42 ¹³²	23.846 ³³⁰	49.46 ²¹⁰	28.349 ³⁴⁹	64.32 ²⁰⁹	40.049 ³¹⁰	62.34 ¹⁹²
June 8.7	22.127 ³³⁷	31.25 ¹¹⁷	24.162 ³¹⁶	51.87 ²⁴¹	28.682 ³³³	66.78 ²⁴⁶	40.348 ²⁹⁹	64.38 ²⁰⁴
18.6	22.448 ³²¹	30.29 ⁹⁶	24.455 ²⁹³	54.55 ²⁶⁸	28.990 ³⁰⁸	69.55 ²⁷⁷	40.630 ²⁸²	66.50 ²¹²
28.6	22.742 ²⁹⁴	29.57 ⁷²	24.718 ²⁶³	57.39 ²⁸⁴	29.267 ²⁷⁷	72.56 ³⁰¹	40.888 ²⁵⁸	68.60 ²¹⁰
July 8.6	23.002 ²⁶⁰	29.09 ⁴⁸	24.945 ²²⁷	60.35 ²⁹⁶	29.503 ²³⁶	75.72 ³¹⁶	41.115 ²⁶⁶	70.66 ²⁰⁶
18.6	23.223 ²²¹	28.87 ²²	25.132 ¹⁸⁷	63.35 ³⁰⁰	29.694 ¹⁹¹	78.95 ³²³	41.307 ¹⁹²	72.64 ¹⁹⁸
28.5	23.397 ¹⁷⁴	28.89 ²	25.272 ¹⁴⁰	66.31 ²⁹⁶	29.837 ¹⁴³	82.20 ³²⁵	41.458 ¹⁵¹	74.49 ¹⁸⁵
Aug. 7.5	23.524 ¹²⁷	29.13 ²⁴	25.363 ⁹¹	69.19 ²⁸⁸	29.927 ⁹⁰	85.38 ³¹⁸	41.566 ¹⁰⁸	76.16 ¹⁶⁷
17.5	23.599 ⁷⁵	29.58 ⁴⁵	25.406 ⁴³	71.92 ²⁷³	29.965 ³⁸	88.42 ³⁰⁴	41.629 ⁶³	77.64 ¹⁴⁸
27.4	23.625 ²⁶	30.19 ⁶¹	25.402 ⁴	74.43 ²⁵¹	29.953 ¹²	91.28 ²⁸⁶	41.647 ¹⁸	78.91 ¹²⁷
Sept. 6.4	23.600 ²⁵	30.95 ⁷⁶	25.353 ⁴⁹	76.71 ²²⁸	29.892 ⁶¹	93.89 ²⁶¹	41.624 ²³	79.96 ¹⁰⁵
16.4	23.533 ⁶⁷	31.78 ⁸³	25.263 ⁹⁰	78.69 ¹⁹⁸	29.787 ¹⁰⁵	96.22 ²³³	41.564 ⁶⁰	80.78 ⁸²
26.4	23.428 ¹⁰⁵	32.63 ⁸⁵	25.139 ¹²⁴	80.35 ¹⁶⁶	29.647 ¹⁴⁰	98.20 ¹⁹⁸	41.473 ⁹¹	81.37 ⁵⁹
Oct. 6.3	23.293 ¹³⁵	33.46 ⁸³	24.988 ¹⁵¹	81.67 ¹³²	29.475 ¹⁷²	99.81 ¹⁶¹	41.355 ¹¹⁸	81.75 ³⁸
16.3	23.137 ¹⁵⁶	34.22 ⁷⁶	24.816 ¹⁷²	82.62 ⁹⁵	29.282 ¹⁹³	101.02 ¹²¹	41.221 ¹³⁴	81.91 ¹⁶
26.3	22.971 ¹⁶⁶	34.89 ⁶⁷	24.634 ¹⁸²	83.18 ⁵⁶	29.076 ²⁰⁶	101.79 ⁷⁷	41.078 ¹⁴³	81.87 ⁴
Nov. 5.3	22.803 ¹⁶⁸	35.41 ⁵²	24.450 ¹⁸⁴	83.33 ¹⁵	28.865 ²¹¹	102.12 ³³	40.933 ¹⁴⁵	81.62 ²⁵
15.2	22.645 ¹⁵⁸	35.76 ³⁵	24.271 ¹⁷⁹	83.08 ²⁵	28.659 ²⁰⁶	102.00 ¹²	40.795 ¹³⁸	81.20 ⁴²
25.2	22.503 ¹⁴²	35.93 ¹⁷	24.106 ¹⁶⁵	82.42 ⁶⁶	28.465 ¹⁹⁴	101.41 ⁵⁹	40.672 ¹²³	80.60 ⁶⁰
Dec. 5.2	22.385 ¹¹⁸	35.92 ¹	23.959 ¹⁴⁷	81.37 ¹⁰⁵	28.291 ¹⁷⁴	100.37 ¹⁰⁴	40.566 ¹⁰⁶	79.85 ⁷⁵
15.1	22.298 ⁸⁷	35.71 ²¹	23.837 ¹²²	79.98 ¹³⁹	28.141 ¹⁵⁰	98.93 ¹⁴⁴	40.485 ⁸¹	78.96 ⁸⁹
25.1	22.242 ⁵⁶	35.34 ³⁷	23.743 ⁹⁴	78.25 ¹⁷³	28.024 ¹¹⁷	97.10 ¹⁸³	40.430 ⁵⁵	77.96 ¹⁰⁰
35.1	22.223 ¹⁹	34.80 ⁵⁴	23.683 ⁶⁰	76.26 ¹⁹⁹	27.939 ⁸⁵	94.94 ²¹⁶	40.404 ²⁶	76.89 ¹⁰⁷
Mean Place	18.644	45.42	21.624	54.35	26.242	70.81	37.506	59.81
Sec δ, Tan δ	1.132	-0.531	1.153	+0.575	1.263	+0.773	1.004	+0.086
$D\psi\alpha, D\omega\alpha$	+0.07	+0.03	+0.05	-0.03	+0.05	-0.04	+0.06	0.00
$D\psi\delta, D\omega\delta$	+0.3	-0.7	+0.3	-0.7	+0.3	-0.7	+0.3	-0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	σ Cygni. Mag. 4.3		θ^1 Microscopii. Mag. 4.9		α Cephei. Mag. 2.6		τ Capricorni. Mag. 4.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 21 14	° ' " +39 2	h m 21 15	° ' " -41 9	h m 21 16	° ' " +62 13	h m 21 17	° ' " -17 11
	s	"	s	"	s	"	s	"
Jan. 1.1	6.005	39.62	23.321	64.25	32.22	57.19	34.201	39.21
11.1	5.940 ⁶⁵	37.28 ²³⁴	23.307 ¹⁴	62.89 ¹³⁶	32.01 ²¹	54.60 ²⁵⁹	34.199 ²	39.16 ⁵
21.1	5.915 ²⁵	34.77 ²⁵¹	23.337 ³⁰	61.32 ¹⁵⁷	31.87 ¹⁴	51.70 ²⁹⁰	34.231 ³²	39.00 ¹⁶
31.0	5.932 ¹⁷	32.16 ²⁶¹	23.411 ⁷⁴	59.59 ¹⁷³	31.81 ⁶	48.60 ³¹⁰	34.294 ⁶³	38.70 ³⁰
Feb. 10.0	5.994 ⁶²	29.54 ²⁶²	23.525 ¹¹⁴	57.71 ¹⁸⁸	31.83 ²	45.43 ³¹⁷	34.388 ⁹⁴	38.27 ⁴³
20.0	6.100	27.05	23.680	55.72	31.93	42.32	34.515	37.70
29.9	6.251 ¹⁵¹	24.81 ²²⁴	23.875 ¹⁹⁵	53.65 ²⁰⁷	32.12 ¹⁹	39.39 ²⁹³	34.673 ¹⁵⁸	36.95 ⁷⁵
Mar. 10.9	6.445 ¹⁹⁴	22.87 ¹⁹⁴	24.107 ²³²	51.55 ²¹⁰	32.38 ²⁶	36.76 ²⁶³	34.859 ¹⁸⁶	36.04 ⁹¹
20.9	6.680 ²³⁵	21.35 ¹⁵²	24.374 ²⁶⁷	49.44 ²¹¹	32.71 ³³	34.55 ²²¹	35.075 ²¹⁶	34.97 ¹⁰⁷
30.9	6.953 ²⁷³	20.32 ¹⁰³	24.675 ³⁰¹	47.35 ²⁰⁹	33.12 ⁴¹	32.83 ¹⁷²	35.318 ²⁴³	33.72 ¹²⁵
Apr. 9.8	7.257 ³⁰⁴	19.80	25.004	45.34	33.58	31.68	35.587 ²⁶⁹	32.34 ¹³⁸
19.8	7.587 ³³⁰	19.83 ³	25.359 ³⁵⁵	43.43 ¹⁹¹	34.07 ⁴⁹	31.13 ⁵⁵	35.877 ²⁹⁰	30.84 ¹⁵⁰
29.8	7.937 ³⁵⁰	20.42 ⁵⁹	25.734 ³⁷⁵	41.67 ¹⁷⁶	34.59 ⁵²	31.21 ⁸	36.186 ³⁰⁹	29.25 ¹⁵⁹
May 9.8	8.297 ³⁶⁰	21.53 ¹¹¹	26.124 ³⁹⁰	40.09 ¹⁵⁸	35.13 ⁵⁴	31.90 ⁶⁹	36.507 ³²¹	27.60 ¹⁶⁵
19.7	8.659 ³⁶²	23.15 ¹⁶²	26.520 ³⁹⁶	38.73 ¹³⁶	35.66 ⁵³	33.19 ¹²⁹	36.834 ³²⁷	25.96 ¹⁶⁴
29.7	9.014 ³⁵⁵	25.21 ²⁰⁶	26.916 ³⁹⁶	37.64 ¹⁰⁹	36.18 ⁵²	35.03 ¹⁸⁴	37.161 ³²⁷	24.34 ¹⁶²
June 8.7	9.353 ³³⁹	27.65 ²⁴⁴	27.301 ³⁸⁵	36.84 ⁸⁰	36.66 ⁴⁸	37.37 ²³⁴	37.480 ³¹⁹	22.81 ¹⁵³
18.6	9.667 ³¹⁴	30.41 ²⁷⁶	27.667 ³⁶⁶	36.32 ⁵²	37.10 ⁴⁴	40.14 ²⁷⁷	37.782 ³⁰²	21.40 ¹⁴¹
28.6	9.946 ²⁷⁹	33.41 ³⁰⁰	28.004 ³³⁷	36.14 ¹⁸	37.48 ³⁸	43.26 ³¹²	38.062 ²⁸⁰	20.15 ¹²⁵
July 8.6	10.187 ¹⁹⁵	36.58 ³¹⁷	28.304 ³⁰⁰	36.27 ¹³	37.80 ³²	46.65 ³³⁹	38.311 ²⁴⁹	19.07 ¹⁰⁸
18.6	10.382 ¹⁴⁵	39.84 ³²⁶	28.559 ²⁵⁵	36.70 ⁴³	38.03 ²³	50.24 ³⁵⁹	38.311 ²¹³	18.21 ⁸⁶
28.5	10.527 ⁹³	43.11 ³²⁷	28.764 ²⁰⁵	37.42 ⁷²	38.20 ¹⁷	53.94 ³⁷⁰	38.524 ¹⁷¹	18.21 ⁶³
Aug. 7.5	10.620 ⁴⁰	46.33 ³²²	28.913 ¹⁴⁹	38.38 ⁹⁶	38.20 ⁸	57.66 ³⁷²	38.695 ¹²⁷	17.58 ⁴³
17.5	10.660 ¹²	49.42 ³⁰⁹	29.002 ⁸⁹	39.56 ¹¹⁸	38.28 ⁰	61.33 ³⁶⁷	38.822 ⁸⁰	17.15 ²⁰
27.5	10.648 ⁶⁰	52.33 ²⁹¹	29.034 ³²	40.88 ¹³²	38.21 ⁷	64.87 ³⁵⁴	38.902 ³³	16.95 ⁰
Sept. 6.4	10.588	54.99	29.009	42.29	38.05	68.21	38.935 ¹²	16.95 ¹⁷
16.4	10.482 ¹⁰⁶	57.37 ²³⁸	29.009 ⁷⁹	42.29 ¹⁴³	38.05 ²³	68.21 ³⁰⁶	38.923 ³⁰⁶	17.12 ³¹
26.4	10.339 ¹⁴³	59.42 ²⁰⁵	28.930 ¹²⁴	43.72 ¹³⁸	37.82 ²⁸	71.27 ²⁷²	38.871 ⁵²	17.43 ⁴¹
Oct. 6.3	10.165 ¹⁷⁴	61.09 ¹⁶⁷	28.806 ¹⁶¹	45.10 ¹²⁸	37.54 ³³	73.99 ²³⁶	38.783 ¹¹⁷	17.84 ⁴⁹
16.3	9.968 ¹⁹⁷	62.35 ¹²⁶	28.645 ¹⁸⁶	46.38 ¹⁰⁹	37.21 ³⁷	76.35 ¹⁹⁰	38.666 ¹³⁶	18.33 ⁵²
26.3	9.757 ²¹¹	63.18 ⁸³	28.459 ²⁰²	47.47 ⁸⁷	36.84 ⁴¹	78.25 ¹³⁹	38.530 ¹⁴⁷	18.85 ⁵²
Nov. 5.3	9.757	63.18	28.257	48.34	36.43	79.64	38.383	19.37
15.2	9.542 ²¹⁵	63.55 ³⁷	28.050 ²⁰⁷	48.93 ²⁹	36.02 ⁴¹	80.52 ⁸⁸	38.383 ¹⁴⁹	19.87 ⁵⁰
25.2	9.331 ²¹¹	63.45 ¹⁰	27.851 ¹⁹⁹	49.22 ²	35.60 ⁴²	80.84 ³²	38.234 ¹⁴⁰	20.33 ⁴⁶
Dec. 5.2	9.130 ²⁰¹	62.89 ⁵⁶	27.667 ¹⁸⁴	49.20 ²	35.19 ⁴¹	80.58 ²⁶	38.092 ¹³²	20.33 ⁴⁶
15.2	8.949 ¹⁸¹	61.87 ¹⁰²	27.512 ¹⁵⁵	48.86 ³⁴	34.80 ³⁹	79.74 ⁸⁴	37.962 ¹⁰⁷	20.72 ³⁰
25.1	8.793 ¹⁵⁶	60.42 ¹⁴⁵	27.390 ¹²²	48.20 ⁶⁶	34.80 ³⁵	79.74 ¹³⁹	37.855 ⁸³	21.02 ³⁰
35.1	8.668 ¹²⁵	58.57 ¹⁸⁵	27.305 ⁸⁵	47.26 ⁹⁴	34.45 ³¹	78.35 ¹⁹¹	37.772 ⁵⁵	21.22 ¹³
35.1	8.577 ⁹¹	56.41 ²¹⁶	27.261 ⁴⁴	46.05 ¹²¹	34.14 ²⁵	76.44 ²³⁵	37.717 ²⁴	21.35 ³
Mean Place	6.946	32.10	23.444	55.14	34.588	45.72	34.307	34.54
Sec δ , Tan δ	1.288	+0.811	1.328	-0.874	2.147	+1.899	1.047	-0.309
$D\psi \alpha$, $D\omega \alpha$	+0.05	-0.04	+0.08	+0.04	+0.03	-0.10	+0.07	+0.02
$D\psi \delta$, $D\omega \delta$	+0.3	-0.7	+0.3	-0.7	+0.3	-0.7	+0.3	-0.7

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	1 Pegasi. Mag. 4.2			γ Pavonis. Mag. 4.3			ζ Capricorni. Mag. 3.9			ξ Cygni. Mag. 5.3		
	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.	Right Ascension.		Declina- tion.
	h	m	°	h	m	°	h	m	°	h	m	°
	21	18	+19 26	21	19	-65 44	21	21	-22 46	21	26	+46 9
	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 1.1	11.638	44.04		30.31	62.44		52.392	38.66		19.779	81.09	
11.1	11.612	42.34	170	30.20	59.88	256	52.386	38.32	34	19.674	78.73	236
21.1	11.617	40.56	178	30.17	57.06	282	52.413	37.83	49	19.614	76.11	262
31.0	11.657	38.76	180	30.23	54.04	302	52.474	37.18	65	19.602	73.35	276
Feb. 10.0	11.730	37.02	174	30.37	50.92	314	52.567	36.39	79	19.639	70.55	280
	108	158		24	318		126	93		90	272	
20.0	11.838	35.44	136	30.61	47.74		52.693	35.46		19.729	67.83	
29.9	11.978	34.08	106	30.91	44.58	316	52.851	34.38	106	19.871	65.32	251
Mar. 10.9	12.153	33.02	70	31.27	41.51	307	53.038	33.15	123	20.063	63.10	222
20.9	12.360	32.32	31	31.71	38.58	293	53.258	31.79	136	20.303	61.27	183
30.9	12.596	32.01	12	32.21	35.86	272	53.506	30.31	148	20.587	59.92	135
	265			55	246		273	157		323	82	
Apr. 9.8	12.861	32.13	55	32.76	33.40		53.779	28.74		20.910	59.10	26
19.8	13.147	32.68	97	33.35	31.24	216	54.077	27.08	166	21.264	58.84	31
29.8	13.453	33.65	137	33.97	29.43	181	54.392	25.39	169	21.641	59.15	88
May 9.8	13.769	35.02	173	34.62	28.00	143	54.722	23.71	168	22.032	60.03	143
19.7	14.089	36.75	204	35.28	26.99	101	55.059	22.09	162	22.427	61.46	192
	318			65	58		337	154		388		
29.7	14.407	38.79	227	35.93	26.41		55.396	20.55		22.815	63.38	235
June 8.7	14.714	41.06	246	36.56	26.29	12	55.727	19.14	141	23.187	65.73	273
18.6	15.004	43.52	259	37.15	26.61	32	56.041	17.91	123	23.532	68.46	303
28.6	15.267	46.11	263	37.70	27.38	77	56.333	16.86	105	23.842	71.49	324
July 8.6	15.499	48.74	262	38.19	28.54	116	56.593	16.05	81	24.109	74.73	338
	193			41	153		224	58		218		
18.6	15.692	51.36	255	38.60	30.07		56.817	15.47	33	24.327	78.11	344
28.5	15.844	53.91	243	38.92	31.92	185	56.998	15.14	10	24.491	81.55	344
Aug. 7.5	15.951	56.34	227	39.14	34.03	211	57.133	15.04	12	24.598	84.99	335
17.5	16.012	58.61	206	39.26	36.31	228	57.219	15.16	32	24.647	88.34	320
27.5	16.027	60.67	183	39.28	38.68	237	57.257	15.48	48	24.639	91.54	298
	27			8	237		9			61		
Sept. 6.4	16.000	62.50	156	39.20	41.05		57.248	15.96	59	24.578	94.52	270
16.4	15.934	64.06	127	39.03	43.34	229	57.198	16.55	68	24.466	97.22	239
26.4	15.836	65.33	98	38.76	45.41	207	57.108	17.23	71	24.311	99.61	200
Oct. 6.3	15.710	66.31	68	38.43	47.22	181	56.989	17.94	69	24.121	101.61	159
16.3	15.566	66.99	33	38.04	48.66	144	56.849	18.63	65	23.902	103.20	113
	155			43	100		152			237		
26.3	15.411	67.32	29	37.61	49.66		56.697	19.28	57	23.665	104.33	65
Nov. 5.3	15.253	67.35	27	37.17	50.18	52	56.542	19.85	45	23.419	104.98	16
15.2	15.099	67.06	61	36.74	50.18	0	56.392	20.30	33	23.173	105.14	36
25.2	14.957	66.45	90	36.33	49.66	52	56.256	20.63	18	22.934	104.78	86
Dec. 5.2	14.833	65.55	119	35.96	48.63	103	56.141	20.81	4	22.712	103.92	134
	102			31	153		91			197		
15.2	14.731	64.36	141	35.65	47.10		56.050	20.85	10	22.515	102.58	179
25.1	14.655	62.95	162	35.42	45.14	196	55.989	20.75	27	22.348	100.79	217
35.1	14.608	61.33		35.25	42.80	234	55.960	20.48		22.217	98.62	
Mean Place	12.090	40.38		30.871	50.38		52.463	32.88		20.928	71.31	
Sec δ. Tan δ	1.061	+0.353		2.435	-2.220		1.085	-0.420		1.444	+1.042	
$D\delta \alpha, D\omega \alpha$	+0.05	-0.02		+0.10	+0.11		+0.07	+0.02		+0.04	-0.05	
$D\delta \delta, D\omega \delta$	+0.3	-0.6		+0.3	-0.6		+0.3	-0.6		+0.3	-0.6	

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	β Aquarii. Mag. 3.1		β Cephei. Mag. 3.3		ξ Aquarii. Mag. 4.8		74 Cygni. Mag. 5.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 21 27	° ' " - 5 56	h m 21 27	° ' " +70 11	h m 21 33	° ' " - 8 13	h m 21 33	° ' " +40 1
	s	"	s	"	s	"	s	"
Jan. 1.1	8.153	30.79	31.42	43.89	16.805	55.68	34.018	77.57
11.1	8.141 ¹²	31.32 ⁵³	31.06 ³⁶	43.89 ²⁴⁷	16.789 ¹⁶	56.10 ⁴²	33.931 ⁸⁷	75.36 ²²¹
21.1	8.160 ¹⁹	31.80 ⁴⁸	30.81 ²⁵	38.60 ²⁸²	16.804 ¹⁵	56.43 ³³	33.882 ⁴⁹	72.93 ²⁴³
31.0	8.208 ⁴⁸	32.18 ³⁸	30.65 ¹⁶	35.51 ³⁰⁹	16.847 ⁴³	56.66 ²³	33.875 ⁷	70.36 ²⁵⁷
Feb. 10.0	8.287 ⁷⁹	32.44 ²⁶	30.60 ⁵	32.30 ³²¹	16.921 ⁷⁴	56.77 ¹¹	33.912 ³⁷	67.78 ²⁵⁸
	110	10	8	321	104	6	82	251
20.0	8.397	32.54	30.68	29.09	17.025	56.71	33.994	65.27
Mar. 1.0	8.535 ¹³⁸	32.45 ⁹	30.88 ²⁰	26.03 ³⁰⁶	17.160 ¹³⁵	56.46 ²⁵	34.123 ¹²⁹	62.94 ²³³
	170	31	30	26.03	17.160	56.46	34.123	62.94
10.9	8.705 ¹⁹⁹	32.14 ⁵⁴	31.18 ⁴¹	23.21 ²⁸²	17.325 ¹⁶⁵	56.01 ⁴⁵	34.297 ¹⁷⁴	60.92 ²⁰²
20.9	8.904 ²²⁶	31.60 ⁸⁰	31.59 ⁵¹	20.77 ¹⁹⁸	17.519 ²⁴⁴	55.33 ⁶⁸	34.514 ²¹⁷	59.28 ¹⁶⁴
30.9	9.130 ²⁵³	30.80 ¹⁰³	32.10 ⁵⁸	18.79 ¹⁴²	17.743 ²⁵¹	54.43 ¹¹³	34.773 ²⁹⁵	58.09 ⁶⁸
Apr. 9.8	9.383 ²⁷⁵	29.77 ¹²⁷	32.68 ⁶⁴	17.37 ⁸⁴	17.994 ²⁷³	53.30 ¹³³	35.068 ³²⁴	57.41 ¹⁵
19.8	9.658 ²⁹⁴	28.50 ¹⁴⁵	33.32 ⁶⁸	16.53 ²²	18.267 ²⁹³	51.97 ¹⁵¹	35.392 ³⁴⁹	57.26 ⁴⁰
29.8	9.952 ³⁰⁹	27.05 ¹⁶³	34.00 ⁷⁰	16.31 ⁴⁰	18.560 ³⁰⁹	50.46 ¹⁶⁶	35.741 ³⁶²	57.66 ⁹⁴
May 9.8	10.261 ³¹⁵	25.42 ¹⁷⁵	34.70 ⁷⁰	16.71 ¹⁰³	18.869 ³¹⁷	48.80 ¹⁷⁵	36.103 ³⁶⁹	58.60 ¹⁴⁵
19.7	10.576 ³¹⁷	23.67 ¹⁸¹	35.40 ⁶⁸	17.74 ¹⁵⁹	19.186 ³¹⁸	47.05 ¹⁸¹	36.472 ³⁶⁶	60.05 ¹⁹⁰
29.7	10.893 ³⁰⁸	21.86 ¹⁸⁵	36.08 ⁶³	19.33 ²¹²	19.504 ³¹³	45.24 ¹⁸¹	36.838 ³⁵²	61.95 ²³¹
June 8.7	11.201 ²⁹⁶	20.01 ¹⁸¹	36.71 ⁵⁸	21.45 ²⁶⁰	19.817 ²⁹⁹	43.43 ¹⁷⁷	37.190 ³³²	64.26 ²⁶⁶
18.7	11.497 ²⁷⁴	18.20 ¹⁷⁵	37.29 ⁵⁰	24.05 ²⁹⁹	20.116 ²⁷⁹	41.66 ¹⁶⁷	37.522 ³⁰⁰	66.92 ²⁹²
28.6	11.771 ²⁴⁴	16.45 ¹⁶²	37.79 ⁴²	27.04 ³²⁹	20.395 ²⁵¹	39.99 ¹⁵⁴	37.822 ²⁶³	69.84 ³¹³
July 8.6	12.015 ²¹⁰	14.83 ¹⁴⁸	38.21 ³²	30.33 ³⁵⁵	20.646 ²¹⁷	38.45 ¹³⁸	38.085 ²¹⁸	72.97 ³²⁴
18.6	12.225 ¹⁷¹	13.35 ¹³⁰	38.53 ²¹	33.88 ³⁷⁰	20.863 ¹⁷⁷	37.07 ¹¹⁹	38.303 ¹⁷⁰	76.21 ³²⁹
28.5	12.396 ¹²⁸	12.05 ¹⁰⁹	38.74 ¹¹	37.58 ³⁷⁷	21.040 ¹³⁶	35.88 ⁹⁹	38.473 ¹¹⁸	79.50 ³²⁶
Aug. 7.5	12.524 ⁸³	10.96 ⁸⁹	38.85 ⁰	41.35 ³⁷⁷	21.176 ⁹⁰	34.89 ⁷⁵	38.591 ⁶⁵	82.76 ³¹⁷
17.5	12.607 ³⁸	10.07 ⁶⁷	38.85 ¹¹	45.12 ³⁶⁸	21.266 ⁴⁶	34.14 ⁵⁵	38.656 ¹²	85.93 ³⁰⁰
27.5	12.645 ³	9.40 ⁴⁷	38.74 ²¹	48.80 ³⁵²	21.312 ²	33.59 ³⁵	38.668 ³⁸	88.93 ²⁸⁰
Sept. 6.4	12.642 ⁴⁴	8.93 ²⁷	38.53 ³⁰	52.32 ³²⁹	21.314 ³⁷	33.24 ¹⁵	38.630 ⁸⁴	91.73 ²⁵²
16.4	12.598 ⁷⁸	8.66 ¹⁰	38.23 ³⁹	55.61 ²⁹⁹	21.277 ⁷³	33.09 ¹	38.546 ¹²⁵	94.25 ²²¹
26.4	12.520 ¹⁰⁵	8.56 ⁵	37.84 ⁴⁶	58.60 ²⁶²	21.204 ¹⁰⁰	33.10 ¹⁶	38.421 ¹⁵⁹	96.46 ¹⁸⁶
Oct. 6.4	12.415 ¹²⁵	8.61 ¹⁹	37.38 ⁵²	61.22 ²¹⁹	21.104 ¹²²	33.26 ²⁸	38.262 ¹⁸³	98.32 ¹⁴⁶
16.3	12.290 ¹³⁶	8.80 ³⁰	36.86 ⁵⁶	63.41 ¹⁷¹	20.982 ¹³⁴	33.54 ³⁶	38.079 ²⁰²	99.78 ¹⁰³
26.3	12.154 ¹³⁹	9.10 ³⁸	36.30 ⁵⁹	65.12 ¹¹⁹	20.848 ¹³⁸	33.90 ⁴³	37.877 ²¹⁰	100.81 ⁵⁹
Nov. 5.3	12.015 ¹³⁵	9.48 ⁴⁵	35.71 ⁶⁰	66.31 ⁶²	20.710 ¹³⁶	34.33 ⁴⁸	37.667 ²¹⁰	101.40 ¹²
15.2	11.880 ¹²²	9.93 ⁵¹	35.11 ⁶¹	66.93 ⁵⁶	20.574 ¹²⁴	34.81 ⁵⁰	37.457 ²⁰⁴	101.52 ³⁵
25.2	11.758 ¹⁰⁷	10.44 ⁵⁵	34.50 ⁵⁸	66.95 ⁵⁶	20.450 ¹⁰⁸	35.31 ⁵²	37.253 ¹⁸⁹	101.17 ⁸²
Dec. 5.2	11.651 ⁸⁵	10.99 ⁵⁸	33.92 ⁵⁴	66.39 ¹¹⁴	20.342 ⁸⁸	35.83 ⁵¹	37.064 ¹⁶⁸	100.35 ¹²⁷
15.2	11.566 ⁵⁹	11.57 ⁵⁸	33.38 ⁴⁸	65.25 ¹⁷¹	20.254 ⁶²	36.34 ⁴⁸	36.896 ¹⁴³	99.08 ¹⁶⁷
25.1	11.507 ³¹	12.15 ⁵⁶	32.90 ⁴¹	63.54 ²²⁰	20.192 ³⁵	36.82 ⁴⁶	36.753 ¹⁰⁹	97.41 ²⁰³
35.1	11.476	12.71	32.49	61.34	20.157	37.28	36.644	95.38
Mean Place	8.282	28.85	34.947	30.44	16.894	53.34	34.888	68.40
Sec δ , Tan δ	1.005	-0.104	2.951	+2.777	1.010	-0.145	1.306	+0.840
$D\psi\alpha$, $D_w\alpha$	+0.06	+0.01	+0.02	-0.15	+0.06	+0.01	+0.05	-0.04
$D\psi\delta$, $D_w\delta$	+0.3	-0.6	+0.3	-0.6	+0.3	-0.6	+0.3	-0.8

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Capricorni. Mag. 3.8			ε Pegasi. Mag. 2.5			11 Cephei. Mag. 4.8			δ Capricorni. Mag. 3.0		
	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.	Right Ascension.		Declination.
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	21	35	-17 2	21	40	+ 9 29	21	40	+70 55	21	42	-16 30
	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 1.1	26.316	17	36.46	3.388	31	23.89	38.21	40	42.65	24.378	22	36.67
11.1	26.299	15	36.42	3.357	31	22.67	37.81	40	40.34	24.356	22	36.68
21.1	26.314	15	36.26	3.354	3	21.43	37.51	30	37.63	24.363	7	36.56
31.0	26.358	44	35.95	3.381	57	20.20	37.32	30	34.63	24.401	38	36.28
Feb. 10.0	26.434	76	35.50	3.439	28	19.06	37.23	9	31.48	24.469	68	35.87
		108	60		88	101		4			99	58
20.0	26.542		34.90	3.527		18.05	37.27		28.29	24.568		35.29
Mar. 1.0	26.679	137	34.12	3.648	121	17.25	37.43	16	25.20	24.698	130	34.52
		170	97		153	55		29	22.32	24.860	162	33.59
10.9	26.849		33.15	3.801		16.70	37.72		19.78	25.052		32.46
20.9	27.048	199	32.02	3.985	184	16.46	38.11	39	17.68	25.276	224	31.17
30.9	27.277	229	30.72	4.200	215	16.55	38.60	49			250	
		257	145		243	44		58				145
Apr. 9.9	27.534		29.27	4.443		16.99	39.18		16.10	25.526		29.72
		280	158		270	79		65	15.09	25.802	276	28.12
19.8	27.814	302	27.69	4.713	289	17.78	39.83	71	14.71	26.101	299	26.43
29.8	28.116	317	26.01	5.002	306	18.92	40.54	72	14.93	26.415	314	24.68
May 9.8	28.433	326	24.29	5.308	313	20.36	41.26	72	15.77	26.740	325	22.91
		329	171		316	195		70			330	174
29.7	29.088		20.84	5.937		24.03	42.88		17.20	27.070		21.17
June 8.7	29.411	323	19.21	6.246	309	26.15	43.36	68	19.17	27.394	324	19.51
		310	150		297	222		62	21.62	27.708	314	17.96
18.7	29.721	291	17.71	6.543	276	28.37	43.98	54	24.49	28.002	294	16.56
28.6	30.012	262	16.36	7.065	246	30.65	44.52	46	27.70	28.268	266	15.37
July 8.6	30.274	227	15.22	7.719	213	32.92	44.98	37			233	
			94			223						99
18.6	30.501		14.28	7.278		35.15	45.35		31.18	28.501		14.38
28.6	30.689	188	13.57	7.453	175	37.25	45.60	25	34.84	28.694	193	13.64
Aug. 7.5	30.833	144	13.10	7.585	132	39.23	45.75	15	38.61	28.843	149	13.12
		97	12.86	7.674	89	41.02	45.80	5	42.40	28.947	104	12.85
17.5	30.930	51	12.82	7.719	45	42.59	45.73	7	46.14	29.004	57	12.78
27.5	30.981	5	17		2			18			12	
Sept. 6.4	30.986		12.99	7.721		43.96	45.55		49.74	29.016		12.92
		37	13.31	7.683	38	45.07	45.27	28	53.14	29.985	31	13.23
16.4	30.949	73	13.75	7.612	71	45.95	44.91	36	56.26	28.918	67	13.67
Oct. 6.4	30.772	104	14.28	7.513	99	46.57	44.46	45	59.03	28.821	97	14.19
		125	14.85	7.392	121	46.96	43.95	51	61.40	28.699	122	14.78
16.3	30.647	139	15.44	7.259	133	47.10		56			135	15.38
26.3	30.508		16.00	7.120		47.02	43.39		63.30	28.564		15.38
Nov. 5.3	30.364	144	16.52	6.983	137	46.70	42.79	60	64.68	28.423	141	15.97
		141	16.97	6.853	130	46.18	42.17	62	65.50	28.283	140	16.52
15.3	30.223	131	17.33	6.738	115	45.45	41.55	62	65.74	28.153	130	17.00
25.2	30.092	114	17.58	6.641	97	44.55	40.95	60	65.39	28.039	114	17.40
Dec. 5.2	29.978	92	17.74	6.566	75	43.50	40.38	57	64.43	27.944	95	17.71
			17.99	6.516	50	42.33	39.86	52	62.91	27.874	70	17.90
15.2	29.886	65					39.41	45	60.86	27.831	43	17.99
25.1	29.821	38										
35.1	29.783											
Mean Place	26.349		32.07	3.607		21.56	41.728		27.95	24.384		32.51
Sec δ, Tan δ	1.046		-0.306	1.014		+0.167	3.060		+2.892	1.043		-0.296
Dψ a, Dω a	+0.07		+0.02	+0.06		-0.01	+0.02		-0.16	+0.06		+0.02
Dψ δ, Dω δ	+0.3		-0.6	+0.3		-0.6	+0.3		-0.6	+0.3		-0.6

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	79 Draconis. Mag. 6.6		ε Indi. Mag. 4.7		30 Pegasi. Mag. 5.7		α Aquarii. Mag. 3.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 21 51	° ' " +73 18	h m 21 56	° ' " -57 7	h m 21 56	° ' " +12 42	h m 22 1	° ' " - 0 43
	s	"	s	"	s	"	s	"
Jan. 1.1	44.58	32.96	56.473	66.27	59.612	65.26	28.190	41.66
11.1	44.08 ⁵⁰	30.78 ²¹⁸	56.364 ¹⁰⁹	64.41 ¹⁸⁶	59.566 ⁴⁶	64.00 ¹²⁶	28.152 ³⁸	42.38 ⁷²
21.1	43.69 ³⁹	28.17 ²⁶¹	56.312 ⁵²	62.21 ²²⁰	59.547 ¹⁹	62.66 ¹³⁴	28.139 ¹³	43.07 ⁶⁹
31.1	43.42 ²⁷	25.24 ²⁹³	56.318 ⁶	59.75 ²⁴⁶	59.555 ⁸	61.32 ¹²⁴	28.153 ¹⁴	43.69 ⁶²
Feb. 10.0	43.28 ¹⁴	22.11 ³¹³	56.382 ⁶⁴	57.07 ²⁶⁸	59.594 ³⁹	60.04 ¹³⁸	28.194 ⁴¹	44.21 ⁵²
20.0	43.28	18.90	56.505	54.25	59.664	58.88	28.265	44.57
Mar. 1.0	43.42 ¹⁴	15.78 ³¹²	56.685 ¹⁸⁰	51.34 ²⁹¹	59.767 ¹⁰³	57.91 ⁹⁷	28.368 ¹⁰³	44.73 ¹⁶
10.9	43.69 ²⁷	12.83 ²⁹⁵	56.921 ²³⁶	48.40 ²⁹⁴	59.903 ¹³⁶	57.19 ⁷²	28.501 ¹³³	44.68 ⁵
20.9	44.10 ⁴¹	10.17 ²⁶⁶	57.212 ²⁹¹	45.50 ²⁹⁰	60.074 ¹⁷¹	56.76 ⁴³	28.667 ¹⁶⁶	44.36 ³²
30.9	44.63 ⁵³	7.94 ²²³	57.554 ³⁴²	42.69 ²⁸¹	60.277 ²⁰³	56.68 ⁸	28.865 ¹⁹⁸	43.77 ⁵⁹
Apr. 9.9	45.26	6.20	57.946	40.05	60.510	56.96	29.092	42.90
19.8	45.97 ⁷¹	5.03 ¹¹⁷	58.379 ⁴³³	37.60 ²⁴⁵	60.771 ²⁶¹	57.60 ⁶⁴	29.348 ²⁵⁶	41.78 ¹¹²
29.8	46.75 ⁷⁸	4.43 ⁶⁰	58.847 ⁴⁶⁸	35.41 ²¹⁹	61.056 ²⁸⁵	58.61 ¹⁰¹	29.627 ²⁷⁹	40.40 ¹³⁸
May 9.8	47.55 ⁸⁰	4.48 ⁵	59.345 ⁴⁹⁸	33.52 ¹⁸⁹	61.359 ³⁰³	59.95 ¹³⁴	29.924 ²⁹⁷	38.79 ¹⁶¹
19.8	48.37 ⁸²	5.13 ⁶⁵	59.861 ⁵¹⁶	31.98 ¹⁵⁴	61.873 ³¹⁴	61.61 ¹⁶⁶	30.236 ³¹²	37.01 ¹⁷⁸
29.7	49.17 ⁸⁰	6.38	60.386	30.82	61.992	63.51	30.552	35.10
June 8.7	49.94 ⁷⁷	8.17 ¹⁷⁹	60.907 ⁵²¹	30.07 ⁷⁵	62.308 ³¹⁶	65.63 ²¹²	30.867 ³¹⁵	33.10 ²⁰⁰
18.7	50.64 ⁷⁰	10.44 ²²⁷	61.414 ⁵⁰⁷	29.76 ³¹	62.611 ³⁰³	67.89 ²²⁶	31.172 ³⁰⁵	31.08 ²⁰²
28.6	51.28 ⁶⁴	13.20 ²⁷⁶	61.892 ⁴⁷⁸	29.88 ¹²	62.897 ²⁸⁶	70.24 ²³⁵	31.461 ²⁸⁹	29.08 ²⁰⁰
July 8.6	51.81 ⁵³	16.33 ³¹³	62.329 ⁴³⁷	30.42 ⁵⁴	63.156 ²⁵⁹	72.61 ²³⁷	31.725 ²⁶⁴	27.17 ¹⁹¹
18.6	52.25 ⁴⁴	19.73	62.717	31.37	63.383	74.97	31.959	25.37
28.6	52.56 ³¹	23.34 ³⁶¹	63.043 ³²⁶	32.71 ¹³⁴	63.573 ¹⁹⁰	77.25 ²²⁸	32.156 ¹⁹⁷	23.73 ¹⁶⁴
Aug. 7.5	52.76 ²⁰	27.10 ³⁷⁶	63.300 ²⁵⁷	34.38 ¹⁶⁷	63.721 ¹⁴⁸	79.39 ²¹⁴	32.312 ¹⁵⁶	22.27 ¹⁴⁶
17.5	52.83 ⁷	30.90 ³⁸⁰	63.481 ¹⁸¹	36.31 ¹⁹³	63.825 ¹⁰⁴	81.38 ¹⁹⁹	32.425 ¹¹³	21.03 ¹²⁴
27.5	52.78 ⁵	34.69 ³⁷⁹	63.584 ¹⁰³	38.45 ²¹⁴	63.885 ⁶⁰	83.17 ¹⁷⁹	32.494 ⁶⁹	19.99 ¹⁰⁴
Sept. 6.5	52.61	38.36	63.609	40.71	63.902	84.73	32.521	19.19
16.4	52.33 ²⁸	41.85 ³⁴⁹	63.557 ⁵²	42.99 ²²⁸	63.879 ²³	86.06 ¹³³	32.508 ¹³	18.60 ⁵⁹
26.4	51.94 ³⁹	45.12 ³²⁷	63.437 ¹²⁰	45.20 ²²¹	63.821 ⁵⁸	87.13 ¹⁰⁷	32.460 ⁴⁸	18.23 ³⁷
Oct. 6.4	51.46 ⁴⁸	48.06 ²⁹⁴	63.256 ¹⁸¹	47.26 ²⁰⁶	63.734 ⁸⁷	87.94 ⁸¹	32.380 ⁸⁰	18.06 ¹⁷
16.3	50.90 ⁵⁶	50.61 ²⁵⁵	63.024 ²³²	49.08 ¹⁸²	63.623 ¹¹¹	88.50 ⁵⁶	32.278 ¹⁰²	18.05 ¹
26.3	50.27 ⁶³	52.68 ²⁰⁷	62.756 ²⁶⁸	50.56 ¹⁴⁸	63.497 ¹²⁶	88.79 ²⁹	32.159 ¹¹⁹	18.21 ¹⁶
Nov. 5.3	49.60 ⁶⁷	54.26 ¹⁵⁸	62.467 ²⁸⁹	51.66 ¹¹⁰	63.362 ¹³⁵	88.84 ⁵	32.032 ¹²⁷	18.51 ³⁰
15.3	48.89 ⁷¹	55.29 ¹⁰³	62.171 ²⁹⁶	52.33 ⁶⁷	63.225 ¹³⁷	88.62 ²²	31.904 ¹²⁸	18.93 ⁴²
25.2	48.18 ⁷¹	55.75 ⁴⁶	61.882 ²⁸⁹	52.52 ¹⁹	63.093 ¹³²	88.17 ⁴⁵	31.780 ¹²⁴	19.45 ⁵²
Dec. 5.2	47.48 ⁷⁰	55.59 ¹⁶	61.615 ²⁶⁷	52.23 ²⁹	62.973 ¹²⁰	87.49 ⁶⁸	31.668 ¹¹²	20.06 ⁶¹
15.2	46.80 ⁶⁸	54.83 ⁷⁶	61.379 ²³⁶	51.47 ⁷⁶	62.868 ¹⁰⁵	86.60 ⁸⁹	31.570 ⁹⁸	20.73 ⁶⁷
25.2	46.18 ⁶²	53.47 ¹³⁶	61.185 ¹⁹⁴	50.26 ¹²¹	62.781 ⁸⁷	85.54 ¹⁰⁶	31.492 ⁷⁸	21.46 ⁷³
35.1	45.64 ⁵⁴	51.58 ¹⁸⁹	61.040 ¹⁴⁵	48.64 ¹⁶²	62.718 ⁶³	84.33 ¹²¹	31.435 ⁵⁷	22.19 ⁷³
Mean Place	48.529	16.99	56.495	54.26	59.793	61.36	28.213	42.04
Sec δ, Tan δ	3.482	+3.335	1.842	-1.548	1.025	+0.226	1.000	-0.013
$D\psi a, D\omega a$	+0.01	-0.19	+0.08	+0.09	+0.06	-0.01	+0.06	0.00
$D\psi \delta, D\omega \delta$	+0.3	-0.5	+0.3	-0.5	+0.3	-0.5	+0.3	-0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♌ Aquarii. Mag. 4.4		♄ 20 Cephei. Mag. 5.4		♊ α Gruis. Mag. 2.2		♌ Pegasi. Mag. 4.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 22 1	° ' -14 16	h m 22 2	° ' +62 22	h m 22 2	° ' -47 21	h m 22 3	° ' +24 55
	s	"	s	"	s	"	s	"
Jan. 1.1	54.191 ³⁸	43.05 ¹²	25.36 ²⁷	47.18 ²¹⁴	56.788 ⁸⁵	77.39 ¹⁴⁵	5.652 ⁶⁸	71.17 ¹⁶⁴
11.1	54.153 ¹¹	43.17 ⁰	25.09 ²¹	45.04 ²⁵³	56.703 ⁴³	75.94 ¹⁷⁷	5.584 ⁴¹	69.53 ¹⁷⁸
21.1	54.142 ¹⁸	43.17 ¹⁵	24.88 ¹⁵	42.51 ²⁸²	56.660 ¹	74.17 ²⁰⁴	5.543 ¹⁰	67.75 ¹⁸⁷
31.1	54.160 ⁴⁶	43.02 ³²	24.73 ⁶	39.69 ³⁰¹	56.659 ⁴⁶	72.13 ²²⁵	5.533 ²³	65.88 ¹⁸⁸
Feb. 10.0	54.206 ⁷⁶	42.70 ⁴⁸	24.67 ¹	36.68 ³⁰⁷	56.705 ⁹⁰	69.88 ²⁴²	5.556 ⁵⁸	64.00 ¹⁸⁰
20.0	54.282	42.22	24.68	33.61	56.795	67.46	5.614	62.20
Mar. 1.0	54.390 ¹⁰⁸	41.56 ⁶⁶	24.77 ⁹	30.61 ³⁰⁰	56.931 ¹³⁶	64.90 ²⁵⁶	5.708 ⁹⁴	60.58 ¹⁶²
10.9	54.529 ¹³⁹	40.69 ⁸⁷	24.95 ¹⁸	27.79 ²⁸²	57.112 ¹⁸¹	62.27 ²⁶³	5.841 ¹³³	59.19 ¹³⁹
20.9	54.701 ¹⁷²	39.63 ¹⁰⁶	25.21 ²⁶	25.30 ²⁴⁹	57.338 ²²⁶	59.61 ²⁶⁶	6.011 ¹⁷⁰	58.14 ¹⁰⁵
30.9	54.905 ²⁰⁴	38.37 ¹²⁶	25.54 ³³	23.21 ²⁰⁹	57.605 ²⁶⁷	56.97 ²⁶⁴	6.218 ²⁰⁷	57.45 ⁶⁹
	232	143	40	160	303	255	240	26
Apr. 9.9	55.137	36.94	25.94	21.61 ¹⁰⁵	57.913	54.42	6.458	57.19
19.8	55.399 ²⁶²	35.33 ¹⁶¹	26.40 ⁴⁶	20.56 ⁴⁵	58.257 ³⁴⁴	51.97 ²⁴⁵	6.730 ²⁷²	57.36 ¹⁷
29.8	55.685 ²⁸⁶	33.61 ¹⁷²	26.91 ⁵¹	20.11 ¹⁴	58.634 ³⁷⁷	49.70 ²²⁷	7.028 ²⁹⁸	57.98 ⁶²
May 9.8	55.991 ³⁰⁶	31.79 ¹⁸²	27.44 ⁵³	20.25 ¹⁴	59.036 ⁴⁰²	47.65 ²⁰⁵	7.345 ³¹⁷	59.03 ¹⁰⁵
19.8	56.310 ³¹⁹	29.93 ¹⁸⁶	27.98 ⁵⁴	21.00 ⁷⁵	59.455 ⁴¹⁹	45.88 ¹⁷⁷	7.674 ³²⁹	60.48 ¹⁴⁵
	326	185	54	132	429	148	333	183
29.7	56.636	28.08	28.52	22.32	59.884	44.40	8.007	62.31
June 8.7	56.961 ³²⁵	26.27 ¹⁸¹	29.05 ⁵³	24.18 ¹⁸⁶	60.312 ⁴²⁸	43.28 ¹¹²	8.338 ³³¹	64.45 ²¹⁴
18.7	57.277 ³¹⁶	24.56 ¹⁷¹	29.55 ⁵⁰	26.52 ²³⁴	60.729 ⁴¹⁷	42.53 ⁷⁵	8.657 ³¹⁹	66.84 ²³⁹
28.6	57.576 ²⁹⁹	23.00 ¹⁵⁶	30.00 ⁴⁵	29.29 ²⁷⁷	61.124 ³⁹⁵	42.16 ³⁷	8.954 ²⁹⁷	69.43 ²⁵⁹
July 8.6	57.852 ²⁷⁶	21.62 ¹³⁸	30.40 ⁴⁰	32.40 ³¹¹	61.488 ³⁶⁴	42.18 ²	9.226 ²⁷²	72.14 ²⁷¹
	243	116	34	338	323	42	236	278
18.6	58.095	20.46	30.74	35.78	61.811	42.60	9.462	74.92
28.6	58.302 ²⁰⁷	19.51 ⁹⁵	31.00 ²⁶	39.35 ³⁵⁷	62.083 ²⁷²	43.39 ⁷⁹	9.658 ¹⁹⁶	77.69 ²⁷⁷
Aug. 7.5	58.467 ¹⁶⁵	18.81 ⁷⁰	31.18 ¹⁸	43.04 ³⁶⁹	62.300 ²¹⁷	44.51 ¹¹²	9.811 ¹⁵³	80.40 ²⁷¹
17.5	58.587 ¹²⁰	18.35 ⁴⁶	31.29 ¹¹	46.77 ³⁷³	62.455 ¹⁵⁵	45.90 ¹³⁹	9.919 ¹⁰⁸	82.98 ²⁵⁸
27.5	58.662 ⁷⁵	18.13 ²²	31.32 ³	50.46 ³⁶⁹	62.547 ⁹²	47.53 ¹⁶³	9.981 ⁶²	85.42 ²⁴⁴
	30	0	6	356	28	178	16	221
Sept. 6.5	58.692	18.13	31.26	54.02	62.575	49.31	9.997	87.63
16.4	58.680 ¹²	18.31 ¹⁸	31.13 ¹³	57.39 ³³⁷	62.542 ³³	51.17 ¹⁸⁶	9.972 ²⁵	89.61 ¹⁹⁸
26.4	58.631 ⁴⁹	18.66 ³⁵	30.94 ¹⁹	60.51 ³¹²	62.453 ⁸⁹	53.03 ¹⁸⁶	9.909 ⁶³	91.32 ¹⁷¹
Oct. 6.4	58.549 ⁸²	19.13 ⁴⁷	30.69 ²⁵	63.31 ²⁸⁰	62.314 ¹³⁹	54.81 ¹⁷⁸	9.816 ⁹³	92.73 ¹⁴¹
16.3	58.443 ¹⁰⁶	19.68 ⁵⁵	30.39 ³⁰	65.71 ²⁴⁰	62.136 ¹⁷⁸	56.41 ¹⁶⁰	9.696 ¹²⁰	93.82 ¹⁰⁹
	125	60	35	197	207	138	138	75
26.3	58.318	20.28	30.04	67.68	61.929	57.79	9.558	94.57
Nov. 5.3	58.185 ¹³³	20.88 ⁶⁰	29.67 ³⁷	69.15 ¹⁴⁷	61.706 ²²³	58.86 ¹⁰⁷	9.410 ¹⁴⁸	94.99 ⁴²
15.3	58.051 ¹³⁴	21.47 ⁵⁹	29.28 ³⁰	70.07 ⁹²	61.477 ²²⁹	59.57 ⁷¹	9.258 ¹⁵²	95.05 ⁶
25.2	57.922 ¹²⁹	22.02 ⁵⁵	28.88 ⁴⁰	70.45 ³⁸	61.254 ²²³	59.90 ³³	9.109 ¹⁴⁹	94.76 ²⁹
Dec. 5.2	57.805 ¹¹⁷	22.51 ⁴⁹	28.49 ³⁹	70.25 ²⁰	61.048 ²⁰⁶	59.83 ⁷	8.968 ¹⁴¹	94.13 ⁶³
	101	40	37	79	183	46	127	95
15.2	57.704	22.91	28.12	69.46	60.865	59.37	8.841	93.18
25.2	57.625 ⁷⁹	23.22 ³¹	27.77 ³⁵	68.12 ¹³⁴	60.714 ¹⁵¹	58.50 ⁸⁷	8.733 ¹⁰⁸	91.92 ¹²⁶
35.1	57.568 ⁵⁷	23.41 ¹⁹	27.47 ³⁰	66.27 ¹⁸⁵	60.600 ¹¹⁴	57.26 ¹²⁴	8.647 ⁸⁶	90.42 ¹⁵⁰
Mean Place	54.120	39.78	27.298	31.67	56.683	66.74	5.985	63.68
Sec δ, Tan δ	1.032	-0.254	2.157	+1.911	1.477	-1.086	1.103	+0.465
Dψ α, Dω α	+0.06	+0.01	+0.04	-0.11	+0.08	+0.06	+0.05	-0.03
Dψ δ, Dω δ	+0.3	-0.5	+0.3	-0.5	+0.3	-0.5	+0.3	-0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	θ Pegasi. Mag. 3.7		π Pegasi. Mag. 4.4		ζ Cephei. Mag. 3.6		24 Cephei. Mag. 5.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 22 5	° ' " + 5 47	h m 22 6	° ' " +32 45	h m 22 7	° ' " +57 47	h m 22 8	° ' " +71 55
	s	"	s	"	s	"	s	"
Jan. 1.1	57.719	5.56	14.857	65.96	54.797	28.14	8.42	55.15
11.1	57.673 ⁴⁶	4.58 ⁹⁸	14.768 ⁸⁹	64.16 ¹⁸⁰	54.573 ²²⁴	26.06 ²⁰⁸	7.94 ⁴⁸	53.14 ²⁰¹
21.1	57.653 ²⁰	3.59 ⁹⁹	14.708 ⁶⁰	62.14 ²⁰²	54.398 ¹⁷⁵	23.60 ²⁴⁶	7.55 ³⁹	50.67 ²⁴⁷
31.1	57.658 ⁵	2.62 ⁹⁷	14.682 ²⁶	59.96 ²¹⁸	54.279 ¹¹⁹	20.86 ²⁷⁴	7.26 ²⁹	47.87 ²⁸⁰
Feb. 10.0	57.693 ³⁵	1.74 ⁸⁸	14.692 ¹⁰	57.75 ²²¹	54.225 ⁵⁴	17.94 ²⁹²	7.10 ¹⁶	44.82 ³⁰⁵
	65	74	47	215	12	298	4	316
20.0	57.758	1.00	14.739	55.60	54.237	14.96	7.06	41.66
Mar. 1.0	57.853 ⁹⁵	0.44 ⁵⁶	14.828 ⁸⁹	53.58 ²⁰²	54.323 ⁸⁶	12.06 ²⁹⁰	7.14 ⁸	38.52 ³¹⁴
11.0	57.982 ¹²⁹	0.13 ³¹	14.959 ¹³¹	51.81 ¹⁷⁷	54.479 ¹⁵⁶	9.35 ²⁷¹	7.35 ²¹	35.53 ²⁹⁹
20.9	58.144 ¹⁶²	0.07 ⁶	15.132 ¹⁷³	50.35 ¹⁴⁶	54.706 ²²⁷	6.94 ²⁴¹	7.69 ³⁴	32.81 ²⁷²
30.9	58.337 ¹⁹³	0.33 ²⁶	15.346 ²¹⁴	49.30 ¹⁰⁵	55.001 ²⁰⁵	4.94 ²⁰⁰	8.14 ⁴⁵	30.46 ²³⁵
	226	58	251	61	352	153	56	187
Apr. 9.9	58.563	0.91	15.597	48.69	55.353	3.41	8.70	28.59
19.8	58.817 ²⁵⁴	1.79 ⁸⁸	15.881 ²⁸⁴	48.55 ¹⁴	55.757 ⁴⁰⁴	2.44 ⁹⁷	9.35 ⁶⁵	27.25 ¹³⁴
29.8	59.095 ²⁷⁸	3.00 ¹²¹	16.194 ³¹³	48.91 ³⁶	56.202 ⁴⁴⁵	2.04 ⁴⁰	10.05 ⁷⁰	26.50 ⁷⁵
May 9.8	59.392 ²⁹⁷	4.47 ¹⁴⁷	16.527 ³³³	49.75 ⁸⁴	56.674 ⁴⁷²	2.23 ¹⁹	10.80 ⁷⁵	26.36 ¹⁴
19.8	59.703 ³¹¹	6.19 ¹⁷²	16.874 ³⁴⁷	51.06 ¹³¹	57.161 ⁴⁸⁷	3.01 ⁷⁸	11.56 ⁷⁶	26.83 ⁴⁷
	318	191	350	173	490	134	76	107
29.7	60.021	8.10	17.224	52.79	57.651	4.35	12.32	27.90
June 8.7	60.337 ³¹⁶	10.16 ²⁰⁶	17.571 ³⁴⁷	54.90 ²¹¹	58.128 ⁴⁷⁷	6.22 ¹⁸⁷	13.06 ⁷⁴	29.53 ¹⁶³
18.7	60.643 ³⁰⁶	12.31 ²¹⁵	17.904 ³³³	57.32 ²⁴²	58.581 ⁴⁵³	8.55 ²³³	13.76 ⁷⁰	31.68 ²¹⁵
28.7	60.933 ²⁹⁰	14.49 ²¹⁸	18.215 ³¹¹	60.01 ²⁶⁹	58.997 ⁴¹⁶	11.30 ²⁷⁵	14.39 ⁶³	34.28 ²⁶⁰
July 8.6	61.198 ²⁶⁵	16.65 ²¹⁶	18.497 ²⁸²	62.87 ²⁸⁶	59.366 ³⁶⁹	14.38 ³⁰⁸	14.94 ⁵⁵	37.28 ³⁰⁰
	235	208	245	298	314	333	46	331
18.6	61.433	18.73	18.742	65.85	59.680	17.71	15.40	40.59
28.6	61.631 ¹⁹⁸	20.69 ¹⁹⁶	18.945 ²⁰³	68.87 ³⁰²	59.932 ¹⁸⁴	21.24 ³⁵³	15.74 ³⁴	44.14 ³⁵⁵
Aug. 7.5	61.790 ¹⁵⁹	22.51 ¹⁸²	19.102 ¹⁵⁷	71.88 ³⁰¹	60.116 ¹¹⁵	24.86 ³⁶²	15.99 ²⁵	47.86 ³⁷²
17.5	61.906 ¹¹⁶	24.12 ¹⁶¹	19.211 ¹⁰⁹	74.81 ²⁹³	60.231 ¹¹⁵	28.52 ³⁶⁶	16.12 ¹³	51.66 ³⁸⁰
27.5	61.977 ⁷¹	25.54 ¹⁴²	19.272 ⁶¹	77.60 ²⁷⁹	60.274 ⁴³	32.12 ³⁶⁰	16.14 ²	55.46 ³⁸⁰
	30	119	13	259	24	348	9	373
Sept. 6.5	62.007	26.73	19.285	80.19	60.250	35.60	16.05	59.19
16.4	61.996 ¹¹	27.69 ⁹⁶	19.254 ³¹	82.56 ²³⁷	60.161 ⁸⁹	38.89 ³²⁹	15.83 ²²	62.76 ³⁵⁷
26.4	61.951 ⁴⁵	28.42 ⁷³	19.183 ⁷¹	84.64 ²⁰⁸	60.011 ¹⁵⁰	41.92 ³⁰³	15.53 ³⁰	66.12 ³³⁶
Oct. 6.4	61.874 ⁷⁷	28.92 ⁵⁰	19.078 ¹⁰⁵	86.41 ¹⁷⁷	59.809 ²⁰²	44.62 ²⁷⁰	15.14 ³⁹	69.17 ³⁰⁵
16.4	61.775 ⁹⁹	29.19 ²⁷	18.946 ¹³²	87.85 ¹⁴⁴	59.563 ²⁴⁶	46.96 ²³⁴	14.67 ⁴⁷	71.86 ²⁶⁹
	117	8	152	105	281	190	53	226
26.3	61.658	29.27	18.794	88.90	59.282	48.86	14.14	74.12
Nov. 5.3	61.532 ¹²⁶	29.15 ¹²	18.628 ¹⁶⁶	89.57 ⁶⁷	58.974 ³⁰⁸	50.26 ¹⁴⁰	13.55 ⁵⁹	75.89 ¹⁷⁷
15.3	61.403 ¹²⁹	28.84 ³¹	18.458 ¹⁷⁰	89.83 ²⁶	58.651 ³²³	51.16 ⁹⁰	12.93 ⁶²	77.13 ¹²⁴
25.2	61.280 ¹²³	28.36 ⁴⁸	18.288 ¹⁷⁰	89.68 ¹⁵	58.323 ³²⁸	51.51 ³⁵	12.29 ⁶⁴	77.79 ⁶⁶
Dec. 5.2	61.164 ¹¹⁶	27.73 ⁶³	18.126 ¹⁶²	89.12 ⁵⁶	57.998 ³²⁵	51.29 ²²	11.65 ⁶⁴	77.85 ⁶
	101	77	149	94	309	77	62	56
15.2	61.063	26.96	17.977	88.18	57.689	50.52	11.03	77.29
25.2	60.979 ⁸⁴	26.09 ⁸⁷	17.846 ¹³¹	86.85 ¹³³	57.404 ²⁸⁵	49.20 ¹³²	10.45 ⁵⁸	76.14 ¹¹⁵
35.1	60.918 ⁶¹	25.13 ⁹⁶	17.739 ¹⁰⁷	85.21 ¹⁶⁴	57.152 ²⁵²	47.39 ¹⁸¹	9.93 ⁵²	74.44 ¹⁷⁰
Mean Place	57.779	3.19	15.333	56.25	56.287	12.95	11.728	37.91
Sec δ , Tan δ	1.005	+0.101	1.189	+0.644	1.876	+1.587	3.224	+3.065
$D\psi\alpha$, $D\omega\alpha$	+0.06	-0.01	+0.05	-0.04	+0.04	-0.09	+0.02	-0.18
$D\psi\delta$, $D\omega\delta$	+0.3	-0.5	+0.3	-0.5	+0.4	-0.5	+0.4	-0.5

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	θ Aquarii. Mag. 4.3		α Tucanæ. Mag. 2.9		γ Aquarii. Mag. 4.0		31 Pegasi. Mag. 4.9	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m 22 12	° ' " - 8 11	h m 22 12	° ' " -60 40	h m 22 17	° ' " - 1 48	h m 22 17	° ' " +11 46
	s	"	s	"	s	"	s	"
Jan. 1.1	24.213 ⁴⁵	68.39 ⁴⁰	45.40 ¹⁷	55.60 ¹⁹⁷	19.148 ⁴⁹	38.75 ⁶⁵	22.939 ⁵⁹	57.96 ¹¹⁶
11.1	24.168 ²⁰	68.79 ³⁰	45.23 ¹¹	53.63 ²³⁴	19.099 ²⁶	39.40 ⁶²	22.880 ³⁵	56.80 ¹²²
21.1	24.148 ⁶	69.09 ¹⁸	45.12 ⁵	51.29 ²⁶⁵	19.073 ¹	40.02 ⁵⁴	22.845 ⁹	55.58 ¹²³
31.1	24.154 ³⁴	69.27 ⁶	45.07 ¹	48.64 ²⁸⁹	19.072 ²⁷	40.56 ⁴²	22.836 ²⁰	54.35 ¹¹⁷
Feb. 10.0	24.188 ⁶⁴	69.33 ¹²	45.08 ⁸	45.75 ³⁰⁷	19.099 ⁵⁷	40.98 ²⁷	22.856 ⁴⁰	53.18 ¹⁰⁷
20.0	24.252 ⁹³	69.21 ³¹	45.16 ¹⁴	42.68 ³¹⁷	19.156 ⁸⁶	41.25 ⁸	22.905 ⁸³	52.11 ⁹⁰
Mar. 1.0	24.345 ¹²⁷	68.90 ⁵²	45.30 ²¹	39.51 ³²¹	19.242 ¹¹⁹	41.33 ¹⁴	22.988 ¹¹⁷	51.21 ⁶⁶
11.0	24.472 ¹⁵⁸	68.38 ⁷⁵	45.51 ²⁶	36.30 ³¹⁷	19.361 ¹⁵¹	41.19 ³⁹	23.105 ¹⁵¹	50.55 ³⁸
20.9	24.630 ¹⁹⁰	67.63 ⁹⁷	45.77 ³³	33.13 ³⁰⁸	19.512 ¹⁸⁴	40.80 ⁶⁶	23.256 ¹⁸⁴	50.17 ²⁸
30.9	24.820 ²²²	66.66 ¹²¹	46.10 ⁴⁰	30.05 ²⁹⁴	19.696 ²¹⁶	40.14 ⁹¹	23.440 ²¹⁸	50.10 ²⁸
Apr. 9.9	25.042 ²⁵¹	65.45 ¹⁴¹	46.50 ⁴³	27.11 ²⁷²	19.912 ²⁴⁶	39.23 ¹¹⁸	23.658 ²⁴⁹	50.38 ⁶⁴
19.8	25.293 ²⁷⁵	64.04 ¹⁶¹	46.93 ⁴⁸	24.39 ²⁴⁵	20.158 ²⁷¹	38.05 ¹⁴²	23.907 ²⁷⁴	51.02 ⁹⁸
29.8	25.568 ²⁹⁸	62.43 ¹⁷⁵	47.41 ⁵¹	21.94 ²¹⁴	20.429 ²⁹³	36.63 ¹⁰⁴	24.181 ²⁹⁶	52.00 ¹³²
May 9.8	25.866 ³¹²	60.68 ¹⁸⁵	47.92 ⁵³	19.80 ¹⁷⁶	20.722 ³⁰⁹	34.99 ¹⁸⁰	24.477 ³¹²	53.32 ¹⁶¹
19.8	26.178 ³¹⁹	58.83 ¹⁹²	48.45 ⁵⁵	18.04 ¹³⁶	21.031 ³¹⁷	33.19 ¹⁹²	24.789 ³¹⁸	54.93 ¹⁸⁶
29.7	26.497 ³²¹	56.91 ¹⁹³	49.00 ⁵⁶	16.68 ⁹²	21.348 ³¹⁸	31.27 ²⁰⁰	25.107 ³²⁰	56.79 ²⁰⁸
June 8.7	26.818 ³¹³	54.98 ¹⁸⁸	49.56 ⁵⁴	15.76 ⁴⁷	21.666 ³¹¹	29.27 ²⁰²	25.427 ³¹⁰	58.87 ²²³
18.7	27.131 ²⁹⁸	53.10 ¹⁸¹	50.10 ⁵¹	15.29 ¹	21.977 ²⁹⁶	27.25 ¹⁹⁹	25.737 ²⁹⁶	61.10 ²³⁰
28.7	27.429 ²⁷⁵	51.29 ¹⁶⁵	50.61 ⁴⁸	15.28 ⁴⁵	22.273 ²⁷⁴	25.26 ¹⁹¹	26.033 ²⁷⁴	63.40 ²³⁴
July 8.6	27.704 ²⁴⁶	49.64 ¹⁴⁹	51.09 ⁴³	15.73 ⁹⁰	22.547 ²⁴⁵	23.35 ¹⁷⁹	26.307 ²⁴²	65.74 ²³¹
18.6	27.950 ²¹⁰	48.15 ¹³⁰	51.52 ³⁵	16.63 ¹³¹	22.792 ²¹⁰	21.56 ¹⁶²	26.549 ²⁰⁷	68.05 ²²⁵
28.6	28.160 ¹⁷⁰	46.85 ¹⁰⁶	51.87 ²⁸	17.94 ¹⁶⁸	23.002 ¹⁷¹	19.94 ¹⁴³	26.756 ¹⁶⁷	70.30 ²¹¹
Aug. 7.5	28.330 ¹²⁸	45.79 ⁸⁴	52.15 ²¹	19.62 ¹⁹⁶	23.173 ¹²⁹	18.51 ¹²¹	26.923 ¹²⁴	72.41 ¹⁹⁶
17.5	28.458 ⁸³	44.95 ⁶⁰	52.36 ¹²	21.58 ²²⁰	23.302 ⁸⁶	17.30 ⁹⁹	27.047 ⁸²	74.37 ¹⁷⁷
27.5	28.541 ³⁹	44.35 ³⁷	52.48 ⁴	23.78 ²³⁴	23.388 ⁴³	16.31 ⁷⁵	27.129 ³⁸	76.14 ¹⁵⁴
Sept. 6.5	28.580 ¹	43.98 ¹⁶	52.52 ⁵	26.12 ²³⁸	23.431 ³	15.56 ⁵³	27.167 ¹	77.68 ¹³²
16.4	28.579 ³⁹	43.82 ¹³	52.47 ¹³	28.50 ²³³	23.434 ³⁵	15.03 ³²	27.166 ³⁹	79.00 ¹⁰⁷
26.4	28.540 ⁷¹	43.85 ¹⁹	52.34 ²⁰	30.83 ²¹⁹	23.399 ⁶⁶	14.71 ¹³	27.127 ⁶⁹	80.07 ⁸¹
Oct. 6.4	28.469 ⁹⁵	44.04 ³³	52.14 ²⁶	33.02 ¹⁹⁴	23.333 ⁹¹	14.58 ⁴	27.058 ⁹⁴	80.88 ⁵⁷
16.4	28.374 ¹¹⁵	44.37 ⁴²	51.88 ³¹	34.96 ¹⁶¹	23.242 ¹⁰⁸	14.62 ²¹	26.964 ¹¹⁴	81.45 ³¹
26.3	28.259 ¹²⁴	44.79 ⁵⁰	51.57 ³³	36.57 ¹²²	23.134 ¹²¹	14.83 ³²	26.850 ¹²⁵	81.76 ⁸
Nov. 5.3	28.135 ¹²⁷	45.29 ⁵⁴	51.24 ³⁵	37.79 ⁷⁵	23.013 ¹²⁴	15.15 ⁴⁴	26.725 ¹²⁹	81.84 ¹⁷
15.3	28.008 ¹²⁴	45.83 ⁵⁶	50.89 ³⁵	38.54 ²⁶	22.889 ¹²²	15.59 ⁵³	26.596 ¹²⁷	81.67 ³⁸
25.2	27.884 ¹¹⁴	46.39 ⁵⁴	50.54 ³³	38.80 ²⁵	22.767 ¹¹³	16.12 ⁵⁹	26.469 ¹²⁰	81.29 ⁶⁰
Dec. 5.2	27.770 ¹⁰¹	46.95 ⁵⁴	50.21 ³⁰	38.55 ⁷⁶	22.654 ¹⁰¹	16.71 ⁶⁵	26.349 ¹¹⁰	80.69 ⁸¹
15.2	27.669 ⁸⁴	47.49 ⁵¹	49.91 ²⁶	37.79 ¹²⁶	22.553 ⁸⁶	17.36 ⁶⁸	26.239 ⁹³	79.88 ⁹⁶
25.2	27.585 ⁶¹	48.00 ⁴⁵	49.65 ²²	36.53 ¹⁷⁰	22.467 ⁶⁴	18.04 ⁶⁷	26.146 ⁷⁴	78.92 ¹¹⁰
35.1	27.524	48.45	49.43	34.83	22.403	18.71	26.072	77.82
Mean Place	24.128	66.99	45.362	42.90	19.086	39.31	23.007	53.43
Sec δ , Tan δ	1.010	-0.144	2.042	-1.781	1.000	-0.032	1.022	+0.209
$D\psi \alpha$, $D\omega \alpha$	+0.06	+0.01	+0.08	+0.11	+0.06	0.00	+0.06	-0.01
$D\psi \delta$, $D\omega \delta$	+0.4	-0.5	+0.4	-0.5	+0.4	-0.4	+0.4	-0.4

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♁ Lacertæ. Mag. 4.6		♊ Aquarii. Mag. 4.6		♈ Aquarii. Mag. 4.9		♉ Lacertæ. Mag. 3.8	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	22 20	+51 48	22 20	+ 0 57	22 26	-11 6	22 27	+49 50
	s	"	s	"	s	"	s	"
Jan. 1.2	14.264	43.37	59.280	3.96	12.382	31.16	48.873	76.08
11.1	14.078 ¹⁸⁶	41.44 ¹⁹³	59.228 ⁵²	3.20 ⁷⁶	12.327 ⁵⁵	31.43 ²⁷	48.696 ¹⁷⁷	74.23 ¹⁸⁵
21.1	13.932 ¹⁴⁶	39.14 ²³⁰	59.200 ²⁸	2.47 ⁷³	12.296 ³¹	31.59 ¹⁶	48.553 ¹⁴³	72.02 ²²¹
31.1	13.831 ¹⁰¹	36.55 ²⁵⁹	59.195 ⁵	1.78 ⁶⁹	12.289 ⁷	31.61 ²	48.453 ¹⁰⁰	69.54 ²⁴⁸
Feb. 10.0	13.782 ⁴⁹	33.81 ²⁷⁴	59.218 ²³	1.23 ⁵⁵	12.310 ²¹	31.47 ¹⁴	48.400 ⁵³	66.87 ²⁶⁷
20.0	13.789 ⁷	31.00 ²⁸¹	59.268 ⁵⁰	0.80 ⁴³	12.359 ⁴⁹	31.15 ³²	48.401 ¹	64.15 ²⁷²
Mar. 1.0	13.855 ⁶⁶	28.26 ²⁷⁴	59.351 ⁸³	0.54 ²⁶	12.440 ⁸¹	30.65 ⁵⁰	48.457 ⁵⁶	61.48 ²⁶⁷
11.0	13.982 ¹²⁷	25.69 ²⁵⁷	59.464 ¹¹³	0.53 ¹	12.553 ¹¹³	29.92 ⁷³	48.572 ¹¹⁵	58.98 ²⁵⁰
20.9	14.171 ¹⁸⁹	23.42 ²²⁷	59.611 ¹⁴⁷	0.76 ²³	12.698 ¹⁴⁵	28.99 ⁹³	48.745 ¹⁷³	56.76 ²²²
30.9	14.418 ²⁴⁷	21.52 ¹⁹⁰	59.792 ¹⁸¹	1.28 ⁵²	12.877 ¹⁷⁹	27.83 ¹¹⁶	48.976 ²³¹	54.89 ¹⁸⁷
Apr. 9.9	14.719 ³⁰¹	20.09 ¹⁴³	60.007 ²¹⁵	2.07 ⁷⁹	13.089 ²¹²	26.48 ¹³⁵	49.261 ²⁸⁵	53.48 ¹⁴¹
19.9	15.067 ³⁴⁸	19.19 ⁹⁰	60.249 ²⁴²	3.12 ¹⁰⁵	13.331 ²⁴²	24.94 ¹⁵⁴	49.591 ³³⁰	52.58 ⁹⁰
29.8	15.454 ³⁸⁷	18.83 ³⁶	60.518 ²⁶⁹	4.46 ¹³⁴	13.601 ²⁷⁰	23.22 ¹⁷²	49.961 ³⁷⁰	52.21 ³⁷
May 9.8	15.870 ⁴¹⁶	19.03 ²⁰	60.809 ²⁹¹	6.03 ¹⁵⁷	13.893 ²⁹²	21.39 ¹⁸³	50.362 ⁴⁰¹	52.40 ¹⁹
19.8	16.303 ⁴³³	19.80 ⁷⁷	61.117 ³⁰⁸	7.79 ¹⁷⁶	14.204 ³¹¹	19.47 ¹⁹²	50.780 ⁴¹⁸	53.15 ⁷⁵
29.7	16.742 ⁴³⁹	21.12 ¹³²	61.432 ³¹⁵	9.71 ¹⁹²	14.524 ³²⁰	17.52 ¹⁹⁵	51.208 ⁴²⁸	54.43 ¹²⁸
June 8.7	17.176 ⁴³⁴	22.93 ¹⁸¹	61.749 ³¹⁷	11.73 ²⁰²	14.847 ³²³	15.59 ¹⁹³	51.632 ⁴²⁴	56.20 ¹⁷⁷
18.7	17.593 ⁴¹⁷	25.20 ²²⁷	62.059 ³¹⁰	13.80 ²⁰⁷	15.165 ³¹⁸	13.72 ¹⁸⁷	52.042 ⁴¹⁰	58.42 ²²²
28.7	17.981 ³⁸⁸	27.86 ²⁶⁶	62.355 ²⁹⁶	15.86 ²⁰⁶	15.471 ³⁰⁶	11.96 ¹⁷⁶	52.426 ³⁸⁴	61.03 ²⁶¹
July 8.6	18.331 ³⁵⁰	30.84 ²⁹⁸	62.629 ²⁷⁴	17.89 ²⁰³	15.757 ²⁸⁶	10.37 ¹⁵⁹	52.776 ³⁵⁰	63.94 ²⁹¹
18.6	18.636 ³⁰⁵	34.06 ³²²	62.877 ²⁴⁸	19.77 ¹⁸⁸	16.013 ²⁵⁶	8.96 ¹⁴¹	53.083 ³⁰⁷	67.12 ³¹⁸
28.6	18.887 ²⁵¹	37.45 ³³⁹	63.087 ²¹⁰	21.52 ¹⁷⁵	16.235 ²²²	7.78 ¹¹⁸	53.340 ²⁵⁷	70.46 ³³⁴
Aug. 7.6	19.081 ¹⁹⁴	40.95 ³⁵⁰	63.260 ¹⁷³	23.09 ¹⁵⁷	16.419 ¹⁸⁴	6.83 ⁹⁵	53.542 ²⁰²	73.90 ³⁴⁴
17.5	19.213 ¹³²	44.45 ³⁵⁰	63.391 ¹³¹	24.48 ¹³⁹	16.562 ¹⁴³	6.14 ⁶⁹	53.687 ¹⁴⁵	77.36 ³⁴⁶
27.5	19.285 ⁷²	47.93 ³⁴⁸	63.480 ⁸⁵	25.63 ¹¹⁵	16.659 ⁹⁷	5.69 ⁴⁵	53.771 ⁸⁴	80.79 ³⁴³
Sept. 6.5	19.296 ¹¹	51.28 ³³⁵	63.525 ⁴⁹	26.55 ⁹²	16.712 ⁵³	5.49 ²⁰	53.798 ²⁷	84.10 ³³¹
16.4	19.250 ⁴⁶	54.44 ³¹⁶	63.531 ⁶	27.25 ⁷⁰	16.724 ¹²	5.49 ⁰	53.770 ²⁸	87.22 ³¹²
26.4	19.149 ¹⁰¹	57.35 ²⁹¹	63.500 ³¹	27.75 ⁵⁰	16.698 ²⁶	5.69 ²⁰	53.690 ⁸⁰	90.11 ²⁸⁹
Oct. 6.4	19.003 ¹⁴⁶	59.95 ²⁶⁰	63.437 ⁶³	28.00 ²⁵	16.638 ⁶⁰	6.04 ³⁵	53.564 ¹²⁶	92.69 ²⁵⁸
16.4	18.818 ¹⁸⁵	62.19 ²²⁴	63.349 ⁸⁸	28.08 ⁸	16.550 ⁸⁸	6.51 ⁴⁷	53.399 ¹⁶⁵	94.93 ²²⁴
26.3	18.600 ²¹⁸	64.01 ¹⁸²	63.242 ¹⁰⁷	27.99 ⁹	16.443 ¹⁰⁷	7.06 ⁵⁵	53.203 ¹⁹⁶	96.76 ¹⁸³
Nov. 5.3	18.359 ²⁴¹	65.39 ¹³⁸	63.123 ¹¹⁹	27.73 ²⁶	16.323 ¹²⁰	7.67 ⁶¹	53.203 ²²¹	96.76 ¹³⁹
15.3	18.101 ²⁵⁸	66.27 ⁸⁸	63.001 ¹²²	27.34 ³⁹	16.198 ¹²⁵	8.29 ⁶²	52.982 ²³⁶	98.15 ⁹²
25.3	17.838 ²⁶³	66.63 ³⁶	62.880 ¹²¹	26.83 ⁵¹	16.072 ¹²⁶	8.90 ⁶¹	52.746 ²⁴⁴	99.07 ⁴¹
Dec. 5.2	17.578 ²⁶⁰	66.46 ¹⁷	62.766 ¹¹⁴	26.23 ⁶⁰	15.955 ¹¹⁷	9.48 ⁵⁸	52.502 ²⁴⁴	99.48 ¹¹
15.2	17.326 ²⁵²	65.76 ⁷⁰	62.664 ¹⁰²	25.54 ⁶⁹	15.849 ¹⁰⁶	10.00 ⁵²	52.258 ²³⁶	99.37 ⁶³
25.2	17.092 ²³⁴	64.55 ¹²¹	62.575 ⁸⁹	24.79 ⁷⁵	15.759 ⁹⁰	10.44 ⁴⁴	52.022 ²¹⁹	98.74 ¹¹⁴
35.1	16.887 ²⁰⁵	62.86 ¹⁶⁹	62.507 ⁶⁸	24.04 ⁷⁵	15.689 ⁷⁰	10.80 ³⁶	51.803 ¹⁹⁷	97.60 ¹¹⁴
Mean Place	15.280	28.38	59.227	2.49	12.213	29.24	49.732	60.97
Sec δ, Tan δ	1.617	+1.271	1.000	+0.017	1.019	-0.196	1.551	+1.186
Dψ a, Dω a	+0.05	-0.08	+0.06	0.00	+0.06	+0.01	+0.05	-0.07
Dψ δ, Dω δ	+0.4	-0.4	+0.4	-0.4	+0.4	-0.4	+0.4	-0.4

APPARENT PLACES OF STARS, 1916.

499

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	♃ Aquarii. Mag. 5.3		226 B. Cephei. Mag. 5.7		♄ Aquarii. Mag. 4.1		10 Lacertæ. Mag. 4.9	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 22 30	° ′ -21 7	h m 22 30	° ′ +75 47	h m 22 31	° ′ - 0 32	h m 22 35	° ′ +38 36
	s	"	s	"	s	"	s	"
Jan. 1.2	6.254 ⁶¹	85.13	44.24	55.91	2.540 ⁵⁹	61.44	28.989 ¹²⁷	58.70
11.1	6.193 ³⁷	85.00	43.56	54.21	2.481 ³⁷	62.13	28.862 ¹⁰¹	57.03
21.1	6.156 ¹¹	84.65	42.98	52.03	2.444 ¹³	62.79	28.761 ⁶⁸	55.07
31.1	6.145 ¹⁸	84.12	42.52	49.42	2.431 ¹⁴	63.38	28.693 ³²	52.88
Feb. 10.1	6.163 ⁴⁷	83.38	42.21	46.50	2.445 ⁴¹	63.86	28.661 ⁹	50.58
20.0	6.210 ⁸⁰	82.45	42.05	43.40	2.486 ⁷²	64.19	28.670 ⁵³	48.26
Mar. 1.0	6.290 ¹¹⁴	81.31	42.06	40.25	2.558 ¹⁰⁵	64.33	28.723 ⁹⁹	46.01
11.0	6.404 ¹⁴⁷	79.99	42.23	37.16	2.663 ¹³⁷	64.25	28.822 ¹⁴⁷	43.95
20.9	6.551 ¹⁸²	78.49	42.56	34.29	2.800 ¹⁷²	63.93	28.969 ¹⁹⁴	42.16
30.9	6.733 ²¹⁷	76.82	43.05	31.72	2.972 ²⁰⁵	63.34	29.163 ²³⁸	40.71
Apr. 9.9	6.950 ²⁴⁸	75.01	43.68	29.58	3.177 ²³⁶	62.48	29.401 ²⁷⁹	39.70
19.9	7.198 ²⁷⁷	73.09	44.42	27.91	3.413 ²⁶⁵	61.34	29.680 ³¹⁴	39.15
29.8	7.475 ³⁰²	71.09	45.26	26.81	3.678 ²⁸⁷	59.96	29.994 ³⁴³	39.10
May 9.8	7.777 ³²⁰	69.06	46.16	26.29	3.965 ³⁰⁵	58.36	30.337 ³⁶¹	39.55
19.8	8.097 ³³²	67.04	47.10	26.36	4.270 ³¹⁶	56.57	30.698 ³⁷²	40.52
29.8	8.429 ³³⁷	65.09	48.05	27.06	4.586 ³¹⁸	54.64	31.070 ³⁷²	41.93
June 8.7	8.766 ³³²	63.25	48.98	28.34	4.904 ³¹⁵	52.62	31.442 ³⁶³	43.78
18.7	9.098 ³²¹	61.57	49.87	30.14	5.219 ³⁰¹	50.57	31.805 ³⁴⁴	46.01
28.7	9.419 ²⁹⁹	60.09	50.69	32.44	5.520 ²⁸¹	48.53	32.149 ³¹⁷	48.56
July 8.6	9.718 ²⁷¹	58.87	51.42	35.19	5.801 ²⁵³	46.56	32.466 ²⁸³	51.36
18.6	9.989 ²³⁷	57.89	52.04	38.32	6.054 ²²⁰	44.70	32.749 ²⁴¹	54.34
28.6	10.226 ¹⁹⁷	57.20	52.55	41.72	6.274 ¹⁸²	43.01	32.990 ¹⁹⁶	57.45
Aug. 7.6	10.423 ¹⁵²	56.79	52.92	45.34	6.456 ¹⁴²	41.49	33.186 ¹⁴⁸	60.59
17.5	10.575 ¹⁰⁶	56.67	53.16	49.10	6.598 ⁹⁷	40.19	33.334 ¹⁰⁷	63.72
27.5	10.681 ⁶⁰	56.82	53.26	52.93	6.695 ⁵⁸	39.12	33.430 ⁸⁵	66.76
Sept. 6.5	10.741 ¹⁵	57.21	53.22	56.75	6.753 ¹⁵	38.27	33.476 ⁰	69.66
16.4	10.756 ²⁶	57.79	53.05	60.49	6.768 ²²	37.66	33.476 ⁴⁴	72.38
26.4	10.730 ⁶²	58.54	52.74	64.05	6.746 ⁵⁴	37.26	33.432 ¹⁸	74.84
Oct. 6.4	10.668 ⁹¹	59.39	52.32	67.35	6.692 ⁸⁰	37.08	33.349 ¹¹⁷	77.01
16.4	10.577 ¹¹⁵	60.31	51.79	70.33	6.612 ¹⁰⁰	37.07	33.232 ¹⁴³	78.85
26.3	10.462 ¹²⁸	61.24	51.16	72.93	6.512 ¹¹³	37.22	33.089 ¹⁶²	80.34
Nov. 5.3	10.334 ¹³⁵	62.12	50.46	75.08	6.399 ¹²⁰	37.53	32.927 ¹⁷⁴	81.42
15.3	10.199 ¹³⁵	62.91	49.69	76.71	6.279 ¹²¹	37.95	32.753 ¹⁸⁰	82.08
25.3	10.064 ¹²⁹	63.58	48.89	77.80	6.158 ¹¹²	38.47	32.573 ¹⁸⁰	82.30
Dec. 5.2	9.935 ¹¹⁵	64.12	48.07	78.25	6.046 ¹⁰⁴	39.06	32.393 ¹⁷³	82.08
15.2	9.820 ¹⁰⁰	64.48	47.25	78.08	5.942 ⁹¹	39.72	32.220 ¹⁶⁰	81.41
25.2	9.720 ⁷⁸	64.66	46.47	77.31	5.851 ⁷³	40.42	32.060 ¹⁴³	80.32
35.1	9.642	64.65	45.74	75.96	5.778	41.13	31.917	78.86
Mean Place	6.015	80.46	48.168	36.47	2.420	62.80	29.414	45.76
Sec δ, Tan δ	1.072	-0.387	4.076	+3.952	1.000	-0.009	1.280	+0.799
Dψ α, Dω α	+0.06	+0.02	+0.02	-0.24	+0.06	0.00	+0.05	-0.95
Dψ δ, Dω δ	+0.4	-0.4	+0.4	-0.4	+0.4	-0.4	+0.4	-0.4

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Piscis Australis. Mag. 4.2		ζ Pegasi. Mag. 3.6		β Gruis. Mag. 2.2		η Pegasi. Mag. 3.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '	h m	° '
	22 36	-27 28	22 37	+10 23	22 37	-47 19	22 39	+29 46
	s	"	s	"	s	"	s	"
Jan. 1.2	1.017 ⁷³	62.52	16.385 ⁶⁸	37.85	39.771 ¹²⁵	38.55	3.546 ¹⁰¹	64.05 ¹⁵¹
11.1	0.944 ⁴⁹	62.12 ⁴⁰	16.317 ⁴⁹	36.80 ¹⁰⁵	39.646 ⁹¹	37.31 ¹²⁴	3.445 ⁷⁸	62.54 ¹⁷⁴
21.1	0.895 ¹⁹	61.47 ⁶⁵	16.268 ²⁴	35.70 ¹¹⁰	39.555 ⁵⁰	35.72 ¹⁵⁹	3.367 ⁵²	60.80 ¹⁸⁸
31.1	0.876 [—]	60.59 ⁸⁸	16.244 [—]	34.59 ¹¹¹	39.505 [—]	33.80 ¹⁹²	3.315 ²⁰	58.92 ¹⁸⁸
Feb. 10.1	0.886 ¹⁰	59.48 ¹¹¹	16.245 ¹	33.53 ¹⁰⁶	39.496 ⁹	31.60 ²²⁰	3.295 ¹⁵	56.96 ¹⁹⁶
	40	132	31	96	34	243		195
20.0	0.926	58.16	16.276	32.57	39.530	29.17	3.310	55.01
Mar. 1.0	1.001 ⁷⁵	56.64 ¹⁵²	16.339 ⁶³	31.78 ⁷⁹	39.609 ⁷⁹	26.55 ²⁶²	3.364 ⁵⁴	53.16 ¹⁸⁵
11.0	1.111 ¹¹⁰	54.93 ¹⁷¹	16.434 ⁹⁵	31.19 ⁵⁹	39.734 ¹²⁵	23.81 ²⁷⁴	3.456 ⁹²	51.51 ¹⁶⁵
20.9	1.256 ¹⁴⁵	53.06 ¹⁸⁷	16.566 ¹³²	30.88 ³¹	39.906 ¹⁷²	20.99 ²⁸²	3.592 ¹³⁶	50.13 ¹³⁸
30.9	1.438 ¹⁸²	51.06 ²⁰⁰	16.733 ¹⁶⁷	30.87 ¹	40.124 ¹⁸¹	18.14 ²⁸⁵	3.770 ¹⁷⁸	49.10 ¹⁰³
	218	211	202	31	263	281	219	64
Apr. 9.9	1.656	48.95	16.935	31.18	40.387	15.33	3.989	48.46 ²⁰
19.9	1.908 ²⁵²	46.78 ²¹⁷	17.170 ²³⁵	31.84 ⁶⁶	40.692 ³⁰⁵	12.59 ²⁷⁴	4.245 ²⁵⁶	48.26 ²⁵
29.8	2.190 ²⁸²	44.59 ²¹⁹	17.434 ²⁶⁴	32.82 ⁹⁸	41.035 ³⁴³	10.01 ²⁵⁸	4.533 ²⁸⁸	48.51 ⁷⁰
May 9.8	2.499 ³⁰⁹	42.42 ²¹⁷	17.722 ²⁸⁸	34.13 ¹³¹	41.410 ³⁷⁵	7.61 ²⁴⁰	4.848 ³¹⁵	49.21 ¹¹⁴
19.8	2.828 ³²⁹	40.34 ²⁰⁸	18.030 ³⁰⁸	35.72 ¹⁵⁹	41.812 ⁴⁰²	5.47 ²¹⁴	5.182 ³³⁴	50.35 ¹⁵⁶
	342	198	317	183	418	185	346	
29.8	3.170	38.36	18.347	37.55	42.230	3.62	5.528	51.91
June 8.7	3.518 ³⁴⁸	36.56 ¹⁸⁰	18.669 ³²²	39.58 ²⁰³	42.655 ⁴²⁵	2.13 ¹⁴⁹	5.875 ³⁴⁷	53.82 ¹⁹¹
18.7	3.864 ³⁴⁶	34.98 ¹⁵⁸	18.986 ³¹⁷	41.76 ²¹⁸	43.078 ⁴²³	1.01 ¹¹²	6.216 ³⁴¹	56.05 ²²³
28.7	4.199 ³³⁵	33.65 ¹³³	19.289 ³⁰³	44.02 ²²⁶	43.488 ⁴¹⁰	0.29 ⁷²	6.542 ³²⁶	58.53 ²⁴⁸
July 8.6	4.512 ³¹³	32.63 ¹⁰²	19.573 ²⁸⁴	46.30 ²²⁸	43.873 ³⁸⁵	0.00 ²⁹	6.843 ³⁰¹	61.21 ²⁶⁸
	286	73	256	227	350	13	271	280
18.6	4.798	31.90	19.829	48.57	44.223	0.13	7.114	64.01
28.6	5.049 ²⁵¹	31.49 ⁸	20.052 ²²³	50.75 ²¹⁸	44.530 ³⁰⁷	0.66 ⁵³	7.348 ²³⁴	66.86 ²⁸⁵
Aug. 7.6	5.258 ²⁰⁹	31.41 [—]	20.238 ¹⁸⁶	52.80 ²⁰⁵	44.787 ²⁵⁷	1.58 ⁹²	7.540 ¹⁹²	69.72 ²⁸⁶
17.5	5.421 ¹⁶³	31.63 ²²	20.383 ¹⁴⁵	54.70 ¹⁹⁰	44.985 ¹⁹⁸	2.85 ¹²⁷	7.687 ¹⁴⁷	72.52 ²⁸⁰
27.5	5.537 ¹¹⁶	32.12 ⁴⁹	20.484 ¹⁰¹	56.40 ¹⁷⁰	45.122 ¹³⁷	4.41 ¹⁵⁶	7.788 ¹⁰¹	75.20 ²⁶⁸
	66	75	59	150	74	177	56	251
Sept. 6.5	5.603	32.87	20.543	57.90	45.196	6.18	7.844	77.71
16.5	5.623 ²⁰	33.81 ⁹⁴	20.562 ¹⁹	59.15 ¹²⁵	45.208 ¹²	8.11 ¹⁹³	7.855 ¹¹	80.02 ²³¹
26.4	5.599 ²⁴	34.89 ¹⁰⁸	20.544 ¹⁸	60.18 ¹⁰³	45.161 ⁴⁷	10.10 ¹⁹⁹	7.826 ²⁹	82.08 ²⁰⁶
Oct. 6.4	5.535 ⁶⁴	36.06 ¹¹⁷	20.494 ⁵⁰	60.95 ⁷⁷	45.062 ⁹⁹	12.08 ¹⁹⁸	7.761 ⁶⁵	83.85 ¹⁷⁷
16.4	5.441 ⁹⁴	37.25 ¹¹⁹	20.416 ⁷⁸	61.49 ⁵⁴	44.919 ¹⁴³	13.94 ¹⁸⁶	7.667 ⁹⁴	85.33 ¹⁴⁸
	121	115	98	30	180	167	118	114
26.3	5.320	38.40	20.318	61.79	44.739	15.61	7.549	86.47
Nov. 5.3	5.183 ¹³⁷	39.45 ¹⁰⁵	20.206 ¹¹²	61.87 ⁸	44.533 ²⁰⁶	17.01 ¹⁴⁰	7.414 ¹³⁵	87.25 ⁷⁸
15.3	5.038 ¹⁴⁵	40.36 ⁹¹	20.086 ¹²⁰	61.73 ¹⁴	44.314 ²¹⁹	18.08 ¹⁰⁷	7.268 ¹⁴⁶	87.67 ⁴²
25.3	4.892 ¹⁴⁶	41.08 ⁷²	19.964 ¹²²	61.37 ³⁶	44.092 ²²²	18.77 ⁶⁹	7.117 ¹⁵¹	87.72 ⁵
Dec. 5.2	4.750 ¹⁴²	41.59 ⁵¹	19.846 ¹¹⁸	60.83 ⁵⁴	43.877 ²¹⁵	19.05 ²⁸	6.967 ¹⁵⁰	87.39 ³³
	129	27	111	73	201	14	144	70
15.2	4.621	41.86	19.735	60.10	43.676	18.91	6.823	86.69
25.2	4.509 ¹¹²	41.80 ³	19.637 ⁹⁸	59.23 ⁸⁷	43.497 ¹⁷⁹	18.34 ⁵⁷	6.691 ¹³²	85.65 ¹⁰⁴
35.2	4.417 ⁹²	41.65 ²⁴	19.554 ⁸³	58.24 ⁹⁹	43.348 ¹⁴⁹	17.37 ⁹⁷	6.575 ¹¹⁶	84.30 ¹³⁵
Mean Place	0.724	56.21	16.334	32.93	39.444	27.71	3.756	53.28
Sec δ, Tan δ	1.127	-0.520	1.017	+0.183	1.475	-1.085	1.152	+0.572
$D_{\psi} \alpha, D_{\omega} \alpha$	+0.07	+0.03	+0.06	-0.01	+0.07	+0.07	+0.06	-0.04
$\psi, D_{\omega} \delta$	+0.4	-0.4	+0.4	-0.4	+0.4	-0.4	+0.4	-0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	λ Pegasi. Mag. 4.1		ε Gruis. Mag. 3.7		τ Aquarii. Mag. 4.2		μ Pegasi. Mag. 3.7	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 22 42	° ' +23 7	h m 22 43	° ' -51 45	h m 22 45	° ' -14 1	h m 22 45	° ' +24 9
	s	"	s	"	s	"	s	"
Jan. 1.2	28.918	32.88	29.556	43.31	9.059	72.76	56.783	37.31
11.1	28.828 ⁹⁰	31.53 ¹³⁵	29.403 ¹⁵³	41.95 ¹³⁶	8.992 ⁶⁷	72.94 ¹⁸	56.690 ⁹³	35.97 ¹³⁴
21.1	28.760 ⁶⁸	30.00 ¹⁵³	29.288 ¹¹⁵	40.18 ¹⁷⁷	8.944 ⁴⁸	72.97 ³	56.619 ⁷¹	34.44 ¹⁵³
31.1	28.717 ⁴³	28.37 ¹⁶³	29.216 ⁷²	38.07 ²¹¹	8.921 ²³	72.83 ¹⁴	56.571 ⁴⁸	32.78 ¹⁶⁶
Feb. 10.1	28.703 ¹⁴	26.70 ¹⁶⁷	29.189 ²⁷	35.68 ²³⁹	8.923 ²	72.51 ³²	56.553 ¹⁸	31.08 ¹⁷⁰
	17	162	21	265	31	50	14	165
20.0	28.720	25.08	29.210	33.03	8.954	72.01	56.567	29.43
Mar. 1.0	28.773 ⁵³	23.58 ¹⁵⁰	29.280 ⁷⁰	30.21 ²⁸²	9.015 ⁶¹	71.29 ⁷²	56.615 ⁴⁸	27.88 ¹⁵⁵
11.0	28.862 ⁸⁹	22.27 ¹³¹	29.401 ¹²¹	27.26 ²⁹⁵	9.108 ⁹³	70.37 ⁹²	56.702 ⁸⁷	26.53 ¹³⁵
20.9	28.991 ¹²⁹	21.24 ¹⁰³	29.573 ¹⁷²	24.24 ³⁰²	9.235 ¹²⁷	69.23 ¹¹⁴	56.828 ¹²⁶	25.44 ¹⁰⁹
30.9	29.160 ¹⁶⁹	20.54 ⁷⁰	29.796 ²²³	21.21 ³⁰³	9.397 ¹⁶²	67.90 ¹³³	56.994 ¹⁶⁶	24.68 ⁷⁶
	207	33	272	298	197	153	206	40
Apr. 9.9	29.367	20.21	30.068	18.23	9.594	66.37	57.200	24.28
19.9	29.610 ²⁴³	20.28 ⁷	30.387 ³¹⁹	15.37 ²⁸⁶	9.823 ²²⁹	64.66 ¹⁷¹	57.440 ²⁴⁰	24.28 ⁰
29.8	29.884 ²⁷⁴	20.76 ⁴⁸	30.748 ³⁶¹	12.67 ²⁷⁰	10.083 ²⁶⁰	62.82 ¹⁸⁴	57.714 ²⁷⁴	24.71 ⁴³
May 9.8	30.185 ³⁰¹	21.66 ⁹⁰	31.145 ³⁹⁷	10.20 ²⁴⁷	10.368 ²⁸⁵	60.87 ¹⁹⁵	58.015 ³⁰¹	25.55 ⁸⁴
19.8	30.505 ³²⁰	22.95 ¹²⁹	31.571 ⁴²⁶	8.02 ²¹⁸	10.675 ³⁰⁷	58.87 ²⁰⁰	58.335 ³²⁰	26.79 ¹²⁴
	332	164	445	187	319	201	333	160
29.8	30.837	24.59	32.016	6.15	10.994	56.86	58.668	28.39
June 8.7	31.172 ³³⁵	26.54 ¹⁹⁵	32.471 ⁴⁵⁵	4.67 ¹⁴⁸	11.320 ³²⁶	54.88 ¹⁹⁸	59.006 ³³⁸	30.31 ¹⁹²
18.7	31.503 ³³¹	28.75 ²²¹	32.925 ⁴⁵⁴	3.60 ¹⁰⁷	11.645 ³²⁵	52.99 ¹⁸⁹	59.338 ³³²	32.51 ²²⁰
28.7	31.820 ³¹⁷	31.17 ²⁴²	33.364 ⁴³⁹	2.97 ⁶³	11.960 ³¹⁵	51.24 ¹⁷⁵	59.658 ³²⁰	34.91 ²⁴⁰
July 8.6	32.114 ²⁹⁴	33.73 ²⁵⁶	33.780 ⁴¹⁶	2.78 ¹⁹	12.256 ²⁹⁶	49.69 ¹⁵⁵	59.956 ²⁹⁸	37.48 ²⁵⁷
	266	263	380	26	271	135	270	264
18.6	32.380	36.36	34.160	3.04	12.527	48.34	60.226	40.12
28.6	32.613 ²³³	39.00 ²⁶⁴	34.495 ³³⁵	3.73 ⁶⁹	12.767 ²⁴⁰	47.25 ¹⁰⁹	60.462 ²³⁶	42.79 ²⁶⁷
Aug. 7.6	32.804 ¹⁹¹	41.60 ²⁶⁰	34.774 ²⁷⁹	4.83 ¹¹⁰	12.969 ²⁰²	46.41 ⁸⁴	60.658 ¹⁹⁶	45.43 ²⁶⁴
17.5	32.954 ¹⁵⁰	44.11 ²⁵¹	34.993 ²¹⁹	6.27 ¹⁴⁴	13.130 ¹⁶¹	45.84 ⁵⁷	60.812 ¹⁵⁴	47.98 ²⁵⁵
27.5	33.059 ¹⁰⁵	46.48 ²³⁷	35.146 ¹⁵³	8.02 ¹⁷⁵	13.247 ¹¹⁷	45.55 ²⁹	60.922 ¹¹⁰	50.40 ²⁴²
	61	219	83	198	72	6	66	224
Sept. 6.5	33.120	48.67	35.229	10.00	13.319	45.49	60.988	52.64
16.5	33.140 ²⁰	50.64 ¹⁹⁷	35.246 ¹⁷	12.13 ²¹³	13.350 ³¹	45.68 ¹⁹	61.011 ²³	54.67 ²⁰³
26.4	33.120 ²⁰	52.37 ¹⁷³	35.197 ⁴⁹	14.31 ²¹⁸	13.340 ¹⁰	46.05 ³⁷	60.994 ¹⁷	56.47 ¹⁸⁰
Oct. 6.4	33.068 ⁵²	53.83 ¹⁴⁶	35.090 ¹⁰⁷	16.45 ²¹⁴	13.296 ⁴⁴	46.58 ⁵³	60.944 ⁵⁰	57.98 ¹⁵¹
16.4	32.985 ⁸³	55.00 ¹¹⁷	34.932 ¹⁵⁸	18.47 ²⁰²	13.222 ⁷⁴	47.22 ⁶⁴	60.864 ⁸⁰	59.21 ¹²³
	105	88	199	181	96	72	103	94
26.3	32.880	55.88	34.733	20.28	13.126	47.94	60.761	60.15
Nov. 5.3	32.758 ¹²²	56.43 ⁵⁵	34.505 ²²⁸	21.78 ¹⁵⁰	13.013 ¹¹³	48.69 ⁷⁵	60.640 ¹²¹	60.75 ⁶⁰
15.3	32.627 ¹³¹	56.67 ²⁴	34.259 ²⁴⁶	22.92 ¹¹⁴	12.891 ¹²²	49.43 ⁷⁴	60.509 ¹³¹	61.03 ²⁸
25.3	32.492 ¹³⁵	56.58 ⁹	34.006 ²⁵³	23.64 ⁷²	12.767 ¹²⁴	50.11 ⁶⁸	60.373 ¹³⁶	61.01 ²
Dec. 5.2	32.357 ¹³⁵	56.19 ³⁹	33.758 ²⁴⁸	23.92 ²⁸	12.647 ¹²⁰	50.73 ⁶²	60.237 ¹³⁶	60.63 ³⁸
	128	70	233	18	111	53	130	68
15.2	32.229	55.49	33.525	23.74	12.536	51.26	60.107	59.95
25.2	32.113 ¹¹⁶	54.51 ⁹⁸	33.315 ²¹⁰	23.09 ⁶⁵	12.437 ⁹⁹	51.67 ⁴¹	59.988 ¹¹⁹	58.99 ⁹⁶
35.2	32.010 ¹⁰³	53.27 ¹²⁴	33.135 ¹⁸⁰	22.00 ¹⁰⁹	12.354 ⁸³	51.95 ²⁸	59.882 ¹⁰⁶	57.76 ¹²³
Mean Place	28.996	23.87	29.198	31.65	8.778	70.37	56.855	27.86
Sec δ, Tan δ	1.088	+0.427	1.615	-1.269	1.031	-0.250	1.096	+0.449
Dψ a, Dω a	+0.06	-0.03	+0.07	+0.08	+0.06	+0.02	+0.06	-0.03
Dψ δ, Dω δ	+0.4	-0.3	+0.4	-0.3	+0.4	-0.3	+0.4	-0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ϵ Cephei. Mag. 3.7		λ Aquarii. Mag. 3.8		ρ Indi. Mag. 6.1		δ Aquarii. Mag. 3.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 22 46 s	° ' " +65 45 "	h m 22 48 s	° ' " - 8 1 "	h m 22 48 s	° ' " -70 30 "	h m 22 50 s	° ' " -16 15 "
Jan. 1.2	39.46	49.40	14.243	37.30	49.97	96.29	11.942	67.16
11.1	39.09	47.79	14.176	37.71	49.58	94.27	11.869	67.27
21.1	38.77	45.69	14.127	38.02	49.27	91.79	11.816	67.20
31.1	38.52	43.19	14.102	38.19	49.05	88.94	11.788	66.95
Feb. 10.1	38.34	40.40	14.100	38.22	48.92	85.76	11.784	66.51
20.0	38.24	37.43	14.127	38.08	48.87	82.37	11.809	65.86
Mar. 1.0	38.24	34.40	14.183	37.73	48.94	78.81	11.865	65.01
11.0	38.33	31.44	14.270	37.18	49.08	75.19	11.952	63.95
21.0	38.53	28.67	14.393	36.40	49.34	71.58	12.075	62.68
30.9	38.82	26.21	14.550	35.39	49.68	68.06	12.234	61.21
Apr. 9.9	39.19	24.15	14.740	34.13	50.11	64.68	12.426	59.55
19.9	39.64	22.57	14.965	32.67	50.62	61.54	12.653	57.75
29.8	40.15	21.53	15.221	31.02	51.20	58.67	12.912	55.82
May 9.8	40.71	21.07	15.501	29.21	51.85	56.16	13.197	53.80
19.8	41.31	21.20	15.803	27.28	52.56	54.06	13.504	51.74
29.8	41.92	21.91	16.118	25.28	53.28	52.40	13.826	49.69
June 8.7	42.53	23.19	16.440	23.26	54.04	51.24	14.154	47.71
18.7	43.13	24.99	16.760	21.28	54.79	50.57	14.482	45.83
28.7	43.69	27.28	17.070	19.38	55.51	50.43	14.802	44.13
July 8.7	44.20	29.99	17.364	17.60	56.19	50.81	15.103	42.62
18.6	44.65	33.06	17.632	16.01	56.82	51.70	15.380	41.35
28.6	45.02	36.40	17.869	14.62	57.38	53.08	15.625	40.33
Aug. 7.6	45.33	39.95	18.069	13.47	57.84	54.87	15.833	39.60
17.5	45.54	43.64	18.229	12.55	58.20	57.03	15.999	39.14
27.5	45.67	47.37	18.346	11.90	58.43	59.48	16.121	38.97
Sept. 6.5	45.72	51.09	18.420	11.48	58.55	62.13	16.199	39.05
16.5	45.69	54.71	18.453	11.30	58.55	64.87	16.234	39.37
26.4	45.58	58.15	18.448	11.33	58.42	67.60	16.230	39.87
Oct. 6.4	45.39	61.35	18.408	11.55	58.18	70.20	16.188	40.53
16.4	45.12	64.24	18.339	11.91	57.83	72.59	16.116	41.29
26.4	44.81	66.75	18.249	12.39	57.41	74.63	16.022	42.11
Nov. 5.3	44.45	68.82	18.143	12.95	56.92	76.25	15.909	42.94
15.3	44.06	70.39	18.028	13.56	56.39	77.38	15.787	43.74
25.3	43.63	71.42	17.910	14.19	55.83	77.97	15.662	44.47
Dec. 5.2	43.20	71.87	17.795	14.81	55.27	77.97	15.540	45.11
15.2	42.76	71.73	17.686	15.41	54.74	77.39	15.426	45.63
25.2	42.33	71.00	17.589	15.95	54.25	76.23	15.323	46.00
35.2	41.94	69.71	17.507	16.43	53.81	74.53	15.236	46.22
Mean Place	41.181	30.08	13.982	36.81	49.737	82.17	11.621	64.20
Sec δ , Tan δ	2.436	+2.221	1.010	-0.141	2.999	-2.827	1.042	-0.292
$D\phi \alpha$, $D_w \alpha$	+0.04	-0.14	+0.06	+0.01	+0.08	+0.18	+0.06	+0.02
$D\phi \delta$, $D_w \delta$	+0.4	-0.3	+0.4	-0.3	+0.4	-0.3	+0.4	-0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	α Piscis Australis. (Fomalhaut.) Mag. 1.3		\circ Andromedæ. Mag. 3.6		β Pegasi. Var. 2.2-2.7		α Pegasi. (Markab.) Mag. 2.6	
	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.	Right Ascension.	Declination.
	h m	° '	h m	° '	h m	° '	h m	° '
	22 53	-30 3	22 58	+41 52	22 59	+27 37	23 0	+14 45
	s	"	s	"	s	"	s	"
Jan. 1.2	1.123	70.84	2.826	42.45	41.965	47.88	34.651	18.26
11.1	1.033 ⁹⁰	70.42 ⁴²	2.674 ¹⁵²	40.95 ¹⁵⁰	41.858 ¹⁰⁷	46.57 ¹³¹	34.566 ⁸⁵	17.19 ¹⁰⁷
21.1	0.967 ⁶⁶	69.71 ⁷¹	2.545 ¹²⁹	39.10 ¹⁸⁵	41.770 ⁸⁸	45.02 ¹⁵⁵	34.498 ⁶⁸	16.01 ¹¹⁸
31.1	0.927 ⁴⁰	68.74 ⁹⁷	2.444 ¹⁰¹	36.99 ²¹¹	41.706 ⁶⁴	43.32 ¹⁷⁰	34.450 ⁴⁸	14.78 ¹²³
Feb. 10.1	0.916 ¹¹	67.51 ¹²³	2.380 ⁶⁴	34.70 ²²⁹	41.670 ³⁶	41.53 ¹⁷⁹	34.428 ²²	13.56 ¹²²
	21	146	23	236	5	178	5	114
20.0	0.937	66.05	2.357	32.34	41.665	39.75	34.433	12.42
Mar. 1.0	0.992 ⁵⁵	64.37 ¹⁶⁸	2.379 ²²	30.00 ²³⁴	41.697 ³²	38.05 ¹⁷⁰	34.470 ³⁷	11.40 ¹⁰²
11.0	1.082 ⁹⁰	62.50 ¹⁸⁷	2.451 ⁷²	27.78 ²²²	41.769 ⁷²	36.51 ¹⁵⁴	34.542 ⁷²	10.56 ⁸⁴
21.0	1.210 ¹²⁸	60.45 ²⁰⁵	2.573 ¹²²	25.80 ¹⁹⁸	41.882 ¹¹³	35.23 ¹²⁸	34.651 ¹⁰⁹	9.99 ⁵⁷
30.9	1.376 ¹⁶⁶	58.27 ²¹⁸	2.747 ¹⁷⁴	24.14 ¹⁶⁶	42.037 ¹⁵⁵	34.25 ⁹⁸	34.798 ¹⁴⁷	9.71 ²⁸
	205	227	225	128	197	61	184	4
Apr. 9.9	1.581	56.00	2.972	22.86	42.234	33.64	34.982	9.75
19.9	1.821 ²⁴⁰	53.66 ²³⁴	3.242 ²⁷⁰	22.03 ⁸³	42.470 ²³⁶	33.44 ²⁰	35.203 ²²¹	10.15 ⁴⁰
29.8	2.096 ²⁷⁵	51.31 ²³⁵	3.553 ³¹¹	21.69 ³⁴	42.742 ²⁷²	33.66 ²²	35.457 ²⁵⁴	10.91 ⁷⁶
May 9.8	2.401 ³⁰⁵	49.00 ²³¹	3.897 ³⁴⁴	21.85 ¹⁶	43.044 ³⁰²	34.31 ⁶⁵	35.738 ²⁸¹	12.00 ¹⁰⁹
19.8	2.729 ³²⁸	46.78 ²²²	4.266 ³⁶⁹	22.51 ⁶⁶	43.368 ³²⁴	35.38 ¹⁰⁷	36.042 ³⁰⁴	13.41 ¹⁴¹
	345	207	384	116	339	145	318	171
29.8	3.074	44.71	4.650	23.67	43.707	36.83	36.360	15.12
June 8.7	3.429 ³⁵⁵	42.82 ¹⁸⁹	5.039 ³⁸⁹	25.28 ¹⁶¹	44.052 ³⁴⁵	38.65 ¹⁸²	36.686 ³²⁶	17.06 ¹⁹⁴
18.7	3.782 ³⁵³	41.20 ¹⁶²	5.424 ³⁸⁵	27.30 ²⁰²	44.395 ³⁴³	40.77 ²¹²	37.011 ³²⁵	19.20 ²¹⁴
28.7	4.128 ³⁴⁶	39.83 ¹³⁷	5.793 ³⁶⁹	29.67 ²³⁷	44.727 ³³²	43.13 ²³⁶	37.326 ³¹⁵	21.47 ²²⁷
July 8.7	4.457 ³²⁹	38.78 ¹⁰⁵	6.138 ³⁴⁵	32.35 ²⁶⁸	45.038 ³¹¹	45.69 ²⁵⁶	37.623 ²⁹⁷	23.81 ²³⁴
	302	71	312	290	285	268	274	237
18.6	4.759	38.07	6.450	35.25	45.323	48.37	37.897	26.18
28.6	5.027 ²⁶⁸	37.71 ³⁶	6.722 ²⁷²	38.33 ³⁰⁶	45.574 ²⁵¹	51.11 ²⁷⁴	38.138 ²⁴¹	28.51 ²³³
Aug. 7.6	5.255 ²²⁸	37.68 ³	6.950 ²²⁵	41.49 ³¹⁶	45.786 ²¹²	53.85 ²⁷⁴	38.344 ²⁰⁶	30.75 ²²⁴
17.5	5.439 ¹⁸⁴	37.99 ³¹	7.129 ¹⁷⁹	44.68 ³¹⁹	45.955 ¹⁶⁹	56.54 ²⁶⁹	38.511 ¹⁶⁷	32.86 ²¹¹
27.5	5.574 ¹³⁵	38.61 ⁶²	7.257 ¹²⁸	47.83 ³¹⁵	46.080 ¹²⁵	59.12 ²⁵⁸	38.635 ¹²⁴	34.81 ¹⁹⁵
	86	88	78	304	81	243	83	176
Sept. 6.5	5.660	39.49	7.335	50.87	46.161	61.55	38.718	36.57
16.5	5.698 ³⁸	40.58 ¹⁰⁹	7.363 ²⁸	53.77 ²⁹⁰	46.199 ³⁸	63.79 ²²⁴	38.760 ⁴²	38.10 ¹⁵³
26.4	5.690 ⁸	41.84 ¹²⁶	7.345 ¹⁸	56.44 ²⁶⁷	46.197 ²	65.79 ²⁰⁰	38.764 ⁴	39.39 ¹²⁹
Oct. 6.4	5.642 ⁴⁸	43.19 ¹³⁵	7.284 ⁶¹	58.86 ²⁴²	46.158 ³⁹	67.52 ¹⁷³	38.734 ³⁰	40.44 ¹⁰⁶
16.4	5.557 ⁸⁵	44.56 ¹³⁷	7.188 ⁹⁶	60.97 ²¹¹	46.088 ⁷⁰	68.99 ¹⁴⁷	38.676 ⁵⁸	41.23 ⁷⁹
	112	133	129	176	95	114	83	55
26.4	5.445	45.89	7.059	62.73	45.993	70.13	38.593	41.78
Nov. 5.3	5.314 ¹³¹	47.11 ¹²²	6.907 ¹⁵²	64.11 ¹³⁸	45.877 ¹¹⁶	70.94 ⁸¹	38.493 ¹⁰⁰	42.06 ²⁸
15.3	5.170 ¹⁴⁴	48.17 ¹⁰⁶	6.736 ¹⁷¹	65.06 ⁹⁵	45.748 ¹²⁹	71.43 ⁴⁹	38.382 ¹¹¹	42.12 ⁶
25.3	5.021 ¹⁴⁹	49.03 ⁸⁶	6.554 ¹⁸²	65.56 ⁵⁰	45.612 ¹³⁶	71.56 ¹³	38.263 ¹¹⁹	41.92 ²⁰
Dec. 5.2	4.874 ¹⁴⁷	49.64 ⁶¹	6.367 ¹⁸⁷	65.61 ⁵	45.472 ¹⁴⁰	71.34 ²²	38.144 ¹¹⁹	41.49 ⁴³
	139	33	187	41	137	56	114	64
15.2	4.735	49.97	6.180	65.20	45.335	70.78	38.030	40.85
25.2	4.611 ¹²⁴	50.03 ⁶	6.001 ¹⁷⁹	64.34 ⁸⁶	45.205 ¹³⁰	69.91 ⁸⁷	37.921 ¹⁰⁹	40.02 ⁸³
35.2	4.505 ¹⁰⁶	49.81 ²²	5.836 ¹⁶⁵	63.06 ¹²⁸	45.087 ¹¹⁸	68.74 ¹¹⁷	37.824 ⁹⁷	39.02 ¹⁰⁰
Mean Place	0.729	64.01	3.161	27.39	42.002	36.74	34.516	11.08
Sec δ , Tan δ	1.155	-0.579	1.343	+0.897	1.129	+0.524	1.034	+0.263
$D\psi\alpha$, $D\omega\alpha$	+0.06	+0.04	+0.05	-0.06	+0.06	-0.03	+0.06	-0.02
$D\psi\delta$, $D\omega\delta$	+0.4	-0.3	+0.4	-0.3	+0.4	-0.3	+0.4	-0.3

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	55 Pegasi. Mag. 4.7		C ³ Aquarii. Mag. 3.8		π Cephei. Mag. 4.6		ι Gruis. Mag. 4.1	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 23 2	° ' " + 8 57	h m 23 4	° ' " -21 37	h m 23 5	° ' " +74 55	h m 23 5	° ' " -45 41
	s	"	s	"	s	"	s	"
Jan. 1.2	46.527	24.92	58.600	47.46	10.51	81.35	37.026	77.64
11.2	46.447	24.01	58.513	47.41	9.83	80.09	36.878	76.70
21.1	46.383	23.03	58.447	47.13	9.22	78.28	36.762	75.34
31.1	46.338	22.06	58.402	46.63	8.70	75.99	36.677	73.64
Feb. 10.1	46.318	21.12	58.383	45.89	8.30	73.32	36.630	71.61
20.0	46.325	20.30	58.391	44.93	8.04	70.39	36.622	69.31
Mar. 1.0	46.362	19.61	58.431	43.74	7.94	67.30	36.655	66.78
11.0	46.432	19.15	58.504	42.34	7.98	64.20	36.737	64.07
21.0	46.537	18.90	58.612	40.74	8.19	61.22	36.859	61.23
30.9	46.680	18.96	58.757	38.96	8.55	58.46	37.030	58.33
Apr. 9.9	46.861	19.32	58.940	37.02	9.04	56.05	37.251	55.42
19.9	47.076	19.98	59.159	34.94	9.68	54.08	37.513	52.53
29.9	47.323	20.97	59.412	32.79	10.41	52.60	37.819	49.75
May 9.8	47.599	22.25	59.694	30.59	11.22	51.69	38.161	47.12
19.8	47.897	23.81	60.001	28.39	12.10	51.35	38.535	44.71
29.8	48.210	25.60	60.325	26.27	13.01	51.61	38.930	42.59
June 8.7	48.531	27.58	60.659	24.24	13.92	52.45	39.340	40.78
18.7	48.851	29.71	60.996	22.37	14.81	53.86	39.754	39.33
28.7	49.165	31.90	61.327	20.72	15.66	55.79	40.159	38.29
July 8.7	49.461	34.13	61.642	19.31	16.45	58.20	40.548	37.65
18.6	49.733	36.33	61.934	18.18	17.15	61.01	40.911	37.49
28.6	49.974	38.45	62.196	17.36	17.74	64.18	41.235	37.73
Aug. 7.6	50.180	40.44	62.421	16.84	18.23	67.63	41.513	38.40
17.6	50.349	42.28	62.605	16.65	18.61	71.27	41.739	39.46
27.5	50.476	43.92	62.746	16.75	18.85	75.05	41.908	40.85
Sept. 6.5	50.562	45.34	62.841	17.14	18.96	78.88	42.018	42.52
16.5	50.607	46.54	62.891	17.75	18.94	82.68	42.069	44.40
26.4	50.616	47.51	62.899	18.58	18.80	86.37	42.059	46.41
Oct. 6.4	50.588	48.25	62.868	19.54	18.54	89.87	41.998	48.46
16.4	50.533	48.74	62.804	20.58	18.18	93.14	41.888	50.44
26.4	50.455	49.01	62.715	21.67	17.70	96.05	41.743	52.31
Nov. 5.3	50.360	49.06	62.605	22.72	17.14	98.57	41.565	53.95
15.3	50.252	48.93	62.482	23.70	16.51	100.61	41.369	55.29
25.3	50.141	48.60	62.353	24.56	15.82	102.12	41.162	56.27
Dec. 5.3	50.026	48.11	62.224	25.26	15.09	103.05	40.953	56.87
15.2	49.916	47.47	62.101	25.78	14.34	103.37	40.751	57.05
25.2	49.813	46.68	61.988	26.09	13.60	103.07	40.565	56.79
35.2	49.721	45.79	61.888	26.20	12.89	102.16	40.398	56.11
Mean Place	46.322	19.55	58.174	43.16	13.335	59.63	36.516	67.14
Sec δ, Tan δ	1.012	+0.158	1.076	-0.396	3.848	+3.716	1.432	-1.025
$D\psi a, D\omega a$	+0.06	-0.01	+0.06	+0.03	+0.04	-0.24	+0.07	+0.07
$D\psi \delta, D\omega \delta$	+0.4	-0.2	+0.4	-0.2	+0.4	-0.2	+0.4	-0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	59 Pegasi. Mag. 5.2		5 H ¹ . Cassiop. Mag. 5.6		φ Aquarii. Mag. 4.4		ψ Aquarii. Mag. 4.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 23 7	° ' " + 8 15	h m 23 9	° ' " +56 42	h m 23 9	° ' " - 6 29	h m 23 11	° ' " - 9 32
	s	"	s	"	s	"	s	"
Jan. 1.2	29.931	54.96	13.263	35.23	58.709	66.93	29.912	44.01
11.2	29.849 ⁸²	54.07 ⁸⁹	13.010 ²⁵³	33.85 ¹³⁸	58.630 ⁷⁹	67.42 ⁴⁹	29.834 ⁷⁸	44.39 ³⁸
21.1	29.781 ⁶⁸	53.14 ⁹³	12.787 ²²³	31.99 ¹⁸⁶	58.564 ⁶⁶	67.78 ³⁶	29.769 ⁶⁵	44.64 ²⁵
31.1	29.734 ⁴⁷	52.21 ⁹³	12.604 ¹⁸³	29.76 ²²³	58.521 ⁴³	68.04 ²⁶	29.725 ⁴⁴	44.75 ¹¹
Feb. 10.1	29.710 ²⁴	51.32 ⁸⁹	12.470 ¹³⁴	27.23 ²⁵³	58.498 ²³	68.16 ¹²	29.701 ²⁴	44.68 ⁷
	3	78	76	271	6	7	7	24
20.0	29.713	50.54	12.394	24.52	58.504	68.09	29.708	44.44
Mar. 1.0	29.745 ³²	49.91 ⁴⁴	12.382 ¹²	21.75 ²⁷⁷	58.536 ³²	67.84 ²⁵	29.739 ³¹	44.00 ⁴⁴
11.0	29.809 ⁶⁴	49.47 ⁴⁴	12.441 ⁵⁹	19.02 ²⁷³	58.602 ⁶⁶	67.36 ⁴⁸	29.803 ⁶⁴	43.34 ⁶⁶
21.0	29.912 ¹⁰³	49.27 ²⁰	12.571 ¹³⁰	16.46 ²⁵⁶	58.701 ⁹⁹	66.67 ⁶⁹	29.903 ¹⁰⁰	42.45 ⁸⁹
30.9	30.049 ¹³⁷	49.36 ⁹	12.775 ²⁰⁴	14.17 ²²⁹	58.837 ¹³⁶	65.72 ⁹⁵	30.037 ¹³⁴	41.33 ¹¹²
	176	39	271	192	171	118	172	135
Apr. 9.9	30.225	49.75	13.046	12.25	59.008	64.54	30.209	39.98
19.9	30.436 ²¹¹	50.44 ⁶⁹	13.382 ³³⁶	10.77 ¹⁴⁵	59.217 ²⁰⁹	63.13 ¹⁴¹	30.417 ²⁰⁸	38.42 ¹⁵⁶
29.9	30.679 ²⁴³	51.46 ¹⁰²	13.773 ³⁹¹	9.80 ⁹⁷	59.455 ²³⁸	61.51 ¹⁶²	30.655 ²³⁸	36.69 ¹⁷³
May 9.8	30.954 ²⁷⁵	52.75 ¹²⁹	14.208 ⁴³⁵	9.38 ⁴²	59.723 ²⁶⁸	59.74 ¹⁷⁷	30.925 ²⁷⁰	34.80 ¹⁸⁹
19.8	31.248 ²⁹⁴	54.32 ¹⁵⁷	14.678 ⁴⁷⁰	9.50 ¹²	60.016 ²⁹³	57.82 ¹⁹²	31.218 ²⁹³	32.81 ¹⁹⁹
	312	180	492	67	309	201	311	206
29.8	31.560	56.12	15.170	10.17	60.325	55.81	31.529	30.75
June 8.7	31.881 ³²¹	58.10 ¹⁹⁸	15.667 ⁴⁹⁷	11.38 ¹²¹	60.644 ³¹⁹	53.76 ²⁰⁵	31.850 ³²¹	28.68 ²⁰⁷
18.7	32.202 ³²¹	60.21 ²¹¹	16.157 ⁴⁹⁰	13.10 ¹⁷²	60.965 ³²¹	51.73 ²⁰³	32.174 ³²⁴	26.66 ²⁰²
28.7	32.516 ³¹⁴	62.40 ²¹⁹	16.632 ⁴⁷⁵	15.27 ²¹⁷	61.280 ³¹⁵	49.75 ¹⁹⁸	32.492 ³¹⁸	24.74 ¹⁹²
July 8.7	32.814 ²⁹⁸	64.61 ²²¹	17.075 ⁴⁴³	17.84 ²⁵⁷	61.581 ³⁰¹	47.91 ¹⁸⁴	32.796 ³⁰⁴	22.95 ¹⁷⁹
	275	218	403	292	278	169	283	161
18.6	33.089	66.79	17.478	20.76	61.859	46.22	33.079	21.34
28.6	33.335 ²⁴⁶	68.87 ²⁰⁸	17.831 ³⁵³	23.93 ³¹⁷	62.110 ²⁵¹	44.69 ¹⁵³	33.333 ²⁵⁴	19.97 ¹³⁷
Aug. 7.6	33.544 ²⁰⁹	70.83 ¹⁹⁶	18.128 ²⁹⁷	27.30 ³³⁷	62.325 ²¹⁵	43.42 ¹²⁷	33.553 ²²⁰	18.82 ¹¹⁵
17.6	33.717 ¹⁷³	72.63 ¹⁸⁰	18.362 ²³⁴	30.81 ³⁵¹	62.504 ¹⁷⁹	42.40 ¹⁰²	33.733 ¹⁸⁰	17.96 ⁸⁶
27.5	33.849 ¹³²	74.24 ¹⁶¹	18.535 ¹⁷³	34.37 ³⁵⁶	62.643 ¹³⁹	41.62 ⁷⁸	33.874 ¹⁴¹	17.35 ⁶¹
	90	139	107	352	94	51	99	33
Sept. 6.5	33.939	75.63	18.642	37.89	62.737	41.11	33.973	17.02
16.5	33.990 ⁵¹	76.79 ¹¹⁶	18.684 ⁴²	41.34 ³⁴⁵	62.793 ⁵⁶	40.83 ²⁸	34.030 ⁵⁷	16.94 ⁸
26.4	34.002 ¹²	77.73 ⁹⁴	18.665 ¹⁹	44.62 ³²⁸	62.807 ¹⁴	40.78 ⁵	34.046 ¹⁶	17.06 ¹²
Oct. 6.4	33.979 ²³	78.42 ⁶⁹	18.590 ⁷⁵	47.69 ³⁰⁷	62.789 ¹⁸	40.94 ¹⁶	34.029 ¹⁷	17.39 ³³
16.4	33.929 ⁵⁰	78.89 ⁴⁷	18.462 ¹²⁸	50.45 ²⁷⁶	62.739 ⁵⁰	41.27 ³³	33.980 ⁴⁹	17.85 ⁴⁶
	74	23	173	243	72	46	73	60
26.4	33.855	79.12	18.289	52.88	62.667	41.73	33.907	18.45
Nov. 5.3	33.764 ⁹¹	79.14 ²	18.078 ²¹¹	54.88 ²⁰⁰	62.573 ⁹⁴	42.27 ⁵⁴	33.815 ⁹²	19.12 ⁶⁷
15.3	33.659 ¹⁰⁵	78.99 ¹⁵	17.837 ²⁴¹	56.44 ¹⁵⁶	62.469 ¹⁰⁴	42.90 ⁶³	33.709 ¹⁰⁶	19.83 ⁷¹
25.3	33.547 ¹¹²	78.67 ³²	17.572 ²⁶⁵	57.50 ¹⁰⁶	62.359 ¹¹⁰	43.54 ⁶⁴	33.599 ¹¹⁰	20.54 ⁷¹
Dec. 5.3	33.435 ¹¹²	78.17 ⁵⁰	17.293 ²⁷⁹	58.04 ⁵⁴	62.247 ¹¹²	44.20 ⁶⁶	33.485 ¹¹⁴	21.23 ⁶⁹
	110	65	285	3	110	65	110	63
15.2	33.325	77.52	17.008	58.01	62.137	44.85	33.375	21.86
25.2	33.222 ¹⁰³	76.76 ⁷⁶	16.727 ²⁸¹	57.44 ⁵⁷	62.037 ¹⁰⁰	45.47 ⁶²	33.273 ¹⁰²	22.42 ⁵⁶
35.2	33.128 ⁹⁴	75.90 ⁸⁶	16.460 ²⁶⁷	56.35 ¹⁰⁹	61.945 ⁹²	46.02 ⁵⁵	33.181 ⁹²	22.88 ⁴⁶
Mean Place	29.692	49.65	14.017	16.13	58.342	67.44	29.521	43.58
Sec δ, Tan δ	1.011	+0.145	1.822	+1.523	1.006	-0.114	1.014	-0.168
Dψ α, Dω α	+0.06	-0.01	+0.05	-0.10	+0.06	+0.01	+0.06	+0.01
Dψ δ, Dω δ	+0.4	-0.2	+0.4	-0.2	+0.4	-0.2	+0.4	-0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Tucanae. Mag. 4.1		γ Piscium. Mag. 3.8		γ Sculptoris. Mag. 4.5		ο Cephei. Mag. 4.9	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 23 12	° ' " -58 41	h m 23 12	° ' " + 2 49	h m 23 14	° ' " -32 58	h m 23 15	° ' " +67 38
	s	"	s	"	s	"	s	"
Jan. 1.2	32.610	61.29	48.938	26.96	17.966	90.85	8.76	87.76
11.2	32.368 ²⁴²	59.92 ¹³⁷	48.857 ⁸¹	26.22 ⁷⁴	17.855 ¹¹¹	90.44 ⁴¹	8.33 ⁴³	86.51 ¹²⁵
21.1	32.167 ²⁰¹	58.09 ¹⁸³	48.792 ⁶⁵	25.51 ⁷¹	17.764 ⁹¹	89.70 ⁷⁴	7.94 ³⁹	84.76 ¹⁷⁵
31.1	32.011 ¹⁵⁶	55.85 ²²⁴	48.745 ⁴⁷	24.83 ⁶⁸	17.698 ⁶⁶	88.65 ¹⁰⁵	7.61 ³³	82.53 ²²³
Feb. 10.1	31.906 ¹⁰⁵	53.25 ²⁶⁰	48.721 ²⁴	24.23 ⁶⁰	17.660 ³⁸	87.32 ¹³³	7.35 ²⁶	79.94 ²⁵⁹
	49	288	1	47	8	161	17	283
20.1	31.857	50.37	48.722	23.76	17.652	85.71	7.18	77.11
Mar. 1.0	31.866 ⁹	47.25 ³¹²	48.753 ³¹	23.46 ¹¹	17.679 ²⁷	83.87 ¹⁸⁴	7.10 ⁸	74.14 ²⁹⁷
11.0	31.935 ⁶⁹	43.98 ³²⁷	48.815 ⁶²	23.35 ¹⁵	17.742 ⁶³	81.81 ²⁰⁶	7.13 ³	71.15 ²⁹⁹
21.0	32.066 ¹³¹	40.63 ³³⁵	48.912 ⁹⁷	23.50 ⁴⁰	17.844 ¹⁰²	79.58 ²²³	7.27 ¹⁴	68.28 ²⁸⁷
30.9	32.261 ¹⁹⁵	37.26 ³³⁷	49.046 ¹³⁴	23.90 ⁶⁸	17.986 ¹⁴²	77.21 ²³⁷	7.51 ²⁴	65.64 ²⁶⁴
	255	332	171	68	184	248	34	230
Apr. 9.9	32.516	33.94	49.217	24.58	18.170	74.73	7.85	63.34
19.9	32.830 ³¹⁴	30.73 ³²¹	49.423 ²⁰⁶	25.53 ⁹⁵	18.392 ²²²	72.20 ²⁵³	8.29 ⁴⁴	61.47 ¹⁸⁷
29.9	33.199 ³⁶⁹	27.71 ³⁰²	49.661 ²³⁸	26.76 ¹²³	18.655 ²⁶³	69.66 ²⁵⁴	8.80 ⁵¹	60.08 ¹³⁹
May 9.8	33.817 ⁴¹⁸	24.92 ²⁷⁹	49.930 ²⁶⁹	28.24 ¹⁴⁸	18.950 ²⁹⁵	67.17 ²⁴⁹	9.37 ⁵⁷	59.23 ⁸⁵
19.8	34.076 ⁴⁵⁹	22.46 ²⁴⁶	50.222 ²⁹²	29.94 ¹⁷⁰	19.271 ³²¹	64.78 ²³⁹	10.00 ⁶³	58.97 ²⁶
	490	210	310	188	345	223	65	29
29.8	34.566	20.36	50.532	31.82	19.616	62.55	10.65	59.26
June 8.8	35.074 ⁵⁰⁸	18.66 ¹⁷⁰	50.851 ³¹⁹	33.83 ²⁰¹	19.973 ³⁵⁷	60.54 ²⁰¹	11.31 ⁶⁶	60.16 ⁹⁰
18.7	35.590 ⁵¹⁶	17.42 ¹²⁴	51.172 ³²¹	35.92 ²⁰⁹	20.334 ³⁶¹	58.80 ¹⁷⁴	11.96 ⁶⁵	61.57 ¹⁴¹
28.7	36.100 ⁵¹⁰	16.66 ⁷⁶	51.487 ³¹⁵	38.03 ²¹¹	20.690 ³⁵⁶	57.34 ¹⁴⁶	12.59 ⁶³	63.52 ¹⁹⁵
July 8.7	36.590 ⁴⁹⁰	16.39 ²⁷	51.786 ²⁹⁹	40.12 ²⁰²	21.033 ³⁴³	56.24 ¹¹⁰	13.18 ⁵³	65.93 ²⁴¹
	457	23	280	202	819	74	53	278
18.6	37.047	16.62	52.066	42.14	21.352	55.50	13.71	68.71
28.6	37.459 ⁴¹²	17.34 ⁷²	52.316 ²⁵⁰	44.03 ¹⁸⁹	21.641 ²⁸⁹	55.14 ³⁶	14.18 ⁴⁷	71.85 ³¹⁴
Aug. 7.6	37.815 ³⁵⁶	18.51 ¹¹⁷	52.533 ²¹⁷	45.74 ¹⁷¹	21.892 ²⁶¹	55.15 ¹	14.56 ³⁸	75.24 ³³⁹
17.6	38.104 ²⁸⁹	20.10 ¹⁵⁹	52.712 ¹⁷⁹	47.27 ¹⁸³	22.099 ²⁰⁷	55.53 ³⁸	14.87 ³¹	78.83 ³⁵⁹
27.5	38.320 ²¹⁶	22.03 ¹⁹³	52.852 ¹⁴⁰	48.59 ¹³²	22.259 ¹⁶⁰	56.25 ⁷²	15.09 ²²	82.52 ³⁶⁹
	137	222	98	107	110	100	13	376
Sept. 6.5	38.457	24.25	52.950	49.66	22.369	57.25	15.22	86.28
16.5	38.515 ⁵⁸	26.66 ²⁴¹	53.007 ⁵⁷	50.51 ⁸⁵	22.429 ⁶⁰	58.51 ¹²⁶	15.26 ⁴	89.98 ³⁷⁰
26.5	38.495 ²⁰	29.16 ²⁵⁰	53.027 ²⁰	51.10 ⁵⁹	22.442 ¹³	59.95 ¹⁴⁴	15.21 ⁵	93.57 ³⁵⁹
Oct. 6.4	38.401 ⁹⁴	31.65 ²⁴⁹	53.013 ¹⁴	51.49 ³⁹	22.410 ³²	61.49 ¹⁵⁴	15.08 ¹³	96.97 ³⁴⁰
16.4	38.241 ¹⁸⁰	34.03 ²³⁸	52.969 ⁴⁴	51.66 ¹⁷	22.340 ⁷⁰	63.07 ¹⁵⁸	14.88 ²⁰	100.13 ³¹⁶
	217	216	68	1	101	155	28	281
26.4	38.024	36.19	52.901	51.65	22.239	64.62	14.60	102.94
Nov. 5.3	37.781 ²⁶³	38.05 ¹⁸⁶	52.815 ⁸⁶	51.46 ¹⁹	22.113 ¹²⁶	66.06 ¹⁴⁴	14.26 ³⁴	105.35 ²⁴¹
15.3	37.466 ²⁹⁵	39.51 ¹⁴⁶	52.716 ⁹⁹	51.13 ³³	21.970 ¹⁴³	67.31 ¹²⁵	13.88 ³⁸	107.32 ¹⁹⁷
25.3	37.152 ³¹⁴	40.53 ¹⁰²	52.609 ¹⁰⁷	50.66 ⁴⁷	21.818 ¹⁵²	68.34 ¹⁰³	13.45 ⁴³	108.75 ¹⁴³
Dec. 5.3	36.833 ³¹⁹	41.05 ⁵²	52.501 ¹⁰⁸	50.11 ⁵⁵	21.663 ¹⁵⁵	69.10 ⁷⁶	13.00 ⁴⁵	109.64 ⁸⁹
	313	1	107	64	150	46	47	26
15.2	36.520	41.04	52.394	49.47	21.513	69.56	12.53	109.90
25.2	36.225 ²⁹⁵	40.50 ⁵⁴	52.293 ¹⁰¹	48.75 ⁷²	21.372 ¹⁴¹	69.69 ¹³	12.06 ⁴⁷	109.59 ³¹
35.2	35.959 ²⁶⁶	39.46 ¹⁰⁴	52.203 ⁹⁰	48.01 ⁷⁴	21.245 ¹²⁷	69.48 ²¹	11.61 ⁴⁵	108.70 ⁸⁹
Mean Place	32.033	48.44	48.622	23.30	17.440	83.46	10.218	66.39
Sec δ, Tan δ	1.924	-1.645	1.001	+0.049	1.192	-0.649	2.631	+2.433
<i>D_α, D_ω</i>	+0.07	+0.11	+0.06	0.00	+0.06	+0.04	+0.05	-0.16
<i>D_δ, D_δ</i>	+0.4	-0.2	+0.4	-0.2	+0.4	-0.2	+0.4	-0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	τ Pegasi. Mag. 4.6		δ^1 Aquarii. Mag. 4.2		4 Cassiopeiæ. Mag. 5.2		ν Pegasi. Mag. 4.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 23 16	° ' " +23 16	h m 23 18	° ' " -20 33	h m 23 21	° ' " +61 49	h m 23 21	° ' " +22 56
	s	"	s	"	s	"	s	"
Jan. 1.2	28.756	59.72	34.101	37.46	5.06	38.18	11.246	39.72
11.2	28.650 ¹⁰⁶	58.56 ¹¹⁶	34.009 ⁹²	37.51 ⁵	4.73 ³³	36.96 ¹²²	11.140 ¹⁰⁶	38.60 ¹¹²
21.1	28.560 ⁹⁰	57.22 ¹³⁴	33.932 ⁷⁷	37.33 ¹⁸	4.43 ³⁰	35.23 ¹⁷³	11.048 ⁹²	37.30 ¹³⁰
31.1	28.490 ⁷⁰	55.75 ¹⁴⁷	33.875 ⁵⁷	36.91 ⁴²	4.17 ²⁶	33.07 ²¹⁶	10.976 ⁷²	35.86 ¹⁴⁴
Feb. 10.1	28.443 ⁴⁷	54.21 ¹⁵⁴	33.843 ³²	36.26 ⁶⁵	3.97 ²⁰	30.56 ²⁵¹	10.927 ⁴⁹	34.36 ¹⁵⁰
	16	154	4	88	13	273	20	150
20.1	28.427	52.67	33.839	35.38	3.84	27.83	10.907	32.86
Mar. 1.0	28.444 ¹⁷	51.21 ¹⁴⁶	33.861 ²²	34.26 ¹¹²	3.79 ⁵	24.97 ²⁸⁶	10.920 ¹³	31.44 ¹⁴²
11.0	28.498 ⁵⁴	49.91 ¹³⁰	33.918 ⁵⁷	32.92 ¹³⁴	3.82 ³	22.11 ²⁸⁶	10.969 ⁴⁹	30.18 ¹²⁶
21.0	28.591 ⁹³	48.85 ¹⁰⁶	34.011 ⁹³	31.37 ¹⁵⁵	3.93 ¹¹	19.37 ²⁷⁴	11.058 ⁸⁹	29.12 ¹⁰⁶
30.9	28.726 ¹³⁵	48.07 ⁷⁸	34.140 ¹²⁹	29.61 ¹⁷⁶	4.12 ¹⁹	16.87 ²⁵⁰	11.188 ¹³⁰	28.36 ⁷⁶
	176	46	168	193	28	217	172	44
Apr. 9.9	28.902	47.61	34.308	27.68	4.40	14.70	11.360	27.92
19.9	29.119 ²¹⁷	47.54 ⁷	34.514 ²⁰⁶	25.63 ²⁰⁵	4.75 ³⁵	12.95 ¹⁷⁵	11.573 ²¹³	27.85 ⁷
29.9	29.372 ²⁵³	47.87 ³³	34.753 ²³⁹	23.47 ²¹⁶	5.17 ⁴²	11.69 ¹²⁶	11.822 ²⁴⁹	28.16 ³¹
May 9.8	29.656 ²⁸⁴	48.58 ⁷¹	35.024 ²⁷¹	21.26 ²²¹	5.64 ⁴⁷	10.95 ⁷⁴	12.102 ²⁸⁰	28.86 ⁷⁰
19.8	29.966 ³¹⁰	49.68 ¹¹⁰	35.321 ²⁹⁷	19.05 ²²¹	6.16 ⁵²	10.78 ¹⁷	12.410 ³⁰⁸	29.94 ¹⁰⁸
	327	145	319	220	54	39	325	143
29.8	30.293	51.13	35.640	16.85	6.70	11.17	12.735	31.37
June 8.8	30.630 ³³⁷	52.90 ¹⁷⁷	35.970 ³³⁰	14.76 ²⁰⁹	7.26 ⁵⁶	12.13 ⁹⁶	13.071 ³³⁶	33.12 ¹⁷⁵
18.7	30.968 ³³⁸	54.95 ²⁰⁵	36.305 ³³⁵	12.83 ¹⁹³	7.81 ⁵⁵	13.60 ¹⁴⁷	13.409 ³³⁸	35.15 ²⁰³
28.7	31.298 ³³⁰	57.21 ²²⁶	36.635 ³³⁰	11.08 ¹⁷⁵	8.34 ⁵³	15.57 ¹⁹⁷	13.740 ³³¹	37.39 ²²⁴
July 8.7	31.612 ³¹⁴	59.63 ²⁴²	36.954 ³¹⁹	9.57 ¹⁵¹	8.84 ⁵⁰	17.97 ²⁴⁰	14.056 ³¹⁶	39.77 ²³⁸
	291	252	297	123	46	278	293	250
18.6	31.903	62.15	37.251	8.34	9.30	20.75	14.349	42.27
28.6	32.162 ²⁵⁹	64.72 ²⁵⁷	37.518 ²⁶⁷	7.41 ⁹³	9.71 ⁴¹	23.85 ³¹⁰	14.612 ²⁶³	44.81 ²⁵⁴
Aug. 7.6	32.386 ²²⁴	67.27 ²⁵⁵	37.752 ²³⁴	6.81 ⁶⁰	10.06 ³⁵	27.18 ³³³	14.840 ²²⁸	47.34 ²⁵³
17.6	32.571 ¹⁸⁵	69.75 ²⁴⁸	37.947 ¹⁹⁵	6.50 ³¹	10.33 ²⁷	30.69 ³⁵¹	15.030 ¹⁹⁰	49.80 ²⁴⁶
27.5	32.713 ¹⁴²	72.11 ²³⁶	38.100 ¹⁵³	6.53 ³	10.54 ²¹	34.29 ³⁶⁰	15.178 ¹⁴⁸	52.15 ²³⁵
	100	221	107	31	12	363	105	218
Sept. 6.5	32.813	74.32	38.207	6.84	10.66	37.92	15.283	54.33
16.5	32.871 ⁵⁸	76.33 ²⁰¹	38.271 ⁶⁴	7.40 ⁵⁶	10.72 ⁶	41.49 ³⁵⁷	15.347 ⁶⁴	56.33 ²⁰⁰
26.5	32.889 ¹⁸	78.13 ¹⁸⁰	38.292 ²¹	8.17 ⁷⁷	10.71 ¹	44.95 ³⁴⁶	15.371 ²⁴	58.11 ¹⁷⁸
Oct. 6.4	32.871 ¹⁸	79.67 ¹⁵⁴	38.276 ¹⁶	9.08 ⁹¹	10.63 ⁸	48.22 ³²⁷	15.359 ¹²	59.64 ¹⁵³
16.4	32.823 ⁴⁸	80.94 ¹²⁷	38.225 ⁵¹	10.13 ¹⁰⁵	10.49 ¹⁴	51.22 ³⁰⁰	15.316 ⁴³	60.91 ¹²⁷
	76	100	78	109	20	267	70	100
26.4	32.747	81.94	38.147	11.22	10.29	53.89	15.246	61.91
Nov. 5.3	32.652 ⁹⁵	82.64 ⁷⁰	38.047 ¹⁰⁰	12.31 ¹⁰⁹	10.05 ²⁴	56.18 ²²⁹	15.155 ⁹¹	62.61 ⁷⁰
15.3	32.541 ¹¹¹	83.05 ⁴¹	37.932 ¹¹⁵	13.33 ¹⁰²	9.77 ²⁸	58.01 ¹⁸³	15.048 ¹⁰⁷	63.02 ⁴¹
25.3	32.419 ¹²⁶	83.14 ⁹	37.809 ¹²³	14.27 ⁹⁴	9.44 ³³	59.35 ¹³⁴	14.929 ¹¹⁹	63.13 ¹¹
Dec. 5.3	32.293 ¹²⁶	82.94 ²⁰	37.684 ¹²⁵	15.05 ⁷⁸	9.10 ³⁴	60.15 ⁸⁰	14.805 ¹²⁴	62.94 ¹⁹
	127	49	123	61	35	23	125	47
15.2	32.166	82.45	37.561	15.66	8.75	60.38	14.680	62.47
25.2	32.043 ¹²³	81.66 ⁷⁹	37.444 ¹¹⁷	16.07 ⁴¹	8.40 ³⁵	60.04 ³⁴	14.557 ¹²³	61.72 ⁷⁵
35.2	31.929 ¹¹⁴	80.63 ¹⁰³	37.339 ¹⁰⁵	16.26 ¹⁹	8.05 ³⁵	59.14 ⁹⁰	14.443 ¹¹⁴	60.72 ¹⁰⁰
Mean Place	28.620	49.19	33.608	33.70	5.941	17.45	11.076	29.14
Sec δ , Tan δ	1.089	+0.430	1.068	-0.375	2.118	+1.867	1.086	+0.423
$D\psi \alpha$, $D_{\omega} \alpha$	+0.06	-0.03	+0.06	+0.02	+0.05	-0.12	+0.06	-0.03
$D\psi \delta$, $D_{\omega} \delta$	+0.4	-0.2	+0.4	-0.2	+0.4	-0.2	+0.4	-0.2

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	κ Piscium. Mag. 4.9		θ Piscium. Mag. 4.4		70 Pegasi. Mag. 4.7		β Sculptoris. Mag. 4.5	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 23 22	° ' " + 0 47	h m 23 23	° ' " + 5 55	h m 23 24	° ' " +12 17	h m 23 28	° ' " -38 16
	s	"	s	"	s	"	s	"
Jan. 1.2	37.970	47.66	42.728	8.02	54.611	56.48	28.864	67.85
11.2	37.884 ⁸⁶	46.98 ⁶⁸	42.637 ⁹¹	7.22 ⁸⁰	54.517 ⁹⁴	55.56 ⁹²	28.727 ¹³⁷	67.35 ⁵⁰
21.1	37.813 ⁷¹	46.33 ⁶⁵	42.563 ⁷⁴	6.40 ⁸²	54.437 ⁸⁰	54.55 ¹⁰¹	28.612 ¹¹⁵	66.47 ⁸⁸
31.1	37.758 ⁵⁵	45.75 ⁵⁸	42.505 ⁵⁸	5.60 ⁸⁰	54.375 ⁶²	53.50 ¹⁰⁵	28.521 ⁹¹	65.24 ¹²³
Feb. 10.1	37.724 ³⁴	45.26 ⁴⁹	42.468 ³⁷	4.86 ⁷⁴	54.333 ⁴²	52.47 ¹⁰³	28.460 ³⁰	63.68 ¹⁵⁶
	9	35	11	62	16	97	61	185
20.1	37.715	44.91	42.457	4.24	54.317	51.50	28.430	61.83
Mar. 1.0	37.735 ²⁰	44.73 ¹⁸	42.472 ¹⁵	3.76 ⁴⁸	54.331 ¹⁴	50.65 ⁸⁵	28.434 ⁴	59.71 ²¹²
11.0	37.785 ⁵⁰	44.75 ²	42.522 ⁵⁰	3.48 ²⁸	54.378 ⁴⁷	49.99 ⁶⁶	28.478 ⁴⁴	57.37 ²³⁴
21.0	37.871 ⁸⁶	45.02 ²⁷	42.606 ⁸⁴	3.41 ⁷	54.462 ⁸⁴	49.55 ⁴⁴	28.564 ⁸⁶	54.85 ²⁵²
30.9	37.994 ¹²³	45.53 ⁵¹	42.729 ¹²³	3.63 ²²	54.584 ¹²²	49.39 ¹⁶	28.693 ¹²⁹	52.19 ²⁶⁶
	161	78	162	50	161	14	174	274
Apr. 9.9	38.155	46.31	42.891	4.13	54.745	49.53	28.867	49.45
19.9	38.352 ¹⁹⁷	47.37 ¹⁰⁶	43.087 ¹⁹⁶	4.93 ⁸⁰	54.945 ²⁰⁰	49.98 ⁴⁵	29.083 ²¹⁶	46.68 ²⁷⁷
29.9	38.582 ²³⁰	48.67 ¹³⁰	43.320 ²³³	5.99 ¹⁰⁶	55.180 ²³⁵	50.77 ⁷⁹	29.341 ²⁵⁸	43.92 ²⁷⁶
May 9.8	38.844 ²⁶²	50.22 ¹⁵⁵	43.580 ²⁶⁰	7.35 ¹³⁶	55.446 ²⁶⁶	51.89 ¹¹²	29.635 ²⁹⁴	41.25 ²⁶⁷
19.8	39.130 ²⁸⁶	51.96 ¹⁷⁴	43.866 ²⁸⁶	8.95 ¹⁶⁰	55.738 ²⁹²	53.29 ¹⁴⁰	29.961 ³²⁶	38.72 ²⁵³
	306	190	307	181	311	167	352	234
29.8	39.436	53.86	44.173	10.76	56.049	54.96	30.313	36.38
June 8.8	39.753 ³¹⁷	55.88 ²⁰²	44.491 ³¹⁸	12.72 ¹⁹⁶	56.372 ³²³	56.85 ¹⁸⁹	30.682 ³⁶⁹	34.30 ²⁰⁸
18.7	40.073 ³²⁰	57.96 ²⁰⁸	44.811 ³²⁰	14.81 ²⁰⁹	56.697 ³²⁵	58.93 ²⁰⁸	31.058 ³⁷⁶	32.52 ¹⁷⁸
28.7	40.390 ³¹⁷	60.05 ²⁰⁹	45.128 ³¹⁷	16.94 ²¹³	57.017 ³²⁰	61.11 ²¹⁸	31.433 ³⁷⁵	31.07 ¹⁴⁵
July 8.7	40.692 ³⁰²	62.10 ²⁰⁵	45.432 ³⁰⁴	19.10 ²¹⁶	57.324 ³⁰⁷	63.36 ²²⁵	31.797 ³⁶⁴	30.03 ¹⁰⁴
	284	195	284	208	286	226	342	65
18.6	40.976	64.05	45.716	21.18	57.610	65.62	32.139	29.38
28.6	41.231 ²⁵⁵	65.87 ¹⁶²	45.970 ²⁵⁴	23.19 ²⁰¹	57.868 ²⁵⁸	67.84 ²²²	32.451 ³¹²	29.14 ²⁴
Aug. 7.6	41.453 ²²²	67.50 ¹⁶³	46.193 ²²³	25.04 ¹⁸⁵	58.094 ²²⁶	69.95 ²¹¹	32.726 ²⁷⁵	29.32 ¹⁸
17.6	41.641 ¹⁸⁸	68.93 ¹⁴³	46.379 ¹⁸⁶	26.72 ¹⁶⁸	58.283 ¹⁸⁹	71.94 ¹⁹⁹	32.957 ²³¹	29.89 ⁵⁷
27.5	41.789 ¹⁴⁸	70.12 ¹¹⁹	46.528 ¹⁴⁹	28.21 ¹⁴⁹	58.432 ¹⁴⁹	73.77 ¹⁸³	33.139 ¹⁸²	30.82 ⁹³
	106	96	106	126	108	162	131	126
Sept. 6.5	41.895	71.08	46.634	29.47	58.540	75.39	33.270	32.08
16.5	41.962 ⁶⁷	71.79 ⁷¹	46.700 ⁶⁶	30.49 ¹⁰²	58.608 ⁶⁸	76.80 ¹⁴¹	33.347 ⁷⁷	33.60 ¹⁵²
26.5	41.990 ²⁸	72.28 ⁴⁹	46.731 ³¹	31.27 ⁷⁸	58.638 ³⁰	77.97 ¹¹⁷	33.374 ²⁷	35.31 ¹⁷¹
Oct. 6.4	41.984 ⁶	72.54 ²⁶	46.723 ⁸	31.85 ⁵⁸	58.633 ⁵	78.91 ⁹⁴	33.353 ²¹	37.13 ¹⁸²
16.4	41.948 ³⁶	72.60 ⁶	46.689 ³⁴	32.19 ¹³	58.598 ³⁵	79.60 ⁶⁹	33.288 ⁶⁵	38.99 ¹⁸⁶
	62	12	59	34	61	47	101	180
26.4	41.886	72.48	46.630	32.32	58.537	80.07	33.187	40.79
Nov. 5.3	41.805 ⁸¹	72.20 ²⁸	46.551 ⁷⁹	32.28 ⁴	58.457 ⁸⁰	80.30 ²³	33.056 ¹³¹	42.45 ¹⁶⁶
15.3	41.711 ⁹⁴	71.80 ⁴⁰	46.455 ⁹⁶	32.04 ²⁴	58.361 ⁹⁶	80.32 ²	32.904 ¹⁵²	43.91 ¹⁴⁶
25.3	41.607 ¹⁰⁴	71.30 ⁵⁰	46.351 ¹⁰⁴	31.67 ³⁷	58.256 ¹⁰⁵	80.12 ²⁰	32.739 ²⁰	45.09 ¹¹⁸
Dec. 5.3	41.500 ¹⁰⁷	70.71 ⁵⁹	46.242 ¹⁰⁹	31.16 ⁵¹	58.146 ¹¹⁰	79.73 ³⁹	32.567 ¹⁷²	45.95 ⁸⁶
	108	65	108	64	112	56	170	52
15.2	41.392	70.06	46.134	30.52	58.034	79.17	32.397	46.47
25.2	41.289 ¹⁰³	69.37 ⁶⁹	46.029 ¹⁰⁵	29.82 ⁷⁰	57.925 ¹⁰⁹	78.43 ⁷⁴	32.235 ¹⁶²	46.60 ¹³
35.2	41.194 ⁹⁵	68.67 ⁷⁰	45.933 ⁹⁶	29.06 ⁷⁶	57.823 ¹⁰²	77.56 ⁸⁷	32.085 ¹⁵⁰	46.34 ²⁶
Mean Place	37.584	44.38	42.376	2.99	54.306	49.25	28.231	59.26
Sec δ , Tan δ	1.000	+0.014	1.005	+0.104	1.024	+0.218	1.274	-0.789
$D\delta$ a , $D\alpha$ a	+0.06	0.00	+0.06	-0.01	+0.06	-0.01	+0.06	+0.05
$D\delta$ δ , $D\alpha$ δ	+0.4	-0.2	+0.4	-0.2	+0.4	-0.2	+0.4	-0.1

APPARENT PLACES OF STARS, 1916.

509

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	72 Pegasi (mean). Mag. 5.2		λ Andromedæ. Mag. 4.0		γ Andromedæ. Mag. 4.3		γ Piscium. Mag. 4.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 23 29 s	° ' " +30 51 "	h m 23 33 s	° ' " +46 0 "	h m 23 34 s	° ' " +42 48 "	h m 23 35 s	° ' " + 5 10 "
Jan. 1.2	47.082	55.39	26.777	28.53	0.686	27.68	38.170	20.40
11.2	46.956 ¹²⁶	54.23 ¹¹⁶	26.589 ¹⁸⁸	27.35 ¹¹⁸	0.514 ¹⁷²	26.51 ¹¹⁷	38.078 ⁹²	19.63 ⁷⁷
21.1	46.844 ¹¹²	52.82 ¹⁴¹	26.419 ¹⁷⁰	25.77 ¹⁵⁸	0.358 ¹⁵⁶	24.97 ¹⁵⁴	37.998 ⁸⁰	18.85 ⁷⁸
31.1	46.750 ⁹⁴	51.20 ¹⁶²	26.272 ¹⁴⁷	23.86 ¹⁹¹	0.224 ¹³⁴	23.12 ¹⁸⁵	37.933 ⁶⁵	18.09 ⁷⁶
Feb. 10.1	46.681 ⁶⁹	49.44 ¹⁷⁶	26.158 ¹¹⁴	21.69 ²¹⁷	0.120 ¹⁰⁴	21.03 ²⁰⁹	37.887 ⁴⁶	17.41 ⁶⁸
	38	181	74	233	66	222	21	59
20.1	46.643	47.63	26.084	19.36	0.054	18.81	37.866	16.82
Mar. 1.0	46.639 ⁴	45.84 ¹⁷⁹	26.056 ²⁸	16.97 ²³⁹	0.030 ²⁴	16.53 ²²⁸	37.871 ⁵	16.38 ⁴⁴
11.0	46.675 ³⁶	44.17 ¹⁶⁷	26.080 ²⁴	14.62 ²³⁵	0.056 ²⁶	14.31 ²²²	37.909 ³⁸	16.14 ²⁴
21.0	46.758 ⁸³	42.69 ¹⁴⁸	26.160 ⁸⁰	12.42 ²²⁰	0.133 ⁷⁷	12.25 ²⁰⁶	37.983 ⁷⁴	16.12 ²
31.0	46.884 ¹²⁶	41.48 ¹²¹	26.297 ¹³⁷	10.45 ¹⁹⁷	0.265 ¹³²	10.43 ¹⁸²	38.094 ¹¹¹	16.36 ²⁴
	171	88	194	163	187	148	149	51
Apr. 9.9	47.055	40.60	26.491	8.82	0.452	8.95	38.243	16.87
19.9	47.270 ²¹⁵	40.09 ⁹¹	26.739 ²⁴⁸	7.58 ¹²⁴	0.690 ²³⁸	7.86 ¹⁰⁹	38.430 ¹⁸⁷	17.67 ⁸⁰
29.9	47.526 ²⁵⁶	40.00 ⁹	27.037 ²⁹⁸	6.79 ⁷⁹	0.975 ²⁸⁵	7.21 ⁶⁵	38.654 ²²⁴	18.76 ¹⁰⁹
May 9.8	47.818	40.33 ³³	27.377 ³⁴⁰	6.48 ³¹	1.300 ³²⁵	7.04 ¹⁷	38.910 ²⁵⁶	20.11 ¹³⁵
19.8	48.136 ³¹⁸	41.09 ⁷⁶	27.750 ³⁷³	6.67 ¹⁹	1.659 ³⁵⁹	7.35 ³¹	39.192 ²⁸²	21.70 ¹⁵⁹
	340	117	399	69	382	79	304	179
29.8	48.476	42.26	28.149	7.36	2.041	8.14	39.496	23.49
June 8.8	48.830 ³⁵⁴	43.82 ¹⁵⁶	28.560 ⁴¹¹	8.54 ¹¹⁸	2.436 ³⁹⁵	9.40 ¹²⁶	39.812 ³¹⁶	25.44 ¹⁹⁵
18.7	49.185 ³⁵⁵	45.70 ¹⁸⁸	28.974 ⁴¹⁴	10.16 ¹⁶²	2.834 ³⁹⁸	11.09 ¹⁶⁹	40.135 ³²³	27.50 ²⁰⁶
28.7	49.533 ³⁴⁸	47.88 ²¹⁸	29.379 ⁴⁰⁵	12.19 ²⁰³	3.224 ³⁹⁰	13.16 ²⁰⁷	40.454 ³¹⁹	29.62 ²¹²
July 8.7	49.867 ³³⁴	50.29 ²⁴¹	29.767 ³⁸⁸	14.56 ²³⁷	3.598 ³⁷⁴	15.55 ²³⁹	40.761 ³⁰⁷	31.72 ²¹⁰
	310	259	359	268	346	267	291	206
18.7	50.177	52.88	30.126	17.24	3.944	18.22	41.052	33.78
28.6	50.458 ²⁸¹	55.58 ²⁷⁰	30.449 ³²³	20.14 ²⁹⁰	4.259 ³¹⁵	21.09 ²⁸⁷	41.316 ²⁶⁴	35.75 ¹⁹⁷
Aug. 7.6	50.702 ²⁴⁴	58.33 ²⁷⁵	30.732 ²⁸³	23.21 ³⁰⁷	4.529 ²⁷⁰	24.12 ³⁰³	41.550 ²³⁴	37.56 ¹⁸¹
17.6	50.906 ²⁰⁴	61.07 ²⁷⁴	30.966 ²³⁴	26.37 ³¹⁶	4.756 ²²⁷	27.21 ³⁰⁹	41.747 ¹⁹⁷	39.19 ¹⁶³
27.5	51.067 ¹⁶¹	63.75 ²⁶⁸	31.150 ¹⁸⁴	29.56 ³¹⁹	4.935 ¹⁷⁹	30.31 ³¹⁰	41.906 ¹⁵⁹	40.63 ¹⁴⁴
	117	255	132	316	130	305	119	120
Sept. 6.5	51.184 ⁷³	66.30	31.282 ⁸¹	32.72	5.065 ⁸⁰	33.36	42.025	41.83
16.5	51.257 ³²	68.71 ²⁴¹	31.363 ³¹	35.78 ³⁰⁶	5.145 ³³	36.31 ²⁹⁵	42.105 ⁸⁰	42.81 ⁹⁸
26.5	51.289 ⁵	70.91 ²²⁰	31.394 ¹⁵	38.69 ²⁹¹	5.178 ¹¹	39.10 ²⁷⁹	42.148 ⁴³	43.54 ⁷³
Oct. 6.4	51.284 ⁴¹	72.89 ¹⁹⁸	31.379 ⁵⁸	41.39 ²⁷⁰	5.167 ¹¹	41.66 ²⁵⁶	42.155 ⁷	44.05 ⁵¹
16.4	51.243 ⁷¹	74.59 ¹⁷⁰	31.321 ⁹⁵	43.82 ²⁴³	5.117 ⁵⁰	43.97 ²³¹	42.131 ²⁴	44.33 ²⁸
	26.4	161	142	213	87	200	49	10
26.4	51.172	76.01	31.226	45.95	5.030	45.97	42.082	44.43
Nov. 5.4	51.078 ⁹⁴	77.10 ¹⁰⁹	31.098 ¹²⁸	47.71 ¹⁷⁶	4.913 ¹¹⁷	47.62 ¹⁶⁵	42.011 ⁷¹	44.34 ⁹
15.3	50.963 ¹¹⁵	77.86 ⁷⁶	30.945 ¹⁵³	49.08 ¹³⁷	4.772 ¹⁴¹	48.88 ¹²⁶	41.925 ⁸⁶	44.07 ²⁷
25.3	50.836 ¹²⁷	78.26 ⁴⁰	30.769 ¹⁷⁶	50.03 ⁹⁵	4.610 ¹⁶²	49.72 ⁸⁴	41.828 ⁹⁷	43.67 ⁴⁰
Dec. 5.3	50.699 ¹³⁷	78.31 ⁵	30.578 ¹⁹¹	50.51 ⁴⁸	4.436 ¹⁷⁴	50.13 ⁴¹	41.724 ¹⁰⁴	43.15 ⁵²
	141	30	198	1	182	4	106	62
15.2	50.558	78.01	30.380	50.52	4.254	50.09	41.618	42.53
25.2	50.418 ¹⁴⁰	77.36 ⁶⁵	30.180 ²⁰⁰	50.05 ⁴⁷	4.070 ¹⁸⁴	49.59 ⁵⁰	41.514 ¹⁰⁴	41.81 ⁷²
35.2	50.282 ¹³⁶	76.38 ⁹⁸	29.983 ¹⁹⁷	49.12 ⁹³	3.890 ¹⁸⁰	48.67 ⁹²	41.414 ¹⁰⁰	41.05 ⁷⁶
Mean Place	46.957	42.00	26.900	10.72	0.732	10.65	37.741	15.28
Sec δ , Tan δ	1.165	+0.598	1.440	+1.036	1.363	+0.926	1.004	+0.091
$D\psi a$, $D_{\omega} a$	+0.06	-0.04	+0.06	-0.07	+0.06	-0.06	+0.06	-0.01
$D\psi \delta$, $D_{\omega} \delta$	+0.4	-0.1	+0.4	-0.1	+0.4	-0.1	+0.4	-0.1

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	γ Cephei. Mag. 3.4		κ Andromedæ. Mag. 4.3		α² Aquarii. Mag. 4.6		δ¹ Aquarii. Mag. 5.3	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 23 35	° ' " +77 9	h m 23 36	° ' " +43 52	h m 23 38	° ' " -15 0	h m 23 39	° ' " -18 44
	s	"	s	"	s	"	s	"
Jan. 1.2	50.89	72.40	15.939	24.63	22.604	35.31	51.383	38.72
11.2	50.04 85	71.59 81	15.760 179	23.49 114	22.507 97	35.58 27	51.282 101	38.89 17
21.2	49.26 78	70.19 140	15.597 163	21.95 154	22.423 84	35.67 9	51.192 90	38.85 4
31.1	48.57 69	68.25 194	15.457 140	20.11 184	22.355 68	35.56 11	51.118 74	38.57 28
Feb. 10.1	47.99 58	65.86 239	15.348 109	18.01 210	22.306 49	35.22 34	51.067 51	38.05 52
	43	273	71	225	23	54	26	76
20.1	47.56	63.13	15.277	15.76	22.283	34.68	51.041	37.29
Mar. 1.0	47.30 9	60.17 296	15.248 29	13.45 231	22.286 3	33.90 78	51.043 2	36.29 100
11.0	47.21 26	57.08 309	15.270 22	11.19 226	22.322 36	32.91 99	51.075 32	35.05 124
21.0	47.32 11	54.04 304	15.344 74	9.09 210	22.392 70	31.67 124	51.145 70	33.61 144
31.0	47.60 28	51.13 291	15.476 132	7.22 187	22.499 107	30.22 145	51.251 106	31.93 168
	46	264	186	154	146	166	146	186
Apr. 9.9	48.06	48.49	15.662	5.68	22.645	28.56	51.397	30.07
19.9	48.69 63	46.21 228	15.901 239	4.51 117	22.829 184	26.73 183	51.582 185	28.04 203
29.9	49.46 77	44.37 184	16.188 287	3.81 70	23.049 220	24.74 199	51.804 222	25.90 214
May 9.8	50.34 88	43.04 133	16.516 328	3.58 23	23.303 254	22.63 211	52.056 252	23.66 224
19.8	51.31 97	42.26 78	16.878 362	3.83 25	23.585 282	20.46 217	52.341 285	21.39 227
	103	20	387	74	305	220	308	224
29.8	52.34	42.06	17.265	4.57	23.890	18.26	52.649	19.15
June 8.8	53.40 106	42.45 39	17.665 400	5.78 121	24.210 320	16.11 215	52.971 322	16.97 218
18.7	54.46 106	43.42 97	18.068 403	7.43 165	24.537 327	14.05 206	53.301 330	14.93 204
28.7	55.49 103	44.92 150	18.466 398	9.47 204	24.863 326	12.12 193	53.631 330	13.06 187
July 8.7	56.47 98	46.93 201	18.844 378	11.84 237	25.180 317	10.40 172	53.952 321	11.40 166
	90	248	353	265	298	151	303	138
18.7	57.37 79	49.41	19.197	14.49	25.478	8.89	54.255	10.02
28.6	58.16 68	52.27 286	19.515 318	17.37 288	25.753 275	7.66 123	54.534 279	8.90 112
Aug. 7.6	58.84 68	55.48 321	19.794 279	20.39 302	25.996 243	6.70 96	54.781 247	8.13 77
17.6	59.39 55	58.97 349	20.025 231	23.49 310	26.202 206	6.06 64	54.991 210	7.67 46
27.5	59.81 42	62.63 366	20.209 184	26.62 313	26.369 167	5.73 33	55.163 172	7.54 13
	27	379	133	310	126	5	120	16
Sept. 6.5	60.08 12	66.42 384	20.342 86	29.72 299	26.495 83	5.68 23	55.292 86	7.70 45
16.5	60.20 2	70.26 380	20.428 35	32.71 282	26.578 44	5.91 46	55.378 43	8.15 68
26.5	60.18 16	74.06 369	20.463 9	35.53 264	26.622 5	6.37 67	55.421 7	8.83 87
Oct. 6.4	60.02 30	77.75 349	20.454 50	38.17 236	26.627 28	7.04 82	55.428 30	9.70 101
16.4	59.72 44	81.24 323	20.404 86	40.53 204	26.599 55	7.86 91	55.398 57	10.71 108
26.4	59.28 55	84.47 287	20.318 116	42.57 171	26.544 79	8.77 96	55.341 81	11.79 111
Nov. 5.4	58.73 66	87.34 245	20.202 144	44.28 133	26.465 96	9.73 96	55.260 99	12.90 109
15.3	58.08 74	89.79 196	20.058 173	45.61 90	26.369 107	10.69 92	55.161 113	13.99 100
25.3	57.34 83	91.75 140	19.895 168	46.51 47	26.262 113	11.61 83	55.048 119	14.99 88
Dec. 5.3	56.51 85	93.15 81	19.717 185	46.98 2	26.149 115	12.44 70	54.929 120	15.87 70
15.2	55.66 88	93.96 19	19.532 189	46.96 45	26.034 113	13.14 57	54.809 117	16.57 52
25.2	54.78 87	94.15 44	19.343 185	46.51 89	25.921 106	13.71 41	54.692 111	17.09 33
35.2	53.91	93.71	19.158	45.62	25.815	14.12	54.581	17.42
Mean Place	53.418	48.73	15.986	7.22	22.031	33.66	50.782	35.88
Sec δ, Tan δ	4.503	+4.391	1.387	+0.961	1.035	-0.268	1.056	-0.339
$D\psi a, D\alpha a$	+0.05	-0.29	+0.06	-0.06	+0.06	+0.02	+0.06	+0.02
$D\psi \delta, D\alpha \delta$	+0.4	-0.1	+0.4	-0.1	+0.4	-0.1	+0.4	-0.1

APPARENT PLACES OF STARS, 1916.

511

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ψ Andromedæ. Mag. 5.1		41 H. Cephei. Mag. 5.0		δ Sculptoris. Mag. 4.6		ϕ Pegasi. Mag. 5.2	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 23 41	° ' +45 57	h m 23 43	° ' +67 20	h m 23 44	° ' -28 35	h m 23 48	° ' +18 39
	s	"	s	"	s	"	s	"
Jan. 1.2	51.962	31.79	52.22	46.68	33.794	48.51	13.127	23.53
11.2	51.771 ¹⁰¹	30.72 ¹⁰⁷	51.78 ⁴⁴	45.81 ⁸⁷	33.675 ¹¹⁹	48.44 ⁷	13.019 ¹⁰⁸	22.61 ⁹²
21.2	51.595 ¹⁷⁶	29.22 ¹⁵⁰	51.36 ⁴²	44.37 ¹⁴⁴	33.570 ¹⁰⁵	48.04 ⁴⁰	12.919 ¹⁰⁰	21.54 ¹⁰⁷
31.1	51.441 ¹⁵⁴	27.40 ¹⁸²	50.99 ³⁷	42.45 ¹⁹²	33.482 ⁸⁸	47.33 ⁷¹	12.834 ⁸⁵	20.35 ¹¹⁹
Feb. 10.1	51.317 ¹²⁴	25.29 ²¹¹	50.69 ³⁰	40.12 ²³³	33.418 ⁶⁴	46.33 ¹⁰⁰	12.768 ⁶⁶	19.12 ¹²³
	84	228	23	265	40	120	43	123
20.1	51.233	23.01	50.46	37.47	33.378	45.04	12.725	17.89
Mar. 1.0	51.193 ⁴⁰	20.65 ²³⁶	50.33 ¹³	34.63 ²⁸⁴	33.370 ⁸	43.49 ¹⁵⁵	12.713 ¹²	16.75 ¹¹⁴
11.0	51.206 ¹³	18.33 ²³²	50.29 ⁴	31.69 ²⁹⁴	33.396 ²⁶	41.70 ¹⁷⁹	12.735 ²²	15.73 ¹⁰²
21.0	51.275 ⁶⁹	16.12 ²²¹	50.35 ⁶	28.80 ²⁸⁹	33.459 ⁶³	39.68 ²⁰²	12.795 ⁶⁰	14.92 ⁸¹
31.0	51.400 ¹²⁵	14.17 ¹⁹⁵	50.53 ¹⁸	26.07 ²⁷³	33.563 ¹⁰⁴	37.48 ²²⁰	12.896 ¹⁰¹	14.35 ⁵⁷
	183	167	27	246	144	235	142	26
Apr. 9.9	51.583	12.50	50.80	23.61	33.707	35.13	13.038	14.09
19.9	51.822 ²³⁹	11.22 ¹²⁸	51.18 ³⁸	21.52 ²⁰⁹	33.892 ¹⁸⁵	32.67 ²⁴⁶	13.222 ¹⁸⁴	14.14 ⁵
29.9	52.112 ²⁹⁰	10.38 ⁸⁴	51.64 ⁴⁶	19.87 ¹⁶⁵	34.118 ²²⁶	30.14 ²⁵³	13.445 ²²³	14.55 ⁴¹
May 9.9	52.444 ³³²	10.01 ³⁷	52.18 ⁵⁴	18.72 ¹¹⁵	34.380 ²⁶²	27.61 ²⁵³	13.704 ²⁵⁹	15.31 ⁷⁶
19.8	52.813 ³⁶⁹	10.14 ¹³	52.77 ⁵⁹	18.12 ⁶⁰	34.673 ²⁹³	25.12 ²⁴⁹	13.991 ²⁸⁷	16.41 ¹¹⁰
	395	63	64	4	318	239	312	140
29.8	53.208	10.77	53.41	18.08	34.991	22.73	14.303	17.81
June 8.8	53.620 ⁴¹²	11.88 ¹¹¹	54.07 ⁶⁶	18.60 ⁵²	35.328 ³³⁷	20.50 ²²³	14.629 ³²⁶	19.51 ¹⁷⁰
18.7	54.036 ⁴¹⁶	13.43 ¹⁵⁵	54.72 ⁶⁵	19.68 ¹⁰⁸	35.674 ³⁴⁶	18.49 ²⁰¹	14.962 ³³³	21.43 ¹⁹²
28.7	54.444 ⁴⁰⁸	15.39 ¹⁹⁶	55.37 ⁶⁵	21.28 ¹⁶⁰	36.022 ³⁴⁸	16.75 ¹⁷⁴	15.293 ³³¹	23.55 ²¹²
July 8.7	54.835 ³⁹¹	17.72 ²³³	55.99 ⁶²	23.35 ²⁰⁷	36.362 ³⁴⁰	15.31 ¹⁴⁴	15.614 ³²¹	25.79 ²²⁴
	368	261	58	251	323	109	303	233
18.7	55.203	20.33	56.57	25.86	36.685	14.22	15.917	28.12
28.6	55.534 ³³¹	23.18 ²⁸⁵	57.09 ⁵²	28.73 ²⁸⁷	36.982 ²⁹⁷	13.49 ⁷³	16.196 ²⁷⁹	30.46 ²³⁴
Aug. 7.6	55.826 ²⁹²	26.20 ³⁰²	57.54 ⁴⁵	31.92 ³¹⁹	37.247 ²⁶⁵	13.14 ²	16.442 ²⁴⁶	32.77 ²³¹
17.6	56.070 ²⁴⁴	29.34 ³¹⁴	57.91 ³⁷	35.33 ³⁴¹	37.474 ²²⁷	13.16 ²	16.654 ²¹²	35.01 ²²⁴
27.6	56.265 ¹⁹⁵	32.51 ³¹⁷	58.20 ²⁹	38.92 ³⁵⁹	37.658 ¹⁸⁴	13.55 ³⁹	16.827 ¹⁷³	37.11 ²¹⁰
	145	315	21	366	140	72	133	196
Sept. 6.5	56.410	35.66	58.41	42.58	37.798	14.27	16.960	39.06
16.5	56.504 ⁹⁴	38.72 ³⁰⁶	58.54 ¹³	46.27 ³⁶⁹	37.891 ⁹³	15.26 ⁹⁹	17.054 ⁹⁴	40.82 ¹⁷⁶
26.5	56.548 ⁴⁴	41.66 ²⁹⁴	58.58 ⁴	49.90 ³⁶³	37.938 ⁴⁷	16.51 ¹²⁵	17.108 ⁵⁴	42.36 ¹⁵⁴
Oct. 6.4	56.545 ³	44.38 ²⁷²	58.53 ⁵	53.39 ³⁴⁹	37.943 ⁵	17.91 ¹⁴⁰	17.126 ¹⁸	43.68 ¹³²
16.4	56.500 ⁴⁵	46.87 ²⁴⁹	58.40 ¹³	56.68 ³²⁹	37.909 ³⁴	19.42 ¹⁵¹	17.113 ¹³	44.75 ¹⁰⁷
	85	217	20	300	67	153	41	83
26.4	56.415	49.04	58.20	59.68	37.842	20.95	17.072	45.58
Nov. 5.4	56.298 ¹¹⁷	50.86 ¹⁸²	57.93 ²⁷	62.34 ²⁶⁶	37.749 ⁹³	22.44 ¹⁴⁹	17.007 ⁶⁵	46.15 ⁵⁷
15.3	56.152 ¹⁴⁶	52.31 ¹⁴⁵	57.61 ³²	64.58 ²²⁴	37.634 ¹¹⁵	23.82 ¹³⁸	16.923 ⁸⁴	46.47 ³²
25.3	55.984 ¹⁶⁸	53.34 ¹⁰³	57.24 ³⁷	66.33 ¹⁷⁵	37.506 ¹²⁸	25.03 ¹²¹	16.825 ⁹⁸	46.55 ⁸
Dec. 5.3	55.800 ¹⁸⁴	53.91 ⁵⁷	56.83 ⁴¹	67.56 ¹²³	37.371 ¹³⁵	26.02 ⁹⁹	16.717 ¹⁰⁸	46.37 ¹⁸
	196	10	44	66	141	72	114	41
15.3	55.604	54.01	56.39	68.22	37.230	26.74	16.603	45.96
25.2	55.404 ²⁰⁰	53.64 ³⁷	55.94 ⁴⁵	68.29 ⁷	37.094 ¹³⁶	27.18 ⁴⁴	16.487 ¹¹⁶	45.32 ⁶⁴
35.2	55.207 ¹⁹⁷	52.81 ⁸³	55.49 ⁴⁵	67.75 ⁵⁴	36.964 ¹³⁰	27.31 ¹³	16.373 ¹¹⁴	44.49 ⁸⁸
Mean Place	52.003	13.62	53.121	23.90	33.113	42.75	12.732	13.42
Sec δ , Tan δ	1.438	+1.034	2.596	+2.395	1.139	-0.545	1.056	+0.338
$D\psi a$, $D_{\omega} a$	+0.06	-0.07	+0.06	-0.16	+0.06	+0.04	+0.06	-0.02
$D\psi \delta$, $D_{\omega} \delta$	+0.4	-0.1	+0.4	-0.1	+0.4	-0.1	+0.4	-0.1

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ρ Cassiopeie. Mag. 4.8		Groombridge 4163. Mag. 6.6		ω Piscium. Mag. 4.0	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m 23 50	° ' " +57 1	h m 23 50	° ' " +73 56	h m 23 54	° ' " + 6 23
	s	"	s	"	s	"
Jan. 1.2	10.468	76.56	42.12	58.17	60.353	60.06
11.2	10.189	75.64	41.45	57.50	60.254	59.31
21.2	9.928	74.23	40.83	56.24	60.163	58.54
31.1	9.694	72.38	40.26	54.43	60.085	57.78
Feb. 10.1	9.500	70.18	39.79	52.18	60.024	57.08
20.1	9.357	67.72	39.42	49.53	59.984	56.47
Mar. 1.0	9.272	65.09	39.18	46.67	59.971	55.99
11.0	9.254	62.42	39.08	43.66	59.989	55.69
21.0	9.310	59.82	39.12	40.66	60.042	55.60
31.0	9.440	57.39	39.32	37.77	60.133	55.77
Apr. 9.9	9.643	55.25	39.66	35.10	60.264	56.20
19.9	9.919	53.47	40.14	32.78	60.434	56.92
29.9	10.259	52.12	40.73	30.87	60.643	57.91
May 9.9	10.655	51.26	41.44	29.46	60.886	59.19
19.8	11.096	50.91	42.22	28.60	61.159	60.70
29.8	11.570	51.10	43.06	28.29	61.456	62.44
June 8.8	12.065	51.82	43.93	28.55	61.769	64.34
18.7	12.566	53.05	44.81	29.36	62.090	66.36
28.7	13.061	54.76	45.67	30.75	62.412	68.47
July 8.7	13.537	56.91	46.50	32.63	62.726	70.59
18.7	13.982	59.43	47.28	34.97	63.023	72.66
28.6	14.387	62.26	47.98	37.72	63.299	74.66
Aug. 7.6	14.744	65.36	48.59	40.83	63.546	76.53
17.6	15.046	68.64	49.10	44.21	63.759	78.22
27.6	15.289	72.04	49.50	47.81	63.935	79.72
Sept. 6.5	15.469	75.49	49.79	51.52	64.074	81.01
16.5	15.587	78.92	49.96	55.30	64.173	82.06
26.5	15.644	82.26	50.02	59.06	64.234	82.88
Oct. 6.4	15.640	85.45	49.96	62.72	64.260	83.46
16.4	15.582	88.41	49.79	66.20	64.256	83.83
26.4	15.472	91.09	49.51	69.45	64.223	83.98
Nov. 5.4	15.316	93.43	49.13	72.35	64.168	83.96
15.3	15.120	95.37	48.66	74.87	64.093	83.76
25.3	14.891	96.85	48.12	76.89	64.005	83.41
Dec. 5.3	14.634	97.84	47.52	78.38	63.908	82.94
15.3	14.360	98.30	46.87	79.29	63.805	82.36
25.2	14.076	98.23	46.20	79.62	63.699	81.68
35.2	13.790	97.61	45.52	79.31	63.595	80.94
Mean Place	10.729	55.46	43.583	34.20	59.818	53.99
Sec δ , Tan δ	1.838	+1.542	3.617	+3.475	1.006	+0.112
$D\psi \alpha, D\omega \alpha$	+0.06	-0.10	+0.06	-0.23	+0.06	-0.01
$D\psi \delta, D\omega \delta$	+0.4	0.0	+0.4	0.0	+0.4	0.0

FOR THE UPPER TRANSIT AT WASHINGTON.

Washington Mean Time.	ε Tucanæ. Mag. 4.7		30 Piscium. Mag. 4.7		2 Ceti. Mag. 4.6	
	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.	Right Ascension.	Declina- tion.
	h m	° '	h m	° '	h m	° '
	23 55	-66 2	23 57	- 6 28	23 59	-17 47
	s	"	s	"	s	"
Jan. 1.2	34.65	52.71	39.768	49.59	26.971	75.41
11.2	34.25 40	51.59 112	39.669 99	50.11 52	26.863 108	75.68 27
21.2	33.88 37	49.94 165	39.579 90	50.51 40	26.764 99	75.73 5
31.1	33.56 32	47.79 215	39.499 80	50.77 26	26.678 86	75.54 19
Feb. 10.1	33.30 26	45.21 258	39.439 60	50.89 12	26.611 67	75.12 42
	19	294	41	7	46	68
20.1	33.11	42.27	39.398	50.82	26.565	74.44
Mar. 1.1	32.98 13	39.02 325	39.384 14	50.56 26	26.547 18	73.53 91
11.0	32.94 4	35.55 347	39.399 15	50.09 47	26.559 12	72.37 116
21.0	32.97 3	31.96 359	39.449 50	49.39 70	26.605 46	70.97 140
31.0	33.08 11	28.29 367	39.535 86	48.44 95	26.690 85	69.35 162
	19	366	126	119	124	180
Apr. 9.9	33.27	24.63	39.661	47.25	26.814	67.55
19.9	33.55 28	21.07 356	39.825 164	45.83 142	26.978 164	65.55 200
29.9	33.90 35	17.66 341	40.028 203	44.20 163	27.181 203	63.41 214
May 9.9	34.33 43	14.50 316	40.265 237	42.39 181	27.419 238	61.17 224
19.8	34.82 49	11.63 287	40.532 267	40.44 195	27.690 271	58.88 229
	55	250	293	206	297	280
29.8	35.37	9.13	40.825	38.38	27.987	56.58
June 8.8	35.95 58	7.06 207	41.134 309	36.27 211	28.302 315	54.34 224
18.8	36.55 60	5.46 160	41.454 320	34.15 212	28.628 326	52.22 212
28.7	37.17 62	4.37 109	41.774 320	32.11 204	28.956 328	50.25 197
July 8.7	37.78 61	3.81 56	42.090 316	30.15 196	29.280 324	48.49 176
	58	1	300	179	309	150
18.7	38.36	3.80	42.390	28.36	29.589	46.99
28.6	38.91 55	4.34 54	42.668 278	26.77 150	29.878 269	45.78 121
Aug. 7.6	39.41 50	5.40 106	42.917 249	25.41 136	30.136 258	44.88 90
17.6	39.82 41	6.94 154	43.134 217	24.29 112	30.362 226	44.31 57
27.6	40.16 34	8.91 197	43.314 180	23.46 83	30.550 188	44.08 23
	25	233	141	55	147	7
Sept. 6.5	40.41 16	11.24	43.455	22.91	30.697	44.15
16.5	40.57 5	13.84 260	43.557 102	22.61 30	30.801 104	44.53 38
26.5	40.62 5	16.61 277	43.621 64	22.58 3	30.866 65	45.17 64
Oct. 6.5	40.57 5	19.44 283	43.648 27	22.78 20	30.891 25	46.02 85
16.4	40.43 14	22.22 278	43.642 6	23.16 38	30.882 9	47.03 101
	22	260	34	53	40	110
26.4	40.21	24.82	43.608	23.69	30.842	48.13
Nov. 5.4	39.91 30	27.15 233	43.550 58	24.34 65	30.776 66	49.29 116
15.3	39.55 36	29.12 197	43.473 77	25.07 73	30.690 86	50.42 113
25.3	39.15 40	30.62 150	43.385 88	25.82 75	30.589 101	51.50 108
Dec. 5.3	38.72 43	31.60 98	43.285 100	26.59 77	30.478 111	52.47 97
	44	41	105	73	118	81
15.3	38.28	32.01	43.180	27.32	30.360	53.28
25.2	37.84 44	31.84 17	43.073 107	28.00 68	30.243 117	53.91 63
35.2	37.42 42	31.09 75	42.968 105	28.59 59	30.128 115	54.35 44
Mean Place	33.604	39.06	39.136	51.21	26.264	73.25
Sec δ, Tan δ	2.463	-2.250	1.006	-0.114	1.050	-0.321
Dψ α, Dω α	+0.06	+0.15	+0.06	+0.01	+0.06	+0.02
Dψ δ, Dω δ	+0.4	0.0	+0.4	0.0	+0.4	0.0

FOR WASHINGTON APPARENT NOON.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Equation of Time. Mean—App.		Var. per Hour.	Semi-diameter.		S. T. of Sem. Pass. Merid.		Sidereal Time of Mean Noon.			
	h	m	s		°	'	"		m	s		'	"	m	s		h	m	s
Jan	1	18	43	24.52	11.056	-23	4	36.1	+11.47	+ 3	17.16	+1.196	16	17.84	1	11.08	18	40	6.83
	2	18	47	49.72	11.043	22	59	47.1	12.62	3	45.71	1.183	16	17.84	1	11.04	18	44	3.39
	3	18	52	14.59	11.029	22	54	30.5	13.76	4	13.94	1.169	16	17.84	1	10.99	18	47	59.95
	4	18	56	39.11	11.014	22	48	46.5	14.90	4	41.83	1.154	16	17.84	1	10.94	18	51	56.50
	5	19	1	3.24	10.997	22	42	35.2	16.04	5	9.34	1.138	16	17.83	1	10.88	18	55	53.06
	6	19	5	26.95	10.979	-22	35	56.8	+17.16	+ 5	36.42	+1.119	16	17.82	1	10.82	18	59	49.62
	7	19	9	50.21	10.959	22	28	51.6	18.27	6	3.04	1.099	16	17.80	1	10.76	19	3	46.18
	8	19	14	12.98	10.938	22	21	19.8	19.38	6	29.17	1.078	16	17.78	1	10.70	19	7	42.74
	9	19	18	35.22	10.916	22	13	21.6	20.47	6	54.79	1.056	16	17.75	1	10.63	19	11	39.30
	10	19	22	56.92	10.892	22	4	57.3	21.55	7	19.86	1.032	16	17.72	1	10.55	19	15	35.85
	11	19	27	18.04	10.868	-21	56	7.1	+22.62	+ 7	44.35	+1.008	16	17.69	1	10.48	19	19	32.41
	12	19	31	38.56	10.842	21	46	51.4	23.69	8	8.25	0.983	16	17.65	1	10.40	19	23	28.97
	13	19	35	58.46	10.816	21	37	10.3	24.74	8	31.53	0.957	16	17.61	1	10.32	19	27	25.53
	14	19	40	17.73	10.789	21	27	4.2	25.77	8	54.18	0.928	16	17.56	1	10.24	19	31	22.09
	15	19	44	36.34	10.761	21	16	33.3	26.80	9	16.17	0.901	16	17.51	1	10.15	19	35	18.65
	16	19	48	54.27	10.733	-21	5	38.0	+27.81	+ 9	37.48	+0.874	16	17.45	1	10.06	19	39	15.20
	17	19	53	11.51	10.704	20	54	18.6	28.81	9	58.11	0.845	16	17.38	1	9.97	19	43	11.76
	18	19	57	28.04	10.674	20	42	35.3	29.80	10	18.03	0.815	16	17.30	1	9.87	19	47	8.32
	19	20	1	43.85	10.644	20	30	28.4	30.77	10	37.23	0.784	16	17.22	1	9.77	19	51	4.88
	20	20	5	58.93	10.613	20	17	58.4	31.73	10	55.71	0.753	16	17.14	1	9.66	19	55	1.43
	21	20	10	13.27	10.582	-20	5	5.5	+32.68	+11	13.44	+0.722	16	17.05	1	9.56	19	58	57.99
	22	20	14	26.86	10.550	19	51	50.0	33.61	11	30.43	0.691	16	16.95	1	9.46	20	2	54.55
	23	20	18	39.69	10.519	19	38	12.3	34.53	11	46.65	0.660	16	16.85	1	9.35	20	6	51.11
	24	20	22	51.75	10.486	19	24	12.7	35.44	12	2.11	0.628	16	16.74	1	9.24	20	10	47.66
	25	20	27	3.04	10.454	19	9	51.5	36.33	12	16.80	0.596	16	16.62	1	9.13	20	14	44.22
	26	20	31	13.55	10.422	-18	55	9.2	+37.20	+12	30.72	+0.564	16	16.50	1	9.02	20	18	40.78
	27	20	35	23.28	10.389	18	40	6.1	38.06	12	43.85	0.531	16	16.38	1	8.91	20	22	37.33
	28	20	39	32.22	10.356	18	24	42.6	38.90	12	56.20	0.497	16	16.25	1	8.80	20	26	33.89
	29	20	43	40.36	10.323	18	8	59.0	39.73	13	7.75	0.464	16	16.12	1	8.68	20	30	30.45
	30	20	47	47.70	10.289	17	52	55.7	40.54	13	18.51	0.431	16	15.99	1	8.56	20	34	27.00
	31	20	51	54.24	10.256	-17	36	33.2	+41.33	+13	28.47	+0.398	16	15.85	1	8.45	20	38	23.56
Feb.	1	20	55	59.97	10.222	17	19	51.8	42.11	13	37.62	0.364	16	15.71	1	8.33	20	42	20.12
	2	21	0	4.89	10.188	17	2	52.1	42.87	13	45.95	0.331	16	15.56	1	8.21	20	46	16.67
	3	21	4	8.99	10.154	16	45	34.3	43.61	13	53.48	0.297	16	15.41	1	8.10	20	50	13.23
	4	21	8	12.26	10.119	16	27	58.9	44.33	14	0.19	0.262	16	15.25	1	7.99	20	54	9.79
	5	21	12	14.71	10.085	-16	10	6.5	+45.03	+14	6.05	+0.228	16	15.10	1	7.88	20	58	6.34
	6	21	16	16.33	10.050	15	51	57.5	45.72	14	11.11	0.193	16	14.94	1	7.77	21	2	2.90
	7	21	20	17.13	10.016	15	33	32.2	46.39	14	15.35	0.159	16	14.78	1	7.65	21	5	59.46
	8	21	24	17.11	9.982	15	14	51.0	47.04	14	18.75	0.125	16	14.61	1	7.54	21	9	56.01
	9	21	28	16.27	9.948	14	55	54.5	47.67	14	21.34	0.091	16	14.44	1	7.42	21	13	52.57
	10	21	32	14.62	9.914	-14	36	43.1	+48.28	+14	23.14	+0.058	16	14.27	1	7.31	21	17	49.12
	11	21	36	12.16	9.881	14	17	17.1	48.88	14	24.13	+0.024	16	14.10	1	7.20	21	21	45.68
	12	21	40	8.91	9.848	13	57	37.0	49.46	14	24.31	-0.008	16	13.92	1	7.09	21	25	42.23
	13	21	44	4.88	9.816	13	37	43.2	50.02	14	23.73	0.041	16	13.74	1	6.98	21	29	38.79
	14	21	48	0.07	9.784	13	17	36.2	50.57	14	22.36	0.073	16	13.55	1	6.87	21	33	35.34
	15	21	51	54.50	9.752	-12	57	16.2	+51.09	+14	20.24	-0.104	16	13.36	1	6.76	21	37	31.90
	16	21	55	48.18	9.721	-12	36	43.8	+51.60	+14	17.38	-0.135	16	13.17	1	6.66	21	41	28.45

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

FOR WASHINGTON APPARENT NOON.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Equation of Time. Mean-App.		Var. per Hour.	Semi-diameter.		S. T. of Sem. Pass. Merid.	Sidereal Time of Mean Noon.					
	h	m	s	s	°	'	"	"	m	s	s	'	"	m	s	h	m	s		
Feb. 16	21	55	48.18	9.721	-12	36	43.8	+51.60	+14	17.38	-0.135	16	13.17	1	6.66	21	41	28.45		
17	21	59	41.12	9.691	12	15	59.3	52.10	14	13.78	0.165	16	12.97	1	6.56	21	45	25.01		
18	22	3	33.35	9.662	11	55	3.1	52.58	14	9.47	0.194	16	12.76	1	6.46	21	49	21.56		
19	22	7	24.88	9.633	11	33	55.6	53.04	14	4.46	0.223	16	12.55	1	6.36	21	53	18.12		
20	22	11	15.73	9.605	11	12	37.2	53.49	13	58.77	0.251	16	12.33	1	6.26	21	57	14.67		
21	22	15	5.91	9.577	-10	51	8.2	+53.92	+13	52.41	-0.279	16	12.11	1	6.16	22	1	11.23		
22	22	18	55.44	9.551	10	29	29.0	54.34	13	45.40	0.305	16	11.88	1	6.06	22	5	7.78		
23	22	22	44.34	9.525	10	7	40.2	54.73	13	37.77	0.331	16	11.66	1	5.97	22	9	4.34		
24	22	26	32.64	9.500	9	45	42.0	55.11	13	29.53	0.356	16	11.43	1	5.88	22	13	0.89		
25	22	30	20.34	9.475	9	23	34.8	55.48	13	20.70	0.380	16	11.20	1	5.79	22	16	57.45		
26	22	34	7.46	9.452	-	9	1	19.0	+55.83	+13	11.29	-0.404	16	10.96	1	5.71	22	20	54.00	
27	22	37	54.02	9.429	8	38	54.9	56.17	13	1.33	0.427	16	10.73	1	5.63	22	24	50.55		
28	22	41	40.04	9.406	8	16	23.1	56.48	12	50.82	0.449	16	10.49	1	5.55	22	28	47.11		
29	22	45	25.53	9.385	7	53	44.0	56.78	12	39.79	0.470	16	10.25	1	5.47	22	32	43.66		
Mar. 1	22	49	10.51	9.364	7	30	57.9	57.06	12	28.25	0.491	16	10.00	1	5.40	22	36	40.21		
2	22	52	55.00	9.344	-	7	8	5.3	+57.32	+12	16.21	-0.512	16	9.76	1	5.33	22	40	36.77	
3	22	56	39.00	9.324	6	45	6.6	57.57	12	3.69	0.531	16	9.51	1	5.26	22	44	33.32		
4	23	0	22.54	9.305	6	22	2.3	57.79	11	50.72	0.550	16	9.26	1	5.19	22	48	29.88		
5	23	4	5.62	9.286	5	58	52.7	58.00	11	37.28	0.569	16	9.01	1	5.13	22	52	26.43		
6	23	7	48.26	9.268	5	35	38.3	58.20	11	23.40	0.587	16	8.76	1	5.07	22	56	22.98		
7	23	11	30.49	9.251	-	5	12	19.4	+58.37	+11	9.12	-0.604	16	8.51	1	5.01	23	0	19.54	
8	23	15	12.31	9.234	4	48	56.6	58.53	10	54.43	0.620	16	8.26	1	4.95	23	4	16.09		
9	23	18	53.74	9.219	4	25	30.2	58.67	10	39.35	0.636	16	8.01	1	4.90	23	8	12.64		
10	23	22	34.81	9.204	4	2	0.5	58.80	10	23.90	0.651	16	7.75	1	4.85	23	12	9.20		
11	23	26	15.53	9.190	3	38	28.0	58.91	10	8.11	0.665	16	7.49	1	4.80	23	16	5.75		
12	23	29	55.92	9.176	-	3	14	53.0	+59.00	+	9	51.99	-0.678	16	7.23	1	4.75	23	20	2.31
13	23	33	36.00	9.164	2	51	15.9	59.08	9	35.56	0.691	16	6.97	1	4.70	23	23	58.86		
14	23	37	15.79	9.152	2	27	37.0	59.15	9	18.84	0.702	16	6.71	1	4.66	23	27	55.41		
15	23	40	55.32	9.142	2	3	56.8	59.24	9	1.87	0.712	16	6.45	1	4.62	23	31	51.97		
16	23	44	34.60	9.132	1	40	15.6	59.23	8	44.65	0.722	16	6.19	1	4.59	23	35	48.52		
17	23	48	13.66	9.123	-	1	16	33.7	+59.25	+	8	27.21	-0.731	16	5.92	1	4.57	23	39	45.07
18	23	51	52.53	9.116	0	52	51.5	59.26	8	9.57	0.739	16	5.65	1	4.55	23	43	41.63		
19	23	55	31.22	9.109	0	29	9.3	59.25	7	51.75	0.745	16	5.38	1	4.53	23	47	38.18		
20	23	59	9.76	9.103	-	0	5	27.4	59.23	7	33.79	0.751	16	5.11	1	4.51	23	51	34.73	
21	0	2	48.18	9.099	+	0	18	13.8	59.20	7	15.71	0.756	16	4.83	1	4.49	23	55	31.29	
22	0	6	26.50	9.095	+	0	41	54.0	+59.15	+	6	57.52	-0.759	16	4.55	1	4.47	23	59	27.84
23	0	10	4.74	9.092	1	5	32.9	59.09	6	39.26	0.762	16	4.27	1	4.46	0	3	24.39		
24	0	13	42.92	9.091	1	29	10.1	59.01	6	20.94	0.764	16	3.99	1	4.45	0	7	20.94		
25	0	17	21.08	9.090	1	52	45.2	58.92	6	2.59	0.765	16	3.71	1	4.44	0	11	17.50		
26	0	20	59.23	9.090	2	16	18.0	58.81	5	44.23	0.765	16	3.43	1	4.44	0	15	14.05		
27	0	24	37.38	9.091	+	2	39	48.1	+58.69	+	5	25.88	-0.764	16	3.14	1	4.44	0	19	10.60
28	0	28	15.57	9.092	3	3	15.1	58.55	5	7.56	0.762	16	2.85	1	4.44	0	23	7.16		
29	0	31	53.81	9.095	3	26	38.6	58.40	4	49.30	0.759	16	2.57	1	4.45	0	27	3.71		
30	0	35	32.12	9.098	3	49	58.2	58.23	4	31.11	0.756	16	2.29	1	4.46	0	31	0.27		
31	0	39	10.51	9.102	4	13	13.7	58.05	4	13.00	0.752	16	2.01	1	4.47	0	34	56.82		
Apr. 1	0	42	49.01	9.106	+	4	36	24.6	+57.86	+	3	55.00	-0.748	16	1.73	1	4.48	0	38	53.37
2	0	46	27.62	9.111	+	4	59	30.6	+57.64	+	3	37.10	-0.743	16	1.46	1	4.50	0	42	49.93

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

FOR WASHINGTON APPARENT NOON.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Equation of Time. Mean-App.		Var. per Hour.	Semi-diameter.		S. T. of Sem. Pass. Merid.	Sidereal Time of Mean Noon.		
	h	m	s		°	'	"		m	s		'	"		m	s	h	m	s
Apr. 1	0	42	49.01	9.106	+ 4 36	24.6	+57.86	+3 55.00	-0.748	16 1.73	1 4.48	0 38	53.37				
2	0	46	27.62	9.111	4 59	30.6	57.64	3 37.10	0.743	16 1.46	1 4.50	0 42	49.93				
3	0	50	6.36	9.117	5 22	31.1	57.41	3 19.33	0.737	16 1.18	1 4.52	0 46	46.48				
4	0	53	45.24	9.123	5 45	25.9	57.16	3 1.71	0.731	16 0.91	1 4.54	0 50	43.03				
5	0	57	24.29	9.130	6 8	14.7	56.90	2 44.26	0.724	16 0.63	1 4.57	0 54	39.59				
6	1	1	3.52	9.138	+ 6 30	57.1	+56.63	+2 26.98	-0.716	16 0.36	1 4.60	0 58	36.14				
7	1	4	42.94	9.147	6 53	32.6	56.33	2 9.89	0.708	16 0.09	1 4.64	1 2	32.69				
8	1	8	22.56	9.155	7 16	1.0	56.03	1 53.00	0.699	15 59.82	1 4.67	1 6	29.25				
9	1	12	2.41	9.165	7 38	22.0	55.71	1 36.34	0.689	15 59.55	1 4.71	1 10	25.80				
10	1	15	42.51	9.176	8 0	35.1	55.38	1 19.92	0.679	15 59.28	1 4.75	1 14	22.36				
11	1	19	22.86	9.187	+ 8 22	40.0	+55.03	+1 3.77	-0.667	15 59.01	1 4.79	1 18	18.91				
12	1	23	3.49	9.199	8 44	36.5	54.67	0 47.90	0.655	15 58.75	1 4.84	1 22	15.46				
13	1	26	44.41	9.211	9 6	24.2	54.30	0 32.31	0.643	15 58.48	1 4.88	1 26	12.02				
14	1	30	25.64	9.226	9 28	2.7	53.91	0 17.02	0.630	15 58.21	1 4.93	1 30	8.57				
15	1	34	7.20	9.239	9 49	31.7	53.51	+0 2.07	0.616	15 57.95	1 4.98	1 34	5.13				
16	1	37	49.10	9.253	+10 10	51.0	+53.10	-0 12.54	-0.601	15 57.69	1 5.04	1 38	1.68				
17	1	41	31.36	9.269	10 32	0.2	52.67	0 26.79	0.586	15 57.42	1 5.09	1 41	58.23				
18	1	45	14.01	9.285	10 52	59.0	52.23	0 40.66	0.569	15 57.16	1 5.15	1 45	54.79				
19	1	48	57.06	9.302	11 13	47.2	51.78	0 54.13	0.552	15 56.89	1 5.21	1 49	51.34				
20	1	52	40.53	9.320	11 34	24.4	51.32	1 7.18	0.535	15 56.63	1 5.27	1 53	47.90				
21	1	56	24.43	9.339	+11 54	50.3	+50.84	-1 19.80	-0.516	15 56.36	1 5.33	1 57	44.45				
22	2	0	8.79	9.358	12 15	4.5	50.35	1 31.96	0.497	15 56.10	1 5.40	2 1	41.01				
23	2	3	53.62	9.378	12 35	6.8	49.84	1 43.65	0.477	15 55.84	1 5.46	2 5	37.56				
24	2	7	38.93	9.398	12 54	56.8	49.32	1 54.86	0.457	15 55.58	1 5.53	2 9	34.12				
25	2	11	24.74	9.419	13 14	34.2	48.79	2 5.58	0.436	15 55.32	1 5.60	2 13	30.67				
26	2	15	11.05	9.440	+13 33	58.7	+48.25	-2 15.79	-0.415	15 55.07	1 5.67	2 17	27.23				
27	2	18	57.88	9.462	13 53	9.9	47.69	2 25.49	0.393	15 54.82	1 5.74	2 21	23.78				
28	2	22	45.23	9.484	14 12	7.5	47.11	2 34.67	0.371	15 54.57	1 5.81	2 25	20.34				
29	2	26	33.12	9.506	14 30	51.1	46.52	2 43.32	0.349	15 54.32	1 5.89	2 29	16.89				
30	2	30	21.54	9.528	14 49	20.4	45.92	2 51.44	0.327	15 54.07	1 5.97	2 33	13.45				
May 1	2	34	10.49	9.551	+15 7	35.0	+45.30	-2 59.01	-0.304	15 53.83	1 6.04	2 37	10.00				
2	2	37	59.99	9.574	15 25	34.7	44.67	3 6.05	0.282	15 53.60	1 6.12	2 41	6.56				
3	2	41	50.04	9.597	15 43	19.0	44.02	3 12.55	0.259	15 53.36	1 6.20	2 45	3.11				
4	2	45	40.64	9.620	16 0	47.6	43.36	3 18.50	0.236	15 53.13	1 6.28	2 48	59.67				
5	2	49	31.78	9.642	16 18	0.2	42.69	3 23.90	0.213	15 52.90	1 6.36	2 52	56.22				
6	2	53	23.47	9.665	+16 34	56.6	+42.01	-3 28.74	-0.190	15 52.68	1 6.44	2 56	52.78				
7	2	57	15.72	9.689	16 51	36.5	41.31	3 33.03	0.167	15 52.47	1 6.52	3 0	49.34				
8	3	1	8.53	9.712	17 7	59.4	40.60	3 36.77	0.144	15 52.26	1 6.61	3 4	45.89				
9	3	5	1.89	9.735	17 24	5.1	39.87	3 39.96	0.121	15 52.05	1 6.70	3 8	42.45				
10	3	8	55.81	9.758	17 39	53.3	39.14	3 42.59	0.098	15 51.84	1 6.78	3 12	39.01				
11	3	12	50.28	9.781	+17 55	23.7	+38.39	-3 44.67	-0.075	15 51.63	1 6.86	3 16	35.56				
12	3	16	45.31	9.805	18 10	36.1	37.64	3 46.19	0.052	15 51.43	1 6.94	3 20	32.12				
13	3	20	40.90	9.828	18 25	30.2	36.87	3 47.15	0.028	15 51.22	1 7.02	3 24	28.67				
14	3	24	37.05	9.851	18 40	5.6	36.08	3 47.55	-0.005	15 51.02	1 7.10	3 28	25.23				
15	3	28	33.76	9.875	18 54	22.1	35.29	3 47.40	+0.018	15 50.82	1 7.18	3 32	21.79				
16	3	32	31.03	9.898	+19 8	19.6	+34.49	-3 46.70	+0.041	15 50.62	1 7.26	3 36	18.34				
17	3	36	28.85	9.921	+19 21	57.7	+33.68	-3 45.44	+0.064	15 50.43	1 7.35	3 40	14.90				

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

FOR WASHINGTON APPARENT NOON.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Equation of Time. Mean—App.		Var. per Hour.	Semi-diameter.	S. T. of Sem. Pass. Merid.	Sideral Time of Mean Noon.				
	h	m	s	s	°	'	"	"	m	s	s	'	"	m	s	h	m	s
ay 17	3	36	28.85	9.921	+19	21	57.7	+23.68	-3	45.44	+0.064	15	50.43	1	7.35	3	40	14.90
18	3	40	27.24	9.945	19	35	16.1	32.85	3	43.61	0.088	15	50.24	1	7.43	3	44	11.46
19	3	44	26.19	9.968	19	48	14.5	32.01	3	41.22	0.111	15	50.05	1	7.51	3	48	8.02
20	3	48	25.70	9.991	20	0	52.8	31.17	3	38.27	0.134	15	49.87	1	7.59	3	52	4.57
21	3	52	25.76	10.014	20	13	10.8	30.32	3	34.77	0.157	15	49.68	1	7.66	3	56	1.13
22	3	56	26.39	10.038	+20	25	8.2	+29.46	-3	30.72	+0.180	15	49.50	1	7.73	3	59	57.69
23	4	0	27.57	10.060	20	36	44.6	28.58	3	26.12	0.203	15	49.32	1	7.80	4	3	54.24
24	4	4	29.28	10.082	20	47	59.9	27.69	3	20.98	0.225	15	49.14	1	7.87	4	7	50.80
25	4	8	31.52	10.104	20	58	53.8	26.80	3	15.31	0.247	15	48.97	1	7.94	4	11	47.36
26	4	12	34.27	10.125	21	9	26.0	25.89	3	9.13	0.268	15	48.80	1	8.01	4	15	43.92
27	4	16	37.53	10.146	+21	19	36.4	+24.98	-3	2.44	+0.289	15	48.64	1	8.08	4	19	40.47
28	4	20	41.28	10.166	21	29	24.7	24.05	2	55.27	0.309	15	48.48	1	8.14	4	23	37.03
29	4	24	45.50	10.186	21	38	50.7	23.11	2	47.63	0.328	15	48.32	1	8.21	4	27	33.59
30	4	28	50.17	10.204	21	47	54.1	22.17	2	39.54	0.346	15	48.17	1	8.27	4	31	30.14
ay 31	4	32	55.28	10.222	21	56	34.8	21.22	2	31.02	0.364	15	48.03	1	8.33	4	35	26.70
une 1	4	37	0.81	10.239	+22	4	52.6	+20.26	-2	22.07	+0.381	15	47.89	1	8.39	4	39	23.26
2	4	41	6.73	10.255	22	12	47.3	19.29	2	12.73	0.397	15	47.75	1	8.44	4	43	19.82
3	4	45	13.02	10.270	22	20	18.7	18.32	2	3.01	0.412	15	47.62	1	8.49	4	47	16.38
4	4	49	19.67	10.284	22	27	26.6	17.34	1	52.95	0.426	15	47.50	1	8.54	4	51	12.93
5	4	53	26.66	10.298	22	34	11.0	16.35	1	42.55	0.440	15	47.38	1	8.59	4	55	9.49
6	4	57	33.96	10.311	+22	40	31.6	+15.36	-1	31.83	+0.453	15	47.27	1	8.64	4	59	6.05
7	5	1	41.56	10.322	22	46	28.4	14.37	1	20.82	0.464	15	47.16	1	8.68	5	3	2.61
8	5	5	49.42	10.333	22	52	1.2	13.36	1	9.56	0.475	15	47.05	1	8.72	5	6	59.17
9	5	9	57.53	10.343	22	57	9.8	12.36	0	58.03	0.485	15	46.95	1	8.76	5	10	55.72
10	5	14	5.87	10.352	23	1	54.3	11.35	0	46.29	0.494	15	46.85	1	8.79	5	14	52.28
11	5	18	14.41	10.360	+23	6	14.5	+10.33	-0	34.34	+0.502	15	46.75	1	8.82	5	18	48.84
12	5	22	23.14	10.367	23	10	10.3	9.32	0	22.20	0.509	15	46.66	1	8.84	5	22	45.40
13	5	26	32.04	10.374	23	13	41.7	8.30	-0	9.89	0.516	15	46.57	1	8.86	5	26	41.96
14	5	30	41.08	10.380	23	16	48.5	7.27	+0	2.56	0.521	15	46.48	1	8.88	5	30	38.51
15	5	34	50.25	10.385	23	19	30.8	6.25	0	15.13	0.526	15	46.40	1	8.90	5	34	35.07
16	5	38	59.54	10.389	+23	21	48.4	+5.22	+0	27.82	+0.531	15	46.33	1	8.92	5	38	31.63
17	5	43	8.92	10.393	23	23	41.3	4.19	0	40.61	0.535	15	46.26	1	8.93	5	42	28.19
18	5	47	18.38	10.396	23	25	9.5	3.16	0	53.48	0.538	15	46.19	1	8.94	5	46	24.75
19	5	51	27.90	10.398	23	26	12.9	2.12	1	6.41	0.539	15	46.12	1	8.94	5	50	21.30
20	5	55	37.46	10.399	23	26	51.5	1.09	1	19.37	0.540	15	46.05	1	8.94	5	54	17.86
21	5	59	47.03	10.399	+23	27	5.3	+0.06	+1	32.35	+0.541	15	45.99	1	8.94	5	58	14.42
22	6	3	56.60	10.398	23	26	54.3	-0.98	1	45.33	0.540	15	45.93	1	8.94	6	2	10.98
23	6	8	6.14	10.396	23	26	18.4	2.01	1	58.28	0.538	15	45.87	1	8.93	6	6	7.54
24	6	12	15.62	10.394	23	25	17.7	3.04	2	11.17	0.535	15	45.82	1	8.92	6	10	4.10
25	6	16	25.03	10.390	23	23	52.3	4.07	2	23.98	0.532	15	45.77	1	8.91	6	14	0.66
26	6	20	34.33	10.385	+23	22	2.1	-5.11	+2	36.69	+0.527	15	45.73	1	8.89	6	17	57.21
27	6	24	43.50	10.379	23	19	47.2	6.14	2	49.26	0.521	15	45.70	1	8.87	6	21	53.77
28	6	28	52.51	10.372	23	17	7.6	7.16	3	1.68	0.514	15	45.68	1	8.84	6	25	50.33
29	6	33	1.33	10.363	23	14	3.5	8.18	3	13.91	0.505	15	45.66	1	8.81	6	29	46.89
30	6	37	9.94	10.354	23	10	34.9	9.20	3	25.93	0.496	15	45.64	1	8.78	6	33	43.45
uly 1	6	41	18.31	10.343	+23	6	42.0	-10.21	+3	37.71	+0.486	15	45.63	1	8.74	6	37	40.00
2	6	45	26.42	10.332	+23	2	24.8	-11.22	+3	49.24	+0.474	15	45.62	1	8.71	6	41	36.56

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

FOR WASHINGTON APPARENT NOON.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Equation of Time. Mean-App.	Var. per Hour.	Semi-diameter.	S. T. of Sem. Pass. Merid.	Sidereal Time of Mean Noon.						
	h	m	s		s	°	'						"	"	m	s	h	m	s
July	1	6	41	18.31	10.343	+23	6	42.0	-10.21	+3	37.71	+0.486	15	45.63	1	8.74	6	37	40.00
	2	6	45	26.42	10.332	23	2	24.8	11.22	3	49.24	0.474	15	45.62	1	8.71	6	41	36.56
	3	6	49	34.25	10.320	22	57	43.5	12.22	4	0.47	0.461	15	45.62	1	8.67	6	45	33.12
	4	6	53	41.76	10.306	22	52	38.2	13.22	4	11.39	0.448	15	45.62	1	8.63	6	49	29.68
	5	6	57	48.94	10.292	22	47	8.9	14.21	4	21.98	0.434	15	45.63	1	8.58	6	53	26.24
	6	7	1	55.76	10.277	+22	41	16.0	-15.20	+4	32.22	+0.419	15	45.65	1	8.53	6	57	22.80
	7	7	6	2.21	10.261	22	34	59.5	16.18	4	42.09	0.403	15	45.67	1	8.48	7	1	19.35
	8	7	10	8.26	10.244	22	28	19.5	17.15	4	51.55	0.386	15	45.70	1	8.43	7	5	15.91
	9	7	14	13.90	10.226	22	21	16.4	18.11	5	0.61	0.368	15	45.73	1	8.37	7	9	12.47
	10	7	18	19.10	10.207	22	13	50.2	19.07	5	9.23	0.350	15	45.76	1	8.31	7	13	9.02
	11	7	22	23.85	10.188	+22	6	1.1	-20.02	+5	17.40	+0.331	15	45.80	1	8.25	7	17	5.58
	12	7	26	28.14	10.169	21	57	49.3	20.96	5	25.11	0.311	15	45.84	1	8.19	7	21	2.14
	13	7	30	31.95	10.149	21	49	15.0	21.89	5	32.34	0.291	15	45.89	1	8.12	7	24	58.70
	14	7	34	35.28	10.128	21	40	18.4	22.82	5	39.09	0.271	15	45.94	1	8.05	7	28	55.26
	15	7	38	38.11	10.108	21	30	59.5	23.75	5	45.35	0.250	15	45.99	1	7.98	7	32	51.81
	16	7	42	40.45	10.087	+21	21	18.7	-24.66	+5	51.11	+0.230	15	46.04	1	7.91	7	36	48.37
	17	7	46	42.28	10.066	21	11	16.1	25.56	5	56.37	0.209	15	46.10	1	7.84	7	40	44.93
	18	7	50	43.59	10.044	21	0	51.9	26.45	6	1.12	0.187	15	46.15	1	7.76	7	44	41.49
	19	7	54	44.38	10.022	20	50	6.4	27.34	6	5.35	0.165	15	46.21	1	7.68	7	48	38.04
	20	7	58	44.65	10.000	20	38	59.8	28.21	6	9.05	0.143	15	46.27	1	7.60	7	52	34.60
21	8	2	44.38	9.977	+20	27	32.2	-29.08	+6	12.20	+0.120	15	46.34	1	7.52	7	56	31.16	
22	8	6	43.56	9.954	20	15	43.9	29.94	6	14.82	0.098	15	46.42	1	7.44	8	0	27.72	
23	8	10	42.19	9.931	20	3	35.2	30.79	6	16.89	0.074	15	46.50	1	7.36	8	4	24.27	
24	8	14	40.25	9.907	19	51	6.3	31.62	6	18.39	0.050	15	46.59	1	7.28	8	8	20.83	
25	8	18	37.74	9.883	19	38	17.6	32.44	6	19.31	0.027	15	46.68	1	7.19	8	12	17.39	
26	8	22	34.65	9.859	+19	25	9.2	-33.26	+6	19.67	+0.003	15	46.78	1	7.11	8	16	13.94	
27	8	26	30.97	9.834	19	11	41.3	34.06	6	19.43	-0.022	15	46.88	1	7.02	8	20	10.50	
28	8	30	26.69	9.809	18	57	54.4	34.85	6	18.60	0.047	15	46.98	1	6.94	8	24	7.05	
29	8	34	21.82	9.785	18	43	48.7	35.62	6	17.17	0.072	15	47.09	1	6.85	8	28	3.61	
30	8	38	16.35	9.759	18	29	24.5	36.39	6	15.15	0.097	15	47.21	1	6.76	8	32	0.17	
31	8	42	10.27	9.734	+18	14	42.2	-37.14	+6	12.52	-0.122	15	47.33	1	6.67	8	35	56.72	
Aug.	1	8	46	3.57	9.708	17	59	41.9	37.88	6	9.28	0.148	15	47.45	1	6.58	8	39	53.28
	2	8	49	56.26	9.682	17	44	24.1	38.60	6	5.42	0.174	15	47.58	1	6.50	8	43	49.84
	3	8	53	48.33	9.657	17	28	49.0	39.32	6	0.94	0.199	15	47.71	1	6.41	8	47	46.39
	4	8	57	39.78	9.631	17	12	56.9	40.02	5	55.85	0.225	15	47.85	1	6.33	8	51	42.95
	5	9	1	30.61	9.605	+16	56	48.2	-40.70	+5	50.14	-0.251	15	47.99	1	6.24	8	55	39.50
	6	9	5	20.82	9.579	16	40	23.2	41.38	5	43.82	0.276	15	48.14	1	6.16	8	59	36.06
	7	9	9	10.42	9.554	16	23	42.1	42.04	5	36.88	0.302	15	48.29	1	6.07	9	3	32.62
	8	9	12	59.42	9.529	16	6	45.4	42.69	5	29.34	0.327	15	48.45	1	5.98	9	7	29.17
	9	9	16	47.81	9.504	15	49	33.2	43.33	5	21.20	0.351	15	48.61	1	5.90	9	11	25.73
	10	9	20	35.60	9.479	+15	32	5.8	-43.95	+5	12.47	-0.376	15	48.77	1	5.82	9	15	22.28
	11	9	24	22.81	9.455	15	14	23.6	44.56	5	3.15	0.400	15	48.94	1	5.74	9	19	18.84
	12	9	28	9.45	9.432	14	56	26.9	45.16	4	53.25	0.424	15	49.11	1	5.66	9	23	15.40
	13	9	31	55.53	9.409	14	38	15.9	45.75	4	42.80	0.447	15	49.28	1	5.58	9	27	11.95
	14	9	35	41.06	9.386	14	19	50.8	46.33	4	31.80	0.469	15	49.45	1	5.50	9	31	8.50
	15	9	39	26.05	9.364	+14	1	12.1	-46.89	+4	20.27	-0.491	15	49.62	1	5.42	9	35	5.06
16	9	43	10.52	9.342	+13	42	20.0	-47.45	+4	8.22	-0.512	15	49.80	1	5.34	9	39	1.62	

NOTE.—For mean time interval of semi-diameter passing meridian, subtract 0^s.18 from the sidereal interval.

FOR WASHINGTON APPARENT NOON.

Date.	Apparent Right Ascension.	Var. per Hour.	Apparent Declination.	Var. per Hour.	Equation of Time. Mean—App.	Var. per Hour.	Semi- diameter.	S. T. of Semi-Pass. Merid.	Sideral Time of Mean Noon.
	h m s	s	° ' "	"	m s	s	' "	m s	h m s
ug. 16	9 43 10.52	9.342	+13 42 20.0	-47.45	+ 4 8.22	-0.512	15 49.80	1 5.34	9 39 1.62
17	9 46 54.48	9.321	13 23 14.6	47.99	3 55.67	0.533	15 49.98	1 5.27	9 42 58.17
18	9 50 37.95	9.301	13 3 56.4	48.52	3 42.63	0.553	15 50.16	1 5.20	9 46 54.72
19	9 54 20.95	9.282	12 44 25.6	49.04	3 29.10	0.573	15 50.34	1 5.13	9 50 51.28
20	9 58 3.48	9.262	12 24 42.7	49.54	3 15.11	0.592	15 50.53	1 5.06	9 54 47.83
21	10 1 45.54	9.243	+12 4 47.8	-50.03	+ 3 0.66	-0.611	15 50.72	1 4.99	9 58 44.39
22	10 5 27.16	9.225	11 44 41.3	50.51	2 45.76	0.630	15 50.91	1 4.92	10 2 40.94
23	10 9 8.34	9.207	11 24 23.6	50.97	2 30.43	0.647	15 51.11	1 4.86	10 6 37.50
24	10 12 49.10	9.190	11 3 55.0	51.42	2 14.69	0.664	15 51.31	1 4.79	10 10 34.05
25	10 16 29.46	9.173	10 43 15.7	51.85	1 58.54	0.681	15 51.51	1 4.73	10 14 30.61
26	10 20 9.42	9.157	+10 22 26.2	-52.27	+ 1 41.98	-0.698	15 51.72	1 4.67	10 18 27.16
27	10 23 48.99	9.141	10 1 26.8	52.63	1 25.04	0.714	15 51.94	1 4.61	10 22 23.72
28	10 27 28.19	9.126	9 40 17.7	53.07	1 7.73	0.729	15 52.16	1 4.56	10 26 20.27
29	10 31 7.03	9.111	9 18 59.4	53.45	0 50.07	0.743	15 52.38	1 4.50	10 30 16.82
30	10 34 45.52	9.097	8 57 32.3	53.81	0 32.06	0.757	15 52.60	1 4.45	10 34 13.38
31	10 38 23.67	9.083	+ 8 35 56.7	-54.16	+ 0 13.71	-0.771	15 52.83	1 4.40	10 38 9.93
spt. 1	10 42 1.51	9.070	8 14 12.8	54.49	- 0 4.96	0.784	15 53.06	1 4.36	10 42 6.49
2	10 45 39.03	9.057	7 52 21.2	54.81	0 23.93	0.797	15 53.29	1 4.32	10 46 3.04
3	10 49 16.26	9.045	7 30 22.0	55.12	0 43.20	0.809	15 53.53	1 4.28	10 49 59.59
4	10 52 53.22	9.034	7 8 15.6	55.41	1 2.75	0.820	15 53.77	1 4.24	10 53 56.15
5	10 56 29.92	9.024	+ 6 46 2.3	-55.69	- 1 22.56	-0.830	15 54.02	1 4.21	10 57 52.70
6	11 0 6.36	9.014	6 23 42.5	55.95	1 42.61	0.840	15 54.27	1 4.18	11 1 49.26
7	11 3 42.58	9.005	6 1 16.6	56.20	2 2.89	0.849	15 54.52	1 4.15	11 5 45.81
8	11 7 18.60	8.997	5 38 44.8	56.44	2 23.37	0.857	15 54.77	1 4.12	11 9 42.36
9	11 10 54.44	8.990	5 16 7.4	56.67	2 44.03	0.864	15 55.02	1 4.10	11 13 38.92
10	11 14 30.11	8.983	+ 4 53 24.6	-56.89	- 3 4.85	-0.870	15 55.27	1 4.08	11 17 35.47
11	11 18 5.65	8.978	4 30 36.9	57.09	3 25.81	0.876	15 55.52	1 4.06	11 21 32.02
12	11 21 41.08	8.974	4 7 44.5	57.28	3 46.88	0.880	15 55.78	1 4.04	11 25 28.58
13	11 25 16.42	8.971	3 44 47.6	57.46	4 8.04	0.883	15 56.03	1 4.03	11 29 25.13
14	11 28 51.69	8.969	3 21 46.6	57.62	4 29.26	0.885	15 56.29	1 4.02	11 33 21.68
15	11 32 26.92	8.967	+ 2 58 41.9	-57.77	- 4 50.53	-0.887	15 56.54	1 4.02	11 37 18.24
16	11 36 2.12	8.966	2 35 33.7	57.91	5 11.82	0.887	15 56.80	1 4.01	11 41 14.79
17	11 39 37.32	8.967	2 12 22.3	58.04	5 33.11	0.886	15 57.05	1 4.01	11 45 11.34
18	11 43 12.55	8.969	1 49 8.0	58.15	5 54.37	0.885	15 57.31	1 4.01	11 49 7.90
19	11 46 47.83	8.971	1 25 51.2	58.25	6 15.60	0.883	15 57.57	1 4.02	11 53 4.45
20	11 50 23.16	8.974	+ 1 2 32.3	-58.33	- 6 36.76	-0.880	15 57.83	1 4.03	11 57 1.00
21	11 53 58.57	8.978	0 39 11.6	58.40	6 57.84	0.876	15 58.10	1 4.04	12 0 57.56
22	11 57 34.09	8.982	+ 0 15 49.4	-58.45	7 18.81	0.871	15 58.36	1 4.05	12 4 54.11
23	12 1 9.73	8.988	- 0 7 33.9	58.49	7 39.66	0.866	15 58.63	1 4.07	12 8 50.66
24	12 4 45.51	8.994	0 30 57.9	58.51	8 0.38	0.860	15 58.90	1 4.09	12 12 47.21
25	12 8 21.45	9.001	- 0 54 22.3	-58.52	- 8 20.95	-0.853	15 59.17	1 4.11	12 16 43.77
26	12 11 57.56	9.008	1 17 46.7	58.51	8 41.34	0.845	15 59.44	1 4.14	12 20 40.32
27	12 15 33.86	9.017	1 41 10.7	58.49	9 1.53	0.837	15 59.71	1 4.17	12 24 36.87
28	12 19 10.37	9.026	2 4 34.0	58.45	9 21.51	0.828	15 59.98	1 4.20	12 28 33.43
29	12 22 47.11	9.036	2 27 56.2	58.40	9 41.26	0.818	16 0.26	1 4.24	12 32 29.98
30	12 26 24.10	9.046	- 2 51 17.0	-58.33	-10 0.77	-0.808	16 0.54	1 4.28	12 36 26.53
ct. 1	12 30 1.35	9.058	- 3 14 35.9	-58.24	-10 20.03	-0.797	16 0.82	1 4.32	12 40 23.09

NOTE.—For mean time interval of semi-diameter passing meridian, subtract 0.18 from the sideral interval.

FOR WASHINGTON APPARENT NOON.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Equation of Time. Mean—App.		Var. per Hour.	Semi-diameter.		S. T. of Sem. Pass. Merid.		Sidereal Time of Mean Noon.		
	h	m	s	s	°	'	"	"	m	s	s	'	"	m	s	h	m	s
Oct. 1	12	30	1.35	9.058	— 3	14	35.9	—58.24	—10	20.03	—0.797	16	0.82	1	4.32	12	40	23.09
2	12	33	38.88	9.070	3	37	52.5	58.14	10	39.01	0.785	16	1.10	1	4.36	12	44	19.64
3	12	37	16.70	9.082	4	1	6.5	58.03	10	57.69	0.772	16	1.38	1	4.41	12	48	16.19
4	12	40	54.83	9.096	4	24	17.6	57.90	11	16.06	0.759	16	1.66	1	4.46	12	52	12.75
5	12	44	33.30	9.110	4	47	25.5	57.75	11	34.10	0.744	16	1.95	1	4.51	12	56	9.30
6	12	48	12.13	9.125	— 5	10	29.7	—57.59	—11	51.78	—0.729	16	2.24	1	4.57	13	0	5.85
7	12	51	51.33	9.141	5	33	29.9	57.42	12	9.08	0.713	16	2.52	1	4.63	13	4	2.41
8	12	55	30.93	9.159	5	56	25.7	57.23	12	25.99	0.696	16	2.80	1	4.69	13	7	58.96
9	12	59	10.95	9.177	6	19	16.8	57.03	12	42.48	0.678	16	3.08	1	4.76	13	11	55.51
10	13	2	51.41	9.195	6	42	2.9	56.81	12	58.53	0.659	16	3.36	1	4.83	13	15	52.07
11	13	6	32.34	9.215	— 7	4	43.7	—56.58	—13	14.11	—0.639	16	3.64	1	4.90	13	19	48.62
12	13	10	13.76	9.236	7	27	18.8	56.34	13	29.20	0.618	16	3.92	1	4.98	13	23	45.18
13	13	13	55.70	9.258	7	49	47.8	56.08	13	43.77	0.596	16	4.19	1	5.06	13	27	41.73
14	13	17	38.17	9.281	8	12	10.4	55.83	13	57.82	0.574	16	4.46	1	5.14	13	31	38.28
15	13	21	21.20	9.305	8	34	26.3	55.51	14	11.31	0.550	16	4.73	1	5.22	13	35	34.84
16	13	25	4.81	9.329	— 8	56	35.0	—55.21	—14	24.22	—0.526	16	5.00	1	5.30	13	39	31.39
17	13	28	49.01	9.354	9	18	36.2	54.89	14	36.53	0.500	16	5.27	1	5.38	13	43	27.94
18	13	32	33.83	9.380	9	40	29.4	54.55	14	48.23	0.474	16	5.54	1	5.47	13	47	24.50
19	13	36	19.28	9.407	10	2	14.3	54.19	14	59.30	0.448	16	5.80	1	5.56	13	51	21.05
20	13	40	5.37	9.434	10	23	50.5	53.82	15	9.73	0.421	16	6.07	1	5.65	13	55	17.61
21	13	43	52.13	9.462	—10	45	17.6	—53.43	—15	19.50	—0.393	16	6.33	1	5.74	13	59	14.16
22	13	47	39.57	9.491	11	6	35.1	53.02	15	28.59	0.364	16	6.60	1	5.84	14	3	10.71
23	13	51	27.71	9.520	11	27	42.7	52.60	15	36.99	0.335	16	6.86	1	5.94	14	7	7.27
24	13	55	16.55	9.550	11	48	40.0	52.17	15	44.69	0.306	16	7.13	1	6.04	14	11	3.82
25	13	59	6.11	9.580	12	9	26.5	51.71	15	51.66	0.276	16	7.39	1	6.14	14	15	0.38
26	14	2	56.40	9.611	—12	30	1.8	—51.23	—15	57.91	—0.245	16	7.65	1	6.24	14	18	56.93
27	14	6	47.42	9.641	12	50	25.5	50.74	16	3.43	0.214	16	7.91	1	6.35	14	22	53.49
28	14	10	39.19	9.673	13	10	37.2	50.23	16	8.20	0.183	16	8.17	1	6.46	14	26	50.04
29	14	14	31.71	9.704	13	30	36.4	49.70	16	12.22	0.152	16	8.43	1	6.57	14	30	46.60
30	14	18	25.00	9.736	13	50	22.7	49.15	16	15.48	0.120	16	8.68	1	6.68	14	34	43.15
31	14	22	19.05	9.768	—14	9	55.7	—48.59	—16	17.97	—0.088	16	8.94	1	6.79	14	38	39.71
Nov. 1	14	26	13.88	9.801	14	29	15.1	48.02	16	19.68	0.055	16	9.19	1	6.91	14	42	36.26
2	14	30	9.50	9.834	14	48	20.4	47.42	16	20.63	—0.023	16	9.45	1	7.03	14	46	32.82
3	14	34	5.90	9.867	15	7	11.1	46.80	16	20.79	+0.010	16	9.70	1	7.15	14	50	29.37
4	14	38	3.10	9.900	15	25	46.9	46.17	16	20.15	0.044	16	9.95	1	7.27	14	54	25.93
5	14	42	1.10	9.934	—15	44	7.3	—45.53	—16	18.70	+0.077	16	10.20	1	7.39	14	58	22.48
6	14	45	59.92	9.968	16	2	12.1	44.87	16	16.44	0.111	16	10.45	1	7.51	15	2	19.04
7	14	49	59.57	10.003	16	20	0.8	44.19	16	13.36	0.146	16	10.69	1	7.63	15	6	15.60
8	14	54	0.05	10.038	16	37	33.1	43.50	16	9.44	0.181	16	10.92	1	7.74	15	10	12.15
9	14	58	1.37	10.073	16	54	48.6	42.79	16	4.69	0.216	16	11.15	1	7.86	15	14	8.71
10	15	2	3.54	10.108	—17	11	46.9	—42.06	—15	59.10	+0.251	16	11.38	1	7.98	15	18	5.26
11	15	6	6.56	10.144	17	28	27.5	41.32	15	52.66	0.286	16	11.61	1	8.10	15	22	1.82
12	15	10	10.44	10.180	17	44	50.1	40.56	15	45.36	0.322	16	11.83	1	8.22	15	25	58.38
13	15	14	15.18	10.215	18	0	54.3	39.79	15	37.19	0.358	16	12.04	1	8.34	15	29	54.93
14	15	18	20.78	10.251	18	16	39.8	39.00	15	28.17	0.394	16	12.25	1	8.46	15	33	51.49
15	15	22	27.25	10.287	—18	32	6.1	—38.19	—15	18.29	+0.430	16	12.46	1	8.58	15	37	48.05
16	15	26	34.58	10.323	—18	47	12.7	—37.36	—15	7.54	+0.466	16	12.66	1	8.70	15	41	44.60

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

FOR WASHINGTON APPARENT NOON.

Date.	Apparent Right Ascension.			Var. per Hour.	Apparent Declination.			Var. per Hour.	Equation of Time. Mean-App.		Var. per Hour.	Semi-diameter.		S. T. of Sem. Pass Merid.		Sidereal Time of Mean Noon.		
	h	m	s	s	°	'	"	"	m	s	s	'	"	m	s	h	m	s
Nov. 16	15	26	34.58	10.323	-18	47	12.7	-37.30	-15	7.54	+0.466	16	12.66	1	8.70	15	41	44.60
17	15	30	42.77	10.359	19	1	59.4	36.53	14	55.93	0.501	16	12.86	1	8.81	15	45	41.16
18	15	34	51.81	10.394	19	16	25.8	35.67	14	43.48	0.536	16	13.06	1	8.92	15	49	37.72
19	15	39	1.70	10.430	19	30	31.4	34.80	14	30.18	0.572	16	13.26	1	9.03	15	53	34.27
20	15	43	12.44	10.465	19	44	15.9	33.91	14	16.04	0.607	16	13.45	1	9.14	15	57	30.83
21	15	47	24.00	10.499	-19	57	38.9	-33.00	-14	1.08	+0.641	16	13.64	1	9.25	16	1	27.39
22	15	51	36.38	10.533	20	10	40.0	32.08	13	45.30	0.675	16	13.83	1	9.36	16	5	23.94
23	15	55	49.57	10.566	20	23	18.8	31.15	13	28.71	0.708	16	14.02	1	9.47	16	9	20.50
24	16	0	3.55	10.599	20	35	34.9	30.20	13	11.33	0.740	16	14.20	1	9.58	16	13	17.06
25	16	4	18.31	10.631	20	47	28.1	29.24	12	53.19	0.771	16	14.38	1	9.69	16	17	13.61
26	16	8	33.81	10.661	-20	58	58.1	-28.26	-12	34.30	+0.802	16	14.55	1	9.79	16	21	10.17
27	16	12	50.04	10.691	21	10	4.4	27.26	12	14.67	0.832	16	14.72	1	9.89	16	25	6.73
28	16	17	6.99	10.721	21	20	46.6	26.25	11	54.34	0.861	16	14.89	1	9.99	16	29	3.29
29	16	21	24.62	10.749	21	31	4.5	25.24	11	33.32	0.890	16	15.05	1	10.08	16	32	59.84
30	16	25	42.91	10.776	21	40	57.8	24.20	11	11.64	0.917	16	15.21	1	10.17	16	36	56.40
Dec. 1	16	30	1.85	10.802	-21	50	26.2	-23.16	-10	49.33	+0.943	16	15.37	1	10.26	16	40	52.96
2	16	34	21.41	10.827	21	59	29.6	22.11	10	26.40	0.968	16	15.53	1	10.35	16	44	49.52
3	16	38	41.56	10.852	22	8	7.4	21.04	10	2.87	0.992	16	15.69	1	10.43	16	48	46.08
4	16	43	2.29	10.875	22	16	19.5	19.97	9	38.76	1.016	16	15.84	1	10.51	16	52	42.64
5	16	47	23.57	10.898	22	24	5.8	18.80	9	14.10	1.039	16	15.98	1	10.58	16	56	39.19
6	16	51	45.39	10.920	-22	31	25.9	-17.79	-8	48.90	+1.061	16	16.12	1	10.65	17	0	35.75
7	16	56	7.72	10.941	22	38	19.6	16.60	8	23.20	1.081	16	16.25	1	10.72	17	4	32.31
8	17	0	30.54	10.961	22	44	46.7	15.57	7	57.02	1.101	16	16.38	1	10.79	17	8	28.87
9	17	4	53.82	10.979	22	50	47.0	14.45	7	30.37	1.119	16	16.50	1	10.86	17	12	25.43
10	17	9	17.54	10.997	22	56	20.3	13.32	7	3.29	1.137	16	16.61	1	10.92	17	16	21.99
11	17	13	41.67	11.014	-23	1	26.4	-12.19	-6	35.79	+1.154	16	16.72	1	10.97	17	20	18.54
12	17	18	6.19	11.029	23	6	5.1	11.04	6	7.90	1.169	16	16.82	1	11.02	17	24	15.10
13	17	22	31.06	11.043	23	10	16.3	9.89	5	39.66	1.183	16	16.92	1	11.06	17	28	11.66
14	17	26	56.25	11.056	23	13	59.9	8.74	5	11.11	1.196	16	17.01	1	11.10	17	32	8.22
15	17	31	21.75	11.069	23	17	15.7	7.58	4	42.25	1.208	16	17.09	1	11.14	17	36	4.78
16	17	35	47.53	11.079	-23	20	3.6	-6.41	-4	13.12	+1.219	16	17.17	1	11.17	17	40	1.34
17	17	40	13.54	11.088	23	22	23.4	5.24	3	43.75	1.228	16	17.24	1	11.19	17	43	57.90
18	17	44	39.75	11.096	23	24	15.1	4.07	3	14.18	1.236	16	17.31	1	11.21	17	47	54.45
19	17	49	6.13	11.102	23	25	38.6	2.89	2	44.44	1.242	16	17.37	1	11.23	17	51	51.01
20	17	53	32.64	11.107	23	26	33.9	1.71	2	14.56	1.247	16	17.43	1	11.24	17	55	47.57
21	17	57	59.25	11.110	-23	27	0.8	-0.53	-1	44.59	+1.250	16	17.49	1	11.25	17	59	44.13
22	18	2	25.93	11.112	23	26	59.3	+0.65	1	14.56	1.252	16	17.55	1	11.25	18	3	40.69
23	18	6	52.63	11.113	23	26	29.5	1.83	0	44.50	1.252	16	17.60	1	11.25	18	7	37.25
24	18	11	19.32	11.111	23	25	31.4	3.01	-0	14.45	1.251	16	17.65	1	11.25	18	11	33.81
25	18	15	45.94	11.107	23	24	5.0	4.19	+0	15.53	1.248	16	17.69	1	11.24	18	15	30.36
26	18	20	12.46	11.102	-23	22	10.3	+5.37	+0	45.42	+1.243	16	17.73	1	11.23	18	19	26.92
27	18	24	38.85	11.096	23	19	47.4	6.54	1	15.18	1.236	16	17.76	1	11.21	18	23	23.48
28	18	29	5.07	11.089	23	16	56.3	7.71	1	44.76	1.228	16	17.79	1	11.18	18	27	20.04
29	18	33	31.09	11.079	23	13	37.2	8.88	2	14.13	1.219	16	17.81	1	11.15	18	31	16.60
30	18	37	56.86	11.068	23	9	50.3	10.03	2	43.25	1.207	16	17.83	1	11.12	18	35	13.16
31	18	42	22.34	11.055	-23	5	35.6	+11.19	+3	12.08	+1.196	16	17.85	1	11.09	18	39	9.71
32	18	46	47.50	11.041	-23	0	53.3	+12.34	+3	40.61	+1.182	16	17.87	1	11.05	18	43	6.27

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

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax	Bright Limbs.
		h m	m	h m s	s	" ' "	"	s	" "	" "	
Jan. 0	U	20 19.73	2.454	14 59 14.67	157.51	-22 21 26.6	-606.9	73.91	16 22.3	59 59.2	II. S.
1	L	8 49.89	2.570	15 31 27.15	164.49	24 11 41.9	492.1	75.56	16 28.7	60 22.5	
1	U	21 21.36	2.673	16 4 59.15	170.66	25 36 56.4	357.0	76.99	16 34.2	60 42.8	II. S.
2	L	9 53.94	2.751	16 39 37.14	175.38	26 33 24.0	204.9	78.06	16 38.7	60 59.4	
2	U	22 27.26	2.796	17 15 0.18	178.09	-26 58 7.7	-40.9	78.65	16 42.0	61 11.5	II. N.
3	L	11 0.89	2.802	17 50 41.72	178.43	26 49 27.2	+127.8	78.71	16 43.9	61 18.6	
3	U	23 34.34	2.768	18 26 12.93	176.38	26 7 15.0	293.0	78.23	16 44.4	61 20.3	
4	L	12 7.18	2.699	19 1 6.66	172.26	24 53 0.1	447.0	77.26	16 43.3	61 16.4	
5	U	0 39.02	2.605	19 35 0.91	166.58	-23 9 35.4	+583.7	75.93	16 40.8	61 7.1	
5	L	13 9.63	2.405	20 7 40.89	159.99	21 0 54.6	699.3	74.36	16 36.9	60 52.8	
6	U	1 38.89	2.380	20 38 59.37	153.09	18 31 22.8	792.1	72.69	16 31.7	60 33.8	I. S.
6	L	14 6.78	2.269	21 8 55.66	146.36	15 45 33.0	862.5	71.04	16 25.5	60 10.9	
7	U	2 33.38	2.166	21 37 34.12	140.16	-12 47 47.2	+911.8	69.49	16 18.4	59 45.0	I. S.
7	L	14 58.81	2.075	22 5 2.47	134.70	9 42 4.5	942.3	68.11	16 10.7	59 16.8	
8	U	3 23.24	1.999	22 31 30.38	130.10	6 31 55.9	956.7	66.93	16 2.7	58 47.2	I. S.
8	L	15 46.84	1.937	22 57 8.47	126.40	3 20 23.4	956.5	65.97	15 54.4	58 16.9	
9	U	4 9.79	1.890	23 22 7.56	123.60	-0 10 2.6	+944.9	65.24	15 46.2	57 46.6	I. S.
9	L	16 32.27	1.858	23 46 38.23	121.67	+2 56 54.2	923.0	64.74	15 38.1	57 17.0	
10	U	4 54.44	1.840	0 10 50.61	120.54	5 58 33.9	892.2	64.45	15 30.4	56 48.6	I. S.
10	L	17 16.47	1.834	0 34 54.12	120.17	8 53 17.0	853.7	64.37	15 23.1	56 21.8	
11	U	5 38.49	1.839	0 58 57.47	120.49	+11 39 34.8	+808.1	64.46	15 16.3	55 57.0	I. S.
11	L	18 0.64	1.854	1 23 8.42	121.43	14 16 4.9	755.8	64.73	15 10.1	55 34.3	
12	U	6 23.03	1.879	1 47 33.80	122.88	16 41 29.3	697.2	65.11	15 4.6	55 14.1	I. S.
12	L	18 45.75	1.910	2 12 19.18	124.75	18 54 31.9	632.2	65.60	14 59.8	54 56.3	
13	U	7 8.88	1.945	2 37 28.84	126.90	+20 53 57.3	+560.9	66.16	14 55.6	54 41.0	I. S.
13	L	19 32.45	1.984	3 3 5.42	129.20	22 38 31.2	483.6	66.75	14 52.1	54 28.3	
14	U	7 56.49	2.022	3 29 9.73	131.49	21 7 1.3	400.4	67.33	14 49.3	54 18.0	I. S.
14	L	20 20.97	2.057	3 55 40.63	133.61	25 18 19.7	311.8	67.85	14 47.2	54 10.1	
15	U	8 45.83	2.086	4 22 34.92	135.37	+26 11 25.4	+218.5	68.27	14 45.7	54 4.6	I. S.
15	L	21 11.00	2.107	4 49 47.49	136.63	26 45 28.5	121.5	68.57	14 44.8	54 1.2	
16	U	9 36.36	2.118	5 17 11.59	137.28	26 59 53.4	+22.4	68.69	14 44.4	53 59.8	I. N.S.
16	L	22 1.78	2.117	5 44 39.37	137.24	26 54 22.1	-77.6	68.64	14 44.5	54 0.3	
17	U	10 27.13	2.105	6 12 2.51	136.51	+26 28 56.0	-176.5	68.42	14 45.1	54 2.5	I. N.
17	L	22 52.26	2.082	6 39 12.99	135.14	25 43 57.2	272.7	68.04	14 46.1	54 6.3	
18	U	11 17.07	2.051	7 6 3.73	133.24	24 40 7.2	364.7	67.52	14 47.6	54 11.6	I. N.
18	L	23 41.46	2.013	7 32 29.14	130.94	23 18 24.1	451.3	66.90	14 49.3	54 18.1	
19	U	12 5.36	1.971	7 58 25.46	128.41	+21 40 0.7	-531.4	66.22	14 51.4	54 25.8	I. II. N.S.
20	L	0 28.75	1.928	8 23 50.93	125.82	19 46 20.1	604.1	65.53	14 53.8	54 31.6	
20	U	12 51.63	1.886	8 48 45.71	123.33	17 38 52.2	669.2	64.87	14 56.5	54 44.5	II. S.
21	L	1 14.03	1.848	9 13 11.75	121.06	15 19 11.1	726.3	64.26	14 59.5	54 55.3	
21	U	13 36.01	1.816	9 37 12.53	119.14	+12 48 53.3	-775.3	63.76	15 2.7	55 7.1	II. S.
22	L	1 57.65	1.792	10 0 52.88	117.66	10 9 35.3	816.3	63.38	15 6.2	55 19.8	
22	U	14 19.05	1.776	10 24 18.73	116.73	7 22 53.5	849.4	63.15	15 9.9	55 33.4	II. S.
23	L	2 40.32	1.771	10 47 36.88	116.40	4 30 24.6	874.2	63.08	15 13.8	55 48.0	
23	U	15 1.60	1.776	11 10 54.96	116.73	+1 33 45.4	-890.9	63.21	15 18.1	56 3.5	II. S.

Jan. 16, U Defective Illumination of S. 0''.02.

Jan. 19, U Defective Illumination of II. 0''.01.

Jan. 19, U Defective Illumination of S. 0''.07.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.		Right Ascension of Center.		Var. per Hour of Long.	Geocentric Declination of Center.		Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax.	Bright Limbs.
		h m	m	h m s	s		° ' "	" "					
Jan. 23	U	15 1.60	1.776	11 10 54.96	116.73	+ 1 33 45.4	-890.9	63.21	15 18.1	56 3.5			II. S.
24	L	3 23.00	1.794	11 34 21.22	117.77	- 1 25 24.2	899.2	63.54	15 22.6	56 20.0			
24	U	15 44.69	1.824	11 58 4.50	119.57	4 25 21.1	898.6	64.07	15 27.4	56 37.6			II. S.
25	L	4 6.82	1.867	12 22 14.09	122.17	7 24 15.1	888.6	64.81	15 32.4	56 56.1			
25	U	16 29.55	1.923	12 46 59.62	125.56	-10 20 6.8	-868.1	65.76	15 37.7	57 15.5			II. S.
26	L	4 53.03	1.993	13 12 30.81	129.77	13 10 44.1	836.1	66.91	15 43.2	57 35.7			
26	U	17 17.43	2.076	13 38 57.15	134.74	15 53 40.0	791.0	68.23	15 48.9	57 56.6			II. S.
27	L	5 42.89	2.170	14 6 27.33	140.39	18 26 10.1	731.5	69.70	15 54.7	58 18.0			
27	U	18 9.53	2.272	14 35 8.41	146.52	-20 45 11.4	-656.0	71.27	16 0.6	58 39.6			II. S.
28	L	6 37.43	2.377	15 5 4.79	152.89	22 47 25.3	563.4	72.85	16 6.4	59 0.9			
28	U	19 6.58	2.480	15 36 17.02	159.10	24 29 23.0	453.3	74.36	16 12.1	59 21.6			II. S.
29	L	7 36.92	2.573	16 8 40.48	164.67	25 47 36.0	326.2	75.68	16 17.4	59 41.2			
29	U	20 8.26	2.647	16 42 4.61	169.12	-26 38 52.6	-184.4	76.70	16 22.2	59 59.0			II. S.
30	L	8 40.34	2.694	17 16 12.87	171.96	27 0 38.0	- 31.8	77.34	16 26.5	60 14.6			
30	U	21 12.80	2.710	17 50 43.94	172.88	26 51 13.8	+126.3	77.52	16 29.9	60 27.1			II. N.
31	L	9 45.24	2.692	18 25 14.03	171.81	26 10 13.9	283.1	77.23	16 32.4	60 36.2			
31	U	22 17.28	2.644	18 59 19.90	168.90	-24 58 30.6	+432.4	76.51	16 33.8	60 41.4			II. N.
Feb. 1	L	10 48.58	2.571	19 32 41.68	164.53	23 18 10.2	568.4	75.45	16 34.0	60 42.2			
1	U	23 18.92	2.483	20 5 4.86	159.22	21 12 18.3	687.1	74.15	16 33.0	60 38.5			
2	L	11 48.13	2.387	20 36 20.98	153.45	18 44 41.4	785.6	72.73	16 30.8	60 30.3			
3	U	0 16.19	2.290	21 6 27.34	147.66	-15 59 26.7	+863.3	71.28	16 27.4	60 17.8			
3	L	12 43.12	2.200	21 35 25.98	142.20	13 0 44.4	920.3	69.90	16 22.8	60 1.2			
4	U	1 9.02	2.118	22 3 22.32	137.30	9 52 35.3	958.0	68.66	16 17.4	59 41.2			
4	L	13 34.01	2.049	22 30 24.10	133.12	6 38 42.8	977.9	67.59	16 11.1	59 18.1			
5	U	1 58.24	1.992	22 56 40.25	129.71	- 3 22 29.1	+981.9	66.71	16 4.2	58 52.8			I. S.
5	L	14 21.87	1.949	23 22 20.27	127.10	0 6 53.0	971.8	66.04	15 56.9	58 25.8			
6	U	2 45.06	1.918	23 47 33.65	125.27	+ 3 5 28.5	949.7	65.58	15 49.3	57 58.0			I. S.
6	L	15 7.96	1.901	0 12 29.62	124.18	6 12 18.3	916.9	65.32	15 41.6	57 29.9			
7	U	3 30.71	1.894	0 37 16.83	123.79	+ 9 11 36.6	+874.6	65.25	15 34.1	57 2.2			I. S.
7	L	15 53.45	1.898	1 2 3.22	124.03	12 1 37.4	824.2	65.35	15 26.8	56 35.4			
8	U	4 16.30	1.911	1 26 55.86	124.82	14 40 46.2	766.1	65.59	15 19.9	56 10.0			I. S.
8	L	16 39.35	1.932	1 52 0.84	126.07	17 7 36.7	701.2	65.95	15 13.5	55 46.4			
9	U	5 2.68	1.958	2 17 22.98	127.67	+19 20 49.3	+629.9	66.40	15 7.6	55 25.0			I. S.
9	L	17 26.36	1.988	2 43 5.81	129.49	21 19 9.9	552.5	66.90	15 2.4	55 5.9			
10	U	5 50.41	2.020	3 9 11.19	131.41	23 1 29.1	469.7	67.41	14 57.9	54 49.4			I. S.
10	L	18 14.84	2.051	3 35 39.29	133.26	24 26 43.7	381.9	67.90	14 54.1	54 35.5			
11	U	6 39.62	2.078	4 2 28.53	134.90	+25 33 56.5	+289.6	68.32	14 51.1	54 24.4			I. S.
11	L	19 4.70	2.100	4 29 35.47	136.19	26 22 20.1	193.8	68.64	14 48.8	54 16.1			
12	U	7 29.98	2.113	4 56 55.12	137.00	26 51 17.8	+ 95.5	68.83	14 47.3	54 10.5			I. S.
12	L	19 55.38	2.118	5 24 21.24	137.25	27 0 27.0	- 4.1	68.86	14 46.5	54 7.5			
13	U	8 20.76	2.112	5 51 46.83	136.91	+26 49 41.1	-103.5	68.74	14 46.4	54 7.1			I. N.S.
13	L	20 46.02	2.096	6 19 4.74	135.98	26 19 10.0	201.3	68.46	14 46.9	54 9.1			
14	U	9 11.04	2.072	6 46 8.28	134.52	25 29 19.9	296.4	68.03	14 48.0	54 13.3			I. N.
14	L	21 35.72	2.041	7 12 51.72	132.66	24 20 53.9	387.1	67.50	14 49.7	54 19.5			
15	U	10 0.00	2.005	7 39 10.75	130.48	+22 54 48.7	-472.7	66.89	14 51.9	54 27.5			I. N.

Feb. 13, U Defective Illumination of S. 0'.13.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semi- Pass- ing Mer- idian.	Geocen- tric Semi-di- ameter.	Equa- torial Horiz- ontal Parallax.	Bright Limbs.
		h m	m	h m s	s	" ' "	"	s	' "	' "	
Feb. 15	U	10 0.00	2.005	7 39 10.75	130.48	+22 54 48.7	-472.7	66.89	14 51.9	54 27.5	I. N.
15	L	22 23.83	1.966	8 5 2.73	128.16	21 12 13.0	552.1	66.24	14 54.5	54 37.2	
16	U	10 47.20	1.928	8 30 26.73	125.84	19 14 25.3	624.6	65.59	14 57.5	54 48.2	I. N.
16	L	23 10.11	1.891	8 55 23.50	123.65	17 25 1.2	689.7	64.98	15 0.9	55 0.4	
17	U	11 32.61	1.859	9 19 55.36	121.71	+14 39 1.7	-747.1	64.43	15 4.5	55 13.5	I. N.S.
17	L	23 54.75	1.833	9 44 5.94	120.12	12 4 32.3	796.4	63.98	15 8.2	55 27.3	
18	U	12 16.62	1.814	10 8 0.01	118.97	9 21 1.7	837.3	63.66	15 12.1	55 41.7	I. II. N.S.
19	L	0 38.32	1.803	10 31 43.35	118.35	6 30 11.6	869.6	63.49	15 16.1	55 56.4	
19	U	12 59.94	1.802	10 55 22.47	118.28	+ 3 33 47.1	-893.0	63.48	15 20.2	56 11.4	II. S.
20	L	1 21.61	1.811	11 19 4.59	118.85	+ 0 33 37.0	907.1	63.66	15 24.3	56 26.5	
20	U	13 43.46	1.832	11 42 57.42	120.08	- 2 28 25.1	911.6	64.02	15 28.4	56 41.6	II. S.
21	L	2 5 6.2	1.864	12 7 9.11	121.99	5 30 20.1	905.9	64.57	15 32.5	56 56.6	
21	U	14 28.24	1.908	12 31 48.10	124.63	- 8 30 1.8	-880.2	65.32	15 36.6	57 11.5	II. S.
22	L	2 51.45	1.963	12 57 2.88	127.96	11 25 14.7	860.9	66.25	15 40.6	57 26.3	
22	U	15 15.39	2.030	13 23 1.76	131.97	14 13 34.0	820.1	67.35	15 44.6	57 40.8	II. S.
23	L	3 40.20	2.106	13 49 52.42	136.58	16 52 23.7	785.9	68.58	15 48.5	57 55.2	
23	U	16 5 9.7	2.191	14 17 41.37	141.65	-19 18 57.2	-697.3	69.93	15 52.4	58 9.4	II. S.
24	L	4 32.79	2.280	14 46 33.16	147.00	21 30 17.9	613.6	71.31	15 56.2	58 23.3	
24	U	17 0 6.8	2.369	15 16 29.53	152.36	23 23 23.7	514.8	72.66	15 59.8	58 36.7	III. S.
25	L	5 29.61	2.452	15 47 28.49	157.37	24 55 14.1	401.3	73.91	16 3.3	58 49.7	
25	U	17 59.48	2.523	16 19 23.58	161.65	-26 2 59.4	-274.2	74.95	16 6.7	59 2.1	III. S.
26	L	6 30.09	2.575	16 52 3.62	164.81	26 44 14.1	-136.6	75.71	16 9.8	59 13.5	
26	U	19 1 20	2.604	17 25 13.23	166.53	26 57 10.5	+ 8.0	76.11	16 12.7	59 23.8	III. S.
27	L	7 32.49	2.606	17 58 34.09	166.66	26 40 52.0	155.1	76.12	16 15.1	59 32.7	
27	U	20 3 6.4	2.582	18 31 46.87	165.21	-25 55 19.3	+290.5	75.74	16 17.0	59 39.8	II. N.
28	L	8 34.37	2.535	19 4 33.63	162.37	24 41 33.6	436.5	75.03	16 18.4	59 44.9	
28	U	21 4 41	2.470	19 36 39.53	158.47	23 1 29.6	561.9	74.04	16 19.1	59 47.6	II. N.
29	L	9 33.60	2.394	20 7 54.16	153.89	20 57 45.8	672.7	72.89	16 19.2	59 47.7	
29	U	22 1 8.5	2.313	20 38 11.79	149.03	-18 33 31.3	+766.9	71.65	16 18.4	59 44.9	II. N.
Mar. 1	L	10 29.13	2.233	21 7 31.17	144.23	15 52 12.6	843.2	70.41	16 16.8	59 39.1	
1	U	22 55.47	2.159	21 35 54.60	139.75	12 57 22.8	902.0	69.24	16 14.4	59 30.3	II. N.
2	L	11 20.97	2.093	22 3 27.13	135.77	9 52 32.7	943.4	68.20	16 11.2	59 18.5	
2	U	23 45.74	2.037	22 30 15.62	132.43	- 6 41 5.5	+968.4	67.31	16 7.2	59 3.9	
3	L	12 9 9.1	1.903	22 56 27.95	129.75	3 26 12.8	977.8	66.60	16 2.5	58 46.7	
4	U	0 33.62	1.960	23 22 12.51	127.79	- 0 10 52.9	973.1	66.08	15 57.2	58 27.3	
4	L	12 57.00	1.939	23 47 37.72	126.52	+ 3 2 10.3	955.3	65.75	15 51.5	58 6.2	
5	U	1 20.20	1.929	0 12 51.74	125.92	+ 6 10 27.2	+925.6	65.61	15 45.4	57 43.7	I. S.
5	L	13 43.34	1.929	0 38 2.23	125.93	9 11 40.9	885.0	65.63	15 39.0	57 20.4	
6	U	2 6 5.4	1.938	1 3 16.12	126.47	12 3 47.3	834.5	65.81	15 32.6	56 56.8	I. S.
6	L	14 29.89	1.955	1 28 39.44	127.49	14 44 53.4	775.1	66.11	15 26.2	56 33.4	
7	U	2 53.49	1.978	1 54 17.12	128.85	+17 13 16.6	+707.5	66.51	15 20.0	56 10.7	I. S.
7	L	15 17.38	2.005	2 20 12.81	130.47	19 27 23.8	632.6	66.98	15 14.2	55 49.1	
8	U	3 41.60	2.033	2 46 28.67	132.19	21 25 51.5	551.0	67.47	15 8.7	55 29.1	I. S.
8	L	16 6 17	2.062	3 13 5.29	133.90	23 7 25.5	463.7	67.94	15 3.7	55 10.9	
9	U	4 31.07	2.087	3 40 1.47	135.42	+24 31 2.0	+371.6	68.38	14 59.4	54 54.9	I. S.

Feb. 17, U Defective Illumination of S. 0'.40.

Feb. 18, U Defective Illumination of I. 0'.00.

Feb. 18, U Defective Illumination of N. 0'.00.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax.	Bright Limbs.
		h m	m	h m s	s	° ' "	"	"	' "	' "	
Mar. 9	U	4 31.07	2.087	3 40 1.47	135.42	+24 31 2.0	+371.6	68.38	14 59.4	54 54.9	I. S.
9	L	16 56.25	2.108	4 7 14.37	136.66	25 35 49.1	275.0	68.72	14 55.6	54 41.2	
10	U	5 21.63	2.121	4 34 39.59	137.46	26 21 7.7	177.0	68.94	14 52.6	54 30.2	I. S.
10	L	17 47.12	2.126	5 2 11.47	137.76	26 46 33.6	+ 77.1	69.03	14 50.4	54 21.9	
11	U	6 12.61	2.121	5 29 43.60	137.49	+26 51 57.5	- 23.0	68.97	14 48.9	54 16.4	I. S.
11	L	18 38.00	2.108	5 57 9.24	136.69	26 37 26.3	121.9	68.75	14 48.2	54 13.7	
12	U	7 3.17	2.086	6 24 22.03	135.37	26 3 22.1	218.3	68.39	14 48.2	54 13.8	I. N.
12	L	19 28.04	2.057	6 51 16.39	133.63	25 10 21.2	311.1	67.91	14 48.9	54 16.6	
13	U	7 52.53	2.023	7 17 48.05	131.00	+23 59 11.9	-399.5	67.35	14 50.4	54 22.1	I. N.
13	L	20 16.59	1.987	7 43 54.19	129.40	22 30 53.0	482.6	66.73	14 52.6	54 30.1	
14	U	8 40.21	1.950	8 9 33.62	127.18	20 46 31.1	559.9	66.10	14 55.4	54 40.4	I. N.
14	L	21 3.40	1.915	8 34 46.81	125.05	18 47 19.1	630.9	65.49	14 58.8	54 52.8	
15	U	9 26.18	1.883	8 59 35.65	123.13	+16 34 35.0	-695.2	64.94	15 2.7	55 7.1	I. N.
15	L	21 48.61	1.856	9 24 3.43	121.55	14 9 41.3	752.5	64.47	15 7.0	55 22.9	
16	U	10 10.76	1.837	9 48 14.55	120.38	11 34 4.4	802.3	64.11	15 11.6	55 39.9	I. N.
16	L	22 32.73	1.825	10 12 14.37	119.68	8 49 15.6	844.4	63.89	15 16.5	55 57.9	
17	U	10 54.61	1.823	10 36 9.10	119.53	+ 5 56 51.6	-873.2	63.82	15 21.6	56 16.5	I. N.
17	L	23 16.52	1.830	11 0 5.57	119.98	+ 2 58 35.7	903.0	63.92	15 26.7	56 35.3	
18	U	11 38.58	1.848	11 24 11.20	121.07	- 0 3 40.7	918.1	64.21	15 31.8	56 54.1	I. N.S.
19	L	0 0.93	1.877	11 48 33.82	122.81	3 7 57.3	922.7	64.68	15 36.8	57 12.4	
19	U	12 23.69	1.918	12 13 21.50	125.25	- 6 12 3.1	-916.1	65.34	15 41.6	57 30.0	II. S.
20	L	0 47.00	1.970	12 38 42.43	128.36	9 13 35.4	897.1	66.18	15 46.2	57 46.7	
20	U	13 11.00	2.032	13 4 44.58	132.11	12 9 59.4	864.5	67.19	15 50.4	58 2.2	II. S.
21	L	1 35.80	2.104	13 31 35.34	136.44	14 58 27.9	817.7	68.35	15 54.3	58 16.3	
21	U	14 1.52	2.184	13 59 21.01	141.23	-17 36 2.4	-755.5	69.61	15 57.7	58 28.9	II. S.
22	L	2 28.23	2.268	14 28 6.00	146.29	19 59 35.9	677.5	70.92	16 0.7	58 39.9	
22	U	14 55.95	2.352	14 57 52.09	151.37	22 5 57.9	583.5	72.22	16 3.3	58 49.3	II. S.
23	L	3 24.66	2.431	15 28 37.56	156.13	23 52 1.0	474.5	73.43	16 5.4	58 57.2	
23	U	15 54.26	2.499	16 0 16.54	160.22	-25 14 51.8	-351.9	74.46	16 7.1	59 3.6	II. S.
24	L	4 24.57	2.550	16 32 38.63	163.27	26 12 2.4	518.4	75.22	16 8.5	59 8.5	
24	U	16 55.36	2.578	17 5 29.51	164.97	26 41 43.0	- 77.5	75.65	16 9.4	59 11.9	II. S.
25	L	5 26.35	2.581	17 38 31.87	165.16	26 42 52.5	+ 66.0	75.71	16 10.0	59 14.0	
25	U	17 57.22	2.559	18 11 27.36	163.85	-26 15 25.0	+207.8	75.40	16 10.2	59 14.9	II. N.S.
26	L	6 27.68	2.515	18 43 58.62	161.16	25 20 10.0	343.3	74.76	16 10.1	59 14.5	
26	U	18 57.50	2.453	19 15 51.08	157.43	23 58 46.0	468.8	73.84	16 9.6	59 12.8	II. N.
27	L	7 26.50	2.380	19 46 54.24	153.02	22 13 30.8	581.4	72.73	16 8.8	59 9.8	
27	U	19 54.59	2.301	20 17 2.01	148.26	-20 7 9.4	+679.6	71.53	16 7.7	59 5.6	II. N.
28	L	8 21.72	2.222	20 46 12.66	143.53	17 42 41.8	762.4	70.31	16 6.2	59 0.0	
28	U	20 47.93	2.148	21 14 27.98	139.08	15 3 14.3	829.5	69.14	16 4.3	58 53.1	II. N.
29	L	9 13.30	2.082	21 41 52.51	135.10	12 11 52.6	881.6	68.08	16 2.0	58 44.6	
29	U	21 37.93	2.025	22 8 32.69	131.71	- 9 11 36.2	+918.8	67.15	15 59.2	58 34.6	II. N.
30	L	10 1.95	1.980	22 34 36.20	128.99	6 5 18.2	941.9	66.40	15 56.1	58 23.1	
30	U	22 25.50	1.947	23 0 11.28	126.97	- 2 55 43.2	951.7	65.83	15 52.6	58 10.2	II. N.
31	L	10 48.72	1.925	23 25 26.33	125.66	+ 0 14 32.5	948.8	65.45	15 48.7	57 55.8	
31	U	23 11.74	1.914	23 50 29.65	125.01	+ 3 23 0.4	+933.9	65.26	15 44.4	57 40.2	

Mar. 18, U Defective Illumination of N. O'. 17.

Mar. 25, U Defective Illumination of S. O'. 12.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax.	Bright Limbs.
		h m	m	h m s	s	" ' "	" s	' "	' "	' "	
Mar. 31	U	23 11.74	1.914	23 50 29.65	125.01	+ 3 23 0.4	+933.9	65.26	15 44.4	57 40.2	
Apr. 1	L	11 34.69	1.914	0 15 29.10	125.00	6 27 19.5	907.5	65.25	15 39.9	57 23.5	
1	U	23 57.71	1.923	0 40 31.94	125.57	9 25 15.6	870.1	65.39	15 35.1	57 5.9	
2	L	12 20.88	1.941	1 5 44.65	126.63	12 14 41.5	822.4	65.68	15 30.1	56 47.7	
3	U	0 44.31	1.965	1 31 12.64	128.09	+14 53 36.6	+765.1	66.09	15 25.1	56 29.2	
3	L	13 8.07	1.994	1 57 0.08	129.85	17 20 7.6	698.6	66.57	15 20.0	56 10.6	
4	U	1 32.19	2.026	2 23 9.76	131.77	19 32 29.6	623.7	67.10	15 15.0	55 52.3	I. S.
4	L	13 56.70	2.058	2 49 42.72	133.70	21 29 7.0	541.4	67.63	15 10.2	55 34.7	
5	U	2 21.59	2.088	3 16 38.20	135.49	+23 8 35.5	+452.4	68.14	15 5.7	55 18.2	I. S.
5	L	14 46.80	2.113	3 43 53.58	137.00	24 29 44.6	358.3	68.56	15 1.6	55 2.9	
6	U	3 12.28	2.131	4 11 24.52	138.07	25 31 38.9	260.3	68.88	14 57.9	54 49.3	I. S.
6	L	15 37.92	2.140	4 39 5.13	138.60	26 13 40.9	159.8	69.04	14 54.6	54 37.5	
7	U	4 3.60	2.139	5 6 48.51	138.53	+26 35 31.3	+ 58.6	69.06	14 52.0	54 27.9	I. S.
7	L	16 29.20	2.127	5 34 27.24	137.83	26 37 10.5	- 41.9	68.92	14 50.1	54 20.7	
8	U	4 54.61	2.106	6 1 54.14	136.56	26 18 56.2	140.0	68.61	14 48.8	54 16.0	I. S.
8	L	17 19.71	2.077	6 29 2.78	134.81	25 41 23.1	234.8	68.17	14 48.2	54 14.0	
9	U	5 44.43	2.041	6 55 47.97	132.08	+24 45 19.0	-325.1	67.62	14 48.4	54 14.7	I. N.
9	L	18 8.69	2.002	7 22 6.15	130.33	23 31 41.7	410.3	67.00	14 49.3	54 18.1	
10	U	6 32.48	1.962	7 47 55.53	127.91	22 1 37.0	489.6	66.35	14 51.0	54 24.3	I. N.
10	L	18 55.79	1.923	8 13 16.12	125.55	20 16 14.8	563.0	65.71	14 53.5	54 33.3	
11	U	7 18.64	1.887	8 38 9.51	123.39	+18 16 47.8	-630.4	65.11	14 56.7	54 45.0	I. N.
11	L	19 41.10	1.857	9 2 38.81	121.55	16 4 29.9	691.6	64.59	15 0.5	54 59.1	
12	U	8 3.22	1.833	9 26 48.36	120.12	13 40 36.8	746.3	64.17	15 5.0	55 15.5	I. N.
12	L	20 25.11	1.817	9 50 43.58	119.17	11 6 25.6	794.5	63.88	15 10.1	55 34.1	
13	U	8 46.87	1.810	10 14 30.79	118.79	+ 8 23 16.4	-835.9	63.74	15 15.6	55 54.4	I. N.
13	L	21 8.61	1.814	10 38 17.01	119.02	5 32 34.4	899.9	63.76	15 21.5	56 16.2	
14	U	9 30.46	1.829	11 2 9.90	119.91	+ 2 35 51.2	895.9	63.97	15 27.7	56 39.0	I. N.
14	L	21 52.56	1.856	11 26 17.64	121.50	- 0 25 11.1	913.0	64.38	15 34.2	57 2.5	
15	U	10 15.04	1.894	11 50 48.82	123.82	- 3 28 38.7	-919.9	64.98	15 40.6	57 26.1	I. N.
15	L	22 38.07	1.945	12 15 52.27	126.88	6 32 22.8	915.4	65.78	15 46.9	57 49.3	
16	U	11 1.77	2.008	12 41 36.82	130.67	9 33 57.6	898.1	66.77	15 53.0	58 11.7	I. N.S.
16	L	23 26.30	2.082	13 8 11.01	135.14	12 30 38.7	866.2	67.93	15 58.8	58 32.8	
17	U	11 51.79	2.167	13 35 42.54	140.21	-15 19 23.1	-818.3	69.23	16 4.0	58 52.0	I./I. S.
18	L	0 18.33	2.258	14 4 17.57	145.69	17 56 50.5	753.3	70.62	16 8.6	59 9.0	
18	U	12 45.99	2.352	14 33 59.75	151.35	20 19 27.8	670.0	72.04	16 12.5	59 23.3	II. S.
19	L	1 14.76	2.443	15 4 49.26	156.85	22 23 37.1	568.6	73.41	16 15.6	59 34.8	
19	U	13 44.58	2.525	15 36 41.79	161.77	-24 5 46.9	-450.3	74.63	16 18.0	59 43.3	II. S.
20	L	2 15.29	2.590	16 9 27.83	165.69	25 22 47.6	317.6	75.59	16 19.4	59 48.7	
20	U	14 46.65	2.632	16 42 52.72	168.19	26 12 7.7	174.4	76.22	16 20.1	59 51.0	II. S.
21	L	3 18.34	2.645	17 16 37.67	169.00	26 32 9.8	- 25.6	76.45	16 19.9	59 50.5	
21	U	15 50.02	2.629	17 50 21.65	168.03	-26 22 20.9	+123.3	76.25	16 19.0	59 47.2	II. S.
22	L	4 21.33	2.586	18 23 43.81	165.41	25 43 15.2	266.4	75.65	16 17.5	59 41.6	
22	U	16 51.98	2.520	18 56 26.07	161.44	24 36 28.7	399.4	74.73	16 15.4	59 34.0	II. N.
23	L	5 21.74	2.438	19 28 14.74	156.55	23 4 25.0	518.7	73.56	16 12.8	59 24.5	
23	U	17 50.47	2.349	19 59 1.44	151.18	-21 10 0.4	+622.6	72.25	16 9.9	59 13.7	II. N.

Apr. 16, U Defective Illumination of S. 0°.0).

Apr. 17, U Defective Illumination of II. 0°.03.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax.	Bright Limbs.
		h m	m	h m s	s	" ' "	"	s	' "	' "	
pr. 23	U	17 50.47	2.349	19 59 1.44	151.18	-21 10 0.4	+622.6	72.25	16 9.9	59 13.7	II. N.
24	L	6 18.11	2.259	20 28 42.89	145.74	18 56 27.1	710.2	70.89	16 6.6	59 1.7	
24	U	18 44.69	2.172	20 57 20.24	140.55	16 27 0.9	781.5	69.56	16 3.1	58 48.8	II. N.
25	L	7 10.28	2.094	21 24 58.01	135.84	13 44 52.4	837.4	68.33	15 59.4	58 35.3	
25	U	19 34.99	2.026	21 51 43.02	131.78	-10 53 1.3	+878.8	67.25	15 55.6	58 21.2	II. N.
26	L	7 58.96	1.971	22 17 43.57	128.44	7 54 14.5	906.7	66.33	15 51.7	58 6.8	
26	U	20 22.34	1.928	22 43 8.66	125.87	4 51 6.9	922.4	65.62	15 47.7	57 52.1	II. N.
27	L	8 45.29	1.898	23 8 7.59	124.07	-1 46 2.4	926.4	65.11	15 43.6	57 37.2	
27	U	21 7.96	1.881	23 32 49.50	123.03	+1 18 44.8	+919.6	64.79	15 39.5	57 22.1	II. N.
28	L	9 30.49	1.876	23 57 23.20	122.70	4 21 6.3	902.3	64.66	15 35.3	57 6.9	
28	U	21 53.02	1.881	0 21 56.96	123.03	7 18 59.7	874.9	64.72	15 31.1	56 51.5	II. N.
29	L	10 15.67	1.896	0 46 38.27	123.95	10 10 26.0	837.8	64.95	15 27.0	56 36.2	
29	U	22 38.56	1.920	1 11 33.75	125.37	+12 53 29.5	+791.1	65.31	15 22.8	56 20.8	II. N.
30	L	11 1.78	1.950	1 36 48.85	127.20	15 26 16.6	735.2	65.78	15 18.6	56 5.6	
30	U	23 25.39	1.985	2 2 27.70	129.31	17 46 57.0	670.1	66.32	15 14.5	55 50.6	
lay 1	L	11 49.44	2.023	2 28 32.76	131.54	19 53 45.4	596.5	66.91	15 10.5	55 35.9	
2	U	0 13.93	2.059	2 55 4.68	133.75	+21 45 3.1	+515.1	67.50	15 6.7	55 21.7	
2	L	12 38.85	2.092	3 22 2.04	135.75	23 19 21.3	426.8	68.03	15 3.0	55 8.1	
3	U	1 4.13	2.120	3 49 21.38	137.39	24 35 24.2	332.8	68.46	14 59.5	54 55.4	I. S.
3	L	13 29.69	2.138	4 16 57.32	138.50	25 32 12.4	234.6	68.77	14 56.3	54 43.8	
4	U	1 55.40	2.146	4 44 42.81	138.98	+26 9 6.3	+134.0	68.92	14 53.5	54 33.5	I. S.
4	L	14 21.14	2.142	5 12 29.80	138.75	26 25 47.3	+32.8	68.90	14 51.1	54 24.7	
5	U	2 46.77	2.127	5 40 9.89	137.82	26 22 19.2	-67.2	68.70	14 49.2	54 17.5	I. S.
5	L	15 12.15	2.101	6 7 35.02	136.26	25 59 6.1	164.4	68.33	14 47.7	54 12.2	
6	U	3 37.16	2.067	6 34 38.20	134.19	+25 16 51.0	-257.3	67.82	14 46.9	54 9.1	I. N.
6	L	16 1.72	2.026	7 11 4.02	131.74	24 16 31.1	345.0	67.21	14 46.6	54 8.2	
7	U	4 25.77	1.982	7 27 18.99	129.08	22 59 14.1	426.7	66.54	14 47.0	54 9.7	I. N.
7	L	16 49.27	1.937	7 52 51.61	126.37	21 26 14.3	502.1	65.84	14 48.1	54 13.7	
8	U	5 12.25	1.894	8 17 52.32	123.77	+19 38 48.7	-571.0	65.16	14 49.9	54 20.3	I. N.
8	L	17 34.74	1.855	8 42 23.33	121.44	17 38 15.0	633.5	64.54	14 52.5	54 29.6	
9	U	5 56.79	1.822	9 6 28.36	119.47	15 25 49.2	680.7	64.00	14 55.7	54 41.6	I. N.
9	L	18 18.49	1.797	9 30 12.41	117.96	13 2 46.3	739.8	63.58	14 59.7	54 56.2	
10	U	6 39.95	1.781	9 53 41.52	116.99	+10 30 20.0	-783.6	63.31	15 4.4	55 13.3	I. N.
10	L	19 1.27	1.775	10 17 2.67	116.64	7 49 43.7	821.4	63.20	15 9.7	55 32.9	
11	U	7 22.59	1.780	10 40 23.54	116.96	5 2 13.2	852.6	63.27	15 15.7	55 54.7	I. N.
11	L	19 44.04	1.797	11 3 52.44	117.99	+2 9 9.1	876.9	63.54	15 22.2	56 18.5	
12	U	8 5.77	1.827	11 27 38.29	119.79	-0 48 0.2	-893.3	64.01	15 29.1	56 43.9	I. N.
12	L	20 27.94	1.870	11 51 50.44	123.38	3 47 34.9	900.9	64.68	15 36.3	57 10.6	
13	U	8 50.71	1.927	12 16 38.66	125.70	6 47 40.6	898.2	65.58	15 43.8	57 38.0	I. N.
13	L	21 14.25	1.998	12 42 12.82	130.04	9 46 3.3	883.4	66.68	15 51.3	58 5.6	
14	U	9 38.71	2.081	13 8 42.64	135.06	-12 40 7.5	-854.7	67.97	15 58.8	58 32.9	I. N.
14	L	22 4.24	2.176	13 36 17.09	140.79	15 26 53.6	810.0	69.42	16 5.9	58 59.1	
15	U	10 30.97	2.280	14 5 3.62	147.04	18 2 57.9	747.4	70.98	16 12.6	59 23.5	I. N.S.
15	L	22 58.98	2.388	14 35 7.07	153.55	20 24 34.9	665.3	72.58	16 18.6	59 45.6	
16	U	11 28.28	2.494	15 6 28.31	159.94	-22 27 46.6	-563.2	74.12	16 23.8	60 4.6	I. S.

May 15, U Defective Illumination of S. 0'.17.

FOR TRANSIT OF MOON'S CENTER. OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Pass- ing Meri- dian.	Geocen- tric Semidi- ameter.	Equa- torial Hori- zontal Parallax.	Bright Limbs.
		h m	m	h m s	s	" ' "	"	s	' "	' "	
May 16	U	11 28.28	2.494	15 6 28.31	159.94	-22 27 46.6	-563.2	74.12	16 23.8	60 4.6	I. S.
16	L	23 58.80	2.590	15 39 2.95	165.70	24 8 34.6	441.7	75.50	16 28.0	60 20.0	
17	U	12 30.37	2.667	16 12 40.38	170.30	25 23 19.3	303.2	76.59	16 31.1	60 31.3	II. S.
18	L	1 2.70	2.716	16 47 3.60	173.25	26 9 2.2	-152.2	77.30	16 33.0	60 38.4	
18	U	13 35.42	2.731	17 21 50.37	174.19	-26 23 48.0	+ 5.2	77.53	16 33.7	60 41.0	II. S.
19	L	2 8.11	2.712	17 56 35.67	173.01	26 6 59.2	162.3	77.28	16 33.2	60 39.3	
19	U	14 40.37	2.660	18 30 54.86	169.89	25 19 21.9	312.2	76.58	16 31.6	60 33.4	II. N. S.
20	L	3 11.85	2.583	19 4 26.83	165.23	24 2 57.0	449.4	75.51	16 29.0	60 23.8	
20	U	15 42.28	2.488	19 36 56.10	159.53	-22 20 42.7	+599.9	74.18	16 25.6	60 10.8	II. N.
21	L	4 11.52	2.385	20 8 13.70	153.36	20 16 13.1	671.8	72.70	16 21.2	59 55.1	
21	U	16 39.52	2.283	20 38 16.80	147.19	17 53 15.7	754.5	71.19	16 16.3	59 37.3	II. N.
22	L	5 6.33	2.186	21 7 7.60	141.37	15 15 36.8	819.0	69.73	16 11.0	59 17.8	
22	U	17 32.02	2.099	21 34 51.93	136.14	-12 26 48.8	+866.3	68.40	16 5.4	58 57.2	II. N.
23	L	5 56.75	2.025	22 1 38.03	131.68	9 30 5.5	898.5	67.24	15 59.6	58 36.0	
23	U	18 20.67	1.964	22 27 35.46	128.04	6 28 21.0	916.8	66.27	15 53.8	58 14.6	II. N.
24	L	6 43.95	1.918	22 52 54.34	125.25	3 24 9.6	923.1	65.51	15 48.0	57 53.4	
24	U	19 6.76	1.886	23 17 44.88	123.31	- 0 19 49.6	+918.4	64.97	15 42.3	57 32.5	II. N.
25	L	7 29.26	1.867	23 42 17.01	122.18	+ 2 42 33.8	903.9	64.64	15 36.8	57 12.3	
25	U	19 51.62	1.861	0 6 40.14	121.80	5 41 5.4	879.9	64.52	15 31.5	56 52.8	II. N.
26	L	8 13.97	1.866	0 31 3.04	122.12	8 33 56.8	847.2	64.57	15 26.4	56 34.2	
26	U	20 36.44	1.882	0 55 33.57	123.06	+11 19 24.0	+805.9	64.80	15 21.6	56 16.6	II. N.
27	L	8 59.16	1.906	1 20 18.68	124.54	13 55 45.5	756.2	65.17	15 17.1	55 59.9	
27	U	21 22.22	1.938	1 45 24.12	126.43	16 21 21.2	698.3	65.65	15 12.8	55 44.2	II. N.
28	L	9 45.68	1.974	2 10 54.14	128.61	18 34 32.6	632.3	66.20	15 8.8	55 29.4	
28	U	22 9.60	2.012	2 36 51.32	130.93	+20 33 43.3	+558.3	66.78	15 5.0	55 15.7	II. N.
29	L	10 33.98	2.050	3 3 16.31	133.22	22 17 22.0	477.0	67.36	15 1.5	55 2.9	
29	U	22 58.79	2.085	3 30 7.64	135.29	23 44 5.1	389.1	67.89	14 58.4	54 51.2	
30	L	11 23.99	2.113	3 57 21.66	136.96	24 52 39.5	295.7	68.31	14 55.5	54 40.5	
30	U	23 49.46	2.132	4 24 52.64	138.10	+25 42 7.7	+198.4	68.59	14 52.8	54 30.8	
31	L	12 15.10	2.139	4 52 33.24	138.55	26 11 51.6	+ 98.6	68.71	14 50.5	54 22.4	
June 1	U	0 40.75	2.135	5 20 14.99	138.28	26 21 33.5	- 1.6	68.64	14 48.5	54 15.1	
1	L	13 6.28	2.118	5 47 49.01	137.27	26 11 19.6	100.4	68.40	14 46.9	54 9.2	
2	U	1 31.53	2.090	6 15 6.85	135.60	+25 41 36.9	-196.1	67.99	14 45.7	54 4.8	I. S.
2	L	13 56.40	2.053	6 42 1.22	133.39	24 53 12.6	287.1	67.44	14 44.9	54 1.9	
3	U	2 20.78	2.010	7 8 26.47	130.77	23 47 9.2	372.4	66.79	14 44.6	54 0.7	I. N.
3	L	14 44.62	1.963	7 34 18.89	127.94	22 24 41.0	451.1	66.07	14 44.8	54 1.3	
4	U	3 7.89	1.915	7 59 36.96	125.07	+20 47 8.7	-523.0	65.34	14 45.5	54 3.9	I. N.
4	L	15 30.59	1.869	8 24 21.07	122.32	18 55 56.4	587.9	64.62	14 46.7	54 8.6	
5	U	3 52.76	1.827	8 48 33.48	119.81	16 52 28.3	645.7	63.96	14 48.6	54 15.5	I. N.
5	L	16 14.47	1.792	9 12 17.96	117.68	14 38 6.4	696.8	63.40	14 51.1	54 24.7	
6	U	4 35.80	1.764	9 35 39.58	116.01	+12 14 9.5	-741.5	62.97	14 54.3	54 36.3	I. N.
6	L	16 56.86	1.746	9 58 44.51	114.90	9 41 54.0	780.0	62.68	14 58.1	54 50.3	
7	U	5 17.75	1.738	10 21 39.75	114.41	7 2 34.3	812.3	62.56	15 2.6	55 6.8	I. N.
7	L	17 38.61	1.741	10 44 33.06	114.60	4 17 24.0	838.3	62.62	15 7.8	55 25.7	
8	U	5 59.58	1.756	11 7 32.89	115.51	+ 1 27 39.2	-858.0	62.88	15 13.6	55 47.0	I. N.

May 19, U Defective Illumination of N. 0'.01.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax.	Bright Limbs.
		h m	m	h m s	s	" " "	"	"	" "	" "	
June 8	U	5 59.58	1.756	11 7 32.89	115.51	+ 1 27 39.2	-858.0	62.88	15 13.6	55 47.0	I. N.
8	L	18 20.80	1.784	11 30 48.26	117.20	- 1 25 19.8	870.6	63.35	15 20.0	56 10.5	
9	U	6 42.45	1.826	11 54 28.70	119.69	4 20 3.9	875.3	64.03	15 26.9	56 35.9	I. N.
9	L	19 4.68	1.881	12 18 44.27	123.05	7 14 51.9	871.0	64.93	15 34.3	57 3.1	
10	U	7 27.66	1.952	12 43 45.31	127.27	-10 7 46.7	-856.2	66.05	15 42.1	57 31.6	I. N.
10	L	19 51.57	2.036	13 9 42.22	132.33	12 56 31.2	829.0	67.38	15 50.1	58 1.0	
11	U	8 16.58	2.134	13 36 44.98	138.23	15 38 23.6	787.2	68.88	15 58.2	58 30.8	I. N.
11	L	20 42.82	2.242	14 5 2.35	144.76	18 10 16.9	728.7	70.52	16 6.2	59 0.2	
12	U	9 10.42	2.358	14 34 40.99	151.72	-20 28 38.1	-651.5	72.22	16 13.9	59 28.5	I. N.
12	L	21 39.42	2.475	15 5 43.89	158.74	22 29 33.8	554.3	73.91	16 21.1	59 55.0	
13	U	10 9.78	2.584	15 38 8.94	165.32	24 8 59.9	436.7	75.47	16 27.6	60 18.9	I. N.S.
13	L	22 41.37	2.677	16 11 47.63	170.91	25 23 0.4	300.4	76.77	16 33.2	60 39.3	
14	U	11 13.92	2.743	16 46 24.31	174.90	-26 8 9.1	-148.9	77.69	16 37.7	60 55.7	I. S.
14	L	23 47.07	2.775	17 21 36.93	176.83	26 21 57.8	+ 11.9	78.13	16 40.9	61 7.3	
15	U	12 20.37	2.770	17 56 59.23	176.50	26 3 16.6	174.7	78.05	16 42.6	61 13.8	II. S.
16	L	0 53.39	2.728	18 32 4.05	173.96	25 12 26.3	332.1	77.47	16 43.0	61 15.0	
16	U	13 25.72	2.658	19 6 27.10	169.61	-23 51 16.1	+477.0	76.47	16 41.9	61 11.0	II. N.S.
17	L	1 57.04	2.562	19 39 49.62	163.98	22 2 47.8	604.4	75.16	16 39.4	61 1.9	
17	U	14 27.15	2.457	20 11 59.84	157.66	19 50 51.7	711.3	73.66	16 35.7	60 48.3	II. N.
18	L	2 55.99	2.349	20 42 52.95	151.20	17 19 41.9	796.7	72.10	16 30.9	60 30.6	
18	U	15 23.56	2.247	21 12 29.91	145.03	-14 33 34.8	+861.1	70.59	16 25.2	60 9.7	II. N.
19	L	3 49.95	2.154	21 40 56.01	139.44	11 36 33.4	906.1	69.20	16 18.8	59 46.3	
19	U	16 15.30	2.073	22 8 19.41	134.60	8 32 19.4	933.6	67.97	16 11.9	59 21.0	II. N.
20	L	4 39.77	2.007	22 34 49.85	130.62	5 24 9.3	945.7	66.94	16 4.7	58 54.5	
20	U	17 3.53	1.956	23 0 37.81	127.52	- 2 14 54.9	+944.6	66.13	15 57.3	58 27.6	II. N.
21	L	5 26.76	1.919	23 25 53.82	125.29	+ 0 52 54.6	931.8	65.55	15 50.0	58 0.8	
21	U	17 49.63	1.895	23 50 48.18	123.90	3 57 8.0	908.8	65.18	15 42.9	57 34.5	II. N.
22	L	6 12.31	1.885	0 15 30.59	123.29	6 55 49.8	876.7	65.01	15 36.0	57 9.1	
22	U	18 34.93	1.887	0 40 10.01	123.40	+ 9 47 14.8	+836.1	65.03	15 29.4	56 44.9	II. N.
23	L	6 57.64	1.899	1 4 54.51	124.13	12 29 45.7	787.7	65.21	15 23.2	56 22.2	
23	U	19 20.55	1.920	1 29 51.09	125.39	15 15 0.5	731.8	65.53	15 17.4	56 1.1	II. N.
24	L	7 43.75	1.948	1 55 5.51	127.07	17 22 0.0	668.6	65.96	15 12.1	55 41.6	
24	U	20 7.33	1.981	2 20 42.00	129.04	+19 28 47.8	+598.2	66.46	15 7.3	55 23.9	II. N.
25	L	8 31.31	2.016	2 46 43.19	131.16	21 20 50.9	521.2	66.99	15 3.0	55 8.0	
25	U	20 55.71	2.051	3 13 9.68	133.24	22 56 50.3	437.8	67.50	14 59.1	54 53.8	II. N.
26	L	9 20.51	2.082	3 40 0.01	135.11	24 15 33.7	348.6	67.95	14 55.7	54 41.3	
26	U	21 45.65	2.108	4 7 10.68	136.59	+25 15 59.0	+254.9	68.30	14 52.7	54 30.4	II. N.
27	L	10 11.03	2.122	4 34 36.16	137.55	25 57 18.1	157.8	68.52	14 50.2	54 21.1	
27	U	22 36.54	2.128	5 2 9.32	137.80	26 18 59.7	+ 59.0	68.58	14 48.1	54 13.4	II. S.
28	L	11 2.05	2.121	5 29 42.05	137.47	26 20 52.8	- 40.1	68.45	14 46.3	54 7.1	
28	U	23 27.41	2.103	5 57 5.89	136.38	+26 3 6.7	-137.3	68.16	14 45.0	54 2.3	
29	L	11 52.48	2.074	6 24 12.76	134.66	25 26 12.1	231.1	67.71	14 44.1	53 58.9	
30	U	0 17.16	2.037	6 50 55.73	132.42	24 30 58.2	320.2	67.12	14 43.6	53 57.0	
30	L	12 41.35	1.994	7 17 9.37	129.81	23 18 29.8	403.4	66.44	14 43.5	53 56.5	
July 1	U	1 4.99	1.947	7 42 50.24	126.99	+21 50 3.3	-479.8	65.70	14 43.7	53 57.4	I. N.

June 13, U Defective Illumination of S. 0'.04.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax.	Bright Limbs.
		h m	m	h m s	s	" ' "	"	s	" "	" "	
July 1	U	1 4.99	1.947	7 42 50.24	126.99	+21 50 3.3	-479.8	65.70	14 43.7	53 57.4	I. N.
1	L	13 28.07	1.899	8 7 56.78	124.12	20 7 2.5	549.0	64.95	14 44.4	53 59.8	
2	U	1 50.58	1.853	8 32 29.44	121.36	18 10 55.3	610.9	64.23	14 45.5	54 3.8	I. N.
2	L	14 12.56	1.811	8 56 30.29	118.84	16 3 10.8	665.3	63.56	14 47.0	54 9.5	
3	U	2 34.07	1.775	9 20 2.94	116.67	+13 45 15.6	-712.6	62.99	14 49.0	54 16.9	I. N.
3	L	14 55.20	1.747	9 43 12.23	114.96	11 18 35.1	753.0	62.55	14 51.5	54 26.1	
4	U	3 16.04	1.727	10 6 3.98	113.70	8 44 31.0	786.6	62.25	14 54.6	54 37.3	I. N.
4	L	15 36.69	1.717	10 28 44.88	113.15	6 4 23.2	813.6	62.10	14 58.1	54 50.3	
5	U	3 57.29	1.718	10 51 22.33	113.20	+ 3 19 29.7	-834.2	62.14	15 2.2	55 5.4	I. N.
5	L	16 17.96	1.730	11 14 4.35	113.93	+ 0 31 9.6	848.0	62.37	15 6.9	55 22.6	
6	U	4 38.85	1.754	11 36 59.52	115.40	- 2 19 15.8	854.9	62.81	15 12.2	55 41.9	I. N.
6	L	17 0.11	1.791	12 0 16.96	117.65	5 10 19.4	854.3	63.46	15 18.0	56 3.2	
7	U	5 21.90	1.842	12 24 6.23	120.71	- 8 0 25.9	-845.3	64.31	15 24.3	56 26.4	I. N.
7	L	17 44.38	1.907	12 48 37.24	124.60	10 47 47.2	826.6	65.38	15 31.1	56 51.4	
8	U	6 7.73	1.986	13 13 59.97	129.33	13 30 19.7	796.8	66.64	15 38.3	57 17.9	I. N.
8	L	18 32.09	2.077	13 40 24.20	134.84	16 5 40.0	754.3	68.09	15 45.9	57 45.7	
9	U	6 57.63	2.180	14 7 58.85	141.04	-18 31 3.1	-697.0	69.68	15 53.7	58 14.3	I. N.
9	L	19 24.45	2.292	14 36 51.10	147.74	20 43 20.4	623.0	71.35	16 1.6	58 43.3	
10	U	7 52.64	2.406	15 7 5.21	154.62	22 39 3.4	531.0	73.03	16 9.4	59 12.0	I. N.
10	L	20 22.19	2.517	15 38 41.14	161.29	24 14 29.7	420.2	74.63	16 17.0	59 39.7	
11	U	8 53.00	2.616	16 11 33.28	167.23	-25 25 55.8	-291.3	76.02	16 24.1	60 5.7	I. N.
11	L	21 24.88	2.693	16 45 29.46	171.88	26 9 57.6	-146.7	77.08	16 30.4	60 29.1	
12	U	9 57.51	2.741	17 20 11.16	174.75	26 23 52.1	+ 9.0	77.72	16 35.9	60 49.2	I. N.S.
12	L	22 30.52	2.754	17 55 14.95	175.53	26 6 1.7	169.7	77.88	16 40.3	61 5.1	
13	U	11 3.46	2.731	18 30 15.24	174.18	-25 16 9.9	+328.0	77.54	16 43.3	61 16.3	I. S.
13	L	23 35.94	2.677	19 4 47.64	170.93	23 55 27.0	477.0	76.77	16 44.9	61 22.3	
14	U	12 7.62	2.599	19 38 31.93	166.24	22 6 22.1	610.8	75.66	16 45.1	61 22.9	I. II. N.S.
15	L	0 38.26	2.507	20 11 13.99	160.66	19 52 25.2	725.2	74.32	16 43.7	61 17.9	
15	U	13 7.75	2.408	20 42 46.34	154.71	-17 17 44.5	+817.9	72.89	16 41.0	61 7.7	II. N.
16	L	1 36.05	2.310	21 13 7.40	148.85	14 26 44.0	888.5	71.46	16 36.9	60 52.7	
16	U	14 3.23	2.220	21 42 20.45	143.42	11 23 44.6	937.9	70.12	16 31.6	60 33.3	II. N.
17	L	2 29.38	2.140	22 10 32.01	138.63	8 12 52.7	967.6	68.92	16 25.3	60 10.3	
17	U	14 54.65	2.074	22 37 50.71	134.62	- 4 57 52.6	+979.6	67.91	16 18.3	59 44.5	II. N.
18	L	3 19.20	2.021	23 4 26.20	131.43	- 1 42 2.9	976.2	67.10	16 10.7	59 16.7	
18	U	15 43.20	1.982	23 30 28.51	129.09	+ 1 31 42.7	959.3	66.51	16 2.8	58 47.7	II. N.
19	L	4 6.82	1.956	23 56 7.50	127.54	4 40 52.8	930.6	66.12	15 54.7	58 18.1	
19	U	16 30.20	1.943	0 21 32.53	126.75	+ 7 43 16.0	+891.6	65.93	15 46.7	57 48.7	II. N.
20	L	4 53.49	1.941	0 46 52.22	126.64	10 36 57.1	843.7	65.92	15 38.9	57 20.0	
20	U	17 16.82	1.949	1 12 14.33	127.13	13 20 13.0	787.6	66.06	15 31.4	56 52.4	II. N.
21	L	5 40.31	1.966	1 37 45.41	128.12	15 51 30.6	724.1	66.34	15 24.3	56 26.3	
21	U	18 4.03	1.988	2 3 30.80	129.49	+18 9 24.5	+653.8	66.70	15 17.7	56 2.1	II. N.
22	L	6 28.05	2.015	2 29 34.27	131.11	20 12 35.4	577.0	67.12	15 11.6	55 39.9	
22	U	18 52.40	2.044	2 55 57.94	132.83	21 59 49.6	494.4	67.56	15 6.2	55 19.9	II. N.
23	L	7 17.10	2.071	3 22 42.01	134.48	23 30 0.7	406.6	67.97	15 1.4	55 2.2	
23	U	19 42.10	2.093	3 49 44.76	135.92	+24 42 10.5	+314.4	68.32	14 57.1	54 46.7	II. N.

July 12, U Defective Illumination of N. 0'.32.
July 14, U Defective Illumination of I. 0.00.

July 14, U Defective Illumination of N. 0'.20.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.		Right Ascension of Center.		Var. per Hour of Long.		Geocentric Declination of Center.		Var. per Hour of Long.		S. T. of Semid. Passing Meridian.		Geocentric Semidiameter.		Equatorial Horizontal Parallax.		Bright Limbs.
		h	m	h	m	s	s	'	"	"	s	'	"	'	"	'	"	
July 23	U	19	42.10	2.095	3 49 44.76	135.92	+24 42 10.5	+314.4	68.32	14 57.1	54 46.7							II. N.
24	L	8	7.36	2.113	4 17 2.61	136.98	25 35 31.2	218.7	68.56	14 53.5	54 33.5							II. N.
24	U	20	32.78	2.122	4 44 30.21	137.53	26 9 28.9	120.7	68.67	14 50.5	54 22.5							II. N.
25	L	8	58.25	2.121	5 12 0.99	137.49	26 23 45.6	+ 22.0	68.62	14 48.1	54 13.7							II. N.
25	U	21	23.65	2.110	5 39 27.53	136.83	+26 18 20.4	- 76.0	68.42	14 46.3	54 6.9							II. S.
26	L	9	48.86	2.089	6 6 42.34	135.55	25 53 31.4	171.7	68.05	14 45.0	54 2.1							II. S.
26	U	22	13.76	2.059	6 33 38.43	133.72	25 9 54.1	263.8	67.54	14 44.1	53 59.0							II. S.
27	L	10	38.24	2.021	7 0 9.86	131.45	24 8 20.4	350.9	66.92	14 43.8	53 57.7							II. S.
27	U	23	2.24	1.979	7 26 12.23	128.90	+22 49 56.1	-432.1	66.22	14 43.9	53 58.1							II. S.
28	L	11	25.72	1.933	7 51 42.77	126.18	21 15 56.8	506.7	65.48	14 44.4	53 59.9							II. S.
28	U	23	48.65	1.888	8 16 40.57	123.47	19 27 45.6	574.0	64.74	14 45.3	54 3.1							II. S.
29	L	12	11.04	1.845	8 41 6.31	120.86	17 26 49.8	634.0	64.03	14 46.5	54 7.8							II. S.
30	U	0	32.94	1.806	9 5 2.26	118.51	+15 14 38.8	-686.5	63.39	14 48.2	54 13.8							II. S.
30	L	12	54.41	1.773	9 28 31.93	116.50	12 52 42.3	731.6	62.84	14 50.1	54 21.0							II. S.
31	U	1	15.51	1.746	9 51 39.97	114.92	10 22 28.4	769.4	62.42	14 52.5	54 29.6							I. N.
31	L	13	36.35	1.728	10 14 31.89	113.83	7 45 24.8	799.9	62.14	14 55.2	54 39.5							I. N.
Aug. 1	U	1	57.02	1.719	10 37 13.98	113.28	+ 5 2 57.4	-823.3	62.01	14 58.2	54 50.7							I. N.
1	L	14	17.65	1.720	10 59 53.12	113.34	+ 2 16 32.0	839.6	62.05	15 1.7	55 3.3							I. N.
2	U	2	38.35	1.732	11 22 36.75	114.04	- 0 32 24.5	848.6	62.28	15 5.4	55 17.2							I. N.
2	L	14	59.25	1.755	11 45 32.82	115.42	3 22 23.5	850.0	62.69	15 9.6	55 32.6							I. N.
3	U	3	20.50	1.789	12 8 49.62	117.50	- 6 11 51.4	-843.3	63.31	15 14.2	55 49.4							I. N.
3	L	15	42.24	1.836	12 32 35.84	120.33	8 59 8.2	827.9	64.11	15 19.2	56 7.7							I. N.
4	U	4	4.62	1.895	12 57 0.37	123.90	11 42 25.1	803.1	65.11	15 24.6	56 27.4							I. N.
4	L	16	27.78	1.967	13 22 12.09	128.18	14 19 40.8	767.6	66.29	15 30.3	56 48.5							I. N.
5	U	4	51.87	2.050	13 48 19.51	133.16	-16 48 39.8	-720.1	67.62	15 36.4	57 10.9							I. N.
5	L	17	17.01	2.142	14 15 30.28	138.72	19 6 50.6	659.4	69.08	15 42.8	57 34.3							I. N.
6	U	5	43.30	2.241	14 43 50.46	144.69	21 11 25.5	583.9	70.61	15 49.4	57 58.7							I. N.
6	L	18	10.80	2.343	15 13 23.60	150.83	22 59 22.2	492.8	72.15	15 56.2	58 23.6							I. N.
7	U	6	39.52	2.442	15 44 9.60	156.78	-24 27 29.8	-385.8	73.61	16 3.1	58 48.6							I. N.
7	L	19	9.37	2.531	16 16 3.82	162.12	25 32 38.5	263.2	74.88	16 9.8	59 13.3							I. N.
8	U	7	40.19	2.602	16 48 56.36	166.42	26 11 53.2	-127.3	75.89	16 16.3	59 37.0							I. N.
8	L	20	11.73	2.650	17 22 32.24	169.59	26 22 51.4	+ 18.9	76.53	16 22.3	59 59.1							I. N.
9	U	8	43.68	2.669	17 56 32.32	170.44	-26 4 1.2	+170.0	76.77	16 27.7	60 19.0							I. N.S.
9	L	21	15.67	2.659	18 30 35.46	169.80	25 14 54.3	320.6	76.59	16 32.3	60 35.8							I. N.S.
10	U	9	47.37	2.621	19 4 20.98	167.53	23 56 13.0	464.7	76.02	16 35.9	60 49.1							I. S.
10	L	22	18.48	2.561	19 37 31.08	163.96	22 9 48.4	597.0	75.14	16 38.4	60 58.3							I. S.
11	U	10	48.79	2.487	20 9 52.55	159.51	-19 58 29.2	+713.2	74.04	16 39.6	61 2.8							I. S.
11	L	23	18.15	2.406	20 41 17.51	154.62	17 25 47.2	810.4	72.34	16 39.5	61 2.4							I. S.
12	U	11	46.53	2.324	21 11 43.16	149.69	14 35 39.2	887.4	71.62	16 38.1	60 57.1							I. N.S.
13	L	0	13.95	2.247	21 41 11.08	145.04	11 32 11.8	943.7	70.45	16 35.3	60 46.9							I. N.S.
13	U	12	40.49	2.178	22 9 46.06	140.89	- 8 19 29.6	+980.0	69.40	16 31.3	60 32.2							II. N.
14	L	1	6.26	2.120	22 37 35.06	137.40	5 1 25.6	997.6	68.52	16 26.2	60 13.4							II. N.
14	U	13	31.41	2.073	23 4 46.27	134.61	- 1 41 35.3	998.0	67.81	16 20.1	59 51.1							II. N.
15	L	1	56.07	2.039	23 31 28.45	132.55	+ 1 36 45.0	982.9	67.30	16 13.3	59 26.0							II. N.
15	U	14	20.40	2.017	23 57 50.42	131.22	+ 4 50 39.8	+954.1	66.98	16 5.9	58 58.9							II. N.

Aug. 9, U Defective Illumination of N. O' 56.

Aug. 12, U Defective Illumination of N. O' 58.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Pass- ing Meridian.	Geocen- tric Semidi- ameter.	Equa- torial Horiz- ontal Parallax.	Bright Limbs.
		h m	m	h m s	s	" ' "	"	s	" "	" "	
Aug. 15	U	14 20.40	2.017	23 57 50.42	131.22	+ 4 50 39.8	+954.1	66.98	16 5.9	58 58.9	II. N.
16	L	2 44.53	2.006	0 24 0.51	130.57	7 57 33.6	913.0	66.83	15 58.1	58 30.4	
16	U	15 8.59	2.005	0 50 6.49	130.51	10 55 9.1	861.1	66.85	15 50.2	58 1.3	II. N.
17	L	3 32.70	2.013	1 16 15.10	131.00	13 41 25.0	800.0	67.01	15 42.3	57 32.3	
17	U	15 56.94	2.028	1 42 32.02	131.89	+16 14 34.7	+730.4	67.27	15 34.5	57 3.9	II. N.
18	L	4 21.40	2.048	2 9 1.48	133.06	18 33 4.1	653.4	67.60	15 27.1	56 36.6	
18	U	16 46.10	2.070	2 35 46.21	134.40	20 35 30.4	570.0	67.97	15 20.1	56 11.0	II. N.
19	L	5 11.08	2.092	3 2 47.19	135.75	22 20 42.2	481.1	68.34	15 13.7	55 47.3	
19	U	17 36.31	2.113	3 30 3.66	136.96	+23 47 39.3	+387.8	68.66	15 7.8	55 25.8	II. N.
20	L	6 1.76	2.128	3 57 32.96	137.87	24 55 33.9	290.9	68.89	15 2.6	55 6.7	
20	U	18 27.35	2.136	4 25 10.91	138.38	25 43 52.4	191.9	69.01	14 58.0	54 50.0	II. N.
21	L	6 52.99	2.136	4 52 51.94	138.38	26 12 16.0	+ 92.0	68.99	14 54.2	54 36.0	
21	U	19 18.58	2.127	5 20 29.64	137.82	+26 20 41.9	- 7.5	68.83	14 51.1	54 24.6	II. N.
22	L	7 44.00	2.108	5 47 57.24	136.70	26 9 24.0	105.1	68.51	14 48.7	54 15.8	
22	U	20 9.15	2.081	6 15 8.28	135.06	25 38 52.1	199.6	68.06	14 47.0	54 9.5	II. S.
23	L	8 33.92	2.047	6 41 57.04	133.00	24 49 50.8	289.8	67.48	14 45.9	54 5.5	
23	U	20 58.25	2.007	7 8 19.06	130.62	+23 43 17.3	-374.8	66.82	14 45.5	54 3.9	II. S.
24	L	9 22.08	1.965	7 34 11.28	128.06	22 20 18.5	453.9	66.10	14 45.6	54 4.4	
24	U	21 45.40	1.921	7 59 32.26	125.45	20 42 9.3	526.5	65.37	14 46.3	54 6.8	II. S.
25	L	10 8.19	1.879	8 24 22.14	122.90	18 50 9.8	592.2	64.64	14 47.4	54 11.1	
25	U	22 30.50	1.840	8 48 42.47	120.53	+16 45 43.6	-650.9	63.97	14 49.0	54 17.0	II. S.
26	L	10 52.36	1.805	9 12 36.08	118.46	14 30 16.2	702.5	63.38	14 51.0	54 24.3	
26	U	23 13.85	1.777	9 36 6.91	116.75	12 5 14.3	746.7	62.89	14 53.4	54 33.0	
27	L	11 35.03	1.756	9 59 19.73	115.47	9 32 5.5	783.5	62.52	14 56.1	54 42.8	
27	U	23 56.01	1.742	10 22 20.09	114.68	+ 6 52 18.4	-813.1	62.29	14 59.0	54 53.6	
28	L	12 16.88	1.738	10 45 14.16	114.43	4 7 22.5	835.0	62.22	15 2.2	55 5.4	
29	U	0 37.76	1.743	11 8 8.59	114.74	+ 1 18 49.8	849.2	62.32	15 5.7	55 18.0	
29	L	12 58.76	1.759	11 31 10.44	115.67	- 1 31 45.0	855.2	62.59	15 9.3	55 31.3	
30	U	1 20.01	1.785	11 54 27.10	117.22	- 4 22 42.7	-852.8	63.04	15 13.1	55 45.3	I. N.
30	L	13 41.63	1.821	12 18 6.25	119.42	7 12 18.6	841.5	63.67	15 17.1	56 0.0	
31	U	2 3.76	1.868	12 42 15.71	122.27	9 58 40.9	820.5	64.48	15 21.3	56 15.3	I. N.
31	L	14 26.52	1.926	13 7 3.24	125.76	12 39 49.5	789.1	65.45	15 25.6	56 31.1	
Sept. 1	U	2 50.03	1.994	13 32 36.33	129.85	-15 13 34.5	-746.4	66.58	15 30.1	56 47.6	I. N.
1	L	15 14.42	2.071	13 59 1.78	134.48	17 37 35.2	691.6	67.82	15 34.7	57 4.5	
2	U	3 39.77	2.155	14 26 25.21	139.49	19 49 20.6	623.8	69.16	15 39.5	57 22.0	I. N.
2	L	16 6.14	2.242	14 54 50.40	144.73	21 46 10.3	542.2	70.51	15 44.3	57 39.9	
3	U	4 33.57	2.328	15 24 18.51	149.93	-23 25 18.5	-446.8	71.84	15 49.3	57 58.1	I. N.
3	L	17 2.00	2.409	15 54 47.31	154.79	24 43 59.9	337.9	73.06	15 54.3	58 16.6	
4	U	5 31.34	2.478	16 26 10.71	158.96	25 39 38.9	216.7	74.09	15 59.4	58 35.0	I. N.
4	L	18 1.41	2.531	16 58 18.43	162.13	26 10 0.3	- 85.4	74.85	16 4.3	58 53.0	
5	U	6 31.99	2.562	17 30 56.64	164.01	-26 13 22.9	+ 52.6	75.29	16 9.0	59 10.5	I. N.S.
5	L	19 2.81	2.570	18 3 49.02	164.48	25 48 49.0	193.2	75.39	16 13.5	59 27.0	
6	U	7 33.58	2.554	18 36 38.44	163.54	24 56 13.3	332.1	75.14	16 17.6	59 42.0	I. S.
6	L	20 4.03	2.518	19 9 8.86	161.35	23 36 24.5	464.7	74.59	16 21.2	59 55.2	
7	U	8 33.95	2.466	19 41 7.02	158.21	-21 51 2.8	+587.0	73.79	16 24.1	60 6.0	I. S.

Sept. 5, U Defective Illumination of S. 0'.64.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax.	Bright Limbs.
		h m	m	h m s	s	" ' "	"	s	" "	" "	
Sept. 7	U	8 33.95	2.466	19 41 7.02	158.21	-21 51 2.8	+587.0	73.79	16 24.1	60 6.0	I. S.
7	L	21 3.17	2.403	20 12 23.41	154.45	19 42 31.0	695.8	72.84	16 26.3	60 14.0	
8	U	9 31.61	2.336	20 42 52.74	150.42	17 13 45.0	789.0	71.81	16 27.6	60 18.8	I. S.
8	L	21 59.24	2.270	21 12 33.66	146.43	14 28 3.2	865.0	70.79	16 28.0	60 20.1	
9	U	10 26.11	2.208	21 41 28.21	142.73	-11 28 55.4	+923.2	69.83	16 27.3	60 17.6	I. S.
9	L	22 52.28	2.155	22 9 40.95	139.49	8 19 56.2	963.6	68.98	16 25.6	60 11.3	
10	U	11 17.86	2.110	22 37 18.22	136.83	5 4 37.6	986.6	68.27	16 22.8	60 1.2	I. N.S.
10	L	23 42.97	2.077	23 4 27.38	134.81	- 1 46 24.5	992.8	67.75	16 19.1	59 47.5	
11	U	12 7.74	2.054	23 31 16.30	133.45	+ 1 31 27.6	+983.3	67.40	16 14.5	59 30.5	I. II. N.
12	L	0 32.31	2.042	23 57 52.79	132.74	4 45 55.6	959.0	67.21	16 9.0	59 10.5	
12	U	12 56.80	2.040	0 24 24.31	132.62	7 54 9.5	921.2	67.19	16 2.9	58 48.2	II. N.
13	L	1 21.32	2.047	0 50 57.61	133.02	10 53 33.4	870.9	67.32	15 56.3	58 23.9	
13	U	13 45.96	2.061	1 17 38.45	133.85	+13 41 45.6	+809.3	67.57	15 49.4	57 58.5	II. N.
14	L	2 10.80	2.080	1 44 31.29	135.00	16 16 39.0	737.9	67.90	15 42.3	57 32.4	
14	U	14 35.89	2.102	2 11 39.17	136.33	18 36 21.2	657.8	68.28	15 35.2	57 6.3	II. N.
15	L	3 1.25	2.125	2 39 3.30	137.69	20 39 15.4	570.1	68.66	15 28.2	56 40.7	
15	U	15 26.88	2.145	3 6 43.17	138.92	+22 24 0.6	+476.5	69.01	15 21.5	56 16.2	II. N.
16	L	3 52.72	2.161	3 34 36.38	139.88	23 49 32.8	378.2	69.29	15 15.2	55 53.0	
16	U	16 18.72	2.170	4 2 38.81	140.44	24 55 5.9	277.0	69.46	15 9.4	55 31.7	II. N.
17	L	4 44.78	2.171	4 30 44.87	140.48	25 40 13.1	174.2	69.49	15 4.2	55 12.6	
17	U	17 10.79	2.162	4 58 48.02	139.95	+26 4 46.8	+ 71.6	69.37	14 59.6	54 55.8	II. N.
18	L	5 36.63	2.144	5 26 41.29	138.84	26 8 58.3	- 29.3	69.09	14 55.7	54 41.6	
18	U	18 2.20	2.116	5 54 17.95	137.19	25 53 15.7	127.2	68.66	14 52.6	54 30.1	II. N.
19	L	6 27.40	2.081	6 21 31.99	135.09	25 18 23.0	220.8	68.11	14 50.2	54 21.3	
19	U	18 52.14	2.041	6 48 18.62	132.64	+24 25 17.0	-309.3	67.46	14 48.6	54 15.3	II. S.
20	L	7 16.36	1.997	7 14 34.55	129.99	23 15 3.2	391.9	66.74	14 47.7	54 12.0	
20	U	19 40.05	1.952	7 40 18.11	127.27	21 48 54.1	468.4	65.98	14 47.5	54 11.4	II. S.
21	L	8 3.21	1.907	8 5 29.31	124.61	20 8 6.0	538.5	65.23	14 48.0	54 13.3	
21	U	20 25.84	1.866	8 30 9.58	122.14	+18 13 57.4	-601.9	64.53	14 49.2	54 17.6	II. S.
22	L	8 48.01	1.830	8 54 21.67	119.93	16 7 47.4	658.7	63.89	14 51.0	54 24.1	
22	U	21 9.78	1.799	9 18 9.45	118.10	13 50 55.9	708.8	63.35	14 53.3	54 32.7	II. S.
23	L	9 31.22	1.776	9 41 37.69	116.69	11 24 43.1	732.2	62.93	14 56.2	54 43.1	
23	U	21 52.43	1.760	10 4 51.87	115.76	+ 8 50 30.5	-788.8	62.63	14 59.4	54 55.0	II. S.
24	L	10 13.50	1.754	10 27 58.09	113.37	6 9 41.4	818.2	62.49	15 3.0	55 8.3	
24	U	22 34.55	1.756	10 51 2.89	115.53	3 23 42.8	840.3	62.52	15 7.0	55 22.7	II. S.
25	L	10 55.70	1.769	11 14 13.22	116.29	+ 0 34 6.4	854.5	62.71	15 11.1	55 37.9	
25	U	23 17.05	1.792	11 37 36.32	117.66	- 2 17 30.1	-860.2	63.07	15 15.4	55 53.7	
26	L	11 38.74	1.825	12 1 19.65	119.67	5 9 21.3	856.8	63.61	15 19.8	56 9.8	
27	U	0 0.90	1.869	12 25 30.76	122.30	7 59 32.3	843.3	64.33	15 24.2	56 26.0	
27	L	12 23.64	1.923	12 50 17.13	125.53	10 45 58.3	819.1	65.21	15 28.6	56 42.1	
28	U	0 47.08	1.986	13 15 45.88	129.35	-13 26 23.9	-783.1	66.24	15 32.9	56 57.9	
28	L	13 11.33	2.058	13 42 3.50	133.67	15 58 22.3	734.4	67.39	15 37.1	57 13.4	
29	U	1 36.49	2.136	14 9 15.29	138.36	18 19 16.4	672.3	68.64	15 41.2	57 28.3	I. N.
29	L	14 2.61	2.217	14 37 24.79	143.25	20 26 21.8	596.2	69.92	15 45.1	57 42.7	
30	U	2 29.70	2.298	15 6 33.10	148.11	-22 16 50.1	-506.1	71.17	15 48.8	57 56.3	I. N.

Sept. 10, U Defective Illumination of N. O'.08.

Sept. 11, U Defective Illumination of I. O'.87.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax.	Bright Limb.
		h m	m	h m s	s	" ' "	"	s	' "	' "	
Sept. 30	U	2 29.70	2.298	15 6 33.10	148.11	-22 16 50.1	-506.1	71.17	15 48.8	57 56.3	I. N.
30	L	14 57.74	2.374	15 36 38.20	152.66	23 47 55.8	402.6	72.33	15 52.3	58 9.3	
Oct. 1	U	3 26.62	2.439	16 7 34.45	156.58	24 57 5.1	287.0	73.33	15 55.7	58 21.5	I. N.
1	L	15 56.20	2.488	16 39 12.44	159.57	25 42 5.2	161.6	74.08	15 58.8	58 33.0	
2	U	4 26.27	2.518	17 11 19.41	161.38	-26 1 16.0	-29.4	74.54	16 1.7	58 43.6	I. N.
2	L	16 56.56	2.527	17 43 40.24	161.87	25 53 38.4	+105.8	74.68	16 4.4	58 53.5	
3	U	5 26.82	2.513	18 15 58.92	161.04	25 19 1.1	239.9	74.49	16 6.8	59 2.4	I. S.
3	L	17 56.79	2.479	18 48 0.33	159.02	24 18 0.3	369.0	74.01	16 9.0	59 10.3	
4	U	6 26.26	2.430	19 19 31.69	156.07	-22 51 57.5	+489.7	73.28	16 10.8	59 17.1	I. S.
4	L	18 55.07	2.371	19 50 23.63	152.50	21 2 51.1	599.2	72.40	16 12.3	59 22.6	
5	U	7 23.14	2.307	20 20 30.68	148.65	18 53 7.4	695.7	71.42	16 13.4	59 26.7	I. S.
5	L	19 50.44	2.243	20 49 51.09	144.78	16 25 31.7	777.8	70.42	16 14.1	59 29.0	
6	U	8 16.98	2.182	21 18 26.38	141.16	-13 42 59.9	+845.0	69.47	16 14.2	59 29.5	I. S.
6	L	20 42.84	2.129	21 46 20.67	137.97	10 48 32.7	897.0	68.62	16 13.8	59 28.0	
7	U	9 8.12	2.086	22 13 39.90	135.33	7 45 11.8	934.0	67.91	16 12.8	59 24.2	I. S.
7	L	21 32.94	2.052	22 40 31.20	133.33	4 35 56.8	956.0	67.35	16 11.1	59 18.1	
8	U	9 57.42	2.030	23 7 2.39	131.98	-1 23 43.7	+963.7	66.97	16 8.8	59 9.5	I. S.
8	L	22 21.70	2.019	23 33 21.44	131.31	+ 1 48 35.4	957.1	66.77	16 5.8	58 58.6	
9	U	10 45.91	2.018	23 59 36.14	131.26	4 58 13.3	936.8	66.74	16 2.2	58 45.4	I. N.S.
9	L	23 10.17	2.027	0 25 53.82	131.78	8 2 28.6	903.4	66.86	15 58.0	58 29.9	
10	U	11 34.58	2.044	0 52 20.93	132.80	+10 58 46.5	+857.4	67.12	15 53.3	58 12.6	I. N.
10	L	23 59.24	2.067	1 19 2.84	134.22	13 44 39.8	799.5	67.49	15 48.1	57 53.6	
11	U	12 24.21	2.095	1 46 3.48	135.91	16 17 50.2	730.5	67.94	15 42.5	57 33.3	II. N.
12	L	0 49.53	2.125	2 13 25.11	137.69	18 36 11.7	651.5	68.42	15 36.8	57 12.1	
12	U	13 15.20	2.153	2 41 7.99	139.42	+20 37 51.7	+563.8	68.88	15 30.9	56 50.6	II. N.
13	L	1 41.20	2.178	3 9 10.31	140.91	22 21 14.6	468.9	69.29	15 25.0	56 29.0	
13	U	14 7.45	2.196	3 37 28.19	141.99	23 45 4.7	388.6	69.59	15 19.2	56 7.8	II. N.
14	L	2 33.87	2.205	4 5 55.81	142.51	24 48 27.8	264.9	69.76	15 13.7	55 47.6	
14	U	15 0.33	2.203	4 34 25.94	142.39	+25 30 54.2	+159.5	69.77	15 8.5	55 28.6	II. N.
15	L	3 26.69	2.189	5 2 50.48	141.58	25 52 18.4	+ 54.8	69.60	15 3.8	55 11.2	
15	U	15 52.83	2.165	5 31 1.17	140.10	25 52 58.3	- 47.6	69.25	14 59.6	54 55.8	II. N.
16	L	4 18.61	2.130	5 58 50.40	138.02	25 33 32.4	145.9	68.75	14 56.0	54 42.5	
16	U	16 43.92	2.088	6 26 11.76	135.47	+24 54 56.5	-239.1	68.11	14 53.0	54 31.6	II. N.S.
17	L	5 8.70	2.040	6 53 0.52	132.61	23 58 19.2	326.1	67.39	14 50.8	54 23.4	
17	U	17 32.88	1.990	7 19 13.84	129.59	22 44 57.3	406.5	66.60	14 49.3	54 17.8	II. S.
18	L	5 56.46	1.940	7 44 50.81	126.58	21 16 11.9	480.0	65.80	14 48.5	54 15.0	
18	U	18 19.45	1.892	8 9 52.33	123.71	+19 33 25.2	-546.7	65.02	14 48.5	54 15.1	II S.
19	L	6 41.90	1.849	8 34 20.90	121.11	17 37 58.2	606.7	64.30	14 49.3	54 17.9	
19	U	19 3.86	1.812	8 58 20.32	118.87	15 31 9.9	660.2	63.67	14 50.8	54 23.5	II. S.
20	L	7 25.41	1.782	9 21 55.47	117.07	13 14 16.8	707.5	63.15	14 53.0	54 31.6	
20	U	19 46.66	1.761	9 45 12.09	115.79	+10 48 33.2	-748.7	62.76	14 55.9	54 42.3	II. S.
21	L	8 7.70	1.748	10 8 16.59	115.06	8 15 13.1	783.6	62.53	14 59.5	54 55.3	
21	U	20 28.66	1.746	10 31 15.88	114.93	5 35 31.7	812.2	62.46	15 3.6	55 10.3	II. S.
22	L	8 49.66	1.755	10 54 17.37	115.43	2 50 47.1	834.0	62.56	15 8.2	55 27.1	
22	U	21 10.82	1.774	11 17 28.74	116.58	+ 0 2 23.3	-848.6	62.85	15 13.2	55 45.5	II. S.

Oct. 9, U Defective Illumination of N. 0° 57.

Oct. 16, U Defective Illumination of N. 0° 53.

MOON-CULMINATIONS, 1916.

535

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.		Var. per Hour of Long.	Right Ascension of Center.			Var. per Hour of Long.	Geocentric Declination of Center.			Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax.	Bright Limbs.			
		h	m		m	h	m		s	s	°							'	"
Oct. 23	L	9	32.28	1.804	11	40	57.99	118.41	-	2	48	8.4	-855.2	63.32	15 18.5	56 5.0			
23	U	21	54.17	1.846	12	4	53.33	120.93		5	39	5.7	852.7	63.98	15 24.0	56 25.2	II.	S.	
24	L	10	16.63	1.899	12	29	22.94	124.13		8	28	34.0	840.2	64.82	15 29.6	56 45.9			
24	U	22	39.80	1.963	12	54	34.88	127.98		11	14	23.6	816.1	65.83	15 35.2	57 6.5	II.	S.	
25	L	11	3	2.037	13	20	36.70	132.42		-13	54	9.3	-779.2	66.99	15 40.8	57 26.8			
25	U	23	28.72	2.119	13	47	34.95	137.36		16	25	9.9	728.4	68.26	15 46.1	57 46.2			
26	L	11	54.67	2.207	14	15	34.63	142.62		18	44	29.7	662.4	69.60	15 51.0	58 4.4			
27	U	0	21.69	2.296	14	44	38.24	147.97		20	49	3.0	580.6	70.96	15 55.6	58 21.1			
27	L	12	49.75	2.381	15	14	45.14	153.11		-22	35	40.5	-483.1	72.24	15 59.6	58 36.0			
28	U	1	18.79	2.457	15	45	50.65	157.68		24	1	19.7	371.1	73.37	16 3.1	58 48.9	I.	N.	
28	L	13	48.66	2.517	16	17	45.71	161.31		25	3	17.4	246.6	74.28	16 6.0	58 59.6			
29	U	2	19.13	2.556	16	50	17.00	163.67		25	39	22.9	-113.1	74.88	16 8.4	59 8.2	I.	N.	
29	L	14	49.92	2.571	17	23	7.89	164.55		-25	48	12.6	+ 25.2	75.12	16 10.1	59 14.6			
30	U	3	20.73	2.560	17	56	0.12	163.90		25	29	17.0	163.7	75.00	16 11.3	59 18.9	I.	N.	
30	L	15	51.27	2.526	18	28	35.74	161.83		24	43	2.6	297.6	74.54	16 11.9	59 21.2			
31	U	4	21.28	2.472	19	0	39.18	158.59		23	30	50.3	422.8	73.79	16 12.1	59 21.7	I.	S.	
31	L	16	50.55	2.405	19	31	58.62	154.55		-21	54	43.3	+536.2	72.83	16 11.8	59 20.5			
Nov. 1	U	5	18.97	2.331	20	2	26.67	150.09		19	57	15.3	635.9	71.74	16 11.0	59 17.8	I.	S.	
1	L	17	46.48	2.256	20	32	0.46	145.56		17	41	18.5	721.0	70.61	16 9.9	59 13.8			
2	U	6	13.11	2.184	21	0	40.92	141.25		15	9	51.7	791.0	69.52	16 8.5	59 8.6	I.	S.	
2	L	18	38.92	2.119	21	28	32.11	137.38		-12	25	53.7	+846.3	68.52	16 6.8	59 2.4			
3	U	7	4.02	2.065	21	55	40.27	134.10		9	32	18.0	887.3	67.65	16 4.8	58 55.1	I.	S.	
3	L	19	28.53	2.022	22	22	13.12	131.50		6	31	51.1	914.9	66.95	16 2.6	58 46.8			
4	U	7	52.59	1.991	22	48	19.12	129.63		3	27	11.4	929.5	66.43	16 0.1	58 37.6	I.	S.	
4	L	20	16.36	1.972	23	14	7.13	128.50		-	0	20	51.1	+931.8	66.10	15 57.3	58 27.4		
5	U	8	39.97	1.965	23	39	45.93	128.09		+ 2	44	43.2	921.9	65.96	15 54.3	58 16.3	I.	S.	
5	L	21	3.57	1.970	0	5	23.95	128.36		5	47	9.2	900.5	66.00	15 51.0	58 4.3			
6	U	9	27.28	1.985	0	31	8.97	129.25		8	44	7.4	867.4	66.20	15 47.4	57 51.3	I.	S.	
6	L	21	51.22	2.008	0	57	7.89	130.66		+11	33	20.7	+823.0	66.54	15 43.6	57 37.3			
7	U	10	15.49	2.038	1	23	26.42	132.50		14	12	34.9	767.5	67.00	15 39.6	57 22.5	I.	S.	
7	L	22	40.16	2.074	1	50	8.73	134.59		16	39	39.9	701.5	67.53	15 35.4	57 7.0			
8	U	11	5.26	2.110	2	17	17.16	136.81		2	17	31.6	625.4	68.09	15 31.0	56 50.8	I.	N.S.	
8	L	23	30.80	2.146	2	44	51.97	138.95		+20	49	14.4	+540.2	68.63	15 26.4	56 34.2			
9	U	11	56.74	2.177	3	12	51.06	140.83		22	28	7.0	447.3	69.10	15 21.8	56 17.3	II.	N.	
10	L	0	23.02	2.200	3	41	9.95	142.23		23	47	45.3	348.2	69.47	15 17.2	56 0.4			
10	U	12	49.51	2.213	4	9	42.06	143.00		24	47	6.6	244.8	69.68	15 12.7	55 43.8	II.	N.	
11	L	1	16.08	2.214	4	38	19.04	143.03		+25	25	33.5	+139.5	69.71	15 8.3	55 27.7			
11	U	13	42.58	2.201	5	6	51.58	142.25		25	42	55.6	+ 34.5	69.55	15 4.2	55 12.5	II.	N.	
12	L	2	8.85	2.175	5	35	10.23	140.72		25	39	29.3	- 68.2	69.19	15 0.3	54 58.3			
12	U	14	34.74	2.138	6	3	6.16	138.49		25	15	55.5	196.6	68.65	14 56.8	54 45.6	II.	N.S.	
13	L	3	0.13	2.092	6	30	32.02	135.73		+24	33	14.9	-259.2	67.98	14 53.8	54 34.5			
13	U	15	24.93	2.040	6	57	22.40	132.62		23	32	43.7	344.9	67.20	14 51.3	54 25.4	II.	S.	
14	L	3	49.08	1.986	7	23	34.08	129.32		22	15	47.4	423.3	66.37	14 49.4	54 18.4			
14	U	16	12.58	1.931	7	49	6.05	126.02		20	43	56.1	494.1	65.52	14 48.1	54 13.7	II.	S.	
15	L	4	35.43	1.879	8	13	59.32	122.89		+18	58	40.0	-557.4	64.71	14 47.6	54 11.6			

Nov. 8, U Defective Illumination of S. 0'.24.

Nov. 12, U Defective Illumination of S. 0'.39.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.	Var. per Hour of Long.	Right Ascension of Center.	Var. per Hour of Long.	Geocentric Declination of Center.	Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.	Equatorial Horizontal Parallax.	Bright Limbs.
		h m	m	h m s	s	" " "	"	s	" "	" "	
Nov. 15	U	16 57.69	1.832	8 38 16.63	120.06	+17 1 26.9	-613.6	63.96	14 47.7	54 12.0	II. S.
16	L	5 19.42	1.791	9 2 2.19	117.62	14 53 40.4	663.1	63.30	14 48.6	54 15.2	
16	U	17 40.71	1.759	9 25 21.35	115.67	12 36 39.0	706.1	62.77	14 50.2	54 21.1	II. S.
17	L	6 1.66	1.735	9 48 20.37	114.27	10 11 36.5	743.2	62.39	14 52.6	54 29.8	
17	U	18 22.40	1.722	10 11 6.21	113.48	+ 7 39 44.3	-774.5	62.15	14 55.7	54 41.3	II. S.
18	L	6 43.04	1.720	10 33 46.34	113.33	5 2 11.7	799.9	62.09	14 59.5	54 55.4	
18	U	19 3.72	1.729	10 56 28.76	113.80	+ 2 20 9.3	819.4	62.22	15 4.0	55 12.0	II. S.
19	L	7 24.58	1.749	11 19 21.84	115.11	- 0 25 9.2	832.6	62.55	15 9.2	55 31.0	
19	U	19 45.76	1.782	11 42 34.34	117.10	- 3 12 23.2	-838.6	63.08	15 15.0	55 52.1	II. S.
20	L	8 7.41	1.828	12 6 15.24	119.84	6 0 2.1	836.5	63.81	15 21.2	56 15.0	
20	U	20 29.68	1.887	12 30 33.72	123.36	8 46 22.5	855.1	64.73	15 27.8	56 39.3	II. S.
21	L	8 52.73	1.958	12 55 38.92	127.63	11 29 24.2	803.1	65.84	15 34.7	57 4.6	
21	U	21 16.71	2.040	13 21 39.58	132.59	-14 6 48.4	-768.7	67.12	15 41.7	57 30.3	II. S.
22	L	9 41.74	2.133	13 48 43.55	138.16	16 35 55.1	719.9	68.53	15 48.7	57 56.0	
22	U	22 7.92	2.232	14 16 57.05	144.15	18 53 43.9	655.4	70.03	15 55.5	58 21.0	II. S.
23	L	10 35.31	2.334	14 46 23.67	150.29	20 56 57.0	573.8	71.54	16 2.0	58 44.7	
23	U	23 3.92	2.433	15 17 3.37	156.25	-22 42 6.4	-474.8	72.98	16 7.9	59 6.5	
24	L	11 33.67	2.522	15 48 51.31	161.59	24 5 45.5	359.0	74.26	16 13.2	59 25.9	
25	U	0 4 3.8	2.593	16 21 37.28	165.85	25 4 44.7	228.7	75.28	16 17.7	59 42.3	
25	L	12 35.80	2.639	16 55 5.74	168.61	25 36 31.4	- 87.7	75.94	16 21.2	59 55.4	
26	U	1 7.59	2.655	17 28 56.89	169.60	-25 39 26.4	+ 58.9	76.19	16 23.8	60 4.8	I. N.
26	L	13 39.40	2.641	18 2 48.79	168.74	25 12 58.3	205.1	76.01	16 25.4	60 10.5	
27	U	2 10.86	2.598	18 36 19.99	166.19	24 17 46.7	345.2	75.44	16 25.9	60 12.4	I. S.
27	L	14 41.67	2.533	19 9 12.03	162.29	22 55 36.3	474.2	74.55	16 25.5	60 10.8	
28	U	3 11.61	2.454	19 41 11.32	157.48	-21 9 5.0	+588.3	73.42	16 24.1	60 5.8	I. S.
28	L	15 40.53	2.366	20 12 9.76	152.22	19 1 23.6	685.6	72.17	16 21.9	59 57.8	
29	U	4 8.40	2.278	20 42 4.66	146.95	16 36 0.4	765.3	70.89	16 19.1	59 47.5	I. S.
29	L	16 35.24	2.196	21 10 57.75	141.97	13 56 26.0	827.6	69.66	16 15.7	59 34.8	
30	U	5 1.14	2.122	21 38 54.16	137.54	-11 6 2.8	+873.6	68.54	16 11.8	59 20.6	I. S.
30	L	17 26.22	2.060	22 6 1.36	133.79	8 8 0.3	904.5	67.58	16 7.6	59 5.2	
Dec. 1	U	5 50.63	2.010	22 32 28.17	130.82	5 5 12.4	921.3	66.79	16 3.1	58 48.9	I. S.
1	L	18 14.52	1.974	22 58 24.11	128.65	- 2 0 18.0	925.7	66.23	15 58.6	58 32.1	
2	U	6 38.07	1.952	23 23 58.85	127.29	+ 1 4 17.5	+918.4	65.85	15 53.9	58 15.1	I. S.
2	L	19 1.42	1.942	23 49 21.92	126.69	4 6 19.3	900.2	65.68	15 49.3	57 58.1	
3	U	7 24.72	1.944	0 14 42.33	126.83	7 3 40.8	871.7	65.70	15 44.7	57 41.1	I. S.
3	L	19 48.12	1.957	0 40 8.36	127.62	9 54 20.8	833.3	65.88	15 40.1	57 24.4	
4	U	8 11.73	1.980	1 5 47.35	128.97	+12 36 22.1	+785.3	66.20	15 35.6	57 8.0	I. S.
4	L	20 35.66	2.010	1 31 45.45	130.77	15 7 49.5	727.7	66.64	15 31.2	56 51.9	
5	U	8 59.99	2.045	1 58 7.25	132.90	17 26 51.2	661.0	67.17	15 27.0	56 36.3	I. S.
5	L	21 24.76	2.083	2 24 55.55	135.16	19 31 38.4	585.4	67.72	15 22.8	56 21.0	
6	U	9 49.97	2.120	2 52 11.00	137.39	+21 20 28.7	+501.7	68.27	15 18.8	56 6.1	I. S.
6	L	22 15.61	2.153	3 19 51.91	139.37	22 51 49.1	410.6	68.75	15 14.8	55 51.6	
7	U	10 41.61	2.178	3 47 54.21	140.92	24 4 20.4	313.7	69.12	15 11.0	55 37.6	I. N.S.
7	L	23 7.85	2.194	4 16 11.58	141.86	24 57 1.8	212.6	69.34	15 7.3	55 24.1	
8	U	11 34.21	2.197	4 44 35.83	142.06	+25 29 14.8	+109.3	69.38	15 3.8	55 11.2	I. N.S.

FOR TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Culmination.	Wash. Mean Time.		Var. per Hour of Long.	Right Ascension of Center.			Var. per Hour of Long.	Geocentric Declination of Center.			Var. per Hour of Long.	S. T. of Semid. Passing Meridian.	Geocentric Semidiameter.		Equatorial Horizontal Parallax.		Bright Limb.
		h	m		m	h	m		s	s	°			'	"	"	s	
Dec. 9	L	0	05.3	2.187	5	12	57.63	141.44	+25	40	46.5	+ 6.1	69.23	15	0.5	54	59.0	II. N.S.
9	U	12	26.65	2.164	5	41	7.32	140.04	25	31	49.8	- 95.0	68.88	14	57.4	54	47.7	II. N.S.
9	L	052.42		2.129	6	8	55.74	137.93	25	3	3.0	191.9	68.35	14	54.5	54	37.2	II. N.S.
10	U	13	17.70	2.084	6	36	15.11	135.23	24	15	25.6	283.2	67.67	14	52.0	54	27.9	II. N.S.
11	L	1	42.40	2.032	7	2	59.47	132.12	+23	10	14.3	-367.5	66.89	14	49.8	54	19.9	II. S.
11	U	14	6.46	1.977	7	29	5.08	128.79	21	48	57.1	444.1	66.05	14	48.0	54	13.3	II. S.
12	L	2	29.84	1.921	7	54	30.40	125.43	20	13	8.1	512.8	65.19	14	46.7	54	8.3	II. S.
12	U	14	52.57	1.867	8	19	16.00	122.20	18	24	23.4	573.4	64.35	14	45.8	54	5.2	II. S.
13	L	3	14.68	1.818	8	43	24.25	119.23	+16	24	16.7	-626.4	63.58	14	45.5	54	4.1	II. S.
13	U	15	36.23	1.775	9	6	59.08	116.64	14	14	18.0	672.2	62.90	14	45.8	54	5.1	II. S.
14	L	3	57.31	1.740	9	30	5.59	114.53	11	55	51.3	711.1	62.34	14	46.7	54	8.4	II. S.
14	U	16	18.02	1.713	9	52	49.81	112.94	9	30	15.7	743.7	61.93	14	48.3	54	14.2	II. S.
15	L	4	38.47	1.697	10	15	18.58	111.95	+ 6	58	45.5	-770.3	61.67	14	50.5	54	22.5	II. S.
15	U	16	58.79	1.691	10	37	39.28	111.60	4	22	31.3	791.1	61.59	14	53.5	54	33.4	II. S.
16	L	5	19.10	1.697	10	59	59.82	111.94	+ 1	42	42.1	806.1	61.70	14	57.2	54	47.0	II. S.
16	U	17	39.55	1.714	11	22	28.57	112.98	- 0	59	31.8	815.2	62.00	15	1.6	55	3.2	II. S.
17	L	6	0.29	1.744	11	45	14.30	114.77	- 3	42	56.7	-817.8	62.51	15	6.8	55	22.1	II. S.
17	U	18	21.46	1.786	12	8	26.14	117.34	6	26	12.1	813.4	63.22	15	12.6	55	43.3	II. S.
18	L	6	43.21	1.842	12	32	13.53	120.99	9	7	47.3	800.9	64.13	15	19.0	56	6.9	II. S.
18	U	19	5.72	1.911	12	56	46.04	124.85	11	45	57.8	779.1	65.24	15	26.0	56	32.6	II. S.
19	L	7	29.14	1.993	13	22	13.13	129.79	-14	18	41.2	-746.2	66.53	15	33.4	56	59.9	II. S.
19	U	19	53.61	2.087	13	48	43.72	135.42	16	43	35.5	700.6	67.98	15	41.2	57	28.5	II. S.
20	L	8	19.27	2.190	14	16	25.53	141.63	18	57	56.6	640.3	69.54	15	49.2	57	57.9	II. S.
20	U	20	46.20	2.299	14	45	24.12	148.18	20	58	38.1	563.7	71.16	15	57.3	58	27.5	II. S.
21	L	9	14.44	2.408	15	15	41.81	154.74	-22	42	17.1	-469.8	72.75	16	5.2	58	56.5	II. S.
21	U	21	43.97	2.511	15	47	16.37	160.91	24	5	21.8	358.1	74.21	16	12.7	59	24.1	II. S.
22	L	10	14.64	2.598	16	20	0.03	166.18	25	4	26.7	230.1	75.44	16	19.7	59	49.7	II. N.
22	U	22	46.23	2.663	16	53	39.08	170.06	25	36	31.8	- 88.8	76.33	16	25.9	60	12.4	II. N.
23	L	11	18.43	2.698	17	27	54.34	172.17	-25	39	24.2	+ 61.1	76.80	16	31.1	60	31.5	II. N.
23	U	23	50.85	2.700	18	2	3.12	172.26	25	11	57.3	213.3	76.82	16	35.1	60	46.3	II. N.
24	L	12	23.10	2.670	18	36	41.80	170.51	24	14	22.0	361.3	76.41	16	37.9	60	56.4	II. N.
25	U	0	54.82	2.613	19	10	28.88	167.09	22	48	6.9	499.0	75.62	16	39.3	61	1.5	II. N.
25	L	13	25.74	2.537	19	43	27.34	162.50	-20	55	48.4	+621.3	74.55	16	39.3	61	1.5	II. N.
26	U	1	55.67	2.449	20	15	26.02	157.22	18	40	51.3	725.0	73.30	16	38.0	60	56.7	I. S.
26	L	14	24.51	2.358	20	46	19.67	151.73	16	7	9.6	808.5	71.99	16	35.4	60	47.2	I. S.
27	U	2	52.28	2.270	21	16	8.35	146.44	13	18	46.1	872.0	70.70	16	31.7	60	33.7	I. S.
27	L	15	19.03	2.190	21	44	56.14	141.63	-10	19	38.3	+916.1	69.52	16	27.1	60	16.7	I. S.
28	U	3	44.88	2.121	22	12	49.97	137.47	7	13	28.6	942.5	68.49	16	21.7	59	56.9	I. S.
28	L	16	9.98	2.065	22	39	58.51	134.06	4	3	40.0	953.0	67.64	16	15.7	59	34.9	I. S.
29	U	4	34.49	2.022	23	6	31.28	131.51	- 0	53	13.9	949.1	66.99	16	9.3	59	11.4	I. S.
29	L	16	58.57	1.993	23	32	38.12	129.76	+ 2	15	8.3	+932.6	66.54	16	2.7	58	47.1	I. S.
30	U	5	22.38	1.977	23	58	28.63	128.79	5	19	3.5	904.8	66.30	15	56.0	58	22.5	I. S.
30	L	17	46.06	1.973	0	24	11.91	128.55	8	16	22.6	866.7	66.24	15	49.3	57	58.1	I. S.
31	U	6	9.76	1.980	0	49	56.28	128.95	11	5	8.3	819.3	66.34	15	42.8	57	34.3	I. S.
31	L	18	33.61	1.996	1	15	49.05	129.92	+13	43	31.9	+763.1	66.59	15	36.5	57	11.3	I. S.

Dec. 9, U Defective Illumination of S. 0'.51.

Dec. 10, U Defective Illumination of N. 0'.53.

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	S.P. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	S.P. of Sem. Pass. Mer.
	h m s	h m s	" " "	"	" "	s		h m s	h m s	" " "	"	" "	s
Jan. 1	0 47	19 26 52.35	-24 7 45.2	6.5	2.5	0.18	Feb. 15	22 51	20 31 56.07	-16 16 45.3	12.1	4.6	0.32
2	0 50	19 33 55.48	23 52 40.5	6.6	2.5	0.18	16	22 47	20 31 54.04	16 29 35.5	11.8	4.5	0.31
3	0 53	19 40 56.74	23 36 1.2	6.6	2.5	0.18	17	22 43	20 32 20.40	16 40 56.9	11.6	4.4	0.31
4	0 56	19 47 55.68	23 17 48.2	6.7	2.5	0.18	18	22 40	20 33 13.53	16 50 47.7	11.4	4.3	0.30
5	0 59	19 54 51.80	22 58 1.8	6.8	2.6	0.19	19	22 38	20 34 31.73	16 59 6.9	11.2	4.2	0.30
6	1 2 20	1 44.48	-22 36 43.5	6.9	2.6	0.19	20	22 35	20 36 13.24	-17 5 53.9	10.9	4.1	0.29
7	1 5 20	8 33.08	22 13 55.1	7.0	2.6	0.19	21	22 33	20 38 16.40	17 11 8.7	10.7	4.1	0.29
8	1 7 20	15 16.87	21 49 38.7	7.1	2.7	0.19	22	22 32	20 40 39.56	17 14 51.5	10.5	4.0	0.28
9	1 10 20	21 55.01	21 23 57.3	7.2	2.7	0.20	23	22 31	20 43 21.15	17 17 2.4	10.3	3.9	0.27
10	1 13 20	28 26.51	20 56 55.0	7.3	2.8	0.20	24	22 30	20 46 19.72	17 17 42.3	10.2	3.9	0.27
11	1 15 20	34 50.37	-20 28 36.0	7.4	2.8	0.20	25	22 29	20 49 33.88	-17 16 51.8	10.0	3.8	0.26
12	1 17 20	41 5.33	19 59 6.2	7.5	2.9	0.20	26	22 29	20 53 2.34	17 14 31.6	9.8	3.7	0.26
13	1 20 20	47 10.02	19 28 32.9	7.7	2.9	0.20	27	22 28	20 56 43.94	17 10 42.2	9.6	3.7	0.25
14	1 22 20	53 2.89	18 57 4.3	7.8	3.0	0.21	28	22 28	21 0 37.60	17 5 24.8	9.5	3.6	0.25
15	1 23 20	58 42.23	18 24 50.0	8.0	3.0	0.21	29	22 28	21 4 42.30	16 58 39.9	9.3	3.5	0.25
16	1 25 21	4 6.07	-17 52 2.0	8.2	3.1	0.22	Mar. 1	22 29	21 8 57.16	-16 50 28.3	9.2	3.5	0.24
17	1 26 21	9 12.27	17 18 54.0	8.4	3.2	0.22	2	22 29	21 13 21.34	16 40 50.8	9.0	3.4	0.24
18	1 27 21	13 58.46	16 45 41.3	8.6	3.3	0.23	3	22 30	21 17 54.09	16 29 48.2	8.9	3.4	0.23
19	1 27 21	18 22.10	16 12 41.7	8.8	3.3	0.23	4	22 30	21 22 34.72	16 17 21.4	8.8	3.3	0.23
20	1 27 21	22 20.41	15 40 15.4	9.1	3.4	0.24	5	22 31	21 27 22.62	16 3 31.0	8.7	3.3	0.23
21	1 27 21	25 50.52	-15 8 43.7	9.3	3.5	0.24	6	22 32	21 32 17.23	-15 48 17.7	8.5	3.2	0.22
22	1 26 21	28 49.48	14 38 30.3	9.6	3.6	0.25	7	22 33	21 37 18.07	15 31 42.2	8.4	3.2	0.22
23	1 24 21	31 14.37	14 10 0.1	9.9	3.8	0.25	8	22 34	21 42 24.66	15 13 45.3	8.3	3.1	0.22
24	1 22 21	33 2.34	13 43 39.0	10.2	3.9	0.26	9	22 36	21 47 36.59	14 54 27.7	8.2	3.1	0.21
25	1 19 21	34 10.89	13 19 52.7	10.5	4.0	0.27	10	22 37	21 52 53.55	14 33 49.8	8.1	3.1	0.21
26	1 16 21	34 37.93	-12 59 5.8	10.9	4.1	0.28	11	22 38	21 58 15.18	-14 11 52.6	8.0	3.0	0.21
27	1 12 21	34 22.03	12 41 41.3	11.2	4.2	0.29	12	22 40	22 3 41.23	13 48 36.5	7.9	3.0	0.21
28	1 7 21	33 22.62	12 27 58.4	11.5	4.4	0.30	13	22 42	22 9 11.42	13 24 2.2	7.8	3.0	0.20
29	1 1 21	31 40.12	12 18 11.7	11.9	4.5	0.31	14	22 43	22 14 45.56	12 58 10.4	7.7	2.9	0.20
30	0 55 21	29 16.17	12 12 30.3	12.2	4.6	0.31	15	22 45	22 20 23.48	12 31 1.8	7.7	2.9	0.20
31	0 48 21	26 13.78	-12 10 56.4	12.5	4.7	0.32	16	22 47	22 26 5.02	-12 2 36.6	7.6	2.9	0.20
Feb. 1	0 40 21	22 37.23	12 13 24.2	12.8	4.9	0.33	17	22 48	22 31 50.06	11 32 55.9	7.5	2.8	0.19
2	0 32 21	18 32.07	12 19 40.7	13.0	4.9	0.34	18	22 50	22 37 38.49	11 2 0.0	7.4	2.8	0.19
3	0 24 21	14 4.94	12 29 26.2	13.2	5.0	0.34	19	22 52	22 43 30.24	10 29 49.7	7.4	2.8	0.19
4	0 15 21	9 23.21	12 42 14.1	13.4	5.1	0.35	20	22 54	22 49 25.28	9 56 25.6	7.3	2.8	0.19
5	0 6 21	4 34.73	-12 57 34.2	13.5	5.1	0.35	21	22 56	22 55 23.58	-9 21 48.3	7.2	2.7	0.19
5	23 58	20 59 47.24	13 14 53.7	13.5	5.1	0.35	22	22 58	23 1 25.11	8 45 58.4	7.2	2.7	0.18
6	23 49	20 55 8.14	13 33 39.0	13.5	5.1	0.35	23	23 0	23 7 29.91	8 8 56.7	7.1	2.7	0.18
7	23 41	20 50 44.05	13 53 18.3	13.5	5.1	0.35	24	23 3	23 13 38.01	7 30 44.0	7.1	2.7	0.18
8	23 33	20 46 40.59	14 13 21.8	13.4	5.1	0.35	25	23 5	23 19 49.46	6 51 20.8	7.0	2.7	0.18
9	23 25	20 43 2.27	-14 33 23.8	13.3	5.0	0.35	26	23 7	23 26 4.32	-6 10 48.3	7.0	2.6	0.18
10	23 18	20 39 52.43	14 53 1.9	13.1	5.0	0.34	27	23 9	23 32 22.69	5 29 7.3	6.9	2.6	0.18
11	23 12	20 37 13.27	15 11 58.4	12.9	4.9	0.34	28	23 12	23 38 44.67	4 46 18.8	6.9	2.6	0.17
12	23 6	20 35 6.02	15 29 58.6	12.7	4.8	0.33	29	23 14	23 45 10.39	4 2 23.8	6.8	2.6	0.17
13	23 0	20 33 31.03	15 46 51.8	12.5	4.8	0.33	30	23 17	23 51 39.95	3 17 23.8	6.8	2.6	0.17
14	22 55	20 32 28.01	-16 2 29.3	12.3	4.7	0.32	31	23 19	23 58 13.54	-2 31 20.1	6.7	2.6	0.17
15	22 51	20 31 56.07	-16 16 45.3	12.1	4.6	0.32	Apr. 1	23 22	0 4 51.26	-1 44 14.2	6.7	2.5	0.17

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Som. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Som. Pass. Mer.
	h m	h m s	" " "	" "	" "	s		h m	h m s	" " "	" "	" "	s
Apr.	23 22	0 4 51.26	- 1 44 14.2	6.7	2.5	0.17	May	18 1 21	5 5 44.01	+24 41 15.9	12.2	4.6	0.34
	2 23 25	0 11 33.31	0 56 8.0	6.7	2.5	0.17		19 1 19	5 7 49.58	24 34 12.7	12.5	4.8	0.35
	3 23 28	0 18 19.84	- 0 7 3.6	6.7	2.5	0.17		20 1 17	5 9 34.37	24 25 41.0	12.8	4.9	0.35
	4 23 31	0 25 11.04	+ 0 42 56.9	6.6	2.5	0.17		21 1 15	5 10 58.33	24 15 44.7	13.1	5.0	0.36
	5 23 34	0 32 7.06	1 33 50.5	6.6	2.5	0.17		22 1 12	5 12 1.48	24 4 427.4	13.4	5.1	0.37
	6 23 37	0 39 8.02	+ 2 25 33.8	6.6	2.5	0.17		23 1 9	5 12 43.99	+23 51 53.7	13.7	5.2	0.38
	7 23 40	0 46 14.11	3 18 3.6	6.6	2.5	0.17		24 1 5	5 13 6.13	23 38 7.8	14.0	5.3	0.39
	8 23 43	0 53 25.44	- 4 11 15.4	6.6	2.5	0.17		25 1 1	5 13 8.41	23 23 14.3	14.3	5.4	0.39
	9 23 46	1 0 42.09	5 5 4.2	6.6	2.5	0.17		26 0 57	5 12 51.40	23 7 18.4	14.5	5.5	0.40
	10 23 50	1 8 4.10	5 59 24.7	6.6	2.5	0.17		27 0 52	5 12 15.91	22 50 25.9	14.8	5.6	0.41
	11 23 53	1 15 31.49	+ 6 54 10.4	6.6	2.5	0.17		28 0 48	5 11 22.96	+22 32 43.1	15.0	5.7	0.41
	12 23 57	1 23 4.17	7 49 14.0	6.6	2.5	0.17		29 0 43	5 10 13.74	22 14 16.9	15.2	5.8	0.42
	14 0 1	1 30 41.97	8 44 27.2	6.6	2.5	0.17		30 0 37	5 8 49.70	21 55 15.0	15.4	5.9	0.42
	15 0 4	1 38 24.67	9 39 41.3	6.6	2.5	0.17		31 0 32	5 7 12.44	21 35 46.5	15.6	5.9	0.42
	16 0 8	1 46 11.98	10 34 46.3	6.7	2.5	0.17		June 1 0 26	5 5 23.75	21 16 0.6	15.7	6.0	0.43
	17 0 12	1 54 3.36	+11 29 30.8	6.7	2.5	0.17		2 0 20	5 3 25.62	+20 56 7.6	15.8	6.0	0.43
	18 0 16	2 1 58.30	12 23 43.9	6.7	2.6	0.17		3 0 14	5 1 20.14	20 36 18.2	15.9	6.0	0.43
	19 0 20	2 9 56.10	13 17 12.9	6.8	2.6	0.18		4 0 8	4 59 9.53	20 16 43.8	16.0	6.1	0.43
20 0 24	2 17 55.94	14 9 45.2	6.8	2.6	0.18	5 0 2	+56 56.07	19 57 36.2	16.0	6.1	0.43		
21 0 28	2 25 56.88	15 1 7.9	6.9	2.6	0.18	5 23 56	4 54 42.10	19 39 7.0	16.0	6.1	0.43		
22 0 32	2 33 57.88	+15 51 8.4	7.0	2.7	0.18	6 23 49	4 52 29.88	+19 21 28.0	15.9	6.0	0.43		
23 0 36	2 41 57.84	16 39 34.3	7.1	2.7	0.19	7 23 43	4 50 21.67	19 4 50.1	15.9	6.0	0.42		
24 0 40	2 49 55.53	17 26 14.1	7.2	2.7	0.19	8 23 37	4 48 19.59	18 49 24.0	15.8	6.0	0.42		
25 0 44	2 57 49.77	18 10 57.1	7.3	2.8	0.19	9 23 32	4 46 25.64	18 35 19.2	15.7	5.9	0.42		
26 0 48	3 5 39.31	18 53 33.8	7.4	2.8	0.20	10 23 26	4 44 41.68	18 22 44.3	15.5	5.9	0.41		
27 0 52	3 13 22.90	+19 33 56.5	7.5	2.9	0.20	11 23 21	4 43 9.41	+18 11 46.5	15.3	5.8	0.41		
28 0 56	3 20 59.34	20 11 58.6	7.7	2.9	0.21	12 23 15	4 41 50.30	18 2 31.5	15.1	5.7	0.40		
29 0 59	3 28 27.48	20 47 35.2	7.8	3.0	0.21	13 23 10	4 40 45.63	17 55 3.7	14.8	5.6	0.40		
30 1 2	3 35 46.24	21 20 42.8	8.0	3.0	0.21	14 23 6	4 39 56.52	17 49 26.1	14.6	5.5	0.39		
May 1 1 6	3 42 54.58	21 51 19.6	8.1	3.1	0.22	15 23 1	4 39 23.90	17 45 40.3	14.3	5.4	0.39		
2 1 9	3 49 51.52	+22 19 24.8	8.3	3.1	0.22	16 22 57	4 39 8.52	+17 43 46.7	14.1	5.3	0.38		
3 1 11	3 56 36.21	22 44 58.9	8.5	3.2	0.23	17 22 53	4 39 10.97	17 43 44.0	13.8	5.2	0.37		
4 1 14	4 3 7.80	23 8 3.4	8.7	3.3	0.24	18 22 49	4 39 31.68	17 45 30.4	13.5	5.1	0.36		
5 1 16	4 9 25.55	23 28 40.2	8.9	3.4	0.25	19 22 46	4 40 11.00	17 49 2.4	13.2	5.0	0.35		
6 1 18	4 15 28.72	23 46 52.6	9.1	3.5	0.26	20 22 43	4 41 9.16	17 54 16.3	12.9	4.9	0.34		
7 1 20	4 21 16.68	+24 2 43.8	9.3	3.5	0.26	21 22 40	4 42 26.28	+18 1 7.0	12.6	4.8	0.34		
8 1 22	4 26 48.80	24 16 17.6	9.5	3.6	0.27	22 22 38	4 44 2.46	18 9 29.4	12.3	4.7	0.33		
9 1 23	4 32 4.49	24 27 37.9	9.8	3.7	0.27	23 22 36	4 45 57.70	18 19 17.2	12.0	4.6	0.32		
10 1 24	4 37 3.23	24 36 49.2	10.0	3.8	0.28	24 22 34	4 48 12.01	18 30 24.0	11.8	4.5	0.31		
11 1 25	4 41 44.44	24 43 55.4	10.3	3.9	0.28	25 22 33	4 50 45.34	18 42 43.0	11.5	4.4	0.31		
12 1 25	4 46 7.65	+24 49 1.1	10.5	4.0	0.29	26 22 32	4 53 37.64	+18 56 6.6	11.2	4.3	0.30		
13 1 26	4 50 12.38	24 52 10.4	10.8	4.1	0.30	27 22 31	4 56 48.86	19 10 27.4	10.9	4.1	0.29		
14 1 25	4 53 58.17	24 53 27.5	11.1	4.2	0.31	28 22 31	5 0 18.95	19 25 37.2	10.7	4.0	0.29		
15 1 25	4 57 24.58	24 52 56.7	11.4	4.3	0.32	29 22 31	5 4 7.85	19 41 27.8	10.4	4.0	0.28		
16 1 24	5 0 31.25	24 50 41.9	11.7	4.4	0.32	30 22 31	5 8 15.52	19 57 50.5	10.1	3.9	0.28		
17 1 23	5 3 17.81	+24 46 47.0	12.0	4.5	0.33	July 1 22 31	5 12 41.89	+20 14 36.5	9.9	3.8	0.27		
18 1 21	5 5 44.01	+24 41 15.9	12.2	4.6	0.34	2 22 32	5 17 26.96	+20 31 36.2	9.7	3.7	0.27		

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	S. T. of Sem. Pass. Mer.
	h m	h m s	" " "	" "	" "	s		h m	h m s	" " "	" "	" "	s
July 1	22 31	5 12 41.89	+20 14 36.5	9.9	3.8	0.27	Aug. 17	1 15	10 58 28.62	+ 7 18 21.0	7.0	2.7	0.18
2	22 32	5 17 26.96	20 31 36.2	9.7	3.7	0.27	18	1 17	11 4 17.06	6 34 28.8	7.1	2.7	0.18
3	22 33	5 22 30.66	20 48 40.0	9.4	3.6	0.26	19	1 19	11 9 58.81	5 50 43.9	7.2	2.7	0.18
4	22 35	5 27 52.92	21 5 38.0	9.2	3.5	0.25	20	1 21	11 15 34.06	5 7 9.2	7.2	2.7	0.18
5	22 36	5 33 33.67	21 22 19.6	9.0	3.4	0.25	21	1 22	11 21 3.00	4 23 47.3	7.3	2.8	0.18
6	22 38	5 39 32.79	+21 38 33.8	8.8	3.3	0.24	22	1 24	11 26 25.73	+ 3 40 40.9	7.4	2.8	0.19
7	22 41	5 45 50.12	21 54 9.4	8.6	3.3	0.24	23	1 25	11 31 42.38	2 57 52.5	7.4	2.8	0.19
8	22 43	5 52 25.36	22 8 54.9	8.4	3.2	0.23	24	1 26	11 36 53.05	2 15 24.9	7.5	2.8	0.19
9	22 46	5 59 18.23	22 22 38.2	8.2	3.1	0.23	25	1 27	11 41 57.85	1 33 20.4	7.6	2.9	0.19
10	22 50	6 6 28.30	22 35 7.3	8.1	3.1	0.22	26	1 28	11 46 56.78	0 51 41.3	7.7	2.9	0.19
11	22 53	6 13 54.96	+22 46 9.7	7.9	3.0	0.22	27	1 29	11 51 49.87	+ 0 10 30.5	7.7	2.9	0.20
12	22 57	6 21 37.52	22 55 33.5	7.7	2.9	0.21	28	1 30	11 56 37.15	- 0 30 9.8	7.8	3.0	0.20
13	23 1	6 29 35.09	23 3 6.7	7.6	2.9	0.21	29	1 31	12 1 18.58	1 10 17.0	7.9	3.0	0.20
14	23 5	6 37 46.59	23 8 37.9	7.5	2.8	0.21	30	1 31	12 5 54.09	1 49 48.4	8.0	3.0	0.20
15	23 10	6 46 10.82	23 11 56.6	7.3	2.8	0.20	31	1 32	12 10 23.59	2 28 41.5	8.1	3.1	0.20
16	23 14	6 54 46.33	+23 12 53.4	7.2	2.7	0.20	Sept. 1	1 32	12 14 46.94	- 3 6 53.1	8.2	3.1	0.21
17	23 19	7 3 31.62	23 11 20.4	7.1	2.7	0.20	2	1 33	12 19 4.00	3 44 20.6	8.3	3.2	0.21
18	23 24	7 12 24.92	23 7 11.0	7.0	2.7	0.19	3	1 33	12 23 14.54	4 21 0.9	8.3	3.2	0.21
19	23 29	7 21 24.47	23 0 20.8	6.9	2.6	0.19	4	1 33	12 27 18.32	4 56 50.5	8.6	3.3	0.22
20	23 34	7 30 28.40	22 50 47.2	6.9	2.6	0.19	5	1 33	12 31 15.05	5 31 46.0	8.7	3.3	0.22
21	23 39	7 39 34.87	+22 38 29.7	6.8	2.6	0.19	6	1 33	12 35 4.39	- 6 5 43.6	8.8	3.3	0.22
22	23 44	7 48 42.06	22 23 29.7	6.7	2.6	0.18	7	1 33	12 38 45.93	6 38 39.1	8.9	3.4	0.23
23	23 50	7 57 48.22	22 5 50.6	6.7	2.5	0.18	8	1 32	12 42 19.25	7 10 28.5	9.1	3.4	0.23
24	23 55	8 6 51.80	21 45 37.1	6.6	2.5	0.18	9	1 32	12 45 43.79	7 41 6.6	9.2	3.5	0.23
25	23 59	8 15 51.25	21 22 56.0	6.6	2.5	0.18	10	1 31	12 48 59.01	8 10 28.5	9.4	3.6	0.24
27	0 5	8 24 45.36	+20 57 54.6	6.6	2.5	0.18	11	1 30	12 52 4.24	- 8 38 28.1	9.5	3.6	0.24
28	0 9	8 33 32.96	20 30 41.6	6.0	2.5	0.18	12	1 29	12 54 58.77	9 4 59.7	9.7	3.7	0.25
29	0 14	8 42 13.21	20 1 25.4	6.5	2.5	0.18	13	1 28	12 57 41.81	9 29 56.2	9.9	3.7	0.25
30	0 19	8 50 45.29	19 30 15.9	6.5	2.5	0.18	14	1 27	13 0 12.44	9 53 9.9	10.0	3.8	0.26
31	0 23	8 59 8.68	18 57 22.1	6.5	2.5	0.18	15	1 25	13 2 29.75	10 14 32.9	10.2	3.9	0.26
Aug. 1	0 28	9 7 22.93	+18 22 53.2	6.5	2.5	0.17	16	1 23	13 4 32.67	-10 33 55.8	10.4	4.0	0.27
2	0 32	9 15 27.78	17 46 58.6	6.5	2.5	0.17	17	1 21	13 6 20.08	10 51 8.7	10.6	4.0	0.27
3	0 36	9 23 23.03	17 9 46.9	6.5	2.5	0.17	18	1 18	13 7 50.80	11 6 0.9	10.8	4.1	0.28
4	0 39	9 31 8.62	16 31 26.4	6.0	2.5	0.17	19	1 16	13 9 3.57	11 18 20.5	11.0	4.2	0.28
5	0 43	9 38 44.60	15 52 5.1	6.0	2.5	0.17	20	1 13	13 9 57.08	11 27 54.8	11.2	4.3	0.29
6	0 47	9 46 11.02	+15 11 50.4	6.0	2.5	0.17	21	1 9	13 10 30.06	-11 34 30.2	11.5	4.4	0.30
7	0 50	9 53 28.03	14 30 49.2	6.0	2.5	0.17	22	1 6	13 10 41.24	11 37 52.7	11.7	4.4	0.30
8	0 53	10 0 35.78	13 49 8.1	6.7	2.5	0.17	23	1 1	13 10 29.42	11 37 47.6	11.9	4.5	0.31
9	0 56	10 7 34.52	13 6 52.9	6.7	2.5	0.17	24	0 57	13 9 53.57	11 34 0.5	12.1	4.6	0.31
10	0 59	10 14 24.46	12 24 9.4	6.7	2.5	0.17	25	0 52	13 8 52.89	11 26 17.4	12.4	4.7	0.32
11	1 2	10 21 5.86	+11 41 2.6	6.8	2.6	0.17	26	0 47	13 7 26.89	-11 14 26.0	12.6	4.8	0.32
12	1 4	10 27 38.94	10 57 37.5	6.8	2.6	0.18	27	0 41	13 5 35.55	10 58 16.4	12.8	4.8	0.33
13	1 7	10 34 3.97	10 13 58.3	6.8	2.6	0.18	28	0 35	13 3 19.42	10 37 42.2	12.9	4.9	0.33
14	1 9	10 40 21.21	9 30 9.5	6.9	2.6	0.18	29	0 28	13 0 39.68	10 12 42.8	13.1	5.0	0.34
15	1 11	10 46 30.92	8 46 14.5	6.9	2.6	0.18	30	0 21	12 57 38.40	9 43 24.2	13.2	5.0	0.34
16	1 13	10 52 33.31	+ 8 2 17.3	7.0	2.7	0.18	Oct. 1	0 14	12 54 18.45	- 9 10 0.5	13.3	5.1	0.34
17	1 15	10 58 28.62	+ 7 18 21.0	7.0	2.7	0.18	2	0 6	12 50 43.64	- 8 32 56.1	13.4	5.1	0.34

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam. S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam. S. T. of Sem. Pass. Mer.
	h m	h m s	° ' "	" "	" s		h m	h m s	° ' "	" "	" s
Oct. 1	0 14	12 54 18.45	- 9 10 0.5	13.3	5.1 0.34	Nov. 15	23 28	15 9 24.78	-17 24 42.1	6.2	2.3 0.16
2	0 6	12 50 43.64	8 32 56.1	13.4	5.1 0.34	16	23 30	15 15 46.37	17 56 48.7	6.2	2.3 0.16
2 23	59	12 46 58.56	7 52 45.0	13.4	5.1 0.34	17	23 33	15 22 9.37	18 28 3.4	6.1	2.3 0.16
3	23 51	12 43 8.73	7 10 11.4	13.4	5.1 0.34	18	23 35	15 28 33.79	18 58 24.2	6.1	2.3 0.16
4	23 43	12 39 20.14	6 26 9.0	13.3	5.0 0.34	19	23 38	15 34 59.69	19 27 49.7	6.1	2.3 0.16
5	23 36	12 35 39.14	- 5 41 37.9	13.2	5.0 0.34	20	23 40	15 41 27.14	-19 56 18.1	6.1	2.3 0.16
6	23 28	12 32 12.09	4 57 42.3	13.0	4.9 0.33	21	23 43	15 47 56.14	20 23 48.1	6.1	2.3 0.16
7	23 21	12 29 5.08	4 15 26.7	12.8	4.9 0.33	22	23 45	15 54 26.74	20 50 17.8	6.1	2.3 0.16
8	23 15	12 26 23.61	3 35 52.9	12.5	4.8 0.32	23	23 48	16 0 58.98	21 15 45.9	6.1	2.3 0.16
9	23 9	12 24 12.31	2 59 55.9	12.2	4.6 0.31	24	23 50	16 7 32.88	21 40 11.0	6.1	2.3 0.16
10	23 3	12 22 34.83	- 2 28 21.7	11.9	4.5 0.30	25	23 53	16 14 8.46	-22 3 31.5	6.1	2.3 0.17
11	22 58	12 21 33.74	2 1 45.9	11.6	4.4 0.29	26	23 56	16 20 45.70	22 25 45.9	6.1	2.3 0.17
12	22 54	12 21 10.43	1 40 33.7	11.3	4.3 0.29	27	23 58	16 27 24.65	22 46 52.8	6.1	2.3 0.17
13	22 50	12 21 25.29	1 24 58.6	10.9	4.1 0.28	29	0 1	16 34 5.29	23 6 50.9	6.1	2.3 0.17
14	22 47	12 22 17.77	1 15 4.8	10.6	4.0 0.27	30	0 4	16 40 47.60	23 25 38.9	6.1	2.3 0.17
15	22 45	12 23 46.53	- 1 10 47.6	10.3	3.9 0.26	Dec. 1	0 7	16 47 31.54	-23 43 15.1	6.1	2.3 0.17
16	22 43	12 25 49.60	1 11 55.3	9.9	3.8 0.25	2	0 10	16 54 17.10	23 59 38.1	6.1	2.3 0.17
17	22 41	12 28 24.58	1 18 10.5	9.6	3.7 0.25	3	0 12	17 1 4.20	24 14 46.6	6.1	2.3 0.17
18	22 40	12 31 28.80	1 29 12.3	9.4	3.6 0.24	4	0 15	17 7 52.81	24 28 39.2	6.2	2.3 0.17
19	22 40	12 34 59.42	1 44 36.6	9.1	3.5 0.23	5	0 18	17 14 42.84	24 41 14.6	6.2	2.3 0.17
20	22 40	12 38 53.59	- 2 3 58.4	8.8	3.4 0.22	6	0 21	17 21 34.19	-24 52 31.3	6.2	2.4 0.17
21	22 40	12 43 8.57	2 26 52.2	8.6	3.3 0.22	7	0 24	17 28 26.78	25 2 27.6	6.2	2.4 0.17
22	22 41	12 47 41.71	2 52 52.0	8.4	3.2 0.21	8	0 27	17 35 20.45	25 11 2.6	6.3	2.4 0.17
23	22 42	12 52 30.57	3 21 35.1	8.2	3.1 0.21	9	0 30	17 42 15.08	25 18 14.8	6.3	2.4 0.18
24	22 43	12 57 32.95	3 52 36.8	8.0	3.0 0.20	10	0 33	17 49 10.47	25 24 2.9	6.3	2.4 0.18
25	22 44	13 2 46.87	- 4 25 36.3	7.8	3.0 0.20	11	0 36	17 56 6.46	-25 28 25.6	6.4	2.4 0.18
26	22 46	13 8 10.55	5 0 13.9	7.7	2.9 0.19	12	0 39	18 3 2.80	25 31 21.8	6.4	2.4 0.18
27	22 47	13 13 42.49	5 36 11.9	7.5	2.9 0.19	13	0 42	18 9 59.27	25 32 50.2	6.5	2.5 0.18
28	22 49	13 19 21.41	6 13 14.0	7.4	2.8 0.19	14	0 45	18 16 55.58	25 32 49.9	6.5	2.5 0.18
29	22 51	13 25 6.13	6 51 5.7	7.2	2.8 0.19	15	0 48	18 23 51.40	25 31 20.0	6.6	2.5 0.18
30	22 53	13 30 55.76	- 7 29 34.5	7.1	2.7 0.18	16	0 51	18 30 46.38	-25 28 19.4	6.6	2.5 0.19
31	22 54	13 36 49.47	8 8 28.7	7.0	2.7 0.18	17	0 54	18 37 40.13	25 23 47.8	6.7	2.5 0.19
Nov. 1	22 56	13 42 46.66	8 47 38.6	6.9	2.6 0.18	18	0 57	18 44 32.17	25 17 44.6	6.8	2.6 0.19
2	22 59	13 48 46.77	9 26 55.1	6.8	2.6 0.18	19	0 59	18 51 22.02	25 10 9.7	6.8	2.6 0.19
3	23 1	13 54 49.38	10 6 10.5	6.8	2.6 0.17	20	1 2	18 58 9.10	25 1 3.0	6.9	2.6 0.19
4	23 3	14 0 54.12	-10 45 17.8	6.7	2.5 0.17	21	1 5	19 4 52.74	-24 50 24.9	7.0	2.7 0.20
5	23 5	14 7 0.74	11 24 11.1	6.6	2.5 0.17	22	1 8	19 11 32.25	24 38 16.1	7.1	2.7 0.20
6	23 7	14 13 9.06	12 2 45.1	6.5	2.5 0.17	23	1 10	19 18 6.76	24 24 38.1	7.2	2.7 0.20
7	23 9	14 19 18.89	12 40 54.9	6.5	2.5 0.17	24	1 13	19 24 35.39	24 9 32.3	7.3	2.8 0.20
8	23 12	14 25 30.13	13 18 36.4	6.4	2.4 0.17	25	1 15	19 30 57.04	23 53 1.3	7.4	2.8 0.21
9	23 14	14 31 42.69	-13 55 45.9	6.4	2.4 0.17	26	1 18	19 37 10.55	-23 35 8.3	7.6	2.9 0.21
10	23 16	14 37 56.54	14 32 20.0	6.3	2.4 0.17	27	1 20	19 43 14.56	23 15 57.2	7.7	2.9 0.21
11	23 18	14 44 11.65	15 8 15.5	6.3	2.4 0.16	28	1 22	19 49 7.55	22 55 33.1	7.9	3.0 0.22
12	23 21	14 50 28.01	15 43 29.9	6.3	2.4 0.16	29	1 23	19 54 47.84	22 34 2.1	8.0	3.0 0.22
13	23 23	14 56 45.64	16 18 0.7	6.2	2.4 0.16	30	1 25	20 0 13.47	22 11 31.7	8.2	3.1 0.22
14	23 25	15 3 4.55	-16 51 45.4	6.2	2.4 0.16	31	1 26	20 5 22.35	-21 48 10.6	8.4	3.2 0.23
15	23 28	15 9 24.78	-17 24 42.1	6.2	2.3 0.16	32	1 27	20 10 12.08	-21 24 9.6	8.6	3.3 0.23

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.		Apparent Right Ascension.			Apparent Declination.			Hor. Par.	Semi-diam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.		Apparent Right Ascension.			Apparent Declination.			Hor. Par.	Semi-diam.	S. T. of Sem. Pass. Mer.	
	h	m	h	m	s	"	"	"					h	m	h	m	s	"	"	"				"
Jan.	1	2 1	20 41	3 47	-20 5 9.3	6.1	5.9	0.42	Feb.	15	2 33	0 10 39.19	+ 0 27 41.4	7.3	7.1	0.47	Mar.	1	2 38	1 15 27.96	+ 8 13 58.3	7.9	7.7	0.52
	2	2 2	20 46	9 8.5	19 45 59.8	6.1	5.9	0.42		16	2 33	0 14 59.45	0 59 14.3	7.3	7.1	0.48		2	2 39	1 19 47.47	8 44 4.1	8.0	7.8	0.52
	3	2 3	20 51	14 8.7	19 26 16.7	6.1	6.0	0.42		17	2 33	0 19 19.41	1 30 46.3	7.4	7.2	0.48		3	2 39	1 24 7.18	9 13 58.5	8.0	7.8	0.53
	4	2 4	20 56	18 5.1	19 6 0 6	6.2	6.0	0.42		18	2 34	0 23 39.10	2 2 16 6	7.4	7.2	0.48		4	2 39	1 28 27.12	9 43 40.7	8.1	7.9	0.53
	5	2 5	21 1 20.76	18 45 12.4	18 45 12.4	6.2	6.0	0.42		19	2 34	0 27 58.56	2 33 44.5	7.5	7.2	0.48		5	2 40	1 32 47.32	10 13 10.1	8.1	7.9	0.54
	6	2 6	21 6 21.61	-18 23 52.8	6.2	6.0	0.42	20		2 35	0 32 17.83	+ 3 5 9.4	7.5	7.3	0.49	6		2 40	1 37 7.79	+10 42 26.1	8.2	8.0	0.54	
	7	2 7	21 11 21.06	18 2 2 6	6.2	6.0	0.42	21		2 35	0 36 36.94	3 36 30.5	7.5	7.3	0.49	7		2 41	1 41 28.54	11 11 27.9	8.2	8.0	0.54	
	8	2 8	21 16 19.10	17 39 42.5	6.2	6.1	0.42	22		2 35	0 40 55.94	4 7 47.2	7.6	7.4	0.49	8		2 41	1 45 49.61	11 40 14.8	8.3	8.1	0.55	
	9	2 9	21 21 15.73	17 16 53.3	6.3	6.1	0.42	23		2 36	0 45 14.86	4 38 58.7	7.6	7.4	0.50	9		2 41	1 50 11.01	12 8 46.1	8.3	8.1	0.55	
	10	2 10	21 26 10.96	16 53 35.9	6.3	6.1	0.43	24		2 36	0 49 33.73	5 10 4.4	7.7	7.4	0.50	10		2 42	1 54 32.75	12 37 1.0	8.4	8.2	0.56	
	11	2 11	21 31 4 8.0	-16 29 51.1	6.3	6.1	0.43	25		2 36	0 53 52.59	+ 5 41 3.6	7.7	7.5	0.50	11		2 42	1 58 54.84	+13 4 58.9	8.5	8.2	0.56	
	12	2 12	21 35 57.24	16 5 39 6	6.3	6.1	0.43	26		2 37	0 58 11.47	6 11 55.7	7.8	7.5	0.51	12		2 43	2 3 17.30	13 32 39.3	8.5	8.3	0.57	
	13	2 13	21 40 48.29	15 41 2 4	6.3	6.2	0.43	27		2 37	1 2 30.41	6 42 39.9	7.8	7.6	0.51	13		2 43	2 7 40.15	14 0 1.3	8.6	8.3	0.57	
	14	2 14	21 45 37.96	15 16 0 1	6.4	6.2	0.43	28		2 38	1 6 49.45	7 13 15.4	7.8	7.6	0.51	14		2 44	2 12 3.38	14 27 4.2	8.6	8.4	0.58	
	15	2 15	21 50 26.28	14 50 33.5	6.4	6.2	0.43	29		2 38	1 11 8.62	7 43 41.8	7.9	7.7	0.52	15		2 44	2 16 27.00	14 53 47.5	8.7	8.4	0.58	
16	2 16	21 55 13.25	-14 24 43.5	6.4	6.2	0.43	30	2 38	1 15 27.96	+ 8 13 58.3	7.9	7.7	0.52	16	2 45	2 20 51.03	+15 20 10.6	8.7	8.5	0.59				
17	2 16	21 59 58.91	13 58 30.9	6.4	6.2	0.43	31	2 39	1 19 47.47	8 44 4.1	8.0	7.8	0.52	17	2 45	2 25 15.46	15 46 12.8	8.8	8.5	0.59				
18	2 17	22 4 43.26	13 31 56.4	6.5	6.3	0.43	1	2 39	1 24 7.18	9 13 58.5	8.0	7.8	0.53	18	2 46	2 29 40.30	16 11 53.3	8.9	8.6	0.60				
19	2 18	22 9 26.33	13 5 0 8	6.5	6.3	0.43	2	2 39	1 28 27.12	9 43 40.7	8.1	7.9	0.53	19	2 46	2 34 5.56	16 37 11.6	8.9	8.7	0.60				
20	2 19	22 14 8.15	12 37 45.0	6.5	6.3	0.43	3	2 39	1 32 47.32	10 13 10.1	8.1	7.9	0.54	20	2 46	2 38 31.24	17 2 7.1	9.0	8.7	0.61				
21	2 19	22 18 48.75	-12 10 9 6	6.6	6.4	0.43	4	2 39	1 37 7.79	+10 42 26.1	8.2	8.0	0.54	21	2 47	2 42 57.33	+17 26 39.2	9.1	8.8	0.62				
22	2 20	22 23 28.15	11 42 15 5	6.6	6.4	0.43	5	2 40	1 41 28.54	11 11 27.9	8.2	8.0	0.54	22	2 47	2 47 23.84	17 50 47.3	9.1	8.9	0.62				
23	2 21	22 28 6.37	11 14 3 5	6.6	6.4	0.43	6	2 41	1 45 49.61	11 40 14.8	8.3	8.1	0.55	23	2 48	2 51 50.75	18 14 30.8	9.2	8.9	0.63				
24	2 22	22 32 43.45	10 45 34.2	6.6	6.4	0.44	7	2 41	1 50 11.01	12 8 46.1	8.3	8.1	0.55	24	2 48	2 56 18.07	18 37 49.1	9.3	9.0	0.63				
25	2 22	22 37 19.42	10 16 48.5	6.6	6.5	0.44	8	2 42	1 54 32.75	12 37 1.0	8.4	8.2	0.56	25	2 49	3 0 45.79	19 0 41.8	9.4	9.1	0.64				
26	2 23	22 41 54.32	- 9 47 47.2	6.7	6.5	0.44	9	2 42	1 58 54.84	+13 4 58.9	8.5	8.2	0.56	26	2 49	3 5 13.90	+19 23 8.2	9.4	9.2	0.65				
27	2 23	22 46 28.17	9 18 31.1	6.7	6.5	0.44	10	2 43	2 3 17.30	13 32 39.3	8.5	8.3	0.57	27	2 50	3 9 42.38	19 45 7.7	9.5	9.2	0.65				
28	2 24	22 51 1.02	8 49 0 8	6.7	6.5	0.44	11	2 43	2 7 40.15	14 0 1.3	8.6	8.3	0.57	28	2 51	3 14 11.22	20 6 39.8	9.6	9.3	0.66				
29	2 25	22 55 32.90	8 19 17.1	6.8	6.6	0.44	12	2 44	2 12 3.38	14 27 4.2	8.6	8.4	0.58	29	2 51	3 18 40.39	20 27 43.9	9.7	9.4	0.67				
30	2 25	23 0 3 8.3	7 49 20.9	6.8	6.6	0.44	13	2 44	2 16 27.00	14 53 47.5	8.7	8.4	0.58	30	2 52	3 23 9.87	20 48 19.5	9.7	9.5	0.68				
31	2 26	23 4 43.86	- 7 19 12.9	6.8	6.6	0.45	14	2 45	2 20 51.03	+15 20 10.6	8.7	8.5	0.59	1	2 52	3 27 39.63	+21 8 26.2	9.8	9.5	0.68				
Feb.	1	2 26	23 9 3 0.2	6 48 53.8	6.9	6.6	0.45	15	2 45	2 25 15.46	15 46 12.8	8.8	8.5	0.59	2	2 53	3 32 9.63	+21 28 3.3	9.9	9.6	0.69			
	2	2 27	23 13 31.35	6 18 24.4	6.9	6.7	0.45	16	2 46	2 29 40.30	16 11 53.3	8.9	8.6	0.60	3	2 53	3 37 1.00	+21 36 5.6	9.9	9.6	0.69			
	3	2 27	23 17 58.87	5 47 45.5	6.9	6.7	0.45	17	2 46	2 34 5.56	16 37 11.6	8.9	8.7	0.60	4	2 54	3 41 52.17	+21 45 27.9	9.9	9.6	0.69			
	4	2 28	23 22 25.63	5 16 58.0	6.9	6.7	0.45	18	2 46	2 38 31.24	17 2 7.1	9.0	8.7	0.61	5	2 54	3 46 43.28	+21 54 40.1	9.9	9.6	0.69			
	5	2 28	23 26 51.66	- 4 46 2 6	7.0	6.8	0.45	19	2 47	2 42 57.33	+17 26 39.2	9.1	8.8	0.62	6	2 55	3 51 34.39	+22 3 52.2	9.9	9.6	0.69			
	6	2 29	23 31 16.98	4 14 59.9	7.0	6.8	0.46	20	2 47	2 47 23.84	17 50 47.3	9.1	8.9	0.62	7	2 55	3 56 25.50	+22 13 4.3	9.9	9.6	0.69			
	7	2 29	23 35 41.64	3 43 50.8	7.0	6.8	0.46	21	2 48	2 51 50.75	18 14 30.8	9.2	8.9	0.63	8	2 56	4 0 16.61	+22 22 56.4	9.9	9.6	0.69			
	8	2 30	23 40 5 6.8	3 12 36.1	7.1	6.9	0.46	22	2 48	2 56 18.07	18 37 49.1	9.3	9.0	0.63	9	2 56	4 0 57.72	+22 32 7.4	9.9	9.6	0.69			
	9	2 30	23 44 29.12	2 41 16.5	7.1	6.9	0.46	23	2 49	3 0 45.79	19 0 41.8	9.4	9.1	0.64	10	2 57	4 1 48.83	+22 41 58.5	9.9	9.6	0.69			
	10	2 31	23 48 51.99	- 2 9 52.8	7.1	6.9	0.46	24	2 49	3 5 13.90	+19 23 8.2	9.4	9.2	0.65	11	2 57	4 7 40.00	+22 51 9.0	9.9	9.6	0.69			
	11	2 31	23 53 14.33	1 38 25.8	7.2	7.0	0.46	25	2 50	3 9 42.38	19 45 7.7	9.5	9.2	0.65	12	2 58	4 12 31.11	+23 0 59.1	9.9	9.6	0.69			
	12	2 31	23 57 36.18	1 6 56.2	7.2	7.0	0.47	26	2 51	3 14 11.22	20 6 39.8	9.6	9.3	0.66	13	2 58	4 17 21.94	+23 10 10.2	9.9	9.6	0.69			
	13	2 32	0 1 57.59	0 35 24.6	7.2	7.0	0.47	27	2 51	3 18 40.39	20 27 43.9	9.7	9.4	0.67	14	2 59	4 20 12.66	+23 19 11.3	9.9	9.6	0.69			
	14	2 32	0 6 18.58	- 0 3 51.8	7.3	7.1	0.47	28	2 52	3 23 9.87	20 48 19.5	9.7	9.5	0.68	15	2 59	4 23 3.59	+23 28 12.4	9.9	9.6	0.69			
	15	2 33	0 10 39.19	+ 0 27 41.4	7.3	7.1	0.47	29	2 52	3 27 39.63	+21 8 26.2	9.8	9.5	0.68	16	2 59	4 26 54.30	+23 37 13.5	9.9	9.6	0.69			
	16	2 33	0 14 59.45	+ 0 59 14.3	7.3	7.1	0.48	30	2 53	3 32 9.63	+21 28 3.3	9.9	9.6	0.69	17	2 59	4 30 4.91	+23 46 14.6	9.9	9.6	0.69			
17	2 34	0 19 19.41	1 30 46.3	7.4	7.2	0.48	31	2 54	3 37 1.00	+21 36 5.6	9.9	9.6	0.69	18	3 0	4 34 55.42	+23 55 15.7	9.9	9.6	0.69				
18	2 34	0 23 39.10	2 2 16 6	7.4	7.2	0.48	1	3 0	4 38 58.7	+21 45 27.9	9.9	9.6	0.69	19	3 0	4 39 46.33	+24 4 16.8	9.9	9.6	0.69				
19	2 34	0 27 58.56	2 33 44.5	7.5	7.2	0.48	2	3 0	4 43 40.7	+21 54 40.1	9.9	9.6	0.69	20	3 0	4 44 37								

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.			Apparent Right Ascension.			Apparent Declination.			Hor. Par.	Semi-diam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.			Apparent Right Ascension.			Apparent Declination.			Hor. Par.	Semi-diam.	S. T. of Sem. Pass. Mer.																																																																																																																																																																																																																																																																																																																																																																																																																						
	h	m	s	°	'	"	°	'	"					h	m	s	°	'	"	°	'	"				°	'	"																																																																																																																																																																																																																																																																																																																																																																																																																			
pr.	1	2 53	3 32 9.63	+21 28	3.3	9.9	9.6	0.69	May	16	3 3	6 39 18.22	+26 41	57.0	16.4	15.9	1.19		17	3 2	6 42 27.99	26 37	4.5	16.7	16.2	1.21		18	3 1	6 45 32.84	26 31	48.8	16.9	16.4	1.22		19	3 0	6 48 32.61	26 26	10.8	17.2	16.7	1.24		20	2 59	6 51 27.11	26 20	11.5	17.4	16.9	1.26		21	2 58	6 54 16.16	+26 13	51.6	17.7	17.2	1.28		22	2 57	6 56 59.57	26 7	11.8	18.0	17.4	1.30		23	2 55	6 59 37.14	26 0	13.0	18.2	17.7	1.32		24	2 54	7 2 8.68	25 52	56.0	18.5	18.0	1.33		25	2 52	7 4 33.96	25 45	21.8	18.8	18.2	1.35		26	2 51	7 6 52.78	+25 37	31.1	19.1	18.5	1.37		27	2 49	7 9 4.94	25 29	24.9	19.4	18.8	1.39		28	2 47	7 11 10.21	25 21	4.1	19.7	19.2	1.42		29	2 45	7 13 8.35	25 12	29.5	20.0	19.5	1.44		30	2 43	7 14 59.12	25 3	42.0	20.4	19.8	1.46		31	2 41	7 16 42.28	+24 54	42.5	20.7	20.1	1.48	June	1	2 39	7 18 17.58	24 45	31.9	21.0	20.4	1.50		2	2 36	7 19 44.77	24 36	11.0	21.4	20.7	1.53		3	2 33	7 21 3.62	24 26	40.7	21.7	21.1	1.55		4	2 31	7 22 13.89	24 17	1.9	22.1	21.4	1.58		5	2 28	7 23 15.34	+24 7	15.3	22.4	21.8	1.60		6	2 25	7 24 7.72	23 57	21.6	22.8	22.1	1.62		7	2 21	7 24 50.79	23 47	21.6	23.2	22.5	1.65		8	2 18	7 25 24.34	23 37	16.1	23.5	22.9	1.67		9	2 14	7 25 48.16	23 27	5.7	23.9	23.2	1.69		10	2 11	7 26 2.06	+23 16	50.9	24.3	23.6	1.72		11	2 7	7 26 5.89	23 6	32.3	24.7	24.0	1.74		12	2 3	7 25 59.49	22 56	10.5	25.1	24.3	1.77		13	1 59	7 25 42.77	22 45	46.1	25.4	24.7	1.79		14	1 54	7 25 15.65	22 35	19.3	25.8	25.1	1.82		15	1 50	7 24 38.10	+22 24	50.5	26.2	25.4	1.84	ay	16	1 45	7 23 50.15	22 14	20.1	26.5	25.8	1.86		17	1 40	7 22 51.89	22 3	48.3	26.9	26.1	1.88		18	1 35	7 21 43.44	21 53	15.3	27.3	26.5	1.90		19	1 30	7 20 24.99	21 42	41.4	27.6	26.8	1.93		20	1 24	7 18 56.81	+21 32	6.9	27.9	27.1	1.95		21	1 19	7 17 19.20	21 21	32.1	28.2	27.4	1.97		22	1 13	7 15 32.55	21 10	57.4	28.5	27.6	1.99		23	1 7	7 13 37.33	21 0	23.2	28.8	28.0	2.01		24	1 1	7 11 34.06	20 49	50.1	29.1	28.3	2.02		25	0 55	7 9 23.32	+20 39	18.6	29.3	28.5	2.03		26	0 49	7 7 5.77	20 28	49.6	29.6	28.7	2.05		27	0 43	7 4 42.15	20 18	23.9	29.8	28.9	2.06		28	0 36	7 2 13.25	20 8	2.6	30.0	29.1	2.07		29	0 30	6 59 39.91	19 57	46.8	30.1	29.2	2.07		30	0 23	6 57 3.03	+19 47	37.8	30.3	29.3	2.08		July 1	0 17	6 54 23.54	+19 37	37.2	30.3	29.4	2.08

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.
	h m	h m s	" ' "	" "	" "	s		h m	h m s	" ' "	" "	" "	s
July 1	0 17	6 54 23.54	+19 37 37.2	30.3	29.4	2.08	Aug. 16	21 7	6 49 16.62	+18 6 28.6	17.4	16.9	1.19
2	0 10	6 51 42.39	19 27 46.5	30.3	29.5	2.08	17	21 6	6 52 5.42	18 8 10.8	17.1	16.6	1.17
3	0 3	6 49 0.57	19 18 7.3	30.4	29.5	2.08	18	21 5	6 54 58.84	18 9 40.4	16.9	16.4	1.15
3 23 57	6 46 19.08	19 8 41.4	30.3	29.5	2.08	19	21 4	6 57 56.69	18 10 56.4	16.7	16.2	1.14	
4	23 50	6 43 38.89	18 59 30.8	30.3	29.4	2.08	20	21 3	7 0 58.80	18 11 57.9	16.4	15.9	1.12
5	23 44	6 41 0.97	+18 50 37.3	30.2	29.3	2.07	21	21 2	7 4 5.01	+18 12 43.9	16.2	15.7	1.11
6	23 37	6 38 26.26	18 42 2.7	30.1	29.2	2.06	22	21 1	7 7 15.15	18 13 13.3	16.0	15.5	1.09
7	23 31	6 35 55.65	18 33 48.6	30.0	29.1	2.05	23	21 0	7 10 29.07	18 13 25.0	15.8	15.3	1.08
8	23 24	6 33 30.01	18 25 56.8	29.8	28.9	2.04	24	21 0	7 13 46.62	18 13 18.3	15.6	15.1	1.06
9	23 18	6 31 10.13	18 18 29.0	29.6	28.7	2.02	25	20 59	7 17 7.64	18 12 52.4	15.4	14.9	1.05
10	23 12	6 28 56.77	+18 11 26.8	29.4	28.5	2.00	26	20 59	7 20 31.99	+18 12 6.6	15.1	14.7	1.03
11	23 6	6 26 50.61	18 4 51.5	29.1	28.3	1.98	27	20 58	7 23 59.54	18 11 0.1	14.9	14.5	1.02
12	23 0	6 24 52.24	17 58 44.0	28.9	28.0	1.96	28	20 58	7 27 30.14	18 9 32.2	14.7	14.3	1.01
13	22 54	6 23 2.19	17 53 5.0	28.6	27.7	1.94	29	20 57	7 31 3.66	18 7 42.2	14.6	14.2	1.00
14	22 49	6 21 20.93	17 47 55.3	28.3	27.5	1.92	30	20 57	7 34 39.98	18 5 29.4	14.4	14.0	0.98
15	22 43	6 19 48.86	+17 43 15.3	28.0	27.2	1.90	31	20 57	7 38 18.97	+18 2 53.3	14.2	13.8	0.97
16	22 38	6 18 26.29	17 39 5.3	27.7	26.9	1.88	Sept. 1	20 56	7 42 0.53	17 59 53.3	14.0	13.6	0.96
17	22 33	6 17 13.46	17 35 25.2	27.3	26.5	1.86	2	20 56	7 45 44.54	17 56 29.0	13.9	13.5	0.95
18	22 28	6 16 10.53	17 32 14.7	27.0	26.2	1.84	3	20 56	7 49 30.88	17 52 39.8	13.7	13.3	0.93
19	22 23	6 15 17.61	17 29 33.3	26.6	25.9	1.81	4	20 56	7 53 19.46	17 48 25.2	13.6	13.2	0.92
20	22 18	6 14 34.74	+17 27 20.4	26.2	25.5	1.78	5	20 56	7 57 10.17	+17 43 44.8	13.4	13.0	0.91
21	22 14	6 14 1.92	17 25 35.1	25.9	25.1	1.76	6	20 56	8 1 2.92	17 38 38.2	13.2	12.8	0.90
22	22 9	6 13 39.11	17 24 16.6	25.5	24.8	1.73	7	20 56	8 4 57.62	17 33 5.0	13.1	12.7	0.89
23	22 5	6 13 26.20	17 23 23.7	25.1	24.4	1.71	8	20 56	8 8 54.18	17 27 4.8	12.9	12.6	0.88
24	22 1	6 13 23.08	17 22 55.3	24.8	24.0	1.68	9	20 56	8 12 52.52	17 20 37.3	12.8	12.4	0.87
25	21 58	6 13 29.58	+17 22 50.0	24.4	23.7	1.66	10	20 56	8 16 52.55	+17 13 42.2	12.6	12.3	0.86
26	21 54	6 13 45.54	17 23 6.5	24.0	23.3	1.63	11	20 56	8 20 54.19	17 6 19.3	12.5	12.1	0.85
27	21 50	6 14 10.78	17 23 43.3	23.6	23.0	1.61	12	20 56	8 24 57.34	16 58 28.4	12.4	12.0	0.84
28	21 47	6 14 45.08	17 24 38.8	23.3	22.6	1.58	13	20 56	8 29 1.94	16 50 9.3	12.2	11.9	0.83
29	21 44	6 15 28.22	17 25 51.6	22.9	22.3	1.56	14	20 56	8 33 7.91	16 41 21.9	12.1	11.8	0.82
30	21 41	6 16 19.97	+17 27 20.0	22.6	21.9	1.53	15	20 56	8 37 15.16	+16 32 6.1	12.0	11.6	0.81
31	21 38	6 17 20.10	17 29 2.5	22.2	21.6	1.51	16	20 57	8 41 23.63	16 22 21.8	11.9	11.5	0.80
Aug. 1	21 35	6 18 28.37	17 30 57.3	21.9	21.2	1.49	17	20 57	8 45 33.22	16 12 9.0	11.7	11.4	0.79
2	21 32	6 19 44.55	17 33 2.8	21.5	20.9	1.46	18	20 57	8 49 43.87	16 1 27.7	11.6	11.3	0.78
3	21 30	6 21 8.40	17 35 17.4	21.2	20.6	1.44	19	20 57	8 53 55.51	15 50 18.0	11.5	11.2	0.77
4	21 27	6 22 39.69	+17 37 39.6	20.9	20.3	1.42	20	20 58	8 58 8.07	+15 38 40.0	11.4	11.1	0.77
5	21 25	6 24 18.20	17 40 7.8	20.5	19.9	1.40	21	20 58	9 2 21.49	15 26 33.8	11.3	11.0	0.76
6	21 23	6 26 3.69	17 42 40.3	20.2	19.6	1.37	22	20 58	9 6 35.70	15 13 59.4	11.2	10.9	0.75
7	21 21	6 27 55.94	17 45 15.5	19.9	19.3	1.35	23	20 59	9 10 50.65	15 0 57.2	11.1	10.8	0.74
8	21 19	6 29 54.74	17 47 52.0	19.6	19.0	1.33	24	20 59	9 15 6.26	14 47 27.3	11.0	10.7	0.73
9	21 17	6 31 59.87	+17 50 28.1	19.3	18.7	1.31	25	20 59	9 19 22.49	+14 33 29.9	10.9	10.6	0.73
10	21 15	6 34 11.14	17 53 2.3	19.0	18.5	1.29	26	21 0	9 23 39.29	14 19 5.2	10.8	10.5	0.72
11	21 14	6 36 28.35	17 55 33.1	18.7	18.2	1.27	27	21 0	9 27 56.61	14 4 13.5	10.7	10.4	0.71
12	21 12	6 38 51.30	17 57 59.2	18.4	17.9	1.26	28	21 0	9 32 14.40	13 48 55.1	10.6	10.3	0.70
13	21 11	6 41 19.78	18 0 19.2	18.2	17.6	1.24	29	21 1	9 36 32.61	13 33 10.3	10.5	10.2	0.70
14	21 9	6 43 53.62	+18 2 31.6	17.9	17.4	1.22	30	21 1	9 40 51.21	+13 16 59.4	10.4	10.1	0.69
15/21	8 6 46 32.63	+18 4 35.1	17.6	17.1	1.20	Oct. 1	21 1	9 45 10.17	+13 0 22.7	10.3	10.0	0.68	

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.		Apparent Right Ascension.			Apparent Declination.			Hor. Par.	Semi-diam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.		Apparent Right Ascension.			Apparent Declination.			Hor. Par.	Semi-diam.	S. T. of Sem. Pass. Mer.
	h	m	h	m	s	°	'	"					h	m	h	m	s	°	'	"			
t.	1	21	1	9 45	10.17	+13	02 27.	10.3	10.0	0.68	Nov. 16	21	22	13	7	5.08	-	5	6 35.7	7.5	7.3	0.49	
	2	21	2	9 49	29.45	12 43	20.5	10.2	9.9	0.68		17	21	22	13	11 36.88	5 33	21.3	7.4	7.2	0.48		
	3	21	2	9 53	49.01	12 25	53.2	10.1	9.8	0.67		18	21	23	13	16 7.34	6 0	3.7	7.4	7.2	0.48		
	4	21	2	9 58	8.84	12 8	1.2	10.0	9.7	0.66		19	21	24	13	20 39.50	6 26	42.0	7.4	7.2	0.48		
	5	21	3	10	2 28.90	11 49	44.8	9.9	9.7	0.66		20	21	24	13	25 12.37	6 53	15.5	7.3	7.1	0.48		
	6	21	3	10	6 49.19	+11 31	4.4	9.9	9.6	0.65		21	21	25	13	29 45.98	-	7 19	43.4	7.3	7.1	0.48	
	7	21	4	10	11 9.67	11 12	0.4	9.8	9.5	0.65		22	21	25	13	34 20.35	7 46	5.0	7.3	7.1	0.48		
	8	21	4	10	15 30.34	10 52	33.3	9.7	9.4	0.64		23	21	26	13	38 55.51	8 12	19.4	7.2	7.0	0.47		
	9	21	4	10	19 51.18	10 32	43.4	9.6	9.3	0.63		24	21	27	13	43 31.48	8 38	25.8	7.2	7.0	0.47		
	10	21	5	10	24 12.18	10 12	31.2	9.5	9.3	0.63		25	21	27	13	48 8.29	9 4	23.5	7.1	6.9	0.47		
	11	21	5	10	28 33.32	+ 9 51	57.1	9.5	9.2	0.62		26	21	28	13	52 45.95	-	9 30	11.5	7.1	6.9	0.47	
	12	21	6	10	32 54.60	9 31	1.7	9.4	9.1	0.62		27	21	29	13	57 24.50	9 55	49.1	7.1	6.9	0.47		
	13	21	6	10	37 16.02	9 9	45.5	9.3	9.1	0.61		28	21	29	14	2 3.96	10 21	15.6	7.1	6.9	0.46		
	14	21	6	10	41 37.56	8 48	9.0	9.2	9.0	0.61		29	21	30	14	6 44.35	10 46	30.3	7.0	6.8	0.46		
	15	21	7	10	45 59.20	8 26	12.8	9.2	8.9	0.60		30	21	31	14	11 25.69	11 11	32.3	7.0	6.8	0.46		
	16	21	7	10	50 20.94	+ 8 3	357.3	9.1	8.8	0.60		Dec. 1	21	32	14	16 8.02	-11 36	20.8	7.0	6.8	0.46		
	17	21	8	10	54 42.79	7 41	23.3	9.0	8.8	0.59			2	21	32	14	20 51.35	12 0	55.0	6.9	6.7	0.46	
	18	21	8	10	59 4.74	7 18	31.3	9.0	8.7	0.59			3	21	33	14	25 35.71	12 25	14.2	6.9	6.7	0.46	
	19	21	9	11	3 26.79	6 55	21.9	8.9	8.7	0.58			4	21	34	14	30 21.12	12 49	17.5	6.9	6.7	0.46	
	20	21	9	11	7 48.94	6 31	55.7	8.9	8.6	0.58			5	21	35	14	35 7.59	13 13	4.2	6.8	6.6	0.45	
	21	21	9	11	12 11.18	+ 6 8	13.4	8.8	8.5	0.57			6	21	36	14	39 55.16	-13 36	33.5	6.8	6.6	0.45	
	22	21	10	11	16 33.53	5 44	15.5	8.7	8.5	0.57			7	21	37	14	44 43.85	13 59	44.7	6.8	6.6	0.45	
	23	21	10	11	20 55.98	5 20	2.8	8.7	8.4	0.56			8	21	37	14	49 33.67	14 22	36.8	6.7	6.5	0.45	
	24	21	11	11	25 18.54	4 55	35.8	8.6	8.4	0.56			9	21	38	14	54 24.65	14 45	9.1	6.7	6.5	0.45	
	25	21	11	11	29 41.23	4 30	55.2	8.6	8.3	0.56			10	21	39	14	59 16.79	15 7	20.8	6.7	6.5	0.45	
	26	21	12	11	34 4.04	+ 4 6	1.7	8.5	8.2	0.55		11	21	40	15	4 10.10	-15 29	11.1	6.6	6.5	0.45		
	27	21	12	11	38 26.99	3 40	56.0	8.4	8.2	0.55		12	21	41	15	9 4.60	15 50	39.2	6.6	6.4	0.45		
	28	21	12	11	42 50.09	3 15	38.7	8.4	8.1	0.54		13	21	42	15	14 0.29	16 11	44.3	6.6	6.4	0.44		
	29	21	13	11	47 13.35	2 50	10.5	8.3	8.1	0.54		14	21	43	15	18 57.19	16 32	25.6	6.6	6.4	0.44		
	30	21	13	11	51 36.79	2 24	32.1	8.3	8.0	0.54		15	21	44	15	23 55.30	16 52	42.4	6.5	6.4	0.44		
31	21	14	11	56 0.43	+ 1 58	44.1	8.2	8.0	0.53	16	21	45	15	28 54.61	-17 12	33.8	6.5	6.3	0.44				
ov.	1	21	14	12 0 24.29	1 32	47.0	8.2	7.9	0.53	17	21	46	15	33 55.12	17 31	59.1	6.5	6.3	0.44				
	2	21	15	12 4 48.38	1 6	41.7	8.1	7.9	0.53	18	21	47	15	38 56.84	17 50	57.4	6.5	6.3	0.44				
	3	21	15	12 9 12.73	0 40	28.8	8.1	7.8	0.52	19	21	49	15	43 59.76	18 9	28.0	6.4	6.3	0.44				
	4	21	16	12 13 37.37	+ 0 14	9.1	8.0	7.8	0.52	20	21	50	15	49 3.87	18 27	30.2	6.4	6.2	0.44				
	5	21	16	12 18 2.32	- 0 12	16.8	8.0	7.7	0.52	21	21	51	15	54 9.16	-18 45	3.2	6.4	6.2	0.44				
	6	21	17	12 22 27.60	0 38	48.3	7.9	7.7	0.51	22	21	52	15	59 15.62	19 2 6.2	6.4	6.2	0.44					
	7	21	17	12 26 53.25	1 5	24.8	7.9	7.7	0.51	23	21	53	16	4 23.23	19 18	38.6	6.3	6.2	0.44				
	8	21	18	12 31 19.30	1 32	5.6	7.8	7.6	0.51	24	21	54	16	9 31.97	19 34	39.7	6.3	6.1	0.44				
	9	21	18	12 35 45.78	1 58	49.8	7.8	7.6	0.51	25	21	56	16	14 41.81	19 50	8.7	6.3	6.1	0.44				
	10	21	19	12 40 12.70	- 2 25	36.8	7.7	7.5	0.50	26	21	57	16	19 52.74	-20 5 4.9	6.3	6.1	0.43					
	11	21	19	12 44 40.08	2 52	25.9	7.7	7.5	0.50	27	21	58	16	25 4.73	20 19	27.7	6.3	6.1	0.43				
	12	21	20	12 49 7.96	3 19	16.2	7.7	7.4	0.50	28	21	59	16	30 17.76	20 33	16.6	6.2	6.1	0.43				
	13	21	20	12 53 36.38	3 46	7.1	7.6	7.4	0.49	29	22	1	16 35 31.80	20 46	30.9	6.2	6.0	0.43					
	14	21	21	12 58 5.35	4 12	57.8	7.6	7.4	0.49	30	22	2	16 40 46.82	20 59	9.9	6.2	6.0	0.43					
	15	21	21	13 2 34.91	- 4 39	47.6	7.5	7.3	0.49	31	22	3	16 46 2.78	-21 11	13.0	6.2	6.0	0.43					
	16	21	22	13 7 5.08	- 5 6	35.7	7.5	7.3	0.49	32	22	5	16 51 19.66	-21 22	39.8	6.2	6.0	0.43					

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.
	h m	h m s	° ' "	" "	" "	s		h m	h m s	° ' "	" "	" "	s
Jan. 0	15 34	10 12 47.73	+14 49 57.2	10.6	6.1	0.42	Feb. 15	11 47	9 26 11.58	+19 51 4.0	12.9	7.4	0.53
1	15 30	10 12 48.38	14 46 23.4	10.7	6.2	0.42	16	11 41	9 24 38.64	19 57 26.5	12.9	7.4	0.53
2	15 26	10 12 45.99	14 55 6.0	10.8	6.2	0.43	17	11 36	9 23 6.77	20 3 35.0	12.9	7.4	0.53
3	15 22	10 12 40.54	14 58 5.5	10.9	6.2	0.43	18	11 30	9 21 36.12	20 9 28.9	12.8	7.4	0.52
4	15 18	10 12 32.01	15 1 21.7	11.0	6.3	0.43	19	11 25	9 20 6.87	20 15 7.9	12.8	7.3	0.52
5	15 14	10 12 20.36	+15 4 54.3	11.1	6.4	0.44	20	11 20	9 18 39.18	+20 20 31.5	12.8	7.3	0.52
6	15 10	10 12 5.58	15 8 43.3	11.2	6.4	0.44	21	11 14	9 17 13.18	20 25 39.4	12.7	7.3	0.52
7	15 6	10 11 47.65	15 12 48.6	11.3	6.5	0.44	22	11 9	9 15 49.01	20 30 31.3	12.6	7.2	0.52
8	15 1	10 11 26.55	15 17 10.0	11.4	6.5	0.45	23	11 4	9 14 26.81	20 35 7.0	12.6	7.2	0.52
9	14 57	10 11 2.30	15 21 47.3	11.4	6.6	0.45	24	10 58	9 13 6.73	20 39 26.3	12.5	7.2	0.51
10	14 52	10 10 34.87	+15 26 40.3	11.5	6.6	0.45	25	10 53	9 11 48.88	+20 43 29.2	12.5	7.1	0.51
11	14 48	10 10 4.28	15 31 48.8	11.6	6.6	0.46	26	10 48	9 10 33.36	20 47 15.4	12.4	7.1	0.51
12	14 44	10 9 30.54	15 37 12.3	11.7	6.7	0.46	27	10 43	9 9 20.32	20 50 44.8	12.3	7.1	0.51
13	14 39	10 8 53.64	15 42 50.5	11.8	6.7	0.46	28	10 38	9 8 9.85	20 53 57.5	12.3	7.0	0.51
14	14 34	10 8 13.60	15 48 43.1	11.8	6.8	0.47	29	10 33	9 7 2.05	20 56 53.4	12.2	7.0	0.50
15	14 30	10 7 30.44	+15 54 49.6	11.9	6.8	0.47	Mar. 1	10 28	9 5 57.01	+20 59 32.4	12.1	6.9	0.50
16	14 25	10 6 44.18	16 1 9.4	12.0	6.9	0.47	2	10 23	9 4 54.83	21 1 54.8	12.0	6.9	0.50
17	14 20	10 5 54.84	16 7 42.2	12.1	6.9	0.47	3	10 18	9 3 55.58	21 4 0.4	12.0	6.8	0.49
18	14 16	10 5 2.47	16 14 27.3	12.2	7.0	0.49	4	10 13	9 2 59.34	21 5 49.5	11.9	6.8	0.49
19	14 11	10 4 7.11	16 21 24.3	12.2	7.0	0.49	5	10 8	9 2 6.13	21 7 22.2	11.8	6.8	0.49
20	14 6	10 3 8.77	+16 28 32.5	12.3	7.1	0.49	6	10 3	9 1 16.03	+21 8 38.7	11.7	6.7	0.49
21	14 1	10 2 7.54	16 35 51.2	12.4	7.1	0.50	7	9 58	9 0 29.08	21 9 39.2	11.6	6.7	0.47
22	13 56	10 1 3.47	16 43 19.8	12.4	7.1	0.50	8	9 54	8 59 45.30	21 10 24.1	11.6	6.6	0.47
23	13 51	9 59 56.63	16 50 57.4	12.5	7.2	0.50	9	9 49	8 59 4.71	21 10 53.5	11.5	6.6	0.47
24	13 46	9 58 47.10	16 58 43.3	12.6	7.2	0.51	10	9 45	8 58 27.33	21 11 7.7	11.4	6.5	0.46
25	13 41	9 57 34.93	+17 6 36.7	12.6	7.2	0.51	11	9 40	8 57 53.17	+21 11 7.0	11.3	6.5	0.46
26	13 35	9 56 20.24	17 14 36.6	12.7	7.3	0.51	12	9 36	8 57 22.23	21 10 51.8	11.2	6.4	0.46
27	13 30	9 55 3.12	17 22 42.1	12.7	7.3	0.51	13	9 31	8 56 54.50	21 10 22.4	11.1	6.4	0.45
28	13 25	9 53 43.68	17 30 52.2	12.8	7.3	0.51	14	9 27	8 56 29.96	21 9 38.8	11.0	6.3	0.45
29	13 20	9 52 22.04	17 39 6.1	12.8	7.4	0.52	15	9 23	8 56 8.62	21 8 41.6	10.9	6.3	0.45
30	13 14	9 50 58.33	+17 47 22.5	12.9	7.4	0.52	16	9 18	8 55 50.44	+21 7 31.0	10.8	6.2	0.44
31	13 9	9 49 32.69	17 55 40.4	12.9	7.4	0.52	17	9 14	8 55 35.39	21 6 7.3	10.8	6.2	0.44
Feb. 1	13 4	9 48 5.26	18 3 58.9	12.9	7.4	0.52	18	9 10	8 55 23.46	21 4 30.8	10.7	6.1	0.44
2	12 58	9 46 36.21	18 12 16.7	13.0	7.4	0.52	19	9 6	8 55 14.61	21 2 41.9	10.6	6.1	0.43
3	12 53	9 45 5.71	18 20 32.7	13.0	7.4	0.52	20	9 2	8 55 8.80	21 0 40.8	10.5	6.0	0.43
4	12 47	9 43 33.93	+18 28 45.6	13.0	7.5	0.53	21	8 58	8 55 6.00	+20 58 27.7	10.4	6.0	0.43
5	12 42	9 42 1.02	18 36 54.6	13.0	7.5	0.53	22	8 54	8 55 6.17	20 56 3.0	10.3	5.9	0.42
6	12 36	9 40 27.19	18 44 58.5	13.0	7.5	0.53	23	8 50	8 55 9.28	20 53 26.9	10.2	5.8	0.42
7	12 31	9 38 52.62	18 52 56.3	13.0	7.5	0.53	24	8 46	8 55 15.28	20 50 39.6	10.1	5.8	0.42
8	12 25	9 37 17.49	19 0 46.9	13.0	7.5	0.53	25	8 43	8 55 24.13	20 47 41.1	10.0	5.8	0.41
9	12 20	9 35 41.99	+19 8 29.3	13.0	7.5	0.53	26	8 39	8 55 35.80	+20 44 31.8	10.0	5.7	0.41
10	12 14	9 34 6.30	19 16 2.5	13.0	7.5	0.53	27	8 35	8 55 50.25	20 41 11.8	9.9	5.7	0.41
11	12 9	9 32 30.62	19 23 25.8	13.0	7.5	0.53	28	8 32	8 56 7.43	20 37 41.4	9.8	5.6	0.40
12	12 3	9 30 55.13	19 30 38.3	13.0	7.5	0.53	29	8 28	8 56 27.30	20 34 0.5	9.7	5.6	0.40
13	11 58	9 29 20.00	19 37 39.3	13.0	7.5	0.53	30	8 24	8 56 49.82	20 30 9.4	9.6	5.5	0.40
14	11 52	9 27 45.43	+19 44 28.1	13.0	7.4	0.53	31	8 21	8 57 14.96	+20 26 8.4	9.5	5.5	0.39
15	11 47	9 26 11.58	+19 51 4.0	12.9	7.4	0.53	Apr. 1	8 18	8 57 42.66	+20 21 57.5	9.5	5.4	0.39

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.
pr.	h m	h m s	" " "	"	"	s	May 17	h m	h m s	" " "	"	"	s
	1 8 18	8 57 42.66	+20 21 57.5	9.5	5.4	0.39	17 6 11	9 51 49.76	+14 42 45.5	6.6	3.8	0.26	
	2 8 14	8 58 12.88	20 17 36.8	9.4	5.4	0.39	18 6 8	9 53 29.13	14 32 36.6	6.6	3.8	0.26	
	3 8 11	8 58 45.57	20 13 6.5	9.3	5.3	0.38	19 6 6	9 55 9.26	14 22 21.6	6.6	3.8	0.26	
	4 8 7	8 59 20.67	20 8 26.8	9.2	5.3	0.38	20 6 4	9 56 50.14	14 12 0.4	6.5	3.7	0.26	
	5 8 4	8 59 58.15	20 3 37.8	9.1	5.2	0.38	21 6 2	9 58 31.73	14 1 33.0	6.5	3.7	0.26	
	6 8 1	9 0 37.95	+19 58 39.6	9.1	5.2	0.37	22 5 59	10 0 14.05	+13 50 59.5	6.4	3.7	0.25	
	7 7 58	9 1 20.02	19 53 32.4	9.0	5.2	0.37	23 5 57	10 1 57.08	13 40 19.9	6.4	3.7	0.25	
	8 7 54	9 2 4.30	19 48 16.3	8.9	5.1	0.37	24 5 55	10 3 40.79	13 29 34.2	6.4	3.6	0.25	
	9 7 51	9 2 50.75	19 42 51.7	8.8	5.1	0.36	25 5 53	10 5 25.18	13 18 42.4	6.3	3.6	0.25	
	10 7 48	9 3 39.31	19 37 18.2	8.8	5.0	0.36	26 5 50	10 7 10.22	13 7 44.4	6.3	3.6	0.25	
	11 7 45	9 4 29.93	+19 31 36.4	8.7	5.0	0.36	27 5 48	10 8 55.92	+12 56 40.5	6.2	3.6	0.25	
	12 7 42	9 5 22.55	19 25 46.1	8.6	4.9	0.35	28 5 46	10 10 42.26	12 45 30.6	6.2	3.6	0.25	
	13 7 39	9 6 17.13	19 19 47.7	8.6	4.9	0.35	29 5 44	10 12 29.21	12 34 14.8	6.2	3.5	0.24	
	14 7 36	9 7 13.61	19 13 41.1	8.5	4.9	0.35	30 5 42	10 14 16.77	12 22 52.9	6.1	3.5	0.24	
	15 7 33	9 8 11.95	19 7 26.5	8.4	4.8	0.35	31 5 40	10 16 4.93	12 11 25.3	6.1	3.5	0.24	
	16 7 30	9 9 12.09	+19 1 3.9	8.3	4.8	0.33	June 1 5 38	10 17 53.67	+11 59 52.0	6.1	3.5	0.24	
	17 7 27	9 10 13.99	18 54 33.6	8.3	4.7	0.33	2 5 36	10 19 42.99	11 48 13.1	6.0	3.5	0.24	
	18 7 24	9 11 17.60	18 47 55.5	8.2	4.7	0.33	3 5 33	10 21 32.86	11 36 28.3	6.0	3.4	0.24	
	19 7 21	9 12 22.89	18 41 9.8	8.1	4.7	0.33	4 5 31	10 23 23.27	11 24 37.9	6.0	3.4	0.24	
	20 7 18	9 13 29.82	18 34 16.5	8.1	4.6	0.32	5 5 29	10 25 14.21	11 12 42.1	5.9	3.4	0.23	
	21 7 16	9 14 38.33	+18 27 15.5	8.0	4.6	0.32	6 5 27	10 27 5.68	+11 0 40.9	5.9	3.4	0.23	
	22 7 13	9 15 48.38	18 20 7.0	8.0	4.6	0.32	7 5 25	10 28 57.65	10 48 34.2	5.9	3.4	0.23	
	23 7 10	9 16 59.95	18 12 51.1	7.9	4.5	0.31	8 5 23	10 30 50.12	10 36 22.3	5.8	3.3	0.23	
	24 7 8	9 18 13.01	18 5 27.7	7.8	4.5	0.31	9 5 21	10 32 43.06	10 24 5.1	5.8	3.3	0.23	
	25 7 5	9 19 27.52	17 57 56.9	7.8	4.4	0.31	10 5 19	10 34 36.47	10 11 42.8	5.8	3.3	0.23	
	26 7 2	9 20 43.44	+17 50 18.6	7.7	4.4	0.31	11 5 17	10 36 30.33	+ 9 59 15.5	5.7	3.3	0.23	
	27 6 59	9 22 0.74	17 42 33.0	7.6	4.4	0.30	12 5 15	10 38 24.65	9 46 43.1	5.7	3.3	0.23	
	28 6 57	9 23 19.41	17 34 40.1	7.6	4.4	0.30	13 5 13	10 40 19.41	9 34 5.8	5.7	3.3	0.22	
	29 6 54	9 24 39.40	17 26 39.9	7.5	4.3	0.30	14 5 11	10 42 14.59	9 21 23.7	5.6	3.2	0.22	
30 6 52	9 26 0.67	17 18 32.4	7.5	4.3	0.30	15 5 9	10 44 10.20	9 8 36.6	5.6	3.2	0.22		
ay	1 6 49	9 27 23.20	+17 10 17.7	7.4	4.3	0.30	16 5 7	10 46 6.23	+ 8 55 44.9	5.6	3.2	0.22	
	2 6 47	9 28 46.95	17 1 55.9	7.4	4.2	0.29	17 5 5	10 48 2.67	8 42 48.5	5.6	3.2	0.22	
	3 6 44	9 30 11.89	16 53 26.8	7.3	4.2	0.29	18 5 3	10 49 59.52	8 29 47.4	5.5	3.2	0.22	
	4 6 42	9 31 38.00	16 44 50.7	7.3	4.2	0.29	19 5 1	10 51 56.75	8 16 41.7	5.5	3.1	0.22	
	5 6 39	9 33 5.24	16 36 7.6	7.2	4.1	0.29	20 4 59	10 53 54.40	8 3 31.3	5.5	3.1	0.22	
	6 6 37	9 34 33.59	+16 27 17.6	7.2	4.1	0.28	21 4 57	10 55 52.44	+ 7 50 16.5	5.5	3.1	0.22	
	7 6 34	9 36 3.00	16 18 20.7	7.1	4.1	0.28	22 4 55	10 57 50.88	7 36 57.1	5.4	3.1	0.21	
	8 6 32	9 37 33.46	16 9 16.9	7.0	4.0	0.28	23 4 53	10 59 49.72	7 23 33.2	5.4	3.1	0.21	
	9 6 29	9 39 4.93	16 0 6.4	7.0	4.0	0.28	24 4 51	11 1 148.95	7 10 5.1	5.4	3.1	0.21	
	10 6 27	9 40 37.38	15 50 49.0	7.0	4.0	0.28	25 4 49	11 3 48.57	6 56 32.7	5.4	3.1	0.21	
	11 6 24	9 42 10.79	+15 41 25.1	6.9	4.0	0.28	26 4 47	11 5 48.59	+ 6 42 55.8	5.3	3.1	0.21	
	12 6 22	9 43 45.11	15 31 54.6	6.9	3.9	0.27	27 4 45	11 7 48.97	6 29 14.8	5.3	3.0	0.21	
	13 6 20	9 45 20.34	15 22 17.6	6.8	3.9	0.27	28 4 43	11 9 49.75	6 15 29.7	5.3	3.0	0.21	
	14 6 18	9 46 56.45	15 12 34.2	6.8	3.9	0.27	29 4 41	11 11 50.89	6 1 40.6	5.3	3.0	0.21	
	15 6 15	9 48 33.40	15 2 44.3	6.7	3.8	0.27	30 4 39	11 13 52.42	5 47 47.4	5.2	3.0	0.21	
16 6 13	9 50 11.18	+14 52 48.0	6.7	3.8	0.27	July 1 4 38	11 15 54.32	+ 5 33 50.3	5.2	3.0	0.21		
17 6 11	9 51 49.76	+14 42 45.5	6.6	3.8	0.26	2 4 36	11 17 56.59	+ 5 19 49.5	5.2	3.0	0.21		

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Polar Semidiam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Polar Semidiam.	S. T. of Sem. Pass. Mer.
	h m s	h m s	° ' "	"	"	s		h m s	h m s	° ' "	"	"	s
Jan. 1	4 53	23 33 48.83	- 4 11 22.6	1.7	18.2	1.30	Aug. 16	16 32	2 13 55.30	+11 59 28.8	1.9	20.7	1.50
2	4 50	23 34 20.83	4 7 43.0	1.7	18.1	1.29	17	16 28	2 14 1.34	11 59 45.4	1.9	20.8	1.51
3	4 46	23 34 53.34	4 4 0.3	1.7	18.1	1.29	18	16 24	2 14 6.63	11 59 58.1	1.9	20.9	1.51
4	4 43	23 35 26.37	4 0 14.2	1.7	18.0	1.29	19	16 21	2 14 11.16	12 0 7.0	2.0	20.9	1.51
5	4 39	23 35 59.90	3 56 24.9	1.7	18.0	1.28	20	16 17	2 14 14.93	12 0 11.9	2.0	21.0	1.52
6	4 36	23 36 33.92	- 3 52 32.5	1.7	17.9	1.28	21	16 13	2 14 17.95	+12 0 13.0	2.0	21.1	1.52
7	4 33	23 37 8.42	3 48 37.0	1.7	17.9	1.28	22	16 9	2 14 20.20	12 0 10.0	2.0	21.1	1.53
8	4 29	23 37 43.41	3 44 38.5	1.7	17.8	1.27	23	16 5	2 14 21.67	12 0 3.2	2.0	21.2	1.53
9	4 26	23 38 18.86	3 40 37.1	1.7	17.8	1.27	24	16 1	2 14 22.38	11 59 52.4	2.0	21.3	1.54
10	4 23	23 38 54.77	3 36 32.8	1.7	17.8	1.26	25	15 57	2 14 22.31	11 59 37.7	2.0	21.3	1.54
11	4 19	23 39 31.14	- 3 32 25.5	1.7	17.7	1.26	26	15 53	2 14 21.46	+11 59 19.0	2.0	21.4	1.55
12	4 16	23 40 7.94	3 28 15.5	1.6	17.7	1.26	27	15 49	2 14 19.85	11 58 56.6	2.0	21.5	1.55
13	4 13	23 40 45.20	3 24 2.7	1.6	17.6	1.26	28	15 45	2 14 17.46	11 58 30.2	2.0	21.5	1.56
14	4 9	23 41 22.88	3 19 47.2	1.6	17.6	1.25	29	15 41	2 14 14.29	11 57 59.9	2.0	21.6	1.56
15	4 6	23 42 0.97	- 3 15 29.2	1.6	17.5	1.25	30	15 37	2 14 10.34	11 57 25.8	2.0	21.7	1.56
July 16	18 25	2 5 1.36	+11 20 6.8	1.8	18.8	1.36	31	15 33	2 14 5.63	+11 56 47.7	2.0	21.7	1.57
17	18 22	2 5 28.16	11 22 16.2	1.8	18.9	1.36	Sept. 1	15 29	2 14 0.14	11 56 5.8	2.0	21.8	1.57
18	18 18	2 5 54.39	11 24 22.4	1.8	18.9	1.37	2	15 25	2 13 53.90	11 55 20.1	2.0	21.8	1.58
19	18 15	2 6 20.04	11 26 25.2	1.8	19.0	1.37	3	15 21	2 13 46.90	11 54 30.6	2.0	21.9	1.59
20	18 11	2 6 45.12	11 28 24.7	1.8	19.0	1.38	4	15 17	2 13 39.12	11 53 37.3	2.0	22.0	1.60
21	18 8	2 7 9.59	+11 30 20.6	1.8	19.1	1.38	5	15 13	2 13 30.60	+11 52 40.2	2.1	22.0	1.60
22	18 4	2 7 33.46	11 32 13.1	1.8	19.2	1.39	6	15 9	2 13 21.33	11 51 39.4	2.1	22.1	1.61
23	18 1	2 7 56.72	11 34 2.1	1.8	19.2	1.39	7	15 5	2 13 11.32	11 50 34.9	2.1	22.2	1.61
24	17 57	2 8 19.37	11 35 47.8	1.8	19.3	1.40	8	15 1	2 13 0.56	11 49 26.6	2.1	22.2	1.61
25	17 53	2 8 41.40	11 37 29.8	1.8	19.3	1.40	9	14 57	2 12 49.07	11 48 14.7	2.1	22.3	1.62
26	17 50	2 9 2.78	+11 39 8.4	1.8	19.4	1.40	10	14 53	2 12 36.84	+11 46 59.1	2.1	22.3	1.62
27	17 46	2 9 23.54	11 40 43.3	1.8	19.5	1.41	11	14 48	2 12 23.90	11 45 40.0	2.1	22.4	1.62
28	17 43	2 9 43.65	11 42 14.6	1.8	19.5	1.41	12	14 44	2 12 10.25	11 44 17.3	2.1	22.4	1.63
29	17 39	2 10 3.11	11 43 42.4	1.8	19.6	1.42	13	14 40	2 11 55.87	11 42 51.1	2.1	22.5	1.63
30	17 35	2 10 21.90	11 45 6.4	1.8	19.6	1.42	14	14 36	2 11 40.79	11 41 21.3	2.1	22.6	1.64
31	17 32	2 10 40.02	+11 46 26.9	1.8	19.7	1.43	15	14 32	2 11 25.01	+11 39 48.1	2.1	22.6	1.64
Aug. 1	17 28	2 10 57.49	11 47 43.7	1.8	19.8	1.43	16	14 28	2 11 8.55	11 38 11.4	2.1	22.7	1.64
2	17 24	2 11 14.26	11 48 57.0	1.9	19.8	1.44	17	14 23	2 10 51.40	11 36 31.4	2.1	22.7	1.65
3	17 21	2 11 30.35	11 50 6.5	1.9	19.9	1.44	18	14 19	2 10 33.58	11 34 48.1	2.1	22.8	1.65
4	17 17	2 11 45.75	11 51 12.2	1.9	20.0	1.45	19	14 15	2 10 15.09	11 33 1.4	2.1	22.8	1.65
5	17 14	2 12 0.46	+11 52 14.2	1.9	20.0	1.45	20	14 11	2 9 55.96	+11 31 11.4	2.1	22.9	1.66
6	17 10	2 12 14.48	11 53 12.6	1.9	20.1	1.46	21	14 6	2 9 36.18	11 29 18.3	2.1	22.9	1.66
7	17 6	2 12 27.80	11 54 7.2	1.9	20.2	1.46	22	14 2	2 9 15.77	11 27 22.1	2.1	23.0	1.66
8	17 2	2 12 40.42	11 54 58.1	1.9	20.2	1.46	23	13 58	2 8 54.75	11 25 22.7	2.2	23.0	1.67
9	16 59	2 12 52.32	11 55 45.2	1.9	20.3	1.47	24	13 54	2 8 33.12	11 23 20.5	2.2	23.1	1.67
10	16 55	2 13 3.50	+11 56 28.5	1.9	20.3	1.47	25	13 49	2 8 10.91	+11 21 15.4	2.2	23.1	1.67
11	16 51	2 13 13.96	11 57 8.1	1.9	20.4	1.48	26	13 45	2 7 48.12	11 19 7.4	2.2	23.2	1.68
12	16 47	2 13 23.69	11 57 43.8	1.9	20.5	1.48	27	13 41	2 7 24.77	11 16 56.6	2.2	23.2	1.68
13	16 44	2 13 32.71	11 58 15.8	1.9	20.6	1.49	28	13 36	2 7 0.87	11 14 43.1	2.2	23.2	1.68
14	16 40	2 13 40.98	11 58 44.0	1.9	20.6	1.49	29	13 32	2 6 36.46	11 12 27.2	2.2	23.3	1.68
15	16 36	2 13 48.51	+11 59 8.3	1.9	20.7	1.50	30	13 28	2 6 11.54	+11 10 8.7	2.2	23.3	1.69
16	16 32	2 13 55.30	+11 59 28.8	1.9	20.7	1.50	Oct. 1	13 23	2 5 46.13	+11 7 47.8	2.2	23.3	1.69

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Polar Semidiam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Polar Semidiam.	S. T. of Sem. Pass. Mer.
	h m	h m s	" ' "	" "	" "	s		h m	h m s	" ' "	" "	" "	s
Oct. 1	13 23	2 5 46.13	+11 7 47.8	2.2	23.3	1.69	Nov. 16	10 0	1 43 35.92	+9 9 9.9	2.2	23.1	1.67
2	13 19	2 5 20.25	11 5 24.6	2.2	23.4	1.69	17	9 56	1 43 11.88	9 7 7.6	2.2	23.1	1.67
3	13 14	2 4 53.93	11 2 59.3	2.2	23.4	1.69	18	9 52	1 42 48.39	9 5 8.6	2.2	23.1	1.66
4	13 10	2 4 27.17	11 0 31.9	2.2	23.4	1.69	19	9 47	1 42 25.44	9 3 12.8	2.2	23.0	1.66
5	13 6	2 4 0.00	10 58 2.5	2.2	23.5	1.70	20	9 43	1 42 3.06	9 1 20.4	2.1	23.0	1.65
6	13 1	2 3 32.45	+10 55 31.1	2.2	23.5	1.70	21	9 39	1 41 41.26	+8 59 31.7	2.1	22.9	1.65
7	12 57	2 3 4.52	10 52 58.0	2.2	23.5	1.70	22	9 34	1 41 20.05	8 57 46.4	2.1	22.9	1.65
8	12 52	2 2 36.24	10 50 23.1	2.2	23.5	1.70	23	9 30	1 40 59.47	8 56 4.8	2.1	22.8	1.64
9	12 48	2 2 7.63	10 47 46.7	2.2	23.6	1.70	24	9 26	1 40 39.50	8 54 27.0	2.1	22.8	1.64
10	12 44	2 1 38.70	10 45 8.8	2.2	23.6	1.71	25	9 22	1 40 20.17	8 52 53.0	2.1	22.7	1.64
11	12 39	2 1 9.50	+10 42 29.5	2.2	23.6	1.71	26	9 17	1 40 1.50	+8 51 23.0	2.1	22.7	1.63
12	12 35	2 0 40.01	10 39 48.9	2.2	23.6	1.71	27	9 13	1 39 43.51	8 49 56.9	2.1	22.6	1.63
13	12 30	2 0 10.27	10 37 7.3	2.2	23.6	1.71	28	9 9	1 39 26.19	8 48 35.0	2.1	22.6	1.62
14	12 26	1 59 40.30	10 34 24.5	2.2	23.7	1.71	29	9 5	1 39 9.56	8 47 17.1	2.1	22.5	1.62
15	12 22	1 59 10.13	10 31 40.8	2.2	23.7	1.71	30	9 0	1 38 53.63	8 46 3.5	2.1	22.4	1.62
16	12 17	1 58 39.77	+10 28 56.2	2.2	23.7	1.71	Dec. 1	8 56	1 38 38.40	+8 44 54.0	2.1	22.4	1.61
17	12 13	1 58 9.25	10 26 11.1	2.2	23.7	1.71	2	8 52	1 38 23.89	8 43 48.8	2.1	22.3	1.61
18	12 8	1 57 38.59	10 23 25.4	2.2	23.7	1.71	3	8 48	1 38 10.10	8 42 47.8	2.1	22.3	1.60
19	12 4	1 57 7.82	10 20 39.2	2.2	23.7	1.71	4	8 44	1 37 57.05	8 41 51.3	2.1	22.2	1.60
20	11 59	1 56 36.94	10 17 52.6	2.2	23.7	1.71	5	8 40	1 37 44.73	8 40 59.0	2.1	22.1	1.59
21	11 55	1 56 6.00	+10 15 6.0	2.2	23.7	1.71	6	8 36	1 37 33.14	+8 40 11.0	2.1	22.1	1.59
22	11 50	1 55 35.02	10 12 19.3	2.2	23.7	1.71	7	8 31	1 37 22.30	8 39 27.6	2.1	22.0	1.58
23	11 46	1 55 4.02	10 9 32.8	2.2	23.7	1.71	8	8 27	1 37 12.22	8 38 48.6	2.0	21.9	1.57
24	11 42	1 54 33.02	10 6 46.4	2.2	23.7	1.71	9	8 23	1 37 2.90	8 38 14.0	2.0	21.9	1.57
25	11 37	1 54 2.06	10 4 0.4	2.2	23.7	1.71	10	8 19	1 36 54.33	8 37 43.9	2.0	21.8	1.56
26	11 33	1 53 31.14	+10 1 15.1	2.2	23.7	1.71	11	8 15	1 36 46.51	+8 37 18.3	2.0	21.8	1.56
27	11 28	1 53 0.31	9 58 30.2	2.2	23.7	1.71	12	8 11	1 36 39.48	8 36 57.3	2.0	21.7	1.55
28	11 24	1 52 29.58	9 55 46.2	2.2	23.7	1.71	13	8 7	1 36 33.20	8 36 40.6	2.0	21.6	1.55
29	11 19	1 51 58.99	9 53 3.1	2.2	23.7	1.71	14	8 3	1 36 27.71	8 36 28.6	2.0	21.6	1.54
30	11 15	1 51 28.55	9 50 21.1	2.2	23.7	1.71	15	7 59	1 36 23.00	8 36 21.3	2.0	21.5	1.54
31	11 10	1 50 58.28	+ 9 47 40.3	2.2	23.6	1.70	16	7 55	1 36 19.06	+8 36 18.4	2.0	21.4	1.54
Nov. 1	11 6	1 50 28.21	9 45 0.9	2.2	23.6	1.70	17	7 51	1 36 15.90	8 36 20.1	2.0	21.4	1.53
2	11 2	1 49 58.38	9 42 22.8	2.2	23.6	1.70	18	7 47	1 36 13.51	8 36 26.4	2.0	21.3	1.53
3	10 57	1 49 28.79	9 39 46.5	2.2	23.6	1.70	19	7 43	1 36 11.91	8 36 37.3	2.0	21.2	1.52
4	10 53	1 48 59.46	9 37 11.8	2.2	23.6	1.70	20	7 39	1 36 11.10	8 36 52.7	2.0	21.2	1.52
5	10 48	1 48 30.43	+ 9 34 39.0	2.2	23.5	1.70	21	7 35	1 36 11.07	+8 37 12.7	2.0	21.1	1.51
6	10 44	1 48 1.71	9 32 8.1	2.2	23.5	1.69	22	7 31	1 36 11.83	8 37 37.2	2.0	21.0	1.51
7	10 40	1 47 33.32	9 29 39.1	2.2	23.5	1.69	23	7 27	1 36 13.38	8 38 6.4	2.0	21.0	1.50
8	10 35	1 47 5.29	9 27 12.4	2.2	23.4	1.69	24	7 24	1 36 15.70	8 38 30.1	2.0	20.9	1.50
9	10 31	1 46 37.62	9 24 48.0	2.2	23.4	1.69	25	7 20	1 36 18.83	8 39 18.4	1.9	20.8	1.49
10	10 26	1 46 10.35	+ 9 22 25.9	2.2	23.4	1.68	26	7 16	1 36 22.73	+8 40 1.1	1.9	20.7	1.49
11	10 22	1 45 43.48	9 20 6.5	2.2	23.3	1.68	27	7 12	1 36 27.41	8 40 48.5	1.9	20.7	1.48
12	10 18	1 45 17.04	9 17 49.5	2.2	23.3	1.68	28	7 8	1 36 32.86	8 41 40.2	1.9	20.6	1.48
13	10 13	1 44 51.05	9 15 35.3	2.2	23.3	1.68	29	7 4	1 36 39.10	8 42 36.4	1.9	20.5	1.47
14	10 9	1 44 25.52	9 13 23.9	2.2	23.2	1.67	30	7 0	1 36 46.10	8 43 37.0	1.9	20.5	1.47
15	10 5	1 44 0.46	+ 9 11 15.4	2.2	23.2	1.67	31	6 57	1 36 53.88	+8 44 42.0	1.9	20.4	1.46
16	10 0	1 43 35.92	+ 9 9 9.9	2.2	23.1	1.67	32	6 53	1 37 2.41	+8 45 51.2	1.9	20.3	1.46

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Polar Semidiam. S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Polar Semidiam. S. T. of Sem. Pass. Mer.		
	h m	h m s	" ' "	"	" s		h m	h m s	" ' "	"	" s		
Jan. 0	12 19	6 57 39.61	+22 17 53.6	1.1	9.6	0.76	Feb. 15	9 5	6 43 48.33	+22 40 29.7	1.1	9.3	0.74
1	12 15	6 57 18.41	22 18 29.1	1.1	9.6	0.76	16	9 1	6 43 37.23	22 40 49.7	1.1	9.3	0.74
2	12 11	6 56 57.17	22 19 4.5	1.1	9.6	0.76	17	8 56	6 43 26.54	22 41 9.2	1.1	9.3	0.73
3	12 7	6 56 35.92	22 19 39.8	1.1	9.6	0.76	18	8 52	6 43 16.28	22 41 28.2	1.1	9.3	0.73
4	12 2	6 56 14.66	22 20 15.0	1.1	9.6	0.76	19	8 48	6 43 6.45	22 41 46.7	1.1	9.3	0.73
5	11 58	6 55 53.39	+22 20 50.1	1.1	9.6	0.76	20	8 44	6 42 57.06	+22 42 4.7	1.1	9.3	0.73
6	11 54	6 55 32.15	22 21 25.2	1.1	9.6	0.76	21	8 40	6 42 48.10	22 42 22.2	1.0	9.2	0.73
7	11 50	6 55 10.94	22 21 59.9	1.1	9.6	0.76	22	8 36	6 42 39.60	22 42 39.3	1.0	9.2	0.73
8	11 45	6 54 49.77	22 22 34.6	1.1	9.6	0.76	23	8 32	6 42 31.54	22 42 55.9	1.0	9.2	0.73
9	11 41	6 54 28.66	22 23 9.1	1.1	9.6	0.76	24	8 28	6 42 23.94	22 43 12.0	1.0	9.2	0.73
10	11 37	6 54 7.60	+22 23 43.3	1.1	9.6	0.76	25	8 24	6 42 16.80	+22 43 27.6	1.0	9.2	0.73
11	11 32	6 53 46.63	22 24 17.4	1.1	9.6	0.76	26	8 20	6 42 10.11	22 43 42.7	1.0	9.2	0.73
12	11 28	6 53 25.76	22 24 51.2	1.1	9.6	0.76	27	8 16	6 42 3.89	22 43 57.4	1.0	9.1	0.72
13	11 24	6 53 5.00	22 25 24.9	1.1	9.6	0.76	28	8 12	6 41 58.13	22 44 11.6	1.0	9.1	0.72
14	11 20	6 52 44.34	22 25 58.2	1.1	9.6	0.76	29	8 8	6 41 52.84	22 44 25.3	1.0	9.1	0.72
15	11 15	6 52 23.81	+22 26 31.2	1.1	9.6	0.76	Mar. 1	8 4	6 41 48.03	+22 44 38.5	1.0	9.1	0.72
16	11 11	6 52 3.43	22 27 4.0	1.1	9.6	0.76	2	8 0	6 41 43.68	22 44 51.2	1.0	9.1	0.72
17	11 7	6 51 43.20	22 27 36.4	1.1	9.6	0.76	3	7 56	6 41 39.82	22 45 3.5	1.0	9.1	0.72
18	11 2	6 51 23.13	22 28 8.5	1.1	9.6	0.76	4	7 52	6 41 36.44	22 45 15.1	1.0	9.1	0.72
19	10 58	6 51 3.23	22 28 40.3	1.1	9.6	0.76	5	7 48	6 41 33.55	22 45 26.4	1.0	9.0	0.71
20	10 54	6 50 43.51	+22 29 11.8	1.1	9.6	0.76	6	7 44	6 41 31.13	+22 45 37.0	1.0	9.0	0.71
21	10 50	6 50 23.99	22 29 42.9	1.1	9.6	0.76	7	7 40	6 41 29.21	22 45 47.2	1.0	9.0	0.71
22	10 45	6 50 4.67	22 30 13.7	1.1	9.6	0.76	8	7 36	6 41 27.76	22 45 56.9	1.0	9.0	0.71
23	10 41	6 49 45.56	22 30 44.2	1.1	9.6	0.76	9	7 32	6 41 26.81	22 46 6.1	1.0	9.0	0.71
24	10 37	6 49 26.68	22 31 14.3	1.1	9.6	0.75	10	7 28	6 41 26.33	22 46 14.8	1.0	9.0	0.71
25	10 33	6 49 8.03	+22 31 43.9	1.1	9.6	0.75	11	7 24	6 41 26.34	+22 46 23.0	1.0	8.9	0.71
26	10 28	6 48 49.64	22 32 13.3	1.1	9.5	0.75	12	7 20	6 41 26.84	22 46 30.7	1.0	8.9	0.71
27	10 24	6 48 31.50	22 32 42.3	1.1	9.5	0.75	13	7 16	6 41 27.81	22 46 38.0	1.0	8.9	0.70
28	10 20	6 48 13.64	22 33 10.9	1.1	9.5	0.75	14	7 12	6 41 29.27	22 46 44.7	1.0	8.9	0.70
29	10 16	6 47 56.04	22 33 39.0	1.1	9.5	0.75	15	7 8	6 41 31.22	22 46 50.9	1.0	8.9	0.70
30	10 12	6 47 38.73	+22 34 6.7	1.1	9.5	0.75	16	7 5	6 41 33.64	+22 46 56.7	1.0	8.9	0.70
31	10 7	6 47 21.72	22 34 34.0	1.1	9.5	0.75	17	7 1	6 41 36.54	22 47 1.9	1.0	8.8	0.70
Feb. 1	10 3	6 47 5.02	22 35 0.9	1.1	9.5	0.75	18	6 57	6 41 39.92	22 47 6.6	1.0	8.8	0.70
2	9 59	6 46 48.63	22 35 27.4	1.1	9.5	0.75	19	6 53	6 41 43.77	22 47 10.8	1.0	8.8	0.70
3	9 55	6 46 32.57	22 35 53.4	1.1	9.5	0.75	20	6 49	6 41 48.10	22 47 14.5	1.0	8.8	0.70
4	9 50	6 46 16.86	+22 36 19.0	1.1	9.5	0.75	21	6 45	6 41 52.90	+22 47 17.7	1.0	8.8	0.69
5	9 46	6 46 1.48	22 36 44.2	1.1	9.4	0.75	22	6 41	6 41 58.19	22 47 20.4	1.0	8.8	0.69
6	9 42	6 45 46.44	22 37 8.8	1.1	9.4	0.75	23	6 38	6 42 3.93	22 47 22.6	1.0	8.8	0.69
7	9 38	6 45 31.78	22 37 33.0	1.1	9.4	0.74	24	6 34	6 42 10.15	22 47 24.3	1.0	8.7	0.69
8	9 34	6 45 17.49	22 37 56.9	1.1	9.4	0.74	25	6 30	6 42 16.83	22 47 25.5	1.0	8.7	0.69
9	9 30	6 45 3.57	+22 38 20.1	1.1	9.4	0.74	26	6 26	6 42 23.99	+22 47 26.2	1.0	8.7	0.69
10	9 26	6 44 50.04	22 38 42.9	1.1	9.4	0.74	27	6 22	6 42 31.60	22 47 26.3	1.0	8.7	0.69
11	9 21	6 44 36.89	22 39 5.2	1.1	9.4	0.74	28	6 18	6 42 39.68	22 47 26.0	1.0	8.7	0.69
12	9 17	6 44 24.15	22 39 27.0	1.1	9.4	0.74	29	6 15	6 42 48.22	22 47 25.1	1.0	8.7	0.68
13	9 13	6 44 11.79	22 39 48.4	1.1	9.4	0.74	30	6 11	6 42 57.21	22 47 23.6	1.0	8.6	0.68
14	9 9	6 43 59.86	+22 40 9.3	1.1	9.3	0.74	31	6 7	6 43 6.66	+22 47 21.6	1.0	8.6	0.68
15	9 5	6 43 48.33	+22 40 29.7	1.1	9.3	0.74	Apr. 1	6 3	6 43 16.57	+22 47 19.1	1.0	8.6	0.68

FOR TRANSIT AT WASHINGTON.

date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Polar Semidiam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Polar Semidiam.	S. T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
or. 1	6 3	6 43 16.57	+22 47 19.1	1.0	8.6	0.68	Nov. 16	16 27	8 11 13.24	+20 7 14.5	1.0	9.0	0.70
2	6 0	6 43 26.92	22 47 16.0	1.0	8.6	0.68	17	16 23	8 11 10.68	20 7 29.2	1.0	9.0	0.70
3	5 56	6 43 37.72	22 47 12.5	1.0	8.6	0.68	18	16 19	8 11 7.65	20 7 45.4	1.0	9.0	0.70
4	5 52	6 43 48.96	22 47 8.4	1.0	8.6	0.68	19	16 15	8 11 4.16	20 8 3.0	1.0	9.0	0.70
5	5 48	6 44 0.66	22 47 3.7	1.0	8.6	0.68	20	16 11	8 11 0.21	20 8 22.2	1.0	9.1	0.70
6	5 45	6 44 12.78	+22 46 58.4	1.0	8.5	0.67	21	16 7	8 10 55.80	+20 8 42.7	1.0	9.1	0.71
7	5 41	6 44 25.33	22 46 52.7	1.0	8.5	0.67	22	16 3	8 10 50.93	20 9 4.7	1.0	9.1	0.71
8	5 37	6 44 38.32	22 46 46.4	1.0	8.5	0.67	23	15 59	8 10 45.59	20 9 28.2	1.0	9.1	0.71
9	5 34	6 44 51.74	22 46 39.5	1.0	8.5	0.67	24	15 55	8 10 39.80	20 9 53.0	1.0	9.1	0.71
10	5 30	6 45 5.56	22 46 32.1	1.0	8.5	0.67	25	15 51	8 10 33.57	20 10 19.2	1.0	9.1	0.71
ct. 11	18 45	8 7 40.02	+20 14 19.3	1.0	8.4	0.66	26	15 47	8 10 26.88	+20 10 46.8	1.0	9.1	0.71
12	18 41	8 7 53.63	20 13 44.1	1.0	8.4	0.66	27	15 43	8 10 19.76	20 11 15.8	1.0	9.2	0.71
13	18 37	8 8 6.83	20 13 9.9	1.0	8.5	0.66	28	15 38	8 10 12.18	20 11 46.2	1.0	9.2	0.71
14	18 34	8 8 19.61	20 12 37.1	1.0	8.5	0.66	29	15 34	8 10 4.17	20 12 18.0	1.0	9.2	0.71
15	18 30	8 8 31.99	20 12 5.5	1.0	8.5	0.66	30	15 30	8 9 55.72	20 12 51.1	1.0	9.2	0.72
16	18 26	8 8 43.94	+20 11 35.1	1.0	8.5	0.66	Dec. 1	15 26	8 9 46.84	+20 13 25.4	1.0	9.2	0.72
17	18 22	8 8 55.49	20 11 5.9	1.0	8.5	0.66	2	15 22	8 9 37.53	20 14 1.0	1.0	9.2	0.72
18	18 19	8 9 6.60	20 10 38.0	1.0	8.5	0.66	3	15 18	8 9 27.82	20 14 37.9	1.1	9.3	0.72
19	18 15	8 9 17.28	20 10 11.4	1.0	8.6	0.66	4	15 14	8 9 17.68	20 15 16.0	1.1	9.3	0.72
20	18 11	8 9 27.54	20 9 46.1	1.0	8.6	0.67	5	15 10	8 9 7.14	20 15 55.3	1.1	9.3	0.72
21	18 7	8 9 37.35	+20 9 22.1	1.0	8.6	0.67	6	15 6	8 8 56.18	+20 16 35.9	1.1	9.3	0.72
22	18 4	8 9 46.73	20 8 59.5	1.0	8.6	0.67	7	15 2	8 8 44.84	20 17 17.6	1.1	9.3	0.72
23	18 0	8 9 55.66	20 8 38.2	1.0	8.6	0.67	8	14 58	8 8 33.09	20 18 0.5	1.1	9.3	0.73
24	17 56	8 10 4.15	20 8 18.3	1.0	8.6	0.67	9	14 54	8 8 20.96	20 18 44.5	1.1	9.3	0.73
25	17 52	8 10 12.20	20 7 59.7	1.0	8.6	0.67	10	14 49	8 8 8.44	20 19 29.5	1.1	9.3	0.73
26	17 48	8 10 19.81	+20 7 42.5	1.0	8.7	0.67	11	14 45	8 7 55.55	+20 20 15.8	1.1	9.4	0.73
27	17 45	8 10 26.95	20 7 26.7	1.0	8.7	0.67	12	14 41	8 7 42.29	20 21 3.0	1.1	9.4	0.73
28	17 41	8 10 33.64	20 7 12.4	1.0	8.7	0.68	13	14 37	8 7 28.66	20 21 51.3	1.1	9.4	0.73
29	17 37	8 10 39.88	20 6 59.5	1.0	8.7	0.68	14	14 33	8 7 14.67	20 22 40.7	1.1	9.4	0.73
30	17 33	8 10 45.66	20 6 48.1	1.0	8.7	0.68	15	14 28	8 7 0.33	20 23 31.0	1.1	9.4	0.73
31	17 29	8 10 50.98	+20 6 38.0	1.0	8.7	0.68	16	14 24	8 6 45.65	+20 24 22.2	1.1	9.4	0.73
ov. 1	17 26	8 10 55.84	20 6 29.4	1.0	8.8	0.68	17	14 20	8 6 30.62	20 25 14.4	1.1	9.4	0.73
2	17 22	8 11 0.24	20 6 22.1	1.0	8.8	0.68	18	14 16	8 6 15.27	20 26 7.5	1.1	9.4	0.73
3	17 18	8 11 4.18	20 6 16.4	1.0	8.8	0.68	19	14 12	8 5 59.59	20 27 1.5	1.1	9.4	0.73
4	17 14	8 11 7.66	20 6 12.1	1.0	8.8	0.68	20	14 8	8 5 43.60	20 27 56.3	1.1	9.5	0.74
5	17 10	8 11 10.68	+20 6 9.3	1.0	8.8	0.69	21	14 3	8 5 27.30	+20 28 51.9	1.1	9.5	0.74
6	17 6	8 11 13.25	20 6 7.9	1.0	8.8	0.69	22	13 59	8 5 10.70	20 29 48.3	1.1	9.5	0.74
7	17 2	8 11 15.33	20 6 7.9	1.0	8.9	0.69	23	13 55	8 4 53.82	20 30 45.5	1.1	9.5	0.74
8	16 58	8 11 16.96	20 6 9.5	1.0	8.9	0.69	24	13 51	8 4 36.65	20 31 43.4	1.1	9.5	0.74
9	16 54	8 11 18.13	20 6 12.5	1.0	8.9	0.69	25	13 47	8 4 19.22	20 32 42.0	1.1	9.5	0.74
10	16 50	8 11 18.83	+20 6 17.0	1.0	8.9	0.69	26	13 42	8 4 1.53	+20 33 41.1	1.1	9.5	0.74
11	16 46	8 11 19.06	20 6 22.9	1.0	8.9	0.69	27	13 38	8 3 43.60	20 34 40.9	1.1	9.5	0.74
12	16 43	8 11 18.83	20 6 30.4	1.0	8.9	0.69	28	13 34	8 3 25.43	20 35 41.1	1.1	9.5	0.74
13	16 39	8 11 18.13	20 6 39.1	1.0	9.0	0.70	29	13 30	8 3 7.03	20 36 42.0	1.1	9.5	0.74
14	16 35	8 11 16.96	20 6 49.4	1.0	9.0	0.70	30	13 25	8 2 48.42	20 37 43.3	1.1	9.5	0.74
15	16 31	8 11 15.33	+20 7 1.3	1.0	9.0	0.70	31	13 21	8 2 29.61	+20 38 45.0	1.1	9.5	0.74
16	16 27	8 11 13.24	+20 7 14.5	1.0	9.0	0.70	32	13 17	8 2 10.59	+20 39 47.1	1.1	9.5	0.74

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.
	h m	h m s	" ' "	" "	" "	s		h m	h m s	" ' "	" "	" "	s
June 1	16 47	21 29 16.81	-15 35 36.3	0.5	1.7	0.12	July 17	13 42	21 25 10.63	-15 56 33.8	0.5	1.8	0.12
2	16 43	21 29 15.14	15 35 46.7	0.5	1.7	0.12	18	13 38	21 25 2.24	15 57 14.6	0.5	1.8	0.12
3	16 39	21 29 13.28	15 35 58.0	0.5	1.7	0.12	19	13 34	21 24 53.76	15 57 55.7	0.5	1.8	0.12
4	16 35	21 29 11.23	15 36 10.1	0.5	1.7	0.12	20	13 30	21 24 45.18	15 58 37.2	0.5	1.8	0.12
5	16 31	21 29 9.00	15 36 23.2	0.5	1.7	0.12	21	13 26	21 24 36.52	15 59 19.0	0.5	1.8	0.12
6	16 27	21 29 6.59	-15 36 37.1	0.5	1.7	0.12	22	13 22	21 24 27.80	-16 0 1.0	0.5	1.8	0.12
7	16 23	21 29 3.98	15 36 51.9	0.5	1.7	0.12	23	13 18	21 24 19.00	16 0 43.4	0.5	1.8	0.12
8	16 19	21 29 1.19	15 37 7.4	0.5	1.7	0.12	24	13 14	21 24 10.13	16 1 25.9	0.5	1.8	0.12
9	16 15	21 28 58.23	15 37 23.8	0.5	1.7	0.12	25	13 10	21 24 1.20	16 2 8.8	0.5	1.8	0.12
10	16 11	21 28 55.09	15 37 41.1	0.5	1.7	0.12	26	13 6	21 23 52.20	16 2 51.8	0.5	1.8	0.12
11	16 7	21 28 51.78	-15 37 59.1	0.5	1.7	0.12	27	13 1	21 23 43.15	-16 3 35.1	0.5	1.8	0.12
12	16 3	21 28 48.29	15 38 18.1	0.5	1.7	0.12	28	12 57	21 23 34.05	16 4 18.5	0.5	1.8	0.12
13	15 59	21 28 44.63	15 38 37.8	0.5	1.7	0.12	29	12 53	21 23 24.89	16 5 2.1	0.5	1.8	0.12
14	15 55	21 28 40.80	15 38 58.4	0.5	1.7	0.12	30	12 49	21 23 15.68	16 5 45.9	0.5	1.8	0.12
15	15 51	21 28 36.80	15 39 19.7	0.5	1.7	0.12	31	12 45	21 23 6.44	16 6 29.7	0.5	1.8	0.12
16	15 47	21 28 32.64	-15 39 41.8	0.5	1.7	0.12	Aug. 1	12 41	21 22 57.16	-16 7 13.7	0.5	1.8	0.12
17	15 43	21 28 28.30	15 40 4.6	0.5	1.7	0.12	2	12 37	21 22 47.84	16 7 57.7	0.5	1.8	0.12
18	15 39	21 28 23.80	15 40 28.2	0.5	1.7	0.12	3	12 33	21 22 38.50	16 8 41.8	0.5	1.8	0.12
19	15 35	21 28 19.12	15 40 52.6	0.5	1.7	0.12	4	12 29	21 22 29.12	16 9 26.1	0.5	1.8	0.12
20	15 31	21 28 14.29	15 41 17.7	0.5	1.7	0.12	5	12 25	21 22 19.72	16 10 10.3	0.5	1.8	0.12
21	15 27	21 28 9.29	-15 41 43.5	0.5	1.7	0.12	6	12 21	21 22 10.30	-16 10 54.5	0.5	1.8	0.12
22	15 23	21 28 4.14	15 42 10.1	0.5	1.7	0.12	7	12 16	21 22 0.87	16 11 38.8	0.5	1.8	0.12
23	15 19	21 27 58.84	15 42 37.4	0.5	1.7	0.12	8	12 12	21 21 51.43	16 12 22.9	0.5	1.8	0.12
24	15 15	21 27 53.38	15 43 5.5	0.5	1.7	0.12	9	12 8	21 21 41.98	16 13 7.0	0.5	1.8	0.12
25	15 11	21 27 47.76	15 43 34.2	0.5	1.7	0.12	10	12 4	21 21 32.53	16 13 51.1	0.5	1.8	0.12
26	15 7	21 27 42.00	-15 44 3.6	0.5	1.7	0.12	11	12 0	21 21 23.07	-16 14 35.2	0.5	1.8	0.12
27	15 3	21 27 36.09	15 44 33.7	0.5	1.7	0.12	12	11 56	21 21 13.62	16 15 19.1	0.5	1.8	0.12
28	14 59	21 27 30.01	15 45 4.4	0.5	1.7	0.12	13	11 52	21 21 4.18	16 16 3.0	0.5	1.8	0.12
29	14 55	21 27 23.82	15 45 35.8	0.5	1.7	0.12	14	11 48	21 20 54.75	16 16 46.6	0.5	1.8	0.12
30	14 51	21 27 17.47	15 46 7.8	0.5	1.8	0.12	15	11 44	21 20 45.34	16 17 30.2	0.5	1.8	0.12
July 1	14 47	21 27 10.98	-15 46 40.3	0.5	1.8	0.12	16	11 40	21 20 35.94	-16 18 13.7	0.5	1.8	0.12
2	14 43	21 27 4.35	15 47 13.5	0.5	1.8	0.12	17	11 36	21 20 26.57	16 18 56.9	0.5	1.8	0.12
3	14 39	21 26 57.59	15 47 47.4	0.5	1.8	0.12	18	11 32	21 20 17.22	16 19 39.9	0.5	1.8	0.12
4	14 35	21 26 50.71	15 48 21.8	0.5	1.8	0.12	19	11 27	21 20 7.90	16 20 22.8	0.5	1.8	0.12
5	14 31	21 26 43.69	15 48 56.7	0.5	1.8	0.12	20	11 23	21 19 58.62	16 21 5.4	0.5	1.8	0.12
6	14 27	21 26 36.55	-15 49 32.2	0.5	1.8	0.12	21	11 19	21 19 49.36	-16 21 47.8	0.5	1.8	0.12
7	14 23	21 26 29.30	15 50 8.2	0.5	1.8	0.12	22	11 15	21 19 40.15	16 22 29.9	0.5	1.8	0.12
8	14 19	21 26 21.91	15 50 44.8	0.5	1.8	0.12	23	11 11	21 19 30.99	16 23 11.6	0.5	1.8	0.12
9	14 15	21 26 14.41	15 51 21.8	0.5	1.8	0.12	24	11 7	21 19 21.88	16 23 53.1	0.5	1.8	0.12
10	14 11	21 26 6.80	15 51 59.3	0.5	1.8	0.12	25	11 3	21 19 12.83	16 24 34.4	0.5	1.8	0.12
11	14 7	21 25 59.08	-15 52 37.3	0.5	1.8	0.12	26	10 59	21 19 3.82	-16 25 15.2	0.5	1.8	0.12
12	14 3	21 25 51.26	15 53 15.7	0.5	1.8	0.12	27	10 55	21 18 54.88	16 25 55.8	0.5	1.8	0.12
13	13 58	21 25 43.32	15 53 54.5	0.5	1.8	0.12	28	10 51	21 18 46.00	16 26 36.0	0.5	1.8	0.12
14	13 54	21 25 35.30	15 54 33.7	0.5	1.8	0.12	29	10 46	21 18 37.19	16 27 15.8	0.5	1.8	0.12
15	13 50	21 25 27.17	15 55 13.3	0.5	1.8	0.12	30	10 42	21 18 28.46	16 27 55.2	0.5	1.8	0.12
16	13 46	21 25 18.95	-15 55 53.4	0.5	1.8	0.12	31	10 38	21 18 19.79	-16 28 34.1	0.5	1.8	0.12
17	13 42	21 25 10.63	-15 56 33.8	0.5	1.8	0.12	Sept. 1	10 34	21 18 11.22	-16 29 12.6	0.5	1.8	0.12

Stellar magnitude at opposition, in August, 1916, 6.0.

FOR TRANSIT AT WASHINGTON.

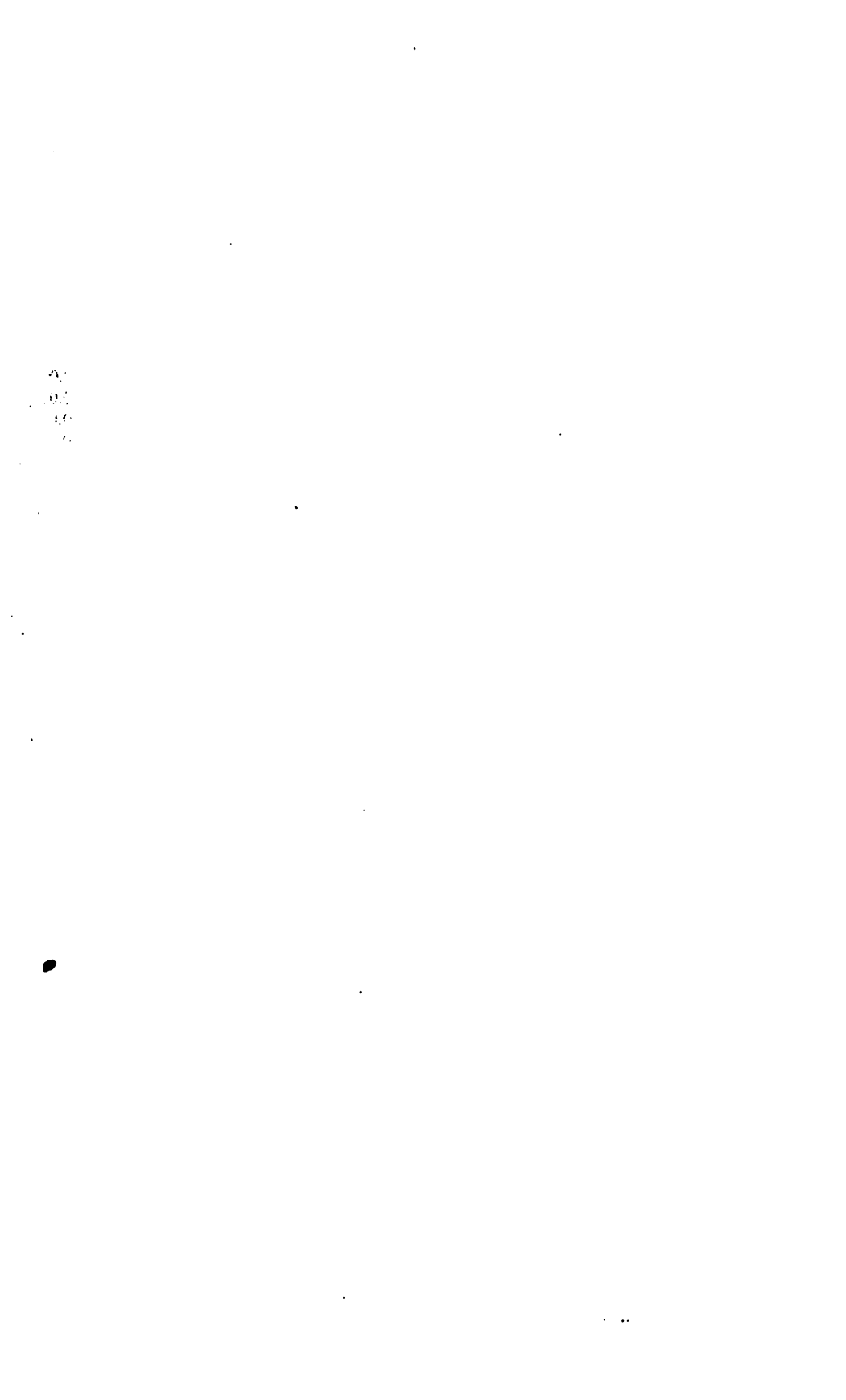
Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.
	h m	h m s	" ' "	"	" "	s		h m	h m s	" ' "	"	" "	s
Sept. 1	10 34	21 18 11.22	-16 29 12.6	0.5	1.8	0.12	Oct. 17	7 29	21 13 56.93	-16 47 17.4	0.5	1.7	0.12
2	10 30	21 18 2.73	16 29 50.7	0.5	1.8	0.12	18	7 25	21 13 55.37	16 47 22.4	0.5	1.7	0.12
3	10 26	21 17 54.33	16 30 28.3	0.5	1.8	0.12	19	7 21	21 13 54.02	16 47 26.4	0.4	1.7	0.12
4	10 22	21 17 46.02	16 31 5.5	0.5	1.8	0.12	20	7 17	21 13 52.85	16 47 29.7	0.4	1.7	0.12
5	10 18	21 17 37.80	16 31 42.1	0.5	1.8	0.12	21	7 14	21 13 51.88	16 47 32.0	0.4	1.7	0.12
6	10 14	21 17 29.68	-16 32 18.2	0.5	1.8	0.12	22	7 10	21 13 51.11	-16 47 33.4	0.4	1.7	0.12
7	10 10	21 17 21.66	16 32 53.8	0.5	1.8	0.12	23	7 6	21 13 50.55	16 47 33.9	0.4	1.7	0.12
8	10 6	21 17 13.76	16 33 28.8	0.5	1.8	0.12	24	7 2	21 13 50.18	16 47 33.5	0.4	1.7	0.12
9	10 2	21 17 5.95	16 34 3.2	0.5	1.8	0.12	25	6 58	21 13 50.02	16 47 32.3	0.4	1.7	0.12
10	9 58	21 16 58.25	16 34 37.2	0.5	1.8	0.12	26	6 54	21 13 50.06	16 47 30.1	0.4	1.7	0.12
11	9 54	21 16 50.67	-16 35 10.6	0.5	1.8	0.12	27	6 50	21 13 50.30	-16 47 27.0	0.4	1.7	0.12
12	9 50	21 16 43.20	16 35 43.5	0.5	1.8	0.12	28	6 46	21 13 50.74	16 47 22.8	0.4	1.7	0.12
13	9 46	21 16 35.85	16 36 15.7	0.5	1.8	0.12	29	6 42	21 13 51.39	16 47 17.8	0.4	1.7	0.12
14	9 42	21 16 28.63	16 36 47.3	0.5	1.8	0.12	30	6 38	21 13 52.24	16 47 12.0	0.4	1.7	0.12
15	9 37	21 16 21.53	16 37 18.3	0.5	1.8	0.12	31	6 34	21 13 53.29	16 47 5.2	0.4	1.7	0.12
16	9 33	21 16 14.57	-16 37 48.6	0.5	1.8	0.12	Nov. 1	6 30	21 13 54.56	-16 46 57.5	0.4	1.7	0.12
17	9 29	21 16 7.74	16 38 18.3	0.5	1.8	0.12	2	6 26	21 13 56.02	16 46 48.8	0.4	1.7	0.12
18	9 25	21 16 1.04	16 38 47.4	0.5	1.8	0.12	3	6 22	21 13 57.68	16 46 39.3	0.4	1.7	0.12
19	9 21	21 15 54.47	16 39 15.7	0.5	1.8	0.12	4	6 19	21 13 59.56	16 46 28.8	0.4	1.7	0.12
20	9 17	21 15 48.05	16 39 43.4	0.5	1.8	0.12	5	6 15	21 14 1.63	16 46 17.4	0.4	1.7	0.12
21	9 13	21 15 41.77	-16 40 10.3	0.5	1.8	0.12	6	6 11	21 14 3.90	-16 46 5.2	0.4	1.7	0.12
22	9 9	21 15 35.64	16 40 36.6	0.5	1.8	0.12	7	6 7	21 14 6.38	16 45 52.0	0.4	1.7	0.12
23	9 5	21 15 29.66	16 41 2.2	0.5	1.8	0.12	8	6 3	21 14 9.05	16 45 37.9	0.4	1.7	0.12
24	9 1	21 15 23.83	16 41 27.1	0.5	1.8	0.12	9	5 59	21 14 11.93	16 45 22.9	0.4	1.7	0.12
25	8 57	21 15 18.16	16 41 51.2	0.5	1.7	0.12	10	5 55	21 14 15.00	16 45 7.1	0.4	1.7	0.12
26	8 53	21 15 12.64	-16 42 14.5	0.5	1.7	0.12	11	5 51	21 14 18.28	-16 44 50.3	0.4	1.7	0.12
27	8 49	21 15 7.28	16 42 37.1	0.5	1.7	0.12	12	5 48	21 14 21.75	16 44 32.7	0.4	1.7	0.12
28	8 45	21 15 2.08	16 42 58.9	0.5	1.7	0.12	13	5 44	21 14 25.42	16 44 14.2	0.4	1.7	0.12
29	8 41	21 14 57.06	16 43 20.0	0.5	1.7	0.12	14	5 40	21 14 29.29	16 43 54.8	0.4	1.7	0.12
30	8 37	21 14 52.19	16 43 40.3	0.5	1.7	0.12	15	5 36	21 14 33.36	16 43 34.4	0.4	1.7	0.12
Oct. 1	8 33	21 14 47.51	-16 43 59.7	0.5	1.7	0.12	16	5 32	21 14 37.63	-16 43 13.2	0.4	1.7	0.12
2	8 29	21 14 42.99	16 44 18.3	0.5	1.7	0.12	17	5 28	21 14 42.09	16 42 51.2	0.4	1.7	0.12
3	8 25	21 14 38.64	16 44 36.1	0.5	1.7	0.12	18	5 24	21 14 46.74	16 42 28.2	0.4	1.7	0.12
4	8 21	21 14 34.47	16 44 53.1	0.5	1.7	0.12	19	5 20	21 14 51.59	16 42 4.4	0.4	1.7	0.12
5	8 17	21 14 30.48	16 45 9.2	0.5	1.7	0.12	20	5 17	21 14 56.64	16 41 39.7	0.4	1.7	0.12
6	8 13	21 14 26.67	-16 45 24.5	0.5	1.7	0.12	21	5 13	21 15 1.88	-16 41 14.2	0.4	1.7	0.12
7	8 9	21 14 23.04	16 45 39.0	0.5	1.7	0.12	22	5 9	21 15 7.31	16 40 47.8	0.4	1.7	0.12
8	8 5	21 14 19.58	16 45 52.7	0.5	1.7	0.12	23	5 5	21 15 12.92	16 40 20.5	0.4	1.7	0.12
9	8 1	21 14 16.32	16 46 5.6	0.5	1.7	0.12	24	5 1	21 15 18.73	16 39 52.4	0.4	1.7	0.12
10	7 57	21 14 13.24	16 46 17.6	0.5	1.7	0.12	25	4 57	21 15 24.72	16 39 23.3	0.4	1.7	0.12
11	7 53	21 14 10.34	-16 46 28.8	0.5	1.7	0.12	26	4 54	21 15 30.91	-16 38 53.5	0.4	1.7	0.12
12	7 49	21 14 7.63	16 46 39.0	0.5	1.7	0.12	27	4 50	21 15 37.27	16 38 22.9	0.4	1.7	0.12
13	7 45	21 14 5.11	16 46 48.4	0.5	1.7	0.12	28	4 46	21 15 43.82	16 37 51.4	0.4	1.7	0.11
14	7 41	21 14 2.78	16 46 57.0	0.5	1.7	0.12	29	4 42	21 15 50.56	16 37 19.1	0.4	1.7	0.11
15	7 37	21 14 0.64	16 47 4.7	0.5	1.7	0.12	30	4 38	21 15 57.46	16 36 46.0	0.4	1.7	0.11
16	7 33	21 13 58.69	-16 47 11.5	0.5	1.7	0.12	Dec. 1	4 34	21 16 4.55	-16 36 12.1	0.4	1.7	0.11
17	7 29	21 13 56.93	-16 47 17.4	0.5	1.7	0.12	2	4 31	21 16 11.82	-16 35 37.4	0.4	1.6	0.11

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. P. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. P. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	13 38	8 16 12.01	+19 27 10.4	0.3	1.3	0.09	Feb. 15	10 32	8 11 2.01	+19 44 7.2	0.3	1.3	0.09
1	13 34	8 16 5.64	19 27 31.4	0.3	1.3	0.09	16	10 28	8 10 55.87	19 44 27.3	0.3	1.3	0.09
2	13 30	8 15 59.22	19 27 52.5	0.3	1.3	0.09	17	10 24	8 10 49.81	19 44 47.1	0.3	1.3	0.09
3	13 26	8 15 52.75	19 28 13.9	0.3	1.3	0.09	18	10 20	8 10 43.81	19 45 6.8	0.3	1.3	0.09
4	13 22	8 15 46.24	19 28 35.4	0.3	1.3	0.09	19	10 16	8 10 37.89	19 45 26.2	0.3	1.3	0.09
5	13 18	8 15 39.67	+19 28 57.2	0.3	1.3	0.09	20	10 12	8 10 32.04	+19 45 45.4	0.3	1.3	0.09
6	13 14	8 15 33.05	19 29 19.0	0.3	1.3	0.09	21	10 8	8 10 26.27	19 46 4.2	0.3	1.3	0.09
7	13 10	8 15 26.39	19 29 40.9	0.3	1.3	0.09	22	10 4	8 10 20.59	19 46 22.9	0.3	1.3	0.09
8	13 6	8 15 19.68	19 30 3.0	0.3	1.3	0.09	23	10 0	8 10 14.98	19 46 41.3	0.3	1.3	0.09
9	13 1	8 15 12.93	19 30 25.2	0.3	1.3	0.09	24	9 56	8 10 9.46	19 46 59.5	0.3	1.3	0.09
10	12 57	8 15 6.15	+19 30 47.5	0.3	1.3	0.09	25	9 52	8 10 4.02	+19 47 17.3	0.3	1.3	0.09
11	12 53	8 14 59.34	19 31 9.9	0.3	1.3	0.09	26	9 47	8 9 58.67	19 47 34.9	0.3	1.3	0.09
12	12 49	8 14 52.50	19 31 32.4	0.3	1.3	0.09	27	9 43	8 9 53.42	19 47 52.3	0.3	1.3	0.09
13	12 45	8 14 45.64	19 31 54.9	0.3	1.3	0.09	28	9 39	8 9 48.25	19 48 9.3	0.3	1.3	0.09
14	12 41	8 14 38.74	19 32 17.6	0.3	1.3	0.09	29	9 35	8 9 43.18	19 48 26.1	0.3	1.3	0.09
15	12 37	8 14 31.83	+19 32 40.3	0.3	1.3	0.09	Mar. 1	9 31	8 9 38.20	+19 48 42.5	0.3	1.3	0.09
16	12 33	8 14 24.90	19 33 3.1	0.3	1.3	0.09	2	9 27	8 9 33.32	19 48 58.6	0.3	1.3	0.09
17	12 29	8 14 17.95	19 33 25.9	0.3	1.3	0.09	3	9 23	8 9 28.55	19 49 14.5	0.3	1.3	0.09
18	12 25	8 14 11.00	19 33 48.7	0.3	1.3	0.09	4	9 19	8 9 23.87	19 49 30.0	0.3	1.3	0.09
19	12 21	8 14 4.02	19 34 11.6	0.3	1.3	0.09	5	9 15	8 9 19.30	19 49 45.1	0.3	1.3	0.09
20	12 17	8 13 57.05	+19 34 34.5	0.3	1.3	0.09	6	9 11	8 9 14.85	+19 49 59.9	0.3	1.3	0.09
21	12 13	8 13 50.05	19 34 57.4	0.3	1.3	0.09	7	9 7	8 9 10.50	19 50 14.5	0.3	1.3	0.09
22	12 9	8 13 43.06	19 35 20.3	0.3	1.3	0.09	8	9 3	8 9 6.25	19 50 28.7	0.3	1.3	0.09
23	12 5	8 13 36.08	19 35 43.2	0.3	1.3	0.09	9	8 59	8 9 2.13	19 50 42.5	0.3	1.3	0.09
24	12 1	8 13 29.10	19 36 6.1	0.3	1.3	0.09	10	8 55	8 8 58.11	19 50 55.9	0.3	1.3	0.09
25	11 57	8 13 22.12	+19 36 28.9	0.3	1.3	0.09	11	8 51	8 8 54.22	+19 51 9.1	0.3	1.3	0.09
26	11 53	8 13 15.15	19 36 51.8	0.3	1.3	0.09	12	8 47	8 8 50.43	19 51 21.9	0.3	1.3	0.09
27	11 49	8 13 8.19	19 37 14.6	0.3	1.3	0.09	13	8 43	8 8 46.77	19 51 34.3	0.3	1.3	0.09
28	11 45	8 13 1.24	19 37 37.3	0.3	1.3	0.09	14	8 39	8 8 43.21	19 51 46.3	0.3	1.3	0.09
29	11 40	8 12 54.33	19 37 59.9	0.3	1.3	0.09	15	8 35	8 8 39.78	19 51 58.0	0.3	1.3	0.09
30	11 36	8 12 47.42	+19 38 22.5	0.3	1.3	0.09	16	8 31	8 8 36.48	+19 52 9.3	0.3	1.3	0.09
31	11 32	8 12 40.54	19 38 45.0	0.3	1.3	0.09	17	8 27	8 8 33.30	19 52 20.2	0.3	1.3	0.09
Feb. 1	11 28	8 12 33.68	19 39 7.4	0.3	1.3	0.09	18	8 23	8 8 30.23	19 52 30.7	0.3	1.3	0.09
2	11 24	8 12 26.85	19 39 29.8	0.3	1.3	0.09	19	8 19	8 8 27.29	19 52 41.0	0.3	1.3	0.09
3	11 20	8 12 20.06	19 39 52.0	0.3	1.3	0.09	20	8 15	8 8 24.49	19 52 50.8	0.3	1.3	0.09
4	11 16	8 12 13.30	+19 40 14.1	0.3	1.3	0.09	21	8 11	8 8 21.79	+19 53 0.2	0.3	1.3	0.09
5	11 12	8 12 6.57	19 40 36.1	0.3	1.3	0.09	22	8 8	8 8 19.23	19 53 9.2	0.3	1.3	0.09
6	11 8	8 11 59.89	19 40 58.0	0.3	1.3	0.09	23	8 4	8 8 16.80	19 53 17.8	0.3	1.3	0.09
7	11 4	8 11 53.25	19 41 19.6	0.3	1.3	0.09	24	8 0	8 8 14.50	19 53 26.0	0.3	1.3	0.09
8	11 0	8 11 46.65	19 41 41.2	0.3	1.3	0.09	25	7 56	8 8 12.32	19 53 33.9	0.3	1.3	0.09
9	10 56	8 11 40.10	+19 42 2.6	0.3	1.3	0.09	26	7 52	8 8 10.29	+19 53 41.4	0.3	1.3	0.09
10	10 52	8 11 33.62	19 42 23.8	0.3	1.3	0.09	27	7 48	8 8 8.38	19 53 48.4	0.3	1.3	0.09
11	10 48	8 11 27.18	19 42 44.9	0.3	1.3	0.09	28	7 44	8 8 6.61	19 53 55.1	0.3	1.3	0.09
12	10 44	8 11 20.79	19 43 5.8	0.3	1.3	0.09	29	7 40	8 8 4.97	19 54 1.3	0.3	1.3	0.09
13	10 40	8 11 14.46	19 43 26.4	0.3	1.3	0.09	30	7 36	8 8 3.47	19 54 7.1	0.3	1.3	0.09
14	10 36	8 11 8.21	+19 43 46.9	0.3	1.3	0.09	31	7 32	8 8 2.09	+19 54 12.5	0.3	1.3	0.09
15/10 32	8 11 2.01	+19 44 7.2	0.3	1.3	0.09	Apr. 1	7 28	8 8 0.86	+19 54 17.5	0.3	1.3	0.09	

FOR TRANSIT AT WASHINGTON.

Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.	Date.	Wash. Mean Time.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semidiam.	S. T. of Sem. Pass. Mer.		
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s		
Apr. 1	7 28	8 8 0.86	+19 54 17.5	0.3	1.3	0.09	Nov. 16	16 44	8 28 36.44	+18 49 19.9	0.3	1.3	0.09		
	2	7 24	8 7 59.76	19 54 22.0	0.3	1.3		0.09	17	16 40	8 28 35.00	18 49 25.1	0.3	1.3	0.09
	3	7 20	8 7 58.81	19 54 26.2	0.3	1.3		0.09	18	16 36	8 28 33.43	18 49 30.9	0.3	1.3	0.09
	4	7 16	8 7 57.99	19 54 30.0	0.3	1.3		0.09	19	16 32	8 28 31.73	18 49 37.0	0.3	1.3	0.09
	5	7 12	8 7 57.30	19 54 33.4	0.3	1.3		0.09	20	16 28	8 28 29.89	18 49 43.6	0.3	1.3	0.09
	6	7 8	8 7 56.76	+19 54 36.3	0.3	1.3		0.09	21	16 24	8 28 27.91	+18 49 50.8	0.3	1.3	0.09
	7	7 4	8 7 56.34	19 54 38.8	0.3	1.3		0.09	22	16 20	8 28 25.80	18 49 58.4	0.3	1.3	0.09
	8	7 0	8 7 56.07	19 54 40.8	0.3	1.3		0.09	23	16 16	8 28 23.55	18 50 6.4	0.3	1.3	0.09
	9	6 56	8 7 55.94	19 54 42.5	0.3	1.3		0.09	24	16 12	8 28 21.18	18 50 14.9	0.3	1.3	0.09
	10	6 52	8 7 55.95	19 54 43.7	0.3	1.3		0.09	25	16 8	8 28 18.67	18 50 24.0	0.3	1.3	0.09
	11	6 48	8 7 56.09	+19 54 44.5	0.3	1.3		0.09	26	16 4	8 28 16.03	+18 50 33.5	0.3	1.3	0.09
	12	6 45	8 7 56.38	19 54 44.8	0.3	1.3		0.09	27	16 0	8 28 13.27	18 50 43.4	0.3	1.3	0.09
	13	6 41	8 7 56.80	19 54 44.9	0.3	1.3		0.09	28	15 56	8 28 10.39	18 50 53.7	0.3	1.3	0.09
	14	6 37	8 7 57.36	19 54 44.4	0.3	1.3		0.09	29	15 52	8 28 7.37	18 51 4.5	0.3	1.3	0.09
	15	6 33	8 7 58.05	19 54 43.5	0.3	1.3		0.09	30	15 48	8 28 4.23	18 51 15.9	0.3	1.3	0.09
Oct. 21	6 29	8 7 58.90	+19 54 42.2	0.3	1.3	0.09	Dec. 1	15 44	8 28 0.96	+18 51 27.6	0.3	1.3	0.09		
	17	6 25	8 7 59.88	19 54 40.4	0.3	1.3		0.09	2	15 40	8 27 57.57	18 51 39.7	0.3	1.3	0.09
	18	6 21	8 8 0.98	19 54 38.3	0.3	1.3		0.09	3	15 36	8 27 54.07	18 51 52.2	0.3	1.3	0.09
	19	6 17	8 8 2.23	19 54 35.7	0.3	1.3		0.09	4	15 32	8 27 50.44	18 52 5.1	0.3	1.3	0.09
	20	6 13	8 8 3.62	19 54 32.7	0.3	1.3		0.09	5	15 28	8 27 46.70	18 52 18.5	0.3	1.3	0.09
	22	18 26	8 28 25.29	+18 49 55.1	0.3	1.3		0.09	6	15 24	8 27 42.85	+18 52 32.3	0.3	1.3	0.09
	23	18 22	8 28 27.46	18 49 47.6	0.3	1.3		0.09	7	15 20	8 27 38.87	18 52 46.5	0.3	1.3	0.09
	24	18 18	8 28 29.49	18 49 40.7	0.3	1.3		0.09	8	15 16	8 27 34.78	18 53 1.0	0.3	1.3	0.09
	25	18 14	8 28 31.37	18 49 34.2	0.3	1.3		0.09	9	15 12	8 27 30.58	18 53 15.9	0.3	1.3	0.09
	26	18 11	8 28 33.12	18 49 28.2	0.3	1.3		0.09	10	15 8	8 27 26.27	18 53 31.2	0.3	1.3	0.09
	27	18 7	8 28 34.73	+18 49 22.7	0.3	1.3		0.09	11	15 4	8 27 21.86	+18 53 46.9	0.3	1.3	0.09
	28	18 3	8 28 36.20	18 49 17.7	0.3	1.3		0.09	12	15 0	8 27 17.34	18 54 3.0	0.3	1.3	0.09
	29	17 59	8 28 37.53	18 49 13.2	0.3	1.3		0.09	13	14 56	8 27 12.73	18 54 19.3	0.3	1.3	0.09
	30	17 55	8 28 38.72	18 49 9.2	0.3	1.3		0.09	14	14 52	8 27 8.01	18 54 36.1	0.3	1.3	0.09
	31	17 51	8 28 39.79	18 49 5.5	0.3	1.3		0.09	15	14 48	8 27 3.18	18 54 53.3	0.3	1.3	0.09
Nov. 1	17 47	8 28 40.70	+18 49 2.3	0.3	1.3	0.09	16	14 44	8 26 58.26	+18 55 10.9	0.3	1.3	0.09		
	2	17 43	8 28 41.47	18 48 59.7	0.3	1.3	0.09	17	14 40	8 26 53.23	18 55 28.7	0.3	1.3	0.09	
	3	17 39	8 28 42.11	18 48 57.6	0.3	1.3	0.09	18	14 36	8 26 48.11	18 55 46.8	0.3	1.3	0.09	
	4	17 35	8 28 42.61	18 48 56.1	0.3	1.3	0.09	19	14 32	8 26 42.89	18 56 5.4	0.3	1.3	0.09	
	5	17 31	8 28 42.97	18 48 55.0	0.3	1.3	0.09	20	14 28	8 26 37.59	18 56 24.2	0.3	1.3	0.09	
	6	17 27	8 28 43.19	+18 48 54.4	0.3	1.3	0.09	21	14 24	8 26 32.19	+18 56 43.2	0.3	1.3	0.09	
	7	17 24	8 28 43.27	18 48 54.3	0.3	1.3	0.09	22	14 20	8 26 26.70	18 57 2.6	0.3	1.3	0.09	
	8	17 20	8 28 43.20	18 48 54.7	0.3	1.3	0.09	23	14 16	8 26 21.13	18 57 22.3	0.3	1.3	0.09	
	9	17 16	8 28 43.00	18 48 55.4	0.3	1.3	0.09	24	14 12	8 26 15.47	18 57 42.4	0.3	1.3	0.09	
	10	17 12	8 28 42.66	18 48 56.8	0.3	1.3	0.09	25	14 8	8 26 9.75	18 58 2.7	0.3	1.3	0.09	
	11	17 8	8 28 42.19	+18 48 58.6	0.3	1.3	0.09	26	14 4	8 26 3.93	+18 58 23.2	0.3	1.3	0.09	
	12	17 4	8 28 41.58	18 49 0.9	0.3	1.3	0.09	27	14 0	8 25 58.04	18 58 44.1	0.3	1.3	0.09	
	13	17 0	8 28 40.83	18 49 3.8	0.3	1.3	0.09	28	13 56	8 25 52.08	18 59 5.1	0.3	1.3	0.09	
	14	16 56	8 28 39.94	18 49 7.1	0.3	1.3	0.09	29	13 52	8 25 46.05	18 59 26.4	0.3	1.3	0.09	
	15	16 52	8 28 38.91	18 49 10.9	0.3	1.3	0.09	30	13 48	8 25 39.96	18 59 47.9	0.3	1.3	0.09	
16	16 48	8 28 37.74	+18 49 15.1	0.3	1.3	0.09	31	13 44	8 25 33.79	+19 0 9.6	0.3	1.3	0.09		
17	16 44	8 28 36.44	+18 49 19.9	0.3	1.3	0.09	32	13 40	8 25 27.56	+19 0 31.5	0.3	1.3	0.09		



PART III.

PHENOMENA.

In the year 1916 there will be five eclipses, three of the Sun and two of the Moon.

I.—*A Partial Eclipse of the Moon*, 1916, January 19, visible at Washington; the beginning visible generally in extreme western Europe, the north Atlantic Ocean, North and South America, and the Pacific Ocean; the ending visible generally in North America, the north Atlantic Ocean, northwestern South America, northeast Asia, and the Pacific Ocean.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of β in right ascension, January 19		d	h	m	s	
		19	20	5	19.1	
Sun's right ascension	h m s	20	4	20.92	Hourly motion	10.62 ^s
Moon's right ascension	h m s	8	4	20.92	Hourly motion	123.78 ^s
Sun's declination	° ' "	-20	22	49.5	Hourly motion	+ 0 31.4
Moon's declination	° ' "	+21	15	3.7	Hourly motion	- 8 51.5
Sun's equa. hor. parallax				8.9	Sun's true semidiameter	16 15.3
Moon's equa. hor. parallax		54	28.1		Moon's true semidiameter	14 49.8

CIRCUMSTANCES OF THE ECLIPSE.

Moon enters penumbra	Jan.	d	h	m	} Greenwich Mean Time.
Moon enters shadow		19	18	4.6	
Middle of the eclipse		19	19	55.0	
Moon leaves shadow		19	20	39.5	
Moon leaves penumbra		19	21	24.0	
		19	23	14.3	

Contacts of shadow with Moon's limb.	Angles of position from the north point.	The Moon being in the zenith in longitude from Greenwich,		and in latitude.
First	175 to E.	+116	7	+21 17
Last	140 to W.	+137	41	+21 3

Magnitude of the eclipse=0.137 (Moon's diameter=1.0).

II.—*A Total Eclipse of the Sun*, 1916, February 3, visible at Washington as a partial eclipse.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, February 3		d	h	m	s	
		3	4	21	39.2	
Sun and Moon's R. A.	h m s	21	3	58.74	Hourly motions	10.15 and 142.67 ^s
Sun's declination	° ' "	-16	46	18.2	Hourly motion	+ 0 43.6
Moon's declination	° ' "	-16	13	52.3	Hourly motion	+13 45.9
Sun's equa. hor. parallax				8.9	Sun's true semidiameter	16 13.5
Moon's equa. hor. parallax		60	19.4		Moon's true semidiameter	16 25.4

CIRCUMSTANCES OF THE ECLIPSE.

	Greenwich Mean Time.	Longitude from Greenwich.	Latitude.
Eclipse begins	Feb. d h m	+109 15.5	- 3 17.1
Central eclipse begins	3 1 26.9	+121 35.6	+ 7 20.8
Central eclipse at local apparent noon	3 2 29.2	+ 61 56.5	+15 57.2
Central eclipse ends	3 4 21.7	+ 9 50.2	+49 23.8
Eclipse ends	3 5 31.0	+ 19 6.1	+39 16.0
	3 6 33.3		

III.—*A Partial Eclipse of the Moon*, 1916, July 14, visible at Washington; the beginning visible generally in Africa, southwestern Europe, the Atlantic Ocean, North America except the more western portions, South America, and the South Pacific Ocean; the ending visible generally in the Atlantic Ocean, North and South America, and the south Pacific Ocean.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, July 14 16 29 34.3			
Sun's right ascension	h m s	Hourly motion	s
Moon's right ascension	19 36 29.27	Hourly motion	159.64
	''		''
Sun's declination	+21 35 58.9	Hourly motion	-0 23.3
Moon's declination	-22 13 50.2	Hourly motion	+9 38.0
Sun's equa. hor. parallax	8.7	Sun's true semidiameter	15 44.1
Moon's equa. hor. parallax	61 23.4	Moon's true semidiameter	16 42.9

CIRCUMSTANCES OF THE ECLIPSE.

Moon enters penumbra	July	d	h	m	} Greenwich Mean Time.
Moon enters shadow		14	14	18.3	
Middle of the eclipse		14	15	19.3	
Moon leaves shadow		14	16	45.9	
Moon leaves penumbra		14	18	12.5	
		14	19	13.6	

Contacts of shadow with Moon's limb.	Angles of position from the north point.	The Moon being in the zenith			
		in longitude from Greenwich,		and in latitude.	
First	40 to E.	+49	8	-22	25
Last	70 to W.	+90	38	-21	57

Magnitude of the eclipse=0.800 (Moon's diameter=1.0).

IV.—*An Annular Eclipse of the Sun*, 1916, July 29, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ζ in right ascension, July 29 14 39 30.3			
Sun and Moon's R. A.	h m s	Hourly motions	s
	8 35 53.91		9.77 and 117.77
	''		''
Sun's declination	+18 38 11.8	Hourly motion	- 0 35.9
Moon's declination	+17 53 51.1	Hourly motion	-10 3.1
Sun's equa. hor. parallax	8.7	Sun's true semidiameter	15 45.3
Moon's equa. hor. parallax	54 7.0	Moon's true semidiameter	14 44.0

CIRCUMSTANCES OF THE ECLIPSE.

	Greenwich Mean Time.	Longitude from Greenwich.	Latitude.
Eclipse begins	July 29 11 24.9	-103 23.2	- 8 55.8
Central eclipse begins	29 12 50.8	- 89 32.1	-28 44.6
Central eclipse at local apparent noon	29 14 39.5	-141 41.5	-36 53.7
Central eclipse ends	29 15 20.8	-178 36.5	-63 35.6
Eclipse ends	29 16 46.8	-179 5.1	-46 29.6

V.—*A Partial Eclipse of the Sun, 1916, December 24, invisible at Washington*

ELEMENTS OF THE ECLIPSE.

		Greenwich mean time of δ in right ascension, December 24			d h m s	
		d	h	m	s	
Sun and Moon's R. A.	18 11 56.27	18	11	56	27	Hourly motions 11.11 and 164.50
Sun's declination	-23 25 21.1					Hourly motion + 0 3.2
Moon's declination	-24 58 58.2					Hourly motion + 4 4.1
Sun's equa. hor. parallax	8.9					Sun's true semidiameter 16 15.7
Moon's equa. hor. parallax	60 50.0					Moon's true semidiameter 16 33.8

CIRCUMSTANCES OF THE ECLIPSE.

	Greenwich Mean Time.			Longitude from Greenwich.		Latitude.
	d	h	m	'	"	'
Eclipse begins	Dec. 24	8	32.4	-47	39.9	-66 31.5
Greatest eclipse		24	8 46.2	-32	10.5	-65 43.2
Eclipse ends		24	9 0.1	-17	42.7	-64 1.7

Magnitude of greatest eclipse=0.011 (Sun's diameter=1.0).

The regions within which the first two eclipses of the Sun are visible are laid down on the accompanying charts, from which, by means of the dotted lines, the Greenwich mean times of beginning and ending at any place may be found with an uncertainty which will vary from three or four minutes for a high Sun to fifteen or twenty minutes when the Sun is near the horizon.

BESSELIAN ELEMENTS OF THE TOTAL ECLIPSE OF THE SUN,
1916, FEBRUARY 3.

Greenwich Mean Time.	Coordinates of Center of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	x	y	Log sin d	Log cos d	μ	l_1	l_2
h m					° ′		
1 20	-1.60070	-0.11678	-9.46115	+9.98104	16 31.7	+0.54225	-0.00365
30	1.51258	0.08073	9.46110	9.98104	19 1.7	0.54227	0.00362
40	1.42445	0.04467	9.46105	9.98105	21 31.7	0.54230	0.00360
50	1.33633	-0.00861	9.46100	9.98105	24 1.7	0.54232	0.00358
2 0	-1.24821	+0.02746	-9.46095	+9.98106	26 31.7	+0.54234	-0.00356
10	1.18009	0.06354	9.46091	9.98106	29 1.7	0.54236	0.00353
20	1.07196	0.09962	9.46086	9.98106	31 31.7	0.54239	0.00351
30	0.98384	0.13571	9.46081	9.98107	34 1.7	0.54241	0.00349
40	0.89572	0.17180	9.46076	9.98107	36 31.7	0.54243	0.00347
50	0.80760	0.20790	9.46071	9.98108	39 1.7	0.54245	0.00345
3 0	-0.71948	+0.24400	-9.46066	+9.98108	41 31.7	+0.54246	-0.00344
10	0.63136	0.28011	9.46062	9.98109	44 1.7	0.54248	0.00342
20	0.54324	0.31622	9.46057	9.98109	46 31.7	0.54250	0.00340
30	0.45512	0.35234	9.46052	9.98110	49 1.7	0.54252	0.00338
40	0.36701	0.38846	9.46047	9.98110	51 31.7	0.54253	0.00337
50	0.27890	0.42459	9.46042	9.98110	54 1.7	0.54255	0.00335
4 0	-0.19078	+0.46072	-9.46037	+9.98111	56 31.7	+0.54256	-0.00334
10	0.10268	0.49686	9.46032	9.98111	59 1.7	0.54257	0.00333
20	-0.01457	0.53300	9.46028	9.98112	61 31.7	0.54259	0.00331
30	+0.07353	0.56915	9.46023	9.98112	64 1.7	0.54260	0.00330
40	0.16163	0.60530	9.46018	9.98113	66 31.7	0.54261	0.00329
50	0.24973	0.64145	9.46013	9.98113	69 1.7	0.54262	0.00328
5 0	+0.33782	+0.67761	-9.46008	+9.98114	71 31.7	+0.54263	-0.00327
10	0.42591	0.71377	9.46003	9.98114	74 1.7	0.54264	0.00326
20	0 51399	0.74994	9.45999	9.98114	76 31.7	0.54265	0.00325
30	0.60207	0.78611	9.45994	9.98115	79 1.7	0.54266	0.00324
40	0.69015	0.82228	9.45989	9.98115	81 31.7	0.54266	0.00324
50	0.77822	0.85846	9.45984	9.98116	84 1.7	0.54267	0.00323
6 0	+0.86628	+0.89464	-9.45979	+9.98116	86 31.7	+0.54268	-0.00322
10	0.95434	0.93082	9.45974	9.98117	89 1.7	0.54268	0.00322
20	1.04239	0.96701	9.45969	9.98117	91 31.7	0.54269	0.00322
30	1.13044	1.00320	9.45965	9.98118	94 1.7	0.54269	0.00321
40	+1.21848	+1.03939	-9.45960	+9.98118	96 31.7	+0.54269	-0.00321

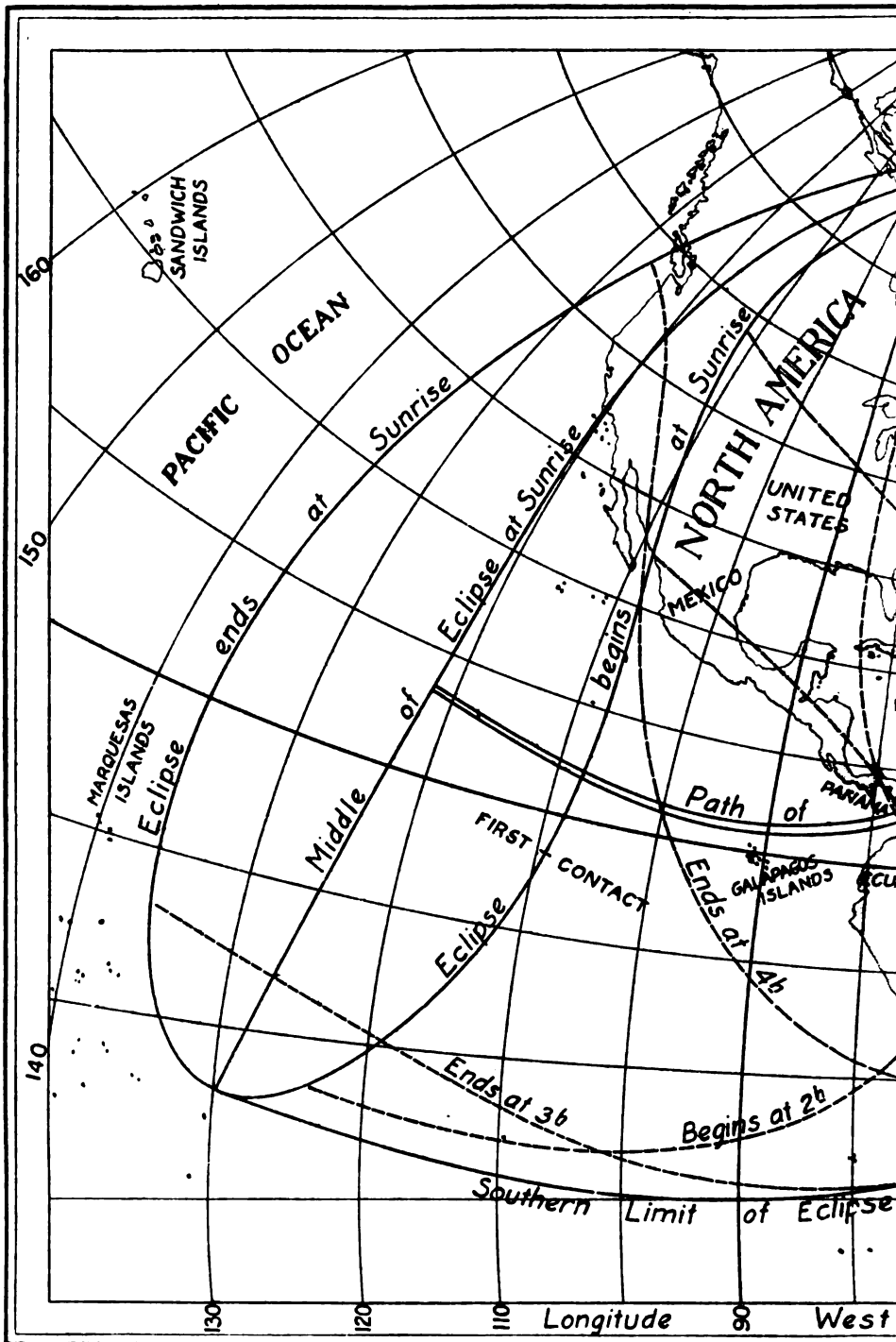
Greenwich Mean Time.	Log x' for 1 Minute.	Log y' for 1 Minute.	Log μ' for 1 Minute.	Log Tangents of Angles of Cones.	
				Penumbra.	Shadow.
h m					
1 0	+7.9451	+7.5568	+1.1761	+7.67608	+7.67391
2 0	7.9451	7.5572	1.1761	7.67608	7.67391
3 0	7.9451	7.5576	1.1761	7.67608	7.67391
4 0	7.9450	7.5579	1.1761	7.67608	7.67391
5 0	7.9449	7.5582	1.1761	7.67607	7.67390
6 0	7.9448	7.5585	1.1761	7.67607	7.67390
7 0	+7.9446	+7.5587	+1.1761	+7.67607	+7.67390



PATH OF THE SHADOW DURING THE TOTAL ECLIPSE OF THE
SUN, 1916, FEBRUARY 3.

Green- wich Mean Time.	Northern Limit of Shadow Path.		Central Line.		Southern Limit of Shadow Path.		Duration of Totality on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
Limits.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	m s
2 ^h 30 ^m	+ 7 34.1	+121 34.0	+ 7 20.8	+121 35.6	+ 7 7.6	+121 37.2	. . .
35	6 1.3	116 4.4	5 33.6	115 19.0	5 7.0	114 38.3	0 57.1
40	3 47.0	105 54.1	3 24.4	105 34.3	3 1.7	105 15.0	1 16.4
45	3 2.2	100 31.8	2 39.3	100 15.2	2 16.2	99 58.9	1 28.7
50	2 44.2	96 30.4	2 20.7	96 14.9	1 57.1	95 59.8	1 38.7
55	2 41.2	93 12.2	2 17.1	92 57.1	1 53.0	92 42.4	1 47.5
	2 48.4	90 21.8	2 23.9	90 6.9	1 59.4	89 52.2	1 55.2
3 0	+ 3 3.3	+ 87 51.1	+ 2 38.5	+ 87 36.2	+ 2 13.7	+ 87 21.4	2 2.1
5	3 24.4	85 35.2	2 59.4	85 20.1	2 34.8	85 5.2	2 8.3
10	3 50.7	83 30.9	3 25.4	83 15.7	3 0.2	83 0.5	2 13.8
15	4 21.4	81 35.9	3 56.1	81 20.5	3 30.7	81 5.1	2 18.7
20	4 56.2	79 48.5	4 30.8	79 32.9	4 5.4	79 17.2	2 22.9
25	5 34.6	78 7.3	5 9.1	77 51.4	4 43.7	77 35.6	2 26.5
30	+ 6 16.3	+ 76 31.3	+ 5 50.9	+ 76 15.2	+ 5 25.5	+ 75 59.2	2 29.6
35	7 1.2	74 59.5	6 35.8	74 43.3	6 10.6	74 27.1	2 32.0
40	7 49.1	73 31.3	7 23.9	73 14.9	6 58.7	72 58.5	2 33.9
45	8 39.9	72 5.9	8 14.8	71 49.4	7 49.9	71 32.9	2 35.2
50	9 33.6	70 42.7	9 8.7	70 26.1	8 43.9	70 9.6	2 36.0
55	10 30.1	69 21.2	10 5.4	69 4.6	9 40.8	68 48.0	2 36.2
4 0	+11 29.4	+ 68 0.8	+11 4.9	+ 67 44.2	+10 40.5	+ 67 27.6	2 36.0
5	12 31.6	66 41.1	12 7.3	66 24.5	11 43.1	66 7.9	2 35.2
10	13 36.8	65 21.3	13 12.7	65 4.9	12 48.7	64 48.4	2 33.9
15	14 45.0	64 1.1	14 21.1	63 44.8	13 57.3	63 28.4	2 32.1
20	15 56.4	62 39.8	15 32.7	62 23.7	15 9.1	62 7.5	2 29.9
25	17 11.1	61 16.7	16 47.7	61 0.9	16 24.2	60 44.9	2 27.2
30	+18 29.5	+ 59 51.1	+18 6.2	+ 59 35.6	+17 43.0	+ 59 20.0	2 24.0
35	19 51.7	58 22.1	19 28.6	58 7.0	19 5.6	57 51.8	2 20.4
40	21 18.2	56 48.8	20 55.3	56 34.1	20 32.4	56 19.3	2 16.3
45	22 49.5	55 9.7	22 26.7	54 55.6	22 4.0	54 41.4	2 11.7
50	24 26.1	53 23.3	24 3.4	53 10.0	23 40.9	52 56.5	2 6.7
55	26 8.9	51 27.5	25 46.4	51 15.1	25 24.0	51 2.4	2 1.1
5 0	+27 59.1	+ 49 19.5	+27 36.7	+ 49 8.1	+27 14.4	+ 48 56.5	1 55.1
5	29 58.3	46 55.0	29 35.9	46 45.0	29 13.6	46 34.7	1 48.4
10	32 9.0	44 7.8	31 46.6	43 59.6	31 24.3	43 51.0	1 41.1
15	34 35.2	40 47.2	34 12.6	40 41.5	33 50.3	40 35.3	1 32.8
20	37 24.3	36 32.8	37 1.3	36 30.8	36 38.7	36 28.2	1 23.4
25	40 54.3	30 34.0	40 30.4	30 39.0	40 6.7	30 43.2	1 11.9
30	+46 34.6	+ 18 23.6	+46 1.9	+ 19 3.8	+45 30.9	+ 19 38.6	0 54.1
Limits.	+49 35.2	+ 9 56.6	+49 23.8	+ 9 50.2	+49 12.3	+ 9 43.8	. . .

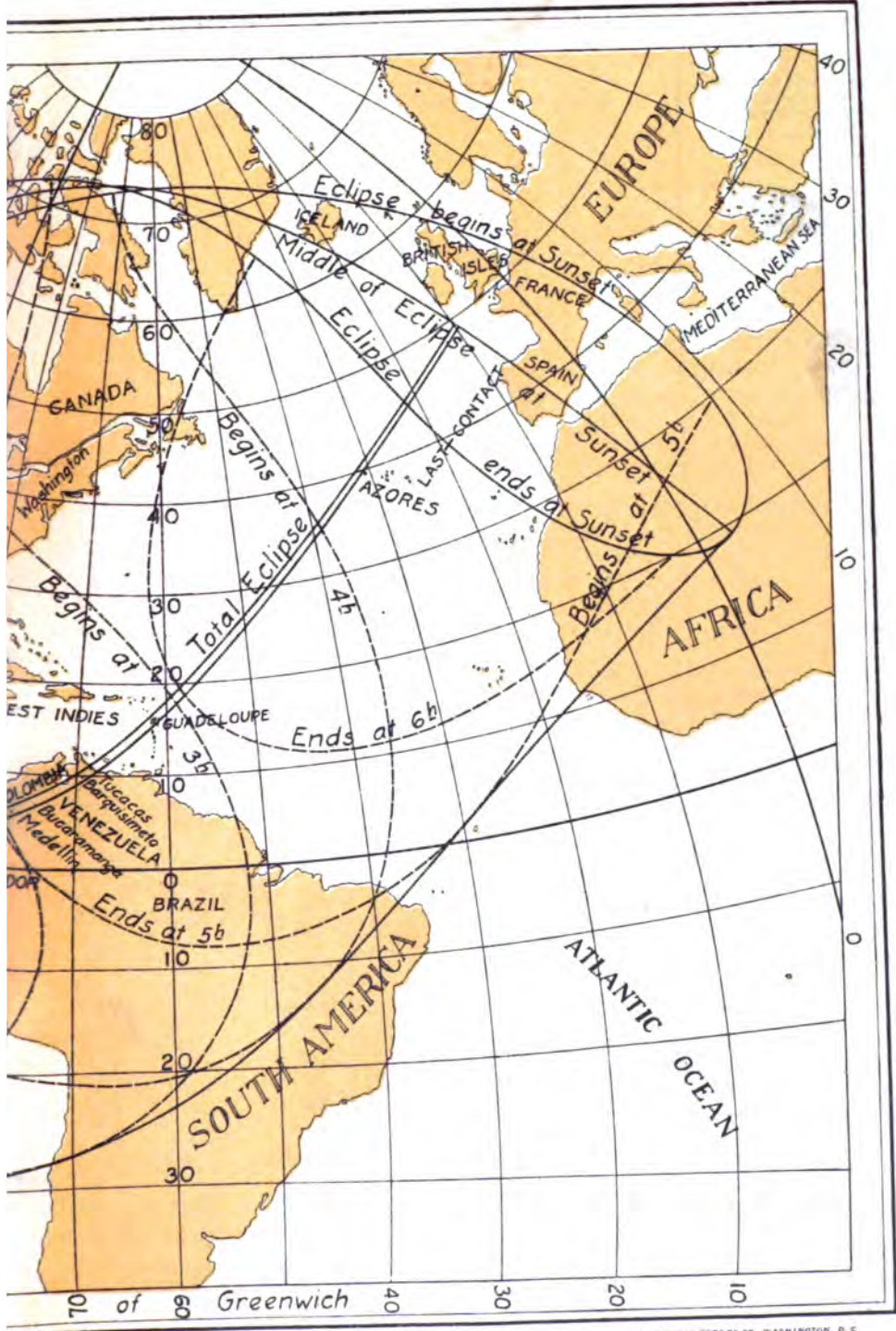
TOTAL ECLIPSE OF



Note:- The hours of beginning and ending

1900

FEBRUARY 3RD 1916



THE MORRIS PETERS CO., WASHINGTON, D. C.

are expressed in Greenwich Mean Time.

BESSELIAN ELEMENTS OF THE ANNULAR ECLIPSE OF THE SUN, 1916, JULY 29.

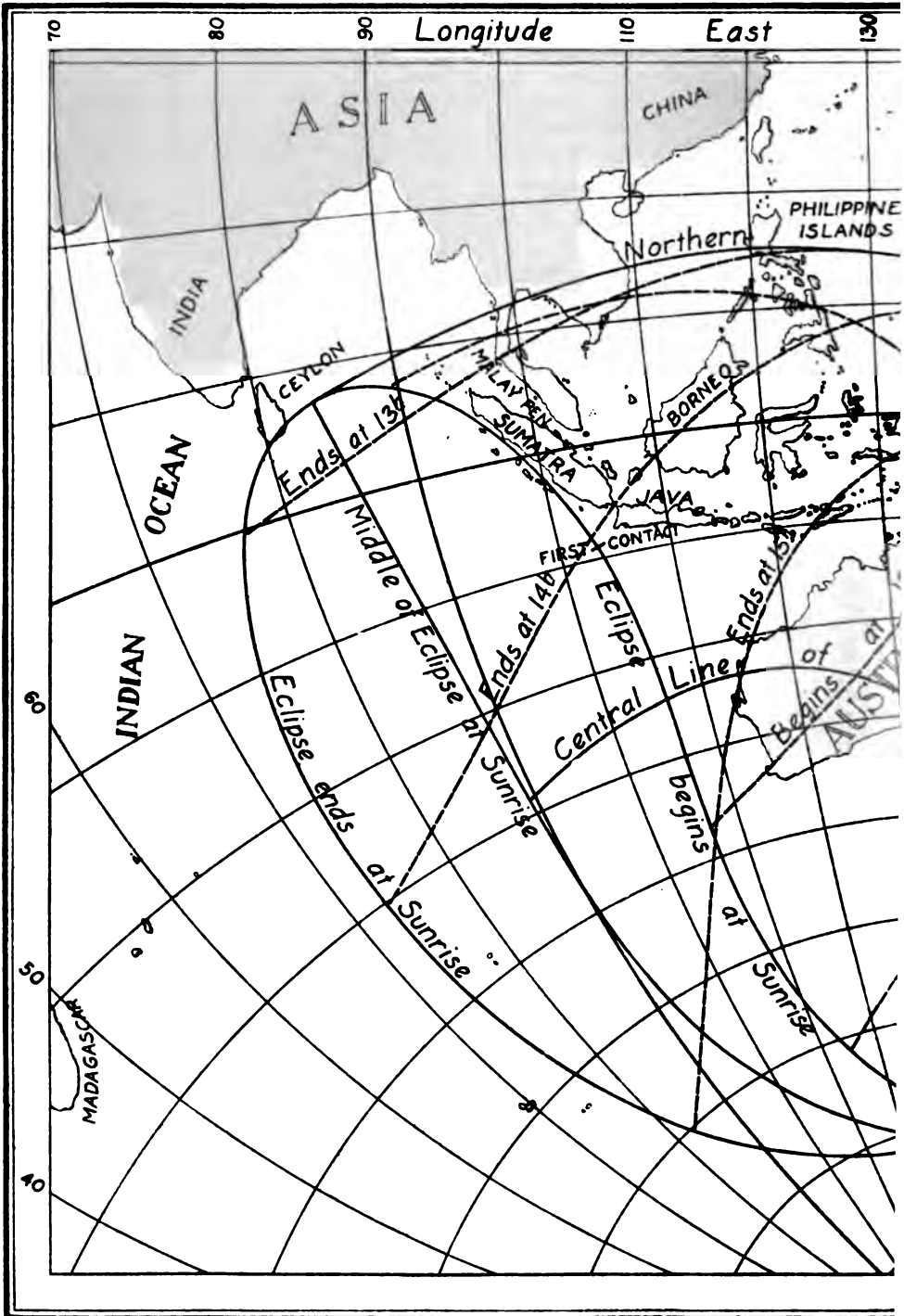
Greenwich Mean Time.	Coordinates of Center of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	<i>x</i>	<i>y</i>	Log sin <i>d</i>	Log cos <i>d</i>	<i>μ</i>	<i>h</i> ₁	<i>h</i> ₂
h m							
11 20	-1.58299	-0.24058	+9.50532	+9.97652	168 25.6	+0.56494	+0.01893
30	1.50365	0.26966	9.50528	9.97653	170 55.6	0.56495	0.01894
40	1.42430	0.29874	9.50525	9.97653	173 25.6	0.56495	0.01894
50	1.34496	0.32783	9.50521	9.97653	175 55.6	0.56495	0.01894
12 0	-1.26561	-0.35692	+9.50517	+9.97654	178 25.6	+0.56495	+0.01894
10	1.18626	0.38602	9.50514	9.97654	180 55.7	0.56495	0.01894
20	1.10691	0.41512	9.50510	9.97655	183 25.7	0.56495	0.01894
30	1.02756	0.44423	9.50507	9.97655	185 55.7	0.56495	0.01894
40	0.94821	0.47335	9.50503	9.97655	188 25.7	0.56495	0.01894
50	0.86887	0.50246	9.50500	9.97656	190 55.7	0.56495	0.01894
13 0	-0.78952	-0.53159	+9.50496	+9.97656	193 25.7	+0.56495	+0.01894
10	0.71017	0.56072	9.50492	9.97657	195 55.7	0.56495	0.01893
20	0.63082	0.58985	9.50489	9.97657	198 25.8	0.56494	0.01893
30	0.55147	0.61899	9.50485	9.97658	200 55.8	0.56494	0.01893
40	0.47213	0.64813	9.50482	9.97658	203 25.8	0.56493	0.01892
50	0.39278	0.67728	9.50478	9.97658	205 55.8	0.56493	0.01892
14 0	-0.31344	-0.70643	+9.50474	+9.97659	208 25.8	+0.56493	+0.01891
10	0.23409	0.73559	9.50471	9.97659	210 55.8	0.56492	0.01891
20	0.15475	0.76475	9.50467	9.97660	213 25.9	0.56491	0.01890
30	-0.07541	0.79392	9.50464	9.97660	215 55.9	0.56491	0.01890
40	+0.00393	0.82309	9.50460	9.97660	218 25.9	0.56490	0.01889
50	0.08327	0.85226	9.50457	9.97661	220 55.9	0.56489	0.01888
15 0	+0.16260	-0.88144	+9.50453	+9.97661	223 25.9	+0.56488	+0.01887
10	0.24194	0.91062	9.50449	9.97662	225 55.9	0.56487	0.01886
20	0.32127	0.93981	9.50446	9.97662	228 25.9	0.56486	0.01885
30	0.40060	0.96900	9.50442	9.97662	230 56.0	0.56485	0.01884
40	0.47993	0.99820	9.50439	9.97663	233 26.0	0.56484	0.01883
50	0.55925	1.02740	9.50435	9.97663	235 56.0	0.56483	0.01882
16 0	+0.63857	-1.05660	+9.50432	+9.97664	238 26.0	+0.56482	+0.01881
10	0.71789	1.08581	9.50428	9.97664	240 56.0	0.56481	0.01880
20	0.79721	1.11502	9.50424	9.97664	243 26.0	0.56480	0.01879
30	0.87652	1.14423	9.50421	9.97665	245 56.1	0.56478	0.01877
40	0.95583	1.17345	9.50417	9.97665	248 26.1	0.56477	0.01876
50	+1.03514	-1.20267	+9.50414	+9.97666	250 56.1	+0.56475	+0.01874

Greenwich Mean Time.	Log <i>r'</i> for 1 Minute.	Log <i>y'</i> for 1 Minute.	Log <i>μ'</i> for 1 Minute.	Log Tangents of Angles of Cones.	
				Penumbra.	Shadow.
h m					
11 0	+7.8995	-7.4634	+1.1761	+7.66338	+7.66121
12 0	7.8995	7.4638	1.1761	7.66338	7.66121
13 0	7.8995	7.4643	1.1761	7.66338	7.66121
14 0	7.8995	7.4647	1.1761	7.66339	7.66122
15 0	7.8995	7.4651	1.1761	7.66339	7.66122
16 0	7.8994	7.4654	1.1761	7.66339	7.66122
17 0	+7.8993	-7.4658	+1.1761	+7.66339	+7.66122

PATH OF THE ANNULUS DURING THE ANNULAR ECLIPSE OF
THE SUN, 1916, JULY 29.

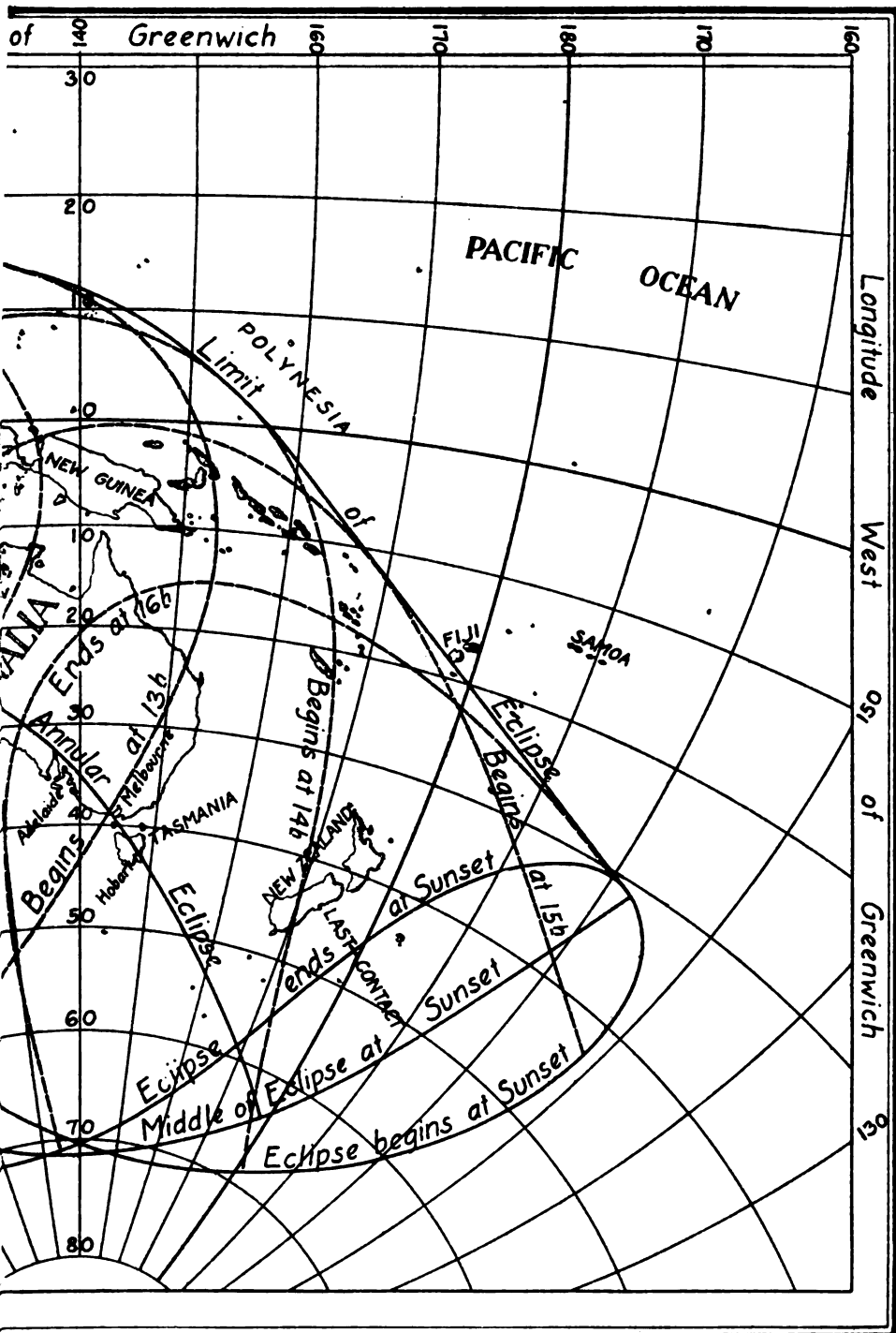
Greenwich Mean Time.	Central Line.		Duration of Annulus on Central Line.
	Latitude.	Longitude from Greenwich.	
Limits.	-28 44.6	- 89 32.1	m s
12 ^h 55 ^m	25 10.8	101 31.1	5 27.5
13 0	-24 7.3	-106 44.3	5 39.2
5	23 38.3	110 25.7	5 48.2
10	23 27.1	113 23.1	5 55.7
15	23 27.4	115 53.5	6 2.0
20	23 36.5	118 5.6	6 7.4
25	23 52.4	120 4.3	6 12.0
30	-24 14.2	-121 52.9	6 15.9
35	24 41.2	123 33.6	6 19.0
40	25 12.8	125 8.2	6 21.4
45	25 48.7	126 37.8	6 23.2
50	26 28.7	128 3.6	6 24.3
55	27 12.7	129 26.5	6 24.9
14 0	-28 0.7	-130 47.4	6 24.9
5	28 52.6	132 6.9	6 24.3
10	29 48.6	133 25.8	6 23.2
15	30 48.7	134 44.8	6 21.7
20	31 53.2	136 4.7	6 19.7
25	33 2.3	137 26.2	6 17.2
30	-34 16.6	-138 50.3	6 14.3
35	35 36.4	140 18.2	6 11.0
40	37 2.6	141 51.1	6 7.2
45	38 36.1	143 30.9	6 3.1
50	40 18.2	145 19.7	5 58.5
55	42 11.0	147 21.2	5 53.5
15 0	-44 17.3	-149 40.6	5 47.9
5	46 42.2	152 26.4	5 41.7
10	49 35.0	155 56.1	5 34.5
15	53 18.6	160 52.3	5 25.7
20	59 51.0	171 12.8	5 11.7
Limits.	-63 35.6	-178 36.5	. . .

ANNULAR ECLIPS



Note:- The hours of beginning and ending

OF JULY 29TH 1916



are expressed in Greenwich Mean Time.

BESSELIAN ELEMENTS OF THE PARTIAL ECLIPSE OF THE SUN, 1916, DECEMBER 24.

Greenwich Mean Time.	Coordinates of Center of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra on Fundamental Plane.
	<i>x</i>	<i>y</i>	Log sin <i>d</i>	Log cos <i>d</i>	<i>α</i>	<i>l</i>
h m						
8 30	+0.02237	-1.54000	-9.59928	+9.96267	127 32.6	+0.54084
40	0.11790	1.52890	9.59928	9.96267	130 2.5	0.54083
50	0.21342	1.51779	9.59927	9.96267	132 32.5	0.54082
9 0	+0.30895	-1.50666	-9.59927	+9.96267	135 2.5	+0.54081
10	+0.40447	-1.49552	-9.59927	+9.96267	137 32.4	+0.54080

Greenwich Mean Time.	Log <i>x'</i> for 1 Minute.	Log <i>y'</i> for 1 Minute.	Log <i>ρ'</i> for 1 Minute.	Log Tangent of Angle of Cone.
	Penumbra.			
h m				
8 0	+7.9801	+7.0432	+1.1760	+7.67706
9 0	7.9801	7.0467	1.1760	7.67706
10 0	+7.9801	+7.0501	+1.1760	+7.67706

566 STARS OCCULTED BY THE MOON, 1916.

MEAN PLACES FOR 1916.0. (January 1^d.189, Greenwich.)

Name of Star.		Magni- tude.	Right Ascension.			Annual Proper Motion.	Declination.			Annual Proper Motion.
			h	m	s	s	°	'	"	"
36	Piscium	6.2	0	12	14.982	-0.0027	+ 7	46	26.27	-0.006
<i>d</i>	Piscium	5.4	0	16	16.475	+0.0003	7	43	25.86	+0.016
136 B.	Piscium	6.5	0	36	51.353	-0.0084	8	53	48.53	-0.082
58	Piscium	5.7	0	42	38.423	+0.0033	11	30	57.66	-0.025
75	Piscium	6.3	1	2	8.352	+0.0012	12	30	22.29	+0.042
η	Piscium	3.7	1	26	59.130	+0.0015	+14	54	47.45	-0.003
101	Piscium	6.2	1	31	16.819	+0.0010	14	13	56.68	-0.001
105	Piscium	6.1	1	35	8.712	+0.0053	15	58	48.36	-0.006
3	Arietis	6.4	1	42	1.507	+0.0031	16	59	33.47	+0.015
4	Arietis	5.8	1	43	37.367	+0.0035	16	32	16.22	-0.021
ϵ	Arietis	5.1	1	52	45.506	+0.0021	+17	24	28.35	-0.020
35 B.	Arietis	6.4	1	59	5.979	-0.0008	17	51	0.17	-0.018
47 B.	Arietis	6.5	2	3	8.995	-0.0037	17	37	46.99	-0.007
20 H.	Arietis	6.4	2	4	46.053	+0.0112	16	49	51.03	-0.179
15	Arietis	5.9	2	5	58.016	+0.0059	19	6	16.06	-0.032
θ	Arietis	5.6	2	13	27.003	-0.0007	+19	30	47.30	-0.003
26	Arietis	6.2	2	25	55.549	+0.0050	19	28	59.27	-0.022
ν	Arietis	5.4	2	34	2.605	+0.0001	21	35	55.63	-0.021
μ	Arietis	5.7	2	37	37.599	+0.0023	19	39	15.43	-0.038
47	Arietis	5.8	2	53	16.532	+0.0180	20	19	57.61	-0.021
σ	Arietis (<i>mean</i>)	4.6	2	54	24.310	-0.0009	+21	0	18.17	-0.010
64	Arietis	5.8	3	19	20.631	+0.0013	24	25	38.53	-0.046
66	Arietis	6.1	3	23	31.774	+0.0006	22	30	54.87	-0.112
7	Tauri	5.9	3	29	27.958	+0.0013	24	11	0.66	-0.023
11	Tauri	6.1	3	35	45.091	+0.0014	25	3	31.47	-0.008
16	Tauri	5.4	3	39	48.399	+0.0009	+24	1	33.70	-0.049
17	Tauri	3.8	3	39	53.043	+0.0016	23	51	0.22	-0.050
18	Tauri	5.6	3	40	8.777	+0.0004	24	34	35.94	-0.038
ρ	Tauri	4.3	3	40	12.231	+0.0010	24	12	17.04	-0.034
20	Tauri	4.1	3	40	49.510	+0.0016	24	6	22.10	-0.044
21	Tauri	5.8	3	40	53.993	+0.0012	+24	17	35.35	-0.046
22	Tauri	6.5	3	41	2.434	+0.0006	24	16	0.10	-0.039
23	Tauri	4.3	3	41	20.240	+0.0017	23	41	14.83	-0.050
η	Tauri	3.0	3	42	29.281	+0.0016	23	50	46.45	-0.050
104 B.	Tauri	5.5	3	43	22.235	+0.0008	23	9	50.38	-0.045
27	Tauri	3.7	3	44	9.852	+0.0013	+23	47	50.75	-0.048
28	Tauri	5.2	3	44	11.139	+0.0009	23	52	51.38	-0.046
14 H.	Tauri	5.3	3	45	15.742	+0.0033	25	19	36.90	-0.103
36	Tauri	5.6	3	59	20.059	+0.0001	23	52	31.76	-0.022
<i>p</i>	Tauri	5.6	4	5	42.728	-0.0024	26	15	45.53	-0.042
χ	Tauri	5.3	4	17	28.108	+0.0028	+25	25	55.07	-0.029
62	Tauri	6.1	4	18	55.749	+0.0008	24	6	22.27	-0.019
17 B.	Aurigæ	6.0	4	47	32.164	+0.0033	27	45	28.44	-0.037
315 B.	Tauri	6.3	4	51	8.552	-0.0001	24	27	31.99	-0.033
<i>k</i>	Tauri	5.6	4	53	0.862	+0.0023	24	55	17.59	-0.061
38 B.	Aurigæ	6.5	4	59	22.687	-0.0001	+27	34	46.58	-0.075
47 B.	Aurigæ	6.0	5	4	28.383	. . . .	27	55	32.01	. . . .
354 B.	Tauri	6.4	5	15	42.728	-0.0027	27	52	23.36	-0.015
118	Tauri	5.4	5	24	6.282	+0.0015	25	5	0.28	-0.038
107 B.	Aurigæ	6.5	5	30	39.171	-0.0013	27	36	30.05	-0.076
112 B.	Aurigæ	5.7	5	31	53.972	-0.0004	+26	52	21.75	-0.039
125	Tauri	5.1	5	34	31.834	+0.0018	25	51	3.59	-0.029
132	Tauri	5.0	5	43	51.624	0.0000	+24	32	25.41	-0.022

MEAN PLACES FOR 1916.0. (January 1^d.189, Greenwich.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Proper Motion.	Declination.			Annual Proper Motion.
		h	m	s		°	'	"	
406 B. Tauri	5.6	5	45	40.423	-0.0013	+27	56	37.81	+0.011
136 Tauri	4.6	5	48	2.882	+0.0013	27	35	36.25	-0.020
412 B. Tauri	5.8	5	51	47.480	....	24	14	18.19	....
139 Tauri	4.7	5	52	46.919	0.0000	25	56	40.31	-0.007
415 B. Tauri	6.1	5	55	43.829	+0.0018	27	34	8.34	-0.001
5 Geminorum	5.9	6	6	23.261	+0.0011	+24	26	23.06	-0.061
8 Geminorum	6.1	6	11	11.120	-0.0009	23	59	53.02	-0.026
52 B. Geminorum	6.5	6	32	18.294	-0.0021	24	39	41.32	-0.002
ε Geminorum	3.2	6	38	45.897	-0.0001	25	12	55.35	-0.018
87 B. Geminorum	5.8	6	46	54.133	-0.0006	23	42	7.03	-0.021
37 Geminorum	5.7	6	50	8.794	-0.0028	+25	28	54.40	+0.014
39 Geminorum	6.2	6	53	36.887	-0.0117	26	11	32.63	+0.086
40 Geminorum	6.3	6	54	16.800	-0.0012	26	1	45.03	-0.015
ω Geminorum	5.2	6	57	17.777	-0.0003	24	20	10.43	0.000
44 Geminorum	5.9	7	0	15.036	0.0000	22	45	51.15	-0.019
48 Geminorum	5.8	7	7	20.252	-0.0009	+24	16	12.72	-0.041
52 Geminorum	6.1	7	9	33.823	+0.0038	25	1	55.16	-0.086
δ Geminorum	3.5	7	15	6.499	-0.0010	22	8	16.82	-0.015
Λ Geminorum	5.1	7	18	21.334	-0.0051	25	12	46.75	-0.014
58 Geminorum	6.0	7	18	25.352	-0.0022	23	6	28.11	-0.064
149 B. Geminorum	6.4	7	21	52.513	-0.0219	+21	42	16.19	-0.022
63 Geminorum	5.3	7	22	45.321	-0.0035	21	37	5.29	-0.110
B. D.+23° 1744	6.4	7	27	48.701	-0.0010	23	4	3.43	-0.007
187 B. Geminorum	6.3	7	35	56.944	+0.0011	23	12	50.57	+0.007
192 B. Geminorum	6.3	7	38	22.151	-0.0014	22	35	54.46	+0.025
79 Geminorum	6.3	7	40	13.546	-0.0013	+20	31	6.94	-0.012
82 Geminorum	6.3	7	43	32.390	-0.0010	23	20	59.18	-0.001
209 B. Geminorum	6.2	7	47	3.765	-0.0029	19	32	27.90	-0.030
85 Geminorum	5.2	7	50	45.888	-0.0011	20	6	23.79	-0.048
217 B. Geminorum	6.3	7	55	54.378	-0.0018	20	2	50.55	-0.007
10 H. Cancri	6.1	7	59	54.111	-0.0020	+19	4	48.67	-0.046
μ Cancri	5.5	8	2	49.419	+0.0019	21	49	34.62	-0.084
49 B. Cancri	6.0	8	15	27.206	+0.0052	21	0	48.18	-0.063
α ¹ Cancri	5.9	8	18	33.377	-0.0038	18	36	9.73	-0.031
α ² Cancri	6.2	8	21	4.740	-0.0132	17	19	26.08	-0.153
θ Cancri	5.5	8	26	48.516	-0.0039	+18	22	44.25	-0.068
102 B. Cancri	6.5	8	35	32.829	-0.0048	19	58	4.03	-0.010
ε Cancri	6.3	8	35	38.170	-0.0007	19	50	33.53	-0.027
δ Cancri	4.2	8	39	54.842	-0.0006	18	27	49.59	-0.240
139 B. Cancri	6.1	8	45	58.380	-0.0011	19	8	47.57	-0.001
54 Cancri	6.3	8	46	20.903	-0.0075	+15	39	46.70	+0.076
X Cancri (var.)	6.2	8	50	39.162	+0.0009	17	33	6.30	+0.013
o ¹ Cancri	5.1	8	52	33.976	+0.0041	15	38	44.29	+0.022
o ² Cancri	5.7	8	52	53.861	+0.0043	15	54	16.57	+0.023
81 Cancri	6.4	9	7	41.920	-0.0359	15	20	6.89	+0.244
π Cancri	5.6	9	10	35.780	-0.0022	+15	17	26.32	-0.008
227 B. Cancri	6.4	9	16	37.334	....	15	43	42.04	....
ξ Leonis	5.1	9	27	25.210	-0.0063	11	40	20.74	-0.084
o Leonis	3.8	9	36	40.165	-0.0096	10	16	30.54	-0.033
18 Leonis	5.8	9	41	51.961	-0.0006	12	11	50.80	+0.008
19 Leonis	6.4	9	42	55.034	-0.0049	+11	57	26.23	+0.008
R Leonis (var.)	5-10	9	43	2.528	-0.0005	11	49	8.76	-0.040
83 B. Leonis	5.9	9	51	58.834	-0.0074	+ 9	19	54.41	+0.017

MEAN PLACES FOR 1916.0. (January 1^d.189, Greenwich.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Proper Motion.	Declination.			Annual Proper Motion.
		h	m	s		°	'	"	
89 B. Leonis	6.2	9	53	40.745	+0.0010	+ 8	42	55.56	-0.029
π Leonis	4.9	9	55	46.547	-0.0023	8	26	51.90	-0.027
A Leonis	4.6	10	3	26.912	-0.0057	10	24	35.02	-0.067
43 Leonis	6.3	10	18	36.791	-0.0017	6	58	10.48	-0.101
155 B. Leonis	6.5	10	18	52.892	-0.0187	6	7	14.62	-0.071
48 Leonis	5.2	10	30	25.171	-0.0072	+ 7	23	11.29	+0.046
35 Sextantis	6.1	10	38	59.399	+0.0018	5	11	20.05	-0.019
d Leonis	5.0	10	56	13.382	+0.0004	4	4	7.38	-0.022
p ^a Leonis	5.7	11	2	37.184	-0.0253	2	24	42.76	-0.080
p ^b Leonis	5.3	11	9	27.593	-0.0029	0	23	15.75	-0.003
75 Leonis	5.4	11	12	58.050	+0.0027	+ 2	28	21.62	-0.145
76 Leonis	6.0	11	14	36.303	-0.0037	2	6	40.34	-0.053
359 B. Leonis	6.3	11	18	59.899	-0.0024	+ 0	35	35.95	-0.015
388 B. Leonis	6.3	11	23	36.188	-0.0025	- 1	14	14.64	+0.007
e Leonis	5.1	11	26	1.390	+0.0018	2	32	23.02	-0.008
v Leonis	4.5	11	32	38.870	0.0000	- 0	21	35.47	+0.039
431 B. Leonis	6.2	11	34	6.516	-0.0028	1	58	17.15	+0.047
13 B. Virginis	5.9	11	46	44.591	+0.0008	4	51	57.75	+0.006
64 B. Virginis	6.5	12	6	8.595	-0.0004	7	18	25.28	+0.017
78 B. Virginis	6.5	12	9	57.247	-0.0051	5	15	7.71	+0.114
q Virginis	5.3	12	29	26.539	-0.0057	- 8	59	19.31	+0.004
x Virginis	4.8	12	34	54.542	-0.0056	7	32	0.49	-0.031
370 B. Virginis	6.0	12	49	56.310	-0.0058	11	11	36.06	-0.037
69 Virginis	4.9	13	22	58.182	-0.0086	15	32	17.99	+0.013
75 Virginis	5.6	13	28	22.209	-0.0050	14	55	52.16	+0.004
83 Virginis	5.6	13	39	57.706	+0.0007	-15	45	25.25	-0.011
85 Virginis	6.1	13	41	3.544	-0.0029	15	20	45.03	-0.034
87 Virginis	5.8	13	42	50.974	+0.0025	17	26	23.19	-0.046
89 Virginis	5.1	13	45	18.232	-0.0077	17	42	58.11	-0.040
43 H. Virginis	5.5	14	10	46.165	-0.0031	17	48	33.31	-0.015
231 G. Virginis	6.4	14	12	24.947	-0.0005	-18	11	43.43	+0.106
236 G. Virginis	5.7	14	13	59.390	-0.0039	18	19	37.76	-0.001
9 G. Libræ	6.5	14	30	6.990	+0.0032	20	4	16.41	-0.004
17 G. Libræ	6.4	14	41	24.812	-0.0047	20	49	13.41	-0.121
18 G. Libræ	6.1	14	42	26.881	-0.0032	20	58	23.06	-0.014
43 B. Libræ	5.7	14	52	33.447	+0.0745	-21	2	16.10	-1.798
47 G. Libræ	6.1	15	1	36.199	+0.0065	21	42	20.28	-0.051
64 G. Libræ	5.8	15	11	30.636	-0.0028	22	5	21.06	+0.018
153 B. Libræ	6.3	15	28	10.560	-0.0006	24	12	17.52	-0.042
169 B. Libræ	6.0	15	32	51.556	-0.0017	22	51	48.79	-0.068
177 B. Libræ	6.2	15	34	24.728	-0.0016	-22	52	34.32	-0.034
42 Libræ	5.0	15	35	18.725	-0.0018	23	32	45.12	-0.027
b Scorpïi	4.7	15	45	55.379	-0.0023	25	29	48.77	-0.044
A Scorpïi	4.6	15	48	33.918	-0.0017	25	4	37.30	-0.023
31 B. Scorpïi	5.4	15	48	52.601	-0.0022	24	17	1.47	-0.037
32 B. Scorpïi	5.3	15	48	55.686	-0.0023	-23	43	42.31	-0.016
3 Scorpïi	5.9	15	49	36.677	-0.0031	24	59	43.75	-0.029
4 Scorpïi	5.7	15	50	25.281	-0.0038	26	1	8.79	-0.028
40 B. Scorpïi	5.4	15	53	32.380	-0.0031	24	35	23.09	+0.004
π Scorpïi	3.0	15	53	46.018	-0.0010	25	52	23.56	-0.048
48 B. Scorpïi	4.9	15	58	15.872	-0.0048	-25	37	55.06	-0.043
50 B. Scorpïi	6.4	15	58	51.924	+0.0017	-24	29	43.76	-0.032

MEAN PLACES FOR 1916.0. (January 1^d.189, Greenwich.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Proper Motion.	Declination.			Annual Proper Motion.
		h	m	s		°	'	"	
57 B. Scorpii	5.7	16	1	5.617	-0.0011	-23	22	40.33	-0.004
24 G. Scorpii	6.2	16	2	49.247	0.0000	24	14	17.28	-0.068
65 B. Scorpii	5.5	16	3	0.316	+0.0095	26	6	7.64	+0.023
27 G. Scorpii	5.8	16	3	42.678	+0.0032	23	27	42.72	-0.012
41 G. Scorpii	6.3	16	8	42.240	-0.0004	24	12	29.26	-0.034
85 B. Scorpii	6.0	16	9	47.841	-0.0005	-25	15	52.05	+0.012
19 Scorpii	4.9	16	15	34.705	-0.0012	23	58	3.51	-0.013
♄ Scorpii	3.1	16	16	4.779	-0.0011	25	23	32.01	-0.030
α Scorpii	1.2	16	24	15.249	-0.0006	26	14	47.60	-0.028
22 Scorpii	4.8	16	25	6.113	-0.0004	24	55	51.78	-0.016
116 B. Scorpii	6.2	16	26	13.394	-0.0013	-26	21	20.39	-0.037
126 B. Scorpii	6.1	16	36	30.626	-0.0023	24	18	21.25	-0.004
134 B. Scorpii	6.4	16	39	4.635	+0.0012	27	17	57.66	-0.014
88 B. Ophiuchi	6.3	16	54	49.022	+0.0005	24	57	55.82	-0.015
26 Ophiuchi	5.8	16	55	0.647	+0.0036	24	51	42.30	-0.053
118 B. Ophiuchi	6.2	17	1	40.788	-0.0008	-26	24	1.63	-0.046
137 B. Ophiuchi	6.3	17	7	4.248	+0.0058	25	9	8.10	-0.045
95 G. Ophiuchi	6.1	17	7	9.446	+0.0008	27	39	32.92	-0.020
36 Ophiuchi (<i>First Star</i>)	5.4	17	10	10.761	-0.0369	26	28	50.34	-1.169
θ Ophiuchi	3.4	17	16	50.939	-0.0006	24	55	0.35	-0.036
43 Ophiuchi	5.4	17	18	4.293	-0.0002	-28	3	45.04	-0.040
136 G. Ophiuchi	6.3	17	21	43.349	-0.0010	25	52	11.77	-0.003
151 G. Ophiuchi	6.0	17	26	31.425	+0.0012	26	12	22.29	-0.026
163 G. Ophiuchi	6.3	17	38	0.350	+0.0002	27	50	40.43	-0.017
X Sagittarii (<i>var.</i>)	4.4	17	42	16.356	+0.0002	27	47	59.34	-0.015
4 G. Sagittarii	6.2	17	43	12.613	-0.0003	-26	56	46.04	-0.030
63 Ophiuchi	6.1	17	49	43.904	-0.0001	24	52	17.05	-0.015
10 G. Sagittarii	5.7	17	51	23.602	+0.0024	28	3	8.53	+0.015
7 Sagittarii	5.5	17	57	42.208	-0.0003	24	16	57.01	-0.007
9 Sagittarii	6.0	17	58	43.358	-0.0006	24	21	48.19	-0.006
66 B. Sagittarii	4.7	18	12	47.708	0.0000	-27	4	25.46	+0.015
67 B. Sagittarii	6.4	18	13	29.657	-0.0044	25	38	14.07	-0.062
70 B. Sagittarii	6.4	18	16	21.147	+0.0013	24	57	14.38	-0.001
68 G. Sagittarii	6.2	18	22	29.563	0.0000	26	41	7.67	-0.046
λ Sagittarii	2.9	18	22	47.209	-0.0033	25	28	9.43	-0.199
69 G. Sagittarii	6.3	18	22	51.810	+0.0018	-26	48	30.14	-0.032
86 B. Sagittarii	6.5	18	23	43.012	-0.0063	26	38	10.42	-0.054
24 Sagittarii	5.7	18	28	45.614	-0.0002	24	5	45.63	-0.020
117 B. Sagittarii	5.8	18	33	24.143	-0.0015	23	34	39.05	-0.020
26 Sagittarii	6.1	18	36	44.258	+0.0021	23	54	45.29	-0.023
126 B. Sagittarii	5.7	18	39	39.759	-0.0008	-25	5	47.06	-0.041
γ ¹ Sagittarii	5.0	18	49	5.945	+0.0001	22	50	57.28	-0.021
γ ² Sagittarii	5.1	18	50	2.487	+0.0069	22	46	37.75	-0.024
♄ Sagittarii	2.1	18	50	3.394	-0.0003	26	24	7.93	-0.075
154 B. Sagittarii	5.9	18	50	55.523	-0.0010	23	16	54.34	-0.021
162 B. Sagittarii	6.4	18	53	11.524	-0.0009	-24	59	23.23	-0.020
127 G. Sagittarii	6.4	18	55	15.555	+0.0023	25	3	35.36	+0.051
168 B. Sagittarii	6.3	18	56	33.980	+0.0005	22	48	52.35	+0.009
172 B. Sagittarii	5.8	18	57	19.375	+0.0002	24	57	48.63	-0.172
189 B. Sagittarii	6.1	19	3	6.704	+0.0012	24	47	21.82	+0.001
191 B. Sagittarii	6.5	19	3	40.007	-0.0011	-23	19	25.38	-0.057
199 B. Sagittarii	6.4	19	7	26.877	-0.0003	-21	47	55.53	-0.040

570 STARS OCCULTED BY THE MOON, 1916.

MEAN PLACES FOR 1916.0. (January 1^d.189, Greenwich.)

Name of Star.		Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.
			h m s	s	° ' "	"
ψ	Sagittarii	4.9	19 10 23.449	+0.0025	-25 24 8.98	-0.035
208 B.	Sagittarii	6.1	19 10 26.217	+0.0072	24 19 23.71	-0.078
222 B.	Sagittarii	5.5	19 15 36.149	-0.0016	22 33 35.04	+0.026
χ	Sagittarii	4.9	19 20 9.885	+0.0033	24 40 21.42	-0.063
49	Sagittarii	5.5	19 20 24.701	-0.0017	24 7 39.82	+0.001
50	Sagittarii	5.5	19 21 18.614	+0.0019	-21 56 37.83	+0.001
253 B.	Sagittarii	6.1	19 25 55.014	+0.0026	21 29 16.07	-0.028
53	Sagittarii	6.3	19 34 46.694	-0.0004	23 37 10.84	-0.037
274 B.	Sagittarii	6.1	19 35 4.274	+0.0018	23 37 20.24	-0.031
f	Sagittarii	5.1	19 41 27.794	-0.0099	19 57 50.06	-0.088
329 B.	Sagittarii	6.1	19 56 24.498	+0.0010	-22 58 8.39	-0.005
336 B.	Sagittarii	6.5	19 58 45.782	-0.0019	22 49 54.44	+0.032
σ	Capricorni	5.5	20 14 32.919	-0.0002	19 22 53.27	-0.006
π	Capricorni	5.2	20 22 30.878	+0.0004	18 29 15.96	-0.002
ρ	Capricorni	5.0	20 24 4.266	-0.0013	18 5 31.78	-0.020
\omicron	Capricorni	5.6	20 25 5.089	+0.0011	-18 51 43.08	-0.081
47 B.	Capricorni	6.2	20 30 47.156	+0.0055	16 48 54.69	-0.033
ν	Capricorni	5.3	20 35 16.187	-0.0018	18 26 6.01	-0.007
61 B.	Capricorni	5.9	20 35 49.500	-0.0032	16 25 25.19	+0.082
81 B.	Capricorni	6.4	20 44 34.773	-0.0004	18 20 46.93	-0.019
19	Capricorni	5.7	20 50 3.178	-0.0041	-18 14 31.54	-0.013
94 B.	Capricorni	5.7	20 52 58.641	+0.0046	16 21 18.69	+0.030
95 B.	Capricorni	5.9	20 54 2.955	. . . . .	14 48 29.12	. . . . .
21	Capricorni	6.5	20 56 8.249	-0.0025	17 51 32.41	-0.002
θ	Capricorni	4.2	21 1 13.626	+0.0050	17 34 2.73	-0.066
29	Capricorni	5.5	21 11 6.005	+0.0016	-15 31 16.35	+0.004
53 B.	Aquarii	6.5	21 11 23.640	+0.0004	13 33 3.66	-0.039
18	Aquarii	5.5	21 19 36.160	+0.0054	13 14 21.35	+0.007
72 B.	Aquarii	6.5	21 23 40.869	-0.0045	11 55 57.62	+0.008
137 B.	Capricorni	6.2	21 34 57.287	+0.0001	10 57 19.00	-0.010
c^1	Capricorni	5.3	21 40 31.615	+0.0004	- 9 28 7.09	+0.008
c^2	Capricorni	6.3	21 41 47.470	+0.0008	9 39 50.83	+0.001
λ	Capricorni	5.5	21 42 0.892	+0.0015	11 45 13.82	-0.004
151 B.	Capricorni	6.1	21 45 8.758	-0.0009	13 6 53.36	+0.031
96 B.	Aquarii	6.5	21 49 6.632	-0.0001	10 42 27.35	+0.006
θ	Aquarii	4.3	22 12 24.128	+0.0073	- 8 12 6.99	-0.019
150 B.	Aquarii	6.0	22 12 26.611	-0.0034	9 27 32.34	-0.005
ρ	Aquarii	5.3	22 15 46.808	+0.0008	8 14 36.57	-0.008
170 B.	Aquarii	6.0	22 19 7.942	+0.0012	7 37 9.73	+0.033
51	Aquarii	5.8	22 19 44.379	+0.0011	5 15 44.82	-0.011
186 B.	Aquarii	6.1	22 26 54.116	+0.0129	- 6 59 3.67	-0.129
κ	Aquarii	5.2	22 33 24.424	-0.0049	4 39 41.81	-0.113
207 B.	Aquarii	6.3	22 36 27.219	. . . . .	3 59 28.80	. . . . .
252 B.	Aquarii	5.8	22 50 49.528	-0.0003	5 26 7.50	+0.009
6 G.	Piscium	6.2	22 53 56.037	+0.0002	2 50 43.37	-0.082
22 B.	Piscium	6.4	23 19 13.388	+0.0043	- 0 10 11.38	+0.038
κ	Piscium	4.9	23 22 37.584	+0.0056	+ 0 47 44.38	-0.093
9	Piscium	6.4	23 22 56.623	+0.0032	0 39 40.03	-0.029
16	Piscium	5.7	23 32 6.082	-0.0074	1 38 9.48	+0.057
λ	Piscium	4.6	23 37 45.599	-0.0092	1 19 3.54	-0.154
19	Piscium	5.4	23 42 5.906	-0.0034	+ 3 1 14.72	-0.020
22	Piscium	5.8	23 47 39.791	+0.0009	+ 2 27 48.33	-0.011

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.						Limiting Parallels.		
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>z'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
47 G. Libræ	6.1	-0.04	-2.8	21 42.4	1	2	24.0	+6 2.1	-0.8010	0.5842	-0.1598	-14	-90
64 G. Libræ	5.8	0.08	2.9	22 5.4			6 17.4	+9 46.2	-1.0193	0.5882	0.1503	-29	-90
153 B. Libræ	6.3	0.16	2.7	24 12.3			12 43.2	-8 3.6	+0.1756	0.5946	0.1336	+35	-33
42 Libræ	5.0	0.17	3.0	23 32.8			15 26.0	-5 27.5	-0.8314	0.5972	0.1262	-19	-90
<i>b</i> Scorpii	4.7	0.22	2.8	25 29.9			19 25.6	+0.6226	0.6007	0.1149	+60	-8	
Λ Scorpii	4.6	-0.22	-3.0	25 4.7			20 24.9	-0 41.0	+0.0943	0.6016	-0.1121	+29	-38
31 B. Scorpii	5.4	0.22	3.1	24 17.1			20 31.8	-0 34.4	-0.7046	0.6017	0.1117	-14	-90
32 B. Scorpii	5.3	0.22	3.3	23 43.8			20 33.0	-0 33.2	-1.2569	0.6018	0.1117	-56	-80
3 Scorpii	5.9	0.23	3.0	24 59.8			20 48.3	-0 18.6	-0.0299	0.6020	0.1109	+22	-45
4 Scorpii	5.7	0.24	2.8	26 1.2			21 6.4	-0 1.2	+0.9506	0.6021	0.1100	+64	+14
40 B. Scorpii	5.4	-0.24	-3.2	24 35.4			22 16.0	+1 5.5	-0.5905	0.6032	-0.1066	-7	-85
π Scorpii	3.0	0.24	2.9	25 52.4			22 21.0	+1 10.2	+0.6711	0.6033	0.1064	+62	-5
48 B. Scorpii	4.9	0.26	3.0	25 38.0			2 0 1.0	+2 45.9	+0.2590	0.6047	0.1014	+36	-28
50 B. Scorpii	6.4	0.25	3.3	24 29.8			0 14.3	+2 58.6	-0.8876	0.6048	0.1007	-25	-90
24 G. Scorpii	6.2	0.26	3.4	24 14.3			1 41.8	+4 22.5	-1.2850	0.6060	0.0963	-63	-69
65 B. Scorpii	5.5	-0.27	-3.0	26 6.2			1 45.8	+4 26.4	+0.5510	0.6060	-0.0961	+54	-12
85 B. Scorpii	6.0	0.28	3.4	25 15.9			4 15.3	+6 49.4	-0.5064	0.6080	0.0884	-4	-77
σ Scorpii	3.1	0.30	3.5	25 23.6			6 32.8	+9 1.0	-0.5741	0.6096	0.0812	-9	-84
α Scorpii	1.2	0.32	3.5	26 14.9			9 30.6	+11 51.2	+0.0421	0.6118	0.0717	+22	-40
22 Scorpii	4.8	0.32	3.7	24 55.9			9 49.0	-11 51.3	-1.2761	0.6118	0.0707	-62	-70
116 B. Scorpii	6.2	-0.33	-3.5	26 21.4			10 13.3	-11 28.0	+0.0994	0.6121	-0.0694	+25	-37
134 B. Scorpii	6.4	0.36	3.6	27 18.0			14 50.4	-7 3.1	+0.7422	0.6147	-0.0542	+63	0
NEW MOON.													
URANUS	6.2	...	...	-17 15.4			6 18 18.4	-7 46.3	+1.2762	0.5627	+0.2282	+73	+38
29 Capricorni	5.5	-0.14	-4.4	-15 31.3			20 10.5	-5 58.3	-0.0226	0.5629	+0.2314	+35	-44
λ Capricorni	5.5	0.05	3.2	11 45.3			7 9 40.3	+7 2.8	-0.5595	0.5502	0.2475	-10	-78
151 B. Capricorni	6.1	0.03	3.4	13 6.9			11 4.4	+8 24.0	+1.1574	0.5489	0.2488	+77	+25
96 B. Aquarii	6.5	-0.03	2.8	10 42.5			12 51.3	+10 7.2	-0.8213	0.5473	0.2504	-4	-90
θ Aquarii	4.3	+0.05	1.7	8 12.1			23 31.6	-3 34.0	-0.6427	0.5385	0.2582	+8	-85
150 B. Aquarii	6.0	+0.06	-2.0	9 27.6			23 32.8	-3 32.8	-0.6376	0.5385	+0.2582	+79	-10
ρ Aquarii	5.3	0.06	1.6	8 14.6			8 1 6.2	-2 2.5	-0.1934	0.5373	0.2591	+31	-54
170 B. Aquarii	6.0	0.07	1.4	7 37.2			2 40.4	-0 31.4	-0.4204	0.5361	0.2599	+20	-68
186 B. Aquarii	6.1	0.10	-1.0	6 59.1			6 20.3	+3 1.3	-0.1117	0.5335	0.2616	+36	-49
252 B. Aquarii	5.8	0.20	+0.1	5 26.1			17 50.1	-9 50.9	+1.3368	0.5261	0.2647	+83	+40
6 G. Piscium	6.2	+0.20	+0.9	2 50.7			19 21.0	-8 22.7	-0.9239	0.5252	+0.2649	-7	-90
22 B. Piscium	6.4	0.30	2.3	0 10.2			9 7 51.1	+3 44.0	-0.3812	0.5191	0.2645	+23	-65
κ Piscium	4.9	0.31	2.7	+0 47.8			9 33.2	+5 23.0	-0.9341	0.5183	0.2642	-7	-89
9 Piscium	6.4	0.32	2.7	0 39.7			9 42.8	+5 32.3	-0.7524	0.5183	0.2642	+4	-89
16 Piscium	5.7	0.36	3.2	1 38.2			14 19.0	+10 0.1	-0.5552	0.5166	0.2631	+14	-77
λ Piscium	4.6	+0.39	+3.3	+1 19.1			17 10.5	-11 13.7	+0.5276	0.5156	+0.2622	+75	-16
19 Piscium	5.4	0.40	4.0	3 1.3			19 22.4	-9 5.7	-0.6770	0.5150	0.2614	+8	-86
22 Piscium	5.8	0.43	3.9	2 27.9			22 12.1	-6 21.2	+0.6438	0.5142	0.2603	+85	-9
d Piscium	5.4	0.56	6.4	7 43.5			10 12 50.3	+7 50.9	-1.1437	0.5115	0.2522	-22	-82
136 B. Piscium	6.5	0.67	7.2	8 53.9			23 25.4	-5 52.9	+0.2358	0.5110	0.2441	+56	-29
75 Piscium	6.3	+0.81	+9.0	+12 30.5			11 12 25.1	+6 43.6	-0.5297	0.5118	+0.2319	+15	-69
7 Piscium	3.7	0.96	10.1	14 55.0			13 1 6.8	+4 57.4	-0.2703	0.5140	0.2175	-28	-52
101 Piscium	6.2	0.99	9.9	14 14.1			3 17.8	-2 50.4	+0.9381	0.5145	0.2148	+90	+13
105 Piscium	6.1	1.01	10.6	15 59.0			5 15.4	-0 56.3	-0.5351	0.5149	0.2123	+14	-66
3 Arietis	6.4	1.05	11.0	16 59.7			8 44.2	+2 26.2	-0.9028	0.5158	0.2077	-7	-73
4 Arietis	5.8	+1.06	+10.8	+16 32.5			9 32.6	+3 13.2	-0.2424	0.5160	+0.2067	+30	-49
τ Arietis	5.1	1.12	11.2	17 24.7			14 8.6	+7 40.7	-0.2522	0.5173	0.2003	+29	-49
35 B. Arietis	6.4	1.16	11.3	17 51.2			17 19.3	+10 45.6	-0.1041	0.5183	0.1958	+37	-40
47 B. Arietis	6.5	1.19	11.3	17 38.0			19 20.8	-11 16.6	+0.5294	0.5190	0.1928	+77	-7
15 Arietis	5.9	1.21	11.8	19 6.5			20 45.1	-9 54.9	-0.8095	0.5194	0.1907	-2	-71
θ Arietis	5.6	+1.26	+11.9	+19 31.0			13 0 28.3	-6 18.5	-0.5578	0.5207	+0.1850	+13	-64

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.			
Name.	Mag.	Red'ts from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
		s	"	"	"	"	"	"					
26 Arietis	6.2	+1.34	+11.8	+19 29.2	13	6 38.1	- 0 20.1	+0.5850	0.5228	+0.1751	+82	- 2	
<i>v</i> Arietis	5.4	1.40	12.5	21 36.1	10	37.0	+ 3 31.2	-1.0495	0.5244	0.1685	-19	-68	
ϵ Arietis (<i>mean</i>)	4.6	1.53	12.0	21 0.5	20	30.7	-10 53.7	+1.1845	0.5281	0.1510	+90	+41	
64 Arietis	5.8	1.71	12.7	24 25.9	14	8 26.9	+ 0 39.4	-0.9185	0.5328	0.1282	-11	-66	
7 Tauri	5.9	1.78	12.4	24 11.2	13	14.2	+ 5 17.4	-0.0586	0.5346	0.1186	+40	-29	
11 Tauri	6.1	+1.82	+12.4	+25 3.7	16	11.7	+ 8 9.1	-0.6845	0.5357	+0.1125	+ 4	-64	
16 Tauri	5.4	1.84	12.0	24 1.8	18	5.9	+ 9 59.6	+0.6681	0.5364	0.1085	+90	+10	
17 Tauri	3.8	1.84	12.0	23 51.2	18	8.0	+10 1.7	+0.8666	0.5364	0.1085	+90	+21	
18 Tauri	5.6	1.85	12.2	24 34.8	18	15.4	+10 8.7	+0.0762	0.5364	0.1081	+47	-21	
<i>q</i> Tauri	4.3	1.84	12.1	24 12.5	18	17.0	+10 10.3	+0.4905	0.5365	0.1081	+76	+ 1	
20 Tauri	4.1	+1.85	+12.1	+24 6.6	18	34.5	+10 27.2	+0.6311	0.5366	+0.1075	+90	+ 8	
21 Tauri	5.8	1.85	12.1	24 17.8	18	36.6	+10 29.3	+0.4279	0.5366	0.1075	+71	- 3	
22 Tauri	6.5	1.85	12.1	24 16.2	18	40.6	+10 33.1	+0.4642	0.5366	0.1073	+73	- 1	
23 Tauri	4.3	1.85	11.9	23 41.4	18	48.9	+10 41.1	+1.1200	0.5366	0.1070	+90	+40	
η Tauri	3.0	1.86	11.9	23 51.0	19	21.2	+11 12.4	+1.0018	0.5368	0.1059	+90	+31	
27 Tauri	3.7	+1.86	+11.8	+23 48.0	20	8.2	+11 57.8	+1.1383	0.5371	+0.1042	+90	+42	
28 Tauri	5.2	1.87	11.9	23 53.1	20	8.8	+11 58.4	+1.0469	0.5371	0.1042	+90	+34	
14 H. Tauri	5.3	1.89	12.2	25 19.8	20	39.0	-11 32.3	-0.5011	0.5374	0.1032	+15	-52	
<i>p</i> Tauri	5.6	2.02	11.9	26 16.0	15	6 9.1	- 2 21.1	-0.6557	0.5405	0.0825	+ 5	-60	
χ Tauri	5.3	2.09	11.1	25 26.1	11	34.2	+ 2 53.1	+0.6799	0.5421	0.0704	+90	+15	
17 B. Aurigæ	6.0	+2.29	+10.4	+27 45.6	16	1 18.8	- 7 50.2	-1.1516	0.5453	+0.0386	-33	-62	
38 B. Aurigæ	6.5	2.35	9.7	27 34.9	6	41.5	- 2 38.4	-0.7801	0.5461	0.0259	- 3	-62	
47 B. Aurigæ	6.0	2.38	9.5	27 55.7	9	0.1	- 0 24.5	-1.1110	0.5464	0.0204	-29	-62	
354 B. Tauri	6.4	2.43	8.9	27 52.5	14	5.5	+ 4 30.4	-0.9798	0.5469	+0.0082	-17	-62	
107 B. Aurigæ	6.5	2.50	7.9	27 36.6	20	51.0	+11 2.2	-0.6845	0.5473	-0.0080	+ 3	-58	
112 B. Aurigæ	5.7	+2.49	+ 7.7	+26 52.5	21	24.9	+11 34.9	+0.1281	0.5473	-0.0093	+50	- 8	
125 Tauri	5.1	2.48	7.4	25 51.2	22	36.3	-11 16.2	+1.2507	0.5473	0.0122	+76	+61	
406 B. Tauri	5.6	2.57	7.1	27 56.7	17	3 38.8	- 6 23.9	-1.1664	0.5472	0.0243	-35	-62	
136 Tauri	4.6	2.57	6.9	27 35.7	4	43.3	- 5 21.6	-0.8044	0.5471	0.0268	- 4	-62	
139 Tauri	4.7	2.55	6.3	25 56.8	6	52.0	- 3 17.3	+0.9644	0.5470	0.0320	+90	+36	
415 B. Tauri	6.1	+2.60	+ 6.4	+27 34.2	8	12.2	- 1 59.9	-0.8850	0.5469	-0.0351	-10	-62	
ϵ Geminorum	3.2	2.68	3.2	25 13.0	18	3 49.3	- 7 2.6	+0.5876	0.5437	0.0808	+85	+ 9	
37 Geminorum	5.7	2.71	2.4	25 28.9	9	3.8	- 1 58.6	-0.1617	0.5423	0.0925	+34	-32	
39 Geminorum	6.2	2.73	2.3	26 11.6	10	40.0	- 0 25.6	-1.1002	0.5418	0.0960	-26	-64	
40 Geminorum	6.3	2.73	2.2	26 1.8	10	58.4	- 0 7.7	-0.9489	0.5417	0.0967	-14	-64	
ω Geminorum	5.2	+2.70	+ 1.8	+24 20.2	12	22.2	+ 1 13.2	+0.7897	0.5414	-0.0997	+90	+18	
48 Geminorum	5.8	2.71	1.1	24 16.2	17	2.2	+ 5 44.0	+0.3736	0.5399	0.1098	+66	- 6	
52 Geminorum	6.1	2.73	1.0	25 1.9	18	4.6	+ 6 44.3	-0.5848	0.5396	0.1120	+10	-58	
<i>A</i> Geminorum	5.1	2.75	0.4	25 12.8	22	11.4	+10 42.9	-1.2628	0.5381	0.1206	+46	-65	
58 Geminorum	6.0	2.70	+ 0.3	23 6.5	22	13.3	+10 44.7	+1.0622	0.5381	0.1207	+90	+34	
B. D. +23° 1744	6.4	+2.71	- 0.4	+23 4.0	19	2 38.4	- 8 58.9	+0.5530	0.5365	-0.1297	+81	+ 2	
187 B. Geminorum	6.3	2.72	1.0	23 12.8	6	29.5	- 5 15.2	-0.1231	0.5350	0.1373	+36	-34	
192 B. Geminorum	6.3	2.71	1.2	22 35.9	7	38.5	- 4 8.4	+0.3977	0.5346	0.1395	+68	- 8	
82 Geminorum	6.3	2.73	1.5	23 21.0	10	6.3	- 1 45.4	-0.7813	0.5336	0.1443	-1	-67	
μ Cancri	5.5	2.70	2.9	21 49.5	19	22.5	+ 7 13.0	-0.5173	0.5298	0.1614	+14	-59	
NEPTUNE	7.7	...	...	+19 34.3	20	0 48.2	-11 31.5	+1.0625	0.5288	-0.1711	+90	+28
49 B. Cancri	6.0	+2.68	- 3.8	21 0.7	1	31.2	-10 49.9	-0.6457	0.5272	0.1720	+ 8	-67	
θ Cancri	5.5	2.62	4.5	18 22.7	7	5.8	- 5 25.7	+1.2663	0.5249	0.1811	+86	+45	
102 B. Cancri	6.5	2.65	5.1	19 58.0	11	25.4	- 1 14.1	-1.2769	0.5231	0.1879	+40	-70	
ϵ Cancri	6.3	2.64	5.1	19 50.5	11	28.0	- 1 11.6	-1.1478	0.5231	0.1879	-26	-70	
δ Cancri	4.2	+2.61	- 5.4	+18 27.7	13	35.7	+ 0 52.1	-0.0374	0.5222	-0.1911	+41	-36	
<i>X</i> Cancri (<i>var.</i>)	6.2	2.58	6.0	17 33.0	18	58.2	+ 6 4.8	-0.0854	0.5200	0.1989	+38	-39	
81 Cancri	6.4	2.52	6.9	15 20.0	21	3 35.4	- 9 33.6	+0.5754	0.5166	0.2104	+81	- 7	
π Cancri	5.6	2.51	7.1	15 17.3	5	4.0	- 8 7.7	+0.3121	0.5161	0.2122	+61	-21	
227 B. Cancri	6.4	2.51	7.5	15 43.6	8	8.7	- 5 8.6	-0.8250	0.5149	0.2159	- 2	-74	
18 Leonis	5.8	+2.40	- 8.6	+12 11.7	21	10.7	+ 7 30.4	+0.1160	0.5107	-0.2300	+49	-33	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.				
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.		Greenwich Mean Time.		Hour Angle, H	Y'	z'	y'	N.	S.	
		Δα	Δδ	°	'	d	h	m	h	m	°	'	°	'
Leonis	6.4	+2.39	-8.6	+11	57.3	21	21	43.5	+ 8 2.2	+0.2513	0.5106	-0.2305	+57	-26
Leonis (var.)	5-10	2.39	8.6	11	49.0	21	47.4	+ 8 6.0	+0.3866	0.5105	0.2306	+66	-19	
Leonis	4.6	2.32	9.4	10	24.4	22	8 28.1	- 5 31.9	-0.5956	0.5079	0.2398	+12	-75	
Leonis	6.3	2.23	9.6	6	58.0	16	27.7	+ 2 13.8	+1.1868	0.5064	0.2456	+90	+27	
Leonis	5.2	2.20	10.2	7	23.0	22	42.5	+ 8 17.8	-0.8100	0.5056	0.2493	0	-83	
Sextantis	6.1	+2.14	-10.2	+ 5	11.2	23	3 15.1	-11 17.4	+0.4208	0.5052	-0.2516	+67	-20	
Leonis	5.0	2.07	10.6	4	3.9	12	23.8	- 2 24.5	-0.6927	0.5050	0.2553	+ 7	-86	
Leonis	5.7	2.03	10.4	2	24.5	15	47.3	+ 0 53.2	+0.2174	0.5051	0.2563	+55	-31	
Leonis	5.4	2.00	10.8	2	28.2	21	16.0	+ 6 12.5	-1.2542	0.5055	0.2575	-31	-88	
Leonis	6.0	1.99	10.8	2	6.5	22	8.0	+ 7 3.0	-1.0902	0.5056	0.2576	-17	-88	
B. Leonis	6.3	+1.96	-10.6	+ 0	35.4	24	0 27.3	+ 9 18.4	-0.0654	0.5059	-0.2579	+39	-46	
B. Leonis	6.3	1.93	10.2	- 1	14.4	2	53.0	+11 39.9	+1.2622	0.5063	0.2582	+89	+32	
Leonis	4.5	1.90	10.7	0	21.8	7	38.5	- 7 42.9	-0.9029	0.5072	0.2583	- 5	-90	
B. Leonis	6.2	1.88	10.4	1	58.5	8	24.5	- 6 58.2	+0.6157	0.5073	0.2583	+82	-11	
B. Virginis	6.5	1.72	10.3	5	15.3	25	3 0.6	+11 5.0	-0.6861	0.5131	0.2549	+ 6	-89	
Virginis	5.3	+1.62	- 9.6	- 8	59.5	12	54.1	- 3 19.4	+0.7529	0.5177	-0.2504	+81	- 3	
B. Virginis	6.0	1.52	9.2	11	11.8	23	5.6	+ 6 33.2	+0.5442	0.5235	0.2438	+71	-14	
Virginis	4.9	1.36	8.1	15	32.5	26	15 0.0	- 2 3.1	+1.3046	0.5345	0.2289	+74	+40	
Virginis	5.6	1.34	8.4	14	56.0	17	31.5	+ 0 23.9	+0.0968	0.5365	0.2259	+42	-38	
Virginis	5.6	1.28	8.2	15	45.6	22	54.2	+ 5 35.8	-0.2441	0.5405	0.2193	+24	-57	
Virginis	6.1	+1.28	- 8.3	-15	20.9	23	24.4	+ 6 4.9	-0.7799	0.5412	-0.2186	- 5	-90	
Virginis	5.8	1.27	7.6	17	26.5	27	0 13.7	+ 6 52.6	+1.2074	0.5419	0.2175	+73	+30	
Virginis	5.1	1.26	7.5	17	43.1	1	21.0	+ 7 57.7	+1.2492	0.5429	0.2160	+72	+35	
H. Virginis	5.5	1.14	7.7	17	48.7	12	45.9	- 5 1.0	-1.0252	0.5529	0.1987	-24	-90	
G. Virginis	6.4	1.13	7.6	18	11.8	13	29.3	- 4 19.1	-0.7714	0.5536	0.1974	- 7	-90	
G. Virginis	5.7	+1.12	- 7.5	-18	19.8	14	10.8	- 3 39.2	-0.7715	0.5542	-0.1963	- 7	-90	
G. Libræ	6.5	1.05	7.0	20	4.4	21	9.7	+ 3 4.9	-0.3082	0.5606	0.1837	+16	-61	
G. Libræ	6.4	1.00	6.8	20	49.3	28	1 57.5	+ 7 42.1	-0.4000	0.5652	0.1743	+10	-68	
G. Libræ	6.1	0.99	6.7	20	58.5	2	23.6	+ 8 7.2	-0.3197	0.5656	0.1734	+14	-62	
B. Libræ	5.7	0.95	6.8	21	2.4	6	37.0	-11 48.8	-0.9660	0.5695	0.1645	-23	-90	
G. Libræ	6.1	+0.91	- 6.5	-21	42.4	10	20.8	- 8 13.4	-0.8827	0.5730	-0.1563	-19	-90	
G. Libræ	5.8	0.86	6.4	22	5.5	14	22.8	- 4 20.6	-1.1028	0.5767	0.1469	-35	-90	
B. Libræ	6.3	0.79	5.7	24	12.4	21	3.2	+ 2 4.2	+0.1172	0.5828	0.1305	+32	-36	
Libræ	5.0	0.76	5.9	23	32.8	23	52.2	+ 4 46.5	-0.9063	0.5852	0.1232	-24	-90	
Scorpii	4.7	0.71	5.3	25	29.9	29	4 1.0	+ 8 45.5	+0.5764	0.5887	0.1121	+57	-11	
Scorpii	4.6	+0.70	- 5.4	-25	4.7	5	2.6	+ 9 44.5	+0.0392	0.5895	-0.1093	+26	-41	
B. Scorpii	5.4	0.70	5.7	24	17.1	5	9.8	+ 9 51.4	-0.7740	0.5897	0.1089	-17	-90	
Scorpii	5.9	0.70	5.4	24	59.8	5	26.9	+10 7.9	-0.0871	0.5899	0.1082	+19	-48	
Scorpii	5.7	0.70	5.1	26	1.2	5	45.7	+10 25.9	+0.9112	0.5901	0.1073	+64	+10	
B. Scorpii	5.4	0.68	5.6	24	35.5	6	57.9	+11 35.1	-0.6567	0.5911	0.1039	-11	-90	
Scorpii	3.0	+0.68	- 5.2	-25	52.5	7	3.2	+11 40.3	+0.6274	0.5912	-0.1037	+60	- 7	
B. Scorpii	4.9	0.66	5.3	25	38.0	8	47.0	-10 40.3	+0.2090	0.5925	0.0988	+34	-31	
B. Scorpii	6.4	0.66	5.6	24	29.8	9	0.8	-10 26.9	-0.9579	0.5927	0.0982	-30	-90	
B. Scorpii	5.5	0.64	5.1	26	6.2	10	35.8	- 8 55.8	+0.5073	0.5939	0.0936	+51	-14	
B. Scorpii	6.0	0.62	5.4	25	16.0	13	11.0	- 6 26.9	-0.5673	0.5958	0.0861	- 8	-83	
Scorpii	3.1	+0.59	- 5.3	-25	23.6	15	33.7	- 4 10.1	-0.6347	0.5974	-0.0790	-12	-90	
Scorpii	1.2	0.56	5.1	26	14.9	18	38.2	- 1 13.3	-0.0059	0.5995	0.0697	+20	-43	
B. Scorpii	6.2	0.55	5.0	26	21.4	19	22.5	- 0 30.8	+0.0528	0.5999	0.0675	+23	-40	
B. Scorpii	6.4	0.50	4.8	27	18.0	30	0 10.0	+ 4 4.5	+0.7095	0.6028	0.0526	+62	- 2	
B. Ophiuchi	6.2	0.42	5.0	26	24.1	8	30.0	-11 56.7	-0.5161	0.6066	0.0258	-10	-78	
G. Ophiuchi	6.1	+0.40	- 4.7	-27	39.6	10	30.3	-10 1.6	+0.6938	0.6074	-0.0193	+60	- 3	
Ophi. (1st star)	5.4	0.39	5.1	26	28.9	11	36.6	- 8 58.1	-0.5003	0.6078	0.0157	-10	-77	
Ophiuchi	5.4	0.37	4.6	28	3.8	14	29.4	- 6 12.7	+1.0438	0.6086	0.0062	+62	+22	
G. Ophiuchi	6.3	0.35	5.1	25	52.3	15	49.1	- 4 56.4	-1.1441	0.6089	-0.0018	-52	-90	
G. Ophiuchi	6.0	0.34	5.0	26	12.5	17	33.9	- 3 16.1	-0.8071	0.6094	+0.0040	-28	-80	
G. Ophiuchi	6.3	+0.30	- 4.6	-27	50.8	21	44.1	+ 0 43.3	+0.8675	0.6100	+0.0179	+62	- 0	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.	Hour Angle, <i>H</i>	<i>Y'</i>	<i>z'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
<i>X</i> Sagittarii (<i>var.</i>)	4.4	+0.29	-4.6	-27 48.1	30 23 17.0	+ 2 12.1	+0.8544	0.6101	+0.0231	+62	+ 8
4 G. Sagittarii	6.2	0.28	4.8	26 56.8	23 37.4	+ 2 31.8	+0.0146	0.6102	0.0242	+18	-42
10 G. Sagittarii	5.7	0.26	4.6	28 3.2	31 2 35.5	+ 5 22.0	+1.1989	0.6103	0.0341	+62	+40
66 B. Sagittarii	4.7	0.20	4.7	27 4.5	10 21.7	-11 11.9	+0.5919	0.6097	0.0598	+54	- 9
67 B. Sagittarii	6.4	0.20	5.1	25 38.3	10 37.0	-10 57.3	-0.8159	0.6096	0.0606	-24	-90
68 G. Sagittarii	6.2	+0.18	-4.8	-26 41.2	13 53.6	- 7 49.1	+0.4384	0.6090	+0.0713	+45	-18
λ Sagittarii	2.9	0.18	5.1	25 28.2	14 0.0	- 7 43.0	-0.7581	0.6090	0.0716	-20	-90
69 G. Sagittarii	6.3	0.18	4.8	26 48.6	14 1.7	- 7 41.4	+0.5698	0.6090	0.0717	+53	-10
86 B. Sagittarii	6.5	0.18	4.8	26 38.3	14 20.4	- 7 23.4	+0.4217	0.6089	0.0727	+44	-19
126 B. Sagittarii	5.7	0.14	5.0	25 5.9	20 10.3	- 1 48.6	-0.6234	0.6071	0.0913	-11	-89
σ Sagittarii	2.1	+0.13	-4.8	-26 24.2	23 59.8	+ 1 51.1	+1.0403	0.6056	+0.1033	+64	+21

FEBRUARY.

162 B. Sagittarii	6.4	+0.12	-5.0	-24 59.5	1 1 9.2	+ 2 57.7	-0.2348	0.6051	+0.1068	+11	-57
127 G. Sagittarii	6.4	+0.11	-5.0	-25 3.7	1 55.1	+ 3 41.6	-0.0830	0.6048	+0.1092	+19	-48
172 B. Sagittarii	5.8	0.11	5.0	24 57.9	2 40.9	+ 4 25.5	-0.0940	0.6044	0.1115	+19	-48
<i>NEW MOON.</i>											
252 B. Aquarii	5.8	+0.10	-1.0	-5 26.1	5 4 19.4	+ 2 26.6	+1.3484	0.5335	+0.2686	+82	+41
6 G. Piscium	6.2	+0.09	-0.4	-2 50.7	5 48.2	+ 3 52.6	-0.8899	0.5328	+0.2688	- 5	-90
22 B. Piscium	6.4	0.15	+0.8	0 10.2	17 59.2	- 8 19.7	-0.3506	0.5272	0.2687	+25	-63
κ Piscium	4.9	0.15	1.1	+0 47.8	19 38.6	- 6 43.4	-0.8971	0.5266	0.2685	+5	-89
9 Piscium	6.4	0.15	1.1	0 39.7	19 47.9	- 6 34.4	-0.7175	0.5266	0.2684	+ 6	-89
16 Piscium	5.7	0.17	1.6	1 38.2	6 0 16.6	- 2 14.3	-0.5219	0.5250	0.2674	+16	-75
λ Piscium	4.6	+0.20	+1.6	+1 19.1	3 3.4	+ 0 27.3	+0.5483	0.5241	+0.2665	+77	-14
19 Piscium	5.4	0.20	2.2	3 1.3	5 11.6	+ 2 31.6	-0.6418	0.5235	0.2657	+10	-84
22 Piscium	5.8	0.23	2.2	2 27.8	7 56.5	+ 5 11.3	+0.6631	0.5227	0.2646	+87	- 8
<i>d</i> Piscium	5.4	0.30	4.4	7 43.5	22 9.5	- 5 2.0	-1.1026	0.5201	0.2563	-18	-82
136 B. Piscium	6.5	0.39	5.2	8 53.9	7 8 26.4	+ 4 56.0	+0.2588	0.5193	0.2479	+57	-27
75 Piscium	6.3	+0.50	+6.9	+12 30.5	21 4.5	- 6 49.0	-0.4990	0.5195	+0.2352	+17	-68
η Piscium	3.7	0.62	8.2	14 54.7	8 9 26.5	+ 5 10.1	-0.2450	0.5209	0.2203	+30	-50
101 Piscium	6.2	0.65	8.0	14 14.1	11 34.2	+ 7 13.9	+0.9491	0.5212	0.2174	+90	+14
105 Piscium	6.1	0.66	8.7	15 59.0	13 29.0	+ 9 5.1	-0.5076	0.5216	0.2149	+16	-65
3 Arietis	6.4	0.70	9.1	16 59.7	16 52.9	-11 37.2	-0.8721	0.5222	0.2101	- 5	-73
4 Arietis	5.8	+0.71	+9.0	+16 32.4	17 40.2	-10 51.4	-0.2191	0.5223	+0.2090	+31	-48
<i>t</i> Arietis	5.1	0.76	9.4	17 24.6	22 9.9	- 6 30.2	-0.2298	0.5232	0.2024	+31	-47
35 B. Arietis	6.4	0.80	9.6	17 51.2	9 1 16.5	- 3 29.4	-0.0840	0.5240	0.1977	+38	-39
47 B. Arietis	6.5	0.83	9.6	17 37.9	3 15.4	- 1 34.3	+0.5426	0.5245	0.1946	+78	- 8
15 Arietis	5.9	0.84	10.1	19 6.4	4 38.0	- 0 14.2	-0.7829	0.5248	0.1925	0	-71
9 Arietis	5.6	+0.89	+10.3	+19 31.0	8 16.7	+ 3 17.6	-0.5348	0.5257	+0.1866	+15	-63
26 Arietis	6.2	0.97	10.4	19 29.2	14 19.6	+ 9 9.1	+0.5958	0.5274	0.1764	+84	- 1
<i>v</i> Arietis	5.4	1.02	11.1	21 36.1	18 14.4	-11 3.7	-1.0249	0.5285	0.1696	-17	-68
ϵ Arietis (<i>mean</i>)	4.6	1.16	11.0	21 0.5	10 3 59.0	- 1 37.7	+1.1883	0.5314	0.1517	+90	+41
64 Arietis	5.8	1.35	11.9	24 25.8	15 46.2	+ 9 46.4	-0.9017	0.5349	0.1285	- 9	-66
7 Tauri	5.9	+1.42	+11.7	+24 11.2	20 30.6	- 9 38.5	-0.0486	0.5363	+0.1188	+40	-28
11 Tauri	6.1	1.47	11.8	25 3.7	23 26.5	- 6 48.5	-0.6713	0.5372	0.1126	+5	-63
16 Tauri	5.4	1.49	11.4	24 1.8	1 19.7	- 4 59.0	+0.6728	0.5377	0.1086	+90	+10
17 Tauri	3.8	1.49	11.4	23 51.2	1 21.8	- 4 57.0	+0.8702	0.5377	0.1085	+90	+22
18 Tauri	5.6	1.50	11.6	24 34.8	1 29.2	- 4 50.0	+0.0844	0.5378	0.1083	+48	-20
<i>q</i> Tauri	4.3	+1.49	+11.5	+24 12.5	1 30.8	- 4 48.4	+0.4963	0.5377	+0.1082	+76	+ 1
20 Tauri	4.1	1.50	11.4	24 6.6	1 48.1	- 4 31.6	+0.6360	0.5378	0.1076	+90	+ 8
21 Tauri	5.8	1.50	11.5	24 17.8	1 50.2	- 4 29.5	+0.4340	0.5378	0.1075	+71	- 2
22 Tauri	6.5	1.50	11.5	24 16.2	1 54.1	- 4 25.8	+0.4701	0.5379	0.1074	+74	0
23 Tauri	4.3	1.50	11.3	23 41.4	2 2.4	- 4 17.8	+1.1221	0.5379	0.1071	+90	+40
<i>z</i> Tauri	3.0	+1.51	+11.3	+23 51.0	2 34.4	- 3 46.8	+1.0045	0.5381	+0.1059	+90	+31

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S				AT CONJUNCTION IN R. A.					Limiting Parallels.				
Name.	Mag.	Red's ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, H	Y	x'	y'	N.	S.
		Δα	Δδ		d	h	m						
H. Tauri	3.7	+1.52	+11.3	23 48.0	11	3 21.1	- 3 1.6	+1.1403	0.5383	+0.1043	+90	+42	
Tauri	5.2	1.52	11.3	23 53.0		3 21.7	- 3 1.0	+1.0494	0.5383	0.1043	+90	+35	
H. Tauri	5.3	1.54	11.8	25 19.8		3 51.6	- 2 32.2	-0.4902	0.5384	0.1032	+15	-51	
Tauri	5.6	1.69	11.6	26 16.0		13 18.0	+ 6 35.4	-0.6462	0.5408	0.0824	+ 6	-60	
Tauri	5.3	1.77	11.0	25 26.1		18 41.5	+11 48.0	+0.6825	0.5420	0.0702	+90	+15	
B. Aurigæ	6.0	+2.00	+10.7	+27 45.7	12	8 23.7	+ 1 2.4	-1.1445	0.5444	+0.0384	-32	-62	
B. Aurigæ	6.5	2.08	10.1	27 34.9		13 46.1	+ 6 13.9	-0.7752	0.5450	0.0257	- 2	-62	
B. Aurigæ	6.0	2.12	10.0	27 55.7		16 4.6	+ 8 27.6	-1.1056	0.5451	0.0202	-28	-62	
B. Tauri	6.4	2.19	9.5	27 52.5		21 10.0	-10 37.3	-0.9757	0.5454	+0.0081	-17	-62	
B. Aurigæ	6.5	2.28	8.7	27 36.6	13	3 55.7	- 4 5.6	-0.6820	0.5456	-0.0081	+ 3	-58	
B. Aurigæ	5.7	+2.28	+ 8.4	+26 52.5		4 29.6	- 3 32.8	+0.1287	0.5456	-0.0094	+51	- 8	
Tauri	5.1	2.28	7.9	25 51.2		5 41.0	- 2 23.8	+1.2488	0.5456	0.0122	+77	+61	
B. Tauri	5.6	2.38	7.9	27 56.8		10 44.0	+ 2 28.9	-1.1637	0.5454	0.0243	-35	-62	
Tauri	4.6	2.39	7.7	27 35.7		11 48.5	+ 3 31.1	-0.8026	0.5453	0.0268	- 4	-62	
Tauri	4.7	2.38	6.9	25 56.8		13 57.4	+ 5 35.7	+0.9626	0.5452	0.0319	+90	+36	
B. Tauri	6.1	+2.43	+ 7.2	+27 34.3		15 17.7	+ 6 53.2	-0.8832	0.5450	-0.0351	-10	-62	
Geminorum	3.2	2.61	3.9	25 13.0	14	10 56.7	+ 1 52.4	+0.5863	0.5420	0.0805	+85	+ 9	
Geminorum	5.7	2.66	3.2	25 29.0		16 11.6	+ 6 56.8	-0.1618	0.5408	0.0922	+34	-31	
Geminorum	6.2	2.70	3.1	26 11.6		17 47.9	+ 8 29.8	-1.0986	0.5404	0.0957	-26	-64	
Geminorum	6.3	2.70	3.0	26 1.8		18 6.4	+ 8 47.8	-0.9475	0.5403	0.0964	-14	-64	
Geminorum	5.2	+2.67	+ 2.4	+24 20.2		19 30.3	+10 8.9	+0.7880	0.5399	-0.0994	+90	+18	
Geminorum	5.8	2.71	1.7	24 16.2	15	0 10.5	- 9 20.2	+0.3729	0.5386	0.1095	+66	- 5	
Geminorum	6.1	2.74	1.7	25 1.9		1 12.8	- 8 19.9	-0.5837	0.5383	0.1117	+10	-58	
Geminorum	5.1	2.77	1.1	25 12.8		5 19.7	- 4 21.1	-1.2600	0.5371	0.1203	-45	-65	
Geminorum	6.0	2.73	+ 0.7	23 6.5		5 21.6	- 4 19.3	+1.0604	0.5371	0.1203	+90	+34	
B. D.+23° 1744	6.4	+2.76	0.0	+23 4.1		9 46.6	- 0 3.0	+0.5526	0.5357	-0.1294	+81	+ 2	
B. Geminorum	6.3	2.79	- 0.5	23 12.8		13 37.6	+ 3 40.5	-0.1217	0.5344	0.1370	+36	+34	
B. Geminorum	6.3	2.78	0.8	22 35.9		14 46.5	+ 4 47.2	+0.3981	0.5340	0.1393	+68	- 7	
Geminorum	6.3	2.81	1.0	23 21.0		17 14.1	+ 7 10.0	-0.7780	0.5332	0.1440	- 1	-67	
Cancri	5.5	2.83	2.8	21 49.5	16	2 29.1	- 7 52.8	-0.5130	0.5299	0.1612	+15	-58	
NEPTUNE	7.7	...	...	+19 44.3		6 24.3	- 4 5.0	+1.1326	0.5297	-0.1685	+90	+34
B. Cancri	6.0	+2.84	- 3.8	21 0.7		8 36.5	- 1 57.0	-0.6398	0.5277	0.1720	+ 8	-67	
Cancri	5.5	2.81	5.0	18 22.7		14 9.6	+ 3 25.6	+1.2674	0.5258	0.1812	+90	+46	
B. Cancri	6.5	2.85	5.4	19 58.0		18 27.8	+ 7 35.8	-1.2663	0.5242	0.1881	-39	-70	
Cancri	6.3	2.85	5.4	19 50.5		18 30.4	+ 7 38.3	-1.1376	0.5242	0.1881	-25	-70	
Cancri	4.2	+2.83	- 5.9	-18 27.7		20 37.4	+ 9 41.4	-0.0306	0.5235	-0.1914	+41	-35	
B. Cancri	6.1	2.85	6.2	19 8.7		23 37.8	-11 23.7	-1.3585	0.5224	0.1959	-60	-64	
Cancri (var.)	6.2	2.83	6.7	17 33.0	17	1 57.7	- 9 8.1	-0.0770	0.5216	0.1993	+39	-39	
Cancri	6.4	2.80	8.1	15 20.0		10 30.9	- 0 50.5	+0.5836	0.5189	0.2110	+81	- 7	
Cancri	5.6	2.80	8.3	15 17.3		11 58.7	+ 0 34.7	+0.3218	0.5184	0.2129	+62	-20	
B. Cancri	6.4	+2.81	- 8.6	+15 43.6		15 1.8	+ 3 32.1	-0.8093	0.5175	-0.2167	- 1	-74	
Leonis	5.8	2.76	10.4	12 11.7	18	3 55.5	- 7 57.3	+0.1321	0.5141	0.2311	+50	-32	
Leonis	6.4	2.75	10.5	11 57.3		4 27.9	- 7 25.9	+0.2668	0.5140	0.2317	+58	-26	
Leonis (var.)	5-10	2.75	10.5	11 49.0		4 31.8	- 7 22.1	+0.4015	0.5140	0.2317	+67	-19	
Leonis	4.6	2.72	11.7	10 24.4		15 4.5	+ 2 52.0	-0.5715	0.5118	0.2413	+13	-74	
Leonis	6.3	+2.66	-12.5	+ 6 58.0		22 57.6	+10 31.2	+1.2047	0.5107	-0.2473	+90	+28	
Leonis	5.2	2.66	13.1	7 23.0	19	5 7.1	- 7 30.1	-0.7784	0.5102	0.2511	+ 2	-83	
Sextantis	6.1	2.62	13.4	5 11.1		9 35.8	- 3 9.1	+0.4477	0.5099	0.2535	+69	-19	
Leonis	5.0	2.59	14.1	4 3.9		18 36.2	+ 5 35.4	-0.6554	0.5099	0.2573	+ 9	-84	
Leonis	5.7	2.56	14.2	2 24.5		21 56.6	+ 8 50.0	+0.2513	0.5101	0.2583	+57	-30	
Leonis	5.4	+2.55	-14.6	+ 2 28.1	20	3 20.4	- 9 55.7	-1.2101	0.5106	-0.2596	-27	-88	
Leonis	6.0	2.54	14.6	2 6.4		4 11.6	- 9 5.9	-1.0465	0.5107	0.2597	+14	-88	
B. Leonis	6.3	2.52	14.6	+ 0 35.4		6 28.8	- 6 52.8	-0.0259	0.5109	0.2600	+42	-44	
B. Leonis	6.3	2.50	14.6	- 1 14.5		8 52.3	- 4 33.4	+1.2963	0.5113	0.2602	+89	+35	
Leonis	4.5	2.49	15.0	0 21.8		13 33.7	- 0 0.4	-0.8560	0.5122	0.2604	- 2	-90	
B. Leonis	6.2	+2.47	-14.8	- 1 58.5		14 19.0	+ 0 43.7	+0.6558	0.5123	-0.2604	+88	-90	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels	
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.		Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N. S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
78 B. Virginis	6.5	+2.38	-15.1	-5 15.4	21	8 40.3	-5 28.0	-0.6322	0.5176	-0.2566	+ 9-84
<i>q</i> Virginis	5.3	2.31	14.7	8 59.6		18 27.2	+ 4 1.1	+0.8070	0.5217	0.2518	+81 0
<i>X</i> Virginis	4.8	2.30	15.1	7 32.3		21 10.1	+ 6 39.0	-1.4005	0.5229	0.2502	-56-71
370 B. Virginis	6.0	2.25	14.4	11 11.8		22 4 33.4	-10 11.6	+0.6035	0.5267	0.2448	+75-11
69 Virginis	4.9	2.16	13.4	15 32.5		20 23.0	+ 5 7.6	+1.3714	0.5363	0.2292	+69+54
75 Virginis	5.6	+2.14	-13.6	-14 56.1		22 54.8	+ 7 34.5	+0.1633	0.5380	-0.2262	+46-34
83 Virginis	5.6	2.10	13.3	15 45.6		23 4 17.3	-11 13.8	-0.1767	0.5417	0.2193	+27-53
85 Virginis	6.1	2.10	13.4	15 21.0		4 47.6	-10 44.5	-0.7137	0.5421	0.2186	-1-90
87 Virginis	5.8	2.10	12.8	17 26.6		5 36.9	-9 56.9	+1.2785	0.5427	0.2174	+73+38
89 Virginis	5.1	2.09	12.7	17 43.2		6 44.4	-8 51.6	+1.3210	0.5434	0.2159	+72+45
43 H. Virginis	5.5	+2.01	-12.5	-17 48.8		18 12.0	+ 2 12.4	-0.9585	0.5520	-0.1981	-18-90
231 G. Virginis	6.4	2.00	12.4	18 11.9		18 55.7	+ 2 54.6	-0.7035	0.5526	0.1968	-3-90
236 G. Virginis	5.7	2.00	12.3	18 19.8		19 37.4	+ 3 34.8	-0.7036	0.5532	0.1956	-3-90
9 G. Libræ	6.5	1.94	11.6	20 4.5		24 2 39.9	+10 22.4	-0.2374	0.5587	0.1828	+19-57
17 G. Libræ	6.4	1.90	11.2	20 49.4		7 30.8	-8 57.2	-0.3295	0.5625	0.1732	+14-63
18 G. Libræ	6.1	+1.90	-11.1	-20 58.6		7 57.3	-8 31.7	-0.2486	0.5628	-0.1723	+18-57
43 B. Libræ	5.7	1.88	11.2	21 2.5		12 13.9	-4 24.5	-0.8994	0.5662	0.1634	-19-90
47 G. Libræ	6.1	1.83	10.6	21 42.5		16 1.0	+ 0 45.8	-0.8159	0.5692	0.1550	-15-90
64 G. Libræ	5.8	1.80	10.3	22 5.5		20 7.0	+ 3 11.0	-1.0382	0.5723	0.1456	-30-90
153 B. Libræ	6.3	1.74	9.2	24 12.4		25 2 54.8	+ 9 43.2	+0.1926	0.5773	0.1291	+36-32
42 Libræ	5.0	+1.71	-9.3	-23 32.9		5 47.3	-11 30.9	-0.8413	0.5793	-0.1219	-20-90
<i>b</i> Scorpii	4.7	1.68	8.4	25 30.0		10 1.6	-7 26.7	+0.6569	0.5822	0.1108	+62-6
<i>A</i> Scorpii	4.6	1.66	8.5	25 4.8		11 4.5	-6 26.2	+0.1138	0.5830	0.1080	+30-36
31 B. Scorpii	5.4	1.66	8.8	24 17.2		11 11.9	-6 19.1	-0.7084	0.5831	0.1077	-13-90
32 B. Scorpii	5.3	1.65	9.0	23 43.9		11 13.1	-6 18.0	-1.2768	0.5831	0.1077	-59-75
3 Scorpii	5.9	+1.66	-8.5	-24 59.9		11 29.4	-6 2.2	-0.0139	0.5832	-0.1069	+23-44
4 Scorpii	5.7	1.66	8.1	26 1.3		11 48.6	-5 43.8	+0.9955	0.5835	0.1060	+64+17
40 B. Scorpii	5.4	1.64	8.6	24 35.5		13 2.5	-4 32.9	-0.5902	0.5843	0.1027	-7-85
π Scorpii	3.0	1.65	8.1	25 52.5		13 7.9	-4 27.6	+0.7086	0.5843	0.1025	+64-2
48 B. Scorpii	4.9	1.63	8.1	25 38.1		14 54.2	-2 45.6	+0.2853	0.5855	0.0976	+38-27
50 B. Scorpii	6.4	+1.62	-8.5	-24 29.9		15 8.4	-2 31.9	-0.8951	0.5856	-0.0970	-25-90
65 B. Scorpii	5.5	1.61	7.8	26 6.3		16 45.8	-0 58.3	+0.5871	0.5866	0.0924	+56-10
85 B. Scorpii	6.0	1.57	8.0	25 16.0		19 24.9	+ 1 34.4	-0.5007	0.5882	0.0850	-4-77
σ Scorpii	3.1	1.55	7.8	25 23.7		21 51.4	+ 3 55.0	-0.5695	0.5895	0.0780	-9-83
α Scorpii	1.2	1.52	7.3	26 14.9		26 1.0	+ 6 57.0	+0.0669	0.5912	0.0688	+24-38
116 B. Scorpii	6.2	+1.51	-7.2	-26 21.5		1 46.5	+ 7 40.7	+0.1263	0.5915	-0.0666	+26-35
134 B. Scorpii	6.4	1.46	6.6	27 18.1		6 42.2	-11 35.7	+0.7912	0.5938	0.0519	+63+3
118 B. Ophiuchi	6.2	1.36	6.4	26 24.1		15 17.6	-3 21.5	-0.4532	0.5969	0.0256	-7-73
95 G. Ophiuchi	6.1	1.35	5.8	27 39.6		17 21.8	-1 22.4	+0.7740	0.5974	0.0192	+62+2
36 Ophi. (1st star)	5.4	1.32	6.3	26 28.9		18 30.2	-0 16.9	-0.4378	0.5977	0.0156	-7-72
43 Ophiuchi	5.4	+1.30	-5.4	-28 3.8		21 28.6	+ 2 34.1	+1.1286	0.5984	-0.0063	+62+31
136 G. Ophiuchi	6.3	1.27	6.0	25 52.3		22 51.0	+ 3 53.2	-1.0927	0.5986	-0.0020	-47-90
151 G. Ophiuchi	6.0	1.25	5.8	26 12.5		0 39.3	+ 5 36.9	-0.7512	0.5989	+0.0037	-25-90
163 G. Ophiuchi	6.3	1.21	5.0	27 50.8		4 58.1	+ 9 44.9	+0.9480	0.5993	0.0173	+62+15
<i>X</i> Sagittarii (var.)	4.4	1.19	4.9	27 48.1		6 34.1	+11 16.9	+0.9343	0.5994	0.0224	+62+14
4 G. Sagittarii	6.2	+1.18	-5.2	-26 56.9		6 55.3	+11 37.2	+0.0812	0.5994	+0.0235	+20-38
66 B. Sagittarii	4.7	1.06	4.4	27 4.5		18 2.2	-1 43.6	+0.6640	0.5985	0.0583	+59-5
67 B. Sagittarii	6.4	1.04	4.9	25 38.3		18 18.0	-1 28.5	-0.7665	0.5985	0.0591	-21-90
68 G. Sagittarii	6.2	1.01	4.3	26 41.2		21 41.5	+ 1 46.6	+0.5066	0.5978	0.0695	+49-15
λ Sagittarii	2.9	1.00	4.7	25 28.2		21 48.2	+ 1 53.0	-0.7092	0.5978	0.0699	+17-90
69 G. Sagittarii	6.3	+1.01	-4.3	-26 48.6		21 50.0	+ 1 54.6	+0.6400	0.5978	+0.0700	+58-6
86 B. Sagittarii	6.5	1.00	4.3	26 38.2		22 9.3	+ 2 13.2	+0.4895	0.5977	0.0709	+48-15
126 B. Sagittarii	5.7	0.93	4.4	25 5.9		4 11.7	+ 8 0.6	-0.5750	0.5960	0.0892	-8-84
σ Sagittarii	2.1	0.90	3.8	26 24.2		8 9.2	+11 48.3	+1.1135	0.5946	0.1009	+64+28
162 B. Sagittarii	6.4	0.87	4.1	24 59.5		9 21.2	-11 2.6	-0.1826	0.5941	0.1043	+14-54
127 G. Sagittarii	6.4	+0.87	-4.0	-25 3.7		10 8.6	-10 17.1	-0.0287	0.5938	+0.1066	+22-44

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.			
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
172 B. Sagittarii	5.8	+0.86	-4.0	-24 57.9	28	10 56.1	-9 31.5	-0.0402	0.5935	+0.1089	+22	-45	
189 B. Sagittarii	6.1	0.83	3.9	24 47.4	13	9.5	-7 23.5	+0.0341	0.5925	0.1153	+26	-41	
ψ Sagittarii	4.9	0.81	3.6	25 24.2	15	57.9	-4 42.0	+0.9842	0.5912	0.1231	+65	+16	
208 B. Sagittarii	6.1	0.80	3.9	24 19.5	15	59.0	-4 41.0	-0.0971	0.5912	0.1232	+20	-49	
χ Sagittarii	4.9	0.77	3.6	24 40.4	19	45.4	-1 3.7	+0.7378	0.5892	0.1335	+65	-1	
49 Sagittarii	5.5	+0.76	-3.7	-24 7.7	19	51.1	-0 58.1	+0.2037	0.5892	+0.1338	+37	-31	
53 Sagittarii	6.3	0.71	3.5	23 37.2	29	1 28.5	+4 25.8	+0.4877	0.5861	0.1486	+54	-16	
274 B. Sagittarii	6.1	0.71	3.5	23 37.4	1	35.4	+4 32.5	+0.5075	0.5860	0.1488	+56	-15	
329 B. Sagittarii	6.1	0.63	3.1	22 58.2	10	4.0	-11 18.8	+1.2032	0.5808	0.1697	+67	+34	
336 B. Sagittarii	6.5	0.62	3.1	22 50.0	11	0.8	-10 24.4	+1.2271	0.5802	0.1719	+67	+37	
σ Capricorni	5.5	+0.55	-3.5	-19 22.9	17	24.3	-4 15.5	-1.0897	0.5760	+0.1862	-30	-90	
\circ Capricorni	5.6	+0.51	-3.4	-18 51.8	21	43.6	-0 6.0	-0.7865	0.5730	+0.1953	-9	-90	

MARCH.

ν Capricorni	5.3	+0.48	-3.2	-18 26.2	1	1 57.0	+3 57.8	-0.3729	0.5701	+0.2036	+14	-65
81 B. Capricorni	6.4	0.46	3.0	18 20.8	5	51.0	+7 43.2	+0.3465	0.5674	0.2109	+53	-24
19 Capricorni	5.7	0.44	2.8	18 14.6	8	9.6	+9 56.7	+0.7340	0.5657	0.2150	+72	-3
94 B. Capricorni	5.7	0.42	3.1	16 21.4	9	24.0	+11 8.3	-0.8941	0.5649	0.2171	-12	-90
21 Capricorni	6.5	0.42	2.8	17 51.6	10	44.7	-11 33.8	+0.9106	0.5639	0.2194	+72	+8
θ Capricorni	4.2	+0.41	-2.7	-17 34.1	12	55.2	-9 28.1	+1.0989	0.5624	+0.2229	+72	+21
MERCURY	0.3	...	...	-16 54.9	15	17.5	-7 11.0	+0.9775	0.5194	0.2215	+73	+11
NEW MOON.												
136 B. Piscium	6.5	+0.22	+3.5	+8 53.9	5	18 16.9	-7 25.4	+0.1661	0.5251	+0.2497	+52	-32
75 Piscium	6.3	+0.27	+4.9	+12 30.5	6	6 41.7	+4 36.2	-0.5987	0.5259	+0.2373	+11	-74
η Piscium	3.7	0.35	6.1	14 54.9	18	49.6	-7 38.8	-0.3564	0.5276	0.2223	+24	-57
101 Piscium	6.2	0.37	6.0	14 14.0	20	54.8	-5 37.6	+0.8273	0.5281	0.2195	+90	+7
105 Piscium	6.1	0.38	6.6	15 58.9	22	47.3	-3 48.7	-0.6201	0.5283	0.2168	+10	-71
3 Arietis	6.4	0.40	7.0	16 59.7	7	2 7.2	-0 35.0	-0.9841	0.5290	0.2121	-12	-73
4 Arietis	5.8	+0.41	+6.9	+16 32.4	2	53.5	+0 9.9	-0.3367	0.5291	+0.2110	+25	-54
ι Arietis	5.1	0.44	7.3	17 24.6	7	17.9	+4 25.8	-0.3503	0.5301	0.2043	+24	-54
35 B. Arietis	6.4	0.47	7.5	17 51.1	10	20.8	+7 22.9	-0.2076	0.5307	0.1996	+32	-46
47 B. Arietis	6.5	0.49	7.6	17 37.9	12	17.3	+9 15.6	+0.4127	0.5312	0.1964	+63	-13
15 Arietis	5.9	0.50	8.0	19 6.4	13	38.2	+10 33.9	-0.9033	0.5315	0.1943	-8	-71
θ Arietis	5.6	+0.54	+8.2	+19 30.9	17	12.7	-9 58.5	-0.6592	0.5323	+0.1883	+7	-69
26 Arietis	6.2	0.60	8.4	19 29.1	23	8.6	-4 14.0	+0.4592	0.5338	0.1780	+72	-9
ν Arietis	5.4	0.64	9.1	21 36.1	8	2 59.0	+0 31.2	-1.1508	0.5348	0.1710	-28	-68
μ Arietis	5.7	0.66	8.6	19 39.4	4	40.4	+1 7.0	+1.2337	0.5352	0.1679	+89	+44
ϵ Arietis (mean)	4.6	0.75	9.1	21 0.5	12	33.0	+8 44.1	+1.0412	0.5372	0.1529	+90	+29
64 Arietis	5.8	+0.90	+10.3	+24 25.8	9	0 8.6	-4 3.4	-1.0377	0.5400	+0.1294	-20	-66
66 Arietis	6.1	0.93	9.6	22 31.1	2	4.6	-2 11.2	+1.2912	0.5405	0.1253	+74	+58
7 Tauri	5.9	0.97	10.2	24 11.2	4	48.8	+0 27.5	-0.1920	0.5411	0.1195	+32	-36
11 Tauri	6.1	1.01	10.4	25 3.7	7	42.2	+3 15.1	-0.8114	0.5417	0.1133	-4	-65
16 Tauri	5.4	1.04	10.1	24 1.7	9	33.8	+5 3.0	+0.5236	0.5421	0.1092	+79	+2
17 Tauri	3.8	+1.04	+10.0	+23 51.2	9	36.0	+5 5.0	+0.7197	0.5421	+0.1091	+90	+13
18 Tauri	5.6	1.04	10.2	24 34.8	9	43.2	+5 12.0	-0.0611	0.5421	0.1089	+39	-28
q Tauri	4.3	1.04	10.1	24 12.5	9	44.8	+5 13.5	+0.3482	0.5421	0.1088	+64	-7
20 Tauri	4.1	1.04	10.1	24 6.5	10	1.8	+5 30.0	+0.4868	0.5422	0.1082	+75	0
21 Tauri	5.8	1.04	10.1	24 17.8	10	3.9	+5 32.1	+0.2863	0.5422	0.1081	+60	-10
22 Tauri	6.5	+1.05	+10.1	+24 16.2	10	7.8	+5 35.8	+0.3221	0.5422	+0.1080	+63	-8
23 Tauri	4.3	1.05	9.9	23 41.4	10	15.9	+5 43.6	+0.9699	0.5422	0.1076	+90	+29
η Tauri	3.0	1.05	10.0	23 50.9	10	47.6	+6 14.2	+0.8529	0.5423	0.1065	+90	+21
27 Tauri	3.7	1.06	9.9	23 48.0	11	33.6	+6 58.7	+0.9877	0.5425	0.1048	+90	+31
28 Tauri	5.2	1.06	10.0	23 53.0	11	34.2	+6 59.3	+0.8973	0.5425	0.1048	+90	+24
14 H. Tauri	5.3	+1.08	+10.4	+25 19.8	12	3.8	+7 27.9	-0.6325	0.5426	+0.1037	+7	-61

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S					AT CONJUNCTION IN R. A.					Limit- ing Par- allels.	
Name.	Mag.	Red'n's from 1916.0.		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	Y'	x'	y'		N. S.
		$\Delta\alpha$	$\Delta\delta$							d		h	m	h	m
p Tauri	5.6	+1.22	+10.6	+26 15.9	9	21 23.4	- 7 31.4	-0.7896	0.5442	+0.0827	- 3 -64
X Tauri	5.3	1.30	10.1	25 26.1	10	2 43.7	- 2 22.1	+0.5313	0.5450	0.0705	+80 + 7
38 B. Aurigæ	6.5	1.60	9.8	27 34.9		21 40.0	- 8 4.5	-0.9203	0.5462	0.0259	-13 -62
47 B. Aurigæ	6.0	1.64	9.8	27 55.7		23 57.9	- 5 51.4	-1.2495	0.5462	0.0203	-50 -62
354 B. Tauri	6.4	1.72	9.4	27 52.5	11	5 2.0	+ 0 57.6	-1.1200	0.5461	+0.0082	-30 -62
107 B. Aurigæ	6.5	+1.82	+ 8.7	+27 36.6		11 46.8	+ 5 33.3	-0.8266	0.5456	-0.0078	- 6 -62
112 B. Aurigæ	5.7	1.82	8.4	26 52.5		12 20.6	+ 6 6.0	-0.0180	0.5456	0.0092	+42 -16
125 Tauri	5.1	1.83	7.9	25 51.2		13 32.0	+ 7 14.9	+1.0992	0.5456	0.0120	+90 +47
136 Tauri	4.6	1.94	8.0	27 35.7		19 39.2	-10 50.4	-0.9458	0.5448	0.0265	-15 -62
139 Tauri	4.7	1.95	7.2	25 56.8		21 48.0	- 8 45.9	+0.8162	0.5445	0.0316	+90 +26
415 B. Tauri	6.1	+1.99	+ 7.6	+27 34.3		23 8.4	- 7 28.3	-1.0255	0.5443	-0.0347	-21 -62
e Geminorum	3.2	2.23	4.6	25 13.0	12	18 49.9	+11 33.4	+0.4483	0.5402	0.0797	+72 + 1
37 Geminorum	5.7	2.30	4.0	25 29.0	13	0 6.0	- 7 21.1	-0.2967	0.5387	0.0913	+26 -39
39 Geminorum	6.2	2.33	4.1	26 11.6		1 42.7	- 5 47.6	-1.2320	0.5383	0.0948	-42 -64
40 Geminorum	6.3	2.33	4.0	26 1.8		2 1.2	- 5 29.7	-1.0809	0.5382	0.0954	-25 -64
ω Geminorum	5.2	+2.32	+ 3.2	+24 20.2		3 25.5	+ 4 8.1	+0.6543	0.5378	-0.0985	+90 +10
48 Geminorum	5.8	2.37	2.6	24 16.3		8 6.9	+ 0 23.9	+0.2418	0.5364	0.1084	+58 -12
52 Geminorum	6.1	2.40	2.7	25 2.0		9 9.6	+ 1 24.5	-0.7137	0.5361	0.1105	+ 2 -65
58 Geminorum	6.0	2.41	1.5	23 6.5		13 19.5	+ 5 26.3	+0.9323	0.5347	0.1191	+90 +25
B. D. +23° 1744	6.4	2.46	0.9	23 4.1		17 45.9	+ 9 44.0	+0.4275	0.5333	0.1280	+70 - 5
187 B. Geminorum	6.3	+2.50	+ 0.4	+23 12.8		21 38.0	-10 31.3	-0.2440	0.5320	-0.1356	+29 -40
192 B. Geminorum	6.3	2.50	+ 0.1	22 35.9		22 47.3	- 9 24.3	+0.2765	0.5316	0.1379	+59 -14
82 Geminorum	6.3	2.54	0.0	23 21.0	14	1 15.6	- 7 0.7	-0.8974	0.5308	0.1426	- 9 -67
μ Cancri	5.5	2.60	- 1.8	21 49.6		10 33.3	+ 1 59.2	-0.6250	0.5277	0.1596	+ 8 -65
NEPTUNE	7.7	...	...	19 51.8		13 24.0	+ 4 44.6	+1.0690	0.5274	0.1647	+90 +29
49 B. Cancri	6.0	+2.64	- 2.9	+21 0.8		16 42.3	+ 7 56.6	-0.7463	0.5256	-0.1703	+ 2 -69
θ Cancri	5.5	2.63	4.3	18 22.7		22 16.7	-10 39.4	+1.1652	0.5239	0.1795	+90 +35
ε Cancri	6.3	2.69	4.6	19 50.5	15	2 38.4	- 6 25.9	-1.2338	0.5225	0.1864	-35 -70
δ Cancri	4.2	2.68	5.2	18 27.7		4 45.8	- 4 22.5	-0.1253	0.5218	0.1896	+36 -40
X Cancri (var.)	6.2	2.70	6.1	17 33.0		10 6.9	+ 0 48.9	-0.1658	0.5202	0.1976	+34 -43
81 Cancri	6.4	+2.71	- 7.7	+15 20.0		18 40.7	+ 9 7.1	+0.5039	0.5179	-0.2093	+74 -11
π Cancri	5.6	2.72	8.0	15 17.3		20 8.6	+10 32.3	+0.2443	0.5176	0.2113	+57 -24
227 B. Cancri	6.4	2.75	8.2	15 43.6		23 11.6	-10 30.3	-0.8808	0.5169	0.2151	- 6 -74
18 Leonis	5.8	2.75	10.6	12 11.7	16	12 4.1	+ 1 59.2	+0.0762	0.5143	0.2298	+47 -35
19 Leonis	6.4	2.75	10.7	11 57.3		12 36.4	+ 2 30.5	+0.2113	0.5143	0.2304	+55 -28
R Leonis (var.)	5-10	+2.75	-10.8	+11 49.0		12 40.3	+ 2 34.3	+0.3457	0.5143	-0.2304	+63 -21
A Leonis	4.6	2.77	12.2	10 24.4		23 10.1	-11 14.6	-0.6084	0.5130	0.2403	+10 -76
43 Leonis	6.3	2.75	13.5	6 58.0	17	7 0.0	- 3 38.7	+1.1727	0.5126	0.2466	+90 +26
48 Leonis	5.2	2.77	14.1	7 23.0		13 6.4	+ 2 17.0	-0.7916	0.5125	0.2507	+ 1 -83
35 Sextantis	6.1	2.76	14.7	5 11.1		17 32.4	+ 6 35.2	+0.4358	0.5126	0.2532	+68 -19
d Leonis	5.0	+2.77	-15.6	+ 4 3.9	18	2 26.5	- 8 46.6	-0.6462	0.5134	-0.2573	+ 9 -83
p ⁴ Leonis	5.7	2.75	16.0	2 24.4		5 44.3	- 5 34.7	+0.2609	0.5139	0.2585	+57 -29
75 Leonis	5.4	2.77	16.4	2 28.1		11 3.5	- 0 24.9	-1.1817	0.5148	0.2599	-25 -88
76 Leonis	6.0	2.76	16.5	2 6.4		11 54.0	+ 0 24.1	-1.0177	0.5150	0.2601	-13 -88
359 B. Leonis	6.3	2.75	16.7	+ 0 35.3		14 9.0	+ 2 35.1	0.0000	0.5154	0.2605	+43 -43
388 B. Leonis	6.3	+2.74	-17.0	- 1 14.5		16 30.4	+ 4 52.2	+1.3169	0.5159	-0.2608	+88 +38
v Leonis	4.5	2.75	17.2	0 21.9		21 7.0	+ 9 20.7	-0.8119	0.5171	0.2612	0 0-90
431 B. Leonis	6.2	2.74	17.3	1 58.6		21 51.6	+10 3.8	+0.6900	0.5174	0.2612	+88 - 8
78 B. Virginis	6.5	2.74	18.1	5 15.4	19	15 52.2	+ 3 31.6	-0.5568	0.5239	0.2580	+13 -77
q Virginis	5.3	2.72	18.2	8 59.6	20	1 27.0	-11 11.6	+0.8857	0.5284	0.2534	+81 + 5
X Virginis	4.8	+2.73	-18.4	- 7 32.3		4 6.4	- 8 37.2	-1.2980	0.5298	-0.2518	-38 -90
370 B. Virginis	6.0	2.72	18.2	11 11.9		11 20.0	+ 1 37.3	+0.6994	0.5338	0.2465	+79 - 6
75 Virginis	5.6	2.70	17.6	14 56.2	21	5 17.2	- 8 15.6	+0.2889	0.5453	0.2278	+53 -27
83 Virginis	5.6	2.69	17.3	15 45.7		10 32.8	- 3 10.8	-0.0413	0.5490	0.2208	+34 -45
85 Virginis	6.1	2.69	17.4	15 21.0		11 2.4	- 2 42.1	-0.5731	0.5494	0.2201	+ 7 -80
43 H. Virginis	5.5	+2.66	-16.4	-17 48.8	22	0 10.6	+ 9 58.4	-0.8013	0.5590	-0.1992	- 9 -90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.			
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.		Greenwich Mean Time.		Hour Angle, <i>H</i>	<i>Y</i>	<i>z'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$	"	'	d	h							m	"	'
231 G. Virginis	6.4	+2.66	-16.3	-18	12.0	22	0 53.4	+10 39.6	-0.5475	0.5596	-0.1980	+ 5	-79
236 G. Virginis	5.7	2.68	16.2	18	19.9		1 34.3	+11 19.2	-0.5470	0.5600	0.1968	+ 5	-79
9 G. Libræ	6.5	2.65	15.4	20	4.5		8 29.1	- 6 1.1	-0.0777	0.5652	0.1837	+27	-47
17 G. Libræ	6.4	2.64	15.0	20	49.5		13 15.0	- 1 25.6	-0.1648	0.5687	0.1740	+22	-52
18 G. Libræ	6.1	2.64	14.9	20	58.6		13 41.1	- 1 0.6	-0.0841	0.5690	0.1731	+26	-47
43 B. Libræ	5.7	+2.64	-15.0	-21	2.5		17 53.7	+ 3 2.6	-0.7274	0.5720	-0.1640	- 9	-90
47 G. Libræ	6.1	2.61	14.1	21	42.6		21 37.4	+ 6 38.0	-0.6419	0.5747	0.1556	- 5	-90
64 G. Libræ	5.8	2.58	13.6	22	5.6	23	1 40.1	+10 31.4	-0.8606	0.5774	0.1460	-18	-90
153 B. Libræ	6.3	2.57	12.5	24	12.5		8 23.2	- 7 1.1	+0.3684	0.5818	0.1293	+46	-22
169 B. Libræ	6.0	2.54	12.7	22	52.0		10 15.3	- 5 13.3	-1.2336	0.5830	0.1245	-51	-85
177 B. Libræ	6.2	+2.53	-12.6	-22	52.8		10 52.4	- 4 37.7	-1.2971	0.5833	-0.1229	-62	-69
42 Libræ	5.0	2.54	12.4	23	33.0		11 13.9	- 4 17.1	-0.6597	0.5835	0.1220	- 9	-90
b Scorpïi	4.7	2.54	11.4	25	30.0		15 25.9	+ 0 15.0	+0.8352	0.5859	0.1108	+65	+ 6
A Scorpïi	4.6	2.52	11.4	25	4.8		16 28.3	+ 0 45.0	+0.2945	0.5865	0.1080	+39	-26
31 B. Scorpïi	5.4	2.51	11.6	24	17.2		16 35.6	+ 0 52.0	-0.5249	0.5866	0.1076	- 3	-79
32 B. Scorpïi	5.3	+2.50	-11.8	-23	43.9		16 36.8	+ 0 53.2	-1.0916	0.5866	-0.1076	-39	-90
3 Scorpïi	5.9	2.52	11.4	24	59.9		16 53.0	+ 1 8.7	+0.1675	0.5867	0.1068	+32	-33
4 Scorpïi	5.7	2.53	11.0	26	1.3		17 12.1	+ 1 27.0	+1.1739	0.5869	0.1060	+64	+34
40 B. Scorpïi	5.4	2.50	11.3	24	35.6		18 25.5	+ 2 37.5	-0.4063	0.5876	0.1026	+ 2	-69
π Scorpïi	3.0	2.52	11.0	25	52.6		18 30.8	+ 2 42.6	+0.8888	0.5876	0.1024	+64	+10
48 B. Scorpïi	4.9	+2.50	-10.8	-25	38.1		20 16.4	+ 4 24.0	+0.4677	0.5885	-0.0975	+49	-16
50 B. Scorpïi	6.4	2.48	11.2	24	29.9		20 30.5	+ 4 37.6	-0.7098	0.5886	0.0968	-14	-90
24 G. Scorpïi	6.2	2.47	11.0	24	14.5		22 3.0	+ 6 6.3	-1.1171	0.5893	0.0925	-42	-90
65 B. Scorpïi	5.5	2.50	10.4	26	6.3		22 7.3	+ 6 10.5	+0.7695	0.5893	0.0923	+64	+ 2
85 B. Scorpïi	6.0	2.46	10.4	25	16.0	24	0 45.6	+ 8 42.4	-0.3149	0.5906	0.0848	+ 5	-62
σ Scorpïi	3.1	+2.44	-10.1	-25	23.7		3 11.5	+11 2.4	-0.3827	0.5917	-0.0777	+ 1	-67
α Scorpïi	1.2	2.42	9.4	26	15.0		6 20.5	- 9 56.3	+0.2537	0.5929	0.0685	+34	-28
22 Scorpïi	4.8	2.40	9.8	24	56.0		6 40.1	- 9 37.4	-1.1033	0.5930	0.0676	-43	-90
116 B. Scorpïi	6.2	2.42	9.3	26	21.5		7 6.0	- 9 12.6	+0.3133	0.5931	0.0663	+37	-25
134 B. Scorpïi	6.4	2.39	8.4	27	18.1		12 1.4	- 4 29.2	+0.9798	0.5947	0.0516	+63	+17
118 B. Ophiuchi	6.2	+2.29	- 7.6	-26	24.2		20 37.7	+ 3 45.9	-0.2635	0.5966	-0.0254	+ 3	-59
95 G. Ophiuchi	6.1	2.28	7.0	27	39.7		22 42.4	+ 5 45.4	+0.9660	0.5969	0.0189	+62	+16
36 Ophi. (1st star)	5.4	2.24	7.5	28	29.0		23 51.1	+ 6 51.3	-0.2479	0.5970	0.0154	+ 2	-58
136 G. Ophiuchi	6.3	2.19	6.9	25	52.3	25	4 13.5	+11 2.8	-0.9046	0.5973	-0.0019	-35	-90
151 G. Ophiuchi	6.0	2.18	6.5	26	12.5		6 2.6	-11 12.6	-0.5622	0.5972	-0.0038	-15	-83
163 G. Ophiuchi	6.3	+2.15	- 5.4	-27	50.8		10 23.5	- 7 2.4	+1.1428	0.5970	+0.0172	+62	+33
X Sagittarii (var.)	4.4	2.13	5.2	27	48.1		12 0.5	+ 5 29.4	+1.1294	0.5968	0.0223	+62	+31
4 G. Sagittarii	6.2	2.12	5.5	26	56.9		12 21.8	- 5 9.0	+0.2729	0.5968	0.0234	+31	-27
66 B. Sagittarii	4.7	1.98	4.0	27	4.5		23 36.9	+ 5 38.4	+0.8581	0.5945	0.0576	+63	+ 8
67 B. Sagittarii	6.4	1.95	4.5	25	38.3		23 52.9	+ 5 53.7	-0.5811	0.5944	0.0584	-11	-85
70 B. Sagittarii	6.4	+1.93	- 4.6	-24	57.3	26	0 58.5	+ 6 56.7	-1.2073	0.5941	-0.0617	-53	-86
68 G. Sagittarii	6.2	1.93	3.7	26	41.2		3 19.6	+ 9 12.0	+0.6993	0.5933	0.0687	+62	- 2
λ Sagittarii	2.9	1.90	4.1	25	28.2		3 26.4	+ 9 18.6	-0.5244	0.5933	0.0690	- 7	-79
69 G. Sagittarii	6.3	1.93	3.6	26	48.6		3 28.2	+ 9 20.3	+0.8335	0.5933	0.0691	+63	+ 6
86 B. Sagittarii	6.5	1.92	3.6	26	38.2		3 47.8	+ 9 39.1	+0.6821	0.5931	0.0701	+61	- 3
126 B. Sagittarii	5.7	+1.82	- 3.4	-25	5.8		9 56.4	- 8 27.3	-0.3917	0.5907	+0.0880	+ 2	-68
162 B. Sagittarii	6.4	1.75	2.8	24	59.4		15 11.7	- 3 24.6	+0.0016	0.5882	0.1028	+23	-42
127 G. Sagittarii	6.4	1.74	2.7	25	3.6		16 0.1	- 2 38.2	+0.1563	0.5879	0.1050	+32	-34
172 B. Sagittarii	5.8	1.73	2.7	24	57.9		16 48.5	- 1 51.7	+0.1444	0.5874	0.1072	+31	-34
189 B. Sagittarii	6.1	1.70	2.5	24	47.4		19 4.7	+ 0 19.1	+0.2184	0.5863	0.1134	+36	-30
191 B. Sagittarii	6.5	+1.67	- 3.0	-23	19.5		19 17.8	+ 0 31.7	-1.2415	0.5862	+0.1140	-53	-83
ψ Sagittarii	4.9	1.67	1.9	25	24.2		21 56.7	+ 3 4.3	+1.1758	0.5847	0.1211	+65	+34
208 B. Sagittarii	6.1	1.66	2.3	24	19.4		21 57.8	+ 3 5.3	+0.0847	0.5847	0.1212	+29	-38
χ Sagittarii	4.9	1.61	1.8	24	40.4	27	1 49.2	+ 6 47.7	+0.9255	0.5824	0.1312	+65	+12
49 Sagittarii	5.5	1.60	1.9	24	7.7		1 55.2	+ 6 53.3	+0.3862	0.5824	0.1315	+47	- 21
53 Sagittarii	6.3	+1.52	- 1.5	-23	37.2		7 40.4	-11 34.7	+0.6697	0.5788	+0.1459	+65	- 5

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallax		
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N. S.
		$\Delta\alpha$	$\Delta\delta$		d	h	m					
		<i>s</i>	<i>"</i>	<i>°</i>	<i>'</i>	h	m					
274 B. Sagittarii	6.1	+1.52	-1.5	-23 37.4	27	7 47.5	-11 28.0	+0.6895	0.5788	+0.1462	+66-4	
σ Capricorni	5.5	1.27	1.2	19 22.9	28	0 0.8	+ 4 8.5	-0.9385	0.5679	0.1825	-19-30	
π Capricorni	5.2	1.22	1.1	18 29.3		3 22.0	+ 7 22.3	-1.2233	0.5656	0.1892	-41-30	
\omicron Capricorni	5.6	1.22	0.9	18 51.7		4 27.2	+ 8 25.1	-0.6365	0.5648	0.1913	0-87	
ν Capricorni	5.3	1.16	0.6	18 26.1		8 47.6	-11 24.0	-0.2226	0.5619	0.1994	+22-55	
81 B. Capricorni	6.4	+1.12	-0.3	-18 20.8		12 48.0	- 7 32.1	+0.5008	0.5592	+0.2065	+62-16	
19 Capricorni	5.7	1.09	0.1	18 14.5		15 10.6	- 5 14.7	+0.8902	0.5576	0.2104	+72+7	
94 B. Capricorni	5.7	1.06	-0.6	16 21.3		16 27.1	- 4 0.9	-0.7595	0.5567	0.2125	- 5-30	
21 Capricorni	6.5	1.06	0.0	17 51.5		17 50.0	- 2 41.0	+1.0658	0.5558	0.2148	+72+19	
θ Capricorni	4.2	1.04	+0.1	17 34.0		20 4.2	- 0 31.4	+1.2537	0.5543	0.2182	+72+36	
29 Capricorni	5.5	+0.97	-0.2	-15 31.3	29	0 26.5	+ 3 41.7	+0.1389	0.5515	+0.2246	+44-35	
18 Aquarii	5.5	0.91	-0.4	13 14.4		4 14.7	+ 7 22.0	-1.3228	0.5491	0.2298	-47-82	
λ Capricorni	5.5	0.81	0.0	11 45.2		14 25.8	- 6 47.6	-0.4366	0.5431	0.2418	-16-09	
151 B. Capricorni	6.1	0.81	+0.4	13 6.9		15 52.3	- 5 24.1	+1.3034	0.5423	0.2433	+77+39	
96 B. Aquarii	6.5	0.77	0.0	10 42.5		17 42.1	- 3 37.9	-0.7092	0.5413	0.2451	+ 2-30	
θ Aquarii	4.3	+0.67	+0.2	- 8 12.1	30	4 35.7	+ 6 54.3	-0.5534	0.5360	+0.2542	+13-71	
150 B. Aquarii	6.0	0.68	0.5	9 27.5		4 36.8	+ 6 55.3	+0.7398	0.5360	0.2542	+81-4	
ρ Aquarii	5.3	0.66	0.4	8 14.6		6 11.6	+ 8 27.0	-0.1038	0.5352	0.2553	+35-28	
170 B. Aquarii	6.0	0.64	0.4	7 37.2		7 47.0	+ 9 59.4	-0.3370	0.5346	0.2563	+24-62	
186 B. Aquarii	6.1	0.62	0.5	6 59.1		11 29.1	-10 25.7	-0.0359	0.5331	0.2585	+40-44	
252 B. Aquarii	5.8	+0.53	+1.0	- 5 26.1		23 0.6	+ 0 43.8	+1.3822	0.5291	+0.2631	+78+48	
6 G. Piscium	6.2	+0.51	+0.7	- 2 50.7	31	0 31.2	+ 2 11.5	-0.8883	0.5287	+0.2635	- 5-30	

NEW MOON.

APRIL.

26 Arietis	6.2	+0.40	+6.7	+19 29.1	4	7 58.6	+ 6 23.9	+0.2938	0.5379	+0.1777	+60-17
ν Arietis	5.4	0.42	7.2	21 36.0		11 47.0	+10 4.7	-1.3189	0.5390	0.1708	-52-68
μ Arietis	5.7	0.44	6.9	19 39.4		13 27.6	+11 42.1	+1.0580	0.5395	0.1677	+90+29
ϵ Arietis (mean)	4.6	+0.50	+7.4	+21 0.4		21 15.7	+ 4 45.3	+0.8543	0.5417	+0.1527	+90+17
64 Arietis	5.8	0.59	8.3	24 25.8	5	8 44.5	+ 6 20.3	-1.2341	0.5446	0.1292	-41-66
66 Arietis	6.1	0.61	7.9	22 31.0		10 39.4	+ 8 11.4	+1.0856	0.5450	0.1251	+90+35
7 Tauri	5.9	0.64	8.3	24 11.2		13 21.9	+10 48.4	-0.3963	0.5456	0.1192	+20-47
11 Tauri	6.1	0.67	8.5	25 3.7		16 13.6	+10 25.7	-1.0171	0.5462	0.1130	-19-65
16 Tauri	5.4	+0.69	+8.3	+24 1.7		18 4.2	- 8 38.8	+0.3116	0.5466	+0.1089	+62-9
17 Tauri	3.8	0.69	8.3	23 51.1		18 6.2	- 8 36.9	+0.5071	0.5466	0.1088	+77+2
18 Tauri	5.6	0.69	8.4	24 34.7		18 13.4	- 8 30.0	-0.2714	0.5466	0.1086	+27-39
η Tauri	4.3	0.69	8.4	24 12.4		18 15.0	- 8 28.4	+0.1366	0.5466	0.1085	+51-17
20 Tauri	4.1	0.69	8.3	24 6.5		18 31.9	- 8 12.1	+0.2745	0.5466	0.1079	+59-10
21 Tauri	5.8	+0.69	+8.4	+24 17.7		18 33.9	- 8 10.2	+0.0744	0.5467	+0.1078	+47-20
22 Tauri	6.5	0.69	8.4	24 16.1		18 37.8	- 8 6.5	+0.1101	0.5467	0.1077	+49-19
23 Tauri	4.3	0.70	8.2	23 41.4		18 45.8	- 7 58.6	+0.7557	0.5467	0.1074	+90+15
η Tauri	3.0	0.70	8.3	23 50.9		19 17.2	- 7 28.3	+0.6386	0.5468	0.1062	+90+9
27 Tauri	3.7	0.71	8.2	23 48.0		20 2.8	- 6 44.3	+0.7720	0.5469	0.1045	+90+17
28 Tauri	5.2	+0.71	+8.3	+23 53.0		20 3.4	- 6 43.8	+0.6821	0.5469	+0.1045	+90+12
14 H. Tauri	5.3	0.72	8.6	25 19.8		20 32.6	- 6 15.5	-0.8436	0.5470	0.1034	- 6-65
p Tauri	5.6	0.82	8.8	26 15.9		5 47.0	+ 2 40.1	-1.0097	0.5484	0.0823	-19-64
χ Tauri	5.3	0.89	8.6	25 26.1	6	11 4.5	+ 7 46.6	+0.3021	0.5490	0.0700	+61-5
38 B. Aurigæ	6.5	1.14	8.6	27 34.9	7	5 52.4	+ 1 55.8	-1.1605	0.5492	+0.0253	-35-62
107 B. Aurigæ	6.5	+1.34	+8.0	+27 36.6		19 55.3	- 8 30.4	-1.0762	0.5477	-0.0083	-26-62
112 B. Aurigæ	5.7	1.34	7.7	26 52.5		20 29.0	- 7 57.8	-0.2692	0.5477	0.0097	+27-30
125 Tauri	5.1	1.34	7.3	25 51.2		21 40.1	- 6 49.2	+0.8457	0.5474	0.0125	+90+30
136 Tauri	4.6	1.45	7.5	27 35.7	8	3 46.5	- 0 55.4	-1.1993	0.5463	0.0269	-40-62
139 Tauri	4.7	1.46	6.8	25 56.8		5 55.1	+ 1 8.9	+0.5598	0.5458	0.0320	+82+12
52 B. Geminorum	6.5	+1.69	+4.8	+24 39.8		23 58.9	- 5 23.9	+1.0279	0.5408	-0.0731	+90+36

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S				AT CONJUNCTION IN R. A.					Limiting Parallels.		
Name.	Mag.	Red'n's from 1916.0.		Apparent Declination.	Greenwich Mean Time.		Y	z'	y'	N.	S.
		Δα	Δδ		h	m						h	m
z Geminorum	3.2	+1.74	+ 4.8	+25 13.0	9	2 58.0	- 2 30.7	+0.1871	0.5398	-0.0796	+54 -12
37 Geminorum	5.7	1.81	4.4	25 29.0		8 15.2	+ 2 36.0	-0.5588	0.5380	0.0910	+11 -55
∞ Geminorum	5.2	1.84	3.6	24 20.2		11 35.6	+ 5 49.8	+0.3928	0.5368	0.0981	+68 - 3
48 Geminorum	5.8	1.90	3.1	24 16.3		16 18.5	+10 23.4	-0.0198	0.5351	0.1078	+41 -26
52 Geminorum	6.1	1.92	3.2	25 2.0		17 21.5	+11 24.4	-0.9764	0.5346	0.1100	-16 -65
58 Geminorum	6.0	+1.94	+ 2.1	+23 6.5		21 33.0	- 8 32.4	+0.6723	0.5330	-0.1184	+9 + 9
B. D.+23° 1744	6.4	2.00	1.6	23 4.1	10	2 1.2	- 4 12.8	+0.1675	0.5313	0.1272	+52 -18
187 B. Geminorum	6.3	2.05	1.2	23 12.9		5 55.1	- 0 26.4	-0.5043	0.5298	0.1346	+15 -56
192 B. Geminorum	6.3	2.05	0.9	22 35.9		7 4.9	+ 0 41.2	+0.0175	0.5294	0.1368	+43 -27
82 Geminorum	6.3	2.09	+ 0.9	23 21.0		9 34.5	+ 3 6.0	-1.1581	0.5284	0.1414	-30 -67
μ Cancrī	5.5	+2.17	- 0.8	+21 49.6		18 57.2	-11 49.1	-0.8814	0.5248	-0.1581	- 8 -68
NEPTUNE	7.7	...	...	19 54.7		21 26.4	- 9 24.4	+0.8269	0.5239	0.1623	+90 +13
49 B. Cancrī	6.0	2.23	1.8	21 0.8	11	1 9.8	- 5 47.9	-0.9997	0.5225	0.1685	-15 -69
θ Cancrī	5.5	2.24	3.4	18 22.7		6 47.8	- 0 20.5	+0.9209	0.5206	0.1775	+90 +17
δ Cancrī	4.2	2.31	4.1	18 27.8		13 20.9	+ 6 0.6	-0.3682	0.5184	0.1874	+23 -54
X Cancrī (var.)	6.2	+2.35	- 5.0	+17 33.0		18 45.6	-11 15.5	-0.4039	0.5168	-0.1951	+21 -57
∞ Cancrī	5.7	2.33	5.7	15 54.2		19 53.7	-11 38.4	+1.1747	0.5164	0.1967	+90 +33
81 Cancrī	6.4	2.38	6.7	15 20.0	12	3 25.0	- 4 20.7	+0.2768	0.5144	0.2066	+58 -22
π Cancrī	5.6	2.40	6.9	15 17.3		4 53.8	- 2 54.6	+0.0182	0.5141	0.2085	+44 -35
227 B. Cancrī	6.4	2.44	7.1	15 43.6		7 58.9	+ 0 4.9	-1.1067	0.5134	0.2123	-21 -74
18 Leonis	5.8	+2.49	- 9.7	+12 11.7		20 59.2	-11 17.9	-0.1291	0.5112	-0.2268	+36 -46
19 Leonis	6.4	2.49	9.8	11 57.3		21 31.9	-10 46.2	+0.0072	0.5111	0.2273	+43 -38
R Leonis (var.)	5-10	2.49	9.8	11 49.0		21 35.7	-10 42.5	+0.1420	0.5111	0.2274	+50 -31
A Leonis	4.6	2.55	11.4	10 24.4	13	8 11.1	- 0 25.7	-0.7970	0.5102	0.2373	0 -80
43 Leonis	6.3	2.56	13.1	6 58.0		16 4.5	+ 7 13.8	+1.0015	0.5102	0.2435	+90 +14
48 Leonis	5.2	+2.61	-13.6	+ 7 23.0		22 13.0	-10 48.5	-0.9533	0.5105	-0.2477	- 9 -83
35 Sextantis	6.1	2.62	14.5	5 11.1	14	2 40.2	- 6 29.0	+0.2842	0.5109	0.2503	+58 -27
d Leonis	5.0	2.66	15.5	4 3.9		11 36.0	+ 2 10.9	-0.7785	0.5124	0.2546	+ 2 -86
p ⁴ Leonis	5.7	2.66	16.2	2 24.4		14 54.2	+ 5 23.2	+0.1355	0.5130	0.2558	+50 -35
p ⁵ Leonis	5.3	2.67	16.8	0 23.0		18 25.4	+ 8 48.2	+1.3728	0.5140	0.2570	+81 +46
75 Leonis	5.4	+2.70	-16.6	+ 2 28.1		20 13.5	+10 33.1	-1.2932	0.5144	-0.2575	-35 -88
76 Leonis	6.0	2.70	16.6	2 6.4		21 3.9	+11 22.0	-1.1274	0.5147	0.2577	-21 -88
359 B. Leonis	6.3	2.70	17.1	+ 0 35.3		23 18.8	-10 27.1	-0.1056	0.5153	0.2581	+37 -48
388 B. Leonis	6.3	2.70	17.6	+ 1 14.5	15	1 39.9	- 8 10.2	+1.2147	0.5161	0.2585	+89 +28
v Leonis	4.5	2.74	17.7	0 21.9		6 15.9	- 3 42.6	-0.8987	0.5177	0.2590	- 6 -90
431 B. Leonis	6.2	+2.73	-18.0	+ 1 58.6		7 0.3	- 2 59.6	+0.6015	0.5180	-0.2591	+81 -11
78 B. Virginis	6.5	2.82	19.3	5 15.4	16	0 53.9	- 9 38.8	-0.5958	0.5263	0.2568	+11 -80
q Virginis	5.3	2.86	20.0	8 59.7		10 22.4	- 0 28.2	+0.8636	0.5318	0.2525	+81 + 4
χ Virginis	4.8	2.87	19.9	7 32.3		12 59.8	+ 2 4.1	-1.3000	0.5335	0.2509	-39 -89
370 B. Virginis	6.0	2.91	20.2	11 11.9		20 7.3	+ 8 57.8	+0.7029	0.5383	0.2459	+79 - 5
75 Virginis	5.6	+3.00	-20.0	-14 56.2	17	13 45.2	+ 2 0.2	+0.3393	0.5516	-0.2279	+55 -24
83 Virginis	5.6	3.03	19.8	15 45.8		18 54.2	+ 6 58.4	+0.0247	0.5558	0.2210	+37 -41
85 Virginis	6.1	3.02	19.8	15 21.1		19 23.2	+ 7 26.4	-0.5006	0.5562	0.2203	+10 -74
43 H. Virginis	5.5	3.08	19.0	17 48.9	18	8 13.3	- 4 11.1	-0.6959	0.5669	0.1997	+ 3 -90
231 G. Virginis	6.4	3.09	18.9	18 12.0		8 55.1	- 3 30.8	-0.4433	0.5675	0.1984	+10 -70
236 G. Virginis	5.7	+3.09	-18.8	-18 19.9		9 35.0	- 2 52.3	-0.4413	0.5681	-0.1972	+10 -70
9 G. Libræ	6.5	3.13	18.2	20 4.6		16 19.4	+ 3 37.0	+0.0378	0.5736	0.1842	+33 -40
17 G. Libræ	6.4	3.14	17.7	20 49.5		20 58.1	+ 8 5.1	-0.0386	0.5774	0.1744	+28 -45
18 G. Libræ	6.1	3.15	17.6	20 58.7		21 23.4	+ 8 29.5	+0.0420	0.5777	0.1735	+32 -40
43 G. Libræ	5.7	3.18	17.7	21 2.6	19	1 29.5	-11 33.9	-0.5853	0.5810	0.1644	- 1 -83
47 G. Libræ	6.1	+3.17	-16.7	-21 42.6		5 7.3	- 8 4.6	-0.4935	0.5837	-0.1559	+ 3 -75
64 G. Libræ	5.8	3.17	16.2	22 5.6		9 3.5	- 4 17.6	-0.7019	0.5866	0.1463	- 9 -90
153 B. Libræ	6.3	3.21	15.0	24 12.5		15 35.8	+ 1 59.2	+0.5240	0.5912	0.1294	+55 -13
169 B. Libræ	6.0	3.18	14.9	22 52.1		17 25.0	+ 3 43.9	-1.0551	0.5923	0.1246	-34 -90
177 B. Libræ	6.2	3.18	14.8	22 52.8		18 1.0	+ 4 18.5	-1.1167	0.5927	0.1229	-39 -90
42 Libræ	5.0	+3.19	-14.7	-23 33.0		18 22.0	+ 4 38.6	-0.4866	0.5929	-0.1220	0 -75

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.		
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>	
		$\Delta\alpha$	$\Delta\delta$									
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d</i>	<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>	<i>'</i>	<i>"</i>	
<i>b</i> Scorpii	4.7	+3.22	-13.7	-25 30.0	19	22	27.2	+ 8 34.0	+0.9969	0.5953	-0.1107	+64+18
<i>A</i> Scorpii	4.6	3.21	13.6	25 4.8		23	28.0	+ 9 32.3	+0.4644	0.5959	0.1079	+50-16
31 B. Scorpii	5.4	3.20	13.8	24 17.3		23	35.2	+ 9 39.2	-0.3448	0.5960	0.1075	+ 6-64
32 B. Scorpii	5.3	3.19	13.9	23 43.9		23	36.3	+ 9 40.2	-0.9044	0.5960	0.1075	-25-90
3 Scorpii	5.9	3.21	13.6	25 0.0		23	52.0	+ 9 55.2	+0.3397	0.5961	0.1067	+42-23
40 B. Scorpii	5.4	+3.20	-13.4	-24 35.6	20	1	22.1	+11 21.7	-0.2247	0.5970	-0.1024	+11-56
π Scorpii	3.0	3.22	13.2	25 52.6		1	27.3	+11 26.7	+1.0546	0.5970	0.1022	+64+23
48 B. Scorpii	4.9	3.21	13.0	25 38.1		3	10.1	-10 54.7	+0.6414	0.5978	0.0972	+60- 6
50 B. Scorpii	6.4	3.19	13.2	24 29.9		3	23.8	-10 41.5	-0.5212	0.5979	0.0966	- 4-78.
24 G. Scorpii	6.2	3.18	13.0	24 14.5		4	53.9	- 9 15.2	-0.9211	0.5987	0.0922	-28-90
65 B. Scorpii	5.5	+3.22	-12.6	-26 6.3		4	58.1	- 9 11.2	+0.9426	0.5987	-0.0920	+64+13
41 G. Scorpii	6.3	3.17	12.6	24 12.7		7	7.5	- 7 7.1	-1.1492	0.5988	0.0856	-46-90
85 B. Scorpii	6.0	3.19	12.3	25 16.1		7	32.3	- 6 43.4	-0.1247	0.5999	0.0844	+15-50
σ Scorpii	3.1	3.19	11.9	25 23.7		9	54.4	- 4 27.1	-0.1882	0.6009	0.0773	+11-54
α Scorpii	1.2	3.19	11.2	26 15.0		12	58.7	- 1 30.5	+0.4452	0.6020	0.0680	+45-17
22 Scorpii	4.8	+3.16	-11.4	-24 56.1		13	17.7	- 1 12.3	-0.8952	0.6021	-0.0670	-29-90
116 B. Scorpii	6.2	3.19	11.0	26 21.5		13	42.9	- 0 48.1	+0.5052	0.6022	0.0657	+49-14
134 B. Scorpii	6.4	3.19	9.9	27 18.1		18	31.1	+ 3 48.0	+1.1707	0.6035	0.0509	+63+36
118 B. Ophiuchi	6.2	3.12	8.6	26 24.2	21	2	55.2	+ 11 50.9	-0.0473	0.6049	0.0244	+14-45
95 G. Ophiuchi	6.1	3.13	7.9	27 39.7		4	57.1	-10 12.4	+1.1713	0.6050	0.0179	+62+36
36 Ophi. (1st star)	5.4	+3.08	- 8.4	-26 29.0		6	4.3	- 9 8.0	-0.0281	0.6050	-0.0144	+14-44
136 G. Ophiuchi	6.3	3.05	7.4	25 52.3		10	21.0	- 5 2.2	-0.6731	0.6049	-0.0007	-21-90
151 G. Ophiuchi	6.0	3.04	6.9	26 12.5		12	7.9	- 3 19.8	-0.3323	0.6047	+0.0049	- 3-63
4 G. Sagittarii	6.2	3.00	5.6	26 56.9		18	19.7	+ 2 36.3	+0.5011	0.6037	0.0246	+45-14
66 B. Sagittarii	4.7	2.89	3.4	27 4.5	22	5	23.2	-10 47.9	+1.0925	0.6002	0.0589	+63+27
67 B. Sagittarii	6.4	+2.86	- 3.8	-25 38.3		5	39.0	-10 32.9	-0.3348	0.6000	+0.0597	+ 2-63
70 B. Sagittarii	6.4	2.83	3.8	24 57.3		6	43.5	- 9 31.0	-0.9553	0.5996	0.0630	-33-90
68 G. Sagittarii	6.2	2.84	2.8	26 41.2		9	2.6	- 7 17.6	+0.9384	0.5985	0.0700	+63+14
λ Sagittarii	2.9	2.81	3.2	25 28.2		9	9.2	- 7 11.2	-0.2760	0.5985	0.0703	+ 6-59
69 G. Sagittarii	6.3	2.84	2.8	26 48.5		9	11.0	- 7 9.6	+1.0718	0.5984	0.0704	+63+25
86 B. Sagittarii	6.5	+2.83	- 2.8	-26 38.2		9	30.4	- 6 51.0	+0.9217	0.5983	+0.0713	+63+13
126 B. Sagittarii	5.7	2.73	2.2	25 5.8		15	34.2	- 1 2.1	-0.1398	0.5951	0.0891	+15-51
162 B. Sagittarii	6.4	2.66	1.3	24 59.4		20	46.0	+ 3 57.0	+0.2543	0.5920	0.1038	+37-28
127 G. Sagittarii	6.4	2.65	1.1	25 3.6		21	34.0	+ 4 43.0	+0.4087	0.5915	0.1060	+46-19
172 B. Sagittarii	5.8	2.64	1.0	24 57.8		22	21.9	+ 5 29.0	+0.3974	0.5910	0.1082	+46-20
189 B. Sagittarii	6.1	+2.61	- 0.6	-24 47.4	23	0	36.8	+ 7 38.5	+0.4723	0.5895	+0.1144	+51-16
191 B. Sagittarii	6.5	2.58	1.1	23 19.4		0	49.8	+ 7 51.0	-0.9800	0.5893	0.1149	-30-90
208 B. Sagittarii	6.1	2.56	0.3	24 19.4		3	28.6	+10 23.5	+0.3407	0.5875	0.1220	+43-23
222 B. Sagittarii	5.5	2.50	-0.6	-22 33.6		5	30.3	-11 39.6	-1.1852	0.5861	0.1272	-45-90
χ Sagittarii	4.9	+2.52	+ 0.4	24 40.4		7	18.4	- 9 55.8	+1.1799	0.5848	0.1319	+65+34
49 Sagittarii	5.5	+2.50	+ 0.3	-24 7.7		7	24.3	- 9 50.2	+0.6429	0.5847	+0.1321	+63- 6
53 Sagittarii	6.3	2.42	1.0	23 37.2		13	7.8	- 4 20.0	+0.9279	0.5804	0.1462	+66+12
274 B. Sagittarii	6.1	2.42	1.0	23 37.3		13	14.9	- 4 13.2	+0.9478	0.5803	0.1465	+66+13
σ Capricorni	5.5	2.12	2.0	19 22.9	24	5	27.3	+11 22.3	-0.6757	0.5675	0.1819	- 4-90
π Capricorni	5.2	2.06	2.1	18 29.2		8	48.9	- 9 23.5	-0.9614	0.5648	0.1884	-20-90
ρ Capricorni	5.0	+2.05	+ 2.0	-18 5.5		9	28.6	- 8 45.2	-1.2386	0.5642	+0.1896	-43-90
ω Capricorni	5.6	2.05	2.4	18 51.7		9	54.4	- 8 20.4	-0.3748	0.5639	0.1904	+13-65
ν Capricorni	5.3	1.99	2.8	18 26.1		14	15.9	- 4 8.4	+0.0380	0.5604	0.1982	+35-40
81 B. Capricorni	6.4	1.94	3.3	18 20.7		18	17.8	- 0 15.1	+0.7612	0.5572	0.2050	+72- 1
19 Capricorni	5.7	1.90	3.5	18 14.5		20	41.3	+ 2 3.3	+1.1506	0.5554	0.2089	+72+26
94 B. Capricorni	5.7	+1.86	+ 3.0	-16 21.3		21	58.4	+ 3 17.7	-0.5032	0.5544	+0.2108	+ 9-74
21 Capricorni	6.5	1.86	3.7	17 51.5		23	22.0	+ 4 38.3	+1.3257	0.5533	0.2130	+72+47
29 Capricorni	5.5	1.75	3.6	15 31.2	25	6	2.1	+11 4.7	+0.3925	0.5484	0.2224	+58-22
18 Aquarii	5.5	1.67	3.3	13 14.3		9	52.6	- 9 12.7	-1.0774	0.5457	0.2273	-23-90
λ Capricorni	5.5	1.53	3.8	11 45.2		20	11.3	+ 0 45.3	-0.1980	0.5390	0.2386	-28-53
96 B. Aquarii	6.5	+1.48	+ 3.8	-10 42.4		23	30.4	+ 3 57.9	-0.4760	0.5370	+0.2417	+15-71

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallax.	
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.		Hour Angle, <i>H</i>	<i>Y'</i>	<i>x'</i>	<i>y'</i>	N. S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
<i>p</i> ⁴ Leonis	5.7	+2.42	-15.2	+ 2 24.5	12 0 14.1	- 7 28.9	-0.1117	0.5081	-0.2518	+36 -48	
<i>p</i> ⁵ Leonis	5.3	2.45	16.1	0 23.0	3 48.9	- 4 0.3	+1.1398	0.5091	0.2528	+90 +22	
76 Leonis	6.0	2.48	15.7	2 6.4	6 29.9	- 1 23.9	-1.3715	0.5099	0.2535	-46 -80	
359 B. Leonis	6.3	2.49	16.3	+ 0 35.3	8 46.9	+ 0 49.0	-0.3390	0.5106	0.2540	+25 -82	
388 B. Leonis	6.3	2.50	17.0	- 1 14.5	11 10.2	+ 3 8.1	+0.9939	0.5114	0.2544	+89 +12	
<i>v</i> Leonis	4.5	+2.55	-17.0	- 0 21.9	15 50.2	+ 7 39.8	-1.1225	0.5132	-0.2549	-21 -90	
431 B. Leonis	6.2	2.55	17.5	1 58.6	16 35.2	+ 8 23.4	+0.3877	0.5136	0.2550	+65 -22	
78 B. Virginis	6.5	2.71	19.1	5 15.4	13 10 41.9	+ 1 57.3	-0.7745	0.5229	0.2528	+ 1 -90	
<i>q</i> Virginis	5.3	2.79	20.2	8 59.7	20 15.5	+11 12.9	+0.7132	0.5292	0.2489	+81 - 5	
370 B. Virginis	6.0	2.89	20.8	11 11.9	14 6 3.7	- 3 17.7	+0.5764	0.5366	0.2427	+73 -12	
75 Virginis	5.6	+3.08	-21.0	-14 56.2	23 42.9	-10 14.0	+0.2591	0.5518	-0.2253	+51 -28	
83 Virginis	5.6	3.13	20.9	15 45.8	15 4 51.0	+ 5 16.6	-0.0411	0.5565	0.2187	+34 -44	
85 Virginis	6.1	3.14	20.8	15 21.1	5 20.0	- 4 48.7	-0.5640	0.5571	0.2180	+ 7 -79	
43 H. Virginis	5.5	3.28	20.3	17 48.9	18 5.1	+ 7 28.8	-0.7225	0.5693	0.1978	- 5 -90	
231 G. Virginis	6.4	3.29	20.2	18 12.1	18 46.6	+ 8 8.7	-0.4690	0.5700	0.1966	+ 9 -72	
236 G. Virginis	5.7	+3.29	-20.2	-18 20.0	19 26.1	+ 8 46.8	-0.4652	0.5706	-0.1954	+ 9 -71	
9 G. Libræ	6.5	3.38	19.8	20 4.6	16 2 6.3	- 8 48.1	+0.0295	0.5771	0.1826	+33 -40	
17 G. Libræ	6.4	3.43	19.3	20 49.6	6 41.5	- 4 23.4	-0.0343	0.5815	0.1730	+28 -44	
18 G. Libræ	6.1	3.43	19.2	20 58.7	7 6.5	+ 3 59.3	+0.0469	0.5818	0.1721	+32 -40	
43 B. Libræ	5.7	3.50	19.4	21 2.6	11 9.0	- 0 6.3	-0.5652	0.5856	0.1630	0 -81	
47 G. Libræ	6.1	+3.51	-18.3	-21 42.6	14 43.5	+ 3 19.7	-0.4646	0.5888	-0.1546	+ 4 -72	
64 G. Libræ	5.8	3.54	17.7	22 5.6	18 35.7	+ 7 2.7	-0.6610	0.5922	0.1450	- 7 -90	
153 B. Libræ	6.3	3.62	16.7	24 12.6	17 1 0.7	-10 47.9	+0.5701	0.5975	0.1283	+58 -10	
169 B. Libræ	6.0	3.60	16.4	22 52.1	2 47.7	- 9 5.3	-0.9895	0.5988	0.1234	-30 -90	
177 B. Libræ	6.2	3.61	16.3	22 52.8	3 23.1	- 8 31.4	-1.0490	0.5993	0.1218	-34 -90	
42 Libræ	5.0	+3.63	-16.2	-23 33.0	3 43.6	- 8 11.8	-0.4241	0.5995	-0.1208	+ 3 -70	
<i>b</i> Scorpii	4.7	3.69	15.5	25 30.1	7 43.8	- 4 21.5	+1.0540	0.6025	0.1095	+64 +22	
<i>A</i> Scorpii	4.6	3.69	15.3	25 4.9	8 43.2	- 3 24.6	-0.5294	0.6031	0.1067	+53 -12	
31 B. Scorpii	5.4	3.67	15.3	24 17.3	8 50.2	+ 3 17.8	-0.2711	0.6032	0.1063	+ 9 -59	
32 B. Scorpii	5.3	3.66	15.3	23 44.0	8 51.4	+ 3 16.8	-0.8248	0.6032	0.1063	-21 -90	
3 Scorpii	5.9	+3.69	-15.2	-25 0.0	9 6.7	- 3 2.1	+0.4068	0.6034	-0.1055	+46 -19	
40 B. Scorpii	5.4	3.69	14.9	24 35.6	10 34.8	- 1 37.7	-0.1480	0.6044	0.1013	+15 -51	
π Scorpii	3.0	3.72	14.9	25 52.6	10 39.9	+ 1 32.7	+1.1178	0.6044	0.1010	+64 +29	
48 B. Scorpii	4.9	3.72	14.6	25 38.2	12 20.4	+ 0 3.5	+0.7128	0.6055	0.0961	+64 - 1	
50 B. Scorpii	6.4	3.69	14.6	24 30.0	12 33.7	+ 0 16.3	-0.4366	0.6056	0.0954	0 -71	
24 G. Scorpii	6.2	+3.69	-14.3	-24 14.5	14 1.8	+ 1 40.6	-0.8285	0.6065	-0.0910	-22 -90	
65 B. Scorpii	5.5	3.74	14.2	26 6.4	14 5.9	+ 1 44.5	+1.0145	0.6065	0.0908	+64 +20	
41 G. Scorpii	6.3	3.70	13.8	24 12.7	16 12.3	+ 3 45.6	-1.0486	0.6077	0.0844	-38 -90	
85 B. Scorpii	6.0	3.73	13.7	25 16.1	16 36.5	+ 4 8.7	-0.0350	0.6079	0.0831	+19 -44	
σ Scorpii	3.1	3.74	13.2	25 23.8	18 55.1	+ 6 21.5	-0.0923	0.6091	0.0760	+16 -48	
α Scorpii	1.2	+3.77	-12.5	-26 15.0	21 54.8	+ 9 13.5	+0.5403	0.6105	-0.0666	+51 -12	
22 Scorpii	4.8	3.73	12.5	24 56.1	22 13.4	+ 9 31.2	-0.7832	0.6106	0.0657	-22 -90	
116 B. Scorpii	6.2	3.77	12.4	26 21.5	22 38.0	+ 9 54.8	+0.6012	0.6108	0.0643	+55 - 8	
134 B. Scorpii	6.4	3.81	11.2	27 18.1	18 3 18.7	- 9 36.6	+1.2684	0.6125	0.0494	+63 +55	
88 B. Ophiuchi	6.3	3.74	10.1	24 58.1	9 0.6	- 4 9.5	-1.2696	0.6140	0.0308	-64 -70	
118 B. Ophiuchi	6.2	+3.78	- 9.4	-26 24.2	11 29.2	- 1 47.3	+0.0834	0.6144	-0.0226	+20 -37	
137 B. Ophiuchi	6.3	3.75	9.1	25 9.3	13 25.8	+ 0 4.3	-1.1888	0.6147	0.0162	-55 -88	
36 Ophi. (1st star)	5.4	3.77	9.1	26 29.0	14 33.1	+ 1 8.6	+0.1088	0.6147	-0.0125	+21 -36	
136 G. Ophiuchi	6.3	3.76	7.7	25 52.3	18 42.5	+ 5 7.1	-0.5187	0.6148	-0.0013	-13 -78	
151 G. Ophiuchi	6.0	3.76	7.2	26 12.5	20 26.3	+ 6 46.4	-0.1792	0.6147	0.0070	+ 5 -53	
4 G. Sagittarii	6.2	+3.76	- 5.6	-26 56.9	19 2 27.2	-11 28.3	+0.6543	0.6138	+0.0269	+57 - 5	
66 B. Sagittarii	4.7	3.70	2.9	27 4.5	13 11.2	- 1 12.2	+1.2572	0.6104	0.0617	+63 +51	
67 B. Sagittarii	6.4	3.66	3.1	25 38.3	13 26.5	- 0 57.6	-0.1489	0.6103	0.0624	+12 -51	
70 B. Sagittarii	6.4	3.63	3.0	24 57.3	14 29.2	+ 0 2.4	-0.7584	0.6098	0.0658	-20 -90	
68 G. Sagittarii	6.2	3.66	2.1	26 41.2	16 44.1	+ 2 11.5	+1.1116	0.6087	0.0728	+63 +29	
λ Sagittarii	2.9	+3.63	- 2.4	-25 28.2	16 50.6	+ 2 17.9	-0.0848	0.6086	+0.0731	+16 -47	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.			
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>r</i>	<i>y</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
G. Sagittarii	6.3	+3.67	-2.0	-26 48.5	19	16 52.3	+ 2 19.5	+1.2433	0.6086	-0.0732	+63	+47	
B. Sagittarii	6.5	3.66	2.0	26 38.2	17	11.1	+ 2 37.4	+1.0960	0.6085	0.0742	+63	+27	
Sagittarii	5.7	3.57	2.1	24 5.8	19	2.3	+ 4 23.9	-1.2774	0.6075	0.0799	-63	-71	
Sagittarii	6.1	3.54	1.4	23 54.8	21	59.1	+ 7 13.2	-1.2112	0.6058	0.0889	-52	-87	
B. Sagittarii	5.7	3.57	-0.9	25 5.8	23	4.1	+ 8 15.5	+0.0601	0.6051	0.0921	+65	-39	
B. Sagittarii	6.4	+3.52	+0.3	-24 59.4	20	4 6.9	-10 54.5	+0.4570	0.6018	+0.1070	+49	-17	
G. Sagittarii	6.4	3.51	0.5	25 3.6	4	53.5	-10 9.8	+0.6104	0.6013	0.1092	+59	-8	
B. Sagittarii	5.8	3.50	0.6	24 57.8	5	40.0	- 9 25.3	+0.6005	0.6007	0.1114	+59	-9	
B. Sagittarii	6.1	3.47	1.1	24 47.3	7	51.1	- 7 19.6	+0.6778	0.5991	0.1175	+64	-4	
B. Sagittarii	6.5	3.43	0.8	23 19.4	8	3.7	- 7 7.5	-0.7533	0.5990	0.1181	-15	-90	
B. Sagittarii	6.1	+3.43	+1.6	-24 19.4	10	37.9	- 4 39.7	+0.5525	0.5970	+0.1252	+57	-11	
B. Sagittarii	5.5	3.35	1.7	22 33.6	12	36.3	- 2 46.1	-0.9489	0.5954	0.1305	-26	-90	
Sagittarii	5.5	3.38	2.4	24 7.6	14	27.0	- 0 59.9	+0.8562	0.5939	0.1354	+66	+7	
Sagittarii	5.5	3.32	1.9	21 56.6	14	47.8	- 0 40.0	-1.2699	0.5936	0.1363	-54	-80	
Sagittarii	6.3	3.31	3.5	23 37.1	20	1.2	+ 4 20.9	+1.1456	0.5893	0.1495	+66	+30	
B. Sagittarii	6.1	+3.31	+3.5	-23 37.3	20	8.1	+ 4 27.5	+1.1654	0.5892	+0.1498	+66	+32	
Capricorni	5.5	3.01	5.4	19 22.8	21	11 55.9	+ 4 21.5	-0.4176	0.5749	0.1850	+10	-68	
Capricorni	5.2	2.95	5.7	18 29.2	15	12.9	- 1 12.0	-0.6968	0.5719	0.1914	-4	-90	
Capricorni	5.0	2.93	5.7	18 5.4	15	51.6	- 0 34.7	-0.9701	0.5713	0.1926	-21	-90	
Capricorni	5.6	2.94	6.0	18 51.6	16	16.9	- 0 10.3	-0.1161	0.5709	0.1934	+27	-49	
Capricorni	5.3	+2.88	+6.6	-18 26.0	20	32.7	+ 3 56.0	+0.2959	0.5670	+0.2011	+49	-26	
B. Capricorni	6.4	2.83	7.2	18 20.7	22	0 29.6	+ 7 44.2	+1.0146	0.5634	0.2077	+72	+16	
B. Capricorni	5.7	2.74	7.2	16 12.1	4	5.8	+11 12.6	-0.2338	0.5602	0.2133	+23	-56	
Capricorni	5.5	2.62	8.0	15 31.1	12	0.9	- 5 9.1	+0.6578	0.5533	0.2244	+73	-7	
B. Aquarii	6.5	2.59	7.4	13 32.9	12	8.7	- 5 1.6	-1.3081	0.5532	0.2246	-46	-84	
Aquarii	5.5	+2.54	+7.8	-13 14.2	15	47.8	+ 1 30.1	-0.7976	0.5501	+0.2291	-5	-90	
Capricorni	5.5	2.38	8.6	11 45.1	23	1 57.9	+ 8 19.2	+0.0766	0.5423	0.2398	+43	-38	
B. Aquarii	6.5	2.33	8.6	10 42.3	5	14.7	+11 29.6	-0.1995	0.5399	0.2427	+29	-53	
Aquarii	4.3	2.17	8.8	8 12.0	16	12.2	- 1 54.4	-0.0607	0.5328	0.2504	+37	-46	
B. Aquarii	6.0	2.18	9.3	9 27.4	16	13.4	- 1 53.3	+1.2344	0.5328	0.2504	+81	+31	
Aquarii	5.3	+2.14	+9.0	-8 14.5	17	49.0	+ 0 20.8	+0.3867	0.5318	+0.2514	+62	-22	
B. Aquarii	6.0	2.12	9.0	7 37.0	19	25.3	+ 1 12.4	+0.1498	0.5310	0.2522	+49	-34	
B. Aquarii	6.1	2.07	9.1	6 58.9	23	9.9	+ 4 49.9	+0.4442	0.5289	0.2539	+67	-19	
Aquarii	5.2	2.00	8.6	4 39.6	24	2 19.3	+ 7 53.3	-1.1473	0.5273	0.2551	-24	-90	
G. Piscium	6.2	1.87	8.7	2 50.6	12	23.6	- 6 21.4	-0.4453	0.5230	0.2576	+19	-69	
B. Piscium	6.4	+1.72	+8.8	- 0 10.0	25	1 0.3	+ 5 52.1	+0.0247	0.5192	+0.2579	+44	-41	
Piscium	4.9	1.70	8.5	+ 0 47.9	2	43.0	+ 7 31.5	-0.5422	0.5189	0.2576	+14	-76	
Piscium	6.4	1.70	8.6	0 39.8	2	52.5	+ 7 40.9	-0.3606	0.5188	0.2576	+23	-63	
Piscium	5.7	1.64	8.6	1 38.3	7	29.4	-11 50.6	-0.1930	0.5179	0.2568	+32	-53	
Piscium	4.6	1.61	8.8	1 19.2	10	21.0	- 9 4.2	+0.8740	0.5175	0.2561	+90	+5	
Piscium	5.4	+1.58	+8.4	+ 3 1.4	12	32.7	- 6 56.4	-0.3496	0.5173	+0.2554	+24	-62	
Piscium	5.8	1.56	8.8	2 28.0	15	21.9	- 4 12.4	+0.9544	0.5170	0.2544	+90	+10	
Piscium	5.4	1.41	7.9	7 43.6	26	5 53.3	+ 9 52.9	-0.9405	0.5169	0.2472	-9	-82	
B. Piscium	6.5	1.31	8.0	8 53.9	16	19.2	- 4 0.1	+0.3573	0.5180	0.2398	+63	-22	
Piscium	6.3	1.21	7.5	12 30.5	27	5 3.6	+ 8 21.0	-0.5029	0.5205	0.2281	+16	-67	
Piscium	3.7	+1.13	+7.3	+14 54.9	17	26.7	- 3 38.6	-0.3394	0.5240	+0.2142	+24	-55	
Piscium	6.2	1.12	7.5	14 14.1	19	34.2	- 1 35.1	+0.8436	0.5247	0.2115	+90	+9	
Piscium	6.1	1.10	7.2	15 58.9	21	28.6	+ 0 15.7	-0.6324	0.5254	0.2090	+9	-72	
Arietis	6.4	1.08	7.1	16 59.7	28	0 51.6	+ 3 32.6	-1.0221	0.5265	0.2045	-16	-73	
Arietis	5.8	1.08	7.2	16 32.4	1	38.7	+ 4 18.2	-0.3730	0.5268	0.2035	+22	-56	
Arietis	5.1	+1.06	+7.1	+17 24.6	6	6.7	+ 8 37.7	-0.4157	0.5284	+0.1972	+20	-57	
B. Arietis	6.4	1.04	7.1	17 51.1	9	11.9	+11 37.1	-0.2915	0.5296	0.1926	+26	-50	
B. Arietis	6.5	1.03	7.2	17 37.9	11	9.7	-10 28.9	+0.3219	0.5303	0.1897	+61	-17	
H. Arietis	6.4	1.03	7.3	16 50.0	11	56.7	- 9 43.3	+1.3329	0.5306	0.1884	+75	+66	
Arietis	5.9	1.02	6.9	19 6.4	12	31.5	- 9 9.6	-1.0140	0.5308	0.1876	-16	-71	
Arietis	5.6	+1.01	+7.0	+19 30.9	16	8.0	- 5 40.0	-0.7903	0.5322	+0.1819	-1	-1	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.		
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.		Hour Angle, <i>H</i>	<i>Y</i>	<i>z'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h m						
26 Arietis	6.2	+0.99	+ 7.0	+19 29.1	28 22 6.6	+ 0 7.1	+0.2998	0.5345	+0.1720	+60	-16	
μ Arietis	6.7	+0.97	+ 7.1	+19 39.4	29 3 40.2	+ 5 29.9	+1.0442	0.5368	+0.1622	+90	+28	
NEW MOON.												

JUNE.

52 B. Geminorum	6.5	+1.22	+ 3.7	+24 39.8	2 14 34.9	-11 12.5	+0.6123	0.5431	-0.0759	+87	+10
ϵ Geminorum	3.2	1.24	3.6	25 13.0	17 34.5	- 8 18.9	-0.2396	0.5419	0.0824	+28	-35
87 B. Geminorum	5.8	1.26	3.1	23 42.2	21 21.7	- 4 39.2	+1.1138	0.5404	0.0905	+90	+41
37 Geminorum	5.7	+1.28	+ 3.3	+25 29.0	22 52.7	- 3 11.2	-1.0026	0.5398	-0.0936	-18	-65
ω Geminorum	5.2	1.30	2.8	24 20.2	3 2 13.9	+ 0 3.4	-0.0559	0.5383	0.1006	+39	-27
48 Geminorum	5.8	1.33	2.5	24 16.3	6 58.3	+ 4 38.4	-0.4820	0.5362	0.1102	+15	-52
58 Geminorum	6.0	1.36	1.9	23 6.5	12 14.8	+ 9 44.8	+0.2007	0.5337	0.1205	+54	-16
B. D.+23° 1744	6.4	1.39	1.5	23 4.1	16 45.1	- 9 53.5	-0.3166	0.5316	0.1290	+25	-44
187 B. Geminorum	6.3	+1.42	+ 1.3	+23 12.9	20 41.1	- 6 5.1	-1.0008	0.5296	-0.1363	-17	-67
192 B. Geminorum	6.3	1.42	+ 1.0	22 35.9	21 51.6	- 4 56.8	-0.4783	0.5291	0.1384	+16	-55
217 B. Geminorum	6.3	1.46	- 0.3	20 2.8	6 26.9	+ 3 22.5	+1.1015	0.5249	0.1532	+90	+33
NEPTUNE	7.8	...	...	19 45.4	14 5.4	+10 46.8	+0.2049	0.5200	0.1653	+54	-21
d^1 Cancrī	5.9	1.54	1.6	18 36.1	17 44.2	- 9 41.1	+0.8706	0.5194	0.1712	+90	+14
θ Cancrī	5.5	+1.57	- 2.0	+18 22.7	21 54.3	- 5 38.5	+0.3919	0.5175	-0.1773	+66	-13
δ Cancrī	4.2	1.63	2.6	18 27.8	4 35.1	+ 0 50.3	-0.9176	0.5145	0.1866	- 9	-72
X Cancrī (var.)	6.2	1.66	3.2	17 33.1	10 6.8	+ 6 12.1	-0.9595	0.5122	0.1939	-12	-72
α^1 Cancrī	5.1	1.65	3.9	15 38.7	11 6.2	+ 7 9.7	+0.9553	0.5118	0.1951	+90	+16
α^2 Cancrī	5.7	1.66	3.8	15 54.2	11 16.5	+ 7 19.8	+0.6356	0.5117	0.1954	+88	- 3
81 Cancrī	6.4	+1.70	- 4.6	+15 20.0	18 58.9	- 9 11.4	-0.2774	0.5088	-0.2046	+27	-51
π Cancrī	5.6	1.72	4.8	15 17.4	20 30.0	- 7 42.9	-0.5398	0.5083	0.2063	+14	-67
18 Leonis	5.8	1.83	7.2	12 11.7	6 13 3.6	+ 8 22.1	-0.6914	0.5035	0.2229	+ 7	-78
19 Leonis	6.4	1.83	7.3	11 57.3	13 37.3	+ 8 54.9	-0.5530	0.5034	0.2234	+13	-71
R Leonis (var.)	5-10	1.83	7.3	11 49.0	13 41.3	+ 8 58.7	-0.4162	0.5033	0.2234	+20	-62
83 B. Leonis	5.9	+1.84	- 8.5	+ 9 19.8	18 28.4	-10 22.4	+1.2319	0.5024	-0.2275	+90	+33
A Leonis	4.6	1.92	8.7	10 24.4	7 0 38.0	- 4 23.2	-1.3641	0.5014	0.2323	-48	-78
43 Leonis	6.3	1.96	10.5	6 58.0	8 48.4	+ 3 33.3	+0.4710	0.5006	0.2377	+71	-16
155 B. Leonis	6.5	1.94	10.8	6 7.1	8 57.0	+ 3 41.8	+1.3613	0.5006	0.2378	+81	+48
35 Sextantis	6.1	2.05	11.9	5 11.1	19 48.1	- 9 45.4	-0.2424	0.5006	0.2437	+90	-55
d Leonis	5.0	+2.13	-12.9	+ 4 3.9	8 5 4.8	- 0 44.6	-1.3057	0.5016	-0.2474	-37	-86
p^4 Leonis	5.7	2.14	13.7	2 24.5	8 30.7	+ 2 35.5	-0.3683	0.5022	0.2484	+23	-63
p^5 Leonis	5.3	2.17	14.6	0 23.0	12 10.3	+ 6 8.9	+0.8987	0.5030	0.2493	+90	+ 6
359 B. Leonis	6.3	2.22	14.8	+ 0 35.4	17 15.3	+11 5.2	-0.5920	0.5043	0.2502	+11	-80
388 B. Leonis	6.3	2.24	15.6	- 1 14.5	19 41.9	-10 32.4	+0.7572	0.5050	0.2505	+90	- 3
v Leonis	4.5	+2.30	-15.5	- 0 21.8	9 0 28.6	- 5 53.9	-1.3780	0.5067	-0.2509	-47	-80
431 B. Leonis	6.2	2.29	16.1	1 58.6	1 14.7	- 5 9.1	+0.1495	0.5070	0.2509	+50	-34
78 B. Virginis	6.5	2.49	17.9	5 15.4	19 47.8	-11 8.8	-1.0040	0.5159	0.2483	-14	-90
γ Virginis	5.3	2.59	19.4	8 59.6	10 5 35.1	- 1 39.5	+0.5139	0.5222	0.2443	+71	-15
370 B. Virginis	6.0	2.72	20.2	11 11.9	15 37.0	+ 8 3.6	+0.3916	0.5297	0.2382	+61	-22
69 Virginis	4.9	+2.94	-21.2	-15 32.7	11 7 10.5	- 0 53.3	+1.2790	0.5432	-0.2240	+74	+39
75 Virginis	5.6	2.97	20.9	14 56.2	9 38.7	+ 1 29.9	+0.1033	0.5456	0.2211	+42	-37
83 Virginis	5.6	3.06	20.9	15 45.8	14 52.6	+ 6 32.9	-0.1893	0.5506	0.2146	+26	-53
85 Virginis	6.1	3.06	20.8	15 21.1	15 22.0	+ 7 1.4	-0.7154	0.5511	0.2140	- 2	-80
87 Virginis	5.8	3.09	21.3	17 26.8	16 9.9	+ 7 47.7	+1.2579	0.5519	0.2129	+73	+37
89 Virginis	5.1	+3.10	-21.3	-17 43.3	17 15.4	+ 8 50.8	+1.3083	0.5530	-0.2114	+72	+45
43 H. Virginis	5.5	3.26	20.5	17 48.9	12 4 19.6	- 4 28.6	-0.8477	0.5644	0.1943	-11	-90
231 G. Virginis	6.4	3.28	20.5	18 12.1	5 1.7	- 3 48.1	-0.5911	0.5651	0.1931	+ 2	-82
236 G. Virginis	5.7	3.29	20.5	18 20.0	5 41.8	- 3 9.4	-0.5858	0.5658	0.1919	+ 2	-82
9 G. Libræ	6.5	3.41	20.3	20 4.6	12 27.1	+ 3 20.8	-0.0740	0.5729	0.1794	+27	-46
17 G. Libræ	6.4	+3.48	-19.9	-20 49.6	17 5.3	+ 7 48.5	-0.1283	0.5778	-0.1700	+23	-50

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.		
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.		Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>
		$\Delta\alpha$	$\Delta\delta$		d	h							m	h	m
18 G. Libræ	6.1	+3.49	-19.9	20 58.7	12 17	30.5	+ 8 12.8	-0.0458	0.5782	-0.1691	+27	-45
43 B. Libræ	5.7	3.58	20.2	21 2.6	21 35.3	-11 51.9	-0.6515	0.5824	0.1602	- 5	-90	
47 G. Libræ	6.1	3.62	19.0	21 42.7	13 11.4	- 8 24.2	-0.5427	0.5861	0.1519	0	-79	
64 G. Libræ	5.8	3.67	18.4	22 5.7	5 5.1	+ 4 39.8	-0.7310	0.5899	0.1425	-12	-90	
153 B. Libræ	6.3	3.80	17.7	24 12.6	11 31.7	+ 1 31.3	+0.5159	0.5961	0.1259	+54	-13	
169 B. Libræ	6.0	+3.80	-17.2	-22 52.1	13 19.0	+ 3 14.2	-1.0411	0.5977	-0.1211	-34	-90	
177 B. Libræ	6.2	3.80	17.1	22 52.9	13 54.4	+ 3 48.1	-1.0993	0.5982	0.1195	-38	-90	
42 Libræ	5.0	3.82	17.1	23 33.0	14 15.0	+ 4 7.8	-0.4734	0.5985	0.1186	0	-73	
<i>b</i> Scorpii	4.7	3.92	16.6	25 30.1	18 15.4	+ 7 58.3	+1.0130	0.6020	0.1074	+64	+19	
<i>A</i> Scorpii	4.6	3.92	16.4	25 4.9	19 14.8	+ 8 55.3	+0.4906	0.6028	0.1046	+51	-15	
31 B. Scorpii	5.4	+3.90	-16.2	-24 17.3	19 21.8	+ 9 2.0	-0.3092	0.6029	-0.1042	+ 8	-61	
32 B. Scorpii	5.3	3.88	16.2	23 44.0	19 22.9	+ 9 3.0	-0.8626	0.6029	0.1042	-23	-90	
3 Scorpii	5.9	3.92	16.3	25 0.0	19 38.3	+ 9 17.7	+0.3689	0.6031	0.1034	+43	-22	
40 B. Scorpii	5.4	3.93	15.9	24 35.6	21 6.3	+10 42.1	-0.1825	0.6043	0.0992	+14	-53	
π Scorpii	3.0	3.96	16.1	25 52.7	21 11.4	+10 47.0	+1.0824	0.6044	0.0989	+64	+25	
48 B. Scorpii	4.9	+3.97	-15.7	-25 38.2	22 51.7	-11 36.9	+0.6810	0.6057	-0.0940	+62	- 3	
50 B. Scorpii	6.4	3.95	15.5	24 30.0	23 5.1	-11 24.1	-0.4665	0.6058	0.0934	- 2	-73	
24 G. Scorpii	6.2	3.96	15.1	24 14.5	14 0 32.9	-10 0.1	-0.8546	0.6069	0.0890	-24	-90	
65 B. Scorpii	5.5	4.01	15.3	26 6.4	0 37.0	+ 9 56.2	+0.9856	0.6069	0.0888	+64	+17	
41 G. Scorpii	6.3	3.98	14.6	24 12.7	2 43.0	+ 7 55.6	-1.0694	0.6085	0.0624	-39	-90	
85 B. Scorpii	6.0	+4.02	-14.6	-25 16.1	3 7.1	+ 7 32.5	-0.0569	0.6087	-0.0812	+17	-45	
σ Scorpii	3.1	4.04	14.2	25 23.8	5 25.3	+ 5 20.1	-0.1094	0.6103	0.0741	+14	-49	
α Scorpii	1.2	4.10	13.5	26 15.0	8 24.0	+ 2 29.1	+0.5275	0.6121	0.0647	+50	-12	
22 Scorpii	4.8	4.06	13.3	24 56.1	8 42.5	+ 2 11.5	-0.7913	0.6123	0.0638	-22	-90	
116 B. Scorpii	6.2	4.10	13.4	26 21.6	9 6.9	+ 1 48.1	+0.5895	0.6125	0.0625	+54	- 9	
134 B. Scorpii	6.4	+4.18	-12.3	-27 18.2	13 45.7	+ 2 38.7	+1.2629	0.6150	-0.0475	+63	+53	
88 B. Ophiuchi	6.3	4.15	10.7	24 58.1	19 24.4	+ 8 2.5	-1.2516	0.6172	0.0289	+61	-90	
118 B. Ophiuchi	6.2	4.22	10.0	26 24.2	21 51.4	+10 23.0	+0.0991	0.6180	0.0207	+21	-36	
137 B. Ophiuchi	6.3	4.19	9.5	25 9.3	23 46.6	-11 46.8	-1.1614	0.6185	0.0143	-53	-90	
36 Ophi. (1st star)	5.4	4.22	9.7	26 29.0	15 0 53.0	-10 43.4	+0.1304	0.6188	-0.0106	+22	-35	
136 G. Ophiuchi	6.3	+4.24	-8.1	-25 52.3	4 59.1	+ 6 48.2	-0.4847	0.6194	+0.0033	-10	-75	
151 G. Ophiuchi	6.0	4.26	7.6	26 12.5	6 41.4	+ 5 10.4	-0.1441	0.6195	0.0091	+ 7	-51	
4 G. Sagittarii	6.2	4.30	5.9	26 56.9	12 36.6	+ 0 29.1	+0.6940	0.6195	0.0291	+60	- 2	
63 Ophiuchi	6.1	4.23	5.3	24 52.4	14 55.4	+ 2 41.8	-1.2635	0.6193	0.0369	-62	-90	
67 B. Sagittarii	6.4	4.26	2.8	25 38.3	23 23.2	+10 47.1	-0.0814	0.6172	0.0650	+15	-47	
70 B. Sagittarii	6.4	+4.24	- 2.5	-24 57.3	16 0 24.5	+11 45.9	-0.6826	0.6169	+0.0684	-16	-90	
68 G. Sagittarii	6.2	4.30	1.8	26 41.2	2 36.6	-10 7.9	+1.1716	0.6160	0.0755	+63	+35	
λ Sagittarii	2.9	4.25	1.9	25 28.2	2 42.9	-10 1.9	-0.0117	0.6160	0.0758	+20	-43	
86 B. Sagittarii	6.5	4.29	1.7	26 38.2	3 2.9	+ 9 42.7	+1.1568	0.6158	0.0769	+63	+34	
24 Sagittarii	5.7	4.20	1.3	24 5.8	4 51.7	+ 7 58.6	-1.1868	0.6150	0.0827	-50	-90	
26 Sagittarii	6.1	+4.19	- 0.5	-23 54.8	7 44.3	+ 5 13.5	-1.1157	0.6136	+0.0918	-42	-90	
126 B. Sagittarii	5.7	4.23	-0.1	25 5.8	8 47.9	+ 4 12.7	+0.1429	0.6131	0.0951	+30	-34	
154 B. Sagittarii	5.9	4.15	+ 0.9	23 16.9	12 53.5	- 0 17.7	-1.2203	0.6107	0.1077	-52	-90	
162 B. Sagittarii	6.4	4.21	1.3	24 59.4	13 43.2	+ 0 29.9	+0.5437	0.6102	0.1102	+55	-12	
127 G. Sagittarii	6.4	4.21	1.6	25 3.6	14 28.6	+ 1 13.4	+0.6966	0.6097	0.1124	+64	- 3	
172 B. Sagittarii	5.8	+4.20	+ 1.7	-24 57.8	15 14.0	+ 1 56.7	+0.8881	0.6092	+0.1147	+64	- 3	
189 B. Sagittarii	6.1	4.18	2.3	24 47.3	17 21.6	+ 3 59.0	+0.7681	0.6078	0.1209	+65	+ 2	
191 B. Sagittarii	6.5	4.13	2.2	23 19.4	17 33.8	+ 4 10.8	-0.6443	0.6077	0.1215	- 9	-90	
208 B. Sagittarii	6.1	4.16	3.0	24 19.3	20 4.0	+ 6 34.5	+0.6490	0.6059	0.1287	+63	- 6	
222 B. Sagittarii	5.5	4.08	3.3	22 33.5	21 59.1	+ 8 24.7	-0.8290	0.6045	0.1341	-18	-90	
49 Sagittarii	5.5	+4.12	+ 4.0	-24 7.6	23 46.8	+10 7.9	+0.9549	0.6031	+0.1391	+66	+14	
50 Sagittarii	5.5	4.05	3.8	21 56.6	17 0 7.0	+10 27.2	-1.1419	0.6028	0.1400	-40	-90	
53 Sagittarii	6.3	4.07	5.4	23 37.1	5 11.6	+ 8 40.7	+1.2489	0.5987	0.1535	+66	+42	
274 B. Sagittarii	6.1	4.07	5.4	23 37.2	5 18.2	+ 8 34.3	+1.2685	0.5986	0.1538	+66	+45	
σ Capricorni	5.5	3.81	8.4	19 22.7	20 37.7	+ 6 8.1	-0.2670	0.5848	0.1895	+18	-58	
π Capricorni	5.2	+3.76	+ 8.9	-18 29.1	23 48.6	+ 9 11.5	-0.5371	0.5817	+0.1960	+ 5	-77	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S				AT CONJUNCTION IN R. A.					Limiting Parallels.		
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x</i>	<i>y</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$									d	h	m	h	m
ρ Capricorni	5.0	+3.74	+ 9.0	-18 5.4	18 0 26.1	+ 9 47.7	-0.8053	0.5812	+0.1972	-10	-90
σ Capricorni	5.6	3.76	9.2	18 51.6	0 50.6	+10 11.2	+0.0362	0.5808	0.1980	+35	-40
υ Capricorni	5.3	3.70	10.0	18 25.9	4 58.4	- 9 50.5	+0.4477	0.5768	0.2057	+59	-17
81 B. Capricorni	6.4	3.66	10.8	18 20.6	8 47.8	- 6 9.8	+1.1605	0.5732	0.2124	+72	+28
94 B. Capricorni	5.7	3.58	11.0	16 21.1	12 17.2	- 2 48.2	-0.0639	0.5699	0.2180	+31	-46
29 Capricorni	5.5	+3.47	+12.2	-15 31.1	19 57.3	+ 4 35.0	+0.8233	0.5628	+0.2292	+74	+ 2
53 B. Aquarii	6.5	3.43	11.7	13 32.9	20 4.9	+ 4 42.3	-1.1121	0.5626	0.2293	-26	-90
.18 Aquarii	5.5	3.38	12.2	13 14.2	23 37.1	+ 8 6.9	-0.6056	0.5595	0.2338	+ 6	-82
137 B. Capricorni	6.2	3.26	12.7	10 57.1	19 6 20.4	+ 9 24.1	-1.2969	0.5537	0.2413	-42	-88
λ Capricorni	5.5	3.25	13.4	11 45.0	9 28.6	- 6 22.4	+0.2651	0.5511	0.2443	+53	-28
96 B. Aquarii	6.5	+3.19	+13.5	-10 42.2	12 39.5	+ 3 18.1	-0.0042	0.5485	+0.2472	+39	-42
θ Aquarii	4.3	3.03	14.1	8 11.9	23 18.1	+ 6 58.9	+0.1402	0.5406	0.2545	+48	-35
ρ Aquarii	5.3	3.01	14.3	8 14.4	20 0 52.2	+ 8 30.0	+0.5824	0.5396	0.2553	+76	-12
170 B. Aquarii	6.0	2.99	14.3	7 36.9	2 25.9	+10 0.6	+0.3497	0.5386	0.2561	+60	-24
186 B. Aquarii	6.1	2.94	14.4	6 58.8	6 4.5	-10 28.0	+0.6420	0.5362	0.2577	+81	- 9
κ Aquarii	5.2	+2.87	+14.0	- 4 39.5	9 8.9	+ 7 29.6	-0.9273	0.5344	+0.2587	- 8	-90
207 B. Aquarii	6.3	2.85	14.0	3 59.2	10 35.6	- 6 5.7	-1.2364	0.5336	0.2591	-31	-90
6 G. Piscium	6.2	2.74	14.3	2 50.5	18 58.4	+ 2 1.0	-0.2321	0.5292	0.2606	+30	-55
22 B. Piscium	6.4	2.59	14.4	- 0 10.0	7 18.8	-10 1.9	+0.2326	0.5242	0.2601	+55	-30
κ Piscium	4.9	2.56	14.1	+ 0 48.0	8 59.4	- 8 24.4	-0.3285	0.5236	0.2597	+25	-61
9 Piscium	6.4	+2.56	+14.2	+ 0 39.9	9 8.8	- 8 15.3	-0.1489	0.5236	+0.2597	+34	-50
16 Piscium	5.7	2.50	14.2	1 38.4	13 40.5	+ 3 52.0	+0.0160	0.5223	0.2586	+43	-41
θ Piscium	4.6	2.48	14.4	1 19.3	16 29.1	- 1 8.6	+1.0722	0.5216	0.2577	+90	+17
19 Piscium	5.4	2.44	14.0	3 1.5	18 38.6	+ 0 57.0	-0.1407	0.5211	0.2569	+35	-50
22 Piscium	5.8	2.42	14.3	2 28.0	21 25.0	+ 3 38.2	+1.1509	0.5206	0.2557	+90	+23
36 Piscium	6.2	+2.28	+13.0	+ 7 46.7	22 9 43.5	- 8 25.9	-1.2900	0.5192	+0.2490	-37	-82
<i>d</i> Piscium	5.4	2.26	13.1	7 43.6	11 44.7	+ 6 28.4	-0.7371	0.5191	0.2476	+ 3	-82
136 B. Piscium	6.5	2.15	12.9	8 54.0	22 4.6	+ 3 32.6	+0.5448	0.5193	0.2395	+76	-12
75 Piscium	6.3	2.04	12.0	12 30.6	20 10 44.0	- 8 11.1	-0.3233	0.5207	0.2272	+25	-56
η Piscium	3.7	1.94	11.3	14 55.0	23 4.8	+ 3 46.9	-0.1742	0.5233	0.2128	+33	-46
101 Piscium	6.2	+1.92	+11.5	+14 14.1	24 1 12.1	+ 5 50.2	+1.0037	0.5239	+0.2100	+90	+19
105 Piscium	6.1	1.91	11.0	15 59.0	3 6.4	+ 7 40.9	-0.4715	0.5245	0.2076	+17	-62
3 Arietis	6.4	1.88	10.7	16 59.7	6 29.4	+10 57.6	-0.8648	0.5253	0.2029	- 5	-73
4 Arietis	5.8	1.88	10.8	16 32.4	7 16.4	+11 43.1	-0.2178	0.5256	0.2018	+30	-46
<i>z</i> Arietis	5.1	1.84	10.5	17 24.6	11 44.6	- 7 57.1	-0.2681	0.5269	0.1954	+27	-49
35 B. Arietis	6.4	+1.82	+10.4	+17 51.2	14 50.0	- 4 57.5	-0.1460	0.5279	+0.1908	+34	-41
47 B. Arietis	6.5	1.81	10.4	17 38.0	16 48.1	- 3 3.1	+0.4643	0.5286	0.1878	+71	-10
15 Arietis	5.9	1.80	10.0	19 6.4	18 10.0	- 1 43.8	-0.8728	0.5290	0.1857	- 7	-71
θ Arietis	5.6	1.78	9.8	19 31.0	21 47.1	+ 1 46.4	-0.6540	0.5303	0.1799	+ 6	-69
26 Arietis	6.2	1.74	9.8	19 29.2	25 3 46.8	+ 7 34.6	+0.4275	0.5324	0.1700	+69	- 9
ν Arietis	5.4	+1.72	+ 9.1	+21 36.1	7 39.4	+11 19.8	-1.2223	0.5338	+0.1633	-37	-68
μ Arietis	5.7	1.70	9.6	19 39.4	9 21.7	-11 1.3	+1.1654	0.5343	0.1602	+90	+38
<i>e</i> Arietis (mean)	4.6	1.66	9.1	21 0.5	17 17.9	- 3 20.5	+0.9130	0.5372	0.1456	+90	+21
64 Arietis	5.8	1.61	7.9	24 25.8	4 57.2	+ 7 55.7	-1.2588	0.5412	0.1227	+45	-66
66 Arietis	6.1	1.59	8.3	22 31.1	6 53.6	+ 9 48.2	+1.0676	0.5418	0.1187	+90	+35
7 Tauri	5.9	+1.59	+ 7.9	+24 11.1	9 38.4	-11 32.4	-0.4409	0.5427	+0.1130	-18	-50
11 Tauri	6.1	1.58	7.6	25 3.6	12 32.2	- 8 44.4	-1.0822	0.5436	0.1069	+25	-65
16 Tauri	5.4	1.56	7.7	24 1.7	14 24.2	- 6 56.1	+0.2457	0.5442	0.1029	+57	-11
17 Tauri	3.8	1.56	7.8	23 51.1	14 26.3	- 6 54.1	+0.4425	0.5442	0.1028	+71	- 1
18 Tauri	5.6	1.57	7.6	24 34.7	14 33.5	- 6 47.2	-0.3423	0.5442	0.1025	+23	-43
<i>q</i> Tauri	4.3	+1.56	+ 7.7	+24 12.4	14 35.1	- 6 45.6	+0.0684	0.5442	+0.1025	+46	-21
20 Tauri	4.1	1.56	7.7	24 6.5	14 52.2	- 6 29.2	+0.2058	0.5443	0.1018	+55	-14
21 Tauri	5.8	1.56	7.6	24 17.7	14 54.3	- 6 27.1	+0.0041	0.5443	0.1018	+42	-24
22 Tauri	6.5	1.56	7.6	24 16.1	14 58.2	- 6 23.3	+0.0397	0.5443	0.1016	+44	-22
23 Tauri	4.3	1.56	7.8	23 41.4	15 6.4	- 6 15.4	+0.6891	0.5444	0.1013	+90	+12
<i>n</i> Tauri	3.0	+1.56	+ 7.7	+23 50.9	15 38.0	- 5 44.8	+0.5682	0.5445	+0.1002	+82	+ 5

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.	Hour Angle, <i>H</i>	<i>Y'</i>	<i>z'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$									d	h	m	h	m
27 Tauri	3.7	+1.56	+ 7.7	+23 48.0	26 16 24.2	- 5 0.2	+0.6983	0.5448	+0.0985	+90	+14
28 Tauri	5.2	1.56	7.7	23 53.0	16 24.8	- 4 59.6	+0.6076	0.5448	0.0985	+87	+ 8
14 H. Tauri	5.3	1.56	7.3	25 19.7	16 54.4	- 4 31.0	-0.9313	0.5449	0.0975	-13	-65
36 Tauri	5.6	1.53	7.4	23 52.7	23 20.4	+ 1 41.8	+1.2453	0.5466	0.0833	+90	+56
<i>p</i> Tauri	5.6	1.53	6.8	26 15.9	27 2 14.6	+ 4 30.4	-1.1484	0.5472	0.0768	-34	-64
<i>x</i> Tauri	5.3	+1.51	+ 6.8	+25 26.0	7 34.9	+ 9 39.7	+0.1434	0.5483	+0.0647	+51	-12
				NEW MOON.							

JULY.

<i>d</i> ¹ Cancr	5.9	+1.51	- 1.6	+18 36.1	1 23 56.1	- 1 41.7	+0.7855	0.5204	-0.1725	+90	+10
θ Cancr	5.5	1.53	2.0	18 22.7	2 4 6.3	+ 2 21.0	+0.3017	0.5185	0.1786	+60	-17
δ Cancr	4.2	1.56	2.6	18 27.8	10 47.4	+ 8 50.1	-1.0173	0.5154	0.1879	-16	-72
<i>X</i> Cancr (<i>var.</i>)	6.2	1.58	3.1	17 33.1	16 19.4	- 9 47.8	-1.0648	0.5130	0.1950	-19	-72
<i>o</i> ¹ Cancr	5.1	+1.56	- 3.5	+15 38.7	17 18.9	- 8 50.1	+0.8538	0.5126	-0.1963	+90	+11
<i>o</i> ² Cancr	5.7	1.56	3.4	15 54.2	17 29.2	- 8 40.0	+0.5931	0.5125	0.1965	+76	- 8
81 Cancr	6.4	1.68	4.1	15 20.0	3 12.6	+ 1 10.3	-0.3892	0.5094	0.2056	+22	-58
π Cancr	5.6	1.60	4.3	15 17.4	2 43.9	+ 0 18.4	-0.6538	0.5088	0.2073	+ 7	-73
18 Leonis	5.8	1.67	6.3	12 11.7	19 21.3	- 7 32.7	-0.8193	0.5032	0.2234	- 2	-78
19 Leonis	6.4	+1.67	- 6.4	+11 57.3	19 55.1	- 6 59.8	-0.6807	0.5031	-0.2239	+ 6	-78
<i>R</i> Leonis (<i>var.</i>)	5-10	1.67	6.5	11 49.0	19 59.2	- 6 55.9	-0.5434	0.5031	0.2240	+14	-70
83 B. Leonis	5.9	1.67	7.4	9 19.8	4 0 47.9	- 2 15.3	+1.1093	0.5018	0.2279	+90	+22
43 Leonis	6.3	1.76	9.2	6 58.0	15 14.5	+11 47.1	+0.3376	0.4992	0.2375	+62	-23
155 B. Leonis	6.5	1.74	9.4	6 7.1	15 23.3	+11 55.6	+1.2384	0.4992	0.2376	+90	+32
35 Sextantis	6.1	+1.82	-10.4	+ 5 11.2	5 2 21.2	- 1 24.8	-0.3846	0.4985	-0.2429	+22	-64
<i>p</i> ⁴ Leonis	5.7	1.90	12.1	2 24.5	15 14.1	+11 6.5	-0.5150	0.4990	0.2470	+15	-74
<i>p</i> ⁵ Leonis	5.3	1.92	13.0	0 23.0	18 57.2	- 9 16.6	+0.7628	0.4995	0.2477	+90	- 2
359 B. Leonis	6.3	1.98	13.2	+ 0 35.4	6 0 7.3	- 4 15.2	-0.7420	0.5004	0.2484	+ 3	-89
388 B. Leonis	6.3	1.99	13.9	- 1 14.5	2 36.5	- 1 50.2	+0.6203	0.5009	0.2486	+82	-10
431 B. Leonis	6.2	+2.04	-14.4	+ 1 58.5	8 15.5	+ 3 39.3	+0.0070	0.5024	-0.2486	+42	-42
78 B. Virginis	6.5	2.23	16.2	5 15.4	7 3 12.9	- 1 56.1	-1.1563	0.5098	0.2451	+25	-80
<i>g</i> Virginis	5.3	2.34	17.8	8 59.6	13 14.9	+ 7 48.1	+0.3843	0.5153	0.2408	+62	-22
370 B. Virginis	6.0	2.47	18.8	11 11.9	23 33.1	- 6 12.5	+0.2659	0.5220	0.2344	+54	-28
69 Virginis	4.9	2.70	20.1	15 32.6	8 15 33.5	+ 9 17.5	+1.1764	0.5347	0.2199	+74	+28
75 Virginis	5.6	+2.74	-19.8	+14 56.2	18 6.1	+11 45.1	-0.0140	0.5369	-0.2171	+86	-43
83 Virginis	5.6	2.83	20.0	15 45.8	23 29.5	- 7 2.2	-0.3066	0.5418	0.2106	+19	-60
85 Virginis	5.1	2.83	19.8	15 21.1	23 59.8	- 6 33.0	-0.8397	0.5422	0.2099	-10	-90
87 Virginis	5.8	2.86	20.5	17 26.7	9 0 49.1	- 5 45.3	+1.1621	0.5430	0.2089	+73	+27
89 Virginis	5.1	2.88	20.6	17 43.3	1 56.5	- 4 40.2	+1.2142	0.5441	0.2074	+72	+32
43 H. Virginis	5.5	+3.07	-19.9	-17 48.9	13 20.8	+ 6 20.6	-0.9624	0.5552	-0.1904	-20	-90
231 G. Virginis	6.4	3.08	19.9	18 12.1	14 4.2	+ 7 2.3	-0.7017	0.5559	0.1892	- 4	-90
236 G. Virginis	5.7	3.10	19.9	18 20.0	14 45.5	+ 7 42.3	-0.6956	0.5566	0.1881	- 4	-90
9 G. Libræ	6.5	3.24	19.9	20 4.6	21 42.8	- 9 35.4	-0.1703	0.5637	0.1757	+22	-52
17 G. Libræ	6.4	3.33	19.7	20 49.6	10 2 29.1	- 4 59.7	-0.2208	0.5686	0.1665	+19	-55
18 G. Libræ	6.1	+3.34	-19.7	-20 58.7	2 55.1	- 4 34.6	-0.1370	0.5690	-0.1656	+22	-50
43 B. Libræ	5.7	3.45	20.1	21 2.6	7 6.9	- 0 32.2	-0.7465	0.5734	0.1569	-11	-90
47 G. Libræ	6.1	3.49	18.9	21 42.7	10 49.0	+ 3 1.4	-0.6324	0.5772	0.1487	- 5	-88
64 G. Libræ	5.8	3.56	18.4	22 5.7	14 49.1	+ 6 52.3	-0.8189	0.5812	0.1395	-17	-90
153 B. Libræ	6.3	3.72	18.0	24 12.6	21 26.0	-10 46.5	+0.4496	0.5876	0.1233	+50	-17
169 B. Libræ	6.0	+3.73	-17.3	-22 52.1	23 15.9	- 9 0.9	-1.1235	0.5894	-0.1185	-40	-90
177 B. Libræ	6.2	3.74	17.2	22 52.9	23 32.3	- 8 26.0	-1.1816	0.5900	0.1170	-46	-90
42 Libræ	5.0	3.76	17.4	23 33.0	11 0 13.3	- 8 5.9	-0.5482	0.5903	0.1161	- 5	-80
<i>b</i> Scorpii	4.7	3.87	17.1	25 30.1	4 19.5	- 4 9.6	+0.9585	0.5940	0.1050	+64	+15
<i>A</i> Scorpii	4.6	3.88	16.8	25 4.9	5 20.4	- 3 11.1	+0.4314	0.5949	0.1023	+47	-18
31 B. Scorpii	5.4	+3.86	-16.6	-24 17.3	5 27.5	- 3 4.3	-0.3767	0.5950	-0.1019	+ 4	-66

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallel.			
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
32 B. Scorpii	5.3	+3.85	-16.4	-23 44.0	11	5 28.7	- 3 3.2	-0.9359	0.5950	-0.1019	-28	-90	
3 Scorpii	5.9	3.88	16.7	25 0.0		5 44.4	- 2 48.2	+0.3088	0.5952	0.1012	+39	-35	
40 B. Scorpii	5.4	3.90	16.3	24 35.7		7 14.5	- 1 21.7	-0.2468	0.5965	0.0970	+10	-57	
π Scorpii	3.0	3.93	16.6	25 52.7		7 19.7	- 1 16.7	+1.0311	0.5966	0.0967	+64	+21	
48 B. Scorpii	4.9	3.96	16.2	25 38.2		9 2.3	+ 0 21.7	+0.6272	0.5981	0.0919	+59	- 6	
50 B. Scorpii	6.4	+3.93	-15.9	-24 30.0		9 16.0	+ 0 34.7	-0.5316	0.5983	-0.0913	- 5	-79	
24 G. Scorpii	6.2	3.96	15.5	24 14.5		10 45.7	+ 2 0.8	-0.9219	0.5994	0.0869	-29	-90	
65 B. Scorpii	5.5	4.01	15.9	26 6.4		10 49.9	+ 2 4.8	-0.9366	0.5995	0.0868	+64	+14	
41 G. Scorpii	6.3	3.99	15.0	24 12.8		12 58.6	+ 4 8.1	-1.1362	0.6012	0.0805	+45	-90	
85 B. Scorpii	6.0	4.02	15.2	25 16.1		13 23.3	+ 4 31.8	-0.1137	0.6015	0.0793	+15	-49	
σ Scorpii	3.1	+4.06	-14.7	-25 23.8		15 44.2	+ 6 46.9	-0.1642	0.6033	-0.0723	+12	-52	
α Scorpii	1.2	4.14	14.2	26 15.0		18 46.5	+ 9 41.5	+0.4813	0.6055	0.0631	+47	-15	
22 Scorpii	4.8	4.10	13.8	24 56.1		19 5.3	+ 9 59.4	-0.8484	0.6057	0.0621	-26	-90	
116 B. Scorpii	6.2	4.15	14.0	26 21.6		19 30.2	+10 23.3	+0.5445	0.6060	0.0608	+51	-19	
134 B. Scorpii	6.4	4.26	13.1	27 18.2	12	0 14.0	- 9 4.9	+1.2274	0.6089	0.0461	+63	+45	
118 B. Ophiuchi	6.2	+4.34	-10.7	-26 24.2		8 27.4	- 1 12.8	+0.0629	0.6130	-0.0196	+19	-39	
137 B. Ophiuchi	6.3	4.33	9.9	25 9.3		10 24.2	+ 0 39.0	-1.2030	0.6138	0.0132	-56	-86	
36 Ophi. (1st star)	5.4	4.37	10.5	26 29.0		11 31.4	+ 1 43.2	+0.0974	0.6142	-0.0095	+20	-36	
136 G. Ophiuchi	6.3	4.42	8.6	25 52.3		15 40.4	+ 5 41.4	-0.5164	0.6154	+0.0043	-12	-78	
151 G. Ophiuchi	6.0	4.45	8.2	26 12.5		17 23.8	+ 7 20.3	-0.1724	0.6158	0.0100	+ 5	-52	
4 G. Sagittarii	6.2	+4.53	- 6.5	-26 56.9		23 22.2	-10 57.1	+0.6746	0.6167	+0.0300	+59	- 4	
67 B. Sagittarii	6.4	4.57	3.0	25 38.3	13	10 12.2	+ 0 35.6	-0.0923	0.6161	0.0659	+15	-48	
70 B. Sagittarii	6.4	4.56	2.6	24 57.3		10 13.6	+ 0 23.1	-0.6929	0.6159	0.0693	-16	-90	
68 G. Sagittarii	6.2	4.63	2.1	26 41.2		13 25.9	+ 2 29.6	+1.1643	0.6154	0.0764	+63	+35	
λ Sagittarii	2.9	4.59	2.0	25 28.2		13 32.2	+ 2 35.6	-0.0192	0.6154	0.0768	+20	-43	
86 B. Sagittarii	6.5	+4.63	- 2.0	-26 38.2		13 52.3	+ 2 54.9	+1.1499	0.6153	+0.0779	+63	+33	
24 Sagittarii	5.7	4.55	1.2	24 5.8		15 41.1	+ 4 39.0	-1.1920	0.6148	0.0837	-50	-90	
26 Sagittarii	6.1	4.56	- 0.2	23 54.8		18 33.7	+ 7 24.0	-1.1174	0.6139	0.0929	-42	-90	
126 B. Sagittarii	5.7	4.60	0.0	25 5.8		19 37.1	+ 8 24.7	+0.1413	0.6135	0.0962	+30	-34	
154 B. Sagittarii	5.9	4.55	+ 1.4	23 16.9		23 42.1	-11 40.9	-1.2155	0.6118	0.1089	-51	-87	
162 B. Sagittarii	6.4	+4.62	+ 1.5	-24 59.4	14	0 31.6	-10 53.5	+0.5459	0.6114	+0.1114	+55	-12	
127 G. Sagittarii	6.4	4.62	1.8	25 3.6		1 16.8	-10 10.3	+0.6991	0.6111	0.1137	+64	- 2	
172 B. Sagittarii	5.8	4.62	1.9	24 57.8		2 1.9	- 9 27.1	+0.6912	0.6107	0.1159	+64	- 3	
189 B. Sagittarii	6.1	4.61	2.7	24 47.3		4 8.9	- 7 25.5	+0.7727	0.6096	0.1223	+65	+ 2	
191 B. Sagittarii	6.5	4.56	2.8	23 19.4		4 21.1	- 7 13.8	-0.6354	0.6095	0.1228	- 9	-89	
208 B. Sagittarii	6.1	+4.60	+ 3.5	-24 19.3		6 50.3	- 4 51.0	+0.6562	0.6081	+0.1302	+63	- 6	
222 B. Sagittarii	5.5	4.54	4.2	22 33.5		8 44.6	- 3 1.6	-0.8146	0.6070	0.1356	-18	-90	
49 Sagittarii	5.5	4.59	4.6	24 7.6		10 31.4	- 1 19.3	+0.9638	0.6059	0.1407	+66	+15	
50 Sagittarii	5.5	4.52	4.8	21 56.6		10 51.4	- 1 0.1	-1.1237	0.6057	0.1416	-39	-90	
53 Sagittarii	6.3	4.57	6.2	23 37.1		15 52.9	+ 3 48.7	+1.2604	0.6023	0.1553	+66	+44	
274 B. Sagittarii	6.1	+4.57	+ 6.3	-23 37.2		15 59.5	+ 3 55.1	+1.2801	0.6022	+0.1556	+66	+48	
σ Capricorni	5.5	4.39	10.4	19 22.7	15	7 5.8	- 5 35.6	-0.2328	0.5904	0.1922	+20	-56	
π Capricorni	5.2	4.35	11.1	18 29.1		10 13.2	- 2 35.7	-0.4976	0.5878	0.1988	+ 7	-74	
ρ Capricorni	5.0	4.34	11.2	18 5.3		10 50.0	- 2 0.3	-0.7628	0.5872	0.2001	- 8	-90	
ν Capricorni	5.6	4.36	11.3	18 51.5		11 14.1	- 1 37.3	+0.0716	0.5869	0.2009	+37	-38	
81 B. Capricorni	5.3	+4.32	+12.4	-18 25.9		15 17.0	+ 2 16.2	+0.4826	0.5834	+0.2089	+60	-16	
94 B. Capricorni	6.4	4.30	13.2	18 20.6		19 1.5	+ 5 51.9	+1.1911	0.5801	0.2158	+72	+30	
29 Capricorni	5.7	4.22	13.8	16 21.1		22 26.3	+ 9 9.0	-0.0181	0.5772	0.2216	+34	-43	
53 B. Aquarii	6.5	4.10	15.1	13 32.8	16	5 55.3	- 7 38.9	+0.8647	0.5707	0.2331	+74	+ 5	
18 Aquarii	5.5	+4.07	+15.7	-13 14.1		6 2.6	- 7 31.9	-1.0479	0.5706	0.2333	-21	-90	
137 B. Capricorni	6.2	3.97	16.6	10 57.0		9 29.4	+ 4 12.7	-0.5445	0.5676	+0.2379	+10	-77	
λ Capricorni	5.5	3.96	17.2	11 44.9		16 1.8	+ 2 5.4	-1.2218	0.5623	0.2457	-33	-90	
96 B. Aquarii	6.5	3.92	17.6	10 42.2		19 4.7	+ 5 1.8	-0.3220	0.5598	0.2488	+56	-25	
θ Aquarii	4.3	3.78	18.6	8 11.8		22 10.1	+ 8 0.5	+0.0583	0.5574	0.2517	+42	-39	
ρ Aquarii	5.3	+3.77	+18.8	- 8 14.3	17	8 29.6	- 6 1.5	+0.2068	0.5498	0.2593	+52	-31	
						10 0.8	+ 4 33.4	+0.6A33	0.5488	+0.2602	+80	- 9	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.						Limiting Parallels.		
Name.	Mag.	Red'n's from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
B. Aquarii	6.0	+3.75	+18.9	7 36.8	17	11	31.7	-3 5.7	+0.4148	0.5478	+0.2609	+65	-20
B. Aquarii	6.1	3.71	19.2	6 58.7	15	3.5	+0 18.9	+0.7045	0.5455	0.2625	+83	-5	
Aquarii	5.2	3.64	19.0	4 39.4	18	2.1	+3 11.5	-0.8405	0.5437	0.2636	-3	-90	
B. Aquarii	6.3	3.62	19.0	3 59.2	19	26.1	+4 32.7	-1.1444	0.5428	0.2640	-23	-90	
G. Piscium	6.2	3.54	19.6	2 50.4	18	3 33.0	-11 36.6	-0.1517	0.5384	0.2654	+34	-50	
B. Piscium	6.4	+3.41	+19.9	0 9.9	15	30.0	0 3.0	+0.3094	0.5330	+0.2646	+60	-26	
Piscium	4.9	3.38	19.6	+0 48.1	17	7.5	+1 31.4	-0.2430	0.5325	0.2643	+29	-56	
Piscium	6.4	3.38	19.7	0 40.0	17	16.6	+1 40.2	-0.0661	0.5324	0.2642	+38	-46	
Piscium	5.7	3.33	19.8	1 38.5	21	39.9	+5 55.1	+0.0973	0.5309	0.2630	+47	-37	
Piscium	4.6	3.31	19.9	1 19.4	19	0 23.3	+8 33.4	+1.1386	0.5301	0.2620	+90	+22	
Piscium	5.4	+3.28	+19.6	+3 1.6	2	28.9	+10 34.9	-0.0566	0.5295	+0.2611	+39	-45	
Piscium	5.8	3.26	19.9	2 28.1	5	10.4	-10 48.6	+1.2168	0.5288	0.2598	+90	+29	
Piscium	6.2	3.13	18.7	7 46.8	17	7.7	+0 46.0	-1.1899	0.5266	0.2525	-26	-82	
Piscium	5.4	3.12	18.8	7 43.7	19	5.6	+2 40.2	-0.6447	0.5263	0.2510	+8	-80	
B. Piscium	6.5	3.02	18.5	8 54.1	20	5 9.3	-11 35.1	+0.6197	0.5257	0.2424	+82	-8	
Piscium	6.3	+2.92	+17.4	+12 30.7	17	30.9	+0 23.3	-0.2402	0.5262	+0.2294	+30	-51	
Piscium	3.7	2.83	16.4	14 55.1	21	5 36.8	-11 53.6	-0.0961	0.5277	0.2143	+37	-42	
Piscium	6.2	2.81	16.5	14 14.2	7	41.8	-9 52.5	+1.0698	0.5280	0.2114	+90	+24	
Piscium	6.1	2.80	15.9	15 59.1	9	34.1	-8 3.8	-0.3918	0.5284	0.2088	+22	-57	
Arietis	6.4	2.78	15.5	16 59.8	12	53.7	-4 50.6	-0.7829	0.5290	0.2040	-1	-73	
Arietis	5.8	+2.77	+15.6	+16 32.5	13	40.0	-4 5.8	-0.1420	0.5292	+0.2029	+34	-43	
Arietis	5.1	2.74	15.1	17 24.7	18	4.0	+0 9.9	-0.1914	0.5301	0.1963	+32	-44	
Arietis	6.4	2.72	14.9	17 51.2	21	6.7	+3 6.8	-0.0735	0.5308	0.1915	+38	-38	
B. Arietis	6.5	2.70	14.9	17 38.0	23	3.2	+4 59.4	+0.5312	0.5313	0.1885	+77	-6	
Arietis	5.9	2.70	14.3	19 6.5	22	0 24.0	+6 17.7	-0.7957	0.5316	0.1863	-2	-71	
Arietis	5.6	+2.68	+14.0	+19 31.0	3	58.3	+9 45.1	-0.5804	0.5326	+0.1804	+11	-65	
Arietis	6.2	2.63	13.8	19 29.2	9	54.0	-8 30.8	+0.4911	0.5342	0.1702	+74	-6	
Arietis	5.4	2.61	12.8	21 36.1	13	44.3	-4 47.9	-1.1499	0.5352	0.1633	-29	-68	
Arietis	5.7	2.59	13.4	19 39.5	15	25.7	-3 9.8	+1.2224	0.5357	0.1602	+90	+44	
Arietis (mean)	4.6	2.53	12.5	21 0.5	23	18.1	+4 27.1	+0.9690	0.5379	0.1454	+90	+25	
Arietis	5.8	+2.48	+10.6	+24 25.8	23	10 53.5	-8 20.5	-1.1980	0.5411	+0.1222	-36	-66	
Arietis	6.1	2.45	11.1	22 31.1	12	49.4	-6 28.4	+1.1182	0.5416	0.1182	+90	+39	
Tauri	5.9	2.45	10.4	24 11.2	15	33.6	-3 49.7	-0.3857	0.5423	0.1124	+21	-46	
Tauri	6.1	2.44	9.9	25 3.7	18	27.0	-1 2.2	-1.0262	0.5431	0.1063	-20	-65	
Tauri	5.4	2.41	10.0	24 1.7	20	18.6	+0 45.6	+0.2964	0.5435	0.1023	+60	-9	
Tauri	3.8	+2.41	+10.1	+23 51.2	20	20.7	+0 47.7	+0.4924	0.5435	+0.1022	+75	+2	
Tauri	5.6	2.42	9.9	24 34.8	20	27.9	+0 54.7	-0.2898	0.5435	0.1020	+26	-40	
Tauri	4.3	2.41	10.0	24 12.4	20	29.5	+0 56.3	+0.1196	0.5435	0.1019	+49	-17	
Tauri	4.1	2.41	10.0	24 6.5	20	46.6	+1 12.7	+0.2564	0.5436	0.1013	+58	-10	
Tauri	5.8	2.41	9.9	24 17.8	20	48.6	+1 14.7	+0.0553	0.5436	0.1012	+45	-21	
Tauri	6.5	+2.41	+10.0	+24 16.2	20	52.5	+1 18.4	+0.0908	0.5436	+0.1011	+47	-19	
Tauri	4.3	2.40	10.1	23 41.4	21	0.6	+1 26.3	+0.7380	0.5437	0.1008	+90	+15	
Tauri	3.0	2.40	10.0	23 50.9	21	32.3	+1 56.9	+0.6173	0.5438	0.0996	+88	+8	
Tauri	3.7	2.39	10.0	23 48.0	22	18.3	+2 41.4	+0.7467	0.5440	0.0980	+90	+16	
Tauri	5.2	2.39	10.0	23 53.0	22	18.9	+2 42.0	+0.6563	0.5440	0.0979	+90	+11	
H. Tauri	5.3	+2.41	+9.4	+25 19.8	22	48.5	+3 10.5	-0.8781	0.5441	+0.0969	-9	-65	
Tauri	5.6	2.35	8.4	26 15.9	24	8 8.0	-11 49.0	-1.0994	0.5460	0.0761	-27	-64	
Tauri	5.3	2.31	8.3	25 26.1	13	28.2	-6 39.6	+0.1870	0.5469	+0.0640	+53	-10	
B. Aurigæ	5.7	2.12	4.8	26 52.4	25	23 7.2	+1 50.5	-0.5663	0.5478	-0.0146	+10	-49	
Tauri	5.1	2.10	4.9	25 51.1	26	0 18.7	+2 59.6	+0.5469	0.5477	0.0174	+81	+13	
Tauri	4.7	+2.05	+4.1	+25 56.7	8	36.4	+11 0.4	+0.2193	0.5465	-0.0367	+56	-6	
B. Geminorum	6.5	1.95	2.5	24 39.7	27	2 45.8	+4 33.3	+0.6061	0.5421	0.0774	+87	+11	
Geminorum	3.2	1.94	2.1	25 13.0	5	45.8	+7 27.2	-0.2516	0.5411	0.0839	+28	-36	
B. Geminorum	5.8	1.91	2.0	23 42.2	9	33.6	+11 7.6	+1.0970	0.5399	0.0920	+90	+39	
Geminorum	5.7	+1.92	+1.6	+25 28.9	11	4.8	-11 24.3	-1.0237	0.5394	-0.0932	-20	-55	

NEW MOON.

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limit ing Pa- rals.
Name.	Mag.	Red'ns from 1916.0.		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	Y	z'	y'	N. A.
		$\Delta\alpha$	$\Delta\delta$							
		s	"	'	d h m	h m				
43 Leonis	6.3	+1.70	-8.3	+ 6 58.0	31 20 58.4	- 4 41.7	+0.3362	0.5011	-0.2384	+61-2
155 B. Leonis	6.5	+1.68	-8.4	+ 6 7.1	21 7.2	- 4 33.1	+1.2327	0.5011	-0.2385	+96-2

AUGUST.

35 Sextantis	6.1	+1.73	-9.4	+ 5 11.2	1 8 3.7	+ 6 5.1	-0.3867	0.5000	-0.2436	+22-4
p^4 Leonis	5.7	1.76	10.8	2 24.5	20 56.2	- 5 24.0	-0.5171	0.4999	0.2474	+15-7
p^5 Leonis	5.3	1.78	11.4	0 23.1	2 0 39.4	+ 1 46.9	+0.7647	0.5003	0.2480	+90-1
359 B. Leonis	6.3	1.81	11.7	+ 0 35.4	5 50.1	+ 3 15.1	-0.7446	0.5009	0.2485	+ 3-8
388 B. Leonis	6.3	1.82	12.2	- 1 14.4	8 19.8	+ 5 40.6	+0.6229	0.5013	0.2486	+82-3
431 B. Leonis	6.2	+1.85	-12.8	- 1 58.5	14 0.1	+11 11.3	+0.0078	0.5023	-0.2485	+42-4
78 B. Virginis	6.5	1.99	14.4	5 15.4	3 9 5.4	+ 5 43.8	-1.1606	0.5082	0.2442	+26-8
q Virginis	5.3	2.07	15.9	8 59.6	19 14.1	- 8 25.3	+0.3920	0.5128	0.2395	+65-2
370 B. Virginis	6.0	2.19	16.9	11 11.9	4 5 41.2	+ 1 43.0	+0.2748	0.5185	0.2326	+34-3
69 Virginis	4.9	2.40	18.3	15 32.6	21 59.5	- 6 29.0	+1.1984	0.5295	0.2176	+74-3
75 Virginis	5.6	+2.43	-18.1	-14 56.2	5 0 35.4	+ 3 58.1	-0.0050	0.5314	-0.2147	+36-4
83 Virginis	5.6	2.52	18.3	15 45.7	6 6.1	+ 1 21.9	-0.3003	0.5357	0.2081	+30-2
85 Virginis	6.1	2.53	18.2	15 21.1	6 37.1	+ 1 51.9	-0.8399	0.5361	0.2074	+10-8
87 Virginis	5.8	2.55	18.8	17 26.7	7 27.6	+ 2 40.7	+1.1867	0.5368	0.2063	+73-3
89 Virginis	5.1	2.56	18.9	17 43.3	8 36.7	+ 3 47.6	+1.2396	0.5378	0.2048	+73-3
43 H. Virginis	5.5	+2.75	-18.4	-17 48.9	20 18.8	- 8 53.9	-0.9638	0.5477	-0.1877	+19-8
231 G. Virginis	6.4	2.77	18.5	18 12.0	21 3.3	+ 8 10.9	-0.6993	0.5484	0.1865	+ 4-8
236 G. Virginis	5.7	2.78	18.5	18 19.9	21 45.8	- 7 29.8	-0.6933	0.5490	0.1854	+ 4-8
9 G. Libræ	6.5	2.92	18.7	20 4.6	6 4 55.2	- 0 35.4	-0.1602	0.5554	0.1730	+23-2
17 G. Libræ	6.4	3.01	18.6	20 49.5	9 50.1	+ 4 9.0	-0.2110	0.5598	0.1638	+18-5
18 G. Libræ	6.1	+3.02	-18.6	-20 58.7	10 16.9	+ 4 34.9	-0.1257	0.5602	-0.1630	+23-4
43 B. Libræ	5.7	3.14	19.2	21 2.6	14 36.5	+ 8 45.1	-0.7439	0.5642	0.1543	+10-8
47 G. Libræ	6.1	3.18	18.1	21 42.6	18 25.8	-11 34.1	-0.6282	0.5677	0.1463	+ 3-8
64 G. Libræ	5.8	3.26	17.7	22 5.6	22 33.7	- 7 35.4	-0.8174	0.5714	0.1371	+17-8
153 B. Libræ	6.3	3.42	17.6	24 12.6	7 5 23.7	- 1 0.9	+0.4712	0.5775	0.1210	+51-3
169 B. Libræ	6.0	+3.44	-16.8	-22 52.1	7 17.4	+ 0 48.4	-1.1265	0.5791	-0.1164	+0-8
177 B. Libræ	6.2	3.45	16.7	22 52.8	7 54.9	+ 1 24.4	-1.1856	0.5797	0.1149	+7-8
42 Libræ	5.0	3.47	16.9	23 33.0	8 16.7	+ 1 45.4	-0.5421	0.5800	0.1140	+ 4-7
b Scorpii	4.7	3.59	16.9	25 30.1	12 31.3	+ 5 50.1	+0.9884	0.5835	0.1032	+64-15
A Scorpii	4.6	3.60	16.6	25 4.9	13 34.2	+ 6 50.5	+0.4531	0.5844	0.1004	+45-7
31 B. Scorpii	5.4	+3.59	-16.3	-24 17.3	13 41.6	+ 6 57.6	-0.3678	0.5845	-0.1001	+ 4-8
32 B. Scorpii	5.3	3.58	16.1	23 44.0	13 42.8	+ 6 58.8	-0.9358	0.5845	0.1001	+28-8
3 Scorpii	5.9	3.61	16.5	25 0.0	13 59.1	+ 7 14.4	+0.3285	0.5847	0.0993	+41-3
40 B. Scorpii	5.4	3.63	16.0	24 35.7	15 32.2	+ 8 43.9	-0.2359	0.5860	0.0952	+10-2
π Scorpii	3.0	3.66	16.5	25 52.7	15 37.6	+ 8 49.1	+1.0623	0.5860	0.0950	+64-23
48 B. Scorpii	4.9	+3.68	-16.1	-25 38.2	17 23.7	+10 31.0	+0.6521	0.5874	-0.0902	+61-3
50 B. Scorpii	6.4	3.67	15.7	24 30.0	17 37.9	+10 44.6	-0.5250	0.5876	0.0896	+ 5-3
24 G. Scorpii	6.2	3.70	15.3	24 14.5	19 10.7	-11 46.4	-0.9215	0.5888	0.0854	+28-8
65 B. Scorpii	5.5	3.74	15.9	26 6.4	19 15.1	-11 42.1	+0.9663	0.5888	0.0852	+64-18
41 G. Scorpii	6.3	3.74	14.8	24 12.7	21 28.2	- 9 34.4	-1.1392	0.5905	0.0790	+46-8
85 B. Scorpii	6.0	+3.77	-15.1	-25 16.1	21 53.7	- 9 9.9	-0.1005	0.5908	-0.0779	+16-4
σ Scorpii	3.1	3.82	14.7	25 23.8	8 0 19.5	+ 6 49.9	-0.1518	0.5925	0.0710	+13-5
α Scorpii	1.2	3.90	14.3	26 15.0	3 28.0	- 3 49.1	+0.5036	0.5947	0.0619	+48-14
22 Scorpii	4.8	3.87	13.8	24 56.1	3 47.5	- 3 30.5	-0.8468	0.5949	0.0610	+26-8
116 B. Scorpii	6.2	3.92	14.2	26 21.6	4 13.2	- 3 5.8	+0.5679	0.5952	0.0597	+53-18
134 B. Scorpii	6.4	+4.03	-13.4	-27 18.2	9 6.7	+ 1 35.7	+1.2611	0.5982	-0.0453	+63-5
118 B. Ophiuchi	6.2	4.16	11.1	26 24.2	17 36.5	+ 9 44.3	+0.0782	0.6025	0.0193	+20-3
137 B. Ophiuchi	6.3	4.16	10.2	25 9.3	19 37.1	+11 39.8	-1.2066	0.6034	0.0130	+57-8
36 Ophi. (1st star)	5.4	4.21	11.0	26 29.0	20 46.5	-11 13.7	+0.1131	0.6038	-0.0094	+21-8
136 G. Ophiuchi	6.3	4.27	9.0	25 52.3	9 1 3.5	- 7 7.5	-0.5100	0.6053	+0.0041	+11-7
151 G. Ophiuchi	6.0	+4.31	-8.6	-26 12.5	2 50.0	- 5 25.5	-0.1612	0.6057	+0.0098	+ 7-2

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.			
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
G. Sagittarii	6.2	+4.44	-7.2	-26 56.9	9	8 59.4	+ 0 28.2	-0.6968	0.6070	+0.0294	+61	- 2	
B. Sagittarii	6.4	4.54	3.6	25 38.3		20 7.7	+11 8.0	-0.0819	0.6075	0.0649	+15	-47	
B. Sagittarii	6.4	4.53	3.0	24 57.3		21 10.8	-11 51.5	-0.6900	0.6074	0.0681	-16	-90	
G. Sagittarii	6.2	4.62	2.8	26 41.2		23 26.5	- 9 41.6	+1.1888	0.6072	0.0752	+63	+38	
Sagittarii	2.9	4.57	2.6	25 28.2		23 33.0	- 9 35.4	-0.0085	0.6071	0.0756	+20	-43	
B. Sagittarii	6.5	+4.62	-2.7	-26 38.2		23 53.6	- 9 15.7	+1.1742	0.6071	+0.0766	+63	+36	
Sagittarii	5.7	4.55	1.5	24 5.8	10	1 45.1	+ 7 28.9	-1.1948	0.6068	0.0824	-51	-89	
Sagittarii	6.1	4.57	0.6	23 54.8		4 41.8	- 4 39.7	-1.1194	0.6063	0.0915	-43	-90	
B. Sagittarii	5.7	4.63	-0.5	25 5.8		5 46.8	- 3 37.6	+0.1527	0.6060	0.0948	+30	-34	
B. Sagittarii	5.9	4.61	+1.1	23 16.9		9 57.2	+ 0 22.3	-1.2186	0.6049	0.1074	-51	-87	
B. Sagittarii	6.4	+4.67	+1.0	-24 59.4		10 47.8	+ 1 10.8	+0.5602	0.6046	+0.1099	+56	-11	
G. Sagittarii	6.4	4.68	1.3	25 3.6		11 34.0	+ 1 55.1	+0.7145	0.6043	0.1122	+65	- 2	
B. Sagittarii	5.8	4.68	1.4	24 57.8		12 20.1	+ 2 39.2	+0.7063	0.6041	0.1144	+65	- 2	
B. Sagittarii	6.1	4.70	2.2	24 47.3		14 29.6	+ 4 43.3	+0.7878	0.6032	0.1207	+65	+ 3	
B. Sagittarii	6.5	4.64	2.6	23 19.4		14 42.1	+ 4 55.3	-0.6333	0.6031	0.1214	- 9	-89	
B. Sagittarii	6.1	+4.70	+3.1	-24 19.3		17 14.1	+ 7 20.9	+0.6892	0.6022	+0.1287	+64	- 5	
B. Sagittarii	5.5	4.64	4.1	22 33.5		19 10.5	+ 9 12.4	-0.8145	0.6013	0.1341	-17	-90	
Sagittarii	5.5	4.72	4.3	24 7.6		20 59.2	+10 56.6	+0.9780	0.6005	0.1392	+66	+16	
Sagittarii	5.5	4.64	4.8	21 56.6		21 19.5	+11 16.1	-1.1263	0.6002	0.1401	-38	-90	
Sagittarii	6.3	4.73	6.0	23 37.1	11	2 25.9	- 7 50.1	+1.2741	0.5977	0.1539	+66	+47	
B. Sagittarii	6.1	+4.73	+6.1	-23 37.2		2 32.6	- 7 43.7	+1.2939	0.5976	+0.1541	+66	+51	
Capricorni	5.5	4.64	11.0	19 22.7		17 48.9	+ 6 55.7	-0.2336	0.5882	0.1911	+20	-56	
Capricorni	5.2	4.61	12.0	18 29.1		20 57.7	+ 9 57.0	-0.5001	0.5861	0.1979	+ 6	-74	
Capricorni	5.0	4.60	12.1	18 5.3		21 34.7	+10 32.6	-0.7665	0.5857	0.1992	- 9	-90	
Capricorni	5.6	4.63	12.1	18 51.5		21 58.9	+10 55.8	+0.0705	0.5854	0.2000	+36	-39	
Capricorni	5.3	+4.62	+13.3	-18 25.9	12	2 2.9	- 9 9.7	+0.4807	0.5826	+0.2082	+60	-16	
B. Capricorni	6.4	4.62	14.2	18 20.5		5 48.0	- 5 33.3	+1.1883	0.5799	0.2153	+72	+30	
B. Capricorni	5.7	4.56	15.2	16 21.1		9 12.9	- 2 16.3	-0.0238	0.5775	0.2214	+34	-44	
Capricorni	5.5	4.52	16.9	15 31.0		16 41.2	+ 4 55.1	+0.8551	0.5722	0.2333	+74	+ 4	
B. Aquarii	6.5	4.47	17.0	13 32.8		16 48.5	+ 5 2.2	-1.0560	0.5721	0.2335	-22	-90	
Aquarii	5.5	+4.46	+17.8	-13 14.1		20 14.4	+ 8 20.4	-0.5542	0.5697	+0.2383	+ 9	-78	
B. Capricorni	6.2	4.39	19.1	10 57.0	13	2 44.2	- 9 24.0	-1.2317	0.5652	0.2465	-35	-90	
Capricorni	5.5	4.40	19.6	11 44.9		5 45.5	- 6 29.3	+0.3059	0.5631	0.2499	+55	-28	
B. Aquarii	6.5	4.36	20.2	10 42.1		8 49.0	- 3 32.4	+0.0416	0.5611	0.2529	+42	-40	
Aquarii	4.3	4.28	21.7	8 11.8		10 0.5	+ 6 17.5	+0.1840	0.5548	0.2612	+50	-32	
Aquarii	5.3	+4.27	+22.0	- 8 14.2		20 30.3	+ 7 44.2	+0.6169	0.5540	+0.2621	+78	-10	
B. Aquarii	6.0	4.26	22.2	7 36.8		21 59.7	+ 9 10.5	+0.3889	0.5532	0.2630	+63	-22	
B. Aquarii	6.1	4.24	22.5	6 58.7	14	1 27.9	-11 28.6	+0.6746	0.5512	0.2648	+82	- 7	
Aquarii	5.2	4.18	22.7	4 39.3		4 23.3	- 8 39.2	-0.8604	0.5497	0.2660	- 5	-90	
B. Aquarii	6.3	4.16	22.8	3 59.1		5 45.7	- 7 19.6	-1.1625	0.5490	0.2664	-25	-90	
G. Piscium	6.2	+4.11	+23.6	- 2 50.3		13 42.8	+ 0 21.4	-0.1816	0.5452	+0.2683	+32	-52	
B. Piscium	6.4	4.02	24.3	- 0 9.8	15	1 23.2	+11 38.4	+0.2689	0.5408	0.2680	+57	-28	
Piscium	4.9	4.01	24.2	+ 0 48.1		2 58.3	-10 49.6	-0.2785	0.5403	0.2677	-28	-58	
Piscium	6.4	4.01	24.3	+ 0 40.1		3 7.1	-10 41.1	-0.1034	0.5402	0.2676	+37	-48	
Piscium	5.7	3.97	24.4	+ 1 38.6		7 23.8	- 6 32.9	+0.0560	0.5390	0.2664	+45	-39	
Piscium	4.6	+3.96	+24.5	+ 1 19.5		10 3.0	- 3 58.9	+1.0842	0.5382	+0.2655	+90	+18	
Piscium	5.4	3.94	24.4	+ 3 1.7		12 5.2	- 2 0.7	-0.0985	0.5377	0.2647	+37	-47	
Piscium	5.8	3.93	24.7	+ 2 28.2		14 42.4	+ 0 31.4	+1.1587	0.5371	0.2634	+90	+24	
Piscium	6.2	3.84	23.9	+ 7 46.8	16	2 19.8	+11 46.1	-1.2243	0.5352	0.2562	-30	-82	
Piscium	5.4	3.83	24.0	+ 7 43.8		4 14.3	-10 23.1	-0.6866	0.5350	0.2547	+ 6	-82	
B. Piscium	6.5	+3.77	+23.7	+ 8 54.2		14 0.8	- 0 55.6	+0.5576	0.5344	+0.2460	+77	-11	
Piscium	6.3	3.71	22.6	+12 30.7	17	2 1.4	+10 41.6	-0.2957	0.5345	0.2327	+26	-54	
Piscium	3.7	3.65	21.5	+15 55.2		13 47.2	- 1 55.4	-0.1573	0.5356	0.2172	+34	-45	
Piscium	6.2	3.63	21.6	+14 14.3		15 48.9	+ 0 2.3	+0.9933	0.5358	0.2142	+90	+18	
Piscium	6.1	3.63	21.0	+15 59.2		17 38.2	+ 1 48.0	-0.4504	0.5361	0.2116	+18	-61	
Arietis	6.4	+3.62	+20.5	+16 59.9		20 52.6	+ 4 56.0	-0.8375	0.5366	+0.2066	+ 4	-73	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Par- allels.		
Name.	Mag.	Red'ns from 1916.0.		Apparent Declina- tion.	Greenwich Mean Time.			Hour Angle, H	Y	x'	y'	N. S.
		Δα	Δδ		d	h	m					
4 Arietis	5.8	+3.62	+20.6	+16 32.6	17 21 37.6	+ 5 39.6	-0.2048	0.5366	+0.2055	+31	-46	
z Arietis	5.1	3.59	20.1	17 24.8	18 1 55.0	+ 9 48.6	-0.2548	0.5374	0.1987	+28	-45	
35 B. Arietis	6.4	3.58	19.8	17 51.3	4 53.2	-11 19.1	-0.1389	0.5379	0.1938	+34	-41	
47 B. Arietis	6.5	3.56	19.7	17 38.1	6 46.8	- 9 29.2	+0.4583	0.5382	0.1907	+71	-10	
15 Arietis	5.9	3.57	19.1	19 6.6	8 5 7.	- 8 12.9	-0.8533	0.5384	0.1884	- 5	-71	
θ Arietis	5.6	+3.55	+18.7	+19 31.1	11 35.0	+ 4 50.5	-0.6413	0.5391	+0.1824	+ 7	-68	
26 Arietis	6.2	3.51	18.2	19 29.3	17 22.7	+ 0 45.7	+0.4171	0.5402	0.1719	+68	-10	
ν Arietis	5.4	3.51	17.2	21 36.2	21 8.1	+ 4 23.6	-1.2064	0.5410	0.1649	-34	-68	
μ Arietis	5.7	3.48	17.7	19 39.6	22 47.4	+ 5 59.5	+1.1402	0.5414	0.1618	+90	+36	
ε Arietis (mean)	4.6	3.44	16.5	21 0.6	19 6 30.6	-10 32.9	+0.8894	0.5429	0.1466	+90	+20	
64 Arietis	5.8	+3.40	+14.0	+24 25.9	17 54.0	+ 0 27.5	-1.2578	0.5451	+0.1230	-45	-66	
66 Arietis	6.1	3.36	14.4	22 31.2	19 48.2	+ 2 17.9	+1.0379	0.5454	0.1190	+90	+32	
7 Arietis	5.9	3.37	13.6	24 11.2	22 29.9	+ 4 54.1	-0.4530	0.5459	0.1132	+17	-50	
11 Tauri	6.1	3.36	13.0	25 3.7	20 1 20.8	+ 7 39.2	-1.0883	0.5463	0.1069	-25	-65	
16 Tauri	5.4	3.33	13.1	24 1.8	3 10.9	+ 9 25.5	+0.2236	0.5467	0.1029	+56	-13	
17 Tauri	3.8	+3.32	+13.1	+23 51.2	3 13.0	+ 9 27.6	+0.4180	0.5467	+0.1028	+70	-3	
18 Tauri	5.6	3.34	12.9	24 34.8	3 20.2	+ 9 34.5	-0.3580	0.5467	0.1026	+22	-43	
γ Tauri	4.3	3.33	13.0	24 12.5	3 21.7	+ 9 36.0	+0.0482	0.5467	0.1025	+45	-21	
20 Tauri	4.1	3.33	13.0	24 6.6	3 38.6	+ 9 62.3	+0.1839	0.5467	0.1019	+53	-14	
21 Tauri	5.8	3.33	12.9	24 17.8	3 40.6	+ 9 54.2	-0.0156	0.5467	0.1018	+41	-24	
22 Tauri	6.5	+3.33	+12.9	+24 16.2	3 44.4	+ 9 57.9	+0.0196	0.5468	+0.1016	+43	-23	
23 Tauri	4.3	3.32	13.1	23 41.5	3 52.5	+10 5.7	+0.6616	0.5468	0.1013	+90	+11	
η Tauri	3.0	3.32	13.0	23 51.0	4 23.7	+10 35.9	+0.5419	0.5468	0.1002	+90	+4	
27 Tauri	3.7	3.31	12.9	23 48.1	5 9.1	+11 19.7	+0.6704	0.5470	0.0985	+90	+11	
28 Tauri	5.2	3.31	12.9	23 53.1	5 9.7	+11 20.3	+0.5808	0.5470	0.0985	+84	+7	
14 H. Tauri	5.3	+3.33	+12.3	+25 19.8	5 38.9	+11 48.5	-0.9416	0.5470	+0.0974	-14	-65	
36 Tauri	5.6	3.25	12.1	23 52.7	11 59.7	- 6 3.7	+1.2102	0.5478	0.0831	+87	-51	
p Tauri	5.0	3.27	10.8	26 15.9	14 52.0	- 3 17.4	-1.1816	0.5481	0.0765	-34	-64	
χ Tauri	5.3	3.22	10.4	25 26.1	20 9.2	+ 1 49.0	+0.1164	0.5486	+0.0643	+49	-14	
112 B. Aurigæ	5.7	2.95	5.3	26 52.4	23 5 37.1	+10 7.9	-0.6270	0.5473	-0.0143	+ 6	-54	
125 Tauri	5.1	+2.92	+ 5.4	+25 51.2	6 48.5	+11 16.8	+0.4822	0.5472	-0.0171	+75	+ 9	
139 Tauri	4.7	2.85	4.3	25 56.7	15 5.3	- 4 43.2	+0.1585	0.5456	0.0363	+52	- 9	
52 B. Geminorum	6.5	2.66	2.1	24 39.7	23 9 14.2	-11 10.8	+0.5514	0.5409	0.0768	+81	+7	
ε Geminorum	3.2	2.65	1.5	25 12.9	12 14.3	- 8 16.7	-0.3028	0.5400	0.0833	+25	-39	
87 B. Geminorum	5.8	2.59	1.5	23 42.1	16 2.2	- 4 36.3	+1.0445	0.5387	0.0913	+90	+36	
37 Geminorum	5.7	+2.61	+ 0.7	+25 28.9	17 33.4	- 3 8.1	-1.0709	0.5382	-0.0944	-24	-65	
ω Geminorum	5.2	2.56	+ 0.6	24 20.2	20 55.0	+ 0 6.9	-0.1289	0.5370	0.1013	+36	-31	
48 Geminorum	5.8	2.52	- 0.1	24 16.2	24 1 39.8	+ 4 42.4	-0.5594	0.5352	0.1109	+11	-57	
58 Geminorum	6.0	2.46	0.4	23 6.5	6 56.5	+ 9 48.8	+0.1177	0.5332	0.1213	+49	-20	
B. D.+23° 1744	6.4	2.42	1.0	23 4.0	11 26.8	- 9 49.4	-0.4031	0.5315	0.1298	+20	-49	
187 B. Geminorum	6.3	+2.40	- 1.5	+23 12.8	15 22.7	- 6 1.1	-1.0898	0.5300	-0.1370	-24	-67	
192 B. Geminorum	6.3	2.38	1.5	22 35.9	16 33.1	- 4 52.9	-0.5689	0.5294	0.1392	-10	-80	
SATURN	0.4	...	...	20 59.8	22 11.3	+ 0 34.6	+0.3942	0.5222	0.1484	+67	- 9
85 Geminorum	5.2	2.30	1.7	20 6.4	22 35.9	+ 0 58.5	+1.3212	0.5270	0.1498	+68	+63	
217 B. Geminorum	6.3	2.28	2.0	20 2.8	25 1 7.4	+ 3 25.4	+1.0029	0.5260	0.1541	+90	+36	
d ¹ Cancri	5.9	+2.18	- 3.1	+18 36.1	12 22.4	- 9 40.6	+0.7658	0.5215	-0.1723	+90	+ 8	
NEPTUNE	7.8	...	...	19 8.2	14 36.9	- 7 30.1	-0.2164	0.5192	0.1753	+30	-44
θ Cancri	5.5	2.15	3.6	18 22.7	16 31.3	- 5 39.1	+0.2856	0.5199	0.1785	+59	-14	
δ Cancri	4.2	2.12	4.5	18 27.8	23 10.0	+ 0 47.6	-1.0254	0.5174	0.1879	-17	-73	
X Cancri (var.)	6.2	2.08	4.7	+17 33.0	26 4 39.7	+ 6 7.4	-1.0689	0.5154	0.1952	-20	-73	
NEW MOON.												
78 B. Virginis	6.5	+1.85	-13.1	- 5 15.3	30 14 36.8	-10 57.4	-1.0618	0.5117	-0.2449	-23	-90	
γ Virginis	5.3	1.90	14.2	8 59.6	31 0 41.3	- 1 10.9	+0.4978	0.5158	0.2400	+69	-16	
370 B. Virginis	6.0	+1.97	-15.0	-11 11.8	31 11 5.1	+ 8 54.2	+0.3890	0.5210	-0.2329	+61	-22	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S				AT CONJUNCTION IN R. A.					Limiting Parallels.					
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>	
		$\Delta\alpha$	$\Delta\delta$		d	h	m							
69	Virginis	4.9	+2.12	-16.3	-15	32.6	1	3 21.6	+ 0 40.6	+1.3262	0.5307	-0.2174	+74	+46
75	Virginis	5.6	2.15	16.2	14	56.1		5 57.7	+ 3 11.6	+0.1215	0.5324	0.2144	+43	-36
83	Virginis	5.6	2.22	16.3	15	45.7		11 29.1	+ 8 32.3	-0.1719	0.5362	0.2076	+27	-52
86	Virginis	6.1	2.22	16.2	15	21.0		12 0.2	+ 9 2.4	-0.7131	0.5366	0.2069	- 2	-90
87	Virginis	5.8	2.24	16.8	17	26.7		12 50.9	+ 9 51.4	+1.3209	0.5371	0.2058	+73	+47
43	H. Virginis	5.5	+2.40	-16.6	-17	48.8	2	1 46.5	- 1 38.8	-0.8334	0.5466	-0.1867	-12	-90
231	G. Virginis	6.4	2.42	16.6	18	12.0		2 31.3	- 0 55.6	-0.5675	0.5472	0.1856	+ 4	-80
236	G. Virginis	5.7	2.43	16.7	18	19.9		3 14.1	- 0 14.2	-0.5611	0.5478	0.1844	+ 4	-79
9	G. Libræ	6.5	2.55	16.9	20	4.6		10 27.8	+ 6 44.4	-0.0232	0.5533	0.1719	+30	-43
17	G. Libræ	6.4	2.63	17.0	20	49.5		15 26.2	+11 32.4	-0.0734	0.5572	0.1626	+26	-46
18	G. Libræ	6.1	+2.64	-16.9	-20	58.7		15 53.4	+11 58.7	+0.0125	0.5575	-0.1618	+30	-42
43	B. Libræ	5.7	2.76	17.8	21	2.6		20 16.6	- 7 47.5	-0.6100	0.5609	0.1530	- 3	-85
47	G. Libræ	6.1	2.78	16.6	21	42.6	3	0 9.4	+ 4 3.1	-0.4931	0.5640	0.1450	+ 2	-75
64	G. Libræ	5.8	2.86	16.2	22	5.6		4 21.5	- 0 0.3	-0.6840	0.5671	0.1358	- 9	-90
153	B. Libræ	6.3	3.01	16.2	24	12.6		11 19.3	+ 6 42.1	+0.6168	0.5723	0.1198	-61	- 7
169	B. Libræ	6.0	+3.02	-15.6	-22	52.1		13 15.4	+ 8 33.8	-0.9973	0.5737	-0.1152	-31	-90
177	B. Libræ	6.2	3.03	15.5	22	52.8		13 53.7	+ 9 10.6	-1.0572	0.5742	0.1136	-35	-90
42	Libræ	5.0	3.05	15.7	23	33.0		14 15.9	+ 9 31.9	-0.4071	0.5744	0.1128	+ 3	-68
<i>b</i>	Scorpii	4.7	3.16	15.8	25	30.1		18 36.2	-10 17.6	+1.1400	0.5775	0.1020	+64	+31
<i>A</i>	Scorpii	4.6	3.18	15.5	25	4.9		19 40.6	+ 9 15.7	+0.5986	0.5782	0.0993	+58	- 8
31	B. Scorpii	5.4	+3.17	-15.2	-24	17.3		19 48.1	- 9 8.4	-0.2316	0.5783	-0.0990	+12	-56
32	B. Scorpii	5.3	3.16	15.0	23	44.0		19 49.4	- 9 7.2	-0.8060	0.5783	0.0989	-20	-90
3	Scorpii	5.9	3.18	15.4	25	0.0		20 6.0	- 8 51.3	+0.4726	0.5785	0.0982	+50	-16
40	B. Scorpii	5.4	3.21	15.0	24	35.6		21 41.3	- 7 19.5	-0.0984	0.5795	0.0941	+17	-48
π	Scorpii	3.0	3.23	15.5	25	52.7		21 46.8	- 7 14.3	+1.2147	0.5796	0.0940	+64	+41
48	B. Scorpii	4.9	+3.26	-15.2	-25	38.2		23 35.5	- 5 29.8	+0.7996	0.5807	-0.0892	+64	+ 4
50	B. Scorpii	6.4	3.25	14.7	24	30.0		23 50.0	- 5 15.9	-0.3913	0.5809	0.0886	+ 2	-67
24	G. Scorpii	6.2	3.27	14.4	24	14.5	4	1 25.2	- 3 44.4	-0.7930	0.5819	0.0844	-21	-90
65	B. Scorpii	5.5	3.31	15.0	26	6.4		1 29.6	- 3 40.2	+1.1175	0.5820	0.0842	+64	+29
41	G. Scorpii	6.3	3.31	14.0	24	12.7		3 46.1	- 1 29.0	-1.0139	0.5834	0.0781	-35	-90
85	B. Scorpii	6.0	+3.34	-14.3	-25	16.1		4 12.3	- 1 3.8	+0.0375	0.5836	-0.0770	+23	-40
σ	Scorpii	3.1	3.39	14.0	25	23.8		6 41.9	+ 1 20.0	-0.0150	0.5850	0.0702	+20	-43
α	Scorpii	1.2	3.47	13.7	26	15.0		9 55.6	+ 4 25.9	+0.6482	0.5868	0.0613	+59	- 5
22	Scorpii	4.8	3.45	13.2	24	56.1		10 15.6	+ 4 45.2	-0.7198	0.5870	0.0603	-18	-90
116	B. Scorpii	6.2	3.49	13.6	26	21.6		10 42.0	+ 5 10.6	+0.7131	0.5872	0.0591	+63	- 1
88	B. Ophiuchi	6.3	+3.67	-11.0	-24	58.1		21 50.3	- 8 7.9	-1.1882	0.5923	-0.0271	-54	-89
118	B. Ophiuchi	6.2	3.76	10.9	26	24.2	5	0 29.1	- 5 35.5	+0.2129	0.5933	0.0193	-27	-30
137	B. Ophiuchi	6.3	3.76	10.1	25	9.3		2 33.5	- 3 36.2	-1.0912	0.5939	0.0131	-47	-90
36	Ophi. (1st star)	5.4	3.79	11.0	26	29.0		3 45.2	- 2 27.4	+0.2471	0.5943	-0.0096	+28	-28
136	G. Ophiuchi	6.3	3.89	9.0	25	52.3		8 10.5	+ 1 47.0	-0.3871	0.5954	+0.0036	- 5	-67
151	G. Ophiuchi	6.0	+3.93	- 8.7	-26	12.5		10 0.5	+ 3 32.5	-0.0340	0.5958	+0.0092	+13	-44
4	G. Sagittarii	6.2	4.06	7.5	26	56.9		16 22.2	+ 9 38.6	+0.8339	0.5968	0.0284	+63	+ 7
63	Ophiuchi	6.1	4.04	6.1	24	52.4		18 51.1	-11 58.6	-1.1854	0.5970	0.0359	-54	-89
67	B. Sagittarii	6.4	4.21	4.1	25	38.3	6	3 53.6	- 3 18.4	+0.0365	0.5969	0.0631	-22	-40
70	B. Sagittarii	6.4	4.20	3.5	24	57.3		4 58.9	- 2 15.7	-0.5817	0.5968	0.0663	-10	-84
λ	Sagittarii	2.9	+4.26	- 3.2	-25	28.2		7 26.1	+ 0 5.4	+0.1088	0.5965	+0.0735	+26	-36
24	Sagittarii	5.7	4.24	2.0	24	5.8		9 42.8	+ 2 16.6	-1.0980	0.5962	0.0802	-42	-90
26	Sagittarii	6.1	4.28	1.1	23	54.8		12 45.7	+ 5 12.0	-1.0235	0.5966	0.0891	-35	-90
126	B. Sagittarii	5.7	4.34	- 1.2	25	5.8		13 52.9	+ 6 16.5	+0.2678	0.5963	0.0923	+36	-27
154	B. Sagittarii	5.9	4.33	+ 0.6	23	16.9		18 12.1	+10 25.1	-1.1284	0.5943	0.1047	-42	-90
162	B. Sagittarii	6.4	+4.40	+ 0.3	-24	59.4		19 4.4	+11 15.2	+0.6776	0.5940	+0.1071	+63	- 4
127	G. Sagittarii	6.4	4.42	0.5	25	5.6		19 52.2	-11 58.8	+0.8337	0.5938	0.1093	+65	+ 6
172	B. Sagittarii	5.8	4.42	0.6	24	57.8		20 39.9	-11 13.1	+0.8247	0.5935	0.1116	+65	+ 6
189	B. Sagittarii	6.1	4.44	1.4	24	47.3		22 53.9	- 9 4.5	+0.9055	0.5928	0.1177	+65	+11
191	B. Sagittarii	6.5	4.40	1.9	23	19.4		23 6.7	- 8 52.2	-0.5379	0.5927	0.1183	- 3	-79
208	B. Sagittarii	6.1	+4.47	+ 2.3	-24	19.4	7	1 44.0	- 6 21.3	+0.7826	0.5918	+0.1254	+66	+ 2

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Pa- ra- allels.		
Name.	Mag.	Red'ns from 1916.0.		Apparent Declina- tion.	Greenwich Mean Time.		Hour Angle, H	Y	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h							m	h	m
222 B. Sagittarii	5.5	+4.42	+ 3.5	-22 33.5	7	3 44.3	- 4 25.9	-0.7259	0.5911	+0.1309	-12	-90
49 Sagittarii	5.5	4.50	3.5	24 7.6		5 36.7	- 2 38.0	+1.0923	0.5903	0.1358	+66	+25
50 Sagittarii	5.5	4.43	4.3	21 56.6		5 57.7	- 2 17.8	-1.0445	0.5901	0.1367	-32	-90
253 B. Sagittarii	6.1	4.43	4.9	21 29.2		7 45.6	- 0 34.2	-1.2500	0.5894	0.1414	-51	-84
σ Capricorni	5.5	4.54	10.6	19 22.7	8	3 5.6	- 5 59.6	-0.1606	0.5798	0.1871	+23	-51
π Capricorni	5.2	+4.53	+11.7	-18 29.1		6 19.7	- 2 53.0	-0.4347	0.5780	+0.1938	+10	-69
ρ Capricorni	5.0	4.52	11.9	18 5.3		6 57.8	- 2 16.3	-0.7052	0.5776	0.1951	- 5	-90
\omicron Capricorni	5.6	4.55	11.8	18 51.5		7 22.6	- 1 52.5	+0.1421	0.5773	0.1959	+40	-34
υ Capricorni	5.3	4.56	13.0	18 25.9		11 33.2	+ 2 8.7	+0.5521	0.5750	0.2041	+64	-12
81 B. Capricorni	6.4	4.58	13.9	18 20.6		15 24.1	+ 5 50.8	+1.2626	0.5727	0.2112	+72	+39
94 B. Capricorni	5.7	+4.54	+15.2	-16 21.1		18 54.0	+ 9 12.9	+0.0311	0.5708	+0.2173	+37	-40
29 Capricorni	5.5	4.55	17.0	15 31.0	9	2 32.2	- 7 25.8	+0.9078	0.5664	0.2294	+74	+ 8
53 B. Aquarii	6.5	4.50	17.4	13 32.8		2 39.6	- 7 18.7	-1.0230	0.5663	0.2296	-20	-90
18 Aquarii	5.5	4.51	18.2	13 14.1		6 9.7	- 3 56.2	-0.5210	0.5644	0.2345	-10	-75
137 B. Capricorni	6.2	4.47	19.9	10 57.0		12 46.4	+ 2 26.3	-1.2143	0.5608	0.2430	-33	-90
λ Capricorni	5.5	+4.50	+20.4	-11 44.9		15 50.6	+ 5 23.9	+0.3314	0.5592	+0.2464	+57	-25
96 B. Aquarii	6.5	4.48	21.1	10 42.1		18 56.8	+ 8 23.5	+0.0598	0.5576	0.2497	+42	-39
θ Aquarii	4.3	4.45	23.1	8 11.7	10	5 15.3	- 5 39.6	+0.1852	0.5528	0.2585	+51	-32
ρ Aquarii	5.3	4.45	23.3	8 14.2		6 45.9	+ 4 12.2	+0.6178	0.5521	0.2595	+78	-10
170 B. Aquarii	6.0	4.44	23.6	7 36.8		8 16.0	- 2 45.1	+0.3859	0.5516	0.2605	+63	-22
186 B. Aquarii	6.1	+4.44	+24.1	- 6 58.7		11 45.7	+ 0 37.3	+0.6664	0.5501	+0.2625	+82	- 7
κ Aquarii	5.2	4.40	24.6	4 39.3		14 42.1	+ 3 27.7	-0.8801	0.5490	0.2639	- 6	-90
207 B. Aquarii	6.3	4.39	25.0	3 59.1		16 5.0	+ 4 47.7	-1.1855	0.5485	0.2645	-27	-90
6 G. Piscium	6.2	4.38	25.9	2 50.3	11	0 3.2	-11 30.1	-0.2150	0.5459	0.2669	+30	-54
22 B. Piscium	6.4	4.35	27.1	- 0 9.7		11 42.5	- 0 14.2	+0.2150	0.5429	0.2673	+54	-31
ι Piscium	4.9	+4.34	+27.1	+ 0 48.2		13 17.1	+ 1 17.3	-0.3351	0.5426	+0.2671	+25	-61
9 Piscium	6.4	4.34	27.2	0 40.1		13 26.0	+ 1 25.9	-0.1604	0.5426	0.2671	+34	-51
16 Piscium	5.7	4.33	27.5	1 38.6		17 41.2	+ 5 32.6	-0.0086	0.5418	0.2661	+42	-42
λ Piscium	4.6	4.33	27.5	1 19.5		20 19.2	+ 8 5.4	+1.0131	0.5414	0.2654	+90	+13
19 Piscium	5.4	4.32	27.6	3 1.7		22 20.5	+10 2.7	-0.1709	0.5412	0.2647	+33	-51
22 Piscium	5.8	+4.32	+27.8	+ 2 28.3	12	0 56.3	-11 26.6	+1.0788	0.5408	+0.2636	+90	+18
36 Piscium	6.2	4.30	27.7	7 46.9		12 25.8	+ 0 19.9	-1.3152	0.5401	0.2569	-40	-82
d Piscium	5.4	4.30	27.8	7 43.9		14 18.8	+ 1 29.4	-0.7827	0.5401	0.2555	+1	-82
136 B. Piscium	6.5	4.28	27.6	8 54.3		23 56.4	+10 48.0	+0.4402	0.5403	0.2472	+68	-17
75 Piscium	6.3	4.28	26.9	12 30.8	13	11 44.1	- 1 47.6	-0.4245	0.5412	0.2342	+20	-62
η Piscium	3.7	+4.28	+25.8	+14 55.2		23 15.8	+ 9 21.1	-0.3016	0.5428	+0.2188	+26	-53
101 Piscium	6.2	4.27	25.8	14 14.4	14	1 14.9	+11 16.2	+0.8370	0.5431	0.2159	+90	+ 9
105 Piscium	6.1	4.28	25.4	15 59.2		3 1.9	-11 0.3	-0.5966	0.5434	0.2133	+10	-70
3 Arietis	6.4	4.29	24.9	17 0.0		6 12.1	- 7 56.5	-0.9838	0.5440	0.2084	-14	-73
4 Arietis	5.8	4.28	25.0	16 32.7		6 56.2	- 7 13.9	-0.3574	0.5441	0.2072	-23	-55
τ Arietis	5.1	+4.28	+24.4	+17 24.9		11 8.0	- 3 10.5	-0.4112	0.5448	+0.2004	+20	-57
35 B. Arietis	6.4	4.27	24.0	17 51.4		14 2.2	- 0 22.1	-0.2994	0.5454	0.1955	+26	-50
47 B. Arietis	6.5	4.26	23.9	17 38.2		15 53.4	+ 1 25.3	+0.2905	0.5458	0.1923	+59	-18
20 H. Arietis	6.4	4.26	23.9	16 50.2		16 37.7	+ 2 8.1	+1.2701	0.5459	0.1910	+87	+46
15 Arietis	5.9	4.28	23.4	19 6.7		17 10.6	+ 2 39.8	-1.0101	0.5460	0.1901	-15	-71
θ Arietis	5.6	+4.28	+23.0	+19 31.2		20 35.2	+ 5 57.6	-0.8032	0.5466	+0.1839	- 2	-70
26 Arietis	6.2	4.26	23.0	19 29.4	15	2 15.2	+11 26.1	+0.2403	0.5478	0.1734	+56	-19
μ Arietis	5.7	4.24	21.6	19 39.6		7 32.8	- 7 27.3	+0.9523	0.5487	0.1631	+90	+22
ϵ Arietis (mean)	4.6	4.23	20.2	21 0.6		15 5.9	- 0 9.6	-0.6986	0.5501	0.1478	+90	+ 8
66 Arietis	6.1	4.20	17.7	22 31.2	16	4 7.2	-11 35.3	+0.8387	0.5520	0.1198	+90	+19
7 Tauri	5.9	+4.22	+16.9	+24 11.3		6 45.7	- 9 2.3	-0.6397	0.5523	+0.1140	+ 6	-62
11 Tauri	6.1	4.23	16.1	25 3.8		9 33.4	- 6 20.4	-1.2705	0.5526	0.1076	-50	-65
16 Tauri	5.4	4.19	16.1	24 1.8		11 21.4	- 4 36.2	-0.0288	0.5528	0.1036	+44	-22
17 Tauri	3.8	4.19	16.2	23 51.3		11 23.5	+ 4 34.2	+0.2214	0.5528	0.1035	+55	-13
18 Tauri	5.6	4.20	15.9	24 34.9		11 30.5	- 4 27.4	-0.5476	0.5528	0.1032	+11	-55
ζ Tauri	4.3	+4.20	+16.0	+24 12.6		11 32.0	- 4 26.0	-0.1451	0.5528	+0.1032	+34	-32

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S				AT CONJUNCTION IN R. A.					Limiting Parallels.			
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Y	x'	y'	N.	S.
		Δα	Δδ		d	h	m						h	m
		s	''	'	'	'					'	'
20 Tauri	4.1	+4.19	+16.0	+24 6.6	16 11 48.6	- 4 10.0	-0.0108	0.5528	+0.1025	+41	- 24	
21 Tauri	5.8	4.20	16.0	24 17.9	11 50.6	- 4 8.2	-0.2084	0.5528	0.1025	+30	-35	
22 Tauri	6.5	4.19	16.0	24 16.3	11 54.3	- 4 4.5	-0.1736	0.5528	0.1023	+32	-33	
23 Tauri	4.3	4.18	16.1	23 41.5	12 2.2	- 3 56.9	+0.4627	0.5528	0.1020	+73	0	
γ Tauri	3.0	4.18	16.0	23 51.0	12 32.8	- 3 27.3	+0.3438	0.5529	0.1009	+63	- 6	
104 B. Tauri	5.5	+4.16	+16.1	+23 10.1	12 56.3	- 3 4.6	+1.1172	0.5529	+0.1000	+90	+41	
27 Tauri	3.7	4.18	15.9	23 48.1	13 17.4	- 2 44.2	+0.4709	0.5529	0.0992	+73	0	
28 Tauri	5.2	4.18	15.8	23 53.1	13 18.0	- 2 43.7	+0.3820	0.5529	0.0991	+66	- 4	
14 H. Tauri	5.3	4.21	15.2	25 19.9	13 46.7	- 2 15.9	-1.1270	0.5530	0.0980	-30	-65	
36 Tauri	5.6	4.13	14.7	23 52.8	20 0.8	+ 3 45.1	+1.0040	0.5533	0.0836	+90	+34	
χ Tauri	5.3	+4.12	+12.7	+25 26.1	17 4 2.3	+11 29.8	-0.0824	0.5535	+0.0647	+37	-25	
κ Tauri	5.6	3.97	9.8	24 55.5	19 46.7	+ 2 41.1	+1.1999	0.5525	+0.0271	+87	+55	
118 Tauri	5.4	3.85	7.1	25 5.1	18 9 37.3	+ 7 57.0	+1.1752	0.5502	-0.0060	+90	+54	
112 B. Aurigæ	5.7	3.86	5.8	26 52.5	13 6.7	- 4 34.9	-0.8227	0.5495	0.0142	- 6	-63	
125 Tauri	5.1	3.82	6.0	25 51.2	14 17.5	- 3 26.5	+0.2807	0.5492	0.0170	+59	- 1	
139 Tauri	4.7	+3.74	+ 4.3	+25 56.7	22 31.0	+ 4 30.2	-0.0396	0.5470	-0.0361	+40	-20	
52 B. Geminorum	6.5	3.51	1.4	24 39.7	16 35.3	- 2 2.2	+0.3580	0.5410	0.0763	+65	- 3	
ε Geminorum	3.2	3.50	0.6	25 12.9	19 35.0	+ 0 51.6	-0.4918	0.5399	0.0827	+14	-50	
87 B. Geminorum	5.8	3.41	+ 0.4	23 42.1	23 22.5	+ 4 31.5	+0.8531	0.5384	0.0906	+90	+23	
37 Geminorum	5.7	3.44	- 0.4	25 28.9	20 0 53.6	+ 5 59.7	-1.2549	0.5378	0.0937	-47	-65	
ω Geminorum	5.2	+3.38	- 0.6	+24 20.2	4 15.0	+ 9 14.5	-0.3140	0.5365	-0.1005	+24	-41	
44 Geminorum	5.9	3.32	0.3	22 45.8	5 38.5	+10 35.3	+1.2834	0.5360	0.1034	+74	+60	
48 Geminorum	5.8	3.32	1.4	24 16.2	8 59.6	-10 10.1	-0.7406	0.5346	0.1100	0	-66	
δ Geminorum	3.5	3.23	1.3	22 8.3	12 41.4	- 6 35.5	+1.1997	0.5330	0.1172	+90	+47	
58 Geminorum	6.0	3.23	2.0	23 6.4	14 16.4	- 5 3.6	-0.0616	0.5324	0.1202	+37	-29	
149 B. Geminorum	6.4	+3.17	- 1.7	+21 42.2	15 55.6	- 3 27.5	+1.2906	0.5317	-0.1234	+75	+59	
B. D. +23° 1744	6.4	3.18	2.6	23 4.0	18 46.9	- 0 41.7	-0.5780	0.5305	0.1286	+10	-60	
187 B. Geminorum	6.3	3.15	3.3	23 12.8	22 42.9	+ 3 6.8	-1.2603	0.5288	0.1358	-44	-67	
192 B. Geminorum	6.3	3.12	3.3	22 35.9	23 53.4	+ 4 15.1	-0.7395	0.5283	0.1379	0	-67	
85 Geminorum	5.2	3.00	3.5	20 6.3	21 5 56.7	+10 7.0	+1.1522	0.5258	0.1485	+90	+38	
217 B. Geminorum	6.3	+2.97	- 3.9	+20 2.8	8 28.4	-11 26.1	+0.8370	0.5248	-0.1527	+90	+15	
SATURN	0.5	...	...	20 30.3	11 15.5	- 8 44.2	-0.1027	0.5199	0.1566	+36	-36
α ¹ Cancri	5.9	2.82	5.1	18 36.1	19 44.4	- 0 30.8	+0.6121	0.5203	0.1706	+85	0	
NEPTUNE	7.8	...	...	18 57.1	23 38.2	+ 3 15.9	-0.4510	0.5177	0.1761	+18	-58
θ Cancri	5.5	2.78	5.6	18 22.6	23 53.8	+ 3 30.9	+0.1376	0.5186	0.1768	+50	-25	
δ Cancri	4.2	+2.72	- 6.7	+18 27.7	23 6 33.0	+ 9 58.2	-1.1632	0.5163	-0.1861	-28	-72	
54 Cancri	6.3	2.63	6.1	15 39.7	9 50.5	-10 50.2	+1.3090	0.5150	0.1905	+82	+50	
χ Cancri (var.)	6.2	2.65	7.0	17 33.0	12 3.1	- 8 41.5	-1.1994	0.5144	0.1934	-31	-72	
ο ¹ Cancri	5.1	2.61	6.6	15 38.6	13 2.1	- 7 44.3	+0.7123	0.5141	0.1947	+90	+ 2	
ο ² Cancri	5.7	2.61	6.7	15 54.2	13 12.4	- 7 34.2	+0.3934	0.5140	0.1949	+66	-15	
VENUS	-3.9	...	...	+15 17.4	19 40.8	- 1 17.4	-0.2198	0.4666	-0.1937	+31	-48
81 Cancri	6.4	+2.51	- 7.3	+15 20.0	20 52.0	- 0 8.2	-0.5077	0.5117	0.2042	+15	-65	
π Cancri	5.6	2.52	7.7	15 17.3	22 22.5	+ 1 19.7	-0.7676	0.5113	0.2059	0	-75	
ξ Leonis	5.1	2.39	7.9	11 40.2	23 7 10.9	+ 9 52.6	+1.3555	0.5091	0.2154	+77	+53	
18 Leonis	5.8	2.35	8.8	12 11.7	14 48.3	- 6 43.2	-0.8912	0.5075	0.2227	- 6	-78	
19 Leonis	6.4	+2.34	- 8.8	+11 57.3	15 21.7	- 6 10.8	-0.7519	0.5075	-0.2232	+ 2	-78	
R Leonis (var.)	5-10	2.34	8.8	11 49.0	15 25.6	- 6 6.9	-0.6151	0.5074	0.2232	+ 9	-75	
83 B. Leonis	5.9	2.27	8.7	9 19.8	20 10.2	- 1 30.5	+1.0412	0.5067	0.2273	+90	+18	
43 Leonis	6.3	2.16	9.8	6 58.0	24 10 22.6	-11 42.4	+0.3145	0.5054	0.2374	+60	-24	
155 B. Leonis	6.5	2.13	9.6	+ 6 7.1	10 31.2	-11 34.1	+1.2056	0.5053	0.2375	+90	+30	
NEW MOON.												
43 H. Virginis	5.5	+2.18	-14.8	-17 48.8	29 7 26.5	+ 5 48.6	-0.6007	0.5522	-0.1871	- 2	-90	
231 G. Virginis	6.4	2.19	14.8	18 12.0	8 10.8	+ 6 31.3	-0.3951	0.5527	0.1859	+12	-66	
236 G. Virginis	5.7	+2.19	-14.9	-18 19.9	8 53.0	+ 7 12.2	-0.3879	0.5532	-0.1847	+13	-66	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.
SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limit- ing Par- allels.			
Name.	Mag.	Red'ns from 1916.0.		Apparent Declina- tion.	Greenwich Mean Time.			Hour Angle, H	Y	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
9 G. Libræ	6.5	+2.28	-15.0	20 4.5	29	16	0.9	- 9 55.0	+0.1567	0.5585	-0.1720	+39	-33
17 G. Libræ	6.4	2.34	15.0	20 49.5		20	55.9	- 5 10.5	+0.1127	0.5620	0.1626	+36	-36
18 G. Libræ	6.1	2.34	15.0	20 58.6		21	22.7	- 4 44.6	+0.1988	0.5623	0.1617	+40	-31
43 B. Libræ	5.7	2.46	16.1	21 2.6	30	1	43.2	- 0 33.5	-0.4168	0.5654	0.1529	+ 7	-68
47 G. Libræ	6.1	2.46	14.7	21 42.6		5	33.8	+ 3 8.7	-0.2965	0.5681	0.1448	+13	-60
64 G. Libræ	5.8	+2.51	-14.4	22 5.6		9	43.8	+ 7 9.4	-0.4831	0.5710	-0.1355	+ 2	-74
153 B. Libræ	6.3	2.63	14.4	24 12.5		16	38.9	-10 11.0	+0.8214	0.5755	0.1194	+66	+ 5
169 B. Libræ	6.0	2.64	13.9	22 52.0		18	34.3	- 8 19.9	-0.7889	0.5767	0.1147	-17	-90
177 B. Libræ	6.2	2.65	13.9	22 52.8		19	12.5	- 7 43.2	-0.8482	0.5771	0.1132	-21	-90
42 Libræ	5.0	+2.67	-14.0	23 33.0		19	34.6	- 7 22.0	-0.1986	0.5773	-0.1123	+14	-54

OCTOBER.

A Scorpïi	4.6	+2.77	-13.8	25 4.9	1	0	58.0	- 2 10.9	+0.8105	0.5804	-0.0988	+65	+ 5
31 B. Scorpïi	5.4	+2.76	-13.6	24 17.3		1	5.6	- 2 3.6	-0.0193	0.5805	-0.0984	+22	-43
32 B. Scorpïi	5.3	2.75	13.4	23 43.9		1	6.8	- 2 2.4	-0.5935	0.5805	0.0984	- 8	-84
3 Scorpïi	5.9	2.77	13.8	25 0.0		1	23.4	- 1 46.6	+0.6849	0.5807	0.0977	+63	- 3
40 B. Scorpïi	5.4	2.79	13.5	24 35.6		2	58.5	- 0 15.1	+0.1152	0.5816	0.0936	+29	-35
48 B. Scorpïi	4.9	2.84	13.6	25 38.1		4	52.6	+ 1 34.5	+1.0146	0.5826	0.0886	+64	+20
50 B. Scorpïi	6.4	+2.83	-13.2	24 30.0		5	7.0	+ 1 48.4	-0.1764	0.5827	-0.0880	+13	-53
24 G. Scorpïi	6.2	2.85	13.0	24 14.5		6	42.1	+ 3 19.8	-0.5772	0.5835	0.0838	- 8	-83
41 G. Scorpïi	6.3	2.88	12.6	24 12.7		9	3.1	+ 5 35.3	-0.7972	0.5846	0.0775	-21	-90
85 B. Scorpïi	6.0	2.91	12.8	25 16.1		9	29.2	+ 6 0.5	+0.2553	0.5849	0.0763	+35	-27
19 Scorpïi	4.9	2.92	12.2	23 58.3		11	47.0	+ 8 12.8	-1.2454	0.5859	0.0701	-58	-81
σ Scorpïi	3.1	+2.95	-12.6	25 23.7		11	59.0	+ 8 24.4	+0.2042	0.5860	-0.0696	+31	-30
α Scorpïi	1.2	3.02	12.4	26 15.0		15	13.0	+11 30.7	+0.8703	0.5873	0.0606	+64	+10
22 Scorpïi	4.8	3.00	11.9	24 56.1		15	33.1	+11 50.0	-0.5000	0.5875	0.0597	- 7	-76
116 B. Scorpïi	6.2	3.04	12.3	26 21.5		15	59.6	-11 44.6	+0.9359	0.5877	0.0585	+64	+14
88 B. Ophiuchi	6.3	3.20	10.1	24 58.1	2	3	11.3	- 0 59.6	-0.9665	0.5912	0.0266	-37	-90
26 Ophiuchi	5.8	+3.20	-10.0	24 51.9		3	15.8	- 0 55.3	-1.0746	0.5912	-0.0264	-45	-90
118 B. Ophiuchi	6.2	3.28	10.1	26 24.2		5	51.4	+ 1 34.2	+0.4408	0.5918	0.0189	+41	-17
137 B. Ophiuchi	6.3	3.29	9.3	25 9.3		7	56.9	+ 3 34.6	-0.8684	0.5922	0.0128	-32	-90
36 Ophi. (1st star)	5.4	3.31	10.4	26 29.0		9	9.2	+ 4 44.0	+0.4761	0.5924	0.0093	+43	-15
θ Ophiuchi	3.4	3.34	8.5	24 55.1		11	44.2	+ 7 12.7	-1.1357	0.5928	-0.0017	-51	-90
136 G. Ophiuchi	6.3	+3.40	- 8.4	25 52.3		13	37.3	+ 9 1.2	-0.1603	0.5929	+0.0039	+ 6	-52
151 G. Ophiuchi	6.0	3.44	8.2	26 12.5		15	28.7	+10 48.1	+0.1951	0.5931	0.0093	+26	-31
4 G. Sagittarii	6.2	3.56	7.1	26 56.9		21	55.5	- 7 0.7	+1.0696	0.5932	0.0283	+63	+26
63 Ophiuchi	6.1	3.55	5.9	24 52.4	3	0	26.7	- 4 35.6	-0.9636	0.5931	0.0357	-36	-90
67 B. Sagittarii	6.4	3.72	4.1	25 38.3		9	38.6	+ 4 14.0	+0.2668	0.5918	0.0623	+34	-27
70 B. Sagittarii	6.4	+3.72	- 3.6	24 57.3		10	45.2	+ 5 18.0	-0.3569	0.5916	+0.0655	+ 1	-65
λ Sagittarii	2.9	3.77	3.4	25 28.2		13	15.2	+ 7 42.0	+0.3393	0.5910	0.0726	+39	-23
24 Sagittarii	5.7	3.77	2.2	24 5.8		15	34.7	+ 9 55.9	-0.8791	0.5904	0.0791	-26	-90
117 B. Sagittarii	5.8	3.78	1.6	23 34.7		17	23.4	+11 40.2	-1.2574	0.5899	0.0842	-58	-79
26 Sagittarii	6.1	3.81	1.4	23 54.8		18	41.6	-11 4.7	-0.8050	0.5895	0.0878	-21	-90
126 B. Sagittarii	5.7	+3.86	- 1.6	25 5.8		19	50.3	- 9 58.7	+0.4985	0.5891	+0.0910	+51	-14
154 B. Sagittarii	5.9	3.87	+ 0.2	23 16.9	4	0	15.5	- 5 44.1	-0.9134	0.5876	0.1030	-26	-90
162 B. Sagittarii	6.4	3.94	- 0.2	24 59.4		1	9.0	- 4 52.7	+0.9112	0.5873	0.1054	+65	+12
127 G. Sagittarii	6.4	3.96	0.0	25 3.6		1	57.9	- 4 5.7	+1.0687	0.5870	0.1076	+65	+24
168 B. Sagittarii	6.3	3.99	+ 0.9	22 48.9		2	28.8	- 3 36.0	-1.1513	0.5867	0.1089	-44	-90
172 B. Sagittarii	5.8	+3.96	0.0	24 57.8		2	46.8	+ 3 18.7	+1.0594	0.5866	+0.1097	+65	+23
189 B. Sagittarii	6.1	3.99	+ 0.8	24 47.4		5	4.1	- 1 6.9	+1.1405	0.5857	0.1157	+65	+31
191 B. Sagittarii	6.5	3.94	1.3	23 19.4		5	17.3	- 0 54.1	-0.3190	0.5856	0.1163	+ 8	-62
208 B. Sagittarii	6.1	4.02	1.6	24 19.4		7	58.6	+ 1 40.8	+1.0150	0.5845	0.1232	+66	+19
222 B. Sagittarii	5.5	3.98	2.8	22 33.5		10	2.0	+ 3 30.3	-0.5119	0.5835	0.1285	- 1	-76
50 Sagittarii	5.5	+4.00	+ 3.6	21 56.6		12	18.9	+ 5 50.9	-0.8355	0.5824	+0.1342	-18	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.			
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
253 B. Sagittarii	6.1	+4.01	+ 4.2	-21 29.2	4	14	9.8	+ 7 37.5	-1.0448	0.5816	+0.1387	32	-90
σ Capricorni	5.5	4.18	9.6	19 22.7	5	10	3.6	+ 2 46.0	+0.0412	0.5710	0.1830	+34	-40
π Capricorni	5.2	4.18	10.7	18 29.1	13	23.6	+ 5 58.5	-0.2402	0.5691	0.1895	+20	-56	
ρ Capricorni	5.0	4.18	11.0	18 5.3	14	2.8	+ 6 36.3	-0.5152	0.5688	0.1907	+ 6	-75	
\circ Capricorni	5.6	4.21	10.8	18 51.5	14	28.4	+ 7 0.9	+0.3433	0.5685	0.1916	+51	-23	
47 B. Capricorni	6.2	+4.18	+12.0	-16 48.7	16	52.7	+ 9 19.9	-1.2563	0.5672	+0.1960	-45	-89	
ν Capricorni	5.3	4.24	11.9	18 25.9	18	46.7	+11 9.8	+0.7540	0.5661	0.1995	+72	- 1	
61 B. Capricorni	5.9	4.18	12.7	16 25.2	19	0.9	+11 23.4	-1.2286	0.5659	0.1999	-41	-90	
94 B. Capricorni	5.7	4.25	14.3	16 21.1	6	2 21.3	- 5 32.0	+0.2157	0.5618	0.2123	+46	-30	
95 B. Capricorni	5.9	4.21	14.8	14 48.2	2	49.0	- 5 5.3	-1.2466	0.5616	0.2130	-41	-90	
29 Capricorni	5.5	+4.29	+16.1	-15 31.0	10	13.7	+ 2 3.5	+1.0932	0.5577	+0.2241	+74	+21	
53 B. Aquarii	6.5	4.24	16.7	13 32.8	10	21.4	+ 2 10.9	-0.8652	0.5576	0.2243	-10	-90	
18 Aquarii	5.5	4.27	17.3	13 14.1	13	57.9	+ 5 39.8	-0.3619	0.5558	0.2291	-18	-63	
72 B. Aquarii	6.5	4.24	18.3	11 55.7	15	46.0	+ 7 24.0	-1.2651	0.5549	0.2314	-40	-90	
137 B. Capricorni	6.2	4.26	19.4	10 57.0	20	46.6	-11 45.7	-1.0766	0.5525	0.2374	-22	-90	
η Capricorni	5.5	+4.31	+19.8	-11 44.9	23	56.2	- 8 42.7	+0.4846	0.5510	+0.2408	+66	-16	
96 B. Aquarii	6.5	4.30	20.6	10 42.1	7	3 7.9	- 5 37.6	+0.2032	0.5497	0.2440	+50	-31	
θ Aquarii	4.3	4.33	22.9	8 11.7	13	43.6	+ 4 36.6	+0.3085	0.5456	0.2529	+58	-28	
ρ Aquarii	5.3	4.34	23.1	8 14.2	15	16.6	+ 6 4.4	+0.7434	0.5450	0.2539	+82	- 3	
170 B. Aquarii	6.0	4.34	23.5	7 36.8	16	49.1	+ 7 35.9	+0.5050	0.5445	0.2549	+71	-16	
186 B. Aquarii	6.1	+4.35	+24.0	- 6 58.7	20	24.2	+11 3.8	+0.7809	0.5434	+0.2570	+83	0	
κ Aquarii	5.2	4.32	24.9	4 39.3	23	24.9	-10 1.6	-0.7914	0.5426	0.2585	- 1	-90	
207 B. Aquarii	6.3	4.32	25.4	3 59.1	8	0 49.8	- 8 39.5	-1.1037	0.5422	0.2591	-21	-90	
6 G. Piscium	6.2	4.36	26.4	2 50.3	8	58.9	- 0 46.5	-0.1409	0.5403	0.2617	+34	-50	
22 B. Piscium	6.4	4.39	28.0	0 9.7	20	51.8	+10 43.0	+0.2639	0.5386	0.2626	+57	-28	
μ Piscium	4.9	+4.39	+28.2	+ 0 48.2	22	28.1	-11 43.8	-0.2955	0.5385	+0.2625	+26	-68	
9 Piscium	6.4	4.39	28.2	0 40.1	22	37.1	-11 35.1	-0.1195	0.5385	0.2625	+36	-48	
16 Piscium	5.7	4.40	28.7	1 38.6	9	2 56.4	- 7 24.2	+0.0226	0.5382	0.2618	+43	-40	
λ Piscium	4.6	4.41	28.7	1 19.5	5	36.8	- 4 49.0	+1.0459	0.5381	0.2612	+90	+16	
19 Piscium	5.4	4.42	29.1	3 1.7	7	39.9	- 2 49.9	-0.1533	0.5381	0.2605	+34	-50	
22 Piscium	5.8	+4.44	+29.2	+ 2 28.3	10	17.7	+ 0 17.2	+1.0992	0.5381	+0.2596	+90	+20	
36 Piscium	6.2	4.47	30.0	7 46.9	21	54.6	+10 57.0	-1.3412	0.5387	0.2536	-44	-81	
δ Piscium	5.4	4.48	30.0	7 43.9	23	48.5	-11 12.8	-0.8103	0.5389	0.2523	- 2	-82	
136 B. Piscium	6.5	4.52	29.9	8 54.3	10	9 29.6	- 1 50.7	+0.3937	0.5402	0.2446	+65	-19	
75 Piscium	6.3	4.59	29.7	12 30.9	21	18.9	+ 9 35.2	-0.5033	0.5425	0.2323	+15	-67	
η Piscium	3.7	+4.66	+28.8	+14 55.3	11	8 49.5	- 3 17.2	-0.4071	0.5452	+0.2174	+20	-59	
101 Piscium	6.2	4.66	28.7	14 14.4	10	48.1	+ 1 22.5	+0.7274	0.5457	0.2146	+90	+ 2	
105 Piscium	6.1	4.69	28.4	15 59.3	12	34.7	+ 0 20.6	-0.7105	0.5462	0.2120	+ 4	-74	
3 Arietis	6.4	4.71	28.1	17 0.0	15	44.0	+ 3 23.5	-1.1045	0.5470	0.2072	-23	-73	
4 Arietis	5.8	4.71	28.0	16 32.7	16	27.8	+ 4 5.8	-0.4798	0.5472	0.2061	+16	-62	
ζ Arietis	5.1	+4.73	+27.5	+17 24.9	20	38.0	+ 8 7.6	-0.5426	0.5483	+0.1994	+12	-65	
35 B. Arietis	6.4	4.74	27.1	17 51.5	23	31.1	+10 54.8	-0.4369	0.5491	0.1946	+18	-58	
47 B. Arietis	6.5	4.74	27.0	17 38.2	12	1 21.3	-11 18.8	+0.1482	0.5496	0.1915	+50	-25	
20 H. Arietis	6.4	4.74	26.8	16 50.3	2	5.3	-10 36.3	+1.1246	0.5498	0.1902	+90	+31	
15 Arietis	5.9	4.78	26.6	19 6.7	2	37.9	-10 4.8	-1.1528	0.5500	0.1893	-28	-71	
θ Arietis	5.6	+4.79	+26.2	+19 31.2	6	0.8	- 6 48.8	-0.9529	0.5508	+0.1832	-13	-70	
μ Arietis	6.2	4.80	25.4	19 29.4	11	37.6	+ 1 23.6	+0.0772	0.5523	0.1728	+46	-27	
26 Arietis	5.7	4.82	24.5	19 39.7	16	51.8	+ 3 39.8	+0.7768	0.5536	0.1626	+90	+11	
47 Arietis	5.8	4.84	23.3	20 20.3	23	49.6	+10 23.0	+1.1476	0.5552	0.1484	+90	+39	
ϵ Arietis (mean)	4.6	4.85	23.1	21 0.7	13	0 19.7	+10 52.2	+0.5102	0.5553	0.1474	+76	- 2	
66 Arietis	6.1	+4.88	+20.4	+22 31.3	13	10.9	- 0 43.6	+0.6280	0.5576	+0.1194	+88	+ 7	
7 Tauri	5.9	4.93	19.6	24 11.3	15	47.4	+ 1 47.3	-0.8473	0.5580	0.1136	- 7	-66	
16 Tauri	5.4	4.92	18.6	24 1.9	20	19.3	+ 6 9.6	-0.1888	0.5585	0.1031	+31	-34	
17 Tauri	3.8	4.91	18.7	23 51.3	20	21.3	+ 6 11.5	-0.0029	0.5585	0.1030	+42	-24	
18 Tauri	5.6	4.93	18.5	24 34.9	20	28.2	+ 6 18.3	-0.7623	0.5585	0.1028	- 2	-65	
q Tauri	4.3	+4.92	+18.6	+24 12.6	20	29.7	+ 6 19.7	-0.3620	0.5585	+0.1027	+22	-44	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					
Name.	Mag.	Red'n's from 1916.0.		Apparent Declination.	Greenwich Mean Time.	Hour Angle, <i>H</i>	Y	x'	y'	
		$\Delta\alpha$	$\Delta\delta$							
		s	"	'	d	h	m	h	m	
20 Tauri	4.1	+4.92	+18.6	+24 6.7	13	20 46.0	+ 6 35.4	-0.2287	0.5585	+0.1021
21 Tauri	5.8	4.93	18.5	24 17.9	20	48.0	+ 6 37.3	-0.4254	0.5585	0.1020
22 Tauri	6.5	4.92	18.5	24 16.3	20	51.7	+ 6 40.9	-0.3909	0.5585	0.1019
23 Tauri	4.3	4.91	18.6	23 41.6	20	59.5	+ 6 48.4	+0.2420	0.5585	0.1016
7 Tauri	3.0	4.91	18.4	23 51.1	21	29.7	+ 7 17.5	+0.1231	0.5586	0.1004
104 B. Tauri	5.5	+4.89	+18.5	+23 10.1	21	52.9	+ 7 39.9	+0.8919	0.5586	+0.0995
27 Tauri	3.7	4.91	18.3	23 48.2	22	13.7	+ 8 0.1	+0.2484	0.5587	0.0987
28 Tauri	5.2	4.91	18.2	23 53.2	22	14.3	+ 8 0.6	+0.1600	0.5587	0.0987
36 Tauri	5.6	4.89	16.8	23 52.8	14	4 51.5	- 9 36.3	+0.7696	0.5591	0.0831
χ Tauri	5.3	4.92	14.6	25 26.2	12	46.4	- 1 58.3	-0.3208	0.5590	0.0641
62 Tauri	6.1	+4.87	+14.8	+24 6.6	13	24.6	- 1 21.4	+1.1489	0.5590	+0.0620
k Tauri	5.6	4.82	11.0	24 55.5	15	4 18.4	-10 59.3	+0.9377	0.5576	+0.0264
118 Tauri	5.4	4.73	7.6	25 5.1	17	59.4	+ 2 12.9	+0.9012	0.5546	-0.0067
112 B. Aurigæ	5.7	4.76	6.2	26 52.5	21	26.6	+ 5 32.8	-1.0894	0.5535	0.0150
125 Tauri	5.1	4.72	6.2	25 51.2	22	36.7	+ 6 40.5	+0.0077	0.5532	0.0177
139 Tauri	4.7	+4.65	+ 4.2	+25 56.7	16	6 45.6	- 9 27.5	-0.3167	0.5505	-0.0368
5 Geminorum	5.9	4.54	3.2	24 26.4	12	53.2	- 3 32.5	+1.0666	0.5482	0.0508
52 B. Geminorum	6.5	4.42	+ 0.3	24 39.7	17	0 42.6	+ 7 52.9	+0.0705	0.5431	0.0767
e Geminorum	3.2	4.41	- 0.6	25 12.9	3	41.4	+10 45.8	-0.7777	0.5418	0.0830
87 B. Geminorum	5.8	4.31	0.9	23 42.1	7	28.0	- 9 35.2	+0.5620	0.5400	0.0908
ω Geminorum	5.2	+4.28	- 2.2	+24 20.1	12	19.5	- 4 53.3	-0.6029	0.5377	-0.1008
44 Geminorum	5.9	4.21	2.0	22 45.8	13	42.8	- 3 32.6	+0.9902	0.5370	0.1035
48 Geminorum	5.8	4.22	3.2	24 16.2	17	3.6	- 0 18.4	-1.0293	0.5354	0.1100
δ Geminorum	3.5	4.11	3.3	22 8.2	20	45.0	+ 3 15.8	+0.9065	0.5336	0.1171
58 Geminorum	6.0	4.12	4.0	23 6.4	22	19.9	+ 4 47.7	-0.3524	0.5328	0.1201
149 B. Geminorum	6.4	+4.04	- 3.8	+21 42.2	23	59.1	+ 6 23.7	+0.9974	0.5320	-0.1232
63 Geminorum	5.3	4.05	3.9	21 37.0	18	0 24.4	+ 6 48.3	+1.0408	0.5318	0.1240
B. D.+23° 1744	6.4	4.06	4.9	23 4.0	2	50.3	+ 9 9.5	-0.8679	0.5306	0.1284
192 B. Geminorum	6.3	3.99	5.7	22 35.8	7	57.0	- 9 53.5	-1.0289	0.5281	0.1375
79 Geminorum	6.3	3.91	5.2	20 31.0	8	51.2	- 9 1.0	+1.1460	0.5277	0.1390
85 Geminorum	5.2	+3.84	- 6.0	+20 6.3	14	0.8	- 4 1.1	+0.8621	0.5251	-0.1477
217 B. Geminorum	6.3	3.81	6.5	20 2.7	16	32.9	- 1 33.8	+0.5479	0.5239	0.1519
10 H. Cancri	6.1	3.76	6.6	19 4.7	18	31.6	+ 0 21.2	+1.3141	0.5230	0.1551
SATURN	0.4	...	...	20 10.6	23	4.8	+ 4 46.1	-0.6241	0.5191	0.1619
α^1 Cancri	5.9	3.63	8.0	18 36.0	19	3 51.2	+ 9 23.7	+0.3282	0.5188	0.1694
θ Cancri	5.5	+3.58	- 8.7	+18 22.6	8	1.6	-10 33.5	-0.1438	0.5170	-0.1754
NEPTUNE	7.7	...	...	18 50.3	8	45.8	- 9 56.0	-0.7834	0.5163	0.1763
54 Cancri	6.3	3.39	9.3	15 39.6	18	1.4	- 0 51.5	+1.0352	0.5131	0.1888
α^1 Cancri	5.1	3.37	9.8	15 38.6	21	14.1	+ 2 15.5	+0.4412	0.5120	0.1928
α^2 Cancri	5.7	3.37	10.0	15 54.1	21	24.4	+ 2 25.4	+0.1223	0.5119	0.1930
81 Cancri	6.4	+3.24	-10.7	+15 19.9	20	5 6.8	+ 9 54.2	-0.7718	0.5095	-0.2021
π Cancri	5.6	3.25	11.1	15 17.3	6	37.8	+11 22.7	-1.0302	0.5090	0.2037
ξ Leonis	5.1	3.08	11.2	11 40.2	15	29.6	+ 4 1.0	+1.1051	0.5067	0.2130
18 Leonis	5.8	3.01	12.2	12 11.6	23	9.8	+ 3 26.1	-1.1328	0.5052	0.2201
19 Leonis	6.4	3.00	12.2	11 57.2	23	43.4	+ 3 58.8	-0.9925	0.5051	0.2206
R Leonis (var.)	5-10	+3.00	-12.2	+11 48.9	23	47.4	+ 4 2.6	-0.8555	0.5051	-0.2206
83 B. Leonis	5.9	2.90	12.0	9 19.7	21	4 33.7	+ 8 40.8	+0.8092	0.5044	0.2246
89 B. Leonis	6.2	2.89	11.9	8 42.7	5	28.2	+ 9 33.8	+1.2798	0.5043	0.2253
π Leonis	4.9	2.87	12.0	8 26.7	6	35.5	+10 39.2	+1.3192	0.5042	0.2262
43 Leonis	6.3	2.74	13.0	6 58.0	18	50.5	- 1 26.7	+0.1067	0.5035	0.2346
155 B. Leonis	6.5	+2.72	-12.7	+ 6 7.0	18	59.1	- 1 18.3	+0.9983	0.5035	-0.2347
35 Sextantis	6.1	2.63	13.4	5 11.1	22	5 47.3	+ 9 11.6	-0.5563	0.5039	0.2404
p^4 Leonis	5.7	2.48	13.8	2 24.5	18	26.3	- 2 31.1	-0.6179	0.5058	0.2449
p^5 Leonis	5.3	2.45	13.5	0 23.0	22	4.9	+ 1 1.3	+0.6723	0.5066	0.2457
359 B. Leonis	6.3	2.42	14.0	+ 0 35.4	23	3 8.6	+ 5 56.4	-0.7948	0.5080	0.2465
388 B. Leonis	6.3	+2.39	-13.7	- 1 14.5	5	34.7	+ 8 18.3	+0.5730	0.5086	-0.2467

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.
OCTOBER.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.			
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
B. Leonis	6.2	+2.35	-13.9	1 58.5	23	11	6.5	-10 19.5	-0.0049	0.5105	-0.2469	+41	-42
B. Virginis	6.5	2.24	14.2	5 15.4	24	5	38.6	+ 7 39.7	-1.0548	0.5186	0.2435	-18	-90
NEW MOON.													
B. Scorpii	5.4	+2.59	-11.8	24 35.6	28	9	30.4	+ 8 4.4	+0.2856	0.5898	-0.0929	+38	-26
B. Scorpii	4.9	2.63	11.8	25 38.1		11	21.9	+ 9 51.5	+1.1795	0.5908	0.0879	+64	+37
B. Scorpii	6.4	2.62	11.6	24 29.9		11	36.0	+10 5.0	+0.0008	0.5909	0.0873	+22	-42
B. Scorpii	5.7	2.61	11.3	23 22.9		12	28.4	+10 55.3	-1.2128	0.5913	0.0849	-53	-87
G. Scorpii	6.2	2.63	11.4	24 14.5		13	9.0	+11 34.3	-0.3932	0.5917	0.0831	+ 1	-67
G. Scorpii	5.8	+2.62	-11.2	23 27.9		13	29.8	+11 54.2	-1.2125	0.5919	-0.0821	-53	-87
G. Scorpii	6.3	2.65	11.1	24 12.7		15	26.8	-10 13.4	-0.6071	0.5928	0.0767	-11	-86
B. Scorpii	6.0	2.67	11.2	25 16.1		15	52.3	- 9 48.9	+0.4357	0.5930	0.0755	+46	-17
Scorpii	4.9	2.68	10.7	23 58.2		18	7.2	- 7 39.4	-1.0465	0.5940	0.0692	-39	-90
Scorpii	3.1	2.70	11.0	25 23.7		18	18.8	- 7 28.3	+0.3893	0.5940	0.0687	+42	-20
Scorpii	1.2	+2.76	-10.7	26 15.0		21	28.7	- 4 26.1	+1.0544	0.5953	-0.0597	+64	+24
Scorpii	4.8	2.74	10.4	24 56.0		21	48.3	- 4 7.2	-0.3023	0.5954	0.0587	+ 4	-60
B. Scorpii	6.2	2.76	10.7	26 21.5		22	14.3	- 3 42.3	+1.1206	0.5956	0.0575	+64	+30
B. Scorpii	6.1	2.78	9.7	24 18.5	29	2	11.9	+ 0 5.6	-1.1671	0.5969	0.0460	-51	-90
B. Ophiuchi	6.3	2.88	8.8	24 58.1		9	12.4	+ 6 48.9	-0.7472	0.5985	0.0254	-23	-90
Ophiuchi	5.8	+2.88	- 8.8	24 51.9		9	16.8	+ 6 53.1	-0.8543	0.5986	-0.0252	-30	-90
B. Ophiuchi	6.2	2.94	8.7	26 24.2		11	49.4	+ 9 19.6	+0.6517	0.5989	0.0176	+57	- 4
B. Ophiuchi	6.3	2.95	8.1	25 9.3		13	52.7	+11 17.8	-0.6436	0.5992	0.0115	-18	-90
Ophi. (1st star)	5.4	2.96	9.2	26 29.0		15	3.7	-11 34.1	+0.6915	0.5993	0.0079	+60	- 2
Ophiuchi	3.4	2.98	7.4	24 55.1		17	36.0	- 9 8.1	-0.9039	0.5994	-0.0003	-35	-90
G. Ophiuchi	6.3	+3.03	- 7.3	25 52.3		19	27.2	- 7 21.5	+0.0662	0.5995	+0.0052	+18	-38
G. Ophiuchi	6.0	3.06	7.1	26 12.5		21	16.7	- 5 36.5	+0.4212	0.5994	0.0107	+39	-18
Ophiuchi	6.1	3.15	5.1	24 52.4	30	6	6.7	+ 2 51.8	-0.7187	0.5985	0.0371	-21	-90
Sagittarii	5.5	3.18	4.4	24 17.0		9	9.2	+ 5 46.8	-1.1879	0.5979	0.0461	-53	-89
Sagittarii	6.0	3.19	4.3	24 21.9		9	32.5	+ 6 9.2	-1.0880	0.5978	0.0472	-44	-90
B. Sagittarii	6.4	+3.29	- 3.6	25 38.3		15	11.9	+11 34.8	+0.5140	0.5962	+0.0637	+50	-12
B. Sagittarii	6.4	3.29	3.1	24 57.3		16	17.8	-11 22.0	-0.1053	0.5959	0.0668	+15	-48
Sagittarii	2.9	3.33	2.9	25 28.2		18	46.3	- 8 59.5	+0.5899	0.5950	0.0739	+56	- 8
Sagittarii	5.7	3.33	1.9	24 5.8		21	4.6	- 6 46.8	-0.6208	0.5941	0.0804	-11	-88
B. Sagittarii	5.8	3.34	1.3	23 34.7		22	52.4	- 5 3.4	-0.9961	0.5934	0.0854	-34	-90
Sagittarii	6.1	+3.37	- 1.2	23 54.8	31	0	10.0	- 3 49.0	-0.5446	0.5928	+0.0890	- 6	-80
B. Sagittarii	5.7	3.41	- 1.3	25 5.8		1	18.2	- 2 43.5	+0.7550	0.5923	0.0921	+65	+ 2
Sagittarii	5.0	3.40	+ 0.2	22 51.0		4	58.8	+ 0 48.2	-1.1596	0.5905	0.1021	-46	-90
Sagittarii	5.1	3.41	0.3	22 46.6		5	21.0	+ 1 9.6	-1.1946	0.5904	0.1031	-49	-90
B. Sagittarii	5.9	3.42	+ 0.2	23 16.9		5	41.7	+ 1 29.4	-0.6487	0.5902	0.1040	-10	-90
B. Sagittarii	6.4	+3.48	- 0.2	24 59.4		6	35.0	+ 2 20.7	+1.1711	0.5897	+0.1064	+65	+35
B. Sagittarii	6.3	3.44	+ 0.9	22 48.9		7	54.4	+ 3 36.9	-0.8846	0.5890	0.1098	-24	-90
B. Sagittarii	6.5	3.49	1.2	23 19.4		10	42.2	+ 6 18.1	-0.0526	0.5875	0.1171	+22	+45
B. Sagittarii	6.1	3.56	1.5	24 19.4		13	23.0	+ 8 52.5	+1.2807	0.5860	0.1239	+66	+52
B. Sagittarii	5.5	3.53	2.6	22 33.5		15	26.2	+10 50.8	-0.2424	0.5848	0.1291	+13	-56
Sagittarii	5.5	+3.55	+ 3.2	21 56.6		17	43.0	-10 57.7	-0.5646	0.5834	+0.1347	- 3	-81
B. Sagittarii	6.1	+3.56	+ 3.8	21 29.2		19	33.8	- 9 11.2	-0.7730	0.5823	+0.1391	-14	-90

NOVEMBER.

Capricorni	5.5	+3.73	+ 8.8	-19 22.8	1	15	32.2	+10 2.0	+0.3183	0.5691	+0.1821	+49	-24
Capricorni	5.2	3.75	9.8	18 29.1		18	53.9	-10 43.8	+0.0360	0.5668	0.1884	+34	-40
Capricorni	5.0	3.74	10.0	18 5.4		19	33.5	-10 5.6	-0.2399	0.5664	0.1896	+20	-56
Capricorni	5.6	3.77	9.8	18 51.6		19	59.3	- 9 40.7	+0.6215	0.5661	0.1904	+68	- 8
B. Capricorni	6.2	3.75	11.0	16 48.7		22	25.0	- 7 20.3	-0.9844	0.5645	0.1947	-21	-90
Capricorni	5.3	+3.80	+10.9	-18 25.9	2	0	20.2	- 5 29.3	+1.0336	0.5632	+0.1879	+72	+18

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
61 B. Capricorni	5.9	+3.76	+11.7	-16 25.2	2 0 34.5	- 5 15.6	-0.9573	0.5630	+0.1983	-19	-90
94 B. Capricorni	5.7	3.84	13.1	16 21.1	8 0 3+	+ 1 54.3	+0.4914	0.5581	0.2102	+63	-15
95 B. Capricorni	5.9	3.80	13.8	14 48.3	8 28.4	+ 2 21.4	-0.9791	0.5578	0.2109	-19	-90
53 B. Aquarii	6.5	3.86	15.6	13 32.8	16 7.6	+ 9 44.3	-0.6004	0.5531	0.2215	+ 5	-82
18 Aquarii	5.5	3.89	16.4	13 14.1	19 47.6	-10 43.0	-0.0964	0.5509	0.2261	+32	-47
72 B. Aquarii	6.5	+3.87	+17.1	-11 55.7	21 37.5	- 8 56.9	-1.0077	0.5499	+0.2283	-18	-90
137 B. Capricorni	6.2	3.90	18.3	10 57.0	3 2 43.6	- 4 1.4	-0.8228	0.5471	0.2339	- 7	-90
λ Capricorni	5.5	3.95	18.5	11 44.9	5 56.9	+ 0 54.6	+0.7481	0.5454	0.2371	+78	- 2
96 B. Aquarii	6.5	3.96	19.4	10 42.1	9 12.4	+ 2 14.3	+0.4610	0.5438	0.2401	+65	-17
θ Aquarii	4.3	4.02	21.8	8 11.8	20 1.8	-11 17.9	+0.5540	0.5392	0.2483	+74	-13
ρ Aquarii	5.3	+4.04	+22.0	- 8 14.2	21 36.8	- 9 45.8	+0.9910	0.5386	+0.2493	+82	+13
170 B. Aquarii	6.0	4.04	22.4	7 36.8	23 11.4	- 8 14.4	+0.7480	0.5380	0.2502	+82	- 2
186 B. Aquarii	6.1	4.07	23.0	6 58.7	4 2 51.4	- 4 41.4	+1.0212	0.5368	0.2521	+83	+15
κ Aquarii	5.2	4.05	24.1	4 39.3	5 56.4	- 1 42.5	-0.5724	0.5359	0.2535	+11	-78
207 B. Aquarii	6.3	4.06	24.6	3 59.1	7 23.3	- 0 18.4	-0.8905	0.5354	0.2540	- 7	-90
6 G. Piscium	6.2	+4.13	+25.7	- 2 50.3	15 44.1	+ 7 46.3	+0.0674	0.5334	+0.2564	+45	-38
22 B. Piscium	6.4	4.21	27.6	0 9.7	5 3 54.4	- 4 26.8	+0.4519	0.5318	0.2571	+69	-18
κ Piscium	4.9	4.22	27.8	+ 0 48.2	5 33.0	- 2 51.3	-0.1175	0.5317	0.2569	+35	-48
9 Piscium	6.4	4.22	27.9	0 40.1	5 42.2	- 2 42.4	+0.0602	0.5317	0.2569	+45	-38
16 Piscium	5.7	4.25	28.5	1 38.6	10 7.8	+ 1 34.8	+0.1939	0.5315	0.2562	+52	-31
λ Piscium	4.6	+4.27	+28.3	+ 1 19.5	12 52.1	+ 4 13.9	+1.2226	0.5315	+0.2556	+90	+30
19 Piscium	5.4	4.29	29.0	3 1.7	14 58.0	+ 6 15.8	+0.0049	0.5315	0.2550	+42	-41
22 Piscium	5.8	4.32	29.0	2 28.3	17 39.6	+ 8 52.3	+1.2649	0.5316	0.2541	+90	+35
36 Piscium	6.2	4.41	30.5	7 46.9	6 5 32.3	- 3 37.6	-1.2317	0.5327	0.2483	+31	-82
d Piscium	5.4	4.44	30.5	7 43.9	7 28.7	- 1 44.9	-0.7000	0.5330	0.2470	+ 5	-82
136 B. Piscium	6.5	+4.52	+30.6	+ 8 54.3	17 21.8	+ 7 49.3	+0.4908	0.5349	+0.2396	+72	-14
75 Piscium	6.3	4.66	30.8	12 30.9	7 5 24.1	- 4 31.8	-0.4471	0.5381	0.2277	+18	-63
η Piscium	3.7	4.80	30.3	14 55.3	17 5.5	+ 6 46.6	-0.3810	0.5418	0.2134	+21	-57
101 Piscium	6.2	4.81	30.0	14 14.4	19 5.8	+ 8 42.9	+0.7568	0.5425	0.2107	+90	+ 5
105 Piscium	6.1	4.85	30.0	15 59.3	20 53.8	+10 27.4	-0.6968	0.5431	0.2081	+ 4	-74
3 Arietis	6.4	+4.90	+29.8	+17 0.1	8 0 5.5	-10 27.2	-1.1018	0.5442	+0.2035	-23	-73
4 Arietis	5.8	4.90	29.7	16 32.8	0 49.9	- 9 44.3	-0.4747	0.5445	0.2024	+16	-62
τ Arietis	5.1	4.95	29.3	17 25.0	5 3.0	- 5 39.6	-0.5488	0.5460	0.1959	+12	-65
35 B. Arietis	6.4	4.98	28.9	17 51.5	7 57.8	- 2 50.7	-0.4499	0.5470	0.1912	+17	-59
47 B. Arietis	6.5	4.99	28.7	17 38.3	9 49.2	- 1 3.0	+0.1341	0.5477	0.1882	+49	-26
20 H ¹ . Arietis	6.4	+4.99	+28.4	+16 50.3	10 33.6	- 0 20.2	+1.1144	0.5480	+0.1870	+90	+31
15 Arietis	5.9	5.03	28.6	19 6.7	11 6.5	+ 0 11.6	-1.1781	0.5482	0.1860	-31	-71
θ Arietis	5.6	5.06	28.2	19 31.3	14 31.2	+ 3 29.5	-0.9854	0.5494	0.1802	+15	-70
26 Arietis	6.2	5.12	27.2	19 29.4	20 10.6	+ 8 57.3	+0.0360	0.5514	0.1700	+44	-29
μ Arietis	5.7	5.16	26.3	19 39.7	9 1 26.8	- 9 57.5	+0.7254	0.5532	0.1600	+90	+ 9
47 Arietis	5.8	+5.24	+25.1	+20 20.4	8 26.6	- 3 12.1	+1.0797	0.5553	+0.1460	+90	+33
ϵ Arietis (mean)	4.6	5.24	25.0	21 0.7	8 56.8	- 2 42.9	+0.4388	0.5555	0.1450	+70	- 5
66 Arietis	6.1	5.36	22.2	22 31.3	21 49.7	+ 9 43.0	+0.5260	0.5589	0.1174	+77	+ 2
7 Tauri	5.9	5.43	21.6	24 11.4	10 0 26.2	-11 46.2	-0.9581	0.5594	0.1115	-15	-66
16 Tauri	5.4	5.44	20.4	24 1.9	4 58.0	- 7 23.9	-0.3084	0.5603	0.1012	+24	-40
17 Tauri	3.8	+5.44	+20.4	+23 51.3	5 0.0	- 7 22.0	-0.1165	0.5603	+0.1012	+35	-30
18 Tauri	5.6	5.46	20.4	24 34.9	5 6.9	- 7 15.3	-0.8831	0.5603	0.1009	-10	-65
q Tauri	4.3	5.45	20.4	24 12.6	5 8.4	- 7 13.9	-0.4822	0.5603	0.1008	+14	-51
20 Tauri	4.1	5.45	20.3	24 6.7	5 24.7	- 6 58.1	-0.3493	0.5603	0.1002	+22	-43
21 Tauri	5.8	5.46	20.3	24 17.9	5 26.7	- 6 56.2	-0.5463	0.5603	0.1001	+11	-55
22 Tauri	6.5	+5.45	+20.3	+24 16.3	5 30.4	- 6 52.6	-0.5119	0.5603	+0.1000	+13	-53
23 Tauri	4.3	5.44	20.3	23 41.6	5 38.2	- 6 45.1	+0.1216	0.5604	0.0997	+49	-17
η Tauri	3.0	5.44	20.2	23 51.1	6 8.3	- 6 16.1	+0.0014	0.5604	0.0985	+42	-24
104 B. Tauri	5.5	5.42	20.1	23 10.2	6 31.5	- 5 53.7	+0.7704	0.5605	0.0976	+90	+18
27 Tauri	3.7	5.44	20.0	23 48.2	6 52.3	- 5 33.7	+0.1253	0.5606	0.0968	+49	-17
28 Tauri	5.2	+5.44	+20.0	+23 53.2	6 52.9	- 5 33.1	+0.0367	0.5606	+0.0968	+44	-21

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.			
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h	m						
36 Tauri	5.6	+5.47	+18.3	+23 52.8	10	13	29.4	+0 49.4	+0.6327	0.5614	+0.0813	+89	+12
χ Tauri	5.3	5.55	16.1	25 26.2	21	22.9	+ 8 26.0	-0.4746	0.5618	0.0624	+15	-47	
62 Tauri	6.1	5.50	16.0	24 6.6	22	1.0	+ 9 2.8	+0.9940	0.5613	0.0609	+90	+36	
315 B. Tauri	6.3	5.52	12.1	24 27.7	11	12 1.7	- 1 26.3	+1.2337	0.5610	0.0266	+82	+59	
k Tauri	5.6	5.54	11.8	24 55.5	12	50.7	- 0 39.1	+0.7533	0.5608	+0.0246	+90	+24	
118 Tauri	5.4	+5.51	+ 7.8	+25 5.1	18	2 26.9	-11 31.8	+0.6925	0.5581	-0.0084	+90	+22	
125 Tauri	5.1	5.52	6.3	25 51.2	7	2.6	- 7 5.7	-0.2076	0.5568	0.0194	+30	-27	
132 Tauri	5.0	5.44	5.4	24 32.5	11	10.4	- 3 6.7	+1.1243	0.5554	0.0292	+90	+48	
139 Tauri	4.7	5.48	3.9	25 56.7	15	8.5	+ 0 43.2	-0.5445	0.5540	0.0384	+11	-50	
5 Geminorum	5.9	5.38	2.5	24 26.4	21	13.9	+ 6 36.0	+0.8275	0.5515	0.0524	+90	+25	
8 Geminorum	6.1	+5.34	+ 2.0	+23 59.9	23	23.6	+ 8 41.2	+1.1941	0.5508	-0.0573	+89	+53	
52 B. Geminorum	6.5	5.30	0.9	24 39.7	13	8 59.5	- 6 2.3	-0.1836	0.5461	0.0783	+31	-32	
e Geminorum	3.2	5.30	1.9	25 12.9	11	57.5	- 3 10.3	-1.0347	0.5446	0.0846	-22	-65	
87 B. Geminorum	5.8	5.20	2.6	23 42.1	15	43.0	+ 0 27.7	+0.2987	0.5426	0.0924	+60	- 8	
ω Geminorum	5.2	5.18	4.0	24 20.1	20	33.4	+ 5 8.6	-0.8710	0.5401	0.1021	- 9	-66	
44 Geminorum	5.9	+5.10	- 4.0	+22 45.8	21	56.4	+ 6 28.9	+0.7191	0.5394	-0.1049	+90	+14	
δ Geminorum	3.5	5.01	5.6	22 8.2	4	57.4	-10 44.0	+0.6279	0.5355	0.1184	+88	+ 7	
58 Geminorum	6.0	5.03	6.3	23 6.4	6	32.1	- 9 12.3	-0.6320	0.5347	0.1213	+ 6	-63	
149 B. Geminorum	6.4	4.94	6.3	21 42.2	8	11.1	- 7 36.6	+0.7156	0.5337	0.1243	+90	+11	
63 Geminorum	5.3	4.95	6.5	21 37.0	8	36.4	- 7 12.0	+0.7585	0.5335	0.1251	+90	+14	
B. D.+23° 1744	6.4	+4.98	- 7.4	+23 3.9	11	2.0	+ 4 51.1	-1.1520	0.5322	-0.1295	-31	-67	
79 Geminorum	6.3	4.82	8.1	20 31.0	17	2.6	+ 0 58.1	+0.8563	0.5288	0.1399	+90	+18	
85 Geminorum	5.2	4.75	9.2	20 6.2	22	12.3	+ 5 58.1	+0.5684	0.5260	0.1485	+80	0	
217 B. Geminorum	6.3	4.72	9.7	20 2.7	15	0 44.5	+ 8 25.6	+0.2522	0.5246	0.1526	+56	-17	
10 H. Cancri	6.1	4.66	9.9	19 4.6	2	43.3	+10 20.7	+1.0176	0.5235	0.1557	+90	+26	
SATURN	0.3	...	...	+20 6.9	8	21.7	- 8 11.2	-1.0337	0.5210	-0.1644	-19	-70
d^1 Cancri	5.9	+4.54	-11.7	18 36.0	12	4.3	- 4 35.3	+0.0254	0.5186	0.1696	+43	-31	
d^2 Cancri	6.2	4.48	11.6	17 19.2	13	20.9	- 3 21.1	+1.2236	0.5180	0.1714	+90	+42	
6 Cancri	5.5	4.48	12.5	18 22.5	16	15.7	- 0 31.5	-0.4494	0.5166	0.1754	+17	-58	
NEPTUNE	7.7	...	...	18 49.2	17	9.2	+ 0 20.4	-1.0994	0.5164	0.1767	-24	-71
54 Cancri	6.3	+4.28	-13.4	+15 39.6	16	2 18.5	+ 9 13.4	+0.7290	0.5119	-0.1833	+90	+ 4	
o^1 Cancri	5.1	4.25	14.0	15 38.5	5	32.5	-11 38.3	+0.1330	0.5105	0.1922	+49	-28	
o^2 Cancri	5.7	4.26	14.1	15 54.0	5	42.9	-11 28.3	-0.1868	0.5105	0.1924	+31	-45	
81 Cancri	6.4	4.11	15.1	15 19.9	13	28.7	- 3 56.0	-1.0842	0.5074	0.2010	-21	-75	
π Cancri	5.6	4.12	15.6	15 17.2	15	0 8	+ 2 26.7	-1.3435	0.5069	0.2027	-51	-72	
ξ Leonis	5.1	+3.93	-15.7	+11 40.1	23	57.2	+ 6 14.5	+0.8005	0.5041	-0.2115	+90	+ 5	
σ Leonis	3.8	3.84	15.9	10 16.2	17	4 54.7	+11 3.6	+1.2819	0.5028	0.2158	+90	+41	
19 Leonis	6.4	3.85	17.0	11 57.2	8	16.4	- 9 40.4	-1.3023	0.5020	0.2186	-41	-78	
R Leonis (var.)	5-10	3.85	17.0	11 48.9	8	20.5	- 9 36.4	-1.1648	0.5020	0.2187	-27	-78	
83 B. Leonis	5.9	3.74	16.7	9 19.6	13	10.1	- 4 54.9	+0.5097	0.5011	0.2224	+73	-12	
89 B. Leonis	6.2	+3.72	-16.6	+ 8 42.6	14	5.2	- 4 1.4	+0.9828	0.5009	-0.2231	+90	+15	
π Leonis	4.9	3.70	16.6	8 26.6	15	13.3	- 2 55.2	+1.0232	0.5007	0.2239	+90	+17	
43 Leonis	6.3	3.54	17.7	6 57.9	18	3 37.8	+ 9 8.5	-0.1852	0.4995	0.2318	+32	-50	
155 B. Leonis	6.5	3.52	17.4	6 7.0	3	46.6	+ 9 17.1	+0.7109	0.4995	0.2319	+90	- 3	
35 Sextantis	6.1	3.41	18.2	5 11.0	14	43.6	- 4 4.2	-0.8398	0.4997	0.2372	- 3	-85	
p^4 Leonis	5.7	+3.23	-18.4	+ 2 24.4	19	3 33.2	+ 8 23.9	-0.8845	0.5014	-0.2413	- 6	-88	
p^6 Leonis	5.3	3.19	17.9	0 23.0	7	14.9	+11 59.3	+0.4178	0.5022	0.2421	+66	-20	
359 B. Leonis	6.3	3.15	18.4	+ 0 35.3	12	22.8	- 7 1.7	-1.0481	0.5036	0.2428	-16	-89	
388 B. Leonis	6.3	3.11	17.9	- 1 14.5	14	50.8	- 4 37.8	+0.3304	0.5044	0.2430	+60	-24	
431 B. Leonis	6.2	3.06	18.0	1 58.6	20	26.8	- 0 48.7	-0.2401	0.5063	0.2432	+29	-55	
13 B. Virginis	5.9	+2.99	-17.5	- 4 52.3	20	3 7.4	+ 7 17.8	+1.2460	0.5090	-0.2427	+85	+33	
78 B. Virginis	6.5	2.89	17.8	5 15.4	15	11.5	- 4 59.3	-1.2555	0.5152	0.2399	-35	-90	
η Virginis	5.3	2.81	17.2	8 59.6	21	1 5.6	+ 4 36.9	+0.3605	0.5212	0.2356	+60	-23	
370 B. Virginis	6.0	2.75	16.8	11 11.9	11	15.4	- 9 32.2	+0.3229	0.5284	0.2292	+57	-25	
69 Virginis	4.9	2.68	15.8	15 32.6	22	3 3.0	+ 5 45.1	+1.3546	0.5412	0.2147	+70	+54	
75 Virginis	5.6	+2.67	-16.0	-14 56.1	5	33.7	+ 8 10.8	+0.1847	0.5434	-0.2119	+46	-32	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.
NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	
		$\Delta\alpha$	$\Delta\delta$							
83	Virginis	5.6	+2.66	-15.7	15 45.7					
85	Virginis	6.1	2.66	15.8	15 21.0					
NEW					MOON.					
67 B.	Sagittarii	6.4	3.12	2.6	25 38.2	26 22 47.1	- 3 2.4	+0.6618	0.6063	+0.0665
70 B.	Sagittarii	6.4	+3.12	- 2.2	-24 57.3	23 51.1	- 2 1.1	+0.0532	0.6060	+0.0697
λ	Sagittarii	2.9	3.14	2.0	25 28.2	27 2 15.3	+ 0 17.2	+0.7429	0.6051	0.0768
24	Sagittarii	5.7	3.14	1.2	24 5.8	4 29.5	+ 2 25.7	-0.4467	0.6042	0.0834
117 B.	Sagittarii	5.8	3.14	0.7	23 34.7	6 14.1	+ 4 6.0	-0.8137	0.6034	0.0885
26	Sagittarii	6.1	3.16	0.6	23 54.8	7 29.5	+ 5 18.2	-0.3664	0.6028	0.0921
126 B.	Sagittarii	5.7	+3.19	- 0.6	-25 5.8	8 35.6	+ 6 21.7	+0.9167	0.6022	+0.0951
ν^1	Sagittarii	5.0	3.17	+ 0.6	22 50.9	12 10.0	+ 9 47.0	-0.9648	0.6004	0.1053
ν^2	Sagittarii	5.1	3.18	0.7	22 46.6	12 31.4	+10 7.7	-0.9989	0.6002	0.1063
154 B.	Sagittarii	5.9	3.19	0.6	23 16.9	12 51.6	+10 27.0	-0.4600	0.6000	0.1073
168 B.	Sagittarii	6.3	3.20	1.2	22 48.9	15 0.5	-11 29.3	-0.6892	0.5988	0.1131
191 B.	Sagittarii	6.5	+3.23	+ 1.6	-23 19.4	17 43.5	- 8 53.0	+0.1356	0.5971	+0.1204
199 B.	Sagittarii	6.4	3.21	2.2	21 47.9	19 10.7	- 7 29.3	-1.2071	0.5962	0.1243
222 B.	Sagittarii	5.5	3.26	2.8	22 33.5	22 19.6	- 4 28.1	-0.0444	0.5942	0.1325
50	Sagittarii	5.5	3.26	3.4	21 56.6	28 0 32.6	+ 2 20.5	-0.3590	0.5926	0.1380
253 B.	Sagittarii	6.1	3.27	3.8	21 29.2	2 20.4	- 0 37.0	-0.5620	0.5913	0.1425
<i>f</i>	Sagittarii	5.1	+3.28	+ 5.4	-19 57.7	8 27.7	+ 5 15.8	-1.1665	0.5869	+0.1570
ϕ	Capricorni	5.5	3.40	8.3	19 22.8	21 48.9	+ 5 53.9	+0.5409	0.5764	0.1853
π	Capricorni	5.2	3.41	9.2	18 29.1	29 1 6.2	+ 2 44.0	+0.2655	0.5738	0.1914
ρ	Capricorni	5.0	3.40	9.4	18 5.4	1 44.9	- 2 6.7	-0.0068	0.5733	0.1926
σ	Capricorni	5.6	3.43	9.2	18 51.6	2 10.2	- 1 42.3	+0.8458	0.5730	0.1934
47 B.	Capricorni	6.2	+3.41	+10.3	-16 48.7	4 32.8	+ 0 34.9	-0.7406	0.5711	+0.1976
<i>v</i>	Capricorni	5.3	3.45	10.2	18 25.9	6 25.7	+ 2 23.7	+1.2583	0.5696	0.2008
61 B.	Capricorni	5.9	3.41	10.9	16 25.2	6 39.7	+ 2 37.1	-0.7120	0.5694	0.2012
94 B.	Capricorni	5.7	3.49	12.2	16 21.1	13 57.1	+ 9 38.6	+0.7286	0.5636	0.2127
95 B.	Capricorni	5.9	3.45	12.8	14 48.3	14 24.7	+10 5.2	-0.7280	0.5633	0.2134
53 B.	Aquarii	6.5	+3.50	+14.4	-13 32.8	21 56.4	- 6 39.3	-0.3483	0.5576	+0.2236
18	Aquarii	5.5	3.53	15.1	13 14.1	30 1 33.3	- 3 10.0	+0.1535	0.5550	0.2280
72 B.	Aquarii	6.5	3.52	15.9	11 55.7	3 21.8	- 1 25.2	-0.7505	0.5537	0.2300
137 B.	Capricorni	6.2	3.55	17.0	10 57.0	8 24.2	+ 3 26.7	-0.5656	0.5503	0.2353
c^2	Capricorni	6.3	3.56	17.8	9 39.6	11 29.4	+ 6 25.5	-1.1413	0.5483	0.2382
λ	Capricorni	5.5	+3.60	+17.2	-11 44.9	11 35.5	+ 6 31.4	+0.9969	0.5482	+0.2383
96 B.	Aquarii	6.5	+3.61	+18.0	-10 42.2	14 49.2	+ 9 38.5	+0.7123	0.5462	+0.2410

DECEMBER.

θ	Aquarii	4.3	+3.69	+20.2	- 8 11.8	1 1 34.3	- 3 57.9	+0.8061	0.5402	+0.2484
ρ	Aquarii	5.3	3.70	20.4	8 14.3	3 0 9.0	+ 2 26.3	+1.2417	0.5394	0.2493
170 B.	Aquarii	6.0	3.70	20.9	7 36.8	4 43.2	+ 0 55.2	+0.9993	0.5386	0.2500
51	Aquarii	5.8	3.67	21.7	5 15.4	5 0.3	- 0 38.7	-1.3286	0.5385	0.2502
186 B.	Aquarii	6.1	3.74	21.4	6 58.7	8 22.6	+ 2 37.0	+1.2715	0.5370	0.2517
κ	Aquarii	5.2	+3.73	+22.6	- 4 39.3	11 27.3	+ 5 35.7	-0.3204	0.5357	+0.2528
207 B.	Aquarii	6.3	3.74	23.0	3 59.1	12 54.2	+ 6 59.7	-0.6388	0.5350	0.2532
6 G.	Piscium	6.2	3.82	24.2	2 50.3	21 15.6	- 8 54.9	+0.3134	0.5322	0.2550
22 B.	Piscium	6.4	3.93	26.2	- 0 9.8	2 9 29.4	+ 2 55.7	+0.6890	0.5293	0.2548
κ	Piscium	4.9	3.95	26.4	+ 0 48.2	11 8.7	+ 4 31.8	+0.1169	0.5290	0.2546
9	Piscium	6.4	+3.95	+26.5	+ 0 40.1	11 18.0	+ 4 40.9	+0.2948	0.5290	+0.2546
16	Piscium	5.7	3.98	27.2	1 38.6	15 45.7	+ 9 0.1	+0.4242	0.5285	0.2536
19	Piscium	5.4	4.04	27.8	3 1.7	20 38.5	+10 16.3	+0.2290	0.5281	0.2521
36	Piscium	6.2	4.20	29.7	7 46.9	3 11 23.1	+ 4 0.6	-1.0341	0.5283	0.2447
<i>d</i>	Piscium	5.4	4.23	29.7	7 43.9	13 21.0	+ 5 54.9	-0.5028	0.5285	0.2434
136 B.	Piscium	6.5	+4.36	+29.9	+ 8 54.3	23 22.8	- 8 22.4	+0.8788	0.5299	+0.2357

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.	Hour Angle, H	Y'	z'	y'	N.	S.
		Δα	Δδ								
		s	"	° ' "	d h m	h m				°	'
Piscium	6.3	+4.55	+30.6	+12 30.9	4 11 36.8	+ 3 28.5	-0.2868	0.5327	+0.2237	+26	-53
Piscium	3.7	4.73	30.4	14 55.3	23 30.2	- 9 1.1	-0.2429	0.5363	0.2093	+28	-49
Piscium	6.2	4.75	30.0	14 14.4	5 1 32.6	- 7 2.7	+0.8997	0.5370	0.2066	+90	+13
Piscium	6.1	4.81	30.3	15 59.3	3 22.5	+ 5 16.3	-0.5687	0.5376	0.2042	+11	-68
Arietis	6.4	4.86	30.3	17 0.1	6 37.5	- 2 7.7	-0.9832	0.5387	0.1995	-14	-73
Arietis	5.8	+4.87	+30.0	+16 32.8	7 22.6	- 1 24.1	-0.3527	0.5390	+0.1984	+22	-54
Arietis	5.1	4.94	29.7	17 25.0	11 40.1	+ 2 45.0	-0.4360	0.5406	0.1920	+18	-58
B. Arietis	6.4	4.99	29.5	17 51.5	14 38.0	+ 5 37.0	-0.3423	0.5417	0.1874	+23	-52
B. Arietis	6.5	5.01	29.2	17 38.3	16 31.2	+ 7 26.5	+0.2423	0.5424	0.1844	+56	-20
H. Arietis	6.4	5.01	28.7	16 50.3	17 16.4	+ 8 10.1	+1.2287	0.5426	0.1832	+90	+42
Arietis	5.9	+5.06	+29.3	+19 6.8	17 49.9	+ 8 42.5	-1.0826	0.5429	+0.1823	-23	-71
Arietis	5.6	5.11	28.9	19 31.3	21 18.0	-11 56.2	-0.8954	0.5442	0.1765	- 9	-70
Arietis	6.2	5.19	28.0	19 29.5	6 3 3.0	- 6 22.8	+0.1221	0.5464	0.1665	+48	-24
Arietis	5.7	5.27	27.0	19 39.7	8 24.1	- 1 12.4	+0.8057	0.5484	0.1566	+90	+13
Arietis	5.8	5.38	25.8	20 20.4	15 30.3	+ 5 39.2	+1.1479	0.5510	0.1429	+90	+39
Arietis (mean)	4.6	+5.39	+25.9	+21 0.7	16 0.9	+ 6 8.8	+0.5014	0.5511	+0.1419	+75	- 2
Arietis	6.1	5.60	23.1	22 31.3	7 5 4.3	- 5 14.8	+0.5626	0.5554	0.1147	+81	+ 4
Tauri	5.9	5.68	22.8	24 11.4	7 42.8	- 2 41.9	-0.9361	0.5561	0.1089	-14	-66
Tauri	5.4	5.73	21.6	24 1.9	12 17.8	+ 1 43.6	-0.2912	0.5572	0.0987	+25	-39
Tauri	3.8	5.73	21.5	23 51.4	12 19.8	+ 1 45.5	-0.0983	0.5572	0.0986	+36	-29
Tauri	5.6	+5.75	+21.6	+24 35.0	12 26.8	+ 1 52.3	-0.8696	0.5572	+0.0984	- 9	-65
Tauri	4.3	5.74	21.6	24 12.6	12 28.3	+ 1 53.7	-0.4664	0.5572	0.0983	+15	-50
Tauri	4.1	5.74	21.5	24 6.7	12 44.8	+ 2 9.7	-0.3333	0.5573	0.0977	+23	-42
Tauri	5.8	5.75	21.5	24 17.9	12 46.8	+ 2 11.6	-0.5316	0.5573	0.0976	+12	-54
Tauri	6.5	5.75	21.5	24 16.4	12 50.5	+ 2 15.2	-0.4970	0.5573	0.0975	+14	-52
Tauri	4.3	+5.73	+21.4	+23 41.6	12 58.4	+ 2 22.8	+0.1400	0.5574	+0.0972	+50	-16
Tauri	3.0	5.74	21.2	23 51.1	13 28.9	+ 2 52.2	+0.0181	0.5575	0.0960	+42	-22
B. Tauri	5.5	5.72	21.1	23 10.2	13 52.3	+ 3 14.8	+0.7907	0.5576	0.0952	+90	+19
Tauri	3.7	5.74	21.1	23 48.2	14 13.4	+ 3 35.1	+0.1412	0.5576	0.0944	+50	-16
Tauri	5.2	5.75	21.1	23 53.2	14 13.9	+ 3 35.6	+0.0521	0.5576	0.0943	+45	-20
Tauri	5.6	+5.81	+19.3	+23 52.8	20 54.6	+10 2.3	+0.6382	0.5589	+0.0790	+90	+12
Tauri	5.3	5.94	17.1	25 26.2	4 52.3	- 6 16.9	-0.4899	0.5600	0.0603	-14	-48
Tauri	6.1	5.89	16.9	24 6.7	5 30.7	- 5 39.8	+0.9845	0.5600	0.0588	+90	+35
B. Tauri	6.3	5.99	12.6	24 27.7	19 37.1	+ 7 56.7	+1.1980	0.5602	0.0248	+88	+56
Tauri	5.6	6.02	12.3	24 55.5	20 26.3	+ 8 44.2	+0.7143	0.5602	+0.0228	+90	+22
Tauri	5.4	+6.07	+ 8.0	+25 5.1	9 10 5.9	- 2 5.0	+0.6284	0.5583	+0.0101	+89	+18
Tauri	5.1	6.12	6.4	25 51.2	14 42.3	+ 2 21.7	-0.2822	0.5572	0.0211	+25	-32
Tauri	5.0	6.06	5.2	24 32.5	18 50.6	+ 6 21.3	+1.0459	0.5561	0.0308	+90	+42
B. Tauri	5.8	6.04	4.1	24 14.4	22 22.5	+ 9 45.9	+1.2548	0.5550	0.0391	+77	+62
Tauri	4.7	6.13	3.8	25 56.7	22 49.0	+10 11.4	-0.6334	0.5549	0.0401	+ 5	-57
Geminorum	5.9	+6.05	+ 1.9	+24 26.4	10 4 54.8	- 7 55.4	+0.7133	0.5527	-0.0541	+90	+20
Geminorum	6.1	6.02	+ 1.3	23 59.9	7 4.4	- 5 50.2	+1.0950	0.5519	0.0590	+90	+43
B. Geminorum	6.5	6.03	- 1.9	24 39.7	16 40.2	+ 3 26.0	-0.3003	0.5477	0.0800	+24	-38
Geminorum	3.2	6.04	2.9	25 12.9	19 38.0	+ 6 17.8	-1.1572	0.5464	0.0863	-34	-65
B. Geminorum	5.8	5.96	3.9	23 42.1	23 23.4	+ 9 55.6	+0.1724	0.5445	0.0941	+52	-14
Geminorum	5.2	+5.96	- 5.4	+24 20.1	11 4 13.4	- 9 23.8	-1.0060	0.5420	-0.1039	-19	-66
Geminorum	5.9	5.88	5.7	22 45.8	5 36.3	- 8 3.6	+0.5841	0.5413	0.1066	+83	+ 6
Geminorum	3.5	5.81	7.6	22 8.2	12 36.7	- 1 16.9	+0.4827	0.5374	0.1200	+73	- 1
Geminorum	6.0	5.84	8.3	23 6.3	14 11.2	+ 0 14.5	-0.7809	0.5366	0.1230	- 3	-67
B. Geminorum	6.4	5.75	8.5	21 42.1	15 50.0	+ 1 50.1	+0.5661	0.5356	0.1260	+81	+ 3
Geminorum	5.3	+5.76	- 8.7	+21 36.9	16 15.3	+ 2 14.6	+0.6085	0.5354	-0.1268	+85	+ 5
B. D.+23° 1744	6.4	5.80	9.5	23 3.9	18 40.8	+ 4 35.5	-1.3077	0.5340	0.1311	-59	-65
Geminorum	6.3	5.65	10.8	20 30.9	10 40.9	+10 24.1	+0.6953	0.5306	0.1416	+90	+ 8
B. Geminorum	6.2	5.58	11.5	19 32.3	4 1.2	-10 21.9	+1.2968	0.5287	0.1471	+78	+56
Geminorum	5.2	5.60	12.1	20 6.2	5 50.2	- 8 36.3	+0.4006	0.5277	0.1501	+67	- 9
B. Geminorum	6.3	+5.57	-12.7	+20 2.6	8 22.3	- 6 8.9	+0.0809	0.5282	-0.1541	+48	-28

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Pa- sible.	
Name.	Mag.	Red'ns from 1916.0.		Apparent Declina- tion.	Greenwich Mean Time.		Hour Angle, H	Y	x'	y'	N. S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
10 H. Cancri	6.1	+5.51	-13.0	+19 4.6	12 10 21.1	-4 13.8	+0.8450	0.5251	-0.1572	+90+15	
SATURN	0.1	...	...	20 20.9	14 13.2	-0 28.8	-1.1845	0.5256	0.1637	-33-70
d ¹ Cancri	5.9	5.41	15.2	18 35.9	19 42.0	+4 50.0	-0.1592	0.5200	0.1709	+33-41	
d ² Cancri	6.2	5.34	15.3	17 19.2	20 58.6	+6 4.2	+1.0400	0.5193	0.1727	+90-28	
θ Cancri	5.5	5.36	16.2	18 22.5	23 53.5	+8 53.9	-0.6395	0.5177	0.1767	+7-60	
NEPTUNE	7.7	...	...	+18 54.1	13 0 5.1	+9 5.2	-1.2586	0.5184	-0.1771	-40-71
54 Cancri	6.3	+5.17	-17.5	15 39.5	9 57.4	-5 20.1	+0.5321	0.5126	0.1893	+76-7	
o ¹ Cancri	5.1	5.15	18.3	15 38.4	13 11.9	-2 11.2	-0.0683	0.5110	0.1930	-38-38	
o ² Cancri	5.7	5.16	18.4	15 54.0	13 22.3	-2 1.1	-0.3892	0.5109	0.1932	+21-57	
81 Cancri	6.4	5.02	19.6	15 19.8	21 9.8	+5 32.9	-1.2959	0.5074	0.2016	-42-75	
ξ Leonis	5.1	+4.84	-20.7	+11 40.0	14 7 41.8	-8 13.1	+0.5891	0.5033	-0.2116	+80-7	
o Leonis	3.8	4.75	21.1	10 16.2	12 41.3	-3 22.0	+1.0704	0.5017	0.2157	+90-22	
83 B. Leonis	5.9	4.65	22.0	9 19.5	21 1.0	+4 43.6	+0.2914	0.4993	0.2219	+58-24	
89 B. Leonis	6.2	4.63	22.0	8 42.6	21 56.6	+5 37.8	+0.7669	0.4991	0.2225	+90+1	
π Leonis	4.9	4.61	22.1	8 26.5	23 5.4	+6 44.6	+0.8072	0.4988	0.2233	+90+4	
43 Leonis	6.3	+4.46	-23.3	+6 57.8	15 11 38.5	-5 3.1	-0.4105	0.4966	-0.2306	+20-64	
155 B. Leonis	6.5	4.43	23.0	6 6.9	11 47.3	-4 54.6	+0.4916	0.4966	0.2306	+72-15	
35 Sextantis	6.1	4.32	23.8	5 10.9	22 53.7	+5 53.6	-1.0702	0.4959	0.2353	-18-85	
p ⁴ Leonis	5.7	4.13	24.1	2 24.3	16 11 56.3	+5 25.2	-1.1129	0.4968	0.2388	-21-88	
p ⁶ Leonis	5.3	4.09	23.6	0 22.9	15 42.1	-1 45.6	+0.2022	0.4973	0.2394	+53-31	
359 B. Leonis	6.3	+4.05	-24.1	+0 35.2	20 55.9	+3 19.4	-1.2745	0.4983	-0.2399	-36-89	
388 B. Leonis	6.3	4.01	23.6	-1 14.6	23 26.9	+5 46.3	+0.1180	0.4989	0.2399	+48-35	
e Leonis	5.1	3.99	23.2	2 32.8	17 0 46.1	+7 3.2	+1.2192	0.4992	0.2400	+87+30	
431 B. Leonis	6.2	3.95	23.6	1 58.7	5 9.9	+11 19.6	-0.4544	0.5005	0.2398	+18-69	
13 B. Virginis	5.9	3.88	23.0	4 52.3	11 59.2	-6 2.5	+1.0512	0.5029	0.2391	+85+17	
64 B. Virginis	6.5	+3.78	-22.5	-7 18.8	22 19.2	+3 59.8	+1.2225	0.5074	-0.2367	+83+31	
γ Virginis	5.3	3.68	22.2	8 59.7	18 10 27.7	-8 13.0	+0.1787	0.5142	0.2316	+49-32	
370 B. Virginis	6.0	3.60	21.5	11 12.0	20 51.6	+1 52.1	+0.1531	0.5212	0.2251	+47-33	
69 Virginis	4.9	3.50	19.6	15 32.6	13 0 6.6	-6 29.3	+1.2154	0.5342	0.2108	+74+33	
75 Virginis	5.6	3.49	19.8	14 56.2	15 34.5	-4 0.3	+0.0387	0.5364	0.2080	+38-40	
83 Virginis	5.6	+3.46	-19.3	-15 45.7	21 0.7	+1 15.2	-0.2083	0.5414	-0.2015	+24-54	
85 Virginis	6.1	3.46	19.4	15 21.1	21 31.2	+1 44.6	-0.7409	0.5418	0.2009	-5-90	
87 Virginis	5.8	3.47	18.7	17 26.7	22 21.0	+2 32.8	+1.2830	0.5426	0.1998	+73+42	
89 Virginis	5.1	3.45	18.6	17 43.3	23 29.0	+3 38.5	+1.3452	0.5437	0.1984	+69+56	
43 H. Virginis	5.5	3.40	17.8	17 48.9	20 10 59.4	-9 14.7	-0.7499	0.5549	0.1817	-8-90	
231 G. Virginis	6.4	+3.40	-17.6	-18 12.0	11 43.1	-8 32.6	-0.4813	0.5556	-0.1805	+7-72	
236 G. Virginis	5.7	3.39	17.6	18 19.9	12 24.7	-7 52.4	-0.4695	0.5563	0.1794	+8-71	
9 G. Libræ	6.5	3.38	16.5	20 4.5	19 26.0	-1 6.2	+0.1161	0.5634	0.1672	+36-35	
17 G. Libræ	6.4	3.36	16.0	20 49.5	20 0 15.0	+3 32.4	+0.1030	0.5682	0.1581	+35-36	
18 G. Libræ	6.1	3.36	15.8	20 58.6	0 41.2	+3 57.7	+0.1908	0.5686	0.1572	+39-31	
43 B. Libræ	5.7	+3.42	-17.1	-21 2.6	4 55.5	+8 2.6	-0.3904	0.5729	-0.1487	+8-66	
47 G. Libræ	6.1	3.35	14.8	21 42.6	8 39.9	+11 38.5	-0.2481	0.5766	0.1406	+15-56	
64 G. Libræ	5.8	3.33	14.2	22 5.6	12 42.5	-8 28.1	-0.4066	0.5805	0.1316	+5-67	
153 B. Libræ	6.3	3.45	13.0	24 12.5	19 23.6	-2 2.5	+0.9163	0.5868	0.1156	+66+12	
169 B. Libræ	6.0	3.32	13.0	22 52.0	21 14.9	-0 15.6	-0.6542	0.5885	0.1110	-10-90	
177 B. Libræ	6.2	+3.32	-12.9	-22 52.8	21 51.6	+0 19.6	-0.7087	0.5890	-0.1095	-13-90	
42 Libræ	5.0	3.33	12.7	23 33.0	22 12.9	+0 40.0	-0.0689	0.5894	0.1086	+20-46	
A Scorpïi	4.6	3.34	11.7	25 4.8	3 23.6	+5 38.4	+0.9505	0.5938	0.0950	+65+15	
31 B. Scorpïi	5.4	3.32	11.8	24 17.2	3 30.9	+5 45.4	+0.1380	0.5939	0.0947	+30-34	
32 B. Scorpïi	5.3	3.31	11.9	23 43.9	3 32.1	+5 46.5	-0.4245	0.5939	0.0947	+1-69	
3 Scorpïi	5.9	+3.34	-11.7	-24 59.9	3 48.0	+6 1.7	+0.8296	0.5942	-0.0940	+65+7	
40 B. Scorpïi	5.4	3.32	11.5	24 35.6	5 19.1	+7 29.2	+0.2800	0.5954	0.0899	+37-26	
48 B. Scorpïi	4.9	3.34	11.1	25 38.1	7 8.3	+9 14.0	+1.1707	0.5969	0.0849	+64+36	
50 B. Scorpïi	6.4	3.32	11.2	24 29.9	7 22.1	+9 27.2	+0.0062	0.5970	0.0843	+22-41	
57 B. Scorpïi	5.7	+3.30	-11.2	-23 22.9	8 13.3	+10 16.4	-1.1900	0.5977	-0.0819	-50-90	

NEW MOON.

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.						Limiting Parallels.		
Name.	Mag.	Red'ns from 1916.0.		Apparent Declination.	Greenwich Mean Time.			Hour Angle, H	Y	x'	y'	N.	S.
		Δα	Δδ		d	h	m						
		g	"		°	'	"						
π Capricorni	5.2	+3.30	+ 9.0	-18 29.1	26	9 54.6	+ 7 52.2	+0.3575	0.5847	+0.1961	+52	-22	
ρ Capricorni	5.0	3.29	9.2	18 5.4		10 32.1	+ 8 28.3	+0.0904	0.5842	0.1973	+37	-36	
ο Capricorni	5.6	3.31	9.1	18 51.6		10 56.5	+ 8 51.8	+0.9293	0.5838	0.1981	+71	+11	
47 B. Capricorni	6.2	3.28	9.9	16 48.7		13 14.2	+11 4.2	-0.6280	0.5820	0.2024	0	-85	
v Capricorni	5.3	3.32	10.0	18 25.9		15 3.1	-11 11.1	+1.3393	0.5805	0.2056	+69	+55	
61 B. Capricorni	5.9	+3.28	+10.5	-16 25.2		15 16.6	-10 58.1	-0.5977	0.5803	+0.2060	+ 2	-82	
94 B. Capricorni	5.7	3.32	11.7	16 21.1		22 18.7	- 4 12.0	+0.8261	0.5746	0.2177	+74	+ 4	
95 B. Capricorni	5.9	3.29	12.1	14 48.3		22 45.4	- 3 46.4	-0.6054	0.5742	0.2184	+ 4	-82	
53 B. Aquarii	6.5	3.31	13.6	13 32.8	27	6 1.2	+ 3 13.3	-0.2252	0.5684	0.2287	+25	-54	
18 Aquarii	5.5	3.33	14.2	13 14.1		9 30.5	+ 6 34.9	+0.2714	0.5657	0.2331	+52	-27	
72 B. Aquarii	6.5	+3.31	+14.8	-11 55.7		11 15.2	+ 8 15.8	-0.6159	0.5643	+0.2351	+ 5	-83	
137 B. Capricorni	6.2	3.33	15.8	10 57.1		16 7.2	-11 2.7	-0.4303	0.5606	0.2403	+16	-67	
c ¹ Capricorni	5.3	3.33	16.6	9 27.8		18 32.9	- 8 42.2	-1.3229	0.5589	0.2427	-46	-84	
c ² Capricorni	6.3	3.34	16.6	9 39.6		19 6.0	- 8 10.2	-0.9944	0.5585	0.2432	-16	-90	
λ Capricorni	5.5	3.37	16.1	11 45.0		19 11.9	- 8 4.5	+1.1086	0.5584	0.2433	+78	+22	
96 B. Aquarii	6.5	+3.38	+16.8	-10 42.2		22 19.0	- 5 4.0	+0.8310	0.5562	+0.2460	+79	+ 3	
θ Aquarii	4.3	3.43	18.8	8 11.8	28	8 43.0	+ 4 58.4	+0.9302	0.5494	0.2530	+82	+ 9	
ρ Aquarii	5.3	3.44	19.0	8 14.3		10 14.7	+ 6 27.1	+1.3599	0.5485	0.2538	+78	+48	
170 B. Aquarii	6.0	3.44	19.4	7 36.8		11 46.0	+ 7 55.2	+1.1221	0.5476	0.2545	+82	+22	
51 Aquarii	5.8	3.41	20.1	5 15.4		12 2.6	+ 8 11.3	-1.1702	0.5475	0.2547	-27	-90	
186 B. Aquarii	6.1	+3.48	+19.9	- 6 58.7		15 18.7	+11 20.7	+1.3922	0.5456	+0.2560	+72	+55	
κ Aquarii	5.2	3.46	20.9	4 39.3		18 17.9	- 9 46.1	-0.1750	0.5440	0.2570	+32	-51	
207 B. Aquarii	6.3	3.47	21.4	3 59.1		19 42.2	- 8 24.6	-0.4884	0.5434	0.2573	+16	-71	
6 G. Piscium	6.2	3.54	22.4	2 50.3	29	3 49.7	- 0 33.3	+0.4527	0.5396	0.2586	+68	-18	
22 B. Piscium	6.4	3.65	24.4	0 9.8		15 45.2	+10 58.9	+0.8256	0.5353	0.2577	+90	+ 2	
κ Piscium	4.9	+3.66	+24.6	+ 0 48.1		17 22.3	-11 27.1	+0.2602	0.5349	+0.2573	+56	-28	
9 Piscium	6.4	3.66	24.7	0 40.1		17 31.3	-11 18.4	+0.4360	0.5348	0.2573	+67	-19	
16 Piscium	5.7	3.69	25.4	1 38.6		21 53.3	- 7 4.9	+0.5640	0.5337	0.2560	+77	-12	
19 Piscium	5.4	3.75	26.0	3 1.7	30	2 40.4	- 2 27.0	+0.3705	0.5328	0.2541	+63	-22	
36 Piscium	6.2	3.92	28.1	7 46.9		17 10.6	+11 35.5	-0.8863	0.5312	0.2457	- 6	-82	
d Piscium	5.4	+3.95	+28.1	+ 7 43.9		19 7.0	-10 31.8	-0.3598	0.5312	+0.2443	+23	-61	
136 B. Piscium	6.5	4.09	28.4	8 54.3	31	5 2.3	- 0 55.5	+0.8098	0.5314	0.2359	+90	+ 4	
58 Piscium	5.7	4.15	29.3	11 31.4		7 49.4	+ 1 46.3	-1.2600	0.5316	0.2332	-36	-78	
75 Piscium	6.3	+4.29	+29.4	+12 30.9		17 11.4	+10 50.3	-0.1579	0.5328	+0.2231	+33	-46	

OCCULTATIONS VISIBLE AT WASHINGTON.

Date.	THE STAR'S		IMMERSION.				EMERSION.				Duration of Occultation.
			Washington.		Angle from—		Washington.		Angle from—		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Ver- tex.	Sidereal Time.	Mean Time.	North Point.	Ver- tex.	
Jan. 14	γ Tauri	4.3	h m	h m	°	°	h m	h m	°	°	h m
14	16 Tauri	5.4	9 40	14 6	95	41	10 38	15 4	260	210	0 58
14	21 Tauri	5.8	9 41	14 8	145	91	10 13	14 39	210	158	0 32
14	20 Tauri	5.8	10 0	14 26	76	24	10 55	15 22	279	231	0 55
14	20 Tauri	4.1	10 1	14 28	121	69	10 48	15 14	234	185	0 47
14	22 Tauri	6.5	10 3	14 30	83	30	10 59	15 26	273	225	0 56
15	χ Tauri	5.3	0 26	4 50	132	192	1 3	5 27	191	251	0 37
18	48 Geminorum	5.8	7 26	11 37	126	111	8 52	13 3	276	224	1 26

NOTE.—The angles of position are counted from the north point and vertex of the Moon's limb toward the east.

OCCULTATIONS VISIBLE AT WASHINGTON.

Date.	THE STAR'S		IMMERSION.				EMERSION.				Duration of Occultation.		
			Washington.		Angle from—		Washington.		Angle from—				
			Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.		North Point.	Vertex.
Jan. 18	58	Geminorum	†	6.0	h m	h m	°	°	h m	h m	°	°	h m
23	8 ^p	Leonis	†	5.7	4 45	8 36	114	166	5 44	9 36	299	350	0 59
26	87	Virginis		5.8	16 12	19 50	165	134	17 1	20 39	245	206	0 49
29	134	B. Scorp̄ii		6.4	14 27	17 53	71	98	15 32	18 59	313	328	1 6
30	X	Sagitt. (var.)	†	4.4	13 11	16 34	118	164	14 10	17 33	256	296	0 56
31	σ	Sagittarii	†	2.1	14 3	17 21	143	191	14 38	17 57	213	257	0 36
Feb. 14	ε	Geminorum		3.2	1 47	4 13	154	213	2 17	4 42	205	264	0 30
14	ω	Geminorum		5.2	12 58	15 22	116	62	13 53	16 17	280	231	0 55
15		B. D.+23° 1744		6.4	0 25	2 47	119	168	1 18	3 39	251	304	0 52
15	192	B. Geminorum		6.3	6 34	8 54	141	179	7 53	10 14	260	251	1 19
17	π	Cancr̄i		5.6	2 38	4 52	114	165	3 37	5 51	280	333	0 59
21	q	Virginis		5.3	10 37	12 34	175	202	11 29	13 26	261	277	0 52
27	69	G. Sagittarii	†	6.3	13 30	15 2	60	109	14 24	15 56	303	346	0 54
Mar. 7	47	B. Ariet̄is		6.5	7 7	8 5	103	48	8 2	9 0	328	275	0 55
11	112	B. Aurigæ		5.7	6 41	7 24	28	342	7 14	7 57	346	292	0 33
16	18	Leonis		5.8	4 31	4 54	83	136	5 30	5 53	324	17	0 59
16	19	Leonis		6.4	5 10	5 33	112	165	6 22	6 45	299	349	1 12
16	R	Leonis (var.)		5-10	5 25	5 48	138	190	6 32	6 55	273	323	1 7
18	359	B. Leonis		6.3	6 54	7 9	60	109	7 26	7 40	5	52	0 31
23	π	Scorp̄ii		3.0	12 14	12 9	162	202	12 56	12 50	240	274	0 42
23	65	B. Scorp̄ii		5.5	17 0	16 54	64	51	18 7	18 1	312	287	1 7
24	95	G. Ophiuchi		6.1	17 23	17 13	101	98	18 44	18 33	258	238	1 20
25	66	B. Sagittarii		4.7	18 19	18 5	73	71	19 40	19 26	266	247	1 21
26	φ	Sagittarii		4.9	15 53	15 36	154	191	16 16	15 59	191	224	0 23
Apr. 6	χ	Tauri		5.3	7 31	6 31	91	30	8 45	7 46	270	211	1 14
9	ω	Geminorum		5.2	7 26	6 14	128	106	8 52	7 40	271	218	1 25
13	43	Leonis		6.3	13 14	11 46	154	110	14 17	12 48	276	225	1 2
16	370	B. Virginis		6.0	17 46	16 6	35	346	17 59	16 19	10	320	0 13
17	75	Virginis		5.6	8 30	6 47	111	160	9 30	7 46	309	353	0 59
19	153	B. Libræ	†	6.3	10 36	8 45	107	156	11 36	9 44	297	339	1 0
19	b	Scorp̄ii	†	4.7	20 4	18 11	135	90	20 50	18 57	232	182	0 46
24	19	Capricorni		5.7	15 56	13 44	113	162	16 46	14 34	211	255	0 50
May 8	θ	Cancr̄i		5.5	13 50	10 43	66	11	14 28	11 21	345	292	0 37
19	86	B. Sagittarii		6.5	14 39	10 49	158	199	15 4	11 14	202	239	0 25
20	53	Sagittarii		6.3	17 48	13 53	121	144	18 40	14 45	204	216	0 52
20	274	B. Sagittarii		6.1	18 1	14 6	129	149	18 44	14 49	195	206	0 43
June 8	8 ^p	Leonis		5.3	12 22	7 14	148	126	13 38	8 30	288	251	1 16
11	87	Virginis		5.8	17 38	12 18	187	144	17 54	12 34	213	168	0 16
13	b	Scorp̄ii		4.7	19 17	13 48	129	90	20 11	14 42	238	192	0 54
16	172	B. Sagittarii		5.8	14 11	8 31	53	101	15 3	9 23	299	341	0 52
16	189	B. Sagittarii	†	6.1	16 54	11 13	44	70	17 56	12 15	294	309	1 2
16	208	B. Sagittarii		6.1	20 50	15 8	47	26	21 55	16 14	269	237	1 6
18	29	Capricorni		5.5	19 45	13 56	50	69	21 1	15 12	249	251	1 16
21	22	Piscium		5.8	20 51	14 50	132	174	21 6	15 5	155	196	0 15
22	136	B. Piscium		6.5	21 52	15 47	18	62	22 52	16 47	270	305	1 0
July 16	96	B. Aquarii		6.5	2 8	18 29	339	292	2 20	18 40	318	270	0 11
23	17	Tauri		3.8	21 40	13 34	25	79	22 21	14 14	297	353	0 40
23	23	Tauri		4.3	22 3	13 56	90	145	23 1	14 54	230	289	0 58
23	η	Tauri		3.0	22 38	14 30	76	133	23 43	15 36	243	302	1 5
23	28	Tauri		5.2	23 30	15 23	101	160	0 31	16 23	216	275	1 1
23	27	Tauri		3.7	23 36	15 29	126	184	0 16	16 8	192	250	0 39
Aug. 7	b	Scorp̄ii		4.7	16 11	7 7	115	109	17 32	8 27	268	246	1 20
10	127	G. Sagittarii	†	6.4	14 4	4 48	61	109	15 0	5 44	292	334	0 56

NOTE.—The angles of position are counted from the north point and vertex of the Moon's limb toward the east.
† Immersion below the horizon of Washington. ‡ Emersion below the horizon of Washington.

OCCULTATIONS VISIBLE AT WASHINGTON.

Date.	THE STAR'S		IMMERSON.				EMERSON.				Duration of Occultation.
			Washington.		Angle from—		Washington.		Angle from—		
			Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Ver- tex.	Sidereal Time.	Mean Time.		North Point.	Ver- tex.
			h m	h m	°	°	h m	h m	°	°	h m
Aug. 10	172 B. Sagittarii	5.8	15 2	5 46	44	86	15 54	6 38	305	340	0 52
10	189 B. Sagittarii	6.1	17 55	8 38	48	63	19 6	9 49	282	281	1 10
10	208 B. Sagittarii	6.1	21 48	12 30	69	38	22 53	13 35	246	205	1 5
12	29 Capricorni	5.5	20 12	10 47	61	75	21 27	12 2	235	231	1 15
13	ρ Aquarii	5.3	1 27	15 57	106	66	2 8	16 38	188	143	0 40
13	170 B. Aquarii †	6.0	3 14	17 44	84	34	4 5	18 34	218	167	0 50
15	22 Piscium †	5.8	17 13	7 37	93	144	18 0	8 24	213	265	0 47
17	101 Piscium †	6.2	18 31	8 46	75	124	19 22	9 38	235	287	0 51
24	SATURN	0.4	1 16	15 3	104	155	2 18	16 5	272	327	1 1
Sept. 4	116 B. Scorpii	6.2	15 55	5 1	54	60	16 55	6 0	323	317	1 0
9	96 B. Aquarii	6.5	2 25	15 9	356	309	2 51	15 35	302	253	0 26
15	ε Arietis (mean)	4.6	19 55	8 16	40	90	20 40	9 2	298	331	0 46
18	139 Tauri	4.7	4 37	16 45	19	66	5 5	17 13	344	20	0 28
21	α ² Cancri †	5.9	0 57	12 54	146	193	1 36	13 33	236	296	0 39
Oct. 5	ο Capricorni	5.6	23 10	10 12	5	332	23 48	10 50	296	257	0 39
6	29 Capricorni	5.5	16 15	3 15	94	143	17 15	4 14	225	269	0 59
7	ρ Aquarii	5.3	23 2	9 56	82	70	0 6	11 1	204	178	1 4
7	170 B. Aquarii	6.0	1 19	12 13	79	40	2 19	13 13	214	169	1 0
12	μ Arietis	5.7	23 48	10 23	127	181	0 20	10 54	177	227	0 32
13	66 Arietis †	6.1	19 59	6 30	28	75	20 35	7 6	297	347	0 36
13	17 Tauri	3.8	4 58	15 28	27	343	5 50	16 20	312	258	0 52
13	23 Tauri	4.3	5 32	16 2	84	32	6 54	17 23	262	203	1 2
13	γ Tauri	3.0	6 22	16 52	56	358	7 30	17 59	294	235	1 7
13	27 Tauri	3.7	7 15	17 45	76	17	8 25	18 54	278	220	1 9
13	28 Tauri	5.2	7 21	17 50	56	357	8 22	18 51	297	239	1 1
19	α ² Cancri	5.7	4 11	14 17	85	140	5 19	15 25	314	7	1 8
19	α ¹ Cancri	5.1	4 19	14 26	152	206	5 13	15 19	246	299	0 54
Nov. 4	6 G. Piscium	6.2	2 44	11 48	4	318	3 23	12 26	292	244	0 38
6	136 B. Piscium	6.5	3 58	12 54	115	66	4 41	13 37	193	142	0 43
8	20 H ¹ . Arietis †	6.4	18 47	3 37	112	160	19 24	4 13	204	254	0 36
8	26 Arietis	6.2	7 34	16 22	7	312	7 54	16 41	330	276	0 20
9	66 Arietis	6.1	8 55	17 38	111	55	9 48	18 31	241	189	0 53
10	38 Tauri	5.6	21 49	6 30	68	121	22 47	7 27	258	315	0 57
11	ε Tauri †	5.6	21 19	5 56	92	188	22 10	6 47	248	299	0 51
13	87 B. Geminorum	5.8	0 15	8 44	58	109	1 5	9 33	304	359	0 50
14	85 Geminorum	5.2	8 46	17 9	148	118	10 0	18 24	266	216	1 15
16	ξ Leonis	5.1	10 57	19 12	158	125	12 7	20 22	274	227	1 10
Dec. 2	22 B. Piscium	6.4	19 49	3 4	13	58	20 39	3 53	282	321	0 50
2	16 Piscium	5.7	4 18	11 32	98	47	5 7	12 20	209	158	0 49
5	47 B. Arietis	6.5	4 52	11 53	72	20	6 7	13 8	252	196	1 15
6	ε Arietis (mean)	4.6	3 58	10 55	186	101	4 37	11 34	190	144	0 39
7	27 Tauri	3.7	1 15	8 9	10	66	1 54	8 48	310	2	0 39
7	36 Tauri	5.6	9 54	16 46	124	70	10 41	17 34	236	186	0 47
8	ε Tauri	5.6	9 46	16 35	174	117	10 0	16 49	199	142	0 14
11	149 B. Geminorum	6.4	2 33	9 12	166	223	2 58	9 36	207	264	0 24
11	79 Geminorum	6.3	13 54	20 31	80	28	14 41	21 17	320	271	0 47
14	83 B. Leonis	5.9	8 17	14 42	102	134	9 38	16 3	330	336	1 21
14	89 B. Leonis	6.2	10 26	16 51	161	149	11 38	18 3	274	239	1 12
14	π Leonis	4.9	11 58	18 22	136	98	13 15	19 39	295	247	1 17
16	ε Leonis	5.1	14 37	20 54	191	150	15 6	21 22	235	190	0 29
18	370 B. Virginis	6.0	7 33	13 43	82	132	8 23	14 32	388	25	0 49
26	π Capricorni	5.2	23 55	5 35	34	354	0 49	6 28	270	224	0 54
27	18 Aquarii	5.5	23 43	5 19	343	312	0 3	5 39	310	276	0 20

NOTE.—The angles of position are counted from the north point and vertex of the Moon's limb toward the east.
 † Immersion below the horizon of Washington. ‡ Emerison below the horizon of Washington.

EPIHEMERIS FOR PHYSICAL OBSERVATIONS OF THE SUN.
FOR GREENWICH MEAN NOON.

Date.	P	B_0	L_0	Date.	P	B_0	L_0
	°	°	°		°	°	°
Jan. 1	+ 2.37	-3.08	313.50	July 4	- 1.22	+3.35	31.75
6	- 0.07	3.65	247.65	9	+ 1.05	3.87	325.58
11	2.49	4.19	181.81	14	3.31	4.36	259.41
16	4.87	4.70	115.97	19	5.52	4.83	193.25
21	7.19	5.17	50.13	24	7.68	5.26	127.10
26	- 9.43	-5.60	344.30	29	+ 9.77	+5.66	60.96
31	11.57	5.98	278.47	Aug. 3	11.77	6.02	354.84
Feb. 5	13.60	6.32	212.64	8	13.68	6.34	288.72
10	15.51	6.61	146.80	13	15.49	6.61	222.62
15	17.28	6.85	80.96	18	17.18	6.84	156.53
20	-18.92	-7.03	15.12	23	+18.75	+7.02	90.46
25	20.41	7.16	309.27	28	20.20	7.14	24.40
Mar. 1	21.74	7.23	243.41	Sept. 2	21.51	7.22	318.35
6	22.92	7.25	177.54	7	22.68	7.25	252.32
11	23.93	7.21	111.65	12	23.70	7.22	186.30
16	-24.78	-7.12	45.75	17	+24.57	+7.15	120.28
21	25.45	6.97	339.83	22	25.28	7.02	54.29
26	25.95	6.77	273.89	27	25.82	6.84	348.30
31	26.28	6.52	207.94	Oct. 2	26.20	6.60	282.32
Apr. 5	26.42	6.22	141.97	7	26.40	6.32	216.36
10	-26.39	-5.88	75.98	12	+26.42	+5.99	150.39
15	26.16	5.50	9.96	17	26.25	5.61	84.44
20	25.76	5.08	303.93	22	25.89	5.20	18.50
25	25.17	4.62	237.87	27	25.33	4.74	312.56
30	24.40	4.13	171.80	Nov. 1	24.58	4.24	246.63
May 5	-23.44	-3.61	105.71	6	+23.63	+3.71	180.70
10	22.31	3.07	39.60	11	22.49	3.15	114.78
15	21.01	2.51	333.47	16	21.15	2.57	48.86
20	19.54	1.93	267.33	21	19.62	1.96	342.96
25	17.92	1.34	201.18	26	17.92	1.34	277.06
30	-16.16	-0.74	135.02	Dec. 1	+16.06	+0.71	211.17
June 4	14.27	-0.14	68.84	6	14.04	+0.07	145.28
9	12.27	+0.47	2.67	11	11.90	-0.57	79.39
14	10.17	1.06	296.48	16	9.65	1.21	13.52
19	8.00	1.66	230.30	21	7.31	1.84	307.65
24	- 5.77	+2.24	164.11	26	+ 4.91	-2.45	241.79
29	- 3.50	+2.80	97.93	31	+ 2.48	-3.05	175.94

In the above table, P is the position-angle of the axis of rotation measured eastward from the north point of the disk, while L_0 and B_0 are the heliographic longitudes and latitudes, respectively, of the center of the disk. The longitudes are reckoned from the Solar Meridian which passed through the ascending node of the Sun's equator on the ecliptic, on Jan. 1, 1854, Greenwich Mean Noon.

MEAN EQUATOR, ORBIT, AND MEAN LONGITUDE.

FOR GREENWICH MEAN NOON.

Date.	Mean Equator.			Orbit.		Mean Longitude. C	Mean Solar Days.	Motion in Mean Longitude.
	i	Δ	Ω'	Γ'	Ω			
Jan. 1	22 30.0	126 52.8	3 5.2	265 22.3	309 43.0	233 18.6	0.1	1 19.06
11	22 30.7	126 19.8	3 6.5	266 29.2	309 11.3	5 4.4	0.2	2 38.12
21	22 31.4	125 46.8	3 7.8	267 36.0	308 39.5	136 50.3	0.3	3 57.18
31	22 32.1	125 13.9	3 9.1	268 42.8	308 7.7	268 36.1	0.4	5 16.23
Feb. 10	22 32.8	124 41.0	3 10.4	269 49.7	307 36.0	40 22.0	0.5	6 35.29
20	22 33.5	124 8.0	3 11.6	270 56.5	307 4.2	172 7.8	0.6	7 54.35
Mar. 1	22 34.2	123 35.1	3 12.9	272 3.4	306 32.4	303 53.6	0.7	9 13.41
11	22 34.9	123 2.2	3 14.1	273 10.2	306 0.6	75 39.5	0.8	10 32.47
21	22 35.6	122 29.4	3 15.3	274 17.0	305 28.9	207 25.3	0.9	11 51.53
31	22 36.3	121 56.5	3 16.5	275 23.9	304 57.1	339 11.1	1.0	13 10.58
Apr. 10	22 37.0	121 23.7	3 17.6	276 30.8	304 25.3	110 57.0	2.0	26 21.17
20	22 37.8	120 50.8	3 18.8	277 37.6	303 53.5	242 42.8	3.0	39 31.75
30	22 38.5	120 18.0	3 19.9	278 44.4	303 21.7	14 28.7	4.0	52 42.33
May 10	22 39.2	119 45.3	3 21.0	279 51.3	302 50.0	146 14.5	5.0	65 52.92
20	22 40.0	119 12.5	3 22.1	280 58.1	302 18.2	278 0.3	6.0	79 3.50
30	22 40.7	118 39.8	3 23.2	282 4.9	301 46.5	49 46.2	7.0	92 14.09
June 9	22 41.5	118 7.0	3 24.2	283 11.8	301 14.7	181 32.0	8.0	105 24.67
19	22 42.2	117 34.3	3 25.2	284 18.6	300 42.9	313 17.8	9.0	118 35.25
29	22 43.0	117 1.6	3 26.2	285 25.5	300 11.1	85 3.7	10.0	131 45.84
July 9	22 43.7	116 29.0	3 27.2	286 32.3	299 39.4	216 49.5	Hours.	0 32.94
19	22 44.5	115 56.3	3 28.2	287 39.2	299 7.6	348 35.4	1	1 5.88
29	22 45.2	115 23.7	3 29.2	288 46.0	298 35.8	120 21.2	2	1 38.82
Aug. 8	22 46.0	114 51.1	3 30.1	289 52.8	298 4.1	252 7.0	3	2 11.76
18	22 46.8	114 18.5	3 31.0	290 59.7	297 32.3	23 52.9	4	2 44.70
28	22 47.6	113 45.9	3 31.9	292 6.5	297 0.5	155 38.7	5	3 17.65
Sept. 7	22 48.4	113 13.3	3 32.8	293 13.3	296 28.7	287 24.5	6	3 50.59
17	22 49.1	112 40.7	3 33.6	294 20.2	295 57.0	59 10.4	7	4 23.53
27	22 49.9	112 8.2	3 34.5	295 27.1	295 25.2	190 56.2	8	4 56.47
Oct. 7	22 50.7	111 35.7	3 35.3	296 33.9	294 53.4	322 42.1	9	5 29.41
17	22 51.5	111 3.2	3 36.1	297 40.7	294 21.6	94 27.9	10	6 2.35
27	22 52.3	110 30.7	3 36.9	298 47.6	293 49.9	226 13.7	11	6 35.29
Nov. 6	22 53.1	109 58.2	3 37.6	299 54.4	293 18.1	357 59.6	12	7 8.23
16	22 53.9	109 25.8	3 38.4	301 1.2	292 46.3	129 45.4	13	7 41.17
26	22 54.7	108 53.4	3 39.1	302 8.1	292 14.5	261 31.3	14	8 14.11
Dec. 6	22 55.5	108 21.0	3 39.8	303 15.0	291 42.8	33 17.1	15	8 47.06
16	22 56.3	107 48.6	3 40.5	304 21.8	291 11.0	165 2.9	16	9 20.00
26	22 57.1	107 16.3	3 41.1	305 28.6	290 39.2	296 48.8	17	9 52.94
36	22 57.9	106 43.9	3 41.8	306 35.5	290 7.5	68 34.6	18	10 25.88
							19	10 58.82
							20	11 31.76
							21	12 4.70
							22	12 37.64
							23	

Daily motion of Γ' +6'.684
 Daily motion of Ω -3'.177

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

FOR GREENWICH MEAN MIDNIGHT.

Date.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C
	Long.	Lat.	Long.	Lat.	Colong.	Lat.	
Jan. 1	-4.63	+6.45	0.00	-0.03	229.52	-0.73	14.78
2	2.86	5.74	0.00	0.03	241.71	0.70	9.45
3	-0.88	4.62	0.00	0.03	253.90	0.67	3.19
4	+1.15	3.16	0.00	0.03	266.09	0.65	356.71
5	3.08	+1.48	0.00	0.03	278.28	0.62	350.76
6	+4.74	-0.28	+0.01	-0.03	290.47	-0.60	345.79
7	6.05	1.97	0.01	0.03	302.65	0.57	342.03
8	6.92	3.50	0.01	0.03	314.84	0.55	339.37
9	7.36	4.78	0.01	0.03	327.01	0.53	337.84
10	7.37	5.77	0.01	0.03	339.18	0.51	337.35
11	+7.00	-6.43	+0.01	-0.03	351.35	-0.49	337.86
12	6.31	6.78	0.01	0.03	3.50	0.47	339.36
13	5.37	6.81	+0.01	0.03	15.66	0.45	341.83
14	4.23	6.54	0.00	0.03	27.80	0.43	345.22
15	2.97	5.99	0.00	0.03	39.95	0.41	349.40
16	+1.64	-5.18	0.00	-0.03	52.09	-0.38	354.15
17	+0.28	4.16	0.00	0.03	64.22	0.36	359.19
18	-1.05	2.96	0.00	0.03	76.35	0.33	4.19
19	2.32	1.62	0.00	0.03	88.48	0.30	8.87
20	3.49	-0.20	0.00	0.03	100.61	0.27	13.02
21	-4.53	+1.25	0.00	-0.03	112.74	-0.24	16.51
22	5.40	2.66	0.00	0.03	124.88	0.20	19.27
23	6.07	3.96	0.00	0.03	137.01	0.17	21.24
24	6.50	5.09	-0.01	0.03	149.15	0.14	22.39
25	6.67	5.97	0.01	0.03	161.30	0.10	22.60
26	-6.53	+6.56	-0.01	-0.03	173.45	-0.07	21.75
27	6.07	6.80	0.01	0.02	185.61	0.04	19.69
28	5.28	6.65	0.01	0.02	197.77	-0.01	16.30
29	4.18	6.09	0.01	0.02	209.94	+0.03	11.59
30	2.81	5.13	-0.01	0.02	222.12	0.06	5.82
31	-1.24	+3.82	0.00	-0.02	234.31	+0.09	359.53
Feb. 1	+0.42	2.24	0.00	0.02	246.50	0.12	353.39
2	2.08	+0.51	0.00	0.02	258.70	0.15	347.97
3	3.59	-1.25	0.00	0.02	270.89	0.18	343.61
4	4.87	2.89	0.00	0.02	283.08	0.21	340.40
5	+5.81	-4.32	0.00	-0.02	295.28	+0.24	338.35
6	6.37	5.46	0.00	0.02	307.47	0.26	337.39
7	6.53	6.26	0.00	0.03	319.65	0.29	337.52
8	6.28	6.72	0.00	0.03	331.83	0.31	338.69
9	5.69	6.84	0.00	0.03	344.01	0.33	340.89
10	+4.79	-6.65	0.00	-0.03	356.18	+0.36	344.05
11	3.66	6.17	0.00	0.03	8.34	0.38	348.04
12	2.38	5.42	0.00	0.03	20.50	0.40	352.67
13	+1.02	4.45	0.00	0.03	32.66	0.42	357.66
14	-0.34	3.30	0.00	0.03	44.80	0.45	2.71
15	-1.64	-1.99	-0.01	-0.03	56.95	+0.47	7.51
16	-2.81	-0.58	-0.01	-0.02	69.09	+0.50	11.86

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

FOR GREENWICH MEAN MIDNIGHT

Date.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C
	Long.	Lat.	Long.	Lat.	Colong.	Lat.	
Feb. 16	-2.81	-0.58	-0.01	-0.02	69.09	+0.50	11.86
17	3.81	+0.87	0.01	0.02	81.23	0.53	15.58
18	4.60	2.30	0.01	0.02	93.37	0.55	18.59
19	5.15	3.64	0.01	0.02	105.51	0.58	20.82
20	5.46	4.82	0.01	0.02	117.65	0.61	22.21
21	-5.52	+5.77	-0.01	-0.02	129.80	+0.64	22.67
22	5.35	6.42	0.01	0.02	141.95	0.67	22.07
23	4.95	6.73	0.01	0.02	154.09	0.70	20.30
24	4.36	6.65	0.01	0.02	166.24	0.72	17.25
25	3.59	6.19	0.01	0.02	178.41	0.75	12.93
26	-2.66	+5.35	-0.01	-0.02	190.58	+0.78	7.54
27	1.61	4.17	0.01	0.02	202.76	0.80	1.53
28	-0.47	2.72	0.01	0.02	214.95	0.83	355.47
29	+0.73	+1.10	0.01	0.02	227.15	0.86	349.91
Mar. 1	1.92	-0.60	0.01	0.02	239.34	0.88	345.23
2	+3.05	-2.25	-0.01	-0.02	251.55	+0.91	341.60
3	4.03	3.74	0.01	0.02	263.75	0.93	339.07
4	4.78	4.99	0.01	0.02	275.96	0.96	337.64
5	5.26	5.91	0.01	0.02	288.17	0.98	337.31
6	5.40	6.49	0.01	0.02	300.37	1.00	338.07
7	+5.18	-6.72	-0.01	-0.02	312.57	+1.02	339.91
8	4.63	6.62	0.01	0.02	324.77	1.04	342.78
9	3.77	6.21	0.01	0.02	336.96	1.06	346.56
10	2.66	5.54	0.01	0.02	349.15	1.07	351.05
11	1.38	4.63	0.01	0.02	1.33	1.09	355.98
12	+0.02	-3.53	-0.01	-0.02	13.50	+1.10	1.04
13	-1.34	2.28	0.01	0.02	25.68	1.12	5.95
14	2.62	-0.92	0.01	0.02	37.84	1.14	10.45
15	3.72	+0.49	0.01	0.02	50.00	1.16	14.39
16	4.58	1.91	0.02	0.02	62.16	1.17	17.67
17	-5.15	+3.26	-0.02	-0.02	74.32	+1.19	20.19
18	5.39	4.48	0.02	0.02	86.47	1.21	21.89
19	5.31	5.48	0.02	0.02	98.62	1.22	22.66
20	4.93	6.19	0.02	0.02	110.77	1.24	22.38
21	4.30	6.56	0.02	0.02	122.93	1.26	20.91
22	-3.49	+6.55	-0.02	-0.02	135.09	+1.27	18.13
23	2.56	6.14	0.02	0.02	147.25	1.29	14.04
24	1.59	5.36	0.01	0.02	159.42	1.30	8.83
25	-0.62	4.25	0.01	0.02	171.60	1.31	2.94
26	+0.32	2.88	0.01	0.02	183.78	1.33	356.92
27	+1.21	+1.33	-0.01	-0.02	195.97	+1.34	351.30
28	2.04	-0.29	0.01	0.02	208.17	1.36	346.47
29	2.81	1.89	0.01	0.02	220.38	1.38	342.61
30	3.49	3.36	0.01	0.02	232.59	1.39	339.78
31	4.05	4.62	0.01	0.02	244.81	1.40	338.00
Apr. 1	+4.45	-5.60	-0.01	-0.02	257.03	+1.42	337.27
2	+4.64	-6.25	-0.01	-0.02	269.25	+1.43	337.82

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

FOR GREENWICH MEAN MIDNIGHT.

Date.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C
	Long.	Lat.	Long.	Lat.	Colong.	Lat.	
Apr. 1	+4.45	-5.60	-0.01	-0.02	257.03	+1.42	337.27
2	4.64	6.25	0.01	0.02	269.25	1.43	337.62
3	4.57	6.56	0.01	0.02	281.47	1.45	339.07
4	4.23	6.54	0.01	0.02	293.69	1.46	341.58
5	3.59	6.20	0.01	0.02	305.91	1.47	345.09
6	+2.69	-5.57	-0.01	-0.02	318.12	+1.47	349.40
7	1.56	4.71	0.01	0.02	330.34	1.48	354.24
8	+0.26	3.66	0.01	0.02	342.54	1.49	359.31
9	-1.12	2.45	0.01	0.02	354.74	1.50	4.30
10	2.50	-1.13	0.01	0.02	6.94	1.50	8.94
11	-3.77	+0.24	-0.01	-0.02	19.13	+1.51	13.06
12	4.85	1.63	0.01	0.02	31.31	1.51	16.56
13	5.64	2.96	0.01	0.02	43.49	1.51	19.35
14	6.08	4.18	0.02	0.02	55.67	1.52	21.37
15	6.12	5.22	0.02	0.02	67.84	1.52	22.52
16	-5.75	+6.00	-0.02	-0.02	80.01	+1.52	22.65
17	5.00	6.44	0.02	0.02	92.18	1.52	21.61
18	3.93	6.50	0.02	0.02	104.34	1.52	19.23
19	2.66	6.15	0.02	0.02	116.51	1.52	15.45
20	-1.31	5.41	0.02	0.02	128.68	1.52	10.40
21	+0.02	+4.31	-0.01	-0.02	140.86	+1.52	4.48
22	1.24	2.94	0.01	0.02	153.05	1.52	358.34
23	2.29	+1.40	0.01	0.02	165.24	1.51	352.53
24	3.16	-0.21	0.01	0.02	177.43	1.51	347.49
25	3.84	1.79	0.01	0.02	189.64	1.51	343.42
26	+4.35	-3.24	-0.01	-0.02	201.85	+1.51	340.37
27	4.70	4.49	0.01	0.02	214.07	1.52	338.34
28	4.88	5.48	0.01	0.02	226.30	1.52	337.33
29	4.89	6.16	0.01	0.02	238.52	1.52	337.36
30	4.72	6.51	0.01	0.02	250.76	1.52	338.45
May 1	+4.35	-6.52	-0.01	-0.02	262.99	+1.52	340.62
2	3.75	6.22	0.01	0.02	275.23	1.52	343.81
3	2.94	5.64	0.01	0.02	287.47	1.52	347.89
4	1.90	4.80	0.01	0.02	299.70	1.52	352.61
5	+0.69	3.76	0.01	0.02	311.93	1.52	357.66
6	-0.66	-2.57	-0.01	-0.02	324.16	+1.51	2.70
7	2.07	-1.27	0.01	0.02	336.38	1.51	7.46
8	3.47	+0.09	0.01	0.02	348.60	1.50	11.74
9	4.76	1.46	0.01	0.02	0.82	1.49	15.43
10	5.85	2.78	0.01	0.02	13.03	1.49	18.44
11	-6.64	+4.00	-0.01	-0.02	25.23	+1.48	20.72
12	7.06	5.06	0.01	0.01	37.43	1.47	22.21
13	7.04	5.89	0.01	0.01	49.62	1.45	22.77
14	6.53	6.41	0.01	0.01	61.81	1.44	22.24
15	5.58	6.57	0.01	0.01	73.99	1.43	20.43
16	-4.25	+6.32	-0.01	-0.01	86.17	+1.41	17.17
17	-2.64	+5.64	-0.01	-0.01	98.35	+1.40	12.49

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

FOR GREENWICH MEAN MIDNIGHT.

Date.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C
	Long.	Lat.	Long.	Lat.	Colong.	Lat.	
May 17	-2.64	+5.64	-0.01	-0.01	98.35	+1.40	12.49
18	-0.91	4.58	0.01	0.01	110.53	1.38	6.68
19	+0.80	3.20	0.01	0.01	122.71	1.36	0.35
20	2.36	+1.62	0.01	0.01	134.90	1.34	354.20
21	3.68	-0.05	-0.01	0.01	147.10	1.32	348.76
22	+4.72	-1.69	0.00	-0.01	159.30	+1.31	344.32
23	5.47	3.19	0.00	0.01	171.50	1.29	340.97
24	5.92	4.48	0.00	0.01	183.72	1.28	338.68
25	6.11	5.50	0.00	0.01	195.94	1.27	337.44
26	6.06	6.20	0.00	0.01	208.17	1.26	337.21
27	+5.78	-6.58	0.00	-0.01	220.41	+1.25	338.03
28	5.30	6.63	0.00	0.02	232.65	1.24	339.91
29	4.62	6.36	0.00	0.02	244.89	1.23	342.81
30	3.76	5.80	0.00	0.02	257.14	1.22	346.64
31	2.72	4.98	0.00	0.02	269.38	1.21	351.19
June 1	+1.52	-3.95	0.00	-0.02	281.63	+1.20	356.18
2	+0.20	2.75	0.00	0.02	293.88	1.18	1.25
3	-1.20	1.44	0.00	0.01	306.12	1.17	6.12
4	2.64	-0.07	-0.01	0.01	318.36	1.16	10.55
5	4.04	+1.31	0.01	0.01	330.60	1.14	14.40
6	-5.32	+2.64	-0.01	-0.01	342.83	+1.12	17.59
7	6.41	3.88	0.01	0.01	355.06	1.10	20.08
8	7.22	4.96	0.01	0.01	7.28	1.08	21.82
9	7.66	5.84	0.01	0.01	19.50	1.06	22.72
10	7.67	6.44	0.01	0.01	31.70	1.04	22.64
11	-7.20	+6.70	-0.01	-0.01	43.91	+1.02	21.39
12	6.26	6.57	0.01	0.01	56.10	0.99	18.80
13	4.88	6.03	0.01	0.01	68.30	0.96	14.74
14	3.17	5.07	-0.01	0.01	80.49	0.94	9.35
15	-1.26	3.74	0.00	0.01	92.68	0.91	3.07
16	+0.71	+2.15	0.00	-0.01	104.86	+0.88	356.62
17	2.56	+0.41	0.00	0.01	117.06	0.85	350.68
18	4.19	-1.34	0.00	0.01	129.25	0.82	345.71
19	5.49	2.96	0.00	0.01	141.45	0.79	341.88
20	6.44	4.36	0.00	0.01	153.66	0.76	339.19
21	+7.00	-5.47	0.00	-0.01	165.87	+0.74	337.62
22	7.20	6.25	0.00	0.01	178.09	0.72	337.13
23	7.07	6.68	+0.01	0.01	190.32	0.70	337.70
24	6.64	6.77	+0.01	0.01	202.55	0.68	339.33
25	5.95	6.54	0.00	0.01	214.79	0.66	341.99
26	+5.05	-6.01	0.00	-0.01	227.03	+0.64	345.60
27	3.97	5.22	0.00	0.01	239.28	0.62	349.98
28	2.74	4.21	0.00	0.01	251.53	0.61	354.86
29	1.41	3.02	0.00	0.01	263.78	0.59	359.94
30	+0.01	1.71	0.00	0.01	276.03	0.57	4.89
July 1	-1.42	-0.32	0.00	-0.01	288.28	+0.55	9.46
2	-2.82	+1.08	0.00	-0.01	300.53	+0.53	13.87

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.
FOR GREENWICH MEAN MIDNIGHT.

Date.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		c	
	Long.	Lat.	Long.	Lat.	Colong.	Lat.		
July	1	-1.42	-0.32	0.00	-0.01	288.28	+0.55	9.46
	2	2.82	+1.08	0.00	0.01	300.53	0.53	13.47
	3	4.16	2.44	0.00	0.01	312.78	0.51	16.84
	4	5.38	3.71	0.00	0.01	325.02	0.49	19.51
	5	6.40	4.83	0.00	0.01	337.26	0.46	21.45
	6	-7.16	+5.75	0.00	-0.01	349.50	+0.44	22.59
	7	7.61	6.42	0.00	0.01	1.72	0.41	22.82
	8	7.67	6.77	0.00	0.01	13.94	0.39	22.01
	9	7.32	6.76	0.00	0.01	26.16	0.36	19.98
	10	6.52	6.37	0.00	0.01	38.37	0.33	16.59
	11	-5.30	+5.56	0.00	-0.01	50.57	+0.29	11.82
	12	3.71	4.38	0.00	0.01	62.76	0.26	5.95
	13	-1.87	2.87	0.00	0.01	74.96	0.22	359.52
	14	+0.11	+1.14	0.00	0.01	87.14	0.19	353.25
	15	2.08	-0.67	+0.01	0.01	99.33	0.15	347.72
	16	+3.88	-2.41	+0.01	-0.01	111.52	+0.12	343.29
	17	5.41	3.96	0.01	0.01	123.72	0.08	340.05
	18	6.57	5.22	0.01	0.01	135.92	0.05	338.01
	19	7.31	6.12	0.01	0.01	148.12	+0.02	337.13
	20	7.63	6.66	0.01	0.01	160.33	-0.01	337.39
	21	+7.53	-6.84	+0.01	-0.01	172.55	-0.03	338.75
	22	7.07	6.67	0.01	0.01	184.77	0.06	341.18
	23	6.30	6.20	0.01	0.01	197.00	0.08	344.59
	24	5.27	5.45	0.01	0.01	209.23	0.10	348.81
	25	4.06	4.47	0.01	0.01	221.47	0.12	353.60
	26	+2.72	-3.31	+0.01	-0.01	233.72	-0.14	358.66
	27	+1.31	2.02	0.01	0.01	245.96	0.16	3.66
	28	-0.11	-0.64	0.01	0.01	258.21	0.18	8.35
	29	1.50	+0.77	0.01	0.01	270.46	0.20	12.54
	30	2.82	2.16	+0.01	0.01	282.71	0.22	16.09
	31	-4.02	+3.46	0.00	-0.01	294.96	-0.24	18.96
Aug.	1	5.06	4.62	0.00	0.01	307.20	0.26	21.08
	2	5.91	5.58	0.00	0.01	319.45	0.29	22.42
	3	6.53	6.30	0.00	0.01	331.68	0.31	22.89
	4	6.88	6.72	0.00	0.01	343.91	0.34	22.37
	5	-6.92	+6.80	0.00	-0.01	356.14	-0.36	20.72
	6	6.64	6.52	+0.01	0.01	8.36	0.39	17.82
	7	6.01	5.85	0.01	0.01	20.57	0.42	13.62
	8	5.02	4.83	0.01	0.01	32.78	0.45	8.27
	9	3.72	3.47	0.01	0.01	44.97	0.48	2.16
	10	-2.15	+1.86	+0.01	-0.01	57.16	-0.51	355.88
	11	-0.40	+0.10	0.01	0.01	69.35	0.55	350.06
	12	+1.43	-1.67	0.01	0.01	81.53	0.58	345.12
	13	3.19	3.32	0.01	0.01	93.72	0.62	341.31
	14	4.76	4.72	0.02	-0.01	105.90	0.65	338.71
	15	+6.03	-5.79	+0.02	0.00	118.08	-0.68	337.32
	16	+6.90	-6.47	+0.02	0.00	130.27	-0.71	337.13

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.
FOR GREENWICH MEAN MIDNIGHT.

Date.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C
	Long.	Lat.	Long.	Lat.	Colong.	Lat.	
Aug. 16	+6.90	-6.47	+0.02	0.00	130.27	-0.71	337.13
17	7.32	6.76	0.02	0.00	142.47	0.74	338.12
18	7.31	6.69	0.02	0.00	154.67	0.76	340.26
19	6.89	6.29	0.02	0.00	166.87	0.78	343.45
20	6.10	5.80	0.02	0.00	179.08	0.80	347.52
21	+5.04	-4.67	+0.02	0.00	191.30	-0.82	352.23
22	3.77	3.55	0.02	0.00	203.53	0.84	357.27
23	2.39	2.29	0.02	0.00	215.75	0.86	2.32
24	+0.96	-0.94	0.02	0.00	227.98	0.88	7.13
25	-0.43	+0.46	0.01	0.00	240.22	0.89	11.47
26	-1.74	+1.84	+0.01	0.00	252.46	-0.91	15.22
27	2.91	3.15	0.01	0.00	264.70	0.92	18.30
28	3.90	4.34	0.01	0.00	276.94	0.94	20.65
29	4.68	5.34	0.01	0.00	289.18	0.96	22.21
30	5.24	6.09	0.01	0.00	301.41	0.97	22.90
31	-5.58	+6.56	+0.01	0.00	313.65	-0.99	22.61
Sept. 1	5.70	6.69	0.01	0.00	325.88	1.00	21.23
2	5.59	6.48	0.01	0.00	338.10	1.02	18.64
3	5.25	5.90	0.01	0.00	350.32	1.04	14.81
4	4.68	4.98	0.01	0.00	2.53	1.06	9.85
5	-3.89	+3.75	+0.01	0.00	14.73	-1.08	4.07
6	2.87	2.28	0.01	0.00	26.92	1.11	357.98
7	1.65	+0.63	0.02	0.00	39.11	1.13	352.12
8	-0.26	-1.08	0.02	0.00	51.29	1.16	346.95
9	+1.22	2.72	0.02	0.00	63.47	1.18	342.74
10	+2.71	-4.17	+0.02	0.00	75.64	-1.21	339.65
11	4.09	5.34	0.02	0.00	87.81	1.23	337.74
12	5.24	6.15	0.02	0.00	99.98	1.26	337.03
13	6.08	6.58	0.02	0.00	112.15	1.28	337.55
14	6.51	6.61	0.02	0.00	124.32	1.30	339.28
15	+6.52	-6.29	+0.02	0.00	136.50	-1.32	342.16
16	6.13	5.66	0.02	0.00	148.69	1.33	346.06
17	5.36	4.78	0.02	0.00	160.88	1.34	350.63
18	4.30	3.70	0.02	0.00	173.07	1.35	355.66
19	3.02	2.47	0.02	0.00	185.27	1.36	0.78
20	+1.63	-1.16	+0.02	0.00	197.48	-1.37	5.69
21	+0.21	+0.21	0.02	0.00	209.69	1.38	10.20
22	-1.14	1.57	0.01	0.00	221.90	1.39	14.14
23	2.35	2.88	0.01	0.00	234.12	1.40	17.45
24	3.36	4.07	0.01	0.00	246.34	1.40	20.04
25	-4.11	+5.09	+0.01	0.00	258.57	-1.41	21.86
26	4.60	5.88	0.01	0.00	270.79	1.41	22.83
27	4.81	6.39	0.01	0.00	283.02	1.42	22.82
28	4.78	6.57	0.01	0.00	295.24	1.42	21.71
29	4.52	6.40	0.01	0.00	307.46	1.43	19.39
30	-4.10	+5.86	+0.01	0.00	319.68	-1.43	15.80
Oct. 1	-3.53	+4.98	+0.01	0.00	331.89	-1.44	11.05

620 ILLUMINATED DISK OF MERCURY, 1916.

FOR GREENWICH MEAN NOON.

Date.	k	i	θ	L	Stellar Mag.	Date.	k	i	θ	L	Stellar Mag.
Jan. 1	0.958	24	4	33.4	-0.8	July 4	0.476	93	170	45.2	+0.2
6	0.917	34	358	40.3	0.8	9	0.621	76	175	54.9	-0.3
11	0.842	47	352	49.8	0.7	14	0.774	57	182	63.9	0.5
16	0.719	64	347	60.7	0.6	19	0.904	36	191	68.3	1.3
21	0.524	87	342	65.1	-0.3	24	0.982	16	206	64.8	1.6
26	0.294	114	337	51.9	+0.4	29	0.998	6	320	56.1	-1.6
31	0.085	146	327	19.1	1.6	Aug. 3	0.971	20	3	46.7	1.3
Feb. 5	0.009	169	248	2.0	2.7	8	0.927	31	12	39.4	0.8
10	0.080	147	182	15.4	1.7	13	0.877	41	18	34.5	0.4
15	0.220	124	174	31.4	1.1	18	0.827	49	21	31.4	-0.2
20	0.359	106	170	37.0	+0.7	23	0.775	56	23	29.8	0.0
25	0.474	93	166	36.5	0.5	28	0.723	64	25	29.5	+0.2
Mar. 1	0.566	82	163	34.2	0.4	Sept. 2	0.665	71	26	30.3	0.3
6	0.641	74	160	32.1	0.3	7	0.596	79	28	31.7	0.4
11	0.704	66	157	30.7	0.2	12	0.516	88	29	33.7	0.5
16	0.754	59	154	30.0	+0.1	17	0.415	100	30	35.1	+0.6
21	0.806	52	152	30.5	-0.1	22	0.283	116	32	32.4	0.9
26	0.852	45	150	32.4	0.3	27	0.148	135	36	23.2	1.4
31	0.900	37	148	35.9	0.6	Oct. 2	0.029	160	48	6.0	2.4
Apr. 5	0.946	27	146	41.5	0.9	7	0.015	166	185	3.3	2.6
10	0.985	14	142	49.6	-1.4	12	0.153	134	204	30.7	+1.1
15	0.999	3	19	59.4	1.8	17	0.387	103	208	58.8	+0.1
20	0.966	21	338	67.6	1.6	22	0.615	77	209	65.1	-0.4
25	0.870	42	338	69.1	1.1	27	0.783	56	209	57.0	0.7
30	0.726	63	340	63.0	0.7	Nov. 1	0.886	40	209	46.3	0.8
May 5	0.571	82	343	53.3	-0.2	6	0.944	27	207	37.6	-0.8
10	0.427	98	345	43.3	+0.4	11	0.977	18	205	31.6	0.8
15	0.299	114	348	33.8	0.9	16	0.993	10	200	27.7	0.8
20	0.190	128	351	24.3	1.4	21	0.999	3	183	25.4	0.8
25	0.100	143	354	14.5	1.9	26	0.999	3	41	24.4	0.8
30	0.035	158	1	5.6	+2.5	Dec. 1	0.994	9	24	24.5	-0.7
June 4	0.004	173	39	0.7	3.3	6	0.982	15	18	25.8	0.6
9	0.014	166	139	2.4	3.0	11	0.963	22	12	28.2	0.6
14	0.063	151	153	9.6	2.2	16	0.933	30	7	32.3	0.6
19	0.139	136	158	18.8	1.7	21	0.885	40	2	38.5	0.6
24	0.235	122	162	27.7	+1.2	26	0.806	52	357	47.2	-0.6
29	0.348	108	166	36.4	+0.7	31	0.682	69	352	57.3	-0.5

NOTATION.

k —the ratio of the area of the illuminated portion of the apparent disk to the area of the entire apparent disk regarded as circular.

i —the angle between the Sun and Earth, as seen from the planet.

θ —the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L —the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the Sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR GREENWICH MEAN NOON.

Date.	k	i	θ	L	Stellar Mag.	Date.	k	i	θ	L	Stellar Mag.
Jan. 1	0.892	38.4	348.5	59.1	-3.4	July 4	0.002	174.5	110.1	3.8	-2.8
6	0.882	40.1	348.5	60.4	3.4	9	0.015	185.9	155.3	23.8	3.2
11	0.872	41.8	344.6	61.9	3.4	14	0.043	156.0	164.2	63.4	3.6
16	0.862	43.6	343.0	63.5	3.4	19	0.083	146.6	167.8	107.1	3.8
21	0.851	45.4	341.5	65.2	3.4	24	0.128	138.1	170.2	144.0	4.0
26	0.839	47.3	340.2	67.0	-3.4	29	0.174	130.6	172.1	168.9	-4.1
31	0.827	49.1	339.2	69.0	3.4	Aug. 3	0.220	124.0	174.0	182.1	4.2
Feb. 5	0.815	50.9	338.4	71.1	3.5	8	0.264	118.1	176.0	186.9	4.2
10	0.801	53.0	337.8	73.4	3.5	13	0.306	112.8	178.0	185.8	4.2
15	0.787	55.0	337.4	75.9	3.5	18	0.345	108.1	180.0	180.8	4.2
20	0.772	57.0	337.3	78.6	-3.5	23	0.380	103.8	182.2	173.8	-4.1
25	0.757	59.1	337.3	81.4	3.6	28	0.414	99.9	184.4	165.9	4.1
Mar. 1	0.741	61.2	337.6	84.6	3.6	Sept. 2	0.446	96.2	186.6	157.5	4.1
6	0.724	63.4	338.0	88.0	3.6	7	0.475	92.8	188.8	149.5	4.0
11	0.706	65.7	338.7	91.6	3.6	12	0.503	89.6	191.0	141.8	4.0
16	0.687	68.0	339.6	95.6	-3.7	17	0.530	86.6	193.1	134.2	-3.9
21	0.668	70.4	340.7	99.9	3.7	22	0.555	83.7	195.1	127.7	3.9
26	0.648	72.9	341.9	104.7	3.7	27	0.579	81.0	197.0	121.4	3.9
31	0.628	75.4	343.4	109.7	3.8	Oct. 2	0.601	78.4	198.8	115.7	3.8
Apr. 5	0.603	78.1	345.0	115.1	3.8	7	0.623	75.8	200.4	110.2	3.8
10	0.579	80.8	346.7	121.3	-3.9	12	0.644	73.2	201.8	105.3	-3.7
15	0.554	83.7	348.6	127.7	3.9	17	0.664	70.8	203.0	100.7	3.7
20	0.528	86.7	350.5	134.7	3.9	22	0.683	68.5	208.9	96.4	3.7
25	0.501	89.9	352.4	142.3	4.0	27	0.702	66.2	204.6	92.6	3.7
30	0.471	93.3	354.3	150.2	4.0	Nov. 1	0.720	63.9	205.1	89.1	3.6
May 5	0.441	96.9	356.2	158.6	-4.1	6	0.737	61.7	205.3	85.8	-3.6
10	0.408	100.7	358.0	167.1	4.1	11	0.753	59.6	205.3	82.6	3.6
15	0.372	104.9	359.7	174.4	4.2	16	0.769	57.5	205.0	79.8	3.5
20	0.334	109.4	1.3	181.0	4.2	21	0.784	55.4	204.4	77.1	3.5
25	0.294	114.4	2.7	185.1	4.2	26	0.799	53.3	203.5	74.6	3.5
30	0.250	120.0	3.8	184.3	-4.2	Dec. 1	0.813	51.3	202.4	72.3	-3.5
June 4	0.204	126.3	4.9	176.5	4.2	6	0.826	49.3	201.0	70.1	3.5
9	0.157	133.3	5.9	159.3	4.2	11	0.838	47.4	199.3	68.1	3.4
14	0.110	141.2	7.1	130.3	4.0	16	0.850	45.5	197.3	66.2	3.4
19	0.067	150.1	9.0	90.1	3.8	21	0.862	43.6	195.1	64.4	3.4
24	0.031	159.8	13.1	46.3	-3.5	26	0.873	41.8	192.7	62.7	-3.4
29	0.008	169.8	27.7	12.8	-3.0	31	0.884	39.9	190.1	61.2	-3.4

NOTATION.

k = the ratio of the area of the illuminated portion of the apparent disk to the area of the entire apparent disk regarded as circular.

i = the angle between the Sun and Earth, as seen from the planet.

θ = the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L = the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the Sun, and illuminated by the latter as the mean disk of the planet is illuminated.

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

FOR GREENWICH MEAN NOON.

Date.	Light-Time.	Stellar Magnitude.	P	$A_{\oplus}+180^{\circ}$	D_{\oplus}	$A_{\odot}-A_{\oplus}$	D_{\odot}	\odot_2
	m	.	.	.	.	.	.	.
Jan. 1	6.86	-0.2	9.54	240.18	+19.36	-27.91	+13.36	34.65
3	6.75	0.3	9.52	240.16	19.28	27.02	13.67	35.55
5	6.64	0.3	9.48	240.08	19.18	26.07	13.97	36.45
7	6.54	0.4	9.41	239.94	19.08	25.06	14.27	37.34
9	6.44	0.4	9.30	239.75	18.96	23.99	14.57	38.24
11	6.34	-0.5	9.16	239.50	+18.84	-22.87	+14.86	39.13
13	6.25	0.5	8.99	239.19	18.70	21.69	15.15	40.03
15	6.16	0.6	8.79	238.83	18.56	20.46	15.44	40.93
17	6.08	0.6	8.55	238.42	18.41	19.17	15.72	41.81
19	6.01	0.7	8.28	237.96	18.25	17.82	16.00	42.70
21	5.94	-0.7	7.99	237.44	+18.08	-16.43	+16.27	43.58
23	5.87	0.7	7.66	236.88	17.90	14.99	16.54	44.47
25	5.81	0.8	7.31	236.27	17.72	13.50	16.81	45.36
27	5.76	0.8	6.93	235.62	17.52	11.96	17.07	46.24
29	5.72	0.9	6.53	234.93	17.33	10.39	17.33	47.13
31	5.68	-0.9	6.10	234.21	+17.13	- 8.78	+17.58	48.01
Feb. 2	5.65	0.9	5.66	233.46	16.92	7.14	17.83	48.89
4	5.63	1.0	5.20	232.69	16.71	5.48	18.08	49.77
6	5.62	1.0	4.73	231.90	16.50	3.80	18.32	50.65
8	5.61	1.0	4.25	231.10	16.30	2.11	18.56	51.53
10	5.61	-1.0	3.76	230.30	+16.09	- 0.41	+18.79	52.41
12	5.62	1.0	3.28	229.50	15.89	+ 1.29	19.02	53.29
14	5.63	1.0	2.80	228.71	15.69	2.98	19.24	54.17
16	5.65	0.9	2.32	227.93	15.50	4.65	19.46	55.04
18	5.68	0.9	1.86	227.17	15.32	6.31	19.67	55.92
20	5.72	-0.9	1.41	226.44	+15.15	+ 7.95	+19.88	56.80
22	5.77	0.8	0.97	225.73	14.99	9.56	20.09	57.67
24	5.82	0.8	0.56	225.06	14.85	11.14	20.29	58.55
26	5.88	0.8	0.16	224.43	14.72	12.68	20.48	59.42
28	5.94	0.7	359.80	223.83	14.60	14.19	20.67	60.30
Mar. 1	6.01	-0.7	359.45	223.28	+14.49	+15.65	+20.86	61.17
3	6.09	0.6	359.14	222.78	14.41	17.07	21.04	62.04
5	6.17	0.6	358.86	222.32	14.34	18.44	21.21	62.92
7	6.26	0.5	358.60	221.92	14.28	19.77	21.38	63.79
9	6.35	0.5	358.38	221.56	14.25	21.04	21.55	64.66
11	6.45	-0.4	358.20	221.26	+14.23	+22.27	+21.71	65.54
13	6.55	0.4	358.04	221.01	14.23	23.45	21.87	66.41
15	6.66	0.3	357.92	220.81	14.25	24.58	22.02	67.28
17	6.77	0.3	357.82	220.66	14.28	25.66	22.16	68.16
19	6.88	0.2	357.76	220.56	14.33	26.69	22.30	69.03
21	7.00	-0.2	357.73	220.50	+14.39	+27.67	+22.44	69.90
23	7.12	0.1	357.73	220.50	14.47	28.61	22.57	70.78
25	7.24	-0.1	357.76	220.54	14.57	29.51	22.69	71.65
27	7.37	0.0	357.81	220.63	14.68	30.36	22.81	72.52
29	7.50	0.0	357.90	220.76	14.80	31.16	22.92	73.40
31	7.63	+0.1	358.01	220.94	+14.93	+31.93	+23.03	74.27
Apr. 2	7.76	+0.1	358.14	221.16	+15.08	+32.66	+23.13	75.15

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

FOR GREENWICH MEAN NOON.

Date.	k	Diameter.	i	q	Q	Central Meridian.	Mean Time of Transit of Zero Meridian.		
							Of Date.	Of Intermediate Date.	
		"	"	"	"	"	h m	h m	
an.	1	0.944	12.23	27.41	0.69	287.90	331.50	1 56.9	2 34.2
	3	0.947	12.43	26.48	0.65	287.61	313.34	3 11.5	3 48.6
	5	0.951	12.63	25.49	0.61	287.28	295.23	4 25.7	5 2.8
	7	0.955	12.84	24.46	0.57	286.91	277.18	5 39.8	6 16.7
	9	0.959	13.04	23.37	0.53	286.49	259.18	6 53.6	7 30.4
	11	0.963	13.24	22.23	0.49	286.00	241.24	8 7.2	8 43.9
	13	0.967	13.43	21.04	0.45	285.42	223.35	9 20.5	9 57.1
	15	0.970	13.62	19.80	0.40	284.76	205.51	10 33.6	11 10.1
	17	0.974	13.80	18.51	0.36	284.00	187.73	11 46.5	12 22.9
	19	0.978	13.97	17.17	0.31	283.11	170.00	12 59.2	13 35.4
	21	0.981	14.14	15.79	0.27	282.07	152.31	14 11.6	14 47.8
	23	0.984	14.29	14.37	0.22	280.83	134.68	15 23.9	15 59.9
	25	0.987	14.43	12.92	0.18	279.32	117.08	16 36.0	17 11.9
	27	0.990	14.56	11.43	0.14	277.42	99.53	17 47.9	18 23.8
	29	0.993	14.67	9.92	0.11	274.98	82.01	18 59.6	19 35.5
	31	0.995	14.77	8.39	0.08	271.69	64.53	20 11.3	20 47.0
eb.	2	0.997	14.84	6.88	0.05	266.99	47.07	21 22.8	21 58.5
	4	0.998	14.90	5.41	0.04	259.77	29.63	22 34.2	23 10.0
	6	0.999	14.94	4.05	0.02	247.60	12.20	23 45.7	...
	8	0.999	14.96	3.02	0.01	225.64	354.79	0 21.4	0 57.0
	10	0.999	14.96	2.72	0.01	191.96	337.38	1 32.7	2 8.4
	12	0.999	14.94	3.36	0.01	162.04	319.96	2 44.1	3 19.8
	14	0.998	14.90	4.54	0.02	144.56	302.53	3 55.6	4 31.3
	16	0.997	14.84	5.94	0.04	134.69	285.09	5 7.1	5 42.9
	18	0.996	14.76	7.42	0.06	128.60	267.62	6 18.7	6 54.6
	20	0.994	14.67	8.93	0.09	124.49	250.13	7 30.4	8 6.4
	22	0.992	14.55	10.44	0.12	121.53	232.61	8 42.3	9 18.3
	24	0.989	14.43	11.93	0.16	119.27	215.05	9 54.3	10 30.4
	26	0.986	14.28	13.39	0.19	117.49	197.45	11 6.5	11 42.7
	28	0.983	14.13	14.81	0.24	116.03	179.82	12 18.9	12 55.1
lar.	1	0.980	13.96	16.20	0.28	114.82	162.13	13 31.4	14 7.8
	3	0.977	13.79	17.54	0.32	113.79	144.40	14 44.2	15 20.7
	5	0.973	13.60	18.84	0.36	112.91	126.62	15 57.2	16 33.8
	7	0.970	13.41	20.09	0.41	112.14	108.79	17 10.4	17 47.1
	9	0.966	13.22	21.29	0.45	111.47	90.91	18 23.8	19 0.6
	11	0.962	13.02	22.44	0.49	110.90 ^a	72.97	19 37.5	20 14.4
	13	0.958	12.81	23.53	0.53	110.39	54.98	20 51.4	21 28.4
	15	0.955	12.61	24.58	0.57	109.93	36.94	22 5.5	22 42.7
	17	0.951	12.40	25.57	0.61	109.54	18.85	23 19.9	23 57.1
	19	0.947	12.20	26.51	0.64	109.19	0.70	...	0 34.4
	21	0.944	11.99	27.41	0.67	108.89	342.51	1 11.8	1 49.2
	23	0.940	11.79	28.26	0.70	108.64	324.27	2 26.6	3 4.2
	25	0.937	11.59	29.06	0.73	108.42	305.98	3 41.7	4 19.3
	27	0.934	11.39	29.81	0.75	108.24	287.65	4 57.0	5 34.7
	29	0.931	11.19	30.52	0.78	108.08	269.27	6 12.5	6 50.3
	31	0.928	11.00	31.19	0.80	107.96	250.84	7 28.1	8 6.0
pr.	2	0.925	10.81	31.81	0.81	107.86	232.38	8 44.0	9 23.8

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

FOR GREENWICH MEAN NOON.

Date.	Light-Time.	Stellar Magnitude.	P	$A_{\oplus}+180^{\circ}$	D_{\oplus}	$A_{\odot}-A_{\oplus}$	D_{\odot}	\odot_{δ}
	m		.	.	.	.	.	.
Mar. 31	7.63	+0.1	358.01	220.94	+14.93	+31.93	+23.03	74.27
Apr. 2	7.76	0.1	358.14	221.16	15.08	32.66	23.13	75.15
4	7.90	0.2	358.30	221.42	15.24	33.35	23.23	76.02
6	8.03	0.2	358.49	221.72	15.41	34.00	23.32	76.90
8	8.17	0.3	358.70	222.05	15.58	34.61	23.40	77.78
10	8.31	+0.3	358.93	222.43	+15.77	+35.18	+23.48	78.65
12	8.45	0.4	359.19	222.84	15.97	35.73	23.56	79.53
14	8.59	0.4	359.46	223.28	16.17	36.24	23.62	80.41
16	8.74	0.4	359.75	223.76	16.38	36.72	23.69	81.29
18	8.88	0.5	0.07	224.27	16.60	37.17	23.74	82.17
20	9.02	+0.5	0.40	224.81	+16.83	+37.59	+23.79	83.05
22	9.17	0.6	0.74	225.38	17.06	37.98	23.84	83.93
24	9.31	0.6	1.11	225.98	17.29	38.35	23.88	84.81
26	9.46	0.6	1.49	226.60	17.53	38.68	23.91	85.69
28	9.60	0.7	1.88	227.25	17.77	39.00	23.93	86.57
30	9.75	+0.7	2.29	227.93	+18.01	+39.29	+23.96	87.46
May 2	9.90	0.7	2.72	228.64	18.26	39.55	23.97	88.34
4	10.04	0.8	3.15	229.36	18.51	39.79	23.98	89.23
6	10.19	0.8	3.60	230.12	18.76	40.01	23.98	90.12
8	10.33	0.8	4.06	230.89	19.01	40.21	23.98	91.01
10	10.48	+0.9	4.54	231.69	+19.26	+40.38	+23.96	91.90
12	10.62	0.9	5.02	232.51	19.51	40.54	23.95	92.79
14	10.77	0.9	5.52	233.35	19.76	40.67	23.93	93.68
16	10.91	0.9	6.02	234.22	20.00	40.78	23.90	94.57
18	11.05	1.0	6.53	235.10	20.25	40.88	23.86	95.47
20	11.20	+1.0	7.05	236.00	+20.49	+40.96	+23.82	96.36
22	11.34	1.0	7.58	236.92	20.74	41.02	23.78	97.26
24	11.48	1.0	8.12	237.86	20.97	41.06	23.72	98.16
26	11.62	1.1	8.67	238.81	21.21	41.09	23.66	99.06
28	11.76	1.1	9.22	239.78	21.44	41.10	23.60	99.96
30	11.90	+1.1	9.78	240.78	+21.67	+41.09	+23.52	100.86
June 1	12.03	1.1	10.35	241.78	21.89	41.06	23.44	101.77
3	12.17	1.2	10.92	242.80	22.11	41.02	23.36	102.68
5	12.31	1.2	11.50	243.84	22.32	40.97	23.27	103.59
7	12.44	1.2	12.08	244.90	22.53	40.90	23.17	104.50
9	12.58	+1.2	12.66	245.97	+22.73	+40.81	+23.07	105.41
11	12.71	1.2	13.25	247.06	22.92	40.71	22.96	106.32
13	12.84	1.3	13.85	248.16	23.11	40.60	22.84	107.24
15	12.97	1.3	14.44	249.27	23.29	40.47	22.72	108.16
17	13.10	1.3	15.04	250.40	23.46	40.33	22.59	109.08
19	13.23	+1.3	15.64	251.54	+23.62	+40.18	+22.45	110.00
21	13.35	1.3	16.25	252.69	23.78	40.02	22.31	110.92
23	13.48	1.3	16.85	253.85	23.93	39.84	22.16	111.85
25	13.60	1.4	17.45	255.03	24.07	39.65	22.01	112.77
27	13.73	1.4	18.06	256.22	24.20	39.44	21.85	113.70
29	13.85	+1.4	18.66	257.42	+24.32	+39.23	+21.68	114.64
July 1	13.97	+1.4	19.27	258.65	+24.43	+39.00	+21.51	115.57

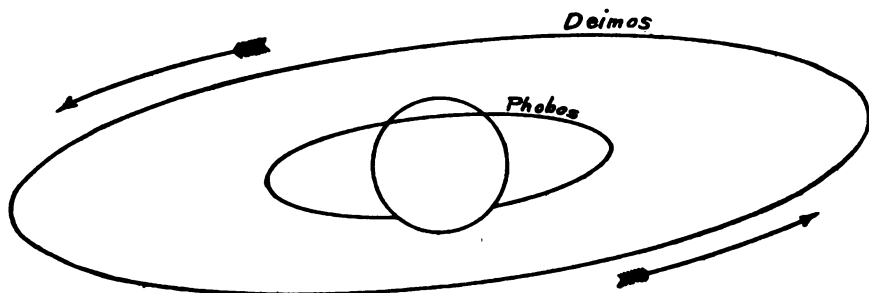
EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

FOR GREENWICH MEAN NOON.

Date.	k	Diameter.	i	q	Q	Central Meridian.	Mean Time of Transit of Zero Meridian.			
							Of Date.		Of Intermediate Date.	
							h	m	h	m
Mar. 31	0.928	11.00	31.19	0.80	107.96	250.84	7	28.1	8	6.0
pr. 2	0.925	10.81	31.81	0.81	107.86	232.38	8	44.0	9	21.9
4	0.922	10.63	32.40	0.83	107.79	213.87	10	0.0	10	38.0
6	0.919	10.45	32.95	0.84	107.75	195.32	11	16.2	11	54.3
8	0.917	10.27	33.46	0.85	107.72	176.73	12	32.5	13	10.8
10	0.915	10.10	33.93	0.86	107.71	158.11	13	49.0	14	27.4
12	0.913	9.93	34.37	0.87	107.72	139.45	15	5.7	15	44.1
14	0.911	9.77	34.78	0.87	107.75	120.75	16	22.5	17	1.0
16	0.909	9.61	35.16	0.88	107.80	102.03	17	39.5	18	18.0
18	0.907	9.45	35.50	0.88	107.85	83.27	18	56.6	19	35.2
20	0.905	9.30	35.82	0.88	107.92	64.48	20	13.8	20	52.5
22	0.904	9.15	36.12	0.88	108.01	45.66	21	31.2	22	9.9
24	0.902	9.01	36.38	0.88	108.10	26.81	22	48.6	23	27.4
26	0.901	8.87	36.63	0.88	108.20	7.93	...	...	0	6.2
28	0.900	8.74	36.84	0.87	108.31	349.02	0	45.1	1	24.0
30	0.899	8.61	37.04	0.87	108.42	330.10	2	2.8	2	41.8
May 2	0.898	8.48	37.22	0.86	108.55	311.14	3	20.7	3	59.7
4	0.897	8.36	37.37	0.86	108.69	292.16	4	38.7	5	17.8
6	0.897	8.24	37.50	0.85	108.82	273.15	5	56.8	6	35.9
8	0.896	8.12	37.62	0.84	108.96	254.13	7	15.0	7	54.1
10	0.896	8.01	37.71	0.84	109.11	235.08	8	33.3	9	12.5
12	0.895	7.90	37.79	0.83	109.26	216.00	9	51.7	10	30.9
14	0.895	7.80	37.85	0.82	109.41	196.91	11	10.1	11	49.4
16	0.894	7.69	37.90	0.81	109.56	177.80	12	28.7	13	8.0
18	0.894	7.59	37.93	0.80	109.72	158.67	13	47.3	14	26.7
20	0.894	7.50	37.95	0.79	109.88	139.52	15	6.0	15	45.4
22	0.894	7.40	37.96	0.78	110.03	120.35	16	24.9	17	4.3
24	0.894	7.31	37.95	0.77	110.19	101.16	17	43.7	18	23.2
26	0.894	7.22	37.93	0.76	110.35	81.95	19	2.7	19	42.2
28	0.894	7.14	37.90	0.75	110.50	62.73	20	21.7	21	1.3
30	0.895	7.06	37.85	0.74	110.66	43.49	21	40.8	22	20.4
June 1	0.895	6.97	37.80	0.73	110.81	24.23	23	0.0	23	39.6
3	0.895	6.90	37.73	0.72	110.96	4.96	...	...	0	19.3
5	0.896	6.82	37.66	0.71	111.11	345.67	0	58.9	1	38.6
7	0.896	6.75	37.57	0.70	111.25	326.37	2	18.2	2	57.9
9	0.897	6.67	37.47	0.69	111.40	307.05	3	37.6	4	17.4
11	0.897	6.60	37.37	0.68	111.53	287.71	4	57.1	5	36.9
13	0.898	6.54	37.26	0.67	111.67	268.37	6	16.7	6	56.4
15	0.899	6.47	37.14	0.66	111.80	249.00	7	36.3	8	16.1
17	0.899	6.41	37.01	0.65	111.93	229.63	8	55.9	9	35.8
19	0.900	6.34	36.87	0.64	112.05	210.24	10	15.6	10	55.5
21	0.901	6.28	36.73	0.62	112.17	190.84	11	35.4	12	15.3
23	0.901	6.23	36.58	0.61	112.28	171.43	12	55.2	13	35.1
25	0.902	6.17	36.43	0.60	112.38	152.01	14	15.0	14	55.0
27	0.903	6.11	36.26	0.59	112.49	132.57	15	35.0	16	14.9
29	0.904	6.06	36.09	0.58	112.58	113.13	16	54.9	17	34.9
July 1	0.905	6.01	35.92	0.57	112.67	93.67	18	14.9	18	55.0

APPARENT ORBITS OF THE SATELLITES OF MARS, AT DATE OF OPPOSITION, FEBRUARY 9, 1916, AS SEEN IN AN INVERTING TELESCOPE.

South



North

Phobos.			Deimos.		
Date.	Position Angle of Apels.	Apparent Distance at Apels.	Date.	Position Angle of Apels.	Apparent Distance at Apels.
Jan. d	°	"	Jan. d	°	"
Jan. 11	280.6	17.0	Jan. 11	281.7	42.4
Feb. 10	274.8	19.2	Feb. 10	276.3	48.0
Mar. 11	268.9	16.7	Mar. 11	270.6	41.7

GREENWICH MEAN TIME OF GREATEST ELONGATION.

Phobos.			Deimos.		
d	h		d	h	
Jan. 17	19.6	E.	Jan. 15	20.1	E.
18	22.4	W.	17	17.5	W.
20	1.2	E.	19	14.9	E.
21	3.9	W.	21	12.3	W.
22	6.7	E.	23	9.7	E.
23	9.5	W.	25	7.1	W.
24	12.3	E.	27	4.5	E.
25	15.1	W.	29	1.9	W.
26	17.8	E.	30	23.3	E.
27	20.6	W.	Feb. 1	20.7	W.
28	23.4	E.	Mar. 1	5.5	E.
30	2.2	W.	2	10.8	E.
31	5.0	E.	3	13.6	W.
Feb. 1	7.7	W.	4	16.4	E.
2	10.5	E.	5	19.1	W.
			6	21.9	E.
			7	12.8	E.
			9	10.2	W.
			11	7.6	E.
			13	5.0	W.
			15	2.3	E.
			16	23.7	W.
			18	21.1	E.
			20	18.5	W.
			22	15.9	E.
			24	13.3	W.
			26	10.7	E.
			28	8.1	W.
			3	2.9	W.
			5	0.3	E.
			6	21.7	W.
			8	19.2	E.
			10	16.6	W.

For Phobos every seventh eastern and western elongation is given, and for Deimos every third; the intermediate ones may be found by adding multiples of the period of the satellite.

Sidereal period of Phobos, 7^h 39^m 13^s.85. Sidereal period of Deimos, 30^h 17^m 54^s.87

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF JUPITER.

FOR GREENWICH MEAN NOON.

Date.	Light-Time.	Stellar Magnitude.	P	$A_{\oplus}+180^{\circ}$	D_{\oplus}	$A_{\odot}+180^{\circ}$	D_{\odot}		
	m		°	°	°	°	°		
Jan.	1	42.89	-1.9	334.63	216.55	+1.83	227.45	+2.26	
	8	43.76	1.8	334.60	217.62	1.84	228.09	2.28	
	15	44.58	1.8	334.57	218.79	1.86	228.73	2.31	
	22	45.36	1.8	334.55	220.06	1.89	229.37	2.33	
	29	46.09	1.7	334.54	221.41	1.92	230.02	2.35	
Feb.	5	46.76	-1.7	334.55	222.83	+1.95	230.66	+2.37	
	12	47.36	1.7	334.57	224.32	1.99	231.30	2.40	
	19	47.89	1.6	334.60	225.86	2.03	231.94	2.42	
	26	48.35	1.6	334.66	227.45	2.08	232.58	2.44	
	Mar.	4	48.73	1.6	334.73	229.07	2.12	233.22	2.46
May	1	48.79	-1.6	336.10	242.93	+2.54	238.54	+2.62	
	8	48.43	1.6	336.35	244.54	2.59	239.18	2.64	
	15	48.00	1.6	336.61	246.12	2.64	239.82	2.65	
	22	47.49	1.7	336.87	247.64	2.69	240.46	2.67	
	29	46.92	1.7	337.14	249.12	2.74	241.10	2.69	
June	5	46.30	-1.7	337.42	250.54	+2.79	241.74	+2.70	
	12	45.61	1.8	337.69	251.89	2.84	242.38	2.72	
	19	44.88	1.8	337.96	253.16	2.89	243.03	2.74	
	26	44.10	1.8	338.22	254.35	2.93	243.67	2.75	
	July	3	43.28	1.9	338.47	255.44	2.98	244.31	2.77
	10	42.43	-1.9	338.70	256.43	+3.02	244.95	+2.78	
	17	41.56	2.0	338.91	257.31	3.06	245.59	2.80	
	24	40.68	2.0	339.10	258.06	3.10	246.23	2.81	
	31	39.79	2.0	339.25	258.68	3.14	246.87	2.82	
	Aug.	7	38.91	2.1	339.38	259.16	3.18	247.51	2.84
	14	38.05	-2.2	339.46	259.49	+3.21	248.15	+2.85	
	21	37.21	2.2	339.51	259.66	3.24	248.80	2.86	
	28	36.42	2.3	339.51	259.67	3.27	249.44	2.87	
	Sept.	4	35.68	2.3	339.47	259.51	3.29	250.08	2.89
	11	35.00	2.3	339.39	259.20	3.31	250.72	2.90	
	18	34.41	-2.4	339.28	258.72	+3.32	251.36	+2.91	
	25	33.90	2.4	339.13	258.11	3.32	252.00	2.92	
	Oct.	2	33.50	2.4	338.95	257.37	3.32	252.64	2.93
	9	33.20	2.4	338.75	256.54	3.31	253.28	2.94	
	16	33.03	2.5	338.53	255.63	3.29	253.92	2.95	
	23	32.98	-2.5	338.32	254.69	+3.27	254.56	+2.96	
	30	33.05	2.5	338.11	253.74	3.24	255.20	2.97	
	Nov.	6	33.25	2.4	337.91	252.83	3.20	255.83	2.98
	13	33.57	2.4	337.73	251.99	3.16	256.47	2.98	
	20	34.01	2.4	337.58	251.25	3.12	257.11	2.99	
Dec.	27	34.55	-2.4	337.45	250.63	+3.07	257.75	+3.00	
	4	35.18	2.3	337.36	250.16	3.03	258.39	3.01	
	11	35.90	2.3	337.29	249.84	2.99	259.02	3.01	
	18	36.69	2.2	337.26	249.70	2.95	259.66	3.02	
	25	37.54	2.2	337.27	249.72	2.91	260.30	3.03	
32	38.42	-2.1	337.30	249.92	+2.88	260.94	+3.03		

**EPHEMERIS FOR PHYSICAL OBSERVATIONS OF JUPITER.
FOR GREENWICH MEAN NOON.**

Date.	Equatorial Diameter.	Excess of Equat. Diameter over Polar.	i	q	Q	Central Meridian.		Correction for Phase.	
						System I.	System II.		
Jan.	1	38.82	2.35	10.90	0.35	67.09	215.88	288.39	-0.52
	8	38.06	2.31	10.48	0.32	67.20	239.58	258.68	0.48
	15	37.35	2.26	9.95	0.28	67.30	263.20	228.90	0.43
	22	36.71	2.22	9.32	0.24	67.43	286.76	199.06	0.38
	29	36.13	2.19	8.62	0.21	67.58	310.27	169.16	0.32
Feb.	5	35.62	2.16	7.83	0.17	67.77	333.74	139.22	-0.27
	12	35.16	2.13	6.98	0.13	68.01	357.18	109.26	0.21
	19	34.77	2.11	6.08	0.09	68.35	20.62	79.28	0.16
	26	34.44	2.09	5.14	0.07	68.80	44.05	49.31	0.12
Mar.	4	34.17	2.07	4.16	0.04	69.47	67.49	19.34	-0.08
May	1	34.13	2.07	4.39	0.05	245.00	211.80	81.11	+0.08
	8	34.38	2.08	5.36	0.08	245.77	235.70	51.60	0.12
	15	34.70	2.10	6.29	0.10	246.37	259.69	22.18	0.17
	22	35.06	2.12	7.17	0.14	246.89	283.77	352.85	0.22
	29	35.49	2.15	8.01	0.17	247.36	307.94	323.60	0.28
June	5	35.97	2.18	8.79	0.21	247.78	332.21	294.46	+0.34
	12	36.51	2.21	9.49	0.25	248.18	356.58	265.42	0.39
	19	37.11	2.24	10.12	0.29	248.57	21.05	236.47	0.44
	26	37.76	2.28	10.67	0.33	248.93	45.64	207.65	0.50
July	3	38.48	2.33	11.12	0.36	249.28	70.34	178.94	0.54
	10	39.24	2.37	11.47	0.39	249.61	95.17	150.35	+0.57
	17	40.06	2.42	11.71	0.42	249.92	120.12	121.89	0.60
	24	40.93	2.48	11.82	0.43	250.22	145.21	93.56	0.61
	31	41.85	2.53	11.80	0.44	250.49	170.43	65.36	0.60
Aug.	7	42.79	2.59	11.64	0.44	250.74	195.79	37.31	0.59
	14	43.76	2.65	11.32	0.42	250.99	221.29	9.39	+0.56
	21	44.75	2.71	10.86	0.40	251.22	246.92	341.62	0.51
	28	45.72	2.76	10.22	0.37	251.44	272.70	313.98	0.45
Sept.	4	46.67	2.82	9.43	0.32	251.67	298.61	286.47	0.39
	11	47.57	2.88	8.47	0.26	251.93	324.64	259.09	0.31
	18	48.40	2.93	7.36	0.20	252.26	350.77	231.81	+0.24
	25	49.12	2.97	6.12	0.14	252.74	16.99	204.62	0.16
Oct.	2	49.72	3.00	4.75	0.08	253.54	43.28	177.49	0.10
	9	50.15	3.03	3.28	0.04	255.15	69.59	150.39	0.05
	16	50.42	3.05	1.75	0.01	259.86	95.90	123.29	+0.01
	23	50.50	3.05	0.34	0.00	315.12	122.18	96.16	0.00
	30	50.38	3.05	1.48	0.01	57.61	148.38	68.95	-0.01
Nov.	6	50.08	3.03	3.01	0.03	63.70	174.47	41.63	0.04
	13	49.60	3.00	4.48	0.07	65.60	200.42	14.17	0.09
	20	48.97	2.96	5.86	0.13	66.51	226.19	346.54	0.15
	27	48.20	2.92	7.11	0.18	67.05	251.78	318.72	-0.22
Dec.	4	47.33	2.86	8.22	0.25	67.42	277.17	290.70	-0.30
	11	46.38	2.80	9.17	0.30	67.70	302.34	262.46	0.37
	18	45.39	2.74	9.95	0.34	67.94	327.31	234.02	0.43
	25	44.36	2.68	10.56	0.38	68.16	352.06	205.38	0.49
	32	43.34	2.62	11.00	0.40	68.38	16.63	176.53	-0.53

**EPHEMERIS FOR PHYSICAL OBSERVATIONS OF JUPITER,
SYSTEM II.**

GREENWICH MEAN TIME.

Transit of Zero Meridian.			Interval between Successive Transits.		Transit of Zero Meridian.			Interval between Successive Transits.		Transit of Zero Meridian.			Interval between Successive Transits.	
Jan.	d	h m	h	m	June	d	h m	h	m	Sept.	d	h m	h	m
	1	1 59.38	9	55.83		2	14 13.29	9	55.77		18	3 31.69	9	55
	3	3 38.52				4	15 52.14				20	5 9.68		
	5	5 17.66				6	17 30.98				22	6 47.66		
	7	6 56.81				8	19 9.80				24	8 25.62		
	9	8 35.97				10	20 48.60				26	10 3.57		
	11	10 15.15	9	55.84		12	22 27.39	9	55.75		28	11 41.51	9	55
	13	11 54.33				15	0 6.17				30	13 19.44		
	15	13 33.52				17	1 44.94			Oct.	2	14 57.37		
	17	15 12.73				19	3 23.68				4	16 35.28		
	19	16 51.95				21	5 2.41				6	18 13.20		
	21	18 31.17	9	55.85		23	6 41.12	9	55.74		8	19 51.11	9	55
	23	20 10.39				25	8 19.82				10	21 29.02		
	25	21 49.62				27	9 58.50				12	23 6.93		
	27	23 28.86				29	11 37.17				15	0 44.84		
	30	1 8.11			July	1	13 15.82				17	2 22.75		
Feb.	1	2 47.36	9	55.85		3	14 54.46	9	55.72		19	4 0.66	9	55
	3	4 26.61				5	16 33.08				21	5 38.57		
	5	6 5.87				7	18 11.68				23	7 16.50		
	7	7 45.13				9	19 50.27				25	8 54.43		
	9	9 24.40				11	21 28.83				27	10 32.38		
	11	11 3.66	9	55.85		13	23 7.38	9	55.70		29	12 10.35	9	55
	13	12 42.93				16	0 45.92				31	13 48.33		
	15	14 22.21				18	2 24.43			Nov.	2	15 26.34		
	17	16 1.48				20	4 2.93				4	17 4.36		
	19	17 40.75				22	5 41.41				6	18 42.41		
	21	19 20.03	9	55.85		24	7 19.88	9	55.69		8	20 20.49	9	55
	23	20 59.30				26	8 58.32				10	21 58.58		
	25	22 38.58				28	10 36.76				12	23 36.70		
	28	0 17.85				30	12 15.18				15	1 14.85		
Mar.	1	1 57.13			Aug.	1	13 53.56				17	2 53.03		
	3	3 36.40	9	55.85		3	15 31.93	9	55.67		19	4 31.23	9	55
	5	5 15.67				5	17 10.29				21	6 9.46		
						7	18 48.62				23	7 47.72		
						9	20 26.95				25	9 26.01		
Apr.	26	8 31.65	9	55.81		11	22 5.26				27	11 4.34		
	28	10 10.74	9	55.81		13	23 43.54	9	55.65		29	12 42.69	9	55
	30	11 49.82				16	1 21.80			Dec.	1	14 21.07		
May	2	13 28.87				18	3 0.06				3	15 59.48		
	4	15 7.93				20	4 38.29				5	17 37.92		
	6	16 46.97				22	6 16.50				7	19 16.39		
	8	18 25.99	9	55.80		24	7 54.69	9	55.63		9	20 54.89	9	55
	10	20 5.01				26	9 32.86				11	22 33.42		
	12	21 44.02				28	11 11.02				14	0 11.98		
	14	23 23.01				30	12 49.16				16	1 50.56		
	17	1 1.98			Sept.	1	14 27.29				18	3 29.18		
	19	2 40.94	9	55.79		3	16 5.40	9	55.61		20	5 7.82	9	55
	21	4 19.90				5	17 43.48				22	6 46.49		
	23	5 58.83				7	19 21.56				24	8 25.18		
	25	7 37.75				9	20 59.62				26	10 3.91		
	27	9 16.66				11	22 37.66				28	11 42.67		
	29	10 55.55	9	55.77		14	0 15.68	9	55.60		30	13 21.44	9	55
	31	12 34.43				16	1 53.70				32	15 0.25		

SATELLITE V.

GREENWICH MEAN TIME OF EVERY TWENTIETH GREATEST ELONGATION.

Month	d	h	E.	Month	d	h	E.	Month	d	h	W.	Month	d	h	W.
July	15	1.4	E.	Oct.	12	17.4	E.	July	15	7.4	W.	Oct.	12	23.4	W.
	25	0.6	E.		22	16.5	E.		25	6.5	W.		22	22.4	W.
Aug.	3	23.7	E.	Nov.	1	15.5	E.	Aug.	4	5.7	W.	Nov.	1	21.5	W.
	13	22.8	E.		11	14.6	E.		14	4.8	W.		11	20.6	W.
	23	21.9	E.		21	13.7	E.		24	3.9	W.		21	19.7	W.
Sept.	2	21.0	E.	Dec.	1	12.9	E.	Sept.	3	3.0	W.	Dec.	1	18.8	W.
	12	20.1	E.		11	12.0	E.		13	2.1	W.		11	18.0	W.
	22	19.2	E.		21	11.1	E.		23	1.2	W.		21	17.1	W.
Oct.	2	18.3	E.		31	10.3	E.	Oct.	3	0.3	W.		31	16.3	W.

GREENWICH MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE I.

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

DIFFERENTIAL COORDINATES OF SATELLITE VI.

Greenwich Mean Noon.	$\alpha_{VI}-\alpha_{Jup.}$	$\delta_{VI}-\delta_{Jup.}$	Greenwich Mean Noon.	$\alpha_{VI}-\alpha_{Jup.}$	$\delta_{VI}-\delta_{Jup.}$	Greenwich Mean Noon.	$\alpha_{VI}-\alpha_{Jup.}$	$\delta_{VI}-\delta_{Jup.}$
Jan. 1	m 3 -2	1.9	June 8	m 41 +2	+ 9.0	Sept. 20	m 21 -3	-10.1
3	1 55	1.5	10	2 36	9.6	22	3 15	11.3
5	1 47	1.1	12	2 30	10.2	24	3 9	12.4
7	1 38	0.7	14	2 24	10.7	26	3 1	13.4
9	1 30	+0.3	16	2 18	11.3	28	2 58	14.4
11	-1 21	-0.1	18	+2 12	+11.8	Oct. 30	-2 44	-15.3
13	1 12	0.6	20	2 5	12.4	2	2 35	16.2
15	1 3	1.0	22	1 58	12.9	4	2 24	17.0
17	0 54	1.4	24	1 50	13.4	6	2 13	17.8
19	0 45	1.8	26	1 42	13.9	8	2 2	18.4
21	-0 36	-2.2	28	+1 34	+14.3	10	-1 50	-19.0
23	0 27	2.6	30	1 26	14.8	12	1 38	19.6
25	0 18	3.1	July 2	1 17	15.2	14	1 25	20.1
27	0 10	3.4	4	1 7	15.5	16	1 12	20.5
29	-0 1	3.8	6	0 58	15.9	18	0 58	20.8
31	+0 8	-4.2	8	+0 48	+16.2	20	-0 45	-21.1
Feb. 2	0 16	4.6	10	0 38	16.4	22	0 31	21.4
4	0 24	4.9	12	0 28	16.6	24	0 17	21.5
6	0 33	5.2	14	0 17	16.8	26	-0 4	21.7
8	0 41	5.5	16	+0 6	16.9	28	+0 10	21.7
10	+0 49	-5.8	18	-0 5	+17.0	Nov. 30	+0 24	-21.7
12	0 56	6.1	20	0 16	16.9	1	0 38	21.7
14	1 4	6.4	22	0 28	16.8	3	0 52	21.6
16	1 12	6.6	24	0 39	16.7	5	1 5	21.4
18	1 19	6.8	26	0 50	16.5	7	1 18	21.2
20	+1 26	-7.0	28	-1 2	+16.2	9	+1 31	-21.0
22	1 32	7.2	30	1 13	15.9	11	1 43	20.7
24	1 38	7.4	Aug. 1	1 25	15.5	13	1 55	20.3
26	1 44	7.6	3	1 36	15.1	15	2 7	19.9
28	1 50	7.7	5	1 47	14.6	17	2 18	19.5
Mar. 1	+1 55	-7.8	7	-1 58	+14.0	19	+2 29	-19.0
.	..	..	9	2 8	13.4	21	2 40	18.6
.	..	..	11	2 19	12.6	23	2 50	18.0
.	..	..	13	2 28	11.9	25	2 59	17.5
May 3	+3 27	-1.0	15	2 38	11.0	27	3 8	16.9
5	+3 26	-0.5	17	-2 47	+10.1	Dec. 29	+3 17	-16.3
7	3 25	0.0	19	2 55	9.1	1	3 25	15.7
9	3 24	+0.5	21	3 3	8.1	3	3 32	15.1
11	3 23	1.0	23	3 10	7.0	5	3 39	14.4
13	3 22	1.6	25	3 16	5.9	7	3 45	13.7
15	+3 20	+2.1	27	-3 22	+ 4.8	9	+3 51	-13.0
17	3 19	2.6	29	3 27	3.6	11	3 56	12.4
19	3 17	3.2	31	3 31	2.3	13	4 1	11.6
21	3 14	3.8	Sept. 2	3 34	+ 1.1	15	4 5	10.9
23	3 12	4.3	4	3 36	- 0.1	17	4 9	10.1
25	+3 9	+4.9	6	-3 38	- 1.5	19	+4 12	- 9.5
27	3 6	5.5	8	3 38	2.8	21	4 15	8.7
29	3 2	6.0	10	3 38	4.0	23	4 17	8.0
31	2 59	6.6	12	3 36	5.3	25	4 19	7.2
June 2	2 55	7.2	14	3 34	6.5	27	4 20	6.5
4	+2 50	+7.8	16	-3 30	- 7.8	29	+4 21	- 5.7
6	+2 46	+8.4	18	-3 26	- 9.0	31	+4 21	- 5.0

SATELLITES OF JUPITER, 1916.

635

DIFFERENTIAL COORDINATES OF SATELLITE VII.

Greenwich Mean Noon.		$\alpha_{VII}-\alpha_{Jup.}$		$\delta_{VII}-\delta_{Jup.}$		Greenwich Mean Noon.		$\alpha_{VII}-\alpha_{Jup.}$		$\delta_{VII}-\delta_{Jup.}$	
n.	m s	' "	June	m s	' "	Sept.	m s	' "	Oct.	m s	' "
1	+0 23	-14.9	8	-1 40	+9.5	20	+2 19	-8.3			
3	+0 12	15.2	10	1 34	9.3	22	2 8	8.3			
5	0 0	15.5	12	1 27	9.2	24	1 56	8.2			
7	-0 11	15.7	14	1 21	9.0	26	1 43	8.2			
9	0 22	15.8	16	1 14	8.9	28	1 30	8.1			
11	-0 33	-15.8	18	-1 7	+8.7	30	+1 16	-8.0			
13	0 43	15.8	20	1 0	8.5	2	1 2	7.8			
15	0 54	15.7	22	0 53	8.2	4	0 47	7.7			
17	1 4	15.6	24	0 46	8.0	6	0 32	7.5			
19	1 14	15.4	26	0 38	7.7	8	0 17	7.3			
21	-1 23	-15.2	28	-0 30	+7.5	10	+0 1	-7.1			
23	1 32	14.9	30	0 23	7.2	12	-0 14	6.9			
25	1 41	14.6	2	0 15	6.9	14	0 30	6.6			
27	1 50	14.2	4	-0 7	6.5	16	0 46	6.4			
29	1 58	13.8	6	+0 2	6.2	18	1 2	6.1			
31	-2 5	-13.3	8	+0 10	+5.8	20	-1 17	-5.8			
eb. 2	2 13	12.8	10	0 19	5.4	22	1 32	5.5			
4	2 20	12.3	12	0 28	5.0	24	1 47	5.2			
6	2 26	11.8	14	0 37	4.6	26	2 2	4.8			
8	2 32	11.2	16	0 46	4.2	28	2 16	4.5			
10	-2 38	-10.6	18	+0 55	+3.7	30	-2 29	-4.1			
12	2 44	10.1	20	1 4	3.2	1	2 43	3.8			
14	2 49	9.5	22	1 13	2.7	3	2 55	3.4			
16	2 53	8.9	24	1 23	2.2	5	3 7	3.0			
18	2 58	8.3	26	1 32	1.7	7	3 19	2.6			
20	-3 2	-7.6	28	+1 41	+1.2	9	-3 30	-2.2			
22	3 5	7.0	30	1 50	0.6	11	3 40	1.8			
24	3 9	6.4	1	1 59	+0.1	13	3 50	1.4			
26	3 12	5.8	3	2 8	-0.4	15	3 59	1.0			
28	3 15	5.3	5	2 17	1.0	17	4 7	0.6			
ar. 1	-3 18	-4.7	7	+2 25	-1.5	19	-4 14	-0.2			
.	..	..	9	2 33	2.1	21	4 21	+0.2			
.	..	..	11	2 40	2.6	23	4 27	0.6			
.	..	..	13	2 47	3.1	25	4 33	1.0			
ay 3	-3 4	+8.7	15	2 54	3.6	27	4 38	1.5			
5	-3 1	+8.9	17	+2 59	-4.1	29	-4 42	+1.9			
7	2 57	9.1	19	3 4	4.6	1	4 46	2.3			
9	2 54	9.3	21	3 9	5.0	3	4 49	2.7			
11	2 50	9.4	23	3 12	5.5	5	4 51	3.1			
13	2 46	9.6	25	3 15	5.9	7	4 53	3.5			
15	-2 42	+9.7	27	+3 16	-6.2	9	-4 54	+3.9			
17	2 38	9.8	29	3 17	6.6	11	4 55	4.3			
19	2 33	9.8	31	3 17	6.9	13	4 56	4.7			
21	2 29	9.9	2	3 16	7.2	15	4 55	5.1			
23	2 24	9.9	4	3 13	7.4	17	4 55	5.5			
25	-2 19	+9.9	6	+3 10	-7.6	19	-4 54	+5.9			
27	2 14	9.9	8	3 6	7.8	21	4 52	6.2			
29	2 9	9.8	10	3 0	8.0	23	4 50	6.6			
31	2 3	9.8	12	2 54	8.1	25	4 48	6.9			
ne 2	1 58	9.7	14	2 46	8.2	27	4 46	7.2			
4	-1 52	+9.6	16	+2 38	-8.3	29	-4 43	+7.5			
6	-1 46	+9.6	18	+2 29	-8.3	31	-4 39	+7.8			

GREENWICH MEAN TIME.

JANUARY.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s		
1	3	30	0	II. Oc. D.	9	11	48	38	I.*Sh. I.	16	23	43	31	III. Sh. E.	24	11	54	19	I.*Oc. D.	
	8	53	52	II. Ec. R.		11	53	56	III.*Tr. I.							15	11	59	I. Ec. R.	
	11	26	11	I.*Oc. R.		12	49	29	I.*Tr. E.	17	4	7	3	II. Tr. I.						
	14	57	9	I.*Ec. R.		14	1	27	I.*Sh. E.		6	24	52	II. Sh. I.	25	9	5	24	I. Tr. I.	
2	7	38	14	III. Tr. I.		14	55	27	III. Tr. E.		6	53	6	II. Tr. E.		10	9	21	I. Sh. I.	
	8	36	9	I. Tr. I.		17	2	25	III. Sh. I.		9	6	44	II. Sh. E.		11	19	54	I.*Tr. E.	
	9	52	41	I. Sh. I.		19	41	39	III. Sh. E.		9	54	13	I. Oc. D.		12	22	15	I.*Sh. E.	
	10	40	15	III.*Tr. E.	10	1	22	34	II. Tr. I.		13	16	43	I.*Ec. R.	26	1	13	12	II. Oc. D.	
	10	50	24	I.*Tr. E.		3	48	26	II. Sh. I.	18	7	4	52	I. Tr. I.		6	9	4	II. Ec. R.	
	12	5	23	I.*Sh. E.		4	8	44	II. Tr. E.		8	13	29	I. Sh. I.		6	24	24	I. Oc. D.	
	12	59	18	III.*Sh. I.		6	30	29	II. Sh. E.		9	19	18	I. Tr. E.		9	40	47	I. Ec. R.	
	15	39	47	III. Sh. E.		7	54	41	I. Oc. D.		10	26	21	I. Sh. E.						
	22	39	17	II. Tr. I.		11	21	25	I.*Ec. R.		22	24	45	II. Oc. D.	27	3	35	42	I. Tr. I.	
3	1	11	52	II. Sh. I.	11	5	4	57	I. Tr. I.	19	3	30	29	II. Ec. R.		5	50	13	I. Tr. E.	
	1	25	35	II. Tr. E.		6	17	32	I. Sh. I.		4	24	10	I. Oc. D.		6	51	22	I. Sh. E.	
	3	54	7	II. Sh. E.		7	19	19	I. Tr. E.		7	45	33	I. Ec. R.		10	48	46	III. Oc. D.	
	5	55	50	I. Oc. D.		8	30	23	I. Sh. E.							13	49	16	III.*Oc. R.	
	9	26	2	I. Ec. R.		19	37	45	II. Oc. D.	20	1	35	1	I. Tr. I.		15	10	21	III. Ec. D.	
	13	20	26	IV.*Oc. D.							2	42	30	I. Sh. I.		17	48	18	III. Ec. R.	
	16	35	9	IV. Oc. R.	12	0	49	29	IV. Tr. I.		3	49	28	I. Tr. E.		20	15	47	II. Tr. I.	
4	2	13	42	IV. Ec. D.		0	51	56	II. Ec. R.		4	55	25	I. Sh. E.		22	19	14	II. Sh. I.	
	3	5	46	I. Tr. I.		2	24	29	I. Oc. D.		6	26	11	III. Oc. D.		23	1	38	II. Tr. E.	
	3	34	21	IV. Ec. R.		3	56	42	IV. Tr. E.		9	6	6	IV. Oc. D.	28	0	54	32	I. Oc. D.	
	4	21	36	I. Sh. I.		5	50	14	I. Ec. R.		9	27	57	III. Ec. R.		1	0	50	II. Sh. E.	
	5	20	2	I. Tr. E.		13	22	38	IV.*Sh. I.		11	7	59	III.*Oc. D.		4	9	35	I. Ec. R.	
	6	34	24	I. Sh. E.		14	13	48	IV.*Sh. E.		12	12	59	IV.*Oc. R.		20	56	28	IV. Tr. I.	
	16	52	20	II. Oc. D.		23	34	56	I. Tr. I.		13	47	17	III.*Ec. R.		22	5	55	I. Tr. I.	
	22	13	26	II. Ec. R.	13	0	46	35	I. Sh. I.		17	29	42	II. Tr. I.		23	7	19	I. Sh. I.	
5	0	25	27	I. Oc. D.		1	49	19	I. Tr. E.		19	43	2	II. Sh. I.		23	53	4	IV. Tr. E.	
	3	54	53	I. Ec. R.		2	6	21	III. Oc. D.		20	15	41	II. Tr. E.						
	21	35	33	I. Tr. I.		2	59	26	I. Sh. E.		20	48	11	IV. Ec. D.	29	0	20	27	I. Tr. E.	
	21	49	13	III. Oc. D.		5	9	10	III. Oc. R.		21	32	26	IV. Ec. R.		1	20	19	I. Sh. E.	
	22	50	39	I. Sh. I.		7	5	43	III. Ec. D.		22	24	47	II. Sh. E.		14	37	29	II. Oc. D.	
	23	49	51	I. Tr. E.		9	46	22	III. Ec. R.		22	54	11	I. Oc. D.		19	24	41	I. Oc. D.	
6	0	52	52	III. Oc. R.		14	44	42	II. Tr. I.	21	2	14	22	I. Ec. R.		19	27	55	II. Ec. R.	
	1	3	27	I. Sh. E.		17	6	40	II. Sh. I.		20	5	6	I. Tr. I.		22	38	22	I. Ec. R.	
	3	3	14	III. Ec. D.		17	30	46	II. Tr. E.		21	11	26	I. Sh. I.	30	16	36	15	I. Tr. I.	
	5	45	14	III. Ec. R.		19	48	38	II. Sh. E.		22	19	33	I. Tr. E.		17	36	21	I. Sh. I.	
	12	0	48	II.*Tr. I.		20	54	21	I. Oc. D.		23	24	22	I. Sh. E.		18	50	48	I. Tr. E.	
	14	30	9	II.*Sh. I.	14	0	19	5	I. Ec. R.	23	11	48	27	II.*Oc. D.		19	49	20	I. Sh. E.	
	14	47	1	II.*Tr. E.		18	4	51	I. Tr. I.		16	49	21	II. Ec. R.	31	1	0	0	III. Tr. I.	
	17	12	18	II. Sh. E.		19	15	31	I. Sh. I.		17	24	10	I. Oc. D.		3	58	33	III. Tr. E.	
	18	55	9	I. Oc. D.		20	19	16	I. Tr. E.		20	43	10	I. Ec. R.		5	12	22	III. Sh. I.	
	22	23	44	I. Ec. R.		21	28	23	I. Sh. E.							7	47	56	III. Sh. E.	
7	16	5	17	I. Tr. I.	15	9	0	43	II. Oc. D.	23	14	35	17	I. Tr. I.		9	39	13	II. Tr. I.	
	17	19	36	I. Sh. I.		14	10	47	II.*Ec. R.		15	40	27	I. Sh. I.		11	37	19	II.*Sh. I.	
	18	19	36	I. Tr. E.		15	24	14	I. Oc. D.		16	49	47	I. Tr. E.		12	24	58	II.*Tr. E.	
	19	32	24	I. Sh. E.		18	47	53	I. Ec. R.		17	53	24	I. Sh. E.		13	54	54	I. Oc. D.	
8	6	14	32	II. Oc. D.		16	12	34	54	I.*Tr. I.		20	35	30	III. Tr. I.		14	18	51	II. Sh. E.
	11	32	19	II.*Ec. R.		13	44	33	I.*Sh. I.	24	1	9	15	III. Sh. I.		17	7	10	I. Ec. R.	
	13	24	52	I.*Oc. D.		14	49	19	I. Tr. E.		3	46	2	III. Sh. E.						
	16	52	33	I. Ec. R.		15	57	26	I. Sh. E.		6	52	37	II. Tr. I.						
9	10	35	9	I.*Tr. I.		16	12	55	III. Tr. I.		9	1	10	II. Sh. I.						
						19	13	40	III. Tr. E.		9	38	32	II. Tr. E.						
						21	5	30	III. Sh. I.		11	42	49	II.*Sh. E.						

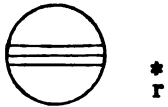

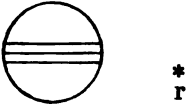

NOTE.—I. denotes ingress; E., egress; D., disappearance; R., reappearance; Ec., eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow.

*Visible at Washington.

GREENWICH MEAN TIME.

JANUARY.

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

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

Configurations at 11^h 55^m for an Inverting Telescope.

Day.	West.	East.
1	·4	○ ·2 3· ·1●
2	·4	¹ / ₂ ○ 2·
3	3· 2·	·○4 ·1
4	·3 1·2	○ ·4
5	·3	○ ·1 ·2 ·4
6	·1	2○ ·3 ·4
7	·2	○ 1· ·3 ·4
8	·1	○ ·2 3· 4·
9	○1·	3○ ·2· 4·
10	3· 2·	○ ·1 4·
11	·3	¹ / ₂ ○ 4·
12	·3 4·	○ ·1 ·2
13	4·	·1 ○2· 3
14	4· 2·	○ 1· ·3
15	4·	·1 ○ 3· ·2●
16	·4	1○ ·3· 2·
17	·4	3· 2· ○ ·1●
18	·43·	·2 1· ○
19	³ / ₄	○ ·1 ·2
20	1·	○ 2· ·3● ·4●
21	2·	○ 1· ·4 ·3
22	·1	○ 3· ·4 ·2●
23		○ 1· 3· 2· ·4
24	3· 2·	○ 1 ·4
25	3· ·2 1·	○ 4·
26	·3	○ ·1 ·2 4·
27	1·	○ 2· 4· ·3●
28	2·	○ 4· ·1 ·3
29	⁴ / ₁ ·2	○ 3·
30	4·	○ 1· 3· ·2
31	○2· 4·	3· ·1○

GREENWICH MEAN TIME.

FEBRUARY.

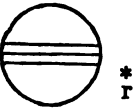
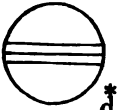

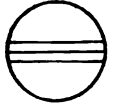
d h m s		d h m s		d h m s		d h m s	
1 11 630	I.* Tr. I.	8 15 2240	I. Tr. E.	16 9 45 19	II. Oc. D.	23 16 43 17	II. Ec. R.
12 5 13	I.* Sh. I.	16 14 7	I. Sh. E.	12 27 40	I.* Oc. D.	17 21 1	I. Ec. R.
13 21 4	I.* Tr. E.			14 4 46	II. Ec. R.		
14 18 14	I. Sh. E.	9 6 53 39	II. Oc. D.	15 26 4	I. Ec. R.	24 11 43 0	I.* Tr. I.
		10 26 14	I. Oc. D.			12 21 29	I.* Sh. I.
2 4 252	II. Oc. D.	11 26 14	II.* Ec. R.	17 9 40 39	I. Tr. I.	13 57 35	I. Tr. E.
8 25 7	I. Oc. D.	13 31 3	I. Ec. R.	10 25 48	I. Sh. I.	14 34 39	I. Sh. E.
8 47 38	II. Ec. R.			11 55 15	I.* Tr. E.		
11 35 58	I.* Ec. R.	10 7 38 36	I. Tr. I.	12 38 56	I.* Sh. E.	25 4 40 48	III. Oc. D.
		8 30 3	I. Sh. I.			7 28 3	II. Tr. I.
3 5 36 57	I. Tr. I.	9 53 12	I. Tr. E.	18 0 10 43	III. Oc. D.	8 42 41	II. Sh. I.
6 34 15	I. Sh. I.	10 43 8	I. Sh. E.	3 6 4	III. Oc. R.	8 59 49	I. Oc. D.
7 51 30	I. Tr. E.	19 41 21	III. Oc. D.	3 18 35	III. Ec. D.	9 53 6	III. Ec. R.
8 47 17	I. Sh. E.	22 38 38	III. Oc. R.	4 39 2	II. Tr. I.	10 13 2	II. Tr. E.
15 14 8	III. Oc. D.	23 15 42	III. Ec. D.	5 52 25	III. Ec. R.	11 23 46	II. Sh. E.
18 13 9	III. Oc. R.			6 7 0	II. Sh. I.	11 49 44	I.* Ec. R.
19 13 11	III. Ec. D.	11 1 50 35	II. Tr. I.	6 58 3	I. Oc. D.		
21 49 46	III. Ec. R.	1 50 54	III. Ec. R.	7 24 17	II. Tr. E.	26 6 13 36	I. Tr. I.
23 2 49	II. Tr. I.	3 31 11	II. Sh. I.	8 48 13	II. Sh. E.	6 50 21	I. Sh. I.
		4 36 4	II. Tr. E.	9 54 48	I. Ec. R.	8 28 9	I. Tr. E.
4 0 55 17	II. Sh. I.	4 56 33	I. Oc. D.			9 3 31	I. Sh. E.
1 48 29	II. Tr. E.	6 12 30	II. Sh. E.	19 4 11 10	I. Tr. I.		
2 55 21	I. Oc. D.	7 59 48	I. Ec. R.	4 54 43	I. Sh. I.	27 2 3 45	II. Oc. D.
3 36 45	II. Sh. E.			6 25 46	I. Tr. E.	3 30 15	I. Oc. D.
6 4 44	I. Ec. R.	13 2 9 2	I. Tr. I.	7 7 49	I. Sh. E.	6 2 3	II. Ec. R.
		2 58 59	I. Sh. I.	23 11 1	II. Oc. D.	6 18 25	I. Ec. R.
5 0 7 15	I. Tr. I.	4 23 38	I. Tr. E.				
1 3 9	I. Sh. I.	5 12 4	I. Sh. E.	20 1 28 27	I. Oc. D.	28 0 44 18	I. Tr. I.
2 21 50	I. Tr. E.	20 18 58	II. Oc. D.	3 23 34	II. Ec. R.	1 19 19	I. Sh. I.
3 16 12	I. Sh. E.	23 26 53	I. Oc. D.	4 23 31	I. Ec. R.	2 58 50	I. Tr. E.
17 27 44	II. Oc. D.			22 41 48	I. Tr. I.	3 32 29	I. Sh. E.
21 25 36	I. Oc. D.	13 0 45 4	II. Ec. R.	23 23 39	I. Sh. I.	18 55 58	III. Tr. I.
22 6 30	II. Ec. R.	2 28 32	I. Ec. R.			20 52 41	II. Tr. I.
		20 39 35	I. Tr. I.	21 0 56 24	I. Tr. E.	21 23 6	III. Sh. I.
6 0 33 30	I. Ec. R.	21 27 56	I. Sh. I.	1 36 49	I. Sh. E.	21 47 22	III. Tr. E.
5 27 27	IV. Oc. D.	22 54 12	I. Tr. E.	14 24 28	III. Tr. I.	22 0 28	II. Sh. I.
8 20 28	IV. Oc. R.	23 41 3	I. Sh. E.	17 17 59	III. Tr. E.	22 0 45	I. Oc. D.
18 37 42	I. Tr. I.			17 20 14	III. Sh. I.	23 37 31	II. Tr. E.
19 32 9	I. Sh. I.	14 9 54 48	III. Tr. I.	18 3 28	II. Tr. I.	23 53 38	III. Sh. E.
20 52 18	I. Tr. E.	12 50 13	III.* Tr. E.	19 24 51	II. Sh. I.		
21 45 13	I. Sh. E.	13 17 49	III. Sh. I.	19 52 3	III. Sh. E.	29 0 41 28	II. Sh. E.
		15 14 45	II. Tr. I.	19 58 55	I. Oc. D.	0 47 8	I. Ec. R.
7 5 26 42	III. Tr. I.	15 50 54	III. Sh. E.	20 48 35	II. Tr. E.	19 14 54	I. Tr. I.
8 23 46	III. Tr. E.	16 49 7	II. Sh. I.	22 6 1	II. Sh. E.	19 48 8	I. Sh. I.
9 15 19	III. Sh. I.	17 35 41	IV. Tr. I.	22 52 16	I. Ec. R.	21 29 24	I. Tr. E.
11 49 39	III.* Sh. E.	17 57 16	I. Oc. D.			22 1 19	I. Sh. E.
12 26 37	II.* Tr. I.	18 0 7	II. Tr. E.	23 17 12 20	I. Tr. I.		
14 13 15	II. Sh. I.	19 30 24	II. Sh. E.	17 52 30	I. Sh. I.		
15 12 11	II. Tr. E.	20 14 57	IV. Tr. E.	19 26 55	I. Tr. E.		
15 55 55	I. Oc. D.	20 57 19	I. Ec. R.	20 5 40	I. Sh. E.		
16 54 38	II. Sh. E.						
19 2 17	I. Ec. R.	15 15 10 2	I. Tr. I.	23 2 16 30	IV. Oc. D.		
		15 56 48	I. Sh. I.	4 48 29	IV. Oc. R.		
8 13 8 5	I.* Tr. I.	17 24 39	I. Tr. E.	12 37 45	II.* Oc. D.		
14 1 2	I. Sh. I.	18 9 56	I. Sh. E.	14 29 22	I. Oc. D.		

By reason of the proximity of JUPITER to the SUN the phenomena of the satellites are not given for March and April.

GREENWICH MEAN TIME.

FEBRUARY.

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

<p>I.  * r</p>	<p>III.  * d * r</p>
<p>II.  * r</p>	<p>IV. No Eclipse. </p>

Configurations at 11^h 40^m for an Inverting Telescope.

Day.	West.					East.				
1	○1.	4.	3.	·2	○					
2		·4	·3		○·1	·2				
3		·4		1·3	○	2.				
4			·4	2.	○	·1	·3			
5				·41·	·2	○			·3	
6						○·4	1.	$\frac{3}{2}$		
7				$\frac{3}{2}$	○·			·4		
8			3.	·2	○1.				·4	
9			·3		○	·2			·4	·1●
10				·31·	○	2.			·4	
11				2.	○	·1	·3		4.	
12				$\frac{1}{2}$	○			·3	4.	
13					○	1.	·2	$\frac{4}{2}$		
14	○3.			·1	○ $\frac{4}{2}$					
15			3.	2.	4.	○	1.			
16			4.	·3	·	○1				·2●
17	○1.	4.		·3	○	2.				
18		4.		2.	○	·1	·3			
19		·4		·21.	○			·3		
20		·4			○	·1	·2	3.		
21			·4	·1	○	3.	2.			
22				3·2.	·4	○	1.			
23			·3		·1.	○	2·4			
24				·3	1	○·	2.	·4		
25					2.	○	·3		·4	·1●
26				·2	1.	○		·3	·4	
27						○	$\frac{3}{2}$	3.	4.	
28				1.	○	3·2.			4.	
29				$\frac{3}{2}$	○	1.			4.	

GREENWICH MEAN TIME.

MAY.

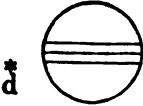
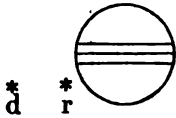

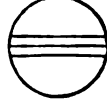
d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	0	025		I. Oc. R.	9	23	54	6	II. Sh. I.	17	20	353		III. Sh. E.	26	14	1231		I. Tr. I.
	3	114		II. Ec. D.							21	015		III.* Tr. I.		15	2921		I. Sh. E.
	6	46	53	II. Oc. R.	10	1	12	55	II. Tr. I.		23	15	12	III. Tr. E.		16	2331		I. Tr. E.
	18	36	31	I. Sh. I.		2	33	7	II. Sh. E.										
	19	8	19	I. Tr. I.		3	52	32	II. Tr. E.	18	14	3	0	I. Ec. D.	27	10	2541		I. Ec. D.
	20	48	44	I. Sh. E.		13	47	14	III. Sh. I.		17	2	35	I. Oc. R.		13	3247		I. Oc. R.
	21	20	46	I. Tr. E.		14	59	58	I. Sh. I.		21	34	32	II. Ec. D.		18	28	4	II. Sh. I.
						15	40	21	I. Tr. I.							20	14	11	II. Tr. I.
2	15	45	56	I. Ec. D.		16	3	36	III. Sh. E.	19	1	52	23	II. Oc. R.		21	1	24	II.* Sh. E.
	18	30	42	I. Oc. R.		16	30	19	III. Tr. I.		11	23	23	I. Sh. I.		22	51	55	II. Tr. E.
	21	18	41	II. Sh. I.		17	11	54	I. Sh. E.		12	11	51	I. Tr. I.					
	22	23	40	II. Tr. I.		17	52	18	I. Tr. E.		13	35	1	I. Sh. E.					
	23	57	57	II. Sh. E.		18	49	25	III. Tr. E.		14	23	17	I. Tr. E.	28	7	46	35	I. Sh. I.
																8	42	34	I. Tr. I.
																9	57	53	I. Sh. E.
3	1	3	48	II. Tr. E.	11	12	8	47	I. Ec. D.	30	8	31	32	I. Ec. D.		10	53	27	I. Tr. E.
	9	45	23	III. Sh. I.		15	1	58	I. Oc. R.		11	32	39	I. Oc. R.		11	43	43	III. Ec. D.
	11	58	55	III. Tr. I.		18	57	30	II. Ec. D.		15	47	25	II. Sh. I.		13	58	19	III. Ec. R.
	12	3	14	III. Sh. E.		23	2	57	II. Oc. R.		17	26	6	II. Tr. I.		15	33	58	III. Oc. D.
	13	5	9	I. Sh. I.							18	26	2	II. Sh. E.		17	44	20	III. Oc. R.
	13	38	42	I. Tr. I.	12	9	28	42	I. Sh. I.		20	4	35	II. Tr. E.					
	14	22	2	III. Tr. E.		10	10	44	I. Tr. I.										
	15	17	20	I. Sh. E.		11	40	34	I. Sh. E.	21	5	52	0	I. Sh. I.	29	4	54	14	I. Ec. D.
	15	51	3	I. Tr. E.		12	22	35	I. Tr. E.		6	42	2	I. Tr. I.		8	2	46	I. Oc. R.
											7	41	52	III. Ec. D.		13	29	29	II. Ec. D.
											8	3	34	I. Sh. E.		18	4	26	II. Oc. R.
4	10	14	32	I. Ec. D.	13	6	37	20	I. Ec. D.		8	5	31	I. Sh. E.	30	2	15	16	I. Sh. I.
	13	1	1	I. Oc. R.		9	32	7	I. Oc. R.		8	53	21	I. Tr. E.		3	12	40	I. Tr. I.
	16	20	18	II. Ec. D.		13	11	54	II. Sh. I.		9	57	50	III. Ec. R.		4	26	30	I. Sh. E.
	20	12	40	II. Oc. R.		14	37	26	II. Tr. I.		11	6	8	III. Oc. D.		5	23	27	I. Tr. E.
						15	50	47	II. Sh. E.		13	20	39	III. Oc. R.		5	23	27	I. Tr. E.
						17	16	41	II. Tr. E.							23	22	45	I. Ec. D.
5	7	33	55	I. Sh. I.						22	3	0	5	I. Ec. D.					
	8	9	11	I. Tr. I.							6	2	44	I. Oc. R.	31	2	32	41	I. Oc. R.
	9	46	1	I. Sh. E.	14	3	40	21	III. Ec. D.		10	52	42	II. Ec. D.		7	41	1	II. Sh. I.
	10	21	26	I. Tr. E.		3	57	21	I. Sh. I.		15	16	31	II. Oc. R.		9	38	7	II. Tr. I.
						4	41	1	I. Tr. I.							10	19	12	II. Sh. E.
6	4	43	5	I. Ec. D.		5	57	41	III. Ec. R.							12	15	27	II. Tr. E.
	7	31	15	I. Oc. R.		6	9	9	I. Sh. E.	23	0	20	43	I. Sh. I.		12	15	27	II. Tr. E.
	10	36	24	II. Sh. I.		6	37	9	III. Oc. D.		1	12	16	I. Tr. I.		20	43	50	I.* Sh. I.
	11	48	15	II. Tr. I.		6	52	45	I. Tr. E.		2	32	13	I. Sh. E.		21	42	38	I. Tr. I.
	13	15	33	II. Sh. E.		8	55	41	III. Oc. R.		3	23	29	I. Tr. E.		22	55	1	I. Sh. E.
	14	28	12	II. Tr. E.							21	28	37	I. Ec. D.		23	53	19	I. Tr. E.
	23	38	28	III. Ec. D.	15	1	5	53	I. Ec. D.										
						4	2	16	I. Oc. R.	24	0	32	45	I. Oc. R.					
7	1	57	10	III. Ec. R.		8	15	45	II. Ec. D.		5	5	18	II. Sh. I.					
	2	2	34	I. Sh. I.		12	27	33	II. Oc. R.		6	50	19	II. Tr. I.					
	2	6	30	III. Oc. D.		22	28	5	I. Sh. I.		7	43	46	II. Sh. E.					
	2	39	34	I. Tr. I.		23	11	21	I. Tr. I.		9	28	26	II. Tr. E.					
	4	14	38	I. Sh. E.							18	49	18	I. Sh. I.					
	4	28	56	III. Oc. R.	16	0	37	50	I. Sh. E.		19	42	22	I. Tr. I.					
	4	51	43	I. Tr. E.		1	23	0	I. Tr. E.		21	0	45	I.* Sh. E.					
	23	11	39	I. Ec. D.		19	34	25	I. Ec. D.		21	50	24	III. Sh. I.					
						22	32	25	I. Oc. R.		21	53	28	I. Tr. E.					
8	2	1	31	I. Oc. R.						25	0	3	45	III. Sh. E.					
	5	38	36	II. Ec. D.	17	2	29	41	II. Sh. I.		1	28	29	III. Tr. I.					
	9	37	38	II. Oc. R.		4	1	54	II. Tr. I.		3	39	9	III. Tr. E.					
	20	31	21	I. Sh. I.		5	8	26	II. Sh. E.		15	57	11	I. Ec. D.					
	21	10	2	I. Tr. I.		6	40	46	II. Tr. E.		19	2	49	I. Oc. R.					
	22	43	20	I. Sh. E.		16	54	41	I. Sh. I.										
	23	22	5	I. Tr. E.		17	41	35	I. Tr. I.										
						17	49	1	III. Sh. I.	26	0	11	21	II. Ec. D.					
9	17	40	12	I. Ec. D.		19	6	23	I. Sh. E.		4	40	48	II. Oc. R.					
	20	31	43	I. Oc. R.		19	53	7	I. Tr. E.		13	17	59	I. Sh. I.					

NOTE.—I. denotes ingress; E., egress; D., disappearance; R., reappearance; Ec., eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow.
*Visible at Washington.

GREENWICH MEAN TIME.

MAY.

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

<p>I. </p>	<p>III. </p>
<p>II. </p>	<p>IV. No Eclipse. </p>

Configurations at 20^h 40^m for an Inverting Telescope.

Day.	West.	East.
1	○ 1.	○ .2 .4 3.
2		○ 2. 1 3. .4
3	2. 1. ³	○ .4
4	3. ○ .2 .1	.4
5	.3 .1 ○	2. 4.
6	2. 3 ○ 1.	4.
7	.2 .1 ○	.3 4.
8	1 ○ .4. .2 .3	
9	4. ○ .12. 3.	
10	4. 2. 1.3 ○	
11	4. 3. ○	.1 .2 ●
12	4. .3 1. ○	2.
13	.4 .32. ○	1.
14	.4 .2 .1 ○	.3
15	.4 ○ 1. .2 .3	
16	.4 ○ 2. 3.	.1 ●
17	2. 1. ³ ○	.4
18	3. .2 ○ .1 .4	
19	.3 1. ○	.2 .4
20	.3 2. ○ .1	.4
21	.2 .1 ○	.3 4.
22	○ 1. 2 .3 4.	
23	.1 ○ 2. 3. 4.	
24	○ 1. 2. ○ 3. 4.	
25	3. .24 ○ .1	
26	3. 4. 1. ○	.2
27	○ 2. 4. .3 ○ .1	
28	4. .2 .1 ○	.3
29	4. ○ .21. .3	
30	.4 .1 ○	2. 3.
31	.4 2. ○ 1. 3.	

GREENWICH MEAN TIME.

JUNE.

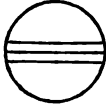
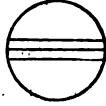
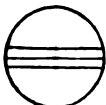
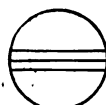
d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	151	42		III. Sh. I.	9	18	12	12	I. Tr. I.	18	7	9	1	II. Tr. E.	26	12	30	36	I. Ec.
	4	3	33	III. Sh. E.		19	17	45	I. Sh. E.		13	29	47	I. Sh. I.		15	57	49	I. Oc.
	5	55	2	III. Tr. I.		20	22	20	I.* Tr. E.		14	40	43	I. Tr. I.		23	54	18	II. Ec.
	8	1	17	III. Tr. E.							15	40	16	I. Sh. E.					
	17	51	19	I. Ec. D.	10	14	13	55	I. Ec. D.		16	50	19	I. Tr. E.	27	5	3	27	II. Oc.
	21	2	38	I.* Oc. R.		17	31	41	I. Oc. R.		23	46	36	III. Ec. D.		9	52	36	I. Sh.
						23	34	36	II. Sh. I.							11	8	13	I. Tr.
2	247	57		II. Ec. D.	11	148	7		II. Tr. I.	19	157	13		III. Ec. R.		12	246		I. Sh.
	7	28	9	II. Oc. R.		2	12	23	II. Sh. E.		4	43	28	III. Oc. D.		13	17	18	I. Tr.
	15	12	29	I. Sh. I.		4	24	15	II. Tr. E.		10	36	32	I. Ec. D.	28	6	59	5	I. Ec.
	16	12	39	I. Tr. I.		11	35	28	I. Sh. I.		13	59	56	I. Oc. R.		10	27	7	I. Oc.
	17	23	36	I. Sh. E.		12	41	57	I. Tr. I.		21	18	23	II. Ec. D.		18	44	49	II. Sh.
	18	23	12	I. Tr. E.		13	46	14	I. Sh. E.							20	40		II.* Tr.
3	12	19	49	I. Ec. D.		14	51	59	I. Tr. E.	20	2	20	49	II. Oc. R.		20	41	56	II.* Sh.
	15	32	29	I. Oc. R.		19	45	44	III.* Ec. D.		7	58	24	I. Sh. I.		23	14	21	II.* Tr.
	20	58	45	II.* Sh. I.		21	57	40	III. Ec. R.		9	10	21	I. Tr. I.					
	23	1	34	II. Tr. I.							10	8	49	I. Sh. E.	29	4	21	5	I. Sh.
	23	36	49	II. Sh. E.	12	0	22	28	III. Oc. D.		11	19	50	I. Tr. E.		5	37	32	I. Tr.
						2	24	12	III. Oc. R.							6	31	12	I. Sh.
4	1	38	30	II. Tr. E.		8	42	28	I. Ec. D.	21	5	5	1	I. Ec. D.		7	46	31	I. Tr.
	9	41	3	I. Sh. I.		12	1	25	I. Oc. R.		8	29	25	I. Oc. R.		17	58	30	III. Sh.
	10	42	34	I. Tr. I.		18	42	16	II. Ec. D.		15	28	41	II. Sh. I.		20	4	31	III.* Sh.
	11	52	6	I. Sh. E.		23	36	42	II. Oc. R.		17	56	20	II. Tr. I.		23	21	31	III. Tr.
	12	53	1	I. Tr. E.							18	6	4	II. Sh. E.					
	15	44	47	III. Ec. D.	13	6	4	7	I. Sh. I.		20	31	12	II.* Tr. E.	30	1	9	0	III. Tr.
	17	58	3	III. Ec. R.		7	11	46	I. Tr. I.							1	27	38	I. Ec.
	19	59	16	III.* Oc. D.		8	14	48	I. Sh. E.	22	2	26	54	I. Sh. I.		4	56	30	I. Oc.
	22	5	23	III. Oc. R.		9	21	41	I. Tr. E.		3	39	53	I. Tr. I.		13	12	17	II. Ec.
											4	37	16	I. Sh. E.		18	24	13	II.* Oc.
5	6	48	22	I. Ec. D.	14	3	10	56	I. Ec. D.		5	49	14	I. Tr. E.		22	49	37	I. Sh.
	10	2	21	I. Oc. R.		6	31	4	I. Oc. R.		13	57	6	III. Sh. I.					
	16	5	58	II. Ec. D.		12	52	42	II. Sh. I.		16	4	33	III. Sh. E.					
	20	51	12	II.* Oc. R.		15	11	14	II. Tr. I.		19	3	57	III.* Tr. I.					
						15	30	20	II. Sh. E.		20	56	16	III.* Tr. E.					
6	4	9	44	I. Sh. I.		17	46	56	II. Tr. E.		23	33	35	I. Ec. D.					
	5	12	32	I. Tr. I.	15	0	32	38	I. Sh. I.	23	2	58	57	I. Oc. R.					
	6	20	42	I. Sh. E.		1	41	26	I. Tr. I.		10	36	31	II. Ec. D.					
	7	22	52	I. Tr. E.		2	43	16	I. Sh. E.		15	42	25	II. Oc. R.					
7	1	16	51	I. Ec. D.		3	51	14	I. Tr. E.		20	55	29	I.* Sh. I.					
	4	32	8	I. Oc. R.		9	55	0	III. Sh. I.		22	9	23	I. Tr. I.					
	10	16	46	II. Sh. I.		12	3	54	III. Sh. E.		23	5	47	I. Sh. E.					
	12	25	6	II. Tr. I.		14	43	2	III. Tr. I.										
	12	54	42	II. Sh. E.		16	40	6	III. Tr. E.	24	0	18	39	I. Tr. E.					
	15	1	39	II. Tr. E.		21	39	30	I. Ec. D.		18	2	4	I. Ec. D.					
	22	38	17	I. Sh. I.							21	28	22	I. Oc. R.					
	23	42	21	I. Tr. I.	16	1	0	46	I. Oc. R.										
						8	0	31	II. Ec. D.	25	4	46	35	II. Sh. I.					
8	0	49	11	I. Sh. E.		12	59	2	II. Oc. R.		7	18	16	II. Tr. I.					
	1	52	35	I. Tr. E.		19	1	14	I. Sh. I.		7	23	50	II. Sh. E.					
	5	53	28	III. Sh. I.		20	11	7	I.* Tr. I.		9	52	43	II. Tr. E.					
	8	3	49	III. Sh. E.		21	11	48	I.* Sh. E.		15	24	1	I. Sh. I.					
	10	20	15	III. Tr. I.		22	20	49	I. Tr. E.		16	38	47	I. Tr. I.					
	12	21	57	III. Tr. E.							17	34	14	I. Sh. E.					
	19	45	25	I.* Ec. D.	17	16	8	0	I. Ec. D.		18	47	57	I.* Tr. E.					
	23	1	58	I. Oc. R.		19	30	20	I.* Oc. R.										
9	5	24	21	II. Ec. D.	18	2	10	33	II. Sh. I.	26	3	47	39	III. Ec. D.					
	10	14	16	II. Oc. R.		4	33	44	II. Tr. I.		5	56	56	III. Ec. R.					
	17	6	55	I. Sh. I.		4	48	3	II. Sh. E.		9	2	12	III. Oc. D.					
											10	54	41	III. Oc. R.					

NOTE.—I. denotes ingress; E., egress; D., disappearance; R., reappearance; Ec., eclipse; Oc., occultat
Tr., transit of the satellite; Sh., transit of the shadow. *Visible at Washington.

GREENWICH MEAN TIME.

JUNE.

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

<p>I. d </p>	<p>III. d r </p>
<p>II. d </p>	<p>IV. No Eclipse. </p>

Configurations at 19^h 55^m for an Inverting Telescope.

Day.	West.	East.
1	.4 3.2	○ .1 ●
2	3. 4.1	○ .2
3	.3	○ 2.1 ⁴
4	2. 1. 3	○ .4
5		○ 1. 3 .4 .2 ●
6	.1	○ 2. 3. .4
7	2.	○ 1. 3. 4.
8	.23.	○ 4. .1 ●
9	○ 1. 3.	○ .2 4.
10	.3	○ .12. 4.
11	2. 1.	○ .3 ●
12	4.	○ .1 3 .2 ●
13	4. .1	○ 2. 3
14	4. 2.	○ 1. 3.
15	4. .2	○ .1
16	.4 3.	○ 1. 2
17	.4 3.	○ 1 2.
18	.4 2. 1.	○
19	.4 ³	○ .1 3
20	1.	○ .4 2 3
21	○ 2.	○ 1. 3. 4
22	○ 3. .2 .1	○ .4
23	3.	○ 1.2 .4
24	.3	○ 2. 4. .1 ●
25	.3 1.	○ 4.
26	.2	○ .1 3 4.
27	1.	○ 4.2 3
28	.4 ³	○ .1 3.
29	4. 2. 1.	○ 3.
30	4. 3.	○ 21.

GREENWICH MEAN TIME.

JULY.

d h m s		d h m s		d h m s		d h m s	
1 0 6 51	I. Tr. I.	9 9 58 56	II. Sh. I.	16 23 15 44	I. Sh. E.	24 23 41 45	I. Oc. R.
0 59 42	I. Sh. E.	12 35 43	II. Sh. E.				
2 15 44	I. Tr. E.	12 43 28	II. Tr. I.	17 0 36 15	I. Tr. E.	25 1 47 12	III. Oc. D.
19 56 7	I.* Ec. D.	15 16 19	II. Tr. E.	15 52 3	III. Ec. D.	3 19 42	III. Oc. R.
23 25 44	I. Oc. R.	19 12 9	I.* Sh. I.	17 57 27	III.* Ec. D.	10 16 7	II. Ec. D.
		20 32 36	I.* Tr. I.	18 12 48	I.* Ec. R.	12 53 17	II. Ec. R.
2 7 22 43	II. Sh. I.	21 21 58	I. Sh. E.	21 41 40	III. Oc. D.	13 5 6	II. Oc. D.
9 59 43	II. Sh. E.	22 41 1	I. Tr. E.	21 47 2	I. Oc. R.	15 36 51	II. Oc. R.
10 1 34	II. Tr. I.			23 19 19	III. Oc. R.	17 28 28	I.* Sh. I.
12 35 12	II. Tr. E.	10 11 50 29	III. Ec. D.			18 51 22	I.* Tr. I.
17 18 7	I. Sh. I.	13 57 9	III. Ec. R.	13 7 40 54	II. Ec. D.	19 37 55	I.* Sh. E.
18 36 4	I.* Tr. I.	16 18 44	I. Ec. D.	10 18 23	II. Ec. R.	20 59 6	I.* Tr. E.
19 28 8	I.* Sh. E.	17 31 46	III. Oc. D.	10 28 41	II. Oc. D.		
20 44 52	I.* Tr. E.	19 14 27	III.* Oc. R.	13 1 16	II. Oc. R.	26 14 35 22	I. Ec. D.
		19 51 26	I.* Oc. R.	15 34 37	I. Sh. I.	18 10 13	I.* Oc. R.
				16 56 59	I. Tr. I.		
3 7 49 15	III. Ec. D.			17 44 72	I.* Sh. E.	27 4 30 21	II. Sh. I.
9 57 13	III. Ec. R.	11 5 53 4	II. Ec. D.	19 4 57	I.* Tr. E.	7 6 42	II. Sh. E.
13 18 45	III. Oc. D.	7 43 23	II. Ec. R.			7 21 35	II. Tr. I.
14 24 40	I. Ec. D.	7 50 22	II. Oc. D.			9 52 34	II. Tr. E.
15 6 24	III. Oc. R.	10 23 48	II. Oc. R.	19 12 41 16	I. Ec. D.	11 56 54	I. Sh. I.
17 55 0	I. Oc. R.	13 40 41	I. Sh. I.	16 15 44	I. Oc. R.	13 19 48	I. Tr. I.
		15 1 35	I. Tr. I.			14 6 19	I. Sh. E.
4 2 30 1	II. Ec. D.	15 50 27	I. Sh. E.	20 1 53 50	II. Sh. I.	15 27 28	I. Tr. E.
5 8 12	II. Ec. R.	17 9 55	I. Tr. E.	4 30 19	II. Sh. E.		
5 10 9	II. Oc. D.			4 43 46	II. Tr. I.		
7 44 29	II. Oc. R.	12 10 47 12	I. Ec. D.	7 15 29	II. Tr. E.	28 9 3 58	I. Ec. D.
11 46 40	I. Sh. I.	14 20 21	I. Oc. R.	10 3 3	I. Sh. I.	10 2 22	III. Sh. I.
13 5 19	I. Tr. I.	23 17 22	II. Sh. I.	11 25 37	I. Tr. I.	12 3 5	III. Sh. E.
13 56 39	I. Sh. E.			12 12 37	I. Sh. E.	12 38 46	I. Oc. R.
15 14 1	I. Tr. E.	13 1 54 3	II. Sh. E.	13 33 34	I. Tr. E.	15 58 21	III. Tr. I.
		2 4 10	II. Tr. I.			17 25 7	III.* Tr. E.
5 8 53 8	I. Ec. D.	4 36 39	II. Tr. E.	21 6 1 8	III. Sh. I.	23 33 43	II. Ec. D.
12 24 7	I. Oc. R.	8 9 9	I. Sh. I.	7 9 51	I. Ec. D.		
20 41 3	II.* Sh. I.	9 30 29	I. Tr. I.	8 3 7	III. Sh. E.	29 2 10 41	II. Ec. R.
23 17 56	II. Sh. E.	10 18 52	I. Sh. E.	10 44 30	I. Oc. R.	2 22 32	II. Oc. D.
23 23 0	II. Tr. I.	11 38 44	I. Tr. E.	11 54 11	III. Tr. I.	4 53 52	II. Oc. R.
				13 26 19	III. Tr. E.	6 25 21	I. Sh. I.
6 1 56 14	II. Tr. E.	14 2 0 25	III. Sh. I.	20 58 35	II.* Ec. D.	7 48 11	I. Tr. I.
6 15 9	I. Sh. I.	4 3 43	III. Sh. E.	23 35 53	II. Ec. R.	8 34 45	I. Sh. E.
7 34 26	I. Tr. I.	5 15 46	I. Ec. D.	23 47 10	II. Oc. D.	9 55 48	I. Tr. E.
8 25 4	I. Sh. E.	7 48 48	III. Tr. I.				
9 43 2	I. Tr. E.	8 49 20	I. Oc. R.	22 2 19 19	II. Oc. R.	30 3 32 27	I. Ec. D.
21 59 38	III. Sh. I.	9 24 9	III. Tr. E.	4 31 32	I. Sh. I.	7 7 8	I. Oc. R.
		18 23 19	II.* Ec. D.	5 54 16	I. Tr. I.	17 48 22	II.* Sh. I.
7 0 4 17	III. Sh. E.	21 0 57	II.* Ec. R.	6 41 3	I. Sh. E.	20 24 40	II.* Sh. E.
3 21 42	I. Ec. D.	21 9 47	II.* Oc. D.	8 2 8	I. Tr. E.	20 39 26	II.* Tr. I.
3 35 54	III. Tr. I.	23 42 48	II. Oc. R.			23 10 5	II. Tr. E.
5 18 22	III. Tr. E.			23 1 38 20	I. Ec. D.		
6 53 19	I. Oc. R.	15 2 37 38	I. Sh. I.	5 13 7	I. Oc. R.	31 0 53 46	I. Sh. I.
15 47 53	II. Ec. D.	3 59 22	I. Tr. I.	15 11 48	II. Sh. I.	2 16 32	I. Tr. I.
18 25 53	II. Ec. R.	4 47 19	I. Sh. E.	17 48 12	II.* Sh. E.	3 3 9	I. Sh. E.
18 30 29	II.* Oc. D.	6 7 32	I. Tr. E.	18 2 34	II.* Tr. I.	4 24 6	I. Tr. E.
21 4 23	II.* Oc. R.	23 44 15	I. Ec. D.	20 33 54	II.* Tr. E.	22 1 2	I. Ec. D.
				22 59 58	I. Sh. I.	23 53 40	III. Ec. D.
8 0 43 40	I. Sh. I.	16 3 18 10	I. Oc. R.				
2 3 32	I. Tr. I.	12 35 19	II. Sh. I.	24 0 22 49	I. Tr. I.		
2 53 32	I. Sh. E.	15 11 54	II. Sh. E.	1 9 28	I. Sh. E.		
4 12 3	I. Tr. E.	15 23 51	II. Tr. I.	2 30 37	I. Tr. E.		
21 50 11	I. Ec. D.	17 55 57	II.* Tr. E.	19 52 54	III.* Ec. D.		
		21 6 6	I.* Sh. I.	20 6 55	I.* Ec. D.		
9 1 22 21	I. Oc. R.	22 28 9	I. Tr. I.	21 57 2	III. Ec. R.		

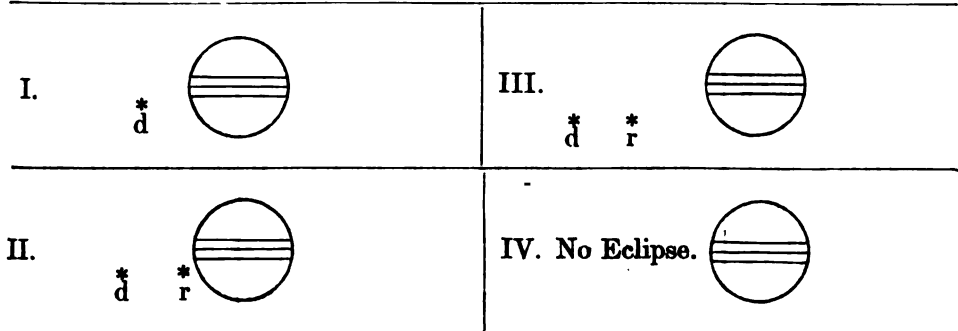
NOTE.—I. denotes ingress; E., egress; D., disappearance; R., reappearance; Ec., eclipse; Oc., occultation. Tr., transit of the satellite; Sh., transit of the shadow.

*Visible at Washington.

GREENWICH MEAN TIME.

JULY.

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



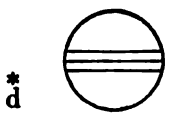
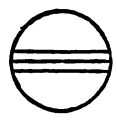
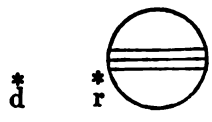
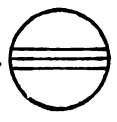
Configurations at 19^h 10^m for an Inverting Telescope.

Day.	West.	East.
1	4• 3•	•1○ 2•
2	○1• 4•	•3 2• ○
3	•4	•2 ○ ¹ ₃
4	•4	1• ○ •2 •3
5	•4	○ 2• •1 3•
6	2• 1•	•4○ 3•
7	3•	○ 1• •4 •2●
8	3•	•1 ○ 2• •4
9	•3 2•	○1• •4
10	•2	○ •4 •1●•3●
11	1•	○ •2 •3 4•
12	2• 1•	○ ⁵ ₁ 3• 4•
13	3•	○ ⁴ ₁ 3• 4•
14	3•	○ ⁴ ₁ •2 •2●
15	•3	•4 ₁ ○ •2
16	•4 ₃	2• ○ 1•
17	4•	•2 •○ ₃ •1●
18	4•	1• ○ •2 •3
19	•4	○ •1 2• 3•
20	•4	2• 1• ○ 3•
21	•4	•3 ₂ ○ •1
22	3• 4•	•1 ○ •2
23	•3	○ 1•
24	•2	•1 ₃ ○ •4
25	○1•	○ •2 •3 •4
26	•1	○ •1 2• •3 •4
27	2• 1•	○ 3• •4
28	•2 3•	○ •1 4•
29	3• 1•	○ •2 4•
30	•3	○ 2• 1• 4•
31	2•	•3•1 ○ 4•

GREENWICH MEAN TIME.

AUGUST.

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

<p>I. </p>	<p>III. </p>
<p>II. </p>	<p>IV. No Eclipse. </p>

Configurations at 18^h 25^m for an Inverting Telescope.

Day.	West.	East.
1		4. ○ ¹ / ₄ .3
2	4.	○ 2. .3
3	4.	2. 1. ○ 3.
4	4.	.2 3 ○ .1
5	.4	3. 1. ○ .2
6	.4 .3	○ 2. .1
7	.4 2. .3 .1	○
8	.4	○ ¹ / ₃ .2 ●
9		.1 ○ .4 2. .3
10	○ 1.	2. ○ .4 3.
11		.2 ○ ³ / ₁ .4
12		3. 1. ○ .2 .4
13	3.	○ ² / ₁ 4.
14	.3 2. .1	○ 4.
15		○ .3 1. 4. .2 ●
16		.1 ○ .2 4. .3
17		¹ / ₄ ○ 3.
18		⁴ / ₂ ○ .1 3.
19	4.	3. 1. ○ .2
20	4.	3. ○ .1 2.
21	4.	.3 2. 1. ○
22	.4	.2 ○ 1. .3 ●
23	.4	.1 ○ .2 .3
24	○ 2.	.4 ○ 1. 3.
25		.2 .4 ○ 3. .1 ●
26		3. 1. ○ .2 4
27	3.	○ .1 2. .4
28	.3	¹ / ₂ ○ .4
29		.2 .3 ○ 1. .4
30		.1 ○ .2 3 4.
31		○ 2. 1. 3. 4.

GREENWICH MEAN TIME.

SEPTEMBER.

d h m s		d h m s		d h m s		d h m s	
1 04132	I. Tr. E.	9 19 34 45	II.*Oc. R.	18 15 115	I.*Tr. I.	27 10 31 59	I. Sh.
18 35 8	I.*Ec. D.	19 56 55	I.*Sh. E.	16 19 12	I.*Sh. E.	11 12 21	I. Tr.
21 54 22	I.*Oc. R.	20 55 51	I.*Tr. E.	16 24 46	II.*Tr. E.	11 13 35	III. Oc.
				17 8 32	I.*Tr. E.	12 9 56	III. Oc.
2 6 7 2	III. Sh. I.	10 14 58 8	I.*Ec. D.			12 41 40	I. Sh.
8 2 13	III. Sh. E.	18 8 56	I.*Oc. R.	19 11 21 23	I. Ec. D.	13 18 57	II.*Oc.
11 9 54	III. Tr. I.			14 21 59	I.*Oc. R.	13 19 50	I.*Tr.
12 10 52	III. Tr. E.	11 9 30 20	II. Sh. I.				
12 27 48	II. Ec. D.	11 35 10	II. Tr. I.	20 4 2 22	III. Ec. D.	28 7 44 40	I. Ec.
15 53 47	I.*Sh. I.	12 6 30	II. Sh. E.	5 57 8	III. Ec. R.	10 33 32	I. Oc.
17 1 25	I.*Tr. I.	12 15 53	I. Sh. I.	6 54 36	II. Ec. D.		
17 13 36	II.*Oc. R.	13 15 18	I. Tr. I.	7 50 27	III. Oc. D.	29 4 4 48	II. Sh.
18 3 8	I.*Sh. E.	14 3 31	II.*Tr. E.	8 38 6	I. Sh. I.	5 0 28	I. Sh.
19 8 31	I.*Tr. E.	14 25 20	I.*Sh. E.	8 47 28	III. Oc. R.	5 25 1	II. Tr.
		15 22 28	I.*Tr. E.	9 27 35	I. Tr. I.	5 38 26	I. Tr.
				10 47 42	I. Sh. E.	6 40 57	II. Sh.
3 13 3 41	I. Ec. D.	12 9 26 47	I. Ec. D.	11 2 39	II. Oc. R.	7 10 11	I. Sh.
16 21 23	I.*Oc. R.	12 35 43	I. Oc. R.	11 34 54	I. Tr. E.	7 45 58	I. Tr.
						7 53 35	II. Tr.
4 6 53 1	II. Sh. I.	13 0 1 18	III. Ec. D.	21 5 49 58	I. Ec. D.		
9 11 40	II. Tr. I.	157 7	III. Ec. R.	8 48 21	I. Oc. R.	30 2 13 26	I. Ec.
9 29 9	II. Sh. E.	4 19 53	II. Ec. D.			4 59 46	I. Oc.
10 22 11	I. Sh. I.	4 22 44	III. Oc. D.	22 1 27 6	II. Sh. I.	22 11 30	III.*Sh.
11 28 19	I. Tr. I.	5 21 49	III. Oc. R.	3 6 34	I. Sh. I.	22 46 48	II. Ec.
11 40 8	II. Tr. E.	6 44 20	I. Sh. I.	3 6 45	II. Tr. I.	23 28 57	I. Sh.
12 31 34	I. Sh. E.	7 41 54	I. Tr. I.	3 53 52	I. Tr. I.		
13 35 26	I. Tr. E.	8 44 34	II. Oc. R.	4 3 16	II. Sh. E.		
		8 53 49	I. Sh. E.	5 16 11	I. Sh. E.		
5 7 32 20	I. Ec. D.	9 49 6	I. Tr. E.	5 35 8	II. Tr. E.		
10 48 26	I. Oc. R.			6 1 13	I. Tr. E.		
20 0 13	III.*Ec. D.	14 3 55 23	I. Ec. D.	23 0 18 42	I. Ec. D.		
21 57 9	III.*Ec. R.	7 2 18	I. Oc. R.	3 14 47	I. Oc. R.		
		22 49 29	II. Sh. I.	18 9 47	III.*Sh. I.		
6 0 49 56	III. Oc. D.	15 0 46 30	II. Tr. I.	20 2 3	III.*Sh. E.		
1 45 10	II. Ec. D.	1 12 46	I. Sh. I.	20 11 58	II.*Ec. D.		
1 52 21	III. Oc. R.	1 25 40	II. Sh. E.	21 35 1	I.*Sh. I.		
4 50 38	I. Sh. I.	2 8 25	I. Tr. I.	21 41 2	III.*Tr. I.		
5 55 11	I. Tr. I.	3 14 50	II. Tr. E.	22 20 4	I.*Tr. I.		
6 24 27	II. Oc. R.	3 22 17	I. Sh. E.	22 33 28	III. Tr. E.		
7 0 1	I. Sh. E.	4 15 38	I. Tr. E.	23 44 40	I. Sh. E.		
8 2 19	I. Tr. E.	22 24 5	I. Ec. D.				
7 2 0 52	I. Ec. D.	16 1 28 57	I. Oc. R.	24 0 11 0	II. Oc. R.		
5 15 17	I. Oc. R.	14 8 45	III.*Sh. I.	0 27 28	I. Tr. E.		
20 12 6	II.*Sh. I.	16 1 57	III.*Sh. E.	18 47 20	I.*Ec. D.		
22 24 9	II. Tr. I.	17 37 14	II.*Ec. D.	21 41 3	I.*Oc. R.		
22 48 15	II. Sh. E.	18 15 39	III.*Tr. I.	25 14 45 28	II.*Sh. I.		
23 19 3	I. Sh. I.	19 9 35	III.*Tr. E.	16 3 29	I.*Sh. I.		
		19 41 12	I.*Sh. I.	16 15 40	II.*Tr. I.		
8 0 21 57	I. Tr. I.	20 34 52	I.*Tr. I.	16 46 13	I.*Tr. I.		
0 52 33	II. Tr. E.	21 50 45	I.*Sh. E.	17 21 38	II.*Sh. E.		
1 28 28	I. Sh. E.	21 53 51	II.*Oc. R.	18 13 8	I.*Sh. E.		
2 29 7	I. Tr. E.	22 42 7	I. Tr. E.	18 44 8	II.*Tr. E.		
20 29 34	I.*Ec. D.			18 53 39	I.*Tr. E.		
23 42 12	I. Oc. R.	17 16 52 41	I.*Ec. D.				
		19 55 27	I.*Oc. R.	26 13 16 3	I.*Ec. D.		
9 10 7 34	III. Sh. I.	18 12 7 48	II. Sh. I.	16 7 23	I.*Oc. R.		
12 1 45	III. Sh. E.	13 56 26	II.*Tr. I.	27 8 3 34	III. Ec. D.		
14 45 0	III.*Tr. I.	14 9 38	I.*Sh. I.	9 29 24	II. Ec. D.		
15 2 30	II.*Ec. D.	14 43 59	II.*Sh. E.	9 57 14	III. Ec. R.		
15 41 56	III.*Tr. E.						
17 47 28	I.*Sh. I.						
18 48 40	I.*Tr. I.						

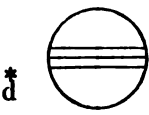
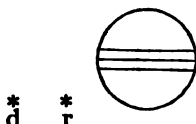
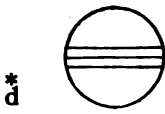
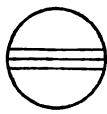
Note.—I. denotes ingress; E., egress; D., disappearance; R., reappearance; Ec., eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow.

*Visible at Washington.

GREENWICH MEAN TIME.

SEPTEMBER.

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

<p>I. </p>	<p>III. </p>
<p>II. </p>	<p>IV. No Eclipse. </p>

Configurations at 17^h 40^m for an Inverting Telescope.

Day.	West.	East.
1	2. 1	3. 4.
2	1.	3. 2 4.
3	3.	4. 1 2.
4	34. 1.	0
5	4.	2 3 0 1
6	4.	1. 0 3
7	4.	0 1. 3
8	4	2. 1 0 3.
9	4	3. 0 1. 2 ●
10	3 4	0 2. 1 ●
11	3	1. 2. 0 4
12		2 3 0 1 4
13		1. 0 3 4
14		0 1. 3 4
15	2. 1	0 3. 4
16		3 0 1. 4. 2 ●
17	3.	0 2 4. 1 ●
18	3	1. 0 4.
19		3 0 14.
20		1. 0 3
21	4.	0 1. 3
22	4.	2. 1 0 3.
23	4.	2 0 3 1.
24	4	3. 1 0 2
25	2 0 1.	4 3 0
26	4	3 0 1
27		4 1. 0 3
28		0 4 12. 3
29		2 1 0 43.
30		2 0 3 1. 4

GREENWICH MEAN TIME.

OCTOBER.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s		
1	0	251		III. Sh. E.	9	20	1	13	II.*Sh. I.	18	17	14	21	II.*Ec. D.	27	14	37	19	II.*Sh. I.	
	0	427		I. Tr. I.		20	14	2	I.*Tr. I.		18	24	14	I.*Sh. E.		14	40	15	I.*Tr. E.	
	1	223		III. Tr. I.		20	49	8	II.*Tr. I.		18	31	5	I.*Tr. E.		14	47	19	I.*Sh. E.	
	1	3841		I. Sh. E.		22	1	22	I.*Sh. E.		20	0	41	II.*Oc. R.		16	57	10	II.*Tr. E.	
	1	55	5	III. Tr. E.		22	21	50	I.*Tr. E.		20	9	16	III.*Ec. D.		17	12	54	II.*Sh. E.	
	2	12	0	I. Tr. E.		22	37	16	II.*Sh. E.		22	7	6	III.*Oc. R.						
	2	26	31	II. Oc. R.		23	18	15	II. Tr. E.						28	9	46	19	I. Oc. D.	
	20	42	5	I.*Ec. D.							19	13	29	I.*Ec. D.		12	4	23	I.*Ec. R.	
	23	25	52	I. Oc. R.	10	17	5	45	I.*Ec. D.		15	45	50	I.*Oc. R.						
						19	36	10	I.*Oc. R.						29	6	57	48	I. Tr. I.	
3	17	23	14	II.*Sh. I.						20	10	43	1	I. Sh. I.		7	6	10	I. Sh. I.	
	17	57	26	I.*Sh. I.	11	14	20	6	I.*Sh. I.		10	48	51	I. Tr. I.		8	51	9	II. Oc. D.	
	18	30	26	I.*Tr. I.		14	39	14	II.*Ec. D.		11	58	56	II.*Sh. I.		9	6	6	I. Tr. E.	
	18	35	5	II.*Tr. I.		14	39	53	I.*Tr. I.		12	12	3	II.*Tr. I.		9	15	56	I. Sh. E.	
	19	59	22	II.*Sh. E.		16	7	20	III.*Ec. D.		12	52	51	I.*Sh. E.		11	41	7	II.*Ec. R.	
	20	7	11	I.*Sh. E.		16	29	55	I.*Sh. E.		12	56	55	I.*Tr. E.		13	56	25	III.*Tr. I.	
	20	38	2	I.*Tr. E.		16	47	43	I.*Tr. E.		14	34	45	II.*Sh. E.		14	16	22	III.*Sh. I.	
	21	1	48	II.*Tr. E.		17	47	32	II.*Oc. R.		14	41	53	II.*Tr. E.		15	5	53	III.*Tr. E.	
						18	49	16	III.*Oc. R.						16	3	57	III.*Sh. E.		
3	15	10	51	I.*Ec. D.						21	7	58	19	I. Ec. D.						
	17	52	2	I.*Oc. R.	12	11	34	25	I. Ec. D.		10	11	48	I. Oc. R.		30	4	12	12	I. Oc. D.
						14	2	4	I.*Oc. R.						6	33	8		I. Ec. R.	
4	12	4	16	II. Ec. D.						22	5	11	37	I. Sh. I.						
	12	5	5	III. Ec. D.	18	8	48	40	I. Sh. I.		5	14	36	I. Tr. I.		31	1	23	38	I. Tr. I.
	12	25	59	I.*Sh. I.		9	5	42	I. Tr. I.		6	31	59	II. Ec. D.		1	34	49	I. Sh. I.	
	12	56	24	I.*Tr. I.		9	20	43	II. Sh. I.		7	21	27	I. Sh. E.		3	31	58	I. Tr. E.	
	13	57	43	III.*Ec. R.		9	57	14	II. Tr. I.		7	22	44	I. Tr. E.		3	33	44	II. Tr. I.	
	14	32	45	III.*Oc. D.		10	58	30	I. Sh. E.		9	7	11	II. Oc. R.		3	44	35	I. Sh. E.	
	14	35	44	I.*Sh. E.		11	13	36	I. Tr. E.		10	15	3	III. Sh. I.		3	56	6	II. Sh. I.	
	15	4	3	I.*Tr. E.		11	56	42	II.*Sh. E.		10	44	57	III. Tr. I.		6	4	29	II. Tr. E.	
	15	30	8	III.*Oc. R.		12	26	34	II.*Tr. E.		11	48	35	III.*Tr. E.		6	31	32	II. Sh. E.	
	15	33	47	II.*Oc. R.							12	3	36	III.*Sh. E.		22	38	14	I. Oc. D.	
5	9	39	29	I. Ec. D.	14	6	3	14	I. Ec. D.		23	2	27	4	I. Ec. D.					
	12	18	2	I.*Oc. R.		8	28	4	I. Oc. R.		4	37	42	I. Oc. R.						
6	6	42	41	II. Sh. I.	15	3	17	14	I. Sh. I.		23	40	14	I. Sh. I.						
	6	54	29	I. Sh. I.		3	31	29	I. Tr. I.		23	40	22	I. Tr. I.						
	7	22	19	I. Tr. I.		3	56	47	II. Ec. D.						24	1	17	40	II. Sh. I.	
	7	41	42	II. Tr. I.		5	27	4	I. Sh. E.		1	18	57	II. Tr. I.						
	9	4	17	I. Sh. E.		5	39	26	I. Tr. E.		1	18	57	I. Tr. E.						
	9	18	48	II. Sh. E.		6	13	54	III. Sh. I.		1	48	32	I. Tr. E.						
	9	30	1	I. Tr. E.		6	54	10	II. Oc. R.		1	50	3	I. Sh. E.						
	10	10	37	II. Tr. E.		7	33	1	III. Tr. I.		3	49	2	II. Tr. E.						
7	4	8	16	I. Ec. D.		8	3	25	III. Sh. E.		3	53	23	II. Sh. E.						
	6	44	8	I. Oc. R.		8	31	42	III. Tr. E.		20	54	29	I.*Oc. D.						
						8	31	42	III. Tr. E.		23	6	49	I. Ec. R.						
8	1	21	44	II. Ec. D.	16	0	31	57	I. Ec. D.		25	18	6	10	I.*Tr. I.					
	1	23	1	I. Sh. I.		2	53	58	I. Oc. R.			18	8	53	I.*Sh. I.					
	1	48	11	I. Tr. I.		21	45	48	I.*Sh. I.			19	44	48	II.*Oc. D.					
	2	12	44	III. Sh. I.		21	57	16	I.*Tr. I.			20	14	22	I.*Tr. E.					
	3	32	49	I. Sh. E.		22	39	20	II.*Sh. I.			20	18	40	I.*Sh. E.					
	3	55	56	I. Tr. E.		23	4	14	II. Tr. I.			22	23	28	II.*Ec. R.					
	4	3	10	III. Sh. E.		23	55	38	I. Sh. E.											
	4	19	13	III. Tr. I.		17	0	5	15	I. Tr. E.		26	0	11	35	III. Ec. D.				
	4	40	46	II. Oc. R.			1	15	15	II. Sh. E.			2	1	17	III. Ec. R.				
	5	14	7	III. Tr. E.			1	33	49	II. Tr. E.			15	20	20	I.*Oc. D.				
	22	36	57	I.*Ec. D.			19	0	47	I.*Ec. D.			17	35	32	I.*Ec. R.				
							21	19	59	I.*Oc. R.										
9	1	10	6	I. Oc. R.	18	16	14	24	I.*Sh. I.		37	12	31	59	I.*Tr. I.					
	19	51	32	I.*Sh. I.		16	23	3	I.*Tr. I.			12	37	32	I.*Sh. I.					
												14	26	43	II.*Tr. I.					

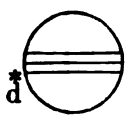
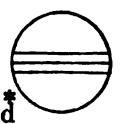
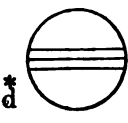
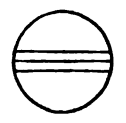
NOTE.—I. denotes ingress; E., egress; D., disappearance; R., reappearance; Ec., eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow.

*Visible at Washington.

GREENWICH MEAN TIME.

OCTOBER.

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

<p>I. </p>	<p>III. </p>
<p>II. </p>	<p>IV. No Eclipse. </p>

Configurations at 16^h 40^m for an Inverting Telescope.

Day.	West.	East.
1	3° · 1	○ · 2 · 4
2	3°	○ ² ₁ · 4
3	· 32°	○ 4° · 1 ●
4		1° ○ · 2 4°
5		○ · 1 2° 4° · 3
6		² ₁ ○ 4° 3°
7		4° · 2 ○ 1° ³
8	4°	3° · 1 ○ · 2
9	4° 3°	○ ² ₁
10	4° · 32°	· ○ 1
11	○ 1° · 4	○ · 2 ● · 3 ●
12	· 4	○ · 1 2° · 3
13	· 4	² ₁ ○ 3°
14		· 2 · 4 ○ · 13°
15		² ₁ ○ · 4 · 2
16	3°	○ ² ₁ · 4
17	· 3 2°	· 1 ○ · 4
18	○ 1°	· 3° ○ 2 · 4
19		○ · 1 ² ₃ 4°
20		1 · 2° ○ 3° 4°
21		· 2 ○ · 1 3° 4°
22		1° 3° ○ · 24°
23	3°	4° ○ 1° ²
24	· 34° 2°	· 1 ○
25	4°	· 3 · 2 ○ 1°
26	4°	○ · 3 · 2 · 1 ●
27	○ 2° · 4	1° ○ · 3
28	· 4	· 2 ○ · 1 3°
29	· 4	1° 3° ○ · 2
30	3° · 4	○ 1 · 2°
31	· 3 2° · 1	○ ₄

GREENWICH MEAN TIME.

NOVEMBER.

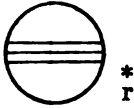
d h m s		d h m s		d h m s		d h m s	
1 1 2 1	I. Ec. R.	9 18 48 31	I.*Oc. D.	18 1 7 19	II. Sh. E.	27 3 4 49	III. Tr. I.
19 49 31	I.*Tr. I.	21 26 6	I.*Ec. R.	15 0 3	I.*Oc. D.	4 39 8	III. Tr. E.
20 3 30	I.*Sh. I.	10 15 59 29	I.*Tr. I.	17 50 27	I.*Ec. R.	6 25 0	III. Sh. I.
21 57 34	II.*Oc. D.	16 26 59	I.*Sh. I.	19 12 10 40	I.*Tr. I.	8 8 46	III. Sh. E.
21 57 54	I.*Tr. E.	18 8 3	I.*Tr. E.	12 50 38	I.*Sh. I.	11 13 0	I.*Oc. D.
22 13 13	I.*Sh. E.	18 36 35	I.*Sh. E.	14 19 23	I.*Tr. E.	14 14 52	I.*Ec. R.
2 0 58 46	II. Ec. R.	18 57 53	II.*Tr. I.	15 0 2	I.*Sh. E.	28 8 23 28	I. Tr. I.
3 28 5	III. Oc. D.	19 54 17	II.*Sh. I.	15 34 8	II.*Oc. D.	9 14 30	I. Sh. I.
6 2 6	III. Ec. R.	21 29 35	II.*Tr. E.	19 27 50	II.*Ec. R.	10 32 18	I.*Tr. E.
17 4 10	I.*Oc. D.	22 29 13	II. Sh. E.	23 42 50	III. Tr. I.	11 23 42	I.*Sh. E.
19 30 46	I.*Ec. R.	11 13 14 45	I.*Oc. D.	30 1 11 13	III. Tr. E.	12 44 51	II.*Tr. I.
3 14 15 27	I.*Tr. I.	15 55 0	I.*Ec. R.	2 22 55	III. Sh. I.	14 30 20	II.*Sh. I.
14 32 11	I.*Sh. I.	13 10 25 36	I. Tr. I.	4 7 36	III. Sh. E.	15 18 1	II.*Tr. E.
16 23 52	I.*Tr. E.	10 55 41	I.*Sh. I.	9 26 28	I. Oc. D.	17 4 8	II.*Sh. E.
16 41 48	II.*Tr. I.	12 34 12	I.*Tr. E.	12 19 18	I.*Ec. R.	29 5 39 52	I. Oc. D.
16 41 54	I.*Sh. E.	13 5 14	I.*Sh. E.	31 6 37 5	I. Tr. I.	8 43 50	I. Ec. R.
17 15 45	II.*Sh. I.	13 18 25	II.*Oc. D.	7 19 24	I. Sh. I.	30 2 50 14	I. Tr. I.
19 12 52	II.*Tr. E.	16 52 3	II.*Ec. R.	8 45 50	I. Tr. E.	3 43 17	I. Sh. I.
19 51 2	II.*Sh. E.	20 24 17	III.*Tr. I.	9 28 46	I. Sh. E.	4 59 6	I. Tr. E.
4 11 30 15	I.*Oc. D.	21 46 22	III. Tr. E.	10 24 26	II.*Tr. I.	5 52 27	I. Sh. E.
13 59 38	I.*Ec. R.	22 20 20	III. Sh. I.	11 51 43	II.*Sh. I.	7 1 24	II. Oc. D.
5 8 41 23	I. Tr. I.	13 0 5 58	III. Sh. E.	12 57 2	II.*Tr. E.	11 21 53	II.*Ec. R.
9 0 51	I. Sh. I.	7 40 57	I. Oc. D.	14 25 59	II.*Sh. E.	16 43 35	III.*Oc. D.
10 49 50	I.*Tr. E.	10 23 49	I. Ec. R.	22 3 353 3	I. Oc. D.	18 23 8	III.*Oc. R.
11 4 15	II.*Oc. D.	14 4 51 47	I. Tr. I.	6 48 14	I. Ec. R.	20 21 59	III. Ec. D.
11 10 32	I.*Sh. E.	5 24 24	I. Sh. I.	23 1 3 34	I. Tr. I.	22 7 30	III. Ec. R.
14 16 30	II.*Ec. R.	7 0 24	I. Tr. E.	1 48 9	I. Sh. I.		
17 9 25	III.*Tr. I.	7 33 56	I. Sh. E.	3 12 21	I. Tr. E.		
18 18 25	III.*Sh. I.	8 6 3	II. Tr. I.	3 57 29	I. Sh. E.		
18 25 8	III.*Tr. E.	9 13 9	II. Sh. I.	4 42 41	II. Oc. D.		
20 5 0	III.*Sh. E.	10 38 3	II.*Tr. E.	8 45 48	II. Ec. R.		
6 5 56 16	I. Oc. D.	11 47 52	II.*Sh. E.	13 18 29	III.*Oc. D.		
8 28 26	I. Ec. R.	15 2 7 19	I. Oc. D.	14 52 25	III.*Oc. R.		
7 3 7 22	I. Tr. I.	4 52 44	I. Ec. R.	16 19 5	III.*Ec. D.		
3 29 33	I. Sh. I.	23 18 1	I. Tr. I.	18 5 24	III.*Ec. R.		
5 15 51	I. Tr. E.	23 53 8	I. Sh. I.	22 19 35	I. Oc. D.		
5 39 12	I. Sh. E.	16 1 2 60	I. Tr. E.	24 1 17 4	I. Ec. R.		
5 49 17	II. Tr. I.	2 2 37	I. Sh. E.	19 30 9	I.*Tr. I.		
6 34 35	II. Sh. I.	2 26 3	II. Oc. D.	20 16 57	I.*Sh. I.		
8 20 40	II. Tr. E.	6 9 54	II. Ec. R.	21 38 57	I. Tr. E.		
9 9 42	II. Sh. E.	9 58 17	III. Oc. D.	22 26 14	I. Sh. E.		
8 0 22 26	I. Oc. D.	11 26 13	III.*Oc. R.	23 34 46	II. Tr. I.		
2 57 20	I. Ec. R.	12 16 54	III.*Ec. D.	25 1 11 25	II. Sh. I.		
21 33 23	I.*Tr. I.	14 4 0	III.*Ec. R.	2 7 40	II. Tr. E.		
21 58 14	I. Sh. I.	20 33 35	I.*Oc. D.	3 45 27	II. Sh. E.		
23 41 55	I. Tr. E.	23 21 33	I. Ec. R.	16 46 18	I.*Oc. D.		
9 0 7 53	I. Sh. E.	17 17 44 20	I.*Tr. I.	19 46 0	I.*Ec. R.		
0 11 9	II. Oc. D.	18 21 54	I.*Sh. I.	26 13 56 46	I.*Tr. I.		
3 34 14	II. Ec. R.	19 53 1	I.*Tr. E.	14 45 43	I.*Sh. I.		
6 41 52	III. Oc. D.	20 31 21	I.*Sh. E.	16 5 35	I.*Tr. E.		
8 3 35	III. Oc. R.	21 15 25	II. Tr. I.	16 54 57	I.*Sh. E.		
8 15 1	III. Ec. D.	22 32 50	II. Sh. I.	17 51 46	II.*Oc. D.		
10 2 58	III. Ec. R.	23 47 44	II. Tr. E.	22 3 49	II. Ec. R.		

NOTE.—I. denotes Ingress; E., egress; D., disappearance; R., reappearance; Ec., eclipse; Oc., occultation. Tr., transit of the satellite; Sh., transit of the shadow. *Visible at Washington.

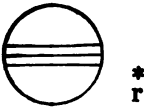
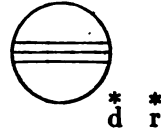
GREENWICH MEAN TIME.

NOVEMBER.

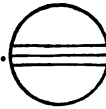
Phases of the Eclipses of the Satellites for an Inverting Telescope.



III.



IV. No Eclipse.



Configurations at 15^h 25^m for an Inverting Telescope.

Day.	West.	East.
1		·3·2 ○ 1· ·4
2		·1○ ·3 ·2 ·4
3	○1·	2○· ·3 ·4
4		·2 ○ ·1 3· ·4
5		1· 3○·2 4·
6	3·	○ ·12· 4·
7	·3	·1 ² ○ 4·
8		·3·2 ○ 4·1
9		4· ·1 ○ ·3 ·2
10	4·	○1·2· ·3
11	4·	2· ○ 3· ·1●
12	4·	1· ○ 3· ·2●
13	·4	3· ○ ·1 2·
14	·4 3·	1·2· ○
15	·4	·3 ·2 ○ 1·
16		·4·1 ○ ·3 ·2
17		○ 1·2· ·3
18		2· ○ ·43· ·1●
19		1··○2 3· ·4
20		3· ○ ·1 2· ·4
21	3·	1· 2· ○ 4·
22		·3 ·2 ○ ·1 4·
23		·1 ○ ·2 4·
24		○ 1·2· 4· ·3
25		2· ·1○ 3·
26	○1·	4· ·2○ 3·
27		4· 3· ○ ·1 ·2
28	4· 3·	1· 2· ○
29	4·	·3 ·2 ○ ·1
30	·4	·1 ·○3 ·2

GREENWICH MEAN TIME.

DECEMBER.

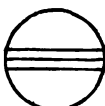
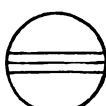

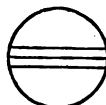
d h m s		d h m s		d h m s		d h m s	
1 0 641	I. Oc. D.	9 9 135	II. Sh. E.	18 552 59	II. Ec. R.	26 17 50 34	I.*Tr. E.
3 12 40	I. Ec. R.	20 22 18	I. Oc. D.	13 39 46	III.*Tr. I.	19 4 37	I. Sh. E.
21 17 7	I. Tr. I.	23 37 19	I. Ec. R.	15 28 38	III.*Tr. E.	22 30 28	II. Tr. I.
22 12 7	I. Sh. I.			16 39 51	I.*Oc. D.		
23 26 0	I. Tr. E.	10 17 32 31	I.*Tr. I.	18 30 53	III.*Sh. I.	27 1 4 12	II. Sh. I.
		18 36 13	I.*Sh. I.	20 1 55	I. Ec. R.	1 5 22	II. Tr. E.
2 0 21 14	I. Sh. E.	19 41 31	I.*Tr. E.	20 12 5	III. Sh. E.	3 36 13	II. Sh. E.
1 56 17	II. Tr. I.	20 45 8	I. Sh. E.			12 59 31	I.*Oc. D.
3 49 59	II. Sh. I.	22 34 3	II. Oc. D.	19 13 49 57	I.*Tr. I.	16 26 41	I.*Ec. R.
4 29 43	II. Tr. E.			15 0 29	I.*Sh. I.		
6 23 33	II. Sh. E.	11 3 16 24	II. Ec. R.	15 59 4	I.*Tr. E.	28 10 9 24	I. Tr. I.
18 33 42	I.*Oc. D.	10 3 3	III. Tr. I.	17 9 13	I.*Sh. E.	11 24 51	I.*Sh. I.
21 41 37	I. Ec. R.	11 47 39	III.*Tr. E.	20 0 21	II. Tr. I.	12 18 37	I.*Tr. E.
		14 28 53	III.*Sh. I.	22 25 51	II. Sh. I.	13 33 28	I.*Sh. E.
3 15 44 2	I.*Tr. I.	14 49 37	I.*Oc. D.	22 34 55	II. Tr. E.	16 41 26	II.*Oc. D.
16 40 55	I.*Sh. I.	16 10 54	III.*Sh. E.			21 48 18	II. Ec. R.
17 52 56	I.*Tr. E.	18 6 12	I.*Ec. R.	20 0 58 18	II. Sh. E.		
18 49 59	I.*Sh. E.			11 7 40	I.*Oc. D.	29 7 13 28	III. Oc. D.
20 11 40	II. Oc. D.	19 11 59 50	I.*Tr. I.	14 30 56	I.*Ec. R.	7 27 34	I. Oc. D.
		13 5 3	I.*Sh. I.			9 10 23	III. Oc. R.
4 0 40 0	II. Ec. R.	14 8 52	I.*Tr. E.	21 8 17 40	I. Tr. I.	10 55 33	I.*Ec. R.
6 31 24	III. Tr. I.	15 13 56	I.*Sh. E.	9 29 20	I. Sh. I.	12 31 20	III.*Ec. D.
8 11 8	III. Tr. E.	17 32 42	II.*Tr. I.	10 26 48	I.*Tr. E.	14 14 20	III.*Ec. R.
10 26 58	III.*Sh. I.	19 47 24	II. Sh. I.	11 38 2	I.*Sh. E.		
12 9 52	III.*Sh. E.	20 6 52	II. Tr. E.	14 12 28	II.*Oc. D.	30 4 37 32	I. Tr. I.
13 0 41	I.*Oc. D.	22 20 17	II. Sh. E.	19 11 24	II. Ec. R.	5 53 46	I. Sh. I.
16 10 30	I.*Ec. R.					6 46 48	I. Tr. E.
		13 9 17 7	I. Oc. D.	22 3 28 14	III. Oc. D.	8 2 23	I. Sh. E.
5 10 11 2	I. Tr. I.	12 35 11	I.*Ec. R.	5 21 40	III. Oc. R.	11 46 35	II.*Tr. I.
11 9 44	I.*Sh. I.			5 35 27	I. Oc. D.	14 21 37	II.*Tr. E.
12 19 58	I.*Tr. E.	14 6 27 14	I. Tr. I.	8 29 20	III. Ec. D.	14 23 35	II.*Sh. I.
13 18 45	I.*Sh. E.	7 33 53	I. Sh. I.	8 59 48	I. Ec. R.	16 55 24	II.*Sh. E.
15 7 32	II.*Tr. I.	8 36 17	I. Tr. E.	10 12 53	III. Ec. R.		
17 8 52	II.*Sh. I.	9 42 44	I. Sh. E.			31 1 55 53	I. Oc. D.
17 41 13	II.*Tr. E.	11 46 11	II.*Oc. D.	23 2 45 31	I. Tr. I.	5 24 32	I. Ec. R.
19 42 13	II.*Sh. E.	16 34 41	II.*Ec. R.	3 58 14	I. Sh. I.	23 5 43	I. Tr. I.
		23 48 22	III. Oc. D.	4 54 40	I. Tr. E.		
6 7 27 52	I. Oc. D.			6 6 55	I. Sh. E.		
10 39 29	I.*Ec. R.	15 1 37 45	III. Oc. R.	9 15 26	II. Tr. I.		
		3 44 34	I. Oc. D.	11 45 18	II.*Sh. I.		
7 4 38 6	I. Tr. I.	4 27 15	III. Ec. D.	11 50 9	II.*Tr. E.		
5 38 33	I. Sh. I.	6 11 24	III. Ec. R.	14 17 32	II.*Sh. E.		
6 47 3	I. Tr. E.	7 4 3	I. Ec. R.			24 0 3 25	I. Oc. D.
7 47 31	I. Sh. E.					3 28 47	I. Ec. R.
9 22 32	II. Oc. D.	16 0 54 45	I. Tr. I.	I. Sh. I.	21 13 23	I. Tr. I.	
13 58 12	II.*Ec. R.	2 2 47	I. Sh. I.	I. Sh. I.	22 27 5	I. Sh. I.	
20 13 11	III. Oc. D.	3 3 50	I. Tr. E.	I. Sh. E.	23 22 33	I. Tr. E.	
21 57 55	III. Oc. R.	4 11 35	I. Sh. E.	II. Tr. I.			
		6 46 33	II. Tr. I.	II. Sh. I.			
8 0 24 28	III. Ec. D.	9 6 58	II. Sh. I.	II. Tr. E.	25 0 35 45	I. Sh. E.	
1 54 59	I. Oc. D.	9 20 56	II. Tr. E.	II. Oc. D.	3 26 37	II. Oc. D.	
2 9 16	III. Ec. R.	11 39 37	II.*Sh. E.	II. Ec. R.	8 29 47	II. Ec. R.	
5 8 20	I. Ec. R.	22 12 13	I. Oc. D.	III.*Tr. I.	17 22 44	III.*Tr. I.	
23 5 18	I. Tr. I.			I. Oc. D.	18 31 22	I. Oc. D.	
		17 1 33 1	I. Ec. R.	III. Tr. E.	19 15 13	III. Tr. E.	
9 0 7 24	I. Sh. I.	19 22 16	I. Tr. I.	I. Ec. R.	21 57 40	I. Ec. R.	
1 14 16	I. Tr. E.	20 31 37	I. Sh. I.	III. Sh. I.	22 33 34	III. Sh. I.	
2 16 21	I. Sh. E.	21 31 24	I. Tr. E.				
4 20 12	II. Tr. I.	22 40 22	I. Sh. E.	26 0 14 0	III. Sh. E.		
6 28 29	II. Sh. I.			15 41 21	I.*Tr. I.		
6 54 9	II. Tr. E.	18 0 59 0	II. Oc. D.	16 55 59	I.*Sh. I.		

NOTE.—I. denotes Ingress; E., egress; D., disappearance; R., reappearance; Ec., eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow. *Visible at Washington.

GREENWICH MEAN TIME.

DECEMBER.

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

<p>I.  *</p> <p style="text-align: right;">r</p>	<p>III.  *</p> <p style="text-align: right;">d *</p> <p style="text-align: right;">r</p>
<p>II.  *</p> <p style="text-align: right;">r</p>	<p>IV. No Eclipse. </p>

Configurations at 14^h 10^m for an Inverting Telescope.

Day.	West.		East.
1	.4	○	1.2. 3
2	.4	2. 1 ○	3.
3		.2.4 ○ 1.	3.
4		3. ○	.4 .2
5	3.	1.2 ○ .	.4
6	.3	.2 ○	.1
7		1. .3 ○ .2	.4
8		○	1. ³ / ₂ 4.
9		² / ₁ ○	.3 4.
0		.2 ○ 1.	3. 4.
1		³ / ₁ ○	1. 4. 2
2	○ 1.	3. 4. ○ 2.	
3		.34. 2. ○	.1
4	4.	¹ / ₂ ○	.2 ●
5	.4	○	.1.32.
6	.4	.12. ○	.3
7	.4	.2 ○ 1.	3.
8	○ 3.	.4 .1 ○	.2
9	○ 1.	3. .4 ○	2.
0		.3 2. ○	1 ●
1		.3 1. . ○ 2	.4
2		○	¹ / ₂ 2. .4
3		1. 2. ○	.3 .4
4		.2 ○ 1.	3. .4
5		.1 ○ 3. .2	4.
6		3. ○ 1. 2.	4.
7	.3	.2 ○	4. .1 ●
8		.3 ¹ / ₂ ○	4.
9		4. ○	.1 .2 .3 ●
0	○ 2.	4. 1. ○	.3
1	4.	.2 ○ 1.	3.

656 MAGNITUDE AND RINGS OF SATURN, 1916.

ELEMENTS FOR DETERMINING THE GEOCENTRIC POSITION, APPEARANCE, AND MAGNITUDE OF SATURN'S RINGS.

Greenwich Mean Noon.	<i>a</i>	<i>b</i>	<i>p</i>	<i>l</i>	<i>l'</i>	<i>u</i> <i>u'</i>		Stellar Mag.
	Outer Major Axis.	Outer Minor Axis.	Inclination of Northern Semi-minor Axis to Circle of Declination from North to East.	The Elevation of the Earth above the Plane of the Rings.	The Elevation of the Sun above the Plane of the Rings.	Earth's Longitude from Saturn counted on Plane of Rings from the Rings' Ascending Node on—		
						Equator.	Ecliptic.	
Jan. 1	46.67	-19.57	-6 58.3	-24 47.6	-24 55.7	160 7.2	117 42.1	-0.2
11	46.63	19.70	6 56.2	24 59.3	24 51.8	159 14.2	116 49.2	0.2
21	46.42	19.75	6 54.0	25 10.4	24 47.8	158 23.0	115 58.1	0.1
31	46.03	19.70	6 52.0	25 20.4	24 43.7	157 36.9	115 12.0	-0.1
Feb. 10	45.50	19.57	6 50.3	25 28.7	24 39.5	156 58.2	114 33.4	0.0
20	44.86	-19.37	-6 49.1	-25 35.4	-24 35.3	156 29.4	114 4.6	0.0
Mar. 1	44.13	19.11	6 48.2	25 40.0	24 31.0	156 11.4	113 46.6	+0.1
11	43.36	18.81	6 48.0	25 42.4	24 26.7	156 5.5	113 40.8	0.2
21	42.57	18.47	6 48.4	25 42.6	24 22.3	156 11.8	113 47.1	0.2
31	41.79	18.11	6 49.3	25 40.7	24 17.9	156 30.0	114 5.4	0.3
Apr. 10	41.03	-17.74	-6 50.7	-25 36.8	-24 13.4	156 59.5	114 35.0	+0.3
20	40.32	17.37	6 52.6	25 30.7	24 8.8	157 39.6	115 15.1	0.3
30	39.66	17.00	6 54.8	25 22.5	24 4.2	158 29.4	116 4.9	0.3
May 10	39.08	16.65	6 57.3	25 12.4	23 59.5	159 27.1	117 2.7	0.4
20	38.58	16.31	7 0.0	25 0.4	23 54.8	160 32.1	118 7.7	0.4
30	38.16	-15.99	-7 2.8	-24 46.5	-23 50.0	161 42.8	119 18.5	+0.4
June 9	37.83	15.70	7 5.3	24 30.9	23 45.1	162 58.2	120 33.9	0.4
19	37.58	15.42	7 7.8	24 13.9	23 40.2	164 16.9	121 52.7	0.3
29	37.41	15.16	7 10.0	23 55.4	23 35.2	165 37.6	123 13.4	0.3
July 9	37.33	14.94	7 12.0	23 35.9	23 30.2	166 59.7	124 35.6	0.3
19	37.34	-14.74	-7 13.8	-23 15.6	-23 25.1	168 21.5	125 57.4	+0.3
29	37.44	14.57	7 15.3	22 54.6	23 19.9	169 42.3	127 18.2	0.4
Aug. 8	37.63	14.44	7 16.4	22 33.6	23 14.7	171 0.8	128 36.8	0.4
18	37.91	14.33	7 17.2	22 12.9	23 9.4	172 15.7	129 51.8	0.4
28	38.27	14.26	7 17.7	21 52.7	23 4.1	173 26.7	131 2.8	0.4
Sept. 7	38.72	-14.23	-7 18.0	-21 33.6	-22 58.7	174 32.2	132 8.3	+0.5
17	39.24	14.24	7 18.1	21 16.2	22 53.2	175 31.0	133 7.2	0.5
27	39.84	14.29	7 18.2	21 0.6	22 47.6	176 22.5	133 58.7	0.5
Oct. 7	40.50	14.38	7 18.1	20 47.6	22 42.0	177 5.5	134 41.8	0.4
17	41.23	14.53	7 18.0	20 37.5	22 36.4	177 38.9	135 15.2	0.4
27	41.99	-14.72	-7 17.9	-20 31.0	-22 30.7	178 2.2	135 38.6	+0.4
Nov. 6	42.78	14.96	7 17.9	20 28.0	22 25.0	178 14.4	135 50.8	0.3
16	43.56	15.24	7 17.9	20 28.8	22 19.2	178 15.4	135 51.9	0.3
26	44.30	15.56	7 18.0	20 33.3	22 13.4	178 5.0	135 41.5	0.2
Dec. 6	44.98	15.90	7 18.2	20 41.6	22 7.5	177 44.1	135 20.6	0.1
16	45.56	-16.24	-7 18.4	-20 52.9	-22 1.6	177 13.3	134 49.9	+0.1
26	46.03	16.58	7 18.5	21 6.9	21 55.6	176 34.1	134 10.7	0.0
31	46.20	-16.74	-7 18.5	-21 14.8	-21 52.5	176 12.0	133 48.6	0.0

The factor to be multiplied by *a* and *b* to obtain the axes of—

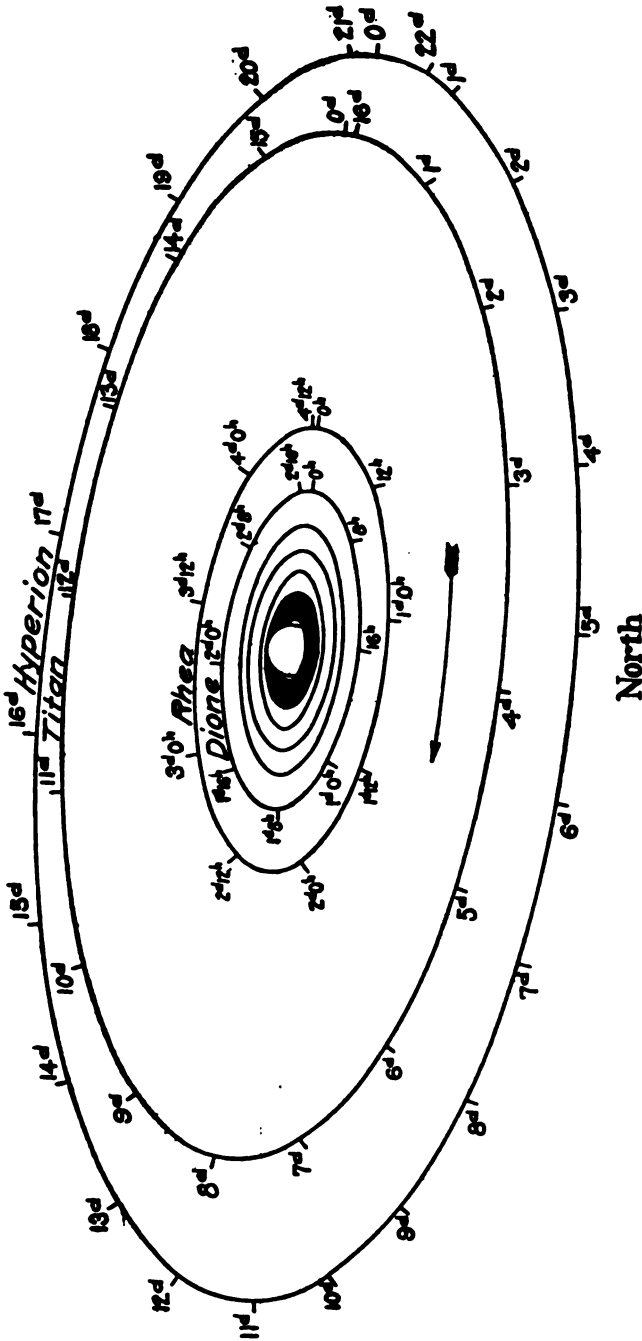
The inner ellipse of the outer ring=0.8801 log factor=9.9445

The outer ellipse of the inner ring=0.8599, log factor=9.9344

The inner ellipse of the inner ring=0.6650, log factor=9.8228

The inner ellipse of the dusky ring=0.5486, log factor=9.7392

NOTE.—The negative sign of *l* indicates that the visible surface of the rings is the southern one.



NAMES OF THE SATELLITES.

- I. Mimas.
- II. Enceladus.
- III. Tethys.
- IV. Dione.
- V. Rhea.
- VI. Titan.
- VII. Hyperion.
- VIII. Iapetus.
- IX. Phoebe.

APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN,

AT DATE OF OPPOSITION, JANUARY 4, 1916,

AS SEEN IN AN INVERTING TELESCOPE.

MEAN SYNODIC PERIODS.

	d	h
I.	0	22.6
II.	1	8.9
III.	1	21.3
IV.	2	17.7
V.	4	12.5
VI.	15	23.3
VII.	21	7.6
VIII.	79	22.1
IX.	523	15.6

GREENWICH MEAN TIME OF GREATEST ELONGATION, ETC.

In the diagram on the preceding page, the points of the orbits marked "0" are those of the eastern elongation, as seen in an inverting telescope. The times of these elongations may be found from the following tables, and the apparent position of a satellite at any other time may be marked on the diagram by setting off on the proper orbit the elapsed interval in days and hours since the last eastern elongation. The orbits of the five inner satellites are regarded as circular and the time of any elongation not given in the tables may be readily found from those given by adding or subtracting the proper multiple of the mean synodic period. For Titan, Hyperion and Iapetus the eccentricity is taken into account, and for Iapetus the times both of the elongations and of the conjunctions are given. The following abbreviations are used in the tables:

E., East Elongation.
W., West Elongation.

I., Inferior Conjunction (north of planet).
S., Superior Conjunction (south of planet).

MIMAS.

Greatest Elongations Visible in the United States.

Jan.	d h 1 14.9 W. 2 13.5 W. 3 0.8 E. 3 12.1 W. 3 23.4 E.	Jan.	d h 28 0.0 W. 28 11.3 E. 28 22.6 W. 29 21.2 W. 30 19.9 W.	Feb.	d h 28 13.7 E. 29 12.3 E. Mar. 2 20.8 W. 3 19.5 W. 4 18.1 W.	Apr.	d h 14 18.3 E. 15 16.9 E. 16 15.5 E. 17 14.2 E. 18 12.8 E.	Oct.	d h 25 0.1 E. 25 22.7 E. 26 21.3 E. 27 19.9 E. 28 18.6 E.	Dec.	d h 1 16.8 E. 2 15.4 E. 3 14.0 E. 4 1.3 W. 4 23.9 W.
	4 10.7 W. 4 22.0 E. 5 20.6 E. 6 19.3 E. 7 17.9 E.	Feb.	31 18.5 W. 1 17.1 W. 2 15.7 W. 3 14.3 W. 3 14.2 W.		5 16.7 W. 6 15.3 W. 7 13.9 W. 8 12.5 W. 10 21.1 E.		22 18.5 W. 23 17.1 W. 24 15.7 W. 25 14.3 W. 26 13.0 W.	Nov.	2 0.3 W. 2 22.9 W. 3 21.5 W. 4 20.2 W.	5 22.5 W. 6 21.1 W. 7 19.8 W. 8 18.4 W. 9 17.0 W.	
	8 16.5 E. 9 15.1 E. 10 13.7 E. 11 1.0 W. 11 12.3 E.		5 11.5 W. 5 22.9 E. 6 21.5 E. 7 20.1 E. 8 18.7 E.		11 19.7 E. 12 18.3 E. 13 16.9 E. 14 15.6 E. 15 14.2 E.	May	1 17.4 E. 2 16.0 E. 3 14.6 E.		5 18.8 W. 6 17.4 W. 7 16.0 W. 10 0.6 E. 10 23.2 E.	10 15.6 W. 11 14.2 W. 12 1.5 E. 13 0.1 E. 13 22.7 E.	
	11 23.6 W. 12 10.9 E. 12 22.2 W. 13 20.8 W. 14 19.5 W.		9 17.3 E. 10 15.9 E. 11 14.5 E. 12 13.1 E. 13 11.7 E.		16 12.8 E. 19 20.0 W. 20 18.6 W. 21 17.2 W. 22 15.8 W.	Sept.	22 23.0 E. 23 21.6 E. 24 20.2 E. 25 18.9 E. 30 23.3 W.		11 21.8 E. 12 20.4 E. 13 19.0 E. 14 17.6 E. 15 16.3 E.	14 21.3 E. 15 20.0 E. 16 18.6 E. 17 17.2 E. 18 15.8 E.	
	15 18.1 W. 16 16.7 W. 17 15.3 W. 18 13.9 W. 19 12.5 W.		13 23.0 W. 14 21.6 W. 15 20.2 W. 16 18.9 W. 17 17.5 W.		23 14.4 W. 24 13.1 W. 27 20.3 E. 28 18.9 E. 29 17.5 E.	Oct.	1 21.9 W. 2 20.6 W. 3 19.2 W. 4 17.8 W. 8 23.6 E.		16 14.9 E. 18 0.8 W. 18 23.4 W. 19 22.0 W. 20 20.7 W.	19 14.4 E. 20 13.0 E. 21 0.3 W. 21 22.9 W. 22 21.5 W.	
	19 23.8 E. 20 11.1 W. 20 22.4 E. 21 21.0 E. 22 19.7 E.		18 16.1 W. 19 14.8 W. 20 13.4 W. 21 12.0 W. 22 22.0 E.	Apr.	1 13.4 E. 2 12.1 E. 5 19.3 W.		9 22.2 E. 10 20.9 E. 11 19.5 E. 12 18.1 E. 16 23.9 W.		21 19.3 W. 22 17.9 W. 23 16.5 W. 24 15.1 W. 26 1.1 E.	23 20.2 W. 24 18.8 W. 25 17.4 W. 26 16.0 W. 27 14.6 W.	
	23 18.3 E. 24 16.9 E. 25 15.5 E. 26 14.1 E. 27 12.7 E.		23 20.6 E. 24 19.2 E. 25 17.8 E. 26 16.4 E. 27 15.1 E.		6 17.9 W. 7 16.5 W. 8 15.2 W. 9 13.9 W. 10 12.5 W.		17 22.5 W. 18 21.1 W. 19 19.7 W. 20 18.4 W. 21 17.0 W.		26 23.7 E. 27 22.3 E. 28 20.9 E. 29 19.5 E. 30 18.1 E.	28 13.2 W. 29 0.5 E. 29 23.1 E. 30 21.7 E. 31 20.4 E.	

SATELLITES OF SATURN, 1916.

659

GREENWICH MEAN TIME OF GREATEST ELONGATION.

ENCELADUS.

	d h	d h	d h	d h	d h	d h					
Jan.	1 1.4 E. 210.2 E. 319.1 E. 5 4.0 E. 612.8 E.	Feb.	9 18.7 E. 11 3.6 E. 12 12.5 E. 13 21.4 E. 15 6.3 E.	Mar.	20 12.4 E. 21 21.3 E. 23 6.2 E. 24 15.1 E. 26 0.0 E.	Apr.	29 6.4 E. 30 15.3 E. May 2 0.2 E. 3 9.1 E.	Oct.	18 23.7 E. 20 8.6 E. 21 17.4 E. 23 2.3 E. 24 11.2 E.	Nov.	27 17.4 E. 29 2.3 E. 30 11.2 E. Dec. 1 20.1 E. 3 5.0 E.
	7 21.7 E. 9 6.6 E. 10 15.5 E. 12 0.3 E. 13 9.2 E.		16 15.1 E. 18 0.0 E. 19 8.9 E. 20 17.8 E. 22 2.7 E.		27 8.9 E. 28 17.8 E. 30 2.7 E. 31 11.5 E. Apr. 1 20.4 E.		..... Sept. 17 11.1 E. 18 20.0 E. 20 4.9 E. 21 13.8 E.		25 20.1 E. 27 5.0 E. 28 13.9 E. 29 22.7 E. 31 7.6 E.		4 13.9 E. 5 22.7 E. 7 7.6 E. 8 16.4 E. 10 1.3 E.
	14 18.1 E. 16 3.0 E. 17 11.8 E. 18 20.7 E. 20 5.6 E.		23 11.6 E. 24 20.4 E. 26 5.3 E. 27 14.2 E. 28 23.1 E.		3 5.3 E. 4 14.2 E. 5 23.1 E. 7 8.0 E. 8 16.9 E.		22 22.7 E. 24 7.6 E. 25 16.5 E. 27 1.4 E. 28 10.3 E.		Nov. 1 16.5 E. 3 1.4 E. 4 10.3 E. 5 19.1 E. 7 4.0 E.		11 10.2 E. 12 19.1 E. 14 4.0 E. 15 12.8 E. 16 21.7 E.
	21 14.4 E. 22 23.3 E. 24 8.2 E. 25 17.1 E. 27 1.9 E.	Mar.	1 8.0 E. 2 16.9 E. 4 1.7 E. 5 10.6 E. 6 19.5 E.		10 1.8 E. 11 10.7 E. 12 19.6 E. 14 4.5 E. 15 13.4 E.		29 19.2 E. Oct. 1 4.1 E. 2 13.0 E. 3 21.9 E. 5 6.8 E.		8 12.9 E. 9 21.8 E. 11 6.7 E. 12 15.6 E. 14 0.4 E.		18 6.5 E. 19 15.3 E. 21 0.2 E. 22 9.0 E. 23 17.9 E.
	28 10.8 E. 29 19.7 E. 31 4.6 E.		8 4.4 E. 9 13.3 E. 10 22.2 E.		16 22.3 E. 18 7.2 E. 19 16.1 E. 21 1.0 E. 22 9.9 E.		6 15.7 E. 8 0.7 E. 9 9.5 E. 10 18.4 E. 12 3.3 E.		15 9.3 E. 16 18.2 E. 18 3.1 E. 19 12.0 E. 20 20.9 E.		25 2.8 E. 26 11.7 E. 27 20.5 E. 29 5.4 E. 30 14.3 E.
Feb.	1 13.4 E. 2 22.3 E.		12 7.1 E. 13 16.0 E.		21 18.8 E. 25 3.7 E. 26 12.6 E. 27 21.5 E.		13 12.2 E. 14 21.1 E. 16 5.9 E. 17 14.8 E.		22 5.8 E. 23 14.7 E. 24 23.6 E. 26 8.5 E.		31 23.2 E.
	4 7.2 E. 5 16.1 E. 7 1.0 E. 8 9.8 E.		15 0.8 E. 16 9.7 E. 17 18.6 E. 19 3.5 E.								

TETHYS.

	d h	d h	d h	d h	d h	d h					
Jan.	2 17.8 E. 4 15.1 E. 6 12.4 E. 8 9.7 E. 10 7.0 E.	Feb.	11 9.0 E. 13 6.3 E. 15 3.6 E. 17 0.9 E. 18 22.2 E.	Mar.	22 0.4 E. 23 21.7 E. 25 19.0 E. 27 16.4 E. 29 13.7 E.	Apr.	30 16.2 E. May 2 13.5 E. Sept. 17 11.1 E.	Oct.	19 13.5 E. 21 10.8 E. 23 8.1 E. 25 5.5 E. 27 2.8 E.	Nov.	28 5.0 E. 30 2.3 E. Dec. 1 23.6 E. 3 20.9 E. 5 18.2 E.
	12 4.2 E. 14 1.5 E. 15 22.8 E. 17 20.1 E. 19 17.4 E.		20 19.5 E. 22 16.8 E. 24 14.1 E. 26 11.4 E. 28 8.7 E.		31 11.0 E. Apr. 2 8.3 E. 4 5.7 E. 6 3.0 E. 8 0.3 E.		19 8.4 E. 21 5.7 E. 23 3.1 E. 25 0.4 E. 26 21.7 E.		29 0.1 E. 30 21.4 E. Nov. 1 18.7 E. 3 16.0 E. 5 13.3 E.		7 15.5 E. 9 12.8 E. 11 10.1 E. 13 7.3 E. 15 4.6 E.
	21 14.7 E. 23 12.0 E. 25 9.3 E. 27 6.5 E. 29 3.8 E.	Mar.	1 6.0 E. 3 3.3 E. 5 0.6 E. 6 21.9 E. 8 19.2 E.		9 21.6 E. 11 19.0 E. 13 16.3 E. 15 13.6 E. 17 10.9 E.		28 19.1 E. 30 16.4 E. Oct. 2 13.7 E. 4 11.0 E. 6 8.3 E.		7 10.6 E. 9 8.0 E. 11 5.3 E. 13 2.6 E. 14 23.9 E.		17 1.9 E. 18 23.2 E. 20 20.5 E. 22 17.8 E. 24 15.1 E.
	31 1.1 E. Feb. 1 22.4 E. 3 19.7 E. 5 17.0 E. 7 14.3 E.		10 16.5 E. 12 13.8 E. 14 11.2 E. 16 8.5 E. 18 5.8 E.		19 8.3 E. 21 5.6 E. 23 2.9 E. 25 0.2 E. 26 21.5 E.		8 5.6 E. 10 3.0 E. 12 0.3 E. 13 21.6 E. 15 18.9 E.		16 21.2 E. 18 18.5 E. 20 15.8 E. 22 13.1 E. 24 10.4 E.		26 12.4 E. 28 9.6 E. 30 6.9 E.
	9 11.6 E.		20 3.1 E.		28 18.9 E.		17 16.2 E.		26 7.7 E.		

SATELLITES OF SATURN, 1916.

661

DIFFERENTIAL COORDINATES OF PHOEBE.

Greenwich Mean Noon.	$a_{Ph.} - a_{Sat.}$	$\delta_{Ph.} - \delta_{Sat.}$	Greenwich Mean Noon.	$a_{Ph.} - a_{Sat.}$	$\delta_{Ph.} - \delta_{Sat.}$	Greenwich Mean Noon.	$a_{Ph.} - a_{Sat.}$	$\delta_{Ph.} - \delta_{Sat.}$
	m s	' "		m s	' "		m s	' "
Jan. 1	+0 46.2	+2 53	Apr. 14	-1 27.2	+2 31	Sept. 20	-0 41.1	-0 37
3	0 43.7	2 56	16	1 29.3	2 30	22	0 37.5	0 47
5	0 41.2	2 58	18	1 31.3	2 29	24	0 33.9	0 56
7	0 38.7	3 1	20	1 33.4	2 29	26	0 30.3	1 6
9	0 36.1	3 3	22	1 35.3	2 28	28	0 26.6	1 15
11	+0 33.6	+3 5	24	-1 37.3	+2 28	30	-0 22.9	-1 25
13	0 31.0	3 7	26	1 39.1	2 27	Oct. 2	0 19.1	1 35
15	0 28.4	3 8	28	1 41.0	2 27	4	0 15.4	1 45
17	0 25.8	3 10	30	1 42.8	2 27	6	0 11.6	1 55
19	0 23.2	3 11	May 2	1 44.5	2 27	8	0 7.7	2 5
21	+0 20.5	+3 12	4	-1 46.1	+2 26	10	-0 3.9	-2 15
23	0 17.9	3 13	6	1 47.7	2 26	12	0 0.0	2 25
25	0 15.2	3 14	8	1 49.3	2 26	14	+0 3.8	2 36
27	0 12.6	3 14	10	1 50.8	2 26	16	0 7.7	2 46
29	0 9.9	3 14	12	1 52.2	2 26	18	0 11.6	2 56
31	+0 7.2	+3 15	14	-1 53.6	+2 26	20	+0 15.5	-3 6
Feb. 2	0 4.5	3 14	16	1 54.9	2 26	22	0 19.4	3 15
4	+0 1.8	3 14	18	1 56.2	2 27	24	0 23.2	3 25
6	-0 0.9	3 14	20	1 57.4	2 27	26	0 27.1	3 35
8	0 3.6	3 14	22	1 58.5	2 27	28	0 30.9	3 45
10	-0 6.3	+3 13	24	-1 59.6	+2 28	30	+0 34.8	-3 54
12	0 9.0	3 13	26	2 0.6	2 28	Nov. 1	0 38.6	4 3
14	0 11.7	3 12	28	2 1.5	2 29	3	0 42.4	4 12
16	0 14.4	3 11	30	2 2.4	2 29	5	0 46.2	4 21
18	0 17.1	3 10	June 1	2 3.2	2 30	7	0 50.0	4 30
20	-0 19.8	+3 9	3	-2 3.9	+2 30	9	+0 53.7	-4 38
22	0 22.5	3 7	5	2 4.5	2 31	11	0 57.4	4 46
24	0 25.2	3 6	7	2 5.1	2 31	13	1 1.0	4 54
26	0 27.9	3 5	9	2 5.6	2 32	15	1 4.6	5 2
28	0 30.6	3 3	11	-2 6.0	+2 32	17	1 8.2	5 9
Mar. 1	-0 33.2	+3 2		...	...	19	+1 11.7	-5 16
3	0 35.9	3 0		...	...	21	1 15.1	5 22
5	0 38.6	2 58	Aug. 11	-1 39.5	+1 44	23	1 18.5	5 29
7	0 41.2	2 57	13	1 37.2	1 39	25	1 21.9	5 35
9	0 43.8	2 55	15	1 34.9	1 35	27	1 25.2	5 40
11	-0 46.4	+2 54	17	-1 32.6	+1 29	29	+1 28.4	-5 45
13	0 49.0	2 52	19	1 30.1	1 24	Dec. 1	1 31.5	5 50
15	0 51.6	2 50	21	1 27.6	1 18	3	1 34.6	5 55
17	0 54.2	2 49	23	1 25.0	1 12	5	1 37.6	5 59
19	0 56.7	2 47	25	1 22.3	1 6	7	1 40.6	6 2
21	-0 59.2	+2 46	27	-1 19.5	+1 0	9	+1 43.5	-6 5
23	1 1.7	2 44	29	1 16.7	0 53	11	1 46.3	6 8
25	1 4.2	2 43	31	1 13.8	0 46	13	1 49.0	6 11
27	1 6.6	2 42	Sept. 2	1 10.8	0 39	15	1 51.6	6 13
29	1 9.0	2 40	4	1 7.7	0 31	17	1 54.2	6 14
31	-1 11.4	+2 39	6	-1 4.6	+0 23	19	+1 56.7	-6 16
Apr. 2	1 13.8	2 37	8	1 1.4	0 15	21	1 59.1	6 17
4	1 16.1	2 36	10	0 58.1	+0 7	23	2 1.4	6 17
6	1 18.4	2 35	12	0 54.8	-0 2	25	2 3.6	6 17
8	1 20.6	2 34	14	0 51.5	0 10	27	2 5.7	6 17
10	-1 22.8	+2 33	16	-0 48.1	-0 19	29	+2 7.8	-6 16
12	-1 25.0	+2 32	18	-0 44.6	-0 28	31	+2 9.7	-6 15

Time from Eastern Elongation.	Mimas.		Time from Eastern Elongation.		Enceladus.		Tethys.		Time from Eastern Elongation.		Dione.	
	p^1	F	p^1	F	p^1	F	p^1	F	p^1	F	p^1	F
h	°		d	h	°		°		d	h	°	
0.0	83.3	1.000	0	0	83.3	1.000	83.3	1.000	0	0	83.3	1.000
0.5	80.2	0.992	0	1	78.7	0.985	80.1	0.992	0	2	78.7	0.985
1.0	76.9	0.968	0	2	73.7	0.941	76.7	0.968	0	4	73.7	0.941
1.5	73.4	0.928	0	3	68.2	0.871	73.1	0.929	0	6	68.1	0.871
2.0	69.6	0.875	0	4	61.4	0.778	69.2	0.877	0	8	61.3	0.778
2.5	65.1	0.809	0	5	52.6	0.672	64.6	0.812	0	10	52.5	0.671
3.0	59.8	0.733	0	6	40.4	0.562	59.2	0.738	0	12	40.2	0.562
3.5	53.2	0.651	0	7	22.8	0.470	52.5	0.657	0	14	22.6	0.470
4.0	44.7	0.568	0	8	359.1	0.422	44.0	0.576	0	16	358.8	0.423
4.5	33.4	0.490	0	9	333.7	0.442	32.7	0.500	0	18	333.5	0.443
5.0	18.3	0.429	0	10	313.3	0.518	17.8	0.441	0	20	313.1	0.520
5.5	359.5	0.397	0	11	299.0	0.623	359.7	0.410	0	22	298.9	0.624
6.0	339.6	0.405	0	12	288.9	0.723	340.4	0.417	1	0	288.8	0.734
6.5	322.2	0.449	0	13	281.3	0.832	323.3	0.459	1	2	281.2	0.834
7.0	308.6	0.517	0	14	275.3	0.913	309.7	0.525	1	4	275.2	0.914
7.5	298.4	0.599	0	15	270.1	0.969	299.5	0.604	1	6	270.0	0.970
8.0	290.7	0.683	0	16	265.4	0.997	291.7	0.686	1	8	265.3	0.997
8.5	284.7	0.763	0	17	260.8	0.995	285.5	0.764	1	10	260.7	0.995
9.0	279.8	0.835	0	18	256.0	0.964	280.4	0.836	1	12	255.9	0.963
9.5	275.6	0.897	0	19	250.7	0.905	276.1	0.896	1	14	250.6	0.903
10.0	271.9	0.945	0	20	244.6	0.822	272.3	0.945	1	16	244.4	0.819
10.5	268.5	0.979	0	21	236.8	0.720	268.8	0.978	1	18	236.5	0.717
11.0	265.3	0.997	0	22	226.3	0.610	265.5	0.997	1	20	225.9	0.607
11.5	262.1	0.999	0	23	211.4	0.507	262.2	0.999	1	22	210.8	0.505
12.0	258.9	0.984	1	0	190.2	0.436	258.9	0.986	2	0	189.4	0.435
12.5	255.6	0.955	1	1	164.6	0.425	255.5	0.957	2	2	163.9	0.426
13.0	252.0	0.910	1	2	141.6	0.480	251.8	0.913	2	4	140.9	0.482
13.5	247.9	0.851	1	3	124.7	0.575	247.7	0.856	2	6	124.2	0.579
14.0	243.2	0.781	1	4	112.9	0.684	242.8	0.787	2	8	112.6	0.688
14.5	237.5	0.701	1	5	104.4	0.790	237.1	0.710	2	10	104.2	0.794
15.0	230.3	0.619	1	6	97.8	0.880	229.8	0.628	2	12	97.6	0.883
15.5	220.8	0.536	1	7	92.3	0.948	220.4	0.549	2	14	92.1	0.950
16.0	208.1	0.464	1	8	87.5	0.988	207.9	0.477	2	16	87.3	0.969
16.5	191.5	0.413	1	9	82.8	1.000	191.9	0.426	2	18	82.6	1.000
17.0	171.9	0.396	1	10			172.9	0.410				
17.5	152.5	0.418	1	11			154.1	0.428				
18.0	136.5	0.474	1	12			138.2	0.480				
18.5	124.4	0.549	1	13			125.9	0.552				
19.0	115.2	0.631	1	14			116.5	0.632				
19.5	108.3	0.714	1	15			109.4	0.713				
20.0	102.7	0.792	1	16			103.6	0.790				
20.5	98.1	0.860	1	17			98.9	0.858				
21.0	94.1	0.917	1	18			94.7	0.915				
21.5	90.6	0.960	1	19			91.0	0.958				
22.0	87.3	0.988	1	20			87.6	0.986				
22.5	84.1	1.000	1	21			84.3	0.999				
23.0	80.9	0.995	1	22			81.1	0.996				

Position angle of satellite $p = p^1 + (P - P_0)$.Apparent distance of satellite $s = \frac{F^2(p)}{p}$.

Time from Eastern Elongation.	Rhea.		Time from Eastern Elongation.	Titan.		Hyperion.		Time from Eastern Elongation.	Iapetus.	
	p^1	F		p^1	F	p^1	F		p^1	F
d h	.		d h	.		.		d	.	
0 0	83.3	1.000	0 0	83.3	1.001	83.9	0.950	0	81.2	1.027
0 3	79.1	0.988	0 10	79.4	0.985	80.6	0.953	2	79.5	1.015
0 6	74.6	0.951	0 20	75.2	0.948	77.3	0.942	4	77.8	0.979
0 9	69.7	0.892	1 6	70.6	0.889	73.9	0.919	6	76.0	0.922
0 12	63.9	0.815	1 16	65.2	0.813	70.3	0.885	8	73.8	0.843
0 15	56.7	0.722	2 2	58.6	0.722	66.4	0.842	10	71.2	0.747
0 18	47.4	0.622	2 12	49.9	0.623	61.9	0.789	12	67.6	0.634
0 21	34.4	0.527	2 22	38.0	0.526	56.8	0.731	14	62.5	0.511
1 0	16.6	0.453	3 8	21.1	0.447	50.8	0.669	16	53.8	0.381
1 3	354.2	0.423	3 18	359.1	0.405	43.5	0.608	18	36.6	0.259
1 6	331.5	0.449	4 4	335.6	0.420	34.7	0.550	20	359.1	0.186
1 9	313.3	0.521	4 14	316.0	0.484	23.9	0.501	22	314.8	0.225
1 12	300.1	0.615	5 0	302.0	0.575	11.3	0.466	24	292.2	0.338
1 15	290.5	0.715	5 10	291.9	0.674	357.1	0.452	26	281.5	0.467
1 18	283.2	0.808	5 20	284.4	0.770	342.9	0.461	28	275.4	0.593
1 21	277.4	0.887	6 6	278.4	0.853	329.7	0.490	30	271.4	0.707
2 0	272.4	0.948	6 16	273.5	0.920	318.5	0.537	32	268.4	0.805
2 3	267.9	0.986	7 2	269.1	0.967	309.2	0.594	34	266.1	0.882
2 6	263.6	1.000	7 12	265.0	0.993	301.6	0.657	36	264.1	0.936
2 9	259.4	0.989	7 22	261.1	0.996	295.4	0.722	38	262.3	0.967
2 12	255.0	0.955	8 8	257.1	0.977	290.2	0.785	40	260.5	0.972
2 15	250.0	0.897	8 18	252.9	0.937	285.7	0.844	42	258.7	0.950
2 18	244.3	0.820	9 4	248.1	0.879	281.9	0.899	44	256.7	0.905
2 21	237.3	0.728	9 14	242.6	0.804	278.4	0.946	46	254.5	0.837
3 0	228.1	0.629	10 0	235.9	0.718	275.2	0.985	48	251.8	0.748
3 3	215.5	0.533	10 10	227.2	0.627	272.3	1.014	50	248.3	0.641
3 6	198.0	0.457	10 20	215.6	0.539	269.5	1.033	52	243.2	0.520
3 9	175.8	0.423	11 6	200.0	0.468	266.8	1.042	54	235.0	0.393
3 12	153.0	0.446	11 16	180.2	0.430	264.0	1.039	56	219.3	0.272
3 15	134.4	0.515	12 2	159.2	0.439	261.3	1.025	58	185.5	0.192
3 18	120.9	0.608	12 12	140.7	0.490	258.4	0.999	60	140.8	0.216
3 21	111.1	0.708	12 22	126.6	0.569	255.3	0.961	62	115.7	0.320
4 0	103.7	0.802	13 8	116.2	0.660	252.0	0.913	64	103.9	0.447
4 3	97.8	0.882	13 18	108.4	0.750	248.2	0.855	66	97.3	0.573
4 6	92.7	0.944	14 4	102.1	0.834	243.8	0.787	68	93.0	0.691
4 9	88.2	0.984	14 14	96.9	0.904	238.6	0.712	70	89.9	0.794
4 12	83.9	1.000	15 0	92.4	0.956	232.1	0.633	72	87.6	0.882
4 15	79.7	0.991	15 10	88.3	0.989	223.6	0.554	74	85.6	0.950
			15 20	84.4	1.002	212.5	0.481	76	83.8	0.998
			16 6	80.5	0.992	197.9	0.423	78	82.2	1.023
			16 16			179.8	0.392	80	80.6	1.027
			17 2			160.6	0.397			
			17 12			143.3	0.435			
			17 22			129.6	0.498			
			18 8			119.2	0.572			
			18 18			111.3	0.650			
			19 4			105.0	0.724			
			19 14			99.9	0.791			
			20 0			95.5	0.849			
			20 10			91.6	0.895			
			20 20			88.1	0.928			
			21 6			84.7	0.948			
			21 16			81.5	0.954			

Position angle of satellite $p = p^1 + (P - P_0)$.

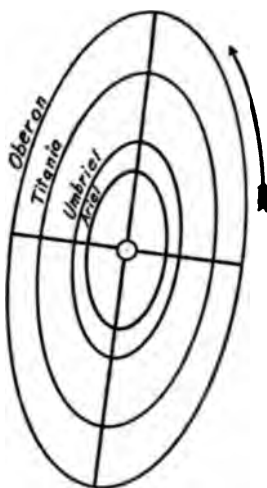
Apparent distance of satellite $s = \frac{F^{\alpha(p)}}{p}$.

Date.	Mimas.		Enceladus.		Tethys.		Dione.	
	$P-P_0$	$\frac{a(p)}{p}$	$P-P_0$	$\frac{a(p)}{p}$	$P-P_0$	$\frac{a(p)}{p}$	$P-P_0$	$\frac{a(p)}{p}$
	•	"	•	"	•	"	•	"
Jan. 1	0.0	31.8	-0.3	40.8	+0.5	50.5	-0.3	64.7
6	+0.2	31.8	0.3	40.8	0.5	50.5	0.3	64.7
11	0.3	31.8	0.3	40.8	0.6	50.5	0.3	64.6
16	0.5	31.7	0.2	40.7	0.6	50.4	0.3	64.5
21	0.6	31.6	0.2	40.6	0.6	50.2	0.3	64.3
26	+0.8	31.5	-0.2	40.4	+0.6	50.0	-0.3	64.1
31	0.9	31.4	0.2	40.2	0.7	49.8	0.2	63.8
Feb. 5	1.0	31.2	0.2	40.0	0.7	49.5	0.2	63.5
10	1.1	31.0	0.2	39.8	0.7	49.2	0.2	63.1
15	1.2	30.8	0.2	39.5	0.7	48.9	0.2	62.7
20	+1.3	30.6	-0.2	39.2	+0.8	48.6	-0.2	62.2
25	1.4	30.4	0.2	38.9	0.8	48.2	0.2	61.7
Mar. 1	1.5	30.1	0.2	38.6	0.8	47.8	0.2	61.2
6	1.5	29.8	0.2	38.3	0.8	47.4	0.2	60.7
11	1.6	29.5	0.1	37.9	0.8	46.9	0.2	60.1
16	+1.6	29.3	-0.2	37.6	+0.8	46.5	-0.2	59.6
21	1.6	29.0	0.2	37.2	0.8	46.1	0.2	59.0
26	1.6	28.7	0.2	36.9	0.8	45.7	0.2	58.4
31	1.6	28.5	0.2	36.5	0.8	45.2	0.2	57.9
Apr. 5	1.6	28.3	0.2	36.2	0.8	44.8	0.2	57.4
10	+1.5	28.0	-0.2	35.9	+0.9	44.4	-0.2	56.9
15	1.5	27.7	0.2	35.6	0.8	44.0	0.3	56.4
20	1.4	27.5	0.2	35.2	0.8	43.6	0.3	55.9
25	1.3	27.3	0.2	34.9	0.8	43.3	0.3	55.4
30	+1.2	27.0	-0.3	34.7	+0.8	42.9	-0.3	55.0
Sept. 27	-2.2	27.1	-0.7	34.9	+0.4	43.1	-0.7	55.2
Oct. 2	2.1	27.4	0.7	35.1	0.4	43.5	0.7	55.7
7	2.0	27.6	0.7	35.4	0.4	43.8	0.7	56.1
12	1.9	27.8	0.7	35.7	0.4	44.2	0.7	56.6
17	1.8	28.1	0.7	36.0	0.4	44.6	0.7	57.1
22	-1.7	28.4	-0.7	36.4	+0.4	45.0	-0.7	57.7
27	1.5	28.7	0.7	36.7	0.3	45.4	0.7	58.2
Nov. 1	1.4	28.9	0.7	37.1	0.3	45.9	0.7	58.7
6	1.2	29.2	0.7	37.4	0.3	46.3	0.7	59.2
11	1.1	29.4	0.7	37.7	0.3	46.7	0.7	59.8
16	-1.0	29.7	-0.7	38.0	+0.3	47.1	-0.7	60.4
21	0.8	29.9	0.7	38.4	0.3	47.5	0.7	60.9
26	0.7	30.2	0.6	38.7	0.3	47.9	0.7	61.4
Dec. 1	0.5	30.4	0.6	39.0	0.3	48.3	0.7	61.9
6	0.4	30.7	0.6	39.3	0.2	48.7	0.7	62.4
11	-0.3	30.9	-0.6	39.6	+0.2	49.0	-0.7	62.8
16	-0.1	31.1	0.6	39.9	0.2	49.3	0.7	63.2
21	0.0	31.2	0.6	40.1	0.2	49.6	0.7	63.5
26	+0.1	31.4	0.6	40.3	0.2	49.8	0.7	63.8
31	+0.3	31.5	-0.6	40.4	+0.2	50.0	-0.7	64.0

Date.	Rhea.		Titan.		Hyperion.		Iapetus.	
	$P-P_0$	$\frac{a(p)}{p}$	$P-P_0$	$\frac{a(p)}{p}$	$P-P_0$	$\frac{a(p)}{p}$	$P-P_0$	$\frac{a(p)}{p}$
	.	"	.	"	.	"	.	"
Jan. 1	0.0	90.3	0.0	209	0.0	254	0.0	610
6	+0.1	90.3	0.0	209	0.0	254	-0.1	610
11	0.1	90.3	0.0	209	0.0	253	0.1	610
16	0.1	90.2	0.0	209	0.0	253	0.2	609
21	0.1	89.9	+0.1	208	+0.1	252	0.3	607
26	+0.1	89.5	+0.1	207	+0.1	251	-0.4	605
31	0.1	89.1	0.1	206	0.1	250	0.5	602
Feb. 5	0.2	88.6	0.1	205	0.1	249	0.5	599
10	0.2	88.1	0.1	204	0.1	247	0.6	596
15	0.2	87.5	0.1	203	0.1	246	0.7	591
20	+0.2	86.8	+0.1	201	+0.2	244	-0.7	587
25	0.2	86.1	0.1	200	0.2	242	0.7	582
Mar. 1	0.2	85.4	0.1	198	0.2	240	0.8	577
6	0.2	84.7	0.1	196	0.2	238	0.8	572
11	0.2	83.9	0.1	194	0.2	236	0.8	567
16	+0.2	83.2	+0.1	193	+0.2	234	-0.8	562
21	0.2	82.4	0.1	191	0.2	231	0.7	557
26	0.2	81.7	0.1	189	0.2	229	0.7	551
31	0.2	80.9	0.1	187	0.1	227	0.7	546
Apr. 5	0.2	80.2	0.1	186	0.1	225	0.6	541
10	+0.2	79.4	+0.1	184	+0.1	223	-0.6	536
15	0.1	78.7	0.1	182	0.1	221	0.5	532
20	0.1	78.0	0.1	181	0.1	219	0.4	527
25	0.1	77.4	+0.1	179	+0.1	217	0.4	523
30	+0.1	76.8	0.0	178	0.0	216	-0.3	519
Sept. 27	-0.5	77.1	-0.3	179	-0.4	217	+3.8	521
Oct. 2	0.5	77.8	0.3	180	0.4	218	3.9	525
7	0.5	78.5	0.3	182	0.4	220	4.0	530
12	0.5	79.1	0.3	183	0.4	222	4.0	534
17	0.5	79.8	0.3	185	0.4	224	4.1	539
22	-0.5	80.5	-0.3	187	-0.4	226	+4.1	544
27	0.5	81.2	0.3	188	0.4	228	4.2	549
Nov. 1	0.5	82.0	0.3	190	0.4	230	4.2	554
6	0.5	82.8	0.3	192	0.4	232	4.2	559
11	0.5	83.6	0.3	194	0.4	235	4.2	564
16	-0.5	84.3	-0.3	195	-0.4	237	+4.2	569
21	0.5	85.0	0.3	197	0.4	239	4.2	574
26	0.5	85.7	0.3	199	0.4	241	4.2	579
Dec. 1	0.5	86.4	0.3	200	0.5	243	4.1	584
6	0.5	87.1	0.3	202	0.5	244	4.1	588
11	-0.5	87.7	-0.3	203	-0.5	246	+4.0	592
16	0.5	88.2	0.3	204	0.5	248	4.0	596
21	0.5	88.7	0.3	206	0.5	249	3.9	599
26	0.5	89.1	0.3	207	0.4	250	3.8	602
31	-0.5	89.4	-0.3	207	-0.4	251	+3.7	604

APPARENT ORBITS OF THE SATELLITES OF URANUS AT DATE OF OPPOSITION,
AUGUST 10, 1916, AS SEEN IN AN INVERTING TELESCOPE.

South



Apparent Apsides.

Date.	Position Angle.	App. Distances.	Ariel.	Umbriel.
		"	"	"
May 4,	350.9	13.2	18.4	
Aug. 12,	351.6	14.0	19.5	
Nov. 20,	352.2	13.1	18.3	

Apparent Apsides.

Date.	Position Angle.	App. Distances.	Titania.	Oberon.
		"	"	"
May 4,	350.9	30.2	40.4	
Aug. 12,	351.6	31.9	42.7	
Nov. 20,	352.2	30.0	40.1	

North

GREENWICH MEAN TIME OF GREATEST ELONGATION.

ARIEL.		UMBRIEL.		TITANIA.		OBERON.
North.	South.	North.	South.	North.	South.	North and South.
May 10 21.6 18 11.0 26 0.5	May 14 16.3 22 5.8 29 19.2	May 4 8.9 12 15.8 20 22.7	May 6 10.6 14 17.5 23 0.4	Apr. 29 2.8 May 7 19.7 16 12.6	May 3 11.2 12 4.2 20 21.1	May 23 18.4 S. 30 11.9 N.
June 2 13.9 10 3.4 17 16.8	June 6 8.6 13 22.1 21 11.6	June 6 12.5 14 19.4 23 2.3	June 8 14.2 16 21.2 25 4.1	June 2 22.5 11 15.4 20 8.4	June 7 6.9 15 23.9 24 16.8	June 6 5.5 S. 12 23.0 N. 19 16.6 S. 26 10.2 N.
July 2 19.8 10 9.2 17 22.7	July 6 14.5 14 4.0 21 17.4	July 1 9.3 9 16.2 17 23.1	July 3 11.0 11 17.9 20 0.8	July 7 18.2 16 11.2 25 4.2	July 3 9.8 12 2.7 20 19.7	July 3 3.8 S. 9 21.4 N. 16 14.9 S. 23 8.5 N.
Aug. 2 1.6 9 15.1 17 4.6	Aug. 5 20.4 13 9.8 20 23.3	Aug. 3 13.0 11 19.9 20 2.8	Aug. 5 14.7 13 21.6 22 4.6	Aug. 2 21.2 11 14.1 20 7.1	Aug. 7 5.6 15 22.6 24 15.6	Aug. 5 19.7 N. 12 13.3 S. 19 6.9 N.
Sept. 1 7.6 8 21.0 16 10.5	Sept. 5 2.3 12 15.8 20 5.3	Sept. 5 16.7 13 23.7 22 6.6	Sept. 7 18.5 16 1.4 24 8.4	Sept. 6 17.1 15 10.1 24 3.0	Sept. 2 8.6 11 1.6 19 18.6	Sept. 26 0.5 S. 118.2 N. 8 11.8 S.
Oct. 24 0.0 1 13.5 9 3.0	Oct. 27 18.7 5 8.2 12 21.7	Oct. 30 13.6 8 20.5 17 3.4	Oct. 2 15.3 10 22.2 19 5.2	Oct. 2 20.0 11 13.0 20 6.0	Oct. 7 4.5 15 21.5 24 14.4	Oct. 21 23.0 S. 28 16.6 N. 5 10.1 S.
Nov. 31 19.4 8 8.9	Nov. 4 14.2 12 3.6	Nov. 2 17.3 11 0.3 19 7.2	Nov. 4 19.1 13 2.0 21 8.9	Nov. 6 15.9 15 8.8 24 1.8	Nov. 2 7.4 11 0.3 19 17.3	Nov. 12 3.7 N. 18 21.3 S. 25 14.9 N.

For Ariel every third elongation is given, and for Umbriel every alternate one; the intermediate ones may be found by adding multiples of the period of the satellite.

Sidereal period of Ariel, $2^d 12^h.489$; of Umbriel, $4^d 3^h.460$; of Titania, $1^d 16^h.941$; of Oberon, $13^d 11^h.118$.

Fractions of the Period of Revolution.					Fraction of a Revolution.	p^1	F
Fraction of a Revolution.	Ariel.	Umbriel.	Titania.	Oberon.			
	d h	d h	d h	d h			
0.00	0 0.0	0 0.0	0 0.0	0 0.0	0.00	351.6	1.000
0.02	0 1.2	0 2.0	0 4.2	0 6.5	0.02	355.0	0.994
0.04	0 2.4	0 4.0	0 8.4	0 12.9	0.04	358.6	0.976
0.06	0 3.6	0 6.0	0 12.5	0 19.4	0.06	2.3	0.946
0.08	0 4.8	0 8.0	0 16.7	1 1.8	0.08	6.3	0.906
0.10	0 6.0	0 10.0	0 20.9	1 8.3	0.10	10.7	0.856
0.12	0 7.3	0 11.9	1 1.1	1 14.8	0.12	15.7	0.799
0.14	0 8.5	0 13.9	1 5.3	1 21.2	0.14	21.6	0.736
0.16	0 9.7	0 15.9	1 9.4	2 3.7	0.16	28.5	0.670
0.18	0 10.9	0 17.9	1 13.6	2 10.2	0.18	37.0	0.606
0.20	0 12.1	0 19.9	1 17.8	2 16.6	0.20	47.3	0.549
0.22	0 13.3	0 21.9	1 22.0	2 23.1	0.22	59.8	0.505
0.24	0 14.5	0 23.9	2 2.1	3 5.5	0.24	74.1	0.480
0.26	0 15.7	1 1.9	2 6.3	3 12.0	0.26	89.1	0.480
0.28	0 16.9	1 3.8	2 10.5	3 18.5	0.28	103.4	0.505
0.30	0 18.1	1 5.8	2 14.7	4 0.9	0.30	115.8	0.549
0.32	0 19.4	1 7.8	2 18.9	4 7.4	0.32	126.2	0.606
0.34	0 20.6	1 9.8	2 23.0	4 13.9	0.34	134.6	0.670
0.36	0 21.8	1 11.8	3 3.2	4 20.3	0.36	141.6	0.736
0.38	0 23.0	1 13.8	3 7.4	5 2.8	0.38	147.4	0.799
0.40	1 0.2	1 15.8	3 11.6	5 9.2	0.40	152.5	0.856
0.42	1 1.4	1 17.8	3 15.8	5 15.7	0.42	156.9	0.906
0.44	1 2.6	1 19.8	3 19.9	5 22.2	0.44	160.9	0.946
0.46	1 3.8	1 21.8	4 0.1	6 4.6	0.46	164.6	0.976
0.48	1 5.0	1 23.7	4 4.3	6 11.1	0.48	168.1	0.994
0.50	1 6.2	2 1.7	4 8.5	6 17.6	0.50	171.6	1.000
0.52	1 7.5	2 3.7	4 12.6	7 0.0	0.52	175.0	0.994
0.54	1 8.7	2 5.7	4 16.8	7 6.5	0.54	178.6	0.976
0.56	1 9.9	2 7.7	4 21.0	7 12.9	0.56	182.3	0.946
0.58	1 11.1	2 9.7	5 1.2	7 19.4	0.58	186.3	0.906
0.60	1 12.3	2 11.7	5 5.4	8 1.9	0.60	190.7	0.856
0.62	1 13.5	2 13.7	5 9.5	8 8.3	0.62	195.7	0.799
0.64	1 14.7	2 15.7	5 13.7	8 14.8	0.64	201.6	0.736
0.66	1 15.9	2 17.6	5 17.9	8 21.3	0.66	208.5	0.670
0.68	1 17.1	2 19.6	5 22.1	9 3.7	0.68	217.0	0.606
0.70	1 18.3	2 21.6	6 2.3	9 10.2	0.70	227.3	0.549
0.72	1 19.6	2 23.6	6 6.4	9 16.6	0.72	239.8	0.505
0.74	1 20.8	3 1.6	6 10.6	9 23.1	0.74	254.1	0.480
0.76	1 22.0	3 3.6	6 14.8	10 5.6	0.76	269.1	0.480
0.78	1 23.2	3 5.6	6 19.0	10 12.0	0.78	283.4	0.505
0.80	2 0.4	3 7.6	6 23.2	10 18.5	0.80	295.8	0.549
0.82	2 1.6	3 9.6	7 3.3	11 1.0	0.82	306.2	0.606
0.84	2 2.8	3 11.5	7 7.5	11 7.4	0.84	314.6	0.670
0.86	2 4.0	3 13.5	7 11.7	11 13.9	0.86	321.6	0.736
0.88	2 5.2	3 15.5	7 15.9	11 20.3	0.88	327.4	0.799
0.90	2 6.4	3 17.5	7 20.0	12 2.8	0.90	332.5	0.856
0.92	2 7.7	3 19.5	8 0.2	12 9.3	0.92	336.9	0.906
0.94	2 8.9	3 21.5	8 4.4	12 15.7	0.94	340.9	0.946
0.96	2 10.1	3 23.5	8 8.6	12 22.2	0.96	344.6	0.976
0.98	2 11.3	4 1.5	8 12.8	13 4.7	0.98	348.1	0.994
1.00	2 12.5	4 3.5	8 16.9	13 11.1	1.00	351.6	1.000

The fraction of a revolution is reckoned from the Northern Elongation.
 Position angle of satellite $p = p^1 + (P - P_0)$.

Apparent distance of satellite $s = F \frac{a(p)}{p}$.

SATELLITES OF URANUS, 1916.

Date.	P-P ₀	$\frac{\alpha(\rho)}{\rho}$				Date.	P-P ₀	$\frac{\alpha(\rho)}{\rho}$			
		Ariel.	Umbriel.	Titania.	Oberon.			Ariel.	Umbriel.	Titania.	Oberon.
	•	''	''	''	''		•	''	''	''	''
Apr. 15	-0.5	13.0	18.1	29.7	39.8	Aug. 13	0.0	14.0	19.5	31.9	42.7
20	0.6	13.1	18.2	29.8	39.9	18	+0.1	14.0	19.4	31.9	42.7
25	0.6	13.1	18.3	30.0	40.1	23	0.2	13.9	19.4	31.9	42.6
30	0.6	13.2	18.3	30.1	40.2	28	0.3	13.9	19.4	31.8	42.6
May 5	0.7	13.2	18.4	30.2	40.4	Sept 2	0.3	13.9	19.4	31.8	42.5
10	-0.7	13.3	18.5	30.3	40.6	7	+0.4	13.9	19.3	31.7	42.4
15	0.7	13.3	18.6	30.5	40.8	12	0.5	13.8	19.3	31.6	42.3
20	0.7	13.4	18.7	30.6	40.9	17	0.5	13.8	19.2	31.6	42.2
25	0.7	13.4	18.7	30.7	41.1	22	0.6	13.8	19.2	31.5	42.1
30	0.7	13.5	18.8	30.9	41.3	27	0.6	13.7	19.1	31.4	42.0
June 4	-0.7	13.6	18.9	31.0	41.4	Oct. 2	+0.6	13.7	19.1	31.3	41.8
9	0.7	13.6	19.0	31.1	41.6	7	0.7	13.6	19.0	31.1	41.7
14	0.6	13.6	19.0	31.2	41.7	12	0.7	13.6	18.9	31.0	41.5
19	0.6	13.7	19.1	31.3	41.9	17	0.7	13.5	18.8	30.9	41.3
24	0.6	13.7	19.2	31.4	42.0	22	0.7	13.5	18.8	30.8	41.2
29	-0.5	13.8	19.2	31.5	42.2	27	+0.7	13.4	18.7	30.6	41.0
July 4	0.5	13.8	19.3	31.6	42.3	Nov. 1	0.7	13.4	18.6	30.5	40.8
9	0.4	13.9	19.3	31.7	42.4	6	0.7	13.3	18.5	30.4	40.6
14	0.4	13.9	19.4	31.8	42.5	11	0.7	13.2	18.4	30.2	40.5
19	0.3	13.9	19.4	31.8	42.5	16	0.6	13.2	18.4	30.1	40.3
24	-0.2	13.9	19.4	31.9	42.6	21	+0.6	13.1	18.3	30.0	40.1
29	0.2	14.0	19.4	31.9	42.7	26	0.5	13.1	18.2	29.9	39.9
Aug. 3	-0.1	14.0	19.4	31.9	42.7	Dec. 1	0.5	13.0	18.2	29.8	39.8
8	0.0	14.0	19.5	31.9	42.7	6	+0.4	13.0	18.1	29.6	39.6

SATELLITE OF NEPTUNE, 1916.

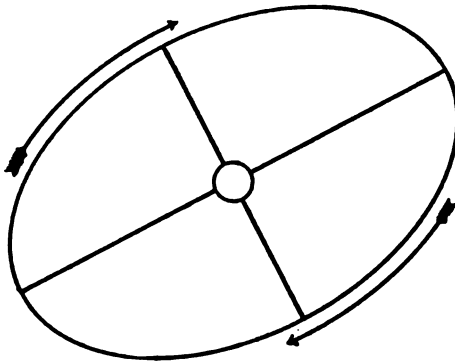
Time from Eastern Elongation.		p ¹	F	Time from Eastern Elongation.		p ¹	F	Date.	P-P ₀	$\frac{\alpha(\rho)}{\rho}$	Date.	P-P ₀	$\frac{\alpha(\rho)}{\rho}$
d h	•			d h	•				•	''		•	''
0 0	117.7	1.000		3 0	295.3	0.999		Jan. 1	+0.6	16.8	Apr. 30	-1.6	16.2
0 3	112.8	0.995		3 3	290.4	0.988		6	0.5	16.8	May 5	1.5	16.1
0 6	107.8	0.979		3 6	285.3	0.968		11	0.3	16.8	10	1.4	16.1
0 9	102.6	0.954		3 9	279.9	0.940		16	+0.2	16.8	15	1.3	16.0
0 12	97.0	0.920		3 12	274.1	0.901		21	0.0	16.8	20	-1.2	16.0
0 15	90.9	0.879		3 15	267.8	0.857		26	-0.2	16.8	Oct. 2	+3.6	16.0
0 18	84.3	0.833		3 18	260.7	0.810		31	0.3	16.8	7	3.7	16.1
0 21	76.8	0.786		3 21	252.8	0.762		Feb. 5	0.5	16.8	12	3.8	16.1
1 0	68.3	0.738		4 0	243.8	0.716		10	0.6	16.8	17	3.8	16.2
1 3	58.8	0.696		4 3	233.7	0.679		15	0.8	16.8	22	3.9	16.2
1 6	48.2	0.664		4 6	222.7	0.652		20	-0.9	16.7	27	+3.9	16.2
1 9	36.7	0.644		4 9	210.9	0.640		25	1.1	16.7	Nov. 1	4.0	16.3
1 12	24.8	0.640		4 12	198.9	0.643		Mar. 1	1.2	16.7	6	4.0	16.3
1 15	13.0	0.652		4 15	187.4	0.663		6	1.3	16.6	11	4.0	16.4
1 18	1.9	0.678		4 18	176.8	0.696		11	1.4	16.6	16	3.9	16.4
1 21	351.8	0.716		4 21	167.2	0.738		16	-1.5	16.6	21	+3.9	16.5
2 0	342.8	0.761		5 0	158.8	0.785		21	1.6	16.5	26	3.8	16.5
2 3	334.9	0.809		5 3	151.3	0.833		26	1.6	16.5	Dec. 1	3.7	16.6
2 6	327.8	0.856		5 6	144.6	0.878		31	1.7	16.4	6	3.6	16.6
2 9	321.4	0.900		5 9	138.6	0.919		Apr. 5	1.7	16.4	11	3.5	16.6
2 12	315.6	0.938		5 12	133.0	0.953		10	-1.7	16.4	16	+3.4	16.7
2 15	310.3	0.967		5 15	127.7	0.978		15	1.7	16.3	21	3.3	16.7
2 18	305.2	0.988		5 18	122.7	0.995		20	1.7	16.3	26	3.2	16.7
2 21	300.2	0.999		5 21	117.8	1.000		25	-1.6	16.2	31	+3.1	16.8

Position angle of satellite $p = p^1 + (P - P_0)$.

Apparent distance of satellite $\alpha = F \frac{\alpha(\rho)}{\rho}$.

APPARENT ORBIT OF THE SATELLITE OF NEPTUNE AT DATE OF OPPOSITION, JANUARY 22, 1916, AS SEEN IN AN INVERTING TELESCOPE.

South



North

Date.	Position Angle of Apsis.	Apparent Distance at Apsis.
Jan. 21	117.7	16.8
Apr. 30	116.1	16.2
Oct. 11	121.5	16.1
Dec. 30	120.9	16.7

GREENWICH MEAN TIME OF GREATEST ELONGATION.

East.		West.		East.		West.		East.		West.	
d	h	d	h	d	h	d	h	d	h	d	h
Jan.	3 16.6	Jan.	6 15.1	Mar.	26 0.2	Mar.	28 22.7	Oct.	11 17.5	Oct.	14 16.0
	9 13.7		12 12.2		31 21.2	Apr.	3 19.8		17 14.5		20 13.0
	15 10.8		18 9.4	Apr.	6 18.3		9 16.9		23 11.5		26 10.0
	21 7.9		24 6.5		12 15.4		15 13.9		29 8.5	Nov.	1 7.0
	27 5.1		30 3.6		18 12.4		21 11.0	Nov.	4 5.5		7 4.0
Feb.	2 2.2	Feb.	5 0.7		24 9.5		27 8.0		10 2.5		13 1.1
	7 23.3		10 21.9		30 6.5	May	3 5.0		15 23.6		18 22.1
	13 20.4		16 19.0	May	6 3.5		9 2.0		21 20.6		24 19.1
	19 17.5		22 16.1		12 0.5		14 23.0		27 17.7		30 16.2
	25 14.7		28 13.2		17 21.5		20 20.0	Dec.	3 14.8	Dec.	6 13.3
Mar.	2 11.8	Mar.	5 10.3		23 18.5		26 17.0		9 11.8		12 10.3
	8 8.9		11 7.4		29 16.5		29 15.5		15 8.9		18 7.4
	14 6.0		17 4.5	Sept.	29 23.5	Oct.	2 22.0		21 6.0		24 4.6
	20 3.1		23 1.6	Oct.	5 20.5		8 19.0		27 3.1		30 1.7

The above times are the instants of each passage of the satellite through the apsis of its apparent orbit. The position of the satellite at any other time may be found by measuring around the orbit from the apsis last passed through, bearing in mind that the radius vector of the satellite describes equal areas in equal times.

The sidereal period of the satellite of Neptune is 5^d 21^h.044.

NOTE.—In the preceding diagrams the central circle represents the planet and is on the same scale as the orbits.

GREENWICH MEAN TIME.

PLANETARY CONFIGURATIONS.

	d	h	m		
♃ Greatest Hel. Lat. S.	Sept. 22	6	-	♃ Stationary.	
♃ ♃ - 7 7	22	19	41	♃ ♃ ♃ + 0 12	
♃ Great. elong. W.	22	21	14	♃ ♃ enters ♃, Autumn com.	
♃ ♃ - 4 30	27	4	-	♃ ♃ in ♃	
♃ ♃ ♃ - 1 6	28	0	11	♃ ♃ ♃ + 1 30	
♃ ♃ ♃ + 0 6	30	0	1	♃ ♃ ♃ + 4 30	
♃ in Aphelion.	Oct. 4	23	-	♃ ♃ Inferior.	
♃ in ♃	6	11	40	♃ ♃ ♃ - 2 39	
♃ ♃ + 5 22	8	8	-	♃ ♃ in ♃	
♃ ♃ ♃ + 5 1	11	6	-	♃ ♃ in ♃	
♃ ♃ Par. ecl. vis. at Wash.	12	0	21	♃ ♃ ♃ - 6 54	
♃ in ♃	13	7	-	♃ ♃ Stationary.	
♃ ♃ - 2 44	15	21	-	♃ ♃ in Perihelion.	
♃ in Perihelion.	18	23	5	♃ ♃ ♃ + 0 34	
♃ ♃ ♃ + 1 9	19	8	46	♃ ♃ ♃ + 0 42	
♃ in Aphelion.	20	10	-	♃ ♃ Great. elong. W.	18 17
♃ in ♃	23	1	47	♃ ♃ ♃ + 5 35	
♃ ♃ ♃ - 6 57	23	13	-	♃ ♃ ♃ + 7 40	
♃ Stationary.	23	14	-	♃ ♃ Stationary.	
♃ ♃ ♃ + 1 53	25	20	-	♃ ♃ Greatest Hel. Lat. N.	
♃ ♃ - 8 21	26	3	-	♃ ♃ ♃ + 3 3	
♃ ♃ Superior.	28	3	-	♃ ♃ ♃ - 2 53	
♃ ♃ ♃ - 0 44	28	16	46	♃ ♃ Stationary.	
♃ ♃ Ann. ecl. invis. at Wash.	Nov. 2	17	14	♃ ♃ ♃ - 6 56	
♃ ♃ + 0 5	7	0	-	♃ ♃ in Perihelion.	
♃ ♃ ♃ + 2 50	8	2	31	♃ ♃ Stationary.	
♃ ♃ Greatest Hel. Lat. N.	11	2	-	♃ ♃ ♃ + 0 56	
♃ ♃ ♃ + 5 42	11	22	-	♃ ♃ ♃ + 1 0	
♃ ♃ Greatest brilliancy.	15	8	22	♃ ♃ in ♃	
♃ ♃ ♃ - 2 37	15	17	9	♃ ♃ ♃ + 7 33	
♃ ♃ Greatest Hel. Lat. S.	18	15	-	♃ ♃ Superior.	
♃ ♃ ♃ - 6 58	22	6	32	♃ ♃ ♃ + 3 5	
♃ ♃ in ♃	23	14	-	♃ ♃ ♃ + 1 12	
♃ ♃ in ♃	24	23	17	♃ ♃ in Aphelion.	
♃ ♃ ♃ - 5 23	26	11	57	♃ ♃ ♃ - 3 10	
♃ ♃ ♃ - 0 21	28	20	-	♃ ♃ Greatest Hel. Lat. N.	
♃ ♃ Stationary.	29	23	54	♃ ♃ ♃ - 7 0	
♃ ♃ ♃ + 0 12	Dec. 2	20	-	♃ ♃ ♃ + 1 4	
♃ ♃ ♃ + 3 54	5	4	36	♃ ♃ ♃ + 1 8	
♃ ♃ ♃ + 5 25	12	14	13	♃ ♃ Greatest Hel. Lat. S.	
♃ ♃ in Aphelion.	13	0	5	♃ ♃ Stationary.	
♃ ♃ ♃ - 3 0	19	5	-	♃ ♃ enters ♃, Winter com.	
♃ ♃ ♃ - 2 33	21	15	59	♃ ♃ ♃ - 1 10	
♃ ♃ Great. elong. E.	21	23	-	♃ ♃ ♃ + 5 34	
♃ ♃ Great. elong. W.	22	5	46	♃ ♃ Par. ecl. invis. at Wash.	
♃ ♃ ♃ - 2 3	22	5	46	♃ ♃ ♃ - 0 57	
♃ ♃ ♃ - 6 55	24	-	-	♃ ♃ ♃ - 9 13	
♃ ♃ ♃ + 0 6	25	10	4	♃ ♃ ♃ - 3 22	
♃ ♃ ♃ + 0 25	25	14	36		
♃ ♃ Greatest Hel. Lat. S.	27	9	42		

No.	Place.	Latitude.	Reduction to Geocentric Latitude.	Altitude (Meters).	Log ρ (Including altitude).	Longitude from Greenwich.	Reduction from Greenwich to Local S.T.M.N.
		° ' "	' "			h m s	s
1	Abbadia, France . . .	+43 22 52.2	-11 34.4	69	9.999317	+ 0 7 0.1	+ 1.15
2	Adelaide, S. Australia .	-34 55 38.0 ^a	+10 52.4	41 ^b	9.999526	- 9 14 20.07 ^a	- 91.06
3	Adelaide, S. Australia .	-34 55 37.4 ^c	+10 52.4	...	9.999523	- 9 14 20.17 ^c	- 91.06
4	Albany, N. Y.	+42 39 12.7 ^a	-11 33.1	70 ^a	9.999336	+ 4 55 7.12 ^a	+ 48.48
5	Albany, N. Y.	+42 39 49.5 ^a	-11 33.1	52	9.999335	+ 4 54 59.97 ^a	+ 48.46
6	Algiers, Algeria	+36 47 50	-11 6.7	342	9.999501	- 0 12 8.38	- 1.99
7	Allegheny, Pa.	+40 28 58.1 ^d	-11 26.7	370 ^d	9.999411	+ 5 20 5.39 ^d	+ 52.58
8	Allegheny, Pa.	+40 27 41.6	-11 26.6	...	9.999387	+ 5 20 2.93	+ 52.58
9	Amherst, Mass.	+42 21 56.5 ^e	-11 32.5	110 ^e	9.999346	+ 4 50 5.93 ^e	+ 47.66
10	Amherst, Mass.	+42 22 17.1 ^f	-11 32.5	...	9.999338	+ 4 50 4.67 ^f	+ 47.65
11	Ann Arbor, Mich.	+42 16 48.7 ^a	-11 32.3	282 ^a	9.999360	+ 5 34 55.27 ^a	+ 55.02
12	Appleton, Wis.	+44 15 39.2 ^g	-11 35.4	242	9.999307	+ 5 53 35.92 ^g	+ 58.09
13	Arceetri, Italy	+43 45 14.4	-11 34.9	184	9.999316	- 0 45 1.30	- 7.40
14	Arequipa, Peru	-16 22 28.0 ^h	+ 6 15.2	2451 ^h	0.000052	+ 4 46 11.73 ^h	+ 47.02
15	Armagh, Ireland	+54 21 12.7 ^c	-10 59.6	61 ^c	9.999040	+ 0 26 35.4 ^c	+ 4.37
16	Athens, Greece	+37 58 19.7 ⁱ	-11 14.3	107 ⁱ	9.999456	- 1 34 53	- 15.59
17	Baltimore, Md.	+39 17 52.0 ^j	-11 21.5	36 ^j	9.999418	+ 5 6 29.1 ^j	+ 50.35
18	Bamberg, Bavaria	+49 53 6.0 ^c	-11 26.0	299 ^c	9.999167	- 0 43 33.57 ^c	- 7.16
19	Barcelona, Spain	+41 25 18	-11 30.0	420	9.999391	- 0 8 28.0	- 1.39
20	Beloit, Wis.	+42 30 8.4	-11 32.8	...	9.999335	+ 5 56 7.4	+ 58.50
21	Bergedorf, Germany . . .	+53 28 46.2	-11 6.1	35	9.999060	- 0 40 57.74	- 6.73
22	Berkeley, Cal.	+37 52 23.6	-11 13.7	97	9.999458	+ 8 9 2.72	+ 80.34
23	Berlin, Prussia	+52 30 16.7 ^k	-11 12.5	47 ^k	9.999085	- 0 53 34.80 ^k	- 8.80
24	Berlin, Prussia	+52 31 13.1	-11 12.4	...	9.999081	- 0 53 34.41	- 8.80
25	Berlin, Prussia	+52 31 30.7	-11 12.4	...	9.999081	- 0 53 27.40	- 8.78
26	Berlin, Prussia	+52 29 7	-11 12.6	38	9.999084	- 0 53 54.2	- 8.86
27	Berne, Switzerland	+46 57 8.7	-11 34.2	573	9.999260	- 0 29 45.70 ^a	- 4.89
28	Beaunçon, France	+47 14 59.0	-11 33.7	312	9.999235	- 0 23 57.13	- 3.93
29	Birr Castle, Ireland . . .	+53 5 47	-11 8.7	56	9.999071	+ 0 31 40.9	+ 5.20
30	Bloomington, Ind.	+39 9 56 ^d	-11 20.8	238 ^d	9.999435	+ 5 46 5	+ 56.85
31	Bogota, Colombia	+ 4 35 55.2 ^c	- 1 50.8	2634	0.000170	+ 4 56 23.5	+ 48.69
32	Bombay (Colaba), India . .	+18 53 36.2 ^c	- 7 5.1	14 ^c	9.999849	- 4 51 15.72 ^c	- 47.85
33	Bonn, Prussia	+50 43 45.0 ^k	-11 22.3	62 ^l	9.999130	- 0 28 23.17 ^k	- 4.66
34	Bordeaux (Floirac), France	+44 50 7.2 ^a	-11 35.6	73	9.999281	+ 0 2 5.51 ^a	+ 0.34
35	Boston, Mass	+42 20 58 ^m	-11 32.5	31 ^m	9.999341	+ 4 44 19.1 ^m	+ 46.71
36	Boston, Mass	+42 21 32.5	-11 32.5	48	9.999342	+ 4 44 15.0	+ 46.70
37	Bothkamp, Prussia	+54 12 9.6 ⁿ	-11 0.8	32 ⁿ	9.999042	- 0 40 31.02 ^m	- 6.66
38	Bremen, Germany	+53 4 36	-11 8.8	...	9.999067	- 0 35 15	- 5.79
39	Breslau, Prussia	+51 6 55.8 ^k	-11 20.4	147 ^k	9.999126	- 1 8 8.72 ^k	- 11.20
40	Brisbane, Queensland . . .	-27 28 0.0	+ 9 28.3	...	9.999691	-10 12 6.17	-100.55
41	Brussels (Uccle), Belgium	+50 47 55.5 ^a	-11 21.9	105 ^a	9.999131	- 0 17 26.05 ^a	- 2.86
42	Brussels, Belgium	+50 51 10.6 ^c	-11 21.7	...	9.999123	- 0 17 28.02 ^c	- 2.87
43	Budapest, Hungary	+47 29 34.7 ^c	-11 33.2	131 ^c	9.999217	- 1 16 13.5 ^c	- 12.53
44	Cambridge, England	+52 12 51.6	-11 14.3	28	9.999091	- 0 0 22.75	- 0.06
45	Cambridge, Mass.	+42 22 47.6 ^o	-11 32.6	24	9.999340	+ 4 44 31.05 ^o	+ 46.74
46	Cape of Good Hope	-33 56 3.5 ^p	+10 43.6	13 ^p	9.999548	- 1 13 54.76 ^p	- 12.14
47	Carloforte, Sardinia	+39 8 8.9 ^q	-11 20.7	18 ^q	9.999421	- 0 33 14.9 ^q	- 5.46
48	Catania, Sicily	+37 30 13.2 ^c	-11 11.4	49 ^c	9.999464	- 1 0 20.70 ^c	- 9.91
49	Charkov, Russia	+50 0 9.9 ^a	-11 25.5	138 ^r	9.999153	- 2 24 55.75 ^a	- 23.81
50	Charlottesville, Va.	+38 2 1.2 ^e	-11 14.6	259 ^e	9.999465	+ 5 14 5.33 ^e	+ 51.60

^a Meridian circle. ^g Center of dome. ^m Foot of pillar of 7-in. equatorial.
^b Standard barometer. ^h Transit pier. ⁿ Cube of equatorial.
^c Transit instrument. ⁱ Circle Syngros. ^o Dome of 15-in. equatorial.
^d Transit instrument pier. ^j Center of instrument house. ^p 8-in. meridian circle.
^e Center of large dome. ^k Center of observatory. ^q Zenith telescope.
^f Center of dome tower. ^l Floor of meridian room. ^r Barometer in meridian room.

No.	Authority for—		Description.
	Latitude.	Longitude.	
1	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Obs. Paris Acad. of Sci., Hendeys.
2	Letter from Govt. Astronomer, 1913.	Letter from Govt. Astronomer, 1913.	Govt. Obs., since 1884.
3	Letter from Govt. Astronomer, 1913.	Letter from Govt. Astronomer, 1913.	Govt. Obs., before 1884.
4	Letter from Director, 1913.	Letter from Director, 1913.	Dudley Obs., since 1893.
5	Letter from Director, 1913.	Letter from Director, 1913.	Dudley Obs., before 1893.
6	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	At Bouzaréah. Old Obs. 3° 8 S., 8° E.
7	<i>Publications of Obs.</i> , 1909.	<i>Publications of Obs.</i> , 1909.	• Obs. Western Univ. of Pa., since 1905.
8	Letter from Director, 1897.	Letter from Director, 1897.	Obs. Western Univ. of Pa., before 1905.
9	Letter from Director, 1913.	Letter from Director, 1913.	Amherst College Obs., since 1903.
10	Letter from Director, 1913.	Letter from Director, 1913.	Lawrence Obs., before 1903.
11	Letter from Director, 1913.	Letter from Director, 1913.	Detroit Obs., Univ. of Mich.
12	See footnote (b).	See footnote (b).	Underwood Obs., Lawrence Collge.
13	<i>Pubbl. dell'Osserv.</i> , 1900.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal Observatory.
14	<i>Harvard Annals</i> , 1903.	<i>Harvard Annals</i> , 1903.	Branch of Harvard Coll. Obs.
15	<i>Armagh Catalogue of Stars</i> , 1840.	<i>Armagh Catalogue of Stars</i> , 1840.	Armagh Observatory.
16	<i>Annales de l'Obs.</i> , 1910.	Letter from Director, 1913.	• National Observatory.
17	Letter from Director, 1913.	Letter from Director, 1913.	Johns Hopkins Univ. Obs.
18	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Remeis Observatory.
19	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Fabra Obs., Acad. of Sci. and Arts.
20	Letter from Director, 1897.	Letter from Director, 1897.	Smith Obs., Beloit Collge.
21	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Hamburg Obs., since 1909.
22	Letter from Director, 1897.	Letter from Director, 1897.	Students' Obs., Univ. of Cal.
23	<i>Astron. Nach.</i> , Nr. 3545, 1898.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal Obs., since 1835.
24	Letter from Director, 1913.	Letter from Director, 1913.	Royal Obs., before 1835.
25	<i>Astron. Nach.</i> , Nr. 3170, 1893.	<i>Astron. Nach.</i> , Nr. 3170, 1893.	Urania Observatory.
26	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Treptow Observatory.
27	<i>Berliner Jahrbuch</i> .	<i>Astron. Nach.</i> , Nr. 3202, 1893.	Observatory, Cantonal Univ.
28	<i>Astron. Nach.</i> , Nr. 2805, 1887.	<i>Astron. Nach.</i> , Nr. 2805, 1887.	National Observatory.
29	<i>British Nautical Almanac</i> .	<i>British Nautical Almanac</i> .	Private Obs. of Earl of Rosse.
30	Letter from Director, 1913.	Letter from Director, 1913.	Kirkwood Obs., Univ. of Ind.
31	Letter from Director, 1913.	Letter from Director, 1913.	National Observatory.
32	Letter from Director, 1913.	Letter from Director, 1913.	Government Observatory.
33	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal Observatory.
34	Letter from Director, 1897.	<i>Annales de l'Obs.</i> , 1885.	Obs., Univ. of Bordeaux.
35	Letter from Director, 1909.	Letter from Director, 1909.	Boston Univ. Obs., since 1908.
36	Letter from Director, 1895.	Letter from Director, 1895.	Boston Univ. Obs., before 1908.
37	<i>Beob. zu Bothkamp</i> , 1872.	Letter from Director, 1913.	Obs. of Herr von Bülow.
38	<i>Astron. Nach.</i> , Nr. 15, 1822.	<i>Astron. Nach.</i> , Nr. 15, 1822.	Formerly Olber's Obs.
39	Letter from Director, 1897.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal University Obs.
40	<i>British Nautical Almanac</i> .	• <i>British Nautical Almanac</i> .	Brisbane Observatory.
41	Letter from Director, 1913.	Letter from Director, 1913.	Royal Obs., since 1891.
42	<i>Annales de l'Obs.</i> , 1857.	Letter from Director, 1913.	Royal Obs., before 1891.
43	<i>Astron. Nach.</i> , Nr. 2752, 1886.	<i>Astron. Nach.</i> , Nr. 2752, 1886.	University Observatory.
44	Letter from Director, 1879.	Letter from Director, 1879.	University Observatory.
45	<i>Harvard Annals</i> , 1887.	<i>U. S. C. and G. S. Report</i> , 1897.	Harvard Collge Obs.
46	<i>Cape Gen. Catalogue of Stars</i> , 1885.	<i>Monthly Notices, R. A. S.</i> , Nov. 1908.	Royal Observatory.
47	See footnote (d).	Letter from Director, 1913.	International Lat. Obs.
48	Letter from Director, 1913.	Letter from Director, 1913.	Royal Obs. of Catania and Etna.
49	<i>Annales de l'Obs.</i> , 1904.	<i>Annales de l'Obs.</i> , 1904.	University Observatory.
50	Letter from Director, 1913.	Letter from Director, 1913.	Leander McCormick Obs., Univ. Va.

• Name of Western Univ. of Pa. changed in 1906; now the Univ. of Pittsburgh.

b *Professional Papers, Corps of Engineers, U. S. A.*, 1882.

c Old meridian circle 0° 4 S., 0° 1 W. of Cerole Synros.

d *Resultate des Internationalen Breitendienstes*, 1900-1908.

e With the new value of the longitude of Sydney.

No.	Place.	Latitude.	Reduction to Geocentric Latitude.	Altitude (Meters).	Log ρ (Including altitude).	Longitude from Greenwich.	Reduction from Greenwich to Local S. T. M. N.
		° ' "	' "			h m s	s
51	Chicago, Ill.	+41 50 1.0	-11 31.2	. . .	9.999352	+5 50 26.84	+57.57
52	Christiania, Norway . . .	+59 54 44.0 ^a	-10 4.6	25 ^a	9.998908	-0 42 53.50 ^a	-7.05
53	Cincinnati, Ohio	+39 8 19.8 ^b	-11 20.7	247 ^b	9.999437	+5 37 41.40 ^b	+55.48
54	Cincinnati, Ohio	+39 6 26.5	-11 20.5	. . .	9.999421	+5 37 59.00	+55.52
55	Cleveland, Ohio	+41 30 14.5 ^c	-11 30.2	215 ^c	9.999375	+5 26 25.86 ^c	+53.62
56	Clinton, N. Y.	+43 3 17.0	-11 33.9	276	9.999340	+5 1 37.45	+49.55
57	Coimbra, Portugal	+40 12 24.5	-11 25.6	99	9.999400	+0 33 43.1	+5.54
58	Columbia, Mo.	+38 56 51.7 ^d	-11 19.7	225 ^e	9.999440	+6 9 18.33 ^d	+60.67
59	Columbus, Ohio	+39 59 50.4 ^d	-11 24.7	233 ^d	9.999414	+5 32 2.60 ^d	+54.55
60	Copenhagen, Denmark . .	+55 41 12.6	-10 48.6	14	9.999005	-0 50 18.69 ^f	-8.26
61	Cordova, Arg. Rep.	-31 25 15.5 ^g	+10 18.0	434 ^g	9.999634	+4 16 48.22 ^g	+42.19
62	Cracow, Austria	+50 3 52.0 ^a	-11 25.2	221 ^a	9.999157	-1 19 50.27 ^a	-13.12
63	Danzig, Prussia	+54 21 18.0	-10 59.6	3	9.999036	-1 14 39.6	-12.26
64	Dehra Dun, India	+30 18 51.8 ^h	-10 5.3	681 ^h	9.999676	-5 12 11.76 ^h	-51.29
65	Denver, Colo.	+39 40 36.4 ^a	-11 23.3	1644 ⁱ	9.999518	+6 59 47.72 ^a	+68.96
66	Des Moines, Iowa	+41 36 0	-11 30.5	296	9.999378	+6 14 30.56	+61.52
67	Dorpat (Jurjew), Russia .	+58 22 47.2 ^a	-10 22.1	67 ^a	9.998945	-1 46 53.22 ^a	-17.56
68	Dresden, Saxony	+51 2 16.8	-11 20.8	121	9.999126	-0 54 54.74	-9.02
69	Dublin, Ireland	+53 23 13.1 ^a	-11 6.7	86 ^a	9.999066	+0 25 21.1 ^a	+4.16
70	Dun Echt, Scotland	+57 9 36	-10 34.8	141	9.998979	+0 9 40.0	+1.59
71	Durham, England	+54 46 6.2 ^j	-10 56.4	107 ^k	9.999033	+0 6 19.75 ^j	+1.04
72	Dusseldorf, Prussia	+51 12 25.0 ^l	-11 19.9	46 ^l	9.999117	-0 27 2.69 ^j	-4.44
73	Edinburgh, Scotland	+55 55 30.0 ^a	-10 46.5	134 ^m	9.999007	+0 12 44.22 ^a	+2.09
74	Edinburgh, Scotland	+55 57 23.2 ⁿ	-10 46.2	106 ^o	9.998995	+0 12 43.05 ^m	+2.09
75	Elmira, N. Y.	+42 6 25	-11 31.9	. . .	9.999345	+5 7 13.90	+50.47
76	Evanston, Ill.	+42 3 33.4	-11 31.8	175	9.999358	+5 50 42.3	+57.61
77	Flagstaff, Ariz.	+35 12 30.5	-10 54.7	2210	9.999667	+7 26 44.58	+73.39
78	Gaithersburg, Md.	+39 8 13.2 ^r	-11 20.7	165	9.999431	+5 8 47.73	+50.73
79	Geneva, N. Y.	+42 52 46.2	-11 33.6	152	9.999336	+5 8 1.00	+50.60
80	Geneva, Switzerland	+46 11 59.3 ^a	-11 35.2	407 ^a	9.999268	-0 24 36.61 ^a	-4.04
81	Genoa, Italy	+44 25 9.3 ^a	-11 35.5	105	9.999293	-0 35 41.28 ^a	-5.66
82	Georgetown, D. C.	+38 54 26.7 ^b	-11 19.5	47	9.999429	+5 8 18.26 ^b	+50.65
83	Glasgow, Mo.	+39 13 45.6	-11 21.1	227	9.999433	+6 11 18.08	+61.00
84	Glasgow, Scotland	+55 52 42.8 ^a	-10 46.9	55 ^p	9.999003	+0 17 10.55 ^a	+2.82
85	Gotha, Germany	+50 56 37.9 ^l	-11 21.2	322 ^a	9.999142	-0 42 50.51 ^l	-7.04
86	Gotha, Germany	+50 56 4.4 ^j	-11 21.2	360 ^j	9.999145	-0 42 55.09 ^j	-7.05
87	Göttingen, Prussia	+51 31 48.1 ^q	-11 18.2	161 ^q	9.999116	-0 39 46.22 ^q	-6.53
88	Greencastle, Ind.	+39 38 46.6 ^a	-11 23.1	262 ^a	9.999425	+5 47 24.36 ^a	+57.07
89	Greenwich, England	+51 28 38.2 ^a	-11 18.5	49 ^a	9.999110	0 0 0.00 ^a	0.00
90	Hamburg, Germany	+53 33 6.0	-11 5.6	25	9.999057	-0 39 53.60 ^a	-6.55
91	Hamburg, Germany	+53 32 51.3 ^d	-11 5.6	30 ^d	9.999058	-0 39 53.46 ^d	-6.55
92	Hanover, N. H.	+43 42 15.3	-11 34.8	183	9.999317	+4 49 8.02	+47.50
93	Haverford, Pa.	+40 0 40.1 ^r	-11 24.8	. . .	9.999398	+5 1 12.70 ^r	+49.48
94	Heidelberg, Baden	+49 23 55.2 ^s	-11 27.8	567 ^s	9.999198	-0 34 53.13 ^s	-5.73
95	Heidelberg, Baden	+49 23 55.7 ^t	-11 27.8	570 ^t	9.999198	-0 34 52.96 ^t	-5.73
96	Heidelberg, Baden	+49 24 34.3 ^l	-11 27.8	126 ^l	9.999168	-0 34 46.80 ^l	-5.71
97	Helsingfors, Finland	+60 9 42.3 ^a	-10 1.5	33 ^a	9.998903	-1 39 49.10 ^a	-16.40
98	Herény, Hungary	+47 15 47.4	-11 33.7	229	9.999229	-1 6 24.7	-10.91
99	Hong Kong, China	+22 18 13.2 ^j	-8 7.4	33 ^j	9.999793	-7 36 41.86 ^j	-75.01
100	Iowa City, Iowa	+41 40 0	-11 30.7	183	9.999369	+6 6 6	+60.14

^a Meridian circle.^b Center of dome.^c Zenith telescope pier.^d Transit pier.^e Observatory bench mark.^f Center of observatory.^g Old meridian circle.^h Floor-level of zenith sector pillar.ⁱ Main floor.^j Transit instrument.^k Barometer in transit room.^l Equatorial.^m Standard barometer.ⁿ Point midway between transit instrument and mural circle.^o Floor of main building.^p Floor of meridian circle room.^q Position of meridian circle before 1868.^r Zenith telescope.^s Repsold meridian circle.^t Bruce telescope.

No.	Authority for—		Description.
	Latitude.	Longitude.	
51	U. S. Lake Survey, 1864.	Smithsonian Report, 1886.	a Dearborn Observatory.
52	<i>Astron. Nach.</i> , Nr. 3193, 1893.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	University Observatory.
53	<i>Publications of the Obs.</i> , 1908.	<i>Astronomical Journal</i> , 1897.	Cincinnati Obs., since 1873.
54	Letter from Director, 1897.	<i>Astronomical Journal</i> , 1854.	Cincinnati Obs. before 1873.
55	Letter from Director, 1913.	Letter from Director, 1913.	Case Obs., Case School of Appl'd Sci.
56	<i>Astron. Nach.</i> , Nr. 2553, 1883.	<i>Astron. Nach.</i> , Nr. 2553, 1883.	Litchfield Obs., Hamflton College.
57	<i>Eph. Astron. de Coimbra</i> , 1889.	<i>Eph. Astron. de Coimbra</i> , 1889.	University Observatory.
58	<i>Trans. Acad. of Sci. of St. Louis</i> , 1894.	<i>Trans. Acad. of Sci. of St. Louis</i> , 1894.	Laws Obs., Univ. of Mo.
59	Letter from Director, 1913.	Letter from Director, 1899.	McMillin Obs., State Univ.
60	British Nautical Almanac.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	University Observatory.
61	<i>Resultados del Obs.</i> , 1887.	<i>Resultados del Obs.</i> , 1887.	National Observatory.
62	Letter from Director, 1913.	Letter from Director, 1913.	Imperial and Royal Obs.
63	Letter from Director, 1897.	Letter from Director, 1897.	Obs. of the School of Navigation.
64	<i>Great Trig. Survey of India</i> , 1906.	Letter from Supt. of Survey, 1913.	Halg Obs., Trig. Survey of India.
65	Letter from Director, 1913.	Letter from Director, 1913.	Chamberlin Obs., Univ. of Denver.
66	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Drake Univ. Obs.
67	<i>Publikationen der Sternw.</i> , 1911.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Imperial University Obs.
68	<i>Berliner Jahrbuch.</i>	<i>Berliner Jahrbuch.</i>	b Baron Engelhardt's Obs.
69	<i>Trans. Royal Dublin Soc.</i> , 1880.	<i>Trans. Royal Irish Acad.</i> , 1838.	Dunsink Obs., Trinity College.
70	Letter from Royal Astronomer, 1897.	Letter from Royal Astronomer, 1897.	c Lord Crawford's Obs.
71	Letter from Director, 1913.	Letter from Director, 1913.	University Observatory.
72	<i>Astron. Nach.</i> , Nr. 643, 1848.	Letter from Director, 1913.	Municipal Obs., Bilk.
73	<i>Monthly Notices, R. A. S.</i> , 1907.	Letter from Director, 1913.	Royal Obs. since 1895; Blackford Hill.
74	<i>Monthly Notices, R. A. S.</i> , 1836.	<i>Edinburgh Observations</i> , 1858.	d Royal Obs. before 1895; Calton Hill.
75	Letter from Director, 1912.	Letter from Director, 1912.	Elmira College Obs.
76	Letter from Director, 1893.	Letter from Director, 1893.	Dearborn Obs., North Western Univ.
77	British Nautical Almanac.	British Nautical Almanac.	Lowell Observatory.
78	See footnote (j).	See footnote (k).	International Lat. Obs.
79	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Smith Observatory.
80	<i>Memoire par J. Pidoux</i> , 1900.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Municipal Observatory.
81	Letter from Director, 1897.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Hydrographic Institute.
82	See footnote (e).	See footnote (e).	Georgetown College Obs.
83	<i>Astron. Nach.</i> , Nr. 2625, 1884.	<i>Washington Observations</i> , 1877.	Morrison Observatory.
84	<i>First Glasgow Catalogue</i> , 1870.	<i>Monthly Notices, R. A. S.</i> , 1865.	University Observatory.
85	Letter from Director, 1913.	Letter from Director, 1913.	Ducal Obs. since 1857.
86	Letter, Director new Obs., 1913.	Letter, Director new Obs., 1913.	Ducal Obs. before 1857.
87	<i>Astron. Nach.</i> , Nr. 4428, 1910.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal University Obs.
88	Letter from Director, 1912.	Letter from Director, 1912.	McKim Obs., De Pauw Univ.
89	<i>Greenwich Observations</i> , 1910.	<i>Greenwich Observations</i> , 1910.	f Royal Observatory.
90	Letter, Director new Obs., 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	g Hamburg Observatory before 1909.
91	Letter from Director, 1913.	Letter from Director, 1913.	h Imperial Marine Obs.
92	Letter from Director, 1894.	Letter from Director, 1894.	Shastuck Obs., Dartmouth College.
93	<i>Proc. Amer. Ph. Soc.</i> , 1883.	<i>Proc. Amer. Ph. Soc.</i> , 1883.	Haverford College Obs.
94	Letter from Director, 1913.	Letter from Director, 1913.	Astron. Institute, Königstuhl Obs.
95	<i>Publik. des Obs.</i> , Königstuhl, 1902.	<i>Publik. des Obs.</i> , Königstuhl, 1902.	Astrophys. Inst., Königstuhl Obs.
96	<i>Publik. des Obs.</i> , Königstuhl, 1902.	<i>Publik. des Obs.</i> , Königstuhl, 1902.	i Dr. Wolf's Obs. before 1898.
97	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Imperial Univ. Obs.
98	<i>Astron. Nach.</i> , Nr. 2633, 1884.	British Nautical Almanac.	Astrophysical Observatory.
99	<i>Hong Kong Observations</i> , 1897.	Letter from Director, 1897.	Colonial Observatory.
00	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Obs., Univ. of Iowa.

a Transferred to Evanston, Ill., in 1887.

b Instruments transferred to Univ. of Kasan in 1897.

c Instruments transferred to Royal Obs. at Edinburgh in 1896.

d City Obs. since 1896.

e Based upon data from the U. S. C. and G. Survey.

f Point of reference before 1851, 7½ ft. N., 19 ft. W.

g At Bergedorf since 1909.

h Transit instrument before 1908, 0' 5 N., 0° 04 W.

i Instruments transferred to the Astrophysical Institute of the Königstuhl Obs. in 1898.

j *Resultate des Internationalen Breitenmessens*, 1900-1908.k *Resultate des Internationalen Breitenmessens*, Band I, 1908.

No.	Place.	Latitude.	Reduction to Geocentric Latitude.	Altitude (Meters).	Log ρ (Including altitude).	Longitude from Greenwich.	Reduction from Greenwich to Local S.T.M.N.
		° ' "	' "			h m s	°
101	Ithaca, N. Y.	+42 26 47.3 ^a	-11 32.6	256 ^a	9.999354	+5 5 55.99 ^a	+50.26
102	Ithaca, N. Y.	+42 26 51.4	-11 32.6	...	9.999337	+5 5 56.47	+50.26
103	Jamaica, West Indies	+18 24 51 ^b	- 6 55.9	540 ^b	9.999892	+5 11 29.48 ^b	+51.17
104	Jena, Saxe-Weimar	+50 55 34.9 ^c	-11 21.3	165 ^c	9.999132	-0 46 20.22 ^c	- 7.61
105	Jena, Saxe-Weimar	+50 55 35.8	-11 21.3	155	9.999131	-0 46 20.31	- 7.61
106	Jena, Saxe-Weimar	+50 56 11.0	-11 21.3	174	9.999132	-0 46 20.73	- 7.61
107	Johannesburg, Transvaal	-26 10 54.6 ^d	+ 9 9.8	1804 ^d	9.999840	-1 52 18.0 ^d	-18.45
108	Kalocsa, Hungary	+46 31 41.7 ^b	-11 34.8	117 ^e	9.999240	-1 15 54.12 ^b	-12.47
109	Kasan, Russia	+55 50 20.0 ^f	-10 47.3	98 ^f	9.999007	-3 15 15.61 ^f	-32.08
110	Kasan, Russia	+55 47 23.9 ^g	-10 47.7	79 ^g	9.999007	-3 16 29.00 ^g	-32.28
111	Kew, England	+51 28 6	-11 18.5	10	9.999108	+0 1 15.1	+ 0.21
112	Kief, Russia	+50 27 10.0 ^h	-11 23.5	179 ^f	9.999145	-2 2 0.56 ^f	-20.04
113	Kiel, Prussia	+54 20 27.6 ^f	-10 59.7	52 ^f	9.999040	-0 40 35.45 ^f	- 6.67
114	Kis-Kartal, Hungary	+47 41 54.8	-11 32.8	...	9.999202	-1 18 11.7	-12.85
115	Königsberg, Prussia	+54 42 50.5 ^f	-10 56.8	24 ^f	9.999029	-1 21 58.97 ^f	-13.47
116	Kremsmunster, Austria	+48 3 23.1 ^f	-11 32.0	384 ^f	9.999220	-0 56 31.58 ^f	- 9.29
117	La Plata, Arg. Rep.	-34 54 31.8 ^h	+10 52.2	18 ^h	9.999525	+3 51 44.8 ^h	+38.07
118	Leiden, Netherlands	+52 9 19.8 ^f	-11 14.6	6 ^f	9.999090	-0 17 56.15 ^f	- 2.95
119	Leipzig, Saxony	+51 20 5.9 ⁱ	-11 19.2	119 ⁱ	9.999118	-0 49 33.92 ⁱ	- 8.14
120	Leipzig, Saxony	+51 20 20.1	-11 19.2	...	9.999110	-0 49 29.92	- 8.13
121	Liege, Belgium	+50 37 6	-11 22.8	127	9.999137	-0 22 15.44	- 3.66
122	Lisbon (Tapada), Portugal	+38 42 30.5 ^f	-11 18.5	95 ^f	9.999437	+0 36 44.68 ^f	+ 6.04
123	Liverpool, England	+53 24 4.8	-11 6.6	61	9.999064	+0 12 17.33	+ 2.02
124	Liverpool, England	+53 24 47.8	-11 6.5	...	9.999059	+0 12 0.11	+ 1.97
125	Lund, Sweden	+55 41 51.6 ⁱ	-10 48.5	38	9.999006	-0 52 44.97 ⁱ	- 8.67
126	Lund, Sweden	+55 52 12.0	-10 47.0	...	9.999000	-0 52 47.50	- 8.67
127	Lussinpiccolo, Austria	+44 32 11.0	-11 35.5	42	9.999286	-0 57 52.41	- 9.51
128	Lyons, France	+45 41 41.0	-11 35.5	299	9.999274	-0 19 8.52 ^k	- 3.14
129	Madison, Wis.	+43 4 36.8 ^f	-11 33.9	292 ^l	9.999340	+5 57 37.90 ^f	+58.75
130	Madras, India	+13 4 8.0 ^f	- 5 5.5	7	9.999926	-5 20 59.14	-52.73
131	Madrid, Spain	+40 24 30.0 ^m	-11 26.4	655 ^m	9.999433	+0 14 45.09 ^m	+ 2.42
132	Manila, P. I.	+14 34 41	- 5 38.2	3	9.999908	-8 3 54.2	-79.48
133	Mare Island, Cal.	+38 5 55.8 ⁿ	-11 15.0	18 ⁿ	9.999447	+8 9 5.63 ⁿ	+80.35
134	Markree, Ireland	+54 10 31.8	-11 1.0	45	9.999044	+0 33 48.4	+ 5.55
135	Marseilles, France	+43 18 19 ^f	-11 34.3	75 ^o	9.999820	-0 21 34.55 ^f	- 3.54
136	Marseilles, France	+43 17 52	-11 34.3	27	9.999317	-0 21 28.1	- 3.53
137	Mauritius (Port Louis)	-20 5 39	+ 7 27.7	54	9.999832	-3 50 12.6	-37.82
138	Melbourne, Victoria	-37 49 53.2 ^p	+11 13.4	28 ^q	9.999454	-9 39 53.92 ^p	-95.26
139	Meudon, France	+48 48 18	-11 29.8	162	9.999185	-0 8 55.6	- 1.47
140	Middletown, Conn.	+41 33 16.0	-11 30.4	...	9.999359	+4 50 37.18	+47.74
141	Milan, Italy	+45 27 59.2	-11 35.6	120	9.999268	-0 36 45.88 ^r	- 6.04
142	Minneapolis, Minn.	+44 58 40.0 ^r	-11 35.7	260 ^r	9.999290	+6 12 56.84 ^r	+61.27
143	Mizusawa, Japan	+39 8 3.6 ^x	-11 20.7	62	9.999424	-9 24 30.75	-92.74
144	Modena, Italy	+44 38 51.4	-11 35.6	64	9.999285	-0 43 43.40	- 7.15
145	Montreal, Canada	+45 30 20 ^s	-11 35.6	57 ^s	9.999262	+4 54 18.63 ^s	+48.35
146	Moscow (Presnia), Russia	+55 45 19.5	-10 48.0	150 ^f	9.999012	-2 30 17.03 ^f	-24.69
147	Mount Hamilton, Cal.	+37 20 25.6 ^r	-11 10.4	1284 ^r	9.999552	+8 6 34.89 ^r	+79.93
148	Mount Wilson, Cal.	+34 12 59.5 ^t	-10 46.2	1799 ^t	9.999663	+7 52 14.33 ^t	+77.56
149	Mount Wilson, Cal.	+34 12 55	-10 46.1	1727 ^u	9.999658	+7 52 14.3	+77.56
150	Munich, Bavaria	+48 8 45.5 ^v	-11 31.7	529 ^v	9.999227	-0 46 26.02 ^v	- 7.63

^a Top of east pier in transit room.

^b Transit instrument pier.

^c Bamberg equatorial.

^d International latitude hut.

^e Seven-inch equatorial.

^f Meridian circle.

^g Center of great dome.

^h Gautier meridian circle.

ⁱ Center of observatory.

^j Center of dome.

^k Pier of small meridian circle.

^l Main floor.

^m Center of rotunda.

ⁿ East transit instrument.

^o Barometer.

^p Old meridian circle.

^q Floor of meridian room.

^r Transit instrument.

^s East transit pier.

^t Snow telescope pier.

^u Floor.

^v West dome.

^w Photographic equatorial, 41 feet south of

prime vertical transit.

^x Zenith telescope.

No.	Authority for—		Description.
	Latitude.	Longitude.	
101	Letter from the Dean, 1913.	Letter from the Dean, 1913.	^a Fuertes Obs., Cornell Univ.
102	Letter from the Dean, 1913.	Letter from the Dean, 1913.	^b Fuertes Obs., Cornell Univ.
103	<i>Memoirs, R. A. S.</i> , 1879.	See footnote (c).	Mr. Hall's Obs., Montego Bay.
104	Letter from Director, 1913.	Letter from Director, 1913.	Univ. Obs., since 1888.
105	Letter, Director new Obs., 1913.	Letter, Director new Obs., 1913.	Univ. Obs., before 1888.
106	<i>V. J. S. Astron. Gesell.</i> , 1910.	<i>V. J. S. Astron. Gesell.</i> , 1910.	The late Dr. Winkler's Obs.
107	Transvaal Obs. <i>Circular</i> , 1910.	Transvaal Obs. <i>Circular</i> , 1910.	Union Obs., formerly Transvaal Obs.
108	Letter from Director, 1913.	Letter from Director, 1913.	Archiepiscopal Haynald Obs.
109	Letter from Director, 1913.	Publications of the Obs., 1911.	Engelhardt Obs., Univ. of Kasan.
110	Publications of the Obs., 1911.	Letter from Director, 1913.	University Observatory.
111	Letter from Director, 1897.	Letter from Director, 1897.	Meteorological Obs., London.
112	<i>Annales de l'Obs.</i> , Vol. IV, 1893.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Imperial Univ. Obs.
113	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	^d Royal University Obs.
114	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Near Aszöd, Hungary.
115	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal University Obs.
116	Letter from Director, 1897.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Obs. of the Benedictines.
117	Letter from Director, 1913.	Letter from Director, 1913.	National Univ. Obs.
118	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	University Observatory.
119	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	University Obs., since 1861.
120	Letter, Director new Obs., 1913.	Letter, Director new Obs., 1913.	University Obs., before 1861.
121	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	University Obs., Cointe.
122	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3202, 1893.	Obs. of Lisbon.
123	<i>Monthly Notices, R. A. S.</i> , 1894.	<i>Monthly Notices, R. A. S.</i> , 1894.	Bidston, Birkenhead, since 1867.
124	British <i>Nautical Almanac</i> , 1872.	British <i>Nautical Almanac</i> , 1872.	Liverpool Obs., before 1867.
125	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal Univ. Obs., since 1867.
126	Letter, Director new Obs., 1913.	Letter, Director new Obs., 1913.	Royal Univ. Obs., before 1867.
127	Letter from Director, 1897.	Letter from Director, 1897.	Manora Observatory.
128	Letter from Director, 1897.	<i>Astron. Nach.</i> , Nr. 3202, 1893.	Obs. of the Univ., St. Genis Laval.
129	<i>Publications of the Obs.</i> , 1892.	Letter from Director, 1912.	Waaburn Obs., Univ. of Wis.
130	<i>Great Trig. Survey of India</i> , 1906.	<i>Great Trig. Survey of India</i> , 1901.	Obs. founded by East India Co.
131	<i>Annuario del Obs.</i> , 1912.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Astron. and Meteorolog. Obs.
132	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Meteorological Observatory.
133	Letter from Director, 1913.	<i>Lick Obs. Bulletin</i> , 1908.	Chronom. and Time Sta., Navy Yd.
134	<i>Astron. Nach.</i> Nr. 758, 1851.	British <i>Nautical Almanac</i> , 1901.	Col. Cooper's Observatory.
135	Letter from Director, 1913.	<i>Astron. Nach.</i> Nr. 3993, 1905.	See footnote (e).
136	Letter, Director new Obs., 1913.	Letter, Director new Obs., 1913.	See footnote (f).
137	<i>Mag. and Meteor. Results</i> , 1908.	<i>Mag. and Meteor. Results</i> , 1908.	Royal Alfred Obs.
138	<i>Astron. Results</i> , 1881-84.	^g <i>Astron. Results</i> , 1881-84.	^g Government Observatory.
139	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Seine-et-Oise, near Paris.
140	Letter from Director, 1894.	Letter from Director, 1894.	Wesleyan University Obs.
141	British <i>Nautical Almanac</i> .	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal Observatory, Brera.
142	Letter from Director, 1913.	Letter from Director, 1913.	Obs. Univ. of Minn.
143	See footnote (h).	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	International Lat. Obs.
144	Letter from Director, 1913.	Letter from Director, 1913.	Royal Univ. Geophysical Obs.
145	Letter from Director, 1912.	<i>U. S. C. and G. S. Report</i> , 1897.	McGill University Obs.
146	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Obs. of the Imperial Univ.
147	<i>Publications of the Obs.</i> 1900.	<i>U. S. C. and G. S. Report</i> , 1897.	Lick Obs., Univ. of Cal.
148	<i>Astrophysical Journal</i> , 1906.	<i>Astrophysical Journal</i> , 1906.	Solar Obs., Carnegie Inst.
149	Letter from C. G. Abbot, 1912.	Letter from C. G. Abbot, 1912.	Branch of Smithsonian Astrophys. Obs.
150	Letter from Director, 1897.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal Observatory.

^a Since 1902.^b Before 1902.^c British Report on Transit of Venus, 1882.^d Old position of meridian circle, 0°.9 N., 0.12 E.^e National Obs., Univ. of Aix-Marseille, since 1864-66.^f National Obs., at Accoules, before 1864-66.^g Transferred from Williamstown in 1861.^h Resultate des Internationalen Breitendienstes, 1900-1908.ⁱ With the new values of the longitudes of Adelaide and Sydney.

No.	Place.	Latitude.	Reduction to Geocentric Latitude.	Altitude (Meters).	Log ρ (Including altitude).	Longitude from Greenwich.			Reduction from Greenwich to Local S.T.M.N.
						h	m	s	
151	Naples, Italy	+40 51 46.3	-11 28.1	164	9.999388	-0 57	1.70	^a	- 9.37
152	Nashville, Tenn. . . .	+36 8 54.4 ^b	-11 2.0	172 ^c	9.999505	+5 47	12.2		+57.04
153	Neuchâtel, Switzerland	+46 59 50.6	-11 34.1	488	9.999254	-0 27	49.90	^d	- 4.57
154	New Brunswick, N. J. . .	+40 30 1.4 ^b	-11 26.7	21 ^b	9.999387	+4 57	47.45	^b	+48.92
155	New Haven, Conn. . . .	+41 19 22.3	-11 29.6	40	9.999368	+4 51	40.58		+47.92
156	New Haven, Conn. . . .	+41 18 36.5	-11 29.6	.. .	9.999365	+4 51	42.16		+47.92
157	New York, N. Y.	+40 48 34.6	-11 27.9	25	9.999380	+4 55	50		+48.60
158	New York, N. Y.	+40 45 23.1	-11 27.7	.. .	9.999379	+4 55	53.64		+48.61
159	Nice, France	+43 43 16.9 ^e	-11 34.9	378	9.999330	-0 29	12.15	^e	- 4.80
160	Nikolaieff, Russia	+46 58 22.1	-11 34.2	55	9.999225	-2 7	53.78	^a	-21.01
161	Northampton, Mass. . . .	+42 19 1.9 ^b	-11 32.4	70 ^b	9.999345	+4 50	33.10	^b	+47.73
162	Northfield, Minn.	+44 27 41.6 ^f	-11 35.5	290 ^f	9.999305	+6 12	35.92	^f	+61.21
163	Oakland, Cal.	+37 48 5 ^d	-11 13.2	11 ^d	9.999454	+8 9	6.55	^d	+80.35
164	Odessa, Russia	+46 28 37.5	-11 34.9	.. .	9.999234	-2 3	2.18	^b	-20.21
165	Odessa, Russia	+46 28 36.7 ^d	-11 34.9	55 ^d	9.999237	-2 3	2.04	^d	-20.21
166	O-Gyalla, Hungary	+47 52 27.3	-11 32.4	113	9.999206	-1 12	45.49		-11.95
167	Omaha, Nebr.	+41 16 5.6 ^b	-11 29.5	344 ^b	9.999390	+6 23	46.96	^b	+63.05
168	Orono, Me.	+44 54 0	-11 35.6	38	9.999277	+4 34	40.3		+45.12
169	Ottawa, Canada	+45 23 39.1 ^d	-11 35.6	85 ^g	9.999267	+5 2	51.98	^d	+49.75
170	Oxford, Miss.	+34 22 12.6	-10 47.5	.. .	9.999536	+5 58	7.18		+58.83
171	Oxford, England	+51 45 35.6 ^d	-11 16.9	65 ^h	9.999104	+0 5	2.6		+ 0.83
172	Oxford, England	+51 45 34.2	-11 16.9	64	9.999104	+0 5	0.40		+ 0.82
173	Padua, Italy	+45 24 1.0 ⁱ	-11 35.6	31 ^j	9.999263	-0 47	29.13	ⁱ	- 7.86
174	Palermo, Sicily	+38 6 44.0 ^k	-11 15.1	76 ^d	9.999451	-0 53	25.87		- 8.73
175	Paris, France	+48 50 11.2 ^l	-11 29.8	67 ^m	9.999178	-0 9	20.93	ⁿ	- 1.53
176	Perth, West Australia . . .	-31 57 8.9 ^d	+10 23.8	60	9.999597	-7 43	21.51	^d	-76.12
177	Philadelphia, Pa.	+39 58 2.1 ^o	-11 24.6	74 ^o	9.999404	+5 1	6.81	^o	+49.46
178	Pola, Austria	+44 51 48.6 ^d	-11 35.6	32 ^d	9.999277	-0 55	23.07	^d	- 9.10
179	Potsdam, Prussia	+52 22 56.0 ^p	-11 13.3	97 ^p	9.999091	-0 52	15.86	^p	- 8.59
180	Poughkeepsie, N. Y. . . .	+41 41 18	-11 30.8	61	9.999360	+4 55	33.6	^b	+48.55
181	Prague, Bohemia	+50 5 16.0 ^o	-11 25.1	197 ^o	9.999155	-0 57	40.28	^o	- 9.47
182	Princeton, N. J.	+40 20 55.8	-11 26.1	75	9.999395	+4 58	39.44		+49.06
183	Princeton, N. J.	+40 20 57.8 ^d	-11 26.1	65 ^d	9.999394	+4 58	37.61	^d	+49.06
184	Providence, R. I.	+41 60 21	-11 31.2	64	9.999356	+4 45	35.95		+46.92
185	Providence, R. I.	+41 49 46.4	-11 31.2	.. .	9.999352	+4 45	37.64		+46.92
186	Pulkowa, Russia	+59 46 18.7 ^a	-10 6.2	75 ^q	9.998914	-2 1	18.57	^a	-19.93
187	Quebec, Canada	+46 47 59.2	-11 34.4	90	9.999231	+4 44	52.71	^b	+46.80
188	Quito, Ecuador	- 0 14 0	+ 0 5.6	2908	0.000198	+5 14	6.66		+51.60
189	Riga, Russia	+56 57 9.3	-10 36.9	.. .	9.998974	-1 36	28.10	^r	-15.85
190	Rio de Janeiro, Brazil . . .	-22 54 23.8 ^o	+ 8 17.7	62 ^o	9.999784	+2 52	41.4	^o	+28.37
191	Rome, Italy	+41 53 53.6 ^d	-11 31.3	51 ^j	9.999354	-0 49	55.12	^d	- 8.20
192	Rome, Italy	+41 53 33.6 ^d	-11 31.3	65 ^q	9.999355	-0 49	56.34	^d	- 8.20
193	Rome, Italy	+41 54 12.4 ^d	-11 31.4	100 ^d	9.999357	-0 49	48.02	^d	- 8.15
194	Rome, Italy	+41 54 16.7	-11 31.4	75 ^j	9.999355	-0 49	49.28	^d	- 8.15
195	San Fernando, Spain	+36 27 42.0 ^s	-11 4.3	30 ^s	9.999488	+0 24	49.32	^s	+ 4.06
196	San Fernando, Spain	+36 31 7	-11 4.7	.. .	9.999485	+0 25	10.82		+ 4.14
197	San Francisco, Cal.	+37 47 27.9	-11 13.2	.. .	9.999454	+8 9	42.86	^t	+80.45
198	San Luis, Arg. Rep.	-33 17 45.7	+10 37.6	800	9.999616	+4 25	22		+43.69
199	Santiago, Chile	-33 26 42 ^d	+10 39.0	520 ^d	9.999594	+4 42	46.0	^d	+46.45
200	Santiago, Chile	-33 26 25	+10 38.9	619	9.999600	+4 42	36.5		+46.42
201	Santiago, Chile	-33 33 46 ^b	+10 40.1	580 ^b	9.999595	+4 42	46	^b	+46.45

^a Center of observatory.

^b Transit instrument.

^c Bench mark on obs. steps.

^d Meridian circle.

^e Small meridian circle.

^f Meridian circle pier.

^g Bench mark in east wall.

^h Barometer basin.

ⁱ Axis of tower.

^j Barometer.

^k Center of south dome.

^l South facade of observatory.

^m Level of obs. terraces.

ⁿ Cassini's Meridian.

^o Center of dome.

^p Center of middle dome.

^q Main floor.

^r Tower of school.

^s Center of building, ground floor.

^t West transit pier.

No.	Authority for—		Description.
	Latitude.	Longitude.	
151	Letter from Director, 1897.	<i>Astron. Nach.</i> , Nr. 3202, 1893.	Royal Obs., Capo di Monte.
152	Letter from the Dean, 1913.	Letter from Director, 1893.	Obs. of Vanderbilt Univ.
153	Swiss Triangulation, 1890.	<i>Astron. Nach.</i> , Nr. 3202, 1893.	Cantonal Observatory.
154	Letter from Director, 1913.	Letter from Director, 1913.	Schanck Obs., Rutgers College.
155	Letter from Director, 1893.	See footnote (A).	Yale Univ. Obs., since 1882.
156	Letter, Director new Obs., 1903.	Letter, Director new Obs., 1903.	Yale Univ. Obs., before 1882.
157	<i>Contributions from the Obs.</i> , 1906.	<i>Contributions from the Obs.</i> , 1906.	Columbia Univ. Obs., since 1897.
158	Letter from Director, 1879.	<i>British Nautical Almanac.</i>	Columbia Univ. Obs., before 1897.
159	<i>Annales de l'Obs.</i> , Tome II, 1887.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Mt. Gros, near Nice.
160	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Astron. Nach.</i> , Nr. 3202, 1893.	Naval Observatory.
161	Letter from Director, 1913.	Harvard <i>Annals</i> , 1893.	Smith College Obs.
162	Letter from Director, 1912.	<i>Publications of Obs.</i> , 1901.	♠ Goodsell Obs., Carleton College.
163	Letter from Director, 1912.	Letter from Director, 1912.	Chabot Observatory.
164	Pulkowa <i>Mitteilungen</i> , No. 56, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Branch of Pulkowa Obs.
165	Letter from Director, 1897.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	University Observatory.
166	Letter from Director, 1897.	Letter from Director, 1897.	Royal Astrophysical Obs.
167	Letter from Director, 1912.	Letter from Director, 1912.	Creighton University Obs.
168	Letter from Director, 1912.	Letter from Director, 1912.	Obs. Univ. of Maine.
169	Letter from Chief Astronomer, 1913.	Letter from Chief Astronomer, 1913.	Dominion Astronomical Obs.
170	Smithsonian Report, 1880.	Smithsonian Report, 1880.	Obs. Univ. of Mississippi.
171	<i>Radcliffe Catalogue of Stars</i> , 1900.	<i>Radcliffe Observations</i> , 1842.	Radcliffe Observatory.
172	<i>Oxford Astron. Observations</i> , 1878.	<i>Oxford Astron. Observations</i> , 1878.	University Observatory.
173	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal University Obs.
174	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3202, 1893.	Royal Observatory.
175	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Observatory of Paris.
176	<i>Meridian Observations</i> , Vol. 2, 1908.	♠ <i>Meridian Observations</i> , Vol. 2, 1908.	Government Observatory.
177	Letter from Director, 1913.	Letter from Director, 1913.	Flower Obs., Univ. of Pa.
178	Letter from Director, 1913.	Letter from Director, 1913.	See footnote (b).
179	<i>Veröff. K. Preuss. Geod. Inst.</i> , 1906.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal Astrophysical Obs.
180	Smithsonian Report, 1880.	Smithsonian Report, 1880.	Vassar College Obs.
181	<i>Prague Observations</i> , 1907.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Imperial and Royal Obs.
182	Letter from Director, 1913.	Letter from Director, 1913.	Halsted Obs., Princeton Univ.
183	Letter from Director, 1913.	<i>Washington Observations</i> , 1878.	Obs. of Instruction, Princeton Univ.
184	Letter from Director, 1893.	Letter from Director, 1893.	Ladd Obs., Brown Univ.
185	<i>Astron. Nach.</i> , Nr. 2254, 1879.	<i>Astron. Nach.</i> , Nr. 2254, 1879.	Mr. Seagrave's Observatory.
186	<i>Description de l'Obs.</i> , 1845.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Obs. Central Nicolas.
187	Letter from Director, 1912.	Letter from Director, 1912.	Quebec Obs., Plains of Abraham.
188	Letter from Director, 1897.	Letter from Director, 1897.	National Observatory.
189	Letter from Director, 1897.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Polytechnic School Obs.
190	See footnote (c).	See footnote (c).	National Observatory.
191	<i>Memorie del R. Osserv.</i> , 1904.	Letter from Director, 1913.	Royal Obs. at Roman College.
192	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal Univ. Obs. at Capitol.
193	Letter from Director, 1913.	Letter from Director, 1913.	Vatican Obs., since 1906-7.
194	<i>Publ. della Specola Vaticana</i> , 1905.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	♠ Vatican Obs., before 1906-7.
195	<i>Annales del Obs.</i> , 1892.	Letter from Director, 1913.	♠ Naval Obs., since 1797.
196	Letter, Director new Obs., 1913.	Letter, Director new Obs., 1913.	♠ Naval Obs., before 1797.
197	Letter from Director, 1897.	<i>U. S. C. and G. S. Report</i> , 1897.	Davidson Observatory.
198	Letter from Director, 1911.	Letter from Director, 1911.	Southern Obs. of Carnegie Inst.
199	Letter from Director, 1913.	Letter from Director, 1913.	♠ National Obs., since 1862.
200	Letter, Director new Obs., 1913.	Letter, Director new Obs., 1913.	♠ National Obs., before 1862.
201	Letter from Director, 1913.	Letter from Director, 1913.	National Obs., Espejo.

♠ Old observatory, 1877-1886, 415 feet W.

♠ Observatory of Imperial and Royal Hydrographic Office.

♠ Green and Davis, *Telegraphic Determinations of Longitudes on the East Coast of South America*, 1880.

♠ In the Gregorian tower.

♠ In Cadix.

♠ In Quinta Normal.

♠ On the hill Santa Lucia, in Santiago.

♠ Based upon data from the U. S. C. and G. Survey.

♠ With the new value of the longitude of Sydney.

No.	Place.	Latitude.	Reduction to Geocentric Latitude.	Altitude (Meters).	Log ρ (Including altitude).	Longitude from Greenwich.	Reduction from Greenwich to Local S.T.M.N.
		° ' "	' "			h m s	s
202	South Bethlehem, Pa. . .	+40 36 23.2 <i>a</i>	-11 27.2	110	9.999391	+ 5 1 31.96 <i>a</i>	+ 49.53
203	South Hadley, Mass. . .	+42 15 18.2 <i>b</i>	-11 32.2	76 <i>b</i>	9.999346	+ 4 50 20.40 <i>b</i>	+ 47.70
204	St. Louis, Mo. . .	+38 38 3.0	-11 18.1	. . .	9.999432	+ 6 0 49.26	+ 59.27
205	St. Petersburg, Russia . .	+59 56 32.0	-10 4.2	4	9.998906	- 2 1 11.4	- 19.91
206	Stockholm, Sweden . .	+59 20 32.6 <i>c</i>	-10 11.3	44 <i>c</i>	9.998922	- 1 12 13.97 <i>c</i>	- 11.87
207	Stonyhurst, England . .	+53 50 40	-11 3.4	117 <i>c</i>	9.999056	+ 0 9 52.68	+ 1.62
208	Strassburg, Alsace . .	+48 35 0.3 <i>c</i>	-11 30.5	144 <i>c</i>	9.999190	- 0 31 4.52 <i>c</i>	- 5.11
209	Swarthmore, Pa. . .	+39 54 23.3	-11 24.3	. . .	9.999401	+ 5 1 24.89	+ 49.52
210	Sydney, N. S. W. . .	-33 51 41.1	+10 42.9	44	9.999552	-10 4 49.31	- 99.36
211	Syracuse, N. Y. . .	+43 2 13.1	-11 33.9	160	9.999332	+ 5 4 33.36	+ 50.03
212	Tacubaya, Mexico . .	+19 24 17.5 <i>c</i>	- 7 14.8	2285 <i>c</i>	9.999995	+ 6 36 46.67 <i>c</i>	+ 65.18
213	Tashkent, Turkestan . .	+41 19 31.3	-11 29.6	457	9.999396	- 4 37 10.80	- 45.53
214	Taunton, Mass. . .	+41 54 0	-11 31.3	8	9.999351	+ 4 44 20	+ 46.71
215	Teramo, Italy . .	+42 39 27 <i>d</i>	-11 33.1	398	9.999358	- 0 54 56	- 9.02
216	Tokyo, Japan . .	+35 39 17.0 <i>c</i>	-10 58.3	25	9.999507	- 9 18 58.22 <i>c</i>	- 91.82
217	Toronto, Canada . .	+43 39 46.0 <i>f</i>	-11 34.8	110 <i>g</i>	9.999313	+ 5 17 34.70 <i>g</i>	+ 52.17
218	Toronto, Canada . .	+43 40 0.8 <i>g</i>	-11 34.8	116 <i>g</i>	9.999313	+ 5 17 35.60 <i>g</i>	+ 52.17
219	Toulouse, France . .	+43 36 44.0	-11 34.7	194	9.999320	- 0 5 51.23	- 0.96
220	Triest, Austria . .	+45 38 35.5 <i>h</i>	-11 35.5	68 <i>i</i>	9.999260	- 0 55 5.23 <i>h</i>	- 9.05
221	Triest, Austria . .	+45 38 45.4 <i>j</i>	-11 35.5	26 <i>i</i>	9.999257	- 0 55 3.0	- 9.04
222	Techarajui, Turkestan . .	+39 8 11.0 <i>d</i>	-11 20.7	188 <i>d</i>	9.999433	- 4 14 17.2 <i>d</i>	- 41.77
223	Techarajui, Turkestan . .	+39 8 10.7 <i>d</i>	-11 20.7	167	9.999431	- 4 13 57.3	- 41.72
224	Tulse Hill, England . .	+51 26 47	-11 18.6	48	9.999111	+ 0 0 27.7	+ 0.08
225	Turin, Italy . .	+45 2 16.2 <i>k</i>	-11 35.7	618 <i>k</i>	9.999313	- 0 31 3 <i>k</i>	- 5.10
226	Turin, Italy . .	+45 4 8.3 <i>c</i>	-11 35.7	276 <i>i</i>	9.999288	- 0 30 47.15 <i>c</i>	- 5.06
227	Tuscaloosa, Ala. . .	+33 12 36.8 <i>c</i>	-10 36.7	69	9.999568	+ 5 50 11.74 <i>c</i>	+ 57.53
228	Ukiah, Cal. . .	+39 8 12.1 <i>d</i>	-11 20.7	220 <i>d</i>	9.999435	+ 8 12 50.3 <i>d</i>	+ 80.96
229	Upsala, Sweden . .	+59 51 29.4 <i>b</i>	-10 5.2	21 <i>b</i>	9.998909	- 1 10 30.12 <i>b</i>	- 11.58
230	Urbana, Ill. . .	+40 6 20.2 <i>l</i>	-11 25.2	236 <i>l</i>	9.999412	+ 5 52 53.90 <i>l</i>	+ 57.97
231	Utrecht, Netherlands . .	+52 5 9.7 <i>m</i>	-11 15.0	12 <i>m</i>	9.999093	- 0 20 31.0 <i>m</i>	- 3.37
232	Utrecht, Netherlands . .	+52 5 13	-11 15.0	23	9.999093	- 0 20 28.9	- 3.36
233	Venice, Italy . .	+45 26 10.5 <i>c</i>	-11 35.8	15 <i>c</i>	9.999261	- 0 49 22.12 <i>c</i>	- 8.11
234	Vienna, Austria . .	+48 13 55.1 <i>n</i>	-11 31.5	240 <i>i</i>	9.999205	- 1 5 21.35 <i>n</i>	- 10.74
235	Vienna, Austria . .	+48 12 35.5	-11 31.6	186 <i>i</i>	9.999202	- 1 5 31.61	- 10.76
236	Vienna, Austria . .	+48 12 53.8	-11 31.6	214	9.999204	- 1 5 25.17	- 10.75
237	Vienna, Austria . .	+48 12 46.7 <i>c</i>	-11 31.6	285	9.999209	- 1 5 10.96	- 10.71
238	Warsaw, Russia . .	+52 13 4.6 <i>c</i>	-11 14.3	121 <i>c</i>	9.999097	- 1 24 7.25 <i>c</i>	- 13.82
239	Washington, D. C. . .	+38 55 14.0 <i>o</i>	-11 19.6	82 <i>p</i>	9.999431	+ 5 8 15.78 <i>o</i>	+ 50.64
240	Washington, D. C. . .	+38 53 38.7 <i>q</i>	-11 19.4	31 <i>r</i>	9.999428	+ 5 8 12.15 <i>q</i>	+ 50.63
241	Washington, D. C. . .	+38 53 17.3 <i>s</i>	-11 19.4	10 <i>s</i>	9.999427	+ 5 8 6.24 <i>s</i>	+ 50.61
242	Washington, D. C. . .	+38 56 14.8 <i>a</i>	-11 19.7	. . .	9.999425	+ 5 8 0.0 <i>a</i>	+ 50.60
243	Wellfleet, Mass. . .	+42 17 34.8	-11 32.3	61	9.999344	+ 4 45 12.7	+ 45.85
244	Wellington, N. Z. . .	-41 17 3.8 <i>b</i>	+11 29.5	127 <i>b</i>	9.999375	-11 39 4.27 <i>b</i>	-114.84
245	West Point, N. Y. . .	+41 23 22.1	-11 29.9	170	9.999375	+ 4 55 50.55	+ 48.69
246	Wilhelmshaven, Germany	+53 31 52.1 <i>c</i>	-11 5.7	9 <i>c</i>	9.999057	- 0 32 35.06 <i>c</i>	- 5.35
247	Williams Bay, Wis. . .	+42 34 12.6 <i>t</i>	-11 33.0	320 <i>t</i>	9.999355	+ 5 54 13.24 <i>t</i>	+ 58.19
248	Williamstown, Mass. . .	+42 42 30	-11 33.2	213	9.999344	+ 4 52 50	+ 43.10
249	Winchester, Mass. . .	+42 27 11	-11 32.7	30	9.999338	+ 4 44 32.4	+ 46.74
250	Windsor, N. S. W. . .	-33 36 30.8 <i>b</i>	+10 40.6	16 <i>r</i>	9.999556	-10 3 19.9	- 99.11
251	Zō-Sē, China . .	+31 5 48.0 <i>c</i>	-10 14.4	100 <i>c</i>	9.999619	- 8 4 44.82 <i>c</i>	- 79.63
252	Zurich, Switzerland . .	+47 22 38.3 <i>c</i>	-11 33.5	469 <i>c</i>	9.999243	- 0 34 12.26 <i>c</i>	- 5.62

a Center of dome.*b* Transit instrument.*c* Meridian circle.*d* Zenith telescope.*e* Great transit instrument.*f* Main dome.*g* Transit pier.*h* Equatorial pier.*i* Barometer cistern.*j* Stone pier in terrace wall.*k* Prime vertical instrument.*l* 12-inch equatorial.*m* Altazimuth pier.*n* Central dome.*o* Center of the clock room.*p* Ground floor of main building.*q* Small dome.*r* Barometer.*s* Siderostat pier.*t* 40-inch equatorial.

No.	Authority for—		Description.
	Latitude.	Longitude.	
202	Letter from Director, 1913.	<i>Washington Observations</i> , 1875.	Sayre Obs., Lehigh Univ.
203	<i>Amer. Jour. of Sci.</i> , 1883.	Letter from Director, 1913.	Williston Obs., Mt. Holyoke Coll.
204	Letter from Director, 1897.	<i>U. S. C. and G. S. Report</i> , 1897.	Washington University Obs.
205	<i>Astron. Nach.</i> , Nr. 2582, 1884.	<i>Astron. Nach.</i> , Nr. 2582, 1884.	Imperial University Obs.
206	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Obs. of Acad. of Sci.
207	Letter from Director, 1913.	<i>Monthly Notices, R. A. S.</i> , 1851.	Stonyhurst College Obs.
208	<i>Annalen der Sternw.</i> , 1896.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Imperial Univ. Obs.
209	Letter from Director, 1912.	Letter from Director, 1912.	Sproul Obs., Swarthmore College.
210	<i>Astron. Results</i> , 1879-81.	See footnote (b).	Government Observatory.
211	Letter from Director, 1891.	Letter from Director, 1891.	Syracuse Univ. Obs.
212	<i>Annuario del Obs.</i> , 1902.	<i>Annuario del Obs.</i> , 1902.	National Observatory.
213	Letter from Director, 1897.	Letter from Director, 1897.	Tashkent Observatory.
214	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Mr. Metcalf's Obs., before 1911.
215	<i>Pubbl. dell'Osserv.</i> , 1900.	Letter from Director, 1913.	Collurania Observatory.
216	<i>Annales de l'Obs.</i> , 1894.	<i>Annales de l'Obs.</i> , 1894.	University Observatory.
217	Letter from Director, 1913.	Letter from Director, 1913.	University Observatory.
218	Letter from Director, 1912.	Letter from Director, 1912.	Meteorological Observatory.
219	<i>Annales de l'Obs.</i> , 1912.	<i>British Nautical Almanac</i> .	University Observatory.
220	Letter from Director, 1913.	Letter from Director, 1913.	Imperial and Royal Maritime Obs.
221	Letter, Director new Obs., 1913.	Letter, Director new Obs., 1913.	Imperial and Royal Maritime Obs.
222	<i>Astron. Nach.</i> , Nr. 4588, 1912.	Letter from Director, 1913.	International Lat. Obs., since 1909.
223	See footnote (e).	See footnote (f).	International Lat. Obs., before 1909.
224	<i>British Nautical Almanac</i> .	<i>British Nautical Almanac</i> .	Obs. of Sir W. Huggins, London.
225	Letter from Director, 1913.	Letter from Director, 1913.	Royal Obs. of the Univ., since 1913.
226	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Royal Obs. of the Univ., before 1913.
227	Letter from Director, 1897.	Letter from Director, 1897.	Obs. Univ. of Ala.
228	See footnote (e).	Letter from Director, 1912.	International Lat. Obs.
229	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	University Observatory.
230	Letter from Director, 1913.	Letter from Director, 1913.	Obs., Univ. of Ill.
231	Letter from Director, 1913.	Letter from Director, 1913.	University Obs., since 1855.
232	Letter, Director New Obs., 1913.	Letter, Director new Obs., 1913.	University Obs., before 1855.
233	Letter from Director, 1913.	Letter from Director, 1913.	Obs. of the Nautical Institute.
234	See footnote (h).	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Imperial and Royal Univ. Obs.
235	Letter, Director new Obs., 1913.	Letter, Director new Obs., 1913.	Imperial and Royal Univ. Obs.
236	<i>Berliner Jahrbuch</i> .	<i>Berliner Jahrbuch</i> .	Oppolzer Obs., Josephstadt.
237	<i>Publik. der Sternw.</i> , 1892.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Kuffner Obs., Ottaking.
238	<i>Astron. Nach.</i> , Nr. 4666, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Imperial University Obs.
239	<i>U. S. Naval Obs. Publications</i> , 1900.	<i>U. S. C. and G. S. Report</i> , 1897.	U. S. N. Obs., Georgetown Heights.
240	See footnote (m).	<i>U. S. C. and G. S. Report</i> , 1897.	U. S. Naval Obs., 1842-1893.
241	Letter from Director, 1912.	Letter from Director, 1912.	Smithsonian Astrophysical Obs.
242	<i>Astronomical Journal</i> , 1897.	<i>Astronomical Journal</i> , 1897.	Catholic Univ. Obs., Brookland.
243	Letter from Director, 1912.	<i>Les Obs. Astron.</i> , Bruxelles, 1907.	Whitin Obs., Wellesley College.
244	<i>New Zealand Gazette</i> , Feb. 29, 1912.	<i>New Zealand Gazette</i> , Feb. 29, 1912.	Hector Observatory.
245	Letter from Director, 1891.	Letter from Director, 1891.	U. S. Military Academy.
246	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3993, 1905.	Imperial Naval Obs.
247	<i>Astrophysical Journal</i> , 1901.	<i>Astrophysical Journal</i> , 1901.	Yerkes Obs., Univ. of Chicago.
248	Letter from Director, 1893.	Letter from Director, 1893.	Field Memorial Obs., Williams Coll.
249	Letter from Director, 1913.	Letter from Director, 1913.	Mr. Metcalf's Obs., since 1911.
250	<i>Monthly Notices, R. A. S.</i> , 1884.	<i>Monthly Notices, R. A. S.</i> , 1888.	Mr. John Tebbutt's Obs.
251	<i>Annales de l'Obs.</i> , 1907.	<i>Annales de l'Obs.</i> , 1907.	Obs. of the Jesuits near Shanghai.
252	Letter from Director, 1913.	<i>Astron. Nach.</i> , Nr. 3202, 1893.	Obs. of Swiss Polytechnic School.

^a Old observatory 0° 125' E.

^b Letter from Government Astronomer at Adelaide, 1913.

^c Since 1896.

^d Before 1896.

^e *Resultate des Internationalen Breitendienstes*, 1900-1908.

^f At Pino Torinese.

^g At Palazzo Madama.

^h *Astron. Arbeiten des K. K. Gradmessungs-Bureau*, 1896.

ⁱ Since 1879.

^j Before 1879.

^k Old observatory 9' N., 1° 2' E.

^l *Resultate des Internationalen Breitendienstes*, Band I, 1903.

^m *Washington Observations for 1892*, Appendix I, pp. XXI and

XXXII.

ⁿ And the new value of the longitude of Sydney.

THE COMPUTATION OF LUNAR DISTANCES.

The tables of lunar distances formerly given on pages XIII to XVIII, inclusive, for each month of the Greenwich Ephemeris, are omitted, as it has been decided by the authorities of the Navy Department that they are now of little practical use to navigators. However, in case it is desired to use this method, the angular distance between the Moon and any heavenly body may be calculated by solving the spherical triangle of which the known parts are the polar distances of the Moon and the other body and the difference of their right ascensions, or, in other words, the angle at the pole between their hour-circles. Then, the Greenwich mean time of the observation being approximately known, and the lunar distances for the star or other body calculated for the even hour before and after, the required lunar distance may be interpolated and the longitude derived by the methods given in books on navigation.

EXAMPLE 1.

Find the lunar distance of Aldebaran, May 9, 1916, at 6 P. M. Greenwich Mean Time.

Let α and δ = Right Ascension and Declination of the star	
" α' and δ' = " " " " " " Moon	
" D = Lunar Distance	
Also let $\tan M = \tan \delta' \sec (\alpha - \alpha')$	
Then $\cos D = \sin \delta' \cos (M - \delta) \operatorname{cosec} M$	
$\alpha = 4^{\text{h}} 31^{\text{m}} 6^{\text{s}}.7$	$M = 36^{\circ} 13' 35''$
$\alpha' = 8^{\text{h}} 56^{\text{m}} 37^{\text{s}}.1$	$\delta = +16^{\circ} 20' 35''$
$\alpha - \alpha' = 19^{\text{h}} 34^{\text{m}} 29^{\text{s}}.6$	$M - \delta = 19^{\circ} 53' 0''$
$\alpha - \alpha' = 293^{\circ} 37' 24''$	$\sin \delta' = 9.449758$
$\delta = + 16^{\circ} 21' 38''$	$\cos (M - \delta) = 9.973307$
$\tan \delta' = 9.467709$	$\operatorname{cosec} M = 0.228429$
$\sec (\alpha - \alpha') = 0.397157$	$\cos D = 9.651494$
$\tan M = 9.864866$	$D = 63^{\circ} 22' 12''$

EXAMPLE 2.

Find the lunar distance of Jupiter, March 6, 1916, at noon, Greenwich Mean Time. In this case the distance is smaller and the following method is more accurate:

Let α and δ = Right Ascension and Declination of the planet	
" α' and δ' = " " " " " " Moon	
" D = Lunar Distance	
Also let $\tan N = \tan \frac{1}{2} (\alpha - \alpha') \cos \frac{1}{2} (\delta + \delta') \operatorname{cosec} \frac{1}{2} (\delta - \delta')$	
Then $\sin \frac{1}{2} D = \sin \frac{1}{2} (\alpha - \alpha') \cos \frac{1}{2} (\delta + \delta') \operatorname{cosec} N$	
$\sin N$ and $\sin \frac{1}{2} (\alpha - \alpha')$ have the same algebraic sign.	
$\alpha = 0^{\text{h}} 21^{\text{m}} 4^{\text{s}}.8$	$\tan \frac{1}{2} (\alpha - \alpha') = 8.777268 n$
$\alpha' = 0^{\text{h}} 48^{\text{m}} 29^{\text{s}}.7$	$\cos \frac{1}{2} (\delta + \delta') = 9.997815$
$\alpha - \alpha' = 23^{\text{h}} 32^{\text{m}} 35^{\text{s}}.1$	$\operatorname{cosec} \frac{1}{2} (\delta - \delta') = 1.089983 n$
$\alpha - \alpha' = 353^{\circ} 8' 46''$	$\tan N = 9.865066$
$\delta = + 1^{\circ} 4' 49''$	$N = 36^{\circ} 14' 20''$
$\delta' = + 10^{\circ} 24' 19''$	
$\delta + \delta' = + 11^{\circ} 29' 8''$	$\sin \frac{1}{2} (\alpha - \alpha') = 8.776490$
$\delta - \delta' = - 9^{\circ} 19' 30''$	$\cos \frac{1}{2} (\delta + \delta') = 9.997815$
	$\operatorname{cosec} N = 0.228300$
$\frac{1}{2} (\alpha - \alpha') = 176^{\circ} 34' 23''$	$\sin \frac{1}{2} D = 9.002605$
$\frac{1}{2} (\delta + \delta') = + 5^{\circ} 44' 34''$	$\frac{1}{2} D = 5^{\circ} 46' 26''$
$\frac{1}{2} (\delta - \delta') = - 4^{\circ} 39' 45''$	$D = 11^{\circ} 32' 52''$

FOR FINDING THE LATITUDE BY AN OBSERVED ALTITUDE OF POLARIS, 1916.

Reduce the observed altitude of Polaris to the true altitude.

Reduce the recorded time of observation to the local sidereal time.

Take out the App. R. A. and App. Decl. of Polaris for the time of observation.

Subtract the App. R. A. from the local sidereal time of observation and the remainder is the hour-angle of Polaris.

With this hour-angle as the vertical argument, and the App. Decl. of Polaris as the horizontal argument, take out the correction from Table I and add it to or subtract it from the true altitude, according to its sign.

For other altitudes than 45°, corrections taken from the supplementary table at the bottom of Table I (Table Ia) may be applied when necessary for the degree of accuracy required.

Example.—1916, August 5, at 10^h 40^m 30^s P. M. local mean solar time, in longitude 59° west of Greenwich, suppose the true altitude of Polaris to be 33° 20' 0", required the latitude of the place.

Local astronomical mean time	h m s
Reduction from Table III for 10 ^h 40 ^m 30 ^s	10 40 30
Greenwich sidereal time of mean noon, August 5, page 10	+ 1 45
Reduction from Table III, for longitude (=3 ^h 56 ^m west, or plus)	8 54 49
	+ 0 39
Sum (having regard to signs) is equal to local sidereal time	h m s
R. A. of Polaris (page 281) for time of observation	19 37 43
	1 30 18
Remainder is equal to hour-angle of Polaris	h m s
Decl. of Polaris (page 281) for time of observation 88° 51' 25"	18 7 25
	. ' "
True altitude	+33 20 0
Correction from Table I	-1 32
Correction from Table Ia	-14
	. ' "
Latitude of the place	+33 18 14

Observations of Polaris for latitude should be made when practicable near the times of upper or of lower culminations (hour-angle 0^h or 12^h). However, at sea, if made near elongation (hour-angle 6^h or 18^h), the hour-angle, and hence the local time, should be known within one minute.

Decl. H. A.	88° 51' 20"	88° 51' 30"	88° 51' 40"	88° 51' 50"	88° 52' 0"	88° 52' 10"	Decl. H. A.
h m	' "	' "	' "	' "	' "	' "	h m
0 0	-68 40 0	-68 30 0	-68 20 0	-68 10 0	-68 0 0	-67 50 0	24 0
0 3	68 40 1	68 30 1	68 20 1	68 10 1	68 0 1	67 50 1	23 57
0 6	68 39 2	68 29 2	68 19 2	68 9 2	67 59 2	67 49 2	54
0 9	68 37 3	68 27 3	68 17 3	68 7 3	67 57 3	67 47 3	51
0 12	68 34 3	68 24 3	68 14 3	68 4 3	67 54 3	67 44 3	48
0 15	-68 31 4	-68 21 4	-68 11 4	-68 1 4	-67 51 4	-67 41 4	23 45
0 18	68 27 5	68 17 5	68 7 5	67 57 5	67 47 5	67 37 5	42
0 21	68 22 5	68 12 5	68 2 5	67 52 5	67 43 5	67 33 5	39
0 24	68 17 5	68 7 5	67 57 5	67 47 5	67 37 5	67 27 5	36
0 27	68 11 6	68 1 6	67 51 6	67 41 6	67 31 6	67 21 6	33
0 30	-68 4 8	-67 54 7	-67 44 7	-67 34 7	-67 24 7	-67 14 7	23 30
0 33	67 56 8	67 47 8	67 37 8	67 27 8	67 17 8	67 7 8	27
0 36	67 48 8	67 39 8	67 29 8	67 19 8	67 9 8	66 59 8	24
0 39	67 39 9	67 30 9	67 20 9	67 10 9	67 0 9	66 50 9	21
0 42	67 30 9	67 20 10	67 10 10	67 0 10	66 50 10	66 41 10	18
0 45	-67 19 11	-67 10 11	-67 0 11	-66 50 11	-66 40 11	-66 30 11	23 15
0 48	67 8 12	66 59 12	66 49 12	66 39 12	66 29 12	66 19 12	12
0 51	66 56 12	66 47 12	66 37 12	66 27 12	66 17 12	66 8 12	9
0 54	66 44 13	66 34 13	66 24 13	66 15 13	66 5 13	65 55 13	6
0 57	66 31 14	66 21 14	66 11 13	66 2 14	65 52 14	65 42 13	3
1 0	-66 17 15	-66 7 14	-65 58 15	-65 48 14	-65 38 14	-65 29 15	23 0
1 3	66 2 15	65 53 15	65 43 15	65 34 15	65 24 15	65 14 15	22 57
1 6	65 47 15	65 38 15	65 28 15	65 18 15	65 9 15	64 59 15	54
1 9	65 31 16	65 22 16	65 12 16	65 2 16	64 53 16	64 43 16	51
1 12	-65 14 17	-65 5 17	-64 56 16	-64 46 16	-64 36 17	-64 27 16	22 48

FOR FINDING THE LATITUDE BY AN OBSERVED ALTITUDE OF POLARIS, 1914.

Decl.		88° 51' 20"	88° 51' 30"	88° 51' 40"	88° 51' 50"	88° 52' 0"	88° 52' 10"	Decl.	
H. A.								H. A.	
h	m	' "	' "	' "	' "	' "	' "	h	m
1	12	-65 14	-65 5	-64 56	-64 46	-64 36	-64 27	22	48
	15	64 57	64 48	64 38	64 29	64 19	64 10		45
	18	64 39	64 30	64 20	64 11	64 2	63 52		42
	21	64 20	64 11	64 2	63 52	63 43	63 34		39
	24	64 1	63 52	63 42	63 33	63 24	63 15		36
1	27	-63 41	-63 32	-63 22	-63 13	-63 4	-62 55	22	33
	30	63 20	63 11	63 2	62 53	62 44	62 34		30
	33	62 59	62 50	62 41	62 32	62 23	62 13		27
	36	62 37	62 28	62 19	62 10	62 1	61 52		24
	39	62 14	62 5	61 56	61 47	61 38	61 29		21
1	42	-61 51	-61 42	-61 33	-61 24	-61 15	-61 6	22	18
	45	61 27	61 18	61 9	61 0	60 51	60 42		15
	48	61 2	60 54	60 45	60 35	60 27	60 18		12
	51	60 37	60 29	60 20	60 10	60 2	59 53		9
	54	60 11	60 3	59 54	59 45	59 37	59 28		6
1	57	-59 45	-59 36	-59 28	-59 19	-59 10	-59 2	22	3
2	0	59 18	59 9	59 1	58 52	58 43	58 35	22	0
	3	58 50	58 41	58 33	58 24	58 16	58 7	21	57
	6	58 22	58 13	58 5	57 56	57 48	57 39		54
	9	57 53	57 44	57 36	57 28	57 19	57 11		51
2	12	-57 23	-57 15	-57 7	-56 58	-56 50	-56 42	21	48
	15	56 53	56 45	56 37	56 28	56 20	56 12		45
	18	56 22	56 14	56 6	55 58	55 50	55 41		42
	21	55 51	55 43	55 35	55 27	55 19	55 10		39
	24	55 19	55 11	55 3	54 55	54 47	54 39		36
2	27	-54 46	-54 39	-54 31	-54 23	-54 15	-54 7	21	33
	30	54 13	54 6	53 58	53 50	53 42	53 34		30
	33	53 40	53 32	53 24	53 16	53 9	53 1		27
	36	53 6	52 58	52 50	52 42	52 35	52 27		24
	39	52 31	52 23	52 16	52 8	52 1	51 53		21
2	42	-51 56	-51 48	-51 41	-51 33	-51 26	-51 18	21	18
	45	51 20	51 12	51 5	50 58	50 50	50 43		15
	48	50 43	50 36	50 29	50 22	50 14	50 7		12
	51	50 6	49 59	49 52	49 45	49 38	49 30		9
	54	49 29	49 22	49 15	49 8	49 1	48 53		6
2	57	-48 51	-48 44	-48 37	-48 30	-48 23	-48 16	21	3
3	0	48 13	48 6	47 59	47 52	47 45	47 38	21	0
	3	47 34	47 27	47 20	47 13	47 6	47 0	20	57
	6	46 55	46 48	46 41	46 34	46 27	46 21		54
	9	46 15	46 8	46 1	45 55	45 48	45 41		51
3	12	-45 34	-45 28	-45 21	-45 15	-45 8	-45 1	20	48
	15	44 53	44 47	44 40	44 34	44 28	44 21		45
	18	44 12	44 6	43 59	43 53	43 47	43 40		42
	21	43 30	43 24	43 18	43 12	43 5	42 59		39
	24	42 48	42 42	42 36	42 30	42 23	42 17		36
3	27	-42 5	-41 59	-41 53	-41 47	-41 41	-41 35	20	33
	30	41 22	41 16	41 10	41 4	40 59	40 53		30
	33	40 39	40 33	40 27	40 21	40 16	40 10		27
	36	39 55	39 49	39 44	39 38	39 32	39 26		24
	39	39 11	39 5	39 0	38 54	38 48	38 42		21
3	42	-38 26	-38 20	-38 15	-38 9	-38 4	-37 58	20	18
	45	37 41	37 35	37 30	37 24	37 19	37 14		15
	48	36 55	36 50	36 45	36 39	36 34	36 29		12
	51	36 9	36 4	35 59	35 54	35 48	35 43		9
	54	35 23	35 18	35 13	35 8	35 3	34 58		6
3	57	-34 36	-34 31	-34 27	-34 22	-34 17	-34 12	20	3
4	0	33 49	33 44	33 40	33 35	33 30	33 25	20	0
	3	33 2	32 57	32 53	32 48	32 43	32 38		19
	6	32 14	32 10	32 5	32 0	31 56	31 51		54
4	9	-31 26	-31 22	-31 17	-31 13	-31 8	-31 4		19

TABLE I.

FOR FINDING THE LATITUDE BY AN OBSERVED ALTITUDE OF POLARIS, 1916.

Decl.		88° 51' 20''	88° 51' 30''	88° 51' 40''	88° 51' 50''	88° 52' 0''	88° 52' 10''	Decl.	
H. A.								H. A.	
h	m	' "	' "	' "	' "	' "	' "	' "	h m
4	9	-31 26 48	-31 22 48	-31 17 48	-31 13 48	-31 8 48	-31 4 48	-31 4 48	19 51
	12	30 38 48	30 34 48	30 29 48	30 25 48	30 20 48	30 16 48	30 16 48	48
	15	29 49 49	29 45 49	29 41 48	29 36 49	29 32 48	29 28 48	29 28 48	45
	18	29 0 49	28 56 49	28 52 49	28 47 48	28 43 48	28 40 49	28 40 49	42
	21	28 11 49	28 7 49	28 3 49	27 59 49	27 55 49	27 51 49	27 51 49	39
4	24	-27 22 50	-27 18 50	-27 14 50	-27 10 50	-27 6 49	-27 2 49	-27 2 49	19 36
	27	26 32 50	26 28 50	26 24 50	26 20 50	26 17 49	26 13 49	26 13 49	33
	30	25 42 51	25 38 50	25 34 50	25 31 49	25 27 50	25 24 49	25 24 49	30
	33	24 51 50	24 48 50	24 44 50	24 41 50	24 37 50	24 34 50	24 34 50	27
	36	24 1 51	23 57 50	23 54 51	23 51 51	23 47 50	23 44 50	23 44 50	24
4	39	-23 10 51	-23 7 51	-23 3 51	-23 0 51	-22 57 51	-22 54 51	-22 54 51	19 21
	42	22 19 51	22 16 51	22 12 51	22 9 51	22 6 51	22 3 51	22 3 51	18
	45	21 27 52	21 25 52	21 21 51	21 18 51	21 15 51	21 13 51	21 13 51	15
	48	20 36 52	20 33 51	20 30 51	20 27 51	20 24 51	20 22 51	20 22 51	12
	51	19 44 52	19 42 52	19 39 52	19 36 52	19 33 51	19 31 52	19 31 52	9
4	54	-18 52 52	-18 50 52	-18 47 52	-18 44 51	-18 42 52	-18 39 51	-18 39 51	19 6
4	57	18 0 52	17 58 52	17 55 52	17 53 52	17 50 52	17 48 52	17 48 52	3
5	0	17 8 52	17 6 53	17 3 52	17 1 52	16 58 51	16 56 52	16 56 52	19 0
	3	16 16 53	16 13 52	16 11 52	16 9 52	16 7 52	16 4 52	16 4 52	18 57
	6	15 23 53	15 21 53	15 19 52	15 17 53	15 15 53	15 12 52	15 12 52	54
5	9	-14 30 53	-14 28 52	-14 27 53	-14 24 52	-14 22 52	-14 20 52	-14 20 52	18 51
	12	13 37 53	13 36 53	13 34 53	13 32 53	13 30 53	13 28 52	13 28 52	48
	15	12 44 53	12 43 53	12 41 53	12 39 53	12 37 52	12 36 53	12 36 53	45
	18	11 51 53	11 50 53	11 48 53	11 46 53	11 45 52	11 43 53	11 43 53	42
	21	10 58 54	10 56 53	10 55 53	10 53 53	10 52 53	10 50 52	10 50 52	39
5	24	-10 4 53	-10 3 53	-10 2 53	-10 0 53	-9 59 53	-9 58 53	-9 58 53	18 36
	27	9 11 54	9 10 54	9 9 53	9 7 53	9 6 53	9 5 53	9 5 53	33
	30	8 17 53	8 16 53	8 16 54	8 14 53	8 13 53	8 12 53	8 12 53	30
	33	7 24 54	7 23 53	7 22 54	7 21 53	7 20 53	7 19 53	7 19 53	27
	36	6 30 54	6 29 54	6 28 54	6 28 53	6 27 53	6 26 53	6 26 53	24
5	39	-5 36 54	-5 35 53	-5 35 54	-5 34 53	-5 33 53	-5 33 53	-5 33 53	18 21
	42	4 42 54	4 42 54	4 41 53	4 41 53	4 40 53	4 40 54	4 40 54	18
	45	3 48 53	3 48 54	3 48 54	3 48 53	3 47 54	3 46 54	3 46 54	15
	48	2 55 54	2 54 53	2 54 54	2 54 54	2 53 53	2 53 53	2 53 53	12
	51	2 1 54	2 1 54	2 0 53	2 0 54	2 0 54	2 0 54	2 0 54	9
5	54	-1 7 54	-1 7 54	-1 7 54	-1 6 53	-1 6 53	-1 6 53	-1 6 53	18 6
5	57	-0 13 54	-0 13 54	-0 13 54	-0 13 54	-0 13 53	-0 13 53	-0 13 53	3
6	0	+0 41 54	+0 41 54	+0 41 53	+0 41 54	+0 40 54	+0 40 53	+0 40 53	18 0
	3	1 35 54	1 35 53	1 34 54	1 34 53	1 34 54	1 33 53	1 33 53	17 57
	6	2 29 54	2 28 54	2 28 54	2 28 54	2 27 53	2 27 53	2 27 53	54
6	9	+3 23 54	+3 22 54	+3 22 53	+3 21 54	+3 20 54	+3 20 53	+3 20 53	17 51
	12	4 17 53	4 16 53	4 15 54	4 15 53	4 14 53	4 13 53	4 13 53	48
	15	5 10 54	5 9 53	5 9 54	5 8 53	5 7 53	5 6 53	5 6 53	45
	18	6 4 54	6 3 54	6 2 53	6 1 53	6 0 53	5 59 53	5 59 53	42
	21	6 58 53	6 56 54	6 56 53	6 54 54	6 53 53	6 52 53	6 52 53	39
6	24	+7 51 54	+7 50 53	+7 49 53	+7 48 53	+7 46 53	+7 45 53	+7 45 53	17 36
	27	8 45 53	8 43 54	8 42 53	8 41 53	8 39 53	8 38 53	8 38 53	33
	30	9 38 53	9 37 53	9 35 53	9 34 53	9 32 53	9 31 53	9 31 53	30
	33	10 32 53	10 30 53	10 28 53	10 27 53	10 25 53	10 23 52	10 23 52	27
	36	11 25 53	11 23 53	11 21 53	11 19 53	11 18 52	11 16 52	11 16 52	24
6	39	+12 18 52	+12 16 52	+12 14 53	+12 12 53	+12 10 53	+12 8 53	+12 8 53	17 21
	42	13 10 53	13 8 53	13 7 53	13 5 53	13 3 53	13 1 53	13 1 53	18
	45	14 3 53	14 1 53	13 59 53	13 57 52	13 55 52	13 53 52	13 53 52	15
	48	14 56 52	14 54 52	14 52 52	14 49 52	14 47 52	14 45 52	14 45 52	12
	51	15 48 53	15 46 52	15 44 52	15 41 52	15 39 52	15 37 51	15 37 51	9
6	54	+16 41 52	+16 38 52	+16 36 52	+16 33 52	+16 31 51	+16 28 52	+16 28 52	17 6
	57	17 33 52	17 30 52	17 28 51	17 25 51	17 22 51	17 20 51	17 20 51	3
7	0	18 25 51	18 22 52	18 19 52	18 16 52	18 14 51	18 11 51	18 11 51	17 0
	3	19 16 52	19 14 51	19 11 51	19 8 51	19 5 51	19 2 51	19 2 51	16 57
	6	+20 8 52	+20 5 51	+20 2 51	+19 59 51	+19 56 51	+19 53 51	+19 53 51	16 54

FOR FINDING THE LATITUDE BY AN OBSERVED ALTITUDE OF POLARIS, 1916.

Decl.		88° 51' 20''	88° 51' 30''	88° 51' 40''	88° 51' 50''	88° 52' 0''	88° 52' 10''	Decl.	
H. A.								H. A.	
h	m	' "	' "	' "	' "	' "	' "	h	m
7	6	+20 8	+20 5	+20 2	+19 59	+19 56	+19 53	16	54
	9	20 59 51	20 56 51	20 53 51	20 50 51	20 47 51	20 44 51		51
	12	21 50 51	21 47 51	21 44 51	21 41 50	21 37 51	21 34 50		48
	15	22 41 51	22 38 51	22 35 51	22 31 50	22 28 51	22 24 50		45
	18	23 32 51	23 28 51	23 25 50	23 21 50	23 18 50	23 14 50		42
7	21	+24 22 50	+24 19 50	+24 15 50	+24 11 50	+24 8 49	+24 4 50	16	39
	24	25 12 50	25 9 49	25 5 50	25 1 50	24 57 50	24 54 49		36
	27	26 2 50	25 58 49	25 55 49	25 51 49	25 47 49	25 43 49		33
	30	26 52 49	26 48 49	26 44 49	26 40 49	26 36 49	26 32 49		30
	33	27 41 49	27 37 49	27 33 49	27 30 48	27 25 48	27 21 48		27
7	36	+28 30 49	+28 26 48	+28 22 48	+28 18 48	+28 13 49	+28 9 48	16	24
	39	29 19 48	29 14 48	29 10 48	29 6 48	29 2 48	28 57 48		21
	42	30 7 48	30 3 49	29 58 48	29 54 48	29 50 48	29 45 48		18
	45	30 55 48	30 51 48	30 46 48	30 42 47	30 37 47	30 33 47		15
	48	31 43 48	31 38 48	31 34 47	31 29 47	31 24 47	31 20 47		12
7	51	+32 31 47	+32 26 47	+32 21 47	+32 16 47	+32 11 47	+32 7 46	16	9
	54	33 18 47	33 13 46	33 8 47	33 3 47	32 58 46	32 53 46		6
	7	34 5 46	33 59 47	33 55 46	33 50 46	33 44 46	33 39 46		3
	8	34 51 46	34 46 46	34 41 46	34 36 45	34 30 46	34 25 46	16	0
	3	35 37 46	35 32 45	35 27 45	35 21 46	35 16 45	35 11 45		15 57
8	6	+36 23 45	+36 17 45	+36 12 45	+36 7 45	+36 1 45	+35 56 45	15	54
	9	37 8 45	37 2 45	36 57 45	36 52 44	36 46 45	36 41 44		51
	12	37 53 44	37 47 45	37 42 44	37 36 44	37 31 44	37 25 44		48
	15	38 37 45	38 32 44	38 26 44	38 20 44	38 15 43	38 9 44		45
	18	39 22 43	39 16 43	39 10 44	39 4 44	38 58 44	38 53 43		42
8	21	+40 5 44	+39 59 44	+39 54 43	+39 48 43	+39 42 43	+39 36 43	15	39
	24	40 49 44	40 43 44	40 37 43	40 31 42	40 25 42	40 19 42		36
	27	41 32 42	41 26 42	41 20 42	41 13 42	41 7 42	41 1 42		33
	30	42 14 42	42 8 42	42 2 42	41 55 42	41 49 42	41 43 42		30
	33	42 56 42	42 50 41	42 44 41	42 37 42	42 31 41	42 25 41		27
8	36	+43 38 41	+43 31 41	+43 25 41	+43 19 41	+43 12 41	+43 6 41	15	24
	39	44 19 41	44 12 41	44 6 40	44 0 40	43 53 40	43 47 40		21
	42	45 0 40	44 53 40	44 46 40	44 40 40	44 33 40	44 27 40		18
	45	45 40 40	45 33 40	45 26 40	45 20 40	45 13 39	45 7 39		15
	48	46 20 39	46 13 39	46 6 39	45 59 39	45 52 39	45 46 39		12
8	51	+46 59 39	+46 52 39	+46 45 39	+46 38 39	+46 31 39	+46 25 38	15	9
	54	47 38 38	47 31 38	47 24 38	47 17 38	47 10 38	47 3 38		6
	8	48 16 38	48 9 38	48 2 38	47 55 38	47 48 37	47 41 37		3
	9	48 54 37	48 47 37	48 40 37	48 33 37	48 25 37	48 18 37	15	0
	3	49 31 37	49 24 37	49 17 37	49 10 36	49 2 37	48 55 36		14 57
9	6	+50 8 36	+50 1 36	+49 54 36	+49 46 36	+49 39 36	+49 31 36	14	54
	9	50 44 36	50 37 36	50 30 35	50 22 36	50 15 35	50 7 36		51
	12	51 20 35	51 13 35	51 5 35	50 58 35	50 50 35	50 43 35		48
	15	51 55 35	51 48 35	51 40 35	51 33 35	51 25 35	51 18 35		45
	18	52 30 34	52 23 34	52 15 34	52 7 34	52 0 34	51 52 34		42
9	21	+53 4 34	+52 57 33	+52 49 34	+52 41 34	+52 34 33	+52 26 33	14	39
	24	53 38 33	53 30 33	53 23 33	53 15 33	53 7 33	52 59 33		36
	27	54 11 33	54 3 33	53 56 32	53 48 32	53 40 32	53 32 32		33
	30	54 44 32	54 36 32	54 28 32	54 20 32	54 12 32	54 4 32		30
	33	55 16 31	55 6 31	55 0 31	54 52 31	54 44 31	54 36 31		27
9	36	+55 47 31	+55 39 31	+55 31 31	+55 23 31	+55 15 30	+55 7 30	14	24
	39	56 18 31	56 10 30	56 2 30	55 54 30	55 45 30	55 37 30		21
	42	56 49 30	56 40 30	56 32 30	56 24 29	56 15 30	56 7 30		18
	45	57 19 29	57 10 30	57 2 30	56 53 29	56 45 30	56 37 29		15
	48	57 48 28	57 39 29	57 31 28	57 22 29	57 14 28	57 6 28		12
9	51	+58 16 28	+58 8 28	+57 59 28	+57 51 28	+57 42 28	+57 34 27	14	9
	54	58 44 28	58 36 27	58 27 27	58 19 27	58 10 27	58 1 27		6
	9	59 12 27	59 3 27	58 54 27	58 46 26	58 37 27	58 28 27		3
	10	59 39 26	59 30 26	59 21 26	59 12 26	59 4 26	58 55 26		14 0
	3	+60 5 26	+59 56 26	+59 47 26	+59 38 26	+59 30 26	+59 21 26		13 57

FOR FINDING THE LATITUDE BY AN OBSERVED ALTITUDE OF POLARIS, 1916.

Decl.		88° 51' 20''	88° 51' 30''	88° 51' 40''	88° 51' 50''	88° 52' 0''	88° 52' 10''	Decl.	
H. A.								H. A.	
h	m	' "	' "	' "	' "	' "	' "	h	m
10	3	+60 5 25	+59 56 25	+59 47 26	+59 38 26	+59 30 25	+59 21 25	13	57
	6	60 30 25	60 21 25	60 13 24	60 4 24	59 55 25	59 46 25		54
	9	60 55 24	60 46 24	60 37 25	60 28 25	60 20 24	60 11 24		51
	12	61 19 24	61 10 24	61 2 25	60 53 23	60 44 23	60 35 23		48
	15	61 43 23	61 34 23	61 25 23	61 16 23	61 7 23	60 58 23		45
10	18	+62 6 23	+61 57 22	+61 48 23	+61 39 23	+61 30 22	+61 21 22	13	42
	21	62 29 22	62 19 22	62 11 21	62 2 21	61 52 22	61 43 22		39
	24	62 51 21	62 41 21	62 32 21	62 23 21	62 14 22	62 5 22		36
	27	63 12 21	63 2 21	62 53 21	62 44 21	62 35 20	62 26 20		33
	30	63 33 20	63 23 20	63 14 20	63 5 19	62 55 20	62 46 20		30
10	33	+63 53 19	+63 43 19	+63 34 19	+63 24 20	+63 15 19	+63 6 19	13	27
	36	64 12 18	64 2 19	63 53 19	63 44 18	63 34 19	63 25 18		24
	39	64 30 18	64 21 18	64 12 17	64 2 18	63 53 18	63 43 18		21
	42	64 48 18	64 39 17	64 29 18	64 20 17	64 11 17	64 1 17		18
	45	65 5 17	64 56 17	64 47 16	64 37 17	64 28 16	64 18 17		15
10	48	+65 22 16	+65 13 16	+65 3 16	+64 54 16	+64 44 16	+64 35 16	13	12
	51	65 38 15	65 29 15	65 19 15	65 10 15	65 0 15	64 51 15		9
	54	65 53 15	65 44 15	65 34 15	65 25 15	65 15 15	65 6 14		6
10	57	66 8 14	65 59 14	65 49 14	65 40 14	65 30 14	65 20 14		3
	0	66 22 13	66 13 13	66 3 13	65 54 13	65 44 13	65 34 13	13	0
11	3	+66 35 13	+66 26 13	+66 16 13	+66 7 12	+65 57 12	+65 47 13	12	57
	6	66 48 12	66 39 12	66 29 12	66 19 12	66 9 12	66 0 12		54
	9	67 0 12	66 51 11	66 41 11	66 31 11	66 21 12	66 12 11		51
	12	67 12 11	67 2 11	66 52 11	66 42 11	66 33 10	66 23 10		48
	15	67 23 10	67 13 10	67 3 10	66 53 10	66 43 10	66 33 10		45
11	18	+67 33 9	+67 23 9	+67 13 9	+67 3 9	+66 53 9	+66 43 9	12	42
	21	67 42 8	67 32 8	67 22 8	67 12 8	67 2 9	66 52 9		39
	24	67 50 8	67 40 8	67 30 8	67 20 8	67 11 8	67 1 8		36
	27	67 58 8	67 48 8	67 38 8	67 28 8	67 19 8	67 9 8		33
	30	68 5 7	67 55 7	67 46 6	67 36 6	67 26 6	67 16 6		30
11	33	+68 12 6	+68 2 6	+67 52 6	+67 42 6	+67 32 6	+67 22 6	12	27
	36	68 18 5	68 8 5	67 58 5	67 48 5	67 38 5	67 28 5		24
	39	68 23 5	68 13 5	68 3 5	67 53 5	67 43 5	67 33 5		21
	42	68 28 4	68 17 4	68 8 5	67 58 5	67 48 5	67 38 5		18
	45	68 32 3	68 21 3	68 11 3	68 1 3	67 51 3	67 41 3		15
11	48	+68 35 2	+68 24 3	+68 14 3	+68 4 3	+67 54 3	+67 44 3	12	12
	51	68 37 2	68 27 2	68 17 2	68 7 2	67 57 2	67 47 2		9
	54	68 39 1	68 29 1	68 19 1	68 9 1	67 59 1	67 49 1		6
	57	68 40 0	68 30 0	68 20 0	68 10 0	68 0 0	67 50 0		3
	0	+68 40 0	+68 30 0	+68 20 0	+68 10 0	+68 0 0	+67 50 0	12	0

TABLE Ia.

Table I has been computed for an altitude of 45°. For other altitudes, corrections taken from the following table may be applied when the desired degree of accuracy requires it.

Altitude.		10°	20°	30°	40°	50°	60°	70°	Altitude.	
H. A.									H. A.	
h	h	"	"	"	"	"	"	"	h	h
0	12	0	0	0	0	0	0	0	12	24
1	11	- 2	- 2	- 1	0	0	+ 2	+ 5	13	23
2	10	8	7	4	-2	+2	8	18	14	22
3	9	17	13	9	3	4	15	36	15	21
4	8	25	20	13	5	6	23	54	16	20
5	7	32	24	16	6	7	28	67	17	19
6	6	-34	-26	-17	-7	+8	+30	+72	18	18

SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

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	s	s
0	0	0.000	0	9.830	0	19.659	0	29.489	0	39.318	0	49.148	0	58.977	1	8.807	0	0.000
1	0	0.164	0	9.993	0	19.823	0	29.653	0	39.482	0	49.312	0	59.141	1	8.971	1	0.003
2	0	0.328	0	10.157	0	19.987	0	29.816	0	39.646	0	49.475	0	59.305	1	9.135	2	0.005
3	0	0.491	0	10.321	0	20.151	0	29.980	0	39.810	0	49.639	0	59.469	1	9.298	3	0.008
4	0	0.655	0	10.485	0	20.314	0	30.144	0	39.974	0	49.803	0	59.633	1	9.462	4	0.011
5	0	0.819	0	10.649	0	20.478	0	30.308	0	40.137	0	49.967	0	59.796	1	9.626	5	0.014
6	0	0.983	0	10.813	0	20.642	0	30.472	0	40.301	0	50.131	0	59.960	1	9.790	6	0.016
7	0	1.147	0	10.976	0	20.806	0	30.635	0	40.465	0	50.295	1	0.124	1	9.954	7	0.019
8	0	1.311	0	11.140	0	20.970	0	30.799	0	40.629	0	50.458	1	0.288	1	10.118	8	0.022
9	0	1.474	0	11.304	0	21.134	0	30.963	0	40.793	0	50.622	1	0.452	1	10.281	9	0.025
10	0	1.638	0	11.468	0	21.297	0	31.127	0	40.956	0	50.786	1	0.616	1	10.445	10	0.027
11	0	1.802	0	11.632	0	21.461	0	31.291	0	41.120	0	50.950	1	0.779	1	10.609	11	0.030
12	0	1.966	0	11.795	0	21.625	0	31.455	0	41.284	0	51.114	1	0.943	1	10.773	12	0.033
13	0	2.130	0	11.959	0	21.789	0	31.618	0	41.448	0	51.278	1	1.107	1	10.937	13	0.035
14	0	2.294	0	12.123	0	21.953	0	31.782	0	41.612	0	51.441	1	1.271	1	11.100	14	0.038
15	0	2.457	0	12.287	0	22.117	0	31.946	0	41.776	0	51.605	1	1.435	1	11.264	15	0.041
16	0	2.621	0	12.451	0	22.280	0	32.110	0	41.939	0	51.769	1	1.599	1	11.428	16	0.044
17	0	2.785	0	12.615	0	22.444	0	32.274	0	42.103	0	51.933	1	1.762	1	11.592	17	0.046
18	0	2.949	0	12.778	0	22.608	0	32.438	0	42.267	0	52.097	1	1.926	1	11.756	18	0.049
19	0	3.113	0	12.942	0	22.772	0	32.601	0	42.431	0	52.260	1	2.090	1	11.920	19	0.052
20	0	3.277	0	13.106	0	22.936	0	32.765	0	42.595	0	52.424	1	2.254	1	12.083	20	0.055
21	0	3.440	0	13.270	0	23.099	0	32.929	0	42.759	0	52.588	1	2.418	1	12.247	21	0.057
22	0	3.604	0	13.434	0	23.263	0	33.093	0	42.922	0	52.752	1	2.582	1	12.411	22	0.060
23	0	3.768	0	13.598	0	23.427	0	33.257	0	43.086	0	52.916	1	2.745	1	12.575	23	0.063
24	0	3.932	0	13.761	0	23.591	0	33.420	0	43.250	0	53.080	1	2.909	1	12.739	24	0.066
25	0	4.096	0	13.925	0	23.755	0	33.584	0	43.414	0	53.243	1	3.073	1	12.903	25	0.068
26	0	4.259	0	14.089	0	23.919	0	33.748	0	43.578	0	53.407	1	3.237	1	13.066	26	0.071
27	0	4.423	0	14.253	0	24.082	0	33.912	0	43.742	0	53.571	1	3.401	1	13.230	27	0.074
28	0	4.587	0	14.417	0	24.246	0	34.076	0	43.905	0	53.735	1	3.564	1	13.394	28	0.076
29	0	4.751	0	14.581	0	24.410	0	34.240	0	44.069	0	53.899	1	3.728	1	13.558	29	0.079
30	0	4.915	0	14.744	0	24.574	0	34.403	0	44.233	0	54.063	1	3.892	1	13.722	30	0.082
31	0	5.079	0	14.908	0	24.738	0	34.567	0	44.397	0	54.226	1	4.056	1	13.886	31	0.085
32	0	5.242	0	15.072	0	24.902	0	34.731	0	44.561	0	54.390	1	4.220	1	14.049	32	0.087
33	0	5.406	0	15.236	0	25.065	0	34.895	0	44.724	0	54.554	1	4.384	1	14.213	33	0.090
34	0	5.570	0	15.400	0	25.229	0	35.059	0	44.888	0	54.718	1	4.547	1	14.377	34	0.093
35	0	5.734	0	15.563	0	25.393	0	35.223	0	45.052	0	54.882	1	4.711	1	14.541	35	0.096
36	0	5.898	0	15.727	0	25.557	0	35.386	0	45.216	0	55.046	1	4.875	1	14.705	36	0.098
37	0	6.062	0	15.891	0	25.721	0	35.550	0	45.380	0	55.209	1	5.039	1	14.868	37	0.101
38	0	6.225	0	16.055	0	25.885	0	35.714	0	45.544	0	55.373	1	5.203	1	15.032	38	0.104
39	0	6.389	0	16.219	0	26.048	0	35.878	0	45.707	0	55.537	1	5.367	1	15.196	39	0.106
40	0	6.553	0	16.383	0	26.212	0	36.042	0	45.871	0	55.701	1	5.530	1	15.360	40	0.109
41	0	6.717	0	16.546	0	26.376	0	36.206	0	46.035	0	55.865	1	5.694	1	15.524	41	0.112
42	0	6.881	0	16.710	0	26.540	0	36.369	0	46.199	0	56.028	1	5.858	1	15.688	42	0.115
43	0	7.045	0	16.874	0	26.704	0	36.533	0	46.363	0	56.192	1	6.022	1	15.851	43	0.117
44	0	7.208	0	17.038	0	26.867	0	36.697	0	46.527	0	56.356	1	6.186	1	16.015	44	0.120
45	0	7.372	0	17.202	0	27.031	0	36.861	0	46.690	0	56.520	1	6.350	1	16.179	45	0.123
46	0	7.536	0	17.366	0	27.195	0	37.025	0	46.854	0	56.684	1	6.513	1	16.343	46	0.126
47	0	7.700	0	17.529	0	27.359	0	37.188	0	47.018	0	56.848	1	6.677	1	16.507	47	0.128
48	0	7.864	0	17.693	0	27.523	0	37.352	0	47.182	0	57.011	1	6.841	1	16.671	48	0.131
49	0	8.027	0	17.857	0	27.687	0	37.516	0	47.346	0	57.175	1	7.005	1	16.834	49	0.134
50	0	8.191	0	18.021	0	27.850	0	37.680	0	47.510	0	57.339	1	7.169	1	16.998	50	0.137
51	0	8.355	0	18.185	0	28.014	0	37.844	0	47.673	0	57.503	1	7.332	1	17.162	51	0.139
52	0	8.519	0	18.349	0	28.178	0	38.008	0	47.837	0	57.667	1	7.496	1	17.326	52	0.142
53	0	8.683	0	18.512	0	28.342	0	38.171	0	48.001	0	57.831	1	7.660	1	17.490	53	0.145
54	0	8.847	0	18.676	0	28.506	0	38.335	0	48.165	0	57.994	1	7.824	1	17.654	54	0.147
55	0	9.010	0	18.840	0	28.670	0	38.499	0	48.329	0	58.158	1	7.988	1	17.817	55	0.150
56	0	9.174	0	19.004	0	28.833	0	38.663	0	48.492	0	58.322	1	8.152	1	17.981	56	0.153
57	0	9.338	0	19.168	0	28.997	0	38.827	0	48.656	0	58.486	1	8.315	1	18.145	57	0.156
58	0	9.502	0	19.331	0	29.161	0	38.991	0	48.820	0	58.650	1	8.479	1	18.309	58	0.158
59	0	9.666	0	19.495	0	29.325	0	39.154	0	48.984	0	58.814	1	8.643	1	18.473	59	0.161

SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side- real.	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	s	s
0	1	18.636	1	28.466	1	38.296	1	48.125	1	57.955	2	7.784	2	17.614	2	27.443	0	0.000
1	1	18.800	1	28.630	1	38.459	1	48.289	1	58.119	2	7.948	2	17.778	2	27.607	1	0.003
2	1	18.964	1	28.794	1	38.623	1	48.453	1	58.282	2	8.112	2	17.941	2	27.771	2	0.005
3	1	19.128	1	28.958	1	38.787	1	48.617	1	58.446	2	8.276	2	18.105	2	27.935	3	0.008
4	1	19.292	1	29.121	1	38.951	1	48.780	1	58.610	2	8.440	2	18.269	2	28.099	4	0.011
5	1	19.456	1	29.285	1	39.115	1	48.944	1	58.774	2	8.603	2	18.433	2	28.263	5	0.014
6	1	19.619	1	29.449	1	39.279	1	49.108	1	58.938	2	8.767	2	18.597	2	28.426	6	0.016
7	1	19.783	1	29.613	1	39.442	1	49.272	1	59.101	2	8.931	2	18.761	2	28.590	7	0.019
8	1	19.947	1	29.777	1	39.606	1	49.436	1	59.265	2	9.095	2	18.924	2	28.754	8	0.022
9	1	20.111	1	29.940	1	39.770	1	49.600	1	59.429	2	9.259	2	19.088	2	28.918	9	0.025
10	1	20.275	1	30.104	1	39.934	1	49.763	1	59.593	2	9.423	2	19.252	2	29.082	10	0.027
11	1	20.439	1	30.268	1	40.098	1	49.927	1	59.757	2	9.586	2	19.416	2	29.245	11	0.030
12	1	20.602	1	30.432	1	40.261	1	50.091	1	59.921	2	9.750	2	19.580	2	29.409	12	0.033
13	1	20.766	1	30.596	1	40.425	1	50.255	2	0.084	2	9.914	2	19.744	2	29.573	13	0.035
14	1	20.930	1	30.760	1	40.589	1	50.419	2	0.248	2	10.078	2	19.907	2	29.737	14	0.038
15	1	21.094	1	30.923	1	40.753	1	50.583	2	0.412	2	10.242	2	20.071	2	29.901	15	0.041
16	1	21.258	1	31.087	1	40.917	1	50.746	2	0.576	2	10.405	2	20.235	2	30.065	16	0.044
17	1	21.422	1	31.251	1	41.081	1	50.910	2	0.740	2	10.569	2	20.399	2	30.228	17	0.046
18	1	21.585	1	31.415	1	41.244	1	51.074	2	0.904	2	10.733	2	20.563	2	30.392	18	0.049
19	1	21.749	1	31.579	1	41.408	1	51.238	2	1.067	2	10.897	2	20.727	2	30.556	19	0.052
20	1	21.913	1	31.743	1	41.572	1	51.402	2	1.231	2	11.061	2	20.890	2	30.720	20	0.055
21	1	22.077	1	31.906	1	41.736	1	51.565	2	1.395	2	11.225	2	21.054	2	30.884	21	0.057
22	1	22.241	1	32.070	1	41.900	1	51.729	2	1.559	2	11.388	2	21.218	2	31.048	22	0.060
23	1	22.404	1	32.234	1	42.064	1	51.893	2	1.723	2	11.552	2	21.382	2	31.211	23	0.063
24	1	22.568	1	32.398	1	42.227	1	52.057	2	1.887	2	11.716	2	21.546	2	31.375	24	0.066
25	1	22.732	1	32.562	1	42.391	1	52.221	2	2.050	2	11.880	2	21.709	2	31.539	25	0.068
26	1	22.896	1	32.726	1	42.555	1	52.385	2	2.214	2	12.044	2	21.873	2	31.703	26	0.071
27	1	23.060	1	32.889	1	42.719	1	52.548	2	2.378	2	12.208	2	22.037	2	31.867	27	0.074
28	1	23.224	1	33.053	1	42.883	1	52.712	2	2.542	2	12.371	2	22.201	2	32.031	28	0.076
29	1	23.387	1	33.217	1	43.047	1	52.876	2	2.706	2	12.535	2	22.365	2	32.194	29	0.079
30	1	23.551	1	33.381	1	43.210	1	53.040	2	2.869	2	12.699	2	22.529	2	32.358	30	0.082
31	1	23.715	1	33.545	1	43.374	1	53.204	2	3.033	2	12.863	2	22.692	2	32.522	31	0.085
32	1	23.879	1	33.708	1	43.538	1	53.368	2	3.197	2	13.027	2	22.856	2	32.686	32	0.087
33	1	24.043	1	33.872	1	43.702	1	53.531	2	3.361	2	13.191	2	23.020	2	32.850	33	0.090
34	1	24.207	1	34.036	1	43.866	1	53.695	2	3.525	2	13.354	2	23.184	2	33.013	34	0.093
35	1	24.370	1	34.200	1	44.029	1	53.859	2	3.689	2	13.518	2	23.348	2	33.177	35	0.096
36	1	24.534	1	34.364	1	44.193	1	54.023	2	3.852	2	13.682	2	23.512	2	33.341	36	0.098
37	1	24.698	1	34.528	1	44.357	1	54.187	2	4.016	2	13.846	2	23.675	2	33.505	37	0.101
38	1	24.862	1	34.691	1	44.521	1	54.351	2	4.180	2	14.010	2	23.839	2	33.669	38	0.104
39	1	25.026	1	34.855	1	44.685	1	54.514	2	4.344	2	14.173	2	24.003	2	33.833	39	0.106
40	1	25.190	1	35.019	1	44.849	1	54.678	2	4.508	2	14.337	2	24.167	2	33.996	40	0.109
41	1	25.353	1	35.183	1	45.012	1	54.842	2	4.672	2	14.501	2	24.331	2	34.160	41	0.112
42	1	25.517	1	35.347	1	45.176	1	55.006	2	4.835	2	14.665	2	24.495	2	34.324	42	0.115
43	1	25.681	1	35.511	1	45.340	1	55.170	2	4.999	2	14.829	2	24.658	2	34.488	43	0.117
44	1	25.845	1	35.674	1	45.504	1	55.333	2	5.163	2	14.993	2	24.822	2	34.652	44	0.120
45	1	26.009	1	35.838	1	45.668	1	55.497	2	5.327	2	15.156	2	24.986	2	34.816	45	0.123
46	1	26.172	1	36.002	1	45.832	1	55.661	2	5.491	2	15.320	2	25.150	2	34.979	46	0.126
47	1	26.336	1	36.166	1	45.995	1	55.825	2	5.655	2	15.484	2	25.314	2	35.143	47	0.128
48	1	26.500	1	36.330	1	46.159	1	55.989	2	5.818	2	15.648	2	25.477	2	35.307	48	0.131
49	1	26.664	1	36.493	1	46.323	1	56.153	2	5.982	2	15.812	2	25.641	2	35.471	49	0.134
50	1	26.828	1	36.657	1	46.487	1	56.316	2	6.146	2	15.976	2	25.805	2	35.635	50	0.137
51	1	26.992	1	36.821	1	46.651	1	56.480	2	6.310	2	16.139	2	25.969	2	35.798	51	0.139
52	1	27.155	1	36.985	1	46.815	1	56.644	2	6.474	2	16.303	2	26.133	2	35.962	52	0.142
53	1	27.319	1	37.149	1	46.978	1	56.808	2	6.637	2	16.467	2	26.297	2	36.126	53	0.145
54	1	27.483	1	37.313	1	47.142	1	56.972	2	6.801	2	16.631	2	26.460	2	36.290	54	0.147
55	1	27.647	1	37.476	1	47.306	1	57.136	2	6.965	2	16.795	2	26.624	2	36.454	55	0.150
56	1	27.811	1	37.640	1	47.470	1	57.299	2	7.129	2	16.959	2	26.788	2	36.618	56	0.153
57	1	27.975	1	37.804	1	47.634	1	57.463	2	7.293	2	17.122	2	26.952	2	36.781	57	0.156
58	1	28.138	1	37.968	1	47.797	1	57.627	2	7.457	2	17.286	2	27.116	2	36.945	58	0.159
59	1	28.302	1	38.132	1	47.961	1	57.791	2	7.620	2	17.450	2	27.280	2	37.109	59	0.162

SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side- real.	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	s
0	2 37.273		2 47.102		2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080							0	0.000
1	2 37.437		2 47.266		2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244							1	0.003
2	2 37.601		2 47.430		2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407							2	0.005
3	2 37.764		2 47.594		2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571							3	0.008
4	2 37.928		2 47.758		2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735							4	0.011
5	2 38.092		2 47.922		2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899							5	0.014
6	2 38.256		2 48.085		2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063							6	0.016
7	2 38.420		2 48.249		2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227							7	0.019
8	2 38.584		2 48.413		2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390							8	0.022
9	2 38.747		2 48.577		2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554							9	0.025
10	2 38.911		2 48.741		2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718							10	0.027
11	2 39.075		2 48.905		2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882							11	0.030
12	2 39.239		2 49.068		2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046							12	0.033
13	2 39.403		2 49.232		2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210							13	0.035
14	2 39.566		2 49.396		2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373							14	0.038
15	2 39.730		2 49.560		2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537							15	0.041
16	2 39.894		2 49.724		2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701							16	0.044
17	2 40.058		2 49.888		2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865							17	0.046
18	2 40.222		2 50.051		2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029							18	0.049
19	2 40.386		2 50.215		3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193							19	0.052
20	2 40.549		2 50.379		3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356							20	0.055
21	2 40.713		2 50.543		3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520							21	0.057
22	2 40.877		2 50.707		3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684							22	0.060
23	2 41.041		2 50.870		3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848							23	0.063
24	2 41.205		2 51.034		3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012							24	0.066
25	2 41.369		2 51.198		3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175							25	0.068
26	2 41.532		2 51.362		3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339							26	0.071
27	2 41.696		2 51.526		3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503							27	0.074
28	2 41.860		2 51.690		3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667							28	0.076
29	2 42.024		2 51.853		3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831							29	0.079
30	2 42.188		2 52.017		3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995							30	0.082
31	2 42.352		2 52.181		3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158							31	0.085
32	2 42.515		2 52.345		3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322							32	0.087
33	2 42.679		2 52.509		3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486							33	0.090
34	2 42.843		2 52.673		3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650							34	0.093
35	2 43.007		2 52.836		3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814							35	0.096
36	2 43.171		2 53.000		3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978							36	0.098
37	2 43.334		2 53.164		3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141							37	0.101
38	2 43.498		2 53.328		3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305							38	0.104
39	2 43.662		2 53.492		3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469							39	0.106
40	2 43.826		2 53.656		3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633							40	0.109
41	2 43.990		2 53.819		3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797							41	0.112
42	2 44.154		2 53.983		3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961							42	0.115
43	2 44.317		2 54.147		3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124							43	0.117
44	2 44.481		2 54.311		3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288							44	0.120
45	2 44.645		2 54.475		3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452							45	0.123
46	2 44.809		2 54.638		3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616							46	0.126
47	2 44.973		2 54.802		3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780							47	0.128
48	2 45.137		2 54.966		3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943							48	0.131
49	2 45.300		2 55.130		3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107							49	0.134
50	2 45.464		2 55.294		3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271							50	0.137
51	2 45.628		2 55.458		3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435							51	0.139
52	2 45.792		2 55.621		3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599							52	0.142
53	2 45.956		2 55.785		3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763							53	0.145
54	2 46.120		2 55.949		3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926							54	0.147
55	2 46.283		2 56.113		3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090							55	0.150
56	2 46.447		2 56.277		3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254							56	0.153
57	2 46.611		2 56.441		3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418							57	0.156
58	2 46.775		2 56.604		3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582							58	0.158
59	2 46.939		2 56.768		3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746							59	0.161

MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

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	s	s
0	0	0.000	0	9.856	0	19.713	0	29.569	0	39.426	0	49.282	0	59.139	1	8.995	0	0.000
1	0	0.164	0	10.021	0	19.877	0	29.734	0	39.590	0	49.447	0	59.303	1	9.160	1	0.003
2	0	0.329	0	10.185	0	20.041	0	29.898	0	39.754	0	49.611	0	59.467	1	9.324	2	0.005
3	0	0.493	0	10.349	0	20.206	0	30.062	0	39.919	0	49.775	0	59.632	1	9.488	3	0.008
4	0	0.657	0	10.514	0	20.370	0	30.227	0	40.083	0	49.939	0	59.796	1	9.652	4	0.011
5	0	0.821	0	10.678	0	20.534	0	30.391	0	40.247	0	50.104	0	59.960	1	9.817	5	0.014
6	0	0.986	0	10.842	0	20.699	0	30.555	0	40.412	0	50.268	1	0.124	1	9.981	6	0.016
7	0	1.150	0	11.006	0	20.863	0	30.719	0	40.576	0	50.432	1	0.289	1	10.145	7	0.019
8	0	1.314	0	11.171	0	21.027	0	30.884	0	40.740	0	50.597	1	0.453	1	10.310	8	0.022
9	0	1.478	0	11.335	0	21.191	0	31.048	0	40.904	0	50.761	1	0.617	1	10.474	9	0.025
10	0	1.643	0	11.499	0	21.356	0	31.212	0	41.069	0	50.925	1	0.782	1	10.638	10	0.027
11	0	1.807	0	11.663	0	21.520	0	31.376	0	41.233	0	51.089	1	0.946	1	10.802	11	0.030
12	0	1.971	0	11.828	0	21.684	0	31.541	0	41.397	0	51.254	1	1.110	1	10.967	12	0.033
13	0	2.136	0	11.992	0	21.849	0	31.705	0	41.561	0	51.418	1	1.274	1	11.131	13	0.036
14	0	2.300	0	12.156	0	22.013	0	31.869	0	41.726	0	51.582	1	1.439	1	11.295	14	0.038
15	0	2.464	0	12.321	0	22.177	0	32.034	0	41.890	0	51.746	1	1.603	1	11.459	15	0.041
16	0	2.628	0	12.485	0	22.341	0	32.198	0	42.054	0	51.911	1	1.767	1	11.624	16	0.044
17	0	2.793	0	12.649	0	22.506	0	32.362	0	42.219	0	52.075	1	1.932	1	11.788	17	0.047
18	0	2.957	0	12.813	0	22.670	0	32.526	0	42.383	0	52.239	1	2.096	1	11.952	18	0.049
19	0	3.121	0	12.978	0	22.834	0	32.691	0	42.547	0	52.404	1	2.260	1	12.117	19	0.052
20	0	3.285	0	13.142	0	22.998	0	32.855	0	42.711	0	52.568	1	2.424	1	12.281	20	0.055
21	0	3.450	0	13.306	0	23.163	0	33.019	0	42.876	0	52.732	1	2.589	1	12.445	21	0.057
22	0	3.614	0	13.471	0	23.327	0	33.183	0	43.040	0	52.896	1	2.753	1	12.609	22	0.060
23	0	3.778	0	13.635	0	23.491	0	33.348	0	43.204	0	53.061	1	2.917	1	12.774	23	0.063
24	0	3.943	0	13.799	0	23.656	0	33.512	0	43.368	0	53.225	1	3.081	1	12.938	24	0.066
25	0	4.107	0	13.963	0	23.820	0	33.676	0	43.533	0	53.389	1	3.246	1	13.102	25	0.068
26	0	4.271	0	14.128	0	23.984	0	33.841	0	43.697	0	53.554	1	3.410	1	13.266	26	0.071
27	0	4.435	0	14.292	0	24.148	0	34.005	0	43.861	0	53.718	1	3.574	1	13.431	27	0.074
28	0	4.600	0	14.456	0	24.313	0	34.169	0	44.026	0	53.882	1	3.739	1	13.595	28	0.077
29	0	4.764	0	14.620	0	24.477	0	34.333	0	44.190	0	54.046	1	3.903	1	13.759	29	0.079
30	0	4.928	0	14.785	0	24.641	0	34.498	0	44.354	0	54.211	1	4.067	1	13.924	30	0.082
31	0	5.093	0	14.949	0	24.805	0	34.662	0	44.518	0	54.375	1	4.231	1	14.088	31	0.085
32	0	5.257	0	15.113	0	24.970	0	34.826	0	44.683	0	54.539	1	4.396	1	14.252	32	0.088
33	0	5.421	0	15.278	0	25.134	0	34.990	0	44.847	0	54.703	1	4.560	1	14.416	33	0.090
34	0	5.585	0	15.442	0	25.298	0	35.155	0	45.011	0	54.868	1	4.724	1	14.581	34	0.093
35	0	5.750	0	15.606	0	25.463	0	35.319	0	45.176	0	55.032	1	4.888	1	14.745	35	0.096
36	0	5.914	0	15.770	0	25.627	0	35.483	0	45.340	0	55.196	1	5.053	1	14.909	36	0.099
37	0	6.078	0	15.935	0	25.791	0	35.648	0	45.504	0	55.361	1	5.217	1	15.073	37	0.101
38	0	6.242	0	16.099	0	25.955	0	35.812	0	45.668	0	55.525	1	5.381	1	15.238	38	0.104
39	0	6.407	0	16.263	0	26.120	0	35.976	0	45.833	0	55.689	1	5.546	1	15.402	39	0.107
40	0	6.571	0	16.427	0	26.284	0	36.140	0	45.997	0	55.853	1	5.710	1	15.566	40	0.110
41	0	6.735	0	16.592	0	26.448	0	36.305	0	46.161	0	56.018	1	5.874	1	15.731	41	0.112
42	0	6.900	0	16.756	0	26.612	0	36.469	0	46.325	0	56.182	1	6.038	1	15.895	42	0.115
43	0	7.064	0	16.920	0	26.777	0	36.633	0	46.490	0	56.346	1	6.203	1	16.059	43	0.118
44	0	7.228	0	17.085	0	26.941	0	36.798	0	46.654	0	56.510	1	6.367	1	16.223	44	0.120
45	0	7.392	0	17.249	0	27.105	0	36.962	0	46.818	0	56.675	1	6.531	1	16.388	45	0.123
46	0	7.557	0	17.413	0	27.270	0	37.126	0	46.983	0	56.839	1	6.695	1	16.552	46	0.126
47	0	7.721	0	17.577	0	27.434	0	37.290	0	47.147	0	57.003	1	6.860	1	16.716	47	0.129
48	0	7.885	0	17.742	0	27.598	0	37.455	0	47.311	0	57.168	1	7.024	1	16.881	48	0.131
49	0	8.049	0	17.906	0	27.762	0	37.619	0	47.475	0	57.332	1	7.188	1	17.045	49	0.134
50	0	8.214	0	18.070	0	27.927	0	37.783	0	47.640	0	57.496	1	7.353	1	17.209	50	0.137
51	0	8.378	0	18.234	0	28.091	0	37.947	0	47.804	0	57.660	1	7.517	1	17.373	51	0.140
52	0	8.542	0	18.399	0	28.255	0	38.112	0	47.968	0	57.825	1	7.681	1	17.538	52	0.142
53	0	8.707	0	18.563	0	28.420	0	38.276	0	48.132	0	57.989	1	7.845	1	17.702	53	0.145
54	0	8.871	0	18.727	0	28.584	0	38.440	0	48.297	0	58.153	1	8.010	1	17.866	54	0.148
55	0	9.035	0	18.892	0	28.748	0	38.605	0	48.461	0	58.317	1	8.174	1	18.030	55	0.151
56	0	9.199	0	19.056	0	28.912	0	38.769	0	48.625	0	58.482	1	8.338	1	18.195	56	0.153
57	0	9.364	0	19.220	0	29.077	0	38.933	0	48.790	0	58.646	1	8.502	1	18.359	57	0.156
58	0	9.528	0	19.384	0	29.241	0	39.097	0	48.954	0	58.810	1	8.667	1	18.523	58	0.158
59	0	9.692	0	19.549	0	29.405	0	39.262	0	49.118	0	58.975	1	8.831	1	18.688	59	0.162

MEAN SOLAR INTO SIDEREAL TIME.
TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	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	s	s
0	1	18.852	1	28.708	1	38.565	1	48.421	1	58.278	2	8.134	2	17.991	2	27.847	0	0.000
1	1	19.016	1	28.873	1	38.729	1	48.585	1	58.442	2	8.298	2	18.155	2	28.011	1	0.003
2	1	19.180	1	29.037	1	38.893	1	48.750	1	58.606	2	8.463	2	18.319	2	28.176	2	0.005
3	1	19.345	1	29.201	1	39.058	1	48.914	1	58.771	2	8.627	2	18.483	2	28.340	3	0.008
4	1	19.509	1	29.365	1	39.222	1	49.078	1	58.935	2	8.791	2	18.648	2	28.504	4	0.011
5	1	19.673	1	29.530	1	39.386	1	49.243	1	59.099	2	8.956	2	18.812	2	28.668	5	0.014
6	1	19.837	1	29.694	1	39.550	1	49.407	1	59.263	2	9.120	2	18.976	2	28.833	6	0.016
7	1	20.002	1	29.858	1	39.715	1	49.571	1	59.428	2	9.284	2	19.141	2	28.997	7	0.019
8	1	20.166	1	30.022	1	39.879	1	49.735	1	59.592	2	9.448	2	19.305	2	29.161	8	0.022
9	1	20.330	1	30.187	1	40.043	1	49.900	1	59.756	2	9.613	2	19.469	2	29.326	9	0.025
10	1	20.495	1	30.351	1	40.207	1	50.064	1	59.920	2	9.777	2	19.633	2	29.490	10	0.027
11	1	20.659	1	30.515	1	40.372	1	50.228	2	0.085	2	9.941	2	19.798	2	29.654	11	0.030
12	1	20.823	1	30.680	1	40.536	1	50.393	2	0.249	2	10.105	2	19.962	2	29.818	12	0.033
13	1	20.987	1	30.844	1	40.700	1	50.557	2	0.413	2	10.270	2	20.126	2	29.983	13	0.036
14	1	21.152	1	31.008	1	40.865	1	50.721	2	0.578	2	10.434	2	20.290	2	30.147	14	0.038
15	1	21.316	1	31.172	1	41.029	1	50.885	2	0.742	2	10.598	2	20.455	2	30.311	15	0.041
16	1	21.480	1	31.337	1	41.193	1	51.050	2	0.906	2	10.763	2	20.619	2	30.476	16	0.044
17	1	21.644	1	31.501	1	41.357	1	51.214	2	1.070	2	10.927	2	20.783	2	30.640	17	0.047
18	1	21.809	1	31.665	1	41.522	1	51.378	2	1.235	2	11.091	2	20.948	2	30.804	18	0.049
19	1	21.973	1	31.829	1	41.686	1	51.542	2	1.399	2	11.255	2	21.112	2	30.968	19	0.052
20	1	22.137	1	31.994	1	41.850	1	51.707	2	1.563	2	11.420	2	21.276	2	31.133	20	0.055
21	1	22.302	1	32.158	1	42.015	1	51.871	2	1.727	2	11.584	2	21.440	2	31.297	21	0.057
22	1	22.466	1	32.322	1	42.179	1	52.035	2	1.892	2	11.748	2	21.605	2	31.461	22	0.060
23	1	22.630	1	32.487	1	42.343	1	52.200	2	2.056	2	11.912	2	21.769	2	31.625	23	0.063
24	1	22.794	1	32.651	1	42.507	1	52.364	2	2.220	2	12.077	2	21.933	2	31.790	24	0.066
25	1	22.959	1	32.815	1	42.672	1	52.528	2	2.385	2	12.241	2	22.098	2	31.954	25	0.068
26	1	23.123	1	32.979	1	42.836	1	52.692	2	2.549	2	12.405	2	22.262	2	32.118	26	0.071
27	1	23.287	1	33.144	1	43.000	1	52.857	2	2.713	2	12.570	2	22.426	2	32.283	27	0.074
28	1	23.451	1	33.308	1	43.164	1	53.021	2	2.877	2	12.734	2	22.590	2	32.447	28	0.077
29	1	23.616	1	33.472	1	43.329	1	53.185	2	3.042	2	12.898	2	22.755	2	32.611	29	0.079
30	1	23.780	1	33.637	1	43.493	1	53.349	2	3.206	2	13.062	2	22.919	2	32.775	30	0.082
31	1	23.944	1	33.801	1	43.657	1	53.514	2	3.370	2	13.227	2	23.083	2	32.940	31	0.085
32	1	24.109	1	33.965	1	43.822	1	53.678	2	3.534	2	13.391	2	23.247	2	33.104	32	0.088
33	1	24.273	1	34.129	1	43.986	1	53.842	2	3.699	2	13.555	2	23.412	2	33.268	33	0.090
34	1	24.437	1	34.294	1	44.150	1	54.007	2	3.863	2	13.720	2	23.576	2	33.432	34	0.093
35	1	24.601	1	34.458	1	44.314	1	54.171	2	4.027	2	13.884	2	23.740	2	33.597	35	0.096
36	1	24.766	1	34.622	1	44.479	1	54.335	2	4.192	2	14.048	2	23.905	2	33.761	36	0.099
37	1	24.930	1	34.786	1	44.643	1	54.499	2	4.356	2	14.212	2	24.069	2	33.925	37	0.101
38	1	25.094	1	34.951	1	44.807	1	54.664	2	4.520	2	14.377	2	24.233	2	34.090	38	0.104
39	1	25.259	1	35.115	1	44.971	1	54.828	2	4.684	2	14.541	2	24.397	2	34.254	39	0.107
40	1	25.423	1	35.279	1	45.136	1	54.992	2	4.849	2	14.705	2	24.562	2	34.418	40	0.110
41	1	25.587	1	35.444	1	45.300	1	55.156	2	5.013	2	14.869	2	24.726	2	34.582	41	0.112
42	1	25.751	1	35.608	1	45.464	1	55.321	2	5.177	2	15.034	2	24.890	2	34.747	42	0.115
43	1	25.916	1	35.772	1	45.629	1	55.485	2	5.342	2	15.198	2	25.054	2	34.911	43	0.118
44	1	26.080	1	35.936	1	45.793	1	55.649	2	5.506	2	15.362	2	25.219	2	35.075	44	0.120
45	1	26.244	1	36.101	1	45.957	1	55.814	2	5.670	2	15.527	2	25.383	2	35.239	45	0.123
46	1	26.408	1	36.265	1	46.121	1	55.978	2	5.834	2	15.691	2	25.547	2	35.404	46	0.126
47	1	26.573	1	36.429	1	46.286	1	56.142	2	5.999	2	15.855	2	25.712	2	35.568	47	0.129
48	1	26.737	1	36.593	1	46.450	1	56.306	2	6.163	2	16.019	2	25.876	2	35.732	48	0.131
49	1	26.901	1	36.758	1	46.614	1	56.471	2	6.327	2	16.184	2	26.040	2	35.897	49	0.134
50	1	27.066	1	36.922	1	46.778	1	56.635	2	6.491	2	16.348	2	26.204	2	36.061	50	0.137
51	1	27.230	1	37.086	1	46.943	1	56.799	2	6.656	2	16.512	2	26.369	2	36.225	51	0.140
52	1	27.394	1	37.251	1	47.107	1	56.964	2	6.820	2	16.676	2	26.533	2	36.389	52	0.142
53	1	27.558	1	37.415	1	47.271	1	57.128	2	6.984	2	16.841	2	26.697	2	36.554	53	0.145
54	1	27.723	1	37.579	1	47.436	1	57.292	2	7.149	2	17.005	2	26.861	2	36.718	54	0.148
55	1	27.887	1	37.743	1	47.600	1	57.456	2	7.313	2	17.169	2	27.026	2	36.882	55	0.151
56	1	28.051	1	37.908	1	47.764	1	57.621	2	7.477	2	17.334	2	27.190	2	37.047	56	0.153
57	1	28.215	1	38.072	1	47.928	1	57.785	2	7.641	2	17.498	2	27.354	2	37.211	57	0.156
58	1	28.380	1	38.236	1	48.093	1	57.949	2	7.806	2	17.662	2	27.519	2	37.375	58	0.159
59	1	28.544	1	38.400	1	48.257	1	58.113	2	7.970	2	17.826	2	27.683	2	37.539	59	0.162

MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

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	s
0	2	37.704	2	47.560	2	57.417	3	7.273	3	17.129	3	26.986	3	36.842	3	46.699	0	0.000
1	2	37.868	2	47.724	2	57.581	3	7.437	3	17.294	3	27.150	3	37.007	3	46.863	1	0.003
2	2	38.032	2	47.889	2	57.745	3	7.602	3	17.458	3	27.315	3	37.171	3	47.027	2	0.005
3	2	38.196	2	48.053	2	57.909	3	7.766	3	17.622	3	27.479	3	37.335	3	47.192	3	0.008
4	2	38.361	2	48.217	2	58.074	3	7.930	3	17.787	3	27.643	3	37.500	3	47.356	4	0.011
5	2	38.525	2	48.381	2	58.238	3	8.094	3	17.951	3	27.807	3	37.664	3	47.520	5	0.014
6	2	38.689	2	48.546	2	58.402	3	8.259	3	18.115	3	27.972	3	37.828	3	47.685	6	0.016
7	2	38.854	2	48.710	2	58.566	3	8.423	3	18.279	3	28.136	3	37.992	3	47.849	7	0.019
8	2	39.018	2	48.874	2	58.731	3	8.587	3	18.444	3	28.300	3	38.157	3	48.013	8	0.022
9	2	39.182	2	49.039	2	58.895	3	8.751	3	18.608	3	28.464	3	38.321	3	48.177	9	0.025
10	2	39.346	2	49.203	2	59.059	3	8.916	3	18.772	3	28.629	3	38.485	3	48.342	10	0.027
11	2	39.511	2	49.367	2	59.224	3	9.080	3	18.937	3	28.793	3	38.649	3	48.506	11	0.030
12	2	39.675	2	49.531	2	59.388	3	9.244	3	19.101	3	28.957	3	38.814	3	48.670	12	0.033
13	2	39.839	2	49.696	2	59.552	3	9.409	3	19.265	3	29.122	3	38.978	3	48.834	13	0.036
14	2	40.003	2	49.860	2	59.716	3	9.573	3	19.429	3	29.286	3	39.142	3	48.999	14	0.038
15	2	40.168	2	50.024	2	59.881	3	9.737	3	19.594	3	29.450	3	39.307	3	49.163	15	0.041
16	2	40.332	2	50.188	3	0.045	3	9.901	3	19.758	3	29.614	3	39.471	3	49.327	16	0.044
17	2	40.496	2	50.353	3	0.209	3	10.066	3	19.922	3	29.779	3	39.635	3	49.492	17	0.047
18	2	40.661	2	50.517	3	0.373	3	10.230	3	20.086	3	29.943	3	39.799	3	49.656	18	0.049
19	2	40.825	2	50.681	3	0.538	3	10.394	3	20.251	3	30.107	3	39.964	3	49.820	19	0.052
20	2	40.989	2	50.846	3	0.702	3	10.559	3	20.415	3	30.271	3	40.128	3	49.984	20	0.055
21	2	41.153	2	51.010	3	0.866	3	10.723	3	20.579	3	30.436	3	40.292	3	50.149	21	0.057
22	2	41.318	2	51.174	3	1.031	3	10.887	3	20.744	3	30.600	3	40.456	3	50.313	22	0.060
23	2	41.482	2	51.338	3	1.195	3	11.051	3	20.908	3	30.764	3	40.621	3	50.477	23	0.063
24	2	41.646	2	51.503	3	1.359	3	11.216	3	21.072	3	30.929	3	40.785	3	50.642	24	0.066
25	2	41.810	2	51.667	3	1.523	3	11.380	3	21.236	3	31.093	3	40.949	3	50.806	25	0.068
26	2	41.975	2	51.831	3	1.688	3	11.544	3	21.401	3	31.257	3	41.114	3	50.970	26	0.071
27	2	42.139	2	51.995	3	1.852	3	11.708	3	21.565	3	31.421	3	41.278	3	51.134	27	0.074
28	2	42.303	2	52.160	3	2.016	3	11.873	3	21.729	3	31.586	3	41.442	3	51.299	28	0.077
29	2	42.468	2	52.324	3	2.181	3	12.037	3	21.893	3	31.750	3	41.606	3	51.463	29	0.079
30	2	42.632	2	52.488	3	2.345	3	12.201	3	22.058	3	31.914	3	41.771	3	51.627	30	0.082
31	2	42.796	2	52.653	3	2.509	3	12.366	3	22.222	3	32.078	3	41.935	3	51.791	31	0.085
32	2	42.960	2	52.817	3	2.673	3	12.530	3	22.386	3	32.243	3	42.099	3	51.956	32	0.088
33	2	43.125	2	52.981	3	2.838	3	12.694	3	22.551	3	32.407	3	42.264	3	52.120	33	0.090
34	2	43.289	2	53.145	3	3.002	3	12.858	3	22.715	3	32.571	3	42.428	3	52.284	34	0.093
35	2	43.453	2	53.310	3	3.166	3	13.023	3	22.879	3	32.736	3	42.592	3	52.449	35	0.096
36	2	43.617	2	53.474	3	3.330	3	13.187	3	23.043	3	32.900	3	42.756	3	52.613	36	0.099
37	2	43.782	2	53.638	3	3.495	3	13.351	3	23.208	3	33.064	3	42.921	3	52.777	37	0.101
38	2	43.946	2	53.803	3	3.659	3	13.515	3	23.372	3	33.228	3	43.085	3	52.941	38	0.104
39	2	44.110	2	53.967	3	3.823	3	13.680	3	23.536	3	33.393	3	43.249	3	53.106	39	0.107
40	2	44.275	2	54.131	3	3.988	3	13.844	3	23.700	3	33.557	3	43.413	3	53.270	40	0.110
41	2	44.439	2	54.295	3	4.152	3	14.008	3	23.865	3	33.721	3	43.578	3	53.434	41	0.112
42	2	44.603	2	54.460	3	4.316	3	14.173	3	24.029	3	33.886	3	43.742	3	53.598	42	0.115
43	2	44.767	2	54.624	3	4.480	3	14.337	3	24.193	3	34.050	3	43.906	3	53.763	43	0.118
44	2	44.932	2	54.788	3	4.645	3	14.501	3	24.358	3	34.214	3	44.071	3	53.927	44	0.120
45	2	45.096	2	54.952	3	4.809	3	14.665	3	24.522	3	34.378	3	44.235	3	54.091	45	0.123
46	2	45.260	2	55.117	3	4.973	3	14.830	3	24.686	3	34.543	3	44.399	3	54.256	46	0.126
47	2	45.425	2	55.281	3	5.137	3	14.994	3	24.850	3	34.707	3	44.563	3	54.420	47	0.129
48	2	45.589	2	55.445	3	5.302	3	15.158	3	25.015	3	34.871	3	44.728	3	54.584	48	0.131
49	2	45.753	2	55.610	3	5.466	3	15.322	3	25.179	3	35.035	3	44.892	3	54.748	49	0.134
50	2	45.917	2	55.774	3	5.630	3	15.487	3	25.343	3	35.200	3	45.056	3	54.913	50	0.137
51	2	46.082	2	55.938	3	5.795	3	15.651	3	25.508	3	35.364	3	45.220	3	55.077	51	0.140
52	2	46.246	2	56.102	3	5.959	3	15.815	3	25.672	3	35.528	3	45.385	3	55.241	52	0.142
53	2	46.410	2	56.267	3	6.123	3	15.980	3	25.836	3	35.693	3	45.549	3	55.405	53	0.145
54	2	46.574	2	56.431	3	6.287	3	16.144	3	26.000	3	35.857	3	45.713	3	55.570	54	0.148
55	2	46.739	2	56.595	3	6.452	3	16.308	3	26.165	3	36.021	3	45.878	3	55.734	55	0.151
56	2	46.903	2	56.759	3	6.616	3	16.472	3	26.329	3	36.185	3	46.042	3	55.898	56	0.153
57	2	47.067	2	56.924	3	6.780	3	16.637	3	26.493	3	36.350	3	46.206	3	56.063	57	0.156
58	2	47.232	2	57.088	3	6.944	3	16.801	3	26.657	3	36.514	3	46.370	3	56.227	58	0.158
59	2	47.396	2	57.252	3	7.109	3	16.965	3	26.822	3	36.678	3	46.535	3	56.391	59	0.162

AZIMUTH OF POLARIS AT ALL HOUR ANGLES, 1916.

[For hour angles 0^h to 12^h the star is west of north, and for hour angles 12^h to 24^h it is east of north.]

Lat.		10°	15°	20°	22°	24°	26°	28°	30°	32°	Lat.		
H.A.												H.A.	
h	m	°	'	°	'	°	'	°	'	°	'	h	m
0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	24	0
	10	0	3.0	0	3.1	0	3.2	0	3.3	0	3.4	23	50
	20	0	6.1	0	6.2	0	6.4	0	6.6	0	6.7		40
0	30	0	9.1	0	9.3	0	9.6	0	9.7	0	9.8	23	30
	40	0	12.1	0	12.3	0	12.7	0	12.9	0	13.1		20
	50	0	15.1	0	15.4	0	15.8	0	16.1	0	16.3		10
1	0	0	18.0	0	18.4	0	18.9	0	19.2	0	19.5	23	0
	10	0	20.9	0	21.4	0	22.0	0	22.3	0	22.7	22	50
	20	0	23.8	0	24.3	0	25.0	0	25.4	0	25.8		40
1	30	0	26.6	0	27.2	0	28.0	0	28.4	0	28.8	22	30
	40	0	29.4	0	30.0	0	30.9	0	31.3	0	31.8		20
	50	0	32.1	0	32.8	0	33.7	0	34.2	0	34.8		10
2	0	0	34.8	0	35.5	0	36.5	0	37.1	0	37.6	22	0
	10	0	37.4	0	38.1	0	39.3	0	39.8	0	40.4	21	50
	20	0	39.9	0	40.7	0	41.9	0	42.5	0	43.2		40
2	30	0	42.3	0	43.2	0	44.5	0	45.1	0	45.8	21	30
	40	0	44.7	0	45.6	0	46.9	0	47.6	0	48.3		20
	50	0	46.9	0	47.9	0	49.3	0	50.0	0	50.8		10
3	0	0	49.1	0	50.2	0	51.6	0	52.3	0	53.2	21	0
	10	0	51.2	0	52.3	0	53.8	0	54.6	0	55.4	20	50
	20	0	53.2	0	54.3	0	55.9	0	56.7	0	57.6		40
3	30	0	55.1	0	56.2	0	57.9	0	58.7	0	59.6	20	30
	40	0	56.9	0	58.1	0	59.7	1	0.6	1	1.5		20
	50	0	58.6	0	59.8	1	1.5	1	2.4	1	3.3		10
4	0	1	0.1	1	1.4	1	3.1	1	4.0	1	5.0	20	0
	10	1	1.6	1	2.8	1	4.6	1	5.5	1	6.5	19	50
	20	1	2.9	1	4.2	1	6.0	1	6.9	1	8.0		40
4	30	1	4.1	1	5.4	1	7.3	1	8.2	1	9.3	19	30
	40	1	5.2	1	6.5	1	8.4	1	9.4	1	10.4		20
	50	1	6.2	1	7.5	1	9.4	1	10.4	1	11.4		10
5	0	1	7.0	1	8.3	1	10.3	1	11.3	1	12.3	19	0
	10	1	7.7	1	9.1	1	11.0	1	12.0	1	13.1	18	50
	20	1	8.3	1	9.7	1	11.6	1	12.6	1	13.7		40
5	30	1	8.7	1	10.1	1	12.1	1	13.1	1	14.2	18	30
	40	1	9.1	1	10.4	1	12.4	1	13.4	1	14.5		20
	50	1	9.3	1	10.6	1	12.6	1	13.6	1	14.7		10
6	0	1	9.3	1	10.7	1	12.6	1	13.6	1	14.7	18	0
	10	1	9.2	1	10.6	1	12.5	1	13.5	1	14.6	17	50
	20	1	9.0	1	10.4	1	12.3	1	13.3	1	14.4		40
6	30	1	8.7	1	10.0	1	11.9	1	12.9	1	14.0	17	30
	40	1	8.2	1	9.5	1	11.4	1	12.4	1	13.5		20
	50	1	7.6	1	8.9	1	10.8	1	11.7	1	12.8		10
7	0	1	6.9	1	8.2	1	10.0	1	10.9	1	12.0	17	0
	10	1	6.0	1	7.3	1	9.1	1	10.0	1	11.1	16	50
	20	1	5.0	1	6.3	1	8.1	1	9.0	1	10.0		40
7	30	1	3.9	1	5.2	1	6.9	1	7.8	1	8.8	16	30
	40	1	2.7	1	3.9	1	5.6	1	6.5	1	7.5		20
	50	1	1.4	1	2.5	1	4.2	1	5.1	1	6.0		10
8	0	0	59.9	1	1.0	1	2.7	1	3.5	1	4.4	16	0
	10	0	58.3	0	59.4	1	1.0	1	1.8	1	2.7	15	50
	20	0	56.7	0	57.7	0	59.2	1	0.0	1	0.9		40
8	30	0	54.9	0	55.9	0	57.4	0	58.1	0	59.0	15	30
	40	0	53.0	0	53.9	0	55.4	0	56.1	0	56.9		20
	50	0	51.0	0	51.9	0	53.3	0	54.0	0	54.7		10
9	0	0	48.9	0	49.8	0	51.1	0	51.8	0	52.5	15	0

TABLE IV.

AZIMUTH OF POLARIS AT ALL HOUR ANGLES, 1916.

[For hour angles 0^h to 12^h the star is west of north, and for hour angles 12^h to 24^h it is east of north.]

Lat.		10°	15°	20°	22°	24°	26°	28°	30°	32°	Lat.				
H. A.												H. A.			
h	m	°	'	°	'	°	'	°	'	°	'	°	'	h	m
9	0	0 48.9	0 49.8	0 51.1	0 51.8	0 52.5	0 53.3	0 54.2	0 55.3	0 56.4	0 56.4	15	0	15	0
	10	0 46.7	0 47.5	0 48.8	0 49.4	0 50.1	0 50.9	0 51.8	0 52.8	0 53.9	0 53.9	14	50	14	50
	20	0 44.4	0 45.2	0 46.4	0 47.0	0 47.7	0 48.4	0 49.3	0 50.2	0 51.2	0 51.2	40		40	
9	30	0 42.1	0 42.8	0 44.0	0 44.5	0 45.2	0 45.9	0 46.7	0 47.5	0 48.5	0 48.5	14	30	14	30
	40	0 39.6	0 40.3	0 41.4	0 41.9	0 42.5	0 43.2	0 44.0	0 44.8	0 45.7	0 45.7	20		20	
	50	0 37.1	0 37.8	0 38.8	0 39.3	0 39.8	0 40.5	0 41.2	0 41.9	0 42.8	0 42.8	10		10	
10	0	0 34.5	0 35.2	0 36.1	0 36.5	0 37.1	0 37.7	0 38.3	0 39.0	0 39.8	0 39.8	14	0	14	0
	10	0 31.9	0 32.5	0 33.3	0 33.7	0 34.2	0 34.8	0 35.4	0 36.0	0 36.8	0 36.8	13	50	13	50
	20	0 29.2	0 29.7	0 30.5	0 30.9	0 31.3	0 31.8	0 32.4	0 33.0	0 33.6	0 33.6	40		40	
10	30	0 26.4	0 26.9	0 27.6	0 28.0	0 28.4	0 28.8	0 29.3	0 29.9	0 30.4	0 30.4	13	30	13	30
	40	0 23.6	0 24.0	0 24.7	0 25.0	0 25.3	0 25.7	0 26.2	0 26.7	0 27.2	0 27.2	20		20	
	50	0 20.8	0 21.1	0 21.7	0 22.0	0 22.3	0 22.6	0 23.0	0 23.5	0 23.9	0 23.9	10		10	
11	0	0 17.9	0 18.2	0 18.7	0 18.9	0 19.2	0 19.5	0 19.8	0 20.2	0 20.6	0 20.6	13	0	13	0
	10	0 15.0	0 15.2	0 15.6	0 15.8	0 16.0	0 16.3	0 16.6	0 16.9	0 17.2	0 17.2	12	50	12	50
	20	0 12.0	0 12.2	0 12.5	0 12.7	0 12.9	0 13.1	0 13.3	0 13.5	0 13.8	0 13.8	40		40	
11	30	0 9.0	0 9.2	0 9.4	0 9.5	0 9.7	0 9.8	0 10.0	0 10.2	0 10.4	0 10.4	12	30	12	30
	40	0 6.0	0 6.1	0 6.3	0 6.4	0 6.5	0 6.6	0 6.7	0 6.8	0 6.9	0 6.9	20		20	
	50	0 3.0	0 3.1	0 3.1	0 3.2	0 3.2	0 3.3	0 3.3	0 3.4	0 3.5	0 3.5	10		10	
12	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	0 0.0	12	0	12	0

Lat.		32°	34°	36°	38°	40°	42°	44°	46°	48°	Lat.				
H. A.												H. A.			
h	m	°	'	°	'	°	'	°	'	°	'	°	'	h	m
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 0.0	0 0.0	24	0	24	0
	10	0 3.6	0 3.6	0 3.7	0 3.8	0 3.9	0 4.1	0 4.2	0 4.4	0 4.6	0 4.6	23	50	23	50
	20	0 7.1	0 7.3	0 7.5	0 7.7	0 7.9	0 8.2	0 8.4	0 8.8	0 9.1	0 9.1	40		40	
0	30	0 10.6	0 10.9	0 11.2	0 11.5	0 11.8	0 12.2	0 12.6	0 13.1	0 13.6	0 13.6	23	30	23	30
	40	0 14.1	0 14.5	0 14.9	0 15.3	0 15.7	0 16.2	0 16.8	0 17.4	0 18.1	0 18.1	20		20	
	50	0 17.6	0 18.1	0 18.5	0 19.0	0 19.6	0 20.2	0 20.9	0 21.7	0 22.6	0 22.6	10		10	
1	0	0 21.1	0 21.6	0 22.1	0 22.7	0 23.4	0 24.2	0 25.0	0 25.9	0 27.0	0 27.0	23	0	23	0
	10	0 24.5	0 25.1	0 25.7	0 26.4	0 27.2	0 28.1	0 29.0	0 30.1	0 31.3	0 31.3	22	50	22	50
	20	0 27.9	0 28.5	0 29.2	0 30.0	0 30.9	0 31.9	0 33.0	0 34.2	0 35.6	0 35.6	40		40	
1	30	0 31.2	0 31.9	0 32.7	0 33.6	0 34.6	0 35.7	0 36.9	0 38.3	0 39.8	0 39.8	22	30	22	30
	40	0 34.4	0 35.2	0 36.1	0 37.1	0 38.2	0 39.4	0 40.8	0 42.3	0 44.0	0 44.0	20		20	
	50	0 37.6	0 38.5	0 39.5	0 40.5	0 41.7	0 43.1	0 44.6	0 46.2	0 48.0	0 48.0	10		10	
2	0	0 40.7	0 41.6	0 42.7	0 43.9	0 45.2	0 46.6	0 48.2	0 50.0	0 52.0	0 52.0	22	0	22	0
	10	0 43.7	0 44.7	0 45.9	0 47.1	0 48.5	0 50.1	0 51.8	0 53.7	0 55.8	0 55.8	21	50	21	50
	20	0 46.6	0 47.7	0 49.0	0 50.3	0 51.8	0 53.4	0 55.3	0 57.3	0 59.6	0 59.6	40		40	
2	30	0 49.5	0 50.6	0 51.9	0 53.4	0 55.0	0 56.7	0 58.6	1 0.8	1 3.2	1 3.2	21	30	21	30
	40	0 52.2	0 53.5	0 54.8	0 56.3	0 58.0	0 59.8	1 1.9	1 4.2	1 6.7	1 6.7	20		20	
	50	0 54.9	0 56.2	0 57.6	0 59.2	1 0.9	1 2.9	1 5.0	1 7.4	1 10.0	1 10.0	10		10	
3	0	0 57.4	0 58.8	1 0.3	1 1.9	1 3.7	1 5.8	1 8.0	1 10.5	1 13.2	1 13.2	21	0	21	0
	10	0 59.8	1 1.2	1 2.8	1 4.5	1 6.4	1 8.5	1 10.9	1 13.5	1 16.3	1 16.3	20	50	20	50
	20	1 2.1	1 3.6	1 5.2	1 7.0	1 9.0	1 11.1	1 13.6	1 16.3	1 19.2	1 19.2	40		40	
3	30	1 4.3	1 5.8	1 7.5	1 9.4	1 11.4	1 13.6	1 16.2	1 18.9	1 22.0	1 22.0	20	30	20	30
	40	1 6.4	1 7.9	1 9.7	1 11.6	1 13.7	1 16.0	1 18.6	1 21.4	1 24.6	1 24.6	20		20	
	50	1 8.3	1 9.9	1 11.7	1 13.7	1 15.8	1 18.2	1 20.9	1 23.8	1 27.0	1 27.0	10		10	
4	0	1 10.1	1 11.8	1 13.6	1 15.6	1 17.8	1 20.2	1 23.0	1 26.0	1 29.3	1 29.3	20	0	20	0
	10	1 11.8	1 13.5	1 15.3	1 17.4	1 19.6	1 22.1	1 24.9	1 28.0	1 31.4	1 31.4	19	50	19	50
	20	1 13.3	1 15.0	1 16.9	1 19.0	1 21.3	1 23.9	1 26.7	1 29.8	1 33.3	1 33.3	40		40	
4	30	1 14.7	1 16.4	1 18.4	1 20.5	1 22.8	1 25.4	1 28.3	1 31.5	1 35.0	1 35.0	19	30	19	30
	40	1 15.9	1 17.7	1 19.7	1 21.8	1 24.2	1 26.8	1 29.7	1 33.0	1 36.6	1 36.6	20		20	
	50	1 17.0	1 18.8	1 20.8	1 23.0	1 25.4	1 28.1	1 31.0	1 34.3	1 37.9	1 37.9	10		10	
5	0	1 18.0	1 19.8	1 21.8	1 24.0	1 26.4	1 29.1	1 32.1	1 35.4	1 39.1	1 39.1	19	0	19	0

AZIMUTH OF POLARIS AT ALL HOUR ANGLES, 1916.

[For hour angles 0^h to 12^h the star is west of north, and for hour angles 12^h to 24^h it is east of north.]

Lat.		32°	34°	36°	38°	40°	42°	44°	46°	48°	Lat.		
H.A.											H.A.		
h	m	°	'	°	'	°	'	°	'	°	'	h	m
5	0	1 18.0	1 19.8	1 21.8	1 24.0	1 26.4	1 29.1	1 32.1	1 35.4	1 39.1		19	0
	10	1 18.8	1 20.6	1 22.6	1 24.8	1 27.3	1 30.0	1 33.0	1 36.3	1 40.1		18	50
	20	1 19.4	1 21.3	1 23.3	1 25.5	1 28.0	1 30.7	1 33.7	1 37.1	1 40.8			40
5	30	1 19.9	1 21.8	1 23.8	1 26.0	1 28.5	1 31.3	1 34.3	1 37.7	1 41.4		18	30
	40	1 20.3	1 22.1	1 24.1	1 26.4	1 28.9	1 31.6	1 34.7	1 38.1	1 41.8			20
	50	1 20.5	1 22.3	1 24.3	1 26.6	1 29.1	1 31.8	1 34.9	1 38.2	1 42.0			10
6	0	1 20.5	1 22.3	1 24.4	1 26.6	1 29.1	1 31.8	1 34.9	1 38.2	1 42.0		18	0
	10	1 20.4	1 22.2	1 24.2	1 26.5	1 28.9	1 31.7	1 34.7	1 38.1	1 41.8		17	50
	20	1 20.1	1 21.9	1 23.9	1 26.2	1 28.6	1 31.4	1 34.4	1 37.7	1 41.4			40
6	30	1 19.7	1 21.5	1 23.5	1 25.7	1 28.1	1 30.9	1 33.8	1 37.1	1 40.8		17	30
	40	1 19.1	1 20.9	1 22.9	1 25.1	1 27.5	1 30.2	1 33.1	1 36.4	1 40.1			20
	50	1 18.4	1 20.1	1 22.1	1 24.3	1 26.7	1 29.3	1 32.2	1 35.5	1 39.1			10
7	0	1 17.5	1 19.2	1 21.2	1 23.3	1 25.7	1 28.3	1 31.2	1 34.4	1 38.0		17	0
	10	1 16.5	1 18.2	1 20.1	1 22.2	1 24.5	1 27.1	1 30.0	1 33.1	1 36.6		16	50
	20	1 15.3	1 17.0	1 18.9	1 20.9	1 23.2	1 25.8	1 28.6	1 31.7	1 35.1			40
7	30	1 14.0	1 15.7	1 17.5	1 19.5	1 21.8	1 24.3	1 27.0	1 30.1	1 33.4		16	30
	40	1 12.6	1 14.2	1 16.0	1 18.0	1 20.2	1 22.6	1 25.3	1 28.3	1 31.6			20
	50	1 11.0	1 12.6	1 14.3	1 16.3	1 18.4	1 20.8	1 23.4	1 26.3	1 29.6			10
8	0	1 9.3	1 10.8	1 12.5	1 14.4	1 16.5	1 18.8	1 21.4	1 24.2	1 27.4		16	0
	10	1 7.4	1 8.9	1 10.6	1 12.4	1 14.5	1 16.7	1 19.2	1 21.9	1 25.0		15	50
	20	1 5.5	1 6.9	1 8.5	1 10.3	1 12.3	1 14.5	1 16.9	1 19.5	1 22.5			40
8	30	1 3.4	1 4.8	1 6.3	1 8.1	1 10.0	1 12.1	1 14.4	1 17.0	1 19.8		15	30
	40	1 1.2	1 2.5	1 4.0	1 5.7	1 7.5	1 9.6	1 11.8	1 14.3	1 17.0			20
	50	0 58.8	1 0.1	1 1.6	1 3.2	1 5.0	1 6.9	1 9.1	1 11.4	1 14.1			10
9	0	0 56.4	0 57.7	0 59.0	1 0.6	1 2.3	1 4.1	1 6.2	1 8.5	1 11.0		15	0
	10	0 53.9	0 55.1	0 56.4	0 57.8	0 59.4	1 1.2	1 3.2	1 5.4	1 7.8		14	50
	20	0 51.2	0 52.4	0 53.6	0 55.0	0 56.5	0 58.2	1 0.1	1 2.2	1 4.4			40
9	30	0 48.5	0 49.6	0 50.8	0 52.1	0 53.5	0 55.1	0 56.9	0 58.8	1 1.0		14	30
	40	0 45.7	0 46.7	0 47.8	0 49.0	0 50.4	0 51.9	0 53.6	0 55.4	0 57.4			20
	50	0 42.8	0 43.7	0 44.8	0 45.9	0 47.2	0 48.6	0 50.2	0 51.9	0 53.8			10
10	0	0 39.8	0 40.7	0 41.7	0 42.7	0 43.9	0 45.2	0 46.7	0 48.2	0 50.0		14	0
	10	0 36.8	0 37.6	0 38.5	0 39.4	0 40.5	0 41.7	0 43.1	0 44.5	0 46.2		13	50
	20	0 33.6	0 34.4	0 35.2	0 36.1	0 37.1	0 38.2	0 39.4	0 40.7	0 42.2			40
10	30	0 30.4	0 31.1	0 31.9	0 32.7	0 33.6	0 34.6	0 35.7	0 36.9	0 38.2		13	30
	40	0 27.2	0 27.8	0 28.5	0 29.2	0 30.0	0 30.9	0 31.9	0 33.0	0 34.2			20
	50	0 23.9	0 24.4	0 25.0	0 25.7	0 26.4	0 27.2	0 28.0	0 29.0	0 30.0			10
11	0	0 20.6	0 21.0	0 21.5	0 22.1	0 22.7	0 23.4	0 24.1	0 24.9	0 25.8		13	0
	10	0 17.2	0 17.6	0 18.0	0 18.5	0 19.0	0 19.5	0 20.2	0 20.8	0 21.6		12	50
	20	0 13.8	0 14.1	0 14.4	0 14.8	0 15.2	0 15.7	0 16.2	0 16.7	0 17.3			40
11	30	0 10.4	0 10.6	0 10.8	0 11.1	0 11.4	0 11.8	0 12.2	0 12.6	0 13.0		12	30
	40	0 6.9	0 7.1	0 7.2	0 7.4	0 7.6	0 7.8	0 8.1	0 8.4	0 8.7			20
	50	0 3.5	0 3.5	0 3.6	0 3.7	0 3.8	0 3.9	0 4.1	0 4.2	0 4.3			10
12	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		12	0

Lat.		48°	50°	52°	54°	56°	58°	60°	61°	62°	Lat.		
H.A.											H.A.		
h	m	°	'	°	'	°	'	°	'	°	'	h	m
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 0.0		24	0
	10	0 4.6	0 4.7	0 5.0	0 5.2	0 5.5	0 5.8	0 6.2	0 6.4	0 6.6		23	50
	20	0 9.1	0 9.5	0 9.9	0 10.4	0 10.9	0 11.6	0 12.3	0 12.7	0 13.2			40
0	30	0 13.6	0 14.2	0 14.8	0 15.6	0 16.4	0 17.3	0 18.4	0 19.1	0 19.7		23	30
	40	0 18.1	0 18.9	0 19.7	0 20.7	0 21.8	0 23.0	0 24.5	0 25.3	0 26.2			20
	50	0 22.6	0 23.5	0 24.6	0 25.8	0 27.2	0 28.7	0 30.5	0 31.6	0 32.7			10
1	0	0 27.0	0 28.1	0 29.4	0 30.8	0 32.5	0 34.4	0 36.5	0 37.7	0 39.0		23	0

TABLE IV.

697

AZIMUTH OF POLARIS AT ALL HOUR ANGLES, 1916.

For hour angles 0^h to 12^h the star is west of north, and for hour angles 12^h to 24^h it is east of north.]

Lat.		48°	50°	52°	54°	56°	58°	60°	61°	62°	Lat.		
A.											H. A.		
h	m	°	'	°	'	°	'	°	'	°	'	h	m
1	0	0 27.0	0 28.1	0 29.4	0 30.8	0 32.5	0 34.4	0 36.5	0 37.7	0 39.0		23	0
	10	0 31.3	0 32.6	0 34.1	0 35.8	0 37.7	0 39.9	0 42.4	0 43.8	0 45.3		22	50
	20	0 35.6	0 37.1	0 38.8	0 40.7	0 42.9	0 45.4	0 48.2	0 49.8	0 51.5			40
1	30	0 39.8	0 41.5	0 43.4	0 45.6	0 48.0	0 50.7	0 53.9	0 55.7	0 57.6		22	30
	40	0 44.0	0 45.8	0 47.9	0 50.3	0 53.0	0 56.0	0 59.5	1 1.5	1 3.6			20
	50	0 48.0	0 50.1	0 52.3	0 54.9	0 57.8	1 1.2	1 5.0	1 7.1	1 9.4			10
2	0	0 52.0	0 54.2	0 56.6	0 59.4	1 2.6	1 6.2	1 10.3	1 12.6	1 15.1		22	0
	10	0 55.8	0 58.2	1 0.8	1 3.8	1 7.2	1 11.1	1 15.5	1 18.0	1 20.6		21	50
	20	0 59.6	1 2.1	1 4.9	1 8.1	1 11.7	1 15.8	1 20.5	1 23.2	1 26.0			40
2	30	1 3.2	1 5.9	1 8.8	1 12.2	1 16.0	1 20.4	1 25.4	1 28.2	1 31.2		21	30
	40	1 6.7	1 9.5	1 12.6	1 16.2	1 20.2	1 24.8	1 30.1	1 33.0	1 36.2			20
	50	1 10.0	1 13.0	1 16.3	1 20.0	1 24.2	1 29.0	1 34.6	1 37.7	1 41.0			10
3	0	1 13.2	1 16.3	1 19.8	1 23.7	1 28.1	1 33.1	1 38.9	1 42.1	1 45.6		21	0
	10	1 16.3	1 19.5	1 23.1	1 27.2	1 31.8	1 37.0	1 43.0	1 46.3	1 50.0		20	50
	20	1 19.2	1 22.6	1 26.3	1 30.5	1 35.3	1 40.7	1 46.9	1 50.3	1 54.1			40
3	30	1 22.0	1 25.5	1 29.3	1 33.6	1 38.6	1 44.2	1 50.6	1 54.1	1 58.0		20	30
	40	1 24.6	1 28.2	1 32.1	1 36.6	1 41.7	1 47.4	1 54.0	1 57.7	2 1.7			20
	50	1 27.0	1 30.7	1 34.8	1 39.4	1 44.6	1 50.5	1 57.3	2 1.0	2 5.1			10
4	0	1 29.3	1 33.0	1 37.2	1 41.9	1 47.3	1 53.3	2 0.2	2 4.1	2 8.3		20	0
	10	1 31.4	1 35.2	1 39.5	1 44.3	1 49.7	1 55.9	2 3.0	2 6.9	2 11.2		19	50
	20	1 33.3	1 37.2	1 41.6	1 46.5	1 52.0	1 58.3	2 5.5	2 9.5	2 13.8			40
4	30	1 35.0	1 39.0	1 43.4	1 48.4	1 54.0	2 0.4	2 7.8	2 11.8	2 16.2		19	30
	40	1 36.6	1 40.6	1 45.1	1 50.1	1 55.8	2 2.3	2 9.8	2 13.9	2 18.3			20
	50	1 37.9	1 42.0	1 46.5	1 51.6	1 57.4	2 4.0	2 11.5	2 15.7	2 20.2			10
5	0	1 39.1	1 43.2	1 47.8	1 52.9	1 58.8	2 5.4	2 13.0	2 17.2	2 21.7		19	0
	10	1 40.1	1 44.2	1 48.8	1 54.0	1 59.9	2 6.6	2 14.2	2 18.5	2 23.0		18	50
	20	1 40.8	1 45.0	1 49.6	1 54.9	2 0.8	2 7.5	2 15.2	2 19.5	2 24.0			40
5	30	1 41.4	1 45.6	1 50.3	1 55.5	2 1.5	2 8.2	2 15.9	2 20.2	2 24.8		18	30
	40	1 41.8	1 46.0	1 50.7	1 55.9	2 1.9	2 8.6	2 16.4	2 20.6	2 25.2			20
	50	1 42.0	1 46.2	1 50.9	1 56.1	2 2.1	2 8.8	2 16.6	2 20.8	2 25.4			10
6	0	1 42.0	1 46.2	1 50.9	1 56.1	2 2.1	2 8.8	2 16.5	2 20.7	2 25.3		18	0
	10	1 41.8	1 46.0	1 50.6	1 55.9	2 1.8	2 8.5	2 16.1	2 20.4	2 24.9		17	50
	20	1 41.4	1 45.6	1 50.2	1 55.4	2 1.3	2 8.0	2 15.5	2 19.8	2 24.3			40
6	30	1 40.8	1 44.9	1 49.6	1 54.7	2 0.6	2 7.2	2 14.7	2 18.9	2 23.4		17	30
	40	1 40.1	1 44.1	1 48.7	1 53.8	1 59.6	2 6.2	2 13.6	2 17.7	2 22.2			20
	50	1 39.1	1 43.1	1 47.6	1 52.7	1 58.4	2 4.9	2 12.3	2 16.3	2 20.7			10
7	0	1 38.0	1 41.9	1 46.4	1 51.4	1 57.0	2 3.4	2 10.7	2 14.7	2 19.0		17	0
	10	1 36.6	1 40.5	1 44.9	1 49.8	1 55.4	2 1.6	2 8.8	2 12.8	2 17.0		16	50
	20	1 35.1	1 39.0	1 43.3	1 48.1	1 53.5	1 59.7	2 6.7	2 10.7	2 14.8			40
7	30	1 33.4	1 37.2	1 41.4	1 46.2	1 51.5	1 57.5	2 4.4	2 8.3	2 12.4		16	30
	40	1 31.6	1 35.3	1 39.4	1 44.0	1 49.2	1 55.2	2 1.9	2 5.6	2 9.7			20
	50	1 29.6	1 33.2	1 37.2	1 41.7	1 46.8	1 52.6	1 59.2	2 2.8	2 6.7			10
8	0	1 27.4	1 30.9	1 34.8	1 39.2	1 44.1	1 49.8	1 56.2	1 59.7	2 3.5		16	0
	10	1 25.0	1 28.4	1 32.2	1 36.5	1 41.3	1 46.8	1 53.0	1 56.5	2 0.1		15	50
	20	1 22.5	1 25.8	1 29.5	1 33.6	1 38.3	1 43.6	1 49.6	1 53.0	1 56.5			40
8	30	1 19.8	1 23.0	1 26.6	1 30.6	1 35.1	1 40.2	1 46.0	1 49.3	1 52.7		15	30
	40	1 17.0	1 20.1	1 23.5	1 27.4	1 31.7	1 36.6	1 42.3	1 45.4	1 48.7			20
	50	1 14.1	1 17.0	1 20.3	1 24.0	1 28.2	1 32.9	1 38.3	1 41.3	1 44.5			10
9	0	1 11.0	1 13.8	1 17.0	1 20.5	1 24.5	1 29.0	1 34.2	1 37.1	1 40.1		15	0
	10	1 7.8	1 10.5	1 13.5	1 16.9	1 20.7	1 25.0	1 29.9	1 32.7	1 35.6		14	50
	20	1 4.4	1 7.0	1 9.9	1 13.1	1 16.7	1 20.8	1 25.5	1 28.1	1 30.8			40
9	30	1 1.0	1 3.4	1 6.1	1 9.2	1 12.6	1 16.4	1 20.9	1 23.3	1 25.9		14	30
	40	0 57.4	0 59.7	1 2.3	1 5.1	1 8.3	1 11.9	1 16.1	1 18.4	1 20.9			20
	50	0 53.8	0 55.9	0 58.3	1 1.0	1 3.9	1 7.3	1 11.2	1 13.4	1 15.7			10
10	0	0 50.0	0 52.0	0 54.2	0 56.7	0 59.5	1 2.6	1 6.2	1 8.3	1 10.4		14	0

AZIMUTH OF POLARIS AT ALL HOUR ANGLES, 1916.

[For hour angles 0^h to 12^h the star is west of north, and for hour angles 12^h to 24^h it is east of north.]

Lat.		48°	50°	52°	54°	56°	58°	60°	61°	62°	Lat.	
H.A.											H.A.	
h m	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h m	° ' "
10 0	0 50.0	0 52.0	0 54.2	0 56.7	0 59.5	1 2.6	1 6.2	1 8.3	1 10.4	14 0	14 0	14 0
10 10	0 46.2	0 48.0	0 50.0	0 52.3	0 54.9	0 57.8	1 1.1	1 3.0	1 5.0	13 50	13 50	13 50
10 20	0 42.2	0 43.9	0 45.8	0 47.8	0 50.2	0 52.9	0 55.9	0 57.6	0 59.4	40	40	40
10 30	0 38.2	0 39.7	0 41.4	0 43.3	0 45.4	0 47.8	0 50.6	0 52.2	0 53.8	13 30	13 30	13 30
10 40	0 34.2	0 35.5	0 37.0	0 38.7	0 40.6	0 42.7	0 45.2	0 46.6	0 48.0	20	20	20
10 50	0 30.0	0 31.2	0 32.5	0 34.0	0 35.7	0 37.5	0 39.7	0 40.9	0 42.2	10	10	10
11 0	0 25.8	0 26.8	0 28.0	0 29.3	0 30.7	0 32.3	0 34.2	0 35.2	0 36.3	13 0	13 0	13 0
11 10	0 21.6	0 22.4	0 23.4	0 24.5	0 25.7	0 27.0	0 28.6	0 29.4	0 30.4	12 50	12 50	12 50
11 20	0 17.3	0 18.0	0 18.8	0 19.6	0 20.6	0 21.7	0 22.9	0 23.6	0 24.4	40	40	40
11 30	0 13.0	0 13.5	0 14.1	0 14.7	0 15.5	0 16.3	0 17.2	0 17.8	0 18.3	12 30	12 30	12 30
11 40	0 8.7	0 9.0	0 9.4	0 9.8	0 10.3	0 10.9	0 11.5	0 11.9	0 12.2	20	20	20
11 50	0 4.3	0 4.5	0 4.7	0 4.9	0 5.2	0 5.4	0 5.8	0 6.0	0 6.1	10	10	10
12 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	12 0	12 0	12 0

Lat.		62°	63°	64°	65°	66°	67°	68°	69°	70°	Lat.	
H.A.											H.A.	
h m	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h m	° ' "
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 0.0	0 0.0	24 0	24 0
0 10	0 6.6	0 6.8	0 7.1	0 7.4	0 7.7	0 8.0	0 8.4	0 8.8	0 9.2	23 50	23 50	23 50
0 20	0 13.2	0 13.6	0 14.2	0 14.7	0 15.3	0 16.0	0 16.7	0 17.5	0 18.4	40	40	40
0 30	0 19.7	0 20.4	0 21.2	0 22.0	0 22.9	0 23.9	0 25.0	0 26.2	0 27.5	23 30	23 30	23 30
0 40	0 26.2	0 27.1	0 28.2	0 29.3	0 30.5	0 31.8	0 33.2	0 34.8	0 36.6	20	20	20
0 50	0 32.7	0 33.8	0 35.1	0 36.5	0 38.0	0 39.6	0 41.4	0 43.4	0 45.6	10	10	10
1 0	0 39.0	0 40.4	0 41.9	0 43.6	0 45.4	0 47.3	0 49.5	0 51.9	0 54.5	23 0	23 0	23 0
1 10	0 45.3	0 47.0	0 48.7	0 50.6	0 52.7	0 55.0	0 57.5	1 0.3	1 3.3	22 50	22 50	22 50
1 20	0 51.5	0 53.4	0 55.4	0 57.5	0 59.9	1 2.5	1 5.3	1 8.5	1 11.9	40	40	40
1 30	0 57.6	0 59.7	1 1.9	1 4.3	1 7.0	1 9.9	1 13.0	1 16.5	1 20.4	22 30	22 30	22 30
1 40	1 3.6	1 5.9	1 8.3	1 11.0	1 13.9	1 17.1	1 20.6	1 24.4	1 28.7	20	20	20
1 50	1 9.4	1 11.9	1 14.6	1 17.5	1 20.7	1 24.1	1 28.0	1 32.1	1 36.8	10	10	10
2 0	1 15.1	1 17.8	1 20.7	1 23.8	1 27.3	1 31.0	1 35.1	1 39.7	1 44.7	22 0	22 0	22 0
2 10	1 20.8	1 23.5	1 26.6	1 30.0	1 33.7	1 37.7	1 42.1	1 47.0	1 52.4	21 50	21 50	21 50
2 20	1 26.0	1 29.1	1 32.4	1 36.0	1 39.9	1 44.2	1 48.9	1 54.1	1 59.8	40	40	40
2 30	1 31.2	1 34.4	1 37.9	1 41.7	1 45.9	1 50.4	1 55.4	2 0.9	2 6.9	21 30	21 30	21 30
2 40	1 36.2	1 39.6	1 43.3	1 47.3	1 51.7	1 56.4	2 1.7	2 7.4	2 13.8	20	20	20
2 50	1 41.0	1 44.6	1 48.4	1 52.6	1 57.2	2 2.2	2 7.7	2 13.7	2 20.4	10	10	10
3 0	1 45.6	1 49.3	1 53.3	1 57.7	2 2.5	2 7.7	2 13.4	2 19.7	2 26.7	21 0	21 0	21 0
3 10	1 50.0	1 53.8	1 58.0	2 2.6	2 7.5	2 12.9	2 18.9	2 25.4	2 32.7	20 50	20 50	20 50
3 20	1 54.1	1 58.1	2 2.4	2 7.2	2 12.3	2 17.9	2 24.1	2 30.8	2 38.3	40	40	40
3 30	1 58.0	2 2.1	2 6.6	2 11.5	2 16.8	2 22.6	2 28.9	2 35.9	2 43.6	20 30	20 30	20 30
3 40	2 1.7	2 5.9	2 10.5	2 15.6	2 21.0	2 27.0	2 33.5	2 40.7	2 48.6	20	20	20
3 50	2 5.1	2 9.5	2 14.2	2 19.3	2 24.9	2 31.0	2 37.7	2 45.1	2 53.3	10	10	10
4 0	2 8.3	2 12.7	2 17.6	2 22.8	2 28.6	2 34.8	2 41.7	2 49.2	2 57.5	20 0	20 0	20 0
4 10	2 11.2	2 15.7	2 20.7	2 26.1	2 31.9	2 38.3	2 45.3	2 52.9	3 1.4	19 50	19 50	19 50
4 20	2 13.8	2 18.5	2 23.5	2 29.0	2 34.9	2 41.4	2 48.5	2 56.3	3 5.0	40	40	40
4 30	2 16.2	2 20.9	2 26.0	2 31.6	2 37.6	2 44.2	2 51.4	2 59.4	3 8.1	19 30	19 30	19 30
4 40	2 18.3	2 23.1	2 28.3	2 33.9	2 40.0	2 46.7	2 54.0	3 2.1	3 10.9	20	20	20
4 50	2 20.2	2 25.0	2 30.2	2 35.9	2 42.1	2 48.9	2 56.2	3 4.4	3 13.3	10	10	10
5 0	2 21.7	2 26.6	2 31.9	2 37.6	2 43.9	2 50.7	2 58.1	3 6.3	3 15.3	19 0	19 0	19 0
5 10	2 23.0	2 28.0	2 33.3	2 39.0	2 45.3	2 52.2	2 59.6	3 7.9	3 17.0	18 50	18 50	18 50
5 20	2 24.0	2 29.0	2 34.3	2 40.1	2 46.4	2 53.3	3 0.8	3 9.1	3 18.2	40	40	40
5 30	2 24.8	2 29.7	2 35.1	2 40.9	2 47.2	2 54.1	3 1.6	3 9.9	3 19.1	18 30	18 30	18 30
5 40	2 25.2	2 30.2	2 35.6	2 41.4	2 47.7	2 54.6	3 2.1	3 10.4	3 19.5	20	20	20
5 50	2 25.4	2 30.4	2 35.7	2 41.6	2 47.9	2 54.7	3 2.2	3 10.5	3 19.6	10	10	10
6 0	2 25.3	2 30.3	2 35.6	2 41.4	2 47.7	2 54.5	3 2.0	3 10.3	3 19.4	18 0	18 0	18 0

AZIMUTH OF POLARIS AT ALL HOUR ANGLES, 1916.

[For hour angles 0^h to 12^h the star is west of north, and for hour angles 12^h to 24^h it is east of north.]

Lat.		62°	63°	64°	65°	66°	67°	68°	69°	70°	Lat.		
H. A.											H. A.		
h	m	°	'	°	'	°	'	°	'	°	'	h	m
6	0	2 25.3	2 30.3	2 35.6	2 41.4	2 47.7	2 54.5	3 2.0	3 10.3	3 19.4	18	0	
	10	2 24.9	2 29.9	2 35.2	2 41.0	2 47.2	2 54.0	3 1.5	3 9.7	3 18.7	17	50	
	20	2 24.3	2 29.2	2 34.5	2 40.2	2 46.4	2 53.2	3 0.6	3 8.7	3 17.7	17	40	
6	30	2 23.4	2 28.2	2 33.5	2 39.1	2 45.3	2 52.0	2 59.4	3 7.4	3 16.3	17	30	
	40	2 22.2	2 27.0	2 32.2	2 37.8	2 43.9	2 50.5	2 57.8	3 5.7	3 14.5	17	20	
	50	2 20.7	2 25.5	2 30.6	2 36.1	2 42.2	2 48.7	2 55.9	3 3.7	3 12.4	17	10	
7	0	2 19.0	2 23.7	2 28.7	2 34.2	2 40.1	2 46.6	2 53.6	3 1.4	3 9.9	17	0	
	10	2 17.0	2 21.7	2 26.6	2 32.0	2 37.8	2 44.2	2 51.1	2 58.7	3 7.1	16	50	
	20	2 14.8	2 19.4	2 24.2	2 29.5	2 35.2	2 41.4	2 48.3	2 55.7	3 3.9	16	40	
7	30	2 12.4	2 16.8	2 21.6	2 26.7	2 32.3	2 38.4	2 45.1	2 52.4	3 0.4	16	30	
	40	2 9.7	2 14.0	2 18.7	2 23.7	2 29.2	2 35.1	2 41.6	2 48.8	2 56.6	16	20	
	50	2 6.7	2 11.0	2 15.5	2 20.4	2 25.8	2 31.6	2 37.9	2 44.9	2 52.5	16	10	
8	0	2 3.5	2 7.7	2 12.1	2 16.9	2 22.1	2 27.7	2 33.9	2 40.7	2 48.1	16	0	
	10	2 0.1	2 4.2	2 8.5	2 13.1	2 18.2	2 23.6	2 29.6	2 36.2	2 43.4	15	50	
	20	1 56.5	2 0.4	2 4.6	2 9.1	2 14.0	2 19.3	2 25.1	2 31.4	2 38.4	15	40	
8	30	1 52.7	1 56.5	2 0.5	2 4.9	2 9.6	2 14.7	2 20.3	2 26.4	2 33.1	15	30	
	40	1 48.7	1 52.3	1 56.2	2 0.4	2 4.9	2 9.9	2 15.2	2 21.1	2 27.6	15	20	
	50	1 44.5	1 48.0	1 51.7	1 55.7	2 0.1	2 4.8	2 10.0	2 15.6	2 21.8	15	10	
9	0	1 40.1	1 43.4	1 47.0	1 50.8	1 55.0	1 59.5	2 4.5	2 9.9	2 15.8	15	0	
	10	1 35.6	1 38.7	1 42.1	1 45.8	1 49.7	1 54.0	1 58.7	2 3.9	2 9.6	14	50	
	20	1 30.8	1 33.8	1 37.0	1 40.5	1 44.3	1 48.4	1 52.8	1 57.7	2 3.1	14	40	
9	30	1 25.9	1 28.8	1 31.8	1 35.1	1 38.7	1 42.5	1 46.7	1 51.3	1 56.4	14	30	
	40	1 20.9	1 23.6	1 26.4	1 29.5	1 32.9	1 36.5	1 40.4	1 44.8	1 49.5	14	20	
	50	1 15.7	1 18.2	1 20.9	1 23.8	1 26.9	1 30.3	1 34.0	1 38.0	1 42.5	14	10	
10	0	1 10.4	1 12.7	1 15.2	1 17.9	1 20.8	1 23.9	1 27.4	1 31.1	1 35.3	14	0	
	10	1 5.0	1 7.1	1 9.4	1 11.9	1 14.5	1 17.4	1 20.6	1 24.1	1 27.9	13	50	
	20	0 59.4	1 1.4	1 3.5	1 5.7	1 8.2	1 10.8	1 13.7	1 16.9	1 20.4	13	40	
10	30	0 53.8	0 55.5	0 57.4	0 59.5	1 1.7	1 4.1	1 6.7	1 9.6	1 12.7	13	30	
	40	0 48.0	0 49.6	0 51.3	0 53.1	0 55.1	0 57.2	0 59.6	1 2.1	1 4.9	13	20	
	50	0 42.2	0 43.6	0 45.1	0 46.7	0 48.4	0 50.3	0 52.3	0 54.6	0 57.1	13	10	
11	0	0 36.3	0 37.5	0 38.8	0 40.2	0 41.6	0 43.3	0 45.0	0 47.0	0 49.1	13	0	
	10	0 30.4	0 31.3	0 32.4	0 33.6	0 34.8	0 36.2	0 37.6	0 39.2	0 41.0	12	50	
	20	0 24.4	0 25.1	0 26.0	0 26.9	0 27.9	0 29.0	0 30.2	0 31.5	0 32.9	12	40	
11	30	0 18.3	0 18.9	0 19.5	0 20.2	0 21.0	0 21.8	0 22.7	0 23.7	0 24.7	12	30	
	40	0 12.2	0 12.6	0 13.0	0 13.5	0 14.0	0 14.5	0 15.2	0 15.8	0 16.5	12	20	
	50	0 6.1	0 6.3	0 6.5	0 6.8	0 7.0	0 7.3	0 7.6	0 7.9	0 8.3	12	10	
12	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	12	0	

TABLE IVa.

Table IV has been computed for a declination of 88° 51' 45". For other declinations of Polaris the correction given below should be applied to the Azimuth taken from Table IV.

Decl.	Azimuth.											Decl.
	0'	20'	40'	60'	80'	100'	120'	140'	160'	180'	200'	
88 51 20	0.0	+0.1	+0.2	+0.4	+0.5	+0.6	+0.7	+0.8	+1.0	+1.1	+1.2	88 51 20
88 51 25	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	88 51 25
88 51 30	0.0	+0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7	88 51 30
88 51 35	0.0	0.0	+0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	88 51 35
88 51 40	0.0	0.0	0.0	+0.1	+0.1	+0.1	+0.1	+0.2	+0.2	+0.2	+0.2	88 51 40
88 51 45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88 51 45
88 51 50	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	88 51 50
88 51 55	0.0	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	88 51 55
88 52 0	0.0	-0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7	88 52 0
88 52 5	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	88 52 5
88 52 10	0.0	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-1.0	-1.1	-1.2	88 52 10

AZIMUTH OF POLARIS AT ELONGATION, 1916.

Decl. Lat.	88° 51' 20"	88° 51' 30"	88° 51' 40"	88° 51' 50"	88° 52' 00"	88° 52' 10"	Variation for—	
							1' of Lat.	1' of d.
10 0	1 9 43.6	1 9 33.4	1 9 23.3	1 9 13.1	1 9 2.9	1 8 52.8	+0.21	-1.02
10 20	1 9 47.9	1 9 37.8	1 9 27.6	1 9 17.4	1 9 7.3	1 8 57.1	0.22	1.02
10 40	1 9 52.4	1 9 42.3	1 9 32.1	1 9 21.9	1 9 11.8	1 9 1.6	0.23	1.02
11 0	1 9 57.1	1 9 46.9	1 9 36.8	1 9 26.6	1 9 16.4	1 9 6.2	0.24	1.02
11 20	1 10 1.9	1 9 51.7	1 9 41.6	1 9 31.4	1 9 21.2	1 9 11.0	0.24	1.02
11 40	1 10 6.9	1 9 56.7	1 9 46.5	1 9 36.3	1 9 26.1	1 9 15.9	+0.25	-1.02
12 0	1 10 12.1	1 10 1.8	1 9 51.6	1 9 41.4	1 9 31.2	1 9 20.9	0.26	1.02
12 20	1 10 17.3	1 10 7.1	1 9 56.9	1 9 46.6	1 9 36.4	1 9 26.2	0.27	1.03
12 40	1 10 22.8	1 10 12.5	1 10 2.3	1 9 52.0	1 9 41.8	1 9 31.5	0.28	1.03
13 0	1 10 28.4	1 10 18.1	1 10 7.9	1 9 57.6	1 9 47.3	1 9 37.1	0.28	1.03
13 20	1 10 34.2	1 10 23.9	1 10 13.6	1 10 3.3	1 9 53.0	1 9 42.8	+0.29	-1.03
13 40	1 10 40.1	1 10 29.8	1 10 19.5	1 10 9.2	1 9 58.9	1 9 48.6	0.30	1.03
14 0	1 10 46.2	1 10 35.8	1 10 25.5	1 10 15.2	1 10 4.9	1 9 54.6	0.30	1.03
14 20	1 10 52.4	1 10 42.1	1 10 31.7	1 10 21.4	1 10 11.1	1 10 0.8	0.31	1.03
14 40	1 10 58.8	1 10 48.4	1 10 38.1	1 10 27.8	1 10 17.4	1 10 7.1	0.32	1.03
15 0	1 11 5.4	1 10 55.0	1 10 44.6	1 10 34.3	1 10 23.9	1 10 13.6	+0.33	-1.04
15 20	1 11 12.1	1 11 1.7	1 10 51.4	1 10 41.0	1 10 30.6	1 10 20.2	0.34	1.04
15 40	1 11 19.0	1 11 8.6	1 10 58.2	1 10 47.8	1 10 37.4	1 10 27.1	0.34	1.04
16 0	1 11 26.1	1 11 15.7	1 11 5.2	1 10 54.8	1 10 44.4	1 10 34.0	0.35	1.04
16 20	1 11 33.3	1 11 22.9	1 11 12.4	1 11 2.0	1 10 51.6	1 10 41.2	0.36	1.04
16 40	1 11 40.7	1 11 30.3	1 11 19.8	1 11 9.4	1 10 58.9	1 10 48.5	+0.37	-1.04
17 0	1 11 48.3	1 11 37.8	1 11 27.4	1 11 16.9	1 11 8.4	1 10 56.0	0.38	1.05
17 20	1 11 56.0	1 11 45.5	1 11 35.1	1 11 24.6	1 11 14.1	1 11 3.6	0.39	1.05
17 40	1 12 4.0	1 11 53.5	1 11 43.0	1 11 32.5	1 11 22.0	1 11 11.5	0.40	1.05
18 0	1 12 12.1	1 12 1.5	1 11 51.0	1 11 40.5	1 11 30.0	1 11 19.5	0.41	1.05
18 20	1 12 20.3	1 12 9.8	1 11 59.3	1 11 48.7	1 11 38.2	1 11 27.7	+0.42	-1.05
18 40	1 12 28.8	1 12 18.2	1 12 7.7	1 11 57.1	1 11 46.6	1 11 36.0	0.42	1.06
19 0	1 12 37.4	1 12 26.9	1 12 16.3	1 12 5.7	1 11 55.1	1 11 44.5	0.43	1.06
19 20	1 12 46.2	1 12 35.6	1 12 25.1	1 12 14.5	1 12 3.9	1 11 53.3	0.44	1.06
19 40	1 12 55.3	1 12 44.6	1 12 34.0	1 12 23.4	1 12 12.8	1 12 2.2	0.45	1.06
20 0	1 13 4.4	1 12 53.8	1 12 43.2	1 12 32.5	1 12 21.9	1 12 11.2	+0.46	-1.06
20 20	1 13 13.8	1 13 3.2	1 12 52.5	1 12 41.8	1 12 31.2	1 12 20.5	0.47	1.07
20 40	1 13 23.4	1 13 12.7	1 13 2.0	1 12 51.3	1 12 40.7	1 12 30.0	0.48	1.07
21 0	1 13 33.2	1 13 22.5	1 13 11.7	1 13 1.0	1 12 50.3	1 12 39.6	0.49	1.07
21 20	1 13 43.1	1 13 32.4	1 13 21.6	1 13 10.9	1 13 0.2	1 12 49.4	0.50	1.07
21 40	1 13 53.3	1 13 42.5	1 13 31.7	1 13 21.0	1 13 10.2	1 12 59.5	+0.51	-1.08
22 0	1 14 3.6	1 13 52.8	1 13 42.0	1 13 31.2	1 13 20.5	1 13 9.7	0.52	1.08
22 20	1 14 14.2	1 14 3.4	1 13 52.5	1 13 41.7	1 13 30.9	1 13 20.1	0.53	1.08
22 40	1 14 24.9	1 14 14.1	1 14 3.2	1 13 52.4	1 13 41.6	1 13 30.7	0.54	1.08
23 0	1 14 35.9	1 14 25.0	1 14 14.1	1 14 3.3	1 13 52.4	1 13 41.5	0.55	1.09
23 20	1 14 47.0	1 14 36.1	1 14 25.2	1 14 14.3	1 14 3.4	1 13 52.6	+0.56	-1.09
23 40	1 14 58.4	1 14 47.5	1 14 36.5	1 14 25.6	1 14 14.7	1 14 3.8	0.57	1.09
24 0	1 15 10.0	1 14 59.0	1 14 48.1	1 14 37.1	1 14 28.2	1 14 15.2	0.58	1.10
24 20	1 15 21.8	1 15 10.8	1 14 59.8	1 14 48.8	1 14 37.9	1 14 26.9	0.59	1.10
24 40	1 15 33.8	1 15 22.8	1 15 11.8	1 15 0.8	1 14 49.7	1 14 38.7	0.60	1.10
25 0	1 15 46.0	1 15 34.9	1 15 23.9	1 15 12.9	1 15 1.8	1 14 50.8	+0.61	-1.10
25 20	1 15 58.4	1 15 47.4	1 15 36.3	1 15 25.2	1 15 14.2	1 15 3.1	0.62	1.11
25 40	1 16 11.1	1 16 0.0	1 15 48.9	1 15 37.8	1 15 26.7	1 15 15.6	0.64	1.11
26 0	1 16 24.0	1 16 12.9	1 16 1.7	1 15 50.6	1 15 39.5	1 15 28.4	0.65	1.11
26 20	1 16 37.1	1 16 26.0	1 16 14.8	1 16 3.6	1 15 52.5	1 15 41.3	0.66	1.12
26 40	1 16 50.5	1 16 39.3	1 16 28.1	1 16 16.9	1 16 5.7	1 15 54.5	+0.67	-1.12
27 0	1 17 4.1	1 16 52.8	1 16 41.6	1 16 30.4	1 16 19.2	1 16 7.9	0.68	1.12
27 20	1 17 17.9	1 17 6.6	1 16 55.4	1 16 44.1	1 16 32.9	1 16 21.6	0.69	1.13
27 40	1 17 32.0	1 17 20.7	1 17 9.4	1 16 58.1	1 16 46.8	1 16 35.5	0.70	1.13
28 0	1 17 46.3	1 17 34.9	1 17 23.6	1 17 12.3	1 17 1.0	1 16 49.6	0.72	1.13
28 20	1 18 0.8	1 17 49.5	1 17 38.1	1 17 26.8	1 17 15.4	1 17 4.0	+0.73	-1.14
28 40	1 18 15.6	1 18 4.3	1 17 52.8	1 17 41.5	1 17 30.1	1 17 18.7	0.74	1.14
29 0	1 18 30.7	1 18 19.3	1 18 7.8	1 17 56.4	1 17 45.0	1 17 33.5	0.76	1.14
29 20	1 18 46.0	1 18 34.6	1 18 23.1	1 18 11.6	1 18 0.2	1 17 48.7	0.77	1.15
29 40	1 19 1.6	1 18 50.1	1 18 38.6	1 18 27.1	1 18 15.6	1 18 4.1	0.78	1.15
30 0	1 19 17.5	1 19 5.9	1 18 54.4	1 18 42.8	1 18 31.3	1 18 19.7	+0.79	-1.16

AZIMUTH OF POLARIS AT ELONGATION, 1916.

Decl. Lat.	88° 51' 20"	88° 51' 30"	88° 51' 40"	88° 51' 50"	88° 52' 0"	88° 52' 10"	Variation for—	
							1' of Lat.	1" of s.
30 0	1 19 17.5	1 19 5.9	1 18 54.4	1 18 42.8	1 18 31.3	1 18 19.7	+0.79	-1.16
30 10	1 19 25.5	1 19 13.9	1 19 2.4	1 18 50.8	1 18 39.2	1 18 27.7	0.80	1.16
30 20	1 19 33.6	1 19 22.0	1 19 10.4	1 18 58.8	1 18 47.2	1 18 35.7	0.81	1.16
30 30	1 19 41.8	1 19 30.1	1 19 18.5	1 19 6.9	1 18 55.3	1 18 43.7	0.82	1.16
30 40	1 19 50.0	1 19 38.4	1 19 26.7	1 19 15.1	1 19 3.5	1 18 51.8	0.82	1.16
30 50	1 19 58.3	1 19 46.6	1 19 35.0	1 19 23.3	1 19 11.7	1 19 0.0	+0.83	-1.17
31 0	1 20 6.6	1 19 55.0	1 19 43.3	1 19 31.6	1 19 20.0	1 19 8.3	0.84	1.17
31 10	1 20 15.1	1 20 3.4	1 19 51.7	1 19 40.0	1 19 28.3	1 19 16.6	0.84	1.17
31 20	1 20 23.6	1 20 11.9	1 20 0.2	1 19 48.5	1 19 36.8	1 19 25.0	0.85	1.17
31 30	1 20 32.2	1 20 20.4	1 20 8.7	1 19 57.0	1 19 45.3	1 19 33.5	0.86	1.17
31 40	1 20 40.8	1 20 29.1	1 20 17.3	1 20 5.6	1 19 53.8	1 19 42.1	+0.86	-1.17
31 50	1 20 49.5	1 20 37.8	1 20 26.0	1 20 14.2	1 20 2.5	1 19 50.7	0.87	1.18
32 0	1 20 58.3	1 20 46.5	1 20 34.8	1 20 23.0	1 20 11.2	1 19 59.4	0.88	1.18
32 10	1 21 7.2	1 20 55.4	1 20 43.6	1 20 31.8	1 20 19.9	1 20 8.1	0.88	1.18
32 20	1 21 16.2	1 21 4.3	1 20 52.5	1 20 40.6	1 20 28.8	1 20 17.0	0.89	1.18
32 30	1 21 25.2	1 21 13.3	1 21 1.5	1 20 49.6	1 20 37.7	1 20 25.9	+0.90	-1.19
32 40	1 21 34.3	1 21 22.4	1 21 10.5	1 20 58.6	1 20 46.7	1 20 34.9	0.91	1.19
32 50	1 21 43.4	1 21 31.5	1 21 19.6	1 21 7.7	1 20 55.8	1 20 43.9	0.92	1.19
33 0	1 21 52.7	1 21 40.7	1 21 28.8	1 21 16.9	1 21 5.0	1 20 53.1	0.92	1.19
33 10	1 22 2.0	1 21 50.0	1 21 38.1	1 21 26.2	1 21 14.2	1 21 2.3	0.93	1.19
33 20	1 22 11.4	1 21 59.4	1 21 47.4	1 21 35.5	1 21 23.5	1 21 11.5	+0.94	-1.20
33 30	1 22 20.9	1 22 8.9	1 21 56.9	1 21 44.9	1 21 32.9	1 21 20.9	0.95	1.20
33 40	1 22 30.4	1 22 18.4	1 22 6.4	1 21 54.4	1 21 42.4	1 21 30.3	0.95	1.20
33 50	1 22 40.1	1 22 28.0	1 22 16.0	1 22 3.9	1 21 51.9	1 21 39.9	0.96	1.20
34 0	1 22 49.8	1 22 37.7	1 22 25.6	1 22 13.6	1 22 1.5	1 21 49.5	0.97	1.21
34 10	1 22 59.6	1 22 47.5	1 22 35.4	1 22 23.3	1 22 11.2	1 21 59.1	+0.98	-1.21
34 20	1 23 9.4	1 22 57.3	1 22 45.2	1 22 33.1	1 22 21.0	1 22 8.9	0.98	1.21
34 30	1 23 19.4	1 23 7.3	1 22 55.1	1 22 43.0	1 22 30.9	1 22 18.7	0.99	1.21
34 40	1 23 29.4	1 23 17.3	1 23 5.1	1 22 53.0	1 22 40.8	1 22 28.6	1.00	1.22
34 50	1 23 39.6	1 23 27.4	1 23 15.2	1 23 3.0	1 22 50.8	1 22 38.6	1.01	1.22
35 0	1 23 49.8	1 23 37.5	1 23 25.3	1 23 13.1	1 23 0.9	1 22 48.7	+1.02	-1.22
35 10	1 24 0.0	1 23 47.8	1 23 35.6	1 23 23.4	1 23 11.1	1 22 58.9	1.03	1.22
35 20	1 24 10.4	1 23 58.2	1 23 45.9	1 23 33.6	1 23 21.4	1 23 9.1	1.03	1.23
35 30	1 24 20.9	1 24 8.6	1 23 56.3	1 23 44.0	1 23 31.7	1 23 19.5	1.04	1.23
35 40	1 24 31.4	1 24 19.1	1 24 6.8	1 23 54.5	1 23 42.2	1 23 29.9	1.05	1.23
35 50	1 24 42.1	1 24 29.7	1 24 17.4	1 24 5.0	1 23 52.7	1 23 40.4	+1.06	-1.23
36 0	1 24 52.8	1 24 40.4	1 24 28.0	1 24 15.7	1 24 3.3	1 23 51.0	1.07	1.24
36 10	1 25 3.6	1 24 51.2	1 24 38.8	1 24 26.4	1 24 14.0	1 24 1.6	1.08	1.24
36 20	1 25 14.5	1 25 2.1	1 24 49.6	1 24 37.2	1 24 24.8	1 24 12.4	1.09	1.24
36 30	1 25 25.5	1 25 13.0	1 25 0.6	1 24 48.2	1 24 35.7	1 24 23.3	1.10	1.24
36 40	1 25 36.6	1 25 24.1	1 25 11.6	1 24 59.2	1 24 46.7	1 24 34.2	+1.10	-1.25
36 50	1 25 47.7	1 25 35.2	1 25 22.7	1 25 10.2	1 24 57.7	1 24 45.2	1.11	1.25
37 0	1 25 59.0	1 25 46.5	1 25 34.0	1 25 21.4	1 25 8.9	1 24 56.4	1.12	1.25
37 10	1 26 10.3	1 25 57.8	1 25 45.2	1 25 32.7	1 25 20.1	1 25 7.6	1.13	1.25
37 20	1 26 21.8	1 26 9.2	1 25 56.6	1 25 44.1	1 25 31.5	1 25 18.9	1.14	1.26
37 30	1 26 33.3	1 26 20.7	1 26 8.1	1 25 55.5	1 25 42.9	1 25 30.3	+1.15	-1.26
37 40	1 26 45.0	1 26 32.4	1 26 19.7	1 26 7.1	1 25 54.5	1 25 41.8	1.16	1.26
37 50	1 26 56.7	1 26 44.1	1 26 31.4	1 26 18.7	1 26 6.1	1 25 53.4	1.17	1.27
38 0	1 27 8.6	1 26 55.9	1 26 43.2	1 26 30.5	1 26 17.8	1 26 5.1	1.18	1.27
38 10	1 27 20.5	1 27 7.8	1 26 55.1	1 26 42.3	1 26 29.6	1 26 16.9	1.19	1.27
38 20	1 27 32.5	1 27 19.8	1 27 7.0	1 26 54.3	1 26 41.5	1 26 28.8	+1.20	-1.27
38 30	1 27 44.7	1 27 31.9	1 27 19.1	1 27 6.3	1 26 53.5	1 26 40.8	1.21	1.28
38 40	1 27 56.9	1 27 44.1	1 27 31.3	1 27 18.5	1 27 5.7	1 26 52.9	1.22	1.28
38 50	1 28 9.2	1 27 56.4	1 27 43.6	1 27 30.7	1 27 17.9	1 27 5.0	1.23	1.28
39 0	1 28 21.7	1 28 8.8	1 27 55.9	1 27 43.1	1 27 30.2	1 27 17.3	1.24	1.29
39 10	1 28 34.2	1 28 21.3	1 28 8.4	1 27 55.5	1 27 42.6	1 27 29.7	+1.25	-1.29
39 20	1 28 46.9	1 28 33.9	1 28 21.0	1 28 8.1	1 27 55.1	1 27 42.2	1.26	1.29
39 30	1 28 59.6	1 28 46.7	1 28 33.7	1 28 20.7	1 28 7.8	1 27 54.8	1.27	1.30
39 40	1 29 12.5	1 28 59.5	1 28 46.5	1 28 33.5	1 28 20.5	1 28 7.5	1.28	1.30
39 50	1 29 25.4	1 29 12.4	1 28 59.4	1 28 46.4	1 28 33.4	1 28 20.3	1.29	1.30
40 0	1 29 38.5	1 29 25.5	1 29 12.4	1 28 59.4	1 28 46.3	1 28 33.2	+1.30	-1.31

AZIMUTH OF POLARIS AT ELONGATION, 1916.

Decl. Lat.							Variation for—	
	88° 51' 20''	88° 51' 30''	88° 51' 40''	88° 51' 50''	88° 52' 0''	88° 52' 10''	1' of Lat.	1" of λ .
40 0	1 29 38.5	1 29 25.5	1 29 12.4	1 28 59.4	1 28 46.3	1 28 33.2	+1.30	-1.31
40 10	1 29 51.7	1 29 38.6	1 29 25.5	1 29 12.4	1 28 59.4	1 28 46.3	1.32	1.31
40 20	1 30 5.0	1 29 51.9	1 29 38.8	1 29 25.7	1 29 12.5	1 28 59.4	1.33	1.31
40 30	1 30 18.4	1 30 5.3	1 29 52.1	1 29 39.0	1 29 25.8	1 29 12.7	1.34	1.31
40 40	1 30 31.9	1 30 18.8	1 30 5.6	1 29 52.4	1 29 39.2	1 29 26.0	1.35	1.32
40 50	1 30 45.6	1 30 32.4	1 30 19.1	1 30 5.9	1 29 52.7	1 29 39.5	+1.36	-1.32
41 0	1 30 59.3	1 30 46.1	1 30 32.8	1 30 19.6	1 30 6.3	1 29 53.1	1.37	1.32
41 10	1 31 13.2	1 30 59.9	1 30 46.6	1 30 33.3	1 30 20.1	1 30 6.8	1.38	1.33
41 20	1 31 27.2	1 31 13.9	1 31 0.5	1 30 47.2	1 30 33.9	1 30 20.6	1.40	1.33
41 30	1 31 41.3	1 31 27.9	1 31 14.6	1 31 1.2	1 30 47.9	1 30 34.5	1.41	1.34
41 40	1 31 55.5	1 31 42.1	1 31 28.7	1 31 15.3	1 31 2.0	1 30 48.6	+1.42	-1.34
41 50	1 32 9.8	1 31 56.4	1 31 43.0	1 31 29.6	1 31 16.2	1 31 2.7	1.43	1.34
42 0	1 32 24.3	1 32 10.8	1 31 57.4	1 31 43.9	1 31 30.5	1 31 17.0	1.44	1.35
42 10	1 32 38.9	1 32 25.4	1 32 11.9	1 31 58.4	1 31 44.9	1 31 31.4	1.46	1.35
42 20	1 32 53.6	1 32 40.1	1 32 26.5	1 32 13.0	1 31 59.5	1 31 46.0	1.47	1.35
42 30	1 33 8.4	1 32 54.9	1 32 41.3	1 32 27.7	1 32 14.2	1 32 0.6	+1.48	-1.36
42 40	1 33 23.4	1 33 9.8	1 32 56.2	1 32 42.6	1 32 29.0	1 32 15.4	1.50	1.36
42 50	1 33 38.5	1 33 24.9	1 33 11.2	1 32 57.6	1 32 43.9	1 32 30.3	1.51	1.36
43 0	1 33 53.7	1 33 40.0	1 33 26.4	1 33 12.7	1 32 59.0	1 32 45.3	1.52	1.37
43 10	1 34 9.1	1 33 55.4	1 33 41.6	1 33 27.9	1 33 14.2	1 33 0.5	1.53	1.37
43 20	1 34 24.6	1 34 10.8	1 33 57.0	1 33 43.3	1 33 29.5	1 33 15.8	+1.55	-1.38
43 30	1 34 40.2	1 34 26.4	1 34 12.6	1 33 58.8	1 33 45.0	1 33 31.2	1.56	1.38
43 40	1 34 55.9	1 34 42.1	1 34 28.3	1 34 14.4	1 34 0.6	1 33 46.8	1.57	1.38
43 50	1 35 11.8	1 34 57.9	1 34 44.1	1 34 30.2	1 34 16.3	1 34 2.5	1.58	1.39
44 0	1 35 27.8	1 35 13.9	1 35 0.0	1 34 46.1	1 34 32.2	1 34 18.3	1.60	1.39
44 10	1 35 44.0	1 35 30.0	1 35 16.1	1 35 2.2	1 34 48.2	1 34 34.3	+1.61	-1.39
44 20	1 36 0.3	1 35 46.3	1 35 32.3	1 35 18.4	1 35 4.4	1 34 50.4	1.63	1.40
44 30	1 36 16.7	1 36 2.7	1 35 48.7	1 35 34.7	1 35 20.7	1 35 6.6	1.64	1.40
44 40	1 36 33.3	1 36 19.3	1 36 5.2	1 35 51.2	1 35 37.1	1 35 23.0	1.66	1.41
44 50	1 36 50.1	1 36 36.0	1 36 21.9	1 36 7.8	1 35 53.6	1 35 39.5	1.67	1.41
45 0	1 37 6.9	1 36 52.8	1 36 38.7	1 36 24.5	1 36 10.4	1 35 56.2	+1.68	-1.41
45 10	1 37 24.0	1 37 9.8	1 36 55.6	1 36 41.4	1 36 27.2	1 36 13.0	1.70	1.42
45 20	1 37 41.2	1 37 26.9	1 37 12.7	1 36 58.5	1 36 44.2	1 36 30.0	1.71	1.42
45 30	1 37 58.5	1 37 44.2	1 37 29.9	1 37 15.7	1 37 1.4	1 36 47.1	1.73	1.43
45 40	1 38 16.0	1 38 1.7	1 37 47.3	1 37 33.0	1 37 18.7	1 37 4.4	1.75	1.43
45 50	1 38 33.6	1 38 19.3	1 38 4.9	1 37 50.5	1 37 36.2	1 37 21.8	+1.76	-1.44
46 0	1 38 51.4	1 38 37.0	1 38 22.6	1 38 8.2	1 37 53.8	1 37 39.4	1.78	1.44
46 10	1 39 9.3	1 38 54.9	1 38 40.5	1 38 26.0	1 38 11.6	1 37 57.1	1.79	1.44
46 20	1 39 27.5	1 39 13.0	1 38 58.5	1 38 44.0	1 38 29.5	1 38 15.0	1.81	1.45
46 30	1 39 45.7	1 39 31.2	1 39 16.7	1 39 2.1	1 38 47.6	1 38 33.1	1.82	1.45
46 40	1 40 4.2	1 39 49.6	1 39 35.0	1 39 20.4	1 39 5.9	1 38 51.3	+1.84	-1.46
46 50	1 40 22.8	1 40 8.1	1 39 53.5	1 39 38.9	1 39 24.3	1 39 9.7	1.86	1.46
47 0	1 40 41.5	1 40 26.9	1 40 12.2	1 39 57.5	1 39 42.9	1 39 28.2	1.87	1.47
47 10	1 41 0.5	1 40 45.8	1 40 31.0	1 40 16.3	1 40 1.6	1 39 46.9	1.89	1.47
47 20	1 41 19.6	1 41 4.8	1 40 50.1	1 40 35.3	1 40 20.5	1 40 5.8	1.91	1.48
47 30	1 41 38.8	1 41 24.0	1 41 9.2	1 40 54.4	1 40 39.6	1 40 24.8	+1.92	-1.48
47 40	1 41 58.3	1 41 43.5	1 41 28.6	1 41 13.8	1 40 58.9	1 40 44.0	1.94	1.49
47 50	1 42 17.9	1 42 3.0	1 41 48.1	1 41 33.2	1 41 18.3	1 41 3.4	1.96	1.49
48 0	1 42 37.7	1 42 22.8	1 42 7.8	1 41 52.9	1 41 38.0	1 41 23.0	1.98	1.49
48 10	1 42 57.7	1 42 42.7	1 42 27.7	1 42 12.8	1 41 57.8	1 41 42.8	2.00	1.50
48 20	1 43 17.9	1 43 2.9	1 42 47.8	1 42 32.8	1 42 17.7	1 42 2.7	+2.02	-1.50
48 30	1 43 38.3	1 43 23.2	1 43 8.1	1 42 53.0	1 42 37.9	1 42 22.8	2.03	1.51
48 40	1 43 58.8	1 43 43.7	1 43 28.5	1 43 13.4	1 42 58.2	1 42 43.1	2.05	1.51
48 50	1 44 19.5	1 44 4.3	1 43 49.2	1 43 34.0	1 43 18.8	1 43 3.6	2.07	1.52
49 0	1 44 40.5	1 44 25.2	1 44 10.0	1 43 54.7	1 43 39.5	1 43 24.2	2.09	1.53
49 10	1 45 1.6	1 44 46.3	1 44 31.0	1 44 15.7	1 44 0.4	1 43 45.1	+2.11	-1.53
49 20	1 45 22.9	1 45 7.6	1 44 52.2	1 44 36.9	1 44 21.5	1 44 6.2	2.13	1.53
49 30	1 45 44.4	1 45 29.0	1 45 13.6	1 44 58.2	1 44 42.8	1 44 27.4	2.15	1.54
49 40	1 46 6.1	1 45 50.7	1 45 35.2	1 45 19.8	1 45 4.3	1 44 48.9	2.17	1.54
49 50	1 46 28.1	1 46 12.6	1 45 57.0	1 45 41.5	1 45 26.0	1 45 10.5	2.19	1.55
50 0	1 46 50.2	1 46 34.6	1 46 19.1	1 46 3.5	1 45 47.9	1 45 32.4	+2.21	-1.56

TABLE V.

AZIMUTH OF POLARIS AT ELONGATION, 1916.

88° 51' 20''	88° 51' 30''	88° 51' 40''	88° 51' 50''	88° 52' 0''	88° 52' 10''	Variation for—	
						1' of Lat.	1' of δ .
1 46 50.2	1 46 34.6	1 46 19.1	1 46 3.5	1 45 47.9	1 45 32.4	+2.21	-1.56
1 47 12.5	1 46 56.9	1 46 41.3	1 46 25.7	1 46 10.1	1 45 54.4	2.23	1.56
1 47 35.1	1 47 19.4	1 47 3.7	1 46 48.1	1 46 32.4	1 46 16.7	2.25	1.57
1 47 57.8	1 47 42.1	1 47 26.4	1 47 10.6	1 46 54.9	1 46 39.2	2.27	1.57
1 48 20.8	1 48 5.0	1 47 49.2	1 47 33.5	1 47 17.7	1 47 1.9	2.30	1.58
1 48 44.0	1 48 28.2	1 48 12.3	1 47 56.5	1 47 40.6	1 47 24.8	+2.32	-1.58
1 49 7.4	1 48 51.5	1 48 35.6	1 48 19.7	1 48 3.8	1 47 47.9	2.34	1.59
1 49 31.1	1 49 15.1	1 48 59.1	1 48 43.2	1 48 27.2	1 48 11.3	2.36	1.60
1 49 54.9	1 49 38.9	1 49 22.9	1 49 6.9	1 48 50.9	1 48 34.9	2.38	1.60
1 50 19.0	1 50 2.9	1 49 46.9	1 49 30.8	1 49 14.7	1 48 58.7	2.41	1.61
1 50 43.4	1 50 27.2	1 50 11.1	1 49 55.0	1 49 38.8	1 49 22.7	+2.43	-1.61
1 51 7.9	1 50 51.7	1 50 35.5	1 50 19.4	1 50 3.2	1 49 47.0	2.45	1.62
1 51 32.7	1 51 16.5	1 51 0.2	1 50 44.0	1 50 27.7	1 50 11.5	2.48	1.62
1 51 57.8	1 51 41.5	1 51 25.1	1 51 8.8	1 50 52.5	1 50 36.2	2.50	1.63
1 52 23.1	1 52 6.7	1 51 50.3	1 51 34.0	1 51 17.6	1 51 1.2	2.53	1.64
1 52 48.6	1 52 32.2	1 52 15.7	1 51 59.3	1 51 42.9	1 51 26.4	+2.55	-1.64
1 53 14.4	1 52 57.9	1 52 41.4	1 52 24.9	1 52 8.4	1 51 51.9	2.58	1.65
1 53 40.4	1 53 23.9	1 53 7.3	1 52 50.8	1 52 34.2	1 52 17.7	2.60	1.65
1 54 6.8	1 53 50.1	1 53 33.5	1 53 16.9	1 53 0.3	1 52 43.6	2.63	1.66
1 54 33.3	1 54 16.6	1 54 0.0	1 53 43.3	1 53 26.6	1 53 9.9	2.65	1.67
1 55 0.2	1 54 43.4	1 54 26.7	1 54 9.9	1 53 53.2	1 53 36.4	+2.68	-1.68
1 55 27.3	1 55 10.5	1 54 53.6	1 54 36.8	1 54 20.0	1 54 3.2	2.71	1.68
1 55 54.7	1 55 37.8	1 55 20.9	1 55 4.0	1 54 47.1	1 54 30.2	2.74	1.69
1 56 22.3	1 56 5.4	1 55 48.4	1 55 31.5	1 55 14.5	1 54 57.6	2.76	1.69
1 56 50.2	1 56 33.2	1 56 16.2	1 55 59.2	1 55 42.2	1 55 25.1	2.79	1.70
1 57 18.5	1 57 1.4	1 56 44.3	1 56 27.2	1 56 10.1	1 55 53.0	+2.82	-1.71
1 57 47.0	1 57 29.8	1 57 12.7	1 56 55.5	1 56 38.3	1 56 21.2	2.85	1.72
1 58 15.8	1 57 58.6	1 57 41.3	1 57 24.1	1 57 6.9	1 56 49.6	2.88	1.72
1 58 44.9	1 58 27.6	1 58 10.3	1 57 53.0	1 57 35.7	1 57 18.4	2.91	1.73
1 59 14.3	1 58 56.9	1 58 39.5	1 58 22.2	1 58 4.8	1 57 47.4	2.94	1.74
1 59 44.0	1 59 26.5	1 59 9.1	1 58 51.6	1 58 34.2	1 58 16.8	+2.97	-1.74
2 0 14.0	1 59 56.5	1 59 39.0	1 59 21.4	1 59 3.9	1 58 46.4	3.00	1.75
2 0 44.3	2 0 26.7	2 0 9.1	1 59 51.6	1 59 34.0	1 59 16.4	3.03	1.76
2 1 15.0	2 0 57.3	2 0 39.6	2 0 22.0	2 0 4.3	1 59 46.6	3.06	1.77
2 1 45.9	2 1 28.2	2 1 10.4	2 0 52.7	2 0 35.0	2 0 17.2	3.10	1.77
2 2 17.2	2 1 59.4	2 1 41.6	2 1 23.8	2 1 6.0	2 0 48.1	+3.13	-1.78
2 2 48.8	2 2 30.9	2 2 13.1	2 1 55.2	2 1 37.3	2 1 19.4	3.16	1.79
2 3 20.8	2 3 2.8	2 2 44.9	2 2 26.9	2 2 8.9	2 1 51.0	3.19	1.80
2 3 53.1	2 3 35.1	2 3 17.0	2 2 59.0	2 2 40.9	2 2 22.9	3.23	1.80
2 4 25.8	2 4 7.6	2 3 49.5	2 3 31.4	2 3 13.2	2 2 55.1	3.26	1.81
2 4 58.8	2 4 40.6	2 4 22.3	2 4 4.1	2 3 45.9	2 3 27.7	+3.30	-1.82
2 5 32.1	2 5 13.8	2 4 55.5	2 4 37.2	2 4 19.0	2 4 0.7	3.33	1.83
2 6 5.8	2 5 47.5	2 5 29.1	2 5 10.7	2 4 52.4	2 4 34.0	3.37	1.84
2 6 39.9	2 6 21.5	2 6 3.0	2 5 44.6	2 5 26.1	2 5 7.7	3.41	1.84
2 7 14.4	2 6 55.9	2 6 37.3	2 6 18.8	2 6 0.2	2 5 41.7	3.44	1.85
2 7 49.2	2 7 30.6	2 7 12.0	2 6 53.4	2 6 34.7	2 6 16.1	+3.48	-1.86
2 8 24.5	2 8 5.8	2 7 47.0	2 7 28.3	2 7 9.6	2 6 50.9	3.52	1.87
2 9 0.1	2 8 41.3	2 8 22.5	2 8 3.7	2 7 44.0	2 7 26.1	3.56	1.88
2 9 36.1	2 9 17.2	2 8 58.3	2 8 39.4	2 8 20.6	2 8 1.7	3.60	1.89
2 10 12.5	2 9 53.5	2 9 34.6	2 9 15.6	2 8 56.6	2 8 37.7	3.64	1.90
2 10 49.3	2 10 30.3	2 10 11.2	2 9 52.2	2 9 33.1	2 9 14.0	+3.68	-1.91
2 11 26.6	2 11 7.4	2 10 48.3	2 10 29.1	2 10 10.0	2 9 50.8	3.72	1.92
2 12 4.3	2 11 45.0	2 11 25.8	2 11 6.5	2 10 47.3	2 10 28.1	3.77	1.92
2 12 42.3	2 12 23.0	2 12 3.7	2 11 44.4	2 11 25.0	2 11 5.7	3.81	1.93
2 13 20.9	2 13 1.5	2 12 42.0	2 12 22.6	2 12 3.2	2 11 43.8	3.85	1.94
2 13 59.9	2 13 40.3	2 13 20.8	2 13 1.3	2 12 41.8	2 12 22.3	+3.90	-1.95
2 14 39.3	2 14 19.7	2 14 0.0	2 13 40.4	2 13 20.8	2 13 1.2	3.94	1.96
2 15 19.2	2 14 59.5	2 14 39.7	2 14 20.0	2 14 0.3	2 13 40.6	3.99	1.97
2 15 59.5	2 15 39.7	2 15 19.9	2 15 0.1	2 14 40.3	2 14 20.5	4.04	1.98
2 16 40.3	2 16 20.4	2 16 0.5	2 15 40.6	2 15 20.7	2 15 0.8	4.08	1.99
2 17 21.6	2 17 1.6	2 16 41.6	2 16 21.6	2 16 1.6	2 15 41.6	+4.13	-2.00

AZIMUTH OF POLARIS AT ELONGATION, 1916.

Decl. Lat.	Azimuth						Variation in—	
	88° 51' 20"	88° 51' 30"	88° 51' 40"	88° 51' 50"	88° 52' 0"	88° 52' 10"	1" of Lat.	1" of a.
60 0	2 17 21.6	2 17 1.6	2 16 41.6	2 16 21.6	2 16 1.6	2 15 41.6	+4.13	-2.00
60 10	2 18 3.4	2 17 43.3	2 17 23.2	2 17 3.1	2 16 43.0	2 16 22.9	4.18	2.01
60 20	2 18 45.7	2 18 25.5	2 18 5.3	2 17 45.1	2 17 24.9	2 17 4.6	4.23	2.02
60 30	2 19 28.5	2 19 8.2	2 18 47.9	2 18 27.6	2 18 7.2	2 17 46.9	4.28	2.03
60 40	2 20 11.8	2 19 51.4	2 19 31.0	2 19 10.6	2 18 50.1	2 18 29.7	4.33	2.04
60 50	2 20 55.7	2 20 35.1	2 20 14.6	2 19 54.1	2 19 33.5	2 19 13.0	+4.38	-2.05
61 0	2 21 40.0	2 21 19.4	2 20 58.7	2 20 38.1	2 20 17.5	2 19 56.8	4.44	2.07
61 10	2 22 24.9	2 22 4.2	2 21 43.4	2 21 22.7	2 21 1.9	2 20 41.2	4.49	2.08
61 20	2 23 10.4	2 22 49.5	2 22 28.6	2 22 7.8	2 21 46.9	2 21 26.1	4.54	2.09
61 30	2 23 56.4	2 23 35.4	2 23 14.4	2 22 53.5	2 22 32.5	2 22 11.5	4.60	2.10
61 40	2 24 43.0	2 24 21.9	2 24 0.8	2 23 39.7	2 23 18.6	2 22 57.5	+4.66	-2.11
61 50	2 25 30.1	2 25 8.9	2 24 47.7	2 24 26.5	2 24 5.3	2 23 44.1	4.72	2.12
62 0	2 26 17.9	2 25 56.6	2 25 35.3	2 25 13.9	2 24 52.6	2 24 31.3	4.78	2.13
62 10	2 27 6.2	2 26 44.8	2 26 23.4	2 26 1.9	2 25 40.5	2 25 19.1	4.84	2.14
62 20	2 27 55.2	2 27 33.7	2 27 12.1	2 26 50.6	2 26 29.0	2 26 7.4	4.90	2.16
62 30	2 28 44.8	2 28 23.1	2 28 1.4	2 27 39.8	2 27 18.1	2 26 56.4	+4.96	-2.17
62 40	2 29 35.0	2 29 13.2	2 28 51.4	2 28 29.6	2 28 7.8	2 27 46.0	5.02	2.18
62 50	2 30 25.9	2 30 4.0	2 29 42.0	2 29 20.1	2 28 58.2	2 28 36.3	5.09	2.19
63 0	2 31 17.4	2 30 55.4	2 30 33.3	2 30 11.3	2 29 49.2	2 29 27.2	5.16	2.20
63 10	2 32 9.6	2 31 47.4	2 31 25.3	2 31 3.1	2 30 40.9	2 30 18.8	5.22	2.22
63 20	2 33 2.5	2 32 40.2	2 32 17.9	2 31 55.6	2 31 33.3	2 31 11.0	+5.29	-2.23
63 30	2 33 56.0	2 33 33.6	2 33 11.2	2 32 48.8	2 32 26.3	2 32 3.9	5.36	2.24
63 40	2 34 50.3	2 34 27.8	2 34 5.2	2 33 42.6	2 33 20.1	2 32 57.5	5.43	2.26
63 50	2 35 45.3	2 35 22.6	2 34 59.9	2 34 37.2	2 34 14.5	2 33 51.8	5.50	2.27
64 0	2 36 41.1	2 36 18.2	2 35 55.4	2 35 32.6	2 35 9.7	2 34 46.9	5.58	2.28
64 10	2 37 37.5	2 37 14.6	2 36 51.6	2 36 28.6	2 36 5.7	2 35 42.7	+5.65	-2.30
64 20	2 38 34.8	2 38 11.7	2 37 48.6	2 37 25.5	2 37 2.4	2 36 39.3	5.73	2.31
64 30	2 39 32.8	2 39 9.6	2 38 46.3	2 38 23.1	2 37 59.8	2 37 36.6	5.81	2.32
64 40	2 40 31.6	2 40 8.2	2 39 44.9	2 39 21.5	2 38 58.1	2 38 34.7	5.89	2.34
64 50	2 41 31.3	2 41 7.7	2 40 44.2	2 40 20.7	2 39 57.1	2 39 33.6	5.97	2.35
65 0	2 42 31.7	2 42 8.0	2 41 44.4	2 41 20.7	2 40 57.0	2 40 33.3	+6.05	-2.37
65 10	2 43 33.0	2 43 9.2	2 42 45.4	2 42 21.5	2 41 57.7	2 41 33.9	6.13	2.38
65 20	2 44 35.2	2 44 11.2	2 43 47.2	2 43 23.2	2 42 59.3	2 42 35.3	6.22	2.40
65 30	2 45 38.2	2 45 14.1	2 44 50.0	2 44 25.8	2 44 1.7	2 43 37.6	6.31	2.41
65 40	2 46 42.2	2 46 17.9	2 45 53.6	2 45 29.3	2 45 5.0	2 44 40.7	6.40	2.43
65 50	2 47 47.0	2 47 22.6	2 46 58.1	2 46 33.7	2 46 9.2	2 45 44.8	+6.49	-2.44
66 0	2 48 52.8	2 48 28.2	2 48 3.6	2 47 39.0	2 47 14.4	2 46 49.8	6.58	2.46
66 10	2 49 59.5	2 49 34.8	2 49 10.0	2 48 45.2	2 48 20.5	2 47 55.7	6.68	2.48
66 20	2 51 7.2	2 50 42.3	2 50 17.4	2 49 52.4	2 49 27.5	2 49 2.6	6.78	2.49
66 30	2 52 15.9	2 51 50.8	2 51 25.7	2 51 0.6	2 50 35.5	2 50 10.4	6.88	2.51
66 40	2 53 25.7	2 53 0.4	2 52 35.1	2 52 9.8	2 51 44.6	2 51 19.3	+6.98	-2.53
66 50	2 54 36.4	2 54 11.0	2 53 45.5	2 53 20.1	2 52 54.6	2 52 29.2	7.09	2.54
67 0	2 55 48.2	2 55 22.6	2 54 57.0	2 54 31.4	2 54 5.7	2 53 40.1	7.19	2.56
67 10	2 57 1.1	2 56 35.3	2 56 9.5	2 55 43.7	2 55 17.9	2 54 52.1	7.30	2.58
67 20	2 58 15.1	2 57 49.1	2 57 23.2	2 56 57.2	2 56 31.2	2 56 5.2	7.41	2.60
67 30	2 59 30.3	2 59 4.1	2 58 37.9	2 58 11.8	2 57 45.6	2 57 19.4	+7.52	-2.62
67 40	3 0 46.5	3 0 20.2	2 59 53.8	2 59 27.5	2 59 1.2	2 58 34.8	7.64	2.63
67 50	3 2 4.0	3 1 37.5	3 1 10.9	3 0 44.4	3 0 17.9	2 59 51.3	7.76	2.65
68 0	3 3 22.7	3 2 56.0	3 2 29.2	3 2 2.5	3 1 35.8	3 1 9.0	7.88	2.67
68 10	3 4 42.6	3 4 15.7	3 3 48.8	3 3 21.8	3 2 54.9	3 2 28.0	8.01	2.69
68 20	3 6 3.8	3 5 36.7	3 5 9.6	3 4 42.4	3 4 15.3	3 3 48.2	+8.13	-2.71
68 30	3 7 26.3	3 6 58.9	3 6 31.6	3 6 4.3	3 5 37.0	3 5 9.7	8.26	2.73
68 40	3 8 50.1	3 8 22.5	3 7 55.0	3 7 27.5	3 7 0.0	3 6 32.4	8.40	2.75
68 50	3 10 15.2	3 9 47.5	3 9 19.8	3 8 52.0	3 8 24.3	3 7 56.6	8.53	2.77
69 0	3 11 41.8	3 11 13.8	3 10 45.9	3 10 17.9	3 9 50.0	3 9 22.1	8.67	2.79
69 10	3 13 9.7	3 12 41.6	3 12 13.4	3 11 45.3	3 11 17.1	3 10 49.0	+8.81	-2.81
69 20	3 14 30.1	3 14 10.8	3 13 42.4	3 13 14.0	3 12 45.7	3 12 17.3	8.96	2.84
69 30	3 16 10.1	3 15 41.5	3 15 12.9	3 14 44.3	3 14 15.7	3 13 47.1	9.11	2.86
69 40	3 17 42.5	3 17 13.7	3 16 44.9	3 16 16.0	3 15 47.2	3 15 18.4	9.26	2.88
69 50	3 19 16.5	3 18 47.5	3 18 18.4	3 17 49.4	3 17 20.3	3 16 51.3	9.42	2.90
70 0	3 20 52.1	3 20 22.8	3 19 53.6	3 19 24.3	3 18 55.0	3 18 25.7	+9.58	-2.93

FOR REDUCING TO ELONGATION OBSERVATIONS MADE NEAR ELONGATION.

Azimuth at Elong.	1° 0'	1° 10'	1° 20'	1° 30'	1° 40'	1° 50'	2° 0'	2° 10'	Azimuth at Elong.
Time.									Time.
m	"	"	"	"	"	"	"	"	m
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1	0.0	0.0	0.0	+ 0.1	+ 0.1	+ 0.1	+ 0.1	+ 0.1	1
2	+ 0.1	+ 0.2	+ 0.2	0.2	0.2	0.3	0.3	0.3	2
3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	3
4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	4
5	+ 0.9	+ 1.0	+ 1.1	+ 1.3	+ 1.4	+ 1.6	+ 1.7	+ 1.9	5
6	1.2	1.4	1.6	1.8	2.1	2.3	2.5	2.7	6
7	1.7	2.0	2.2	2.5	2.8	3.1	3.4	3.7	7
8	2.2	2.6	2.9	3.3	3.7	4.0	4.4	4.8	8
9	2.8	3.2	3.7	4.2	4.6	5.1	5.6	6.0	9
10	+ 3.4	+ 4.0	+ 4.6	+ 5.1	+ 5.7	+ 6.3	+ 6.9	+ 7.4	10
11	4.1	4.8	5.5	6.2	6.9	7.6	8.3	9.0	11
12	4.9	5.8	6.6	7.4	8.2	9.0	9.9	10.7	12
13	5.8	6.8	7.7	8.7	9.7	10.6	11.6	12.6	13
14	6.7	7.8	9.0	10.1	11.2	12.3	13.4	14.6	14
15	+ 7.7	+ 9.0	+10.3	+11.6	+12.8	+14.1	+15.4	+16.7	15
16	8.8	10.2	11.7	13.2	14.6	16.1	17.5	19.0	16
17	9.9	11.5	13.2	14.9	16.5	18.2	19.8	21.5	17
18	11.1	12.9	14.8	16.7	18.5	20.4	22.2	24.1	18
19	12.4	14.4	16.5	18.6	20.6	22.7	24.7	26.8	19
20	+13.7	+16.0	+18.3	+20.6	+22.8	+25.1	+27.4	+29.7	20
21	15.1	17.6	20.1	22.7	25.2	27.7	30.2	32.7	21
22	16.6	19.3	22.1	24.9	27.6	30.4	33.2	35.9	22
23	18.1	21.1	24.2	27.2	30.2	33.2	36.2	39.3	23
24	19.7	23.0	26.3	29.6	32.9	36.2	39.5	42.8	24
25	+21.4	+25.0	+28.5	+32.1	+35.7	+39.2	+42.8	+46.4	25

Azimuth at Elong.	2° 10'	2° 20'	2° 30'	2° 40'	2° 50'	3° 0'	3° 10'	3° 20'	Azimuth at Elong.
Time.									Time.*
m	"	"	"	"	"	"	"	"	m
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1	+ 0.1	+ 0.1	+ 0.1	+ 0.1	+ 0.1	+ 0.1	+ 0.1	+ 0.1	1
2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	2
3	0.7	0.7	0.8	0.8	0.9	0.9	1.0	1.0	3
4	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.8	4
5	+ 1.9	+ 2.0	+ 2.1	+ 2.3	+ 2.4	+ 2.6	+ 2.7	+ 2.9	5
6	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	6
7	3.7	3.9	4.2	4.5	4.8	5.0	5.3	5.6	7
8	4.8	5.1	5.5	5.9	6.2	6.6	7.0	7.3	8
9	6.0	6.5	7.0	7.4	7.9	8.3	8.8	9.3	9
10	+ 7.4	+ 8.0	+ 8.6	+ 9.2	+ 9.7	+10.3	+10.9	+11.4	10
11	9.0	9.7	10.4	11.1	11.8	12.4	13.1	13.8	11
12	10.7	11.5	12.3	13.2	14.0	14.8	15.6	16.5	12
13	12.6	13.5	14.5	15.4	16.4	17.4	18.4	19.3	13
14	14.6	15.7	16.8	17.9	19.0	20.2	21.3	22.4	14
15	+16.7	+18.0	+19.3	+20.6	+21.9	+23.1	+24.4	+25.7	15
16	19.0	20.5	21.9	23.4	24.9	26.3	27.8	29.3	16
17	21.5	23.1	24.8	26.4	28.1	29.7	31.4	33.0	17
18	24.1	25.9	27.8	29.6	31.5	33.3	35.2	37.0	18
19	26.8	28.9	30.9	33.0	35.1	37.1	39.2	41.3	19
20	+29.7	+32.0	+34.3	+36.6	+38.8	+41.1	+43.4	+45.7	20
21	32.7	35.3	37.8	40.3	42.8	45.3	47.9	50.4	21
22	35.9	38.7	41.5	44.2	47.0	49.8	52.5	55.3	22
23	39.3	42.3	45.3	48.3	51.4	54.4	57.4	60.4	23
24	42.8	46.0	49.3	52.6	55.9	59.2	62.5	65.8	24
25	+46.4	+49.9	+53.5	+57.1	+60.7	+64.2	+67.8	+71.4	25

* Sidereal time from elongation.

FOR FINDING THE TIMES OF UPPER AND LOWER CULMINATION OF POLARIS, 1916, FROM THE OBSERVED TIMES WHEN THE STAR IS ON THE SAME VERTICAL CIRCLE WITH THE STARS ζ URSÆ MAJORIS (MIZAR) *SUB POLO* AND δ CASSIOPEIÆ *SUB POLO*, RESPECTIVELY.

Except at high latitudes, the pole star at either upper or lower culmination furnishes a simple and convenient method for laying down a meridian line on the earth's surface at points in the northern hemisphere. When the local time is unknown and accurate astronomical instruments are not available, the time of culmination of Polaris may be found by observing the instant when Polaris is vertically above (has the same azimuth as) ζ Ursæ Majoris (Mizar) below the pole, or δ Cassiopeiæ below the pole. In the former case, for the year 1916, Polaris is approaching upper culmination and in the latter case it is approaching lower culmination. The mean time interval which elapses between the observed times above mentioned and upper or lower culmination, as the case may be, are given for ζ Ursæ Majoris and δ Cassiopeiæ for ten-day intervals in the following table. This method can not be used at places south of 30° north latitude.

ζ URSÆ MAJORIS (MIZAR). (Upper culmination of Polaris.)						δ CASSIOPEIÆ. (Lower culmination of Polaris.)							
Date.	Lat.	40°	45°	50°	55°	60°	Date.	Lat.	35°	40°	45°	50°	55°
Jan.	1	m s	m s	m s	m s	m s	Jan.	1	m s	m s	m s	m s	m s
	11	8 51	8 50	8 48	8 45	8 42		11	9 58	9 59	10 1	10 3	10 6
	21	8 41	8 39	8 37	8 35	8 31		21	9 47	9 48	9 50	9 52	9 55
		8 30	8 29	8 27	8 24	8 21			9 36	9 38	9 40	9 42	9 44
	31	8 20	8 19	8 17	8 14	8 11	Feb.	31	9 26	9 28	9 29	9 31	9 34
Feb.	10	8 10	8 8	8 7	8 4	8 1	Feb.	10	9 16	9 17	9 19	9 21	9 23
	20	8 1	7 59	7 57	7 55	7 52		20	9 6	9 7	9 9	9 11	9 13
Mar.	1	7 53	7 52	7 50	7 48	7 45	Mar.	2	8 57	8 59	9 1	9 3	9 5
June	30	8 37	8 35	8 33	8 31	8 28		12	8 51	8 53	8 55	8 57	8 59
July	10	8 48	8 46	8 44	8 42	8 38		22	8 47	8 48	8 50	8 52	8 54
	20	8 59	8 57	8 55	8 52	8 49	Apr.	1	8 45	8 46	8 48	8 50	8 52
	30	9 10	9 8	9 6	9 3	9 0		11	8 45	8 46	8 48	8 50	8 52
Aug.	9	9 21	9 19	9 17	9 14	9 10		21	8 47	8 48	8 50	8 52	8 54
	19	9 30	9 28	9 26	9 23	9 20	May	1	8 50	8 52	8 53	8 55	8 58
	29	9 38	9 37	9 34	9 31	9 28		11	8 56	8 57	8 59	9 1	9 3
Sept.	8	9 46	9 45	9 42	9 39	9 36		21	9 4	9 5	9 7	9 9	9 11
	18	9 53	9 51	9 49	9 46	9 42	June	31	9 12	9 14	9 15	9 17	9 20
	28	9 58	9 56	9 53	9 51	9 47		10	9 21	9 23	9 24	9 26	9 29
Oct.	8	10 1	9 59	9 57	9 54	9 50		20	9 32	9 33	9 35	9 37	9 40
	18	10 4	10 2	9 59	9 56	9 53	July	30	9 43	9 45	9 47	9 49	9 52
	28	10 4	10 2	9 59	9 57	9 53		10	9 54	9 56	9 58	10 0	10 3
Nov.	7	10 2	10 0	9 58	9 55	9 51		20	10 5	10 7	10 9	10 11	10 14
	17	9 59	9 57	9 55	9 52	9 48	Nov.	30	10 17	10 18	10 20	10 23	10 26
	27	9 54	9 52	9 50	9 47	9 44		Nov. 27	11 2	11 4	11 6	11 9	11 12
Dec.	7	9 48	9 46	9 43	9 41	9 37	Dec.	7	10 55	10 57	10 59	11 2	11 5
	17	9 39	9 37	9 35	9 32	9 29		17	10 47	10 49	10 51	10 53	10 56
	27	9 31	9 29	9 27	9 24	9 20		27	10 38	10 40	10 42	10 44	10 47
	31	9 27	9 25	9 23	9 20	9 17		31	10 34	10 35	10 37	10 40	10 43

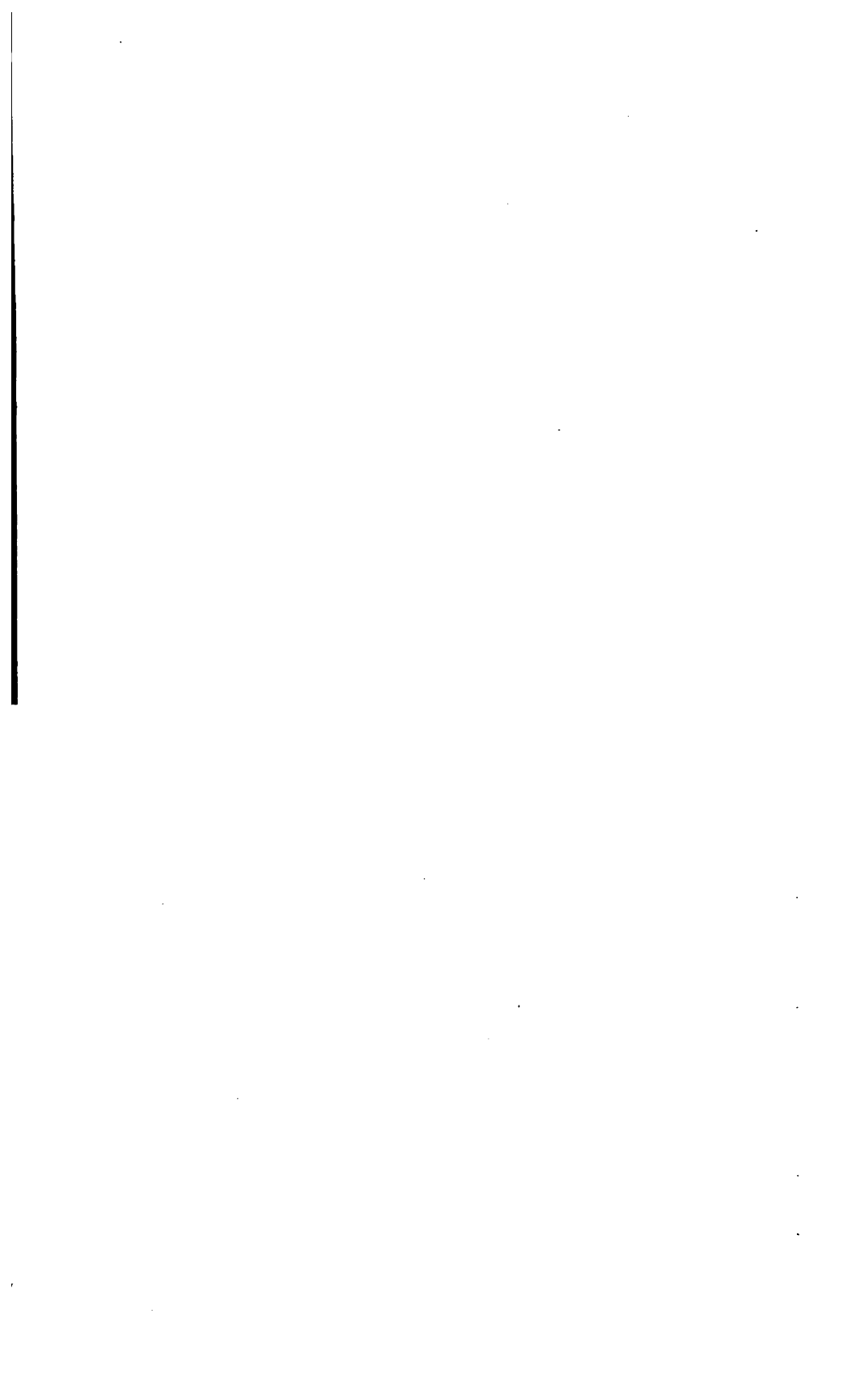
APPARENT PLACE, TIME OF UPPER CULMINATION, AND TIME INTERVAL BETWEEN UPPER CULMINATION AND ELONGATION EAST OR WEST, OF POLARIS, 1916.

The local mean time of culmination on any meridian for a given date is found by taking from the following table the *Mean Time* of the nearest Greenwich culmination, and applying to it the product of the *Var. per Day* by the integral number of intervening days, this product being numerically additive for an earlier date and subtractive for a later date than that given in the table; and by applying also the product of the *Var. per Hour* by the longitude from Greenwich expressed in hours and fractions of an hour, this product being numerically additive for East longitudes and subtractive for West longitudes.

The time interval between upper and lower culmination is 12^h diminished by one-half the numerical value of the *Var. per Day*.

The last column below applies to all meridians.

Date.	Upper Culmination, Meridian of Greenwich.					Latitude.	Mean Time Interval, Elongation ^{mins} Upper Culm.
	Apparent Right Ascension.	Apparent Declination.	Mean Time.	Var. per Day.	Var. per Hour.		
	h m l 28	° ' " +88.51	h m s	m s	W. E.	°	W. E. h m
Jan. 1	111	51.8	6 49 28	-3 57.0	-9.88+	10	+5 58.2-
11	100	52.9	6 9 58	3 57.0	9.87	12	5 58.1
21	90	53.4	5 30 28	3 56.9	9.87	14	5 57.9
31	80	53.0	4 50 59	3 56.9	9.87	16	5 57.7
Feb. 10	70	52.0	4 11 30	3 56.9	9.87	18	5 57.5
20	60	50.6	3 32 1	-3 56.8	-9.87+	20	+5 57.4-
Mar. 1	53	48.6	2 52 35	3 56.6	9.86	22	5 57.2
11	46	46.0	2 13 10	3 56.5	9.85	24	5 57.0
21	41	43.2	1 33 45	3 56.3	9.84	26	5 56.8
31	39	40.3	0 54 24	3 56.0	9.83	28	5 56.6
Apr. 10	39	37.1	0 15 5	-3 55.8	-9.83+	30	+5 56.4-
19	40	34.0	23 35 47	3 55.7	9.82	32	5 56.2
29	43	31.1	22 56 31	3 55.5	9.81	34	5 56.0
May 9	49	28.6	22 17 18	3 55.3	9.80	36	5 55.7
19	56	26.2	21 38 6	3 55.1	9.80	38	5 55.5
29	64	24.2	20 58 55	-3 55.0	-9.79+	40	+5 55.2-
June 8	74	22.9	20 19 45	3 54.9	9.79	42	5 54.9
18	85	22.1	19 40 37	3 54.8	9.78	44	5 54.6
28	96	21.6	19 1 29	3 54.8	9.78	46	5 54.3
July 8	107	21.7	18 22 20	3 54.8	9.78	48	5 54.0
18	118	22.6	17 43 12	-3 54.8	-9.78+	50	+5 53.6-
28	130	23.8	17 4 5	3 54.8	9.78	52	5 53.2
Aug. 7	140	25.4	16 24 56	3 54.9	9.79	54	5 52.8
17	150	27.7	15 45 47	3 55.0	9.79	56	5 52.3
27	159	30.4	15 6 37	3 55.0	9.79	58	5 51.8
Sept. 6	168	33.3	14 27 27	-3 55.1	-9.80+	60	+5 51.2-
16	174	36.5	13 48 14	3 55.3	9.80	62	5 50.5
26	179	40.1	13 9 0	3 55.4	9.81	64	5 49.7
Oct. 6	184	43.9	12 29 46	3 55.6	9.82	66	5 48.8
16	187	47.6	11 50 29	3 55.8	9.82	68	5 47.8
26	187	51.4	11 11 10	-3 56.0	-9.83+	70	+5 46.5-
Nov. 5	186	55.2	10 31 50	3 56.1	9.84		
15	183	58.8	9 52 29	3 56.3	9.84		
25	179	62.0	9 13 5	3 56.5	9.85		
Dec. 5	172	65.0	8 33 39	3 56.6	9.86		
15	165	67.6	7 54 13	-3 56.7	-9.86+		
25	156	69.6	7 14 45	-3 56.8	-9.87+		



ON THE ARRANGEMENT AND USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

There are in general use three different kinds of time, True Solar Time—also called Apparent Solar Time—Mean Solar Time, and Sidereal Time.

True or Apparent Solar Time is measured by the diurnal motion of the Sun, the length of the day being the interval between two successive transits of the Sun over the same meridian, and the time of day being the hour-angle of the Sun westward from the meridian. Owing to the obliquity of the ecliptic and to the lack of uniformity of the motion of the Earth in its orbit, the rate of motion of the Sun in hour-angle and the length of the apparent solar day are not constant. Therefore clocks and chronometers can not be regulated to apparent solar time, which may, however, be determined by observations of the Sun when visible.

Mean Solar Time is measured by the motion of a fictitious body called the mean Sun, which is supposed to move uniformly in the celestial equator, completing the circuit in one tropical year. Since mean solar time is uniform and regular in its passage, clocks and watches may be regulated to it, and those in ordinary use are usually so regulated.

Mean solar time can not, of course, be determined by direct observation, but may be determined indirectly by correcting observations of the Sun for the equation of time, or by converting to mean time sidereal time determined by observations of fixed stars.

The Equation of Time is the difference in hour-angle between the true Sun and the mean Sun. The true Sun is sometimes before and sometimes behind the mean Sun by an amount which varies from zero to about 16 minutes. The equation of time is given for Greenwich mean noon on pages 2-16 and for Washington apparent noon on pages 514-521.

The Mean Solar Day is the unit of mean solar time, and is equal in length to the mean or average of all the true or apparent solar days of the year. It may be otherwise defined as the interval of time elapsing between two successive transits of the mean Sun across the meridian of any place.

Sidereal Time or star time, in general terms, is measured by the diurnal motion of the fixed stars, or, speaking more precisely, by the diurnal motion of that point on the celestial equator called the vernal equinox, from which the right ascensions of the heavenly bodies are measured. Astronomical clocks regulated to sidereal time are called sidereal clocks. Sidereal time may be determined from observations of stars whose right ascensions are known.

A Sidereal Day is very nearly the length of time in which the Earth rotates on its axis and is accurately defined as the time interval between two suc-

cessive transits of the vernal equinox over the same meridian. The sidereal day is shorter than the mean solar day by $3^m 56^s.555$ sidereal time or $3^m 55^s.909$ mean solar time, the tropical year of 365.2422 mean solar days containing 366.2422 sidereal days. Sidereal time and the length of the sidereal day are subject to slight irregularities on account of small differences between the positions of the true and mean equinoxes.

The mean solar and sidereal days are each divided into 24 hours. About March 23 (civil date) of each year, about two days after the vernal equinox, there is an instant when the face of a sidereal clock shows the same time as a mean time clock, and the former gains on the latter $3^m 56^s.555$ sidereal time per mean solar day, so that at the end of a year it will have gained one sidereal day and will again agree with the mean time clock.

The Civil Day begins at midnight and comprises 24 hours, the hours being counted from 0 to 12 in two series; the first, marked A. M., running from midnight to noon, and the second, marked P. M., running from noon to midnight.

The Astronomical Day begins at noon on the civil day of the same date, the 24 hours being counted from 0 to 24, running from noon of one day to noon of the next following day. Astronomical time as well as civil time may be either apparent or mean.

The civil day begins twelve hours before the astronomical day; therefore the first half of the civil day coincides with the last half of the preceding astronomical day, and the last half of the civil day coincides with the first half of the astronomical day of the same date. Hence we have the following rules:

To convert Civil Time into Astronomical Time.—If the civil time is marked A. M., take one from the day and add twelve to the hours; if the civil time is marked P. M., take away the designation P. M. Thus, January 9, 2 o'clock, A. M., civil time, is January 8, 14^h , astronomical time; and January 9, 2 o'clock, P. M., civil time, is January 9, 2^h , astronomical time.

To convert Astronomical Time into Civil Time.—If the astronomical time is less than twelve hours, write P. M. after it; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To convert Solar or Sidereal Time of any meridian B to that of another meridian A, add the difference of longitude expressed in time when A is east of B, and subtract the difference of longitude when A is west of B.

Greenwich mean time, which at any fixed observatory is obtained by applying the longitude to the local mean time, on board ship is usually taken from the mean time chronometer set to Greenwich time.

Greenwich mean noon of any date means the noon at the beginning of the astronomical day.

PART I.—THE EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

Pages 2–17 contain for Greenwich mean noon of each day the *Sun's Apparent Right Ascension, Apparent Declination, Semidiameter, Horizontal Parallax, True Longitude, and Latitude*. They also contain the *Logarithm of the Radius Vector of the Earth, the Precession in Longitude, the Nutation in Longitude, the Aberration, the True Obliquity, the Equation of Time, the Sidereal Time or Right Ascension of Mean Sun, and the Mean Time of Sidereal Noon*. Adjoining columns contain, for each Greenwich mean noon, the *Variation per*

Hour for those of the quantities for which it seemed advisable to give a rate of motion. By multiplying any one of those variations by the hours and parts of an hour from Greenwich mean noon and adding the product algebraically to the corresponding quantity at noon, we obtain an approximate value of the quantity in question for any given Greenwich mean time. If great exactness is desired, the value of the hourly variation is found for the time halfway between Greenwich mean noon and the given Greenwich mean time before multiplying by the hours and parts of an hour from Greenwich mean noon.

It is to be noted that here, as elsewhere throughout the volume, the positive sign used with declinations or latitudes indicates north and the negative sign south.

The Sun's *Apparent Right Ascension* and *Declination* are affected both by aberration and by nutation, and therefore denote the *apparent* position of the *true* Sun. The Sun's *True Longitude* is the true geometric longitude not corrected for aberration; it is referred to the true equinox.

The Sun's *Latitude* is referred to the ecliptic of the date.

The Sun's *Declination* is required whenever that body is observed for the purpose of finding latitude, local time, or azimuth.

The Sun's *Semidiameter* is used in reducing the altitude of the upper or lower limb of the Sun to the altitude of the center; and in reducing the angular distance between the limb of the Sun and any other object to the distance from the center of the Sun.

The *Horizontal Parallax* is the angle subtended by the equatorial radius of the Earth, as seen from the center of the Sun.

The *Precession in Longitude* is the quantity to be applied to the longitude of the Sun referred to the mean equinox of the beginning of the Besselian fictitious year, i. e., the instant when the Sun's mean longitude is 280° , in order to refer it to the mean equinox of date.

The *Nutation in Longitude* is the quantity to be applied to the longitude of a body referred to the mean equinox of date in order to refer it to the true equinox, short-period terms being neglected.

The *Aberration* is the quantity to be subtracted from the true longitude of the Sun in order to obtain its apparent longitude.

The *True Obliquity* is the inclination of the Earth's equator to the ecliptic, short-period terms being neglected.

The corrections to the values of the nutation and the obliquity here given, to take account of the short-period terms, may be found on pages 215–216.

The *Equation of Time* is the apparent time of Greenwich mean noon, or the hour angle of the true Sun at that instant. When interpolated to any given Greenwich mean time, it is the correction to be applied to mean time in order to obtain apparent time.

The *Sidereal Time of Mean Noon* is the right ascension of the mean Sun at Greenwich mean noon. It may be reduced for the longitude or to any Greenwich mean time by using the hourly variation, $+9^s.8565$; or by Table III, page 691 of this volume, for reducing intervals of mean time to sidereal time. It is useful in converting mean time to sidereal time. We first find the Greenwich mean time, then the right ascension of the mean Sun for that time,

and this being added to the local astronomical mean time, i. e., the hour angle of the mean Sun, will give the hour angle of the vernal equinox, or the sidereal time required.

The sidereal time of mean noon, reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time gives the interval of sidereal time past noon, and that is converted into the required mean time by subtracting from it the corresponding reduction of a sidereal interval to a mean-time interval, taken from Table II, page 688 of this volume. If the sidereal interval is less than $3^m 56^s.555$, there are two mean times corresponding to the given sidereal time, one a few minutes after the preceding noon, and the other a few minutes before the following noon, the mean time interval between these two mean times being $23^h 56^m 4^s.09$. The mean time, approximately known, will always show which one is to be taken. Instead of using Table II, the reduction of a sidereal to a mean time interval may be found by multiplying $-9^s.8296$ by the hours and parts of an hour of the sidereal interval.

The *Mean Time of Sidereal Noon* is the number of hours, minutes, and seconds after Greenwich mean noon when the vernal equinox passes the meridian of Greenwich; it may be reduced to any other meridian by using the hourly variation, $-9^s.8296$, to effect the necessary interpolation, or the reduction may be taken directly from Table II. In the same way the reduction may be made to any Greenwich sidereal time, and the result will then represent $24^h -$ Right Ascension of the Mean Sun. This column may be conveniently used for converting sidereal to mean time, or—which is the same problem—for finding the time of meridian passage of a star whose right ascension is known, by adding to the mean time of the *preceding* local sidereal noon, the mean time equivalent of the given sidereal time.

As examples of the use of pages 2-17:

1. Let the Sun's declination be required for 1916, April 14, $2^h 5^m 20^s$, P. M., at a place whose longitude is $58^\circ 20'$, or $3^h 53^m 20^s$ west from Greenwich:

Local mean time	April 14,	$\begin{matrix} h & m & s \\ 2 & 5 & 20 \end{matrix}$
Longitude from Greenwich (additive)		$\begin{matrix} 3 & 53 & 20 \\ \hline \end{matrix}$
Greenwich mean time	April 14,	$\begin{matrix} 5 & 58 & 40 \end{matrix}$

Reducing the minutes and seconds to decimals of an hour, we find that this moment is $5^h.978$ after Greenwich mean noon on April 14, or $18^h.022$ before Greenwich mean noon on April 15.

On page 6 of the Ephemeris we find that the variation of declination per hour is:

At Greenwich mean noon, April 14	+54.00
At Greenwich mean noon, April 15	+53.60
	<hr/>
Difference for one day	- 0.40

If great exactness is desired, we find the amount of this hourly variation for the time halfway between Greenwich noon and the time of observation; that is, for 3 hours after Greenwich noon of the 14th, this being half of 6 hours. Three hours is 0.125 of a day; so the calculation is as follows:

Variation at Greenwich mean noon, April 14	+54.00
Change for 0.125 of a day, or $-0''.40 \times 0.125$	- 0.05
<hr/>	
Variation at 3 hours after noon	+53.95
$+53''.95 \times 5.978 = +322''.5 = +5' 22''.5$	
<hr/>	
Declination at Greenwich noon, April 14	+9 23 25.2
Variation in 5.978 hours	+ 5 22.5
<hr/>	
Sun's declination at time of observation	+9 28 47.7

With equal facility the computation might have been made backward from the succeeding noon. Thus in the example just given the time is 18^h.022 before Greenwich noon of April 15; half this interval is about 0.375 of a day, and the hourly motion for the middle of the interval is +53''.75. Then we find:

Declination at Greenwich noon, April 15	+9 44 56.5
Product of $+53''.75 \times -18.022 = -968''.7$	- 16 8.7
<hr/>	
Sun's declination at time of observation	+9 28 47.8

It will always be well to make the calculation in both ways, as a check; but if the results differ slightly the one derived from the nearest noon should be regarded as the more accurate.

2. Let the Sun's right ascension and the equation of time be required for 1916, July 13, 10^h 3^m 30^s, A. M., mean time, at a place whose longitude is 85° 15', or 5^h 41^m west from Greenwich.

Local astronomical mean time	July 12, 22 3 30
Longitude from Greenwich (additive)	5 41 0
<hr/>	
Greenwich mean time	July 13, 3 44 30=3.7417

Sun's Right Ascension.

Equation of Time.

Greenwich noon, July 13 $\begin{matrix} h & m & s \\ 7 & 29 & 38.86 \end{matrix}$	Greenwich noon, July 13 $\begin{matrix} m & s \\ -5 & 30.80 \end{matrix}$
H. V. $10^\circ.150 \times 3.7417$ + 37.98	H. V. $-0^\circ.294 \times 3.7417$ - 1.10
<hr/>	<hr/>
7 30 16.84	-5 31.90

In this case the hourly variations interpolated to half the interval, or 1^h.87 after noon, have been used.

3. If the sidereal time is required for the same time and place, we have:

Sidereal time at Greenwich mean noon, July 13	$\begin{matrix} h & m & s \\ 7 & 24 & 8.06 \end{matrix}$
Reduction for 3 ^h 44 ^m 30 ^s from Table III, or $9^\circ.8565 \times 3.7417$	+ 36.88
Add the local astronomical mean time	22 3 30.00
<hr/>	
The required sidereal time (rejecting 24 ^h)	5 28 14.94

4. On 1916, July 13, A. M., at a place whose longitude is 85° 15' W., suppose the sidereal time to be 5^h 28^m 14^s.94 and that the corresponding mean time is required.

The astronomical day is July 12; the longitude in time, $+5^h 41^m 0^s$, or $+5^h.6833$.

First solution.

Sidereal time at Greenwich mean noon, July 12	$7^h 20^m 11.50^s$
Reduction for $5^h 41^m 0^s$ from Table III, or $9^s.8565 \times 5.6833$	$+56.02$
<hr/>	
The sidereal time at local mean noon, July 12	$7^h 21^m 7.52^s$
The given sidereal time ($+24^h$, if necessary for the following subtraction)	$29^h 28^m 14.94^s$
<hr/>	
Subtracting the first from the second gives the sidereal interval from noon	$22^h 7^m 7.42^s = 22.1187^h$
Reduction for $22^h 7^m 7^s.42$ from Table II, or $-9^s.8296 \times 22.1187$	$-3^m 37.42^s$
<hr/>	
The required astronomical mean time July 12,	$22^h 3^m 30.00^s$

Second solution.

Mean time at Greenwich sidereal noon July 12,	$16^h 37^m 4.70^s$
Reduction for longitude from Table II, or $-9^s.8296 \times 5.6833$	-55.86
<hr/>	
Mean time of <i>preceding</i> local sidereal noon July 12,	$16^h 36^m 8.84^s$
Add the given sidereal time	$5^h 28^m 14.94^s$
Reduction for $5^h 28^m 14^s.94$ from Table II, or $-9^s.8296 \times 5.4708$	-53.78
<hr/>	
The required astronomical mean time July 12,	$22^h 3^m 30.00^s$

If there is any doubt about the mean time of the *preceding* local sidereal noon, the first solution is to be preferred.

Pages 18–25 contain the rectangular coordinates of the Sun, referred to the center of the Earth as the origin, and to the true equator and equinox as the plane and point of reference. Each coordinate is given for every Greenwich mean noon and midnight. The columns *Reduc. to Mean Eq'x of 1916.0* give the corrections to be applied to the coordinates for noon in order to obtain the corresponding coordinates referred to the mean equator and equinox of the beginning of the Besselian fictitious year.

Pages 26–117 contain *The Moon's Right Ascension and Declination* for each day and hour of Greenwich mean time, referred to the true equator and equinox. They are accompanied by columns of *Variations per Minute*, by means of which, interpolation may be conveniently made to any moment of Greenwich mean time. The right ascension or declination is taken out for the given day and hour of Greenwich mean time; the *Var. per Min.* is multiplied by the minutes and parts of a minute of the Greenwich time, and the product is added numerically in case of the right ascension and algebraically in case of the declination.

Thus, suppose the Moon's right ascension and declination are required for 1916, January 25, $10^h 10^m 30^s$, astronomical mean time at Greenwich:

	<i>Right Ascension.</i>	<i>Declination.</i>
	h^m^s	$^{\circ}'''$
January 25, 10^h	$12^h 23^m 42.84^s$	$-7^{\circ} 34' 59.9''$
Var. $1^s.9777 \times 10.5$	20.77	$-14'' .346 \times 10.5$
<hr/>		<hr/>
January 25, $10^h 10^m 30^s$	$12^h 24^m 3.61^s$	$-7^{\circ} 37' 30.5''$

For the sake of precision, the differences here employed have been interpolated for $5^m.2 = 0^h.09$.

Page 117 contains also the *Phases of the Moon* and the dates of the *Moon's Apogee and Perigee*, or greatest and least distances from the Earth.

Pages 118–133 contain for every Greenwich mean noon and midnight the *Moon's Longitude* and *Latitude* referred to the true equinox and the ecliptic, its *Semidiameter*, and its *Equatorial Horizontal Parallax*. The column adjoining that of the horizontal parallax gives the variation of that quantity per hour, by means of which it can be reduced to any other Greenwich mean time in the manner shown in the preceding examples. When allowing for change in the variation itself, note must be taken of the fact that the tabular interval is here 12 hours instead of 24. The quantity thus obtained is the equatorial horizontal parallax; to obtain the horizontal parallax at any given place, the correction for the latitude of the place must be applied. The reduction of the Moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.2725 (see page xiii), or by simply computing the proportional part.

If, for example, the semidiameter of the Moon is to be taken out for 1916, March 10, 7^h, P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of March 10 is 2''.9; then,

$$12^h : 7^h = 2''.9 : 1''.7$$

which is the correction to be subtracted from the semidiameter at noon, because the semidiameter is decreasing. The Moon's semidiameter for March 10, 7^h, is therefore 14' 53''.5.

The Moon's semidiameter and horizontal parallax are required for all observations of the Moon.

Pages 118–133 contain also: The *Moon's Age*, or the time elapsed since the preceding new Moon, given to tenths of a day; the mean time of the *Moon's Transit, Upper and Lower*, at Greenwich, given to tenths of a minute; and the *Variation per Hour* of the latter quantity, that is, the variation for one hour of longitude, by means of which the local time of an upper or lower transit of the Moon may be computed for any place whose longitude is known.

Pages 134–198 contain for each of the seven major planets the geocentric ephemeris followed immediately by the heliocentric ephemeris.

The geocentric ephemeris gives the planet's *Apparent Right Ascension* and *Apparent Declination* with the respective *Variations per Hour* or *per Day*. The positions thus given are referred to the true equator and equinox, and are corrected for aberration. The geocentric ephemeris gives also the *Logarithm of Distance from Earth* with the *Variation per Hour* or *per Day*, the planet's *Semidiameter* and *Horizontal Parallax*, and, to tenths of a minute, the time of *Transit, Meridian of Greenwich*. All the data, except the last named, are given for Greenwich mean noon.

The right ascension and declination of a planet are required whenever it is observed for time, latitude, or azimuth. The mode of reducing the ephemeris positions of planets to other instants of Greenwich mean time is the same as that already given for the Sun. The local mean time of meridian transit of any planet at any place can be found by dividing the proper daily difference of the ephemeris times by 24, multiplying the quotient by the longitude of the place expressed in hours and fractions, and applying the product with its proper sign to the time of Greenwich transit.

The heliocentric ephemeris gives the *Heliocentric Longitude*, *Mean Equinox of Date*; the *Heliocentric Latitude*; and the *Logarithm of Radius Vector*; with

their respective *Variations per Day*. The heliocentric longitude may be referred to the true equinox by applying nutation. The variations are given for the instant of Greenwich mean noon. The column *Reduction to Orbit* contains the correction to be applied to the heliocentric longitude in order to obtain the longitude measured along the orbit of the planet. This orbit longitude is equal to the distance from the mean equinox to the node, plus the distance from the node to the planet. The heliocentric latitude is referred to the ecliptic of the date. The *Logarithm of Radius Vector* is the logarithm of the distance of the center of the planet from that of the Sun.

PART II.—THE EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Pages 200–201 contain formulæ for reducing mean positions of stars to apparent positions, including expressions for the Besselian star-numbers and star-constants, and for the independent star-numbers; the whole based upon the constants of the Paris Conference of May, 1896, and expressed in the notation of BESSEL.

Pages 202–205 contain the logarithms of the *Besselian Star-Numbers*, *A*, *B*, *C*, *D*, for each Washington mean midnight, with the values of *E* appended at the bottoms of the pages. The terms of short period have been included. These numbers serve to reduce the mean place of a star at the beginning of the Besselian fictitious year to its apparent place at any of the dates for which the numbers are given, and in ordinary cases four-figure logarithms suffice; but where extreme accuracy is desired the logarithms of *A*, *C*, and *D* are sometimes needed to five places of decimals. Along with the solar day, the first column contains the sidereal hour of Washington mean midnight for certain dates, and by interpolation among them it is easy to find the sidereal time for which any set of quantities is given.

The following is an example of the reduction of a star to apparent place by the Besselian star-numbers:

Computation of the apparent place of ϵ Aquilæ, July 2, 1916, for the upper transit at Washington.

log <i>a</i>	0.5165	log <i>b</i>	7.2441 <i>n</i>	log <i>c</i>	8.0434	log <i>d</i>	8.8236 <i>n</i>
log <i>A</i>	9.9072	log <i>B</i>	0.6185 <i>n</i>	log <i>C</i>	0.5513	log <i>D</i>	1.3032 <i>n</i>
log <i>a'</i>	0.5159	log <i>b'</i>	9.9941	log <i>c'</i>	9.4341	log <i>d'</i>	8.4146 <i>n</i>
log <i>Aa</i>	0.4237	log <i>Bb</i>	7.8626	log <i>Cc</i>	8.5947	log <i>Dd</i>	0.1268
log <i>Aa'</i>	0.4231	log <i>Bb'</i>	0.6126 <i>n</i>	log <i>Cc'</i>	9.9854	log <i>Dd'</i>	9.7178
<i>Mean Place, 1916.0</i>				$\alpha_0 =$	^h 18 ^m 37 ^s 40.531	$\delta_0 =$	[°] -9 ['] 8 ["] 1.93
				<i>Aa</i> =	+2.653	<i>Aa'</i> =	+2.65
				<i>Bb</i> =	+0.007	<i>Bb'</i> =	-4.10
				<i>Cc</i> =	+0.039	<i>Cc'</i> =	+0.97
				<i>Dd</i> =	+1.339	<i>Dd'</i> =	+0.52
				<i>E</i> =	+0.003	$\tau\mu'$ =	0.00
				$\tau\mu$ =	+0.001		
<i>Apparent Place, July 2,</i>				$\alpha =$	<hr/> 18 37 44.573	$\delta =$	<hr/> -9 8 1.89

Pages 206–213 contain the *Independent Star-Numbers*, which can frequently be advantageously used instead of the *Besselian Star-Numbers*. The terms of short period have been included. These quantities are connected with those of *Bessel* by the relations given on page 200, which also contains the formulæ and precepts for the application of both systems of numbers. In order to use

the Besselian numbers, it is necessary to have the values of the star-constants, $a, b, c, d, a', b', c', d'$, while the independent star-numbers render it possible to determine the apparent place of a star without computing these star-constants. Four-figure logarithms usually suffice, but where extreme accuracy is desired the logarithms of g and h are needed to five places of decimals, and G and H are needed to one-tenth of a minute of arc. The column τ gives the fraction of a year, counted from the beginning of the Besselian fictitious year to each date.

The following is an example of the reduction of a star to apparent place by the independent star-numbers:

Computation of the apparent place of α Aquilæ, July 2, 1916, for the upper transit at Washington.

	h $G = 23$	m 2.4		° $\delta_0 = -9$	' 8.0
	$\alpha_0 = 18$	37.7		$G + \alpha_0 = 17^h$	$40^m.1$
	$H = 11$	19.8		$H + \alpha_0 = 5$	57.5
$\log \frac{1}{r}$	8.8239	$\log \frac{1}{r}$	8.8239	$\alpha_0 =$	h m s 18 37 40.531
$\log g$	1.2231	$\log h$	1.3099	$f + f' =$	+2.485
$\sin (G + \alpha_0)$	9.9984 n	$\sin (H + \alpha_0)$	0.0000	$(g) =$	+0.178
$\tan \delta_0$	9.2062 n	$\sec \delta_0$	0.0055	$(h) =$	+1.378
$\log (g)$	9.2516	$\log (h)$	0.1393	$\tau \mu =$	+0.001
				$\alpha =$	18 37 44.573
$\log g$	1.2231	$\log h$	1.3099	$\delta_0 = -9$	8 1.93
$\cos (G + \alpha_0)$	8.9381 n	$\cos (H + \alpha_0)$	8.0377	$(g') =$	-1.45
$\log (g')$	0.1612 n	$\sin \delta_0$	9.2007 n	$(h') =$	-0.04
		$\log (h')$	8.5483 n	$(i) =$	+1.52
$\log i$	0.1885			$\tau \mu' =$	0.00
$\cos \delta_0$	9.9945			$\delta = -9$	8 1.90
$\log (i)$	0.1830				

Page 214 contains for every tenth sidereal day the *Besselian and Independent Star-Numbers*, exclusive of all short-period terms. They are useful in computing ephemerides of stars, similar to those on pages 316-513, for which data containing short-period terms should not be employed.

Pages 215-216 contain for Washington mean midnight of each day the short-period terms of the nutation in longitude and obliquity, for use in connection with the formulæ on page 201, and the coefficients mentioned later, which are given for each star on pages 316-513.

Pages 217-230 contain the *Mean Places of Ten-day Stars* for the beginning of the Besselian fictitious year. These pages give also the magnitude, spectral type, annual variations, and proper motions for each star. The annual variations are to be considered as the differential coefficients of each coordinate with respect to the time at the beginning of the year.

Page 231 contains, for the *Circumpolar Stars*, the same data as the immediately preceding pages do for the ten-day stars.

Pages 232-315 contain for every upper transit at Washington the apparent positions of seventeen northern and eighteen southern circumpolar stars arranged in the order of their right ascensions. The mean solar time of transit is given in the column *Washington Mean Time*, in order that each transit above

and below the pole may be readily identified. Suppose, for example, that the transit of Polaris below the pole on January 26 is to be found, and we wish to know whether it precedes or follows the upper transit of the same date. On page 232 we find that the upper transit occurs January 26.2; the lower transit, therefore, occurs January 26.7. But the lower transit of July 1 precedes the upper one, which occurs July 1.8. A transit occurring very nearly at noon may also be identified without a computation to ascertain the actual mean date, by simply noting the tenth of a day in the column *Washington Mean Time*.

The secant and tangent of the apparent declination for the 15th of each month and the mean place in right ascension and declination for the beginning of the year are given for each star at the foot of the page.

Pages 316–513 contain, for every tenth upper transit at Washington, the apparent places of 790 stars, being all those given in the list of mean places of ten-day stars. The *Washington Mean Time* in the left-hand column of each page gives the day and tenth of the transit, so that intermediate transits may be readily identified; and to facilitate interpolation, the differences of each coordinate are given for every ten days.

In connection with the ephemeris of each ten-day star there are given at the foot of the page (1) the seconds of the mean place in both right ascension and declination for the beginning of the year, (2) the secant and the tangent of the mean of the star's greatest and least apparent declinations during the year, and (3) the coefficients of the short-period terms of the nutation, the use of which is explained on page 201.

Pages 514–521 contain, for Washington apparent noon, the *Apparent Right Ascension and Declination* of the Sun, the *Equation of Time*, and the *Variation per Hour* of these quantities; the *Semidiameter* of the Sun, and the *Sidereal Time of Semidiameter Passing Meridian*. The last column on each page contains the *Sidereal Time of Mean Noon*.

The *Equation of Time, Mean—App.* is the correction to be applied to apparent time in order to obtain mean time. Each number as given is the mean time of transit of the Sun's center over the meridian of Washington counted from the nearest noon.

Pages 522–537 contain the *Right Ascension of Center*, the *Geocentric Declination of Center*, the *Sidereal Time of Semidiameter Passing Meridian*, the *Geocentric Semidiameter*, and the *Equatorial Horizontal Parallax* of the Moon, and the *Washington Mean Time* at the moment of each upper and lower transit over the meridian of Washington.

The *Variation per Hour of Longitude* is the correction to be applied in each case to the quantity in the preceding column to obtain its value for the time of transit over the meridian one hour west of Washington, supposing the rate of change to be uniform and equal to what it is at the instant of transit over the meridian of Washington. The quantities in the third column, when corrected for another longitude by the hourly variations, give the local mean time of transit for that longitude. By means of the variations per hour of longitude any one of the quantities under consideration can be computed with great exactness for the moment of transit over any meridian not more than one hour distant from Washington. To obtain the same accuracy for more distant

meridians, we may proceed as follows: Let F represent either the *Washington Mean Time*, the *Right Ascension of Center*, or the *Geocentric Declination of Center*, and let V represent the corresponding *Variation per Hour of Longitude*. Write down three successive values of F , together with the corresponding values of V , and difference the latter as in the following scheme, where the middle values, F_0 and V_0 , belong to the culmination from which is to be derived the value of F for the culmination on the meridian whose longitude is λ :—

Function.	Var. per Hour of Longitude.	Δ'	Δ''
F_{-1}	V_{-1}	a'	
F_0	V_0	a''	b
F_{+1}	V_{+1}		

Then, for the culmination at the meridian λ

$$F_\lambda = F_0 + \lambda V_0 + \frac{\lambda^2}{48}(a' + a'') + \frac{\lambda^3 b}{864}$$

where λ must be expressed in hours and decimals of an hour, and reckoned from Washington or from 180° from Washington according as the upper or lower culmination is used for the middle value (F_0). Adding twelve hours to the Washington time of lower transit at Washington gives the local time of upper transit at places whose longitude is 180° from Washington.

The column *Bright Limbs* is given to indicate to the observer which limbs are illuminated. When one limb is full and the terminator is within $1''$ of the opposite limb, both can be well observed, and in such cases both are indicated, the defective limb being indicated by an italic letter or numeral, and the correction for defective illumination (as seen from Washington) being given in a footnote.

Pages 538–555 contain for each of the seven major planets, the geocentric *Apparent Right Ascension and Declination*, the *Horizontal Parallax*, *Semidiameter*, *Sidereal Time of Semidiameter Passing Meridian*, and the *Washington Mean Time*, for the moments of all transits which it is usually desirable to observe over the meridian of Washington. The stellar magnitude at opposition for Mars, Jupiter, Saturn, Uranus, and Neptune, respectively, is given at the bottom of the page containing the ephemeris of the planet.

PART III.—PHENOMENA.

This part gives the dates of the principal astronomical phenomena of the year, expressed in Greenwich mean time, except in the case of the occultations visible at Washington, where Washington time is used.

Pages 558–565 contain all necessary data respecting the solar and lunar eclipses which occur during the year.

The eclipse elements are given for the moment of conjunction of the Sun and Moon in right ascension, but the subsequent tables and results are computed from the exact positions of these bodies at the several instants referred to. The times and angles designated as the circumstances of a lunar eclipse remain the same throughout all parts of the Earth, and require no explanation beyond a mere statement of the fact that in computing them the geometrical

diameter of the Earth's shadow has been augmented in the proportion of 51 : 50. The principal circumstances of each total and annular eclipse of the Sun are stated in five lines, as follows:—

The line entitled "Eclipse begins" gives the Greenwich mean time at which the Moon's penumbra first touches the Earth, together with the latitude and longitude of the point of contact.

The line entitled "Central eclipse begins" gives the time when the axis of the Moon's shadow first touches the Earth, and the latitude and longitude of the point of contact follow.

The line entitled "Central eclipse at local apparent noon" gives the time when the axes of the Earth and of the shadow cone lie in the same plane. The latitude and longitude of the point where the axis of the shadow cone then cuts the Earth's surface follow, and there the eclipse will be central and the Sun will be exactly on the meridian.

The lines entitled "Central eclipse ends" and "Eclipse ends" give, respectively, the times when and the localities where these events occur, the phenomena being the converse of those denoted by the similar phrases for the beginning.

In the case of partial solar eclipses the axis of the Moon's shadow does not come into contact with the Earth, and the three lines entitled, respectively, "Central eclipse begins," "Central eclipse at local apparent noon," and "Central eclipse ends," are replaced by a single line entitled "Greatest eclipse," whereon are given the time when and the latitude and longitude where the eclipse attains its greatest magnitude. The latter phenomenon necessarily occurs with the Sun in the horizon.

Maps of the Eclipses.—The regions in which each eclipse is visible are shown upon the map relating to it, from which may be taken approximately, for any place, both the times of the beginning and ending of the eclipse and its magnitude. The dotted curves show the outline of the shadow for each hour of Greenwich mean time, and therefore pass through all places where the eclipse begins or ends at the hour indicated. To find the instant of beginning at any place, we determine by inspection between what pair of these curved lines the place is situated. The eclipse will then begin between the corresponding hours of Greenwich mean time; and the fraction of the hour may be determined by dividing the hour in the same proportion as the space representing it on the map is divided by the place in question. This division may be made a little more exact by allowing for the changes in the spaces as indicated by their varying width. The Greenwich mean time thus found must be reduced to local mean time by applying the longitude.

As an example, suppose we wish to find the times at which the eclipse of 1916, February 3, begins and ends at a point near Washington, latitude $+38^{\circ} 54'$, longitude $+77^{\circ} 3'$.

For the beginning we compare the distance of the place from the curves of 3^{h} and 4^{h} , and find it to correspond to about 10 minutes from the former, thus giving for the approximate time of beginning $3^{\text{h}} 10^{\text{m}}$; for the end we compare the distance of the place from the curves of 5^{h} and 6^{h} , and find it to be about 20 minutes from the former, thus giving for the approximate time of ending $5^{\text{h}} 20^{\text{m}}$, and both of these results are probably correct to within 3 or 4 minutes.

Changing to local mean time, we shall have—

		<i>Beginning.</i>			<i>Ending.</i>		
		d	h	m	d	h	m
Greenwich mean time	February	3	3	10	3	5	20
Longitude west		5 8			5 8		
Local mean time	February	2	22	2	3	0	12

In the case of total and annular eclipses, a fair estimate of the magnitude of the eclipse at any place may be obtained from the position thereof relatively to the central line and to the limit. On the central line the eclipse is annular or total, while between the central line and the limit the maximum magnitude of the eclipse is given by the quotient of the distance of the place from the limit divided by the distance of the central line from the limit; the measurements being made upon a line drawn through the place perpendicularly to the central line.

More Accurate Computations.—A more accurate determination of the phases, as visible at any point of the Earth's surface, may be obtained from the Besselian elements which are given for every 10 minutes of Greenwich mean time. Their geometric signification is as follows:—

Let us imagine a plane passing through the center of the Earth, perpendicular to the right line joining the centers of the Sun and Moon. This latter line is the axis of the Moon's shadow, and the plane is called the *fundamental plane* or plane of *xy*. We take the intersection of this plane with that of the Earth's equator as the axis of *x*, and the center of the Earth as the origin of coordinates. The axis of *y* is perpendicular to that of *x*, and directed toward the north; *x* and *y* are then the coordinates of the point in which the axis of the shadow intersects the fundamental plane, and they are here expressed in terms of the Earth's equatorial radius as unity. The angle *d*, of which the sine and cosine are both given, is the declination of that point of the celestial sphere toward which the axis of the shadow is directed; or, in other words, it is the declination of the center of the Sun as seen from the center of the Moon. The angle μ is the Greenwich hour-angle of this same point of the celestial sphere.

The quantities l_1 and l_2 are the radii of the shadow cones upon the fundamental plane, l_1 corresponding to the penumbra, and l_2 to the umbra, or annulus. The notation is that of CHAUVENET'S *Spherical and Practical Astronomy*, in which l_2 is regarded as positive for an annular and negative for a total eclipse.

The angles f_1 and f_2 , the tangents of which are given, are the angles which the elements of the respective shadow cones make with the axis of the shadow; or, they are the semiangles of the two cones.

In order to facilitate interpolation to any required moment, the logarithms of x' , y' , and μ' , which are the changes of *x*, *y*, and μ , in one minute of time, are given at the bottom of the table.

The method of computing an eclipse from its Besselian elements is based on the fact that at the moments of beginning and ending the distance of the observer from the axis of the shadow or penumbra is equal to the radius of the latter at the point of observation. To find this distance and radius we proceed as follows:

(1) The coordinates of the observer, ξ , η , and ζ , together with their variations in one minute, are computed for some assumed moment of Greenwich mean time, as near as practicable to the true time of the required phase.

(2) The coordinates x and y of the axis of the shadow, together with their variations in one minute, are taken for the same moment from the tables of elements.

(3) From (1) and (2) the position and motion of the observer relative to the axis of the shadow are found.

(4) The radius of the penumbra or umbra at a distance from the fundamental plane equal to that of the observer is also computed.

(5) Then, assuming the motions to be uniform, we determine the time required for the observer to be brought to a distance from the axis of the shadow equal to this radius.

The formulæ and directions for the several steps in the computation are as follows:—

(1) Find $\rho \cos \varphi'$ and $\rho \sin \varphi'$, which are the geocentric coordinates of the station referred to the Earth's equator, ρ being the distance from the center of the Earth and φ' the geocentric latitude. These coordinates may be computed from the following table based on the compression of the Earth adopted at the Paris Conference of 1911, 1/297, by the formulæ—

$$\rho \cos \varphi' = F \cos \varphi$$

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

φ being, as usual, the geographic latitude.

Table for Computing the Geocentric Coordinates of a Place.

φ	Log F .	Log G .
0°	0.00000	0.00293
5	0.00001	0.00292
10	0.00004	0.00289
15	0.00010	0.00283
20	0.00017	0.00276
25	0.00026	0.00267
30	0.00037	0.00256
35	0.00048	0.00245
40	0.00060	0.00232
45	0.00073	0.00220
50	0.00086	0.00207
55	0.00098	0.00195
60	0.00110	0.00183
65	0.00120	0.00173
70	0.00129	0.00164
75	0.00137	0.00156
80	0.00142	0.00151
85	0.00145	0.00148
90	0.00146	0.00146

For the assumed Greenwich mean time of computation, take from the table of elements the values of $\sin d$, $\cos d$, and μ . Then, with λ for the longitude west from Greenwich, the coordinates of the observer will be—

$$\xi = \rho \cos \varphi' \sin (\mu - \lambda)$$

$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (\mu - \lambda) = \eta_1 - \eta_2$$

$$\zeta = \rho \sin \varphi' \sin d + \rho \cos \varphi' \cos d \cos (\mu - \lambda) = \zeta_1 + \zeta_2$$

and their variations in one minute of mean time will be—

$$\begin{aligned} \xi' &= [7.63992] \rho \cos \varphi' \cos (\mu - \lambda) \\ \eta' &= [7.63992] \rho \cos \varphi' \sin d \sin (\mu - \lambda) = [7.63992] \xi \sin d \\ \zeta' &\text{ is not needed.} \end{aligned}$$

(2) For the same assumed moment of Greenwich mean time, take from the tables of elements the coordinates x and y of the axis of the shadow, together with their variations for one minute, which are equal to one-tenth of the differences of two consecutive numbers. These variations are represented by x' and y' , and their logarithms are given beneath the tables of x and y .

(3) The distance m and position-angle M of the axis of the shadow relatively to the observer, and the relative motions, n and N , are computed by the formulæ—

$$\begin{aligned} m \sin M &= x - \xi \\ m \cos M &= y - \eta \\ n \sin N &= x' - \xi' \\ n \cos N &= y' - \eta' \end{aligned}$$

(4) Both for the shadow and for the penumbra, the radius L at the distance ζ from the fundamental plane is computed by the formula—

$$L = l - \zeta \tan f$$

l and f being found from the table of elements, and ζ computed in (1).

(5) If the time chosen for computation is exactly that of the beginning or ending of the eclipse, we shall have—

$$m = L$$

But, as this condition will rarely be fulfilled on a first trial, a correction τ to the assumed time is computed thus: Find the angle ψ from the equation,

$$\sin \psi = \frac{m \sin (M - N)}{L}$$

There will be two values for this angle, of which one will be in the first and the other in the second quadrant when $\sin \psi$ is positive, and one in the third and the other in the fourth quadrant when $\sin \psi$ is negative; but simplicity will be gained by taking only that value of ψ for which $\cos \psi$ is positive. This value lies between the limits $+90^\circ$ and -90° . The correction τ to the assumed time of beginning or ending of the eclipse will then be found, in minutes, from—

$$\tau = - \frac{m \cos (M - N)}{n} \mp \frac{L \cos \psi}{n}$$

where the double sign is to be taken negative for the beginning and positive for the ending.

However, one such pair of values of τ can not give the times of both beginning and ending with accuracy. To attain that, we must commence the computation by assuming two times, one near the beginning and the other near the ending of the eclipse, both of which may be derived from the chart with sufficient exactness. The computation for the first assumed time will

give a small value of τ which, when applied to the assumed time, will give the beginning of the eclipse nearly correctly, and a large value which will give an inaccurate time of ending. Similarly, the computation for the second assumed time will give a small and nearly correct value of τ for finding the time of ending, and a large and inaccurate negative value for finding the time of beginning. We shall thus deduce two times of each phase, only one of which is to be regarded as approximately correct.

The more accurate times of beginning and ending may now be taken in place of those originally assumed, and the whole computation may be repeated, thus leading to a pair of values of τ , which should be very small and accurate. Such a repetition of the computation will in general be advisable, to guard against accidental numerical errors, but a second approximation may be obtained without it, by finding a corrected value of τ in accordance with the formulæ—

$$\delta\tau = \mp \frac{\tau(l' + [5.3100]\xi \cos d)}{n \cos \psi} - \frac{[4.9788]\tau^2}{n \cos \psi} [\xi \sin (N \mp \psi) - \eta_2 \cos (N \mp \psi)]$$

$$\tau_0 = \tau + \delta\tau$$

where the double signs are to be taken negative for the beginning of the eclipse and positive for the ending. l' is the variation of l for one minute of time, and its numerical value can be taken by inspection from the table of Besselian elements.

If the resulting values of τ_0 are not greater than fifteen minutes, the corrected times of contact thus obtained will be theoretically exact within less than a second, but the uncertainties of the solar and lunar tables are such that an unavoidable error of several seconds may exist in the prediction. To guard against numerical mistakes it is better, after making this final correction, to repeat the computations so far as to obtain new values of m and L for the corrected times. If these two quantities agree within a unit of the fourth place of decimals, the times employed are generally correct within a second of time. If they differ too widely, the computer must use his own judgment as to making further corrections and computations.

Position-angle of Point of Contact.—The position-angle P , of the point of contact, reckoned from the north point of the Sun's limb toward the east, is found by the formulæ—

$$P = N - \psi \pm 180^\circ \text{ for the beginning,}$$

$$\text{or } P = N + \psi \quad \text{for the ending,}$$

it being assumed that, in each case, the value of ψ is taken between the limits $\pm 90^\circ$.

Computation of the Solar Eclipse of 1916, February 3, for Washington.

The position of the point chosen is—

Latitude, $\phi =$	+	38	54	0
Longitude, $\lambda =$	+	77	3	0

Its geocentric coordinates are—

$$\rho \sin \varphi' = 9.79558$$

$$\rho \cos \varphi' = 9.89169$$

From the Eclipse Chart we find the approximate times of the phases to

Beginning February	d	h	m	} Greenwich Mean Time.			
Ending	3	3	10				
	3	5	20				
Greenwich Mean Time, T , February 3,				Beginning.	Ending.		
				3 ^h 10 ^m	5 ^h 20 ^m		
		°	'	"	°	'	"
μ		44	1	42	76	31	42
λ		+77	3	0	+77	3	0
$\mu - \lambda$		-33	1	18	- 0	31	18
$\rho \cos \varphi'$		9.89169			9.89169		
$\sin (\mu - \lambda)$		9.73636	n		7.95926	n	
$\log \xi$		9.62805	n		7.85095	n	
ξ		-0.42467			-0.00710		
$\rho \sin \varphi'$		9.79558			9.79558		
$\cos d$		9.98109			9.98114		
$\log \eta_1$		9.77667			9.77672		
η_1		+0.59796			+0.59803		
$\rho \cos \varphi'$		9.89169			9.89169		
$\sin d$		9.46062	n		9.45999	n	
$\cos (\mu - \lambda)$		9.92349			9.99998		
$\log \eta_2$		9.27580	n		9.35166	n	
η_2		-0.18871			-0.22473		
$\eta = \eta_1 - \eta_2$		+0.78667			+0.82276		
$\rho \sin \varphi' \sin d$		9.25620	n		9.25557	n	
ζ_1		-0.18038			-0.18012		
$\rho \cos \varphi' \cos d \cos (\mu - \lambda)$		9.79627			9.87281		
ζ_2		+0.62556			+0.74612		
$\zeta = \zeta_1 + \zeta_2$		+0.44518			+0.56600		
const. log		7.63992			7.63992		
$\rho \cos \varphi' \cos (\mu - \lambda)$		9.81518			9.89167		
$\log \xi'$		7.45510			7.53159		
ξ'		+0.002852			+0.003401		
const. log		7.63992			7.63992		
$\xi \sin d$		9.08867			7.31094		
$\log \eta'$		6.72859			4.95086		
η'		+0.000535			+0.000009		
$x - \xi$		-0.20669			+0.52109		
$y - \eta$		-0.50656			-0.07282		
$x' - \xi'$		+0.005961			+0.005407		
$y' - \eta'$		+0.003076			+0.003608		
$m \sin M$		9.31532	n		9.71691		
$m \cos M$		9.70463	n		3.86225	n	
$\tan M$		9.61069			0.85466	n	

	Beginning.	Ending.
M	202° 11' 48''	97° 57' 19''
$\sin M$	9.57725 <i>n</i>	9.99580
$\log m$	9.73807	9.72111
$n \sin N$	7.77532	7.73296
$n \cos N$	7.48799	7.55727
$\tan N$	0.28733	0.17569
N	62° 42' 19''	56° 17' 9''
$\sin N$	9.94873	9.92003
$\log n$	7.82659	7.81293
$\tan f$	7.67608	7.67607
$\log \zeta$	9.64854	9.75282
	7.32462	7.42889
$\zeta \tan f$	+0.00211	+0.00268
l	+0.54248	+0.54265
L	+0.54037	+0.53997
$M - N$	139° 29' 29''	41° 40' 10''
$\sin (M - N)$	9.81262	9.82271
$\log m$	9.73807	9.72111
$\csc L$	0.26731	0.26763
$\sin \psi$	9.81800	9.81145
ψ	+41° 7' 17''	+40° 22' 36''
$\log \frac{m}{n}$	1.91148	1.90818
$\cos (M - N)$	9.88099 <i>n</i>	9.87332
	1.79247 <i>n</i>	1.78150
$-\frac{m}{n} \cos (M - N)$	+62.011	-60.464
$\log L$	9.73269	9.73237
$\cos \psi$	9.87698	9.88184
$\csc n$	2.17341	2.18707
	1.78308	1.80128
$\mp \frac{L \cos \psi}{n}$	-60.684	+63.281
τ	+ 1.327	+ 2.817
$T + \tau$	3 ^d 3 ^h 11.327 ^m	3 ^d 5 ^h 22.817 ^m

Although neither value of τ is large, we compute the correction $\delta\tau$ for the ending as follows:

const. log	Ending. 5.3100		Ending.
log ξ	7.8510 <i>n</i>		number -0.0000001
cos d	9.9811		l' +0.0000008
	<hr/> 3.1421 <i>n</i>		<hr/> sum +0.0000007

	Ending.			Ending.
log (sum)	3.8451		$\xi \sin (N+\psi)$	-0.0070
log τ	0.4498		$\eta_2 \cos (N+\psi)$	+0.0261
colog n	2.1871		diff.	-0.0331
sec ψ	0.1182			
	<u>6.6002</u>		log (diff.)	8.5198 n
(1)	+0.0004		const. log	4.9788 n
$N+\psi$	96° 40'		log τ^2	0.8996
sin ($N+\psi$)	9.9971		colog ($n \cos \psi$)	2.3052
log ξ	7.8510 n			<u>6.7034</u>
log $\xi \sin (N+\psi)$	<u>7.8481 n</u>		(2)	+0.0005
cos ($N+\psi$)	9.0648 n		(1) + (2) = $\delta\tau$	^m +0.001
log η_2	9.3517 n		τ	+2.817
log $\eta_2 \cos (N+\psi)$	<u>8.4165</u>		τ_0	+2.818

The corrected time of ending is, therefore,

$$T_0 = \text{February } 3^{\text{d}} 5^{\text{h}} 22^{\text{m}}.818$$

Whence we find—

		Beginning.		Ending.
Greenwich Mean Time, February		d h m		d h m
		3 3 11.327		3 5 22.818
λ	+	5 8.200	+	5 8.200
Local Mean Time, February		2 22 3.127		3 0 14.618

Therefore we have—

Beginning of the Eclipse, February	d h m s	}	Local Mean Time.
End of the Eclipse, February	2 22 3 7.6		
	3 0 14 37.1		

	Beginning.	Ending.
$N \mp \psi$	21 35.0	96 39.8
constant	<u>180 0.0</u>	<u>0 0.0</u>
Angle of position, P	201 35.0	96 39.8

from the north point of the Sun's disk toward the east for direct image.

Pages 566-570 contain the adopted mean places and annual proper motions of such stars, as bright as magnitude 6.5, as will be occulted during the year by the Moon.

Pages 571-607 contain the elements for the prediction of the times of occultations of stars and planets by the Moon during the current year. The system of coordinates employed is similar to that already described for eclipses, the fundamental plane passing through the center of the Earth, and being taken perpendicular to the line joining the star and the center of the Moon, but the cone circumscribing the Moon and star is regarded as a cylinder which intercepts the fundamental plane in a circle having the same linear diameter as the Moon.

In the columns referring to the star, those headed *Red'ns from 1916.0* give the quantities necessary to reduce the mean place of the star at the beginning of 1916 to its apparent place at the time of occultation. These reductions are sufficiently accurate to be definitive.

Under the general head, *At Conjunction in R. A.*, are five columns giving certain quantities for the moment of geocentric conjunction of the Moon and star in right ascension, as follows:

The *Greenwich Mean Time* is the moment, T , at which the two bodies are in geocentric conjunction in right ascension. At that moment the coordinate x of the axis of the cylinder on the fundamental plane has the value zero. The column *Hour Angle*, H , gives the common geocentric hour-angle of the Moon and star at the same moment, expressed in sidereal time and counted from the meridian of Greenwich—positive toward the west and negative toward the east. Column Y gives the coordinate y of the axis of the cylinder upon the fundamental plane at the same moment. Columns x' and y' give the variations of x and y in one hour of mean time. The linear unit in these columns is the Earth's equatorial radius. The limiting parallels, north and south, show the extreme limits of latitude within which the occultation will be visible.

By the aid of these elements, the time of immersion and emersion of a star relatively to the limb of the Moon may be computed for any part of the Earth by a method nearly the same as that already explained for computing eclipses, but somewhat more simple.

Prediction of Occultations for a given Place.—When it is desired to predict the circumstances of one or more occultations at any place, the first step will be to select them from the general list given in the Ephemeris. The conditions of visibility are:—

1. The limiting parallels in the last columns must include the latitude of the place.

2. The quantity $H - \lambda$, taken without regard to sign, must be less than the semidiurnal arc of the star by at least one hour. On very rare occasions an emersion might be seen in the east, or an immersion in the west, when this difference is a few minutes less than an hour.

3. The Sun must not be much more than an hour above the horizon at the local mean time $T - \lambda$, unless the star is bright enough to be seen in the daytime.

When many occultations are to be selected, the most convenient course will be to write the value of $-\lambda$ on the bottom of a slip of paper, and in passing through the list of occultations to pause over each one for which condition (1) is fulfilled, and examine by means of the slip whether conditions (2) and (3) are also fulfilled. If either fails, the computer passes on. Sometimes it will be difficult to determine whether $H - \lambda$ or $T - \lambda$ falls within the limits; and in such cases the computer may mark the occultation for trial and leave the decision for the subsequent operations. The whole list can be gone over in less than a day, and it will probably be found that about one-tenth of the occultations are marked for trial.

The next step will be to compute the local times of immersion and emersion from the elements, and to that end let—

T = the instant of geocentric conjunction of Moon and star in right ascension, expressed in Greenwich mean time;

H = the Greenwich west hour-angle of the two bodies at that moment;

λ = the longitude west of Greenwich;

$\lambda_0 = H - \lambda$ = the local hour-angle of the star at the instant T ;

δ = the star's declination.

The procedure for each occultation will then be as follows:—

(1) The geocentric coordinates of the place, $\rho \sin \varphi'$ and $\rho \cos \varphi'$, are to be computed by the formulæ and table given in connection with eclipses on page 722.

The next step will be to find the approximate instant of apparent conjunction of the Moon and star as seen from the place, and that may be deduced from the time of geocentric conjunction by the application of an approximate correction taken from DOWNES'S table, printed in the volumes of the American Ephemeris for 1882 to 1899. This correction must be reckoned in mean solar hours, and will be designated by the symbol t . It will have the same sign as h_0 .

When DOWNES'S table is not available, the correction may be computed from the formulæ,

$$\begin{aligned}\xi_0 &= \rho \cos \varphi' \sin h_0 \\ \xi' &= [9.4192] \rho \cos \varphi' \cos \frac{4}{3} h_0 \\ t &= \frac{\xi_0}{x' - \xi'}\end{aligned}$$

By applying t to the Greenwich mean time of geocentric conjunction, as given with the elements, we shall have the Greenwich mean time of local conjunction within a few minutes.

(2) Compute for the instant $T+t$ the following quantities, in which t_0 is the sidereal equivalent of the mean time interval t :

$$\begin{aligned}\xi &= \rho \cos \varphi' \sin (h_0 + t_0) \\ \eta &= \rho \sin \varphi' \cos \delta - \rho \cos \varphi' \sin \delta \cos (h_0 + t_0) = \eta_1 - \eta_2 \\ \xi' &= [9.4192] \rho \cos \varphi' \cos (h_0 + t_0) \\ \eta' &= [9.4192] \rho \cos \varphi' \sin \delta \sin (h_0 + t_0) = [9.4192] \xi \sin \delta \\ x &= x't \\ y &= Y + y't\end{aligned}$$

Compute also m , M , n , N , and ψ from the equations,

$$\begin{aligned}m \sin M &= x - \xi \\ m \cos M &= y - \eta \\ n \sin N &= x' - \xi' \\ n \cos N &= y' - \eta' \\ \sin \psi &= [0.5646] m \sin (M - N)\end{aligned}$$

ψ being taken between the limits $\pm 90^\circ$. Finally compute,

$$\begin{aligned}\tau &= -\frac{[1.7782]m}{n} \cos (M - N) \mp \frac{[1.2135]}{n} \cos \psi \\ \delta\tau &= \frac{[6.7591]\tau^2}{n \cos \psi} [n_2 \cos (N \mp \psi) - \xi \sin (N \mp \psi)]\end{aligned}$$

where the double signs are to be taken negative for an immersion and positive for an emersion. Both τ and $\delta\tau$ thus have two values, which are expressed in minutes of time, and in order to distinguish them let those pertaining to immersion be designated respectively τ' and $\delta\tau'$, while those pertaining to emersion are designated τ'' and $\delta\tau''$. We then have for the Greenwich mean times of the phases,

$$\text{Instant of immersion} = T + t + \tau' + \delta\tau'$$

$$\text{Instant of emersion} = T + t + \tau'' + \delta\tau''$$

These expressions are practically exact, as the corrections $\delta\tau$ seldom amount to so much as 1.5 minutes, and whenever an inaccuracy of that magnitude is permissible they may be omitted. As a check upon the results it will be advisable to compute ξ , η , x , and y for the times of immersion and emersion finally obtained. If these times are correct, the quantities in question will fulfill the condition,

$$\sqrt{(x - \xi)^2 + (y - \eta)^2} = 0.2725$$

If $\log m \sin (M - N) > 9.4354$, $\sin \psi$ will be numerically greater than unity, and no occultation is to be expected at the given place; but a very brief one may occur if the excess of the computed distance over the Moon's semi-diameter happens to be within the errors of the ephemerides of the Moon and star.

The position-angle of the line from the Moon's center to the star, at the time of contact, is reckoned from the north point toward the east, and designated by the symbol P . It is computed from the formulæ,

$$P = N - \psi + \delta P \quad \text{for immersion,}$$

$$\text{or} \quad P = N + \psi + \delta P \pm 180^\circ \text{ for emersion,}$$

where the angles $N - \psi$ and $N + \psi$ are taken directly from the computation of $\delta\tau$, and δP is found in degrees of arc from the expression,

$$\delta P = \mp \frac{[7.3038]\tau^2}{\cos \psi} [\eta_2 \sin N + \xi \cos N]$$

In the latter formula the double sign is to be taken negative for an immersion and positive for an emersion.

The angle from the vertex, V , is also reckoned in the direction from the north toward the east, and is found from the formula,

$$V = P - C$$

where C is computed from the expression,

$$\tan C = \frac{\xi + [8.2218]\tau\xi' - [4.9810]\tau^2\xi}{\eta + [8.2218]\tau\eta' + [4.9810]\tau^2\eta_2}$$

C being taken less or greater than 180° , according as the numerator is positive or negative.

The value of τ employed in the latter formula must be so taken as to correspond with the phase for which C is required.

In the volumes of the American Ephemeris for the years 1882 to 1901 instructions are given for constructing three special tables which greatly diminish the labor of computing occultations, but as these tables should contain from 4700 to 6300 quantities, and as they would apply only to the place for which they were computed, it will rarely be worth while to undertake the labor of forming them. Those who desire further information on the subject may consult any one of the volumes in question.

As an example of an isolated occultation, we will compute that of 112 B. Aurigæ on March 11, 1916, for Miami, Fla., whose position is—

$$\begin{aligned}\varphi &= +25^\circ 46' 28''.0 \\ \lambda &= + 5^h 20^m 45^s.8\end{aligned}$$

and whose geocentric coordinates are—

$$\begin{aligned}\rho \sin \varphi' &= 9.6357 \\ \rho \cos \varphi' &= 9.9548\end{aligned}$$

From the elements on page 578 we have,

$$\begin{aligned}T &= \begin{matrix} h & m \\ 12 & 20.6 \end{matrix} \\ H &= + \begin{matrix} h & m \\ 6 & 6.0 \end{matrix}\end{aligned}$$

and

$$h_0 = H - \lambda = + 0 \ 45.2$$

From the formulæ on page 729, we find the correction, t , to the Greenwich mean time of geocentric conjunction, T , to be about $+0^h 33^m.4$; therefore the Greenwich mean time of apparent conjunction is—

$$T+t = \text{March } 11^d 12^h 54^m.0$$

112 B. Aurigæ.	Apparent Declination.	G. M. T. of δ	Hour Angle.	Y	x'	y'
	+26 52.5	Mar. 11 12 20.6	+ 6 6.0	-0.0180	0.5456	-0.0092

$T+t$ Mar. 11 ^d 12 ^h 54 ^m .0		η'	+0.0360
h_0	+ 0 45.2	$\log x'$	9.7369
t_0	+ 0 33.5	$\log t$	9.7455
h_0+t_0	+ 1 18.7	$\log x$	9.4824
$\rho \cos \varphi'$	9.9548	x	+0.3037
$\sin (h_0+t_0)$	9.5272	$\log y'$	7.9638 n
$\log \xi$	9.4820	$\log y'/t$	7.7093 n
ξ	+0.3034	y'/t	-0.0051
$\rho \sin \varphi'$	9.6357	Y	-0.0180
$\cos \delta$	9.9504	y	-0.0231
$\log \eta_1$	9.5861	$x-\xi$	+0.0003
η_1	+0.3856	$y-\eta$	-0.0251
$\rho \cos \varphi'$	9.9548	$x'-\xi'$	+0.3228
$\sin \delta$	9.6552	$y'-\eta'$	-0.0452
$\cos (h_0+t_0)$	9.9739	$m \sin M$	6.4771
$\log \eta_2$	9.5839	$m \cos M$	8.3997 n
η_2	+0.3836	$\tan M$	8.0774 n
$\eta_1-\eta_2=\eta$	+0.0020	M	179° 19'
const. log	9.4192	$\cos M$	0.0000 n
$\rho \cos \varphi' \cos (h_0+t_0)$	9.9287	$\log m$	8.3997
$\log \xi'$	9.3479	$n \sin N$	9.5089
ξ'	+0.2228	$n \cos N$	8.6551 n
const. log	9.4192	$\tan N$	0.8538 n
$\xi \sin \delta$	9.1372	N	97° 58'
$\log \eta'$	8.5564	$\sin N$	9.9958
		$\log n$	9.512

const. log	0.5646	$-\frac{[1.7782]m}{n} \cos(M-N)$	-0.70	
log m	8.3997		const. log	1.2135
sin $(M-N)$	9.9950		colog n	0.4869
sin ψ	8.9593		cos ψ	9.9982
ψ	+ 5° 13'			
const. log	1.7782			1.6986
log $\frac{m}{n}$	8.8866		$\mp \frac{[1.2135] \cos \psi}{n}$	\mp 49.96
cos $(M-N)$	9.1772		τ for immersion	- 50.66
	9.8420		τ for emersion	+ 49.26

The computation of $\delta\tau$ for the two contacts is as follows:

	Immersion.	Emersion.
$N \mp \psi$	92° 45'	103° 11'
cos $(N \mp \psi)$	8.6810 n	9.3581 n
log η_2	9.5839	9.5839
log (1)	8.2649 n	8.9420 n
(1)	-0.0184	-0.0875
sin $(N \mp \psi)$	9.9995	9.9884
log ξ	9.4820	9.4820
log (2)	9.4815	9.4704
(2)	+0.3031	+0.2954
(1) - (2)	-0.3215	-0.3829
log [(1) - (2)]	9.5072 n	9.5831 n
const. log	6.7591	6.7591
log τ^2	3.4094	3.3850
colog $(n \cos \psi)$	0.4887	0.4887
log $\delta\tau$	0.1644 n	0.2159 n
$\delta\tau$	- $\overset{m}{1.46}$	- $\overset{m}{1.64}$
$\tau + \delta\tau$	- 52.12	+ 47.62
$T+t$	Mar. $\overset{d}{11} \overset{h}{12} \overset{m}{54.0}$	$\overset{h}{12} \overset{m}{54.0}$
Greenwich Mean Time of Phase,	" $\overset{d}{11} \overset{h}{12} \overset{m}{1.9}$	$\overset{h}{13} \overset{m}{41.6}$
λ	+5 20.8	+ $\overset{h}{5} \overset{m}{20.8}$
Miami Mean Time,	Mar. $\overset{d}{11} \overset{h}{6} \overset{m}{41.1}$	$\overset{h}{8} \overset{m}{20.8}$

To find δP and P :

log η_2	9.5839	log ξ	9.4820	(3)	+0.3799
sin N	9.9958	cos N	9.1420 n	(4)	-0.0421
log (3)	9.5797	log (4)	8.6240 n	(3) + (4)	+0.3378
		Immersion.			
log [(3) + (4)]		9.5287		Emersion.	9.5287
const. log		7.3038 n		7.3038	
log τ^2		3.4094		3.3850	
colog cos ψ		0.0018		0.0018	
log δP		0.2437 n		0.2193	

	Immersion.	Emersion.
δP	- 1.8	+ 1.7
$N \mp \phi$	92.8	103.2
constant	0.0	180.0
Angle of position, P	91.0	284.9

from the north point of the Moon's limb toward the east, for direct image.

Pages 607-609 contain in detail all the data necessary for observing every occultation of the general list which is visible at Washington during the current year.

Page 610 contains the *Ephemeris for Physical Observations of the Sun*.

Page 611 contains certain elements referring to the Moon, its equator, and its orbit.

i is the inclination of the Moon's mean equator to the Earth's true equator.

A is the distance on the Moon's mean equator from its ascending node on the Earth's true equator to its ascending node on the ecliptic of date.

Ω' is the distance along the Earth's true equator from the true equinox to the ascending node of the Moon's mean equator.

I' is the longitude of the perigee of the Moon's orbit, referred to the mean equinox of date.

Ω is the longitude of the ascending node of the Moon's orbit on the ecliptic, referred to the mean equinox of date.

C is the Moon's mean longitude, referred to the mean equinox of date.

Pages 612-619 contain the *Ephemeris for Physical Observations of the Moon*. The selenographic longitudes are measured in the plane of the Moon's equator, the axis of reference being the radius of the Moon which passes through the mean center of the visible disk, positive toward the west—i. e., toward Mare Crisium—and the latitudes are measured from the Moon's equator, positive toward the north—i. e., in the hemisphere containing Mare Serenitatis.

The optical and physical librations in longitude and latitude have been computed with elements and formulæ given on page xiii, and their sums are given in the second and third columns, respectively, the physical libration being given separately in the fourth and fifth columns. The Sun's selenographic colongitude (90° - longitude) and latitude and the position-angle of the Moon's axis, C , in the sixth, seventh, and eighth columns, respectively, have all been corrected for the effect of physical libration.

When the libration in longitude is positive, the mean center of the disk is displaced toward the east—that is, the region thus exposed to view is on the west limb—and when the libration in latitude is positive the mean center of the disk is displaced toward the south—that is, the region thus exposed to view is on the north limb.

The altitude of the Sun, A , at any given time above the horizon of any point on the Moon whose selenographic longitude and latitude, λ and β , are known, may be computed from the following formula, the Sun's selenographic longitude and latitude being denoted by l_\odot and b_\odot , respectively:

$$\sin A = \sin b_\odot \sin \beta + \cos b_\odot \cos \beta \cos (l_\odot - \lambda)$$

Pages 620-621 contain the data with reference to the illuminated disks of Mercury and Venus. The angle θ is the angle which the arc of the great circle

from the planet to the Sun makes with the arc from the planet toward the west, measured in the direction west, north, east, south. It is measured from 0° to 360° . We may also regard θ as expressing the angle which the line of cusps makes with the meridian, the positive direction of the meridian being toward the north, and the positive direction of the line of cusps that in which a person following this line would have the illuminated portion of the disk on his right.

Pages 622–625 contain the *Ephemeris for Physical Observations of Mars*. The quantities here given have been corrected for aberration, so that in using them they should be interpolated to the actual time of observation.

P is the position-angle of the axis of rotation measured eastward from the north point of the disk.

A_\oplus and A_\odot are the planetocentric right ascensions of the Earth and Sun, respectively, measured in the plane of the planet's equator from its vernal equinox.

D_\oplus and D_\odot are the planetocentric declinations of the Earth and Sun, respectively, referred to the planet's equator.

\odot_σ is the planetocentric longitude of the Sun measured in the plane of the planet's orbit from its vernal equinox.

k is the ratio of the area of the illuminated portion of the apparent disk to the area of the entire apparent disk regarded as circular.

i is the angle between the Sun and the Earth as seen from the planet.

q is the angular value of the greatest defect of illumination as seen from the Earth.

Q is the position-angle of the radius of the disk which passes through the point of greatest defect of illumination—that is, of the radius perpendicular to the line joining the cusps. It is measured eastward from the north point of the disk.

The column headed *Central Meridian* contains the longitude of the meridian which bisects the disk, measured from the adopted zero meridian.

The columns headed *Mean Time of Transit of Zero Meridian* contain the Greenwich Mean Time of every transit of the zero meridian across the actual center of the disk.

Page 626 contains, for the *Satellites of Mars*, the diagram of their orbits and the times of their elongations.

Pages 627–630 contain the *Ephemeris for Physical Observations of Jupiter*.

The columns headed *Central Meridian* contain the longitudes of the meridian which bisects the disk, measured from the adopted zero meridian of System I and System II, respectively.

The column headed *Correction for Phase* contains the corrections to be applied to the longitudes of the central meridian to obtain the longitudes of the meridian bisecting the illuminated disk.

The column headed *Transit of Zero Meridian* contains the Greenwich Mean Time of every fifth transit of the zero meridian across the center of the illuminated disk.

The quantities in the remaining columns on pages 627–628 are the same as those defined under the *Ephemeris for the Physical Observations of Mars*.

Pages 631–655 contain, concerning the *Satellites of Jupiter*, the diagram of the orbits of Satellites I–V, the times of conjunction of Satellites I–IV,

the times of elongation of Satellite V, the differences in right ascension and declination between Jupiter and Satellites VI and VII, and the phenomena of the Satellites I-IV together with their configurations.

Page 656 contains the *Magnitude of Saturn* and the *Elements of the Rings*.

Pages 657-665 contain, concerning the *Satellites of Saturn*, the diagram of the orbits of the seven inner satellites, the times of elongation for the first eight satellites, the differences in right ascension and declination between Saturn and Phœbe, the ninth satellite, and tables for predicting the position-angles and distances from the center of the planet of the first eight satellites.

Page 666 contains the diagram of the orbits of the satellites of Uranus, together with the times of their elongations.

Pages 667-668 contain tables for predicting the position-angles and distances from the center of the planet of the satellites of Uranus and Neptune.

Page 669 contains the diagram of the orbit of the satellite of Neptune, together with the times of its elongations.

Pages 670-671 contain the *Phenomena*, or the configurations of the Sun, Moon, and planets, expressed in the symbols of page xx. The predicted times of the conjunctions, quadratures, and oppositions of the planets with respect to the Sun are, respectively, the instants when the longitude of each planet differs from that of the Sun by 0° , $\pm 90^\circ$, or 180° . For the conjunction of the planets with the Moon and with each other, the predicted times are the instants when the two bodies have the same right ascension. In the case of conjunction the degrees and minutes to the right indicate the difference of declination. Thus, $\delta \text{ } \text{C} \dots \text{ } \delta - 4^\circ 22'$ would be read "Conjunction of Mars with the Moon, Mars $4^\circ 22'$ to the South."

These pages contain also the beginning of the seasons; the perihelia and aphelia of the planets, including the Earth; the passage of the planets through the nodes of their orbits upon the ecliptic; the time of Mars' nearest approach to the Earth; the time of the greatest brilliancy of Venus; and the date of lunar and solar eclipses, with their aspect as seen from Washington.

Pages 672-681 contain the *Positions of Observatories*, together with a list of the authorities from which the positions are obtained. The tabular arrangement is self-explanatory.

Page 682 contains two examples in the computation of lunar distances, which are inserted because lunar distance tables are no longer published.

Pages 683-707 contain a series of tables numbered from I to VII.

Table I—For Finding the Latitude by an Observed Altitude of Polaris.

Table II—For converting Sidereal into Mean Solar Time.

Table III—For converting Mean Solar into Sidereal Time.

Table IV—For Finding the Azimuth of Polaris at All Hour Angles.

Table V—For Finding the Azimuth of Polaris at Elongation.

Table VI—For Finding the Times of Upper and Lower Culmination of Polaris.

Table VII—For finding the Apparent Place, Time of Upper Culmination, and Time Interval between Upper Culmination and Elongation, of Polaris.

INDEX TO APPARENT PLACES OF STARS, 1916. 737

Name. Page.	Name. Page.	Name. Page.	Name. Page.	Name. Page.	Name. Page.	Name. Page.
Corvi.	Doradus.	Eridani.	Groombr.	Horologii.	Leonis.	Lupi.
β 417	α 355	ν 354	1446 388	α 352	ε 396	β 434
γ 414	δ 366	σ^1 352	1450 387	μ 342	ζ 400	γ 439
δ 416		τ^2 340	1586 397	38 G. 344	η 398	ζ 436
ε 413	Draconis.	τ^3 341	1706 405		θ 408	
		τ^5 347	1830 412	Hydræ.	ι 409	Lyncis.
Crateris.	α 427	τ^6 348	2001 423	α 394	μ 397	
	β 456	υ^5 353	2164 433	γ 422	ξ 395	2 369
α 406	γ 460	ϕ 334	2283 236	δ 388	\omicron 396	8 371
β 407	δ 471	ϵ 345	2320 444	ε 390	π 398	15 375
δ 408	ε 476	g 348	2377 450	ζ 390	ρ 402	24 381
ζ 411	ζ 453	12 343	2533 463	θ 392	σ 409	26 383
	η 447	53 355	3241 481	λ 399	τ 409	27 384
Crucis.	θ 443		4163 512	μ 401	υ 410	31 386
	ι 438	Fornacis.		ν 404	χ 407	40 393
α^1 415	κ 417			ξ 410	d 406	
β 419	λ 410	β 339	Gruis.	π 426	l 404	Lyræ.
γ 416	ξ 459	κ 335	α 495	σ 388	p^1 407	
δ 414	\omicron 468	μ 334	β 500		54 405	α 466
	τ 472		γ 453	Hydri.	Leo. Min.	β 467
	χ 464	Geminor.	ε 501	α 332	10 395	γ 469
Cygni.	ψ 458	α^2 380	ι 504	β 318	19 398	θ 471
	ω 457	β 382		γ 349	31 401	ι 470
α 483	A 448	γ 372	Herculis.	δ 335	41 403	R 468
β 473	1 H. 234	δ 378		ε 337	42 403	
γ 480	3 411	ε 373	α 453	θ 342	46 405	Mensæ.
δ 475	4 H. 414	ζ 376	β 448	ι 345		δ 353
ε 484	9 II. 402	η 369	γ 446	λ 322		ζ 233
ζ 488	12 H. 441	θ 375	δ 453	μ 337	Leporis.	31 G. 233
θ 474	35 459	ι 379	ε 452		α 363	
ι 473	36 463	κ 381	ζ 450	Indi.	β 362	Microscop.
κ 472	50 467	λ 378	η 450	α 482	δ 366	
ν 486	76 237	μ 370	θ 460	β 485	ε 359	γ 486
ξ 487	79 494	ν 371	ι 457	ε 494	ζ 365	θ^1 489
\omicron 478	220 H ¹ . 485	ξ 373	κ 444	ρ 502	η 367	
π^2 493		ρ 380	λ 456		μ 360	Monocer.
σ 489	Equulei.	ϕ 382	μ 458	Lacertæ.		
τ 488		χ 384	ξ 460	α 498	Libræ.	S 373
g 490	α 488	1 368	\omicron 462	3 498	α 433	8 370
15 475		51 377	π 454	10 499	β 437	10 371
41 481	Eridani.		σ 449		γ 439	18 374
61 487		Groombr.	τ 446	Leonis.	δ 434	25 381
74 491	α 328	750 232	ϕ 444	α 399	ι 436	30 387
	β 359	848 355	ω 447	β 412	λ 442	
Delphini.	γ 350	944 232	d 452	γ 400	ξ^2 434	Muscæ.
	δ 347	966 363	w 454	δ 408	2 429	
α 482	ε 346	1119 234	49 451		8 433	α 417
β 482	ζ 344	1308 379	109 464		32 438	δ 420
γ 484	η 340	1374 383	110 466			
δ 483	θ 341					
ε 481	μ 356					

738 INDEX TO APPARENT PLACES OF STARS, 1916.

Name. Page.	Name. Page.	Name. Page.	Name. Page.	Name. Page.	Name. Page.	Name. Page.
Normæ.	Orionis.	Persei.	Puppis.	Scorpii.	Telescopii.	Urs. Min.
γ^2 445	π^5 357	ρ 342	1 G. 368	τ 449	α 464	α 232
	τ 361	τ 340	4 382	24 449		β 433
Octantis.	φ^1 364	υ 328	20 385		Trianguli.	γ 437
α 486	11 359	φ 329		Sculptoris.	α 330	δ 237
β 238	Pavonis.	c 351	Pyxidis.	α 323	β 333	ϵ 236
γ^1 238		m 354	α 389	β 508	γ 334	ζ 441
δ 236	α 480	6 333	θ 394	γ 506		η 447
ζ 234	β 483	Phœnicis.	Reticuli.	δ 511	Tri. Austr.	λ 237
η 235	γ 490	α 318	α 352	ϵ 330	α 450	4 428
ι 235	ϵ 477	β 324	δ 350	Serpentis.	β 442	5 430
κ 235	ζ 465	γ 326		α 440	γ 436	19 445
λ 238	η 457	ϵ 316	Sagittæ.	β 440	Tucanæ.	Velorum.
ρ 236	λ 467	μ 320	β 474	γ 442	α 497	q 399
σ 237	Pegasi.	ψ 331	γ 477	ϵ 441	γ 506	Virginis.
υ 238	α 503	Piazzii.	δ 476	η 463	ϵ 513	α 422
χ 237	β 503	221 434	Sagittarii.	θ 468	ζ 318	β 412
4 G. 232	γ 317		γ 461	κ 440	κ 325	γ 418
7 G. 233	ϵ 492	Pictoris.	δ 463	ξ 457		δ 420
Ophiuchi.	ζ 500	α 375	ϵ 464	τ^1 438	Urs. Maj.	ϵ 421
α 456	η 500	Pisc. Austr.	ζ 469	c 465	α 406	ζ 423
β 458	θ 496	α 503	η 462	3 436	β 406	η 415
γ 459	ι 495	ϵ 500	ι 477	Sextantis.	γ 412	θ 421
δ 445	λ 501	3 488	λ 465	θ 397	δ 414	ι 428
ϵ 446	μ 501	Piscium.	μ 462	33 402	ϵ 420	κ 427
ζ 449	π 496	σ 468	π 470	Tauri.	ζ^1 422	λ 429
η 452	τ 507	φ 466	σ 468	α 354	η 424	μ 432
θ 454	υ 507	ψ 471	φ 466	β 362	θ 395	o 413
κ 451	φ 511	c 478	ψ 471	γ 353	ι 391	π 413
λ 448	1 490	d 471	c 478	δ 353	κ 391	ρ 418
ν 460	16 493	f 475	d 471	ϵ 354	λ 400	τ 426
σ 455	20 494	h 473	f 475	ζ 364	μ 400	φ 430
b 455	31 497	54 474	h 473	η 348	ν 408	χ 418
30 452	55 504	Scorpii.	ι 474	ϵ 354	ω 387	m 424
67 461	59 505	α 448		ζ 364	σ 392	70 423
70 461	70 508	β 443		η 348	υ 397	89 425
72 462	72 509	γ 435		ι 358	ψ 407	109 432
Orionis.	Persei.	δ 443		λ 350	χ 411	Volantis.
α 367	α 345	ϵ 451	α 448	μ 352	d 394	γ^2 375
β 361	β 343	η 453	β 443	ν 351	h 394	δ 379
γ 362	γ 342	ι^1 458	γ 435	ξ 346	3 H. 384	Vulpeculæ.
δ 363	δ 347	λ 456	δ 443	τ 355	30 H. 401	24 479
ϵ 364	ϵ 349	π 442	ϵ 451	λ 351	32 399	32 485
ζ 365	ζ 349	σ 446	η 453	f 346	i 357	
ι 364	η 339		θ 458	i 357	p 351	
κ 366	θ 338		λ 456			
ν 368	ν 347		π 442			
π^3 358	ξ 350		σ 446			

GENERAL INDEX.

	Page.
Abbreviations	xx
Aberration, Constant of	xviii
of the Sun	3
Achernar (Alpha Eridani), Apparent Place	328
Mean Place	217
Age of the Moon	118
Alcyone (Eta Tauri), Apparent Place	348
Mean Place	219
Aldebaran (Alpha Tauri), Apparent Place	354
Mean Place	219
Algol (Beta Persei), Apparent Place	343
Mean Place	218
Alioth (Epsilon Ursæ Majoris), Apparent Place	420
Mean Place	224
Alkaid (Eta Ursæ Majoris), Apparent Place	424
Mean Place	224
Alpha Canis Majoris (Sirius), Apparent Place	374
Mean Place	221
Orbit Position	xii
Parallax	xi
Alpha Canis Minoris (Procyon), Apparent Place	381
Mean Place	221
Orbit Position	xii
Parallax	xi
Alpha Centauri, Apparent Place	431
Mean Place	225
Orbit Position	xii
Parallax	xi
Alpha Ursæ Minoris (Polaris), Apparent Place	232, 707
Mean Place	231
Polaris Tables	683
Alpheratz (Alpha Andromedæ), Apparent Place	316
Mean Place	217
Altair (Alpha Aquilæ), Apparent Place	476
Mean Place	228
Parallax	xi
Anniversaries and Festivals	xvi
Antares (Alpha Scorpii), Apparent Place	448
Mean Place	226
Aphelia of Planets	670
Apogee of Moon	117
Apparent Place of 2 Aquilæ, Example of Reduction to	716
Places of 790 Standard Stars	316
of 35 Circumpolar Stars	232
of 825 Stars, Index to	736
Arcturus (Alpha Boötis), Apparent Place	428
Mean Place	224
Ariel, First Satellite of Uranus	666, 667, 668

	Page.
Arrangement and Use of the American Ephemeris	709
Aspects of the Planets	670
Astronomical Constants	xviii
Azimuth of Polaris at all Hour Angles, Table IV	694
at Elongation, Table V	700
Beginning of the Seasons	670
Bellatrix (Gamma Orionis), Apparent Place	362
Mean Place	220
Besselian Elements of Solar Eclipses	561, 563, 565
Formulæ for Star Reductions	200
Star Numbers	202, 214
Example of Reduction with	716
Exclusive of short-period Terms	214
Betelgeux (Alpha Orionis), Apparent Place	367
Mean Place	220
Brilliancy of the Planets, greatest (see Stellar Magnitude under each planet).	
Canopus (Alpha Argus), Apparent Place	371
Mean Place	220
Capella (Alpha Aurigæ), Apparent Place	380
Mean Place	220
Castor (Alpha Geminorum), Apparent Place	380
Mean Place	221
Charts of Solar Eclipses	following pages 562, 564
Chronological Eras and Cycles	xvii
Circumpolar Stars, Apparent Places	232
Mean Places	231
Conjunctions of Planets	670
of Satellites	632
Constants, Astronomical	xviii
Culminations, Moon	522
of Polaris, Table VI for finding times of	706
Upper Culmination, Meridian of Greenwich, Table VII	707
Cygni 61, Apparent Place	487
Mean Place	229
Parallax	xi
Day, Civil and Astronomical	710
Length of	xviii
of Julian Period	xvii
Deimos, Second Satellite of Mars	626
Delta Cassiopeiæ, Apparent Place	326
Mean Place	217
Used for finding time of culmination of Polaris (Table VI)	706
Deneb (Alpha Cygni), Apparent Place	483
Mean Place	228
Denebola (Beta Leonis), Apparent Place	413
Mean Place	223
Dione, Fourth Satellite of Saturn	657, 660, 662, 664
Disk of Mercury	620
of Venus	621
Distance, Astronomical Unit of	xviii
of the Moon	xviii
of the Planets (see also reference under each planet)	xix
of the Sun	xviii, 3
Dominical Letter	xvii
Earth, Dimensions of	xviii
Elements of Orbit of	xix
Earth's Radius Vector, Logarithm of	3

	Page.
Easter, date of	xvi
Eccentricities of the Orbits of the Earth and Planets	xix
Eclipses, Solar and Lunar Elements and Circumstances of	558
Solar, Besselian Elements of	561, 563, 565
Charts of	following pages 562, 564
Correction to Elements of	xii
Example of the Computation of	724
Ecliptic, Obliquity of	3
Election Day, Date of	xvi
Elements of Planetary Orbits	xix
Elongations of Planets	670
of Satellites	626, 632, 658, 666, 669
Elongation, Azimuth of Polaris at, Table V	700
of Polaris, Time Interval from Upper Culmination, Table VII	707
Enceladus, Second Satellite of Saturn	657, 659, 662, 664
Epac	xvii
Ephemeris for the Meridian of Greenwich (Part I)	1-198
of Washington (Part II)	199-555
Equation of Time for Greenwich Mean Noon	2
for Washington Apparent Noon	514
Equator, Moon's	611
Equinoxes, Date of	670
Errata	viii
Example of the Computation of Lunar Distances	682
of Occultations	731
of Solar Eclipses	724
Reduction of Stars to Apparent Place	716
of the Sun	712
Festivals, etc	xvi
Fomalhaut (Alpha Piscis Australis), Apparent Place	503
Mean Place	230
Geocentric Ephemerides of the Planets	134
Latitude of Observatories, Reduction to	672
Golden Number	xvii
Gravity, Acceleration due to	xviii
Gaussian Constant of	xviii
Greenwich Ephemeris (Part I)	1-198
Hayford's Spheroid	xviii
Heliocentric Coordinates of the Planets	142
Hyperion, Seventh Satellite of Saturn	657, 660, 663, 665
Iapetus, Eighth Satellite of Saturn	657, 660, 663, 665
Independent Star-Numbers	206, 214
Example of Reduction with	717
Exclusive of short-period Terms	214
Formulæ for	200
Irradiation	xiii
Julian Period	xvii
Jupiter, Distance from Earth, logarithm of	174
Elements of Orbit of	xix
Ephemeris for Physical Observations of	627
Elements used	xiv
Greenwich Transit of	174
Heliocentric Longitude and Latitude of	182
Horizontal Parallax of	174, 548
Radius Vector (Distance from Sun), logarithm of	182
Reduction to Orbit	182
Right Ascension and Declination at Greenwich Mean Noon	174
at Washington Transit	viii

	Page.
Jupiter, Satellites, Diagram of Apparent Orbits of	631
Synodic Periods of	631
I, II, III, and IV, Phenomena and Configurations of	636
Times of Superior Conjunction of	632
Satellite V, Greatest Elongation of	632
Satellites VI and VII, Differential Coordinates of	634
Semidiameter, Adopted Constant of	xix
Apparent Equatorial	628
Polar	174, 548
Sidereal Time of, Passing Meridian	548
Stellar Magnitude of	548, 627
Washington Transit of	548
Latitude, for finding, by an Observed Altitude of Polaris, Tables I, Ia	683
Formula for Reduction to Geocentric	xviii
Heliocentric, of the Planets	142
of the Moon	118
Corrections to	xii
of the Sun	3
Length of the Day	xviii
of the Month	xviii
of the Seconds Pendulum	xviii
of the Year	xviii
Libration of the Moon	612
Light, Velocity of	xviii
Longitude, Heliocentric, of the Planets	142
Mean, of the Moon	611
Nutation in	3
of the Sun	3
of the Moon, Corrections to	xii
Precession in	3
Short Period Terms of Nutation in	215
True, of the Moon	118
Lunar Distances, Examples in	682
Magnitudes, Stellar, of Jupiter	548, 627
of Mars	546, 622
of Mercury	620
of Neptune	554
of Saturn	550, 656
of Uranus	552
of Venus	621
Maps of Solar Eclipses	following pages 562, 564
Markab (Alpha Pegasi), Apparent Place	503
Mean Place	230
Mars, Distance from Earth, logarithm of	162
Elements of Orbit of	xix
Ephemeris for Physical Observations of	622
Elements used.	xiv
Greenwich Transit of	162
Heliocentric Longitude and Latitude of	170
Horizontal Parallax of	162, 546
Radius Vector (Distance from Sun), logarithm of	170
Reduction to Orbit	170
Right Ascension and Declination at Greenwich Mean Noon	162
at Washington Transit	546
Satellites, Apparent Apsides	626
Diagram of Apparent Orbits of	626
Greatest Elongations of	626
Sidereal Periods of	626

	Page.
Mars, Semidiameter, Adopted Constant of	xix
Apparent	162, 546
Sidereal Time of, Passing Meridian	546
Stellar Magnitude of	546, 622
Washington Transit of	546
Mass of Planets	xix
Mean Places of 790 Standard Stars	217
of 35 Circumpolars	231
of Stars Occulted by the Moon	566
Mean Solar into Sidereal Time, Table III	691
Mercury, Apparent Disk of	620
Distance from Earth, logarithm of	134
Elements of Orbit of	xix
Greenwich Transit of	134
Heliocentric Longitude and Latitude of	142
Horizontal Parallax of	134, 538
Occultation of	577
Radius Vector (Distance from Sun), logarithm of	142
Reduction to Orbit	142
Right Ascension and Declination at Greenwich Mean Noon	134
at Washington Transit	538
Semidiameter, Adopted Constant of	xix
Apparent	134, 538
Sidereal Time of, Passing Meridian	538
Stellar Magnitude of	620
Washington Transit of	538
Meridian Passage of Jupiter	174, 548
of Mars	162, 546
of Mercury	134, 538
of Moon	118, 522
of Neptune	197, 554
of Saturn	184, 550
of Sun	514
of Uranus	193, 552
of Venus	150, 542
Mimas, First Satellite of Saturn	657, 658, 662, 664
Mira (Omicron Ceti), Apparent Place	335
Mean Place	218
Mizar (Zeta Ursæ Majoris), Apparent Place	422
Mean Place	224
Used for finding time of Culmination of Polaris (Table VI)	706
Month, Length of	xviii
Moon, Age of, Greenwich Mean Noon and Midnight	118
Apogee and Perigee	117
Bright Limbs	522
Corrections to the Long., Lat., and Hor. Parallax of the	xii
Culminations, upper and lower, Meridian of Washington	522
Distance from Earth, Mean	xviii
Eclipses of, Elements and Circumstances	558
Ephemeris for Physical Observations of	612
Formulæ used.	xiii
Hourly	26
Equator, Position of	611
Libration, Formulæ for computing	xiv
Longitude and Latitude of	118
Formulæ for	ix
Longitude, Mean	118
True	611

	Page.
Moon, Motion of, in Mean Longitude	611
Node, Mean Longitude of	611
Parallax for Greenwich Noon and Midnight	118
for Washington, upper and lower transit	522
Mean Equatorial Horizontal	xviii
Perigee and Apogee	117
Perigee, Mean Longitude of	611
Phases of	117
Right Ascension and Declination for each Hour	26
for Washington upper and lower Transit	522
Semidiameter, Adopted Constant of	xiii, xix
Apparent	118, 522
Sidereal Time of, Passing Meridian	522
Transit, upper and lower, at Greenwich	118
at Washington	522
Neptune, Distance from Earth, logarithm of	196
Elements of Orbit of	xix
Greenwich Transit of	196
Heliocentric Longitude and Latitude of	198
Horizontal Parallax of	196, 554
Occultation of 572, 575, 578, 581, 583, 586, 594, 597, 600, 603, 606	198
Radius Vector (Distance from Sun), logarithm of	198
Reduction to Orbit	198
Right Ascension and Declination at Greenwich Mean Noon	196
at Washington Transit	554
Satellite, Apparent Apesides of	669
Diagram of Apparent Orbit of	669
Sidereal Period of	669
Tables for Determining Position Angle and Distance of	668
Times of Elongation of	669
Semidiameter, Adopted Constant of	xix
Apparent	196, 554
Sidereal Time of, Passing Meridian	554
Stellar Magnitude of	554
Washington Transit of	554
Node, Mean Longitude of the Moon's	611
Nutation, Constant of	xviii
Formulæ for	x
Terms of Short Period in the	215
in Longitude	3
Oberon, Fourth Satellite of Uranus	666, 667, 668
Obliquity of the Ecliptic, True	3
Mean	xviii
Short Period Terms of Nutation in	215
Observatories, Positions of, etc.	672
Occultations, Elements for Prediction of	571
Example of Computation of	731
Mean Places of Stars	566
of Planets 571, 572, 575, 577, 578, 581, 583, 586, 594, 597, 600, 603, 606, 609	607
Visible at Washington	607
Opposition of Planets	670
Orbits of the Planets, Elements of	xix
Orbit Positions of Sirius, Procyon, and α^2 Centauri	xii
Parallax, Annual of τ Ceti, ϵ Eridani, Sirius, Procyon, α Centauri, Altair, and 61 Cygni	xi
Corrections to, of the Moon	xii
Horizontal, of Jupiter	134, 538
of Mars	162, 546

	Page.
Parallax, Horizontal, of Mercury	134, 538
of Moon	xviii, 118, 522
of Neptune	196, 554
of Saturn	184, 550
of Sun	2
of Uranus	193, 552
of Venus	150, 542
Solar, Constant of	ix, xviii
Pendulum, Length of Seconds	xviii
Perigee of the Moon	117
Longitude of Moon's	611
Perihelia of Planets	xix, 670
Phases of Eclipses of Jupiter's Satellites	637
of the Moon	117
Phenomena, Eclipses, Occultations, Satellites, etc., Part III	557
of Jupiter's Satellites	636
Planetary Configurations	670
Phobos, First Satellite of Mars	626
Phœbe, Ninth Satellite of Saturn	657, 661
Physical Observations of Jupiter, Ephemeris for	627
of Mars, Ephemeris for	622
of the Moon, Ephemeris for	612
of the Sun, Ephemeris for	610
Planetary Configurations	670
Orbits, Elements of	xix
Planets, Aspects of	670
at Greatest Brilliancy (see Stellar Magnitude under each planet)	
at Stationary Points	670
in Ascending and Descending Node	670
in Conjunction	670
in Elongation	670
in Opposition	670
in Perihelion and Aphelion	670
in Quadrature	670
Occultations of 571, 572, 575, 577, 578, 581, 583, 586, 594, 597, 600, 603, 606, 609	
Semidiameters of	xix
Signs of	xx
Polaris (Alpha Ursæ Minoris), Apparent Place	232, 707
Azimuth of, at All Hour Angles, Table IV	694
Azimuth of, at Elongation, Table V	700
for Finding the Times of Upper and Lower Culminations from Observations in Connection with Zeta Ursæ Majoris (Mizar), S. P. and Delta Cassiopeiæ, S. P., Table VI	706
Mean Place	231
Table I, for Determining Latitude by Observations of Polaris	683
Time of Upper Culmination, and Time Interval between Upper Culmination and Elongation, Table VII	707
Pole Star (see Polaris).	
Pollux (Beta Geminorum), Apparent Place	382
Mean Place	221
Precession, General	xviii
in Longitude	3
Procyon (Alpha Canis Minoris), Apparent Place	381
Mean Place	221
Orbit Position	xii
Parallax	xi
Quadrature of Planets	670

