Young.

THE OBSERVER'S HANDBOOK FOR 1926

PUBLISHED BY

The Royal Astronomical Society of Canada

EDITED BY C. A. CHANT

EIGHTEENTH YEAR OF PUBLICATION

TORONTO
198 COLLEGE STREET
PRINTED FOR THE SOCIETY
1926

1926 CALENDAR 1926

JANUARY						
Sun.	3	10	17	24	31	
Mon.	4	11	18	25		
Tues.	5	12	19	26		
Wed.	6	13	20	27		
Thur.	7	14	21	28		
Fri.	1	8	15	22	29	
Sat.	2	9	16	23	30	

FEBRUARY						
Sun.		7	14	21	28	
Mon.	1	8	15	22		
Tues.	2	9	16	23		
Wed.	3	10	17	24		
Thur.	4	11	18	25		
Fri.	5	12	19	26		
Sat.	6	13	20	27		

MARCH						
Sun.		7	14	21	28	
Mon.	1	8	15	22	29	
Tues.	2	9	16	23	30	
Wed.	3	10	17	24	31	
Thur.	4	11	18	25		
Fri.	5	12	19	26		
Sat.	6	13	20	27		

APRIL						
Sun.		4	11	18	25	
Mon.		5	12	19	26	
Tues.		6	13	20	27	
Wed.		7	14	21	28	
Thur.	1	8	15	22	29	
Fri.	2	9	16	23	30	
Sat.	3	10	17	24		

MAY						
Sun.	2	9	16	23	30	
Mon.	3	10	17	24	31	
Tues.	4	11	18	25		
Wed.	5	12	19	26		
Thur.	6	13	20	27		
Fri.	7	14	21	28		
Sat.	1	8	15	22	29	

JUNE						
Sun.		6	13	20	27	
Mon.		7	14	21	28	
Tues.	1	8	15	22	29	
Wed.	2	9	16	23	30	
Thur.	3	10	17	24		
Fri.	4	11	18	25		
Sat.	5	12	19	26		

JULY						
Sun.		4	11	18	25	
Mon.		5	12	19	26	
Tues.		6	13	20	27	
Wed.		7	14	21	28	
Thur.	1	8	15	22	29	
Fri.	2	9	16	23	30	
Sat.	3	10	17	24	31	

AUGUST						
Sun.	1	8	15	22	29	
Mon.	2	9	16	23	30	
Tues.	3	10	17	24	31	
Wed.	4	11	18	25		
Thur.	5	12	19	26		
Fri.	6	13	20	27		
Sat.	7	14	21	28		

SEPTEMBER						
Sun.		5	12	19	26	
Mon.		6	13	20	27	
Tues.		7	14	21	28	
Wed.	1	8	15	22	29	
Thur.	2	9	16	23	30	
Fri.	3	10	17	24		
Sat.	4	11	18	25		

OCTOBER						
Sun.	3	10	17	24	31	
Mon.	4	11	18	25		
Tues.	5	12	19	26		
Wed.	6	13	20	27		
Thur.	7	14	21	28		
Fri.	1	8	15	22	29	
Sat.	2	9	16	23	30	

NOVEMBER						
Sun.		7	14	21	28	
Mon.	1	8	15	22	29	
Tues.	2	9	16	23	30	
Wed.	3	10	17	24		
Thur.	4	11	18	25		
Fri.	5	12	19	26		
Sat.	6	13	20	27		

DECEMBER						
Sun.		6	12	19	26	
Mon.		5	13	20	27	
Tues.		7	14	21	28	
Wed.	1	8	15	22	29	
Thur.	2	9	16	23	30	
Fri.	3	10	17	24	31	
Sat.	4	11	18	25		

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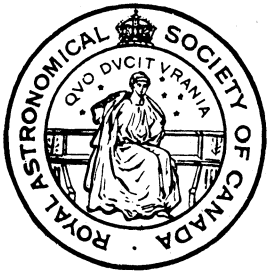

EIGHTEENTH YEAR OF PUBLICATION

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1926

CONTENTS

PREFACE

The HANDBOOK for 1926 is similar to that for 1925, which was somewhat larger than those issued for some years before that date. The increase consisted chiefly in a comprehensive table embodying the most important information known regarding 260 of the brightest stars. This table was prepared by Mr. W. E. Harper of the Dominion Astrophysical Observatory, Victoria, B.C. As in past years, Mr. R. M. Motherwell, of the Dominion Observatory, Ottawa, supplies the list of stars occulted by the Moon.

Descriptions of the constellations and also star maps are not included, since fuller information is available in a better form and at a reasonable price in many publications, such as: Young's *Uranography* (72 c.), Norton's *Star Atlas and Telescopic Handbook* (10*s.* 6*d.*), Olcott's *A Field-book of the Stars* ($1.50), or McKready's *A Beginner's Star Book* ($5.00).

In the preparation of this HANDBOOK the Editor has been assisted by the two gentlemen named above, by Mr. J. A. Pearce, M.A., of the Dominion Astrophysical Observatory; Mr. J. H. Horning, M.A., of Toronto; and his colleague, Dr. R. K. Young, of the University of Toronto.

The times of the minima of Algol are based upon an observation of Stebbins, J.D. 2422619.7866 (*Ap. J.*, vol. 53, 1921), together with Hellerick's period of 2.86731077 days (*A.N.*, vol. 209, p. 227, 1919). As a check on Chandler's formula, consider two observations:

1. Stebbins (photometer), J.D. 2422619,7866.
$$C-S = +0.1198 \text{ days} = 2\text{h } 52\text{m } 36\text{s}.$$
2. Pearce (visual), J.D. 2423310.8146 $\pm$0.0010.
$$C-P = +0.1175 \text{ days} = 2\text{h } 49\text{m } 17\text{s}.$$

Chandler's formula should be corrected by -2h 50m.

TORONTO, December, 1925. THE EDITOR.

ANNIVERSARIES AND FESTIVALS, 1926

New Year's Day	Fri., Jan. 1	Victoria Day	Mon., May 24
Epiphany	Wed., Jan. 6	Trinity Sunday	May 30
Septuagesima Sunday	Jan. 31	Corpus Christi	Thur., June 3
Quinquagesima Sunday	Feb. 14	St. John Baptist	Thur., June 24
Ash Wednesday	Feb. 17	Dominion Day	Thur., July 1
St. David	Mon., Mar. 1	Labour Day	Mon., Sept. 6
St. Patrick	Wed., Mar. 17	St. Michael (Michaelmas Day)	Wed., Sept. 29
Palm Sunday	Mar. 28	All Saints Day	Mon., Nov. 1
Good Friday	Apr. 2	First Sunday in Advent	Nov. 28
Easter Sunday	Apr. 4	St. Andrew	Tues., Nov. 30
St. George	Fri., Apr. 23	Conception Day	Wed., Dec. 8
Rogation Sunday	May 9	St. Thomas Day	Tues., Dec. 21
Ascension Day	Thur., May 13	Christmas Day	Sat., Dec. 25
Pentecost (Whit Sunday)	May 23		

King George V., born June 3, 1865; began to reign May 6, 1910.
Queen Mary, born May 26, 1867.
Prince of Wales, born June 23, 1894.

SYMBOLS AND ABBREVIATIONS

SIGNS OF THE ZODIAC

♈ Aries..... 0°	♌ Leo.....120°	♐ Sagittarius...240°
♉ Taurus .....30°	♍ Virgo .....150°	♑ Capricornus..270°
♊ Gemini .....60°	♎ Libra.....180°	♒ Aquarius....300°
♋ Cancer.....90°	♏ Scorpio ....210°	♓ Pisces.....330°

SUN, MOON AND PLANETS

☉ The Sun.	☾ The Moon generally.	♃ Jupiter.
● New Moon.	☿ Mercury.	♄ Saturn.
○ Full Moon.	♀ Venus.	♅ or ♅ Uranus
☽ First Quarter	⊕ Earth.	♆ Neptune.
☾ Last Quarter.	♂ Mars.	

ASPECTS AND ABBREVIATIONS

☌ Conjunction, or having the same Longitude or Right Ascension
☍ Opposition, or differing 180° in Longitude or Right Ascension.
□ Quadrature, or differing 90° in Longitude or Right Ascension.
☊ Ascending Node; ☋ Descending Node.
α or A.R., Right Ascension; δ Declination.
h, m, s, Hours, Minutes, Seconds of Time.
° ′ ″, Degrees, Minutes, Seconds of Arc.

THE GREEK ALPHABET

A, α,	Alpha.	I, ι,	Iota.	P, ρ,	Rho.
B, β,	Beta.	K, κ,	Kappa.	Σ, σ, ς,	Sigma.
Γ, γ,	Gamma.	Λ, λ,	Lambda.	T, τ,	Tau.
Δ, δ,	Delta.	M, μ,	Mu.	Υ, υ,	Upsilon.
E, ε,	Epsilon.	N, ν,	Nu.	Φ, ϕ,	Phi.
Z, ζ,	Zeta.	Ξ, ξ,	Xi.	X, χ,	Chi.
H, η,	Eta.	O, o,	Omicron.	Ψ, ψ,	Psi.
Θ, θ, ϑ,	Theta.	Π, π,	Pi.	Ω, ω,	Omega

In the Configurations of Jupiter's Satellites (pages 29, 31, etc.), O represents the disc of the planet, d signifies that the satellite is on the disc, * signifies that the satellite is behind the disc or in the shadow. Configurations are for an inverting telescope.

SOLAR AND SIDEREAL TIME

In practical astronomy three different kinds of time are used, while in ordinary life we use a fourth.

1. *Apparent Time*—By apparent noon is meant the moment when the sun is on the meridian, and apparent time is measured by the distance in degrees that the sun is east or west of the meridian. Apparent time is given by the sun-dial.

2. *Mean Time*—The interval between apparent noon on two successive days is not constant, and a clock cannot be constructed to keep apparent time. For this reason *mean time* is used. The length of a mean day is the average of all the apparent days throughout the year. The *real sun* moves about the ecliptic in one year; an imaginary *mean sun* is considered as moving uniformly around the celestial equator in one year. The difference between the times that the real sun and the mean sun cross the meridian (*i. e.* between apparent noon and mean noon) is the *equation of time.* (See next page).

3. *Sidereal Time*—This is time as determined from the stars. It is sidereal noon when the Vernal Equinox or First of Aries is on the meridian. In accurate time-keeping the moment when a star is on the meridian is observed and the corresponding mean time is then computed with the assistance of the Nautical Almanac. When a telescope is mounted equatorially the position of a body in the sky is located by means of the sidereal time.

4. *Standard Time*—In everyday life we use still another kind of time. A moment's thought will show that in general two places will not have the same mean time; indeed, difference in longitude between two places is determined from their difference in time. But in travelling it is very inconvenient to have the time varying from station to station. For the purpose of facilitating transportation the system of *Standard Time* was introduced in 1883. Within a certain belt approximately 15° wide, all the clocks show the same time, and in passing from one belt to the next the hands of the clock are moved forward or backward one hour.

In Canada we have six standard time belts, as follows;—60th meridian or Atlantic Time, 4h. slower than Greenwich; 75th meridian or Eastern Time, 5h.; 90th meridian or Central Time, 6h.; 105th meridian or Mountain Time, 7h.; 120th meridian or Pacific Time, 8h.; and 135th meridian or Yukon Time, 9h. slower than Greenwich.

1926 EPHEMERIS OF THE SUN AT 0h GREENWICH CIVIL TIME

Date	R.A.	Equation of Time	Declination	Date	R.A.	Equation of Time	Declination
	h m s	m s	° ′ ″		h m s	m s	° ′ ″
Jan. 1	18 42 45	+ 3 12.1	−23 5 2	Apr. 3	0 45 56	+3 39.7	+ 4 56 5
" 4	18 55 59	+ 4 36.4	−22 49 26	" 6	0 56 52	+2 46.6	+ 6 4 50
" 7	19 9 10	+ 5 57.4	−22 29 45	" 9	1 7 50	+1 55.2	+ 7 12 39
" 10	19 22 16	+ 7 14.4	−22 6 4	" 12	1 18 51	+1 6.1	+ 8 19 23
" 13	19 35 18	+ 8 26.6	−21 38 29	" 15	1 29 54	+0 19.7	+ 9 24 53
" 16	19 48 15	+ 9 33.3	−21 7 9	" 18	1 41 0	+0 23.9	+10 28 58
" 19	20 1 5	+10 33.9	−20 32 9	" 21	1 52 10	−1 4.1	+11 31 29
" 22	20 13 48	+11 27.7	−19 53 41	" 24	2 3 23	−1 40.7	+12 32 16
" 25	20 26 25	+12 14.6	−19 11 52	" 27	2 14 40	−2 13.2	+13 31 12
" 28	20 38 54	+12 54.1	−18 26 54	" 30	2 26 2	−2 41.3	+14 28 8
" 31	20 51 16	+13 26.4	−17 38 55	May 3	2 37 28	−3 4.6	+15 22 55
Feb. 3	21 3 31	+13 51.4	−16 48 8	" 6	2 48 59	−3 22.9	+16 15 26
" 6	21 15 38	+14 9.1	−15 54 41	" 9	3 0 36	−3 36.0	+17 5 32
" 9	21 27 38	+14 19.7	−14 58 47	" 12	3 12 18	−3 43.8	+17 53 5
" 12	21 39 32	+14 23.4	−14 0 36	" 15	3 24 5	−3 46.5	+18 37 57
" 15	21 51 18	+14 20.1	−13 0 20	" 18	3 35 57	−3 44.1	+19 19 58
" 18	22 2 58	+14 10.1	−11 58 10	" 21	3 47 54	−3 36.9	+19 59 2
" 21	22 14 31	+13 53.7	−10 54 18	" 24	3 59 55	−3 24.9	+20 35 2
" 24	22 25 58	+13 31.2	− 9 48 56	" 27	4 12 1	−3 8.4	+21 7 50
" 27	22 37 20	+13 3.0	− 8 42 14	" 30	4 24 12	−2 47.5	+21 37 22
Mar. 1	22 44 51	+12 41.4	− 7 57 7	June 2	4 36 27	−2 22.5	+22 3 32
" 4	22 56 5	+12 5.2	− 6 48 35	" 5	4 48 45	−1 53.8	+22 26 16
" 7	23 7 14	+11 24.8	− 5 39 11	" 8	5 1 7	−1 21.7	+22 45 28
" 10	23 18 20	+10 40.9	− 4 29 6	" 11	5 13 31	−0 46.9	+23 1 4
" 13	23 29 22	+ 9 53.9	− 3 18 28	" 14	5 25 58	−0 10.1	+23 13 3
" 16	23 40 22	+ 9 4.3	− 2 7 30	" 17	5 38 26	+0 28.0	+23 21 20
" 19	23 51 20	+ 8 12.6	− 0 56 22	" 20	5 50 54	+1 6.9	+23 25 54
" 22	0 2 16	+ 7 19.1	+ 0 14 47	" 23	6 3 23	+1 45.8	+23 26 45
" 25	0 13 11	+ 6 24.5	+ 1 25 45	" 26	6 15 51	+2 24.1	+23 23 53
" 28	0 24 6	+ 5 29.3	+ 2 36 24	" 29	6 28 18	+3 1.4	+23 17 19
" 31	0 35 0	+ 4 34.2	+ 3 46 33				

1926 EPHEMERIS OF SUN AT 0h GREENWICH CIVIL TIME

Date	R.A.	Equation of Time	Declination	Date	R.A.	Equation of Time	Declination
	h m s	m s	° ′ ″		h m s	m s	° ′ ″
July 2	6 40 43	+3 25.5	+23 10 54	Oct. 3	12 33 9	−10 36.3	− 3 34 40
" 5	6 53 6	+4 10.8	+22 53 12	" 6	12 44 4	−11 31.4	− 4 44 15
" 8	7 5 27	+4 41.8	+22 35 44	" 9	12 55 2	−12 23.2	− 5 53 19
" 11	7 17 44	+5 9.5	+22 14 44	" 12	13 6 3	−13 11.3	− 7 1 42
" 14	7 29 58	+5 33.3	+21 50 18	" 15	13 17 9	−13 55.0	− 8 9 12
" 17	7 42 7	+5 52.7	+21 22 30	" 18	13 28 20	−14 34.1	− 9 15 40
" 20	7 54 11	+6 7.4	+20 51 26	" 21	13 39 36	−15 7.9	−10 20 55
" 23	8 6 11	+6 17.0	+20 17 12	" 24	13 50 57	−15 36.0	−11 24 48
" 26	8 18 5	+6 21.3	+19 39 56	" 27	14 2 25	−15 57.7	−12 27 8
" 29	8 29 53	+6 20.4	+18 59 43	" 30	14 14 0	−16 12.8	−13 27 45
Aug. 1	8 41 37	+6 14.2	+18 16 40	Nov. 2	14 25 41	−16 20.7	−14 26 29
" 4	8 53 15	+6 2.8	+17 30 56	" 5	14 37 30	−16 21.4	−15 23 7
" 7	9 4 48	+5 46.1	+16 42 37	" 8	14 49 27	−16 14.7	−16 17 29
" 10	9 16 16	+5 24.1	+15 51 52	" 11	15 1 31	−16 0.5	−17 9 23
" 13	9 27 38	+4 56.8	+14 58 50	" 14	15 13 42	−15 38.8	−17 58 38
" 16	9 38 55	+4 24.4	+14 3 39	" 17	15 26 1	−15 9.7	−18 45 3
" 19	9 50 8	+3 47.0	+13 6 28	" 20	15 38 27	−14 33.1	−19 28 27
" 22	10 1 15	+3 5.0	+12 7 25	" 23	15 51 1	−13 49.2	−20 8 42
" 25	10 12 19	+2 18.8	+11 6 39	" 26	16 3 41	−12 58.0	−20 45 37
" 28	10 23 18	+1 28.9	+10 4 17	" 29	16 16 29	−11 59.8	−21 19 5
" 31	10 34 15	+0 35.7	+ 9 0 29	Dec. 2	16 29 24	−10 55.2	−21 48 55
Sept. 3	10 45 9	−0 20.3	+ 7 55 22	" 5	16 42 24	− 9 44.8	−22 15 0
" 6	10 56 0	−1 18.7	+ 6 49 5	" 8	16 55 29	− 8 29.1	−22 37 12
" 9	11 6 49	−2 19.1	+ 5 41 48	" 11	17 8 39	− 7 9.0	−22 55 25
" 12	11 17 37	−3 21.2	+ 4 33 39	" 14	17 21 52	− 5 45.5	−23 9 33
" 15	11 28 23	−4 24.4	+ 3 24 48	" 17	17 35 8	− 4 19.2	−23 19 31
" 18	11 39 9	−5 28.3	+ 2 15 24	" 20	17 48 26	− 2 51.1	−23 25 18
" 21	11 49 55	−6 32.2	+ 1 5 37	" 23	18 1 45	− 1 21.8	−23 26 52
" 24	12 0 41	−7 35.7	− 0 4 26	" 26	18 15 4	+ 0 7.8	−23 24 11
" 27	12 11 28	−8 37.9	− 1 14 36	" 29	18 28 23	+ 1 36.8	−23 17 17
" 30	12 22 18	−9 38.3	− 2 24 43	" 31	18 37 14	+ 2 35.3	−23 10 20

To obtain the Sidereal Time or R.A. of Mean Sun, subtract the Equation of Time from the Right Ascension.

In the Equation of Time the Sign + means the watch is faster than the Sun, − that it is slower. To obtain the Local Mean Time, in the former case add the Equation of Time to, and in the latter case subtract it from, apparent or sun-dial time.

OCCULTATIONS OF STARS BY THE MOON, 1926

By R. M. Motherwell

These occulations were computed for the latitude of Ottawa by the graphical method of Wm. F. Rigge, only stars of magnitude 4.5 or brighter being included.

Date	Star	Mag.	Immersion*	Emersion*	Position Angle	
					Immer.	Emer.
1926			h m	h m	°	°
Jan. 10	θ Librae	4.4	6 58.2	7 50.8	158	247
Feb. 17	ξ^2 Ceti	4.3	11 15.2	12 11.2	47	264
Feb. 17	μ Ceti	4.4	21 24.0	22 12.9	110	215
Apr. 15	δ Tauri	3.9	10 43.5	11 25.1	18	298
June 7	μ Ceti	4.4	8 07.9	8 48.9	118	185
June 12	δ Geminorum	3.5	10 25.0	11 18.1	50	320
July 4	ξ^2 Ceti	4.3	6 08.5	6 15.0	145	156
July 6	δ Tauri	3.9	12 18.5	13 17.0	113	222
July 6	68Tauri	4.3	13 46.9	14 44.6	53	287
Aug. 11	ν Virginis	4.2	12 12.1	12 43.9	51	3
Aug. 31	ζ Tauri	3.0	9 00.9	10 16.5	73	278
Sept. 2	δ Geminorum	3.5	5 33.8	6 54.7	86	267
Sept. 26	68Tauri	4.3	9 37.6	9 48.6	159	181
Oct. 24	ζ Tauri	3.0	23 29.5	23 46.7	151	179
Nov. 1	ν Virginis	4.2	7 07.1	8 07.9	72	343
Nov. 22	ηGeminorum	3.2	1 39.3	2 59.2	96	253
Nov. 22	μ Geminorum	3.2	6 15.8	7 19.7	101	266

*Eastern Standard Civil Time

TIMES OF SUNRISE AND SUNSET

In the tables on pages 10 to 21 are given the times of sunrise and sunset for places in latitudes 44°, 46°, 48°, 50° and 52°, which cover pretty well the populated parts of Canada. The times are given in Mean Solar Time, and in the table on page following this, are given corrections to change these times to the Standard or Railroad times of the cities and towns named, or for places near them.

How the Tables are Constructed

The time of sunrise and sunset at a given place, in mean solar time, varies from day to day, and depends principally upon the declination of the sun. Variations in the equation of time, the apparent diameter of the sun and atmospheric refraction at the points of sunrise and sunset also affect the final result. These quantities, as well as the solar declination, do not have precisely the same values on corresponding days from year to year, and so it is impossible to give in any general table the exact time of sunrise and sunset day by day.

With this explanation the following general table has been computed, giving the rising and setting of the upper limb of the sun, corrected for refraction, using the values of the solar declination and equation of time given in the Nautical Almanac for 1899; these are very close average values and may be accepted as approximately correct for years. It must also be remembered that these times are computed for the sea horizon, which is only approximately realised on land surfaces, and is generally widely departed from in hilly and mountainous localities. The greater or less elevation of the point of view above the ground must also be considered, to get exact results.

The Times for Any Station

In order to find the time of sunrise and sunset for any place on any day, first from the list below find the approximate latitude of the place and the correction, in minutes, which follows the name. Then find in the monthly table the time of sunrise and sunset for the proper latitude, on the desired day, and apply the correction.

44°		46°		48°		50°		52°	
	mins.		mins.		mins.		mins.		mins.
Barrie	+ 17	Charlotte-		Port Arthur	+ 57	Brandon	+ 40	Calgary	+ 36
Brantford	+ 21	town	+ 13	Victoria	+ 13	Indian		Edmon-	
Chatham	+ 29	Fredericton	+ 26			Head	- 5	ton	+ 34
Goderich	+ 27	Montreal	- 6			Kamloops	+ 2	Prince	
Guelph	+ 21	Ottawa	+ 3			Kenora	+ 18	Albert	+ 4
Halifax	+ 14	Parry Sound	+ 20			Medicine		Saska-	
Hamilton	+ 20	Quebec	- 15			Hat	+ 22	toon	+ 6
Kingston	+ 6	Sherbrooke	- 12			Moosejaw	+ 2		
London	+ 25	St. John,				Moosomin	+ 40		
Orillia	+ 18	N.B.	+ 24			Nelson	- 11		
Owen Sound	+ 24	Sydney	+ 1			Portage La			
Peterboro	+ 13	Three Rivers	- 10			Prairie	+ 33		
Port Hope	+ 14					Regina	- 2		
Stratford	+ 24					Vancouver	+ 12		
Toronto	+ 18					Winnipeg	+ 28		
Windsor	+ 32								
Woodstock	+ 23								
Yarmouth	+ 24								

Example.—Find the time of sunrise at Owen Sound, also at Regina, on February 11.

In the above list Owen Sound is under "44°", and the correction is + 24 min. On page 11 the time of sunrise on February 11 for latitude 44° is 7.05; add 24 min. and we get 7.29 (Eastern Standard Time). Regina is under "50°", and the correction is - 2 min. From the table the time is 7.18, and subtracting 2 min. we get the time of sunrise 7.16 (Central Standard Time).

JANUARY

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	7 35	4 33	7 42	4 26	7 50	4 18	7 59	4 9	8 9	3 59
2	7 35	4 34	7 42	4 26	7 50	4 19	7 59	4 10	8 8	4 0
3	7 35	4 35	7 42	4 27	7 50	4 20	7 59	4 11	8 8	4 2
4	7 35	4 36	7 42	4 28	7 50	4 21	7 58	4 12	8 7	4 3
5	7 35	4 37	7 42	4 29	7 50	4 22	7 58	4 13	8 7	4 4
6	7 35	4 38	7 42	4 30	7 49	4 23	7 58	4 14	8 6	4 6
7	7 35	4 39	7 42	4 32	7 49	4 24	7 58	4 16	8 6	4 7
8	7 34	4 40	7 41	4 33	7 49	4 25	7 57	4 17	8 5	4 8
9	7 34	4 41	7 41	4 34	7 49	4 26	7 57	4 18	8 5	4 9
10	7 34	4 42	7 41	4 35	7 48	4 27	7 56	4 19	8 4	4 11
11	7 34	4 43	7 40	4 36	7 48	4 29	7 56	4 21	8 4	4 12
12	7 33	4 44	7 40	4 38	7 47	4 30	7 55	4 22	8 3	4 14
13	7 33	4 45	7 39	4 39	7 47	4 31	7 55	4 23	8 2	4 15
14	7 32	4 46	7 39	4 40	7 46	4 33	7 54	4 25	8 1	4 17
15	7 32	4 48	7 38	4 41	7 45	4 34	7 53	4 26	8 0	4 19
16	7 31	4 49	7 38	4 42	7 45	4 36	7 52	4 28	8 0	4 21
17	7 30	4 50	7 37	4 44	7 44	4 37	7 52	4 29	7 59	4 22
18	7 30	4 52	7 36	4 45	7 43	4 38	7 51	4 31	7 58	4 24
19	7 29	4 53	7 35	4 47	7 42	4 40	7 50	4 32	7 57	4 26
20	7 28	4 54	7 34	4 48	7 41	4 41	7 49	4 34	7 56	4 27
21	7 28	4 55	7 34	4 49	7 40	4 43	7 48	4 36	7 55	4 29
22	7 27	4 57	7 33	4 51	7 40	4 44	7 46	4 37	7 54	4 31
23	7 26	4 58	7 32	4 52	7 39	4 46	7 45	4 39	7 52	4 32
24	7 25	4 59	7 31	4 54	7 38	4 47	7 44	4 41	7 51	4 34
25	7 25	5 1	7 30	4 55	7 36	4 49	7 43	4 42	7 50	4 36
26	7 24	5 2	7 29	4 56	7 35	4 50	7 42	4 44	7 49	4 38
27	7 23	5 3	7 28	4 58	7 34	4 52	7 40	4 46	7 47	4 39
28	7 22	5 5	7 27	4 59	7 33	4 54	7 39	4 47	7 46	4 41
29	7 21	5 6	7 26	5 1	7 32	4 55	7 38	4 49	7 45	4 43
30	7 20	5 8	7 25	5 3	7 30	4 57	7 36	4 51	7 43	4 44
31	7 18	5 9	7 23	5 4	7 29	4 58	7 35	4 52	7 42	4 46

For an explanation of this table and its use at various places, see pages 8 and 9.

FEBRURAY

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	7 17	5 10	7 22	5 5	7 28	5 0	7 33	4 54	7 40	4 48
2	7 16	5 12	7 21	5 7	7 26	5 1	7 32	4 56	7 38	4 50
3	7 15	5 13	7 20	5 8	7 25	5 3	7 30	4 58	7 36	4 52
4	7 14	5 14	7 19	5 10	7 24	5 5	7 29	4 59	7 34	4 54
5	7 13	5 15	7 18	5 11	7 22	5 6	7 27	5 1	7 33	4 56
6	7 12	5 17	7 17	5 12	7 21	5 8	7 26	5 3	7 31	4 57
7	7 10	5 18	7 15	5 14	7 19	5 9	7 24	5 5	7 29	4 59
8	7 9	5 20	7 13	5 15	7 18	5 11	7 23	5 6	7 27	5 1
9	7 8	5 21	7 12	5 17	7 16	5 13	7 21	5 8	7 25	5 3
10	7 6	5 23	7 11	5 18	7 15	5 14	7 19	5 10	7 23	5 5
11	7 5	5 24	7 10	5 19	7 13	5 16	7 18	5 11	7 21	5 7
12	7 3	5 25	7 8	5 21	7 12	5 17	7 16	5 13	7 19	5 9
13	7 2	5 27	7 6	5 23	7 10	5 19	7 14	5 15	7 18	5 10
14	7 1	5 28	7 4	5 24	7 8	5 21	7 12	5 17	7 16	5 12
15	6 59	5 29	7 3	5 26	7 6	5 22	7 10	5 18	7 14	5 14
16	6 58	5 31	7 1	5 27	7 5	5 24	7 9	5 20	7 12	5 16
17	6 56	5 32	7 0	5 29	7 3	5 26	7 7	5 22	7 10	5 18
18	6 55	5 34	6 58	5 30	7 1	5 27	7 5	5 23	7 9	5 19
19	6 53	5 35	6 56	5 32	6 59	5 29	7 3	5 25	7 7	5 21
20	6 52	5 36	6 54	5 33	6 58	5 30	7 1	5 27	7 5	5 23
21	6 50	5 38	6 53	5 35	6 56	5 32	6 59	5 29	7 3	5 25
22	6 48	5 39	6 51	5 36	6 54	5 33	6 57	5 30	7 0	5 27
23	6 47	5 40	6 49	5 38	6 52	5 35	6 55	5 32	6 58	5 29
24	6 45	5 42	6 47	5 39	6 50	5 36	6 53	5 34	6 56	5 31
25	6 44	5 43	6 46	5 41	6 49	5 38	6 51	5 35	6 54	5 33
26	6 42	5 44	6 44	5 42	6 47	5 39	6 49	5 37	6 51	5 34
27	6 40	5 45	6 42	5 43	6 45	5 41	6 48	5 38	6 49	5 36
28	6 38	5 47	6 41	5 45	6 43	5 42	6 45	5 40	6 47	5 38

For an explanation of this table and its use at various places, see pages 8 and 9.

MARCH

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	6 37	5 48	6 39	5 46	6 41	5 44	6 43	5 42	6 43	5 41
2	6 35	5 49	6 37	5 47	6 39	5 45	6 41	5 44	6 42	5 42
3	6 34	5 50	6 35	5 49	6 37	5 47	6 39	5 45	6 40	5 44
4	6 32	5 52	6 33	5 50	6 35	5 48	6 37	5 47	6 38	5 45
5	6 30	5 53	6 31	5 52	6 33	5 50	6 35	5 48	6 36	5 47
6	6 28	5 55	6 30	5 53	6 31	5 51	6 33	5 50	6 34	5 49
7	6 26	5 56	6 28	5 54	6 29	5 53	6 31	5 52	6 32	5 51
8	6 25	5 57	6 26	5 56	6 27	5 54	6 28	5 53	6 29	5 52
9	6 23	5 58	6 24	5 57	6 25	5 56	6 26	5 55	6 27	5 54
10	6 21	6 0	6 22	5 59	6 23	5 57	6 24	5 56	6 25	5 56
11	6 19	6 1	6 20	6 0	6 21	5 59	6 22	5 58	6 23	5 57
12	6 18	6 2	6 18	6 1	6 19	6 0	6 20	6 0	6 21	5 59
13	6 16	6 4	6 16	6 3	6 17	6 2	6 18	6 2	6 19	6 1
14	6 14	6 5	6 15	6 4	6 15	6 3	6 15	6 3	6 16	6 3
15	6 12	6 6	6 13	6 5	6 13	6 5	6 13	6 5	6 14	6 4
16	6 10	6 7	6 11	6 7	6 11	6 6	6 11	6 6	6 11	6 6
17	6 8	6 8	6 9	6 8	6 9	6 8	6 9	6 8	6 9	6 8
18	6 7	6 10	6 7	6 9	6 7	6 9	6 7	6 9	6 7	6 10
19	6 5	6 11	6 5	6 11	6 5	6 11	6 5	6 11	6 4	6 12
20	6 3	6 12	6 3	6 12	6 3	6 12	6 3	6 13	6 2	6 13
21	6 1	6 13	6 1	6 14	6 1	6 14	6 0	6 14	5 59	6 15
22	5 59	6 14	5 59	6 15	5 59	6 15	5 58	6 16	5 57	6 17
23	5 58	6 16	5 57	6 16	5 56	6 17	5 56	6 17	5 55	6 19
24	5 56	6 17	5 55	6 17	5 54	6 18	5 54	6 19	5 52	6 20
25	5 54	6 18	5 53	6 19	5 52	6 20	5 52	6 20	5 50	6 22
26	5 52	6 19	5 51	6 20	5 50	6 21	5 50	6 22	5 48	6 24
27	5 50	6 21	5 49	6 22	5 48	6 23	5 47	6 24	5 46	6 26
28	5 48	6 22	5 47	6 23	5 46	6 24	5 45	6 25	5 43	6 27
29	5 47	6 23	5 46	6 24	5 44	6 26	5 43	6 27	5 41	6 29
30	5 45	6 24	5 44	6 25	5 42	6 27	5 41	6 28	5 39	6 31
31	5 43	6 25	5 42	6 27	5 40	6 28	5 38	6 30	5 36	6 32

For an explanation of this table and its use at various places, see pages 8 and 9.

APRIL

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	5 41	6 27	5 40	6 28	5 38	6 30	5 36	6 31	5 34	6 34
2	5 39	6 28	5 38	6 30	5 36	6 31	5 34	6 33	5 32	6 36
3	5 38	6 29	5 36	6 31	5 34	6 33	5 32	6 35	5 30	6 37
4	5 36	6 30	5 34	6 32	5 32	6 34	5 30	6 36	5 27	6 39
5	5 34	6 32	5 32	6 33	5 30	6 36	5 28	6 38	5 25	6 41
6	5 32	6 33	5 30	6 34	5 28	6 37	5 26	6 39	5 23	6 43
7	5 30	6 34	5 28	6 36	5 26	6 38	5 24	6 41	5 21	6 44
8	5 29	6 35	5 26	6 37	5 24	6 40	5 21	6 42	5 19	6 46
9	5 27	6 36	5 24	6 39	5 22	6 41	5 19	6 44	5 16	6 48
10	5 25	6 37	5 23	6 40	5 20	6 43	5 17	6 46	5 14	6 49
11	5 24	6 38	5 21	6 41	5 18	6 44	5 15	6 47	5 11	6 51
12	5 22	6 40	5 19	6 43	5 16	6 45	5 13	6 49	5 9	6 53
13	5 20	6 41	5 17	6 44	5 14	6 47	5 11	6 50	5 7	6 54
14	5 18	6 42	5 15	6 45	5 12	6 48	5 9	6 52	5 5	6 56
15	5 17	6 43	5 14	6 46	5 10	6 50	5 7	6 53	5 3	6 58
16	5 15	6 45	5 12	6 48	5 8	6 51	5 5	6 55	5 1	7 0
17	5 13	6 46	5 10	6 49	5 6	6 53	5 2	6 56	4 58	7 1
18	5 11	6 47	5 8	6 50	5 5	6 54	5 1	6 58	4 56	7 3
19	5 10	6 48	5 6	6 52	5 3	6 55	4 59	6 59	4 54	7 5
20	5 8	6 49	5 5	6 53	5 1	6 57	4 57	7 1	4 52	7 6
21	5 7	6 50	5 3	6 54	4 59	6 58	4 55	7 2	4 50	7 8
22	5 5	6 52	5 1	6 56	4 57	7 0	4 53	7 4	4 48	7 10
23	5 3	6 53	4 59	6 57	4 55	7 1	4 50	7 6	4 46	7 11
24	5 2	6 54	4 58	6 58	4 54	7 3	4 49	7 7	4 44	7 13
25	5 0	6 56	4 56	7 0	4 52	7 4	4 47	7 9	4 42	7 14
26	4 59	6 57	4 54	7 1	4 50	7 5	4 45	7 10	4 40	7 16
27	4 57	6 58	4 53	7 2	4 48	7 7	4 43	7 12	4 38	7 18
28	4 56	6 59	4 51	7 3	4 47	7 8	4 41	7 13	4 36	7 19
29	4 54	7 0	4 50	7 5	4 45	7 10	4 39	7 15	4 34	7 21
30	4 53	7 1	4 48	7 6	4 43	7 12	4 38	7 16	4 32	7 22

For an explanation of this table and its use at various places, see pages 8 and 9.

MAY

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	4 51	7 3	4 47	7 7	4 42	7 12	4 36	7 18	4 30	7 24
2	4 50	7 4	4 45	7 9	4 40	7 14	4 34	7 20	4 28	7 26
3	4 48	7 5	4 43	7 10	4 38	7 15	4 32	7 21	4 26	7 27
4	4 47	7 6	4 42	7 11	4 37	7 17	4 31	7 23	4 24	7 29
5	4 46	7 8	4 41	7 13	4 35	7 18	4 29	7 24	4 22	7 31
6	4 44	7 9	4 39	7 14	4 34	7 19	4 27	7 26	4 21	7 33
7	4 43	7 10	4 38	7 15	4 32	7 21	4 26	7 27	4 19	7 34
8	4 42	7 11	4 36	7 16	4 31	7 22	4 24	7 29	4 17	7 36
9	4 40	7 12	4 35	7 17	4 29	7 23	4 22	7 30	4 15	7 38
10	4 39	7 13	4 34	7 19	4 28	7 25	4 21	7 32	4 13	7 39
11	4 38	7 14	4 32	7 20	4 26	7 26	4 20	7 33	4 11	7 41
12	4 37	7 16	4 31	7 21	4 25	7 28	4 18	7 34	4 10	7 42
13	4 36	7 17	4 30	7 23	4 24	7 29	4 16	7 36	4 8	7 44
14	4 35	7 18	4 49	7 24	4 22	7 30	4 15	7 37	4 7	7 45
15	4 34	7 19	4 28	7 25	4 21	7 31	4 14	7 39	4 5	7 47
16	4 32	7 20	4 26	7 26	4 20	7 33	4 12	7 40	4 4	7 48
17	4 31	7 21	4 25	7 27	4 18	7 34	4 11	7 42	4 3	7 50
18	4 30	7 22	4 24	7 28	4 17	7 35	4 10	7 43	4 1	7 51
19	4 30	7 23	4 23	7 30	4 16	7 36	4 8	7 44	4 0	7 52
20	4 29	7 24	4 22	7 31	4 15	7 38	4 7	7 46	3 58	7 54
21	4 28	7 25	4 21	7 32	4 14	7 39	4 6	7 47	3 57	7 55
22	4 27	7 26	4 20	7 33	4 13	7 40	4 5	7 48	3 56	7 56
23	4 26	7 27	4 19	7 34	4 12	7 41	4 4	7 49	3 55	7 58
24	4 25	7 28	4 18	7 35	4 11	7 43	4 3	7 51	3 53	7 59
25	4 24	7 29	4 17	7 36	4 10	7 44	4 2	7 52	3 52	8 1
26	4 24	7 30	4 16	7 37	4 9	7 45	4 0	7 53	3 51	8 2
27	4 23	7 31	4 16	7 38	4 8	7 46	3 59	7 54	3 50	8 3
28	4 22	7 32	4 15	7 39	4 7	7 47	3 58	7 56	3 49	8 5
29	4 22	7 33	4 14	7 40	4 6	7 48	3 58	7 57	3 47	8 6
30	4 21	7 34	4 14	7 41	4 5	7 49	3 57	7 58	3 46	8 8
31	4 21	7 34	4 13	7 42	4 5	7 50	3 56	7 59	3 45	8 9

For an explanation of this table and its use at various places, see pages 8 and 9.

JUNE

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	4 20	7 35	4 12	7 43	4 4	7 51	3 56	8 0	3 45	8 10
2	4 19	7 36	4 12	7 44	4 4	7 52	3 55	8 1	3 44	8 11
3	4 19	7 37	4 11	7 44	4 3	7 52	3 54	8 2	3 44	8 11
4	4 18	7 38	4 11	7 45	4 3	7 53	3 54	8 3	3 43	8 12
5	4 18	7 39	4 10	7 46	4 2	7 54	3 53	8 4	3 43	8 13
6	4 17	7 39	4 10	7 47	4 2	7 55	3 52	8 4	3 43	8 14
7	4 17	7 40	4 10	7 48	4 1	7 56	3 52	8 5	3 42	8 15
8	4 17	7 41	4 9	7 48	4 1	7 57	3 52	8 6	3 42	8 15
9	4 17	7 41	4 9	7 49	4 1	7 57	3 51	8 7	3 41	8 16
10	4 16	7 42	4 9	7 49	4 0	7 58	3 51	8 8	3 41	8 17
11	4 16	7 42	4 9	7 50	4 0	7 59	3 50	8 8	3 41	8 18
12	4 16	7 43	4 9	7 51	4 0	7 59	3 50	8 9	3 41	8 18
13	4 16	7 43	4 8	7 51	4 0	8 0	3 50	8 10	3 40	8 19
14	4 16	7 44	4 8	7 52	4 0	8 0	3 50	8 10	3 40	8 19
15	4 16	7 44	4 8	7 52	4 0	8 1	3 50	8 11	3 40	8 20
16	4 16	7 45	4 8	7 53	4 0	8 1	3 50	8 11	3 40	8 21
17	4 17	7 45	4 8	7 53	4 0	8 2	3 50	8 12	3 40	8 21
18	4 17	7 45	4 8	7 54	4 0	8 2	3 50	8 12	3 39	8 22
19	4 17	7 46	4 8	7 54	4 0	8 2	3 50	8 12	3 39	8 23
20	4 17	7 46	4 8	7 54	4 0	8 3	3 50	8 13	3 39	8 23
21	4 17	7 46	4 8	7 54	4 0	8 3	3 50	8 13	3 39	8 23
22	4 18	7 46	4 9	7 55	4 0	8 3	3 50	8 13	3 39	8 23
23	4 18	7 46	4 9	7 55	4 1	8 3	3 51	8 13	3 40	8 23
24	4 18	7 47	4 10	7 55	4 1	8 3	3 51	8 13	3 40	8 23
25	4 18	7 47	4 10	7 55	4 1	8 3	3 51	8 13	3 40	8 23
26	4 19	7 47	4 10	7 55	4 2	8 3	3 52	8 13	3 41	8 23
27	4 19	7 47	4 11	7 55	4 2	8 3	3 52	8 13	3 41	8 23
28	4 19	7 47	4 11	7 55	4 3	8 3	3 53	8 13	3 42	8 23
29	4 20	7 47	4 12	7 55	4 3	8 3	3 53	8 13	3 42	8 23
30	4 20	7 47	4 12	7 54	4 4	8 3	3 54	8 13	3 43	8 23

For an explanation of this table and its use at various places, see pages 8 and 9.

JULY

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	4 21	7 47	4 13	7 54	4 4	8 3	3 55	8 12	3 44	8 23
2	4 21	7 46	4 14	7 54	4 5	8 2	3 56	8 12	3 45	8 22
3	4 22	7 46	4 14	7 54	4 6	8 2	3 56	8 12	3 46	8 22
4	4 22	7 46	4 15	7 54	4 6	8 2	3 57	8 11	3 47	8 21
5	4 23	7 46	4 15	7 53	4 7	8 2	3 58	8 11	3 48	8 21
6	4 24	7 45	4 16	7 53	4 8	8 1	3 59	8 10	3 48	8 20
7	4 24	7 45	4 17	7 53	4 9	8 1	4 0	8 10	3 49	8 20
8	4 25	7 45	4 18	7 52	4 10	8 0	4 0	8 9	3 50	8 19
9	4 26	7 44	4 18	7 52	4 10	8 0	4 1	8 9	3 51	8 19
10	4 27	7 43	4 19	7 51	4 11	7 59	4 2	8 8	3 52	8 18
11	4 28	7 43	4 20	7 50	4 12	7 59	4 3	8 7	3 53	8 17
12	4 29	7 42	4 21	7 50	4 13	7 58	4 4	8 7	3 54	8 16
13	4 29	7 42	4 22	7 49	4 14	7 57	4 5	8 6	3 56	8 15
14	4 30	7 41	4 23	7 48	4 15	7 56	4 6	8 5	3 57	8 14
15	4 31	7 40	4 24	7 48	4 16	7 56	4 7	8 4	3 58	8 13
16	4 32	7 40	4 25	7 47	4 17	7 55	4 8	8 3	3 59	8 12
17	4 33	7 39	4 26	7 46	4 18	7 54	4 10	8 2	4 0	8 11
18	4 34	7 38	4 27	7 45	4 19	7 53	4 11	8 1	4 2	8 10
19	4 34	7 38	4 28	7 44	4 20	7 52	4 12	8 0	4 3	8 9
20	4 36	7 37	4 29	7 43	4 21	7 51	4 13	7 59	4 4	8 8
21	4 37	7 36	4 30	7 42	4 23	7 50	4 15	7 58	4 5	8 7
22	4 38	7 35	4 31	7 41	4 24	7 49	4 16	7 57	4 7	8 5
23	4 39	7 34	4 32	7 40	4 25	7 48	4 17	7 56	4 8	8 4
24	4 40	7 33	4 33	7 39	4 26	7 47	4 18	7 54	4 10	8 2
25	4 40	7 32	4 34	7 38	4 27	7 46	4 20	7 53	4 11	8 1
26	4 41	7 31	4 35	7 37	4 28	7 44	4 21	7 52	4 12	8 0
27	4 42	7 30	4 36	7 36	4 30	7 43	4 22	7 50	4 14	7 58
28	4 44	7 29	4 38	7 35	4 31	7 42	4 24	7 49	4 15	7 57
29	4 45	7 28	4 39	7 34	4 32	7 40	4 25	7 47	4 17	7 55
30	4 46	7 27	4 40	7 33	4 33	7 39	4 26	7 46	4 18	7 54
31	4 47	7 26	4 41	7 32	4 35	7 38	4 28	7 44	4 20	7 52

For an explanation of this table and its use at various places, see pages 8 and 9

AUGUST

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	4 48	7 24	4 42	7 30	4 36	7 36	4 29	7 43	4 21	7 50
2	4 49	7 23	4 44	7 29	4 37	7 35	4 31	7 41	4 23	7 49
3	4 50	7 22	4 45	7 27	4 39	7 33	4 32	7 40	4 24	7 47
4	4 51	7 21	4 46	7 26	4 40	7 32	4 33	7 38	4 26	7 45
5	4 52	7 19	4 47	7 24	4 41	7 30	4 35	7 37	4 28	7 43
6	4 53	7 18	4 48	7 23	4 43	7 29	4 36	7 35	4 29	7 41
7	4 54	7 17	4 49	7 22	4 44	7 27	4 38	7 33	4 31	7 40
8	4 56	7 15	4 51	7 20	4 45	7 26	4 39	7 32	4 32	7 38
9	4 57	7 14	4 52	7 19	4 46	7 24	4 40	7 30	4 34	7 36
10	4 58	7 12	4 53	7 17	4 48	7 22	4 42	7 28	4 36	7 34
11	4 59	7 11	4 54	7 16	4 49	7 21	4 44	7 26	4 37	7 32
12	5 0	7 9	4 56	7 14	4 51	7 19	4 45	7 25	4 39	7 30
13	5 2	7 8	4 57	7 12	4 52	7 17	4 47	7 23	4 40	7 28
14	5 3	7 6	4 58	7 11	4 53	7 16	4 48	7 21	4 42	7 26
15	5 4	7 5	4 59	7 9	4 55	7 14	4 50	7 19	4 44	7 24
16	5 5	7 3	5 1	7 8	4 56	7 12	4 51	7 17	4 45	7 22
17	5 6	7 2	5 2	7 6	4 57	7 10	4 53	7 15	4 47	7 20
18	5 7	7 0	5 3	7 4	4 59	7 9	4 54	7 13	4 48	7 18
19	5 8	6 59	5 4	7 3	5 0	7 7	4 55	7 12	4 50	7 16
20	5 10	6 57	5 6	7 1	5 2	7 5	4 57	7 9	4 52	7 14
21	5 11	6 55	5 7	6 59	5 3	7 3	4 59	7 7	4 53	7 12
22	5 12	6 54	5 8	6 57	5 4	7 1	5 0	7 5	4 55	7 10
23	5 13	6 52	5 9	6 56	5 6	6 59	5 2	7 3	4 56	7 8
24	5 14	6 50	5 11	6 54	5 7	6 57	5 3	7 1	4 58	7 6
25	5 15	6 49	5 12	6 52	5 8	6 56	5 4	7 0	5 0	7 4
26	5 16	6 47	5 13	6 50	5 10	6 54	5 6	6 57	5 1	7 2
27	5 18	6 45	5 14	6 48	5 11	6 52	5 8	6 55	5 3	7 0
28	5 19	6 44	5 16	6 46	5 12	6 50	5 9	6 53	5 4	6 58
29	5 20	6 42	5 17	6 45	5 14	6 48	5 10	6 51	5 6	6 56
30	5 21	6 40	5 18	6 43	5 15	6 46	5 12	6 49	5 8	6 54
31	5 22	6 38	5 19	6 41	5 17	6 44	5 14	6 47	5 10	6 51

For an explanation of this table and its use at various places, see pages 8 and 9.

SEPTEMBER

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	5 23	6 36	5 20	6 39	5 18	6 42	5 15	6 45	5 11	6 49
2	5 24	6 35	5 22	6 37	5 19	6 40	5 16	6 43	5 13	6 46
3	5 25	6 33	5 23	6 35	5 21	6 38	5 18	6 40	5 15	6 44
4	5 27	6 31	5 24	6 33	5 22	6 36	5 20	6 38	5 17	6 42
5	5 28	6 29	5 26	6 31	5 23	6 34	5 21	6 36	5 19	6 39
6	5 29	6 28	5 27	6 29	5 25	6 32	5 23	6 34	5 20	6 37
7	5 30	6 26	5 28	6 27	5 26	6 30	5 24	6 32	5 22	6 34
8	5 31	6 24	5 30	6 26	5 27	6 28	5 25	6 30	5 24	6 32
9	5 32	6 22	5 31	6 24	5 29	6 26	5 27	6 28	5 26	6 30
10	5 33	6 20	5 32	6 22	5 30	6 24	5 28	6 25	5 27	6 27
11	5 34	6 19	5 33	6 20	5 31	6 22	5 30	6 23	5 29	6 25
12	5 36	6 17	5 34	6 18	5 33	6 20	5 31	6 21	5 30	6 23
13	5 37	6 15	5 36	6 16	5 34	6 17	5 33	6 19	5 32	6 21
14	5 38	6 13	5 37	6 14	5 36	6 15	5 34	6 17	5 33	6 18
15	5 39	6 11	5 38	6 12	5 37	6 13	5 36	6 14	5 35	6 16
16	5 40	6 9	5 39	6 10	5 38	6 11	5 38	6 12	5 36	6 14
17	5 41	6 8	5 41	6 8	5 40	6 9	5 39	6 10	5 38	6 11
18	5 42	6 6	5 42	6 6	5 41	6 7	5 41	6 8	5 39	6 9
19	5 44	6 4	5 44	6 4	5 42	6 5	5 42	6 5	5 41	6 7
20	5 45	6 2	5 45	6 2	5 44	6 3	5 43	6 3	5 42	6 4
21	5 46	6 0	5 46	6 0	5 45	6 1	5 45	6 1	5 44	6 2
22	5 47	5 58	5 47	5 58	5 47	5 59	5 46	5 59	5 46	6 0
23	5 48	5 56	5 48	5 56	5 48	5 56	5 48	5 56	5 48	5 58
24	5 49	5 55	5 50	5 54	5 50	5 54	5 50	5 54	5 49	5 55
25	5 50	5 53	5 51	5 52	5 51	5 52	5 51	5 52	5 51	5 53
26	5 52	5 51	5 52	5 50	5 52	5 50	5 52	5 50	5 53	5 51
27	5 53	5 49	5 54	5 48	5 54	5 48	5 54	5 48	5 54	5 48
28	5 54	5 47	5 55	5 46	5 55	5 46	5 55	5 46	5 56	5 46
29	5 55	5 45	5 56	5 44	5 57	5 44	5 57	5 44	5 58	5 44
30	5 56	5 43	5 57	5 43	5 58	5 42	5 58	5 41	5 59	5 41

For an explanation of this table and its use at various places, see pages 8 and 9.

OCTOBER

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	5 58	5 41	5 58	5 41	5 59	5 40	6 0	5 39	6 1	5 39
2	5 59	5 40	6 0	5 39	6 1	5 38	6 2	5 37	6 3	5 37
3	6 0	5 38	6 1	5 37	6 2	5 36	6 3	5 35	6 5	5 35
4	6 1	5 36	6 2	5 35	6 4	5 34	6 5	5 33	6 6	5 32
5	6 2	5 34	6 4	5 33	6 5	5 32	6 6	5 31	6 8	5 30
6	6 4	5 32	6 5	5 31	6 7	5 30	6 8	5 28	6 10	5 28
7	6 5	5 31	6 6	5 30	6 8	5 28	6 10	5 26	6 11	5 25
8	6 6	5 29	6 8	5 28	6 9	5 26	6 11	5 24	6 13	5 23
9	6 8	5 27	6 9	5 26	6 11	5 24	6 12	5 22	6 15	5 21
10	6 9	5 25	6 10	5 24	6 12	5 22	6 14	5 20	6 16	5 19
11	6 10	5 24	6 12	5 22	6 14	5 20	6 16	5 18	6 18	5 17
12	6 11	5 22	6 13	5 20	6 15	5 18	6 17	5 16	6 19	5 15
13	6 12	5 20	6 14	5 18	6 17	5 16	6 19	5 14	6 21	5 13
14	6 13	5 19	6 16	5 16	6 18	5 14	6 21	5 12	6 23	5 10
15	6 15	5 17	6 17	5 14	6 20	5 12	6 22	5 10	6 24	5 8
16	6 16	5 15	6 18	5 13	6 21	5 10	6 24	5 7	6 26	5 6
17	6 17	5 13	6 20	5 11	6 22	5 8	6 26	5 5	6 27	5 4
18	6 19	5 12	6 21	5 9	6 24	5 6	6 27	5 3	6 29	5 1
19	6 20	5 10	6 22	5 8	6 25	5 5	6 28	5 2	6 31	4 59
20	6 21	5 9	6 24	5 6	6 27	5 3	6 30	5 0	6 33	4 57
21	6 22	5 7	6 25	5 4	6 28	5 1	6 32	4 57	6 35	4 55
22	6 24	5 6	6 27	5 2	6 30	4 59	6 34	4 56	6 37	4 53
23	6 25	5 4	6 28	5 1	6 31	4 58	6 35	4 54	6 39	4 51
24	6 26	5 2	6 30	4 59	6 33	4 56	6 37	4 52	6 40	4 48
25	6 28	5 1	6 31	4 57	6 34	4 54	6 38	4 50	6 42	4 46
26	6 29	4 59	6 32	4 56	6 36	4 52	6 40	4 48	6 44	4 44
27	6 30	4 57	6 34	4 54	6 38	4 50	6 42	4 46	6 46	4 42
28	6 32	4 56	6 35	4 52	6 39	4 48	6 43	4 44	6 48	4 40
29	6 33	4 55	6 37	4 51	6 41	4 47	6 45	4 42	6 50	4 38
30	6 34	4 54	6 38	4 49	6 42	4 45	6 47	4 41	6 52	4 36
31	6 35	4 52	6 40	4 48	6 44	4 44	6 48	4 39	6 53	4 35

For an explanation of this table and its use at various places, see pages 8 and 9.

NOVEMBER

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	6 37	4 51	6 41	4 46	6 45	4 42	6 50	4 37	6 55	4 33
2	6 38	4 49	6 42	4 45	6 47	4 41	6 52	4 36	6 57	4 31
3	6 40	4 48	6 44	4 44	6 48	4 39	6 53	4 34	6 59	4 29
4	6 41	4 47	6 45	4 42	6 50	4 38	6 55	4 32	7 1	4 27
5	6 42	4 45	6 47	4 41	6 51	4 36	6 57	4 31	7 2	4 26
6	6 43	4 44	6 48	4 39	6 53	4 35	6 58	4 29	7 4	4 24
7	6 44	4 43	6 49	4 38	6 54	4 33	7 0	4 28	7 6	4 22
8	6 46	4 42	6 51	4 37	6 56	4 32	7 2	4 26	7 8	4 21
9	6 47	4 41	6 52	4 36	6 58	4 30	7 3	4 25	7 9	4 19
10	6 49	4 40	6 54	4 35	6 59	4 29	7 5	4 23	7 11	4 18
11	6 50	4 38	6 55	4 33	7 1	4 28	7 7	4 22	7 13	4 16
12	6 51	4 37	6 56	4 32	7 2	4 26	7 8	4 20	7 15	4 15
13	6 53	4 36	6 58	4 31	7 4	4 25	7 10	4 19	7 16	4 13
14	6 54	4 35	6 59	4 30	7 5	4 24	7 11	4 18	7 18	4 12
15	6 55	4 34	7 1	4 29	7 7	4 23	7 13	4 16	7 20	4 10
16	6 57	4 33	7 2	4 28	7 8	4 21	7 15	4 15	7 21	4 9
17	6 58	4 32	7 4	4 27	7 10	4 20	7 16	4 14	7 23	4 7
18	6 59	4 32	7 5	4 26	7 12	4 19	7 18	4 13	7 25	4 6
19	7 0	4 31	7 6	4 25	7 13	4 18	7 20	4 11	7 26	4 5
20	7 2	4 30	7 8	4 24	7 14	4 17	7 21	4 10	7 28	4 4
21	7 3	4 29	7 9	4 23	7 15	4 17	7 23	4 9	7 30	4 3
22	7 4	4 28	7 10	4 22	7 17	4 16	7 24	4 8	7 32	4 2
23	7 6	4 28	7 12	4 22	7 19	4 15	7 26	4 7	7 33	4 0
24	7 7	4 27	7 13	4 21	7 20	4 14	7 28	4 6	7 35	3 59
25	7 8	4 26	7 14	4 20	7 21	4 13	7 29	4 5	7 37	3 58
26	7 9	4 26	7 16	4 19	7 23	4 12	7 31	4 4	7 38	3 57
27	7 10	4 25	7 17	4 19	7 24	4 12	7 32	4 4	7 40	3 56
28	7 12	4 25	7 18	4 18	7 25	4 11	7 33	4 3	7 41	3 55
29	7 13	4 24	7 19	4 18	7 27	4 10	7 35	4 2	7 43	3 55
30	7 14	4 24	7 21	4 17	7 28	4 10	7 36	4 2	7 44	3 54

For an explanation of this table and its use at various places, see pages 8 and 9.

DECEMBER

Day of Month	Latitude 44°		Latitude 46°		Latitude 48°		Latitude 50°		Latitude 52°	
	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset	Sunrise	Sunset
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	7 15	4 23	7 22	4 16	7 29	4 9	7 37	4 1	7 46	3 54
2	7 16	4 23	7 23	4 16	7 31	4 9	7 39	4 1	7 47	3 53
3	7 17	4 23	7 24	4 16	7 32	4 8	7 40	4 0	7 48	3 52
4	7 18	4 23	7 25	4 16	7 33	4 8	7 41	4 0	7 50	3 52
5	7 19	4 22	7 26	4 15	7 34	4 8	7 42	3 59	7 51	3 51
6	7 20	4 22	7 27	4 15	7 35	4 8	7 43	3 59	7 53	3 51
7	7 21	4 22	7 29	4 15	7 36	4 7	7 45	3 59	7 54	3 50
8	7 22	4 22	7 30	4 15	7 37	4 7	7 46	3 59	7 55	3 50
9	7 23	4 22	7 30	4 15	7 37	4 7	7 47	3 58	7 56	3 50
10	7 24	4 22	7 31	4 15	7 38	4 7	7 48	3 58	7 57	3 50
11	7 25	4 22	7 32	4 15	7 40	4 7	7 49	3 58	7 58	3 50
12	7 26	4 22	7 33	4 15	7 41	4 7	7 50	3 58	7 59	3 50
13	7 26	4 22	7 34	4 15	7 42	4 7	7 51	3 58	7 59	3 49
14	7 27	4 22	7 35	4 15	7 43	4 7	7 52	3 58	8 0	3 49
15	7 28	4 23	7 36	4 15	7 44	4 7	7 53	3 58	8 1	3 49
16	7 29	4 23	7 36	4 15	7 44	4 7	7 53	3 58	8 2	3 49
17	7 30	4 23	7 37	4 16	7 45	4 8	7 54	3 59	8 3	3 49
18	7 30	4 24	7 38	4 16	7 46	4 8	7 55	3 59	8 4	3 50
19	7 31	4 24	7 38	4 16	7 46	4 8	7 55	3 59	8 4	3 50
20	7 31	4 24	7 39	4 17	7 47	4 9	7 56	4 0	8 5	3 51
21	7 32	4 25	7 39	4 17	7 47	4 9	7 56	4 0	8 5	3 51
22	7 32	4 25	7 40	4 18	7 48	4 10	7 57	4 1	8 6	3 52
23	7 33	4 26	7 40	4 18	7 48	4 10	7 57	4 1	8 6	3 52
24	7 33	4 27	7 41	4 19	7 49	4 11	7 58	4 2	8 7	3 53
25	7 34	4 27	7 41	4 20	7 49	4 12	7 58	4 3	8 7	3 53
26	7 34	4 28	7 42	4 20	7 50	4 12	7 58	4 3	8 8	3 54
27	7 34	4 28	7 42	4 21	7 50	4 13	7 59	4 4	8 8	3 54
28	7 34	4 29	7 42	4 22	7 50	4 14	7 59	4 5	8 8	3 55
29	7 35	4 30	7 42	4 22	7 50	4 15	7 59	4 6	8 8	3 56
30	7 35	4 31	7 42	4 23	7 50	4 16	7 59	4 7	8 8	3 57
31	7 35	4 32	7 42	4 24	7 50	4 17	7 59	4 8	8 8	3 58

For an explanation of this table and its use at various places, see pages 8 and 9.

THE PLANETS DURING 1926

In the following notes on the planets a general account of the phenomena in connection with their motions is given. Fuller details will be found on the pages headed *The Sky for the Month* (pages 28, 30, ...).

MERCURY

Mercury's apparent separation from the sun is never very great, and consequently the planet is comparatively seldom seen with the naked eye; but when near its greatest elongation, or angular distance from the sun, it is easily visible as a star of the first magnitude. It can often be seen for about a fortnight, or even longer, at such a time, but some of these occasions are much more favourable than others. In general, the planet can best be seen at an eastern elongation (that is, as an evening star) in the spring; at a western elongation (that is, as a morning star) in the autumn. Similar elongations recur, on the average, every 116 days, or a little less than four months.

The eastern elongations are as follows: March 14, 18° 23′; July 10, 26° 22′; November 4, 23° 22′.

The western elongations:—April 28, 27° 4′; August 25, 18° 20′; December 13, 21° 13′.

The March elongation is the best for evening observations. At those in July and November the planet is much farther from the sun, but it is not so high above the horizon at sunset. The August elongation is the best for morning observations, for a similar reason. But with a clear sky Mercury should be visible at almost every elongation, though a field-glass may be required sometimes to locate it.

Further details are given on the pages devoted to *The Sky for the Month.*

VENUS

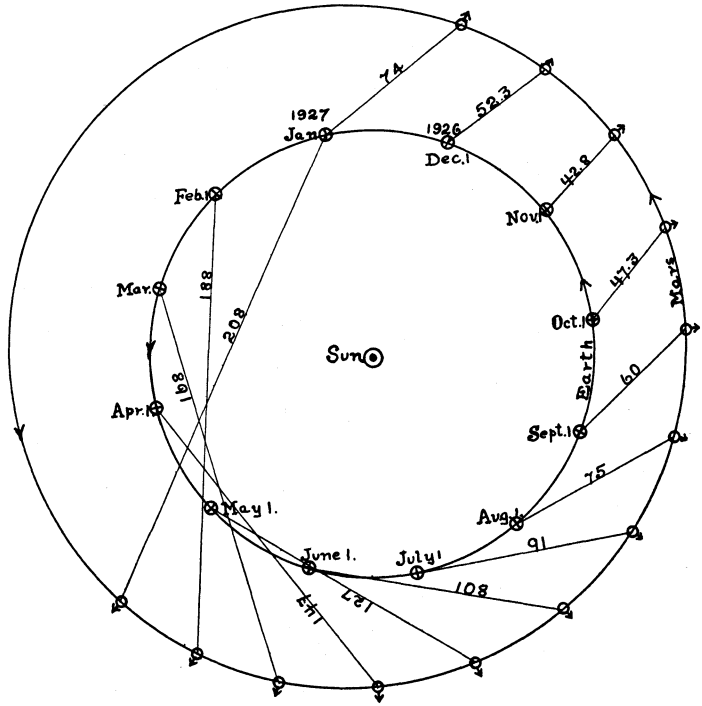
At the beginning of the year Venus is a splendid evening star; indeed on January 2 it attains greatest brilliance, at which time its stellar magnitude is —4.4, or about 15 times as bright as Sirius. It gradually draws in towards the sun and reaches inferior conjunction on February 7. For some time before and after this date the planet will be too close to the sun for comfortable observation. On March 14 it attains greatest brilliance again and from this time until October it will be a fine morning star. On April 18 it reaches its greatest elongation west, 46° 16′, at which time the telescope reveals its phase to be that of a half-moon (third quarter). On Sept. 10-11 the planet is near Regulus, being less than 30′ north of the star. It comes to superior conjunction with the sun on November 21, after which it is an evening star again. Further details of the planet's position and brightness are given in the monthly pages. See plate on inside of cover.

Mars

There was a notable opposition of Mars on August 23, 1924, at which time it was nearer to the earth than at any opposition for many years past or to come. The oppositions occur at intervals of approximately 780 days, and hence there will be one in 1926. It will occur on November 4, though the planet is nearest the earth on October 27. Its distance is 42,624,200 miles, which is somewhat greater than that in 1924, namely, 34,637,400, but the planet this year is a little nearer the equator, which will improve its position for observation. See plate on inside of cover.

At the beginning of the year Mars is in Scorpio, a few degrees north of Antares, which it resembles in colour but at this time it is fainter. The planet steadily approaches the earth and becomes brighter. It is in quadrature (90° w.) with the sun on July 8, reaches a stationary point on Sept. 28, retrogrades until Dec. 7, when it becomes stationary again and begins to move eastward once more. Opposition is midway between the stationary points.

In the accompanying diagrams are shown the orbits of earth and Mars, and also the path of Mars among the stars during 1926.



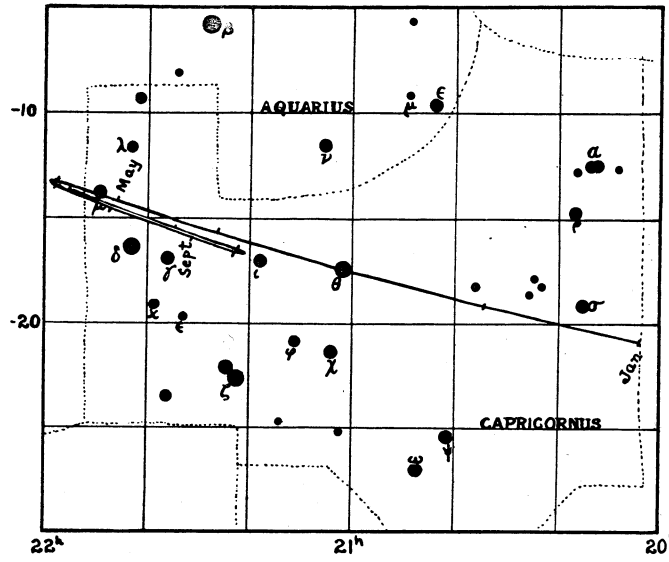
Orbits of Earth and Mars during 1926. The distance of Mars from Earth is expressed in millions of miles. Least distance, October 27, 42.6 millions.

Jupiter

Jupiter is the greatest of all the planets. Its brightness exceeds that of any of the fixed stars, and though at times Mars rivals it, Venus only distinctly outshines it.

At the beginning of the year Jupiter is too close to the sun for observation. It comes to conjunction on Jan. 25, and will not be in suitable position for observation for a month after that. Then it will gradually improve as a morning star. It comes to opposition on August 15. After that it apparently drifts steadily westward in the sky, and it is a brilliant evening star all the rest of the year.

Jupiter is a fine object for a small telescope. Even a field glass will reveal its disc and also its four large moons. They were discovered by Galileo in 1610, but since then five more have been discovered, all very faint objects (see page 56). The path of Jupiter amongst the stars in 1926 is given in the accompanying diagram.



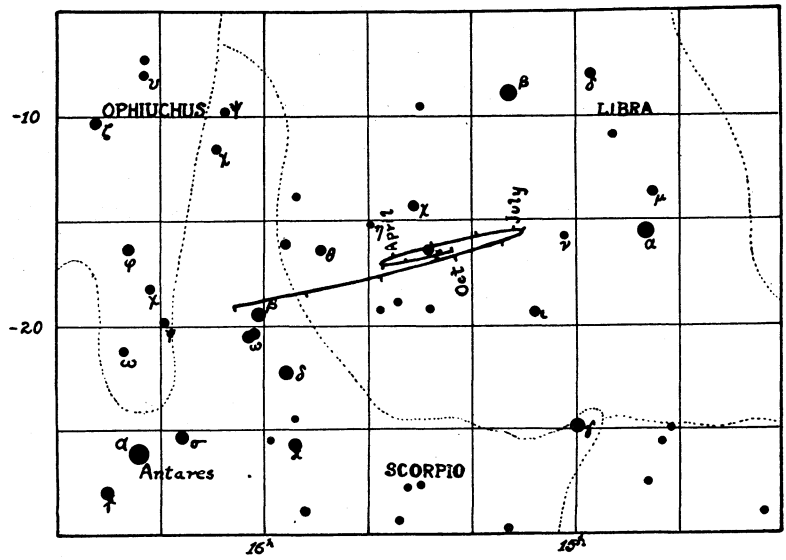
Path of Jupiter among the stars during 1926. The positions of the planet are given on the first of each month. (Jupiter is very close to Theta on March 2 and to Mu on May 8).

Saturn

At the beginning of the year Saturn is a good morning star in the constellation Libra, rising at about 5 o'clock. Its stellar magnitude is 0.8. It slowly moves eastward among the stars until March 6, when it reaches a stationary point and begins to retrograde, which it continues to do until July 24. It is in opposition on May 14, and is visible all night long. After this it drifts to the western sky

and is an evening star. It is in conjunction with the sun on Nov. 21, and for some weeks before and after this date is too near the sun for observation. At the end of the year it is a morning star.

By many observers Saturn, with its unique ring system and its numerous satellites, is considered the finest object in the sky. During some months in 1921 the rings were invisible (as explained in the HANDBOOK for 1921) and we now see their north face. During this year the formation of the rings can be well seen, though they will continue to open out until 1928, and then for seven years they will continue to close in again. The accompanying diagram shows the path of Saturn amongst the stars in 1926.

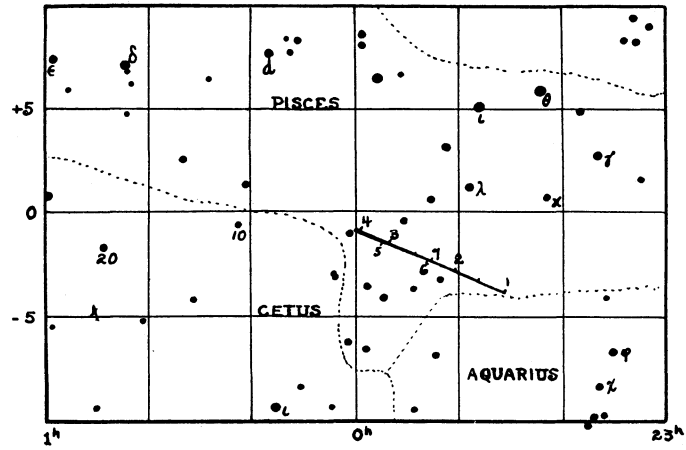


Path of Saturn among the stars during 1926. The positions of the planet are indicated on the first of each month.

URANUS

This planet was discovered by Sir William Herschel in 1781 and it appears to the naked eye on a dark night as a star of the sixth magnitude. It is in the constellation of Pisces all the year. It moves forward in its orbit only a little over 4° per year. It moves eastward until July 5, when it becomes stationary and begins to retrograde, which it continues to do until December 5. Midway between these dates, namely, on September 21, it is in opposition to the sun, when it is visible all night.

For some weeks before and after this date the planet can best be observed, and its position and motion can be followed with a field glass. See the accompanying map of the planet's path amongst the stars.



Path of Uranus among the stars during 1926. The position of the planet is represented by numbers:—1, Jan. 1; 2, March 1; 3, May 1; 4, July 1; 5, Sept. 1; 6, Nov. 1; 7, Jan. 1, 1927.

Neptune

The planet Neptune is the most distant member of the solar system, being 2,800 millions of miles from the sun and requiring 165 years to complete a revolution. During the year it is in the constellation Leo, and it will remain there for some years as it moves in its orbit only 2.2 degrees per year. On January 1 it is in R.A. 9h 48m, and it retrogrades until May 3, when its R.A. is 9h 38m. The motion then becomes direct until November 30, when its R.A. is 9h 57m. For the rest of the year it retrogrades again, and on December 31 its R.A. is 9h 56m, Decl. 13° 2′ N. The planet appears as a star of the eighth magnitude, and so cannot be seen with the naked eye.

ECLIPSES, 1926

In the year 1926 there will be two eclipses, both of the sun.

1. A Total Eclipse of the Sun, January 14, 1926.

The path of totality begins in Central Africa, emerges at the east coast just south of the equator, crosses the Indian Ocean, passing over the Island of Seychelles, crosses Sumatra approximately in latitude 5° south, crosses Borneo and Mindanao, the southernmost of the Philippine Islands, and ends in the Pacific Ocean.

The greatest duration, at the middle of the path, is 4m 11s, but it occurs in mid-ocean. On the west coast of Sumatra, at Benkoelen, the duration is 3m 20s. Here the weather conditions are best, but they are not very favourable.

The partial phase will be seen in a large part of Africa (not including Cape of Good Hope), Egypt, Arabia, India, S.E. China, Japan, West Indies, N.W. Australia.

Among the expeditions which will observe the eclipse are those from the U.S. Naval Observatory, Washington, D.C.; the Sproul Observatory, Swathmore, Pa.; the Royal Academy of Science of the Netherlands; and the Einstein Foundation and the Observatory, Potsdam, Germany.

Circumstances of the Eclipse

	Greenwich Civil Time			Long. from Greenwich		Latitude	
	d	h	m	°	′	°	′
Eclipse begins.....January	14	3	58.6	− 33	47	+ 3	7
Central eclipse begins..... "	14	4	55.1	− 21	9	+ 6	52
Central eclipse at L. App. Noon..... "	14	6	37.9	− 82	45	−10	5
Central eclipse ends..... "	14	8	17.8	−141	58	+14	28
Eclipse ends..... "	14	9	14.3	−129	24	+10	44

2. An Annular Eclipse of the Sun, July 9-10, 1926.

This eclipse is visible only in the Pacific Ocean. The central path passes over very few square miles of land. It begins in long. 132° E, lat. 4° N, its mid-point is in long. 167° W, lat. 26° N, and it ends in long. 103° W, lat. 1° N.

The partial phase will be seen in Japan, S.E. China, the West Indies, Northern Australia, south-western portion of the United States and of British Columbia, Mexico and Central America.

THE SKY FOR JANUARY, 1926

The times of transit are given in Local Mean Time; to change to Standard Time, see p. 9.

The Sun.—During January the sun's R.A. increases from 18h 43m to 20h 55m and its Decl. from 23° 5′ S to 17° 22′ S. The equation of time (see page 6) increases from 3m to 12s. to 13m 36s. On account of this rapid rise in value the time of mean noon appears to remain, for the first ten days of the month, at the same distance from the time of sunrise, that is, the forenoons as indicated by our clocks are of the same length. On the 20th the sun enters the sign Aquarius the second of the winter signs of the zodiac. On January 1 the sun is in perihelion (see opp. page for distance). On January 14 there is a total eclipse of the sun visible in Eastern Africa, Indian Ocean and the East Indies, not visible in Canada (see page 28).

The Moon.—For its phases and conjunctions with the planets, see opposite page. On Jan. 10 the moon occults a star in Libra (see page 8).

Mercury on the 15th is in R.A. 18h 22m, Decl. 23° 29′ S, and transits at 10.49. It reached greatest elongation west, 22° 36′, on December 31, 1925. At that time the planet for middle latitudes was about 15° above the horizon in a direction 40° east of south. For a week or ten days at this time it should be visible without difficulty. Use a field-glass in searching for the planet. (See page 22.)

Venus on the 15th is in R.A. 21h 49m, Decl. 9° 57′ S, and transits at 14.11. The planet begins the year as a splendid evening star. Indeed its brightness is a maximum on the 2nd, at which time its stellar magnitude is −4.4, or about 15 times as bright as Sirius. In the telescope it shows a crescent shape like the moon 4 days old. During the month the planet draws in towards the sun. On the 31st it transits 37m after the sun, but on account of higher declination it sets about $1\frac{1}{4}$ hrs. after sunset.

Mars on the 15th is in R.A. 16h 44m, Decl. 22° 15′ S, and transits at 9.09. At the beginning of the year Mars is in Scorpio about 5° north of Antares. It is very distant from the earth (199,120,000 mls. on the 15th) and hence is faint, a little brighter than Polaris, but of a red colour, like Antares.

Jupiter on the 15th is in R.A. 20h 17m, Decl. 20° 8′ S, and transits at 12.42. It is in the constellation Capricornus during the month. On the 1st it sets about 1h 40m after the sun, and on the 25th it is in conjunction, after which it is a morning star. During the entire month it is too near the sun for observation, and for this reason the configurations of its satellites are not given.

Saturn on the 15th is in R.A. 15h 29m, Decl. 16° 43′ S, and transits at 7.53. At the beginning of the year Saturn is in Libra about 4° south-west of Gamma and can be well observed as a morning star. Its stellar magnitude is 0.8.

Uranus on the 15th is in R.A. 23h 33m, Decl. 3° 40′ S, and transits at 15.56.

Neptune on the 15th is in R.A. 9h 46m, Decl. 13° 50′ N, and transits at 2.11.

For further information regarding the planets, with maps of their paths, see pages 22 to 26.

JANUARY

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol	Configurations of Jupiter's Satellites
			h m	
Fri.	1	23h ⊕ in Perihelion, 91,337,800 miles		
Sat.	2	16h ♀ Greatest brilliancy; 17 h 35m☌♆☾, ♆ 2° 15′ S	5 40	
Sun.	3			
Mon.	4			
Tues.	5		2 30	
Wed.	6			
☾ Thur.	7	2h 22m Moon L Q	23 20	
Fri.	8			
Sat.	9	21h 47m☌♄☾, ♄ 2° 39′ S		
Sun.	10		20 10	
Mon.	11	1h 50m☌♂☾, ♂ 3° 48′ S		
Tues.	12	15h 40m☌☿☾, ☿ 1° 58′ S		
Wed.	13	17h ☿ in ♉	17 00	
♋ Thur.	14	1h 35m N.M.; ☉ Total Eclipse invisible in Canada (see p. 28); 15h 19m☌♃☾, ♃ 0° 10′ N		
Fri.	15	16h ♀ stationary		
Sat.	16	2h 10m☌♀☾, ♀ 6° 6′ N	13 50	
Sun.	17	18h♂ in ♉; 21h 54m☌♁☾, ♁ 3° 57′ N		
Mon.	18			
Tues.	19		10 40	
☽ Wed.	20	17h 31m Moon F.Q		
Thur.	21			
Fri.	22		7 30	
Sat.	23	23h ☿ in Aphelion		
Sun.	24			
Mon.	25	0h☌♃☉	4 10	
Tues.	26			
Wed.	27			
♋ Thur.	28	16h 35m F.M	1 00	
Fri.	29	22h 45m☌♆☾, ♆ 2° 10′ S		
Sat.	30		21 50	
Sun.	31			

Invisible by reason of the proximity of Jupiter to the Sun.

Explanation of symbols and abbreviations on page 4.

THE SKY FOR FEBRUARY, 1926

The times of transit are in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During February the sun's R.A. increases from 20h 55m to 22h 45m, and its Decl. changes from 17° 22′ S to 7° 57′ S. The equation of time reaches a maximum value of 14m 23s on the 12th (see page 6). For the change in the length of the day, see page 11. On the 19th the sun enters the third winter sign of the zodiac, Pisces.

The Moon.—For its phases and conjunctions with the planets, see opp. page. On February 17 it occults two stars in Cetus (see page 8).

Mercury on the 15th is in R.A. 21h 51m, Decl. 5° 11′ S and transits at 12.16. On the same day it is in superior conjunction with the sun, and so it is not in suitable position for observation during the month.

Venus on the 15th is in R.A. 20h 54m, Decl. 8° 45′ S, and transits at 11.15. It is rapidly approaching the sun and reaches inferior conjunction on the 7th. It is then 7½° north of the sun. After this it is a morning star, but some weeks will elapse before it will be suitably placed for observation.

Mars on the 15th is in R.A. 18h 18m, Decl. 23° 44′ S, and transits at 8.41. It is in Sagittarius nearly all the month, and on the 15th its distance from the earth is 178,140,000 mls.

Jupiter on the 15th is in R.A. 20h 48m, Decl. 18° 23′ S, and transits at 11.10. The planet is too near the sun for observation until about the 20th. For the configuration of its satellites, see next page; and for their eclipses, etc., see page 52.

Saturn on the 15th is in R.A. 15h 36m, Decl. 17° 2′ S, and transits at 5.58. On this date it is in quadrature with the sun, being 90° west of the sun. Its stellar magnitude is 0.7 and it is well placed for observation as a morning star.

Uranus on the 15th is in R.A. 23h 38m, Decl. 3° 8′ S, and transits at 14.00.

Neptune on the 15th is in R.A. 9h 43m, Decl. 14° 7′ K, and transits at 0.06.

For further information regarding the planets, with maps of their paths, see pages 22 to 26.

FEBRUARY

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol	Configurations of Jupiter's Satellites at 6h 15m
			h m	
Mon.	1		18 40	
Tues.	2	18h ♀ in Perihelion		
Wed.	3			
Thur.	4	5h ☌ ☿ ♃, ☿ 1° 32′ S		
☾ Fri.	5	18h 25m Moon L.Q	15 30	
Sat.	6	9h 47m ☌ ♄ ☾, ♄ 2° 27′ S		
Sun.	7	10h ☌ ♀ ☉ Inferior		
Mon.	8	18h ☌ ☿ ♀, ☿ 10° 38′ S; 22h 50m ☌ ♂ ☾, ♂ 2° 32′ S	12 20	
Tues.	9			
Wed.	10			Invisible
Thur.	11	13h 1m ☌ ♃ ☾, ♃ 0° 43′ N.; 19h 27m ☌ ♀ ☾, ♀ 10° 16′ N	9 10	
♍ Fri.	12	7h 42m ☌ ☿ ☾, ☿ 0° 8′ N.; 12h 20m N.M.; 16h ☍ ♆ ☉		
Sat.	13	8h ☿ Greatest Hel. Lat. S		
Sun.	14	10h 8m ☌ ♁ ☾, ♁ 3° 59′ N	6 00	
Mon.	15	0h □ ♄ ☉; 20h ☌ ☿ ☉ Superior		
Tues.	16			
Wed.	17	15h ☌ ♀ ♃, ♀ 9° 8′ N	2 50	
Thur.	18			
☽ Fri.	19	7h 36m Moon F.Q	23 30	43201
Sat.	20			4210*
Sun.	21			d4023
Mon.	22		20 20	40123
Tues.	23			21043
Wed.	24	14h ♀ Greatest Hel. Lat. N		23014
Thur.	25		17 10	31024
Fri.	26	3h 29m ☌ ♆ ☾, ♆ 2° 6′ S		d3014
♑ Sat.	27	3h ♀ Stationary; 11h 51m F.M		21304
Sun.	28		14 00	02134

Explanation of symbols and abbreviations on page 4.

THE SKY FOR MARCH, 1926

The times of transit are given in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During March the sun's R.A. increases from 22h 45m to 0h 39m, and its Decl. changes from 7° 57′ S to 4° 10′ N. The equation of time decreases from 12m 41s to 4m 16s (see page 6). For changes in the length of the day, see page 12. On the 21st at 4.02 a.m. the sun enters the first spring sign of the zodiac, Aries (see opp. page).

The Moon.—For its phases and conjunctions with the planets, see opp. page.

Mercury on the 15th is in R.A. 0h 40m, Decl. 6° 47′ N, and transits at 13.12. On the previous day it attains its greatest elongation east, 18° 23′. This is a fine occasion to observe the planet. Immediately after sunset search for it about 10° south of the west point of the horizon and at an altitude of about 17°. A field-glass may be helpful in locating it, but there should be no difficulty with the naked eye. From about March 6 to March 20 the planet should be visible. (See page 22.)

Venus on the 15th is in R.A. 21h 2m, Decl. 11° 44′ S, and transits at 9.33. On the 14th it has maximum brilliance. Then it exhibits the crescent phase like the moon 4 days old (see notes for January). Its stellar magnitude then is −4.3, and the planet loses little in brightness during the month.

Mars on the 15th is in R.A. 19h 45m, Decl. 22° 5′ S, and transits at 8.17. During the month the planet moves from Sagittarius into Capricornus, and on the 15th the distance from the earth is 158,570,000 mls.

Jupiter on the 15th is in R.A. 21h 13m, Decl. 16° 41′ S, and transits at 9.44. It is a bright morning star, but not very high above the horizon at sunset. For the configuration of its satellites, see next page; and for their eclipses, etc., see page 52.

Saturn on the 15th is in R.A. 15h 37m, Decl. 17° 1′ S, and transits at 4.09. On the 6th the planet reaches a stationary point and begins to retrograde, which it continues to do until July 24. Magnitude 0.5. Well placed for morning observations.

Uranus on the 15th is in R.A. 23h 44m, Decl. 2° 31′ S, and transits at 12.15.

Neptune on the 15th is in R.A. 9h 40m, Decl. 14° 22N., and transits at 22.09.

For further information regarding the planets, with maps of their paths, see pages 22 to 26.

MARCH

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol		Configurations of Jupiter's Satellites at 5h 30m
			h	m	
Mon.	1				O234*
Tues.	2				21O34
Wed.	3	0h ☌ ☿ ♁, ☿ 0° 31′ N	10	50	23O41
Thur.	4	8h ☿ in ♌			341O2
Fri.	5	17h 33m ☌ ♄ ☾, ♄ 2° 9′ S			43O21
Sat.	6	11h ♄ Stationary	7	40	4231O
☾ Sun.	7	6h 50m Moon L.Q			4O13*
Mon.	8	23h ☿ in Perihelion			41O23
Tues.	9	18h 12 ☌ ♂ ☾, ♂ 1° 2′ S	4	30	d42O3
Wed.	10				d42O1
Thur.	11	2h 58m ☌ ♀ ☾, ♀ 7° 22′ N.; 9h 18m ☌ ♃ ☾, ♃ 1° 18′ N			341O2
Fri.	12		1	20	3O421
♍ Sat.	13	22h 20m N.M.; 23h 45m ☌ ♁ ☾, ♁ 4°.0′ N			231O4
Sun.	14	0h ☿ Greatest Elong., E. 18° 23′; 1h ♀ Greatest brilliancy	22	10	O314*
Mon.	15	0h 21m ☌ ☿ ☾, ☿ 7° 51′ N			1O234
Tues.	16	13h ☌ ♁ ☉			2O134
Wed.	17		18	50	2O34*
Thur.	18				31O24
Fri.	19	5h ☿ Greatest Hel. Lat. N			3O124
Sat.	20		15	40	d321O
☽ Sun.	21	0h ☿ Stationery; 0h 12m Moon F.Q.; 4h 2m ☉ enters ♈, Spring commences			42O31
Mon.	22	6h ☌ ♀ ♃, ♀ 4° 39′ N			41O23
Tues.	23		12	30	d4O13
Wed.	24				42O3*
Thur.	25	8h 46 ☌ ♆ ☾, ♆ 2° 9′ S			d43O2
Fri.	26		9	20	43O12
Sat.	27				4321O
Sun.	28				2O1**
♑ Mon.	29	5h 0m F.M	6	10	1O423
Tues.	30				O2143
Wed.	31	1h ☌ ☿ ☉ Inferior			21O34

Explanation of symbols and abbreviations on page 4.

THE SKY FOR APRIL, 1926

The times of transit are given in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During April the sun's R.A. increases from 0h 39m to 2h 30m, and its Decl. from 4° 10′ N. to 14° 47′ N. The equation of time changes from +4m 16s to −2m 50s (see page 6). For the length of daylight in various latitudes, consult page 13. On the 20th the sun enters the second spring sign, Taurus.

The Moon.—For its phases and conjunctions with the planets, see opp. page. On April 15 it occults a star in Taurus (see p. 8).

Mercury on the 15th is in R.A. 0h 11m, Decl. 0° 21′ N., and transits at 10.39. It is now a morning star, having passed inferior conjunction on March 31. During the month it separates from the sun, and on the 28th reaches its greatest elongation west, 27° 4′, and transits at 10.20. This is not the best time of the year to observe the planet at a western elongation although its distance from the sun is great. At sunrise it is only about 8° above the horizon, at a point about 5° south of east.

Venus on the 15th is in R.A. 22h 40m, Decl. 7° 44′ S, and transits at 9.08. On the 18th it attains its greatest elongation, 46° 16′ W, at which times its phase as revealed in the telescope is that of a half-moon. The planet is a fine morning star and during the month its magnitude changes from −4.2 to −3.9.

Mars on the 15th is in R.A. 21h 17m, Decl. 17° 10′ S, and transits at 7.48. Its distance from the earth on that date is 137,420,000 mls., and its stellar magnitude is 0.9, about 30 per cent. brighter than Antares. It rises about $2\frac{1}{4}$ hrs. before the sun, and is fairly well placed for observation. On the 23rd the planet is in conjunction with Jupiter (see opp. page).

Jupiter on the 15th is in R.A. 21h 37m, Decl. 14° 56′ S, and transits at 8.06. Its stellar magnitude is −1.7 (a little brighter than Sirius), a prominent morning star not far from Mars. For the configuration of its satellites, see next page; for their eclipses, etc., see page 52.

Saturn on the 15th is in R.A. 15h 32m, Decl. 16° 40′ S, and transits at 2.02. Stellar magnitude 0.4 and visible much of the night.

Uranus on the 15th is in R.A. 23h 50m, Decl. 1° 50′ S, and transits at 10.19.

Neptune on the 15th is in R.A. 9h 38m, Decl. 14° 32′ N, and transits at 20.05.

For further information regarding the planets, with maps of their paths, see pages 22 to 26.

APRIL

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol	Configurations of Jupiter's Satellites at 4h 15m
			h m	
Thur.	1	22h 1m☌♄ ☾, ♄ 1° 53′ S.	3 00	3O14*
Fri.	2			3O24*
Sat.	3		23 50	321O4
Sun.	4			2O14*
☾ Mon.	5	15h 50m Moon L Q.		1O234
Tues.	6		20 40	dO213
Wed.	7	11h 38m☌☌ ☾, ☌ 0° 31′ N.		42103
Thur.	8	2h 13m☌ ⚳ ☾, ⚳ 1° 52′ N.; 20h 22m☌♀ ☾, ♀ 4°56′ N.		4301*
Fri.	9		17 30	4302*
Sat.	10	12h 11m☌♁ ☾, ♁ 4° 8′ N.; 21h 19m☌☿ ☾, ☿ 5° 21′ N.		4231O
Sun.	11	17h ☿ in ♉		42301
♍ Mon.	12	7h 56m N.M.; 11h ☿ Stationary	14 20	41O23
Tues.	13			4O123
Wed.	14			2143O
Thur.	15		11 00	d2O14
Fri.	16			31O24
Sat.	17			dd3O4
Sun.	18	14h ♀ Greatest Elong. W., 46° 16′.	7 50	23O14
☽ Mon.	19	18h 23m Moon F Q.		1O234
Tues.	20			O1234
Wed.	21	15h 16m☌♆ ☾, ♆ 2* 20′ S.; 16h ♀ in ♉; 23h ☿ in Aphelion.	4 40	21O34
Thur.	22			2O314
Fri.	23	6h☌☌⚳, ☌ 0° 51′ S.		314O2
Sat.	24		1 30	34O21
Sun.	25			423O*
Mon.	26		22 20	41O23
♑ Tues.	27	19h 17m F.M.		4O123
Wed.	28	1h ☿ Greatest Elong. W., 22₀ 4′		42103
Thur.	29	1h 29m☌♄ ☾, ♄ 1° 48′ S.	19 10	42O31
Fri.	30			4312O

Explanation of symbols and abbreviations on page 4.

THE SKY FOR MAY, 1926

The times of transit are given in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During May the sun's R.A. increases from 2h 30m to 4h 32m, and its Decl. from 14° 47′ N to 21° 55′ N. The equation of time increases from 2m 50s to a maximum of 3m 47s on the 15th, and then falls to 2m 31s on the 31st (see page 6). For changes in the length of the day, see page 14. On the 21st the sun enters Gemini, the third sign of the zodiac.

The Moon.—For its phases and conjunctions with the planets, see opp. page.

Mercury on the 15th is in R.A. 2h 5m, Decl. 10° 0′ N, and transits at 10.38. During the first few days of the month it should continue to be seen as a morning star, and then it moves on towards superior conjunction and becomes too near the sun for observation.

Venus on the 15th is in R.A. 0h 38m, Decl. 2° 18′ N, and transits at 9.08. It is still a fine morning star, its stellar magnitude changing very slightly during the month, namely, from −3.9 to −3.6. On the 4th there is a close conjunction of Venus and Uranus (see opp. page).

Mars on the 15th is in R.A. 22h 42m, Decl. 10° 15′ S, and transits at 7.14. On this date its distance from the sun is 118,250,000 mls. and its stellar magnitude 0.6, an increase in brightness during one month of about 30 per cent. Still improving as a morning star.

Jupiter on the 15th is in R.A. 21h 52m, Decl. 13° 43′ S, and transits at 6.24. On the 17th it is in quadrature with the sun, but being much farther south in the sky it rises (to a person in middle north latitude) about 3½ hours before the sun. It is a fine morning star of magnitude −1.9.

Saturn on the 15th is in R.A. 15h 24m, Decl. 16° 8′ S, and transits at 23.52. It comes to opposition on the 14th, at which time it sets as the sun rises and consequently can be seen all night long. Stellar magnitude 0.2, the same as that of Capella.

Uranus on the 15th is in R.A. 23h 56m, Decl. 1° 16′ S, and transits at 8.18.

Neptune on the 15th is in R.A. 9h 38m, Decl. 14° 33′ N, and transits at 18.07.

For further information regarding the planets, with the maps of their paths, see pages 22 to 26.

MAY

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol		Configurations of Jupiter's Satellites at 3h 0m
			h	m	
Sat.	1				34O21
Sun.	2		16	00	321O4
Mon.	3	10h ♆ Stationary			dO4**
☾ Tues.	4	10h☌♁, ☿ 0° 21′ S.; 22h 13m Moon L Q			O1234
Wed.	5	14h 54m☌♃, ♃ 2° 21′ N	12	50	12O34
Thur.	6	3h 37m☌♂, ☾, ♂ 1° 52′ N			2O134
Fri.	7	21h 55m☌♁, ☾, ♁ 4° 20′ N			13O24
Sat.	8	4h 30m☌☿, ☾, ☿ 3° 51′ N	9	40	3O214
Sun.	9	20h 17m☌☿, ☾, ☿ 2° 22′ N			321O4
Mon.	10				4O1**
● Tues.	11	17h 55m N.M	6	20	4O23*
Wed.	12	7h ☿ Greatest Hel. Lat. S			412O3
Thur.	13	8h □♆☉			42O13
Fri.	14	3h ☍♄☉	3	10	413O2
Sat.	15				43O12
Sun.	16				4321O
Mon.	17	6h □♃☉	0	00	432O1
Tues.	18	23h 6m☌♆☾, ♆ 2° 35′ S			O32**
☽ Wed.	19	12h 48m Moon F.Q	20	50	d1O43
Thur.	20				2O134
Fri.	21				d1O24
Sat.	22		17	40	3O124
Sun.	23				321O4
Mon.	24				32O14
Tues.	25	22h ☿ in Aphelion	14	30	1O324
Wed.	26	5h 52m☌♄ ☾, ♄ 1° 56′ S			dO243
○ Thur.	27	6h 49m F.M			24O13
Fri.	28		11	20	41O32
Sat.	29				43O12
Sun.	30				4321O
Mon.	31	8h ☿ in ♌	8	10	432O1

Explanation of symbols and abbreviations on page 4.

THE SKY FOR JUNE, 1926

The times of transit are given in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During June the sun's R.A. increases from 4h 32m to 6h 37m, and its Decl. rises from 21° 55′ N on the 1st to its maximum 23° 27′ on the 22nd. On that date the sun reaches the summer solstice and enters the first summer sign of the zodiac, Cancer. The duration of daylight is then the longest, but it does not change appreciably for several days before and after this date (see page 15). The Decl. falls to 23° 11′ on the 30th. The increase in the equation of time (for which see p. 6), taking with the decreasing length of daylight, causes the local mean time of sunset to appear unchanged for several days at the end of June and the beginning of July.

The Moon.—For its phases and conjunction with the planets, see opp. page. On June 7 it occults a star in Cetus and on the 12th one in Gemini (see p. 8).

Mercury on the 15th is in R.A. 6h 23m, Decl. 25° 13′ N, and transits at 12.57. On June 4 is in superior conjunction, after which it is an evening star. It steadily separates from the sun, and on the 30th its elongation east is about 22°. At sunset its altitude is approximately 13° and its azimuth is 15° north of west. At this time it should be observable, though a field-glass will be useful to locate it in the twilight.

Venus on the 15th is in R.A. 2h 51m, Decl. 14° 8′ N, and transits at 9.19. The planet still remains a morning star (which it will continue to do until Nov. 21), slowly falling in brightness from mag. −3.6 to −3.4 during the month.

Mars on the 15th is in R.A. 0h 4m, Decl. 2° 11′ S, and transits at 6.33. The distance from the earth is now 100,000,000 mls., and the stellar magnitude 0.3. The planet rises near the east point, about $3\frac{3}{4}$ hrs. before the sun, and is now well placed for observation as a morning star.

Jupiter on the 15th is in R.A. 21h 59m, Decl. 13° 17′ S, and transits at 4.28. It has now passed into Aquarius, but on the 16th it reaches a stationary point and begins to move westward towards Capricornus again. Stellar magnitude −2.2; a splendid morning star.

Saturn on the 15th is in R.A. 15h 15m, Decl. 15° 39′ S, and transits at 21.41. The planet is slightly fainter than a month ago, but is still bright, being of magnitude 0.4. It is about 6° east of Alpha Librae and is well placed for evening observations.

Uranus on the 15th is in R.A. 23h 58m, Decl. 0° 59′ S, and transits at 6.27.

Neptune on the 15th is in R.A. 9h 40m, Decl. 14° 24′ N, and transits at 16.07.

For further information regarding the planets, with maps of their paths, see pages 22 to 26.

JUNE

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol		Configurations of Jupiter's Satellites at 2h 0m
			h	m	
Tues.	1				41032
Wed.	2	0h 3m☌♃☾, ♃ 2° 37′ N			40123
☾ Thur.	3	3h 9m Moon L Q.; 18h 51m, ☌♂☾, ♂ 2° 43′ N	5	00	2403*
Fri.	4	5h 5m☌♁☾, ♁ 4° 32′ N.; 11h☌☿☉ Superior; 23h ☿ in Perihelion			1043*
Sat.	5				30124
Sun.	6	20h 8m☌♀☾, ♀ 2° 56′ N	1	50	31204
Mon.	7				32014
Tues.	8		22	30	10324
Wed.	9				01234
● Thur.	10	5h 8m N.M.; 20h 44m☌☿☾, ☿ 3° 18′ N			2034*
Fri.	11		19	20	d034*
Sat.	12	17h☌♂♁, ♂ 1° 45′ S			30412
Sun.	13				34120
Mon.	14		16	10	43201
Tues.	15	5h☿ Greatest Hel. Lat. N.; 7h 45m☌♆☾, ♆ 2° 47′ S			4102*
Wed.	16	16h ♃ Stationary			40123
Thur.	17	13h ♀ Greatest Hel. Lat. S	13	00	42103
◑ Fri.	18	6h 14m Moon F.Q			42013
Sat.	19				43012
Sun.	20		9	50	d310*
Mon.	21	7h □♁☉, 23h 30m☉ enters ♎, Summer commences			32014
Tues.	22	12h 0m☌♄☾, ♄ 2° 10′ S			1024*
Wed.	23	16h♂ Greatest Hel. Lat. S	6	40	01234
Thur.	24				21034
♋ Fri.	25	16h 13m F.M			20134
Sat.	26		3	30	3024*
Sun.	27				31024
Mon.	28				32014
Tues.	29	6h 39m☌♃☾, ♃ 2° 35′ N	0	20	13402
Wed.	30				40123

Explanation of symbols and abbreviations on page 4.

THE SKY FOR JULY, 1926

The times of transit are given in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During July the Sun's R.A. increases from 6h 37m to 8h 42m, and its Decl. decreases from 23° 11′ N to 18° 17′ N. The equation of time increases from 3m 25s on the 1st to 6m 22s on the 27th and then falls to 6m 14s on the 31st (see p. 7). On the 23rd the sun enters Leo, the second summer sign of the zodiac. For changes in the length of the day, see page 16. The earth is in aphelion on the 5th (see opp. page for distance). There is an annular eclipse of the sun on July 9-10, observable as a partial eclipse in a portion of British Columbia and the United States (see page 27).

The Moon.—For its phases and conjunctions with the planets, see opp. page. On the 4th it occults a star in Cetus and on the 6th two stars in Taurus (see p. 8).

Mercury on the 15th is in R.A. 9h 19m, Decl. 14° 22′ N, and transits at 13.49. On the 10th it reaches its greatest elongation, 26° 22′ east. At sunset the planet now is 13° above the horizon, in azimuth 10° north of west. Indeed there is little change in its position at sunset during the first 15 days of the month, and it should be visible, though a field-glass will be useful to locate it in the twilight.

Venus on the 15th is in R.A. 5h 16m, Decl. 21° 44′ N, and transits at 9.45. Still a good morning star, in the constellation Taurus. On July 7 the planet is 4° N of Aldebaran. During all the month the stellar magnitude is —3.4.

Mars on the 15th is in R.A. 1h 17m, Decl. 5° 10′ N, and transits at 5.48. On this date the planet's distance from the earth is 83,660,000 miles and its stellar magnitude —0.1, and so it is brighter than any star in the sky except Sirius.

Jupiter on the 15th is in R.A. 21h 54m, Decl. 13° 51′ S, and transits at 2.25. Its stellar magnitude is —2.3. It rises about 9.30 p.m. and is a very fine object until dawn.

Saturn on the 15th is in R.A. 15h 11m, Decl. 15° 27′ S, and transits at 19.39. On July 24 the planet ceases to retrograde (see opp. page). Its stellar magnitude is 0.6 and it can be observed from sunset until it sets at about half an hour after midnight.

Uranus on the 15th is in R.A. 23h 59m, Decl. 0° 57′ S, and transits at 4.30.

Neptune on the 15th is in R.A. 9h 43m, Decl. 14° 8′ N, and transits at 14.12.

For further information regarding the planets, with maps of their paths, see pages 22 to 26.

JULY

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol		Configurations of Jupiter's Satellites at 1h 0m
			h	m	
Thur.	1	11h 10m☌♅ ☾, ♅ 4° 37′ N	21	10	41203
☾ Fri.	2	8h 2m Moon L Q.; 9h 27m☌♂ ☾, ♂ 2° 52′ N			42013
Sat.	3				d4102
Sun.	4		17	50	d4302
Mon.	5	8h ♅ Stationary, 9h ⊕ in Aphelion, 94,453,500 miles			43201
Tues.	6	18h 3m☌♀ ☾, ♀ 1° 33′ N			4310*
Wed.	7		14	40	40132
Thur.	8	13h □♂☉; 16h ☿ in ♍			12043
● Fri.	9	18h 6m N.M.; Ann. Ecl. invisible in Canada (see p. 27)			20134
Sat.	10	12h ☿ Greatest Elong. E., 26° 22′	11	30	10324
Sun.	11				30124
Mon.	12	0h 44m☌☿ ☾, ☿ 3° 18′ S.; 16h 32m☌♆ ☾, ♆ 2° 52′ S			3204*
Tues.	13		8	20	3104*
Wed.	14				01324
Thur.	15				12043
Fri.	16		5	10	24013
◑ Sat.	17	21h 55m Moon F.Q.			41032
Sun.	18	11h♂ in Perihelion, 22h ☿ in Aphelion			43012
Mon.	19	19h 42m☌♄ ☾, ♄ 2° 20′ S	2	00	4320*
Tues.	20				43210
Wed.	21		22	50	40312
Thur.	22				d4103
Fri.	23	14h ☿ Stationary			24013
Sat.	24	23h ♄ Stationary	19	40	10423
♋ Sun.	25	0h 13m F.M.			30124
Mon.	26	12h 7m☌♃ ☾, ♃ 2° 18′ N			32104
Tues.	27		16	30	d3204
Wed.	28	17h 57m☌♅ ☾, ♅ 4° 34′ N			0124*
Thur.	29				10234
Fri.	30	22h 6m☌♂ ☾, ♂ 2° 24′ N	13	10	20134
♋ Sat.	31	14h 25m Moon L.Q.			10234

Explanation of symbols and abbreviations on page 4.

The times of transit are given in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During August the sun's R.A. increases from 8h 42m to 10h 38m, and its Decl. decreases from 18° 17′ N to 8° 39′ N. The equation of time falls from 6m 14s to 0m 17s (see page 7). For changes in the length of daylight, see page 17. On the 23rd the sun enters the third summer sign of the zodiac, Virgo.

The Moon.—For its phases and conjunctions with the planets, see opp. page. On August 11 it occults a star in Virgo and on the 31st one in Taurus (see p. 8).

Mercury on the 15th is in R.A. 8h 45m, Decl. 14° 26′ N, and transits at 11.11. On August 7 it comes to inferior conjunction. It then becomes a morning star and reaches greatest elongation west 18° 20′ on the 25th. At sunrise the planet has an altitude of 15° in azimuth 10° north of east, and it should be easily visible for some days before the 25th and for a week after it. This is the best opportunity to see Mercury as a morning star during the year. (See page 22.)

Venus on the 15th is in R.A. 7h 56m, Decl. 20° 54′ N, and transits at 10.23. It is then in the constellation Gemini, just south of Pollux. Its mag. is —3.3, that of Pollux 1.2. Thus there is a difference of 4.5 mags. or the planet is 63 times as bright.

Mars on the 15th is in R.A. 2h 23m, Decl. 11° 5′ N, and transits at 4.52. The planet's distance from the earth is now 67,760,000 mls., and its stellar magnitude —0.6. It is in the constellation Aries, and is a fine morning star, rising nearly 7 hrs. before the sun.

Jupiter on the 15th is in R.A. 21h 40m, Decl. 15° 7′ S, and transits at 0.10. It is in opposition to the sun on this date (see opp. page) and hence rises as the sun sets. A fine object, visible all night. Stellar magnitude —2.4, of maximum brightness. For the configuration of its satellites, see opp. page; for their eclipses, etc., see page 53.

Saturn on the 15th is in R.A. 15h 12m, Decl. 15° 40′ S, and transits at 17.38. On the 13th it is in quadrature with the sun, being 90° east. Its stellar magnitude is 0.7, or 20 per cent. brighter than Altair. The planet sets at about 22.30, and hence can be well seen as an evening star.

Uranus on the 15th is in R.A. 23h 57m, Decl. 1° 14′ S, and transits at 2.26.

Neptune on the 15th is in R.A. 9h 47m, Decl. 13° 45′ N, and transits at 12.15.

For further information regarding the planets, including maps of their paths, see pages 22 to 26.

AUGUST

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol h	Minima of Algol m	Configurations of Jupiter's Satellites at 0h 0m
Sun.	1				30412
Mon.	2		10	00	34210
Tues.	3				43201
Wed.	4				4302*
Thur.	5	21h 5m☌♀☾, ♀ 0° 14′ S.	6	50	41023
Fri.	6				42013
Sat.	7	9h☌☿☉ Inferior			4103*
● Sun.	8	1h 41m☌☿☾, ☿ 7° 17′ S.; 6h ☿ Greatest Hel. Lat. S.; 8h 49m N.M.	3	40	43012
Mon.	9	0h 55m☌♆☾, ♆ 2° 54′ S.			31240
Tues.	10				32014
Wed.	11		0	30	31024
Thur.	12	19h ♀ in♌			d0234
Fri.	13	1h □♄☉	21	20	20134
Sat.	14				12034
Sun.	15	15h☍♃☉			30124
◑ Mon.	16	4h 25m☌♄☾, ♄ 2° 19′ S.; 11h 39m Moon F.Q.; 21h ☿ Stationary	18	10	31204
Tues.	17				32014
Wed.	18	1h☌♆☉			34102
Thur.	19		15	00	d4023
Fri.	20				42013
Sat.	21				41203
Sun.	22	17h 32m☌♃☾, ♃ 1° 57′ N	11	50	d4012
○ Mon.	23	7h 38m F. M.			d4310
Tues.	24				43201
Wed.	25	2h 16m☌♁☾, ♁ 4° 27′ N.; 4h ☿ Greatest Elong. W., 18° 20′	8	30	43102
Thur.	26				0132*
Fri.	27	7h ☿ in♌			2043*
Sat.	28	5h 29m☌♂☾, ♂ 1° 43′ N	5	20	21034
☾ Sun.	29	23h 40m Moon L Q.			03124
Mon.	30				31024
Tues.	31	23h ☿ in Perihelion	2	10	32014

Explanation of symbols and abbreviations on page 4.

THE SKY FOR SEPTEMBER, 1926

The times of transit are given in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During September the sun's R.A. increases from 10h 38m to 12h 26m, and its Decl. changes from 8° 39′ N to 2° 48′ S. The equation of time becomes zero on 1st and then increases to 9m 58s. For the change in the length of daylight, see page 18. On the 23rd the sun crosses the equator going southward and enters the first autumn sign of the zodiac, Libra.

The Moon.—For its phases and conjunctions with the planets, see opp. page. On September 2 it occults a star in Gemini and on the 26th one in Taurus (see p. 8).

Mercury on the 15th is in R.A. 11h 16m, Decl. 6° 38′ N, and transits at 11.45. It is visible during a few days at the beginning of the month (see last month's notes) and then it moves in towards the sun, reaching superior conjunction on the 19th. For the rest of the month it is too close to the sun to be observed.

Venus on the 15th is in R.A. 10h 29m, Decl. 10° 52′ N, and transits at 10.53. At sunrise the planet is directly in the east and about 16° above the horizon. Thus it is still a good morning star. During the month its stellar magnitude changes from —3.3 to —3.4.

Mars on the 15th is in R.A. 3h 5m, Decl. 14° 33′ N, and transits at 3.32. On this date the distance from the earth is 53,300,000 mls., and the stellar magnitude is —1.2, slightly below Sirius. On the 28th the planet reaches a stationary point and begins to retrograde, which it continues to do until December 8. A fine morning star.

Jupiter on the 15th is in R.A. 21h 26m, Decl. 16° 18′ S, and transits at 21.49. The planet has fallen slightly in brightness, having now a magnitude —2.3. It is in excellent position for observing. Jupiter in Capricornus and Mars in Aries can both be seen much of the night. For the configuration of Jupiter's satellites, see opp. page; for their eclipses, etc., see page 53.

Saturn on the 15th is in R.A. 15h 19m, Decl. 16° 15′ S, and transits at 15.44. The planet is now above the horizon about $2\frac{3}{4}$ after sunset and hence can still be seen quite well as an evening star.

Uranus on the 15th is in R.A. 23h 53m, Decl. 1° 38′ S, and transits at 0.20.

Neptune on the 15th is in R.A. 9h 51m, Decl. 13° 24′ N, and transits at 10.18.

For further information regarding the planets, with maps of their paths, see pages 22 to 26.

SEPTEMBER

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol	Configurations of Jupiter's Satellites at 22h 30m
			h m	
Tues.	0	23h ☿ in Perihelion	2 10	31O24
Wed.	1			O3124
Thur.	2	17h ☌ ☿ Ψ, ☿ 0° 52′ N	23 00	21O43
Fri.	3			d42O3
Sat.	4			4O132
Sun.	5	3h 23m ☌ ♀ ☾, ♀ 2° 12′ S.; 8h 53m ☌ Ψ ☾, Ψ 2° 59′ S.; 19h 47m ☌ ☿ ☾, ☿ 2° 8′ S	19 50	431O2
Mon.	6			432O1
(NM) Tues.	7	0h 45m N.M.; 11h ☌ ♀ Ψ, ♀ 0° 39′ N		431O*
Wed.	8		16 40	4O12*
Thur.	9			421O3
Fri.	10			24O13
Sat.	11	4h ☿ Greatest Hel. Lat. N	13 30	O32**
Sun.	12	13h 52m ☌ ♄ ☾, ♄ 2° 7′ S		31O24
Mon.	13			32O14
(FQ) Tues.	14	23h 27m Moon F.Q	10 20	312O4
Wed.	15	7h ♀ in Perihelion		O124*
Thur.	16			12O34
Fri.	17		7 10	2O134
Sat.	18	23h 33m ☌ ♃ ☾, ♃ 1° 48′ N		O234*
Sun.	19	9h ☌ ☿ ☉ Superior		d31O2
Mon.	20		4 00	342O1
(♍) Tues.	21	0h ☍ ♁ ☉, 11h 35m ☌ ♁ ☾, ♁ 4° 21′ N.; 15h 19m F.M.		4312O
Wed.	22			43O12
Thur.	23	14h 27m ☉ enters ♎, Autumn commences	0 40	d41O3
Fri.	24			42O13
Sat.	25	1h 43m ☌ ♂ ☾, ♂ 1° 33′ N	21 30	41O23
Sun.	26			d43O2
Mon.	27			324O1
☾ Tues.	28	12h ♂ Stationary; 12h 48m Moon L.Q	18 20	312O4
Wed.	29			3O124
Thur.	30			

Explanation of symbols and abbreviations on page 4.

THE SKY FOR OCTOBER, 1926

The times of transit are given in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During October the sun's R.A. increases from 12h 26m to 14h 22m, and its Decl. increases from 2° 48′ S to 14° 7′ S. On the 24th the sun enters the second autumnal sign of the zodiac, Scorpio. The equation of time rises from 9m 58s to 16m 19s, to be subtracted from apparent or sun-dial time (see p. 7). For the change in the length of daylight, see page 19.

The Moon.—For its phases and conjunctions with the planets, see opp. page. On October 24 it occults the star Zeta Tauri, mag. 3 (see page 8).

Mercury on the 15th is in R.A. 14h 20m, Decl. 15° 11′ S, and transits at 12.50. During the month it continually separates eastward from the sun, but it is so far south of the equator that its altitude at sunset is so low that it cannot well be seen.

Venus on the 15th is in R.A. 12h 47m, Decl. 3° 32′ N, and transits at 11.13. It is slowly drawing in towards the sun, but is still easily observable as a morning star, of mag. —3.4.

Mars on the 15th is in R.A. 3h 3m, Decl. 15° 17′ N, and transits at 1.31. On this date the planet's distance from the earth is 43,728,000 mls., and its stellar magnitude is —1.9, about 30 per cent. brighter than Sirius. On the 27th the planet comes nearest to the earth (see opp. page) but it does not come into opposition until Nov. 4. From Oct. 26 to Nov. 7 the stellar magnitude is —2.1, and the planet is a fine object to observe.

Jupiter on the 15th is in R.A. 21h 20m, Decl. 16° 41′ S, and transits at 19.46. On the 14th the planet reaches a stationary point and begins to move eastward amongst the stars again. It is still of magnitude —2.2 and is a fine object for observation. For the configuration of its satellites, see opp. page; for their eclipses, etc., see page 53.

Saturn on the 15th is in R.A. 15h 30m, Decl. 17° 1′ S, and transits at 13.57. During this month the sun moves along towards the planet, and renders it more difficult to observe as an evening star. The planet sets at about 18.40 in azimuth 25° south of west.

Uranus on the 15th is in R.A. 23h 49m, Decl. 2° 6′ S, and transits at 22,14.

Neptune on the 15th is in R.A. 9h 55m, Decl. 13° 7′ N, and transits at 8.23.

For further information regarding the planets, with maps of their paths, see pages 22 to 26.

OCTOBER

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol		Configurations of Jupiter's Satellites at 21h 15m
			h	m	
Thur.	0	.....			1O234
Fri.	1	.....	15	10	2O134
Sat.	2	16h 41m☌♆☾, ♆ 3° 10′ S.....			1O34*
Sun.	3	.....			dO124
Mon.	4	15h☿ in♉.....	12	00	32O4*
Tues.	5	12h 5m☌♀☾, ♀ 3° 42′ S.....			321O4
Wed.	6	17h 13m N.M.....			34O12
Thur.	7	7h ♀ Greatest Hel. Lat. N.; 16h 54m☌☿☾, ☿ 5° 36′ S.....	8	50	41O23
Fri.	8	.....			42O13
Sat.	9	.....			41O3*
Sun.	10	0h 17m☌♄☾, ♄ 1° 51′ S.....	5	40	4O312
Mon.	11	.....			4321O
Tues.	12	.....			d432O
Wed.	13	.....	2	30	43O12
Thur.	14	4h ♃ Stationary; 9h 28m Moon F.Q.; 21h ☿ in Aphelion.....			1O32*
Fri.	15	.....	23	20	2O143
Sat.	16	6h 29m☌♃☾, ♃ 1° 58′ N			12O34
Sun.	17	.....			O3124
Mon.	18	20h 22m☌♁☾, ♁ 4° 25′ N.....	20	00	321O4
Tues.	19	.....			d32O4
Wed.	20	.....			3O24*
Thur.	21	0h 15m F.M.....	16	50	1O24*
Fri.	22	5h 18m☌☌☾, ☌ 2° 43′ N.....			2O413
Sat.	23	.....			412O3
Sun.	24	.....	13	40	4O312
Mon.	25	.....			d431O
Tues.	26	.....			432O1
Wed.	27	0h☌ nearest ⊕, 42,624,200 miles.....	10	30	43O2*
Thur.	28	5h 57m Moon L.Q.; 18h☌☿♄, ☿ 4° 30′ S			41O2*
Fri.	29	.....			42O13
Sat.	30	0h 42m☌♆☾, ♆ 3° 26′ S.....	7	20	412O3
Sun.	31	.....			

Explanation of symbols and abbreviations on page 4.

THE SKY FOR NOVEMBER, 1926

The times of transit are given in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During November the sun's R.A. increases from 14h 22m to 16h 25m, and its Decl. changes from 14° 7′ S to 21° 39′ S. On the 23rd the sun enters Sagittarius, the third autumnal sign of the zodiac. The equation of time on the 4th rises to a maximum of 16m 22s, to be subtracted from apparent time—that is, the sun dial is that amount ahead of the mean time clock (see page 7). For the changes in the length of daylight, see page 20.

The Moon.—For its phases and conjunctions with the planets, see opp. page. On the 1st it occults a star in Virgo, and on the 22nd two in Gemini (see p. 8).

Mercury on the 15th is in R.A. 16h 38m, Decl. 24° 19′ S, and transits at 13.02. On the 4th it reaches greatest elongation 23° 22′ east, but on account of its low declination its altitude at sunset is only about 8°, in the south-west, and hence it is not in good position for observation.

Venus on the 15th is in R.A. 15h 16m, Decl. 17° 25′ S, and transits at 11.39. It is now too close to be well observed, and on the 21st it reaches superior conjunction with the sun. After this it is an evening star, but it will be some weeks before it will be in a position suitable for observations.

Mars on the 15th is in R.A. 2h 22m, Decl. 13° 57′ N, and transits at 22.44. The planet is now separating from the earth, and on the 15th its distance is 45,530,000 mls. with stellar magnitude —1.9. It is in opposition to the sun on the 4th (see opp. page) and is visible all night.

Jupiter on the 15th is in R.A. 21h 27m, Decl. 16° 7′ S, and transits at 17.51. On the 11th it is in quadrature with the sun (see opp. page). Stellar magnitude —2.0 and a fine evening star. For the configuration of its satellites, see opposite page; for their eclipses, etc., see page 53.

Saturn on the 15th is in R.A. 15h 44m, Decl. 17° 54′ S, and transits at 12.09. On the 21st the planet is in conjunction with the sun (see opp. page), after which it becomes a morning star. During the entire month it will be too near the sun for observation.

Uranus on the 15th is in R.A. 23h 45m, Decl. 2° 25′ S, and transits at 20.09.

Neptune on the 15th is in R.A. 9h 57m, Decl. 12° 57′ N, and transits at 6.23.

For further information regarding the planets, with maps of their paths, see pages 22 to 26.

NOVEMBER

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol		Configuration of Jupiter's Satellites at 20h 0m
			h	m	
Sun.	0				O4132
Mon.	1				13O24
Tues.	2		4	10	32O14
Wed.	3				31O4*
Thur.	4	4h☌♂☉; 6h ☿ Greatest Hel. Lat. S.; 22h 34m ☌♀☾, ♀ 3° 41′ S.; 23h ☿ Greatest Elong. E. 23° 22′			d3O24
Fri.	5	9h 34m N.M.	1	00	2O34*
Sat.	6	12h 20m☌♄☾, ♄ 1° 35′ S.			21O34
Sun.	7	6h 54m☌☿☾, ☿ 5° 34′ S.	21	50	O1234
Mon.	8				13O42
Tues.	9				32401
Wed.	10		18	40	431O*
Thur.	11	14h □♃☉			43O12
Fri.	12	14h 55m☌♃☾, ♃ 2° 23′ N.; 18h 2m Moon F.Q.			42O3*
Sat.	13		15	20	421O3
Sun.	14				4O123
Mon.	15	3h 19m☌♁☾, ♁ 4° 35′ N.; 14h ☿ Stationary			d41O2
Tues.	16		12	10	32401
Wed.	17	23h♂ in ♌; 23h 44m☌♂☾, ♂ 4° 50 N.			312O*
Thur.	18				3O124
Fri.	19	11h 21m F.M.; 20h □♆☉	9	00	21O34
Sat.	20				d2O34
Sun.	21	7h ☌♀☉ Superior; 13h ☌♄☉; 18h ♂♀♄, ♀ 1° 28′ S.			O1234
Mon.	22		5	50	1O324
Tues.	23	6h ☿ in ♌			32O14
Wed.	24				312O4
Thur.	25	9h☌☿♀, ☿ 0° 27′ N.; 19h☌☿☉ Inferior	2	40	d3O12
Fri.	26	9h 1m☌♆☾, ♆ 3° 40′ S.			d41O*
Sat.	27	2h 15m Moon L.Q.; 21h ☿ in Perihelion	23	30	d42O3
Sun.	28	9h ☌☿♄, ☿ 0° 12′ S.			4O23*
Mon.	29				41O32
Tues.	30	2h ♆ Stationary	20	20	

Explanation of symbols and abbreviations on page 4.

THE SKY IN DECEMBER, 1926

The times of transit are given in Local Mean Time. To change to Standard Time, see p. 9.

The Sun.—During December the sun's R.A. increases from 16h 25m to 18h 42m, and its Decl. reaches a maximum value 23° 27′ S on the 22nd. This is the time of the winter solstice and the sun enters the first of the winter signs of the zodiac, Capricornus. It is then vertical to points on the tropic of Capricorn on the earth. From this time it slowly moves northward, the daylight period being the shortest and changing very little for several days before and after the solstice (see p. 21). The equation of time changes from 11m 17s. Watch slow to 3m 75 watch fast (see page 7).

The Moon.—For its phases and conjunctions with the planets, see opp. page.

Mercury on the 15th is in R.A. 15h 58m, Decl. 18° 18′ S, and transits at 10.27. It attains greatest elongation west, 21° 13′, on the 13th, and is in fair position to be observed as a morning star. At sunrise it is near the south-east point and is about 17° above the horizon. For several days it should be visible and then it draws in towards the sun.

Venus on the 15th is in R.A. 17h 55m, Decl. 23° 58′ S, and transits at 12.21. It is a morning star, but too close to the sun for observation.

Mars on the 15th is in R.A. 2h 9m, Decl. 14° 11′ N, and transits at 20.34. On this date the planet's distance from the earth is 60,920,000 mls. and its stellar magnitude is —0.9. It is still well placed for observation and will continue to be for some months.

Jupiter on the 15th is in R.A. 21h 43m, Decl. 14° 44′ S, and transits at 16.09. Its stellar magnitude is —1.7, and it can still be observed 2 hours or more after sunset. At the beginning of the year the planet was just entering Capricornus; at the end it is just leaving this constellation. For the configuration of its satellites, see opp. page; for their eclipses, etc., see page 53.

Saturn on the 15th is in R.A. 15h 59m, Decl. 18° 39′ S, and transits at 10.26. During the first part of the month the planet is too near the sun for observation. On the 31st it rises about 3 hrs. before the sun and can be well seen as a morning star. Its low declination renders its altitude not very great at any time.

Uranus on the 15th is in R.A. 23h 44m, Decl. 2° 27′ S, and transits at 18.10.

Neptune on the 15th is in R.A. 9h 57m, Decl. 12° 57′ N, and transits at 4.25.

For further information regarding the planets, with maps of their paths, see pages 22 to 26.

DECEMBER

ASTRONOMICAL PHENOMENA

(75th Meridian Civil Time)

			Minima of Algol		Configurations of Jupiter's Satellites at 19h 0m
			h	m	
Tues.	0	2h ♆ Stationary	20	20	4320 1
Wed.	1				4312 O
Thur.	2	8h ♀ in ♍			4301 2
Fri.	3	17h 34m ☌ ☿, ☾, ☿ 0° 56′ S.	17	10	1402*
Sat.	4	2h 18m ☌ ♄, ☾, ♄ 1° 22′ S.			2O143
● Sun.	5	1h 12m N.M.; 5 h ☿ Stationary, 7h 30m ☌ ♀, ☾, ♀ 2° 3′ S.; 17h ♁ Stationary			O34**
Mon.	6		14	00	1O324
Tues.	7	19h ♂ Stationary			32O14
Wed.	8	3h ☿ Greatest Hel. Lat. N.			3210 4
Thur.	9		10	50	3O124
Fri.	10	2h 4m ☌ ♃, ☾, ♃ 2° 51′ N.			13O24
Sat.	11				2O143
☽ Sun.	12	1h 47m Moon F.Q.; 8h 48m ☌ ♁, ☾, ♁ 4° 45′ N.	7	30	4103*
Mon.	13	19h ☿ Greatest Elong. W., 21° 13′			d4032
Tues.	14	23h ☌ ☿, ♃, ☿ 0° 18′ N.			4320 1
Wed.	15	3h 17m ☌ ♂, ☾, ♂ 6° 12′ N.	4	20	4321O
Thur.	16				43012
Fri.	17				4130 2
Sat.	18	1h □ ♁ ☉	1	10	4201 3
♒ Sun.	19	1h 9m F.M.			4120 3
Mon.	20		22	00	4O123
Tues.	21				d3O4*
Wed.	22	9h 34m ☉ enters ♑, Winter commences.			3210 4
Thur.	23	17h 11m ☌ ♆, ☾, ♆ 3° 44′ S.	18	50	3O214
Fri.	24				3102 4
Sat.	25				2O134
☾ Sun.	26	23h 59m Moon L. Q.	15	40	1203 4
Mon.	27				O1234
Tues.	28				d1024
Wed.	29		12	30	3241O
Thur.	30				34021
Fri.	31	14h ☿ in ♍; 17h 27m ☌ ♄, ☾, ♄ 1° 9′ S.			4310 2
Sat.	32		9	20	4203 1

Explanation of symbols and abbreviations on page 4.

PHENOMENA OF JUPITER'S SATELLITES, 1926

E—Eclipse, O—occultation, T—transit, S—shadow, D—disappearance, R—reappearance
I—ingress, e—egress. The Roman numerals denote the satellites.
75th Meridian Civil Time.

FEBRUARY

d	h	m	Sat.	Phen.
26	6	1	II	TI

MARCH

d	h	m	Sat.	Phen.	d	h	m	Sat.	Phen.
10	5	46	III	Se	25	5	30	I	Te
23	4	55	II	Se	28	4	47	IV	ED
24	4	56	I	ED	30	4	39	II	SI

APRIL

1	4	33	II	OR	17	3	37	I	TI
	5	12	I	TI		4	31	II	Te
2	4	42	I	OR		4	42	I	Se
4	4	13	III	ED	24	4	19	I	SI
10	3	56	I	Te		4	21	II	TI
15	4	45	II	ED		4	40	II	Se

MAY

1	4	24	II	SI	19	1	42	II	TI
2	3	24	I	ED		1	50	II	Se
3	2	57	I	Se		2	32	I	Te
	4	15	I	Te	21	3	8	III	Te
	4	38	II	OR	25	3	34	I	ED
9	2	28	IV	SI	26	1	24	IV	Se
10	2	35	I	SI		1	33	II	SI
	3	52	III	ER		2	8	I	TI
	3	53	I	TI		3	6	I	Se
11	3	27	I	OR		4	17	II	TI
17	4	12	III	ED	27	1	43	I	OR
	4	17	II	ED	28	1	38	II	OR
18	1	40	I	ED		1	41	III	Se
						3	29	III	TI

JUNE

2	2	43	I	SI		3	49	II	ED
	4	0	I	TI	19	1	43	I	OR
	4	10	II	SI	20	1	4	II	TI
3	3	35	I	OR		1	35	II	Se
4	0	44	I	Te		3	58	II	Te
	2	4	III	SI		4	4	IV	ER
	4	8	II	OR	22	0	11	III	ED
8	1	1	III	OR		3	50	III	ER
10	1	51	I	ED	25	2	51	I	SI
11	0	18	I	TI		3	56	I	TI
	1	15	II	ED	26	0	8	I	ED
	1	21	I	Se		3	32	I	OR
	2	35	I	Te		23	36	I	Se
12	2	44	IV	TI	27	0	39	I	Te
13	1	29	II	Te		1	18	II	SI
14	23	50	III	ER		3	29	II	TI
15	1	10	III	OD		4	12	II	Se
17	3	45	I	ED	28	23	44	IV	Te
18	0	58	I	SI	29	0	37	II	OR
	2	8	I	TI		4	11	III	ED
	3	14	I	Se					

JULY

d	h	m	Sat.	Phen.	d	h	m	Sat.	Phen.
3	1	34	III	TE		3	42	I	TI
	2	2	I	ED	19	0	19	I	ED
	23	13	I	SI		3	18	I	OR
4	0	10	I	TI		21	29	I	SI
	1	30	I	Se		22	8	I	TI
	2	27	I	Te		23	46	I	Se
	3	35	II	SI	20	0	25	I	Te
	23	46	I	OR		3	24	II	ED
6	2	58	II	OR		21	44	I	OR
7	1	56	IV	OD		22	22	III	OR
10	1	31	III	TI	21	22	27	II	SI
	1	39	III	Se		23	41	II	TI
	3	56	I	ED	22	1	21	II	Se
11	1	7	I	SI		2	34	II	Te
	1	56	I	TI	23	21	35	IV	OR
	3	24	I	Se	26	2	14	I	ED
	4	13	I	Te		23	23	I	SI
	22	25	I	ED		23	52	I	TI
12	1	33	I	OR	27	1	40	I	Se
	22	39	I	Te		2	9	I	Te
13	0	49	II	ED		23	29	I	OR
14	22	44	II	Se	28	1	42	III	OR
15	0	16	II	Te	29	1	3	II	SI
	3	3	IV	SI		1	57	II	TI
17	2	1	III	SI		3	57	II	Se
18	3	0	I	SI	30	22	57	II	OR
					31	21	13	IV	SI

AUGUST

1	0	49	IV	TI		22	27	II	Te
	2	6	IV	Se		22	28	II	Se
2	4	8	I	ED	17	19	42	IV	Te
3	1	17	I	SI		20	17	IV	Se
	1	36	I	TI	18	2	23	I	OD
	3	34	I	Se		23	29	I	TI
	3	53	I	Te	18	23	34	I	SI
	22	37	I	ED	19	1	47	I	Te
4	0	13	III	ED		1	52	I	Se
	1	13	I	OR		20	49	I	OD
	22	3	I	Se		23	13	I	ER
	22	19	I	Te	20	20	12	I	Te
5	3	40	II	SI		20	21	I	Se
	4	12	II	TI	21	2	46	II	OD
6	21	52	II	ED		21	23	III	TI
7	1	11	II	OR		22	2	III	SI
8	20	13	II	Te	22	0	58	III	Te
10	3	11	I	SI		1	39	III	Se
	3	20	I	TI		21	49	II	TI
11	0	32	I	ED		22	11	II	SI
	2	57	I	OR	23	0	42	II	Te
	4	13	III	ED		1	5	II	Se
	21	40	I	SI	25	4	6	I	OD
	21	46	I	TI		21	23	IV	OD
	23	57	I	Se	26	1	13	I	TI
12	0	3	I	Te		1	29	I	SI
	21	23	I	OR		3	30	I	Te
14	0	27	II	ED		3	47	I	Se
	3	25	II	OR		22	33	I	OD
	21	38	III	Se	27	1	8	I	ER
	21	41	III	Te		19	39	I	TI
15	19	34	II	TI		19	58	I	SI
	19	35	II	SI		21	56	I	Te

AUGUST—*Continued*

d	h	m	Sat.	Phen.	d	h	m	Sat.	Phen.
	22	15	I	Se		0	48	II	SI
28	19	37	I	ER		2	57	II	Te
29	0	41	III	TI		3	41	II	Se
	2	4	III	SI	31	21	51	II	ER
30	0	4	II	TI					

SEPTEMBER

19	1	53	III	ER		22	12	II	Se
2	2	57	I	TI	18	0	55	I	TI
	3	24	I	SI		1	43	I	SI
3	0	17	I	OD		22	15	I	OD
	3	3	I	ER	19	1	22	I	ER
	21	24	I	TI		19	22	I	TI
	21	53	I	SI		19	53	IV	TI
	23	41	I	Te		20	12	I	SI
4	0	10	I	Se		21	39	I	Te
	21	32	I	ER		22	29	I	Se
6	2	20	II	TI	20	0	41	IV	Te
7	20	25	II	OD		19	50	I	ER
8	0	28	II	ER	22	1	2	II	OD
8	23	54	III	ER	23	0	43	III	OD
9	19	36	II	SE		20	8	II	TI
10	2	2	I	OD		21	56	II	SI
	23	9	I	TI		23	0	II	Te
	23	48	I	SI	24	0	48	II	Se
11	1	26	I	Te	25	19	1	II	ER
	2	5	I	Se	26	0	2	I	OD
	20	29	I	OD		21	10	I	TI
	22	48	IV	ER		21	43	III	Se
	23	27	I	ER		22	7	I	SI
	19	53	I	Te		23	27	I	Te
	20	34	I	Se	27	0	24	I	Se
14	22	43	II	OD		18	29	I	OD
15	21	15	III	OD		21	46	I	ER
16	19	20	II	SI	28	18	53	I	Se
	20	40	II	Te	30	22	30	II	TI

OCTOBER

1	0	33	II	SI	8	0	55	II	TI
	1	22	II	Te	9	19	2	II	OD
2	21	38	II	ER	10	0	16	II	ER
3	21	25	III	Te		21	29	III	TI
	22	10	III	SI	11	19	18	II	Se
	22	59	I	TI		22	8	I	OD
4	0	3	I	SI	12	19	17	I	TI
	1	16	I	Te		20	27	I	SI
	20	18	I	OD		21	33	I	Te
	23	41	I	ER		22	44	I	Se
5	18	31	I	SI	13	20	5	I	ER
	19	43	I	Te	14	19	7	IV	OD
	20	48	I	Se		19	59	III	ER
6	22	8	IV	SI		23	55	IV	OR
16	21	31	II	O D		23	4	III	O D
18	19	4	II	SI	5	20	20	I	E R
	19	28	II	Te	8	18	21	III	SI
	21	54	II	Se		21	46	IV	TI
	23	59	I	O D		21	51	III	Se
19	21	8	I	TI	10	18	31	II	OD
	22	23	I	SI	11	21	19	I	TI
	23	25	I	Te		22	39	I	SI
20	18	27	I	OD	12	18	38	I	OD
	22	0	I	ER		19	0	II	Se
21	17	53	I	TE		22	15	I	ER
	18	54	III	OR	13	18	5	I	Te
	19	8	I	Se		19	25	I	Se
	20	26	III	ED	15	20	32	III	Te
22	0	0	III	ER		22	23	III	SI
23	21	7	IV	Se	17	18	53	IV	ED
25	19	7	II	TI		21	10	II	OD
	21	40	II	SI	19	18	47	II	SI
	21	58	II	Te		19	1	II	Te
26	23	1	I	TI		20	34	I	OD
27	18	52	II	ER		21	36	II	Se
	20	20	I	OD	20	17	45	I	TI
28	18	48	I	SI		19	4	I	SI
	19	8	III	OD		20	2	I	Te
	19	46	I	Te		21	21	I	Se
	21	4	I	Se	21	18	39	I	ER
	22	46	III	OR	22	21	3	III	TI
29	18	24	I	ER	25	21	12	IV	Te

NOVEMBER

					26	18	49	II	TI
						20	7	III	ER
1	17	50	III	Se		21	23	II	SI
	21	40	II	TI		21	40	II	Te
3	21	30	II	ER	27	19	43	I	TI
	22	14	I	OD		21	0	I	SI
4	19	24	I	TI	28	18	45	II	ER
	20	43	I	SI		20	34	I	ER
	21	41	I	Te	29	17	46	I	Se
	23	0	I	Se					

DECEMBER

3	19	7	III	OR		18	53	I	ER
	20	37	III	ED	20	20	11	I	TI
	21	30	II	TI	21	17	26	I	OD
4	17	45	IV	ER		17	42	III	Te
5	18	58	I	OD		18	28	II	SI
	21	24	II	ER		18	35	III	SI
6	17	25	I	SI		19	10	II	Te
	18	28	I	Te	22	18	3	I	Se
	19	42	I	Se	28	18	29	III	TI
10	19	45	III	OD		19	5	II	TI
12	18	43	II	OD		19	27	I	OD
	20	57	I	OD	29	17	32	IV	SI
13	18	11	I	TI		17	42	I	SI
	19	21	I	SI		18	59	I	Te
	20	28	I	Te		19	59	I	Se
14	18	1	III	Se	30	18	39	II	ER
	18	41	II	Se					

Jupiter's Satellites.—During the last four months of the year the configurations are given for the day 0. The times given in the *N.A.* make this necessary. The configurations for Sept. 30, Oct. 31, and Nov. 30 are given for Oct. 0, Nov. 0, and Dec. 0. This should cause no confusion to the thinking reader of the HANDBOOK. The configuration for the date Dec. 31, which was not given in the 1926 or 1927 *N.A*, was found by a graphical method.

METEORS AND SHOOTING STARS

On almost any clear night any one observing the sky for a few minutes will see one or more shooting stars. They are particularly numerous during the autumn months and on account of the rotation of the earth are better seen during the early morning hours than in the evening.

At certain times there are striking displays, located in particular portions of the sky. These are considered to be due to *meteor swarms*. The principal ones are given in the following table.

Name of Shower	Duration	Greatest Display	Radiant Point R.A.		Decl.
			h	m	°
Quadrantids	Dec. 28-Jan. 9	Jan. 3	15	20	+ 53
Aurigids	Feb. 7-23	Feb. 10	5	0	+ 41
Lyrids	April 16-22	April 21	18	4	+ 33
η Aquarids	April 29-May 8	May 4-6	22	32	- 2
Herculids	May 13-29	May 24	16	36	+ 30
Scorpiids	May-June-July	June 4	16	48	- 21
Sagittids	June-July	July 28	20	12	+ 24
Capricornids	July-Aug.	July 22	20	20	- 12
δ Aquarids	July 18-Aug. 12	July 28-31	22	36	- 11
α β Perseids	July-Aug.-Sept.	Aug. 16	3	12	+ 43
Perseids	July 8-Aug. 25	Aug. 11-12	3	4	+ 57
Draconis	Aug. 18-25	Aug. 23	19	24	+ 61
ϵ Perseids	Aug.-Sept.	Sept. 15	4	8	+ 35
Arietids	Aug.-Sept.-Oct.	Sept. 21	2	4	+ 19
	Sept.-Oct.	Oct. 15	2	4	+ 9
Orionids	Oct. 9-29	Oct. 19	6	8	+ 15
μ Ursids Maj.	Oct.-Nov.-Dec.	Nov. 16-25	10	16	+ 41
Taurids	November	Nov. 21	4	12	+ 23
Leonids	Nov. 9 20	Nov. 14-15	10	0	+ 23
Andromedes	Nov. 20-30	Nov. 20-23	1	40	+ 43
Geminids	Dec. 1-14	Dec. 11	7	12	+ 33

Of these the chief ones are the Perseids, the Leonids and the Andromedes.

The Perseids furnish an annual display of considerable strength, and are perhaps the best known of all. The swarm appears to have an orbit identical with that of the great Comet 1862 III., the period of which is 120 years.

The Leonids follow in the orbit of Tempel's Comet of 1866, of period 33 years.

The Andromedes are thought to be remnants of Biela's Comet. They were especially numerous in 1872, 1885, 1898, but in recent years have not been so prominent.

The above table was prepared for the HANDBOOK by Mr. W. F. Denning, F.R.A.S., of Bristol, England; and for further interesting information regarding this subject (and almost any other subject in which the amateur is interested) reference may be made to his *Telescopic Work for Starlight Evenings*.

PRINCIPAL ELEMENTS OF THE SOLAR SYSTEM

Name	Mean Distance from Sun		Sidereal Period		Mean Diameter Miles	Mass	Density	Volume	Axial Rotation
	⊕ =1	Millions of Miles	Mean Solar Days	Years		⊕ =1	Water =1	⊕ =1	
☿ Mercury	0.387	36.0	87.97	0.24	3009	0.0556	4.7(?)	0.055	88d
♀ Venus	0.723	67.2	224.70	0.62	7575	0.817	4.94	0.88	225d
⊕ Earth	1.000	92.9	365.26	1.00	7917.8	1.000	5.55	1.000	23h 56m 4s
♂ Mars	1.524	141.5	686.97	1.88	4216	0.108	3.92	0.151	24h 37m 23s
♃ Jupiter	5.203	483.3	4332.58	11.86	86728	318.4	1.32	1314	9h 55m ±
♄ Saturn	9.539	886.1	10759.2	29.46	72430	95.2	0.72	765	10h 14m ±
♅ Uranus	19.191	1782.8	30685.9	84.02	30878	14.6	1.22	59	10h 45m ±
♆ Neptune	30.071	2793.4	60187.6	164.79	32932	16.9	1.11	72	?
☉ Sun	....	....	....	....	864392	333400	1.39	1301100	25d 7h 48m±
☾ Moon	From ⊕238,857 mls.		27.32	0.075	2160	0.0123	3.39	0.020	27d 7h 43m 11.5s

SATELLITES OF THE SOLAR SYSTEM

Name	Stellar Magnitude.	Mean Distance in Miles	Sidereal Period d. h. m. s.	Discoverer	Date
THE EARTH					
The Moon..	..	238,840	27 7 43 11		
MARS					
1. Phobos.....	14	5,850	7 39 15	Asaph Hall....	Aug. 17, 1877
2. Deimos....	13	14,650	1 6 17 54	Asaph Hall....	Aug. 11, 1877
JUPITER					
5. (Nameless).	13	112,500	11 57 23	Barnard.....	Sept. 9, 1892
1. Io.....	6½	261,000	1 18 27 33	Galileo.....	Jan. 7, 1610
2. Europa....	6½	415,000	3 13 13 42	Galileo.....	Jan. 8, 1610
3. Ganymede .	6	664,000	7 3 42 33	Galileo.....	Jan. 7, 1610
4. Callisto....	7	1,167,000	16 16 32 11	Galileo.....	Jan. 7, 1610
6. (Nameless).	14	7,372,000	266·00 d.	Perrine	Dec. 1904
7. (Nameless).	16	7,567,900	276·67 d.	Perrine	Jan. 1905
8. (Nameless).	17	15,600,000	789 d.	Melotte.....	Jan. 1908
9. (Nameless).	19	18,900,000	3 years	Nicholson.....	July 1914
SATURN					
1. Mimas.....	15	117,000	22 37 6	W. Herschel...	July 18, 1789
2. Enceladus..	14	157,000	1 8 53 7	W. Herschel...	Aug. 29, 1789
3. Tethys.....	11	186,000	1 21 18 26	J. D. Cassini...	Mar. 21, 1684
4. Dione.....	11	238,000	2 17 41 9	J. D. Cassini...	Mar. 21, 1684
5. Rhea.....	10	332,000	4 12 25 12	J. D. Cassini...	Dec. 23, 1672
6. Titan.....	9	771,000	15 22 41 23	Huygens.....	Mar. 25, 1655
7. Hyperion...	16	934,000	21 6 39 27	G. P. Bond....	Sept. 16, 1848
8. Iapetus....	11	2,225,000	79 7 54 17	J. D. Cassini...	Oct. 25, 1671
9. Phoebe.....	17	8,000,000	546.5 d.	W.H.Pickering	1898
10. Themis.....	17	906,000	20 20 24 0	W.H.Pickering	1905
URANUS					
1. Ariel.....	15	120,000	2 12 29 21	Lassell.....	Oct. 24, 1851
2. Umbriel....	16	167,000	4 3 27 37	Lassell.....	Oct 24, 1851
3. Titania.....	13	273,000	8 16 56 29	W. Herschel...	Jan 11, 1787
4. Oberon.....	14	365,000	13 11 7 6	W. Herschel...	Jan. 11, 1787
NEPTUNE					
1. (Nameless).	13	221,500	5 21 2 44	Lassell.....	Oct. 10, 1846

DOUBLE STARS

Close scrutiny of the sky reveals the fact that many of the stars are composed of two or more components, that is, they are *double* or *multiple* stars. Over 15,000 such objects have been discovered.

A star may appear double in two ways. First, one may just happen to be nearly in line with the other as seen from the earth. Second, the two bodies may be physically connected, each revolving about their common centre of gravity. The former are called *optical doubles*, the latter *binary stars*. In the course of time the binaries exhibit a change in the distance between the components and also in the direction of the line joining them, that is, in the position angle.

While the close pairs require a large instrument for their detection, there are many within the range of small instruments. Such observations also allow one to determine the quality of the instrument employed. It has been found that a telescope having an objective 1 inch in diameter should be able to distinguish two stars 4″.56 apart, and the resolving power is inversely proportional to the diameter of the objective. Thus a telescope of 3-inch aperture should separate stars 1/3 of 4″.56, or 1″.52 apart; for one of aperture 10 inches, stars 1/10 of 4″.56, or 0″.45 apart should be seen separate; and so on. With the Yerkes refractor, of aperture 40 inches, a double star with distance 0″.11 can be detected.

In choosing a double star for testing a telescope care should be taken not to select a binary, with varying distance between its components.

The stars in the following short lists can be identified from almost any star atlas, and observation of them will prove of great interest to the amateur.

I. THE MOST LUMINOUS PAIRS

Star	Mags.	Dist. ″	Star	Mags.	Dist. ″
Mizar....	2.4, 4.0	14.5	γ Leonis....	2.5, 4.0	3.0
Castor...	2.5, 3.0	5.6	β Scorpii...	2.5, 5.5	13.0
γ Virginis .	3.0, 3.2	5.0	θ Serpentis.	4.4, 6.0	21.0
γ Arietis...	4.2, 4.5	8.9	44i Boötis....	5.0, 6.0	4.8
ζ Aquarii..	3.5, 4.4	3.5	π Boötis....	4.3, 6.0	6.0

II. THE FINEST COLORED PAIRS

Star	Magnitudes	Distance ″	Colors
γ Andromedæ..	2.2, 5.5	10	Orange, Green.
α Canum Venat.	3.2, 5.7	20	Golden, Lilac.
β Cygni.....	3.3, 5.5	34	Golden, Sapphire.
ε Boötis.....	2.4, 6.5	2.9	Golden, Sapphire.
95 Herculis.....	5.5, 5.8	6	Golden, Azure.
α Herculis.....	4, 5.5	4.7	Ruby, Emerald.
γ Delphini.....	3.4, 5	11	Golden, Bluish Green.
32 Eridani.....	4.7, 7	6.7	Topaz, Bright Green.
ε Hydræ.....	3.5, 7.5	3.5	Yellow, Blue.
ζ Lyræ.....	4.5, 5.5	44	Yellow, Green.
ι Cancri.....	4.5, 5	30	Pale Orange, Blue.
o Cygni.....	4.3, 7.5, 5.5	337.8, 106.8	Yellow, Blue.
24 Coma Beren..	5.6, 7	21	Orange, Lilac.
o Cephei.....	5.4, 8	2.5	Golden, Azure.
94 Aquarii.....	5.5, 7.5	11	Rose, Greenish.
39 Ophiuchi.....	5.7, 7.5	12	Yellow, Blue.
41 Aquarii.....	5.8, 8.5	4.8	Yellow Topaz, Blue.
2 Canum Venat	6, 9	11	Golden, Azure
52 Cygni.....	4.6, 9	7	Orange, Blue.
55 Piscium.....	6, 9	6	Orange, Blue.
κ Geminorum..	3.8, 9	9	Orange, Blue.
ρ Orionis.....	5.1, 9	6.8	Orange, Blue.
54 Hydræ.....	5.2, 8	9	Yellow, Violet.
η Persei.....	4.2, 8.5	28	Yellow, Blue.
ϕ Draconis.....	4.8, 6	31	Yellow, Lilac.
o Draconis.....	4.7, 8.5	32	Golden, Lilac.
η Cassiopeiæ...	4.7, 7	5.7	Golden, Purple.
23 Orionis.....	5.4, 7	32	White, Blue.
δ Herculis.....	3.6, 8	18	White, Violet.
o Capricorni...	6.3, 7	22	Bluish.
17 Virginis.....	6.5, 7	20	Rose.
ξ Boötis.....	4.5, 6.5	4.2	Reddish Yellow.

The colors given above are according to Flammarion. For slight variations and also for a much longer list consult Webb's "Celestial Objects."

VARIABLE STARS

The study of variable stars is especially suited to amateur observers. In it they can make observations of permanent scientific value, since all the brighter and more interesting objects are within the range of modest instruments. An ordinary field glass or a small telescope is all that is required.

In recent years there has been organized the American Association of Variable Star Observers, with a working membership of about 70, and reports of observations are published monthly in *Popular Astronomy*. The recording secretary is Leon Campbell, Harvard Observatory, Cambridge, Mass., and additional observers are desired.

The *novae* or "new" stars comprise one class of variables, and all the recent brighter objects of this sort have been discovered by amateurs. The long-period variable Omicron Ceti, or *Mira*, was discovered by Fabricius in 1596, while Algol, the best-known variable of short-period, was discovered by Goodricke, a deaf mute, in 1783.

Several attempts have been made to classify the variable stars; but a scientific system of classification, in harmony with the chief deductions of theory as well as the facts of observation, is still wanting. The best known system is that formulated by Professor E. C. Pickering in 1880, and reproduced (with slight additions) in his "Provisional Catalogue of Variable Stars" (1903). This includes five classes, two of which are subdivided, as follows:—

	EXAMPLES
I. New or temporary stars	Nova, 1572
II. Variables of long period:	
a. Ordinary stars of this class. . . . *o*	Ceti
b. Stars subject to "occasional sudden and irregular outbursts of light which gradually diminishes"	U Geminorum
III. "Variables of small range or irregular variation, according to laws as yet unknown" . . . *a*	Orionis
IV. Variables of short period:	
a. "Ordinary" cases . . . *δ*	Cephei
b. Stars with "minima successively bright and faint" . . . *β*	Lyræ
V. Stars of the Algol type . . . *β*	Persei

Name	Limiting Mags.	Period	Class	Discoverer
		d. h. m.		
U Cephei	7.0– 9.2	2 11 49.6	V.	W. Ceraski....1880
o Ceti	1.7– 9.5	331.7	II.	Fabricius....1596
ρ Persei	3.4– 4.2	Irr.	III.	Schmidt....1854
6.1904 Cephei	8.6– 9.1	32.3	V.	Blajko....1904
β Persei (Algol)	2.1– 3.2	2 20 48.9	V.	Montanari....1669
λ Tauri	3.3– 4.2	3 22 52.2	V.	Baxendell....1848
W Eridani	8.1–<12.5	369	II.	Fleming....1898
RW Tauri	8–11	2 18 27.2	V.	Fleming....1905
R Leporis	6–8 ?	436.1	II.	Schmidt....1855
α Orionis	1– 1.4	Irr.	III.	J. Herschel....1840
U Orionis	5.8–12.3	375	II.	Gore....1885
η Geminorum	3.2– 4.2	231.4	III.	Schmidt....1865
T Monocerotis	5.7– 6.8	27.0	IV.	Gould....1871
ζ Geminorum	3.8– 4.3	10 3 41.5	IV.	Schmidt....1847
R Geminorum	6.6–13.3	370.2	II.	Hind....1848
R Canis Maj	5.7– 6.3	1 3 15.8	V.	Sawyer....1887
S Cancri	8.0–10.2	9 11 37.8	V.	Hind....1848
S Antliæ	6.3– 6.8	0 7 46.8	IV.	Paul....1888
W Ursæ Maj	7.9– 8.6	0 4 0.2	V.?	Müller & Kempf..1903
R Leonis	4.6–10.5	312.8	II.	Koch....1782
R Hydræ	3.5– 9.7	425.1	II.	Montanari....1670
δ Libræ	5.0– 6.2	2 7 51.4	V.	Schmidt....1859
α Herculis	3.1– 3.9	Irr.	III.	W. Herschel....1795
U Ophiuchi	6.0– 6.7	0 20 7.7	V.	Gould....1871
X Sagittarii	4.4– 5.4	7 0 17.1	IV.	Schmidt....1866
R Scuti	4.8– 7.8	Irr.	III.	Pigott....1795
β Lyræ	3.4– 4.1	12 21 59.2	IV.	Goodricke....1784
χ Cygni	4.5–13.5	406.0	II.	Kirch....1686
η Aquilæ	3.7– 4.5	7 4 14.0	IV.	Pigott....1784
S Sagittæ	5.5– 6.1	8 9 11.8	IV.	Gore....1885
14.1904 Cygni	10.7–11.6	0 3 14.2	IV.	Ceraski....1904
Y Cygni	7.1– 7.9	1 11 57.5	V.	Chandler....1886
δ Cephei	3.7– 4.6	5 8 47.7	IV.	Goodricke....1784
U Pegasi	9.3– 9.9	0 8 59.7	IV.	Chandler....1894

THE DISTANCES OF THE STARS

The measurement of the distances of the stars is one of the most important problems in astronomy. Without such information it is impossible to form any idea as to the magnitude of our universe or the distribution of the various bodies in it.

The parallax of a star is the apparent change of position in the sky which the star would exhibit if one would pass from the sun to the earth at a time when the line joining earth to sun is at right angles to the line drawn to the star; or, more accurately, it is the angle subtended by the semi-major axis of the earth's orbit when viewed perpendicularly from the star. Knowing the parallax, the distance can be deduced at once.

For many years attempts were made to measure stellar parallaxes, but without success. The angle to be measured is so exceedingly small that it was lost in the unavoidable instrumental and other errors of observation. The first satisfactory results were obtained by Bessel, who in 1838, by means of a heliometer, succeeded in determining the parallax of 61 Cygni, a 6th magnitude star with a proper motion of 5″ a year. On account of this large motion the star was thought to be comparatively near to us, and such proved to be the case. At about the same time Henderson, at the Cape of Good Hope, from meridian-circle observations, deduced the parallax of Alpha Centauri to be 0″.75. For a long time this was considered to be the nearest of all the stars in the sky, but in 1913 Innes, director of the Union Observatory, Johannesburg, South Africa, discovered a small 11th mag. star, 2° 13′ from Alpha Centauri, with a large proper motion, and to which, from his measurements, he assigned a parallax of 0″.78. Its brightness is only 1/20,000 that of Alpha Centauri. In 1916 Barnard discovered an 11th mag. star in Ophiuchus with a proper motion of 10″ per year, the greatest on record, and its parallax is about 0″.53. It is believed to be next to Alpha Centauri in distance from us.

The distances of the stars are so enormous that a very large unit has to be chosen to express them. The one generally used is the light-year, that is, the distance travelled by light in a year, or 186,000x60x60x24x365¼ miles. A star whose parallax is 1″ is distant 3.26 light years; if the parallax is 0″.1, the distance is 32.6 l.-y.; if the parallax is 0″.27 the distance is 3.26÷.27 = 12 l.-y. In other words, the distance is inversely proportional to the parallax. In recent years the word *parsec* has been introduced to express the distances of the stars. A star whose distance is 1 parsec is such that its *par*-allax is 1 *sec*-ond. Thus 1 parsec is equivalent to 3.26 l.-y., 10 parsecs = 32.6 l.-y., etc.

In later times much attention has been given to the determination of parallaxes, chiefly by means of photography, and now several hundred are known with tolerable accuracy.

The following list, prepared by Mr. J. A. Pearce, gives some of the latest values obtained.

	Name	R.A. (1900) h	m	Decl. (1900) ′	″	Vis. Mag. Harvard	Parallax ″	Distance Light Years
	Prox. Cen	14	22.9	−62	15	10.5	0.78	4.08
*	αCentauri	14	32.8	−60	25	0.33	.759	4.30
	Barnard	17	52.9	+ 4	28	9.67	.533	6.12
	Lal. 21185	10	57.9	+36	38	7.60	.403	8.09
*	αCan. Maj	6	40.7	−16	35	−1.58	.376	8.67
	Innes	11	12.0	−57	2	(12)	.339	9.62
	C.Z. 5h 243	5	7.7	−44	59	8.3	.319	10.22
	τCeti	1	39.4	−16	28	3.65	.318	10.25
*	αCan. Min	7	34.1	+ 5	29	0.48	.312	10.45
	εErid	3	28.2	− 9	48	3.81	.311	10.48
*	61 Cygni	21	2.4	+38	15	5.57	.306	10.65
	Lac. 9352	22	59.4	−36	26	7.44	.292	11.16
*	Σ2398	18	41.8	+59	29	9.33	.287	11.36
	εIndi	21	55.7	−57	12	4.74	.284	11.48
*	Groom. 34	0	12.5	+43	27	7.98	.281	11.60
*	Krüger 60	22	24.5	+57	12	9.64	.262	12.44
	Lac. 8760	21	11.4	−39	15	6.65	.251	12.99
	Oe. Arg. 17415-6	17	37.0	+68	26	9.2	.247	13.20
	Van Maanen	0	43.9	+ 4	55	12.3	.246	13.25
	Gould 32416	23	59.5	−37	51	8.5	.203	15.87
	αAquilae	19	45.9	+ 8	36	0.89	.200	16.30
	O^2 Erid	4	10.7	− 7	49	4.48	.198	16.5
*	70 Oph	18	10.4	+ 2	31	4.28	.192	17.0
	Cordoba 32416	23	59.5	−37	51	8.3	.191	17.1
	+HR 7703	20	4.6	−36	21	5.34	.190	17.2
*	ηCassiop	0	43.0	+57	17	3.64	.184	17.7
	Alb. 8164	23	44.0	+ 1	52	8.7	.183	17.8
	σDrac	19	32.6	+69	29	4.78	.182	17.9
	HR 8832	23	8.5	+56	37	5.65	.177	18.4
*	HR 6416	17	11.5	−46	32	5.58	.175	18.6
*	A Oph	17	9.2	−26	27	5.29	.174	18.7
*	HR 6426	17	12.1	−34	53	5.89	.170	19.2
	eErid	3	15.9	−43	27	4.30	.152	21.5
*	ξUrs. Maj	11	12.9	+32	6	4.41	.150	21.7
	δErid	3	38.5	−10	6	3.72	.142	23.0
*	αLyrae	18	33.6	+38	41	0.14	.134	24.3
	βHydri	0	20.5	−77	49	2.90	.133	24.5
	αPis. Aus	22	52.1	−30	9	1.29	.128	25.5
	χDrac	18	22.9	+72	41	3.69	.127	25.7
*	ζHerc	16	37.5	+31	47	3.00	.116	28.1
*	μHerc	17	42.5	+27	47	3.48	.116	28.1
	βLeonis	11	44.0	+15	8	2.23	.109	29.9
	αBootis	14	11.1	+19	42	0.24	.105	31.1
	βVirg	11	45.5	+ 2	20	3.80	.105	31.1
	βCan. Ven	12	29.0	+41	54	4.32	.104	31.4
*	85 Peg	23	56.8	+26	34	5.85	.101	32.3
	βGemin	7	39.2	+28	16	1.21	.095	34.3
	αTauri	4	30.2	+16	18	1.06	.064	50.9
*	αAurigae	5	9.3	+45	54	0.21	.063	51.8
	αLeonis	10	3.0	+12	27	1.34	.045	72.5
	αErid	1	34.0	−57	45	0.60	.041	79.5
*	Urs. Min	1	22.6	+88	46	2.12	.041	79.5
	αCentauri	13	56.8	−59	53	0.86	.027	120.7
	αOrionis	5	49.8	+ 7	23	0.92	.022	148.2
	αScorp	16	23.3	−26	13	1.22	.019	171.6
	αCygni	20	38.0	+44	35	1.33	.012	271.7
	αCarinae	6	21.7	−52	38	−0.86	.007	465.7

*Double or multiple star; magnitude of brighter component given.

THE BRIGHTEST STARS

Their Magnitudes, Types, Proper Motions, Distances and Radial Velocities

Prepared by W. E. HARPER

The accompanying table contains the chief known facts regarding 260 stars brighter than apparent magnitude 3.51 as listed in *Harvard Annals*, Volume 50. The position of the star for 1900 is given in the second and third columns. The fourth and fifth columns give the apparent visual magnitude and type taken from the same publication. In a few cases the type is changed to conform with a later determination.

The parallaxes are taken from Schlesinger's Advance Copy of Catalogue of Parallaxes, 1924 Edition, and for such stars the proper motions are copied from the same source. The remaining proper motions were computed using the abbreviated μ_α and μ_δ as they appeared in the HANDBOOK for 1915, wbere this table first appeared, and are not necessarily correct to the third decimal place. Three or four spectroscopic parallaxes have been added to those given in Schlesinger's catalogue. The small letter *s* following the parallax indicates a spectroscopic determination has also been made. The distance is also given in light years in the eighth column as to the lay mind that seems a fitting unit. The absolute magnitude or the magnitude the star would appear to have if it were at a distance of 32.6 light years is given in the ninth column. At that distance the sun would appear as a star of magnitude 5.5. The radial velocities taken from Voûte's list supplemented from our observatory card catalogue is given in the last column. Those starred indicate that the star is a spectroscopic binary for which the velocity of the system is given. Where only the whole number appears the velocity may be regarded as approximate. There are 74 starred out of 235 radial velocities set down or one in three of the bright stars is a spectroscopic binary.

NOTE.—Some of the parallaxes in this table differ slightly from those given in the previous table. The reader should be not surprised at this, and it has not been thought worth while to harmonize the two tables.—EDITOR.

Star	R.A. 1900	Decl. 1900	Mag.	Type	Proper Motion	Parallax	Distance in Light Years	M	Rad. Vel.
	h m	° ′							km./sec.
α Andromedae	0 3	+28 32	2.2	Aop	.207	.....	.....	.....	−13.0*
β Cassiopeiae	4	+58 36	2.4	F5	.561	.071 s	46	1.7	+12.8
γ Pegasi	8	+14 38	2.9	B2	.010	.....	.....	.....	+ 7. *
β Hydri	20	−77 49	2.9	G0	2.243	.141	23	3.6	+22.2
α Phoenicis	21	−42 51	2.4	K0	.446	.....	.....	.....	+75.8*
δ Andromedae	34	+30 19	3.5	K2	.167	.026 s	125	0.6	− 5. *
α Cassiopeiae	35	+55 59	2.2–2.8	K0	.062	.016 s	204	−1.8	− 3.0
β Ceti	39	−18 32	2.2	K0	.230	.042 s	78	0.3	+13.5
‖γ Cassiopeiae	51	+60 11	2.2	B0p	.031	.036	91	0.0	− 4.7
β Phoenicis	1 2	−47 15	3.4	K0	.042	.....	.....	.....	− 0.6
β Andromedae	4	+35 5	2.4	M0	.219	.045 s	72	0.7	− 2.
δ Cassiopeiae	19	+59 43	2.8	A5	.306	.....	.....	.....	+ 9.
‖α Ursae Minoris	23	+88 46	2.1	F8	.043	.007 s	466	−3.7	−14.8*
γ Phoenicis	24	−43 50	3.4	K5	.222	.....	.....	.....	+26. *
α Eridani	34	−57 44	0.6	B5	.093	.049 s	67	−1.0	
ϵ Cassiopeiae	47	+63 11	3.4	B3	.043	.001 s	3260	−6.6	− 7.4
β Arietis	49	+20 19	2.7	A5	.150	.064 s	51	1.7	− 0.6*
α Hydri	56	−62 3	3.0	F0	.256	.....	.....	.....	− 5.
‖γ Andromedae	58	+41 51	2.3	K0	.073	.007 s	466	−3.5	−10.9
α Arietis	2 2	+22 59	2.2	K2	.242	.033 s	99	−0.2	−14.3
β Trianguli	4	+34 31	3.1	A5	.161	.014	262	−1.2	.....*
o Ceti	14	− 3 26	1.7–9.6	M6e	.239	.062	53	0.7	+63.9
‖θ Eridani	54	−40 42	3.4	A2	.071	.....	.....	.....	+20.
α Ceti	57	+ 3 42	2.8	M1	.080	.011 s	296	−2.0	−25.8
γ Persei	58	+53 7	3.1	Gp	.012	.012 s	272	−1.5	+ 2. *
ρ Persei	59	+38 27	3.4–4.2	M6	.176	.038 s	86	1.3	+28.6
β Persei	3 2	+40 34	0.1–3.2	B8	.011	.....	.....	.....	+ 5. *
α Persei	17	+49 30	1.9	F5	.041	.015 s	217	−2.2	− 2.4
δ Persei	36	+47 28	3.1	B5	.047	.005 s	652	−3.4	+ 0.7
‖η Tauri	41	+23 48	3.0	B5p	.053	.007 s	466	−2.8	+15.
ζ Persei	48	+31 55	2.9	B1	.023	− .003 s	3260 :	−7.1	+21.2
γ Hydri	49	−74 33	3.2	Ma	.128	.....	.....	.....	+16.8
‖ϵ Persei	51	+39 43	3.0	B1	.041	− .012 s	3260 :	−7.0	.....*
γ Eridani	53	−13 47	3.2	K5	.133	.018 s	181	−0.5	+62.2
λ Tauri	55	+12 12	3.3–4.2	B3	.015	− .008	3260 :	−6.7	+13.6*
α Reticuli	4 13	−62 43	3.4	G5	.069	.....	.....	.....	+35.4

Star	R.A. 1900	Decl. 1900	Mag.	Type	Proper Motion	Parallax	Distance in Light Years	M	Rad. Vel.
	h m	° ′							km./sec.
α Tauri	4 30	+16 18	1.1	K5	.205	.057 s	57	−0.1	+54.5
α Doradus	32	−55 15	3.5	A0p	.003	.....	.....	.....	+26.
π^3 Orionis	44	+ 6 47	3.3	F8	.474	.136 s	24	4.0	+24.7
ι Aurigae	50	+33 0	2.9	K2	.030	.018 s	181	−0.8	+18.5
ϵ Aurigae	55	+43 41	3.4–4.1	F5p	.015	.002 s	1630	−5.0	− 9. *
η Aurigae	5 0	+41 6	3.3	B3	.082	.014 s	233	−1.0	+ 3.0
ϵ Leporis	1	−22 30	3.3	K5	.074	.022 s	148	0.0	+ 1.1
β Eridani	3	− 5 13	2.9	A3	.117	.052 s	63	1.5	− 8.
μ Leporis	8	−16 19	3.3	A0p	.053	.....	.....	.....	+28.0
$\|\|\alpha$ Aurigae	9	+45 54	0.2	G0	.439	.075 s	43	−0.4	+30.2*
$\|\|\beta$ Orionis	10	− 8 19	0.3	B8p	.005	.006	543	−5.8	+22.6*
$\|\|\eta$ Orionis	19	− 2 29	3.4	B1	.000	.....	.....	.....	+35.5*
γ Orionis	20	+ 6 16	1.7	B2	.019	.019 s	172	−1.9	+19.
β Tauri	20	+28 31	1.8	B8	.180	.024 s	136	−1.3	+11.
β Leporis	24	−20 50	3.0	G0	.095	.004 s	815	−4.0	−13.7
$\|\|\delta$ Orionis	27	− 0 22	2.4	B0	.006	.009 s	362	−2.8	+17.6*
α Leporis	28	−17 54	2.7	F0	.006	.014 s	233	−1.6	+24.6
$\|\|\iota$ Orionis	31	− 5 59	2.9	Oe5	.000	.....	.....	.....	+21.3*
ϵ Orionis	31	− 1 16	1.8	B0	.004	.005 s	652	−3.7	+26.3
ζ Tauri	32	+21 5	3.0	B3p	.028	−.001 s	3260:	−7.2	+16.4*
$\|\|\zeta$ Orionis	36	− 2 0	1.8	B0	.012	−.019 s	3260:	−8.2	+17.9
α Columbae	36	−34 8	2.8	B5p	.040	.....	.....	.....	.....
κ Orionis	43	− 9 42	2.2	B0	.009	.029 s	112	2.5	+19.
β Columbae	47	−35 48	3.2	K0	.397	.....	.....	.....	+89.2
α Orionis	50	+ 7 23	1.0–1.4	M1	.032	.017 s	192	−2.8	+21.3*
β Aurigae	52	+44 56	2.1	A0p	.046	.034 s	96	−0.2	−19. *
$\|\|\theta$ Aurigae	53	+37 12	2.7	A0p	.106	.016 s	204	−1.3	+28.5
η Geminorum	6 9	+22 32	3.2–4.2	M2	.062	.014 s	233	−1.1	+20. *
μ Geminorum	17	+22 34	3.2	M3	.129	.016 s	204	−0.8	+55.2
β Can. Majoris	18	−17 54	2.0	B1	.003	.012 s	272	−2.6	+33. *
α Carinae	22	−52 38	−0.9	F0	.022	.005 s	652	−7.4	+20.2
γ Geminorum	32	+16 29	1.9	A0	.066	.043 s	76	0.1	−12.3*
ν Puppis	35	−43 6	3.2	B8	.020	.....	.....	.....	+26.0*
ϵ Geminorum	38	+25 14	3.2	G5	.020	.007 s	466	−2.6	+ 9.5
ξ Geminorum	40	+13 0	3.4	F5	.230	.048 s	68	1.8	+26.7
$\|\|\alpha$ Can. Majoris	41	−16 35	−1.6	A0	1.315	.371 s	9	1.2	− 7.4*
α Pictoris	47	−61 50	3.3	A5	.271	.....	.....	.....	.....
τ Puppis	47	−50 30	2.8	K0	.094	.....	.....	.....	+37. *

Star	R.A. 1900	Decl. 1900	Mag.	Type	Proper Motion	Parallax	Distance in Light Years	M	Rad. Vel.
	h m	° ′							km./sec.
||ε Can. Majoris	6 55	−28 50	1.6	B1	.000	.....	.....	.....	+28.2
ζ Geminorum	58	20 43	3.7–4.3	G0p	.007	.005 s	652	−2.8	+ 6.8*
o^2 Can. Majoris	59	−23 41	3.1	B5p	.000	.....	.....	.....	.....
δ Can. Majoris	7 4	−26 14	2.0	G2p	.005	.010	326	−2.9	+34. *
L ^{2}Puppis	10	−44 29	3.4–6.2	Md	.334	.....	.....	.....	+52.6
π Puppis	14	−36 55	2.7	K5	.012	.....	.....	.....	+16.3
β Can. Minoris	22	+ 8 29	3.1	B8	.063	.020 s	163	−0.4	.....
σ Puppis	26	−43 6	3.3	K5	.192	.....	.....	.....	+87.3
||$α_2$ Geminorum	28	+32 6	2.0	A0	.201	.077 s	42	1.4	+ 6.2*
$α_1$ Geminorum	28	+32 6	2.8	A0	.209	.....	.....	.....	− 1.0*
α Can. Minoris	34	+ 5 29	0.5	F5	1.242	.312 s	10	3.0	− 4.3
β Geminorum	39	+28 16	1.2	K0	.623	.101 s	32	1.2	+ 3.6
ξ Puppis	45	−24 37	3.5	G6p	.007	.003 s	1087	−4.2	+ 4.2
ζ Puppis	8 0	−39 43	2.3	Od	.036	.....	.....	.....	.....
ρ Puppis	3	−24 1	2.9	F5	.097	.028 s	116	0.1	+46.
||γ Velorum	6	−47 3	2.2	Oap	.000	.....	.....	.....	.....
||ε Carinae	8 20	−59 11	1.7	K0	.032	.....	.....	.....	+11.7
o Urs. Majoris	22	+61 3	3.5	G0	.166	− .004 s	3260:	−6.5	+20.3
||ε Hydrae	41	+ 6 47	3.5	F8	.193	.015 s	217	−0.6	+37.2*
δ Velorum	42	−54 20	2.0	A0	.093	.....	.....	.....	.....
ζ Hydrae	50	+ 6 20	3.3	K0	.101	.014 s	233	−1.0	+23.0
ι Urs. Majoris	52	+48 26	3.1	A5	.500	.070 s	47	2.3	+ 8.
λ Velorum	9 4	−43 2	2.2	K5	.022	.....	.....	.....	+18.8
β Carinae	12	−69 18	1.8	A0	.192	.....	.....	.....	−16.0
ι Carinae	14	−58 51	2.2	F0	.023	.....	.....	.....	+13.1
α Lyncis	15	+34 49	3.3	K5	.214	.002 s	1630	−5.1	+38.5
κ Velorum	19	−54 35	2.6	B3	.017	.....	.....	.....	+21.9*
α Hydrae	23	− 8 14	2.2	K2	.036	.006 s	543	−3.9	− 4.0
θ Urs. Majoris	26	+52 8	3.3	F8p	1.096	.056 s	58	2.0	+15.8
N Velorum	28	−56 36	3.0	K5	.041	.....	.....	.....	−13.9
ε Leonis	40	+24 14	3.1	G0p	.045	− .001 s	3260:	−6.9	+ 5.1
||υ Carinae	45	−64 36	3.1	F0	.062	.....	.....	.....	+13.2
α Leonis	10 3	+12 27	1.3	B8	.244	.058 s	56	0.1	.....
q Carinae	14	−60 50	3.4	K5	.045	.....	.....	.....	+ 9.2
||γ Leonis	14	+20 21	2.3	K0	.347	.004 s	815	−4.7	−36.
μ Urs. Majoris	16	+42 0	3.2	K5	.082	.034 s	96	0.9	−22.

Star	R.A. 1900	Decl. 1900	Mag.	Type	Proper Motion	Parallax	Distance in Light Years	M	Rad. Vel.
	h m	° ′							km./sec.
θ Carinae	10 39	−63 52	3.0	B0	.063	.....	.....	.....	+16.
η Carinae	41	−59 10	1.0–7.4	Pec	.000	.....	.....	.....	.....
μ Velorum	42	−48 54	2.8	G5	.084	.....	.....	.....	+ 7.1
ν Hydrae	45	−15 40	3.3	K0	.214	.035 s	93	1.0	− 0.7
β Urs. Majoris	56	+56 55	2.4	A0	.089	.047 s	69	0.8	−10.9*
α Urs. Majoris	58	+62 17	2.0	G5	.137	.074 s	44	1.4	− 8.
ψ Urs. Majoris	11 4	+45 2	3.2	K0	.067	.049 s	67	1.6	− 3.4
δ Leonis	9	+21 4	2.6	A3	.208	.078 s	42	2.1	−18.
θ Leonis	9	+15 59	3.4	A0	.103	.019 s	172	−0.2	+ 6.8
λ Centauri	31	−62 28	3.3	B9	.046	.....	.....	.....	+11.
β Leonis	44	+15 8	2.2	A2	.507	.101 s	32	2.2	+ 1.3
γ Urs. Majoris	49	+54 15	2.5	A0	.095	.004 s	815	−4.5	−10.0
δ Centauri	12 3	−50 10	2.9	B3p	.044	.....	.....	.....	.....
ϵ Corvi	5	−22 4	3.2	K0	.063	.025 s	130	0.2	+ 5.2
δ Crucis	10	−58 12	3.1	B3	.051	.....	.....	.....	+25.
δ Urs. Majoris	10	+57 35	3.4	A2	.113	.045 s	72	1.7	−10.7
γ Corvi	11	−16 59	2.8	B8	.159	.....	.....	.....	− 7. *
α Crucis	21	−62 33	1.0	B1	.048	.030	109	−1.6	+19.
$\|\|\delta$ Corvi	25	−15 58	3.1	A0	.249	.010 s	326	−1.9	−53.5
γ Crucis	26	−56 33	1.5	M6	.270	.....	.....	.....	+21.5
β Corvi	29	−22 51	2.8	G5	.061	.028	116	0.0	− 7.4
α Muscae	31	−68 35	2.9	B3	.038	.....	.....	.....	+13.5
γ Centauri	36	−48 24	2.4	A0	.200	.....	.....	.....	− 9.
γ Virginis	36	− 0 54	2.9	F0	.561	.073 s	45	2.2	−20.0
β Muscae	40	−67 34	3.3	B3	.041	.....	.....	.....	+35. *
β Crucis	42	−59 9	1.5	B1	.054	.008 s	408	−4.0	+13.
ϵ Urs. Majoris	50	+56 30	1.7	A0p	.117	.042	78	−0.2	−11.9*
$\|\|\alpha$ Can. Venat.	51	+38 51	2.8	A0p	.233	.015 s	217	−1.3	+ 1.0*
ϵ Virginis	57	+11 30	3.0	K0	.270	.048 s	68	1.4	−13.6
γ Hydrae	13 13	−22 39	3.3	G5	.085	.017 s	192	−0.5	− 5.1
ι Centauri	15	−36 11	2.9	A2	.111	.....	.....	.....	+ 2.0
$\|\|\zeta$ Urs. Majoris	20	+55 27	2.4	A2p	.131	.038 s	86	0.3	− 9.6*
α Virginis	20	−10 38	1.2	B2	.051	.009 s	362	−4.0	+ 1.6*
ζ Virginis	30	− 0 5	3.4	A2	.285	.038	86	1.3	.....
ϵ Centauri	34	−52 57	2.6	B1	.091	.....	.....	.....	+ 6.
η Urs. Majoris	44	+49 49	1.9	B3	.116	−.004 s	3260:	−8.1	− 6.
μ Centauri	44	−41 59	3.3	B2p	.030	.....	.....	.....	+12.6

Star	R.A. 1900	Decl. 1900	Mag.	Type	Proper Motion	Parallax	Distance in Light Years	M	Rad. Vel.
	h m	° ′							km./sec.
ζ Centauri	13 49	-46 48	3.1	B2p	.079	.....	.....	.....	.....
η Boötis	50	+18 54	2.8	G0	.370	.098 s	33	2.8	− 0.2*
β Centauri	57	−59 53	0.9	B1	.039	.036	91	−1.3	+12.0*
π Hydrae	14 1	−26 12	3.5	K0	.165	.....	.....	.....	+27.6
θ Centauri	1	−35 53	2.3	K0	.748	.....	.....	.....	+ 1.8
α Boötis	11	+19 42	0.2	K0	2.287	.080 s	41	−0.3	−5 .0
γ Boötis	28	+38 45	3.0	F0	.182	.058 s	56	1.8	−35.
η Centauri	29	−41 43	2.6	B3p	.052	.....	.....	.....	0.
||α Centauri	33	−60 25	0.3	G0	3.682	.758	4	4.7	+22.2
α Circini	34	−64 32	3.4	F0	.312	.....	.....	.....	+ 7.3
α Lupi	35	−46 58	2.9	B2	.036	.....	.....	.....	+ 8. *
||ε Boötis	41	+27 30	2.7	K0	.045	.016 s	204	−1.3	−16.4
||α² Librae	45	−15 38	2.9	K2	.129	.....	.....	.....	−17. *
β Urs. Minoris	51	+74 34	2.2	K5	.028	.011 s	296	−2.6	+17.0
β Lupi	52	−42 44	2.8	B2p	.066	.....	.....	.....	0. *
κ Centauri	53	−41 42	3.4	B3	.037	.....	.....	.....	+10. *
σ Librae	58	−24 53	3.4	M6	.094	.029 s	112	0.7	− 4.2
ζ Lupi	15 5	−51 43	3.5	K0	.132	.....	.....	.....	− 9.2
γT Australis	10	−68 19	3.1	A0	.064	.....	.....	.....	.....
β Librae	12	− 9 1	2.7	B8	.108	.....	.....	.....	−38. *
δ Lupi	15	−40 17	3.4	B2	.032	.....	.....	.....	.....
γ Urs. Minoris	21	+72 11	3.1	A2	.017	.....	.....	.....	− 8.
ι Draconis	23	+59 19	3.5	K0	.010	.034 s	96	1.2	−10.2
γ Lupi	28	−40 50	3.0	B3	.042	.....	.....	.....	.....
α Cor. Borealis	30	+27 3	2.3	A0	.160	.053 s	62	0.9	+ 0.4*
α Serpentis	39	+ 6 44	2.8	K0	.142	.046 s	71	1.1	+ 3.3
βT Australis	46	−63 7	3.0	F0	.440	.....	.....	.....	.....
π Scorpii	53	−25 50	3.0	B2p	.042	.....	.....	.....	*
δ Scorpii	54	−22 20	2.5	B0	.042	.....	.....	.....	*
||β Scorpii	16 0	−19 32	2.8	B1	.041	.....	.....	.....	− 9.5*
δ Ophiuchi	9	− 3 26	3.0	K8	.159	.040 s	82	1.0	−19.0
ε Ophiuchi	13	− 4 27	3.3	K0	.088	.046 s	71	1.6	− 9.2
||σ Scorpii	15	−25 21	3.1	B1	.033	.....	.....	.....	+ 2.0*
||η Draconis	23	+61 44	2.9	G5	.062	.042 s	78	1.0	−13.9
||α Scorpii	23	−26 12	1.2	M2p	.032	.026 s	126	−1.7	− 3.1*
β Herculis	26	+21 42	2.8	K0	.104	.030 s	109	0.2	−25.5*
τ Scorpii	30	−28 1	2.9	B0	.042	.....	.....	.....	+ 1.5

Star	R.A. 1900	Decl. 1900	Mag.	Type	Proper Motion	Parallax	Distance in Light Years	M	Rad. Vel.
	h m	° ′							km./sec.
ζ Ophiuchi	16 32	−10 22	2.7	B0	.024	.....	.....	.....	−15.0
||ζ Herculis	38	+31 47	3.0	G0	.601	.111 s	29	3.2	−70. *
α T Australis	38	−68 51	1.9	K2	.034	.....	.....	.....	− 3.7
ϵ Scorpii	44	−34 7	2.4	K0	.668	.....	.....	.....	− 2.0
μ^1 Scorpii	45	−37 53	3.1	B3p	.032	.....	.....	.....	.....
ζ Arae	50	−55 50	3.1	Ma	.047	.....	.....	.....	− 6.1
κ Ophiuchi	53	+ 9 32	3.4	K0	.296	.208 s	116	0.6	−55.3
||η Ophiuchi	17 5	−15 36	2.6	A0	.094	.....	.....	.....	− 1.1
η Scorpii	5	−43 6	3.4	F2	.291	.....	.....	.....	−28.
ζ Draconis	8	+65 50	3.2	B5	.023	.019 s	172	−0.4	−14.6
||α Herculis	10	+14 30	3.1–3.9	M7	.030	− .002 s	3260 :	−6.9	−32.4
δ Herculis	11	+24 57	3.2	A2	.164	.029 s	112	0.5	−42. *
π Herculis	12	+36 55	3.4	K2	.021	.019 s	172	−0.2	−25.1
θ Ophiuchi	16	−24 54	3.4	B3	.030	.....	.....	.....	− 0.9
β Arae	17	−55 26	2.8	K2	.035	.....	.....	.....	− 1.0
υ Scorpii	24	−37 13	2.8	B3	.040	.....	.....	.....	.....
α Arae	24	−49 48	3.0	B3p	.085	.....	.....	.....	.....
λ Scorpii	27	−37 2	1.7	B2	.040	.....	.....	.....	− 1. *
β Draconis	28	+52 23	3.0	G0	.012	.004 s	815	−4.0	−19.7
θ Scorpii	30	−42 56	2.0	F0	.010	.....	.....	.....	+ 5.
α Ophiuchi	30	+12 38	2.1	A5	.264	.049 s	67	0.5	.....
κ Scorpii	36	−38 58	2.5	B2	.032	.....	.....	.....	.....
β Ophiuchi	39	+ 4 37	2.9	K0	.157	.024 s	136	−0.2	−11.5
ι^1 Scorpii	41	−40 5	3.1	F5p	.000	.....	.....	.....	−27.8
||μ Herculis	43	+27 47	3.5	G5	.817	.111 s	29	3.7	−15.7
G Scorpii	43	−37 1	3.2	K2	.062	.....	.....	.....	+24.7
ν Ophiuchi	54	− 9 46	3.5	K0	.118	.026 s	126	0.6	+12.6
γ Draconis	54	+51 30	2.4	K5	.026	.017 s	192	−1.4	−27.0
γ Sagittarii	59	−30 26	3.1	K0	.206	.....	.....	.....	+22. *
η Sagittarii	18 11	−36 48	3.2	M6	.223	.....	.....	.....	0.0
δ Sagittarii	15	−29 52	2.8	K0	.042	.....	.....	.....	−20.2
η Serpentis	16	− 2 55	3.4	K0	.898	.065 s	50	2.5	+ 9.5
ϵ Sagittarii	18	−34 26	2.0	A0	.139	.....	.....	.....	−11.0
λ Sagittarii	22	−25 29	2.9	K0	.197	.....	.....	.....	−43.2
||α Lyrae	34	+38 41	0.1	A0	.348	.124 s	26	0.6	−13.8
φ Sagittarii	39	−27 6	3.3	B8	.053	.....	.....	.....	+26. *
||β Lyrae	46	+33 15	3.4–4.1	B2p	.011	− .014 s	3260 :	−6.6	*
σ Sagittarii	49	−26 25	2.1	B3	.081	.....	.....	.....	− 1.

Star	R.A. 1900	Decl. 1900	Mag.	Type	Proper Motion	Parallax	Distance in Light Years	M	Rad. Vel.
	h m	° ′							km./sec.
γ Lyrae	18 55	+32 33	3.3	A0	.010	.....	.....	.....	−20. *
||ζ Sagittarii	56	−30 1	2.7	A2	.026	.....	.....	.....	+22.
τ Sagittarii	19 1	−27 49	3.4	K0	.265	.....	.....	.....	+42. *
ζ Aquilae	1	+13 43	3.0	A0	.103	.040 s	82	1.0	−38.6
π Sagittarii	4	−21 11	3.0	F2	.041	.016 s	204	−1.0	−10.3
δ Draconis	13	+67 29	3.2	K0	.135	.038 s	86	1.1	+25.1
δ Aquilae	21	+ 2 55	3.4	F0	.267	.057 s	57	2.2	−32. *
||β Cygni	27	+27 45	3.2	K0p	.010	.003 s	1087	−4.4	−23. *
γ Aquilae	42	+10 22	2.8	K2	.018	.018 s	181	−0.9	− 2.1
||δ Cygni	42	+44 53	3.0	A0	.067	.038 s	86	0.9	−37.
α Aquilae	46	+ 8 36	0.9	A5	.659	.204 s	16	2.4	−33.
θ Aquilae	20 6	− 1 7	3.4	A0	.035	.015 s	217	−0.7	−29.2*
||β Capricorni	15	−15 6	3.2	G0p	.042	.005 s	652	−3.3	−18.8*
α Pavonis	18	−57 3	2.1	B3	.090	.....	.....	.....	+ 2.0*
γ Cygni	19	+39 56	2.3	F8p	.006	−.002 s	3260 :	−7.7	− 5.6
α Indi	31	−47 38	3.2	K0	.072	.....	.....	.....	− 0.8
α Cygni	38	+44 55	1.3	A2p	.004	.005	652	−5.2	− 4.
ϵ Cygni	42	+33 36	2.6	K0	.485	.041 s	80	0.7	−10. *
ζ Cygni	21 9	+29 49	3.4	K0	.061	.024 s	136	0.3	+17. *
α Cephei	16	+62 10	2.6	A5	.163	.083 s	39	2.2	−30.7
α Aquarii	26	− 6 1	3.1	G0	.020	−.003 s	3260 :	−6.9	+ 6.4
β Cephei	27	+70 7	3.3	B1	.013	.007 s	466	−2.5	−14.1*
ϵ Pegasi	39	+ 9 25	2.5	K0	.028	.002 s	1630	−5.9	+ 5.3
δ Capricorni	42	−16 35	3.0	A5	.395	.114 s	29	3.3	*
γ Gruis	48	−37 50	3.2	A0	.108	.....	.....	.....	− 3.
α Aquarii	22 1	− 0 48	3.2	G0	.009	.009 s	362	−2.0	+ 7.1
α Gruis	2	−47 27	2.2	B5	.200				
α Tucanae	12	−60 45	2.9	K2	.085	.....	.....	.....	+41.
β Gruis	37	−47 24	2.2	M6	.122	.....	.....	.....	+ 1.2
η Pegasi	38	+29 42	3.1	G0	.039	−.001 s	3260 :	−6.9	+ 4.3*
αP Australis	52	−30 9	1.3	A3	.367	.137	24	2.0	+ 6.7
β Pegasi	59	+27 32	2.6	M3	.235	.016 s	204	−1.4	+ 8.6
α Pegasi	59	+14 40	2.6	A0	.077	.038 s	86	0.5	+ 4. *
γ Cephei	23 35	+77 4	3.4	K1	.167	.069 s	47	2.6	−41.6

GEOGRAPHICAL POSITIONS OF SOME POINTS IN CANADA

Name	Latitude N.			Longitude W.			Feet above Sea Level
	°	′	″	°	′	″	
Banff, Alta	51	10		115	35		4542
Barrie, Ont	44	23		79	41		839
Battleford, Sask	52	41		103	20		1620
Brandon, Man	49	51		99	57		1176
Calgary, Alta	51	02	39.21	7	36	15.1	3428
Charlottetown, P.E.I	46	14		63	10		38
Collingwood, Ont	44	30		80	15		595
Edmonton, Alta	53	31	58.81	113	30	27.0	2188
Father Point, Que	48	31		68	19		20
Fort Churchill	58	51		94	11		....
Fort Simpson	61	52		121	43		....
Fredericton, N.B	45	57		66	36		164
Golden, B.C	51	16		116	55		2550
Gravenhurst, Ont	44	54		79	20		770
Guelph, Ont	43	32	43.7	80	15	09.0	1063
Halifax, N.S	44	39		63	36		97
Hamilton, Ont	43	16		79	54		303
Herschel Is	69	30		139	15		....
Kingston, Ont	44	13		76	29		285
London, Ont	42	59		81	13		808
Medicine Hat	50	1		110	37		2161
Moncton, N.B	46	9		64	45		50
Montreal Que	45	30	17.0	73	34	39.45	187
New Westminster, B.C	49	13		122	54		330
No. West River, Ungava	53	31	31.45	60	10	17.85	....
Ottawa, Ont	45	23	38	75	42	58.20	273.4
Owen Sound, Ont	44	33	56.42	80	56	40.5	585
Peterborough, Ont	44	17		78	19		722
Portage la Prairie, Man	49	58		98	17		830
Port Simpson, B.C	54	34		130	26		26
Prince Albert, Sask	53	10		106	0		1432
Quebec, Que	46	48		71	13		296
Regina, Sask	50	27		104	37		1885
Revelstoke, B.C	51	00	11.25	7	52	49.8	1503
Rose Point, Ont	45	19	00.73	80	02	28.5	602
St. Catharines, Ont	43	10		79	17		347
St. John, N.B	45	17		66	4		70
St. Johns, Nfd	47	34		52	42		125
Stratford, Ont	43	23		81	00		1191
Toronto, Ont	43	39	35.9	79	23	39.75	350
Vancouver, B.C	49	17	48.0	123	07	05.52	11
Victoria, B.C	48	25	31.38	123	21	42.0	55
Windsor, Ont	42	20		83	4		625
Winnipeg, Man	49	53	51.53	97	08	28.53	751
York Factory	57	00		92	28		55

In above table the longitudes of Calgary and Revelstoke are in h. m. s. In arc the values are 105° 12′ 46″.5 and 105° 25′ 27″ respectively.

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Paths of Venus and Mars among the stars during 1926. Mars above. Venus below. The positions of the planets are shown on the first of each month.

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

The Library and the offices of the General Secretary and the General Treasurer are at 198 College Street, Toronto.

Ordinary meetings are held in Toronto in the Physics Building on alternate Tuesdays, beginning in September and continuing to the end of May. In addition, ordinary meetings are at present held at Montreal, Ottawa, Winnipeg and Victoria. The Society also has organizations at Guelph, Hamilton, Peterborough and Regina, but during the war the meetings were discontinued and have not yet been revived.

The Society publishes a monthly JOURNAL, containing each year about 400 pages of interesting articles, and a yearly HANDBOOK of 72 pages, containing information for the amateur observer. Subscription, $2.00 a year; single copies of the JOURNAL or HANDBOOK, 25 cents.

Membership in the Society is open to anyone interested in Astronomy and many more members are desired. The annual fee of $2.00 includes subscription to the publications.

For further information apply to the General Secretary, Mr. F. T. Stanford, at the above address.