VISIBILITY OF PLANETS

MERCURY can only be seen low in the east before sunrise, or low in the west after sunset (about the time of beginning or end of civil twilight). It is visible in the mornings between the following approximate dates: January 4 to February 24, April 29 to June 14, September 4 to September 28 and December 19 to December 31. The planet is brighter at the end of each period, (the best conditions in northern latitudes occur in mid-September and in late December and in southern latitudes in the second half of May). It is visible in the evenings between the following approximate dates: March 16 to April 12, June 29 to August 20 and October 23 to December 7. The planet is brighter at the beginning of each period,(the best conditions in northern latitudes occur from late March to early April and in southern latitudes from mid-July to mid-August).

VENUS is a brilliant object in the evening sky until in the second half of March when it becomes too close to the Sun for observation. It reappears in late March as a morning star and can be seen in the morning sky until late November when it again becomes too close to the Sun for observation. Venus is in conjunction with Mars on October 5 and with Jupiter on November 13.

MARS can be seen only in the evening sky until early June passing through Aquarius, Pisces from late January, into Aries in early March, Taurus in mid-April (passing 6° N of Aldebaran on May 7) and into Gemini in early June. From the start of the second week of June it becomes too close to the Sun for observation and reappears in the morning sky in mid-September in Leo, moves into Virgo in mid-October (passing 3° N of Spica on November 28) and then into Libra in late December. Mars is in conjunction with Mercury on September 16 and with Venus on October 5. The redddish tint of Mars should assist in its identification.

JUPITER can be seen in Virgo from the beginning of the year and from mid-January can be seen for more than half the night (passing 4° N of Spica on January 20 and again 4° N of Spica on February 23). It is at opposition on April 7 when it can be seen throughout the night. From early July it can only be seen in the evening sky (passing 3° N of Spica on September 5) and from mid-October it becomes too close to the Sun for observation. It reappears in the morning sky in the second week of November and passes into Libra in mid-November. Jupiter is in conjuction with Venus on November 13.

SATURN rises shortly before sunrise at the beginning of the year in Ophiucus, passing into Sagittarius in late February and can only be seen in the morning sky until mid-March. Its westward elongation gradually increases, passing into Ophiucus again in the second half of May, and is at opposition on June 15, when it can be seen throughout the night. Its eastward elongation gradually decreases, and from mid-September until early December it can only be seen in the evening sky. It returns into Sagittarius in mid-November and in early December it becomes too close to the Sun for observation for the remainder of the year. Saturn is in conjunction with Mercury on November 28.

URANUS is visible at the beginning of the year in Pisces and remains in this constellation throughout the year. From mid-January it can only be seen in the evening sky until late March when it becomes too close to the Sun for observation. It reappears in early May in the morning sky and is at opposition on Oct. 19. Its eastward elongation gradually decreases and Uranus can be seen for more than half the night.

NEPTUNE is visible at the beginning of the year in the evening sky in Aquarius and remains in this constellation throughout the year. In the second week of February it becomes too close to the Sun for observation and reappears in the second half of March in the morning sky. Neptune is at opposition on September 5 and from early December can only be seen in the evening sky.

DO NOT CONFUSE (1) Mercury with Mars in mid-September and with Saturn in late November to early December; on both occasions Mercury is the brighter object. (2) Venus with Mars in late September to mid-October and with Jupiter in mid-November; on both occasions Venus is the brighter object. (3) Mars with Jupiter in late December when Jupiter is the brighter object.

VISIBILITY OF PLANETS IN MORNING AND EVENING TWILIGHT

	Morning	Evening
Venus		January 1 – March 22
	March 30 – November 28	
Mars		January 1 – June 7
	September 12 – December 31	
Jupiter	January 1 – April 7	April 7 – October 13
	November 9 – December 31	
Saturn	January 1 – June 15	June 15 – December 5

VISIBILITY OF PLANETS

The planet diagram on page 9 shows, in graphical form for any date during the year, the local mean times of meridian passage of the Sun, of the five planets, Mercury, Venus, Mars, Jupiter and Saturn, and of every 2^h of right ascension. Intermediate lines, corresponding to particular stars, may be drawn in by the user if desired. The diagram is intended to provide a general picture of the availability of planets and stars for observation during the year.

On each side of the line marking the time of meridian passage of the Sun, a band 45^m wide is shaded to indicate that planets and most stars crossing the meridian within 45^m of the Sun are generally too close to the Sun for observation.

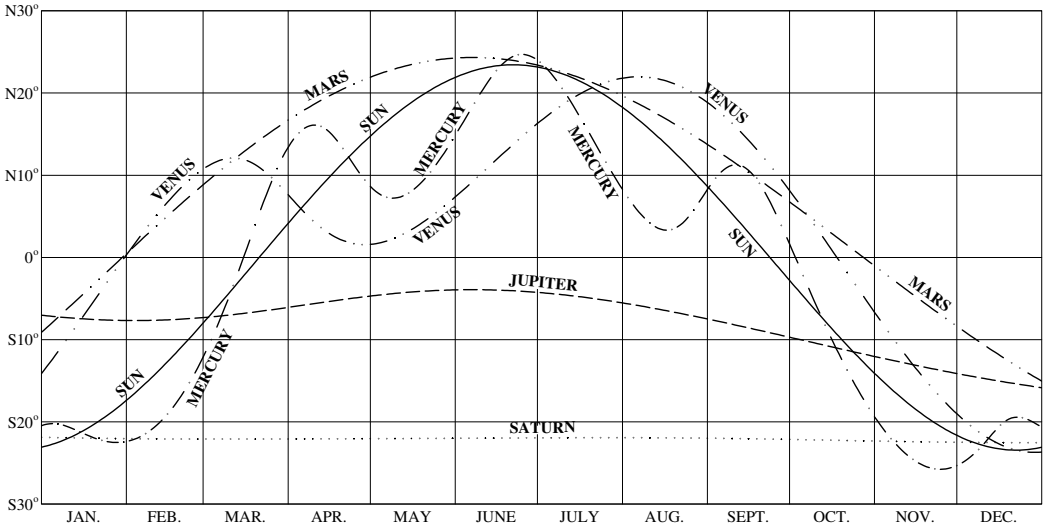
For any date the diagram provides immediately the local mean time of meridian passage of the Sun, planets and stars, and thus the following information:

a) whether a planet or star is too close to the Sun for observation;
b) visibility of a planet or star in the morning or evening;
c) location of a planet or star during twilight;
d) proximity of planets to stars or other planets.

When the meridian passage of a body occurs at midnight, it is close to opposition to the Sun and is visible all night, and may be observed in both morning and evening twilights. As the time of meridian passage decreases, the body ceases to be observable in the morning, but its altitude above the eastern horizon during evening twilight gradually increases until it is on the meridian at evening twilight. From then onwards the body is observable above the western horizon, its altitude at evening twilight gradually decreasing, until it becomes too close to the Sun for observation. When it again becomes visible, it is seen in the morning twilight, low in the east. Its altitude at morning twilight gradually increases until meridian passage occurs at the time of morning twilight, then as the time of meridian passage decreases to 0^h, the body is observable in the west in the morning twilight with a gradually decreasing altitude, until it once again reaches opposition.

Notes on the visibility of the planets are given on page 7. Further information on the visibility of planets may be obtained from the diagram below which shows, in graphical form for any date during the year, the declinations of the bodies plotted on the planet diagram on page 9.

DECLINATION OF SUN AND PLANETS, 2017



LOCAL MEAN TIME OF MERIDIAN PASSAGE