Crewkerne & District Astronomical Society

Sky Notes : December 2014

All timings are Universal Time. (G.M.T.)

Moon's Phases

Full	December	06d. 12h. 27m.
Last Quarter	"	14d. 12h. 41m.
New	"	22d. 01h. 36m.
First Quarter	"	28d. 18h. 32m.

Moon at apogee (furthest from Earth) December 12d. 23h. Diam. 29' 31"
Moon at perigee (nearest to Earth) " 24d. 17h. " 32' 44"

The Planets

Mercury : On the 8th. it reaches superior conjunction with the Sun, so is very difficult to observe for most of the month. Around the 18th. it starts to set after sunset, and by the 31st. at 16.45, ¾ hour after sunset. It starts the month in northern Scorpius, travelling East, and it crosses into Ophiuchus around the 4th. Continuing eastwards, it enters Sagittarius on the 15th. and ends the month in eastern Sagittarius, some 10° W. of Capricornus. A total travel of 50° during the month. It passes N. of the 'Teapot' between the 20th. & 25th.
On the 18th. it will be mag. -1.0, 5" diam., and elongation 6° E.

Venus : Remains a very early evening object, improving slightly by the end of the month. At the start it sets at 16.15, 25 minutes after sunset and by the end at 17.10, an hour and 10 minutes after the Sun. Starting the month in southern Ophiuchus, 13° E.S.E. of Mercury, moving E. it enters Sagittarius around the 8th., and crosses most of it to end the month 6° W. of the border with Capricornus, some 4° E. of Mercury. A total distance of 40° during the month.
Mid month it will be mag. –3.8, 10" diam., elong. 12° E., and setting at 16.30, 40 minutes after sunset.

Mars : Another early evening object, but better placed than Mercury or Venus. On the 1st. it sets at 19.10, 3¼ hours after sunset, and by the 31st. at 19.30, 3½ hours after the Sun. Starting the month in eastern Sagittarius, 4° from Capricornus, it travels E.N.E. to enter Capricornus on the 3rd. It ends the month close to the border with Aquarius, a total travel of 25°.
Mid month it will be mag. +1.0, 4.9" diam., elong. 45° E. and setting at 19.20, 3½ hours after sunset.

Jupiter : A late evening and morning object, but getting earlier. At the beginning of the month it rises at 21.40, and by the end at 19.30, the same time as Mars sets. Still in western Leo, it moves a few arc minutes S.E. to reach a stationary point on the 9th. It then moves back ½° N.W. to the end of the month. All month it will lie 7 or 8° W.N.W. of the 1st. mag. star Regulus, Alpha Leonis. On the 12th. at 04.00 it will lie 5° N. of the Moon, 2 days before L.Q.
Mid month Jupiter will be mag. –2.3, 38.7" diam., elong. 120° W. and rising at 20.45.

Saturn : Following solar conjunction last month, Saturn is now a late morning object. On the 1st. it rises at 06.30, 1¼ hours before dawn, and by the 31st. at 05.00, just over 3 hours before the Sun. Remaining in eastern Libra, it travels 3½° E.S.E. during the month, to end it 2° W. of the border with northern Scorpius.
Mid month it will be mag. +0.5, disc diam. 15.4", rings 34.8" (inclined at 24°), elong. 23° W. and rising at 05.50, just over 2 hours before dawn.
Titan, mag 8.2 & elong. 160". Greatest W. elong. on Dec. 7 & 23. Greatest E. elong. on Dec. 15 & 31.

Uranus : An evening object, at the start of the month setting at 02.30 and by the end at 00.30. Continuing to lie in southern Pisces, some 3°N. of the border with Cetus, it moves a few arc minutes S.W. to a stationary point on the 22nd., then starts to move back N.E.
Mid month it will be mag. 5.7, 3.7" diam., elong. 111° E.. and setting at 01.30. It will lie 3½° S. of the 4th. mag. star Delta (63) Piscium.

Neptune : An early evening object, on the 1st. setting at 22.50, and by the 31st.at 21.00. Remaining in western Aquarius, it moves ½° N.E. during the month, ending it ½° N.W. of the 4.8 mag. star Sigma (57) Aquarii. On the 26th. at 15.00 it will lie 4° S. of the F.Q. Moon.
Mid month it will be mag. 7.9, 2.2" diam., elong. 63° E. and setting at 22.00.

Meteors

Geminids : December 8 - 16. Maximum Dec. 14 07h. One of the most prolific showers, with a Zenith Hourly Rate of 100. Believed to originate from minor planet 3200 Phaethon. Radiant at R.A. 07h. 32m., Dec. +33°, around 1° N. of Castor, mag. 1.6 Alpha Geminorum Culmination at 02.00, altitude 72°. Moon not too favourable, L.Q., rising at 23.30 on the 13th.

Ursids : December 17 - 25. Max. Dec. 22 & 23. From Comet Tuttle. Radiant at R.A. 14h.28m., Dec. +78°, around 5° N. of 2nd. mag. Delta Ursa Minoris. Circumpolar. Z.H.R. 10. Moon very favourable, New, setting at 17.15 on the 22nd. & 18.15 on 23rd.,rising at 02.45.

Variable Stars

Algol (Beta Persei) : Known to the early Arabian astronomers as the 'Demon Star'. The name is from the Arabic 'Al Ra's al Ghul', the 'Demon's Head'. The star represented the head of Medusa, the most notorious of the three Gorgon sisters. They were serpent-headed ladies of ill repute. Algol is not a true variable star, but an eclipsing binary, where a bright star is partially eclipsed by a fainter companion every 68 hours & 49 minutes. Normally at magnitude 2.1, over a peroid of 5 hours it drops to mag. 3.4, then rises over 5 hours back to 2.1. The first recorded observation of its variability was made by the Italian astronomer Montanari around 1667. The regularity of its period was first determined by John Goodricke in 1782. He suggested that the periodic dimming might be attributed to the partial eclipse of the star by a dark companion revolving about it. This remained only a theory, although generally accepted, until 1889 when H.C. Vogel at Potsdam proved it to be true by spectroscopic analysis. At a distance of 100 L.Y., Algol is one of the nearest eclipsing binaries, and is certainly the best known. The primary star (Algol A) is about 100 times the Sun's luminosity, 4 times its mass, 3 times its diameter and it lies 1 million miles from the centre of gravity of the system. The secondary (Algol B) is 4 times the Sun's diameter, but only its same mass. It lies some 6½ million miles from A. An excellent comparison star to Algol in Perseus is Rho (25) Persei which lies 2° S. of it at a constant 3.5 mag. From our latitude Algol is circumpolar (never setting), but best seen during the winter months. For example it will be nearly overhead (80°) at 22.00 in mid December. Times of minima currently visible from the U.K. :- Nov.23 04.9, Nov.26 01.7, Nov.28 22.5, Dec.13 06.6, Dec.16 03.4, Dec.19 00.2, Dec.21 21.0, Jan.5 05.1,Jan.8 01.9. Algol R.A. 03h. 08m., Dec. +40°57'.

Arthur Davis Nov. 2014