Crewkerne & District Astronomical Society

Sky Notes : January 2016

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

The Earth is at Perihelion (nearest the Sun) on Jan. 2 at 23h. 147,100,176 km., 0.983303941 A.U. away.

Moon's Phases

Last Quarter	January	02d. 05h. 30m.
New	"	10d. 01h. 31m.
First Quarter	"	16d. 23h. 26m.
Full	"	24d. 01h. 46m.

Moon at apogee	(furthest from Earth)	Jan. 02d. 12h.	Diam. 30' 33"
Moon at perigee	(nearest to Earth)	" 15d. 02h.	" 32' 20"
Moon at apogee		" 30d. 09h.	" 30' 32"

. The Planets

Mercury : It starts the year as an early evening object, setting at 17.40, 1½ hours after sunset, but it reaches inferior conjunction on the 14th., when it sets at sunset, 16.30. It then becomes a morning object, which it will be until the end of March. At the end of the month it rises at 06.30, nearly 1½ hours before dawn.. At the beginning of the month Mercury lies in eastern Sagittarius close to the border with Capricornus at mag. -0.4, 7.1" diam. & elongation 19° E. It moves E. ¼° to a stationary point on the 5th., just inside Capricornus. It then goes back 18° W.to another stationary point on the 25th. Finally it travels E. 2½° to the end of the month, when it will be mag. +0.2, 8.0"diam., & elong. 24° W.

Venus : Continues to be a morning object, which it will be until June. On the 1st. it rises at 05.10, 3 hours before dawn, and by the end at 06.30, an hour & 10 minutes before the Sun. Venus starts the month in eastern Libra on the border with Scorpius, which it enters on the 2nd, moving E. It crosses Scorpius to enter Sagittarius around the 21st.. It ends it some 3° N.E. of 2.8 mag. star Lambda (22) Sag., the top star of the Teapot's lid. A total travel of some 45°. On the 9th. at 04.00 Venus will pass only 0.1° N. of Saturn.
Mid month it will be -4.0 mag., 13.2" diam., elong. 35° W. and rising at 05.45.

Mars : Another morning object, but getting earlier. On the 1st. it rises at 02.10, and by the 31st. at 01.40. It begins the month in eastern Virgo, 8° N.E. of Spica, Alpha Virginis. Travelling S.E. it enters Libra around the 16th. and ends the month 1½° N. of the 2.7 mag. star Alpha (9) Librae. A total movement of 16°.
Mid month it will be mag. +1.1, 6.1" diam., elong. 78° W. and rising at 01.45.

Jupiter : Now a late evening object, but getting better. At the start of the month it rises at 22.40, and by the end at 19.20, 3¾ hours hours after sunset. All month it lies in eastern Leo, near the border with Virgo. From the beginning it moves ½° S.E. to a stationary point on the 8th., then turns back, travelling ¾° to the month's end. On the 28th. at 01.00 Jupiter will lie 1.4° N. of the nearly L.Q. Moon.
Mid month it will be mag. -2.2, 41"diam., elong.121° W. and rising at 21.40.

Saturn : Back to the morning objects ! On the 1st. it rises at 06.00, just over 2 hours before dawn, and by the 31st. at 04.20, 3½ hours before the Sun. Remaining in S.W. Ophiuchus, near the border with Scorpius, it starts the month 7° N.N.E. of Antares, 1st. mag. star Alpha Scorpii. It travels 3¼° E. during the month. As mentioned above, Saturn will lie 0.1° S. of Venus on the 9th.
Mid month it will be mag. +0.5, disc diam. 15.5", rings 35.1", elong. 42° W. and rising at 05.15.
Titan, mag. 8.2 & elong. 160". Greatest E. elong. on Jan. 2 & 18. Greatest W.. elong. on Jan. 10 & 26.

Uranus : An evening object. It begins the month setting at 01.00, and ends it setting at 23.00. Still lying in S. Pisces, near the Cetus border, it moves from a stationary point on the 1st. ½° N.E.to the end of the month. It will then lie ½° N.W. of the mag. 6 star 73 Piscium.
Mid month Uranus will be mag. 5.8, 3.5" diam., elong. 82° E. and setting at midnight.

Neptune : Also an evening object. On the 1st. it sets at 21.15, and by the 31st. at 19.20, 2½ hours after sunset. Continuing to lie in central Aquarius, it starts the month just over 2° N.E. of the 6.2 mag. star Sigma (57) Aqu. It travels ¼° N.E. to end the month just over 2° N.W. of the 6.2 mag. star 70 Aqu.
Mid month Neptune will be mag. 7.9, 2.2" diam., elong. 44 ° E. and setting at 20.20.

Meteors

Quadrantids : January 1 - 6. Maximum Jan. 4, 09h. One of the most prolific showers, with a Zenith Hourly Rate of 80. Believed to originate from Comet 96P/Machholz. Radiant at R.A.15h. 20m., Dec. +50°, around 15° N. of Alkaid, mag 1.9 Eta Ursa Majoris. Circumpolar. Moon fairly favourable, 2 days after L.Q., rising at 02.15 on the 4th.

Deep Sky Objects

M42 (NGC 1976) : The 'Great' Nebula. A gaseous nebula in Orion. M42 is one of the best known and certainly the most spectacular of the Messier objects. As a 'star' in Orion's sword, it has been known since the beginnings of recorded astronomy. Ptolemy and Tycho Brahe commented on it. In 1603 Johann Bayer noted it as a 3rd. mag. star and designated it as Theta Orionis. Its discovery as a nebula is attributed to Nicholas Peiresc in 1611. Christian Huygens made detailed sketches of the Nebula in 1656 and discovered the 'Trapeziun' of 4 stars in Theta. Charles Messier observed and listed it in 1769. He prepared a detailed drawing of it for the Academy (of Sciences) which can be seen in their Memoirs for 1771.
M42 is one of the brightest examples of an ionised-hydrogen (H II) region surrounding hot young stars. It lies some 1,300 L.Y. from us, with a diam. of 35 L.Y., giving it an apparent size of 1½°x1° and a mag. of 3.7. The age of the central part of the nebula is around 30,000 years. Theta is a complex collection of stars. There are 2 main groups, θ1 & θ2. θ1 contains the group of 4 stars the 'Trapezium' in an area 30" diam. 'A' the western one, is an eclipsing variable, mag 6.7 to 7.5 over 65 days. 'B' in the North, is another one, mag. 7.9 to 8.5, over 6.4 days. 'C' in the South is mag. 7.5 and 'D' in the East is mag. 7.6. These young, very hot stars, provide much of the energy heating up the Nebula. More recently hundreds of young , faint red stars have been discovered in the area.
10 minutes N. of M42 is a patch of nebulosity that Messier also observed in 1769, M43 (NGC 1982). Subsequent observations have shown that it is part of M42. M43 is around 3 L.Y. in extent, 6'x3' and mag. 6.8.
To find M42, start from the middle star forming Orion's belt, mag. 1.7 Epsilon (46). M42 is 4½° S. of it. R.A. 5h. 35.3m., Dec. -5° 23'.

Arthur Davis Nov. 2015