Sky notes

2006 October & November

by Neil Bone

Sun and Moon

The Sun's steady southwards progress along the ecliptic brings ever-lengthening hours of darkness as autumn advances. Sunspot activity should soon reach its minimum between cycles 23 (which peaked in 2000) and 24 (expected to peak in 2010–'11). Spots have been rare in the past six months, and most that have appeared have been relatively small. Runs of up to ten days without any sunspot activity whatsoever have not been unusual for observers viewing the Sun by the recommended safe projection method. Attentive observers may soon start to see the emergence, at high solar latitudes, of the first spot groups of the new cycle.

The end of summer...

The Summer Triangle immersed in the Milky Way. A two minute exposure at Rousay, Orkney with a Nikon D100 digital camera, 24mm (36mm equiv.), f/2.8, ISO 400. 2006 August 27, 22h 24m UT. *J. C. Vetterlein.*

The Moon is New on October 22 and November 20, meaning that darkest nighttime skies will be found in the second half of either month. Full Moon, with its attendant bright nights for several days to either side, falls on October 7 and November 5.

Civil clocks revert to GMT on Sunday October 29, obviating the need to subtract an hour to arrive at the astronomical standard of Universal Time (UT).

The planets

For early risers, Mercury is a favourable 'Morning Star' in the second half of November: towards the month's end, the planet rises 1h40m ahead of sunrise. Around greatest elongation (20° west of the Sun on Nov 25), Mercury is a bright 'spark' of magnitude –0.5, seen against the stars of Libra in the south-southeast as dawn begins to gather.

Venus has been poorly placed in the morning sky for some time, and reaches superior conjunction on the far side of the Sun on October 27. During November, Venus remains too close to the Sun for observation as it crawls into the evening sky – the planet won't really become noticeable until the year's end, but will be well placed next spring.

Mars, too, arrives at the end of its apparition, reaching conjunction with the Sun on October 23. A year from now, the Red Planet will be well placed for northern hemisphere observers. Jupiter is also lost from view, reaching its solar conjunction on November 21.

Relief is at hand for planetary observers as Saturn becomes ever better placed. Moving slowly eastwards against the star background of Leo, about five degrees west of Regulus, Saturn rises around midnight in late October, 23h by mid-November. The ringed planet is well up in the southeast during the early morning hours, prominent at mag +0.5 Compared to earlier in the year, the aspect of the rings is now somewhat more 'closed': as Saturn moves to more southerly declinations on the ecliptic, we see the rings at a more oblique angle from our terrestrial perspective. Conversely, the planet's north pole, hidden from view by the rings a couple of years ago, is now visible once more.

For observers using medium-aperture telescopes in the 100–150mm range, the Cassini Division separating the main A and B ring components is now trickier to resolve and might only be clearly seen at the rings' eastern and western extremities (ansae). Saturn's globe usually shows only fairly muted darker belts and lighter zones.

At mag +8, Saturn's largest satellite Titan is well within small telescope range. Titan can be found due west of the planet (by about four times the rings' east–west span) around October 4 and 20 and November 5 and 21: it is due east roughly eight days later. Avoiding confusion about directions on the sky, planetary observers often use the conventions 'preceding' and 'following' to denote west and east respectively; when west of Saturn, Titan precedes the planet through the field of an undriven telescope.

Minor planets

(7) Iris is favourably-placed, reaching opposition on November 14 when it will be slightly brighter than 7th magnitude, well in reach of 10×50 binoculars. Iris can be found moving gradually westwards (retrograde) to the west of the Pleiades, north from the 'head' of Cetus. Observations at intervals of a couple of days will show Iris' motion relative to the stellar background, the asteroid itself appearing as a star-like point.

Meteors

The Orionids are favourably placed in the second half of October, with the Moon well out of the way for the main activity period around Oct 20–22. Early-morning watches may yield up to 15 very fast meteors each hour, from a radiant to the northeast (upper left) of Betelgeuse.

By late October, some Taurid activity should be in evidence. These slow, sometimes bright meteors are produced by debris from Comet 2P/Encke, and come from a double radiant with branches positioned just west of the Hyades and near the Pleiades in early November. Never especially prolific (best rates are perhaps 5 per hour), the shower will be rather muted by strong moonlight over its broad maximum during the first week of November.

The Leonids, active between November 15–20, are met by dark sky conditions, and as outlined in 'Notes and News' offer the possibility of one last, probably relatively minor, outburst on the Saturday night to Sunday morning of November 18–19.

Variable stars

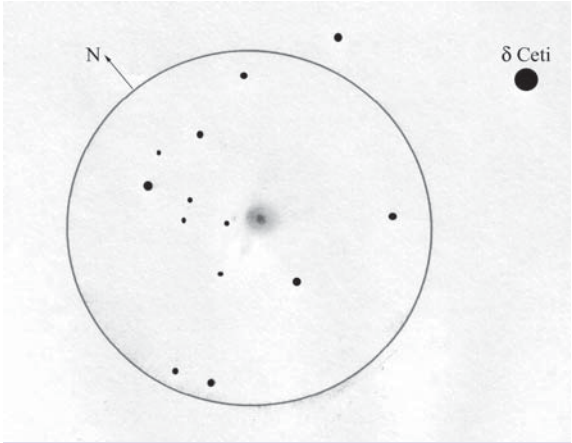
Following its bright maximum in August, the long period variable star Chi Cygni drops to faint binocular visibility during October. With Cygnus heading westwards on autumn evenings, observations will become increasingly challenging.

Also a challenge is the prototype of the class, Mira (Omicron Ceti), which should be at its 9th magnitude minimum in late October – just in reach for 10×50 binoculars. Located just west of the triangle of Alpha, Gamma and Delta Ceti (the Head of Cetus), Mira reaches maximum light at intervals of 330 days (11 months). The last three maxima came when the star was at conjunction with the Sun, and this cycle offers the first chance for a while to follow Mira from minimum to maximum, which will be reached just as Cetus begins to become lost in the western evening twilight next spring. Finder charts indicating constant-brightness comparison stars can be found at **http://www.britastro.org/vss.** Magnitude estimates should be made at roughly weekly intervals.

Eclipsing binary Algol (Beta Persei) has favourably-timed minima for UK-based observers on the nights of October 16–17, 19–20 and 22, and November 8–9, 11–12 and 28–29. During eclipses, Algol dips from mag +2.1 to +3.4 over the course of about five hours, taking the same time to recover. The variations can be followed by making magnitude estimates every 15–20 minutes. Algol's entire cycle is, of course, well within naked eye range.

Deep sky

The open spaces of the autumn evening sky, looking out of the obscuring plane of the Milky Way in the general direction of the South Galactic Pole, offer views to the deeper Universe where some distant galaxies can be found. Most familiar – almost on our doorstep in cosmological terms at a distance of 2.4 million light years – is the Andromeda Galaxy M31 (NGC 224), an easy naked eye object just north of (above) the upper line of Andromeda's stars trailing away from the northeast corner of the Square of Pegasus. High on an October or November evening, M31 bears examination with binoculars or a small telescope, which will reveal some of its considerable angular extent, and also its 8th magnitude companions M32 (NGC 221) and M110 (NGC 205).



M77 as seen in an 80mm f/5 refractor ×40 in 2004 October. *Drawing by Neil Bone.*

Another relatively easy autumn galaxy is M33 (NGC 598) in Triangulum, a few degrees northwest from Alpha Trianguli (the Triangle's sharp tip). Despite its catalogue magnitude of +5.7, M33's face-on presentation means that its light is spread over a large area of sky (67×42 arcminutes), giving relatively low contrast: low power, binocular views are sometimes better than those in a telescope. Like M31, M33 is part of the Local Group of galaxies to which our home Milky Way belongs.

Looking farther afield, a couple of fainter Messier catalogue galaxies are worth seeking out in the autumn sky. M74 (NGC 628) in Pisces, 30 arcminutes (one Moon-diameter) northeast of mag +3.6 Eta Psc, is, like M33, a face-on spiral showing low contrast. On a good night, mag +9.4 M74 is visible in 60–80mm aperture telescopes or, just, 10×50 binoculars. If conditions are misty, even 150mm and larger aperture telescopes may show it only poorly. Low power views show a roughly circular haze, perhaps 11 arcminutes across, with a strong nuclear condensation. The galaxy is 35 million light years away.

Surprisingly easy, given that it, too, is a spiral galaxy presented face-on, M77 (NGC 1068) in Cetus is somewhat brighter at mag +8.9. Located 42 arcminutes ESE from mag +4.1 Delta Ceti (in the Head of Cetus), M77 is easily visible in 10×50 binoculars. In a small (80–100mm aperture) telescope at ×40, M77 shows up as a roughly circular haze with a 'stellar' core. In averted vision – looking to one side of the object – the outer parts appear quite extended. A 10th magnitude foreground star lies close to the galaxy's east. At higher magnifications, the central parts of M77 also appear more somewhat more extended. M77 is a strong radio emitter, belonging to the active class of Seyfert galaxies. It lies at a distance of 60 million light years.

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