

2006 August & September

Sun and Moon

Sunspot cycle 23 is now very close to minimum, and on many days recently the projected solar disk has appeared blank. The few spot groups which have broken out in the last few months have mostly been quite small. Regular observers are now on the lookout for the first spots of cycle 24, which are expected to soon appear at high solar latitudes.

From the terrestrial perspective, the Sun is now heading southwards on the ecliptic, its apparent annual path against the star background. At 04h 03m Universal Time (UT, equivalent to GMT; BST minus 1 hour) on September 23, the Sun sits on the celestial equator: this is the moment of the autumnal equinox. Thereafter, the hours of darkness exceed those of daylight for those at the latitude of the British Isles, ushering in the prime observing season.

The Moon is new on August 23 and September 22, giving the darkest night-time skies in the last ten days or so of either

month. Full Moon on August 9 will severely hamper observations of the Perseid meteor shower. The September 7 Full Moon undergoes a small partial eclipse in Earth's shadow. The event is part-visible from the British Isles; first umbral contact is at 18h 05m UT, and the eclipse ends at 19h 37m UT. From UK locations, moonrise is around 18h 40m UT, close to mid-eclipse when 19% of the Moon will be immersed in shadow – the northern lunar limb really only just clips through the outer edge of the umbra. The 'bite' should, at least, be noticeable, albeit diminishing in extent as the Moon rises higher.

Traditionally, September's Full Moon is the Harvest Moon, its strong light for several evenings after Full being welcome in times past as extra natural illumination for bringing in the crops. In both August and September, the angle between the ecliptic and the eastern evening horizon is shallow, with the result that the Moon's daily eastwards motion (about 13°/day) makes minimal difference to the time between successive moonrises, and right up to last quarter

(August 16, September 14) the Moon is up well before midnight. This is a favourable circumstance for observers wishing to view features in the heavily-cratered lunar southern hemisphere under local sunset conditions at a user-friendly hour.

September 1, then Mercury moves into the evening sky where it is very unfavourably placed for observers at northern latitudes.

Venus' stint as 'Morning Star' is drawing to a close. Never spectacularly easy this time around, despite its brilliant mag -4, Venus rises about 1h 40m ahead of the Sun during early August, but by the month's end it will be pretty much lost from view. Through September, the planet's elongation west of the Sun diminishes rapidly, and Venus will not be visible again until about Christmas when it begins a much more favourable evening showing.

The long wind-down of Mars' current apparition continues, with the red planet now essentially lost into the bright evening sky close to the Sun. Setting about an hour after the Sun, Mars is now a dim, distant second-magnitude object with a tiny (4 arcsec diameter) apparent disk.

Jupiter, seen against the stars of Libra, is still reasonably-placed in the southwestern sky for an hour or so in the early evening during August. The mag -2 planet has a disk diameter close to 35 arcseconds, and should show a fair amount of detail in small telescopes. During September, Jupiter becomes lost into the evening twilight, setting an hour after the Sun.

Saturn reaches conjunction on the far side of the Sun on August 7, emerging into the morning sky during September. Now located in Leo, a little west of Regulus, the mag +0.5 ringed planet rises around 02h UT – 2h 30m ahead of sunrise – in mid-September, providing reasonable telescopic views for early risers. As its orbital motion carries it southwards along the ecliptic, Saturn's rings begin to close in their presentation towards us: observers will find the rings markedly less open than they were during spring 2006.


The dearth of naked eye planets is somewhat compensated by the favourable presentation of Uranus and Neptune – each visible in 10x50 binoculars – during this interval. The brighter of the two at mag +5.7, Uranus reaches opposition – 180° from the Sun in Earth's sky – on September 5, when it will be a little more than a degree due east of the mag +3.7 star Lambda Aquarii, SSE from the 'Water Jar' asterism in Aquarius.

Neptune, somewhat trickier at mag +7.8, is at opposition on August 11, a degree to the north of mag +4.3 Iota Capricorni.

Both these outer ice & gas giants are too remote to show much more than tiny (3–4 arcsecond) disks in amateur telescopes. Their favourable presentation in August and September, and the comparative short-


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The planets

Mercury is in the morning sky in early August. At greatest elongation 19° west of the Sun on August 8, it will rise only about 90 minutes ahead of sunrise, and at magnitude 0 will be quite difficult to find in the brightening northeastern sky. Superior conjunction, on the far side of the Sun, is reached on



age of other planetary targets, might make them interesting subjects nonetheless for observation in telescopes of 100mm aperture upwards: seasoned planetary observers might find it interesting to compare the visual appearance of these two distant worlds.

Minor planets

(1) Ceres is at opposition on August 17, when it reaches visual magnitude +7.6. Its southerly declination against the stars of Piscis Austrinus, west of Fomalhaut, makes it a rather unfavourable target for UK-based observers.

Somewhat better placed is 8th magnitude (6) Hebe, moving retrograde against the stars of Capricornus about 5° east of the wide naked eye pairing of Alpha and Beta Capricorni, and reaching opposition on August 7.

Meteors

Normally the summer's main attraction, the Perseids are severely affected by moonlight at their August 12/13 maximum in 2006. Only the brightest meteors will be visible, with glare from the early-rising waning gibbous Moon dominant by the time twilight has ended. Conditions will be much, much better next year.

The later parts of August provide some relatively low-key minor shower activity which, augmented by reasonable background sporadic rates, can make for productive watches. The Kappa Cygnids, from a radiant in Cygnus' more northerly 'wing', have their nominal peak around Aug 17/18, when rates of around 5 meteors/hr might be attained. Kappa Cygnids are slow (meteoroid atmospheric entry velocity 25 km/s), and in some years bright meteors and fireballs have been reported from the shower.

Towards the very end of August, peaking around September 1, the Alpha Aurigids produce modest activity from a radiant near Capella, well up in the northeastern sky by the early hours.

Variable stars

The long-period (Mira type) variable Chi Cygni is expected to be at maximum light

around August 19, when it should be a faint naked eye object. Peak brightness is reached at intervals of about 14 months, and Chi Cyg usually gets as bright as 5th magnitude: some maxima are noticeably brighter, as was the case in 2004. Chi appears as an additional star along Cygnus' 'neck', close to 4th magnitude Eta Cyg, and it will remain an easy binocular object even as it begins to fade during September.

As autumn approaches, the familiar 'W' of Cassiopeia becomes more prominent in the northeastern evening sky. The middle star of the 'W', Gamma Cassiopeiae, is a well-known naked eye variable star. Gamma Cas is a young, massive rapidly-rotating B-class star, prone to 'shell' episodes during which outer layers are shed leading to a prolonged period of brightening. Currently around mag +2.3, Gamma reached mag +1.7 during the 1930s, for example. Brightness estimates made at weekly intervals may reveal subtle short-term variations, and suitable non-varying comparison stars include Alpha Persei (mag +1.8) and Alpha Cephei (mag +2.4).

Autumn's arrival also makes it possible to again follow minima of the eclipsing binary Algol (Beta Persei), during which the star dips from its usual mag +2.1 down to mag +3.4. This will occur on September 26/27, and in the early evening of September 29/30.

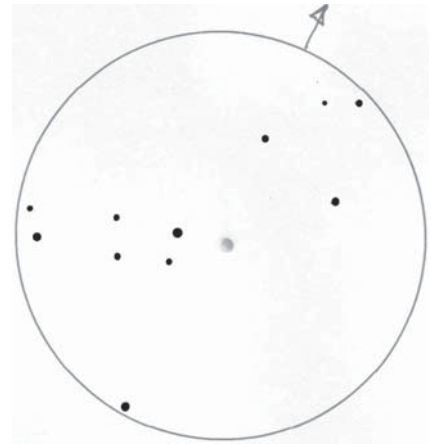
Deep sky

The rich Milky Way fields south of Aquila remain well-placed in August and – early in the evening – into September. Another region well supplied with good targets is in eastern Ophiuchus, adjacent to Aquila's western (to the right in British skies) 'wing', around the triangle of fourth-magnitude stars 67, 68 and 70 Ophiuchi – sometimes known as 'Poniatowski's Bull'.

70 Oph, the star at the eastern point of the triangle, is a good double for medium-aperture (80–100mm) telescopes. The components are separated by a comparatively easy 5 arcseconds. The brighter star is yellowish, and shines at mag +4.2, while the mag +6.0 secondary, at position angle 148° to the SSE, is reddish.

A couple of degrees to the west, just NNW of mag +2.8 Beta Ophiuchi, IC 4665 is a fine, loosely-scattered open cluster, readily visible in 10×50 binoculars. Around thirty stars of mag +7 to +8 are contained in a region 45 arcminutes (1½ moonwidths) across.

A binocular sweep to the east of Poniatowski's Bull will turn up another of this region's good open clusters, NGC 6633. Binoculars show this as a prominent north-



NGC 6572 sketched by Neil Bone using an 80mm f/5 refractor at ×40. Unfiltered view. (2005 August 28).

east-pointing hazy wedge of faint stars. In a small telescope at low powers (×20 is good), NGC 6633 appears to contain about twenty stars, ranging from mag +7 to +9, in a narrow triangle with a long axis of about 10 arcminutes. A solitary 6th-magnitude star lies to the south.

North of 70 Oph, the 4th-magnitude star 72 Oph is a good guide (2.5° to its NNW) for the compact planetary nebula NGC 6572, an excellent object for medium-sized telescopes. In small telescopes, the 15 arcsecond diameter, mag +8.1 disk is essentially star-like; an OIII or UHC filter will give away its nature (NGC 6572, emitting more or less exclusively at the 500.7 and 485.9nm excited oxygen wavelengths, remains undimmed, unlike the stars, when such a filter is passed in front of the eyepiece). Larger telescopes at higher magnifications will show NGC 6572 as bluish, and may reveal the 13th-magnitude central white dwarf star.

Neil Bone



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