Sky notes

2009 April & May

by Neil Bone

Sun and Moon

A still rather-inactive Sun climbs steadily northwards along the ecliptic from Aries into Taurus during this interval, bringing diminishing hours of darkness with nightfall arriving later and dawn earlier. Observers following the state of white-light solar activity have plenty of viewing hours, but continue to report little in the way of signs that the new sunspot cycle 24 is taking off: by some past, optimistic forecasts, it was anticipated that we would by now be seeing a rash of new high-latitude spots. The upturn could, however, be just around the corner, and daily monitoring by the safe projection method should still be carried out when possible.

Those equipped with H-alpha and similar safely-filtered instruments are still reporting plenty of interesting prominence and other chromospheric activity, despite the lack of much to see in white light.

The Moon is New on April 25 and May 24, putting the darkest evening skies in the second and third weeks of either month – though by late May, the Sun's high declination and consequent low elevation below the northern horizon even at midnight means that at this time the sky is little better than deeply twilit from the latitudes of the Midlands northwards. Full Moon brightens the sky for several nights close to April 9 and May 9.

The planets

Mercury makes its best evening showing for the year during the third week of April, as shown in Figure 1 where its position is plotted for a central-UK location of 53°N for 1 hour after sunset. Greatest elongation east of the Sun – an angular distance of 20° – is reached on April 26, when Mercury will set 2h12m after sunset; an hour after sunset, the magnitude +0.4 innermost planet will stand about 9° above the horizon at azimuth 296° in the NNW, an easy naked eye target perhaps also presenting some wide-field photographic possibilities.

Around this time Mercury will show a half-phase telescopically, similar to the first quarter Moon, but with an overall diameter of only 8 arcseconds; at least a 100mm aperture at ×50 will be needed to show this well.

Fast-moving Mercury rapidly drops from view in early May, reaching inferior conjunction between Earth and Sun on the 18th. Following its late-March inferior conjunction, **Venus** emerges as an 'Morning Star', rising a little more than an hour before the Sun from mid-April and into May. During this interval, in the telescope the mag –4 planet shows a gradually-broadening crescent phase similar to that of the Moon between last quarter and new, as it pulls westwards away from the Sun against the stars of Pisces.

Mars, at mag +1, is also in the predawn sky but rather faint and distant for ready visibility, close to the Sun in this interval. On the Capricornus/Aquarius border, mag –2 **Jupiter** gradually become better placed, rising around 01h UT (Universal Time; BST minus 1 hour) by late May. A bit higher in the sky this year than last for UK-based observers, the giant planet should reveal plenty of detail in medium aperture (100–150mm) telescopes during the early hours, whilst even binoculars will readily show the four bright Galilean satellites.

Saturn is an evening object at mag +0.7 to +0.8 in southern Leo, setting around 02h UT in late May. Having been very close to edge-on in their presentation at the start of 2009, the rings have now opened out somewhat, and should be more easily discernible in medium-aperture telescopes to either side of the planet's globe. The globe itself will reveal some cloud detail – generally with more subtle contrast than that on Jupiter – in larger instruments.

Saturn's main bright satellite Titan (mag +8) is due east of the planet by about four ring-spans on April 10 and 26 and May 12 and 28, due west some eight days later.

Meteors

The **Lyrids** are active from April 19–25, peaking around Apr 22d 10h UT (after daybreak over the UK, of course). Best observed rates – perhaps reaching 10 meteors/hr – should be found in the early hours of Tuesday–Wednesday April 21–22, particularly towards dawn (*ca.* 02h 30m UT), by which time the radiant, 10° to the southwest of Vega, will be around 60° up in the eastern sky. At the Lyrids' maximum, the Moon is a late-rising waning crescent, a couple of days from new, and will not interfere significantly with observations.

Outbursts of higher Lyrid activity have been seen – most recently in 1982 – but these are unpredictable, and there is no reason to expect anything out of the ordinary in 2009: the shower is, however, one for which the Meteor Section has been unable to accumulate a lot of data in recent times thanks to poor weather, and observations would be particularly welcomed.

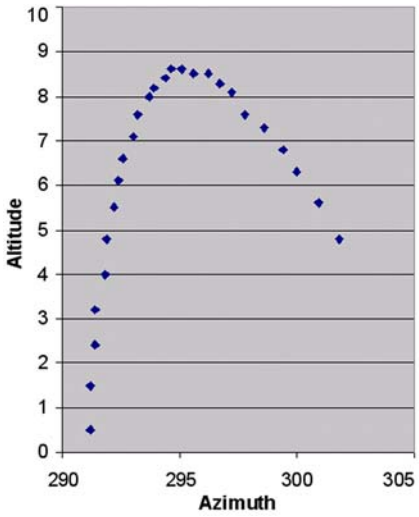

Figure 1. Position of Mercury plotted for one hour after sunset in the third week of April.

Lyrid meteors are swift (entry velocity 49 km/s) and can often be bright and leave behind good persistent ionisation trains, particularly in the predawn twilight.

Swifter still (entry velocity 67 km/s) are the **Eta Aquarids**, associated with Comet 1P/Halley. The shower peaks around May 4–5 with a broad span of reasonable activity during the opening week of the month – coinciding in 2009 with morning's last hour or so of moonless skies. The radiant is close to Aquarius' 'Water Jar' asterism. This, however, doesn't get particularly high in the eastern sky (12° by 03h UT) before dawn really begins to brighten the sky: observed rates of 4–5 meteors/hr can be considered a good return, and there are plenty of otherwise experienced meteor-watchers who have never seen an Eta Aquarid! (I saw my solitary shower member during a break – caused by patchy cloud – in a watch 30 years ago in 1979….)

Variable stars

Eclipsing binary **Algol** (Beta Persei) has a couple of last UK-favourable minima for the season in April (12–13 and 15–16) before the constellation slips into the twilight zone of the northern sky. The earlier may be affected by moonlight.

A springtime favourite star in most years, **R Coronae Borealis** is known for occasional fades due to carbon condensation in

its extended atmosphere (see note on previous page). For much of the time, this ancient star – inside the eastern half of Corona's 'circlet' – appears to hover around 6th magnitude, well within binocular range. When it fades, it can drop beyond visibility in all but the largest amateur telescopes. The most recent fade, which set in during July 2007, took the star down to an apparent 14th magnitude, where it has remained until at least the opening months of 2009 – the longest deep fade since that of 1967–1971. It is well worth small telescope and binocular observers keeping a nightly eye for R CrB's eventual return towards maximum light, which may or may not occur in the coming months. Such unpredictability is one of the reasons that observing variable stars can be such a rewarding sub-branch of astronomy.

Deep sky

Spring evenings see the Plough and the rest of Ursa Major spread out across the zenith. Following the line of the Plough's 'handle' down towards the horizon takes the view to the fourth-brightest star in the sky, Arcturus. Arcturus (Alpha Boötis) is of mag –0.04 – marginally brighter than Vega in Lyra – and is also one of the most highly-coloured stars. To the naked eye it is pronouncedly orange, reflecting its K spectral class. Arcturus is a giant star, with a surface temperature of 3600K, markedly cooler than the Sun. On a high-inclination orbit relative to our Galaxy's spiral arms, it is just passing through our neighbourhood, heading southwestwards by an apparent 2.3 arcseconds per year; in 500,000 years it will have retreated too far to be visible to the naked eye! Currently, it lies 36 light years away.

Observers using binoculars to enhance the hue of Arcturus may – as I did in 1973 – stumble across the star's wide line-of-sight pairing with a non-related star which provides a nice colour contrast. This is mag +6.0 SAO100949, about 20 arcminutes to the SSW of Arcturus. SAO100949 is a spectral class A star, and although it should be white appears greenish in a low power field.

Neil Bone