

The summer solstice (June 21st) has now passed; the Earth reaches Aphelion (furthest point of its orbit around the Sun on July 5th at a distance of 152 million km (95 million miles) and the evening twilight noticeably fades earlier throughout the month. In July there are several highlights to observe, Saturn rises by late evening and is followed by the planet Jupiter rising about an hour later. Both located low in the southern aspect and show retrograde motion moving westward against the background stars throughout the month.

Saturn is also found low in the southern aspect, a notable yellowish coloured star (0m magnitude) in the constellation of Capricornus. This favours more southern observers as the planet is low in UK skies. Saturn's ring system is open, although beginning to close slightly at 17° from 21° last year, still a classic view of this gem of the solar system. Small telescopes will show the rings and the brightest moon Titan. Larger telescopes show up to six or so fainter moons and any white oval features on the planets disk. Around the time of opposition the illumination of particles in the rings changes and brightening of the rings may be seen from late July due to the Seeliger effect. Saturn is at opposition on August 2nd.

Jupiter shines brightly low in the south in the constellation of Aquarius, telescopes show the planets characteristic banding of the equatorial cloud belts and the four bright Galilean moons Io, Europa, Ganymede and Callisto changing position night to night. Larger telescopes show detail of the Great Red Spot a pale pink / straw coloured feature in the South Equatorial Belt and also shadow transits of the Galilean moons (Details LAS Newsletter No 299)

The July night sky shows the summer constellations prominently in the south east from late evening and the late spring constellations disappear into the western twilight.

The summer night sky contains many fine objects to view for the enthusiast in the late evening hours but also has a few notable events of special interest. Look to the NW from around 90 minutes to 120 minutes after sunset or similarly to the NE hours before sunrise, when the Sun just below the horizon during the summer months. In the right conditions extremely high clouds at 80 km altitude known as Noctilucent Cloud (NLC) may be seen, NLC's show a bluish colour and also show filamentary structure.

Our own Milky Way galaxy stretches from the constellation of Auriga [The Charioteer], marked by the bright star Capella and through the constellations of Perseus and Cassiopeia all now positioned low in the north.

In the south east the summer constellation of Cygnus [The Swan] now seen as evening twilight fades. The Milky Way can be seen as a faint band of stars stretching low in the east down through constellations of Aquila [The Eagle], Scutum [The Shield] and towards Sagittarius [The Archer] and Scorpius [The Scorpion] in late evening skies, use binoculars to see the myriad of stars in these rich star clouds, best seen on clear dark moonless evenings from darker locations outside the town. Sagittarius is best seen in July, the constellation is known for the 'Teapot' asterism of stars has rich star fields and some fine star clusters located above the spout of the Teapot asterism; however you do need a good southern horizon and finder chart (see notes) to spot some of these.

Hercules is noted for the Globular cluster M13 containing some 750,000 stars, a nice view in a small telescope and its overlooked rival globular cluster M92. The bright star Vega in the constellation of Lyra [The Lyre] is seen low above the north east horizon and Altair in the constellation of Aquila low in the east. Vega, Altair and Deneb, in the constellation of Cygnus form the 'Summer Triangle' asterism, a useful sign post for the summer skies.

Look low in the southern aspect late evening to find the distinctive 'T' shaped asterism of stars of the 'head' of Scorpius. Although rather low as seen from the UK, look below the 'T' head of Scorpius to see the 'blood red' coloured star Antares. Antares name means 'The rival of Mars', a red super giant star, with a mass of some 20 solar masses. It has a diameter that, on the scale of our solar system, would be greater than the orbit of Mars. High in the south the bright orange star Arcturus in the constellation of Bootes [The Herdsman] is the brightest star in the northern hemisphere of the sky.

Planets in July 2021

Mercury at greatest elongation on July 4th is not observable in dawn twilight rising with or after sunrise

Venus is visible low in evening twilight by around 22:00 BST , conjunction with Mars around July 13th

Mars is just south of Venus July 12th /13th - binoculars show the red colour but Mars is outshone by brilliant Venus . Observe these two over a few nights to see Venus slip past Mars in evening twilight – separation 0.5°.

Jupiter is low in the south east in Aquarius late evening, cloud belt and Galilean moons visible using a small telescope. Larger instruments show a number of shadow transits by Io , Europa and Ganymede during July

Saturn approaches opposition in early August , low in the south in Capricornus - a good time to see this ringed `gem`. Catch the apparent ring brightening just before opposition due to the `Seelinger Effect`

Uranus is placed in our– best views in autumn skies.

Neptune is placed in our midnight skies – best views in autumn skies.

Dwarf planet Pluto close to opposition in the constellation of Sagittarius.

Moons phases in July 2021

New Moon	July 10th	Moonless, best time for deep sky observing.
First Quarter	July 17 th	Best days to see shadow details in lunar craters (early evening)
Full Moon	July 24th	Best days to see bright ray craters like Copernicus/ Tycho. Moon illusion at Moonrise 21:55 BST
Last Quarter	July 31st	Moon visible in daytime skies. Do not look directly at the Sun.

Meteor showers

Southern δ Aquarids, maxima around 28th July, ZHR 20/hr, unfavourable

Capricornids, several maxima in July, bright yellow / blue meteors, low rates.

The highlights of the month.

Jupiter is low in the southern aspect – telescopes show the equatorial cloud belts and four Galilean moons.

Saturn is low in southern aspect; rings nicely wide open at 17° DE [tilt] showing Saturn's North Pole.

Scutum, Sagittarius and Scorpius are visible low in the south as twilight fades. Good star fields seen on moonless evenings. Also note the deep red colour of star Antares `the rival of Mars` in Scorpius and globular cluster M4.

Noctilucent cloud – watch the NW skies from 90 to 120 minutes after sunset to see these electric blue clouds.

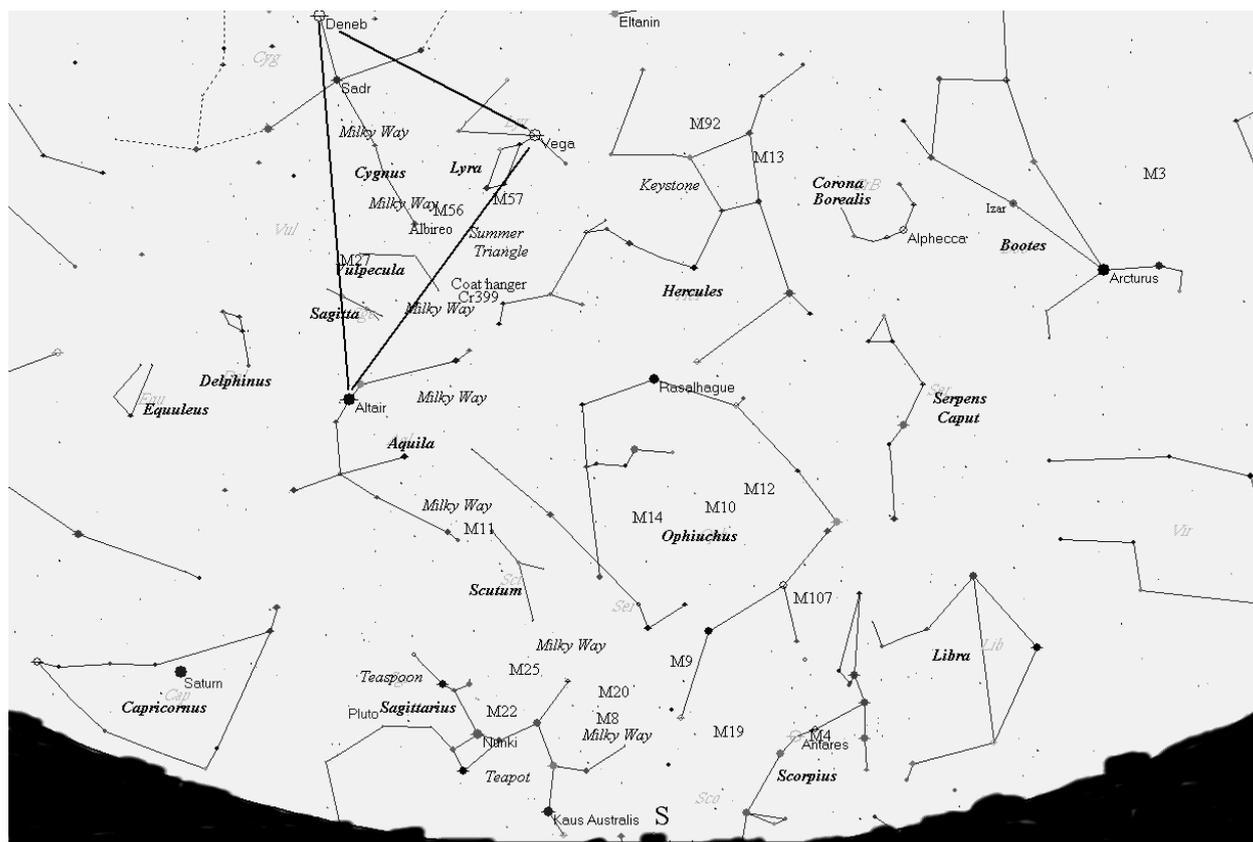
Low in the south, the red star Antares in the constellation of Scorpius.

Venus and Mars at conjunction in evening twilight (July 11th to 13th) also with crescent Moon visible.

More detailed sky notes and LAS Newsletters, Finder charts are available to LAS members via the Members` page on the LAS Website www.lutonastrolink.org.uk

Waxing crescent Moon visibility . **Caution. Do NOT look at the Sun directly with or without optical aid.** A very thin, 18 hour old , 0.6% waxing crescent Moon is visible **after sunset** from around 21:30 BST to moonset 22:11 BST on July 10th . **Only look for the crescent Moon after the sun has completely set.**

Sky looking south at 23:30 British Summer Time (BST), early July



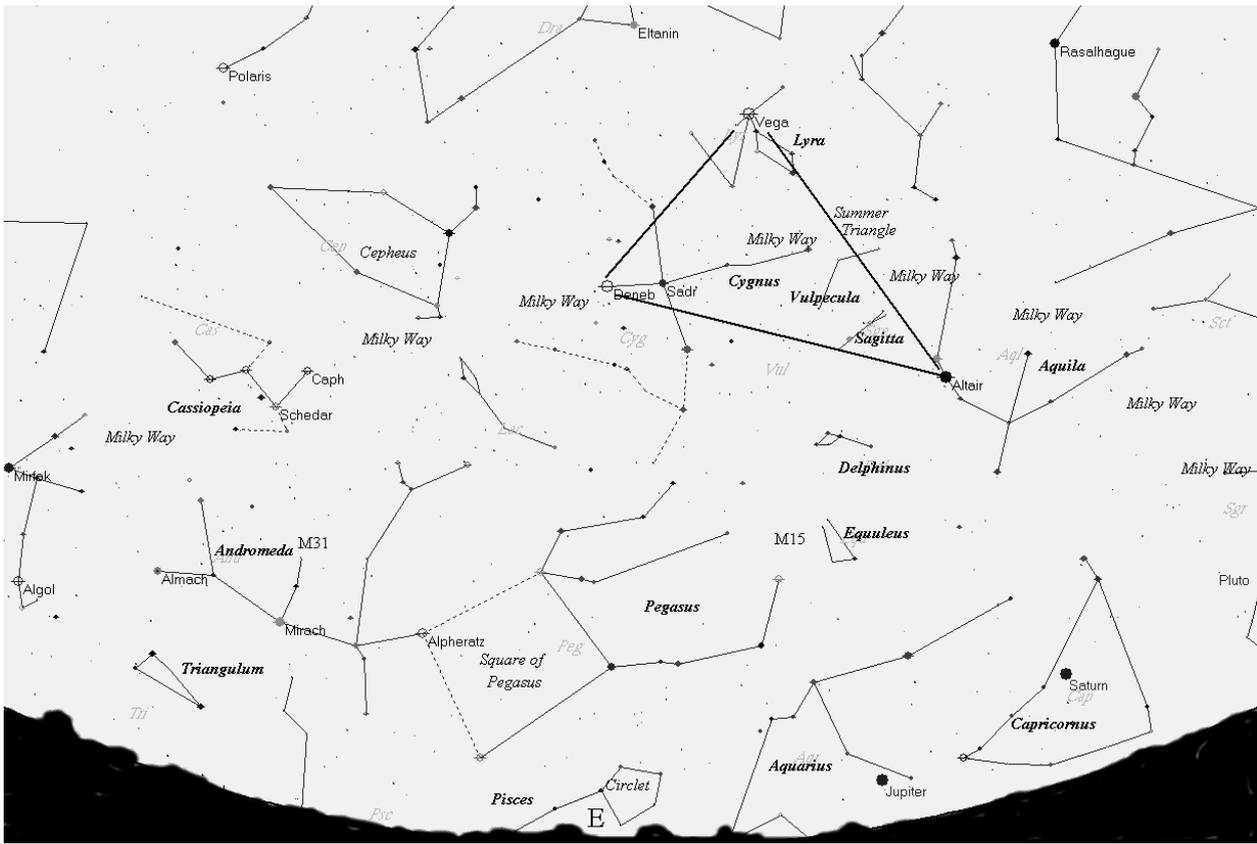
In the south planet Saturn currently is located in Capricornus, to the east of the Teapot asterism

Low In the south the constellation of Sagittarius (noted by the famous Teapot asterism) rises late evening. This area of sky is rich in star fields of the Milky Way and has many fine clusters but is only observable in our evening skies during the summer months. Looking at Virgo we look outside our own Milky Way galaxy towards the external galaxies of the Virgo Cluster, look at Sagittarius and into the spiral arm of our own galaxy, the centre of our own galaxy is however just too far south to see from the UK

To the west of Sagittarius is the constellation of Scorpius. From the UK we only see the head; the rest of the constellation is visible from more southerly locations. Catch a glimpse in July of the red star Antares (The rival of Mars) on the stem of the `T` asterism low in the south/southwest.

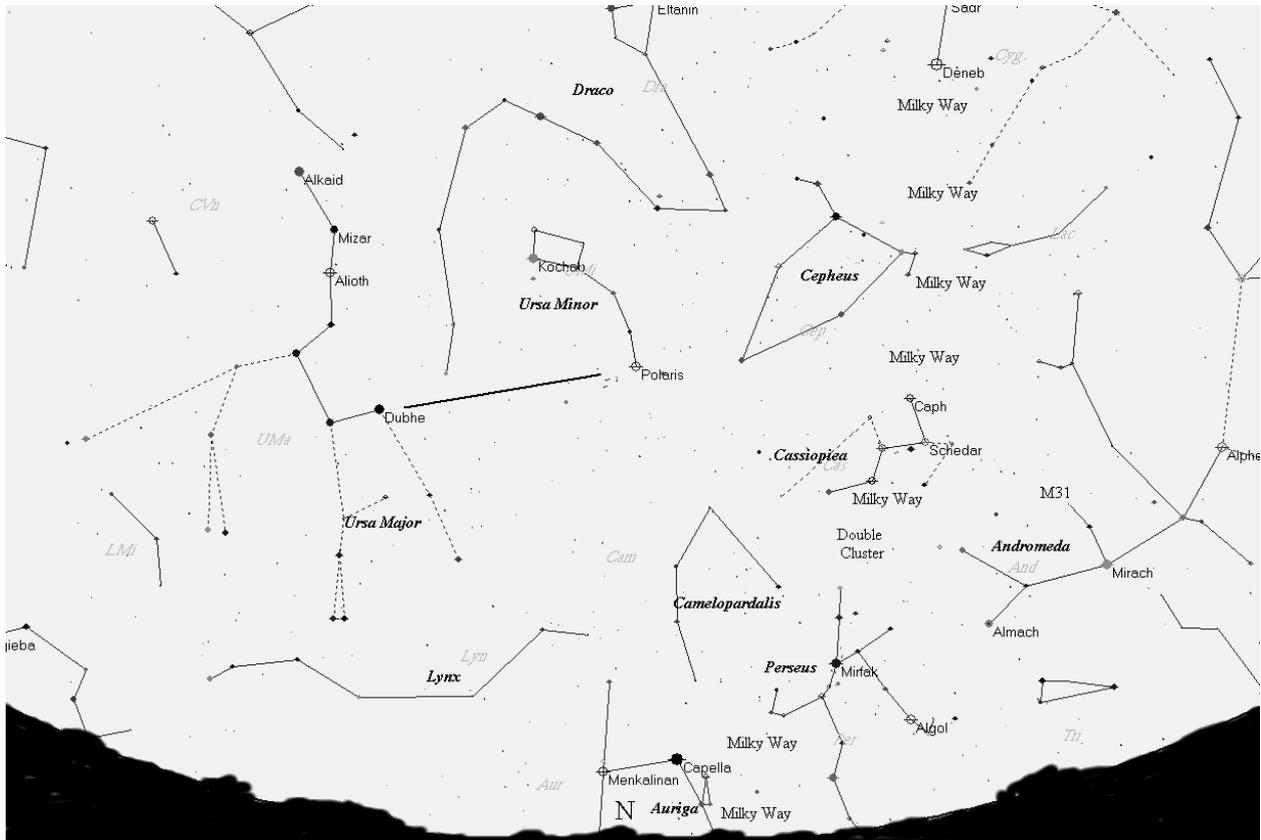
The orange star Arcturus is found by following the curve of stars in the handle of the Plough down. The constellation of Bootes, resembles a `kite` or `Club` in shape. The star Izar is a beautiful orange/blue double star visible in small telescopes. To the east of Bootes find the `horseshoe` shaped constellation of Corona Borealis (Northern Crown) and the `Keystone` Asterism in the constellation of Hercules. Hercules also has M13 the famous Globular Cluster, visible to the unaided eye as a misty patch; telescopes show the true wonder of this cluster with over 750,000 stars. Likewise another nice globular is M92 in Hercules.

Sky looking east at 23:30 BST early July



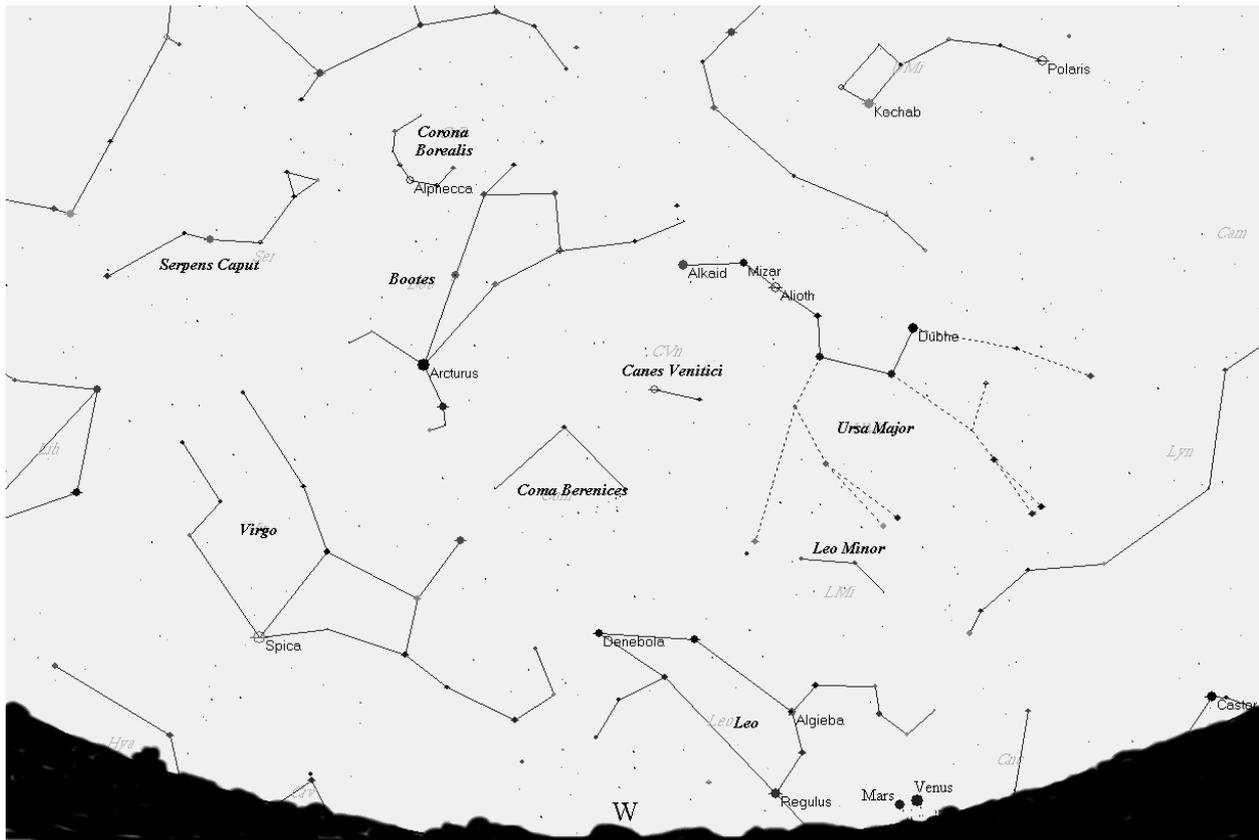
In July, the summer constellations of Lyra and Cygnus are rising by mid evening, the Milky Way may be visible on moonless evenings from a dark site. Stretching from low in the south east to low in the north west, this misty band is best seen with binoculars, follow the star fields from Altair, down through Scutum and into Sagittarius is stunning in a dark sky.

Sky looking north at 23:30 BST in early July



The Plough stands with its handle pointing upward follow the pointer's Dubhe and Merak to find the polestar Polaris. The 'W' shaped constellation of Cassiopeia is near to its lowest point in the north late evening. The Milky Way follows the galactic equator and stretches from east through the constellations of Cygnus, Cassiopeia, Perseus and down into the northern horizon. The bright star Capella is positioned almost due north and is circumpolar i.e. does not set from our latitude.

Sky looking west at 22:30 BST early July



Low in the west late evening the bright orange star Arcturus and the white star Spica can be found by following the handle of `The Plough` asterism in an extended arc.

More detailed finder charts and newsletters are available to LAS members on the member's page.