

The Astronomical Sky Above Edinburgh and Lothian in July 2024

The Earth reaches the furthest point from the Sun all year and we still anticipate the eruption of the Blaze Star in Corona Borealis (The Northern Crown).

Aphelion is the term used for when the Earth and Sun are furthest apart and occurs on 5 July at 6:16 am when the Earth will be 152,099,962 km away from the Sun. This is 4,999,330 km further than perihelion (closest to the Sun) last January. To put it in terrestrial terms, if you were driving your car at a zippy 100 km/h, it would take you 5.7 years travelling 24/7 to cover the extra 3.13 million miles!

The Sun passes from Gemini (The Twins) on 20 July at 6:07 am and enters Cancer (The Crab). The good news is that we are getting longer nights now that the Solstice has passed. Daylight shortens from 17:29 (17.487 hours) on 1 July to 16:05 (16.087 hours) on 31 July so we gain 1 hour and 24 minutes of night time, by the end of the month. The bad news is that we are still within the summer months of perpetual twilight, so reducing astronomical visibility to the brightest objects in the sky. The Sun, however, is reaching 'Solar Max' which is the peak of the 11 year Sun spot cycle. This, coupled with the recent solar flares,

should herald better aurorae between now and the end of the year.

The new Moon appears on 5 July at 11:57 pm in Gemini (The Twins) beginning a new synodic (Lunar) month.

Lunar apogee (furthest from Earth) occurs on 12 July at 9:15 am and takes the Moon to

404,400 km away from Earth—around 20,000 km further than average—subtending an angle of 29.5 arc-minutes.

The first quarter of the new cycle shows up on 13 July at 11:49 pm in Virgo (The Maiden).

The full Buck Moon makes an appearance on 21 July at 11:17 am in Capricornus (The Sea Goat). This is also known as

the Thunder Moon. Lunar perigee (closest to Earth) on 24 July at 6:50 am finds the Moon some

364,895 km away from Earth—around 19,505 km closer than average—subtending an angle of 32.7 arc-minutes.

Finally, the Moon enters last quarter on 28 July at 3:52 am in Aries (The Ram).

For the inferior planets: Mercury reaches greatest eastern elongation, at 26.9 degrees, on 22 July at 7:40 am.

On 27 July at 4:34 pm it reaches aphelion at 70 million km. Since it never reaches more than 7 degrees above the horizon after sunset, it is difficult to observe. Venus is still lost in the Sun's glare but reaches perihelion at 107.5 million km on 10 July at 6:20 am.

Around 3:30 am throughout July, all the superior planets should be viewable. It helps that they all get closer to Earth over the month with the consequent increase in brightness. On 15 July, around 3:30 am, Mars at 1.1 mag will conjunct with Uranus at 5.8 mag being separated by less than 1 degree. Jupiter—around -2.0 mag—conjuncts with the waning crescent Moon at 5 degrees separation on 3 July after 3:30 am in Taurus (The Bull). It does so again when it rises, around 1 am, on 31 July. Saturn conjuncts on 25 July, after rising at 11 pm, with the waning gibbous Moon

which will be less than half a degree away.

We should take this moment to herald the re-awakening of Voyager I. Launched on 5 September 1977, Voyager I is now in interstellar space and holds the record as the furthest man-made object in the cosmos. At 15 billion miles from Earth it takes almost a day to send data back to us. Some science highlights include: discovery of Jovian rings, 2 new Jovian moons, Saturn's multi-banded ring system (including B-ring spokes), 5 new Saturnian moons and Titan's Earth-like (nitrogen rich) atmosphere. Perhaps, though, the most significant contribution to human culture from Voyager I is the image known as the 'Pale Blue Dot': a family snapshot taken as it left the outer Solar system in 1990. After a computer glitch caused a hiatus of several months in data streaming, NASA scientists fixed the spacecraft and it is now returning data from interstellar space. We might expect to collect data from this remarkable spacecraft until the 2030s!

There are four meteor showers in July but visibility is nigh on impossible either due to twilight, Moon illumination, latitude or shooting star rates but we mention them for completeness.

The July Pegasids peak on 10 July are radiant from Pegasus (The Winged Horse) near the star Markab (alpha Pegasi).

Only 5 meteors per hour are expected. The parent body is thought to be comet C/1979 Y1 (Bradfield).

On 28 July, we have the gamma Draconids radiant from Draco (The Dragon) near the star Rastaban (beta Draconis).

The parent body is unknown.

On 31 July, we have the southern delta Aquariids, radiant from Aquarius (The Water Bearer) near it's namesake star.

There may be up to 25 meteors per hour but, as the name implies, viewing is much better at southern latitudes.

The parent comet may be 96P/Machholz.

Also on 31 July, we have the alpha Capricornids radiant near

the horns of the sea goat.

Discovered in 1871, the parent comet is 169P/NEAT but the Earth won't pass through the main cometary debris for another 2 centuries!

Comet 13P/Olbers begins July at 7.5 mag in Lynx (The Lynx) and ends the month at 8 mag in Ursa Major (The Great Bear).

It will reach the closest approach to Earth on 20 July at 284 million km. This Halley-like comet has a period of 69 years and was last visible in 1956 but you will be lucky, even with binoculars or a telescope, to catch it this time around.

The recurrent nova called the Blaze Star (T CrB) is expected to pop sometime before the end of the year.

We eagerly anticipate this once in a lifetime event but, of course, would prefer it later in the year and, certainly, outside the summer's perpetual twilit sky! Vigilant observers should continue to monitor the sky near CrB epsilon-13 to see if the crown gains another jewel. Alphecca (sometimes called Gemma or alpha CrB) is the brightest star in the constellation, at 2.2 mag, and should guide you to this transient event.

At the time of our sky map, some constellations visible are Draco (The Dragon) at zenith, Camelopardalis (The Giraffe) in the north, Cygnus (The Swan) in the east, Leo (The Lion) in the west, and Ophiuchus (The Serpent Bearer) in the south.

The ecliptic hosts Sagittarius (The Archer), Scorpius (The Scorpion), Libra (The Scales), Virgo (The Maiden), and Leo (The Lion).

Around mid-July, after sunset and into the wee hours, look south for the tail of Scorpius (The Scorpion) featuring the red super-giant star Antares and the M4 cluster of more than 1000 stars.

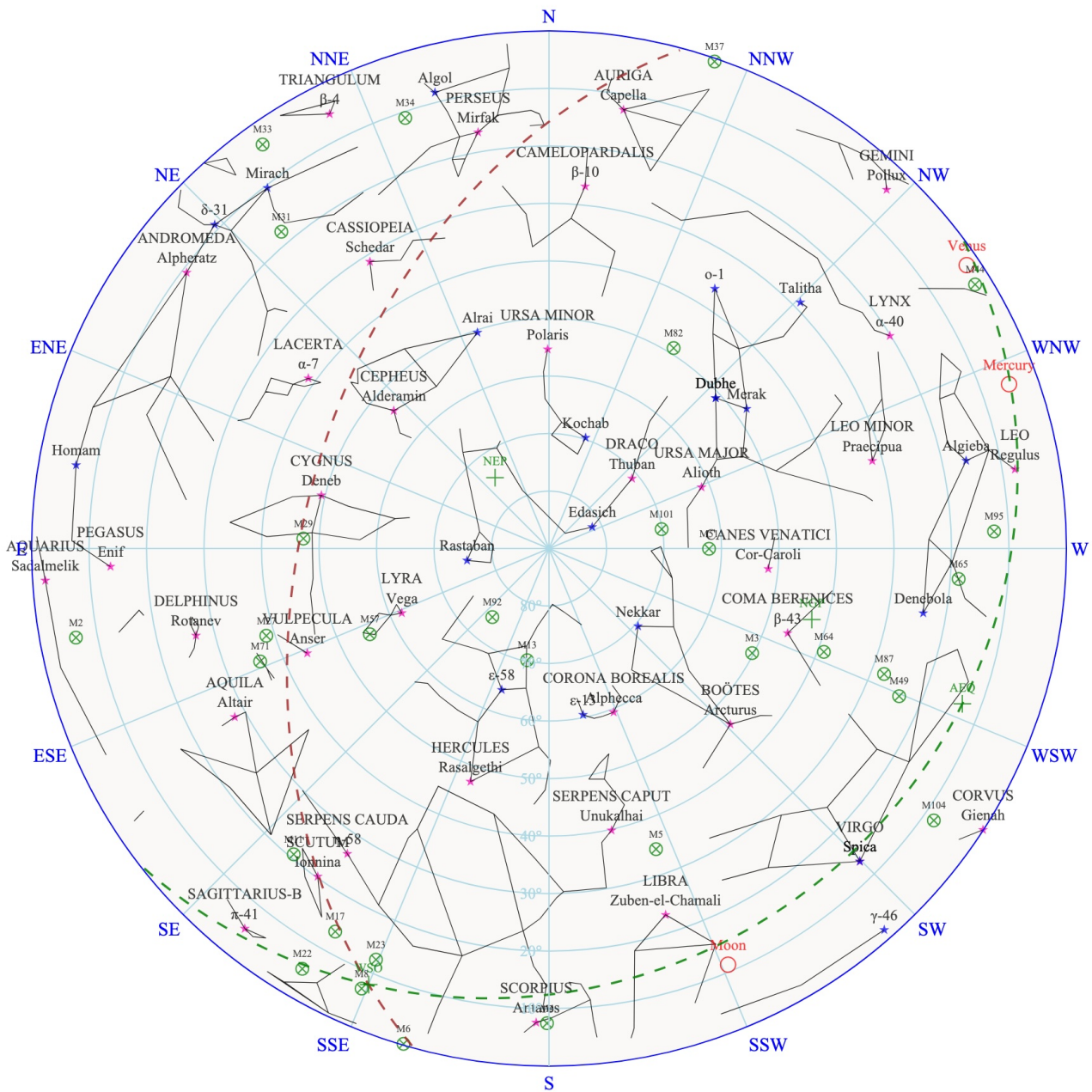
The 'Summer Triangle'—Vega in Lyra (The Lyre), Altair in Aquila (The Eagle) and Deneb in Cygnus (The Swan)—is prominent in the east. The 'Diamond of Virgo'—Arcturus in Bootes (The Herdsman), Cor Caroli in Canes Venatici (The Hunting Dogs), Denebola in Leo (The Lion) and Spica in Virgo (The Maiden)—is prominent in the south-west.

Circumpolar constellations—always above the horizon—include Cassiopeia (The Seated Queen), Cepheus (The King) and Ursa Major (The Great Bear).

Edinburgh and Lothian Ephemeris

2 July 10:58 am	Neptune reverses direction to retrograde	Pisces
3 July 3:30 am	Jupiter approaches within 5.0° of waning crescent Moon	Taurus
5 July 6:16 am	Earth aphelion 152,099,962 km	Gemini
5 July 11:57 pm	New Moon, Meeus lunation 303	Gemini
6 July 4:47 pm	Ceres at opposition	Sagittarius
10 July 12:00 am	July Pegasids (175 JPE) meteor shower	Pegasus
10 July 6:20 am	Venus perihelion 107,479,894 km	Cancer
12 July 9:15 am	Lunar apogee 404,400 km	Virgo
12 July 11:27 pm	Moon crosses descending node	Virgo
13 July 11:49 pm	Moon at first quarter	Virgo
15 July 3:30 am	Mars approaches within 1.0° of Uranus	Taurus
18 July 0:00 am	Moon close to Antares and M4	Scorpius
19 July 12:45 am	Mercury at dichotomy	Leo
20 July 6:07 am	Sun leaves Gemini, enters Cancer at 1.016 AU	Cancer
20 July 11:00 pm	Comet 13P/Olbers closest to Earth at 284 million km	Leo Minor
21 July 3:56 am	55 year anniversary of first Moon landing	Capricornus
21 July 11:17 am	Full (Buck) Moon	Capricornus
22 July 7:40 am	Mercury at greatest eastern elongation, 26.9°	Leo
23 July 6:35 am	Dwarf planet Pluto at opposition	Capricornus
24 July 6:50 am	Lunar perigee 364,895 km	Aquarius
25 July 0:30 am	Saturn approaches within 0.5° of waning gibbous Moon	Aquarius
26 July 6:32 am	Moon crosses ascending node	Pisces
27 July 4:34 pm	Mercury aphelion 69,817,845 km	Leo
28 July 3:52 am	Moon at last quarter	Aries
28 July 2:00 am	Gamma Draconids (184 GDR) meteor shower	Draco
30 July 2:30 am	Waning crescent Moon near the Pleiades (M45)	Taurus
31 July 0:00 am	Alpha Draconids (001 CAP) meteor shower	Capricornus
31 July 0:00 am	Southern Delta Aquariids (005 SDA) meteor shower	Aquarius
31 July 1:30 am	Jupiter rises within 5.0° of waning crescent Moon	Taurus

Edinburgh and Lothian
(55.95°, -3.19°, 10.00m for 15 July 2024 10:00 pm)



The sky above Edinburgh and Lothian at 11 pm on 1 July, 10 pm on 15 July and 9 pm on 30 July. The green, dashed, line is the Ecliptic and the brown, dashed, line is the Milky Way. Asterisms below 10° may be truncated because of distortion. To use the map, face any direction and then rotate the map until that cardinal point is nearest to you. The zenith (point directly overhead) is at the center of the circle and the edge is the horizon.