Astronomical sky above Edinburgh and Lothian April 2024

The opening weekend of April is the last chance to try the Messier Marathon in 2024 but the headline grabbing news is that the Devil's Comet reaches perihelion, and should be visible with the naked-eye, plus the Lyrid meteor shower peaks around the 3rd week. There is also the possibility of a 'new star' appearing in the April sky.

First, though, the Sun starts the month in Pisces and enters Aries on 18 April at 6:42 am. Daylight lengthens from 13:09 (13.158 hours) on 1 April to 15:20 (15.341 hours) on 30 April so we lose 2 hours and 11 minutes of night time by the end of the month. Sunset is, of course, when the upper Solar limb reaches the horizon at 0° altitude. At that moment, the Sun enters civil twilight until it reaches −6° altitude. Once past that marker, it enters nautical twilight which lasts until the Solar altitude reaches −12°. It then enters astronomical twilight (dusk for the evening, dawn for the morning) which ends when the Sun reaches −18°. After astronomical dusk (evening twilight) and before astronomical dawn (morning twilight) are the best hours for observing but as we head into

the spring and summer months, this timespan contracts considerably. Consider this month: on 1 April astronomical dusk ends at 10:08 pm and astronomical dawn begins at 4:23 am the following day. Astronomical dark time, therefore, extends for 6 hours and 15 minutes. By the end of the month, astronomical dusk ends at 12:07 am (the following day!) and astronomical dawn begins at 2:03 am (the same day) so we are down to 1 hours and 56 minutes of dark sky astronomy. We can see how easy it is to pine for cold, dark Edinburgh and Lothian winter nights.

On 8 April there is a total eclipse of the Sun over North America which, technically, will be seen as a partial Solar eclipse over Edinburgh and Lothian. Viewing, however, will be nigh on impossible as the eclipse begins at 7:54 pm at 1° altitude in the west, the Moon sets at 8:02 pm and the Sun sets at 8:06 pm. Even so, please, never look directly at the Sun but wear suitable eye protection, eclipse or not.

The Moon enters last quarter on 2 April at 4:15 am in Sagittarius. Lunar perigee (closest to Earth) on 7 April at 6:46 pm finds the Moon some 358,841 km away from Earth—around 25,559 km closer than average—subtending an angle of 33.3 arcminutes. The new Moon appears on 8 April at 7:21 pm in Pisces beginning a new synodic (Lunar) month. The first quarter of the new cycle shows up on 15 April at 8:13 pm in Gemini. Lunar apogee (furthest from Earth) occurs on 20 April at 3:03 am and takes the Moon to 405,650 km away from Earth—around 21,250 km further than average—subtending an angle of 29.4 arcminutes. The full Pink Moon makes an appearance on 24 April at 0:49 am in Virgo.

Planet watchers will have a hard time in April with Mercury, Venus, Mars, Saturn and Neptune all lost in the Sun’s glare or twilight. Jupiter starts the month 865 million km from Earth and ends the month 31 million km further away so fades slightly from -2.1 to -2.0 mag. It will be visible in the evening hours all month but sets before midnight and twilight

will encroach on the view as the month goes on. Uranus is in lock-step with Jupiter and starts the month at 3,047 million km from Earth and also recedes by 32 million km by month's end so it, too, fades, this time from 5.8 to 5.9 mag. Jupiter and Uranus will conjunct for several hours after sunset on 20 April being separated by 0.5°. Our skymap shows them in close proximity some 5 days earlier than conjunction near the west-north-west horizon at 10 pm.

Although we may be disappointed by the lack of planetary objects to view in April, let us take heart that there are still wonders to be seen.

Shooting star watchers may enjoy the Lyrid meteor shower between 14–30 April. These originate in Lyra (The Lyre) and should peak 21–22 April with 18 meteors per hour. Good viewing will be a couple of hours either side of midnight. Seeded by (C/1861 G1) Thatcher's Comet, these are the oldest meteor showers having been observed by Chinese astronomers in 687 BCE. Thatcher's comet has a period of around 415 years and will not be visible in our night sky until it returns to perihelion sometime in 2276. The Eta Aquarids, radiant from Aquarius (The Water Bearer), are active after 19 April but peak in the early part of next May.

Comet 12P/Pons-Brooks is a periodic comet with an orbital period of 71.32 years. First discovered by Jean-Louis Pons in 1812—although there is some evidence it had been seen before—it was recovered in 1883 by William Brooks. On 10 June 2020, it was recovered again by the Lowell Discovery Telescope when the comet was extremely faint, 23 mag, and beyond the orbit of Saturn. Subsequent observations by professionals and amateurs alike, all over the world, have resulted in a predicted perihelion on 21 April. In fact, when it swings around the Sun at perihelion, it will be travelling at a velocity of 47.1 km/s at a distance of 116.8 million kilometres (0.781 AU). It will be closest to Earth, at 232 million kilometres (1.55 AU), on 2 June 2024.

In July 2023, the comet underwent a 5 magnitudes outburst, brightening some 100×, which resulted in a horse-shoe shaped coma. This appearance of ‘horns’ earned it the soubriquet the Devil’s Comet although there is nothing sinister about it. A subsequent outburst in October 2023 lead to a further brightening of approximately 4 magnitudes, 40× brighter, and it is now expected to peak at around 4.4 magnitude. This is naked-eye brightness and certainly well within the grasp of a pair of binoculars or a small telescope.

On 1 April at 9 pm it will be 1.5° left of Hamal, the principal star of Aries (The Ram), in the western sky. On 8 April at 9:30 pm, still in Aries it brightens to 4.7 mag but is lower in the western sky. The nearest bright object will be Jupiter. It remains in the vicinity of Jupiter, passing closest on 13 April, when the comet will be 3° south of the gas giant planet. Around 15 April at 10 pm—the time of our skymap—it will be 4.5 mag but barely on the horizon at 1° altitude in Taurus (The Bull). For Edinburgh and Lothian, we will not see the perihelion passage as the comet will not have risen on that day. Thereafter, it sets earlier and earlier and will be lost to us.

A nova (from the Latin for ‘new’) is a type of transient astronomical event whereby progenitor white dwarfs expand their hot outer layers and luminosity increases. Typically, this occurs once but there are a few recurrent novae and T Coronae Borealis (T CrB), better known as the Blaze Star, is one such object which erupts every 80 years. It last erupted in 1946, 78 years ago, but it usually dims for just over a year before the nova ocurrs. For the Blaze Star, this dimming started last March so astronomers are anticipating a rapid increase in brightness in the next few months. The Blaze Star is actually a binary system located 2,500 light years away in the constellation Corona Borealis (The Northern Crown), which is visible on our skymap in the east. The principal star, Alphecca, which shines around 2.2 magnitudes is visible with

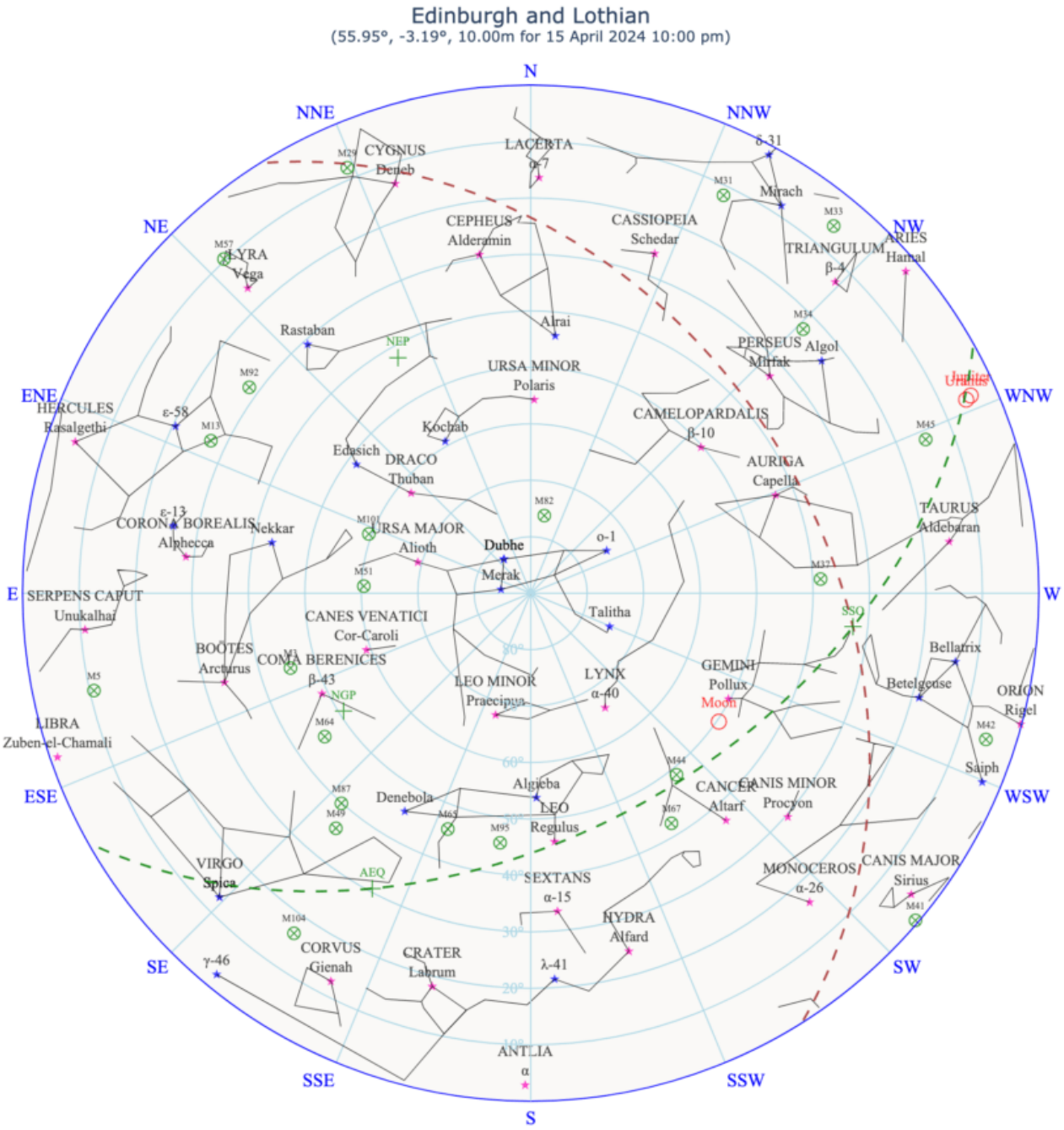
the naked-eye. T Coronae Borealis will be expected to brighten to about 2 magnitudes (similar to Polaris) and last a few days with the naked-eye and a week with binoculars. So keep Corona Borealis in your sights, near the star CrB ε-13, over the next few months to see if you can witness this once in a lifetime event.

At the time of our sky map, some constellations visible are Ursa Major (The Greater Dog) at zenith, Bo ötes (The Herdsman) in the east, Orion (The Hunter) in the west, Cepheus (The Seated King) in the north and the sky's largest constellation Hydra (The Female Water Snake) in the south. The ecliptic hosts Virgo (The Maiden), Leo (The Lion), Cancer (The Crab), Gemini (The Twins) and Taurus (The Bull). The 'Winter Triangle' (Sirius, Betelgeuse, Procyon) remains visible in the south-west as does the 'Winter Hexagon' (Rigel, Aldebaran, Capella, Pollux, Procyon and Sirius). Circumpolar constellations—always above the horizon—include Cassiopeia (The Seated Queen), Draco (The Dragon), Ursa Minor (The Little Bear) and Perseus (The Hero).

If you missed last month's Messier marathon—the opportunity to observe all 110 Messier objects within one night—you get a second chance on the weekend on 6 April. Good luck!

Edinburgh and Lothian Ephemeris

1 April 9:00 pm	Comet 12P/Pons-Brooks, 5.1 mag, 16°N 286°W	Aries
1 April 10:44 pm	Mercury at stationary retrograde point	Pisces
2 April 4:15 am	Moon at last quarter	Sagittarius
7 April 6:46 pm	Lunar perigee 358,841 km (0.934)	Pisces
8 April 1:19 pm	Moon crosses ascending node	Pisces
8 April 7:21 pm	New Moon, Meeus lunation 300	Pisces
8 April 7:54 pm	Partial solar eclipse	Pisces
8 April 9:30 pm	Comet 12P/Pons-Brooks, 4.7 mag, 9°N 290°W	Aries
10 April 10:08 pm	Jupiter 4°S of Moon	Aries
12 April 12:03 am	Mercury at inferior conjunction	Pisces
13 April 9:00 pm	Jupiter 3°N of Comet 12P/Pons-Brooks	Aries
15 April 8:23 am	Earth Mercury closest approach 86,170,345 km (0.576 AU)	Pisces
15 April 8:13 pm	Moon at first quarter	Gemini
15 April 10:00 pm	Comet 12P/Pons-Brooks, 4.5 mag, 1°N 293°W	Aries
18 April 6:42 am	Sun leaves Pisces, enters Aries at 1.004 AU	Aries
20 April 3:03 am	Lunar apogee 405,650 km (1.055)	Leo
20 April 10:00 pm	Jupiter conjuncts with Uranus, 0.5° separation	Aries
21 April 1:42 am	Dwarf planet Haumea at opposition	Boötes
21 April 4:16 am	Comet 12P/Pons-Brooks, perihelion $116.8 \times 10^6 km$, 4.4 mag	Taurus
21 April 10:00 pm	Lyrid meteor shower peaks over next 4 hours	Lyra
22 April 11:44 am	Moon crosses descending node	Virgo
23 April 3:02 am	Spica 1.5°S of Moon	Virgo
24 April 12:49 am	Full (Pink) Moon	Virgo
25 April 1:24 pm	Mercury retrograde orbit returns to direct	Pisces
30 April 5:19 pm	Mercury aphelion 69,817,792 km (0.467 AU)	Pisces



The sky above Edinburgh and Lothian at 11 pm on 1 April, 10 pm on 15 April and 9 pm on 30 April. 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 centre of the circle and the edge is the horizon.