The astronomical sky over Edinburgh

A new year and a new beginning.

Before we get to this month’s almanac, we can predict that 2024 will be an excellent year for Edinburgh and Lothian sky watchers with three eclipses, two super Moons, a black Moon, a (seasonal) blue Moon, at least two naked-eye comets, an occultation, 11 meteor showers plus the usual conjunctions, oppositions and quadratures expected of our solar system neighbours.

As for January 2024, the Sun starts the month in Sagittarius and enters Capricorn on 20 January at 6:00 am. Daylight lengthens from 07:05 (7.080 hours) on 1 January to 08:32 (8.539 hours) on 31 January so we lose 1 hour and 28 minutes of night time by the end of the month. Our home planet reaches perihelion (closest to the Sun) at a distance of 147.1 million km (0.983 AU) on 3 January at 00:39 am.

Lunar apogee (furthest from Earth) occurs on 1 January at 3:25 pm and takes the Moon to 404,873 km away from Earth—around 20,473 km further than average—subtending an angle of 29.5 arcminutes. The Moon enters last quarter on 4 January at 3:30 am in Virgo. The new Moon appears on 11 January at 11:57 am in Sagittarius beginning a new synodic (Lunar) month. Lunar perigee (closest to Earth) on 13 January at 10:29 am finds the Moon some 362,283 km away from Earth— around 22,117 km closer than average—subtending an angle of 33.0 arcminutes. The first quarter of the new cycle shows up on 18 January at 3:53 am in Pisces. Later in the month, the full Wolf Moon makes an appearance on 25 January at 5:54 pm in Cancer. However, the Moon sees a second apogee within January that occurs on 29 January at 8:06 am and takes the Moon to 405,751 km away from

Earth—around 21,351 km further than average—subtending an angle of 29.4 arcminutes.

For the inferior planets: Mercury brightens from 0.5 mag to -0.3 mag as the month goes on and reaches a stationary point on 2 January at 3:51 am after which it returns to a prograde path from retrograde. It does not, of course, change direction along the ecliptic but appears to change direction, on sky, when viewed from Earth due to the relative orbital motions. It is also at greatest western elongation on 12 January at 2:39 pm, some 23.5° from the Sun. Around that time, you might catch Mercury, about an hour before sunrise, very low in the south-east. We fare much better with Venus, fading slightly from -4.0 mag to -3.9 mag, which is still a morning object best viewed before sunrise, again in the south-east.

For the superior planets: Mars, once again, is lost to us this month in the Sun's glare. All the other superior planets, though, will be visible for several hours after 6 pm each night before mid- month with only Saturn dropping out after that. Jupiter is still a bright evening object but loses a little of its lustre by fading from -2.6 mag to -2.4 mag throughout January. It reaches eastern quadrature on 27 January at 7:18 am in Aries when the angle between Sun, Earth and Jupiter equals 90°. Saturn, steady at 1.0 mag, sets earlier as the month goes on but is visible for a minimum of an hour after astronomical twilight ends (–18° altitude, around 6 pm) until mid-month. Uranus, at 5.7 mag, reaches it's own stationary point after which it returns to a prograde path from retrograde on 27 January at 10:50 am. It should be visible all evening and into the wee hours every day of the month. Neptune, resolutely a binoculars-only object at 7.8 mag, is visible in Pisces (and bordering Aquarius) for a few hours after sunset but the window closes as the month goes on.

In terms of conjunctions, the Moon dances a merry jig with multiple partners in January for several hours in each instance. It rises close to Spica in Virgo (The Maiden) on 5

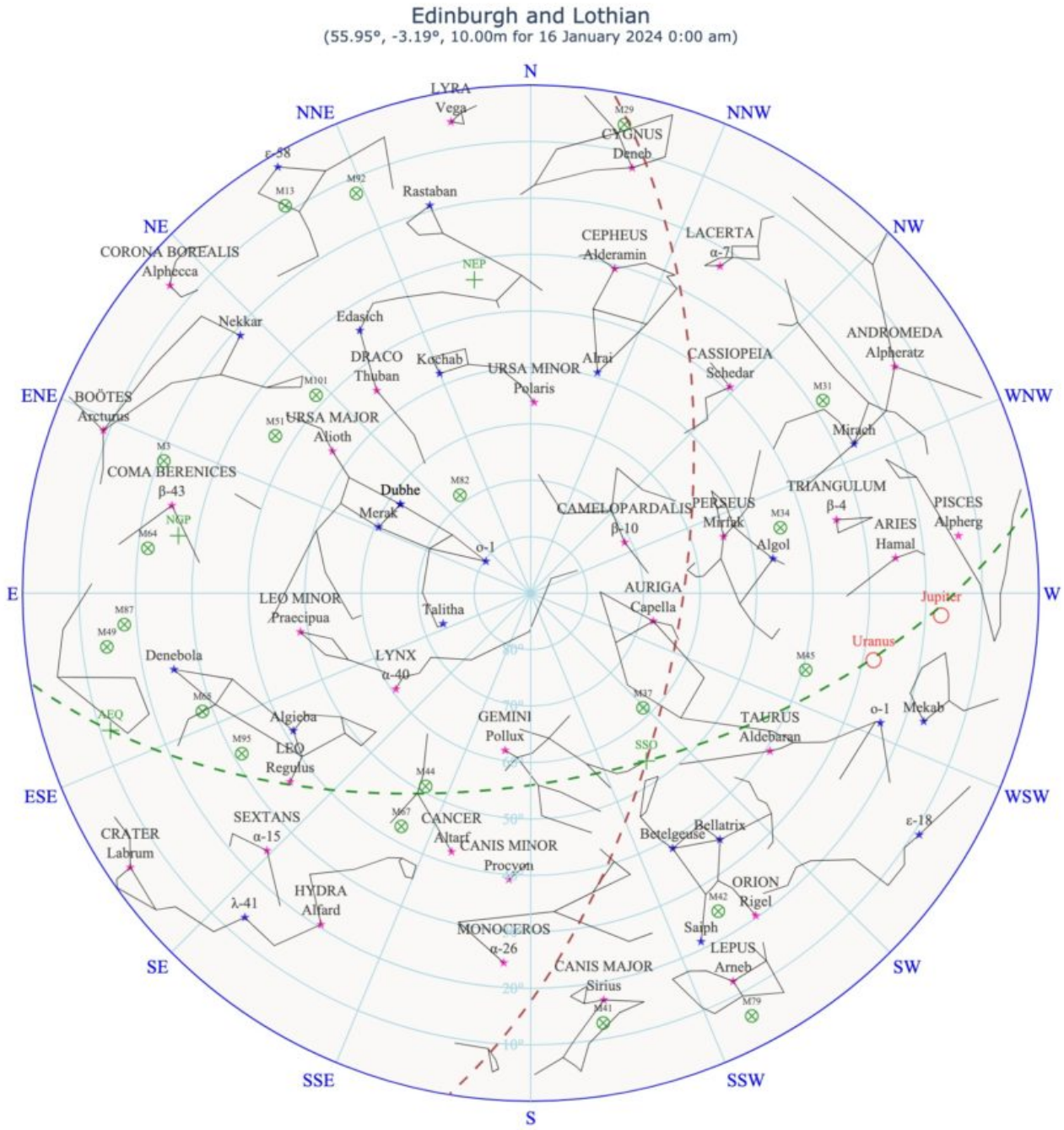
January at 1:34 am. On 14 January at 4:58 pm it conjuncts with Saturn whilst both are setting. It does meet with Neptune on 15 January at 6:43 pm but the waxing crescent Moon, illuminated at 25%, will be bright enough to outshine our sea-god planet. The conjunction with Jupiter on 18 January at 6:43 pm will be much more easily visible. The Moon also visits the 'Seven Sisters' (The Pleiades, M45) in Taurus (The Bull) after sunset on 20 January at 5:01 pm, sneaks past Pollux, in Gemini (The Twins), on 24 January at 7:05 pm and Regulus, the brightest star in Leo (The Lion), on 27 January at 8:54 pm.

Although no naked-eye comets appear in January, binoculars or a telescope will catch a glimpse of 12P/Pons-Brooks. Three times the size of Mount Everest and nicknamed the Devil's Comet because of its appearance, it is approaching perihelion over the next few months. The prediction is for it to become spectacular and be visible during the April total Solar eclipse in the USA. Certainly an object to keep an eye on. In January, it passes through Cygnus (The Swan) after sunset but don't confuse it with M29. Also viewable with binoculars or a telescope is 62P/Tsuchinshan located between Denebola in Leo (The Lion) and M87.

The Quadrantids meteor shower, radiant from Bo ötes (The Herdsman), will be active 1–5 January with peak activity overnight on 3–4 January. The origin is thought to be dust left behind by the extinct comet called 2003 EH1 which orbits the Sun with a 5.5 year period. The meteor shower should be visible after astronomical twilight ends (6 pm) with good viewing throughout the evening. The radiant point is between Edasich in Draco (The Dragon) and Nekkar in Bo ötes (The Herdsman) and both are labelled on our skymap. Expect, possibly, 100 meteors per hour. Once the waning gibbous Moon rises, around 2 am on 4 January, the fainter meteors will be difficult to see but we can still expect very good visibility for the brightest until 6 am.

Some constellations visible in January are Orion (The Hunter), Monoceros (The Unicorn), Bo ötes (The Herdsman) and Auriga (The Charioteer) visible on our sky map. The ecliptic hosts Virgo (The Maiden), Leo (The Lion), Cancer (The Crab), Gemini (The Twins), Taurus (The Bull), Aries (The Ram) and Pisces (The Fishes). Circumpolar constellations—always above the horizon—include Cassiopeia (The Seated Queen), Draco (The Dragon), Ursa Minor (The Little Bear), Ursa Major (The Great Bear) and Cepheus (The King).

1 January 3:25 pm	Lunar apogee 404,873 km	Leo
2 January 3:51 am	Mercury returns to direct (prograde) orbit	Ophiuchus
3 January 0:39 am	Earth perihelion 147,100,632 km, Sun in Sagittarius	Sagittarius
3 January 6:00 pm	Quadrantids meteors peak over next 12 hours	Boötes
4 January 3:30 am	Moon at last quarter	Virgo
4 January 6:53 pm	Moon crosses descending node	Virgo
5 January 1:34 am	Waning crescent Moon rises within 1.8° of Spica	Virgo
11 January 11:57 am	New Moon, Meeus lunation 297	Sagittarius
12 January 2:39 pm	Mercury at greatest western elongation, 23.5°	Sagittarius
13 January 10:29 am	Lunar perigee 362,283 km	Capricorn
14 January 4:58 pm	Waxing crescent Moon conjuncts with Saturn 4.1°	Aquarius
15 January 9:12 pm	Waxing crescent Moon conjuncts with Neptune 0.8°	Pisces
17 January 2:04 pm	Moon crosses ascending node	Pisces
18 January 3:53 am	Moon at first quarter	Pisces
18 January 6:43 pm	Waxing gibbous Moon conjuncts with Jupiter 2.5°	Aries
20 January 6:00 am	Sun leaves Sagittarius, enters Capricorn at 0.984 AU	Capricorn
20 January 5:01 pm	Waxing gibbous Moon within 1.7° of Pleiades (M45)	Taurus
24 January 7:05 pm	Waxing gibbous Moon within 1.7° of Pollux	Gemini
25 January 5:54 pm	Full (Wolf) Moon	Cancer
27 January 7:18 am	Jupiter at eastern quadrature	Aries
27 January 10:50 am	Uranus returns to direct (prograde) orbit	Aries
27 January 8:54 pm	Waning gibbous Moon within 3.3° of Regulus	Leo
29 January 8:06 am	Lunar apogee 405,751 km	Leo
31 January 8:17 pm	Moon crosses descending node	Virgo



The sky above Edinburgh and Lothian at midnight on 15/16 January. The figure also applies at 1 am on 1 January and 11 pm on 30 January. 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.