The Astronomical Sky over Edinburgh in January

A 6-planet parade and the Quadrantids meteor shower dominate the January night sky.

The good ship Mother Earth reaches perihelion (closest to the Sun) on 4 January at 1:37 pm at 147,103,691 km (0.983 AU) in Pisces (The Fishes).

The Sun leaves Sagittarius (The Archer) on 19 January at 11:50 am and enters Capricornus (The Sea Goat). Daylight lengthens from 07:06 (7.099 hours) on 1 January to 08:35 (8.590 hours) on 31 January so we lose 1 hour and 30 minutes of night time by month's end.

The first quarter Moon shows up on 6 January at 11:56 pm in Pisces (The Fishes). Lunar perigee (closest to Earth) on 8 January at 12:08 am finds the Moon some 370,207 km away from Earth—around 14,193 km closer than average—subtending an angle of 32.3 arc-minutes. The full Wolf Moon makes an appearance on 13 January at 10:27 pm in Gemini (The Twins). Lunar apogee (furthest from Earth) that occurs on 21 January at 4:54 am and takes the Moon to 404,258 km away from Earth—around 19,858 km further than average—subtending an angle of 29.6 arc-minutes. The Moon enters last quarter on 21 January at 8:31 pm in Virgo (The Maiden). The new Moon appears on 29 January at 12:36 pm in Capricornus (The Sea Goat) beginning a new Lunar (synodic) month which will last 29 days, 12 hours and 9 minutes.

The Moon conjuncts with some well-known stars throughout January: On 10 January the Pleiades star cluster (M45) in Taurus (The Bull) will be separated from the waxing gibbous

Moon by a mere 0.3 degrees south. On 13 January the star Pollux in Gemini (The Twins) will be 2.1 degrees north of the full Moon. Finally, on 21 January the brightest star in Virgo (The Maiden), Spica, will be 0.1 degrees north of the last quarter Moon.

A rare 6-planet parade will occur starting after sunset in early January and will last for several weeks. Planets visible (from east to west) are Mars, Jupiter, Uranus, Neptune, Venus and Saturn. The middle planets in the parade, Uranus and Neptune, will require binoculars or a telescope to see but all the others will have naked-eye visibility. The reason it is called a parade instead of an alignment, is that the planets will be spread along the Ecliptic (a curve) across 35 degrees of altitude and a whopping 150 degrees of azimuth.

In late February, Saturn will set earlier and be replaced, briefly, by Mercury. To help you find your way, on 10 January, around 8 pm or so, the waxing gibbous Moon will be 5 degrees north of a very bright Jupiter. I have also adjusted the time of the sky map to show the planets mid-month at 8 pm so it’s a good opportunity to slip outside into the crisp Edinburgh evening and enjoy 4 naked-eye planets plus the waning gibbous, but almost full, Moon.

For the inferior planets: Mercury, the ‘Swift Planet’, begins the month in Ophiuchus (The Serpent Bearer) and ends in Capricorn (The Sea Goat) but recedes by 39,441,421 km. Even so, because of the peculiarity of its orbit as seen from Earth, Mercury increases in brightness from -0.35 to -0.93 magnitudes (1.71x in luminosity) over the month. Mercury reaches the first of four aphelions (furthest from the Sun) this year on 19 January in Sagittarius (The Archer).

Venus, the ‘Evening Star Planet’, begins the month in Aquarius (The Water Bearer) and ends in Pisces (The Fishes) and comes closer by 34,148,260 km so increasing in brightness from -4.45 to -4.75 magnitudes (1.32x in luminosity). On 3 January, she

will be 1.4 degrees north of the waxing crescent Moon and will remain close after sunset. She reaches greatest eastern elongation at 47.2 degrees on 10 January and will conjunct with Saturn in the late afternoon of 18 January being some 2.2 degrees north of the ‘Ringed Planet’ which, again, will last into the evening hours.

Mars begins the month in Cancer (The Crab) and ends in Gemini (The Twins) and recedes by 4,048,877 km. The ‘Red Planet’ decreases in brightness from -1.22 to -1.07 magnitudes (0.88x in luminosity) but is closest to the Earth all year on 12 January at 96,083,233 km away. On 14 January, starting around 3 am, Mars will be occulted by the waning gibbous Moon and re-emerge 2.5 hours later. The best view, however, may be during opposition on 16 January. By 23 January, Mars will conjunct 2.3 degrees south of Pollux in Gemini (The Twins) in the evening hours.

Jupiter will be closest to Earth all year on New Year’s Day at 626,927,263 km. The ‘Giant Planet’ remains in Taurus (The Bull) but recedes by 52,656,326 km over the month and decreases in brightness from -2.74 to -2.52 magnitudes (0.82x in luminosity).

Saturn remains in Aquarius (The Water Bearer) all month but recedes by 57,628,290 km and decreases in brightness from 1.05 to 1.11 magnitudes (0.95x in luminosity). Saturn will be occulted by the waxing crescent Moon on 4 January after sunset and emerge the other side around 8 pm.

Uranus begins the month in Taurus (The Bull) and ends in Aries (The Ram) but recedes by 69,750,818 km so the ‘Ice Giant’ decreases in brightness from 5.67 to 5.72 magnitudes (0.95x in luminosity) over the month. It will return to a prograde orbit on 30 January. Neptune remains in Pisces (The Fishes) all month but recedes by 69,655,984 km. If you have difficulty finding Neptune, look after sunset on 31 January when the ‘Blue Giant’ will be 3.3 degrees south of the much brighter

Venus.

The Blaze Star (T CrB) defied predictions in 2024 so astronomers are hoping that 2025 proves to be the year that we witness a recurrent nova in real time. The host constellation, Corona Borealis (The Northern Crown), rises around midnight on 1 January and gets progressively earlier as the month progresses.

The Quadrantids meteor shower, radiant from Bootes (The Herdsman), will peak overnight on 3–4 January. The parent body is asteroid 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 the stars Edasich in Draco (The Dragon) and Nekkar in Bootes (The Herdsman) and both are labelled on our skymap. Expect, possibly, 80 meteors per hour and the waxing crescent Moon is only 15 per cent illuminated.

At the time of our sky map, some constellations visible are Camelopardalis (The Giraffe) at zenith, Draco (The Dragon) in the north, Cancer (The Crab) in the east, Pegasus (The Winged Horse) in the west, and Eridanus (The River) in the south. The ecliptic hosts Leo (The Lion), Cancer (the Crab), Gemini (The Twins), Taurus (The Bull), Aries (The Ram), Pisces (The Fishes) and Aquarius (The Water Bearer).

The highly visible Orion (The Hunter) in the south-east helps us spot some pseudo-constellations. The ‘Winter Hexagon’—Rigel in Orion (The Hunter), Aldebaran in Taurus (The Bull), Capella in Auriga (The Charioteer), Pollux in Gemini (The Twins), Procyon in Canis Minor (The Lesser Dog) and Sirius in Canis Major (The Great Dog)—rises in the south-east. This superstructure also contains the ‘Winter Triangle’ comprising the stars Procyon and Sirius but joined by Betelgeuse in Orion (The Hunter). Circumpolar constellations—always above the horizon—include Cepheus (The King), Perseus (The Hero), Cassiopeia (The Seated Queen) and Ursa Major (The Greater

Bear).

Edinburgh and Lothian Ephemeris		
3 January 3:24 pm	Venus 1.4°N of waxing crescent Moon	Aquarius
3 January 6:00 pm	Quadrantid meteor shower peaks with ZHR=80	Boötes
4 January 1:37 pm	Earth perihelion 147,103,691 km (0.983 AU)	Pisces
4 January 8:00 pm	Saturn emerges from occulatation by waxing crescent Moon	Aquarius
5 January 7:45 pm	Moon crosses ascending node	Pisces
6 January 11:56 pm	Moon at first quarter	Pisces
8 January 12:08 am	Lunar perigee 370,207 km	Aries
10 January 1:01 am	Pleiades 0.3°S of waxing gibbous Moon	Taurus
10 January 5:03 am	Venus at greatest eastern elongation, 47.2°	Aquarius
12 January 4:23 am	Lunar standstill north	Taurus
12 January 1:34 pm	Earth Mars closest approach 96,083,233 km (0.642 AU)	Cancer
13 January 9:45 pm	Pollux 2.1°N of full Moon	Gemini
13 January 10:27 pm	Full (Wolf) Moon	Gemini
14 January 3:00 am	Mars occulted by waning gibbous Moon over next 3 hours	Gemini
16 January 2:39 am	Mars at opposition	Gemini
18 January 4:00 pm	Venus 2.2°N of Saturn	Aquarius
19 January 1:48 am	Moon crosses descending node	Virgo
19 January 11:50 am	Sun leaves Sagittarius, enters Capricorn at 0.984 AU	Capricorn
19 January 2:06 pm	Mercury aphelion 69,817,561 km (0.467 AU)	Sagittarius
21 January 3:53 am	Spica 0.1°N of last quarter Moon	Virgo
21 January 4:54 am	Lunar apogee 404,258 km	Virgo
21 January 8:31 pm	Moon at last quarter	Virgo
23 January 5:07 pm	Mars 2.3°S of Pollux	Gemini
26 January 1:21 pm	Lunar standstill south	Sagittarius
29 January 12:36 pm	New Moon, Meeus lunation 310	Capricorn
30 January 7:04 pm	Uranus returns to prograde orbit	Aries
31 January 5:30 pm	Neptune 3.3°S of Venus	Pisces

Edinburgh and Lothian

(55.95°, -3.19°, 10.00m for 15 January 2025 8:00 pm)