

The Astronomical Sky over Edinburgh – February 2024

The Earth and Saturn reach their furthest apart all year plus the Moon takes centre stage to aid in locating constellations in the February sky. Meanwhile, Jupiter remains a bright object in the evening hours all month long whilst the devil's comet continues to brighten foreshadowing a brilliant perihelion in April.

The Sun starts the month in Capricorn and enters Aquarius on 16 February at 4:25 pm. Daylight lengthens from 08:36 (8.606 hours) on 1 February to 10:40 (10.670 hours) on 29 February so we lose 2 hours and 4 minutes of night time by the end of the month.

Mercury reaches the first of 4 aphelions (furthest distance from the Sun) during 2024 on 2 February at 5:03 pm. After last month's greatest western elongation (furthest angular separation from the Sun), it comes as no surprise that Mercury now approaches the Sun and is lost within it's glare. Mercury does reach two other maxima in February: at 208 million km on 20 February at 8:13 pm, it will be at maximum distance from the Earth (but they do get even further apart next October) and on 22 February at 11:05 pm it will be 7.0° south of the

ecliptic (the plane of the Earth-Sun orbit). At superior conjunction, on 28 February at 8:43 am, Mercury will be completely obscured from view behind the Sun. Venus remains bright at -3.9 mag but is low in the south-east before sunrise and crosses the ecliptic on 13 February at 11:35 pm.

Mars is too close to the Sun for much of the early part of the year so remains elusive. Jupiter, dimming slightly from -2.4 to -2.2 mag in Aries, is visible after sunset and through the evening until midnight all month as it moves from south to west. On Valentine's Day at 11:00 pm, Jupiter conjuncts with the waxing crescent Moon in Aries and will get closer as both set. Saturn, at 1.0 mag, keeps a very low profile, an hour or so after sunset, in the south-western sky for the first half of the month but sets earlier as the month progresses. Saturn reaches maximum distance from the Earth for the whole of 2024 on 28 February at 5:22 pm when it will be 1.6 billion km away. You will not see this event, though, as Saturn is in conjunction with the Sun, when it lies directly behind it as viewed from Earth, on 28 February at 9:26 pm. Uranus, at 5.8 mag in Aries, reaches eastern quadrature, making the angle between Sun-Earth-planet exactly 90° , on 8 February at 10:46 am. It is visible after astronomical twilight ends (~ 2 hours after sunset) until around midnight for all of February. Uranus will also encounter the first quarter Moon on 16 February at 12:04 am. Like Uranus, Neptune—a binoculars-only object at 7.8 mag—is visible in Pisces for an hour after astronomical twilight ends but even this narrow observing window closes as the month goes on.

The Moon enters last quarter on 2 February at 11:18 pm in Libra. The new Moon appears on 9 February at 10:59 pm in Capricorn beginning a new synodic (Lunar) month. Lunar perigee (closest to Earth) on 10 February at 6:47 pm finds the Moon some 358,096 km away from Earth—around 26,304 km closer than average—subtending an angle of 33.4 arcminutes. The first quarter of the new cycle shows up on 16 February at 3:01 pm in

Taurus. The full Snow Moon makes an appearance on 24 February at 12:30 pm in Leo. Lunar apogee (furthest from Earth) occurs on 25 February at 2:44 pm and takes the Moon to 406,303 km away from Earth—around 21,903 km further than average—subtending an angle of 29.4 arcminutes.

We can use the Moon to help find some of the brightest stars in some notable constellations throughout February. On 1 February at 7:04 am, the brightest star in Virgo (The Maiden), Spica, is 1.7°S of the waning gibbous Moon. On 16 February at 7:13 pm, the Pleiades (Seven Sisters, M45) star cluster will be 0.6°N of the first quarter Moon in Taurus (The Bull). On 21 February at 12:54am Pollux, brother of Castor in Gemini (The Twins), will be 1.6°N of the waxing gibbous Moon. Finally, Regulus in Leo (The Lion) is 3.6°S of the waxing gibbous Moon on 23 February at 10:45 pm.

There are no major meteor showers in February.

Comet 12P/Pons-Brooks—also known as the Devil's Comet because of an outburst in late July that gives the appearance of horns—continues to brighten throughout February. On 1 February at 7 pm, it can be found in Cygnus shining at 9.4 mag and 286 million km from Earth. Mid-month finds it in Lacerta (The Lizard), brightening to 8.5 mag but still too faint for the unaided eye at 268 million km from Earth. By February's leap-day, it has brightened by another magnitude to 7.4 mag as it enters Andromeda (The Chained Maiden) at 253 million km from Earth. The 2 magnitudes difference between start and end of month, makes the comet $6.3\times$ brighter and visible through binoculars or a telescope. This behemoth, three times the size of Mount Everest, is on track to become a naked eye object at 4.5 mag during perihelion in April.

Some constellations visible in February are Orion (The Hunter), Monoceros (The Unicorn), Bo ötes (The Herdsman) and Auriga (The Charioteer). The ecliptic hosts Virgo (The Maiden), Leo (The Lion), Cancer (The Crab), Gemini (The

Twins), Taurus (The Bull) and Aries (The Ram).

In the winter time, there are 3 highly visible pseudo-constellations called the Winter Triangle, the Winter Circle (sometimes called the Winter Hexagon) and the Diamond of Virgo. The Winter Triangle comprises the bright stars Betelgeuse in Orion, Sirius (the 'dog star' and the brightest star in the night sky) in Canis Major (The Great Dog) and Procyon (the 'lesser dog star') in Canis Minor (The Lesser Dog). At the time of our skymap, the Winter Triangle is clearly visible in the south-west. Covering a much larger area of the south-western winter sky is the Winter Circle: Rigel in Orion, Aldebaran in Taurus, Capella in Auriga, Pollux in Gemini, Procyon in Canis Minor and Sirius in Canis Major. These 6 bright stars will help you identify their host constellations.

The Diamond of Virgo consists of Arcturus in Bootes, Cor Caroli in Canes Venatici (The Hunting Dogs), Denebola in Leo and Spica in Virgo. At the center of this pseudo-constellation lies the real constellation known as Coma Berenices (Berenice's Hair) which contains M64, the so-called Black Eye Galaxy, which is suitable for telescopic observation.

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).

Edinburgh and Lothian Ephemeris

1 February 7:04 am	Spica 1.7°S of waning gibbous Moon	Virgo
2 February 5:03 pm	Mercury aphelion at 69,817,579 km from Sun	Sagittarius
2 February 11:18 pm	Moon at last quarter	Libra
8 February 10:46 am	Uranus reaches eastern quadrature	Aries
9 February 10:59 pm	New Moon, Meeus lunation 298	Capricorn
10 February 6:47 pm	Lunar perigee at 358,096 km from Earth	Aquarius
13 February 5:02 pm	Moon crosses ascending node	Pisces
13 February 11:35 pm	Venus crosses ecliptic	Pisces
14 February 11:00 pm	Jupiter 4.9°S of waxing crescent Moon	Aries
16 February 3:01 pm	Moon at first quarter	Taurus
16 February 4:25 pm	Sun leaves Capricorn, enters Aquarius at 0.988 AU	Aquarius
16 February 0:04 am	Uranus 3.0°N of first quarter Moon	Aries
16 February 7:13 pm	Pleiades (M45) 0.6°N of first quarter Moon	Gemini
20 February 8:13 pm	Mercury furthest away from Earth at 207,990,913 km	Capricorn
21 February 12:54 am	Pollux 1.6°N of waxing gibbous Moon	Gemini
22 February 11:05 pm	Mercury 7.0°S of ecliptic	Capricorn
23 February 10:45 pm	Regulus 3.6°S of waxing gibbous Moon	Leo
24 February 12:30 pm	Full (Snow) Moon	Leo
25 February 2:44 pm	Lunar apogee at 406,303 km from Earth	Leo
27 February 10:54 pm	Moon crosses descending node	Virgo
28 February 8:43 am	Mercury at superior conjunction	Aquarius
28 February 5:22 pm	Saturn furthest away from Earth at 1,602,374,146 km	Aquarius
28 February 9:26 pm	Saturn at conjunction with the Sun	Capricorn

(55.95°, -3.19°, 10.00m for 15 February 2024 0:00 am)

