The astronomical sky above Edinburgh and Lothian in June 2024

The stellar astronomical event of the month, if you will forgive the pun, is the Summer Solstice which marks the Sun’s most northerly altitude and places it directly over the line of latitude known as the Tropic of Cancer at 23.44N. You will cast your shortest shadow of the year and the longest day will last 17 hours and 36 minutes.

The word Solstice derives from the Latin ‘Sol’ (Sun) and ‘sistere’ (to stand still) as the Sun appears to pause at its highest point in the sky. This year’s Solstice occurs on 20 June at 9:51 pm and represents the first day of astronomical summer. This astronomical season will will last until the September equinox for a duration of 93 days 15 hours and 52 minutes.

Although the Sun will reach a peak altitude of 57.5 degrees (at 1:14 pm local time) as it embraces the Solstice at our locale, you would be forgiven for thinking that the Sun will actually be in the constellation of Cancer (the Crab) at that time. Yet, the Sun passes from Taurus (The Bull) on 21 June at 1:19 am and enters Gemini (The Twins). Why?

The zero-point of the astronomical co-ordinate system (the so-called ‘First Point of Aries’) is not fixed in space but moves across the sky at a rate of 1 degree every 71.6 years (called the precession of the equinoxes). So the background stars (constellations) appear to shift position as the Sun traces the Ecliptic and this accumulates over several thousand years. So the ‘First Point of Aries’ is now in Pisces (The Fishes) and the Sun is not in Cancer (The Crab) at the Solstice but Taurus (The Bull).

To put it another way: in the northern hemisphere, we are fortunate to have a star that seems to sit exactly on the celestial pole. It is called Polaris (the North Star) and it has an altitude above the horizon that equates, exactly, to the latitude of the observer. For our present location, look north and upwards in the evening sky at 55.95 degrees and there will be Polaris shining brightly. At magnitude 1.98 it is easily visible to the naked-eye observer. However, because of precession, had you lived in 3,000 BC during the first dynasty of Egypt under King Narmer, the pole star would have been Thuban in the constellation of Draco (the Dragon). Around 7,500 AD—more than 5 millenia from now—the pole will lie close to Aldermin the brightest star in Cepheus (The King).

Returning to the Sun, though, daylight lengthens from 17:13 (17.215 hours) on 1 June to 17:31 (17.509 hours) on 30 June so we lose 18 minutes of night time, overall, by the end of the month. In reality, between 1 June and the Solstice we lose 24 minutes of night time. After the Solstice, we gain 6 minutes of night time because the days start to get shorter and the nights longer. Our summer perpetual twilight has, of course, begun but the Sun is reaching ‘Solar Max’ which is the peak of the 11 year Sun spot cycle. This may herald better aurorae between now and the end of the year.

The first Lunar perigee (closest to Earth) on 2 June at 8:09 am finds the Moon some 368,072 km away from Earth – -around 16,328 km closer than average—subtending an angle of 32.5 arc-

minutes. The new Moon appears on 6 June at 1:38 pm in Taurus (The Bull) beginning a new synodic (Lunar) month. The first quarter of the new cycle shows up on 14 June at 6:18 am in Virgo (The Maiden). Lunar apogee (furthest from Earth) occurs on 14 June at 2:35 pm and takes the Moon to 404,116 km away from Earth – around 19,716 km further than average–subtending an angle of 29.6 arc-minutes. The full Strawberry Moon makes an appearance on 22 June at 2:08 am in Sagittarius (The Archer). Since June is named after the Roman god of marriage – Juno – this month's full moon is also called the Honey Moon. The second Lunar perigee (closest to Earth) on 27 June at 12:37 pm finds the Moon some 369,252 km away from Earth – around 15,148 km closer than average – subtending an angle of 32.4 arc-minutes. Finally, the Moon enters last quarter on 28 June at 10:53 pm in Pisces (The Fishes).

For the inferior planets: Mercury rises just before the Sun in the first part of the month but reaches perihelion and superior conjunction ('behind the sun') some 10 days after Venus so both are lost to us.

For the superior planets: Mars, in Pisces (The Fishes), and Saturn, in Aquarius (The Water Bearer), are increasing visible during morning twilight. Couple that with both Jupiter and Uranus emerging from solar conjunction, and Saturn and Neptune reaching western quadrature, means have a planetary alignment visible in June. Such an alignment will occur early in June but the best opportunity is much later on in the month on 30 June at 3:30 am (about an hour before sunrise), we should see the following planets aligned along the Ecliptic covering some 80 degrees of azimuth: Jupiter (-2.0 mag), Uranus (5.8 mag), Mars (1 mag), the waning crescent Moon, Neptune (7.8 mag) and Saturn (1 mag). Uranus and Neptune will require binoculars or a telescope but the other objects should have naked-eye visibility in the east.

There are no significant meteor showers in June. There are, however, 3 day-time meteor showers unobservable by us: 7 June

sees both the Arietids and zeta-Perseids and 25 June sees the beta-Taurids. On 27 June, there is a minor night-time meteor shower known as the June Bootids, radiant near Nekkar in Bootes (The Herdsman), but the activity is very low. The parent body is the comet 7P/Pons-Winnecke.

Although now unobservable from Edinburgh and Lothian, comet 12/P Pons-Brooks will reach closest approach to Earth on 2 June at 1 am, at 1.55 AU or 231 million km. The periodic comet 13/P Olbers—discovered by he of paradox fame – will reach perihelion on 30 June and should be viewable with binoculars or a telescope at 7.5 mag, low in the north-western sky, in Lynx (The Lynx).

We still await the much anticipated recurrent nova known as the Blaze Star (T CrB). We can expect this 'new star' to appear near CrB epsilon-13 in the constellation Corona Borealis (The Northern Crown) located adjacent to Bootes (The Herdsman). Alphecca (sometimes called Gemma or alpha-CrB) is the brightest star in the crown, at 2.2 mag, and should guide you to this, once in a lifetime, transient event.

At the time of our sky map, some constellations visible are Ursa Major (The Great Bear), Draco (The Dragon) and Bootes (The Herdsman) at zenith, Aquila (The Eagle) in the east, Leo Minor (The Lesser Lion) and Leo (The Lion) in the west, Ursa Minor (The Little Bear) in the north and the Virgo (The Maiden) and Libra (The Scales) in the south. The ecliptic hosts Libra, Virgo, Leo, Cancer and Gemini.

The pseudo-constellation called the 'Summer Triangle': Vega in Lyra (The Lyre), Altair in Aquila (The Eagle) and Deneb in Cygnus (The Swan) rises in the east. Another prominent pseudo-constellation is the 'Diamond of Virgo': Arcturus in Bootes, Cor Caroli in Canes Venatici (The Hunting Dogs), Denebola in Leo (The Lion) and Spica in Virgo (The Maiden). At center of the
diamond is Coma Berenices (Berenice's Hair) which hosts the

north galactic pole.

Circumpolar constellations – always above the horizon – include Cassiopeia (The Seated Queen), Cepheus (The King) and Perseus (The Hero).

Edinburgh and Lothian Ephemeris		
2 June 1:00 am	Comet 12/P Pons-Brooks closest to Earth	Lepus
2 June 4:08 am	Moon crosses ascending node	Pisces
2 June 8:09 am	Lunar perigee 368,072 km	Pisces
4 June 11:32 am	Mercury and Jupiter 0.25° apart	Taurus
4 June 4:33 pm	Venus at superior conjunction	Taurus
5 June 4:02 am	Earth Venus furthest apart at 259,594,545 km	Taurus
6 June 1:38 pm	New Moon, Meeus lunation 302	Taurus
9 June 11:36 am	Saturn at western quadrature	Aquarius
13 June 4:55 pm	Mercury perihelion 45,999,986 km	Taurus
14 June 6:18 am	Moon at first quarter	Virgo
14 June 2:35 pm	Lunar apogee 404,116 km	Virgo
14 June 5:33 pm	Mercury at superior conjunction	Taurus
15 June 2:51 am	Earth Mercury furthest apart at 197,926,508 km	Taurus
15 June 9:18 pm	Moon crosses descending node	Virgo
17 June 11:47 am	Mercury and Venus 0.9° apart (behind the Sun)	Taurus
20 June 7:12 pm	Neptune at western quadrature	Pisces
20 June 9:51 pm	June (summer) solstice	Taurus
21 June 1:19 am	Sun leaves Taurus, enters Gemini at 1.016 AU	Gemini
22 June 2:08 am	Full (Strawberry) Moon	Sagittarius
27 June 12:37 pm	Lunar perigee 369,252 km	Aquarius
27 June 12:00 am	June Bootids meteor shower (weak)	Boötes
28 June 10:53 pm	Moon at last quarter	Pisces
29 June 5:25 am	Moon crosses ascending node	Pisces
30 June 2:08 am	Comet 13/P Olbers at perihelion	Lynx
30 June 3:30 am	Jupiter, Uranus, Mars, Moon, Neptune, Saturn align	Ecliptic
30 June 10:15 pm	Saturn at stationary retrograde point	Aquarius

Edinburgh and Lothian

(55.95°, -3.19°, 10.00m for 15 June 2024 10:00 pm)