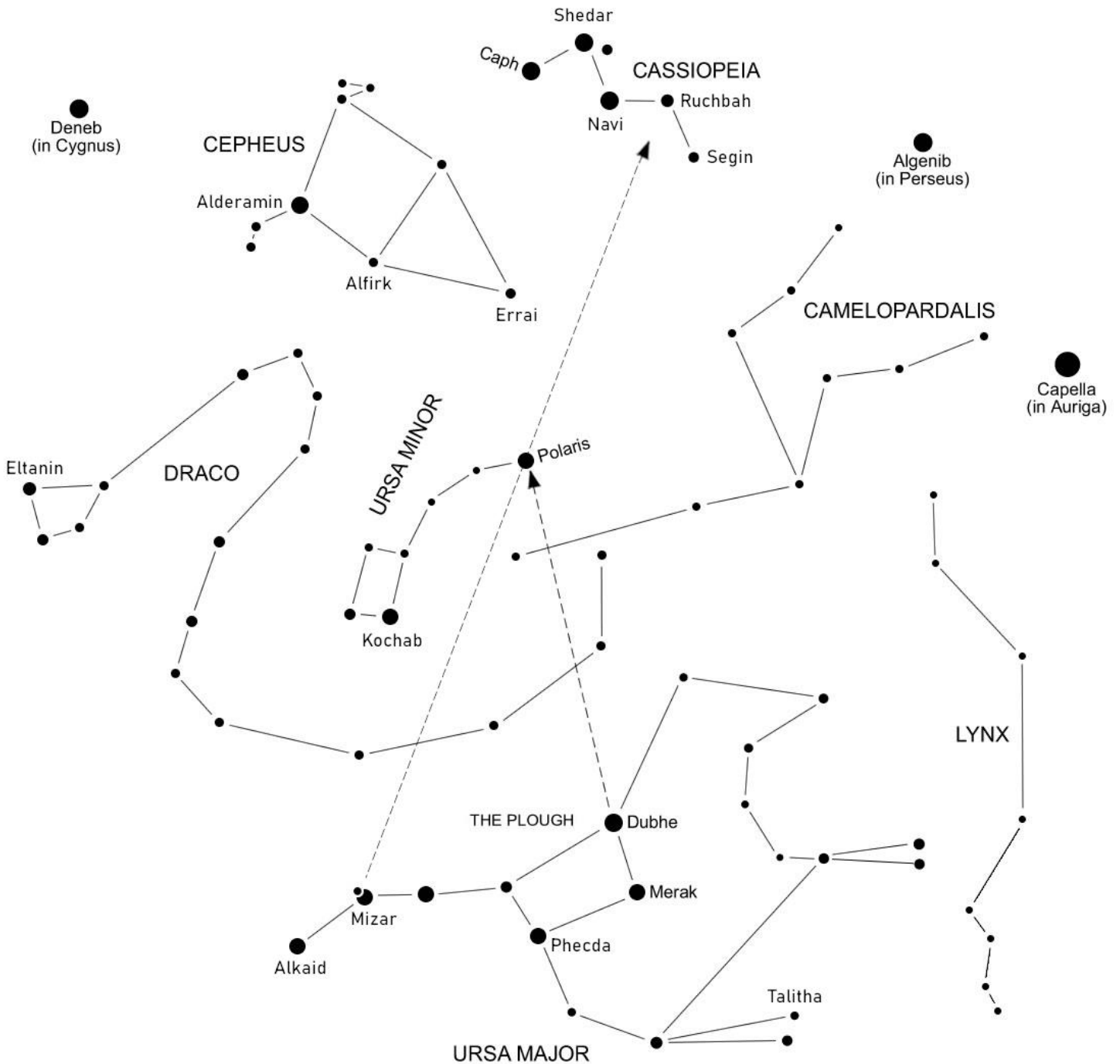


Circumpolar Stars

A circumpolar star (or constellation) is one that never sets: it is always above the observer's horizon and can be viewed all year round. The stars that are circumpolar depend on where you are situated on the planet. For example, from mid-northern latitudes, the stars shown on the chart below are circumpolar; the further south your location, the fewer circumpolar stars there will be.

This guide is suitable for mid-northern latitudes.



The Plough, together with the rest of Ursa Major (the Great Bear), can be seen around the zenith (directly overhead) during mid-evenings in spring, whilst summer evenings see Draco (the Dragon) in

this position. Cassiopeia takes its place during the autumn months and the faint and sprawling Camelopardalis (the Giraffe) in winter.

To start your search of the circumpolar sky, first print the above chart and, facing north, hold it above your head. Now, using the Plough as a guide, rotate the chart so that the stars shown align with their locations in the sky. The chart will then enable you to identify the stars and constellations. On a clear night with a dark sky, many fainter stars will be visible that are not shown on the chart.

The Plough is by far the most prominent and well-known constellation in this region. It is a conspicuous pattern of stars formed from the seven brightest members of Ursa Major and can act as a useful direction finder to many other stars and constellations. One of these is Polaris, the Pole Star. If you extend the line from Merak through Dubhe as shown, it will lead you to Polaris, from which the rest of the stars in Ursa Minor can be picked out. Continue the line from Merak and Dubhe roughly as far again past Polaris and it will bring you to Cepheus, the mythological King of Ethiopia.

Now find the star Mizar, the second from the end of the handle of the Plough. Extend an imaginary line from Mizar through Polaris to roughly the same extent on the other side, and it will lead you to Cassiopeia, a distinct W-shaped group of five bright stars. According to legend, Cassiopeia was wife of Cepheus and mother of Princess Andromeda. Andromeda lies a little further away from Polaris than Cassiopeia and is best seen in during the autumn.

There are three other constellations in this area of the sky: Draco, which winds its way around Ursa Minor, and Camelopardalis and Lynx (the Lynx). The latter two do not contain any bright stars, and a very clear sky is required to identify them; a pair of binoculars may help in this regard.

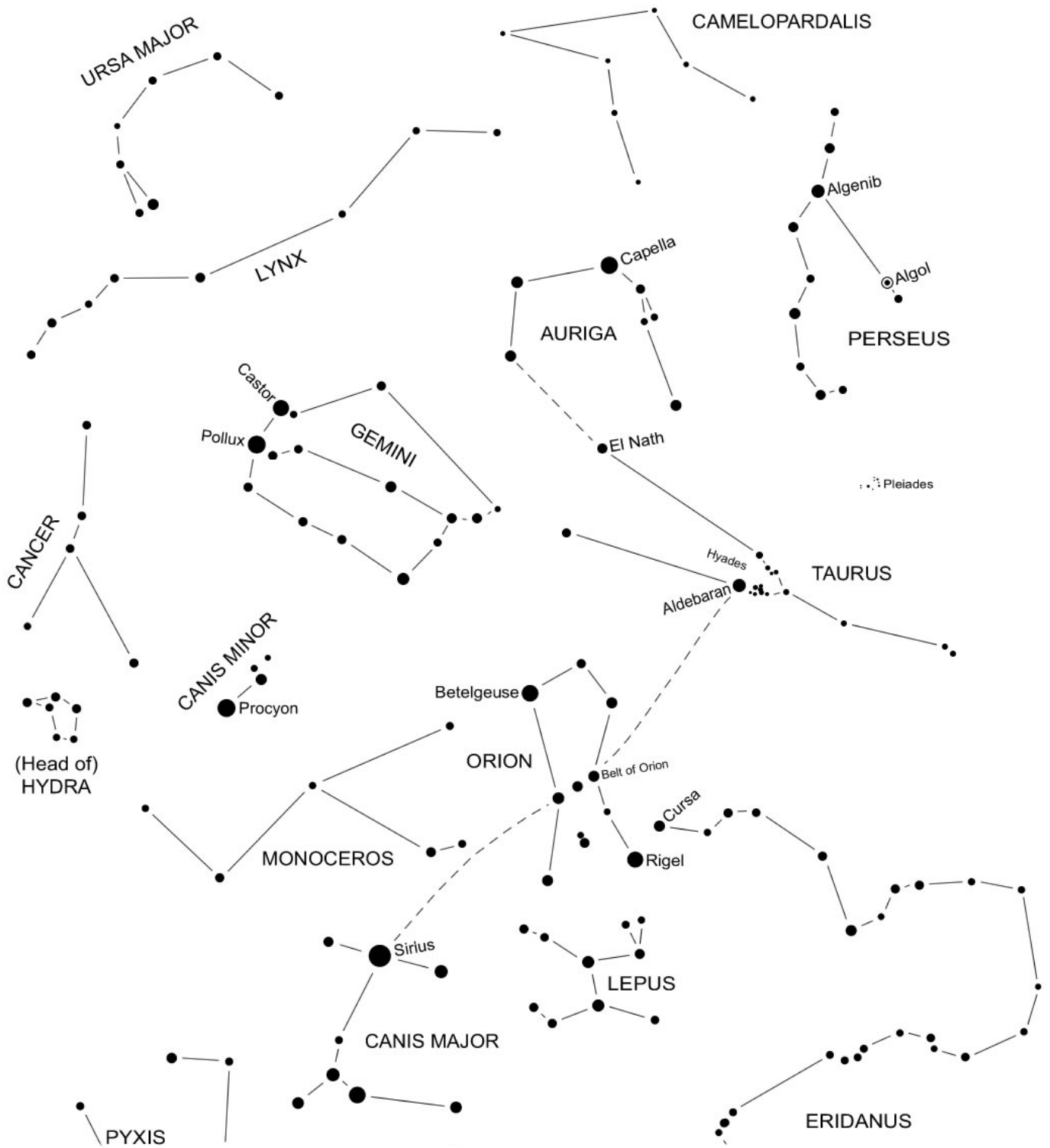
Winter Constellations

The chart below shows the night sky during northern winter. The brilliant star Capella in Auriga (the Charioteer) is located at or around the zenith. Many prominent stars are in evidence which makes the job of picking out star patterns much easier. The constellation Gemini (the Twins) can be found a little southeast of Auriga, with its two leading stars, Castor and Pollux, particularly prominent. Also prominent is Pollux, the brightest star in the constellation Canis Minor (the Little Dog), located to the south of Procyon.

The conspicuous form of Perseus lies to the west of Auriga, its famous variable star Algol located to the south of Algenib. Less obvious is the straggling line of faint stars forming the constellation Lynx, northeast of Gemini. Immediately to the east of Gemini and Canis Minor is the faint constellation Cancer (the Crab) which itself lies just to the north of the tiny circlet of stars forming the head of Hydra (the Water Snake). The rest of the long and winding form of the constellation Hydra is depicted on the chart of spring stars.

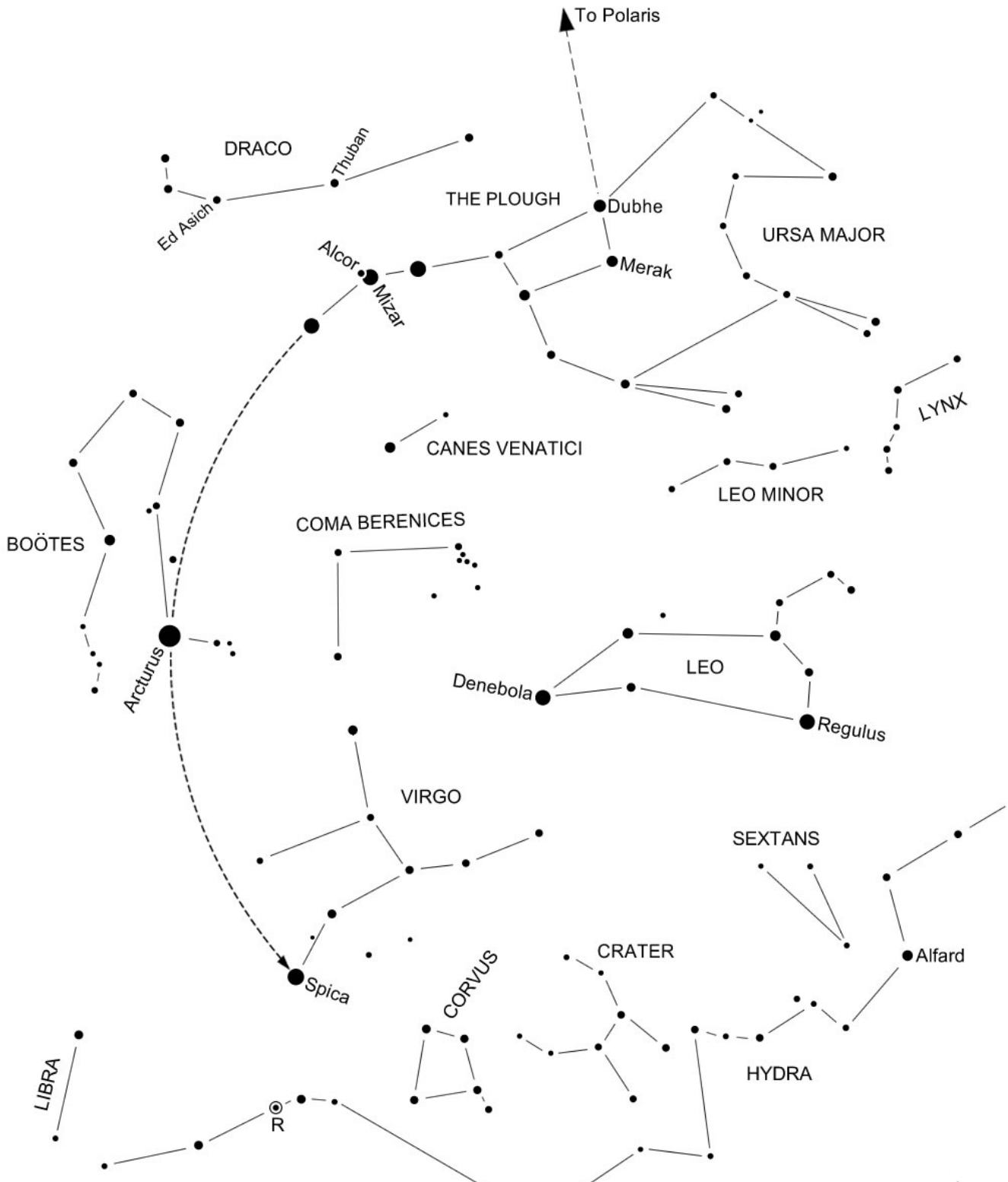
Pride of place for stargazers at this time of year goes to Orion (the Hunter) the four brightest stars of which form a distinctive quadrangle. Betelgeuse and Rigel are unmistakable, as is the trio of regularly spaced stars spanning the central region of the group. Representing the Hunter's belt, they act as pointers to two neighbouring constellations. Following the line formed by the Belt towards the northwest we first reach Aldebaran, the leading star in Taurus (the Bull). Extending the line further brings us to the Pleiades, a prominent open star cluster located in the north-western reaches of Taurus. Following the stars in the Belt towards the southeast brings us to Sirius, the brightest star in Canis Major (the Great Dog). Immediately to the south of Orion lies the small gathering of stars forming the constellation Lepus (the Hare).

The faint constellation Monoceros (the Unicorn) is to the east of Orion, located between the two celestial dogs Canis Major and Canis Minor. The long and winding trail of faint stars forming Eridanus (the River) stretches away from the star Cursa, located just to the north west of Rigel at the foot of Orion. Eridanus flows southwards deep into the southern sky.



Spring Constellations

Located at or near the zenith during the spring night sky is the familiar shape of the Plough, forming part of Ursa Major (the remainder of the constellation stretches out to the west). Immediately to the north of the Plough is part of the long, winding constellation Draco, of which the brightest star is Thuban.



The famous naked-eye double star, Alcor/Mizar lies in the handle of the Plough. Located just to the south are the faint constellations Canes Venatici (the Hunting Dogs) and Coma Berenices (Berenice's

Hair). Following the curve of the line of stars in the handle southwards as shown here will take you to Arcturus, the leading star in the constellation Boötes (the Herdsman). Extending the line further will lead to Spica, the brightest star in the constellation Virgo (the Virgin).

If the sky is dark and clear, you should be able to pick out the small, faint constellations Leo Minor (the Little Lion) and Lynx, both located just to the north of Leo. A clear sky will also be needed to reveal the small constellations Corvus (the Crow) and Crater (the Cup) to the south and southwest of Virgo. An even bigger challenge is to pick out the tiny Sextans (the Sextant), found a little to the south of the bright star Regulus in Leo.

Spanning the skies to the south of Corvus, Crater and Sextans is the long and winding constellation Hydra (the Water Snake). The brightest star in Hydra is Alford, found just to the west of Sextans, from where the rest of the group stretches away. Try finding Alford and then, with binoculars, make your way along the body of the Snake!

Summer Constellations

The night sky in summer is dominated by the three constellations Cygnus (the Swan), Lyra (the Lyre) and Aquila (the Eagle) which lie close to the zenith during summer evenings. Particularly prominent is the triangle formed from the bright stars Deneb in Cygnus, Vega in Lyra and Altair in Aquila. Known as the Summer Triangle, this trio of stars is unmistakable and from here many of the other constellations depicted on the chart can be located.

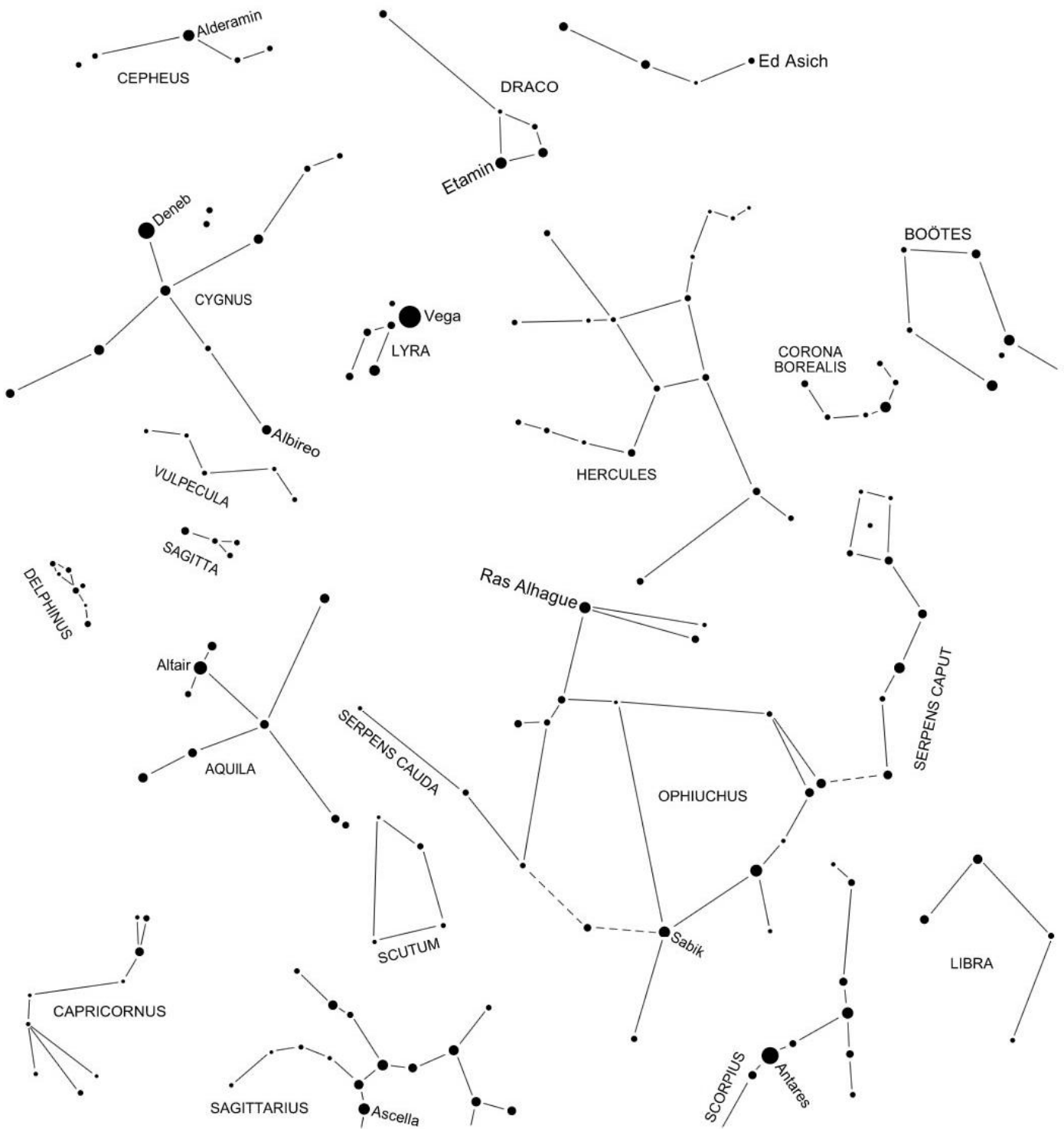
Between Aquila and Cygnus are three smaller constellations Vulpecula (the Fox), Sagitta (the Arrow) and Delphinus (the Dolphin) while to the immediate southwest of Aquila is the faint but distinctive shape of Scutum (the Shield). All four constellations should be visible to the naked eye if the sky is dark and clear, although a pair of binoculars will help.

To the west of Lyra lies the conspicuous quadrilateral of stars marking the centre of the constellation Hercules. Known as the 'Keystone', the rest of Hercules can be seen spreading away from it. Look immediately to the west of Hercules to find the distinctive circlet of stars forming Corona Borealis (the Northern Crown) and, beyond it, Boötes.

If the sky is really dark and clear you should be able to trace the winding pattern of Serpens Caput (the head of the Serpent) snaking southwards from underneath Corona Borealis. East of Serpens Caput lies Ophiuchus (the Serpent Holder) and, to the east of Ophiuchus, the smaller line of stars depicting Serpens Cauda (the tail of the Serpent). According to Greek mythology, Ophiuchus represents Asclepius, the god of medicine and son of Apollo. He is shown holding the head of the serpent in his left hand and the tail in his right hand, thereby splitting the constellation Serpens into two parts.

To the southwest of Ophiuchus, situated a little way above the southern horizon, is the brilliant red Antares, the leading star in Scorpius (the Scorpion). The name Antares can be loosely translated as 'rival of Mars' from the fact that, when Mars (often referred to as the Red Planet) and Antares are seen in the same area of sky, the two objects are equally prominent.

Just to the west of Scorpius is the somewhat less distinctive constellation Libra (the Scales) while to its east is the large and sprawling Sagittarius (the Archer).



Autumn Constellations

In autumn, Cassiopeia can be found at or near the zenith. The southern regions of Cepheus, together with its leading star Alderamin and the variable star Delta Cephei, lie just to the west of Cassiopeia.

Just to the south of Cepheus is the tiny constellation Lacerta (the Lizard). Taking the form of a zigzag line of faint stars, Lacerta may not be easy to pick out without some form of optical aid, unlike the bright star Deneb in the neighbouring constellation Cygnus.

A little way to the south of Cassiopeia is the line of stars forming Andromeda. Sirrah, the westernmost star in Andromeda, is located at the corner of the adjoining and very conspicuous Square of Pegasus (the Winged Horse). This huge quadrilateral of stars is a striking feature of the night sky at this time of year. If the sky is really dark and moonless you might try counting the stars visible to the naked eye within the Square. If viewing conditions are good and you have keen eyesight, you might count twenty or more. The rest of Pegasus extends to the west of the Square where, situated immediately to the west of Enif, the brightest star in Pegasus, we find the tiny constellation Equuleus (the Little Horse).



Just to the northeast of Andromeda is the bright star Algenib in Perseus, with the famous variable star Algol to its the south. To the southeast of Andromeda are the two tiny but prominent groups

Triangulum (the Triangle) and Aries (the Ram) and extending in a meandering line from Andromeda to below the Square of Pegasus is the large but faint constellation Pisces (the Fish).

To the south of Pegasus we find Aquarius (the Water Carrier), which can be located by following a line from Scheat, through Markab, both in the Square of Pegasus, as shown in the chart above. On the way towards the bright star Fomalhaut you will pass just to the east of the star Skat in Aquarius from where you should be able to make out the rest of this large and sprawling constellation. Capricornus (the Goat) lies immediately to the southwest of Aquarius. Binoculars may be necessary to detect the stars of Aquarius and Capricornus unless the sky is really dark and clear.

Staying with the watery theme, bordering the south-eastern edge of Pisces is another faint constellation, Cetus (the Whale). The animal's tail is marked by the bright star Deneb Kaitos, a name derived from the Arabic for 'Tail of the Whale'. The most interesting object in this group is the long-period variable star Mira.

The bright star Fomalhaut in the constellation Piscis Austrinus (the Southern Fish) derives its name from the Arabic for 'Mouth of the Fish'. It lies just above the southern horizon during late-evenings in autumn. If the sky close to the horizon is exceptionally dark and clear you should spot Fomalhaut and, using binoculars, may be able to pick out some of the fainter stars in Piscis Austrinus together with part of the neighbouring Sculptor (the Sculptor) and, further to the east, Fornax (the Furnace).

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