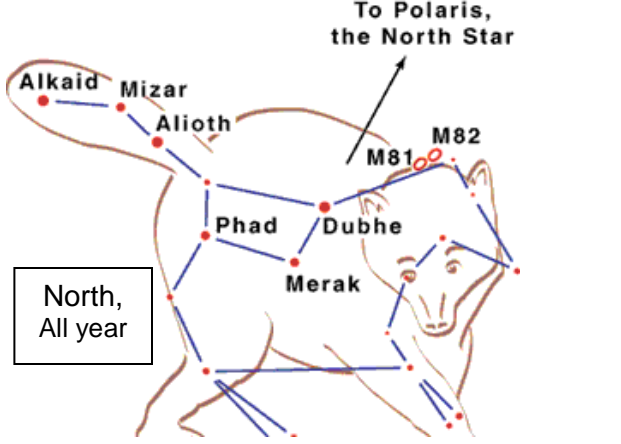
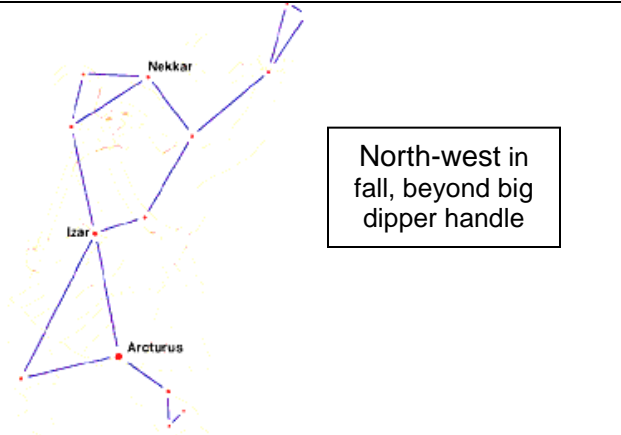
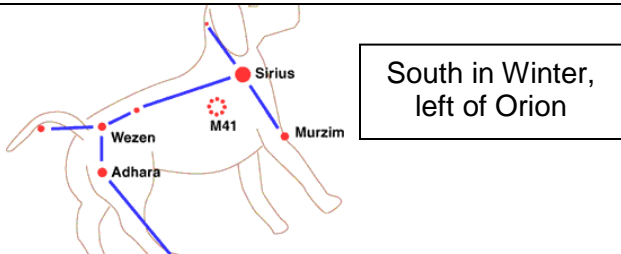
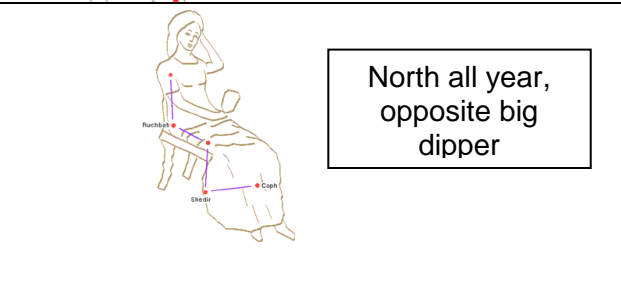


Constellation Guide

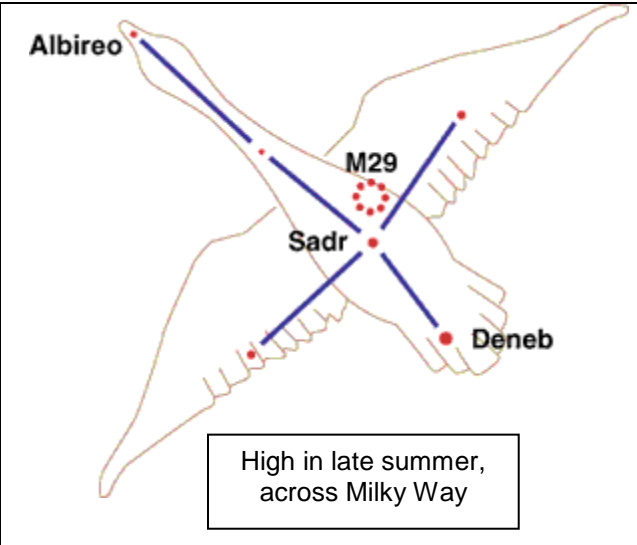
The International Astronomical Union recognizes 88 constellations covering the entire northern and southern sky. Below is a selection of the most familiar and easily seen constellations in the northern sky.

<p>Big Dipper, Ursa Major — the great bear — is always above the horizon in the northern latitudes, but the best time to see it is in the spring when it's high above the northeastern horizon. Ursa Major is best known as the home of the Big Dipper.</p> <p>Of all the star patterns in the sky, the Big Dipper is the most universally recognized. The dipper's seven bright stars form a portion of the great bear. It's hard to see the rest of the bear, especially from light-polluted cities.</p> <p>After you locate the dipper, look at the two stars that mark the outer edge of its bowl. Now connect these two stars, then extend the line above the dipper's bowl. Polaris, the north star, lies along this line, about five times the distance between the two pointers. No matter where the Big Dipper is in our sky, those two stars always point to Polaris.</p>	 <p style="text-align: center;">To Polaris, the North Star</p> <p style="border: 1px solid black; padding: 2px;">North, All year</p>
<p>Boötes, the Herdsman The brightest stars of Boötes form a cone shape, with brilliant yellow-orange Arcturus at the base of the cone. Arcturus, the fourth-brightest star in Earth's night sky, is about 20 times larger than the Sun, and it produces about a hundred times as much energy.</p> <p>But Arcturus is nearing the end of its life. In astronomical parlance, Arcturus has moved off the main sequence and entered the "giant" phase of its life. At a distance of about 35 light-years, it's closer to us than any other stellar giant.</p> <p>The name Boötes comes from a Sumerian word that means "Man Who Drove the Great Cart." The "Great Cart" was the Big Dipper. Boötes trails the Big Dipper as it wheels around the North Star.</p>	 <p style="border: 1px solid black; padding: 2px;">North-west in fall, beyond big dipper handle</p>
<p>Canis Major, the Greater Dog Canis Major loyally follows its mythical master, Orion, across the southern skies of winter.</p> <p>The brightest star in Canis Major also is the brightest in the entire night sky — brilliant Sirius, which is just 8.6 light-years away. That's only twice as far as our closest stellar neighbor.</p>	 <p style="border: 1px solid black; padding: 2px;">South in Winter, left of Orion</p>
<p>Cassiopeia The mythological queen Cassiopeia floats overhead in fall and winter.</p> <p>The best time to see her is in November, high in the northeastern sky. Cassiopeia looks like a flattened "W" against the frothy background of our home galaxy, the Milky Way. The "W" consists of five bright stars. It's surrounded by fainter stars, so it's fairly easy to pick out.</p>	 <p style="border: 1px solid black; padding: 2px;">North all year, opposite big dipper</p>

Cygnus, the Swan The brightest stars of Cygnus form a cross, so the swan is also known as the Northern Cross. Find it soaring high overhead during late summer evenings.

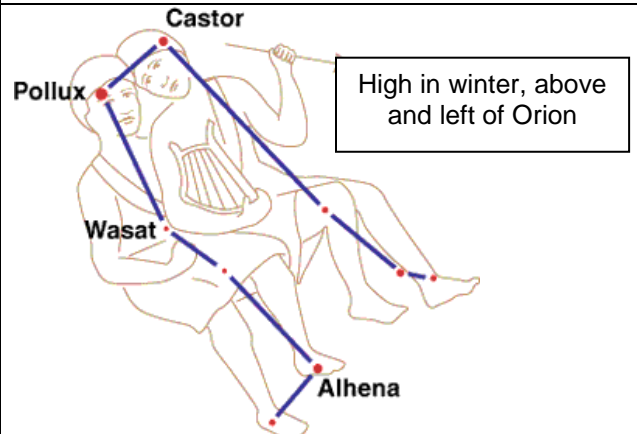
The constellation's brightest star is Deneb — an Arabic word that means "the tail." Deneb — the tail of the swan — marks the top of the cross. The swan's outstretched wings form the horizontal bar of the cross, while the head of the swan — a double star called Albireo — is the bottom of the cross.

Although it lies about 1,500 light-years from Earth, Deneb shines brightly in our night sky because it's a white supergiant — a star that's much larger, hotter, and brighter than the Sun. Deneb is the northeastern point of a star pattern called the Summer Triangle. If you use binoculars to scan the area between the two bright stars that define the swan's eastern wing, you'll see the remnant of a supernova — a faint, incomplete ring of light called the Cygnus Loop.



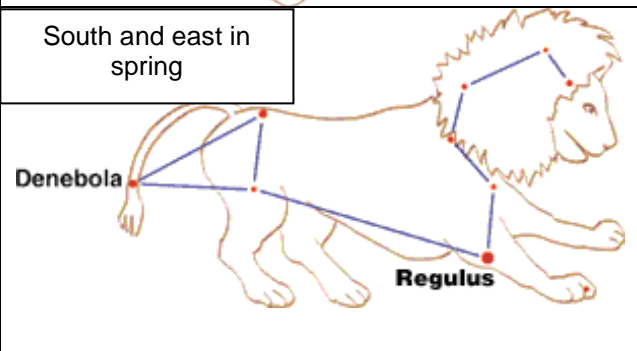
Gemini, the Twins Gemini is easy to find as it glides high overhead in mid-winter, above and to the left of Orion. It's two brightest stars — Castor and Pollux — represent the mythological twins brothers of Helen of Troy.

Many cultures have seen two humans in this star pattern — marked by two roughly parallel lines of stars capped by two of the brightest stars in our night sky. But the legend that endures is that of Castor and Pollux. Gemini's two brightest stars bear the names of the twins. Pollux is the brighter of the twins. It's an orange-giant star that's about 35 light-years from Earth. Castor consists of six stars — a cosmic sextet locked in a gravitational ballet. This crowded system lies about 50 light-years from Earth.

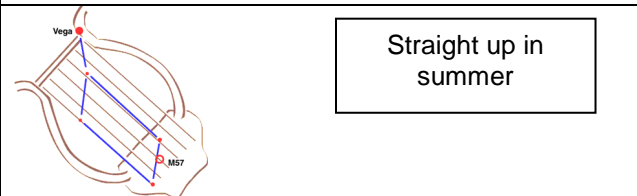


Leo, the Lion The zodiacal constellation Leo, the lion, is one of a handful of constellations that really does look like its namesake. Look for Leo high in south in April and May.

Leo's brightest star is blue-white Regulus, one of the brightest stars in the night sky. Once Regulus climbs into the sky, look to its left — toward the north — for a group of stars forming a **backward question mark**. These stars outline Leo's head and mane. Look low in the east for Leo's tail — a white star named Denebola — an Arabic name that, appropriately enough, means "tail of the lion."



Lyra, the Harp It's easy to find Lyra, the harp, by first finding Vega — one of the brightest stars in Earth's night sky. Look for Vega high overhead in mid-summer. Lyra looks like a small, lopsided square, with Vega just beside one of the corners of the square.

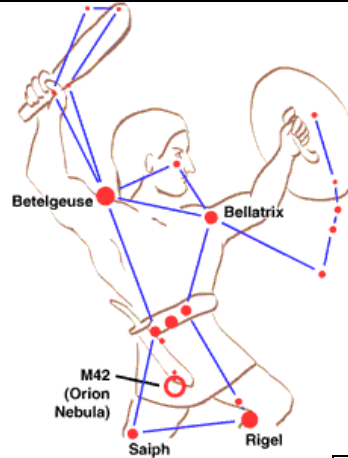


Orion, the Hunter Orion is one of the most beautiful of all constellations, and one of the easiest to find. It looks like a large rectangle high in winter's south-southeastern sky.

Two of the brightest stars in the evening sky lie at opposite corners of the rectangle: bright red Betelgeuse at the northeastern corner and even brighter Rigel at the southwest.

Near the center of the rectangle, look for a short diagonal line of three stars — Orion's belt. And extending south from the belt, you'll see another, fainter line of stars that forms Orion's sword.

One of the objects in Orion's sword isn't a star at all. It's a nebula — a cloud of gas and dust that's like a giant fluorescent bulb. Hot young stars inside the nebula pump energy into its gas, causing the gas to glow.

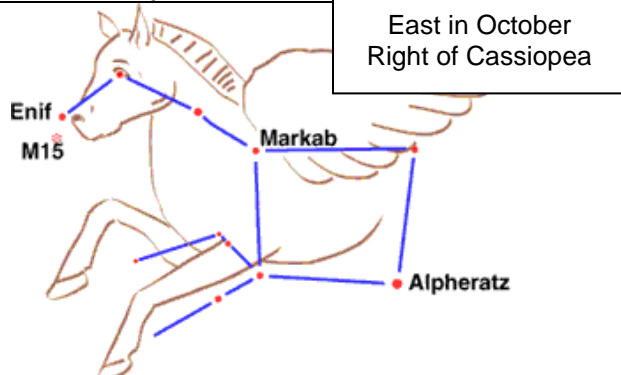


East in November,
South in January
West in April

Pegasus, the Flying Horse Pegasus is a large pattern of stars marked by a great square — four bright stars that form the body of the winged horse.

The brightest star in the Great Square — Alpheratz — isn't in the constellation Pegasus. It's in Andromeda, which is just northeast of Pegasus. It's part of the ancient sky picture that we know as Pegasus. But when astronomers drew the official boundaries for the constellations, this star was placed just across the line in Andromeda.

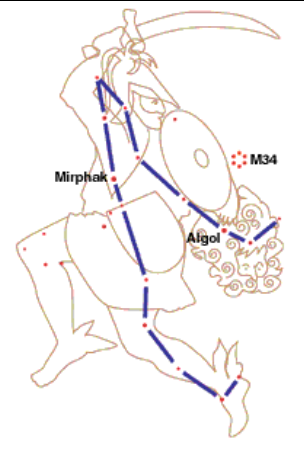
The brightest star in the constellation Pegasus is called Markab, which means "the saddle." It's at the southwestern corner of the Great Square.



East in October
Right of Cassiopea

Perseus, the Hero Perseus, the hero, arcs high overhead in fall and early winter. Many of its stars are immersed in the faint glow of our galaxy, the Milky Way. In fact, if you look at Perseus under dark skies, you may be able to see three of the spiral arms that enfold the Milky Way.

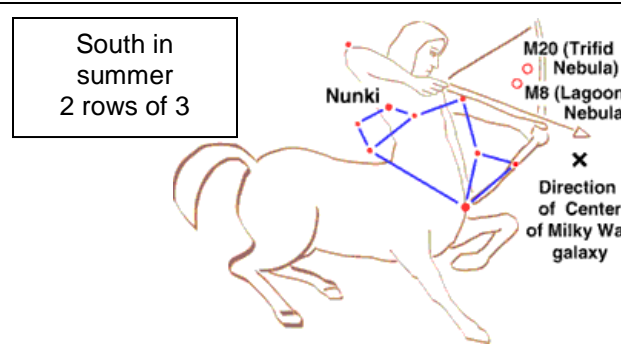
One of the brightest and most interesting stars in Perseus is Algol. The name Algol means "demon star." Ancient skywatchers thought it was cursed because its brightness changes. That's because Algol — which is about 75 light-years from Earth — is the most famous "eclipsing binary" star. Today, astronomers know that Algol is two separate stars. About once every three days, the fainter member of the pair passes in front of the brighter one, and Algol grows fainter. A faint star cluster in Perseus, called M34 is visible with binoculars.



Funnel "V"
East in October
Near Cassiopea

Sagittarius, the Archer Sagittarius, the archer — whose brightest stars form the shape of a teapot — slides low across the southern sky of summer. Sagittarius has drawn his bow, and his arrow is pointing at Antares, the bright red heart of Scorpius, the scorpion. The archer is avenging Orion, who was slain by the scorpion's sting.

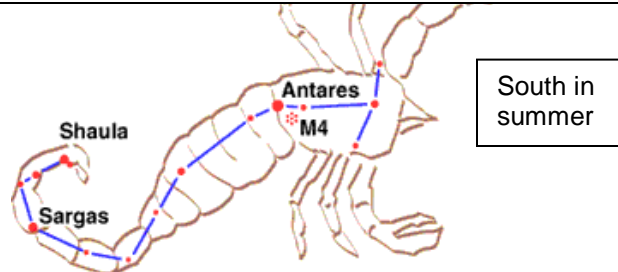
One of the most interesting regions of the sky, the center of our Milky Way galaxy lies inside Sagittarius, about 26,000 light-years away. The constellation also contains several globular clusters — tightly packed collections of hundreds of thousands of stars.



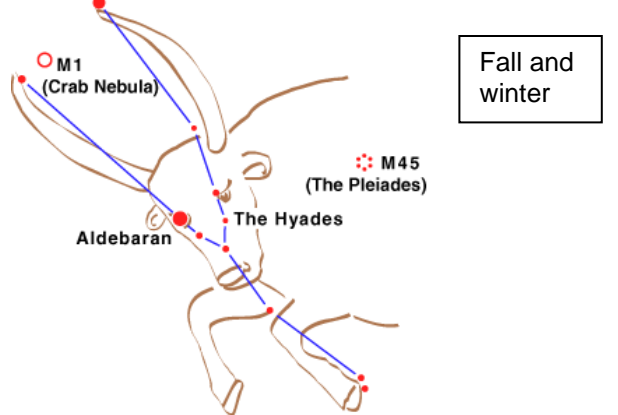
South in
summer
2 rows of 3

M20 (Trifid
Nebula)
M8 (Lagoon
Nebula)
X
Direction
of Center
of Milky Way
galaxy

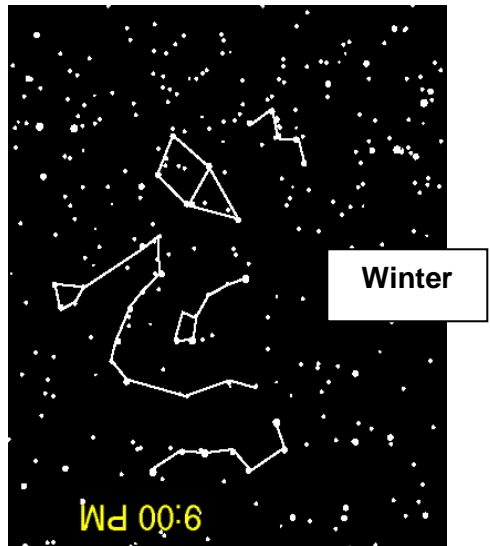
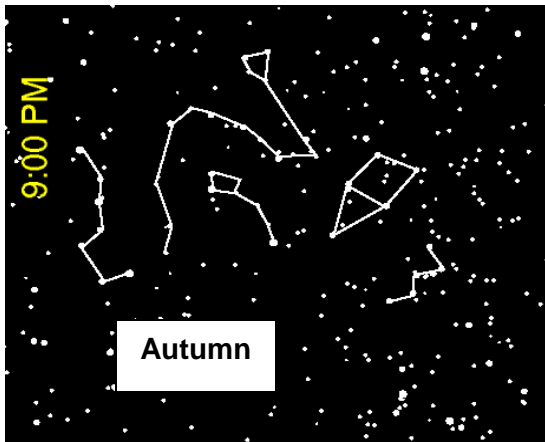
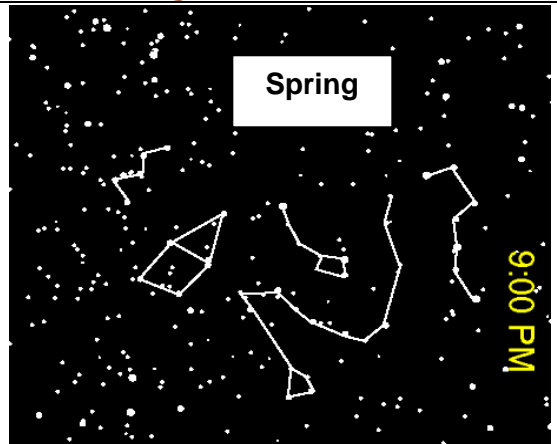
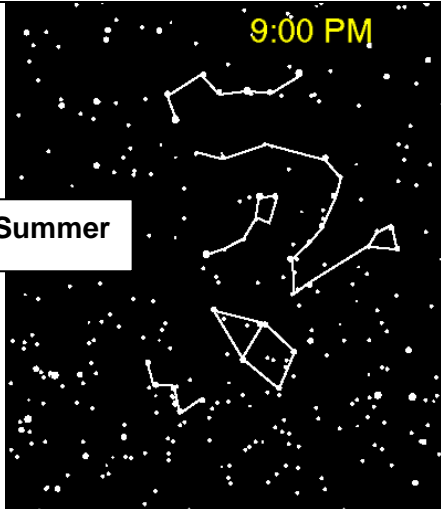
Scorpius, the Scorpion Three bright stars form the "head" of Scorpius, the celestial scorpion, while its tail curves away below it in the southern sky of summer. The brightest star in Scorpius is Antares, which is in the middle of the scorpion's curving body. This brilliant red star is one of the behemoths of our stellar neighborhood. If you placed it at the center of our own solar system, it would swallow Mercury, Venus, Earth, and Mars, and almost reach Jupiter.



Taurus, the Bull Taurus, the bull, is marked by a V-shaped pattern of stars that outlines the bull's face. Bright red Aldebaran, the "eye" of the bull, stands at one point of the V. This pattern is part of a cluster of stars called the Hyades — the second-closest star cluster to Earth. It consists of several hundred stars that lie about 130 light-years away.

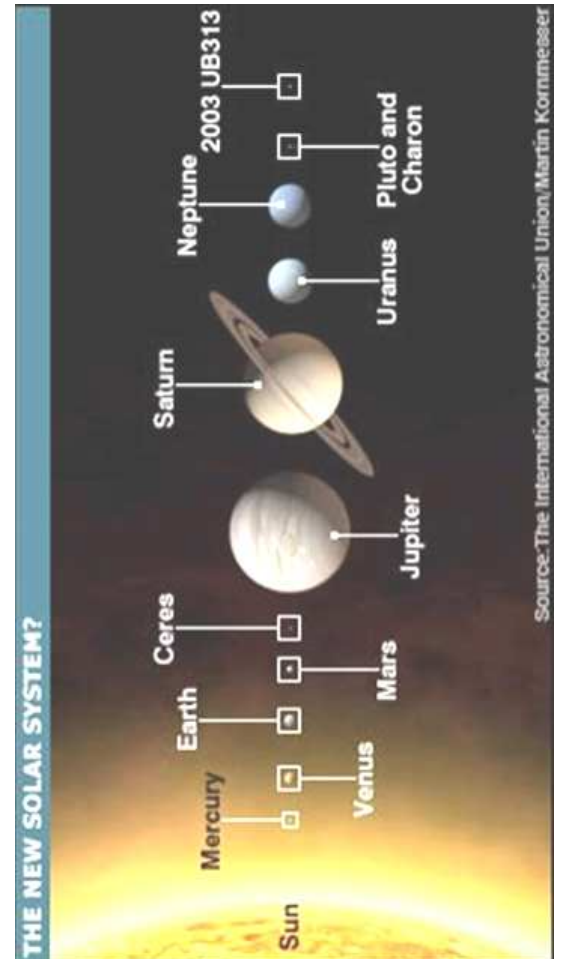
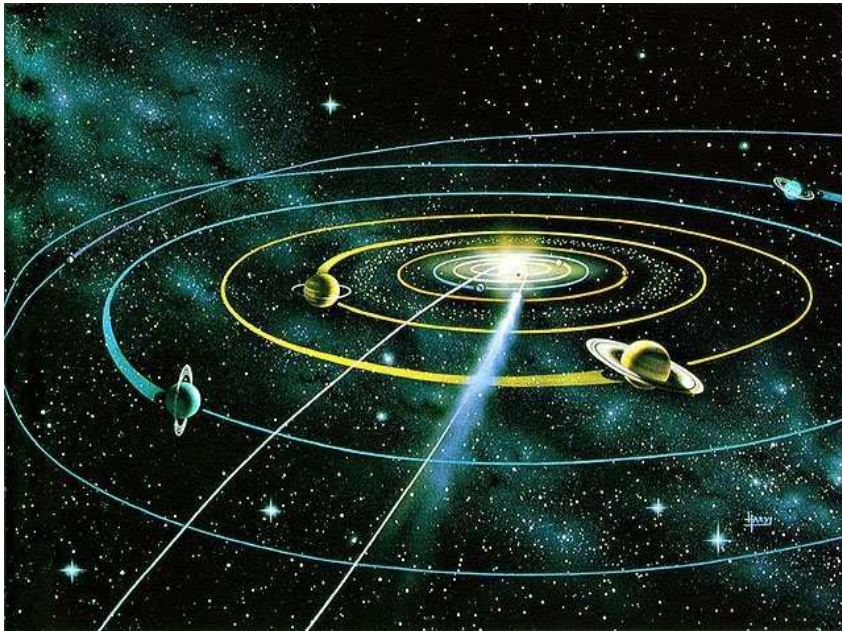


Aldebaran outshines all the other stars that outline the bull's face. But Aldebaran isn't a member of the Hyades cluster — it just lies in the same direction. It's about 70 light-years away, half as far as the stars of the Hyades. Aldebaran is a red-giant — an old, bloated star that's used up most of its nuclear fuel. It's much larger and much brighter than our own middle-aged Sun.



On a clear, moonless night, a thousand or more **stars** are visible. Five of our solar system's eight **planets**, a few star clusters, a spiral **galaxy**, and the odd bright comet are visible, too! Truly, the catalog of objects visible to the unaided eye is impressive — and overwhelming. Bringing the complexity down to earth

Veteran stargazers suggest that you begin your sky-watching adventures indoors with a good skywatching guide or star chart.



Source: The International Astronomical Union/Martin Kornmesser

