

THE NIGHT SKY

JULY 2024

Look up overhead on any of these frosty winter's nights, and as long as you have a dark area away from direct lighting, you'll see the band of the Milky Way shining brightly. The bulge of the Milky Way will be at its biggest here, as we are looking towards the centre of our galaxy, towards the constellation of Sagittarius.

Today, we recognize this band of light for what it is: the edge-on view of our own galaxy of stars. This is a fantastic area of sky to explore with binoculars. Vast areas of gas and dust, superimposed upon millions of countless stars await the observer. As you observe those tiny pinpoints of light, just remember that their light has undertaken a journey of nearly 30,000 years to reach you.

Some of these objects are stellar nurseries; regions where clouds of gas are collapsing to give birth to new stars. Others are at the other end of the stellar life cycle; big clusters of geriatric stars. One such cluster is M22, at about 10,000 light-years away. It contains half a million stars, all packed into a region of space only a few dozen light-years across. By comparison, a similar volume of space around our own solar system contains only a few hundred stars. M22 is a globular cluster. At more than 12 billion years of age, it's one of the oldest objects in our entire galaxy.

The very centre of our Milky Way galaxy is bright, crowded, and busy. It's filled with fast-moving stars, big clouds of gas, and turbulent magnetic fields; all surrounding a black hole that's at least two million times heavier than the Sun.

The gravity of the black hole is so powerful that anything that enters it is trapped, including light. But it's encircled by a spinning disk of hot gas that's spiralling into the black hole. The hot gas emits X-rays, which orbiting observatories can detect. Recently, astronomers found a long filament of gas that's squirting away from the black hole. The gas is moving into the galaxy at almost the speed of light; adding more turmoil to the already busy centre of the Milky Way.

The constellation of Sagittarius represents an archer, however to most modern eyes, its brightest stars outline the shape of a teapot, with the handle to the left and the spout to the right. To see the Teapot the right way up, face south and then look straight up. Imagine the combined glow of the millions of stars in the disk of our Milky Way as the steam escaping from the teapot. You need dark skies to see it; city lights overpower its subtle glow.

The brightest stars visible along the Milky Way are generally "local", that is, they lie within a few thousand light years of Earth. One very local star is Alpha Centauri; the brighter of the two Pointers, not far from the Southern Cross, now high in the southern sky. It's located only 4.25 light years from Earth. A mere stone's throw away from us. In comparison, the Hubble Space Telescope has photographed galaxies whose starlight left on its journey to the Earth a whopping 10,000 million years ago!

Shining brightly, low in the north-eastern sky we find Vega, one of the brightest stars in the sky and also one of the closest to us, at a distance of only 27 light years. The name Vega comes from ancient Arabic, and it means the "swooping eagle." Today, though, Vega's better known as the "harp" star, because it is in the constellation Lyra, the lyre or harp. It is the only musical instrument enshrined in the stars.

Also in the north-eastern sky, we find Altair, the brightest star of Aquila, the eagle. In fact, the name "Altair" means "the flying eagle." Altair is only about 17 light-years away — closer than all but a handful of the stars that are visible to the unaided eye.

Astronomers have found that Altair contains a lot of heavy elements. That means the cloud of material that gave birth to Altair offered plenty of ingredients for planets. A lot of those ingredients are still there, in the form of dust grains around the star. But so far, astronomers haven't discovered a single planet around the star. Any planets that do orbit Altair are unlikely to host any life. Altair is much younger than the Sun, so there's been a lot less time for life to develop.

Another aspect of Altair is the fascination that science fiction writers have for the star. Planets in the Altair system have been the setting for many novels, short stories, TV episodes, movies, and video games. Perhaps the best-known of the bunch is the 1956 movie "Forbidden Planet," in which a starship from Earth tries to rescue the survivors of an expedition from 20 years earlier. It also introduced Robbie, the Robot. But so far, all those planets are just fiction.

Planetary observers will have to wait until next month, when both Venus and Saturn return to the evening skies.

The Moon is New on July 6th, at First Quarter on the 14th, Full on the 21st, and at Last Quarter on the 28th of July.

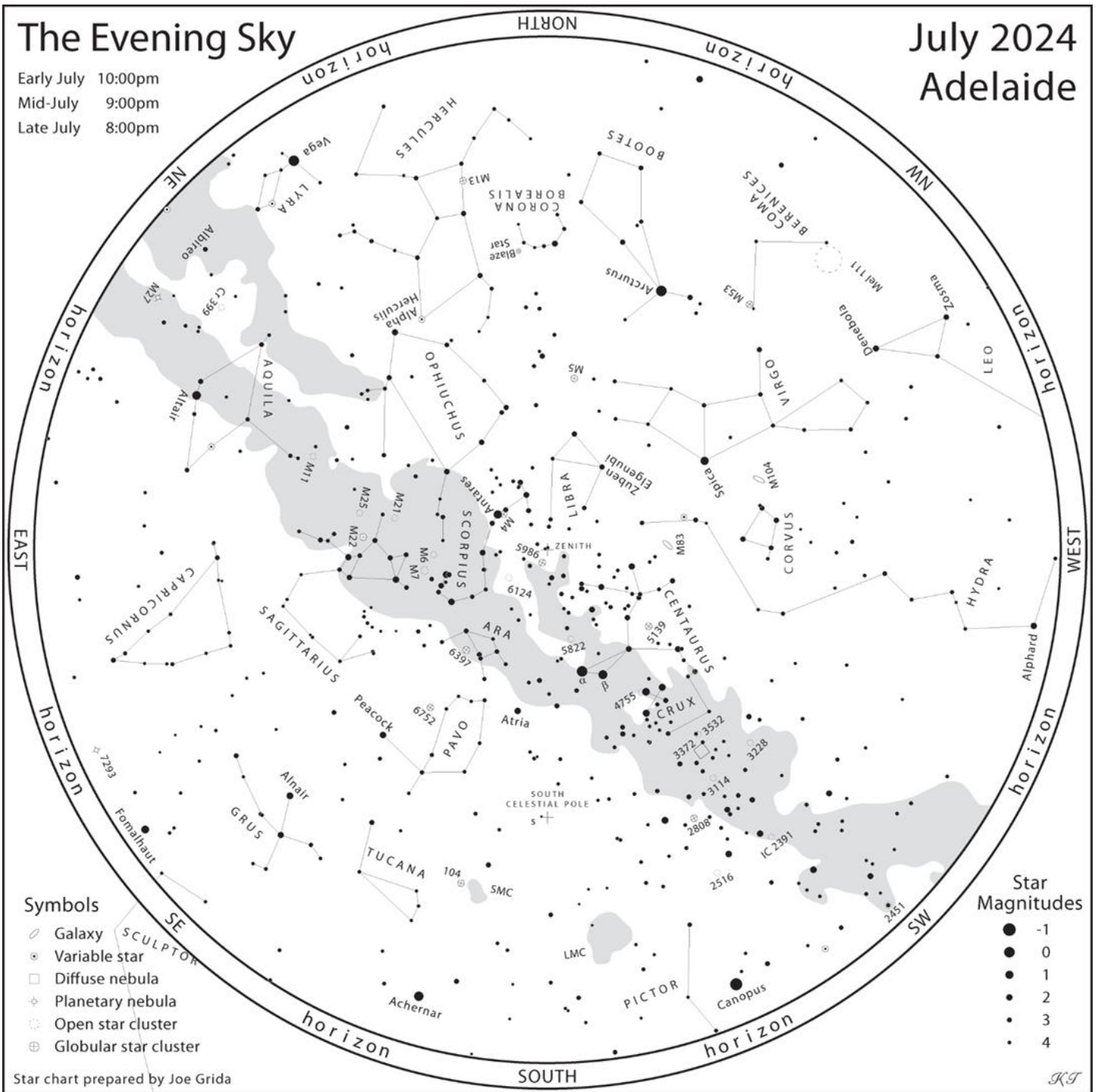


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Juggle House Experiences
4 Randell Street (Arnold Park)
Mannum

The Evening Sky

July 2024
Adelaide

Early July 10:00pm
Mid-July 9:00pm
Late July 8:00pm



Galaxy NGC 5128—Centaurus A

NGC 5128 is the nearest large elliptical galaxy to our sun, at a distance of 12.5 million light years. It is also the nearest of the giant radio galaxies, possessing an active galactic nucleus (AGN) and optically one of the most luminous galaxies in the sky.

NGC 5128 is believed to be the result of the merger between 2 galaxies within the last billion years. Strikingly apparent within the galaxy are two major components, a large elliptical structure which generates about 90% of the luminosity and a massive disk of stars, dust and gas.

The odd appearance supports the premise that a large scale merger of an elliptical galaxy with a large barred disk galaxy occurred to form NGC 5128 within the last billion years. Tidal streams of young stars have also been identified in the halo of NGC 5128 thought to have occurred by cannibalization of a nearby gas rich dwarf galaxy some 300 million years ago.