The October Night Sky

Three bright planets light up the evening sky Venus, Jupiter & Saturn. Venus looks like a first-quarter Moon but without any craters. Jupiter and Saturn are much more interesting in telescopes. Even a small telescope shows Jupiter's disk. Larger 'scopes will show the parallel bands caused by temperature differences in its clouds. Jupiter's 4 big moons are lined up on either side of the planet, swapping positions from night to night. Saturn appears oval in binoculars as the planet and ring blend. Telescopes separate the ring and planet and show Saturn's biggest moon, Titan, four ring diameters from the planet.

The scorpion constellation, or fish-hook of Maui, is prominent (image). The Scorpion's tail loops up the sky in the evening, making a back-to-front question mark with Antares being the dot. Antares is a red giant star 19,000 times brighter than the sun. Red giants are dying stars, wringing the last of the thermo-nuclear energy from their cores. Above and right of the Scorpion's tail is 'the teapot' made by the brightest stars of Sagittarius, upside down to us.

Canopus is low in the southeast at dusk often twinkling colourfully and swings up into the eastern sky during the night. Canopus is 13,000 times the sun's brightness. On the north skyline is Vega, setting in the early evening. It is 50 times brighter than the sun and the 5th brightest star in the sky.

In the southwest are 'The Pointers ', Beta and Alpha Centauri, making a vertical pair. They point down to Crux the Southern Cross. Alpha Centauri, the top Pointer, is our closest naked eye star. Beta Centauri is a blue-giant star, very hot and very luminous, hundreds of times further away.

In a dark sky the Milky Way can be traced down to the south, seen brightest and broadest in Scorpius and Sagittarius. The Milky Way is our edgewise view of the galaxy, made up of billions of stars - our sun is just one. The thick hub of the galaxy is in Sagittarius. The actual centre, with a black hole four million times the sun's mass, is hidden by dust clouds in space. Its direction is a little outside the Teapot's spout. A scan along the Milky Way with binoculars shows many clusters of new stars and some glowing clouds of left-over gas. There are many in Scorpius and Sagittarius and in the Carina region.

The Large and Small Clouds of Magellan, LMC and SMC, look like two misty patches of light in the southeast sky. They are easily seen by eye on a dark moonless night. They are galaxies like our Milky Way but much smaller. The Large Cloud is 10-25% of the mass of our Galaxy and the Small Cloud around 3%. That is still many billions of stars in each.

On moonless evenings in a dark rural sky the Zodiacal Light is visible in the west - sunlight reflecting off meteoric dust (originally from a comet) in the plane of the solar system. It looks like late twilight: a faint broad column of light reaching toward Venus and fading out at the Milky Way.

The Orionid meteor shower is active for most of October, peaking in the early morning hours of the 21st. One of the finest of all meteor showers, the Orionids can display up to 20 fast-moving meteors per hour in dark sky. These meteors are tiny pieces of Comet Halley that hit the upper atmosphere as the Earth passes through the comet’s debris field. Unfortunately the moon, just past full, will obscure the faintest meteors this year.

**MERCURY**: Mercury is lost to the Sun’s glare early in October. It returns to the dawn twilight from late October for a few weeks, very low in the east, but very hard to see.

**VENUS**: Venus appears midway down the western sky soon after sunset. It sets in the southwest near midnight, a brilliant 'star' in the dark night sky.

**MARS**: Mars passes solar conjunction on 08 October and returns to the dawn twilight in November. Very low, south of east, Mars is difficult to see.

**JUPITER**: Jupiter appears northeast of the zenith in the bright twilight, close to Saturn and brighter. Both planets are in the sky till morning hours when they set in the southwest. The Moon will be near Jupiter on the 15th.

**SATURN**: Saturn is pale yellow in colour and much fainter than glowing Jupiter, which sits to its right. However, it is easily identified, being much brighter than the surrounding stars of Capricornus. In early spring both planets are beautifully placed for telescope viewing. The Moon will be near Saturn on the 14th.

<https://www.rasnz.org.nz/in-the-sky/the-evening-sky> <https://cosmicpursuits.com/night-sky-this-month/>

<https://www.stardome.org.nz/astronomy/star-charts/>