

It all started four hundred years ago, with a couple of pieces of glass and tube that could magically make things appear as if they were closer – the telescope. December 2009 marks the end of the International Year of Astronomy (IYA), a yearlong, global celebration of the 400th anniversary of Galileo Galilee first turning his newly created telescope (which was actually invented by Hans Lippershey in 1608) toward the skies above in 1609. The simple act of going from watching ships on the horizon to watching the stars, Moon and planets changed our view of the Universe and how we view our place within it. Galileo saw craters on the Moon, Venus go through phases as it revolved around the Sun and four new worlds revolving around Jupiter. Today's astronomers, with their larger and more powerful instruments, have shown us a universe that Galileo could never have imagined.

The winter sky is home to bright stars and well-known constellations, like Orion. The crisp winter air makes the colors of stars appear more vivid. The color of a star corresponds to its temperature. Our yellow star, the Sun, has a surface temperature of about 10,000 degrees Fahrenheit. The hotter a star is, the bluer it appears. Conversely, cooler stars appear redder. Betelgeuse, the red supergiant that serves as Orion's right shoulder, is a relatively cool 6,000 degrees, whereas, Rigel, the left foot of Orion, blazes at a sizzling 20,000 degrees.

Orion is one of the most prominent constellations in the winter sky. To the ancient Greeks, Orion was known as the fearless hunter. With its distinctive and easily recognizable pattern of stars, Orion was seen as many different things by different cultures and ancient civilizations. People in India saw him as a deer. Hungarian people saw him as a great hunter, warrior and father to their people. To the Aborigines of Australia, Orion is a canoe. They tell a story about how two brothers went fishing one day and soon caught a fish. Being very hungry, they quickly ate the fish. However, under their laws, they were not allowed to eat that fish. Seeing that the two brothers had broken the law, the Sun sent a waterspout that carried the two brothers and their canoe into the sky where they became the constellation of Orion, and where they serve as a reminder to obey the laws of the land.

Orion also serves as one of the best road maps to other constellations in the sky. Follow the three belt stars of Orion to the right and up and you find the star Aldebaran, the orange eye of Taurus the Bull. Follow the belt down and to the left and you will discover the brightest star in all of the night sky: Sirius, also known as the Dog Star, of the constellation Canis Major. Drawing a line from Rigel through Betelgeuse leads you to the Gemini twins, Castor and Pollux. Finally, a straight line from Bellatrix through Betelgeuse points you to Canis Minor.

In early January, the annual Quadrantids meteor shower returns to the skies. The peak of the showers will be Jan. 3-4; however they can be seen from Jan. 1-5. At their peak, there are typically 35-40 meteors visible per hour at a dark location. From city or light polluted areas, that number can drop to 5-10 per hour. The meteors are typically bright, blue and fast. They blaze through the atmosphere at 25 miles per second and some will leave behind a dust trail. The meteors will radiate from the constellation Bootes. As with all meteor showers, viewing is best after midnight from a dark location.

Throughout the entire winter, the planet Mars will be visible in the east. Mars is the last of the Terrestrial, or rocky planets. Mars is only half the size of the Earth. However, some of the largest objects in the Solar System, for example, the canyon called Mariner Valley, are found on this red planet. If placed on the United States, the canyon would run from New York to San Francisco, clear across the width of the country! It is 3,000 miles long, 100 miles wide and four miles deep at its lowest point. It is truly the Grand Canyon of the Solar System. Overlooking that chasm on Mars are four large mountains, which are ancient Martian volcanoes. Olympus Mons is the largest mountain in the Solar System. If placed on the United States, it would cover all of Arizona and stretch two and half times taller than Mount Everest, the tallest peak on the Earth.

The winter sky is beautiful! If you are new to the night sky or a seasoned veteran stargazer, we encourage you to come join us at the Dorrance Planetarium at Arizona Science Center.