

HEAVENLY NEWS

“Follow the Arc”

By Forrest Lockhart, Lead Docent, Community Observatory

Since ancient times humans have traced patterns in the stars, making stick figures in the sky to represent everything from mythic beings to creatures and objects in everyday life. One of the most famous of these is the Big Dipper star pattern, or asterism, in the constellation Ursa Major, the great bear. Known in ancient Rome as the Cart, and in England as the Plough, the Big Dipper adorns our northern sky all year due to its position near the north celestial pole. A little research on the Big Dipper reveals some interesting facts.

While most of the recognizable constellations are coincidental alignments of stars at widely varying distances from us, five of the seven stars making up the Big Dipper form a loose cluster currently about 80 light years away. The cluster is moving southward toward the constellation Sagittarius at about 14 kilometers per second, so in a mere hundred thousand years or so the familiar dipper shape will be drastically changed.

The second star from the tip of the handle is actually a multiple star, two of which can be seen with the unaided eye or a binocular. The visible pair, 2nd magnitude Mizar and 4th magnitude Alcor, were known to Arab desert dwellers as the “Horse and Rider”, and are said to have been a critical eye test in the armies of ancient Rome. It is recorded that if a recruit could discern the pair as distinct stars he would become an archer; if not he would be assigned a sword and sent to the infantry. Measurements of the distance of this pair range from 78 to 81 light years from Earth, however it is uncertain whether they may be close enough to be gravitationally bound. Mizar has a fascinating story of its own. First observed in a telescope in 1650, it is the first known telescopic double star. Later, when the newly invented spectroscope was first aimed at Mizar and its orbiting companion it was discovered that each of these stars is, in fact, an extremely close binary with an orbital period of less than six months. So, when you gaze at Mizar and Alcor you are actually observing a quadruple star system plus a possible fifth member. From the handle of the Big Dipper we can find our way to the fourth-brightest star in the sky. Step outside and locate the dipper in the northern sky. Trace an extension of the arc formed by the handle until you reach a bright orange-tinted beacon in the west. This is the star Arcturus, a red giant behemoth 37 light years distant in the constellation Boötes. With a diameter 23 times that of our Sun and 100 times more luminosity, Arcturus also has the distinction of one of the highest proper motions across the sky. Two million years ago Arcturus would have been 800 light years away in the constellation Cepheus and too dim to be seen by our hairy ancestors. Two million years in the future Arcturus will be in the constellation Vela and will have retreated back to invisibility. But for now, be content to step outside, take a sip of starlight from the dipper, and follow the arc to Arcturus.

You can learn more by visiting the Community Observatory, located behind the El Dorado Center, Folsom Lake College. Admission is free and open to the public (weather permitting) Friday, Saturday and Sunday evenings from 8:30 PM – 10:30PM. As the days get shorter, the observatory will gradually adjust operating hours to 7:30P PM – 9:30 PM. You can find driving directions and more information about the observatory at www.communityobservatory.com