




January Skies over the Pinnacles

January 2024

by Jeff Hutton

January's Four Principal Phases of the Moon

January 4	Last Quarter	
January 11	New Moon	
January 18	First Quarter	
January 25	Full Moon	

How Dark is Your Night?



One-Third of all people around the world cannot see the Milky Way at night, according to the American Association for the Advancement of Science. In the United States, the figure drops to one-fifth.

Look at the illustration above. I took the top-left picture from Valentine, Nebraska in 2010. The top-right picture was taken from my home in Berea in 2019. I've drawn in the familiar outlines of the 'Teapot' of the constellation, Sagittarius, and the 'Fish hook' of Scorpius in both images. Same camera, same exposure. Why are so many more stars visible from the Valentine picture than the Berea picture?

Valentine (see the light pollution map) is located well away of human sources of artificial light. Most of the glow in the picture on the right is from the unnecessarily bright light emanating from the Berea industrial park, mostly from the fork-truck factory. Most stars are blotted-out by this light. In fact, 1% of all outdoor lighting serves some useful purpose, according to U.S. Department of Energy. Most of the rest, I believe, serves two purposes: vanity (*look at me!*) and fear (*I'm afraid of the dark!*). But what about crime? I was surprised to learn that there is no direct connection between increased outdoor lighting and increased nocturnal crime.

Most of us live in “perpetual twilight” at night, according to Sky and Telescope Magazine, July, 2024. There is a lot of evidence that too much artificial light is harmful to our health. Melatonin is a hormone that your brain produces in response to darkness, according to the U.S. Department of Health and Human Services. When we don't experience enough daily natural darkness, less melatonin is produced in our bodies and certain cancers, including breast cancer, are more likely to occur. I believe that the more contact we have with the natural world, including the starry night sky, the more likely we are to be happy.

The nonhuman natural world also suffers from our addiction to unnatural light. Flocks of birds are attracted to their doom by lit city buildings, Sea turtles lose their way to the ocean after hatching, perishing by the thousands. Human disruption of the natural day/night cycle has damaged the ecosystem in ways we are just now discovering.

Although you may not be able to see the night sky from your home, there are designated “dark sky sights” in America and internationally that you can visit.



Sadly, Valentine, Nebraska, isn't as light-pollution free as it was just 14 years ago but it still hosts dark sky observing during an event called the Nebraska Star Party in July. Those orange glows above are mostly from municipal lighting from surrounding towns. I recall that in 2010, the only way you could tell if a small cloud was overhead was that the stars were strangely absent from that patch of sky!

The National Parks Conservation Association has a list of designated dark sky sites that you can check out: <https://www.npca.org/articles/1806-see-a-sky-full-of-stars-at-these-certified-dark-sky-parks> Closer to home, I understand that there are dark skies to be enjoyed near the Cumberland Falls area in Kentucky as well as some locations in the Red River George. Blackwater Falls, in West Virginia is another favorite of star-gazers. Kim Kobersmith wrote an excellent article about where to find dark skies. Check it out at <https://dailyyonder.com/seeing-the-stars-small-towns-and-rural-parks-pursue-dark-sky-goals/2021/12/21/>

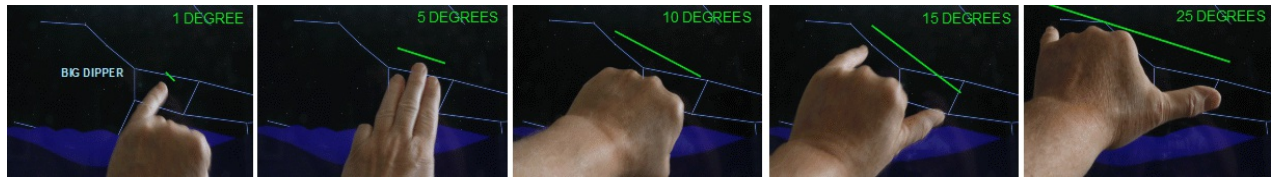
A note about the term, “dark skies”. In Nebraska, my first true experience away from light polluted skies, I was surprised that the uncountable stars and planets above produce the most calming, ambient, light. If conversation happened, the soft glow of starlight encourages hushed tones with that person a few feet away. And yes, you can clearly see your surroundings with only the light of the stars overhead.

There are rules when you visit one of these sacred sites. If you MUST use a flashlight, use one that shines red, and keep it pointed at the ground! I recall the loud disapproval expressed during the 2010 Valentine Star Party at some inconsiderate individual on a hill to the east who was pointing an intense white light in our direction. The offending light was even casting shadows as the voices got even louder. Suddenly, the din of swearing died away as some small voice nearby said, “ oh, that's Jupiter rising!”

One last note about the pictures at the top of this article. You might notice that Sagittarius and Scorpius are closer to the southern horizon in Valentine than they are in Berea. As we are further south at 37.6 degrees north latitude than Valentine at 42.9 degrees north latitude. We see more of the southern sky and Valentine sees more of the northern sky.

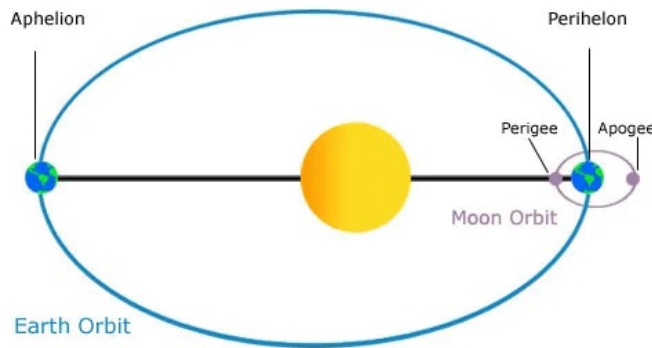
Attractions in January

When you hold your hand all the way out and hold three fingers out, like the scout's salute in panel 2, your fingers create an **angular distance** of 5 degrees, about the width of the bowl of the Big Dipper. When I talk about the angular distance between, say, the Moon and a star or planet, I'll say that they are separated by a certain number of degrees. Sky and Telescope magazine is my source for most of the following information.



January 2

Nothing to see here but today is the day when the Earth is at the closest it ever gets to the Sun. Our planet's orbit around is in the shape of an ellipse (oval) and each year at this time we are 3% closer to than the Sun than we are in July. The illustration below, courtesy of NASA, greatly exaggerates the 'oval-ness' of our orbit, but it makes the point.



January 4

There is a minor meteor shower this month happening when the Earth, on it's annual trip around the Sun, passes through a narrow stretch of sand grains left over from Comet 96P/Machholz, as well as debris from an asteroid called 2003 EH1. In fact, the whole shower lasts only 6 hours, compared with several days for last month's Geminids. All annual meteor showers are named for the constellation that the meteors appear to come from. This shower, the Quadrantids, is no exception. Don't bother trying to find the constellation of the Quadrant on your star chart. It isn't recognized as 'official' anymore. It was located halfway between the current constellations of Hercules and Ursa Major (the Big Dipper). Check out my August, 2021, edition of "Skies over the Pinnacles" for handy observing tips.

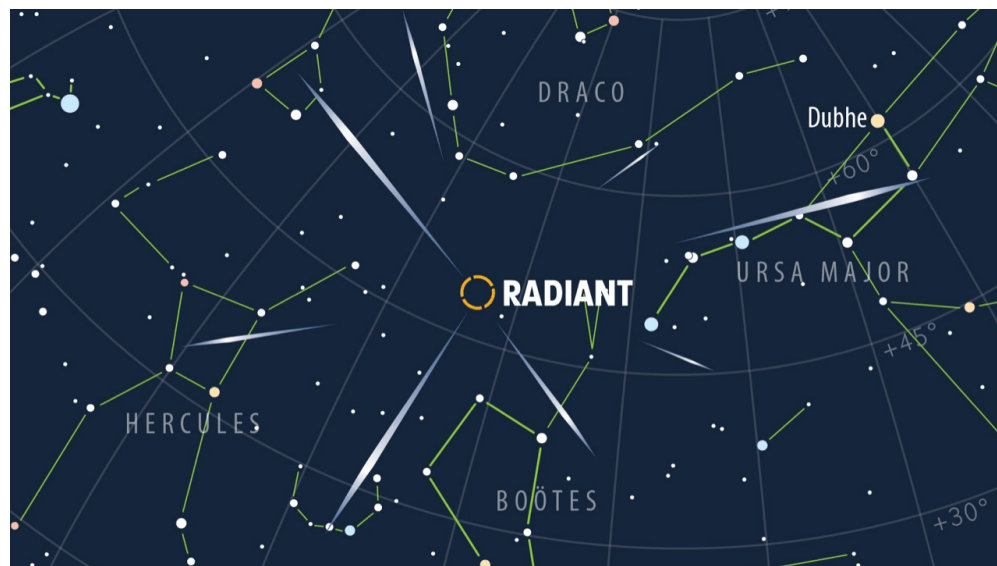
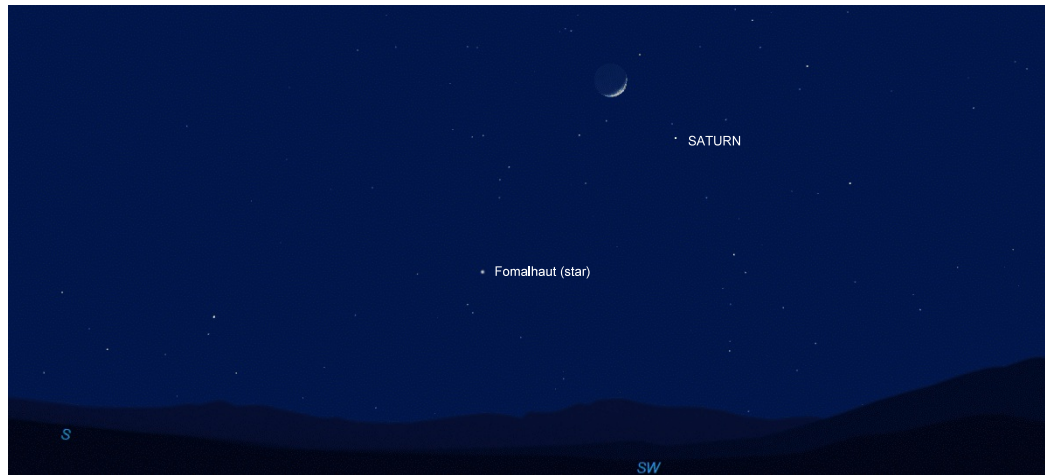


Image from SciTech daily.

January 14

Right after dinner, check out the southwestern sky and see the Moon “chasing” Saturn down to the horizon. 7 degrees separates the two.



January 18

Now, for dessert, find the Moon high in the southern sky just 3 degrees to the upper left of Jupiter. Can you spot the Pleiades above and the V-shaped Hyades which form the face of Taurus, the Bull?



January 20

This evening go outside and see how the Moon has traveled farther east to find itself just below the Pleiades. There's mighty Orion to the left.



January 24

The Moon is nearly full tonight and is near the star Pollux, one of the Gemini twins.



January 31

If you're up around 1AM, Go outside and look east-southeast to check out the Moon rising right alongside the blue star, Spica, brightest star in the constellation, Virgo.



Questions or comments? Feel free to contact me at sawandtelescope@gmail.com.