June Skies over the Pinnacles

June 2025

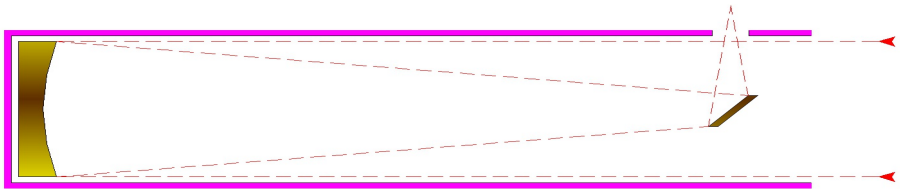
by Jeff Hutton

June's Four Principal Phases of the Moon

June 3	First Quarter
June 11	Full Moon
June 18	Last Quarter
June 25	New Moon

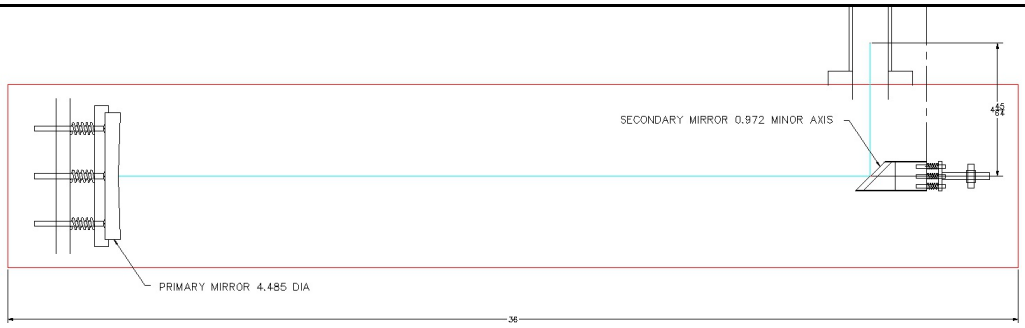
You Want to Build a ***What***?

Part 2



Last month I told you that I am planning to offer a Learnshop this summer where participants would assemble 5 working telescopes that they could take home and enjoy views of the Moon, planets and even some celestial objects beyond our solar system. The design was invented by Isaac Newton in 1668. The 'Newtonian Reflector' has been a favorite of star gazers ever since. It is simple and gives good images.

This is my second report on my progress. If you remember from last month's installment, I made a mechanical drawing of the project and had completed some of the parts we need, including the adjustable holder for the primary mirror, seen on the left side of the illustration above and the adjustable holder for the secondary mirror, seen on the right. The telescope's interior is always painted flat black to prevent unwanted reflections.



Plans for the Learnshop Telescope

The telescope components are put in place.

The top part of the illustration above is the original plans for our telescope. Below it is a picture I took of the main parts placed on two sides of the square wooden tube that will hold everything together.

Now that I had a complete set of telescope parts made I needed to test one of the telescopes to see if everything worked. I put the optics in the wooden tube and pointed the telescope at the mountains behind my wood shop.

The little red circle at far right shows the area that is seen in the middle picture.

Next, I wanted to see how the Moon looked through the new telescope. I haven't built a way to point the telescope to look up at the sky yet, so I attached the wooden telescope tube to another telescope mount.

This is what I got. I took two pictures of the Moon that night, one that shows the entire disk of the Moon and a closer view, showing the rough lunar terminator. Pretty good, but not quite there yet.

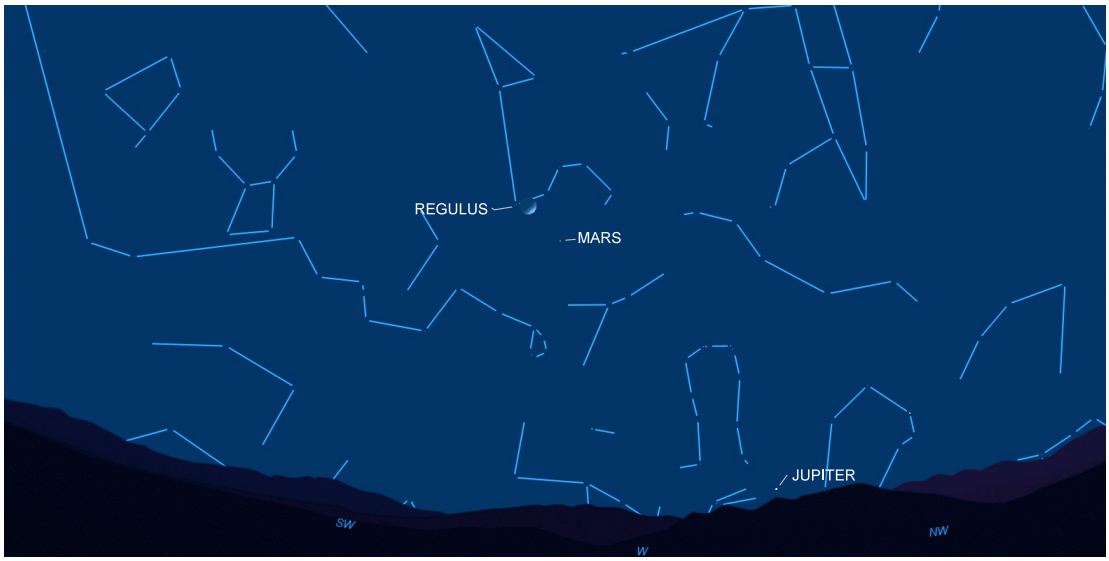
At right is another phone picture, this time of a bright star', *way* out of focus. The big "**X**" is showing the arms of the spider that holds the secondary mirror. What you are actually seeing is the primary mirror "filled" with light from the star. Notice two other things. One, The mirror doesn't look round. That's because the mirror isn't 'looking' straight out of the tube. The flat area at lower right is a straight side of the wooden tube. This problem can solved by better alignment of the optics. Second, notice the bright ring on the outside of the mirror? That means that the curve of the mirror gets too 'flat' toward the outside. Telescope makers call this a "turned-down edge", which is common in mass-produced mirrors. It throws unwanted light into the image and it can be fixed by placing an opaque ring around the outer edge of the mirror.

Next time, I'll continue on to the completion of the telescope for the **First Light Learnshop.**
This will be held July 24 and 25 in room 455, the Yahng Discovery Center, in the Margaret A. Cargill Building on the Berea College Campus. If you are interested, look for the official announcement on Berea's tourism website soon.

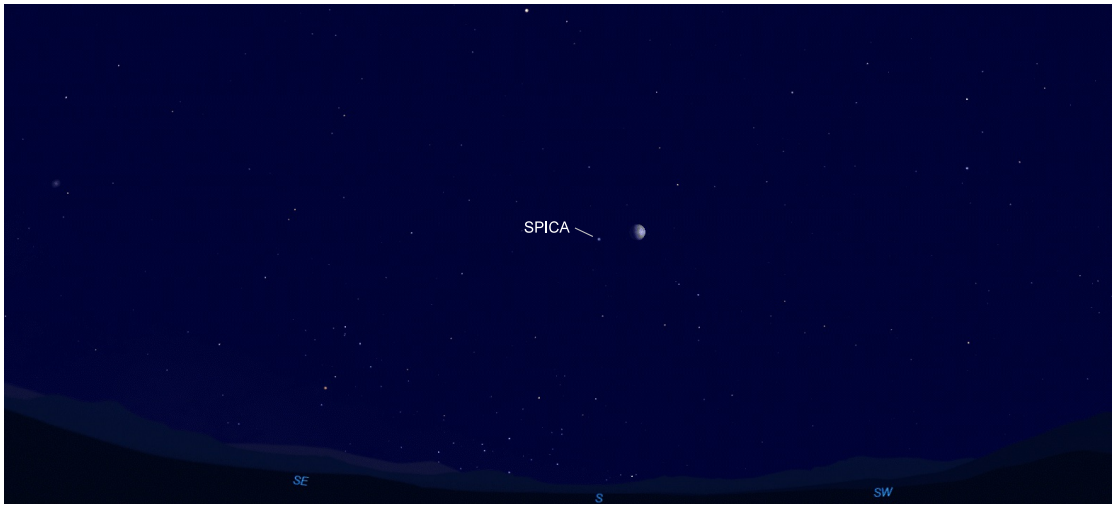
Attractions in June

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 or a star or planet, I'll say that they are separated by a certain number of angular degrees. Sky and Telescope magazine is my source for most of the following information.

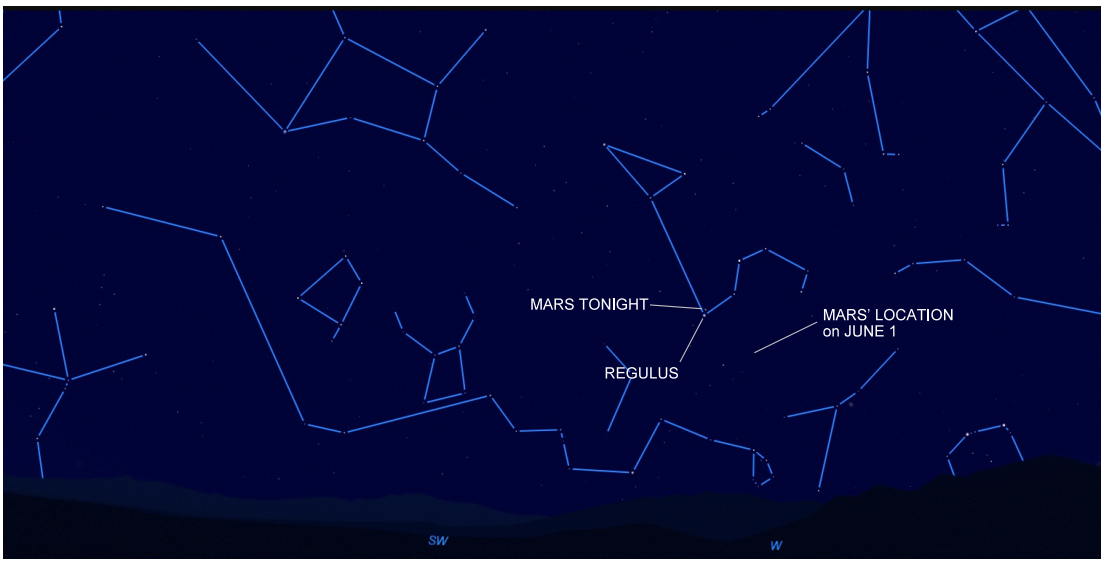
June 1 Head outside at around 9PM and find the beautiful crescent Moon. Just to the left is the star Regulus and the planer Mars is at lower left. You might even catch the planet Jupiter before it sets in the west.



June 5 If you go outside after dark, this might catch your eye. That's the star Spica, brightest in the constellation Virgo shining to the left of the Moon.

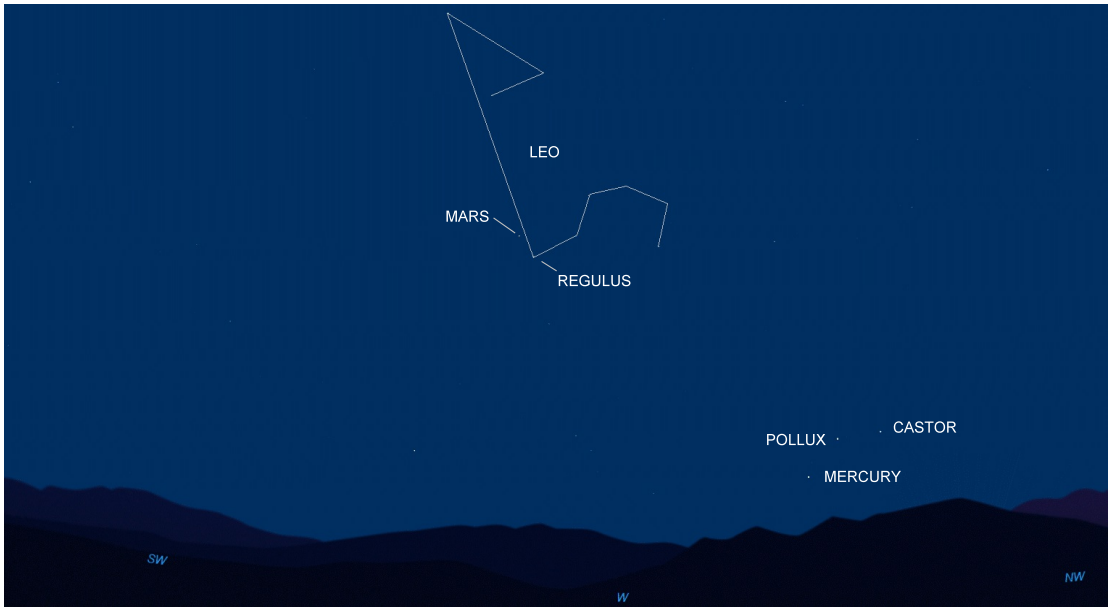


June 16,17 If you saw Mars on June 1, located between the constellations Leo and Cancer, you'll be surprised to see that the planet has now sidled up next to the star Regulus, in Leo. The word 'planet', means 'wanderer' because planets appear to wander among the stars.

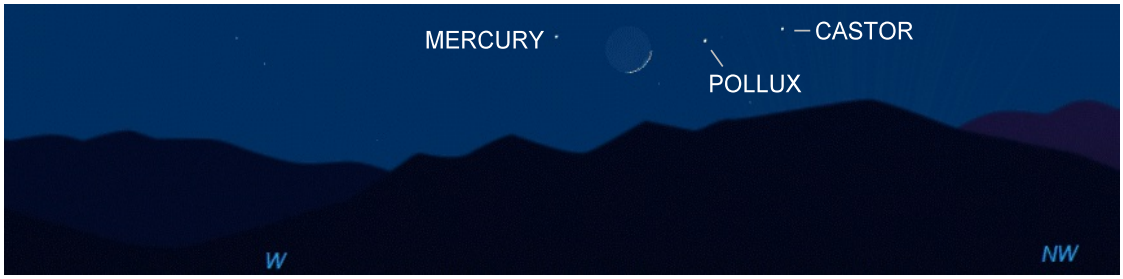


June 20 The sun is taking its northernmost place in the sky, marking the summer solstice, being in summer and the longest day of the year.

June 21 **Binocular Alert!** If you have a clear view of the western horizon after the sun has set, you might just catch a glimpse of the planet Mercury just before it sets. Just remember, to avoid eye damage from the sun, wait until after the sun is well below the horizon!



June 26 **Binocular Alert!** If you have a good view of the western horizon and after the sun has set, start looking for the razor thin crescent Moon los in the west. Now look to the left and find Mercury and then right to catch the stars, Pollux and Castor in the constellation, Gemini.



June 28 **Star Party!** Take a short drive to Legacy Grove Park in Winchester, KY for the first summer star party of the summer. Members of the **Pinnacles Astronomy Club** will be on hand starting at 8PM with their telescopes ready to show you such wonders as Mars, star clusters, and some of the beautiful double stars of the early summer sky. We'll also pick out some constellations for you!

June 29 Look closely at the Moon this evening,, now in Leo. Now look *closely* at the moon and you'll just see Mars poking up just above our natural satellite. People in southern parts of the world will see Mars covered-up, or **occulted** by the moon.