July Skies over the Pinnacles

July 2025

by Jeff Hutton

July's Four Principal Phases of the Moon

July 2	First Quarter
July 10	Full Moon
July 18	Last Quarter
July 24	New Moon

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

Part 3

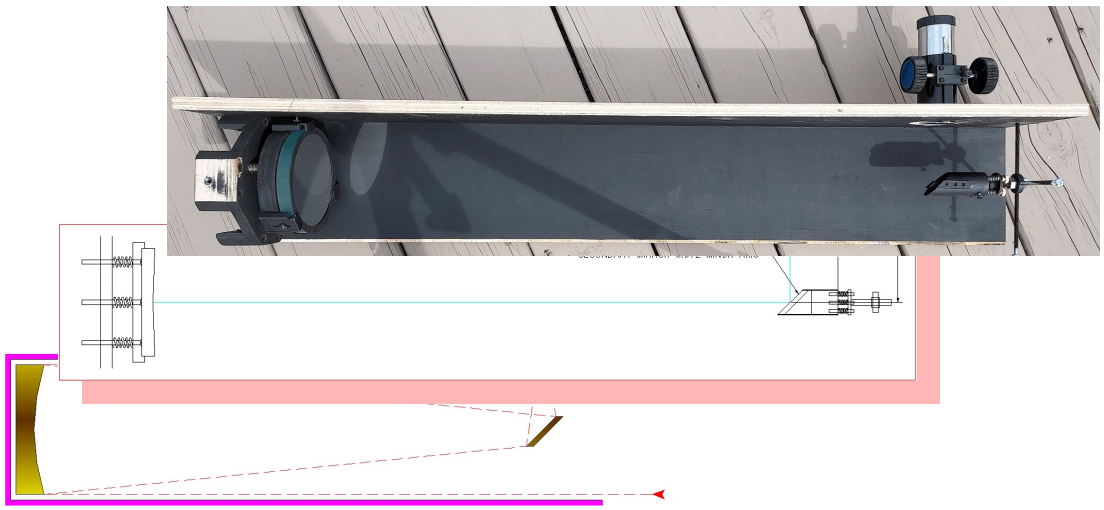
Over the years, I've been asked, "What's the best telescope?". After considering the options, little ones, big ones, retractors, reflectors, cheap and expensive, I think the best answer is, "A telescope that gets used." I've been building telescopes for 50 years and I've made some really good ones and a lot that weren't. The ones that didn't get used were the shaky, hard to aim ones. I've been blessed in knowing some superb glass grinders, Dick Wessling, Ed Jones, George Aprile, some are alive and some have passed on. I've been spoiled by the images of the Moon that were so sharp that they hurt your eyes. In the 1970's and 80's a gentleman came along who revolutionized construction of really big telescopes. His name was John Dobson. As a member of the San Francisco Sidewalk Astronomers, he and his friends brought their big telescopes to the people, often inviting the public to view the Moon and planets from urban sidewalks.

Dick Wessling and one of his homemade telescopes. The simple and ingenious mount was Dobson's Design.

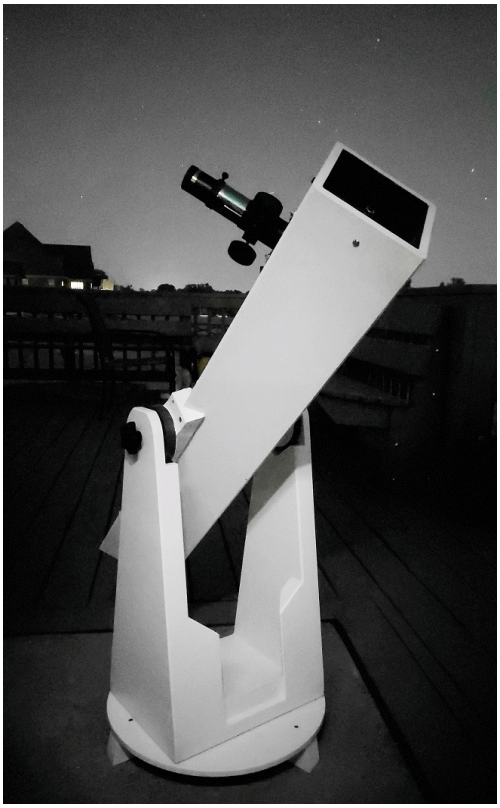
John Dobson seen here with one of his telescopes made from simple materials.

I had the idea to introduce the mechanics of telescopes to whomever might be interested during the summer session of the 2025 Festival of Learnshops here in Berea. Interest was evident so I met with the tourism folks to offer up my idea of having students assemble 5 telescopes from kits that I would produce, using commercially available optics. The Learnshop staff was enthusiastic, so I began to create the telescopes. Later, for reasons that are not completely clear, the summer 2025 Festival of Learnshops was abruptly cancelled a little over a month before they were to commence. There is an October Learnshop event planned and I am leaning toward conducting my Learnshop, called "First Light" at that future date, instead of trying offering it on my own. If they cancel in October I'll think about doing the workshop on my own.

Here is my third update on the “First Light” telescope’s progress. Last night I moved the first completed telescope outside to begin testing.



Concept, Plans and Construction of the Optical Part of the “First Light” Telescope

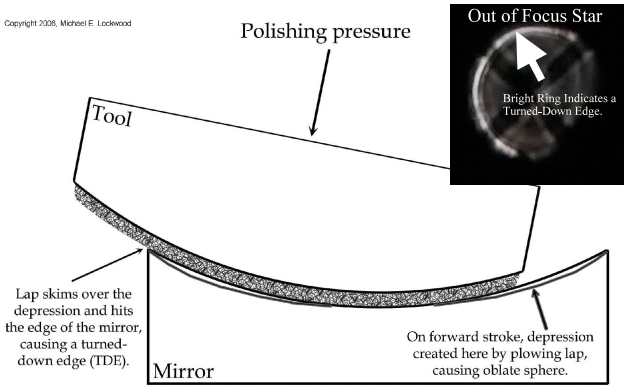


You can see that I used the simple, sturdy construction that was first introduced by Mr. Dobson. The square optical tube simplified assembly and the ‘diamond’ configuration puts the eyepiece in a convenient place for the observer and keeps air currents away from the optical path.

The telescope’s height puts the eyepiece at the perfect place for a child to reach while standing and for a seated adult. At left, you can see the 4-1/2 inch diameter mirror, reflecting the blue sky, from the bottom of the tube. This instrument will make the perfect beginner’s or family telescope.

The weather didn’t cooperate at the end of June, so next month I plan to show you more pictures of the Moon, taken through this telescope! Here’s where the projects stands. The scope is easy to point and stays aimed where you put it. To varying degrees, the primary mirrors all seem to have turned edges, as I noted in June’s article.

In the diagram at right you can see how the outer edges of the mirror get flattened during the glass polishing process. These flat edges soften the images seen through the telescope and throw light into areas where it doesn’t belong. Think of seeing a crater on the Moon. If the bottom of the crater is in shadow, it should appear jet black. With this kind of mirror defect, the crater bottom would appear grey and details washed-out. To learn more, visit https://www.loptics.com/



Here are the black stop-down rings that I made for the mirrors of the 5 Learnshop telescopes, looking here like the Olympics logo. By using these, you lose a little light gathering power in each telescope but you gain sharpness and contrast in your images.

Here are a few more pictures taken while I was building these telescopes.

I used a special table saw jig to cut the tapered sides for the telescope mount.

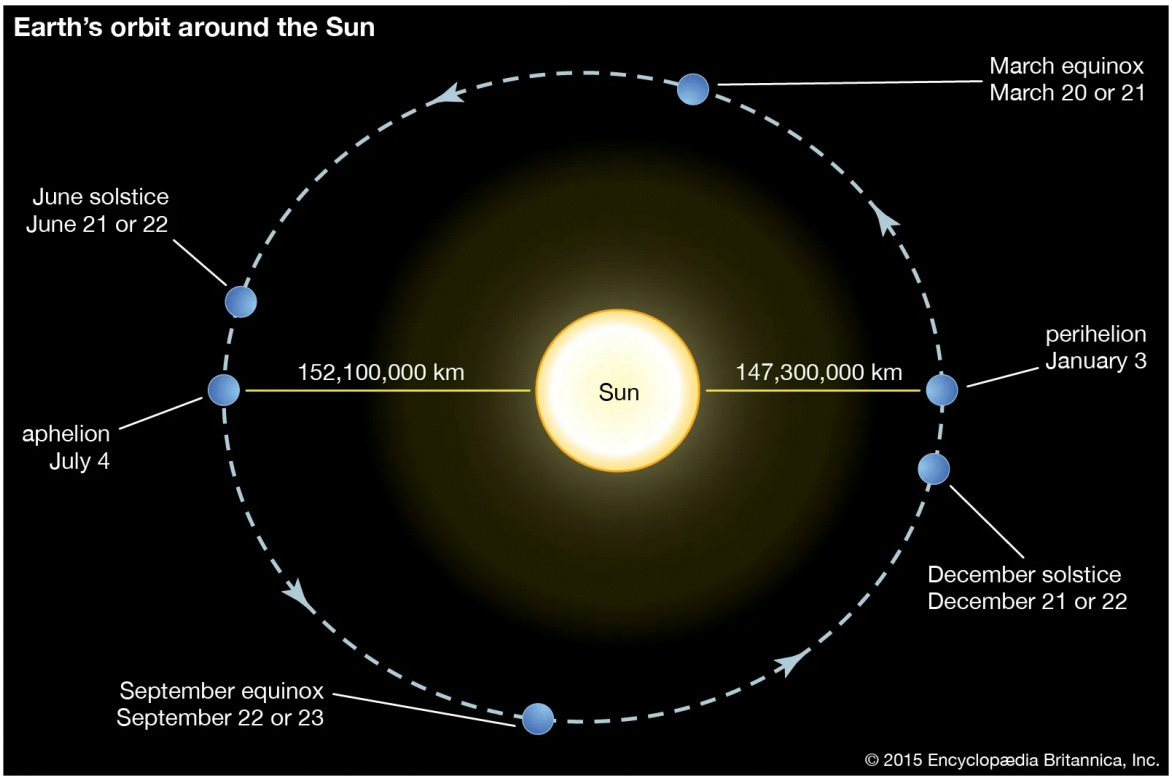
For the telescope to move and point smoothly, the two V-grooves (circled) for the altitude bearings must be aligned with each other and the two upright arms of the telescope mount must be parallel and square to the base. I used a piece of plywood, cut square and to the exact size to placed between the arms for assembly. A cleat, cut to the exact angle of the V-grooves nests into them for perfect alignment. Next, I took it all apart and reassembled with glue.

Here, you can see the one finished telescope along with the arms, altitude bearings and bases ready to be assembled into the next four Learnshop Telescopes.

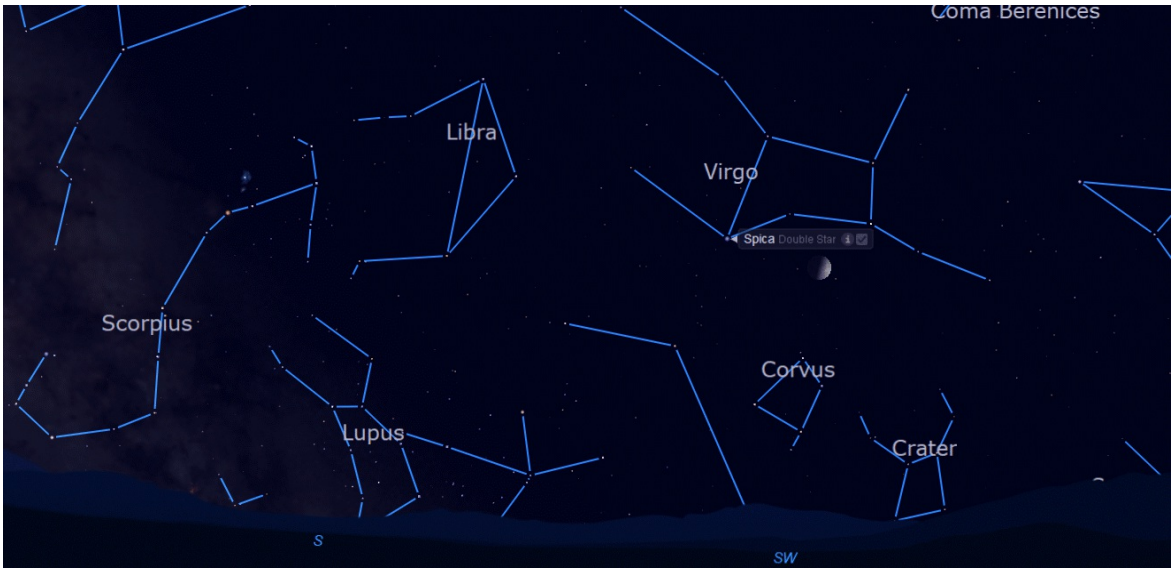
Attractions in July

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.

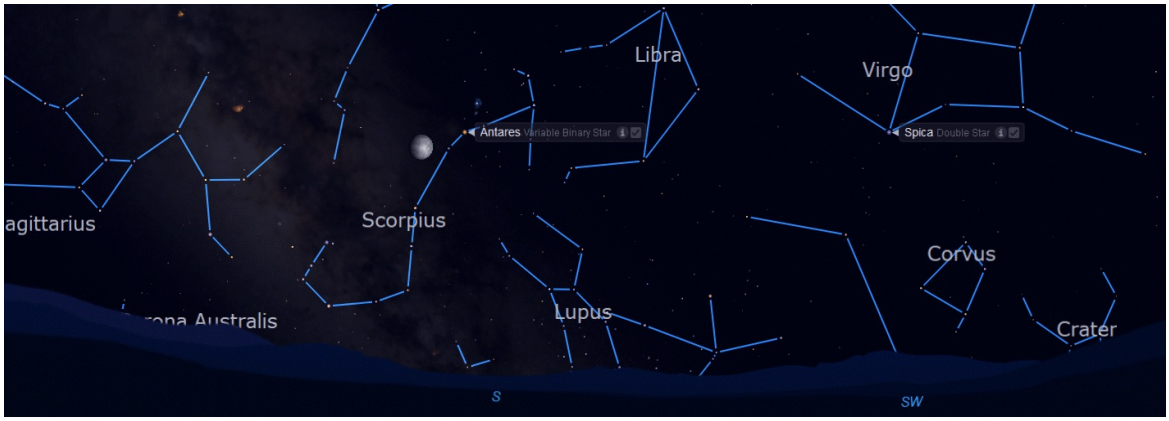
July 3 You won't notice this, but today is the day when the Earth reaches the point of it's orbit that is farthest of the Sun. The name for this point is **aphelion**. We are closest to the Sun on January 3.



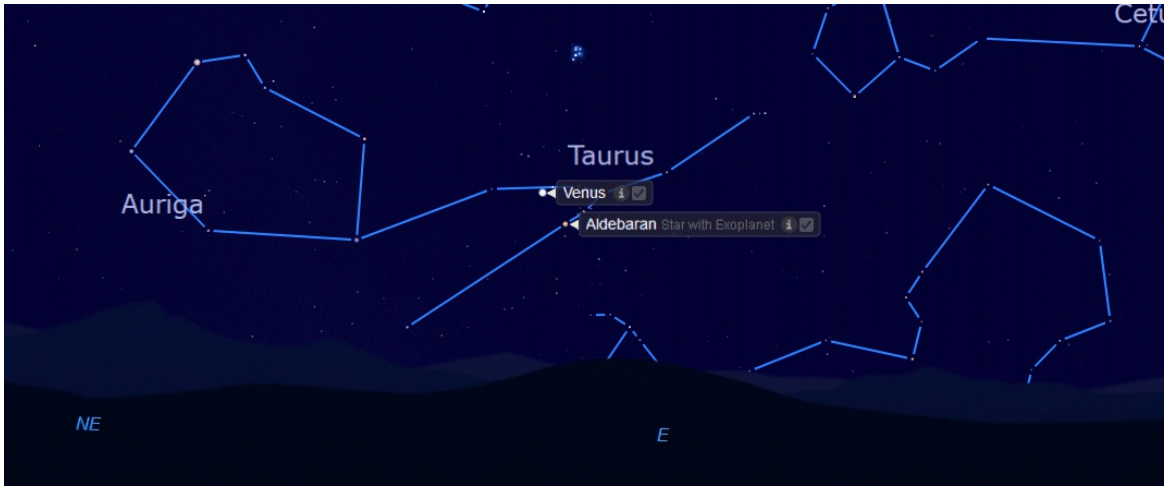
July 3 Go out this evening to see the Moon, a day past first quarter, four and ½ degrees southwest of the blue star, Spica, brightest in the constellation , Virgo.



July 7 Now see our growing Moon the same distance on the opposite side from red Antares, brightest star in Scorpius.



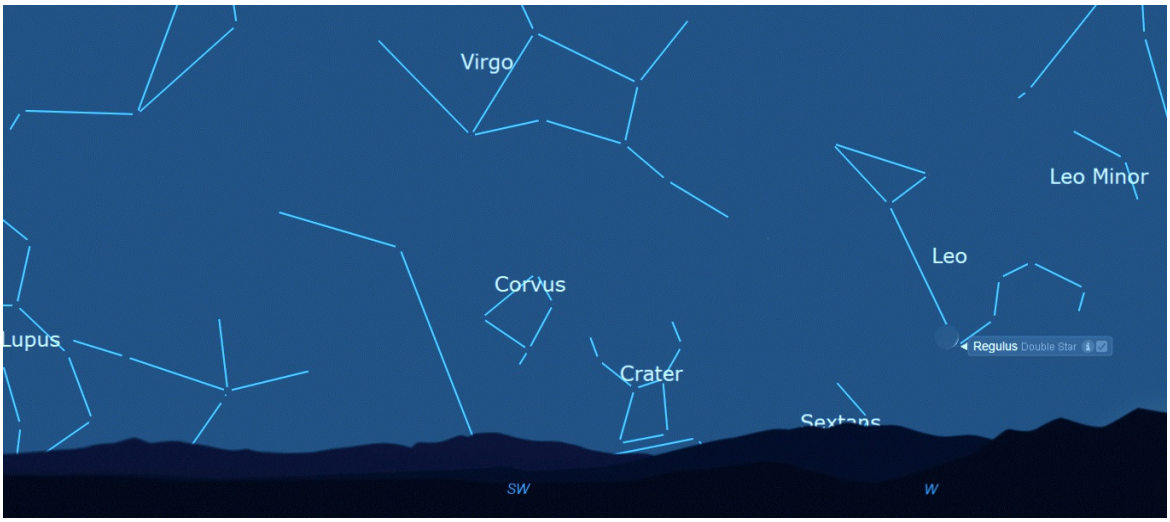
July 12 If you're up before the sun this morning (and that take some doing, being so close to the Solstice), Check out Venus, now a morning star, rising, followed by bright Aldebaran in Taurus.



July 15 If you're willing to stay up until 1AM, you can catch the waning gibbous Moon rising, followed by the planet Saturn just 2 degrees below.

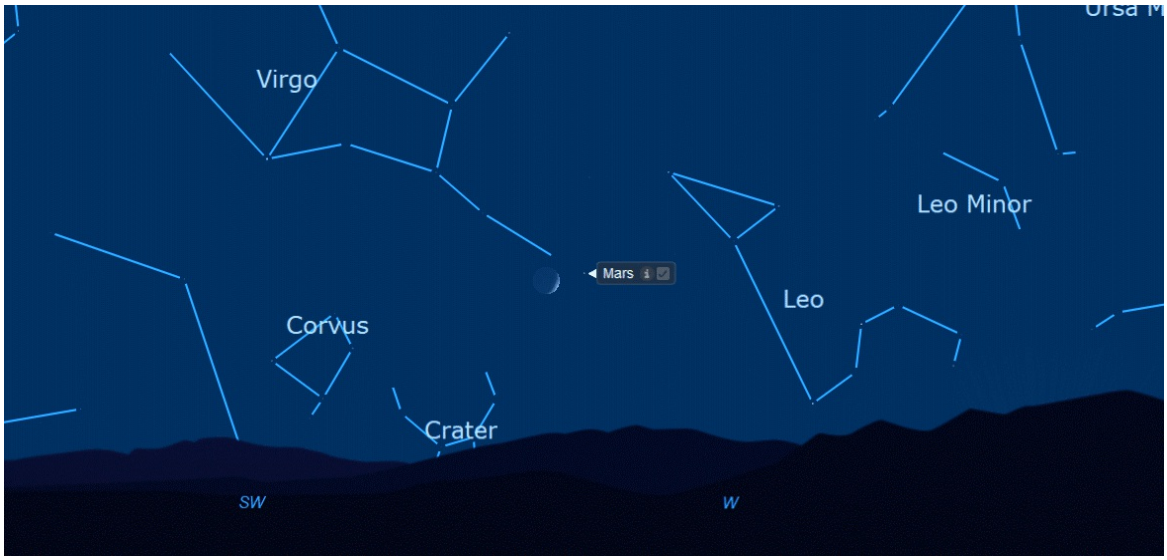
July 26

Just as the stars start coming out this evening, you might just catch the thinnest crescent Moon, low in the west with the brightest star in Leo, called Regulus, hanging 2 degrees above and to the left. **This is also the 'rain date' for the Legacy Grove star party that was clouded-out on June 28. Come to Winchester and join us. We'll start at 8PM!**



July 28

This evening notice how the Moon's orbit has carried it east and is now only 4 degrees to the left (east) of the planet Mars.



July 29

Closing out the month of July is a return pairing of the Moon, almost at first quarter phase, just 2 degrees south of blue Spica.