

On Friday evening, 14 September, 2001, I took my newest telescopic toy to Fremont Peak. It is an Orion 120 mm f/5 refractor optical tube assembly mounted on a simple, mostly home-made altazimuth mounting -- a bent-fork design influenced by the Dobson style of mount. I brought this instrument to the San Jose Astronomical Association slide and equipment night, where some of you may have seen it. From bottom up, the mount uses wooden legs from an old Vixen tripod, attached to a foot-long length of 4-inch ABS pipe that runs vertically. The pipe has a cap, with a bolt and acorn nut at its center. The acorn nut bears against a brass plate in the part of the tripod that rotates in azimuth, and carries the entire weight of the moving parts of the telescope.

The part that moves in azimuth is in essence a wooden box, of 1/2-inch plywood, with no bottom, that fits over the ABS pipe. Two of the box sides extend outward past its nominal edges, and carry altitude bearings for the OTA. Within the box are the brass plate just mentioned, and four DuPont Teflon pads that bear against the side of the ABS pipe to help define the box's position. Two pads are near the bottom of the box on the edges toward the fork arms, two more near the top on the edges away from the fork arms. With the weight of the tube offset from the box center, the pads are continually pressed against the outer diameter of the ABS pipe, so the box rotates smoothly. I doubt I can satisfactorily draw how this works with ASCII graphics.

The altitude bearings resemble side bearings for a dobson, each having two Teflon pads in a v-shaped arrangement, which bear against the curved surface of a 3-inch ABS pipe caps that has been shaped to fit the side of the OTA. The pipe caps are fastened to a pipe clamp which wraps around the OTA; just loosening the clamp allows the OTA to slide back and forth within it, to adjust balance.

If I do say so, this setup is the simplest effective refractor mounting I have ever used. Setup takes about one minute, the friction on both axes worked out for a nice feel, and between the adjustable wooden legs of the tripod and my slide-up-and-down observing chair, the telescope is very convenient to use. The friction is sufficiently light that I have been able to use the telescope essentially at the zenith -- there is almost none of the "Dobson's hole" inconvenience that comes with most altazimuth mountings.

It had first light several weeks earlier, but September 14 was its first trip to reasonably dark sky. The Peak was lightly populated, since most of the regulars were at the large CalStar star party further south. Besides my 120 mm, there was an Orion 6-inch f/5 reflector and a NexStar 11 GPS. (The latter seemed to work about as advertised, perhaps with somewhat better pointing than my non-GPS NexStar 8.)

I had fun working on a Messier hunt with the 120. I have often said that the easiest Messier hunting is with binoculars of 70 to 80 mm aperture, but this altazimuth mounting is so slick that the larger 120, with a 20 mm Erfle eyepiece giving 30x and more than a two-degree field, is easier still. I logged a few more than 60 targets in an hour and a half, including about 50 from the Messier catalog. Performance was about what you would expect with 120 mm and 30x -- probably not quite as much throughput as a 6-inch reflector. All the Messier objects showed shape or structure of some kind, and even at 30x, several of the looser Messier globulars showed hints of incipient resolution.

I looked at Stephan's Quintet, but at 30x, it showed only as a featureless blob. I have seen several of its galaxies separately with less aperture and more magnification, but was too lazy to change eyepieces on the 120 mm. I also had a tolerable view of the Helix Nebula, and a very pleasant sweep across star clouds and dark nebulae in the area where Sagittarius, Scorpius, and Ophiuchus come together. Fast optics in this size range are just wonderful for rich-field work, and I will probably use the Orion 120 mm f/5 in preference to my 25x100 binocular, since the telescope is mounted and the binocular isn't, and I'm lazy. (Did I already say that?)

I also ran the magnification up enough for modest double-star work and star testing. Zeta Aquarius was well separated at 150x, with a single bright ring visible around each star. There was plenty of uncorrected color -- this is a simple conventional doublet, and 120 mm f/5 is way too fast for good color correction of such a design; however, only on relatively bright stars was the lack of perfect correction noticeable. Using Polaris as a target for star testing, at 150x, revealed out of focus images differing on each side of focus in the manner expected of a conventional doublet, but also demonstrated a comatic shape to the out of focus image, that varied depending where in the eyepiece field I placed the star in a manner that suggested the objective was not square in its cell. I may fuss with squaring it up, or may merely let sleeping dogs lie -- the error was unnoticeable when the telescope was used at lower magnification for deep-sky work, and only detectable with difficulty in in-focus images at 150x.