Orion 90mm AZ refractor − review, comparison, observing report

Source: http://sci.tech−archive.net/Archive/sci.astro.amateur/2005−09/msg00421.html

- *From*: boofreak@xxxxxxxxx
- *Date*: 4 Sep 2005 23:08:03 −0700

Orion Explorer 90mm AZ − review, comparison, observing report(s)

When I was in my teens and early 20's I had an interest in astronomy. Starting off with a pair of 7x35 binocs I learned most of the summer constellations. It was the family summer vacation to the bay of Islands (MacGregor bay, northern lake Huron) that deepened my interest in Astrononmy as a hobby. With the bulk of lake Huron the south, and the area to the north sparsely populated, the night sky was pristine. It was here that I got my first really good look at the milky way, especially through Sagittarius. My brother and I decided we'd have to get some sort of scope to check things out.

I eventually ended up ordering a pair of 11x80's binocs and a small (5.5") fast reflector (from Orion). No regrets. The view of Andromeda through the 11x80's was stunning, and this alone justified the purchase as far as I was concerned. Many happy memories.

Well, that nice little reflector ended up getting stolen from my parents back lawn, and I ended up selling the 11x80's to pay for rent one month a couple years after purchasing it. Unfortunately the 11x80's really only came into their own under a dark sky, which I seldom see where I live (madison, wi). Too much light pollution.

That was close to 20 years ago now, but recently I got the desire to purchase another scope (in addition to 7x50 binocs I have). Looking through the latest Orion catalog was bewildering. So many scopes to choose from! This time I wanted to try a refractor. I was quite tempted by the 100 and 120mm refractors, but I decided these were just too fast for a crown&flint doublet. I still wanted to use the scope for planetary viewing. Also, I wanted an alt−az mount. I think EQ mounts are more of a liability than an asset for visual observing. Needlessly complex and heavy. So I eventually decided on the 'Explorer 90mm AZ' from Orion. At f/10 I hoped the chromatic aberration would be low enough for planetary viewing at higher powers.

The scope was $300, and I also purchased a 40mm 'Sirius plossl' to go with the two eyepieces that came with the scope (25 and 10 mm

plossls − 23x, 36x, 91x respectively). The entire package with shipping came to about $375.00. Yes my budget was very limited. I would LOVE one of one those ED or APO refracters (100−120 mm) but considering how seldom I observe I have trouble justifying the price (5 − 15x more than I paid).

I placed my order about a week and half ago, and feeling like a kid before X−mas I very impatiently waited for it to arrive. It arrived on August 30th. I took it out that night with a friend and his Intes 130mm Mak. I also took it out (all night) on Sept. 2, and a bit last night (Sept. 3) and was able to compare it to a friends 8" Meade SCT (scope circa early 80's).

The scope arrived well packed. The OTA was wrapped in vellum like paper and a ouple of sheets of bubble wrap and double boxed. I had to take a few pictures of the optics while they were still spotless and dust free.

The Scope after I just set it up. The OTA is enameled aluminum. Note that I had yet to install the 6x26 'correct−image' finder nor the 45 degree correct−image diagonal (A friend gave me one of his 90 degree prism diagonals − a decent Japanese unit. I used this for all the astro. observing. I have yet to try out the 45 degree diagonal that came with the scope).
http://www.fractalfreak.com/astro/scope2.jpg

Picture of the objective. The few colored dots are hot pixels in the camera. Lens is nicely coated with some sort of multi−coating. a light green/purple cast:
http://www.fractalfreak.com/astro/scope1.jpg

The eyepieces. From left to right: 10 mm, 25 mm (these two came with scope), 40 mm (ordered separately − this is the best eyepiece).
http://www.fractalfreak.com/astro/eyepieces.jpg

I'm not an equipment freak, so I'm not going to measurebate endlessly on the quality of the OTA paint job or how well the focuser works. Considering the price everything is excellent. The mount is adequate − a little more plastic than I'd like to see, but it's nice and light. The accessory tray mates to some plastic thingies on the tripod legs, and the aluminum tripod legs are capped with plasic feet and attach to the cast iron alt−az mount via some plastic end bits and screws. Quite straightforward. The alt−az mount does have some backlash when used in the field (handguided), but that's what the slo−mo controls are for. Though they are screw based so they've got to be reset periodically. Most of the time I didn't use the slo−mo controls and simply guided the scope by grabbing its base and moving it. I'm certain this mount will not be the most stable in any sort of wind, but in the field, and at the magnifications used (< 150x), it worked fine.

In the field the finder was easy enough to use. The long tube of the refractor makes aiming a cinch, though near the zenith I often found myself crouched down or on my butt while finding stuff, and there is some neck strain involved. The mount does tend to 'break down' a bit while trying to look at stuff directly overhead.

On to how things look *though* the little beast. The scope was not tested used under pristine skies unfortunately. Both locations were quite suburban. The first site offered a good view of the the south and west skies, and the second site, while still in the city, offered a good view of the northern sky by virtue of being on the southern shore of lake Mendota. ZLM was arounnd 5−5.5 and seeing and transparency were average.

The first view through the 40mm eyepiece was excellent. I knew right away the scope was good. I also had a friend along with his 130mm Intes Maksutov Cassegrain (f/15?) − a fine little scope. So I was able to get a second opinion and compare it to the Intes. The 40mm plossl served up a solid degree of sky, and the view were surprisingly bright. Stars looked great − round and tack sharp. We compared the views in the two scopes using the 40mm eyepiece. The view in the refractor offered more contrast. It was subtle, but the background sky was a tad darker in the refractor, and the stars just looked a touch harder and more pleasing. Surprisingly we found the refractor to be better at DSO stuff − those faint fuzzy monochromatic critters. For example, while looking at M27 we both thought the view in the refractor, while not as bright as the Intes, offered just a bit more detail. It was at higher powers that the Intes pulled ahead, with its greater aperture, larger image scale, and lack of CA.

The views in the 25mm were still excellent, but just a touch of CA began to creep in around the brightest stars. The 10mm plossl was mediocre − it's eye relief and field of view were so−so, and it added noticable chromatic abberation to things.

On to the observing list:

M13: Was nicely served in the little refractor, probably looking best in the 25mm. It simmered with stars on the threshold of visibility, and positively seethed with stars using averted vision.

M57: Lovely. The contrast was excellent, and compared to the background stars it appeared to float 3−D like in front of them. Even in the 10mm its ring shape was faint but evident looking straight at it, and obvious using averted vision.

M71, M56: − these clusters were nice. Just a few of the outer stars were resolved, but they looked distinctly granular, especially using averted vision.

M31, 32, 110 (Andromeda and company): As one would expect this looked

best in the 40mm. Even large scopes show little detail in this object, beyond being large and bright. I still think Andormeda looks best in binocs.

M103 and other open clusters in Cassiopea − looked great at low power.

M81 and M82 − Not enough aperture to show much in these objects, especially with them low in the sky. I swear I may have glimpsed a dust lane or two bisecting the center of M82 using averted vision though.

M27: The dumbell shape was easy to note, especially using averted vision.

I'm not a big double star fan − at really high powers all you're really looking at are interefernce rings. Still, Polaris was an easy split at all magnifications, with its (9th mag?) companion evident in the one o'clock position. Albireo was nice too, looking best in the 40mm. Several of the multiple stars in Lyra were evident as elongated and obviously not single stars, but I needed more power to split them cleanly.

The pleiades were nice, just fitting the field the in the 40mm.

Mars. Mars was the planetary test, and this scope came through. Using the 10mm (91x) Mars clearly showed its waxing disk, over 3/4's full. I played the game of planetary observing, waiting for moments of good seeing to pour all my attention onto the trembling little disk. Even in a large scope I wouldn't call the surface markings on Mars high contrast. Despite the light violet fringing and tiny size of the disk I was able to see surface details! I could make out a broad distinct horizontal feature on the bottom half of the disk, and a couple other dusky markings on the top half. The polar cap winked in and out on the top of the disk (seeing permitting) and it appeared to be ringed by a darker region. I was transfixed, and spent a lot time looking at Mars. I needed higher power. I think that with a higher power eyepiece (120−200x) and perhaps a minus violet filter this little pup will make an excellent plantary scope. I can hardly wait to gaze upon Jupiter and Saturn with it!

Critical notes...

Color. This scope is a f/10 crown and flint doublet, so one would expect some color fringing, and there was, but it was really only obvious around the brightest stars (and Mars). Using the 40mm there was essentially no false color, even on a star like Vega. Going up to 25mm the beautiful charged blue of Vega became ringed with an aura of deeper blue, but it was still not bad. In the 10mm Vega was badly fringed. Looking at mars in the 10mm revealed a considerable violet aura, extending over half the distance

radially as the planet itself − but it was quite faint and low contrast features on the tiny Martian disk could still be seen (I think much of the CA on mars may have been due to the eyepiece). The CA was about was I was expecting. And on nearly all (fainter) stars it's just not evident. This doublet does appear to be corrected better in the reds than the blues. Blue stars had a slight green tinge − for example all the Pleiades had a subtle but distinct green cast, especially evident when comparing the view to the Intes or the Meade SCT.

All and all I'm very pleased with this scope. I think considering the price it's excellent, and it would hold its own (or likely exceed) the view through any other 90mm scope out there.

−Eric B

.

- Prev by Date: ***Re: Sure to be a classic "Bad Astrononomy Movie"***
- Next by Date: ***Re: Refractor question***
- Previous by thread: ***Measure Moon's Parallax***
- Next by thread: ***Telescope market size?***
- Index(es):
  - ***Date***
  - ***Thread***