Adventures with a GSO Dobsonian

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Amateur astronomy is an addiction - you may have remissions but it never leaves you. In my case it had been quiescent for over 10 years. Then I made the mistake of attending the CAS meeting and telescope fever struck again.

Until a few weeks ago my largest scope was a home made 6" f/4 with a WWII army surplus tank telescope Erfle eyepiece. It's mounted on an ugly but very effective home made Dobsonian structure. Those of you who saw it on its one outing to the old CAS northern dark site along Wallaroo Road may remember it looking like a plywood Pterodactyl crouching in the dark. Its mirror was last coated in 1967, so it's losing a bit of light now - limiting magnitude in the middle of Canberra is about 12.4.

The announcement of Vello's new comet made me keen to see if it was visible through the Pterodactyl. Hardly a surprise, it required a great deal of imagination to see the comet at magnitude 12.8. This led to a slippery slope - the uncontrollable urge to buy or build a large new scope (or both). Building is a long term aim - perhaps a 16" or greater - but in the short term, nothing could satisfy aperture craving but a new commercial scope.

Talking with a few people at the CAS meeting (Crash in particular) and doing a lot of web searching lead me to considering one of the Chinese Dobsonians - 10 or 12 inch - or possibly one of the Synta 6" f/8 refractors. The nearest commercial outlets I could find were in Sydney - Bintel and Andrews Communications. Both appear to have good reputations but Bintel was a bit more expensive. So a quick trip to Sydney was called for, with credit card in hand. I decided on Andrews because, apart from being a bit cheaper, they are a lot easier to get to (no inner city parking problems).

We set off at 8am (delaying for 24 hours to avoid George Bush) and reached the Gray stanes shops where Andrews is located at 11 am on the dot. Then down to business.

Lee Andrews at Andrews Communications is very helpful. The small shop is stuffed full of scopes and Ham Radio gear (another of my addictions currently in remission). It's easy to talk scopes and radio for hours. Not a good move if you're accompanied by a non-astronomer wife, though the Ikea store in Blacktown is only 5 minutes drive away, to serve as a distraction.

I was giving some thought to the Synta 6" refractor (in stock at Andrews) but the EQ5 tripod supplied via Tasco wobbles far too much and there were no EQ6 mounts in the country. The people who supplied Crash's pier mount were out of stock too. So I settled on the 12" f/5 Guan Sheng (Taiwanese) Dobsonian.

The main tube comes in a rather large cardboard box - 1.6 metres long by 50 cm square. It fits like a glove into the back of a Volvo V40 wagon. The mount comes disassembled in another largish but shallow box.

We headed back to Canberra after a local hamburger, arriving without incident.

Now came the fun part. Getting the large tube out of the box is not too difficult provided you have enough room. Assembling the mount is also not too difficult if you're used to kits from Freedom or Ikea. The standard Dobsonian frame is mounted on a triangular base board with fixed feet. Accessories that accompany it are an 8x50 finder scope, a no-name 2" 32mm eyepiece and 1.25" 25mm and 9mm Plössls. [Note: the 25mm was missing from the package so Lee replaced it with a 20mm Plössl.]

The scope tube sits snugly in the altitude axis supports and is held in place with two stiff springs, which also serve to some extent to overcome a top- or bottom-heavy tube.

It's *very* similar to the telescope sold by Hardin Optical in the US (see advertisement on p.61 of the November 2003 issue of Sky and Telescope). Allowing for GST, the Andrews price is within A\$7 of the Hardin US price, which is exceptional.

I bought a simple laser collimator and found that the scope needed a bit of tweaking after the trip to Canberra, but was quite easy to collimate. The focusser is a solidly built metal rack-and-pinion 2" unit, smooth to operate.

Come dusk the scope was ready and out on the deck. First light was Alpha Centauri in the twilight (good for getting the finder scope aligned). Cleanly split in the 32mm (x47) eyepiece. As darkness fell it became obvious that it wasn't going to be the darkest of nights - quite hazy with humidity from the east. But good enough to give the scope a try-out. Next on the agenda was 47 Tucanae. I'd last seem this properly through Peter Bobroff's monster Dobsonian and using one of his Nagler eyepieces. Not a fair comparison, but I was hoping it would do a better job than the "fuzzy patch with a few stars in it" view that the Pterodacty1 gave.

I found (as I thought) the globular in the 2" eyepiece. I could resolve quite a number of stars but it was a bit disappointing. Then I compared it with the view through the Pterodactyl, and realized I had lined up on a different globular (probably NGC 362), not 47 Tuc! A quick relocation and there it was - full of stars! Very pleasing. The yellow colour of the stars was particularly clear in the 9mm Plössl.

A bit more random wandering around, including a look at Achernar to see what the image looked like inside and outside focus suggested two things: the optics are good and my eyes have some astigmatism... At this point the easterly brought the cloud in and that was it for the night.



Figure 1 – the mount.

The following day I took a closer look at the mount. (Figure 1). The altitude bearing is conventional and works well but the azimuth bearing is an aspect of the scope I have some concerns about. The bearing is a 12" spoked plastic disk with 24 small steel cylindrical rollers embedded. See Figure 2.



Figure 2 - the azimuth bearing and a 12" laminex disk

What is not good is that this bearing is sandwiched between two pieces of chipboard covered with thin vinyl sheet. Initially it provides a very good balance between smoothness and friction, but after a few hours with the scope stationary, the rollers put permanent dents in the vinyl and any subsequent rotation causes "bumps" when the

scope is moved in azimuth past the dents. This is a significant design flaw. (See Figure 4 below).

However, this did provide me with something interesting to do during daylight hours. I cut two 12" disks of laminex – left over from making the Pterodactyl years ago – and sandwiched the roller disk between them. This worked better but was now too slippery. You can see one of the discs in Figure 2, above.

So I bit the bullet and bought a piece of Ebony Star laminex (Enterprise Joinery, Queanbey an) and some 3mm Teflon (Canberra Plastics, Fyshwick) which I cut into disks, using the formula for size from David Kriege's Dobsonian book. The final diameter of each of the three Teflon pads arrived at by experimenting was 31.6mm (or 1.25", nearly exactly).

The Ebony Star glued nicely to the underneath of the upper azimuth base, though drilling the holes for the screws was a bit fiddly, and cutting a perfect 25" diameter disk of laminate was a challenge. See Figure 3.



Figure 3 – base with Ebony Star laminate added

I attached the 3 Teflon disks to the base board as shown in Figure 4. You can see the dents made by the original bearing in the same picture.



Figure 4 – the base board showing dents from bearing, and new Teflon disk

The result – after reducing the size of the Teflon disk size a little below the Kriege formula - was a butter-smooth azimuth. It still exhibits a bit of stickiness on first start after sitting for a few minutes, but when it's being moved regularly, it's beautifully smooth. I'm going to try PFA later to see if that works better than Teflon (PTFE) – as per the article in Sky and Telescope, October 2003.

I also replaced the eyepiece holder – a pressed steel unit with hard edges – with an MDF unit drilled with a biscuit cutter for 2" and 1.25" eyepieces – no sense in scratching the nice new eyepieces! You can see the replacement unit in Figure 1 above.

My only other fault with the mount is that the scope is a bit bottom-heavy with only a 1.25" eyepiece in place. A small piece of lead wrapped in felt and bent around the lip of the tube is an effective solution and easy to remove if I ever get a Nagler.

Two nights later, finally clear skies again – for an hour or so – and some amazing views of the Tarantula Nebula in the LMC tell me I'm going to have a lot of fun with this scope.

For the moment at least I'm happy as a pig in muck. Of course, when more EQ6 mounts reach the country, there's always that 6" Synta. And maybe a Chromacor, and... Well, what's a hobby for if not to dream?

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