

标题 : First run with new Binotron

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Lots of clouds and cold (for Austin anyway, and if you don't have Nanook of the north wardrobe, 39 degrees in the wind feels might cold).

寒冷, 多云.

Binotron was flawless. Used the D21s and only changed eyepieces twice (once to put in the 24mm ES eyepieces, once to put the D21s back in).

The Binotron is to me the perfect match for a dob.

但是貌似没有影响 Binotron 的表现, 它, 堪称完美.

我观测时更换了 2 次目镜 (换上 24mm ES 替换 D21, 再换回 D21 目镜)。

于我而言, Binotron 和我的 Dob 是绝配.

The Diopter function on the Binotron is peerless. The rings are large and easy to find and turn even with gloves on, making super-fine tweaking of focus easier than with a dual speed Crayford.

它的视距补偿手轮调节设计是无敌的, 即便是带着手套, 也因为尺寸够大的尺寸和细腻的手感使它的表现要优于双速 Crayford.

The homework on the focuser proved to time well spent. I had just enough in travel to reach focus with the OCS fully bottomed (which gives the lowest power) and with the high power arm in, I had just enough out travel to reach focus without having to slip the OCS out of the focuser tube.

我不得不说前期用在寻焦上的时间是很值得的. 无论是将 OCS (**多功能延焦镜**) 置底得到最小倍率或者是将倍率转换器换成大倍率时, 我都能顺利地合焦而无需调整 OCS.

With the exception mentioned above, I did all of my observing with just one pair of eyepieces, and it was sooooo nice to be able to just stay seated and change powers. No eyepiece case, no fiddling.

除了换过次 24mm ES, 我只用一对目镜就完成了所有观测, 就这么坐着切换倍率, 不用带目镜箱, 不用翻箱找目镜, 这感觉 Nice 极了.

Now when you do need to change eyepieces, it takes some twisting. In fact, I hate the taper on the ES eyepieces because it requires several turns to get the compression collet to close in on them. I had problems with these in the Mark V, but here it makes them tedious to put in and take out.

当然，确实需要换目镜时，旋转几下手轮还是必需的。实际上，我个人不太喜欢 ES 目镜上的锥形结构，因为需要拧好几圈才能将压力圈压实。我使用 Mark V 的时候就遇到过这问题，感觉来回插拔非常麻烦。

No doubt, changing eyepieces in the Mark V is quick and easy by comparison.

But the value proposition here is that you might be able to do a complete session without changing eyepieces and more and more, this is what I want. I was spending a lot of time changing eyepieces before, and I had to carry out an eyepiece case with four pairs of eyepieces in it.

I am done with that. My new philosophy is that one of these settings is going to have to work because I want to spend more time observing and less time changing eyepieces and going back and forth to the eyepiece case.

虽说在 MARK V 上换目镜还是很方便的，但是我现在更喜欢的是，能在尽量少的更换目镜的前提下完成整个观测。因为原来我总是花费太多时间的来更换目镜，所以不得不总拎着一个装有至少 4 对目镜的箱子。

比起原来频繁往返于望远镜和目镜盒之间换目镜，现在我更喜欢能有更多的时间用于观测，最好一套配置通吃。现在这个愿望 Binotron 帮我实现了。

Views were superb. Bright and crisp. I looked at a variety of targets and all were just beautiful. Orion was almost completely in the low power field (what I can see of it from my central Austin location). Clusters like M37 were just so compelling that I could look at them over and over again.

Binotron 的图像真的太棒了，又亮又锐。我观测了很多个目标，个个都非常漂亮。我在低倍率模式下差不多能看全猎户星座（从我住的 Austin 中心位置观测到的）。M37 这时看起来是如此的绚烂，一旦入眼，很难走开。

I opted for the 45mm OCA. This did improve the off axis illumination in low power, but the field is still only getting about 60% illumination at $f/4.9$ when a star reaches the field stop. This was a lot better than maybe the 40% that I was getting out of a 38mm OCS, so if you have a dob and you order a Binotron, my advice is to flip for the extra big OCA. For most refractors, the 38mm OCA will be fine.

我选择的是 45mm OCS。比起 38mm 的 OCS，它确实提升了低倍率下的离轴通光量，但是当一颗星体到达场阑时， $f/4.9$ 还是只能获得 60% 的通光量，但这已经远高于 38mm 的 40%。所以，对于 Dob 而言，如果配 Binotron 的话，我建议是选一个大尺寸 OCS。对于大部分折射望远镜而言，38mm 的 OCS 足够用了。

Jupiter was amazing. If I could change one thing, I would lower the power on the high power

arm because with the D21s, the 208x is just a bit too much for planetary on most nights, but with binoculars, even at 140x, the Jupiter looked amazing.

木星的表现和 M37 一样优异，要是非要我说出美中不足的地方，我觉得倍率转换器的大倍率端的倍率略微有点高了，在用 D21 时观测行星时，208 倍稍嫌高了些。可是说实话，Binotron 140 倍的观测效果已经足够让我震撼了。

The big surprise... I had tried the Binotron before in this same scope with ES 24/68s and could see that there was some slight vignetting at the outside of the field.

Now the last time I did this, I had to have the OCS extended to reach focus in low power. This time, the OCS was fully bottomed. Also, last time the sky was a bit brighter I guess because transparency was maybe a bit less, causing the sky to wash a bit, and this makes any uneven illumination of the field easier to see.

比较奇怪的是.....，我上次在同一个望远镜上将 ES 24/68 目镜安装到 Binotron 上，可以看到视场外有微弱的虚影。

但是这次，在我将 OCS 完全至底合焦后，或许是因为天空稍微暗一些？虚影完全看不到了。

These are the only differences I know of, but this time, the 24/68s seemed to do much better than last time.. My sky conditions were pretty dark last night so maybe not a good test, but I saw no easily noticeable vignetting, and the sky illumination did not appear to noze dive near the field stop as it had in my first try a year ago.

这是我能想到的所有差别。这次，24/68 的表现好像比上次要好的多。也许昨晚的天空很暗，测试条件不够理想？但是我真的很难看到虚影，而且场阑附近的通光量也没有像我一年前看到的那样出现骤降。

The field was quite a bit wider with the 24/68s as well, and off axis performance was really quite excellent.

24/68 的视场确实宽些，而且离轴表现确实卓越。

I did test the off axis illumination in this configuration and as one would expect, it appeared to be under 50% by the time you get to the field stop, so while the field is bigger, on a rich background, it will cost you.

我用这个配置做了离轴通光量测试，效果正如所预期的：当接近场阑极限时，通光量低于 50%。所以如果在富星背景下，却想要视场再大些的话，会让人很头疼。

And I always get hung up on this equation. Is it better to have a wider field with less fidelity (missing field stars) or a slightly narrower field with more fidelity.

Don't know. Just one of the big individual compromise questions everyone has to answer for themselves.

这个困扰由来已久，是想要一个较大的视场而牺牲一些保真度好呢？还是一个较小的视场而保持较高的

保真度好呢？

很难取舍，仁者见仁，智者见智吧？

But I like the D21s in some ways more. They are so comfortable to use, and the magnification steps were better suited to my needs. Do the math on this and what you find out is that the lower the magnification of the eyepieces, the more "Compressed" the steps are between the power switch settings.

在某些方面我更喜欢现在 D21 这对目镜，因为这对目镜我用起来更舒服，其倍率档位对我来说更合适。因为做个算术题你就会发现：目镜的放大倍率越低，其与倍率转换器匹配后(3 档)的整体放大率越“紧凑”。

With the D21s, I have a Low/Medium/High of 90x, 140x, and 208x.

With the 24s, it would be 81x, 125x, and 187x.

使用 D21 目镜，我获得的低/中/高倍率分别为 90x, 140x 和 208x.

使用 24s 目镜，获得的倍率分别为 81x, 125x 和 187x.

Anyway, in the end, I think I liked the comfort of the D21s, and they are super planetary eyepieces.

I knew the Binotron was the right system for my 12" dob.

总之，我想说我很喜欢 D21 目镜的舒适性，这对目镜是极好的行星目镜。

而 Binotron 是我 12" Dob 望远镜的理想选择。

In fact, the 12" dob was selected partly on the basis that I thought it would be the best possible match I could get for the Binotron. The 1500mm focal length still allows a wide enough true field with the D21s to view most objects, and for planets, 200x seeing limits the performance of most larger apertures anyway on most nights, and I like the eyepiece height of the 12" making it possible to do observing seated even while viewing at high angles. And I have a great desire to preserve as much off axis illumination as possible, and going faster than f/4.9 will get you very quickly to less than %50 off axis illumination. **This is not the fault of the Binotron.. It is just the result of passing a fast light cone through a lot of little holes.** The faster the scope, the more off axis illumination you can expect to lose.

实际上,选择 12" Dob 望远镜的原因也部分基于我认为它可能是我为 Binotron 提供的最佳匹配的考虑。1500mm 的焦距让我仍能用 D21 目镜得到一个足够大的保真场景来观测绝大部分目标，因为对于行星而言，在大部分的夜晚，200 的倍率限制了大部分大口径望远镜的性能。并且我喜欢 12" Dob 的目镜安装高度，它使我恰好可以坐着观测，甚至以一个大角度观测。

我有一个强烈的愿望：就是尽可能多的保持的离轴通光量。使用比 f/4.9 焦比更小的望远镜会更早的损失 50% 的离轴通光量。这不是 Binotron 的缺陷，这是光锥在光路中通过一系列“小孔”的必然结果。(望远镜焦比越小，离轴照度损失的越多)

And yes, the Mark V with 1.7x GPC lost illumination too. Not quite as much in the apparent field, but over a narrower field, so in the end, it was about the same amount of off axis light loss for a given point in the true field. It is a simple geometry problem. The faster you go, the more off axis illumination you lose at low power, which to me is when it is most important.

是的, Mark V 匹配 1.7x GPC 也会造成通光量的损失. 不过不是在整个视场里, 而是相对要窄一些, 但损失的总量是一样的. 这是一个简单的几何问题: 望远镜焦比越小, 在低倍率下离轴通光量损失越大, 这是我首先要考虑的.

Bintron was flawless last night. I enjoyed my Dob more than ever before. About as simple as you can get. A nice size dob, one pair of eyepieces, and the night sky...

昨晚, Binotron 表现堪称完美. 因为我发现我比以往更加喜欢我的 12" DOB.

一只 DOB, 一对目镜, 一片夜空..... 足矣~~

首次使用 Binotron 的感受

文章中所涉及到一些 B-27 的部件名称, 为了便于大家理解, 特附上 B-27 结构图:

