Expanded Discussion of Telescope Choices

Dr. J. P. Galloway

So, the question is – what telescope is best for your purposes, etc.? I might start by directing your attention to a small announcement about that topic that I have placed in the DOCUMENTS section of my Web Site.

A direct link to that file is:

http://jerrygalloway.com/astro/docs/BestScope.pdf

With the growth of astronomy in recent years, there are now a whole bunch of scopes and manufacturers out there. This is generally a good thing – I think more is better.

You may want "simple to operate" – and yes, frustration can be a big factor. So, a few words about that first. There are three categories of frustration:

(1) operating the equipment. This is getting it to do what it was designed to do. While some designs call for greater knowledge and at some level a considerable increase in knowledge, the cheaper units simply can't do what they pretend to do… or at least don't do it well enough. So, generally, spending more is better. It gets you away from the designs and manufacturing that is built only on hype and promotionals for the unsuspecting public. In simple terms, one should avoid the department store –type of scope. Likewise, in the highly commercial companies – like Orion – which caters mostly to the general public just like the department stores - you should avoid both cheaper models and some of those that "appear" to compete with the high-end companies like Meade and Celestron. I'll make some recommendations below.

(2) learning the sky. What is where? and… why can't I find it? Too….once you do find it, is that all there is? Boy! This is a big one! The pics out there today build our expectations and lead us to think that we're going to see the pictures on the box or the images we've seen on PBS TV. Of course, that's not going to happen. The "old school" notion is that you learn the sky by doing what's called "star-hoping." This is a slow and tedious method but nevertheless one which will certainly yield useful knowledge. I suggest it is too frustrating as a general method. Essentially, you learn about where a target is, relative to surrounding stars. Then, you target the surrounding star and gradually maneuver toward and search for the target image. This is very difficult for most objects. It requires you to know what the image is supposed to be before you get there in both the finder scope and primary eyepiece. Too, it requires one to be comfortable with "browsing" through a complex star field in both scopes. It's very difficult to do well.

While some level of skill and comfort here is necessary and important, the only real alternative is a computerized "Go To" telescope, which is what I prefer. These afford a much reduced level of frustration in this category #2 while increasing the difficulty in category #1 above. The net result is much better with a reliable, high-quality "Go To" system. This does mean something in terms of expense, relative to the scope you get. Obviously, some of your expense is in the computerized electronics. I do not trust the "Go To" systems on cheaper scopes. I do not believe they can work well enough with the cheaper construction to yield the user-friendly operation they claim. So, the conclusion is simple: if spending less, skip the computerization and simply use a manual telescope – to get more for your money. If spending more, include the computerized "Go To" as a very useful component.

(3) your own skill and knowledge. Well, this is the real challenge, isn't it. If you can get #'s 1 and 2 above in line and resolved to a reasonable degree, then it becomes much easier to accept and focus on this primary goal. Certainly, operating the equipment (correct and successful sighting-in of a computerized system, successful alignment of a finder scope, etc.) is a challenge and takes some time. That can be fun too and should be thought as such. Achieving goals, whether it's finding, observing and resolving detail in images or recording in imagery (film and electronic photos), is a real challenge. I have been taking photos for at least 7-8 years and I have found many others in less time achieve better results than myself. I find far too often that good photos seem more like a random event than a function of my own skill. Frustrating? – of course. Nevertheless, this represents one of the important challenges and motivations for my involvement in the hobby.

So, what scope to buy? It all seems relative to expenditure. So, on that basis…

Reflectors will get you more aperture for your dollar. Larger aperture = more light. More light = improved contrast. Improved contrast & light = better view.

Refractors can actually be the best views – IF – the refractor is large enough. They offer sharper images over reflectors. The problem is the cheaper ones are made poorly both in lens quality and in the mount. To get a quality refractor one must spend a lot of money. This is not generally a good choice for the inexperienced.

Mount: *German Equatorial* – very common and often a part of cheaper scopes. But, this is most important for long-term photography. The mount keeps the scope aligned with the movement of stars. But, for a manual scope and an inexperienced photographer, it is impractical. Likewise, there is no point for this mount on a cheaper scope.

Mount: *Alt-Azimuth* – also very common. Generally, it means that it rotates level with the ground (azimuth) and allows the tube to be tilted up and down (altitude) for viewing. This is fine for most any viewing situation. It is also fine for the faster snap-shot photography and even some modern CCD cameras. It would work fine for most planetary photos as well. It would not be suitable for long-term, deep-space photography.

$0 - $400 range: nothing. I don't believe there is much of anything in this range that would be anything more than a toy. For a child, fine. I do believe there are better and worse choices even within this price range. I do have preferences of where and on what to spend $299 if that's all there's going to be. But, for someone really interested in trying out the hobby – no.

$450-$1000 range: a manual dobsonian scope. I expect those offered by Orion (magazine or online) to be well-made and worth it in this price range. They offer a "Go To" system for their dobsonians but I believe, in this range, that is a mistake and maybe somewhat unreliable. This is an opinion and untested. They still offer the manual version and the price savings is worth it. So, I recommend the 8-inch dobsonian which is about $450 more or less. That is, the SkyQuest XT8 Classic… and it is priced at only $370 at this writing – a really good deal. The 8" aperture will yield decent and respectable views while the simple design allows easy operation in a manual, point-&-look method.

Cut & Paste the whole URL before hitting enter…

http://www.telescope.com/shopping/product/detailmain.jsp?
itemID=252215&itemType=PRODUCT&iMainCat=4&iSubCat=8&iProductID=252215

For the higher prices under $1000, I would likely still go with a manual scope but with a larger aperture… 10” or 12” for some really great views but, unfortunately, still manual operation.

Higher prices allow electronic “GoTo” systems from Meade or Celestron. I have heard that Celestron has the best optics but I have not really seen a noticeable difference. I prefer the design and computer systems in the Meade instruments. So…

Here is one vender – there are many:

http://www.optcorp.com/ProductList.aspx?uid=1-600-603-572

$1200-$1500
I have not used but have examined the LXD-75 systems. The Schmidt-Newtonian and Schmidt-Cassegrain models with the Meade Goto system seem like a good choice in this price range.

SN-8 AT UHTC - 8" f/4 Schmidt-Newtonian on LXD75 AT Mount – about $1200
SC-8 AT UHTC - 8" f/10 Schmidt-Cassegrain on LXD75 Mount – about $1500
SN-10 AT UHTC - 10" f/4 Schmidt-Newtonian on LXD75 AT Mount – about $1400

$2000-$2700
Now you’re talking real telescopes. I strongly recommend the LX90 Meade Schmidt-Cassegrain telescope. The higher price is for a 10” which is not a bad idea. But, perhaps the very best scope for the money of any aperture and any design is the LX90 – 8 inch model for around $2000. This is an excellent, high-quality telescope and easy to use GoTo system. Here’s a vender link:
http://www.optcorp.com/product.aspx?pid=1-600-603-980-7863

For higher priced scopes and larger apertures, contact me personally.

In any event, do not under estimate the extent of other expenses for everything from books and flashlights to eyepieces and filters.

The best scope is the one you enjoy the most. All scopes have some useful purpose and a role to play for someone.

Dr. Jerry P. Galloway