Beginners Guide to Choosing a Telescope

Lots of people buy a new telescope to look at the stars and planets. Unfortunately many of these people never manage to make their new telescope work properly - they put it away in a cupboard and forget about it. Why is this? Well, sometimes it is because they need some help in using the telescope but all too often it is because a sales person with little or no knowledge of telescopes has sold them something that is totally unsuitable for astronomy.

If what you need is help, then just ask any of us from Loughton Astronomical Society or Astrokyds and we will arrange some help.

But how do I make sure I don't get sold something totally unsuitable Well here are some useful tips:

Magnification

Many shops and web sites sell telescopes with claims of huge magnifications. Typical claims are for magnifications of between 500 and 650 times. It doesn't matter what the shop assistant tells you, a small telescope just cannot magnify 500 times.

Often these telescopes have a notice in small lettering to say the optimum magnification is closer to 100 or 200 times. Why do they have this notice? It is to protect them from being prosecuted for making false claims of high magnification.

The good news is you don't need high magnification. Magnifications of between 50 and 200 times will be all you need for most astronomical objects. A small telescope should manage this.

What do I mean by small, well a telescope 2 inches in diameter is very small but should manage a magnification of 100. A good 3 inch telescope should manage magnifications of up to 150.

Mounting

Even at magnifications of 50 times, a wobbly tripod or stand will shake around so much that the telescope will be impossible to use. Look for a telescope with a good solid tripod or stand.

All tripods or stands need to have some method for moving the telescope around the night sky. This movement must be smooth and preferably have some sort of slow motion control, or better still a pair of electric motors. The exception to this is a type of telescope called a Dobsonian, which has a simple push-around aiming system. Even this must be smooth though.

Optics

Good quality optics are essential. Unfortunately this is difficult to check in a shop and impossible to check on a web site. Buying a good name (e.g. Celestron or Meade) should ensure good quality optics but there are many other makes that are good and provide good value for money. The Chinese are making telescopes which may not be top flight but are good enough for most needs and provide good value for money. The best advice is to buy a copy of one of the astronomy magazines and look at the adverts. If you have any questions then ask one of us.

There is a shop near Cambridge called Greenwitch who specialise in telescopes and binoculars. They will give you good advice - no I don't get a cut and they won't know my name or give you a discount if you tell them I sent you.

What Type

There are many types of telescopes. Refractors (which use lenses), Newtonians and Dobsonians (which use mirrors) and Schmidt Cassegrains (which use both mirrors and lenses) are all common.

At this stage of your astronomy, what type is of less importance than quality. Refractors tend to be long, robust and reliable but can give colour fringes to stars. Newtonians and Dobsonians are also long and tend to need more careful looking after. They do, however, provide a lot of telescope for your money. The Schmidt Cassegrains are compact and provide a good balance of performance and portability.

Why Not Buy Binoculars ?

Why not? They are not as sexy as a telescope and they won't provide the magnification for looking at planets but they are portable, robust and excellent for galaxies, comets and for taking on holiday.

Once again a good aperture is important. 10x50 and 8x42 are common sizes that should not cost an arm and a leg (unless you insist on the best) and will give good wide angle views of the night sky. Avoid those with high magnifications (you will never hold them still) or those with zoom eyepieces.

Can I Use My Birding Scope ?

Yes. It won't be as easy to aim but it will work. I get some excellent views with my 80 mm fluorite and it is easy to carry around, but then it cost me about twice the price of a good astronomical 80 mm telescope.

Eyepieces

All beginners' telescopes should come with at least one eyepiece. Most will come with several. It is the eyepiece that controls the magnification. A long focal length eyepiece (25 - 35 mm) will give a low magnification and a bright image. A short focal length (4 - 6 - 8 mm) will give a high magnification but a dimmer image. Start with the low magnification eyepiece and work up.

Star Finder or Guide Scope

Most telescopes designed for astronomy come with a small guide scope or star finder. This is to help you find the object you want to look at. Even at 50x magnification it can be difficult to find an object in the telescope without a guide scope.

Computer or Go-To Telescopes

With the advent of cheap micro-computers, many telescopes come with what is often known as a Go-To system. You tell the telescope what you want to look at and it finds it for you. This sounds great, especially to a beginner. Well they can be great, but beware, they can be very tricky to set up. You have to train them to find the stars before they can find them for you.

Sun

Never ever look at the sun through a telescope or binoculars - you will go blind!

Some telescopes are sold with a thing called a sun filter. This screws onto the back of the eyepiece. Don't try it; these are dangerous. All good astronomy shops will remove these from the pack if the manufacturer includes it.

Finally

There is much more to buying the right telescope than I can write in a short guide. Hopefully this will get you started.

Allan Bell (LAS and Astrokyds) - http://las-astro.org.uk