

BUYING A TELESCOPE

Purchasing a telescope is an exciting time! The opportunity to see celestial objects up close and in detail takes your appreciation of astronomy to an all new level. However purchasing a telescope can be a daunting experience since there are many different brands, types, and models to choose from. Here are a few things to consider when purchasing a telescope.



- **What do you intend to look at with your telescope?**

Celestial objects fall into three main categories: Solar System (Moon, Sun, planets), Milky Way (nebulae, star clusters), and Galactic (i.e. other galaxies). Some telescopes are better for one type of viewing but not so good for others. For example, a telescope that provides the best views of objects in our solar system might be too small to view galaxies. Some telescopes will do okay for all three categories but not be superior in any one category. Think about what you want to look at and purchase the best telescope for what you like. Many amateur astronomers have more than one telescope to handle the different types of objects.

- **How much money are you willing to spend?**

Let's face it in life you often get what you pay for. This is certainly true with telescopes. Inexpensive telescopes are often mass produced and are made out of plastic parts with plastic lenses. Higher quality materials and parts provide a stable telescope and glass lenses will provide the clearest and sharpest views of celestial objects. If you are serious about wanting a telescope that will perform well and give you years of service, be prepared to spend a minimum of a few hundred dollars and often more. Some telescopes can cost many thousands of dollars but provide views of the Universe that are spectacular and unforgettable!



- **Do you intend to take your telescope out and about?**

Some people are content with a telescope that sits in the backyard while others want to take it with them on camping trips or other outdoor locations away from home. What you chose to do will determine what you purchase. All telescopes are delicate instruments that don't do well when bumped or dropped. Many telescopes are not designed to be conveniently portable while others are made with this in mind. Larger telescopes are generally not portable since they are heavy and perform best when permanently mounted. Keep this in mind if you chose a telescope that is large enough for viewing faint galaxies you will probably not be taking it on your next camping trip without some effort to dismantle it, pack it up, and haul it safely. Smaller telescopes are more portable but will not be large enough to offer views of faint deep-sky objects. Many telescopes have motors that keep the telescope turning with the rotation of the Earth. These motors require power making the ability to take your telescope with you more complicated. The good news is that there are many battery-packs that are manufactured for this purpose and there are options of plugging telescopes into the power sockets in most cars.



- **How much do you know about the night sky?**

Telescopes are designed to provide views of celestial objects - providing you can find them in the sky. Nearly all objects are too faint to be seen by the human eye without a telescope. This means that you must point the telescope to a place in the sky that might appear empty to the naked eye. Being slightly off-target will mean that you will not be able to find the object. The good news is that modern telescopes have motors and computers that

will help you in this effort. Some telescopes go to great lengths to make the user experience as effortless as possible. The built-in computer will align the telescope and point at objects that you choose by entering them into the computer. However these “effortless” telescopes are typically expensive since they require the motors and a built-in computer to make this experience possible. On the other hand, some telescopes will provide large apertures and quality optics but have no computer or motors for guiding. These telescopes provide very good views of the Universe but require users to have some knowledge of the sky who can point the telescope to the right places without the aid of the computer.



- **Do you want to do photography with your telescope?**

A growing trend in amateur astronomy is “astrophotography” – or – taking images through the telescope. This can be a very rewarding hobby but can also be very difficult and expensive. Modern electronics allows for high quality cameras at affordable prices and the ability to see an image without developing film is appealing and convenient. However be aware that a telescope that is capable of having a camera attached to it must be very stable. Additionally the telescope must be aligned to the sky very accurately otherwise the timed exposure will blur the image as the rotation of the Earth makes the object appear to move in the eyepiece. Once the image is taken there is usually some work to do at a computer to stretch and enhance the image bringing out the fine details that you often see in many images on the internet. It is not a hobby for those only casually interested in astrophotography and much preparation, practice, and money must be invested in the hobby to make images that you are happy with. There are many great online resources that will help you get started (it is a topic way too large for this simple information sheet).



So, after all this, do you still want to buy a telescope?

GREAT!

Have fun and enjoy your new telescope – with practice, it can provide many hours and evenings of enjoyment as you explore the Universe first hand.

Visit our online guide: “How to Choose a Telescope”

www.palomar.edu/planetarium/Telescopes.htm

Some businesses that might be able to help you with your purchase:

Oceanside Photo & Telescope (OPT)

www.optcorp.com

Orion Telescopes & Binoculars

www.telescope.com

