

Be an informed buyer

Now that you're up to speed on some of the most important concepts and terms, take the time to peruse the ads and product reviews in recent issues of *Sky & Telescope* or *Sky Watch* magazine. Then go ahead and call or write to anyone who manufactures instruments you might be interested in. Their brochures and catalogues should tell you much of what you want to know; if not, call the manufacturers or their dealers and ask away. However, nothing substitutes for firsthand experience. By far the best way to acquaint yourself with the wide world of telescopes is to participate in an astronomy club's night time observing session, or "star party." There, you can try out and ask about a wide variety of telescopes. (Find an astronomy club or star party using our Resources section.) You may also be able to buy a used telescope from someone in an astronomy club. Used telescopes carry some risks, including undisclosed damage by the previous owner and a lack of warranty coverage. However, they can also be spectacular bargains. You can also find used telescopes on the Internet. (Be sure to take reasonable precautions if buying from a private party online.) Of course, many buyers will find that a new instrument best suits them. This should be bought from a source specializing in astronomical telescopes. Many camera stores are excellent sources of astronomical products as well. If you're set on buying a new instrument, be prepared to spend at least \$200. If this is beyond your means, your astronomical aspirations will probably be best served by buying a decent pair of binoculars and a sturdy lawn chair. At the same time, realize that many excellent beginners' telescopes are available for well under \$1,000. Remember that whatever investment you make may serve you well for several decades.

Kicking the Tyres: You generally can't test a telescope's optical performance in a store, and many telescopes are sold by mail order. As a result, you should ask any vendor to spell out return policies (preferably in writing). Make sure you'll be given enough time to try a scope out under the stars, and the opportunity to return it for a full refund if it doesn't meet your needs. (One more caveat: if you bought the telescope by mail order, be sure to determine whether you or the vendor will pay for shipping in the event you wish to return the telescope for a refund. You should be prepared to pick up at least part of the shipping tab in exchange for the privilege of being able to "test-drive" the telescope.)

Once you obtain a telescope, new or used, you can immediately scrutinize its mechanical features and its mount, even in daylight. Any telescope mount, be it a camera/video tripod or a computer-controlled equatorial, should be stable enough to remain standing even if someone bumps into it in the dark. Give the mounted scope a gentle tap while viewing some distant target. Does the view jump around briefly, then stabilize? Good! But if it hops around for several seconds or more, it'll be endlessly frustrating. Finally, you should be able to move your telescope easily and smoothly, whether by pushing the telescope's tube, turning a knob, or switching on an electric motor.

It's harder for a newcomer to visual astronomy to critically assess a telescope's optical performance. But even an inexpensive telescope should pass the following night-time tests. Point the telescope at a starry region in or near the Milky Way. Use your telescope's lowest power. Stars at the centre of your telescope's field of view should focus to points of light without any distracting flares or coloured halos. (Flares or halos may appear at the edge of the field of view, but they shouldn't be prominent until at least halfway out.)

Now set your sights on a fairly bright star and switch to high power. Focus the star, then turn the focus knob one way, then the other. The two out-of-focus images should resemble one another and be more or less circular. (Keep this important note in mind: eyeglass wearers with astigmatism should keep their eyeglasses on while performing this test and the preceding one.)

Finally, examine the Moon: it should look crisp, not hazy, and it shouldn't produce numerous ghost images (the consequences of inadequate coatings somewhere in the optics).

Keep in mind that perfection is expensive, and that a lot can be seen with less-than-perfect equipment. (It's the only kind I've ever owned!) Be patient with your new telescope and with yourself. At the same time, don't be afraid to ask for help! As time goes on, the wonders of the heavens will become familiar friends.