

## HOW TO BECOME A BACKYARD ASTRONOMER IN 10 EASY (AND MOSTLY LOW-COST) STEPS

by Alan Dyer

# 10 steps to successful

# Stargazing

TERENCE DICKINSON

THE SKY CONTAINS SO MANY WONDERS, YOU'LL NEVER SEE THEM ALL in a lifetime. After 30 years in the hobby, I still see sights I've never seen before, and even the well-known attractions draw me back season after season. Backyard astronomy is a hobby that provides endless enjoyment as you learn to appreciate the beauty of the sky above you every night.

To cultivate this appreciation and embark upon a journey of exploration, I suggest taking the following steps at the outset. These aren't just my sage bits of advice; talk to other veteran backyard stargazers, and chances are, they'll offer much the same guidance. We've learned the hard way, so you don't have to.

## 1. DON'T BUY A TELESCOPE—YET Cost: \$0

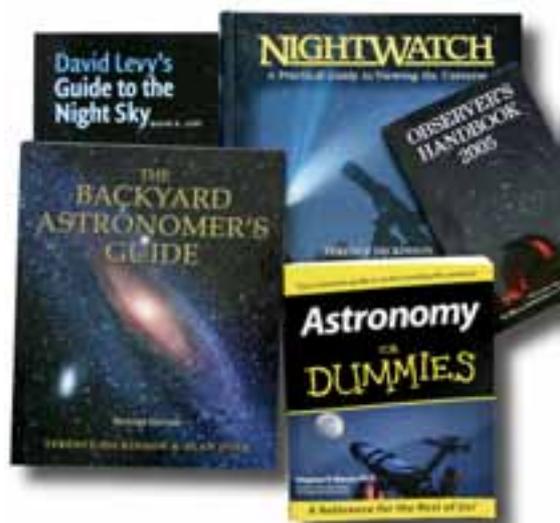
Owning a telescope is often seen as the price of entry into the hobby. Don't believe it. Buying a telescope too soon is actually an annoying detour, sometimes even a dead end. Sure, if you're serious, you could spend a few hundred dollars at this point and get a great telescope. But you probably wouldn't use it. If you don't know the sky, you won't know how to set up the telescope and aim it to find things.

Yes, there are computerized telescopes that can whirr their way around the sky.

But setting one up still requires some basic knowledge: finding north, finding bright stars, then (most critically) knowing what there is to look at. And, if the telescope doesn't work, either because of operator error or component failure, you won't know what's gone wrong without some experience under the stars. You might blame yourself when the telescope is at fault or blame the telescope when you're the problem! The result: The scope goes up for sale on eBay, and you give up on the sky. That's what we want you to avoid by taking these small steps before making the big leap to a telescope.

## 2. BEFRIEND A BOOK Cost: \$0 to \$40

Even in these days of computers and DVDs, the best way to learn about the sky is to buy or borrow (remember libraries?) a good introductory astronomy book, and there are many from which to choose. It will teach you about the types of objects in the universe and provide simple star charts for finding your way around the night sky, identifying stars and planets and locating choice targets. It will also offer expert advice on buying a telescope.





### 3. BEFRIEND THE SKY Cost: Your time

A century ago, Martha Evans Martin, a popular astronomy writer of the day, wrote a charming little book called *The Friendly Stars*. Although now long out of print, it made the point better than most modern books that the stars are like friends. They are reliable and reassuring. Once you've learned to identify them, that knowledge will serve you for the rest of your life, as the faithful stars return to the same area of the sky every year like clockwork. For us in the northern hemisphere, the rising of the Pleiades is as much a sign of the coming autumn and winter season as is the turning of the leaves; and Vega sparkling in the east is a harbinger of spring, like the first robins in the yard.

To befriend the stars, simply step outside at night with your astronomy guidebook and look up. Another suitable aid is a plastic planisphere, or star wheel, available at telescope shops and many bookstores. And right in this magazine is the centrepiece sky map. Relating the dots on the charts to the vast sky overhead can take an evening or two, but with patience, you'll get it. Correctly identifying one star leads to another, which will help you define one constellation, then another. Like a jigsaw puzzle, the big picture of the sky will begin to fall into place. To see the picture, all you need are your eyes and a good chart.

Don't worry about travelling to a dark-sky site; a city or suburban backyard or park with an open view of the sky will do fine.

For simplicity's sake, all you want to see are just the brightest stars anyway, which is all that urban light pollution allows. A dark sky plastered with hundreds of stars is information overload at this stage.

Conduct your star-identification sessions throughout the year, say, once a month, so that you can see the constellations gradually shift through the seasons as Earth orbits the Sun. As winter turns to spring, you'll see Orion set and Leo rise, to be replaced by the Summer Triangle, then by autumn's Square of Pegasus.

You don't need to learn every constellation (few skywatchers do). Just concentrate on identifying the brightest stars and the better-known star patterns, such as the Big Dipper, Cassiopeia, Pegasus, Orion, Taurus, Gemini—two or three constellations per season.

In the process, you'll learn to tell the difference between a star and a planet. There's no secret trick. Bright "stars" not plotted on star maps in books are planets; *SkyNews* will tell you which planet is which. Planets move across the sky from month to month, so you might not see Mars or another favourite planet right away. But there's always at least one of the four prominent naked-eye planets in the evening or morning sky.

Getting to know the friendly sky on a casual, first-name basis is *the* most important step. It's what will make you an amateur astronomer. So you could stop right here, if you like, but there's much more to explore.

### 4. TRY SOME SOFTWARE Cost: \$0 to \$75

A high-tech aid to learning the sky is computer software. You needn't spend a lot. In fact, several very good programs are available for free as shareware or trial demos. (See [www.seds.org/billa/astrosoftware.html](http://www.seds.org/billa/astrosoftware.html) for links to software sources.) Even a basic astronomy program can print out customized star charts, complete with planets, for use that night. But unlike printed maps, software can show you how the sky moves. Click on the Time or Animation button, and you can see the sky rotate through the night or watch as the Moon and planets shift position through the weeks and months. This makes for great cloudy-night study. Understanding how and why the sky moves is part of the requisite knowledge all backyard astronomers should master.

### 5. BUY BINOCULARS Cost: \$150 to \$200

Or just dust off the binoculars you already own. A pair of 7x50 or 10x50 binoculars (50mm lenses and 7 or 10 power) are ideal for astronomy and needn't cost more than \$150 to \$200. They can show a surprising number of sky sights: lunar features, Jupiter's moons, double stars, star clusters, nebulae, even some galaxies. A year spent exploring the sky through binoculars, with star charts in hand, will provide enough experience that you'll be able to put a telescope to good use right away, should you decide to get one.



TERENCE DICKINSON (BOTH)

Make it a goal to find a few of the sky's top binocular objects, such as the Double Cluster, the Pleiades, the Orion Nebula and the Andromeda Galaxy. By reading (Step 2), you'll come to understand what these celestial objects are. That's the whole point of amateur astronomy—not just seeing sights but knowing what you are looking at and how it all fits into the big picture of the universe.

### 6. FIND FELLOW ENTHUSIASTS Cost: Your time

Astronomy needn't be a lone pursuit. You can learn a lot by talking to other amateur astronomers, many of whom belong to clubs that often meet monthly at a local planetarium or college or perhaps at their own observatory. Not every meeting topic will be ideal for those new to the hobby, but many clubs have beginner nights, and all have experts who love to chat to newcomers about how to get started. Most clubs also have loaner telescopes that paid-up members can borrow or rent for a month or two—a great way



2004 Saskatchewan Summer Star Party

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to get your feet wet without plunging in too deeply at the outset.

These days, you can join “virtual clubs” through Internet forums and Yahoo e-groups. Moderated groups are the most useful, as contributors are required to stay on topic. Beware of unedited groups that serve as open forums for every crackpot and curmudgeon to vent and rant. In all cases, check the FAQs (Frequently Asked Questions), because many of your general questions may have already been addressed.

If you’ve read enough and found a friendly club, you may have all the information you need. As well, many astronomy clubs, science centres, planetariums, schools with continuing-education programs and even retail outlets offer evening or web-based courses to get you into the hobby. By taking a good course, you can learn from an expert firsthand, have your questions answered and meet others who share your interest.

## 7. CRASH A PARTY Cost: Gas money

Another place to learn more about the sky and to try out a variety of telescopes is at a star party, usually hosted by a local astronomy club at a nearby park, campground or club observatory. Planetariums and science centres often stage free telescope nights as well. These provide a smorgasbord of telescopes aimed at a feast of celestial objects. Not only can you find out how various types and brands of telescopes work, but you can receive a reality check on the sky. You might be delighted and amazed at what you see. If you are expecting Technicolor views like the pictures from the Hubble Space Telescope and the NASA planet probes, however,

you might be disappointed. Either way, you’ll become more familiar with what a telescope can and cannot show you.

## 8. LEARN THE JARGON Cost: Time and patience

Reading an introductory astronomy book and connecting with other amateur astronomers will soon get you talking the talk. You can’t get too far in any hobby without learning to speak the language and decode the abbreviations. “What’s an M31? An NGC? What do you mean by ‘seeing’? I thought ‘terminator’ was an Arnie movie!” One way to become familiar with the jargon of telescopes is to read product reviews. SkyNewsmagazine.com maintains an archive of past reviews, and privately run websites such as CloudyNights.com and ScopeReviews.com host vast libraries of reviews, some written by newcomers just like you.

## 9. OK, NOW BUY A TELESCOPE Cost: \$300 to \$600

You’ve done the homework and paid your dues by learning your way around the sky. You know what M31 is and can actually find it with binoculars. You’re ready. Don’t succumb to impulse by buying a truckload special at the local discount store (promoted as a “powerful 400x professional model”—yeah, right!). Be prepared to buy a telescope with quality optics and fittings, a sturdy mount and enough aperture (i.e., a large enough lens or mirror) to show the objects you have read about and now want to see for yourself. Don’t worry about refractor vs. reflector, and don’t automatically assume that you must have an equatorial mount

(because “I want to take pictures through my telescope”—see the next step).

Expect to spend \$300 to \$600 for a good telescope, a small price for a product that can provide a lifetime of celestial views. A prime factor in making your decision is to get a telescope large enough to show you neat stuff but not so large that you’ll rarely use it because it’s too heavy and complex to set up. The \$4,000 backbreaking superscope can kill your interest just as quickly as the \$99 trash scope.

Before you make a decision, check out the review websites mentioned in Step 8, talk to fellow amateurs and find a local telescope dealer (most large cities have at least one). Some dealers maintain e-commerce websites with “How to Buy a Telescope” help files on-line. But nothing beats seeing telescopes for yourself and “kicking their tires” in a showroom. Reputable dealers will take care to steer you toward a telescope tailored to your needs; they want you as a happy customer so that you’ll come back to buy more accessories.

## 10. AVOID ASTROPHOTOGRAPHY! Cost: Nothing—you save hundreds of dollars and hours!

OK, that’s a little strict. You can easily take stunning astrophotos with a standard camera, like the one you might already own, without having to resort to a telescope or special tracking systems. You can also aim digital cameras into the eyepiece of any telescope and get excellent close-ups of the Moon.

All too often, beginners are lured into the minefield of long telescopic exposures. Capturing images of glowing nebulas and galaxies is tempting, indeed. Yet getting good results requires exposures many minutes, if not hours, long, all framed, focused and tracked superaccurately. Only the better telescope mounts, which cost far more than what most beginners should pay, are up to the demanding task. Let others spend the money and make the effort; you can applaud their hard-won photos at the next club meeting. But for your own sanity, stick with the simple pleasures of looking through an eyepiece. It is a constant joy. ■

*Alan Dyer is a show producer at the Calgary Science Centre, where he also teaches astronomy courses and helps run weekly stargazing nights for the public with the assistance of the Calgary Centre of the RASC.*