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Preface

In Robert Frost's famous poem *The Star-Splitter*, he states that someone in every town owes it to the town to keep a telescope. I would take that a step further and say that someone in *every home* should have one! For without these wondrous instruments, we are out of touch with the awesome universe in which we live. I have no doubt that Frost himself would have agreed with me, for he was an avid stargazer throughout his long life.

The book you're holding in your hands will make it possible for you to be that someone who has the vision and curiosity to own a telescope. It will help answer such questions as: "Should I buy a new or used telescope?" "Can I make one myself?", "Which type is best?", "What size should I get and how much should I spend?", "How much power do I need?", "What can I see with it once I get it?", and "Do I really need a telescope or will binoculars suffice?" These are all important concerns – and ones that should be addressed before plunging into the purchase of any instrument intended for stargazing.

This book contains two main themes. One deals with the different kinds of astronomical telescopes and binoculars, and recommended sources for them. The other tells you how to use them once you possess them and what to look at in the sky.

Perhaps this is as good a place as any to explain what we mean when we describe an instrument as "astronomical." This term relates to its optical quality. While just about any telescope will show the features of the Moon's alien landscape, the four bright jewel-like satellites of Jupiter, and perhaps even the majestic ice-rings of Saturn, there's an amazing difference in the views seen of these and a host of other celestial wonders through a precision optical system compared with those in one of poor or mediocre quality. Most binoculars and low-end

"spotting grade" telescopes are designed with terrestrial use in mind rather than celestial. The optical precision needed to produce razor-sharp views of the Moon and planets and pinpoint images of stars is an order of magnitude above that required for ground-based observing. Since binoculars are normally used at very low magnifications (typically 10× or less), optical aberrations are not nearly as critical an issue for them as they are for a telescope with its correspondingly greater magnifications (typically 50× and higher).

For many readers – particularly those who are already somewhat familiar with telescopes and binoculars, as well as with their use – the greatest value of this book may well prove to be the extensive compilations in Chapter 8 and Chapter 9 that provide handy references to the principal manufacturers and sources for these instruments. Here you'll find standard mail and Internet web-site addresses, telephone numbers (in most cases), and an overview of types and models offered. Since new or upgraded instruments are constantly being added to many manufacturers' lines, you'll be able to get information and specifications on the very latest available models, current prices, and delivery times through their catalogs and other literature (both on-line and printed copies).

Distilled in this volume is the author's more than 50 years of experience in making, designing, selecting, testing – and especially using – literally thousands of different sizes, types, and makes of telescopes. These have included refractors from 2- to 30-inch (!) in aperture, reflectors from 3- to 60-inch, and compound catadioptric scopes from 3.5- to 22-inch in size, employed both for casual personal observing and (in the case of the larger apertures) for research work as well. And after all those instruments and all those years, I'm as excited about telescopes and stargazing as ever!

It should be mentioned here that this present book is *not* intended to be a comprehensive treatise on all the intricate technical aspects of telescope and binocular optics – nor is it intended to be an all-encompassing guidebook on their use in astronomy. (References are given throughout for those who do wish to dig deeper into these areas.) Its purpose, instead, is to offer readers a condensed, trustworthy treatment of these topics that is sufficient to make informed decisions on the selection and use of these instruments – but general enough to not overwhelm them. And although I discuss telescopes costing many thousands of dollars, I also cover ones priced at around a hundred dollars. Stargazing can indeed be a very affordable pastime! If you are new to the field, it's best to start with a basic instrument of good quality (especially optically) and then in time graduate to a larger and/or more sophisticated one if desired. Despite all the varied types and sizes of instruments I've used over the years, my most pleasurable observing experiences still continue to be those with a 3-inch short-focus refractor at 30× and a 5-inch catadioptric telescope at magnifications of 40× to 100×. Each of them, used on an interchangeable, lightweight but sturdy altazimuth mounting with smooth slow-motion controls and wooden tripod, weighs in at less than a dozen pounds. Another long-time favorite instrument is a very portable 6-inch reflector on a basic Dobsonian mounting.

It's my sincere wish that, whatever level your present familiarity and experience with telescopes and binoculars may be, if you read this book carefully you will be able to select a quality optical instrument ideally suited to your particular needs and intended purposes. And more importantly, that it will also lead you to

the ultimate use of these marvelous devices – whether binocular or telescope, new or used, large or small, inexpensive and basic, or costly and sophisticated – viewing the wonders of the heavens in a way that will excite, enrich, and ennoble your life, as well as that of others!

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There are many people in the astronomical and telescope manufacturing community who have helped to make this book possible. The companies listed in the tables in Chapters 8–9 have kindly supplied the resource information given there on their products, as well as images of selected instruments in many cases. Special thanks must go to Orion Telescopes & Binoculars, which has generously supplied me with images of many telescopes, binoculars, and accessories typical of those widely used by amateur astronomers today.

I am also indebted to Dennis di Cicco, a Senior Editor at *Sky & Telescope* magazine and long recognized as one of the world's most experienced astrophotographers, for the use of previously unpublished images from his private collection. And California astroimager Steve Peters also kindly supplied many of his personal images for use in this book.

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