

Cambridge University Press

978-0-521-72170-7 - Stephen James O'Meara's *Observing the Night Sky with Binoculars: A Simple Guide to the Heavens*

Stephen James O'Meara

Frontmatter

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Stephen James O'Meara's *Observing the Night Sky with Binoculars*

Month by month, constellation by constellation, star by star, object by object, Stephen James O'Meara takes readers on a celestial journey to many of the most prominent stars and constellations visible from mid-northern latitudes.

Filled with interesting anecdotes about the stars and constellations and their intriguing histories, this book is both a useful guide for amateur astronomers, and a great first-time reference for those just starting out. After describing a constellation's mythology, readers are guided in locating and identifying its brightest stars in the sky, as well as any other bright targets of interest – colorful stars, double or multiple stars, star clusters and asterisms, nebulae, galaxies, variable stars, and more.

This book will help beginning stargazers become familiar with the stars and constellations visible from their backyards, and explore the brightest and best stars, nebulae, and clusters visible through inexpensive, handheld binoculars.

STEPHEN JAMES O'MEARA has spent much of his career on the editorial staff of *Sky & Telescope*, and is a columnist and contributing editor for *Astronomy* magazine. He is an award-winning visual observer. His remarkable skills continually reset the standard of quality for other visual observers, and he was the first to sight Halley's Comet on its return in 1985. The International Astronomical Union named asteroid 3637 O'Meara in his honor. Steve is the recipient of the prestigious Lone Stargazer Award (2001) and the Omega Centauri Award (1994) for "his efforts in advancing astronomy through observation, writing, and promotion, and for sharing his love of the sky." He has also been awarded the Caroline Herschel Award for his pre-Voyager visual discovery of the spokes in Saturn's B-ring and for being the first to determine visually the rotation period of Uranus. Steve is also a contract videographer for *National Geographic Digital Motion*, and a contract photographer for *National Geographic Image Collection*.

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To Donna,
The love of my life
To Milky Way, Miranda Piewacket, and Pele,
You are my starlight
And to Daisy Duke Such a Joy
My little bit of Heaven here on Earth

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Preface

The night sky is full of wonder. It has a history as old as human thought, and a scope that is truly infinite. Seeing a star-filled sky from a dark location can inspire a lifetime of passion. And what the eye alone sees as an infinite expanse is suddenly and magnificently magnified in binoculars. The view awakens the mind to the humbling reality that the heavens are a vast and intangible wilderness with a quiet spirit. There is so much to see, so much to explore, so much to experience, that knowing where to begin and where to look can present a challenge. Now consider that the stars move as the Earth turns, and our perspective changes as our planet orbits the Sun. In a way, trying to befriend a star is like trying to grab hold of the golden ring on a merry-go-round. That's why I created this book, to help you make sense of the night sky while guiding you to some of the brightest and most attractive deep-sky wonders visible through handheld binoculars.

Handheld binoculars are ones that can be held comfortably in the hand – such as 7×50 and 10×50 binoculars; these are, in fact, the binoculars that virtually all credible sources overwhelmingly recommend to beginners, because they have wide fields of view, the best eye relief, and are comfortable to hold; they are also within the price range of most beginning observers. Expensive, quality optics do make a great difference in the view. That said, the binoculars I used to make the observations in this book were both inexpensive: one is a pair of old 7×50 s that I bought at a yard sale for \$5; the other is a pair of Meade 10×50 s that I purchased at Radio Shack for \$20. While the objects in this book have been selected with common optics in mind, they can also be enjoyed by owners of large binoculars, which will reveal them with greater ease and show them with greater clarity. The point is you do not have to spend a lot of money to enjoy the stars, the enjoyment comes from within.

My approach to helping you get started is different. The book opens by introducing you to the Big Dipper, the most recognizable star pattern in the night sky. I then help you to explore many of the naked-eye and binocular wonders within it. In doing so, you will learn many of the terms used in amateur astronomy and discover ways to measure sky distances, determine direction. You will also learn about star names, stellar magnitudes, spectral types, and the variety of deep-sky objects accessible through binoculars. This section also includes several useful tips

on binocular observing. Using the Big Dipper as a learning center has several advantages. Its stars never set from mid-northern latitudes, they always circle the heavens in the north, and the stars are bright and easy to see, even under city lights.

What follows is a month-by-month journey to many of the most prominent stars and constellations visible from mid-northern latitudes within two hours of the time when they are highest in the sky. I encourage you to start with the opening chapter on the Big Dipper, which will introduce you to just about all the general and repetitive terms you'll encounter throughout the book. After that you can start your observing program at any given month in any given season. Once you begin your journey, try to follow the progression I have laid out in the book. I have carefully planned a very methodical approach to learning the stars, with repetition leading to familiarity.

Each section opens with an introduction that sets the celestial stage. It then goes on to preview each constellation individually, introducing you to the constellation's mythology, how to locate and identify its stars in the sky, and how to find any bright targets of interest – colorful stars, double or multiple stars, star clusters and asterisms, nebulae, galaxies, variable stars, and more. Most of the objects are bright and should be easy to see under a dark sky, though occasionally, I toss out a challenge. One thing is certain. As the months go by and your observing skills sharpen, you'll find it easier and easier to see fainter and fainter objects.

Much of the data concerning the stars and their planets was gleaned from "Stars," a wonderful website (<http://www.astro.uiuc.edu/~kaler/sow/sowlist.html>) created by Jim Kaler, Professor Emeritus of Astronomy, University of Illinois. Variable star data is mainly from the American Association of Variable Star Observers. I'd like to thank Simon Mitton and Vince Higgs at Cambridge University Press for encouraging the creation of this book. This book also owes a lot to the loving support of my wife Donna. Finally, a deep bow to my copy-editor Zoë Lewin, whose curiosity for all things beautiful in the night sky, and her attention to detail, made this a better book. I, of course, take full responsibility for any slips of the tongue.

Stephen James O'Meara
Volcano, Hawaii
July 2007

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*If the stars should appear one night in a thousand years,
how would men believe and adore; and preserve for many
generations the remembrance of the city of God which had
been shown! But every night come out these envoys of
beauty, and light the universe with their admonishing smile.*

– Emerson, from *Nature*

Beginners. Getting Started With Observing. Exploring the Night Sky with Binoculars by Patrick Moore. Facebook. Twitter. I noticed some good quality 10x binoculars on the side to which my friend said he has sometimes used them but did not know what to look for or where. A couple of days later we went with our wives to Hay on Wye and while perusing around a book shop I found an old, used hard copy of the above book for £5. Despite the temptation to keep it for myself, it was very well received as one of our parting gifts. I will quizz him next time. :) 3. My wife got up in the night to do, (well you know womans things). She beckoned me to come and have a look at the sky but I was tired from driving so stayed in our camp bed. I think maybe I will live to regret that moment.