



Contents

Preface	v
Acknowledgments	ix

Part I: **Buying Astronomical Telescopes and Binoculars**

1. Introduction	3
More Than Meets the Eye	3
New Versus Used Equipment	4
Making Your Own	5
Optical Testing	6
2. Binoculars	9
Seeing Double	9
Specifications	10
Prisms and Optical Coatings	12
Image-Stabilized	13
Minis and Giants	13
Binocular Telescopes	14
3. Telescope Basics	17
Aperture	17
Focal Length/Ratio	17
Magnifying Power	19

Light-Gathering Power	20
Resolving Power	20
Mountings	21
4. Refracting Telescopes	27
Achromatic	27
Apochromatic	29
Rich-Field	30
Long-Focus	31
Solar	33
5. Reflecting Telescopes	35
Newtonian	35
Dobsonian	38
Rich-Field	40
Cassegrain	42
Ritchey-Chrétien	43
Dall-Kirkham	44
Modified Cassegrain	44
Off-Axis	45
6. Catadioptric Telescopes	47
Maksutov-Cassegrain	47
Schmidt-Cassegrain	51
Schmidt-Newtonian	53
Maksutov-Newtonian	53
7. Accessories	55
Eyepieces	55
Finders	58
Star Diagonals	60
Barlow Lenses	62
Dew Caps/Light Shields	63
Miscellaneous Items	64
8. Binocular Sources	71
Product and Contact Information For Principal Manufacturers/ Suppliers	71
9. Telescope Sources	77
Product and Contact Information For Principal Manufacturers/ Suppliers	77
10. Observing Techniques	93
Training the Eye	93

Part II: **Using Astronomical Telescopes and Binoculars**

Contents

Sky Conditions	96
Record Keeping	98
Observing Sites and Observatories	100
Personal Matters	103
 11. Solar System Observing	105
Sun	105
Moon	109
Planets	112
Comets	121
Asteroids	122
Meteors	122
Artificial Satellites	123
 12. Stellar System Observing	125
First-Magnitude and Highly Tinted Single Stars	125
Double and Multiple Stars	127
Variable Stars, Novae, and Supernovae	132
 13. Deep-Sky Observing	137
Stellar Associations and Asterisms	137
Star Clusters	138
Nebulae	143
Galaxies and Quasars	150
Milky Way	154
Navigating the Great Beyond	155
 14. Conclusion	159
Sharing The Wonder	159
Pleasure Versus Serious Observing	160
Aesthetic and Philosophical Considerations	162
 Appendices	
1. Telescope Limiting-Magnitude and Resolution	167
2. Constellation Names and Abbreviations	169
3. Celestial Showpiece Roster	173
 About the Author	195
 Index	197