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978-0-521-00790-0 - How to Use a Computerized Telescope: Practical Amateur Astronomy

Michael A. Covington

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Practical Amateur Astronomy

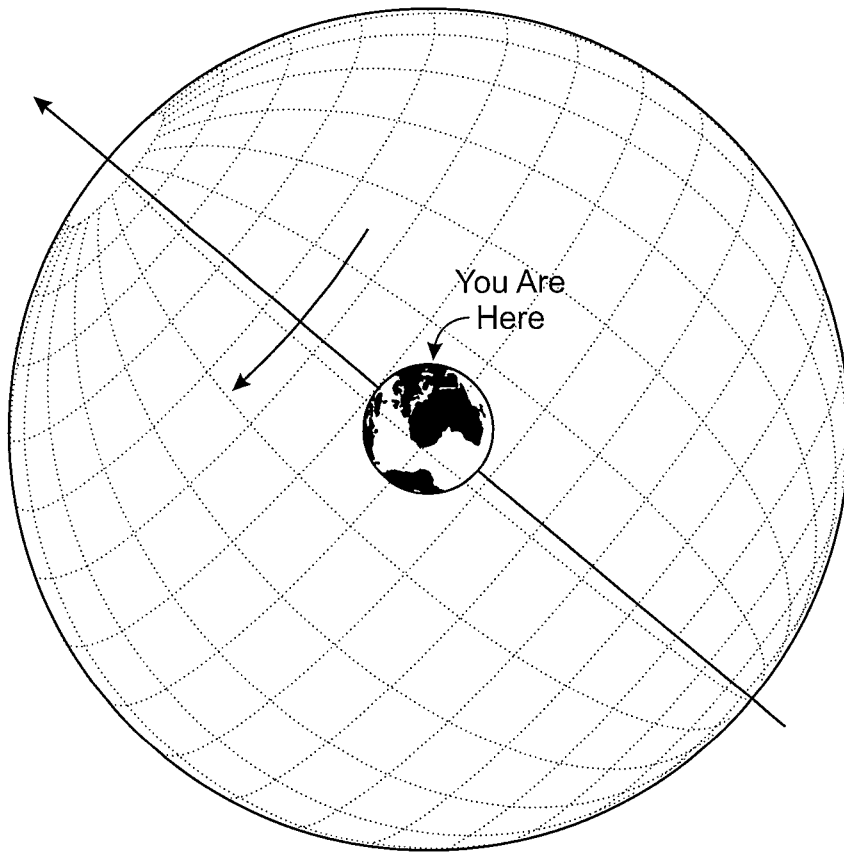
How to Use a Computerized Telescope

Computerized telescopes have brought a revolution to amateur astronomy. The new technology has opened up observing to many who were previously daunted by the task of learning the sky or using star charts. Finding an astronomical object becomes a quick operation with a computerized telescope, allowing more time for actual observation of the heavens.

How to Use a Computerized Telescope is the first handbook that describes how to get your computerized telescope up and running, and how to embark on a program of observation. It explains in detail how the sky moves, how your telescope tracks it, and how to get the most out of any computerized telescope. Packed full of practical advice and tips for troubleshooting, it translates the manufacturers' technical jargon into easy-to-follow, step-by-step instructions, as well as including many of the author's tried and tested observing techniques. Early chapters explain how to test your telescope's optics, choose eyepieces and accessories, take pictures through your telescope, and diagnose operational problems. The second half of the book then gives detailed instructions for three classic telescopes: the Meade LX200, Celestron NexStar 5 and 8, and Meade Autostar (ETX and LX90). Besides helping owners and would-be purchasers of these models, the instructions also provide a basis of comparison for understanding newer telescopes.

Amateur astronomers will find this book an invaluable source of information and advice for getting started with a new computerized telescope. Concentrating mainly on telescope operation and troubleshooting, it is the ideal companion to *Celestial Objects for Modern Telescopes*, also by Michael Covington, which provides the reader with suggestions for interesting celestial objects to view and advice on how to observe them.

MICHAEL COVINGTON, an avid amateur astronomer since age 12, has degrees in linguistics from Cambridge and Yale Universities. He does research on computer processing of human languages at the University of Georgia, where his work won first prize in the IBM Supercomputing Competition in 1990. His current research and consulting areas include theoretical linguistics, natural language processing, logic programming, and microcontrollers. Although a computational linguist by profession, he is recognized as one of America's leading amateur astronomers and is highly regarded in the field. He is the author of several books, including the highly acclaimed *Astrophotography for the Amateur* (1985; second edition 1999) and *Celestial Objects for Modern Telescopes* (2002), which are both published by Cambridge University Press. The author's other pursuits include amateur radio, electronics, computers, ancient languages and literatures, philosophy, theology, and church work. He lives in Athens, Georgia, U.S.A., with his wife Melody and daughters Cathy and Sharon, and can be visited on the Web at www.covingtoninnovations.com.



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Frontmatter

[More information](#)

Soli Deo gloria

Contents

	Preface	<i>page xv</i>
Part I	Telescopes in general	1
1	Welcome to amateur astronomy!	3
1.1	Using a telescope	3
1.2	Learning the sky	4
1.3	Is a computerized telescope right for you?	4
1.4	Material you can skip	5
1.5	Does this book cover your telescope?	5
2	How the sky moves	6
2.1	Daily motion	6
2.2	Coordinates	8
2.2.1	Right ascension and declination	8
2.2.2	Declination and latitude	9
2.2.3	Some terminology	10
2.2.4	Other coordinate systems	10
2.2.5	Degrees, minutes, and seconds	11
2.2.6	Distance between points in the sky	12
2.3	Annual motion	12
2.3.1	Why time of year matters	12
2.3.2	Sidereal time	13
2.4	Time of day	13
2.4.1	Solar time and time zones	13
2.4.2	Hints on using UT	15
2.4.3	UTC, ET, and other subtleties	17
2.5	Slow changes in R.A. and declination	17
2.5.1	Precession and epochs	17
2.5.2	How precession works	17
2.5.3	Proper motion	18

Contents

3	How telescopes track the stars	19
3.1	What's inside a computerized telescope	19
3.1.1	Computer	19
3.1.2	Motors	20
3.1.3	Encoders	21
3.1.4	Digital setting circles (DSC)	21
3.2	Altazimuth and equatorial mounts	21
3.3	Site information	22
3.3.1	Why it's needed	22
3.3.2	Obtaining site data	23
3.4	Why compasses don't point north	25
3.5	Setting up the telescope	27
3.6	Choosing alignment stars	28
3.7	Automatic setup with GPS	29
3.8	Tripods and piers	29
3.8.1	Steadiness	29
3.8.2	Other tripod and wedge hints	30
3.8.3	Observatories and permanent piers	31
3.9	Pointing accuracy	32
3.9.1	What to expect	32
3.9.2	Factors that affect pointing accuracy	32
3.9.3	Aligning the telescope tube in the mount	34
3.9.4	The double-GO TO trick	34
3.9.5	Meade high-precision mode	35
3.9.6	<i>TPoint</i> Software	35
3.9.7	What the telescope is calculating	35
3.10	Computer control	36
3.11	Electricity for telescopes	37
4	Using equatorial mounts and wedges	39
4.1	Why equatorial?	39
4.2	Must field rotation be eliminated?	39
4.3	Using an equatorial mount	43
4.3.1	Setting up the mount	43
4.3.2	Rough polar-axis alignment without sighting stars	43
4.3.3	Finding Polaris	44
4.3.4	Rough polar-axis alignment on Polaris	45
4.3.5	Initializing the computer	47
4.4	Refining the polar alignment	48
4.4.1	Iterating on Polaris and one other star	48
4.4.2	Fine alignment – the drift method	49
4.5	Using wedges	49
4.6	Tracking in equatorial mode	51
4.6.1	Tracking rates	51

Contents

4.6.2	Periodic-error correction (PEC)	53
4.7	Setting circles	53
4.8	Southern declination limits	55
4.9	German equatorial mounts	56
5	Telescope optics	59
5.1	How a telescope works	59
5.2	Upside down and backward images	59
5.3	Light grasp and image brightness	61
5.4	Resolving power	63
5.5	Types of telescopes	64
5.5.1	Refractors, reflectors, and catadioptrics	64
5.5.2	Catadioptric quirks	66
5.5.3	“Fast” and “slow” f -ratios	67
5.5.4	Does the central obstruction ruin the image?	68
5.5.5	Which design is best?	69
5.6	Collimation	70
5.6.1	Collimating a Schmidt–Cassegrain	70
5.6.2	Collimating a Newtonian	73
5.6.3	How often?	74
5.7	Star testing	74
5.8	Buying a telescope secondhand	77
5.9	Cleaning optics	78
5.9.1	Lenses	78
5.9.2	Mirrors	78
6	Eyepieces and optical accessories	79
6.1	What eyepieces do you need?	79
6.2	Barrel size	79
6.3	Field of view	80
6.3.1	Measuring field of view	82
6.4	Eye relief	83
6.5	Eyepiece designs	83
6.6	New-generation eyepieces	85
6.7	Anti-reflection coatings	86
6.8	Choosing eyepieces wisely	86
6.9	Eyepiece calculations and technical details	87
6.9.1	The exit pupil	87
6.9.2	Limits on low power	88
6.9.3	Limits on high power	89
6.9.4	Field stop and tube size	89
6.10	Eyepiece accessories	90
6.10.1	Diagonals	90
6.10.2	Barlow lenses	92

Cambridge University Press

978-0-521-00790-0 - How to Use a Computerized Telescope: Practical Amateur Astronomy

Michael A. Covington

Frontmatter

[More information](#)

Contents

6.10.3	Focal reducers (compressors)	93
6.10.4	Filters	94
6.11	Eyeglasses	96
6.12	Finders	97
7	Astrophotography	99
7.1	Overview	99
7.2	Attaching cameras to telescopes	100
7.2.1	Optical configurations	100
7.2.2	Brackets and adapters	102
7.3	Two simple projects to get you started	103
7.3.1	Project #1: the Moon, afocal method	103
7.3.2	Project #2: the stars, piggybacking	103
7.4	Equipment for astrophotography	107
7.4.1	Telescope requirements	107
7.4.2	35-mm SLR cameras	107
7.4.3	Other film cameras	109
7.4.4	Digital and video cameras	109
7.4.5	Astronomical CCD cameras	110
7.5	Focal length, image size, and f -ratio	111
7.5.1	Finding the effective focal length	111
7.5.2	Image size and field of view	112
7.5.3	Finding the f -ratio	113
7.5.4	Exposure, film, and development	113
7.6	Focusing and sharpness	115
7.7	Deep-sky techniques	116
7.8	Digital image processing	119
8	Troubleshooting	122
8.1	Electrical and computer problems	122
8.2	Keypad problems	123
8.3	Motor and slewing problems	125
8.4	Optical problems	129
Part II	Three classic telescopes	131
9	Three that led the revolution	133
10	Meade LX200	134
10.1	Introduction	134
10.1.1	Evaluation of the LX200	134
10.1.2	Related products	135
10.1.3	Firmware versions	135
10.1.4	LX200 websites	136
10.2	Electrical requirements	136
10.3	Keypad	137

Contents

10.3.1	Direction of movement	138
10.3.2	How to enter negative numbers	138
10.4	Operation without electricity	138
10.5	Motorized operation without alignment	139
10.6	Controlling the slewing speed	140
10.7	Entering date, time, and site information	140
10.7.1	Setting the time	140
10.7.2	Setting the date	141
10.7.3	Entering site latitude and longitude	141
10.8	Aligning the telescope on the sky	143
10.8.1	Altazimuth mode	143
10.8.2	Equatorial mode	146
10.9	Finding objects by coordinates	149
10.9.1	Slewing to a given R.A. and declination	149
10.9.2	Slewing to a given altitude and azimuth	149
10.9.3	Dealing with decimal minutes	149
10.10	How to interrupt a slewing movement	150
10.11	Finding deep-sky objects using the built-in catalogues	150
10.11.1	M (Messier) Catalogue	150
10.11.2	NGC, IC, and UGC	150
10.12	Finding stars using the built-in catalogues	151
10.12.1	Named stars	151
10.12.2	STAR, SAO, and GCVS numbers	152
10.13	Finding the Moon and planets	153
10.14	More precise pointing	154
10.14.1	How to sync on an object	154
10.14.2	High-precision mode	156
10.15	Training the Smart Drive (PEC)	157
10.16	Cables, connections, and ports	158
10.16.1	Keypad and declination cables	158
10.16.2	CCD port	159
10.16.3	The serial ports	159
10.16.4	Other connectors	161
10.16.5	Internal battery	161
10.16.6	The floating ground	161
10.17	Known firmware bugs	162
10.18	Mechanical and electrical improvements	162
10.19	Menu maps	163
11	Celestron NexStar 5 and 8	169
11.1	Introduction	169
11.1.1	Related products	169
11.1.2	Evaluation of the NexStar 5	169
11.1.3	Firmware versions	170

Contents

11.1.4	NexStar websites	170
11.2	Important precautions	171
11.3	Electrical requirements	171
11.4	Keypad	172
11.4.1	Direction of movement	172
11.4.2	How to enter declinations and latitudes	173
11.5	Basic operation without alignment	173
11.5.1	Operation without electricity	173
11.5.2	Motorized operation without alignment	174
11.5.3	Controlling the slewing speed	174
11.6	Entering date, time, and site information	175
11.6.1	Setting the date and time	175
11.6.2	Entering site latitude and longitude	176
11.6.3	Storing an observing site	176
11.7	Aligning the telescope on the sky	177
11.7.1	Altazimuth mode	177
11.7.2	Equatorial mode	181
11.8	How to interrupt a slewing movement	182
11.9	Finding objects with the built-in catalogues	183
11.9.1	Messier, Caldwell, and NGC objects	183
11.9.2	Stars	183
11.9.3	Planets	184
11.9.4	Lists of objects	184
11.9.5	Sky tours	184
11.10	Finding objects by coordinates	184
11.10.1	Slewing to a given R.A. and declination	184
11.10.2	Slewing to a given altitude and azimuth	184
11.10.3	The "User Object" catalogue	184
11.11	More precise pointing	185
11.11.1	Approaching with ▲ and ►	185
11.11.2	Backlash adjustment	185
11.11.3	How to sync on an object	185
11.11.4	The controversy over tripod leveling	185
11.12	Cables, connections, and ports	186
11.12.1	Keypad cable	186
11.12.2	Serial (RS-232) port	186
11.13	Known firmware bugs	187
11.14	Menu maps	187
12	Meade Autostar (ETX and LX90)	193
12.1	Introduction	193
12.1.1	Related products	193
12.1.2	Evaluation of the Autostar (ETX-90 and LX90)	194
12.1.3	Firmware versions	194

Cambridge University Press

978-0-521-00790-0 - How to Use a Computerized Telescope: Practical Amateur Astronomy

Michael A. Covington

Frontmatter

[More information](#)

Contents

12.1.4	Autostar websites	195
12.2	Electrical requirements	195
12.3	Keypad	195
12.3.1	Is the computer included?	195
12.3.2	Please type slowly!	196
12.3.3	How to enter information	196
12.3.4	Display adjustments	197
12.3.5	Direction of movement	197
12.3.6	Display modes	197
12.4	Power-on sequence, date, and time	197
12.5	Entering site information	199
12.5.1	Choosing your location from a menu	199
12.5.2	Entering latitude, longitude, and time zone directly	200
12.6	Basic operation without alignment	200
12.6.1	Operation without electricity	200
12.6.2	Land mode	201
12.6.3	Controlling the slewing speed	201
12.7	Aligning the telescope on the sky	201
12.7.1	Checking the finder	201
12.7.2	Altazimuth mode	201
12.7.3	Equatorial mode	204
12.8	How to interrupt a slewing movement	205
12.9	Finding objects with the built-in catalogues	205
12.10	Finding objects by coordinates	205
12.11	More precise pointing	206
12.11.1	How to sync on an object	206
12.11.2	High-precision mode	206
12.11.3	Square spiral search (“box scan”)	206
12.11.4	Drive training and backlash adjustment	207
12.12	Cables, connections, and ports	207
12.12.1	The connector panel	207
12.12.2	The serial port	208
12.13	Upgrading the firmware and downloading data	208
12.14	Other advanced features	209
12.14.1	Satellite tracking	209
12.14.2	Sky tours	211
12.15	Menu maps	211
	Index	219

Preface

Computerized telescopes are revolutionizing amateur astronomy. Even the least expensive entry-level telescopes are now available with computer-controlled motors to find and track objects in the sky. No longer do you have to search for NGC 1999 or Neptune by carefully comparing the view with a star map – you just tell the telescope what to point at, and it does it.

Do computer controls take all the fun out of astronomy? No more than paved highways take the fun out of the Arizona desert. Professional astronomers have used setting circles to find objects since the time of Tycho Brahe and have always tried to make them as accurate as possible. Amateurs have long *had* setting circles, but they weren't very accurate. Now, with the advent of computers, professional-level accuracy is within the reach of the amateur, and the computer actually controls the telescope rather than just telling you where it's pointed.

After 30 years of finding celestial objects the old way, I bought my first computerized telescope in 2000 and immediately found myself doing a new kind of amateur astronomy. Suddenly I was spending my time looking *at* objects instead of *for* them. No longer preoccupied with "star-hopping", I could spare the time and attention to study the celestial objects themselves.

In fact I realized for the first time that, for all those years, my observing program had been skewed by the fact that some objects are easier to find than others. I regularly viewed M13 and not M92 because the latter is not near any bright stars. I rarely looked at Uranus or Neptune because that would require getting out a special map, updated yearly. Now I can look at anything within reach of the telescope.

At the same time I have become much more aware of, and dependent on, astronomical data sources. If an atlas omits NGC 404 or a star catalogue skips ξ Ursae Majoris, that's an obstacle I'll bump into and notice. If I use epoch-1950 coordinates on an epoch-2000 telescope, I won't find what I'm looking for. Conversely, the latest data files from the Astronomical Data Center can be put to immediate use with my computer and telescope.

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Frontmatter

[More information](#)

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What it all means is that new-style amateur astronomers need a new kind of guidebook. My writing project began as a list of interesting objects that I put together for use at the telescope. Soon I added a concise summary of the Meade LX200 operating manual. Simon Mitton of Cambridge University Press saw my notes and encouraged me to turn them into a book. By the time I finished, I had enough material for two books, *How to Use a Computerized Telescope* (this volume) and *Celestial Objects for Modern Telescopes* (the companion volume, which focuses on the sky rather than the equipment).

While I was writing the two books, Scott Roberts of Meade Instruments lent me equipment to try out. The technical support departments at Meade, Celestron, Software Bisque, and Starry Night Software answered technical questions. Daniel Bisque supplied software for testing. Howard Lester, Dennis Persyk, Lenny Abbey, Rich Jakiel, T. Wesley Erickson, Robert Leyland, R. A. Greiner, Richard Seymour, Ralph Pass, Phil Chambers, Ells Dutton, Michael Forsyth, and John Barnes critiqued drafts of parts of the text. Tom Sanford let me try out his Meade LX90 at length. Earlier, Jim Dillard first got me interested in computer-aided astronomy by buying my old Meade LX3 from me and outfitting it with digital setting circles. There are probably others whose names I've forgotten to list, and I beg their indulgence. And I have hopelessly lost track of who helped with which volume!

All along, Melody (my wife) and Cathy and Sharon (my daughters) have patiently endured a living room full of tripods and have even accompanied me on some observing trips. (I keep pointing out that all this is not as expensive as boats or even golf!) I want to thank all of these people, and others unnamed, for their encouragement and assistance.

Please visit me on the Web at <http://www.covingtoninnovations.com>, where this book will have its own web page with updates and related information.

*Athens, Georgia
December 24, 2001*