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# Remote Observatories For Amateur Astronomers Using High Powered Telescopes From Home The Patrick Moore Practical Astronomy Series

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*Remote  
Observatories  
For Amateur  
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## **HORTON HALEY**

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NightWatch Cambridge University Press  
Adopted as the official book of the International Year of Astronomy (IYA) 2009, this stunningly illustrated history of telescopic discovery spans the range from the first telescopes via the Hubble Space Telescope to next generation platforms,

and how they have changed and continue to change our view of the universe, our place in it and where it all came from. EYES ON THE SKIES features numerous full-page photographs and is printed in high-quality color throughout. Also includes the official IYA DVD with 59 minutes of narrated text, expert comments and interviews, animations, computer simulations, science results, plus footage from observatories.

*A Buyer's and User's Guide to Astronomical Telescopes and Binoculars* Springer Science & Business

## Media

Amateur astronomers who want to enhance their capabilities to contribute to science need look no farther than this guide to using remote observatories. The contributors cover how to build your own remote observatory as well as the existing infrastructure of commercial networks of remote observatories that are available to the amateur. They provide specific advice on which programs to use based on your project objectives and offer practical project suggestions. Remotely controlled observatories have many advantages—the most obvious that the observer does not have to be physically present to carry out observations. Such an

observatory can also be used more fully because its time can be scheduled and usefully shared among several astronomers working on different observing projects. More and more professional-level observatories are open to use by amateurs in this way via the Internet, and more advanced amateur astronomers can even build their own remote observatories for sharing among members of a society or interest group. Endorsements: “Remote Observatories for Amateur Astronomers Using High-Powered Telescopes from Home, by Jerry Hubbell, Rich Williams, and Linda Billard, is a unique contribution centering on computer-controlled

private observatories owned by amateur astronomers and commercialized professional-amateur observatories where observing time to collect data can be purchased. Before this book, trying to piece together all of the necessary elements and processes that make up a remotely operated observatory was daunting. The authors and contributors have provided, in this single publication, a wealth of information gained from years of experience that will save you considerable money and countless hours in trying to develop such an observatory. If you follow the methods and processes laid out in this book and choose to build your own

remotely operated observatory or decide to become a regular user of one of the commercial networks, you will not only join an elite group of advanced astronomers who make regular submissions to science, but you will become a member of an ancient fraternity. Your high-technology observatory will contain a “high-powered telescope” no matter how large it is, and from the comfort of home, you can actively contribute to the work that started in pre-history to help uncover the secrets of the cosmos.” Scott Roberts Founder and President, Explore Scientific, LLC. “In the past three and a half decades, since I first became involved with remote observatories, the use of remote,

unmanned telescopes at fully automated observatories has advanced from a very rare approach for making astronomical observations to an increasingly dominant mode for observation among both professional and amateur astronomers. I am very pleased to see this timely book being published on the topic. I highly recommend this book to readers because it not only covers the knowledge needed to become an informed user of existing remote observatories, but also describes what you need to know to develop your own remote observatory. It draws on more than two decades of remote observatory operation and networking by coauthor Rich Williams

as he developed the Sierra Stars Observatory Network (SSON) into the world-class network it is today. This book is the ideal follow-on to coauthor Jerry Hubbell's book *Scientific Astrophotography* (Springer 2012). Remote observatories have a bright future, opening up astronomy to a new and much larger generation of professional, amateur, and student observers. Machines and humans can and do work well together. I hope you enjoy reading this book as much as I have and will take advantage of the developments over the past several decades by the many pioneers of remote observatories." Russ Genet, PhD. California Polytechnic State

University Observing Saturn for the first time is a memory that stays with us for the rest of our lives, and for many it is the start of an odyssey--an odyssey into observational astronomy. Remote Observatories for Amateur Astronomers is a book written for observers, beginners, and old hands alike, providing detailed advice to those wishing to improve their observing skills. Many will want to build and operate a remotely controlled observatory, and for those, Part I of this book is an invaluable source of information. If, like me, you choose to avoid the capital outlay of owning your own facility, Part II describes how you can use one of the many professionally run large

scopes where, for a few dollars, you can capture spectacular color images of nebulae, galaxies, and comets. My own scientific interest in short period eclipsing binaries has been made possible through the availability of remote telescopes such as those operated by the Sierra Stars Observatory Network (SSON). Whichever route you take, this book is essential reading for all who aspire to serious observing. David Pulley The Local Group (UK)

**History of Astronomy**  
Cambridge University Press

Amateur astronomers of all skill levels are always contemplating their next telescope, and this book points the way to the most

suitable instruments. Similarly, those who are buying their first telescopes – and these days not necessarily a low-cost one – will be able to compare and contrast different types and manufacturers. This exciting and revised new guide provides an extensive overview of binoculars and telescopes. It includes detailed up-to-date information on sources, selection and use of virtually every major type, brand, and model on today’s market, a truly invaluable treasure-trove of information and helpful advice for all amateur astronomers. Originally written in 2006, much of the first edition is inevitably now out of date, as equipment advances and manufacturers come

and go. This second edition not only updates all the existing sections of “A Buyer’s and User’s Guide to Astronomical Telescopes and Binoculars” but adds two new ones: Astro-imaging and Professional-Amateur collaboration. Thanks to the rapid and amazing developments that have been made in digital cameras – not those specialist cool-chip astronomical cameras, not even DSLRs, but regular general-purpose vacation cameras – it is easily possible to image all sorts of astronomical objects and fields. Technical developments, including the Internet, have also made it possible for amateur astronomers to make a real contribution to

science by working with professionals. Selecting the right device for a variety of purposes can be an overwhelming task in a market crowded with observing options, but this comprehensive guide clarifies the process. Anyone planning to purchase binoculars or telescopes for astronomy – whether as a first instrument or as an upgrade to the next level – will find this book a treasure-trove of information and advice. It also supplies the reader with many useful hints and tips on using astronomical telescopes or binoculars to get the best possible results from your purchase.

Eyes on the Skies  
Springer Science & Business Media

The quantity of numbered minor planets has now well exceeded a quarter million. The new sixth edition of the Dictionary of Minor Planet Names, which is the IAU's official reference work for the field, now covers more than 17,000 named minor planets. In addition to being of practical value for identification purposes, the Dictionary of Minor Planet Names provides authoritative information on the basis of the rich and colorful variety of ingenious names, from heavenly goddesses to artists, from scientists to Nobel laureates, from historical or political figures to ordinary women and men, from mountains to buildings, as well as a variety of compound



terms and curiosities. This sixth edition of the Dictionary of Minor Planet Names has grown by more than 7,000 entries compared to the fifth edition and by more than 2,000 compared to the fifth edition, including its two addenda published in 2006 and 2009. In addition, there are many corrections, revisions and updates to the entries published in earlier editions. This work is an abundant source of information for anyone interested in minor planets and who enjoys reading about the people and things minor planets commemorate. Care of Astronomical Telescopes and Accessories Springer StarGuides Plus represents the most

comprehensive and accurately validated collection of practical data on organizations involved in astronomy, related space sciences and other related fields. This invaluable reference source (and its companion volume, StarBriefs Plus) should be on the reference shelf of every library, organization or individual with any interest in these areas. The coverage includes relevant universities, scientific committees, institutions, associations, societies, agencies, companies, bibliographic services, data centers, museums, dealers, distributors, funding organizations, journals, manufacturers, meteorological services, national norms & standard institutes, parent

associations & societies, publishers, software producers & distributors, and so on. Besides astronomy and associated space sciences, related fields such as aeronautics, aeronomy, astronautics, atmospheric sciences, chemistry, communications, computer sciences, data processing, education, electronics, engineering, energetics, environment, geodesy, geophysics, information handling, management, mathematics, meteorology, optics, physics, remote sensing, and so on, are also covered where appropriate. After some thirty years in continuous compilation, verification and

updating, StarGuides Plus currently gathers together some 6,000 entries from 100 countries. The information is presented in a clear, uncluttered manner for direct and easy use.

### **More Small Astronomical Observatories**

Springer Science & Business Media  
Long used in undergraduate and introductory graduate courses, *Astrophysical Techniques*, Sixth Edition provides a comprehensive account of the instruments, detectors, and techniques employed in astronomy and astrophysics. Emphasizing the underlying unity of all astronomical observations, this popular text provides a coherent state-of-the-

art account of the instruments and techniques used in current astronomy and astrophysics. As in earlier editions, the author aims to reduce the trend towards fragmentation of astronomical studies. The underlying unity of all of astronomical observation is emphasized by the layout of the book: the pattern of detection → imaging → ancillary techniques has been adopted so that one stage of an observation is encountered together with the similar stages required for all other information carriers. The book is written in a very accessible manner, and most of the mathematics is accessible to those who have attended a mathematics course in

their final years at school. Nevertheless, the treatment of the topics in general is at a sufficiently high level to be of use to those professionals seeking technical information in areas of astronomy with which they might not be completely familiar.

Highlights of

Astronomy: Volume 14

Springer Science &

Business Media

With its clear skies and

low humidity, the

southwestern United

States is an

astronomer's paradise

where observatories

like Kitt Peak have

redefined the art of

skywatching. The

region is unique in its

loose federation of like-

minded research

outposts and in the

quantity and diversity

of its

observatories—places

captured in this unique guidebook. Douglas Isbell and Stephen Strom, both intimately involved in southwestern astronomy, have written a practical guide to the major observatories of the region for those eager to learn what modern telescopes are doing, to understand the role each of these often quirky places has played in advancing our understanding of the cosmos, and hopefully to visit and see the tools of the astronomer up close. For each observatory, the authors describe its history, highlights of its contributions to astronomy—with an emphasis on recent results—and information for visitors. Also included are wide-ranging interviews with

astronomers closely associated with each site. Observatories covered range from McDonald in Texas to Palomar in California, with significant outposts in between: Arizona's Kitt Peak National Observatory southwest of Tucson, the Lowell Observatory in Flagstaff, and the Whipple Observatory outside Amado; and New Mexico's Very Large Array near Socorro and Sacramento Peak close to Sunspot. In addition to describing these established institutions, they also take a look ahead to the most powerful ground-based telescope in the world just beginning to operate at full power on Mount Graham in Safford, Arizona. With more than three dozen

illustrations, Observatories of the Southwest is accessible to amateur astronomers, tourists, students, and teachers—anyone fascinated with the contributions that astronomy has made to deepening our understanding of humanity's place in the universe, whether exploring the solar system from Lowell Observatory or studying the birth of stars using the army of giant radio telescopes at the Very Large Array. This book aims to inspire visits to these sites by illuminating the major scientific questions being pursued every clear night beneath the dark skies of the Southwest and the amazing machinery that makes these

pursuits possible. *Astronomy Adventures and Vacations* John Wiley & Sons  
This Encyclopedia traces the history of the oldest science from the ancient world to the space age in over 300 entries by leading experts.

**Handbook of Practical Astronomy**  
Taylor & Francis  
Astronomy is by nature an interdisciplinary activity: it involves mathematics, physics, chemistry and biology. Astronomers use (and often develop) the latest technology, the fastest computers and the most refined software. In this book twenty-two leading scientists from nine countries talk about how astronomy interacts with these other sciences. They describe modern

instruments used in astronomy and the relations between astronomy and technology, industry, politics and philosophy. They also discuss what it means to be an astronomer, the history of astronomy, and the place of astronomy in society today.

*Astronomy at the Frontiers of Science*

Firefly Books

Discussing the principles of physical and geometrical optics from an engineering point of view, this book explains current optical technology and the applications of optical methods in a wide variety of fields, from astronomy and agriculture to medicine and semiconductors. It offers guidance in the selection of optical components for the construction of bread-

board models using commercially available, standard components, and provides immediately useful equations without unnecessary mathematical derivations.

**Optical Principles and Technology for Engineers** Springer

Science & Business

Media

Contains 250 questions and answers about astronomy, particular for the amateur astronomer.

[The Greenwich Guide to Astronomy in Action](#)

Springer Science &

Business Media

Science and technology have starring roles in a wide range of genres-- science fiction, fantasy, thriller, mystery, and more. Unfortunately, many depictions of technical subjects in

literature, film, and television are pure fiction. A basic understanding of biology, physics, engineering, and medicine will help you create more realistic stories that satisfy discerning readers. This book brings together scientists, physicians, engineers, and other experts to help you:

- Understand the basic principles of science, technology, and medicine that are frequently featured in fiction.
- Avoid common pitfalls and misconceptions to ensure technical accuracy.
- Write realistic and compelling scientific elements that will captivate readers.
- Brainstorm and develop new science- and technology-based story ideas. Whether

writing about mutant monsters, rogue viruses, giant spaceships, or even murders and espionage, Putting the Science in Fiction will have something to help every writer craft better fiction. Putting the Science in Fiction collects articles from "Science in Sci-fi, Fact in Fantasy," Dan Koboldt's popular blog series for authors and fans of speculative fiction ([dankoboldt.com/science-in-scifi](http://dankoboldt.com/science-in-scifi)). Each article discusses an element of sci-fi or fantasy with an expert in that field. Scientists, engineers, medical professionals, and others share their insights in order to debunk the myths, correct the misconceptions, and offer advice on getting the details right.

CAP2007 Conference  
Proceedings Springer  
Science & Business  
Media

This is a complete introduction for anyone who has wanted to be an astronomer, or wondered what an astronomer does. The reader is introduced to the working lives of amateur and professional astronomers, and to both simplistic early equipment and highly sophisticated modern astronomical devices. Major discoveries and some of man's exploits in space are described. Fully illustrated with color photographs, the book documents how observations with the powerful successors to Galileo's simple telescope of 1609 are used in combination with the startling revelations of the X-

ray, infra-red and ultra-violet Universe to advance our understanding of our environment. The continual struggle to improve observing conditions is also explored, from new observatories placed high in remote mountain areas to the efforts to send instruments into space and man's dream of travelling among the planets himself.

**The Future of Small  
Telescopes in the  
New Millennium** CRC  
Press

This title details the essential roles that small telescopes should play in 21st century science and how their future productivity can be maximized. Over 70 experts from all corners of the international



astronomical community have created a reference on the future of big science with small telescopes. at national facilities and their omission from national science priority studies, the oft-lamented demise of the small telescope has been greatly exaggerated. In fact, the future of these workhorses of astronomy will be brighter than ever if creative steps are taken now. This three-volume set defines essential roles that small telescopes should play in 21st century science and the ways in which a productive future for them can be realized. A wide cross-section of the astronomical community has contributed to a

definitive assessment of the present and a vision for the future. radio- and space-based facilities face problems in scientific prioritization and funding. It highlights how current small facilities are evolving to meet the scientific priorities and economical realities of the 21st century through standardization of instrumentation, use of off-the-shelf technology, specialization, optical improvements, new modes of scheduling, automation, and internet access.

The Last Stargazers  
Hamlyn

This is the third edition of Phil Harrington's popular and comprehensive guide to astronomical equipment, written for

both new astronomers as well as experienced amateurs. It includes numerous tips and tricks from other experienced astronomers. In this revised and updated edition of *Star Ware*, the essential guide to buying astronomical equipment, award-winning astronomy writer Philip Harrington does the work for you, analyzing and exploring today's astronomy market and offering point-by-point comparisons of everything you need. Whether you're an experienced amateur astronomer or just getting st.

[An Introduction to Astronomical Photometry Using CCDs](#) Springer Scientific

*Astronomical Photometry* is intended for those

amateur astronomers who are looking for new challenges, once they have mastered visual observing and the basic imaging of various astronomical objects. It will also be a useful reference for scientifically inclined observers who want to learn the fundamentals of astrophotography with a firm emphasis on the discipline of scientific imaging. This book is not about making beautiful astronomical images; it is about recording astronomical images that are scientifically rigorous and from which accurate data can be extracted. This book is unique in that it gives readers the skills necessary for obtaining excellent images for scientific purposes in a concise and procedurally oriented

manner. This not only gets the reader used to a disciplined approach to imaging to maximize quality, but also to maximize the success (and minimize the frustration!) inherent in the pursuit of astrophotography. The knowledge and skills imparted to the reader of this handbook also provide an excellent basis for "beautiful picture" astrophotography! There is a wealth of information in this book - a distillation of ideas and data presented by a diverse set of sources and based on the most recent techniques, equipment, and data available to the amateur astronomer. There are also numerous practical exercises. Scientific Astrophotography is

perfect for any amateur astronomer who wants to go beyond just astrophotography and actually contribute to the science of astronomy. *The Texas Book Two* Routledge Long used in undergraduate and introductory graduate courses, *Astrophysical Techniques, Seventh Edition* provides an accessible yet comprehensive account of the innovate instruments, detectors, and techniques employed in astronomy and astrophysics. Emphasizing the underlying unity of all astronomical observations, this popular textbook provides a coherent state-of-the-art account of the

instruments and techniques used in current astronomy and astrophysics. Fully updated throughout, this seventh edition builds upon the sixth edition, covering improved techniques and cutting-edge methods in the field, as well as other exciting new developments in gravitational waves, dark matter and energy, the use of photonics, and astronomy education and outreach, in addition to further detailed discussions on the latest scientific instruments and individual detectors. The book is written in a very accessible manner, and most of the mathematics is accessible to those who have attended a mathematics course in their final years at

school. Nevertheless, the treatment of the topics in general is at a sufficiently high level to be of use to those professionals seeking technical information in areas of astronomy with which they might not be completely familiar. Key Features:  
 Details the instrumentation and theory of astronomical observations, including radio waves, gamma rays, cosmic rays, neutrinos, gravitational waves and dark matter and energy and more  
 Presents the background theory and operating practice of state-of-the-art detectors and instruments Fully updated to contain the latest technology and research developments  
**Robotic telescopes**  
 Cambridge University Press

Recording the proceedings of the IAU XXVI General Assembly, this volume of the IAU Highlights of Astronomy covers virtually all aspects of modern astrophysics as discussed by 2400 participants from 73 countries. Notably, the common aspects of astrophysical phenomena known to exist in widely differing interstellar environments is thoroughly examined, providing fertile cross correlation from one specialisation to another. This text highlights the importance of the triennial IAU General Assemblies in bringing together the work of observers and theoreticians in widely different fields, but working towards a common goal:

understanding the physics of the Universe. Together with the Proceedings of the IAU Symposia 235-240, this volume examines all of the astrophysics presented at the General Assembly.

**Remote  
Observatories for  
Amateur  
Astronomers**

University of Texas  
Press

This entertaining text details the methods and techniques employed by non-professional astronomers from all over the world, providing a wonderful resource for anyone wishing to build a small observatory of almost any kind. Its a fun read, too. Almost every amateur astronomer dreams of having a fixed observatory - this

provides ideas and constructional details. Ideas from around the world. Written for a broad audience, including non-astronomers.

*A Buyer's and User's Guide to Astronomical Telescopes & Binoculars* CRC Press  
This three-volume set

details the essential roles that small telescopes should play in 21st century science and how their future productivity can be maximized. Over 70 international experts have created a definitive reference on the present and future of "big science with small telescopes".