
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
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BUILDING A BACKYARD OBSERVATORY

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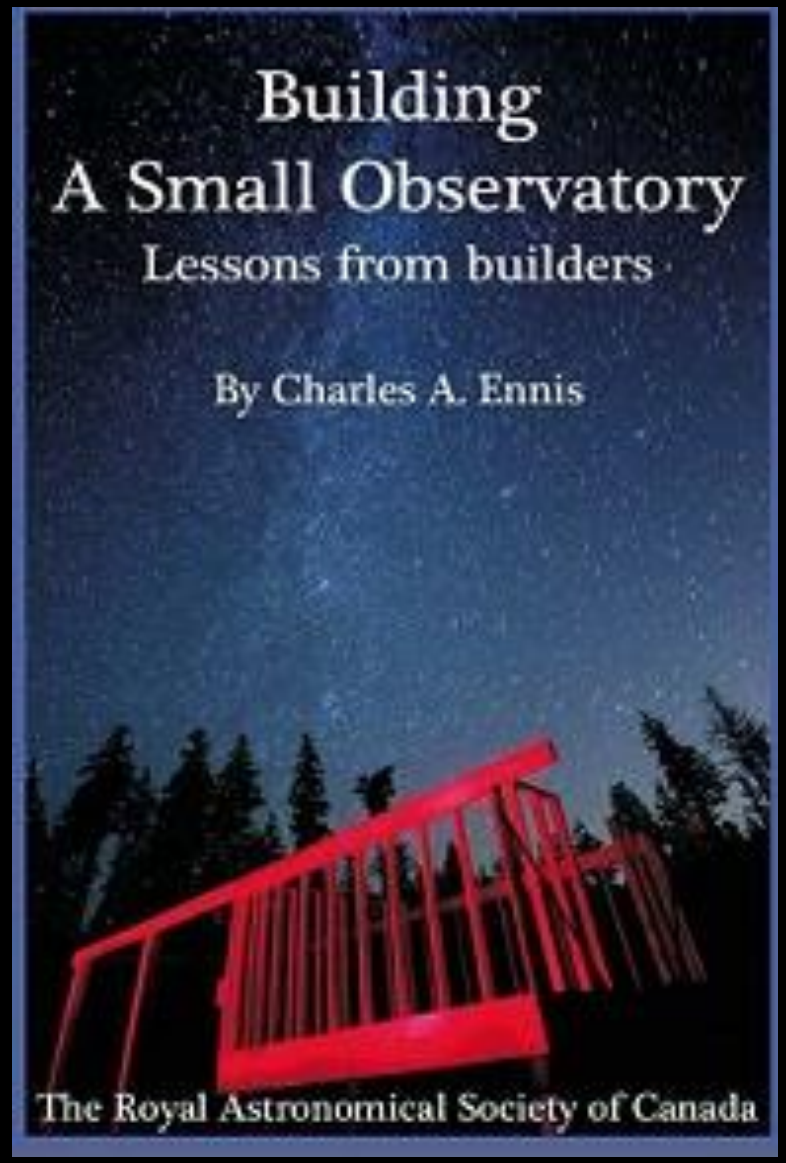
AAVSO:TGR

RASC PUBLICATION

This book is the result of interviews with 140 small observatory owners in 10 countries to discover what it takes to fund, build, and operate a small observatory. As a planning guide, it will help you maximize your chances of successfully creating a trouble-free installation, and help find the best site and equipment. Learn from the experience of those who went before you. Don't make the mistakes that others have made!

Your price: $17.95



WHY AN OBSERVATORY?

- 5 minutes to open/close means you **will** observe more
- Setup and teardown hard on equipment
- Permanent power/network setup
- GOTO Alignments and Polar Alignment simplified
- Place to store equipment and accessories

COVER

- Simple cover to protect the telescope when not in use
- Super-fast setup
- Not weather proof
- No wind protection
- No critter protection
- Note Walmart biffy tent use ☺

FIXED SHED

- There's a lot to be said for storing astrogear in a shed so it can be pulled out at a moments notice
- Simple and cheap plastic sheds
- Pros: Quick setup, shed can provide wind shelter and house computer and other equipment
- Cons: Still have to wheel out and assemble equipment, harder to critter proof and weather proof

ROLL OFF SHED

- Rather than the roof rolling off, the whole structure does
- Pros: Whole sky access, light and easy to roll off, shed provides cover for observer
- Cons: No wind protection, ground rails can get fouled, snow can be a big issue

FOLD OFF VARIANT

- In this variant the shed lifts off and hinges back
- No issues with snow/ice in tracks
- Easily secured and critter-proofed

Pierre Lamay Montreal

ROLL-OFF / RUN-OFF ROOFS

- Shed with some portion of the roof that slides back to expose a telescope
- Pro: full sky exposure, cheap to build, not complex, lots of room
- Con: no wind protection, larger footprint (obs size x 2),more maintenance reqd, critter proofing harder
- Worst case it's a garden shed for your lawn mower

FOLDING ROOF

- Similar to ROR but roof doesn't slide off but opens
- Lots of possible variations
- Counterweighting important
- Pros and cons the same as ROR

Peter T. (New England)

FOLDING WALLS

- Dobs and split ring scopes introduce special issues!
- In this observatory the front wall folds down completely and the side walls 50%
- Can be used for various configurations

DOMES

- Traditional rotating dome with a slit for telescope to view out of
- Pros: Cover from wind, less stray light, smaller footprint
- Cons: Expensive to buy, hard to build, no full sky access, cramped

ROTATING ROOFS

- Easier to build than domes
- Same pros and cons

BUILT-IN DOMES/RORS

- Observatory built into roof of building
- Very convenient
- Hard to make a pier
- Access tends to use up a lot of space on the floor below
- Heat rising from the building is an issue
- Vibration from other occupants can be an issue

Jrcrilly (Akron OH)

BUILDING SPAO

BUILDING SPAO

- Been an ambition since I was a kid
- Designed to house 16” Horseshoe mounted telescope (that never ended up being finished)
- Built in 2002 from Revy build it yourself shed kit
- Cost about $1,200
- Very good N NE E SE S SW exposure
- Yes that tree is gone ☺

BUILDING SPAO

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DECLINE AND RESURRECTION

- In 2012 after very little use I decided to mothball the shed until the kids were older
- Began resurrecting the shed in 2019
- After evicting a lot of squirrels and a prodigious pine cone collection, needed:
  - New stain
  - Replacement of some wood that had been exposed and rotted
  - Relevel rails
  - New pier plate for new EQ-G mount
  - Used C8

Sad-oservatory

SPAO TODAY

- Exterior refreshed so attractive addition to our yard
- Telescope mounted on new mount with very robust pier plate
- Automation use Kstars/Ekos/RPI based INDI system’
- Wireless network from the house (needed extender)
- Operations centre in the house

WORKFLOW

- Unlock
- Power up the pier (and all equipment)
- Drop gable
- Roll off roof
- Check everything up and running
- Head into the house and run sequences in EKOS
- Roll on roof
- Lift gable
- Lock up

Local screen and keyboard to Pi during testing

FUTURE PLANS

- More robust networking (1 Gb)
- Flip off covers on rails
- Replace heavy, hot roof with reflective steel to reduce heat and weight
- Interior finishing
- Add weather detectors (building a MeteoStation)
- Automate roof roll-off – gate opener

COMMON MISTAKES

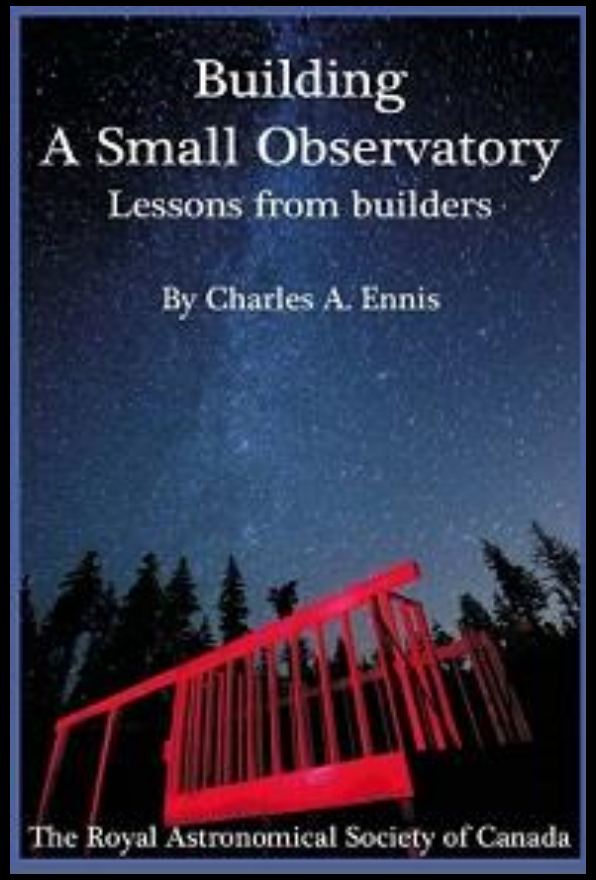
- Make it big enough to comfortably move around
- Isolate pier from pad!!
- Consider winter operation
- Be aware of present and future issues with location
- Use materials that cool quickly – bricks/stone/asphalt poor choices
- Expect cost over-runs
- Make sure you double check zoning laws, code, and property lines and get permits – 108 sq ft not required
- Ensure you have enough power to the observatory
- Make security a primary design criteria
- Critter proof from day 1
- Plan for the future – that 5" SCT might be a 24" RCT one day!

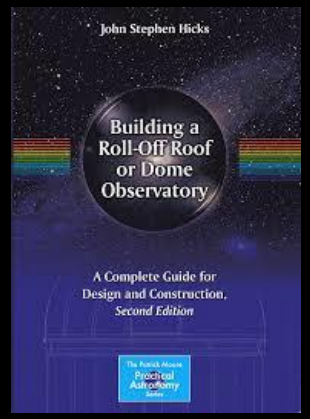
Observa-fail – where do you stand?

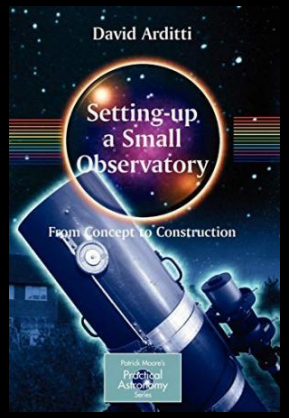
COMMERCIAL OPTIONS

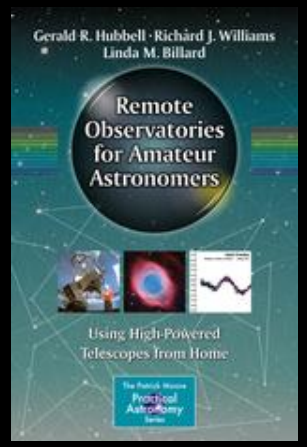
- SkyShed - really nice ROR plans and finished kits, can even build for you as well as Pod observatories
- Technical Innovations – Home Dome, Pro Dome, Robo-Dome
- Backyard Observatories – custom RORs and automation systems
- Astrohaven clamshell domes
- Astrodome (AU)
- Pulsar Observatories

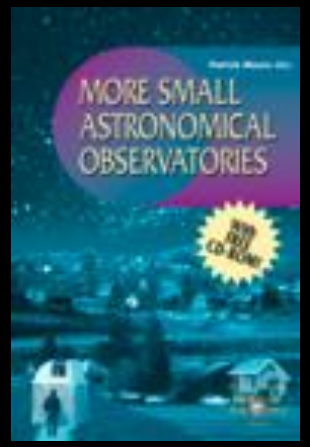
GOOD BOOKS

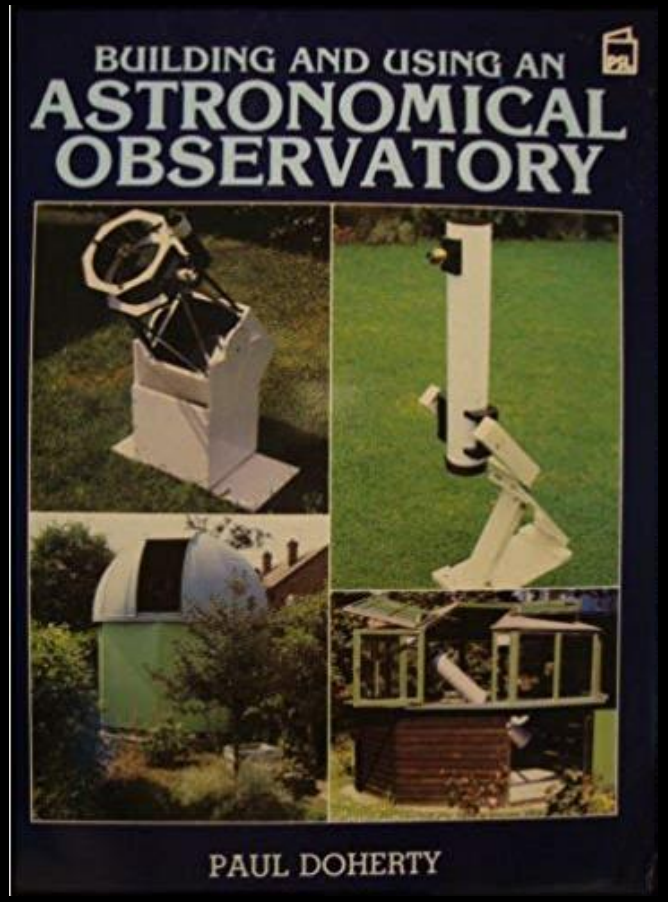

Building
A Small Observatory
Lessons from builders
By Charles A. Ennis
The Royal Astronomical Society of Canada

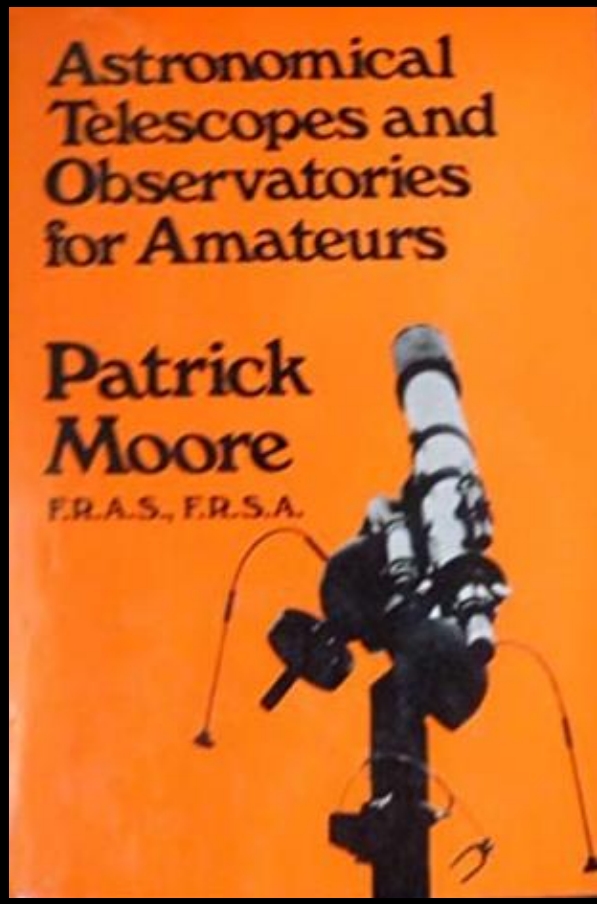

John Stephen Hicks
Building a Roll-Off Roof or Dome Observatory
A Complete Guide for Design and Construction,
Second Edition


David Arditti
Setting-up a Small Observatory
From Concept to Construction


Gerald R. Hubbell · Richard J. Williams
Linda M. Billard
Remote Observatories for Amateur Astronomers
Using High-Powered Telescopes From Home


MORE SMALL ASTRONOMICAL OBSERVATORIES


BUILDING AND USING AN
ASTRONOMICAL
OBSERVATORY
PAUL DOHERTY


Astronomical Telescopes and Observatories for Amateurs
Patrick Moore
F.R.A.S., F.R.S.A.

QUESTIONS?