So you wanna buy a telescope...
- Outline -

- Types of telescopes
- Types of mounts
- Purchasing considerations
- Suggestions for purchasing
WARNING!

- Do not drop shake or throw your telescope as doing so may damage the telescope or people around you.

- Objects in the telescope may be farther away than they appear.

- Eyepieces intended for external use only.

- Make sure no screws are loose before using telescope

*Actual quotes from a telescope instruction manual!* *(courtesy of CUAS member Dave Dickey)*
The lingo...

- Aperture
- Objective (primary, secondary)
- Focal length
- Focal ratio
- Magnification
- Telrad
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Refraacting Telescopes

- Primary objective is a LENS
The Good...and the Bad

Advantages
- Closed tube – virtually maintenance-free
- No collimation or recoating
- Rugged, sturdy design
- No central obstruction

Disadvantages
- Most expensive per inch of aperture
- Price jump after 3”
- Chromatic aberration
- Takes longer to adjust to temperature
- Generally heavier
Reflecting Telescopes

- Primary objective is a MIRROR
# The Good and Bad

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>• Less expensive</td>
<td>• More delicate</td>
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<tr>
<td>• No chromatic aberration</td>
<td>• Mirrors need collimation and recoating</td>
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<tr>
<td>• Bigger aperture doesn't necessarily add weight</td>
<td>• Open tube</td>
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<td></td>
<td>• Central obstruction by secondary mirror</td>
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Types of Reflectors

- Newtonian – most common
- Cassegrain – minimizes length of tube
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Equatorial Mount

- Useful because aligned with sky movement
- Allows for use of equatorial coordinates
- Possibly unnecessary for your type of observing
- Heavy counterweights can be a pain to transport
Dobsonian Mount

- Uses alt–az motion
- Simple and intuitive!
- Too simple?
- Don't want to DIY?
Goto Mount

- Computerized mount that tracks and locates objects from database
- Requires initial calibration
- Typically more expensive
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Purchasing Overview

- Ease of use: GOTO, Dobsonian, Equatorial
- Cost: Reflector, Cassegrain, Refractor
- What do you want to see?
Bigger is better
But, avoid “aperture fever”

- Bigger is not always better
- The larger the aperture, the less you may use it
- Harder to transport = less motivation to use

- The more you use a telescope the more you get for your investment
Beware the Magnification Scam

- Magnification doesn't improve image quality
Beware the Magnification Scam

- Magnification doesn't improve image quality

Resolution improves with aperture size
Accessories

- **Eyepieces**
  - Don't need a million to begin with
  - Don't need excessive magnification

- **Filters**
  - Lots to choose from, but a few are good to consider
  - Moon, skyglow, planets, nebulas, solar
Accessories

- Telrads – convenient, easy-to-use finders
- Clock drives – move telescope with rotation of Earth so no manual correction needed
  - Useful especially for astrophotography
- GOTO drives – find objects for you
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Purchasing Suggestion

- Typical suggested first telescope is the Orion SkyQuest 4-8 inch Dobsonian telescopes
- Cheap: $200-400
- Dobs typically come cheapest for biggest aperture
- Easy to use
Purchasing Suggestion

But at end of day its up to your own personal preference
Too nervous to make the commitment?

- **Start small** – buy a smaller, cheaper telescope and if you enjoy the hobby upgrade to a bigger one

- Still too nervous?
  - **Start with binoculars** – much of amateur astronomy can be done with a simple set
  - **Not a huge cost commitment**

- **Avoid department store telescopes**
AND/OR

Join an astronomy club to get hands-on experience with different kinds of telescopes
Resources

- Orion Telescopes (telescope.com)
- Celestron Telescopes (celestron.com)
- Sky and Telescope (skyandtelescope.com)
- Astronomy Magazine
- Another guide
  - http://www.scopereviews.com/begin.html