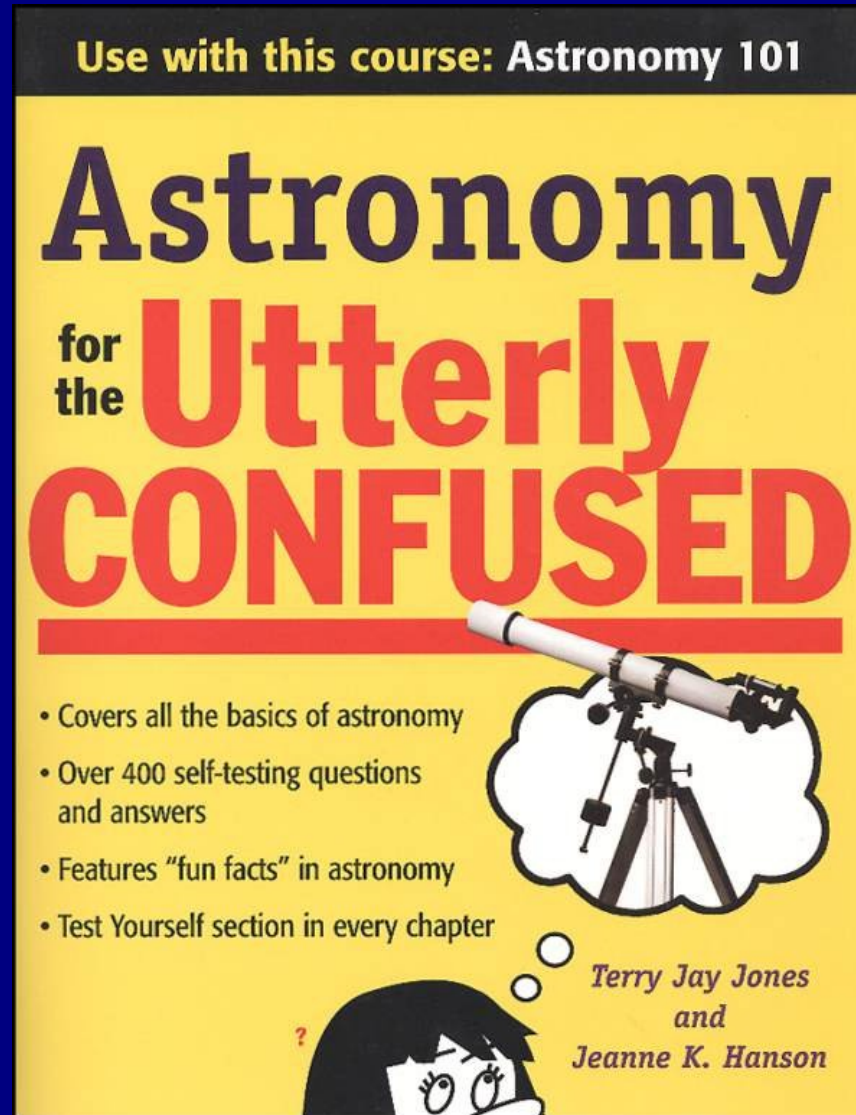


# *So you wanna buy a telescope...*



# - 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





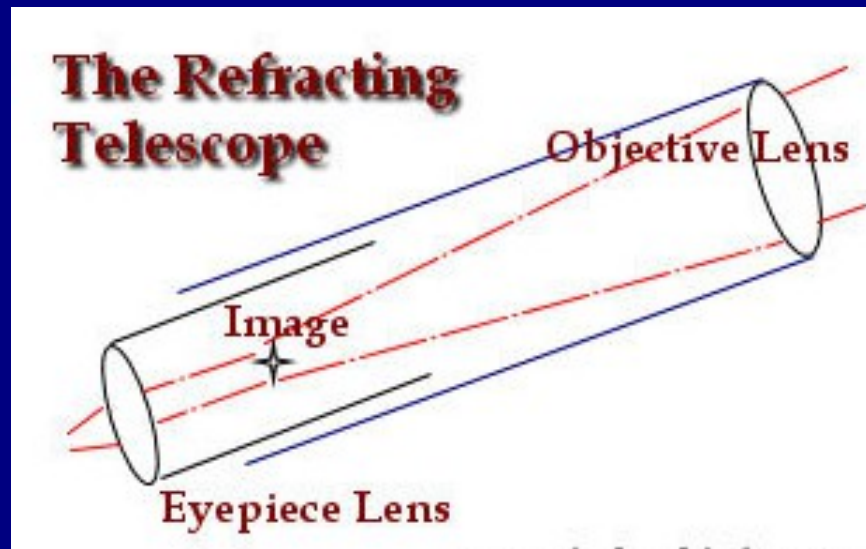
# - Outline -

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# Refracting Telescopes

- Primary objective is a *LENS*



# The Good...and the Bad

## Advantages

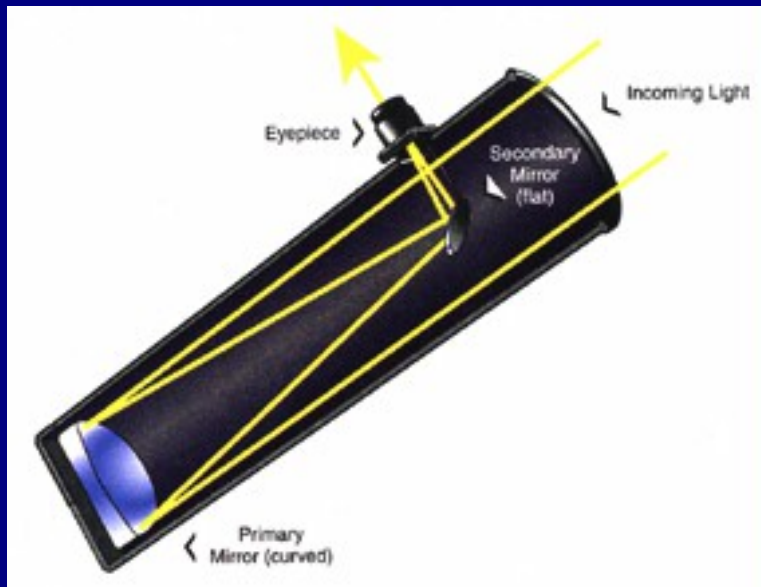
- Closed tube – virtually maintenance-free
- No collimation or recoating
- Rugged, sturdy design
- No central obstruction

## 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

## Advantages

- Less expensive
- No chromatic aberration
- Bigger aperture doesn't necessarily add weight

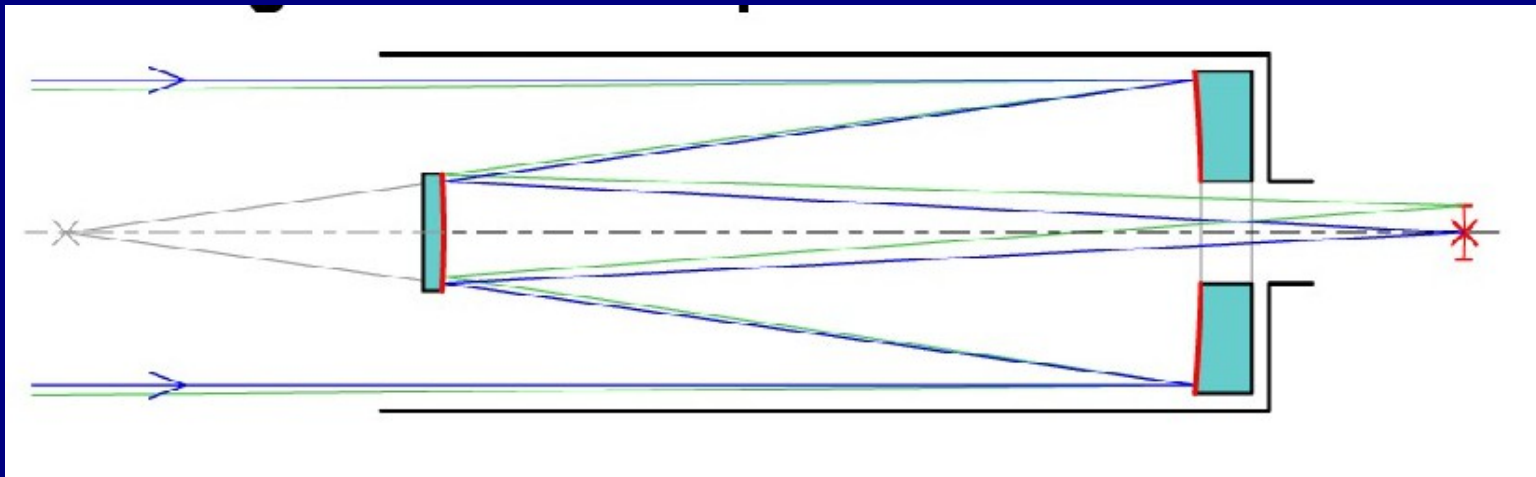
## Disadvantages

- More delicate
- Mirrors need collimation and recoating
- Open tube
- Central obstruction by secondary mirror



# Types of Reflectors

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



# - Outline -

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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





# - Outline -

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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, nebula, 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



# - Outline -

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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
  - <http://www.astronomy.com/observing/equipment-use/2011/10/how-to-buy-your-first-telescope>
- Another guide
  - <http://www.scopereviews.com/begin.html>