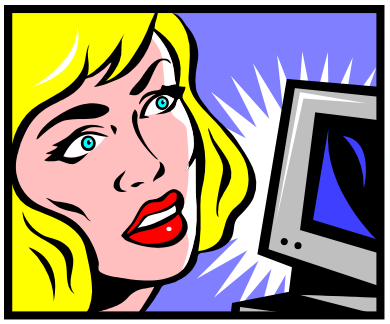
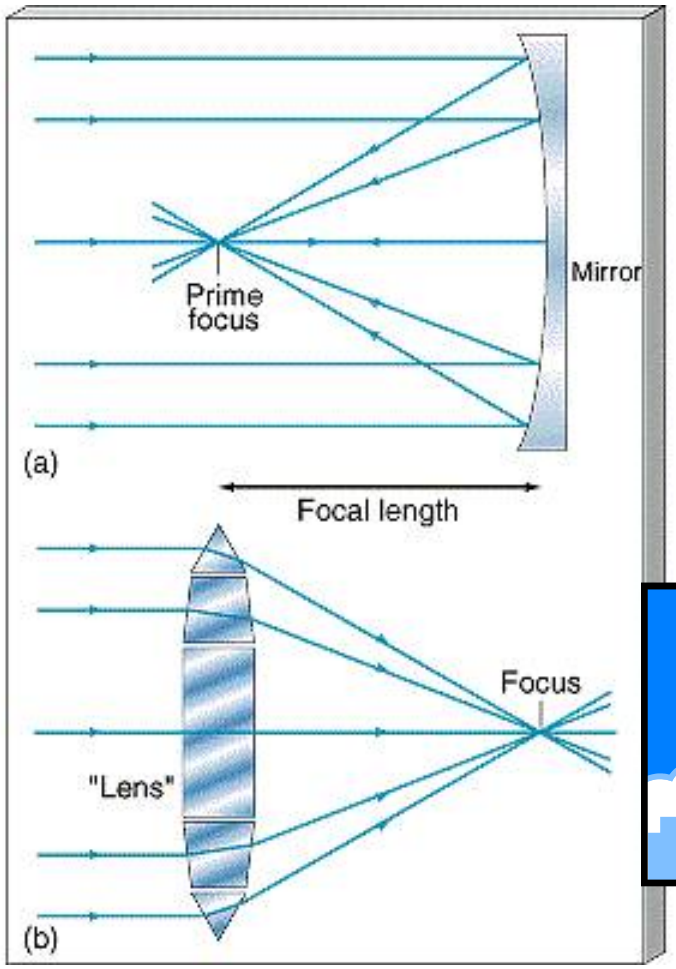
More about telescopes

- What you will be looking through later in the semester
- Progress in astronomy would have been impossible without them

Reflectors and Refractors

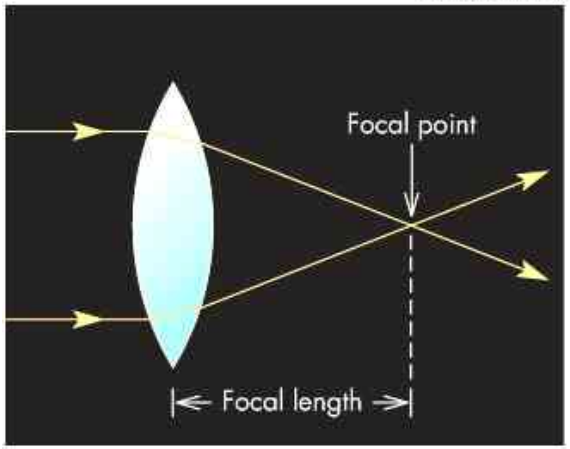




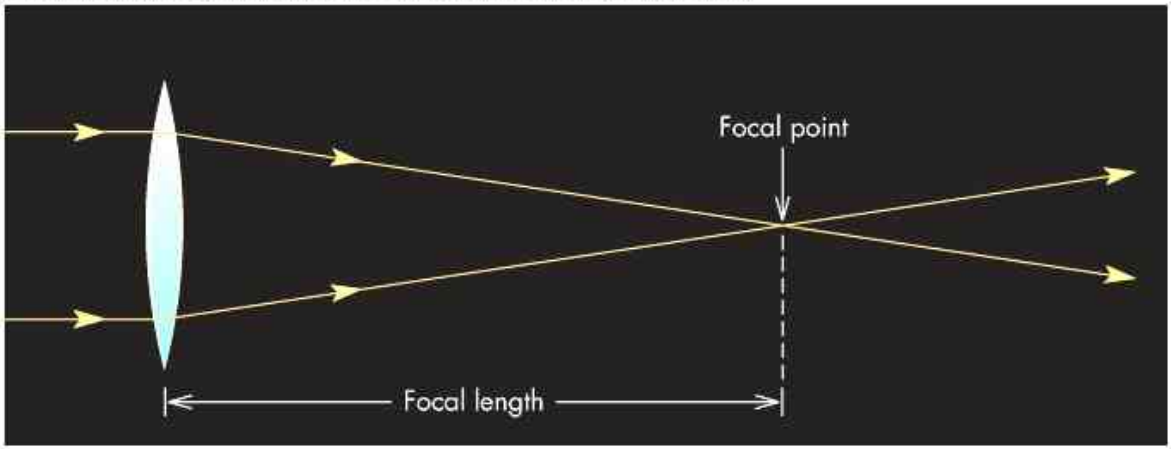
Newtonian

Cassegrain

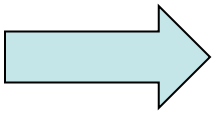
Refractors: more details from the book



Highly curved lens: Short focal length

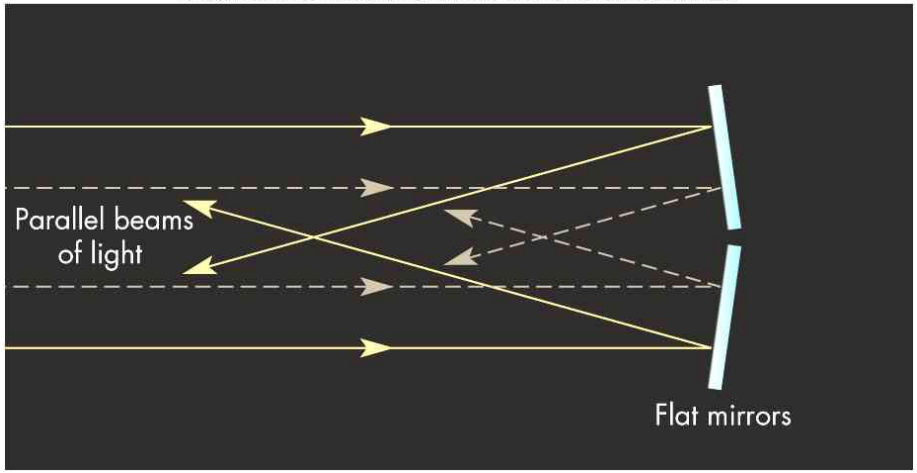


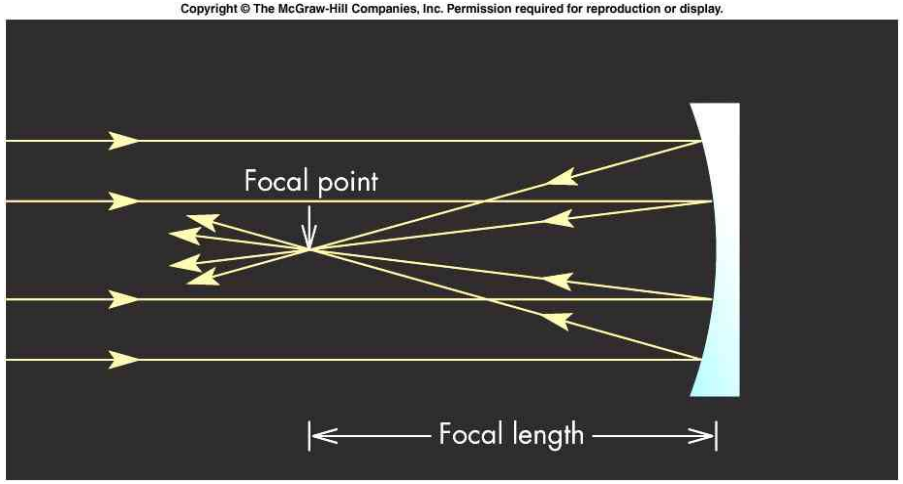
Slightly curved lens: Long focal length

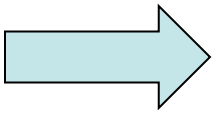


Demo

Reflectors: more details from the book

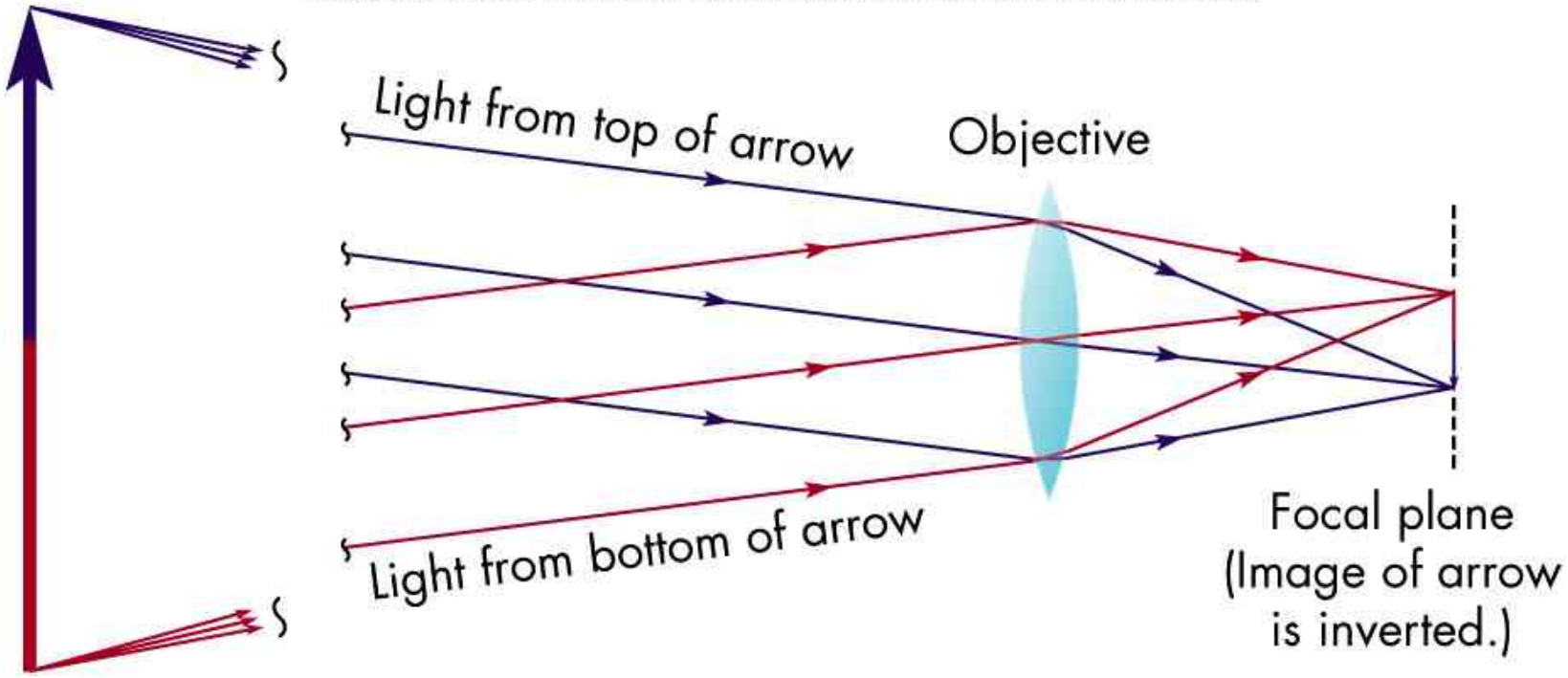




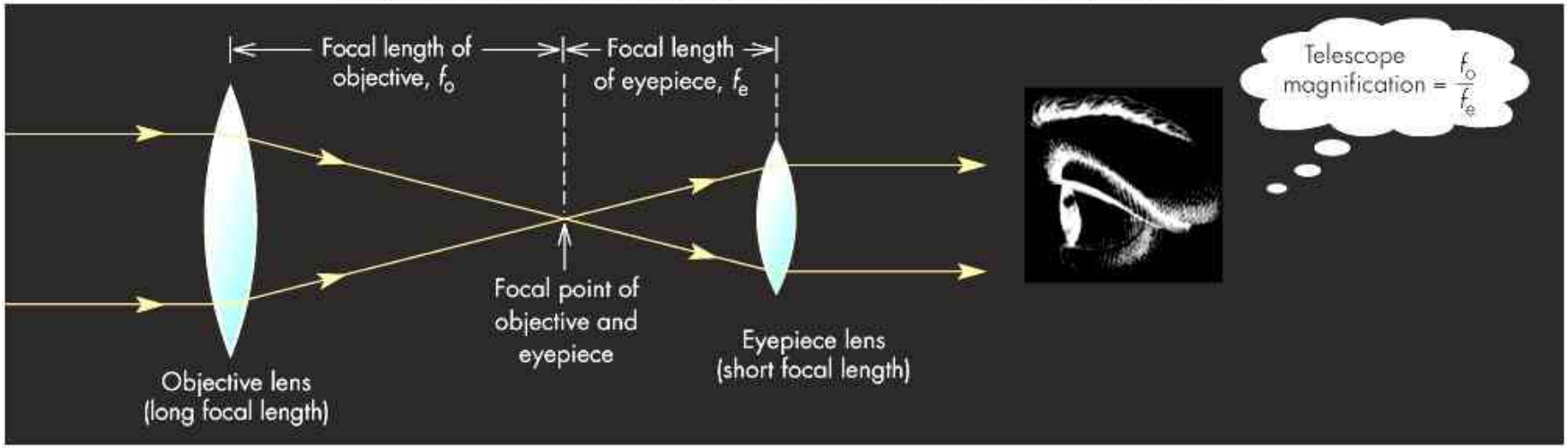


Demo

Formation of an image

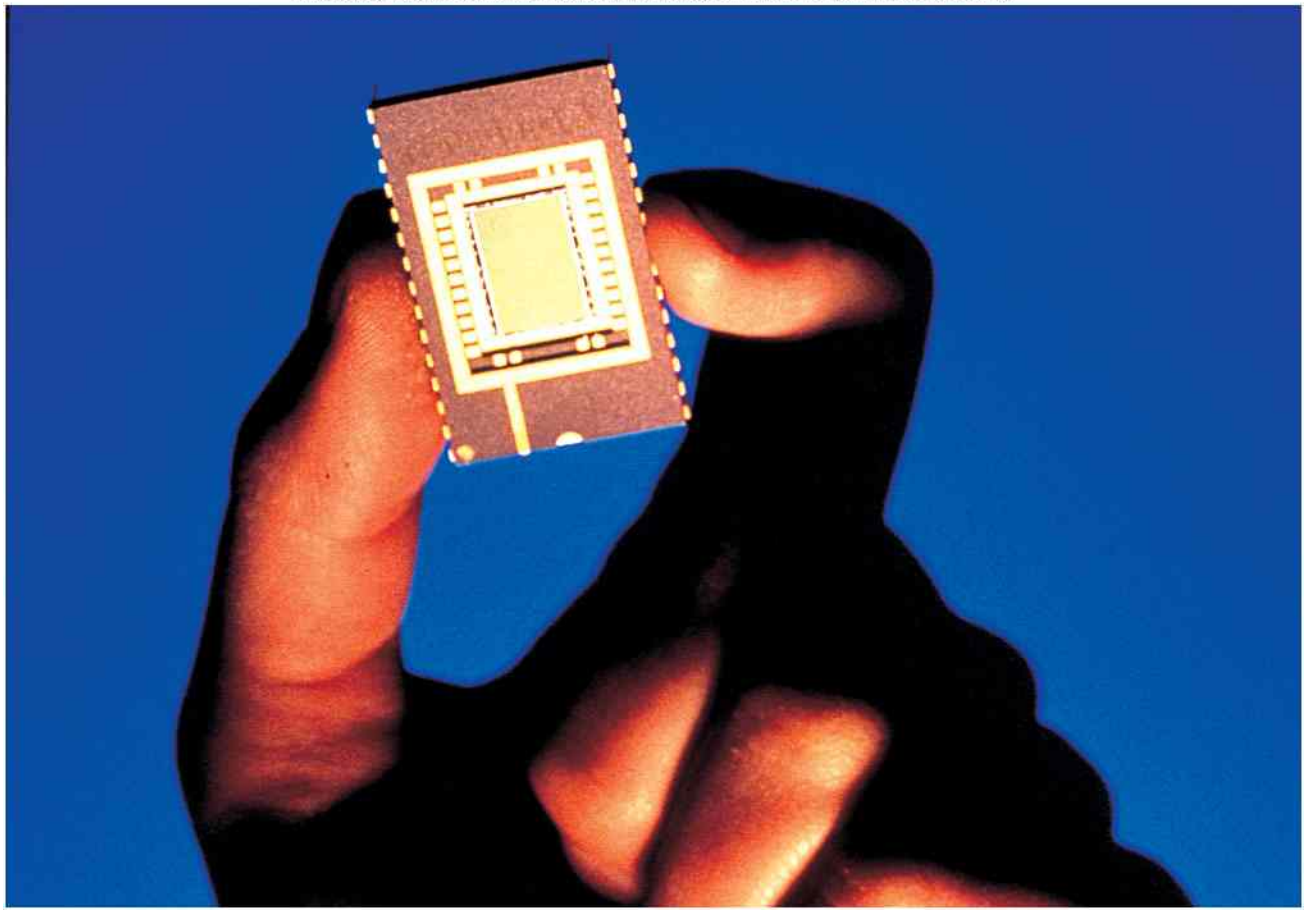


Magnification of a telescope

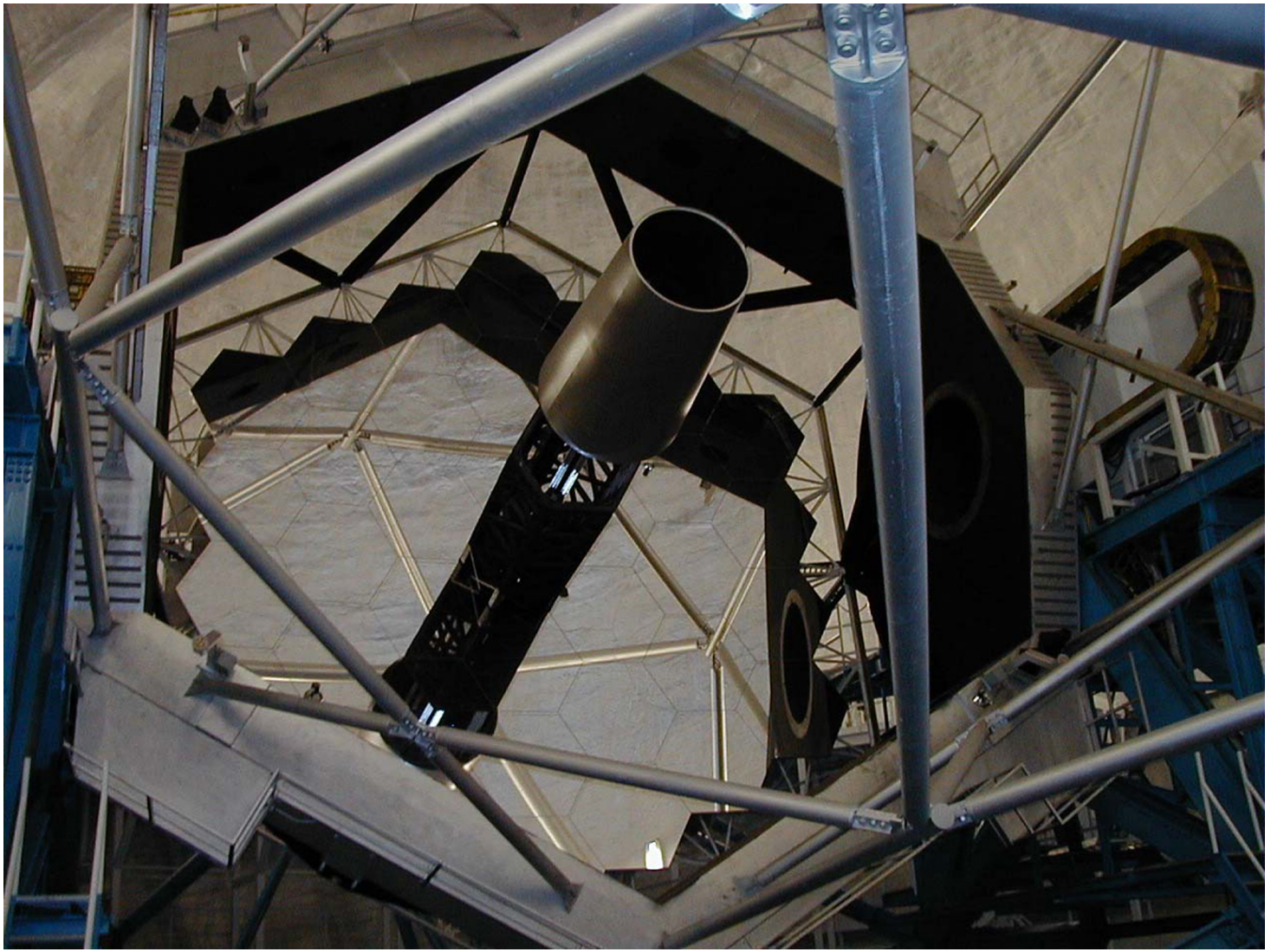


The longer the focal length, the higher the magnification

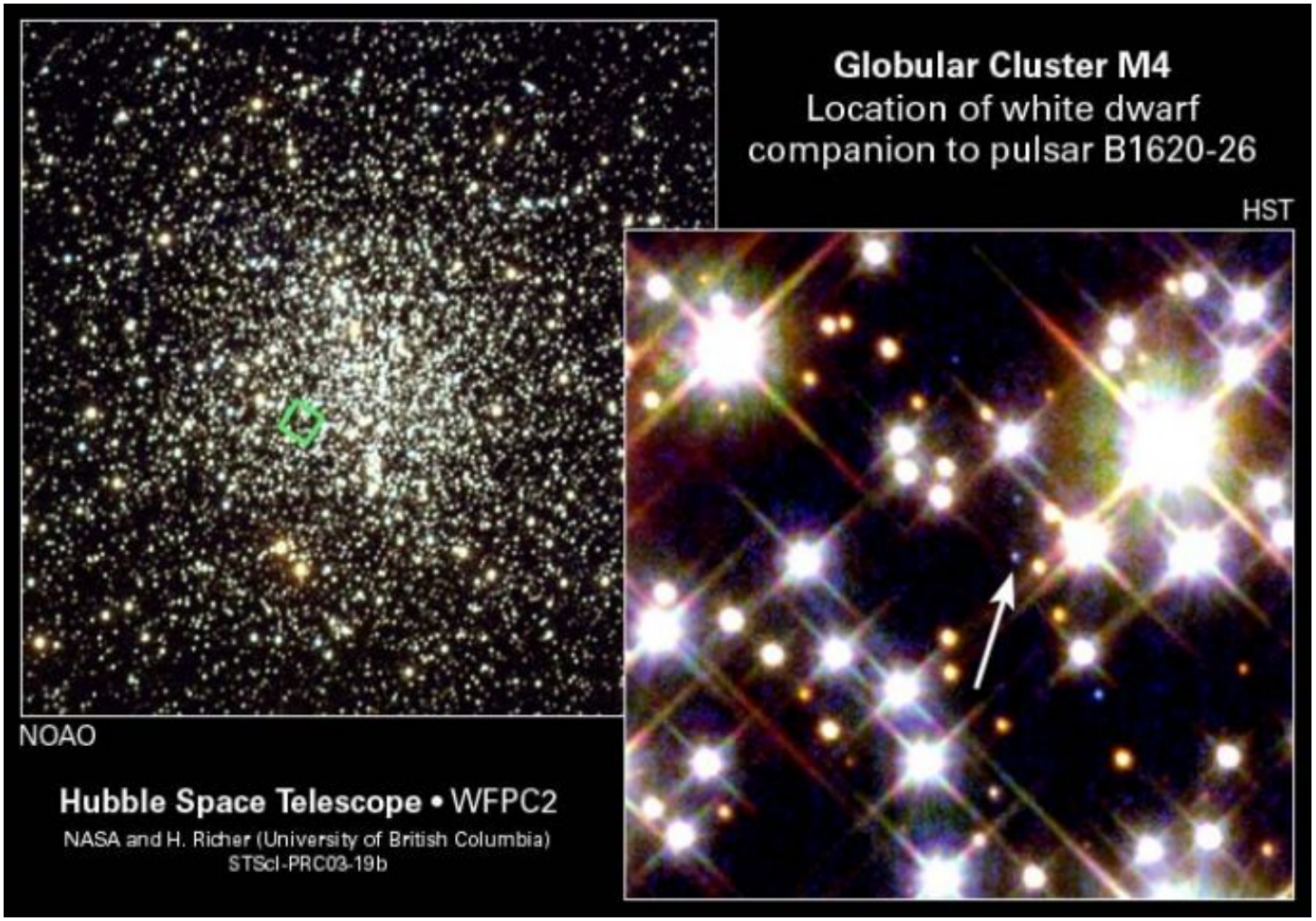
Modern astronomy: instead of an eyepiece, a Charge-Coupled Device (CCD)



Keck Telescopes (Reflectors): 10 meter diameter



Resolution: How small detail can you see with a telescope?



Resolution: smallest angle measurable

Angle=wavelength/diameter(telescope)

(radians)

Radio Telescopes

Wavelength large (1cm – 1 meter typically) so D has to be ***HUGE***

Radio Interferometers:

The ultimate in angular resolution

Final topic: the disappearing night sky: The US by night; where is it dark?