

Webquest: Telescopes

Galileo Era:

1609- 404 years ago. He was the first to see craters on the moon and that planets other than ours can have moons! He rocked the boat; the Catholic Church did not like the idea that the celestial spheres were not perfect (especially the moon).

Early Refractors:

Kepler worked on optics to improve telescopes. Encountered a problem called spherical aberration, which meant that these telescopes needed to be longer than practical.

Great Refractors:

New lenses fixed the spherical aberration problem but glass naturally has imperfections. The first telescopes used with photography, however a huge limit to how big they can be.

Newton's Era:

These telescopes had little aberration and were smaller. They were made with tin mirrors. However there was a problem with blurry images. Also tin does not get very bright and will tarnish easily.

Early Reflectors:

Ended spherical aberration forever! However they were limited by the size of the mirror (hard to make good mirrors big).

Huge Reflectors:

New mirrors were used, bigger and better. Now location mattered, had to deal with light pollution. Could use these with photography and get longer exposure times, meaning you could see fainter objects (those not visible to our eyes).

Radio:

These allowed astronomers to observe all day! Many new objects could be studied, and could study the composition of these objects.

Solar:

See features on the sun. Magnifying is more important than light gathering (not true of any other telescopes)

Multi-Mirrored:

Much easier than one big mirror. Coupled with a CCD device can measure the intensity of the light.

Space:

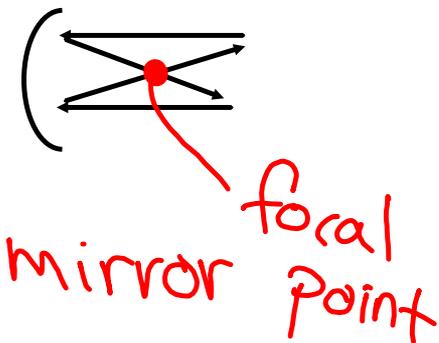
All the problems with the atmosphere (weather and dimming effects) are no longer a problem. Can look at all wavelengths (those that are blocked by the atmosphere, like X-Ray and Gamma ray).

Telescopes

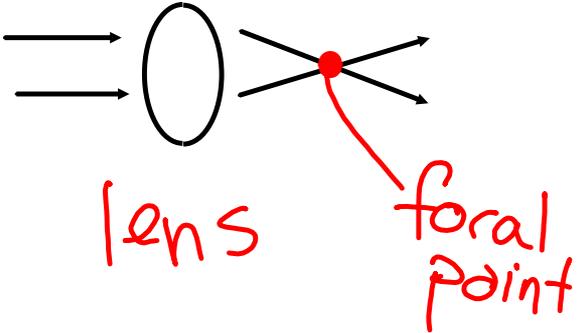
Astronomers are observers- hardly get to experiment

- space is big - things far away
- observe all wavelengths of
- collecting light more important than magnification

Reflecting Telescope



Refracting Telescope
bend light



Light Pollution

lights from
cities etc, that
make the night
sky bright

Seeing

turbulence in
the air from
H₂O vapor,
cause light to
bounce around