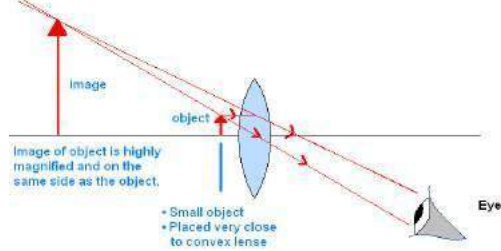


Optical Instruments

Magnifying glass [Simple Microscope]



Convex lens is used as a magnifying glass. Convex lens of shorter focal length gives a greater magnification.

Camera : an instrument which gives a permanent image of the object using a convex lens fitted in a light proof box and photographic film

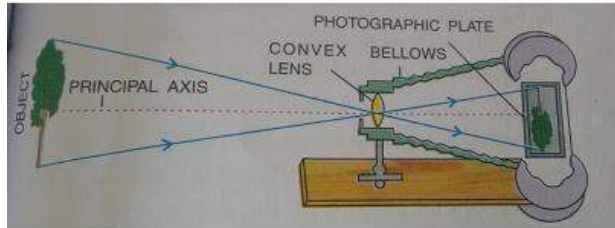
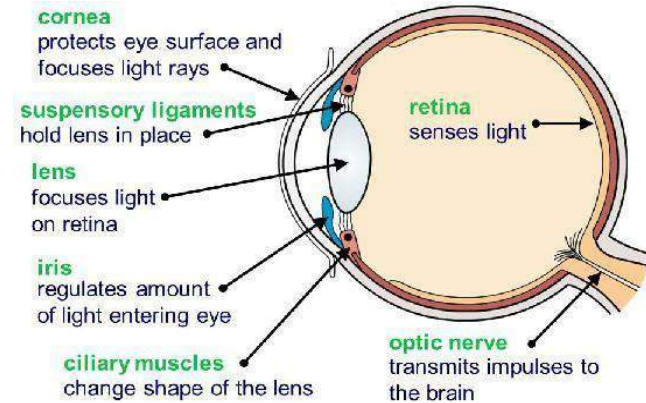


Image formed on the film is real, inverted and diminished.

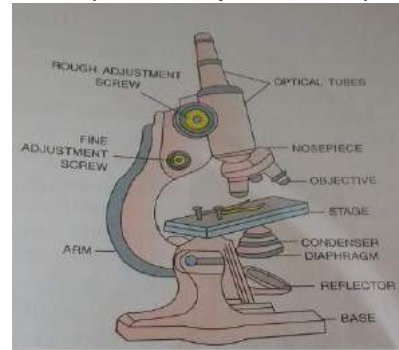
Human Eye – Remarkable Optical Instrument



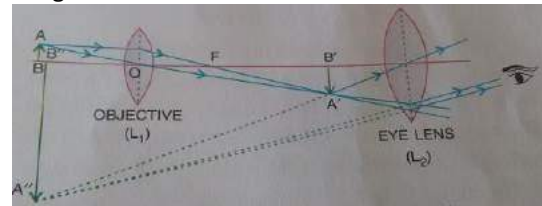
- Sclera – white of the eye
- Cornea – transparent layer
- Choroid – pigmented layer
- Iris – two layers of pigmented smooth muscle
- Pupil – opening in iris
- Lens – focuses image
- Ciliary body – muscles to change lens shape
- Aqueous humor – fluid in the anterior chamber
- Vitreous humor – gelatinous mass in the posterior chamber

Function of an eye and a camera are same. Both forms real, inverted and diminished images. The image formed by an eye is temporary whereas that by camera is permanent

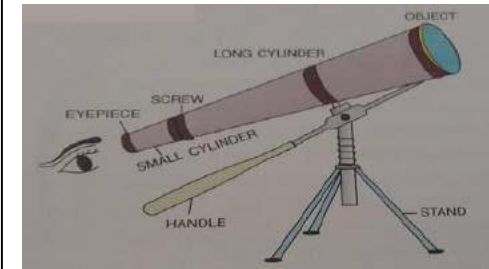
Compound Microscope :for huge magnification to see very minute objects distinctly.



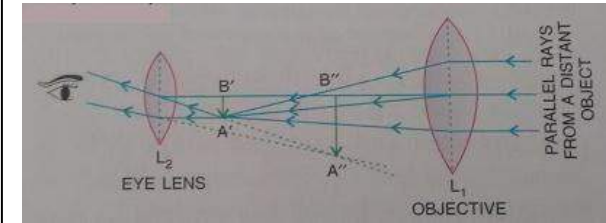
Principle: when an object is placed between F and $2F$ of a convex lens, a real, inverted and enlarged image is formed. If this image falls within the focal length of another convex lens, an enlarged, erect and virtual image of it is obtained



Telescope: - forms the image of very far off objects nearer the eye



Principle : If a real, inverted and highly diminished image of a distant object formed by a convex lens falls within the focal length of another convex lens, an enlarged, erect and virtual image of this image is formed.



Power of Accommodation:

The ability of eye lens to change the power of lens to accommodate the near and the far off distances by changing the curvature of lens, thereby changing its focal length.

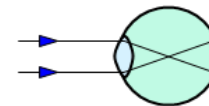
25cm – least distance of distinct vision

Defects of vision :

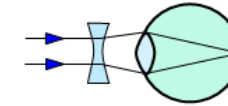
Sometimes the curvature of the lens cannot be adjusted as required for the formation of sharp images. This is called defect of vision.

1. Myopia or short-sightedness

Short sighted eye

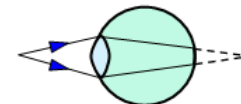


Correction with a concave lens



2. Hypermetropia or long-sightedness

Long sighted eye



Correction with a convex lens

