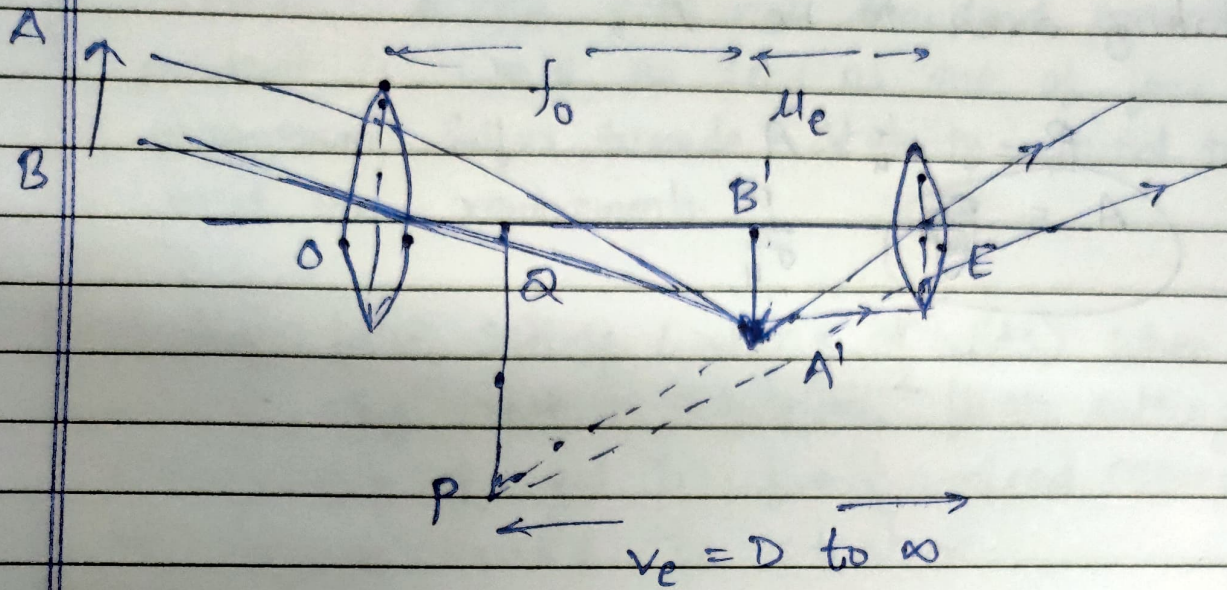


Astronomical Telescope



- used to see heavenly bodies
- $f_{\text{objective}} > f_{\text{eyepiece}}$ and $d_{\text{objective}} > d_{\text{eyepiece}}$
- Intermediate image is real, inverted and small.
- final image is virtual, inverted and small.
- Magnification : $M_D = -\frac{f_o}{f_e} \left(1 + \frac{f_e}{D}\right)$

$$\text{and } M_{\infty} = -\frac{f_o}{f_e}$$

- length : $L_D = f_o + u_e = f_o + \frac{f_e D}{f_e + D}$

$$\text{and } L_{\infty} = f_o + f_e$$

Simple microscope

- Single Convex lens of lesser focal length
- also called magnifying glass or reading lens

$$m_D = \left(1 + \frac{D}{f}\right)_{\max}$$

$$m_\infty = \left(\frac{D}{f}\right)_{\min}$$

- If lens kept at distance 'a' from eye,

$$m_D = 1 + \frac{D-a}{f}$$

$$m_\infty = \frac{D-a}{f}$$

