# I

1) $\overline{L_2H_{oc}} = e\frac{f'_{oc}}{f'_3} = \frac{28\times 40}{56} = 20\,mm$ $\qquad \overline{L_2F_{oc}} = \overline{L_2H_{oc}} + \overline{H_{oc}F_{oc}} = 20-40 = -20\,mm$

$\overline{L_3H'_{oc}} = -e\frac{f'_{oc}}{f'_2} = -\frac{28\times 40}{70} = -16\,mm$ $\qquad \overline{L_3F'_{oc}} = \overline{L_3H'_{oc}} + \overline{H'_{oc}F'_{oc}} = -16+40 = 24\,mm$

2) $\overline{L_2F_{oc}} < 0$ donc oculaire positif.

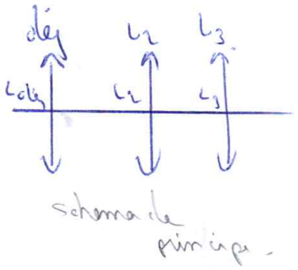
3) $G_{c\,oc} = \frac{|P_{i\,oc}|}{4}$ $\qquad P_{i\,oc} = \frac{1}{f'_{oc}} = \frac{1}{0{,}04} = 25\,\delta$ remplaçons $G_{c\,oc} = \frac{25}{4} = 6{,}25$

# II

1) $A \equiv \infty \xrightarrow{L_{obj}} A_{obj} \xrightarrow{L_2} A_2 \xrightarrow{L_3} A'$

$A_{obj} \equiv F_{oc} \equiv F'_{obj}$ $\qquad A_2 \equiv F_3$ $\qquad A' \equiv \infty \equiv R$

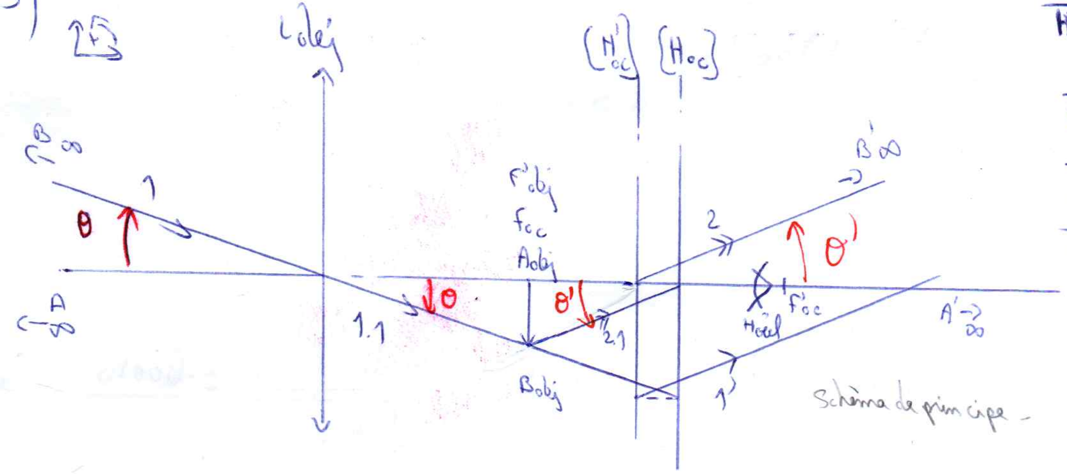
2)




$\overline{L_{obj}L_3} = \overline{L_{obj}F'_{obj}} + \overline{F_{oc}L_2} + \overline{L_2L_3}$
$= 600 + 20 + 28$

$\overline{L_{obj}L_3} = 648\,mm$

3)




$\overline{H_{oc}H'_{oc}} = \overline{H_{oc}L_2} + \overline{L_2L_3} + \overline{L_3H'_{oc}}$
$= -20 + 28 - 16$

$\overline{H_{oc}H'_{oc}} = -8\,mm$

$\overline{L_3H_{oeil}} = 20\,mm$

$\overline{F'_{oc}H_{oeil}} = \overline{F'_{oc}L_3} + \overline{L_3H_{oeil}}$
$= -24 + 20 = -4\,mm$

4) $G = \frac{\tan\theta'}{\tan\theta}$ $\qquad \tan\theta' = \frac{\overline{A_{obj}B_{obj}}}{\overline{H_{oc}F_{oc}}}$ et $\tan\theta = \frac{\overline{A_{obj}B_{obj}}}{\overline{L_{obj}F'_{obj}}}$

$G = \frac{\cancel{\overline{A_{obj}B_{obj}}}}{\overline{H_{oc}F_{oc}}} \times \frac{\overline{L_{obj}F'_{obj}}}{\cancel{\overline{A_{obj}B_{obj}}}} = \frac{\overline{L_{obj}F'_{obj}}}{\overline{H_{oc}F_{oc}}} = \boxed{-\frac{f'_{obj}}{f'_{oc}}}$

$G = -\frac{600}{40} = -15$

III)

1) $A \equiv \infty \xrightarrow{D_{obj}} A_{obj} \equiv F'_{obj} \xrightarrow{L_2} A_2 \xrightarrow{L_3} A' \equiv R \equiv F'_{viseur}$.

2) avant on avait $F'_{obj} \equiv F_{oc}$. L'objectif ne bouge pas. C'est l'oculaire qui bouge de 5 mm de la gauche vers la droite


schéma de principe.

$A \equiv \infty \xrightarrow{D_{obj}} A_{obj} \equiv F'_{obj} \xrightarrow{D_{oc}} A' \equiv R \equiv F'_{viseur}$

* Newton :

$$\overline{F_{oc}F'_{obj}} \times \overline{F'_{oc}R} = f_{oc} f'_{oc} \quad \text{alors} \quad \overline{F'_{oc}R} = \frac{f_{oc} f'_{oc}}{\overline{F_{oc}F'_{obj}}} = \frac{-40 \times 40}{-5} = 320 \text{ mm}$$

$$R = \frac{1}{\overline{H_0R}} = \frac{1}{\overline{H_0L_3} + \overline{L_3F'_{oc}} + \overline{F'_{oc}R}} = \frac{1}{-20.10^{-3} + 24.10^{-3} + 320.10^{-3}} = +3{,}08\,\delta \simeq \underline{+3\,\delta}.$$

IV)

1) $A \equiv F_{viseur} \xrightarrow{L_{obj}} A_{obj} \equiv F_{oc} \xrightarrow{L_2} A_2 \equiv F_3 \xrightarrow{L_3} A' \equiv R \equiv \infty$

2) $\overline{L_{obj}L_3} = \overline{L_{obj}F'_{obj}} + \overline{F'_{obj}F_{oc}} + \overline{F_{oc}L_2} + \overline{L_2L_3}$

$\overline{L_{obj}L_3} = 600 + 200 + 20 + 28$

$\overline{L_{obj}L_3} = 848$ mm.

3) * Newton :

$$\overline{F_{obj}F_{viseur}} \times \overline{F'_{obj}F_{oc}} = f_{obj} f'_{obj} \quad \text{donc} \quad \overline{F_{ob}F_{viseur}} = \frac{f_{ob} f'_{ob}}{\overline{F'_{obj}F_{oc}}} = \frac{-600 \times 600}{200} = -1800 \text{ mm}$$

4) $P_{vis} = -\frac{\tan\theta'}{y}$

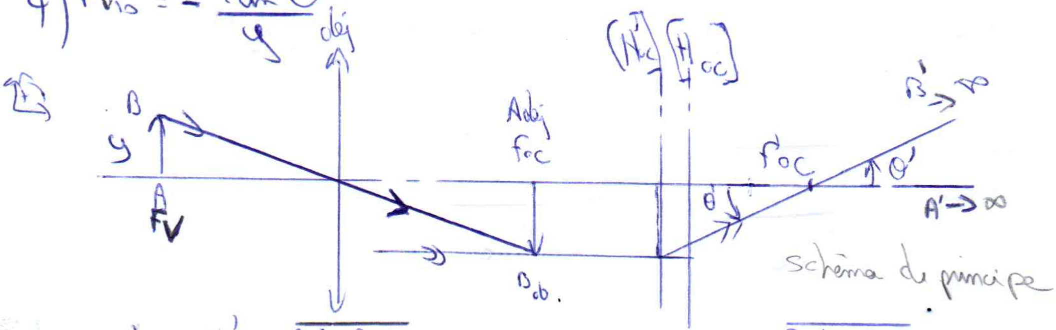



schéma de principe

$$\tan\theta' = \frac{\overline{A_{ob}B_{ob}}}{\overline{H_{oc}F_{oc}}} \qquad P_{vis} = -\frac{\overline{A_{ob}B_{ob}}}{\overline{H_{oc}F_{oc}}} \times \frac{1}{y} = -\frac{1}{\overline{H_{oc}F_{oc}}} \times \frac{\overline{A_{ob}B_{ob}}}{\overline{AB}}$$

$$P_{vis} = -\frac{1}{\overline{H_{oc}F_{oc}}} \times g_{y\,obj} = P_{oc} \times g_{y\,obj} \qquad \left(\text{car } P_{oc} = \frac{1}{f'_{oc}}\right)$$

$$g_{y\,obj} = -\frac{\overline{F'_{obj}F_{oc}}}{f'_{obj}} = \frac{-200}{600} = -0{,}333 \quad \text{(d'après Newton)}$$

$$P_{vis} = \frac{1}{0{,}04} \times -0{,}333 = \underline{\underline{-8{,}33\,\delta}}$$