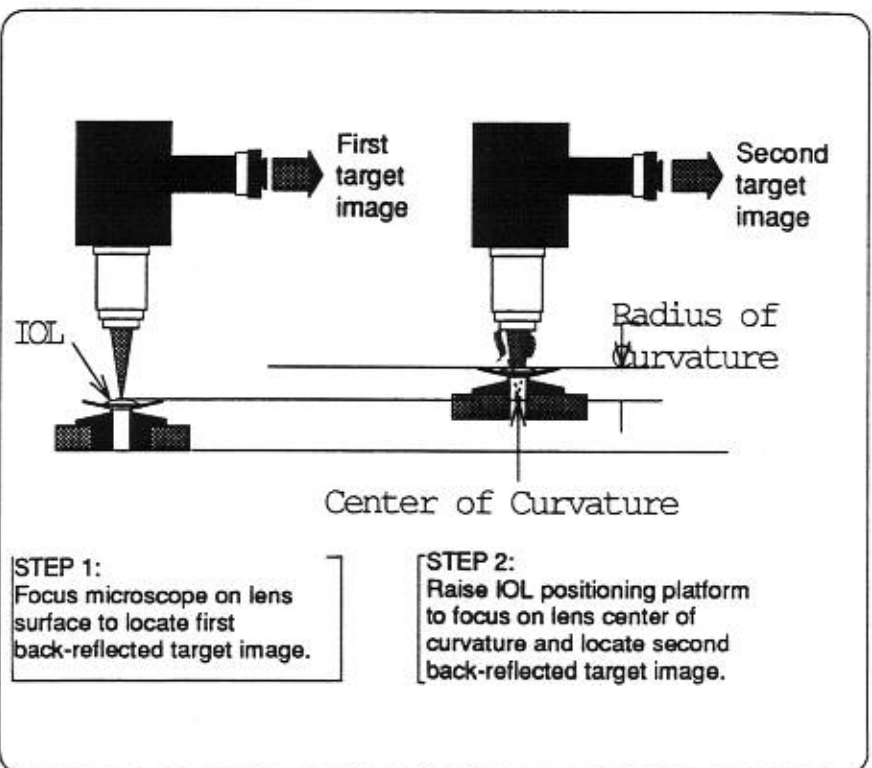
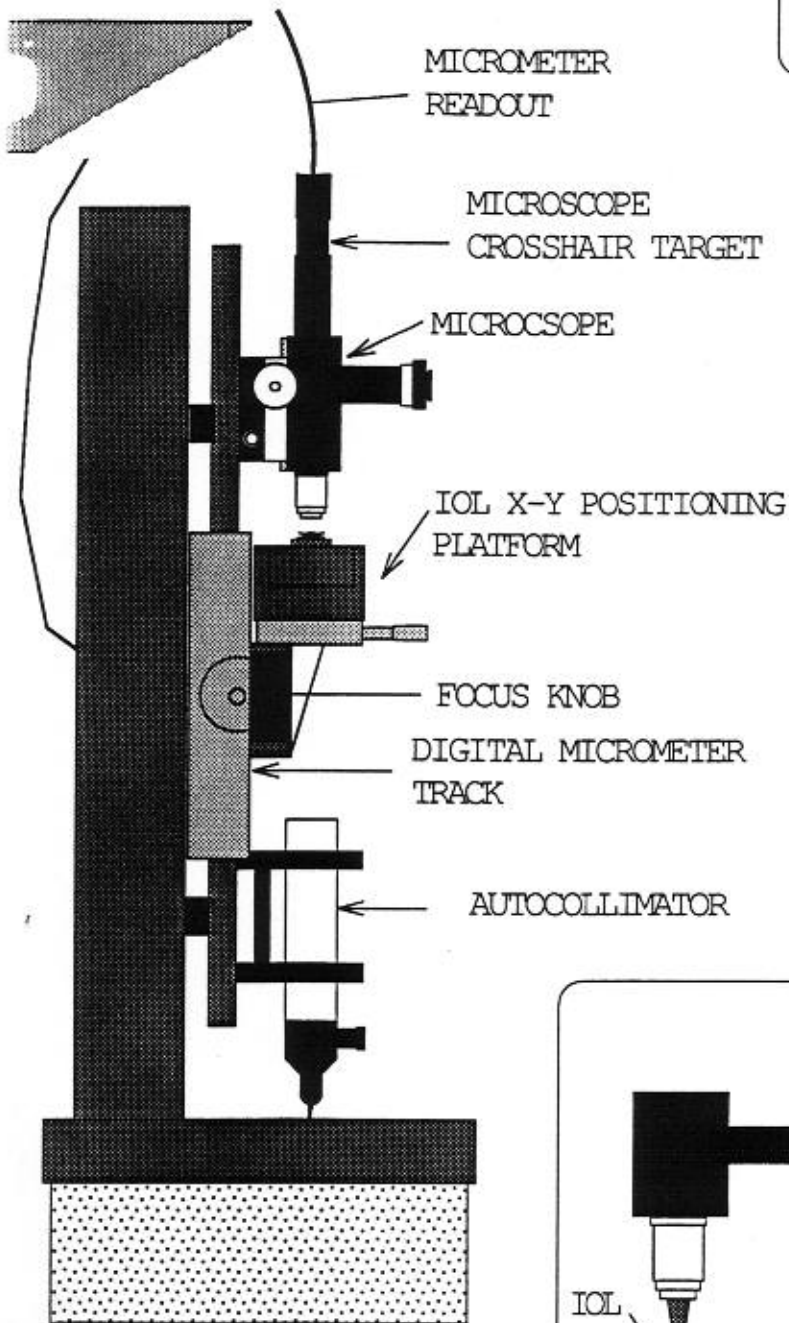
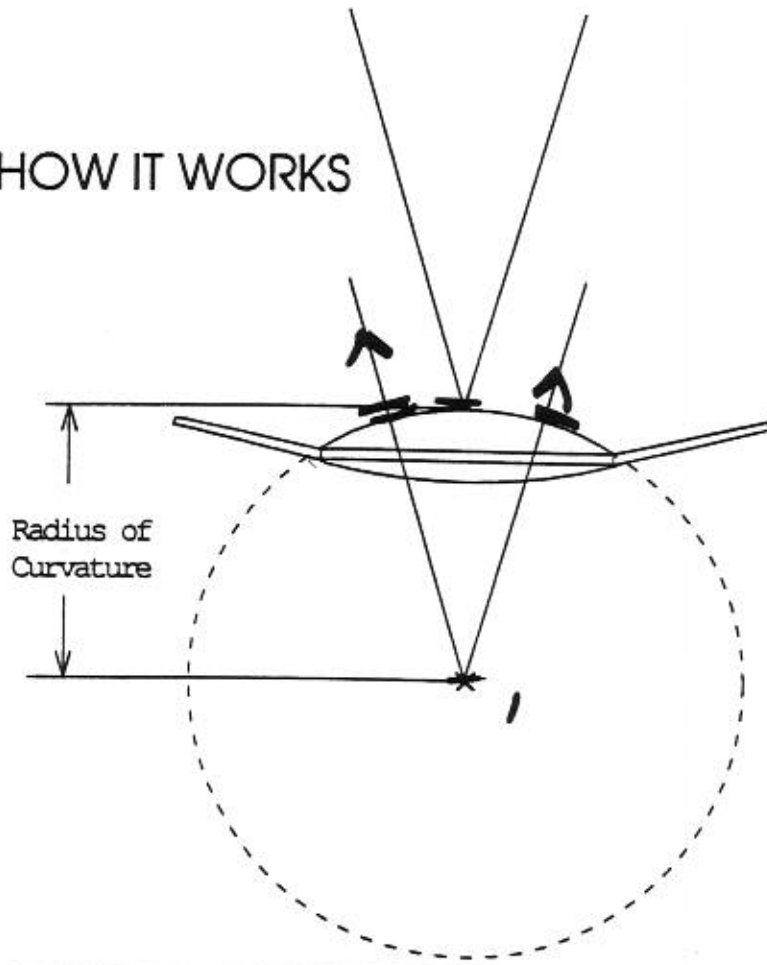


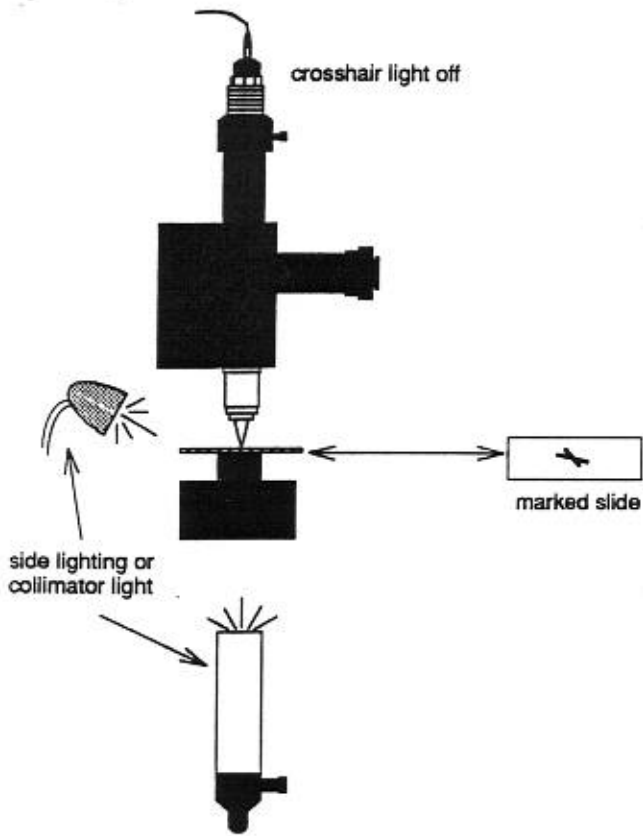
RADIUS OF CURVATURE ON BFL BENCH



HOW IT WORKS



ADJUSTING CROSSHAIR FOCUS

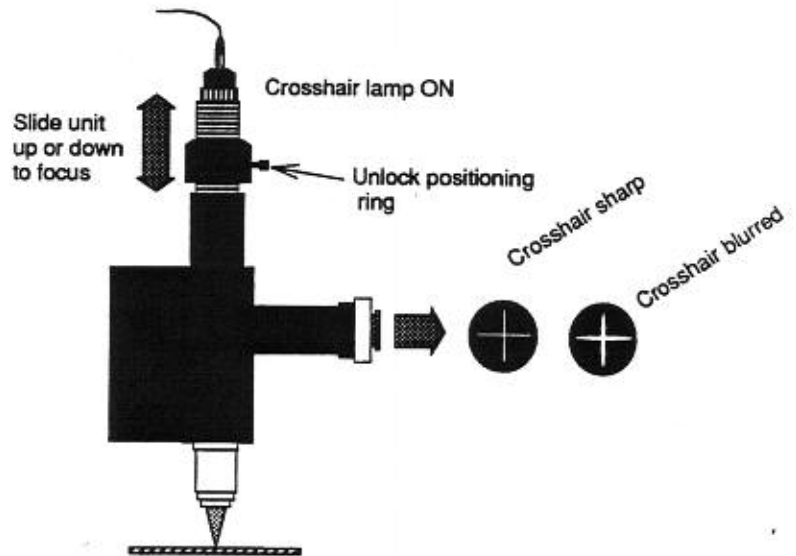
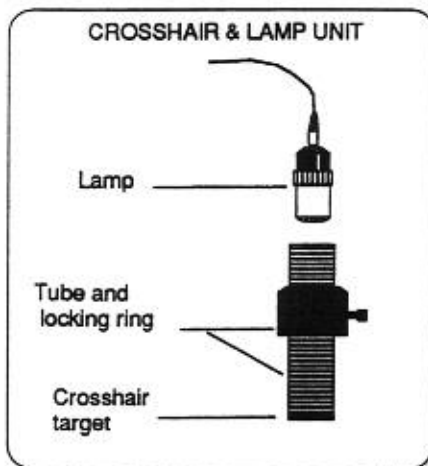


1

Focus microscope on marked glass slide, etc. Use side lighting or lower collimator for illumination. Bring surface markings, dust, etc. into sharp focus.

2

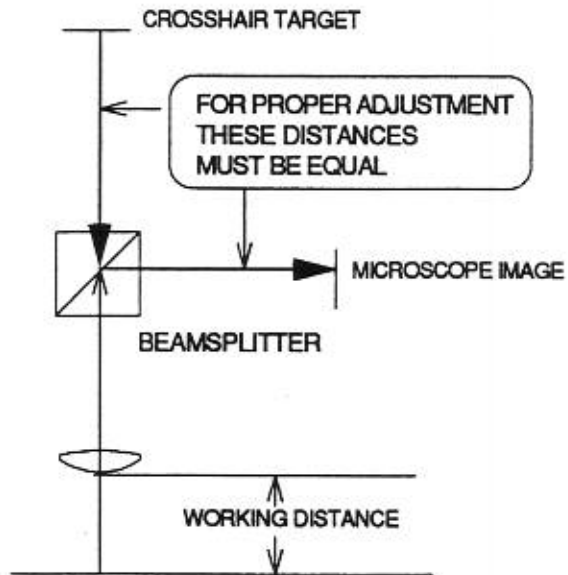
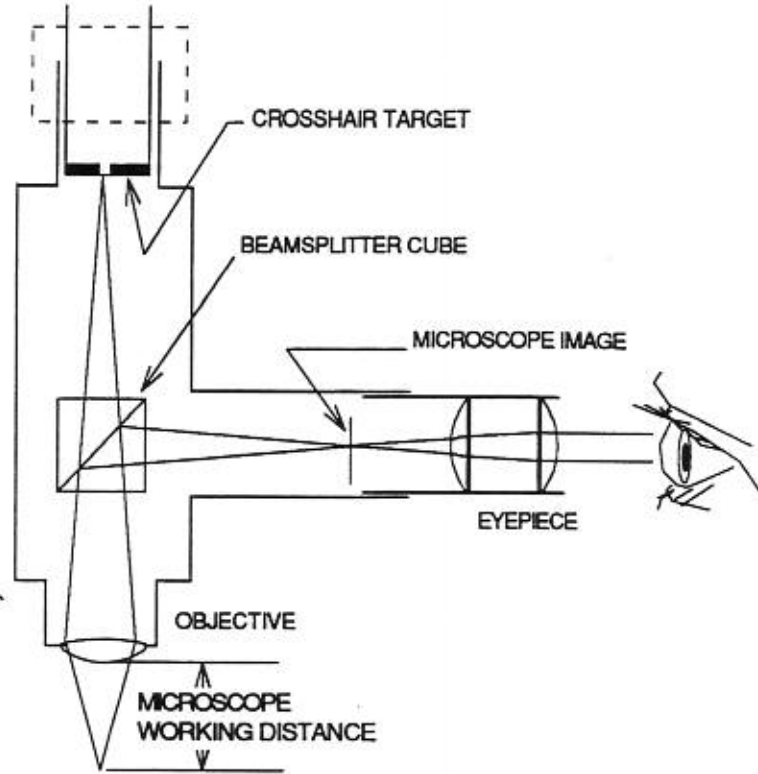
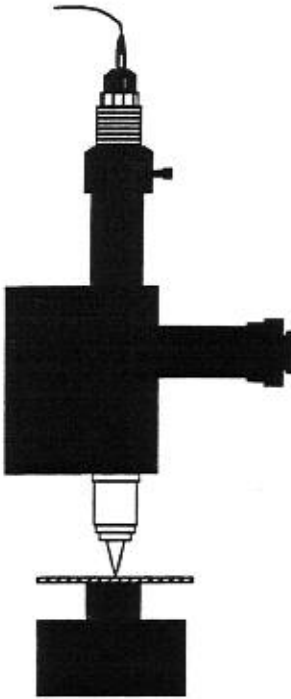
Do not touch focus knob. Switch on crosshair lamp and turn off other illumination. Unlock crosshair focusing ring and adjust position of crosshair and lamp unit to bring crosshair image into sharp focus. Move positioning ring to new setting.



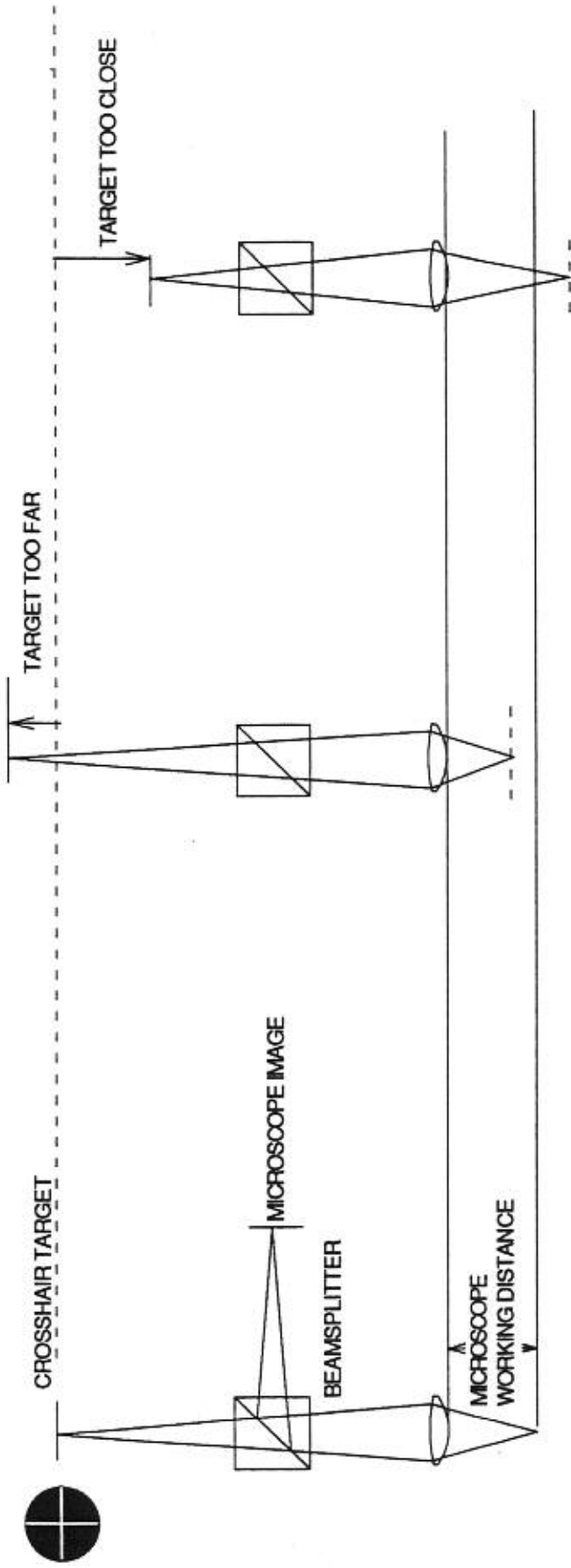
3

Recheck adjustment by switching from crosshair lamp to collimator to make sure that both surface of slide and crosshair images are in sharp focus. Lock positioning ring in place.

OPTICAL PATH DIAGRAM



EFFECT OF IMPROPER CROSSHAIR POSITION



<p>PROPER ADJUSTMENT: _____</p> <p>PROJECTED CROSSHAIR IMAGE FORMS AT MICROSCOPE FOCUS.</p> <p>LENS AND CROSSHAIR ARE IN SHARP FOCUS AT SAME TIME</p>	<p>TARGET TOO FAR: _____</p> <p>CROSSHAIR IMAGE FORMS TOO CLOSE TO OBJECTIVE.</p> <p>BFL TOO LARGE.</p>	<p>TARGET TOO CLOSE _____</p> <p>CROSSHAIR IMAGE FORMS BEYOND MICROSCOPE FOCUS</p> <p>BFL TOO SMALL</p>
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DPR/EFL MATH

METHOD: FIND DISTANCE BETWEEN PLANO SURFACE AND PRINCIPAL PLANE, TO CORRECT BFL TO EFL

$EFL = BFL + \text{apparent depth of lens}$

$EFL = BFL + (t_c - d)$

$$(t_c - d) = \frac{t_c}{n_L} \left(\frac{\cos \alpha}{\cos \beta} \right)$$

$$EFL = BFL + \frac{t_c}{n_L} \left(\frac{\cos \alpha}{\cos \beta} \right)$$

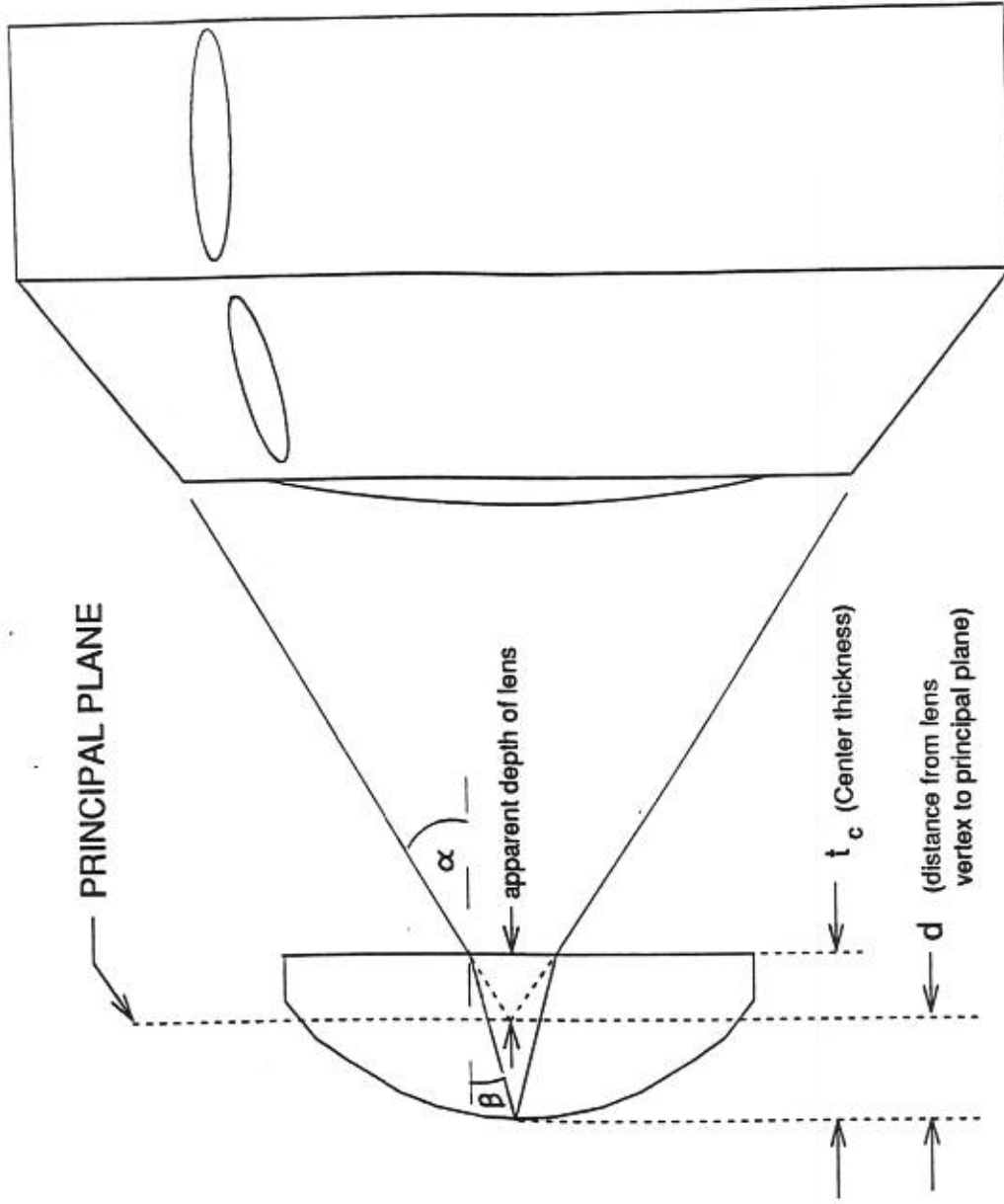
n_L is the refractive index of the lens

t_c is the center thickness of the lens

α is the numerical aperture of the microscope objective

β is the angle of refraction as determined by α and Snell's law:

$$n_1 \sin \alpha = n_2 \sin \beta$$



MICROSCOPE OBJECTIVE