## Practicumwerkblad L
## Buiging

Bron: *Nuffield Revised Physics A-Level* (1986).

### J1 Looking at a lamp through a slit and through a pin-hole

holder with two halves of a razor blade, to be used as a single slit
set of colour filters (red, blue, green)
aluminium foil
35 mm slide mounts
copper wire, 0.2 mm diameter, bare
steel or nichrome wire, 0.2 mm diameter, bare
lamp, holder, and stand
transformer

*either*
matt white reflecting screen
*or*
white card

mains lamp with 30 cm single filament and holder

*Safety note*: Razor blades are sharp! Take care not to get the adjustable slit too close to your face or eye. To avoid any possibility of injury, the side of the slit with the wire loop must be nearer to your eye than the side with the sharp ends.

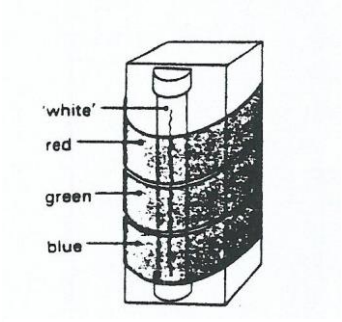


Figure J49
Single-filament lamp with colour filters.

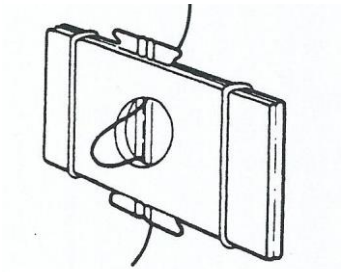

Figure J50
Adjustment of slit width to diameter of steel or nichrome wire.

Make as narrow a slit as possible from a pair of razor blades, by viewing the slit against an illuminated background while you adjust the blades. Hold the slit close to your eye and look at the lamp through it. Describe the patterns you obtain for one particular slit width with each of the colours, and for one colour with different slit widths.

Describe how the pattern depends *i* on the wavelength of light and *ii* on the width of the slit.

Make a circular aperture in some aluminium foil by pricking it carefully with the copper wire which has been stretched and broken. Make sure the wire is pushed through to its maximum diameter. Look at the lamp through the hole and note what you see.

As a final element in your experiment you can compare the patterns produced by a hole and slit of equal ‘widths’ by using the steel or nichrome wire to set the razor blade spacing equal to the hole diameter.

How are the patterns similar? How do they differ?