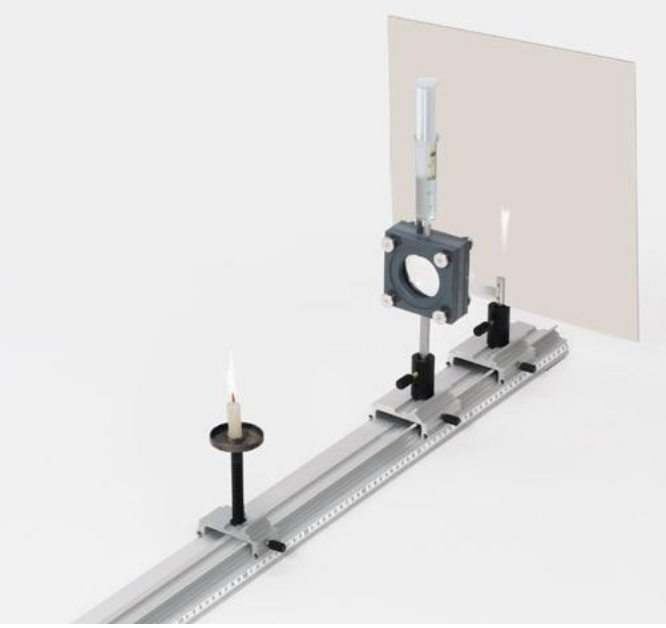
## Object of the experiment

1. Demonstrating the image formation and accommodation of the human eye

## Setup



- Assemble the lens model according to the instruction sheet 662 402, and fill in distilled water.
- Darken the room a little.

## Apparatus

| | |
|---|---|
| 1 Optical bench, S1 profile, 1 m | 460 310 |
| 1 Clamp rider with fixing column | 460 313 |
| 2 Clamp riders with clamp | 460 311 |
| 1 Candle holders, set of 2 | 459 31ET2 |
| 1 Candles, set of 20 | 459 32 |
| 1 Lens Model | 662 402 |
| 1 Screen, translucent | 441 53 |
| 1 Water, pure, 1 l | 675 3400 |

## Carrying out the experiment

- Place the translucent screen on the back third of the optical bench.
- Position the lens model at a distance of 15 cm in front of the translucent screen. See to it that at the beginning the lens has its minimum radius of curvature (the foils have to be just taut when the syringe is relaxed).
- Light the candle, and slide it along the optical bench until a sharp image is visible on the translucent screen. If necessary, slightly blow the candle flame sideward to determine the position of the image.
- Decrease the object distance by displacing the candle, and observe the image on the translucent screen.
- Using the syringe, inject water into the lens until the image observed on the translucent screen is sharp again.
- Increase the object distance, and repeat the experiment.

## Observation

The candle is imaged on the translucent screen by the lens.

The image is upside down and reversed.

The smaller the object distance, the larger the image.

When the object distance is decreased, an unsharp image of the flame is seen on the translucent screen.

If the radius of curvature of the lens is increased, a sharp image is observed again.

After the object distance has been increased, an unsharp image is seen on the translucent screen again.

If the radius of curvature of the lens is decreased, a sharp image is observed.

## Evaluation

The eye creates an image of an object on the retina which is upside down and reversed.

The smaller the distance between the eye and the object, the larger the image.

As the image distance is constant, the focussing of the image at different object distances takes place by way of a change of the radius of curvature of the elastic eye lens.

The greater the radius of curvature of the eye lens, the smaller the focal length of the lens.

The change of the radius of curvature of the eye lens for focussing the image on the retina is called accommodation.

Remark:

The smallest object distance to which an emmetropic eye can accommodate without getting tired is approximately 25 cm (distinct seeing distance).



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