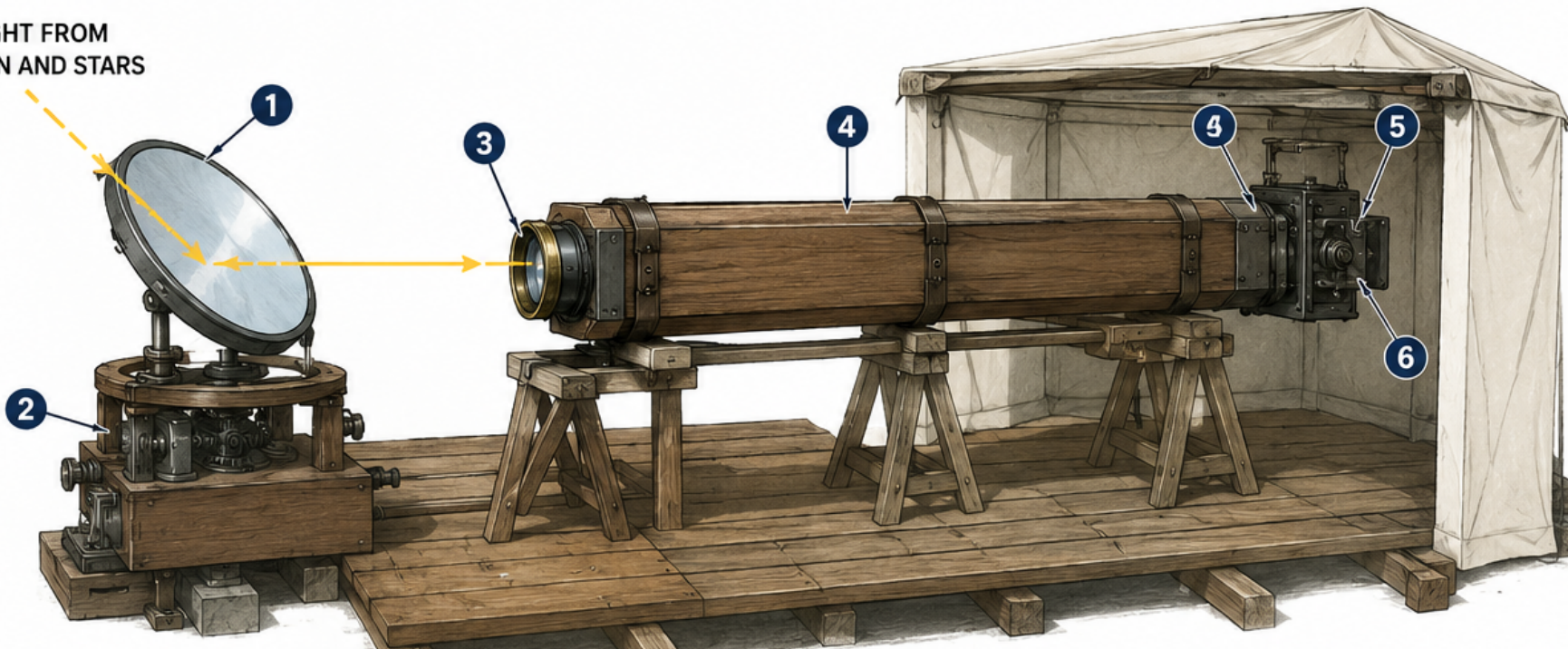


1919 EDDINGTON EXPEDITION – SOBRAL: THE 4-INCH TELESCOPE WITH 8-INCH COELOSTAT

Purpose: photograph stars near the eclipsed Sun to measure gravitational deflection of light.

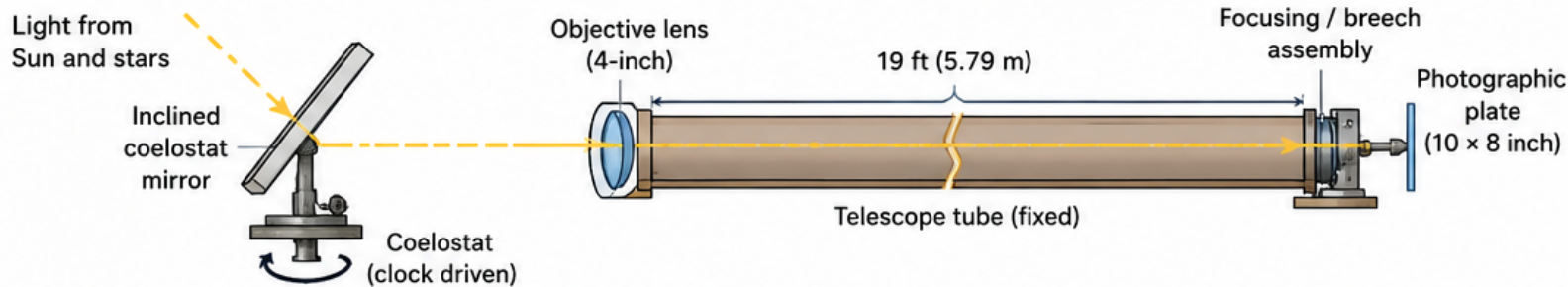
LIGHT FROM
SUN AND STARS



KEY TO PARTS

- 1 8-inch coelostat mirror (tracking mirror)
- 2 Clock drive for coelostat (rotates slowly to keep the reflected beam on the fixed telescope)
- 3 4-inch (10.2 cm) objective lens (Cortie lens)
- 4 19-ft (5.79 m) wooden telescope tube (fixed – does not move)
- 5 Focusing and breech assembly (adjusts focus and squares the plate)
- 6 Plate holder (10 × 8 inch glass plate)

OPTICAL PATH (SIDE VIEW – NOT TO SCALE)



WHAT MOVES?

Only the coelostat mirror (1) moves, driven by the clock (2). The telescope tube and all other parts remain fixed.

NOTES

- The coelostat reflects the light from the Sun and surrounding stars into the horizontal telescope.
- As the Earth rotates, the coelostat turns, keeping the image fixed on the photographic plate.
- The long focal length gives a large scale: 1 arcsecond $\approx$ 28 microns on the plate.
- This was the instrument that provided the successful Sobral results.

SPECIFICATIONS

- Objective aperture: 4 inches (10.2 cm)
- Focal length: 19 ft (5.79 m)
- Coelostat mirror: 8 inches (20.3 cm)
- Plate size: 10 × 8 inch
- Typical exposure: ~60 seconds