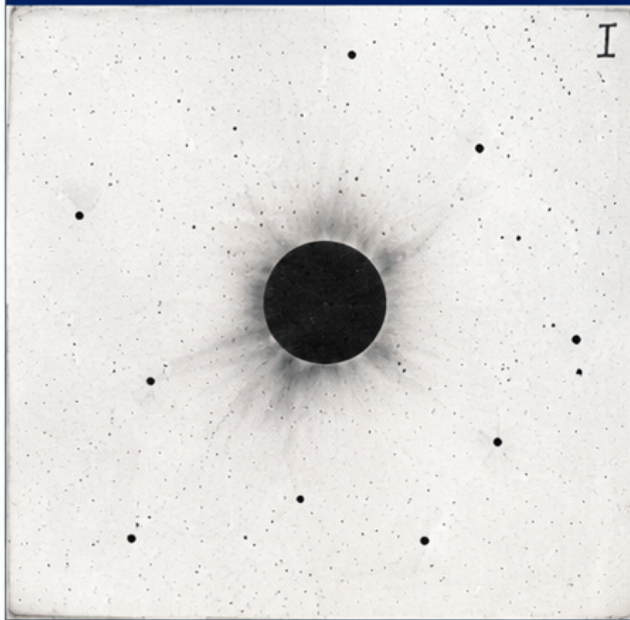


1. WHAT THEY ACTUALLY RECORDED — 29 MAY 1919 AT SOBRAL

4-inch (10-cm) refractor, 19-ft (5.79 m) focal length • Glass photographic plate 10 × 8 inches

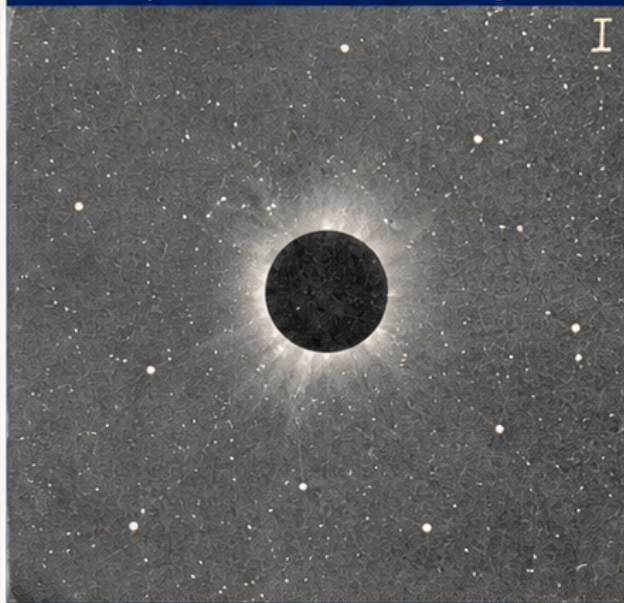
The gravitational displacement of the stars cannot be seen directly on these photographs.
The stellar positions were measured microscopically and compared with photographs of the same field taken when the Sun was absent.

A. ORIGINAL GLASS NEGATIVE
(as it appeared on the plate)



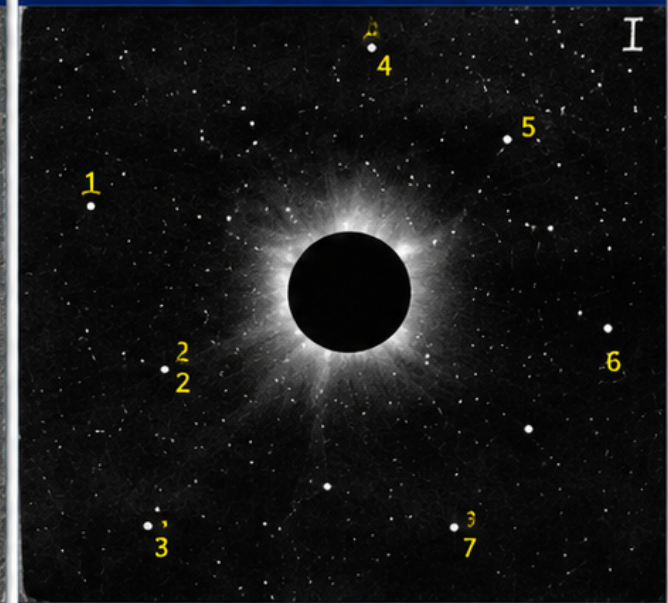
On the actual glass negative the background is light (transparent). Stars and the solar corona recorded as dark images because these regions received more light and deposited more silver during development.

B. 1920 HALF-TONE REPRODUCTION
(Plate I in Dyson, Eddington & Davidson 1920)
Reproduced without retouching



This is the half-tone reproduction of the negative published in the 1920 report (Plate I). It is not the original glass plate. The authors stated explicitly that the reproduction was not retouched.

C. POSITIVE INVERSION FOR INTERPRETATION
(inverted from the negative)
Same plate, easier to read



Positive version (polarity reversed) made from the same negative to make the stellar images and corona easier to see. The numbers identify the seven stars whose positions were measured.

THE SEVEN MEASURED STARS (Plate I)

1	θ^1 Tauri	(mag 7.37)	5	κ^2 Tauri	(mag 6.18)
2	θ^2 Tauri	(mag 6.10)	6	λ Tauri	(mag 6.46)
3	ι Tauri	(mag 5.49)	7	μ Tauri	(mag 6.29)
4	κ^1 Tauri	(mag 7.18)			

Angular distances
from the Sun's
centre:
1.36 – 3.36 solar
radii ($r_\odot$)

SCALE AND EXPECTED DISPLACEMENTS

- Plate scale of the 4-inch telescope: 1 arcsecond ($''$) $\approx$ 28 micrometres (μm)
- Einstein's predicted deflection at the solar limb: $1.75''$
 $\approx 49 \mu\text{m}$ on this plate
- For these seven stars the predicted deflections were only $0.32'' - 0.88''$
 $\approx 9 - 25 \mu\text{m}$ on the plate

EINSTEIN'S 1915 PREDICTION

The deflection is radial:

$$\alpha(r) = 1.75'' (r_\odot / r)$$

where $r_\odot$ is the Sun's apparent angular radius and r is the star's angular distance from the Sun's centre.

The stellar images are tiny (a few tens of micrometres in diameter). Their displacements of only a few hundredths of a millimetre could not be seen by eye. Precise x, y coordinates were measured on this plate and on comparison plates of the same field taken when the Sun was absent.