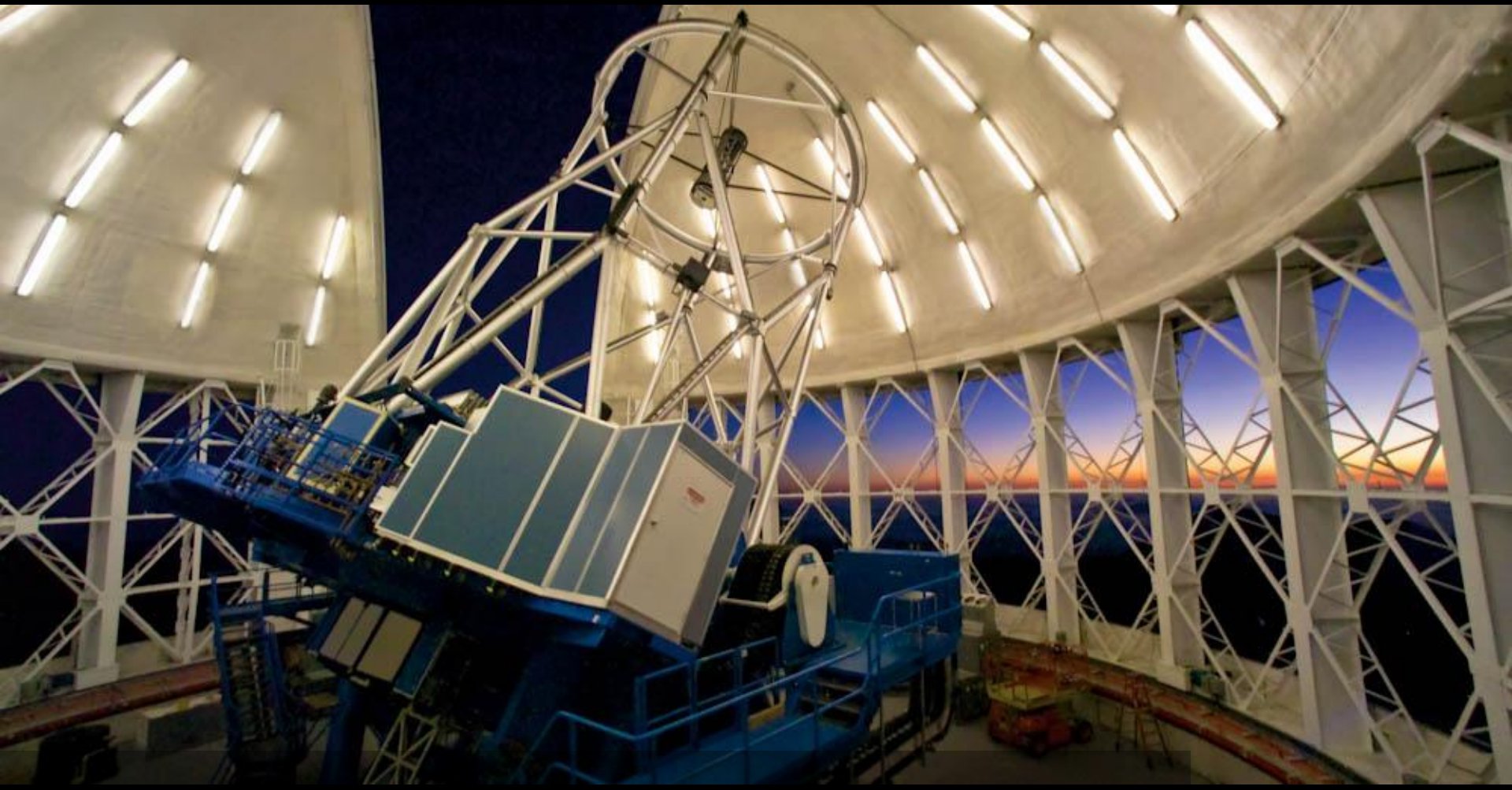
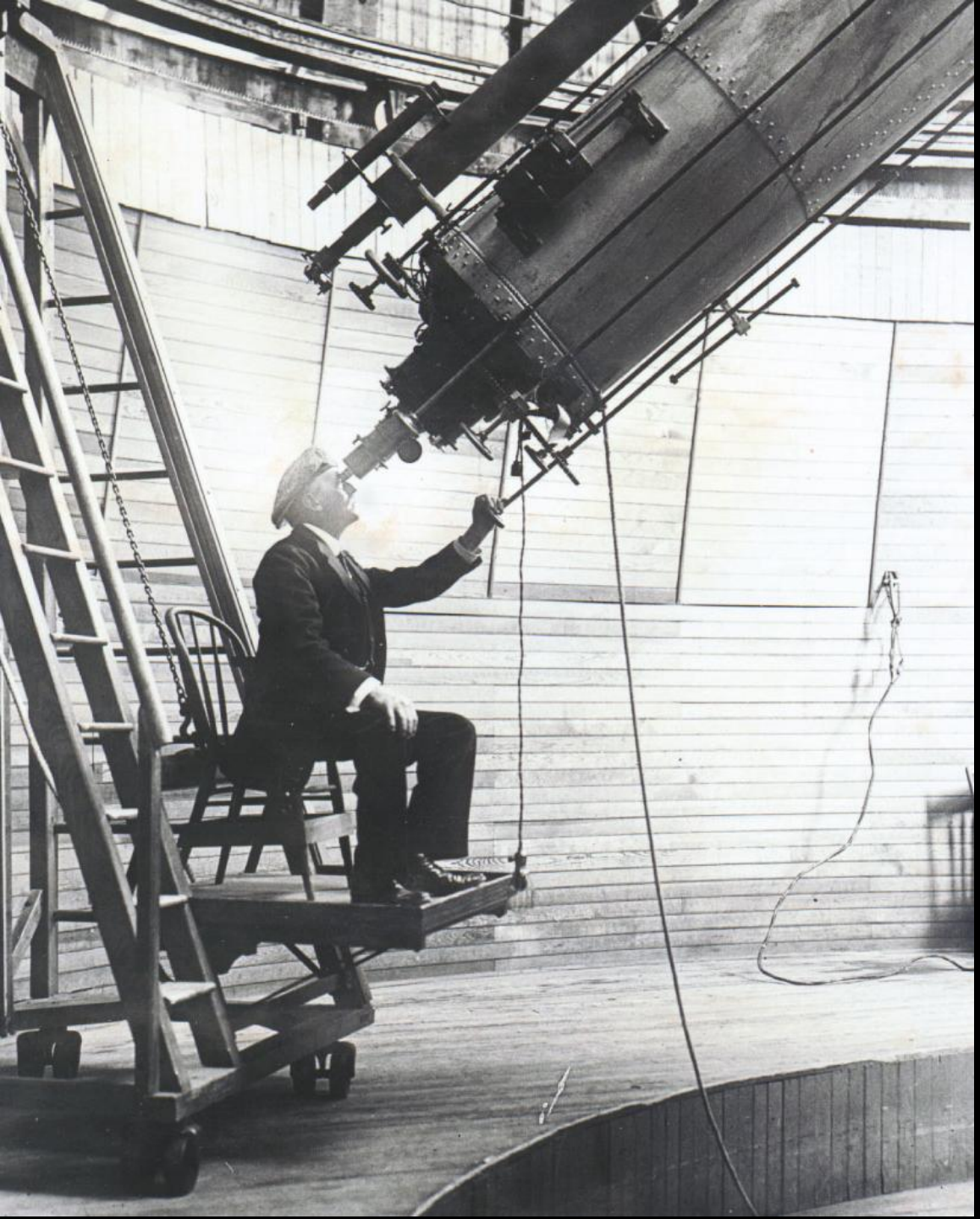
Large Telescopes – and why we need them



Carolin Crawford
Gresham Professor in Astronomy

Gemini Observatory

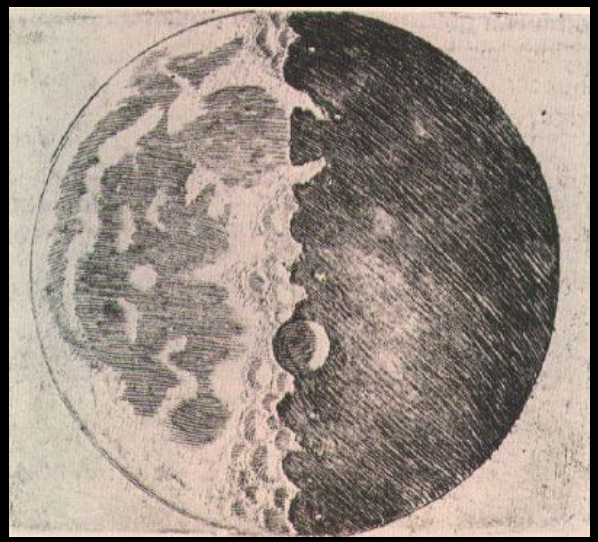

Stephen Leshin

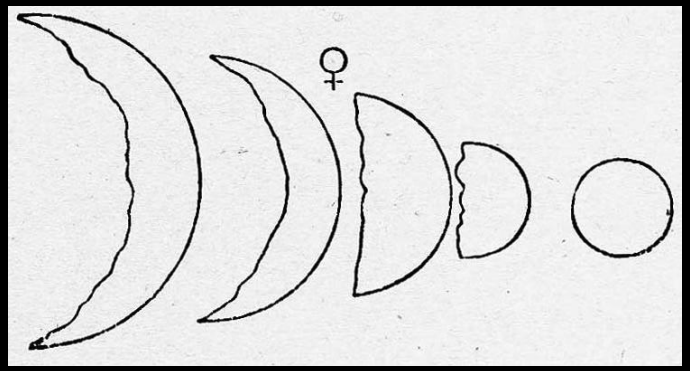


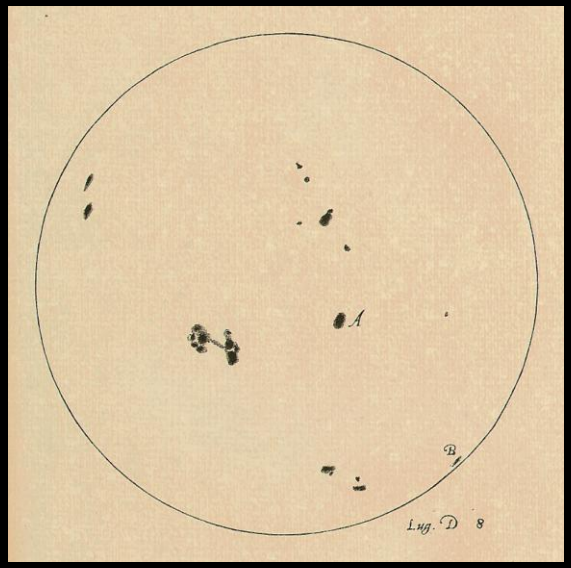
Lowell Observatory

Galileo

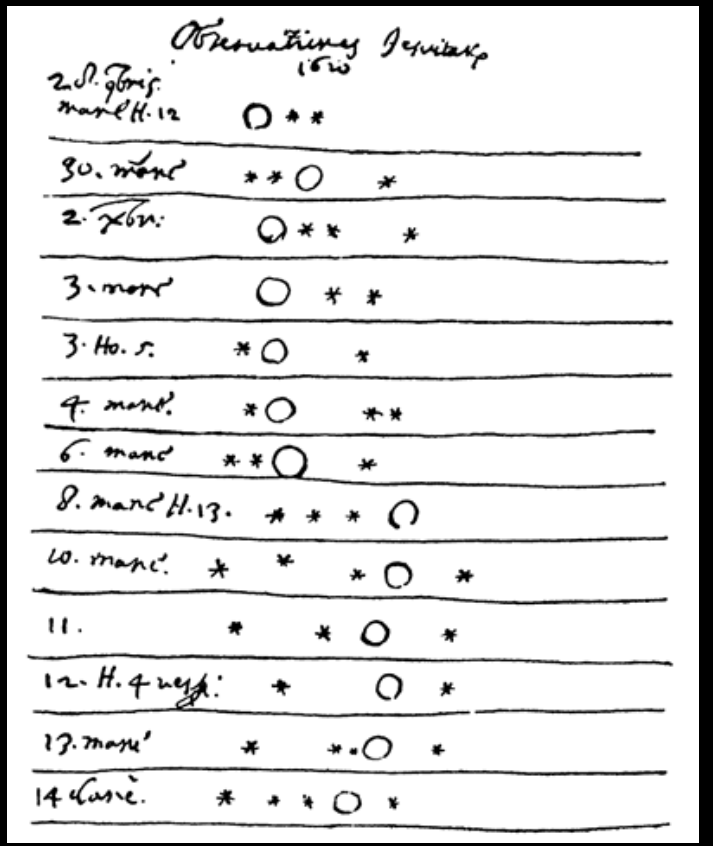
(1564-1642)



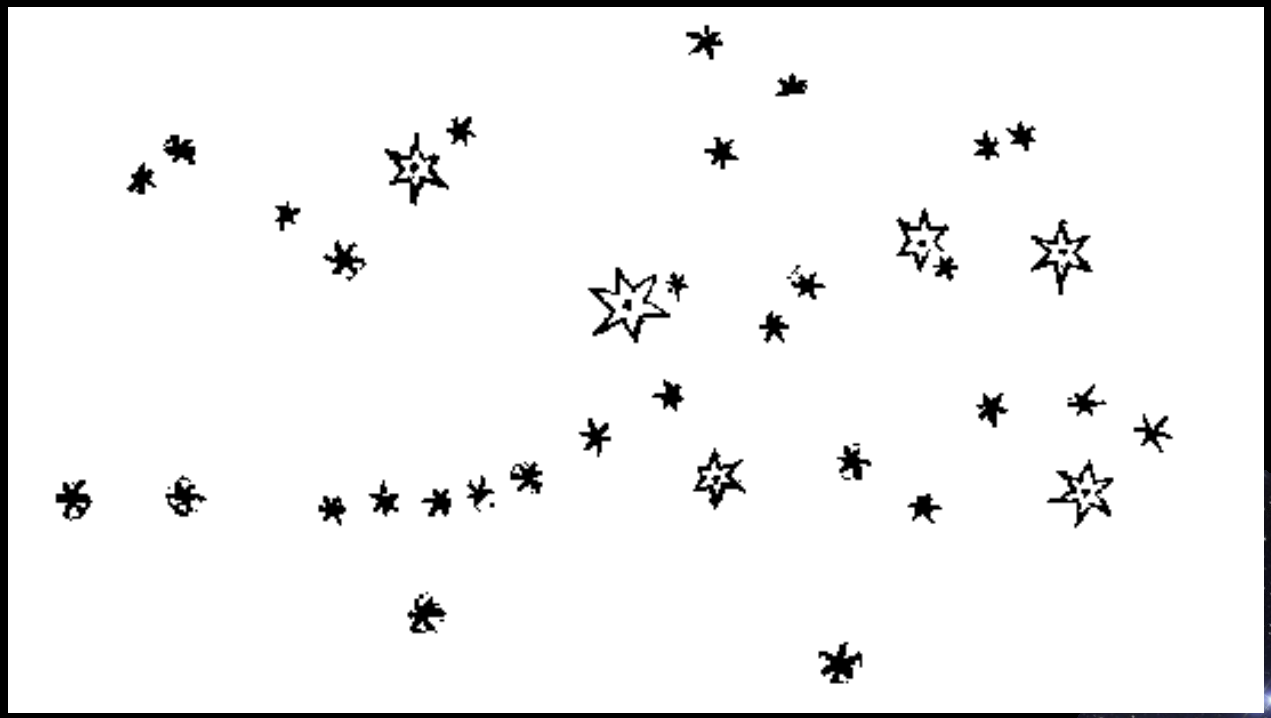




con due ſtelle à i fianchi, creda pur V. S.
ione dello ſtrumento, ò dell'occhio del ri
ndo la figura di Saturno così ○○○, come
erte viſte i perfetti ſtrumenti, doue m
apparisce così ⬭ non ſi diſtinguendo
razione, e figura delle tre ſtelle; ma io
uerſi tempi con eccellente ſtrumento l'h
ſicurarla, che in eſſo non ſi è ſcorta mut

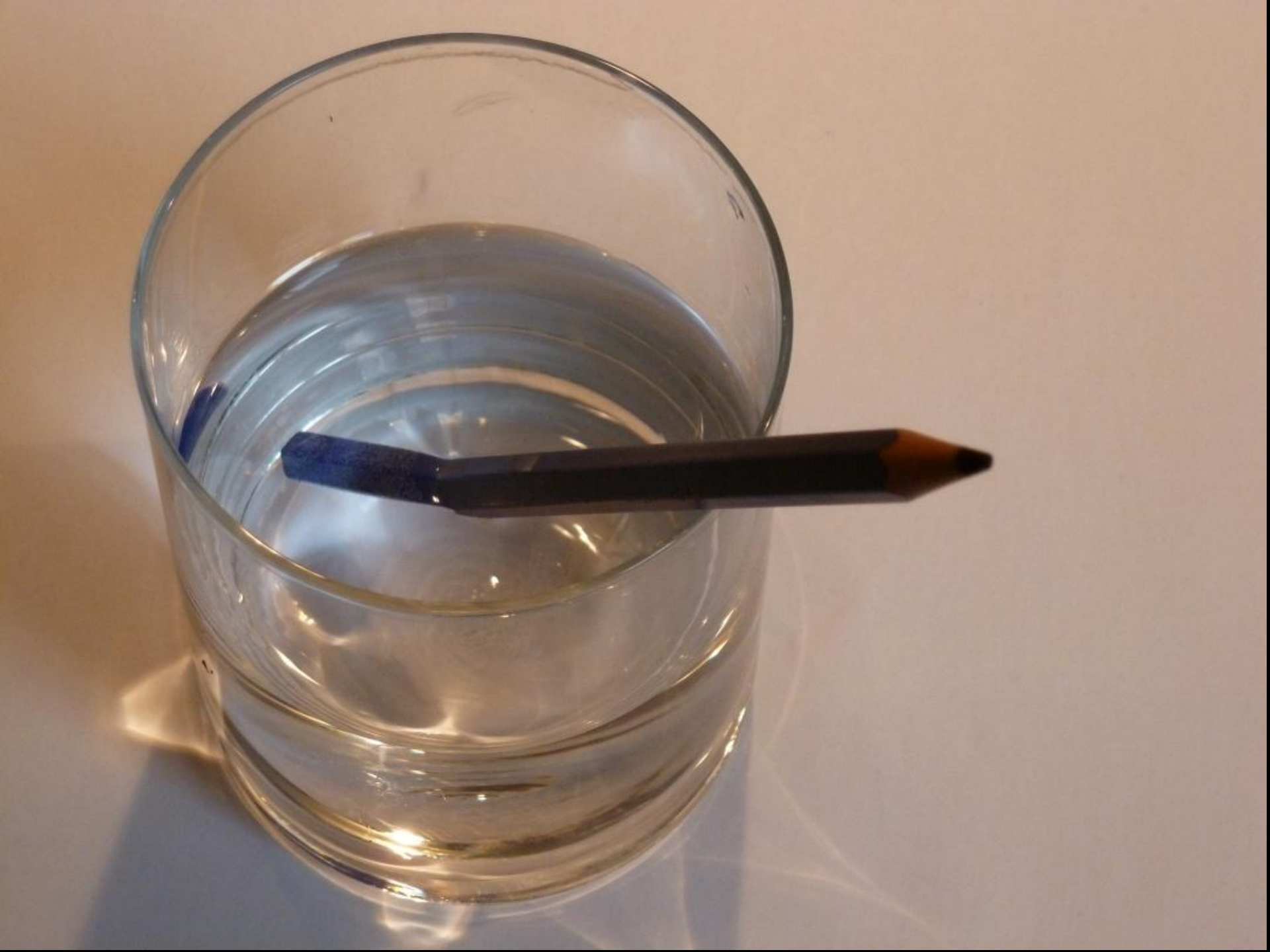


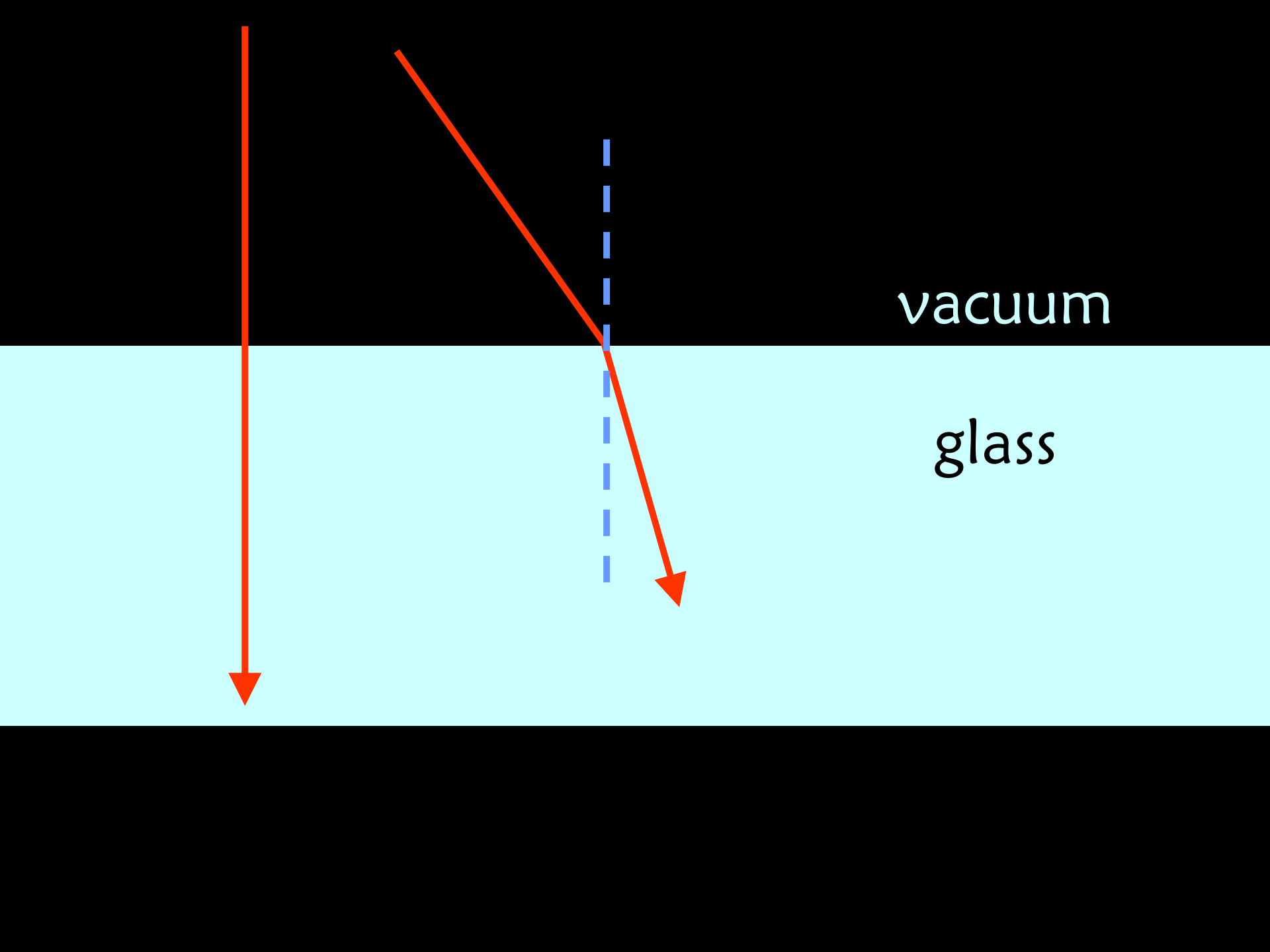

Kerry-Ann Lecky Hepburn

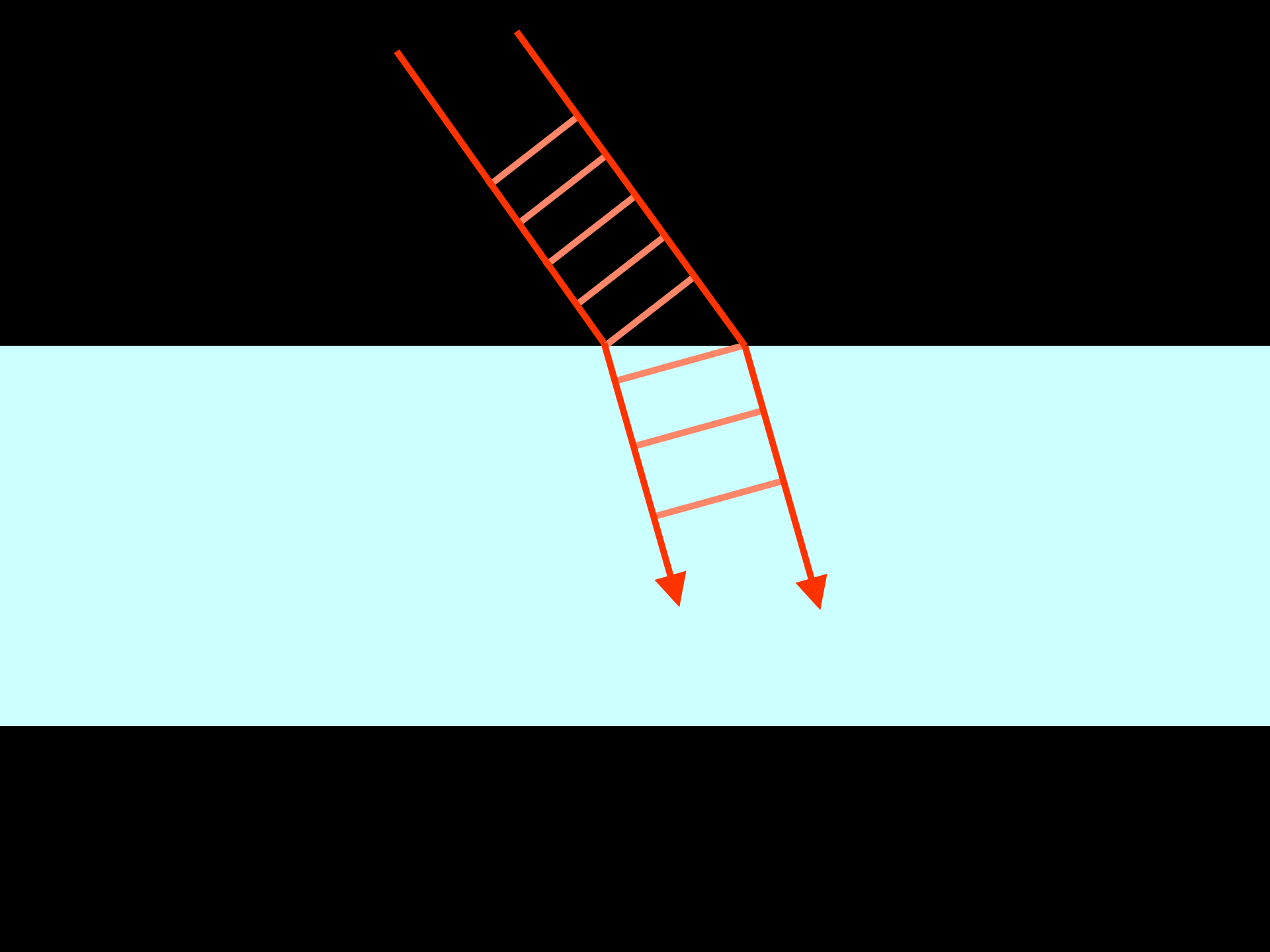


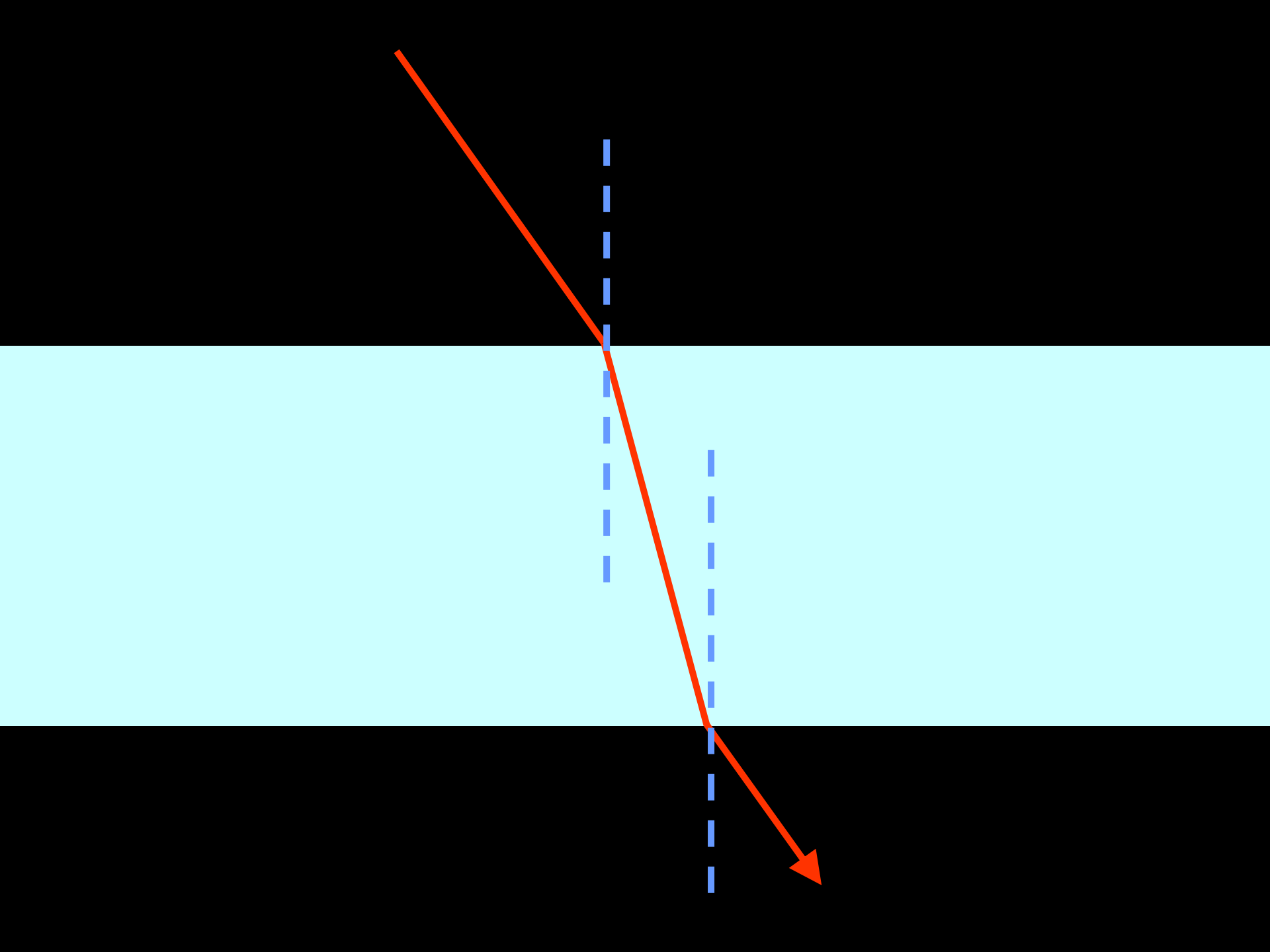
Robert Gendler

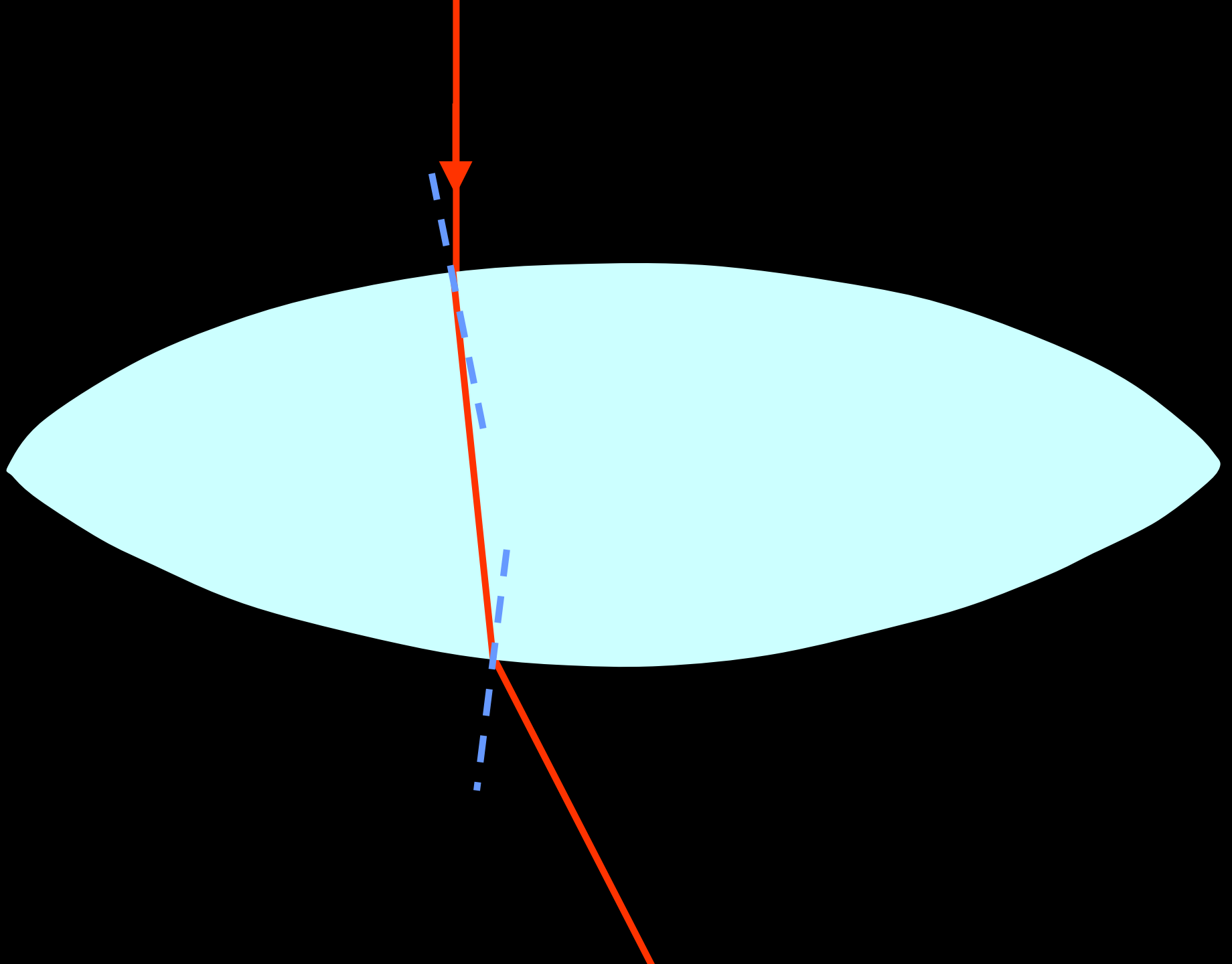
Cinguli et Ensis ORIONIS Asterismus.

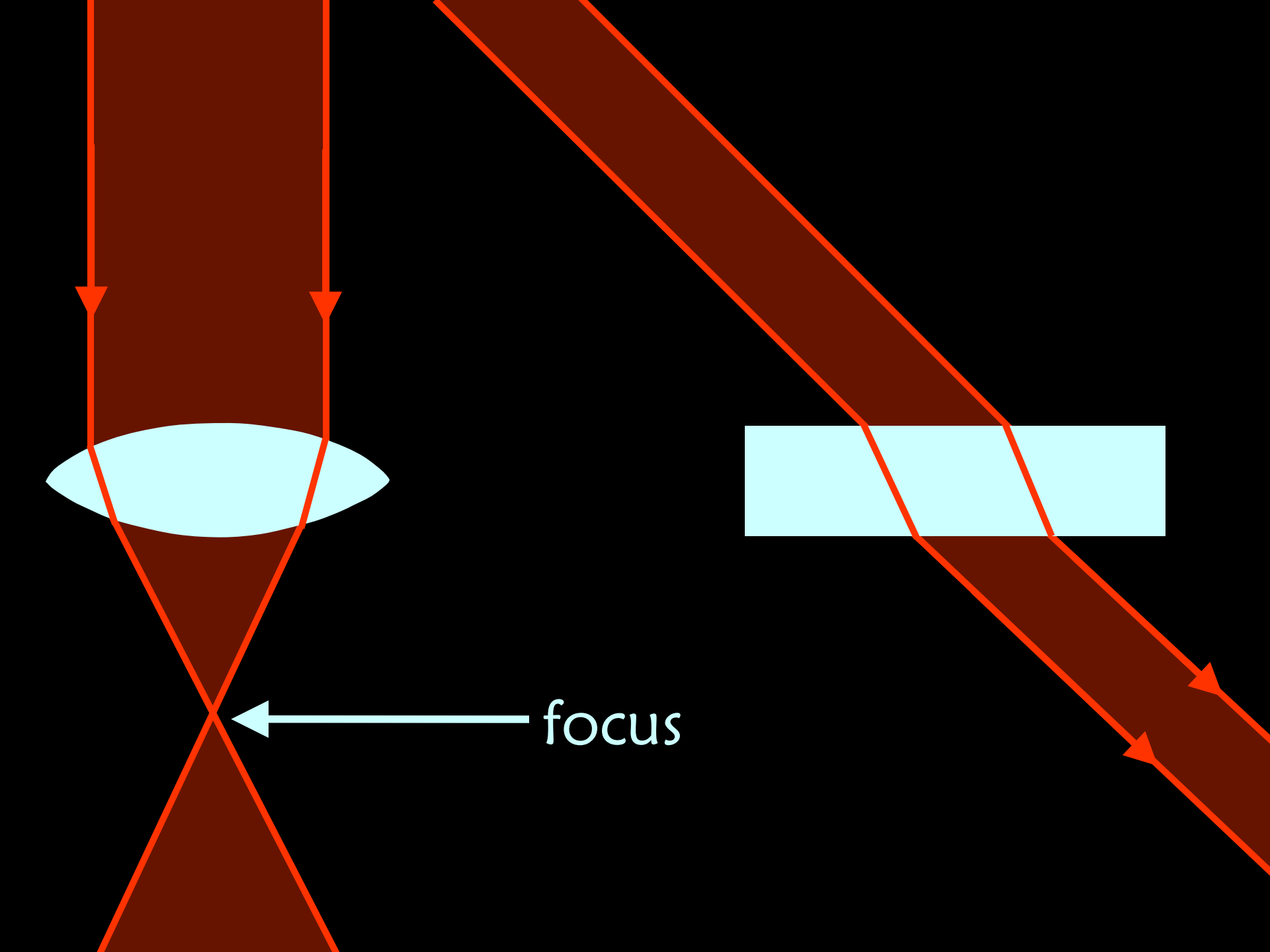


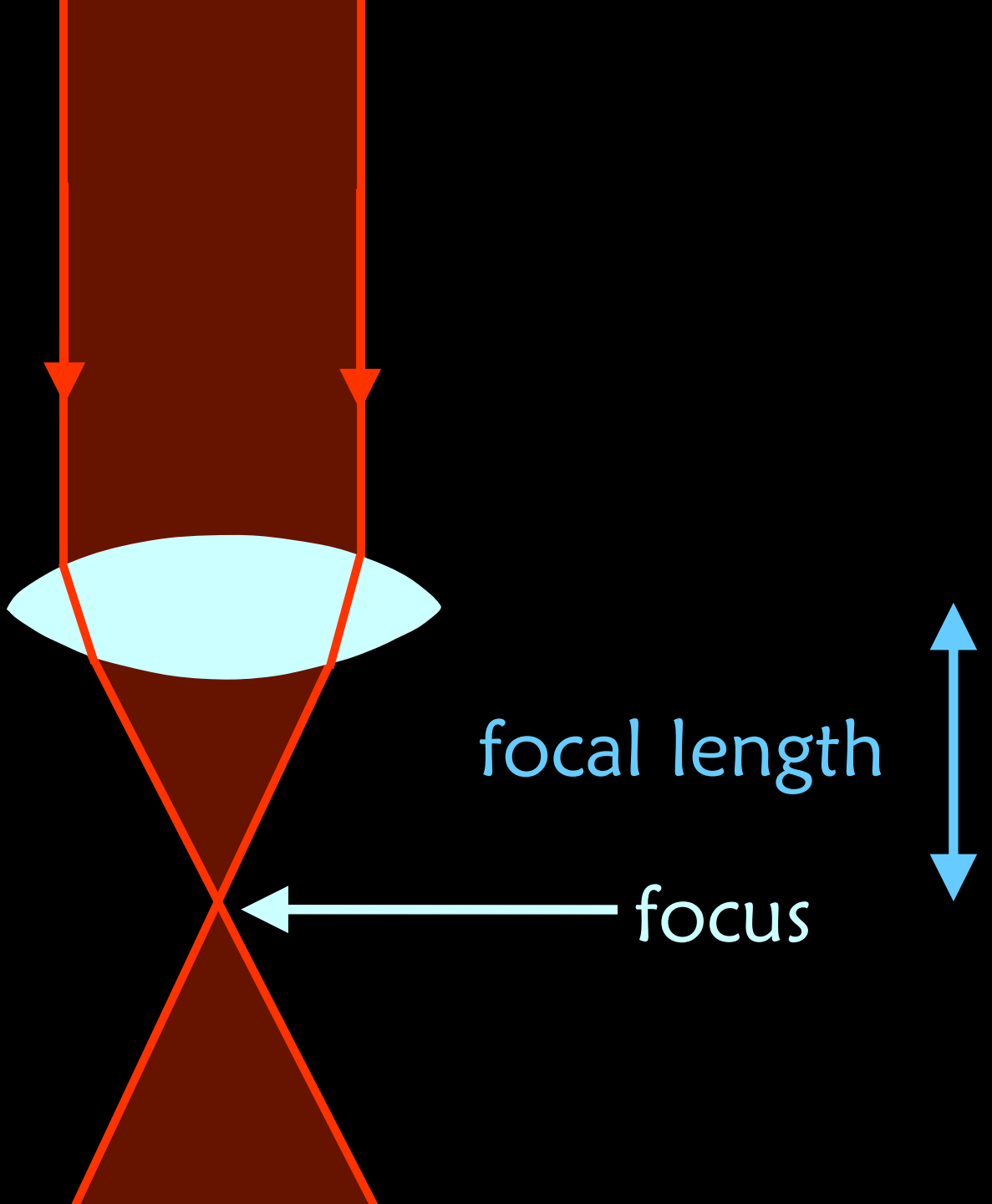

vacuum
glass

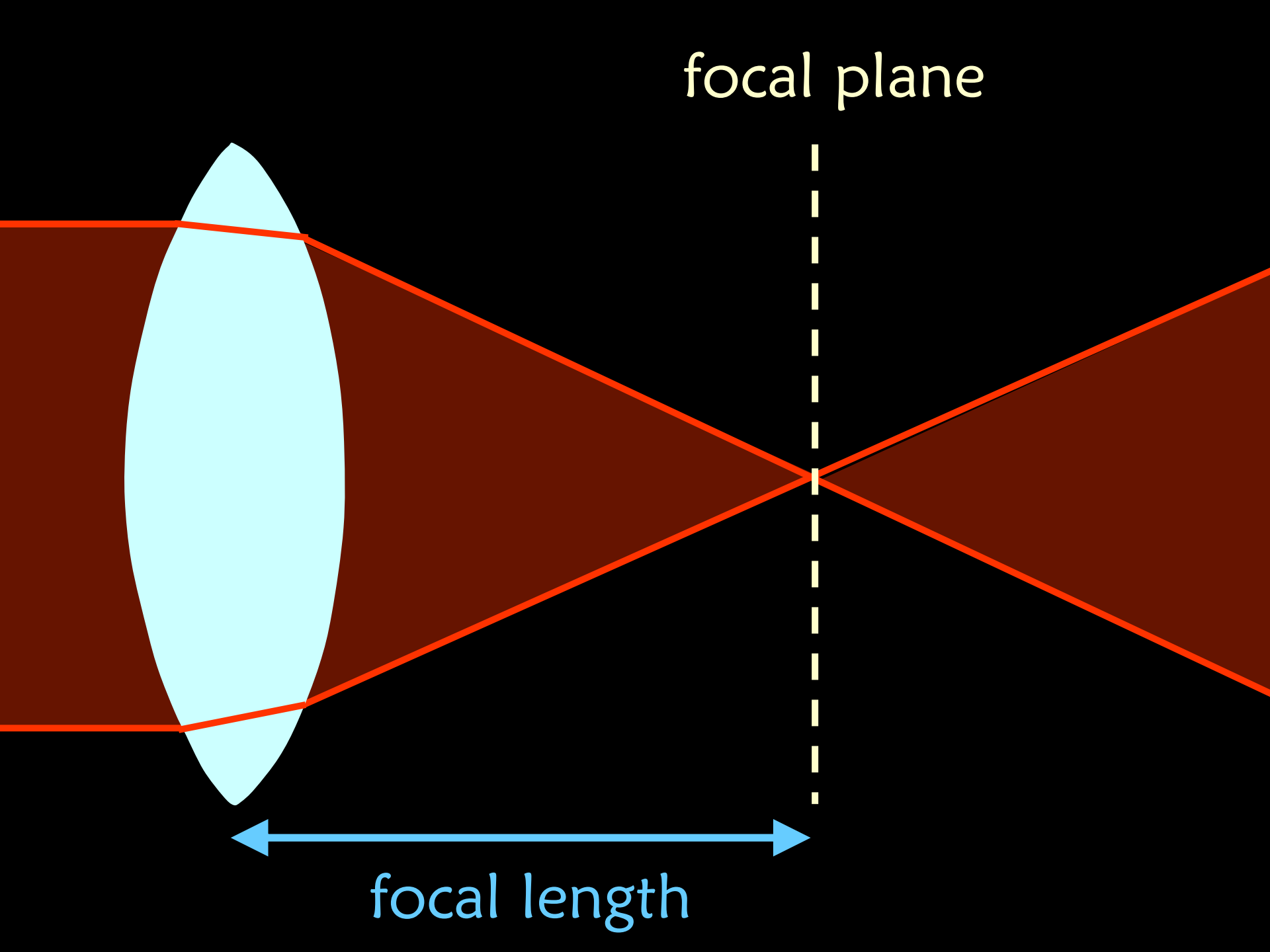


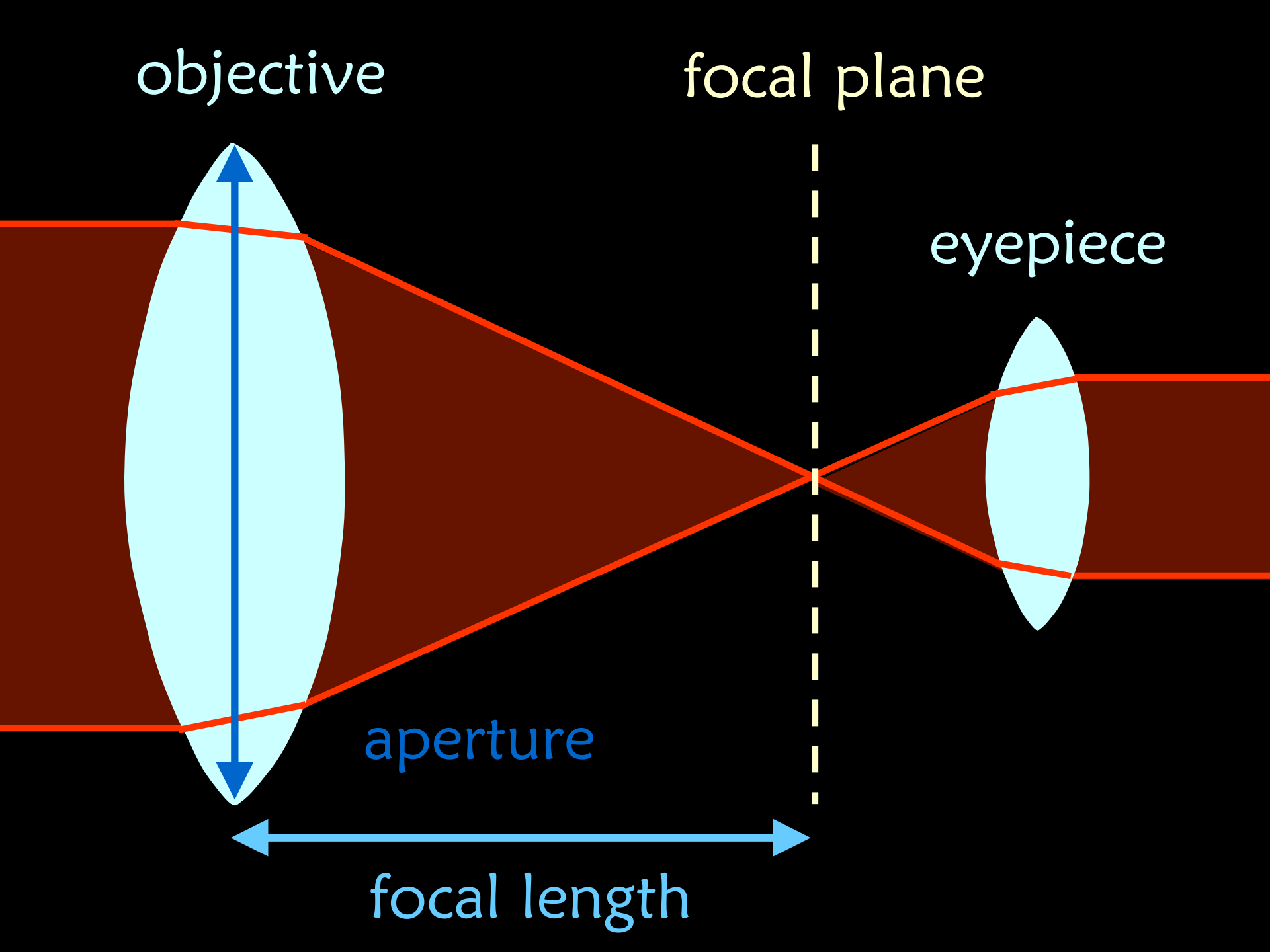





focus

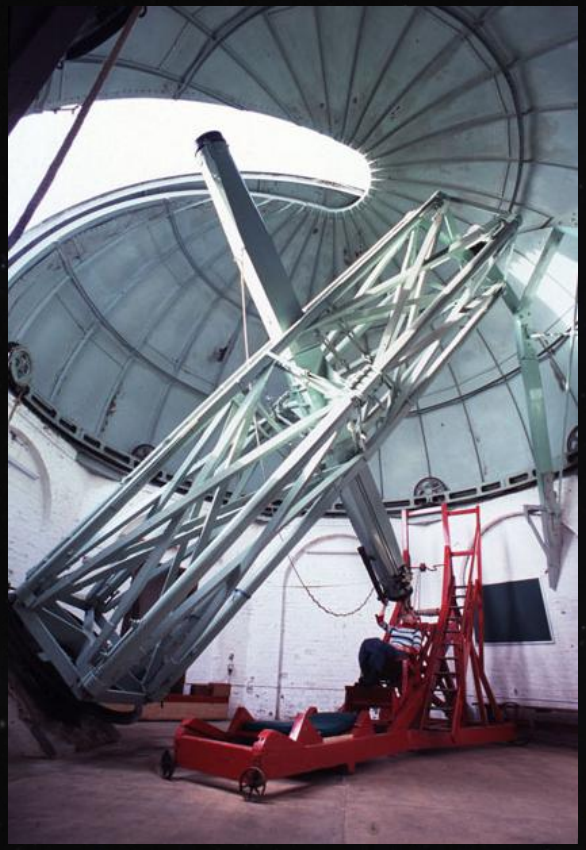

focal length
focus


focal plane
focal length

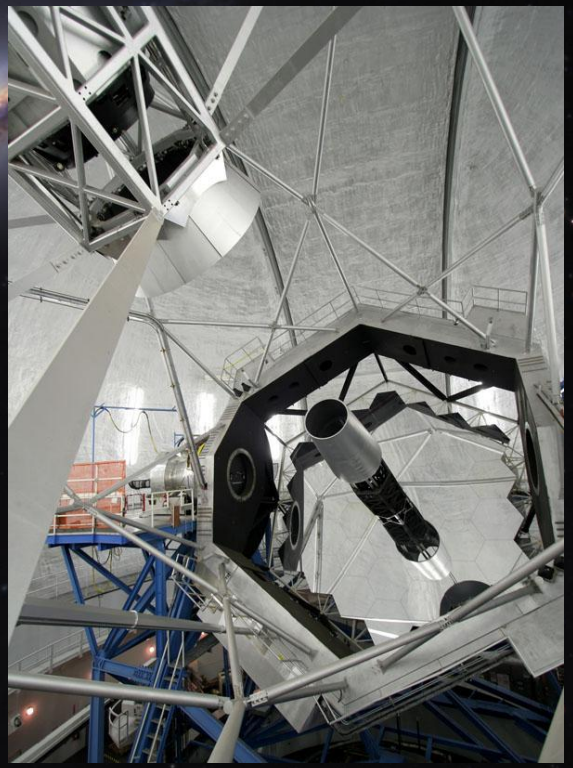

objective
focal plane
eyepiece
aperture
focal length

Light gathering power depends on area

$$\pi\left(\frac{D}{2}\right)^2$$



Amanda Smith



Ken Crawford
Andrew Cooper

Light gathering power

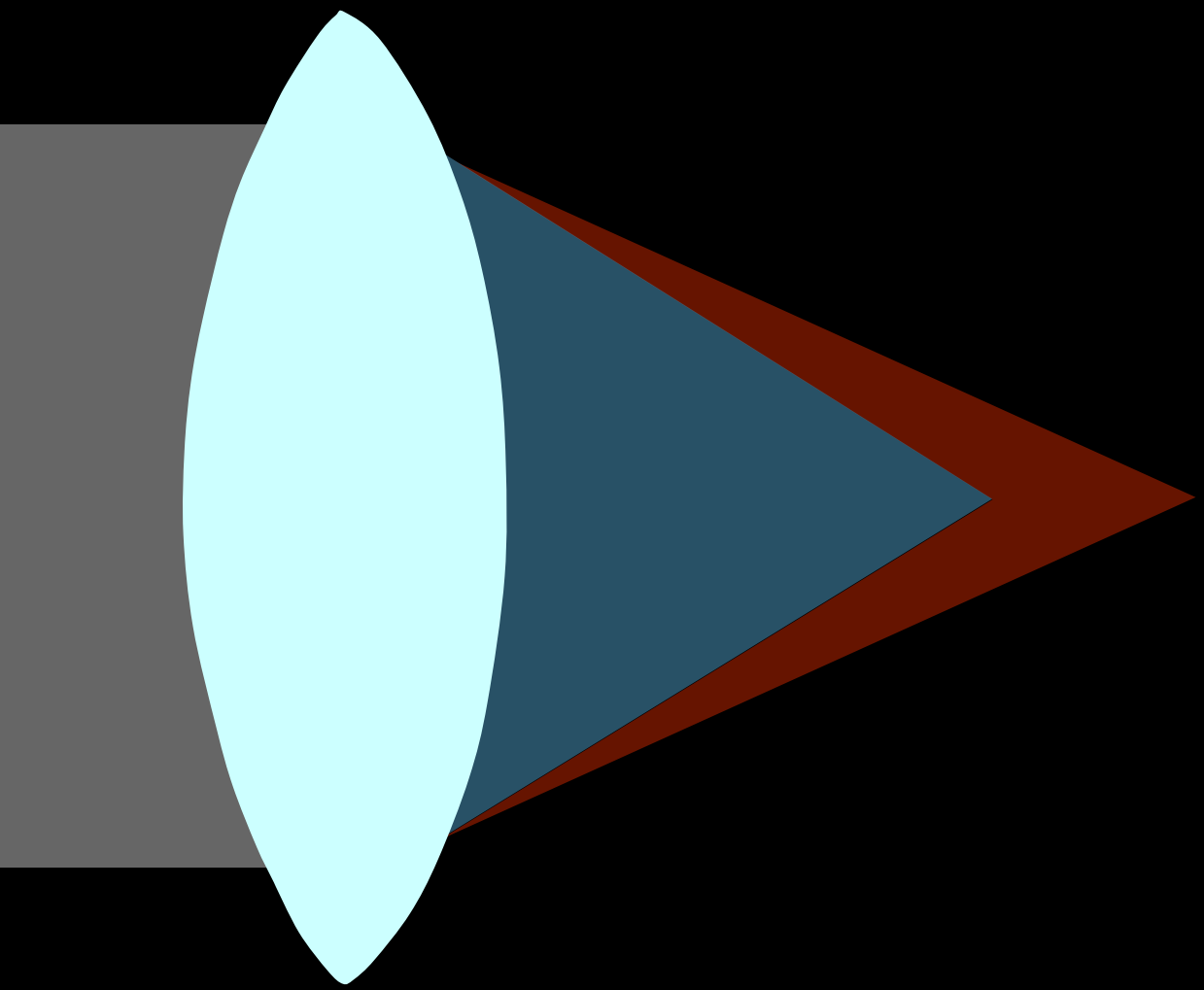
depends on area

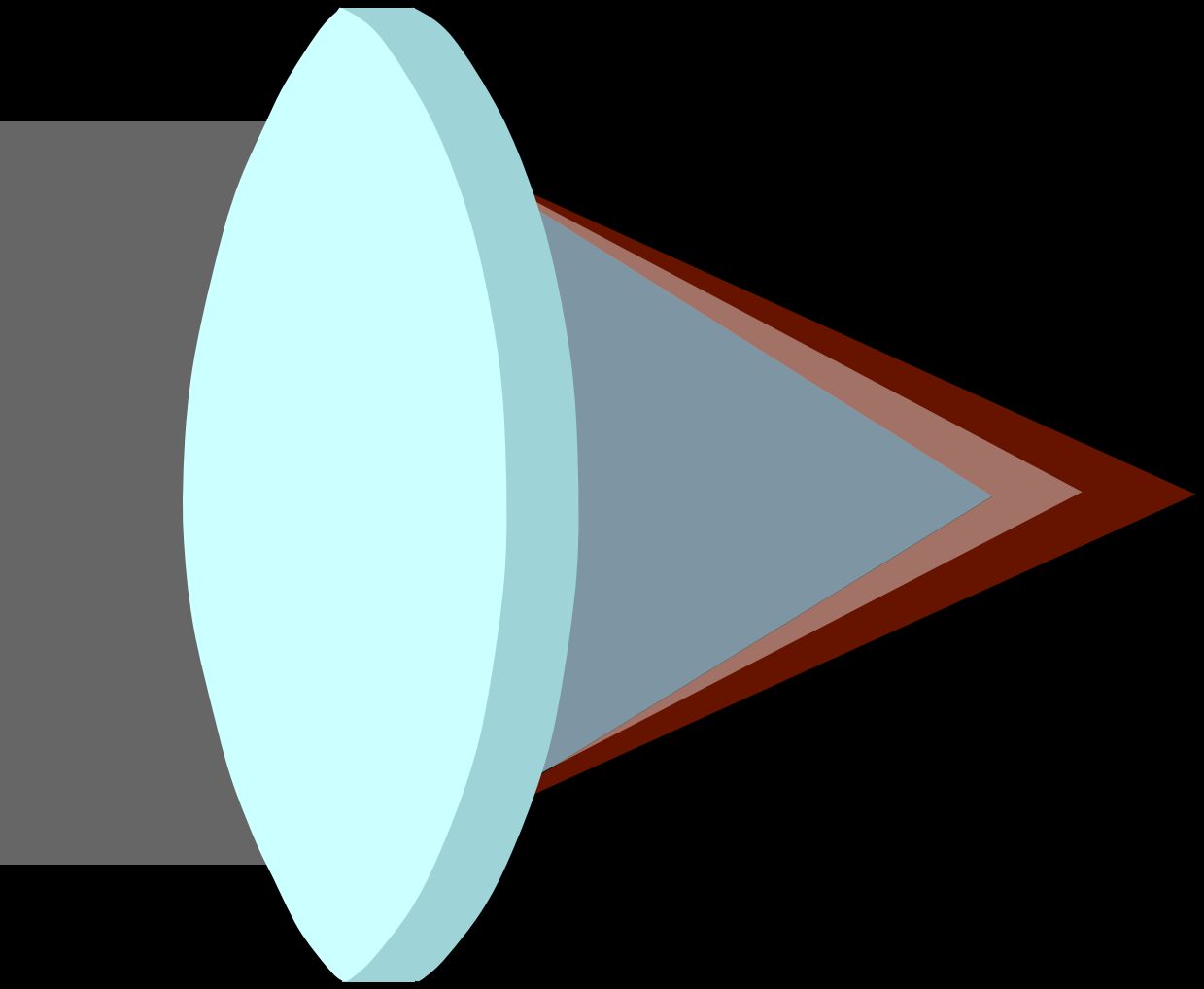
$$\pi\left(\frac{D}{2}\right)^2$$

Magnification

$$\frac{\text{focal length of objective}}{\text{focal length of eyepiece}}$$

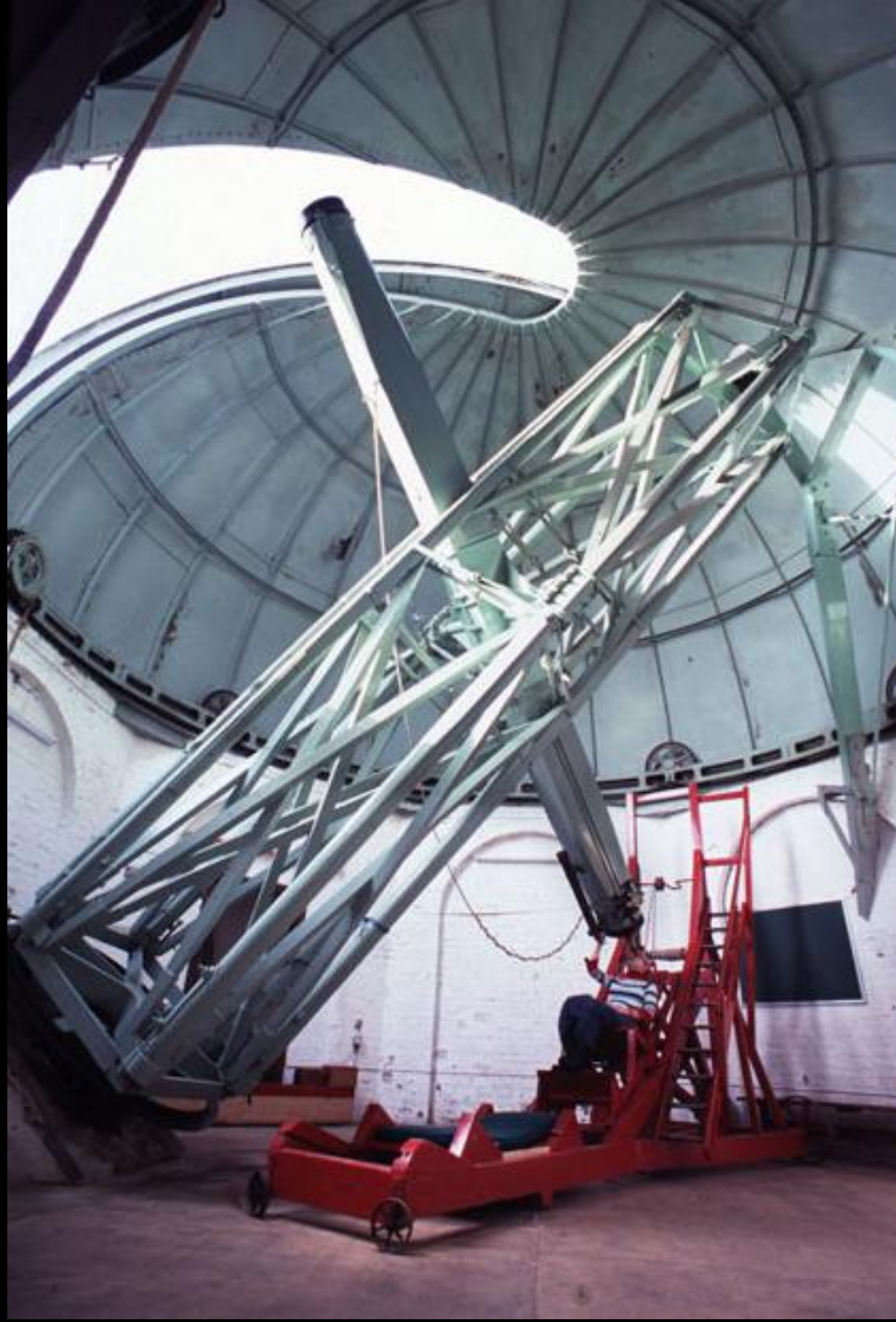
Ken Crawford





J. Basire, lithe

Fig. 26.— Exterior view of the Dome.

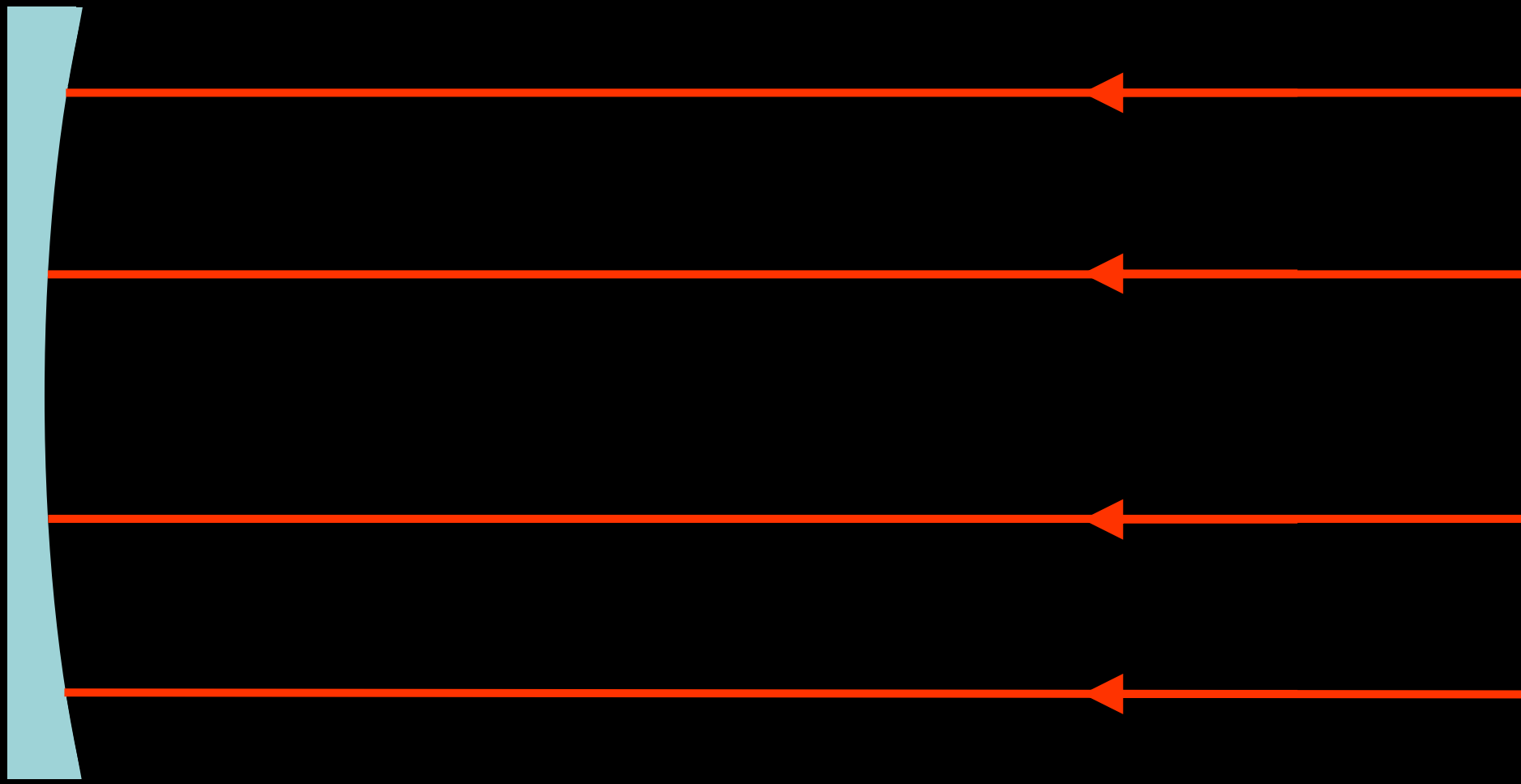


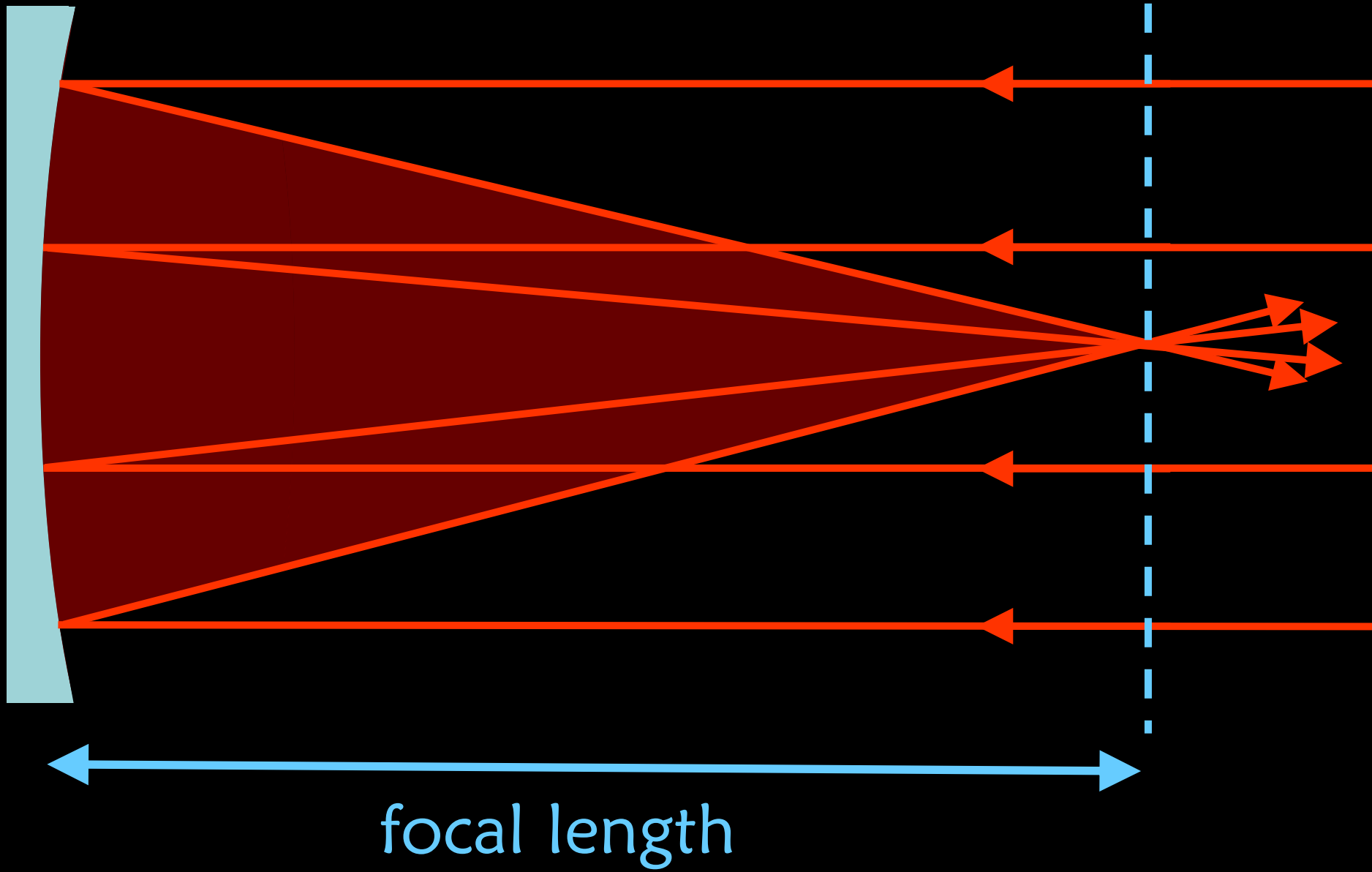
Amanda Smith

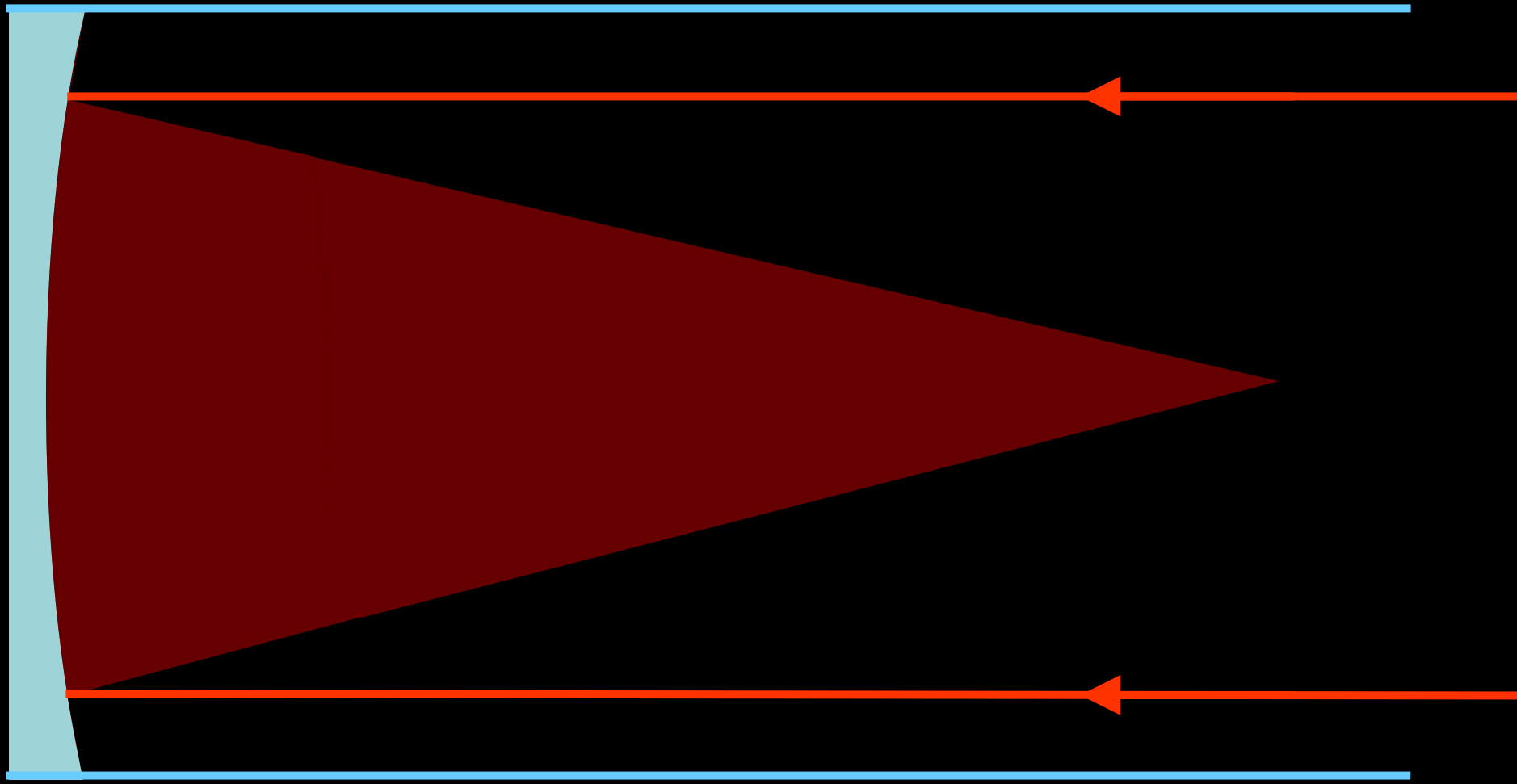
Yerkes Observatory

University of Chicago

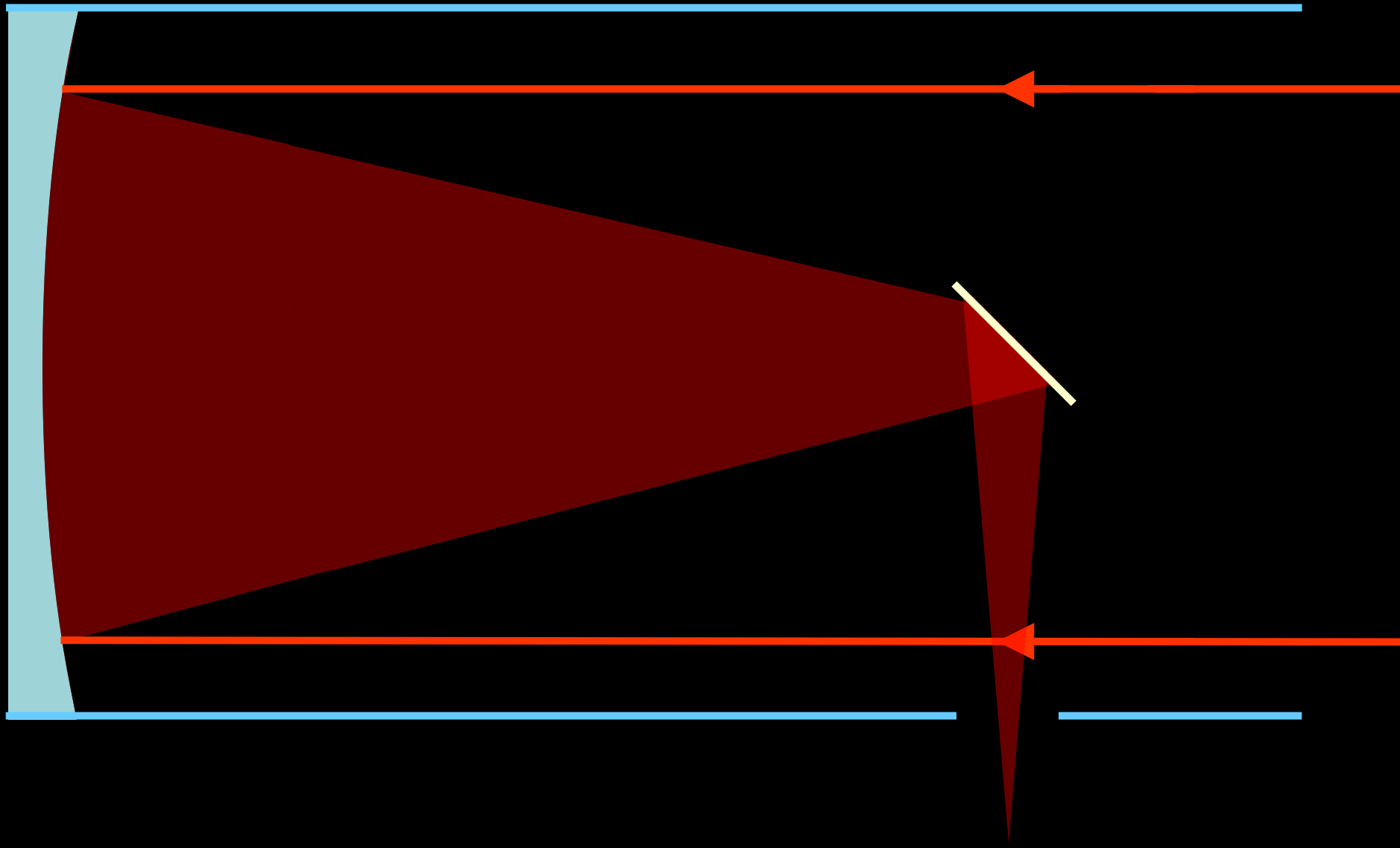
IoA Library, Cambridge



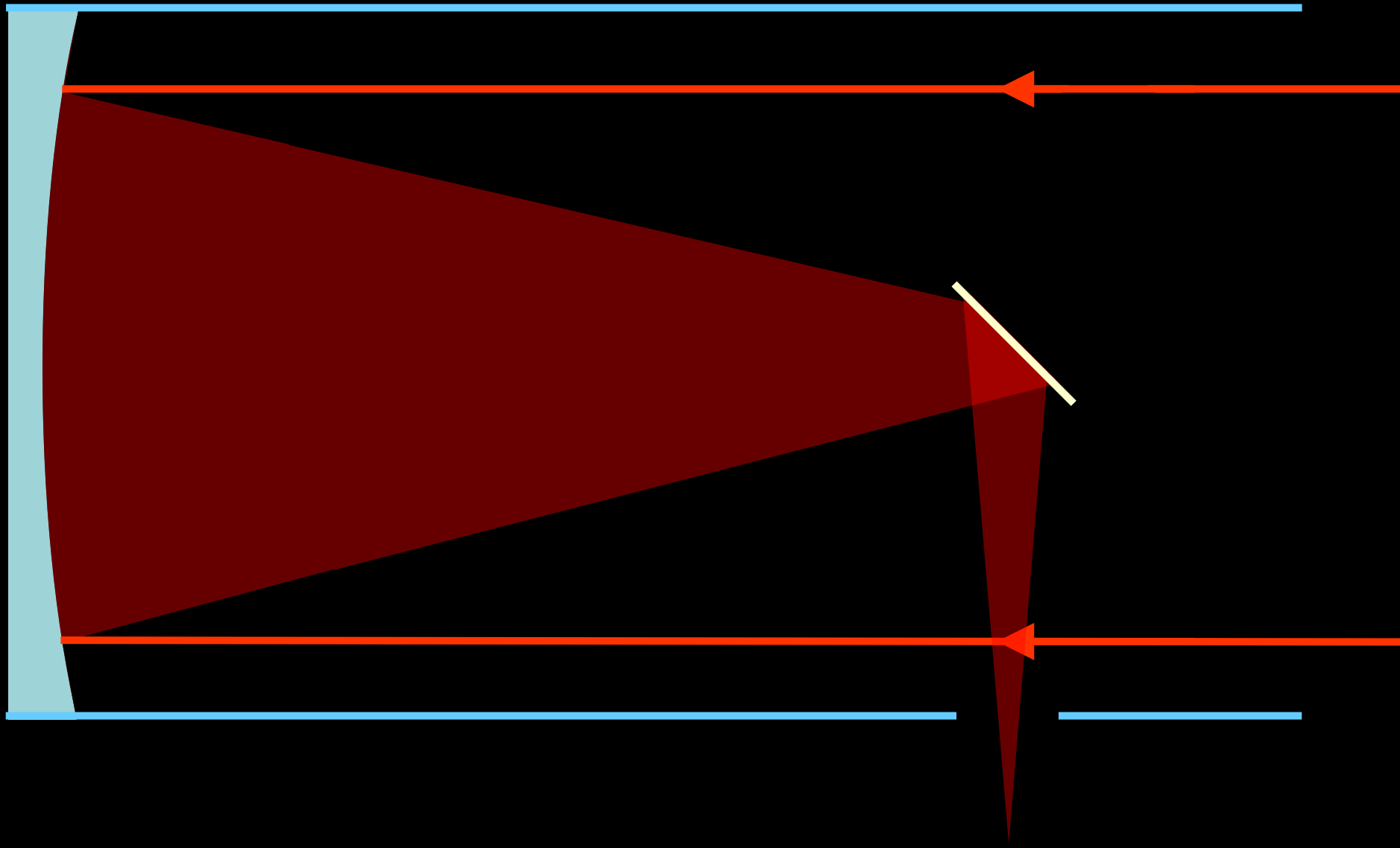

focal length



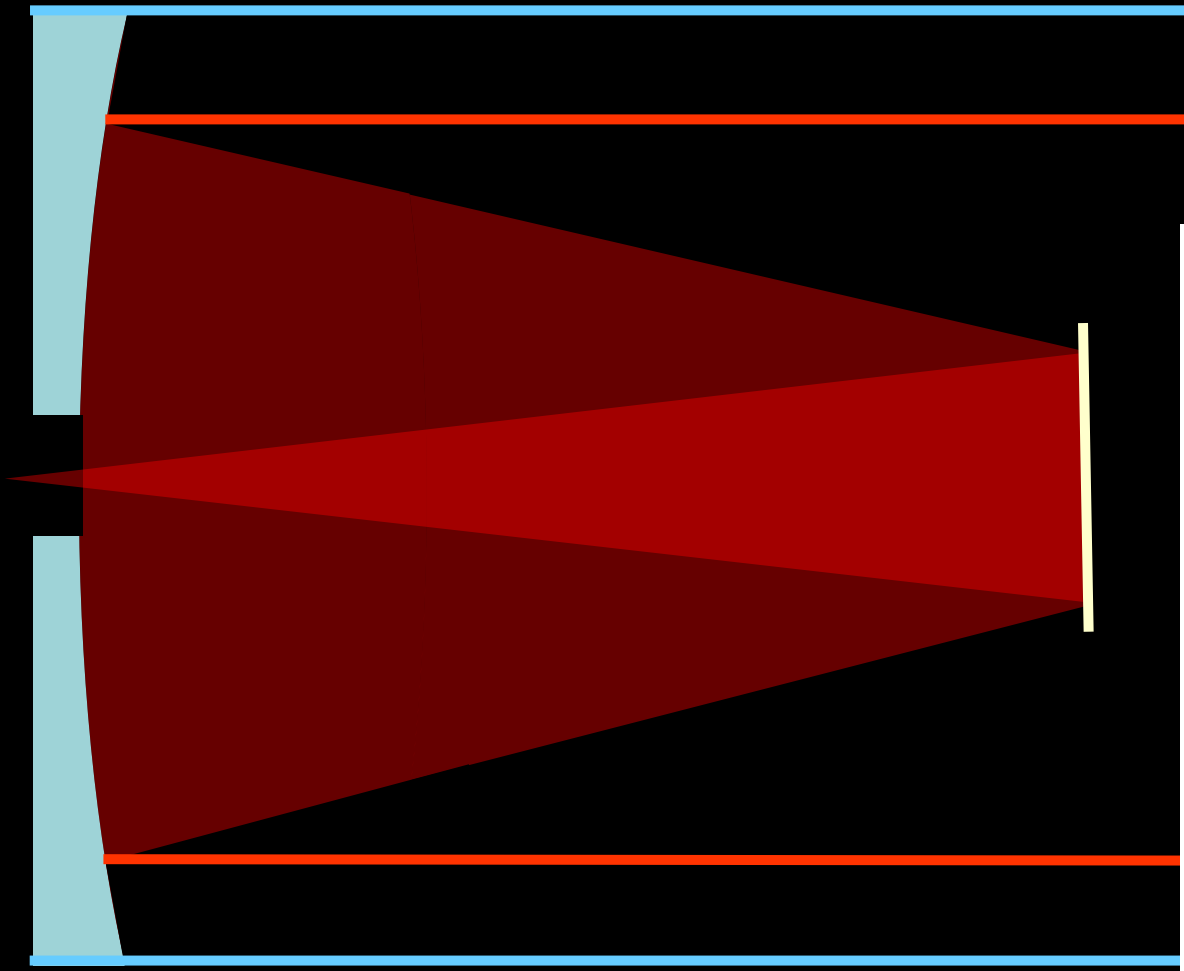
Newtonian focus

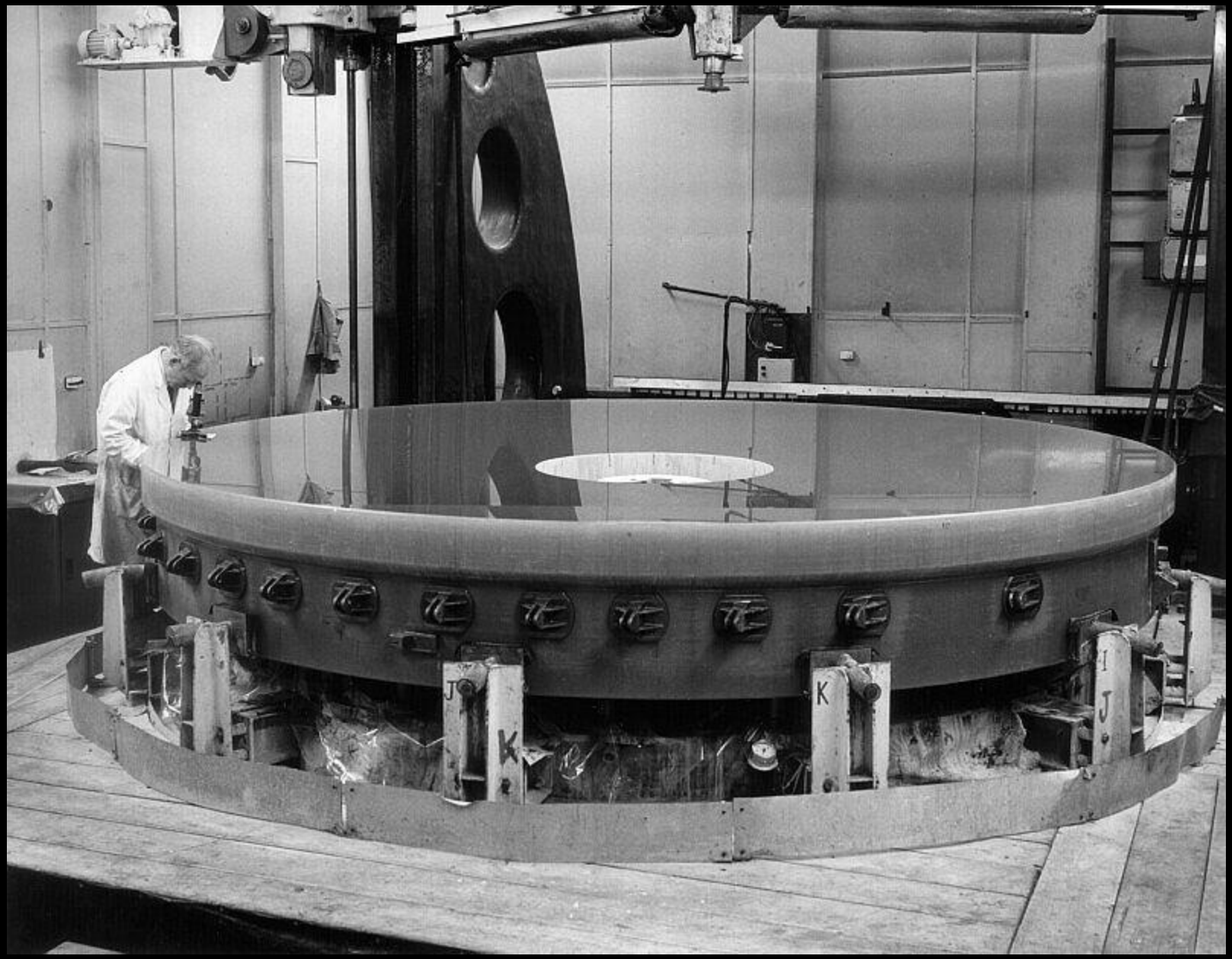


Newtonian focus

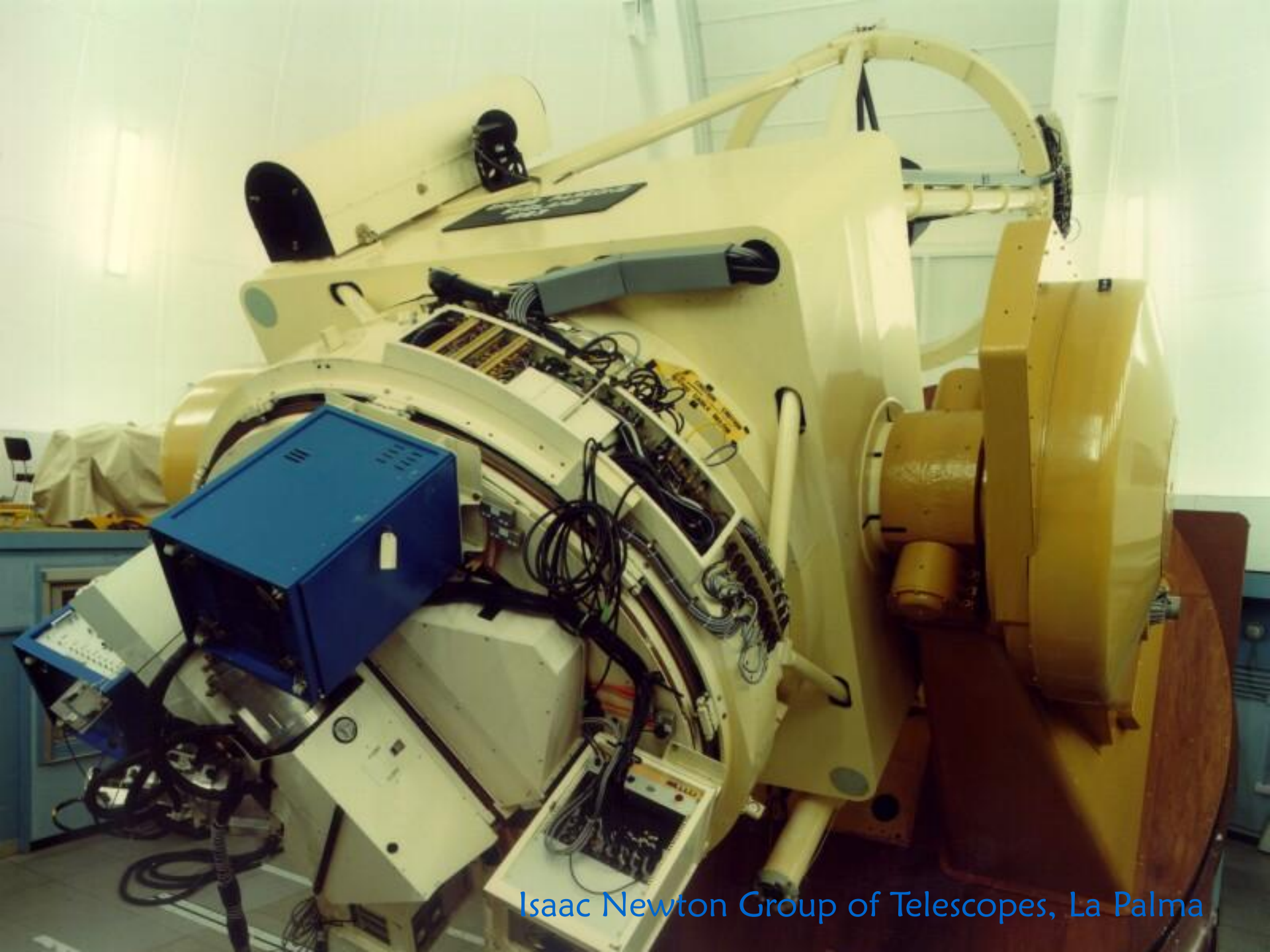


Cassegrain focus



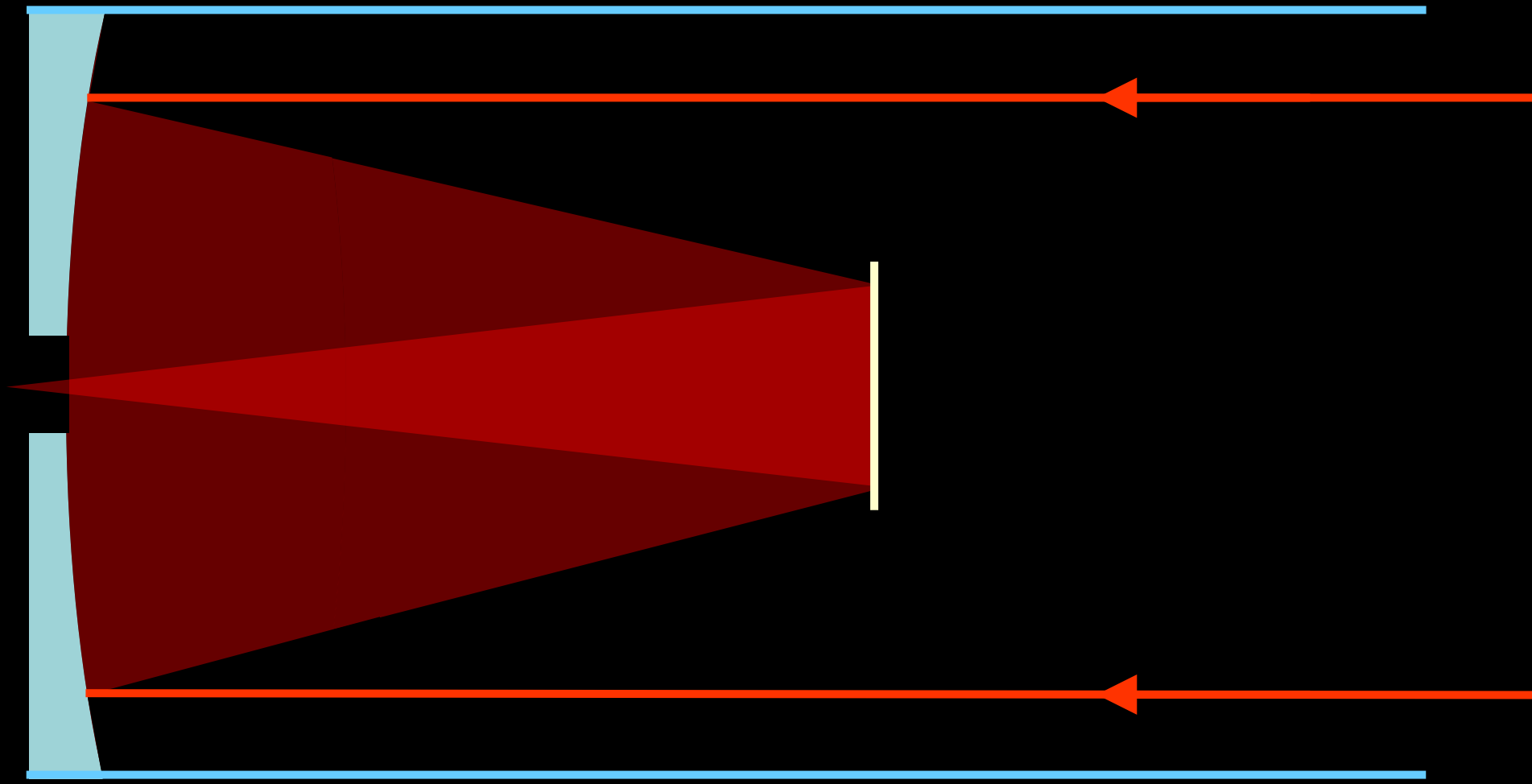


Royal Greenwich Observatory

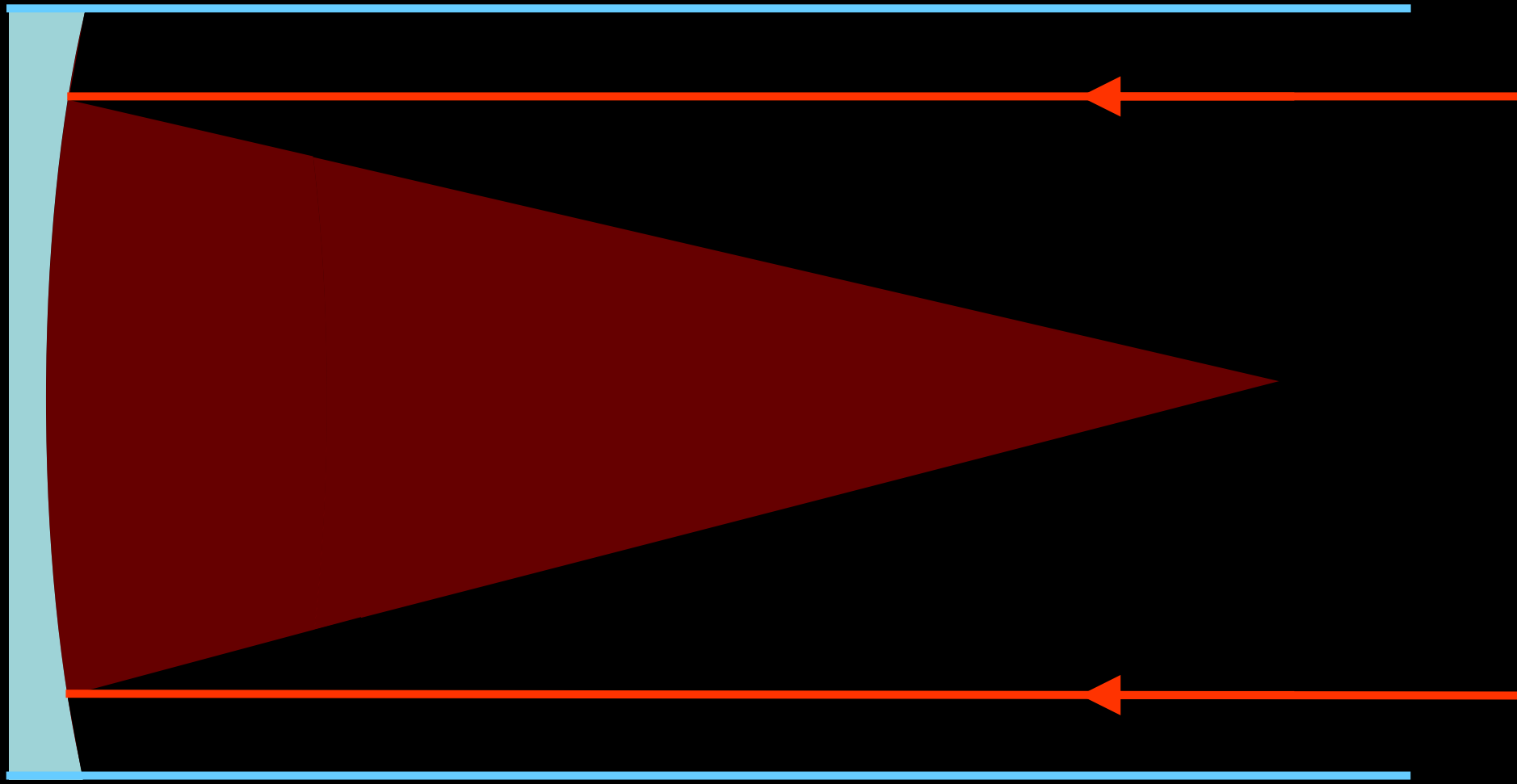

Isaac Newton Group of Telescopes, La Palma

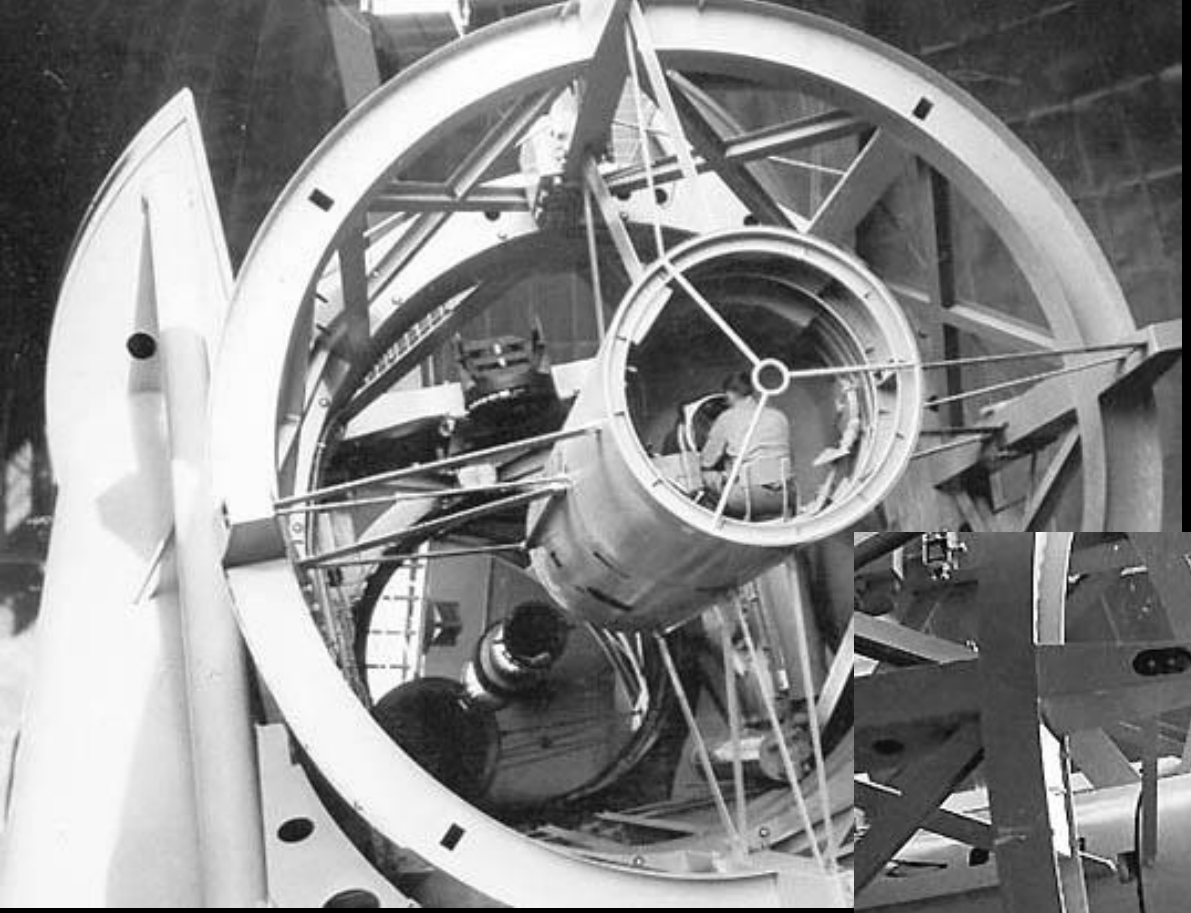
Jens Moser

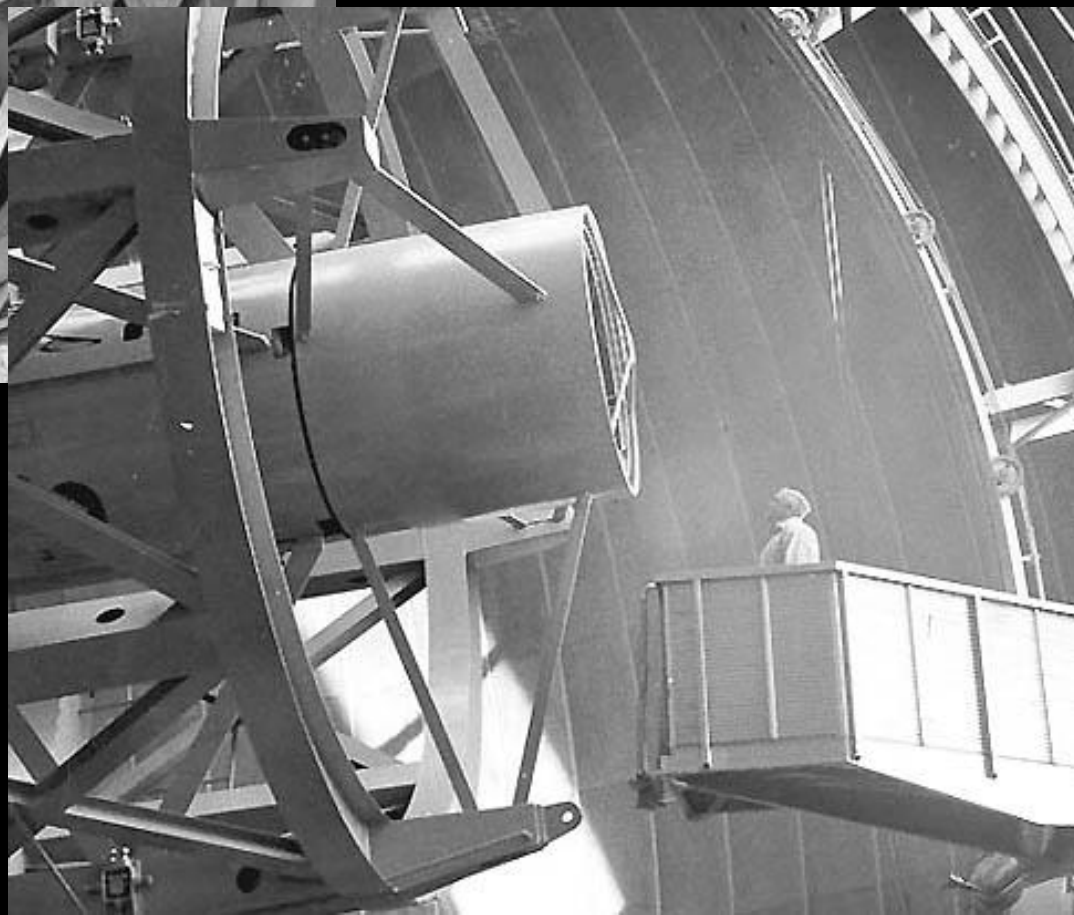
Cassegrain focus



Prime focus



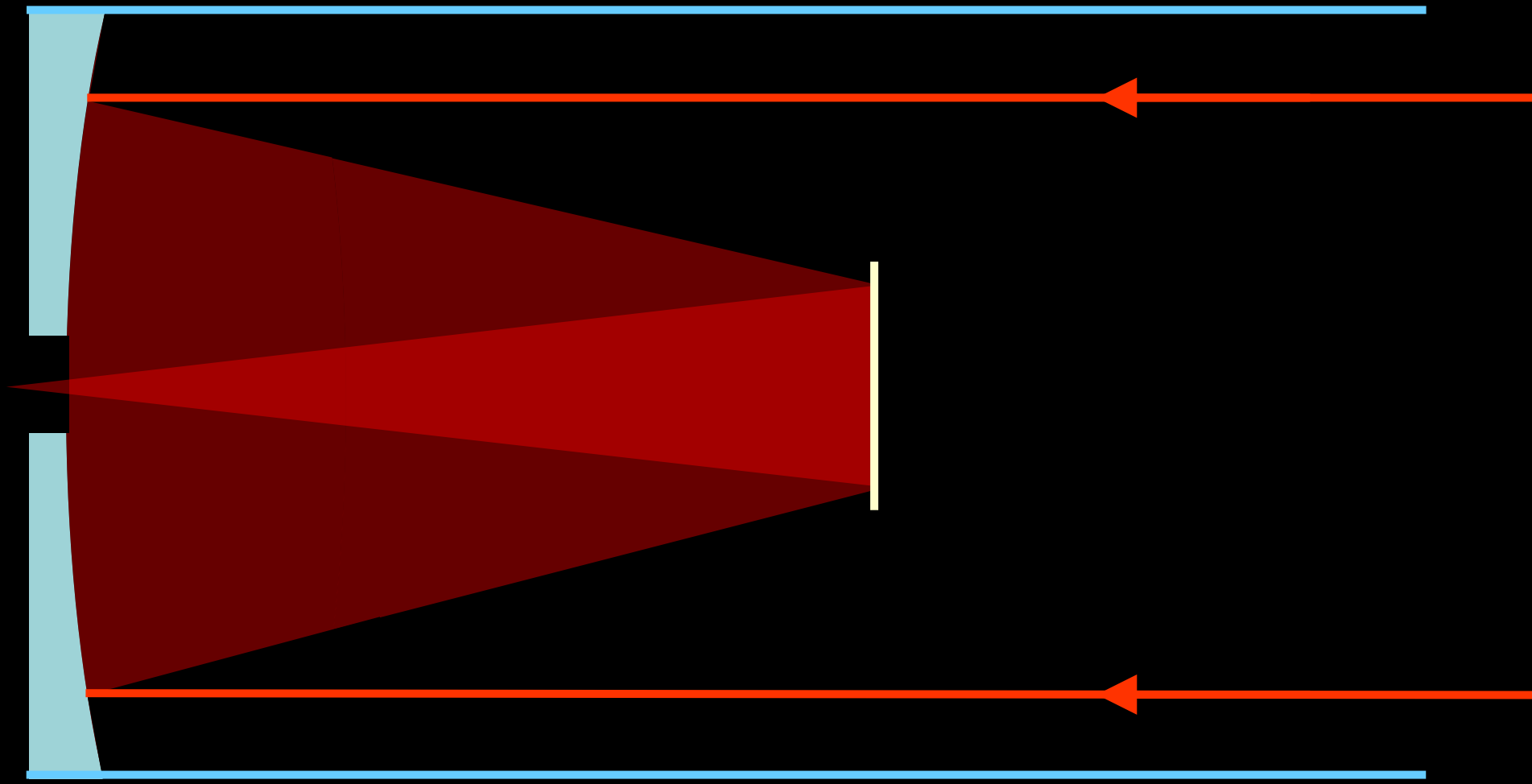




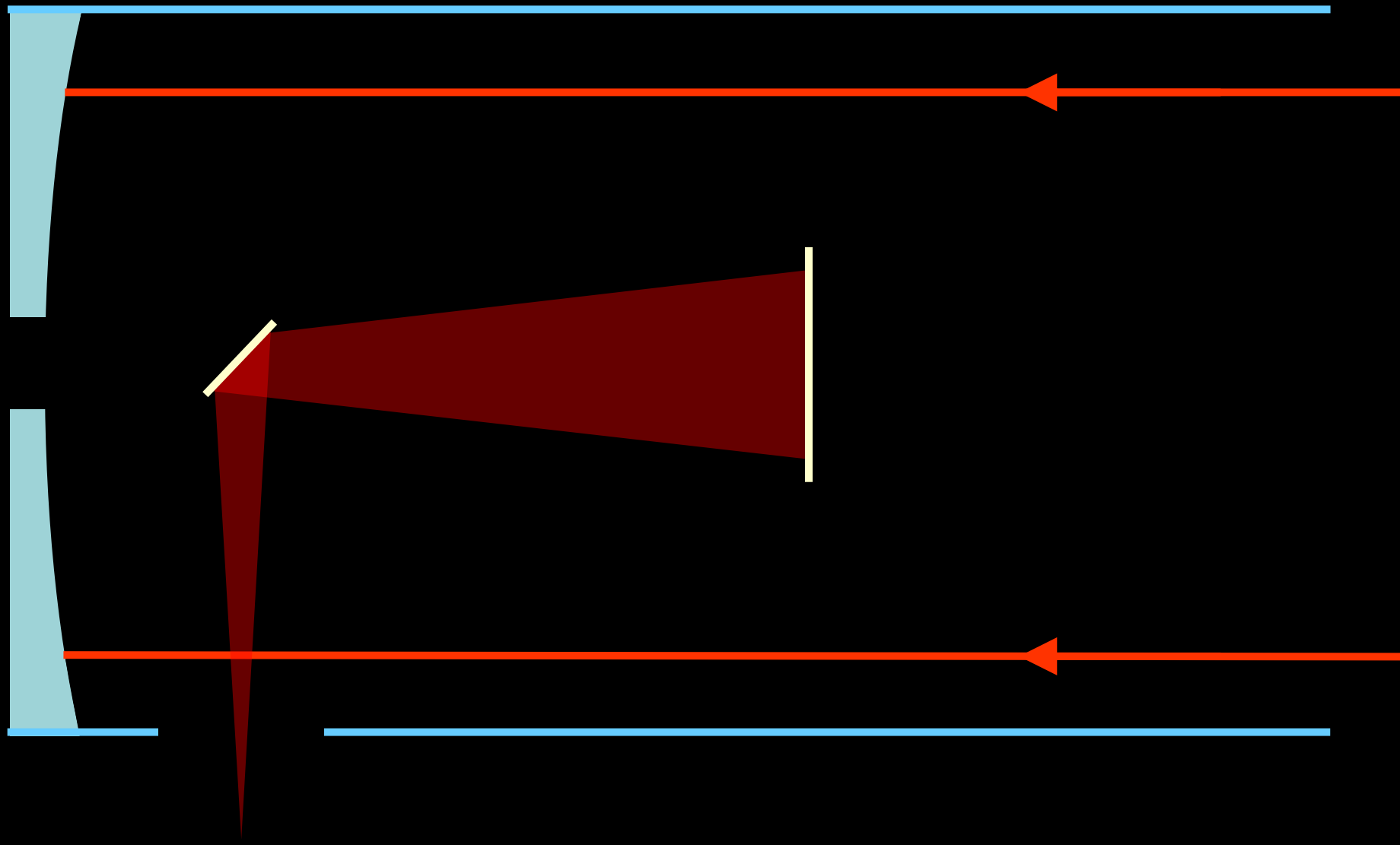
University of San Diego

David Malin

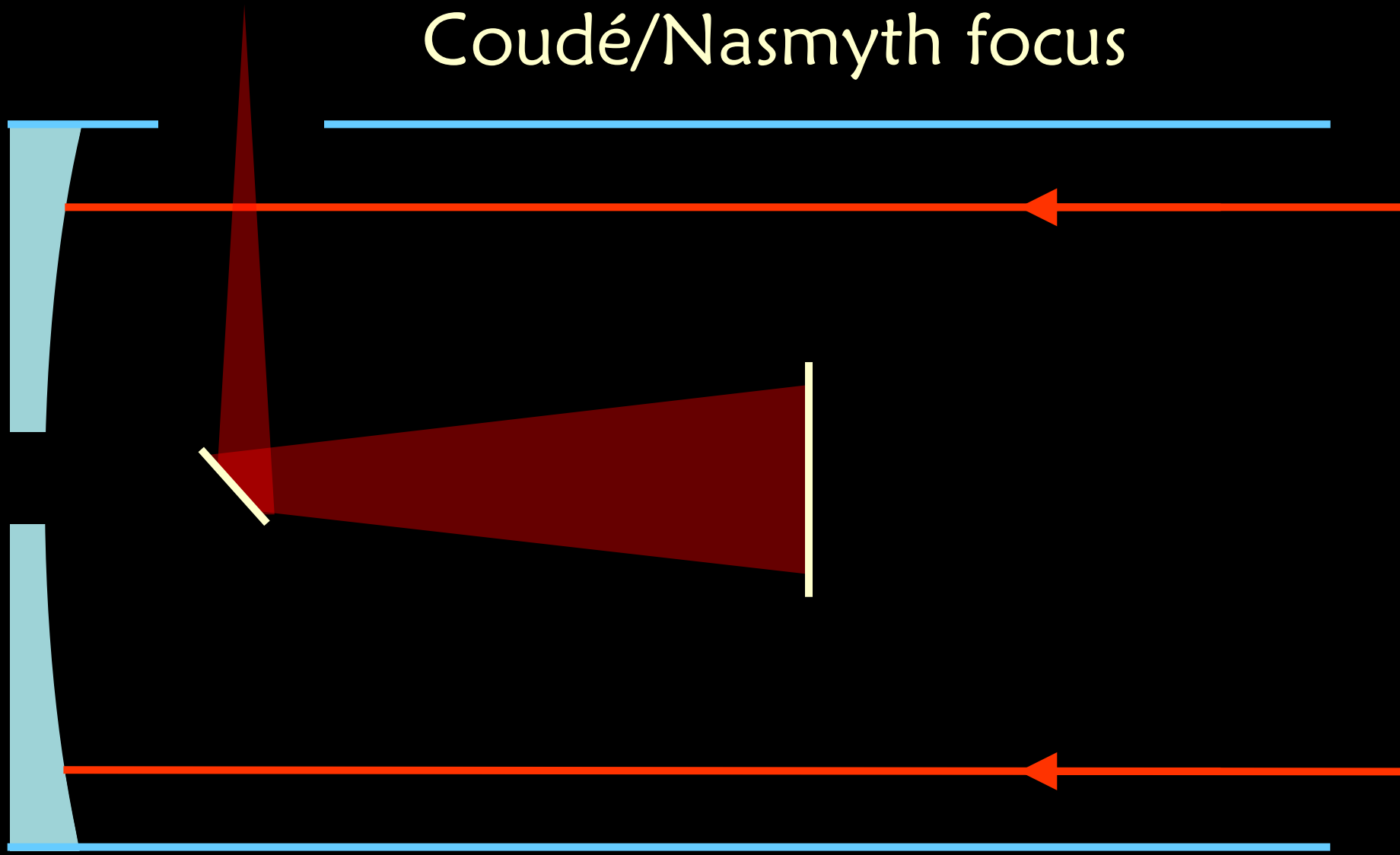
Cassegrain focus

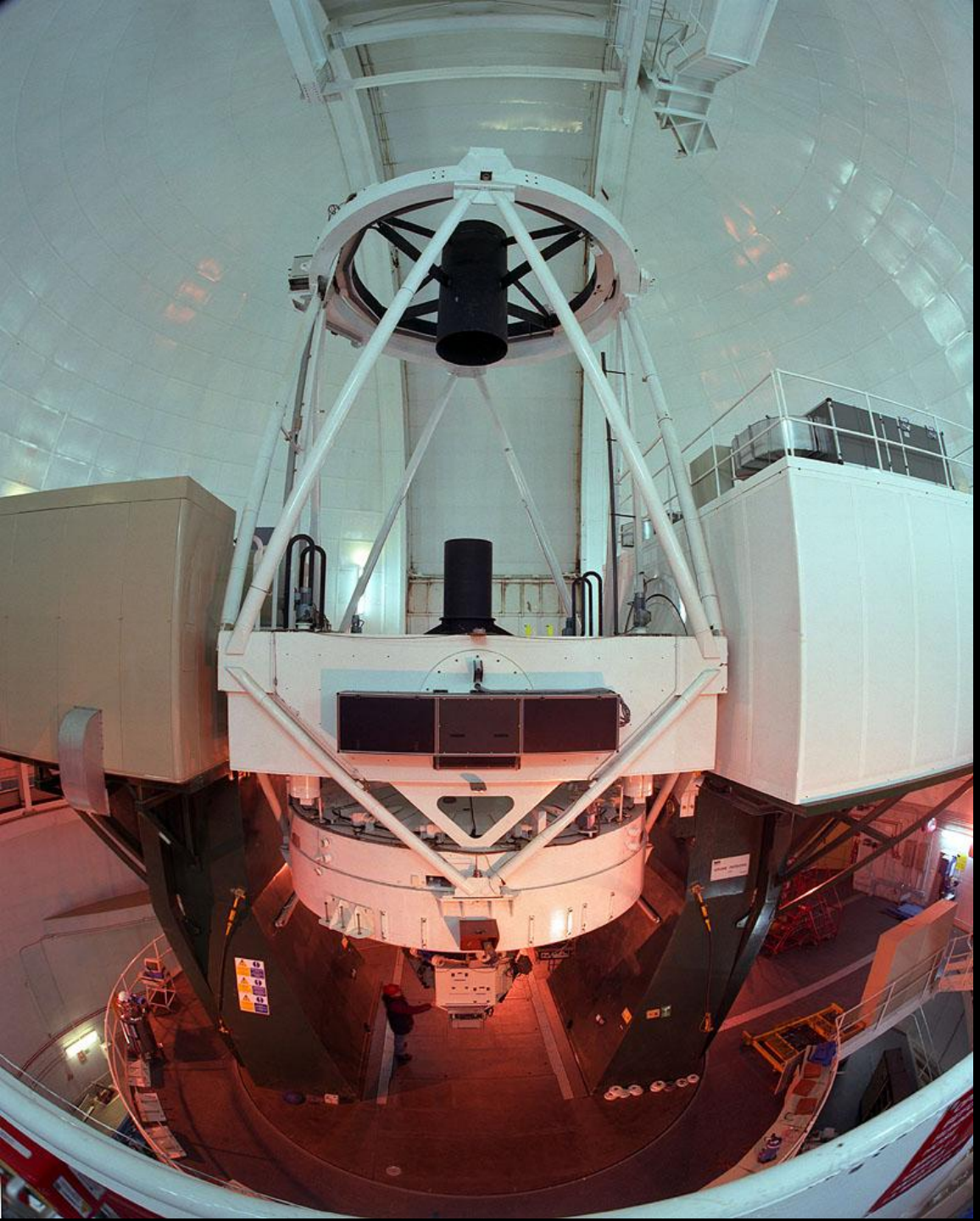


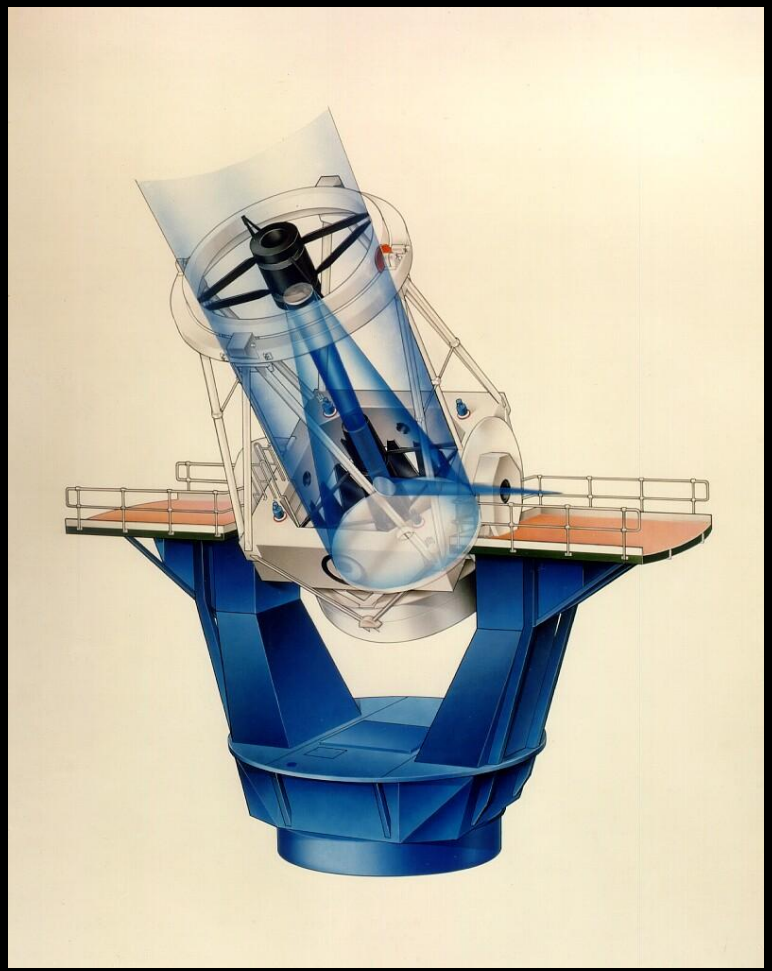
Coudé/Nasmyth focus



Coudé/Nasmyth focus

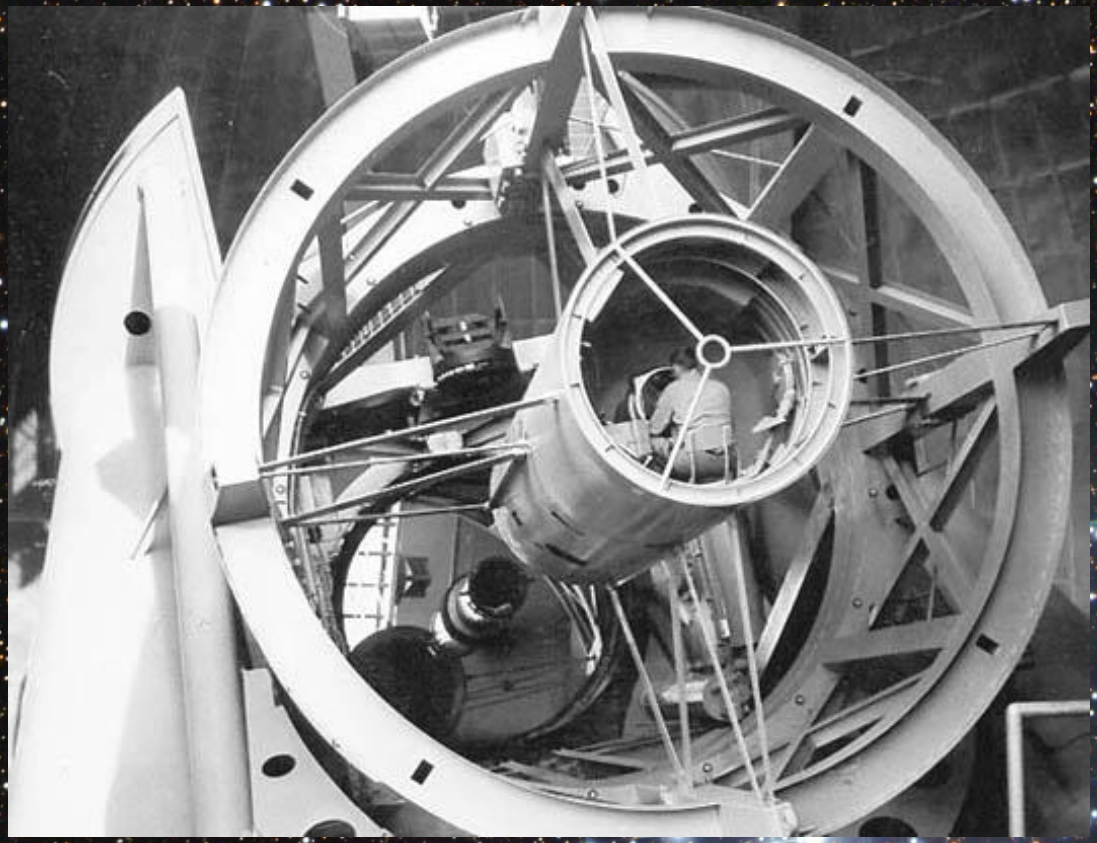


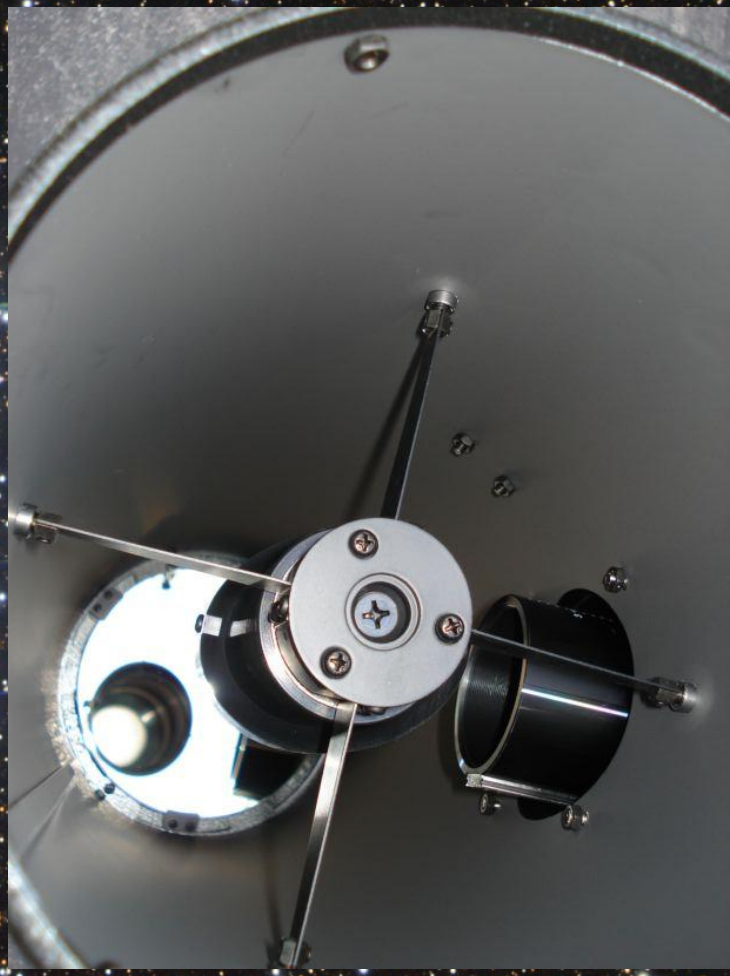




Jens Moser
Isaac Newton Group, La Palma

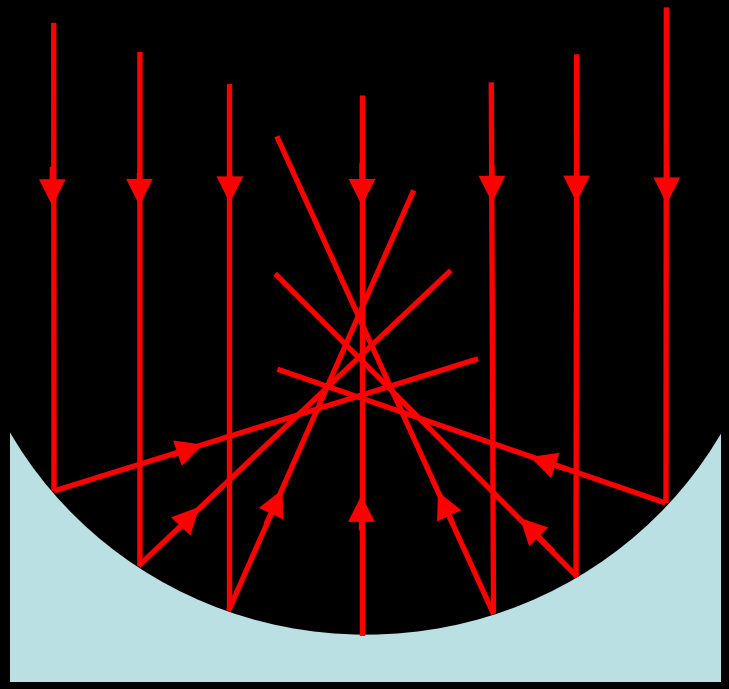

Dieter Willasch (Astro-Cabinet)





Dieter Willasch (Astro-Cabinet)

University of San Diego



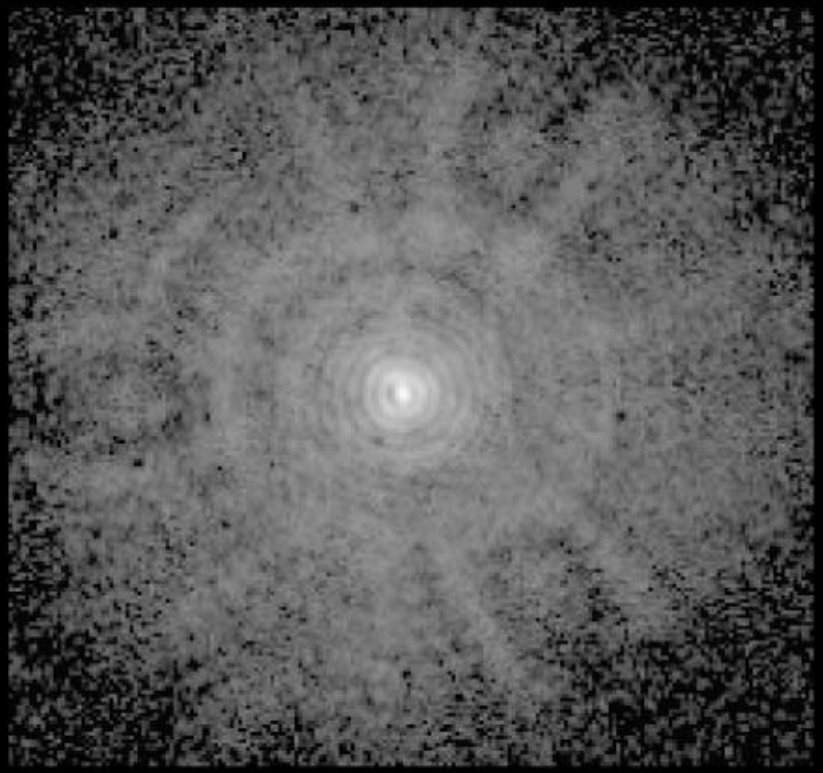
Spherical Mirror


NASA

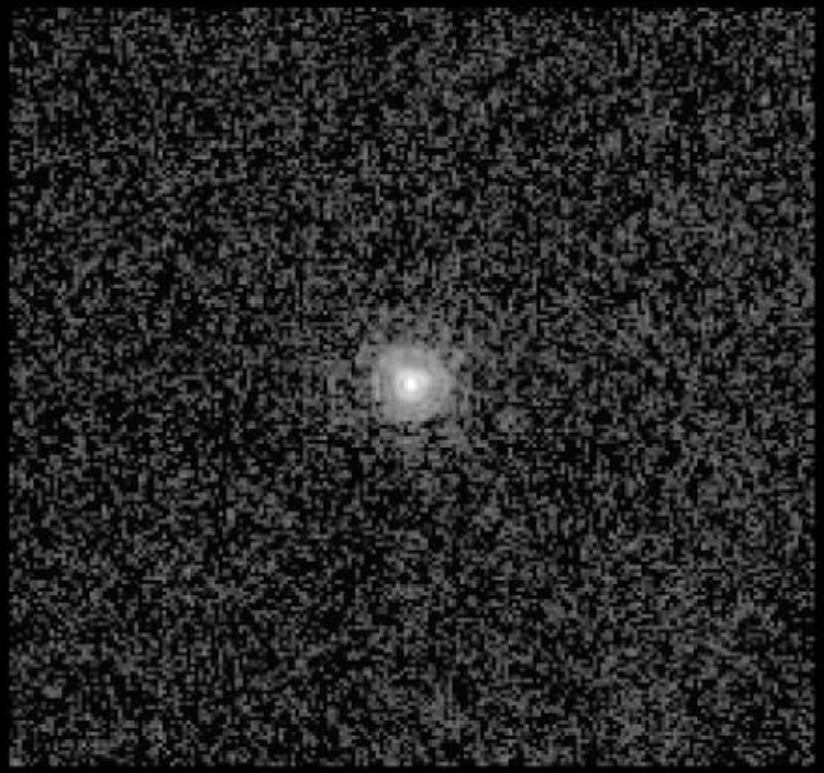
HUBBLE SPACE TELESCOPE

FAINT OBJECT CAMERA

COMPARATIVE VIEWS OF A STAR

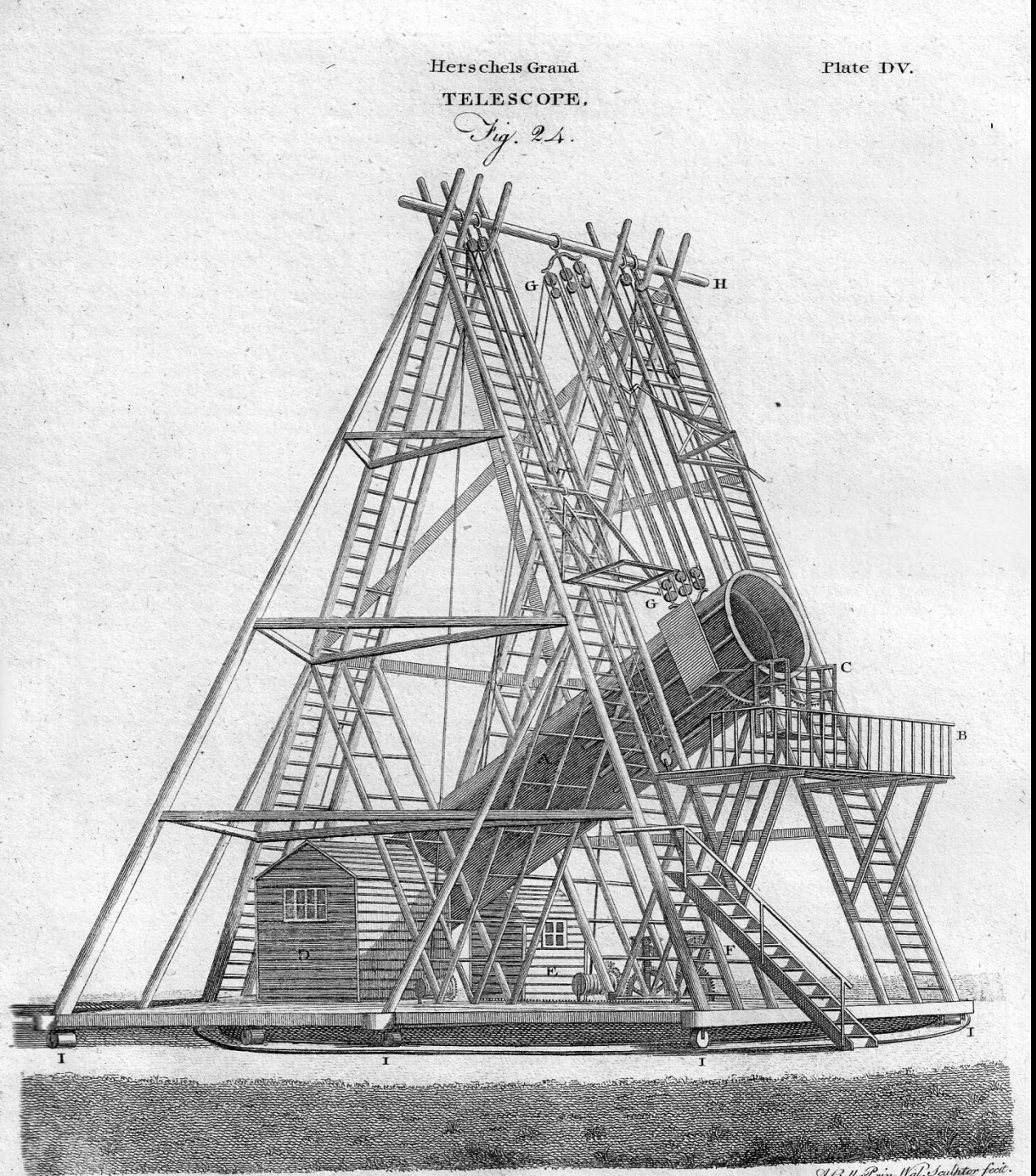


BEFORE COSTAR



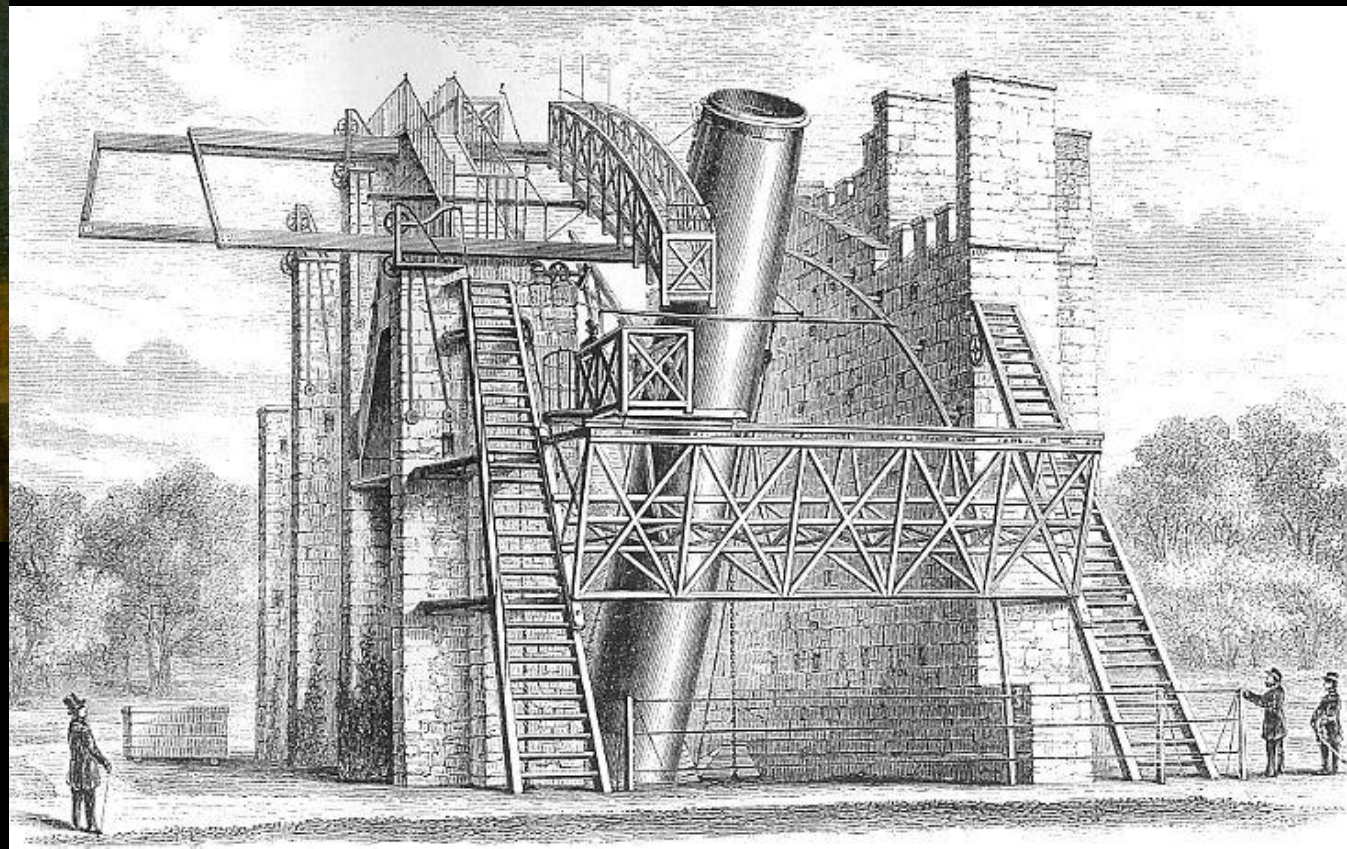
AFTER COSTAR

Hubble News Center



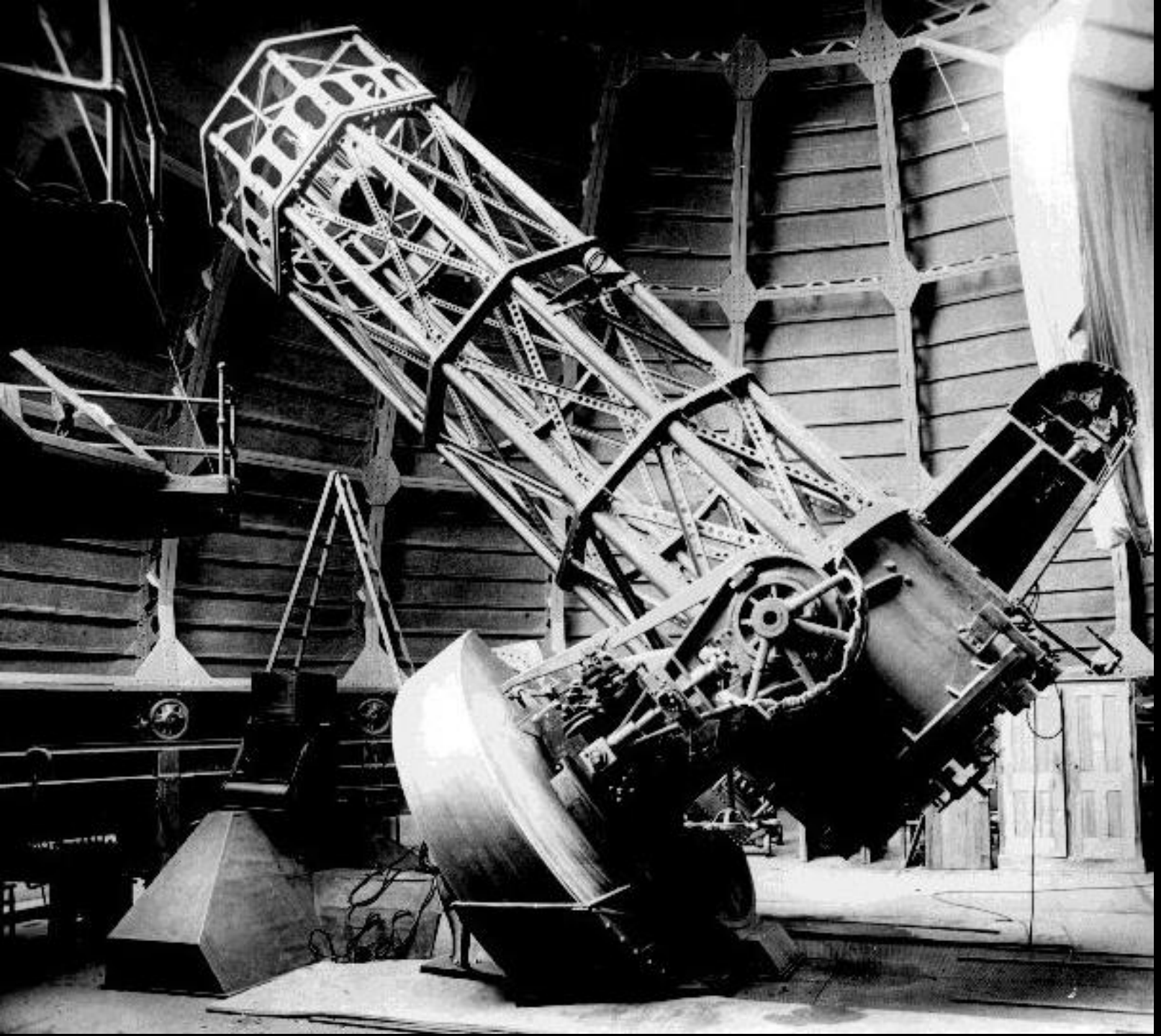
William Herschel
(1738-1822)

Lord Rosse
(1800-1867)

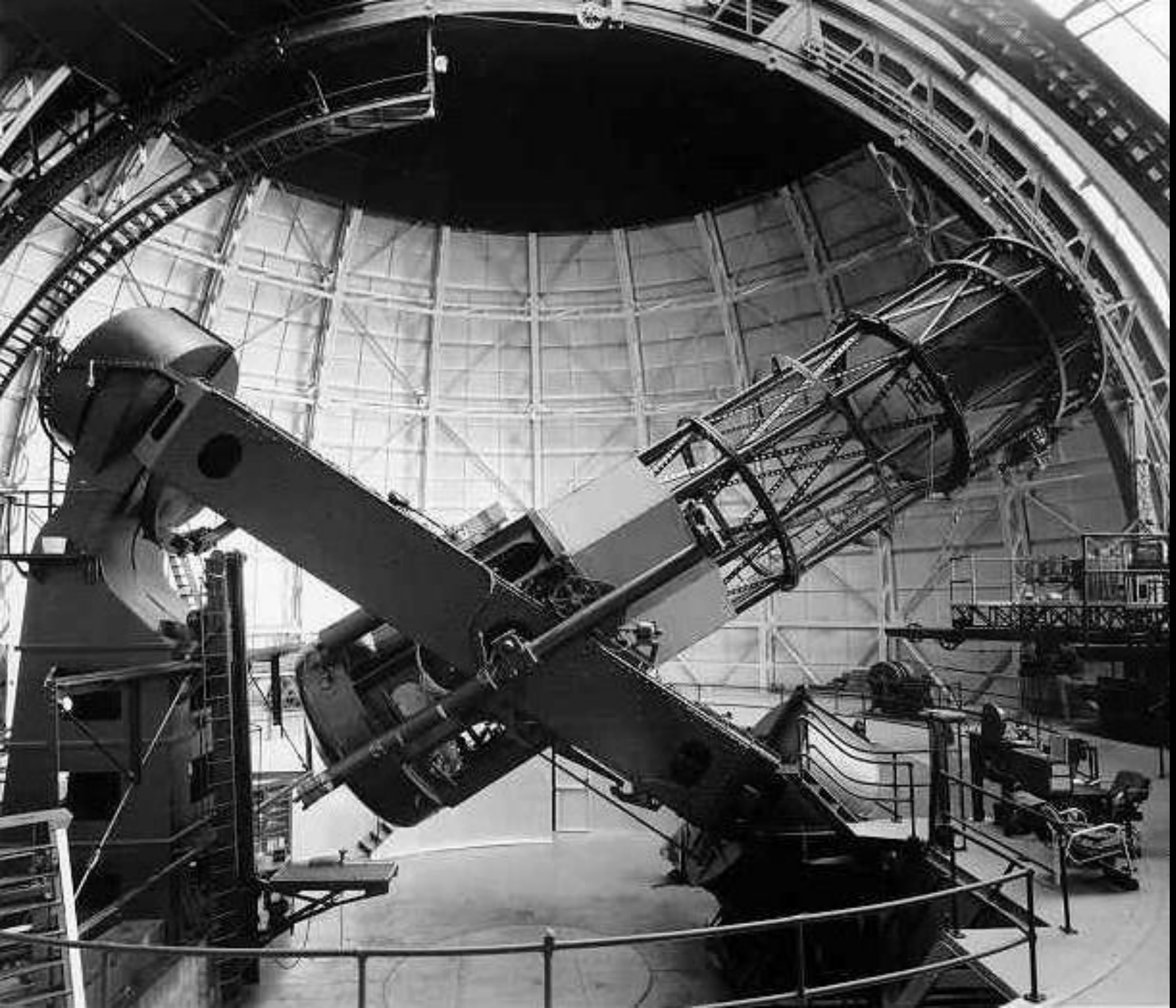



Hubble Space Telescope


Mt Wilson Observatory

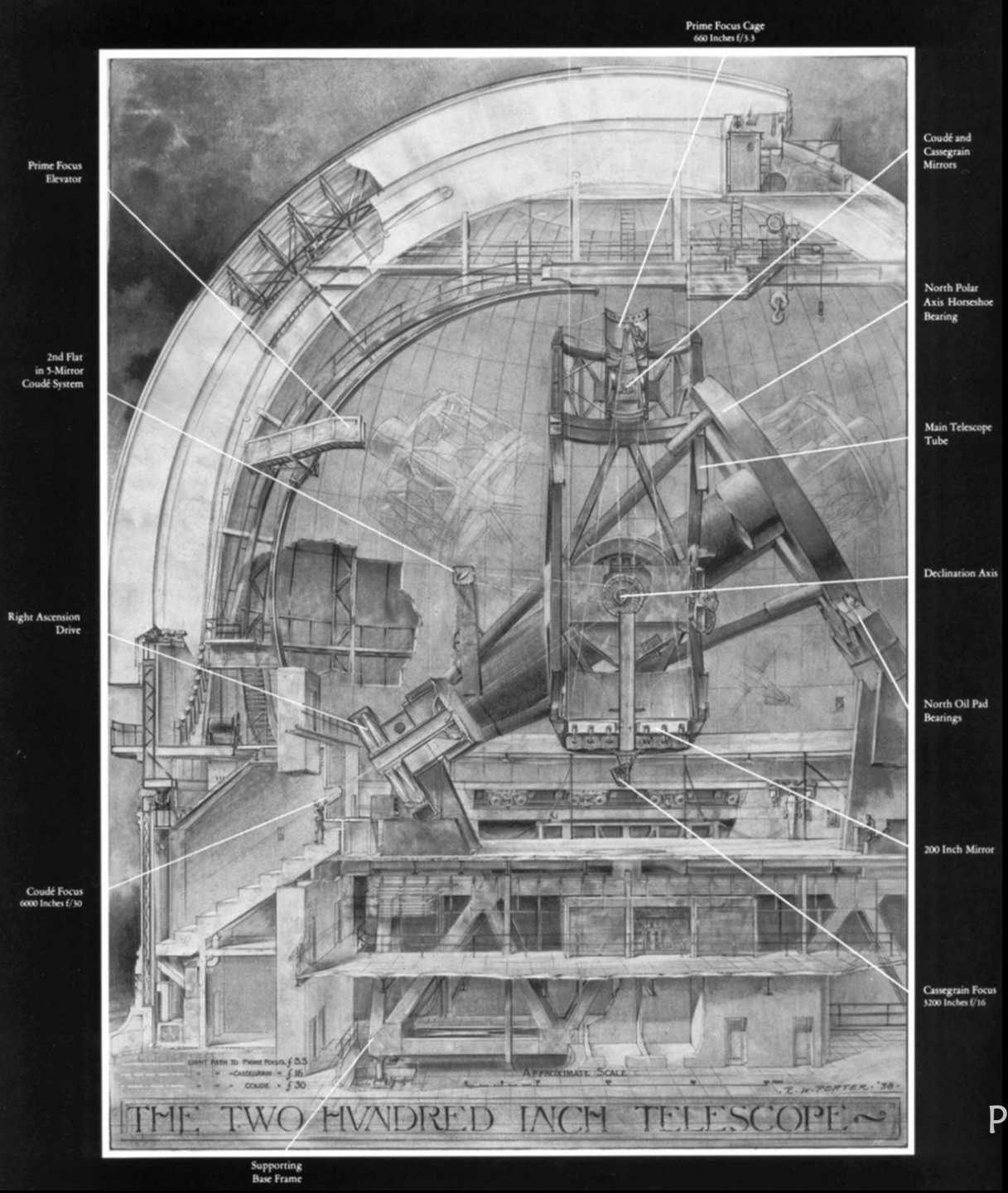


Caltech
archives

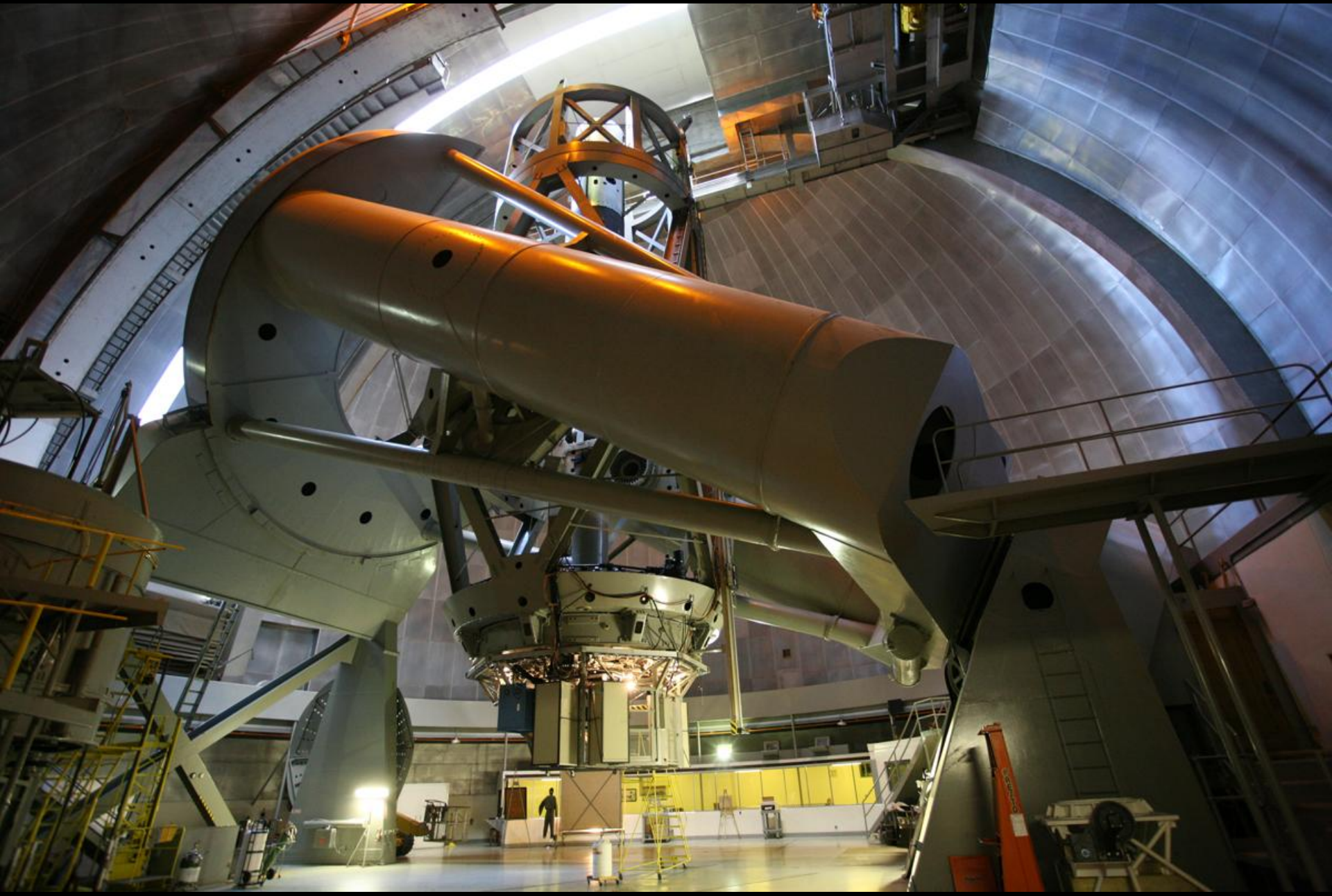


Caltech
archives

Palomar Observatory

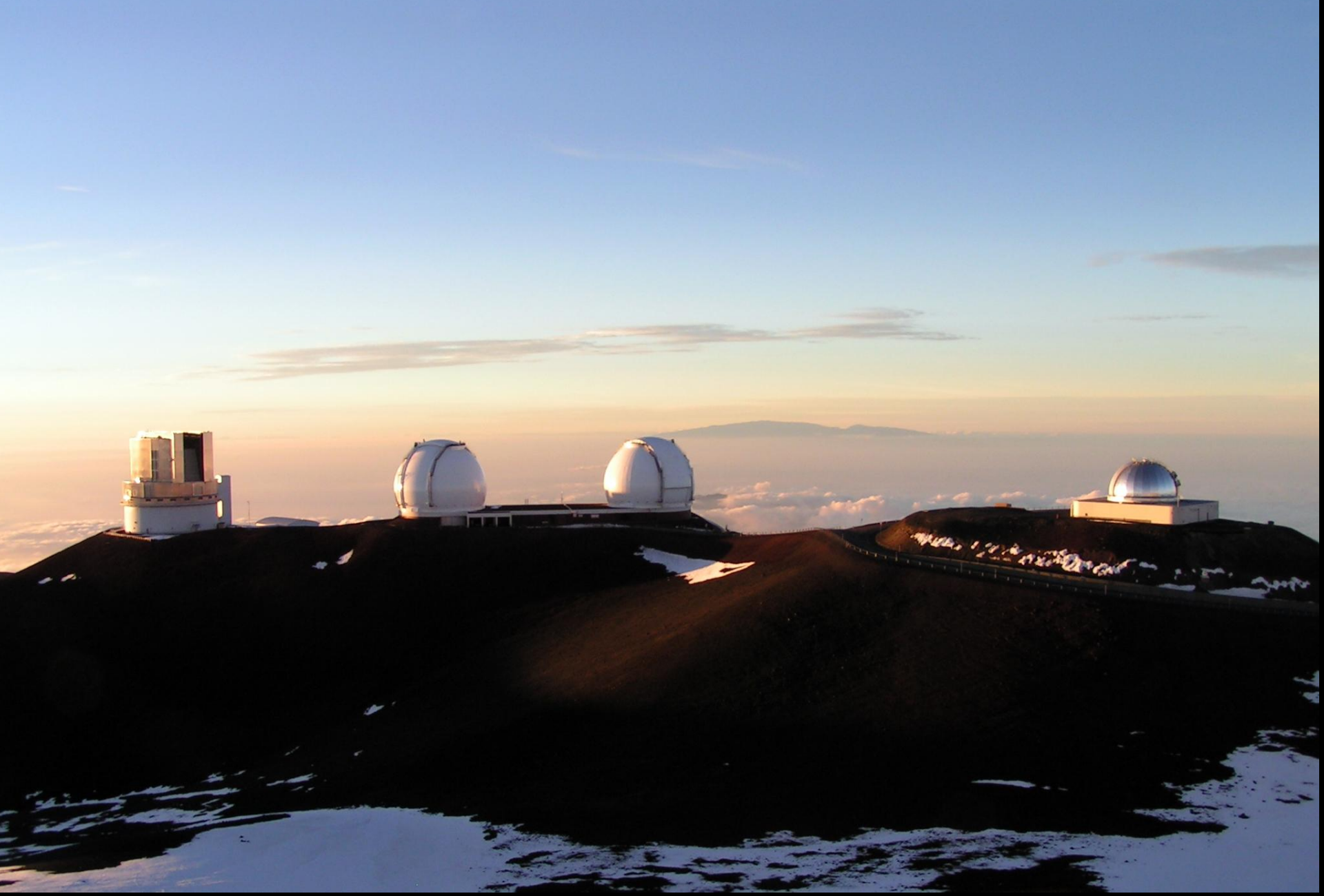


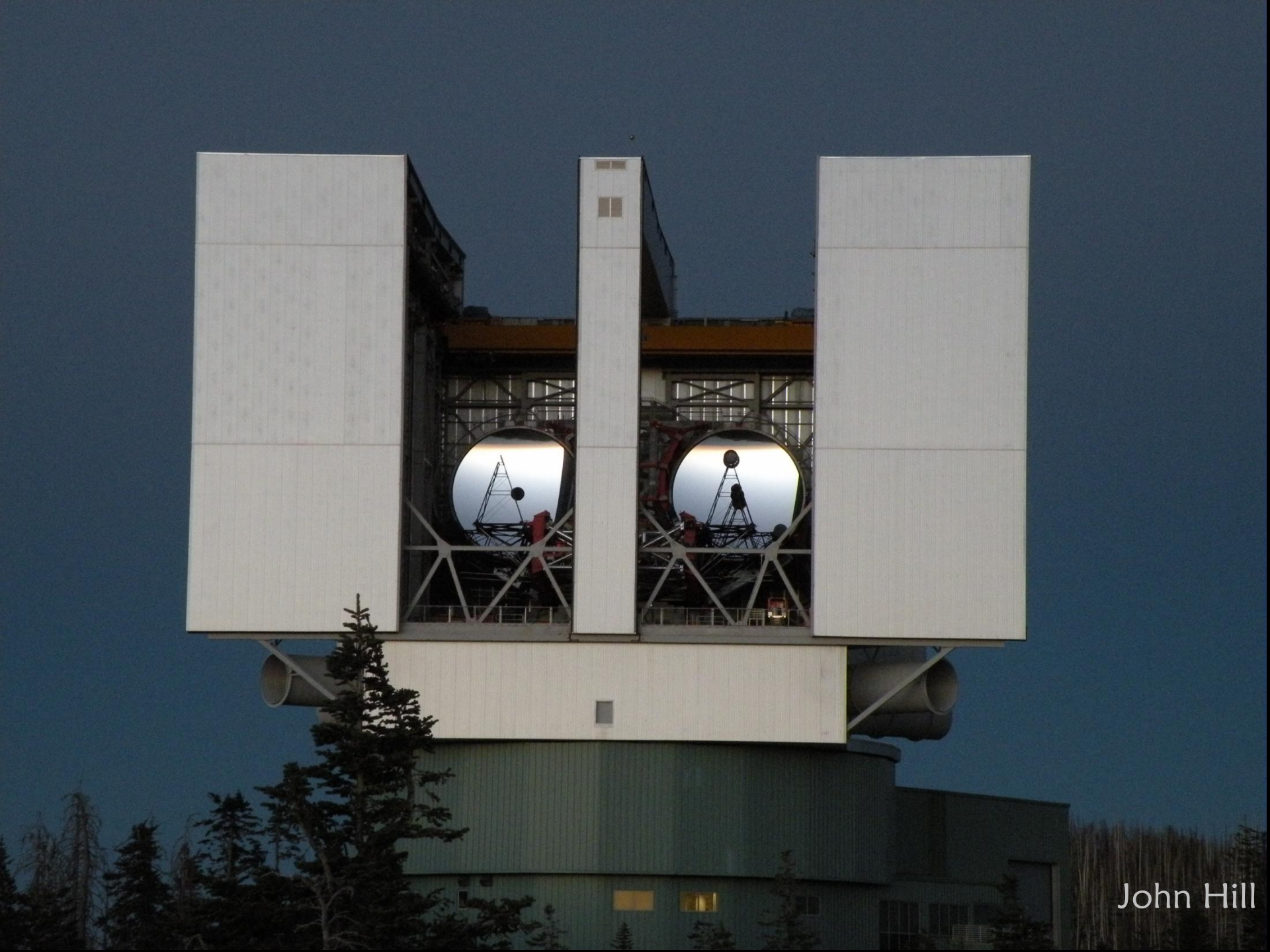
Palomar Observatory



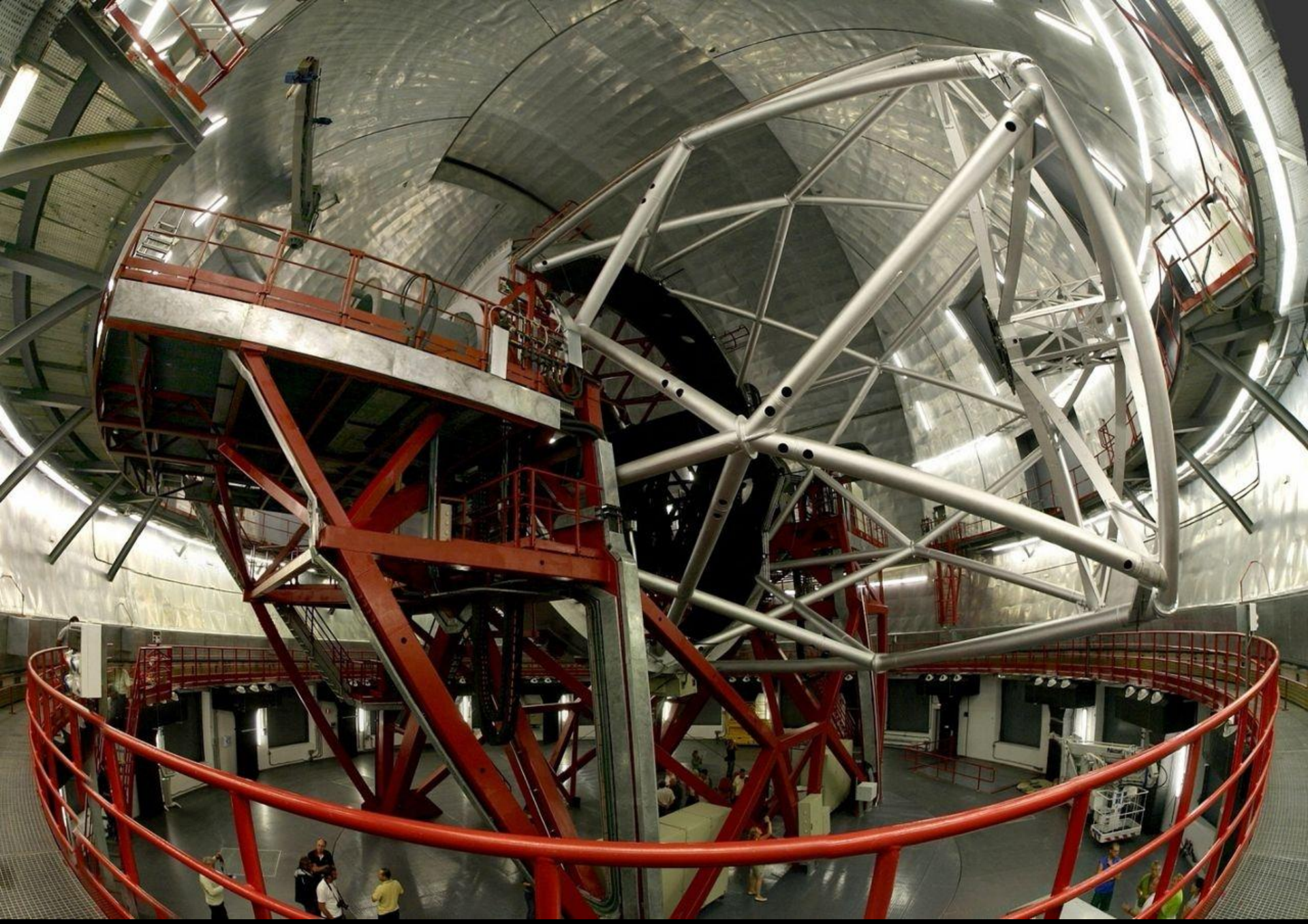
Kardel, Palomar Observatory


Gemini Observatory



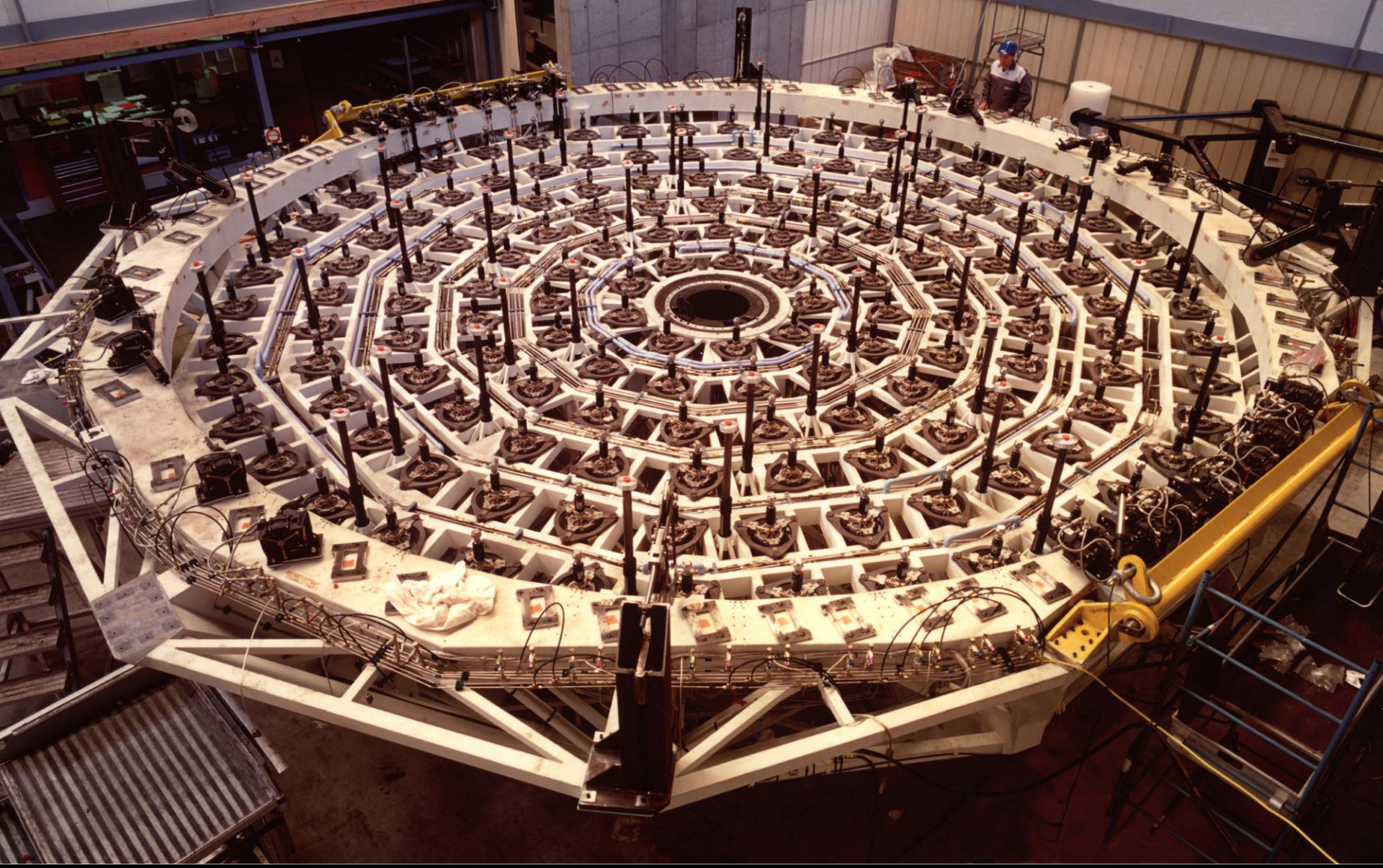

John Hill


European Southern Observatory



H Raab

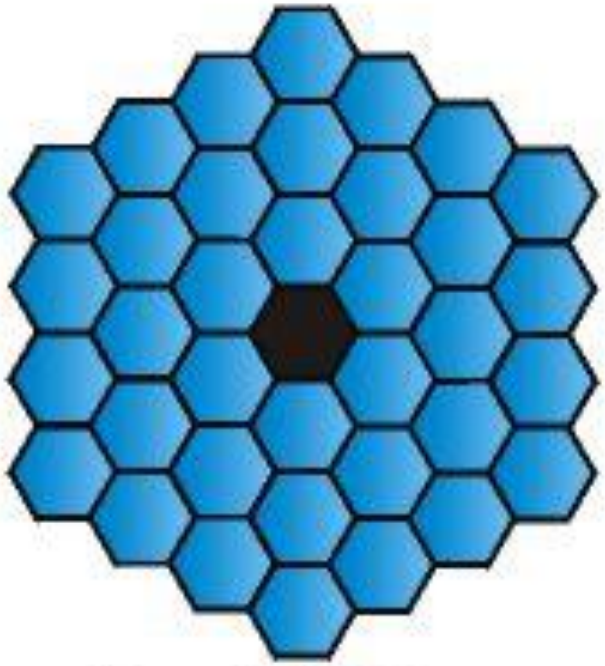

European Southern Observatory



European Southern Observatory

Herschel 4.2m

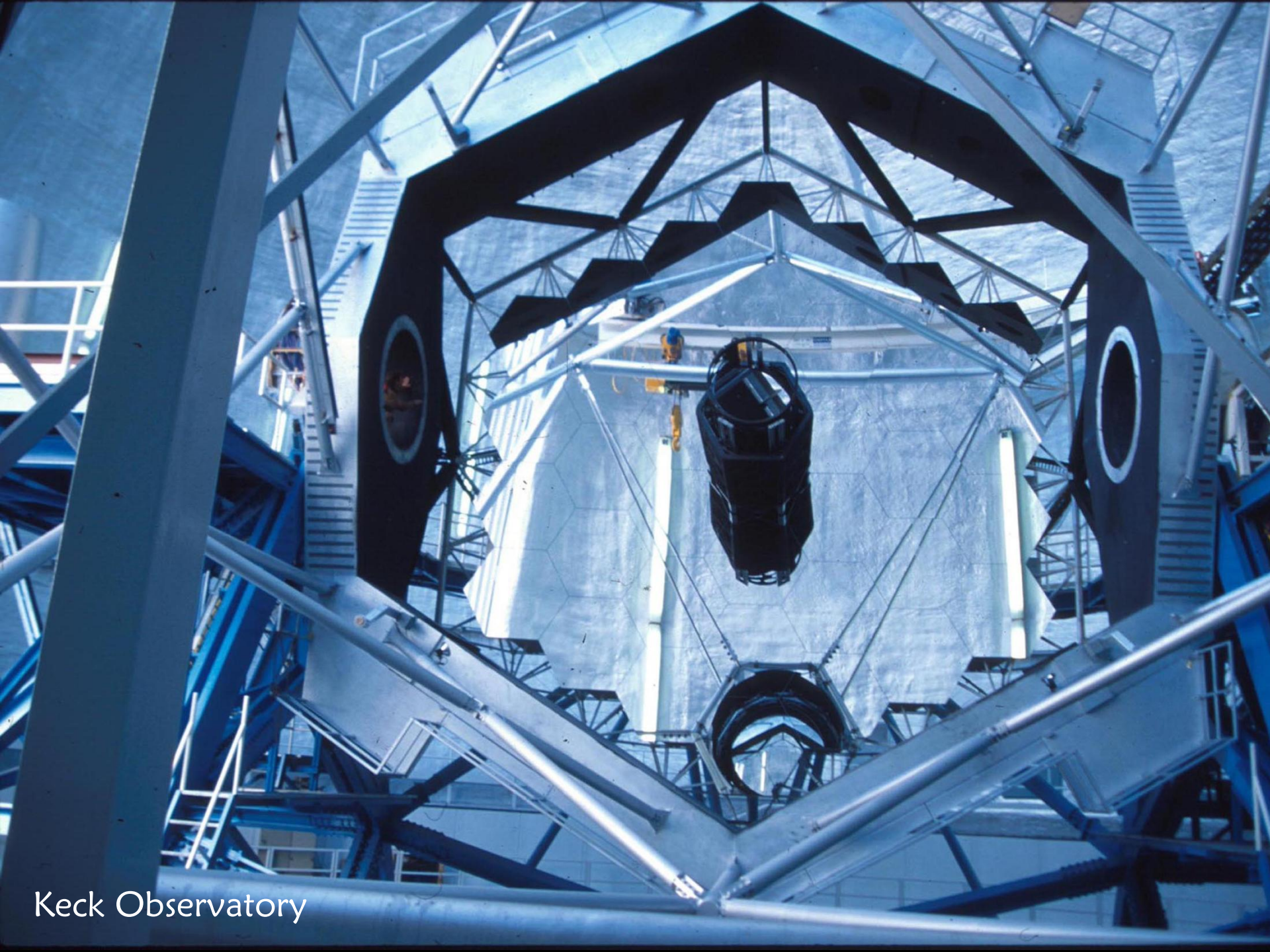
Palomar 5m

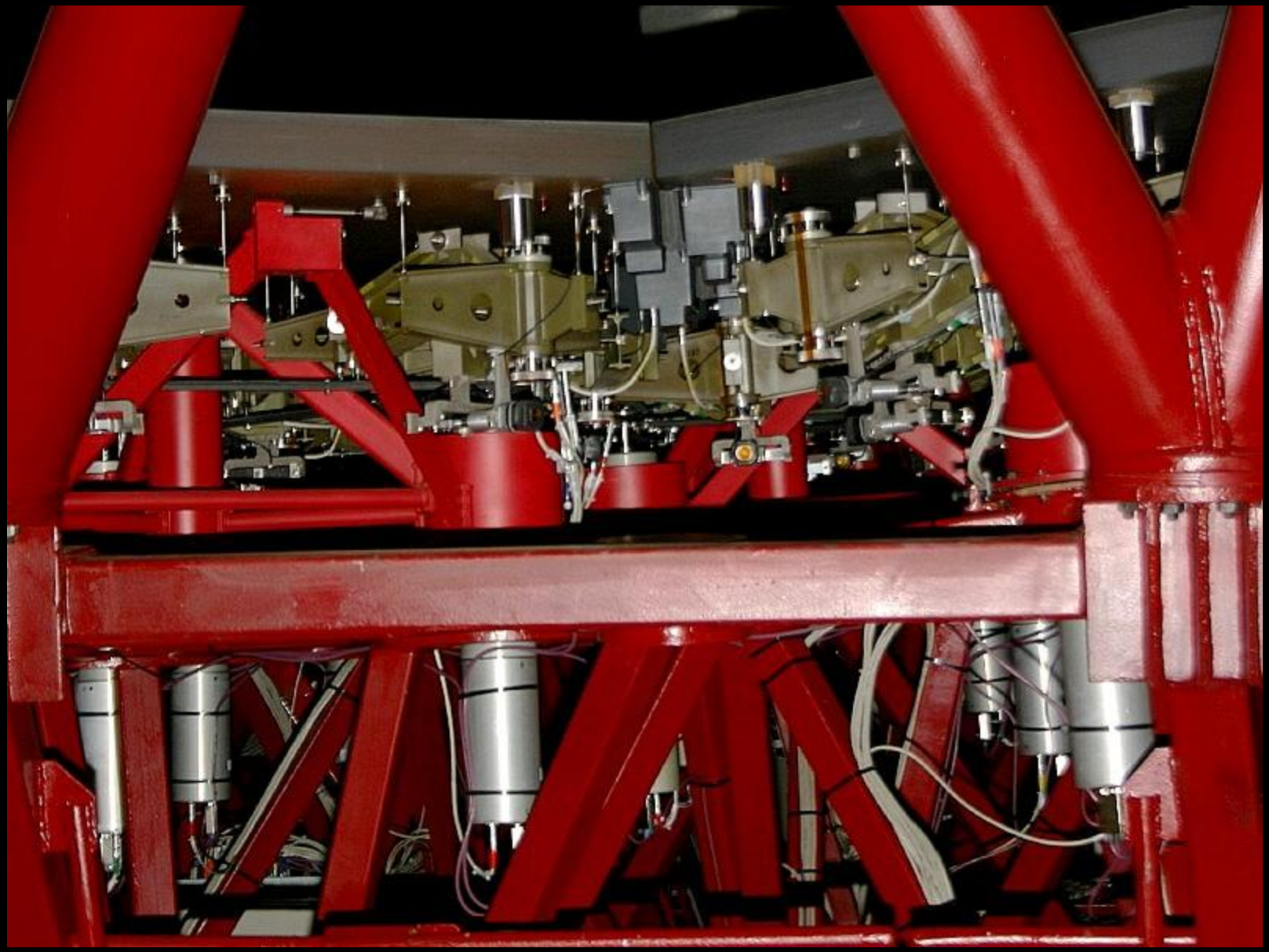


Keck I 10m

VLT 8.2m

Keck Observatory

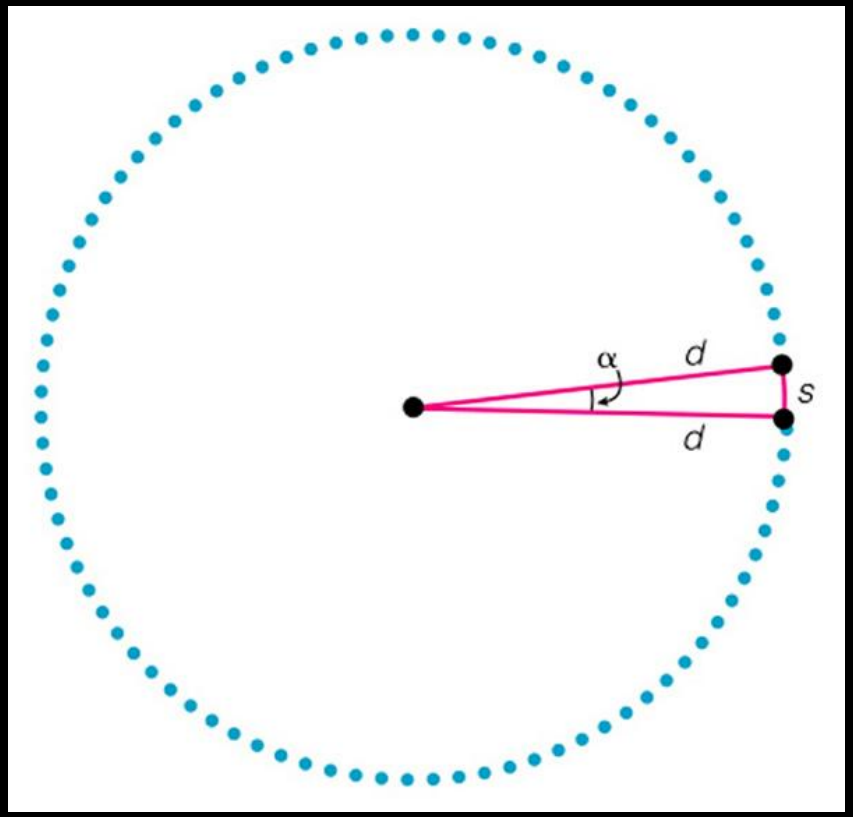

Keck Observatory

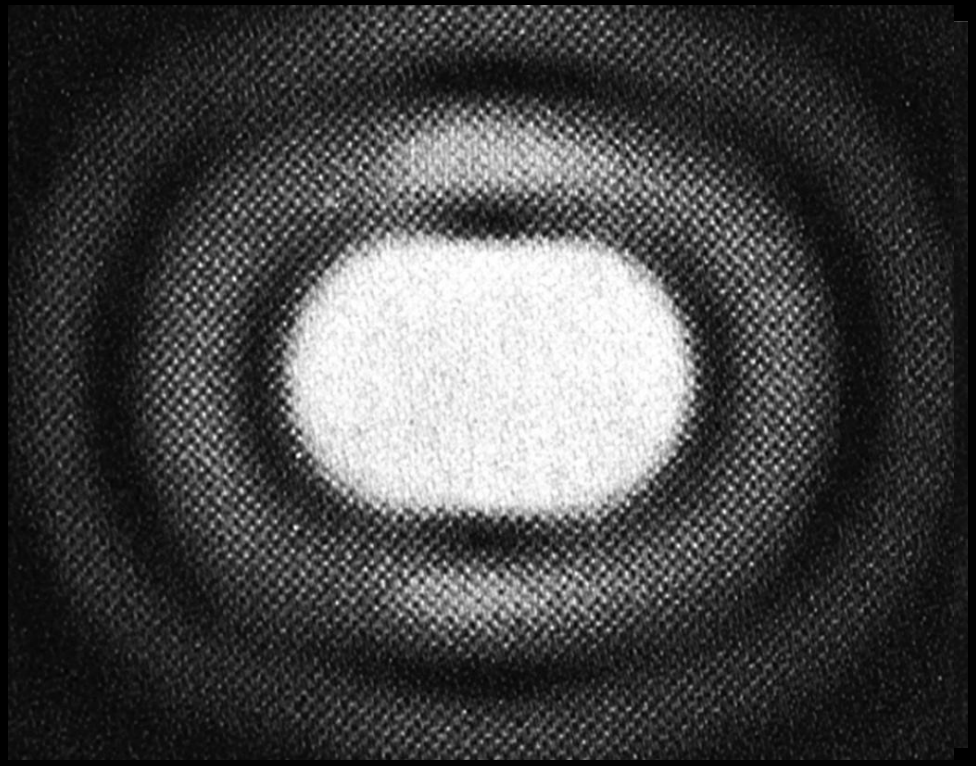


H Raab

Diffraction limit

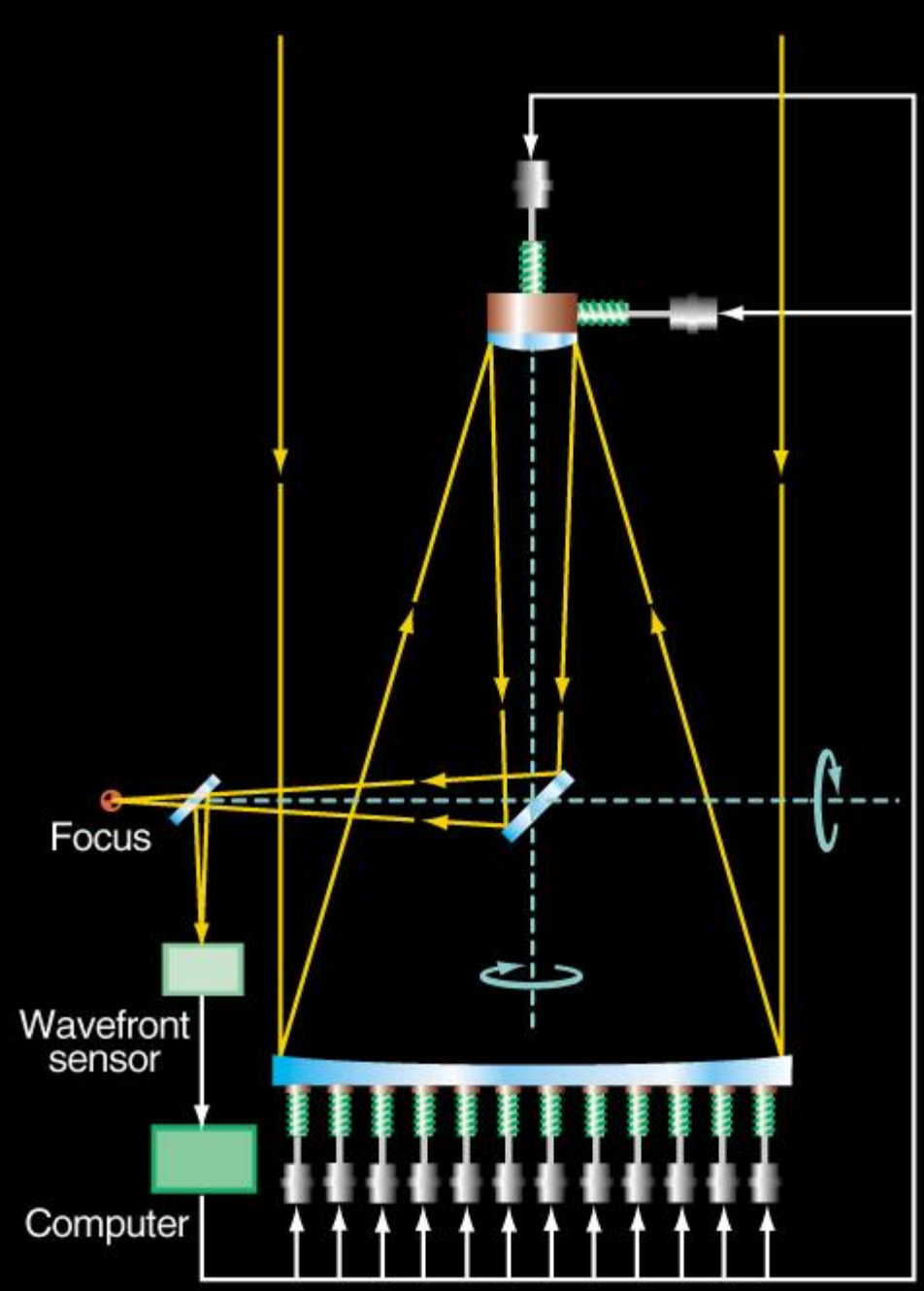
$$\alpha = 2.5 \times 10^5 \frac{\lambda}{D}$$

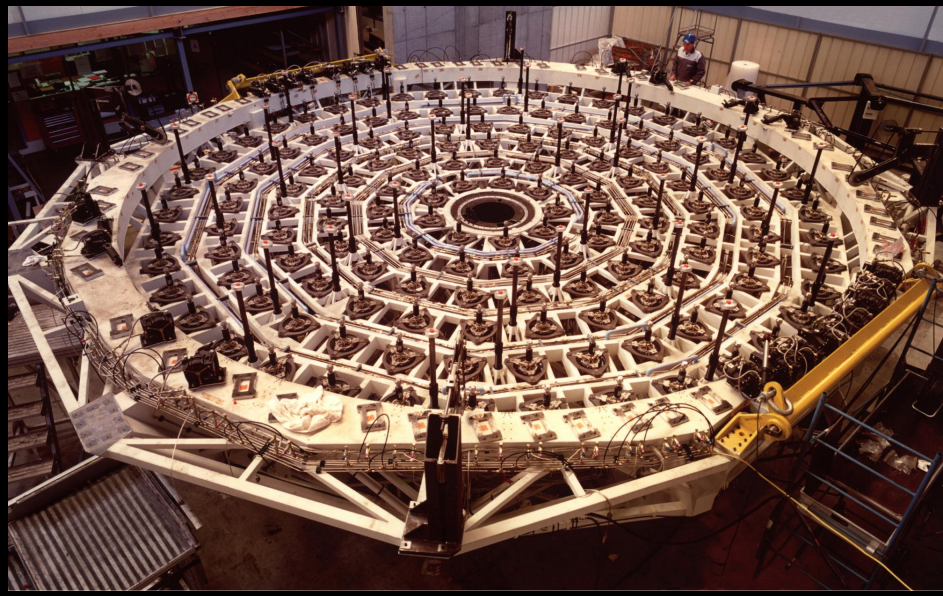




Hudepohl/ European Southern Observatory


Beletsky / European Southern Observatory





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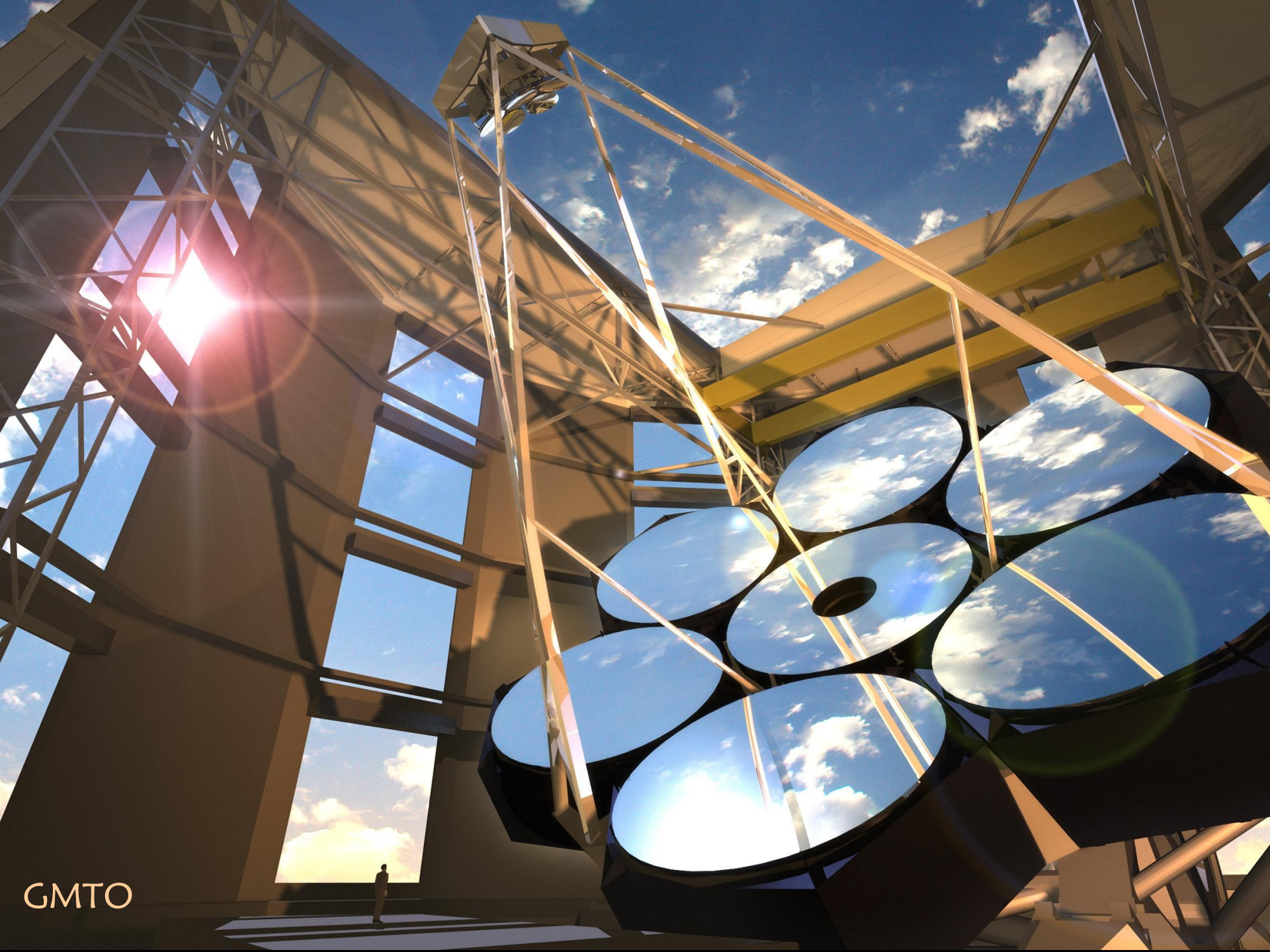
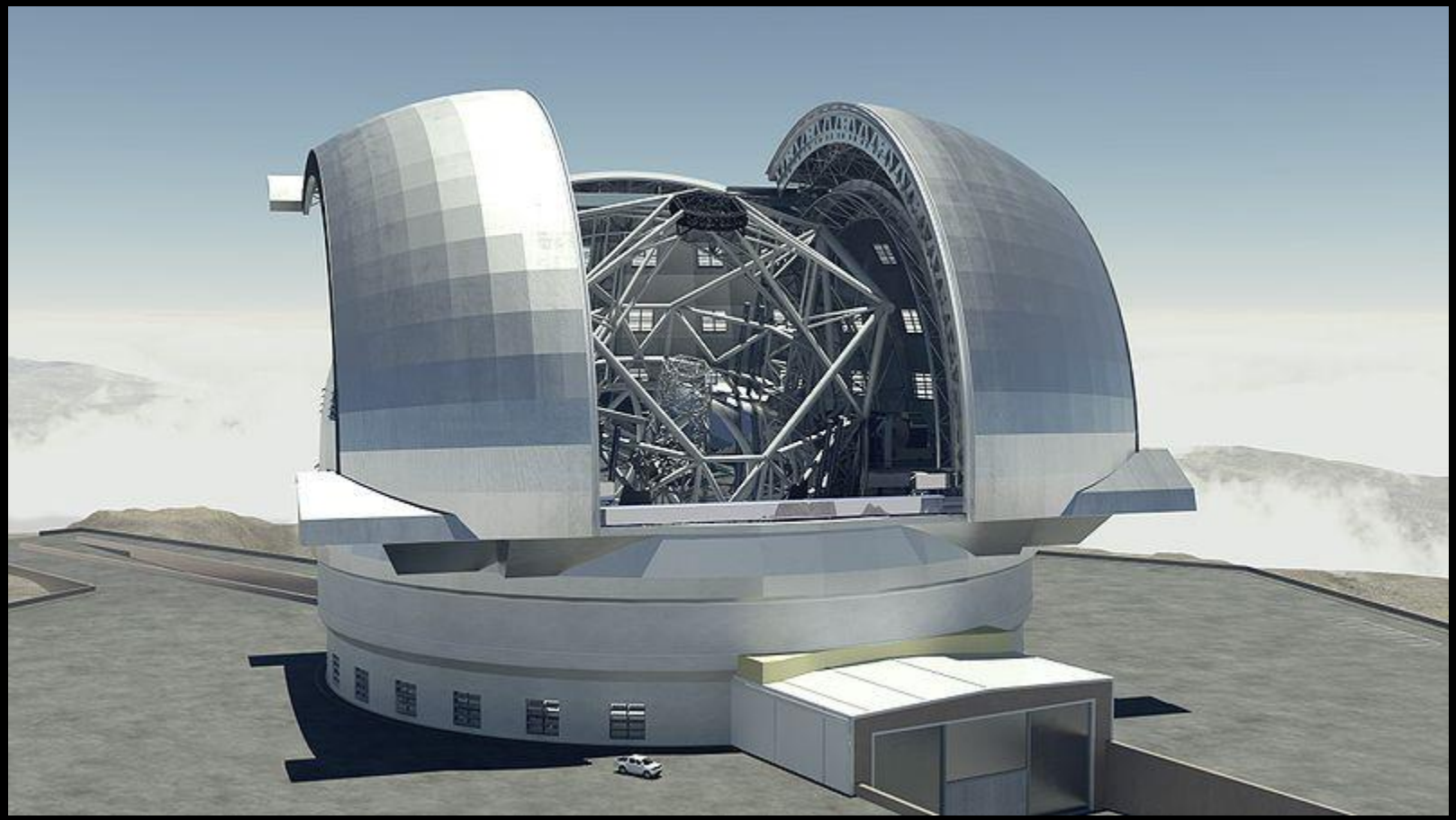
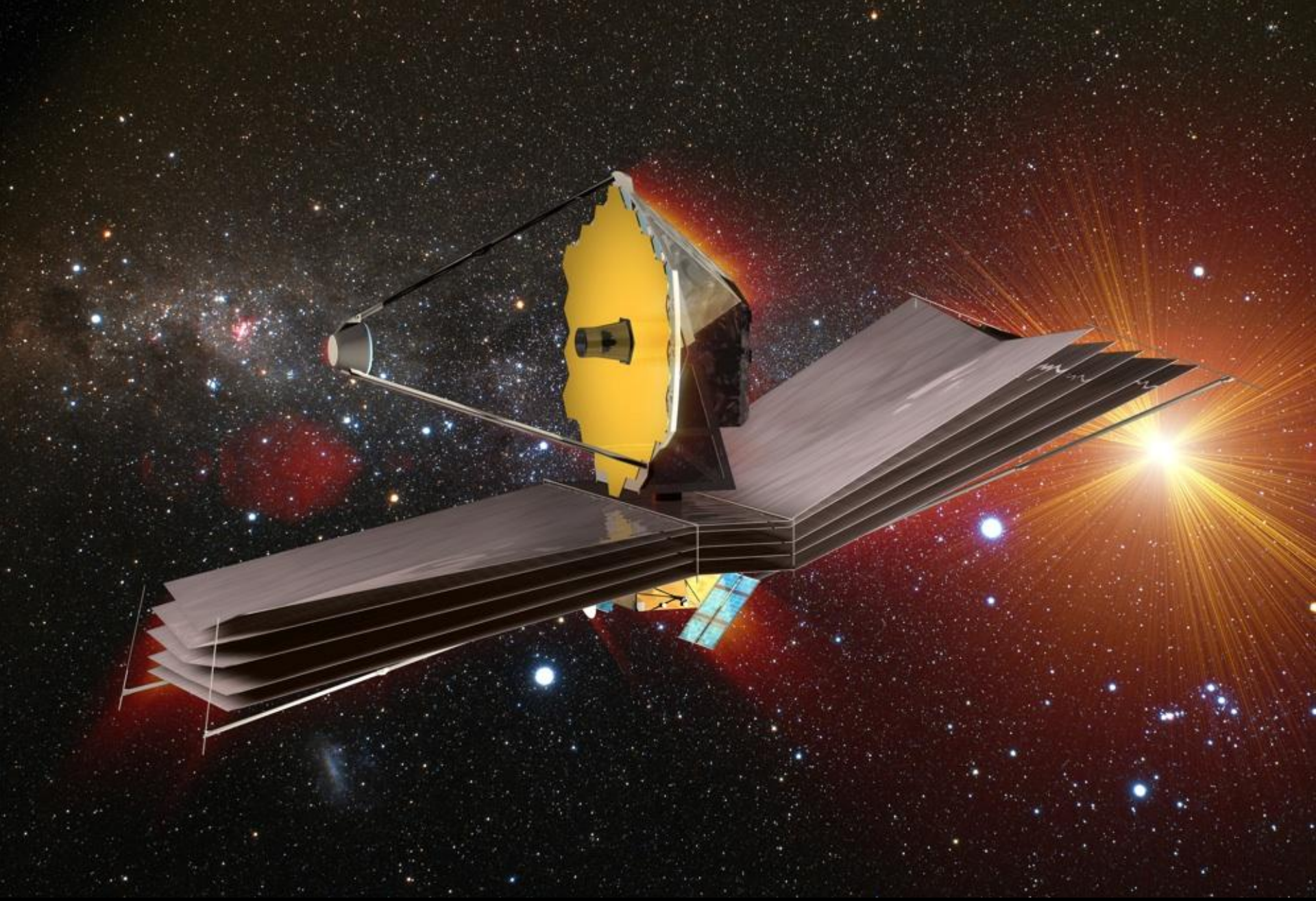

GMTO


Figueroa / GMTO


TMT



European Southern Observatory



NASA

Star Dust

Wednesday 13th June 2012 1pm

John Davis