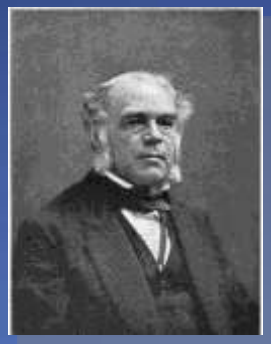
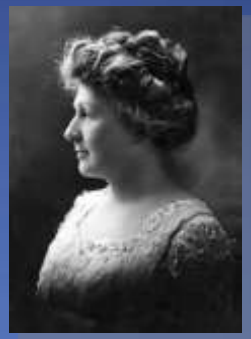
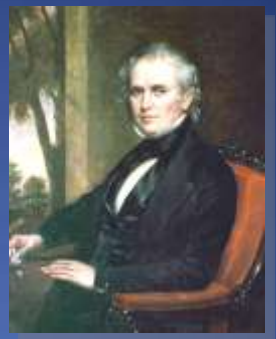
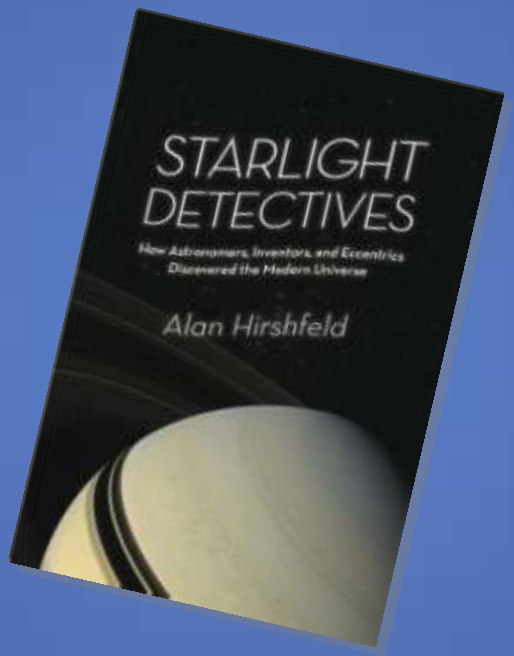
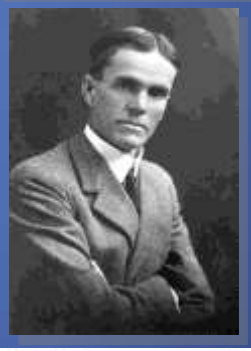


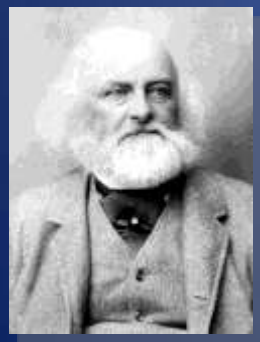




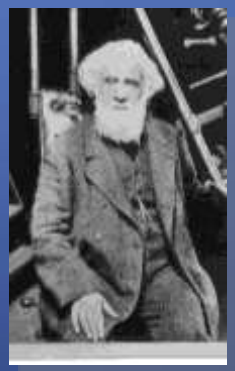



STARLIGHT
DETECTIVES
How Astronomers, Inventors, and Eccentrics
Discovered the Modern Universe
Alan Hirshfeld

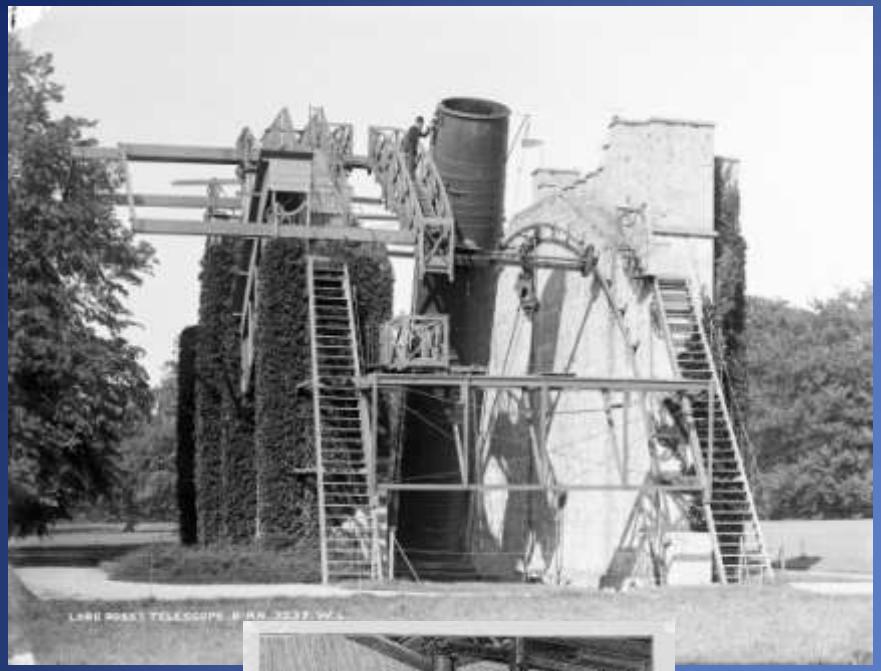


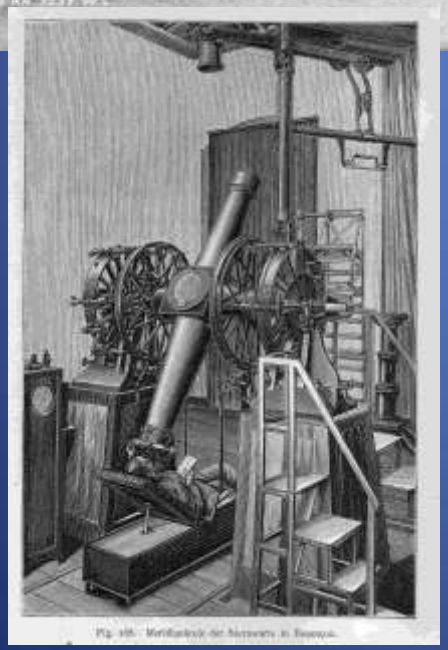





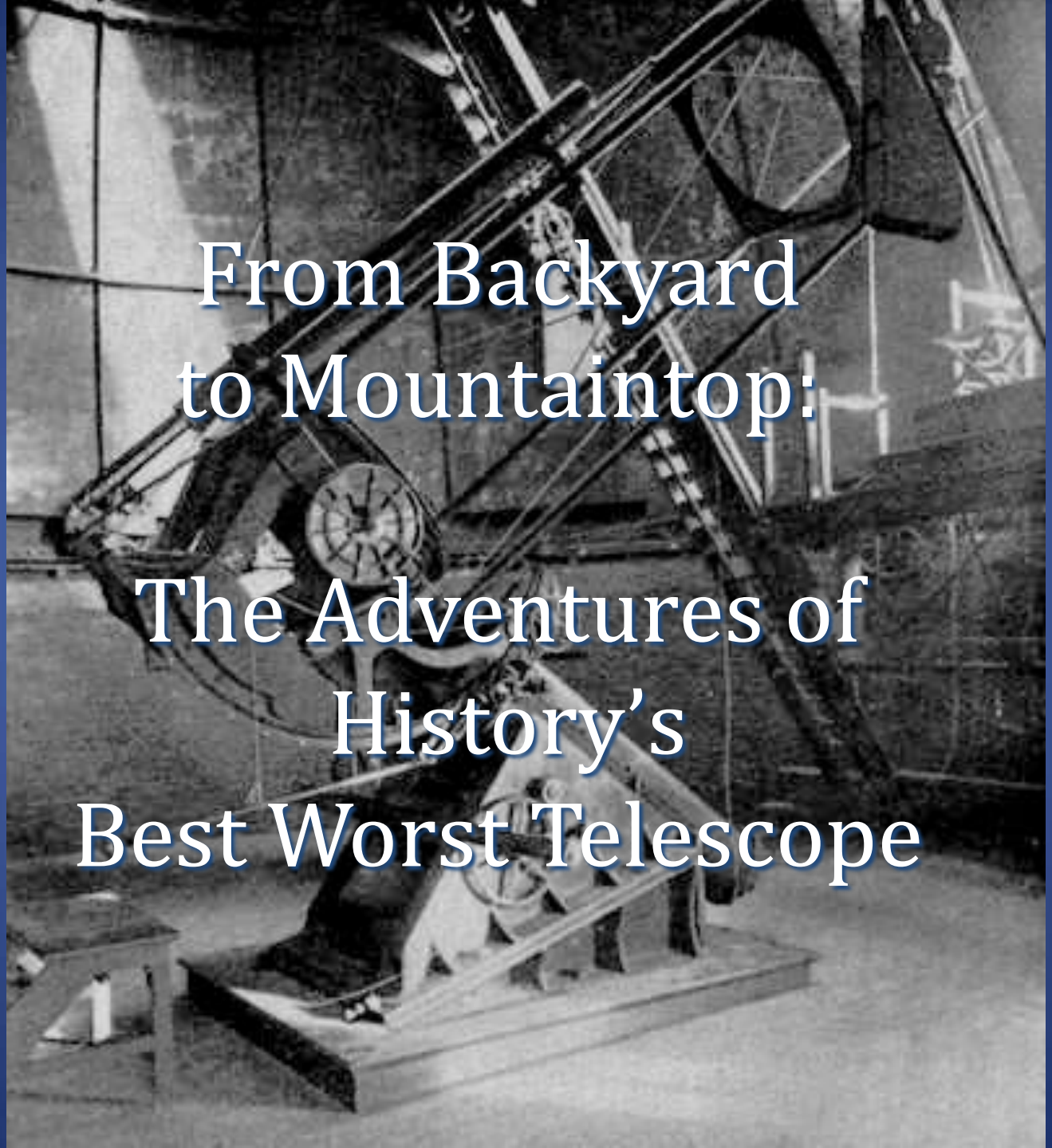



Astronomy in the 1840s





Astronomy in the 1920s ("modern astronomy")



From Backyard to Mountaintop:

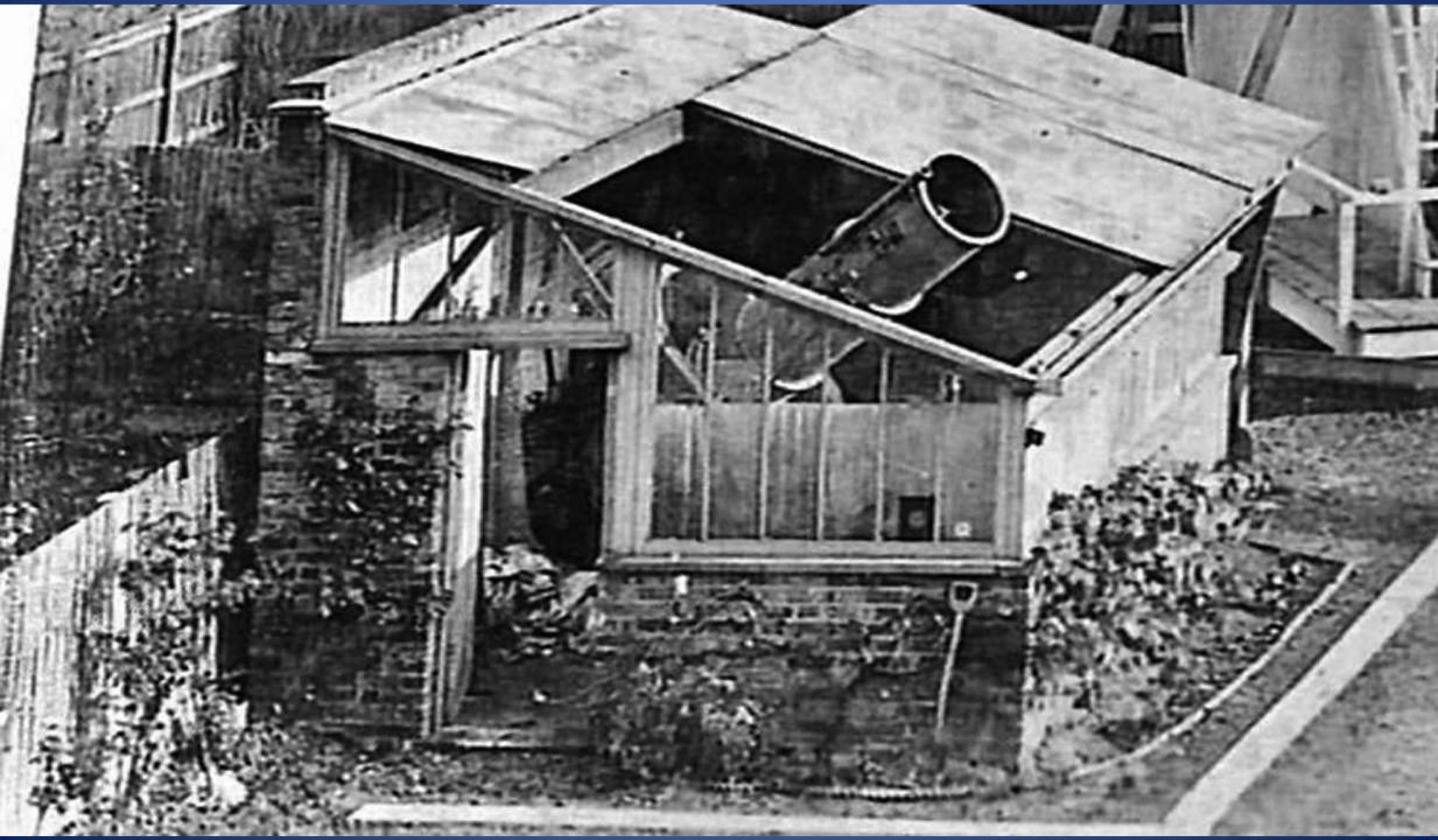
The Adventures of History's Best Worst Telescope

Andrew Ainslie Common (1841-1903)

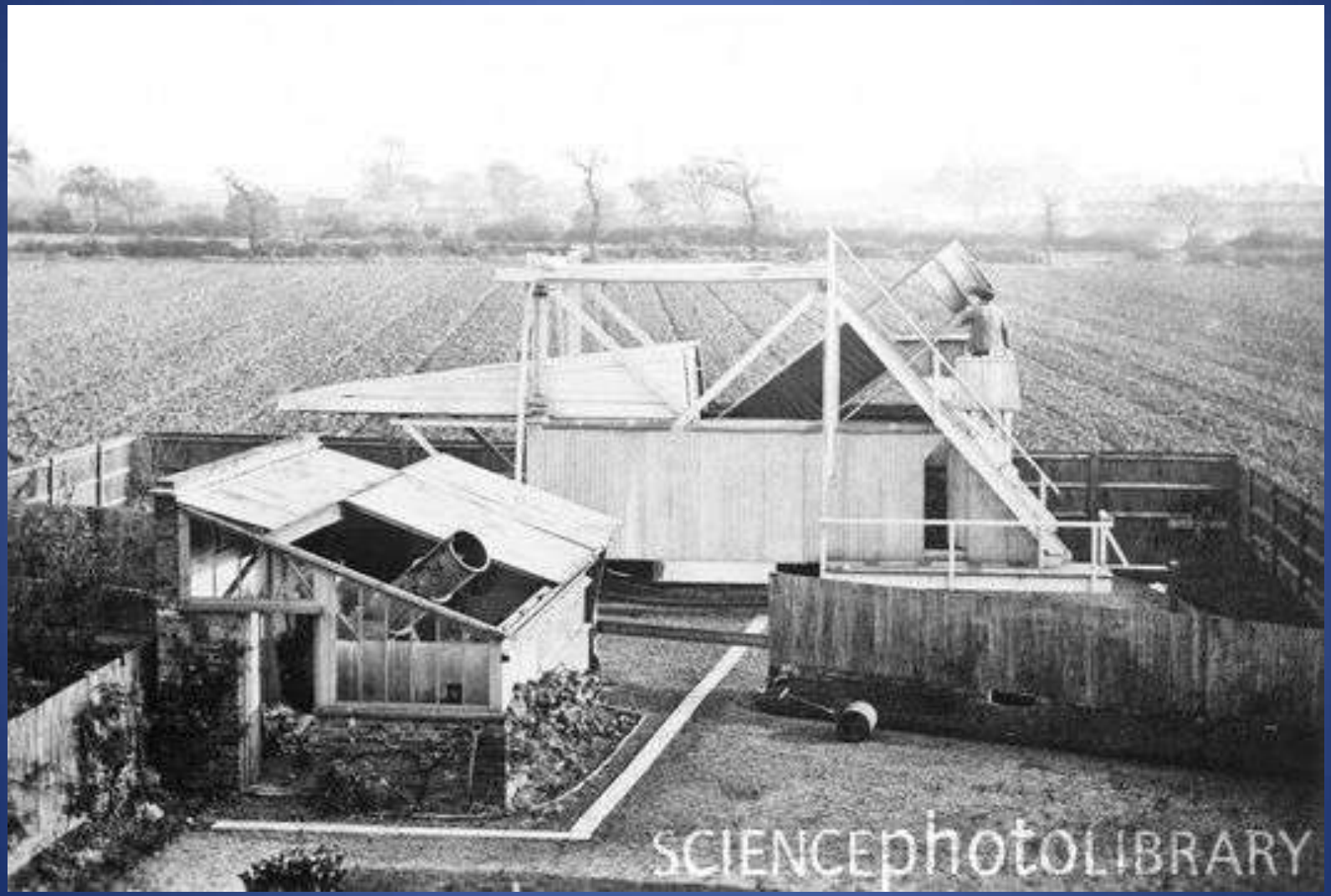
Sanitation engineer, amateur astronomer, London

Eaton Rise, Ealing, West London, 1910

Common's 18-inch equatorial reflector at Ealing, West London, 1877



Common's "three-foot" (37-inch) f/5.8 equatorial reflector, 1879*

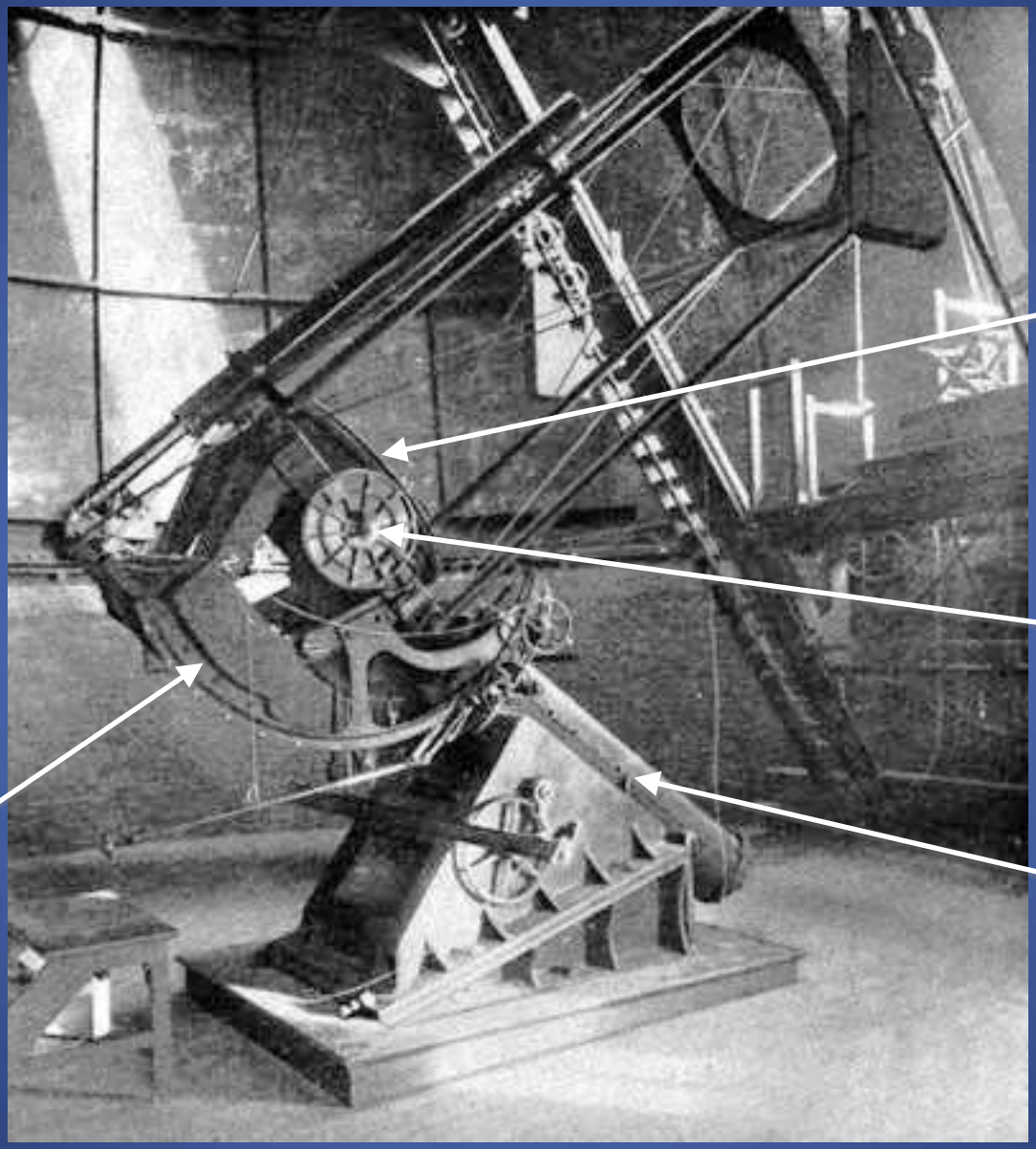


* Looking east

Andrew Common's observatory site: 63 Eaton Rise, Ealing, London UK

Photo viewpoint looking east

Total weight (mirror/tube/ mount) 9 tons



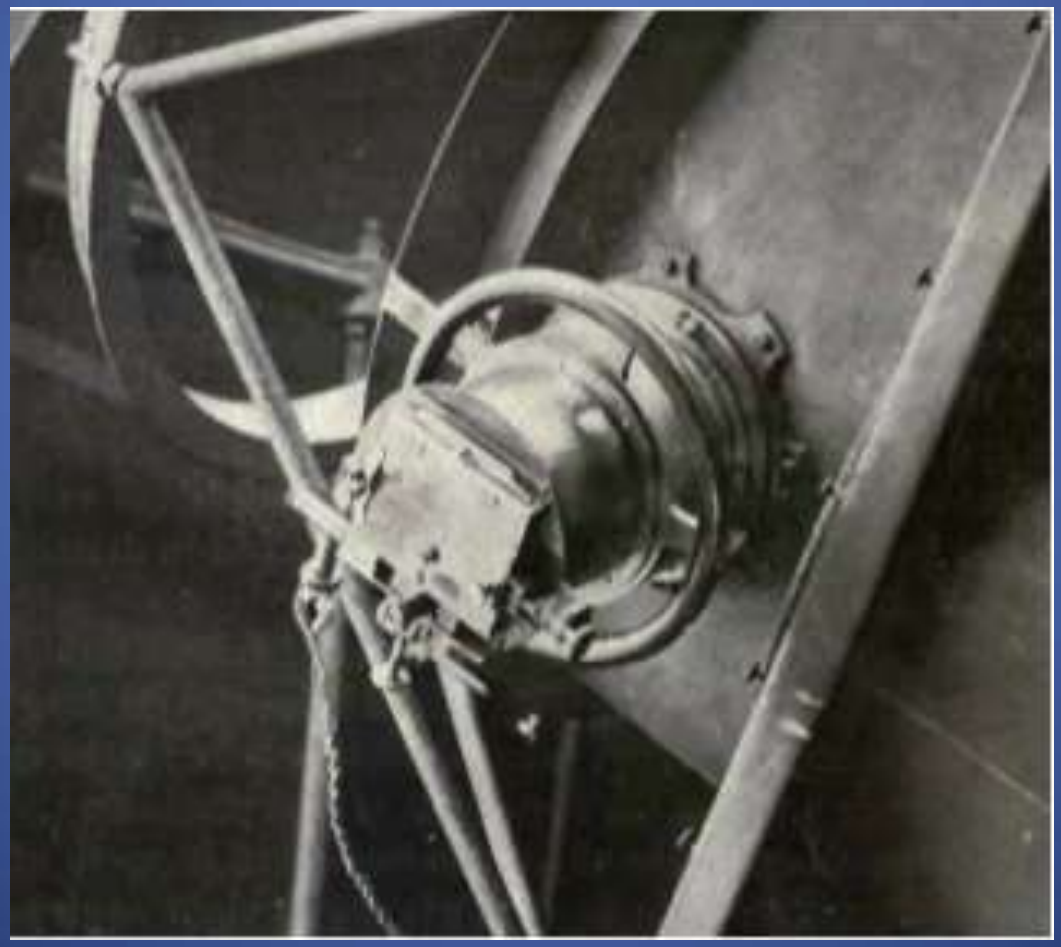
mirror

Declination axis

Counterweight boxes

Mercury-filled polar axis casing

Movable plate holder with guiding eyepiece at Newtonian focus ($3^1/_4$ x $4^1/_4$-inch plates, ~1° field of view)

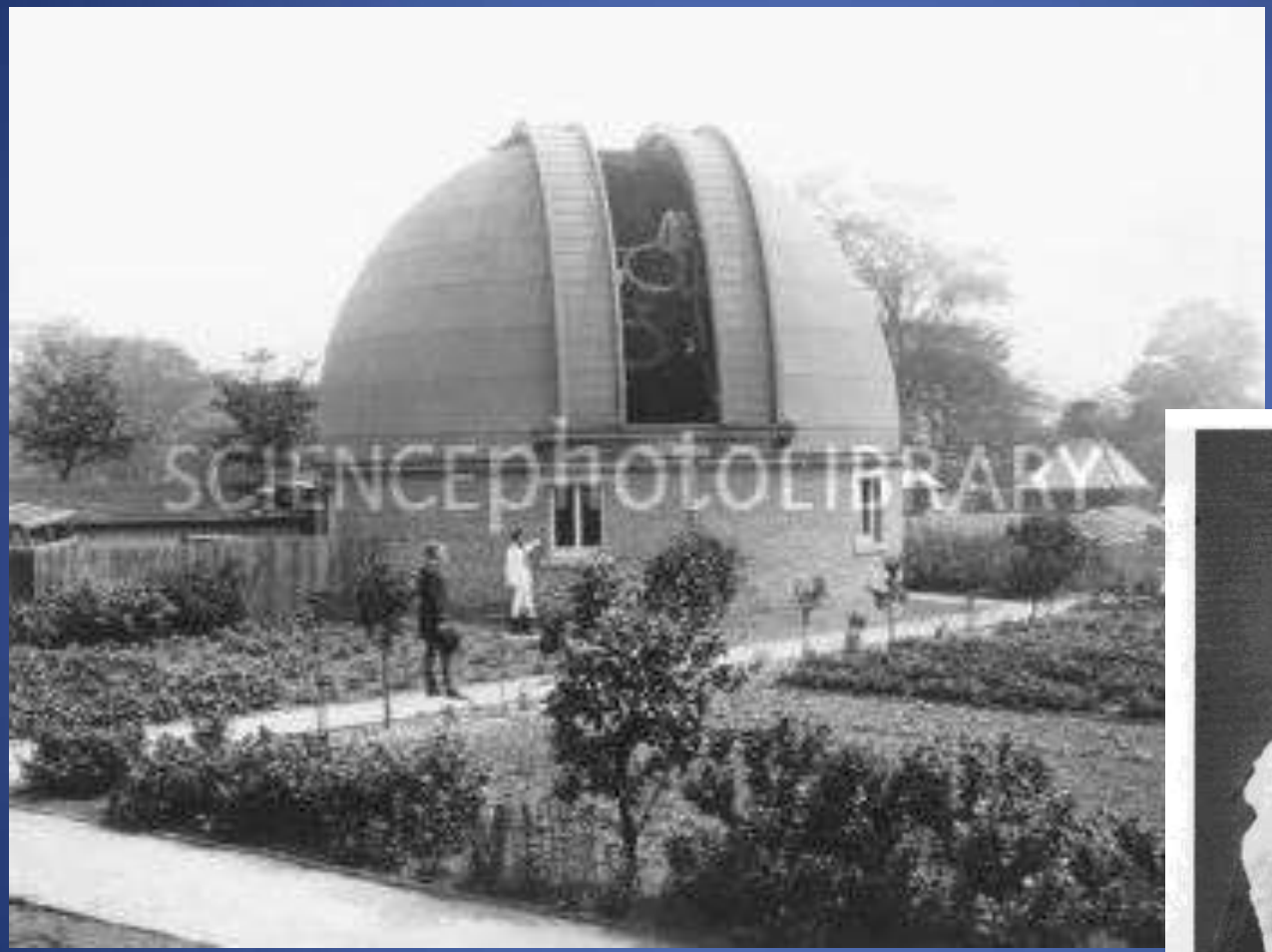


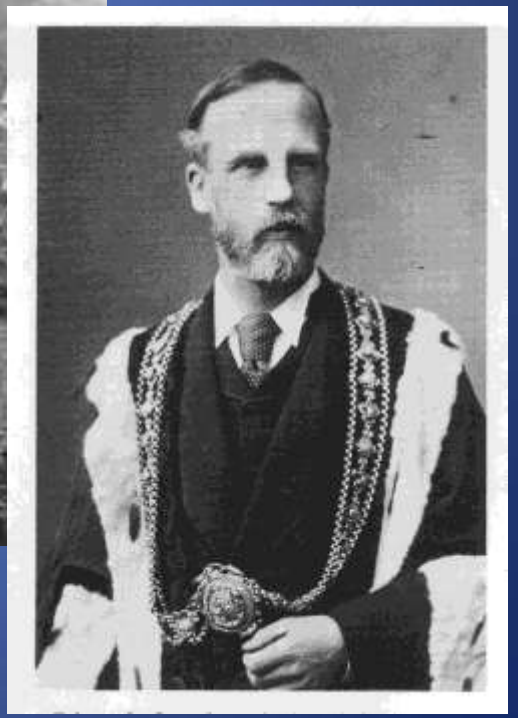
Orion Nebula, Feb 26, 1883 (60-minute exposure)

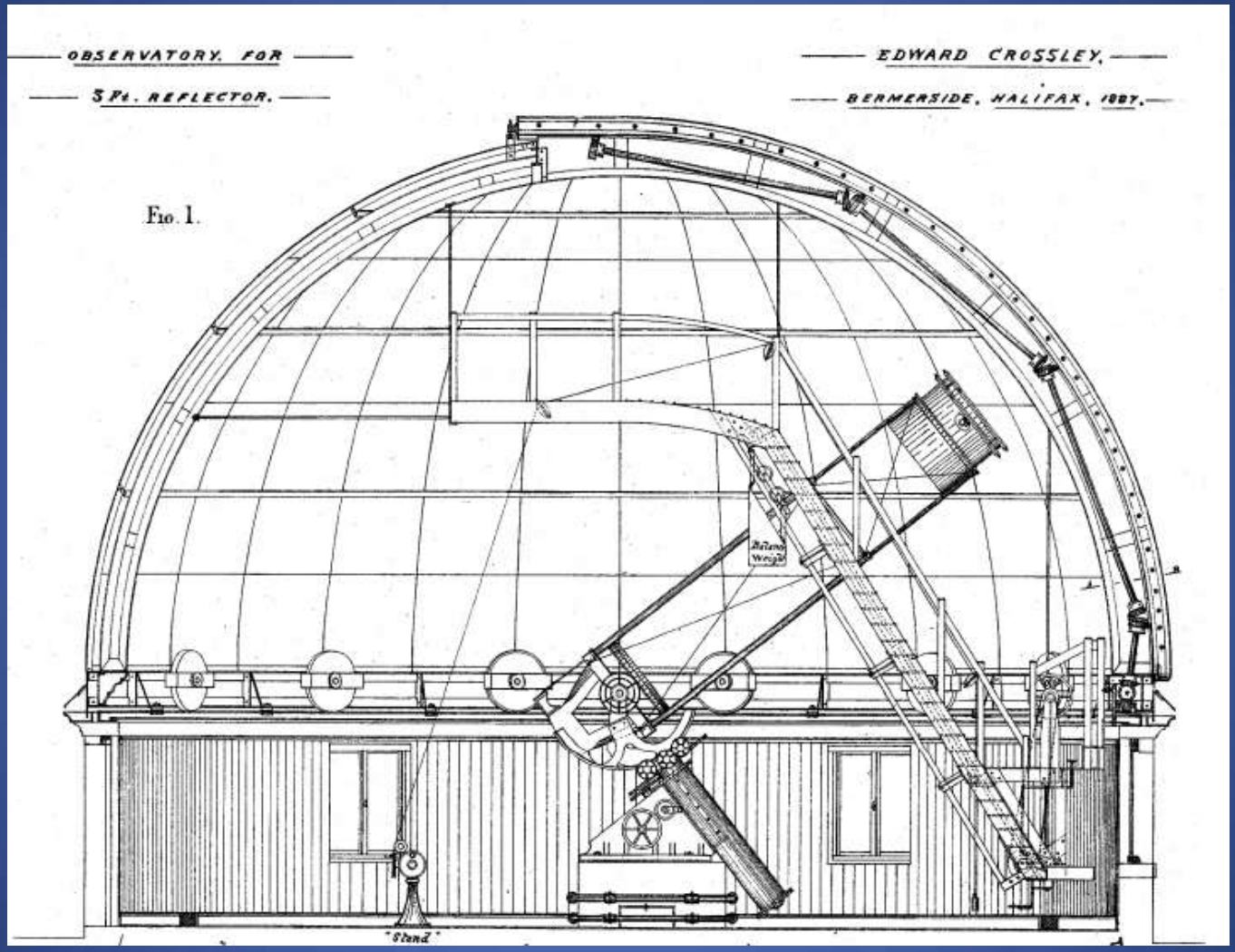
Etienne Trouvelot, 1876

Henry Draper, 1882

Edward Crossley, Bermerside Observatory, Yorkshire, England, 1885

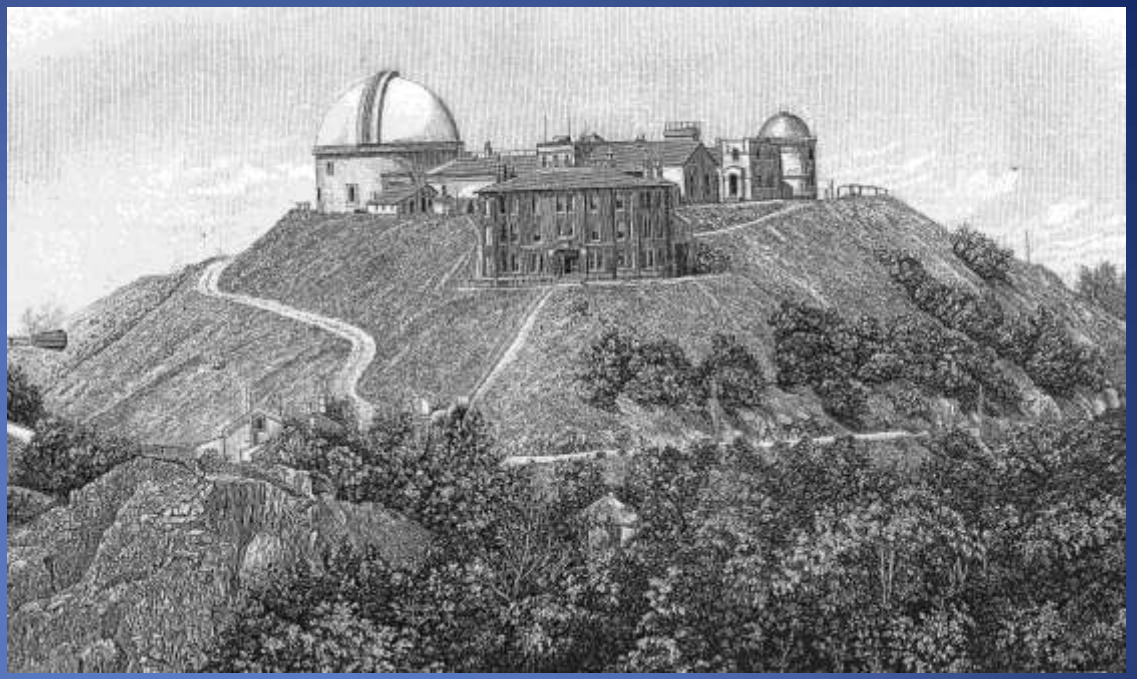






20 ft

15-ton(!) iron-ribbed, iron-plated dome



Lick Observatory,
Mt. Hamilton, CA
1890s

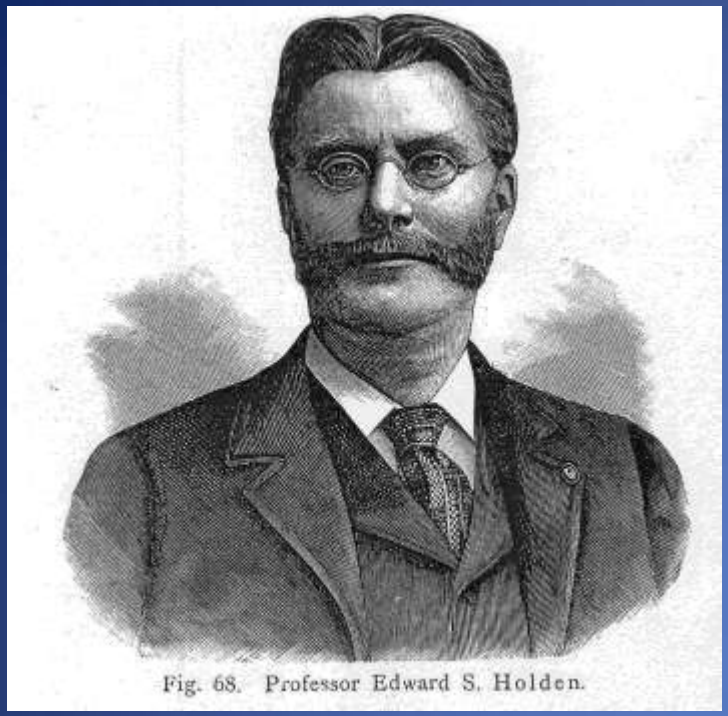


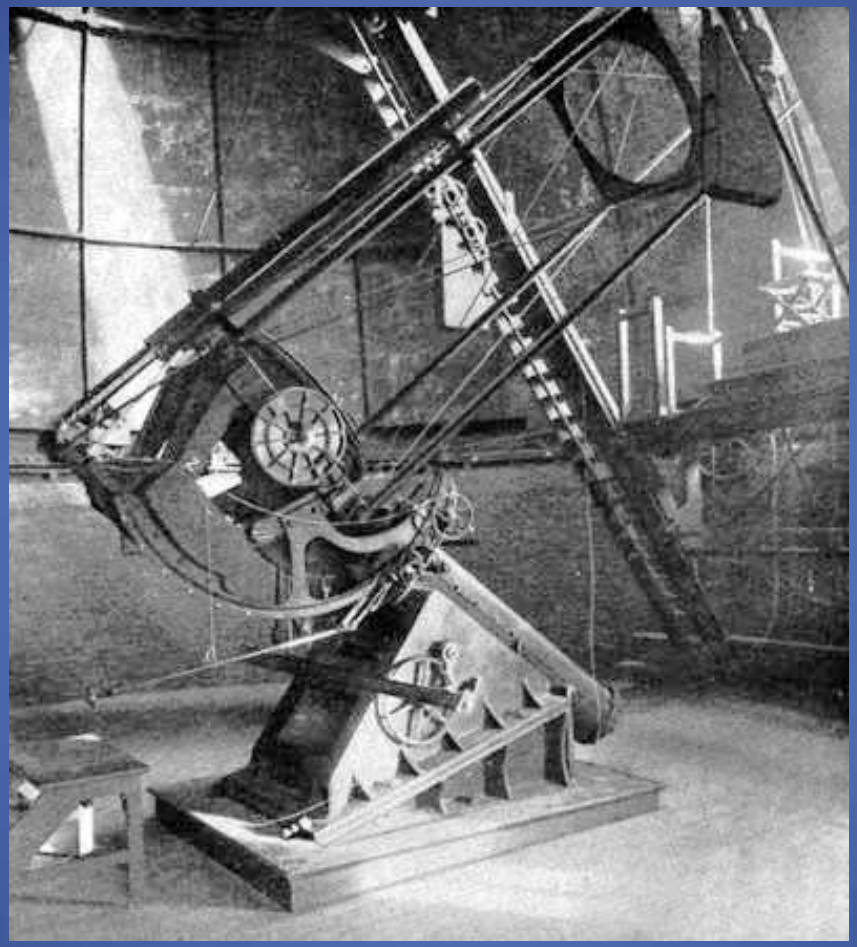
Fig. 68. Professor Edward S. Holden.

Edward S. Holden, Director ("The Dictator")

The Crossley Reflector

"A pile of junk"

"Antiquated as Noah's ark"



"A monstrosity"

"[The eyepiece is so high up,] the dome should be filled with water, so astronomers can observe from a boat."

James Keeler succeeds E. S. Holden as Lick Observatory Director, 1898

Orion Nebula, Crossley reflector, Lick Observatory, 1898 (40 min)

1928

M 51, Crossley reflector, Lick Observatory, 1899 (4 hrs)

NGC 4565, Crossley reflector, Lick Observatory, 1901 (3 hrs)

Trifid Nebula, Crossley reflector, Lick Observatory, 1899 (3 hrs)

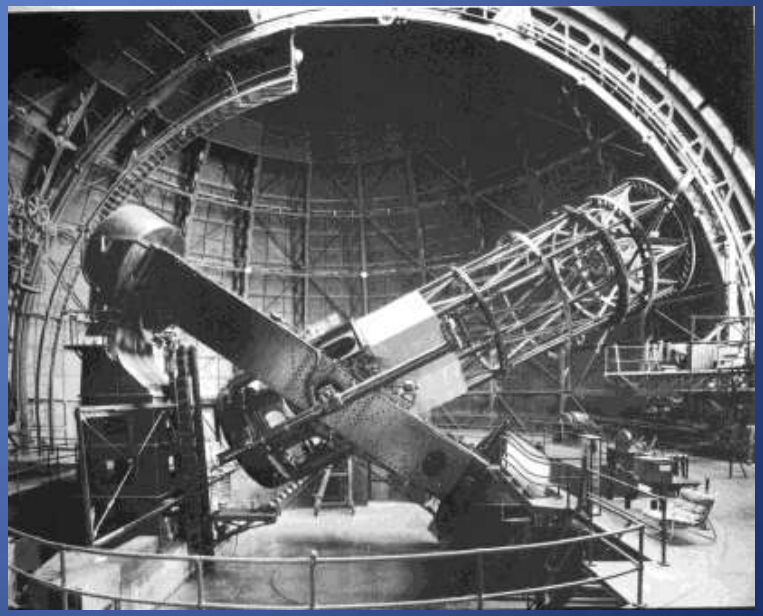
Crab Nebula, Crossley reflector, Lick Observatory, 1899 (2 hrs)

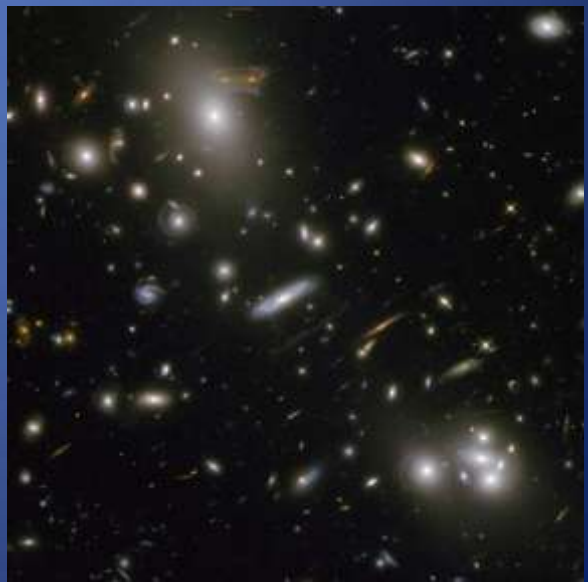
M 13, Crossley reflector, Lick Observatory, June 22, 1900 (2 hrs)

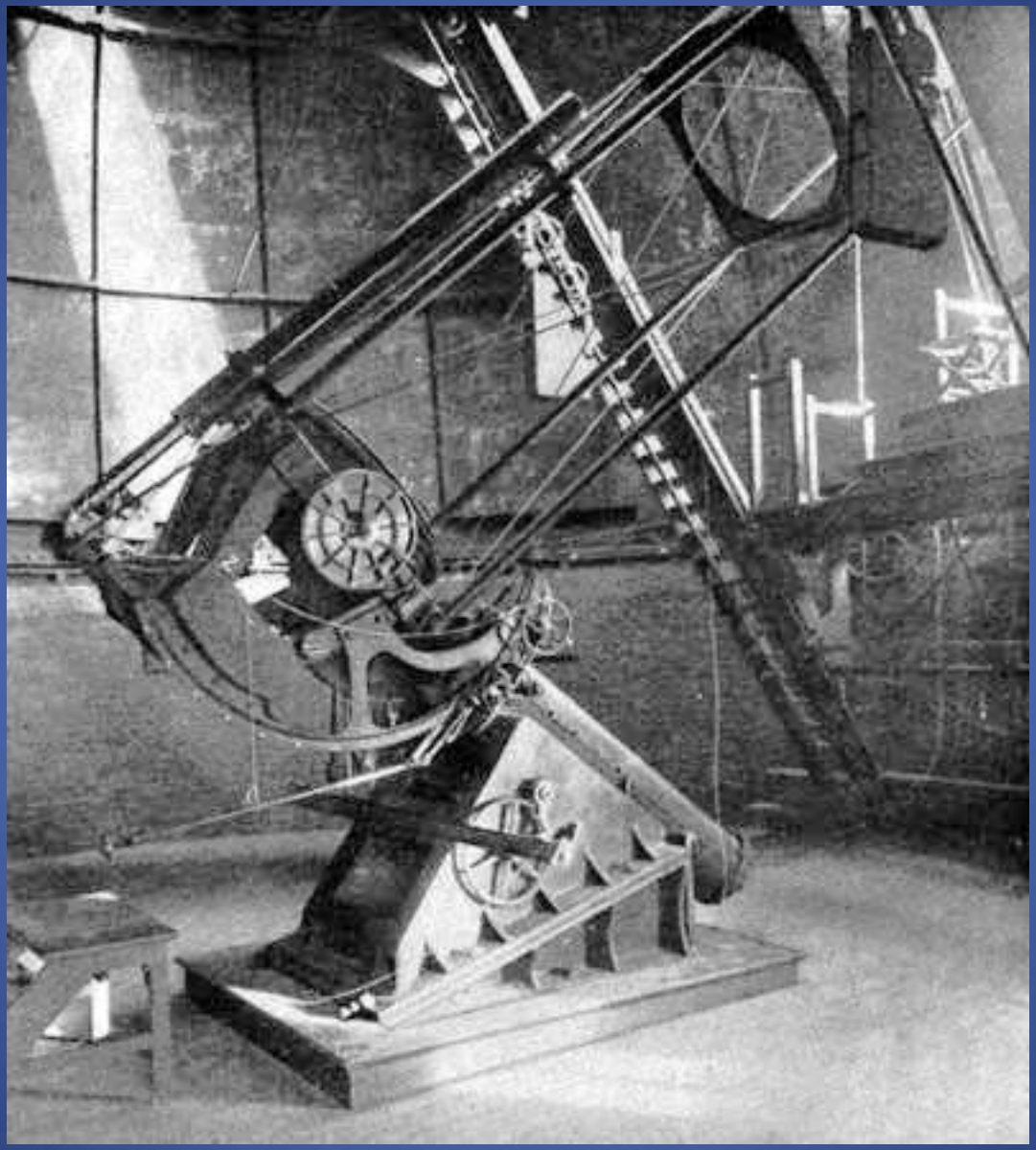
“Many thousands of unrecorded nebulae exist in the sky. A conservative estimate places the number within reach of the Crossley reflector at about 120,000*. … Most of these nebulae have a spiral structure.”

— James Keeler, *Astrophysical Journal*, 1900

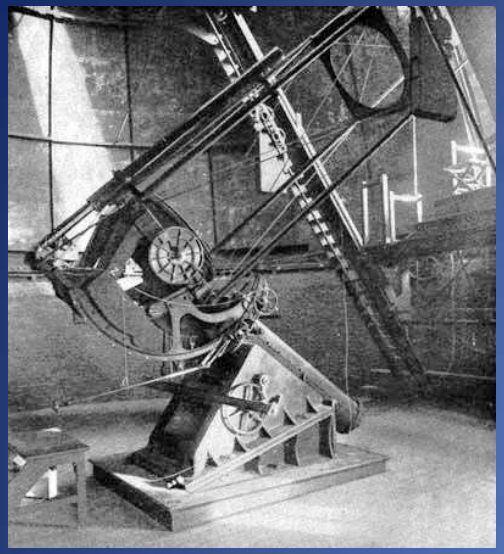
* Later upped to over a million.



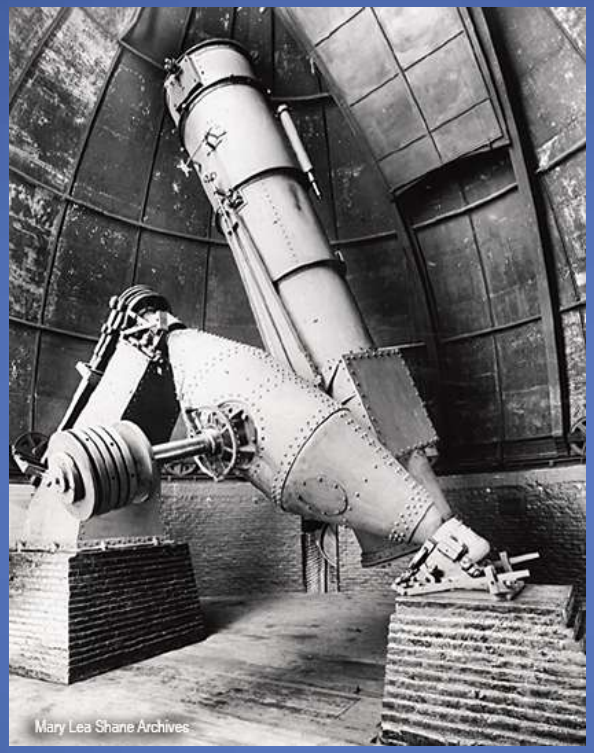




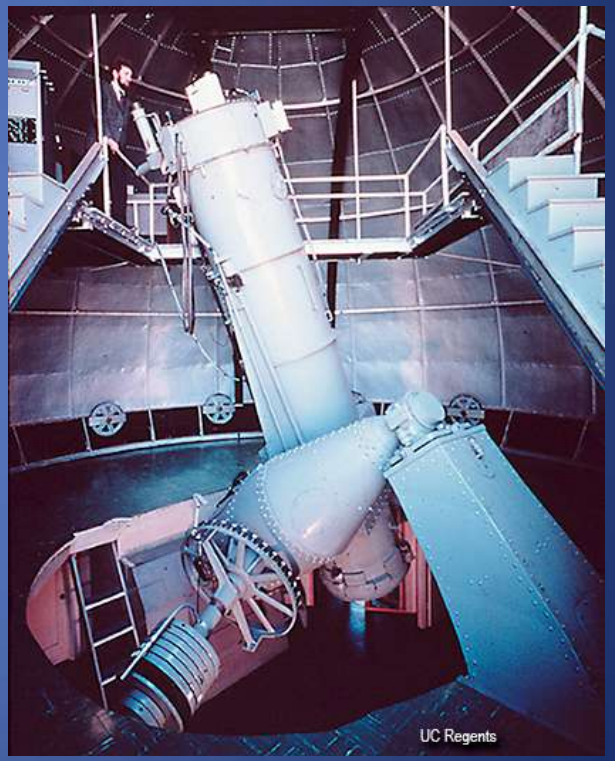
1900



1905



1962

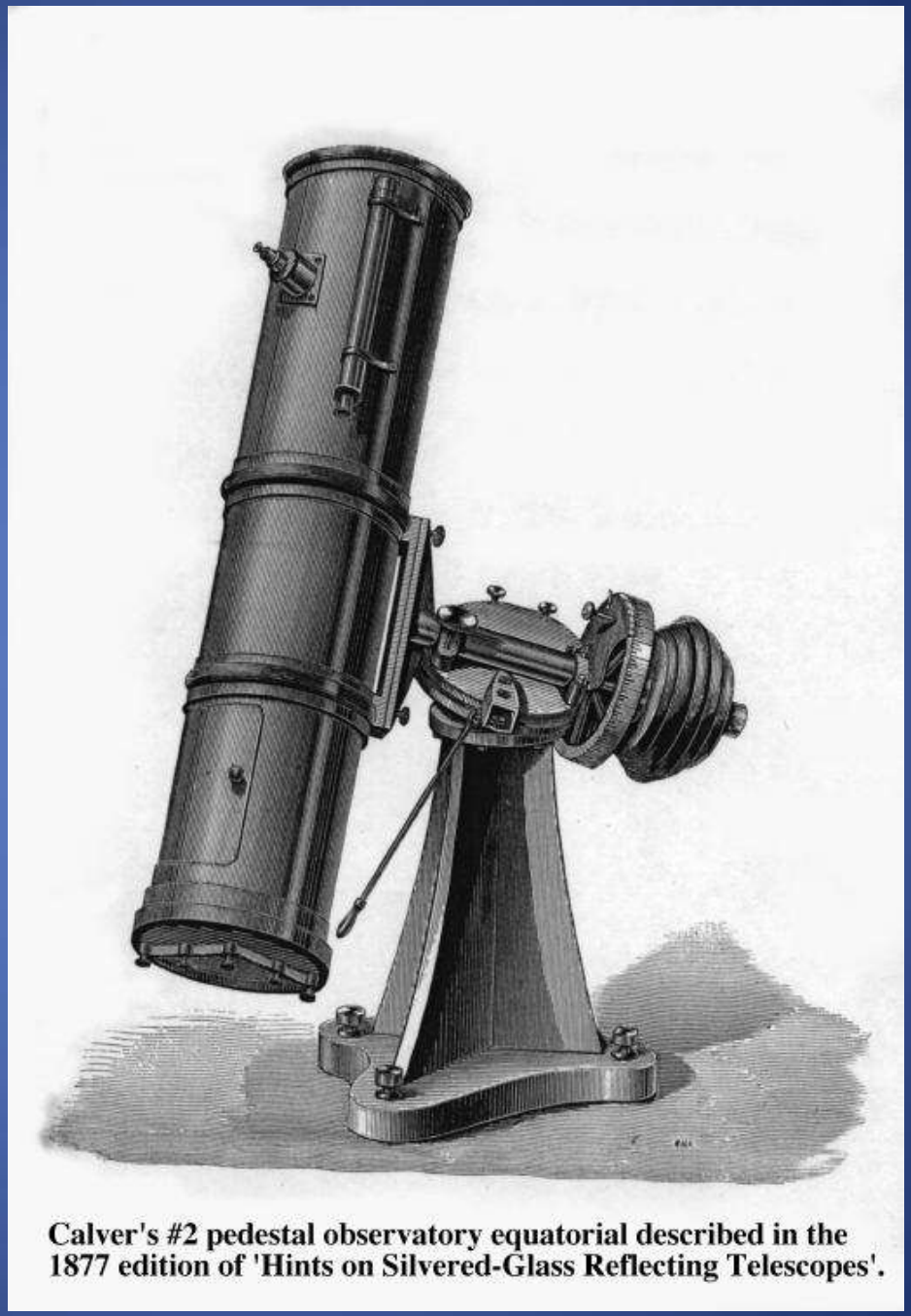


(Original mirror remains!)

George Calver (1834-1927)

Telescope maker, Chelmsford, England

4,000 mirrors!



Calver's #2 pedestal observatory equatorial described in the 1877 edition of 'Hints on Silvered-Glass Reflecting Telescopes'.