The 18-inch Tinsley Classical Cassegrain

Our original telescope for visual use is the 1500-pound Tinsley instrument in the West dome.

Despite its large size, it is easy to use and provides stunning views of celestial objects.

This telescope is housed under a 16-foot rotating dome with a slit that reveals a narrow view of the sky. Both the dome and telescope are computer controlled.

When the operator selects a target from the computer display, the telescope automatically aims at the target and the dome automatically rotates to reveal the right part of the sky.

The interior of the dome is dimly lit with red light, so that your vision adapts to the darkness. The dome is not heated because warm air escaping from it causes “heat waves” that noticeably degrade the view through the telescope.

This telescope was manufactured in 1965 by the Tinsley Labs in Richmond, CA, and was made available by Telescopes In Education (TIE) and the estate of Mr. C.F. Rehnborg (Hemet, California).

The software that gives us computer control is courtesy of Software Bisque.

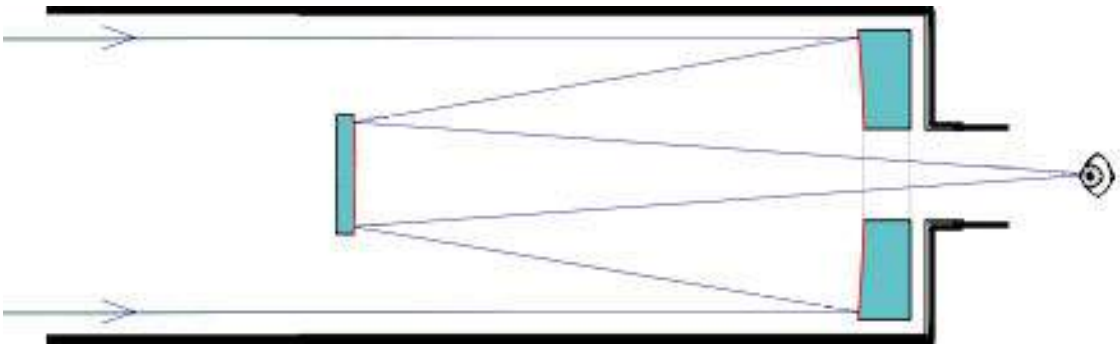
Technical Information for the 18″ Telescope

Mount: Polar Fork
Diameter: 18 inches (457 mm)
Focal ratio: f/14
Focal length: 21.00 feet (6400 mm)
Magnifications: 22mm Nagler (291x), 35mm Panoptics (183x), 38mm Orion (168x), 40mm Meade (160x), 85mm Russell (115x)

Its long focal length means this is a naturally “high-power” telescope. It is very well-suited for planets, the moon, and other small or highly-detailed targets. Although it was not designed for sweeping views of large tracts of the sky, we frequently use a low-power eyepiece (40mm) to achieve a more moderate degree of magnification.

Cassegrain Telescope Design

The telescope optics are a classical Cassegrain design, as shown in this sketch.



Light enters the telescope from the left. The large primary mirror reflects the image onto the smaller secondary mirror. The secondary mirror reflects the image back through a hole in the center of the primary mirror to the eyepiece. For many technical reasons, this is the basic design of most of the major scientific telescopes in use today, including the Hubble Space Telescope. One practical advantage is that the eyepiece is usually at a convenient height for viewing.