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PALOMAR GETS A NEW TELESCOPE

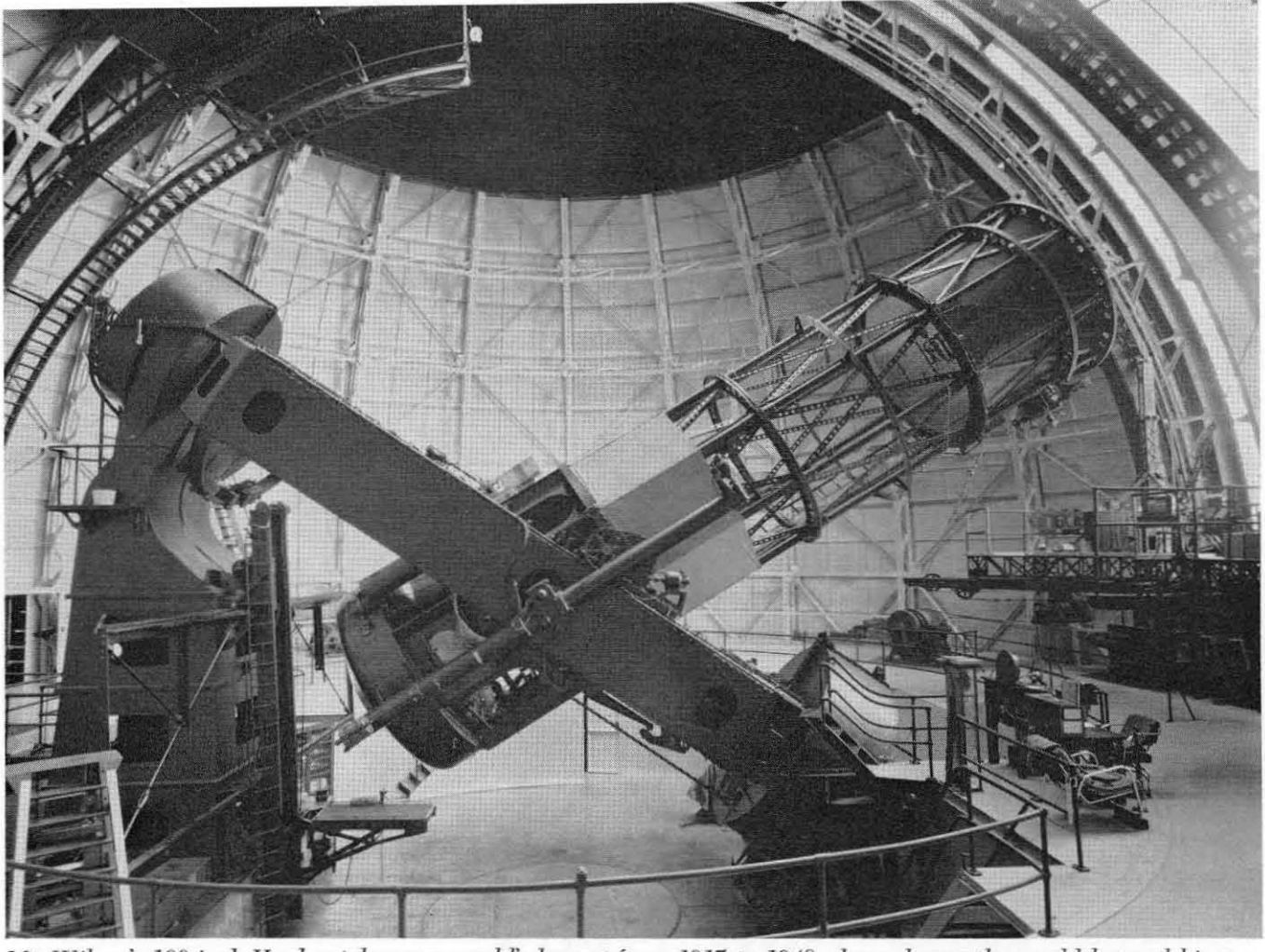
Work is beginning on a 60-inch photometric instrument which, when completed in 1970, will permit more efficient use of the Mt. Wilson and Palomar Observatories' other telescopes

Palomar Observatory will soon have another telescope. A 60-inch reflector of advanced design, scheduled for completion in 1970, will be the first major addition to the Mt. Wilson and Palomar Observatories since the 200-inch Hale telescope became operational in 1948. The new instrument will be a powerful, versatile addition to the Observatories' facilities. Although it is "small" compared to the giant telescopes, it will permit more efficient operation of the Observatories' four major telescopes—the 200-inch Hale and the 48-inch schmidt at Palomar, and the 100-inch Hooker and the 60-inch at Mt. Wilson.

The total cost of the new 60-inch telescope will be about $1,000,000. The National Science Foundation has made a grant of $590,000 to the Carnegie Institution of Washington, co-operator with Caltech of the Mt. Wilson and Palomar Observatories, for materials and construction of the telescope. The Oscar G. Mayer family of Madison, Wisconsin, has pledged to Caltech the funds for the observatory building. The National Aeronautics and Space Administration has given $125,000 for the preliminary design studies and for purchase of the 60-inch mirror blank that was cast by the Corning Glass Works. And additional funds will come from the Carnegie Institution ($74,000) and Caltech ($20,000). Design studies and engineering plans have been completed by Bruce Rule, chief engineer of the Observatories.

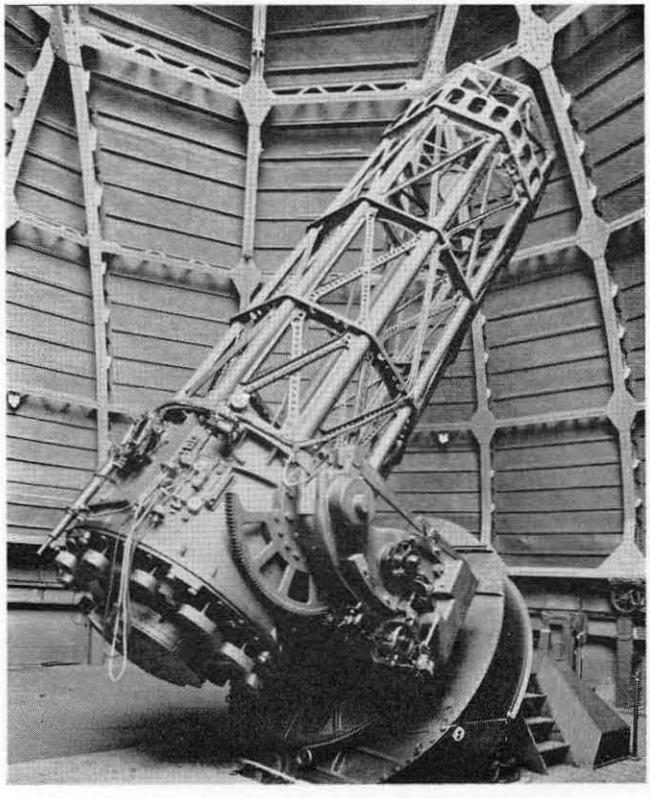
The urgent need for this telescope has been recognized for several years, and planning for it was begun in 1962. It may be regarded as an important unit in the fulfillment of the recommendations made in 1965 by the National Academy of Sciences when it considered a ten-year development program of ground-based astronomy facilities for the United States. Its report stated that of all equipment needed (which includes more than 30 new optical and radio telescopes at an estimated cost of nearly $225 million), construction of two intermediate-size (60 to 84 inches) optical instruments should have the highest priority.

The new telescope will be particularly effective for important photometric observations that do not require the light-gathering capability of the 200-inch telescope. This will free the big telescope to concentrate on observations of the very faint objects for which it was designed. The 60-inch will also get much of the direct photographic and photoelectric work now being done at Mt. Wilson. Increasing reflection of city lights in the night sky over Mt.



Mt. Wilson's 100-inch Hooker telescope, world's largest from 1917 to 1948, showed man the world beyond his own galaxy. After 1970 it and the older 60-inch can be used mainly for bright objects and spectroscopic studies.

The 60-inch telescope at Mt. Wilson, in use since 1909, was the first of the Mt. Wilson and Palomar Observatories' great astronomical instruments.

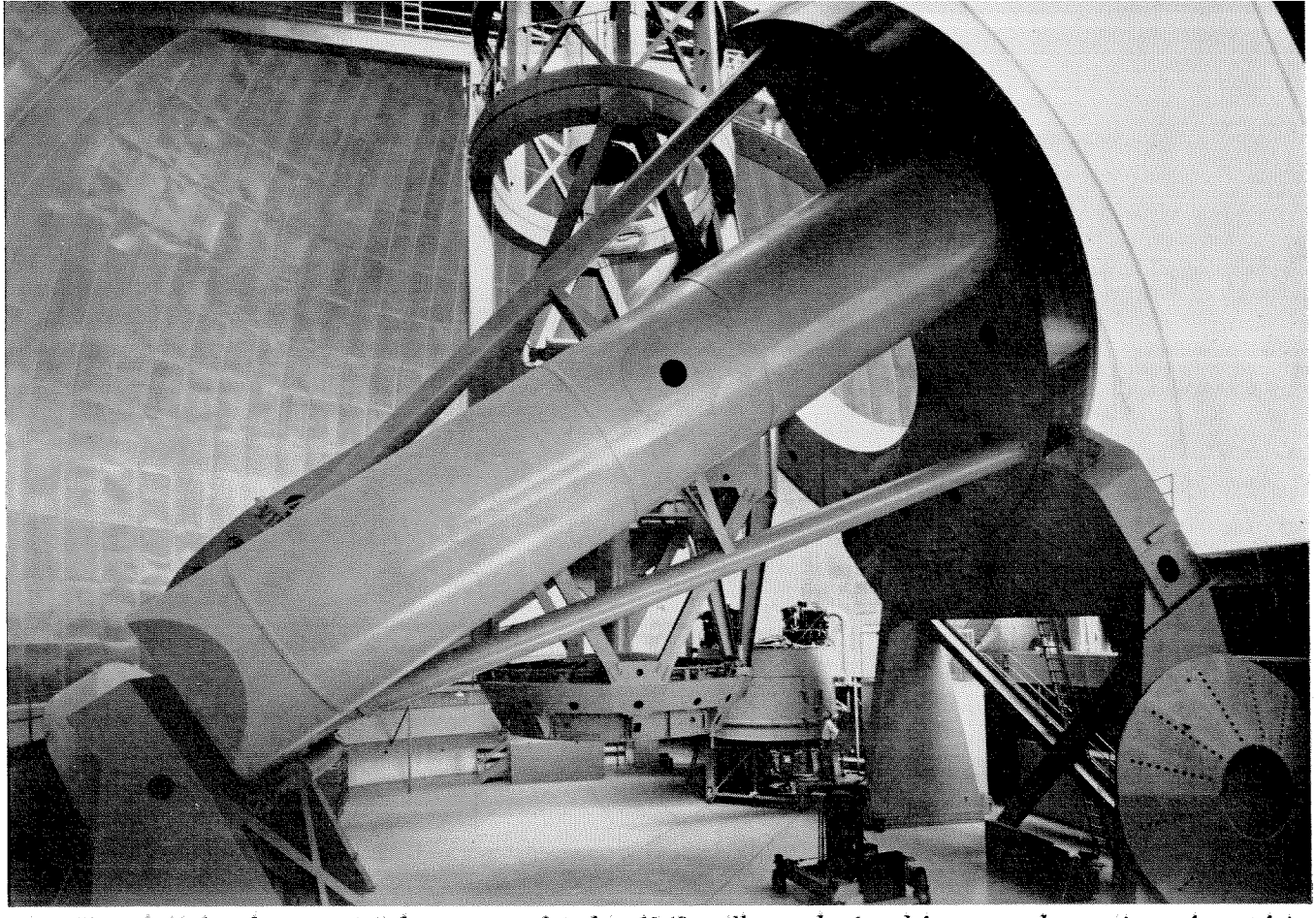


Wilson has reduced the effectiveness of the 100-inch telescope for observations of very faint sources.

After some work from Mt. Wilson is transferred to the new telescope, the Mt. Wilson instruments can be used more effectively for observing brighter objects and for conducting spectroscopic studies in which chemical composition, temperatures, and motions of objects are analyzed. Also, increased availability of the instruments there will help meet the growing need for observing time by the Observatories' staff, graduate students, and guest observers from other institutions.

The new telescope will bridge the gap between the high magnification and small field of the 200-inch and the comparatively low magnification and large field of the 48-inch schmidt. The relatively large field of the 60-inch (1¼ degrees—a little more than two moon diameters) will make it a valuable companion to the schmidt for survey work.

The telescope tube will be only about 13 feet long; the use of mirrors will extend its focal length to that of a much longer telescope. It will have a Cassegrain focus (where the image is reflected by a mirror near the top of the tube to a plane below the primary mirror) for photometry and direct photography and a coudé focus (which is independ-



The 200-inch Hale telescope at Palomar, completed in 1948, will soon be freed for more observations of very faint objects. The new 60-inch will take over some of the other kinds of work that the 200-inch must be used for now.

ent of telescope orientation and is situated in a basement room) for spectrographic studies. The small size of the telescope will make it possible to move quickly from one celestial object to another, and it will also be possible to change rapidly from one focus to another. This will make it extremely useful in photometric work.

The telescope mirror blank, now in the Optical Shop at the Observatories' headquarters in Pasadena, is of fused silica, which is little affected by temperature changes. It has been edge-ground and roughly contoured. After further grinding and polishing the mirror will be coated with highly reflective aluminum, as will the smaller mirrors that direct the image to the observing foci.

The design of the three-story building and dome for the new telescope is being adapted from that of the 48-inch schmidt telescope. It will contain observing space; a basement coudé room; a combination office, library, and photographic plate assessment room; and darkrooms for developing plates. Insulated walls and an air-conditioning system will provide temperature control to safeguard sensitive equipment. The building will be named for the late Mr. Mayer, founder of the large meat packing firm that bears his name.

Palomar's 48-inch schmidt camera, able to take high-resolution photographs with a wide field of view, acts as a scout for the 200-inch telescope.