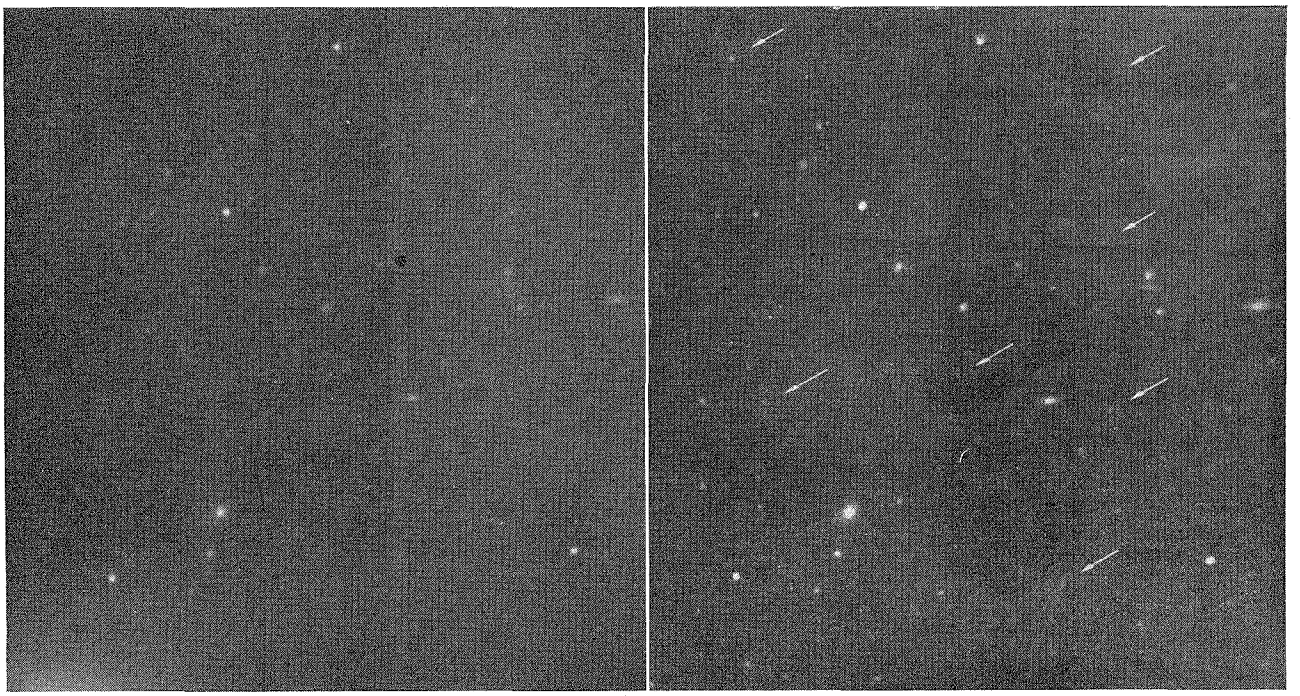


*Comparison of pictures taken by the 100-inch (left) and 200-inch telescopes shows the kind of minute detail obtainable by the Hale telescope (arrow, right) which is of utmost significance to astronomers.*

# THE 200-INCH TELESCOPE

## takes its first pictures

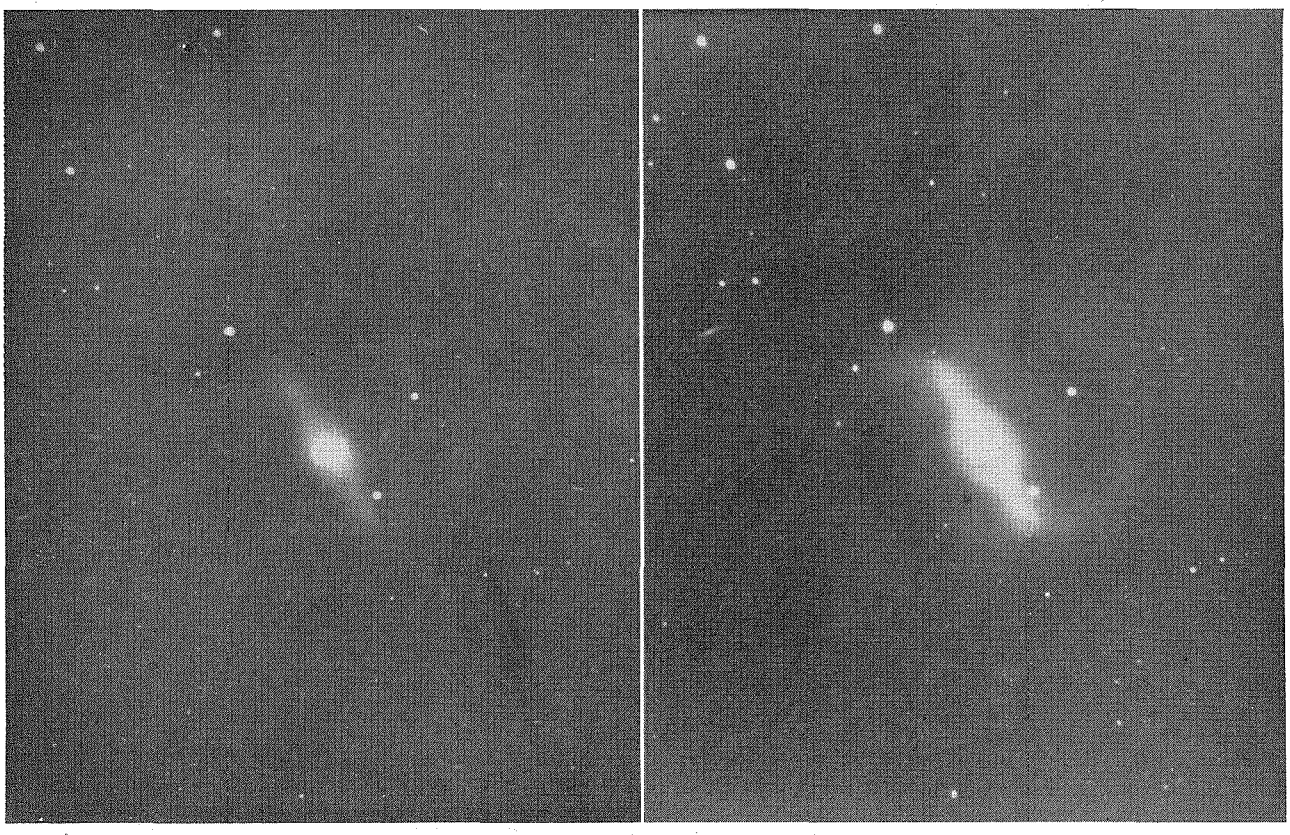
by EDISON HOGE

QUIETLY and without fanfare, on the night of January 26th, 1949, at 10:06 p.m. P.S.T., Dr. Edwin Hubble pulled the slide of the plate holder starting the exposure on plate number P.H.-1. The P stands for Palomar, the H for Hale, and the 1 means that this was the first astronomical photograph taken on the first observing schedule of the 200-inch Hale telescope at Palomar Mountain. To date 62 plates have been taken with the 200-inch telescope.

To the layman these first photographs will probably look just like thousands of other astronomical photographs, taken with other large telescopes. To the astronomer, however, these first Palomar plates are tremendously exciting. Even though they were taken under from poor to average conditions of "seeing," they clearly indicate that the 200-inch Hale telescope is capable of doing the work for which it was designed.

These first observations have already pushed back the horizons of our observable universe from 500 million to 1,000 million light years. Some of the plates show detail and resolution equal to the finest plates thus far taken with the 100-inch telescope on Mt. Wilson. The light-gathering power of the 200-inch mirror assures stellar and nebular spectrograms on a greater scale and with finer detail than ever heretofore obtainable. Due to the novel design of the Hale telescope a large area about the North Pole, not within the range

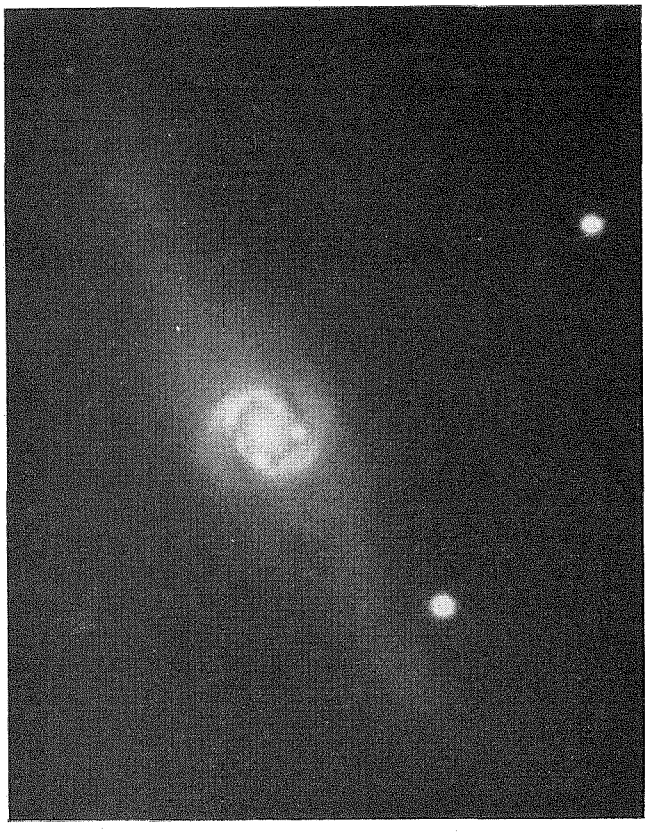
*P.H.-1, first picture taken with the 200-in. telescope is not much—astronomically speaking—since it was only made to try out the telescope. Taken by Dr. Hubble, it shows Hubble's Variable Nebula.*



*Spiral nebula, left, was photographed by the 100-in. telescope; same nebula, right, by the 200-in. telescope.*

## *Unexciting?*

*"Unfortunately," says Dr. Hubble, "the most exciting pictures astronomically (the ones where the most distant objects have been photographed) become the least spectacular . . . on the printed page". But these pictures of a nebula 5,000,000 light years away seem to contradict Dr. Hubble's modest statement.*



*Blow-up of 200-inch plate reveals nebula's nucleus.*

of the 100-inch telescope, now becomes observable with a very large telescope for the first time.

These first plates from Palomar were taken as a practical test of the great telescope. When first installed, the 200-inch mirror was given a thorough optical test in place by Dr. Ira Bowen. The outer 20 inches of the mirror was found to be turned up a few millionths of an inch. To correct this minute irregularity it has been decided to polish this outer rim down to as nearly the correct figure as possible. This work, which will take about six months, will bring the 200-inch Hale telescope to its highest possible working efficiency before the regular observing program is resumed.

Advancement in scientific research is not always accomplished by merely building larger and more powerful equipment. New types of instruments often result in great advances too. The 48-inch Schmidt telescope at Palomar admirably illustrates this point. Although the 48-inch Schmidt has not been much publicized, it will be of outstanding importance in the astronomical research program at Palomar.

The Schmidt type of telescope is unique in that it may photograph with a relatively short exposure a very

*No other astronomical instrument can obtain as vast a region of the sky as the 48-inch Schmidt camera which scouts the skies for the 200-inch, and creates a good deal of astronomical excitement on its own. This typical plate (the original is approximately 14" x 14") was taken in the center of the central line of our Milky Way.*

large area of the sky in exquisite detail. This makes it extremely valuable as a "mapping" telescope, with great possibilities for discovering new astronomical objects. The 200-inch Hale telescope, on the contrary, has an extremely narrow angle of view, but the 200-inch reflecting mirror gives a very great light gathering power and the large diameter provides a very high degree of resolution. These unique characteristics of the 200-inch telescope are well adapted to examining in detail—both by direct photography and by spectrographic photography—astronomical objects that may be discovered with the Schmidt telescope.

The future, indeed, holds great promise for the Palomar astronomers who may use this team of great telescopes to expand our basic knowledge of the universe about us.

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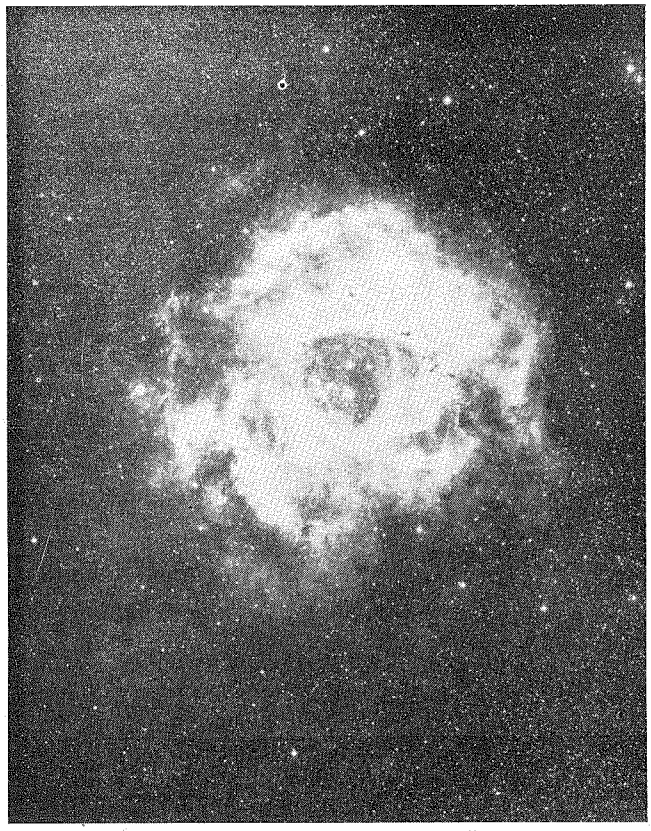
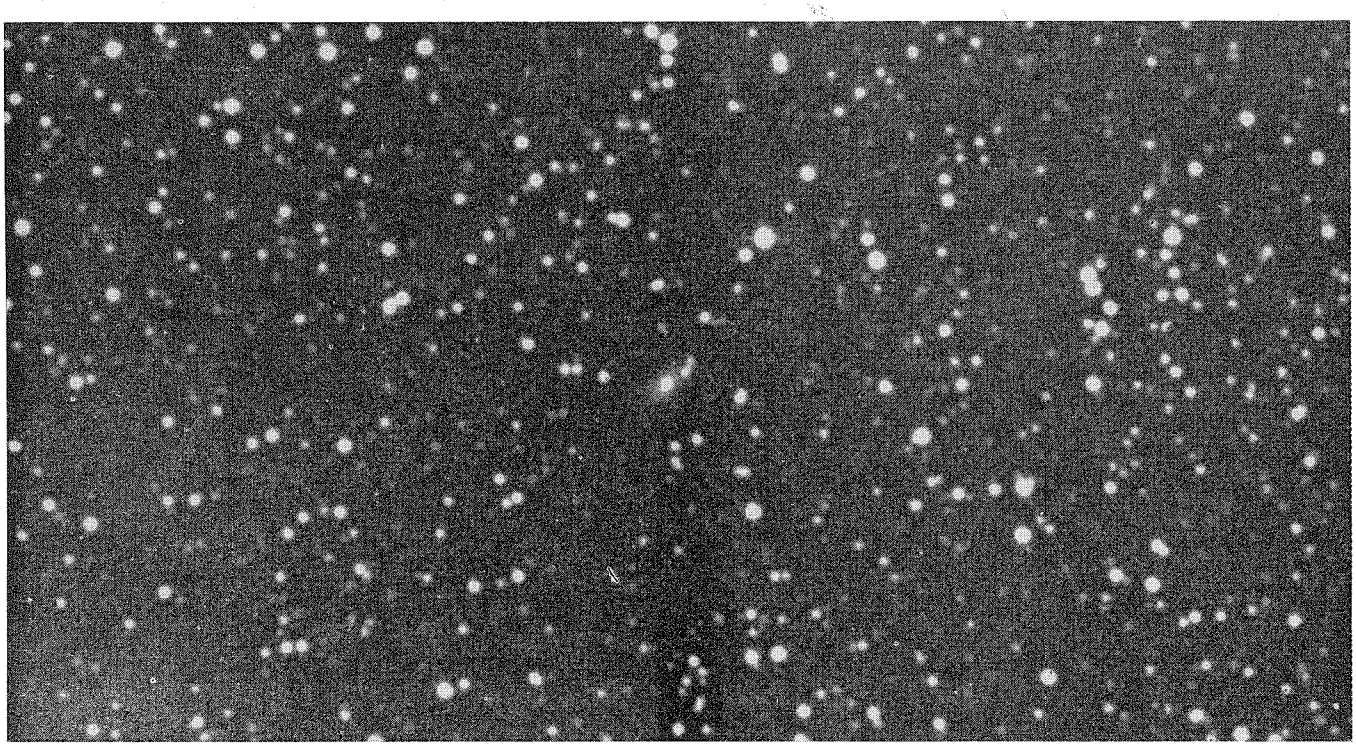


*Enlargement of section of Schmidt plate shows details of Rosette Nebula—a cloud of dust and gas illuminated by hot blue stars in the cloud.*

*Further enlargement (six times) shows dark markings in Rosette Nebula in sharp detail. Nebula is in Minoceros in the Milky Way.*

# The 48-inch Schmidt finds a window in the Milky Way



*Enlargement of a section of the Schmidt plate shown on page 5 reveals an opening or "window" (fuzzy object in center of picture above) in the gas and dust clouds of the Milky Way. Through it, astronomers saw a nebula never before found in this region. It would have been sheer luck if this nebula had been found by an instrument like the 200-inch telescope, which has a high degree of resolution but an extremely narrow field.*