

ASTRONOMY

Giant Telescope Designed

World's second largest telescope, 120-inch reflector that operates on a fork mount, has been designed. Construction will start next year.

► THE DESIGN of the world's second largest telescope, the 120-inch reflector at the University of California's Lick Observatory, is almost completed and construction will start next year.

A scale model one-sixteenth actual size has been built by the designer, W. W. Baustian, to solve in a miniature observatory the problems which will be encountered in the telescope's operation. Cost of the instrument is estimated at \$1,200,000, and construction will take at least four years.

For the first time a fork type mount will be used on a large telescope, the 53-foot tube and eight-ton, 16-inch-thick mirror of the Lick giant resting in a two-pronged 70-ton steel fork. The hollow fork can be rotated at will on its polar axis by a motor, while a second motor in the fork will drive the 35-ton tube and mirror.

With this mount the whole sky, with the exception of the area five degrees above the horizon, can be covered without the requirement of excessive space and heavy counterweights in changing the position of the tube.

Inside the 90-foot diameter dome housing the instrument, mechanized platforms and stairways will permit ready access to any part of the telescope.

Dr. C. Donald Shane, director of the Lick Observatory, said that the instrument has been designed along conserva-

tive lines in order to permit the installation of any type of auxiliary equipment usable on large telescopes. It will be possible to install the prime, Newtonian, Cassegrain and Coude focuses.

Lessons learned in the construction of the 200-inch telescope at Mount Palomar, the 100-inch mirror at Mount Wilson and other large instruments have been used to good advantage in the design. On advice of Palomar designers the mirror will be of solid disc glass, making for easier grinding and polishing and freedom from bending under its own weight than a sectioned type glass.

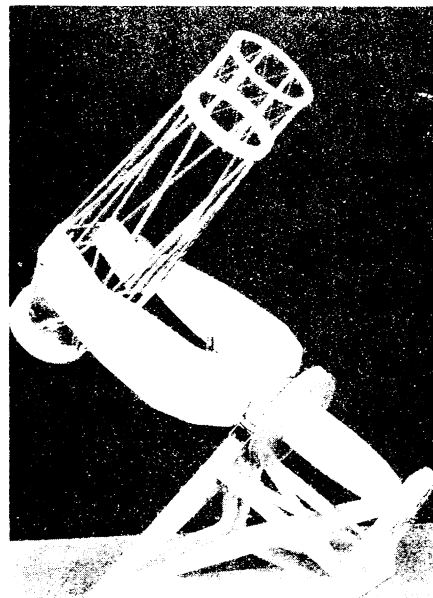
Dr. Shane said the mirror will take astronomers 900 million light years out into space, bringing within visibility fainter stars and stellar systems beyond reach of all but the Palomar telescope.

A cooperative research program will be undertaken by Lick and Palomar astronomers, in order to avoid duplication of effort with the two telescopes, Dr. Shane stated.

In addition to the more detailed study of brighter stars, the 120-inch telescope will permit investigations of remote galaxies beyond the Milky Way.

"An understanding of the motions and detailed structural features of the nearer galaxies affords the most fruitful means of understanding the structure and evolution of the universe," Dr. Shane stated.

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MODEL, NOT TOY—This model of the 120-inch reflecting telescope to be constructed at the University of California's Lick Observatory is scaled to one-sixteenth of the actual size. Figure in fork is reduced to same scale as model.

Snellen test are given the plus sphere test. Cases of nearsightedness are almost always discovered with the Snellen test, but farsightedness is only rarely uncovered by it and then only in the very severe types.

Farsightedness is a much more common defect than nearsightedness. Farsighted children are severely handicapped in their school work. Some are able to overcome the defect enough to see their lessons, but this usually causes eyestrain and headache, especially toward the end of the day. The symptoms may become so aggravated that to do near work is very uncomfortable and the child, therefore, does not like school.

About 7% of the children tested fail the plus sphere test, compared with about 17% who earned a score of 20/30 in both eyes on the Snellen test, Dr. Van der Slice reported.

The plus sphere test, he acknowledged, is open to some controversy on the amount of plus sphere in the glasses but the limits were set by a group of nationally prominent eye specialists after a two-year study in which more than 6,000 children were tested and checked against an eye specialist's examination.

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OPTICS

Test for Farsightedness

► FARSIGHTEDNESS, which handicaps many a school child so greatly that he hates school, can now be detected by a simple, accurate test, Dr. David Van der Slice, Flint, Mich., director of school health program, declared at the meeting of the American School Health Association.

The new test is called the Plus Sphere test. It is one of a battery of tests in the Massachusetts Vision test developed by eye specialists, educators and psychologists.

The test is made with the Snellen (symbol E) chart but with the child wearing plus sphere glasses which shorten the focal length of the reflected light rays. The child is asked to read the 20 line on the chart. If he can read it correctly, he is farsighted. The child who is not farsighted will complain that the symbols are blurred because the plus sphere glasses prevent the light rays from focusing on his retina, as they must for clear vision.

Only those who pass the ordinary