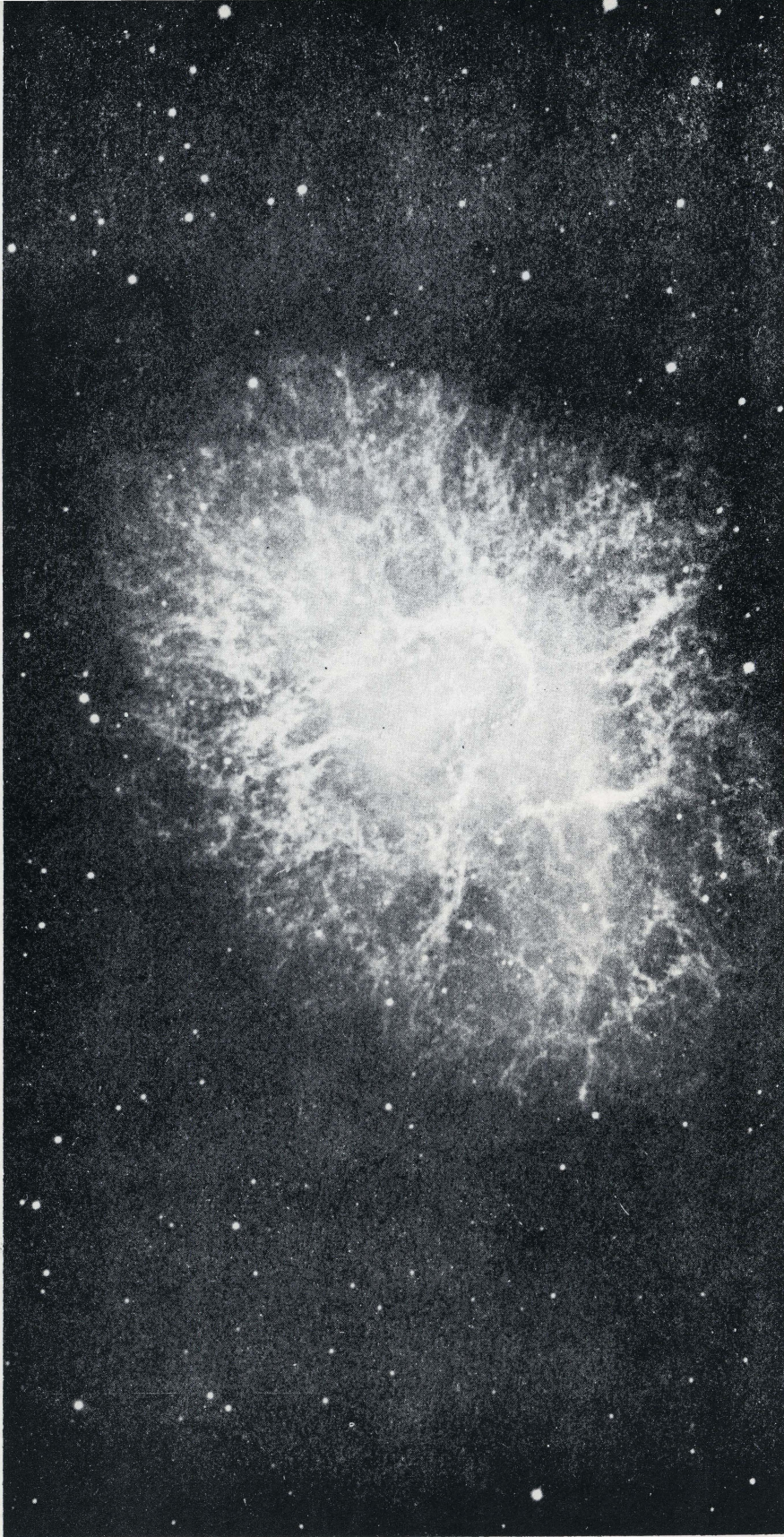




*PLANNING AN ASTRONOMICAL CENTER*  
*For TEXAS CHRISTIAN UNIVERSITY*

*www.tcu.edu*



an



Crab Nebula in Taurus, Mt. Wilson and Palomar Observatories

*“When I consider thy heavens, the work of thy fingers, the moon and the stars thou hast made . . .”*

*Psalms 8:3*

# ASTRONOMICAL CENTER

## as part of the TCU Science Program

THE science division of Texas Christian University maintains a program aimed at providing high-level technical training in the physical, the mathematical, and the biological sciences. In addition to broadening their educations, students may become proficient in a major field of scientific work and prepare for professional careers. It is the University's aim to develop persons who not only are equipped to think but are disciplined to observe facts and to evaluate them properly.

Thoughtful friends of the University are proposing the establishment of an "Astronomical Center" on campus to further this objective. Such a Center, which would stimulate interest and work in physics, mathematics, chemistry, biology and geology, would be an invaluable asset to our work in these areas. It would not only attract promising young scientific minds but would inspire individuals to original, significant research.

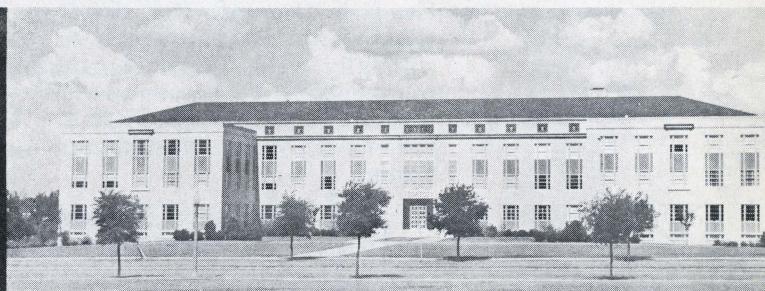
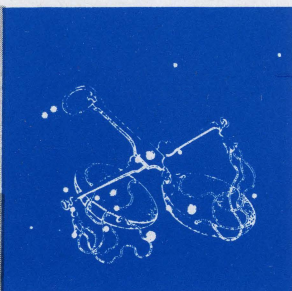
As an institute of higher learning, we at Texas Christian University will be more than delighted to have such a Center. If the necessary buildings and equipment can be procured, we will make certain that it is adequately staffed for outstanding work. We are most grateful for the efforts of everyone in this project.

*M. E. Sadler*

President,  
Texas Christian University

*Joseph Morgan*

Professor of Physics,  
Director of Engineering Program.



Photos above show (left to right) TCU President M. E. Sadler; Dr. Joseph Morgan, director of engineering program and professor of physics; and TCU Science Building which contains laboratories and classrooms for study of the basic sciences and mathematics.

Constellations of the Zodiac are: Aquarius, the Water Bearer and Libra, the Scales.

# Description of Equipment Needed

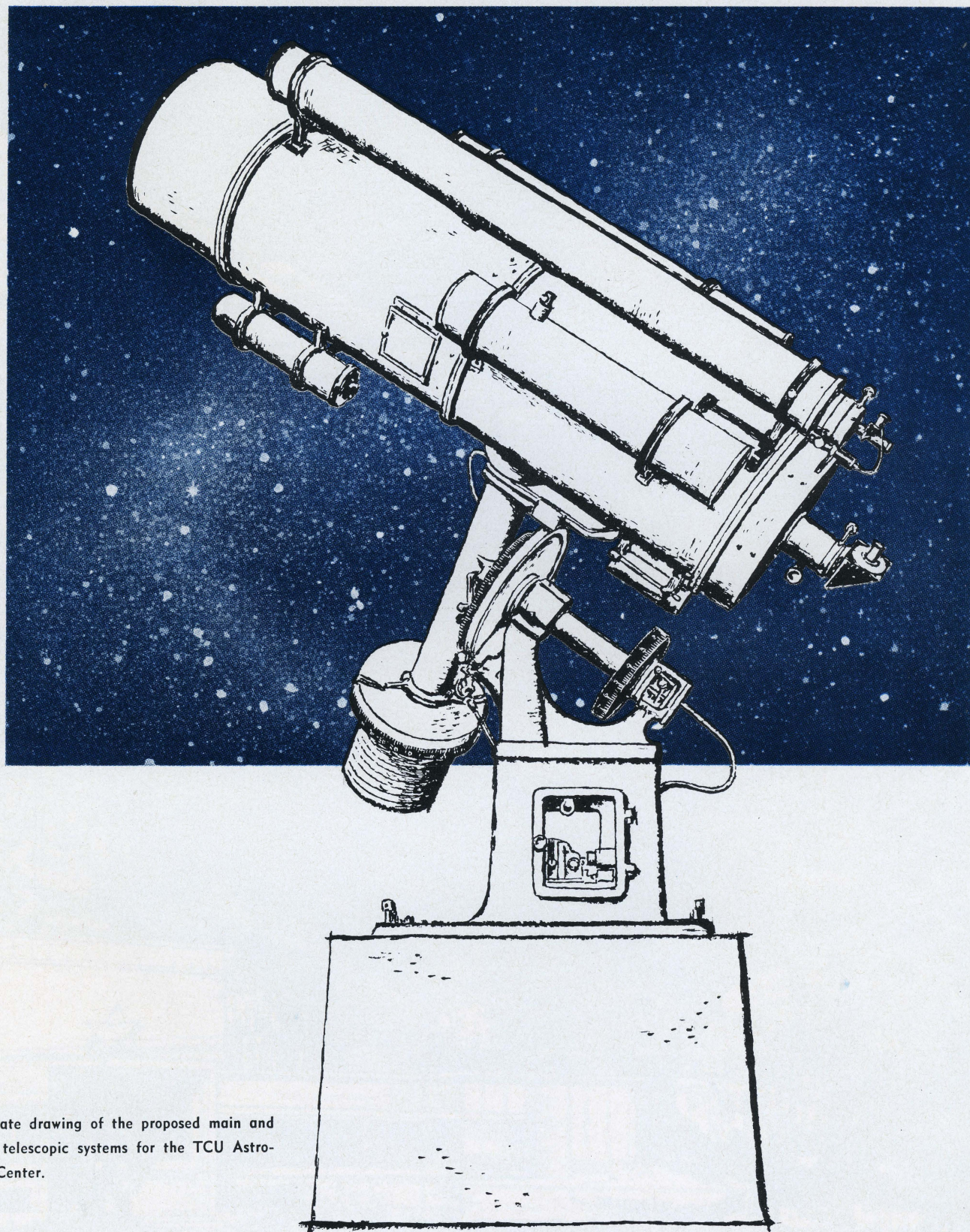
Halley's Comet, Mt. Wilson and Palomar Observatories



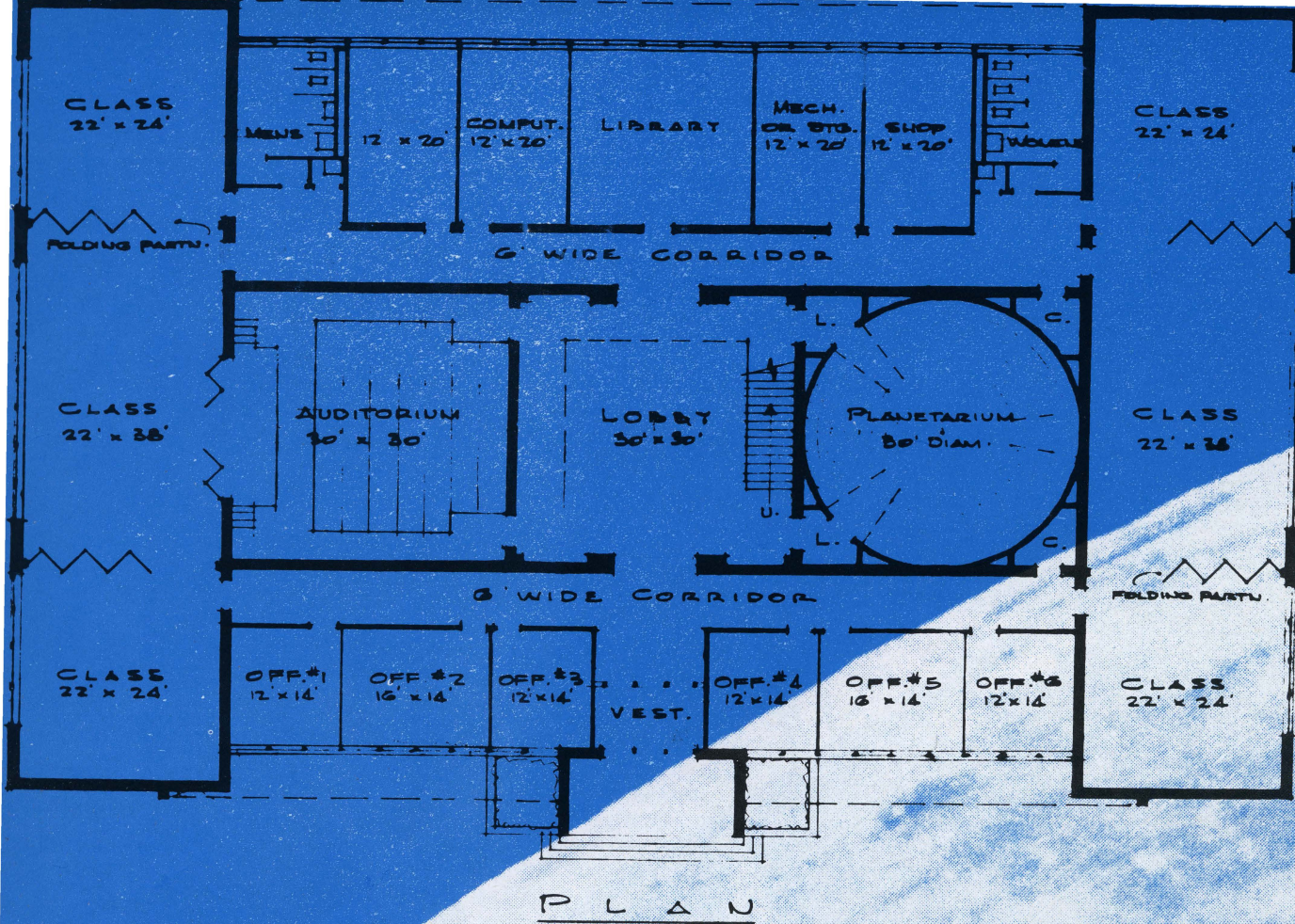
For effective educational use the observatory is to be erected in a suitable location on the Texas Christian University campus. The building pictured in the center pages of this booklet will have permanent installations of the following items of equipment:

- I **Twelve-inch Catadioptric Telescope** complete with a three-inch aperture finder telescope. This main instrument, combining both the lens and mirror principles in its construction, possesses most of the advantages of both the refracting and reflecting type telescopes. The proposed size will be the largest existing telescope of the catadioptric type in the United States. It will be provided with an accurate sidereal drive for tracking celestial bodies.
- II **Three-inch Astrograph Camera** which will be attached to the tube of the main telescope and will serve as an astro-patrol camera having wide field coverage and excellent resolution.
- III **Eight-inch Aperture Richest Field Telescope**—This instrument, which is to be mounted on the main telescope, will serve as a visual telescope to reveal the greatest number of stars in its field.
- IV **Five-inch Clear Aperture Guiding Telescope**—This instrument, mounted coaxially with the main catadioptric telescope, is to be employed when photographic exposures are being taken with the main telescope optical system.
- V **Six-inch Schmidt  $f2.5$  Camera**—This modern photographic telescope, possessing both a very wide field and a great speed, is to be employed in astronomical investigations and observations that require these features.
- VI **Spectroheliograph – Spectroheliograph Instrument**—This combination is for use in the field of solar astronomy. It tracks the sun by means of a special heliostat and thus always brings the sun's image into the field of the telescope used for viewing and photographing the sun and its spectrum.
- VII **An Astronomical Laboratory** containing complete photographic darkroom facilities and optical items essential for astronomical work, of which the following are representative:
  - Photoelectric photometers
  - Spectrographs
  - Spectrophotometers
  - Measuring machines
  - Blink comparator
- VIII **Sixteen-foot Aluminum Dome** with its associated controls to house the main telescope.
- IX **Planetarium Projector**
- X **Planetarium Projector Dome**
- XI **A Workshop** equipped to service and maintain in good working condition the Center's optical and electronic equipment.

Items one to eleven inclusive are to comprise the initial installation. After these are in operation it is planned to erect, at some location remote from the observatory, a radio telescope for detection, observation, and study of the electromagnetic disturbances originating from stellar bodies. The observatory building is to contain several classrooms for lecture purposes and enough observation space in the planetarium to seat about 200 persons.

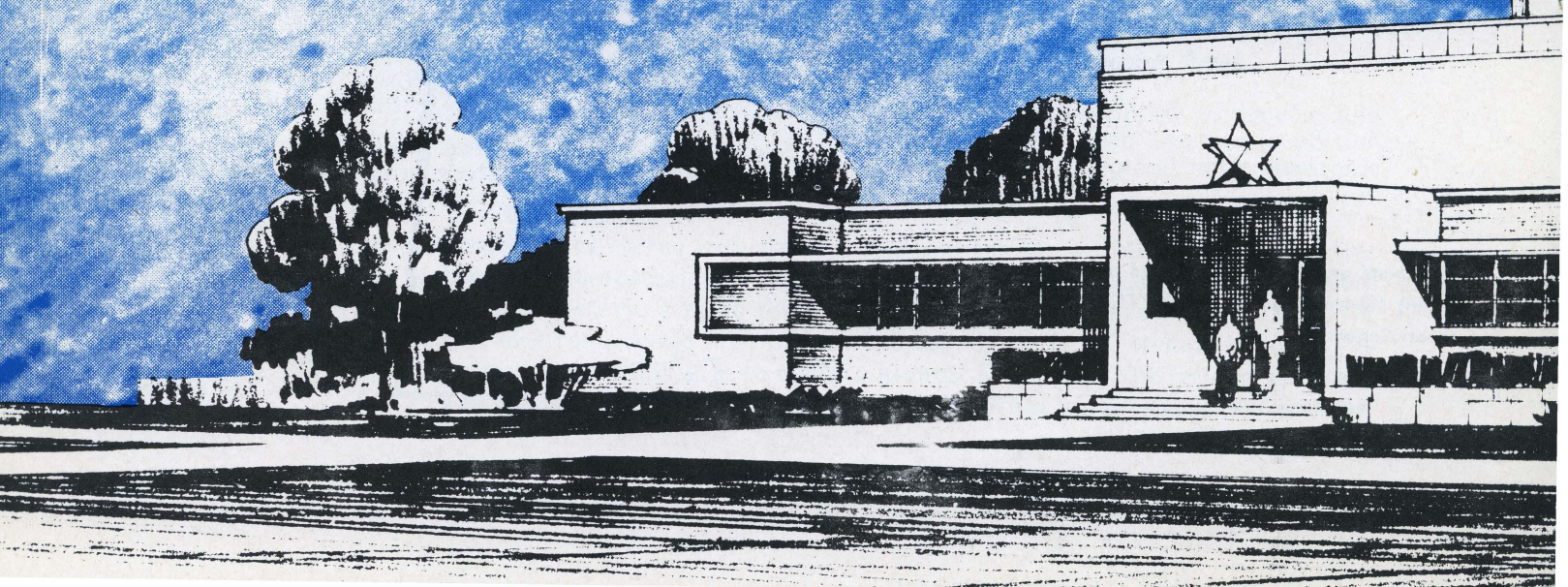


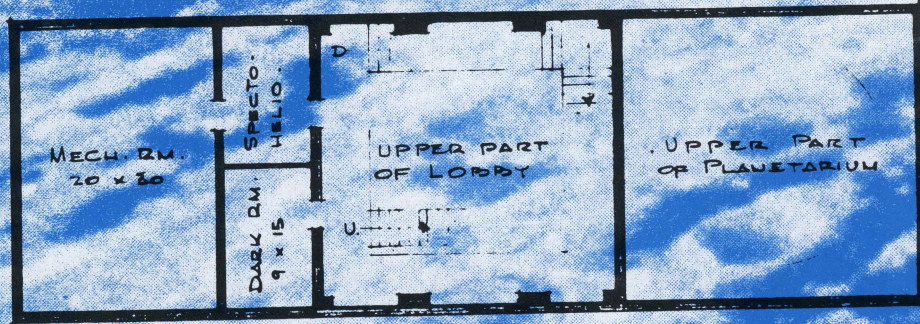
An accurate drawing of the proposed main and auxiliary telescopic systems for the TCU Astronomical Center.



PROPOSED OBSERVATORY  
 FOR  
 TEXAS CHRISTIAN UNIVERSITY  
 FORT WORTH, TEXAS

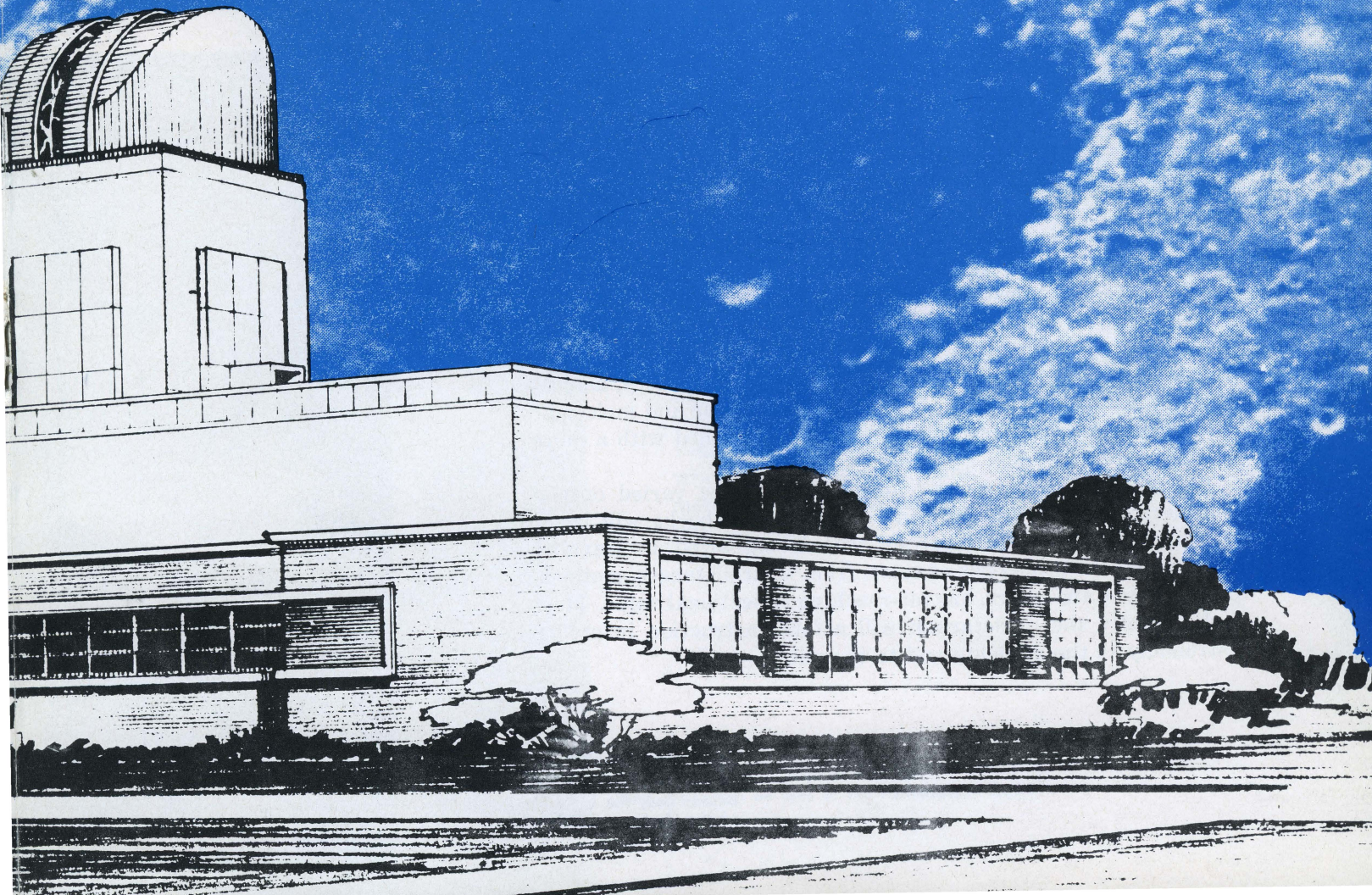
JOS. R. PELICH-ARCHITECT





R O O F

PLAN AT 2ND LEVEL





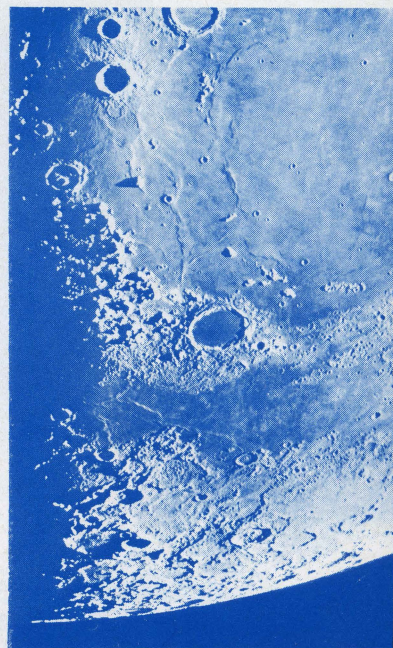
A planetarium similar to this, in the TCU Center will permit instruction in stellar astronomy to students and to the public.

## Uses, Aims and Educational Advantages

WITH the equipment described in this booklet it will be possible to have both undergraduate and graduate instruction in Astronomy. Of vital importance will be the study of the physical and chemical nature of the Sun, the Earth, the planets, and interplanetary matter.

Students will be able to substantiate the principles of the physical sciences and find immediate applications of their studies in the natural sciences and mathematics. It will be possible for students to study the nature of the stars and galaxies, to form theories concerning the origin and evolution of the stars and the universe, and to examine the many other problems and phenomena with expertly supervised laboratory work and observation. The mathematics of trigonometry, astronomy, radiation, probability, orbital motion, atomic and molecular motion, and quantum mechanics will be embellished with a more realistic aspect.

Training in the use and adjustment of the varied optical and electronic instruments and the use of yearbooks will be of inestimable value. The analysis that is employed in learning much about the properties of stars, from their distances, motions, brightnesses, and colors, has far-reaching educational value. Most significantly the planetarium will afford instruction in stellar astronomy to the students and to the public.

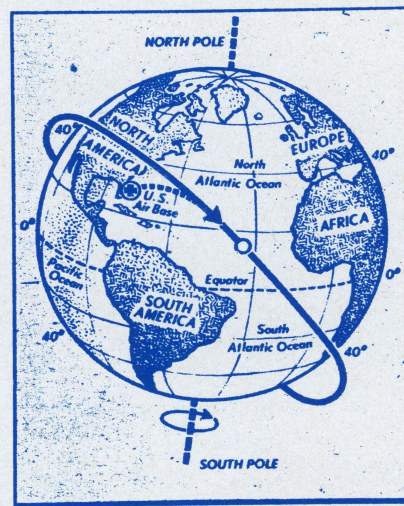
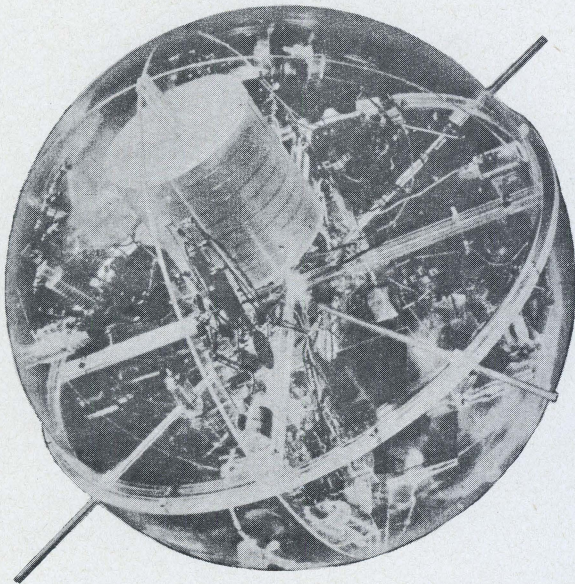


Above: The Moon, Lick Observatory

Below: Leo, the Lion, a constellation of the Zodiac.





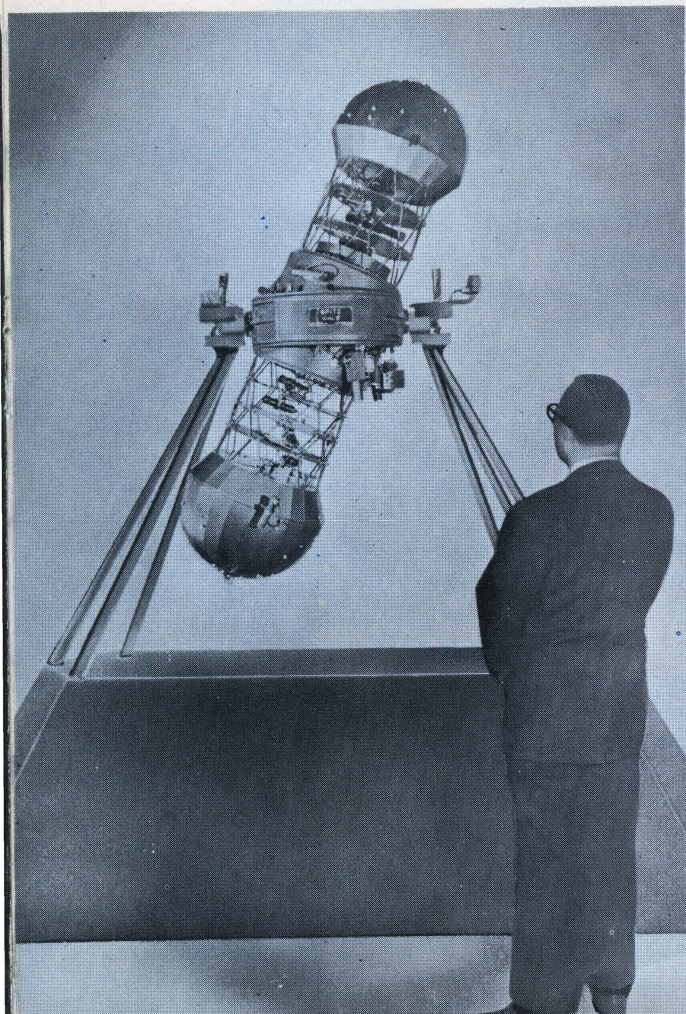


Model (left) of the first earth satellite shows kind of instruments it will use to make observations and report back by radio. Map (above) charts one line of its 5,000-mile-wide equatorial orbit.

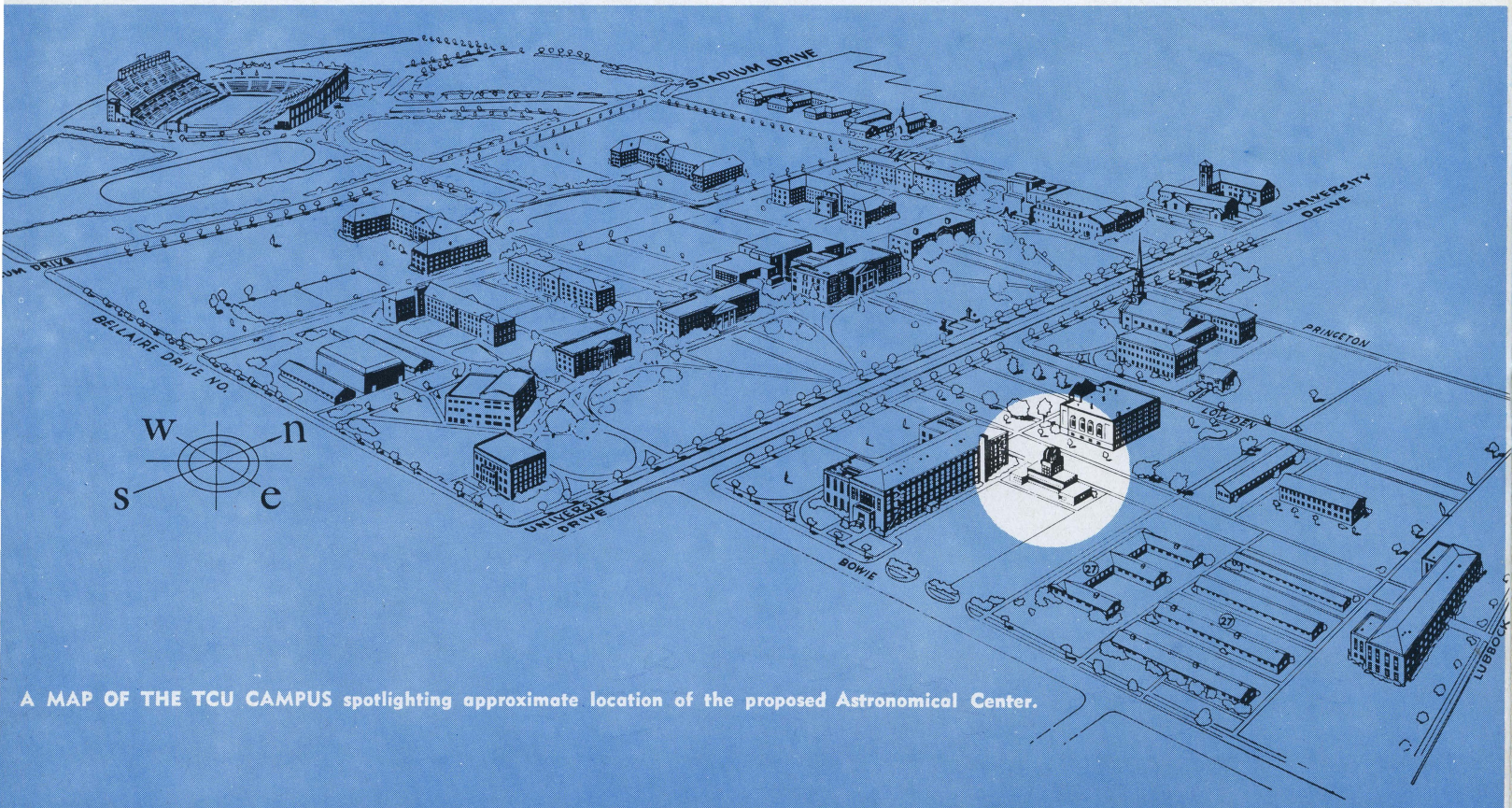
## Value in Teaching and Research

**M**ANY research projects will become possible with the optical and electronic equipment. These instruments place the research worker in contact with objects that are millions of light years away (a light year is the distance that light, with the speed of 186,000 miles per second, travels in one year, or in other words, about six trillion miles). With these instruments the progress of the contemplated man-projected earth satellite can be followed and studied.

The true scientist possesses a genuine humbleness which is acquired very quickly through the study of astronomy. He soon realizes his position in true perspective when, with telescope and related instruments, he penetrates deeply into the universe around him.



A planetarium instrument of this size and design will be used in the Astronomical Center.



A MAP OF THE TCU CAMPUS spotlighting approximate location of the proposed Astronomical Center.

## Astronomy as a Field of Study



Galileo revolutionized the astronomy of his time and pioneered in the scientific method and observation.

**A**STRONOMY as a field of study is fascinating, exciting and challenging. Initially astronomy produced upon man a cultural impact which has had a large share in his modern intellectual development. It is a field in which the true scientific method is constantly being applied. The student of astronomy makes observations, systematizes and classifies his data, explains observed facts and existing phenomena, theorizes, tests his theories and predictions by observation, and gradually develops a true attitude of research. To work in this field means to exercise the utmost in scientific discipline, to apply the principles of physics, mathematics, chemistry, and geophysics, to analyze, to make valid conclusions, to theorize and to predict. In short, the students of astronomy, with a first class laboratory at their disposal, are on their way to becoming what we today very much need . . . true scientists.



Milky Way in Cygnus, Yerkes Observatory

### Man still stands in awe of the Heavens.

THE myriad questions about the universe in which he lives seem endless. Yet yesterday's science-fiction becomes today's hard headlines. With the earth-satellite program, with research into many fields which may lead to interplanetary travel, there is a growing and urgent need for young men and women educated and trained in the field of astronomy. The establishment at Texas Christian University of the proposed Astronomical Center will afford such training and education to thousands of eager young people who could be the key to the future.

With those working in the Center you can also probe and explore the unknown. For, those who participate in this program will be giving something of themselves, through trained young persons, to astronomic study and research . . . and to tomorrow's world.

**You and other interested individuals and organizations can help make this Center possible.**

No organized financial campaign is planned for this program.

