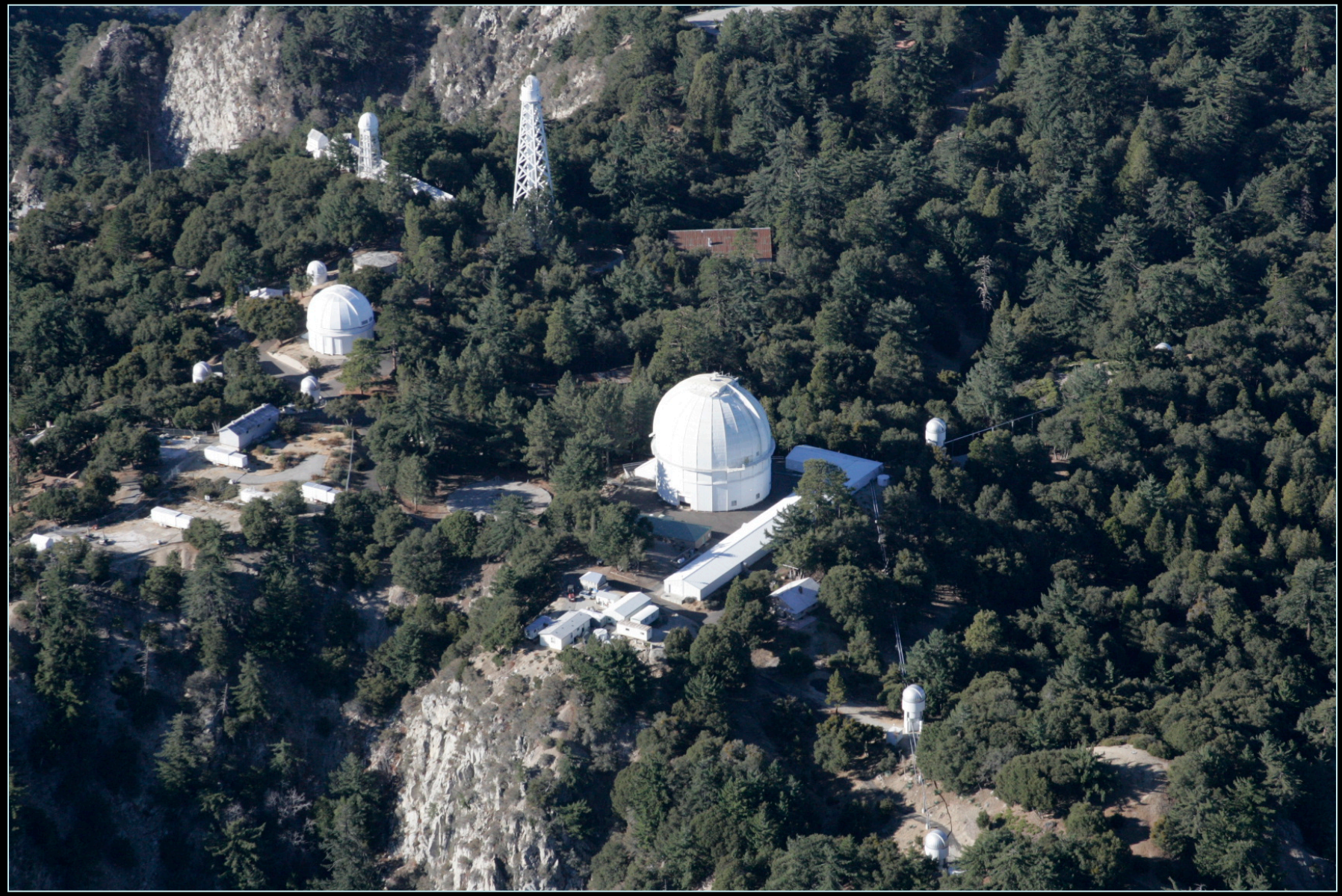
MOUNT WILSON OBSERVATORY

EST. 1904

A Second Century

A Mile Up in California's San Gabriel Mountains

The World's Most Important Observatory was Established in 1904

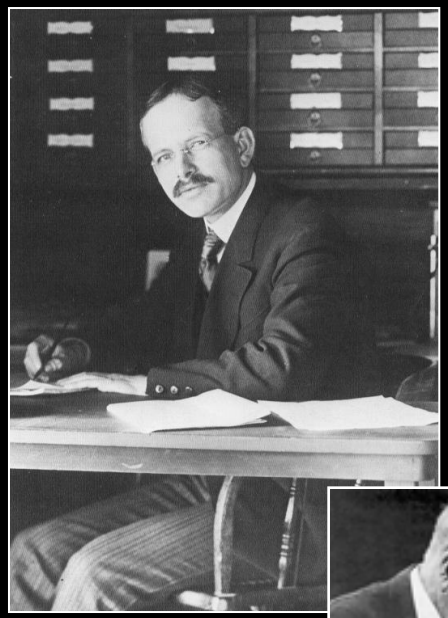


Mount Wilson
An Astronomy World Heritage Site

Here is where

in 1904, the visionary George Ellery Hale founded an observatory that would transcend all others and set the stage for all of modern astronomy.

Hale would build what would be the world's largest telescopes for half a century, enabling discoveries that would forever impact human understanding of our place in the Universe.



Mount Wilson
An Astronomy World Heritage Site

Here is where

Hale, in founding the new field of solar physics, discovered the sun's magnetic field in 1908 and the role it plays in the sunspot cycle, launching what is now the world's longest continuous record of our parent star's behavior.

Mount Wilson
An Astronomy World Heritage Site

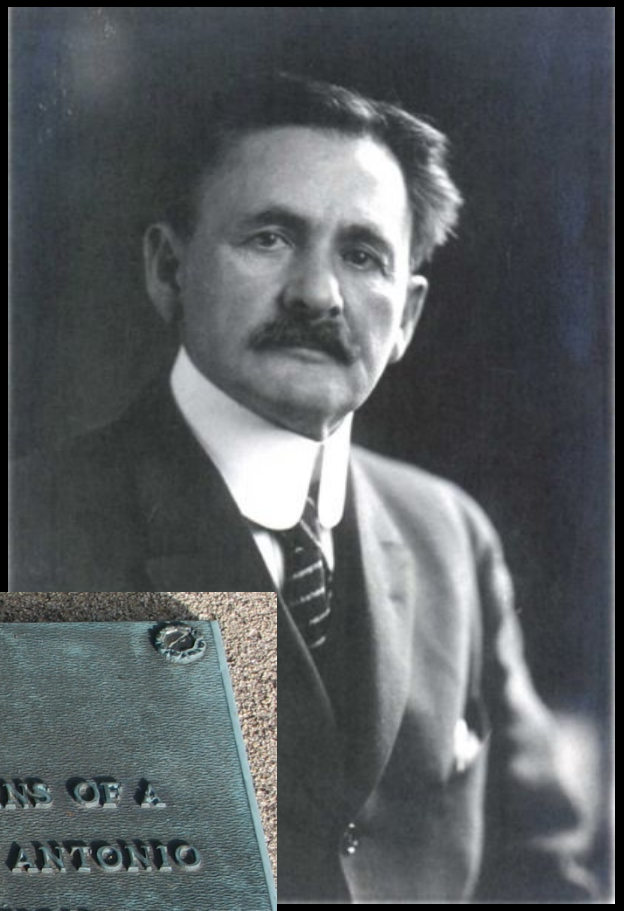
Here is where

the Copernican revolution was completed in 1918 with Harlow Shapley's discovery of our true location in the outskirts of our Galaxy rather than at its center.

Mount Wilson
An Astronomy World Heritage Site

Here is where

Albert Michelson, America's first Nobel laureate in science, made the first accurate determination of the speed of light by measuring its travel time between Mount Wilson and Mount San Antonio some 22 miles away

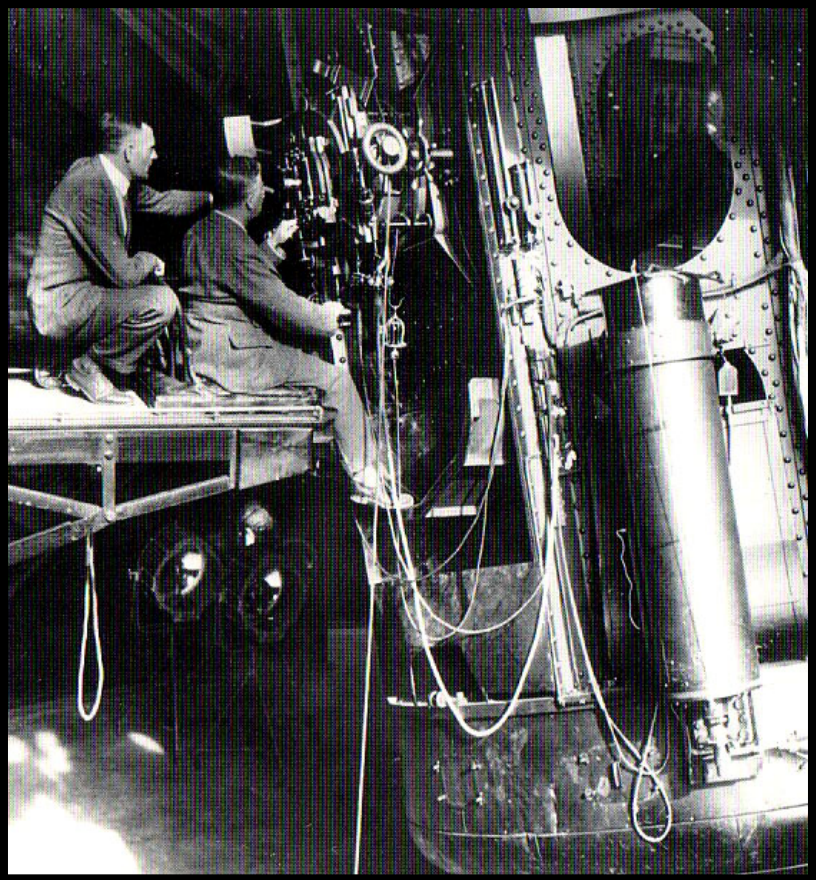


Mount Wilson
An Astronomy World Heritage Site

Here is where

during the Great Depression, Edwin Hubble found that our Milky Way Galaxy is just one among countless others, an island in an apparently limitless Universe.

Hubble then saw galaxies rushing away from our own with speeds increasing with their distances, implying a Universal expansion and inspiring a Big Bang origin of the Universe.



Mount Wilson
An Astronomy World Heritage Site

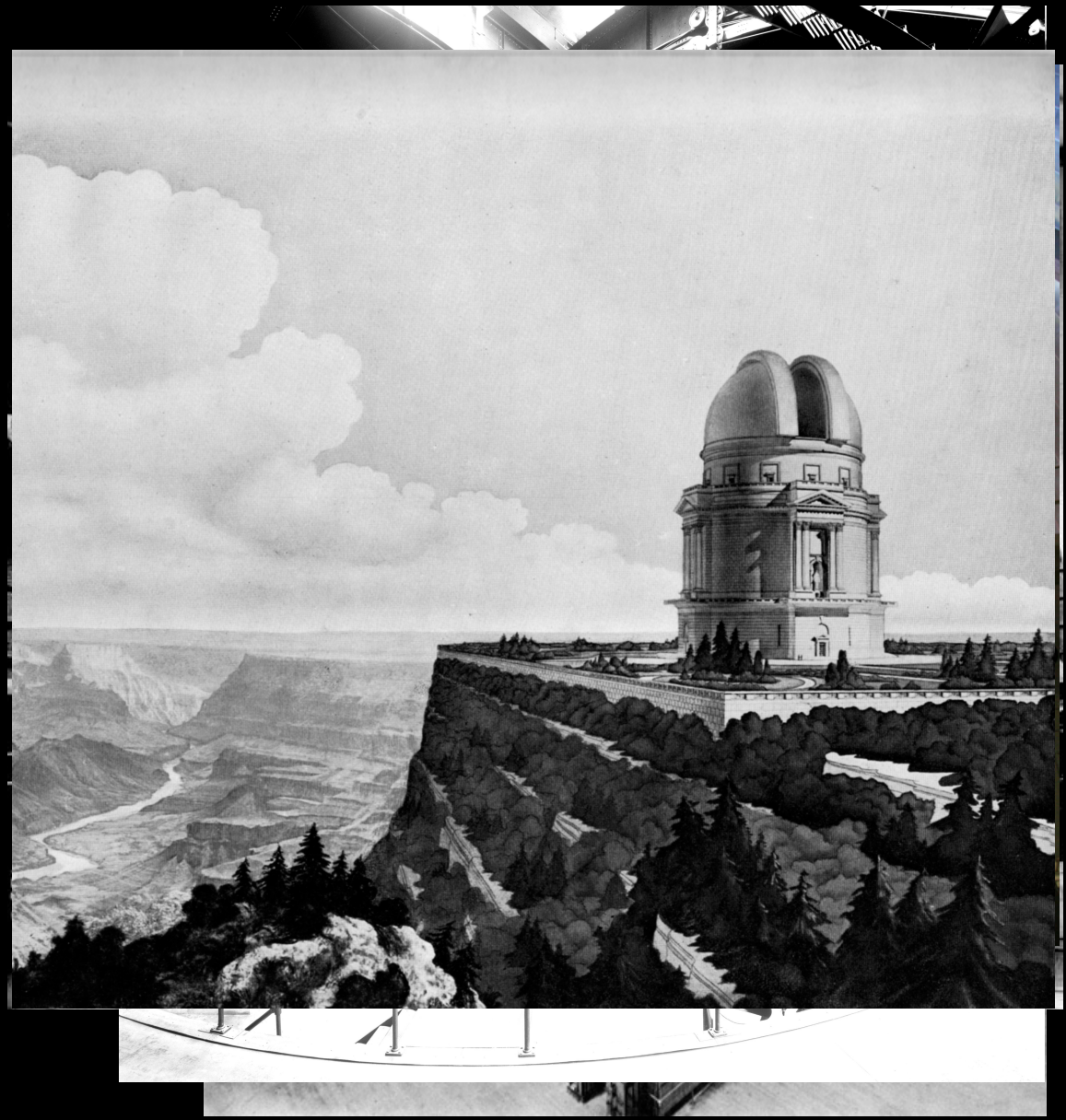
Here is where

during the blackouts of World War II, Walter Baade found that stars are born and die, leading to the subsequent realization that stars pass along the materials they synthesize to subsequent stellar generations and even produce the elements comprising the human body.

The Legacy of George Ellery Hale

- Founded Yerkes Observatory
- Founded Mount Wilson Observatory
- Founded Mount Palomar Observatory
- Founded the American Astronomical Society
- Founded *The Astrophysical Journal*
- A Founder of the California Institute of Technology (Caltech)
- Founded the National Research Council of the NAS
- Invented the field of Solar Physics
- Invented the field of Astrophysics

Hale's Quest for Ever Larger Telescopes



Yerkes 40-inch – 1896 still world's largest refractor

Mt. Wilson 60-inch – 1908 – worlds largest until 1917.

Mt. Wilson 100-inch – 1917 – worlds largest until 1949.

Mt. Palomar 200-inch – 1949 – worlds largest until 1975.

Hale's brilliant optician George Ritchey envisioned a 315-inch telescope in 1928.

Time Stops on Mount Wilson

in the Monastery Library

New York Times

NEW YORK, SATURDAY, JANUARY 3, 1931.

Prof. Einstein Begins His Work at Mt. Wilson; Hoping to Solve Problems Touching Relativity

By The Associated Press.

PASADENA, Cal., Jan. 2.—Dr. Albert Einstein disclosed today why he came to California.

He expects help from the scientists at Mount Wilson Observatory and the California Institute of Technology to solve the major problem of his mind, whether gravitation, light, electricity and electro-magnetism are not different forms of the same thing.

"This question is the main prob-

The Berlin professor seems very happy to be among so many men working on physical tests of his relativity principle. Several of them have completed tests supporting his principle and further revelations are expected.

Professor Einstein revealed another problem puzzling research workers. That is whether light conforms to a wave or corpuscular theory. He said

Mount Wilson – A Science Monument in Beautiful Surroundings

We had a very close call . . .

Sep 5, 2009 – Oct 15, 2009


(c) UCLA Department of
Physics and Astronomy
Sep 05 09 23:09:23

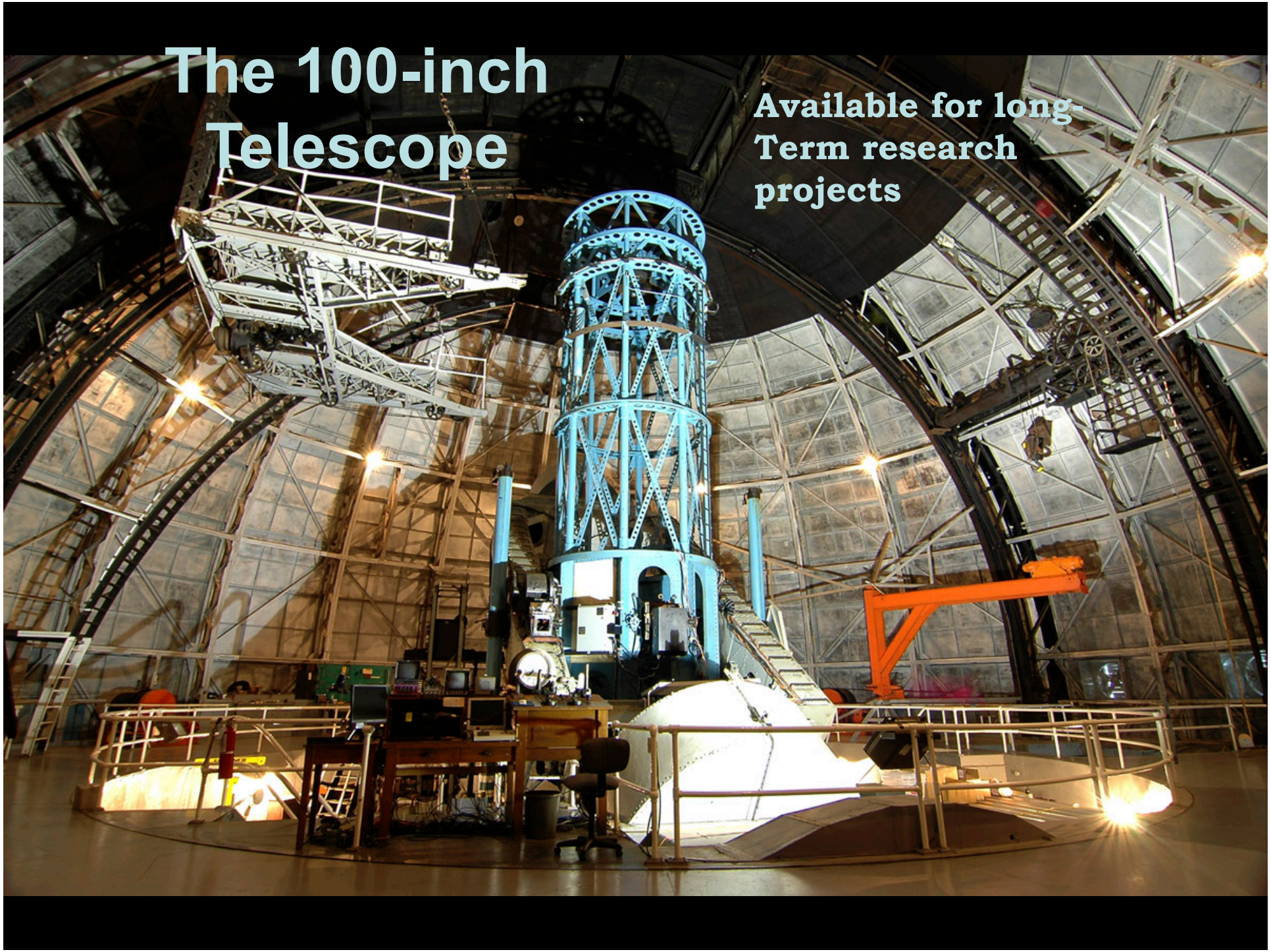
What does the future hold for Hale's Visionary Observatory?

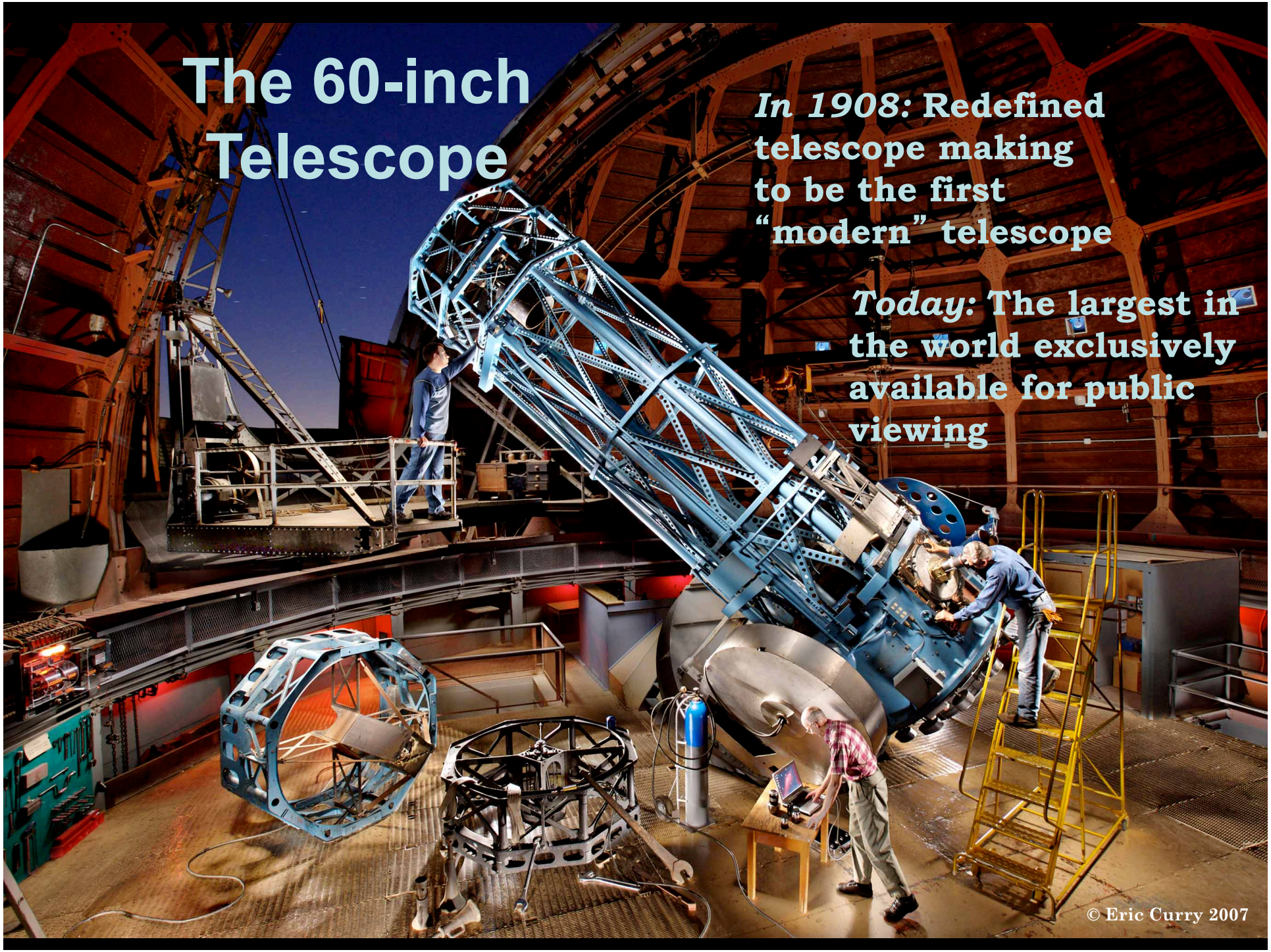
But first, Let's Look at MWO Today

- Still possesses exquisite astronomical seeing.
- Original facilities belong to Carnegie Institution of Washington, which closed the Observatory in 1985.
- In late 1987, CIW gave exclusive operation and management rights to the non-profit Mount Wilson Institute.
  - MWI Director's office housed at Georgia State University since Jan 03
- Independently operated projects that provide site fees include:
  - UCLA – 150-ft solar tower
  - USC – 60-ft solar tower
  - UC Berkeley – Infrared Spatial Interferometer
  - GSU – the CHARA Array
- One or two of these programs are likely to close in the near term. Only the CHARA Array seems poised to continue indefinitely.

Mount Wilson Observatory is at a cross roads.

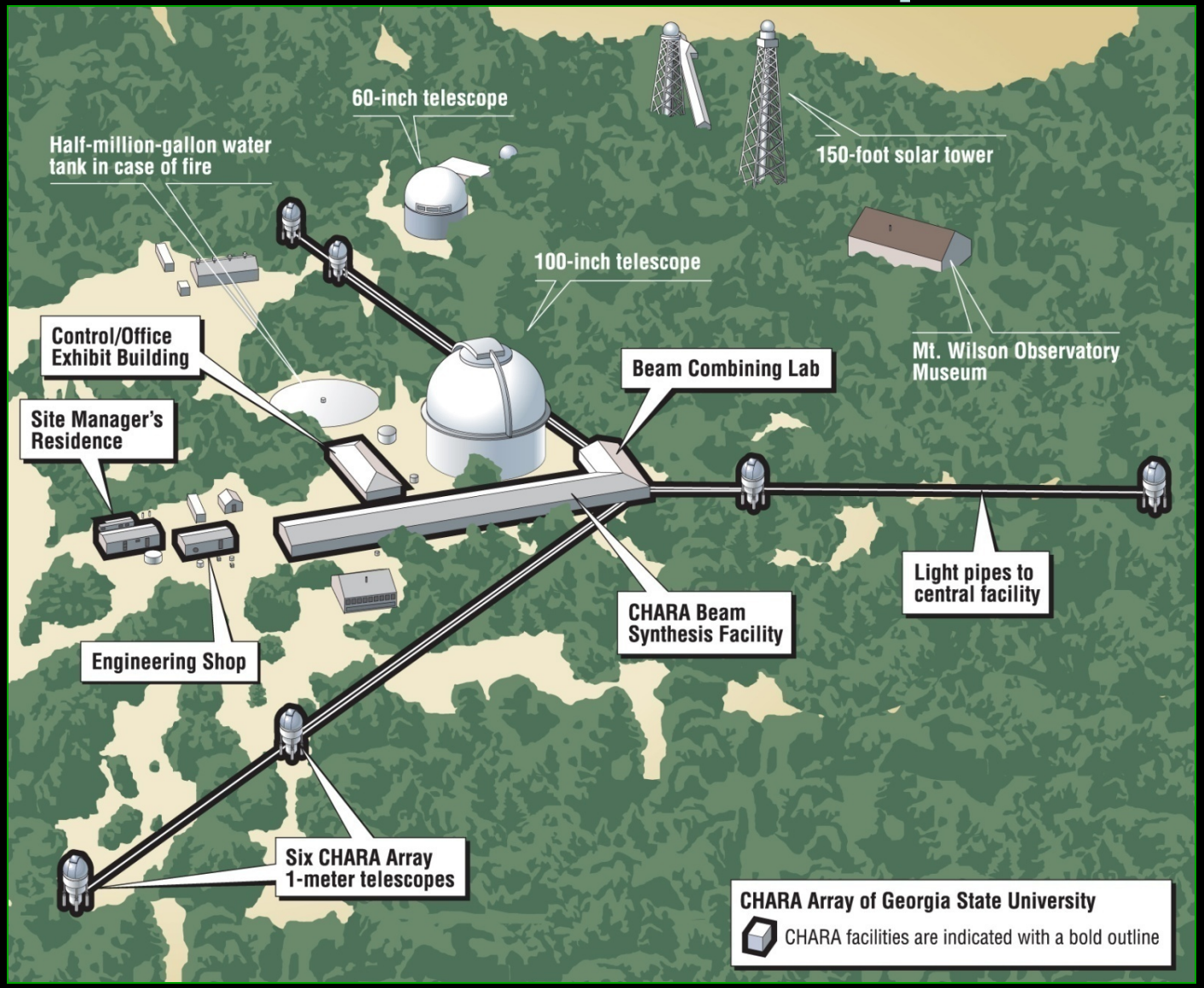
The Solar Towers are Still at Work


The 100-inch Telescope
Available for long-Term research projects


The 60-inch Telescope
In 1908: Redefined telescope making to be the first "modern" telescope
Today: The largest in the world exclusively available for public viewing
© Eric Curry 2007

UC Berkeley's Infrared Spatial
nterferometer is Probing Giant & Supergiant Star
it mid-Infrared wavelengths

The CHARA Array is the World's Highest Resolution Telescope



This world treasure is showing its age …

There are several million dollars in deferred maintenance and necessary replacements. A $1.4M NSF grant in 2010 is getting us started.

Potable water tank

Ensuring a Second Centur
for Mount Wilson

- A new "business model" for the Observatory:
  - Continue supporting science from Mount Wilso

    but

  - Emphasize historic preservation & public outreach.
- Mount Wilson is uniquely poised due to its:
  - Unrivaled astronomical significance,
  - Beautifully scenic location

    and

  - Immediate proximity to 17+ million "customers."

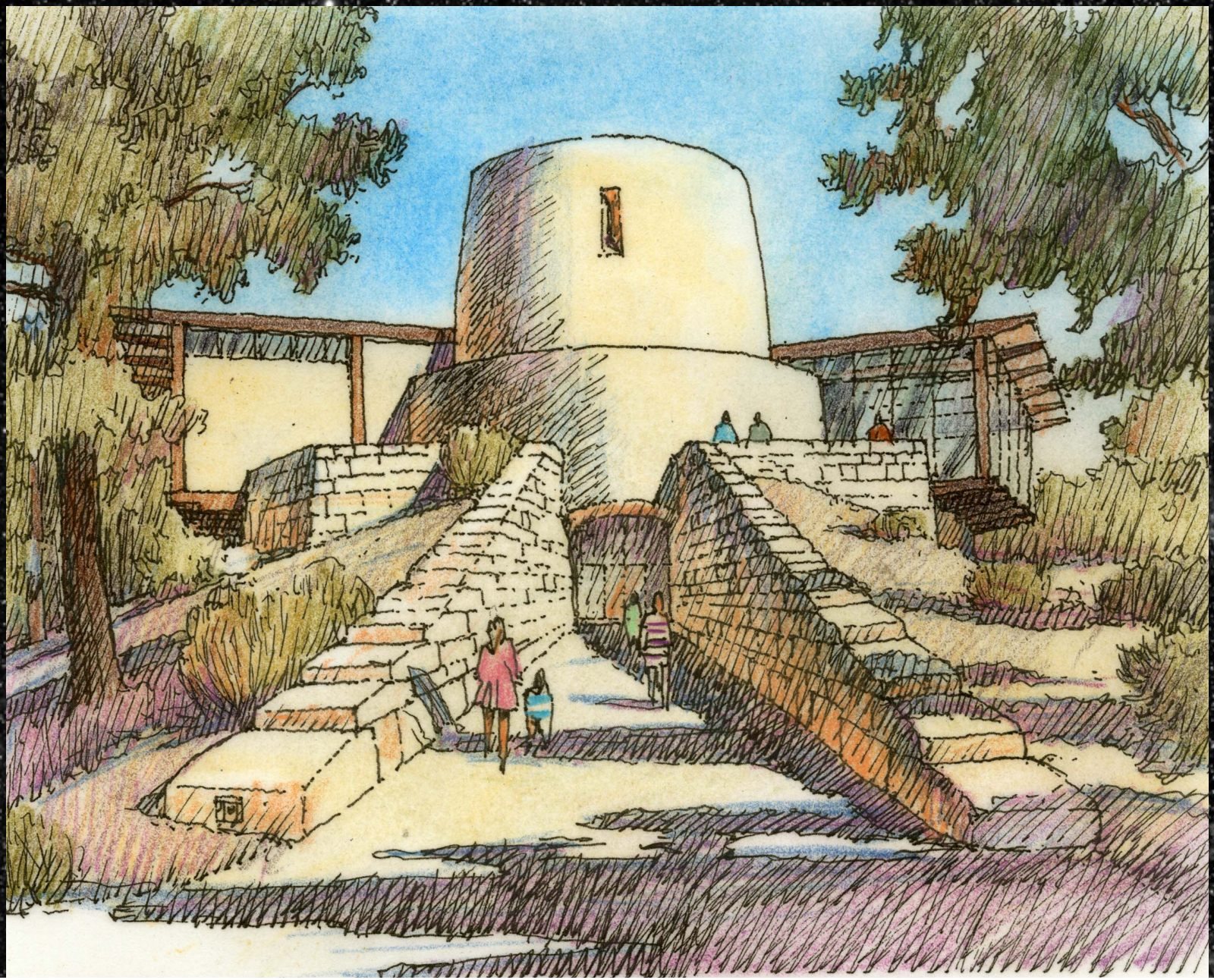
Mount Wilson can become a kind of "astronomical Williamsburg"

A Second Century Capital Campaign

Four-Fold Goals

- Restore & preserve historic facilities,
- Ensure that site remains suitable for on-going scientific research,
- Create a new visitor center and other on-site facilities to foster public understanding of Mount Wilson's heritage and influence on contemporary astronomy,
- Launch on-site and internet-based outreach programs that attract interest of amateurs and inspire a new generation of scientists.

Entrance to the Visitor Center

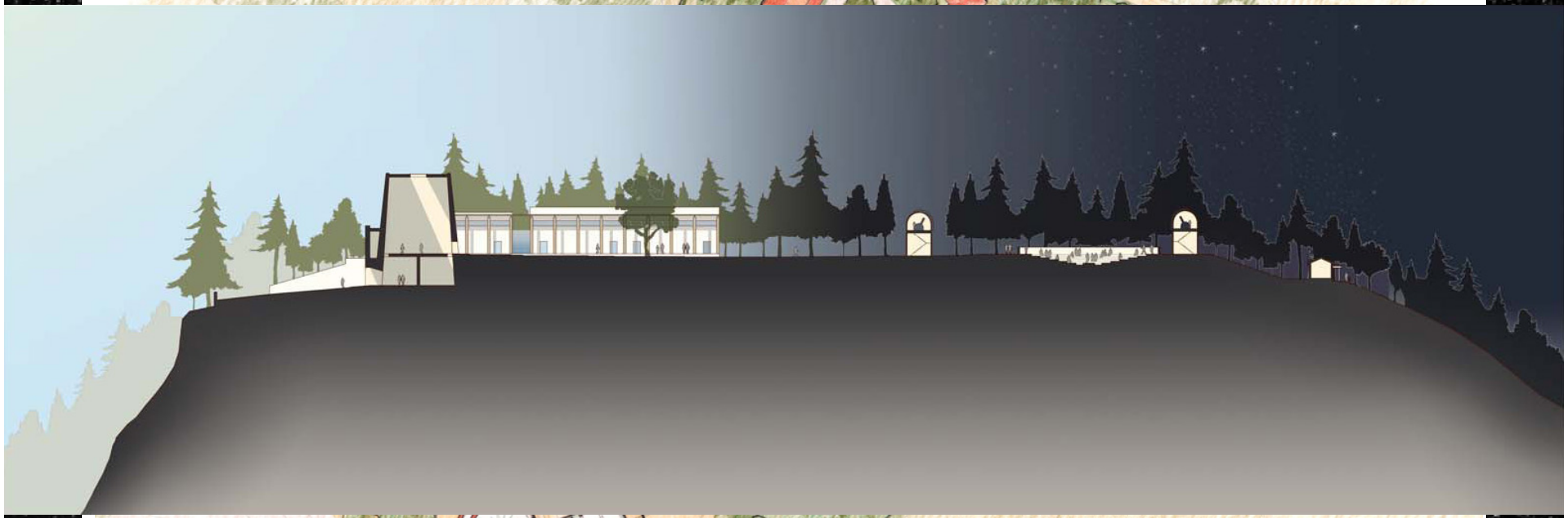


Exiting to the Exhibit Hall Courtyard & Sun

Passing the Sun Pavilion to the Visitor Telescopes

Arriving at the Night Sky Amphitheatre

A New Gateway to the Observatory Grounds




If this won't work up here,
where else could it possibly work?
www.mtwilson.edu