W ORK that resulted in the establishment of
the Mt. Wilson Observatory began in the
spring of 1903, when George Ellery Hale
first set up a small coelostat and a portable four-inch
refracting telescope on the mountain and began taking
direct and spectroscopic photographs of the sun. The
success of these experimental observations was such that
the following year The Carnegie Institution gave Hale
a $10,000 grant to move a solar telescope from Yerkes
Observatory to Mt. Wilson on an expeditionary basis.
Impressed with the results of this experiment, Car­
negie made Mt. Wilson a full department of the In­
stitution with an initial grant of $150,000, and started
the Mt. Wilson Solar Observatory, as it was then
known, on its way.

From Yerkes with the Snow telescope had come
George Ritchey, Ferdinand Ellerman, and Walter
Adams, and a short time later, Francis Pease. These
men, with Hale, were the nucleus who took part in
the establishment of the Mt. Wilson Observatory.
Life on the mountain in the early days was itself in
the nature of an experiment. The only lines of con­
tact with the valley were an old, precipitous Indian
trail which led up Little Santa Anita Canyon from the
village of Sierra Madre, or a somewhat shorter, equally
rugged "toll road", no more than two feet wide, which
zigzagged up from the mouth of Eaton’s Canyon in
Altadena. Over one or the other of these trails,
vital supplies, bulky equipment, and world-renowned
astronomers had to be transported by mule or afoot
to the mountain top.

When Hale first visited Mt. Wilson, the only build­
ing standing was a half-gone log cabin, called the
"Casino", vestige of adventurous vacationers who had
formerly visited the spot in the summer months. The
Casino was soon patched and made waterproof, and
living conditions were immensely improved with the
construction of a huge granite fireplace. By December
1904, a residence known as the Monastery was com­
pleted to serve as living quarters for Mt. Wilson
astronomers.

During the summer of 1904, plans went ahead for
the design and construction of the building to house
the Snow telescope. With the complete financing of
the Mt. Wilson project assured by the Carnegie In­
stitution, George Hale had a 60-inch glass disk, an
earlier gift from his father, moved from Yerkes to
optical shops which had been established in Pasadena.
Ground and polished for two years under the direction
of Ritchey, it was laboriously trucked up the mountain­
side on the toll road especially widened for the
occasion from two feet to a spacious eight. The truck
Aerial view of Mount Wilson today. At left, the 60-foot and 150-foot tower telescopes; behind them in long white shed, the Snow telescope. Center, the dome housing the 60-inch reflecting telescope. To its left the tiny dome housing the 6-inch refractor for visual observation. On the right is the dome of the 100-inch Hooker Telescope. Photograph by E. R. Hoge.

used in the process was a unique affair, having a gas engine connected to a dynamo which powered individual electric motors in each of the four wheels. Driver of the machine was Jerry Dowd, who became chief electrician for the Palomar project in 1930. The 60-inch, then the world's largest, was installed without mishap and went into service in 1908.

This was the point when stellar observation at Mt. Wilson began to take its place in importance beside solar investigation. While Adams, Pease, and others made spectrographic photographs, Frederick Seares worked with direct photographs at the main focus of the 60-inch, and in the first five years they made more than 4000 photographs. They began to reach conclusions which indicated a termination of our galaxy but at an undetermined distance. The 60-inch mirror was not big enough to answer the theory which it posed. Only an infinitesimal number of stars could be analyzed, and at a limited distance. It became increasingly evident that a larger instrument would be necessary to bring a greater number of more distant stars within range.

Then came an offer from John D. Hooker of Los Angeles, who had helped earlier to finance Hale's first work at Mt. Wilson, to build a 100-inch reflector. The uncertain task was taken on by the French glassworks at Saint Gobain, which had produced the 60-inch. Although bubbles seemed to mar each of the four disks poured, Hale finally had their first and best attempt sent to Pasadena for inspection. Stored for a time in the Santa Barbara Street shops, the surface was used as an assembly table for other instruments until a Carnegie Institution geophysicist looked it over and advised Hale to go ahead with the grinding. While Ritchey closeted himself with the glass for six years of polishing, Carnegie himself visited Mt. Wilson, showed intense interest in the work going on, and increased the Institution endowment with specific recommendation that the Mt. Wilson project be encouraged. In 1917 the 100-inch Hooker telescope was first used.

During the thirty years since, the 100-inch has been the center of a great cooperative effort by leading astronomers and physicists to reach farther out into the universe. Adams and his associates devised new methods of measuring the distances of stars; Harlow Shapley's studies gave an accurate idea of the extent of our galaxy; A. A. Michelson applied his interferometer to the 100-inch to measure stellar diameters; Edwin Hubble mapped "island universes" 900,000 light years distant.

Ira S. Bowen

Dr. Ira S. Bowen is Director of the Palomar and Mt. Wilson Observatories and at present is a research associate in astrophysics at the California Institute and chairman of the Observatory Committee.

Joining the Caltech faculty in 1921, Bowen served as a member of the faculty for 10 years, as instructor, assistant professor, and later associate professor in physics. He received his B.A. from Oberlin College in 1919 and a Ph.D. from the California Institute in 1926. Member of the Carnegie Institution, he was named Director of Mt. Wilson Observatory in 1946 and began service this year as ex officio chairman of the Observatory Committee of Mt. Wilson and Palomar. In 1938 he was also Morrison research associate at Lick Observatory, Mt. Hamilton. In his work at Mt. Wilson, Bowen has been engaged in research in the division of stellar spectroscopy. Professional societies of which he is a member include the American Physical Society, American Astronomical Society, Astronomical Society of the Pacific, National Academy of Sciences, and the American Philosophical Society. Bowen is also holder of the Draper Medal from the National Academy of Sciences and the Franklin Institute’s Howard N. Potts Medal.
years away. In 1923, increasing ill health forced Hale to resign as director of Mt. Wilson, to be succeeded by Adams. While investigation went on with the 100-inch, Hale realized that the telescope's size still was inadequate. Again it led to questions which it could not answer. By 1928, he was seriously considering a mirror increased to "200 inches or, better still, to twenty-five feet."

As the idea took shape he interested the Rockefeller Foundation in the project; and it was finally agreed that the Foundation would finance the construction of the giant 200-inch, through the California Institute of Technology, with the aid of the staff and facilities of Mt. Wilson.

With the development of the Astrophysical Observatory and Laboratory at Caltech, Mt. Wilson provided facilities for the testing of auxiliary instruments and attachments for the projected Palomar telescope. Thirty-six-inch and 60-inch grinding machines had already been made available to Caltech from the Mt. Wilson shops. The cooperative plan was continued as experimental correcting lenses were designed for the 60-inch and 100-inch reflectors to increase photographic ranges without altering the ratio of focal length to aperture. Successful experiments on the Mt. Wilson telescopes led to the design of correcting lenses for the Palomar instrument following the same plan. Similarly the Rayton lens to determine radial velocity of remote nebulae, the B.S.I.R.A. lens, and photo-electric amplifier have been perfected on the 100-inch and are expected to increase greatly the efficiency of the 200-inch telescope.

During this cooperative development, regular investigation at Mt. Wilson continued. Solar observa-

The 100-inch Hooker Telescope, showing the interior of the dome, the Cassegrain observing platform, and the control panel, as seen from the west.