Form No. 10-300 (Rev. 10-74) THEME XX: Arts and Science, "Science and Invention"

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC: Lowell Observatory

AND/OR COMMON: Same as above

2 LOCATION

STREET & NUMBER: Mars Hill

__NOT FOR PUBLICATION

CITY, TOWN: Flagstaff __ VICINITY OF

CONGRESSIONAL DISTRICT

STATE: Arizona CODE: 04 COUNTY: Coconino CODE: 005

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	__PUBLIC	X OCCUPIED	__AGRICULTURE	__MUSEUM
__BUILDING(S)	X PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
__STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	__PRIVATE RESIDENCE
X SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	X YES: RESTRICTED	__GOVERNMENT	X SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		__NO	__MILITARY	__OTHER.

4 OWNER OF PROPERTY

Astrononical observatory

NAME: Percival Lowell Estate (contact: Dr. Arthur A. Hoag, Director)

STREET & NUMBER: Lowell Observatory

CITY, TOWN: Flagstaff __ VICINITY OF STATE: Arizona

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.: Coconino County Courthouse

STREET & NUMBER:

CITY, TOWN: Flagstaff STATE: Arizona

6 REPRESENTATION IN EXISTING SURVEYS

TITLE: National Survey of Historic Sites and Buildings

DATE: 9/30/64 X FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS: Office of Archeology and Historic Preservation

CITY, TOWN: Washington STATE: D.C.

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
X EXCELLENT	__DETERIORATED	__UNALTERED	X ORIGINAL SITE
__GOOD	__RUINS	X ALTERED	__MOVED DATE_____
__FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

Lowell Observatory stands on Mars Hill just west of Flagstaff, Arizona. Since its founding in 1894 by Percival Lowell, the observatory has continued to grow and change until today there are many more buildings and telescopes than there were in Lowell's day. The buildings that were most directly connected with Lowell and his work are included in parcel one of the landmark. These include the administration building, a residence which contains Lowell's library, the Lowell 24-inch refractor and its housing, the Lowell Mausoleum, a stone water tower, and one of the astronomers' residences. Located in parcel two is the gate Lowell designed for the access road to the hill.

The 24-inch Refractor and Housing (1896). Designed and built by Godfrey Sykes, the housing of the telescope is a circular structure 40 feet in diameter and 25 feet tall constructed of the local Ponderosa pine. The moveable top half of the structure was described by Sykes as "a huge inverted bucket surmounted by a flattish conical lid;" its interior framing is also of local pine covered with metal sheeting. The top has had three systems for rotation: a track of water on which it rested, railroad-type flanged wheels, and the present system of rubber tires. At present the dome is a bit out of the round and is difficult to move in winter. The "flattish conical lid" opens and closes from the center to permit the use of the telescope. The interior of the structure has the telescope and its mounting in the center of the floor surrounded by two concentric stages for observation. On the second (top) step stands Lowell's moveable observation platform. The telescope is still used for stellar photography.

The Mausoleum (c. 1916). Directly northeast of the dome lies Lowell's tomb designed by his widow, Constance Savage Keith, in the Saturn motif Lowell chose for the observatory. The circular stone table tomb is embellished with Roman Doric columns supporting a stone entablature surmounted by a blue glass dome. The Lowell sarcophagus is visible through the door.

The Lowell Library (c. 1894). Northeast of the mausoleum is a modern wood and stone residence attached to the Lowell Library, all that remains of Lowell's "Baronial Mansion." The Lowell home grew in a rambling sort of way over the years as Mrs. Lowell added one room after another. After her death, the estate found the house too expensive to maintain, so all but the library was demolished and a smaller residence built incorporating the Library. One of the astronomers lives there.

The Administration Building (1914). West of the residence incorporating the Lowell Library is the stone administration building. The most prominent feature of this building is the rotunda at the south entrance, which Lowell designed to commemorate Saturn and its rings. Around the circular structure

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8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	__LAW	X SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	__ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	__ENGINEERING	__MUSIC	__THEATER
X 1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION
X 1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		__INVENTION		

SPECIFIC DATES

BUILDER/ARCHITECT Percival Lowell

STATEMENT OF SIGNIFICANCE

Lowell Observatory was founded in 1894 by Percival Lowell and was at the time the one significant center of pure scientific research in the southwest. While the observatory is relatively small and was until lately supported by Lowell's private fortune, it has been the scene of many significant discoveries. It was here that Lowell pursued the intensive study of Mars which culminated in his theory that the planet was inhabited by intelligent beings. He also did the computations that let to the discovery of Pluto at the observatory. Dr. Andrew Elliott Douglass's research into zodiacal light and sunspot phenomena led to the modern science of dendrochronology (the science of dating things with reference to tree rings) by uncovering the link between climate and the spaces between tree rings. Perhaps the most important was V.M. Slipher's 1912 discovery that the universe was expanding, a discovery of the first magnitude and one which is basic to modern astronomy. The observatory continues today to pursue astronomical knowledge as it has done for over 80 years.

History

Percival Lowell was born in Boston, March 13, 1855, the son of Augustus and Katherine Bigelow (Lawrence) Lowell. He was the brother of poet Amy Lowell and A. Lawrence Lowell, president of Harvard from 1909 to 1933. In 1876 he graduated from Harvard, where he had distinguished himself in mathematics. After traveling abroad, he returned to the Boston business world where he took an active part in the management of cotton-mills, trusts and electric companies.

Lowell's early fame was not scientific but literary, resting on the books he wrote after travels in Japan and Korea. His publications included Chosen - The Land of the Morning Calm (1885); The Soul of the Far East (1888); Noto (1891); and Occult Japan (1895). His heart was never far from astronomy and mathematics, however. Ever since 1877 he had been interested in Mars after the Italian astronomer Schiaparelli discovered fine markings on the planet which he called canali. Schiaparelli's eyesight failed, and Lowell decided to devote his talents and fortune to carrying on the work.

Sent west by Lowell in 1894, A. E. Douglass explored the area using a 6-inch Clark refractor to explore the night skies, and chose Flagstaff, Arizona

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9 MAJOR BIBLIOGRAPHICAL REFERENCES

John S. Hall, "Lowell Observatory," Vol. 17, Encyclopedia Americana (New York, 1974).
A. Lawrence Lowell, Biography of Percival Lowell (New York, 1935).
"Percival Lowell," Dictionary of American Biography, XI, 468-69.
Godfrey Sykes, A Westerly Trend (Tucson, 1944).

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY 4

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	12	439790	3895690
B	12	439790	3895360
C	12	439580	3895360
D	12	439490	3895600

VERBAL BOUNDARY DESCRIPTION

See Continuation Sheet

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE
Marilynn Larew, Historian

ORGANIZATION
Historic Sites Survey Division, National Park Service

DATE
10/31/77

STREET & NUMBER
1100 L Street NW.

TELEPHONE
202-523-5464

CITY OR TOWN
Washington

STATE
D.C. 20240

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL ___ STATE ___ LOCAL

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 19[illegible] (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

Nominated: Dec 1, 1978
Boundary Certified: June 28, 1978

FEDERAL REPRESENTATIVE SIGNATURE

TITLE

DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE 11/24/78

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST:

DATE

KEEPER OF THE NATIONAL REGISTER

(NATIONAL HISTORIC LANDMARKS)

(NATIONAL HISTORIC LANDMARKS)

are engaged Roman Doric columns separated by long french doors with large transoms above. The tall double entrance doors are sheltered by a portico supported by columns in the same Roman Doric order. The three-story stone building has broad windows with lintels of dressed stone. Inside the rotunda are scientific exhibits, some of them in the semicircular cases that used to hold the observatory library. The chandelier also designed by Lowell (see photo) repeats the Saturn motif. The rest of the building is used for offices.

The Stone Water Tower. Originally the only water system for firefighting on the hill, the tower is still operative, but is now the reserve reservoir.

The 1912 Residence. This capacious and comfortable shingle building was built to house one of the staff astronomers and his family.

The Iron Gate. This gate, located down the hill at the beginning of the old access road, was also designed by Lowell and built locally. Notice the ubiquitous Saturn motif.

More buildings and newer telescopes have been added to Mars Hill, but those within the landmark boundary remain much as Lowell left them, and a serene air of quiet competence pervades the observatory, the legacy of men with their eyes fixed on the stars.

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Territory, as the temporary site for Lowell's observations. Professor W. H. Pickering constructed a temporary dome on the hill outside town for the housing of the new 18-inch Brashear refractor. Regular observations began in April 1894. Because of Flagstaff's clear air and the relative stability of the plateau the results were so good that Lowell decided to build a permanent observatory there. He ordered a 24-inch refractor from the famous firm of Alvan Clark & Sons of Cambridgeport, Massachusetts. Alvan Clark, Jr., himself came to Flagstaff to install the lens in 1896.

The dome for the telescope was designed and built by a Flagstaff resident, Godfrey Sykes. Sykes, an English jack-of-all-trades, had been a cowboy, a drover, a mining engineer, and, after 1901, was at the Desert Laboratory in Tucson. In 1896, Sykes owned a ranch, and, with his brother, ran a firm which claimed to be "competent makers of anything." After extracting the dimensions of the desired structure from Lowell--"he deemed it to have been a concession upon his part to have mentioned the diameter of the structure"--Sykes designed "a huge inverted bucket surmounted by a flattish conical lid," framed in the native yellow pine of the Coconino plateau, to be constructed in such a manner as to be dismantled and taken to Mexico for the forthcoming opposition of Mars and then reconstructed on the hill at Flagstaff. The mechanical problems were overcome with difficulty by Sykes, who had never done that kind of work before. In his autobiography he quotes Alvan Clark's appraisal of Lowell: "Percival Lowell is a very fine and brilliant man, and he has a keen mathematical mind, but his only idea for overcoming a mechanical difficulty is to write a checque."

From 1896 until his death there in 1916, Lowell spent part of every year on the hill at Flagstaff. Pickering and Douglass continued there, too, and were joined by E. C. and V. M. Slipher.

Lowell was obsessed by Mars. As he watched the polar cap of the southern hemisphere of the planet shrink as "summer" advanced, with a corresponding change in blue-green color in the "temperate zone," he became convinced that the lines he saw--Schiaparelli's canali--were indeed canals built by intelligent life to irrigate the soil of the dry planet in a desperate struggle for survival. His nightly observations of the planets he complemented with daily literary effort as he published his findings in a series of popular books and papers for scientific journals. His theory of life on Mars was ridiculed by American astronomers; indeed, his fame was always more European than American, for he was unburdened with advanced degrees and therefore was not regarded as a member of the club. He always regarded himself as an "amateur"--in the sense that what he did was without remuneration--and Europe had a better appreciation of the gentleman scholar than did America.

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Besides his observations of Mars, Lowell studied the development of the solar system and the structure of Saturn's rings. Perhaps more fruitful than his Martian theories was his investigation into the problem of the trans-Neptunian planet. By observing perterbations in the orbits of Neptune, he posited the existence of another planet--Planet X--and by 1905 the observatory was engaged in a systematic search for the outer planet. By a series of complex mathematical computations, he arrived at a projected orbit for the unknown planet. Since the difficulty of finding such a small object among so many others was extreme, the search was done by comparing photographs taken on different nights using a blink comparator. Lowell's computations were wrong--or right for the wrong reasons--and the planet was considerably darker than he had suggested. He did not live to see the search completed, but his observatory did. Clyde W. Tombaugh, another self-trained astronomer, discovered Planet X on photographs taken at Lowell Observatory on 23 and 29 January 1930. The planet was subsequently named Pluto for the dark god of the underworld and its symbol rendered ♇ or P.L. in memory of Lowell.

Lowell continued observation and publication up to the day of his death. His books, written with considerable literary grace, were designed to bring astronomy to the literate public. They include Mars (1895); The Solar System (1903); The Evolution of Worlds (1909); and The Genesis of the Planets (1916). He died of apoplexy on 12 November 1916 and was buried near the dome in a mausoleum designed by his wife using the Saturn motif he chose for the Administration Building.

Lowell's death did not bring to an end the scientific work on "Mars Hill," for he left his not inconsiderable fortune to endow the observatory.

Discoveries at the observatory were not confined to Lowell himself. E. C. Slipher was a pioneer in planet photography. Andrew Elliot Douglass formed the basis for the modern science of dendrochronology when he observed, while studying sunspots, that the spacing of tree rings, noted since antiquity, could be coordinated with climatic data, thus providing a dating mechanism for archeology. W. W. Coblentz of the Bureau of Standards and C. O. Lampland measured radiation from the planets. V. M. Slipher pioneered planetary spectroscopy and, in his observations of the motions of galaxies, provided first evidence of the expansion of the universe, a concept revolutionary in its time and the basis of modern astronomy. Millis's recent participation in the discovery of the rings of Uranus shows the observatory's continuing importance in modern astronomy.

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According to former director John S. Hall, the observatory today maintains eight telescopes, the largest of which is the Perkins 72-inch reflector, owned by Ohio Weslyn University and operated jointly by the Perkins Observatory of that institution and the Lowell Observatory. Recent projects at the observatory include the measurement of the brightness, polarization, color, and positions of a wide range of celestial objects. They also include a survey of stellar proper motions, a photometric double star program, and measurements of occulations of stars by the moon. In addition, the observatory's Planetary Research Center contains the largest collection of planetary photographs in existence, with additions coming in constantly from observatories around the world.

The present director is Dr. Arthur A. Hoag, formerly of Kitt Peak. Lowell Observatory is open to visitors Monday through Friday, 1:30 to 2:30 p.m., and every evening at 8 p.m. during June, July, and August. There are plans to increase the scope of visitors' services and to add an interpretation center, perhaps in the rotunda of the Administration Building.

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The Lowell Observatory National Historic Landmark is in two non-contiguous parcels.

Parcel one (See Map B): Beginning at the point of origin of the Loop Road (A), proceed north along the east curb of the east loop approximately 1000 ft., to a point where the road curves west (B); continue along the (now north) curb of Loop Road approximately 200 ft. to the junction with the west maintenance road (C); continue on the north curb of said road approximately 200 more feet to the east curb of the administration building maintenance road (D). Proceed along the east curb of said road approximately 200 ft. to the end of the road. From the end of the road, proceed in a straight line southeast for 100 ft. to a point (E), from that point proceed directly east for 400 feet to a point (F); from that point proceed directly south for approximately 1200 ft. to the northern curb of the south maintenance road (G). Proceed west along said curb for approximately 600 ft. to the point of origin.

Parcel two: The boundary is drawn around the gate which Lowell designed which stands across an unused dirt road (formerly the access road) which branches north at the first curve of the present access road. The boundary around the gate is a circle with a radius of 50 ft. having its center point in the middle of the dirt road at the point where the gate crosses it.