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Now, as then, AZ's involvement in lunar exploration is extensive

By Tom Beal

ARIZONA DAILY STAR

Arizona was full of lunatics 40 years ago, and the tradition continues.

On July 20, 1969, when Neil Armstrong took that historic "small step," it was onto a lunar surface first mapped in Flagstaff by teams of astronomers and graphic artists.

This year, as NASA celebrates the 40th anniversary of the moon landing, scientists at Arizona State University in Tempe are mapping the moon once again, this time with an orbiting suite of cameras that, combined with an array of other instruments, will help NASA select a site for the return of man to the moon in 2020.

Before Monday's anniversary, the ASU team hopes to process images of *Mare Tranquillitatis* (Sea of Tranquility), where Armstrong stepped into history.

Mark Robinson, principal investigator for the Lunar Reconnaissance Orbiter Camera, isn't guaranteeing a clear shot of anything left behind when Apollo 11's lunar lander lifted off. The orbiter is still in its commissioning orbit, and its cameras are still being focused and calibrated, he said.

Something big, such as the base of the lander, might be visible, he said.

The cameras will be 68 miles above the surface, Robinson said, and resolution of anything smaller than a meter will be impossible. "If you know what you're looking for, you might be able to make it out," he said. "You won't see the stars on the flag."

Yesterday afternoon, the Web site for LROC showed the orbiter passing close to the Sea of Tranquility, which was in shadow at the time.

Nicole Staub, spokeswoman for the team, said "processed images of the Apollo landing sites can be expected very soon."

Robinson and his team were cheered by the first images taken by LROC, crisp images taken along the "terminator" — the dividing line between the dark and light areas of the moon.

Images posted on the mission's Web site show a fissured terrain that, Robinson said, is a good deal flatter than the shadows make it out to be.

LROC's mission is to provide mapping photos of the entire surface of the

LOCAL EVENTS commemorating first moon landing

Apollo 11 Moon Landing 40th Anniversary Celebration

Co-sponsored by the Arizona Daily Star.

When: 2 to 8 p.m. Saturday.

Where: Kuiper Space Sciences Building, 1629 E. University Blvd.

Cost: Free.

Parking: Free.

More information: Call 621-4861 or go online to www.lpl.arizona.edu/calendar/calendar.php?ID=254.

Movies

2, 3 and 4 p.m.: "In the Mountains of the Moon" (Room 308).

Lectures

6 p.m.: "Where Did Neil Armstrong Leave His Backpack?" by James V. Scotti, Lunar and Planetary Laboratory senior research specialist (Room 308).

7 p.m.: "40th Anniversary of Apollo 11 Lunar Landing" by Robert G. Strom, Lunar and Planetary Laboratory professor

moon as it orbits its poles over the next year. The three cameras and six instruments coordinated from other sites will gather information on temperature and radiation, search for resources and water, and employ a laser altimeter to create a 3-D map of the surface.

The ultimate goal is to use the moon as a base for future exploration and a testing site for new technologies.

Forty years ago, more primitive technology was used to map potential landing sites for the Apollo mission.

Pre-Apollo, Northern Arizona was a hub of moon activity. Astronauts trained in the use of their equipment on the cinder beds of Sunset Crater, Meteor Crater and Cinder Lake, driving a rover developed by engineers at the U.S. Geological Survey in Flagstaff.

At Lowell Observatory, astronomers scouted the moon for safe landing sites. It was tough getting clear glimpses of the surface through Earth's atmosphere, so they employed graphic artists, who would use terrain clues from a mosaic of blurry photos to make clear maps with airbrushes.

A team from the Air Force's Aeronautical Chart & Information Center used telescopes at Lowell to further enhance those maps. They were a starting point, said Jay Inge, one of the scientific illustrators employed by Lowell Observatory at the time.

By the time of the moon landing there were better photos, taken from moon orbiters. Inge said that was a good thing.

"I wouldn't want them to land based on one of our maps. We couldn't pick up house-sized rocks," he said.

Inge is now retired and still living in Flagstaff. Some of his work is featured in "Flagstaff Goes to the Moon," an exhibit at Lowell Observatory.

Lowell will also host a celebration on the anniversary of the moon walk.

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Children's activities

2-5 p.m.: Physics Factory for Kids (Room 330).

2-5 p.m.: NOAO Astronomy Outreach for Kids (Room 351).

2-5 p.m.: Liquid nitrogen ice cream (4th floor atrium).

Other activities

2-5 p.m.: Question-and-answer session with Shane Byrne (assistant professor, Lunar and Planetary Laboratory and Department of Planetary Sciences); Dolores Hill (senior research specialist, Lunar and Planetary Laboratory); Rik Hill (senior research specialist, Lunar and Planetary Laboratory); Spencer R. Titley (professor emeritus of geosciences); and Ewen Whitaker (associate research scientist emeritus).

2-8 p.m.: Telescopes available for viewing on the UA Mall. From 2 to 3 p.m. the telescopes will be focused on observing the sun and a sliver of the moon.

See the moon

Visit the Web site for the Lunar Reconnaissance Orbiter Camera at Iroc.sese.asu.edu

Special Exhibit at Lowell Observatory

"Flagstaff Goes to the Moon," daily through July 31. For more info: Visit www.lowell.edu or call (928) 233-3211.

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