

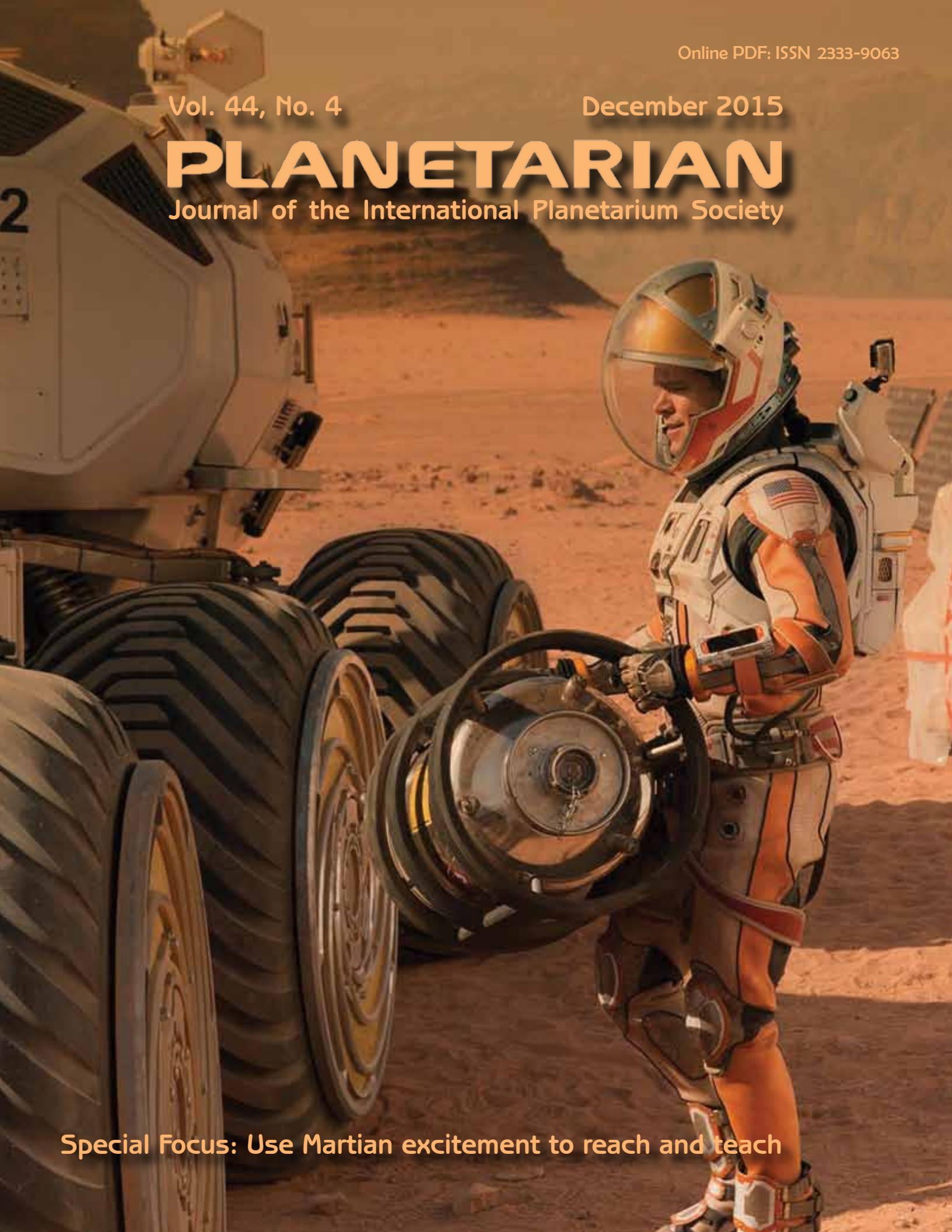
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Special Focus: Use Martian excitement to reach and teach



Making a planetarium jewel sparkle even brighter

By Carolyn Collins Petersen

The venerable Griffith Observatory's Samuel Oschin Planetarium re-invented itself again in late 2015, nearly ten years after a major renovation that ushered the 1930s-era Los Angeles facility squarely into the realm of full-dome.

The latest update brought Digistar 5 along with six Christie Boxer 30,000-lumen projectors to cover the 75-foot dome seamlessly.

According to Griffith Observatory Curator Dr. Laura Danly, the results are amazing. "The difference between our 8K solution and our previous 4K solution with laser projectors (from ten years ago) is simply astonishing," she said. "At present, our content is still 4K content, but they look like brand new shows on the new system. There are so many things we never saw before, and we keep finding them: the loaf of bread on Galileo's table, the Roman sentry in a tower above Ptolemy's courtyard in Alexandria, and so on. It's really a thrill. I can't wait to produce something in 8K!"

The Samuel Oschin Planetarium is now one of a growing number of 8K facilities in the world, and capable of handling shows produced at up to 60 frames per second.

The upgrades were installed in September 2015, and the Griffith staff is taking full advantage of the increase in resolution and brightness of the Digistar projection system to optimize their next production.

To that end, the Griffith producers worked with the creative staff at Fiske Planetarium to update the current show lineup. "We knew that once we went to the new system, sev-

eral of the animation "cheats" we did before would be unacceptable," said Dr. Danly.

"We started on the brush-ups about nine months prior to the reopening and began a wonderful partnership with Fiske Planetarium (University of Colorado), which has an 8K system. We ran through our shows and made a master punch list of fixes. We are forever grateful to Chris Maytag and Thor Metzinger for the long hours preparing our content, and for their keen eyes in the theater when we watched our scenes."

Bringing a state-of-the-art projection system to Griffith required close cooperation with Evans & Sutherland, which supplied the original laser projection system in 2005. "We discussed new projection technologies with Griffith as they became available over the past few years, as the staff has been contemplating a projection system upgrade," said Kirk

Johnson, vice president and general manager at E&S. "We have been working with them for 10-12 years, supporting and maintaining their Digistar 3 laser system. It's been a great relationship of confidence and trust."

The Griffith crew visited E&S's Salt Lake City dome to see the latest projectors, and made site visits to other theaters, including the Science Museum of Virginia in Richmond to see its Digistar 5 and Christie D4K120 projectors.

Planning for the install

After selecting the Christie Boxers, the next part was to plan for installation into Griffith's cove space, a difficult task since there is very limited area between the inner wall of the theater and the bottom of the dome surface. According to Griffith Observatory Director Dr. E.C. Krupp, it required a great deal of planning to make the theater update a seamless one. For example, the projectors needed 208 volts of power at 19 amps, which required an electrical contractor to install new circuits and outlets. That was done two weeks in advance of the projector install.

"This isn't just a case of buying equipment off of a shelf and installing it," Dr. Krupp said, noting



Projector 1 in the Griffith Observatory Samuel Oschin planetarium cove, installed September 23rd. Video cables, mask and lens were not yet attached. Photo courtesy Griffith Observatory.

Facing page: A front view of Griffith Observatory, sitting above Hollywood in Griffith Park, Los Angeles, California. Photo by Matthew Field.

that in addition to the electrical work, major physical and lighting modifications were involved. "Every dimension of the task had to be coordinated. Dr. Laura Danly led this effort with clarity and discipline. In addition, E&S was on top of its game throughout the process. It's remarkable that we were closed down for only a week with such a major infrastructure change."

Patrick So, Programs Manager at Griffith said the preparation for the upgrade began months in advance. Once the projectors and D5 system were selected, the crew delivered working Digitstar 3 show scripts to Salt Lake City for conversion to D5 scripting language, and show dome masters for re-encoding. Then, there were the theater modifications.

"We spent months planning on how to place the projectors into a small space behind the dome," he said. "A projector mockup made out of foam core was used to determine how much room the projectors would take. It turned out the projectors took all the room, from the bottom edge of the dome to the back wall, with a few inches to spare. The horizon projectors were mounted on rails so we could move them forward to change lamps at the back. The zenith projectors were a challenge because they had to be inclined. To make the projectors fit, the back portion of the projector had to dip below the catwalk. This meant cutting large holes in the catwalk."

The result, according to Patrick is a seamless visual experience that enhances the look of the shows. "With our old laser projector we had to manually align and adjust the edge blends between projectors," he said. "Our new system does this automatically with E&S's auto blend and auto align. The images are seamless - you can't tell there are six projectors."

Function influences form

Griffith show philosophy requires that the projection system be invisible to the audience, a challenge Evans & Sutherland took very seriously, according to Dennis Elkins, E&S Director of Advanced Displays. "It adds to the immersive space and magic of the Griffith presentations," he said. "Our engineers were able to design, integrate, and install an 8K system using the Christie Boxers to achieve that objective, while also making it easy to maintain them."

Kirk Johnson added, "I was there for the final day of adjustments and the first two shows when the planetarium re-opened. The image quality of their show on the new system is spectacular. It was fun to sit and listen to the



A scene from the show *Centered in the Universe*, as seen through the newly installed Christie Boxer projectors. According to Dr. E.C. Krupp, this scene, once impressive, is now transcendent. Photo courtesy Griffith Observatory.

comments and reaction of the Griffith staff as they saw their feature show on the system. It's among the very highest brightness and resolution systems in the world and is among the best dome theater systems we have ever installed."

The new projection system is demanding more from the Griffith production staff, a point that Dr. Krupp makes most emphatically. "It's important to keep in mind that Griffith Observatory has, since 2006, been pioneering the use of all-dome digital animation in conjunction with the utterly remarkable Zeiss Mark IX Universarium night sky," he said. "What we want on the dome is more demanding than what is generally required. We expect to push this evolution of hybrid technology in the Samuel Oschin Planetarium for years to come. The brightness and power of the new system introduces new challenges and new resources. I expect mastering these will preoccupy us as we develop the next Griffith Observatory planetarium show. It requires us to treat visual transitions with new sophistication. We are now shaking down the hardware and the software and learning how to make best use of the extraordinary capacity for astronomical storytelling now at our disposal. We want the audience to see the effects of the technology and be unconscious of its existence."

Shows are in production

The next show, focused on life in the universe, is in production, and presents some interesting challenges to the crew. "We understand that it would be a huge undertaking to produce a 30-minute program at 8K, 60 fps,

and that is not always needed," said Danly, the show's producer. "We're going to invoke it at certain times in select scenes where it will have the maximum emotional impact. Our goal is always to make our audience feel something they may not have felt before, and the improved technology will help take us there."

Adding new technology is a major step in continuing Griffith Observatory's reputation for astronomical story-telling, coupled with first-rate imagery to support the stories.

"We are pushing the technology to achieve an emotional, experiential, and intellectual response in the audience, not to create a consciousness of the greater technical virtuosity," said Dr. Krupp. "The images on the dome dazzle with new clarity, brightness, depth of color, and detail. Even if you've seen our programs before, you WILL want to see them again on the new system."

The Griffith theater update was made possible by a grant through the Observatory's support group, Friends of The Observatory (FOTO), made by the Ahmanson Foundation, a Los-Angeles-based group that funds cultural and educational programs. It previously funded the purchase of the Zeiss star projector and is recognized in the name of the Ahmanson Hall of the Sky exhibit space.

In addition to the projection system upgrade, the project also added in new cove lighting and a new control system from Bowen Technovation. ☆

Carolyn Collins Petersen is a long-time friend of Griffith Observatory and wrote their exhibits during the 2002-2006 renovation. She can be reached at carolyn@lochnessproductions.com



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