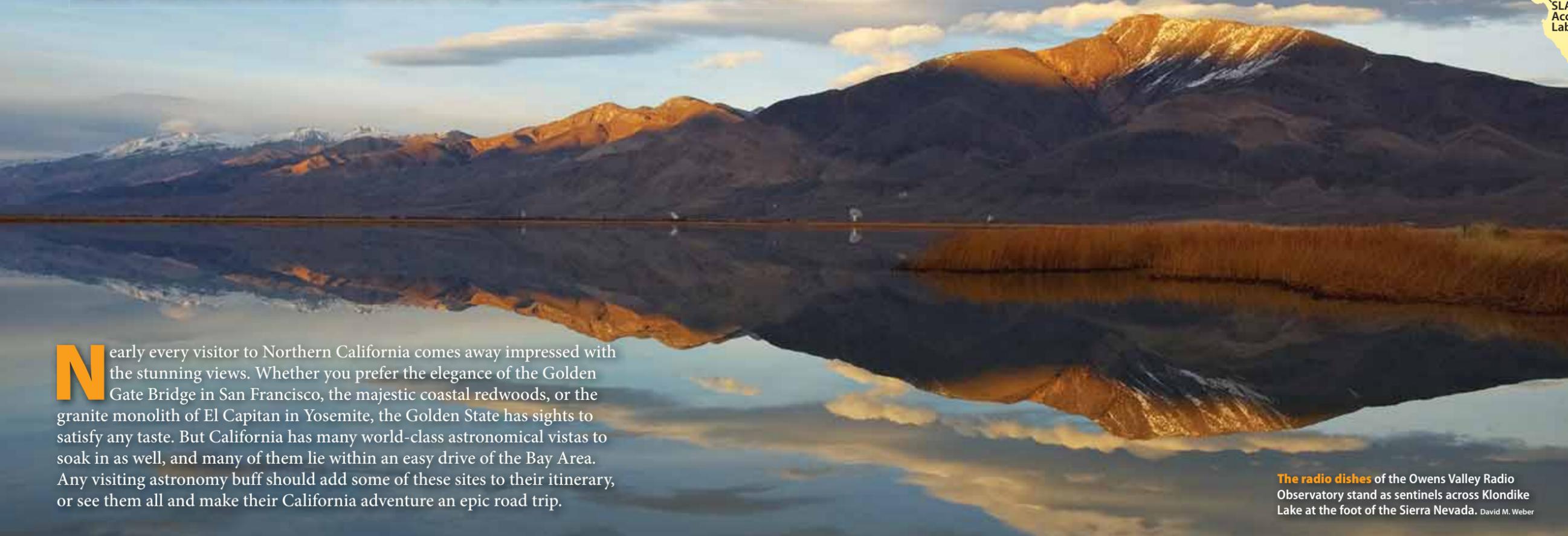




Astronomy travelogue

Visit Northern California's top astronomy sites

From mountaintop observatories exploring the distant cosmos to long tunnels probing matter's heart, Northern California has sites for any astronomy buff. by Yvette Cendes



Nearly every visitor to Northern California comes away impressed with the stunning views. Whether you prefer the elegance of the Golden Gate Bridge in San Francisco, the majestic coastal redwoods, or the granite monolith of El Capitan in Yosemite, the Golden State has sights to satisfy any taste. But California has many world-class astronomical vistas to soak in as well, and many of them lie within an easy drive of the Bay Area. Any visiting astronomy buff should add some of these sites to their itinerary, or see them all and make their California adventure an epic road trip.



Top astronomy sites of Northern California

The Golden State features spectacular natural scenery along with many science sites guaranteed to excite astronomy enthusiasts.

Astronomy: Roen Kelly

ADDRESSES AND WEBSITES

For more information, contact the specific sites:

Allen Telescope Array

42231 Bidwell Road
Hat Creek, CA 96040
[t] 530.335.2364
[w] www.seti.org/ata

California Academy of Sciences

55 Music Concourse Drive
Golden Gate Park
San Francisco, CA 94118
[t] 415.379.8000
[w] www.calacademy.org

Lick Observatory

7281 Mount Hamilton Road
Mount Hamilton, CA 95140
[t] 408.274.5061
[w] <http://mthamilton.ucolick.org>

Owens Valley Radio Observatory

100 Leighton Lane
Big Pine, CA 93513
[t] 760.938.2075
[w] www.ovro.caltech.edu

SLAC National Accelerator Laboratory

2575 Sand Hill Road
Menlo Park, CA 94025
[t] 650.926.3300
[w] <http://slac.stanford.edu>

The radio dishes of the Owens Valley Radio Observatory stand as sentinels across Klondike Lake at the foot of the Sierra Nevada. David M. Weber



Allen Telescope Array

It's a thrill to stand in the shadow of the Allen Telescope Array (ATA) knowing that someday you might tell your grandchildren you were there. The reason: 42 matching radio telescopes silently scan the sky across millions of radio frequencies in a quest to find signals from civilizations elsewhere in the galaxy. The Search for Extraterrestrial Intelligence (SETI) could finally bear fruit at ATA. Of course, the

The Allen Telescope Array at Hat Creek Radio Observatory currently features 42 radio telescopes looking for signals from alien civilizations. Seth Shostak/SETI Institute

long-awaited signal might be years in the future — if it comes at all — but who's to say E.T. won't phone tomorrow?

Located 5 hours north of San Francisco near Lassen Volcanic National Park, Hat Creek Radio Observatory is home of the ATA, which is named after Microsoft co-founder Paul Allen (who funded the technology development and construction). The current 42-dish array, a joint project of the SETI Institute and the University of California, Berkeley, is just the first phase of a much larger instrument that someday will boast 350 telescopes.

The ATA's design pushes the envelope in new technology. The dishes are only

20 feet (6 meters) in diameter — small for a traditional radio telescope but cheaper to build — and high-performance electronics combine signals from the multiple dishes. Further, the array's unique design allows radio astronomers to conduct wide-field sky surveys and SETI searches simultaneously for the first time.

Walk-in tours are available Monday to Friday from 9 A.M. to 3 P.M. during the summer. Tours include seeing the array and visiting the control room (where, it must be noted, the computers do not run Windows even though Allen is the array's namesake). If you're lucky, you might get to chat with visiting SETI astronomers.



The Morrison Planetarium at the California Academy of Sciences in San Francisco features a 90-foot (27 meters) dome tilted at 30° for optimal viewing. Tim Griffith/California Academy of Sciences

California Academy of Sciences

Located in Golden Gate Park in the heart of San Francisco, the California Academy of Sciences boasts itself as “the only place on the planet with an aquarium, a planetarium, a natural history museum, and a 4-story rainforest all under one roof!” If that slogan doesn’t impress you, the building’s award-winning design will. Opened in 2008, it focuses on sustainability and even sports a “living roof,” which features 197,000 square feet of native plants spread across seven hillocks.

Although all of the exhibits are a treat, astronomy buffs will delight in watching a show at the Morrison Planetarium. The world’s largest all-digital planetarium, its 90-foot (27 meters) dome tilts 30° for optimal viewing. The shows are crafted with painstaking scientific accuracy.

The academy is extremely popular and tickets are available on a first-come, first-serve basis, so consider purchasing them online before your visit. Regular museum hours run Monday to Saturday from 9:30 A.M. to 5 P.M., and Sunday from 11 A.M. to 5 P.M.

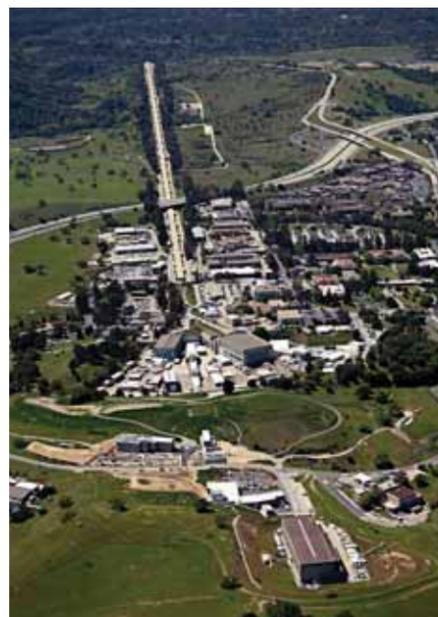
SLAC National Accelerator Laboratory

Here’s an interesting thought to distract you as you head toward Silicon Valley on I-280: When you pass Stanford Univer-

sity, you also are driving over the longest linear accelerator in the world. Part of SLAC National Accelerator Laboratory, this science instrument measures 2 miles (3.2 kilometers) long and stakes a claim as “the world’s straightest object.”

Research at SLAC has produced three Nobel Prizes in physics — for the discovery of the charm quark, the discovery of the tau lepton, and investigations into the quark structure found inside protons and neutrons. All these findings helped scientists better understand the composition of matter in our universe.

The laboratory resides on the campus of Stanford University, a half-hour drive from San Francisco. Free guided tours take place every third Friday of the month and include a visit to the linear



When not globetrotting, Yvette Cendes pursues her astronomy Ph.D.

accelerator. You can sign up for a tour on the lab’s website.

Lick Observatory

You’ll experience no less than 365 turns on the winding road up Mount Hamilton to Lick Observatory — a reminder of the low-grade track needed by the horses and wagons that transported heavy equipment to the summit during the observatory’s construction in the late 19th century. Financed by James Lick, then the wealthiest man in California, the scientific site was the world’s first permanently occupied mountaintop observatory. At first light in 1888, the impressive 36-inch Lick Telescope was the largest refractor in the world, and it still has the curious feature of having its patron entombed beneath its platform.

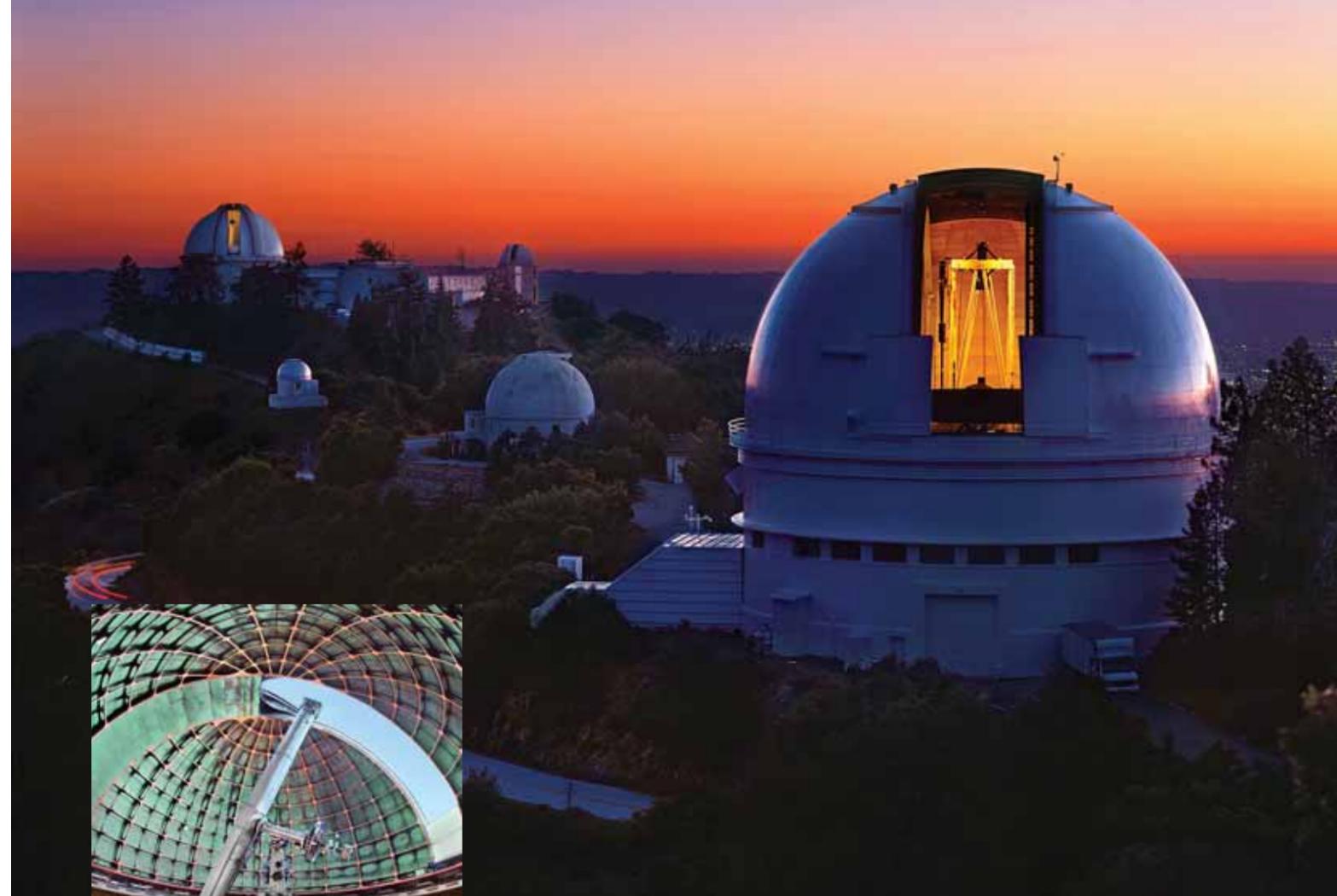
Despite the observatory’s age and location in the Bay Area, scientific research still goes on. Astronomers have had great success using Lick’s telescopes to discover extrasolar planets and nearby supernovae. Visitors can see several of the observatory’s telescopes, including the giant 120-inch Shane reflector and 36-inch Lick refractor, during visiting hours from noon to 5 P.M. 7 days a week from Memorial Day to Labor Day.

The observatory normally discourages nighttime visits to minimize stray lights, but it does hold some special events. The Summer Visitors Program involves a lecture by an astronomer and viewing through the 36-inch refractor and 40-inch reflector; the Music of the Spheres concert series includes live music, a talk, and an observing session. You can find the dates and purchase tickets on the observatory’s website.

Owens Valley Radio Observatory

Drive about 5 hours southeast from San Francisco, past Yosemite and Mammoth ski resort, and some of the highest peaks in the contiguous United States eventually part to make room for the dusty plains of Owens Valley. The area is nearly empty, but such isolated, dry areas are ideal for radio astronomy. Here’s where you’ll find the Owens Valley Radio Observatory (OVRO).

The world’s longest linear accelerator, located at the SLAC National Accelerator Laboratory, probes subatomic structure. Brad Plummer/SLAC



The 36-inch Lick refractor was the largest in the world when it saw first light in 1888. Laurie Hatch

Lick Observatory houses the 120-inch Shane reflector (foreground), the 36-inch Lick refractor (back left), and five other telescopes hunting for planets, supernovae, and other cosmic wonders. Laurie Hatch

formation of stars and galaxies, the composition of planets and comets, and even the evolution of the universe.

The observatory conducts tours of both OVRO (November to April) and CARMA (May to October) at 1 P.M. on the first Monday of the month unless it’s a holiday. No reservations are required. Look on the website for information about public observing nights with optical telescopes.

When you turn south from OVRO, the open road beckons, and the redwoods of the north give way to the endless desert that stretches into Arizona and beyond. But at the conclusion of this Northern California road trip, you’ll think back on not just the beautiful scenery but also the vistas created by those places peering into the universe beyond. From corridors buried under the interstate to mechanical behemoths waiting for messages above, these sights are truly some of the Golden State’s greatest treasures. ☺



The 40-meter radio telescope at Owens Valley is the largest at the site. It explores the inner workings of active galaxies known as blazars.

Tim Pearson/Owens Valley Radio Observatory

Read about Lick Observatory’s history at www.Astronomy.com/toc.