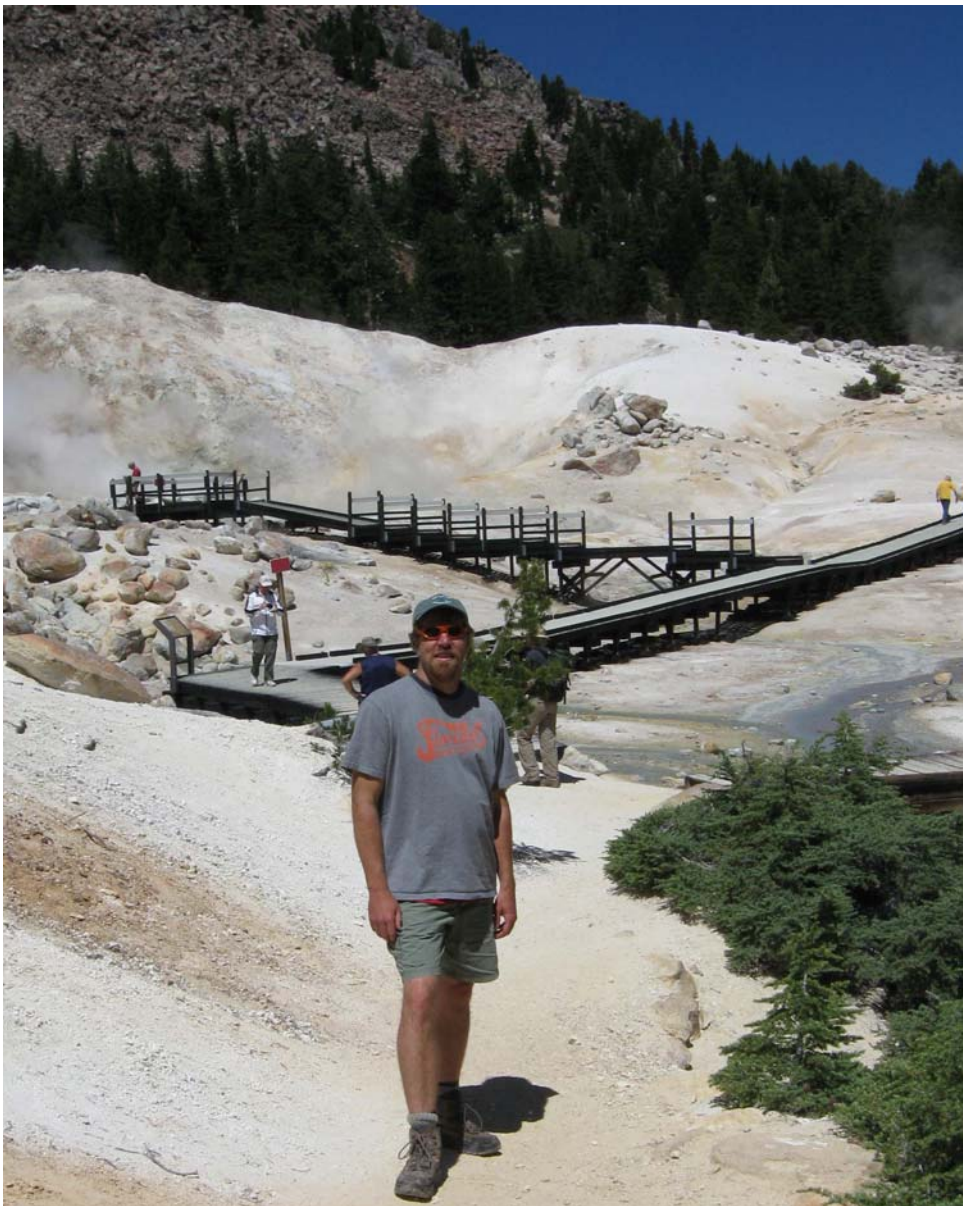
THE LASSEN LOG

5-6 July 2009 Lassen Volcanic National Park, California

A hike to hell and back

Place stinks to high heaven



Preacher at the gate of hell.

I can say authoritatively that the road to hell is not paved with good intentions.

It is paved with mud, snow and boulders.

I've been there and lived to tell this tale of Ken's and my trip to Bumpass Hell at Lassen Volcanic National Park.

"Where is this Bump-Ass Hell?" asked a woman we passed on the road there.

Ken thought she'd find it eventually even if she couldn't pronounce the name.

Bumpass Hell is named for Kendall Vanhook Bumpass, the cowboy who discovered the place in the 1860s while exploring the area around Lassen Peak. He later had his leg amputated after breaking through the thin crust of ground covering the 300-degree plus water and mud that bubbles from below and reminds you that the volcano here is still alive and stinking.

Continued on next page

A mud pot boils in an area of Lassen Volcanic National Park called the Sulfur Works.

A hike to hell and back

Continued from Previous Page

Bumpass Hell, as well as several other geothermal areas in the park such as Sulfur Works, Little Hot Springs Valley, Cold Boiling Lake and Devil's Kitchen, is believed to be heated by a huge reservoir of magma – subterranean molten rock – or very hot but solid rock about five miles beneath the surface and covering an area of perhaps five square miles in the southwest corner of the park.

There are no geysers in Lassen as there are in America's most famous geothermal park, Yellowstone in Wyoming. But there are boiling springs, mudpots and fumaroles, which are high-velocity steam vents like the Big Boiler in Bumpass Hell, which sounds like a constantly running jet engine.

The subterranean temperature is estimated at something higher than 450 degrees Fahrenheit while the steam from the Big Boiler gets as hot as 322 degrees.

The vapors – the breath of Earth itself – carry dissolved minerals from deep underground, especially hydrogen and sulfur, which produce the rotten-egg smell characteristic of areas of vulcanism. These same chemicals, particularly iron and copper compounds, color the ground and the water that flows from it.

Pictures are on the next page.

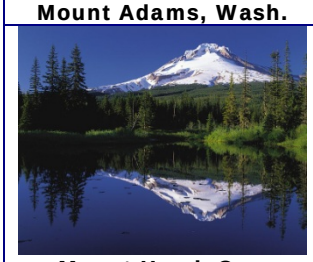
Bumpass Hell's colorful rocks and water.

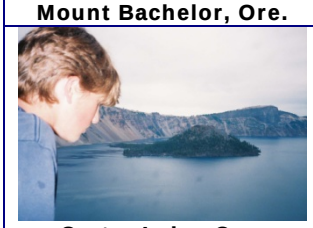
The road to hell is a three-mile roundtrip from a parking lot not far from the trailhead to the top of Lassen Peak.

Strolling through hell on a boardwalk

Major Cascade volcanoes (listed north to south)

The Cascade Range stretches from northern California into southwestern British Columbia in Canada. There are 12 volcanoes in the range 10,000 feet or taller, but the range includes more than 4,000 separate volcanic vents. Cascade eruptions are characterized by their explosiveness, unlike Hawaiian volcanoes which relatively quietly ooze lava for decades at a time. The Cascade volcanoes erupt every few centuries, which is infrequently in human time. In geologic terms, however, this is rapid-fire activity, which means the Cascades are considered among the most dangerous volcanoes in the world. They threaten more than 10 million people in the Pacific Northwest including the cities of Portland, Ore., Seattle, Wash., and Vancouver, British Columbia.

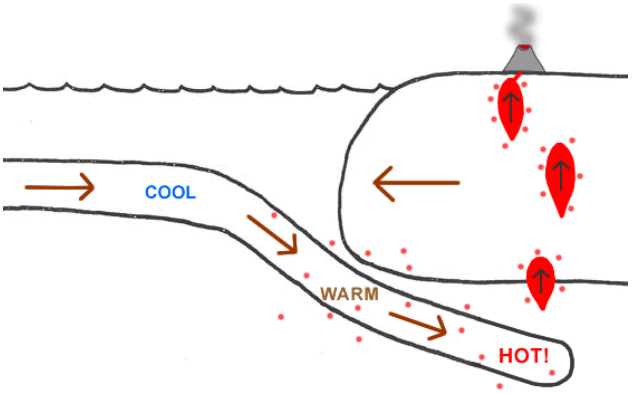
Volcano	Elevation	Eruptions	Notes
 **Mount Baker, Wash.**	10,778 feet 4th tallest mountain in Washington State 6th tallest mountain in Cascade Range	Last in 1891 Snow melt around the crater in 1975 raised concern an eruption was imminent	Mountain has 10 glaciers 1999 snowfall of 95 feet at Mount Baker Ski Area highest ever recorded at a ski resort Named by Capt. George Vancouver of British Royal Navy for 3rd Lt. Joseph Baker, first to see mountain in 1792
 **Mount Rainier, Wash.**	14,411 feet Tallest mountain in Washington State Tallest mountain in Cascade range	Last probably in 1894, last confirmed in 1854	Most heavily glaciated peak in Lower 48 states with 26 major glaciers Located in Mount Rainier National Park, 5th national park in the United States Vancouver named it for his friend, Rear Admiral Peter Ranier of the Royal Navy
 **Mount St. Helens, Wash.**	8,365 feet (9,677 feet before 1980 eruption)	May 18, 1980 eruption was most destructive in U.S. history: 57 fatalities, 250 homes and 230 sq. miles of forest destroyed. Smaller eruption in 2006.	Continues to steam today Located in Mt. St. Helens National Monument Most active Cascade volcano Vancouver named it for a British diplomat who was the first Baron St. Helens
 **Mount Adams, Wash.**	8,116 feet	Last believed to have been about 1,400 years ago, but the volcano is considered dormant, not extinct	Named for President John Adams by Oregon settler Hall J. Kelley, who wanted to rename the Cascades the President's Range and its major peaks after U.S. presidents
 **Mount Hood, Ore.**	11,249 feet Tallest mountain in Oregon 4th tallest mountain in Cascade Range	Last believed active about 170 years ago Considered the Oregon volcano most likely to erupt again	Supports six ski areas; Timberline is only U.S. ski area to operate lifts year-round Timberline Lodge, built by federal government during the Depression, was the exterior for the "Overlook Hotel" in the movie *The Shining*, starring Jack Nicholson Named for British Admiral Samuel Hood
 **Three Sisters, Ore.**	10,363 feet South 10,085 feet North 10,047 feet Middle 3rd, 4th & 5th tallest mountains in Oregon	South Sister probably erupted 2,000 years ago and has risen as result of recent earthquakes; other two peaks are considered to be extinct	The three peaks have 15 of Oregon's 35 named glaciers The peaks were named Faith, Hope and Charity by early settlers

 **Mount Bachelor, Ore.**	9,068 feet	Believed between 8,000 and 10,000 years ago	Mount Bachelor Ski Area is largest in Oregon with vertical drop of 3,365 feet Named because it stands apart from the Three Sisters (see above); was also called Brother Jonathan
 **Crater Lake, Ore.**	Mount Mazama was believed to have been about 11,000 feet Hillman Peak is now highest point on crater rim at 8,159 feet	About 5,500 years ago when Mount Mazama exploded, collapsed into itself and the caldera filled with water creating Crater Lake	North America's second deepest lake (world's 9th) at 1,949 feet Lake level of 6,178 feet is as much as 2,000 feet below rim Central feature of Crater Lake National Park
 **Mount Shasta, Calif.**	14,179 feet 5th tallest mountain in California 2nd tallest mountain in Cascade Range	Probably 1786, fumaroles still active Has erupted about every 600 years over past 4,500 years	Name may have come from Russian explorers (*chistiy* is Russian for "pure") or may be from southern Oregon tribe known as the Sŭsti'ka Has seven named glaciers and one ski area
 **Lassen Peak, Calif.**	10,457 feet	Erupted from 1914-1917. Until Mount St Helens exploded in 1980, was only volcano in Lower 48 states to erupt in 20th Century	Lassen Volcanic National Park was created during its most recent eruption Average snowfall of 55 feet is highest of any California mountain No glaciers but seven year-round snowfields

What causes the volcanoes of the Cascades?

The southern 80% of California's coast is defined by a giant crack in the earth's crust – the San Andreas Fault – which separates two large sections of the earth's surface called plates. The Pacific Plate forms the ocean floor and the North American Plate forms most of the surface of this continent. The San Andreas Fault is called a strike-slip fault, meaning the Pacific Plate periodically slides northward with respect to the North American Plate, and we feel those movements as earthquakes.

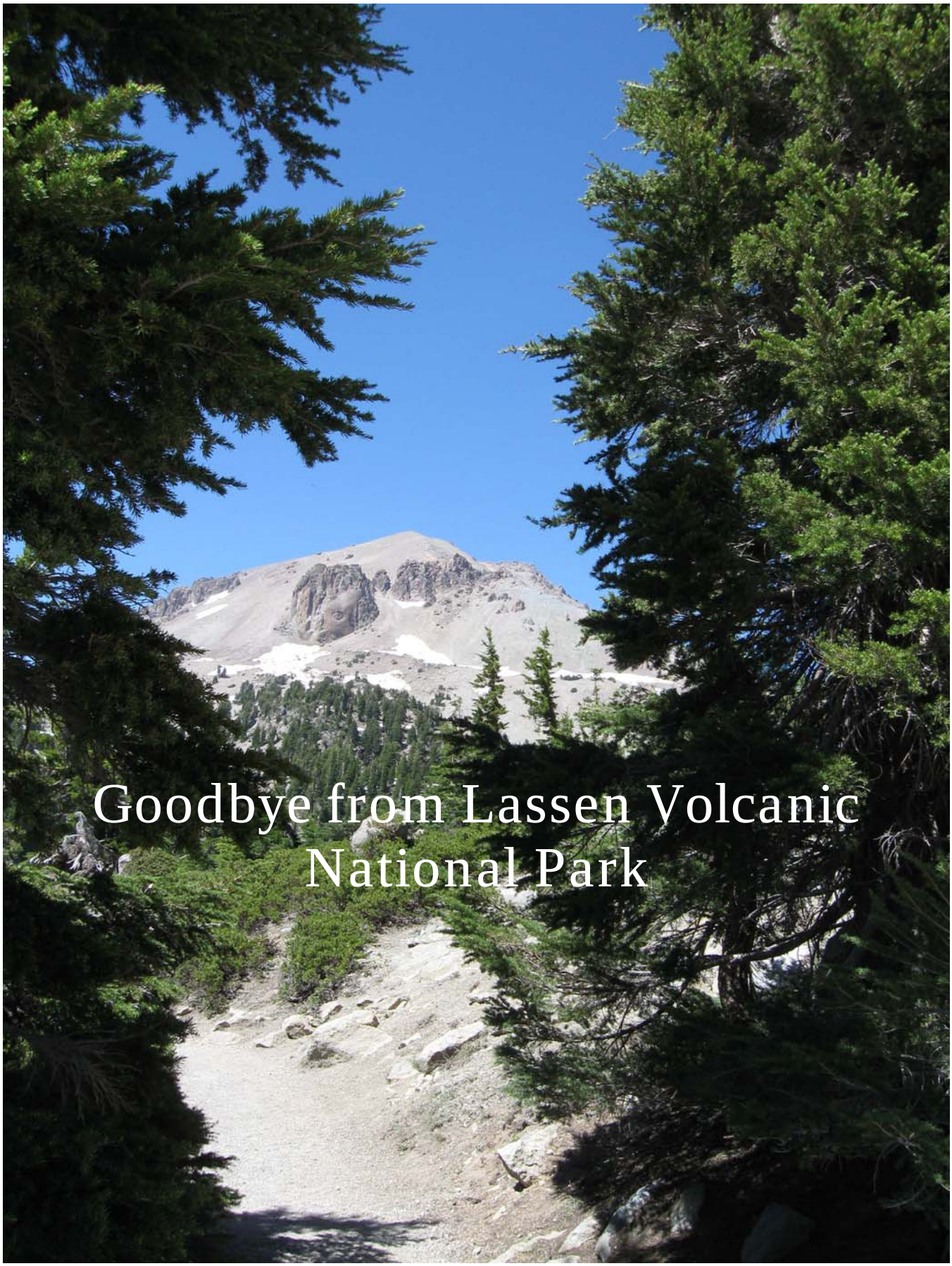
But from northern California 680 miles up to the coast of British Columbia, the fault dividing the floor of the Pacific and the North American Plate is a different kind of fault, a subduction fault. The floor of the Pacific is being forced down and beneath the edge of the North American Plate at a rate of about half an inch per year. As the solid rock of the ocean floor is forced deeper beneath the surface, it melts under intense heat and pressure. This produces an enormous reservoir



Click to play animation

The rock of the Pacific Ocean floor is being forced beneath the North American continent where it melts, then bubbles to the surface in volcanic eruptions.

of pressurized liquid rock, called magma, which underlies northern California, Oregon, Washington and British Columbia. Where the earth's crust is thin or weak, this magma makes its way to the surface and builds volcanoes such as Lassen Peak, Mount Shasta and Mount Rainier.


Goodbye from Lassen Volcanic
National Park