By JULIAN SMITH • *Illustrations by* MARK SMITH

THE URANIUMAIRE

Written off by government geologists, blackballed by the oil and gas industry, and nearly broke, Charlie Steen had something to prove. As the Cold War was ramping up, he defied his skeptics and located huge deposits of the radioactive element near Moab, Utah. His mines made would change his life and the surrounding area forever.

In March 1952, a geologist stood overlooking Big Indian Wash, a massive gash in the rocky desert southeast of Moab, Utah. Mountains rose like green islands to the north and south, and to the west the land disintegrated into the fractured canyon country carved by the Colorado River. Deep layers of sediment left by ancient seas had been lifted, folded, broken, and laid bare by eons of geological forces and erosion. Somewhere in the tortured topography below him, he was sure, was a fortune.

With his receding hairline and thick-framed glasses, the 32-year-old Charlie Steen looked more like an accountant than a prospector. But his dog-eared work boots hinted at a mix of tenacity and poverty that had brought him here to the middle of nowhere, on his own in one of the roughest landscapes in the country. He had already put in so many miles that the heels were worn to almost nothing and the soles were starting to fall off.

It was the dawn of the atomic age, and the United States was desperate for uranium. The radioactive element had fueled one of the bombs that won World War II, and the government was offering big money to anyone who found a dependable domestic source. Small deposits had turned up on the Colorado Plateau—the high, arid expanse where New Mexico, Colorado, Utah, and Arizona come together—and prospectors were already starting to arrive.

Steen had his own theory of where the uranium was, one that had earned nothing but ridicule from government scientists and fellow miners. But Steen had a wife and four sons to support, and after years of chasing his dream around the West, they were reduced to living in a decrepit shack with no running water or electricity. He was hundreds of dollars in the hole for groceries and gasoline. There was no one left to beg or borrow from.

The question now was whether his geological instincts were right. He was sure the uranium was down there, somewhere. It had to be. All he had to do was find it.

As he said later, "I knew I'd be either a millionaire or nothing."

Steen's Texas childhood was marked by extremes. His father was an oil wildcatter who had made and lost a small fortune by the age of 23, leaving Steen's mother to raise him and his sister through the Great Depression. According to Steen, his father left him little more than his name and a dalmatian dog. But there was one more thing: "The combination of need and the speculator's desire to

strike it rich—passed on to me by my father—gave me a driving ambition to seek and find a fortune," Steen said.

Steen earned a degree in geology from the Texas College of Mines and Metallurgy. When his bad eyesight kept him out of World War II, he spent those years mapping gas fields in the Peruvian Amazon. Upon returning, he married Minnie Lee "M.L." Holland, who had grown up under similar circumstances, and took a job as an oil geologist.

"Since the first day I met her…she had been aware that I suffered from acute prospecting fever," Steen said. "She thought then that I was nuts—a grown man playing with rocks."

After he argued with his bosses about how to do his oil job, Steen was fired for insubordination and blackballed from the industry. "It was the best thing that could have happened to him," his son Mark said later, "because it freed him to go prospecting on his own account."

Steen needed something new to prospect for, something that was in high demand and didn't require a huge bankroll to locate. He read about a fledgling mining industry in the desert country of southeast Utah and southwest Colorado. Its focus was a rare and exotic-sounding element that had suddenly become one of the most valuable commodities in the world.

Uranium is the heaviest naturally occurring element and one of the strangest. Formed in supernovas 6.6 billion years ago, it helps create the heat at the center of the earth. It's as common as tin and can be recovered from seawater. For more than a century after its discovery in 1789, its main use was as a pigment for glass and pottery.

In 1896, French physicist Henri Becquerel determined that uranium spontaneously gives off energy. The physicist Marie Curie, with help from her husband, Pierre, soon found that other elements shared this property, which she called radioactivity. Radioactive elements were in fact shedding subatomic particles. Scientists eventually discovered that they could harness and control the natural instability that causes what came to be known as radioactive decay. Under the right conditions, uranium atoms could be induced to split and create a chain reaction as the fragments hit other atoms in turn. The resulting cascade could transform matter into a previously unimaginable amount of energy. A modern fuel pellet of enriched uranium the size of a fingertip can produce as much energy as 1,780 pounds of coal or 149 gallons of oil.

The world witnessed this process in action on August 6, 1945, when 141 pounds of highly enriched uranium at the heart of a bomb named Little Boy annihilated the city of Hiroshima, Japan. The atomic age had begun, and uranium was its fuel.

The problem was that almost all of the uranium used in the bomb, and the experiments that had led to its creation, had come from Canada and the Belgian Congo. Only about one-seventh had come from the United States. The mineral was now a matter of national security, and the country urgently needed its own source.

The Colorado Plateau was known to have deposits of carnotite, a greenish-yellow mineral that early Indigenous people had used to color body paints. Although the radioactive ore was a source of uranium, it wasn't as rich as the grayish-black ore called pitchblende, the primary source worldwide. But carnotite was more common, and it was already being mined from shallow deposits in southwest Colorado and southeast Utah.

In 1948, the U.S. government launched the first federally sponsored mineral rush in history. The newly created Atomic Energy Commission (AEC) became the sole buyer of uranium ore, guaranteeing minimum prices as well as huge bonuses for anyone who discovered new lodes. To speed the process, the government published maps, flew geological-survey flights, built mills, and scraped roads into the desolate backcountry.

Uranium wasn't just for bombs. The AEC predicted that nuclear power would make energy "too cheap to meter," while newspapers published breathless stories of miniature power plants lighting entire cities using tiny amounts of radioactive fuel.

Thousands of amateur prospectors headed to the Colorado Plateau, hoping to strike it rich in this atomic gold rush. Among them was Charlie Steen.

Steen arrived in southeast Utah with M.L. and their four young sons on Christmas Day 1950. They parked their red jeep and 20-foot trailer near the tiny railroad town of Cisco, about 30 miles north of Moab.

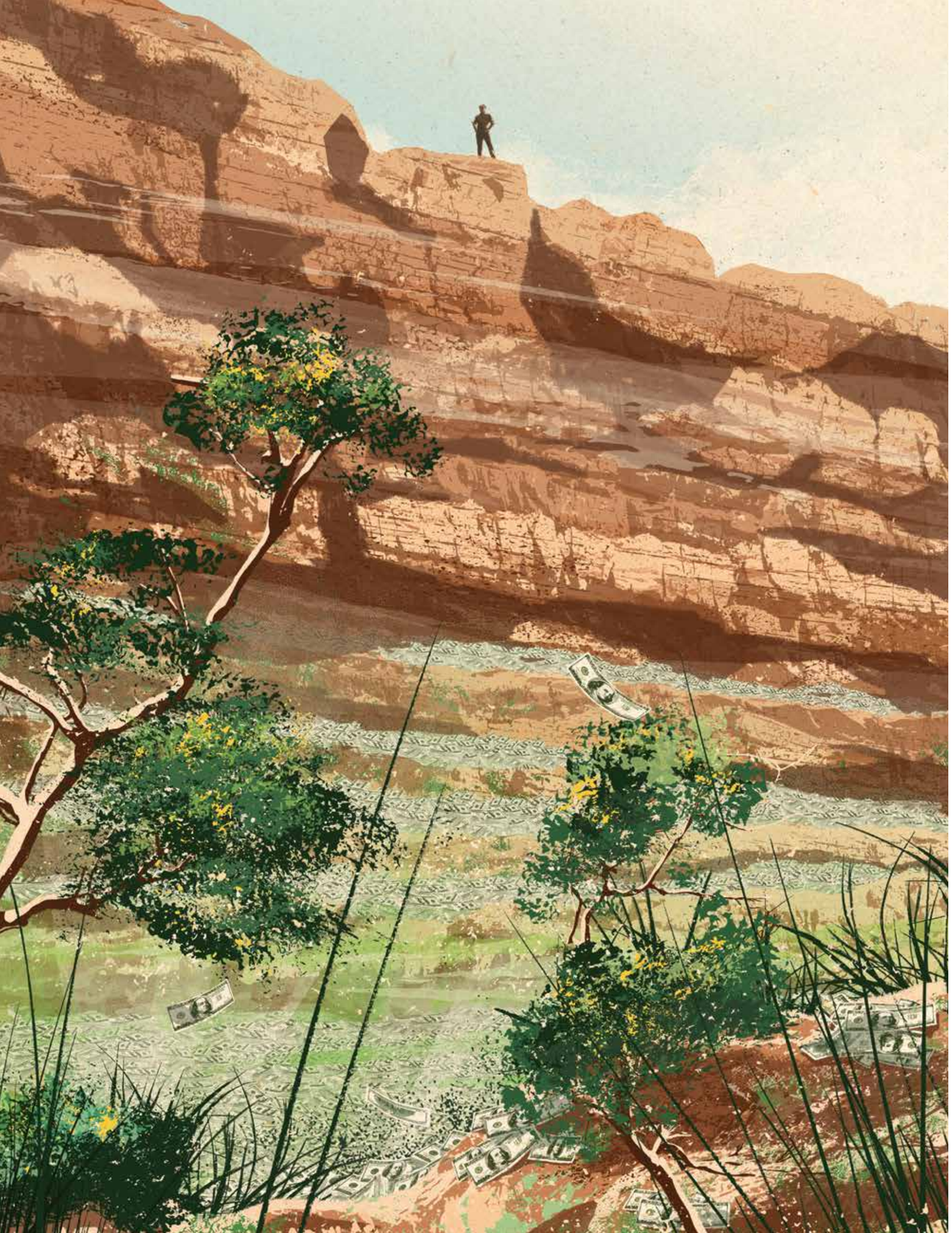
There were already a few hundred mines scattered around Moab, a sleepy farm and ranching community of about 1,200 people on the Colorado River. Most were one- or two-man operations worked with picks, shovels, or jackhammers. Up to this point, many of the mines had focused on vanadium, an element used to harden steel. Uranium was often tossed aside into tailings piles, not worth the effort to gather and sell.

MOAB MUSEUM

Charlie Steen, wife M.L., and sons John, Charles, Mark, and Andy on the day of his big strike in Moab, Utah: July 27, 1962.

Prospectors typically used Geiger counters, which detect radiation, to search for uranium exposures, or outcroppings, on the surface. These were easily accessible but tended not to be very productive. Many of the most easily accessible ones had already been claimed.

As Steen examined geological-survey maps and explored the multihued landscape around Moab, he started to believe that the low-grade deposits on the surface were just the tip of the iceberg. Higher-grade uranium deposits should be concentrated in certain geological layers underground, ones that no one else had explored yet. Geiger counters couldn't detect uranium that deep—not that Steen could afford one anyway. But if he could find the right place, where



enough of the overlying sediments had been removed by erosion, he wouldn't have to drill very deep to test his hunch.

The place that Steen thought looked most promising was the Big Indian mining area, southeast of Moab, a region slashed by deep canyons with no access roads. Government geologists scoffed at Steen's idea—the AEC had already written off Big Indian as a uranium source—but this only made him more determined to prove them wrong.

It took weeks of arduous climbing and bushwhacking, but by March 1951 he had staked 11 mining claims. Each one was marked by four stakes and cost $1 to register. He named them after song lyrics from his time in Peru: Te Quiero (I love you), Mujer Sin Vergüenza (shameless woman), Mi Vida (my life).

Drilling was the next step. But by now, the Steens were almost broke. He took his family to Tucson, Arizona, for a year, where he worked as a carpenter until he had saved some money. They returned to Cisco in April 1952.

"We arrived looking like *The Grapes of Wrath*," Steen said. "We rented a tarpaper shack for $15 a month, scavenged railroad coal to heat it, and our first night there, M.L. came down with pneumonia." The Steens lived on oatmeal, illegal venison, and credit. When they couldn't afford milk for baby Mark's bottle, M.L. filled it with sugared tea.

Steen's mother came from Texas after selling her house, bringing with her much-needed funds. Steen acquired a secondhand diamond-tipped drill and convinced a friend to put up the money to have four miles of road bulldozed into his Mi Vida claim. With the help of a machinist named Douglas Hoot, he started drilling on July 3. His goal was to hit 200 feet, far deeper than the drill was designed to go. Steen figured that would be enough to prove whether his theory was right or wrong. He knew there might not be enough money for a second try.

Days passed with no sign of the yellow of carnotite. At 73 feet down, the drill started bringing up a strange dark ore. Steen set it aside to look at later and kept going. But after drilling through 14 feet of this mystery material, there was nothing else even remotely promising. On July 27, the drill bit broke off at 197 feet.

Steen was devastated. The odds of recovering the bit were slim to none. His family was destitute, and there were no more funding sources left to tap. Facing the AEC geologists would be bad enough. But letting his family down would be worse. M.L.'s unwavering support had kept this crazy dream afloat for two years already, even though her friends and family were asking why her husband didn't get a job "like normal people."

He threw a two-inch piece of the dark ore into his pocket and drove back to Cisco, hoping to scrounge up repair tools and somehow keep going. He pulled up at a service station owned by a prospector named Buddy Cowger, who happened to be examining some ore samples with a Geiger counter.

"Hell, I've got some stuff that'll do better than yours," Steen joked, pulling out the piece of dark ore.

Cowger set it down next to the Geiger counter. The machine shrieked.

"Is that thing working?" Steen said, astonished.

Then it hit him: the stuff was pitchblende. Nobody had ever found any on the Colorado Plateau. Steen himself had seen it only in museums. But it had to be. He had been right. The Steens would be rich. They would be beyond rich.

He sprinted across the block toward the shack where M.L. was doing laundry. He was so excited, he collided with the clothesline, scattering diapers on the ground.

"We've hit it! We've hit it!" he cried. "It's a million-dollar lick!"

"Boy," she said, "you've been out in the sun too long." But you couldn't argue with a Geiger counter.

Steen kept his discovery a secret as he scrambled to stake more claims and find investors to front the money required to sink a mine shaft. On December 1, his 33rd birthday, a small crew of miners from his newly formed Utex Mining Company—named for Utah and Texas—reached the pitchblende layer of the Mi Vida claim and started hauling it out by the ton. Even then, disbelievers accused him of "salting" the strike with ore from Canada.

In its first six months, the Mi Vida mine alone produced $1.3 million worth of high-grade uranium ore. Estimates of the total value of Steen's find would eventually be over one billion dollars.

"Before I hit pay dirt, people called me crazy," Steen said later. "When I hit it, they called me a charlatan. Now that I've got it, they call me lucky."

Newspaper articles about Steen's find set off the biggest prospecting boom since the Klondike gold rush half a century earlier. Fortune seekers descended on the Colorado Plateau by the thousands: geologists, miners, engineers, truckers, roughnecks, and other opportunists, many with families in tow. There were about 800 uranium mines in operation by 1955.

Miners worked by the light of carbide lamps to fill ore carts that horses hauled out to daylight. Falling rocks, cave-ins, and other hazards were part of life. Eventually, rotary drill rigs and diesel-powered jackhammers and mining carts made the process faster and easier.

The sudden influx of people transformed Moab completely. The city's population more than tripled between 1950 and 1956. People lived in trailers, hotels, tents, or cardboard shacks. Some camped out in cars or rolled out sleeping bags in city parks. The demand for water was so high that at times there wasn't enough pressure to fill the fire hoses. The lines at the telephone office were so long that it could be faster to travel 110 miles to Grand Junction, Colorado, to make a long-distance call.

The local rodeo arena went quiet when all the cowboys left to search for uranium. "The Pokes have traded in their high-heeled boots for steel-toed miners rubber boots, their ropes for picks and their saddles for a jack hammer," wrote the local paper.

Like mining towns everywhere, Moab soon had far more men than women. But this was Mormon country, so there was no gambling or prostitution, and drinking was strictly curtailed.

Steen's sudden success ignited uranium fever in popular culture. Magazines and newspapers worldwide ran gushing stories about Steen and, soon enough, other "uraniumaires." Kids played uranium-prospecting board games and followed comic book characters like Goofy as they searched for the precious mineral. Uranium-hunting plotlines appeared in *The Lucy-Desi Comedy Hour*, *The Amos 'n Andy Show*, and Laurel and Hardy's final film, *Utopia*. A penny stock market in uranium companies soared and crashed.

The Steens found themselves at the center of the whirlwind. One of the first things Steen did after he struck it rich was to buy a new pair of boots and have his ragged old size 12s bronzed. He bought a red Lincoln convertible, a plane, and a yacht he named after his wife. He built a six-bedroom house on a hill overlooking the city where the clock over the mantel was permanently set to 5:05 p.m.—cocktail hour—and

> "We've hit it! We've hit it! It's a million-dollar lick!"
> —Charlie Steen

guests gathered by the pool to dance and drink champagne. Celebrities like Henry Fonda, in town to film the movie *Warlock*, dropped by to enjoy the party.

The Steens took full advantage of their new jet-setting lifestyle: flying to Salt Lake City for rumba lessons or Grand Junction to do laundry, taking the boys up in the plane to get better reception for their favorite TV shows. At the same time, the media portrayed Steen as an unassuming Horatio Alger character whose grit and genius were helping win the Cold War.

Steen helped the people involved in his big strike, from the machinist Douglas Hoot to the mine cook at Mi Vida, stake valuable claims of their own. In Moab, he donated land and money to churches, the hospital, and the elementary school. Employees of Utex Mining could buy houses in a subdivision nicknamed Steenville that he developed at the foot of his hilltop house.

Steen's largest investment in the community was building an $8 million uranium mill north of town, so local miners wouldn't have to haul ore to Grand Junction for processing. It was both the largest and the only privately owned facility of its kind in the country.

The Steens found that their sudden fortune also had its downsides. It was isolating, being so much richer than everyone else in town. More and more, Steen wound up spending his time managing his bank accounts instead of prospecting. He was elected to the state senate but stepped down before his term was finished. Eventually, he and M.L. decided to move the family to a 27,000-square-foot mansion near Lake Tahoe.

"What I liked best about Nevada was the protective coloration," he said. "In Moab, I was the only millionaire. In the Reno area, there were at least 130 others, some a lot richer than me."

The Steens returned to Moab in 1964 for the official decommissioning of the Mi Vida mine, which for years had produced more uranium than any other mine in the country. That, seven years later when he should have been living off his riches, Steen was hit in the head by a drill at a mine in California. He lay in a coma for over a month. Three brain surgeries brought him back, but he was never quite the same mentally. Steen spent most of the 1970s battling the IRS, which claimed he owed millions in taxes. Things got so bad financially that at one point the electricity to the mansion was shut off, and the family found themselves eating beans by candlelight.

Without Steen's sharp mind and steady hand, his four sons and eventually their children started to argue over what was left of the family estate after the tax battles had ended. It was still worth millions, including huge tracts of land around Moab. They had successfully expanded into gold-mining properties in Colorado, but that just meant more to fight over.

In 1992, the Steens came back to Moab for a party celebrating the 40th anniversary of Steen's find, but the family continued to fracture. M.L. and Steen stayed together through all of it, though. Steen never forgot how she had stuck by him. "Whatever success I am—or was—I give her credit," he said. M.L. died of emphysema in 1997, and Steen died in 2006 after struggling with Alzheimer's.

Domestic uranium mining peaked in 1956. The AEC program ended in 1970, the same year the Treaty on the Non-Proliferation of Nuclear Weapons came into force. The uranium market shifted from weapons to nuclear power plants, but the accident at Three Mile Island in 1979 turned public opinion against the industry.

Incredibly, Three Mile Island wasn't even the worst nuclear accident that year. Four months later, on July 16, an earth dam collapsed at a uranium mill in northern New Mexico—just 300 miles from where the first atomic test had been conducted exactly 34 years before. A surge of 1,000 tons of radioactive sludge spilled across the Navajo Nation, the largest release of radioactive material in U.S. history.

Today, nuclear power still provides 20 percent of the United States' electricity, but almost all the uranium for it comes from abroad, and competition from natural gas, wind, and solar energy is rising. A workforce that once numbered in the tens of thousands has shrunk to only a few hundred people nationally. The country's last conventional uranium mill is in White Mesa, Utah, 90 miles south of Moab.

Uranium mining left an indelible mark on the Colorado Plateau and its inhabitants. In the decades since Steen's strike, hundreds, if not thousands, of miners have died from lung cancer, leukemia, and kidney failure caused by inhaling radon, a radioactive gas that is a by-product of uranium extraction, in mines and mills. It wasn't until 1990 that the U.S. Congress finally passed legislation to compensate affected communities.

Moab still draws an adventurous crowd today, although for different reasons. Jacked-up jeeps and off-road buggies have replaced the ore trucks that once rumbled down Main Street. Backcountry roads built for mining are now the domain of mountain bikes and off-road vehicles. Tourists come from around the world to explore Arches and Canyonlands National Parks, both just a short drive out of town.

The Steens' mansion on the hill is now the Sunset Grill restaurant, one of the fanciest in town. It's full of artifacts from the uranium boom: board games and movie posters, cabinets full of fluorescent uranium glass and, ironically, numerous Geiger counters. The walls are covered with black-and-white photos of the family in the happy years after the strike.

Steen's uranium mill, across the Colorado River from town, closed in 1984. Its toxic remnants, an estimated 16 million tons of uranium tailings, have been the focus of a massive cleanup effort for decades. As of 2020, almost three-quarters of the radioactive pile had been moved to a permanent disposal site 30 miles away.

Abandoned "zombie mines" still dot the hills and canyons across the Colorado Plateau, ready to be brought back to life if the uranium industry ever recovers. One of these is up a deep red-rock canyon an hour's drive southeast of Moab, accessed by a punishing dirt road. All that remains of the Mi Vida mine is a square hole in a sickly gray-green layer of the canyon wall. It's lined by weathered wooden beams and blocked off 20 feet deep. Rusted mine carts and an engine labeled "UTEX Exploration Co" sit on rails outside. Wind and birdcalls are the only sounds at what was once the richest uranium mine in the country.

Somewhere hundreds of feet above is the cliff where Charlie Steen stood 69 years ago, imagining what lay buried below—and where his son Mark scattered his and M.L.'s ashes half a century later. ■

Julian Smith is the coauthor of Aloha Rodeo: Three Hawaiian Cowboys, the World's Greatest Rodeo, and a Hidden History of the American West *and an executive editor at Atellan, a story studio. He wrote about an unsolved murder at Crater Lake for* Alta Journal, *Winter 2021.*

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