

# Memoir of an unrepentant romantic Caltech undergraduate - 1938 - 1942

By William T. Holser 1992



Bill Holser, Jack Bowen and Johnny Allingham

Ricketts House CalTech 1940

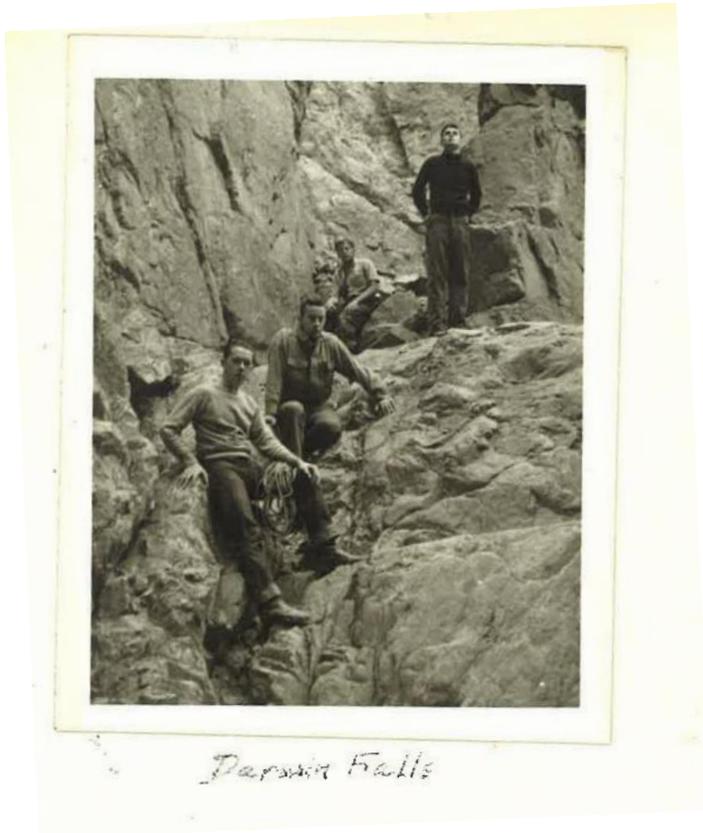
I have a picture of the Arms laboratory of the Geological Sciences in the late 1930's, when the same giant oak seemed to shade its east entrance from the world that, in retrospect, was a sunnier, simpler, and maybe intellectually lazier time. It was a time for mapping faults and folds, without a thought of plate tectonics, a time of the 15-inch log-log-decitrig slide rule rather than the super computer modelling, a time before microprobes when analysis of a rock was the treasured result of a month's work with burette and analytical balance. What I'd like to do is give you a personal and idiosyncratic view of my experience as an undergraduate as I remember it, a story embellished as appropriate for a campfire in the Panamints or a bar in Winnemucca. I've labelled it "romantic", a word whose 4<sup>th</sup> definition is "Marked by the imaginative appeal of the heroic, adventurous, remote, mysterious or idealized characteristics of things, places, people..."

There were only five of us geologists who graduated in the class of 1942, and at least three of us close friends, Bob Greenwood, Bill Menard and myself were pretty much romantics. We attended a senior class in modern poetry, held by professor Clinton K. Judy (1879- 1955) on evenings in the magnificent library of his home in San Marino. Our favorite verse was O'Shaugnessy's Ode:

*"We are the music makers  
And we are the dreamers of dreams  
Wandering by lone sea breakers  
Or sitting by desolate streams  
World losers and world forsakers  
On whom the pale moon beams  
Yet we are the movers and shakers  
Of the world forever it seems..."*

I'm sure Professor Judy didn't think much of that bit of doggerel, but he did love T.S. Eliot, who begins Burnt Norton. Later to be published as one of the Four Quartets, with the memorable:

*Time present and time past  
Are both perhaps present in time future,  
And time future contained in time past...  
What might have been and what has been  
Point to one end, which is always present.  
Footfalls echo in the memory  
Down the passage which we did not take  
Towards the door we never opened..."*

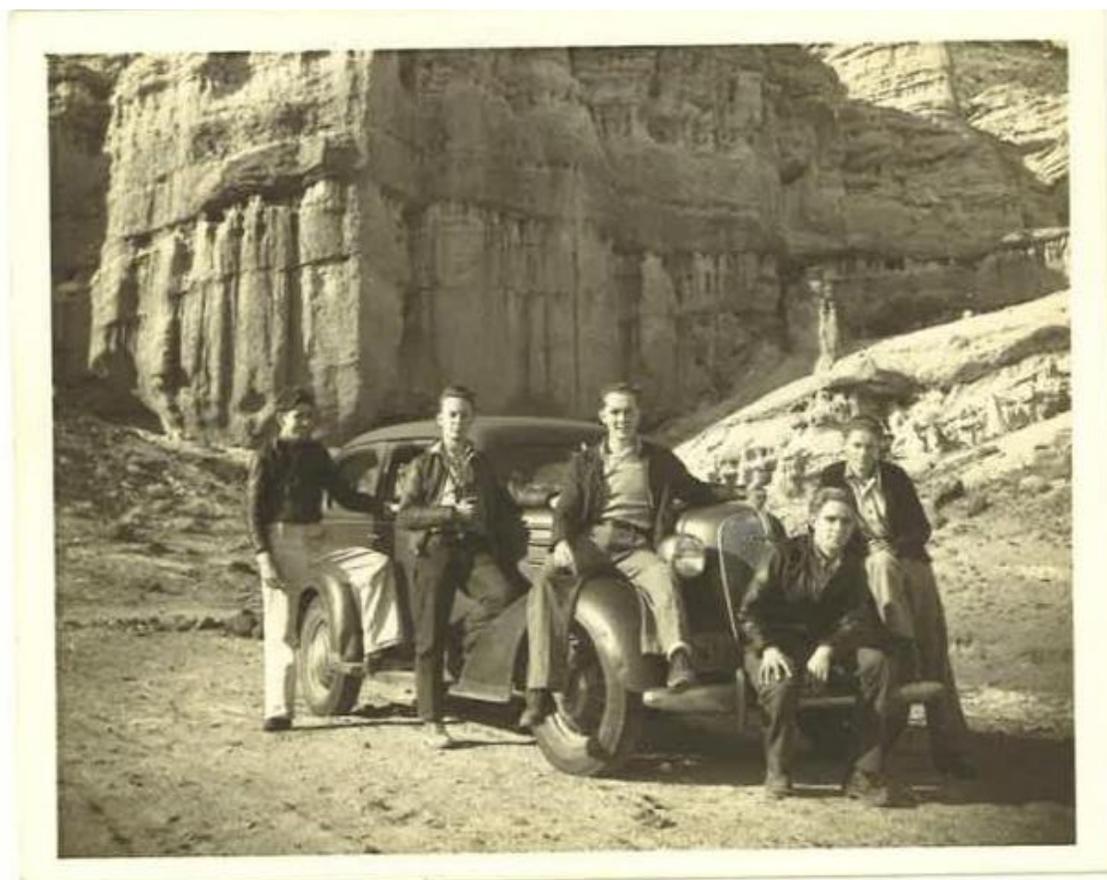


I go back now to 1939 and 1940, to the romance of silver and the Slim Princess. The affair began with a gang of classmates graduating from Polytechnic High in central L.A. We loved to travel, to backpack, to explore the deserts--- here we are on an early trip to Red Rock Canyon on the Mojave (1). I'm probably unrecognizable as the fourth from the left: second from the left is Jack Bowen, who got his degree in '42 in Aeronautical Engineering and later went on to get his Master's in 1946 and his Ph.D. in 1949. The leader of the affair was Johnny Allingham, whose undergrad career at Cal Tech was early interrupted by being called to active duty in the Naval Reserve as a seaman on troop transports in Lend-Lease days. Johnny finally got his BS in geology at Cal Tech in 1948 and his MS in 1954. He was a leader with a very romantic vision of how we could all get rich in the minerals business. Johnny's dad as a pyrometallurgist—and on Mr. Allingham's rare returns home from jobs in mining camps in Africa or the South Pacific, Johnny had soaked up the lore and techniques of that arcane craft. Johnny's plan was deceptively simple when told over a campfire in the Mojave: we would search the silver mining districts of the last century in eastern California and western Nevada for some old stamp mill whose forgotten tailings pile had never been re-run by more modern techniques. Then we would cobble

together a small ten-ton-a-day floatation plant to extract the remainder of the values still locked in the complex mineralogy of the region—and ship the concentrates to a smelter. Johnny was a convincing raconteur, and we were equally easily convinced by what a gaggle of romantics want to believe!

Even then, fifty years after their thundering heyday, the old stamp mills and their tailings ponds were not that easy to find. We began by checking historical records and descriptions in the old L.A. Public Library on Hope Street. We pored over the tattered volumes of the Engineering and Mining Journal, the Reports of the California State Mineralogist, W. A. Chalfant's Story of Inyo (2<sup>nd</sup> ed. 1933) and especially Francis Church Lincoln's Mining districts and Mineral Resources of Nevada (reno, 1923).

Our sampling trips were made in a 1926 Dodge sedan (2), specially fitted with an outside radiator, extra gas tank, and a quarter-inch-steel pan to keep high centers from tearing into our engine. Here it is, high atop a 10,500 foot pass in the White Mountains across from the Sierra Nevada: (left to right) Holser, Clarke, Allingham and Earl Williams. Pierce Clark was never a Cal Techn student, although he certainly would have qualified. He was a genius for anything chemical or mechanical, one hand gone in a teenage experiment with sodium perchlorate.



1. Desert explorers on a 1939 expedition in Red Rock Canyon, left to right: Johnny Allingham (B.S. '48 M.S. '54), Jack Bown (B.S. '42, M.S. '46, Ph.D. '49) Jim Hansen, Bill Holser (B.S. '42 M.S. '46) and "Shorty" Harrington



2. Our "all-terrain-vehicle, a 1926 Dodge sedan, in the White Mountains, 1939. The canvas "desert water bag" cooled drinking water; the "running boards" were often piled with excess baggage. A special thick steel pan protected the guts of our reliable four cylinders from rocky high centers. Her we overlook the road the twists down Silver canyon (Downgrade Travel Only) (Below: Entering Saline Valley)



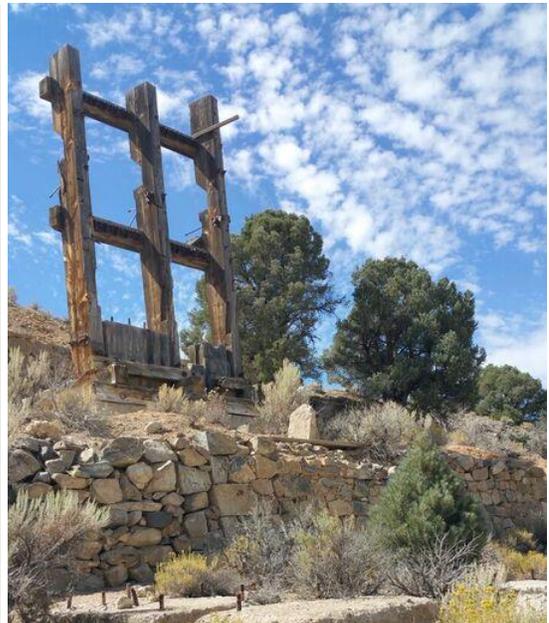
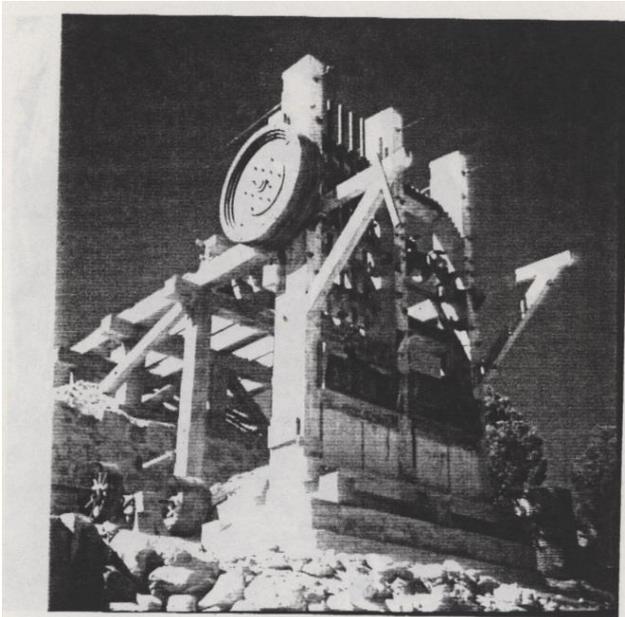


3. *Atop the White Mountains. Having Climbed Wyman Canyon from Deep Springs Valley, we paused in an unnamed, 10,500-foot pass, with the Sierra Nevada in the distance. Left to right: Bill Holser, Pierce Clarke, Johnny Allingham, Earl Williams (below: Top of Wyman Canyon today)*

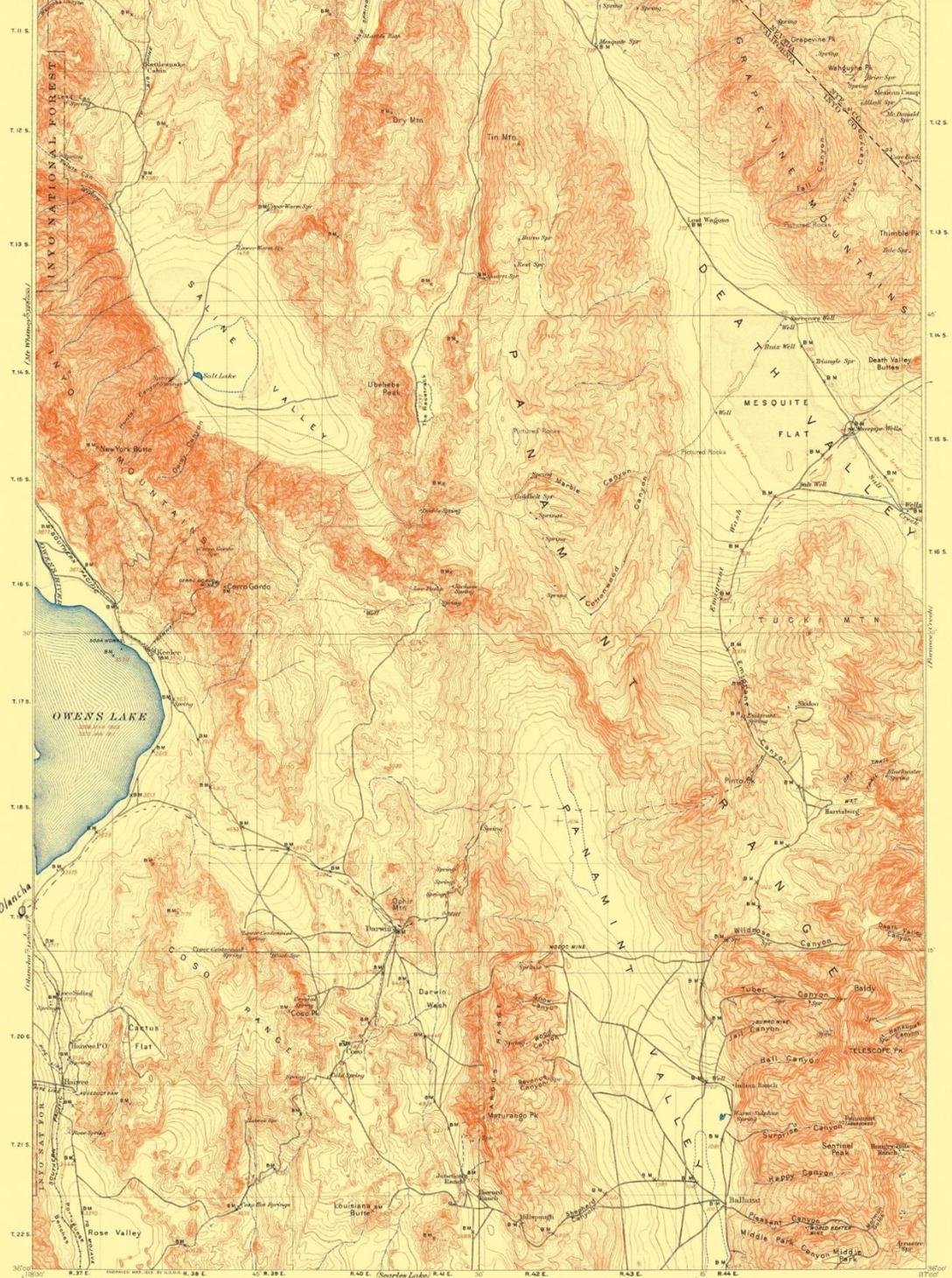




4. *The dramatic desert depression of Saline valley. We were scouting the old Keynot Mine, high on the 11,000-foot scarp of the Inyo Mountains. This one we never did reach, and it took us three days to even get through this hell-hole.*



5. *Ten-stamp mill in western Nevada, probably at Pigeon Springs. A cam raised each of the five stamps in a battery in succession and let them drop with a crash as they crushed the ore. When in operation, as we found at Dayton in the Virginia City district, the overlapping impact of the stamps generated a roar that filled the valley (right: same mill today.)*



R. B. Marshall, Chief Geographer  
 I. M. Douglas and T. G. Corning Geographers in charge  
 Topography by R. H. Chapman, J. E. Blackburn, B. D. Stewart,  
 D. C. Clark, and T. F. Friedman  
 Control by R. H. Chapman, D. F. Moor, C. F. Urquhart,  
 R. A. Farmer, and L. F. Biggs  
 Surveyed in 1905-1906 and 1910-1911

Scale 1:50,000  
 Contour interval 100 feet.  
 Datum is mean sea level.

Edition of Mar. 1913, reprinted 1927.  
 Polyconic projection, North American datum.

BALLARAT, CALIF.-NEV.

For weeks at a time we explored old mills in the Owens Valley, chugged up between the vertical walls of Surprise Canyon to Panamint City and Hungry Bill's ranch, took three days to bounce our way across the deep desert bowl of Saline valley, climbed the flanks of the Sierra to old Dunderberg Mine. At Unionville in northern Nevada we inquired of the oldest miner for information on a stamp mill of the 1890's. In dark and driving snow, we reached what remained of a town called Lundy, high on eastern scarp of the Sierras. Searching in vain for a dry place to camp, we finally approached the one log cabin that showed a dim light. A very ancient visage answered our knock and invited us to warm ourselves around his rosy wood stove. We spent the night spreading our sleeping bags on his floor and listened to his stories of the Lundy Mine, where he had personally tunneled a thousand feet into the mountain with star drill and single jack. We saw the decaying elegance of Tonapah and Virginia city, where the roar of the last stamp mill still echoed off the canyon walls at Dayton.



*Old Stamp Mill*

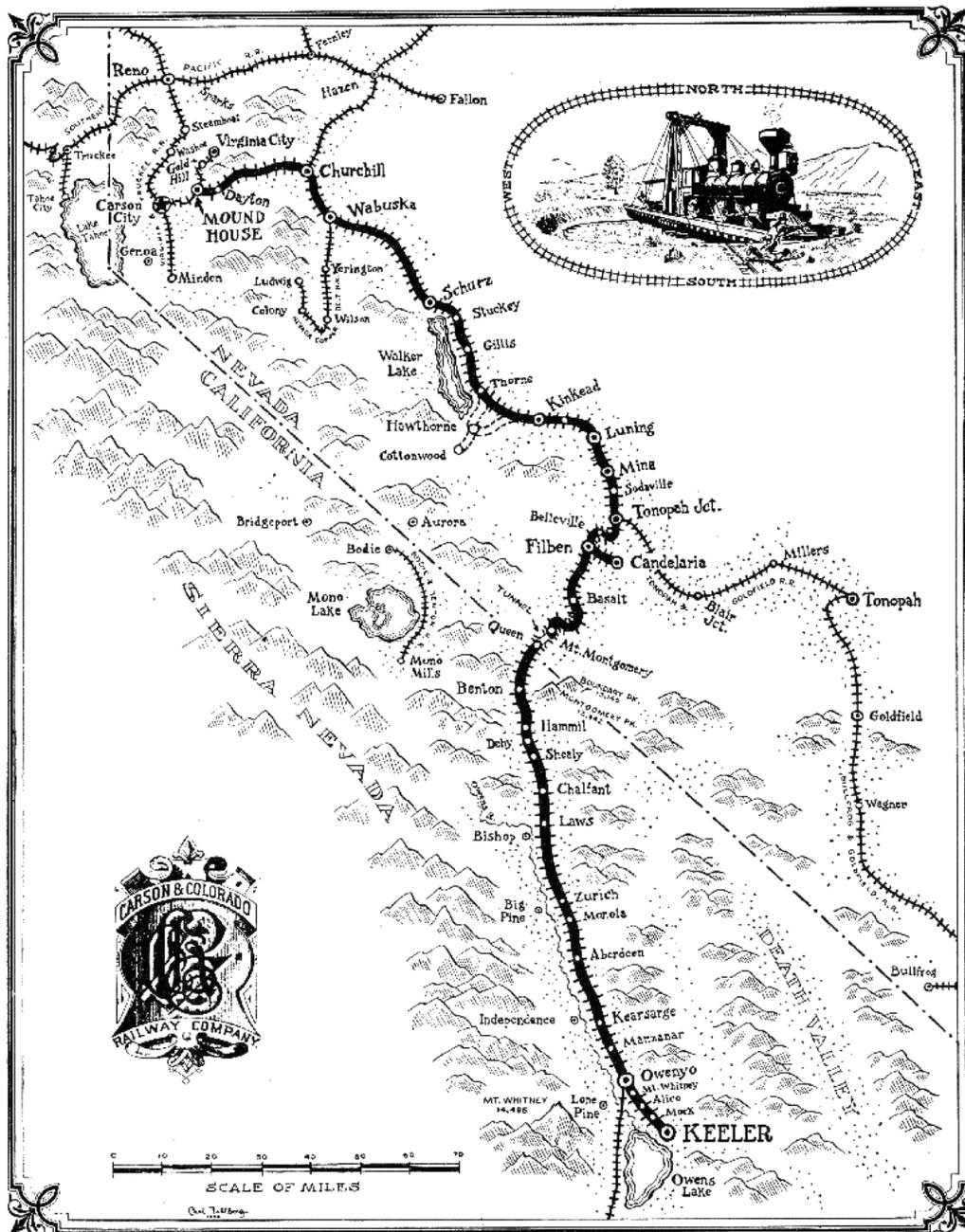
6. *Ruins of a stamp mill in western Nevada. A mill generally rambled down a hill, with a 'grizzly' (course screen made of iron bars that sorted out the boulders of the ore) at the top, then ore bins, a jaw crusher, then batteries of stamps (to grind the ore), amalgamation pans (to catch the silver and gold with mercury), "tables" (rough-carped to hold back the heavier metal-bearing grains), and at the base a tailings pond where the processed tailings of the ore settled out. That was our objective: tailings in which 11 of those processes had measurably failed to gain all the values from the original ore.*

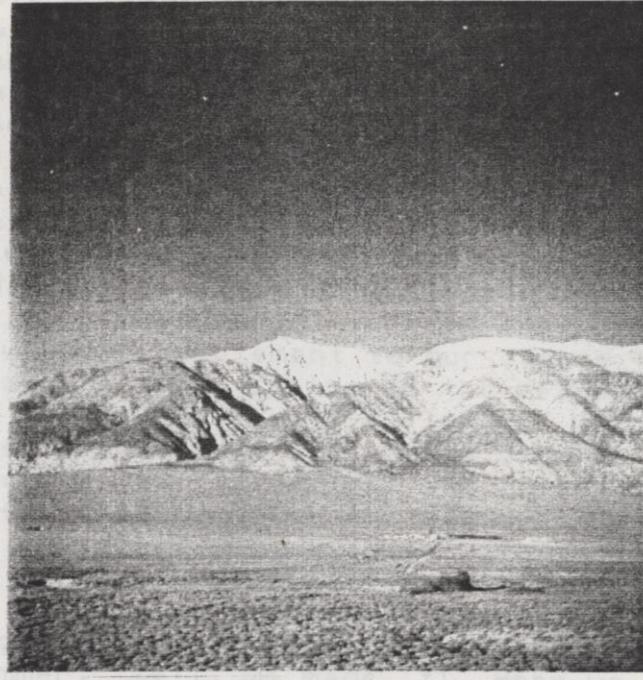
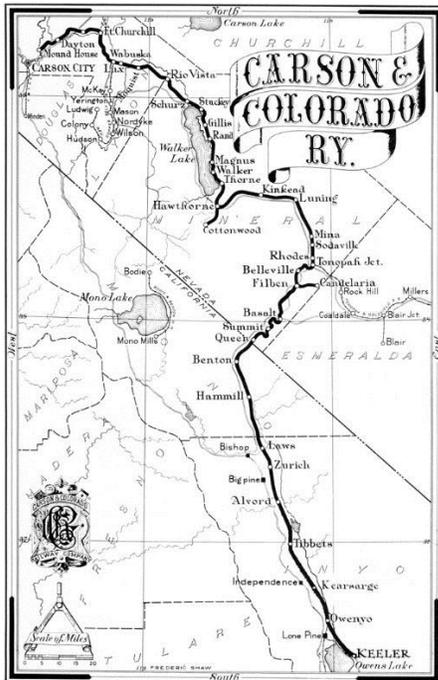


7. *The meadow below Benton Hot Springs, site of the mill that had treated ore from the Blind Springs Hill district, rising in the middle distance. Over the years the dams for the tailings pond failed and let the tailings spread over the flats, long since covered by a thick grass turf. The White Mountains rise like a wall in the background.*



8. *The cottonwood-shaded remains of Queen Station on the old grade of the Nevada and California narrow gauge over Montgomery pass*





9. Lost in the immensity of the alluvial fans flanking Montgomery Peak, the lonely outpost of the Benton Station was already then the end-of-the-track for the Owens Valley narrow gauge—the “Slim Princess”.



10. Dinnertime at the home on the range, above the Benton Hot Springs meadow, Left to right, the still relatively clean profiles of Bill Holser, Johnny Allingham and Earl Williams.

When a tailings pond was located, we got out our post-hole digger and sampled the finely ground yellow dirt. Back to LA with the Dodge down on its springs from the weight of the samples, we unloaded our takings at Johnny's house. Johnny was not only our leader but also our chief assayer: titrations in a closet, floatation tests with his mother's kitchen mixer, and in the backyard a cupel furnace for fire assay of gold and silver. The results came in slowly, for copper, lead, zinc, gold and especially silver, but only total values of \$2.50, 2.00, 1.50 per ton from Empire, Lundy, Pigeon Springs, Unionville, Lida, Bodie. Then miracle of romantic miracles, consistent \$7 to \$9 for a set of samples from Benton, thirty miles north of Bishop, below Montgomery Peak at the north end of the White Mountains. There a small stamp mill had treated the silver-lead-copper ore of the Cornucopia and Comanche Mines on Blind Spring Hill, producing over \$4 million from 1862-1889. In those days a town of more than 3,000 people had prospered around Benton Hot Springs, where now there remained only the general store and post office, and the tailings spread all over a grassy meadow.

But the crucial point was the amount of these values that could be recovered in floatation tests – and here we met failure. No matter what black magic Johnny tried – anthrates, depressants, buffers – the red froth yielded only a few dollars return.

Then to the rescue came the Slim Princess! 'Why not ship the tailings by rail to the smelter at Salt Lake City?' "Slim Princess" you see, was the name affectionately given by old-timers in these parts to the Owens Valley narrow gauge railroad – steam of course! It had been built by William Sharon and Douglas Owen Mills of Virginia City fame, through the deserts along Walker Lake to Mina, and over Montgomery Pass to the south end of Owens Valley. Originally built as the Carson and Colorado, it had been acquired by the Southern Pacific at the turn of the century, just before the big strikes at Tonopah and Goldfield, and renamed the Nevada and California. At Owenyo it connected with a standard gauge branch to the SP main line at Mojave. Just the year before we came on the scene, the tracks through Queen Station and across Montgomery Pass to Candelaria and Mina had been abandoned and torn up. The little freight trail still ran twice weekly through the Owens Valley from Keeler to Laws, but for several years had not climbed the long grade up to Benton Station. However, the SP was still obligated to provide service to the end of the track and Benton.

What we now proposed was to forget about concentrating the tailings, but just truck them the two miles or so to Benton Station, and load them onto narrow gauge cars for transshipment to Salt Lake City and direct smelting. The problem was, we were just a gang of college kids with an assay and a vision, but no equipment. And before we could get the smelter to make its customary guarantee of the railroad for freight charges, we had to prove to the smelter that our assay was good in tonnage as in our samples. So, we had to boot strap the project by shipping an initial 50 tons of the tailings, paying the freight in advance ourselves. Each of us dug into our savings accounts, where the nickels and dimes had been accumulating since grammar school, to ante-up for the initial 50 tons of freight.

And we had to get a contract with the owner, Benton Hot Springs and the meadow lands below, including the old mill and its tailings, were owned by a crusty old guy named Bill Bramlette. He also owned the Little Lake Café, a favorite watering hole halfway along Highway 395 from Mojave to Owens Valley. When you entered the

place, the first thing to catch your eye was the giant photo over the bar, labeled “ Wild Bill Bramlette, winner of the Around Nevada Auto Road Race of 1920”. I came prepared with an iron-clad contract including our offer of \$1 per-ton royalty for Bramlette. Johnny and I found him in a booth, and after hearing the story we had to tell he allowed as how we had mad a deal. He waved away the contract, saying that our handshake was sufficient.



Little Lake Café Highway 395

*In the early '20s, Bill Bramlette, a well-known auto racer of the era, saw Little Lake while participating in a load race from Los Angeles to Bishop. Envisioning possibilities in these swamps, he purchased various homesteads around the area, aggregating some 1200 acres. Then he settled down to raising cattle. He dammed up the south end of the swamps to irrigate his pasture lands and, to keep down the tule growth, he imported muskrats. The resultant mile-long lake, he stocked with fish. Very shortly afterwards delighted fishermen arrived from Southern California cities.*

*For years Bill Bramlette's son, Tom, and his family ran Little Lake as a fishing and boating resort. Tom put in two campgrounds at the north end of the lake, a snack bar and a trout rearing pond and rented boats. Fish are bluegill, bass, catfish, crappie and trout.*

When we went into the little station of the narrow gauge at Laws, the station agent, who ran the whole operation nearly singled handed, was at first very skeptical of sending a train to Benton Station for these young guys. But wen we insisted, he agreed to have old engine no. 18 pull three cars to the siding at Benton Station the next Saturday. He could only give us box cars on such short notice, as the gondolas inherited from another ancient narrow-gauge lines as they went out of business, hadn't been run for years. And we would have to have the three cars loaded with our tailings by the following Saturday- other wise he would have to collect an additional demurrage charge.

For transport from the tailings pile to Benton Station we rented a small box trailer in Los Angeles, and towed it behind our old Dodge to Benton, in time to see No 18 come puffing up the grade with three dilapidated box cars. The train crew dropped them on thee siding and headed straightway for the Benton Bar to refuel for the trip back down the grade to Laws. I have to tell you about Benton Station. It consisted only of a rail siding, and on a pole a crank telephone supposedly connected to the stationmaster at laws. You wound the crank briskly a half dozen times, then shouted into the mouthpiece to overcome the crash of desert static picked up by 35 miles of galvanized phone line. Besides these primitive facilities, there was not station house, no loading planform. Just below on the Bishop-Tonopah highway, was a combination gas station-bar-restaurant-general store. There was also the inspection station for the California Department of Agriculture. Unwary motorists coming over Montgomery Pass from Nevada were relieved of any fresh fruti or vegetables that they carried. When we got to know the inspectors, they provided us with a welcome supplement to our canned food supplies. We set up

camp at a hot spring on the meadow and pitched in to move and load the 50 tons of tailings. With two muck sticks in continuous operation we took turns digging into the red dusty tailing- into the trailer till it was filled with a scant half ton of the stuff, then chug the 2-3 miles to Benton Station, shovel into the box car door, shovel again into the back of the car. All week long we shoveled, shirtless in the desert sun. By the end of the week were all completely covered with the fine red flour of the tailings- a condition that we suffered continuously that summer well, we made it! Here we are with our loaded cars, ready for the engine to haul them away to Laws, to Owenyo, to Mojave, to Salt Lake City. So, back to LA and much -need shower, treatment for sunburn and rest while we waited for the results from the smelter.

Then on one glorious afternoon ten days later, a time that thrills to this day, a telegram came to our headquarters at the Allingham house: assay values totaling \$8.15 per ton, a guarantee of freight charges on future shipments, and “how many tons can you ship per week?”, sined International Smelting and Refining Co pany? Now we had ato get a real earth-moving operation underway. We found a trucker and his friend with a skip loader, both eager for a job close to Sierra fishing, and we talked them into loading and trucking our tailings for \$1 per ton. They claimed that they could load a couple of trains a week, and have time left over for fishing in the Owens River. But they needed a loading ramp from which they could dup their truck loads into the gondolas. As a freshman engineering student, it fell on me to design a loading ramp, and in typical engineering fashion I projected a twelve-foot high platform with an approach slop at ten percent grade the trucker claimed his dump truck could manage fully loaded. With the proceeds from our first smelter shipment, we descended on the Cleveland Wrecking yards in L.A. and picked out sued 6 x 8 timber posts, 3” planking, and a pile of bolts and spikes for construction.



10. both the Dodge and the prospectors pressed into service to haul the initial shipment of tailings to Benton Station. The tailings had been repeatedly ground in the old stamp mill in a vain attempt to break out the values, so we had to deal with a dust that was as fine as flour and as red as rust.



12. the dust-covered crew happily celebrates a week of hand-shoveling (triplly\_ 50 tons of tailings into three box cars. The proceeds from this shipment would hopefully prove out our assays and gain smelter guarantee of future shipments from a real earth-moving operation. Our leader Johnny Allingham sits on the car roof, in the door Earl Williams (left) and Pierce Clarke (right) and standing below is Bill Holser.



13. Benton Station with our first 50-ton shipment hand -loaded into narrow gauge box cars. Don the track, a shirtless member of our gang discusses the prospects of success with local onlookers, while closer at hand old No. 9 is ready to ease the load down the long curing grade to Owens Valley- whence on to the smelter at Salt Lake City.

We were ready to move! Our trucker friend took the skip loader and all our timbers on his dump truck, we ordered a string of gondolas for ten days hence and took off in the Dodge for Benton Station. To say we made a sensation at the bar/store the Station would be no exaggeration as we unloaded our timbers, we attracted a crowd of helpful spectators who had not seen such excitement in years. The truckers went off to fish, and we sweated for a week building the loading platform. Engine No. 9 appeared on schedule and shunted a disappointingly short string of ten gondolas onto our siding. Seems that was all the rolling stock the narrow-gauge line could find in usable condition. Cranking the telephone on the pole, we heard from the station agent that they had to put on an extra crew to fix up more cars for us- another ten cars would be coming on the next train four days later. We sowed the loader operator where to dig in the tufted long grass of the meadow, and went on down to the station to crowbar a gondola into position for the first truckload of our treasured material. The loaded truck came into sight, trailing a cloud of red dust, and backed up the ramp. No go, not way! The pitch of our ramp was just too steep.

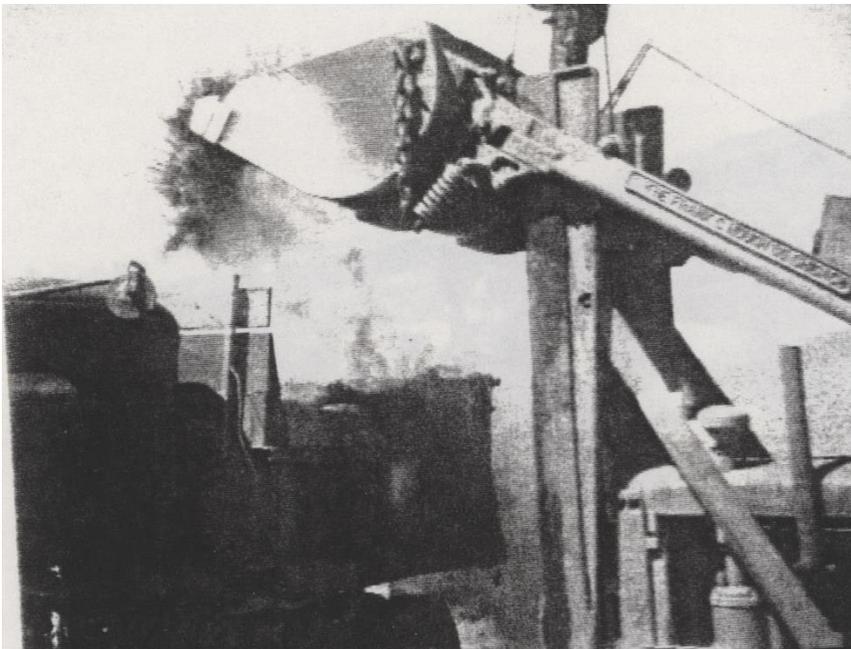
So there we were with a string of railroad cars and no way to load them. Conference. What to do? There was only one possible solution. The SP division office in Bakersfield had told us that we had to keep our structure three feet from the tracks, so we had rigged sheet-iron chute to slide the material from the dump truck into the gondolas. That restriction would have to go, with the hope that the safety inspectors never came as far as Benton Station. We worked all one night by Coleman lantern, cutting the platform posts down by three feet, extending the platform so that it just missed the cars, and tried the dump truck again on the shallower slope. Up, up and away, we dumped the first load directly into the end of the first gondola. Things really moved from there on. One of us kept track of the truck-loading operation, and a couple of us moved the railroad cars by hand, levering a long crowbar under a wheel. Three days later, we had a trainload of tailings, the engine came up with another string of cars and our first train was on its way to the smelter.



*14. Building our loading dock at Benton Station, using second hand timbers purchased in an L.A. wrecking yard with the proceeds from the initial tailings shipment. The ramp is a steep 10% grade dependent, unfortunately, on the advice of the truck driver. It was no go. The loaded truck was waiting, the scraper loader was idle back at the meadow, our train of gondolas stood empty with demurrage charges looming- it was time for radical action.*



15. After a long night of work, the loading platform was lowered by three feet, extended an illegal two feet closer to the tracks of the siding, and the ramp brought down to a grade feasible for the dump truck. Here in the morning Johnny Allingham, Earl Williams and Pierce Clarke nail down the las of the flooring plank



16. Were in business! Here at the meadow the scraper-loader dumps a pile of red flour tailings into the truck.



17, Three of the crew gloat atop our first full train out of Benton Station: left to right, Johnny Allingham, Pierce Clarke and Earl Williams. The sad state of these old cars, which had been inherited from older defunct narrow-gauge railroads, is seen in the bulging curve of their sides. They reminded us of the 1930s comic strip, Toonerville Trolley.



If things had gone smoothly from then on, we could have come out with a few thousand dollars profit, which was a respectable sum in 1940. But the Slim Princess just wasn't up to it: the cars were in bad shape and fell apart after a run or two, the transfer facilities at Owenyou were always subject to delays., and our chunks of red sod clogged up the grizzlies at the smelter. As in this old photo published in a book by Lucius Beebe and Charles Clegg – Steam Cars to the Comstock one of our trains jumped the rails at one of the many curves down the hill toward Laws.

The summer dragged on, with tailings moving out slowly until I had to return to my sophomore fall Term at Cal Tech. the project finally would up fiver or six weeks later, and as official accountant of operation I paid the trucker, paid the royalties, to Mr. Bramlette, paid each of us the amounts we had put up front, paid each of our gang \$5 for every day worked, and that was about all of it. A great romantic vision and a memorable experience, but no thousands of dollars for college! A stringer for the L>A. Times interviewed us, publishing our story with the maximum of hype, "five young men... have demonstrated that rugged individualism still prevails in this country." ( Los Angeles Times Nov. 4, 1940)



18. *Three of the tough guys that the L.A. Times reported (Nov. 4, 1940), "... have demonstrate that rugged individualism still prevails in this country."* Left to right, Bill Holser Pierce Clarke, and Earl Williams

NOVEMBER 4, 1940.

## College Youths Salvaging Waste

Students Scrape Mill Waste From Flat Near Benton to Earn Money

Five young men who are students in Southern California universities have demonstrated that rugged individualism still prevails in this country. By judicious use of some of the gray matter they have been developing in college they have worked out a mining proposition which promises to at least see them through school and perhaps run into considerable profit.

These youths are John Allingham, William T. Holser, Pierce Clarke, Earl Williams and Vernon Beaver. They hit upon the idea of locating some tailings ponds where they might set up and operate a small mill. They searched the records in several counties for old operations where the ore was not free-milling. When they found old millponds they took samples and ran assays to establish probable values.

### PAYING ROYALTIES

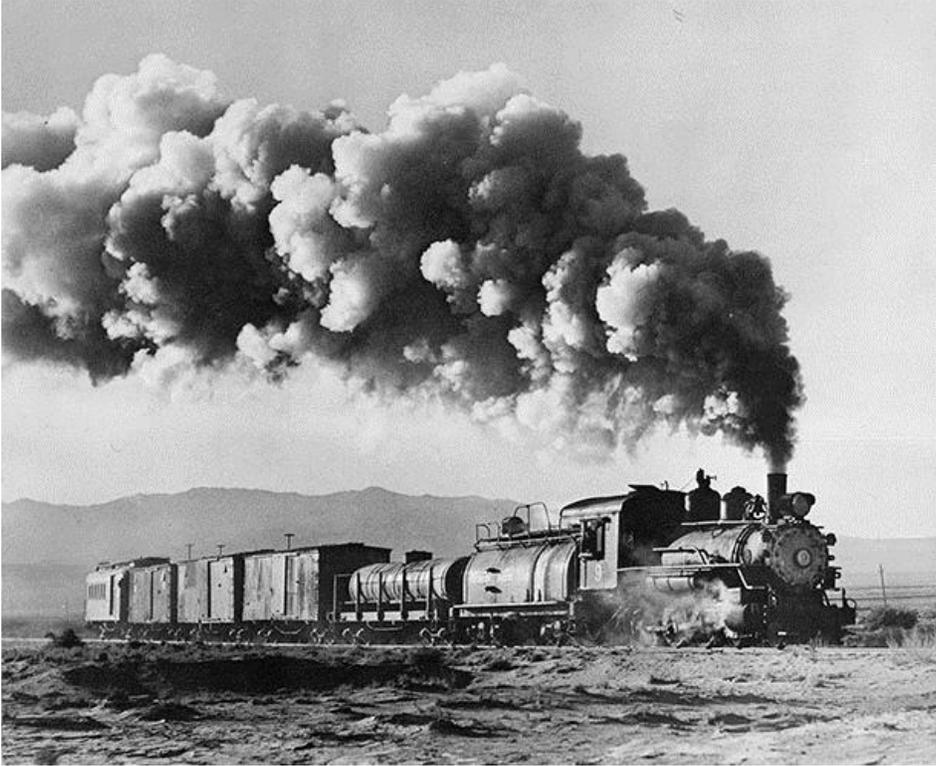
The old town of Benton was the first place they found the two essentials—a millpond containing notable values and an owner who was willing to consider a decent business deal. They worked out a plan to pay a royalty to W. W. Bramlette and began handling tailings which gave only a 45 per cent recovery because of the complex nature of the tailings.

Material shipped to the International Smelter at Salt Lake City convinced its officials that they could use the material as a flux because of high silica content. Though the gross assay value of the samples is \$16 a ton the net value at the smelter is \$9.

### IN WAKE OF STORM

The tailings came from ore worked many years ago from the Comanche, Diana and other Blind Springs mines. They were originally impounded, but were washed out by flood in 1913 and left scattered on the plain near the highway between Benton and Benton Station. A scraper-loader and three dump trucks are used to move the material to Benton Station.

About 1500 tons have been shipped to date. Twelve narrow-gauge gondolas could be loaded daily if cars were available. The railroad rolling stock is in poor condition, and repairs were necessary to take care of the business offered. Last month four cars tipped over near Hammil, and a week later another went over, but the boys continue to make satisfactory progress with their venture.



*Engine No. 9 Steaming home to Keeler with five-car consist in the late afternoon of December 18 1948*



Ceremonial "last run" (April 29 1960) of the famed Southern Pacif Carson & Colorado narrow gauge railway Engine #9, the "Slim Princess" (photos from <http://www.owensvalleyhistory.com> )



Slim Princess switches at Owensyo in 1938



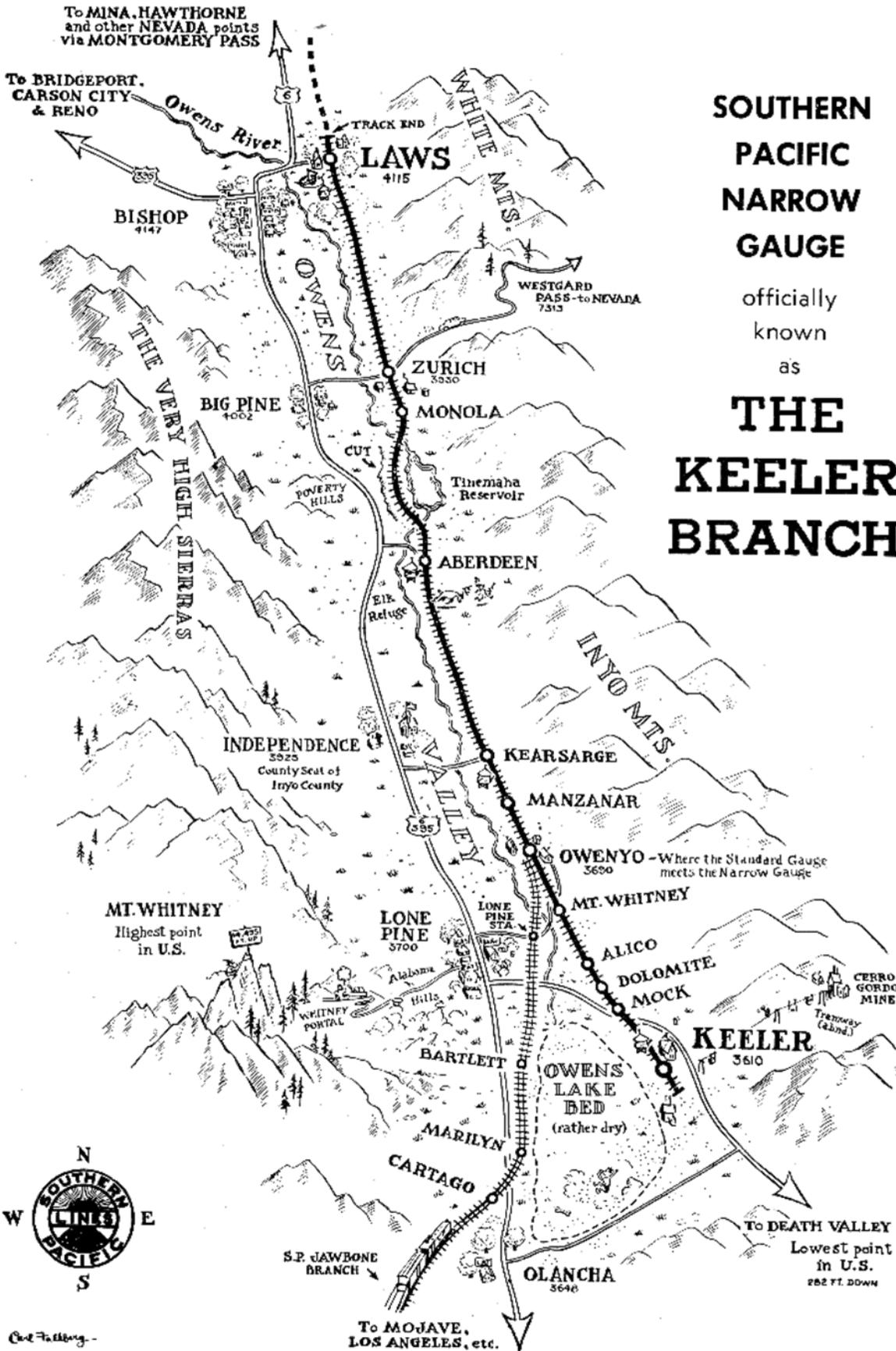
(photos from <http://www.owensvalleyhistory.com> )



(photos from <http://www.owensvalleyhistory.com> )



Benton today from highway US 6 ( note same mountain in background – rail line was behind the tree grove



**SOUTHERN  
PACIFIC  
NARROW  
GAUGE**

officially  
known  
as

**THE  
KEELER  
BRANCH**

Coal Fueling -



Queens Station – my guess at the location

