

Death Valley Confidential

Caltech geologists on a spring odyssey through the back country of California

In the Spring, it has been observed, a young man's fancy turns variously to love, baseball, loafing, or all three. However, when Spring arrives in the Los Angeles Basin, bringing warmer nights and smoggier days, a small group of individuals, concealed in the California Institute of Technology's Division of Geological Sciences, turn their interests to the beautiful geology and scenery to be found in the country around them. This scientific wanderlust, perhaps explained by realizing that there is a little beatnik in the most scientific of us, has resulted in the annual institution known as the Spring Field Trip. During this golden time, with finals over and the new term too far ahead to think about, caravans of geology students and faculty have ranged far afield through the Southwest, seeing some geology, photographing a lot of scenery, and in general having a whale of a good time.

Given this background, it was no surprise that Dick Jahns' casual and offhand announcement that he might lead a small outing through the Panamint Mountains and Death Valley during Spring Recess fell on fertile soil. Three days after a discreet notice inviting travellers was posted there were twenty signatures.

The end of the second-term finals was the signal for the beginning of preparations suggestive of the Normandy landings. On Monday evening, March 21, the mountains of supplies and equipment were loaded into the Carryalls. H-Hour was 8 a.m., March 22.

The account below has been somewhat laboriously deciphered from the author's original trip notes, most of which suffered somewhat from having been written in a bouncing Travelall with an erratic pen.

First Day

Leave at 8 a.m. in two Travelalls. Carryalls (and food) will meet us (we hope) at Mojave.

Stop #1: Mile-wide trench of the San Andreas fault zone, south of Palmdale. Various lines of evidence suggest a movement of about 25 miles since middle

Miocene time. (Translation: The other half of the outcrop we're standing on is somewhere over by Cajon Pass). The fault looks so peaceful now. Ducks swimming on the pond, trucks roaring by. Guess it isn't going to move; we may as well go on.

Stop #2: Tropico Hill gold mine at Rosamond. The ore is located in and near volcanic rocks, but the mine is shut down, waiting for a rise in prices. Jahns draws maps and stratigraphic sections in the dirt to make the "big picture" clear.

Lunch: Like all lunches of the trip, a grab-as-you-can affair, constructed from sandwich makin's placed on the tailgates of the trucks. Bob Zartman has most lethal-looking knife, remains well-fed. Jahns tells anecdotes. Now heading north on Route 6.

Pass by Jawbone Siphon of L.A. Aqueduct. Jahns gives a fascinating summary of the tangled history of Owens Lake water in Los Angeles, replete with lawsuits, fraud, dynamiting, and other skulduggery.

Stop #3: Red Rock Canyon, cut into a series of volcanics, tuff beds, and colorful sandstones. A photographer's delight, with beautiful "badlands" features developed by erosion.

Turn east toward Randsburg, past Koehn Dry Lake.

Camp: The Pinnacles, south of Trona, on the south end of Searles Lake. The Pinnacles are spires of tufa, a form of calcium carbonate probably deposited by springs in the bottom of Searles Lake at a time when the lake covered the valley and was linked to other now-dry lakes in the region. The spires add a weird touch to an already strange scene.

Tufa is sharper than it looks. Jahns' air mattress, punctured in three places, quietly expires at 3 a.m., easing him down onto the hard ground.

Second Day

Drive across Searles Lake toward the Slate Range on the east. The road (a pair of ruts across a scoured surface of salt on the lake) is fortunately dry. The salt is barren and lifeless, a uniform pinkish-gray, sometimes coated with gravel.

Stop #1: Top of Layton Pass. We study the coarse pink gneiss that forms the core of the Slate Range, photograph the beautiful desert flowers, and view the Panamint Range to the East.

Stop #2: American Potash and Chemical Co. plant, a thriving concern which extracts an amazing number of useful chemicals from the brines of Searles Lake. We are given a fine tour through the plant, which remains etched on the memory as an unbelievable maze of intricate pipes, valves and channels. At each step in the process, another chemical is precipitated, and when the whole process is complete, the incoming brine from the lake has given up quantities of sodium chloride, potassium chloride, borax, sodium carbonate, lithium carbonate, and bromine.

Stop #3: Old silver camp of Panamint City. Once the center of wild night- and day-life, active until about 1930, now nearly deserted. A crumbling smelter, made of carefully-dressed stone, testifies to the importance of the town at one time. Now the brick walls topple easily — if shoved at a little. ("Well, it could have fallen on somebody sometime . . .")

Return trip down the canyon. Three wild burros suddenly appear in front of us and careen wildly down the road in front of the lead car. We stop and they study us coolly. Jahns converses with one, to the delight of photographers. The burro, no doubt expecting a handout instead of polite conversation, finally

leaves. We swing west into the gathering darkness and head for the campsite at Darwin Falls.

Camp: In a narrow canyon. A slight trickle of water from a spring brings nervous remarks about flash floods. Dinner setup in the darkness. A water-bomb descends from above onto Jahns' Travelall, innocent expression on all . . . Raccoon climbs down toward food. Chased away, food locked up in the Carryalls. All crawl into sleeping bags. Still prowling raccoon crawls over sleeping student; both startled.

Third Day

Head west toward Darwin, through the Argus Range. Roads graded but disturbingly zigzag.

Stop #1: Summit of Argus Range. Beautiful view of Panamints to east. Interesting structures in the Paleozoic rocks. A few lead mines nearby, where much of the ore is oxidized, so that worthless-looking "dust" runs about 40 percent lead. On past Darwin, heading into Lone Pine.

Stop #2: Route 190, south of Keeler. First view of Owens Lake and the Sierra Nevada, a magnificent sight in any season, no less so now.

Nobody seems to want to say much. Recalling Jahns' comments about Owens Lake being 90 feet deep with packet steamers on it makes one wonder about the worth of the L.A. aqueduct. It seems a shame to lose the reflections of sunrise on the Sierra in the lake to bring water to several millions of people who couldn't care less about scenery.

Stop #3: Into Lone Pine for supplies. Water cans filled, Popsicles eaten. Some students stroll across the road to make the acquaintance of a large desert tortoise, the pet of a little girl not much bigger. Impulse shopping in the nearby delicatessen: "What kind of wine is good with hot dogs?"

We turn our backs on the Sierras, each man planning to return someday. Head onto a dirt road up to Cerro Gordo. Here is where the two-wheel-drive Carryalls get their first test. The road is steep, but well-graded. We make the summit without trouble.

Stop #4: Cerro Gordo mine, at the head of San Lucas Canyon. It started out as a "bonanza" silver mine, later an important lead-zinc producer. We head down San Lucas Canyon, eventual destination Saline Valley.

Camp: We bounce over Saline Valley toward the mineral springs where we will make camp. We pass a pile of shattered rubble that looks like a mine dump. It isn't; it's a small part of a gigantic landslide, 800 feet thick, extending two miles back into the mountains, where the scar gleams whitely.

Camp at the mineral springs. Brave souls try the hot mineral water coursing out of a pipe, find it wonderful. Everyone in camp has a shower, decides that the rough outdoor life isn't so bad at that.

Fourth Day

Sun comes up magnificently for the third consecu-



Professor R. H. Jahns (right) pauses to chat with an old resident of Panamint City, presumably about non-political topics.

tive day. Photo devotees shake themselves awake, grab cameras, and "shoot" the Inyos in the early light. Pack up and load Carryalls. Frank Tuttle startled when a poisonous scorpion scuttles out of his (Tuttle's) sleeping bag; the desert isn't all scenery and fun . . .

Stop #1: Lippincott Lead Mine. A copper-lead-zinc deposit, with a lot of colorful, interesting minerals for the mineral collector. A brief stop, then we head up the road toward the Racetrack Playa.

Road? Ha!

The Travelalls shift to four-wheel drive and groan up a rutted, serpentine track that lines the canyon wall. The Carryalls shift down to low-low and pray. "Are they still there?" one student asks as we round a 160-degree curve. Shaken, we arrive at the summit intact, head east again on the road (now fairly reasonable) toward the Racetrack Playa.

Stop #2: Racetrack Playa. A flat, smooth, dry lake surface, gaining publicity from the boulders and stones that are apparently blown across it, making slight depressions in the surface. Our caravan debouches onto the playa and the Carryall cavalry makes charges at nothing, intoxicated with the feeling of doing a smooth 50 mph thirty miles from the nearest paved road. Jahns points out some genuine depressions or "racetracks," as distinct from the false ones that certain depraved human beings like to construct by dragging rocks behind their cars. Head north from the Playa toward Death Valley National Monument.

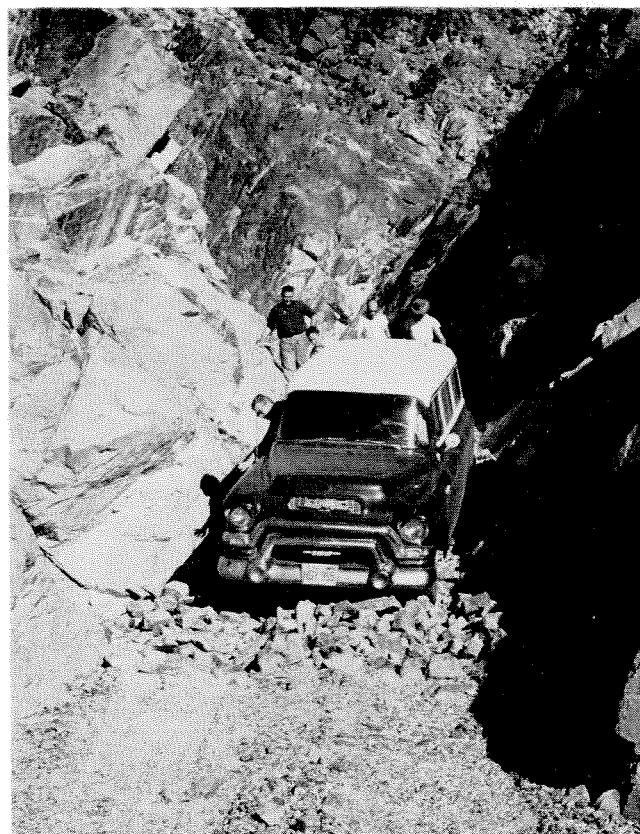
Stop #3: Ubehebe Crater. A gigantic hole, hundreds of feet deep, produced by a volcanic "blow-out" which shattered the lake beds above it and strewed lava "bombs" on the surrounding country. No lava flows are present. The already-colorful beds are further changed by "baking," producing an impressive spectacle. Even the geologists, who can affect a certain blasé familiarity with the mechanisms, stand in awe of the results.

Stop #4: Harmony Borax Works. An early attempt to secure borax by scraping ulexite accumulations from the playa in the valley. A seasonal business, because of the summer temperatures that pass 120 degrees.

Stop #5: Badwater, beneath a steep cliff in "basement" Precambrian, the boundary of a profound fault zone.

Excellent example here of so-called turtleback faults, where the fracture is a curved surface resembling the carapace of a turtle. A lively debate still rages as to whether the faults now show their original shape or were originally flat and bent at some later time. Our discussion, though animated, does nothing to settle the problem. Head south again.

Camp: Ashford Mill site, on the location of a stamp mill for gold ore brought down from the Black Mountains to the east. Dinner and talking by the light of Coleman lanterns. Then to bed, while the clear sky passes overhead, Milky Way and all.



The techniques of non-freeway travel in the Panamints are demonstrated by Carryall drivers, nervously inching down the lower part of Goler Wash.

Fifth Day

Carryalls packed for the last time. We head east, to look at parts of the so-called Amargosa chaos.

Stop #1: Heading up Jubilee Wash, into the "chaos." The "chaos" is a gigantic area of jumbled blocks and boulders, some as large as a city block. Earlier interpretations have suggested that this is the result of grinding and shattering along a gigantic Amargosa thrust fault. Later studies seem to indicate, however, that the origin is largely in place, with the blocks broken off nearby cliffs and moved into the valley by mudflows. The rocks in the outcrop we are looking at are automobile-sized.

A small but vituperative rattlesnake is turned up and carefully avoided by all concerned.

Turn around and head west across dirt roads on the valley floor toward Warm Springs Canyon.

Stop #2: South end of Butte Valley. Striped Butte sits startlingly in the center. Its appearance is due to an alternating black-and-gray section of Permian rocks. No one knows how it got there or where it came from; movement along hidden faults is suspected. The valley is beautiful: no developments, freeways, or billboards. One small winter home of some lucky guy.

We move up to Mengel Pass. The road has never been graded, and is mainly ruts, occasionally passing over piles of rock.



Striped Butte, made of a contorted series of sharply contrasting rocks, dominates the center of Butte Valley in the Panamint Mountains, west of Death Valley.

Stop #3: Mengel Pass. The grave of Charlie Mengel, an old-time prospector who now lies looking back over his country. We look back toward Striped Butte, half-shadowed in cloud, and at the Amargosas to the east, decide there are worse places to be buried. Not many pass by, but those who do are probably the same type of person he must have been.

We move on, down the canyon into Goler Wash.

Stop #4: Lower Goler Wash. We cross the boundary between the young Tertiary volcanics and enter the shadow world of the ancient Archean rocks. The road becomes increasingly bad, and at some point in our descent ceases to justify the term. We lurch down the stream bed and inch the cars over rock ramps, built up over dry waterfalls.

We end our creeping down the wash and come into Panamint Valley. The remainder of the trip is on dirt roads down Panamint Valley, up Layton Canyon, down into Searles Lake, and home. As we climb up Layton Canyon toward the summit, the sun sets and rainbows appear in the clouds above.

We come onto the summit in time to see the sunset again, this time behind the Sierra Nevada. Below, Searles Lake is dim in the twilight. Then we descend onto the lake as a few clouds in the west flare red in the darkness.

The rest is homeward. Dinner in Ridgecrest, where we become reacquainted with such essentials of civilization as beer, rock-n-roll, and television. We arrive in Pasadena about midnight, with the rest of our lives remaining to sort over the events of the past five days.

What do we remember?

We remember a lot of the geological knowledge that poured into us during the trip, but clearer are the sharp mental photographs of individuals and groups during the trip: a small group singing around a campfire, passing a heritage of folk songs into the night . . . the way that sleep came easily under the

stars, as an end to a fine day . . . Jahns' inimitable file of jokes and style of telling them . . . Grant and Schleicher telling Cockney jokes ("But don't you 'ave just a little bit of an onion for 'arry's stew?") . . . the Carryall drivers, who calmly essayed roads that would have panicked the average motorist . . . in short, the company of individuals who needed no more than the world and themselves to give them satisfaction.

What did we learn?

The main lesson may have been one that Lord Chesterfield passed on to his son when he said, "The study of the world is to be found in the world, not in the closet." Geology is the study of the earth, and, no matter how much time we spend in the laboratory, it is to the world around us that we must turn for our information. And more than this. We saw how the lives of countless people had been shaped and modified by the geology of their country, though they may have been unaware of its effect. We learned that geology is people, travel, beauty, and a lot of things that don't find their way into textbooks.

We gained a sense of what has been done in the area we traversed, and of what geological problems remain for study, and how some of us could study them. If every man in his life must face the question, "Why am I what I am?" some of us found some answers on the trip.

So, there is a great deal beneath the casual comment, "It was a great trip. You should have gone." We found many things on the trip: a good time, a nice way to spend Spring Recess, a little more reason to enjoy geology, a little more appreciation for the country we live in, perhaps even a thesis problem, or a renewal of faith for sustaining over the rough spots of a scientific career-to-be.

Many have gone into the desert and come out with less,

— Bevan M. French

Engineering and Science