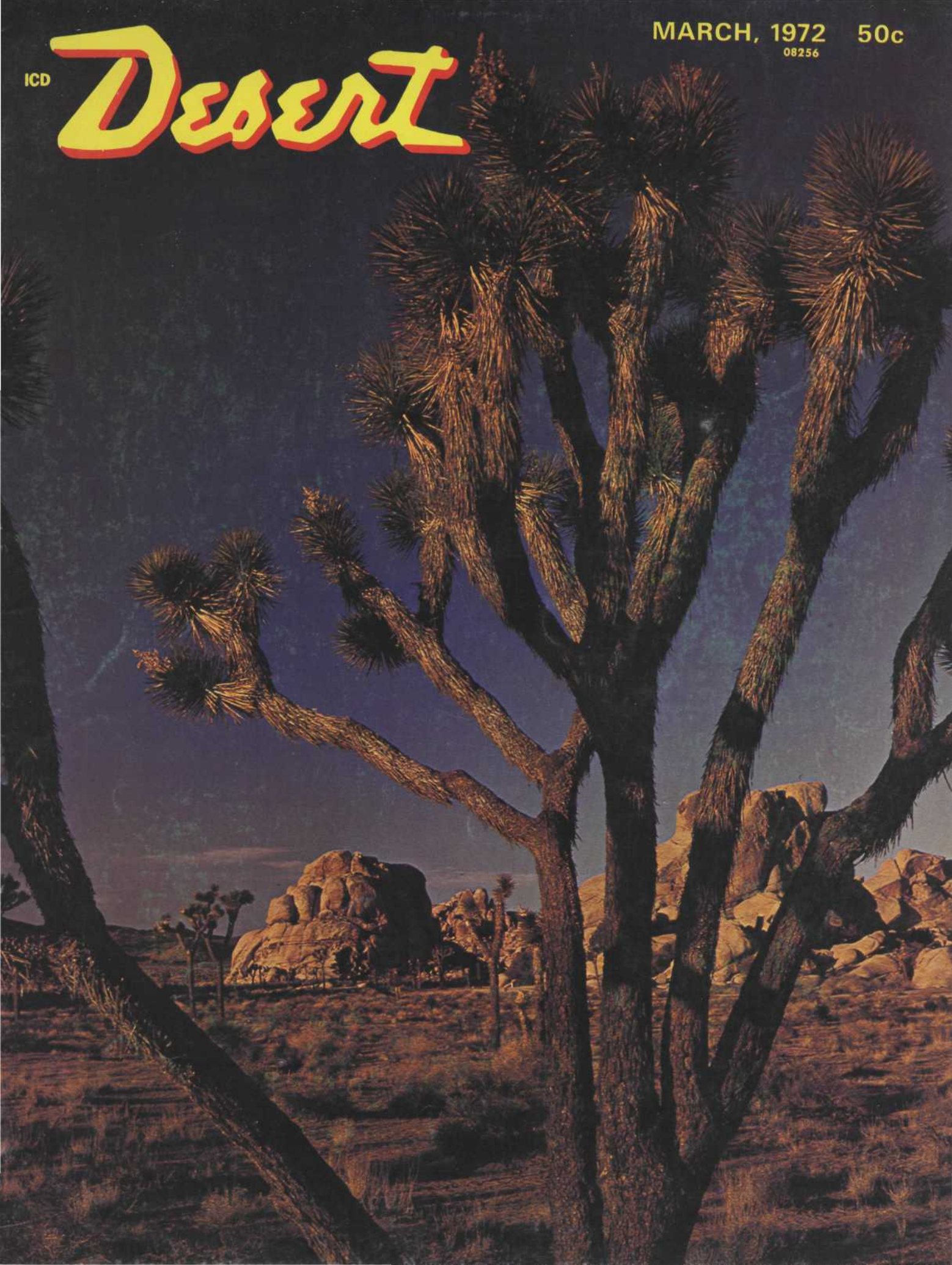


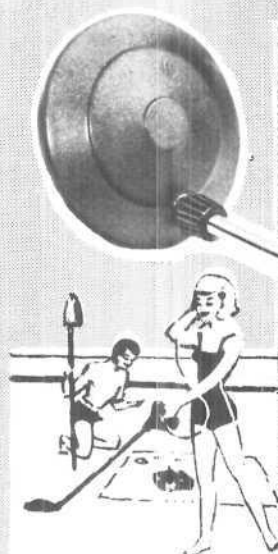
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MARCH, 1972

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A member of the Lily family, the giant Joshua Tree in California's Joshua Tree National Monument is highlighted against the background of a distant quartz monzonite outcrop. Photo by David Muench, Santa Barbara, California.

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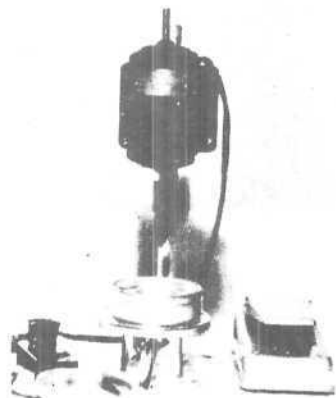
MARVEL BARRETT, *Circulation Manager*

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A Peek in the Publisher's Poke

I WOULD LIKE YOU to meet Enid C. Howard, our new Utah Associate Editor and ambassador of good will. I say that advisedly because, although Utah is her main stamping ground, she is constantly exploring the Southwest and has an insatiable desire to "see what's on the other side of the hill."

Enid recently returned to her home in Monticello, Utah after a three-week trip during which she drove more than 3,000 miles in her four-wheel-drive Jeep pickup camper, sending us reports from Northern California, Utah and Arizona. When asked

why she covered so much territory, she replied, "I like to meet people."

When she first visited Southern Utah four years ago, Enid asked the local residents how she could see the back country. They took one look at her Lincoln Continental and snorted, "Lady, that car wouldn't clear a low bush."

Without another word she drove back to her home near Los Angeles and traded the Lincoln in on a 4WD Jeep pickup. She has been driving it ever since. A year later she moved to Monticello, Utah and, as a passenger with Kent Frost's Canyonland Tours, made frequent trips into Canyonlands National Park.

One day when one of the regular drivers was ill, Kent asked her if she would drive one of the vehicles. Today she is a licensed driver and substitute tour guide.

Enid's love of the outdoors comes from her father who was a prospector in Colorado. He took her on many of his explorations and taught her to respect the wilderness areas. A skilled hiker, she has written articles on the subject for national publications.

How did she learn to write? Five years ago she decided she wanted to "tell people about the beauty of Utah" so she completed a course with the Writer's Digest School. We think she has a natural talent and are very pleased she has joined our staff. We think you will be also when you read her article *Utah's Lavender Canyon* in this issue. During the coming months you will see more of her articles on Utah and Arizona.

When not out exploring, Enid operates the Western Trailer Park in Monticello, Utah. If you are looking for a place to stop with your trailer or camper and/or someone who can tell you about interesting places to see, either by passenger car or back country vehicle, stop by the Westerner. It will become immediately apparent Enid Howard loves Utah, the West—and people.

Speaking of Utah, our May issue will be devoted largely to the Beehive State. We will have articles on many of the national parks, Lake Powell, the Escalante area, plus other features illustrated with both black and white and four-color pictures.



Willen Kuyeth

Book Reviews

by Jack Pepper

All books reviewed are available through
Desert Magazine Book Shop

BYROADS OF BAJA

By
Walt
Wheelock



The 1,000-mile road from the California-Mexico border to the tip of Baja is gradually being paved and it is predicted that within a year the final link in the black top will have been completed.

Today passenger car owners can take a ferry either from Guaymas on the mainland to Santa Rosalia or from Mazatlan to La Paz and drive over a paved road from Cabo San Lucas at the tip of Baja to Santa Rosalia. The north-south section of the road is paved from Tijuana to below Camalu and from Mexicali to San Felipe.

Approximately 600 miles between the two paved sections is still unpaved and can only be traveled by back country vehicles. A few years ago Baja was called the "last wilderness of the West" and only the most seasoned desert explorers ventured into its rugged mountains and arid desert lands.

Today those Baja *aficionados* sadly shake their heads because "Baja is becoming civilized." But even with the *numero uno* highway being paved there will remain hundreds of miles of 4WD roads leading into isolated and interesting areas of Baja.

Veteran Baja explorer and author, Walt Wheelock has written another interesting book on the peninsula. His previous Baja books, *Rough Riding* and *Beaches of Baja* are also available at the Desert Magazine Book Shop.

In *Byroads of Baja*, the author presents

the history of Baja and explores back country roads which lead to Indian ruins, missions and abandoned mines. As he describes the things to see he presents the history of the various areas from the days of the prehistoric Indians, the original "discovery" of Baja by the Spanish, the "saving" of the Indians by the missionaries, the revolutions and the influx of the *Norte Americanos*.

Whether you are a veteran Baja traveler or planning your first trip into this fascinating country, *Byroads of Baja* will open new vistas. Paperback, illustrated, 72 pages, \$1.95.

EASTERN SIERRA JEEP TRAILS

By
Roger
Mitchell



United States Highway 395 winds through the Owens Valley along the eastern slope of California's Sierra Nevada Mountains from the southern boundary of Inyo County to Mono County on the north.

Along this 215-mile highway, roads lead to some of the finest recreation areas in the world with 2,000 lakes and 5,000 miles of streams. Many of the spots can be reached by passenger car, but many more isolated and uncrowded areas are available only to hikers or drivers of back country vehicles.

Author of *Death Valley Jeep Trails* and *Inyo Mono Jeep Trails*, Roger Mitchell in his new book explores the scenic roads of the Eastern Sierra Mountains.

The jeep trails described are all on public lands administered by the Sequoia National Forest, Inyo National Forest, Toiyabe National Forest and the Bureau of Land Management. Although they are all Federal agencies, their regulations and policies do not always coincide.

Mitchell describes these regulations and tells what back country travelers can and cannot do in the areas he explores. This information will prevent you from violating the various regulations and laws.

There are ten different trips and areas described in the book with detailed road

mileage provided along with what to look for from both recreational and historic interest.

When making these trips don't forget to bring your fishing tackle as the trout in these back country areas are always hungry!

Paperback, 36 pages, illustrated, \$1.00.

BAJA BOOKS

Desert Magazine has published more articles on Baja California than any other regional or national publication. Our Book Store also has a complete selection of the most outstanding books on the peninsula. If you are planning a trip "south of the border" we will be glad to help you and provide information to make your safari more rewarding. For our books on Baja see the listing in this issue.

Books reviewed may be ordered from the DESERT Magazine Book Shop, Palm Desert, Calif. 92260. Please include 50c for handling. California residents must add 5% sales tax. Please enclose payment.

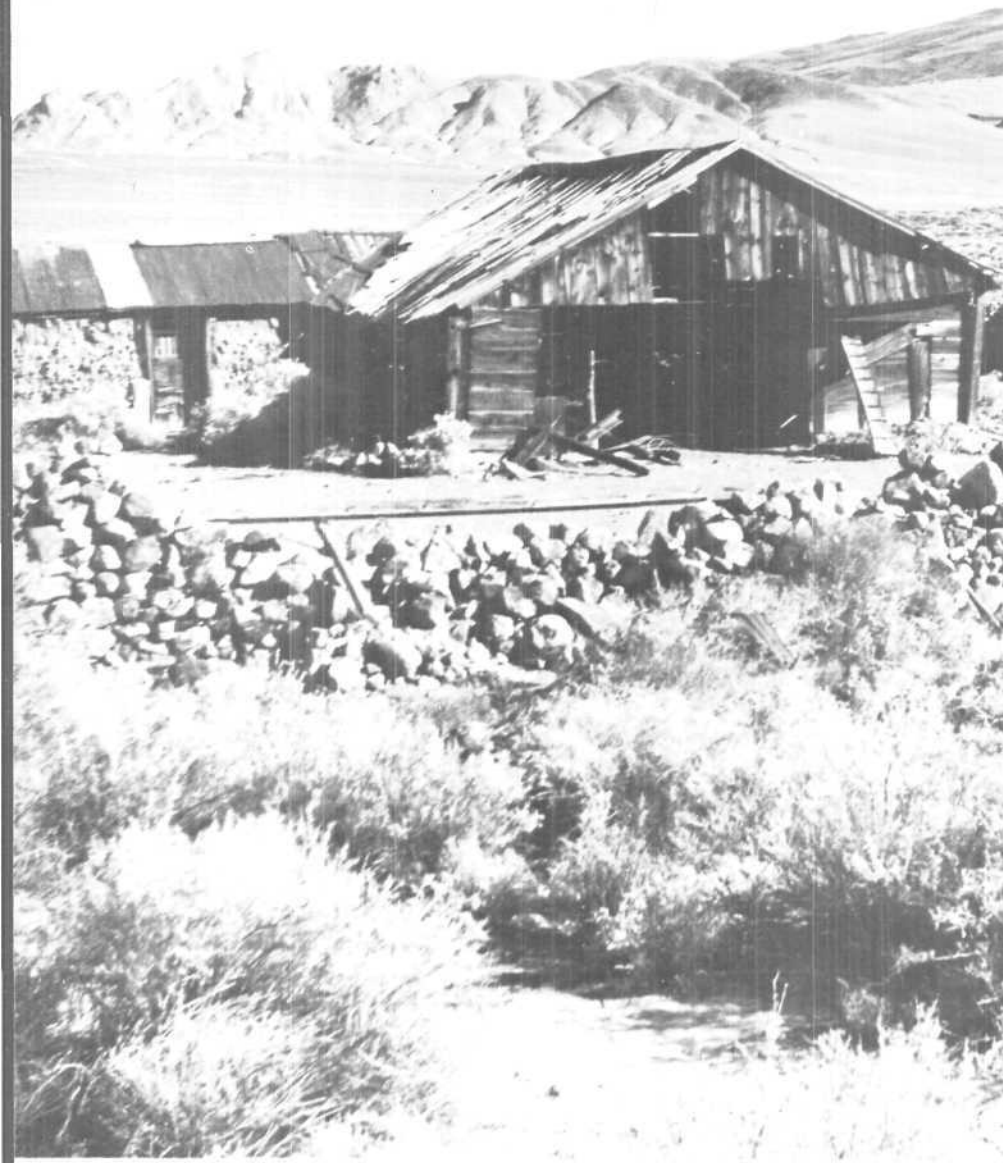
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by
Mary Frances Strong

Photos by
Jerry Strong



Marietta's century-old stage station (above) has withstood the ravages of time remarkably well. Beautifully fitted, hand-hewn work in walls of a former building (right) at Marietta attest to the skill of the early-day builders. Desert blow sand (opposite page) is gradually covering Borax Smith's plant on Teels Marsh.



THE SIX-HORSE stage paused briefly at the summit to rest the winded animals. Almost immediately three armed men stepped from behind granite boulders. "Throw down the strongbox," one man quietly demanded. The order was hastily complied with and, just as hastily, the highwaymen departed with their loot—eight bars of bullion.

It was the year 1876 and such holdups had become almost commonplace on the stage run out of Marietta, Nevada. Located in a broad, high basin and isolated from the outside world by a ring of mountain ranges, this mining camp seems to have had more than its share of lawlessness.

The latter apparently reached its zenith in 1877 when a number of gunfights occurred and the stage was robbed thirty times. This was also the year when Marietta officially became a town. Perhaps "Naughty Marietta" would have been a more appropriate name for the little community on the edge of Teels Marsh in Mineral County.

Marietta came into existence in the early 1860s following the discovery of a large silver-lead deposit in the Excelsior Mountains. The Endowment Mine was developed and it produced rich ore for many years.

During this period, mining also began on Teels Marsh to furnish salt for the

mills at the new silver camp of Aurora. A simple, highly productive method was used to obtain a 99.85 percent pure product from the dry lake bed.

Surface material was dissolved in nine iron boiling-tanks, each eight feet in diameter and seven feet deep. The hot solution was then decanted from the concentrate. As this rich, sodium chloride liquor cooled, it recrystallized into nearly pure salt. By 1867, pack trains of heavily-laden mules were carrying this sorely needed commodity over difficult mountain and valley trails to Aurora's greedy mills.

Silver and salt were not Marietta's only claim to fame in Nevada's mining annals. In 1872, Francis Marion Smith (destined

NAUGHTY

MARIETTA



to themselves. Perhaps it is understandable to find they resorted to opium smoking to blot out the ugliness of reality.

From 1874 to 1883, the Smith brothers produced 9,000 tons of borax; five times that of the state's second largest producer—the Pacific Borax Company. Due to this initial success, Smith was able to extend his operations to California. He later made

numerous stock purchases in European countries and eventually controlled the borax markets of the world for over 20 years.

Marietta had begun to grow during this period. The mines in the hills were keeping a five-stamp mill busy and a hundred men employed. With an influx of foreign-

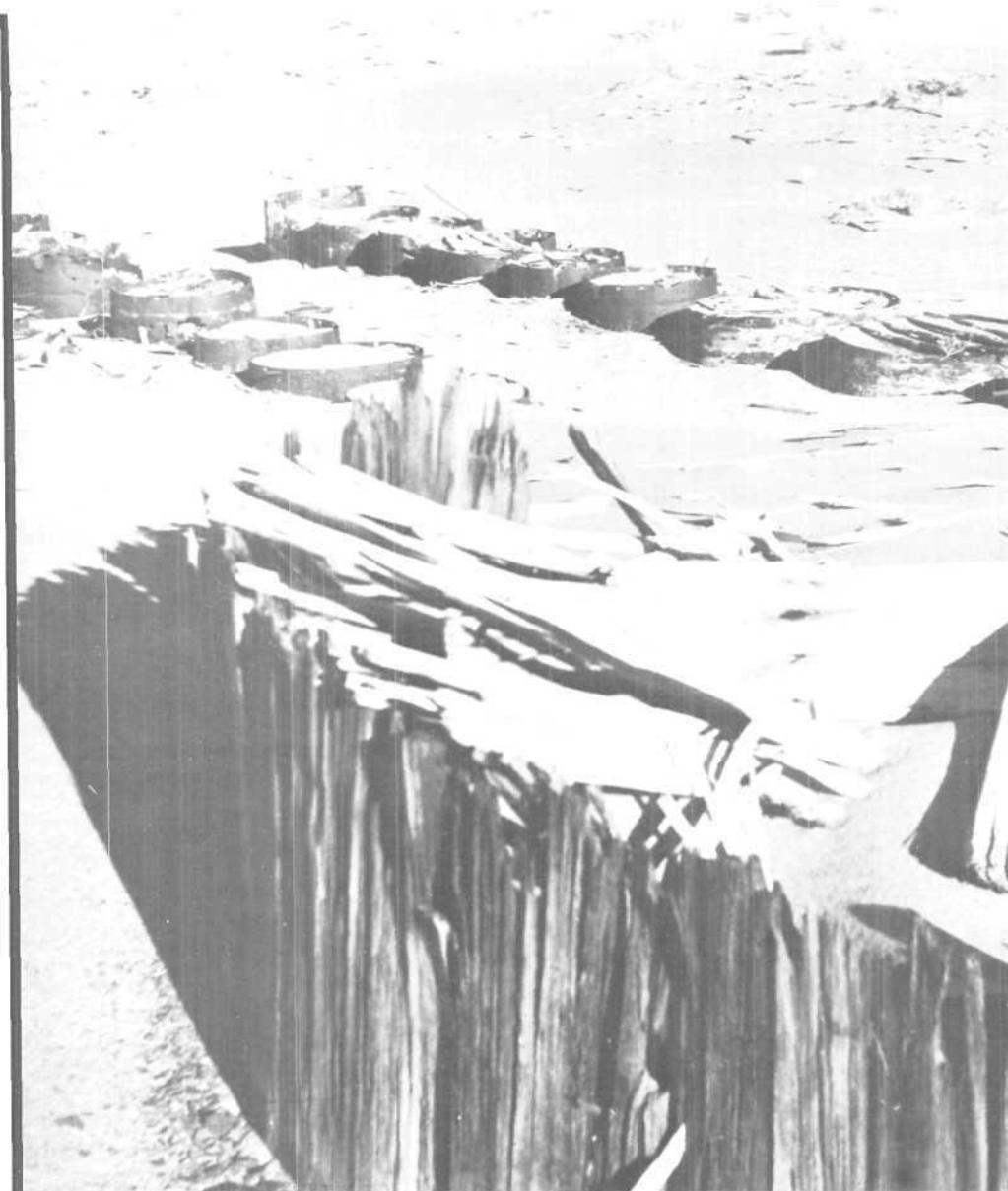
continued

to become known as "Borax" Smith) discovered a rich borate deposit on the southeastern end of Teels Marsh. A year later, in partnership with his brother, Smith built the largest borax plant in Nevada.

Hundreds of Chinese laborers were brought in to mine the borax. Working a 12-hour shift with a pay scale of \$1.00 to \$1.25 per day, their life in mining camps was never pleasant. Two men were housed in each six by nine foot structure with a center ridgepole six feet high. Such a small space for eating, sleeping and living quarters must have been cramped to say the least.

Discrimination was commonplace in the camps and the Chinese were forced to keep





Vats at the Teels Marsh borax plant today are being covered by blow sand.

born miners, Indians and hundreds of Chinese, the population soared.

A post office, small business district, daily stage, several bawdy-houses and 13 saloons were all doing a good business by 1880. The latter, no doubt, helped to keep the "touchy tempers" of a mixed population near an explosive point. Too often the differences of opinion were settled by guns.

The borax deposit was exhausted during the 1890s. The plant closed down and the decline of Marietta began. Though many of the mines continued to produce into the 1920s, they couldn't support a town and the people drifted away.

A trip to the site of Marietta and Teels Marsh offer the back country adventurer a photogenic, as well as, a historic region to explore. A road sign "Marietta" on Nevada State Highway 10 marks the turn-off and seems to imply the former mining camp is still active. It is not. Nor is it a ghost town since several buildings are occupied.

Though still isolated, the area is easily reached via a graded road which follows a natural gateway between the mountains. The climb is gradual and you are unprepared for the abrupt escarpment at the six-thousand-foot summit. Spread out over a thousand feet below is a bowl-shaped basin; its white, salt-encrusted marsh shimmering in the sunlight. The remains of Marietta are clearly visible in the northern edge of the marsh. The road now curves and makes a quick descent in just under five miles.

Marietta's ruins are quite extensive—many stone cellars, foundations and walls scattered over a sizeable area. Two of the standing buildings are occupied. A windmill, trailers and old buildings west of the site are the residences of men developing a local silver mine.

The old stage station consists of an adobe hut attached to a wooden stable with a large rock corral. It is very photogenic. It has been standing for nearly a hundred years and has held up remarkably well.

Browsing around Marietta it is possible to chance upon an old bottle or other memorabilia. There has been some digging by bottle collectors. However, I would guess the present "towns-people" would not permit any such action on a large scale.

A dirt road leads south from Marietta across the eastern edge of Teels Marsh—

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VICTOR VALLEY'S



Digging for bottles near an old Oro Grande homestead yielded 41 excellent finds. Photos by the author.

THE WINDS which blow eastward down from Cajon Pass sweep into the Mojave River basin, loosely called the Victor Valley. This extended aggregate of communities and ranches in Southern California's San Bernardino County is traversed by Interstate 15 and Highways 66, 395 and 18, plus numerous secondary roads, many following paths and routes established shortly after the Civil War.

The Mojave River trough is a natural westward passage out of the arid valleys flanking the lower Colorado River. Indian bands, Spanish explorers, emigrants, prospectors and men of commerce follow-

ed the sandy banks of the Mojave, counting on water and shelter amidst harsh expanses of high desert wilderness.

Mining did the most to first populate this area. Stray prospectors coming south from the Mother Lode began to unearth rare metal in the stark hills north of what is now Victorville. The scattered inhabitants along the Mojave, however, were more concerned with wagon caravans and farm expansion than the grubstakers poking around the mountain slopes.

But by 1870 the overland stage made stops at a gentle turn in the river, shafts and tunnels were being driven, and the name "Silver Mountain Mining District"

was prime conversation. There was even talk that steel rails would cut through the valley toward the sea.

The Sidewinder and Embury mines gave undeniable testimony to the mineral wealth buried not far from the sleepy farms among the Mojave cottonwoods. By 1885, the towns of Halleck (now Oro Grande) and Hesperia were rail stops. Ore from Silver Peak and what is now Black Mountain (north of Apple Valley) was bringing people and progress to the high desert. A railroad telegraph station and switching site built near the rocky Mojave narrows and the Verde Ranch became Victor, named in honor of Santa Fe

SILVERY LINING

by
Van P.
Wilkinson



This was a stage stop for weary travelers during the early 1900s. Ranches along the Mojave River date from 1870

construction boss, Jacob N. Victor. Due to postal confusion with Victor, Colorado, this growing community was renamed Victorville in 1901.

By the turn of the century, non-metallic mining and quarrying began to eclipse gold and silver operations. Great quantities of cement (and related commercial minerals such as lime and marble) made the Victorville region a primary supplier of building compounds. During 1918, Southwest Portland Cement was shipping cement from its large, year-old plant northwest of Victorville. Riverside Cement's plant was built further north along the river, on the spot where lime kilns

once stood in Halleck.

The best way to explore this historical area is from old Route 66. By taking the George Air Force Base-Oro Grande turn-off from Interstate 15, you'll emerge on the northwest edge of Victorville just up river from Southwest Portland Cement. Head northwest toward the Air Base and you'll parallel the A.T.&S.F. rails past the cement plant. Continue on beyond Air Base Road cutoff a couple hundred yards and turn left (west) onto Turner Road, the only paved road before the bridge over the Mojave River.

Turner Road runs along a gentle bend in the river. Some of the crumbling shacks

in this marshy region date before 1880. On the south side of Turner Road stands a whitewashed house with an odd water pool structure by the roadside. It is here the Mormons and other settlers rested before heading on toward Cajon Pass; in 1852 the Mormon's trade route branched southwesterly across Baldy Mesa into the west mouth of Cajon Pass; and the Panamint Stage paused before striking northward through Point of Rocks (now Helendale) toward Death Valley. Within three miles of this stage stop, my wife and I dug up 41 old bottles adjacent to an abandoned homestead.

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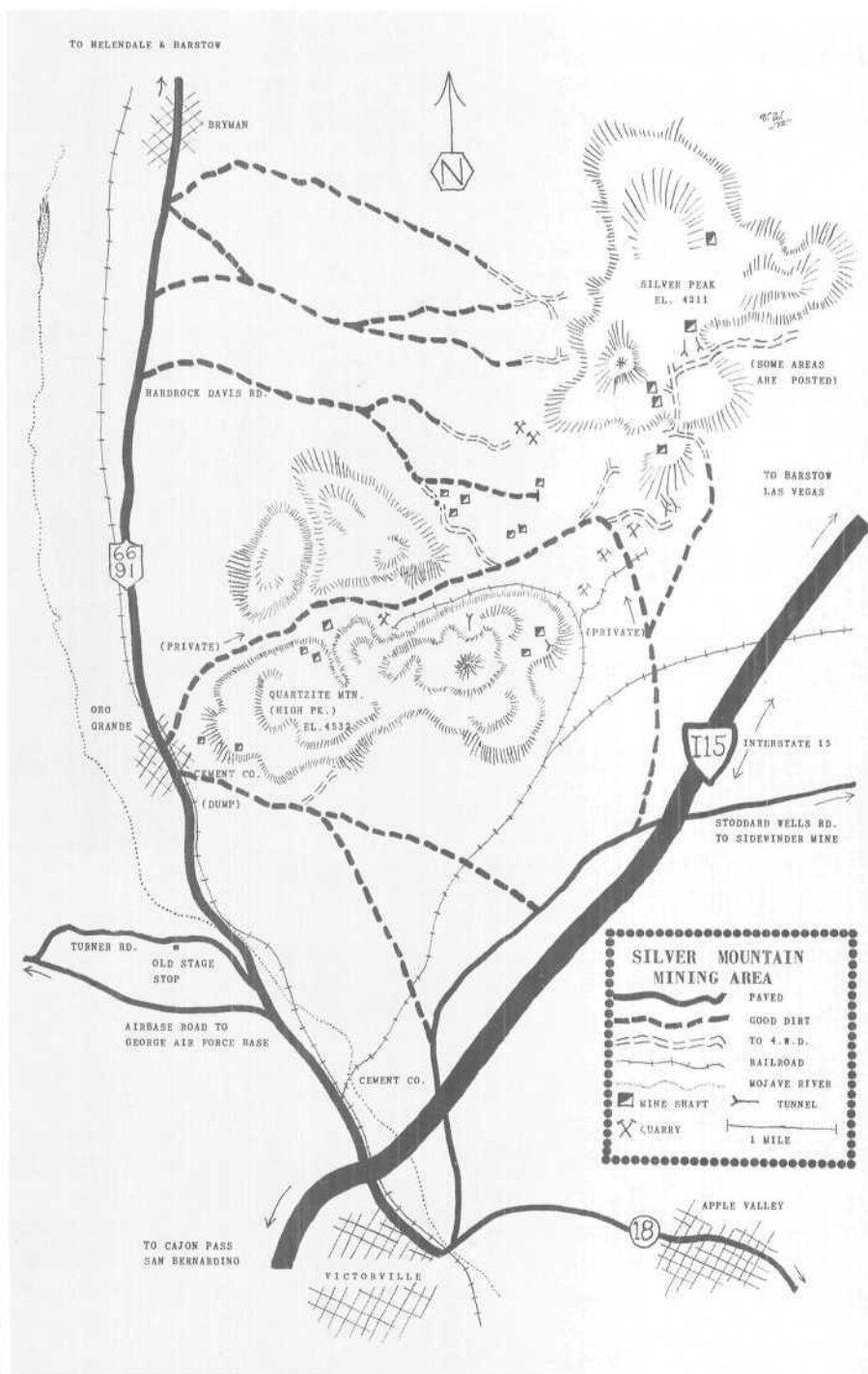
enter Oro Grande and see the Riverside Cement plant. Just southeast of the plant, across the railroad tracks and into the hills, is a dirt road heading up a wide, trash-strewn wash. Further up the wash is the site of the Oro Grande dump. Beyond it the steep road crests a little ridge and continues east along the base of Quartzite Mountain. Most of the roads into the hills behind the cement plant are private; secure permission at Riverside Cement if you must enter from this direction.

To avoid this, drive on north out of Oro Grande about three and one-half miles. Watch on the right (east) side. A large wooden sign reads "Trojan Batteries."

Turn right here next to a home—this is Hardrock Davis Road.

East on this good dirt road is a public-access region, first mined before 1880. The road ultimately dead ends at a gate and cabin. About one and one-fourth miles before the dead end is a fork in the road which follows a narrow wash to the right (southeast). Less than one-half mile along this wash are numerous prospects, two major mine shafts, and an abandoned cabin. Parts of this road are for good-traction vehicles only.

Driving on past the cabin and up over low foothills, one finds a deteriorating road which dips into a very sandy (4WD)





Crumbling railroad dock near Victorville's massive open pit quarries. Although some "No Trespassing" signs are evidently from World War II, do not enter the newly posted areas.

arroyo and eventually joins a wide, graded cement company road.

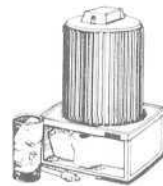
Other roads north from here toward Silver Peak lead to small sites of random shafts and tunnels. Most of these "mini-mines" are left overs from the 1890s, currently being held by die-hards who are awaiting a revaluation of precious metals so they can reopen these low-grade deposits. Signs in good condition warning "No Trespassing" could be honored, but some are rotting placards put up during World War II, and obviously serve no purpose.

On the east side of Quartzite Mountain several mammoth pits in the jagged landscape are all that remain of a marble quarry. Looked to as a source of delicate, rare marble, Victorville shipped the lucrative mineral all over the western states for decorative use on buildings and walkways. Access from Stoddard Wells Road is posted, but a 4WDer can get a spectacular view of the abandoned operation from the hills west of the quarry.

This entire mineralized area, from the Mojave River east to the Sidewinder Mine, is worth your time to visit. A casual

afternoon drive along old Route 66 immerses you in turn-of-the-century history. Investigatory trips off the road can only be described as exquisite. ☐

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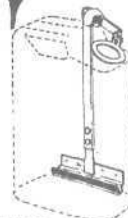
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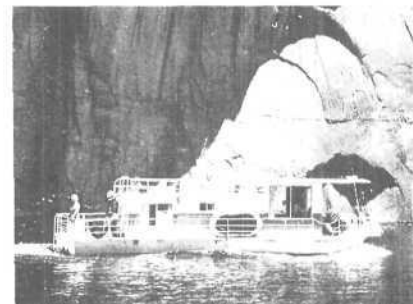
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Monument to a Dreamer

by George Thompson

*Inside photograph of the
Cave Mine at Bradshaw City with light
filtering down through a natural
opening was taken by the author.*



JOHN W. BRADSHAW was a convert to Mormonism from England, who somehow found his way to the little settlement of Minersville, in Utah's Beaver County. Why he chose Minersville as his future home is hard to understand, for he wasn't a miner, and he knew nothing of mining.

John Bradshaw did have one advantage over his neighbors who were more knowledgeable about mining matters than he—he was a dreamer, a man who had special insight to where nature's secret hiding places of gold and silver were. The strangest thing about John Bradshaw's story, however, is that it is true!

Minersville was just another sleepy little Utah hamlet until 1857 when U. S. Army troops under the command of General Albert Sidney Johnson marched against the Mormons during the Utah War. The latter desperately needed lead for bullets for their defense, and as early as 1852 James Rollins had been digging what he thought was lead from an old Spanish mine which he had discovered four miles north of Minersville.

With the approach of the federal troops, Mormon leader Brigham Young sent a party led by Issac Grundy to build a smelter near the Rollins Mine. Grundy built a "Mexican type furnace" on the Beaver River near Minersville in 1858.

The Utah War was nearly over before Grundy's smelter produced any great

amount of lead. Ore from the Rollins Mine didn't prove satisfactory for bullets anyhow, for something in the metal made it too hard to cast bullets properly. That unknown "something" proved to be silver, and silver made Beaver County famous. The mine was worked after hostilities ended, and by 1862 a mining camp named Lincoln had grown up nearby, the Rollins Mine by then having been renamed the Lincoln Mine in honor of President Lincoln. Both Lincoln and Minersville were booming, but probably not as much as one Salt Lake City reporter claimed when he described Lincoln as being, "A goodly town, with over 100 houses and fully 500 people. Business is lively and all signs point to permanent prosperity."

Not everyone was happy, though, for John Bradshaw watched while mine owners at Lincoln and businessmen at Minersville became rich, and he dreamed that he might one day become wealthy also. Then one night Bradshaw had a dream, and in his dream he went into the mountains north of Minersville and there, in a remote place, he came upon a cave which had never been seen by anyone before. Inside the cave there was a packrat's nest, and in the nest he saw nuggets of shining gold!

Bradshaw told everyone who would listen about his dream, but they only laughed, for he was only a dreamer who

knew nothing about mining. Bradshaw wasn't a strong man, and he didn't even own a horse. But his dream was so real he set off on foot into the mountains, tying pieces of colored string to cedar tree branches along the way so he wouldn't become lost.

Finally, when he was too tired and weak to go further, he saw his cave, high on the canyon wall, seven miles north of Minersville. Bradshaw climbed to the cave with renewed strength and there, just as it had been in his dream, was the packrat's nest, and in it were glistening pieces of yellow gold!

John Bradshaw's Cave Mine was one of those strange puzzles of nature, for the cave proved to be a great limestone cavern, with hanging icicle-like stalactites heavily encrusted with sparkling silver crystals, and narrow veins of gold-laden quartz criss-crossing its walls.

Bradshaw persuaded others to return to the cave with him, and it was not long until a line of cabins sprang up along the canyon bottom below. A boarding house and saloon quickly made their appearance as well as a general store. Ore from the cave was hauled to mills at the rival mining camps of Hickory and Frisco to the west, as well as to the Godbe Smelter at Minersville and Grundy's "Mexican furnace."

The Cave Mine was a fine producer of silver, gold and lead for several years,



Mine goes directly north out of Minersville.) The road fades into a trail just below the mine. Just inside the cave entrance there is an old blacksmith forge under fire-blackened walls where drill steels once were sharpened.

Broken pieces of ancient stalactites can be found on the waste dump outside the cave. Near the edge of the cedars across the canyon from the mine, a simple headstone stands by a lonely grave. Its inscription reads simply, "John Hayes, 1886." It could be Bradshaw City's epitaph also.

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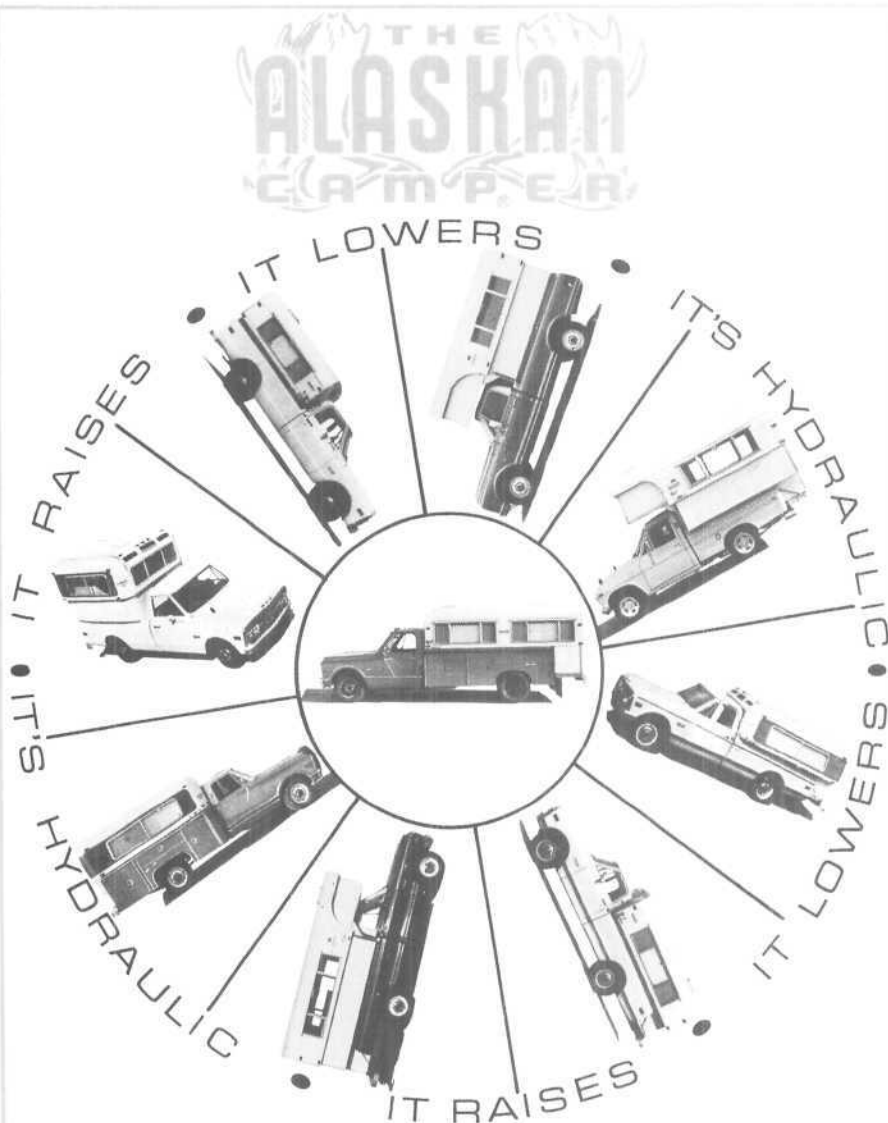
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and the little camp known as Bradshaw City had the reputation of being a lively place while it lasted.

But the honor of having a town named after him was about all that John Bradshaw ever received from his dream, as shrewder men soon swindled him out of his find. But today John Bradshaws' name is still remembered around Minersville and Beaver County, while those who cheated him are forgotten. Perhaps that is his monument.

Today the narrow dirt road leading to the Cave Mine and Bradshaw City leaves Utah State 21 six miles west of Minersville, snaking its way up Cave Canyon. (The road to the famous old Lincoln



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THE ACTIONS OF THE "FAIR SEX" 100
YEARS AGO WHEN THE MEN OF PIOCHE,
NEVADA TRIED TO START THEIR OWN
LIBERATION MOVEMENT?**

They Didn't Stand A Chance!

by Craig MacDonald

IN THE 1870s, Pioche was a man's town. So much so that it had the reputation of being the wickedest mining camp in Eastern Nevada.

"Some people do not hesitate to fire a pistol or gun at any time, day or night, in this city. Murderers who shoot a man in the back get off scot free but the unfortunate devil who steals a bottle of whiskey or a couple of boxes of cigars has to pay for his small crime," a local newspaper reported.

Pioche is said to have had 75 deaths of violence before anyone died a natural death. Not aiding to the sanity of the town of 6,000 were the 72 saloons which kept their inhabitants well lubricated.

As is the case in all diggings, times change and by 1875 Pioche was losing its reputation as a wicked, rip-roaring town. The reason? Due to the male abundance there was a female influx into town. Each stagecoach of women worsened the already chaotic situation.

What was even more disheartening to the town's reputation was that these dames were marrying and "civilizing" the rugged miners.

A group of concerned citizenry, not willing to give up without a fight, formed an organization to counter balance the female problem. The July 8, 1876 *Pioche Daily Record* reports, "An association is being formed in Pioche amongst the unprotected male sex, the object being to protect themselves from the encroachment of the female sex, which of late have become so dangerous, that the poor male is getting to be an object of pity.

"Many have lately been caught up and married before they hardly knew it. Females are arriving from all directions by stages, private conveyances . . . In consequence of this frightful state of affairs, men are getting so timid that they hardly dare venture in the streets for a short walk for fear they will be married men before they can return. This association proposes to ameliorate the condition of affairs."

That night the Single Men's Protective Association crowded into a private, smoke-filled room, for the purpose of devising ways and means whereby single men could be protected from the "rapidly increasing encroachments of the fair sex."

Elected to office were C. H. Patchen, president; W. P. Goodman, secretary; Julius Hoffman, treasurer and Joseph R. Hoag, sergeant-at-arms. Hoag's job was to allow no female, on any pretense what-

ever, to enter the meeting room during the deliberations of the assemblage.

After a \$5 dues was collected, a resolution was introduced to the effect that "owing to the alarming increase of marriages in Pioche, each member should pledge himself to withstand the wiles of all females (exercising the undoubted right of that sex in leap year) who should propose to any member during 1876."

The resolution excited considerable discussion, members claiming that without protection being guaranteed each and every one, and their being backed up by association, that they would be driven into marriage by sheer force if caught alone and unprotected.

It was at this point in the congregation that a large thud was heard outside the door, followed by a tremendous crash. The locked door was being battered down. Moments later a bevy of females, who evidently learned the object of the meeting, stampeded into the room. The male occupants fell over chairs and tables in an effort to reach the nearest window.

Protective Association members made headlong dives out the windows but whether they all succeeded in escaping, "time will tell by their names not appearing amongst the list of marriages in two or three days."

Nothing was heard about the Single Men's Protective Association until July 15 when the *Pioche Daily Record* carried the following article: "The members of the Association, having finally recovered from their panic and bruises of last Saturday evening, will hold another meeting tonight, at which time they will elect a new sergeant-at-arms, as the present incumbent declines to serve any longer.

"He states, and with pretty good reason, that his experience of last Saturday evening, in being knocked down and trampled upon by a swarm of indignant feminines, is not exactly the kind of business that he enjoys as well as he does breakfast, and he thinks someone else should hold that post of honor for a few meetings.

"It is whispered around that the treasurer is a little short on his collection and trouble may be anticipated if accounts do not come out square."

What did occur at that evening's meeting is known only by the members that attended. The Single Men's Protective Association of Pioche was never heard from



Sketch of the "free men" of Pioche was drawn by H. Davidson.

again but rumors have it that the group went underground and held gatherings under the oath of secrecy.

As to the success of the Association in its goals to keep members single and to win back Pioche's tough reputation, only time can be the judge. Churches and court-houses were built and the marriage tally lengthened.

To the happiness of many but to the sadness of some the Pioche paper reported, "The people of this city have been on their good behavior for nearly two months now and there have been no homicides or altercations."

Pioche had become civilized. Its label as the wickedest mining camp in Eastern Nevada had "bitten the dust." □

Pioche circa 1873. Photo courtesy Nevada Historical Society.





Utah's Lavender Canyon

by Enid C. Howard

SILENCE, AND the delicate mist of desert haze over the high walls and valley, introduce you to Lavender Canyon as you round the sawtooth cliff that heads Bridger Jack Mesa at Indian Creek. It is accessible, but delightfully remote.

As the result of a bill signed by President Nixon last November, Lavender Canyon is now part of Utah's Canyonlands National Park. And it has everything to make it an exciting addition to the park—outstanding scenery, a fine assortment of natural arches and caves, it is a hiker's paradise and a photographer's photogenic world. Then too, Lavender's deep sand, stream-bed road is the natural habitat of outback enthusiasts, negotiable only by 4WD's or dune buggies.

Access to Lavender Canyon is from U.S. 163 between Monticello and Moab, Utah. We began our mile log at Monticello driving north on 163 to Church Rock. (Old timers in the area, called it, "The Whiskey Jug.") The Canyonlands National Park, and the Indian Creek State Park sign directs us left. Log 15 miles.

The hard surface road winds down into Indian Creek, where the lush hidden valley below the mesa surprises the visitor with its quiet meadows and grazing cattle,

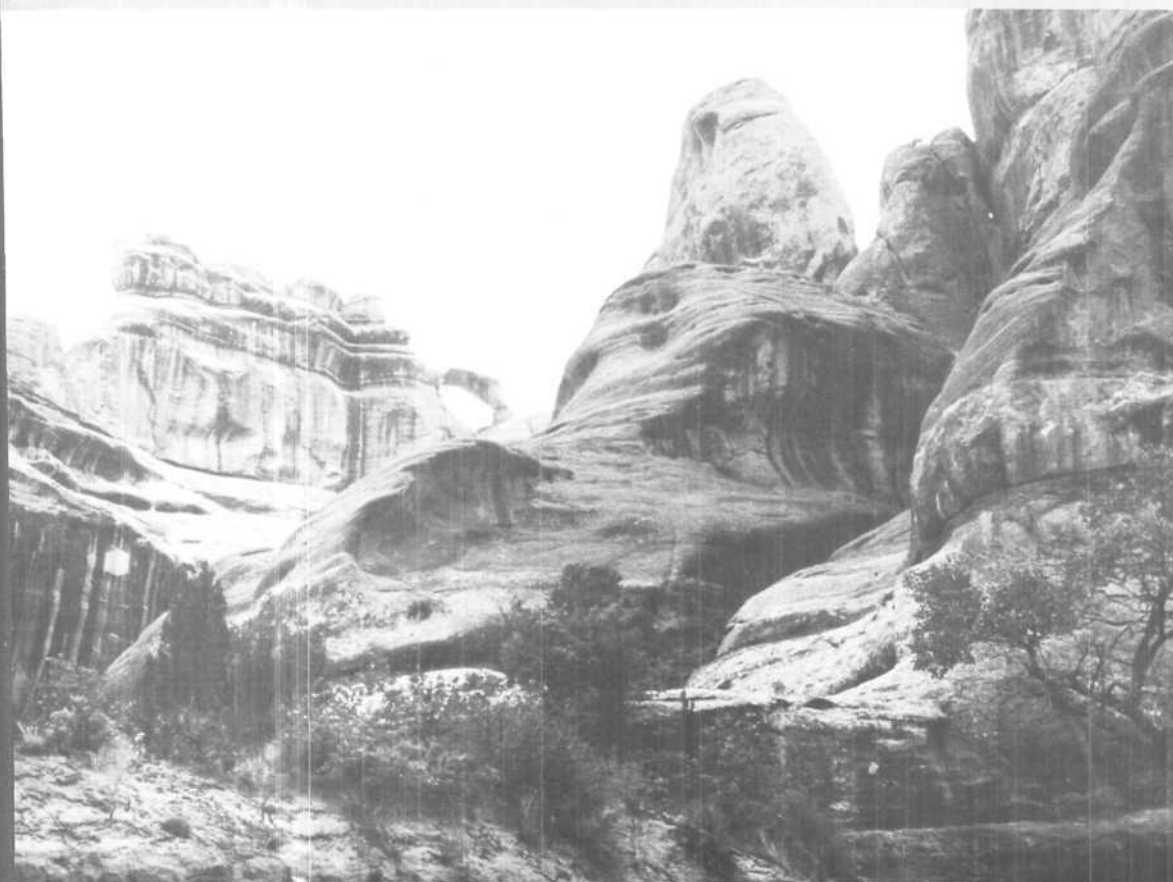
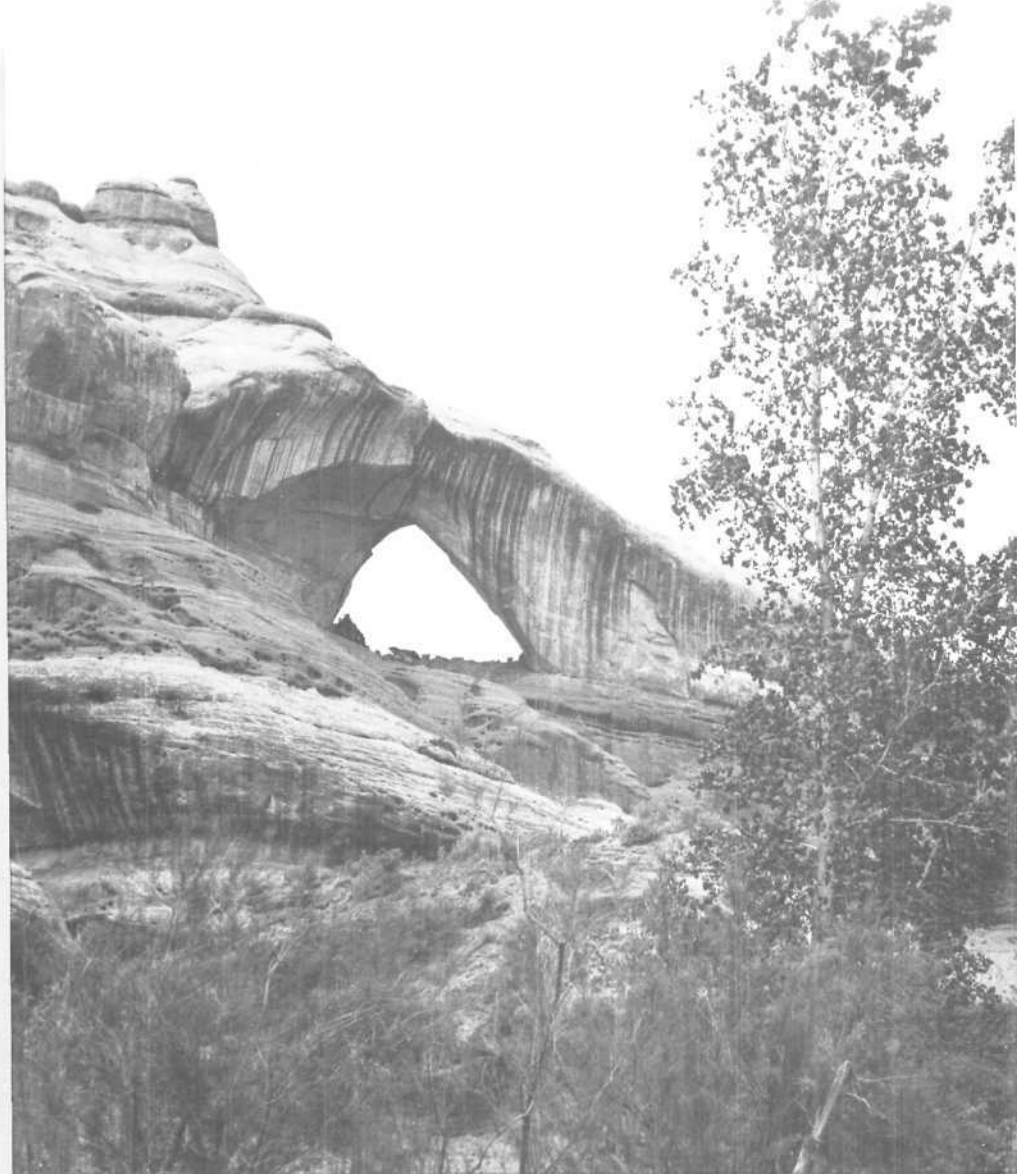
majestic cottonwood trees, and the cathedra walled buttes that jut into the valley floor where Indian Creek cuts its channel to the Colorado River.

Indian Creek knows well the footsteps of man, for it has been host to his passage for hundreds of years. Newspaper Rock petroglyphs at Indian Creek State Park depict three different periods of Indian occupation. Early pioneers homesteaded along the waterway, then came the cattlemen who established ranches. Today it is the domain of picturesque Dugout Ranch, headquarters for the Indian Creek Cattle Company.

Mile 34 at Dugout Ranch, turn left and follow the road through the ranch yard, drive slowly. It is wise to stop before crossing the creek and engage 4WD. Pass sign, *Entering Elk Ridge Hunting Area*, then right turn onto two-track dirt road and follow around corrals. The first canyon fading southwest is North Cottonwood Canyon.

As you approach a rail gate, there are some interesting petroglyphs on a large boulder near the road on the left side. Rule of the range—if you find gates closed, close them after you, if open, leave them open.

Beyond the gate, abandoned buildings mark an old uranium mine, The Royal, which operated during the uranium boom of 1953, and produced pay-dirt ore for the



Lavender Canyon abounds with majestic arches and formations. Largest of the giant geological formations (opposite page) is Train Arch. Cleft Arch (above) as it appears from below. Free-form walls (left) frame Pedestal Arch. Photos and map by the author.

owners. DO NOT enter the open shafts, they are not shored. Continue on dirt road past a group of low mounds of the colorful Chinle strata on the left.

The geological sequence throughout Indian Creek and its tributary canyons, including Lavender, are, beginning with the top formations and working down—cream-yellow almost white Navajo sandstone, the cross-bedded, red-maroon sand shale Kayenta, the distinctive vertically fractured, red walls of Wingate sandstone, below that the soft, grey-lavender Chinle which often contains petrified wood. Below the Chinle lies the Shinarump, the grey to yellow coarse-grained deposits sometimes contain fossil wood as well as uranium ores.

As we progress into Lavender Canyon the walls become higher, and we pass through the stratas below the Shinarump, the chocolate-brown Moenkopi, then into the Cedar Mesa Sandstone formations which make up the walls of the inner canyon to its head. Cedar Mesa Sandstone is usually cream-white to yellow-brown, pink or red, very fine grained and cross-bedded. Weathering produces platforms, arches, windows, and the amusing "biscuits" perched atop columns.

Mile 38 a wire and post gate. The two-track road will swing southwest around the sawtooth cliff that marks the entrance to Lavender Canyon and the road follows the contour of Bridge Jack Mesa for a few more miles. About mile 43 the road separates. Take the right fork and cross the canyon towards South Six Shooter Peak and you will soon be in deep sand as the tracks take to the creek bed. It is best to follow established tire marks to keep out of trouble, and the Bureau of Land Management will appreciate your staying on jeep trails and not starting new erosion patterns.

An interesting side canyon to explore is Dry Fork Canyon. Mile 45, there is a large, lone cottonwood tree in the center of the creek channel, swing left into the entrance of Dry Fork and continue to follow jeep trail. Watch for the arches on left and right sides of the canyons; there

are two that have not been named. Soon you can drive no further, but a short hike ahead on a well established horse trail leads to the very aptly named Train Arch. And a train it does resemble, for the chain-like formation has weathered to the contours of a string of railroad cars.

Out of Dry Fork Canyon the jeep tracks lead left into Lavender. Near mile 50, (vehicle speedometers vary, mileage is approximate) an arch appears on the skyline on the right that we called Pedestal Arch, (no known name) and a short distance on, Cleft Arch, also on the right, dominates the canyon. This is an excellent spot to establish a camp, as the area is ideal for hiking and exploring.

The first small spur canyon south of the arch contains an interesting small Indian ruin site. For those who must climb up and walk under Cleft Arch, the approach on the north side is the safest route. The

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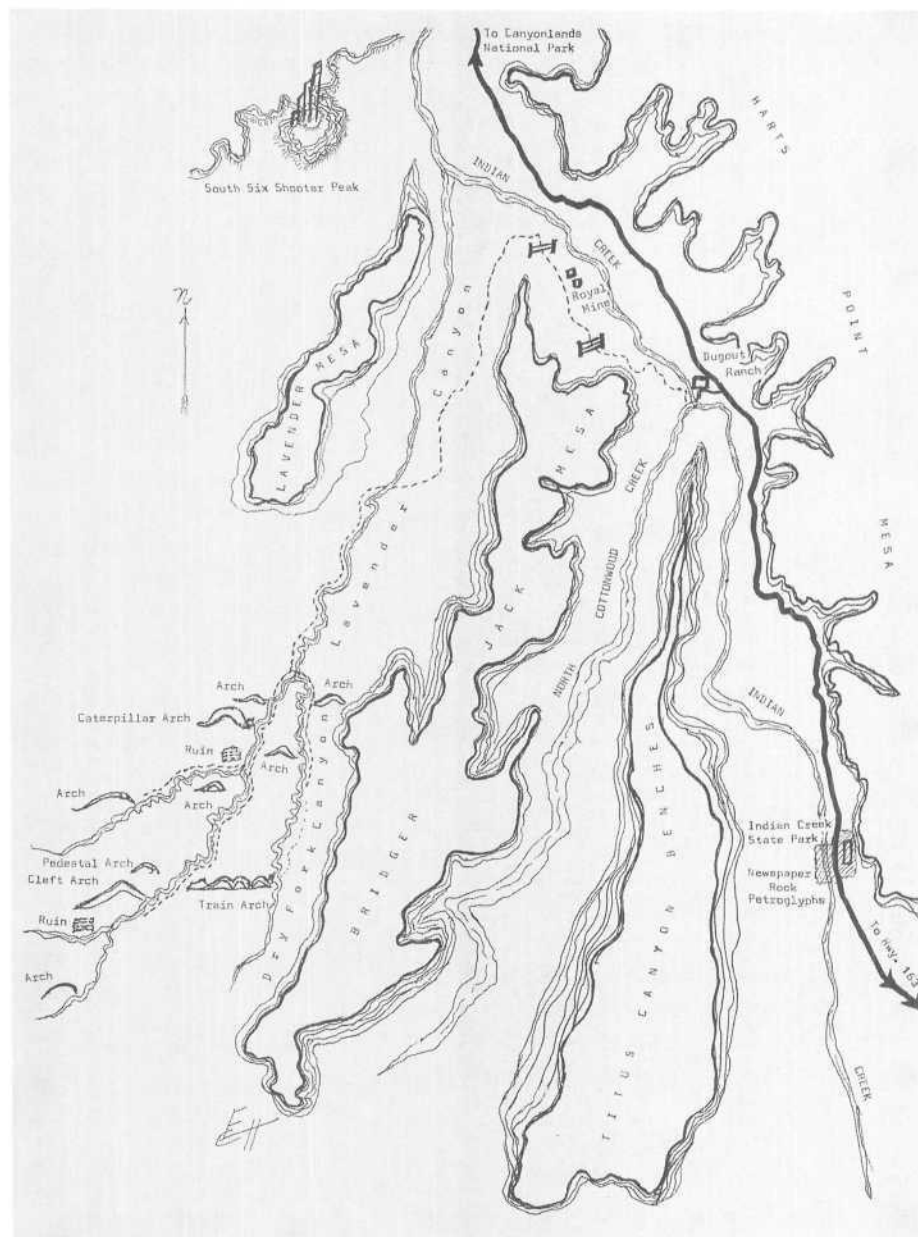
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*A four-wheel-drive
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the colorful cliffs of
Lavender Canyon.*

last few feet are rather steep and the walkway under the arch may cause some to feel a slight vertigo, but it is considered quite safe.

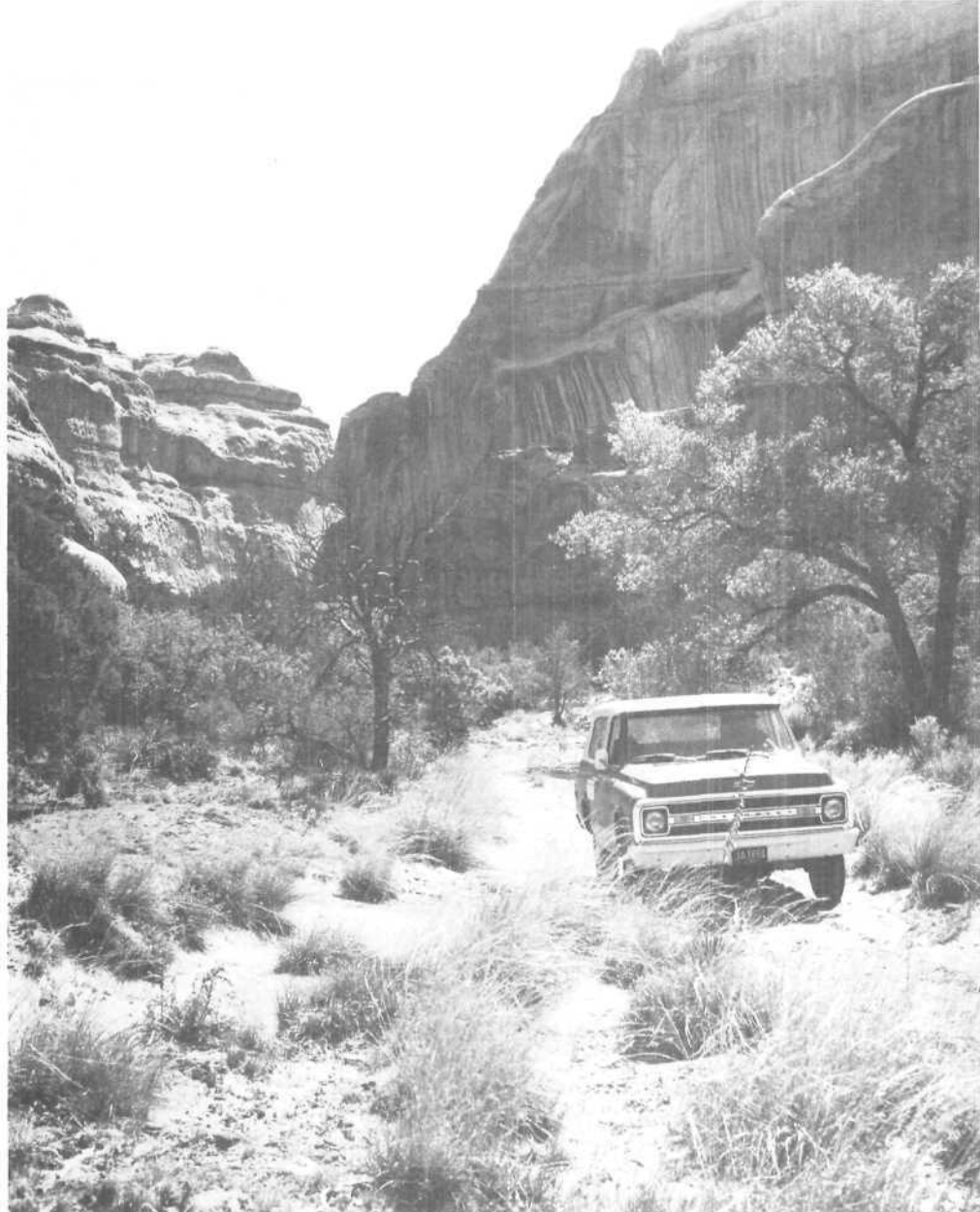
A mile hike into the head canyon of Lavender is rewarding. A small delicate arch clings to the side of a large rounded knob of sandstone. The rolling shelves of Cedar Mesa Sandstone accent the wildly sculptured walls molded by wind and water erosion, and painted by a master artist—nature—with desert varnish and lichens. We estimated the depth of Lavender at its head at near one thousand feet.

Lavender is full of surprises, and we saved some for the trip out. There is a branch canyon three miles north of Cleft Arch, which has two beautiful arches at the top of the sandstone formations. A symmetrical round pot-hole arch on the left slightly past the entrance, and a delicate arch gracefully slender as it silhouettes against the sky at the head of the canyon.

Another surprise, about one-half mile north of the last stop, two more arches on the west side of the channel can be seen from the creek bed. A short walk up the bank and you will have a really good look into Caterpillar Arch, appropriately named by the *National Geographic*, and an unnamed one to the north of Caterpillar Arch. A small ruin site is just below.

Weather conditions in the canyons at Lavender's elevation are not severe from May through November, but July and August temperatures range 85 to 95 degrees. Use caution in driving the stream bed if weather has been stormy, as quicksand sometimes results from flooding of the canyon channels. Carry water sufficient to last the length of your stay. Stream water is alkaline and might cause digestive upset.

Experience Lavender Canyon, savor the essence of its color, form and solitude. Protect it too; carry out your discarded litter. Let your presence there be as a shadow that leaves no sign of passing. And return again! ☐



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Verdant Valley



of The Indians

by Milo Bird



ABOUT 3,000,000 years ago, lava broke from the side of a mountain in central Arizona, dammed several streams and caused a number of lakes and swampy areas to form. Muddy lime which washed down from surrounding hills completely filled in behind that dam and eventually solidified into limestone.

After many millennia, a stream eroded a channel through the lava dam and created a deep canyon across the limestone fill behind it. While this was taking place a small underground stream laden with carbon dioxide slowly dissolved enough lime from one place to create a large cavern.

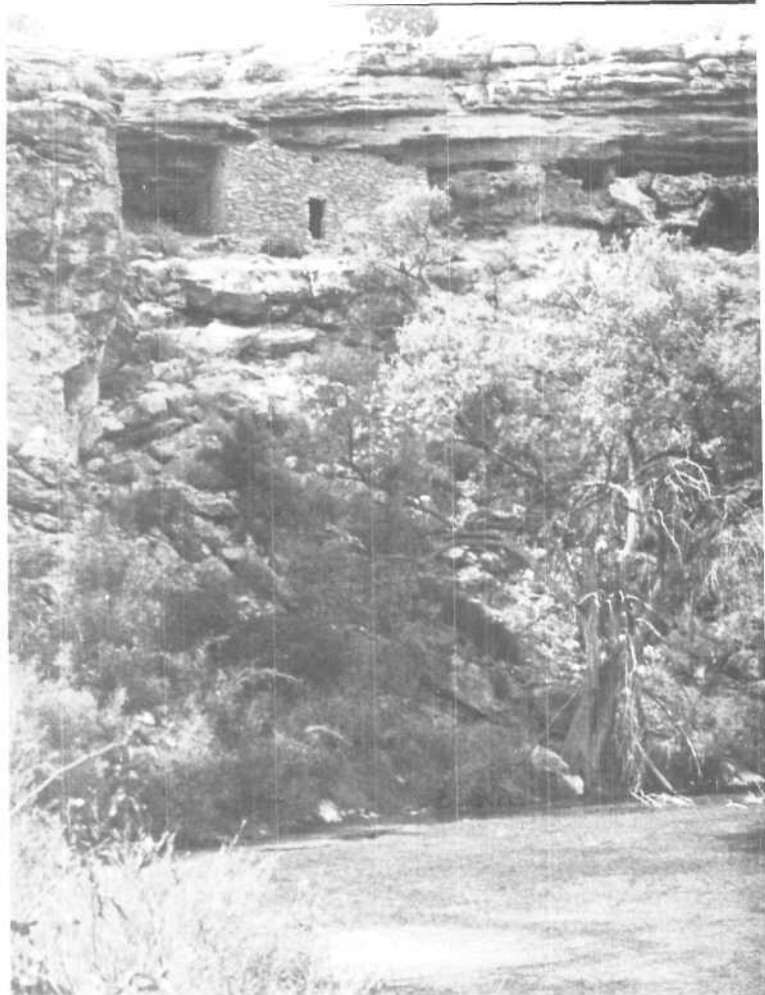
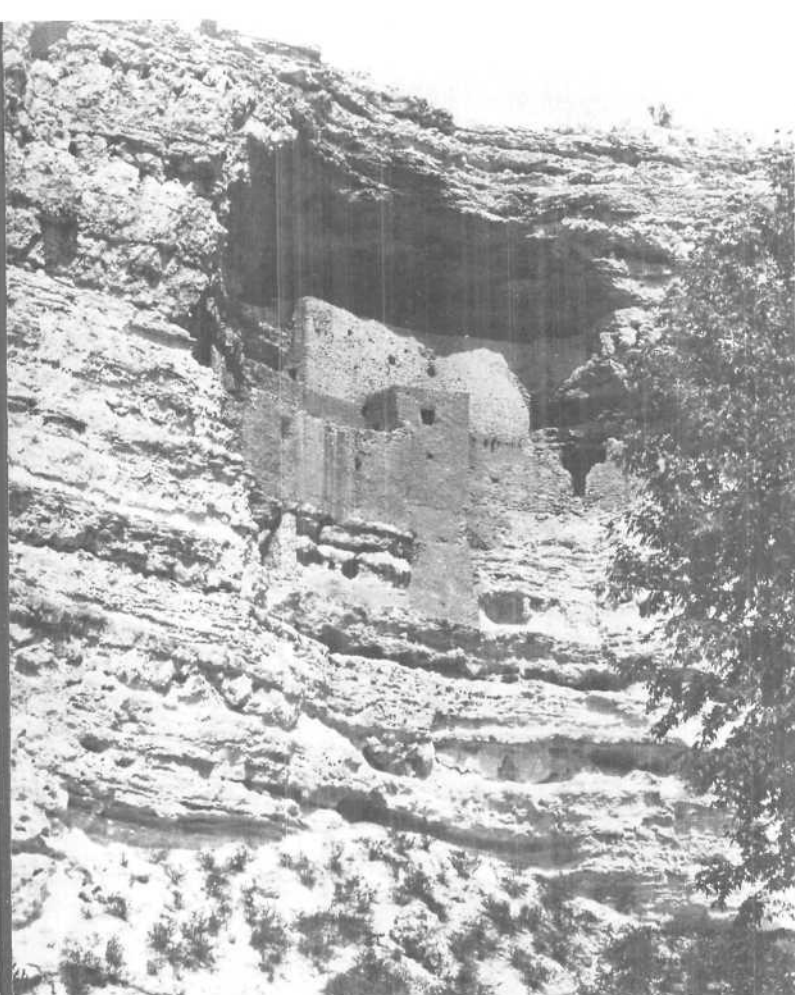
When the roof of the cavern collapsed the sink hole was 470 feet in diameter and 125 feet deep. Springs in the bottom flow at more than 1,000 gallons per minute and maintain water to a depth of 55 feet in the "well."

In jest or mistaken sincerity a group of pioneers who ran across the well in the 1900s named it for Emperor Montezuma II who lived in Mexico, 2,000 miles away and had never been that far north.

Massive erosion gradually widened the canyon and rounded its lowlands into a beautiful valley. Trees grew along the edge of the water and those flats became covered with grass and shrubs.

continued

Once part of an underground river, the roof of Montezuma Well collapsed forming this giant sink hole. Prehistoric Indians once lived around the perimeter. Photo by Ray Manley, Tucson, Arizona.



Main section of Montezuma's Castle (above) has 55 rooms and 90 percent of the structure as it now stands is original. It is more than 700 years old. Prehistoric Indians built their homes (above right) under ledges around Montezuma's Well.

Some 4,000 years ago, Indians discovered this verdant valley with its constant supply of water, its animals which they could kill for food, and a climate more to their liking than that farther north. They were of a migratory nature for evidence indicates that the first permanent settlers, the Hohokams, moved into the valley 600 A.D.

Since the Hohokams were not of a nomadic nature, they built permanent homes and depended upon water from the well and the creek to irrigate their fields of corn, squash, beans and cotton. Their homes consisted of pit houses dug into the earth and covered with brush to keep them warm in winter and cool in summer.

Somewhere around 1070 A.D. many of the Hohokams moved north to the Flagstaff area, while a few other Indians whom archeologists call Sinaguas (Spanish for "without water") moved into the vicinity of Montezuma's Well and became irrigation farmers. They would have continued to live in peace and harmony had it not been for a drought farther north.

From the year 1225 until 1299 the country around Flagstaff suffered one drought after another, the worst period

being from 1276 to 1299. By the year 1225, many of the Sinaguas had moved south and had settled along Beaver Creek and in Verde Valley.

Here they built stone houses near water ways and in caves high upon the cliffs. They built several cliff dwellings inside the rim of Montezuma's Well and built large pueblos on the mesa near the rim. One of those pueblos was two stories high and contained 55 rooms while another one contained 20 rooms. Here, as in other places, many of the rooms had no wall openings but utilized roof hatches for entrance ways and for smoke to escape.

Montezuma's Well is certainly worth a visit not only for its historic value but also for its beauty. The day I was there, the sky was such a deep azure that its reflection in the water seventy feet below the rim looked like a huge sheet of jet black plastic. Zephyrs skimming across its surface caused ripples to slap gently at plants growing at its edge.

The Well looked as though it should be stocked with trout and be populated by dozens of shouting, screaming boys having the time of their lives. But the water is so highly charged with carbon

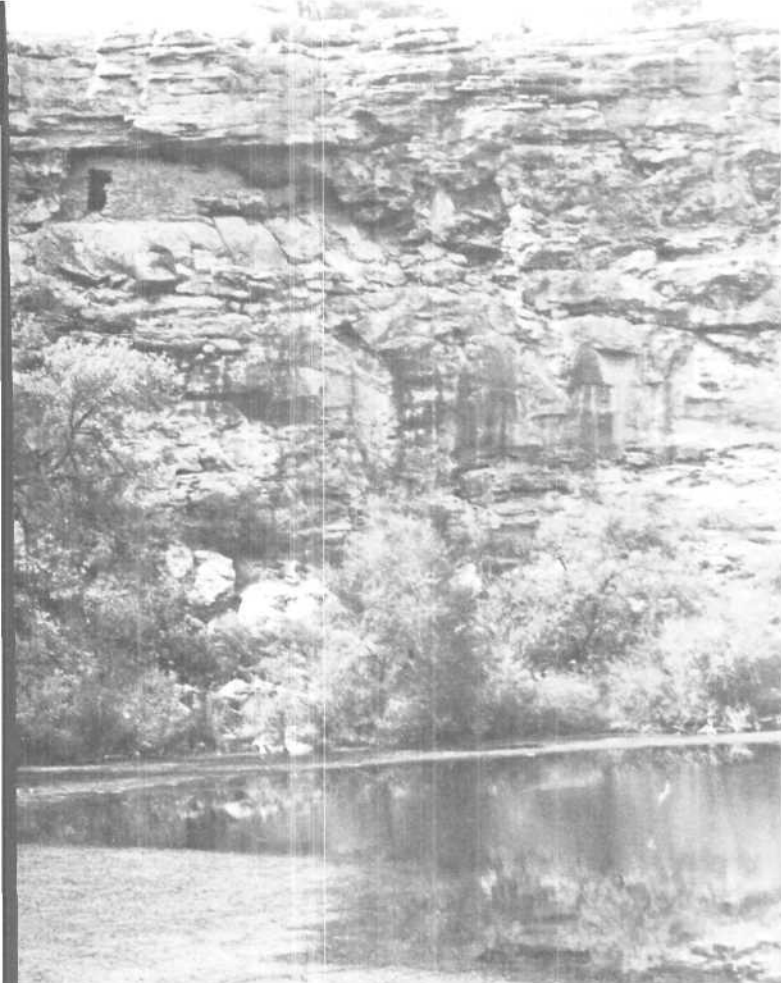
dioxide that fish cannot live in it and so much poison ivy grows inside the pit swimming is prohibited.

Water flows out of the Well through a channel in the Beaver Creek side of the wall, carrying with it 600 pounds of lime per day. This lime content was a blessing to the Indians because it coated their irrigation ditches and made them water tight. Some of the old ditches have linings more than a foot thick. It is easy to imagine, however, that such lime-laden water would eventually coat the farm soil so badly that plants could hardly grow in it.

For unknown reasons, Indians deserted the valley about 1400 A.D. Archeologists suggest that a few of the reasons may have been overfarming, crowded living conditions which led to bickering, and possibly to the inability of normally peaceful people to resist warlike tribes who invaded the valley.

The first white men to see the valley were Spaniards under Antonio de Espejo who reached it in 1583 while searching for Augustin Rodriguez and two other monks who had been missing for some time on a missionary trip to the north.

Montezuma's Castle, seven miles south-



Park rangers have built steps so visitors can explore the cave-dwelling areas around Montezuma's Castle. First white men to see the valley came in 1583.

west of the Well, is the best preserved prehistoric Indian structure in Arizona. In spite of its location in a huge cave half way up a 140-foot vertical cliff, vandals were rapidly destroying it before President Theodore Roosevelt established it as a national monument on December 8, 1906. Roughly 90 percent of the castle as it now stands is original. A few walls have been shored up, a number of holes have been filled and some evidence of vandalism has been obliterated.

Montezuma's Castle is a marvel of engineering skill and ingenuity. The builders cut down 12-inch sycamore trees with stone axes. They built reliable ladders without nails or screws or clamps. They laid up walls without plumb, square or theodolite. They fitted stone to stone without chisel or metal hammer to knock off interfering protruberances. And they plastered their walls without trowel or mortar board.

They dragged heavy logs from where they were cut to the foot of the cliff without donkey, horse or tractor. They hoisted them up the side of that cliff without the use of block or tackle, crane or helicopter. And without pneumatic tools they cut

holes into the cliff so they could anchor those logs in place. The structure has been there for more than 700 years.

Life along Beaver Creek and in the Verde Valley was much more pleasant than it was farther north where there was no shade or running water. Along Beaver Creek, the Indians could spend most of their time under beautiful shade trees and use their homes only at night or during inclement weather.

Catclaw acacia pods, from which they made meal and cakes, were abundant. Mesquite beans and Arizona walnuts were plentiful and they could make a soap substitute from the roots of the graythorn shrub. A brew made of creosote bush leaves could be used as an emetic, as a deodorant and for soothing tired, sore feet. Willow twigs growing along the creek were used in basketry.

Montezuma's Well and the Castle are both reached by way of Highway 17 about thirty miles south of Flagstaff. Summer months get quite hot there, but in late September and early October the weather is excellent and those huge billowy clouds which form every afternoon make wonderful backgrounds for camera shots. □

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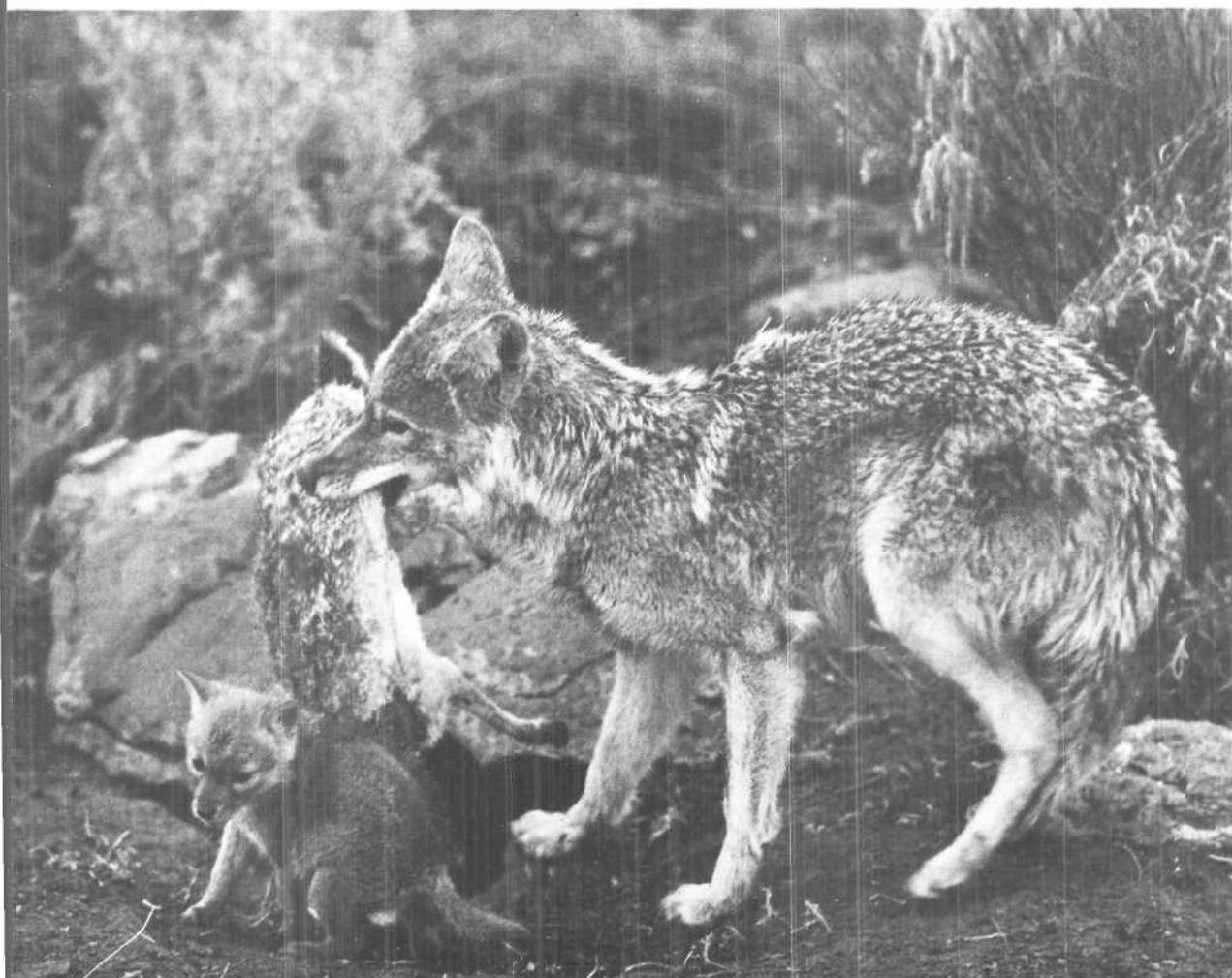
Desert Vocalist

by K. L. Boynton

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WHEN THE big hot sun has finally called it quits for the day and the last of its flaming afterglow has gone, evening comes to the desert, its soft luminous light settling gently over the seared and blasted land. Upstairs the first faint twinkle of stars is just starting to show, and the air begins to stir with a growing coolness. The great wide desert, reviving from the merciless heat of the day, seems to relax and dream in the stillness of twilight. All is peace. Suddenly a sharp bark explodes the silence—rising in a wild crescendo of eerie sounds to a single high pitched howl, its long wailing notes traveling far out over the desert.

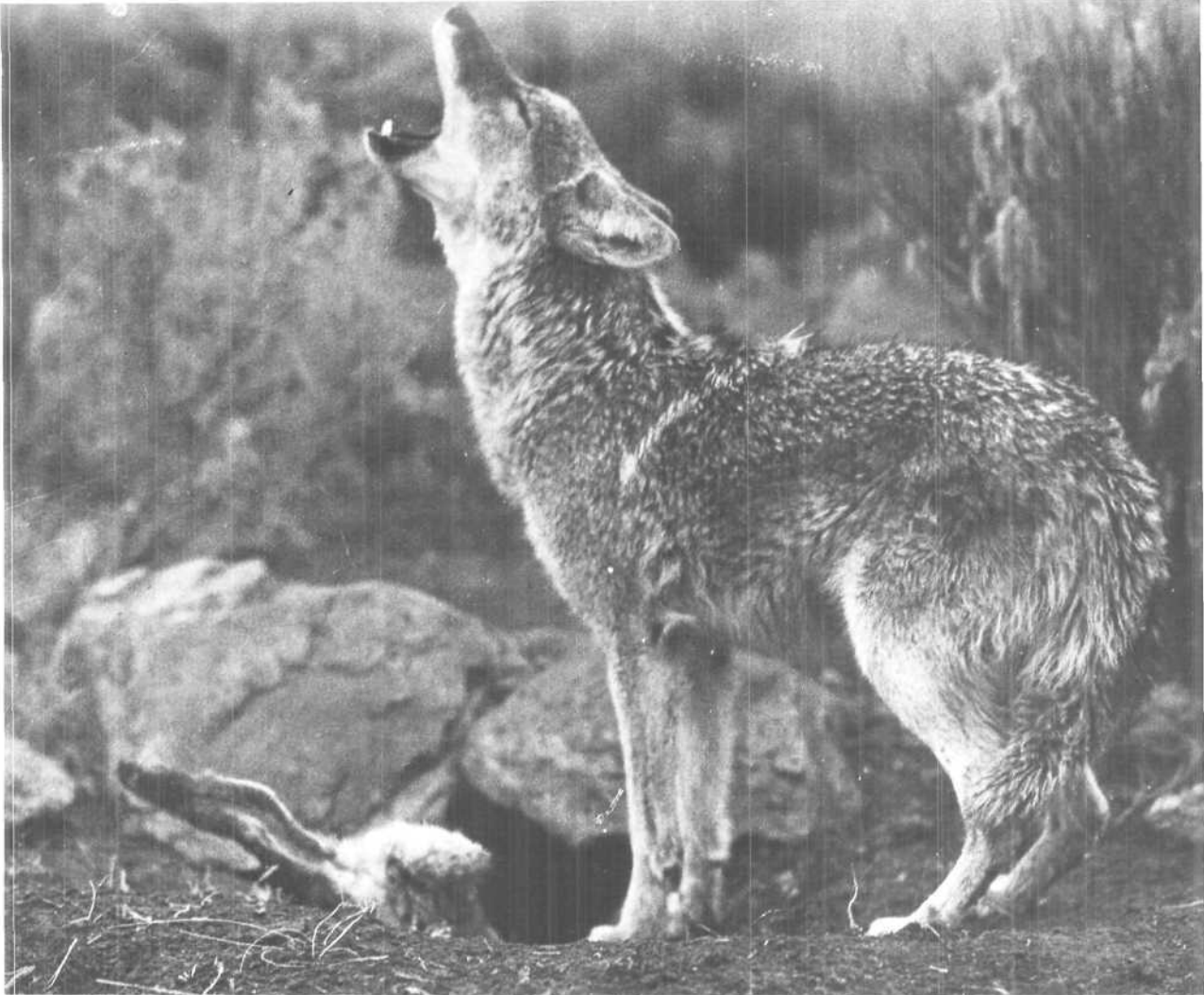
Such is the opening number of the evening serenade, rendered by Senor Coyote, the self-appointed Voice of the Desert. The Senor, rested from a day's loafing underground in a den, or snoozing in the shade of a sagebrush, is awake—greeting the summer night with a bit of song, and presenting his compliments to his fellows. And he is joined immediately by a second songster nearby coming in with a high quavering obligato, a third adding his whines and howls, a fourth punctuating the ballad with staccato yapping. Noses pointed heavenward, this



*A coyote
brings a
rabbit to pups
in her den.*

*Photo
courtesy U.S.
Fish &
Wildlife
Service.*

*The sharp
bark of the
coyote disturbs
the early
morning silence.
Photo courtesy
U.S. Fish &
Wildlife Service.*



bushy-tailed barber shop quartet may continue their concert with all stops pulled out for some ten minutes, a wild and ear-splitting din that seems to come from everywhere. Then suddenly as it began, it stops.

The Senor and his singing companions, having got their music-making off their chests, are now ready for dinner. From their night's work many a rodent career will be cut short, many a rabbit subtracted from the numbers game, many an insect gone for good, the coyote-brotherhood being a major check on such populations.

Indeed it must be said that no matter what biologists may think privately of the musical quality of coyote singing, they regard these sharp-nosed, big-eared, fast-footed members of the dog tribe as very beneficial fellows, extremely important to the balance of nature. For in addition to holding down rodent and insect numbers, coyotes also help control population in many kinds of birds and game animals who, in over-abundance, would be detrimental to their own species.

Coyotes keep wildlife species vigorous by weeding out the weak, and hold disease

at a minimum by the destruction of the sick. Doing a bit of dainty garbage collecting and removal of dead remains on the side, they also serve as scavengers, cleaning up the desert as well.

If given a chance, a coyote can tuck away at least a pound and a half of food a day, and it takes a lot of rodents (a pocket mouse may weigh only as much as three or four sticks of gum) to fill the bill. Hence much hunting has to be done, particularly in the worst of desert regions where food items are very scarce.

A coyote may hunt alone, following a regular beat that has proven fruitful over the time. This may be about a 10-mile circuit, and the Senor, moving along at an easy trot, checks into arroyos, turning over this rock or that, poking under this sagebrush, all the time cocking a big ear this way and that for the slightest sound. Much of his rodent hunting success is based on acute hearing: a rustle, a squeak being all that is needed. Zoologist Alcorn, spotting a coyote one day trotting along about 400 yards away, produced a squeaky sound by the well-known boys' trick of putting the back of his hand against his lips and sucking air into his mouth. The

coyote turned immediately and headed in the squeak direction. The team of Peterson, Heaton and Wruble, testing the auditory responses of various carnivores recently (among them coyotes, greyhounds, foxes, bears, domestic cats, hyenas), reported the coyote placed very high in efficiency of sound reception, even among these notoriously alert animals.

Coyotes dearly love rabbit meat, but the big jacks can easily outrun them, doing a neat 40 mph with the coyote lagging behind at 35 mph. Hence cooperative hunting goes on among coyotes, one circling-driving the rabbit towards the other who waits in ambush. Hunting in pairs can likewise bring a buck home to a couple of extra ambitious coyotes—a treat usually unavailable to a single coyote, since members of the deer tribe are also too fast.

Foodwise the coyote is an omnivorous eater; prickly pear, acorns, mesquite beans, wild fruits, snakes, melons, birds, scorpions all being on the menu. Biologist Fitch, hearing loud complaints from cattlemen, made a study on a cattle range in California. Now it is a social custom among coyotes when covering the hunting circuits or when traveling from here to

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there, to pause along ridges and deposit feces and urine to mark such trails. Along some of the well-traveled trails there is an accumulation of droppings. Knowing that hair and bones in these remains would tell the story of what was eaten, Fitch collected over a thousand scats. From these some 2,250 definite identifications were made and they turned out to be ground squirrels, cottontails, kangaroo rats, pocket gophers, woodrats, pocketmice, field, meadow and harvest mice, squirrels, chipmunks, quail, skunks, jays, towhee, mourning doves, screech owls, gopher snakes, rattlesnakes, lizards, spadefoot toad, jerusalem crickets, grasshoppers and many other different kinds of insects. Some remains of domestic cow and horse showed up here, too, probably taken as carrion.

The overall picture showed that 90 percent of the diet of coyotes on this cattle range was made up of rodents and rabbits, snakes accounting for about eight percent in addition. This 98 percent total indicated that relations with the range cattle were harmonious, in spite of the fact that coyotes do hang about a herd, feeding as a matter of fact on the afterbirths. Only occasionally, Fitch found, an individual

coyote learned to kill small calves, and caused damage.

Murie's study on another range showed coyotes there stuck consistently to cotton-tails, but when the supply of these failed, they turned to sheep. This points up the fallacy of the so called "rabbit drives" conducted today wherein the result of such a bloody day's work is only to increase the certainty of more stock trouble.

More and more ranchers in the Southwest are realizing that rodents compete with stock for range plants, eating the seeds, cutting off new shoots, and that the coyote, with his heavy emphasis on rodents and rabbits in his diet does far more good than harm. Hence, many are now closing their ranches to coyote persecution.

Coyotes raise only one litter a year, breeding around the first of January in the low deserts and as late as March or April in the high. Home sweet home is generally a second hand badger hole, enlarged with three or four exits added, and kept clean of debris and odors. The entrance is usually well hidden by catclaw or other prickly concealing shrubs. Gestation takes some 60-63 days and litters vary in

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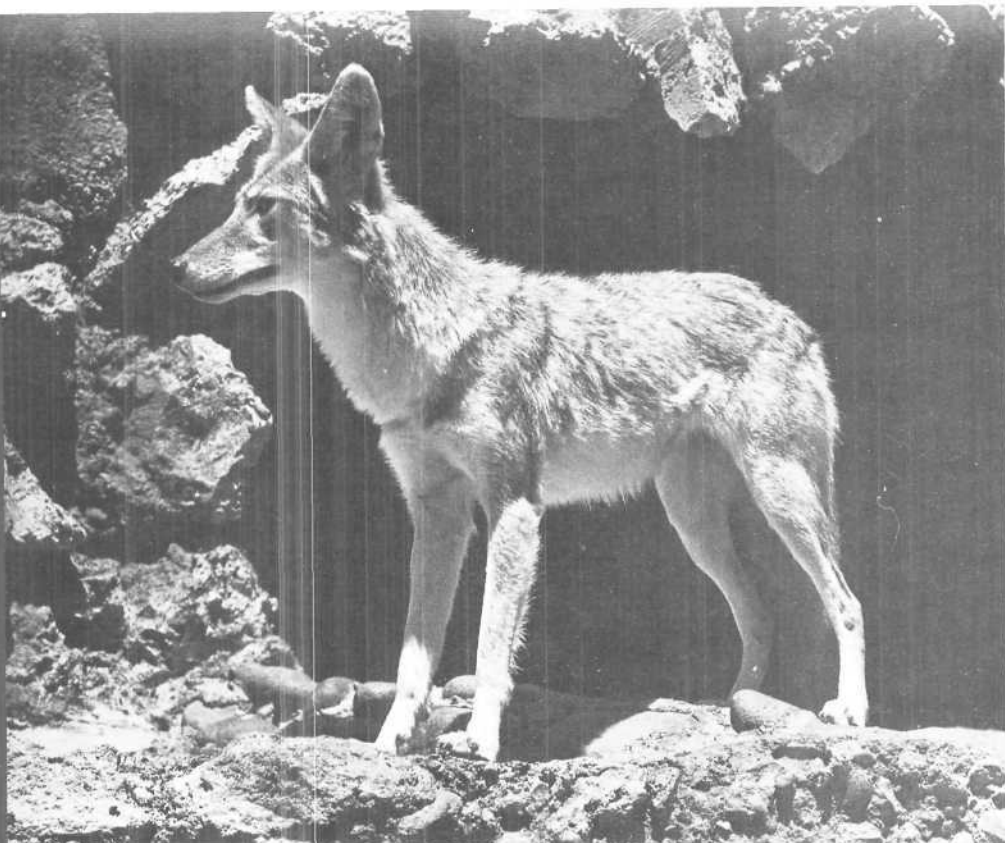
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Ranchers today realize the desert coyote does more good than harm. Photo by G. E. Kirkpatrick.

size from five if food is scarce to a bumper crop of 19 if times are very good. The dark brown fuzzy pups are hard to see in the burrow, weigh about one pound, five ounces at birth and open their eyes in about nine to 14 days.

Excellent parental care is one of the biggest reasons for the coyote's success under very tough desert conditions, with the Senor playing a prominent part. It is he who leads the family on hunting parties, for when the pups are about eight to 10 weeks old, the den is abandoned and the arduous training period begins. Under the guidance of the adults the pups learn to catch the wily rodents, and how best to use their sharp senses not only in hunting but in self protection as well. By the time fall comes, the pups are nearly grown, and can handle desert problems—even in Death Valley.

Now they must move out, for the parental home range will not support so many predators, and the dispersal of the family begins. Stanley and Jackson report pups tagged and released immediately at den sites in New Mexico were found on an average 22.6 miles away in about two years. One Wyoming male pup had traveled 100 miles from his birth den in a year, a female 80 miles. Another, going by way of the winding Snake River, ended up 400 air miles away from where he started.

Senor Coyote is about the size of a small shepherd dog, and thus about a third as big as his cousin, the timber wolf. He may be about twice the size of his smaller fox cousins. Compared to his close relative, the domestic dog, the coyote has a much longer muzzle, practically no forehead, his legs are longer and more slender, his feet small and dainty, his tail bushier. Dwelling in the desert, he dresses in the pale buffs and greys of his surroundings.

The Senor is tough, endowed with a hard physique and remarkable recuperative powers, often recovering from wounds fatal to other animals. He is extremely alert and given to using his head to get himself out of difficulties. He is

also capable of rapid exits, streaking across the desert, ears laid back, nose stretched out, his legs driving like pistons, tail streaming out behind. Given half a chance, he can live to be 10 years of age, perhaps 18 if he's lucky.

Maybe it's the singing that does it, for the Senor, after a night of hunting and socializing, trots to his favorite singing spot at the very first sign of day and, poking his long nose up into the air, lets loose with his Dawn Song which, for sheer noise and wild yip-yapping beats the evening serenade all hollow. □

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HAVEN FOR TORTOISES AND PUPFISH

by Ernie Cowan



VISITORS TO Anza-Borrego Desert State Park will be surprised to learn that there is something new under the sun there. We have enjoyed several weekend outings as a result of a new experiment by park rangers to keep two species of animals one step ahead of the grim reaper.

In a program unique to California State Parks, rangers are trying to reintroduce two kinds of animals now extinct within the nearly half-million acre park in eastern San Diego County.

The animals are the desert tortoise and the desert pupfish. Nearly 80 tortoises have been collected by rangers and 65

have been released in a remote area of the Pinyon Mountains. A few pupfish were put in a new home all their own last year and now number several thousand.

Park Supervisor Jack Hesemeyer and naturalist Ernie Brown are responsible for this interesting idea designed to replenish the desert park with some of the animals that were native there in the past.

The idea of replanting tortoises began about two years ago when someone brought their pet tortoise to park headquarters in Borrego Springs. The owners felt sorry for their pet living in the city, so decided to return it to its natural home.

Brown and some of the other park rangers found other people in the city had desert tortoises as pets, so a few more were collected and it was decided to release them in a suitable area with hopes they would breed.

A San Diego newspaper ran a story about the tortoises and as a result 77 were collected and brought to the park, including 12 we collected in our own area. A special wire enclosure has been built be-

hind park headquarters where new arrivals are kept until they can be released with a number of others. Visitors are welcome to come and see these docile reptiles in a natural setting.

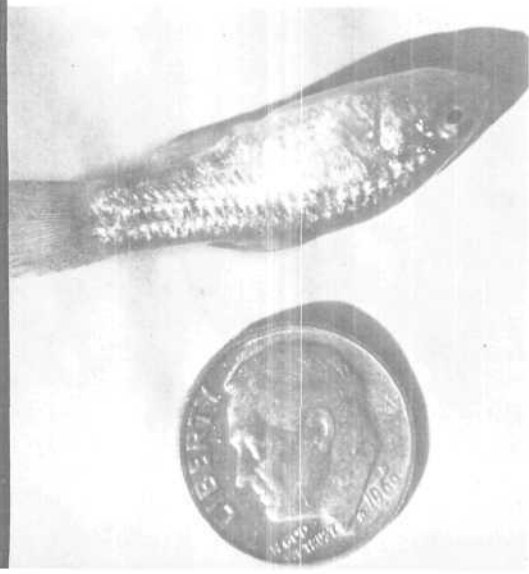
Naturalist Brown feels there are probably "thousands" of tortoises in backyards of California cities. The tortoise is a harmless animal and makes a good pet. This fact has contributed to the decline of this animal since they have been picked up and carted off by the thousands.

California has recognized this problem and has made it illegal to possess a desert tortoise.

Over the past 18 months, park rangers have released three groups of tortoises in a remote area of upper Fish Creek. The area is accessible only on foot, but it's well worth the several miles of walking to see how these new park residents are doing. Check with park rangers for specific directions.

We have hiked into the area several times in the past few months and have found seven live tortoises and three that have not survived. It is not known why the three died, but one we found had eight eggs inside its shell.

Before being released, each tortoise was engraved with its own identification number. They were weighed, measured and



Park Naturalist Ernie Brown (above) examines a desert tortoise. A female desert pupfish (left) compared in size to a dime.

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all information was carefully recorded.

As yet no detailed survey has been made of the fledgling herd, but naturalist Brown plans a survey this spring when the tortoises are most active. In the meantime anyone who finds a tortoise with a number on its back is asked to leave it alone and report the number and location to rangers.

If you are not the active type, there is still plenty for you to see in the park at the special pupfish pond built at the mouth of Borrego Palm Canyon.

Here supervisor Hesemeyer arranged for an honor camp crew to build a natural-looking shallow pond. Rocks were placed around the pond, water plants were introduced, and after the water "cured" for a time, 50 of the tiny pupfish were moved into their new plastic-lined home.

Now visitors can sit beside the pond and watch for the colorful iridescent-blue male to pop to the surface, or the silvery brown female to swim into view. There is also an aquarium at park headquarters with pupfish for visitors to see.

The pond has also provided an added bonus. It has become a favorite watering place for many of the desert birds and smaller animals. The nature photographer has a field day there in the early morning hours of summer. Tracks of a fox, coyote, bobcat or ringtail cat can often be found in the damp sand.

The pupfish in the park pond were caught in the Salton Sea. Brown says the Salton Sea is their major population

*In addition
to supporting fish,
the pond near
ranger headquarters
is a watering
place for desert
animals. Visitors
look for tracks.*



stronghold now. The only other known location of this particular species of pupfish in San Sebastian Marsh, east of the park boundary in Imperial County.

The pupfish is scientifically important because of its unique ability to survive under a wide range of living conditions. This tiny little fish of one and one-half inches is capable of living in water from near freezing to 108 degrees and in nearly pure water to water with salinity twice that of the ocean.

These fish face a threat, however, since

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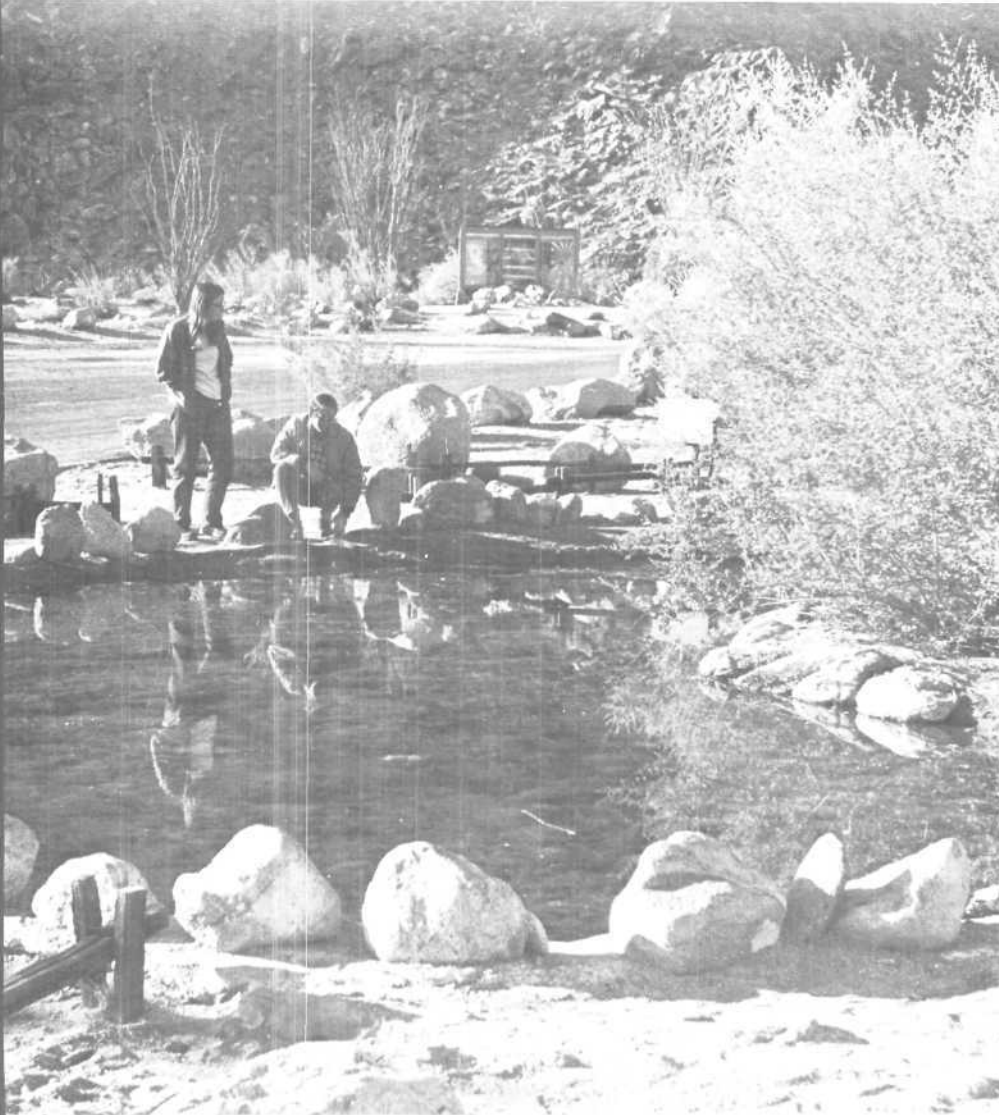
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increasing salinity of the Salton Sea could kill all living things there in another five to ten years, according to some leading scientists.

Brown says the pupfish was once found in Fish Creek when it was running. Carrizo Marsh and other all-year water sources in the park. Man is the biggest enemy of the pupfish, however. Water pollution and the lowering of water tables threaten these fish with oblivion. A detailed census has not been taken as yet, but Brown estimates at least 20,000 now thrive in the pond.

This spring it is hoped some of the tiny fish can be transplanted in places such as Yaqui Well, Sentenac Canyon, Mountain Palm Spring and Carrizo Marsh, reversing the process of extinction that has already taken its toll. By spreading the fish around, it will be that much more difficult for them to disappear in case of disaster.

Perhaps the most important thing about these efforts of park rangers is what they are providing for the visitor.

Our family has taken the time to seek out these new residents of the park and as a result we have learned a little more about nature and some of its wonders.

The tortoise and the pupfish also show us again the contrast of this amazing arid land. In an environment of little water, a tiny fish survives that may hold the answer to scientific questions of lasting import. At the same time a sluggish reptile, unchanged for eons, fights a new enemy for survival. With the help of the state parks he may win! □

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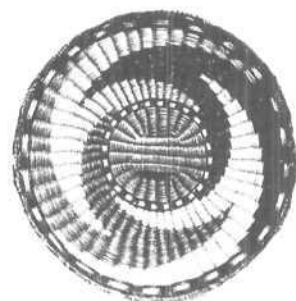
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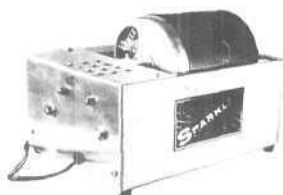
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Rambling on Rocks

by
**Glenn
and Martha Vargas**

ORGANIC MINERALS
Produced By Living Things
(Continued from last month)

PROBABLY THE most important of the organic gems are those produced by the sea. Tortoise shell, mentioned last month, is one of them. At the top of the list, however, is pearl. These sphere-like gems are produced by a type of mussel, but called a pearl oyster. Many other molluscs; real oysters, clams, snails and scallops produce pearls, but they are never of any value. The edible oyster is in this class, and any pearls to be found in the fresh or canned product were never any good, cooked or uncooked.

Pearls are formed around some type of irritant that managed to get into the flesh of the animal. It is usually thought to be a grain of sand, which it seldom is. The irritant is more often some very small sea animal that tries to dig into the flesh of its host. The pearl is built up of successive layers of calcium carbonate (the mineral aragonite) and called *nacre*. This is a French word (pronounced na-ker) meaning mother of pearl. The layers of *nacre* are held together by a leathery substance known as conchiolin. The layers of *nacre* are deposited as very small crystals, and are identical to the material that makes up the inside layer of the shell. Thus, if the inside of the shell of the mollusc is pearly or iridescent, then it may have valuable pearls.

Once the "oyster" begins to coat the irritant, he finds to his dismay that the coating is a further irritant, and he is caught up in an unending circle. The more he coats the irritant, the more it irritates.

The crystals of the *nacre* layer give a roughness for the next layer of conchiolin to attach to, thus helping to bond each layer tightly together. The final layer of *nacre* carries with it all of the color and iridescence that the shell close by exhibits. Part of the fine play of colors is due to the tiny crystals of which it is made. Light reflecting from the many prisms accounts for much of the iridescence.

These tiny crystals help to identify pearls. A person wanting to know if it is genuine rubs the pearl over his front teeth (not bites it!), and the roughness of the nacreous surface can be felt. Fake pearls are a lacquer-like coating over a sphere of some kind, and are smooth. Cultured pearls are a thin coat of *nacre* over a sphere that was placed in the animal.



Coral is an organic gem from the ocean.

The layer is rough, just as in natural pearl.

All pearls are not spherical. Actually, a very small percentage of usable size natural pearls are true spheres. The tiny ones usually start that way, but as growth progresses, the spherical symmetry is usually lost. Growth of layers may be greater on one side, or two pearls may join. If the animal that irritates is fairly large and irregular shaped, the pearl may assume that shape. Such pearls are known as *baroque* (pronounced bar-oke) pearls. This is another French word, meaning odd or irregular.

The abalone of our Pacific waters will sometimes produce very beautiful pearls. These are nearly always *baroque* and far from spheres. The pearl here is usually formed around a small boring shellfish that has bored its way into the body of the animal. Abalone shell is sometimes used as a source of mother of pearl.

Ordinarily, mother of pearl, or pearl shell is cut from the shells of other molluscs. This is sometimes to be had in sheets, but is mostly chunks that can be

fashioned into jewelry, buttons, or even fake pearls. Some of the oysters that produce precious pearls are used for this purpose, but much of the material comes from a near relative that produces few pearls. Pearl buttons have been virtually driven off of the market by plastics, but a few uses remain.

The nucleus sphere of the cultured pearl, as produced by the Japanese, is made from a type of pearl-bearing clam shell found in the rivers of central United States. This was found to be the best type of shell sphere that the pearl oyster would not reject. If the oyster is to coat the sphere with *nacre*, it must be an irritant, but not so great an irritant that the animal will force the sphere out of his body.

Another fine organic gem from the sea is coral. These are twig-like growths of calcium carbonate that are dredged from the sea bottom. This time the mineral is calcite. The growths are produced by animals, even though the results look much like a plant. The coral producing animals are relatives of the starfishes.

The most prized coral is the red to orange-red type found in the Mediterranean Sea. Similar types are found around islands in warm Pacific waters. Some conchiolin is also used here as a binding agent, but it is minor. Unlike pearl, coral is cut into gems, usually as beads, but it is also carved into flowers, etc. It again is soft and tough, and takes a good polish with ease.

Recently, another material has appeared on the market called black coral. This is not a true coral, but is produced by a fairly close relative. Black coral is made up almost entirely of conchiolin, and is very tough and leathery. It can be easily cut and shaped with simple metal working tools, and takes a brilliant jet black polish.

The last, but not the least interesting, of the organic minerals we will discuss is known as whewellite. It is whistled just as it is spelled! This is calcium oxalate, and is produced by plants. Many plants produce oxalic acid, which is then converted into the insoluble whewellite. After the plant dies, the mineral is concentrated and small crystals are formed, usually in coal beds. This is sometimes cut into a small and rather drab gem for collectors. The place in mineralogy for whewellite is subject to argument. Many mineralogists feel it is not a true mineral, but for lack of space to classify it, most complete mineral books list it. ☐

Calendar of Western Events

MARCH 11 & 12, SPRING PARADE OF GEMS sponsored by the Needles Gem and Mineral Club, High School Gymnasium, Needles, Calif. Admission free. Field trips, door prizes, bottle exhibits. Write Ruth Brooks, P. O. Box 726, Needles, Calif. 92363.

MARCH 11 & 12, MOTHER LODE MINERAL SOCIETY'S annual Gem and Mineral Show, Stanislaus County Fairgrounds, Turlock, Calif. Adults, 50 cents admission. Complete show. Write Donald Nelson, 1025 Pearl Ave., Modesto, Calif.

MARCH 18 & 19, TOURNAMENT OF GEMS sponsored by the Pasadena Lapidary Society, Farnsworth Park, Altadena, Calif. Free parking and admission. Complete show. Write Howard Snider, 177 Wapello, Altadena, Calif. 91001.

MARCH 25 & 26, A WEEKEND IN GEMLAND sponsored by the Northrop Recreation Gem and Mineral Club, Northrop Recreation Club House, 12329 South Crenshaw Blvd., Hawthorne, Calif. Free parking and admission. Write Bill Nary, 17210 Spinning Ave., Torrance, Calif. 90504.

MARCH 25 & 26, NINTH ANNUAL BOTTLE SHOW & WORKSHOP, sponsored by Bishop Belles and Beaux Bottle Club, Tri-County Fairgrounds, Bishop, Calif. Write P. O. Box 1475 Bishop, Calif. 93514.

MARCH 25-29, DESERT ART SHOW, Recreation Hall, Shoshone, Calif. Visitors and entrants welcome. Write P. O. Box 69, Tecopa, Calif. 92389.

MARCH 30-APRIL 2, FALLBROOK ART ASSOCIATION AND FALLBROOK GEM & MINERAL Joint Show, Fallbrook High School, Fallbrook, Calif. Free admission & parking. Write P. O. Box 62, Fallbrook, Calif. 92028.

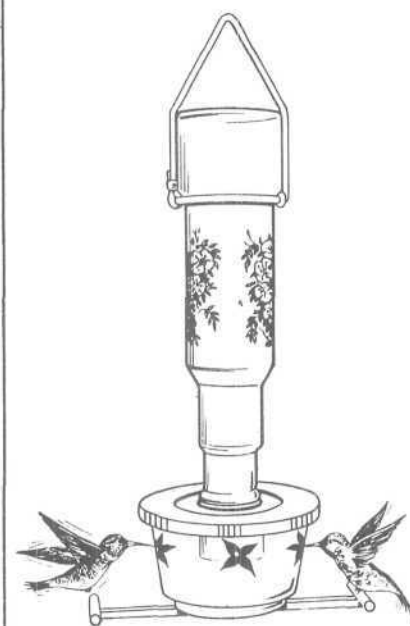
APRIL 2, RED ROCK CANYON Easter Sunrise Services, 25 miles north of Mojave, Calif. on Highway 14. Since 1908. Starts at 5:45 A.M.

APRIL 7-9, WORLD OF GEMS AND MINERALS sponsored by Paradise Gem & Mineral Club, Veterans Memorial Hall, Paradise, Calif. Complete show. Write Frank Fehely, P. O. Box 359, Paradise, Calif. 95969.

APRIL 8 & 9, SECOND ANNUAL HOBBY AND GEM SHOW, Bliss, Idaho. Complete show.

APRIL 8 & 9, NORWALK ROCKHOUND'S Gem and Mineral Show, Masonic Hall, 12345 Rosecrans Ave., Norwalk, Calif. Complete show. Free admission and parking. Write Mrs. Dan Harlow, 13000 Crossdale, Norwalk, Calif. 90650.

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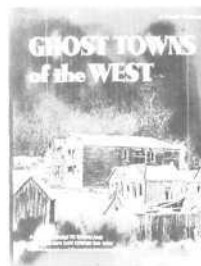
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MAMMALS OF DEEP CANYON by R. Mark Ryan. A study of the habits of more than 40 animals living in the Deep Canyon Research Area in the Colorado Desert. The site was selected because its ecology is typical of deserts throughout the world. Paperback, illustrated, 137 pages, \$2.95.

LOST MINES & BURIED TREASURES ALONG THE OLD FRONTIER by John D. Mitchell. The second of Mitchell's books on lost mines which was out-of-print for many years is available again. Many of these appeared in **DESERT** Magazine years ago and these issues are no longer available. New readers will want to read these. Contains the original map first published with the book and one pinpointing the areas of lost mines. Mitchell's personal research and investigation has gone into the book. Hardcover, 240 pages, \$7.50.

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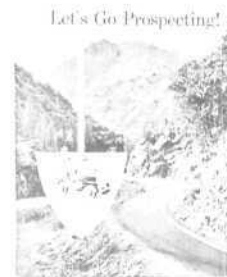
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DEATH VALLEY JEEP TRAILS by Roger Mitchell. Although a system of paved roads covers Death Valley National Monument, there is even a larger network of back country roads leading to old mining camps, stamp mills and other little-known areas of interest. The author has provided a guide to these places for explorers with back country vehicles. Paperback, illustrated, 36 pages, \$1.00.

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TRAVEL GUIDES TO BAJA CALIFORNIA by Ken and Caroline Bates. Published by the Editors of Sunset Books, this is a useful book on Baja and should be a companion piece to Gerhard and Gulick's *Lower California Handbook* and Cliff Cross's *Baja by Road, Airplane and Boat*. The Bates' book takes the reader to the people with text, photographs and maps. Anyone going to Baja should have all three books. Large 8x10 format, heavy paperback, 80 pages, \$1.95.

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SOUTHWESTERN INDIAN ARTS & CRAFTS by Tom Bahti. Beautifully illustrated with 4-color photographs, this book describes the arts and crafts of the Indians of the Southwest and offers suggestions on what to buy and how to judge authentic jewelry, rugs, baskets and pottery. Large format, heavy paperback, 32 pages, \$1.00.

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GOLD MINES OF CALIFORNIA by Jack R. Wagner. Illustrated history of the most productive mines of the Mother Lode country with descriptions and anecdotes about the people who owned the mines and the roles they played in the development of California. Profusely illustrated with rare photographs, the author has chronicled California's greatest and most exciting era. Large 9x11 format, 300 photos and maps, hardcover, 259 pages, 10.00.

ON DESERT TRAILS by Randall Henderson, founder and publisher of *Desert Magazine* for 23 years. One of the first good writers to reveal the beauty of the mysterious desert areas. Henderson's experiences, combined with his comments on the desert of yesterday and today, make this a MUST for those who really want to understand the desert. 375 pages, illustrated. Hardcover, \$6.95.

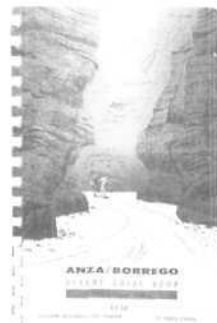


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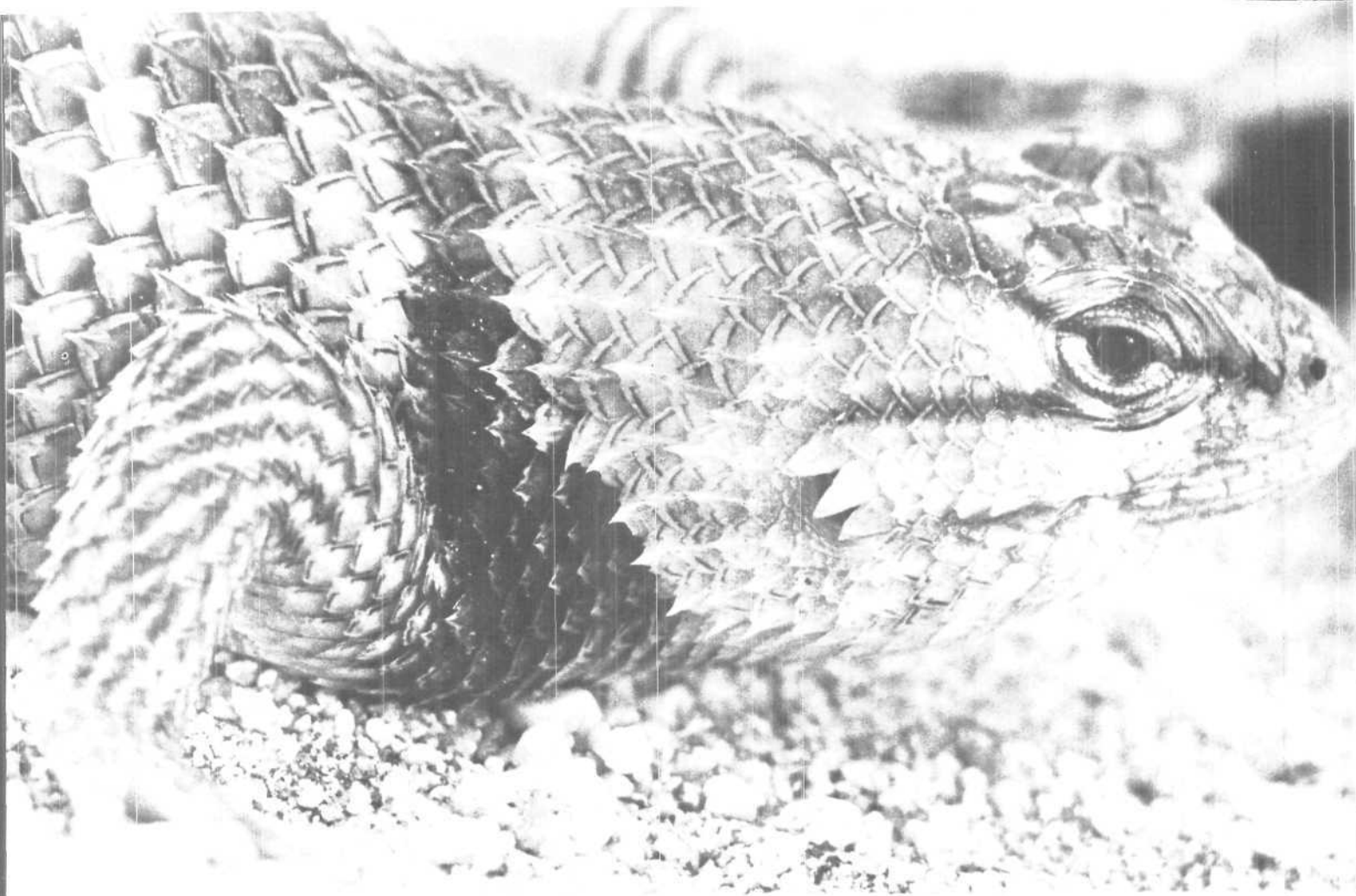
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UNCLE SAM'S CAMELS, edited by Lewis Burt Lesley. This book is the actual journal of May Humphreys Stacey, a young man who was part of the "camel corps" under leadership of Lt. Edward Beale. First published in 1929 this is a fascinating account of attempts by the U.S. government to import camels from Asia to provide transportation across the deserts of the Southwest. Stacey later became a colonel in the U.S. Army. A good description of how the camels were purchased; and Beale's report to the Secretary of War. Hardcover, 298 pages, \$8.00.

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RAY SMAGLICK,
Huntington Beach, Calif.

Not All Vandals . . .

I have been following your articles on the survival of the desert with a great deal of interest and think your stand on the issue is a most practical one.

I am a desert property owner and also a four-wheel-drive owner. I enjoy taking my family into the back country and seeing the great wonders it holds. But then we see the stupidity of some immature guy who gets his kicks out of writing names on old ruins, petroglyphs or beautiful rock formations.

If a poll of these guys was taken and it was discovered most of them drove Chevrolets or Fords there would be people who would say "everyone who drives those cars are vandals."

This would not be right by the same token it is not right to label all four-wheel-drive owners as vandals just because a few clowns are. But since it is a fact that some unreasonable people drive 4WDs, I feel some regulations are needed.

LARRY REYNOLDS,
Glendale, Calif.

Against Controls . . .

In response to your articles on the California desert, I can't follow your line of least resistance in which you almost are resolved to some kind of government control of our deserts. Sir, you don't compromise with the Federal government. We play the game according to their rules—a rule this year, five the next and so on.

A classic example is the Superstition Mountains in Arizona where a few years ago it was made a wilderness area and thus withdrawn from all vehicles. You had to pack in or use horses. Now it has been taken off the mineral location privilege and limited to 80 persons at one time.

We don't need supervision of our desert by the B.L.M. or anyone. All these statements made to help the B.L.M. in the door are pure "dust devils." The B.L.M. and U.S. Forestry Service have already started this "limited access" to our northern forests. I want to enjoy our land and not have to look at it from behind a fence while traveling down a freeway.

I am sorry, but I just cannot buy even the

slightest controls in this area. The ecology hysteria has gotten a little out of hand, especially when it is used to restrict the rights of U.S. citizens. Even the basis of your magazine is in jeopardy. When the B.L.M. controls it, we can say the desert is there but who cares if we can't visit or use it. I say the time to say "when" is before the bottle is uncorked.

RAY SMAGLICK,
Huntington Beach, Calif.

It Is Fragile . . .

Reference the letter in the January issue from Mr. Jack Edwards. Unfortunately, he is totally and completely in error! Many people will read his "well reasoned" arguments and accept them as correct. They are not, not by any stretch of the imagination. Certainly, it would seem as if any organism that can adapt to the rigorous abiotic environment of the desert must be hardy indeed.

However, herein lies the fallacy. It is precisely because they *have* adapted that makes these organisms so very vulnerable. In adapting, they are in a very fine tune with the environment. And while they may be able to withstand 130° heat and lack of water, they have little reserve to withstand added onslaughts. In thinking of the two most fragile ecosystems that come easily to mind, the Tundra and the Desert, it is interesting to note that these are also the two with the most severe conditions with which they must cope.

I wonder if Mr. Edwards wondered why the scars of a quarter of a century ago (desert maneuvers) or a half century ago or a century ago still show so clearly. Of course, it is because they do not heal readily in this particular environment. I have no great quarrel with the 4WD fans but I cannot agree with him about the vast amount of untouched space in the desert. It is difficult to find a bush without a few beer cans behind it, a ghost town that is not well spray painted with names and pock marked with holes left by the bottle diggers and treasure hunters, a quiet canyon that is left in even semi-pristine condition.

I am not suggesting that all the damage, or even a large part of it, is done by 4WDers nor am I suggesting they be somehow corralled in a part of the desert. All I am saying is that Mr. Edwards is talking through his sombrero. My qualifications to comment? Both undergraduate and graduate majors in Biology/Ecology/Geology. Also, I am now teaching Ecology, as well as other subjects in the environmental sciences.

THOMAS M. CONROW,
Santa Rosa, Calif.

Racing Sites . . .

I was very pleased with your articles in the November and January issues regarding the survival of the California deserts. I have some acreage at Borrego Springs and also on Highway 78 near Ocotillo Wells. It is hard to believe that these motorcycles, sand duggies and four-

wheel-drive vehicles are destroying the desert vegetation.

Some of the adjacent property owners have posted their land with "No Trespassing" signs, but the signs are being destroyed. I am in favor of necessary laws requiring the identification and licensing of all desert vehicles and also for the B.L.M. or the State of California to set aside sufficient land for the desert vehicles to conduct their races with proper supervision and control.

RAY RUBOTTOM,
Long Beach, Calif.

Loners At Fault . . .

In reference to the controversial subject of "Saving Our Desert," I feel the only sensible article I have seen about this lately is the one written by Jack Edwards in the January issue.

I have been 4-wheeling for 15 years, having owned seven 4-wheel-drive vehicles. The percentage of desert country a man can travel in a jeep is 99 percent sand and dry washes, with the tracks gone with the first rain, or blown away with the next wind. The other infinitesimal one percent of desert remaining would take forever to destroy enough of it to matter. As for the desert being fragile, this is far from the case. As Mr. Edwards stated, you can find any number of places where the desert has almost completely erased the sign of man ever having been there.

Another point to look at is the proven fact that rarely do organized 4-wheelers destroy any of our country. It is mostly the uninformed loner who does not belong to a club or association that tears up the back country. This, unfortunately, also applies to the dirt bikes and dune buggy owners. The organized recreationalist has done more to clean up and preserve our deserts and mountains than all of the other individuals put together.

If we are "saving" our desert for the public, who ever gets back into it, except these same jeep, dune buggies and dirt bikes? We are the ones who have found pleasure there, and we are the last ones to want to see it destroyed.

I feel Mr. Edwards hit the nail right on the head when he stated he sees it as just another big source of revenue. In this day and age, the pace of living in the metropolitan area is such that if a person is not permitted to get away from it all, from time to time, we'll all wind up in some mental institution.

I have never bought a lot at Big Bear, Parker, or 29 Palms, or elsewhere, because I do not like to be confined to one place. I enjoy seeing our great country and you can't do this from a freeway.

Many's the mile I have hiked to see what's on the other side of a hill that I could have easily driven the jeep over, but I respect what God has put here for us to enjoy. True, the good Lord has made all the land he is going to, and I would like to see a great deal more of it than I have so far.

To Mr. Edwards's remark, "From here it's only five feet to Hell," I have always thought "it was but a few feet from Heaven."

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