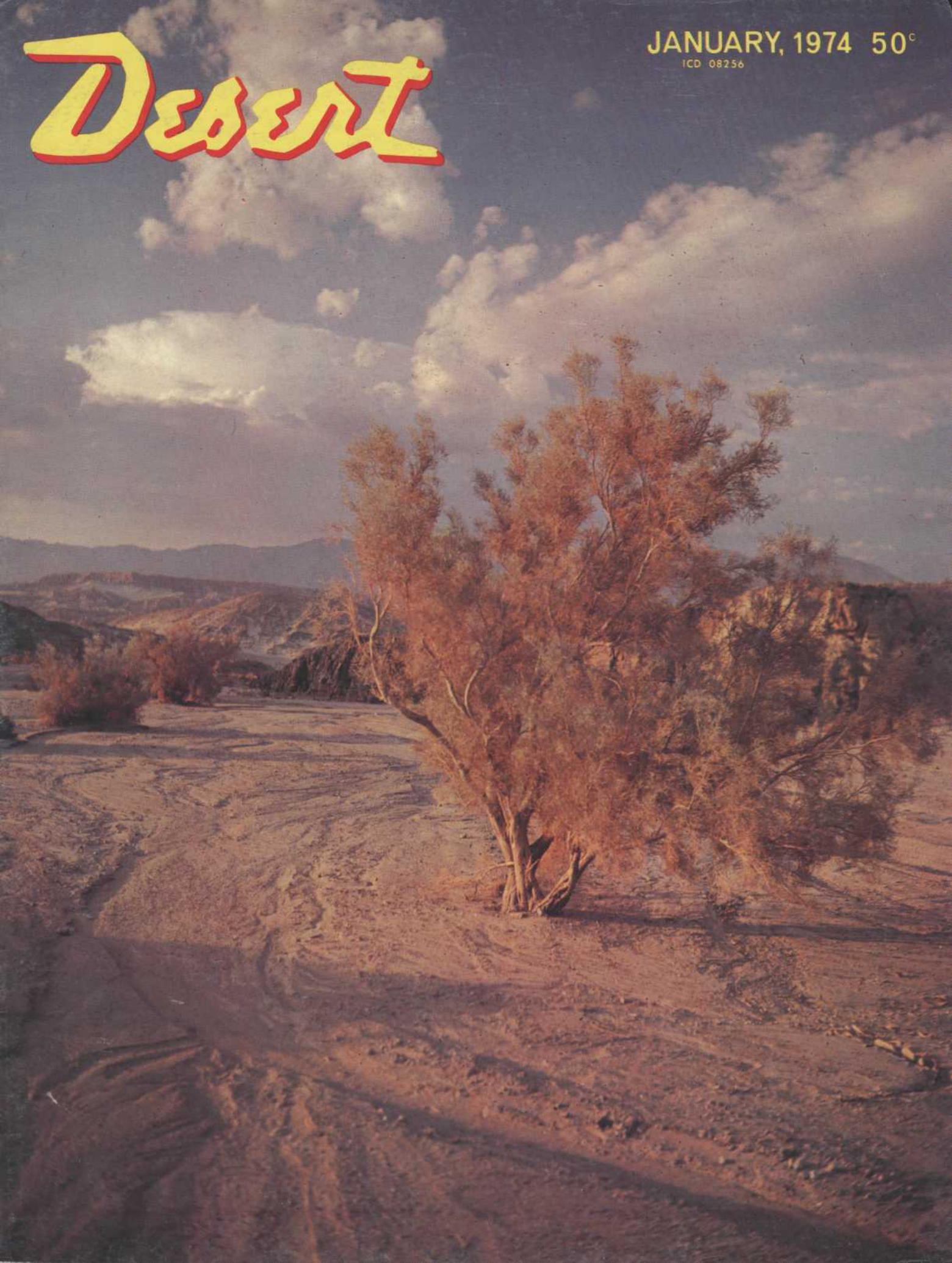


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Volume 37, Number 1

JANUARY, 1974

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THE COVER:

Scenic smoke tree in a typical California desert wash. Photo by George Service, of Palm Desert, California.

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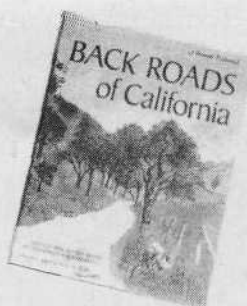
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THE DESERT is a wonderful place to relax and forget those 9 to 5 problems. With more time off through shorter work weeks and extra vacation time, the desert is attracting many different types of recreationists.

Last month we explored the Hugh Osborne State Park, center of dune buggy activity, and this issue we go sand sailing on California's El Mirage Dry Lake. With text by Helen Walker, and photography by Howard and Edward Neal, a father-son combination, it sails across our centerfold and tells about a new breed of men.

Gold lovers will appreciate two articles in this issue. One deals with the hydraulic mining days of old, while the other describes places of placers in Arizona. If gold doesn't excite you, and buffalos are your bag, well Buddy Mays will keep you entertained with his *The Bisons are Back*. Bruce Vinson rounds out the issue with a circle tour of volcanoes in the desert.

In our October issue, the article on the Providence Mountain region contained a map showing how to reach the Woods Mountain petroglyphs. Access to Woods Wash, as shown, is through private property, and permission had to be granted by the owner to those who wished to view these excellent examples of rock art. However, due to abuse, litter, cattle gates being left open, etc., the owner is now turning back all trespassers. There is a 4WD trail entering Woods Wash from the south, though it is not shown on this map. It should appear on all topo maps of the area. Our apologies to any of you who made the Woods Wash trip in vain, but it again points out that a few can spoil it for all.

Another item that needs clarifying is a letter from reader, R. G. Luke, appearing last month, in which he stated that "Tecopa Country" (Nov. '73) would be closed under the BLM Desert Use Plan. An editorial reply was inadvertently omitted assuring Mr. Luke and the readership that his interpretation was incorrect and that the closure applies only to Amargosa Canyon, of which there is no mention in the article. Everyone should obtain a copy of the Desert Use Plan, which spells out plainly all three classifications. These are available through the Bureau of Land Management, Box 723, Riverside, California 92502.

Relative to the many queries received regarding the submission of manuscripts and photographs, we are always pleased to review material for possible publication. Photographs do not necessarily have to accompany manuscripts, but it is preferred. A self-addressed, stamped envelope, however, must be included if material is to be returned.

William Kautz

A Peek in the Publisher's Poke

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ELEPHANTS OF

Right: A prime example of Anza-Borrego's elephant trees. Photo by Louise Lovett. Below: *Bursera microphylla* in bloom. Photo by Ralph Cornell.



ELEPHANTS HAVE been sighted in the California desert. Though not the jungle variety, the desert version exhibits characteristics worthy of its namesake. A thick swollen trunk is clearly visible—it likes to tank up on available water. It bleeds red when wounded. The elephant can be found in herds or individually. In the past, there have even been organized hunting expeditions to find them. Today, the elephant's pasturage in California is protected, helping to perpetuate the species. But here any similarity to the four-legged pachyderm ends, for this desert elephant sports yellow-green paper-like bark, reddish-brown twigs, dark green foliage, and blue berries.

The odd looking elephant tree, or *Bursera microphylla*, is a rarity to the United States found only along the western edge

of the Colorado Desert and in the Gila range of Arizona. It is, however, commonly found further south in Baja, California, and Sonora, Mexico, where it is known locally as *Torote*. Scientifically, the elephant tree belongs to the *Burseraceae* or Torchwood family, named in honor of sixteenth century botanist Joachim Burser. This is the only native species representative of this subtropical family in California. A swollen trunk, tentacled branches, blood-like sap within the bark, and a unique color combination have all combined to make this tree a botanical oddity.

The elephant tree is also an able drought resister capable of maintaining life in a very arid climate. Its thick, pulpy trunk readily absorbs and stores water, giving it a swollen appearance suggesting the trunk of an elephant. This massive

ANZA-BORREGO

by
Diana
Lindsay

trunk also suggests a large tree. However, the tapered branches which somewhat resemble octopus tentacles reaching for the sky, are stunted, thereby giving the tree a shrub-like appearance. Generally this tree never exceeds a height of six to 15 feet in the United States, but in Mexico some have occasionally grown to a height of 30 feet. Mexicans have referred to the branches in naming the tree rather

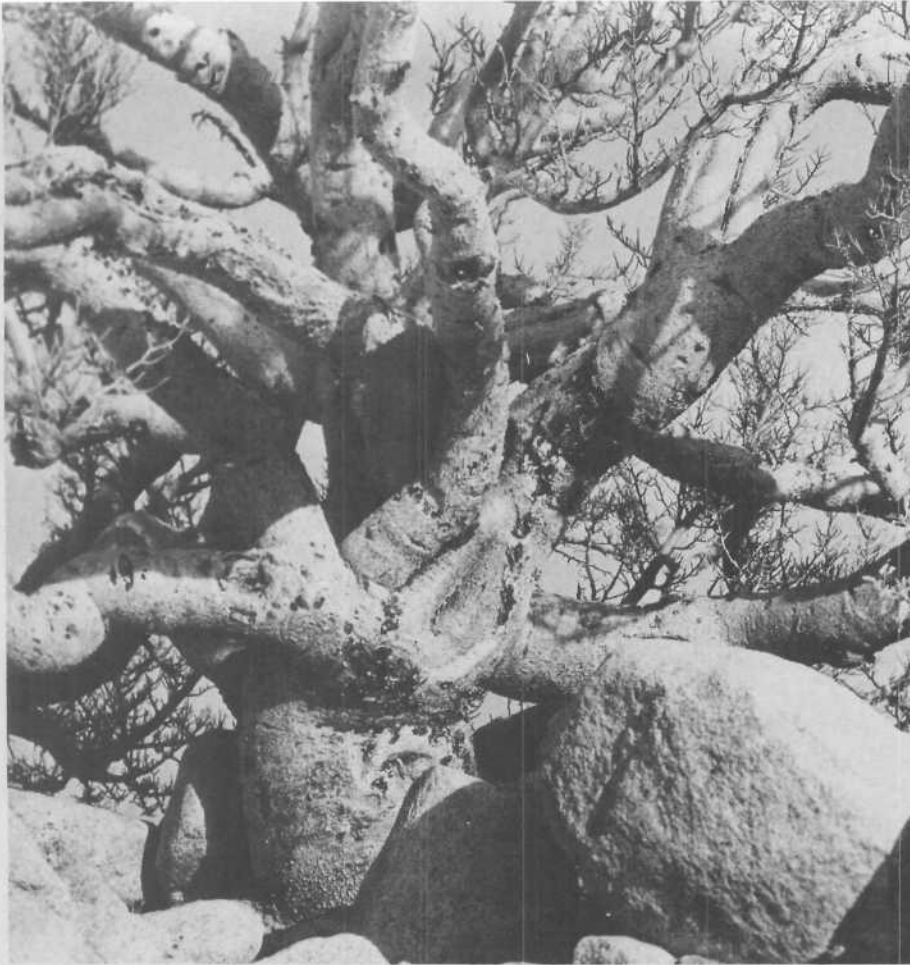
than to the appearance of the trunk. *Torote* is Spanish for twisting, which aptly describes the tentacled branches.

Paper-thin, yellow-white sheets make up the outer bark layer of the limbs and trunk. As this parchment layer dries, it curls, exposing an inner green bark. Below the green layer are reddish layers. During certain seasons red sap will ooze from within the bark if the tree is cut.



Right: An elephant tree seems to spring to life from its rocky surroundings. Photo by George Bergstrom.





Bursera Microphylla. Photo by Ralph Cornell.

The branch tips are darker in color than the limbs and trunk, showing a reddish-brown hue. At the end of each branch are sub-branches from which clusters of dark green fern-like leaves are attached. The twigs and oily textured leaves have an aromatic fragrance much like that of cedar. The tree usually flowers in summer and small blue, pea-sized berries ripen in fall.

Quite confusing is the fact that *Bursera microphylla* is not the only plant referred to as "elephant tree." Botanist Edmund C. Jaeger expanded on the problem in a past issue of *Desert Magazine* (November, 1956):

"On our Colorado Desert in California and adjacent Arizona we call the small, fine-leaved, pungent *Bursera microphylla* an elephant tree. Farther south around San Felipe along the Gulf of California, the apple tree-like large-leaved copal (*Elaphrium macdougalii*) is called an elephant tree. Farther down the peninsula the *Pachycormus* (*discolor*) is spoken of as an elephant tree. This is most unfortunate for each plant is so totally different that even the novice in plant lore will at once realize that the plants are probably distantly related."

Dr. Jaeger concluded in his article that the elephant trees of the Vizcaino Desert of central Baja (*Pachycormus discolor*) should be the only ones that deserve the epithet of "elephant tree." Nevertheless, *Bursera microphylla* still retains the descriptive name.

The elephant tree reportedly has many uses. The aromatic oil has been burned by Mexicans and Indians as incense during religious ceremonies and the red bark has been used as a source of dye and tannins. According to one source, the tree's sap has been used to caulk boats, glue furniture, mend broken dishes, and preserve wood from attacks of worms. Indians in Sonora reputedly used the branches in basketry. The resin, known commercially as copal, is employed as a base for varnish. Healing properties have also been ascribed to the elephant tree. It was once a popular remedy for venereal disease, dropsy, dysentery, and yellow fever. The sap was applied to cure insect bites and scorpion stings and the smoke from a burning tree was inhaled as a remedy for headache.

According to Lowell John Bean and Katherine Siva Saubel, authors of *Temalpakh: Cahuilla Indian Knowledge and*

Useage of Plants, the elephant tree or *kelawat enenka* (bitter wood) was associated with great power among the Cahuilla Indians of California. Consequently, the healing red sap was administered by shamans or medicine men and always kept well hidden in households. Cahuillas also used the red sap to obtain "power" whenever they played the popular gambling game of peon.

Most of California's elephant trees are located within the protected half-million-acre Anza-Borrego Desert State Park in San Diego County. Though now a park attraction, it took many years to establish the fact that these trees actually existed outside of Mexico.

During the early 1900s, an old "desert rat" told Edward H. Davis, of Mesa Grande, that he had seen trees the size of overgrown bushes looking like elephant trunks that bled red. In the winter of 1911, Davis and his son found a group of these perennials in the present Elephant Tree area of the park, just north of Split Mountain. Davis' discovery and subsequent naming of these trees went unnoticed.

Again in the 1920s, "a grizzled old man" told tales about seeing some trees that looked like "a herd of elephants." In January, 1937, a Palm Springs naturalist, Don Admiral, and a representative of the United States Department of Agriculture, E. M. Harvey, went exploring for this bleeding tree. Their search ended when they found one single specimen (*Desert*, November, 1937). This find excited botanical museums and universities who had not known about the tree's existence in the United States.

In November, 1937, the first organized elephant tree hunt was scheduled with the hope of finding more than the one elusive tree. "Hunters" included: three members of the San Diego Natural History Museum, Clinton G. Abbott, Frank F. Garder (with son David), and Allan Stover; Guy Fleming, superintendent of state parks in Southern California; and Harold Sverdrup, director of Scripps Institute of Oceanography. Their careful search proved successful when 75 trees were found on the rocky slopes of the Vallecito Mountains.

Since that time desert travelers have visited tree sites to ponder about this strange tree. More often than not, visitors would "prove" they had found an ele-

phant tree by cutting its bark to see if it would bleed. Unfortunately, this practice has caused damage to some of these rare California plants. Visitors are urged to remember that these and all plants are protected within the state park.

To view these curious plants, drive to Ocotillo Wells on state highway 78, adjacent to the eastern edge of the Anza-Borrego Desert State Park. Go south six miles on Split Mountain Road toward the park's Fish Creek Primitive Camp. At mile three, the road will turn east at the site of the now defunct Miracle Hotel and Little Borrego Townsite. The only visible sign left today of this "boom town" is a concrete slab which often attracts desert campers looking for a level place to park their vans and trailers.

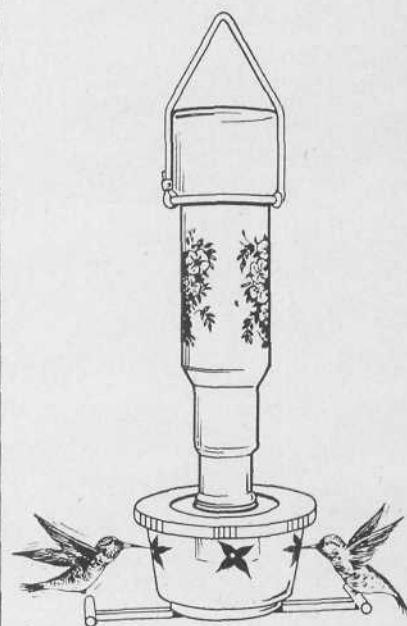
The road jogs around a power substation and then turns south again. A sign, one mile past the substation, marks a dirt road leading west to the Elephant Tree area. Cars can be driven one mile

up this dirt road and parked. A one-and-a-half-mile trail will lead the visitor to a rocky hillside where several stands of elephant trees can be seen. Some 500 specimens have been counted in this area of the park.

Scattered specimens can also be seen further south in the park off highway S-2 in Indian Canyon near Mountain Palm Springs Primitive Camp and in Bow Willow Canyon, three miles further south. A ranger station and campground are maintained at Bow Willow. Visitors to this area of the park can obtain specific information as to good elephant tree sites from the park ranger on duty.

Should you decide to pack your own kind of trunk and take a weekend safari to the Anza-Borrego area, you will be rewarded, not only by these monstrous foliated structures of nature, but by the many picturesque qualities of this desert's changing scene, and its indigenous plant and animal life. □

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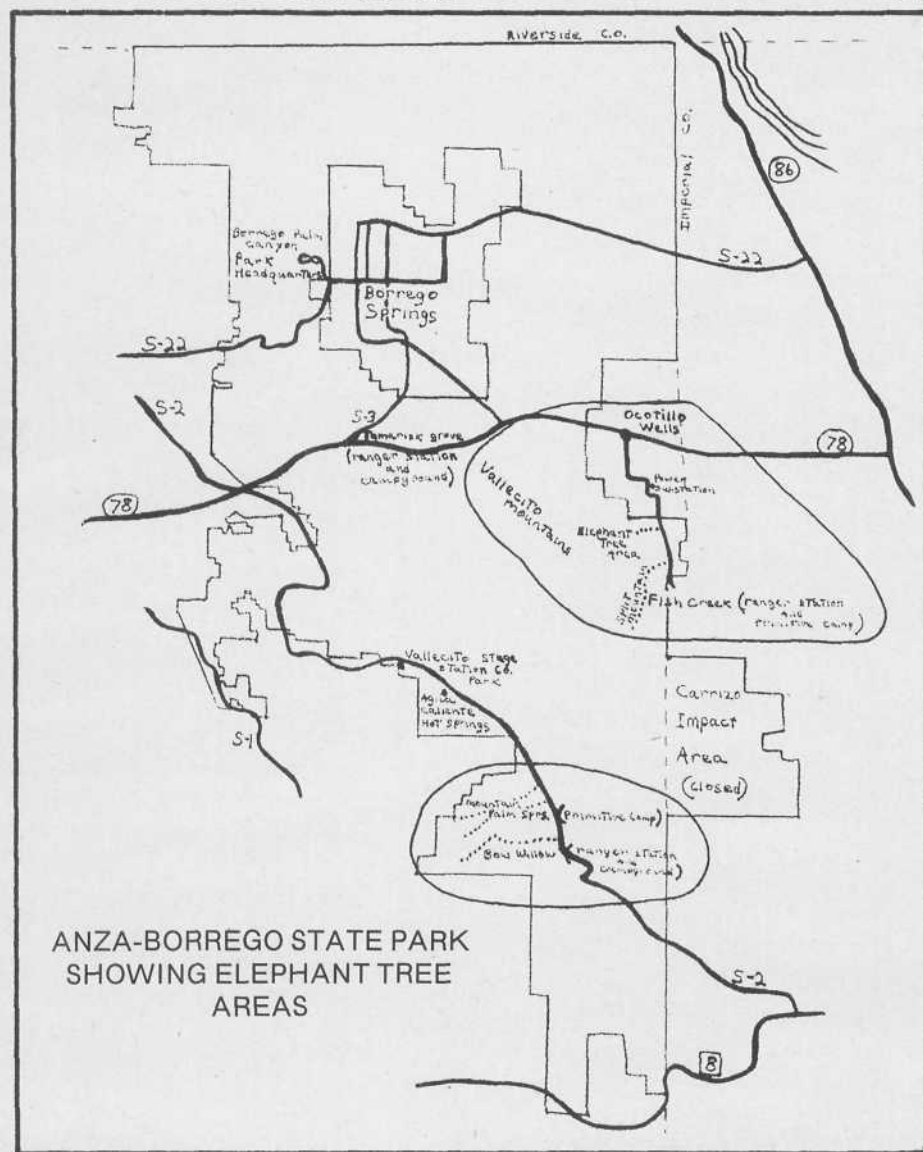
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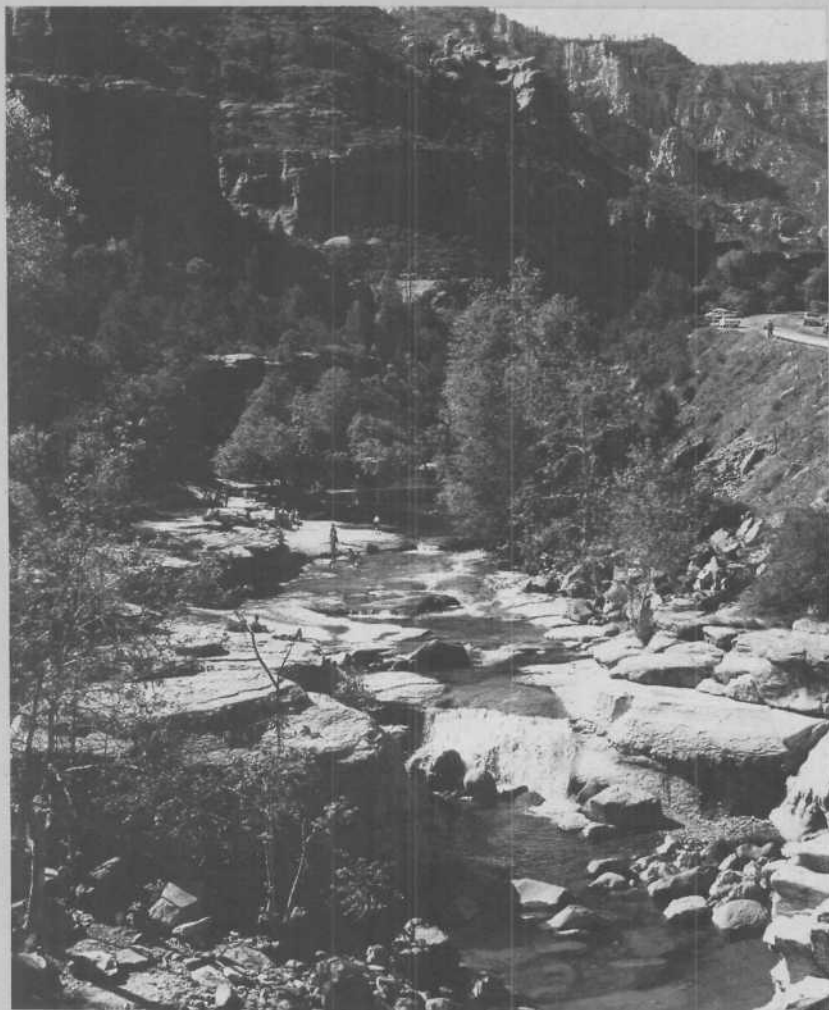
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ANZA-BORREGO STATE PARK
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AREAS

Deep in the



Above left: This is a typical view of Oak Creek Canyon about three miles from Sedona. U.S. 89A travels the length of the canyon, paralleling the creek between high, colorful sandstone walls. The canyon floor and terraced walls are heavily forested. Left: Within three miles of Sedona, the only trace of civilization is an occasional contrail left by a high flying jet plane. Right: The trail toward Soldier Pass is rough and travels through primitive forestlands. The final miles of this trail are so deteriorated they must be hiked.

Heart of Arizona

by
F. A. Barnes

*Fording Oak Creek
at Red Rock
Crossing can be
tricky in places.
Here, a normally
agile sand buggy
has to slow down for
some deep,
water-filled
crevices.*

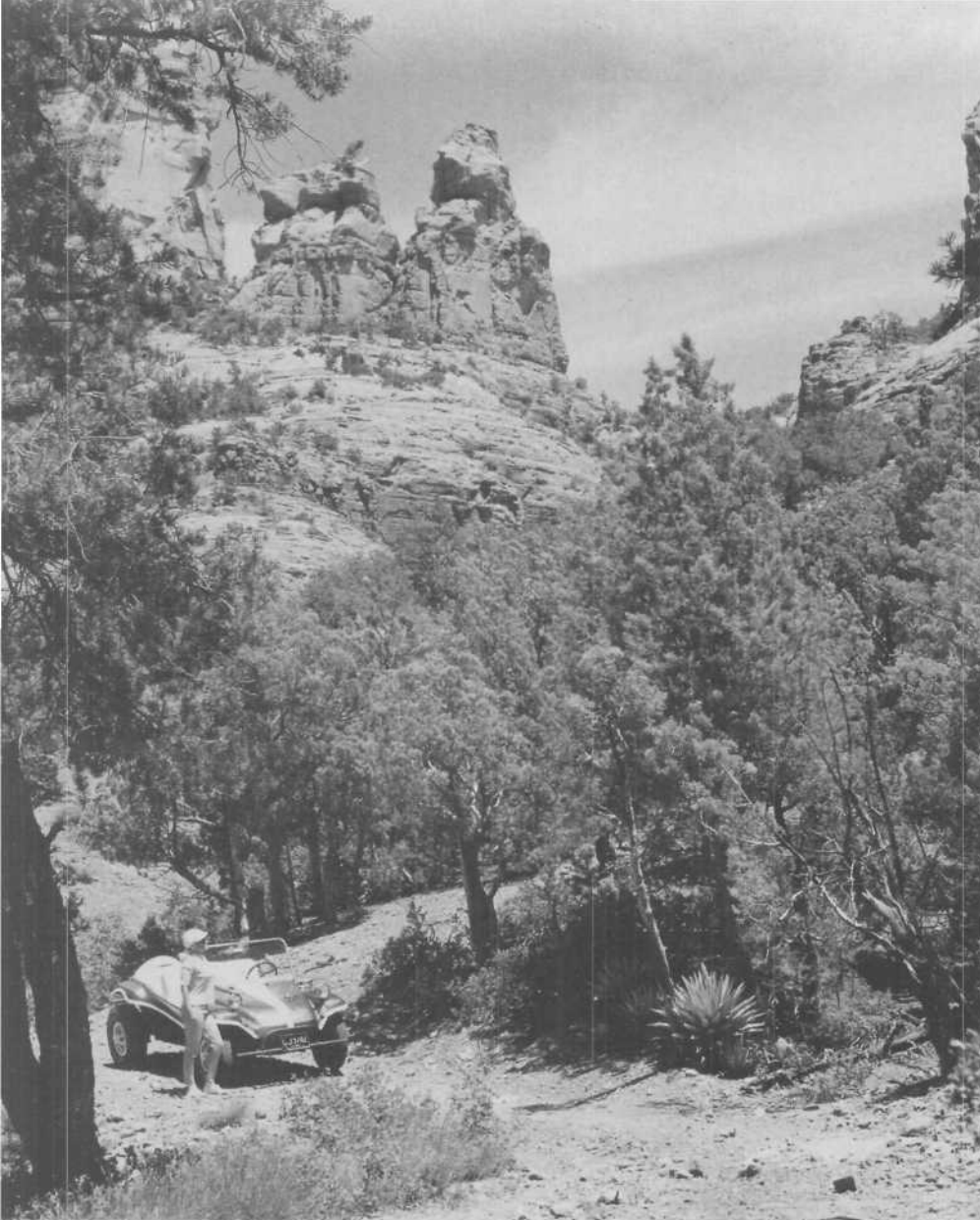
EVERYONE IS familiar with the song extolling the beauty to be found "deep in the heart of Texas," but how many know that deep in the heart of Arizona is a land surpassed by none when it comes to scenic beauty and recreational potential? This land lies near the heart of the Coconino National Forest and is centered around Oak Creek Canyon and the picturesque town of Sedona at the mouth of that canyon.

The Sedona-Oak Creek Canyon area has almost everything of interest to travelers. The town, itself, offers commercial accommodations of all sorts, and there are numerous developed campgrounds in the surrounding National Forest. There are trails for hiking and off-road vehicles, lakes and streams for fishing and swimming, historic and archeological attractions, and natural wonders such as arches, bridges and giant sinkholes.

Sedona also offers many displays of various local arts and crafts and, together with nearby Flagstaff, can provide all the usual amenities for that occasional "night on the town."

For those planning to explore this region, a detailed recreation map of Coconino National Forest can be obtained from the offices of the Sedona Ranger District, at Sedona, Arizona. This map contains a wealth of useful information concerning recreation, wildlife, geology and other aspects of this fascinating region.

Sedona is very near the geographic center of Arizona, but it is also centrally located to quite a number of large cities,



Above: The Steamboat Rock trail travels through picturesque forestlands high above the floor of Oak Creek Canyon. The trail is short but very scenic. Right: People come from far and wide to enjoy the water and setting at Sliderock on Oak Creek in the heart of Arizona.

and the routes to Sedona country travel through or near many other traveler attractions. Denver and San Francisco are each some 800 miles from Sedona. Los Angeles, Salt Lake City and El Paso are around 500 miles away, Las Vegas is less than 300 and Gallup and Tucson are only a trifle more than 200 miles from Sedona.

Along the major routes to Sedona are Death Valley, Lake Mead, Zion, Bryce, Lake Powell, Arches, Canyonlands, Canyon De Chelly, Petrified Forest and many other national and state parks, monuments

and recreation areas. Thus a trip to Sedona and Oak Creek Canyon can be combined with other highlights to produce a truly wonderful trip through the great southwestern mountains and desertlands.

But despite its reputation for desert, Arizona contains other climatic regions, and the Sedona-Oak Creek Canyon area is one of these. There, the terrain is a pleasant blend of high, cool forests and high, semi-arid desert. Vegetation is dense and includes a wide variety of deciduous and evergreen trees, shrubs, cacti and annual wildflowers. The soil varies from rich forest loam to red clay to solid sandstone slickrock.

There is virtually no limit to the recreational potential of the Sedona-Oak Creek Canyon area. For a sample of what the region has to offer, try some of its roads and trails. Many of the roads that penetrate the highly scenic backcountry can be traveled by ordinary passenger car, others require some sort of off-road vehicle. Most, but not all, of such roads and trails appear on the Forest Service recreation map or local maps available from the Sedona Chamber of Commerce. The map accompanying this article shows a few of the points of interest and the principal roads and trails in the immediate vicinity of Sedona.

As you sample the area by vehicle, watch for places worth exploring on foot. There are many developed and primitive foot trails that lead to scenic highlights,



and hiking up into the rimrock country that surrounds Sedona and Oak Creek Canyon can be a highly rewarding experience, especially for rockhounds, photographers and those interested in scenic beauty and wildlife.

The area is also rich in human history. Like so many parts of Arizona, the Sedona region has a colorful past, and was heavily inhabited by Indians in still earlier times. Archeological sites abound, but it is well to remember that all such sites and artifacts are protected by federal law. Significant finds should be reported to the nearest Forest Service office.

To sample some of the scenic roads and trails near Sedona, try some or all of the following:

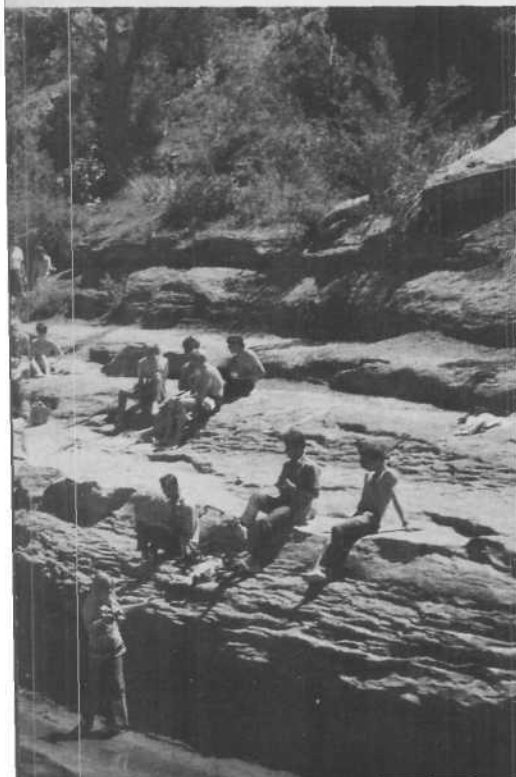
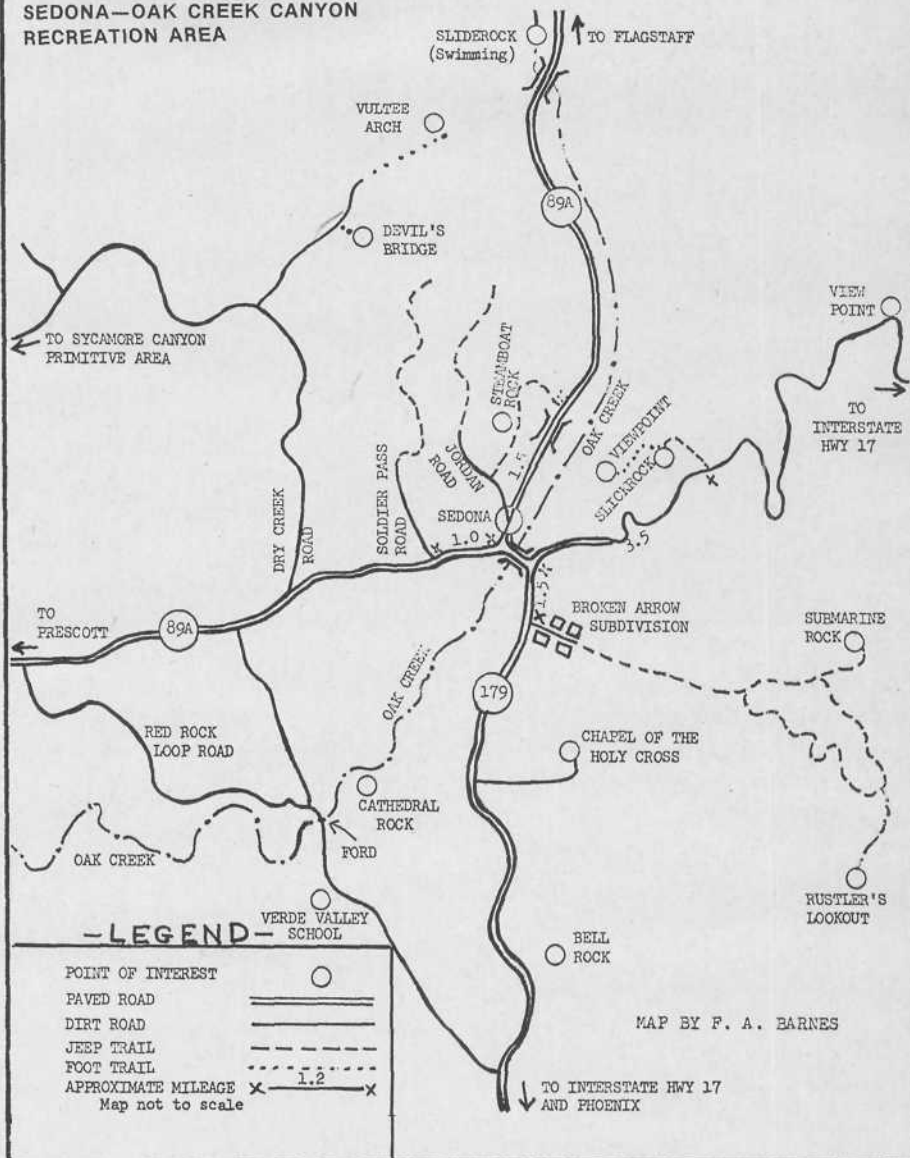
For highway vehicles, try the Red Rock Loop Road, Rock Creek Road to the Sycamore Canyon Primitive Area, U. S. 89A up Oak Creek Canyon, Arizona 179 south to Bell Rock and the fascinating Chapel of the Holy Cross, and the drive up to the Schnebly Hill canyon rim viewpoint.

Those with off-road vehicles should first try the trails to Rustler's Lookout and Submarine Rock, to Steamboat Rock, and up toward Soldier Pass.

For hikers, the trails to Devil's Bridge and Vulture Arch will serve to whet the appetite for ventures into still more primitive country.

But whatever your activity or interest, if the season is appropriate take an afternoon swim at Sliderock. Here, the clear

COCONINO NATIONAL FOREST SEDONA—OAK CREEK CANYON RECREATION AREA



waters of Oak Creek have cut into the solid red-hued sandstone that floors the canyon, creating a series of elongated natural pools and slippery water-shutes. Children and hardier adults enjoy being carried down these watery slides by the rushing stream, while the deeper pools offer everyone respite from the warm desert sun. Indeed, the water and setting at Sliderock are so pleasant that people come from nearby communities, or even from the big cities to the south on weekends, just to swim and sunbathe in the rocky grottoes of Sliderock.

When is the best season for visiting Sedona and Oak Creek Canyon? Well, all seasons are lovely there, but perhaps the best seasons are spring and fall. In the spring, the land is ablaze with wildflowers and blossoming shrubs and cacti. The weather is moderate and the summer thunderstorms have not yet started.

January, 1974

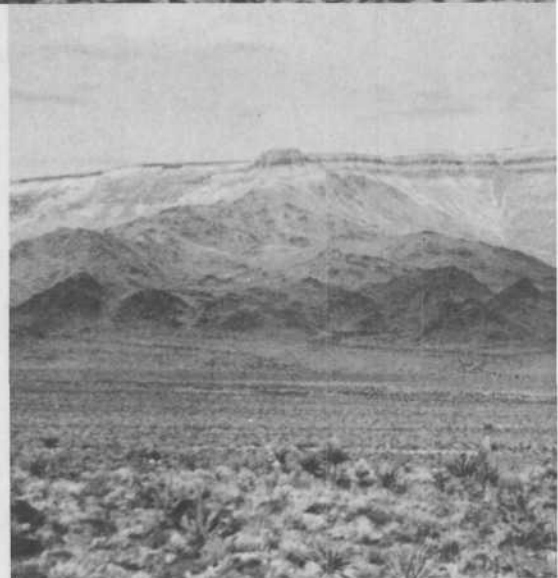
In the autumn, the weather is even more placid, and other species of flowering plants are in full array. Then, too, the cooler nights are changing deciduous foliage from bright green to even brighter hues of red and amber and yellow.

Both spring and fall are delights in Sedona country, but winter also adds a special beauty. Then, infrequent storms throw a mantle of white over the evergreens and redrock walls and pinnacles, and the gentle waters of Oak Creek freeze to form crystalline fantasylands of cascading ice.

But whatever season you choose for a visit to Oak Creek Canyon and Sedona country, you will find it a place of special beauty, a place where family recreation has many aspects, and where the highly touted splendors of central Texas play second fiddle to the land that lies "deep in the heart of—Arizona!"



Above: One of the two dozen red and black cinder cones southeast of Baker, viewed through typical Mohave Desert vegetation. Right: Layer-cake plateau east of Mitchell Caverns, the remains of a series of vast flows that once covered this entire area. Below: Amboy Crater, showing where the wall of the cone was breached by the final eruption.



Volcanoes in the Desert

by Bruce Vinson

ON A VACATION in the desert, the last thing most people expect to see is the inverted black cone of a volcano. Eroded mesas, saline valleys, sandy hills—these are more typical features of the desert southwest. Yet the Mohave Desert—that wide, barren land stretching east and south from the neighborhood of Mohave to Nevada and Arizona—is a graveyard of old volcanic remnants.

Many of the Mohave's mountain ranges are the remains of huge lava flows so ancient that their volcanic form has been eroded away, and they now look like any other mountains. But the most recent eruptions—and there have been many, even in the desert—still show their volcanic shape. Dozens of smooth-sloping, jet-black hills of cinder dot the Mohave landscape, jutting up from flat white

basins or perched atop the barren hills. Their dark tips form a characteristic skyline feature of the Mohave—noticed in passing as familiar shapes, but rarely recognized for what they are.

A good way to see volcanoes in the desert, while enjoying some remote desert scenery, is to take a 200-mile circle tour from Barstow, southwest on U. S. 66 to Amboy, then north along the paved-and-dirt road up through Kelso to Baker, returning west along Interstate 15 to Barstow. Some of the volcanoes, lava beds, and old igneous mountains are close to the road for easy exploring. Others are back in the hills or reached by rutted dirt roads—appealing to the more adventurous. Along the Amboy-Baker road are plenty of out-of-the-way sites for car-camping. And as you hike over the lava

beds and clamber up the cinder cones, you'll see innumerable volcanic roads weirdly and beautifully shaped by the Earth's inner fires, like an outdoor museum of natural art.

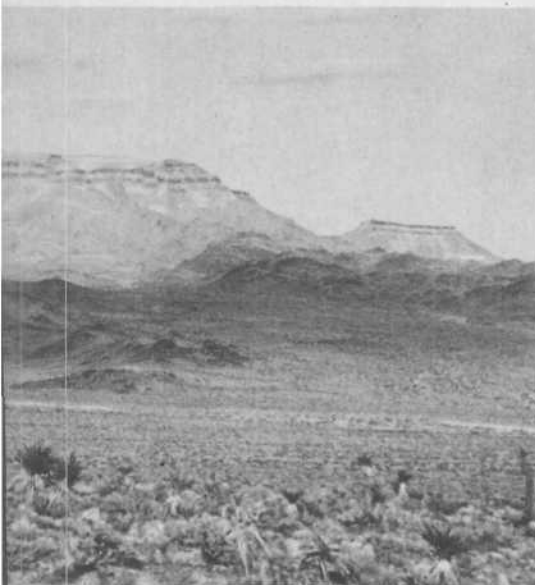
The first of the ancient volcanic mountains is just 20 miles east of Barstow. At Newberry Springs the road passes the north flank of the Newberry Mountains, a series of steep crags built up from ancient eruptions. The weathers of many centuries have so eroded the hills that only the texture of the rock shows it to be volcanic. But high up in the hills is a more recent volcanic cone, with a stream of frozen lava curving down a narrow valley toward the highway. A side road leads south about half a mile, so you can drive right up to the edge of the igneous rocks and get out for a short hike-and-climb among fantastically shaped volcanic crags dating back to the Age of Dinosaurs.

You'll reach the first big event among the volcanics another 15 miles east, where the northern tip of the Black Lava Beds reaches the highway. Another mile farther, and a dirt road leads south, winding among the lava crags of Pisgah Crater. You can park along the road for a picnic in the white sand that has flowed between and over the black lava. Some of the lava rocks are up to 10 feet high, not solid but split and craggy, with paths and labyrinths and little dark hideaways half-filled with drifted sand. From here, Pisgah is a dark rounded mass outline against the

sky. About half a mile farther a gate bars the road to cars, with dire warnings about the dangers of hiking up the loose cinder of the cone.

For Pisgah has been used as a pumice quarry, and some of the mining machinery is still in place. It is private land, belonging to the Atchison, Topeka and Santa Fe railroad. On the south side of the crater a high tower—the end of a conveyor belt—rises into the ragged gap left in the crater's rim by the diggers. Much of the lava around the quarry-yard has been crushed, but around back toward the east slope of the crater is a still-intact lava flow, about the size of a football field, of a strange appearance. It is a low flat dome, deeply fissured, and the rock is full of tiny gas-bubbles like cinder, but the markings show that it was once part of a semi-liquid lava flow. There are rows of small curved ridges where the lava hardened as it flowed, freezing the wave-forms of the magma in place. It looks like a huge petrified cake batter—black, so it must be licorice cake.

The Pisgah Crater is the northernmost in a row of cones stretching southeast for about five miles to Sunshine Peak. All of them erupted on or near a crack in the earth—the Pisgah Fault—that runs just east of the Lava Mountains. Other volcanoes in this part of the desert have less obvious origins. The chief of these is the Amboy Crater, 40 miles farther east. It is on public land. To reach it, curve to the right just beyond Ludlow, along the





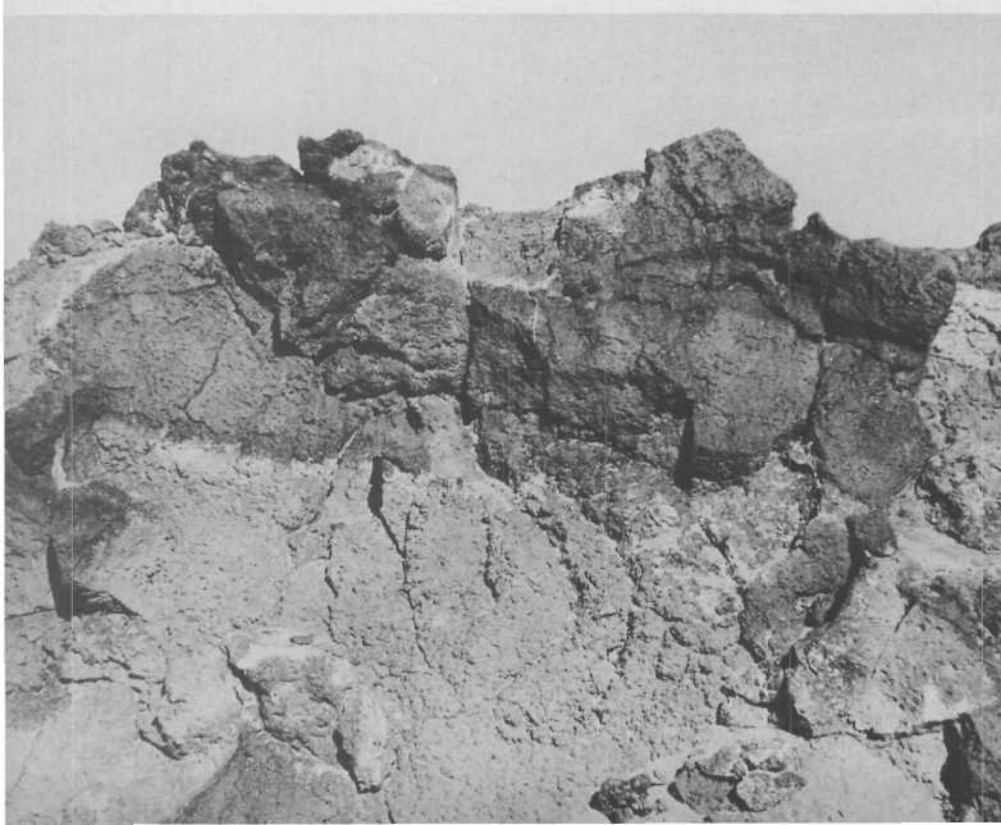
Author's daughters, Rachel, left, and Naomi, prospecting for lava sculptures.

old route of 66. The new route passes about 10 miles to the north, and does not rejoin the old highway for about 60 miles.

You can see the Amboy Crater about a mile off to the right just before reaching the town. The cinder cone, about 200 feet high, sits at the center of a black basaltic lava flow several miles in diameter. In places the surface of the flow is very

rough, with huge craggy walls of lava and steep, cave-like depressions. This lava flow is one of the best places in the Mohave for looking at and taking pictures of fire-sculpted rock art. No two of the lava lumps are alike, and each seems to resemble somebody or something—a house, a ship, an angry man, a dented kettle. Walking among these rocks is like play-

Wall of multi-color lava, Amboy crater lava field.



ing the game of seeing pictures in the clouds. Only in this case the clouds are solid and black, and you can hold them in your hands and climb on them.

But there's also enough smooth surface for easy walking right up to the base of the crater. Here the flat lava pavement is cracked like an old sidewalk, with the criss-cross lines of the cracks half-filled with sand. A steep path, visible even from the highway, heads straight up the cone to the top. But this is the hard way up, and the path must have been cleared by people who didn't know about the other approach to the crater.

Around the cone to the right is a wide opening, where a later eruption breached the crater wall formed during the first outflow of cinder and lava, spilling a smaller flow of even more rough-and-tumble rocks over part of the first layer. You can walk up through the opening to stand in the middle of the old volcano and imagine what it must have been like at this spot one day, a thousand years ago, when red-hot rocks pushed up like half-liquid taffy through the crater's old vent, and then poured down in an avalanche of fire in Amboy's final eruption.

About six miles east of the Amboy Crater, the second leg of the Mohave's volcanic triangle begins. Here the 70-mile desert road to Baker leaves the highway. The road climbs and winds past old volcanic mountains, high sand dunes half-covering the dark lava hills, and a three-by-five-mile volcano field with more than two dozen cinder cones, both red and black. The road is paved for the first few miles, then it passes over a series of toppings—gravel, washboard, packed dirt, bumpy rocks, paved again—that form a sampler of back-country road styles.

Off to the left, about 10 miles north of Amboy, are two old, worn-down volcanic ranges—the Bristol and Old Dad Mountains. Their non-volcanic foothills reach almost to the road, and side roads lead up into remote mountain valleys—snug hideways for overnighing. To the east are the Marble Mountains, also volcanic, and hidden beyond them are the even older Clipper Mountains. Here, at the heart of the Mohave, you are surrounded by a volcanic landscape of most venerable origin.

In another 10 miles the road rises to its highest place between Amboy and

Baker, with the Granite Mountains to the west and the Providence Mountains to the east. Within the Providence range are the Mitchell Caverns—best reached by the road that leads north from Essex, 30 miles east of Amboy. The limestone caverns were formed at a time when the plains to the east were covered to a depth of several hundred feet with thin, multicolor layers of lava from the gentle, widespread flows of ancient times. The caverns were carved by the drainage back-up caused by the lava dams. Since then the lava plateau has been eroded many miles eastward, and now, away on the horizon, the plateau's cliff-like edge shows like a giant layer cake. The chocolate is formed by volcanic ash, while the more exotically-colored flavors are made up of a variety of lava flows: red, cream, gray. Near the foot of the lava-cliff are caves and gorges carved by water into the soft red volcanic rock—a New World labyrinth with rattlers for Minotaurs.

From this high place the Amboy-Baker road heads down a long gentle slope to the Kelso Valley. Beyond the town an old road half-covered with sand leads to the Devil's Playground, where ancient hills of lava are intermixed with large sand dunes. But the climax of this volcanic journey is reached a few miles farther on, about 50 miles out of Amboy. Here is the 15-square-mile field of cinder cones and lava flows, largely on public land. A dirt

road leads to the right, almost up to the base of the nearest cone. And all around it, to the north and east, the horizon is dotted with pointed and rounded mounds of red and black cinder and ash. These are young volcanoes—formed no more than 10,000 years ago. The two dozen or more cinder cones rise from a wide flat plain half overgrown with cacti and other desert plants. Some cones are close by, others are scattered at roughly quarter-mile intervals. Viewed through the openings between the desert plants, the stark lumps of lava rock made a strange contrast of extremes in landscape. Here, the volcanic and the desert landscapes are combined into a new entity. It almost seems like another world in another place, a quieter harsher world, yet with its own unearthly shapes and darkly severe beauty.

Climb up the nearest cone at sunrise, and as the low golden light strikes the rounded hills, you will see a faint echo of what it must have been like once long ago when the valley of the cinders was erupting. There may have been six or eight volcanoes going off at once—spouting red plumes into the sky, pouring hot golden rock across the fields before the black pumice frothed up to build the darkling cones. To the animals and natives of the region, it must have seemed as if the earth were beginning to ignite and burn up from below.

And at the end of the day—for this is

a good camping place—the dark red glow of sunset light fades into blackness, and it is almost as if you are watching the volcanoes themselves die into coals and embers, and slowly cool into solid rock as their own long night comes on.

Beyond the cinder-cone city, the road passes beside some of the lava flows poured out by these recent volcanoes, finally reaching hardtop just before meeting Interstate 15 at Baker. About 15 miles west of Baker the highway curves through a narrow gorge between two peaks of the volcanic Soda Mountains, but from there on, the volcanics are fewer, and farther from the road. The best of them are perched on high hills in the Calico Mountains, northeast of Barstow. Other ancient volcanoes of this region, as far north as the Eagle Crag, are either on land that is off-limits to civilians, or accessible only on foot, on old trails that wind past abandoned mining claims. And that's another adventure altogether.

There may be a hundred or more cinder cones scattered throughout the Mohave Desert and Great Basin, in addition to many ancient volcanic mountains, and rivers of frozen lava both young and old. And those of the Mohave's igneous triangle—Barstow to Amboy to Baker to Barstow—give an accessible and concentrated sampling of this widespread but little-known feature of the American Southwest—volcanoes in the desert. □

*Mining
machinery
at Pisgah
Crater.*



PANNING FOR G

ANYONE CAN see he's got gold fever. Had it for years. He's standing at the fork of any two dirt roads in Arizona's gold country just to make sure no one jumps his claims. He'll show his gold, but don't expect him to tell you where it came from.

He smells like cigars and the tip of his nose is stained brown from years of smoking them. He pokes weather-split fingers at miniature nuggets in a plastic box.

He's one of many prospectors who has camped by Arizona's gold-bearing stream beds and gulches for years. He only wanders into town when his provisions run out and prays for rain the rest of the time—rain that starts gold drifting from its mother lode.

The gold? It's in the gulches all right, just waiting to be found. The fever spreads fast and you can catch it easily if you get a gold panning expedition of your own together. Grab the garden shovel, a few empty bottles with lids, a hand lens and a gold pan. A 16-inch pan is probably best. Even clumsy panners won't lose the colors (flecks of gold) with a large pan. Take along some drinking water and sandwiches. Plan on getting carried away.

According to the Arizona Bureau of Mines, there are about 60 locations in the state where placer, or loose gold, has been found; some places in abundance. Because gold-bearing rocks exist in most southwestern mountain ranges, placer areas occur in almost every county. The twelve best sites for weekend panners are listed at the end of this article and indicated on the map.

Panning for gold with water is much easier and more enjoyable than dry methods. Robert T. O'Haire, mineralogist at the Arizona Bureau of Mines, suggests taking five or ten gallons of water and a washtub along if a dry desert location is selected for panning efforts.

After a site is chosen, the search begins. Gold really is where you find it, but some "rules" might help.

Pan along a water course. Streams, gulches and arroyos are all potential gold carriers. Because gold is six or seven times heavier than ordinary rock, it tends to concentrate along the bottom and toward the middle of the bed.

Take a shovel and scoop off at least a foot or two of gravel. Gold is usually found at the bedrock of a water course and two to three feet above. To avoid shoveling too much earth, follow the course toward its source. The bedrock won't be as far down; neither is the gold.

Natural potholes where drifting gold could be caught, and areas where water has slowed down and dropped its gold, should be carefully inspected. Black sand is a good guide that gold may be near, but is not a foolproof indicator. Some areas with little of it have produced much gold.

After the top gravel is removed, place a shovelful of gravel into the pan. Grab the pan on either side and submerge the whole thing in water. Any clumps of dirt should be broken up, and the larger stones picked out. Now lift out the pan and swirl the contents vigorously, one way and then the other. Holding the pan level, jiggle it from side to side. By now

all the heavy particles have settled to the bottom and the lighter, worthless material must be washed away.

Tip the pan forward and wash the gravel from side to side. Let the gravel slosh out a little at a time as it is washed. Now raise and lower the lip of the pan through the surface of the water. This further reduces all the useless gravel between you and the gold. Continue washing until only black sand, and with luck, the gold remains. Hard work? But don't get discouraged. With practice a pan of gravel can be washed down to black sand in 10 minutes.

Now inspect the black sand for gold with the hand lens. If there is any there it will be in the crease of the pan. If anything glitters, SAVE it. That's what the containers are for. Though the gold color may be mica or pyrite, save it just to make sure. According to Mr. O'Haire, a good field test is to pick out the tiny gold fleck and pound on it. If it flattens out it is gold, otherwise it is probably something else.

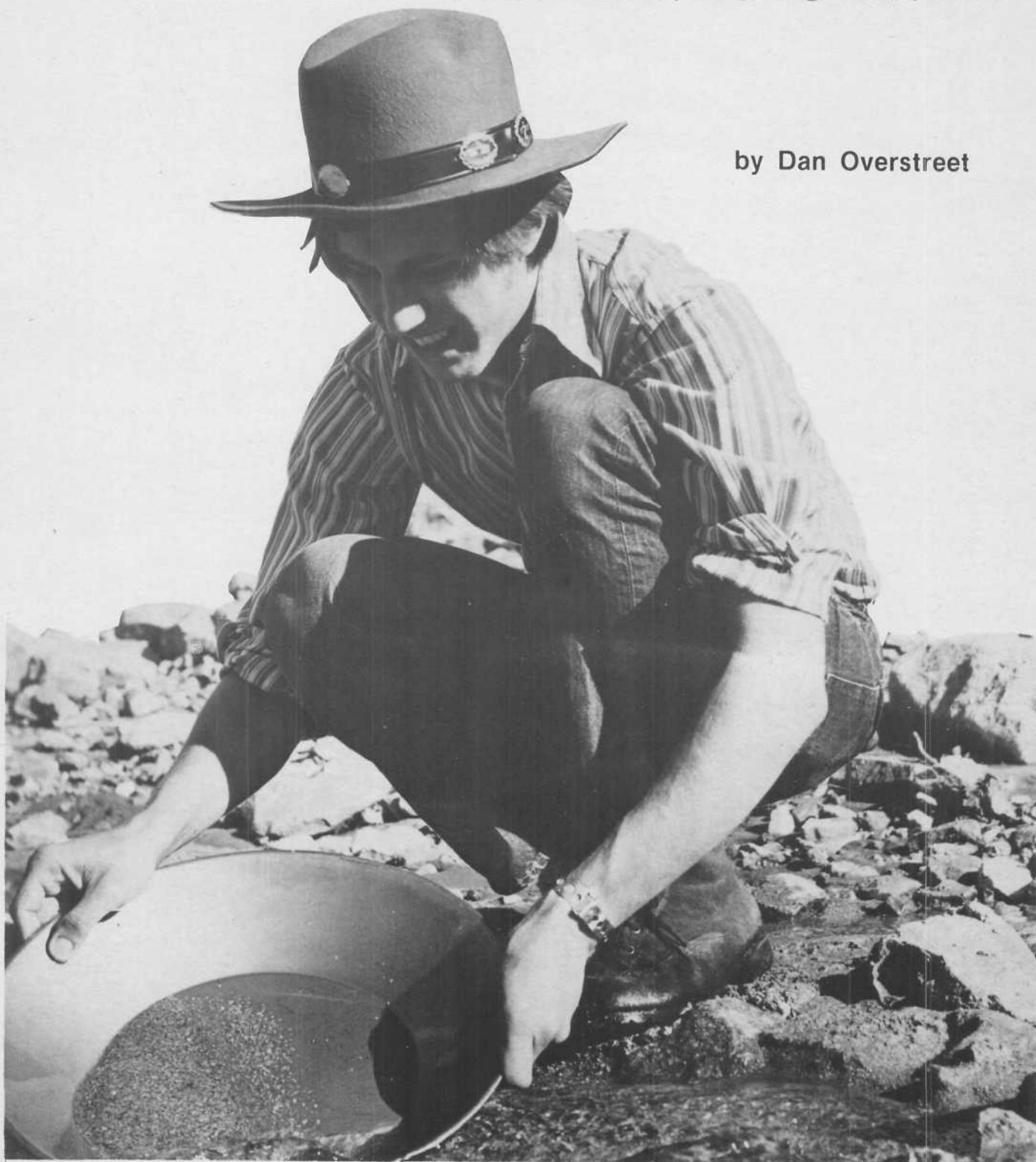
If flecks of gold are apparent in the black sand, the whole mixture can be taken to an assaying office to separate the values from the waste. Even if the bright stuff doesn't pass inspection, just think of the rich experience.

For do-it-yourselfers, there is an alternative, but it must be done carefully.

Rustle up some mercury and a piece of canvas. Gold sticks to mercury; sand doesn't. This is exactly what is needed when something like a gold streak shows up in the pan. Grind the mercury into

OLD IN ARIZONA

by Dan Overstreet



the sand with a pestle or shake the whole mixture up in a bottle. Then put the mercury in the canvas and squeeze the contents through. A residue of mercury mixed with gold will be left behind.

The next problem of separating the gold from the mercury, or restoring, should be left to the assayer. Mercury has harmful vapors and should always be used with caution. Because of its low melting point, a hot day or the heat from a hand can bring the user into contact with dangerous vapors.

In the old days, prospectors would use the potato method for retorting up to an ounce of gold. A white potato was cut in half and a hole big enough for the residue scooped out. After the residue was put in, the potato was wired together and baked in the ashes of an outdoor campfire. The potato absorbed the mercury leaving behind a small button of pure gold.

An old prospector wearing suspenders

warned about this practice. "You got to be real careful when you melt off the mercury. When you use the potato, first wrap it in foil. Stick it in the campfire for about three hours and get the hell out of there. Those vapors are bad. That's how I lost most of my teeth. Six of them turned black and fell out when I breathed those mercury fumes."

Just remember that "all that glitters is not gold," and that "gold is where you find it." It's the challenge that gives most prospectors gold fever, and meeting that challenge year after year makes a "loner" out of him. However, if you can corner that grizzled man at the fork of the road, his suspenders worn and weak, he just may come out of his shell long enough to give you a clue leading you to one of the greatest finds of your lifetime! Even a loner likes to brag a little sometimes. He already knows his, and your, prospecting efforts won't be easy . . . you really have to work at it. □

PLACES TO PAN FOR GOLD IN ARIZONA

GREENLEE COUNTY

Clifton, Ariz.—Best area is on the west bank of the San Francisco River. Water runs there all year. Clifton is on U. S. Highway 666.

*U. S. Geological Survey quadrangle Morenci: Clifton.

MARICOPA COUNTY

Hassayampa Placers—7 miles southwest of Wickenburg just below the mouth of the San Domingo Wash on the Hassayampa River. Water available much of the year, but not in the dry season. U.S.G.S. quad Wickenburg.

Vulture Placers—Near Vulture Mine 14 miles by road southwest of Wickenburg, just south of the Vulture Mountains. U.S.G.S. Vulture Mountains.

PIMA COUNTY

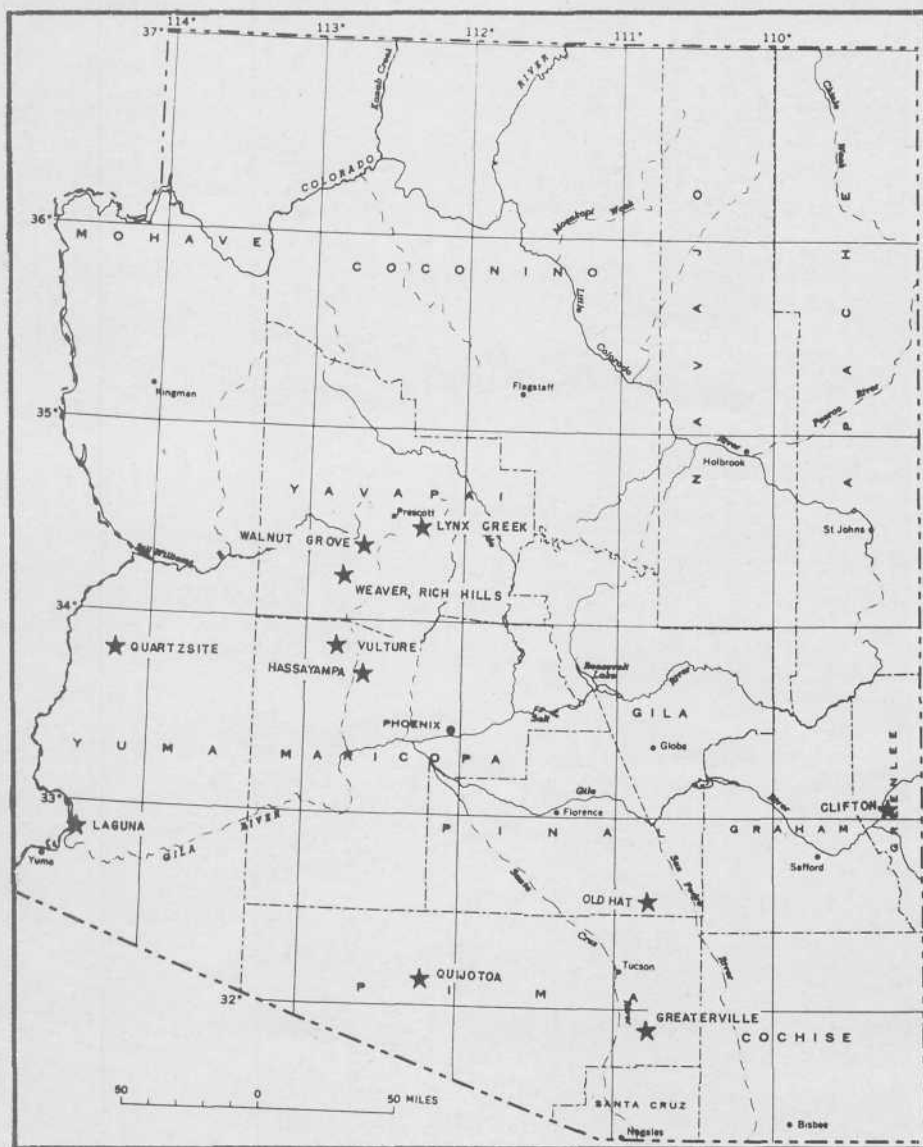
Greaterville—At the eastern foot of the Santa Rita Mountains 34 miles southeast of Tucson or 8½ miles northwest of Sonoita. Easiest route from Tucson is south on Interstate 19, take the Continental turnoff through Box Canyon to Greaterville. Productive gulches are Boston, Kentucky, Succor, Hughes, Ophir, Louisiana, and Empire. U.S.G.S. Sahuarita.

Quijotoa—70 miles west of Tucson in the Quijotoa Mountains. The placers cover about 100 square miles around the little Arizona town. The area is dry so bring own water. Covered Wells and Horseshoe Basin are two great places to start looking. State Highway 86 goes directly to Quijotoa. U.S.G.S. Quijotoa Mountains.

*Topographical maps of Arizona are available for 30¢ each from the Denver Distribution Section, Geological Survey, Federal Center, Denver, Col. 80225.

PINAL COUNTY

Old Hat—In Canada de Oro near the northwest base of the Santa Catalina Mountains from 4 to 10 miles south of the post office in Oracle, Ariz. The area is also 16-29 miles north of Tucson, but easiest access is from Oracle. Turn off State 89 onto the *old* Mount Lemmon road. U.S.G.S. Oracle.



YAVAPAI COUNTY

Lynx Creek — Along Lynx Creek near Walker, Ariz., 7 miles southeast of Prescott, to its junction with Agua Fria Creek. (13 miles east of Prescott.) Water runs all year round, especially in the upper wooded region of the creek. U.S.G.S. Mount Union.

Walnut Grove—Just south of Kirkland Junction which includes the gulches of Placerita (water runs here most of the year), French, Cherry, Blind Indian and Mill. Take State Highway 96. U.S.G.S. Congress: Kirkland.

Weaver and Rich Hills—A short distance from Octave and 6 to 8 miles east of Congress just off Route 89. At southern margin of Weaver Mountains in Antelope Canyon and Weaver Creek which flows all year. U.S.G.S. Congress.

YUMA COUNTY

Laguna Placers — In the Laguna Mountains just north of the Gila River and Gila Mountains. The eastern end of the Laguna Dam 10 miles northeast of Yuma where the gulches and pot-holes are near the Colorado River is a good place to look, and water is available. U.S.G.S. Laguna Dam.

Quartzsite—There are several rich placer districts within a few miles of this town. Quartzsite is about 20 miles east of Blythe on Interstate 10.

La Paz Placers—Along the western foot of the Dome Rock Mountains 9 miles west of Quartzsite and 6 miles east of the Colorado River. A dirt road branches north from the Blythe-Quartzsite highway and should be taken for about 5 miles. Take water unless it rained the day before. U.S.G.S. Dome Rock Mountains.

Plomosa Placers—The eastern and western parts of La Posa Plain 5 miles east of Quartzsite between the Plomosa Mountains on the east and the Dome Rock Mountains on the west. Best fields in the area are La Cholla, Ora Fino, and Middle Field all near the Dome Rock Mountains, and Plomosa near the Plomosa Mountains. Take water. U.S. G.S. Dome Rock Mountains and Bouse.

For further information write for "Gold Placers and Placering in Arizona," Arizona Bureau of Mines, University of Arizona, Tucson, Arizona. 85721. Price of the book is \$1 for non-Arizonans. ☐

Desert Life

by Hans Baerwald

Caught among the branches of a desert bush, this iguana appears to be acting out the now famous TV commercial, "I can't believe I ate the whole thing!"



SA SAIL

by Helen

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Photos by
Howard Neal

Color Photos
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rivers.
s the signal for activity to begin.
ful silence that reigned during

January, 1974





A quick gust can cause minor problems.



Togetherness under sun and sail.

the work week, now plays host to the desert sportminded families and their hobbies and wheels.

During the morning hours, the center of the lake forms a traffic pattern for cyclists. You will see the tiniest mini-bike lagging behind his more powerful brothers—all out to conquer the wide open spaces. In another corner of the lake, you may spot the model airplane builder pre-

paring his latest model for take-off. If you are watching, you will discover a group standing by while a gyro-copter is assembled and made ready for flight.

By mid-day, unless you are a frequent visitor to the lake, you may think that your eyes are witnessing a mirage—a marina on a dry lake bed. Sails, rigid on their mast, crews standing by, all waiting for the one ingredient to set sail—wind.

These sails are not on boats, a fact you will discover on closer inspection, they are sails attached to wind wagons, with wheels for travel.

Land sailors have spent their morning hours making ready their rigs, and now, they patiently stand by for the afternoon breezes to fill their sails and propel them over the hard-packed sand. The westerly wind can slip over the buttes anytime from noon until sunset—it is a waiting game.

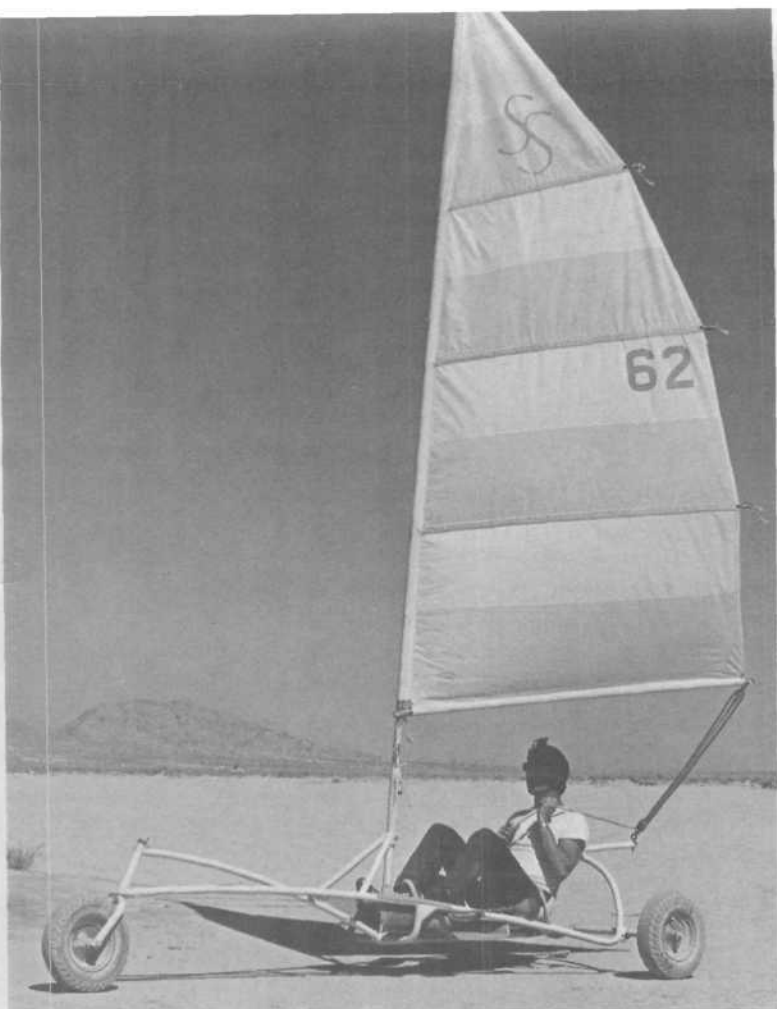
Each sand sailer is basically the same design. The hull is a frame of strong steel tubing. A nose wheel and two rear wheels form the triangle of the base. Over the rear wheel, a seat has been installed for the passengers. Seat belts are a must. In case of an upset, you do not get dunked into the water—instead, you simply unbuckle your belt and step down on dry land.

Guiding a sand sailer is done with your feet, and a rudder at the bow. Your response to wind changes must be quick to avoid upset—you learn with practice and experience.

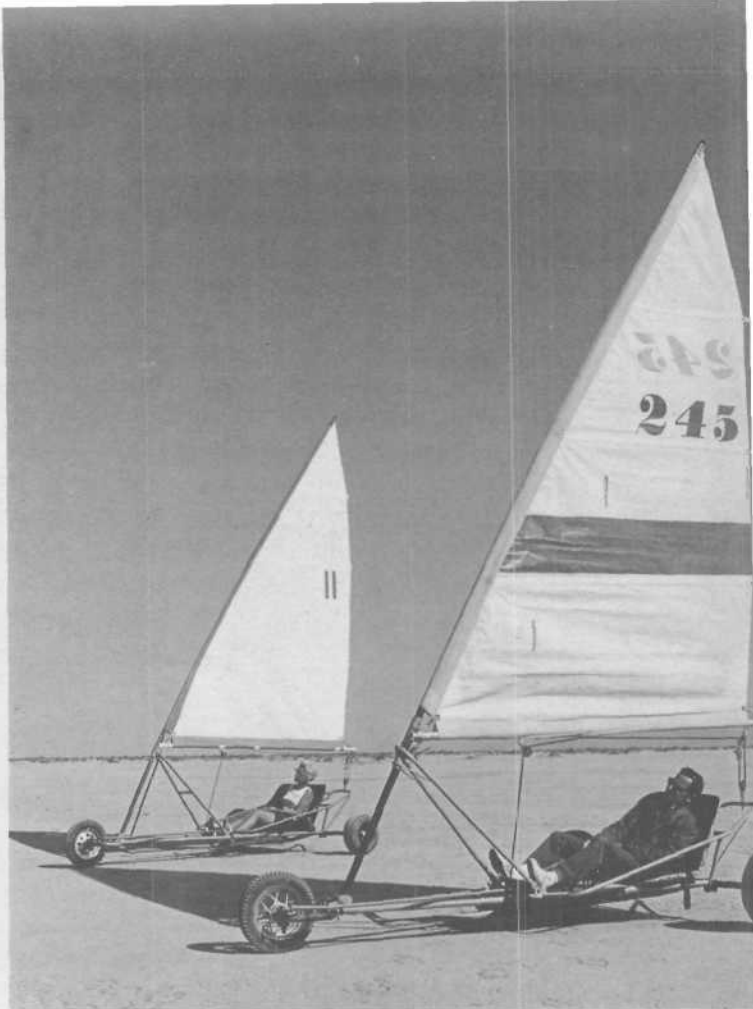
Speed is the thrill of sand sailing. Acceleration is fast, if the wind is right

Waiting for the afternoon breezes allows plenty of time to make mechanical adjustments or just plain relax.





One way to beat the energy crisis.



Becalmed on El Mirage Dry Lake.

—if not, a push from a friend soon gets you off to a good start. Top speed of the sailers has been clocked at 70 miles per hour—a good rule of speed is approximately two and a half times your available wind speed.

Owners of sand sailers talk with great interest in their sport. Many have designed and built their own rigs. Others have purchased kits and assembled them—perhaps making minor changes with their experienced ideas.

For the most, sailing is a family affair. Those skimming the sands are backed up by anxious riders who await their turn back at camp, anxious to sail the sands.

Sailing over land on wheels is not a new sport—in parts of Europe the sport has flourished for some four centuries. The dry lake beds of Mojave were first introduced to sand sailers as early as 1904. So whether for sport or necessity, it does prove that not much is really new, under our desert sun!

From still another corner of El Mirage, gliders are lined up awaiting their turn at the tow plane. Once aloft, the gliders drift silently on wind currents high above

the desert floor. Circling miles beyond their point of take off—they remind us of giant birds, searching for solitude somewhere beyond the boundaries of earth.

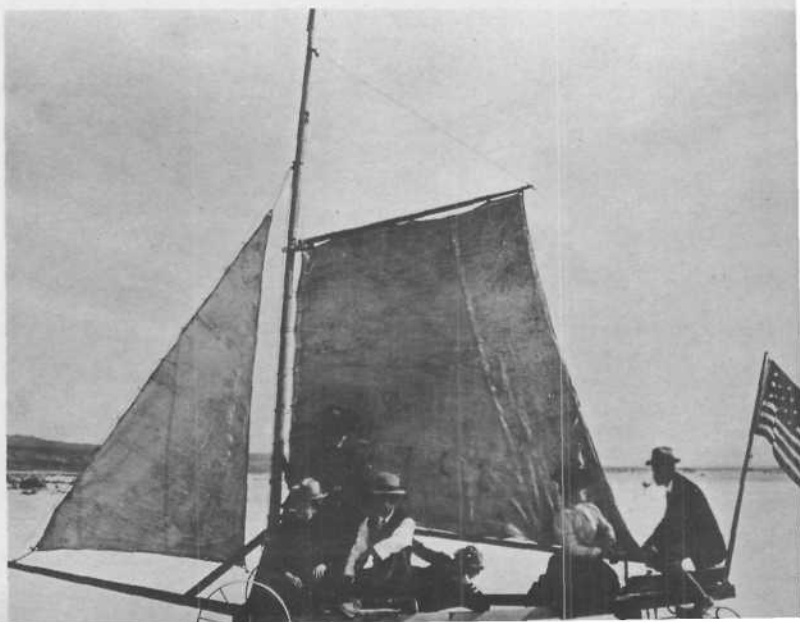
No desert playground would be complete without its share of saucy little dune buggies cruising the area, or perhaps finding some adventure of their own.

Back at camp, some people have been

seen just to relax in the warm sun, and watch the world pass by.

By late Sunday evening, silence and loneliness again settles on the sands of El Mirage Dry Lake. During the absence of activity, the winds of the workday-week will be erased, and by next Friday evening, El Mirage Dry Lake will be ready again to welcome you for a weekend of fun and sport. □

Early sand sailers, circa 1904, opted for 4 wheels and 6 deckhands. Photo courtesy Title Insurance Co.



Oregon's Myste



rious Carving

by Don Lien

WHO CAN identify this exquisite piece of art? Who made it? When was it made? Where is it from? It has been inspected by experts at the Oregon Museum of Science and Industry, the Portland Art Museum and the Arizona Sonora Desert Museum. None of those persons attempting identification can state conclusively they are certain of its age or origin, although they have offered their expert opinions. The general feeling is that it may be depicting the head of Christ.

The mystery objet d'art was found by the two young sons of Tom Malloy on a steep slope in front of their home in Portland, Oregon. When discovered, it was imbedded in a ball of mud and was first thought to be the head of a doll. Not until it was washed and carefully brushed did the finely executed details of this masterpiece come to light.

The area where this carving was found is near the end of a trail leading into old Portland from the fertile Northern Willamette Valley and the Tualatin Plains to the west of the city. Indians, trappers and tradesmen used this trail by foot and

horseback for almost two centuries. The trail terminated at the Willamette River in Portland where deep draft sailing vessels from the world-over dropped anchor. Only small traces of this centuries-old pathway still remain visible. Most of it is now obliterated by homes and black-topped streets. One 400-foot section is still identifiable in front of the Malloy home, being protected from the advances of civilization by a massive rocky ledge. It was here that the mystery carving was found.

The experts in antiquities who have examined this carving have generally agreed that it is of Spanish or French origin. Their opinions are based upon the particular style of craftsmanship—quite similar in detailing and faithfulness of capturing the life-like features found in other pieces of old-world art, and very unlike art forms common to the new world. These experts also agree that, in their opinions, unsubstantiated by facts, the mystery carving was probably created sometime during the 1700's. By what means it arrived in Portland is completely unknown.

Due to its hardness, weight and color,

it is thought the carving is made of elephant ivory with origins in Africa. None thought it could possibly be made from walrus tusks. It measures 1 - 3/16" wide by 2 - 3/8" long. Three tiny holes are drilled across the top of the head. It has been suggested that a separate piece—now missing—had been attached to the head with pegs. This could have been a crown of thorns. Below the chin two more tiny holes appear to have anchored an extension to the beard. This piece is also missing. At the base of the neck is a larger hole which obviously served to connect a body to the head. The left ear is missing. A portion of its outline still remains but it looks as though it had been removed with a knife rather than being worn away by the ravages of time. Except for severe cracking is there any other damage evident. The creator of this mysterious piece of art was a stickler for detail—even teeth and a tongue can easily been seen through the parted lips. The nostrils are incised and pupils stare blindly from wide-open eyes.

The back of the head is a puzzler. It is carved almost flat with just a slight curva-



Tom Malloy and son Mickey search with a metal detector hoping to find tangible evidence of centuries old traffic. This is where the mystery carving was discovered.

ture. For some unknown reason, the artist chose to scribe deep grooves in a cross-hatch pattern over this flat, curved area. Perhaps it was to facilitate mounting to another surface—like a cross, for instance, if this is indeed supposed to be the head of Christ.

Many questions remain to be answered. If this mystery work of Old-World art is of Spanish or French origin dating back a couple hundred years or so, how did it

end up in a muddy hillside in Portland, Oregon?

It could have been lost by a French trapper—they were known to have travelled extensively throughout the Northwest in the 17th and 18th centuries—bringing their beaver pelts to dockside or to the tannery. He could have used this trail while on his way to the Hudson's Bay Post at Fort Vancouver about 15 miles down-river from the spot where this carving

was discovered. But this doesn't logically jibe, as a man of this nature would normally be travelling light, with just the barest of necessities and wouldn't carry an unusual piece of art like this one.

It could be of Spanish origin—or it could be from Portugal. Their art styles are quite familiar. The Northwest has been touched lightly by Spanish explorers in centuries past. Our recorded history is sketchy on this point. There have been round stone houses discovered in Eastern Oregon that are supposedly made by Spanish explorers sometime in the late 1700's. The Idaho Historical Society has claimed possible evidence of Spanish exploration as far back as 200 years. Similar evidence has been discovered in the neighboring states of Montana, Wyoming and Utah.

Oregon also has much more tangible evidence of Spanish exploration as related in the folklore tales of the wreck of an ancient sailing vessel in the vicinity of Neahkahnie Mountain on the Oregon Coast. Indian legend tells of a crew from a "great winged ship" burying treasures along this section of our coastline—just a hundred miles or so from the spot where the carving was found. Chunks of beeswax, identified as having a Spanish origin by cabalistic markings, have been found



The ancient foot and horse trail led down this draw to the Willamette River and old Portland. Trappers traveled this way in the 1800s.



Mystery objet d'art discovered on a muddy hillside in Portland, Oregon. Thought to be of Spanish or French origin made in the 1700s.

in the vicinity of this 17th century shipwreck. Artifacts are occasionally found in the surf that may have come from this Spanish vessel. Even today the search continues for this buried Spanish treasure—the hillsides are pocked with amateur diggings.

There is yet another possibility that the carving is from Portugal. Portuguese traders and seamen were known to have visited the Portland area in the early 1800's. In 1845 a group of Portuguese emissaries, travelling in two ships, visited with Dr. McLoughlin at the Oregon headquarters of the Hudson's Bay Company in Fort Vancouver (now named Vancouver, located in Washington just across the Columbia River from Portland). They were seeking the aid and advice of Dr. McLoughlin in the establishment of colonies in the Northwest. One colony was to be located on the Santiam River about 100 miles down the Willamette Valley to the south of Portland.

One of these two ships, laden with treasure, gold coins and trade goods, was wrecked somewhere near the mouth of the Nehalem River southwest of Portland on the Oregon Coast. The second ship met with a similar fate while attempting a rescue. Survivors of this accident told of seeing Indians looting the ship and killing sailors trying to escape. One lone survivor managed to cross the coastal mountain range enroute to a safe haven at Fort Vancouver. He told of burying several wooden chests near the mouth of

the Nehalem. He attempted to relocate the spot some years later but was unable to do so due to the constant shifting of the river. Treasure hunters today still search in vain for this buried treasure said to be comprised of gold coins and other national treasures. Maybe this carving was part of that buried treasure. Indians could have recovered—and removed and rehidden the gold—and retained the carving as a curio. Coins meant little to the Indians except as decorations on their garments. No trace of these coins has ever been found.

This mystery carving could then have found its way to its hillside resting place in Portland by several means. It could have been found and traded to a trapper, or it could have been lost by a seafaring man. It could also have been a family heirloom handed down for generations until finally becoming lost. Maybe someone will recognize the head and will know where the rest of the figure reposes. Attempts have been made with metal detectors and shovels to locate other tangible evidence of travel over this old trail. Completely unrecognizable bits of rusted iron have been uncovered in the area but they could have belonged to a later era when Portland was becoming the city it is today.

Tom Malloy would like to know just what his two sons have found. If someone could shed light on this mystery, please write the author in care of *Desert Magazine*. □

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Above and below are two views of the Malakoff Diggins, North Bloomfield, California.

MALAKOFF



AMONG THE many interesting and old mining towns and camps in the northern mines area of California, a spectacular scenic standout, interesting to camera fans and others, is the awe-inspiring pit of the great Malakoff hydraulic mine, now the Malakoff Diggins Historic Park. It is located at the old townsite of North Bloomfield in Nevada County.

Operator of this immense project, over a period of some 20 years, was the North Bloomfield Gravel Mining Company. The name "Malakoff," applied to the vast enterprise, was thought to have originated with French miners of the region in honor of the capture of Fort Malakoff in the Crimea by French forces in 1855.

From this great basin was washed the enormous mass of 40,000,000 cubic yards of gold-bearing sand and gravel yielding close to \$4,000,000 in one of the largest



Hydraulic mining, North Bloomfield in Nevada County. Photo courtesy California State Library.

DIGGINS

by Al Waterman

and richest of such operations in the state. Over 500 feet deep in places, the basin extends for a mile and one-eighth in length.

Once an ugly scar on the landscape, since softened by weathering and erosion over the years, it now presents a fantastic display to the viewer. Surrounding the great cavity is an awesome group of pinnacles and fluted columns in a profusion of colors and forms reflected in an accumulation of water at the bottom. Tall pines encircle the basin while plant and tree growth struggle to regain their dominance on the slopes within.

From historic Nevada City, county seat on State 49, and comfortable stopover point with modern accommodations, a scenic drive of about 15 miles over the North Bloomfield County Road brings one to old North Bloomfield and the Park office. Maps and descriptive pamphlets of

the area, together with camping information, may be obtained there.

Responsible for the formation of the huge Malakoff pit was an instrument known as a "monitor" or "giant" consisting of a length of metal pipe with tapered nozzle. Water from high in the Sierra, forced through the monitor under tremendous pressure, was hurled at the banks with devastating impact. Entire hills disintegrated under the onslaught of the jet streams to be washed down and through the sluices. Water doing most of the work, few employees were needed.

A pipeman, standing on a platform, directed the jet stream against the bank by means of a control rod attached to a flexible nozzle tip of the monitor, altering direction as desired. Other monitors, in turn, pushed the material down through a ditch to the sluices where the heavier gold settled behind riffles. The residue

of rubble known as "slickens" was discharged into a stream bed to be carried away.

The earliest crude attempt of this type of mining occurred at Buckeye Hill in Nevada County in 1852, when one, Chabot, used a canvas hose, conducting water from a slightly higher elevation, to wash gravel loosened by a pick, down to and through his sluice, so eliminating shovel work.

Improving on this idea in 1853, E. E. Matteson used a stouter hose connected to a tapered nozzle. Resultant increased pressure enabled him to wash down portions of the bank, eliminating most of the pick and shovel work. The method was quickly followed by others with a rapid progression of improvements.

Gold was first discovered in the Malakoff region by a group of miners working the gravels of a creek for little better than

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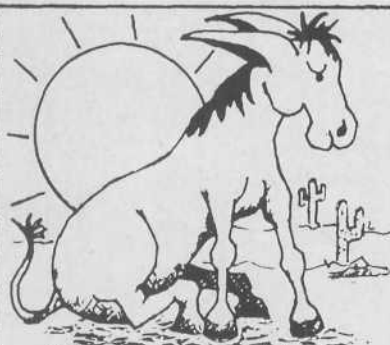
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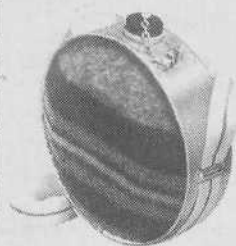


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bacon and bean money. When food supplies ran low, one of the men would ride to Nevada City to replenish the stock.

Like many a prospector's "tall tales," the Malakoff Diggins became the brunt of questionable talk when a tippler ventured in to town to replenish food for the camp. However, many of the local citizens of Nevada City concluded that "talk was cheap," scoffed at the story, and gave what later became North Bloomfield its original name of "Humbug." This did not deter the miners and they proceeded with their venture undisturbed.

The Malakoff region and the adjacent North Columbia workings lie along San Juan Ridge, composed of gravels deposited by a river of an ancient geologic era, and are located between the middle and south forks of the Yuba River. Gold was known to exist in small amounts in the low-grade material of the banks and slopes, but beyond the capabilities of small scale placer mining for profitable recovery.

With the advent of the low-cost hydraulic mining process, the most efficient method ever devised for recovering gold from the gravels of ancient alluvial deposits, the area was ripe for exploitation. A yield of 10¢ a cubic yard was profitable.

Essential to operation of hydraulic mining was a drain tunnel, below the floor of the mine, for discharge of water and tailings after sluicing. In a remarkable achievement of the times, directed by engineer Hamilton Smith, the North Bloomfield Drain Tunnel was drilled for a distance of 7,874 feet, lined with a series of sluices for maximum gold recovery.

The North Bloomfield Gravel Mining Company, a well managed and compact

organization, owned over 1600 acres of gravel deposits, all its water supply lines and a dam it had built forming Bowman Lake, high in the Sierra. It was dependent on no outside source for the billions of gallons used annually in its 24-hour operation over the months when weather permitted.

Hydraulic mining rapidly increased throughout California until the total number of such operations exceeded 400. Many of the largest of these discharged hundreds of millions of cubic yards of mine tailings that eventually reached westward flowing rivers, finally emptying into the Sacramento River Valley.

This tremendous mass of rubble had raised river beds such as the Yuba, American, Bear and Feather rivers, among others, causing them to overflow and alter their courses. The result was the ruination of thousands of acres of valuable ranch and orchard lands of the lower valleys by massive and deep deposits of sterile mine tailings.

Huge amounts of money were spent constructing levees for protection of homes and ranches. Towns were threatened. At Marysville the river level was high above the streets. A breach in the levee would mean disaster. Citizens of the lower valleys were enraged and sought court action to end the abuse.

Reluctance of the courts, however, to interfere with gold mining, the most important influence on the burgeoning economy of California, prevented immediate relief. The industry took precedence over all other business activity at that time, despite the long series of legal actions against the hydraulic practice.

Ever-increasing ruination of vast acreage, however, and the serious blockage of navigable rivers, the Sacramento included, finally brought the case before a Federal Court. Judge Sawyer, in his famous decision of January, 1884, decided the case against the North Bloomfield Gravel Mining Company, issuing a perpetual injunction against discharge of mine tailings into rivers and streams—a ruling that ended hydraulic mining.

The once huge Malakoff project, where hydraulic mining reached its height of development, now silent in picturesque solitude, remains a monument to top engineering ability and adds another great chapter to California's gold mining history.



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A Desert Character

Panamint Annie

by Tom Murray

CIGAR SMOKING, rough talking Panamint Annie spends a lot of time prospecting in the Death Valley mountains from which she is named after. Her legal name is Mary Elizabeth Madison. Annie, the daughter of a New York doctor, said she was only a few units short of graduating from college. She is married and has four children and 13 grandchildren. Claims she hasn't seen her husband in a dozen years. "He's in the Merchant Marine. I can't find him." She quickly adds, "I'm not looking for him. I'm happy the way I am."

In 1935, Annie quit her job as truck driver on the New York to Chicago run and headed for Death Valley to die. "I had TB. I was 24. The sawbones told me I wouldn't see 25. So, I high-tailed it into the Panamints to see a bit of God's country. Annie fooled the doctors and since then has staked claims all over the rugged Panamints that reflect her character. The tough image is just a



Panamint Annie, a colorful character in the Death Valley region for nearly 50 years, posing at the Borax Museum with the ancient press used by G. B. Glasscock to print his famous Death Valley Chuck-walla in Greenwater around the turn of the century.

cover-up for a warm-hearted gal.

You can easily spot her camp in Beatty, Nevada, for it is piled high with junk and more junk. There you will find the remains of a dozen old cars, broken-down trailers, washing machines. You name it, and Annie probably has it somewhere. "When you live out here in the middle of nowhere, you can't afford to throw anything away," she said between drags on that cigar that looks like it might have been

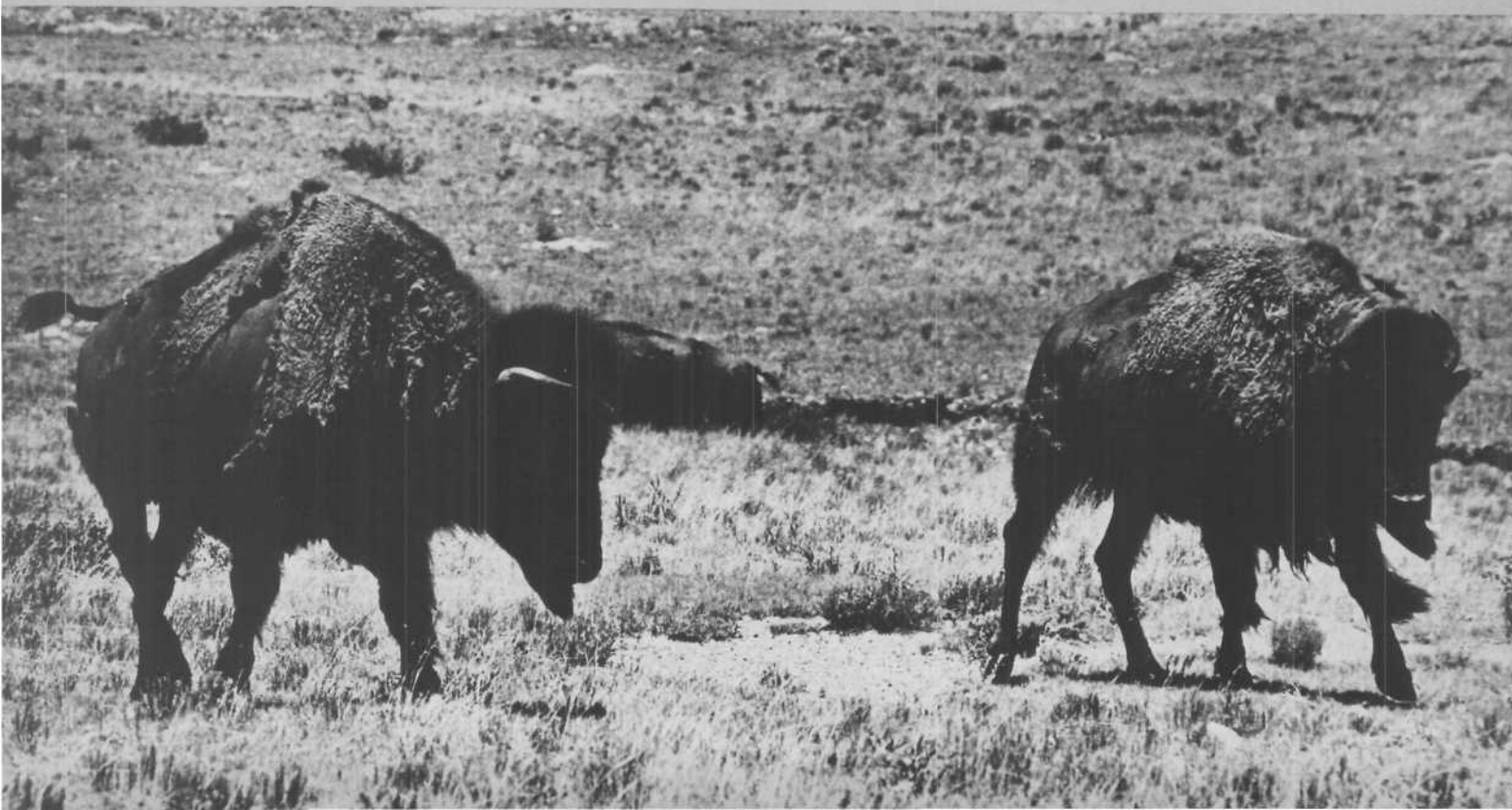
second hand, too.

Get her mind off her junk pile, then Annie will tell you about her mining claims. "I ain't gonna tell you where they are. When I find the right sucker, I got it made.

I asked Panamint Annie how long she has been missing her teeth. "Hell, I ain't missed them. I eat everything you do. I tell all the kids that look at me kind of odd, see what happens when you don't brush your teeth!"



THE BISON





by
Buddy Mays

ARE BACK

ON AN AUTUMN afternoon in 1907, the famous Comanche Chief, Quanah Parker, a small group of his Indian followers, and an even tinier gathering of white men waited patiently at the railroad station at Cache, Oklahoma. Dressed in their most brightly colored costumes, the group awaited the arrival of 15 buffalo being shipped to an 8000-acre tract of fenced land on the outskirts of Cache . . . a tract that had recently been designated by the government as the very first "Bison Refuge" in the United States.

Only 30 years before, the plains surrounding the small town had been literally covered with millions upon millions of buffalo, but in 1907 nothing remained of those huge herds but the dried and sunbleached skulls lying amongst the tumble weeds. For three decades the Indians in Cache had worshipped the memory of the bison in hopes that he would

someday return. And as the train pulled into the station and the 15 animals were unloaded, the Indians roared with unconcealed joy. The buffalo, as few as they might be, were back. They had, at long last, come home.

Weapon experts have long agreed that the Winchester rifle, model 1873, was the "gun" that won the West. Likewise, bison experts who have made involved studies of the ecology of the Great Plains, agree that the buffalo was the *animal* that won the West.

When the Lewis and Clark expedition set sail up the Missouri River in 1804, they couldn't have survived without the rich, tasty meat of the bison. Several times, when the expedition was nearing starvation, camp hunters were able to kill the pondering beasts when no other game could be found. Years later, as cumbersome Conestoga wagons rolled westward in search of green pastures and

unpopulated farm land, the buffalo furnished the wagon trains with everything from steak to shelter.

The first buffalo, however, migrated to North America from Asia where he originated long before the white man. Scientists say the first bison remains can be traced back to the twilight of the "Pliocene Era," that geologic time period shortly before the great ice packs began to expand over most of the earth's land masses. At that time, say biologists, the bison was a small, shaggy beast who resembled an ox more than he did a buffalo.

Then, during the next million years or so, as the ice packs flowed slowly southward, the bison began to change. His body grew huge and tough. He developed defense mechanisms like a nine-foot horn span so that he could protect himself against predators.

Near the end of the ice age, the bison's features changed again—this time to his

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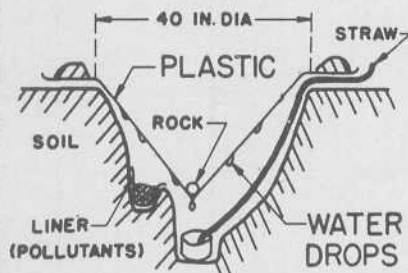
I appreciated your business, but I treasure your friendships much more. When you are in my part of the country, stop and stay as long as you can. I will enjoy visiting with you and your families. My residence is the first house west of Shipley's—in Gem Village—on Highway 160, 1½ miles west of Bayfield. My very best wishes to all of my friends and customers.

I remain, most sincerely,

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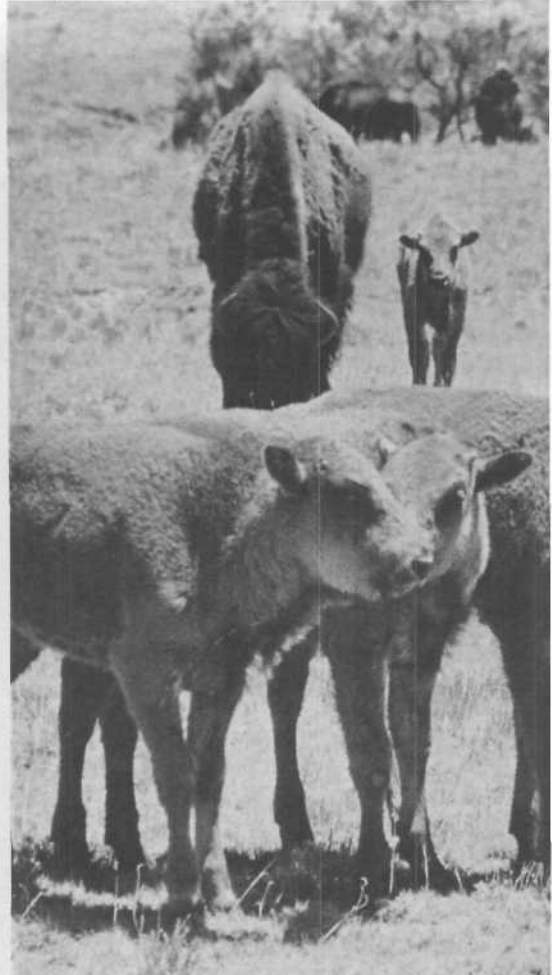
present form — a shaggy, short-horned monster weighing between 1400 and 2000 pounds. Often he will measure 11 feet from the tip of his fly-swatting tail to his nose.

Also, during the end of the ice age, the earth's surface began to change. One of those changes was the formation of the Bering Strait Land Bridge, a narrow strip of earth that was wrenched from the sea bottom. Forty thousand years ago the bridge connected the shores of Asia and North America before disappearing back into the sea. But while it was there the bison migrated along the bridge and introduced themselves into America. Scientists believe that before too many thousand years had passed man, in the form of a prehistoric Indian, followed the animal onto the North American continent. Whether or not the Indian actually chased the buffalo to the "New World," no one knows, but we do know that he was fond of buffalo steaks.

In 1926, an anthropologist from the Colorado Museum of Natural History uncovered a group of fossilized buffalo bones in an arroyo near Folsom, New Mexico. Imbedded in one of the bone fragments was a small, neatly chipped flint spear point. The anthropologist was joyous. His discovery was the first evidence showing that early man actually hunted the animal.

The first white man's eyes ever to set upon a buffalo, at least in recorded history, belonged to a Spanish conqueror who, at the time, was making war against the Aztec tribe of Mexico. In the year 1519, Herman Cortes, a Spanish soldier and captain of a small invading army which had landed on the shores of Mexico, was treated to a look at the Aztec zoo. Escorted by Aztec Emperor Montezuma, Cortes viewed a huge, hairy creature with a large hump and short, deadly horns. It was a bison, probably captured on the plains areas north of the Aztec capital city, and Cortes was astounded. His men had to look for themselves before they would believe the animal actually existed.

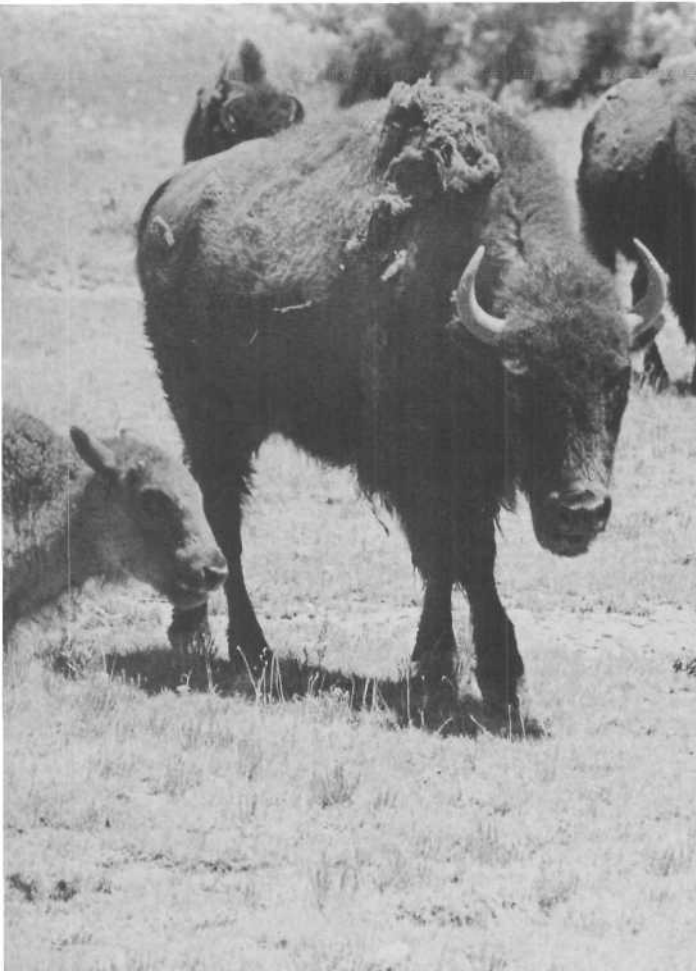
In 1533, another Spanish explorer, Cabeza de Vaca, sighted what he described in his journal as "oxen," roaming the plains of Texas. De Vaca drew a crude picture of the animal he saw and it was later published and circulated. From then on the bison became a source of food,



clothing and shelter for white settlers and mountainmen, just as he had, for centuries, fed and clothed the Indian. There was a great difference, though, in the needs of the Indians and those of the whites. The Indian killed only what he could eat—white men, unfortunately did not.

The buffalo "slaughter" began in earnest around the middle of the 1800s. Before then, it was mostly the roving tribes of Plains' Indians who chased the animal down. Then, when white men found that there was profit in buffalo robes, a new breed of white men began to filter into the bison range. Most of these were strange fellows, living for months at a time on the Plains without visiting a town. Armed with a large caliber rifle, one "buffalo hunter," as they were called, could kill 100 bison a day if he put his mind to it. Each hunter would hire a group of skinners to remove the pelt from the dead buffalo. It wasn't long before the Great Plains was nothing more than a desolate expanse of rotting carcasses. Literally millions of tons of meat were left for the vultures to squabble over.

No one really knew just how many bison were falling to the 50-caliber Sharps rifles until 1874 when a Santa Fe railroad



An adult keeps a wary eye on the photographer while the young calves seem to ignore his presence.

survey turned up some astounding facts. The poll found that during 1872, 1873 and 1874, three mainline railroads, the Santa Fe, the Union Pacific, and the Kansas Pacific shipped more than three million buffalo hides to eastern markets. Added to this startling number were a million more animals killed by Indians, and another 200 thousand killed and eaten by white settlers.

In the flatlands of Kansas, the slaughter reached colossal proportions. Many of the last great herds, driven from the north by heavy hunting pressure, attempted to find sanctuary in the huge areas of open range there. But the hunters gave no mercy. In the last three months of 1873, a single three-man team of riflemen set a record of buffalo kills. The 90-day period saw 7000 animals fall to the rifle.

Why was the slaughter allowed to continue?

Simply, say historians, because no one really believed that the massive herds of bison could ever be destroyed. Even today, no one is really sure just how many buffalo roamed North America during the height of the "buffalo culture." In 1862, Nathaniel Langford, who was to become the first superintendent of Yellowstone National Park, made a trip through

the Great Plains. In a letter home to his family, Langford told of passing through herds of bison that were 10 miles wide and 25 miles long. Wagonmasters related tales of pushing their wagon trains through herds for days on end without ever seeing a spot of open prairie. Scientists believe that at one time there were 30 million bison living free and untamed on the North American continent. But no one will ever know for sure.

The other reason that buffalo killing was not stopped was because of the great demand for buffalo hides. Each hide was bought from the hunter for about \$1.25, then made into anything from blankets to heavy winter coats. Even when buffalo became hard to find and the market value dropped, men called "bone pickers" gathered the hoofs and horns of long dead animals and sold them to curio shops in the form of buttons, combs and knife handles. Buffalo bones were sold for fertilizer.

By the beginning of the 1880s though, the unmolested killing of bison began to grind slowly to a halt. Hunters said that there "warn't no buffler left," and they were very close to the truth. On a warm September morning in 1886, William Hornaday, chief taxidermist at the

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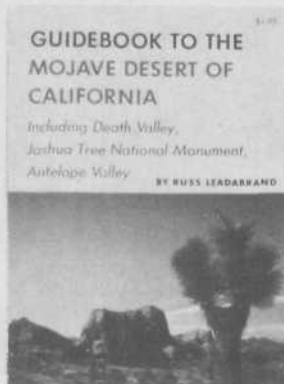
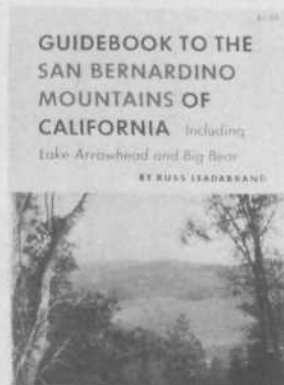
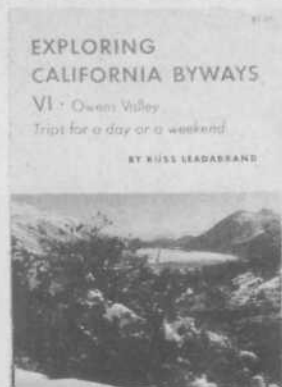
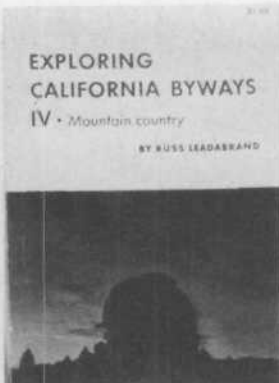
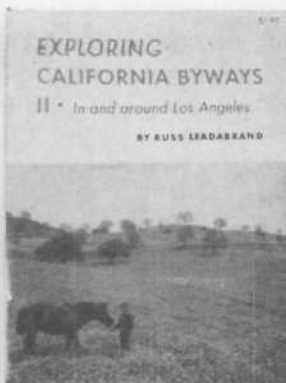
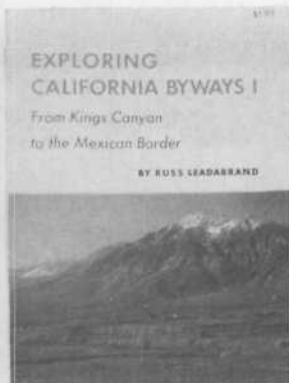
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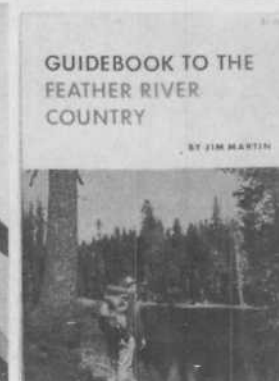
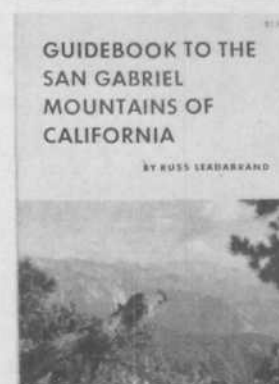
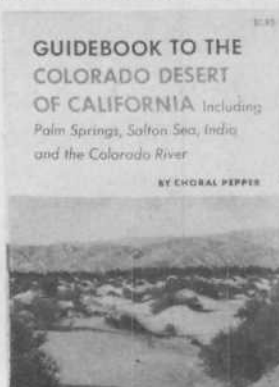
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United States Museum in Washington, discovered that the museum's collection of buffalo hides was in poor shape. Immediately Hornaday set out to remedy the situation. He organized a group of well-known hunters, ordering them to "collect" 20 or so animals for their hides. The group traveled to the midwest at once, set up a camp, and searched for 17 straight days without seeing a single buffalo.

Later that same year, a group of biologists from the American Museum of Natural History had about the same luck. Only this time, the men seached for three months. Not once in those 90 days did they catch sight of a bison.

Suddenly, the country was concerned. What had become of those huge herds which had swarmed endlessly over the Plains? Public pressure began to prod politicians into action and in 1894 Congress passed a bill prohibiting the killing of any buffalo. It was immediately signed into law by President Grover Cleveland.

The law was almost too late. A survey found that there were no more than 85 wild buffalo left in the United States.

On December 8, 1905, a group of concerned conservationists, headed by journalist Ernest Baynes, formed what was probably the first Wildlife Preservation Society in the U. S. They called it the American Bison Society, and the group began the battle to save the few survivors of what had once been one of the most numerous species of animals in the world.

The first order of business for the A.B.S. was to create public apathy for the bison. Magazine and newspaper articles began to flow from the pens of the Society's talented members. The campaign was so successful that the A.B.S. received more donations than they had use for.

In 1907, the Cache, Oklahoma refuge was initiated. Several years later, in 1913, Fort Niobrara Military Reservation in Nebraska was turned over to the Society by the government. The army said that the post was no longer needed to control Indians and cattle rustlers. A.B.S. quickly stocked the range with six privately owned buffalo.

From then on, the fight to save the bison was downhill. The animals increased so rapidly and steadily that refuges began to pop up all over the United States and Canada. By 1930, the American Bison Society felt they had been successful in their

crusade. The society was disbanded, knowing that it had saved a wild creature from the one-way street to extinction.

Today, the buffalo is in no danger, at least in no danger from man's senseless killing. Although several states like Colorado and South Dakota still allow buffalo to be taken with a rifle, there is a reason. Bison simply reproduce faster than they can be transferred, so man must continue to kill so that the animals will stay in balance with their range.

The bison name has recently been removed from the list of "Rare and Endangered" animals on the North American Continent. Thirty thousand of the creatures roam free on the protected grasslands of the U.S. and Canada. The largest herd is in Wood Buffalo National Park in the Northwest Territories. Here, 12 thousand of the animals still taste some semblance of being wild. But, replacing the bison on that same list, are the names of animals which once were almost as numerous. Animals like the mountain lion and the grizzly bear. If they are not saved, these species will meet the same fate that the bison almost met—extinction.

Even though man has been around for several million years, he has not yet discovered how to live *with* his environment, consequently he kills what he does not understand. Only in education will the human race discover what it means to be wild and what it means to be free. A few men, like those original members of the American Bison Society, were able to save a species because of their knowledge and their dedication. Hopefully, in the future, this country and the world will gain the knowledge we need to protect our wildlife—instead of destroying it. ☐

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Rambling on Rocks

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MINERAL NAMES: Chosen Very Carefully

MANY PEOPLE feel that mineral names are a hodge-podge of meaningless jaw-breaking terms. There are times when we think the system could be improved, but on the whole, the names of minerals, their derivations, meanings, and usages follow a very reasonable pattern. We must admit, however, that with all aspects of human endeavor, sooner or later the "perfect" idea shows some flaws; and there are some in the scheme of mineral names.

The most striking feature of mineral names is the suffix *ite*. This is derived from the Greek *lithos* for stone. It became shortened to *lith*, then to *lite*, and finally *ite*.

Ideally, all mineral names should end in *lite* or *ite*. Some other suffix (such as *ene*) should denote a variety or other subdivision. Today, very few, if any, new minerals are accepted if they do not end in *ite*. The acceptance is done by an international commission on mineral names. This commission meets periodically to review all newly reported minerals, and determines if the mineral is new. If so, it usually accepts the name given by the person that described it, if the name fits certain requirements.

The process goes something like this: a miner, student, or someone connected with minerals finds what he thinks is a new mineral. We will call him Joe Doaks. On occasion, there is a temptation to call the new mineral Doaksite, but this would not likely be accepted by the commission. The best thing Joe can do is to send it to a good professor of mineral-

ogy. The professor may later name it Doaksite, but this is not usually done unless Joe Doaks happens to be a very active or well-known collector that has contributed much toward mineral knowledge.

The first thing the professor does is to study the mineral very carefully, and be certain that it is a new mineral. If there is any doubt, (and there usually is), he will submit samples to some of his colleagues for their opinions. Finally, when they feel certain that they have a new mineral, the thought of naming becomes important. In most cases, the name is taken from one or more of the elements that it contains. Calcite is a good example of this type of name: it is made of calcium, carbon and oxygen. Taking the first four letters of calcium, and attaching the suffix *ite*, gives us calcite.

In other cases, the professor may choose to honor an individual (such as Joe Doaks), but usually it is someone well known in mineralogy. In many cases, it is the early teacher of the professor. It may be one of the colleagues that helped him in the study that ended in identification. It never is his father-in-law (unless he is a well-known mineralogist), a good friend, or the holder of the mortgage on his house.

The use of people's names is not usually a good choice, because it can easily be seen that a large number of them have already been used. The use of a name from the constituents or some property gets the most attention.

Constituents have given us many names for commonly known minerals—borax and boracite (boron), cuprite (for cuprum—Latin for copper), alunite (aluminum), molybdenite (molybdenum), etc. Also, we have arsenopyrite (a pyrite-like mineral containing arsenic), cuprotungstite (copper and tungsten). Some of these names border on the ridiculous.

Sometimes the name refers to the color of the mineral: azurite (from azure blue), hematite (from the Greek word for blood), rhodonite (from the Greek word for pink), purpurite, because it is purple, etc.

Very often the geographic location of the first discovery will be used for the name. Such places as San Benito County, California (benitoite), Kern County, California (kernite), the Ilmen Mountains in Russia (ilmenite), Franklin Furnace, New Jersey (franklinite), Danbur-

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ry, Connecticut (danburite), Andalusia Province, Spain (andalusite) have contributed minerals worthy of their names.

We could go on with other subjects that have contributed names, such as crystal shape (axinite), and others, but we would rather discuss some of the names given in the past that do not end in ite.

Many of these are very well known: quartz, tourmaline, cinnabar, diamond, realgar, zircon, topaz and garnet to name a few. Here is a group of minerals where the names carry images of the past; colloquialisms, a resemblance to another item, references to physical properties, even weather conditions, as well as the chemical constituents.

Tourmaline is from an ancient word meaning a group of gems. The first tourmalines reached Holland in early 1700, but were unidentified. When someone asked the exporter what they were, the word *tourmali* was given. The exporter did not know either, but the name has survived.

Cinnabar, the bright red ore of mercury, is thought to have been named in India where the same term is used for a red resin (known in English as dragon's blood). Another mineral named for a resemblance to another item is garnet. The first garnets so resembled the seeds of the pomegranite, that the name garnet evolved.

The garnet story has another like comparison. The common type called grossular or grossularite is named from the Latin word *grossular*, for the gooseberry. The first crystals found were greenish, like gooseberries. Interestingly, no other location has produced grossular in this color; the usual color is orange or brownish.

The name for the all time favorite of gems, diamond, is a corruption of the Greek *adamas* meaning unconquerable, no doubt referring to the hardness. The word *adamantine*, referring to the bright luster of diamond (and other gems), is from the same root.

The red arsenic mineral realgar was named from the Arabic *rahj al ghar*, meaning the powder of the mine. This tells us that some mine in Arabia contained large quantities of this mineral (probably worthless) that easily broke down into a powder, and dispersed through the mine. This no doubt resulted in at least mild cases of poisoning.

The name topaz evidently has a long

evolution. The name seems to come from the Greek *topazos* meaning to seek, and evidently referred to an island that was usually covered with fog. This island, now thought to be Zeberget, in the Red Sea, contains a gem, but it is peridot! It now appears that peridot was once called topaz, but somehow, probably through error, the name moved to another mineral.

The German word *spar*, denotes a mineral that will cleave into blocks. The word for field is *feld*, thus—feldspar is a cleavable rock found in the fields. This is perhaps one of the most simplified of derivations for a mineral name.

The mineral zircon has been known for a long time, but the present name is recent. The name is responsible for the name of the element zirconium, of which it is made. This is a reversal of the constituent naming. The Arabic word *zargoon* was evidently first used for this mineral. The same word appears in Persian, and means gold-colored. Other names were also used; hyacinth (also jacinth) refer to a brownish variety. Jargon (probably a corruption of zargoon) was used for nearly colorless pieces. The word jargon has since come to mean worthless, as the colorless stones were used to imitate diamond.

Zargoon finally was reduced to zircon, and when the main constituent was isolated, it was named zirconium.

There are other minerals whose names do not end in ite; opal, beryl, hornblende, gypsum and others. Some have names with obvious roots, while others are very difficult to trace. It is of interest that if these names were proposed today, they probably would not be acceptable. Because they were named long before orderly thinking entered the science of mineralogy, we have some romantic links with the past. □

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Letters to the Editor

Letters requesting answers must include stamped self-addressed envelope

Trading Post Revisited . . .

In the July, 1966 issue of *Desert Magazine*, you ran a story by Gladwell Richardson entitled, *Bonanza in the Ghost Post*.

On the first page of the story was shown a picture of the trading post at Blue Canyon, Arizona, taken in 1908.

My interest is more than just passing as I was born in that house in 1910 while my father ran the trading post. My older sister, an inveterate browser, came across the issue and recognized the picture instantly from her recollection.

I thought it may be of interest to you and the author to hear from someone with a past connection with such an unlikely place.

A. RANDALL BIGGS
Los Angeles, California

Location of White Plains . . .

Author Mary Frances Strong's uncertainty as to the location of White Plains (see December's *Desert*) can be clarified by newspaper and map research.

The News, published there in 1888, remarked, "We confess that the village of White Plains is, as yet unimportant, but we have a post office, telegraph office, and C. P. railway."

My old maps of 19th Century Nevada show that the town was on the original right-of-way of the Central Pacific which in that area roughly parallels to the south of modern Interstate 80 and *not* as shown on the map accompanying the article. The site on the map is Huxley siding (also known as White Plains) and it did not come into being until the Southern Pacific (the old C.P.) had realigned the railroad route through the area after 1903.

A good article, nonetheless, and it brought back memories of my first search for the elusive White Plains.

STANLEY W. PAHER
Las Vegas, Nevada

More on Mystery Object . . .

I was interested in your letter about the cast iron pillar and wheel which appeared in the November issue.

Some years ago, Randall Henderson told me about this pillar and a similar one farther south, which has been inundated, I believe, by one of the dams. According to Randall, these pillars were erected by the river steamship owner for the dual purpose of helping winch boats over shallows and as a mooring at which to load fuel. The fuel consisted of wood cut in lengths twice that of cord wood—which was called "doughbabies;" these were in use after Pohlemus and Mellen succeeded to the proprietorship of the little sternwheeler.

It is possible that J. Wilson McKenney, who wrote the biography of Randall, can add something, or you might write Jerry McMullen, the director of the Star of India Maritime Museum in San Diego. I recall that Jerry had an extensive chapter on the Colorado River steamers in his book, *Paddlewheel Days*.

L. BURR BELDEN
San Bernardino, Calif.

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Calendar of Events

JANUARY 26-27, WESTERN COLLECTABLE SHOW sponsored by the California Barbed Wire Collectors Assoc., Sports Arena, California City, Calif. Barbed wire, fencing tools and other collectables; exhibits of over 300 different wires. Contact John Alexander, 21330 Lakeshore Dr., Calif. City 93505.

FEBRUARY 16 & 17, SIXTH ANNUAL SAN FERNANDO GEM FAIR Devonshire Downs Fairgrounds, 18000 Devonshire Blvd., Northridge, Ca. Dealers, working lapidary demonstrations, gem and mineral displays, swapping tables. Write George Murray, 8142 Lindley Ave., Reseda, CA 91335.

FEBRUARY 21-23, SCOTTSDALE GEM & MINERAL CLUB SHOW Fashion Square Shopping Center, Corner Scottsdale Rd., and Camelback Rd., Scottsdale, AZ. Dealers. Show Chairman: Tom Wright, 8208 E. Lincoln Dr., Scottsdale, AZ 85253.

MARCH 1-3, PHOENIX GEM & MINERAL SHOW-Silver Jubilee of Gems sponsored by the Maricopa Lapidary Society, Inc. Coliseum, State Fairgrounds, Phoenix, AZ. Camper parking, Field Trip. Write 3340 N. 64th Dr., Phoenix, AZ 85033.

MARCH 2&3, VENTURA GEM & MINERAL SOCIETY'S 12th Annual Show, Ventura County Fairgrounds, Ventura, Ca. Dealers full, camping. Show Chairman: Ed Turner, P.O. Box 405, Santa Paula, CA 93060.

MARCH 1-10, IMPERIAL VALLEY GEM & MINERAL SOCIETY'S 27th Annual Show, California Midwinter Fair at Imperial, CA. Field trip to Cerro Pinto, Mexico on March 9. Area for trailers and campers (no hook-ups). Admission charged to Fairgrounds. Contact Mrs. Ray Smith, 1020 Evan Hewes Hwy, Sp 6, El Centro, CA 92243.

MARCH 30-31, ROSEVILLE ROCK ROLLER'S 3rd Annual Gem & Mineral Show. Main Hall Placer County Fairgrounds. Contact Gordon Henry, 6828 Bismarck Dr., Nth Highlands, CA 95652.

APRIL 6 & 7, STOCKTON LAPIDARY AND MINERAL CLUB'S 22nd Annual Gem & mineral Show presents "Earth's Treasures" at Stockton Ball Room, 9650 Thornton Rd., Stockton, CA. Displays, prizes, dealers, refreshments - No Tailgating.

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