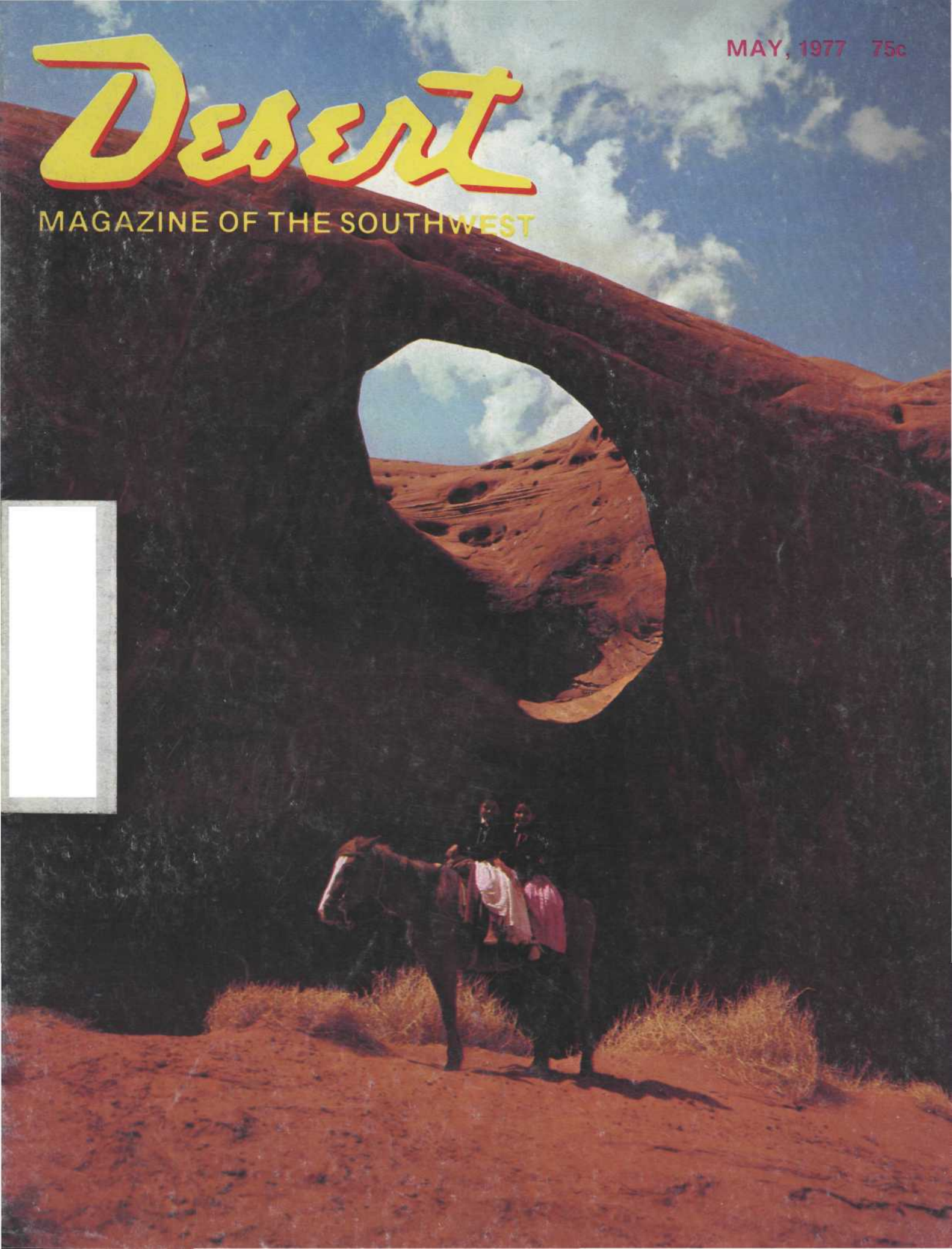
MAY, 1977 75c

Desert

MAGAZINE OF THE SOUTHWEST



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Desert MAGAZINE

Volume 40, Number 5 MAY 1977

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THE COVER:
Two little Navajo girls pose in front of one of the many arches in Monument Valley, Utah. Photo by James Blank, Chula Vista, Calif.

FEATURES

DEPARTMENTS

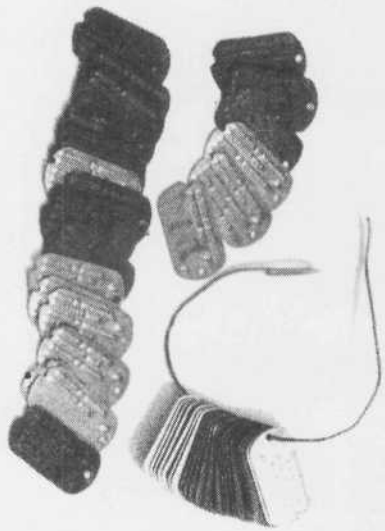
EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: 74-425 Highway 111, Palm Desert, California 92260. Telephone Area Code 714 346-8144. Listed in Standard Rate and Data. SUBSCRIPTION RATES: United States, Canada and Mexico; 1 year, $6.00; 2 years, $11.00; 3 years, $16.00. Other foreign subscribers add $1.00 U. S. currency for each year. See Subscription Order Form in this issue. Allow five weeks for change of address and send both new and old addresses with zip codes. DESERT Magazine is published monthly. Second class postage paid at Palm Desert, California and at additional mailing offices under Act of March 3, 1879.

A Peek in the Publisher's Poke

THE DESERT holds many mysteries in her quiet canyons and valleys. One unusual find was brought to our office by Martin Grunnett, of Indio, California. It seems that about two years ago, Martin and his son, Walter, took a drive out on Interstate 10 east of Indio and turned off the freeway onto the Hayfield pump station service road. They parked the car and decided to do a little exploring, with nothing particular in mind.

A short distance from the car, Walter found a wire ring containing 51 dog tags, relics of the war-time training era of General George Patton and his desert manuevers. There are 11 duplicate sets and 29 single tags. The majority belonged to servicemen from the Southeast, with the state of Tennessee most represented.

The mystery is: How did the tags defy discovery for 30 years and just how were they gathered? Some of the tags are in mint condition and appear to be an aluminum alloy, and others are obviously weathered and are copper-colored.



Was the desert heat so intense it led to 40 boys going over the hill?

Perhaps new tags were issued and these were thrown away to be found later by some relic hunter?

Oh, Perry Mason, where are you?

The tags have been left at our office by Walter and he'd be delighted if some reader could come by and solve this "mystery."

And, by the way, this is a good time to remind everyone that our Book Shop and office will be on summer hours as of May 28th. We will be open from 10 to 3 during the week, but closed on weekends. Be sure to stop by and sign our guest book if you are in the area. It has been a tremendous pleasure to meet so many of our readers this past season who have dropped by to say hello. Almost every state in the Union has been represented, as well as Canada, Mexico, South America, Germany and Sweden. It is most rewarding for us to share *Desert* with so many fine people. Even though "home" may be elsewhere, they still love the beauty, quiet and fascination of the desert.

Included in this issue is an excerpt from an upcoming publication by the University of California Press entitled *Desert Journal*, by Raymond B. Cowles in collaboration with Elna S. Bakker. Although the book is primarily the story of one man's affair with the deserts of southern California, it serves beautifully as an introduction to a whole range of biological and environmental principles. *Desert Journal* is the culminating work of a great teacher, naturalist and scholar.

William Kruppa

3 GREAT BOOKS!

INDIAN JEWELRY MAKING

For the first time Indian jewelry makers, whether experienced or novice, have at their disposal a full-color photographic essay of basic Indian designs. The book utilizes a sequential, step-by-step approach for the craftsman. In addition to basic designs, a short pictorial history of Indian jewelry making as well as modern day techniques and tools are presented. Valuable information on how to set up a work bench, gauge wire, know the weight of silver, etc.

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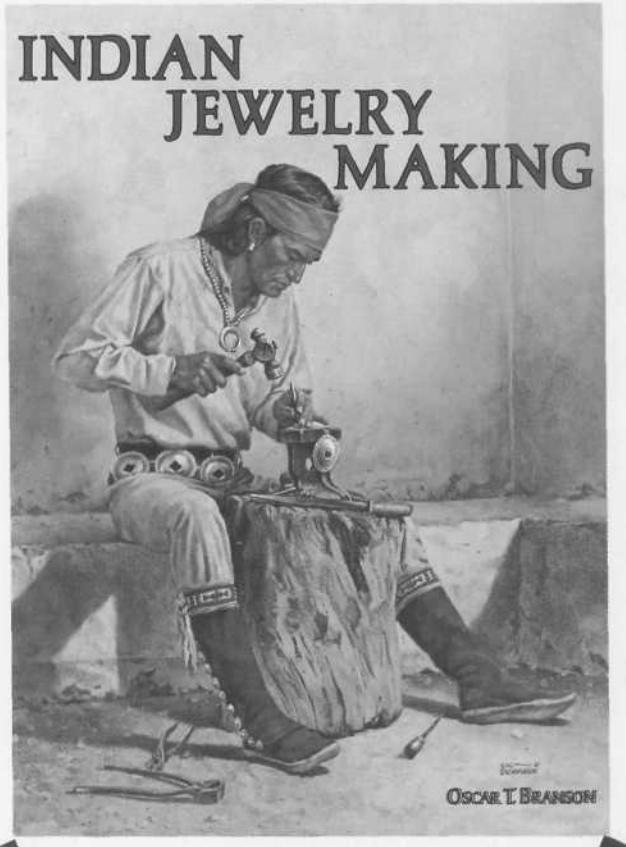
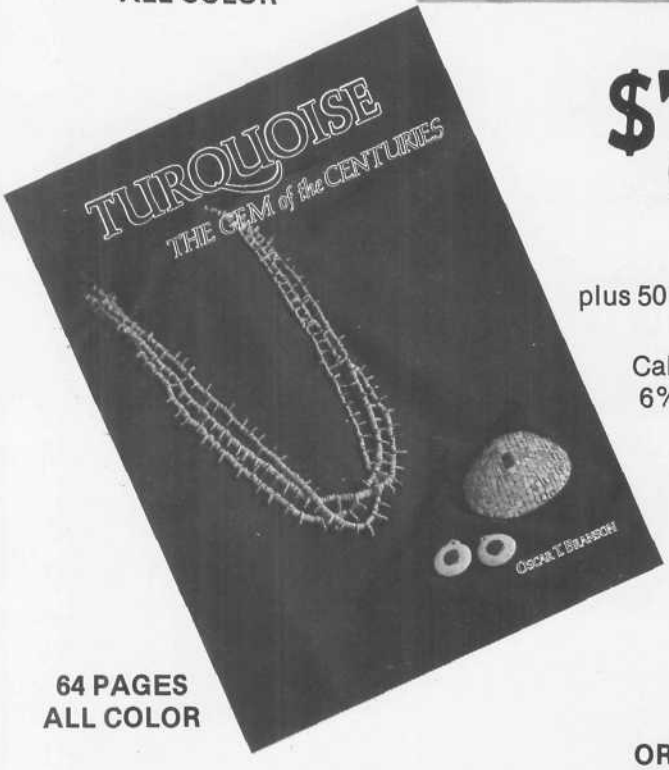


TURQUOISE, The Gem of the Centuries

Beautiful illustrations in accurate color can help you identify the turquoise in your jewelry. Pictures of turquoise from 43 localities from U.S. and around the world. A must for anyone possessing even one piece of turquoise.

FETISHES And Carvings of the Southwest

A vivid pictorial account of the use and beliefs associated with fetishes and the history of popular fetish necklaces since prehistoric times. This book presents the wide range of fetishes and carvings from several Southwestern Indian tribes as well as the outstanding works of several known fetish carvers.



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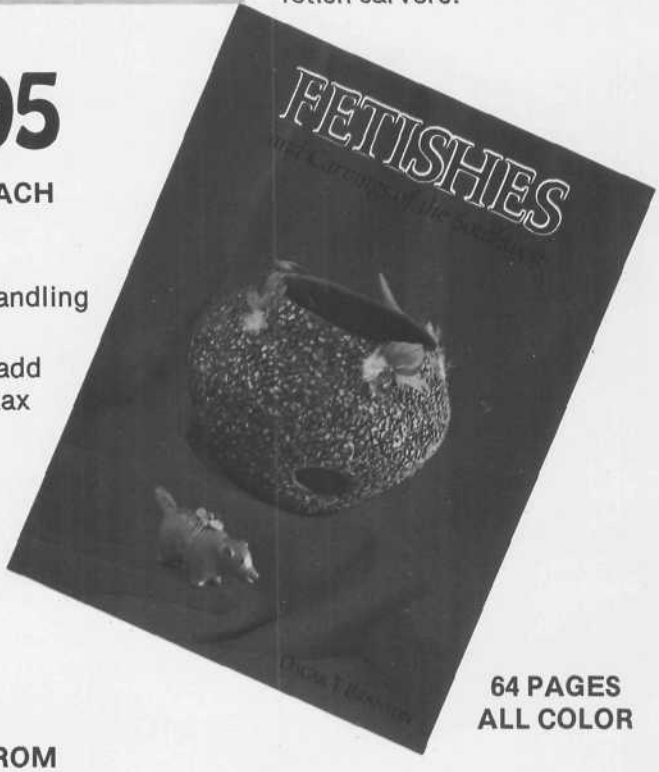

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Books for Desert Readers

COLORADO RIVER GHOST TOWNS
By Stanley W. Paher

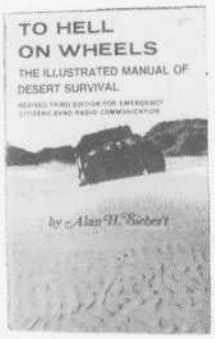
Many of our readers are familiar with Stanley W. Paher who is the author of several books about the Southwest. His *Nevada Ghost Towns and Mining Camps*, published in 1970, earned him the Award of Merit of the American Association of State and Local History. Next came *Northwestern Arizona Ghost Towns* which was followed by *Las Vegas, As it began—as it grew*. Two guidebooks, *Ponderosa Country* [*Reno and vicinity*] and *Death Valley Ghost Towns* were issued in 1972-73.

Now Stan brings us *Colorado River Ghost Towns*, and as is his usual format, it is illustrated with an abundance of rare old photos.

The Cerbat mountains and other barren ranges in western Arizona along the Colorado River offer a wide range of unexpected experiences to the visitor. Tucked away in several canyons are the skeletal remains of abandoned mines and towns. Chloride, Cerbat, Fort Yuma, Ehrenburg, El Dorado Canyon, Oatman, Grand Gulch, La Paz, Swansea, Mohave City and Harrisburg are but a few of the ghost towns that are brought back to life both in text and illustrations.

Large format, paperback, this standard editon is priced at $2.95.

Another edition is also available which contains 15 beautiful four-color reproductions of etchings by Roy Purcell, well known western artist who was featured in the November 1976 issue of *Desert*. This edition is priced at $4.95.



TO HELL ON WHEELS
The Illustrated Manual
of Desert Survival
By Alan H. Siebert

The third edition of this valuable manual is now available. Even the most experienced back road driver considers this reference book essential equipment for glove and tool box.

With charts, photos and drawings, *To Hell on Wheels* tells the how-to story of all-terrain savvy.

Now with the popularity of Citizens Band Radio the book has been revised to reflect emergency signaling for that time when the chips are down. One out of every two recreational vehicles is equipped with CB today, but there is a long and a short side to all communication systems.

Common sense and cool logic are the keys to successful outdoorsmanship and this new edition has the facts laid out in plain, easy-to-understand terms.

This book could make all the difference when the difference can call the outcome.

Paperback, illustrated, 64 pages, $2.95.

The Desert's Summer Place

Cool, Blue Mountains Beckon

by BILL JENNINGS

AS SPRING SIZZLES into summer, the low desert ceases to be a popular camping and off-roading area for most of its fair weather friends, and thoughts turn to the cool, blue mountains above.

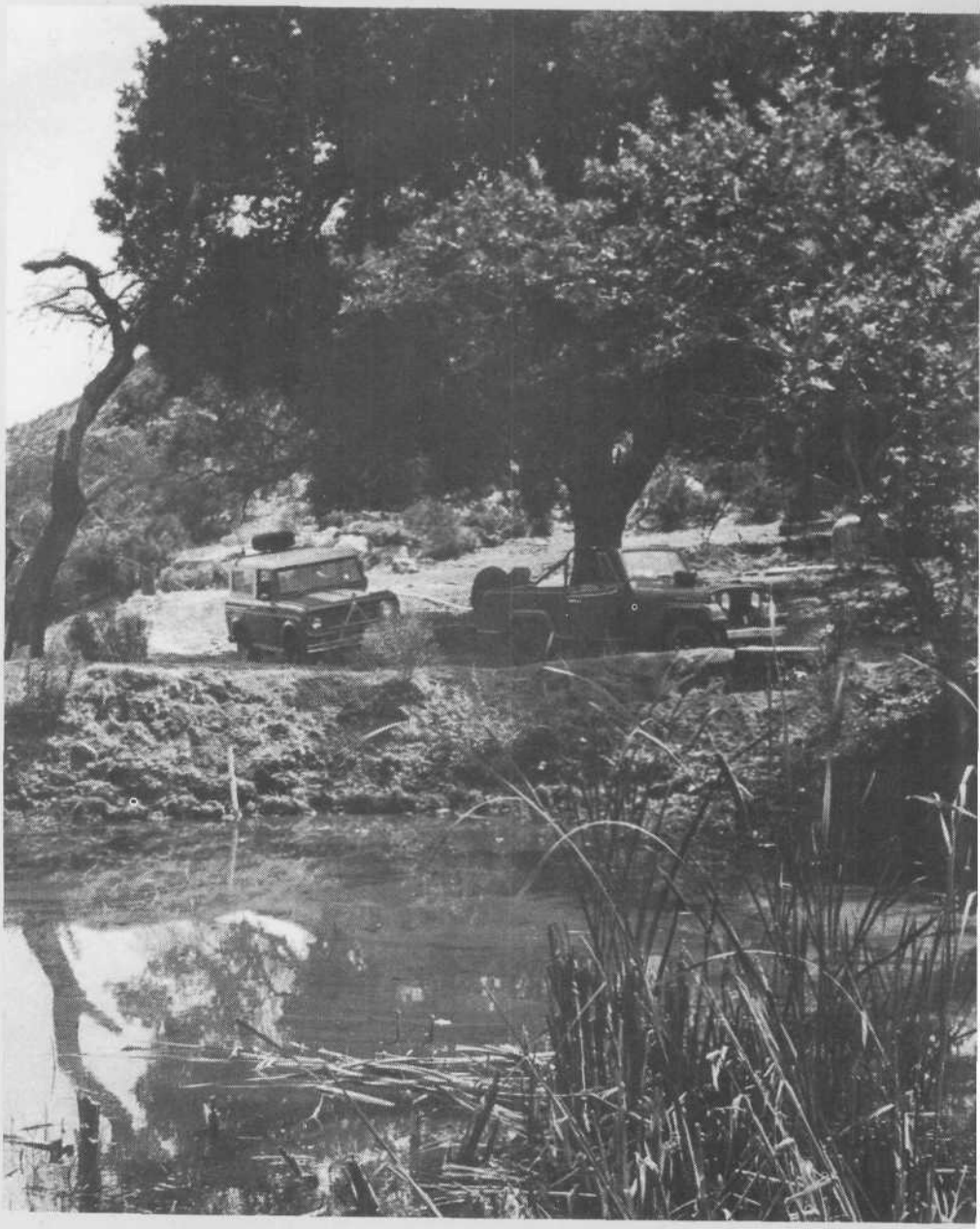
At California's Anza-Borrego Desert State Park, however, you can extend the season through the hottest months because the huge (more than 500,000 acres) park runs up to 6,000 feet in the San Ysidro and Santa Rosa Mountains and on the eastern edges of the Cuyamaca and Laguna Mountains.

About three years ago, the state parks agency began a series of land acquisition moves with private land owners and other public bodies, mainly the U.S. Bureau of Land Management, that should, someday, cause a hyphenation and further elongation of the park's already jaw-breaking name, to the Anza-Borrego Desert-Mountain State Park.

Anza-Borrego has its own longtime mountain empire, the Culp Valley, its adjoining Jasper Trail and the juniper-yucca wonderland of Pinyon Mountain. Now it has added the desert rim escarpment between Julian and Mt. Laguna and most particularly the northern Sheep Canyon Natural Preserve and the vast Santa Rosa Mountains State Wilderness.

Much of these latter areas along upper Coyote Canyon and easterly into Rockhouse Valley are roadless, however, and access is controlled during summer to protect the desert bighorn sheep.

Culp Valley, a primitive campgrounds, however, remains open all year and is the springboard to the vast recreational



Above: Los Coyotes Indian Reservation near Warner Springs in San Diego County offers a good summertime jeeping area for desert denizens. Right: Old homesite at the abandoned Indian village of San Ignacio in the San Ysidro Mountains shows two building styles and eras. Addition at left is from World War II Navy dependents' housing project near San Diego. Original adobe at right is probably 100 years old.

empire of the San Ysidro Mountains. Situated adjacent to County Highway S22, 10 miles west of Borrego Springs and 16 miles southeast of Warner Springs, Culp is the park's highest organized camping area, 3,400 feet and generally cool enough in summer to permit sleeping bag camping.

It has only pit toilets and no water but it is a favorite of off-roaders because it's the jumping-off place for the famous Jasper and Wilson Trails, pioneered nearly 20 years ago by now-retired ranger Frank Fairchild. These tracks will handle all four-wheel-drive rigs and some of the more rugged two-wheel-drive types, but be warned there are some "squeezes" where wide-bodies vehicles may lose a layer of paint or more.

Just a few miles away, up behind Warner's, is the crown jewel of summer sites in these rugged and beautiful mountains, the little-known San Ysidros. On Los Coyotes Indian Reservation there are miles of so-called jeep trails and numerous campsites all open to visitors by payment of modest day and overnight fees.

For the past decade, the Mountain Cahuilla tribesmen have opened their 25,500-acre reservation to visitors. They even have a map showing some of the best four-wheel routes and campsites and ask only that visitors stay out of lower Cougar Canyon where a deceptively easy road leads steeply downward toward a now-inactive tungsten mine and on to the boundary of the state park.

Even some four-wheelers have been known to founder when trying to come back up this grade and tow trucks are expensive when they have to be summoned from Santa Ysabel or Borrego Springs.

The tribal campgrounds committee does not include a salvage and rescue team among its many services to visitors.

The main campground below Panawatt Spring is just six miles from Warner Springs, the first four by a newly paved county road. There is running water here, plenty of firewood and many secluded campgrounds, each with its own ring of canyon oaks. Elevation here is just under 5,000 feet and nights generally are cool enough for comfortable sleeping under covers. At the reservation boundary two miles back you pay your fee and receive the combination to the gate at the old San Ysidro village site. Church services are still held there and tribal meetings occur at least once a month in a modern community clubhouse

Hot Springs Lookout, a Forest Service fire-warning station on San Diego County's highest peak, offers a superlative view, on a clear day, including San Diego Harbor 55 miles away, Catalina and San Clemente islands, 70 miles or more.

Campers in more remote corners of Los Coyotes also pause at the main campground. It's the only source of reliable water year-around on the entire reservation. Other camping areas are found up to 6,000 feet elevation on the road to the Forest Service's Hot Springs Peak lookout, the highest point in San Diego County at 6,533 feet.

Another four miles northeasterly along the main road is the abandoned village site of San Ignacio, the head of a still visible trail that reaches across

Coyote and Rockhouse Canyons to the ancient Santa Rosa villages of another Cahuilla group. At San Ignacio are the ruins of another church with an adjacent cemetery, several homes that are still occupied by cattle-owning members of the Los Coyotes band and some of the loveliest oak canyons in Southern California.

The area escaped in two major San Ysidro fires in the past five years but visitors are warned to be careful with fire pits anywhere on the reservation. Help has to come all the way from Warner's and brush fires are the biggest worry of the Cahuilla. No hunting is permitted on the reservation.

Borrego Palm Canyon rises near San Ignacio but hikers are warned that heavy brush and some steep rock falls make the seemingly short journey down to the permanent stream an arduous one.

Hikers or motorists who make the long climb up to Hot Springs peak are rewarded — on a clear day at least — with one of the most incomparable views still available in Southern California. The Coronado Islands, even Navy ships in San Diego Bay, and still farther out, Catalina and San Clemente Islands can be seen from the deck of the lookout tower. The Forest Service caretakers welcome visitors.

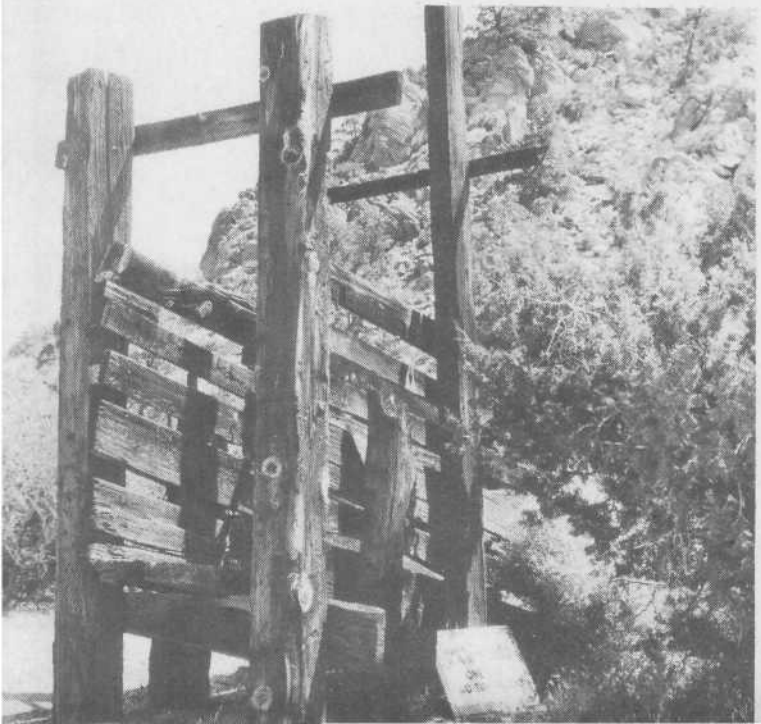
Some of the best off-roading is off the northeast slopes of Hot Springs, in the headwaters of Sheep, Cougar and Indian Canyons and on to the locked gate at the entrance to Lost Valley. An isolated section of Anza-Borrego park adjoins the reservation here but access is blocked by Los Coyotes from the south and the huge Lost Valley Boy Scout Reservation to the north.

Orange County Scouts 15 years ago purchased the old Henry Bergman Ranch in Lost Valley, more than 3,000 acres of mountain meadow that now has a big recreational lake and other activity areas including hiking and riding trails and back country campsites. Even the 600-plus acres belonging to the state are not open to casual visitors, although Anza-Borrego rangers occasionally lead tours into Lost Valley. Eventually, the park is expected to exchange the Lost Valley acreage for land more accessible to the public. However, the state will not be able to pass land title to private interests because the Lost Valley parcel contains known archeological sites and therefore must be protected under state law.

Los Coyotes camp is one of the original units in a new all-Indian enterprise designed to give reservation members a new economic base through recreational development. Known as Indian Campgrounds, Incorporated, the new interstate entity has access to federal economic development funds. Banning Taylor, longtime Los Coyotes elective spokesman, has been an ICI director several years. The ICI system also includes Chemehuevi Valley on the Colorado River's California side opposite Lake Havasu City.

Other camping areas in the mountains fringing Anza-Borrego include several Forest Service campgrounds, at Mt. Laguna and Descanso to the southwest and Indian Flats near Warner Springs, on the Pacific Crest Trail at the entrance to Lost Valley.

The U.S. Bureau of Land Management is the newest public agency landlord in the region with several campgrounds in



Old cattle loading chute attests to the rich ranching history of the Santa Rosa Mountains, an area that offers many summer camping sites for desert area visitors.

Yucca plume rises above slope of Santa Rosa Mountains near one of many old mines that dot the region.

the McCain Valley Recreational Area just north of Interstate 8, 60 miles east of San Diego. This 38,700-acre special use zone was established in October, 1963 and now includes three campgrounds, Lark Canyon, Whitearrow and Cottonwood, with more than 15 miles of roadway and a spectacular off-road vehicle route from Lark Canyon east past Sacatone Spring and Tule Mountain to the western rim of Carrizo Gorge. The gorge, which contains the headwaters of Carrizo Creek, is a 1,500-foot deep cut in the Inkopah Mountains made famous by the San Diego and Arizona Eastern Rail Way, a major victim of last September's tropical storms.

Forest Service camps may require advance reservation during peak-use periods. The most popular are in the Mt. Laguna Recreation Area 12 miles north of Interstate 8 at Pine Valley, 45 miles east of San Diego. A call to Cleveland National Forest headquarters in San Diego is advised before going to Laguna

Also handy for visitors is Cuyamaca Rancho State Park near Cuyamaca Lake, along State Highway 79, 10 miles southeast of Julian. The park contains some of the largest gold mines in Southern California, the most notable of which is the Old Stonewall on the south shore of the little lake. A campground is located here. The park also contains one of the largest collections of Diegueno Indian artifacts at its museum in the old Green Valley ranch house that is now park headquarters.

Until mid-June, the exact date yet to be announced at Anza-Borrego park headquarters, the historic and scenic Juan Bautista de Anza trail up Coyote Canyon will remain open to back country drivers. The so-called canyon "road" is literally a way to go, through and around the intermittent streambed but offers an authentic taste of California history.

Anza led two expeditions through the canyon from Tubac near Tucson to San Gabriel Mission. The second, in 1775-1776, led to the founding of San Francisco and was marked as a major event in the Bicentennial last year.

By park regulation, you can pull off the track anywhere along this route and camp overnight, provided you do not have a campfire.

Far up Coyote, near the San Diego-Riverside counties boundary, there are several outstanding camping and exploring sites, in the vicinity of Upper Willows, Fig Tree and Mangalar, near old cattle line camps that are now part of the park. Of these, the most likely camping areas are in Alder and Tule Canyons, although access to the latter is through some very "quick" sands during times of streamflow, making the route risky for all but the widest-rim rigs around.

Alder contains the remnants of a line camp maintained for many years by the late Howard Bailey, a rancher of the Anza-Cahuilla area who sold much of the upper Coyote Canyon to the state for half its appraised valuation several years ago.

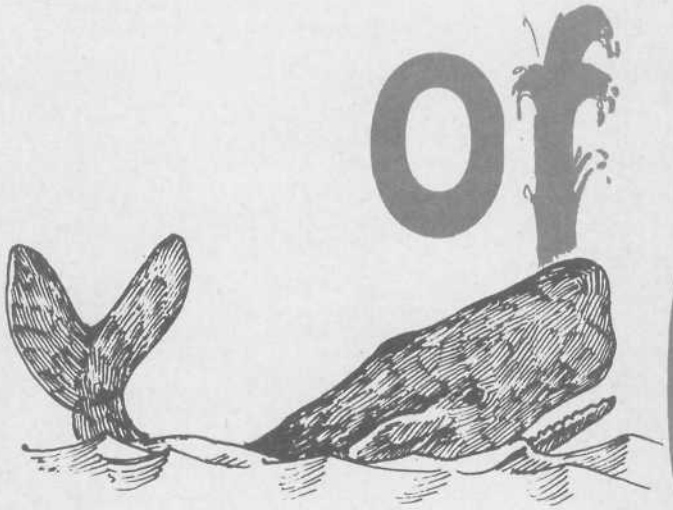
This lovely canyon abounds in wildlife, particularly deer in its upper reaches, quail and other birds. Several thickets of California Alders, sycamore and oak trees mark springs along the streambed. Access is possible by high-centered vehicles with two-wheel-drive.

If you get this far up Coyote and don't find the solitude you seek, continue up the Turkey Track trail to the little town of Anza on State Highway 371 and head easterly toward the Santa Rosa Mountains. Six miles east of Anza you intersect the famous Palms-to-Pines Highway, State Route 74. Continue east toward Palm Desert another five miles to the junction of the Santa Rosa Road, a hairy switchback affair that rises to the summit of the Santa Rosa's 8,716-foot Toro Peak. Toro centers an isolated square mile of the Santa Rosa (Cahuilla) Indian Reservation and is restricted to foot traffic, but the short, steep climb is worth the effort.

The view from Toro is even more spectacular than the vistas from Hot Springs, which you can see some 25 miles to the southwest. From Toro you can see far into Arizona and southern Nevada and westerly to the Pacific. There are several primitive Forest Service camping areas in the Santa Rosas, with good spring water, a confusing network of old logging roads that offer fine four-wheel-drive recreation, all very legal.

Some say the Santa Rosas are haunted, but maybe that's just the wind sighing through the heavy stands of Jeffrey and Ponderosa pines you hear. □

Whale of the Desert



by RON SCOGIN

WHALES are not usually associated with the desert — especially the 45-foot-long sperm whale, sounding down 3,000 feet into the black oceanic depths to capture a lunch of squid and cuttlefish. Yet, a crucial connection does exist between the mighty sperm whale and a common, long neglected, nondescript bush growing in our American desert southwest and this modest plant just may save the mighty leviathan from extinction.

Our nation owes a special debt of gratitude to the sperm whale. During the early years of our republic in which our infant economy was in constant danger of total collapse, the major economic force which helped fill our young nation's coffers and kept the fledgling

The flowers of the male jojoba plant are borne in small, inconspicuous clusters. The paired, leathery, upright leaves are a useful identifying character.

country solvent was the powerful New England whaling fleet of Bedford, Nantucket and New Haven. The prey of these stalwart men of the sea was the sperm whale, hunted for the unusual oil which it contained within a cavernous space in its head. Sperm whale oil was highly prized for illuminating oil and candlemaking and a single whale could yield more than a ton of it. Petroleum products and eventually the brainchild of a man named Thomas Edison spelled the end of sperm oil as an illuminant, but the demand continued for numerous industrial applications of the oil ranging from lubricant in fine instruments to cold pressing of steel to the manufacture of soap and detergents.

The result has been that the sperm whale has been relentlessly and ruthlessly hunted and rendered into oil until their numbers are about one-forth of their former population. For several reasons the sperm whale is more fortunate than his cousins, the blue whale, the humpback whale, the right whale and the bowhead whale. These species are in

The fruit of the jojoba plant are borne in clusters of two to four. Each fruit contains two or three peanut-like seed.

all likelihood now doomed to biological extinction. The sperm whale is merely endangered at present, although his number continually diminish in the face of unregulated hunting.

What has this to do with the desert? As noted, the sperm whale is hunted almost exclusively for the unusual oil it produces in huge quantities. This oil (actually as liquid wax in chemical parlance) was considered to be unique in nature, but an unexpected second source for this oil exists. In our desert grows a shrubby plant known popularly as jojoba or goatbush and to scientists as *Simmondsia chinensis*. The fruit of jojoba contains a peanut-like seed which contains up to 50 percent of its weight as an oil so similar to sperm whale oil that only with difficulty can a trained chemist distinguish the two. Numerous industrial tests have shown that in most applications jojoba oil can substitute for sperm whale oil and industrial interest has risen to the point that it is reasonable to believe that the desert's jojoba plant may provide sufficient quantities of a product which could make sperm whale hunting uneconomical and, as a result, prevent the possible extinction of this majestic monster of the sea.

The utility of jojoba seed and their

contained oil have not been discovered merely recently. For centuries the Indians of the Southwest have used the seed as a food and beverage source. The seeds were eaten out of hand without preparation or a beverage was prepared by grinding the nuts and boiling the resultant meal. The liquid was then strained off and consumed as a nourishing drink.

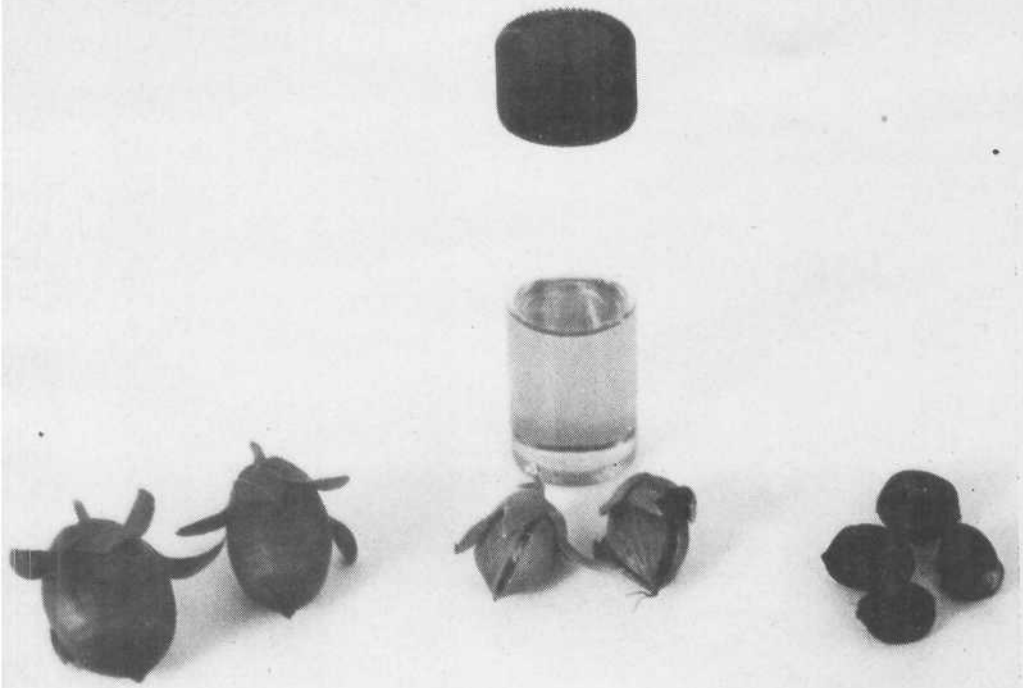
In more recent times, the oil pressed from jojoba seed enjoyed a wide popularity as a hair treatment and restorer Jojoba seed were a standard offering in early Los Angeles drug stores. The oil was pressed or boiled from the seed and rubbed into the scalp or eyebrows. Its restorative properties were highly acclaimed and are still highly regarded in parts of Mexico.

The early Mexicans also made a rich beverage with jojoba nuts, which they first roasted and ground together with the yolk of a hard-boiled egg. This pasty mass was boiled with water to which milk, sugar and vanilla beans were added. The product was a thick, rich drink resembling chocolate.

The popular name jojoba comes from the original Indian word for this plant "hohowi" and the English epithet goatbush attests to the popularity of the shrub as a browsing material for goats, sheep, deer and cattle. The scientific name, *Simmondsia chinensis,* is derived from two sources. The generic name *Simmondsia* is a tribute to the famous English naturalist F.W. Simmonds. The specific name *chinensis* comes from the fact that the first man to describe this plant in the scientific literature believed that the specimen in his possession had been collected in China and so he named it "chinensis." In fact, jojoba has never been near China, but the rules of scientific nomenclature prevent changing the name to something more appropriate and this early geographical error is perpetuated in the name used by the scientific community which prides itself on accuracy and precision.

Jojoba is actually quite restricted in its range, occurring as it does only in our North American Sonoran desert. It is found in southern California, in southern Arizona, on the Baja California peninsula and along the western coast of mainland Mexico.

Jojoba is a common shrub found on dry, rocky hillsides below 5,000 feet in elevation. The bush is usually three to



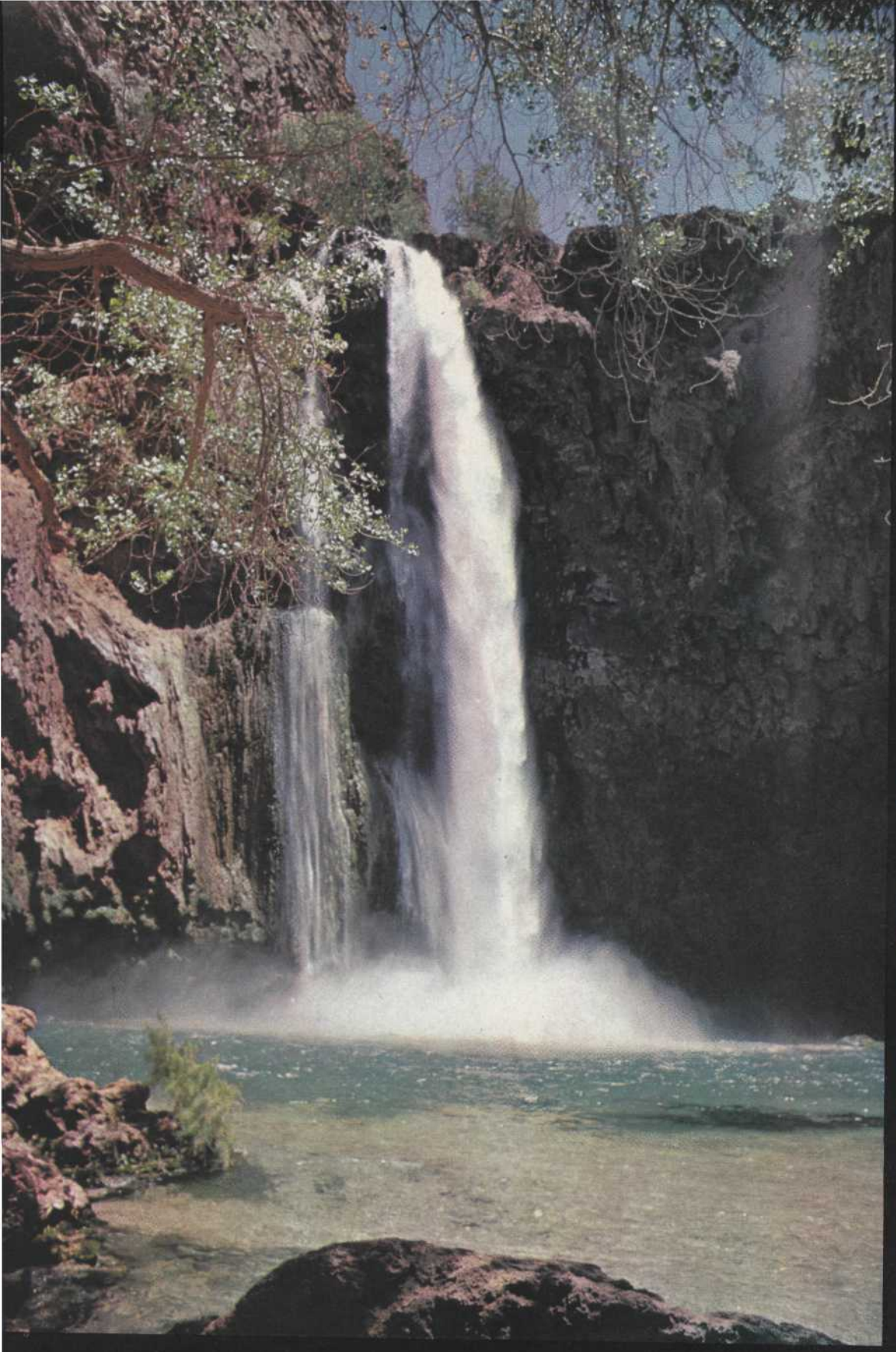
When the fruit [left] of the jojoba dry out they split open [center]. Inside are several dark seeds [right] from which jojoba oil [in vial] can be expressed.

six feet in height with dense foliage consisting of paired, leathery leaves which tend to fold together and point upward. The jojoba is most easily recognized by its thick, bushy appearance and these paired, upward-pointing leaves. The fruit on the female plant are characteristic and in the fruiting season (early summer) appear like an acorn with the cap replaced by four or five small leaves.

The jojoba belongs to a group of plants botanists term "dioecious" — meaning that there are separate male and female plants. This is in contrast to most plants where male and female structures occur on the same plant, indeed, usually in the same flower. The male plants bear very small, inconspicuous flowers which bloom in the spring to produce pollen. The pollen is carried by the wind, rather than insects, to the female flower on a separate, nearby shrub. After pollination the female plant produces the fruit containing the seed with the oil of commercial interest.

There is great interest at present in the feasibility of bringing jojoba into plantation cultivation. Research programs at the University of Arizona and University of California at Riverside are evaluating the considerable problems involved and determining the optimum planting, growing and harvesting conditions for cultivating this plant. Jojoba differs greatly from such crops as corn and wheat, which man has carefully selected for thousands of years. Jojoba is still a wild plant and its genetic variation and range of breeding stocks are still unknown. Much work remains before this plant will yield its oil under cultivated conditions. If these research programs are successful, jojoba will become the only native American desert plant to be brought into plantation cultivation.

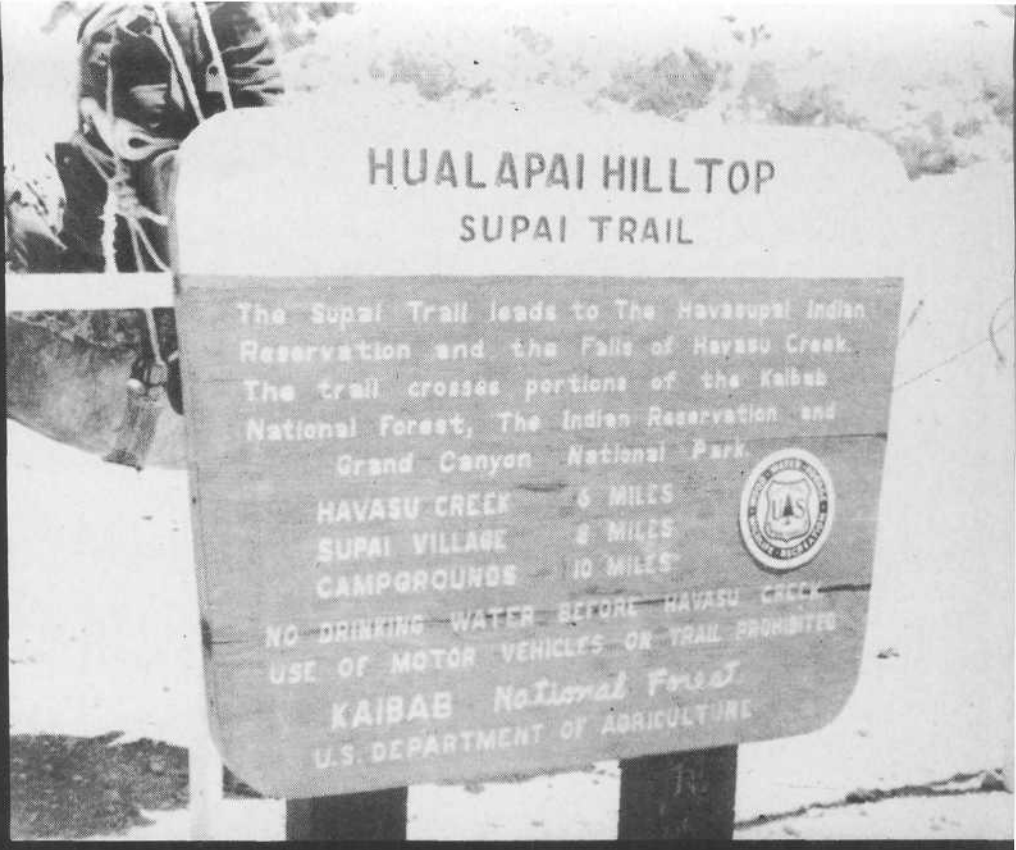
The natural habitat of jojoba includes numerous Indian reservations and these reservations would provide ideal areas for its cultivated growth. The federal Office of Economic Opportunity has expressed its commitment that if plantation planting of jojoba is demonstrated to be feasible, that every effort would be made to assist the native Indian population to cultivate this plant on their lands in hopes of providing a cash crop to improve their economic conditions. Indeed, it would only be just if the first people to realize the utility of this plant centuries ago and exploit it, could today be the benefactors of its utility to industrialized Western man. □



Land of the Blue Water People

Above: Majestic Mooney Fall drops 200 feet into an emerald green pool. Opposite page: The canyon rim sign [top] that marks the start of the trail to Supai Village eight miles below. Travertine Terraces [bottom] form stepping stones across the creek and hold back the water in beautiful lagoons. Photos by Dana Burden of Havasupai Expeditions, Wickenburg, Arizona.

by MICHAEL JOHN BEISCH



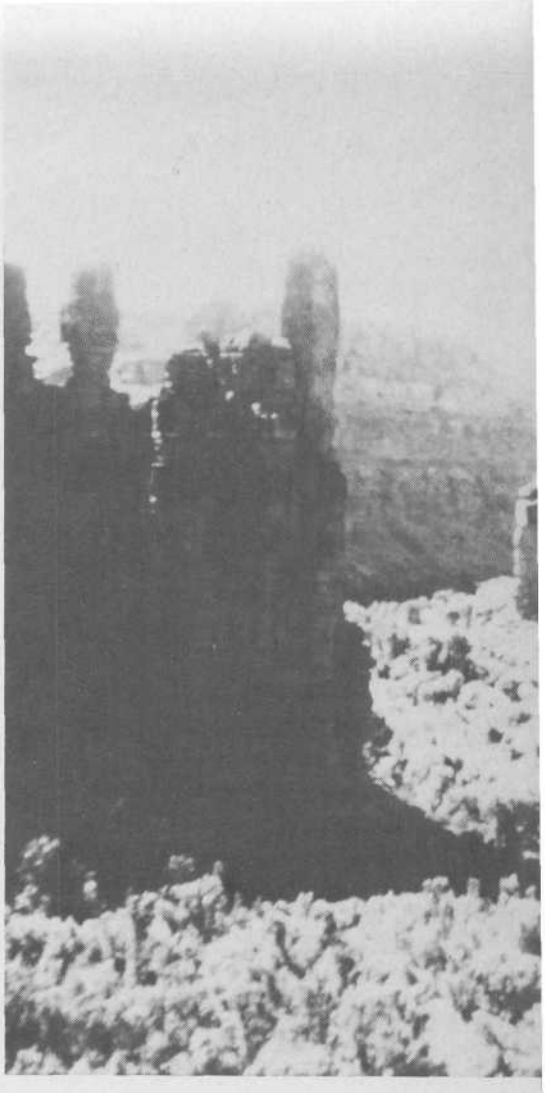
THE STATE of Arizona offers many contrasts to the traveler. Not the least of these are its numerous Indian Reservations. For example, it would be difficult to mistake the Apache Indian Reservation, set in the fastness of the White Mountains, for the Navajo Reservation, with its broad, multicolored desert, and its beautiful Canyon De Chelly. The Hopi Reservation presents an even greater contrast, for its villages are set high on the edge of receding plateaus commonly known as The Three Mesas. However, this picture of contrasts would not be complete without the mention of another, a Reservation that may well be the most unusual of its kind in the United States.

Set in the narrow defile of a Grand Canyon gorge, it consists of a scant 500 acres and is populated by 300 Havasupai Indians. Because of this it has kept much of the wonder and enchantment of its natural surroundings. It might be difficult for some in our day and age to imagine, but with only one automobile, a trading post, a church, a clinic, one street light, and a school, the village retains much of the natural simplicity that is the true hallmark of the American Indian. To walk through the village is to be enmeshed in the "God given" things of this earth. For here there is no concrete or asphalt, but only the soft, undulating feel of sand underfoot. Along Supai's main street, willowy cottonwoods keep a silent vigil. Fields of corn glisten in the sun. Mules bray. Chickens cluck. An Indian boy can be seen trotting his pony down one of the sequestered lanes. For these — it can be justly said — are a simple people.

As one looks up through the hollow of the canyon past its vermillion cliffs and airy portals, there can be seen two pillars of rock. It is an ancient tradition of the Havasupai that these were put there "by the gods" as a sign of divine protection. Wouldn't it be worthwhile to journey to this hidden land and learn something of the people who inhabit and care for it?

One of the first things the hiker hears as he approaches Supai is the sound of running water. He may have begun his journey in Flagstaff or Williams or farther east. Having driven west on I-40 to a cutoff about six miles of Peach Springs, he has taken a long secondary road to what is known as Hualapai Hilltop — the beginning of his long trek to the village. The flat, circumscribed area for the autos seems insignificant as one looks down into the great rift that is the canyon below.

As a terminus for three smaller canyons its sides reach to the sky like massive fortress walls. There is majesty in every line and abutment of this colossus that rises before the human eye. Glancing down, the traveler sees the thin thread of a trail that winds its way to the canyon floor below. With his reservation confirmed and his fee paid, he loads his pack to his back and begins the long descent — eight miles and five hours later — to the Havasupai Indian village. The trail is rocky as he works his way down. For the first mile or so it is fairly steep, laced with sharp switchbacks. Then for a while it flattens. The hiker



The Rim country above Supai Village.

adjusts his pack and manages to catch a second wind. Now the canyon walls narrow as the trail moves into a rocky watercourse. Here the footing must be sure for it is easy to slip. Gradually the canyon opens into a broad gorge. Just ahead is the village of Supai. Here he picks up a yellow tag for his pack that will guarantee his reservation in the campground ahead.

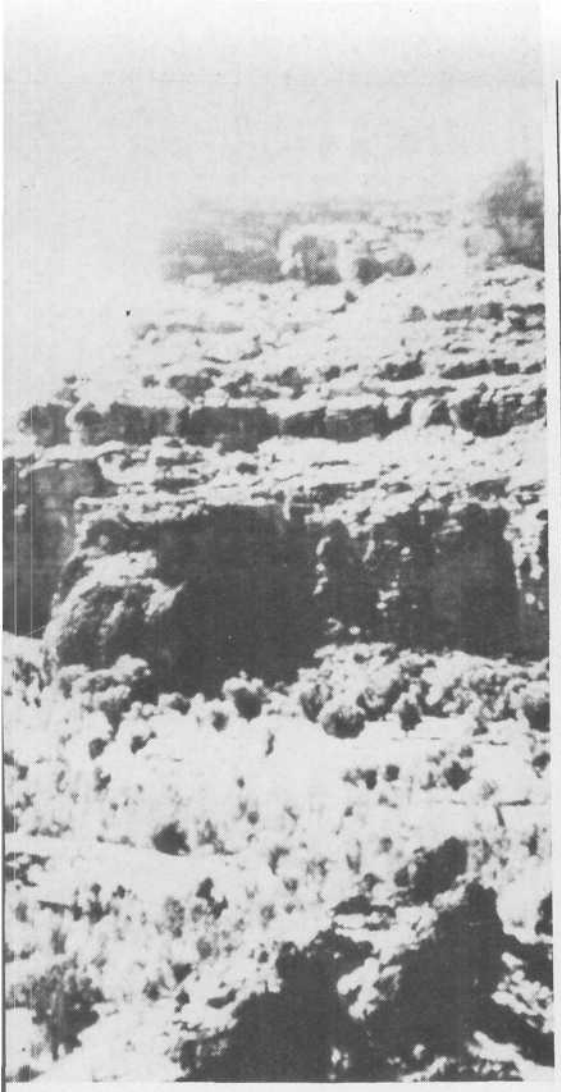
Leaving the village his anticipation grows. He knows that there will be falls ahead, but it is difficult to form a picture of them. The creek bed has begun to change to a lovely crystalline blue. The canyon has taken on the aspect of a tropical garden. Its walls seem to hold the scene fixed in another worldly setting. Then he abruptly comes to Navajo Falls. At first he hears the sound of rushing water to the left of the trail. Routed in several converging streams, the water tumbles 75 feet to the canyon floor below.

There is another series of switchbacks as it winds its way to the rim of Havasu Falls which cuts through the next step of the canyon and pounds 125 feet to the lovely lagoon below. Thrashing over the precipitous drop the water throws its brilliantine into the morning air. Several rows of limestone steps back it up into a natural lagoon. The bottom of the pool varies from a deep azure to a soft blue-green. Nature has been bountiful in her use of color. From here on the creek is coated with travertine — a crystal of calcium carbonate — which takes on many shades of blue. The campground lies just ahead. Set in a wooded area next to the creek it affords a perfect place of rest after a long hike.

From here to the last falls the canyon is a primeval garden untouched by man. A virgin spring seeps from the canyon walls. Tropical fauna is in abundance. Flowers can be seen with long, fluted bells that resemble the trumpet of the old Victor Talking Machine. The traveler now has but to secure his camp and make the last half-mile trek to Mooney Falls. Because of their great depth, he hesitates even to look down. With a thunderous roar the water billows and funnels its way into the large lagoon below. To reach their base a trail has been cut in the side of the canyon wall. In places tunnels have been hewn right through the rock. The descent at times becomes almost perpendicular. Finally — on reaching the bottom — one can look up 200 feet to the crest of water pummeling over the canyon wall and be awe-struck. It is the end of a journey to an enchanted land that cannot help but cause men to wonder at the magnificence of Nature's handiwork.

For this is the land of the Havasupai. It is their offering to their fellow man, and the irredeemable service they daily perform in administering the campground, keeping the canyon clean, and maintaining its trails. A loose piece of paper is not to be found for hikers are asked to pack out their trash and their waste paper. Nor are fires permitted. The traveler is asked to leave things as he finds them and to respect the untouched quality of the reservation.

These are the people who must pack everything down by eight miles of rugged trail. It is not uncommon to see Havasupai packmen on the trail to the village. Supai is the only town in the Unit-



ed States that has its mail delivered by pack-train. It is only in cases of extreme necessity that helicopters are used as in the winter of '72 when National Guard helicopters had to fly in food and emergency supplies.

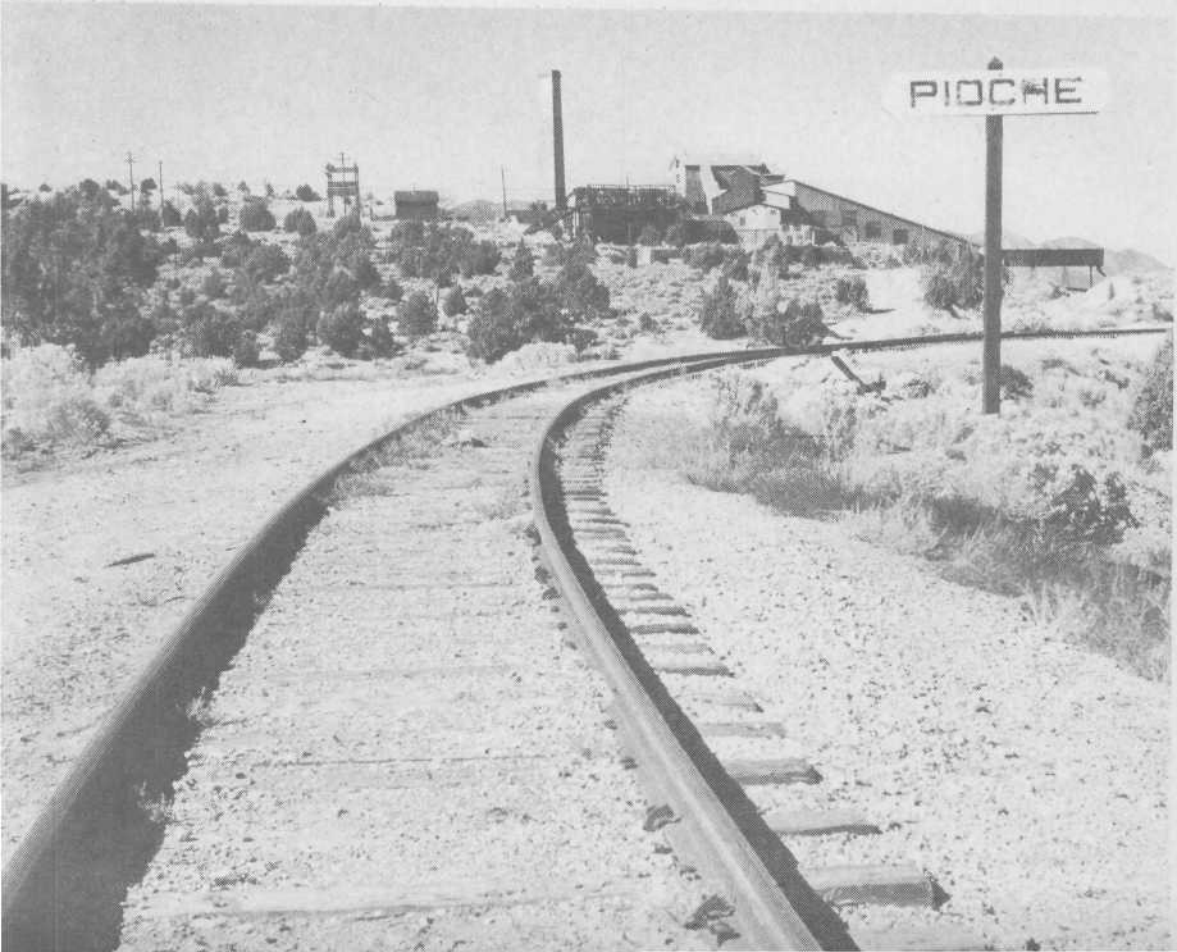
Living close to the land, cut off from the outside world; and returning to others — by caring for it — the beauty of the land. These — in the true meaning of *Havasupai* — are "the blue water people." □

Panaca Spring, at the head of Meadow Valley, was as important to the early miners and settlers as it is to the ranchers today. Because of the presence of abundant water, the first successful stamp mills that processed Pioche ores were erected a short distance west at Bullionville.

A Nevada Field Trip

Pioche- No Ghost Is She!

by MARY FRANCES STRONG



photos by Jerry Strong

Though now idle, the mill and reduction facilities at Pioche stand resolutely in testimony of a vigorous and active past. The continued existence of the Union Pacific Railroad spur tracks, which served the mill, suggests that hope persists for a resurgence of mining and milling.

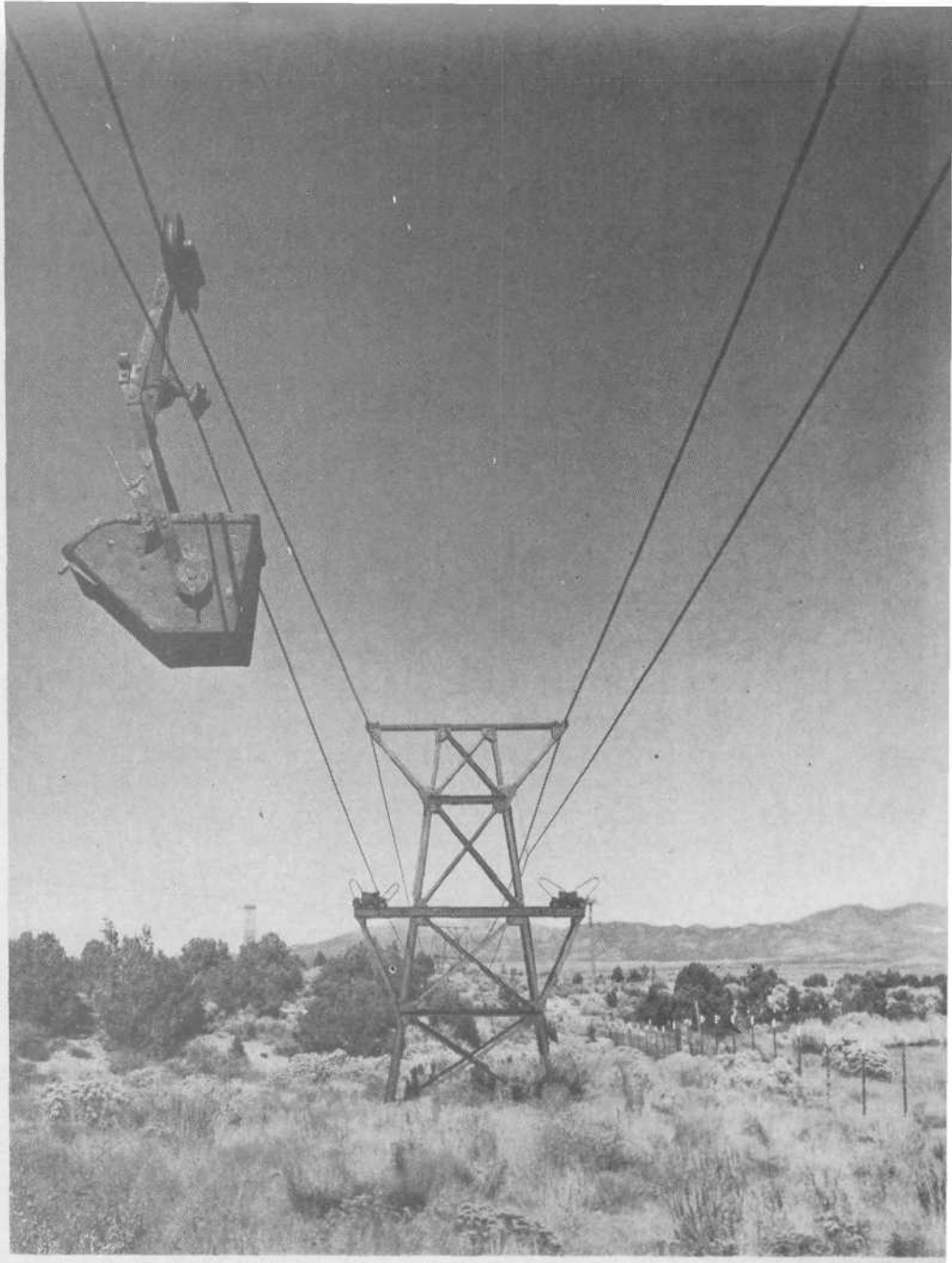
APPROACHING from either north or south, Pioche, Nevada is a surprise. A feeling of nostalgia quickly envelopes you in this picturesque mining camp where the old mingles graciously with the new. Mines and huge dumps sprawl over the Pioche Hills. Below them, the more than a century old community crowds contentedly in a narrow canyon. The laughter of children is heard and townfolks greet strangers as if they belonged here. Pioche's great boom days may be gone but no ghost is she!

Still active as a mining camp, ranchers' supply town and home to many, Pioche has survived devastating fires, flash floods and mine closures. Through good, bad and hard times her viable citizenry has endured and built a community of pleasant living. This has not always been the case. In the early days, Pioche had a reputation as one of the "wickedest towns in the West."

The original strike at Pioche was the result of a simple act of barter. In the fall of 1863, fearing a long hard winter was ahead, Indians showed William Hamblin, Mormon Missionary, some high-grade "panacre" — their name for silver ore. They offered to reveal the source in exchange for food and a bargain was quicky made. Hamblin visited the location and filed claims on the "Panacker Lode." The following spring a townside (Panaca) was developed in Meadow Valley and the Meadow Valley Mining District organized.

Indian hostilities and Brigham Young's disapproval of mining was responsible for the claims lying idle during the next four years. Evidently their owners were completely unaware of the district's real potential. Disregarding the possibility of an Indian attack, numerous prospectors began to arrive in the area and a great many claims were staked out in the hills.

This quiescence was due to change in 1868, after the arrival of three men — William Raymond, John H. Ely and Charles E. Hoffman. Raymond and Ely, fresh from failure in the Pahranagat District, decided to form a partnership and purchase the Burke Brothers' claims in the Pioche Hills. The deal called for a $35,000 payment when enough ore was produced. Hoffman, backed by F.L.A. Pioche, a San Francisco banker, also purchased a number of claims and began development of the Meadow Valley Mining. Company. The district was reorganized and renamed Ely.

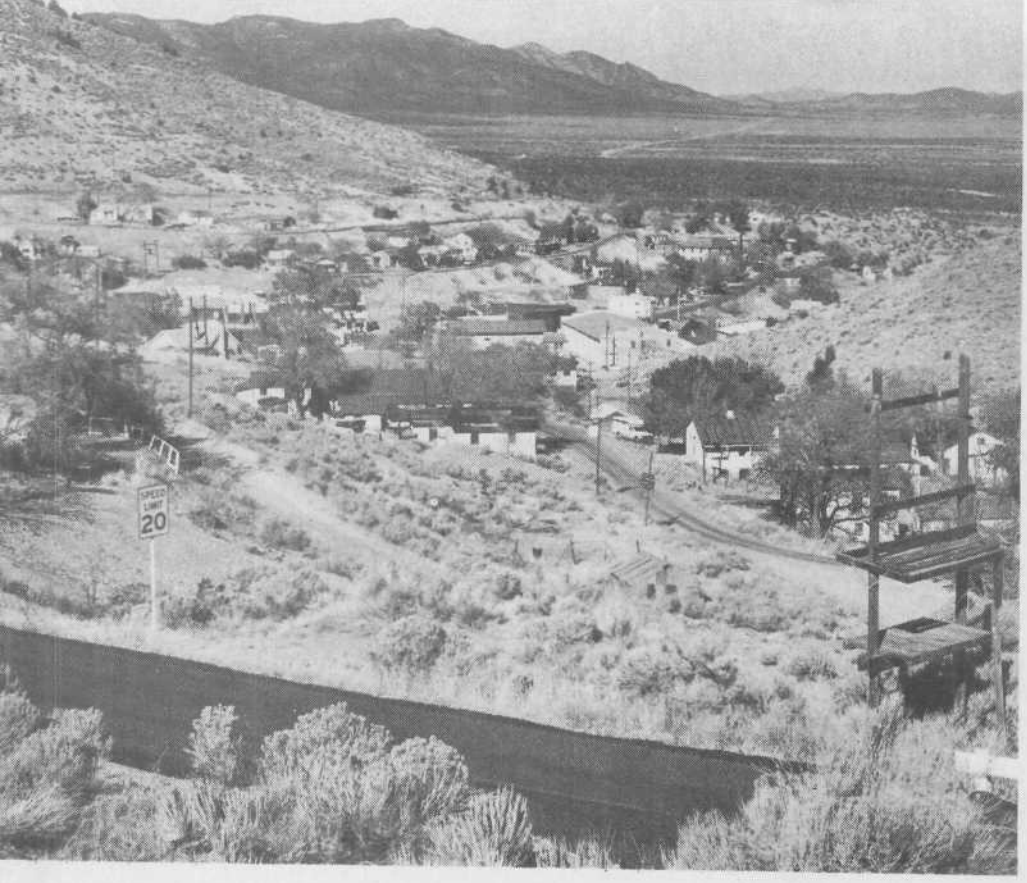


An aerial tramway carried the rich silver ore from Treasure Hill to the Pioche smelter two miles north. Still in fair repair, new mining activities may use it again.

A small camp had sprung up in a canyon below what later became "Treasure Hill" and in 1869 the townsite of Pioche was laid out. The Meadow Valley Mining Company built a rather crude smelter. The parts had been shipped around The Horn to San Francisco and carried by rail to Elko, where the final haul was made by wagon over nearly 300 miles of rough, rugged trail. The firebricks had come all the way from Scotland at a cost of $1 per brick. Initial firing in the new smelter revealed that successful reduction of the ore would require more sophisticated equipment.

As was usually the rule in desert mining areas, water was scarcer than ore. A former general, Patrick E. Conners, solved the camp's problem by building a nine-mile pipeline from springs in the Highland Range west of Pioche. However, the springs could not supply water for milling.

Raymond and Ely decided to move their five-stamp mill at Hiko (Pahranagat District) to the head of Meadow Valley where ample water was available. Faith in the Pioche ores was so great that miners, unemployed due to lack of milling facilities, volunteered to provide the labor needed to reassemble the mill and



Cradled by the slopes of ore-laden mountains, Pioche is a picturesque town of resolute, self-reliant people. As the Lincoln County Seat, it is the hub for many activities.

build a 10-mile stretch of road between Pioche and the millsite that later became Bullionville. They were promised payment only if the mill proved successful.

By January 1870, the mill was ready and the initial ore run tested out at $300 a ton. This little five-stamp mill proved to be the catalyst for Pioche's big boom. There was plenty of high-grade ore and when news spread of nearly a thousand dollars a day profit being recovered by the mill — the rush was on! Within 60 days, the partners paid for the claims and reimbursed the miners for their help. Raymond and Ely developed the Burke claims on Treasure Hill into the greatest silver producer in southern Nevada.

Pioche's population rapidly increased to 6,000. Accommodations became scarce but plenty of entertainment could be found in the town's 72 saloons, three dance halls and 32 houses of ill repute. With money flowing freely and the law lax, it was only natural that Pioche would attract the lawless.

Disputes among the miners were often settled by gunplay and caused the *Daily Record* to state, "Some people here do not hesitate to fire a pistol or gun any time of the day or night." The *Record* also remarked, "Murderers who shoot a man in the back get off Scott free, but the unfortunate devil who steals a bottle of whiskey or a couple of boxes of cigars, has to pay for his small crime." Reportedly, Pioche had over 70 violent deaths before anyone died of natural causes.

In 1871, Pioche became the seat of Lincoln County. That same year a devastating fire raced through town. It caused 13 deaths and left nearly 2,000 homeless. Spirits undaunted — rebuilding started immediately.

Mining continued at a feverish pace and a year later the boom reached its peak. A total production of over five million dollars for the year made Pioche, except for Virginia City, the largest silver producer west of the Rocky Mountains. As a result of this, Bullionville had become a sizable milling center with a population of around 500. Its seven mills, with a total of 120 stamps, roared day and night.

It had also become obvious that the cost of hauling ore by wagon to Bullionville was cutting well into the profits. A railroad seemed to be the answer; thus incorporation of the Nevada Central occurred in 1872 and grading began the following year. The job was fraught with problems — illness of animals and bad weather that included a small hurricane. The latter swept through camp and uprooted everything not bolted down. After overcoming these and other obstacles, the Nevada Central Narrowgauge Railroad was placed in operation on June 8, 1873.

All seemed well at Pioche but when a "peak" is reached the next move is usually down. During 1874, the rich silver ore began to play out and excessive water was encountered in the mine shafts at the 1,200-foot level. The Meadow Valley and Raymond-Ely Mines closed down a few years later and the "Chloriders" (leasers) took over. Like rats on a sinking ship, people deserted Pioche by the hundreds.

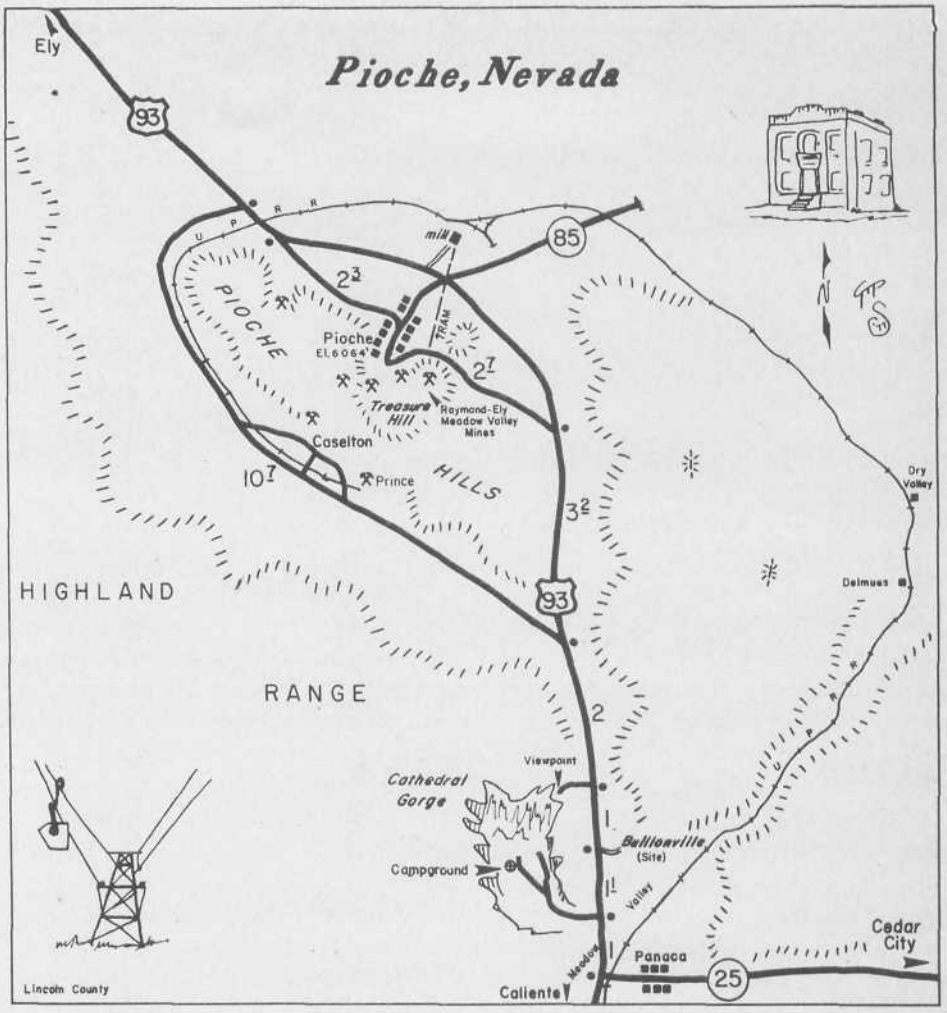
Small ore shipments kept the railroad running on a reduced schedule and the mills operated spasmodically. When these shipments further declined in 1883, railroad operations ceased and most of the rolling stock was sold to W.T. Godbe, a Salt Lake mining man. Only the faithful remained and big, bad, bawdy Pioche took on a new look.

In 1890, Godbe merged the Meadow Valley, Raymond-Ely and Yuba Mining and Reduction Company to form the Pioche Consolidated Mining and Reduction Company. He promptly announced his new company would build a smelter a mile north of Pioche and extend the tramway an additional three miles. Important silver discoveries had been made in the Bristol Range, 15 miles north, and Godbe undertook the construction of a railroad to bring the ores to his mill. It was completed the following year and dubbed "The Jackrabbit Line."

Godbe's confidence in the Pioche mines was undaunted, even though the price of silver continued to steadily decline. In spite of more flash floods, fires and numerous derailments, his mines, railroad and smelter kept Pioche's fires of hope burning. Unfortunately, these fires were mere embers five years later.

Pioche's fortunes waned and prospered during the next three decades. A railroad was completed from Caliente to Pioche. On the west side of the Pioche Hills, the Prince and Virginia Mines were developed. They shut down in 1927 after producing over eight million dollars of argentiferous manganese for use in fluxing.

In 1940, the Prince Mine was reactivated and the Caselton Mill completed a



few months prior to World War II. Pioche was ready to help with the demands of our war effort and the need for zinc-lead and silver. Total production soared to over 100 million dollars before the mines closed down in 1958. These were Pioche's really great bonanza days. She had made the dreams of the faithful come true. Today, there may be still more to come! Once again there is mining activity at Caselton and Pioche is waiting to share the benefits.

Pioche lies nearly three miles west of Highway 93, the main north-south artery of travel in eastern Lincoln County. Because of this she is often bypassed by travelers intent on including the enchanting Lehmann Caves or striking Cathedral Gorge on their vacation itineraries. It is the devotee of Western Americana and recreationists who enjoy secluded, out-of-the-way places that will find Pioche's charm and picturesque countryside to their liking.

It is easy to spend a week or more in the Pioche region. Stop and stroll around the old camp. Note the many original buildings, especially the hundred-year-old courthouse — most photographed edifice in town. Visit the Lincoln County Museum and Library occupying one of the old stone buildings along the main drag. We found Henry Wilder, librarian, very friendly and knowledgeable about the area. He was more than willing to suggest historical places we might enjoy visiting. Hours were: 12:30 to 4:30 p.m., Monday through Friday when we were there.

If you are interested in mining, hike around Treasure Hill. Be sure to respect all "No Trespassing" signs. Do not disturb equipment or collect specimens without permission. Be sure to have your camera along.

Stop at the historical marker on the summit just east of town. The aerial tramway began here and carried ore one and one-half miles northeast to the mill. Tramways were necessary in mountainous regions. Buckets were suspended from a cable by two pulleys and hung from a swivel yoke. This enabled them to be pivoted for dumping.

The bucket is held in a fixed position by two latches when traveling. They must be opened for dumping. The supporting cable is attached to the shoulders of the towers. When the bucket is [illegible]d by passing over the shoulders, it causes some ore to spill. Beneath one, I found a nice specimen to take home.

We also enjoyed browsing around the old mill whose tall, brick chimney dominated the landscape. It seemed to be patiently waiting for another boom to come along. Another day, we made the Caselton loop trip. It was worth the drive just to see the tremendous rotary kiln.

For other recreational activities in this region, you will find four Nevada State Parks within 40 miles of Pioche. Each one provides good campsites and a variety of things to do. They are Cathedral Gorge, nine miles south on Highway 93 (photographic geological formations, hiking); Kershaw-Ryan, three miles south of Caliente (photographic geological formations, hiking); Beaver Dam, 30 miles southeast of Caliente (fishing and hiking); and Eagle Valley Reservoir, 17 miles northeast of Pioche (fishing, boating, swimming, hiking).

During our visit we made Cathedral Gorge our base of operations. From our lovely campsite on pink sandstone among olive trees, we enjoyed a daily, breathtaking view of the "Gorge." Morning sun bathed the formations in shades of warm pink; while the late-afternoon sun's rays deepened them to brilliant vermillion. We spent several days hiking the trails and viewing the gorge from many angles.

It was late November and our planned week's visit had lengthened into two weeks. We were reluctant to leave with so many places yet to see. One morning we awoke to very dark skies and a "special" feel in the air. When the Park Ranger stopped by our camp I remarked, "If we were home, I'd say we were due for snow." He replied, "You are right. It is a good bet that snow will be falling within 24 hours." We left the next morning and later learned Pioche had a foot of snow that night.

Visiting this great old silver camp had shown us a new section of Nevada. It had introduced us to fine, friendly people — the kind you hear about when folks recall the "good old days." Via historical trails we had traveled back in time to 1864 and found some of the old sites alive and well. This is strong, rugged country with hardy, dedicated people. A place to visit — to remember — to return. □

Ho

by
ALVIN REINER

"HEY ALVIN, how would you like to take some photos of hot air balloon flights over Monument Valley?" queried John Burden, the amiable manager of Goulding's Trading Post and Lodge situated in that sandstone paradise. "Sure," I replied, "as long as I don't have to go up in one of those things."

Doing some preparatory research, I found out that a hot air balloon is the simplest type of aircraft; the first successful one being invented by the brothers Joseph and Jacques Montgolfer of France. On June 5, 1783, the brothers filled a silk bag, approximately 32 feet in diameter, with hot air and smoke from a ground fire. The balloon rose more than a mile before cooling off and returning to the terra firma. The first airborne passengers were a sheep, a rooster and a duck. Shortly thereafter, on November 21, 1783, Jean Pilatie de Rozier and the Marquis de Arlandes flew over Paris for 23 minutes.

The French Army had a balloon corps in 1799, and later, in 1809, Napoleon worked out a never-used scheme for invading England from the air. Aerostats were used for observation purposes in several wars including our Civil War. With the advent of fixed-wing aircraft, manned balloon flights became a rarity until recently.

Shortly after six a.m. on a Fall morning, our convoy left Goulding's and headed out into the valley. One-half hour before sunrise the majestic monoliths were silhouetted by the approaching day's soft light; a rainbow of orange, saffron, yellow-green and blue-violet rising into the star-studded blackness overhead. Near the Mittens and Merrick Butte there seemed to be a mist hugging the ground in this normally arid region. An occasional cow or horse looked up as the caravan traveled the 13 miles to the proposed launching site. It looked like the Los Angeles Freeway with headlights strung out for several miles. After passing the information center, the procession turned into a long serpent, slithering down the switchbacks to the Valley's floor. The Sleeping Ute Mountains, over 100 miles away in Colorado, could be readily discerned in the crystal clear morning air.

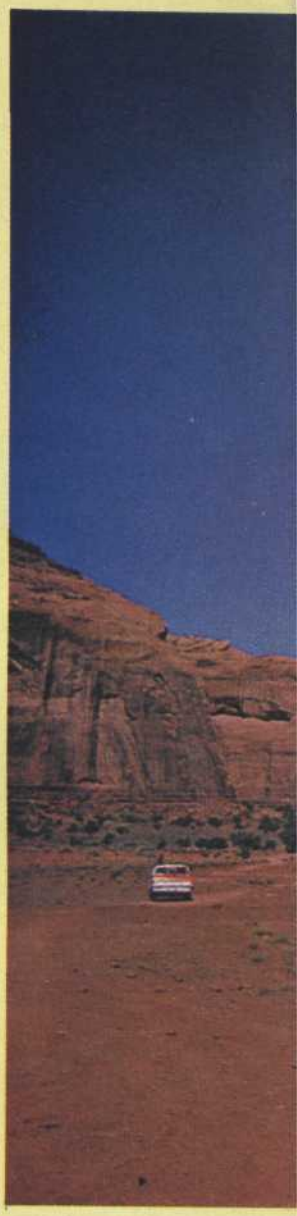
The innumerable pairs of headlight beams heading East were soon outshone by the rising sun as it made its appearance over the horizon.

We passed the stately Three Sisters standing high on their talus thrones, and soon we were dipping down by the Great Sand Dunes into Sand Springs Wash. The convoy then made its way up the opposite bank, and soon with the Totem Pole and Yei-bi-chei Dancers for company, we arrived at the launching site.

The aviators quickly converted their four-cubic-foot sacks of synthetic fibrous material into giant 60,000-cubic-foot spheres, averaging 55 feet in diameter. To inflate these voluminous balloons, a portable gasoline-powered fan is first employed. Then the gas burners above the balloon's basket are ignited, sending forth flames approximately a dozen feet long, and heating the air so the aerostat may be placed in an upright position. The whole operation takes about 15 minutes.

One colorful jumbo bag after another became inflated. It was like watching a field of flowers blossoming as if photographed by time-lapse photography. Then, like dandelion seed pods, they began to ascend ever-so-gently into the air, and drift into the blue sky.

Sid Swanson, a pilot from Chandler, Arizona, filled me in on the sport of balloon flying, which has been growing rapidly during the past few years. For instance, in the 1971 National Championships held in Indiana, there were only 18 entries, while the 1975 competition had 130 participants, with another 150



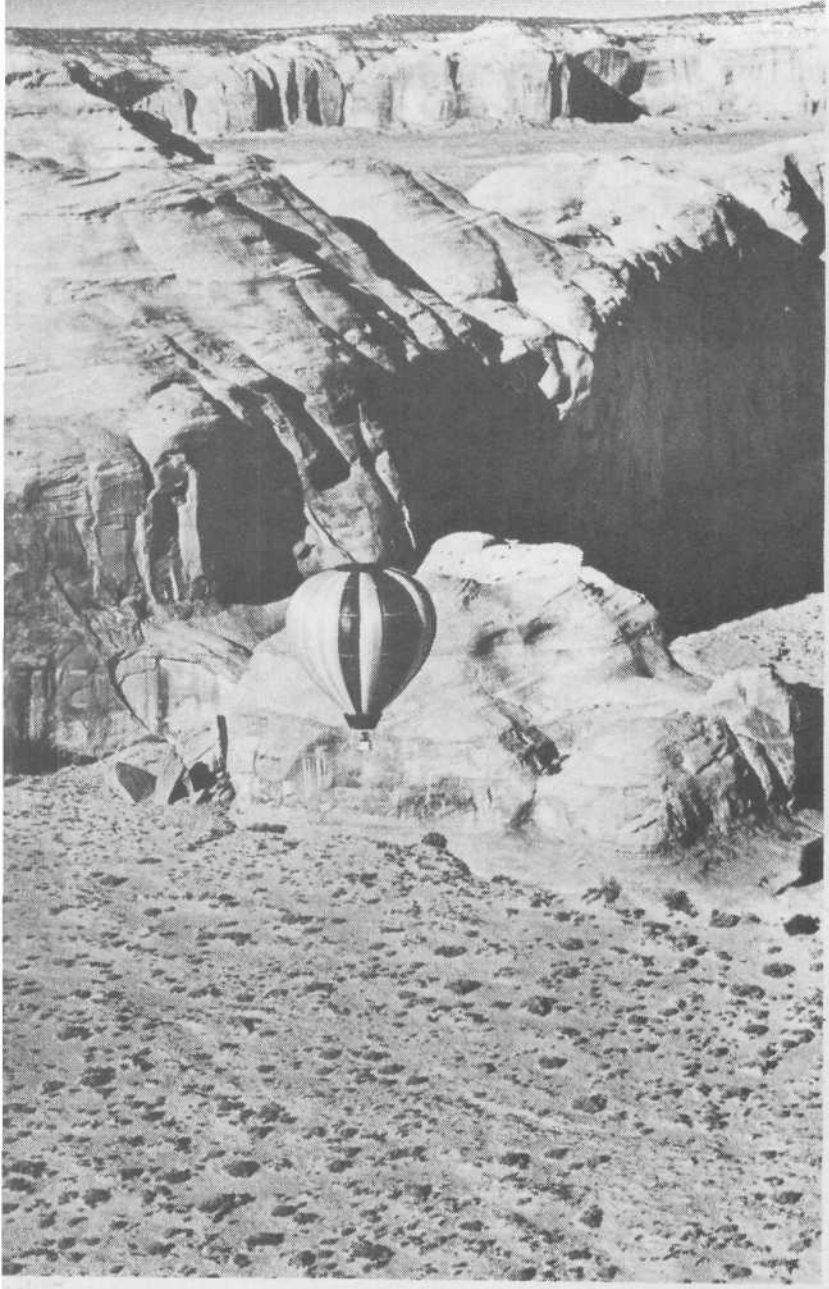
Above: The mighty mesas and monoliths become dwarfed when viewed from 1,000 feet. Right: a hot air balloon drifts through the valley.

t Air Balloons Over Monument Valley

being turned away. There is also an international competition with each country allowed only three entries. The 1976 event was held in Albuquerque, while this year's is scheduled for London, and next year's for India.

Sid and the other pilots consider flying a family sport, and enjoy sharing rides. The Phoenix Balloon Club, to which he belongs, got tired of flying around the city with its power lines and other hazards to contend with, and decided to look for other places to hold outings. Monument Valley is one of the sites they have selected. They got together with the Farmington, Nex Mexico club and decided on this weekend get-together.

Although one of these relatively simple-looking jumbo airships can be purchased for $5,000, most cost around



At 1,000 feet one can observe distant mesas and another balloon below.

$8,500. The size of the vehicle, the number of seams, and the elaborateness of the basket help determine the cost. Another reason for the seemingly high cost is the uniqueness of each vehicle. Many display the owner.s name, and/or some original air work. While the propane gas used to keep an aerostat afloat only costs about $5.00 an hour, by the time depreciation, insurance and a chaser vehicle are considered, the expenditure is close to $75.00 per hour.

In order to operate an aerostat, a balloonist's pilot license has to be obtained from the F.A.A. This consists of 10 hours of dual flight instruction and then passing an F.A.A. examination.

Sid started flying about five years ago after watching others, and became hooked immediately. Most of the pilots in the Phoenix and Farmington clubs have been participants for two or three years.

Sid Swanson then asked me if I would care to go for a ride, and before I could come to my senses, I found myself standing in a five-foot-square wicker basket. "No parachute?" I inquired, but then realized I wouldn't know what to do with one anyway. I guess what really got me paranoid was Sid's wife kissing him good-bye, as well as aerostat owner, Gene Cox, of Phoenix kidding Sid about obtaining a pilot's license one of these days.

Strange thoughts raced through my head. Suppose some sharp-beaked hawk

One of the giant balloons is raised to an upright position prior to liftoff.

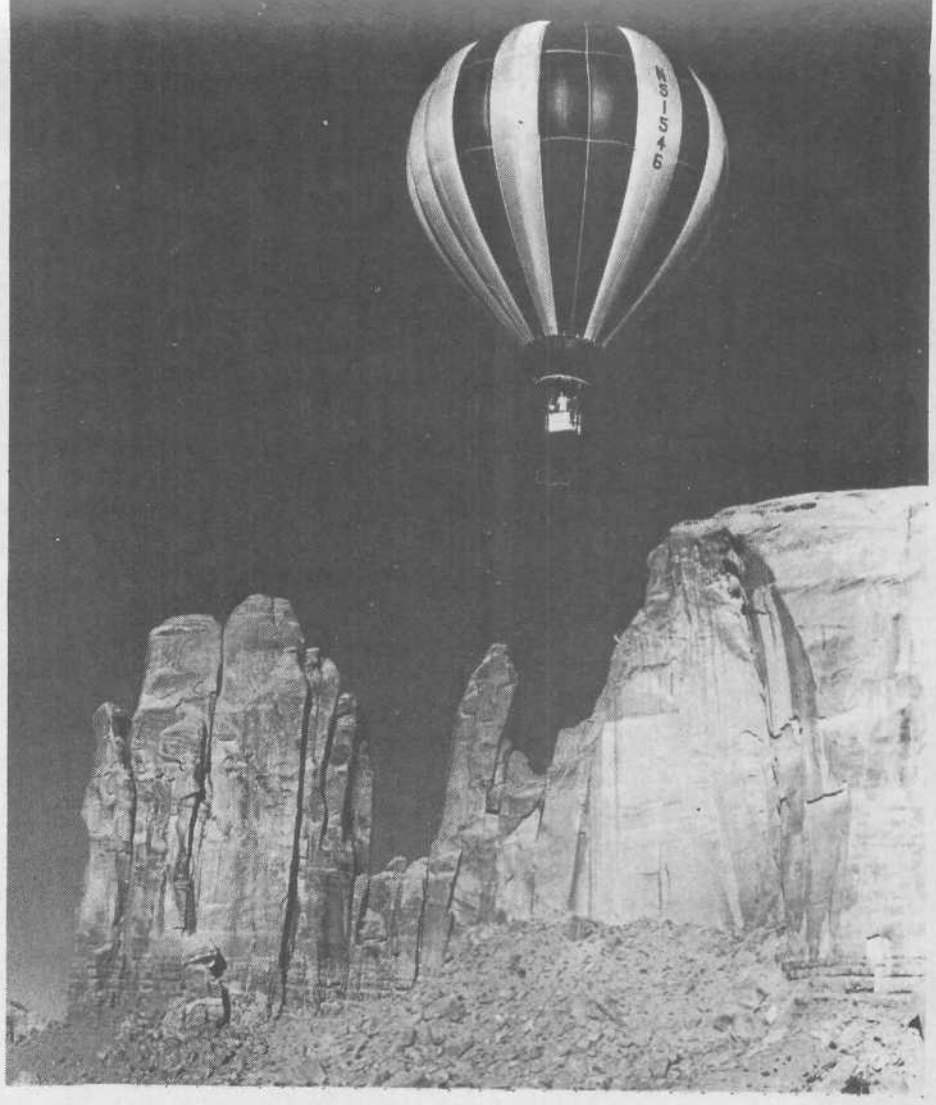
or eagle decided to attack this infringement on its air space? Why, there wouldn't be anything left for the buzzards to clean up, after a 1,000-foot plunge.

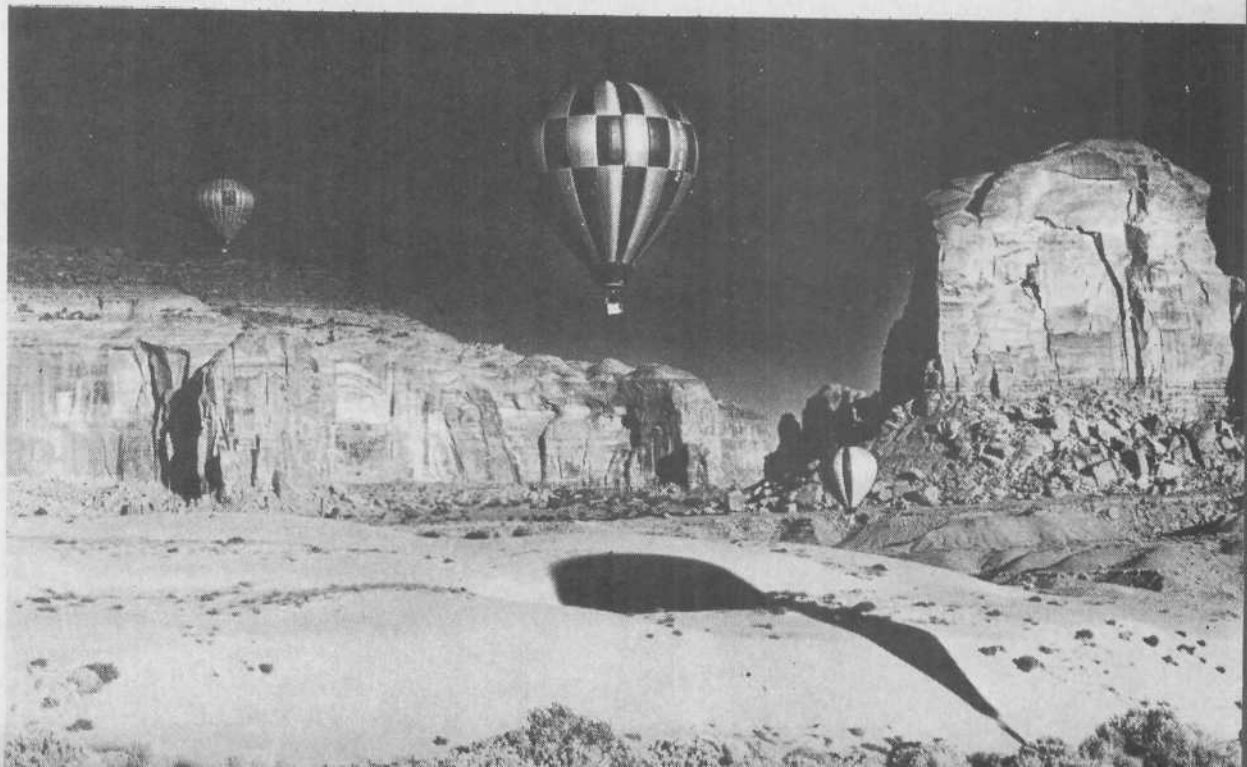
I almost had to be told we were airborne, as there was no sensation of rising. Looking over the side of the basket, it appeared as if the Earth was dropping away from our seemingly stationary platform. However, a glance at the nearby mesa walls attested to the fact that we were, indeed, ascending into the cloudless blue heavens. The gas jets roared as we climbed, while the inferno breathed its dragon-breath against my neck, and singed what few hairs I have left on my head.

When we were about 1,000 feet above the valley floor, Sid cut the engines, and there was the roar of silence. I felt like some supreme being, looking down at the Earth through my window in the sky. Those mighty monoliths, such as the Totem Pole and Yei-bi-chei Dancers, which I had previously looked up at with awe, seemed so insignificant now.

We drifted aimlessly at the whim of the wind. As we hovered, the abstract striations in the rocks situated on the mesa tops became a modern art show on the ancient sandstone. The time flew by as we drifted over one feature after another, and soon the gauges on the propane tanks were in the red, so it was time to return from my dream trip. I was cautioned to bend my knees on touching down, but due to Sid's expert piloting, there was less impact than jumping out of bed in the morning.

My adventure into the skies above Monument Valley has spoiled me, for in the future, when I view the splendors of this magnificent place, from a terrestrial vantage point, they will seem almost commonplace after my view from the heavens. □





Above: A balloon hangs suspended over one of the unique formations for which Monument Valley is famous. Right: Like a Martian invasion, several aerostats float above the valley's great sand dune.

DESERT JOURNAL

A NATURALIST REFLECTS ON ARID CALIFORNIA

by RAYMOND B. COWLES
in collaboration with Elna S. Bakker

Illustrations by Gerhard Bakker

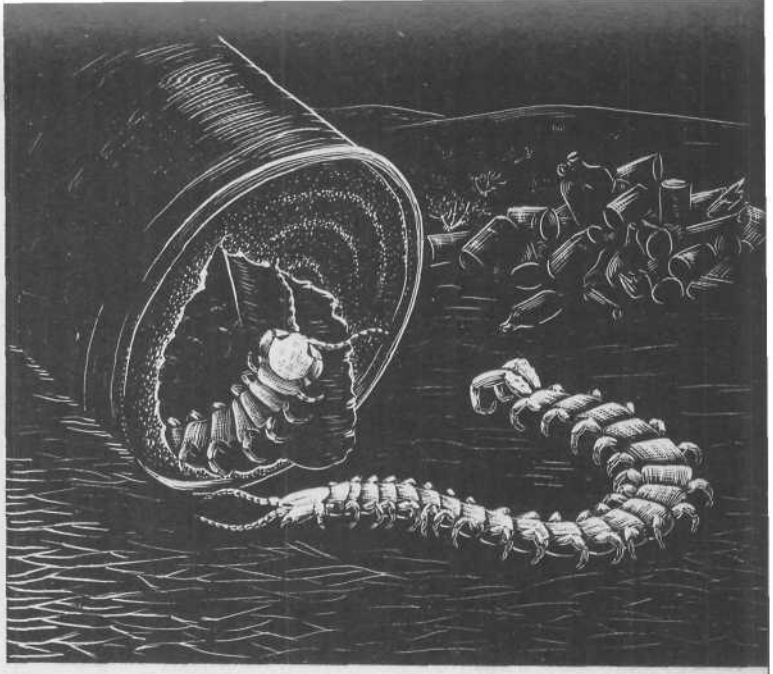
Editor's Note: This is an excerpt from a forthcoming book written by a naturalist who loved his work and the desert. Raymond Cowles served on the faculty of UCLA from 1927 to 1963 and was emeritus professor of biological sciences at the University of California, at Santa Barbara, at the time of his death in 1975.

Nightfall is an interruption. Regardless of where we are and what we might be doing, we are usually aware of its approach. Time to quit the job and go home. Time to start dinner. Time to check out the children, get ready for a play or a party, watch the evening news. There are certainties about nighttime. It will get dark; part of it will be spent in sleep. Something, however, happens beyond the simple setting of the sun. Life shifts gears, changes direction, even if slightly. Things are done that seem somewhat out-of-place during earlier hours. It is time for a cocktail, to review perhaps more objectively any disquieting events of the day, to take stock of the state of the world, to plan a more realistically conceived tomorrow.

A tasty meal, an evening's relaxation or entertainment—these are good hours ahead. Though the shock of morning may be more dramatic, the day ahead is uncertain. It usually means work, often worry, perhaps distress, or exciting new discoveries. Night, on the other hand, is a pleasant companion—rest and laughter, a cherished hobby, an engrossing book, a warm friend, a cool wind, and a muscle loosened that was tense before.

In the world of the wild the departure of the sun is an occurrence of major importance. Plants cease to photosynthesize, though they continue other physiological processes, and animals either settle to rest or awaken to activity. As diurnal species give way to those nocturnal, the machinery of nature shifts its gears as well.

Almost every afternoon in the warm season, coastal fog, held at bay by the heat of the sun, rides in on the ocean breeze toward the seaward bluffs, envelops the surf-ruffled shore, and creeps ever so quietly up every valley of the bordering mountains. Then, dammed up, it rises higher and higher along the flanks of the Coast Range, veils the trees in cool, wet, floating mist, and muffles distant sounds so that the drip of moisture from leaf tip and branchlet often becomes audible.



Fog is a frequent companion of the summer night, and in the cool months of late spring and fall it may occur during the day along the entire California coastline. From Point Conception north it fosters many kinds of trees, which reach up into the moving screen of fog, collect the moisture, and return it to the soil in a nightly shower that keeps the soil damp and favorable for growth. Although fog is composed of odorless and tasteless droplets of water, it stimulates the tissues on which it settles so that one is often aware of a pleasant, almost spicy, odor as the fog arrives each night.

According to research by Don Mullally in the tree groves along Skyline Drive near San Francisco, precipitation from fog drip amounts to double that of annual rainfall. Fortunately for the vegetation, fog is most prevalent during late spring and summer after regular precipitation has ceased. Thus fog climatically "bridges" what would otherwise be an extremely dry season with ample moisture for plants that can collect and use it.

Redwoods, Monterey cypress, Monterey pine, the native sycamore, and to a lesser but still observable extent, oaks, some species of the introduced eucalyptus, and many other types of coastal vegetation collect and drip this moisture. I have noticed that the European plane tree, close relative of the California sycamore, but originally an inhabitant of areas where moisture is far more abundant, seems totally lacking in the ability to attract fog droplets. The two species, European and California, when growing side by side over a pavement demonstrate this difference.

Nocturnal visibility is characteristic of desert regions. In heavily vegetated areas, particularly in dense forest or woodland, most or all of the light from stars and the night sky seem to be lost by absorption or random scattering. The nights are very dark, and artificial illumination is necessary for even the simplest of activities. On the contrary, California's deserts consist of light-colored soils varying from pale buff to soft pink, and their plant life is so scanty it throws few shadows. All the natural light from moon, sky, and star, vivid in the clean air, remains to aid one's vision. Just a few minutes without artificial light and with automatic ocular accommodation, one can find one's way across strange terrain with remarkable ease.

In high mountains night visibility is intermediate between that of the humid coast and the sere desert. Judging by my own eyes and their ability to accommodate, nights do not seem as dark at higher altitudes as in the heavy forests of the Pacific Northwest nor as bright as in the desert.

There is another feature that mountain nights have in common with those of the desert—or did have in less smoggy times. That is—or was—ultra-clear air extending out uninterruptedly into space. Shortly after sunset heat is rapidly radiated into the sky, and the temperatures of both air and ground drop quickly. Night, unless there is a temperature inversion layer, may become quite cold.

From about 5,000 feet upward the evening chill becomes more exaggerated. People unaccustomed to clear mountain air and skies and the consequent quick loss of heat to space are often caught without adequate clothing and suffer accordingly. I have learned to expect a scurry for coats, blankets, fuel, and a good fire around sundown after a day in the mountains with my students.

Nightfall on the desert is remarkably different from that event in other regions of the world. In wintertime the almost balmy temperature and gracious warmth of the setting sun are replaced by increasing and often piercing cold. The change is so abrupt that one feels it almost immediately as the heat departs into space, and the dry air, unable to hold the re-radiated heat, becomes sharply and uncomfortably cold. In summertime, while nights at high altitudes cool swiftly, those in the desert do not. Weeks of long, super-hot days and the heat accumulated in soil and rock under intense solar radiation keep desert nocturnal temperatures relatively high. The approach of night, however, signals at least partial release from the tension of burdensome heat. Temperatures as high as 90° F. are most welcome after 120°F. in the shade.

In the Colorado Desert moist, warm air occasionally drifts northward from tropical storms originating south of the Gulf of California, preventing the escape of the day's accumulation of heat. Under these conditions even the nights remain excessively hot.

In these so-called temperate latitudes nighttime temperatures may remain for hours far above those ever encountered on the hottest days on the Equator, and one can expect temperatures of 100° F. or more as late as midnight.

The sunset skies of the desert have scenic effects that are practically unknown in other climates. The sky blazes behind the peaks clustered to the west. This brilliant color changes from lemon to gold to orange, and eventually the sky becomes deep violet. The absence of clouds confines the warmer colors to a fan-shaped glow, which slowly fades until all above is inky blue and the mountains become sharp-cut silhouettes of black velvet. In more humid climates, dust, moisture, and other microscopic flotsam scatter the remaining rays and soften the harsh contrast characteristic of the desert.

Summer or winter, there is something special about sundown and the oncoming night, and my desert camps were no exception. Not the least was the cessation of work, return to camp, and, in those years of fewer people, the gathering of scanty firewood. I often used cactus skeletons and the roots and stems of stunted shrubs. Soon my camp was rich with fragrance. Food cooked in the aromatic smoke from desert wood has a tang in this clear, unpolluted air unknown outside the arid world. Long before the summer sun has set, the first flight of bats commences, most often the little canyon, or pipistrelle, bat with pale silvery body, black wings and ears. Along the Colorado River they flicker across the sky, bent primarily on reaching water where they can replenish the moisture lost during the day, even in their relatively cool rock-crevice retreats.

In the same locale nighthawks by the hundreds appear soon after the heat begins to abate. They flutter and sail toward the river for the first drink of the day. During May and June when many are still incubating or hovering over their eggs to protect from the sun's increasing heat, this first intake of water precedes feeding. The birds nest, or more accurately, lay their eggs, on the exposed ground. Throughout the day the relentless sun beats down. Air and ground temperatures may exceed 120° F. for hours on end; the direct heat of the sun contributes to what for most creatures would be unendurable conditions. Insulated against heat by its feathers, each nighthawk sits in a self-made patch of shade and comfort. Plumage is an effective in shielding the skin and blood vessels from high temperatures as it is in containing body heat during cold weather.

From time to time, they open their enormous mouths and flutter their gular pouch, evaporating some of their small supply of water to keep blood and body temperatures below damaging or lethal levels. But water is so scarce and the day so long that excessively prolonged cooling by this means would dehydrate the birds. I know of no other animals, however, not even the supposedly sun-tolerant lizards (that possess no feathery insulation), that can remain in the direct sunlight for so long a time. Many of the smaller lizards will die in minutes under such conditions. Yet the nighthawks, warm-blooded, heat-generating birds, complete their incubation period and care for the young in the unrelenting heat of the desert until all can take flight to a less strenuous environment.

These crepuscular (dusk and dawn) flights of bats and nighthawks are generally silent. The bats seldom twitter, and the prolonged croaking warbles of the nighthawks are very rarely heard after the close of the mating season. That particular call and the roaring courtship dive are usually reserved for cooler hours and, if possible, after a drink.

The mating cry of the nighthawk (sometimes called a bullbat, though it is not a bat at all) is a common spring sound on the desert. When it is first heard, those unfamiliar with nighthawks often look in vain for a noisy amphibian, particularly around an oasis or a farmer's reservoir. The other characteristic sound made by the nighthawk is produced apparently by its vibrating feathers at the end of a steep dive at maximum speeds. Such diving is most common during the breeding season. The source of this sudden, vibrant buzz is easy to detect, as the birds are often visible against the sky.

Other sounds belong to the dusk—the thin whistling of a Say phoebe, a hardy desert flycatcher, and the faint calls of a rock wren near rugged slopes and boulder-strewn hillsides. Desert sparrows chirp in the thickening shadows. Though there appears to be a scarcity of life on the desert, nonetheless it is there, and one can gain an inkling of its abundance by listening to the sounds of dawn and dusk.

One of the delights of camping in the unspoiled desert is the nightly scurrying of the several species of the attractive little rodent, the kangaroo mouse. These kangaroo "rats," as they are usually called, bear a rough resemblance to their namesakes in the length and power of their hind legs and their bipedal locomotion. In starshine, moonlight, or campfire glow, their dancing shadows flutter at the far edge of vision. And it is their shadows, not their bodies, that are visible on these rare occasions of abundance and great activity.

This is also true of other desert ground-running, nocturnal creatures. The remarkable concealing coloration of desert animals is probably amplified in our perception because of our limited noctural vision, but it also serves to conceal them from nocturnal predators. The pale fawn grays and browns of their upper surfaces become virtually invisible. In the tangential light of fires or a rising moon they cast sharp black shadows against the pale desert sands that are far more conspicuous than their bodies. Their activity is indeed a shadow ballet attended only by those who dare the silent infinitude of the desert wilderness.

My camp, where I conducted research in animal temperature control, was located near mesquite thickets, often in the lee of a mound of wind-drifted and compacted dust and sand through which ran multitudes of burrows of anthropods and rodents. Arthropods are the insects and numerous other species of backboneless creatures with jointed limbs. They include scorpions,which may be as long as three inches, and the harmless (to human beings) but speedy solpugids, known also as hunting or sun spiders. These long-legged, ghostly creatures, about the leg spread of a quarter, emerge on warm nights, as they had at the ditch camp where I first met them, to dart over the ground in search of their victims. Their swift shadows caught my attention night after night in late spring and summer as I rested in the mesquite grove.

Scorpions appear to be more shy and conceal themselves by remaining still. I rarely saw them unless I was hunting for them. This I did by following their distinctive tracks,as the animals themselves are difficult to see. Pale straw in color, they match their background, and their quiet habits render them invisible. I collected a number of them, however, with a portable ultraviolet light. Then they became spectacular. They glowed with an eery light that reminded me of animated constellations gleaming on the sand. Under the most fortunate conditions I have seen as many as six small scorpions within a single field of light.

To those who love the desert—and judging by its spreading urban communities it has a strong appeal—night is a time for deep enjoyment. The dark is not to fear but to explore. Star glow and the faint shimmer of the night sky brightened my camp and its surroundings. Stretched in my sleeping bag and relaxed after a good meal and a vigorous day of exercise and work, I watched for the occasional meteor and listened for the comforting sounds of night—the distant bugling of a coyote, whose wailing bark belongs to the wilderness, and the mellow, dual-toned hooting of a mated pair of horned owls as they went about their night's business of defending territories and hunting unwary rodents.

In summer, especially, work began well before full daylight. I awakened to the first of the mountains darkening against the eastern sky. Then the light spread over those still violet-shadowed to the north and south. Finally, the horizon glowed as if afire just before the sun burst over the edge of the world.

What is left of the unspoiled desert spaces are the last fragments of virgin nature remaining in many parts of the Southwest. They are hospitable to those who accord them due respect and who have the knowledge to enjoy their intimate little canyons, their wide sun-drenched plains, and the plants and animals that live there. The desert has unique aesthetic and scientific satisfactions. It is as deserving of preservation as forests, lakes, and coastlines. Its future merits more than a scourge of off-road vehicles and a population encouraged to growth by irrigation from desalted sea water and other costly sources. Unless we act now we will surely lose these once almost inviolate refuges, which not only serve to harbor wildlife, but which provide valuable sanctuaries of escape from the multiplying pressures of the human world today. Even their heated air currents are essential to sustain patterns of atmospheric circulation that draw in cooler and heavier air from the sea and stabilize the climate of coastal California. We have a number of reasons to be grateful for those "wastelands" east of the mountains. □

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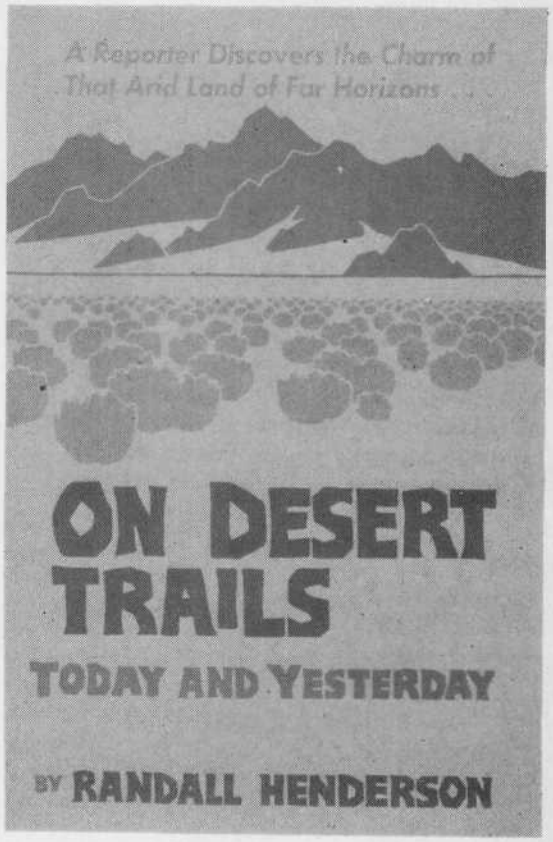

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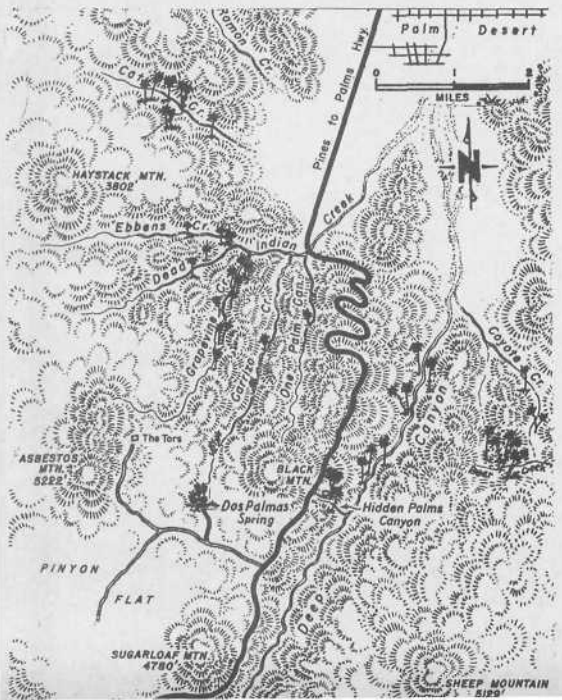
NO. 6 IN A SERIES ON CALIFORNIA PALM OASES

Dead Indian Canyon

by DICK BLOOMQUIST

Scenic Dead Indian Canyon. Photo by George Service, Palm Desert, California.

FROM FERN CANYON our oasis trail runs southeasterly several miles to the sunrise side of the Santa Rosa Range. Dead Indian Creek — in reality a dry, bouldery canyon — rises between Asbestos and Haystack mountains in the Santa Rosas, pouring its occasional storm torrents into the Coachella Valley near Palm Desert. The scenic Palms-to-Pines Highway (Route 74) spans this watercourse just before beginning its twisting climb of Seven Level Hill, yet the palms — though less than a mile away — cannot be seen from the pavement, and their very existence is unsuspected by most motorists. The highway bridge over Dead Indian is three and three-quarter miles south of Palm Desert at a point where the road curves left at the foot of the mountains. One-tenth of a mile further on there is a second bridge, this one over Carrizo Creek. Dos Palmas, which we shall visit on our next field trip, stands at the headwaters of Carrizo.



Beyond the first bridge an unimproved dirt road branches to the right. Passenger cars should park near the start of this road or on the highway shoulder nearby, but four-wheel-drives can continue upstream for three-quarters of a mile to within a few hundred feet of the oasis.

Stands of desert willow, cheesebush, smoke tree, palo verde, chuparosa, and desert lavender formerly mottled the sandy floor of lower Dead Indian Creek, but the great storm late in the summer of '76 carried away most of this growth. Half a mile up the wash the palms come into view for the first time — a tight little grove hard by a cliff on the right side of the canyon. The Jeep trail ends a short distance below the palm cluster, halted by narrowing walls and monumental boulders. A shallow tunnel, evidently a relic of early mining activity, pierces the canyon's left slope at this point. Craggy Grapevine Creek empties into Dead Indian from the left near here, also, but its many Washingtonias are difficult to reach because of the dry waterfalls near its mouth.

From road's end no trail leads to the palms in Dead Indian Creek. For several hundred feet each visitor just picks his own route over and around the megaliths choking the creek bed, which in one place have created a "cave" large enough to stand upright in. The palms form a compact colony in the shadow of sheer canyon walls. I counted 17 living trees (there were 24 a few years before the flash flood of 1976), only one of which grows apart from the cluster. Most of the older ones have charred, partially denuded trunks, yet all appear to be in good health. Water sometimes surfaces in the form of a tiny seep.

In the center of the oasis there is a delightful palm-circled "pocket" filled, at the time of my visit at least, with the music of house finches in the treetops. The tallest palms rise perhaps 35 or 40 feet.

Dead Indian Creek continues beyond the grove, with more palms strung along its course, but the hiking is difficult. A few feet upstream Ebbens Creek comes in from the right, its entrance blocked by a water-stained dry fall. I do not know the origin of the name "Dead Indian," but Ebbens Creek commemorates Theodore Ebbens, a burro prospector of the Santa Rosa Country around the turn of the century. Like Grapevine, this tributary contains wild palms accessible only to dedicated rock climbers.

The unspoiled little oasis in lower Dead Indian Creek is easily reached by the casual hiker, however. It also provides a jumping-off point for those who wish to explore some of the more sequestered palm groups of the Santa Rosa Mountains. □

Mileage Log

- 0.0 Junction of State Highways 111 and 74 in Palm Desert. Drive south toward Hemet on Highway 74 (the Palms-to-Pines highway).
- 3.7 Bridge #56-187 over Dead Indian Creek, the first of two bridges crossed just before the highway begins its ascent of the Santa Rosa Mountains. Park near here; the oasis is less than a mile to the right. Four-wheel-drives can go three-quarters of a mile up the canyon on a road that begins on the far side of the bridge. Elevation at palms about 1320 feet.

Desert GHOSTS

by HOWARD NEAL

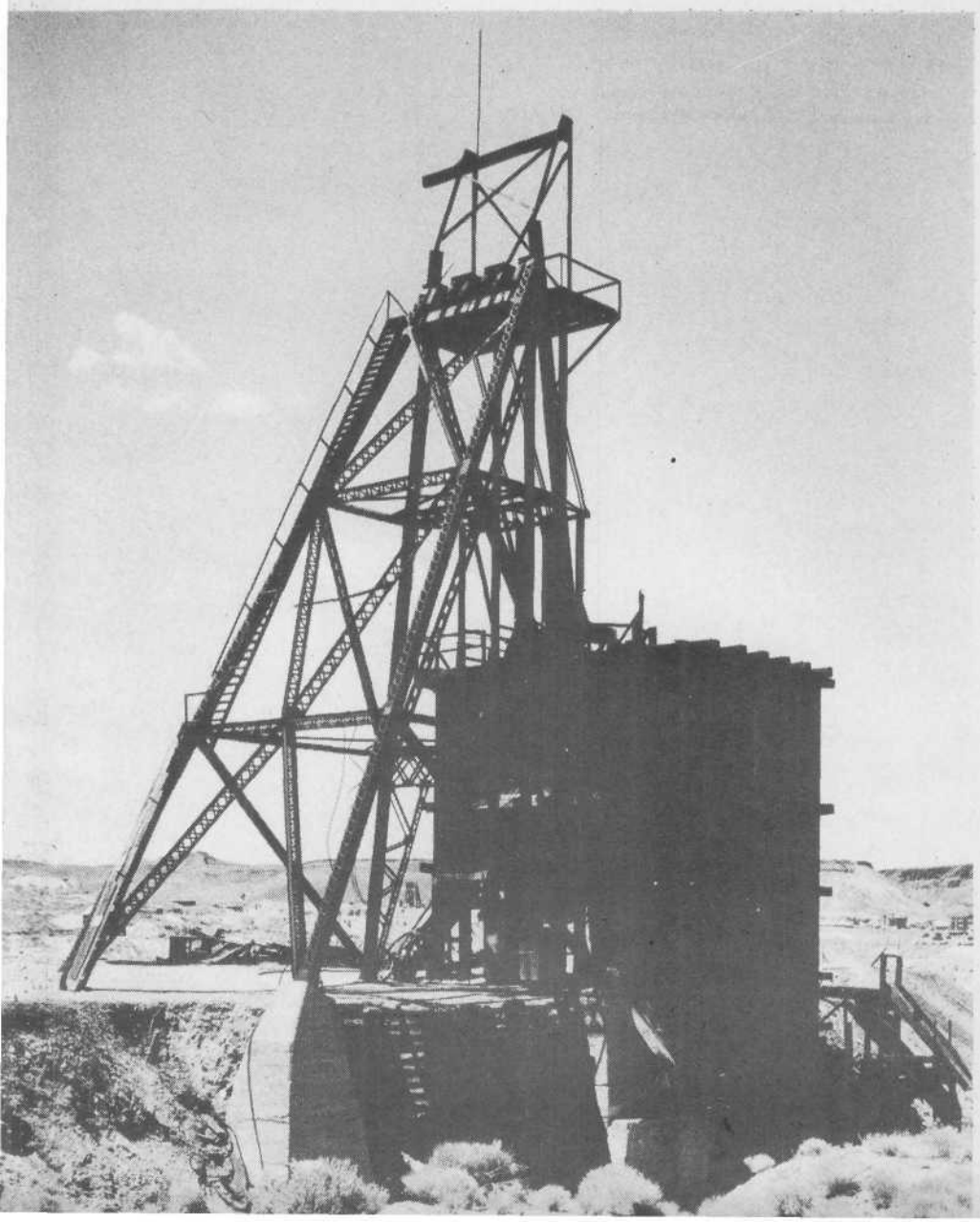
Goldfield, Nevada

Gold was first discovered on Columbia Mountain, in western Nevada, in the fall of 1902. By the spring of the following year a number of prospectors were on the scene, but it took until 1904 for a real gold rush to develop—and, that rush was a big one! Within four years, what had been barren desert became the site of Goldfield, Nevada's largest city.

It was an imposing city, a city that was built to endure with many stone structures reaching as high as five stories into the sky. In 1908 Goldfield's population reached 20,000 and its people prided themselves in the community's five banks, two daily newspapers, three railroads and as spectacular a hotel as could be found in the West.

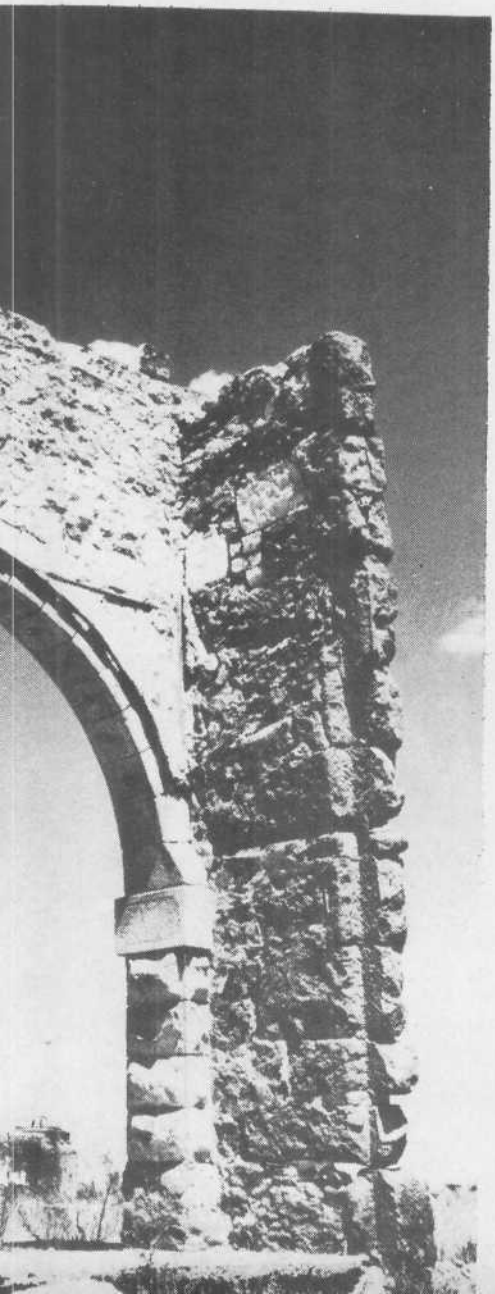
Mining activity hit its peak in 1910 when production reached nearly $11 million. By 1918, when major mining activity stopped, it is said that more than $100 million had been taken from the ground.

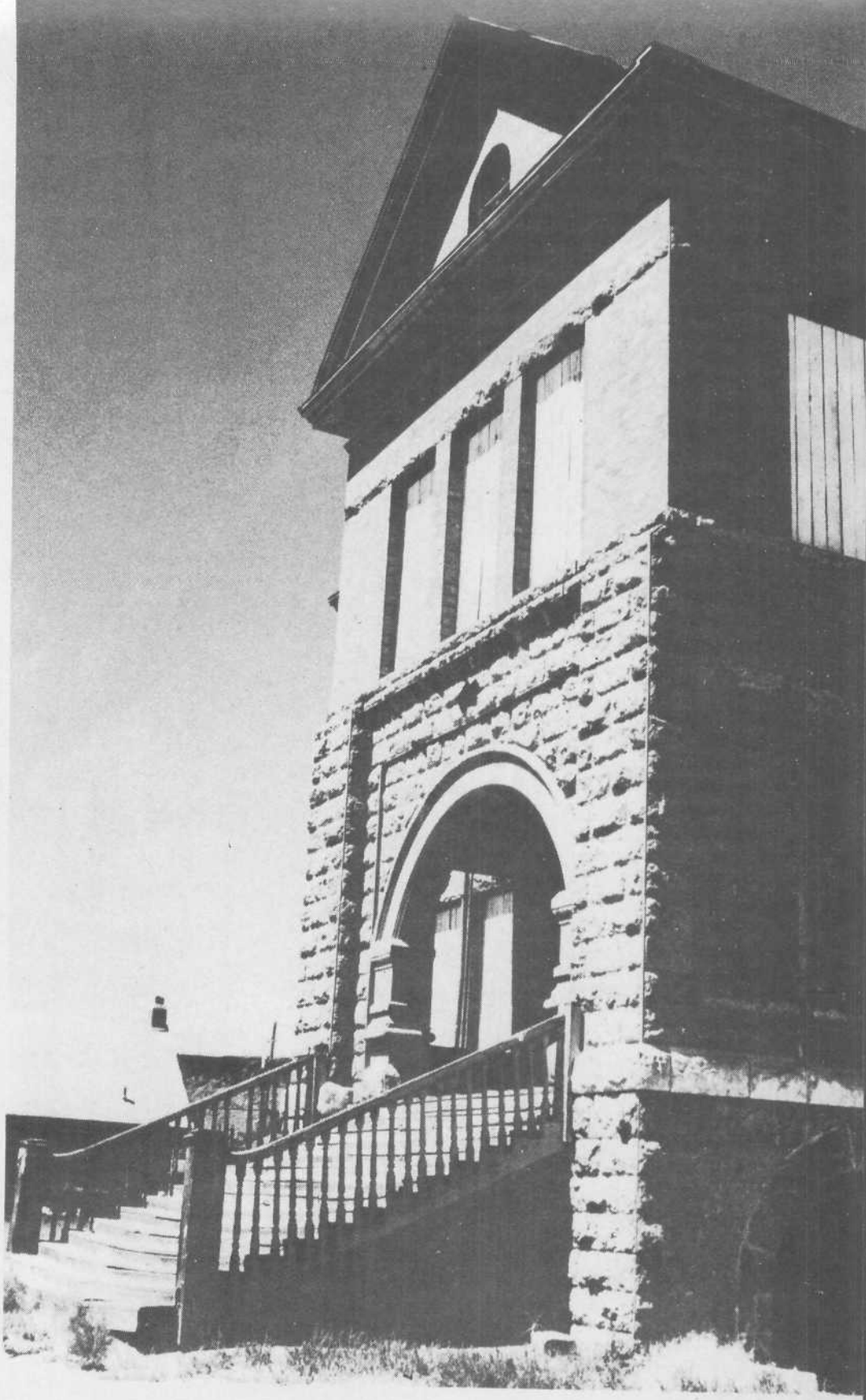
Today, Goldfield is a ghost of her former



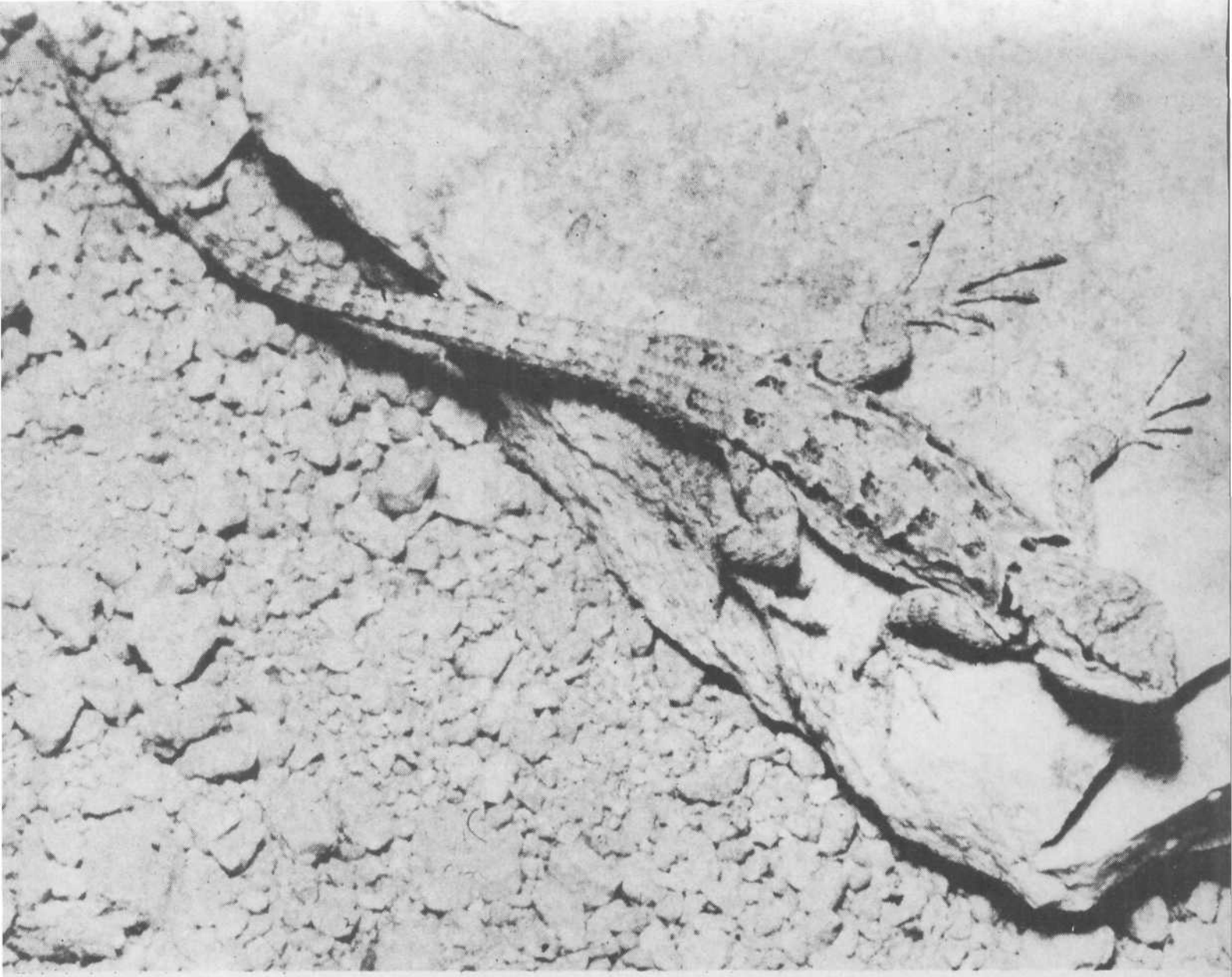
self. In 1913 a flood ravaged the community, and in 1923 some 53 square blocks of the city were consumed by fire—never to be rebuilt. Yet, the quiet streets of Goldfield display much to remind the visitor that this is one of the spots where the history of the West was made.

Goldfield is located 26 miles south of Tonopah, Nevada on U. S. Highway 95. □





Above: In Goldfield, a number of large buildings are still standing but no longer in use. Goldfield High School is one of these structures. Many stone and brick buildings, some as tall as five stories, were built during the years that Goldfield had a population of more than 20,000 and was the largest city in Nevada. Far left: A giant headframe towers over a quiet Goldfield mine. Mine structures seem to cover the desert between Goldfield and Columbia Mountain. It is estimated that more than $100 million was taken from the mining district. The peak production year was 1910, when nearly $11 million in gold was mined. Left: A lonely arch, guarding a vacant lot in downtown Goldfield, is a reminder that the town was once a thriving business center. Early in this century Goldfield had five banks, two daily newspapers and two stock exchanges. Many business buildings were destroyed in a fire that consumed 53 square blocks of the city in 1923.



DESERT CLIMBERS

by K. L. BOYNTON

EVER SEE a lizard tearing across the road ahead of the car, or hotfooting it from here to there in the desert's open space? The odds are about 1000 to 1 that it won't be *Urosaurus ornatus*, or his long-tailed cousin *U. graciosus*, either. Long distance runners they are not, being neither built for it, nor having the stamina. They are the "tree lizards" —climbers, the scansorial experts, gymnasts to be found according to particular habitat on trees, bushes, cholla, rocks. Agile, excellent jumpers and clingers, they're even at home on vertical cliff faces, heads up, down or sidewise.

Artful dodgers, too, whizzing around a tree trunk keeping on the opposite side and never appearing at the same level when next they peek to see what's going on. Alert and wary, they are exceedingly hard to catch, which keeps them in business when larger lizards, snakes, coyotes, foxes or birds wish to dine on them. Or, motionless, they so well match their backgrounds and have such good nervous control, they are easily passed by unseen. Thus when biologists succeed in securing some of these candidates for research, it can be well understood that either some fancy footwork went into it, or a lot of sharp-eyed patient searching, or both.

All this interest in these small-to-medium-sized lizards is not due to their reluctance to cooperate. It is mainly because they are such a successful species throughout the Southwest, a fact that points to their great ability to adapt to many different environmental conditions.

Members of the *Urosaurus* clan are daytime operators and make their living catching insects and other arthropods. Equipped with excellent eyesight and an auditory set-up most sensitive in a range between 700 and 2,000 hertz (fine for insect sounds) they hunt by sight and hearing.

Being reptiles they are active in the warm seasons of the year, depending on the sun to warm them; depending, too, upon behavioral tactics to regulate their temperature, going underground when it is too hot or too cold. Wintertimes they become dormant, with perhaps as many as 30 or 40 clumped together in a retreat not far from the surface. When spring rolls around again they appear topside once more and in due time the big social season gets underway.

Now since the way an individual gets along and how local populations keep up the old numbers are basic measures of species success, a study of lizard behavior becomes of first importance. So zoologists Carpenter and Grubitz, collecting six adult males and two adult females, marked them with paint of various colors for quick identification and let them loose in an enclosure with concrete block and logs to climb on. Then they sat back to watch what happened in *Urosaurus* social circle.

The lizards had scarcely been installed in their new surroundings before it became obvious what was first on the agenda: deciding which male was going to be the top lizard. There were six males and therefore six candidates. Each one was determined, climbing up on the highest thing he could find and challenging the nearest male. This "display" challenge, it turned out, is always done in the proscribed *Urosaurus ornatus* manner: compress the body laterally; thereby exposing a full side view of the brilliant blue belly, push out the throat into a handsome blue or green dewlap, and when as big and tough looking as possible, start doing a series of pushups. All four legs are involved, hoisting the whole body, head and tail up and down, the lizard standing tall at the height of the pushup. In no time at all displaying males were all over the place, breaking into chases and fighting, and thereby sorting themselves out, certain ones fleeing in retreat, or flattening out in submission.

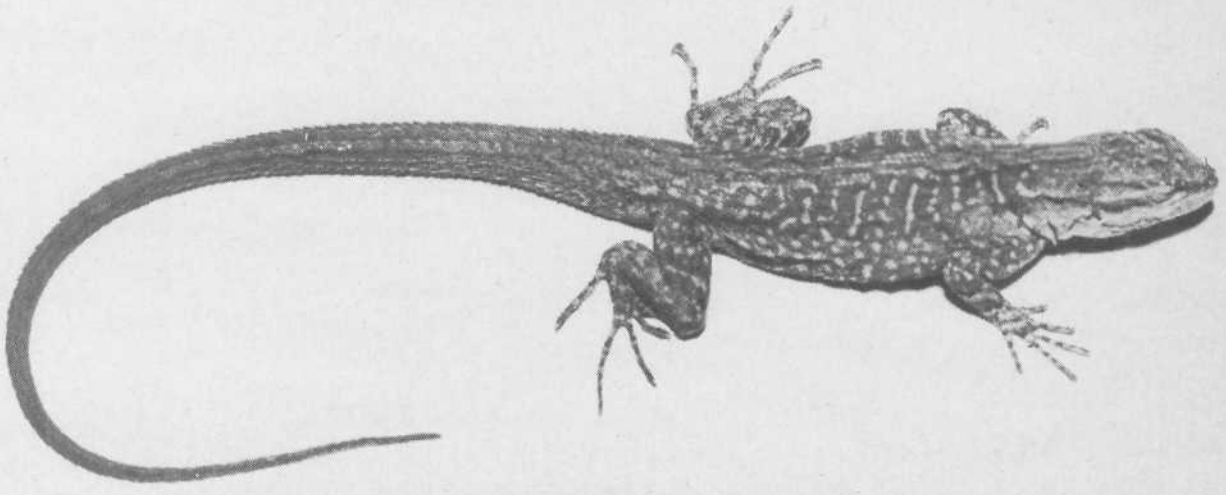
Shortly the contestants were down to two, one marked with white paint, the other with red. Both were active in displaying and making overtures to the ladies but within a few days "whitey" succeeded in overcoming "red" and this settled the matter. He now dominated the whole enclosure doing all the displaying, and of course, the subsequent courting of the females. Not one of the other males, "red" included, displayed.

At this point, to make things interesting, Carpenter and Grubitz removed "whitey" and shortly "red" took over, challenged only briefly by "green." Old Red turned out to be quite a despot and inside of a couple of weeks had worked himself up to some 48 displays an hour, the rest of the males tearing for cover at the sight of him. So the zoologists yanked him, and "green" became dominant for a few days until "red" was returned to the scene. War was declared instantly but eventually "red" became dominant and ruled supreme.

The thing that was immediately apparent was that the male (no matter which one), normally brown on the back, became very much darker in taking over the dominant role, and all the subordinate males paled to a very light brown. But when the dark dominant was plucked out and put by himself, he became lighter in a couple of hours. Returned and eventually dominant once more, he became very dark again. This color change, probably related to the male's psychological state, reinforces the effect of his dominance. A dark, puffed-up, blue-bellied lizard, with extended colorful dewlaps and doing aggressive display pushups vigorously, is a sight to behold — particularly when the next move is bound to be a chase and fight.

Biologists view all this aggressive behavior and dominance as part of the establishment and maintenance of territory under normal conditions. In nature it acts to distribute the males throughout the habitat. With elbow room and territory thus allocated, fighting is cut to a minimum and the population can settle down into the business of daily living and keeping up clan numbers.

Interesting enough, the pushup bit may have more to it than being just part



Above: Urosaurus ornatus *is one of several tree-climbing lizards. Right: His cousin,* U. Microscutatus *or small-scaled brush lizard, is found in Baja California. Photos courtesy of San Diego Zoo.*

of the aggressive display. Carpenter and Grubitz, with stop watch and counter in hand, made a time-motion study and found to their surprise that there was a definite pattern to it, both in the number of pushups and the time between them. It is consistent and instinctive, not dependent on age or experience, and it belongs, subsequent research showed, to the *Urosaurus ornatus* clan alone.

The ladies, it seems, are unmoved by all this rowing among males for supremacy. They go about eating and sunning themselves and display only if the occasion calls for it. In doing so, they do not flatten their bodies or extend the dewlap, and are more half hearted in the pushups. But their timing and sequence is in the proper *Urosaurus* fashion.

What part does all this play in their success in desert conditions?

Zoologist Larry Michel took a look at a New Mexican population near Animas, a rocky section of open plains dotted with lava flows. As is to be expected, with the paucity of trees, the *Urosaurus* were rock dwellers here, but very much at home. During his long study, he caught and marked some 286 lizards and made some 646 captures, and when he finished had a pretty good idea of what went on.

Here the majority of females reach maturity in a year or less, and most produce two clutches a year. One batch is laid around the end of June; the second in early August. The number of eggs to the clutch varies, the biggest contributed by the most ambitious lady, apparently was 16 (her first of the season, by the way). The smallest was five. Counting the united efforts of the ladies in the study area, the average of the first clutch was 10.9 eggs and that of the second 7.5, so broadly speaking Mrs. Urosaurus dwelling near Animas has a potential of 18 eggs a season.

The gentlemen around Animas mature at about a year or less and are sexually active from early June through mid-August at which time regression of the gonads begins, and interest in such proceedings tapers off.

Arizona *Urosaurus ornatus,* studied by biologist Parker near Tucson, on the other hand, showed a longer reproductive season of about six months. The ladies here produced some six clutches a season, but fewer eggs, averaging about 4.8 per clutch. But what with some 87 percent of them mature at the start of the season and others maturing and entering the breeding population on later dates, a good supply of *Urosaurus* in that vicinity seems assured.

Nor are the Texas tree lizards about to take a back seat. Zoologist Martin, looking to their affairs under drouth conditions at that, found that three to four clutches a season with an average of five to a clutch was par. Hence, there's a good potential of 18 eggs per female for the approximately four month season there. This, in spite of an overall seasonal decline in fecundity.

Food makes a big difference in reproductive success, the females who have to produce the eggs being more affected by a shortage of groceries than the males. But the males may be more affected by high temperature. Anatomist Licht's tests showed that keeping *Urosaurus* gents at an even one degree above their "preferred temperature" (body temperature for activity normal to the species) resulted in testicular damage, and loss of body weight as well. Even keeping them at the preferred temperature constantly was damaging, a situation which would not occur in nature since the desert cools shortly after sunset. Apparently lower temperature periods are needed.

Since high temperatures have a sterilizing effect, this may account for the seasonal decline in the male cycle during the summer. Evolutionarily speaking, too, the temperature limit for normal testicle functioning may be what actually determines the level at which a lizard species regulates its body temperature — a figure that varies markedly among the various kinds. Temperature indeed may control the breeding season in hot environments.

Biologist Royce Ballinger, interested in the relation between population sizes and the carrying capacity of the environment, wondered what happens if the numbers living in a place were suddenly reduced. He went around to the Animas region and selecting a couple of study areas, subtracted about one third of the adult lizards from each, thereby simulating a sudden high mortality. The following two years' study showed him that environmental conditions were not equal in both years, the second being much shorter of insects for food, a situation typical of the fluctuations of a desert environment. The adult survival rate still came out just about the same, and most interesting to report — there was a

big increase in hatchling survival. The lizards were bound to begin their numbers-recoup when these reached maturity and entered the breeding population.

Ballinger cogitated on this, with an eye on lizard-expert Tinkle's sage observation that lizards seem to fall into two categories: 1) the early maturing, multiple brooded and short-lived kind, or 2) the late maturing, single brooded long-lived kind. He could see that *Urosaurus* certainly belonged in the first group. Aggressive, hard at their reproductive business all season no matter where, they stood a much better chance of species success in the unstable and difficult conditions of the desert than a late maturing species with one brood. Evolution-wise, natural selection favored this get-on-with-it approach and was operating on the younger members of the population where, he finally decided, the efficiency for evolving these traits should be the greatest.

From the looks of all this, members of the *Urosaurus* tree lizard clan will be skipping about the desert's mesquites, shrubs, cacti and rocks for many a moon to come. □

Rambling on Rocks

by
GLENN and MARTHA VARGAS

Auro Prieto, Brazil Topaz Mine.

IMPERIAL TOPAZ: "The New Precious Gem"

OVER THE YEARS we have resisted the term "precious gem" because it tends to indicate only a few gems that command a high price, and are readily available to the jewelry trade. Usually, the "precious gems" include diamond, ruby, sapphire, emerald and pearl. There are others such as alexandrite and high prices such as alexandrite and cat's-eye (which are both chrysoberyl). In our minds these should also fall in the "precious" classification.

Regardless of our past thinking, imperial topaz is now rapidly approaching the price range of sapphires and rubies. During our recent trip to Brazil, we saw excellent cut gems in the vicinity of 30 carats, or slightly larger, priced at $40,000 per gem. Fine, transparent, deep-orange crystals, about the size of an adult index finger, were being offered at $6,000 per crystal. It is possible that these prices could have been bargained down a bit, but at those levels what is a few hundred or a few thousand dollars?

Imperial topaz has had an interesting history. Only a few mines in a small district of Brazil produce this and a nice golden color. The golden is much more common than the orange. Both colors have always been rare, and commanded a fairly high price in relation to most other popular-priced gems.

This rarity fostered imitation. Certain types of amethyst, when heated carefully, will turn to a yellow or orange color. For many years, this heat-treated amethyst has been sold as "topaz." The practice has been carried on for so long a time that most gem dealers do not feel that the offering of citrine as topaz is fraudulent. In fact, the word citrine is often not part of their vocabulary.

The labeling of citrine as topaz is now illegal in this country, but we still see it on rare occasions. In virtually every other country, the practice goes on without any restraint. In Brazil, it is actually an insult to tell a dealer that his "topaz" is citrine.

The mineral topaz is found in a number of colors. The most common is colorless, which is found in many countries. A nice deep blue is found in Colorado, Texas, Brazil and some African countries. An interesting golden color is found in Utah, but this quickly fades on exposure to light. Mexico produces a nice pinkish-golden color that really defies being named. It is often called champagne or sherry color, but the allusions are not good.

A pink topaz comes from Brazil, but crystals are usually very small. A very fine red comes from Afghanistan, with some of the crystals at least finger size. A red is also reported from Russia. A green topaz is known, but it is very rare.

Our present-day technology has had an interesting effect on the topaz market. If colorless topaz is exposed to

gamma ray irradiation, it turns to an intense deep blue. The color, however, does not really match that of any known natural topaz. There is no danger of any radiation effects, and the color is evidently permanent. We have seen excellent examples of this blue topaz, both cut and uncut, and feel that it will become a popular gem. Undoubtedly, when topaz was first irradiated, imperial topaz color was hoped for.

We had the privilege of visiting a mine where imperial topaz is found, and were able to purchase a small amount. This mine was huge, covering most of a large mountain. At the time of our visit, the miners had found no good crystals for more than two weeks. The mine was really uninteresting. Miners were digging in a brownish to reddish rock that was very decomposed. We saw virtually no crystals in place, and were told that they appeared in a reddish mud without any advance signs. The one reliable advance sign is a few quartz crystals. As far as we could determine, the topaz orginally formed in the usual gem pockets along with quartz. Weathering or other changes broke apart the pockets and liberated the contents into a mud-like material that is probably a decomposition product of the rock that surrounded the original pocket. This situation tends to force the miners to dig almost blindly, with the hope of finding a pocket without any real leads to follow. This certainly tends to add to the price of the good gem quality crystals.

Before our Brazil trip, we knew that imperial topaz prices were rising and we certainly saw this while we were there. We have discussed rising gem prices in our July 1976 column, noting that all gems are rising in price. The present rise of the price of imperial topaz is much greater in proportion to any other gem. Recently, we received a form letter from one of our Brazilian dealer friends, telling us that if a dealer in this country has an imperial topaz gem of five carats or larger, he should immediately raise the price at least 200 percent and a maximum of 300 percent!

For many years, imperial topaz has been referred to as precious topaz, to differentiate it from the citrine imitation. We have never liked the term, and have spoken against it. Now we must eat our words, for this fine orange gem is really becoming precious. □

The Trading Post

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200 TRAILS TO GOLD, A Guide to Promising Old Mines and Hidden Lodes Throughout the West by Samuel B. Jackson. Rated by the pros as "one of the best," this comprehensive guidebook is jam-packed with detailed descriptions of hundreds of gold-prospecting opportunities, histories of past bonanzas, and stories of still-to-be-located lost mines. It covers every gold-bearing section of the United States. Hardcover, 348 pages, illustrated, $8.95.

DESERT EDITOR by J. Wilson McKenney. This is the story of Randall Henderson, founder of DESERT Magazine, who fulfilled a dream and who greatly enriched the lives of the people who love the West. Hardcover, illustrated with 188 pages, $7.95.

GHOST TOWNS AND MINING CAMPS OF CALIFORNIA by Remi Nadeau. Once again available, this excellent book preserves the myths along with the history of the ghost towns of California. Paperback, 278 pages, well illustrated, $4.95.

THE ROCKS BEGIN TO SPEAK by LaVan Martineau. The author tells how his interest in rock writing led to years of study and how he has learned that many—especially the complex petroglyphs—are historical accounts of actual events. Hardcover, well illustrated, glossary bibliography, 210 pages, $8.95.

THE OLD TRAILS WEST by Ralph Moody. The story of great legendary routes that bound a wild land into a nation. The Oregon Trail, El Camino Real, the Butterfield Overland Mail, The Santa Fe Trail and many more names that conjure up the romance of the past. It recounts the true stories behind the trails and how they contributed to the settling of the West. Illustrated with maps and reproductions of authentic old prints. Hardcover, 318 pages, originally published at $8.95, now only $3.98.

MINES OF THE MOJAVE by Ron and Peggy Miller covers the numerous mining districts running across the upper Mojave Desert from Tropico, west of the town of Mojave, to Mountain Pass, a little west of the Nevada border. Paperback, 67 pages, $2.50.

BUTCH CASSIDY, My Brother by Lula Parker Betenson. Official version of the authentic life story of Butch Cassidy, actually Robert Leroy Parker, famed outlaw of his native Utah and adjoining states, told by his surviving sister. The book also offers a new look at Utah Mormom history by a participant. Hardcover, many rare pictues, 265 pages, $7.95.

THE SALTON SEA, Yesterday and Today, by Mildred deStanley. Includes geological history, photographs and maps, early exploration and development of the area up to the present. Paperback, 125 pages, $1.75.

Letters to the Editor

Letters requesting answers must include stamped self-addressed envelope

El Jabonero Secret Gone . . .

I thought you might be interested in this clipping that appeared in a recent edition of the Phoenix *Arizona Republic* newspaper.

"Jim Orosco, the last known full-blooded Sand Papago Indian, died of natural causes Wednesday at his ranch at Poso Redondo.

Mr. Orosco was born about 1900 at Quitobaquito, the family rancheria that today is part of the Organ Pipe National Monument.

His ancestors settled at Quitobaquito after the Mexican government, shortly before the turn of the century, mounted an expedition against the cannibalistic San Papagos, slaughtering almost the entire tribe of about 800 men, women and children.

The few survivors escaped into the Pinacate lava fields. Mr. Orosco's grandfather later settled at Quitobaquito.

After the death of his father, Jose Juan, Mr. Orosco sold the rancheria to the National Park Service and established a ranch at Poso Redondo, 18 miles southeast of Ajo.

Mr. Orosco was thought to be the only person who knew the secret of the famous El Jabonero gold mine, thought to be in the Agua Dulce Mountains. Mr. Orosco's father purchased an automobile from James Carney's Garage in Ajo in 1936 or 1937 with placer gold packed in a tomato can. He is reported to have told Carney, 'If there isn't enough gold in that can, I can get more.'

Mr. Orosco will be buried at Poso Redondo in the traditional Indian manner. No non-Indian services are planned.

Survivors include a son, Francisco."

TOM HENDERSON,
Phoenix, Arizona.

Desert Tortoise Rooter . . .

I have just read Gloria Nowak's article on the "Desert Tortoise," and I must say she did a fine job and I hope she continues to care about the tortoise.

I have lived all my 31 years in the small Mojave Desert town of Boron, so I know a good deal about the Desert Tortoise. I know how they have been victimized by uncaring people.

The Desert Tortoise Preserve is a good idea and hopefully it will some day become a haven for many tortoises.

In the meantime, for anyone who has a tortoise and would like to see it returned to its natural habitat, there may be a way.

Some months ago, I read a newspaper article in the *San Bernardino Sun* (California) about a "Half-way House for Desert Tortoises." These people take in displaced tortoises and help them adjust to the ways of their natural habitat. Hopefully, someday, some will find their way back here where they belong. Bravo! Half-way House!

May I also say that I enjoy reading *Desert Magazine* very much. Being a Desert Rat, I can appreciate all the things I have learned from your magazine about the places nearby that I previously knew nothing about. Keep up the good work.

SHIRLEY WISE,
Boron, California.

Chaffin Ferry . . .

Thanks a million to Mr. Tom McClain of West Jordon, Utah for the fine picture of the Chaffin ferry at the "Dandy Crossing" on the Colorado River, before Lake Powell put it under water.

Mr. McClain refers to my uncle as R. Chaffin. That is very close. His name is Arthur Chaffin, or Art for short.

NED. L. CHAFFIN,
Bakersfield, California.

Likes Joshua Tree . . .

On a recent trip to Palm Springs, California, I had the extreme pleasure of visiting Joshua Tree National Monument and found it to be one of the most beautiful parts of the desert, a place where peace and serenity is still found.

I want to thank you for telling about places like Joshua Tree because it is one of the few parts of the desert where people can go to that is not crowded. By going there I now know that we must preserve areas like this for future generations so they can see what the desert has to offer.

Keep up the good work in your magazine.

SIDNEY BLUME,
Brockton, Massachusetts.

Calendar of Events

This column is a public service and there is no charge for listing your event or meeting—so take advantage of the space by sending in your announcement. We must receive the information at least three months prior to the event.

APRIL 30-MAY 1, Norwalk Rockhounds 13th Annual Gem Show, Masonic Lodge, 12345 E. Rosecrans Ave., Norwalk, Calif. Admission free. Prizes.

MAY 7 & 8, 19th Annual Gem and Mineral Show sponsored by the Kern County Gem and Mineral Society, Kern County Fairgrounds, Ming and So. "P" St. Free admission, ample parking, dealers of all kinds.

MAY 7-15, 51st Annual Wildflower Show sponsored by the Julian Woman's Club, Julian Town Hall, Julian, Calif. An Art Show sponsored by the Julian Chamber of Commerce will be held in the upper floor of the Town Hall. The Pioneer Museum will be open and run concurrent with the flower show. No Admission.

MAY 14 & 15, Mission Peak Gem and Mineral Society's 11th Annual Show, Irvington High School, Blacow Rd. at Grimmer Blvd., Fremont, Calif. Special exhibits, demonstrations, dealers.

MAY 21 & 22, Sacramento Diggers Mineral Society's "77 Gemstone Festival." Florin Center Mall, Florin Road and Stockton Blvd., Sacramento, Calif. Dealers.

MAY 21 & 22, Yucaipa Valley Gem & Mineral 12th Annual Show, "77 Lucky Gems." Yucaipa Valley Community Center, First Street and Avenue B, Yucaipa, Calif. Free admission and parking.

MAY 21 & 22, Glendale Lapidary and Gem Society's 30th Annual May Festival of Gems, Glendale Civic Auditorium, 1401 N. Verdugo Rd., Glendale, Calif. Admission 50 cents.

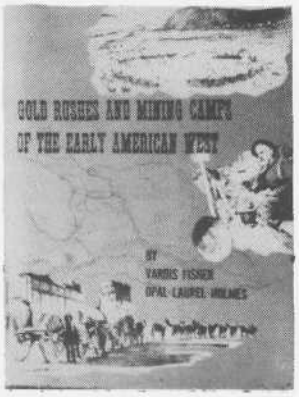
MAY 25-30, Chest of Jewels Gem and Mineral Show, in connection with the Silver Dollar Fair, Butte County Fairgrounds, Chico, Calif. Sponsored by the Superior California Gem and Mineral Association with its member clubs in Chico, Corning, Oroville, Paradise, Red Bluff, Redding and Yuba City.

MAY, 27-29, Yucca Valley, California's 27th Annual Grubstake Days. Parade, art exhibit, contests, games, many events planned.

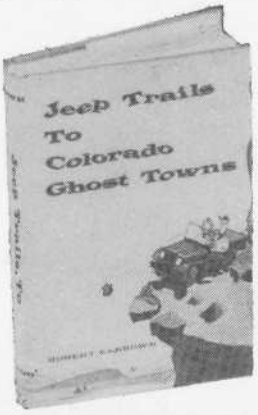
MAY 28 & 29, Verde Valley Gem and Mineral Show, Mingus Union High School, Cottonwood, Arizona. Sponsored by the Oak Creek Gem and Mineral Society of Sedona and Mingus Gem and Mineral Club of Cottonwood, Arizona.

MAY 28-30, 13th Annual Gold Country Classic for four-wheel-drive and dune buggies, sponsored by the Sacramento Jeepers, Inc., 9 miles east of Sloughhouse, Calif., on Highway 16, 20 minutes from Sacramento. Competition geared for the family off-roader. Camping space available.

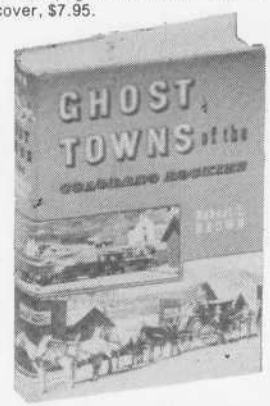
GREAT READING From CAXTON PRINTERS



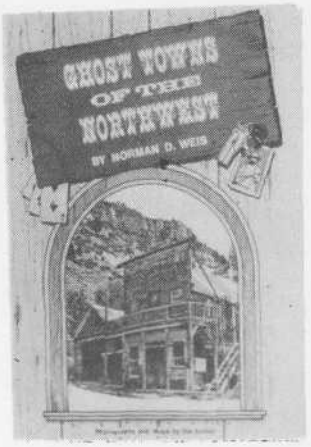
GOLD RUSHES AND MINING CAMPS OF THE EARLY AMERICAN WEST by Vardis Fisher and Opal Laurel Holmes. Few are better prepared than Vardis Fisher to write of the gold rushes and mining camps of the West. He brings together all the men and women, all the fascinating ingredients, all the violent contrasts which go to make up one of the most enthralling chapters in American history. 300 illustrations from photographs. Large format, hardcover, boxed, 466 pages, highly recommended. $17.95.



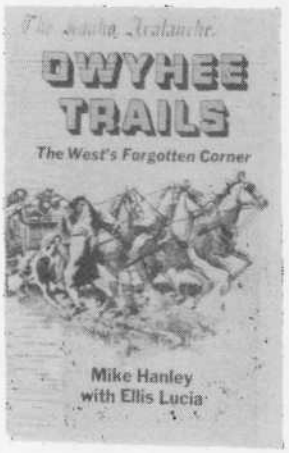
JEEP TRAILS TO COLORADO GHOST TOWNS by Robert L. Brown. An illustrated, detailed, informal history of life in the mining camps deep in the almost inaccessible mountain fastness of the Colorado Rockies. Fifty-eight towns are included. 239 pages, illustrated, end sheet map. Hardcover, $7.95.



GHOST TOWNS OF THE COLORADO ROCKIES by Robert L. Brown. Written by the author of "Jeep Trails to Colorado Ghost Towns," this book deals with ghost towns accessible by passenger car. Gives directions and maps for finding towns along with historical backgrounds. Hardcover, 401 pages, $7.95.



GHOST TOWNS OF THE NORTHWEST by Norman Weis. The ghost-town country of the Pacific Northwest, including trips to many little-knwon areas, is explored in this first-hand factual and interesting book. Excellent photography, maps. Hardcover, 319 pages, $7.95.



OWYHEE TRAILS by Mike Hanley and Ellis Lucia. The authors have teamed to present the boisterous past and intriguing present of this still wild corner of the West sometimes called the I-O-N, where Idaho, Oregon and Nevada come together. Hardcover, 225 pages, $9.95.

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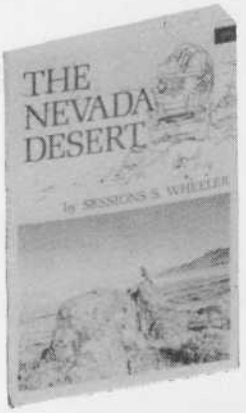
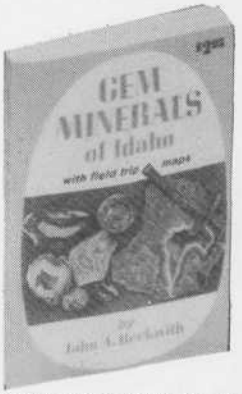


THE NEVADA DESERT by Sessions S. Wheeler Provides information on Nevada's state parks, historical monuments, recreational area, and suggestions for safe, comfortable travel in the remote sections of western America. Paperback, illustrated, 168 pages, $2.95.

SOUTHERN IDAHO GHOST TOWNS by Wayne Sparling. An excellent reference describing 84 ghost towns and the history and highlights of each. Excellent maps detail the location of the camps, and 95 photographs accompany the text. Paperback, 135 pages, $3.95.



GEM MINERALS OF IDAHO by John A. Beckwith. Contains information on physical and optical characteristics of minerals; the history, lore and fashioning of many gems. Eleven rewarding field trips to every sort of collecting area. Slick paperback, maps and photos, 123 pages, $4.95.

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