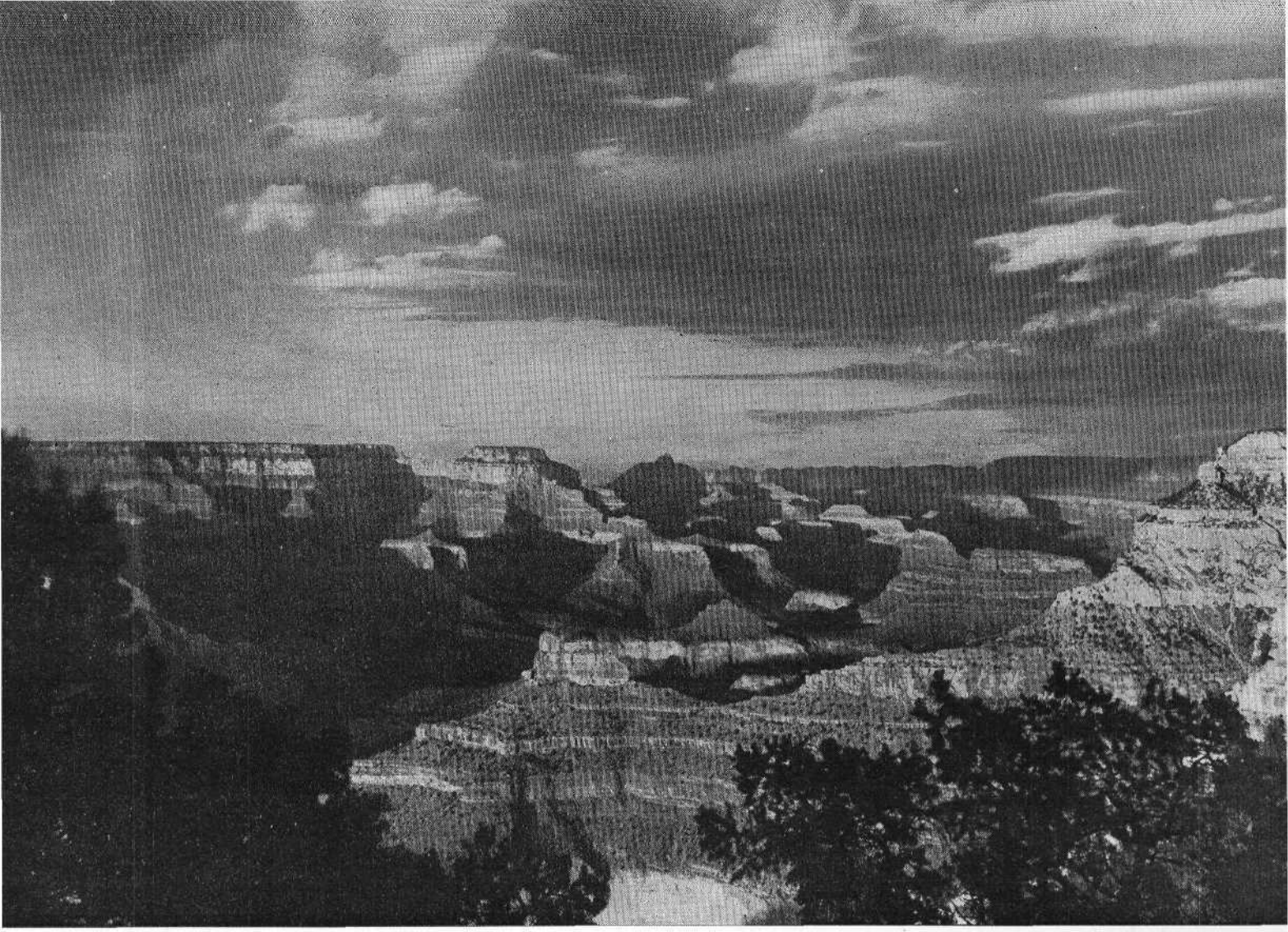
Desert

AUGUST, 1956 . . . . 35 Cents



Cowboy's Soliloquy

By Katherine L. Ramsdell
Tempe, Arizona

D' ya reckon
God made mountain peaks
To keep folks trimmed to size.
Or carved out His Grand Canyon
So folks would realize
How small an' unimportant
Man's mightiest works must stand
When set against the wonders
Which His greater wisdom planned?

I kinda think
He never meant
To curb man's busy mind,
But left His marvels lyin' round
So everybody'd find
Some piece o' His creation
Branded deep, 'way down inside,
Which ties him to th' Big Corral,
His heart a-stretchin' wide.

• • •

FIELD SKETCH

By Grace Parsons Harmon
Desert Hot Springs, California

A rainbow in the desert is a thing of beauty rare—
Mist and sunlight making magic, gleaming in the air.
It tiptoes on the rangeland, and it gently strokes the sky
In caresses soft as whispers — light and fleeting—passing by.

A vivid, breathless moment of a beauty few can know,
That He sketches on His canvas when the desert sun is low!

BARSTOW

By Willa Mae Boone
Formerly of Barstow, California

"The desert will grow on you," I've often heard said.
"No. Never," I've answered, shaking my head.
With nowhere to go, and nothing to do
The desert just bored me; I knew it was true.
Mile after mile of Cactus; sand, and just rock
That I'd miss it, I considered mere talk.
I finally admitted, t'was pretty, at that
But not quite the place to hang up my hat
So, when I left it one day, I was glad to be free.

You can't imagine what's the matter with me!

I'm dreaming of Cactus; rocks, and just sand;
Mile after mile of Beautiful Land
Even missing the wind, howling around
Blowing the tumbleweeds over the ground.
Where is the most wonderful spot in the world?
I know—Naturally you've guessed it.
It is Barstow.

• • •

SOLITUDE

By Mrs. Lon Clarke
Santa Barbara, California

A lonely spot on the desert,
An iron cross lifted high,
A name plate idly swinging—
We paused and wondered why.
Long years ago marked his passing,
And in solitude still he lies,
With only the sage brush to guard him
As he sleeps 'neath the desert skies.

THE DESERT HAS A COVENANT

By Amy Viau
Santa Ana, California

The desert has a covenant with night,
For silence, deep;
For mellowed shadows on its moonlit face,
Like gnomes asleep.

The desert has a covenant with wind and sun
To stir its sand,
To shine with fervency and heat the breaths
Of desert land.

The desert covenants with lure, intangible
As rainbow span,
To tend its desert vastness with design
For luring man.

Gleaning

By Tanya South

I see today, as I had never seen
In the stark Past.
I am today, what I had never been.
I now hold fast
A secret Strength that I had never known
In the stark Past,
An inner Wisdom that is all my own.
I know at last
No soul has might to shatter me at core,
But God to guide and cherish even more.

DESERT CALENDAR

July 29-August 4—Black Hawk Indian War Reunion, Santaquin, Utah.

August 1-September 16—Navajo Sand Paintings, Museum of Northern Arizona, Flagstaff.

August 1-3—County Fair, Roosevelt, Utah.

August 2—Old Pecos Dance, Jemez Indian Pueblo, New Mexico.

August 2-5 — National High School Rodeo, Reno, Nevada.

August 2-5—Burro Races, Apple Valley, California.

August 3-5—Las Vegas, New Mexico, Rough Riders and Cowboys' Reunion.

August 3-5—Northern Arizona Square Dance Festival, Flagstaff.

August 4 — Santo Domingo Pueblo, New Mexico, Corn Dances.

August 4-5—Jaycee Rodeo, Flagstaff, Arizona.

August 4-5—Billy the Kid Pageant, Lincoln, New Mexico.

August 5—Annual Becker Lake Regatta, Springerville, Arizona.

August 6—Pet, Doll and Hobby Parade, Clayton, New Mexico.

August 9-10 — Arizona State Cattle Growers Conclave, Flagstaff.

August 9-12—Gallup, New Mexico, Inter-Tribal Indian Ceremonial.

August 10—Annual Fiesta, San Lorenzo (Picuris) Pueblo, New Mexico.

August 10-12—Rodeo, Payson, Ariz.

August 11—Smoki Indian Ceremonials, 8 p.m., Prescott, Arizona.

August 12 — Annual Fiesta, Santa Clara Pueblo, New Mexico.

August 13-15—Fiesta of Our Lady of Belen, Belen, New Mexico.

August 15—Assumption Day Fiesta and Dance, Zia Pueblo, New Mexico.

August 15-16—Kearny Entrada, Raton, New Mexico.

August 15-18—V-J Day Rodeo, Artesia, New Mexico.

August 16-18—Rodeo, Logan, Utah.

August 17-19 — Horse Show, Santa Fe, New Mexico.

August 25-26—Rodeo, Winslow, Ariz.

August 25-26 — State Championship Cutting Horse Contest, Santa Rosa, New Mexico.

August 28—San Augustin Fiesta and Dance, Isleta Pueblo, New Mexico.

August 31-September 2 — Arizona Game Protective Association Meeting, Flagstaff, Arizona.

August 31-September 3—Annual Fiesta, Santa Fe, New Mexico.

Early August — Carrizo Rodeo and Indian Dances, Ruidoso, New Mexico. Date not set.

Month of August — Old Fashioned Melodrama, Knotts' Calico, California, Ghost Town.

Late August — Hopi Snake Dances, Mishongnovi and Walpi, near Winslow, Arizona. (Date announced by tribal leaders 16 days before event; check with Winslow Chamber of Commerce).

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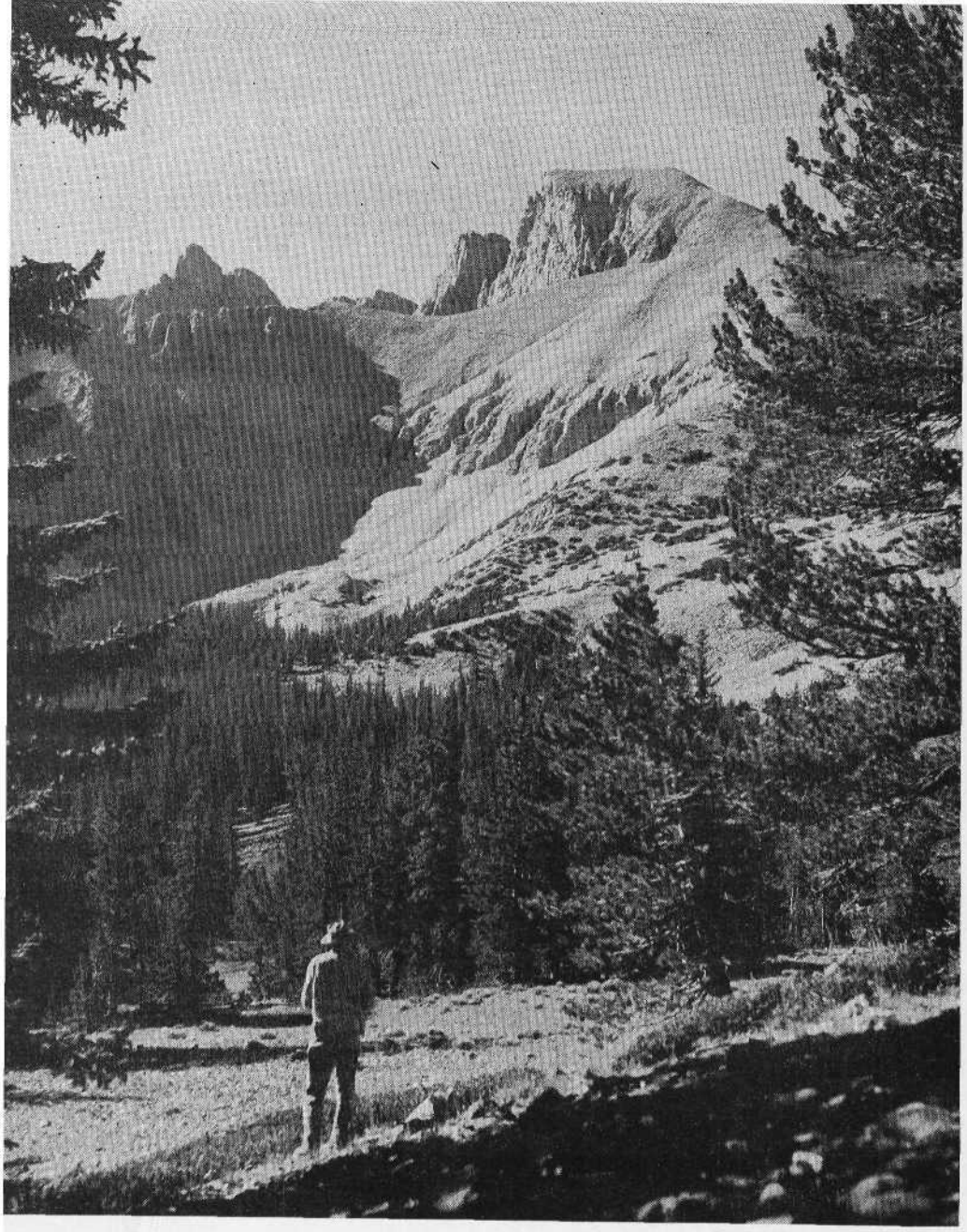


Wheeler Peak rises impressively 3000 feet above the high alpine basin to the north.

National Park in Nevada is Proposed

A movement has been launched for the creation of a new 28-square-mile national park in the Snake Range of Nevada with Lehman Caves, Wheeler Peak and Matthes Glacier as the central attractions. Here is a brief outline of the proposal.

WITH YELLOWSTONE, Grand Canyon and Yosemite becoming more crowded each year as increasing numbers of Americans seek recreation in the national parks, the need for additional park areas is becoming more pressing.

It is to meet this need that the proposal has been made that a large portion of the Snake Range in Nevada, including the Lehman Caves and a recently re-discovered glacier on Mt. Wheeler be set aside as a new national park.

Many outdoor and conservation groups already have given tentative endorsement to the proposal and in response to their requests a delegation of National Park and Forest Service men plan to visit the area August 13-15 to determine its qualifications for park status.

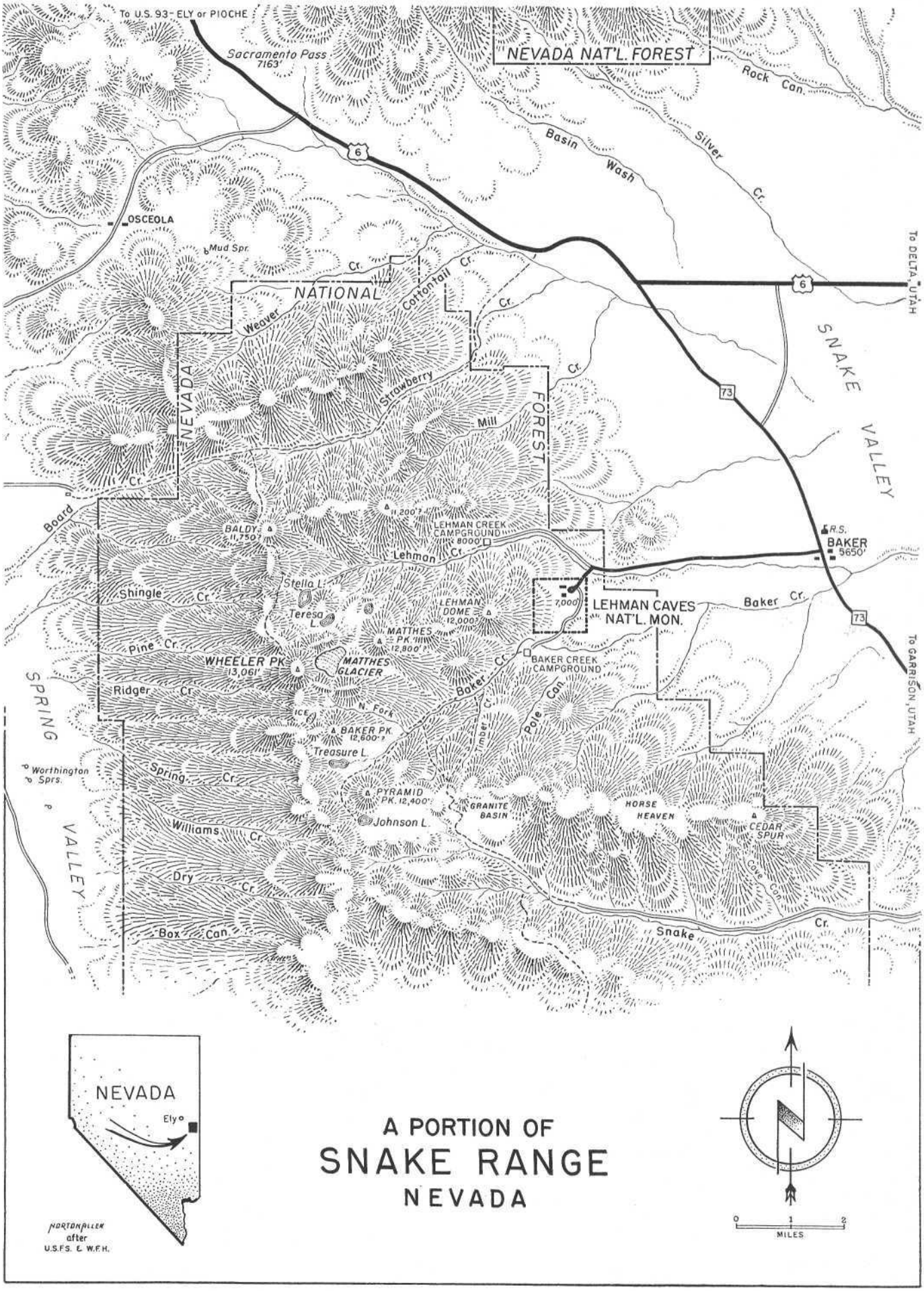
The Snake Range is now mostly within the Nevada National Forest, and approximately 28 square miles of terrain are being considered for park purposes. The Lehman Caves National Monument consisting of 640 acres is within the proposed boundaries.

Interest in this area as a potential national park developed in recent months after Weldon Heald of Tucson and Albert Marshall of Three Rivers, California, made the ascent of 13,061-foot Wheeler Peak and ascertained that a glacier on the east slope of the mountain, first reported by the U. S. Geological Survey in 1883, was still active. This is believed to be the only living glacier in the Great Basin region between the Sierras of California and the Rocky Mountains in Colorado.

Many civic groups in Nevada are lending their support to the proposal that the Snake Range and Wheeler Peak become Nevada's first national park. In order that *Desert* readers may become better acquainted with the project, Norton Allen has prepared the map on the opposite page showing the topography of the area.

Following his ascent of Wheeler Peak, Weldon Heald wrote: "We arrived at the summit at noon. The view from the wedge-shaped crest of the Peak is utterly magnificent. From our perch on the topmost rocks, 13,061 feet above sea level, we looked out over a 360-degree panorama embracing thousands of square miles of deserts, valleys, hills and mountains in eastern Nevada and western Utah. Then we worked our way down the east slope to the edge of a 2000-foot sheer cliff. There in the depths of a cirque below we saw the ice field described by the Geological Survey in 1888. The surface was broken by what appeared to be a bergshrund, a secondary bergshrund, and below these five parallel crevasses one above another. Every sign indicated that the ice was in motion and this was probably a true glacier."

Heald proposed to the National Board of Geographic names that the ice flow in the heart of the desert mountain be named Matthes Glacier, honoring the memory of Francois Emile Matthes (1874-1948) who was one of America's distinguished geologists and a world authority on glaciers.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Sacramento Pass 7163'
NEVADA NAT'L. FOREST
Rock Can.
Basin Wash
Silver Cr.
OSCEOLA
Mud Spr.
Cr.
Cottontail Cr.
NATIONAL
Weaver
NEVADA
Strawberry
Mill
FOREST
Cr.
Board
BALDY 11,750'
11,200'
LEHMAN CREEK CAMPGROUND 8000'
Lehman Cr.
Stella L.
Shingle Cr.
Teresa L.
LEHMAN DOME 12,000'
MATTHES PK. 12,800'
Pine Cr.
WHEELER PK 13,061'
MATTHES GLACIER
Ridger Cr.
ICE
N. Fork
BAKER PK. 12,600'
Treasure L.
Worthington Sprs.
Spring Cr.
PYRAMID PK. 12,400'
Johnson L.
Williams Cr.
Dry Cr.
Box Can.
SPRING VALLEY
7,000'
LEHMAN CAVES NAT'L. MON.
Baker Cr.
BAKER CREEK CAMPGROUND
Baker Cr.
Timber Cr.
Pole Can.
GRANITE BASIN
HORSE HEAVEN
CEDAR SPUR
Cove Can.
Snake Cr.
R.S.
BAKER 5650'
SNAKE VALLEY
To DELTA, UTAH
To GARRISON, UTAH
6
73
NEVADA
Ely
NORTON ALLEN after U.S.F.S. & W.F.H.
A PORTION OF
SNAKE RANGE
NEVADA
0 1 2
MILES

Gem 'Harbors' in the Ship Mountains...

Opalite—plenty of it and in concentrated areas—is the prize for rockhounds who visit the Ship Mountains in California's eastern Mojave Desert. And if you like your desert outings to take you to places where it is easy to conjecture the ghosts of the past, you'll find here the geological evidence of the very beginnings of the world, down through the period when this was a land of lakes and rivers, to the days of the prospectors, steam locomotives and back-breaking mining, and the war maneuvers of our day.

By HAROLD O. WEIGHT
Photographs by the author
Map by Norton Allen

Gem rock from the Ship Mountain buttes—patterned, banded and brecciated opalite in apricot, pink, pale green and golden brown, mixed with chalcedony. Dendrites in opalite, chalcedony and quartz. Large piece in center is four and a half by six inches.

WHEN ADELAIDE ARNOLD picked up her first piece of polishing rock near the Ship Mountains in California's eastern Mojave Desert, she was not hunting rocks. It was during World War II and Adelaide, a writer of note with scores of articles and stories and three successful children's books to her credit, was working with the Twentynine Palms Red Cross. On this hot summer day, her car loaded with emergency surgical dressings, she had been looking for General Patton's tank maneuver camp near Danby Dry Lake.

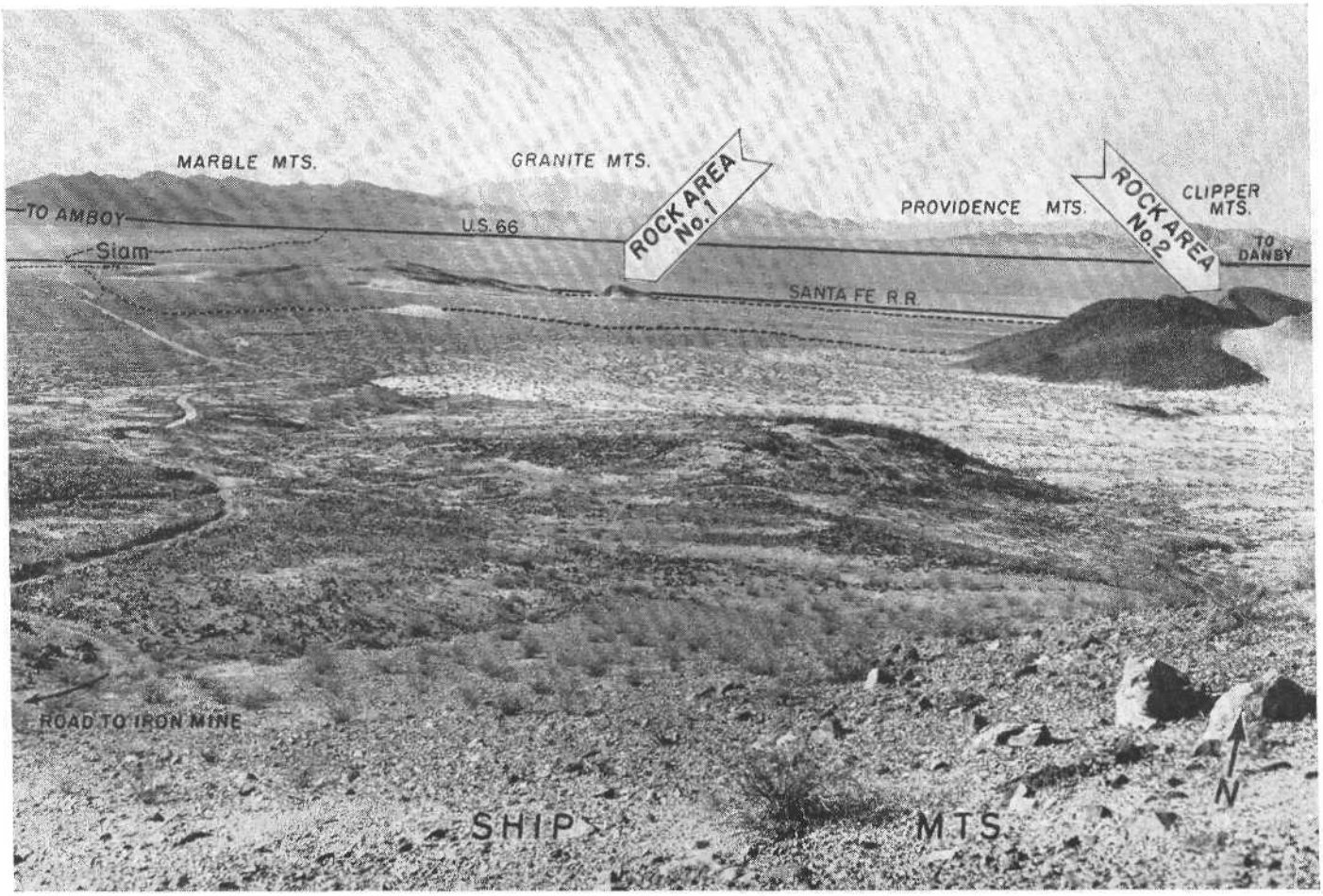
"Condor Field at Twentynine Palms was not very well organized," she recalls. "With no infirmary, the Red Cross was helping out. Women of the Disabled American Veterans Auxiliary made most of the dressings and a station wagon was supposed to haul them out to Clipper Field, at the Clipper Mountains, and to the maneuver camps. But there had been a plane crash at Clipper and they were busy there. Condor Field asked if someone at our center could take the dressings out—so I volunteered."

Adelaide is an oldtimer at Twentynine Palms, first having visited there in 1923. She knew how to drive primitive trails, but the road out to Amboy offered some unique problems. "There wasn't a trace of paving—and tanks had chewed up the dirt trail. But I reached 66, followed it to Chambless, then left the highway for more bad road. And was it hot—over 100 degrees! I finally reached a siding — Chubbuck, I think—where they were bringing in supplies. I turned some dressings over to a captain there, intending to take the rest up to Clipper Field via Danby. But the captain said I couldn't make it because of the heat and the poor road, and he took them all, saying he would see the field got the dressings.

"I went back to 66 by the Danby road anyway, and somewhere along it I saw this rock. It was very pretty and I stopped to pick it up."

Adelaide's next trip to the Ship Mountains was made early in March, 1956, with Lucile and me. This time it was a rock hunt. For years, going to or coming from the Needles and Kingman country, Lucile and I had the urge to trace out the old trails we could see leading up into the dark, jagged Ships. And when our wheels finally did take those lonely ways which — like most roads rockhounds and desert travelers follow — were pioneered by prospectors and miners, we found the Ships richer in rocks, geology and mining history than we had dreamed.

On Highway 66 a homemade sign-



The Mojave Desert from the iron mine in Ship Mountains. Road, left, leads down to site of Siam station. The Santa Fe Railroad and Highway 66 run through the open valley. Opalite and chalcedony are found in some of Tertiary buttes, center.

post, thrust into a rock pile, marked the turnoff to Siam Siding, on the Santa Fe railroad at the foot of the Ships. At night we saw lights in the buildings there but today both sign and buildings are gone, victims of progress and automation.

The rock pile that held the sign remains, 2.7 miles from Cadiz Summit, and we left the highway there. The auto trail was good to the broad wash draining past the Ships into Cadiz Dry Lake. But the wash had run a hundred streams during savage summer cloudbursts. The next mile was very rough, but better than on earlier trips, since more cars had used it. We could have avoided this section by following 66 to Danby, crossing there, and coming back on the southeastern side of the tracks. But this would have taken us far out of our way, and it is not a good road either.

The railroad crossing at Siam is peaked and rough and there is no warning sign. But STOP, LOOK AND LISTEN are imperative! There is tremendous rail traffic here and some travels so fast there is no chance to second guess. Once across, we paused at the ghost of Siam—dead cottonwoods, struggling tamarisks, cement foundations, rock piles, a load ramp.

I feel the desolation of these little abandoned stations keenly because my earliest memories are of just such way stops on the Southern Pacific, where my father was telegrapher or station agent. Once they were essential nerve and supply centers for the great railroads. They furnished water for the steam locomotives, brought the crew telegraphed information about "meets," clearances, and road conditions ahead. Their sidings were used by converging trains according to a complex class system of slow and fast freight, tourist passenger, "flyer." They housed track gangs that walked and maintained the section's rails and lines.

At Siam in 1903, L. A. Clampitt drilled a well to 895 feet for the Santa Fe. It took from February to June. Depth to water was 400 feet, and the well could supply 86,400 gallons every 24 hours. Clampitt drilled a second well from January to August, 1907. It went to 888 feet, with standing water at 420 feet and a test production of 53,280 gallons in 24 hours.

These were the necessities of yesterday's railroading. Today diesel-electrics have replaced steam. Increasing sections of road are double tracked, the remainder protected by automatic signal block systems and radiotelephone. Larger stretches of track are maintained by mechanized, motorized groups. The old methods were inefficient and present costs of labor and material would have made them impossible. So the little way stations wither and die and vanish, and some day all of them will be gone. But at least they have dotted this stretch of desert with wonderful and exotic place names: Nebo, Troy, Hector, Argos, Klondike, Siberia, Trojan, Bagdad, Bengal, Cadiz, Ibis, Java, Khartoum —and Siam.

Adelaide Arnold did not remember where she had found that rock during World War II. I guessed it had lain along the Danby-Chubbuck road at the eastern edge of the Ship Mountains. A considerable area of Tertiary volcanics is exposed there, and in the

canyons of that section we had found opalite in place and as float.

But we were going rock collecting closer to Siam. East of that station site, and within an area of less than four miles square, lies a geological fantasia. Crystalline rocks from the world's beginning, before life existed, face lavas that primitive man in the Southwest might have seen erupt. Buttes of Lower Cambrian limestone, shale and quartzite — preserving the ghosts of ancient life forms like the trilobite — shoulder against buttes of Tertiary volcanics. Post-carboniferous granite and Middle Cambrian shale and Paleozoic limestone nudge one another.

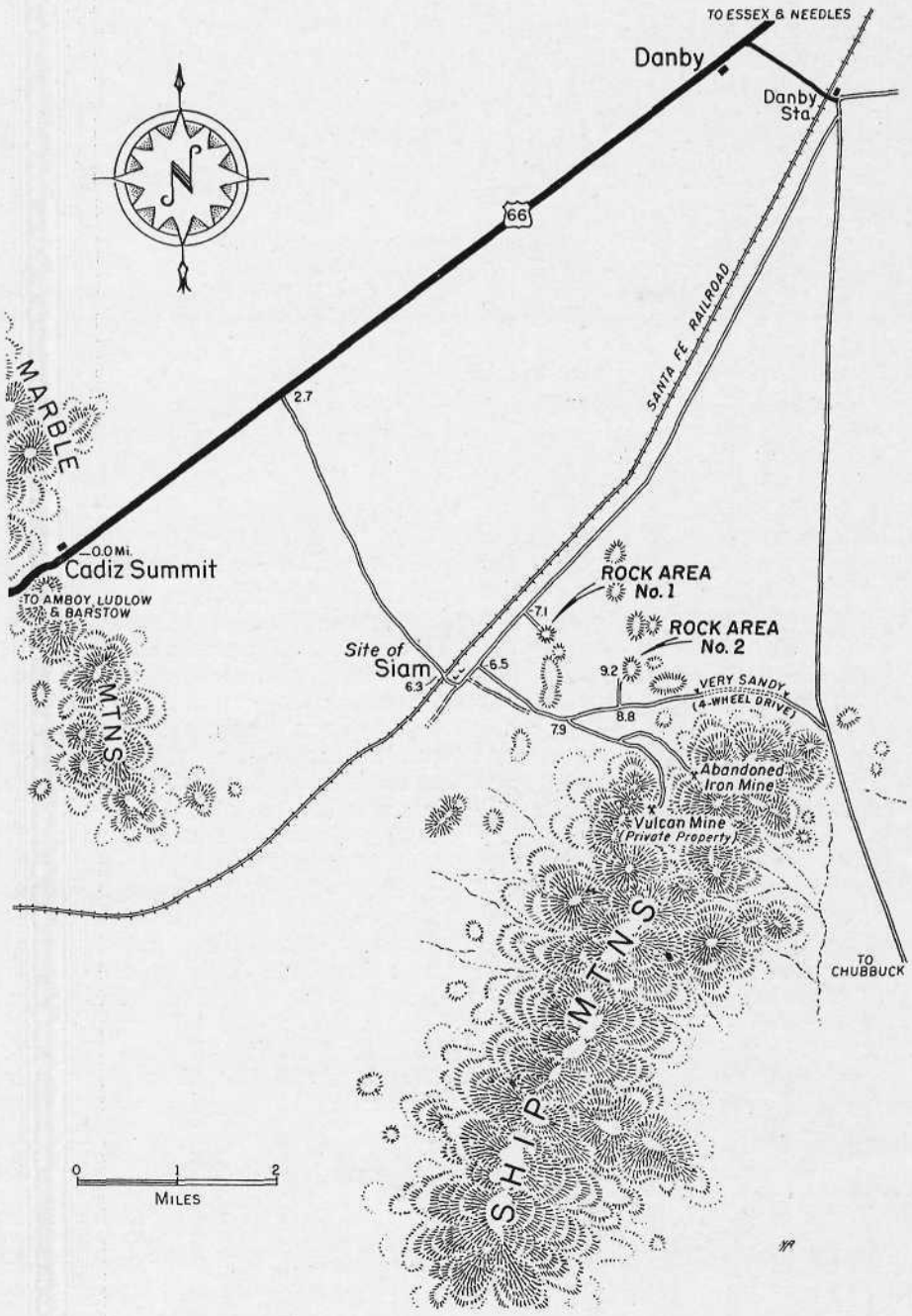
Violence that can scarcely be comprehended even by modern man with his hydrogen bombs, must have taken place here to assemble this vast sample tray of Time. Geologist Robert T. Hill in his *Southern California Geology,* published in 1928, shows a major fault—the Cadiz Rift—running right through this area. The Mojave Desert fault map issued in 1954 as part of the California Division of Mines' mammoth *Geology of Southern California* does not indicate this rift. But it does show a small fault in this area and plots an inferred course for the Garlock Fault to the base of the Ships.

To enrich the geological melodrama of the Ship country, some investigators believe the Mojave River, in glacial times, flowed from its Soda Lake basin past Ludlow and through Bristol, Cadiz and Danby lakes, lapping against the Ships, and reaching the Colorado between Parker and Blythe. This would come as no surprise to Father Pedro Font and other map makers of the days of Spanish exploration in the Southwest, for their maps showed the Mojave—the *Rio de los Martires*—curving to join the Colorado.

Our collecting goal was the group of small brownish buttes, Tertiary flows, which form the northernmost extension of the Ships. "Small" here is purely relative. They look that way from the highway in comparison with the main mass of mountains behind. But once in them, you find them big enough and rugged enough.

Adelaide thought this little covey of hills looked like a fleet in harbor. Apparently the Ship Mountains were named for them. Lucile saw part of the canyon-cut table top of the northeastern end of the range as resembling a great battleship. And, of course, it is possible that one of the oldtimers said: "Well, there's the Clipper Mountains just across the valley—let's call these on this side the Ships."

A scattering of little chalcedony plates and delicate chalcedony roses is found at certain levels on almost all of the brown buttes. But the collectors' prizes are opalite nodules in pastel mixtures — pale green, pink, peach, pale orange, white—and opalite brecciated in chalcedony, or mixed with chalcedony in fine lines. Dendrites are also found here—nice black patterns in opalite, chalcedony and translucent



SHIP MOUNTAIN LOG

First Collecting Area

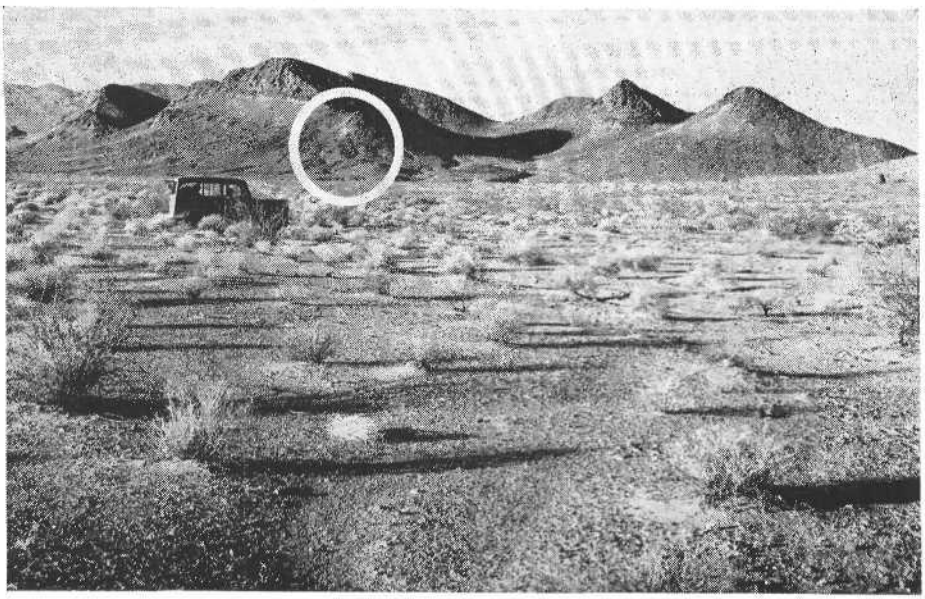
Miles

0.0 Cadiz Summit on U.S. 66.
2.7 Old Siam Siding turnoff. (Approximately 6 mi. from Danby service station on U.S. 66.)
6.3 Siam railroad crossing. After crossing turn left and follow road along tracks to
7.1 Turn right from road along railroad onto old track heading east. Head directly for low pointed butte at northeastern end of long sand covered butte.
7.6 Collecting area.

* * *

Second Collecting Area

6.3 Siam railroad crossing. Cross tracks and turn left along railroad to second road heading easterly into Ship Mtns. at
6.5 Turn right onto Ship Mountain road.
7.9 Y. Take left branch. (Right branch goes to Ship Mountain iron mine and Vulcan Mine.)
8.8 Wash, crossing road, leads down to collecting area No. 2. With standard cars it is not advisable to travel this road. Walk (left) down this sandy wash to
9.2 Collecting area on lower slopes of butte.



Looking down on the second principal collecting area in the Ship Mountain buttes, shown in the lower part of the circle. Collectors with cars not equipped for sand driving are advised to walk from this point to the collecting area.

material trending toward quartz. While a good deal of the rock is large-patterned or lacking in contrasting tones or colors, the best is extremely beautiful. The material I know most nearly like it is that in the Trigos in Arizona (*Desert,* Dec. '51), and in Rochester Basin near Picacho (*Desert,* April '55).

Scatterings of opalite are found in several places in the buttes. But in at least two it is so abundant it resembles the blow-outs of a big vein. Going to the nearest of these two, we followed the road along the tracks about .8 mile toward Danby, then turned right on an old track heading toward a small isolated peak at the northern end of a long sand-covered butte. The track soon changed direction and faded away, but a reasonably good desert driver can take a car right to the base of the little peak, which lies less than half a mile from the railroad. It also is easy to walk if you are worried about cross country driving.

The collecting area lies around a little rise on the lower west slope of the peak. The opalite-chalcedony-agate, in various sized nodules and pieces of nodules, lies on the surface of blow sand here, or buried in it. Most of it has that smooth, waxy feel of sand-blasted rock, and about the only use here for a prospector's pick is to dig buried or half-buried material from the sand.

Rock collectors have been visiting this field recently, and we also saw evidences of an older invasion, dating to the times of Adelaide's first trip—long, narrow grave-like burrows nearly filled with drifting sand, broad and wandering vehicle tracks, and rusting tin cans. Lucile picked up the top of one of the cans and read the legend: "U. S. ARMY FIELD RATION K, CORNED PORK LOAF, with Carrots and Apple Flakes."

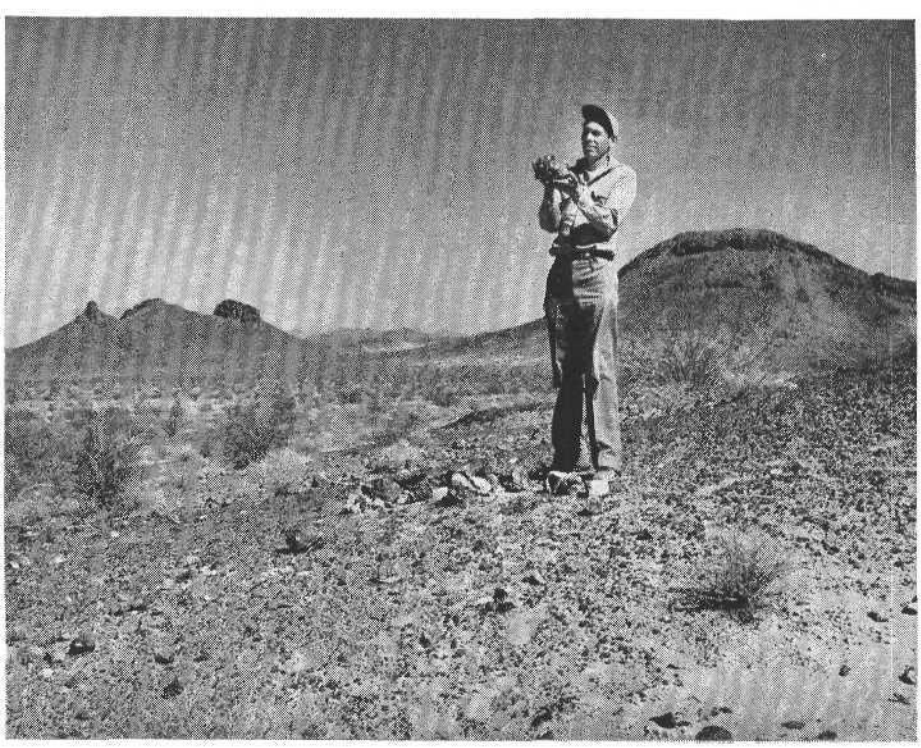
I wondered if any of the GIs who had dug in this little rise had noticed the beautiful stones. I met several collectors in the Air Force, and converted one three-day pass into a field trip across the state of Florida to collect fossil coral at Tampa Bay. But when you were out maneuvering, lugging weapons and food and necessities on your back, you didn't add many rocks to your pack. Not big ones, anyway.

The other collecting blow-out is a mile east of the first one. But a car not equipped for sand driving must return to Siam where parallel roads, scarcely a hundred yards apart, head easterly into the Ships. The second one from the railroad crossing should be taken to 1.6 miles from the crossing where the left branch of a Y is followed to 2.5 miles. Here a wash leads down grade to the collecting butte, .4 of a mile from the road. Without four - wheel - drive, walking from the road is advisable. Care must be taken even in turning the car around for the return trip for it is easy to become deeply sand-mired here. And a short distance beyond this point, the road degenerates into tracks in soft sand.

Lucile and I circled out on the butte to determine how far the material extended, while Adelaide, who is a beginner at rock collecting, remained in the center of the hot spot. In a short time we obtained all the material we wanted and headed back to the car to take a look at Ship Mountains' old mines.

The two principal ones—the Vulcan and the Paul iron deposit—are visible

Author with a piece of "high-grade" dendrite-opalite, at the rock-collecting area nearest the railroad. Much of the rock in the picture, which in many cases is half covered with blow sand, is of cutting grade.



Everywhere around the old mines of the Ships are evidences of the tremendous physical labors of the old time miners.

against the main range to the south and east from where we were. Driving back to the Y we took the right branch, up toward the mountains. At .8 mile from the Y another right branch leads up to the Vulcan. This branch is blocked farther up, since hopeful owners still hold the Vulcan. This mine is the oldest in the Ships, discovered by a prospector named McClintock in 1898. California Division of Mines credits it with about $80,000 total production in gold, copper and silver. Its best years were 1935-1937 when, leased to the Funk Brothers and H. J. Jackson of Ludlow, it produced $50,000 in gold.

We kept left for the iron mine. It is no longer possible to drive all the way up to the dumps. The old road, torn out of a sea of lava boulders, has become a channel for storms. The mine shipped ore—1500 tons of 60 percent iron — only in 1918 during World War I. Broken wheels, weathering timbers, the deep gulch of the road, the black rocks and dark dumps create a picture of gloomy desolation. But everywhere are the evidences of the tremendous physical labors expended to rip hematite from these forbidding mountains.

Those days and ways are forever gone. Should iron mining resume in the Ships, machines would clear the roads and open the mountain. Miners would live in trailers with gas and electricity and radio — and probably television—instead of in canvas boarding houses and piled rock shelters. This is an inevitable development and a good one, but I still feel a twinge for the crude freedom and vitality of those vanished times.

We reached Siam crossing at dusk. From the northeast, almost silently, a yellow streamliner rushed down upon us and rocketed past, and was gone. The tracks clear, we crawled over the rough crossing. I stopped the car a moment and looked back. As the earth turned, darkness was welling up from the canyons and the valleys of the mountains. The ships—the little buttes—lay peaceful in their deepening harbor.

The world has changed from days when puffing locomotives pulled slowly into Siam and the spout was lowered and the water tanks filled, while train crew and agent gossiped and travelers stepped down to stretch their legs. Now these abandoned ruins are meaningless flashes in the eyes of passengers spun from city to city. Sometimes I think our civilization is too like that streamliner, rushing us past places where we should stop — or at least pause and stretch our minds and see where we are and what is going on around us.

But in the history of the Ship Mountains, everything that man has done here, from those primitives who possibly hunted beside a Pleistocene lake or river, through the coming of the railroad, the years of mining, the maneuvering of Patton's troops—all that is less than what the flashing streamliner was to us. Attuned to such a time scale, it is no wonder that desert fastnesses distill an austere peacefulness which brings us relaxation if we seek it and are permitted to seek it. So far, at least, these mountains are open to us. So we will step off the streamliner again, when we can, to visit the Ships. And the rocks there will be as much an excuse for our going as a reason.

THE Desert MAGAZINE CLOSE-UPS

Kit Wing, who describes his adventure in this month's "Blue Water Voyage in the Little Colorado," came to Arizona before the war from New England. Currently superintendent of Fort Union National Monument, Wing has been employed as a Park Ranger at Grand Canyon National Park and Bandelier National Monument. Old Fort Union, near Las Vegas, New Mexico, is the Southwest's newest National Monument. His partner on the Lower Colorado expedition, Lester Womack, was born and raised in northern Arizona. He has been a Park Ranger at Grand Canyon, Sequoia-Kings Canyon National Park and is presently at Carlsbad Caverns National Park. Both Wing and Womack are zealous conservationists and find pleasure working and living in places that people come from all over the world to see.

* * *

"The Gods of Hostin Yaz'zih" in this month's *Desert* is one of several stories Audrey Mac Hunter has written about the Indians of Arizona, particularly the Navajos for whom she has a great admiration.

Mrs. Hunter and her husband are residents of Tucson to which they moved in 1949 from the midwest. Her current interests center on two books on Navajos for young readers which are being considered for publication, and a magazine-newspaper series on Arizona ghost towns. Mrs. Hunter is interested in Arizona folklore and she would like to hear from readers who have bits of historical legend or tales which could be added to the folklore collection at the University of Arizona. Her address is 2609 LaCienega Drive, Tucson, Arizona.

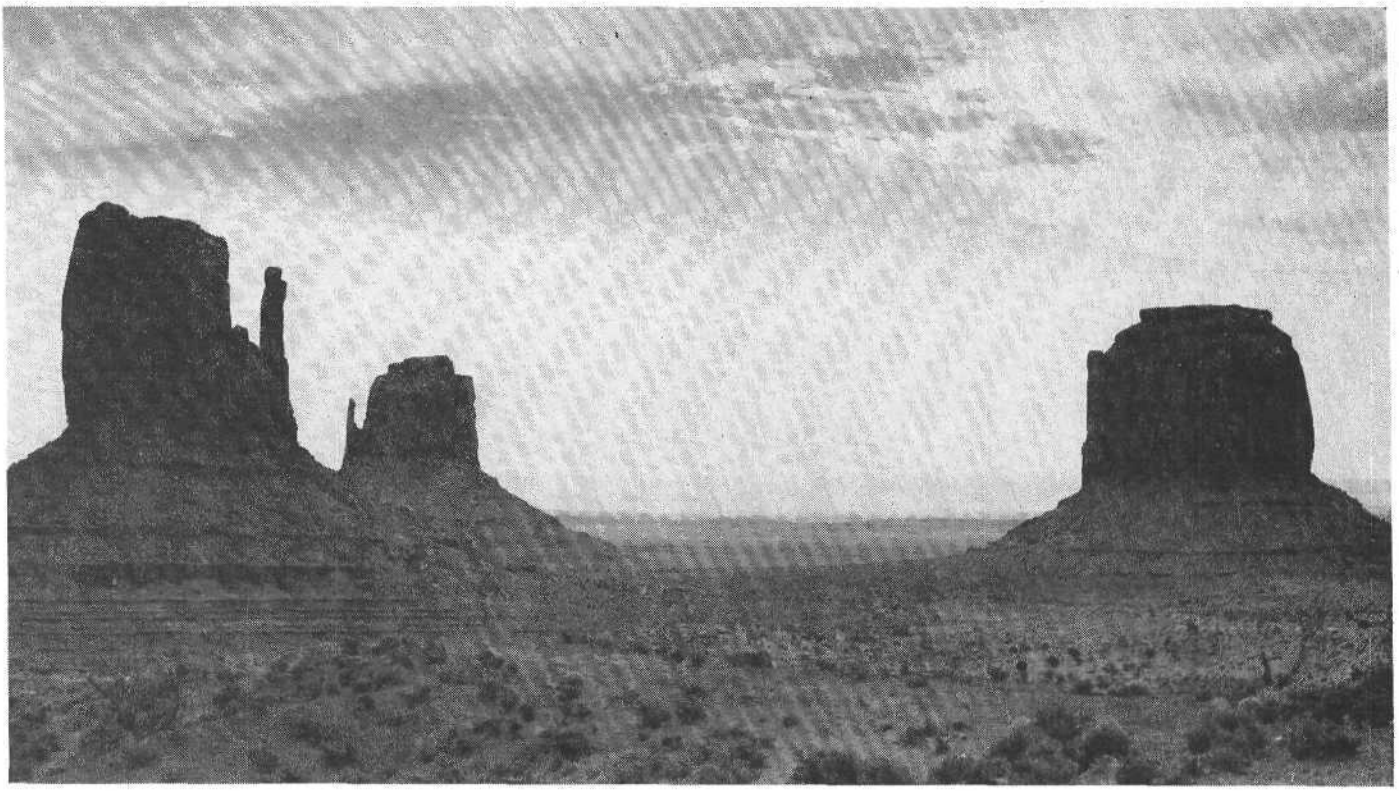
* * *

Edwin Corle, noted American novelist, biographer and writer on the Southwest, passed away in mid-June. He was a resident of Santa Barbara, California, at the time of his death.

Among his best known works are "People on the Earth," "Listen, Bright Angel," "Billy the Kid," "Mojave," "Fig Tree John," "Burro Alley," "The Story of the Grand Canyon," and "The Gila: River of the Southwest."

Corle's literary career was launched with the selection of his short story, "Amethyst," which had a Mojave Desert setting, by Edward J. O'Brien for his "Best Short Stories of 1934."

Corle was born in Wildwood, New Jersey, on May 7, 1906.



The Mittens and Merritt Butte, Monument Valley, Utah. Photo by Josef Muench.

LIFE ON THE DESERT

The Gods of Hostin Yaz'zih...

Like so many before him, the young man had gone to the desert in the hope of regaining his health. The warm, peaceful land did not fail him for after two years he was well again. And it did something more—it restored his faith.

By AUDREY MAC HUNTER

THE STRANGER entered the East-bound bus and sat down beside me. I made a quick appraisal: perhaps 27 or 28 years old, the silent introvert—yet an intangible something about him did not fit a pattern. Though his skin was a deep bronze, the thin shoulders made me wonder if he had always looked this healthy.

As the bus eased slowly out of Winslow, Arizona, I saw him look back, uneasily taking in the whole picture as though he feared he might not see it again. I sensed the tightness that goes with saying goodbye—he was trying too hard to be brave about whatever it was he was leaving. Finally, I spoke.

"This your home?"

He started, as if previously unaware that I was sitting next to him.

"Winslow? Oh, no. I'm from back East—upper New York—that is I was. I've been out here for two years."

"In Winslow?" I persisted. It seemed like an ordinary Western town to me except the main highway—Route 66—sliced through its business district like a knife through a birthday cake. What was so special about this town to the stranger?

He left my question unanswered as he took one last look at the town and the panorama surrounding it. Then he settled back with a sigh. I too had looked back, seeing only the sprawling settlement fading into the desert scene. Yet in the short time the bus had stopped there, a picture had formed in my mind. I saw the fascinating procession of human beings that make up these Western towns — cowboys and ranchers—dusty and friendly; Indians—real and the tourist kind; the blanketed woman with her baby in a cradle board; a crew of Mexican and Indian track workers—all these, plus the usual merchants, clerks and station attendants of any town.

"No," he answered at last, "I've never lived in Winslow. I was in Phoenix until May—I had to wait for the weather up north to warm up. You see, I was pretty sick when the doctor sent me out here. I guess most folks will take a chance where health is concerned. My brother brought me to Phoenix and got me settled. This desert works miracles and I started gaining right away. But, after months of lazing around, a person gets restless, especially when your strength begins to return."

"You certainly look well now," I said. "What a healthy tan!"

He smiled. "You've heard about being 'as brown as an Indian'? I was almost as brown as Hostin Yaz'zih."

I looked up and the young man caught my unspoken question. "He was an old Navajo in the Monument Valley country. I've been up there since May. Wonderful place! In Phoenix I saw many photographs of the

Valley and I wanted to visit it before I returned to the East. I'll never be sorry.

"I don't know which did the most for me, the Valley for my health or Hostin Yaz'zih for my peace of mind." He paused to watch more of the countryside roll by and then went on. "I was pretty soured on life when I came West. I guess you might have said I was an agnostic—I didn't believe in anything."

How callously frank, I thought. It surprised me that he would bare his inner soul to me, a total stranger.

"Why?" I asked at last.

"I guess my high school science teacher started it. He was one of those free-thinkers; he sounded smart and sophisticated. Then this sickness. I always liked sports—I wanted to be a coach. Suddenly with all my studies and practice I was tired all the time. When the doctor took me out of school I became bitter with the world." He turned to me. "You can understand, can't you, giving up everything?"

I could. "I think most of us have been faced with disappointment one time or another," I told him. "But, things usually work themselves out for the best."

He settled down in his seat and went on with his story.

"I bought a second-hand car and some camping equipment and started out. Some folks like Grand Canyon best, mostly, I think, because of the feeling of awe it gives them. I stopped there but it only made me feel more inadequate and confused, even for words to describe it. Did it strike you that way?" he asked.

I had to say that to me the canyon was anything but inadequate. I was surprised that even a self-styled agnostic had not been jarred into a communion with his Maker at its sight.

"Monument Valley is different," he went on. "There is something you can touch. It's all within reach if a person is willing to rough it. Some day modern roads may make the Valley more accessible, but, I hate to see that day come — billboards, hot dog stands, speeding cars. It wouldn't be the same, even with Hostin Yaz'zih and his people."

I waited for another rendezvous between the stranger and his thoughts.

"It was near sundown when I first saw the Valley. Without doubt that was the most brilliant sunset I have ever seen. It seemed like every spire and rock was on fire. I wondered how anything so alive with color could be mere stone. I was so lost in watching it gradually fade away that it was gone before I knew it. That night I slept like one of those rocks out there and next morning I was awakened by the strangest, most weird singing I have ever heard. Finally a horse and rider appeared from behind the rock by which I had camped. That song—it seemed to be a succession of "o-e, o-e," all shrill and penetrating to the ears. The horse saw me first and whinnied, but the rider did not set his eyes directly upon me.

"He was a very old Navajo, his long gray hair tied in a roll on his neck and he was wearing long turquoise earrings that touched his shoulders. What a picture! Nearer now, I saw that the old man was blind.

"Then I heard a galloping horse behind them. It was Hostin Yaz'zih's grandson and luckily they both spoke a broken English. I had read somewhere that water was scarce on the reservation and I apologized for camping next to their spring. But, they didn't mind."

The young man broke off his story and looked at his watch.

"About now Hostin Yaz'zih and Ben would be bringing the sheep up to the spring. That was how I got to know them so well. The boy would tend the flock and the old man would sit in my camp and drink coffee and talk. He told me about his family—most of them were dead and only his daughter and Ben were left. He had lost his wife and two children years before, and he spoke of the gods who were looking after their spirits. When Hostin Yaz'zih first told me about his gods I thought his religion was downright ridiculous and heathenish, but I said nothing.

"One day, after listening to a long and rather fantastic tale about Turquoise Woman and Child of the Water, I very callously asked him if he had ever seen any of these gods.

" 'I do not see you,' he told me, 'yet I know that you are there. I hear your voice. I feel your presence.'

"I reached out and grabbed his arm. 'But, you can touch me. I'm real.'

"He got to his feet and walked straight ahead. I thought surely he would walk right into a big rock, but only inches from it he stopped, and turned to me.

" 'I feel the presence of that which my eyes cannot see,' he said.

"He was a great old man. Originally, I had planned to stay in the Valley a week or two, but meeting Hostin Yaz'zih and his family and neighbors changed that. I borrowed a horse—he would not take money for its rental—and together we would ride over the country. He told me of the spirits of the Ancient Cliff Dwellers that still lived in the ruins we found. His people would not enter these places for fear of disturbing these spirits. I accompanied the old man and his family on their visits to the trading post. The trader was a white man, but I had no desire to be with my kind and I was always glad to return to the spring.

"One day Ben rode into camp and told me that his grandfather was ill and had sent for me. He told me the symptoms—he couldn't keep his food down and was very weak.

"I gave Ben a bottle of ginger ale and told him to make his grandfather drink it and I jumped in my car and drove into town. The doctor was just leaving on a serious case, but he took time to write out a prescription for diarrhea—a very serious malady with the Indians—and I hurried back to the Valley with the medicine.

"Miraculously, the old man was feeling much better when I arrived. He knew we were worried about him. 'It was not the will of the gods. They are not ready for me to leave this body. The gods know best,' he said to us in a reassuring voice.

"Hostin Yaz'zih was at peace with the world and I could not avoid marveling at the faith which allowed him to feel this way. In a few days he was able to visit my camp regularly and it was then I started to tell him about my confused outlook on life, how bitter I had been over my sickness.

" 'It is because of these evil thoughts that you do not have peace in your heart,' he told me. He spoke of the laws that his gods have handed down so that their lives would be filled with peace and beauty. It was part of the Blessing Way. One must not do or think evil for evil is a malignancy that will eventually destroy one's soul. If one lives by the rules of the gods and thinks only good thoughts, one will live in the Blessing Way. I think it makes sense, don't you?"

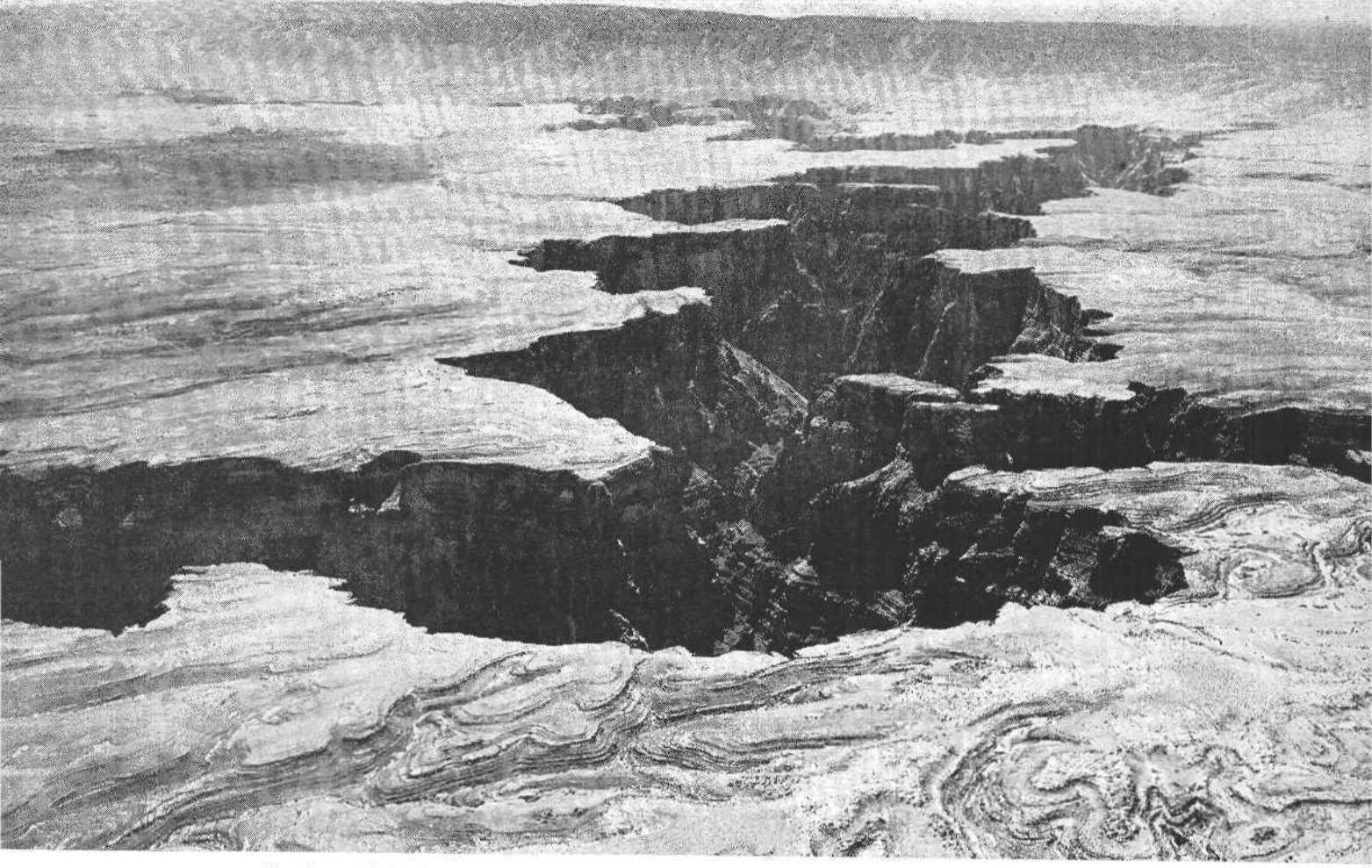
I nodded. "Yes," I said to the young man, "No one can feel at peace when he is angry or has a guilty conscience."

My companion was silent for a long time, and then took three small objects from his pocket—a white shell bead and two pieces of turquoise, one rough and uncut and the other a polished oval.

"Two days ago Hostin Yaz'zih came to say goodbye. These were his parting gifts. To us they are just shell and blue stone, but to him, they were something holy. They were symbols of the good life that he wanted for me."

The young man looked longingly out the window at the rolling dunes of the Painted Desert.

"That country out there—it's got me! I'll never forget this summer, the land or Hostin Yaz'zih. If God is willing, I'll be coming back, very soon, I hope," he added softly.



Air view of the lower Little Colorado Canyon about 25 miles from its junction with the Colorado River. The Canyon floor is 2000 feet below the plateau at this point.

Blue Water Voyage in the Little Colorado

By KITTRIDGE WING
Map by Norton Allen

While explorers and surveyors have been conquering the rapids of western rivers for more than three-quarters of a century, it remained for two venturesome young men in April, 1955, to navigate for the first time the turquoise water which flows from Blue Springs in the chasm of the Little Colorado below Cameron, Arizona. Here is the story of a difficult and hazardous expedition.

EXHAUSTED, WE dropped upon the sandbar in the bottom of the Little Colorado River Canyon and gazed up at the 2600 feet of beetling cliffs down which we had just lowered ourselves.

Nearby was one of the packs we had carried down—a folded rubber boat. With it we hoped to effect the first navigation of the Little Colorado River.

Boat trips down many of America's white-water rivers have become commonplace. Anyone can buy a ticket on a ride down the Ausable or the Snake, and some of the thrill has gone from the rapids of the Green and the Salmon, so routine has their navigation become. But, happily there still remains a few frontiers for the river-runners, streams which because of their violence or inaccessibility have not felt the bite of paddle or oar. Such a course is the Little Colorado of Arizona which has run defiantly on through the centuries, unprofaned and seldom visited by man—for good and sufficient reasons.

The word "river" is a misnomer for this extraordinary drainage system. Through most of the year there is not enough water in the Little Colorado to fill a canteen let alone float a boat. But when cloudbursts strike the Painted Desert a surging, tearing, red-brown flood boils down the canyon, and the channel is transformed from a ribbon of sand into a torrent of destruction. In April and May of some years there is a more gentle, continuous flow from the melting snows of the White Mountains.

The Little Colorado is one of the most forbidding canyons in the West. For the last 53 miles of its length the river is a great jagged gash in the Arizona plateau, reaching an ultimate depth of 3457 feet below its rim as it enters Grand Canyon. At many points along this winding gorge, one can throw a rock into the stream-bed a half-mile below, so sheer are the walls! Because of its cutting prowess, the river has achieved complete privacy in its last miles. Even the Navajo families who herd sheep in this vicinity stay well back from the canyon edge, in superstitious fear of the dark chasm. Far in the depths, the river flows in mystery, inhabited by the beaver and the otter and occasionally by a wild duck or egret.

In the early part of the 19th Century, Captain Sitgreaves of the Topo-

graphical Engineer Corps, received orders from Washington to "pursue the Little Colorado to its junction with the Colorado . . . and pursue the Colorado to its junction with the Gulf of California." With nothing more to go on, Captain Sitgreaves set out from the Zuni pueblo in New Mexico. When he reached the Little Colorado he followed it down stream for some miles, possibly to the vicinity of what is now Cameron, Arizona, and then abandoned the project as being too hazardous. This opinion has prevailed to this day.

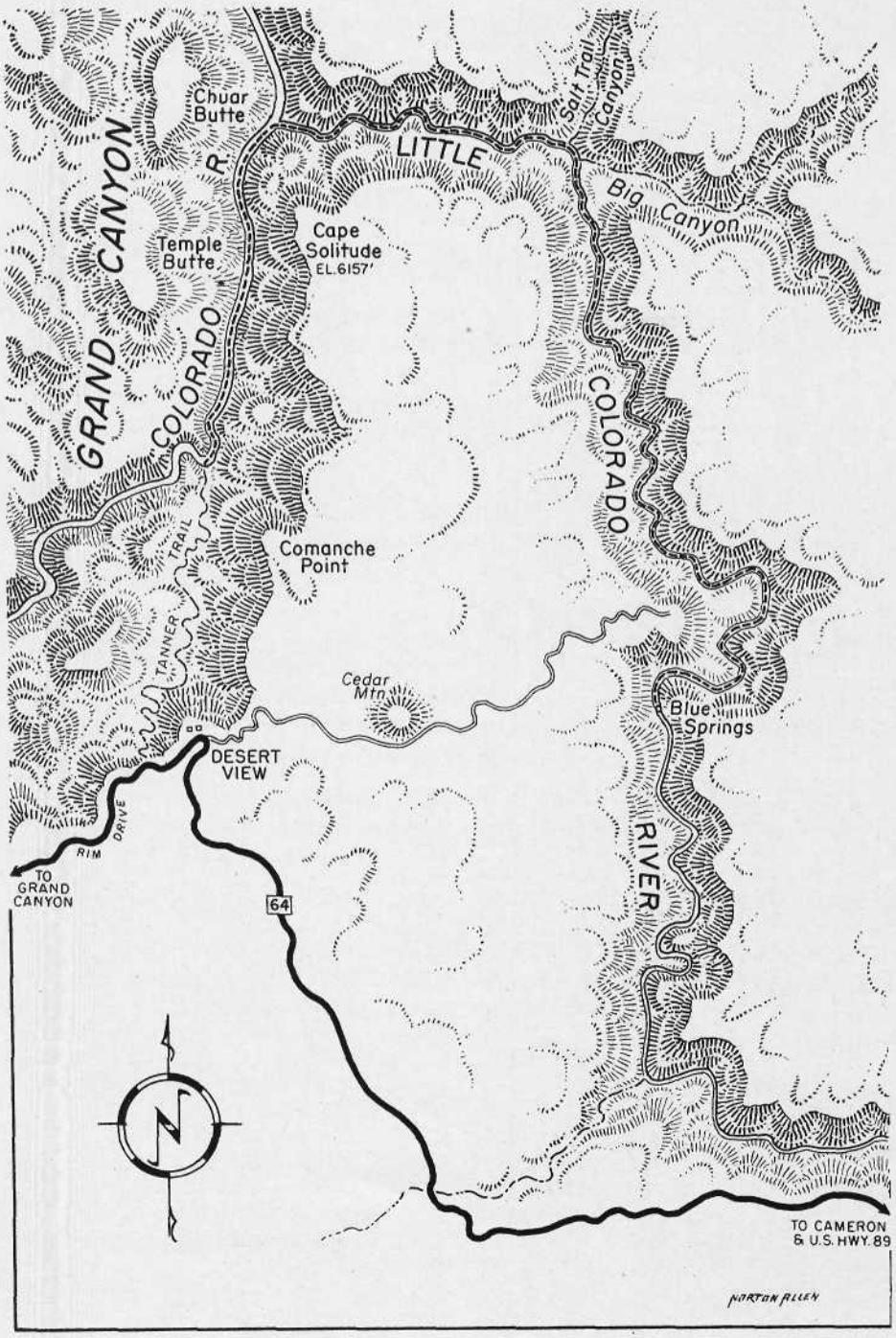
Here then was a stream to challenge the river-man, a sinuous question-mark of a river laid across the map of Northern Arizona. It was to accept this challenge that we were on that sandbar one April afternoon last year.

The obvious beginning for a boat-ride down the lower Little Colorado is at Cameron, where the only highway bridge in a hundred miles crosses the canyon. Here the cliffs are low and the stream-bed accessible — but we found almost no water in the river at this point. So we were forced to travel west from Cameron along the rim to where we knew navigable water existed.

At Blue Springs subterranean streams contribute over 200 cubic feet a second to the main channel. Water would be no problem here, but descending the 2600-foot canyon wall was another matter.

My fellow explorer, Les Womack, knew the location of an old Indian route that snaked down the cliffs to the canyon floor at the Springs. As far as we knew this was the only route down the south rim of the canyon. The year before, Les had worked his way down to the bottom with the use of ropes and believed he could find his way down again. With that much to go on, we laid our plans.

The boat? Obviously it must fold into a back-pack, and must weigh as little as possible. We settled on a Navy four-man inflatable raft. Food? Again weight was critical; we took as little as we dared, but enough to support us for a week. Bedding? We decided to suffer the cold rather than burden ourselves with heavy bedrolls. Incidentals? Cameras and film, a snake-bite kit and a coil of climbing rope. And, most important of all, water to drink. Blue Springs emits sulphurous water, of a lovely turquoise color but unfit to drink! So ours became possibly the first river expedition in history to carry all its drinking water to the river—five gallons—40 pounds of it and as it turned out we needed every drop.



AIR TRAGEDY

This map, drawn by Norton Allen, shows the locale of the tragic air accident on June 30 when a United Air Lines DC-7 and a TWA Super Constellation collided in mid-air, bringing death to 128 passengers and crew members. The DC-7 wreckage was found near the southern end of Chuar Butte, and the TWA plane struck a mile south at the base of Temple Butte. In his story of the trip down the Little Colorado Kittridge Wing reveals the precipitous character of this terrain.

At last we completed the accumulation of gear and food, and we drove to the canyon edge above Blue Springs, 20 miles from the pavement over a rough wagon road. At sunset we looked down the darkening chasm and took our first photographs, wondering privately if the negatives would ever survive to reach the developing tanks. It is a wide, mysterious world out there on the Little Colorado rim, and a full moon and night breeze only emphasized the loneliness. We heard not even a coyote all night long.

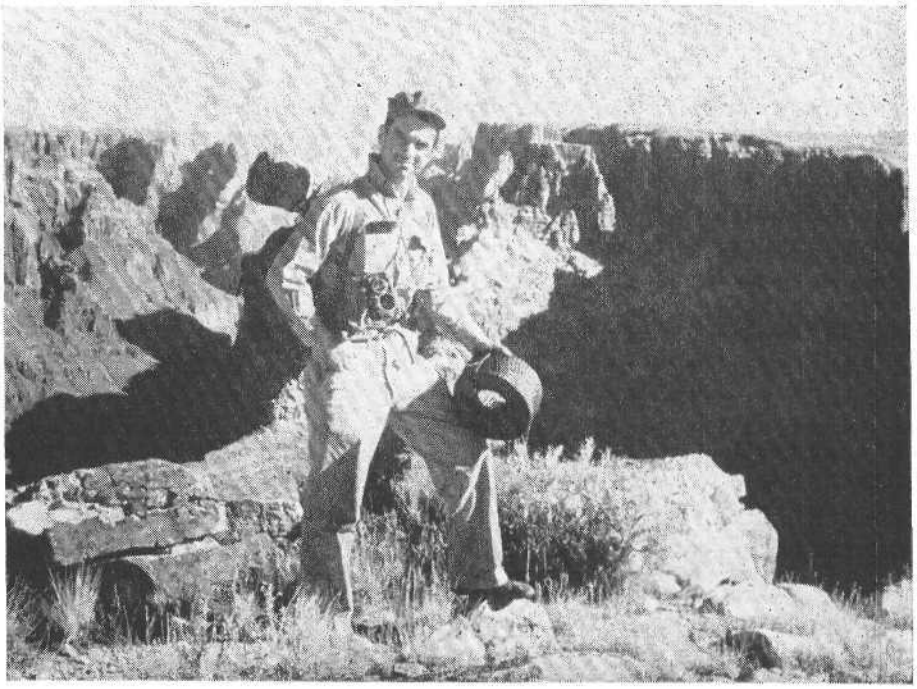
Morning broke clear and we busied ourselves with the packs. Always at

the start of one of these trips comes a procedure of selecting and rejecting supplies. Les and I debated and packed, reconsidered and unpacked, for an hour. The load on which we finally agreed weighed about 200 pounds, obviously too much to carry in one trip. This we had expected for our boat and water supply alone weighed 100 pounds.

With half the load in our bulging rucksacks and the other half in the car, we headed down over the rim at 8:10 with only a pair of soaring ravens watching us.

This day and the next were days of hard work, hardly pleasant to look back upon, but satisfying. The route down the canyon wall to Blue Springs is the cruelest track a rubber boat ever descended. The first thousand feet called for cliff-scrambling and rope work; the next thousand was through a tangle of monoliths and boulders in a steep ravine. We took almost all the first day to get to the bottom because we lost the route many times on the upper cliffs and had to do much reconnoitering and backtracking. If the Indians ever had a trail here its markings have long since eroded away.

We had a mishap on the first day which nearly ended our expedition before it began. Only 10 minutes after starting, our 120-foot coil of five-eighths inch Manila climbing rope escaped from hand while being passed down over a ledge, and took a running jump out into space, rolling and bounding out of sight under the overhang far below! Les looked at me and said, "We've had it." I mournfully agreed.

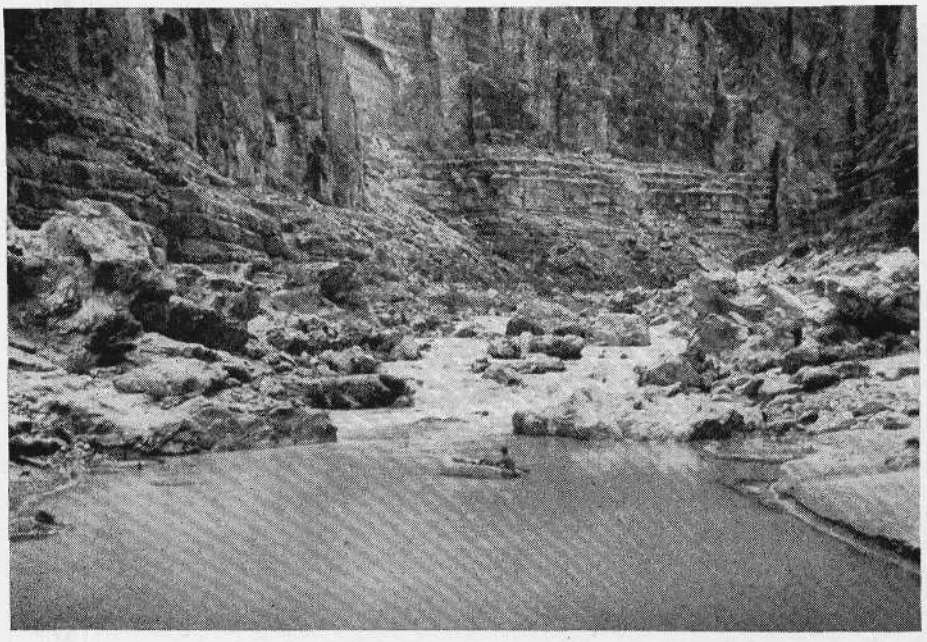


Kit Wing on the rim of the Little Colorado Canyon.

Lester Womack shared the adventure with the author.

We inched our way down to look and hung our chins over a little 50-foot cliff, a sandstone stratum which apparently ran sheer and overhanging out of sight both to right and left. Below it was a short talus slope where our coil of rope must have come to rest. Up the cliff behind us a narrow chimney cut through a shoulder of rock that obstructed our view to that side. Les boosted me up into the chimney and from there I climbed down over the shoulder and down the ledge on a precipitous but well-formed natural ladder. I put my feet and hands to the steps of rock as had the Indian discoverers of this route centuries before me, and was soon down to the slope below. Nearby was the pesky coil of rope. Here we learned an important lesson: never carry a tightly bound coil of rope. Keep it in large loose coils that will catch and hold if dropped. This coil came to rest 400 feet below its jumping-off place—and only because the binder twine had broken and the rope uncoiled. We had the line hung over a rappelling pin by 9:30, and let down all of our load to the foot of the drop by 11:00. The rest of the descent was without hazard.

Next day, after a night's sleep in the canyon bottom, we made a round trip to the rim and back, bringing down the boat, paddles and final supplies. The awkward package the folded boat made gave us many uncomfortable moments on the cliffside. Much of the

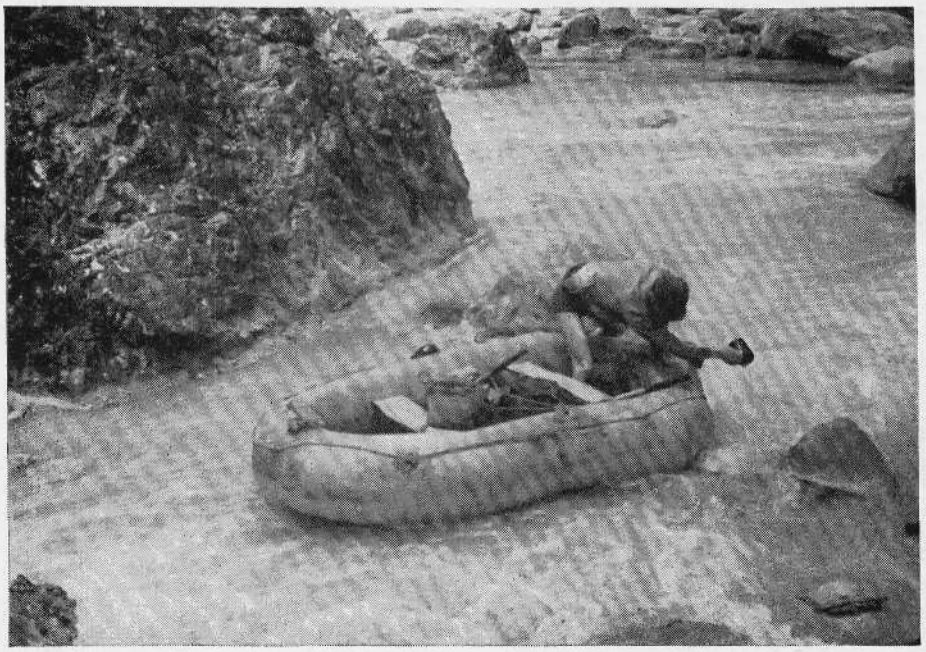


Travertine dam and falls near the bottom of the Great Redwall formation.

time we could not wear the boat on our backs, but had to pass it from hand to hand down the rocks. The combination of anxiety and heavy loads had us into near exhaustion by the time we returned to the river-edge, but after a rest on the beach and a wash in the cool water, we had energy enough to inflate the boat and go for a trial spin on the calm pool of Blue Springs.

Once on the murky water, we felt a mighty elation, but our delight was tempered by the rock-strewn, wave-tumbled river below the pool. What would we find around the bend? We had little real information about the river. In many places it cannot be seen from the rims and its channel has never been surveyed or mapped in this area. Would we find waterfalls which the boat could not run and which we could not portage around? The Indian hearsay and legend which we had heard indicated that this would be the case—we could only hope that these tales were superstition. The famous explorer Major Powell faced the same Indian warnings when he embarked on the unknown Colorado in 1869, yet he got through. Surely this little tributary of the Colorado could not stop us now—or could it? Too tired to speculate or worry for long, we cooked supper over a driftwood fire and turned in.

Bailing out after running a rapid on the lower section of the river.



Our two evenings in camp at Blue Springs were delightful. We camped on a flat of cool sand, ringed on the high sides by a polished blue limestone cliff and decorated on the river side by a stand of pale green tamarisk. The gush of spring water and the squeak of bats filled our ears all night long. On the second night, with a moon directly above and the canyon walls towering dizzily in the pale half-light, I was awakened by the rustle of a paper bag. Raising my head to look, I stared full into the dark eyes of a big ringtail cat who was investigating our provisions. After a long exchange of gazes, he backed away a few steps, turned, and was gone like the perfect creature of the night that he is.

On the long-anticipated morning of Tuesday, April 24, we began the actual boat ride. Behind us was the hard work, ahead the pleasure of the river and the stimulation of the unknown. We packed and lashed our gear in the boat with great care, using plastic waterproof bags for cameras, film and food which must not get wet. We paddled around the pool for an hour, trimming ship and getting accustomed to the handling of our rubber doughnut and finally, at 10:30, we turned the prow north and west into the first rapid.

Almost immediately we were delighted with the performance of the craft. It became a living part of the current, adjusting its very shape to the contours of the rapids and squeezing through narrow rock passages with ease. In the beginning we were very nervous about bumping or scraping the hull, but we soon learned that the rubber is tougher than elephant hide and will stand the most outrageous punishment.

At the last and largest of the Blue Springs outlets, a half mile below the upper pool, we stopped for a swim. The water here issues from a cavern five or six feet below river level, making a clear, inviting pool of ever-circulating 69-degree F. water. We took more pictures, the sun illuminating the contrast of clean blue spring water entering the main current of red silt. At noon we reluctantly embarked, knowing we had to make many miles before dark.

We traversed the Redwall gorge on this first day. Here the cliffs of limestone grew ever higher above our heads as we descended. In places there were undercuts three and four hundred feet high, shutting from view all of the upper walls of the canyon rising to the rim three thousand feet above. Even

at midday there is a cool quiet shadow under some of these overhangs which swallows circle for food, their sharp calls echoing from the cliff. We stopped at one such place for lunch.

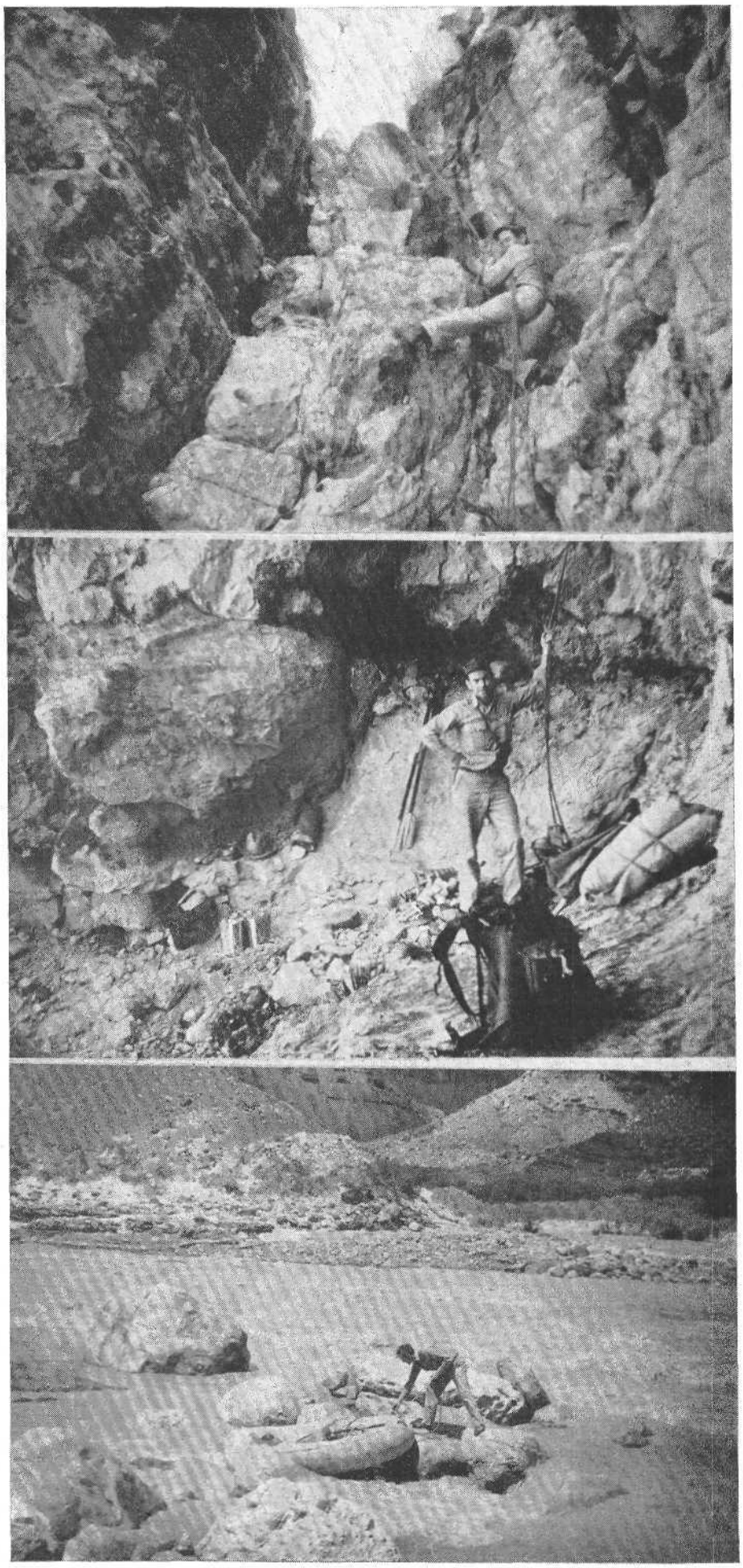
That afternoon our boat-work, which had been entirely comfortable all morning, began to offer a problem. We came by degrees into a stretch of river where the current was intersected by little barrier dams of lime and moss over which only two or three inches of water ran in a long riffle. Such impediments forced us to unload the boat and either drag or lift it across the riffle—only to find another such obstacle a quarter of a mile downstream. By the time we quit for the day we had crossed a dozen such dams, each one larger than the last. We estimated the waterfalls over several of these to be seven or eight feet in vertical height —not exactly navigable water!

We camped that night under a prodigious overhang of the Redwall, built a huge fire to dry our gear, and went to sleep wondering how many dams and waterfalls would challenge us the next day.

Happily, the second day on the river went much better in point of mileage made. We were off to an early start and by 10 a.m. were through the worst of the dams and into a somewhat broader, more easily run river. At noon we came to the midpoint of our passage, the junction with Salt Trail Canyon coming in from the north. Here we examined the banks for some evidence of the old Indian trail to the historic salt mine upcanyon. But we found no sign of human passage, indicating that the occasional floods 50 and 60 feet above normal river level had wiped out the ancient trails.

Along the shores were many trails of other inhabitants, however. The tracks of deer, coyote, beaver, otter and ringtail were everywhere. We looked for the prints of mountain sheep, but found none. Kingfishers were common, pointing to the presence of fish invisible in the clouded water. Occasionally a silvery minnow jumped clear of the surface and we also found a catfish head on a rock in midstream, probably abandoned there by an otter. A solitary and very nervous merganser rose several times ahead of us as we drifted down to him.

By midafternoon we sighted Cape Solitude, the mighty promontory under which the two Colorados flow together. To our distress, the sun was screened behind a brassy overcast, discouraging the taking of pictures in this place



Kit Wing rappelling down the cliff to Blue Springs, and below, lining the boat through one of the rapids.

never before photographed. Hurrying now, we plunged through the last two miles of continuous rapids and arrived at the great portal where the rivers join at 5 p.m.

We accomplished what we had set out to do—the first navigation of the lower Little Colorado. We passed from the mysterious cleft of the Little Colorado into the historic confines of the Grand Canyon, whose rapids are being traversed each year by increasing numbers of boat parties. Our pathfinding cruise down the tributary was behind us—now we were into the world's most dangerous river, in one of the smallest boats ever to venture on the stream in these parts. If we were in any mood of self-congratulation over the feat just accomplished, it was dissipated by the ominous rolling power of the Colorado. We had to travel 10 miles down this torrent to a trail back up the canyon walls to the rim and civilization.

We portaged the first rapid. It was a noisy and awe-inspiring monster compared to the riffles of the tributary we had just left. Then down the great channel and eddy below the rapid we paddled with much care and some trepidation—the grease-colored boils and whirlpools of the current commanded as much respect as a white-water rapid to our unaccustomed eyes. Our little boat seemed small indeed and our paddles puny against the force of the flood. It was growing dark and cold and the clouds gathering in the trees on the North Rim were threatening rain. After portaging one more rapid, we made camp in a sheltering ledge. There we ate a sumptuous supper — a canned ham which we had been saving for a celebration banquet.

It rained most of the night, in the trifling, grudging way of inner-canyon rains, but we slept dry under the ledge. In the morning the storm broke away and we could see sparkling new snow under the firs on Cape Royal, a vertical mile above camp. As we started downstream on our final leg, we remarked how much smaller and less terrifying the river had become since the evening before—so much will good food, sleep and a bright morning do for a man's courage!

Although we portaged one more rapid and lined the boat through two others, we decided that we could have run all of the fast water of this stretch if we had wanted to be entirely sporting. But we were carrying a wealth of irreplaceable film and discretion, not valor, was our watchword. Nonetheless, we did have many a lively ride down long slopes of swift water, with the savage crests of the rapid's tongue roaring loud a few feet to one side or the other. We found that the shallow draft and maneuverability of the little boat were real advantages in sneaking past the edges of the worst rapids. Frequently we made use of tiny rivulets between the rocks of a side channel, leaving the heavy current to snarl in frustration out in midstream. In a matter of five hours' running we made eight miles down river—and wished we could have gone another 80, so pleasant were the sky and clouds and breeze and river.

We rounded a last bend and recognized the beach at the foot of Tanner Trail, where we were to leave the river and climb to Desert View in Grand Canyon National Park. It was 3:30 when we hauled the boat from the water for the last time and squeezed out the cargo of air.

Next day we struggled up the 15 miles of Tanner Trail with our burdens of boat and supplies, staggered over the rim at sunset and found a flat tire on the car which had been left for us at trailhead!

Thus in the humiliation of changing a tire our expedition came to an end. But we had conquered the Little Colorado. We had solved the mystery of its deepest canyon and had brought back a photographic record of its previously unphotographed walls and waterfalls. Our report of the trip to the National Park Service has shed light on a formerly unexplored corner of the Canyon Country.

The Bureau of Reclamation proposes someday to develop the water resources of the Little Colorado canyon, so that eventually there may be a gigantic dam across our lonely chasm, and a lake may invade our pleasant campsite at Blue Springs. We sincerely hope this never comes to pass for the canyon of the Little Colorado is second to none in spectacular beauty, and we feel it should be incorporated into the protective custody of the National Park Service along with its big brother, the Grand Canyon. Here is a section of our vanishing frontier that should be preserved in its entirety—a wild, rugged, wilderness area to remain free from commercialization for all time.

Hard Rock Shorty of Death Valley

"Nope! Ain't seed a rattlesnake in Death Valley fer years," Hard Rock Shorty was telling the dude who had stopped at the Inferno store for information. "Usta be lots o' rattlers here—but not any more."

Shorty reached in his pocket for his old corncob and sack of Bull Durham. The dude waited for the rest of the story, but Shorty seemed to be in no hurry, and finally the visitor could restrain his curiosity no longer.

"What became of all the snakes?" he asked.

"My ol' pardner Pisgah Bill knows the answer to that better'n anybody else. Pisgah read in one o' them papers the freighters brought in that some outfit back east wuz payin' forty dollars a ounce fer rattlesnake pizen. Used it fer makin' some kind o' medicine.

" 'Huh!' says Bill. 'That's better'n minin' silver. I know how t' git the pizen outta them snakes. Jest hold 'em by the neck and squeeze 'em 'til they open their jaws, an' the pizen comes right outta the fangs. I'm gonna write to this outfit.'

"So Bill went in the rattlesnake pizen business. He'd go out every evenin' 'bout sundown and bring in a sack o' rattlers an' milk the pizen outta 'em and turn 'em loose.

"Wuz doin' all right 'til ol' Henry Ford invented them tin lizzies. Then the prospectors started comin' to Death Valley in Model-Ts lookin' fer gold. The professors came out lookin' fer bugs, an' the real estate men came lookin' fer townsites—always in them gas buggies. They didn't pay no 'tention to the freight road — just chugged off across the desert in all directions 'til the valley looked like a sand dune after the beetles' 'd held a convention."

Shorty paused to re-light his pipe while the dude waited for the rest of the story.

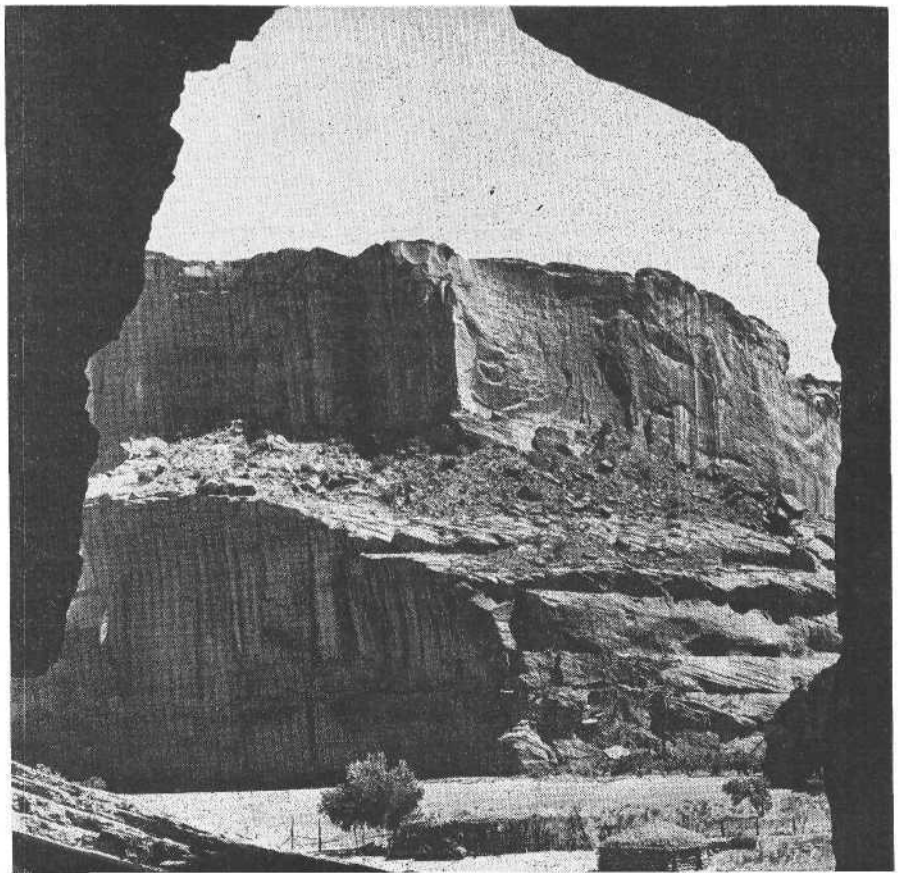
"Yep! That was the end of the rattlesnakes. They all broke their backs trying to follow them car tracks. Ain't been no snakes since."

Pictures of the Month

Desert Story Hour . .

"Once upon a time there was a giant. He was big as big, and his body was green all over. Strangest of all, this giant had not two but five arms. His name was Saguaro . . ."

This photograph by Douglas Rigby of Sedona, Arizona, was awarded first place in Desert's August Picture-of-the-Month contest. Taken north of Tucson with a Rolleiflex camera, Ansco Supreme film, medium yellow filter, f22 at 1/35 second.



Canyon De Chelly . . .

This picture, taken from the ruins of a cliff dwelling in the walls of Canyon de Chelly, Arizona, shows a typical Navajo hogan (lower right) and ranch. Awarded second place in Desert's August contest. Photo taken by Wilma Van Doren of Gallup, New Mexico, with a Rolliecord IV at f22, 100th second, yellow filter.

HISTORIC DESERT WATERHOLES IV

Jemez Springs...

One of the oldest recorded springs in the Southwest, the hot waters that gush from the ground near Jemez Pueblo in New Mexico, are credited with having unusual healing powers.

By WALTER FORD

Jemez Springs has been a mecca for health seekers since the beginning of the Spanish occupation. This group gathered around the spring was photographed in 1889.

MANY OF THE springs and wells of the Desert Southwest were established waterholes long before the Spanish Conquistadores arrived in the New World. One of these is Jemez Springs, located along the Jemez River 60 miles north of Albuquerque, New Mexico.

When Juan Onate visited Jemez in March, 1599, he sent a letter to the Viceroy in Mexico praising the health-giving waters he had found there. History credits the expedition under Francisco Coronado as the first organized Spanish group to enter the area, in 1540, but it appears that Onate was the first to make official note of Jemez Springs.

Jemez Pueblo is situated a few miles south of the springs. Since the beginning of the Spanish occupation the history of the little Indian settlement is one of war, pestilence and strife. Its inhabitants participated in the Pueblo Uprising of 1680, when the pueblo people united to drive the Spanish invaders from their land. When punitive forces arrived from Mexico the Jemez Indians deserted their pueblo and temporarily took haven in the higher mesas. Then the Utes waged war against them and after that came years of drouth and pestilence. In the summer of 1694 they again revolted and General Vargas was sent against them. That encounter resulted in a serious defeat for the Jemez defenders. In their final attempt to throw off the Spanish yoke they killed their missionary and several other Spaniards, and again fled to their high mesa home. Time after time they successfully repulsed Spanish invasions of their high ground and finally, in 1703, they were lured back to their pueblo where they have remained to this day.

From the beginning of the Spanish occupation knowledge of the warm health-giving water at Jemez Springs spread and it became a popular mecca for the Mexican inhabitants of the new province. In more modern times its fame has radiated to other lands and visitors have come from far distant places to enjoy its healthful bounty. The original springs still bubble out of the ground at temperatures near the boiling point, just as they probably did when Coronado first passed that way. A comparison of the present day appearance of the springs with a photograph taken in 1889 shows little change with the exception of background vegetation. Modern day improvements near the springs include a bath house where tub baths are provided with water piped from the spring.

I visited Jemez Springs with Baylor Brooks, professor of geology at San Diego State College and two of his students. At the bath house the caretaker looked over our prospecting equipment and noticing a scintillometer asked if we would mind testing the water for radioactivity. As with nearly every other desert waterhole I have tested, the Jemez water did show small indications of being radioactive, which, said the caretaker, accounted for seemingly miraculous cures affected by the springs. He cited his own case of coming to Jemez a few months previously, badly crippled with arthritis, then after a period of tub bath treatments being completely cured. While I would not question the healing power of the warm mineral waters at Jemez Springs, the curative value of any radioactive material they might contain is rather doubtful. The United States Food and Drug Administration considers low grade uranium ore activity (far more potent than the weak emanations given off by mineral charged waters) as having no medical value whatever. Still the public has become so uranium-conscious that anything containing the magic metal is often accepted as a cure-all for any and all ailments.

The bath house, along with other property in the village at Jemez Springs has in recent years been acquired by the Order of the Servants of the Paraclete, a religious organization which maintains a retreat for men at the north end of the village.

We welcomed the hot bath at Jemez Springs, but had not counted on emerging from the water in a near-parboiled condition, then having to go out into the near-freezing temperature of a September night to our sleeping bags. We dashed across the several hundred feet in a matter of seconds and despite our forebodings of possibly contracting severe colds or pneumonia, we awoke the next morning thoroughly refreshed.

Jemez Springs has much to offer in the way of historical interest. North of the town are the ruins of the old Franciscan mission. Some idea of its original massive beauty is indicated by the eight-foot thick sandstone slab walls and the ruins of the circular or caracole stairway, which Charles P. Lummis believed was the first of its kind in America.

The most direct route to Jemez Springs is by way of Albuquerque and Bernalillo, but when time permits the road which winds through the Nacimiento Mountains is recommended. To one accustomed to thinking of northern New Mexico as a land of buttes and mesas, this route will be one of scenic revelation. And if the trip happens to follow a season of abundant rain, the visitor will be treated to a wildflower display unequaled anywhere in the Southwest.

ON DESERT TRAILS WITH A NATURALIST - XXVIII

Ground Owl

Desert Owls I Have Known

Long-eared Owl

Owls may or may not merit their reputation as the wisest of creatures, but there can be no doubt about their beneficial value to man in helping to keep the balance of Nature by preying upon rodents and insects. Here are Dr. Jaeger's recollections of his experiences with these interesting desert dwellers.

By EDMUND C. JAEGER, D.Sc.
Curator of Plants
Riverside Municipal Museum
Sketches by Lloyd Mason Smith

DURING THE 1915-1916 school season when I taught the 12-pupil school at Palm Springs, California, my small charges enthusiastically told of the strange things they saw in their wide perambulations about the village and the adjacent desert.

One such account was of a "funny bird with rabbit ears" which they had discovered sitting quietly among the branches of a pepper tree. What was it? Was it dangerous and ought it not to be shot? These were the questions uppermost in youthful minds conditioned by the attitude of their elders toward all strange creatures of the wild.

They took me to see their odd bird —a rusty-faced gray Long-eared Owl, and a fine specimen he was, too, with prominent dark brown ear-tufts set closely together. He was sitting bolt upright and from below looked more like a piece of weathered bark than a bird. Subsequent observation showed that he had chosen this place as a more or less permanent roost. Every morning the remains of bones and fur of numerous wild mice and other rodents were found beneath on the ground.

Day after day at recess time the youngsters went to look with deepest fascination at their "rabbit owl," and I had an excellent subject with which to acquaint them with the behavior of owls as well as to teach them how to observe intelligently and patiently.

The Long-eared Owl, during autumn and winter days, roosts in palms and other desert trees, especially ironwood and cottonwood. This "rabbit owl" is one of our most beneficial species since it is a diligent hunter of small rodents.

Major Bendire, one of our earlier students of American mammals, once surprised a female Long-eared Owl in the act of killing a rodent as large as a ground squirrel. "All at once," he wrote, "she seemed to expand several times her normal size, every feather raised and standing at a right angle from the body; the wings were fully spread, thrown up and obliquely backward, their outer edges touching each other over and behind the head which likewise looked abnormally large." This odd performance was accompanied by loud hissing sounds.

The owl more familiar to desert campers because of its loud, deep-toned voluminous call, "who-who-hu-hoo-whoo-whoo," heard especially near steep cliffs and canyons, is the larger Pacific Horned Owl. All through the night, but particularly on moonlit nights during the breeding season, the desert's impressive silence is broken by the unmistakably strange but attractive call notes as one bird answers another at frequent intervals.

This Bubo, as it is known to ornithologists, is a big, fearless owl with a length of from 18 to 25 inches and a fairly wide wingspread of about four feet. Like the Long-eared Owl it also has prominent ear tufts but they are considerably shorter and give its bearer a horned appearance. Occasionally the Horned Owl can be seen noiselessly flying overhead at dusk, setting out in search of nocturnal prey. It has unusually good eyesight, even in the bright daylight hours when most night-roamers are at a disadvantage.

The Horned Owl often appropriates the nests of the larger hawks and ravens built in shallow high-placed caves, on shelves of cliffs or in the embracing upper arms of saguaro cacti. Unlike their longer-eared cousins, these owls go in for big game food such as the larger of the small desert mammals: rabbits, rock squirrels, skunks, woodrats and sometimes small land birds.

Most surprising is the sight of the tiny sparrow-sized round-headed Elf Owl as it sits at the opening of some old woodpecker hole in a saguaro, demurely quiet and doubtlessly preparing to go out for the night's hunt for grasshoppers, beetles and the smaller rodents. Of all desert species the little Elf Owl is the most fascinating because of its diminutive size. Frank Stephens, veteran bird collector of San Diego, California, tells of the very clever protective behavior of an Elf Owl he had discovered in the dense foliage of a willow thicket. "It was sitting," he wrote, "on a branch with its face toward me and its wing held up shield-fashion before its face. I could just see its eyes over the wing and had it kept them shut I might have overlooked

it, as they first attracted my attention. It had drawn itself into the smallest possible compass so that the head formed the widest part of its outline. I moved around a little . . . but whichever way I went, the wing was always interposed, and when I retreated far enough . . . I could not tell the bird from the surrounding bunch of leaves."

This neat-appearing desert bird, smallest of all owls in the United States, is found from southern Texas to southeastern California and southward through Baja California and the lower cactus-studded tablelands of mainland Mexico across the gulf.

One evening while camping near the Chuckawalla Mountains in California, I pitched an umbrella tent because of the threat of rain. I was kept awake most of that night by the peculiar and wholly unexplainable actions of a small gray Saguaro Screech Owl. The sloping top of my tent seemed to hold a fascination for this bird. Time after time, all through the dark hours, it kept up its high-pitched quavering mellow notes and repeatedly persisted in alighting on the highest point of the tent roof and then sliding down the steep inclined surface. "Perhaps owls sometimes go 'haywire'," I said to myself, "just like many humans, and this one was devilishly enjoying the chance to go toboganning down the sloping canvas tent-roof!"

It was under most peculiar circumstances that I became aware of the near presence to my campsite of a family of those long-legged, dark sandy-colored Burrowing Owls, or as we sometimes call them, Billy or Johnny Owls, one day near sundown when my companions and I set up out-of-door housekeeping in the sandy bottom of a high-banked sand wash. All of a sudden I felt the jolting motion of an earthquake. Out of some holes in the wash bank but 10 feet in front of us popped two adult and three young Ground Owls, no doubt disturbed in their subterranean home by the same sharp tremors that we had felt. For a few seconds they blinked at us in utter surprise and wonderment and then, as if suddenly realizing their danger, precipitously flew away a hundred feet or more and began to make strange chattering noises and to engage in those ludicrous head twistings and bobbings which are so characteristic of these brown owls of the earth.

Next to the little Elf Owl, these ground-inhabiting birds are my favorites of all the desert owls. I see them abroad quite often in bright sunny hours and occasionally watch them near twilight on the hunt for grasshoppers, other insects and small lizards. At times they will even catch mice. One owl which Dr. Alexander Wetmore kept in captivity was fond of gopher snakes. It generally swallowed them head first after seizing them and pinching their bodies from one end to the other with its beak. If the snake was too long to be swallowed entirely, the owl just stood stolidly about with the snake's tail protruding limply downward from the bill, patiently awaiting the time when "digestion made room for all inside."

Two of my field companions, Stanley Phair and Fred Wachtman of the Moody Institute of Science, tell of a most unusual experience involving a butcher bird or shrike and one of these Burrowing Owls. It was an early October morning and while they traveled a lonely desert road they saw a white-rumped shrike flying and jumping about in most unpredictable, eratic and excited manner among the branches of a low-spreading bush. All the time it was making strange cries, giving vent to complaining notes and shrieks. What could all the commotion indicate, was the question uppermost in their minds? As they drew nearer they saw what the center of the bird's attention and cause of gross excitement was. Just beneath the bush was a large insloping burrow and standing at its entrance was a small prim-appearing Ground Owl, taking all the scoldings and beratings with greatest composure and seeming total serenity and indifference. "Rave on," I could imagine the owl saying. "If it makes you feel better, keep it up. But I do think your manners are very unbecoming, really very rude. Your behavior is but another exhibition of an ancient ingrained enmity so common to many of the smaller birds towards us owls." The shrike continued its "bush beating" scolding for fully five minutes and would doubtless have kept it up longer and not flown away had it not been disturbed by the approaching car.

On the faces of cliffs and high in the trees we occasionally find the familiar widely-dispersed, buff-colored, comical-looking Monkey-faced or Barn Owl. It is a constant and diligent night prowler and consumes enormous numbers of destructive rodents and larger insects such as Jerusalem crickets. The regurgitated bone-filled weathered pellets are often found on the ground in profusion beneath the Barn Owl's roosting place. The engaging downy young, three or four in number, are raised within cavelets in arroyo banks or in the hollows of stream-border trees. When surprised at the nest, they make strange snapping sounds with their beaks and often hiss loudly at the intruder. The screeching and sometimes nasal notes of the adults are heard most often in spring. This most beneficial bird seems to be as much at home around desert towns as in the open wild cliff country of the desert hinterland.

PUEBLO PANORAMAS V

Wupatki Monument

By JOHN BLACKFORD

Nameless Ruins . . .

(Upper photograph, opposite page)

About numerous, nameless pueblos bordering the Painted Desert of Wupatki National Monument, Arizona, farmer Indians scratched shallow soil to sow the inevitable corn, beans and squash. Their outlook, as it ever is in this unchanging land, was of deep arroyos, red rock, tinted badlands, blue sky and roving clouds. They found patience and perseverance in what they saw, for these are in every view of the desert.

San Francisco Peaks . . .

(Lower photograph, opposite page)

Westward, toward the down-setting sun, like a vision from their spirit land, dwellers in the Nameless Ruins beheld the gleaming San Francisco Peaks. Who doubts but that here the Ancient Pueblоans gazed upon the mighty abode of their gods?

Vines for the Desert Home

Vines can serve two very important functions for your home on the desert—they will make the home cooler, and they hide the unsightly appendages on most dwellings—the gas meter box, the electrical conduit, a downspout. A surprisingly wide range of vining shrubs do well on the desert—and when August comes it is refreshing to have a blanket of green leaves between you and the sun.

By RUTH REYNOLDS
Photographs by Helen Gardiner Doyle

HALF THE FUN of a vacation is returning home again. If home is on the desert and it's August—well it is still wonderful.

I awake the first morning and breathe deeply and know that just to breathe desert air is a rare privilege. There is no other quite like it — so light, so invigorating—even in warm August.

I take an exploratory peek through the slats of the venetian blinds and am staggered by the incredible brightness of the out-of-doors, though I have only been away two weeks and know that my eyes, accustomed for a while to the more subdued light of coastal or wooded areas, will quickly re-adjust to normal desert sunlight.

The sky is cerulean and the Catalinas on the horizon stand out sharply against it. I can hardly wait to get outside and inspect the garden, the premises. If those chrysanthemums died again . . . !

But the chances are they lived. The neighbor boy we engaged to do the watering most likely did at least a fair job of it. And usually there are rains during August. Though the days dawn brightly often there are sudden, refreshing showers in late afternoons.

In any event home looks pretty good—to me.

What I appreciate most at this time of year are, I think, the vines; possibly because their greenery has such cooling potential, both real and illusory.

Vines have other virtues, both aesthetic and functional. If you have something to hide—a gas meter, a downspout—trail a vine over it. If you want a shady screen for porch, terrace or carport, or if you merely want something lovely to compliment the lines of your home, vines are the answer.

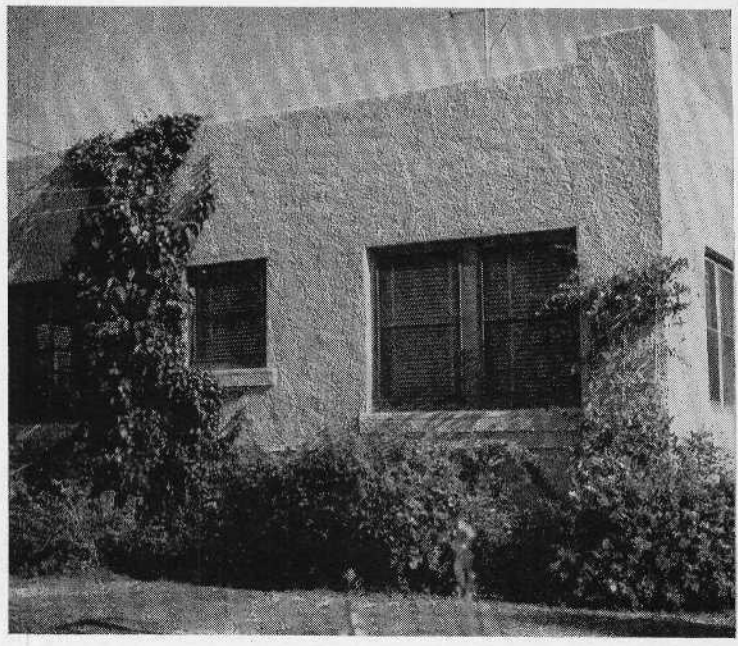
With the exception of fast growing annuals—morning glory, moonflower, mile-a-minute and others—vines usually require a few seasons in which to become established and attain the desired coverage. As their root systems spread they grow faster and climb farther, often thriving on water and fertilizer from surrounding lawn areas.

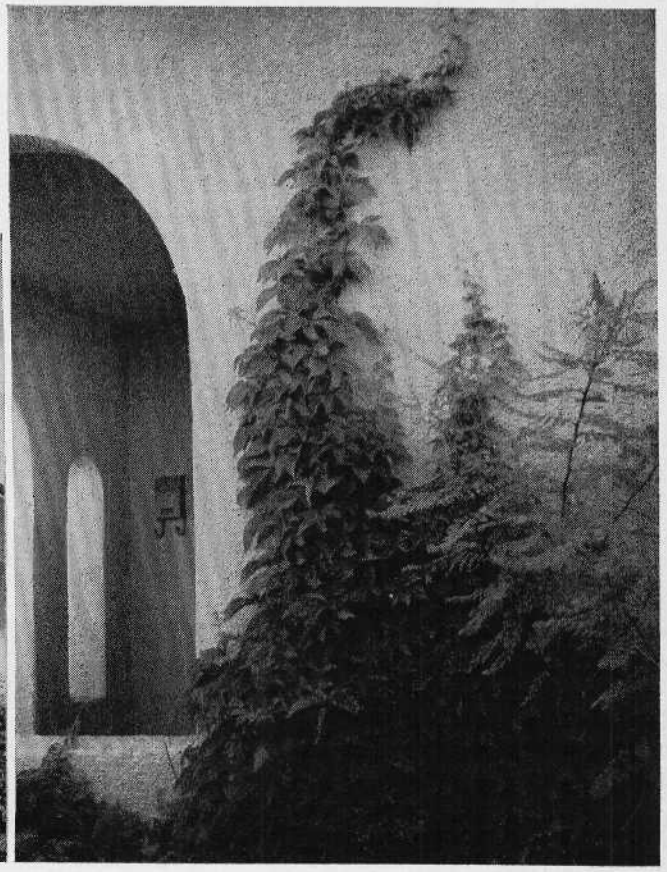
Many varieties blossom, usually in spring, with a great show of color, but now it is enough that they are green —that color which looks best because it looks coolest. And how fortunate for the home on the desert that there are so many hardy and heat resistant vines.

There is our old Virginia creeper, sometimes called Woodbine. We tried to discourage it last year after tearing it down to paint the house. We found it difficult to train. But now it is trying to make its way back up and across the east wall it formerly covered from early spring to fall. It is trying valiantly but from long acquaintance with the

Below—English and Algerian ivies cover electrical conduit, downspout, water pipe and hydrant on rear wall of author's home. Jasmine grows along foundation and on the trellis at the corner is honeysuckle.

Right—Virginia creeper must be supported until established or wind will knock it to ground. At right is bird of paradise.





vine I know it will need help. It must be stapled or taped to the wall at intervals until its tendrils take hold on the stucco. It often rises in dense columns almost to the top of the wall but unless supported with wire or cord it is eventually brought down by the wind. It not only decorates but insulates—cooling the interior of the house by intercepting the sun's hot rays and giving off moisture to cool the air surrounding it. Besides, we need it to camouflage the gas meter and, high up on the wall toward the rear, some unsightly electrical switch boxes. Being deciduous, it doesn't conceal much in winter but after its autumn-tinted leaves have fallen its brown stem system forms a pleasing over-all tracery.

If it were less hardy or less well established I should like to replace it with a vine which would cling to the wall more satisfactorily. Boston ivy, member of the same (*parthenocissus*) family and very similar except for the side shoots, does just that, and forms a more compact, even wall cover.

For an evergreen wall cover English and Algerian ivies serve beautifully. The Algerian variety, having larger, glossier leaves, more widely spaced along the stems, is gaining in popularity over the English ivy. It is more tolerant of sun—will grow in any exposure, while the English ivy is usually restricted to a north wall. Both varieties climb by means of aerial rootlets along the shady inside of the stems. Once the vines are securely pressed against the wall these little roots take a firm hold.

Having more to hide—the downspout, an electrical conduit, a water pipe and hydrant—at the back of the house, I chose the evergreen ivies for that location. A year after planting the English ivy, I discovered the Algerian and planted some of it almost in the same spot. The English ivy, as if challenged by its reputedly more aggressive neighbor, began growing vigorously and continues to maintain a slight edge over the other vine, although both do well, so well, in fact, that an agile ladder-climber and dexterous stapler could train them to cover the whole wall. Without proper pruning and thinning they are inclined to get bunchy, and they seem determined to cover the windows. This is always a problem with vines on a wall.

Another wall climbing evergreen is the Yellow Trumpet vine, sold as *Bignonia Chamberlaynii*. It has recently touched off a veritable gold rush here in Tucson. And no wonder. Its masses of yellow, trumpet-like flowers are beautiful in spring, and its affinity to hot locations makes it an ideal vine for the desert home. It likes a west wall fine; clings like glue to brick or stucco. Its glossy, dark green leaves are small but grow thickly and make a fairly dense shade. Its chief fault is that of overdoing a good thing. If not trimmed back after blooming, it continues its climb roof-ward and, as its claws find their way into crevices, may loosen tiles or shingles.

There is a violet trumpet vine (*Bignonia violacea*) which also does well here, though less hardy both to heat and cold. It sometimes freezes back in winter but recovers quickly in spring. It requires a trellis or other support but in full bloom it can be a show piece.

The Common Trumpet Creeper (*Campsis radicans*) is a good deciduous vine. It grows fast, climbs by aerial rootlets and after the first year develops a self supporting trunk, inclined to be bare at the bottom. In early summer it has clusters of orange-red funnel-shaped blossoms.

For a solid curtain of bloom—in spring before the foliage appears — there is the old favorite, wisteria. I almost jumped the curb a time or two last spring as I drove along gazing at them. Not too many of them to be sure, but now I am beginning to wonder if there is anything that will not grow in the desert garden. Two of the largest specimens I observed had foot-long clusters of lavender, sweet pea-like flowers. Their trunks were six inches thick and had been trained to form tree-like structures which served later in the season to support Queen's Wreaths—(*Antigonan leptopus*).

The Queen's Wreath grows here—from the ground up each year—as a perennial. But how it grows! I planted one to decorate the garage wall but it went on to decorate the structure's flat roof as well, which is a shame because its sprays of small, bright pink blossoms, lost to view from below, are very decorative in late summer and fall. About all it asks is a large-enough trellis to clamber over. It is a very reliable vine, which is more than I can say for the wisteria.

I have heard that some wisterias fail to bloom or that they bloom irregularly, that it is best to buy one already in bloom, and that while it is necessary to shape them by pruning during the first years, it should be done with caution.

For sheer reliability choose honeysuckle. Grown on a wire support, it can wall-in a car port or form a substantial screen for any purpose.

Acting on the theory that every home needs one for its fragrance alone, I planted several. They may become too much for me—dead wood forms underneath and the vines must be renovated and controlled — but their blossoms do perfume the air of summer evenings.

A semi-vining evergreen which I have used extensively is the Jasmine (*J. primulium*). I had my reasons. You can pull up a sprout from any plant and re-plant it in a few inches of soil on top of caliche. It can be trained to grow upright, trailed in waterfall fashion, pruned to formal outlines or left to grow rather freely and naturally as it does at the back of our house. In spring it has small bright yellow flowers scattered through its foliage. In summer it is very good greenery insurance for any home on the desert.

LETTERS

Coyote Wells Damaged . . .

Yermo, California

Desert:

During the past seven years we have traveled extensively through the northern states in the summer months and the South and Southwest in the winter.

The litter on the highways is a disgrace to a supposed civilized country, but nothing compares to a scene that greeted us on the Mojave Desert recently.

The old landmark of Coyote Wells was a shambles. The iron cover to the well was shot full of holes along with the pail at the end of the long wire which desert people for many years have used to draw water. Rubbish had been thrown into the well and the sign was torn down. Only last December we visited this place and everything was intact.

I hope those who are responsible read this letter so they will know what some people think of their barbaric actions.

MRS. H. L. BALDWIN

• • •

Sage Paper Wouldn't Work . . .

Adelanto, California

Desert:

In your May, '56, editorial appears the understatement of the century. You say that if promoters were allowed to make paper from sage that after clearing the land once, their machinery would have to stand idle "for several years."

I've owned desert land for 35 years and greasewood and sage growth are almost unnoticeable. Attention should be turned to a process for making paper out of cotton. I'm told there is a surplus in that commodity.

PAUL H. SNIDER

Captive Fox "Disgusting" . . .

Los Angeles, California

Desert:

I would like to enter a strong protest, through your pages, to the keeping of a kit fox in a cage at one of the desert settlements.

After seeing the unhappy animal pacing back and forth in its cage, I spoke to the people in the gem shop in whose yard the cage was kept. I was told that the fox belonged to the town and that in its cage it had shade, water and plenty of food.

I replied that it was wild and obviously miserable and that there were many people like ourselves who regarded such disgusting treatment of animals as sickening.

Instead of a wonderful holiday trip our trip turned into an unhappy experience.

I hope that other people have complained to the management and that some of your readers will join us in our complaint.

Something can be said for a well-run municipal zoo, but a miserable fox used to attract bored, thick-skinned passers-by is something else.

MRS. JOHN H. ROBERTS

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There Are Two Rawhides . . .

Santee, California

Desert:

I must protest the answer to question 19 in the June, '56, quiz (Rawhide is a ghost mining camp in—*Nevada*).

Rawhide, Nevada, was not a "camp," but quite a city. Furthermore, when I last visited it in 1950, there were dozens of people still living in the town and several mines were still active.

Rawhide, Arizona, however, is the correct answer to the question. At best, it was never more than a mining camp and its present population—one person—qualifies it as a ghost camp (Desert, March '53, p5).

WILL T. SCOTT

W.T.S.—The quiz editor sends his apologies. He'll accept both answers as correct.—R.H.

John LeMoigne's Grave . . .

Idyllwild, California

Desert:

In 1952 my husband and I discovered John LeMoigne's grave in Death Valley. The almost obliterated inscription under his name read "A.D. May, 1919" which disproves Bourke Lee who says "John LeMoyne died in June, 1918." Glascock neatly sidesteps the exact time by saying his body was "found 24 years ago."

Bill and I found the grave by using desert burro sense. He said he could find the trail by sighting the easiest course to Furnace Creek from the Salt Creek hills, and he did. We found bits of the trail still clearly evident, then, reasoning that a burro man would tie his burros where there was feed, we searched until we found salt grass at the edge of the mesquites, and there was the grave, crusted with salt and apparently unvisited for many years.

Bill Corcoran told us before he died in the early '30s, that it was he who discovered John LeMoigne's body and buried it in this spot. Some historians claim it was Death Valley Scotty who buried LeMoigne and although this is ancient history now, when we lived in the Valley it was quite a topic for conversation.

We also recall that there were two graves near our Salt Creek Trading Post which has been overlooked by the National Park Service. We always thought they might have been '49ers, but no one seemed to know.

EDNA PRICE

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Makes Third Solo Trip . . .

Amarillo, Texas

Desert:

Recently I returned from my third Colorado River trip made alone. Two of these trips were from Hite and one from Mexican Hat to Lees Ferry.

On this latest trip I hiked and waded the Escalante River 12 miles to Gregory Natural Bridge and there saw Randall Henderson's second and latest registration, made on June 14, 1950. I registered on April 19, 1956—which date, incidentally, was my 60th birthday. My registration number was 51 and the latest previous registration was made by W. Robert Moore in September, 1954.

I noticed, however, that there were fresh footprints around and concluded that these recent visitors had failed to locate the registration book which is kept in the upper left ledge under the bridge.

Returning to the junction of the Escalante and Colorado, I crossed the former river, never more than knee deep, a total of 56 times and caught one fish in my trouser leg.

BURTON G. ODELL

Olive Trees Unadvisable . . .

Sunland, California

Desert:

Before planting "Olive Trees for Shade and Beauty" near a home, as suggested by Ruth Reynolds (*Desert,* March '56), it may be well to give the idea a second thought. The green snow (pollen) which falls from the masses of blossoms on these trees produces serious allergies in many persons — especially those suffering from asthma, hay fever and tuberculosis.

Tucson, as a health center, probably will have to do as Los Angeles has done: adopt a policy against planting olive trees along streets or in parks.

I speak from personal experience for I live in an old subdivided olive grove in the northern part of Los Angeles. A number of my neighbors have been forced to move because of these trees. Each spring I go to the desert from four to six weeks to get away from this poisonous pollen. But, luckily, the trees are gradually being cut down.

The falling leaves, flowers, pollen and ripe fruit make a dirty mess — especially during late fall, winter and spring. If a person steps on the ripe fruit, he tracks in oily, black spots on his rugs. Here in Sunland, flocks of robins come down from the snowy mountains in the spring. They eat the over-ripe olives and leave oily, blue-black spots over everything.

ROY M. YOUNGMAN

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Vegas Spring Identified . . .

San Diego, California

Desert:

I was much interested in reading the San Francisco reader's comments in the June issue relative to the location of the "main" spring in Las Vegas.

In the early days there were several large springs in the Las Vegas valley, but the one I wrote about was the spring which was and is located a couple of hundred feet from the fort, which is still standing. Although that spring may not have been the largest spring in the area, it was an important watering place for travelers on the nearby Spanish and Mormon trails when they stopped overnight at the fort and to them it was known as Vegas Springs.

Descendants of one of the original owners of the ranch near the spring, Archibald Stewart, still live there and it was from them that I was able to verify some of my data. While in Las Vegas I also stopped at the Chamber of Commerce to supplement my material and they, too, directed me to the Stewart ranch and the fort as the original watering place.

WALTER FORD

Magnetized Muleshoes Found . . .

Porterville, California

Desert:

Please advise reader Paul Bunyan Childers (*Desert,* June '56, p29) that I found the muleshoes his animal lost in the Eagle Mountains in '79.

Just as he wrote, they were stuck fast to the magnetic rock. I easily removed them by reversing their polarity with my electro-magnet powered by a one-cell battery.

I took the shoes home to my grandson to pitch horseshoes with, but they weren't very good for this because being so heavily magnetized, they headed straight for the iron stake every time they were thrown—and with them a fellow couldn't help but make a ringer every time.

They did give me an idea, however. I magnetized my own set of horseshoes and won all the tournaments around this part of the country for quite a while until all the other professionals got wise to my discovery and magnetized their shoes too.

It has sure taken the kick out of horseshoes.

SIERRA MONTE

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Crusade Against Litterbugs . . .

Sedona, Arizona

Desert:

We want you to know that *Desert Magazine's* crusade against litterbugging has been responsible for a very effective clean-up campaign by the local Garden Clubs and the Justice of Peace who has been making the new state law effective by plastering fines on litterbugs who have been reported and caught. One guilty party surrendered $35.00 for littering our beautiful Oak Creek Canyon. The Brownies and Cub Scouts sponsored by the Wayside Chapel have been very active in cleaning up after thoughtless individuals.

H. H. NININGER

TRUE OR FALSE:

Desert Magazine's monthly Quiz is not primarily to see how smart you are, but rather to help you get acquainted with the history, geography, wildlife, Indians, botany and lore of the desert country. This is a monthly school of the desert for those who live to learn. A score of 12 to 14 is fair, 15 to 17 is good, 18 or over is super. The answers are on page 34.

1—The chuckawalla is a poisonous lizard. True____. False____.

2—Montezuma Castle was built by Death Valley Scotty. True____. False____.

3—Ocotillo puts on a new crop of leaves after every heavy rainfall. True____. False____.

4—Wild turkeys inhabit the White Mountains of Arizona. True____. False____.

5—Obsidian, or volcanic glass, is always black. True____. False____.

6—Billy the Kid was a notorious outlaw in Utah. True____. False____.

7—Telescope Peak, overlooking Death Valley, was given its name because of a telescopic observatory on its summit. True____. False____.

8—Mark Twain was once a reporter in Virginia City, Nevada. True____. False____.

9—Pinyon nuts are gathered by the Navajo Indians only for ceremonial purposes. True____. False____.

10—The break in the Colorado River which formed Salton Sea in 1905-6-7 was closed by U. S. Army Engineers. True____. False____.

11—The foliage of the Juniper tree turns yellow in the fall. True____. False____.

12—White Sands National Monument is located near Alamogordo, New Mexico. True____. False____.

13—The fruit of Saguaro cactus is an important item of food for the Papago Indians. True____. False____.

14—Mt. Timpanogos is in Utah. True____. False____.

15—Regular ferry boats no longer operate at Lee's Ferry, Arizona. True____. False____.

16—Father Font's diary describes the journey of the first colony of white people to settle in California. True____. False____.

17—Kearny's Army of the West crossed the Salton Sea in boats in 1846. True____. False____.

18—The flower of the Salt Cedar is a pinkish lavender. True____. False____.

19—The Rio Grande is the boundary between United States and Mexico at El Paso. True____. False____.

20—Carlsbad Caverns are in New Mexico. True____. False____.

Here and There on the Desert . . .

ARIZONA

Squatters Under Fire . . .

YUMA—State officials laid plans for their next move against squatters who have run lessees off nearly 1000 acres of state land 40 miles north of Yuma. The area in question is accretion land, formed by the swing of the Colorado River channel to the west. The state has leased the land to the state fish and game commission who have sub-leased all but the wildlife preserves in the sloughs and lakes along the river for agricultural purposes. The squatters have run sublessees off the tract, claiming it was a legal wasteland belonging to neither state nor federal governments.—*Phoenix Gazette*

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Last of Buffalo Removed . . .

FORT HUACHUCA — The last known buffalo on the Fort Huachuca reservation has been killed. The rest of the herd was removed earlier, some by hunting and the rest by transplanting. This kill marks the end of the special hunt which was authorized to remove these animals. — *Tombstone Epitaph*

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To Acquire Customs House . . .

YUMA—Plans for the city of Yuma to take over the old U.S. Customs House on the edge of the Colorado River behind City Hall were announced with the opening of negotiations by the city with the National Park Service. The city will use the building as a historical monument, it was reported. —*Yuma Sun*

Cloud Seeding Experiments . . .

FLAGSTAFF—Seeding cloud formations with silver iodide crystals to prevent lightning-caused forest fires will be explored during the summer by a team of forest and private research scientists. Protection of national forests against lightning-caused fires is the objective of the experiment to be attempted on the Coconino National Forest in northern Arizona, where thunderstorms are frequent in late May and June. The project is to be known as "sky fire," according to Reed W. Bailey of Ogden, director of Intermountain Forest and Range Experiment Station.—*Salt Lake Tribune*

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State Termed Drouth Area . . .

PHOENIX — President Eisenhower has officially termed Arizona a drouth disaster area. The president's action empowers the secretary of agriculture to name specific areas in the state where farmers will be eligible for federal aid.—*Yuma Sun*

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Land for Dam Reserved . . .

WASHINGTON, D. C. — The interior department has set aside 179,100 acres of public domain in Utah and Arizona for possible reclamation bureau use in construction of Glen Canyon Dam and other features of the Upper Colorado River Storage Project. Involved are 25,500 acres in north central Arizona and 153,600 acres in south central Utah. Reclamation Commissioner W. A. Dexheimer said the land in Arizona will be needed for sources of construction materials and possible use as a government camp and contractors' headquarters. The land is north and west of the Colorado River near Lee's Ferry. Dexheimer said the area in Utah is above the level of the future reservoir and will not be inundated. He said there are no present plans for improvement or construction on the land. It is needed specifically, he added, for earth, gravel and rock for construction purposes. — *Phoenix Gazette*

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Base Name Changes . . .

YUMA—Yuma Air Base will be re-named "Vincent Air Force Base" effective September 1, the Department of the Air Force announced. Re-naming of the base is in honor of the late Brigadier General Clinton D. Vincent who died at Ent Air Force Base, Colorado, on July 5, 1955.—*Yuma Sun*

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CALIFORNIA

Corvina Transplanted . . .

SALTON SEA—The State Department of Fish and Game is conducting a sport fishing program under which adult ocean corvina are seined from the Gulf of California at Felipe and transplanted into the Salton Sea. Of some 35 species transplanted from ocean to inland sea, only the corvina have showed the ability to survive, say Department workers. This year's goal is to introduce at least 2000 adult corvina as brood stock. — *Calexico Chronicle*

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Industry Inevitable . . .

APPLE VALLEY — Los Angeles Chamber of Commerce Industrial Plant Location Committee member Roy Hagen told residents of the Mojave Desert that they could not escape the Southland's booming industrial expansion. He told the desert dwellers that they will be asked to help Los Angeles assimilate its industrial and population growth. "We know you'll aid us—but, if you don't, industries will come out here anyhow. You can't escape them and the problems they bring. That's why we must plan together, work together," he declared.—*Victor Press*

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Mourning Dove Protection . . .

INDIO — The Desert Protective Council has voted to ask the state of California to protect mourning doves from hunters. The resolution was presented by Drs. Henry Weber and Earnest Tinkham, both of Indio. — *Coachella Valley Sun*

Sea Rise Believed Checked . . .

SALTON SEA — The destructive rise of the Salton Sea which has engulfed a boat club and motel resort on the north shore and forced removal to higher ground of a resort on the opposite shore during the past years, may have ended, Chief Engineer Lowell Weeks told members of the Coachella Valley County Water District. Weeks said the sea will drop a foot within the year and that he believes a permanent net decline will follow instead of the usual seasonal shift in water levels. Moderate water rationing plans introduced in Imperial Valley in an effort to prevent farmers from wasting water into the sea may end the 35-year rise, Weeks said.—*Coachella Sun*

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Road Transfer Asked . . .

DEATH VALLEY — The U. S. Park Service has requested the acquisition of Highway 190 through Death Valley from the State of California. According to Fred Binneweis, superintendent of Death Valley National Monument, the service needs control of the highway for the protection of the many visitors which now approximate 90,000 annually, many of them visiting the monument during the hot summer months when they should be warned of traveling without extra water and gasoline. Binneweis said that if the park service took over the highway, checking stations would be erected at each end and a nominal fee for passing through the monument would be charged. Frank Baxter, district engineer for the State Division of Highways, said Hwy. 190 was the only all-year cross-country road between Mojave and Montgomery Pass and that his department did not want to relinquish control of the highway which was "bought and paid for by the people of California when they purchased the old toll road into the valley." The highway engineer said he felt that the Division of Highways would not oppose the establishment of check stations at various points on the highway to halt tourists, but that it would oppose the charging of any fees.—*Inyo Register*

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NEVADA

BLM Works Overtime . . .

RENO—Recently authorized overtime for the Reno Bureau of Land Management office was expected to make possible action on an additional 1000 small tract applications. Five thousand small tract applications are being processed and in June the state's 2000th small tract patent was issued. The BLM had at that time a backlog of 16,274 applications for lease and 883 applications for purchase. Up to 1953, only 23 small tract patents were issued in Nevada. — *Nevada State Journal*

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Tract Leased for Park . . .

ELY—Plans of the State Park Commission to develop the Ward Charcoal Ovens and Willow Lake area for public recreation were nearer to being realized with the signing of an 80-acre lease by the commission with George N. Swallow of the C-B Land and Cattle Co. The Ovens are about 17 miles south of Ely, eight miles off U.S. Highway 93. Also being considered as a state recreation area are the charcoal ovens near Panaca Summit in the Pioche-Caliente area.—*Nevada State Journal*

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Crystal Cavern Discovered . . .

GANDY—Discovery of a beautiful limestone cavern filled with calcite crystals and an estimated 750 to 800 feet long was reported by George Sims of Gandy. Sims said the cave is very near the Utah-White Pine County, Nevada, line and is probably in Utah. There is every evidence, Sims said, that his discovery is the first for this cave. —*Ely Record*

THE DESERT TRADING POST

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BEAUTIFUL, PARTLY level, 20 acres including famous Coral Reef Mt., many superb building spots. Full price $6000. The All American Canal wanders lazily through an 80-acre farm surrounded with lovely desert mountains just 7 miles from Indio. It's for sale, $26,500. Ronald L. Johnson, Thermal, California.

CHOICE HOMESITES and acreage. Salton Sea vicinity. For full information write Pon & Co., Box 46 DA, Azusa, Calif.

HEALTHY DESERT Paradise — Berry Springs ranch. 40 acres. Lots of shade. Several springs, large spring and pond. Good opportunity for fish farm. 16 acres irrigated farm land. Living quarters, double garage, own electric plant. Hide-a-way. On main road to Zion Park uranium district. Price: $15,000. C. O. Watkins, Box 43, Hurricane, Utah.

FOR SALE — 6 unit motel with laundry room. Overnight units, air condition, gas vented and electric heat. Nicely landscaped. Cool shady patio. There are other facilities, too. This is on a main highway. If interested write Box 673, Salome, Arizona.

INDIAN GOODS

VISIT THE Three Flags Trading Post on 395 Highway, 4½ miles south of Coleville, California. Genuine Indian made goods at reasonable prices. Desert Dave or The Duchess will show you around.

5 FINE ANCIENT Indian arrowheads, $2. Flint eagle ceremonial, $2. Perfect Folsome, $5. Spearhead, $1. List Free. Lear's, Glenwood, Arkansas.

PAPAGO INDIAN baskets. Wholesale. Keystone. Baskets are in short supply this year. David L. Young. Coleville, Calif.

OVER 600 fine old baskets. Many rare Navajo rugs, both old and new, Bayeta-Germantown. Artifacts, gems, and fine Indian jewelry. Open daily 10 to 6, closed Mondays. Buffalo Trading Post, Highway 18, Apple Valley, California.

FIVE FINE Prehistoric Indian arrowheads $2.00. Perfect stone tomahawk $2.20. Effigy pipe $5.00. Perfect flint thunderbird $3.00. Flint fish hook $3.00. List free. Five offers for only $12.00. Arrowhead, Box 1249, Hot Springs, Arkansas.

ORDER BY mail: Indian Made Thunderbird necklace $2.95. Papago Tray Basket $2.50. 18 by 36 inch Navajo rug $3.95. Price includes postage and sales tax. Three Flags Trading Post, Coleville, California.

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FREE! BIG 40 page book "Where to Look for Uranium in California" when you subscribe to Western Mining Magazine—one year, $2.00, a real value. Western Mining, Box 787, Sonora, California.

ALL THE DESERT Magazines published to date in binders, perfect shape. $50. R. E. Woolf, 2931-B 3rd Street, Santa Monica, California, EXbrook 98310.

WANTED—Back issues of Desert Magazine. Will pay 50c for Dec. '51; 50c for Mar. '52, in good condition. Desert Magazine, Palm Desert, California.

MISCELLANEOUS

HARDY CACTUS, some rare, free price list, Nancy Duck, 507-30 Road, Grand Junction, Colorado.

SANDBLASTED MANZANITA, desert woods, seed pods of all kinds. Wholesale and retail. Showroom and headquarters, Banner Queen Ranch Trading Post. 7 miles east of Julian, California, on Highway 78.

TEN IRIS Bulbs mailed direct to you from the Holy Land. $3.00 postpaid. Bowman & Son, Box 41231, Los Angeles 41, Calif.

DESERT OIL Paintings, originals, by known artists. From $6. Write for listings and state preferred subjects. Desert Arts, Rancho Riverside, Moapa, Nevada.

SILVERY DESERT Holly plants: One dollar each postpaid. Greasewood Greenhouses, Lenwood, Barstow, California.

PREHISTORIC ANIMALS — Heavy solid metal. $1.00 postpaid. State variety wanted. Jim Price, Box 1244, Midland, Texas.

SECTIONIZED COUNTY maps — San Bernardino $1; Riverside $1; Imperial 50c; San Diego 50c; Inyo 75c; other California counties $1.25 each. Nevada counties $1 each. Topographic maps of all mapped areas. Westwide Maps Co., 114 W. Third St., Los Angeles, California.

BUILD YOUR OWN real swimming pool! Fun for the entire family! Easy plan and instructions, only $1.00. Delta Pools, Box 604, Stockton, California.

PAIR KYPELON or Kiathion Bowls, replicas of those discovered during Archaic Period 900 B.C. Mailed direct to you from Athens, Greece. $3.00 postpaid. Bowman & Son, Box 41231, Los Angeles 41, California.

DESERT TEA. One pound one dollar postpaid. Greasewood Greenhouses, Lenwood, Barstow, California.

INTERESTED IN prospecting for gold and Industrial Minerals? Join United Prospectors and read Panning Gold. Write for application: United Prospectors, 701½ E. Edgeware Rd., Los Angeles 26, Calif.

DELFT BLUE China salt & pepper shakers with sterling silver windmills. Mailed direct to you from Holland. $3.00 postpaid. Bowman & Son, Box 41231, Los Angeles 41, Calif. Any three items advertised $8.75 postpaid. Duty free.

LADY GODIVA "The World's Finest Beautifier." For women who wish to become beautiful, for women who wish to remain beautiful. An outstanding desert cream. For information, write or call Lola Barnes, 963 N. Oakland, Pasadena 6, Calif., or phone SYcamore 4-2378.

GHOST TOWN ITEMS: Sun-colored glass, amethyst to royal purple; ghost railroads materials, tickets; limited odd items from camps of the '60s. Write your interest—Box 64-D, Smith, Nevada.

Navy Curbs Sought . . .

WASHINGTON, D.C.—Legislation to bar Federal interference with state water rights as pointed up by the Hawthorne Naval ammunition depot case now before the Nevada courts, was approved by the Senate Interior irrigation and reclamation subcommittee. The bill governs control, use and distribution of appropriated waters. Classing water as "the West's most important commodity," the bill's co-sponsor, Senator Alan Bible, said "we cannot sit idly by while the federal government runs rough shod over our state laws, threatening orderly development and control of ground water so important to our industrial growth."—*Nevada State Journal*

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Gambling Rules Tightened . . .

CARSON CITY — Several new gambling rules were adopted by the state tax commission, including one prohibiting casino operators from gambling in their own establishments. Another new rule requires all gambling club employees not previously required to be registered and fingerprinted by a city or county to be so listed with the gaming control board. Casinos having more than 50 persons listed on their gaming licenses will not be considered for renewal of their gambling permits, another rule change provides. Also ordered was the display of payoff schedules or award cards on every licensed game.—*Nevada State Journal*

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Employment Rise Continues . . .

CARSON CITY — Nevada nonagricultural employment reached a total of 84,200 in April for a gain of nearly 3.5 percent from a year ago, according to the Nevada Employment Security Department. Most recent average hourly earnings figures are $2.31 in mining; $2.94 construction; $2.41 manufacturing; $1.99 communications and utilities; and $1.93 trades.—*Nevada State Journal*

Lehman-Wheeler Survey Set . . .

ELY—The proposed survey of the Lehman Cave-Mt. Wheeler area to determine that region's feasibility for national park status has been set for August 13-15. In charge of the field expedition for the Park Service will be Assistant Regional Director Harthon L. Bill. Regional Forester C. H. Olson had not as yet named a team to represent the Forest Service on the survey party. The proposed national park site would cover 28 square miles in White Pine County. At the present time most of this area is administered by the Forest Service as part of the Nevada National Forest and Lehman Caves National Monument, and is governed by the National Capital Park Bureau.—*Ely Record*

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NEW MEXICO

Indian Sanitation Scored . . .

WASHINGTON, D. C. — A major part of the Indian population lives under sanitary conditions that are "primitive to the extent now unknown among other population groups of the country," Acting Surgeon General Dr. W. Palmer Dearing testified. He and other Public Health Service officials appeared before a House interior subcommittee studying a PHS program of construction, operation and maintenance of sanitation and water facilities in Indian communities. Dearing said "dysentery, diarrhea and other enteric diseases are widespread and account for unduly high proportion of all Indian illness, hospital admissions and death. The first step toward prevention is to provide clear water supplies in the home." —*Alamogordo Daily News*

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Scenic Markers Asked . . .

ALAMOGORDO — Requests endorsed by four chambers of commerce — Alamogordo, Cloudcroft, Tularosa and Ruidoso—have been sent to State Tourist Director Joe Bursey seeking the "long overdue" erection of several official scenic view markers at strategic points along the highways in the south central part of the state. Requested for erection are scenic view markers at the head of Dark Canyon on Highway 70 and near Three Rivers on Highway 54 designating Sierra Blanca as the southernmost Alpine mountain timberline peak in the United States. Another request asks for a marker west of Cloudcroft on State Road 83. — *Alamogordo Daily News*

Rhodes Shrine Planned . . .

ALAMOGORDO — Plans for a shrine to the memory of Eugene Manlove Rhodes—a replica of the cedar post wickiup that was his first ranch home in the San Andres country — were launched following the annual pilgrimage to the grave of the noted cowboy poet-author. It is hoped that the primitive cedar post structure can be erected on the 10-acre plot of ground in which the famed author's grave is located.—*Alamogordo Daily News*

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Drouth Area Designated . . .

SANTA FE — Drouth - parched ranges of New Mexico and scarcity of livestock feed have prompted Secretary of Agriculture Ezra Taft Benson to designate almost the entire state as a drouth disaster area. All counties in the state are included except San Juan, Rio Arriba, Taos and those portions of McKinley and Valencia counties lying west of the Continental Divide.—*Springer Tribune*

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UTAH

Utes Receive Cash Payment . . .

FT. DUCHESNE—A payment of $500 was made to each adult member of the Ute Indian Tribe and the Affiliated Ute (mixed bloods) Citizens of Utah. A like payment was scheduled to be made to children 18 years of age or younger two weeks from the adult payment date. There are 1804 members in the tribe, making the total payment $902,000. Approximately half of the Indians are adults. The money was derived from the sale of oil and gas leases on land held by the tribe. The mixed bloods were recently dropped from the Ute Tribe and the latter have adopted by-laws for their organization which will be governed by a five-man board of directors. — *Vernal Express*

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Record Year Seen . . .

WASHINGTON, D. C.—A record-breaking number of visitors—53,000,000—are expected to visit the National Parks this year, the National Geographic Society predicted. The parks have attracted ever increasing numbers —from 380,000 visitors in 1916, to more than 20,000,000 in 1941 and about 50,000,000 in 1955. Conrad L. Wirth, director of the National Park Service, predicts the visitor totals will reach 80,000,000 in 1966.—*Coconino Sun*

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$9 Million for Housing . . .

GLEN CANYON — The Reclamation Bureau expects to spend more than $9,000,000 to house government workers at Glen Canyon and Flaming Gorge dams. The Glen Canyon construction calls for $420,000 for housing units and $440,000 for dormitories, cafeteria and laboratory. Eventually, permanent housing units at Glen Canyon, costing a total of $3,187,500, will include 72 two-bedroom and 125 three-bedroom houses to accommodate 200 employees. Temporary housing facilities at the same site, to cost $2,340,000, will include 60 two-bedroom houses, 130 three-bedroom houses, 60 trailers and two dormitories. At Flaming Gorge, plans call for $1,200,000 worth of permanent housing and temporary housing to cost $940,000.—*Washington County News*

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Scenic Road Planned . . .

MONTICELLO—The Forest Service is planning a new scenic route from South Mountain along the rim of the range to the top of Abajo Peak, according to Forest Ranger Julian Thomas of the Manti-LaSal National Forest's Blue Mountain and Elk Mountain region.—*San Juan Record*

MINES and MINING

Bullfrog, Nevada . . .

The famous Bullfrog Mine in southwestern Nye County may be put into activity again, according to company officials. An expansive core drilling program to explore the company's 45 patented claims in the county was ordered and geologists have advised that the mine may contain in addition to gold and silver, many new minerals unheard of in the early gold rush days.—*Pioche Record*

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Mohave County, Arizona . . .

Falcon Seaboard Drilling Co. of Tulsa, Oklahoma, has scheduled a 5000-foot wildcat well on the Antelope Springs Structure in Mohave County, 15 miles south of the old Virgin oil field in Washington County, Utah. Antelope Structure, which has never seen a conclusive test, is on the east side of the big Hurricane Fault and on the other side of that fault from the Hurricane Structure.—*Salt Lake Tribune*

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Reno, Nevada . . .

Mining and shipping of ore from the Constant Minerals Separation Process, Inc., properties on Galena Hill, three miles southwest of Steamboat Springs near Reno, are underway and will increase steadily in volume, Constant President Maurice Constant said. The vein of ore, which shows silver-lead-zinc-copper and some gold, has broadened with depth and displays a width of more than 50 feet on the pit floor. The pit is 50 feet deep and more than 200 feet across.—*Pioche Record*

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Tucson, Arizona . . .

A copper ore reserve of approximately 80,000,000 tons has been developed in the Twin Buttes area 20 miles southwest of Tucson by the Duval Sulphur and Potash Co. Nearly 70 core holes have been drilled to depths of 250 to 275 feet and have shown that about 100 feet of that depth consists of waste overburden, but the rest is copper ore, close enough to the surface and of sufficient quantity to be mined by open pit methods.—*Phoenix Gazette*

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Twentynine Palms, California

The recently discovered tungsten deposits in the Twentynine Palms area have been sold to a mining combine for over $500,000 by prospector-miner J. O. Dorr. Involved were 1400 acres in the New York Mountains.—*Banning Record*

Davis Canyon, Nevada . . .

Development work has started on a promising showing of copper on property of E. B. and Cara Crane in the northern end of Diamond Range in Davis Canyon, Nevada. The company, composed largely of shareholders from Paducah, Ky., Evansville, Ind., and St. Louis, Mo., also has large holdings in the Diamond Range facing Newark Valley.—*Pioche Record*

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Elko, Nevada . . .

Richfield Oil Corporation called a halt to drilling in its Rabbit Creek Unit well 12 miles east of Elko, at the 7349 foot level. This is to be the total depth for this attempt. However, before abandoning the well, several tests were to have been made. The cessation of drilling by Richfield leaves the state with no major operators active at the present time.—*Humboldt Star*

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Basalt, Nevada . . .

Development has started at the Kelly Clark barite mine near Basalt, Esmeralda County, Nevada, by the Kelly-Clark Mining and Exploration Company. The barite occurs in four separate vein systems as replacements in limestone and dolomite.—*Pioche Record*

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Dillon, Montana . . .

Minerals Engineering Co., Salt Lake City and Grand Junction, Colorado, is negotiating with Nissho Co., Tokyo, Japan, for sale of up to 500,000 tons annually of iron ore concentrates from proposed open pit properties near Dillon, Montana. Minerals has lease on about 1400 acres containing more than 240,000,000 tons at about 50 foot depth, according to drilling data. — *Salt Lake Tribune*

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Dyer, Nevada . . .

Talc production is increasing in the Palmetto District. Bill Sutton of Bishop, California, has purchased talc leases and equipment from Roy Knight and Leonard Shellenbarger has increased his open-pit mining of low grade talc to 100 tons per day. He is selling it to Huntley Industrial Minerals as a base for fertilizer. The Archie Brady talc mine was waiting delivery of equipment before resuming talc operations.—*Nevada State Journal*

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Saltair, Utah . . .

John D. Archer of Salt Lake City, Utah, has filed application with Utah Land Board to lease 912 acres of state land north and south of Saltair on Great Salt Lake for extraction of sodium sulphate. The leases are on grounds not covered at present by waters of the lake. Archer offered the state a three percent royalty on extraction of the mineral.—*Salt Lake Tribune*

Lovelock, Nevada . . .

Iron ore shipments from Buena Vista Hills, 30 miles from Lovelock, reached their peak in June. Competition for rail cars arose with the sugar beet industry which was at market peak. An average of 27 cars of iron ore have been leaving Lovelock each day and Minerals Materials has been crushing ore on its siding near the Dodge Construction Company. The ore is being used experimentally on runways used by heavy aircraft.—*Nevada State Journal*

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Eureka County, Nevada . . .

Consolidated Eureka Mining Co. of Salt Lake City, Utah, reported an apparent extension of its high grade lead-silver-gold ore body on the 400-foot level of the north end of the old Diamond Mine in Eureka County, Nevada. About a foot of a three-foot ore face has been described as high grade. — *Salt Lake Tribune*

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Austin, Nevada . . .

Activity at White Caps Mine is being concentrated temporarily on cinnabar, while work is continuing on the shaft and underground operations in preparation for operation of the old gold and silver producer. A recent ore assay showed mercury content of 2.3 which on a tonnage basis would be approximately 46 pounds per ton or $175 per ton. When White Caps was being operated, cinnabar was known to have been in some of the lower levels of the mine, but at that time the market price of mercury was too low to make its production profitable.—*Reese River Reveille*

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Ely, Nevada . . .

What appears to be a large quicksilver deposit was found recently near Little Antelope Summit on Highway 50, 35 miles west of Ely, by Albert Granger of Tonopah. Granger said surface excavations by bulldozer show that the occurrence of mercury is at least 150 feet long and 22 feet wide under a layer of three feet of top soil which has been removed at a number of points. —*Ely Record*

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Park City, Utah . . .

United Park City Mines Co. has established presence of lead-silver-zinc mineralization in the Wasatch limestone sector of Park City District, approximately 800-900 feet below the Ontario drain tunnel. It is too early to say if there is any commercial ore in the area drilled, but indications seem favorable, United Park City Mines General Manager S. K. Droubay said.—*Salt Lake Tribune*

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Goldpoint, Nevada . . .

Fred Vollmar has reportedly purchased the Stateline (Nevada Gold) mill at Goldpoint, and is making arrangements to have it moved to Manhattan where it will presumably treat ore from the White Caps mine. The historic mill was last operated by San Francisco interests for a brief period five years ago.—*Tonopah Time-Bonanza*

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San Juan County, Utah . . .

The Texas Co. announced it would probably keep several rigs active in development of the flush, new Anneth oil field in southwestern San Juan County. The company placed five rigs on the field following discovery of high gravity oil, which in some wells rated initial production above 1000 barrels daily. It is reported that leases in the general Anneth area have been sold for as high as $200 an acre and one major company has offered an independent "free well' in return for rights on only four sections of a 50,000 acre block.—*Salt Lake Tribune*

URANIUM NEWS

Move Toward Open U-ore Market Seen in AEC Purchase Extension

The Atomic Energy Commission has extended the domestic purchasing of uranium four and three-quarter years past the March 31, 1962, termination date.

The long awaited good news for the West's uranium industry allowed, in addition to the extension, that the bonus program to encourage uranium exploration be extended through March 31, 1960.

"This action was taken," an AEC statement said, "in recognition of the need for a continuing government market in order to maintain a high rate of exploration and development."

The salient facts about the extensions are these:

(1) After 1962 there will be no guaranteed purchase program through which miners can sell ore to the U.S. government. The AEC will, instead, buy uranium concentrates from mills and the mills will buy the ore from the miners with price of the ore the miner gets subject to negotiation between him and the miller.

(2) In order to prevent miners from being "squeezed out" of the program, the AEC is limiting the amount of concentrates in ore it will contract for annually via the mill from any one property to 500 tons of concentrates.

(3) The AEC completely eliminated the vanadium purchase program now contained in Circular Five, basic buying document in effect up to March 31, 1962. This does not prevent mills from buying vanadium-uranium ores from producers and paying a price arrived at between producer and miller.

(4) The commission, buying only through contract, will purchase the concentrates from the mill at $8 a pound. This new price, milling companies are reported to have said, will necessitate a reduction in price of ore substantially below guarantees now in effect in the government purchasing program.

(5) Miners will be free to sell to any mill they choose. Millers will be free to sell uranium concentrates to any licensed buyer other than the government.

(6) The initial purchase bonus, which can hit a maximum of only $35,000, was extended from Feb. 28, 1957, to March 31, 1960. This is of principal interest to small operators or prospectors getting a mine into production.—*Salt Lake Tribune*

AEC Contracts New Uranium Mill in Bedrock, Colorado

The AEC's Grand Junction Operations Office announced the awarding of a contract for the construction of a uranium ore processing mill at Bedrock, Montrose County, Colorado. The company building the moderately-sized mill costing several million dollars is Atomic Fuel Extraction Corporation of Pocatello, Idaho.

The AEC said the contract for the plant envisages operations beginning in the spring of next year. The new mill, the commission announcement stated, will process ores from Beaver Mesa, Martin Mesa, Tenderfoot Mesa and the Bull Canyon area. It is expected to employ an acid leach, resin-in-pulp circuit in treatment of the ores.

The AEC has also signed a contract with Union Carbide Nuclear Co., a division of Union Carbide & Carbon Co., for the construction of a new mill at Rifle, Colorado, and "up-grading" uranium ore plants at Green River, Utah, and Slick Rock, Colorado.

Meanwhile, it was learned that there has not as yet been much forward action in the construction of several mills contracted by the AEC. These include the small mill which Continental Uranium Co. has scheduled for La Sal, San Juan County, Utah; the Trace Elements mill at Maybell, Colorado; and the Edgemont, South Dakota, mill which was set up by a group of Colorado School of Mines professionals.—*Salt Lake Tribune*

Navajo Reservation Area Again Opened to Mining

Navajo Tribal Council Chairman Paul Jones announced that the Black Mountain uranium area of the Navajo Indian Reservation has been reopened to mining. The land is located in Apache County, Arizona.

Uranium claims were filed in the area as long ago as 1953, but a special hearing was ordered by the Indian Bureau following charges of "favoritism, nepotism and dictatorship." Jones said the investigation showed the charges were baseless and the right of the Navajo tribe to control the area has been recognized.

He said title to the area has been cleared and drilling and exploration permits with options to take mining leases were to have been offered to the highest bidders on four tracts totaling 2640 acres on May 31. — *Phoenix Gazette*

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Hidden Splendor Mining Co., wholly owned subsidiary of Atlas Corp., handed Federal Uranium Corporation of Salt Lake City a $3,350,000 check for Federal's 33-7/12ths interest in the Daniel-Ruddock uranium ore body in the Big Indian District, San Juan County.—*Salt Lake Tribune*

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Utah Southern Oil Co. of Salt Lake City has commenced open pit mining of a small uranium deposit located on the Navajo Indian Reservation near Cameron, Arizona. A 40-ton shipment showed a .23 percent uranium oxide content, and it is anticipated that shipments of not less than 500 tons monthly will be made to the Tuba City mill of Rare Metals Corporation of America. —*Salt Lake Tribune*

California U-Properties Subject of New Booklet

The California Division of Mines has recently issued Special Report 49, *Radioactive Deposits in California,* which describes the state's uranium and thorium deposits in greater detail than has heretofore been published.

The booklet was written by geologists of the U. S. Geological Survey for the Atomic Energy Commission, and all occurrences of radioactive minerals known to the AEC up to the first of last year are listed. A total of 92 are shown on a map in the booklet, and many of these are described in detail. The booklet can be ordered by mail from the Division's offices in the Ferry Building, San Francisco, 11. 38 pages, 50c plus tax.

Bids totaling $5810 have been received for tracts opened to uranium exploration in the Black Mountain area of the Navajo Indian Reservation. The Navajo Agency put four tracts, totaling 2640.1 acres, up for bid. One of the four tracts did not receive a bid.—*Salt Lake Tribune*

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Plateau's U-Ore Production Set at 1,500,000 Tons

An estimated 1,500,000 tons of uranium ore will be produced in the Colorado Plateau in the fiscal year which ended June 30, according to Jesse Johnson, director of raw materials for AEC. At .26 percent grade considered average for the plateau, the 1,500,000 tons represented a valuation of $59,800,000 and would produce 7,000,000 pounds of uranium concentrate.

Johnson said production on the Colorado Plateau probably will increase to 2,500,000 tons. Just six years ago only 200,000 tons were hauled to buying stations and mills.

No testimony was given regarding known ore reserves, a subject generally considered to be the major military secret of the uranium industry. The federal government usually declines any production figures on uranium output, and Johnson's estimates were made at a hearing held by the Congressional joint committee on atomic energy. —*Dove Creek Press*

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A new type of uranium deposit has been identified in Kern and Fresno counties, California, according to the AEC. It occurs in swampy mountain bogs, and has been found at elevations from 5000 to 8000 feet in the Sierra Nevada Range in the two counties. Some samples have assayed to .70 percent uranium oxide and the bog-type deposits have been likened in some respects to lignites found in the Dakotas.—*Mining Journal*

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Royal Uranium Co. reported discovery of a new uranium ore channel on its properties in the Indian Creek area of San Juan County, Utah. More than 20 core holes some 50 feet apart have been drilled in an extension of the channel south of presently producing properties. On the basis of these cores, ore depth has been estimated at between five and a half and 10 feet of a grade between .25 and .73 percent uranium oxide. —*Salt Lake Tribune*

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Formal notice of intent to build a uranium processing mill in the Austin area was sent to the AEC in May by the Apex Uranium company, Austin, Nevada. Pending approval of a contract with the AEC for uranium oxide cake produced at the proposed mill, Apex will continue shipping ore to Salt Lake City for processing. — *Nevada State Journal*

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Properties of the Hazel E. Mining Company in the Ione, Nevada, district, have been sold to a California group. The buyers have moved on to the property, which they were preparing to core drill before proceeding with more intensive development. — *Nevada State Journal*

AEC Zirconium Contracts Establish $6.80 Pound Price

The AEC announced award of contracts for 11,000,000 pounds of zirconium to be delivered over five years at a total cost of about $75,000,000 or $6.80 per pound. Winning companies are National Distillers Products Corp., National Research Corp. and Carborundum Co.

Zirconium has high resistance to corrosion and is used in atomic reactors to protect uranium fuel from water carrying heat out of the reactor core.

The AEC said the major portion of the zirconium delivered under the new contracts will go for scheduled Navy reactor development projects and the remainder to meet the growing needs of the AEC's own reactor program.—*Mining Record*

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California Offers Free Specimen Identification

Residents of the state of California are entitled to send two specimens a month to the State Division of Mines, Ferry Building, San Francisco, for free identification. In addition, those wishing to receive the Division's monthly bulletin at no charge can do so by writing to the address above. The Division also publishes a quarterly *Journal of Mines and Geology* which costs three dollars per year. Rockhounds will be interested in the special reports which the division issues. Examples of these are "Nephrite in Marin County, California" (Special Report 10-B) and "Jade at Clear Creek and Jade Cove." These reprints are reasonably priced.

Bulletin 141, "Geologic Guidebook Along Highway 49—Sierran Gold Belt" costs only one dollar and is cloth bound and illustrated. Bulletin 136, "Minerals of California" is priced at three dollars and with its 35 cent supplement will aid in identifying almost every known mineral in the state.—Sara K. Smerud in the Fresno, California, Gem and Mineral Society's *Chips*

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Arrival of machinery has made it possible to start development work on the uranium property of Scorpion Exploration Development, Inc., according to Don Bielenberg, president. The concern has uranium claims in Cottonwood Canyon east of Lovelock, Nevada.—*Nevada State Journal*

TRUE OR FALSE ANSWERS

Questions are on page 27

1—False. The chuckawalla is quite harmless.
2—False. Montezuma Castle was built by prehistoric cliff dwellers.
3—True. 4—True.
5—False. Obsidian is found in many shades.
6—False. Billy the Kid was a New Mexico outlaw.
7—False. There is no observatory on Telescope peak.
8—True.
9—False. Navajos gather pinyon nuts for food.
10—False. The Colorado River break was closed by Southern Pacific engineers.
11—False. Juniper is always green.
12—True. 13—True. 14—True.
15—True. 16—True.
17—False. There was no Salton Sea in 1846.
18—True. 19—True. 20—True.

Uranium Institute of America Inaugurates Membership Drive

Plans for a formal campaign for membership to the Uranium Institute of America were announced recently by Admiral R. W. D. Woods, Ret., president of the organization.

The Uranium Institute was organized in the middle of May in Grand Junction, Colorado, after a series of formative meetings were held by representatives of the industry starting in February in Denver.

The admiral stated: "The uranium industry has passed through the pains of birth and the ravages of ill-controlled promotional opportunism. To a large degree, the industry is now shaken down to the course of a healthy development. It is imperative that the Uranium Institute of America, so recently created to serve the industry, be backed by 100 percent support of all echelons of commerce connected with uranium."

A schedule of dues for the institute calls for an assessment ranging from $25 for individual memberships to $1000 for the larger mining companies. The Institute offices are at 321 Uranium Center Building, Grand Junction, Colorado.—*San Juan Record.*

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Plans Call for New Uranium Mill at Grants, New Mexico

The possibilities of a second large uranium mill at Grants, New Mexico, was increased substantially with announcement of a proposed merger of resources of three companies, Sabre and Pinyon Uranium Companies of New Mexico and financial assistance from American Metals Co., Ltd., of New York City. C. J. Warren, a director of Sabre Uranium Co., said plans now call for the construction of the proposed mill near the Bluewater operation of the Anaconda Company and options have already been obtained on the plant site.—*Grants Beacon*

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Title Search on for Deed Holders of Potential U-Land

A search was under way in Los Angeles for thousands of persons holding supposedly worthless deeds to New Mexico land that may be rich in uranium. The land was sold 20 years ago in an oil promotion scheme that landed its backer in court for violation of securities laws. No oil was ever found on the land.

Rich uranium discoveries have been made in areas adjoining the "oil land" near Grants and Gallup recently, and now the Phillips Petroleum Co. wants to develop the long-neglected tracts.

A title searching firm from Gallup has been in California for several months tracking down the deed holders, but so far has come up with only 1600 with an estimated 3000 still missing.—*Phoenix Gazette*

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Two United States Atomic Energy Commission preliminary maps have been placed on sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, 25, D. C. They are priced at 20 cents each, and they are as follows: Preliminary Map No. 6, "Structure Contour Map of Ambrosia Lake Area, McKinley County, New Mexico; Preliminary Map No. 7, "Surface Geology Map of Ambrosia Lake Area," McKinley County, New Mexico.

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A second carload of coffenite was shipped recently by Apex to the Vitro Mill at Kalunite Siding, Utah. The 60-tons of ore was "the best yet," declared company officials who estimated it would run one percent uranium.—*Reese River Reveille*

New and Improved Products for Desert Living

NEW MILEAGE MEASURER FIGURES MAP DISTANCES

A pocket-size mileage measurer that accurately figures distances on any map, regardless of scale, has been placed on the market by Mile-O-Graph, Inc., 165 Broadway, New York City. Retail price of this patented, precision-made device is about $2.

The Mile-O-Graph figures exact distances on any map automatically. First, set the scale as indicated on the map and a small wheel on the Mile-O-Graph traces the route. The exact mileage shows up instantly through a magnifying window. The instrument is made of durable plastic and brass.

BLACK LIGHT HOBBY KIT ANNOUNCED BY ULTRA-VIOLET

Development of a new budget-priced short-wave Mineralight lamp has been announced by Ultra-Violet Products, Inc. of San Gabriel, California.

The new lamp, trade-marked "NH Mineralight" is priced at $14.75. It is designed to fill the need among hobbyists and mineralogists for just such a beginning unit. Operating on 110 volt AC, the short-wave NH will activate 90 percent of all fluorescent minerals. Bulb is rated at 1000-2000 hours of use.

The kit contains eight mounted mineral specimens, invisible fluorescent crayon, chalk and ink, printed samples of unusual fluorescence and a descriptive booklet on rocks and minerals which fluoresce.

The lamp is sold by all Mineralight dealers. Complete information on Mineralight is available free by writing to Ultra-Violet Products, Inc., Dept. DN, San Gabriel, California.

GEMS AND MINERALS

Stardust Jewelry Fuses Beauty of Gem Stone, Mystery of Space

By H. H. NININGER
Sedona, Arizona

The nickel-iron of meteorites polishes with a beautiful, rich chrome-steel luster. When brightened along natural contour lines its beauty is distinctive.

Added to this beauty is the romance and mystery associated with these stones from outer space. Meteorites are too important scientifically and much too rare to justify their general use for ornamentation or other commercial purposes.

Because of their potential yield of information concerning the universe all meteorites should be preserved for educational and scientific purposes except in those rare instances where the representative samples of a single fall exceed the demand by institutions of learning. In only two or three locations has meteoritic material been found in quantities that warrant its commercial use.

No one will ever know how many thousands of fragments were sold as curios between the time of the discovery of Arizona's Meteor Crater in 1891 and 1946 when an effort was launched to record the specimens recovered and disposed of.

In 1946 the American Meteorite Museum decided to experiment with small bits of matter from space. This involved the sectioning and etching of suitable specimens and the polishing of others along contour lines to reveal their true and distinctively beautiful character. Those of suitable size and shape were adapted for wear as costume jewelry, a tedious and expensive task, but a process which enhanced their value both as ornaments and as scientific wonders.

"Stardust" consists of tiny condensation droplets from a meteorite explosion cloud. When the great meteorite smashed into Arizona it shattered itself into dust with still enough energy left over to vaporize. When it did so, a gaseous cloud of blinding incandescence resembling a small sun or star shot into the stratosphere.

Much of this cloud condensed and fell to earth as a drizzle of tiny stainless steel spheres which have resisted the forces of weathering for 50,000 years. Experimentation brought forth a method of separating these particles from the soil, then by embedding them in plastic it has been possible to grind and polish them into brilliant mosaics with chrome-like luster. These mosaics are used in costume jewelry which has been trade-named "Stardust."

Equally amazing to those who in past years have witnessed the disrespect which scientists and laymen alike have placed on the very unattractive fragments of oxidized nickel-iron that were scattered over the plains around the Arizona crater, is the fact that some of this cosmo-terrestrial hybrid actually possesses hidden beauty. In the laboratory it has been found that a small percentage of this "oxidite" will take a high polish and such pieces become very attractive almost jet black gems that are particularly beautiful in silver mounting.

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Rockhounds in Russell Springs, Kansas, have organized a new club with 17 charter members. L. P. Baxter will serve as president; Malcolm Peterson, vice president; Mrs. Marjorie Wright, secretary-treasurer.

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New Officers of the Denver, Colorado, Mineral Society are: Calvin Simmons, president; Ralph Ellis, first vice president; Arthur Ermish, second vice president; Jean Walker, secretary-treasurer; Grace Neill, corresponding secretary.—*Mineral Minutes*

SAN FERNANDO FAIR ADDS FIRST MINERAL EXHIBITS

Added feature of this year's San Fernando Valley, California, Fair will be a mineral, gem and lapidary show. The event is held annually at the Devonshire Downs Fairgrounds, 18000 Devonshire Street, Northridge.

Among the interesting exhibits scheduled are an air float mineral separator operated by inventor Roy Clint; the king-sized mineral specimen collection of William Page; the jade of Vernon Peck; gem collections from Escondido Canyon of Dr. Ralph Sir-Kegian; the outstanding minerals from the Lee Dewing and Robert Hamlin collections; tumbled stones by Walter Ellerby, Ted Hauser and Joe Nicols; and others.

Clubs or individuals desiring exhibition information should write to Kilian E. Bensusan; 7320 Sepulveda Blvd., Van Nuys, California, or phone him at STate 6-3251.

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SURFACE OF MINERALS IS LUSTER-DECIDING FACTOR

The luster of minerals varies with the nature of their surfaces. A variation in the amount of light reflected produces a different degree of intensity of luster, and different kinds of luster are produced by variations in the nature of the reflecting surface.

Metals such as gold, silver and lead have a brilliant shine known as a metallic luster. There are no minerals in Dana's System of Mineralogy after passing the oxides that have a metallic luster—with a single exception, the very rare mineral langbanite. All minerals with metallic luster are opaque.

All other lusters are described as nonmetallic and there are various kinds of these.

Adamantine luster is the bright, somewhat oily flash characterized by diamond and corundum. Two other hard minerals, cassiterite and zircon, also have adamantine luster, but so do cerrusite and anglesite, two quite soft lead minerals. All six of the above mentioned minerals have a high index of refraction and it has been suggested that there is a connection between this property and an adamantine luster. Most compounds of lead, non-metallic in luster, have a high refractive index and adamantine luster.

Vitreous luster is the surface reflection shown best by broken glass. The vitreous and sub-vitreous lusters are the most common in the mineral kingdom. Quartz is an outstanding example of a vitreous luster, and calcite of a sub-vitreous luster.

Resinous or waxy luster is the type of surface reflection exhibited by yellow resins, and is found in opal, sulphur and yellow varieties of sphalerite. Resinous luster grades off into greasy luster, the luster of oily glass, found in some varieties of serpentine and some massive quartz.

Pearly luster gets its name from the beautiful sheen — not the play of colors — of mother-of-pearl. This luster is common among minerals which have a foliated structure and an excellent basal cleavage, such as the micas, heulandite, apophyllite, stilbite, etc.

One of the most beautiful lusters is satiny or silky, characterized by fibrous minerals such as satinspar, serpentine, chrysotile, crocidolite, etc.—Ann Kelly in the Arrowhead Mineralogical Society's *Arrow Points*

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As part of the Fiesta del Pacifico, the San Diego, California, Mineral and Gem Society will stage a month-long show, from July 18 to August 19, at Spanish Village, Balboa Park, San Diego. Special attractions include gem identification by the San Diego Gemological Society; demonstrations of the faceting of outstanding local gem stones; displays; and commercial booths.

AGATES CAN BE PERMANENTLY COLORED BY CHEMICAL BATHS

Agates can be colored in several ways. Water soluble dyes and inorganic compounds (sodium chromate) will quickly color agate, but care must be taken with these stones for they can stain fabrics. Clorox will oxidize dyes to colorless compounds.

Another way to stain a stone is to impregnate it with a solution and follow by another solution which will form an insoluble colored compound. These colors are usually permanently colored, but the insoluble compound, if the rock is not very porous, will clog up the pore spaces.

A third method of dyeing is to soak the stone in a coloring compound. After penetration is complete, allow it to dry from two to 10 days in a warm place and then heating in an oven. It is important that all water be removed from the stone before heating for steam formed inside the stone will crack it or possibly cause it to explode. After the stone is dried, it should be placed in a can filled with sand or asbestos and into an oven. Raise the temperature slowly to 400-degrees. Leave it at this temperature for half an hour. It should take about three hours to warm up and three hours to cool by this process. The final coloring material is the oxide—it is permanent and can be repeated for deeper shades.

All agates are fairly dense. Water-born solutions, even after weeks of soaking, seldom penetrate more than one-fifth inch into the stone. Thus the stone should be slabbed before placed in the dye bath. The oil from slabbing must be carefully removed by scrubbing with soap and carbon tetrachloride. Another method is to preform the stone—grind and rough out. This removes oil and roughs up the surface.

Before dyeing a rock, soak a clean slab in sodium dichromatex in order to see how well dye will penetrate. Remember, the rock that does not accept the dye often whitens upon heating.

For the color red, nails dissolved in nitric or sulfuric acid, will supply iron for this color. Soak the stone in this solution for one to four weeks, dry and heat. Yellow jasper can often be turned to red by heating.

Green is obtained by soaking in chromic acid solution (sodium dichromate and concentrated sulfuric acid) for about two weeks. After rinsing the stone, place it in a closed container with ammonium carbonate for another two weeks. Dry, then heat as for the red coloring. If you use this method, some of the agate should be heated prior to dyeing in order to determine if iron is present. A trace of red iron oxide will turn the green muddy. Traces of iron can be removed by soaking in hydrochloric acid and rinsing several times, but the time involved for this is hardly worth it.

It is possible to get blue-greens with copper salts; deep greens with nickel salts; and yellow-greens with iron salts. These processes do not have to be followed by heating.

Deep browns and blacks are obtained by soaking in a solution of one part sugar and two parts water. After soaking for at least two weeks, dry and heat as for the reds for deep brown. Prolonged heating at the elevated temperatures, or boiling in sulfuric acid will give black, but the acid will not penetrate too deeply and the stone should be soaked in diluted alkali or water to prevent future sweating of acid.

The most common method for blues is to soak in potassium ferro or ferric cyanide in a solution of one part acid to three parts water. After soaking for several weeks remove the stone and place it in an iron solution such as used for red colorations. No heating is required after the stone is removed and dried.

Cadmium salts followed by soaking in sulfide (liver or sulfur) solution in closed containers yield a yellow color.

Caution: some of the chemicals mentioned above are extremely hazardous.—Bill Harrison in the Ventura, California, Gem and Mineral Society's *Rockhound Rambling*

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HARDNESS TEST UNRELIABLE ON KYANITE AND CALCITE

In testing for hardness, the remarkable properties of kyanite should be fully understood. This mineral varies so much in its resistance to abrasion that it can be deeply gouged by a knife as it moves along the "grain," which runs the length of the crystal, but the same blade slips harmlessly over the surface in other directions.

Calcite is more constant, though a basal face on a crystal comes to only 2 on Mohs' scale; this is the less forgivable because calcite is supposed to set a standard as number 3. Other difficulties, such as the crumbling nature of a specimen or the lack of a fresh surface, may also make the hardness test unreliable. — Richard M. Pearl's *Rocks and Minerals*

INEXPENSIVE SAW OILS NEED NO THINNING

Do you buy expensive motor oil to lubricate your diamond saw work and then thin it down with "smelly" kerosene? A. C. Carpenter of the Wichita, Kansas, Gem and Mineral Society says the following oils do not need thinning nor are they as unpleasant to use as kerosene: form oil, wash oil, paraffine oil, floor oil, separator oil (all obtainable for around 50 cents a gallon at most bulk oil distributors) and transformer oil (usually given away free at electric light plants after it has accumulated a little moisture.)—*Quarry Quips*

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James C. Thompson was elected president of the San Jose, California, Lapidary Society at a recent meeting. Other officers who will serve with Thompson are Guy Gibbs, vice president; Orland E. Upton, secretary; Mrs. Rita Addison, treasurer; and Mrs. Elizabeth Elliott, bulletin editor. — *Lap Bulletin*

GEM MART

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GENUINE TURQUOISE: Natural color, blue and bluish green, cut and polished Cabochons — 25 carats (5 to 10 stones according to size) $3.50 including tax, postpaid in U.S.A. Package 50 carats (10 to 20 cabochons) $6.15 including tax, postpaid in U.S.A. Elliott Gem & Mineral Shop, 235 E. Seaside Blvd., Long Beach 2, California.

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VISIT GOLD Pan Rock Shop. Beautiful sphere material, gems, mineral specimens, choice crystals, gem materials, jewelry, baroques, etc. Over 100 tons of material to select from. John and Etta James, proprietors. 2020 N. Carson Street, Carson City, Nevada.

COLORADO MINERAL specimens, cutting and tumbling materials. Send 2 cent stamp for list and terms. Dealers please write for wholesale list. John Patrick, Idaho Springs, Colorado.

GEMS OF THE desert, tumbled polished baroques, Mexican lace and carnelian agate, Death Valley jasper agate, rose quartz, petrified wood palm, black fig, many others. General mixture, $6 pound. Mexican agate slices and various cuff link preforms. Slabs and findings. Earring size tumbled turquoise $8 pound, larger size $1 ounce. Price list. Golden West Gem Co., 7355 Lankershim Blvd., North Hollywood, California.

A DOLLAR DEPOSIT brings a brilliant polished approval selection of assorted slabbed agates. Rare Moss and Plume Nodules in 10 lb. lots $2 per pound plus postage. Helena Jones, 15420 Southeast Division, Portland 66, Oregon.

McSHAN'S GEM SHOP—open 5 to 9 p.m. except Mondays and Thursdays. Rocks, gems, cholla cactus wood. Mile west on U.S. 66, Needles, California, Box 22.

SCANDIUM in a rare and attractive Christmas tree formation. Generous size sample $2.00 postpaid. H. Mick, Box 612, Wickenburg, Arizona.

OPALS AND SAPPHIRES rough, direct from Australia. Cutting opal, 1 ounce $5, $10, $20, $30 and $60. Blue sapphires, 1 ounce $10, $30 and $60. Star sapphires 12 stones $10, $20, and $30, etc. Post free and insured. Send international money order, bank draft. Australian Gem Trading Co., 49 Elizabeth St., Melbourne, Australia. Free list of all Australian stones rough and cut, 16 pp.

TUMBLED GEM Baroque all polished. Small and large sizes 3 oz. $1.25. Gems in the rough, 5 lbs. for $4.00. Dixie Rock Shop, 3245 Prospect Ave., So. San Gabriel, California.

ATTENTION — Advanced collectors and dealers — smoky quartz crystals in singles (one, 54 lbs.) and groups—$10 to $250. Write wants. The whole mine production for sale to person qualified to handle. U. S. gem quality desert roses (chalcedony) ½" to 2"—cabinet specimens or cutting material. All beautiful—no "duds" —at $2 per lb. (state size), 3 lbs. $5.00, postage please. C. Earl Napier, 20472 Harvard Ave., Hayward, California.

ROCKHOUNDS! Semi-precious polished rocks mailed direct to you from India. $3.00 postpaid. Bowman & Son, Box 41231, Los Angeles 41, California.

FREE—good size sample Nebraska agatized wood or Kansas dendritic opal. Enclose 25c for postage and handling charge. Price list available on request. F. C. Hutchins, Franklin, Nebraska.

MINERAL COLLECTORS and prospectors. Special reductions on all books and supplies. Free list. Jim Price, Box 1244, Midland, Texas.

To clean gold which has tarnished, mix the following ingredients and apply to the gold with a soft brush: 10 ounces sodium bicarbonate (baking soda), half ounce clorinated lime, half ounce salt, and eight ounces of water. A very small amount of this solution is sufficient to clean the metal. —*Siskiyou Gem*

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Gaylon Robertson was installed president of the Coachella Valley, California, Mineral Society, along with Ennis Scott, vice president; Mary Alice Winn, secretary; Erva Smith, treasurer; Omar Kersohner, director; and Clifton Carney, federation director.—*Lik 'n Lap*

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September 29-30 have been named dates for the Delvers Gem and Mineral Society's Sixth Annual Show. It will take place at Simms Park auditorium, 16614 So. Clark, Bellflower, California.

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The annual San Antonio, Texas, Rock and Lapidary Society's show is scheduled for October 13-14, at the White Museum Auditorium.

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New officers of the East Bay Mineral Society of Oakland, California, installed in June were Sidney Smyth, president; Francis Rhoades, vice president; Jenness Anderson, secretary; Mr. and Mrs. Russell, treasurers; Si Edwards, director. Incumbent directors are Frank Wilcox and Dennis Patterson.

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The hardness rating of 10 given to diamond is an average. In general, the diamonds found in Borneo and Australia are the hardest, followed by Indian, Brazilian and South African stones in that order. In addition, the hardness of the crystals is greater on the exterior than in the interior, and is greater on certain crystal faces and in certain directions along a single face.—Contra Costa, California, Mineral and Gem Society's *Bulletin*

RIVERSIDE FARMERS FAIR TO FEATURE MINERAL SHOW

One of the outstanding features of the 10th Annual Farmers Fair of Riverside County, to be held in Hemet, California, August 22-26, will be the gem and mineral exhibits, according to Len Harvey, superintendent of the division. Entry blanks must be submitted prior to August 12, and all exhibits must be correctly and adequately labeled, Harvey said. Exhibition rules and premiums may be obtained by writing to the Fair at Post Office Box 398, Hemet.

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FINENESS OF GOLD IS INDICATED TWO WAYS

The "fineness" or purity of natural gold is expressed in parts per thousand. The rest of the thousand is practically all silver, but may include some trifling copper or iron alloyed with the gold. Thus, 850 fine, the average quality of California vein gold, means that there are 85 parts of pure gold to 15 parts of silver. Gold containing over 20 percent silver is known as electrum; it reveals its silver content by its paler yellow color.

The karat mark on gold jewelry is an indication of the number of parts in 24 that are pure gold, the rest being metals added to give the desired hardness or color to the manufactured article. For example, 24K is pure gold, while 12K is half gold; most American rings are 10K, 14K or 18K, and the now-extinct gold coinage of the United States ran to 21.6K, equivalent to 900 fine in the other method of reckoning. This kind of karat should not be confused with the word spelled carat, which is a unit of weight used for gems.—Richard M. Pearl's *Rocks and Minerals*

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BORON MINERALS COME IN WIDE RANGE OF CRYSTALS

The element boron has been used by man since 2000 B.C., as a flux in soldering and smelting, to reduce the co-efficient of expansion in glass and china manufacture, in textile dying and to make paint fire-resistant. Trade caravans brought borax from Persia and Turkestan to Venice in the 13th century where it was highly valued by the makers of delicate glass-ware.

The 20th century has found a new use for boron—a retardant and control of fission in atomic piles. The mineral is formed into rods and these are inserted into the piles to control the rate of fission.

The great dry lakes of California are now producing virtually all the commercial borax refined in the U.S. There are many crystal forms of the boron mineral. Colemanite, for instance, has the second greatest number of crystal forms of any mineral known. Ulexite, usually found as an aggregate of minute fibrous crystals, has recently been discovered in optical form, as clear, massive sections, with pronounced and unusual double refraction.

Teepleite has been found in Nature only once by Mineralogist Max Vonsen who located it at the edge of a lake in Northern California after a series of exceptionally dry years.

The delicate crystal groups of glistening meyerhofferite are the collectors' joy, but the exceeding fragility of the crystals makes handling a problem. A technique developed by some early collectors was to place a group in a small cardboard box as soon as it was removed from the site, and then to fill the box with lukewarm melted paraffin. Once safely home, a small hole was drilled in the bottom of the box, and the wax drained through it in a barely warm oven.—Vincent Morgan in the Arrowhead Mineralogical Society's *Arrow Points*

ROCK HOBBY ENHANCED BY FOSSIL HUNTING SKILL

One of the most interesting rockhound sidelines is the hunting of fossils. Fortunately, the study of fossils is not as difficult as that of artifacts or inscriptions, yet it produces results of the same accuracy in determining the history of life upon this globe.

A fossil is the remains of organisms or the direct evidences of their former existence preserved by natural causes in the earth's crust.

They are formed either by the checking of decomposition or replacement of the hard parts of an organism by a durable substance. Anything unfavorable to the life of bacteria slows or stops decay. Burial in mud or volcanic ash, very dry air, low temperature, sea or bog water and incrustation of pitch, gum or calcium carbonate have a preservative effect. Some outstanding instances are the remains of mammoths in the frozen ice and gravel of Siberia and the imbedded fossils in amber of the Baltic Sea.

If any organism is buried in some substance that retards decay the sand, clay or ooze surrounding it may become hard while the organism retains its original shape. The decay of the object will leave a hollow mold. This could remain as such in which case it would be a fossil. In some cases the waters may fill this hollow with calcite or silica.

Skeletons which consisted mainly of carbon or carbon compounds, are commonly preserved as a black, filmy or even entirely flattened fossil.

Petrified wood has been found throughout the world. The structural details were made permanent by the deposition of siliceous or calcarious material drawn into the dead but still uncollapsed tissues of the trees.

Hunting for and collecting fossils calls for no special equipment or preparation. There is little digging necessary in this hobby, unless a particular layer is so productive that it is worth the extra work. The best place to find fossils is in exposures in cliffs, the sides of ravines, stream beds, quarries and excavations. — Chicago Rocks and Minerals Society's *The Pick and Dop Stick*

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TWO CRYSTAL CLEANING SOLUTIONS DESCRIBED

Keystone Newsletter, bulletin of the Mineralogical Society of Pennsylvania, describes two methods for cleaning quartz crystals:

Boil the crystals in the following solution: 2 percent hydrochloric acid; 6 percent versene regular; 92 percent water. Versene, a chelating agent, is manufactured by the Bersworth Chemical Company of Framingham, Mass. It is an industrial chemical used in textile mills. Note: for safety, boil crystals out of doors.

The second method is to boil the crystals in the following solution: 4 percent sodium hydroxide, 6 percent Versene T and 90 percent water.—*Sooner Rockologist*

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"Melodies in Gems" has been named theme of the September 8-9 Compton, California, Gem and Mineral Club's 7th Annual Show. It was suggested by Don Beck. The event is scheduled for the VFW Hall, 119 East Magnolia Avenue, Compton.—*Rockhounds Call*

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Placerita Canyon near Newhall, California, the site where gold was first discovered in the state 114 years ago, has been set aside as a state and county park. A total of 48 acres are included in the new park.—*Rockhound Rambling*

SHEET CORK IDEAL SURFACE FOR FLAT LAP POLISHER

Sheet cork does not have wide usage by lapidaries as a lap wheel surface, but it is excellent for polishing such materials as agate and jasper. The cork used is that material used in gaskets in gasoline engines and can be obtained at most auto supply stores.

It is made up of small pieces of cork held together with waterproof cement and comes in smooth sheets either 12 or 16 inches wide and 30 inches long. It is available in several thicknesses, but it is not advisable to use less than the one-eighth inch thickness, and the three-sixteenths or one-fourth inch thicknesses are preferred.

To apply the cork to the flat lap, heat the metal backing plate until pitch, made of about half common rosin and half roofing tar, will melt on it. Then smear some of the hot pitch on the hot lap plate and put it down on the cork. Place a heavy weight on it until it cools.

A 12-inch cork lap should be run at 200 rpm. At this speed the wheel does not throw off much of the polishing agent, and a fast polish is obtained.—San Jose, California, Lapidary Society's *Lap Bulletin*

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MANY PECULIAR MINERALS BEAR DESCRIPTIVE NAMES

There are some minerals whose appearance is so unlike what one considers a true mineral that names suggesting animal and vegetable products have been given to them. Asbestos is the outstanding example for it has most of the properties of a true fiber and can be spun and woven into textiles. It is often called mineral silk.

Mountain leather has tough fibers interlaced to make thin flexible sheets. It is light enough to float and belongs to the amphibole group of minerals. An especially thin variety is known as mountain paper. Mountain cork is similar but occurs in thicker pieces while mountain wood is more compact, though also fibrous, and it looks rather like dry wood, being brown or gray.

A soft, spongy variety of calcite sometimes goes under the name of mountain milk or of rock milk. An unctuous variety of halloysite, a claylike mineral, is called mountain soap, while mountain tallow is a yellowish, waxy hydrocarbon properly called hatchettite. Mountain butter is alunogen, and mountain meal is diatomaceous earth.

In addition to these "mountain minerals" there are very many minerals having varieties with interesting, peculiar names applied to them by imaginative persons. Thus we have asparagus-stone, which is green apatite (surely an appropriate combination of words!); cinnamon-stone, which is grossularite garnet; dry bone ore and turkey-fat ore, varieties of smithsonite; feather ore, usually meant for jamesonite, though it also has been applied to stibnite, zinkenite, boulangerite and meneghinite; feather-alum, which is halotrichite; hair salt, a silky fibrous epsomite; horseflesh ore, bornite; kidney ore, rounded hematite; and many other strange names such as toad's-eye tin, dog-tooth spar, cockscomb pyrite, bone turquoise, wood tin, rock meal and several kinds of mineral roses.—Richard M. Pearl's *Rocks and Minerals*

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Installed at the annual banquet of the Washoe Gem and Mineral Society of Reno, Nevada, were the following officers: George Lund, president; Richard Curnow, vice president; Sonja Sanford, secretary; Etta Williams, treasurer; Claude R. Mowry, publicity; Richard Frey and James Palmer, directors.

COPPER FAMILY INCLUDES MANY BEAUTIFUL MINERALS

Various combinations of copper and other elements produce some of the most beautiful crystals and striking colors in a mineral collection. Some of the most common combinations are:

Copper and silica (copper silicates) — dioptase, chrysocolla, bisbeeite and shattuckite.

Copper and oxygen (copper oxides) — cuprite and tenorite.

Copper and carbon (copper carbonates) — azurite and malachite.

Copper and sulphur (copper sulphides) — chalcocite, covellite, brochantite, antlerite and chalcanthite.

Copper, iron and sulphur (sulphides of copper and iron) — bornite and chalcopyrite.

Copper, arsenic and sulphur — enargite and tennantite.

Copper, sulphur and antimony—tetrahedrite and famatinite.

Copper, lead and sulphur—caldonite and linarite.

Copper, aluminum and phosphorus—turquoise.

Many of the copper minerals are employed by the lapidary. These minerals meet the requirements of beauty and rarity, but fail on the durability test to be classed as precious stones. Some of the copper minerals that can be cut and polished are turquoise, malachite, chrysocolla and dioptase.—Long Beach, California, Mineral and Gem Society's *Mineral News*

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TOO MANY ROCK NAMES, MINERALOGIST BELIEVES

Rocks, unlike minerals, represent almost all gradations from one extreme of texture and composition to the opposite. If a sufficiently large and varied number of rock specimens were brought together, they could be arranged to show barely perceptible transitions in almost every direction. Certain gaps would be unfilled and they would be conspicuous by contrast—such missing sections of the rock series are puzzling to petrologists who otherwise find the natural sequence to be orderly and gradual. Because of the nearly uninterrupted continuity among rocks, the names given to them are defined arbitrarily and the limits are drawn artificially. Consequently, hundreds of useless rock names invented by overly eager geologists clutter up the literature.—Richard M. Pearl's *Rocks and Minerals*

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TRUE JADE, ACTINOLITE ARE SAME CHEMICALLY

The Chen Yu, or true jade, is prized above all other stones by the Chinese from ancient times to within the past 200 years. It is a calcium-magnesium silicate which we call nephrite. It is of cryptocrystalline structure and belongs in the amphibole group of rock-forming minerals. Nephrite is identical with actinolite chemically, but differs structurally.

Most specimens of actinolite contain considerable amounts of iron and are dark green or brown in color. There is another mineral — tremolite — which has the same structure and characteristics of actinolite, except that in it iron is almost entirely absent, giving it a pale white color. Nephrite nearly always contains iron, and the higher the iron content in the material, the darker the color.

Jadeite, unlike nephrite, is a sodium-aluminum silicate belonging to the pyroxene group of minerals. It was, as far as is known, not worked by the Chinese before the 18th century, when it was brought into China through Yun-nan Province from northern Burma, the only place in Asia where jadeite is found in the natural state.—Walter A. Wood in the Santa Clara Valley, California, Gem and Mineral Society's *Breccia.*

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The Rockcrafters Club, composed of Lockheed employees, has scheduled its first annual show for October 27-28. Paul Sykes has been named show chairman and assisting him will be Sam Duncan, special exhibits; Tom Whyto and Bill Woick, grab bags; and Bill and Bernadine Riley, commercials and prizes. The club has over 275 members.

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New officers of the Marquette Geologists Association of Chicago, Illinois, are George J. Huss, chairman; James A. Carter, vice chairman; Mary Riordan, secretary-treasurer; Paul J. Keller, Ray C. Mitchell, Arch J. Nisbet and G. G. Putman, directors; Mrs. Harold R. Schwendeman and Oliver P. Schram (alternate), delegates to the Midwest Federation Convention.

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Newest of the modern diamond cuts is heart shape. Stones cut in this shape are usually mounted on a plain band. In the past, when a diamond was called heart-shape, it was actually triangular or pear-shaped.—Evansville, Indiana, Lapidary Society's *News Letter*

AMATEUR GEM CUTTER

By DR. H. C. DAKE, Editor of The Mineralogist

Certain types of rough gem cutting materials are often offered at so much per pound or piece. Obviously, under these circumstances, with many gem materials a certain element of speculation will enter into the transaction. Some items sold under designation of "mine run" means just as it is gathered in the field, from stream gravels, quarry, or from a hole dug in the ground. Then there are various other specific designations including choice, selected, well crystallized, crystals, and many others.

All of these terms mean something, but no matter how honestly the seller may "select," it should be kept in mind that he generally cannot see inside of the rough mass. Certain types of material from specific and well known localities will average to certain grades, and this is fully understood by those who are experienced in handling this material. The more common and cheaper grades of rough gem materials, sold by the pound, will in the long run average out profitably when cut and polished. However, it is possible that in a single pound or piece, selected as mine run or at random, may prove to be poor quality or unsuitable for cutting. This could hardly happen in a larger similarly selected lot.

For many years it was customary for the Australian opal miner to sell his production of rough opal to the buyers visiting the diggings. Plenty of speculation entered into these transactions. At times the buyer charged up a loss, or the seller obtained either more or less than the true value of the material. But neither the buyer nor the seller was looked upon as a shady character. The only really accurate means of estimating the value of a lot of rough opal would be to reduce all of it to finished cut gems —and this was not practical, or was simply not being done. Both parties took the speculative chances, but at the same time tried to rely upon their good judgment and past experience.

Obviously, in a transaction involving rough gem cutting materials of some types, if the buyer is on the short end it is only human that he may be inclined to regard the seller with suspicion. Or if the seller learns that he has sold something for only a small part of its "internal" value he is not inclined to feel very happy over the deal.

Sawing the rough material into sections suitable for cabochon cutting or polished cabinet specimens is generally a reliable means of proving the quality of the material at hand. The number and size of the stones which can be cut may readily be determined, and this in turn is an excellent manner in which a fairly accurate value may be arrived at.

The finer and more valuable types of cabochon cutting materials are generally sold in the form of sawed slabs or sections, a method which is fair to both the seller and the buyer. The value of the slab may be arrived at by the number, size, and quality of gems which the section can produce.

Agate-filled nodules, thunder eggs, geodes, concretions and similar items are sometimes sold sight unseen. It is usually next to impossible to determine just what the interior may yield. Specimens of this kind from most localities will usually average along certain percentages between worthless, poor, medium and high grade. This should be understood by the buyer. In some cases it may be a good average to find only 10 percent in the high grade class and possibly only one percent in the superfine group.

In the old days moss agate was gathered along the Yellowstone River in Montana by the ton. This was generally carried on as a small local industry, and the "mine run" brought about 10 cents a pound. The buyer would perhaps learn that 50 percent or more would prove next to worthless for gem cutting, and only a small percentage was really high grade scenic agate. But it did not require many of these high grade specimens in a ton to compensate the buyer for the duds. Mine run agate of this kind now brings about 10 times as much as it did at one time, and with the growing scarcity of this material the top price is not yet in sight.

In selling mine run the seller could sort over the material and pass along only duds, but this fraud would be open to plenty of suspicion if only duds were found in a reasonable size lot.

In buying a few pounds of rough gem cutting material, costing perhaps a few dollars, you may cut gems from this material worth many times its original value. On the other hand the next lot may not be worth the cost of cutting. In the long run it has been our experience that buying in the rough is not at all fraught with any great or continued loss—averages will prove profitable even when taken as mine run.

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Discarded billiard table felt cloth will be found satisfactory for stretching over a disk or drum sander for polishing large flat surfaces. The usual polishing agents may be used.

Soft minerals, like marble, calcite, travertine and onyx (all carbonates) may be polished more readily by adding a teaspoonful of a 10 percent solution of oxalic acid to the tin oxide or Levigated Alumina (Norton Company) polishing paste. A higher polish may also be obtained on soft gem minerals by following the usual technique with a soft cloth or muslin wheel, charged with red "jewelers" rouge. The cloth or muslin wheel (4 to 6 inches in diameter) may be attached direct to the motor shaft and operated at motor speed (about 1700 r.p.m.). Red rouge is available from supply firms in cake or stick form, which is applied direct to buff while in operation. Care should, of course, be taken not to overheat the work.

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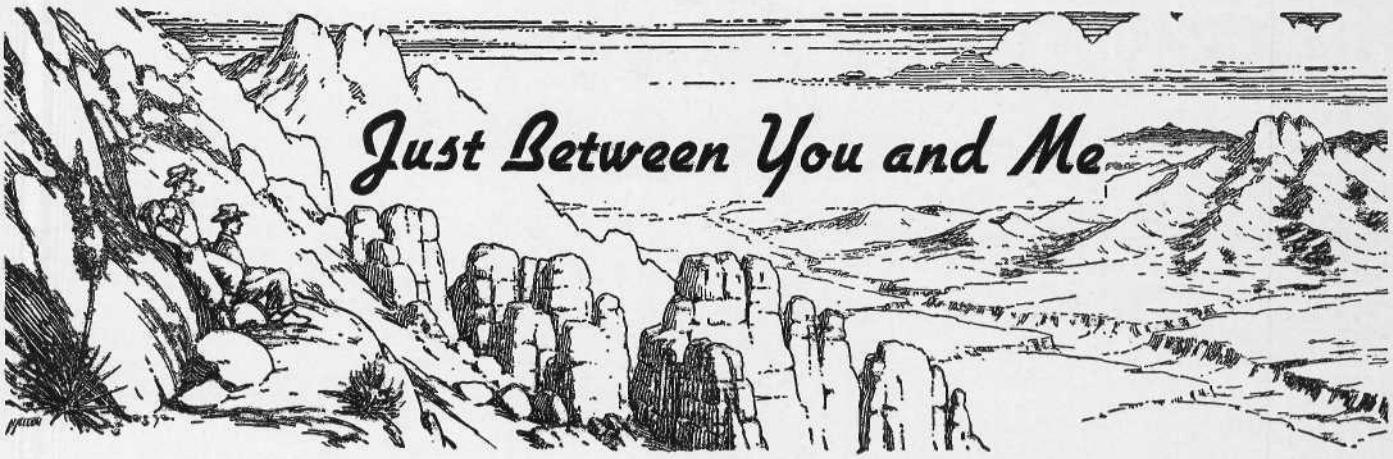
In tumbling gems attention is called to the fact that discarded heavy grits should not be allowed to pass into the drain sewer. Silicon carbide grits are about twice as heavy as ordinary sand, and this specific gravity material is sure to clog any sewer system if used in quantity.



By RANDALL HENDERSON

THIS IS AUGUST, and the summer sun is blazing down on the desert with all its fury. But for those who have normal health, summertime on the desert is not a hardship—unless you prefer to think that way about it. I've given this formula before, but I'll repeat it for the benefit of newcomers: Summertime on the desert involves no great discomfort if you will drink plenty of water, breath deeply, and keep busy.

Your thirst is not always an accurate gauge as to the amount of water you need to compensate for dehydration. So drink plenty of it whether you are thirsty or not.

Deep breathing is a habit we have to strive constantly to cultivate. Try it next time you feel that the afternoon temperature is oppressively hot. It'll give you more permanent lift than a glass of ice water.

The desert is no place for idleness in the summer. You don't have to do hard physical labor—but keep your mind active at a task that really interests you, and the summer days will pass quickly and pleasantly.

I've spent 45 desert summers learning and confirming efficacy of that formula.

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While we are on the subject of summer comfort, I want to repeat another suggestion which has appeared in *Desert Magazine* before. When you install evaporative coolers in your home, put in big ones. For instance, according to the engineering data, a 4500 cfm (cubic feet per minute) evaporative cooler would be adequate for my home. Instead, I put in two 3500 units, with good circulation through the house. We are never uncomfortable, even on the humid days. We prefer evaporative cooling to refrigeration because there is so much more air movement. We like fresh air, and when it comes through an over-size evaporative cooler—at least 50 percent oversize—it will insure comfort for your summer days.

* * *

Charles Kelly of Capitol Reef National Monument has made a suggestion which I hope will be approved by the U. S. Bureau of Reclamation. Kelly is looking ahead to the day when a great new reservoir will be formed behind the proposed Glen Canyon dam in the Colorado River. He would name it Lake Escalante, honoring the memory of the intrepid padre, Silvestre Velez de Escalante, who blazed the first trail across the Utah wilderness in 1776.

The Crossing of the Fathers, where Escalante and his companions hewed steps in the steep sidewalls of the canyon to a point where they could ford the Colorado River—a place which today is marked with a bronze plaque—will be buried deep beneath the waters of the proposed new lake. Incidentally, it was Kelly with Dr. Russell G. Frazier and Byron Davies who re-discovered those stone steps in 1937, and arranged for the Julius F. Stone Colorado River expedition in 1938 to erect the plaque there. (*Desert Magazine,* July '40)

Lake Escalante! And if you pronounce it as the Mexicans do, it is a pleasing name. Certainly it is appropriate, for it will preserve the memory of a man whose faith and courage should always be remembered.

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One of the most reassuring reports which comes to my desk each week is from a comparatively new organization, "Keep America Beautiful, Inc.," with headquarters in New York City.

This organization was formed, not by sentimentalists, but by big tycoons of the business world whose companies sell their products in wrappers, cans, paper boxes and bottles. They are backing "Keep America Beautiful" as a matter of economic self interest.

They have reached a very logical conclusion—that big brand names may lose some of their popularity if they appear too conspicuously in the litter of paper, glass and tin that clutters the roadside gutters.

Vermont already has passed a law against the sale of beer in non-returnable bottles. In other states, laws are being proposed to levy a special tax against concerns which sell their products in throw-away containers—the tax money to be used for clean-up maintenance on the highways and in the parks.

The anti-litter campaign seems to be gaining a great deal of momentum, and for that you and I are grateful.

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Jimmy Swinnerton the artist is a frequent visitor to our Desert Art Gallery—always a welcome visitor, for he was one of the good friends who many years ago encouraged my idea of starting a *Desert Magazine*.

Jimmy is one of those rare souls who see the beauty in everything—and he spends much of his time coaching and encouraging the younger generation of artists. "Nature is the Master Artist," he tells them. "There is more beauty and perfection in a single blossom than in all the words that can be said. None of us ever attains the perfection with which Nature blends her colors. Even in a handful of sand there is no disharmony."

I have a great admiration and respect for Jimmy Swinnerton for to me he personifies the philosophy that "the beauty around us in a large measure is a reflection of something within ourselves."

BOOKS of the SOUTHWEST

HISTORY OF NAVAJOS SHOWS THEM TO BE GREAT LEARNERS

The Navajo is the outstanding refutation of the premise that the American Indian is a vanishing race—a threadbare rabble so steeped in tradition and witchcraft that it will never adjust to the modern world.

The fact is that the Navajos are a dynamic, hybrid people who have "never needed urging to look at something new." The history of these great learners is told in a new book, *The Navajos,* by anthropologist Ruth M. Underhill, for 13 years associated with the United States Indian Service. The book is highly recommended to those who like their history with the accent on human understanding and the author repairs much of the damage done by other social scientists in this field who insist upon filling their works with long and involved sociological theories, book-learned conjectures, overheard surmises and the opinions of their fellows representing various "schools of thought."

The Navajos borrowed from all they came in contact with—corn and even the ceremonies needed to make it grow, from the Pueblos; sheep and horses from the Spaniards; weaving from the Pueblos and American traders; silverwork from the Mexicans; new costumes from Spaniards and Americans.

However, there is another side. When the Navajos set themselves against learning, nothing can move them. A good example of this was the attempt to teach them soil conservation in the '40s. The Indians didn't have to be told any foolishness about their precious horses ruining the range. The grass wouldn't grow because "the ceremonies had been done wrong."

But, explains author Underhill, perhaps the white man, who spent hundreds of years making the transition from the Medieval to the modern, was expecting too much from the Navajo by pushing them to make this very same change in a few years.

Such a change, the author believes, cannot take place without suffering, and today this is born out by the many accounts of Navajo family tragedies, where the loyalty of the young to home and family is tottering, the aged are bewildered and embittered, and young and old are both drowning their confusion in alcohol.

The old way has been undermined beyond repair. Can the substitutes offered by the modern world satisfactorily fill the gap left by the security of old which sprang directly from an intense loyalty to family and clan? The author indicates that the Navajo has been down and out many times before —and he always came back stronger than ever.

Published by University of Oklahoma Press, Norman, Oklahoma; 299 pages with illustrations, index and bibliography; No. 43 in the Civilization of the American Indian Series; $4.50.

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CACTUS GUIDE FOR HOME GARDENER NOW AVAILABLE

Ladislaus Cutak, horticulturist in charge of the Missouri Botanical Garden's extensive cactus collection, has written a book with the home cactus gardener in mind, *Cactus Guide.*

The first part of the book is a detailed discussion on each of the several hundred different varieties of cacti including the jungle types now in favor as exotic decorative plants. The second half of the book is a practical guide to the care of cacti including how much to water and feed, how to treat diseases; uses of cacti—arrangements, desertariums, dish gardens, landscaping; and propagation of cacti from seed, cuttings and by grafting. The book is liberally sprinkled with drawings and diagrams and includes a well-rounded bibliography for those anxious to know more about this fascinating hobby.

Published by D. Van Nostrand Company, Inc., Princeton, New Jersey; 144 pages; illustrations; bibliography; index; $3.95.

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NEW RICHARD PEARL VOLUME TELLS ABOUT ROCK HOBBY

"The mineral kingdom is as near as your garden soil and as broad as the universe." Perhaps this is as close to a one-sentence explanation as we can get for the reasons underlying the accelerated growth of the study of geology by amateurs in this country today.

Rockhounds will receive particular benefit from a new book by Richard M. Pearl entitled *Rocks and Minerals.* Using popular language, the author tells all about this earth-science hobby —how rocks and minerals are classified, recognized, identified, collected and displayed.

Published by Barnes and Noble, Inc., New York; paper cover; 275 pages; index; glossary; reading list; illustrations and colored plates of minerals; $1.95.

DID BILLY THE KID DIE IN 1881 OR 1950?

Was Brushy Bill Roberts really Billy the Kid? His story is told in *Alias Billy the Kid,* by C. L. Sonnichsen and William Morrison, and leaves the reader wondering.

To those interested in the Billy the Kid legend, this book will give fascinating information. To the skeptics, it will give pause for reflection. Why did Brushy Bill have scars that were so similar and such identical physical characteristics—for instance, "the big wrists merged into the smaller hands without a bulge" (to get easily out of handcuffs). Hazy though his memory is after nearly 70 years, Brushy Bill retells his story with a straightforwardness and amazing detail in reference to people and places. According to him, Pat Garrett killed the wrong man —his partner, alike in stature.

Before he died in 1950, Brushy Bill petitioned the governor of New Mexico for a pardon for crimes committed by Billy the Kid. His petition was denied, and he was not recognized officially as Billy the Kid.

Morrison, who accidently became interested in the case, has backed up the story with appendices of transcripts of legal documents and letters bearing on the life of Billy the Kid in New Mexico. He and Sonnichsen let the 91-year old man tell his story in his own words.

As the authors write in the prologue: "How strange it would be if the most famous American outlaw of all time should really survive into the Atomic age . . ."

Published by the University of New Mexico Press, Albuquerque, N. M. 136 pages, including appendices. 16 old-time photographs. $4.00.

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A short summation of the accomplishments made and the work ahead for Christian missionaries among Indians is the subject matter of a booklet by Louisa Rossiter Shotwell, *This is the Indian American.* The author is a member of the staff of the Home Missions Council, now a division of the National Council of Churches. Emphasis is placed not on the day to day work of missionaries and church helpers, but on the broad, general goals of this work.

Published by Friendship Press, New York; 32 pages; many photographs; 50 cents.

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