

THE

Desert

M A G A Z I N E



SEPTEMBER, 1939

25 CENTS

LETTERS

Top o' the Hill
4 miles west of
Jacumba, California

Dear Editor:

The Desert Quiz is my favorite indoor sport. In June and July I missed two questions each. But I am getting better, as I got them all in the August issue.

Having covered the desert and mountains for the past 15 years hunting Indian relics, hot or cold I love it.

HAPPY,

"The Old Man of the Mountains."

All right for you, Happy. You're the first 100 percenter we've heard about. You are getting too good—we are going to make the next Quiz tougher.—Editor.

• • •

Pasadena, California

Gentlemen:

We do not know Desert Steve, have not even had the privilege of visiting his Desert Center, but our household feels that both he and Desert Magazine deserve a hand on his "My Friend, the Tortoise" in July Desert.

Anyone who undertakes the championship of animals abused by man assuredly has something to say, and Desert Steve knows how to say it.

Sincerely yours,

LAURA C. PETERS.

• • •

1000 Palms Oasis, California

Dear Randall:

Your last issue was so darned good that we are getting up a few to go over to the Gallup affair and later maybe attend the snake dance. That article on the gold was fine as the devil. Why there must be just lots of gold if only we knew where to look.

Have had an eventful summer so far. Hiked up San Jac like I said—not up Snow creek. Had a four-day hike and I never will do anything quite so foolish. I learned a lot, anyway. It is steep up there, Randall. I lived through it, and then, from Idyllwild I hiked down to Palm Springs—and got lost! I had a potato cork in my canteen. It came out, and when I stumbled, all the water was lost. I tried to make it down to Palm Springs via Tahquitz ridge—about the most foolish thing I could have done. They found me delirious in back of the Tahquitz Estates, and the caretakers for the Davis estate found me and revived me. It was worse than a case of dysentery, believe me. My stomach acted up for a week.

Then there was a tea party that got three of us. Datura turned out to be a drug stronger than we expected. I read an article in your mag about the Dream Plant of the Indians. We tried it. Randall, it worked! But gosh sakes, we had nightmares, not dreams, and fevers up to 106 degrees. Almost killed one fellow from England. The Indians gave us some bark to chew on, and it helped a little.

All my regards to you, and being inquisitive, you better not publish any more stories of dream plants!

PAUL WILHELM.

Roosevelt, Arizona

Dear Mr. Henderson:

Ever since my introduction to the Desert Magazine—especially since your publication through Mr. and Mrs. Ruess of their son Everett's letter to Mr. Reynolds and me—I have wanted to express our appreciation. The Desert Magazine is a delightful publication that holds interest for our entire household.

Yesterday we had a laughable tragedy—or a sad comedy—that I described for my son's memory book. Perhaps it will give you a smile too, so here it is:

He fell into a cactus—that little boy of mine:

One would think he had the measles for he looked as red as wine!

His playmates roared with laughter while they pulled each cactus spike,

For Charlie did a "strip tease" right there beside his 'byke'.

Probably many readers have noted in this issue of D. M. that Mr. Barnes put Globe, Arizona in Pinal county instead of GILA, a perhaps natural thing to do with the Pinal mountains and Pinal creek both right there. Gila county made an impression on me because it touches Maricopa county on top of Roosevelt dam—crossing the dam far off its center. Mr. Reynolds and I were married on Roosevelt dam and had to be certain the ceremony was performed on the Gila end, having obtained our license in Globe, the county seat.

Best wishes to you and to all who assist in making the Desert Magazine so fine.

ELEANOR REYNOLDS.

• • •

Dodge City, Kansas

Dear Sir:

The Desert Magazine is the most perfect and beautiful writing to come out of the west. I wish I had spare time to write you some of the many grateful thoughts I have known since receiving my complete file of the magazine.

For Mr. Henderson, the editor, I want to suggest a new and novel way to reach the Natural Bridge, Death Valley: Ship your car from El Centro to Indio. Take your kayak and hitchhike up to the south tip of Salton sea. Paddle up to the north end of the sea. Hike up to Indio. Drive from there via Cottonwood springs, Pinto basin, Twentynine Palms, Warren's well, Old Woman springs, Box S ranch, Victorville, Randsburg, Inyo-Kern, Brown, Mountain springs (visit Shultz who came to California via Cape Horn).

Go on to Darwin, after you visit the 5,000 photographs in Box canyon. Take the old Eichbaum toll road (if you can). Turn off in the direction of Skidoo and go through Wildrose canyon to Indian ranch and the Ghost town of Ballarat, and on toward Granite wells.

And now for the unusual—to enter Death Valley via Wingate pass. Drive or push your car up the steep pitch where the old Twenty mule team borax trains used to follow the old Monorail trestle. Try to average 10 miles an hour for several hours, and you will really reach Death Valley, and not far from Bad Water find a sign, Natural Bridge.

Wingate pass is a road of memories. The old Twenty mule team borax trains used to ply that way from Death Valley to Mojave and the railroad. In 1937, in a low Chrysler 8 sedan I drove out of Death Valley over Wingate pass. Scraped bottom a thousand times in four hours. All tenderfeet avoid this road. If at any time your car gets discouraged, just leave it and send for one of Ben Hulse's Caterpillars. You'll make it easily from there on.

To anyone who does not enjoy Death Valley I will pay \$100 to find me a more beautiful place.

HARRY L. ALESON.

Pasadena, California

Gentlemen:

Enclosed please find \$1.00 for a binder for my husband's recent copies of the DM. He has all the first copies in a binder that we bought in May, but he needs another.

We enjoy reading all of the magazine. Don't let anyone make you think that it should be changed very much, and keep up the good old average by limiting your articles to about the length they are now. At least that is what we like.

ADA GIDDINGS.

Sez Hard Rock Shorty of ... Death Valley



By LON GARRISON

"Someway," philosophized Hard Rock Shorty, "it's the unexpected that gets you. Things you are used to don't bother you usually no more'n your wife does. But when changes comes, trouble begins. Like Wally Wilson's chickens over here by Wild Rose."

Hard Rock stuffed his battered cornob with tobacco, borrowed a match, and went on with his story.

"Wally an' his Missus was livin' over there by Deep Spring, an' Mrs. Wally got tired o' the lonesomeness when Wally was out workin' on his claim. So she went out an' got herself a dozen chickens to keep her company as well as lay a egg or two—she hoped. The chickens did fine. Only she hadn't figgered on the wind. There at Deep Spring it blows about 30 mile a hour from the east, an' has blowed that way ever' day n' night for 40 years.

"First off, it like to blowed them chickens away 'til the old lady got 'em anchored down to rocks an' the like. An' then after a week or two they sort o' got used to it, an' got into the habit o' leanin' into the wind as they walked around the yard. It wasn't long 'til they all developed a sort of permanent tilt to the east—just walked that way natural.

"In fact, them chickens got so used to leanin' on the wind, that one day when the wind stopped right dead all of a sudden, they all toppled over. She never could get 'em back up again 'til the wind started blowin' once more."

DESERT Calendar

AUGUST, 1939

28-31 Western division of American Mining congress meets at Salt Lake City.

31 to Sept. 4 Nevada state fair and rodeo at Fallon.

SEPTEMBER, 1939

2 Corn dance at Acoma, New Mexico.
2-4 Dig-N-Dogie Days fiesta at Kingman, Arizona.

2-4 Fiesta at Santa Fe, New Mexico. Col. T. B. Catron, chairman.

2-4 Annual rodeo at Winnemucca, Nevada.

3-4 San Pedro valley rodeo at Benson, Arizona.

3-4 New Mexico State Game Protective Ass'n., meets at Carlsbad.

4 Labor Day stampede at Duchesne, Utah.

7-9 Beaver county fair, Milford, Utah. E. S. Holmes, manager.

8-9 Peach Day at Brigham, Utah. W. L. Holst, manager.

12 Corn dance at Santa Clara pueblo, New Mexico.

14-16 Annual rodeo at Vernal, Utah. Ralph Watson, secretary.

15-16 Mexican Independence Day fiesta at Phoenix.

15-17 New Mexico federation of labor meets at Carlsbad.

15-17 Northern Arizona livestock show and county fair at Holbrook, Arizona.

16 Deer hunting season opens in Imperial and San Diego counties, California.

16-17 Mexican Independence day fiesta at Agua Prieta—across the border from Douglas, Arizona.

19 St. Joseph's Day fiesta at Laguna pueblo, New Mexico.

20-23 Bi-State fair at Clovis, New Mexico. A. W. Anderson, manager.

22-24 Antelope Valley fair, Lancaster, California. Tom Foley, chairman.

23 to Oct. 7 Second annual photographic exhibit at Museum of Northern Arizona, Flagstaff.

24 to Oct. 1 New Mexico State fair at Albuquerque. L. N. Harms, secretary.

28-30 Cochise county fair, Douglas, Arizona.

29 Sundown dance at Taos pueblo, New Mexico.

30 Fiesta de San Geronimo at Taos and other pueblos in New Mexico.

30 Central New Mexico Teachers' Association meets at Santa Fe.



Volume 2

SEPTEMBER, 1939

Number 11

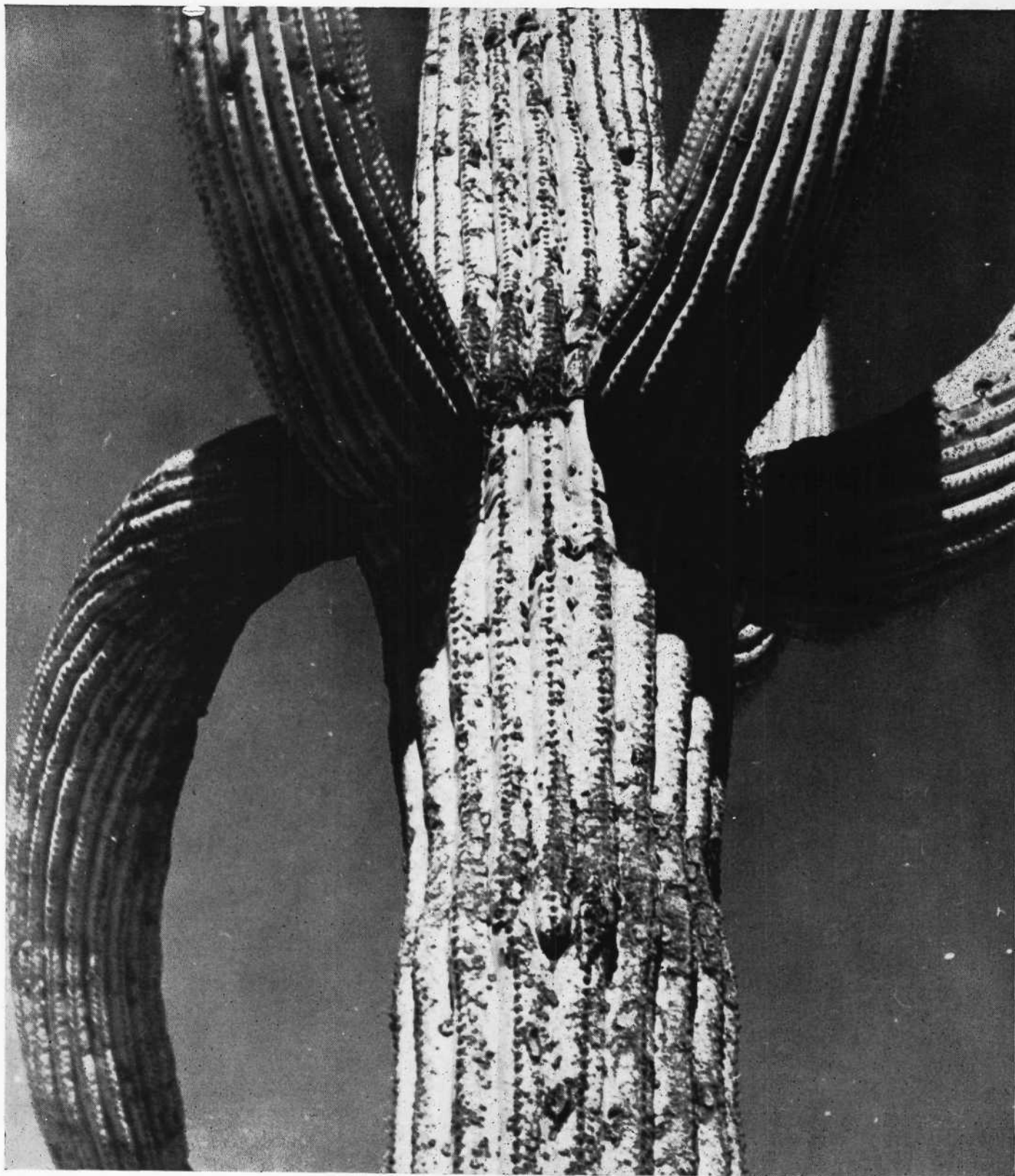
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RANDALL HENDERSON, Editor.
TAZEWELL H. LAMB, Associate Editor.

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Arms

By ROBERT W. CLARKE
Tucson, Arizona

Awarded second prize in the July contest of the Desert Magazine. Taken with a Rolleiflex camera, f3.5, 1/50 second, at f8, 4:00 p. m. in July, 1939.

First prize in the July photographic contest was awarded to Frank Ordway, Claremont, California. His picture, "Yucca," was of such quality it is to be used later as a cover for the Desert Magazine.

In addition to the prize winners the judges in the July contest rated the following entries as having unusual merit:

"Sunset Clouds" by A. R. Leding, State College, New Mexico.

"Boulder Dam" by Edith Kolb Lehnert, Grand Canyon, Arizona.

"Superstition Mountain" by Fred Hankins, Taft, California.

The DESERT MAGAZINE

Seven years ago Nina and Steve Shumway filed on a homestead high up in the Santa Rosa mountains on the rim of the Southern California Desert. Nina held down the claim while Steve worked in his date garden in the Coachella valley to grub-stake the project. And now their home is completed and Uncle Sam has given them a deed to the property. Here is Mrs. Shumway's story of their experience—a story that will be a revelation to those Americans who thought the pioneering days in the west were over.

Hard Rock Homesteaders

By NINA PAUL SHUMWAY

THE pioneers of the midwestern prairies plowed out patents to their government homesteads with ox teams. The settlers of the Northwest hewed theirs out with axes. We blasted out our title to 640 acres on the side of Asbestos mountain in Southern California's Santa Rosa range with dynamite.

We filed on our claim 4300 feet up on the mountainside overlooking the Colorado desert in 1932. From that time until October, 1937, when we finally had complied with Uncle Sam's requirements for a stock-raising homestead we used enough dynamite to operate a huge quarry. We moved literally tons upon tons of granite.

It was our own idea. We wanted that kind of a homestead. We loved the granite tors and terraces of Asbestos mountain and we purposely selected one of the most precipitous slopes as the site for our cabin. The beauty of this spot would be ample compensation for the toil that was necessary.

During the five years we spent in creating our mountain home our symphony was the music of hammer on drill steel with the inevitable crescendo of an echoing blast—followed by the steady staccato of pickpoints on stone. What would have taken five minutes with a shovel in ordinary soil, required two hours of drilling, a charge of dynamite, and a long session with a pick, before we were ready even to begin to shovel.

From the time we began to build our three miles of road to connect with the Palms-to-Pines highway until our walls were erected, we blasted our way. And I mean *we*, for 118 pounds of woman with a five-foot crowbar, enough enthusiasm, and a proper leverage can "wrestle" boulders right along with the men.

Clearing the building site, developing a spring in Grapevine creek and piping the water three quarters of a mile to



Nina and Steve Shumway

the house, sinking postholes for fences, in fact every improvement went ahead to the accompaniment of violent explosions and mighty showers of dust and splintered granite.

We built "The Tors" in a wilderness—a wilderness that howls at times when the fogs from the Pacific roll in over the ridge and the wind comes raging across the flat as if it were trying to tear the mountain in fragments and hurl them into the great warm bowl of the desert thousands of feet below. Yet in spite of all our blasting and building the wilderness still predominates. But it is a bright, beautiful wilderness—not a waste.

Piñon pines, juniper, scrub oak, buckthorn, mountain mahogany—all the hardy members of the Southwest's dwarf forest, as well as many small shrubs and bushes, march in verdant armies up the rugged slopes whose turrets and bastions are brilliantly etched with lichens; or troop down into the ravines where several kinds of rich forage grass follow the stream beds, sustained by moisture stored in the gravel from the winter's run-off or torrential summer thunderstorms. So plentiful is herbage that for many years, at certain seasons, cattlemen on the other side of the mountain have run stock through this area.

In spring the graveled benches are carpeted with flowers. The rocky steeps burst into bloom. Paintbrush, encelias, pentstemon, mallow, all the cactus and yucca tribes display glorious

exhibits of color. The dry fern nestling at the base of great boulders and ledges unfolds its grey curled tendrils in dainty green fronds. All the small citizens of The Tors take part in this general jubilee. Chipmunks frisk up and down the barbed cholla cactus as lightly as sunbeams. Chuckling quail pair off to mate and raise their broods. Amidst the blithe chatter of other birds comes the exquisite fluting of the little grey-throated canyon wren whose clear cadenza starts at the very peak of joy and falls in a ripple of bliss down the scale, sweetening the silence.

In contrast to all this vivacity, the rubber snake drags his glazed curves out into the sun. If you get rough with him he rolls his rather blunt body tightly around his tiny head. One of these helpless reptiles found a way into the house through a crack in the giant boulder that forms the north wall of our fern room, and made use of it all summer, sometimes lying for days inert among the greenery. Though he never seemed actually to enjoy my picking him up and stroking his slick, rubbery body, he soon learned it wasn't necessary to get all balled up about it.

Handsome Mr. Diamondback, too, crawls forth on the first hot day. But to no warm welcome, poor fellow. He doesn't want to bite folks any more than they want to bite him, if they'd only believe it. In fear he gets ready to fight, buzzing his intention fairly. Though I usually kill five or six rattlers, either the black mountain variety or light colored desert type, each season, the assault is made with compunction, especially if,

contrary to my victim's code, I strike without warning.

Much more objectionable than this rattling sportsman are the night-prowling rodents that mow down every watered plant; the scorpions, the bellows bugs, the ants, that invade with sly deviltry your most intimate person; the crawling centipedes, an eight-inch specimen of which drowned himself in the water bucket and lay unseen at the bottom until after I had drunk coffee made from that centipede solution. But a homesteader can't be persnickety.

Unwelcome Visitor in the Kitchen

It is seldom that we glimpse other natives of The Tors—coyotes, bobcats, foxes, badgers. Deer sometimes wander into the ravine below the cabin. An audacious civet cat once squeezed into the kitchen when the screen door had been left ajar, but by diplomatic maneuvering he was induced to leave in a good humor. For the most part, the presence of our shy neighbors is evidenced only by tracks.

While building the road we lived in a tent-topped dugout. In this frail shelter I weathered a three-day blizzard with Rufus the cat for company. Only once since then—the winter of '36 when the whole state of California turned arctic—have we had a real blanket of snow on this side of the mountain. Three years ago an exceptionally cold night broke most of the 3000 feet of water pipe that brings our water from the spring. But usually the days are comfortably warm and sunny, just a bit crisp around the edges. And I have seen nasturtiums

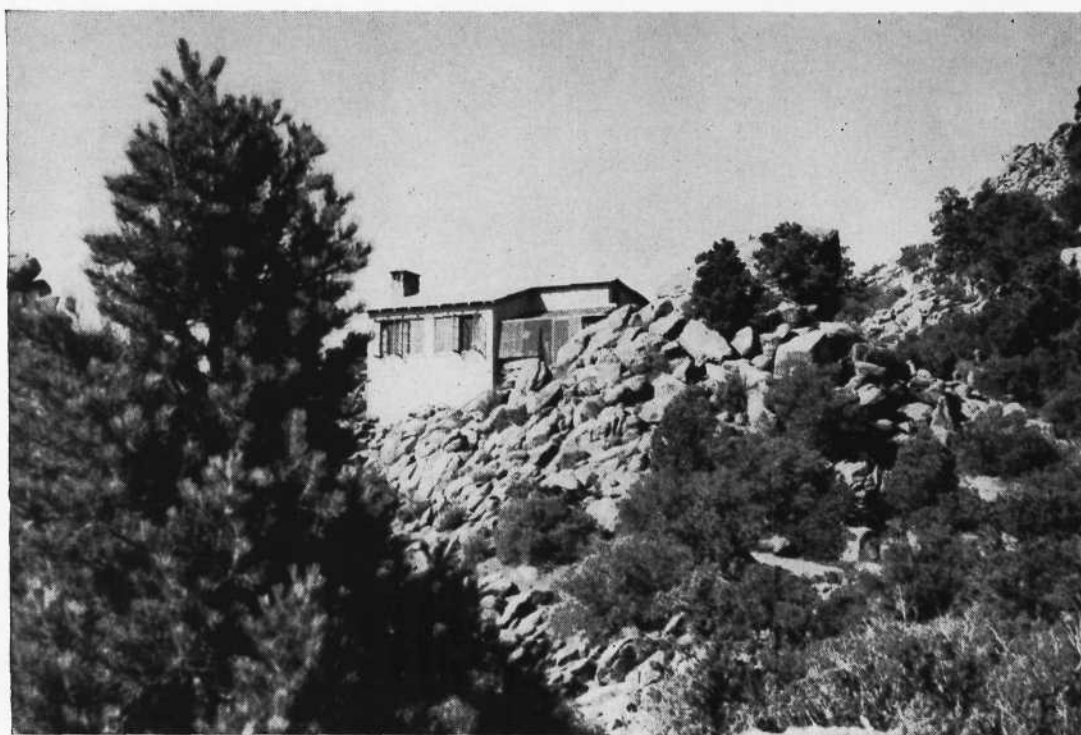
bloom in the porchbox from one spring to the next.

As soon as we could haul lumber, the original homestead cabin, like a large boxcar with screened openings and canvas flaps for windows, was built in a niche blasted out of a rocky comb beside a giant boulder, on the edge of one of the Jovian stairsteps overlooking the desert.

Later, after more granite was leveled with dynamite, pick and crowbar, this little cabin became the kitchen, and an adobe addition was built, extending 11 feet over the edge of the shelf. It took 2000 cubic feet of earth hauled in with a wheelbarrow to fill in the floor. The east wall of the 22 by 24 living room virtually is a retaining wall of concrete and steel with four big windows taking up nearly all the space above ground level.

The effect is that of perching on a high crag and looking out over desert and crumpled mountain ranges which change in color and contour with the shifting of light and shadow. I recall only one person who has failed to respond to that sublime panorama with some expression of wonder or delight. This woman could see in The Tors only a "good place for a murder." Even our huge fireplace left her cold.

I believe the fireplace of the heatalator type with a box four feet wide and nearly three feet high, is practically cool-proof. It is built of smooth slabs of a very hard stone we found in the eastern end of the Eagle mountains and hauled the hundred miles to the homestead a few at a time in our pick-up. The coloring shades through every tone from to-



Perched far up on the side of Asbestos mountain, it was necessary to blast out solid granite to provide a site big enough for the Shumway cabin.

bacco brown to bright orange, harmonizes perfectly with the set of ancient Indian pottery—reward of my hardridden hobby—which looks as if it grew on the massive mantel.

Stable and corrals on the flat bordering Grapevine creek provided comfortable quarters for our initial livestock venture — goats. The goats, however, wanted to live with us, like little dog Mopsy. They ignored the 639 acres of good browsing and haunted the house. Shut in the corral, they pined for our presence. When we went to milk, and incidentally to issue costly rations of alfalfa and rolled barley, joy gave them hysterics. When we left, their woeful bleats followed. The twin bottle-babies, Chula and Bravo, cried like lost children, giving us the depressed feeling that we had wronged the helpless and innocent. Unable to cope with this abnormal yearning in our livestock, we sold them.

We have not yet decided what to go in for next. Cattle would require additional summer range. Dudes would be financially sound, but they might prove even more of a social problem than goats.

Talking to the many strangers who wander in here from the highway, I discover that the pioneer impulse springs as eternal as hope in the human breast. When the new lands watered by the All-American canal are open to entry, we may expect to see a modern revival of early Western drama. There will be tragedy, too. For civilization has softened us; and many will be called, but few chosen.

Your true homesteader is born, not



The natural landscape at The Tors provides decorations for the Shumway cabin. This vase was made by Nina Shumway from the flower stalk of a nolina. The "blossoms" are the dried flowers and seed pods from nolina, yucca and agave.

made. His is a stern and rugged art, requiring the creative ingenuity of a Swiss Family Robinson, the patience of Job, the energy of a piledriver, and the self-sufficiency of a free spirit. The belief that a homesteader could move on a section of the government's free land and thereby acquire moderate wealth without capital investment is recognized now as pure myth. Uncle Sam's old game of betting his land against your vital economy that you won't last till you prove up, is more of a cinch than ever unless you can beat it with financial independence.

Our formula was team work. I held down the homestead while Steve held down a job and commuted. This method wears the wage-earner to a thin edge and demands that the resident member be prepared to enjoy large doses of solitude, forget feminine frailties, if any, and conquer unaided everything from a loose screw to an earthquake. But by perseverance and the grace of God, it will pry a patent out of the Government Land Office.

From a purely financial standpoint The Tors, which has cost us over \$3000 exclusive of our own labor, living and car expenses, could hardly be considered a gilt-edge investment. But we didn't expect it to balance the budget. What it had to give was a new and interesting experience, a close contact with the kind of country we like, sanctuary from desert summer, and beauty with a home in the heart of it. From that angle our hard rock homestead is already paying big dividends.

Prizes to Amateur Photographers

Each month the Desert Magazine offers two cash prizes for the best camera pictures submitted by amateur photographers. The first award is \$5.00 and the second \$3.00.

Pictures are limited to desert subjects, but there is no restriction as to the residence of the photographer. Entries may include Indian pictures, rock formations, flowers and wild animals, canyons, trees, water holes—in fact anything that belongs to the desert country.

In entering pictures in this contest amateur photographers should give attention to lighting, contrast and composition. The day is past when ordinary snapshots will qualify as good photography. The judges for the Desert Magazine always consider the quality of the picture as it will appear when reproduced in the magazine. This means that black and white contrast is important. Grey pictures may win salon prizes, but they do not make good halftone engravings for magazine reproduction.

Following are the rules governing the photographic contest:

1—Pictures submitted in the September contest must be received at the Desert Magazine office by September 20.

2—Not more than four prints may be submitted by one person in one month.

3—Winners will be required to furnish either good glossy enlargements or the original negatives if requested.

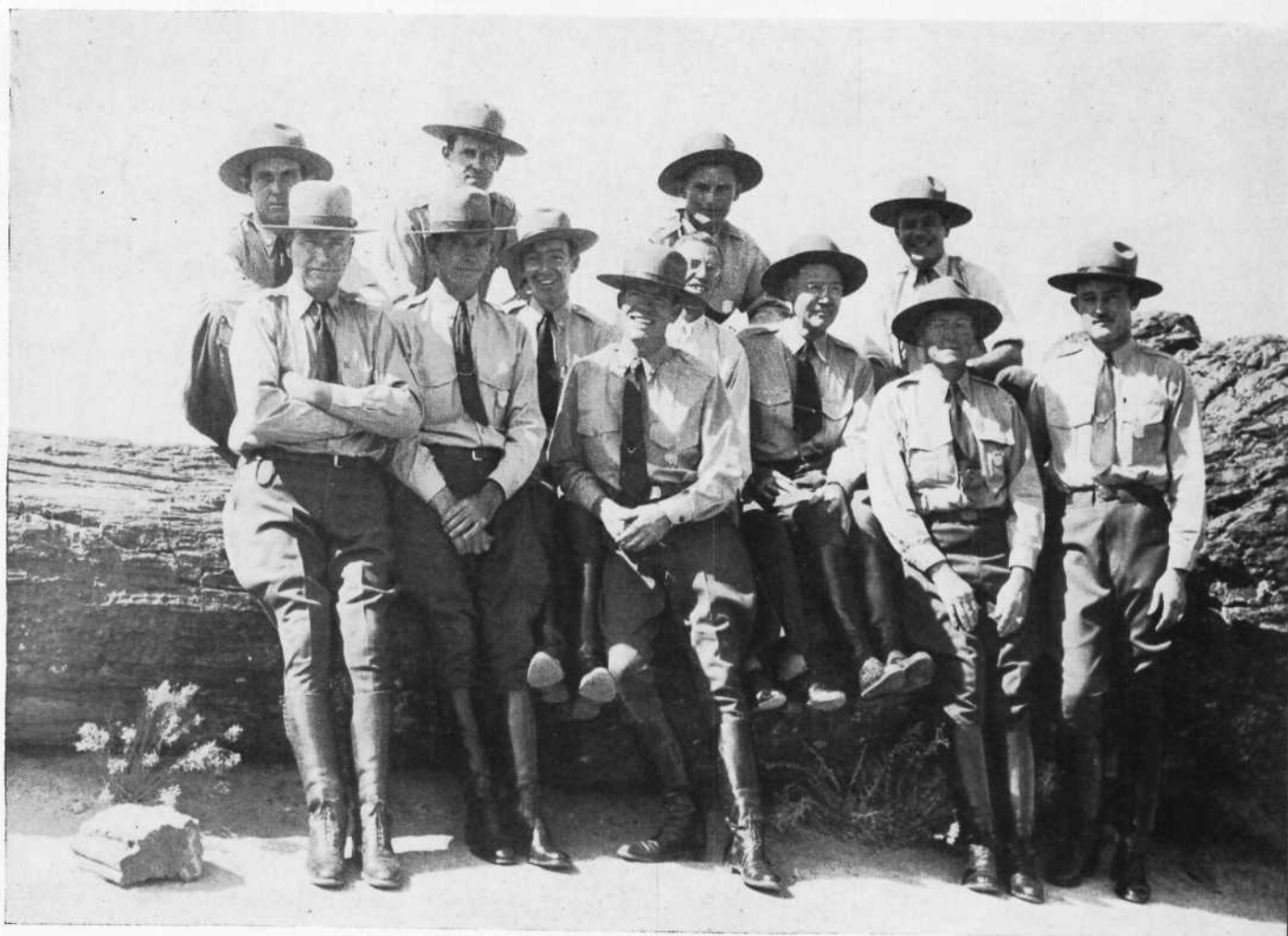
4—Prints must be in black and white, 2¼x3¼ or larger, and must be on glossy paper.

5—Pictures will be returned only when postage is enclosed.

For non-prize-winning pictures accepted for publication \$1.00 will be paid for each print.

Winners of the September contest will be announced and the pictures published in the November number of the magazine. Address all entries to:

Contest Editor, Desert Magazine, El Centro, Calif.



Group of rangers at Petrified Forest. Top row: Reg W. Brown, whose experiences are related in this story, Park Naturalist Stagner, Ranger Benson, Chief Clerk Singerman. Bottom row: Rangers McNeil, Cowan, Hookway, Johnston, Supt. Smith, Rangers Newbury and Coleman. Clerk Nelson is bareheaded.

"It's Fun to be a Ranger"

- - says Reg W. Brown

"It takes all kinds of people to make a world," according to one of the philosophers. And the rangers in Uncle Sam's national park service meet just about all of them. Their job is to be courteous under all circumstances—but it sometimes takes a well developed sense of humor to carry out this rule. In the following interview, one of the rangers at the Petrified Forest national monument reveals some of the interesting episodes in his daily experience.

By ADRIAN HOWARD

"**H**AVE you any petrified wood in your car?" asked Park Ranger Reg Brown, on duty at one of the exits of the Petrified Forest national monument in Arizona.

"No, we haven't a bit!" The driver, a flippant young modern in shorts looked the ranger serenely in the eye. The young man quite evidently was impatient to be on his way, but Brown was not through. Rangers, dealing with thousands of tour-

ists every month become adept students of human nature.

"It is a federal offense carrying a \$500 fine and imprisonment to take government property, you know," the ranger went on.

A gasp from the rear seat. "Ranger, I-I have a little piece or two."

Ranger Brown grinned, "I thought maybe you got a few samples when you parked up around the bend by the no

parking sign. Get out and let's see what you have!"

Four flustered young ladies climbed out of the car. Each one had been sitting on at least a dozen small highly colored chunks of petrified wood. And from glove compartment, cosmetic bag, even from its lodging place over the sun-shield other specimens were brought forth. And then the visitors were permitted to go on

their sight seeing way, wondering how the ranger knew so much.

"How did you know they stopped?" I asked when they were gone.

"A car comes in sight at the top of the hill, then drops down behind those formations. If it isn't around the curve in a minute or two it has stopped. When it stops it's near that big no parking sign. And when they stop it is for just one thing—to pick up petrified wood."

There is a glamour about the role of park ranger that is intriguing to those who visit the national parks, and I took the opportunity to find out more about their duties, their background and their attitude toward the never-ending parade of visitors who come within their jurisdiction. Reg Brown is typical. Young, clean cut six-footer from somewhere south of the Mason-Dixon line, he has that soft voiced courtesy we associate with the southern people. And the attitude so essential in dealing with all sorts and types of people.

"How do you like being a ranger?"

"It's fun. I can't think of any line of outdoor work more interesting or wholesome. The hours are sometimes long in parks or monuments where protection is an important duty. But the pay is good, our fellow rangers are nearly always fine companions, and we do meet a lot of fine people among the thousands who pass through our gates every month."

Just then a car topped the distant hill and remained too long out of sight. Into the government pickup we piled and drove around the curve. Parked against the big sign was a New York Packard with the driver emulating a graven image. And down on hands and knees were Mr. and Mrs. diligently endeavoring to snake gleaming fragments of prohibited wood from under the wire fence. For fishing purposes they used papa's gold headed crook handled cane. "Get that one, Papa. Get the red and black one!" Vell, I'm getting the best I can, ain't I? What you thing I'm doing?"

"Having a good time?" The ranger's inquiry brought papa up with such a start he almost left an ear dangling on the barbed wire. "Vell, Am I embarrassed? Am I embarrassed?" he sputtered.

"Embarrassed because you are stealing from the government or embarrassed because you are caught stealing?" Ranger Brown asked grimly.

"This is a public road. We can take what we want from it," bristled Mama.

"Madam, this road is built by the government through one of its most beautiful and valuable possessions. It is built so that you and thousands of other travelers can visit and enjoy the Petrified Forest with its magnificent stone logs, its

thousand-year-old Indian picture writing, its ancient Indian dwellings. You are an honored guest and as such you are not supposed to steal the belongings of the government any more than you'd pocket the silver in one of your friend's homes back in New York." Ranger Brown patiently led the elderly culprits to the warning sign and listened while they read it aloud to him. Then they were sent on their way. "Am I embarrassed!" a faint echo came back on the breeze.

There are a dozen park rangers stationed in this 90,000-acre reserve. They are there to protect the petrified wood, to give information about roads and other national parks, and to answer questions about the scientific and prehistoric features of the stone forest. Thousands of acres are covered with the semi-precious petrified wood which is almost two hundred million years old. There are no words to give an adequate picture of the beauty of the colored wood. It glows with myriad colors, and crystals gleam here and there among the scattered fragments. Of course it is a temptation to every tourist. And rangers are there to see that they "yield not to temptation," else 200,000 visitors each year would soon deplete even the seemingly inexhaustible supply.

Literally tons of bright colored stone wood are taken from tourists every month. It is quite an art for a ranger to confiscate this forbidden wood and do so without offending Uncle Sam's invited guests.

"In this game," said Ranger Brown, "we meet some of the finest, most considerate people in the world; cultured travelers interested in what they are seeing and anxious to learn more about it. They appreciate beauty and respect the

law. They are the backbone of our American civilization. And then we meet people who are out to cover their 500 miles each day and send post cards to their friends each night boasting of the distance covered and the souvenirs collected en route. They watch for a chance to filch a few pieces of wood and then lie angrily about it when questioned. They bluster and threaten and enumerate their high up political friends who will take great pleasure in 'getting your job for this.' Usually they wilt down and surrender their booty when reminded they'll need those high up politicians to get them out of a federal judge's clutches!

"Many times each year mysterious express packages and parcel post deliveries return wood carried away by covetous visitors whose better natures come to the top when they are away from the luring wood. In a case in the Museum at Headquarters is a letter read with much interest by visitors:

"M. E. Mission, Buduan, India
April 2, 1935

To: The Officer in Charge

Petrified Forest National Monument
Near Holbrook, Arizona, U. S. A.

Dear Sir:

About three years ago I was indirectly responsible for the removal of a small piece of petrified wood from the National Petrified Forest Reserve, and it has been in my possession since that time.

You may smile at me and think me a bit foolish—but I have always been a law abiding citizen and it has troubled me to have something in my possession that is not mine. And, so, I am returning it to you under separate cover, and hope it will reach you safely.

Yours truly,

J - - - - C - - - -

"For real interest in everything they see, and absolute courtesy and observation of rules I believe the Japanese and Chinese people who come through the Forest top the list. Our own American people have the poorest manners and are most destructive. Mary Emptyhead from Cornfield just must leave her initials alongside a priceless Indian petroglyph, and Hiram Grabit of Minersville thinks nothing of breaking a beautiful petrified log with his mechanic's hammer in order to get a souvenir from the exact center of the ageless tree.

"The park service is seeking to restore some of the native wildlife to the park reserve and practically everybody reacts the same when a herd of graceful antelope stroll calmly across the road or stop to drink at their own private reservoir. A dozen cars will be parked indefinitely to watch the shy animals. Our quarrelsome old buck antelope tries daily to pick a fight with the Stars and Stripes floating over my station. He stands about 50 yards away and glares at it intently for a few minutes. When a breeze ripples the drooping folds he tosses his head



"Mrs. Tok-ho-no, does your husband make sunburn cream?"

and stamps the ground, but when a stiff wind whips the flag into full blown majesty then Old Pinto goes into action. He stamps and rears on his hind legs. He snorts and paws the earth, and he lowers his head in challenge. This game never grows tame with him—nor to the tourists who are lucky enough to see Old Glory bantered.

"We men, assigned by Uncle Sam to care for his possession, have varied duties here in the stone forest. We must look out for the welfare of all the animals, large and small, and also the little creeping creatures that make the forest their home. It fell to my pal, Ranger Benson to serve as iceman to the antelope last winter. Each morning 18 or 20 of them would gather around their reservoir and stamp impatiently on the thick ice. When they saw the ranger's pickup they'd retreat to the top of the embankment and wait expectantly for him to smash the ice with an ax. No sooner would he be back in the car when they'd race like greedy children and drink until they couldn't hold another drop. Next morning they'd be there again waiting for their ranger.

"Now it's usually my luck to be guardian to the assorted snakes in this territory. A week ago I rescued a big bull snake from some tourists bent on its destruction. Snakes are protected here, even rattlesnakes unless they are near roads or trails. A foolish tourist lassoed a sidewinder and was taking it around the forest with him. I speedily killed it when he came to this station.

"Speaking of snakes, have you noticed our pet over there?" The ranger pointed to a stone ledge where a 5½-foot yellow and black bullsnake appeared to be dozing in the shade.

"Just one of our pets. We call him Poncho. He is almost a daily visitor at some seasons of the year."

The ranger went on to tell about the porcupines in the forest. They whet their teeth on agate trees and then eat the small green shrubs. But they are not punished. Coyotes and bobcats raise their assorted families wherever it suits them, and even if the mother coyote does hold choir practice and teach her younguns to yodel under the rangers' windows there is no comeback. Rabbits and squirrels and prairie dogs live out their allotted time without fear in the forest.

"There is a tradition here that anybody mistreating an animal always gets the worst of it," Reg told me solemnly. "A CCC boy was posted at Agate bridge to guide the tourists around there. He saw a ground squirrel stealing his lunch and he chased it across the Agate bridge. He threw a rock at it and lost his balance. The stone log forming the bridge



This is the petrified log bridge where the CCC boy mentioned in the story fell and broke his leg. U. S. Park Service photograph.

spans a 50-foot canyon and it is 25 feet to the rocky bottom. The lad fell and his leg was broken. He lay there helpless for an hour before a tourist car came. Would they hurry to headquarters and have his captain send the ambulance, he begged. Yes, they'd be glad to do that but would he mind if they took his picture first? They propped him up against a rock and first mother and then the old man posed beside him. Some tourists are that way—but fortunately they are the exception rather than the rule.

"Among the hundreds of people visiting the Petrified Forest each day it is easy to spot the ones who have saved and scrimped and planned the trip for perhaps years. And every ranger loves to help make the visit of such people something to remember with pleasure. An old couple in a Model T Ford drove in late one evening. Now, the gates into the main part of the forest are closed at dark and left locked until sunrise the next morning. This was necessary in order to protect the wood from commercial wood thieves who were prone to haul out truck loads before measures were taken to stop them. I told these visitors from Arkansas that they had time to drive through the forest before closing time, but little time to stop and see things. The woman was one of those good old mountaineers with no intention of being stampeded.

"Pa, I ain't a-goin' to be rushed through here. For 40 years I been a-hearin' about this wood that is colored rock, and I'm goin' to see if it's the truth or not!"

"They camped at headquarters and three days later after Ma had examined and 'hefted' every piece of wood she wanted to, they chugged out again."

"Son, you done told the truth about this place. When I git back to Arkansas I aim to send you a poke of dried apples and some shag-bark hickory nuts."

"A sense of humor," Brown continued, "is what keeps a ranger sane day in and day out."

Just then a ritzy foreign-made car rolled up before the ranger station where we were talking. In the rear seat two pompous occupants looked straight ahead at nothing.

Brown started to speak to the uniformed chauffeur—but he was also looking straight ahead—haughtier even than his employers.

It was a little disconcerting to the ranger, but he hesitated only an instant and started to address the human icicles in the back seat.

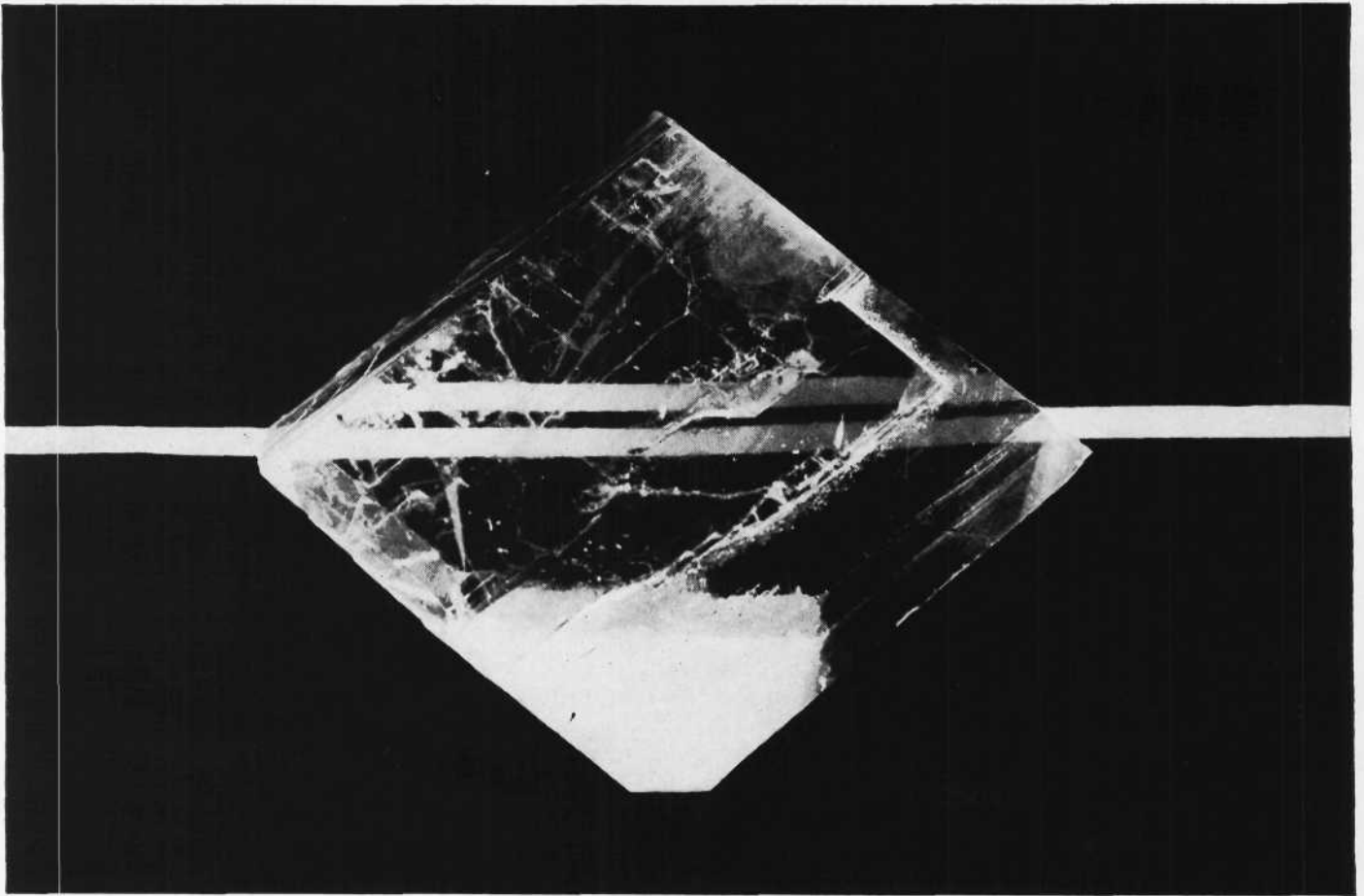
"Speak to the chauffeur, my good man!"

I suspect the ranger wanted to laugh—but he replied solemnly, "I think maybe you'd better let me speak to you."

And then he thrust one of the park maps through the door and gave them the customary line of patter: "Please put this National Park seal on the lower right hand corner of your windshield and keep it there as long as you are in the forest. This map will show you all the roads and important places to stop. You know, of course, that you are not permitted to take any wood away with you."

And then they went on their haughty way—without a flicker of acknowledgment.

The ranger turned to me and grinned, "Yes sir, it's fun being a national park ranger!"



This photograph shows the double refractory quality of a Calcite rhomb.

Rock That Makes You See Double

Having a hardness of only three, calcite crystals do not qualify as gem stones, but they make attractive specimens for a collector, and when found in clear pure form they have a useful place in the scientific laboratories. John Hilton believes there is a great field in the desert Southwest for calcite collectors. Here are some suggestions as to where to look for the crystals, and what to do with them if you find them.

By JOHN W. HILTON

WE were standing in a strange room—one of those mysterious laboratories in which high tension wires are strung about in alarming proximity and the air vibrates with the whir of giant X-ray tubes.

I had gone there as a youngster in my 'teens to deliver some calcite crystals, and Dr. Jesse W. M. DuMond was telling me the important part calcite plays in a scientific laboratory.

It is a highly technical subject, but Dr. DuMond of the California Institute of Technology reduced the story to terms any layman could understand.

"You see," he explained, "X-ray has varying wave lengths just as does ordinary light. But unlike the latter, they cannot be separated into their spectrum by an ordinary glass prism. Optical cal-

cite is used instead. Other crystals have been tried but nothing quite equals Iceland spar as a reflector in this type of instrument.

"When the beam from an X-ray tube is introduced through this slit in the apparatus it strikes the crystal at a critical angle. Some of the rays penetrate only a short distance before they are reflected back out of the crystal, but varying wave lengths penetrate to different depths and are therefore reflected back at different points in the crystal. These separated beams of the X-ray are caught on this fluorescent screen or a photographic plate and we are able to get an accurate picture of the varying intensity of the different wave lengths produced by a given piece of equipment."

One might well ask what all this has

to do with the desert. The answer is that our arid Southwest is one of the most promising potential sources of Iceland spar. Although no large scale mining operations have yet been undertaken in this region for the recovery of optical calcite, hundreds of dollars worth of this crystal substance has been dug from surface pockets in the desert area in the past 10 years.

Optical calcite or Iceland spar was so named for its first commercial discovery in Iceland. It was mined there for many years but in recent times the quarries and open pits have been mostly worked out and abandoned. Much of the material now on the market comes from other sources.

Chemically, this interesting mineral is nothing more than a very pure form of

limestone or calcium carbonate. It has a hardness of three in the standard scale. Belonging to the rhombic division of the hexagonal system of crystallization, it has been found in literally hundreds of different crystal variations, all belonging to this one general system. Its cleavage remains the same regardless of the variation in its surface angles. When this mineral is struck a sharp blow it separates along definite planes that meet at exact angles to form a perfect rhombohedron. These angles of cleavage in calcite remain the same mathematically whether the specimen be found in Iceland or South Africa.

One of the most interesting properties of calcite is its double refraction. Perhaps I should explain the term "double refraction."

A pencil placed in a glass of water has the appearance of bending in a definite angle at the water line. This is visible evidence of the refractory power possessed by water. It has been found that light rays passing from air into any denser transparent substance are refracted or "bent" to a greater or less degree. This angle of difference is called the angle of refraction. A peculiarity of the mineral world is that light passing through minerals, except those belonging to the cubic system, is refracted at two separate angles. This property is known as double refraction.

In most cases the angle between these two rays is so slight as to be unnoticed by the naked eye. But in the case of Iceland spar it is so pronounced that when a crystal of this mineral is placed over small print or lines two distinct images are produced. It is a case in which you "see double."

The mathematics, optics and physics involved in this process of light splitting would fill an entire issue of the *Desert Magazine* were I scientist enough to write it. Suffice to say that calcite is doubly refractive to a very high degree, and because of this property and others its clear, optically perfect crystals are both interesting and valuable to science.

One instrument especially interesting to gem collectors is the dichroscope. Equipped with a prism of calcite this apparatus discloses two images of the gem. If the stone under inspection is dichroic, the two images will be of slightly different colors, representing two tints that are blended in the normal coloring of the gem. If the stone is monochroic and belongs to the cubic system both images will remain the same color as the 'scope is revolved.

Advanced mineral collectors and students of mineralogy use polarizing microscopes in the determination of unknown mineral specimens. The polariz-

ing device in such instruments consists of two Nicoll prisms made of two calcite crystals cut at the proper angle and cemented together.

The occurrence of calcite in the desert in most cases is essentially the same as in Iceland — that is, as fillings or partial fillings in cavities in volcanic rock. There are two general theories as to how these crystals were formed. According to one explanation the calcite was an original component of the molten magma and crystallized out as the lava cooled. The other theory, and to me the more plausible one, is that the calcite entered empty gas pockets in solution of hot volcanic water after the lava had partially or wholly cooled.

In some deposits the calcite fills the entire cavity of the lava bubble, while in other instances the nodules of calcite have a surface that resembles an agate geode. When such a specimen is held to the light, however, the greater transparency identifies it as a substance much clearer than the purest agate.

The finest calcite I have ever found was on the Mojave desert of California in the form of loose crystals inside of giant thin-walled geodes. In the Cady mountains of that region I have found geodes containing crystals of optically good calcite weighing several pounds each. In most cases the walls of such geodes consisted of a thin layer of agate

View of Borrego badlands in Southern California where many fine calcite crystals have been found.



coated with tiny quartz crystals, and are too thin to be removed intact from the mother rock.

Before that area became a popular hunting ground, many fine crystals were taken from the Cady mountain area. Some of my best finds were made there, and one of the largest crystals I recovered was visible sparkling in the sun a quarter of a mile away.

Most of the surface specimens in that area have now been removed but I am sure there are still many beautiful crystals in geodes concealed beneath the surface—to be exposed by cloudbursts at some future time. The occurrences are not plentiful enough, however, to justify mining.

In some of the volcanic areas on the Mojave and Arizona deserts calcite occurs as linings in volcanic fissures and in pockets adjacent to these. Such deposits may be worked at a profit if the grade of crystals is consistently good.

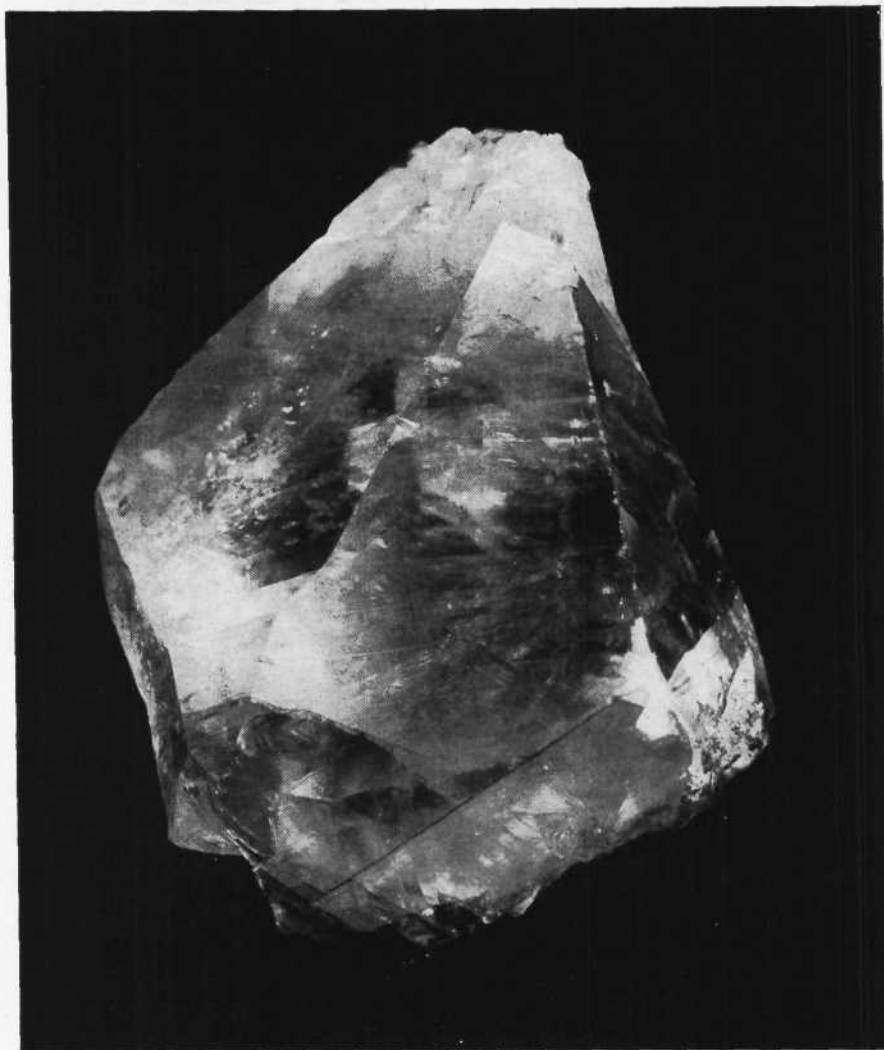
Impurities Add to Beauty

Calcite also occurs as crystal groups in metal veins but in such formation is seldom of optical quality for the reason that a slight trace of metal makes it unfit for scientific use. For specimen purposes, however, some of the most beautiful calcite crystals in the world have been found in occurrence with metallic ore.

A less common occurrence of Iceland spar is where limestone has recrystallized as a secondary mineral in alluvial deposits. One region where such deposits are found is in the Borrego badlands of Southern California. In this rugged highly-eroded area of ancient sandstone, some of which contains fossils of prehistoric mastodons, camels and horses, are long fissures evidently caused by the upthrust of the Santa Rosa mountains. These fissures undoubtedly extend to a very great depth, and hot water has entered with limestone in solution, to be recrystallized in lens-shaped cavities near the surface.

Some of these lenses have yielded fine calcite of an optical grade, and have produced mineral specimens rivaling those of the world's most famous localities. Although crystals have been mined from this region for several years no large scale workings have been undertaken. It is possible that this and other areas in the Southwest desert may some time furnish the optical calcite for this country, especially in the event that war should cut off the foreign supply.

Optical companies and buyers of calcite today purchase the bulk of their material from other countries, and some of them resort to practices which tend to



Calcite crystal of the dogtooth variety.

discourage production of calcite at home. Instances have been known where buyers requested that a 10 or 20-pound sample be shipped at the producer's expense—and then made no effort to pay for it.

Prospectors or miners should send small samples to their state mining bureau or to an accredited university. Such institutions are always willing to report as to the grade and possible market for such crystals.

At the present time there are a number of small concerns attempting to make a livelihood through buying and reselling the lesser known minerals found by prospectors who have only a vague idea as to their value. Some of the firms will offer only a small fraction of the current price, or will write enticing letters mentioning possible markets for 10-ton lots and requesting large samples of the best material. Payment is seldom made for these samples—which may have a very high value.

A reputable firm will request a reasonable sample, offering to pay for it at the market price if it meets standard re-

quirements—otherwise it will be returned at shipper's expense. Unfortunately, this type of dealer is still the exception.

The demand for optical calcite is less than in former years due to the invention of a synthetic plastic having the faculty for polarizing light in much the same manner as the Nicoll prism of calcite. This substance, called polaroid, is replacing calcite where Nicoll prisms are used. Since calcite is most commonly found in small crystals it follows that the market for this mineral has suffered.

Large perfect crystals of calcite suitable for specialized scientific work, however, still have a ready market and should be sold direct to the institution which uses them. Such laboratories generally are working on a non-profit basis for the good of mankind, and they deserve to obtain their materials at as low a cost as possible. Usually they will pay a fair price for the crystals they select—and more often than not this figure will be higher than the offer of the so-called mineral broker.

I know of no more interesting way to spend a week or month's vacation in the

desert than in the search for calcite. There are still thousands of miles of possible calcite-bearing volcanic hills in Arizona, Utah, Nevada and New Mexico which await the exploration of those interested in this mineral.

Calcite is such an obviously different mineral that when one enters a country where it may occur it is advisable to show samples of it to cattlemen, sheepherders, Indians or ranchers in the region for the purpose of securing possible leads as to where it may be found.

A few don'ts for calcite collectors should be mentioned. First, don't attempt to cleave a fine clear crystal into a perfect rhomb. Leave that to men in laboratories and instrument shops who are equipped and trained for this sort of work.

Don't try hurriedly to pry crystals from the matrix. Calcite is very brittle and will stand little pressure without being shattered beyond all use.

Pack 'em Well

Don't attempt to transport crystals without wrapping and packing them. Searchers should carry soft paper and small boxes in the collecting sacks for this purpose. Good crystals should not be transported by car over rough roads or sent through the mail without soft paper wrapping and careful packing with excelsior or sawdust in a wooden box.

Finally, don't imagine yourself rich when you find a large crystal that appears to be perfectly clear. Laboratory tests sometimes prove that such crystals contain microscopic impurities or imperfections that make them unfit for anything but mineral specimens.

All over the world today countless scientists are working toward the solution of obscure problems of the universe. These men in most cases are giving their lives unselfishly to research in order to make the world a better place in which to live. I refer to men like Dr. DuMond whose inventions are saving human lives, astronomers reaching out in the vastness of the universe solving riddles of time and space, biochemists in their laboratories peering through polarized microscopes at tiny samples of crystallized salts, finding perhaps some new truth about the structure of matter, or some new process to synthesize a useful drug.

It is a fine thing to know that aside from the joy and possible remuneration for the crystal, that the discovery of a really fine piece of optical calcite is helping along the work of the pioneers in human betterment.

DESERT QUIZ

Here's a new set of questions for those who pride themselves on their knowledge of the great American desert. The list includes botany, geography, history, mineralogy, Indian life and lore of the desert country. The test this month is more difficult than usual. If you answer 10 of them correctly you are a well-informed student of the desert. A score of 15 makes you eligible for the fraternity of "desert rats," and the honorary degree of S. D. S. —Sand Dune Sage—is the reward of those who know more than 15 correct answers. Don't fudge! Answers on page 35.

- 1—Official name of the new lake created behind the Metropolitan Water district's dam at Parker, Arizona is—
Parker reservoir..... Lake Chemehuevi.....
Lake Havasu..... Los Angeles lake.....
- 2—Evidence that the Salt river valley of Arizona was cultivated extensively by prehistoric Indians is best confirmed by—
Seeds and fiber recovered from ancient ruins.....
Extensive canal systems still visible when the white men came
Legends told by living Indians
Petroglyphic records.....
- 3—Juan Bautista de Anza's first trip across the Southern California desert was made for the purpose of—
Discovering a feasible route from Sonora to the Pacific
Establishing missions along the coast
Escorting colonists to Monterey
Giving military aid to the mission settlements at San Gabriel
- 4—Raton Pass is located in—
Nevada..... Utah..... New Mexico..... Arizona.....
- 5—Organ Pipe national monument in Arizona received its name from—
Pillars of rock in this area..... A species of cactus.....
Musical moaning of wind blowing through cavities in the rocks.....
Formation of the stalactites in caves.....
- 6—The book "Death Valley in '49" was written by—
Manly..... Chalfant..... Coolidge..... Lee.....
- 7—Billy the Kid was killed by—
Texas rangers..... Wyatt Earp..... Accident..... Pat Garrett.....
- 8—The desert sidewinder derives its name from—
The manner in which it strikes..... Method of seizing its prey.....
Peculiar motion in travel..... Coloring of its body.....
- 9—Desert Indians used the seed of the chia mainly for—
Food..... Medicine..... Ceremonials..... Dye.....
- 10—Searles Lake, California, is noted for the production of—
Placer gold..... Gypsum..... Fish..... Borax.....
- 11—Escalante desert in Utah derived its name from—
Spanish padre..... Early trapper..... Mormon saint..... Noted outlaw.....
- 12—Silver used by the Navajo Indians in making jewelry comes mainly from—
Their own silver mines..... Mexican pesos.....
Germany..... U. S. mint.....
- 13—Fleetest animal native of the southwest desert is the—
Jackrabbit..... Swift..... Antelope..... Coyote.....
- 14—The tree-ring method of dating archaeological ruins was perfected by—
U. S. Forestry service..... Dr. Douglass.....
Smithsonian Institution..... Bandelier.....
- 15—Indians at the Mescalero reservation in New Mexico are of the tribe of—
Navajo..... Yaqui..... Apache..... Comanche.....
- 16—Largest open copper pit in the Southwest is located at—
Ruth, Nev..... McGill, Nev..... Douglas, Ariz..... Clifton, Ariz.....
- 17—The state flower of New Mexico is the—
Columbine..... Lupine..... Wild Rose..... Yucca.....
- 18—The Jayhawkers are remembered today because of—
Their discovery of gold..... Their trek across Death Valley.....
Their battle with Indians..... Their exploration of Grand Canyon.....
- 19—"The Goosenecks" are in the—
Colorado river..... Gunnison river.....
Gila river..... San Juan river.....
- 20—Young desert tortoises are hatched from eggs—
In rocky crevices..... Buried in the sand.....
On the open desert..... In desert water holes.....



The Spider Woman and the Hunter of Eagles

(A Hopi Legend)

As told to HARRY C. JAMES

Illustration by W. Mootzka, Hopi Artist

AT Oraibi there once lived a family consisting of a father, mother, two daughters and a son. The boy was a most successful hunter of eagles. He seemed to know all there is to know about that sacred bird. He brought home so many young eagles to raise for the ceremonies that his parents gladly excused him from work in the fields so that he could gather food for the eagles and attend them properly. His sisters, however, often had to help their father in the fields and this made them angry toward their brother and his eagles.

One year the boy captured only two young eagles. He spent many days searching their high nests among the cliffs, but for some reason he found no more. One morning when he was out hunting food for the two eagles, his sisters were left at home to look after the work of the house while their father and mother were in the fields. The two girls became angry at the eagles, saying to them: "If it were not for you our brother would do his share and we would not have to work so hard!"

They went on talking this way to the eagles, growing angrier and angrier at the birds. Finally, they grabbed some sticks and beat the eagles. When they

had vented their anger they became frightened and left the house. They locked the door and hid the key in some ashes in the outside fireplace. They went down and joined their parents in taking the weeds out of the corn field. They worked so hard that their mother knew they must have been in some trouble.

Late in the afternoon the boy came home with food for the eagles. He was hot, tired and thirsty. He tried to open the door. "Well," he said, "someone has locked the door!"

"Yes," said the eagles, "your sister locked it but she buried the key in the ashes of the outside fireplace."

The young man got the key to the big old wooden lock and let himself into the house. Then the eagles told him how his sisters had beaten them. They said: "Now you dress up the way we tell you and we will go to join your family in the fields."

Following the instruction of the eagles, the young man painted his legs yellow and tied some little bells and rattles around his legs and some eagle feathers in his hair. He painted his body with different colors and put on his dance kilt and sash. Over his nose he painted a black line.

One of the eagles then said: "That is

Some of the Hopi legends have important bearing on the religious beliefs of the Indians. Others merely are tales passed along from generation to generation for the entertainment of the children—the bedtime stories of Hopiland. The legend related by Harry James this month is of the latter type—a story centering around the strange Spider Woman who plays so important a part in Hopi mythology.

well done! I am going to carry you on my back."

The boy climbed on the eagle's back and the two eagles walked out the door of the house. They started to run along the street, going faster and faster, flapping their long wings until they finally flew into the air. They circled around the village and then swooped down over the corn fields.

As they flew, the eagle carrying the boy taught him a song. They circled four times as the young man sang his song. His sisters down in the field heard him. The eagles swooped down close to them so that the father and mother could recognize the boy. The parents pleaded with the eagles to give them back their son, but the birds were angry because the girls had beaten them, and flying strongly in great circles, they climbed higher and higher into the sky until they could be seen no more. After a time they reached an opening in the sky which led to the world where the eagles live and from where they come, because of the Hopi prayers, to hatch their young for the Hopi. Here the eagles flew up to the top of a high cliff on which were some white houses in which the eagles lived. They left the boy on top of the cliff and

said: "Here you will have to stay because your sisters beat us."

The boy was lonely and frightened. He felt sure that he would die. There was no shelter on the cliff. There was no food. As he stood there in misery, he saw a little wren hopping among the rocks. He spoke to her but she apparently paid no attention to him and soon flew away. In a few minutes the wren came back, but again she paid no attention to the boy when he spoke to her. She seemed to be watching for someone. In a little time a black spider came walking up the cliff. He had been called by the wren. He walked up to the boy and said: "You poor boy, to be so badly treated by those ungrateful eagles after your kindness to them! Now stay here—I will try to help you."

The spider went away for a few minutes, then returned carrying two downy turkey feathers. "Use one of these to sleep on, and cover yourself with the other." Without saying another word, he left the boy.

When night came the boy did as he was told. When he started to make his bed with the two turkey feathers, to his surprise they grew so large that they made him a comfortable bed and he slept soundly all night.

In the morning the wren came again and behaved just as she always did, paying no attention to the boy. She went to the edge of the cliff and the boy followed her. There she saw a crack in the rock leading straight down to the ground. To the boy's surprise the wren began pulling out her tiny feathers, wedging them just a little space apart in the cliff, making a tiny series of steps. First she pulled out the feathers from her wings, then those from her tail. She was still a long way from the bottom of the cliff and she began to pull out the smaller feathers from all over her body. By the time she reached the ground she had been forced to pull out even the down around her throat to complete the feather ladder.

As soon as she had finished, she climbed up the soft steps. When she regained the top the boy hardly recognized her. She had not a feather left!

She now told the boy to follow her down the ladder. At first he was afraid that the feather steps would not hold his weight, but she reassured him and he started down. When they reached the bottom in safety, the wren told him to wait for her. She then began to climb up again, but this time as she climbed up, stair after stair, she pulled free her feathers and stuck them back into her own body just where they had been.

When she got to the top she was again completely covered. She stretched out her

tail and wings, fluffed her feathers a couple of times, then flew down to the boy waiting at the bottom of the cliff. Then she gave him directions that he was to follow most carefully and disappeared.

The boy did as he was bid and was walking along, happy to be down from the great cliff, when suddenly he stopped, for from almost directly beneath his feet he heard a voice: "Step back a little, please, you are almost on top of my house!"

It was Spider Woman. When he had stepped back, she continued: "Come in, my boy, come in!"

The boy looked down at the tiny opening to Spider Woman's house and said: "But how can I get in? The opening is so small!"

Spider Woman removed a few little stones and some sticks and the boy managed to squeeze in. As soon as he was inside, he marvelled at the beauty and comfort of Spider Woman's house. The floor and walls were all lined with soft silk. Everything was so small he wondered how he would ever get enough to eat.

Soon afterward, however, Spider Woman gave him something to eat and to his amazement when he put it in his mouth it so increased in size that he had no difficulty in filling himself with good food.

Beware of Bad Man

The boy stayed many days with Spider Woman. Learning that there was a certain kind of bird she liked for food, he went hunting and procured several of them for her. Spider Woman had become very fond of the boy and often warned him never to travel to the west, for in that direction lived a very bad person—Asohkata.

For many days the boy obeyed her, but one day he became curious and decided to go that direction and to see for himself just how bad this wicked person was. As he went along, he kicked a little ball ahead of him. When he had traveled without any trouble for a few miles he began kicking the ball harder and harder so that it bounded a long distance in front of him. Finally, when he had given it a particularly hard kick he noticed that the ball had disappeared. When he ran up he found it had gone down into a kiva.

As he stood there, a voice called out: "Come on in! No one will hurt you."

The voice sounded kind, so the boy went down the ladder into the kiva. When his eyes became accustomed to the gloom down there, he saw that he was alone with a strange and terrible looking old man! Telling him that they were going to play a game together, the old man tied the boy's hands together behind his back and his two feet tightly to-

gether. He then carried him up the ladder and placed him over the entrance where the smoke from the fire would almost suffocate him. There he was left to perish.

However, when the boy failed to return at the usual time, Spider Woman guessed what had happened. She called a council of all the animals. Bears, mountain lions, coyotes, wolves, foxes and all kinds of animals came—even a little mole whom Spider Woman was particularly glad to see. So many animals came that the house was entirely filled.

Spider Woman told them of the plight of the boy and begged them to assist her in freeing him. This they all agreed to do and they set off for the wicked old man's house.

When they arrived they found the boy almost dead from the smoke and heat. The old man laughed and joked with them as they came up.

Said Spider Woman: "We have come to rescue this good boy! What must we do to make him free?"

"You must play with me the game of the cup," the old man replied. "You certainly will not win, but I will let you try!"

"All right," said Spider Woman. "We will play."

Spider Woman produced four little cups and under one of them she placed a little ball of clay. She moved them rapidly around. As she did this, the mole hid and quickly burrowed under the floor and up close to the surface of the ground where the cups were. He carefully took out the little ball of clay and hid it away.

"Now," said all the animals, "guess if you can under what cup the ball of clay is!"

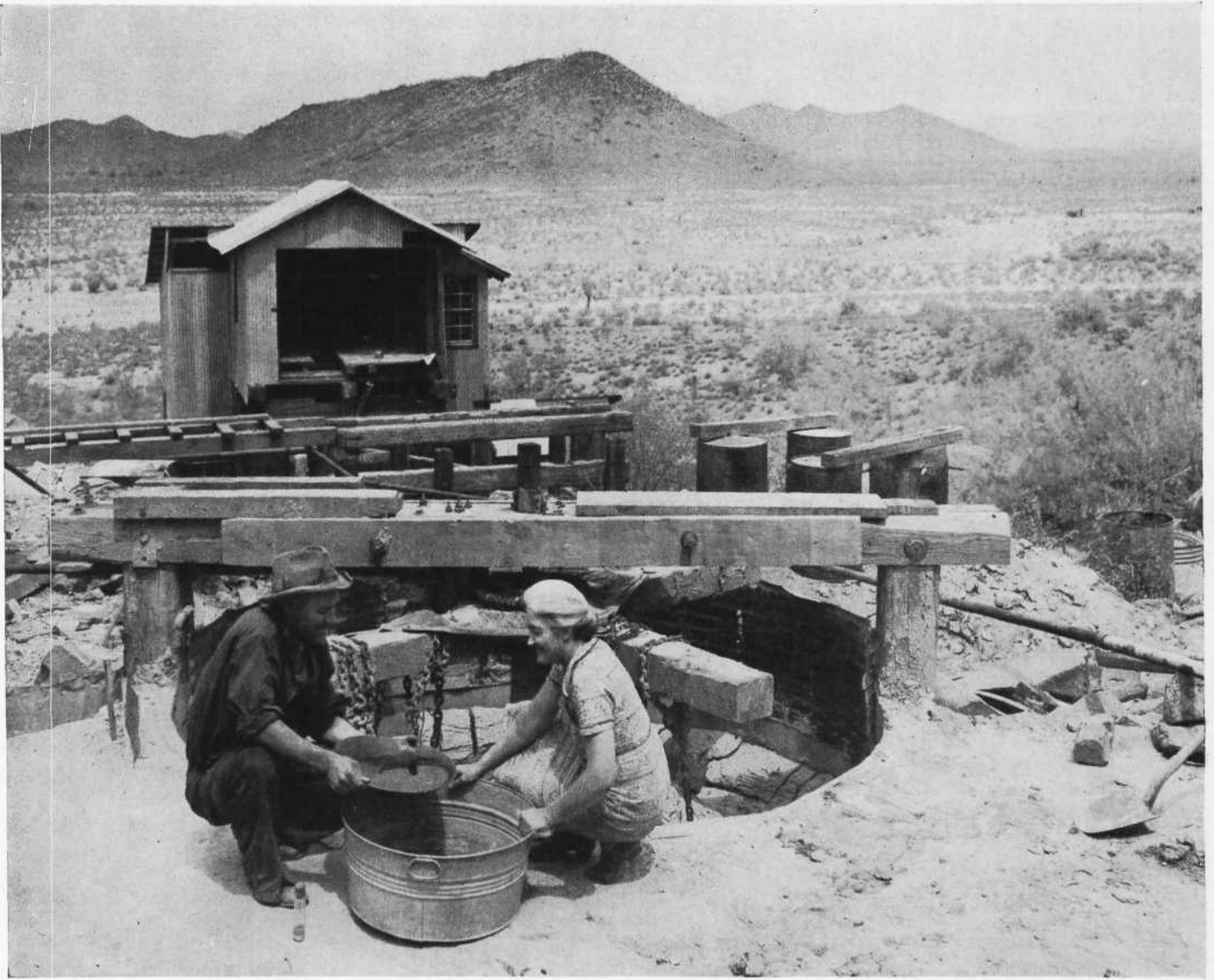
The old man guessed and when Spider Woman lifted up the cup there was no ball there. He guessed again and again—there was no ball there. He was very angry and guessed the fourth time and of course there was no clay ball there either.

His turn was up. The mole quickly slipped the ball back under the first cup, so when Spider Woman lifted the cup there it was.

The old man marvelled but said: "Before you take the boy you must prove yourself again. Outside my house there are many strong bushes with long, hard roots deep into the ground. You pull those up and then you may take the boy."

Upon hearing this, the mole hurried away and tunnelled under some of the bushes, chewing their biggest roots apart. When all the animals had assembled

Continued on page 31



When the ore has been crushed, Mr. and Mrs. Jack Thomas pan the "mud" from the bottom of the arrastre for gold.

Primitive Mill Yields Desert Gold

By RAYMOND F. LAW

Mining men will tell you that gold ore assaying only \$5.00 to the ton is unprofitable except when milled in large tonnage with most modern machinery. And yet here is the story of an Arizona miner and his wife who are making good wages working low grade ore with an old-fashioned arrastre. It is not an easy job but the by-products of their little home-made mill are health and happiness—and that is more than some of America's \$100,000 business executives are getting out of their jobs.

ON a rocky desert hillside under a blazing Arizona sun, a motor salvaged from an old truck sputters and chugs into action. Above a shallow pit in the ground two stout wooden crossbeams begin to revolve. Dragging from them on chains, huge boulders grind around and around in the pit, slowly pulverizing a batch of ore.

At the edge of the pit stands Jack Thomas, veteran of mine and mill, watching the process he uses to extract gold from the ore. He is deeply tanned and hard-muscled. His overalls are torn and his damp shirt sticks to his back.

Mrs. Thomas, clad in a faded house-dress, her white hair unprotected from the sun, takes a hand in the proceedings.

In her own words, she is "Just an old miner at heart."

As the ore is ground fine, Thomas turns water into the pit and the contents gradually become a mass of thin mud. An outlet on the downhill side of the pit is opened and the mass flows over two amalgam plates and drains away down the slope.

The grinding apparatus is stopped. Fine sand is dug from between the crevices of the flat rocks which floor the pit, where mercury has been placed. The muddy sand is panned to recover the mixture of gold and mercury. By the use of a retort the mercury is passed off in vapor, leaving the gold.

The amalgam plates also are cleaned

and other gold particles ground from the ore are recovered.

The outfit rigged up by Thomas is simply an arrastre, a primitive drag-stone mill of the type used for centuries in Mexico and South America. This one, however, is modernized by using a motor instead of burros or manpower employed in earlier days to turn the wheels. It is one of the oldest of milling processes, but so efficient is it under the expert touch of Thomas that he claims a recovery of gold as high as 85 per cent from quartz ore and dump tailings he has worked.

The story behind the little plant is an interesting chapter in man's age-old struggle to wrest gold from the reluctant grasp of the earth. Mr. and Mrs. Thomas, like confirmed miners the world over, are willing to risk their time, such capital as they can raise, and many of the ordinary comforts of life in the hope of making a stake. They believe they are on the way now, but it isn't easy, they will tell you.

Thomas has had wide experience in mining and milling in many parts of the southwest and Mexico. Two years ago he and Mrs. Thomas were in the Baluda district of Sonora, where he was engaged by a mining company to build a power arrastre to replace one which had been turned laboriously by burros. He learned a lot about arrastres there, and decided that some day he would build one for himself.

Arrastre is Built

Labor troubles and other difficulties made it impossible for them to stay in Mexico, so they moved to Arizona. For a time in 1937 they operated a cyanide plant at the Mammon mine, 25 miles south of Casa Grande. A year ago last March they went to the Jack White mine, 17 miles north of Phoenix, where they built their arrastre, the largest now operating in the state.

While Thomas was erecting the plant, Mrs. Thomas set up housekeeping in the front end of a tool house, commodious enough but because of its corrugated iron roof and walls a veritable oven when the Arizona sun blazed down with 110-degree intensity.

"Not much like a swanky apartment," she smiled, "but we get along all right."

Perhaps her knack of making a comfortable home for her family in the odd places of the world where gold is found equals the accomplishment of her husband in figuring out ways to get the gold.

Despite conditions which city women would call primitive, the toolshed living quarters are clean and well kept. The dirt floor is well swept. Dinner is cooking on the old fashioned four-hole cookstove. Groceries and other supplies are arranged

on wooden shelves along one wall. The plain pine table is scrubbed clean.

"How do you manage to keep house here in the summer when it is so hot?" she was asked.

"It's something like camping out," she replied. "But we have a well-insulated refrigerator and three times a week we get 300 pounds of ice from Phoenix."

That solves the problem of keeping food from spoiling and provides cool drinking water.

Water for the house as well as for use in operating the arrastre is pumped up the hill half a mile from a well on the flat below the mill. It is stored in a tank from which it flows by gravity to places where it is used.

A bedroom is unnecessary in the scheme of desert living. Everyone sleeps under the stars. Beds for the whole household are ranged alongside the building.

Prefers Mining to Housekeeping

Mrs. Thomas declares her real interest is mining, not housekeeping. Otherwise she might be living in town while her husband carries on his work out on the rocky hillside. Mining men who know her say she is the only woman cyanide operator in the country. When they are cyaniding, she helps clean the zinc boxes and does a man's work generally.

"I studied chemistry in high school years ago," she explained, "and I've been interested in mining ever since Mr. Thomas and I began working all over the southwest in mines and mills."

Her vigor of speech and action belie her snowy hair. She converses easily and pleasantly of their experiences, in contrast to her husband, who says she will do the talking for the family. He always has plenty to keep him busy around the plant.

There's plenty of gold ore in the desert hills of the southwest, any prospector will assure you, but the problem is how to handle it profitably. The Thomases believe they have found the answer in their arrastre. Such a plant may be built close to the mine, at a cost of about \$100, exclusive of a motor to turn the mill. Many a small mine operator who could not afford to ship ore long distances to a mill will be able to do his own milling, Thomas believes, by setting up an arrastre.

There is nothing new in this process for extracting gold. Every mining man seems to know of it, but few arrastres have been used in this country. Charles A. Diehl, Phoenix assayer and mining authority, gives a clue to the reason. He says the arrastre, for all its apparent simplicity, is hard to operate successfully. He attributes Thomas' success to his wide

experience in milling ores and to his mechanical ability in building the outfit.

In particular, the bearings on the main shaft often give trouble, owing to the great weight of the dragstones — 500 to 800 pounds of granite. Thomas seems to have solved this problem successfully, preventing time-wasting shutdowns for repairs.

The pit in which the ore is crushed is ten feet in diameter and two or three feet deep.

The cross beams, heavy timbers a foot square, are mounted on a metal post, rising from the center of the pit. They are revolved by a shaft turned by a wheel connected with the motor by a long leather belt. The motor burns fuel oil after being started with gasoline, thus cutting operation costs.

The arrastre handles from 300 to 400 pounds of ore at one time, and has a capacity of 12 to 14 tons every 24 hours, although it usually is operated only during the daylight hours.

Thomas says ore as low in value as \$5 per ton can be milled with profit, although some of the quartz handled runs from \$17.50 to \$30.

For a time he worked the tailings of a dump on the property, but most of the ore comes from shallow prospect holes over a nearby hill, transported to the arrastre on the backs of burros.

Depends on Surface Ore

"There's no use sinking much of a shaft to get the ore," Thomas says. "You're taking too big a chance. It's better to use surface ore even though it is of a lower grade. It takes capital to do real mining."

The cleanup, or removal of the gold-bearing material from the plant, is made after 10 to 25 tons of ore have been handled, depending on the value of the rock. The sand and clay from the bottom of the pit are squeezed through a piece of canvas or chamois skin, leaving an amalgam of about two parts mercury and one part gold. This is heated slowly in an iron bottle or retort. The mercury turns to vapor, passes off and is collected in a condenser. A sponge of gold remains, which may be sold in that form or melted down into a small brick of gold. Thomas is an assayer, and in his little shop in the mill building he completes the process.

The property at the Jack White mine is equipped for cyanide operations, which are carried on from time to time. For this work the arrastre is converted into an agitating tank by removing the large drag-stones and replacing them with smaller ones. These are revolved in the pit to stir the mass of ore and chemicals.

'Feel' *of the* *Desert*

NATIVE ART

Photograph by
WM. M. PENNINGTON



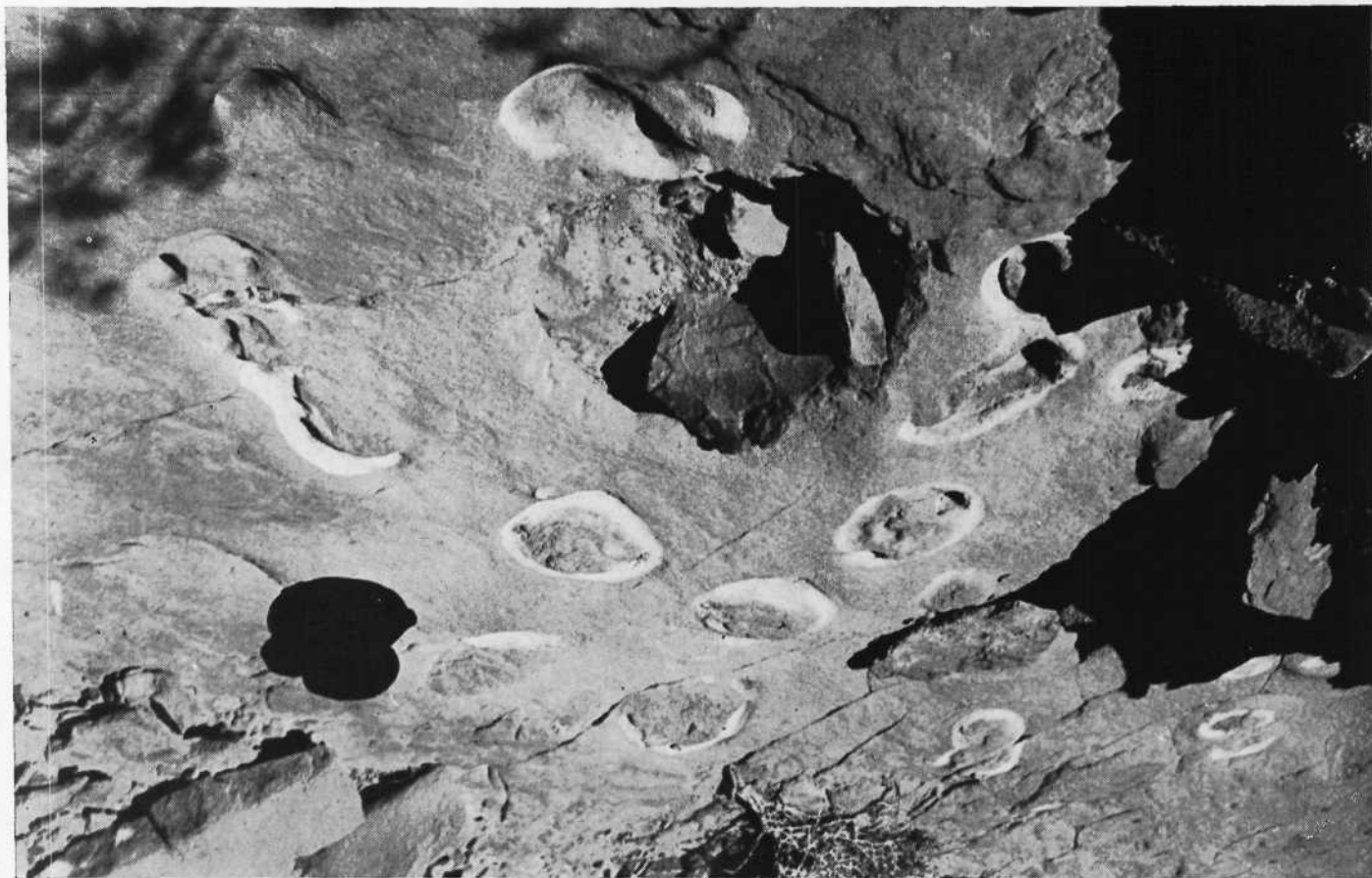
By JOHN STEWART MacCLARY

WHERE and when did Zuni women first learn the art of weaving? In Coronado's time they lacked knowledge of domesticated wool-bearing animals, and although they used a certain amount of hand woven cotton cloth, this commodity was procured by barter from the distant Hopi pueblos.

The Zuni weaver is not seated on the floor in the manner of the Navajo woman, although the woven

designs somewhat resemble certain common Navajo patterns. The loom is unlike those of the Navajo. This indoor weaving equipment resembles the looms of the house-dwelling Hopi Indians—but among the latter tribe weaving is usually done by men.

Perhaps the Zuni—like the Navajo weavers—render credit for the craft to mythical Spider Woman! But it is known that the Spanish invaders brought the first domesticated wool-bearers into the lands of both tribes.



"Dinosaur Tracks" at Split Mountain

Many of the "tracks" have the definite and uniform shape shown above. A few of them such as are shown here have received a deposit of alkali carried down by rainwaters and stand forth in bold relief. Note the section just below center that has been chiseled out by a souvenir hunter. It is hoped for his sake and other vandals like him that they are NOT dinosaur tracks. For size comparison note the black hat in the upper right hand corner.

In the sandstone floor of a little side canyon near Split mountain gorge there are indentations that look to the untrained observer like the tracks of some prehistoric monster. For many years they were accepted as such—until the scientific men came along and said it wasn't so—that this sandstone was formed long after the age when giant reptiles roamed over the face of the earth. The controversy still goes on, and you can choose your own side—but regardless of what caused these strange dents in the rock, you'll find this a gorgeous spot for a weekend excursion into the Southern California desert—when cool weather comes.

By HULBERT BURROUGHS

"**Y**OU fellers been to the dinosaur tracks?"

I glanced quickly at the desert-lean face of the man filling our gas tank.

"What dinosaur tracks?" I asked hopefully — hopefully because thus far our week-end on the Southern California desert had been a dismal failure. Not through any fault of Mother Nature, but only because we had been fools enough

to get our car stuck in some of her artistic handiwork on the edge of Salton sea. After spending Friday afternoon and all day Saturday digging out, we finally limped into a service station late in the afternoon, tired, thirsty, disappointed at having ruined a vacation trip we had been planning so long.

So when we heard mention of "dinosaur tracks" we were interested.

"Why, sure," the attendant was say-

ing, "those tracks've been there close to a million years! — right in the sandstone plain as if the critters that made 'em had walked over the rock yesterday!"

Chuck Sheldon and I looked at each other. Funny how quickly that tired feeling leaves you when excitement begins to brew. Dinosaur tracks! This was getting closer to the adventure and mystery we had hoped to find on the desert.

"... and you go south down high-

way 99 to the Julian and San Diego road, highway 78 — that's just this side of Kane springs. Turn to your right, which is west, an' keep going till you come to a little place called Ocotillo. It's on the left hand side of the road. There's a dry lake on the right which the army and navy aviators use for bombing practice. Turn south at Ocotillo on a sand and gravel road. Continue south seven or eight miles toward the Vallecito mountains. Just before you come to an old gypsum mine the road crosses a big dry wash comin' diagonally down from the right. That wash is the trail to the dinosaur tracks. If it ain't rainin'—an' there's no prospects of it—head your car up the wash. You won't get stuck—the sand's hard. Pretty soon you'll be going through Split mountain canyon. As soon as you get past that narrow gorge keep your eyes peeled, because the tracks are up a side canyon to the left. Somebody painted a red arrow on a boulder so's people could find it. Don't know if it's still there or not. You boys'll find it though—can't miss it."

I think our profuse thanks puzzled the old fellow, but we were really grateful and excited over the prospects of seeing some real dinosaur tracks.

It was nearly 5:30 in the evening when we turned west on highway 78. And by the time we reached Ocotillo the sun had dropped behind the western mountains.

By rights, we should have started looking for a campsite. But the darkening shadows of the Vallecito range ahead of us were an invitation we couldn't resist.

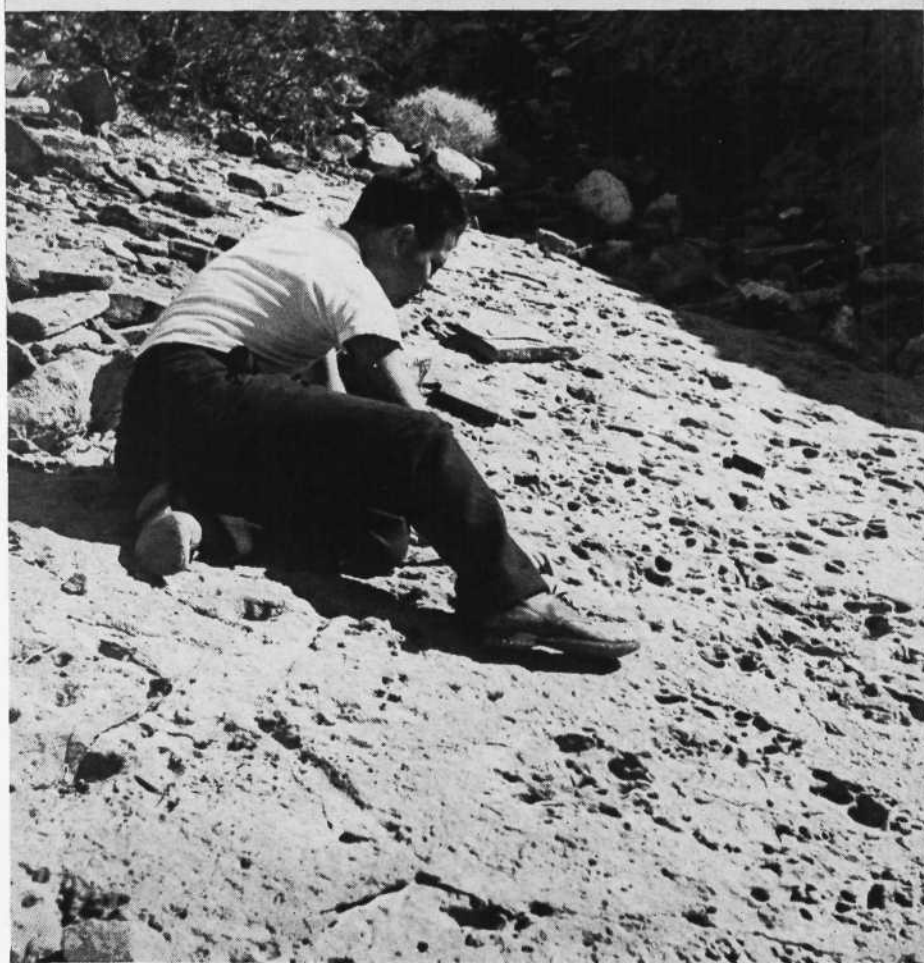
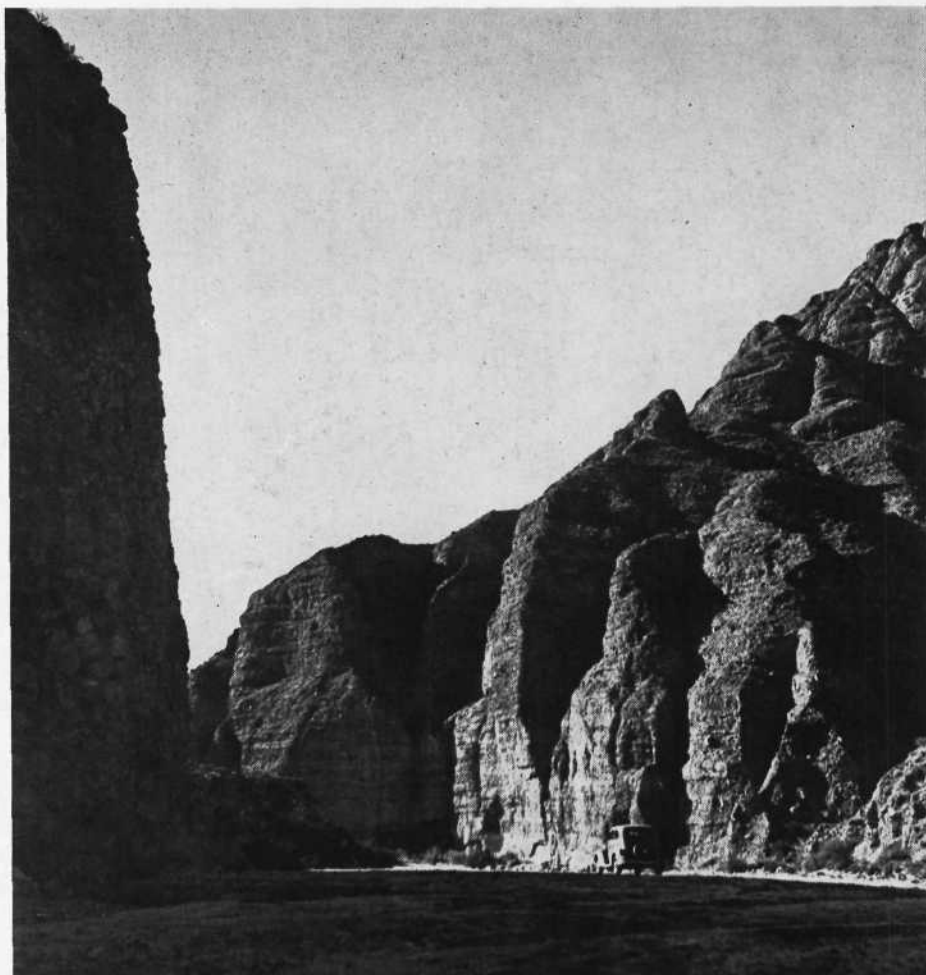
"The moon'll be pretty close to full tonight," I told Chuck, "and it'll be fun to see if we can find the tracks at night."

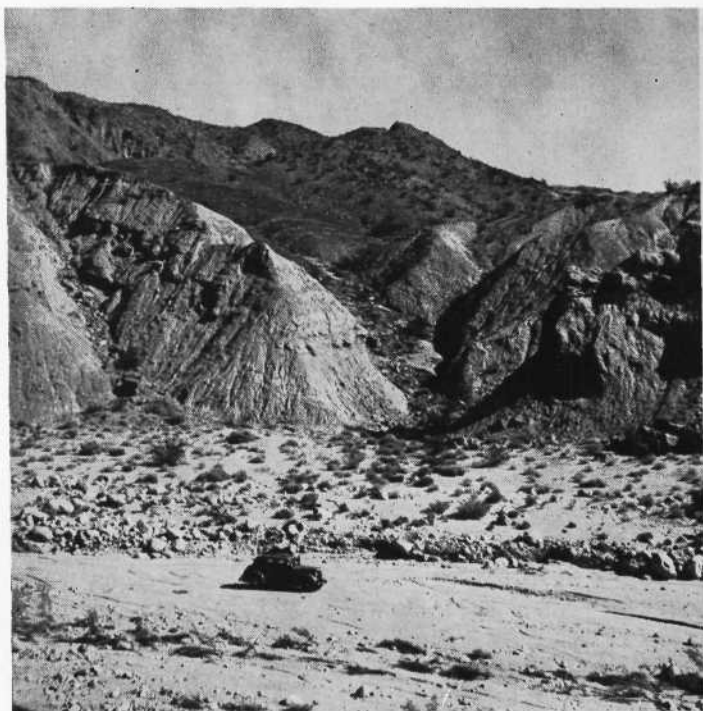
We had no difficulty recognizing the big dry wash coming out of Split mountain canyon below the gypsum mine. It was nearly dark as we turned off the road and headed up the dry hard sand of the streambed. There was no wheel track—no visible sign that anyone had ever traversed the wash before, and we had the feeling that we were pioneering a hitherto unexplored territory!

Dodging among huge boulders, gliding along over velvet smooth stretches of sand, stopping to measure the clearance over a big rock — it was not long

Above—Entering the gorge of Split mountain canyon. This is one of the scenic spots in the proposed new Anza Desert State park.

Below—Most of the markings are a hodge-podge of shapeless small pits in the surface of the exposed sandstone. Chuck Sheldon who accompanied the author of this article is examining the formation.





In the center of the picture is the small canyon in which the so-called dinosaur tracks are located. They appear in the bed of the canyon on the light sandstone clearly visible here. The car faces up-stream in the dry wash which runs through Split mountain canyon. Geologically, most of the sedimentary strata of this region are of the Pliocene or Miocene eras.



Excellent examples of the so-called dinosaur tracks. Geologists explain these interesting markings as the peculiar result of Nature's erosive forces upon concretions imbedded in the sandstone. The small white object with darker circles around it in the upper right hand corner of the picture is definitely and without question a small concretion.

before the dark entrance to Split mountain canyon loomed before us. Deep within the gloom of the sheer, jagged walls we stopped to cook our dinner. Close beneath the cliffs the light of our fire quivered and leaped among the spectral rocks about us.

By the time we were ready to move on in search of the dinosaur tracks, the light of the moon was falling on the upper walls of the western cliffs. That ride up the gorge of Split mountain is really exciting at night. The half luminous shadows of a moonlight night on the desert are weirdly beautiful. If you like to let your imagination wander it is easy to slip back through eons and eons to the time when prehistoric monsters once roamed those hills. We fancied ourselves hunting not for cold, inanimate tracks of the long-dead dinosaur, but out to find the living monster himself! And when we finally came out of the gorge and found the small side canyon on the left, we were like a couple of schoolboys on a first camping trip.

As we climbed out of the main wash and headed up what we were confident was "dinosaur canyon," the moon was shining full in our faces. The hills about us were low and seemed well eroded. Straight ahead in the bed of the little canyon the moonlight reflected sharply on a stratum of exposed sandstone.

That must be the place!—a flat bed of sandstone the old fellow said!

I never was much of a runner so Chuck won the honor of being the "first living man to track a dinosaur to its lair"—at least in our world of fancy.

There was no doubt that these were the dinosaur tracks. On a tilted surface of coarse sandstone that formed the bed of the small dry wash were myriad imprints and markings. Soon we picked out larger tracks that could have been made by nothing but a dinosaur!

Our trip to the desert was a success! We had found the trail of a prehistoric monster. And as we spread our sleeping bags out upon the sandstone, presumably the first men to sleep in a dinosaur footprint, the satisfaction of conquest came over us—followed during the night by a sad, hard realization that sandstone dinosaur tracks were not made to sleep in.

All the next morning we feasted on dinosaur tracks. We could see clearly among a hodge-podge of lesser shapeless impressions, the larger dinosaur footprints; could see in several instances what were clearly to us the claw marks; were so thrilled at seeing actual prehistoric tracks that we returned home with vivid accounts of our experience.

Since that time, however, there have come vague mutterings of doubt and open statements that the "footprints" of Split mountain were not dinosaur tracks at all. Someone had advanced the theory that they were nothing more than the

result of ages of erosion in the sandstone.

Now, no one likes to surrender his fondest beliefs without at least a feeble sort of resistance. So we determined to go once more to the desert for another look, to study and photograph the tracks.

Before our first visit to "dinosaur canyon" we had never actually seen real dinosaur footprints, but had read about those found in other parts of the world. Hence we knew that such things existed. Then, too, someone with red paint had thoughtfully written "Dinosaur Tracks" and painted a large red arrow on a nearby rock. So we were led without question into the belief that these were genuine. But as we walked again up dinosaur canyon we decided that this time we would be less imaginative, more coldly critical.

At first sight the "tracks" appear to be nothing more than indentations in the surface of coarse sandstone. But on closer examination one cannot fail to notice that among them are many larger impressions which have a definite, uniform shape.

Many of these have been battered and others obliterated by countless centuries of erosion as water and boulders have been carried down over the surface of the sandstone. Some have been chiseled out in large blocks and carried away by a more modern agent of erosion — the

vandal souvenir hunter. But there still remains a large assortment for purposes of study.

Those of uniform shape suggest more closely the imprints of the feet of elephants—they are more clearly circular, but with no toe marks. There is one track, however, which immediately attracts the eye as most likely to have been made by a reptile of the dinosaur class. This impression, if it can be called the track of an ancient reptile, was made by one having one single great middle toe or claw. This track measures approximately 14 inches long by nine inches wide. The other more circular impressions average about 10 or 12 inches in diameter.

We knew that if these markings actually were the tracks of prehistoric dinosaurs we would have to think of them as having been made many millions of years ago when the present sandstone was soft, probably on the shore of a swamp or sea, or on the bank of a river.

Well, from a geological standpoint, how old is the stratum of sandstone bearing the tracks? It is doubtful that this particular layer of sandstone anywhere nearly approximates the great age necessary to place it far back in the time of reptiles. Most of the sedimentary strata of this region are of the Miocene or Pliocene eras which dates them long after the dinosaurs became extinct. Exit romanticism!

Secondly, the Split mountain tracks in no way resemble tracks found in other

parts of the world and definitely determined to have been made by dinosaurs. Nor do they, for that matter, resemble any other known tracks.

"If not tracks (which we are loath to accept), what the devil can they be?" we ask ourselves.

Some of our geologically and paleontologically inclined friends answer that they are "— the result of erosive forces upon concretions in the sandstone." Concretions are what our more practical friends term the various nodules or rocks which appear in a matrix of otherwise smooth sedimentary rock layers. It all happened like this: Ages ago, when the sandstone in question was yet soft, there became imbedded in it various rocks or other foreign objects which remained there through the long years as the sandstone matrix hardened. Finally, when the layer of sandstone became exposed by constant erosion of water and wind, these concretions, being harder and more resistant to weathering, were exposed in relief until sufficiently loosened from their base. Then they dropped out, leaving their impressions in the sandstone as we see them today.

On this very point Chester Stock, eminent paleontologist from the California Institute of Technology, has this to say:

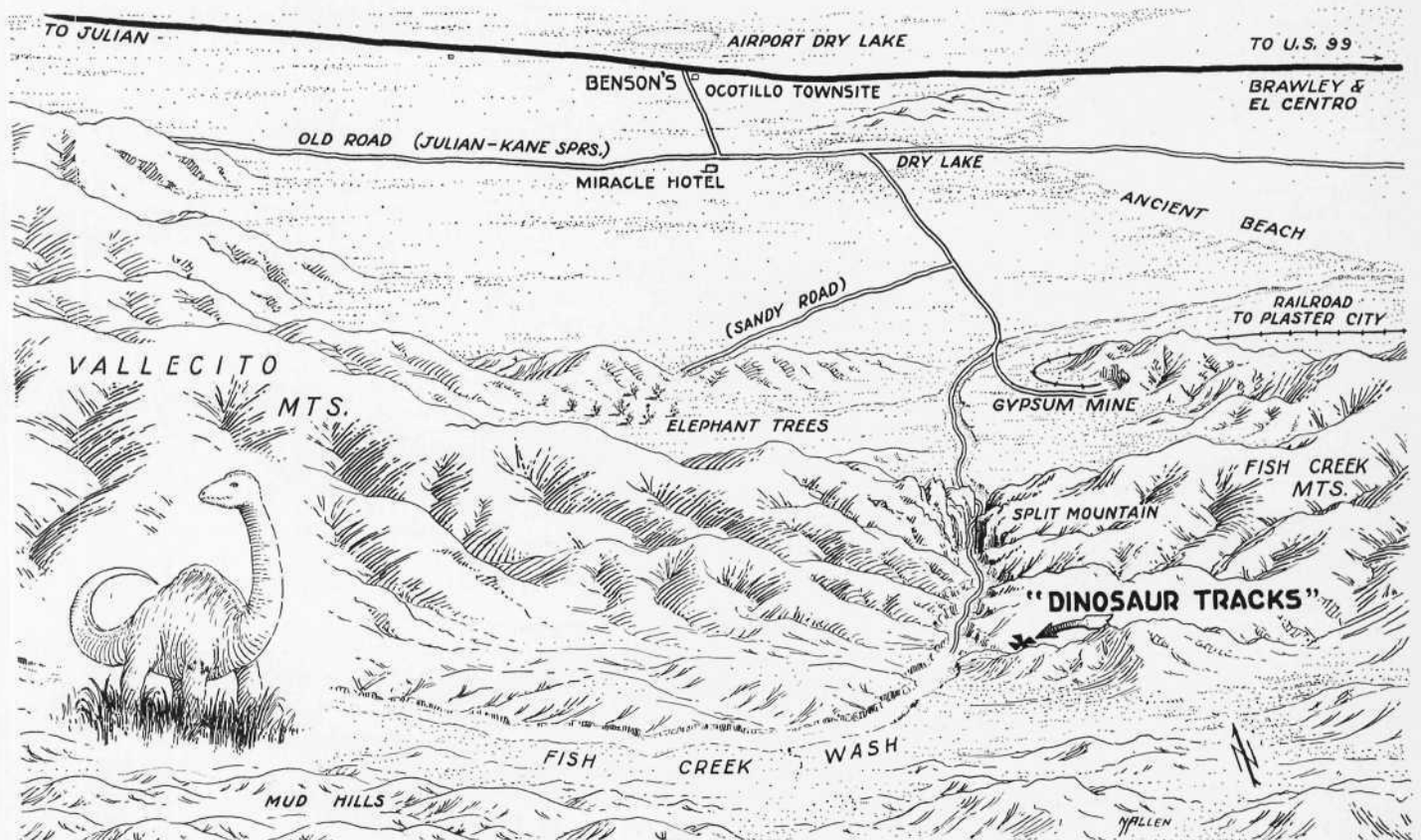
"I am of the opinion that they are not tracks but represent peculiar concretionary structures which occur in the sandstone. Such kernels of harder rock oc-

asionally occur in a uniform sandstone matrix and when the entire rock weathers these kernels are exposed in relief or on occasion may drop out, giving the peculiar impressions that look like the imprints of organisms. Dinosaur tracks as I know them have quite a different configuration and their linear series have a wholly different appearance from the so-called tracks at the Split mountain canyon locality."

A large sail suddenly deprived of wind had nothing on us as we saw our visions of real dinosaur tracks receive this final blow. But we are die-hards. There still remains a persistent doubt. Admittedly there can be no question that many of the markings in the sandstone are naught but the result of erosion upon concretionary substances. In fact some of these concretions in small sizes are still in evidence. And were it not for the remarkable uniformity of shape and size of some of the larger tracks, there could be no doubt as to the validity of this explanation.

However, our doubt is based not only on the track-like appearance of the markings, but likewise on this question: Is it likely that there would occur so many concretionary impressions of such remarkably similar shape and size? Furthermore—

But why not let the reader travel to the head of the gorge in Split mountain canyon and attempt to solve the mystery of the dinosaur tracks for himself?





THE first piece of "sun-purpled" glass I ever saw, was an old pitcher handle. It was in a Palm Springs, California shop and the dealer wanted \$3.00 for it! I eyed him with suspicion; but he assured me that such colorful trinkets were extremely rare, and in no time at all would be entirely extinct. He was also positive that it took about a hundred years to develop a genuine purple color in glass, in which time almost anything could happen to the fragile article; so whole objects in a deep purple were "simply priceless."

This gave me an idea: If I could find enough purple glass intact (especially pitcher handles!) it would be easier than striking oil and just as profitable. And the sooner the search began the better—before the entire available supply had been gleaned by an antique-conscious public.

I struck out at once. I combed the landscape from Palm Springs to Desert Center. I hiked through the Devil's Garden to Morongo Valley. I spent about a week exploring down around the Borrego country. But all without finding more than one bottle-neck — a sort of timid lavender! I took the stage to Quartzsite, Arizona and started for the hills.

An old prospector, discovering my questionable errand, looked off into space and "reckoned as how they'd be a batch o' glass back up in the canyons where there'd been some old mines—but it's prob'ly all busted up by now!" He also mused that it took no less than 35 years to turn glass the least bit, and 50 years to do a good job of it. Whereupon he ventured to display a large wine bottle that was almost a royal purple! "Simply priceless!" I said to myself, and offered him a dollar for it. After some reflection

By TRACY M. SCOTT
Sketches by BEE NICOLL

What causes an old glass bottle lying on the desert to turn purple? How long does it take? Do some types of glass "color" more rapidly than others—and does the character of the earth on which it lies make any difference? There are many answers to these questions — most of them fiction. Here is the lowdown on the purple glass hobby from a young lady who knows. Tracy Scott went in for purple glass in a big way, and now — well, you'll laugh when you read this story.



The old pitcher handle—worth its weight in gold.

he acquiesced and I felt that the cornerstone of a great fortune had been laid.

Back up in the canyons it was just as he had predicted — all the glass was "busted" and there wasn't a single pitcher handle in the lot.

The remains revealed only a great abundance of erstwhile whiskey-bottles! Furthermore, none of it was really purple, although some of the thicker pieces had taken on a slightly amethystine tinge.

But I was undismayed. For months the search continued. I began to specialize on junk-piles, and got so I could detect one at 50 rods, but there was no purple glass. The 100, 50, and 30-year estimates were all probably correct — and I was hunting 30 years too soon! I made a tour of all the old Missions, and visited innumerable ghost towns, but was rewarded by nothing in particular. Even the "purple cache" which an old Indian assured me lay hidden in the canyon 15 miles above Imperial dam (which I finally reached after no little exertion) had already been most thoroughly picked over.

Something was radically wrong with my technique. Obviously I was in need of more information on the subject. I had by this time scoured most of the desert between Flagstaff and Mojave with no greater success than an occasional small phial and some old broken dishes.

At last reward came—in Kern county. I had already concluded that glass must turn purple in the sun for some specific reason. Not only are long hours of hot sunlight necessary, but there must also be certain chemicals in the glass, and also in the soil on which the glass rests. From a text I discovered that "under the

influence of ultra-violet light, as from sunlight, glass containing a relatively small amount of manganese will develop on its outer surface a rich purple color." And that "iron oxides in glass seem to transmit all the yellow and green rays of the spectrum retaining or absorbing the red and blue, or violet rays." This process is obviously hastened by the presence of alkalis.

I found that glass jars on which the lids had scarcely begun to rust, were already a deep violet, if surrounded by alkaline crystals in the soil; while glass jars lying on an acid soil or adobe clay, were still clear, although the surrounding tin had all corroded into dust. Thick glass will also turn purple sooner than thin glass because of its tendency to absorb more of the sun's light and heat, while glass that lies flat is more likely to absorb color than glass which lies at such a slant as to deflect some of the sun.

It soon became apparent that the long-term estimates previously given me, probably related to districts where certain chemical conditions were not as favorable to making purple glass, as they were in Kern county. There, in a season of no more than eight or nine months the sunlight is sufficient to turn small bottles and other cheap glass a delicate heliotrope tint.

Upon this assumption I encouraged a lady to put a heavily-leaded cut-glass fruit bowl out in the summer sun, assuring

her that by October at the very latest, it would be a delicate grape color. However I had failed to reckon with chemistry; for by October the bowl had turned not a purple, but a deep honey color instead. Hastily I referred to another text: "Glass decolorized by selenium is subject to a peculiar development of straw color, when it is exposed to sunlight"—which also accounted for the several yellow pieces I had already discarded as worthless.

Now while soil may aid materially in purpling glass, it is not absolutely essential, for I found glass door knobs, exposed to the sunlight about three years, a lovely shade of purple; and an old church in the San Joaquin valley had to replace one window entirely, because the glass had turned so purple it was no longer admitting sufficient light—so one of the deacons informed me. Also, it is not essential that the glass be on the desert, for I found purple glass as far north as the Oregon border, and at altitudes of 7,000 feet.

But it was in Kern county that I gleaned my harvest of purple pitcher handles—hundreds of them. Not only handles but entire pitchers, thick glass candlesticks, bottles of all kinds and sizes, ink wells, fruit jars, pickle dishes, tumblers—purple glass as far as eye could reach. My fortune would be made!

By the time I got back to Palm Springs with my gigantic collection, another season had passed. In triumph I waved my royal purple wine bottle at the dealer

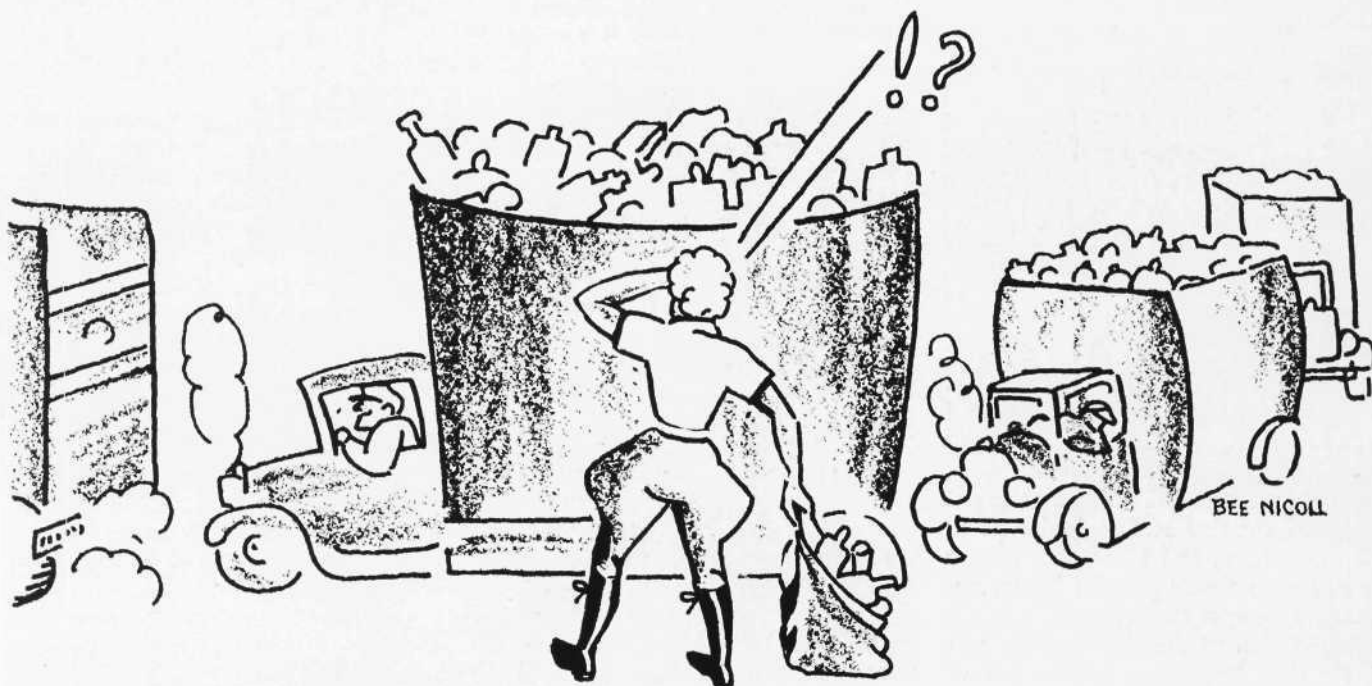


"I reckon you'll find a batch o' old glass up at them mines."

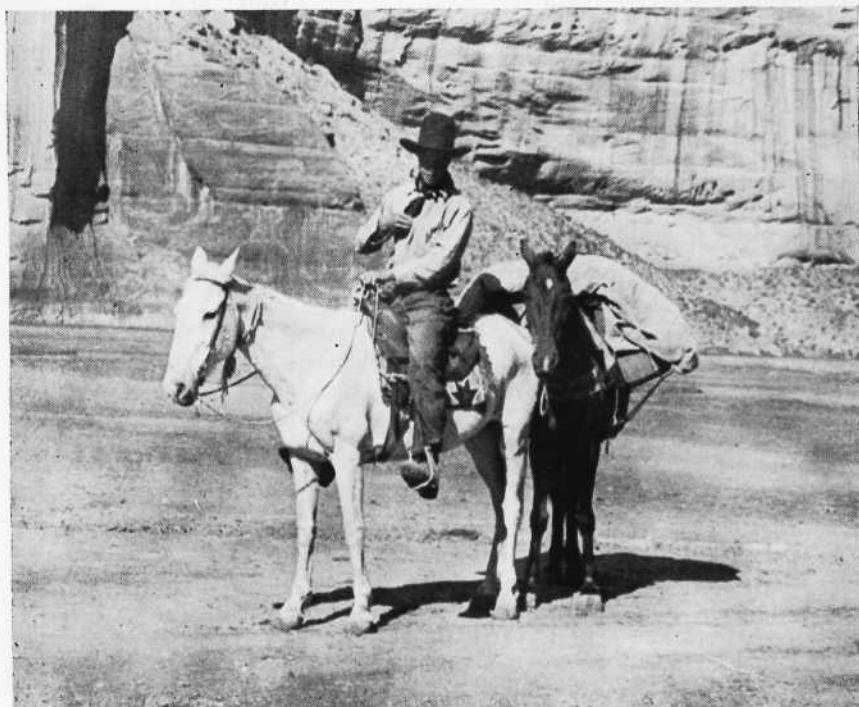
who had first showed me the three-dollar pitcher handle. But alas! He was not impressed. With a shrug he informed me that "the bottom had fallen out of the market because several truck loads of purple glass had just arrived from the backyard 'coloring factories' of certain enterprising natives of the desert who have discovered they can do an excellent 30-year aging job in 18 months."

He figured that my best specimen (in perfect condition) would be worth about a quarter.

When purple glass began arriving in truck-loads the bottom fell out of the market.



Traveling alone in the desert wilderness, the young vagabond artist, Everett Ruess met with adventure which at times became real tragedy. In his diary he recorded his own narrow escapes with little emotion—but the death of his saddle pony Jonathan was a sorrow not to be passed over so lightly. The following from Everett's diary was written three years before his mysterious disappearance in southern Utah, as related by Hugh Lacy in the *Desert Magazine* in September, 1938. The accompanying picture of Everett and his horses (Jonathan in the rear) was taken in Canyon del Muerto a few days before the experience related in these notes.



Tragedy in the Canyon of Death

By EVERETT RUESS

I decided to call Whitey "Nuflo" after the mischievous old guardian of Rima in Hudson's "Green Mountains." The bay I named Jonathan because he was so sweet-tempered, meek, and gentle.

I fed the horses plenty of oats, then started up the side canyon under the high-perched cliff dwelling where I found the Indian necklace last year. I found the up trail steep and rough, and started, as I thought, to leave Canyon del Muerto. It was so steep I led Nuflo, and Jonathan had to be urged. Finally he fell or lay down at a rough spot about half way up. He would not rise, so I unpacked him there. Everything was topsy turvy. When I pulled out the pack saddle, Jonathan slid off the trail, turned over three times on the downslope, and tottered to his feet. I led him up, put Nuflo's saddle on him, packed Nuflo, and slowly descended. I did not mount Jonathan, but tied Nuflo's lead rope to the saddle horn, and we went on. After we had gone a mile past the hogan, upstream, he began to pull back. I halted several times to see if anything was wrong. In a couple more slow miles we

came to my previous campsite and stopped under a cottonwood.

I unloaded and led the horses to the bank where the grass was very sparse. I didn't hobble Jonathan. He went around in circles and didn't eat. I washed a cut on his leg and he stood still for a while, then staggered sidewise and fell into a clump of cactus. He got groggily to his feet, tottered again and collapsed. Then I prepared myself for the worst and began looking at my map to see how near a railroad was.

Jonathan was dead. So for me Canyon del Muerto is indeed the canyon of death—the end of the trail for gentle old Jonathan.

I've decided to cache my saddle in a cliff dwelling—perhaps the one where I left the cradle-board last year. Now I am afoot once more and old Nuflo is my beast of burden. Black clouds are above.

I saddled Nuflo and galloped for the last time in my saddle. I led him half way up the steep slope, then shouldered the saddle and climbed. I was utterly exhausted and dripping with sweat when I reached the dwelling. I found the cradle-board, spread my old blankets on the floor of a small store-house and laid the

cradle and the saddle over them. Two of the blankets are from Grand Canyon—many a mule has had them on his back. There was the quilt from Spurlocks, and a blanket made of a dozen gunnysacks from Superior. I wrote a note, put it under the saddle and started down the slope.

By the time I reached Nuflo it was raining violently. I was wet to the skin when we reached camp. I stood there for awhile, looking at the muddy torrent, the cascades on the cliffs, and the still form of Jonathan. The skies seemed about to open wider, so I donned my poncho, loaded Nuflo, and splashed upstream. The cloudburst drenched us, but we plodded forward, and soon I was in unknown country. The rain stopped. We crossed the river a thousand times. The canyon changed from red to pink, to grey, to yellow. Several times we had slippery scrambles over rocks that blocked the way, and there was some quicksand. Pines and firs were on the canyon floor, and there was one clump of aspens. At last the canyon walls were lower, but we did not find a way out. Finally I saw sheep tracks, the print of bare feet, and when I found a dry cave, I stopped, for we were both weary.

There was good grass for Nuflo. I climbed out and saw a range of purple mountains and buttes—doubtless the Lukachukais. An Indian was whistling a herd of sheep. I found a trail leading out of the canyon and returned to camp. It was late. The skies were murky, and I had not eaten since morning, so I fried some mutton and sweet bread. Then I read Browning and pondered.

How strange is reality! In the morning I shall not ride. I'll not buy another

Continued on page 30

"Borax" Smith has long since passed from the scene but the "20 Mule Team" product made popular by his showmanship over a half century ago is still a best seller on the groceryman's shelf. Here is the story of one of the most colorful mining men in the early history of the west — and of the fortune he found for himself on the Mojave desert of Southern California.

Buckboard Days in Borate

By CORA L. KEAGLE

ONE March morning in the early '80s Francis Marion Smith, better known as "Borax Smith," jumped out of the buckboard in which he had driven from Daggett up Borate canyon to the site of his latest adventure in borax production, destined to yield millions in "white gold." Hitching the spirited blacks to a post in front of the stable perched on the shoulder of the hill, he strode up the last steep pitch to the newly finished guest house. Taking the hill with the slow, measured stride of the outdoor man, he braced himself against the gale blowing through the canyon.

At the top there was barely enough level space for the sprawling house. Log cabins, spiked to the four corners of the foundation and anchored to "dead men" sunk deep in the rocky soil, held it securely against the sweep of the wind. But to Smith, the builder and dreamer, the view was well worth the climb. "I'd give my leg muscles a little extra exercise any time for a view like this," he remarked as he paused to look down into the earth gash that was Borate gulch.

Across the canyon to the south, the miners had dug cave homes in the face of the creamy clay cliff. There was no timber in these tumbled, color-spotted hills and the caves were cool during the shimmering heat of summer on the Mojave desert. Directly below was the boarding house which accommodated the 200 men employed. Nearby stood the post office, store and blacksmith shop. Straggling along the north rim were a few cabins for workers with families. But for the most part it was a man's country.

Farther east, at the turn of the canyon glistened greenish-white ledges of borate of lime, the source of future fortunes in borax. Northeast, through a cleft in the sky line, there was a glimpse of the Mojave desert below. North and west



"Borax" Smith. This is a reproduction of a photograph hanging in the office of W. W. Cabill, superintendent of the Tonopah and Tidewater railroad.

the volcanic Calico hills, stained from Nature's palette with the purple of manganese, iron red and malachite green, were piled in ragged confusion. Highlights of cream colored clays contrasted sharply with shadows of black lava.

These borax bearing beds, the bottom of an ancient sea, are the oldest strata exposed when some earth convulsion tipped this region on edge. In the conglomerate masses of stone there are sections of petrified palm root which tell of a tropical age. Nearby, on the Mule canyon road a spectacular bridge span of black and red lava was recently re-discovered.

"Borax" Smith was as rugged as his surroundings. Those who knew him best say he resembled Theodore Roosevelt. Although his was essentially an outdoor life, he never disregarded the social amenities and could, as he put it, "endure a white vest and a bouquet for hours if necessary." His only physical handicap was his eyesight. He always wore two pair of glasses. A kindly old lady once said to him, "Mr. Smith, you ought to consult an oculist."

"Madam," answered Smith, "I've already consulted 14. Do you know of any more?"

Under the pressure of business he was direct, rather brusque and always in a hurry, but in his leisure moments he was a delightful host with a fund of interesting stories drawn from the years he had followed the mines through Montana, Nevada and California. At various times his interests ranged from restaurants to wood camps. Here is one story he told to "Bill" Chalfant and other friends at Borate.

"Out in Nevada, in '72, I bought a wood camp and planned to supply the mining town of Columbus with wood. One morning, just after my cabin was finished, I heard the sound of chopping outside. I went out and found a crew of Mexicans and a white man cutting down some of my best pine trees. When I remonstrated they claimed the land. As they outnumbered me and were armed with knives and pistols there was nothing for me to do but retire and think it over.

"The next day I walked 12 miles to get a Spencer rifle. By this time the Mexicans had a nice lot of wood corded up ready to move. Early the following morning I heard the bells of a pack train coming and took up a position on the opposite hillside, just out of pistol range. Soon the Mexicans appeared with over 20 pack animals. With my rifle at my shoulder I waited until they began loading the first mule, then called out for them to 'vamos.' One of the Mexicans started toward me. I called out for him to stop and took aim with the rifle. They saw I meant business and making some threats departed, leaving the wood behind. That was the first wood I sold and it didn't cost me a cent for labor. But about a week later when the cabin began to rock violently in the middle of the night I thought the Mexicans had come for their threatened revenge and was out in the middle of the floor with a pistol in my hand before I realized it was an earthquake."

Smith's philosophy was that no honest effort is ever lost. Later, when he became interested in yachting, his favorite yacht was named "Effort" and won the King's cup.

Much has been told of Smith's connection with the borax industry in Ne-

vada and in Death Valley during the days when borax and boric acid were obtained by scraping the alkali from marshes and redeeming the borax by an expensive reducing process. But for some reason little has been written of his operations in Borate canyon.

Tales of mining are seldom intriguing unless precious metals are involved but the history of borax mining in the Calico mountains is full of adventure and humor.

At the time of the silver rush to Calico, borax mining was unknown. It was being produced at Trona and in Death Valley by scraping the salt from the alkali flats near by.

Assay Shows no Silver

In Borate canyon, a few miles east of Calico, there were great deposits of borate of lime, a whitish mineral that somewhat resembled silver quartz. Mining camps always attracted speculators who made a business of locating claims to sell to the "Johnny-come-lates," as the greenhorns in the mining business were called. These claims were bought on the chance that they might prove to be rich silver mines. Samples sent to the assayer in San Francisco showed little silver.

Finally, in 1882, Hugh B. Stevens sent another sample to the assayer. Whether Stevens asked that it be tested for borate of lime or whether by this time the assayer had a "hunch" is perhaps not known, but the sample "burned blue" and proved to be nearly pure borax. The assayer, instead of notifying his client first, told his friend, W. T. Coleman, about the borax.

Coleman sent his son-in-law to Calico as his agent with instructions to buy up these claims. One more stranger attracted little attention there. He quietly bought

up most of these "silver" locations in Borate canyon for less than \$20,000. By this time most of the investors had discovered that their claims were not silver.

Smith bought out Coleman's interest and developed the mines of "colemanite," as the mineral was called. The borax was taken to Daggett, a few miles to the south, by 20-mule teams drawing great, high wheeled wagons of the type previously used in Death Valley. Three days were required for two trips to Daggett, 12 miles away. Mule canyon, at the lower end of Borate canyon, was the camping place for the two overnight stops.

Much could be written about the intelligent performances of these teams and of the skill, pride and loyalty of the drivers. For publicity or exhibition purposes the company teams were all mules but for practical purposes there was a team of horses at the wheel. Contractors who hauled for the company often used mixed teams. Realizing the advertising value of these freighting outfits, Smith sent his best team in charge of Borax Bill, one of his drivers, to many large cities throughout the country to be driven through the main streets guided only by a single "jerk line" nearly 120 feet long. Two of these drivers are still living, Ed. Styles of San Bernardino and Frank Tilton in Death Valley.

With the increased use of borax the plant at Alameda asked that production be doubled. More teams were added but still the demand could not be met. Then one day in 1896 a freight train pulled into Daggett with a complete steam traction engine outfit on flat cars. When the mule drivers started out early the next morning they laughingly predicted that the traction outfit would soon be on the junk pile. The drivers were jealous of their teams and their jobs and resented any competition.

Later that morning a young Swede, Alex Isgreen, walked out of Anton's restaurant. With him were two helpers,

Employees of the Pacific Borax company photographed in front of the boarding house in Borate canyon during the height of the mining operations in the '80s. At the extreme right with his hand in his coat pocket is Hugh B. Stevens who discovered the borax deposits. Photograph from the album of Lucy B. Lane of Calico.



Jerome Connelly and Walter Sanders. They mounted the flat car. Connelly fired the engine and got up steam. A crowd gathered, a hostile crowd, loyal to the teams, anticipating failure for the new method of transportation. With the aid of heavy timbers, sheet iron plates and spools of rope, Isgreen drove the engine safely down the incline with Sanders managing the brakes.

Two of the big 16-foot wagons were standing in the yard. Without a word to anyone they coupled these together, filled the water tank and with a triumphant toot of the whistle moved slowly off to the north across the dry bed of Calico lake, bound for Borate.

Eight hours later they brought 25 tons of ore while the teams were still at Mule canyon for the night. The next day they delivered 50 tons. So the traction engine was adopted as a part of the transportation system to care for the increased output.

The next year a reduction plant was erected at Marion, below the foot of the grade. A broad gauge railroad was extended from Daggett to Marion and a narrow gauge built from Marion to Borate. The iron horse replaced the more picturesque "20-mule team."

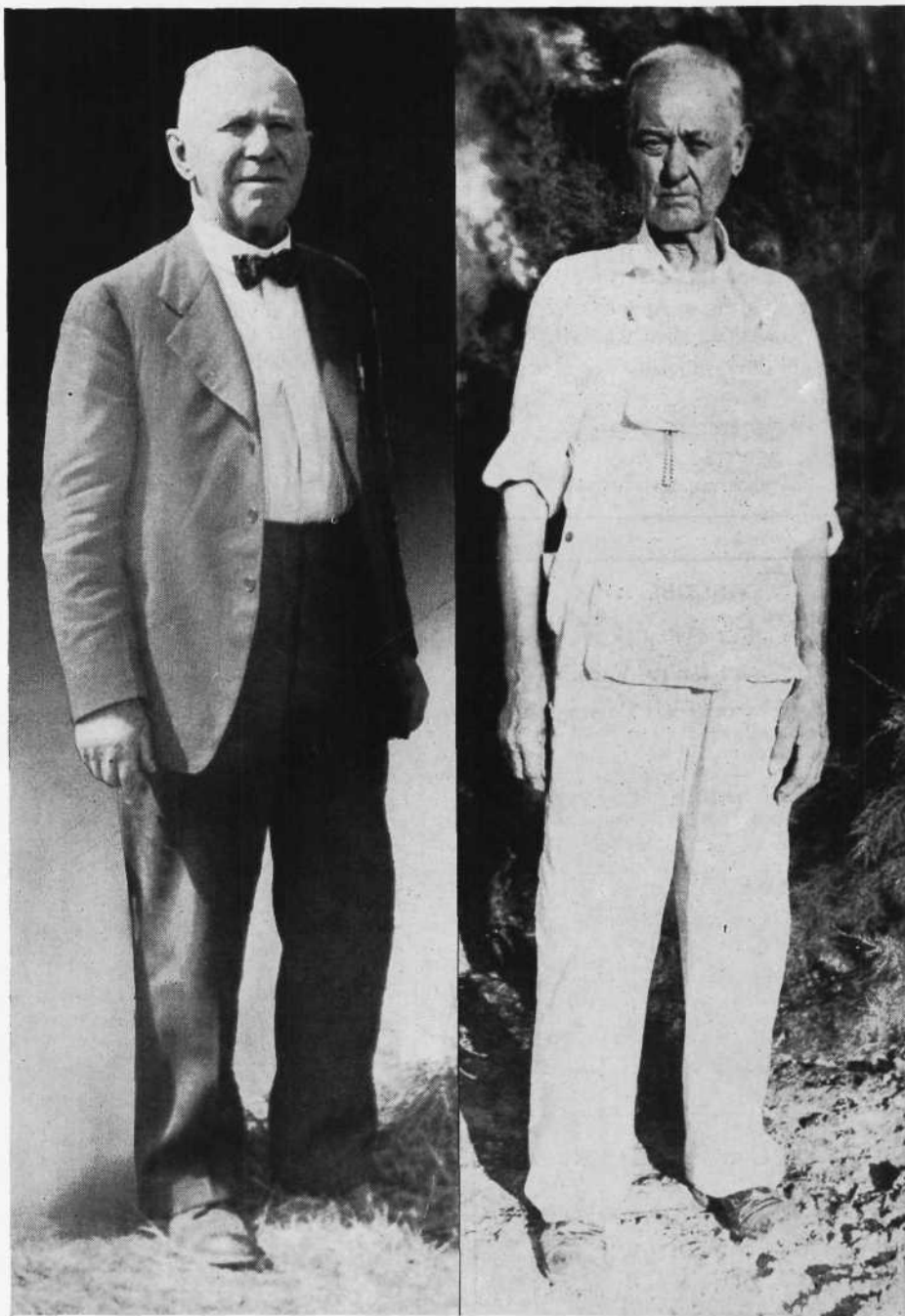
It Was a Good Idea, But—

An amusing incident occurred in connection with this new railroad into Borate. A temperance organization in Oakland heard that the men were allowed only three hours off on Sunday and immediately petitioned Smith to allow the men Sundays off so they could attend church. Smith instructed the superintendent to post a notice to that effect. After breakfast next Sunday all the men except the superintendent and bosses gathered at the new ore train. The train crew was not there but a volunteer fireman and engineer soon had steam up, the men piled aboard and were on their way with the borrowed train.

At Daggett they made a bee line for Alex Falconer's saloon. There were no saloons in Borate so the men proceeded to celebrate. It was Wednesday before the last of the crew was back at work. The Sunday holiday bulletin was pulled down in the interests of temperance.

Smith retained holdings in Death Valley and occasionally went there on inspection trips. He liked to do the driving himself and was always in a hurry. Relays of horses were arranged along the route. He would start off at a gallop with four or six horses hitched to a buckboard. At the relay stations fresh horses quickly replaced the others. In this way he some times made the trip of 160 miles in one day.

A man of contradictions, he handled millions and millionaires with authority



Ed. Stiles of San Bernardino, left, and Frank Tilton of Death Valley, California. They "jerked" 20-mule borax teams in Borate canyon a half century ago—and lost their jobs when a steam traction engine replaced the mules.

yet was so sentimental that when he built a 40-room mansion in beautiful Arbor Villa park in East Oakland, he had the little cabin where he had lived in poverty in Nevada, moved to Oakland and set up near his new home as a constant reminder of his early days.

For nearly 20 years colemanite from Borate canyon furnished the bulk of the world's supply of borax, but a mine is only a storehouse and when the best of the ore had been taken, a new discovery in the Funeral mountains left Borate deserted. But if you go there today you will be able to visualize the scene of activity. The cave-homes are still there

with the pigeon houses on the cliffs above. Around the entrance to the mine from which \$60,000,000 worth of borax was taken, are scattered bits of broken mine machinery. On the site of the old blacksmith shop you can pick up square cut nails made when wire nails were unknown. Then if you climb to the site of the guest house you may still see the imbedded log chains which braced the house against the desert gales.

If a sculptor were asked to carve on the walls of Borate canyon the figure of the person most outstanding in its history, there is no doubt that the choice would be "Borax" Smith.

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Desert Place Names

Magazine is indebted to the research work done by the late Will C. Barnes, author of "Arizona Place Names," to Frances Rosser Brown of New Mexico, to Margaret Hussmann of Nevada, Hugh F. O'Neil of Utah, and to James A. Jasper of Los Angeles.

ARIZONA

FORT BUCHANAN Santa Cruz county

On Sonoita river, near Patagonia. Named for President Buchanan (1856). Pumpelly wrote of a visit to the fort (1860): "Continuing our journey we reached Fort Buchanan. A few adobe houses scattered over considerable area and without a stockade. It was 22 miles northeast of Tubac on the Sonoita." Heitman's Register says it was first called Camp Moore, reports a fight in that vicinity between Apache Indians and Co. D, 1st Dragoons, August 26, 1860. Post was abandoned by U. S. troops July 23, 1861; due to Civil War and approach of Confederates, who later destroyed the fort. The California column reoccupied it for a short time. In 1865 six men were stationed there. Cady, a soldier who lived near here for many years after he quit the army says, "Buchanan was abandoned and then rebuilt in 1868, renamed Fort Crittenden in honor of Gen. Thomas L. Crittenden of Kentucky." Abandonment in 1861 perhaps inspired Poston to write:

"Old Fort Buchanan of rueful name
Forever linked to nation's shame."

BIG LAKE

Apache county

Large natural lake on east slope of Mount Thomas (Baldy). Barnes says in the 1880s he saw cattle, with deer, elk and other game animals standing in "almost solid herds" belly deep in the water to escape deer flies which hovered over them in swarms. The lake had no visible outlet until it was tapped by an irrigation ditch in recent years.

• • •

CALIFORNIA

VERRUGA (vehr ru' gah) San Diego county

Verruga ranch is commonly referred to as Montezuma valley. Near Warner Springs, it took the original name from a settler who had a wart on his neck the size of a hen egg. This man ran the Indians off the place and squatted there as a cattleman until in turn he was run off by Wid Helms in the early 1870s. Name of Montezuma was given in application for a postoffice, but that application was denied because California at the time had another postoffice Montezuma. Verruga (Sp.) means wart.

SENTENAC (sen ten ack) San Diego county

Canyon on the Kane Springs-Julian highway, opening into San Felipe valley. Named for Paul Sentenac, a French settler who lived alone in his cabin at the head of the canyon. It is said of him that when he was 93 years old he decided to seek medical attention in San Diego and walked the entire distance, some 75 miles uphill and down, to a hospital. Perhaps he waited too long to consult the doctors. He died soon thereafter.

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NEVADA

GLENBROOK

Douglas county

In the western part of the county on Lake Tahoe. Acquired its name because it is situated in a beautiful glen, through which a small brook runs. Once it was a lumber camp. Now it is a celebrated and exclusive summer resort with one of the best golf courses in the vicinity.

For the historical data contained in this department the Desert

WELLINGTON

Lyon county

In Smith valley, about 40 miles south of Dayton, this was formerly an old stage station. Now it is a small town, named after Major Wellington, who owned a stage running from Sacramento to White Pine county.

JOB'S PEAK

Douglas county

A principal peak in the Carson sink range noted for its majestic beauty. Named for an old negro who started a store in 1854 a few miles below Genoa, near the base of the mountains.

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NEW MEXICO

RESERVE

Catron county

Town named after Forest Reserve, in a county "about 3/4 forest," writes J. D. Fraser, postmaster. Townsite was old homestead of George Washington Jones, the settlement grew from ranch headquarters to small village. It was known in early days as Milligan Plaza, for an old soldier who saw duty in this region during Indian troubles soon after the Civil War. Milligan for a number of years had the only store in the place. Name changed to Reserve in 1907. Catron county organized in 1921, carved out of Socorro county, named for Senator Thomas B. Catron, prominent politician. There are Indian ruins near Reserve. Geronimo's haunts were hereabouts.

FORT SELDEN

Dona Ana county

Established in 1865 and named for Col. Henry Raymond Selden of the First New Mexico Infantry.

MALAGA (mal' a ga)

Eddy county

Named for Malaga in Spain, because the town became an early center for the grape and wine industry.

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UTAH

CHINATOWN

Morgan county

In the Wasatch mountains so named on account of unusual formations of the rocks which resemble temples and Chinese pagodas, in brilliant natural colors.

CROSSING OF THE FATHERS

Kane county

Sp. *Vado de los Padres*. Vado a ford, a crossing. On the Colorado river in Glen canyon about 35 miles above Lee's Ferry. Used 1858 and later by Jacob Hamblin, Mormon missionary. Sometimes called Ute crossing. Gregory says, "During the year 1776 Hernando D'Escalante Fontaneda, a zealous priest, made his memorable journey from Santa Fe returning to the Spanish settlements across the present Western Navajo Indian reservation to Hopi and Zuni. Tradition is that he crossed Glen canyon at a point designated on the map as the 'Crossing of the Fathers.'" It is about five miles north of the southern Utah state line and for many years was thought to be in Arizona. In 1926 Prof. H. E. Bolton followed the trail made by Escalante from southern Utah across the river and on to Santa Fe. He made the trip with a copy of Escalante's rare diary in his hands. Charles Lummis says, "Escalante crossed here on horseback without the horses having to swim. The padre in his diary wrote that the 'ford of the river is very good. It must be more than a mile in width here at the crossing.'"

AGED BOATMAN MAKES RUN THROUGH CANYON

Seventy-four year old Bert Loper of Salt Lake City heaved a sigh of satisfaction when he moored his rowboat at the landing on Lake Mead behind Boulder dam last week in July. Loper had run the Colorado from Lee's Ferry in 10 days, second section of a voyage started on the headwaters of the river. Spunky boatman thus realized his dream of 40 years.

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FIREARMS BARRED IN YUMA COUNTY AREA

Bighorn sheep refuge in southwestern Arizona—including the Kofa (SH) mountains district—has been closed to use of firearms, according to announcement late in July. In advance of season opening for shooting doves (white wings), hunters were warned.

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INDIANS AND WILDLIFE SUFFER LACK OF RAIN

Before summer rains gave relief in some sections, the entire southwest outside of areas served by storage reservoirs suffered from drouth. Typical of conditions in parched districts is statement by J. P. Madsen, game commissioner at Duchesne, Utah, issued late in July: "Present drouth is equally as drastic as in 1934. All species of life, including wild life, is affected. Deer have been forced from natural haunts down to lower levels along streams and to city limits. Sage chickens have congregated along canal systems; beaver are being forced from lower dry stream beds into irrigation systems and pheasants, due to splendid hatching and brooding conditions, have become so numerous that in some places they are a menace." Superintendent E. R. Fryer said the western third of the Navajo reservation was drier at the beginning of August than at any other time in 15 years.

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Weather

JULY REPORT FROM U. S. BUREAU AT PHOENIX

Temperatures—	Degrees
Mean for month	92.4
Normal for July	89.8
High on July 13	114.
Low on July 5	70.
Rain—	Inches
Total for month	0.71
Normal for July	1.07
Weather—	
Days clear	20
Days partly cloudy	10
Days cloudy	1
G. K. GREENING, Meteorologist.	

FROM YUMA BUREAU

Temperatures—	Degrees
Mean for month	91.8
Normal for July	90.8
High on July 12	119.
Low on July 4	65.
Rain—	Inches
Total for month	0.11
69-year average for July	0.18
Weather—	
Days clear	28
Days partly cloudy	3
Days cloudy	0
Sunshine 98 percent, 427 hours of sunshine out of possible 437 hours.	
Colorado river—July discharge at Grand Canyon 480,000 acre feet. Discharge at Willow beach below Boulder dam 680,000 acre feet. Estimated storage July 31 behind Boulder dam 24,100,000 acre feet.	

JAMES H. GORDON, Meteorologist.

Mines and Mining . .

Silver miners are happy. Congress pegged price of domestic silver at 71.11 cents an ounce, this quotation to stand until changed by new legislation. It is the best price since 1873, means greatly increased activity in all western silver producing states. "Silver is again remonetized," declare spokesmen for mine operators, jubilant because the price cannot be changed by treasury pronouncement or presidential decree. Nevada newspapers hail result as victory for Senators Pittman and McCarren, see boom days ahead for the state. Final draft of hotly contested monetary bill left the treasury with no price for silver mined before the old 64.64 cent price expired June 30 but not offered to the government until later. To remedy this, Roosevelt proclaimed 64.64 cents an ounce for estimated 2,000,000 ounces of stranded silver, mined but not delivered by June 30. Owners of this silver now will have until December 31 to sell to the treasury.

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Searchlight, Nevada . . .

Wingfield interests have taken over the Black mountain group of 19 gold claims 10 miles east of here and about 3½ miles from the Colorado river, for a consideration said to involve \$325,000. Thus Goldfield consolidated of which George Wingfield of Reno has been the dominating figure for 32 years, turns its attention to southern Nevada for the first time. Engineers are said to have estimated 200,000 to 500,000 tons of pay ore in sight. It is announced development work will get under way at once. Reduction plant is planned for capacity of 500 to 1,000 tons daily.

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Winnemucca, Nevada . . .

Completion of a 200-ton mill of the Lake Shore gold mining company is reported here. The property is 50 miles up the Colorado river above Boulder dam in a rugged country, about four miles from shore, with a connecting road for automobiles. Machinery and supplies are hauled to the landing in a 250-ton barge.

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Buckeye, Arizona . . .

Four miles south of Buckeye, across the Gila river, there's a deposit of sericite, apparently enough to supply the world's needs indefinitely. This mineral is a scaly variety of muscovite, locally known both as talc and mica. Powdered, it is used in manufacture of talcum powder, for thickening greases and hard oils, filtering gasoline and finishing roofing materials. Clyde Hawes of Los Angeles is building a 50-ton mill at the deposit, has orders booked for 300 tons a month.

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Austin, Nevada . . .

Increased production of turquoise is reported from mines in this region, which claims most important U. S. deposits of the gems. From properties in the Copper basin and other localities near here shipments are being made. George A. McGinnis is taking turquoise said to be of exceptionally fine quality from a recently developed mine. Gems are used in Indian jewelry, best grade finds demand also in New York, Los Angeles and among European jewelers.

Phoenix, Arizona . . .

Larger share of Arizona's taxes will be paid by the state's producing mines in 1939-40. Valuation total for tax purposes has been stepped up \$1,271,878 by the state tax commission, aggregate standing now at \$87,940,877. Phelps-Dodge Morenci branch was hiked from \$6,215,036 to \$7,332,262. Without this advance the grand total would have been virtually unchanged from the figure for 1938-39. Big jump at Morenci will come in 1942 after new concentrator and smelter have been brought in. D. C. O'Neill, tax commission chairman, says new federal price for domestic silver will place "a great many more producing mines on the rolls before many months have passed."

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Lakeport, California . . .

Higher price for quicksilver has stimulated activity in several cinnabar mines of Lake county. Promising leads are reported in the old Reid property in the Knoxville section. Machinery has been assembled at the Harrison mine in Morgan valley where furnace and retorts will be set up, it is announced. After lying idle several years this property was recently reopened.

• • •

Hayden, Arizona . . .

A. S. & R. smelter here has been closed, will be shut down until November. Meantime repairs will be made, ores and concentrates will be accumulated for steady operation during winter months. Custom ores will be purchased as usual during the shutdown, says H. F. Easter, smelter superintendent. At the Ray mine and Nevada Consolidated concentrator work is not interrupted, but their output isn't enough to keep the smelter going.

• • •

Nogales, Arizona . . .

Across the Mexican line at Mesquite, Sonora, population jumped in five weeks from 20 to 4,000. Rush started when impecunious prospector Francisco Arballo panned gravel in a wash near Mesquite. His eyes bugged out when he found several nuggets, along with smaller grains of gold in his pan. Francisco spread the news. Javier Gomez, a month ago as poor as Francisco, now has washed out 20,000 pesos from the rich placer field. Others, equally as lacking in this world's goods, flocked by the thousands to Mesquite. W. C. Greene, American mining man, says daily production of gold is about 22 pounds. Area being worked covers 10 square kilometers. Miners use only crudest of methods. The location is 25 miles east of Magdalena, and Magdalena is 70 miles south of Nogales.

• • •

Safford, Arizona . . .

Machinery is moving to the Powers gold mine in the Rattlesnake district, 25 miles south of Klondyke. E. K. and Gordon A. Ferguson have taken over the property. From 1908 to 1918 ore from this property was treated in arrastres. In 1933 returns from ore reduced in a small mill averaged \$7.50 per ton. Better results are expected from modern methods. Values are found in brecciated rhyolite, the gold occurring in coarse grains. Workings include 425 feet of adits and drifts and a 50-foot winze.

Death Valley Natural Bridge

Mary Lillian Gower and Goldis Paulson of Death Valley, California are the winners of the \$5.00 prize offered by the Desert Magazine in July for the most complete and accurate 500-word description of the landmark shown in the picture below. The figures quoted in their story are the result of careful measurements taken with engineer's instruments. The winning manuscript is printed on this page.



By MARY LILLIAN GOWER and GOLDIS PAULSON

Photograph by Auto Club of Southern California

THE landmark shown on page 33 of the July Desert Magazine is "The Natural Bridge" of Death Valley, California. It is located in one of the canyons on the west face of the Black mountains, which form the eastern border of Death Valley south of Furnace creek.

To reach this colorful and interesting formation, follow California State highway 190 into Death Valley, either from the east at Death Valley Junction, or from the west at Lone Pine. Turn south from 190 on paved highway at Furnace Creek Inn, which is just at sea level. Follow along the floor of Death Valley at the foot of the range 13.3 miles to a point 3.6 miles north of Bad water, the lowest point on the American continent. Turn here and drive easterly across a gravelly slope and up a narrow canyon to the bridge, exactly 2 miles from the pave-

ment. The formation here is of conglomerate, deeply eroded and fantastically carved by the torrents which rush madly down the rooflike slopes of the Black mountains during summer thunder storms.

The bridge, though not at all symmetrical in shape, is a beautiful and imposing arch, measuring at the center of the canyon 31 feet from the under side, and 73 feet from the top to the bed of the canyon, which at this point is 46 feet in width. The thickness of the arch up and down the canyon is approximately 35 feet.

We are deeply interested in this bridge, as we were among the first to have seen it, at least in recent years.

On the day after Thanksgiving, in 1934, while hiking with Harry P. Gower (father of one of the writers), we located it and were given more or less

publicity as the "discoverers" of a new attraction. However, Dr. L. F. Noble of the U. S. Geological Survey, examining this area some time previously, had seen the bridge. He had recently completed a survey of many months' duration in scenic area at the bottom of the Grand Canyon of Arizona, and apparently our bridge didn't impress him much, for it was a year later in a casual conversation that he mentioned having seen it. From his story, we learned the general location, and after a search of the canyons, found it.

George Greenwood, of Beatty, Nevada, with a prospector companion Johnnie Cyty, came across it in 1916, and R. C. Baker, now deceased, former president of the Pacific Coast Borax company, told a group of friends that he saw it one scorching day in June, 1897. While going from Daggett to Furnace creek in a buckboard on an inspection of Borax company properties, the driver turned off the road and drove a mile or so up a narrow canyon, where they rested during the heat of the day under this same bridge.

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TRAGEDY IN THE CANYON OF DEATH

Continued from page 24

horse—I haven't the money and one will do. Having only Nuflo, I'll care for him more solicitously. He'll have more oats, there'll be no more rope hobbles. I put the saddle cinch on the pack saddle and left the other in the cliff dwelling.

If I had not attempted the steep hill, Jonathan might yet be serving me, but he behaved strangely the last few days.

I sang tragic songs, looked into the coals of my campfire, listened to the song of the crickets, the murmur of the water, the clatter of Nuflo's bell (*yo asoyu*) and the sound of the grass being munched.

Somehow Jonathan's death has not disheartened me. I feel better for accepting the challenge to proceed without him. His death was certainly dramatic. I shall never forget how he ran sidewise, as if groping for something to lean on, found nothing, crashed to earth, and rolled over.

I doubt that anyone will ever find the saddle. The baby-board was where I left it last May, except that the hoops had fallen into the bin. My printing on the board—Everett Rulan*, etc.—was almost obscured. The rain has washed away my tracks. The saddle is well cached. The ghosts of the cliff dwellers will guard it. I think I will not return for it, however.** The clouds have gone. Stars gleam through the fir tops. It might be Christmas.

*—Everett took a boyish delight in the use of "pen" names.

**—As far as is known the saddle is still where Everett left it.

GHOST CAMP IN NEVADA

Who Can Identify This Picture?



PRIZE CONTEST ANNOUNCEMENT

In the boom days of Nevada this building was the pride of a thriving mining camp. But the ore played out, the miners and gamblers and dance hall girls departed—and today only the skeleton of this once substantial business block remains.

For those acquainted with the ghost towns of Nevada this picture will not be hard to identify. In order that the history of both the camp and the building may be passed along to all its readers, the Desert Magazine offers a \$5.00 prize to the person who will supply the most complete story of not over 500 words.

Entrants in the contest should give a

brief history of the mining camp, and all available information regarding the building. When was it erected, who owned it, how long was it in use, and for what purpose? These are some of the questions that should be answered. Also, where is the ghost town located and how is it reached today by highway or railroad, or both?

Letters should be addressed to Landmarks Editor, Desert Magazine, El Centro, California, and must be received by September 20, 1939. The winning entry will be published in the November number of this magazine.

SPIDER WOMAN AND THE HUNTER . . .

Continued from page 14

around the plants, Spider Woman directed some of the smaller ones to pull on the shrubs. They tore them out of the ground easily.

The old man said: "You have won. The boy is yours. Take him."

The animals and Spider Woman were happy. They released the young man and the animals returned to their homes.

When Spider Woman and the boy ar-

rived back at her house, they found the little wren waiting for them. She told Spider Woman how the boy's parents were grieving for him. Much as she liked the boy, Spider Woman knew that he must return to his mother and father.

She took the boy to an opening through which they could look down on the Hopi people. She then spun out a great quantity of web until it reached down to the earth below. She then took the young man on her back and descended. She guided him back to his parents who were overjoyed at his return.

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BOOKS OF YESTERDAY AND TODAY

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WHEN MEN TREKKED ACROSS THE DESERT FOR GOLD

Grant Foreman's MARCY AND THE GOLD SEEKERS, from the University of Oklahoma press at Norman, 1939, brings to life an era which has left its cultural stamp on the Southwest. It gives an intimate picture of that barren plain and mesa land before the buffalo were slain, before the Indian tribes were confined to reservations, and before the white man built his roads.

It is the story of the emigrants who came by horse, by riverboat and gulf steamer from New York, Georgia, Tennessee, Louisiana and all way points, to converge on Fort Smith, Arkansas, preparatory to starting on the new short route to the "diggings," through the present Oklahoma, Texas, New Mexico, Arizona and Southern California.

Of Marcy's journal recording his trip to Santa Fe and back to Fort Smith by a route still farther south, the author says it is "unexcelled in contemporary literature touching this field. It presents such a faithful description of the southwest country and its Indians, and is so little known that it is hoped its reproduction here will serve a useful purpose."

And his observations were useful in his own day. The careful description of geological formations, plant and animal life, and available water aided in establishing a short and easy southern wagon route. It indicated the areas most suitable for future settlement, and it revealed the inaccuracies of existing maps.

Fort Smith was the rendezvous for men and women of every trade and profession—all bent on reaching the California gold fields by the shortest possible route. The color and bustle of thousands brought life to the little post. Enthusiasm ran high. Equipment was elaborate and strict camp regulations were maintained.

But inexperience, misinformation, inability to cooperate in face of difficulties produced friction and eventually broke up many parties. One chronicler has given a vivid description of the changed aspect of those adventurous men as they reached San Diego after three to ten months of desert travail: "Stragglers are still coming in—men from all parts of the states and of various conditions of life. And what spectacles they present as they come into town with a kind of dead march step . . . Of late they have come in here, ragged, filthy, starved, worn down, singly, in pairs, and, now and then large numbers, the fragments of once organized companies, officered, equipped, and governed by written rules, who, broken up by quarrels, disagreements upon policy or pressed by hunger and thirst, detached themselves from the association or separated again from the detached portions."

The things they had feared most—the Indians and the desert—did not prove as formidable as their own inexperience, carelessness and general misinformation. Nearly all the Indians they met, even Comanches, were friendly and eager to please. Most of the tragedies came when they were deceived and betrayed by the whites. Their desert trail would not have been so strewn with discarded saddles, trunks, barrels, casks and endless other equipment, with bleached horns and bones of oxen, with dead mules, and with crosses and heaped stones, had there been fewer tenderfeet and a greater feeling of mutual responsibility. (\$3.00).

—LUCILE HARRIS.

CHEAP IMITATIONS THREATEN NATIVE CRAFTS OF INDIANS

Catharine Oglesby's MODERN PRIMITIVE ARTS, Whittlesey House, 1939, is a delightful study in appreciation of primitive Indian arts in the Southwest, in Mexico and Guatemala. In an era of cheap commercial imitation, a widespread appreciation of superior materials and craftsmanship is the only factor which can save these distinctive arts. To this end, Catharine Oglesby has made her contribution in generous measure.

Three aboriginal arts—weaving, basketry and pottery—have survived in the great plateau from northern Arizona and New Mexico to the southern peak in Guatemala. Each of the three groups expresses itself in a characteristic way, but there is a common and deeply embedded desire to create a more beautiful everyday environment. As a result of this urge, Indian arts are alive and democratic, simple and functional. They are the material expression of the traditional prayer to "make all about me beautiful."

In order to arouse an interest in the pottery of the pueblos, the basketry of the mesas and blankets of the Navajo, and in the pottery, weaving and miscellaneous arts of the two southern groups, the author conducts her readers to market and roadside, to patio and shop. There they consult the expert collectors or sit in the sand and squat in the market place with the makers. They learn of the background and history of each art—the passing of some, the slow evolution of others and the modern renaissance of a few.

In the market place it is simpler to achieve a critical selective power—to test the "ring" of pottery, to observe its subtle curve, the soft luster, the even firing and beauty of design and color.

It is while talking with the basket artists—learning the secret of perfection in weave and symmetry of outline—that the wayside traveler develops a new appreciation.

A visit to Navajoland to see the blankets which "rank with the masterpieces of foreign looms" still further alters a nearsighted perspective on primitive native arts.

Thus in a simple informal way the author familiarizes the reader with Indian crafts—their development and characteristics and criteria for selecting the best. In addition, suggestions for their use in modern interiors are both practical and tempting.

MODERN PRIMITIVE ARTS is a work of beauty in subject, treatment and physical makeup. It is well illustrated with full-page photographs and with copies of more than 70 authentic designs. It contains a helpful calendar of ceremonies, fiestas and markets, a bibliography and index. The binding is simulated lacquer in primitive design. (\$3.00)

—LUCILE HARRIS.

. . . .

NEW SKETCH BOOK IS DEVOTED TO PALM SPRINGS

ENCHANTED SANDS is the name of a little sketch book just completed by Elwood Lloyd in which the author presents a brief history of the founding of Palm Springs, California.

Coachella valley is described as the "Valley of the Little Flying Shells," and as proof that the tiny shells left there by the marine life of an ancient sea are still very much in evidence, each copy of ENCHANTED SANDS contains a bookmark in which a few of the

shells are enclosed in a cellophane envelope. The author devotes a chapter to Carl Eytell, artist and philosopher whose colorful personality made him an outstanding figure in the early-day colony at Palm Springs. Eytell is described as "the personification of the Spirit of the Desert."

There's a bit of poetry in Lloyd's book, and a series of gracefully executed pen sketches by Mary Anderson contribute to the artistry of this small volume. (\$1.00)

• • •

NEW MEXICO JOINS THE GUIDE BOOK PARADE

Reg Manning's Cartoon Guide of Arizona, published more than a year ago, was so popular that Publisher J. J. Augustin of New York immediately began looking about for artist-humorists to prepare the text and sketches for similar books covering every part of the country.

The result has been a parade of cartoon guides. Florida, New York City, Ohio, Old Mexico and the Boulder dam country have all been caricatured. And now comes the CARTOON GUIDE OF NEW MEXICO.

T. M. Pearce wrote the copy for the New Mexico book and James Hall furnished the pen and ink comics. It follows closely the pattern of the Arizona guide. The book contains as much pertinent information as a trunk full of chamber of commerce folders—and is much easier to tote around. For travelers who like to know about the scenery and people along the route — and laugh as they go — Augustin guide books are worth the dollar they cost.

One of the next books to come off the Augustin press is Reg Manning's Guide Book of California which the Arizona cartoonist has had in preparation for several months.

• • •

EAT MORE DATES SAYS LOS ANGELES DOCTOR

In some of the arid regions of the old world the date palm has been the main source of food supply for the inhabitants for ages—and the natives have thrived on them. Dr. Marko J. Petinak of Los Angeles believes that if Americans would eat more of them and less bread and potatoes and meat, they would have better health and more graceful figures.

The doctor made an exhaustive study of the food and curative value of the date during which he lived two months on a diet exclusively of this fruit with milk and fruit juices, and then wrote a 42-page book on his findings. The book, DATES AS FOOD, is filled with information for those who are seeking the foundations of correct living.

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HERE AND THERE

... on the Desert

ARIZONA

Winslow ...

Two Hopi Indian babies stole the show in "twin day" contest at the New York world's fair. Brother and sister Jumping Frog and Sandsnake, 11 months old, ran away with first prize for best-matched pair. Frog is the boy.

Tombstone ...

Twenty-seven men are killed in "Frontier Marshal," film story of Wyatt Earp's Tombstone days. Eighty-year-old widow of the gunfighter, hired as technical observer of the production, protested one scene. "Mr. Earp would never have done a thing like that," she said, when Randolph Scott, as Earp, dunked Binnie Barnes in a horse watering trough.

Flagstaff ...

Hungry coyotes from southern Arizona have moved to the northern part of the state to prey there on antelope herds. To save antelope from extinction, they are being moved to coyotes' old haunts in the south. This is the story told by A. A. Nichol, national park service wildlife specialist.

Flagstaff ...

In 53rd annual convention here Arizona wool growers named Lou Charlebois their president. Jerrie W. Lee will serve again as secretary-treasurer. Fred Porter of Phoenix is new first vice president; Gene Campbell of Phoenix second vice president; T. J. Hudspeth of Seligman, third vice president.

Ajo ...

How NOT to travel the desert in summer: On parched old Devil's highway, the thirstiest and hottest stretch in all the arid southwest, "two well known mining men" late in torrid July returned to their dry camp 45 miles south of Yuma, near the Mexican border. They found a flat tire on their automobile. There was no spare, repairs failed. When the pair had left camp to inspect a nearby prospect, they had forgot to turn off the ignition switch. The car battery was dead. Waiting for rescue, the two ate nearly all their food, drank water from car radiator. Then they walked 20 desert miles. One wore bedroom slippers. A goat herder escorted the men to Ajo, where they met a sheriff's posse organized to hunt for them.

Patagonia ...

Standing 3½ feet high and weighing more than 100 pounds, a male wolf was trapped near here after two weeks hunt in which his mate, only slightly smaller, was also killed. The pair were charged with destroying calves and heifers worth \$1500. Size of the wolves was reported by Chuck Wilson, foreman of the Bacca Float.

Kingman ...

All-time records for eastbound travel on U. S. highway 66 were broken during the first six months of 1939, a total of 41,180 cars for the period registering 20 per cent gain over 1938. Automobiles checked at Kingman going east averaged 256 cars daily. On July 2, a total of 700 cars passed through the inspection station. Westbound traffic generally is heavier than eastbound. J. C. Willis, local inspector, estimates 225,000 automobiles, carrying more than 1 million persons will pass through northern Arizona during 1939.

Coolidge ...

Tourists don't like to pay two-bits to see national monuments. Frank Pinkley, southwestern monuments chief, says the entrance fee "will stop nearly half of our visitors." At seven monuments in Arizona where the fee is charged, in June registered only 38.1 per cent of total sightseers counted by rangers at 26 monuments in Arizona and New Mexico, as against 61.4 per cent last year. Inspection stations report travel is considerably heavier than in 1938, to which Pinkley retorts: "If this is true the motorists are sticking to the pavements." Pinkley now wears seven gold stars on his park service uniform, one for each 5-year hitch.

Kinishba ...

In this largest of Arizona's prehistoric cities archaeologists have found four figured altar stones, brilliantly painted in ceremonial colors of red, yellow, black and green. Excavations completed represent close to 450 rooms of a structure which had second and third stories, inhabited six centuries ago by a people definitely religious. Largest altar stone is 3 feet long, 16 inches wide. Painted upon its smooth sandstone is the figure of a dancing sun priest. His knees are flexed, arms upraised. Symbol wands are held in each hand. Face of the priest, says Dr. Byron Cummings, director emeritus of the Arizona state museum, represents the sun symbol. Across the top of the tablet there is a decorative border of cloud and lightning symbols. A second tablet shows five yellow-brown sunflowers with black centers, painted against a turquoise background.

Phoenix ...

Copper strips mark Arizona highway traffic lanes. Highway department officials, trying metal substitute for white paint, bolted thin copper guides to pavement in area south of Phoenix.

Tucson ...

Prospectors here receiving old age pensions are on the spot. Pension gives them money for rent and food, but if they leave town to prospect they lose all. Result is they have a grubstake, can't use it to search the hills they love. Arizona small mine operators local council will appeal to social security officials, ask for old-timers the privilege of prospecting to their hearts' content.

CALIFORNIA

Barstow ...

Three quarters of a million acres on the Mojave desert will be bought by the U. S. war department for anti-aircraft firing range. Congress has voted the money.

Indio ...

Coachella valley ranch sale at \$600 per acre was closed when E. Lerma bought 20 acres, part in grapefruit and dates, from Linnie B. Jennings, at \$12,000. This property is on the old Palm Springs road, 1½ miles west of here. On the same road, the Lombard ranch of 40 acres has been sold to Walter Kirschner, Hollywood owner of a group of women's dress shops. Kirschner paid \$17,500.

The DESERT MAGAZINE

Death Valley . . .

Mud canyon road, leading from Hell Gate to the floor of Death Valley near Stovepipe well, will make a new section of the valley accessible. Route will be improved along the line taken by pioneer freight wagons and stage lines plying between Rhyolite and Skidoo, ghost towns. Mud canyon will be oil surfaced, ready for use by November 1, official opening of the winter season.

Blythe . . .

Blythe gets a new U. S. highway—No. 95, extending from Kingsgate, Canada, through Sandpoint, Couer d'Alene, Lewiston and Weiser, Idaho, through southwestern Oregon, via McDermitt, Winnemucca, Lovelock, Fallon, Tonopah, Beatty, Las Vegas and Searchlight, Nevada, to Needles, Vidal and it is for the present southern terminus here. Number assigned by American association of state highway officials.

Palm Springs . . .

Tribal management of Agua Caliente Indian reservation has been approved by Harold Ickes, secretary of the department of interior and John Collier, commissioner of Indian affairs. Local tribesmen will now manage their own affairs, under regulations of the interior department. John Forline will be business manager, Noel C. Wilson will serve as local representative for the federal government.

NEW MEXICO

Santa Fe . . .

Pageantry celebrating the cuatro-centennial of Coronado's southwestern explorations will have federal participation. Roosevelt has signed a bill which originally carried an appropriation of \$250,000, with an amendment for \$10,000 to erect a suitable monument "at or near a point in the international boundary between the United States and Mexico where Coronado first entered what is now the United States." Arizona committee says this point is near Nogales.

Albuquerque . . .

More than 200,000 adobe bricks went into the walls of new home for Region Three headquarters, national park service here. The building, erected around a large patio, has 24,000 feet of floor space, covers more than an acre of ground. At housewarming August 4-5, visitors were received from states embracing Region Three: Arizona, Arkansas, New Mexico, Oklahoma, Texas, southern portions of Colorado, Nevada, Utah.

Albuquerque . . .

Four years ago Uncle Sam gave 800 head of cattle to the Ysleta pueblo Indians. For each of these cattle the Indians agreed to give back to Uncle Sam one yearling. Ysletans put in hard labor, improving range, caring for the herd. Uncle has been repaid for the original herd, which now belongs entirely to the Indians and numbers about 950 head. Moreover, the Ysletans have banked about \$11,000. Half of this goes to government projects for tribal betterment, other half of net profits will be shared by pueblo families.

High Rolls . . .

Old-timers who remember Oliver Lee and his million-acre Circle Cross ranch in the Sacramento mountains will recall stirring pages of southwestern history with news that the dwindling remnant of the one-time cattle empire has gone on the block for sale. Only 25,000 acres are left of the great property on which 25,000 Herefords once ran. Federal government may buy, to add to Lincoln national forest for protection of watersheds.

Gallup . . .

To grow vegetables which would follow Imperial Valley and southern Arizona seasons, two Yuma and Phoenix produce firms have taken 2200 acres in the Bluewater district, 48 miles east of here.

Gallup . . .

Sacred images, 200-foot murals six feet high, painted in red, blue, green, lilac, yellow, black and brown, depicting Navajo ceremonial figures and symbols. These were found in northern Arizona in a huge grotto, legendary council chamber of Indian tribal gods. Dr. William A. Gardner of Columbia university explored the cavern, took photographs, refused to give location of the shrine, explaining its sacredness. Navajos say their deities, the Yei, met in the great chamber, left images and paintings for the tribe.

Socorro . . .

After eight years as professor of geology at New Mexico school of mines, Dr. Claude E. Needham has been named president of the institution by the board of regents. He was born at Newton, Ill., September 10, 1894.

NEVADA

Boulder City . . .

All tourist records in the Boulder dam recreational area crashed in June, with more than 79,000 persons registered during the month. Total for first six months of 1939 also sets new top at 250,210 visitors. Number of California tourists in June dropped one-third. Coast travelers were going to the San Francisco fair. This loss was more than made up by big increase of eastern and mid-western sightseers.

Carson City . . .

For the Diamond Jubilee celebration here in October plans include a natural amphitheatre to seat 5,000. The Desert Bowl would have a background of typical Nevada sagebrush covered landscape. Proposed uses range from inauguration of governors to boxing matches.

Reno . . .

Nevada's 1940 automobile license plates will have blue background, letters and numerals in silver.

Las Vegas . . .

Despite objections from Secretary Ickes of the department of the interior, the House public lands committee at Washington has approved transfer of 10,000 acres of Boulder dam reservation lands in Nevada to the state for park purposes. Rep. Scrugham won OK for the shift after Ickes declared it should not be made "as a matter of principle."

Carson City . . .

Nevada is still "the state with a surplus." All the state's outstanding bonds are held by various departments of the state, the controller's cash balance on June 30 was more than \$1,750,000, and investments were valued at \$3,375,000. The figures are from the report of Controller Henry C. Schmidt.

Reno . . .

Rattlesnakes make nice house pets, like to be petted, yawn like babies and go to sleep after you take them in your lap and stroke them. This is Frederic A. Fitz' story and he sticks to it. Fitz says a rattler is an excellent combination watchdog and house cat. Many are the quiet evenings he has enjoyed at home, with no entertainment other than a few rattles, he adds. At this writing he is separated from his pets by a ruling of his employer, the Bell Telephone company, that his hobby is an "unnecessary hazard."

UTAH

Moab . . .

Arches national monument soon will have additional facilities to meet tourists' needs. In October CCC crews will begin building stone administration buildings, roads, trails, parking areas, water storage reservoir and pipe line. Native stone will be used in building. Architecture will be of the Mormon type.

Moab . . .

Sportsmen, Utah's game department, federal forest and soil conservation services are cooperating to transplant 50 beavers from La Sal mountains to the Blue mountains. In La Sal beavers are numerous, in the Blue they are scarce. Beaver dams help to form good trout pools. Hence sportsmen's interest. Conservationists believe beavers aid in controlling erosion, because stream flow slows down behind their dams.

Manila . . .

Here in the Daggett courthouse—in the smallest and most remote county in Utah—first permanent quarters have been provided for exclusive use as a health center at which maternal and child conferences are held regularly once a month. Attendance is increasing. Interest is countywide.

Cedar City . . .

Piute Indian agency headquarters here were closed in July. Authority of Supt. C. C. Wright of the Uintah-Ouray reservation with main office at Fort Duchesne now extends to three scattered reservations in southern Utah, the Kaibab, Kanosh and Shivwits. The Moapa reservation has been assigned to the jurisdiction of Supt. Alida C. Bowler of the Carson Indian agency, Stewart, Nevada. Goshute and Skull valley and South Fork reservations are placed under the Western Shoshone agency, Supt. Carl W. Beck of Owyhee, Nevada.

Vernal . . .

Range lands in Grand Mesa national forest are drier than at any time since 1934, reports Ray Peck, forest supervisor. Grass is brittle, water situation is serious for farming districts depending on the watershed. All southwestern Utah was feeling the drouth at the end of July. In Nevada, Las Vegas, almost under the shadow of Boulder dam, reports the city's water supply is lowest in history. City council there adopted an ordinance to prohibit the waste of water.

DESERT QUIZ ANSWERS

Questions on page 12

- 1—Lake Havasu.
- 2—Extensive canal systems still visible when the white men came.
- 3—Discovering a feasible route from Sonora to the Pacific.
- 4—New Mexico.
- 5—A species of cactus growing there.
- 6—Manly.
- 7—Pat Garrett.
- 8—Peculiar motion in travel.
- 9—Food.
- 10—Borax.
- 11—A Spanish padre.
- 12—Mexican pesos.
- 13—Antelope.
- 14—Dr. Douglass.
- 15—Apache.
- 16—Ruth, Nevada.
- 17—Yucca.
- 18—Their trek across Death valley.
- 19—San Juan river.
- 20—Beneath the sand.



By RANDALL HENDERSON

*I*F this Southern California desert ever becomes so crowded with campers that I cannot find a vacant arroyo beside which to unroll my sleeping bag. I know where I will go to get away from the traffic.

I'll park my jalopy somewhere among those red sandstone canyons in northern Arizona or southern Utah, and defy the whole world to find my hiding place.

I spent most of my two weeks' vacation in that region this summer. I followed winding trails across the Navajo reservation one whole day without passing another automobile. With the exception of the territory close to the main highway, the desert plateau which extends from Flagstaff to Albuquerque is unexplored wilderness as far as the average paved-road tourist is concerned.

* * *

On the way north to Flagstaff I stopped for a chat with Carl Mayhew at his Oak Creek Inn. Carl is one of those rare humans with the soul of an artist and enough hard sense to make beauty pay dividends. The tiny patch of onions in his back yard is lovelier than many flower gardens I have seen. But he put a lot of calluses on his hands creating that little bit of paradise on the floor of the Oak canyon.

* * *

At Flagstaff I spent a day at the Pow Wow—where Toney Richardson and the business men of the city stage a grand rodeo and dancing carnival for the tribesmen every year. Indians come there from reservations all over the Southwest. They camp in the forest surrounding Flagstaff and have a gay holiday as guests of townfolk. The pine-clad landscape at the base of San Francisco peaks provides a gorgeous setting for this show. I am not sure who enjoys the program most—the Indian performers or the Anglo-Americans who sit on the sidelines. This Pow Wow and the Inter-Tribal Ceremonial at Gallup are two of the most fascinating spectacles in America each year, in my opinion.

* * *

At Flagstaff's Museum of Northern Arizona I met two people who are making a fine contribution to the culture of the desert country—Dr. and Mrs. Harold S. Colton.

The annual Hopi Crafts exposition was in progress when I was there. The best of the Hopi handiwork in weaving, pottery and basketry was on display—and could be bought at prices fixed by the Indians themselves. I want to say in behalf of the Hopi they have no exaggerated ideas as to the value of their wares—I have never seen fine pottery marked so reasonably.

From Flagstaff I followed the road through Cameron and Tuba City far back into the Navajo country. I've been wanting to go into that region ever since I started reading the letters written by Everett Ruess during the carefree years he followed those remote trails. It is a wilderness of red sand-

stone and juniper—dotted with an occasional trading post and the hogans of the Navajo.

That is one of the few real frontier areas still remaining in the United States, and how I enjoyed the hours I spent with some of the folks there—the Wetherills at Kayenta, the Wilsons at Rainbow lodge, the Gouldings in Monument valley, the McSparrons at Canyon de Chelly, the Nevills at Mexican Hat, Utah, and other pioneers still living close to the earth—far removed from the nervous tension produced by labor strikes, "ham and eggs" orators, chiseling competitors and unemployment.

* * *

From Clyde Colville at Kayenta I learned that tourists who parade through the reservation in shorts and the other abbreviated costumes city folks often wear when they go to the country, are rated very low by the Navajo—in fact they are regarded as positively immoral.

Navajo women wear skirts that sometimes drag on the ground. They have a code of modesty that would put a Quaker to shame.

As Clyde was telling me about the uncomplimentary remarks he had overheard among the Indians—in their own language of course—when half-clothed white people arrived at the trading, I recalled that the Pilgrims who landed on American shores 300 years ago also were quite shocked to find the Indians—distant relatives of the Navajo perhaps—running around in G-strings.

Ol' St. Peter must have a lot of fun recording the inconsistencies of the human race.

* * *

There were friends to see in Holbrook and Gallup and Santa Fe. At the New Mexico capital I was fortunate in having Sandy Hassell, an oldtime Indian trader, as a guide. One needs a guide in Santa Fe. It is a fascinating city with streets that zig-zag all over the place.

I stayed in Sandy's apartment, in a room piled high with Navajo rugs. They are dirt cheap now—if you are interested. I believe the biggest value in America today, in terms of dollars and human labor, is a Navajo rug. I was told of a trader who undertook to figure the cost of a rug according to the white man's scale of values. He hired one of the best Navajo weavers on the reservation. He paid her \$2.00 a day and allowed regular market prices for wool and dye. The rug cost him \$70.00. And yet the same size and type of rug can be bought in any trading post on the reservation for \$12.00.

In schools and missions they are trying to teach the Indian the white man's way of life. I dread to think what will happen to the rug industry one of these days if the Navajo weavers ever decide they are entitled to the daily wages paid their white sisters.