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NOGALES-MEXICO CITY ROAD IN GOOD REPAIR

Reports of bad road conditions from Nogales, Arizona, to Mexico City over Mexico Highway 15 are not true, the Nogales Chamber of Commerce has announced.

The highway is surfaced from Nogales to Mexico City, according to Lt. Gen. Charles L. Mullins, Jr., Chamber manager, and there are only two points which require fording or ferrying.

"Ferrying is necessary only occasionally during the January-February season and from the middle of May through September during the long rainy season," Gen. Mullins explained.

KEARNY INVASION FETED BY RATON, NEW MEXICO

RATON—Celebration of the conquest of New Mexico by Gen. Stephen W. Kearny is scheduled for the northern New Mexico city of Raton for the weekend of June 18. A sham battle, exhibition Spanish dances, square and round dances, parade featuring historical characters and crowning of a queen comprise the Kearny Entrada, which honors the general who routed the Spanish from New Mexico in 1846.

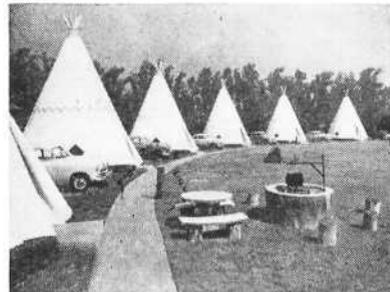
TULARE BACKS HIGHWAY THOUGH HIGH SIERRA

INDEPENDENCE—Joint action by Chambers of Commerce in Tulare County favoring the completion of Highway 190 from Quaking Aspen Camp in Tulare County to Lone Pine defeated another move for a second trans-Sierra highway until the first is completed. A new Mammoth Pass route in Madera County across the Sierra had been planned, but members of the Chambers decided to let nothing disturb the priority of Route 190 project. *Inyo Independent*

GUIDE LINES PAINTED ON UTAH HIGHWAYS

SALT LAKE CITY—Right shoulder guide lines were to be painted on Utah highways this spring as an aid to reducing the number of accidents, the Utah Road Commission has announced. ReflectORIZED yellow guide lines will result in a sense of security, the Commission believes, and motorists will drive closer to the outer edge of the pavement. About 1000 miles of the guide lines will be painted on highway widths 28 feet or more. *Vernal Express*

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DESERT CALENDAR

- May 1 — San Felipe Pueblo Corn Dance, Santa Fe, New Mexico.
- May 1—Turtle Races, Joshua Tree, California.
- May 1, 7-8—Ramona Pageant, Hemet, California.
- May 1, 8-15—Palo Verde Festival Events, State Museum, University of Arizona, Tucson, Arizona.
- May 3 — Corn Dance, Taos, New Mexico.
- May 3—Palm Springs Museum, California, film for public, "Tribe of the Turquoise Water."
- May 4-7—Las Damas Ride, Round-Up Club, Wickenburg, Arizona.
- May 4-8—Fiestas de Mayo, Nogales, Arizona.
- May 7-8—Phoenix Metropolitan Tennis Tournament, Phoenix, Arizona.
- May 7-8 — Yuma County Sheriff's Posse, Junior Rodeo and Horse Show, Yuma, Arizona.
- May 7-8—Sierra Club, Los Padres Chapter (Santa Barbara) trip to Joshua Tree National Monument, California.
- May 7-8—Lone Pine Stampede, Lone Pine, California.
- May 7-8—Newhall-Saugus Rodeo at Saugus, California.
- May 7-29—29th Annual Julian, California, Wildflower Show; 2500 different specimens gathered within 10 mile radius.
- May 11-14—Junior Livestock Show, Spanish Fork, Utah.
- May 12-15 — Helldorado Days and Rodeo, Las Vegas, Nevada.
- May 13 — Palm Springs Museum, California, film for public, "California Heritage."
- May 20-21—Black and White Days, Stock Show, Richmond, Utah.
- May 21-22—Grubstake Days, Yucca Valley, California.
- May 25-26—Uintah Basin, Jr. Livestock Show, Spanish Fork, Utah.
- May 25-28—Elks' Rodeo, Carlsbad, New Mexico.
- May 28-29 — Fiesta San Felipe de Neri, Albuquerque, New Mexico.
- May 29 — Sonoita Quarter Horse Show, Arizona.
- May 28-29—Espanola Valley Rodeo, Espanola, New Mexico.



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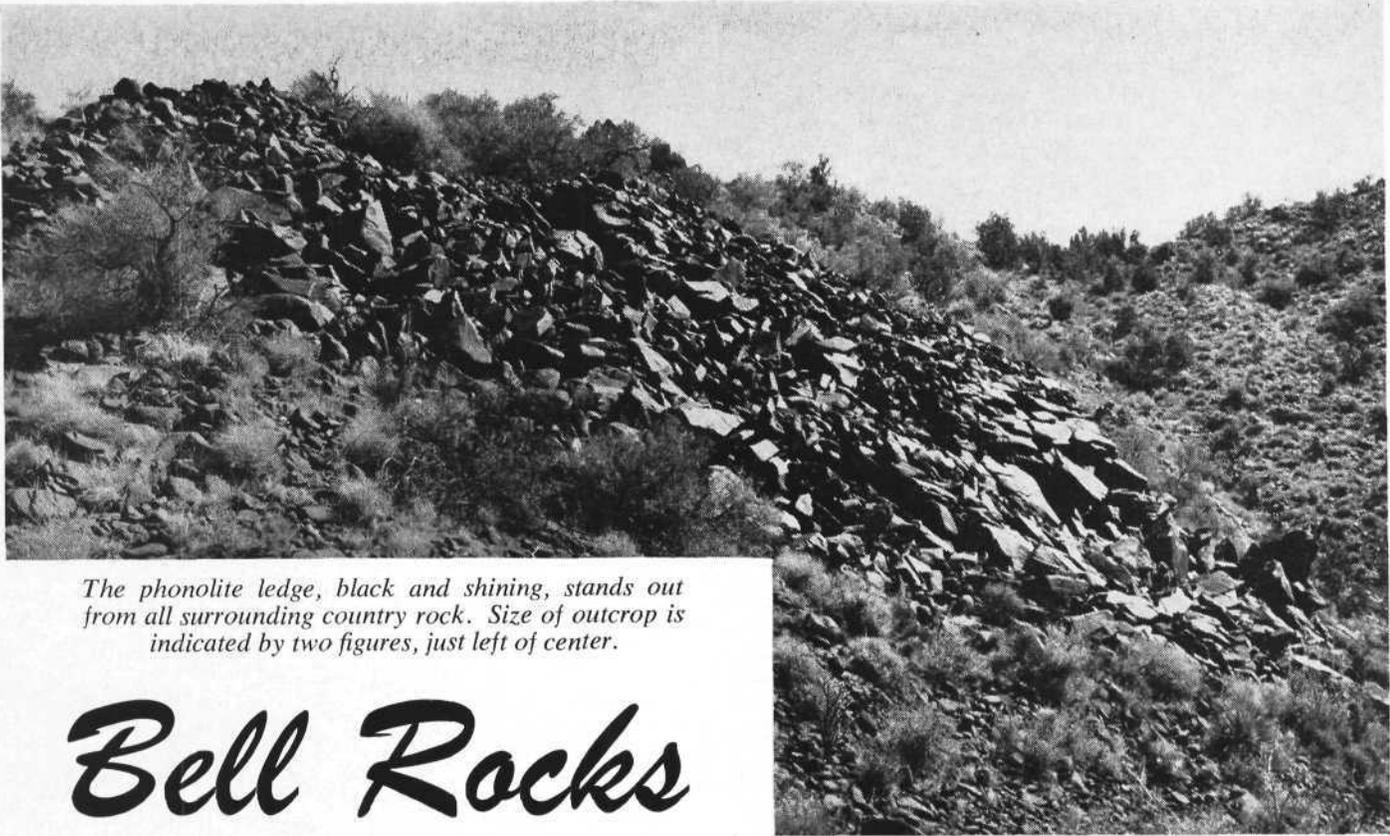
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The phonolite ledge, black and shining, stands out from all surrounding country rock. Size of outcrop is indicated by two figures, just left of center.

Bell Rocks

that Ring in Big Sandy Valley

Guy Hazen, prospecting for prehistoric animal bones, came upon a deposit of strange black rocks—and by accident discovered they ring like bells when struck with pick or sledge hammer. Here is a new kind of field for the rockhounds—where the ear rather than the eye determines the merit of the specimen.

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

7WO MILES SOUTH of Wikieup, Arizona, Guy Hazen swung his pickup from State Highway 93 onto wavering ruts which headed up Bronco Canyon into the Hualpai Mountains. A high ridge thrown up by road-graders almost blocked the old trail, and the canyon floor seemed choked with vegetation. But Lucile and I followed. We were on the trail of what promised to be a unique rockhound experience — the collecting of musical stones.

A few hundred feet farther Guy and Nick Tasertano left the pickup and transferred to our four-wheel-drive station wagon. "This wash makes a fairly good road after a rain," Guy explained, "but it hasn't rained for a long while. Nick and I got stuck in the pickup trying to make it a few days ago."

As I continued cautiously up the canyon, dodging the mesquite, catsclaw and boulders whenever possible, Guy

recalled his discovery of the musical rocks. He came to Wikieup and the valley of the Big Sandy early in 1937, a field scout for the American Museum of Natural History, looking for fossils. He found them, too—prehistoric camels, horses, deer, carnivores and birds—in greenish sedimentary cliffs, remnants of a lost Pleistocene lake. That same year, still hunting fossils, he first headed up Bronco Canyon.

Now Guy has always been willing to hike and scramble miles to determine the geological makeup of an outcrop or peak—a trait which explains his technique in uncovering fossil beds. This trip, he left the canyon bed to investigate an odd, towering butte which proved barren of interest. But as he looked back across the canyon he saw a strange slash of black rock which had been hidden from the wash by a sheer cliff.

Battling sliding rock and catsclaw to reach the outcrop, Guy found it a

confused interlace of boulders blackened by oxidation. He tried to break a slab to determine its composition. But at the impact of his prospector's pick, a clear bell-like tone rolled out across the canyon. A second rock gave a deeper tone. All he tried, large or small — unless they were flawed or damped by contact with others—were musical.

The outcrop was of phonolite, the rare rock once called clinkstone and given its present name from the Greek word meaning "sound, tone, voice." This particular ledge was augite-phonolite, Guy said. It had intruded through the gneiss and cooled slowly beneath the surface, contracting and breaking into blocks and slabs as it cooled.

Having no commercial value, phonolite's interest, beyond the fact it has been found in association with some of our most productive gold mines, lies in its rarity and its musical, unrock-like reaction when struck. So Guy contented himself with hauling out a few good pieces as mineralogical curiosities. Later he found that even when sawed into fairly small pieces, the rock retained its musical quality, with few exceptions.

Since most rocks are collected for their eye appeal, one picked for its ear appeal is indeed a novelty. So when the summer's unusually vigorous heat seemed definitely broken last October, Lucile and I headed for Hazen's Fossil Museum, a mile north of Kingman on the Hoover Dam highway.

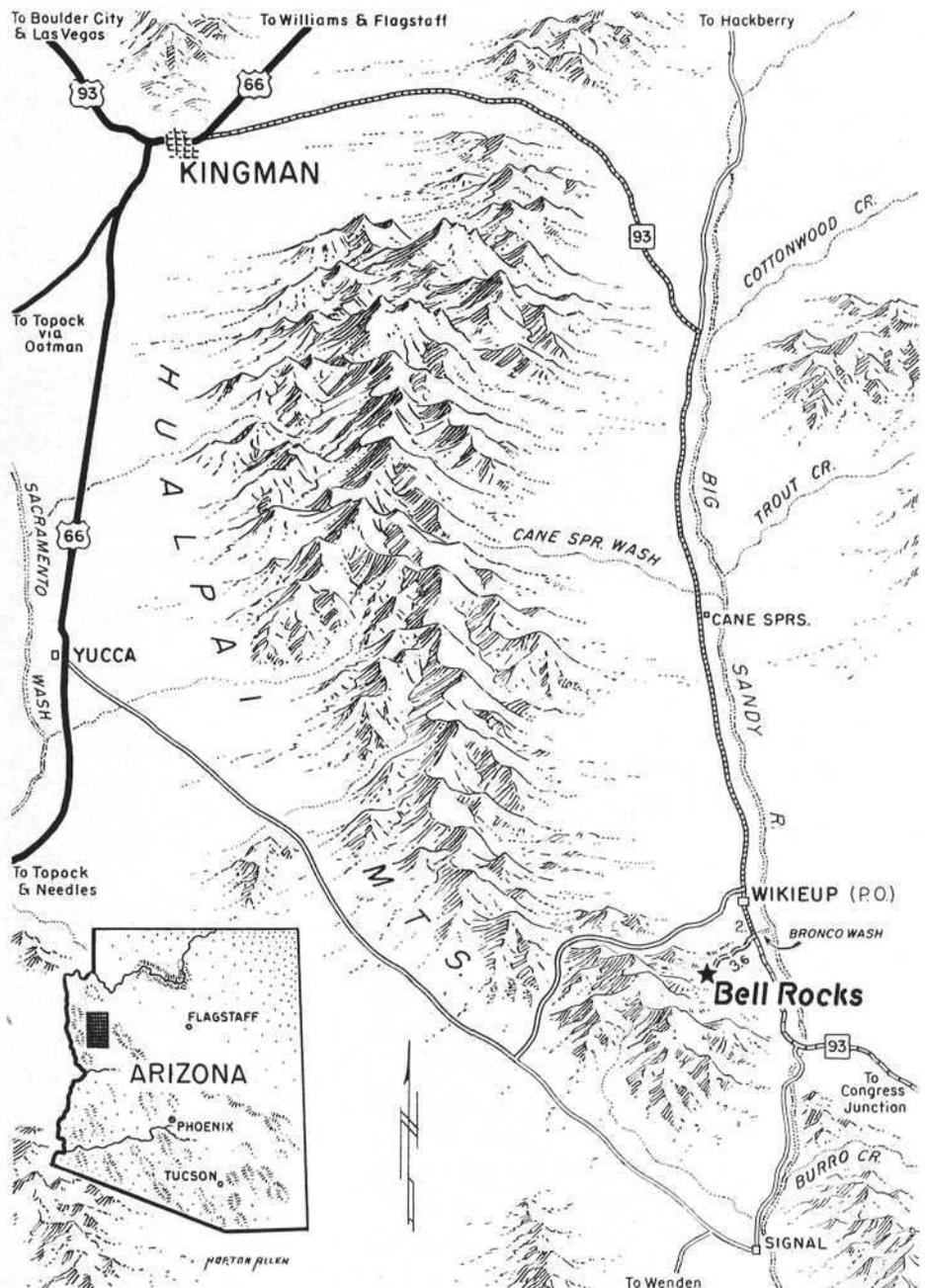
Guy and his friend Nick were waiting and ready, and in a few moments we were heading southeast toward Wikieup. The road, after we left U. S. 66 just east of Kingman, was unpaved but in good condition. In fact a stretch of it near Wikieup, which had been a winding desert trail on my last visit there, was now a fenced freeway. It was part of new State Highway 93, I learned, being cut through and improved from near Congress Junction. When completed and paved, it will be a direct, high speed route between Phoenix and Las Vegas, Nevada.

We wanted to take time to examine and photograph the magnificent desert vegetation through which we passed along the eastern base of the Hualpais and the edge of the Big Sandy Valley. There were large numbers of the unusual *palo de cristo*, which looked like a coarsened relative of the palo verde. Great, healthy junipers grew and spread like forest trees. There were cholla cacti like trees, up to ten feet tall, first of that kind we remembered seeing outside the Organ Pipe Cactus National Monument. But most astonishing was the sight of big saguaros growing side by side with Joshua trees. But there was no time to botanize and still keep Guy's speeding dust column in sight.

The freeway has left old Wikieup bypassed, but the store and postoffice have relocated on the new highway. This is about the third Wikieup, Guy said. It is an old town, but the reason for its name is still older, going back to the brush shelters of a Paiute village which once existed there.

The known history of the valley goes back, too. The Spaniards of Onate's expedition in 1605 passed the mouth of the Big Sandy, about 30 miles below Wikieup, where it and the Santa Maria join to form the Bill Williams River. But the fur-trappers probably were the first whites to travel through the valley. The famed trapper Captain Joseph R. Walker is credited with naming the Big Sandy River, about 1840. Lt. A. W. Whipple, commanding explorations along the 35th parallel for a transcontinental railroad route, was the first to explore it completely, in 1854.

He liked the country. He wrote: "Big Sandy Creek abounds in antelope, deer, rabbits, and partridges, feeding upon the rich grama-grass, and the seed which it yields." And: "The valley, except where the sand has buried the stream, presents a refreshing picture of fertility. Willows, alamos, and large groves of mezquite grow in such dense profusion as sometimes to render it difficult to find a passage through them. Beneath the trees, and bordering the water-courses, there is



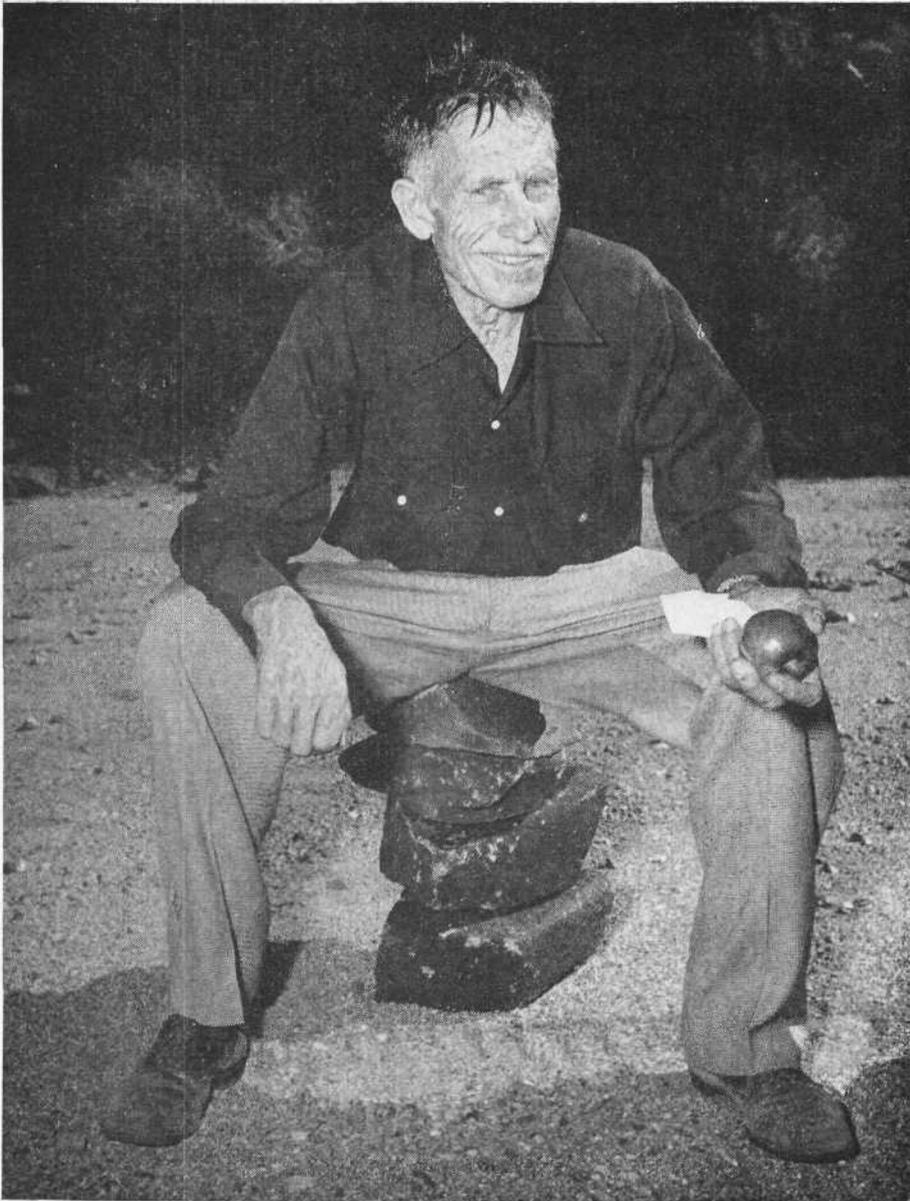
a crop of fresh grass, and occasionally a few spring flowers . . ."

Antoine Leroux, Whipple's guide, advised him to go straight west, rather than down the Big Sandy. But the broad valley looked like a natural railroad route to Whipple. So he followed it, and then went down the rough valley of the Bill Williams and reached the Colorado River near the present site of Parker Dam. Across the river a wall of mountains faced him. So he had to work up the Arizona side, through the spectacularly rugged Needles Peak area, to the Mojave Valley. On the way he was forced to abandon all his wagons except one light spring carriage. Leroux had been right. Today the Santa Fe goes north of the Hualpais and down the great Sacramento Wash to the Mojave Valley.

Like most visitors since then, Whip-

ple was struck by the vegetation of the area. He described the ocotillo, with its "exceedingly beautiful" blossoms, and the "famed *Cereus giganteus*." He especially noted the tree cholla: "To-day we have found a new species of cactodendron, called *chug*. It grows in extensive patches to the height of eight or ten feet; a confused mass of angular joints, whose sheathed spines at a distance glisten beautifully in the sun; but a near approach requires caution. The joints, about three inches in length, are so fragile that, for some distance around, the ground is covered with them; and the sharp barbed spines, now difficult to avoid, wound severely the feet of men and beasts."

Whipple also gave what appears to have been the first description of the Joshua tree for Arizona and possibly for the West: "Another beautiful ad-



Guy Hazen, former field paleontologist for the American Museum of Natural History—and the man who discovered the bell rocks.

dition to the scenery appeared today; groves of tall and branching Yucca, with shining leaves, radiating like a wide-spread fan. They are 20 or 30 feet high, with trunks from a foot and a half to two feet in diameter. The leaves grow upon the extremities of the branches, and each year are folded back to give place to a new set."

But after we had started up Bronco Canyon, there was little chance for me to speculate upon any botanical features except the ones I was trying to dodge. Beyond the circle of flurried and heaped gravel which marked the terminus of Guy's recent attempt to reach the bell-rocks, the vegetation seemed to close ranks even more solidly. The sandy streambed was fine—when we could follow it. But it changed sides frequently and always seemed to select the thickest available conglomeration of brush and rocks to filter through when it crossed over.

Guy kept me to the correct branchings of the canyon and advised on the route. Even so, our progress was slow and we had to back out of a number of blind alleys. We reached the base of the cliff below the phonolite ledge 3.65 miles from the road after a particularly difficult crossing over a brush island caused by the junction of two canyon branches. The phonolite was just to the left of the mouth of the left branch. The only place where the ledge can be seen from the wash is at the entrance of a little drainage canyon just upstream from the cliff. But Guy considered the best and most direct route to it was from the main wash just below the cliff.

It was steep climbing and subject to much backsliding. But once on top there was no trouble identifying the phonolite ledge. Appearing midnight black, it glittered in the sun, completely out of place among the grays and

browns of the country rock. I was amazed at the size of some of the individual blocks. Their smoothly rounded edges made most of them look like water worn boulders rather than slabs from a ledge eroded right there.

At Guy's suggestion, Nick had brought along a sledge hammer. At the phonolite ledge, the rockhound must also be a hammerhound if he is to have any notion of what he is collecting, and a great many of the bell-rocks are too big to be transported unless they can be broken up. On the pile, Nick proceeded to strike a few solid notes on the big rocks while we tapped away with our prospectors picks. Lucile, down in the canyon below, declared that it sounded like a xylophone ensemble tuning up, with the stones ringing from somber bass to high thin soprano.

There did seem to be enough of the scale represented so that it would be possible to hammer out a few tunes. But my advancing of the publicity possibilities of a summer musical festival with brawny single-jack miners beating out "pop" concerts was greeted with raised eyebrows.

When Guy and Nick had selected

BELL ROCKS LOG

Wikieup to Phonolite Ledge

Mile

- 0.0 Wikieup postoffice (58 miles southeast of Kingman). Follow State 93 south to
- 2.0 Dip where big wash (Bronco Canyon) crosses road. Head westerly up bed of wash. Keep to right in wash to
- 5.4 Wash divides. Keep in main (left) branch to
- 5.6+ Cliff at left side of wash, just above branch. Climb out of wash to left, on either side of cliff, to reach phonolite ledge.
- Wikieup to Yucca, over the Hualpais
- 00.0 Wikieup postoffice, head north, on State 93
- 00.4 Turn left (west) from 93
- 00.7 Old main road, old Wikieup, right. Swing left, then curve right, following road into foothills.
- 05.6 Y. Keep right.
- 06.4 Y. Keep right.
- 06.5 Y. Keep left.
- 10.4 Angle into straight road. Keep right.
- 10.9 Left branch, well traveled, keep ahead, right.
- 16.4 Come into road at right angles. Turn right.
- 19.7 Angling cross road. Keep ahead.
- 27.0 Y. Keep right.
- 27.9 Right branch. Keep ahead.
- 35.4 Cross roads. Keep ahead.
- 43.5 Right reverse branch. Keep ahead.
- 45.9 Yucca, on U.S. 66.

their chunks of phonolite, they hauled them to the cliff edge and tossed them down into the sandy wash beside the car. But I was afraid the sample I picked—a large oblong, rather thin slab that weighed about all I could lift—might break if treated so roughly. I pictured it drilled and hung up intact—or perhaps *en masse* would be better—as a colossally impressive door chime. So I carried it.

Going back down Bronco Canyon he had our own tracks to follow, knew where the likely trouble spots were and made good time. But this trail is not recommended for anything except four-wheel-drive vehicles, or those with compound gears, and for those who want to hike. Possibly rain and a little travel would pack a road that passenger cars with good rough-country drivers could navigate.

Guy and Nick were heading back for Kingman. They suggested that we take a road across the Hualpais which would save nearly 50 miles on our return trip to Needles and also give us botanical specimens to study as good as those we had passed on the trip down. We parted near old Wikieup and in a few moments Lucile and I

were climbing a narrow but good dirt road to the west of the little settlement.

Almost immediately we came upon plants of the *palo de cristo* and were able to examine them closely. The seed capsules—five-valved with tiny whitish seeds like miniature wheat grains—and the way they grew showed that they did not belong to the *palo verde* family and were not *Holacantha emoryi*, the crucifixion thorn with which we were familiar. Since the branching was definitely not that of the *Koeberlinia*, also called crucifixion thorn, we deduced the *palo de cristo* must be *Canotia holacantha*, the third spiny plant known as crucifixion thorn.

Again we found Joshua trees and the giant saguaro cacti growing together. As Lyman Benson and Robert Darrow point out in their *Manual of Southwestern Desert Trees and Shrubs*, these two plants are perhaps the most familiar symbols of the desert—the Joshua tree for the Mojave, the saguaro for the Sonoran desert of Arizona. Only in a few spots near the Bill Williams River and along the Hualpais have they been found together.

This road, across a low section of the Hualpais, should be passable for

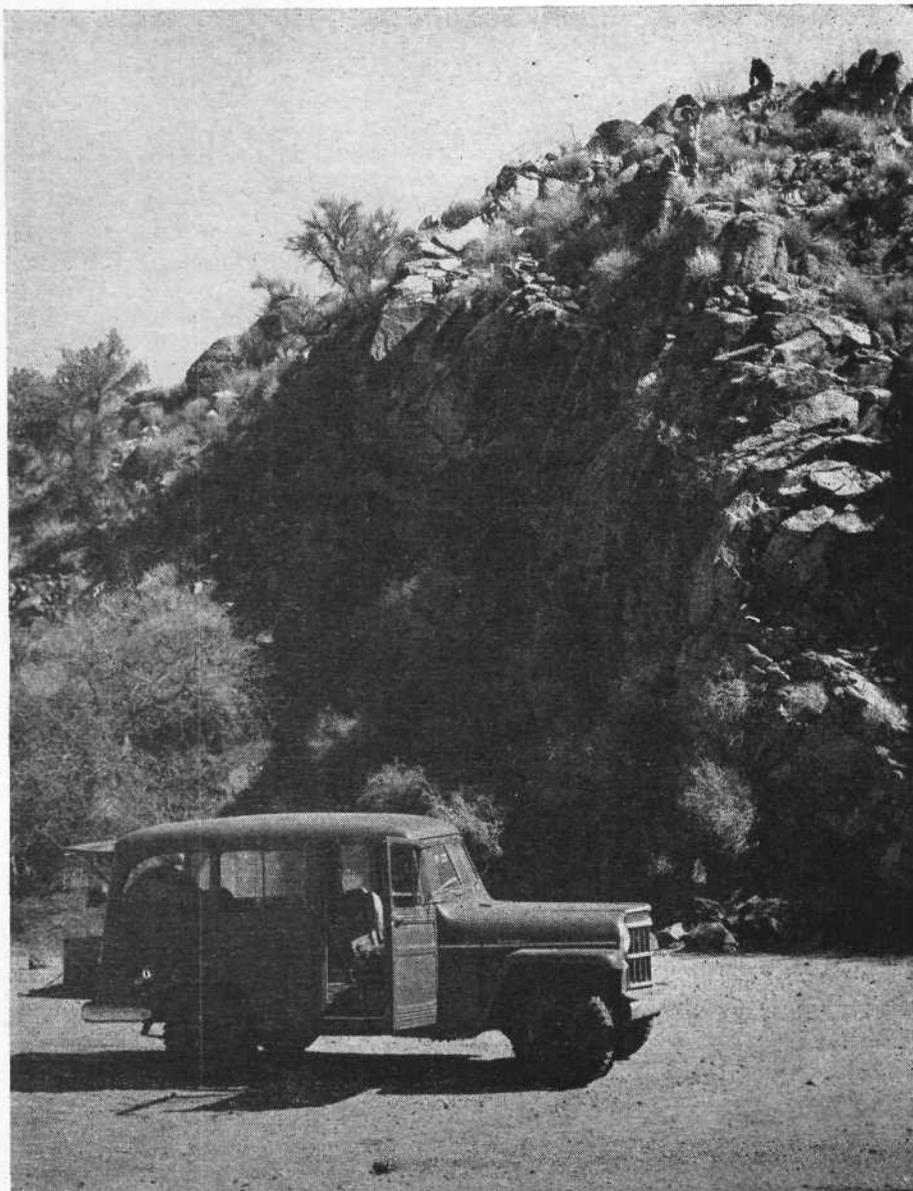
almost any driver experienced in desert or mountain driving. For anyone interested in botany and scenery, it is a wonderful trip. Saguaro, Joshua tree, *palo de cristo*, juniper, ocotillo and *nolina* grow in natural gardens along the lower slopes. Higher we found the ocotillos and *nolinas* still blooming, and passed *Rhus ovatas*—the sugar berry—growing lushly like trees. Then came mesquite and scrub oak, and all throughout were pancake cacti, barrel cacti, Bigelow and tree cholla. Well down on the Sacramento Wash side, we came into forests of Joshuas with scattered Mojave yucca.

We reached the settlement of Yucca and the broad freeway of U.S. 66 at dusk. It was pleasant, at this stage of the trip, to have smooth, wide paving to follow.

But these great fenced freeways through Sacramento Wash and Big Sandy Valley are unhappy evidence that Arizona, like all the rest of our deserts, is becoming civilized. The fencing undoubtedly saves lives by keeping cattle out of the way of high speed traffic. But there is a question whether it will save as many as already have been lost through excessive speed

Nick Tasertano "rings" one of the big musical rocks while Guy Hazen checks it for tone and pitch.





Easiest way to deliver small pieces of the musical rock to the car was to throw them from the top of the cliff which hides the ledge from the canyon floor.

on the new freeway. The long miles with scarcely a gate must be very disconcerting to prospectors and rock-hounds and the more adventurous tourists who once were able to take off wherever a wandering track or likely looking bit of scenery called to them.

Probably there will be a wire fence across the mouth of Bronco Canyon, too, when State Highway 93 is completed. After all there is no through road up it. No remarkable scenery that can be exploited for tourist dollars. Nothing, in fact, of commercial value.

But perhaps in time even the most modern minded of highway commissioners will come to realize that it is a good thing to have visitors pull off for an hour or a day or a week on side roads or even where there are no roads, rather than race between fences

from border to border not daring to lift their eyes from the road. Perhaps, in time, cattle will be fenced and cattle-guarded into their ranges rather than having people fenced out of the public domain.

For it is certain that as time passes, and the West becomes more crowded and cut by freeways and private fences, the little sideroads and the canyons with no roads will become more important. Even now more and more people from the cities are turning to the lonely places that are left open to them.

They may say they are hunting bell-rocks, or scenery to photograph, or strange plants to study, or unpolluted air to breathe, but many of them are really seeking something far more important and vital to the nation—a few moments of peace and quiet where they can find themselves.

Shine Smith Tale Wins '55 Contest

The true desert philosophy of Shine Smith became the pathway to victory for Fred Glimpse of Phoenix, Arizona, as his story of the great missionary to the Navajos won first place in *Desert Magazine's* 1955 Life - on - the - desert contest. First award was \$25.00.

Glimpse's outstanding entry caught Shine Smith's inner spiritual calmness—a calmness which overcomes all material obstacles through a recognition of his oneness with the desert.

Second prize of \$15 went to a most thrilling story of the Battle of Agua Prieta by Cordelia Brinkerhoff of El Monte, California. Mrs. Brinkerhoff's eye-witness account of Pancho Villa's attack on the Mexican border town just south of Douglas, Arizona, is one which *Desert* readers will not soon forget.

Third prize, also \$15, went to Cap and Olga Smith of Des Moines, Iowa, for "Phantom of the Desert," a story of their experience with a family of kit foxes in southern Imperial County, California.

From 88 entries, the following won honorable mention and will appear in future issues:

"The One Eyed Snake of Betatakin" by Lolita A. Olaine of Palo Alto, California.

"The Cattle Drive," by Billie Yost of Flagstaff, Arizona.

"The Healing Interlude" by Helena Ridgway Stone of Glendale, California.

"Flash Flood" by Dee Tripp of Tucson, Arizona.

"The Lost Gold of Morgan City Wash" by Palmer C. Ashley of Santa Monica, California.

"It Happened on the Colorado Desert" by H. E. W. Wilson of Willits, California.

"Get Juan to Do It for You" by Nona B. Mott of Hereford, Arizona.

"Life on the Desert" by Tom May of Wilmington, California.

"Prayer Stick Vengeance" by D. D. Sharp of Albuquerque, New Mexico.

"Dreamers of the Mojave" by Kenneth M. Stewart of Tempe, Arizona.

"The Bill Williams on the Rampage" by the Rev. Norman Sorensen of Pioche, Nevada.

"A Visit to Cross Canyon" by Editha L. Watson of Window Rock, Arizona.

"Trogon Ambiguous Ambiguous" by Dorothy W. Allen of Napa, California.

"A Desert Comedy" by Mrs. John E. Plummer of Milo, Oregon.

"Christmas on the Desert" by Kay Gregor of Douglas, Arizona.

Trout Streams of the Mojave

... WHERE A MILLION RAINBOWS GROW

It seems unlikely that the fleshy rainbow trout could ever have lived in any but the icy mountain streams of Southern California. But the chances are it got its start in 60-degree waters of the Mojave Desert, pampered with three square meals a day, plenty of desert sunshine and clear fresh air. No wonder fishermen love them!

By GASTON BURRIDGE
Photo by the Author

IN THE BOTTOM lands of the Mojave River of California is posted a sign which looks for all the world like something out of a mirage: "Mojave River State Fish Hatchery, ½ Mi." I blinked and looked again, but it appeared real enough. I backed up and turned in—this I must see.

As I drove up, hatcherymen Frank McFarland and Eldon Fredrichsen were seining a long pond. The reason, they told me, was that one of the screens between this pond and another above it had developed a hole. Some of the small trout had slipped through the hole into this pond where old, larger trout lived, and older trout enjoy a trout dinner, too! So the entire pond had to be seined, its fish separated.

This hatchery handles 1,500,000 rainbow trout a year. What is most interesting is that all these trout are nursed and grown on the desert. Desert trout with the sunset on their sides—and they are beauties, too!

It seems a bit incongruous to have a fish one associates with ice cold mountain streams and lakes raised on the desert, but there they are, flashes of steel-blue shadow churning the waters waiting to be fed.

The hatchery part of the name is perhaps a misnomer for the number of fish actually hatched from fish eggs are very few. Probably a better name, at least one more in keeping with the work done, would be "trout nursery."

The eggs are hatched into tiny fish in a plant at Fillmore, California, and arrive at their Mojave River home as "fry." They are pretty small then, weighing about 300 trout to the ounce. When they leave here, to be planted in some stream or lake in Los Angeles, San Diego, Riverside or San Bernardino County, they weigh about four fish to the pound.



Hatcheryman Frank McFarland spreads food in a desert trout stream.

Young trout grow rapidly at the hatchery, and no wonder. The fry are fed a puree of beef liver three times a day. This puree is made by mincing the beef liver in huge grinding machines like those the butcher grinds his hamburger in, only these machines are considerably larger. The puree is then shaken into the pool through a fine sieve.

The trout are raised in pools 12 feet wide, 60 feet long and about two feet deep, with curved bottoms. The water in these pools is flowing 24 hours a day. The hatcheryman walks up stream as he feeds the trout, wading the pool's center, spreading food as he slowly steps along.

As the trout grow their diet changes and the feedings are cut to two a day. Older fish get a ground-up mixture of

saltwater fish, horse meat and beef liver. This food is forced through grinding plates with one-quarter inch holes in them. It takes three pounds of food to make one pound of rainbow trout.

All the meat to be used as fish food comes to the hatchery frozen and is kept in large refrigerated storage rooms. The beef liver used here has been condemned as unfit for human consumption by Government inspectors. It arrives in boxes about two feet square and eight inches thick. The liver is covered with charcoal dust. The horse meat is packed in barrels, while the fish comes in 50-pound paper sacks with special paraffin treated linings—all frozen. This food arrives in batches of as much as 40,000 pounds at a time. This is no small operation out here on the Mojave River.

Why was this particular spot chosen for a trout nursery? It is because of the good and abundant water supply which occurs at just the right temperature. This water has to be aerated constantly to add enough oxygen for the trout. Good clean air, free of smog, is essential.

The best temperature for growing trout is approximately 60 degrees. A female trout is the most fertile and will produce the most eggs in water from 65 to 66 degrees, but water that warm would make the young trout grow too fast and they would become susceptible to their many diseases.

Rainbow are planted in mountain lakes and streams of Southern California counties every month of the year except February, that month being excluded because roads are snowed in deepest, lakes and streams frozen over hardest. The hatchery operates on an all year basis, however, with six full-time employees.

McFarland told me that while trout are interested in all colors it is his belief that red is their favorite. I learned also, that the California State Fish, the golden trout, is a variation of the rainbow trout.

The truck used to transport the trout from this nursery to streams or lakes is an especially designed affair, the result of many years' experiment and experience. Gone are the days of the milk can full of fish! The large tank holds 500 gallons and is equipped with two gasoline engines and two pumps, one for service, one for stand-by. This engine and pump keeps the water aerated and swiftly moving all during transportation. Should it stop for very long, the trout would die. They must have constantly moving water when confined in so small a place—and the water must be provided with plenty of air—air with good oxygen in it. These tanks are iced that their temperature may remain just right also.

When the fish are planted an eight-inch pipe is attached to the tank and run into the water of the stream or lake. A gate in the tank is opened. Out rush the fish with the water and from then the trout are on their own.

The hatcheries are always interested in propagating fish more resistant to disease, having a wider range of living conditions and food. They are continually experimenting with new foods and different methods of feeding. They like to know how their fish are doing after they are planted. Many methods for finding this information have been devised, but none have proved too successful. Now, fish are being tagged with a small number at the side of their mouths. Should you catch such a trout, the hatchery will much appreciate your dropping them a card saying where you caught it, its length, its weight, its general condition and, if caught in an extraordinary spot, a description of that spot. In fact, any information you can give about these marked trout will be used to further the Department's work in making better fishing for you. Address cards to Mojave River State Fish Hatchery, P. O. Box 938, Victorville, California.

The Mojave River State Fish Hatchery is one of the most interesting of California's activities. It is a joint desert-mountain endeavor, using the desert's clear warm climate to produce a superb mountain trout.

Desert Magazine's press run this month is 32,500 copies — 5,000 more than the circulation a year ago. All printing, including the 4-color cover is done at *Desert's* own printing plant in Palm Desert, California.

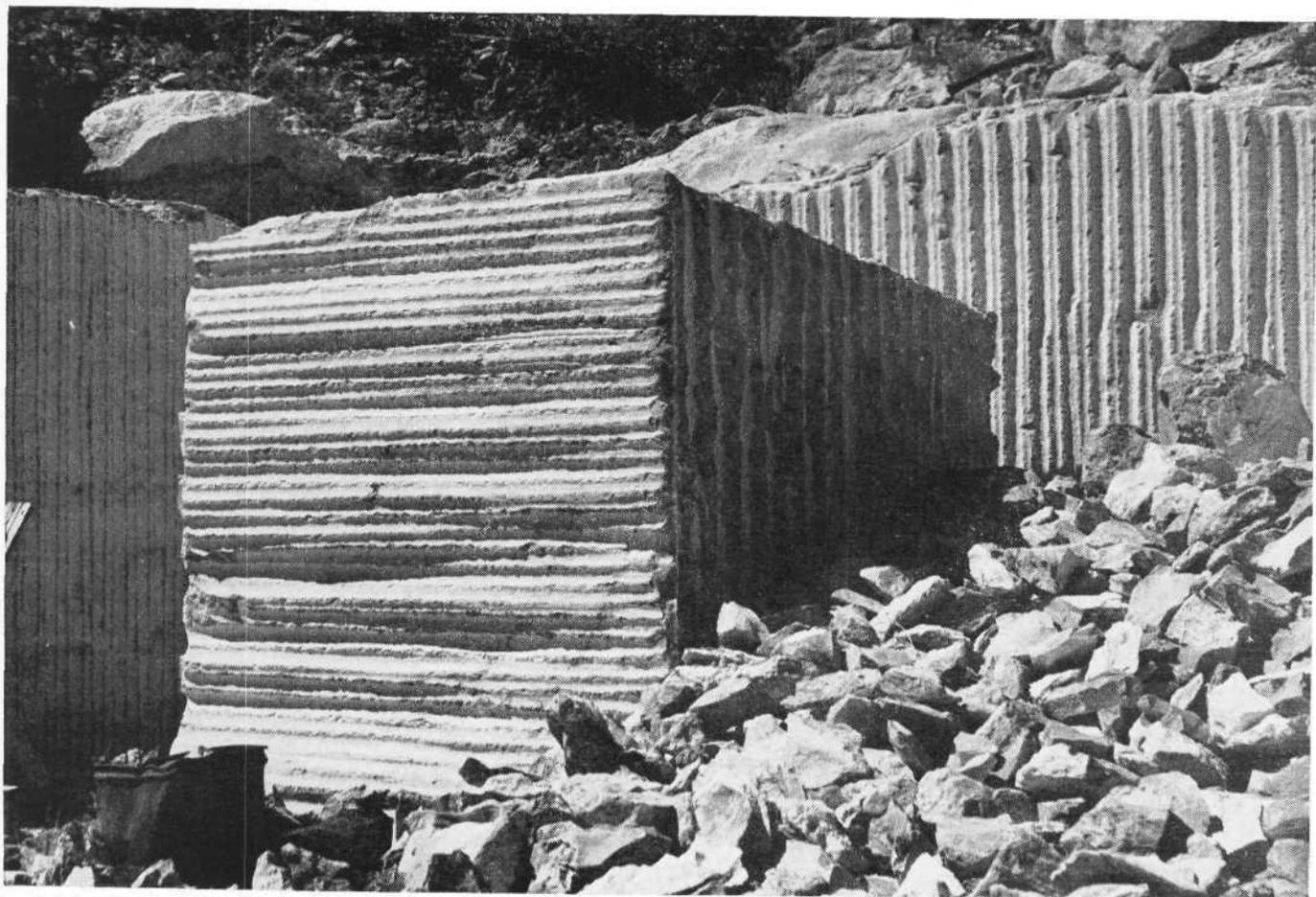
THE *Desert* MAGAZINE CLOSE-UPS

Anthropologist Charles Gallenkamp, of Houston, Texas, author of this month's "Where Ancients Wrote in Stone," is writer, lecturer and traveler. Currently he is writing a book on the American Indians which is due to be published in the fall by Vanguard Press, following which he plans a trip to Mexico to photograph archeological sites and to visit some of the little-known tribes in central and southern Mexico. Among his recent lecture tours, Gallenkamp spent time in Europe where he found the people fascinated with the true picture of Indian life. Paris at that time was featuring an exhibit of Indian paintings and Navajo silverwork.

TRUE OR FALSE

According to the law of averages you should get half of these right even if you never saw the Great American Desert. Regular readers of *Desert* will do much better than that. Fifteen is a fair score, 18 is exceptionally good, and for anything over 18 you may go to the head of the class. Answers are on page 28.

- 1—Indians were living in Death Valley before the white man came to the West. True..... False.....
- 2—Arrastra is a word associated with early day mining. True..... False.....
- 3—The Yampa River is a tributary of the Green River. True..... False.....
- 4—Lowell Observatory is near Flagstaff, Arizona. True..... False.....
- 5—Papago Indians eat the fruit of the Saguaro cactus. True..... False.....
- 6—The Chuckawalla is a poisonous lizard. True..... False.....
- 7—Canyon wrens are seen only in the Grand Canyon of the Colorado. True..... False.....
- 8—The book *Death Valley in '49* was written by W. A. Chalfant. True..... False.....
- 9—Uranium is obtained in many places in the Southwest by placer mining. True..... False.....
- 10—The Smoke Tree blooms every year despite the amount of rainfall. True..... False.....
- 11—Timpanogos Cave National Monument is in Utah. True..... False.....
- 12—Joshua trees grow only in California. True..... False.....
- 13—The door of a Navajo hogan always faces north. True..... False.....
- 14—Headwaters of the Little Colorado River are in the Wasatch Mountains of Utah. True..... False.....
- 15—Pauline Weaver was a famous stage driver. True..... False.....
- 16—The blossom of the datura is white. True..... False.....
- 17—Sunset Crater in Arizona is visible from the Wupatki National Monument. True..... False.....
- 18—The Mohs scale is used to classify the purity of gold. True..... False.....
- 19—A line drawn east and west through Albuquerque, New Mexico, would pass north of Phoenix, Arizona. True..... False.....
- 20—Fairy duster is the common name of a desert butterfly. True..... False.....



Nine-ton block of Naretina marble ready for shipment.

They Mine Marble in Apacheland

By NELL MURBARGER
Photographs by the author

MY REGARD for marble, until quite recently, had never been especially warm. It was an attractive stone, to be sure; but it always seemed aloof and unfriendly. It reminded me of pale winter sunshine, and hushed voices, and chilly places like mausoleums and morgues.

And then, one day last fall, Destiny had trailed me down to Dragoon, Arizona, and a chance meeting with DeForest Ligier.

DeForest—or "Bud," as he is known over most of Arizona—is one of the best marble men in the business. By his own enthusiasm he had helped me see marble as the first great building stone of Man's civilization—the noble rock of Ancient Rome and the Caesars. He pointed out that it is the stone from which the world's greatest masterpieces

of sculpture have been wrought, and the stateliest temples of Time, created.

"No," he had declared, shaking his head, "Marble isn't a cold, unfriendly stone. It's just dignified and queenly—and very proud!"

This veneration for marble has been in the blood of the Ligiers for two generations, possibly longer.

Leon Remy Ligier—Bud's father—was a graduate of the University of Dayton, a geologist and marble prospector, a sculptor of some repute and owner of one of the first monument works in the frontier city of Phoenix, Arizona. It is said to have been he who discovered the white marble mountain that launched the 50-years-ago marble boom in Gunnison County, Colorado. During their many years of operation, those western Colorado

Two city folks became fed up with the noise and congestion of Los Angeles and decided to go out to the Dragoon Mountains in Arizona and "develop Dad's old marble claims." Today their quarries are yielding some of the finest marble to be found in this hemisphere and the Ligiers have grown to love the wild country where Geronimo and Cochise and their Apache warriors once lived and fought.

quarries produced stone for municipal buildings of San Francisco and New York, as well as many other notable structures including the Lincoln Memorial and the tomb of the Unknown Soldier.

Then Leon Ligier had wandered down to Cochise County, in the southeastern corner of Arizona. There, in the north fringe of the rugged Dragoons, he had found another marble mountain!

Decorative marble, in that year of 1909, was in active demand by quality builders, and Ligier had hastened to stake several claims. Due to his prominence in the stone-cutting industry, this implied approval of the new field had the result of luring to that region a throng of boomers and claim jumpers. Half the Southwest, it seemed,



The Ligiers at their Dragoon Mountain home.

suddenly had become marble minded, and claims were being staked right and left and on top of one another.

Out of this flurry of excitement there had risen an impossible tangle of confusion.

As a result of that confusion, the splendid marble claims staked by Ligier were still embroiled in litigation and untouched by development when their original claimant died in 1922.

Upon Mr. Ligier's death his marble holdings—together with his law suits—descended to his five sons, then in their twenties and early thirties. Litigation over the ground continued; and not until the matter had dragged through the courts for 20 costly years, was a decision rendered in favor of the Ligier heirs.

By this time, the national economy was in the doldrums, and with builders tightening their purse strings, there was no market for decorative marble. After the depression came World War II, bringing labor shortages and curtailment of private construction. Thus, for one reason and another, it was not until 1946—nearly 40 years after the claims had been staked—that the Ligier holdings produced their first block of marketable stone.

Since that time those quarries have given to the building industry thousands of square feet of marble comparable in quality, color and beauty, with any produced in the famous marble districts of the Old World.

Yet, all the marble thus far taken from these quarries has barely scratched the surface of that remaining. According to surveys by geologists and mining engineers, the Ligier holdings at Dragoon embrace not less than 2,000,000,000 cubic feet of marketable stone—roughly 186,000,000 tons—or what is probably the largest supply of decorative marble in the Western Hemisphere!

One day last October I was on Ari-

zona State Highway 86, driving from Bowie to Nogales. About 20 miles southwest of Willcox this road enters Texas Canyon and for several miles is bordered by strange rock formations. The morning was warm and lazy. With a few white clouds drifting over the hills and the smell of autumn in the air, the urge to go exploring was too great to resist. At the first branch road I turned off the highway into the rocks.

Circling the formations, the little by-road led down a tree-lined wash, past an old cemetery and a few crumbling adobes; and, suddenly, it was entering the outskirts of a small desert station set astraddle the Southern Pacific tracks, on the north apron of the Dragoon Mountains.

By the federal census of 1950, the town of Dragoon, Arizona, is credited with a population of only 44 persons; yet, it has a store and a postoffice, and it wasn't long before I was visiting with the storekeeper. The matter of mining conditions crept into the conversation—as it generally does, in a mining country—and the storeman said there wasn't much doing in the Dragoon area except at the marble quarries. This had invited more questions and 10 minutes later, I was sitting under a China berry tree in the front yard of the Ligier home, and Bud and his wife Mary were telling me the story of an industry already old in the days of Pompeii.

In his early fifties, and as brown as any Apache who ever roamed the Dragoons, big, good-natured Bud Ligier fits into the Arizona landscape like its rust-colored rocks. Looking at him and his unusually attractive wife, I found it hard to believe that less than 10 years ago this sort of thing was almost as foreign to them as life on another planet.

Born in the San Fernando Valley, of Southern California, Mary's life

had been centered about her home, her club-work, the theater, music, dancing and drama. Bud, while a native of Mesa, Arizona, had grown up on the Coast and knew virtually nothing about the desert.

"And I certainly didn't know anything about marble!" he laughed. "I was a hardwood floor contractor in Los Angeles; was working about 20 hours out of every 24, and making lots of money.

"Then, suddenly, the whole picture seemed to go sour. We were simply fed up with the noise and congestion and cocktail parties and late hours—everything that contributes to the life of a businessman in a large city. We told our friends we were going to quit and get out; that we were going to Arizona and develop Dad's old marble claims. Everyone thought we had lost our minds; but that was our decision."

A smile flickered across his face, and for a moment his eyes caught and held the amused eyes of Mrs. Ligier.

"That was eight years ago," Bud went on. "We've learned a whale of a lot since then—particularly about marble. We've learned that developing a marble quarry is just about the hardest, hottest, heaviest work in the world. You breathe marble dust, and eat it, and tramp through it, and dream about it at night—and pretty soon it gets into your blood, and you know you're in it to stay. You're a 'marble man', and wild horses couldn't drag you away from it!"

Later, Bud suggested we drive up to the quarries. "We're closed for a few days," he said, "but it'll give you an idea of what we're doing."

Heading south out of the little town, we soon began climbing toward a faint white smudge on the mountainside, a few miles distant.

Springing from the mouse-colored flat of Sulphur Springs Valley, the dark island of the Dragoon range rises abruptly to its maximum elevation in Mount Glen, 7512 feet. Spread over those higher levels is a dense thatch of conifers and other shrubbery; but in the lower elevation zone through which we were passing—from 4600 feet at the town of Dragoon, to a mile high at the quarries—the vegetation was strictly that of the highland desert. Sprinkled over the dry slopes were creosote bushes, and the thin, gray whips of ocotillo. There were a few yuccas and cactus; and, now and then, the stout flower spike and toothed blades of an agave. A flock of desert quail sprinted across the road ahead of us, and a roadrunner cocked his head quizzically as we passed.

"This was Chief Cochise's country," Bud was saying. "His headquarters

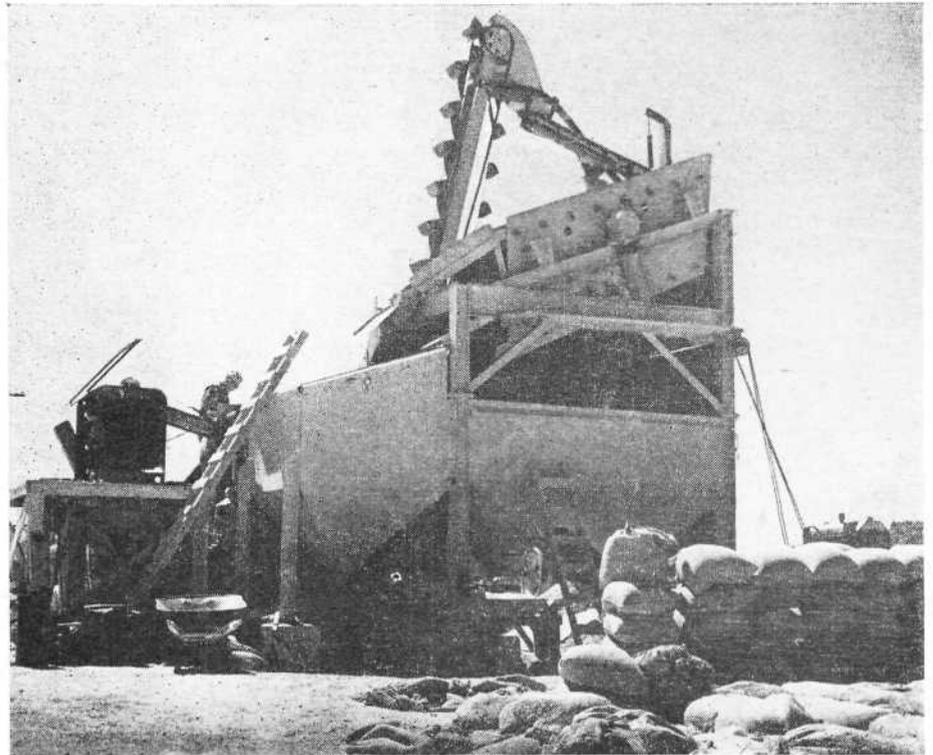
were about five miles down the range, south. He's buried here in the Dragoons. Some say down in the Stronghold but no White man knows where—and the Apaches don't talk about it."

Rattling and bouncing over the rocky road, the old sedan had climbed the last steep pitch and Bud had brought it to a halt at the lip of a large open cut.

Wherever a block of marble had been removed from the quarry, there remained a squared pocket; and over every inch of that cubistic face were long, straight, parallel furrows ground out by the drills. In order that the great block may be removed with a minimum of fracturing and waste, it is necessary that marble be drilled, rather than blasted, explained Bud.

"Twenty centuries ago, they quarried it with slave labor, using hammers and wedges." He grinned. "We still do it the same way. The only difference, we pay higher wages now and use pneumatic drills!"

The sides by which each block of marble is attached to the main mass are drilled as closely parallel as possible, with each drill hole separated from its predecessor by a web of stone about an inch wide. With the completion of drilling, the marble block is thus roughly comparable to a postage stamp surrounded by its perforations. The connecting webs are now cut out, and the block is split from its base. Hoisted from the quarry by means of a large A-frame, the block is lowered to the



Marble chips from this crusher will become terrazo flooring or roofing for many homes and public buildings across the nation.

flat bed of a truck and hauled to the railroad at Dagoon, for shipping.

Blocks taken from the Ligier quarries average about four feet wide, four feet high, and five or six feet long, and at 186 pounds per cubic foot, weigh between seven and nine tons each. For special orders, the Ligiers have cut

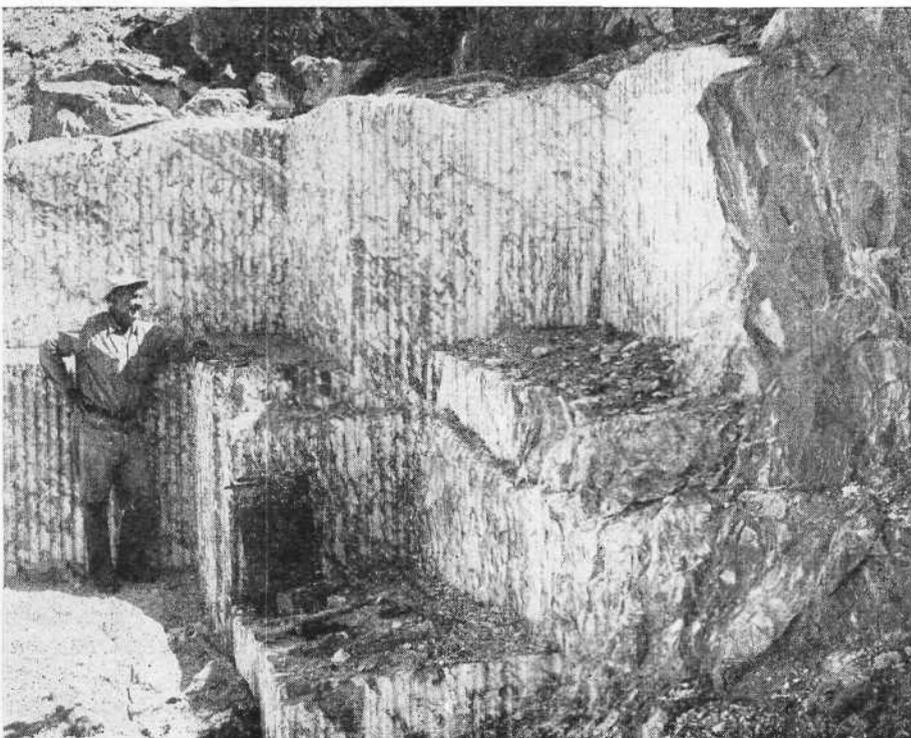
and shipped blocks weighing as much as thirteen tons each. At present it is necessary that the rough blocks be shipped out of the state for slabbing and polishing—many of them going to the great marble works of Laconi Marble Co. at Carthage, Missouri.

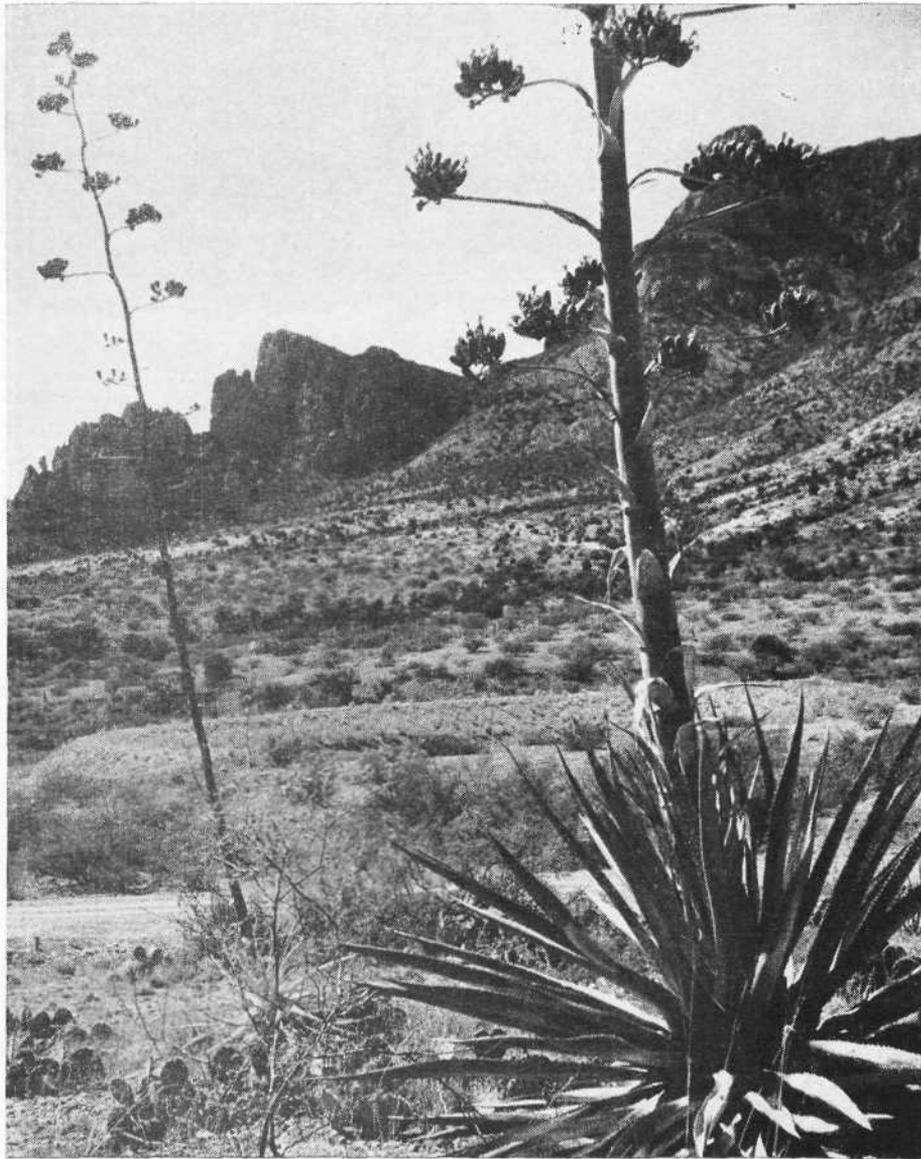
"As soon as we can finance it we're going to put in our own gang saws and polishing equipment, so we can turn out a finished product at the quarry," said Bud. "That's where the big money lies. But, so far, we haven't had the \$200,000 necessary to that sort of expansion!" Up to this point, Bud and his brothers figure their investment in actual cash and labor well over \$50,000.

While all the Ligier claims — embracing some 2000 acres—are situated on the north and northwest slopes of Marble Mountain, each of the several quarries produces marble of its own distinctive color, Bud explained. Each quarry has been assigned a name typical to that region, and this quarry name, in turn, is applied to the particular color of marble there produced.

This first quarry we had visited is known as the Geronimo and from it comes a beautifully variegated pink and buff stone nearly identical with the famous Skyros marble of Egypt. The Dagoon quarry, near the Geronimo, yields an all-green marble, most of which is crushed for terrazo chips and roofing. From the Navajo comes a striking stone whose jet black background is shot through with golden

Dynamite or powder would shatter the rock so the blocks are cut from the mountain of marble by tedious drilling operations. This is the Geronimo quarry.





In these Dragoon Mountains, Cochise County, Arizona, was discovered the largest decorative marble deposit in the Western Hemisphere.

threads. Marble from the Apache quarry is a warm, tawny golden; Tonto is salmon colored; Numidian a rich rose; and Breche Saguaro and Naretina are so-called conglomerates. Thus far, 10 distinct colors and types of marble have been taken from the Ligier quarries.

"As a matter of fact," Bud said, "we can produce a marble comparable to almost any marble in the world!"

As we walked over the Geronimo pit our feet were crunching in a thick carpeting of marble chips. In their unpolished state these fragments bore little resemblance to the finished product, but by wetting the pieces we could gain some idea of the rich, warm tones of this most-highly-colored pink marble. Geologically speaking, marble is recrystallized limestone, and thus dates from the Devonian age when much of the earth's surface was covered by warm seas, and tropical corals flourished where only desert wastes now lie.

"Mausoleums generally use the more subdued colors of marble, but in one California mausoleum there's a private room finished in Geronimo pink," he went on. "When her husband died, the woman had contracted for the room at the mausoleum and had said she wanted it re-finished in a warm, pink marble, 'Bright and full of promise—like the sunrise,' she had said. She was told that such a job would cost her \$15,000; but that seemed quite agreeable with her, and the manager of the mausoleum began combing the quarries for pink marble. Every time he got on the track of a new sample he would show it to her, but none suited her.

"Years passed. It began to look as if the old lady wouldn't live to see her mausoleum room finished as she wanted it. Then we got into production here at Dragoon, and the mausoleum folks happened to see a piece of

Geronimo pink. When they showed it to the woman, she was delighted.

"That's it!" she cried. "That's what I wanted all the time—bright, like the sunrise."

"And so," he concluded, "There's at least one mausoleum room that's finished in Geronimo pink—'like the sunrise.'"

Marble from the Ligier quarries has been used in finishing many beautiful buildings, some of the more notable in the Southwest being St. Mary's hospital, at Tucson; the newest three buildings at the University of Arizona; the new chemistry-geology building at U.C.L.A.; the new hospital at Ventura; the gym and armory at Tempe; and store fronts and banks throughout the area. In addition, buildings in all sections of the Middle West and East, and as far distant as the Canal Zone, have used this highly colored Arizona product.

Turning back toward Dragoon, we detoured to the Ligier crushing and sacking plant at Manzano siding on the railroad, midway between the Southern Pacific stations of Cochise and Dragoon.

By means of a jaw-type crusher, having a capacity of 50 tons daily, waste marble unsuited to slabbing is here transformed into marble chips ranging from dust particles to fragments the size of an almond. Screened to uniform size and sacked in 100-pound burlap bags, these chips find use in a wide variety of ways—chiefly as a stone surface coat for roofing, and in terrazzo work.

Due to its beauty, durability, ease of cleaning and economical maintenance, terrazzo is becoming one of the most popular types of flooring for public buildings—particularly in areas of heavy foot traffic, such as corridors. Mixed with white or pre-colored cement for a binder, the chips either are cast in slabs about an inch in thickness or poured directly on the floor, and after hardening are polished to a soft, velvety gloss. The resulting product is a perfectly smooth, stone-hard slab, more durable than ceramic tile, and with multi-hued marble chips adding flecks of color to its basic tone.

In addition to floors, many builders of high quality homes now are employing terrazzo as a finished material in bathrooms and kitchens.

As Bud turned the old sedan back up the road toward the little town of Dragoon, the sun of late afternoon was lying warmly golden on the gaunt range to the south. In their gray-green whiskering of agaves and yuccas, and their eternal cloak of wistful loneliness, it was difficult to imagine those mountains as an abiding place of marble—

more easily associated with the great upthrust crag of Carrara, the fierce cold ruggedness of Vermont.

Nor was it any easier to visualize these quiet desert hills as a setting for the stirring days of Arizona's dark and bloody past. Through this tawny dip between the main Dragoons and the Little Dragoons, to the north, Coronado's mounted legions had passed in their fruitless search for the Seven Golden Cities of Cibola. Through here had rolled the dusty, arrow-pierced coaches of the Butterfield Stage line; through here had swept the great Cochise and his Chiricahua warriors. Here was a land where early-day hold-ups of stage and train had occurred with such frequency as to provoke little comment. Here was a land where mining for gold and silver once had flourished and gone its way; where

towns had bloomed and faded; where cattle barons had come and gone.

For more than four centuries man had penetrated these hills with hope, and briefly had conquered. With their harvest gathered, he had moved on to other hills, other harvests, other worlds.

After the plundering conquistadores of Spain, the pillaging Apache raiders, the murderous bandits of the border country, the seeking prospectors and land-hungry cattlemen, this great silent land of the Dragoons now is entering upon a new phase, a new era of productivity.

In years to come, history may show that all those phases gone before were but poor preliminaries; and after four centuries of trial and error, the true treasure of the Dragoons may at last be found to lie in their marble heart.

Wildflowers Bloom in Average Display; Lake Mead Area Best

As nearly two weeks of rain ushered in 1955 in the Southwest, hopes soared for an outstanding wildflower display. Since that time rains in most portions of the area have been disappointing and flower predictions are now somewhat spotty—good for some areas and average in others. Prolonged cold weather stunted the verbenas which sprouted in the dunes, and evening primrose failed to reach the blossom stage.

Here is the wildflower picture as described by *Desert Magazine's* correspondents:

Antelope Valley, California—Jane S. Pinheiro reports that the Antelope area is about two inches behind last year's rainfall, which was deficient itself. This is causing many seedlings which the first rains brought out to dry up. Some rain in April could bring a bumper crop of flowers, Mrs. Pinheiro maintains.

Phacelia, pepper cress, bird's eye gilia and California poppies came into March bloom and the Joshua trees were preparing to bloom well. Summer temperatures at the last of March brought flowers to earlier maturity than expected, but without April rain there will be no mass displays.

Death Valley National Monument, California—Flowers in this area are becoming better as May approaches, according to the National Park Service. Desert gold and white evening primrose were dense along Highway 190 late in March, with good stands of yellow evening primrose on Jubilee Pass

road and on the road to Daylight Pass. The phacelia were excellent along Highway 190 and good from Furnace Creek Inn to Badwater, while good stands of desert star were noted along Highway 190 from San Dune Junction to Furnace Creek Inn. The names were very numerous along the same route. Flowering cacti were expected in April and May.

Joshua Tree National Monument, California—Monument Superintendent Samuel A. King reports that the display of annuals at lower elevations is nil. Bladderpods were blooming in the Twentynine Palms area and in the Monument, while from the mouth of Morongo Canyon to Highway 60-70 and along the Dillon highway the brittlebush was due to bloom by mid-April. At the Monument's 4000-foot level the peak blooms, although not in profusion, would be reached just prior to mid-April, Superintendent King predicted, showing desert rock pea, primrose, scarlet astragalus, mentzelia and alfilarie. Joshua tree blooms would be showy during the same period.

April will be the showy month for cactus and ocotillo, too, he added, but the picture is generally not outstanding.

Borrego State Park, California—Best cactus and ocotillo blooms were seen in the Park in April, according to Park Supervisor James B. Chaffee. "For the true desert lover May is a beautiful month in this area," he stated, "and there will be scattered blooms which will appeal to them with the possibility of a desert lily or two (which are just

starting to bloom now—late March) but I don't think there will be much appeal to the average person who thinks of wildflowers in the desert in terms of fields of massed blooms."

Lake Mead National Recreation Area, Nevada—Still one of the most encouraging reports comes from O. L. Wallis, park naturalist at Lake Mead. "Our wildflower display . . . started off with a bang in mid-March with a spectacular array of sundrops, desert poppies, chicory, purple phacelia and Arizona lupines along the roadway to Willow Beach on Lake Mojave," he stated. Beavertail cactus, creosote bush and brittlebush began to bloom in late March. Forming an excellent display along the shores of Lake Mead were desert poppies, sun cups and purple mats. Cool weather should extend the better-than-average flower show much longer than usual, Naturalist Wallis believes. Best May displays will be found at higher elevations in the plateau and mountainous terrain, where such flowers as the desert mariposa, firecracker flower, Palmer's stemmon, Indian paint brush, ocotillo and many forms of cacti will be most colorful.

Highway 95, Quartzsite to Yuma, Arizona—Margaret Gerke, who took this trip just in time for *Desert's* survey, reports the desert was lush and green in the northern part of the Yuma Test Station, where there were occasional patches of phacelia and good encelia flowering with many more bushes budding and green. Miss Gerke said the ocotillo should be especially good in this area. Good patches of verbena and desert lily were noted just south of the turnoff to Martinez Lake. She also spotted some desert roadside sunflower.

Casa Grande National Monument, Arizona—Average shows of the normal April and May wildflowers will be seen in this area, according to Monument Superintendent A. T. Bicknell. The mallow and squawberry were blooming in late March and buds were forming on the ocotillo and staghorn cholla.

Saguaro National Monument, Arizona—No prospects for a better-than-average wildflower season were in sight, according to Monument Superintendent John G. Lewis. There were no flowers in bloom in late March, although ocotillo, false mesquite and a few others were expected by the first of April. Brittlebush, yellow paper daisy, wild mustard, lupine and larkspur were to be at their best by mid-April, Superintendent Lewis believed. A good show of cactus was predicted, with hedgehog cactus first, followed by prickly pear, cholla and pincushions late in the month.

One of the finest natural galleries of primitive American art is found near the ruined city of San Cristobal, in northern New Mexico. Not many people know about these giant panels of pictographs and petroglyphs, and the few who do know their location are inclined to keep it secret for fear vandals will destroy these valuable ancient chronicles as others have been destroyed. The editors of *Desert* offer this story with confidence that those readers interested enough to seek out San Cristobal will respect this ancient art gallery as a heritage to be protected and preserved.

Where Ancients Wrote in Stone

By CHARLES GALLENKAMP
Photos by the Author

7 WENTY-FIVE miles south of Sante Fe, New Mexico, the ruined pueblo of San Cristobal lies hidden in a lifeless, silent valley. Few people know it is there. It is unmarked on state maps, and rarely do the residents of nearby towns visit it. Except for a few obscure archeological

reports, this once flourishing center of Indian life has all but vanished from memory.

It was my friend, John Skolle, who first led me to San Cristobal and the amazing gallery of prehistoric art concealed in the mesas high above it. As a painter he was especially interested in primitive art and had assembled a valuable collection of drawings and photographs of cave paintings, petroglyphs and native designs from many parts of the world. On his first visit to San Cristobal, several years before, he had been greatly impressed by the veritable museum of stone drawings hidden in the rim of mesas surrounding the ruined village.

Indians had a particular fondness for painting and etching on stone, and discoveries of this kind are plentiful in the Southwest. I have photographed close to 15 similar sites within a few miles' radius of Sante Fe alone; but if these at San Cristobal were as fantastic as Skolle described, I wanted to see them for myself. Early one Sunday morning we loaded the cameras and enough food for the day into the car and set out for the ruins.

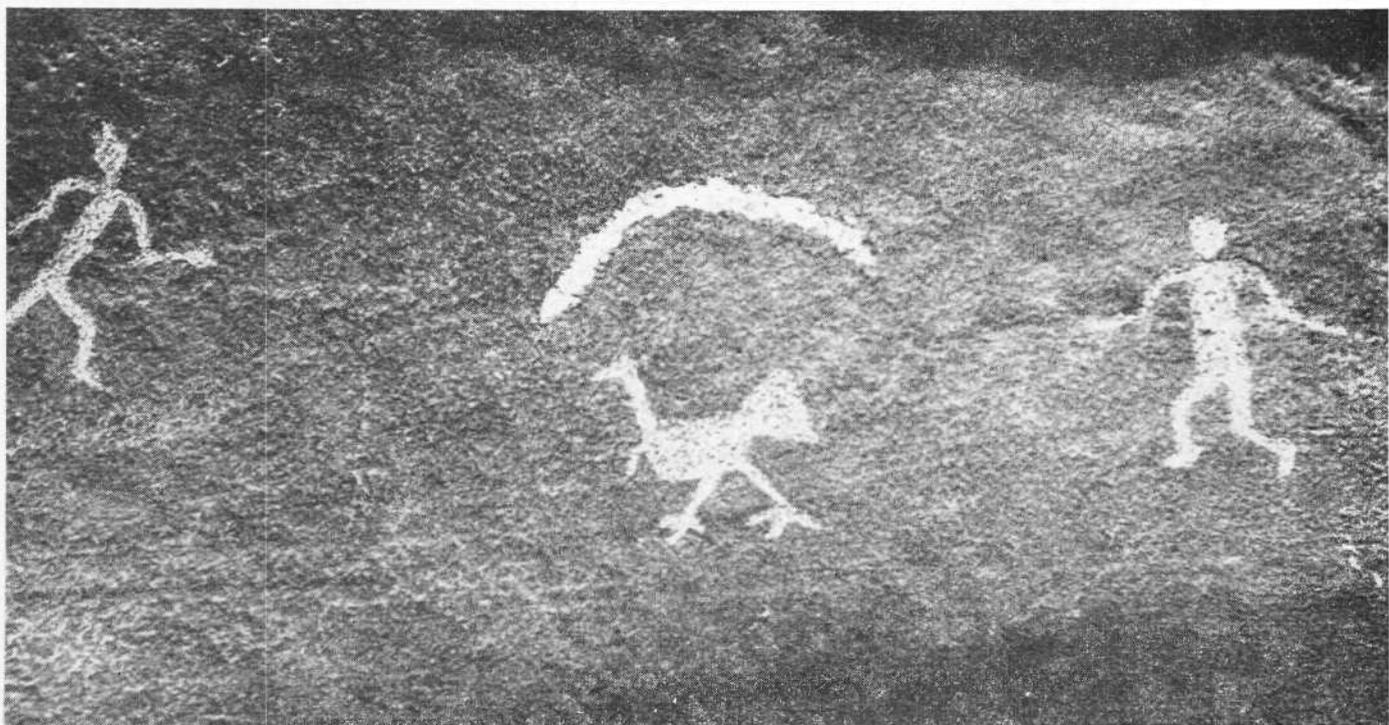
We drove south on a well-paved road that gradually dropped down into a broad valley, scarred now and then by cone-shaped mountains and flat, awkward looking buttes. The countryside reflected a myriad of brilliant colors in the warm morning sun. Finally we turned into a dirt driveway and stopped before a red gate with a sign that read:

SAN CRISTOBAL RANCH
GATE 5

Left—Artist-writer John Skolle, who led the author to the ruins of San Cristobal, examines one of the petroglyph panels.

Opposite page — Top, a ledge covered with etchings of animals, horned masks and what appears to be a star-scarred bear; bottom, figures representing a turkey hunt in which two men armed with clubs pursue a fleeing bird. The crescent-shaped object above the turkey's head probably depicts a throwing-stick.







Ancient artists' chisels added eyes and jagged teeth to a natural projection of stone to create this mammoth rock serpent.

It was a quick walk from there to the crest of the mesa overlooking the ruined pueblo. Far below we could make out the dim outline of what had once been several sections of the village joined by plazas or courtyards, and at the west end of the ruin, one remaining wall of a Spanish mission towered 20 feet above the piles of weathered gray stone.

No one has seen San Cristobal in its glory since the last of the 17th century. It had been the largest of 28 pueblos in the Galisteo Basin—all were abandoned early in the Spanish conquest and have long since crumbled to ruins. In 1912 the archeologist Neils C. Nelson excavated the portion of San Cristobal nearest the mission, but most of its secrets still lie unearthened beneath the debris and rubble of almost three centuries. Only the curious etchings on the rocky ledges above the ruin remain as visible evidence of the Indians who had dwelled there for 500 years.

From where Skolle and I stood we could see nothing in the rocks ahead of us. For ten minutes or more we climbed higher on the side of the mesa. Then I glanced up and suddenly saw them: dozens of faces, masks, animals and figures peered down at us from the black boulders. Everywhere we looked

were more of the mysterious designs incised in the rocks. For several hundred feet along the face of the ledge there was hardly a smooth surface of stone that did not bear faces, the imprint of hands, animal effigies, lines, circles, geometric patterns or masks; and at places in the cliffs we found shallow caves and rock shelters, the walls of which were covered with spirals, bird-like figures and hands with outstretched fingers.

While I set up the cameras, Skolle searched the rocks ahead for new drawings. Within two hours we had taken over 50 photographs, and the imaginative skill of San Cristobal's ancient artists revealed itself at its finest before our cameras.

Archeologists draw a subtle line of distinction between petroglyphs, which are designs pecked into the surface of rocks with stone tools, and pictographs, figures painted on with vegetable or mineral paint. The people of San Cristobal employed both methods to convey their artistic conceptions. In caves and under protective ledges, colored pictographs are still plainly visible; but the open faces of the cliffs are covered with bold, chiseled petroglyphs which have turned white or dull gray with the passing of time. Only in a few instances was it necessary to accentu-

ate badly weathered drawings with chalk.

By mid-afternoon we had a fairly complete film record of the ancient drawings, and the disappearing sun plunged the remaining ones into deep shadow. I gathered up our equipment and started toward a ridge where Skolle had located one more group. As I was climbing I noticed a narrow passage between two sheer walls of stone. At first I took it to be the entrance of a rock shelter, but once inside the passageway I found that it led over a slight ridge and dropped into a basin on the other side. Halfway through the pass, I came quite unexpectedly upon the most exciting discovery of the day. A beam of sunlight directed my attention to a small shelf-like ledge a few feet ahead. The light fell squarely on a natural projection of rock which had been carved to resemble a massive serpent's head with wide-set eyes and a row of jagged fangs. It reminded me of the Feathered Serpent effigies from Mexico, though this image was of crude workmanship by comparison to the Aztec and Mayan stone masterpieces. Yet its serpentine features were unmistakable even in the fading sunlight, and its weathered, grotesque face had looked down on that narrow pass for centuries.

What it had seen we can only guess. Many changes had come to the valley below since it was first sculptured into form. The village of its makers flourished and fell to decay. Spanish conquistadores had come and gone, and a great tide of white settlers had rolled through the valley, leaving behind powerful seeds of a new civilization.

San Cristobal was founded sometime around 1250 A.D. by pueblo tribesmen migrating from the north. It was occupied until the end of the 17th century when a series of epidemics followed by the relentless raids of marauding Apaches threatened to extinguish its inhabitants. Spanish missionaries had established a church in the village shortly after the conquest, but they were powerless to prevent the Indians from abandoning their homes in search of a safer location. By 1692 San Cristobal was deserted, and its occupants gradually moved west toward the Hopi pueblos, settling finally at Hano.

As displaced people inevitably will, they carried remnants of their former culture with them. Many of the designs carved in the rocks at San Cristobal are still seen today in the work of Hopi craftsmen. All that was left behind were the dead, their deserted homes, and the carved faces of gods and spirits to watch from the surrounding cliffs as the village crumbled away.

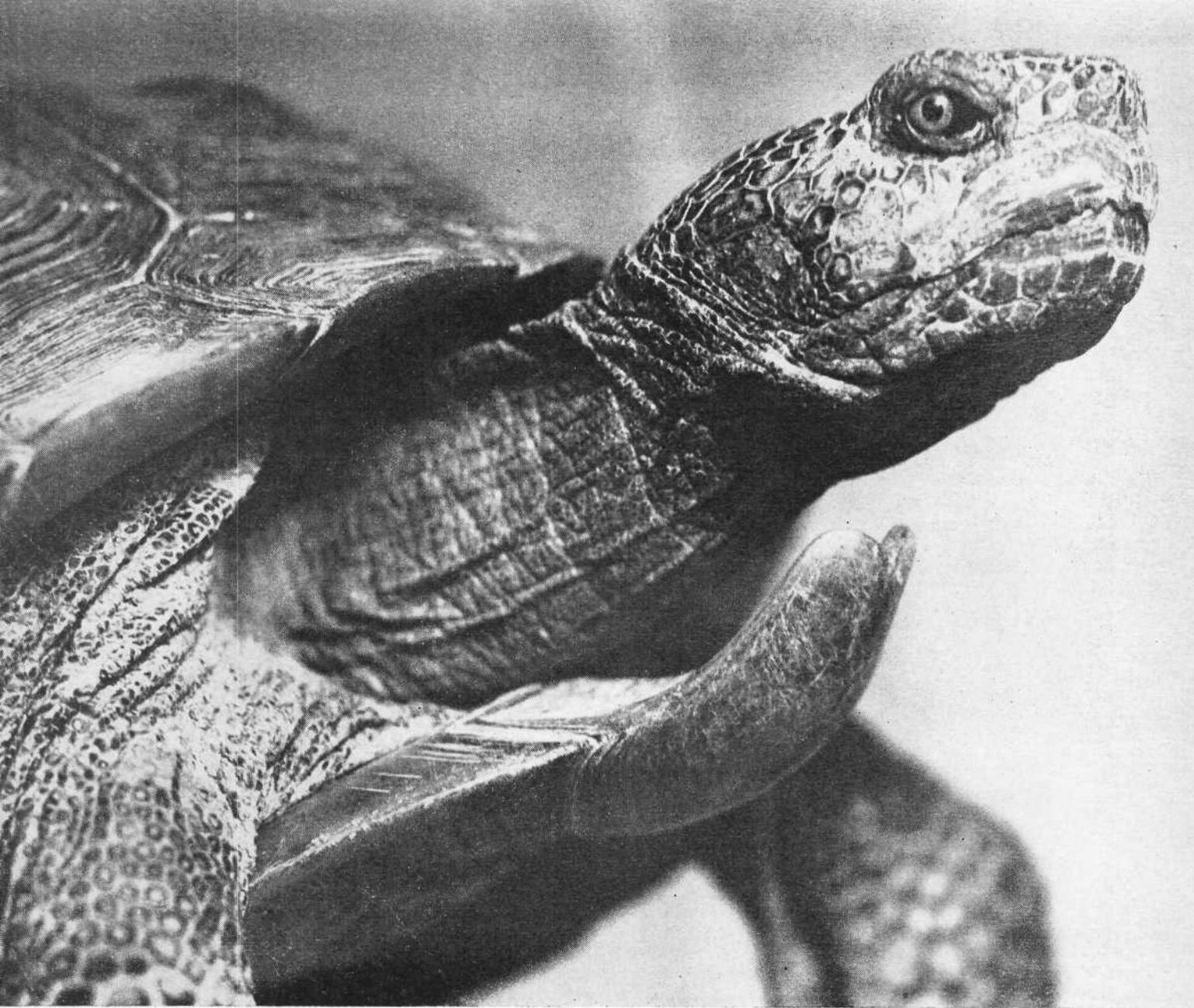


Photo by Richard L. Cassell.

ON DESERT TRAILS WITH A NATURALIST - XIV

Hard-Shelled Denizens of the Wastelands

By EDMUND C. JAEGER, D.Sc.
Curator of Plants
Riverside Municipal Museum

RECENTLY WHILE trekking across country north of the Chuckawalla Mountains of California, I came upon two vacationing high school-age boys who were engaged in an argument over whether the reptile they'd just found should be called a desert turtle or a desert tortoise.

Neither had had much to offer by way of scientific authority and as so

often happens in such cases, each was doing little else than quoting his father, with much fervor. After listening a moment I volunteered to give some reason why trained scientists have decided that the creature they had before them should properly be called a land or desert tortoise and not a turtle.

"The latter name," I said, "is usually reserved for water dwelling creatures with comparatively low-arched

This grim-looking monster really is a very harmless denizen of the southwestern deserts, and a thrifty one at that. In days of plenty it stores water and food inside its shell for the time when there may be a famine. And if you wonder how to distinguish a tortoise from a turtle, here is the answer.

upper shell and webbed toes, or with limbs, some or all of which are modified as flippers or paddles."

"The land tortoises," I said further, "are of robust build and have a high-arched upper shell covered with horny shields showing prominent growth rings. Toes at the end of the stubby limbs are unwebbed and furnished with strong claw-like nails."

"We found this big fellow," said one

of the boys, "by following the trail of footsteps in the sand. The strange tractor-like, double, wide-spaced footmarks were different from any tracks we'd ever seen before. We walked up this sandy wash, about a quarter of a mile before we found him.

"When we first came near him, he was eating grass at the base of a big rock. As we got closer he quickly drew his head, feet and tail into the shell, making a hissing noise."

This desert tortoise, which the boys had found, was the largest one I had ever seen. It was fully 15½ inches long and 12 inches broad. These were the measurements I got when I ran a flexible tape over the curvature of its shell. Although the boys wanted me to tell them, I did not venture to estimate its true age for there is no way of determining it either by size or by the growth lines on the scales. It had doubtless spent many decades wandering over its desert home-land. It may have been 30, or even 40 years old.

The actual weight at any age is rather difficult to determine unless one knows the quantity of green food the reptile has recently eaten or how much water it has drunk. After a summer thunderstorm when free water is found in rock pools a tortoise may nearly double its weight by drinking water. There may also be much stored water in the large bladder and in the supplementary water storage sacs beneath the shell. All this adds to its varying weight.

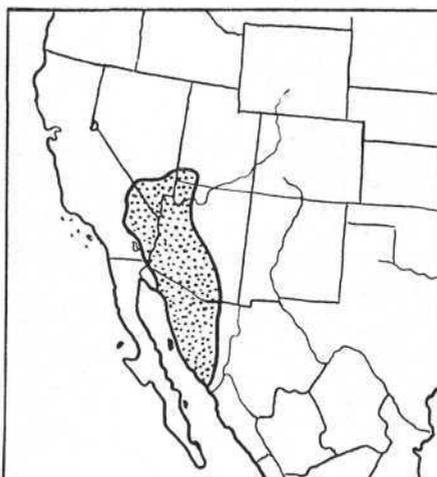
The tortoise the boys had cornered was a male. "How does one know," they asked.

"There are several differences between the sexes," I explained. "First of all, the under shell, or plastron, is somewhat concave in the male, the tail is longer than in a female of similar size and the forked projecting horn or gular shield, at the forepart of the shell, is also better developed and longer in the male."

The pugnacious males advantageously use this large gular horn in bouts with other males during the breeding season. Brandishing it as a weapon, they lunge into their rivals or even use it as a kind of prying instrument to try to turn over the other contestant. A male tortoise may even make thrusts at the female with this gular horn.

The time of courting and mating occurs in spring and early summer. The male's attentions toward the female are shown by rather rapid, amusing, up and down movements of his extended head. He also may be seen repeatedly nipping the edges of the shell of the female, going around her again and again.

The female lays her white, hard-



Dotted portion of map shows distribution area of Desert Tortoise.

shelled oval eggs in shallow holes which she digs in the earth with her rather clumsy hind feet. The eggs are about one and a half inches in diameter. There may be as few as two and as many as nine of them; but the average is four or five. The eggs hatch in a little over three months. September and October are the usual months for emergence of the young.

When a young desert tortoise comes from its egg it is a small, almost round, replica of its parents, mustard yellow to light brown in color, with soft shell and measures only about one and a half inches in diameter. Hardening of the bony plates underneath the brownish scales of the shell does not take place until about the fifth or sixth year, or even later. Growth continues very slowly.

The period of greatest activity of desert tortoises is in spring and early summer when they may be seen wandering about in search of green food. As mid-day temperatures become high they go into their burrows or under rocks where it is cooler, remaining there until evening when they may emerge to forage. If no green food is available they may take to eating dry vegetation such as grass. Tortoises in captivity eat many kinds of green food, especially lettuce, of which they may consume unbelievable quantities.

When winter approaches, these chelonians dig underground burrows of considerable size and depth and into these they retreat. The temporary summer burrows go under ground only three or four feet but the winter tunnels may be 12 or 15 or even as much as 30 feet in length. Sometimes several tortoises "hole-up" together. In one instance, Dr. A. M. Woodbury of the University of Utah, found 17 in one winter den. While in hibernation they live on the fat stored in the body during the spring and summer feeding season.

Once a tortoise has made a burrow for itself it stays rather close to it, seldom traveling farther away than a quarter or half mile. I generally find these reptiles most plentiful in fairly high desert (2500 to 3000 feet elevation) and in the vicinity of large granite rocks such as occur in the Joshua Tree National Monument.

Tortoise numbers have never been great and now with the encroachment of man into their natural habitat they are gradually disappearing in places where once they were quite plentiful. In California it is illegal to remove them from their native habitat, but numbers of them are picked up by travelers and taken to their homes in towns and cities to serve as pets where many of them die from neglect or meet their end by being run over by automobiles.

My friend John Laughlin of the California Fish and Game Commission, tells me that a surprising number of these gentle creatures found wandering in the streets are fortunately brought by thoughtful people into the commission headquarters in Los Angeles. Several times each year whole truck loads of them are transported back to the far desert and turned loose in favorable places where natural food and shelter is available.

Man is the animal's greatest enemy. Next probably are the coyotes, ravens and hawks. All of these prey upon the young tortoises; the birds especially, during the period when they have young in their nests. The soft-shelled dollar-sized babies are particularly tempting morsels for predators; coyotes kill even 1/3 grown tortoises.

Frequently I find empty broken tortoise shells with all the soft parts of the body removed, presumably by hungry birds or mammals. Only the hard-shelled older individuals of large size can find complete protection within their bony armature. The sagacious resourceful ravens are said to take off into the air with baby tortoises held in their beaks and crack them open by letting them fall on rocks. I have not confirmed this by my observations, but knowing these birds as well as I do it seems entirely possible.

Should a tortoise by any chance meet injury to one or more of the bony plates comprising its carapace, or shell, the break is very efficiently, although slowly, repaired. Such a repair takes years to complete. A new horny scute and new piece of bone is slowly formed while the old horn and cracked bone is gradually pushed upward and shed. The repair is so neat that no sign of the injury remains.

There are about 40 species of land



Tortoise tracks reveal typical claw-like toes and long tail.
Photo by Harold Weight.

tortoises in the world, including those that have been exterminated by man within the historic period. Among living forms are some of the gigantic tortoises living on the Galapagos Islands. Fossil remains of more than a dozen land tortoises, some of them with shells fully six feet long have been obtained in India, France and North and South America. During the 16th and 17th centuries tortoises of monstrous size existed in large numbers on some of the islands in the Indian Ocean, but since they afforded a valuable source of food and could be kept alive on board ship their numbers were rapidly reduced.

Francois Leguat, writing in 1691, observed "there are such plenty of land-turtles in this isle (of Rodriguez), that sometimes you see a three thousand of them in a flock, so that you may go above a hundred paces on their backs."

The scientific name of our desert tortoise is *Gopherus agassizi*. The generic name *Gopherus* is taken from the Latin name for a gopher and was given because of the reptile's gopher-like burrowing habits. The specific name honors the great Swiss-born American naturalist, Louis Agassiz, who long studied turtles.

Hard Rock Shorty of DEATH VALLEY



Hard Rock Shorty leaned back in the rickety chair that adorned the lean-to porch in front of the Inferno store and lighted his ancient corncob pipe. A cloud of dust down the road announced the approach of a visitor.

Shorty struck another match and held the flame at the bottom of the over-size thermometer which hung on the wall over his head, and watched the mercury climb up the tube. The burned out match dropped to the floor as the stranger got out of the steaming car.

"Pretty hot today," the visitor

exclaimed as he approached the porch wiping his brow.

"Yep," admitted Hard Rock as he glanced up at the thermometer.

Then the newcomer saw the mercury reading, and gasped.

"But it'll start coolin' purty soon," Shorty assured him.

"Weather changes fast in Death Valley. I remember one day when Pisgah Bill set a dozen eggs out on the porch in the sun to hatch out a batch o' chickens. Then the weather changed all of a sudden an' a few days later when them eggs hatched they wuz all penguins.

"I reckon you'd better have some o' that anti-freeze stuff in your radiator," Shorty continued. "If you ain't, the clerk in the store'll sell you a can of it."

The stranger looked at Shorty, then at the thermometer again, and then rushed back to his car. All Shorty saw after that was the cloud of dust heading south as fast as the car would travel.



This photo of the aged Navajo woman and her young grandson was taken beside her hogan a few weeks before the incident told below.

The Story

Editor, *Desert Magazine*:

For the past three and a half years, my husband and I have lived at two different trading posts in an isolated section of the Navajo Indian Reservation. The past year and a half, my husband was manager at Inscription House Trading Post where we were the only white persons for 20 miles. This did not worry us as we soon made friends with our Navajo neighbors in spite of the fact that few of them spoke the English language.

Many of these people were destitute and we often took them food and clothing. One day I drove our pickup truck to take a box of groceries to an old blind Navajo, Millie Luther, whom I had heard was very ill. As I drove up to her hogan, the place seemed deserted. When I turned off the motor, I heard a weird chanting from the hogan and knew she was having a "sing." My experience that afternoon, waiting to deliver her groceries to her, prompted me to write the little poem which is enclosed.

INEZ H. GOSS

DESERT ART

By AMY VIAU
Santa Ana, California

Roseate dawns—and winds too strong
Spacious silence, fair days belong
To the desert. With moon-drenched sand,
Burning suns and unfurrowed land;
Whispering smoke trees, mountains tall
And low-brush shadows. From these, all,
Lure beats strong in the desert-heart
Melding its moods into precious art.

The Sing

By INEZ H. GOSS
Prescott, Arizona

No sign of life outside the hut
Which blends with muddy bank and
rut;
Within, the chant of weird refrain
Is muted by the falling rain.

Now comes forth an ancient One
Led by her devoted son;
Her feet and withered breasts are bare,
And March winds toss her graying
hair.

She looks with her unseeing eyes
Toward sodden hills and weeping
skies;
Lovelier in her memory
Than they appear to those who see.

The Singer folds his magic wares
And gently leaves her with his prayers.
The crone sinks down on the warm
dirt floor;
Her ills have vanished through canvas
door.

RESURRECTION

By KIT PAXTON
Tucson, Arizona

It cannot happen just by chance
That blossoms bloom on thorn'd tree
And Mariposa lilies dance.
It cannot happen just by chance:
Rebirth, oh desert, comes to thee
In flower fields, when rain falls free.
It cannot happen just by chance
That blossoms bloom on thorn'd tree.

SILVERSMITH

By LORNA BAKER
Los Angeles, California

A wide and knotted scarf of flaming red
Is draped with careless grace, about his
head.
His smooth and sinewed hand of copper-
brown
Guides carefully each tool and then sets
down
Bright symbols of an art that knew its birth
Before the white man came and found its
worth;
At last the matchless craft is set aside—
Goal of perfection reached. In silent pride
High tribute is accepted—all the while
About his mobile lips, there plays a smile
As fleeting as a breath upon the air
That makes one wonder if it had been there.

I saw him later, etched against the sky.
He stood on mountain bluff, his proud
head high,
And gazed across a land his fathers owned
Before the white man came. His dark eyes
shone,
Then, meeting mine, a sleeping hunger
blazed,
And branded in my heart, there lives that
gaze.
For, I, ashamed, saw in the sunset glow,
A naked soul—and not a Navajo.

DESERT WONDERLAND

By VIRGINIA L. BRUCE
Hemet, California

The wanderer found the summer's sun
Reflecting blinding heat
Across the endless rolling sands
That burned beneath his feet.

The autumn winds blew out the fire;
The winter rains were cold.
Then once again the wanderer came
To watch the spring unfold.

He looked with wondering awe across
The land of sun and sand . . .
It bloomed in wild abandonment—
A desert wonderland!

GHOST TOWN HOMESTEAD

By GLADYS B. MARSHALL
San Diego, California

Gnawed by the teeth of vengeful years,
Her sagging frame picked clean of paint,
The doomed house moans no said complaint
To grant winds that steal the tears
Night sheds on her and disappears.
She leans on buckling knees, this saint,
Who housed her wards without constraint—
Whose happy voices still she hears.
Though man may cleave her beams to parts
Her sanctuary is in many hearts.

On Strife

By TANYA SOUTH

The troubles of the heart have sacred
right.
Our every inner hunger, strife and
fight
Are stepping stones, and with fulfill-
ment rife
For an enlightened life.

I view man's desperation and his trial
As the important highlights of his
Fate.
They guide him to the things that are
worth while,
The spiritual state.

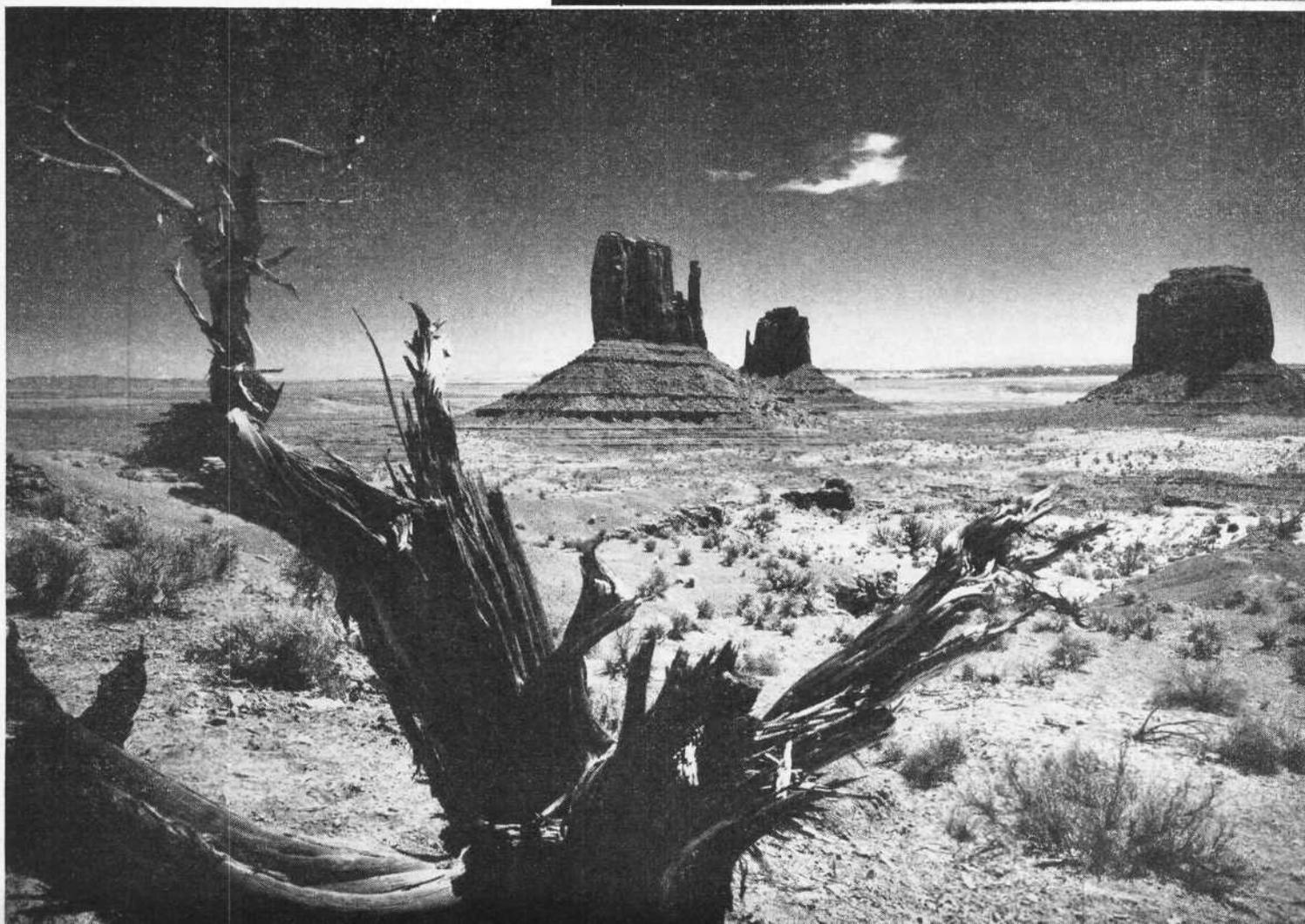
Prescott, Arizona

PICTURES OF THE MONTH

Bert Tallsalt, of Brigham City, Utah, won first prize in the March Picture-of-the-Month Contest, with this picture of "Grandmother Graymountain," taken at Navajo Mountain. He caught the age and wisdom of the Navajo, with an Argoflex camera, at f. 4.5, 1/200 sec.



This striking photograph of "The Mittens" in Monument Valley, Utah, won Hulbert Burroughs, of Tarzana, California, second prize in the contest. Taken with a 4 x 5 Speed Graphic, Schneider 90 mm. Angulon lens, Eastman Infra-red cut-film, 1 sec. f. 32 25A red filter.



HOME ON THE DESERT

When the Palo Verdes Bloom

By RUTH REYNOLDS
Tucson, Arizona

BEFORE THE end of May our desert spring will be on the way out; departing hastily, perhaps, at summer's insistence but in a blaze of glory. And not too figuratively speaking either. For the sun's blaze can be rather real now, and the desert's glory can be very real when it's cactus blossom time on the desert—and the palo verdes bloom.

When these two events coincide—spectacular is the word for it. Who would risk missing the show by spending May Sundays cooped up with a television set?

Some cactus blossoms may be a little reticent as yet if the nights have been too cool, and some of them may close for the day as the afternoon sun gets too hot. Among these are the saguaros' waxy white flowers that so formally crown the regal old giants.

The palo verdes, like other desert plants, have their good years and bad—growing not at all some years and blooming much or little according to their supply of drinking water. But even in the drier years the twigs have some flowering potential reserved from the previous season.

So these amazing trees are fairly regular with their exhibition. From shrub size to medium-tree size, grouped together or scattered widely, the palo verdes with their branches of lovely yellow bloom transform the desert-side much as the cherry trees, in white, transform areas of Japan or the city of Washington.

This year in Tucson gardens there should be many flowering six-year-olds, like the one in my garden that was planted in 1949, during a planting program promoted by the Tucson Palo Verde Festival's sponsors.

At that time all Tucson was coached on palo verde culture. Under the direction of Dr. J. J. Thornber, authority on desert flora, we learned to: Soak the seeds overnight in six inches of water poured over them boiling hot, then leave the wet seeds to smother another 12 hours on a wet paper towel, covered with a dry towel and a dinner plate, then plant them—several together—inch deep in foot-deep, soil-filled holes that measure 12 inches across—calichi permitting. Then water and wait, and after the seeds come up, eliminate all but one plant to a hole.

Now after six years of watering and

When it's cactus blossom time on the desert and the palo verdes bloom, it's the month of May—time to spend Sundays inspecting the springtime desert and weekdays coaxing growth in the garden. Perhaps the morning's friendly smile is the secret to successful desert gardening. Whatever it is, here are some ideas for radishes, okra and palo verde that can make your home on the desert even more enjoyable.

waiting, many young trees should be ready to bloom for the Palo Verde Festival, held in Tucson each May.

Originated by Mrs. W. A. Jackson 20 years ago, the festival has been observed ever since. But only within recent years has it become a citywide project, with civic and cultural groups and individuals all working together to stimulate interest in our golden gowned queen-tree.

On this occasion, the "green stem" in bloom is displayed on canvas, honored in song and verse, concert and lecture. And tours are conducted to its most beautiful show places on the surrounding desert.

All of which takes care of one or more of my May Sundays. The others will find my husband and me on private expeditions to discover, and revel in, spring-on-the-desert—while spring lasts.

We will drive out—about 40 miles northwest—to see for ourselves if the poppies are blooming on Picacho Peak. They have bloomed there in May, and I have seen them spread their flower-fire far up the rising slopes—covering the ground like a sheet of orange flame.

The poppies, though, do not have their good years and bad. Either it's their year or it isn't—depending on the undependable desert rains for which the seeds lie waiting, sometimes for several years.

So we drive out to look for flowers that are or aren't there. And another Sunday afternoon is pleasantly spent.

But May is not all Sundays. Other days dawn and an expedition to the home garden is in order.

If you are one of the gardening kind you know that the day should begin with a garden inspection tour, and begin quite early, while the outdoor air is morning-fresh and as yet only pleasantly sunny.

My husband has a theory that the radishes and tomatoes grow because Juan, our part-time yard man, and I have planted and watered them properly. Ted insists that it is not necessary to go out and beam ecstatically at the garden every morning and measure, as he puts it, the overnight growth of every radish.

I'm afraid my husband just isn't a gardener at heart. But he does like radishes, and I don't. So I suppose he is entitled to a few remarks on their culture—as long as he eats the whole crop, which he obligingly does. So far no indigestion has resulted—a miracle I attribute to my vigils kept at the radish row.

That he eats the whole crop, though, is not the whole truth. I help him with the tops.

Have you tried young tender radish tops in your green salads? Or mixed a few with spinach, chard or other greens to be cooked? There grows no better leaf for adding a tangy touch of flavor. And what fun to have them fresh from your own garden. And the radish, until the weather gets really hot, is a sure-fire hit there.

Radishes are followed by okra. It likes hot weather. And it is as easy to grow as—the radish. Planted in May, it will thrive in a desert garden if given half a chance, and bear abundantly from July to frost. However since there is much prejudice against this fine vegetable, let's leave it for the present and go on with the garden tour.

The last stop is at the palo verde tree—the six-year-old one in my garden. It has bloomed three seasons now and is my pride and joy, though it is by no means a perfect specimen.

It belongs to the Mexican variety, *Parkinsonia aculeata*, said to be faster growing and more easily shaped than either the blue, *Parkinsonia microphylla*, or the foothill type, *Cercidium floridum*. The latter is a fairly thornless tree, armed only with thorn-tipped branches. This might have something to do with the fact that it never quite achieves the density of the others.

Palo Verde adapts itself readily to cultivation and irrigation. In the silt soils of the Colorado River basin and in Imperial Valley, California, where there is underground moisture it grows a prolific crop of seed pods every year. Many years ago the Women's Ten Thousand club of El Centro sponsored a project for planting it in the street-side parkways. But palo verde's chief virtue is golden blossoms. It is a wild-

ling that thrives on sunshine and leaves much to be desired as a shade tree. Hence in recent years most of the palo verdes in El Centro have been replaced by ornamental trees with dense foliage.

My tree is nice and tall—about 15 feet now and almost strong enough to stand upright under the weight of its few branches. That it has so few branches disappoints me, although that is not entirely the tree's fault. I have

pruned off the lower ones to make it more tree-like. Its somewhat anemic condition is probably my fault too—for planting it on a calichi bed and then trying to force its growth with too much water.

Still, with enough patience and only enough water, I hope to sit, one day, under a gloriously festive tree in my own back yard—when the palo verde blooms.

Desert Plants in the Garden . . .

Recently, *Desert Magazine* invited its readers to tell of their experience in the transplanting and propagation of native desert perennials and annuals in the home garden. Many letters have come, both from desert dwellers and from garden hobbyists on the coast. These letters are so informative we are passing them along for their interest to all the gardening fraternity.

Chuperosa Planted . . .

Phoenix, Arizona

Desert Garden Editor:

We have tried domesticating several varieties of desert plants and have had good success with one. In December, 1947, we found a chuperosa (*Beloperrone californica*) that had been dug up and tossed aside in road repair. As it seemed to have no true tap root we split the plant, my friend taking one half and I the other. She planted hers on the south side of the house where it was in full sun and it lived only a short time.

I had noticed they were in more sheltered places and out of the afternoon sun, so put mine on the east side of a garage, giving it an old wagon wheel as a support. It has grown and there are several seedlings. These are near a fence nearly 30 feet to the north and still sheltered from the afternoon sun.

The main plant blooms almost the whole year around and attracts many humming birds. I prune the plant rather vigorously when it starts getting out of bounds. This is easily done by snapping the twigs off where they are too long, as it is very brittle. It gets water only about once in two weeks when we irrigate. If water is withheld longer, it just stops blooming until it does get some. The frost has not hurt it until recently and then only the outer twigs were killed. It is a clean plant and well worth cultivating.

About 15 years ago we gathered seeds from the fiddleneck. I planted them in a bed to the east of the house and to the west of our neighbors. They had only filtered sunlight at mid-day and made a brave display among daffodils and Dutch iris. They reseeded themselves and increased in number yearly. On finding that I was allergic to them, we took them out. It was

several years before they were completely eradicated.

Last summer, a friend gave me four small plants of western jimson. Three grew well and had dozens of blooms every evening through July, August and part of September. These were on the west side of a fence and in full afternoon sun. They grew to be about three feet high and as wide across. I have just pruned back the frosted twigs and new shoots are coming from the roots.

MRS. KATHERINE O. PIERSON

Desert Replanting . . .

San Diego, California

Desert Garden Editor:

I have done a little experimenting with the taming of desert plants.

We are building a cabin in Cranebreak Canyon on the Imperial Highway six miles south of Agua Caliente Springs. The land had been filed on by someone before us who had cleared it of most native plants except ocotillo, creosote and smoke trees. Being a plant lover, my next step was to re-plant as much native plant life as I could. I found a nursery near Escondido with some desert plants, but not enough. I bought some desert holly, juniper, palo verde and goat-nut which have been in more than a year now and are doing fine.

My next course was to raise some plants from seed. I gathered seed from palo verde in Arizona, desert willow and ironwood. They all germinated quite fast in hot beds in San Diego. They were transplanted into gallon cans and last summer were all planted on the desert. Some are now from six to 12 inches high.

Other plants, such as tamarisk, cottonwood, desert willow and ocotillo, will root in sand from cuttings if kept wet continually. Plant ocotillo in long

poles, the others when six or eight inches high.

I discovered why they call these small tracts Jackrabbit Claims. It is because the jackrabbits claim everything you plant, from smoke trees to cacti. I now put a screen around everything I plant.

The elephant tree is my next adventure. I missed gathering the seeds this year, being anxious to complete our house. But I will get them next year.

WILBER H. WIES

. . .

How To Transplant . . .

Mecca, California

Desert Garden Editor:

The adaptation of native desert shrubs to domestic gardens can be done with care. A number of us in the valley have had wonderful success along these lines. Here is the way we do it:

First, find the smallest plant, whether it is desert holly, smoke tree, palo verde or smaller types. Then dig way down, perhaps two to four feet, to get as much of the tap root as possible—the more the better. When transplanting them into your yard, dig holes as deep as the roots, as jamming the roots in will kill them. Next, soak them with water and keep them wet until you see that they have adapted themselves to their new home. While desert plants can get along with very little water, they grow much faster and are far more pretty if kept well watered.

I have even had good luck transplanting that very delicate desert lily. We often call it the Easter Lily of the desert. Although difficult to transplant, I saved two of six bulbs we dug up while they were blooming. Normally, one should wait until after they have bloomed to dig the bulbs, but land-leveling crews would have destroyed these if I had not reached them first.

MRS. JAMES L. PACE

. . .

Desert Specialties . . .

Escondido, California

Desert Garden Editor:

For the past 25 years I have been working with growing natives in cultivation and now have a nursery where I specialize in these plants.

In connection with my nursery, I have a demonstration garden to show how the plants look when planted and growing in a natural setting.

My garden is open to the public daily without charge, except during July and August when it is open on weekends only. To reach the garden, turn west from Highway 395 on 17th Avenue in Escondido and follow the signs to Gander Nursery.

FRANK F. GANDER

LETTERS

Time for Thanks . . .

Needles, California

Desert:

Members of many gem clubs, individual rockhounds and desert enthusiasts have, in past years, enjoyed the genuine and sincere hospitality of the Craik brothers, Jesse and Frank, at their Lost Arch Inn in the Turtle Mountains. They will be grieved to know that on a recent visit to Pasadena Jesse Craik suffered a heart attack. He is now a patient in the General Hospital in Los Angeles and is paralyzed and unable to write or speak.

This seems to be an opportune time for many of us who have accepted the hospitality he so generously gave to repay him in a small way by letters of cheer and encouragement or visits to the hospital by those who are in the vicinity. For one who has loved and lived on the desert as long as Jesse Craik, the hours he must spend confined in a hospital must seem unending and I am sure he would welcome these gestures.

This information should be of interest to many *Desert Magazine* readers.

CELIA E. BECKER

Member

Needles Gem and Mineral Club

Lost Mine . . .

Rialto, California

Desert:

I am a reader of your magazine and have been reading the lost mine accounts. I know of a lost mine that was found in the Cactus Range, 30 miles east of Goldfield, Nye County, Nevada. An elderly man by the name of Ward found it between the Cactus Spring and the Antelope Spring on the east slope of the Cactus Range. The two springs were eight miles apart. Ward found and developed a spring known as Ward's Spring.

He found some rich silver ore in this area. My brother was at Cactus Springs (we have some silver property there) and Ward showed him his samples of ore. Ward went into Goldfield and had his samples assayed. They ran \$300 a ton at 50 cents an ounce (it is now 90 cents an ounce). He was so happy that he got gloriously drunk. It was winter and he started to his camp on the outer edge of Goldfield. He fell down and stayed there. They picked him up the next morning, carried him to the hospital and he died before night.

People from San Francisco, who

were staking him, came up and spent some time trying to find it, my brother hunted for it, others hunted for it, I've looked for it. It is still a lost mine.

I am 76 years old but I'd still like another try at finding that mine.

H. C. BAILEY

More Vandalism . . .

Banning, California

Desert:

We have a small cabin on the desert, located about 20 miles off the main highway. At the end of an outing last fall we left the cabin unlocked as has always been our custom. Upon our return about a month later we found our entire food supply had been cleaned out.

Upon leaving this time we placed a padlock on the door. The answer to that was finding the door battered down. Nothing taken then but a few cooking vessels. We repaired the door and left it unlocked except for a wire in the hasp to keep the door from blowing open. From then on everything was O.K. until last month, when we found the door battered off again and the cabin completely stripped of all the contents — bed, cook stove, dishes, water containers with water, everything taken but the cabin shell.

This time we just left the door off

altogether, as we may not even find a cabin shell left on our next trip out.

Do we have company or are we alone having this experience?

ROBERT M. REID

Twisted Geography . . .

Memphis, Missouri

Desert:

In the article "Three Tries to the Top of the Whipple Range" (*Desert*, February, 1955), there is a bad twist in geography. This is noted in the statement: "They (Lt. Whipple's party) were surveying for a railroad which was roughly to follow the 35th parallel from Fort Smith, Missouri, to the Pacific Ocean."

In Foreman's *A Pathfinder in the Southwest*, the map showing Whipple's complete route places Fort Smith in its true location on the Arkansas-Oklahoma boundary line—at the junction of the Arkansas and Poteau rivers. Likewise, the text (page 27) confirms this location. This is more than 100 miles south of the nearest point in Missouri.

L. R. GRINSTEAD

Reader Grinstead is right. Lt. A. W. Whipple's explorations began at Fort Smith, Arkansas, about 80 miles south of the Missouri border.
—R.H.

Picture-of-the-month Contest . . .

May is a month for outstanding photographic studies of the deserts of southwestern United States. Desert denizens are out of hibernation, cacti and high desert wildflowers are in bloom, the whole region girds itself in final full glory before the quietness of summer settles over all.

To the desert photographer, this season presents the challenge which piques his enthusiasm to capture, as accurately as possible, the total beauty of the season. The best of these artistic studies are material for *Desert Magazine's* monthly Picture-of-the-month contests and winners are chosen from those entries which most nearly represent the flavor of the desert.

Entries for the May contest must be sent to the Desert Magazine office, Palm Desert, California, and be postmarked not later than May 18. Winning prints will appear in the July issue. Pictures which arrive too late for one contest are held over for the next month. First prize is \$10; second prize \$5. For non-winning pictures accepted for publication \$3 each will be paid.

HERE ARE THE RULES

- 1—Prints for monthly contests must be black and white, 5x7 or larger, printed on glossy paper.
- 2—Each photograph submitted should be fully labeled as to subject, time and place. Also technical data: camera, shutter speed, hour of day, etc.
- 3—PRINTS WILL BE RETURNED WHEN RETURN POSTAGE IS ENCLOSED.
- 4—All entries must be in the *Desert Magazine* office by the 20th of the contest month.
- 5—Contests are open to both amateur and professional photographers. *Desert Magazine* requires first publication rights only of prize winning pictures.
- 6—Time and place of photograph are immaterial, except that it must be from the desert Southwest.
- 7—Judges will be selected from *Desert's* editorial staff, and awards will be made immediately after the close of the contest each month.

Address All Entries to Photo Editor

The Desert Magazine

PALM DESERT, CALIFORNIA

LIFE ON THE DESERT

From muddy Luzon to the broad reaches of New Mexico, the Hoffmans have begun a new life — one filled with adventure and grandeur of the Southwest.

By HAL HOFFMAN

FOR NEARLY four years we lived in the mountains of northern Luzon in the Philippines. On the weather map our locale was described as having no true dry season. Most anyone will agree that a rainfall averaging 125 inches a year is on the generous side. It may have been purely psychological but there were times when the mud seemed muddier than ordinary mud. Except for a few uncertain weeks in the year the humidity never broke off its warfare with our fungus-susceptible leather goods, book covers, camera lenses and clothing. By the time we sailed for the United States rain no longer intrigued us.

Back home we could work up no enthusiasm for a cold damp winter. All things considered, the dry, sunny Southwest appealed to us.

Rather arbitrarily we limited our choice to southern New Mexico. Reconnoitering southward through that State we finally came to Las Cruces in the heart of the Mesilla Valley and decided that this was it. Las Cruces was small enough, yet near a city of good size. The state agricultural college was nearby at Mesilla Park, while White Sands Proving Ground, a likely place of employment, was on the other side of the Organ Mountains.

Possessing a minimum of household furnishings we decided that a one-package home in the form of a trailer would be the best way to get started. After establishing our trailer home, we found the employment we desired, entered our three small children in kindergarten and elementary school, and, among other things, waited for a sunny, dry winter to come.

We were not disappointed. Looking back upon nearly a year in this sunland, several life-size experiences can be evaluated. Taking practical considerations first, we found that, despite the misgivings of our parents and friends, a medium-length trailer provides a feasible home, even for a family which includes three children with ages ranging from four to eight years. Nearly every day has been an outdoor play day for the children.

We like our location, one block off the highway at the edge of the city limits. Eastward across our driveway, unfenced, is a large cotton field. New Mexico provided our first experience with growing cotton and we watched with curiosity as the bolls opened fluffy and white. Cotton picking day in the

field was a notable first-time event for parents and children alike.

Best of all, straight away from and 20 miles beyond the cotton field stand the Organ Mountains — spires lifted heavenward from the desert flats. Many artists have tried and most have failed — to capture the wondrously soft, ever-changing red-purple glow of sunset on the Organs. My wife and I have scaled lofty Long's Peak in Colorado and proud Fujiyama in Japan. We know that to challenge the intimacy of great mountains is a memorable experience. But at setting of the sun our Organ Mountains do not lure us with awe-inspiring might. Unlike many of the great peaks which clothe themselves in secret robes of mist at approach of night, the Organs frequently shine forth in brightest grandeur at sunset.

High clouds! Hushed wind!

Hard, clean heat on the desert floor;

Organ pipes: Purple light;

Tender close of day once more.

The mass of rocks which compose the Organ Mountains depend upon the sun for their open-faced radiance. Yet, there are rocks in the Southwest which have inherent beauty of imprisoned color and pattern, set by Nature millions of years ago.

Rockhounds, a friendly crew of nature lovers, band themselves together in the Las Cruces area as elsewhere in the United States. Agate, turquoise, opal, petrified wood and all the other choice stones of the Southwest are objects of private and corporate search by these rock hunters, who will cut and polish their finds. Already our children are confirmed, though very amateur, rockhounds. For them the desert and the mountains are still a vast, uncharted region for exploration and discovery.

Like so many other newcomers to the desert we were astounded by the myriad desert plants and flowers which flourish in spite of searing heat, infrequent showers, and flying sand. The garden-like spacing of desert flora is reminiscent of the work of some master unseen hand. For us all manner of cacti are intriguing examples of Nature's ingenuity in the face of heavy odds. It was not long before we yielded to the temptation and transplanted some of them in our front yard. But before that monarch of the desert, the saguaro cactus, we almost stand as unbelievers. To think that he could grow so tall and live so long!

The story of our first year in the Southwest could be enlarged upon. In

less than a year our children have traveled through a fairyland of wonders. They have rolled in glee down the dunes of White Sands Monument. They have puddled in mountain snow, for the two younger ones an unknown experience. They have trudged in near-reverent silence through the nether world corridors of Carlsbad Caverns. They have sighted the far reaches of Grand Canyon, stood on the brink of Meteor Crater, wondered at the ancient Indian petroglyphs in Arizona's Petrified Forest and meandered through the restored cliff-dwellings at Walnut Canyon. What a collection of rich memories for future years!

We soon discovered that the Southwest is filled with people from all over the United States. Some old-timers who migrated here earlier than we, assert with considerable conviction that the Southwest puts a spell of enchantment upon those who come to live within its far flung borders. They say that even those who leave are inevitably drawn by that spell to return once again. Perhaps so!

• • •

DATES ANNOUNCED FOR DEATH VALLEY PROGRAM

Dates for the 1955 annual encampment of California's Death Valley '49ers are to be November 10, 11, 12 and 13 according to Dr. Thomas Clements, president. In general, the four-day program, which is open to persons regardless of membership in the organization, will follow the same pattern as last year except that the first day's events, Thursday, November 10, will be limited to a campfire program in the evening.

Details of the Encampment were discussed at two recent meetings of the board of directors, at Kernville and Trona. Artists', Authors' and Photographers' breakfasts, to which the public is invited, are to be held Friday, Saturday and Sunday mornings.

Since November 11 is Veterans' Day, tentative plans are being made for the American Legion and possibly other veterans' organizations to participate this year.

The '49ers are working for the success of a measure introduced by Senator Charles Brown which would allot \$350,000 of California's off-shore oil royalties for the building of a museum in Death Valley.

MINES and MINING

Washington, D. C. . . .

An even greater boom for uranium mining was seen in the announcement from the Atomic Energy Commission of plans to spend almost a half million dollars in the next three years to develop atom power plants and atom engines from atomic ore. Private firms will build plants and handle research and development programs under government contract. Most governmental and private experts estimate the first really competitive nuclear power plant will begin operation sometime in the early 1960s. *Pioche Record*

Yuma, Arizona . . .

Uranium rushes in the Yuma area have started, following discovery of top grade uranium just north of Wellton, Arizona, and other uranium strikes near Ogilby, California, 18 miles north of Yuma. Atomic Energy Commission scientists labeled the Wellton discovery as one of the richest in Arizona. It is eight miles north of Wellton in the Muggins Mountains. Best of the Ogilby strikes is in a vein of copper ore in the tunnel roof of the abandoned American Girl gold mine, last worked in 1914. *Yuma Sun*

Phoenix, Arizona . . .

Arizona's chrysotile asbestos deposits—only known sources in the United States of low-iron asbestos needed for electric cable coverings—are described in a new Bureau of Mines report. The report, one of a series covering mineral resources of the U.S., discusses most of the asbestos deposits in the central Arizona region, including brief descriptions of asbestos mining and milling methods. A copy of I.C. 7706, "Chrysotile Asbestos Deposits in Arizona," by Lincoln A. Stewart, can be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pennsylvania. *Mining Record*

San Francisco, California . . .

Southern Pacific Co. has started an exploration program for metallic and nonmetallic minerals other than oil and gas, company officials announced. The detailed survey will cover about five million acres of the company's land and reserved mineral rights in California, Nevada and Utah. The intensive program will require eight years and will follow a pattern of geological investigation with the use of geophysical and other modern mineral prospecting procedures. *Mining Record*

Pioche, Nevada . . .

High grade manganese ore is being produced regularly at the South Paw mine in the Irish Mountain district of the Pahranaagat Valley in Lincoln County. The ore is being shipped via Caliente to the government stockpile at Wenden, Arizona. Running about 40 percent manganese, the ore began leaving the area at the rate of two carloads a week as winter weather broke. *Pioche Record*

Virginia City, Nevada . . .

The famous old mining camp of Rawhide, Nevada, came back into the news with reports of a rich tungsten strike just south of the nearby Nevada Scheelite Mine. Clarence A. Thorne of Reno, the discoverer, estimates 100,000 tons of ore in the strike. Preliminary assay returns show 3.2 percent scheelite. *Territorial Enterprise*

Socorro, New Mexico . . .

The new manganese mill located approximately eight miles south of Socorro was completed late in March. Built by the Manganese Company of Arizona, the mill is among the largest of its type in the world. *Socorro Chieftain*

Globe, Arizona . . .

A new uranium ore-buying station and sampling plant will be established by the U. S. Atomic Energy Commission at Cutter, Arizona, eight miles east of Globe in the south central part of the state. A site has been acquired by lease from the San Carlos Apache Tribal Council and construction of the facility is due to be completed in May or June. The station will be operated for the Commission by the American Smelting and Refining Company. *San Juan Record*

San Francisco, California . . .

A report on the Ubehebe Peak quadrangle, containing the old Ubehebe mining district in Inyo County, has been released, according to Olaf P. Jenkins, Chief of the Division of Mines. Entitled "Geology of Mineral Deposits in the Ubehebe Peak Quadrangle, Inyo County, California," the report is number 42 in the Division's Special Report Series. It deals particularly with the lead-zinc-silver, gold, copper and tungsten mines. The 63-page illustrated report, bound in tan paper, is sold at \$2.00 per copy, plus three percent tax for California residents. Copies may be ordered from the Division's San Francisco office, Ferry Building.

Monticello, Utah . . .

Production has begun on what engineers have called "ten million dollars worth" of uranium at the Dark Canyon Uranium Company's mine located about 85 miles from Blanding and 25 miles from Hite, Utah. Area of operations comprises 31 claims or 20 acres each for a total of 620 acres, largely concentrated in one mountain. Uranium from this discovery has averaged from .25 of one percent to three percent. *San Juan Record*

Ely, Nevada . . .

Nevada Mines Division of the Kennecott Copper Corp. has announced discovery of a new million-ton copper ore body in development of the \$12 million Deep Ruth underground mining project in White Pine County, Nevada. The new ore runs 23½ pounds of copper to the ton. It was named the Minnesota High. Local citizens hailed the discovery as the greatest mining development in White Pine County since the start of the famous Copper Flat (open) Pit at Ruth, Nevada, in 1908. *Pioche Record*

Socorro, New Mexico . . .

The pamphlet "Santa Fe, New Mexico: Two billion years of earth history—as seen in half a day" has just been released by the New Mexico Bureau of Mines and Mineral Resources. The booklet is the first in a series of popular guides designed for the average tourist and describes the geological history of the area. Copies are available from the office of the Bureau of Mines, a division of the New Mexico Institute of Mining and Technology in Socorro. *Socorro Chieftain*

TRUE OR FALSE ANSWERS

(Questions are on page 10)

- 1—True. 2—True. 3—True.
- 4—True. 5—True.
- 6—False. The Chuckawalla is harmless.
- 7—False. Canyon wrens are heard quite widely over the Southwest.
- 8—False. *Death Valley* in '49 was written by William Lewis Manly.
- 9—False. Uranium is always found in conjunction with other minerals.
- 10—True. 11—True.
- 12—False. Many Joshua trees grow in Nevada and Arizona.
- 13—False. The door of a hogan always faces the east.
- 14—False. Headwaters of the Little Colorado are in the White Mountains of Arizona.
- 15—False. Pauline Weaver was a scout, prospector and trapper.
- 16—True. 17—True.
- 18—False. The Mohs scale is used to classify the hardness of minerals.
- 19—True.
- 20—False. Fairy duster is a perennial shrub.

Here and There on the Desert...

ARIZONA

Wickenburg Gets Locomotive . . .

WICKENBURG—Establishment of a museum has loomed on the Wickenburg horizon and a 1906 steam locomotive, the town's first fire-fighting equipment — a horse-drawn ladder, hose and bucket wagon—and an old gold stamp mill appear to be the first museum pieces. The locomotive, latest addition, came from the Santa Fe Railroad. A 140-ton engine, complete with tender and measuring 65 feet over all, it labored on western rails during the early days, ending up in the railroad graveyard at Las Vegas, New Mexico. At present it will be placed in Stone Park. *Wickenburg Sun*

Salt Water Made Drinkable . . .

BUCKEYE—A fresh-water making plant is being operated at Buckeye for the U. S. Department of Interior, under contract by Ionics, Inc., Cambridge, Massachusetts. Salty water is made fresh in the plant by use of the principle that direct current electricity will drive positive ions of salts one way and negative ions another way. Salty water is taken from the ground with 4000 parts per million of dissolved salts, run through the apparatus, and used for irrigation at 350 to 500 parts per million, a good drinkable water. Costs are still too high to use commercially as yet. *Phoenix Gazette*

Subagencies Due Soon . . .

WASHINGTON — Five new sub-agencies for the Navajo Reservation will soon be established, Secretary of the Interior Douglas McKay has announced. The Navajo area covers about 15½ million acres in Arizona, New Mexico and Utah. The five headquarters will be at Tuba City, Arizona; Shiprock, New Mexico; Crownpoint, New Mexico; Chinle, Arizona; and Fort Defiance, Arizona. The first three are due to be established by June 30, while the latter two will be set up in late summer or early fall. *Phoenix Gazette*

Twig Figurines Mystify . . .

FLAGSTAFF — Split-twig figurines of animals, fashioned of willow and sumac, continue to baffle experts, according to Malcolm Farmer, assistant director of the Museum of Northern Arizona. What was their origin and what was their meaning? are questions that are still unanswered. First of the figurines were found in 1933 by a group of Civilian Conservation Corps workers in a cave on the north rim of Grand Canyon. Some were found about the same time in Sycamore Can-

yon. Others were found at Vasey's Paradise in Marble Canyon in 1934 and more recent finds were in the Redwall limestone in Cremation Canyon below Yaki Point at Grand Canyon. They have an estimated age of from five to 10 thousand years. *Cococino Sun*

No New Land Entries . . .

WASHINGTON—The Interior Department policy is to continue to "reject present and future applications" for desert land entries in Arizona, according to Interior Secretary Douglas McKay. The policy is the result of a conflict between Arizona and federal laws whereby Arizona allows late settlers as much right to underground water as earlier settlers. The Federal desert land act requires that a settler must have permanent use of enough underground water to irrigate all of his farm. Under Arizona law a later settler could conceivably drain an earlier settler dry and therefore further desert land entries will be rejected until Arizona passes a law making the percolating water subject to right of prior claim, said the Department's decision. *Phoenix Gazette*

CALIFORNIA

Salton Sea Rises . . .

EL CENTRO—Imperial Irrigation District reported recently a rise of 8.4 inches in the Salton Sea during the past



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12 months. The sea stood at a minus 234.30 feet on February 28, compared with minus 235 feet a year ago. Engineers have estimated that fluctuations will bring the sea to an eventual level of minus 220 feet. *Imperial Valley Weekly*

Earp Purchase Cancelled . . .

BLYTHE—The *Palo Verde Valley Times* has reported that a planned purchase of the town of Earp, California, by the Colorado River Indians will not be consummated. No reason for the change in plans was given. The Indian Tribal Council had approved purchase of the town for \$49,000 from Francis Allen. The town covers eight acres, has a post office, grocery store, gas station, 20 tourist cabins, three houses and a water system.

Shoreline Expansion Due . . .

SACRAMENTO—Salton Sea State Park will stretch 20 miles along the shore of the desert sea when all proposed additions are completed, the California Division of Parks and

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REAL ESTATE

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MISCELLANEOUS

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

Beaches has announced. Almost 15,000 acres of shore line will be added to the park, plus another 5140 acres now held by private owners. *Desert Sun*

Bill Protects Burros . . .

SACRAMENTO—Two year extension of the prohibition against killing undomesticated burros, with an added provision they could not be captured as pets except with special permission, is the goal of a bill before the California legislature. Wild burros have been killed for cat and dog food. The measure has been approved by the Senate Fish and Game Committee, although it is opposed by William P. Dasmann of the Department of Fish and Game. *Desert Star*

Hunter's Alibi Tops . . .

INDEPENDENCE—When Department of Fish and Game Warden Jack Roof of Lancaster saw a car driving along a road with the hunter holding his gun outside, he grew suspicious. Asked how come, the hunter explained: "Well, I know it's against the law to have a loaded gun inside the car, so . . ." Didn't work! Citation issued. *Inyo Independent*

Research Station Highest . . .

WHITE MOUNTAIN—The world's highest research station will be established this summer atop White Moun-

PAN GOLD: \$1 for 75 panning areas in 25 California counties. Geological formations, elevations, pertinent notes. Panning pans \$2.75, \$2.25. Leather nugget and dust poke \$1. Fred Mark, Box 801, Ojai, California.

URANIUM MAP of Southwest. Geiger counters, scintillators, snoopers, \$29.95 up. Free catalog, or better, send \$1.00 for authentic uranium map of Southwest Desert and catalog. Harry's Geiger Counters, 360 So. Hawthorne Blvd., Hawthorne, California.

OCOTILLO WELLS, HIGHWAY 78. Will deed free to responsible party, 200 Feet Highway frontage 300 feet deep, about 1½ acres, who will drill well, build rentals, tennis courts and pool. Come and see us. Rogers, Box 86, Del Mar, Calif.

AGATE MARBLES are again available. Genuine old fashioned ones. Small size \$1.00. Medium size \$1.25. Large size \$1.50. Genuine buckskin marble bag \$1.00. California residents add 3% tax. Satisfaction guaranteed. Deslie's, 282 N. Palm Canyon, Palm Springs, California.

FOR SALE—Bargain. A group of four (4) mining claims with millsite, two (2) good wells. Two miles from Searchlight, Nevada, on River Road. Dr. J. Lenninger, 1141 N. Vermont Ave., Los Angeles 29, California.

WANTED—Dried decorative seed pods in any quantity. Send prices and samples. Banner Queen Ranch, Julian, California.

WANT TO become acquainted with another lone young woman interested in desert treks this spring. Phone Lynwood, California, Newmark 27733.

tain, near the California-Nevada border, at the 14,242-foot level. From this scientific laboratory University of California researchers will be able to trap cosmic radiation from outer space, view astronomical sights without being hindered by lower atmospheric debris and keep a better check on weather conditions in the upper air. *Inyo Independent*

New Trails Established . . .

TWENTYNINE PALMS — Addition of new natural history trails at the Joshua Tree National Monument has been announced by Samuel A. King, Monument Superintendent. Plant exhibits are identified by markers along the trails. Explanatory leaflets describing the plants and shrubs are located in containers at Indian Cove, center of campground, near parking area; Cap Rock, Joshua Tree and Lost Horse Valley roads; and Cholla Gardens, Pinto Basin road. *Desert Trail*

Wildflower Show May 7 . . .

JULIAN—The ladies of Julian, a mountain village 60 miles west of San Diego, will don old-fashioned costumes for their roles as hostesses in the 29th annual Julian Wildflower Show May 7 to 29. One of the most unique flower shows held in California, it features about 2500 different specimens of wildflowers gathered within a radius of 10 miles around Julian. Fresh flowers are placed on display each day. Approximately 10,000 persons attend this show annually.

NEVADA

Lake Mead Low . . .

BOULDER CITY — Water in Lake Mead is at its lowest point since the lake was forming in 1938 and was expected to drop another five feet before reaching the turning point. Officials of the Bureau of Reclamation's river control office at Boulder City said the surface level in mid-March was 1094.80 feet above sea level and still going down. Normal level is 1200 feet. They said the receding lake level won't stop until inflow from runoff exceeds that of the outflow through Boulder Dam. *Pioche Record*

Joint Water Pact Sought . . .

WASHINGTON, D.C. — Congressional approval of a plan to allow California and Nevada to sign a compact for distribution and use of Sierra-Nevada waters supplying both states has been sought by senators from the two states. The compact concerns directly the Truckee, Carson and Walker rivers, Lake Tahoe and all tributaries. Need for water storage reservoirs and power plants is said to be the purpose of the action. *Gardnerville Record-Courier*

Cloud Seeding Legal . . .

CARSON CITY — Cloud seeding is now legal in Nevada following the signing of two measures by Governor Charles H. Russell. The first measure allows for cooperative agreements for weather modification operations while a second gives the counties the right to budget funds for cloud seeding purposes. Cloud seeding programs are expected to alleviate Nevada's water shortage. A rain-making agreement has been entered into by the Nevada State Cloud Seeding Committee and the Water Resources Development Corporation of Denver and actual cloud seeding operations have been started in several Nevada counties. *Wells Progress*

Ichthyosaur Site Probed . . .

CARSON CITY—Work has started in the second season of exploration of the ichthyosaur site near Lone, as excavating and sand blasting crews began operations. Prior to this season 14 huge ichthyosaurs have been uncovered at the site. Plans to create a Nevada ichthyosaur park in Nye County have also been proposed. *Fallon Standard*

NEW MEXICO

Drought Answer Seen . . .

SANTA FE—One possible answer to the long drought period which has plagued New Mexico was advanced by State Senator I. N. Curtis of Quemado. Appearing before both houses in Navajo regalia, Sen. Curtis said the drought was caused by the present yellow state flag, a yellow flag denoting quarantine. He proposed a red, turquoise and white flag. *New Mexican*

Grants Growing Fastest . . .

GRANTS — Grants was rated by the United States Chamber of Commerce as the fastest growing town in the nation during a majority of months in 1954, it was announced. Postal figures now show its size to be 6000 persons. With a population of 2500 in 1952, the town has grown 140 percent since that date. *Grants Beacon*

Statue Honors Indian . . .

GALLUP—A huge statue of granite and steel, higher than the Statue of Liberty, is planned for a red rock bluff east of Gallup as part of a \$9 million memorial to the Indian. The statue, sponsored by the Memorial to the American Indian Foundation, Ann Arbor, Michigan, will be 250 feet high. Included at the memorial will be an amphitheater seating 30,000 where the annual Intertribal Indian Ceremonial will be held and where daily Indian dances will be staged during the tourist season. A museum is also planned for the site. Fund drive for the project is now under way. *Alamogordo Daily News*

Boxes for Fines . . .

SANTA FE—The yellow boxes installed in the business section of the city in which parking violators can deposit their one dollar fines appear to be working out satisfactorily. During the first month of operation the boxes collected \$139 for 139 overtime parking offenses. *New Mexican*

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New Mexico Water Critical . . .

SANTA FE — February brought more rain and snow to New Mexico but 1955 is still shaping up as the most critical year of the long drought period for New Mexico's rich Rio Grande Valley. W. F. Resch, project manager for the Rio Grande in New Mexico and Texas, said he may have to close Elephant Butte and Caballo reservoirs during May. He called water conditions "the most critical of any time during the drouth period." *New Mexican*

UTAH

Paiutes Enter Industry . . .

WASHINGTON — The Bureau of Indian Affairs has notified Sen. Arthur V. Watkins of Utah that five Utah Paiute Indians have been approved for

relocation in Los Angeles where they will receive training for jobs with private industry. The senator said this was the first step in a program to take Indians from uneconomic lands in the state. *Salt Lake Tribune*

Historic Site Planned . . .

Plans to establish a National Historic Site at Promontory, Utah, scene of the Golden Spike ceremony when the transcontinental railroad was completed, are now under way. A Golden Spike project committee is discussing the plan with the National Park Service and representatives of the Union Pacific Railroad company and Southern Pacific Railroad. *Box Elder News*

Pigs Get Limit . . .

BRIGHAM CITY — Residents of Brigham City are now limited to two pigs apiece and in some areas pigs are outlawed altogether. The City Council recently approved a new ordinance eliminating hog raising in the business districts and limiting two pigs per family in the rest of the city, adding that pig pens must be kept unoffensive. *Box Elder Journal*

Watering Trough Gone . . .

SALT LAKE CITY — A historic granite watering trough located on the Salt Lake City and County Building grounds served up its last drink recently as the relic was added to the Pioneer Memorial Museum's collection. The trough was donated to the

city by the National Humane Alliance during the period when horses were the main mode of travel. *Salt Lake Tribune*

Biologists Capture Shrew . . .

SALT LAKE CITY—Two University of Utah biologists have recently reported capturing a small mammal of the rare shrew family which has been seen only six times in the world. Dr. Stephen D. Durrant and M. Raymond Lee trapped the tiny shrew 25 miles west of Blanding in southern Utah. The pair are cataloging animals of southern Utah and thus far have classified 70 different mammals. *Iron County Record*

Navajo Judgment Overthrown . . .

DENVER—A group of Navajo Indians may not get the \$100,000 judgment awarded them by a U.S. District Court for government destruction of 150 ponies and burros in Utah last year. The decision was reversed by the 10th U.S. Circuit Court of Appeals. In reversing the decision, the government cited a Utah statute applied on abandoned livestock and contended the Indians failed to take action when warned about the unsupervised stock. *Salt Lake Tribune*

SAM AHKEAH LOSES NAVAJO ELECTION

Sam Ahkeah, running for his third term as chairman of the Navajo Tribal Council was defeated by more than 3000 votes when 15,000 Navajos cast their votes at their first unsupervised election. Winner of the election was Paul Jones. The chairman's term is four years.

Chairman Jones and his running mate Vice-chairman Scott Preston were installed March 28. In addition to the chairman and vice chairman, the Navajos elected 24 new members to the council and re-elected 50. Aside from the 15,000 votes cast on the reservation another 5000 votes were cast at six off-reservation polling places in California, Arizona and Utah.

Present federal law limits a tribesman to two terms as chairman. Ahkeah was given special permission to run for a third term on the condition that the Navajos decide in this election whether there should be any limit on the number of terms a chairman may serve. The majority favored the limit.

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GEMS and MINERALS

New officers of the Yuma, Arizona, Gem and Mineral Society were elected at a recent meeting. Joseph Baker, of the Navajo Center Art and Gem Shop, was re-elected president. Other officers are: Anthony De-Crescenzi, vice-president, Mrs. Ferrer De-Crescenzi, secretary-treasurer, Vernon Lohr, trek chairman, Mr. and Mrs. E. L. Marable, publicity chairmen, and Mrs. D. Monica Baker, parliamentarian. President Baker appointed the following committee chairmen: Mrs. Mary Payne, hospitality, Mrs. Nellie Clendenen, membership.

May 7 and 8 are the dates for the Fifth Annual Gem Show of the Delvers Gem and Mineral Society of Bellflower, California. At least 60 standard display cases of cut gems and minerals will be shown. The show will be held, as in past years, at the Simms Park community building.

Inquiries for space in the International Gem and Mineral Exposition in San Francisco this year should be addressed to Ralph Paine, 119 28th Avenue, San Francisco 21, California, up to May 15. The Exposition will be held in the Civic Auditorium, July 8-10, 1955.

More than 600 Baltimoreans welcomed the first formal exhibit of work of members of the Gem Cutters Guild of Baltimore, Maryland, on February 26. Cabochon making, faceting and a fluorescent mineral collection were among the highlights of the show, held at the Roosevelt Park recreation center.

The December issue of *Rocks and Gems*, monthly bulletin of the San Fernando Valley, California, Mineral and Gem Society, will be in the form of a yearbook, the society's board of directors has decided. The publication will include features impossible to include in a small monthly publication, plus a roundup of the year's activities.

Eleventh annual show of the Long Beach, California, Mineral and Gem Society will be held in the Armory Building April 30 and May 1. Displays of uranium, first showing of specimens of petrified wood from classic wood localities of the West, Death Valley onyx, fluorescents and jewelry will be features of the show.

Harry Zolars, of the El Paso, Texas, Mineral and Gem Society, has completed a cigarette holder and ash tray of light green ricolite, done in the shape of a country fireplace and removable grate in which the ashes are caught and easily emptied.

The Los Angeles Lapidary Society will join with the Southwest Art Association for their 1955 Annual Exhibit May 7 and 8, the groups have announced. The two groups plan an outstanding exhibit of the lapidary art, gemstones, jewelry, oil paintings, water-colors and pastels. Saturday hours are from 10 a.m. to 10 p.m., while the hours on Sunday will be 10 a.m. to 6 p.m.

May 15 is the date set for the Modesto, California, Swap Day. The swap will be held at the Legion Park in Modesto, sponsored by the Stockton Lapidary and Mineral Club.

Theme for the 1955 show of the Compton, California, Gem and Mineral Club is Holidays in Gems. The sixth annual show is to be held June 4 and 5 at the Veterans of Foreign Wars Hall in Compton.

Snake River, Idaho, Gem Club held its rock and mineral show at the Washington Hotel at Weiser on March 3 and 4. Displays of sunburned glass and sagebrush lamps were highlights of the show, in addition to the usual fine rock exhibits.

Minerals, artifacts, lapidary, gems, fossils and juniors are the six categories for exhibits at the spring show of the Wichita, Kansas, Gem and Mineral Society. The show was scheduled to be held April 23 and 24 at the St. Anthony's School recreation center.

One of California's newest rock clubs was recently formed at the Fred C. Nelles School for Boys. The boys are studying rocks, making shelves and other items necessary for display, but are unable to obtain much of their own cutting materials. The chairman of the club has stated that any used or discarded equipment and cutting materials would be appreciated. Such items should be sent to the Fred C. Nelles School for Boys, Whittier, California.

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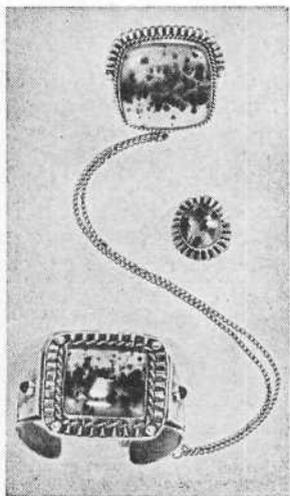
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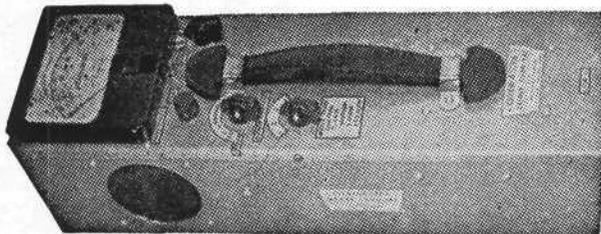
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You too can be a Uranium millionaire! ... and of course you will want to use the new Model 111B "DeLuxe" Scintillator - the first and only instrument that reads in *percentage of Uranium*. With the "percent meter" you know right in the field how valuable your ore is. And that's not all! Only the 111B has a large 1 1/2" diameter crystal and the ultra-sensitive "Multi-Mu" eight tube circuit making it 200 times as sensitive as the best geiger counter.

IT'S EASY TO USE -

Burford says "I knew nothing about instruments or prospecting. It was easy. All I did was to follow the instructions that came with my Precision Scintillator."

Don't delay. Cash in on this once in a lifetime opportunity. See your local dealer today for an actual demonstration of Precision quality instruments or write to the factory for your free copy of the new book "64 Questions and Answers on Geiger Counters and Scintillators" and a complete catalog on Geiger Counters, Scintillators, Metal Locators and Mineralights.

FOR THOSE WHO WANT A SUPERSENSITIVE INSTRUMENT Model 111C "Custom" Scintillator is twice as sensitive as the 111B. It has all the 111B features plus a 2 1/4" diameter crystal. Price only **695.00**

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reads directly in
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LARGE 1 1/2"
DIAMETER CRYSTAL
200 TIMES AS
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New ultra-efficient,
8-tube "Multi-Mu" circuit

Would you hitch a diesel
engine to a kiddy cart?



A large crystal is of no value
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handling its output.

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Every instrument bearing the Precision name has been tested to meet the

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This insures the finest materials, construction, engineering and testing that the ultimate in modern manufacturing techniques can provide. The savings of mass production by the world's largest manufacturer are passed on to the public in a premium product at no premium in price. This pledge is backed by an ironclad

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Scintillator complete
with saddle grain
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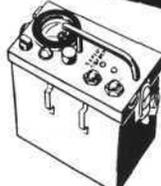
Model 118 Royal
"Scintillator," \$1995.00



Model 107 "Professional"
Geiger Counter, \$139.50



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The "Snooper" Geiger Counter—Model 108	\$ 29.95
The "Lucky Strike" Geiger Counter—Model 106	99.50
The "Professional" Geiger Counter—Model 107	139.50
The "Special" Scintillator—Model 117	299.50
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Kit for 14 minerals (Uranium not included)	16.95
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Prospectors Picks (polished)	4.10
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The name garnet is from the Latin *granatus*, meaning like a grain, and directly from pomegranate, the seeds of which are small, numerous and red, like the crystals. (From *The Sphere* of the Hollywood Lapidary and Mineral Society.)

The special phosphorescent crystals used in scintillation counters, to detect gamma rays, are thallium-activated sodium iodide. *California Mining Journal*

Fossils of sharks, including teeth and bones, were collected by the Verdugo Hills, California, Gem and Mineral Society on a recent field trip to Sharks Tooth Hill near Bakersfield. Another field trip to Lavic, California, netted club members good examples of jasper, agate and geodes.

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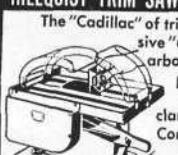
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"Hint number one: Nail polish protects your nails when you remove your glove to inspect a beautiful rock. So put three or four coats completely over the nails before your trip.

"Boots and socks: A good comfortable boot is a necessity, giving protection to the feet and ankles. High boots are preferable as they give protection against snakes and cactus.

"Heavy socks protect the feet but take along an extra pair in the event the weather changes. In the summertime nylon hose are even better as they have more protection than wool in the heat.

"Denim or blue jeans are suitable for the field.

"A sailcloth shirt over a sweater is good for all around use but make sure the shirt has long sleeves to protect the arms and neck from sunburn and insects. Be sure to apply an unscented makeup base for face protection—insects are attracted to perfume.

"The type of hat chosen should be comfortable and for protection. I prefer a cowboy hat because it protects the head and eyes from brush and low limbs of trees, as well as having a large brim for shade. I

have carried my small flashlight, compass, pencil and even rocks and water in my hat.

"Above all, dress in the most comfortable manner." (From an article by Fran Campbell in the *American Prospectors Journal*, published by the American Prospectors Club., Inc., Los Angeles, California.)

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Size	6x1/2"	6x1"	8x1"	8x1 1/2"	10x1 1/2"
80 grit				\$7.50	
100 grit	\$2.65	\$3.60	\$5.35	7.50	\$11.35
220 grit	2.95	3.95	5.90	8.25	12.50
320 grit	3.35	4.50	6.70	9.40	14.20
Shipping weight	2 lbs.	3 lbs.	5 lbs.	6 lbs.	9 lbs.
Crystolon Wheel Dressing Brick 6"x2"x1" . . . 95c					

CRYSTOLON ABRASIVE for the Lapidary . . .

Grit Size	1 Pound	5 Lb. Lots	10 Lb. Lots	25 Lb. Lots
80, 100, 120, 18, 220	\$.83	\$.52	\$.39	\$.30
2F (320), 3F (400)	.38	.57	.41	.32
Graded 400	1.09	.73	.57	.48
Graded 600	1.35	.94	.78	.69

DURITE (Silicon Carbide) ROLL SANDING CLOTH—

Available in 120, 150, 180, 220, 320 grits

Dry Rolls	
2" wide, 25 ft. long—	\$2.00; 150-foot roll—\$ 9.00
3" wide, 15 ft. long—	2.00; 150-foot roll— 13.25
10" wide, 5 ft. long—	2.00; 150-foot roll— 39.77
12" wide, 5 ft. long—	2.25; 150-foot roll— 47.70
Wet Rolls	
3" wide, 10 ft. long—	\$2.00; 150-foot roll—\$21.60
10" wide, 40 in. long—	2.60; 150-foot roll— 71.25

DURITE SANDING CLOTH in round disks . . .

Available in 120, 220, 320 grits

Wet		Dry	
6" 5 for \$1.00; 25 for \$ 3.90		8 for \$1.00; 25 for \$ 2.25	
8" 3 for 1.10; 25 for 7.00		5 for 1.00; 25 for 4.10	
10" 2 for 1.15; 25 for 11.00		3 for 1.00; 25 for 6.45	
12" 2 for 1.65; 25 for 16.00		2 for 1.00; 25 for 9.45	

CONGO OR FELKER DI-MET DIAMOND BLADES

4" diameter by .205" thick	\$ 7.80	10" diameter by .040" thick	\$14.80
6" diameter by .205" thick	7.80	12" diameter by .040" thick	18.20
6" diameter by .032" thick	7.80	14" diameter by .050" thick	25.20
8" diameter by .032" thick	10.40	16" diameter by .050" thick	28.60
8" diameter by .040" thick	11.40	20" diameter by .060" thick	39.20
		24" diameter by .060" thick	50.60

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Stud to glue in top, gold filled or silver, each . . . \$.25

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Minerals
Write Your 'Wants' to Merrell's
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Tumbled Preforms—agate, wood tiger-eye, rhodonite, for cuff links and earrings, matched sets\$1.00
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Baroque Earring Kits—s/s or g/f.....\$1.75
Glyptol Cement, tube\$.60
Please add 10% federal tax and postage

Largest exposed Cambrian deposits found anywhere in the world are within the county limits of Clark County, Nevada, the Clark County Gem Collectors, Inc., learned at a recent meeting. Speaker was University of Southern Nevada Professor of Mineralogy Jay Jeffers who discussed the historical geology of the county.

THE PROSPECTOR'S CATALOG
We are pleased to announce the advent of a new **Minerals Unlimited Catalog**, specifically designed for the amateur or professional prospector. If you are interested in **Geiger Counters, Mineralights, Blowpipe Sets, Gold Pan** or any of the other equipment necessary to a field or prospecting trip, send 5c in stamps or coin for your copy.
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TO BE BLOOD BROTHER OF SAN JUAN INDIANS

"Tex" Clifford, who operates an electrical company at Fabens, Texas, and is a well-known and experienced mineralogist and exploring rockhound, is to be made a blood brother of the San Juan Indians some time this summer, when his costume is assembled and ready and he is notified by the Head Medicine Man to appear for the ceremony.

Clifford visited the San Juan Indians at Christmas at the invitation of Dr. Diefendorf, a minister of the Christian Church at Fabens, and immediately made friends with the leaders of the tribe, who showed him many courtesies.

The Medicine Man entered the kiva and brought out several large pieces of sky-blue turquoise, shaped and polished and engraved with Indian symbols, the largest and most beautiful Clifford had ever seen. When he is inducted into the tribe, Clifford will take part in the Buffalo Dance, a portion of the ceremony. (From *The Voice of the El Paso*, Texas, Mineral and Gem Society.)

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TUNGSTEN
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PROSPECTING INFORMATION.
LATEST NEWS AND DATA ON EQUIPMENT AND METHODS.

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If you're prospecting for anything, you need a Mineralight



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**Geiger Counters—Scintillation Counters
SEE THE BIG THREE**

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ONLY AT YOUR MINERALIGHT DEALER can you see and compare all the models manufactured by these three leaders in fine Geiger Counters and Scintillation Counters. Your Mineralight Dealer can give you complete information on "the big three" and latest data on uranium prospecting.



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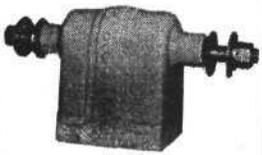
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6"	\$ 9.03	\$ 7.98	
8"	11.50	10.44	
10"	15.23	14.02	
12"	22.26	18.53	
14"	29.40	25.67	
16"	32.76	29.08	
18"	65.60	43.20	36.12
20"	77.95	51.97	39.84
21"	93.24	65.73	51.40
30"	149.62	125.73	
36"	226.00	188.05	

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Sales Tax in California

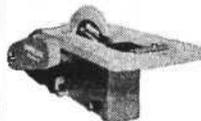
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REDLANDS D, CALIFORNIA

Third annual gem and mineral show of the Fresno, California, Gem and Mineral Society was to be held Saturday and Sunday, April 23 and 24 at the Fresno Fairgrounds cafeteria building.

Annual convention of the Midwest Federation of Geological Societies will be held at the Hotel Detrioter, Detroit, June 23-25. Feature of the convention will be field trips taken in many directions from Detroit. (From *The Pick and Dop Stick* of the Chicago Rocks and Minerals Society.)

The annual show of the Rocky Mountain Federation of Mineralogical Societies will

be held in conjunction with the Wyoming State Mineral and Gem Show, June 16-19, 1955, in the Mountain View School, Rawlins, Wyoming. The formal show will actually end at 10 p.m., June 18, followed Sunday by field trips to various collecting areas around Rawlins and to the jade fields.

Sixth annual gem show of the Tourmaline Gem and Mineral Society of San Diego, California, will be held May 7 and 8 at the Grossmont High School. Doors will be open on Saturday from 12 noon until 10 p.m. and on Sunday from 10 a.m. until 5 p.m.

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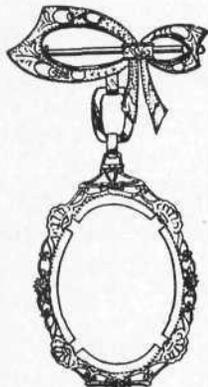
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18 x 25 mm

SS and Gold Trim

\$2.40 each

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Add 10% Fed. Tax to Above Prices

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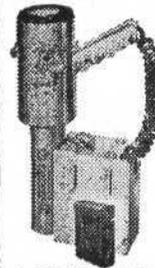
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Specifications

Ranges—.025, .05, .25, .5, 2.5 and 5 MR/HR
Sensitivity—Gamma
Size—4½"x7¼"x7"
Weight—6¾ lbs.
Shipping wt.—10½ lbs.
Price complete \$299.50

A highly sensitive Scintillation Counter at a moderate price. An ideal field instrument because of its ruggedness, compactness and light weight. Industrial, Laboratory, or Uranium use.

Professional Geiger Counter

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Size approximately.....3½" x 4½" x 6½"
Weight approximately.....6 lbs.
Sensitivity.....Beta, Gamma
Ranges.....20, 2, and .2 MR/HR
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A Geiger Counter of the highest sensitivity, accuracy and stability. Has external probe. The best Geiger Counter made for field work. For use in Uranium detection, Civil Defense and Laboratory.

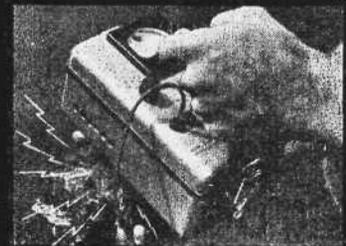
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AMATEUR GEM CUTTER

By LELANDE QUICK, Editor of The Lapidary Journal

Last October we discussed the present uranium boom and gave a lot of useful information for the uranium prospector. Meanwhile the boom has progressed to the point where the situation last October seems mild indeed. Last week (this is written in late March) authorities at Bakersfield, California, released a map on which were pin pointed areas known by government airplane tests to be rich in radio-activity. Hundreds of people stormed the county offices for a copy of the map and the stampede was on. In the following week hundreds of claims were staked and filed. One Los Angeles newspaper published the map and immediately sold out the largest press run they had ever printed.

As this is written the papers are filled with the story of a man who stopped to tie his shoe lace. As he set his geiger counter on the ground to free his hands it went wild and the papers report the hottest find in California. And the prospector was only investigating the possibility of processing the feldspar in his diggings for use in the ceramics and glass industry. He had just carried the geiger counter along for the ride—and he isn't sorry.

We have urged all rockhound clubs to buy a counter or a scintillator with the dollars that lie idle, not even drawing inter-

est, in the club bank accounts. Someone should carry the gadgets on every field trip for no one knows the spot or the hour when some rockhounding group will find pay dirt.

The new find is north of Mojave, at a spot where Josie Bishop lies buried. We remember Josie Bishop. Talk about lost mine stories! Josie always said she had a radium mine and she worked her claims for years. Every once in a while her story would reach the Sunday supplements in the papers and it made exciting reading because we had not heard of "the thing" then and radium was very expensive. But Josie died broke and apparently no one had an idea of taking a seismic instrument over her claims until a prospector stopped to tie his shoe lace. The account says that the newly found deposits are pitchblende.

Don't think that all the spots in the desert regions have been prospected. Few of them have been prospected correctly and we even saw a man snooping around the vacant lot next to our desert home a few weeks ago with a counter. There is a story going the rounds now about the weekend prospector who came back to his office on Monday morning filled with health and disappointment. "Find anything with your geiger counter in the desert over the week end?" asked the boss. "Sure did" said the disconsolate prospector "I found ten other geiger counters." So don't get discouraged and toss away your instrument; just take it easy and stop and tie your shoe lace.

The lure of prospecting, aside from money values, has always been romance and the magic of uncertainty but the machine age has pricked that bubble until now the prospector has to be an engineer with all the gadgets. A new device has now been added to remove the greatest obstacle to profitable mining and that is the astounding new process of mining without water. This is more important, in our estimation, than the sensitivity instruments for it will revive countless abandoned claims for all kinds of min-

erals that have been by-passed because of a lack of water at the site for flotation purposes.

The secret of the new process (developed by Raymond G. Osborne Laboratories of Los Angeles) is the use of a pulsating rising column of air instead of the normal column of water. Superimposed is a secondary vibration of sonic frequency. This combination of air and sonic vibration causes an ore mass to simulate a fluid as it flows through a concentrator and gravity does the rest. The heavy mineral content falls out for collection and shipment and the waste is floated off to the tailings pile. The real purpose of the Osborne gadget is to make a shippable ore at the mine site and cut the freight costs. The unit costs about \$2500 and complete milling facilities utilizing this dry concentrator are expected to cost about \$500 per ton capacity whereas the usual cost on wet milling facilities is reported as about \$1000 per ton capacity.

While this has nothing to do with the hobby of gem cutting we feel that many of our readers will be interested because they may know of, or even own, deposits of valuable minerals that are marginal. As an example—in the Shadow Mountain region near Victorville, California, scheelite ore contains about \$18.90 worth of scheelite per mined ton of ore. This enables an operator to make but a few cents per ton and that is not profitable. With the new concentrator it is possible to net \$5.34 a ton, a figure based on actual cost of operation of a 50 ton mill now operating in that region with a concentrator.

Successful tests have been concluded on the ores of tungsten, titanium, gold, tin, lead, silver, manganese, rare earths and some radio-active minerals. It is believed that the unit can be adapted to any mineral that is susceptible to orthodox gravity separation. Dry mineralized regions all over the world can now become sources of great wealth and mineral production through the use of this new process.

And so the horizons increase for the finding of wealth by the week-end prospector. Unlike the old time prospector he must go forth armed with knowledge. The old timer knew gold when he saw it and he knew nothing else. But now, with all the gold being buried back in the ground from which it came, the man with knowledge can find many other kinds of gold that are more useful to mankind.

There are many books a man can read to acquire the needed knowledge but in none of them can he find more useful knowledge for as little money as he can in the new book *Popular Prospecting* by Dr. H. C. Dake, procurable from our Desert Crafts Shop for \$2.00 postpaid. This little book covers the field of where to prospect, the gem minerals, the metallic minerals, the non-metallic minerals, the uranium minerals and many notes on prospecting with seismic methods etc. The knowledge gained during a week end of study of this little book may well be the means of some of our readers discovering a fortune on some other week end.

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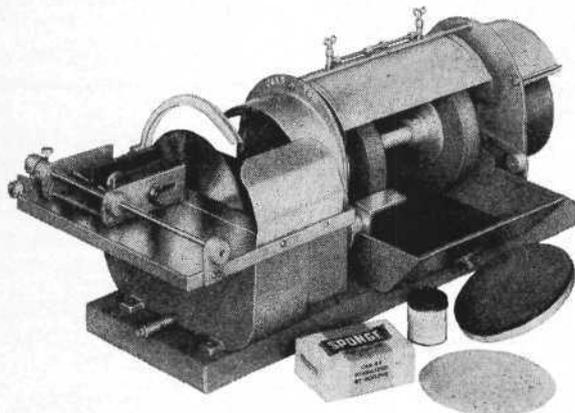
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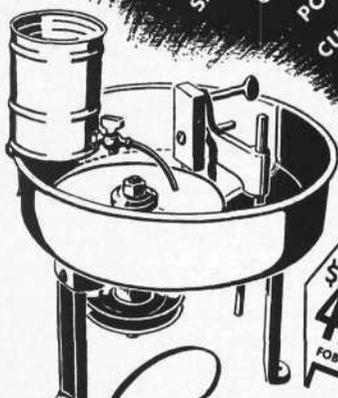
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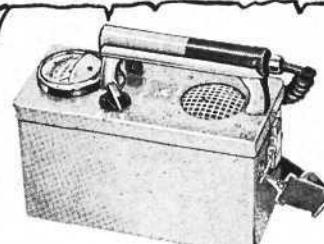


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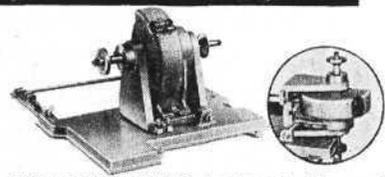
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By RANDALL HENDERSON

FROM THE Muggins Mountain northeast of Yuma comes the story of a prospector whose Geiger counter suddenly began to register great activity. Since no radio-active minerals ever had been found in that spot, the owner decided the gadget needed a repair job. When a visitor came into camp a few hours later he found the parts scattered all over the camp and the owner perspiring over the task of fitting the delicate mechanism back together again.

Later it was confirmed that the prospector merely was the victim of one of those "fall-outs" which have been reported at widely scattered areas in the desert following atomic blasts in the Nevada test grounds. The city of Las Vegas got one of them, and although the authorities insisted that no hazard was involved, it gave some of the folks a very uncomfortable feeling.

All of which suggests questions which I think properly may be asked of the Atomic Energy Commission: How necessary is it that these atomic blasts be continued with increasing power within the limits of continental United States? Why isn't it feasible to conduct the tests on the atolls in the Pacific where there can be no possible threat to the civilian population?

During the last 18 years I have seen more and more of this desert area fenced off with danger signs where the military and the scientists carry on with their weapons of destruction—and I am wondering where it will end. The desert Southwest is now the home of more than three million Americans—and there is talk of using this region for evacuation purposes in the event of a war. It will be a sorry state of affairs indeed if the people in the densely populated areas have to choose between staying home and taking a chance on enemy bombs, or seeking refuge in a region mined with the duds of our own weapons.

That is far-fetched, of course. I am confident there is no immediate threat of a major war. But I do think it is time to call a halt to the ruthless manner in which the AEC, the Army, the Navy and the Air Force are appropriating millions of square miles of desert terrain not only to the exclusion of all civilian population, but for a purpose that involves a positive threat to civilian security.

* * *

On my desk is a story that will appear later in *Desert Magazine*—the story of a young couple with three small children who have sold their home in a crowded metropolitan area, have purchased a two-bedroom trailer and are preparing to find for themselves a new way of life on the great Colorado plateau where the uranium boom is at its height.

It is a great adventure for them—but they have confidence they will somehow find a place for themselves. And I too am sure they will, for these folks have the kind of courage which finds its own reward.

They've been going to night school to study about uranium, and they plan to do some prospecting. But a rich strike isn't their main goal. They want to find the contentment which comes with living close to the Good Earth—away from the over-crowded treadmill, the regimentation of life in the city.

After an exciting holiday with the Geiger counter he will probably find a job as truck driver for one of the mining companies or as timekeeper on a road crew. There will be hardship and sacrifice and disappointment for all of them—the sacrifice that always goes with pioneering. But it also builds character and brings a huge measure of contentment. The youngsters will acquire healthy bodies and self-reliance and faith.

Lucky people! They are fortunate because they have what it takes to break with an environment that too often brings out the worst — not the best in human beings. They'll make a go of it somewhere on the desert—I have no misgivings about that.

* * *

John C. Van Dyke wrote of the desert:

"It is a gaunt land of splintered peaks, torn valleys, and hot skies. And at every step there is the suggestion of the fierce, the defiant, the defensive. Everything within its borders seems fighting to maintain itself against destroying forces. There is a war of elements and a struggle for existence here that for ferocity is unparalleled elsewhere in Nature . . .

"It is stern, harsh and at first repellent. But what tongue shall tell the majesty of it, the eternal strength of it, the poetry of its wide-spread chaos, the sublimity of its lonely desolation! And who shall paint the splendor of its light; and from the rising up of the sun to the going down of the moon over the iron mountains, the glory of its wondrous coloring."

And that, probably, is as close as man will ever come to expressing in words this strange paradox which is the desert. After all, what each of us sees in the desert is a reflection of something within himself. And that is equally true of every environment in which we may find ourselves. In a large measure humans create their own beauty, and their own ugliness in this world. I wish our teachers in the schools would give greater emphasis to this simple truism.

BOOKS of the SOUTHWEST

GEOLOGIST WRITES DEATH VALLEY STORY

Thomas Clements, Head of the Department of Geology at the University of Southern California and Collaborator, Death Valley National Monument, has written a factual, fascinating booklet that the layman can understand, in *Geological Story of Death Valley*. Publication No. 1 of the Death Valley '49ers, this will be added to the active shelf of all interested in Death Valley.

"Death Valley is the combined product of all the geological agents working throughout all of geologic time," as Dr. Clements writes. It is possible here to see the vast panorama of most of the geologic "column" from earliest times to the present, in an area of traveling not more than 300 miles. To understand the vast upheaval that took place there, is to understand the beauty and awesomeness of Death Valley. The reader will find it is still possible to see some remnants of the original sea-floor lifted and faulted by earth movements, in the Panamint, Cottonwood and Argus mountains.

Seventeen illustrations, including a map of Death Valley and selected reading on Death Valley geology. Paperbound; 52 pages. Published by Death Valley '49ers, printed by Desert Magazine Press. \$1.50.

ORIGINAL MANLY MAP RECENTLY DISCOVERED

The discovery of the original Manly map dated 1894, in a first edition of Manly's classic story, "Death Valley, '49ers," resulted in the publication of booklet No. 2 of the Death Valley '49ers. *The Manly Map and the Manly Story* contains the map reproduced and is the exciting resume of the journey, by Ardis M. Walker, who discovered the map.

The perseverance of William Lewis Manly and John Rogers in bringing aid to their famished companions is one of the epics of southwestern history. Through the desolate Mojave desert, these two young men pushed on and on, fighting fatigue and hunger and thirst. That they succeeded is typical of the fortitude and sacrifice of those who pushed to the west, and is a precious heritage for the present western generation. As Mr. Walker writes: "Posterity is fortunate, too, in that he was impelled to tell his story in his simple and humble way. That precious story . . . is a worthy legacy."

Published by Death Valley '49ers, printed by Desert Magazine Press. 24 pages. \$1.00.

STORY OF CALIFORNIA BUTTERFLIES IS TOLD

As a contribution to science and culture, *Butterflies of California*, by John Adams Comstock, has been called an outstanding success.

Dr. Comstock describes his book aptly in the subtitle: "A Popular Guide to a Knowledge of the Butterflies of California embracing all of the 477 species and varieties at present recorded for the state." The book, originally published in 1927, is well-illustrated with photographs and line drawings, giving complete descriptions of the butterflies and discussing proper methods of capture, preparation, preservation and mounting.

Butterflies of California, while being complete for the coastal state, includes a majority of those insects occurring in the Southwest. Highlight of the beautiful work is the section containing some 63 full page color plates showing all of the butterflies known to inhabit the state at the time of publication.

Published by the author; 334 pages, plus 63 separate color pages of butterflies; printed in limited edition; \$9.

ZUNI INDIANS HAVE TRIBAL CODE OF LAW

In Zuni law, only two crimes are punishable by death — sorcery and cowardice in battle.

Zuni Law: a field of values, by Watson Smith and John M. Roberts, describes in minute detail the operation of justice in Zuni. Published among the papers of the Peabody Museum of American Archeology and Ethnology, Harvard University, the study is a report of the Rimrock Values group.

The facts presented in this study were collected from the Zuni people themselves on their reservation in west-central New Mexico. Research into civil and criminal law covers the period from the Zuni beginning, estimated two centuries before the Spanish conquest of 1540, to post-1940.

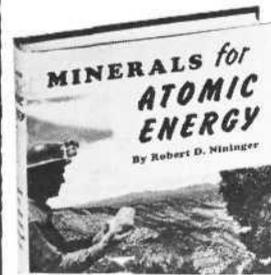
Say the authors: "By far the most frequent type of criminal offense at Zuni is drunkenness, which is regularly

penalized by the imposition of a money fine, according to a fixed scale in which the amounts increase with repeated offenses. The minimum fine is usually \$15 . . . Payment of damages and fines may be made in cash or frequently in goods, such as clothing jewelry, and even livestock. It will usually be paid on the spot . . ."

Published by the Peabody Museum, paperbound, 176 pages with an appendix, "A Practical Zuni Orthography," by Stanley Newman. \$3.00.

Books reviewed on this page are available at Desert Crafts Shop, Palm Desert

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MINERALS FOR ATOMIC ENERGY

By Robert D. Nininger

Here is the most complete reference and guide ever published for the uranium, thorium and beryllium prospector. Now in its 5th big printing, it tells what to look for, where and how to look, what equipment to use, covering every fact you need to know. Includes color plates, extensive appendices on mineral identification, testing, analysis, counters, prices, markets, laws, foreign information.

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SUMMER HEAT

Many months before Pearl Harbor the military and civilian chiefs in Washington began preparations for war — a war which they were afraid might extend to the remote corners of the world.

As part of this preparation, the U.S. Office of Scientific Research entered into a contract with the University of Rochester, New York, for an exhaustive study of problems which must be met if American soldiers were called upon to wage warfare in arid regions of high temperatures. At that time a bitter conflict was in progress on the Sahara in North Africa.

There would be problems of food and clothing, of housing, of health and morale, of stamina and training—and even of survival.

As part of this program of research, a team of scientific men spent many months with Patton's army on the Southern California desert. Other research teams went to the Sahara, to the Gobi and other deserts of the world. No expense was spared in making this the most exhaustive study ever conducted in the broad field of human reaction to heat and water supply.

Physiology of Man in the Desert

To make all this information available for desert dwellers, physicians and students everywhere the complete reports with tables and graphs were published in a 357-page book—*Physiology of Man in the Desert* by Interscience Publishers of New York. Recently the Desert Magazine book shop has acquired the remaining supply of this limited edition, and while they last they will be available at

Paper cover edition \$3.50
 Hard cover with dust jacket..... \$5.00

(Mailed postpaid. California buyers add 3% tax)



Do You Know?

- How much water should you drink in desert summers?
- Why do some people withstand high temperatures better than others?
- Is thirst a true criterion as to the amount of water needed by the body?
- Can the human body become conditioned to lack of water?
- What are the symptoms preceding heat prostration?
- Are chewing gum or pebbles in the mouth an adequate substitute for water?
- Why are salt tablets taken in high temperatures?
- What are the important rules to follow if your car is stranded in an isolated place and your water supply limited?

These and a thousand other questions relative to health, efficiency and even survival in desert summer temperatures are answered in the 357 pages of *Physiology of Man in the Desert*.

PHYSIOLOGY OF MAN IN THE DESERT is a book that should be in the library of every desert dweller, physician, teacher and motorist who plans to travel in the desert country. The edition is limited.

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