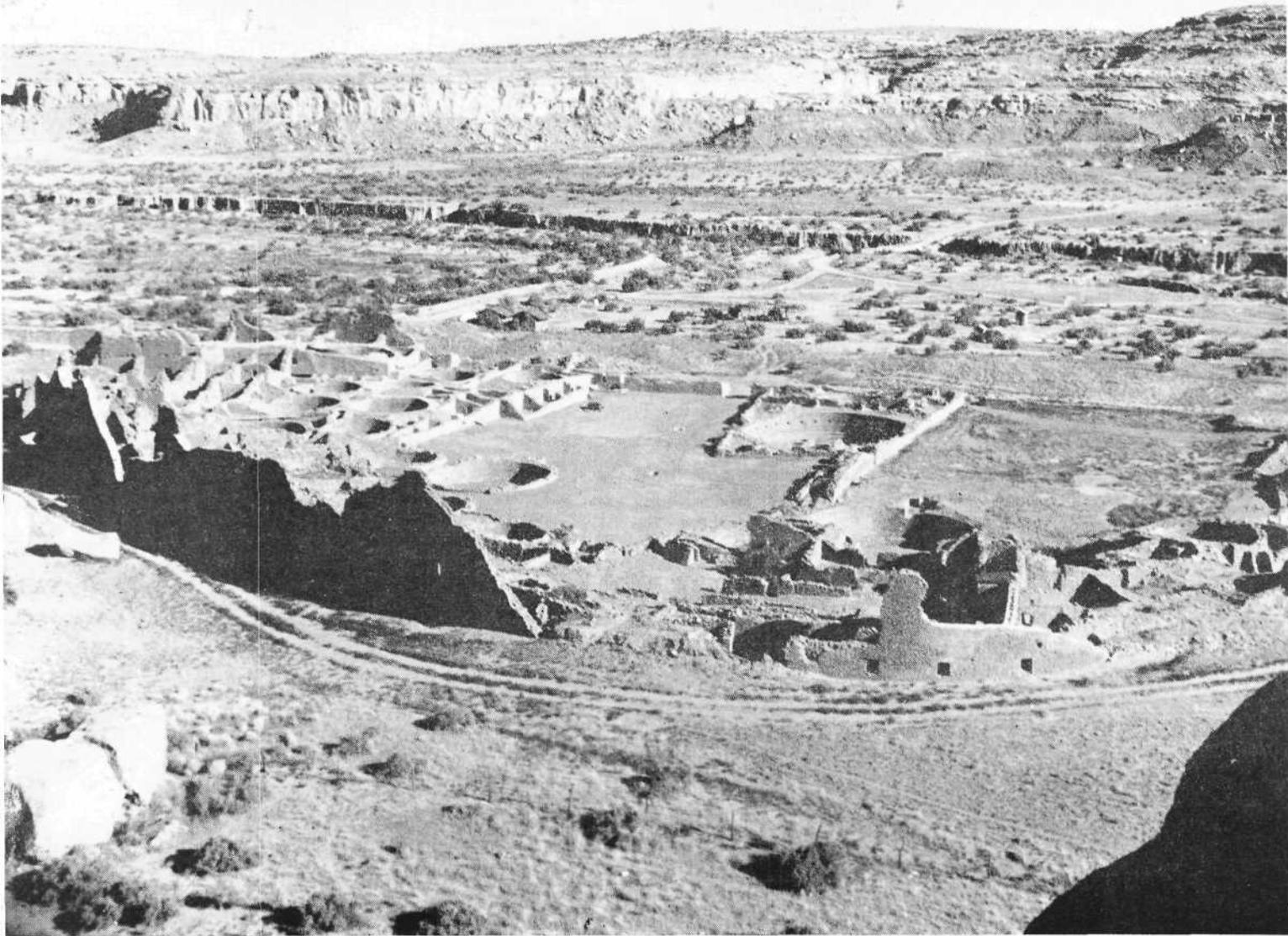


Desert

SEPTEMBER, 1955 . . . 35 Cents





Pueblo Bonito ruins in Chaco Canyon National Monument, New Mexico. Photo by Josef Muench.

DESERT GLASS

By B. R. BRADLEY
Tempiute, Nevada

They throw here cheap white glass
Unvalued when people moved away.
Slowly it turned to purple tint.
A collector's item it's called today.

Its amethystine splendor captive holds
The long, lonely days of the desert sun.
Imprisoned within its lovely hues
Lie mystery and story for everyone.

• • •

RAINMAKER

By MARILYN FRANCIS
Phoenix, Arizona

A white man beats a different drum
In asking for the rains to come,
His tiny rhythmic thunder made
With drumsticks of propeller blade.
No corn meal here, but other seeds
Prepared for universal needs
Are sprinkled in a special cloud;
Unquestioned now, they are allowed
Beyond recall.
Their destiny has been ordained,
(The test tubes show how much it rained.)
Failure is but a fault in ritual,
The unfamiliar, unhabitual
Supplication to the unknown
When laboratory seeds are thrown
To the mercy of winds that seldom blow
According to plan. Only gods know
Where the rains fall.

Pueblo Bonito

By MRS. GRACE B. WILSON
Kirtland, New Mexico

The ancient pueblo's broken walls
Are stark against the hill.
The weathering of centuries
Has worn them down until
No roof is left, and gaping holes
Of doors, like sightless eyes,
Forbid a stranger's wandering
Within to scrutinize.
The sands and time have covered well
Their secret things. Instead,
The desert winds sigh low above
The ruins of the dead.

Courage!

By TANYA SOUTH

Courage! And go you on rejoicing,
With purpose bright, and ever voicing
The upright way, the truth innate,
Whatever they create of Fate.

Courage! With heart uplifted high,
With love unbounding, and with hope,
Thus will you unto Light ally,
And broaden all your scope.

OLD PROSPECTOR'S TALE

By AMY VIAU
Santa Ana, California

That the desert speaks not, no one can doubt
Yet an old prospector heard it shout;
He swears with solemn mien and might
That as he sat in full moonlight
Beside his tent in the summer heat,
With sand and sage brush at his feet—
And nothing to do but sweat and think;
The desert shouted "give me a drink!"
He swears this true by his old canteen
As he tells of what he has heard and seen.

• • •

SUDDEN BEAUTY

By GRACE PARSONS HARMON
Desert Hot Springs, California

Who combed the washes—who swept the
dunes

All clean of the wood we need
To please the eye, and lift the soul
With a driftwood theme in a wide green
bowl—

A thing of beauty or concept droll—
Whatever the mood decreed?

We searched the hillsides, where rains had
lashed.

We followed the freshet's mark
Where the water had rioted and free.
And not a root or a stump could see—
But we heard a song from an old dead tree—
And saw the first meadow lark!

DESERT CALENDAR

- September 2-5 — Santa Fe Fiesta, Santa Fe, New Mexico.
- September 2-5—Mexican Fiesta, annual Jamaica, Our Lady of Guadalupe Church, Flagstaff, Arizona.
- September 3-5 — Sierra Club Desert Peaks Hike, Mt. Toiyabe, Nevada, meeting in Tonopah, Nevada.
- September 3-5 — Pow-Wow, Apple Valley, California.
- September 3-5—Socorro County Rodeo, Socorro, New Mexico.
- September 4—World's Championship Steer Roping, Clovis, New Mexico.
- September 4-5 — Labor Day Rodeo, Bishop, California.
- September 8-11—Antelope Valley Fair and Alfalfa Festival, Lancaster, California.
- September 8-11 — Coconino County Fair, Flagstaff, Arizona.
- September 9-11—Navajo Tribal Fair, Window Rock, Arizona, (tentative dates).
- September 13-17—Eastern New Mexico State Fair Rodeo, Roswell, New Mexico.
- September 14-18 — Yavapai County Fair, Prescott, Arizona.
- September 15-16—Mexican Independence Festival, Nogales.
- September 15-17—Dixie Roundup, St. George, Utah.
- September 16-18—San Carlos Apaches Annual Tribal Fair, San Carlos, Arizona.
- September 16-25 — Utah State Fair, Salt Lake City.
- September 16-30 — Reproductions of Ancient Indian Carvings and Paintings by C. La Monk of Archeological Survey Association, at Southwest Museum, Highland Park, Los Angeles, California.
- September 17-18—Sierra Club Desert Peaks Hike, Tunnabora Peak, meet at Whitney Portal, California.
- September 21-25 — Scottsdale Community Fair, Scottsdale, Arizona.
- September 23-24 — Apache County Fair, St. Johns, Arizona.
- September 24-25 — Barstow Rodeo, Barstow, California.

About the Cover . . .

Proof that the Desert Southwest's beauty is varied—that this vast region has much more to offer Nature lovers than stereotyped stretches of arid land—is seen on this month's cover. Photographer Harry Vroman made this camera study on a high oasis of the San Francisco Mountains near Flagstaff, Arizona, in what could be considered the geographic center of the Southwest desert.



Volume 18	SEPTEMBER, 1955	Number 9
COVER	Aspens on San Francisco peak Photo by Harry Vroman	
POETRY	Pueblo Bonito and other poems	2
CALENDAR	September events on the desert	3
LOST MINE	We Lost a Ledge of Gold By ASA M. RUSSELL	4
HISTORY	He Captured Geronimo By THOMAS B. LESURE	8
FICTION	Hard Rock Shorty of Death Valley	10
FIELD TRIP	An Ancient Sea Bed Gives Up Its Dead By HAROLD O. WEIGHT	11
SCIENCE	Powerplant for a New World By GASTON BURRIDGE	16
NATURE	Rare Mollusks on Desert Slopes By EDMUND C. JAEGER	18
TRUE OR FALSE	A test of your desert knowledge	20
EXPERIENCE	Hens That Lay Wooden Eggs By INEZ H. GOSS	21
CLOSE-UPS	About those who write for Desert	22
GARDENING	What Grass for the Desert Lawn? By RUTH REYNOLDS	23
CONTEST	Picture-of-the-Month contest announcement	24
PHOTOGRAPHY	Pictures of the Month	25
ARCHEOLOGY	Night in Ghostly Castle By JERRY LAUDERMILK	26
LETTERS	Comment from Desert's readers	28
NEWS	From here and there on the Desert	30
URANIUM	Progress of the mining boom	34
MINING	Current news of desert mines	39
LAPIDARY	Amateur Gem Cutter, by LELANDE QUICK	40
HOBBY	Gems and Minerals	41
COMMENT	Just Between You and Me, by the Editor	46
BOOKS	Reviews of Southwestern Literature	47

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RANDALL HENDERSON, Editor BESS STACY, Business Manager
EVONNE RIDDELL, Circulation Manager

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We Lost a Ledge of Gold . . .



Lost Mine area. Ernie and Russ hiked across this rough, steep terrain. On their way back—somewhere on the mountain's side—Ernie picked up the \$15,000 ore sample.

By ASA M. RUSSELL
Map by Norton Allen

ERNIE HUHN, or Siberian Red as he was known by his friends, is gone now. He passed away a few years ago and is buried at Shoshone, east of Death Valley. He was fairly well off financially when he died because of the interest he had in the well run Grantham Talc Mine.

But Ernie could have been one of the richest men on earth and me along with him if—and that's a mighty small if!

While he lived I dared not tell of our experience high in the Panamint Range in 1925, but now I'm sure he wouldn't mind if I do. He was very touchy about it saying that if anyone ever found out they would class us as fools. I guess he was right, but he should have made it "careless fools."

Folks wondered why Ernie, who had mined gold in Siberia, Alaska and California and loved the yellow metal as much as any man, suddenly gave up looking for it and satisfied himself instead by opening up drifts of plain baby talcum powder, as he called it. I was his partner and the last man to grubstake him on a gold venture. I know why.

I met Siberian Red at the Cresta Escavada (summit diggings), a placer property near Randsburg in the early

1920s. The terrain there was made up of rolling, spotted bedrock with no paydirt, just egg shaped rocks. Although it mined out to a dollar a yard Ernie soon found that it wouldn't float a dredge so he decided to move on. There was no way to make it pay.

We met again in Trona some time later and during our visit he repeatedly gazed intently at the towering Panamint Range visible behind the Slate Range. Finally he remarked, "I understand that four formations meet there at the south end of the Panamints. It should be a hot spot to prospect." Somewhere Ernie found out that a road could be easily cut from Death Valley up to Anvil Canyon opening that area for mining if and when a discovery was made. At Anvil Springs there was a stone house and plenty of water.

"Carl Mengel, who has only one leg, says he came through there with his burros—stayed at the stone house and says the area looks like good gold country to him," Ernie went on. I soon became enthusiastic about the area's prospects and offered to grubstake him on the trip and to accompany him, too. I had a fairly successful tree business in Los Angeles at that time and could afford the venture. Before long we struck an agreement.

I bought a truck, loaded it with supplies enough for three months and we headed for Butte Valley by way of

High in the Panamints above Death Valley two men discovered—and then lost—a fabulous ledge of gold. The specimen they took from the vein assayed \$15,000 a ton! And the ledge is still there on the southwestern slope of Manly Peak facing Redland Canyon. And if you wonder how a veteran prospector could lose such a bonanza you'll find the answer in this story.

Death Valley. In those days there was an old road through Death Valley with a sign post pointed toward the mountains which read: "Butte Valley, 21 Miles." Instead of going on to Butte, the road ended right there in a soft sandy wash where the water drained down to Death Valley through the narrow canyon.

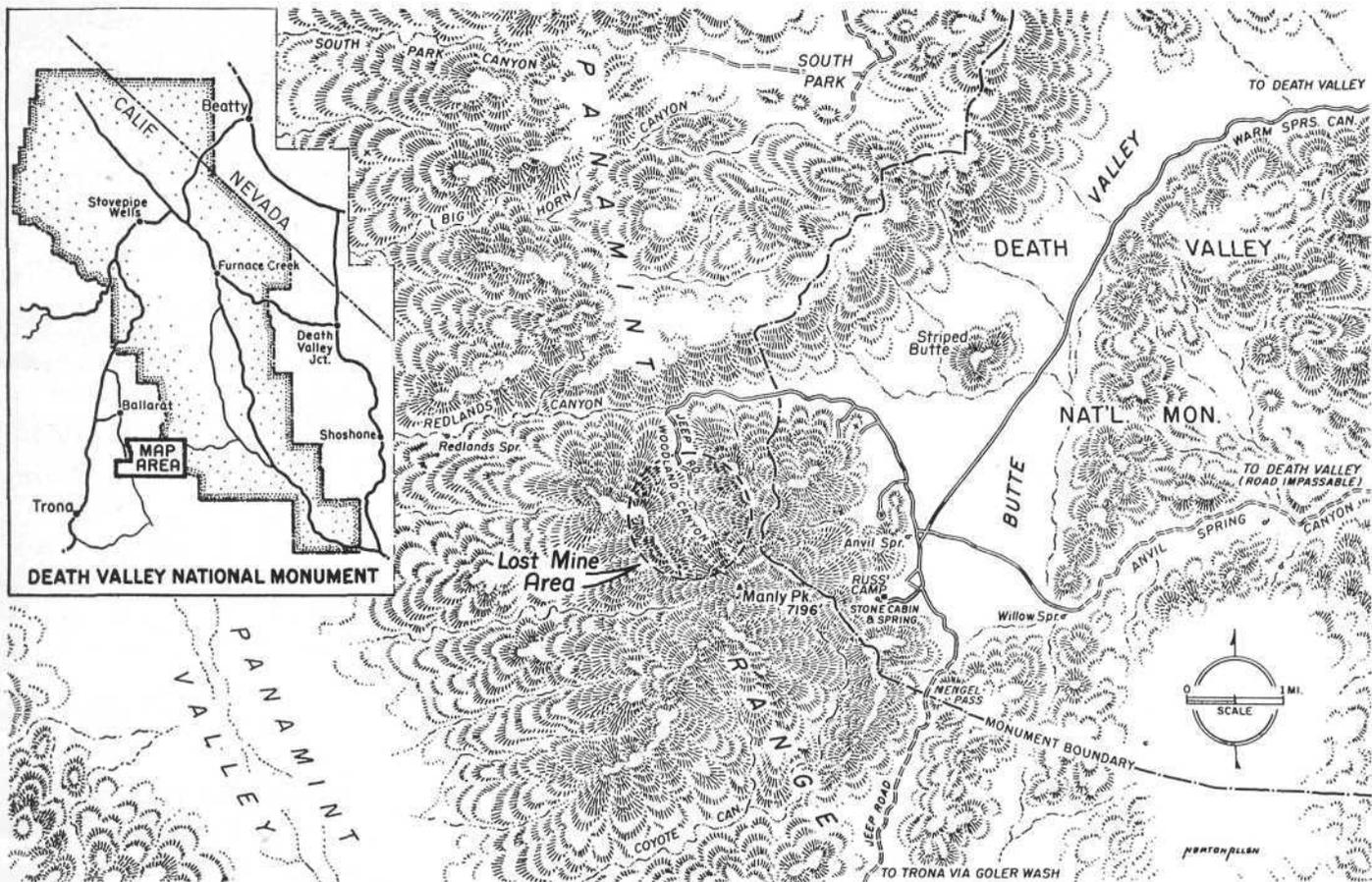
We returned to our original plan and headed up Anvil Canyon making our own road. Every thousand feet we had to stop and drag off the rocks to clear the next thousand feet ahead. To get through the loose gravel we used block and tackle. After five days of hard work we had our road into Butte Canyon by way of Anvil Canyon. The former takes its name from a strata of solid rock projecting 500 feet high in the center of this valley. There was no dirt or vegetation on this huge rock and it was striped with many different colors. The miners called it the Striped Butte.

We located the spring and the stone house and set up camp. We were never able to find out who built the house, but it was built to last. It dated back to the early 1880s and was as good as ever. Here we relaxed for a couple of days, taking short walks around camp.

We had a beautiful view down the canyon to the floor of Death Valley, 20 miles below. The refreshing breeze picked up the scent of sage, ephedra and pinyon making our campsite a delightful place.

The country immediately around us was well mineralized. Small veins shot out across the hills in all directions. Some looked like they would pan fairly good and had they been wider would have caused plenty of excitement. The stone house contained some old newspapers and books, pack saddles and odd shaped demijohns, reminders of days that had gone before. We had ideal prospecting headquarters.

We soon found that this was a big area to cover. Naturally we concen-



trated on the valley floor at first, prospecting a day and then resting a day. We wanted to toughen up gradually before we tackled the high ground. On these low level hikes Ernie would often reach down to the ground with his pick and crack open a rock that looked like ordinary mud to me. He explained that after a little experience I too could distinguish mere mud from stones that had been thinly covered with mud following a rain.

Occasionally I picked up a piece of float. Each time I did Ernie knocked it from my hand and warned me that it was a bad habit to get into. "Unless you intend to follow the float up and find out where it comes from, don't waste your time and mine. You might have a piece that dropped out of a saddle bag or a pack mule. Be sure your sample comes off a vein of ore in place—and a vein wide enough to investigate. Remember, we are 67 miles from the nearest supplies. Don't waste time." I listened to his advice. I knew it was experience talking and I had much to learn.

In time we became tanned and toughened. Our legs were strong. Ernie was convinced that somewhere along this contact a rich vein existed.

One day we had a visitor—a Shoshone Indian — who was leading a string of pack burros. He was on his way to Warm Springs to do a little

There's a discrepancy in the published maps of the Panamint Range. The WPA map published in 1939, shows Manly Peak to be 20 miles north of Anvil Springs — an impossible distance for two prospectors to travel in a day's time over such terrain. For the accompanying map of Manly Peak, Artist Norton Allen took his data from the USGS quadrangle map of the area — confirmed by Superintendent Fred Binnewies of the Death Valley National Monument to be the correct location.

prospecting. He told us that if we needed some packing in the near future, he would be glad to do it for us.

Another week went by and on the first of October a tall, unshaven man named Greenslit walked into our camp. He was a tough old fellow of 65 and had been prospecting the hills for six days out of Trona.

He took out a piece of ore and showed it to us. He had found it on the ridge near Manly peak in a short tunnel of an abandoned mine. He relocated it and was on his way now to Shoshone to try to interest some friends in his find.

After he had gone the next morning Ernie took the piece of ore Greenslit had given him and panned it out. He found it to run about \$200 to the ton.

"I wonder just exactly where he got that rock?" I asked. By the look on Ernie's face I knew he was wondering the same thing. He pointed to the high ridge to the right of Manly Peak. "It must be up there," he said. He scanned the area with his field glasses and then handed them to me. "Look close up there—there's a little gray patch on the mountain side—looks like an old dump—that may be where Greenslit found his ore."

The next day we tried the higher ground. Ernie warned me before we left that when we reached the timber line our vision would be cut down considerably except in small and infrequent clearings. He had me prepare 10 pieces of five different colored rags and told me that should I find a vein large enough to locate, I was to mark it properly, take one piece of colored cloth and wrap the sample in it and number it. The matching piece of rag I was to tie on the top of the highest and nearest tree. A small strip of the cloth was to be tied at ground level. If, after panning the ore, we found it to be worth while, the vein would be easy to relocate. I was also instructed to make a note of the general terrain around my find. "This is the best sys-

tem I know of for tenderfoot prospectors," Ernie said to me as we started out at dawn.

It was a steep climb up the hogback to Manly Peak, but we took our time and had no trouble reaching the saddle on the ridge at the right of the peak before noon. The view alone was worth the climb. Looking over the Slate Range toward Trona the Panamint Valley lay at our feet and at our back was Death Valley.

We ate lunch on the ridge and then made our way to the gray patch below the saddle. As Ernie had predicted we found that it was an old ore dump and there, nearby, was Greenslit's new monument. An old anvil and a few scattered tools with rotted wooden handles lay near the tunnel mouth. We guessed that its former owner was an old timer who had found the high altitude detrimental to his mining efforts.

Before we separated Ernie gave me my instructions for the prospecting trip back to camp. He was going to cover the lower side, close to the contact while I was to stay up along the side hill. If I needed him I was to yell as loud as I could—the air was clear and my voice would carry. If I found anything sensational I was to let him know at once.

We started off and for a time I could hear him cracking rocks with his pick. I made my way around some large boulders, keeping my eye out for snakes, outcroppings and quartz veins and all the time trying to remember all I had been taught during the past weeks by Ernie.

The little veins made me mad as they peeked out under ledges. I followed them down draws, out under ledges and up steep slopes. Few were wide enough to get excited about. Still I took some samples from the widest ones and marked them as ordered.

About four in the afternoon I ran across an outcropping of yellow broken quartz under a pinyon tree. The vein, the widest I had ever seen, was about 15 inches across. It was heavy with iron oxide and I figured important enough to call Ernie.

I yelled down the canyon and presently he answered. It took him 30 minutes to find me. After studying the vein he gave me his verdict: "pretty high up, rugged approach, should run about \$40 a ton. It would have to widen out considerably to be profitable."

I was disappointed, but he suggested that I put up a monument, locate, and mark it well for perhaps someday the price of gold would go up and then it would be worth mining this vein.

I showed him the rest of my samples, all wrapped carefully in their colored

cloths and numbered. He didn't comment on them, but told me that we would pan them out on Sunday. He reached into his pockets and pulled out a half dozen pieces of rock. One of them was cement gray in color and was very heavy. I showed surprise at the weight and asked him about it.

He had chipped it off a vein about three feet wide. The ledge was only exposed for about 20 feet on the surface on the steep side of the draw near the contact. Although he had never heard of anyone finding platinum in these mountains, he wondered if the sample he had might not contain some of that precious metal.

I asked him if I could use his glass to give the specimen a close look, but he had forgotten it. "We'll pan it Sunday along with the other stuff," he said and started off toward camp.

Panamint Russ has the following advice for those who would search the slopes of Manly Peak for the lost gold ledge: "The mountain is rocky and steep; loose boulders are everywhere. I advise two persons or more to attempt it in a single party and to stay close together. A misstep could mean a broken leg or back. Stay on the Manly Peak side, the granite side of the lime and granite contact. Remember when looking that when the upheaval came in that district it came up under the mountain and Manly Peak was its cooling off spot."

"Did you mark it with a colored cloth?" I shouted after him.

Ernie laughed. "That's only for rookies. An old timer remembers and doesn't need flags and sign posts."

When we got back to our stone house the moon was up. After a sound sleep we decided we had better rest for two days before tackling any high ground again. I placed all the samples we brought back on the high shelf on the outside of the house and we agreed to pan them out as soon as possible. It's a good pastime when you are laying around camp. But we were out of fresh meat and spent a day hunting and then on the next day there were shoes to sole, wood to cut and other chores around camp. On the third day we tended the small garden we had put in earlier near the spring, so we put off panning the specimens again.

Then we had visitors. A couple of miners took the road we had made to camp. They were out looking over

the country and we spent many hours talking to them around the campfire. When Sunday came again we spent it quail hunting and that night the four of us enjoyed a delicious dinner.

Our supplies were running low so after the miners left Ernie and I took a week off and went into Shoshone to stock up again. We didn't hurry and still another week went by before we picked up the specimens to pan them out. By now over three weeks had slipped by.

Ernie breezed through my six colored cloth wrapped samples and a few of his own before noon. We found nothing to excite us. The whole lot averaged about \$25 a ton. The rock from the vein I had called him to see under the pinyon tree was the best—it ran around \$40.

After lunch I ground up the heavy cement gray stone and Ernie started to pan it out. He remarked that he wouldn't at all be surprised to find a little platinum in it.

I had ground it up well as Ernie had asked me to do. Coarse pieces of iron may often hold small particles of gold that had to be released if a good pan was to be had.

While Ernie panned the gray stone I sat on a large rock near camp and took some pot shots at a hawk that was circling low trying to scare a family of quail out in the open.

An explosive yell from Ernie brought my thoughts back into focus and I slid off the boulder and ran toward him. He was jumping up and down with glee and shouting, "We hit it! We hit it! We hit it!"

"Look at the gold," he cried holding out the pan to me. I grabbed it from him and still dazed peered into it. The bottom was covered with gold.

Ernie was excited and spoke on in a frenzied voice: "I knew it—I knew I would find something good on the contact! We hit it this time, Russ! Our troubles are over! We're rich! We're rich! I never saw ore like that any place in the world!"

After he calmed down he told me that the panning indicated an ore value of \$15,000 a ton! "And just think, it's ready money—free milling. The ground is all open for location. How does it feel to be rich, Russ? How does it feel to be able to have anything you want—and plenty of good yellow gold to pay for it?"

I couldn't answer—it had all been so sudden. I walked into the house and in a fog put on the spuds and beans for supper.

That meal was the longest I have ever eaten. It started at 5:30 in the afternoon and at 2 the next morning we were still at the table dreaming and

talking. Ernie had a list a mile long of things he was going to buy with his new found wealth. At the very top was a Lincoln coupe, half way down was a small yacht—he was going to sail to the old country and see his mother—bring her back to this country with him. He was walking on air.

Clearing off the table at 2:30 in the morning I could hardly believe it had happened to me. Then I felt a little sick in my stomach remembering that we had let three weeks slip by following discovery, and in those three weeks there had been a heavy rain and a few light showers.

Ernie first spotted the 20 feet of gray ledge from which the specimen came while resting on a boulder somewhere on that vast mountain. The mountain side was steep and the ledge would be hard to find. How much better would I have felt that night had Ernie used colored cloth to mark the gray stone's vein.

Neither Ernie nor I could sleep. He paced the floor eager for daybreak to arrive. He was all packed, ready to go. He had powder, fuse, steel tape, blanket, location papers—everything he would need. While he was hunting for the ledge I was going to go into Warm Springs to buy a pair of pack burros. We would need them to carry supplies for a new camp near our new mine.

Ernie would put up the discovery monument and locate it and pack back what ore he could. When I showed up with the burros we would return to the mine and put up the corner markers.

As soon as it was light enough to see he was out the door. "Get those burros up here quick as you can," he shouted over his shoulder as he started up the hill.

Twenty hours later—near midnight—he returned to the stone house. Something had gone wrong. His clothes were torn and his face haggard. He slumped into a chair by the fireplace and muttered four words: "I couldn't find it."

There was nothing for me to say. I turned to the stove and started to warm up some food for him. As I did my eyes fell upon the colored cloth on the shelf I had used to mark my worthless veins.

He was gone before I woke up the next morning. That night he staggered in again. Nothing. This went on for days and weeks.

I went along with him several times, but my prospecting partner was not the same man. He rushed from bush to boulder—nervous, excited, cursing and damning the elements that had taunted him with a peek at a treasure and then concealed it again.



Stone House in Butte Valley where Ernie and Russ made camp.

I took him to all the places I had marked with the colored rags which were easy to find, thinking that he might, in some way, get above the spot he was looking for, recognize a familiar rock or tree and somehow find that gray ledge again. But, it was no use. His nerves were cracking. He had to quit.

For about three months he remained at Butte Valley and looked for the ledge and then he left it for good. Ernie landed at Warm Springs and got back into tale mining.

We often met in Shoshone in later years and he would always bring up the subject of the lost mine. "Is there anything we overlooked?" "Have you searched for the ledge since then?" he would invariably ask me.

My guess is that the rains that fell

after he picked up the specimen caused a boulder to roll off the top of the mountain across the ledge, pushing the soft decomposed granite ahead of it over the vein. The rain and the wind could have left that small area completely changed in three weeks.

I went back to the city to work at my old job, but every year since have returned to the mountains to do assessment work on my claims. I often wonder how long it will be before someone stumbles across that rich vein on the southwest slope of Manly Peak facing Redland Canyon. If it is hidden, I wonder if Nature will expose it again for some prospector—more alert than we were—to claim. The ground is still open for location.

Folks ask me, "how can you lose a mine?" How do you lose anything? Through carelessness.

WORK ON PALO VERDE DAM TO BE STARTED THIS YEAR

J. P. Jones, regional director of the Bureau of Reclamation, announced that plans and specifications for the Palo Verde Diversion Project on the Colorado River near Blythe, California, are expected to be completed in September making it possible to start construction before the first of the year.

The project will cost an estimated \$6,599,000. Congress recently appropriated \$1,985,000 for beginning of construction. Land owners of the Palo Verde Irrigation District are scheduled to vote September 25 on the proposed repayment contract covering their share of the Palo Verde Diversion Dam which will cost an estimated \$4,538,000.

The dam site is 58 miles down-

stream from the bureau's Parker Dam and power plant. Plans call for an earth and rock-filled structure 1300 feet long and 65 feet above the river bed to divert water from the Colorado into the Palo Verde Irrigation District's canal system.

The dam will replace a temporary rock weir completed by the bureau in 1945. The weir was needed to raise the water level high enough to enter the district's intake canal. The low-water level was caused during 1943-44 when the river scoured its bed at the point of diversion. Had not the weir been built, farmers in the rich valley would have suffered serious crop losses.

Engineers believe the new dam will permanently solve the district's diversion problems.



Geronimo and his warriors. Although he could count on only 24 braves, Geronimo was a scourge to the Arizona-Mexico border country until he finally was tracked down and persuaded to surrender.

He Captured Geronimo

If Geronimo continued his depredations unchecked there was the danger that thousands of other Indians, confined on reservations, would be incited to a full-scale up-rising. The Apache renegade must be captured at all costs—and here is the story of how it was brought about by an obscure army lieutenant, who never was given adequate recognition for his heroism.

By THOMAS B. LESURE
Photographs from the Rose Collection
San Antonio, Texas

WHO CAPTURED Geronimo? Ask any 10 people this question and you will most likely receive 10 different—and incorrect—answers. Despite all the publicity surrounding the life, battles and subjugation of Geronimo, the name of the man most responsible for bringing him in has all but been lost in obscurity.

Lieutenant Charles Baehr Gatewood, a West Point graduate with piercing eyes, straight nose and dark, thick mustache which showed—despite his scant 33 years — the shrewdness of battle gained in nine years of Indian warfare, was the man who brought the Apache renegade back after tracking him deep into the interior of Mexico.

In the 1880s Gatewood's reputation as an Indian fighter was established in the Southwest. He had many tangles with hostile Apaches and on every occasion came out of them with honor, both in the opinion of the white soldiers and, what was probably a more coveted distinction, in the eyes of the Indian Scouts. It is said that he was the only soldier Geronimo trusted.

A fellow officer, Brigadier General

Thomas Cruse, then a lieutenant fresh from West Point, noted that the scouts had the utmost confidence in Gatewood's leadership and warlike acumen. "His nature and method of procedure appealed to them in such degree and manner as I have never seen the like before or since," wrote Cruse.

When, in July, 1886, Gatewood was ordered to capture Geronimo, that noted Indian renegade had for over a year struck terror in the Southern Arizona and northern Mexico areas following his escape from the Fort Apache Reservation. Gatewood was going after a man whose name was cursed and feared—a name synonymous with blood, robbery and murder.

General Nelson A. Miles, commander of the Indian campaign in Arizona, had the job of working out the capture's strategy. The break came when Miles received word from friendly Chiracahua Apaches that the hostiles under Geronimo were near exhaustion in Mexico. The time was ripe, Miles decided, to demand their surrender.

He ordered Gatewood to cross the border and get Geronimo.

Gatewood organized his surrender party at old Fort Bowie, Arizona, and started for the Mexican border with a command consisting of two Apache scouts, Kayitah and Martine; George Wratten, interpreter; and Frank Huston, packer. A few days later they crossed the border and met a troop of 4th U. S. Cavalry under Lieutenant James Parker. Together the two units pushed on to Carretas, Mexico, seeking word of Geronimo's whereabouts.

It wasn't until mid-August that Gatewood, having joined the command of Captain Lawton on the Arros River in the Sierra Madre Mountains 250 miles by trail south of the border, received word that Geronimo and his party were near Fronteras, Mexico.

Leaving Lawton, Gatewood and his men pushed ahead 80 miles in less than a day to Fronteras where they learned that two Apache squaws had only recently left after making overtures of peace and obtaining supplies of food and mescal. But the Mexican Prefect of the district, intent on gaining the glory of Geronimo's subjugation for himself, ordered the Americans away from the chase.

Back tracking and swinging around, Gatewood eluded the Mexicans and struck the squaws' trail six miles east of Fronteras. For the next three days, carrying a piece of flour sacking on a stick for their flag of truce, Gatewood and his men tracked the Indians over rough country to the head of a narrow

canyon leading to the Bavispee River. Here they found a fresh trail of the main Apache party, and sent back word to Lawton.

As they moved cautiously forward, they were startled to find a pair of faded canvas trousers hung on a bush in front of them. What did this mean? Hesitant and fearful, the group stopped, debated, then decided to forge ahead. Nothing happened.

Unbeknown to them, wily Geronimo was watching their every move through a pair of stolen binoculars.

Crossing the Bavispee River, the group made camp amid a cane brake near a small hill, and hung the flag of truce on a nearby century plant. "We felt fairly safe," Gatewood recalled, "though this peace commission business did not at all appeal to us."

And no wonder, in view of the Apache's reputation for ruthlessness and trickery.

At sundown, Martine, one of the Apache scouts, rode up to report that Geronimo and his band were hidden in a rocky position on the Torres Mountains, four miles away. Both he and Kayitah had entered the Apache camp and delivered General Miles' surrender ultimatum. The Apache chieftain held Kayitah as a hostage and sent Martine back with a message asking why Gatewood himself had not come straight to his camp. All would be safe, he added, as long as the soldiers started no trouble. Contact had been made!

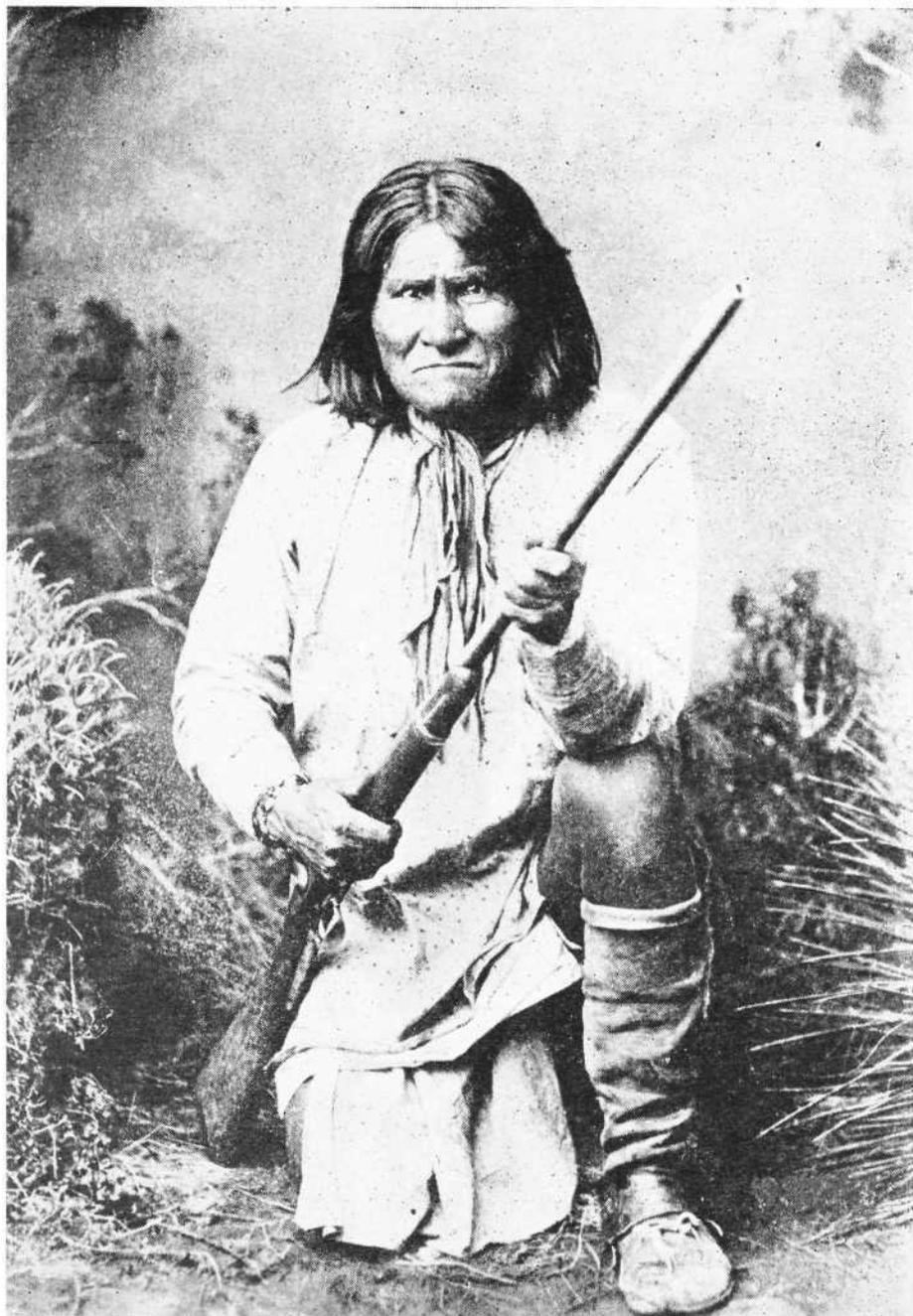
Meanwhile, 30 of Lawton's scouts had joined Gatewood. Lawton, with the rest of his command, was racing toward the scene. Gatewood felt easier.

The next morning — August 24 — Gatewood moved out. Within a mile of the Apache camp a group of unarmed Chiricahuas appeared and repeated the message of the previous night. A few minutes later three armed Apaches rode up. They had a message, too—that Natchez suggested a meeting at the bend of the river provided Gatewood's escort returned to camp.

Gatewood agreed, and a series of smoke signals and shots announced his acceptance to the waiting renegades. The party moved down to the river.

Immediately squads of Apaches galloped up, dismounted and turned their horses out to graze. Among the last to appear was swarthy, cruel-faced Geronimo, carrying a wicked looking rifle. He advanced deliberately to within 20 feet of Gatewood, laid down his weapon, and came forward to greet the lieutenant.

After passing out presents of tobacco, Gatewood sat down and Geronimo took a seat beside him—so close that the army officer could feel the bulge of a revolver in the Apache's



650
This is GERONIMO, who was also known by his Indian name, Cow-a-ar-tha, meaning "Yawner." He was not a chief as is generally supposed, according to best information, but was extremely crafty and suspicious, with unusual ability as a warrior.

coat! The rest of the Indians formed a semi-circle and the conference began.

In reply to Geronimo's request to hear General Miles' message, Gatewood announced:

"Surrender and you will be sent with your families to Florida, there to await the decision of the President as to your final disposition. Accept these terms or fight it out to the bitter end."

Silence fell on the party. All eyes riveted on Geronimo. Rubbing his hand across his eyes, then holding both hands forward, he asked for liquor. Gatewood had none. Silence lengthened as the sun rose. Finally Geronimo spoke:

"Take us back to the reservation, let us reoccupy our farms, furnish us with rations and clothing, guarantee no punishment, and we will leave the warpath."

For two hours they argued. Then the Indians withdrew for a private conference. After lunch the parley was resumed and Geronimo again repeated his demands.

"Take us to the reservation — or fight!" he thundered, looking Gatewood in the eye.

Gatewood was on the horns of a dilemma. He could not accept the terms, he could not fight, nor could he run. The tension mounted, cracked only briefly by Natchez's assurance

that he would be allowed to return unharmed.

Then Gatewood played his trump card. Slowly and pointedly he informed the hostiles that their people, including Natchez's mother and daughter, were being removed from the reservation to Florida. For Geronimo and his men to return to the reservation would mean living among Apaches who were all their enemies.

Stunned by this unexpected news, Geronimo and his warriors retired for another private talk. Returning, Geronimo declared they had decided not to surrender, but still wanted to talk further.

After asking about General Miles, his appearance, character, and attitude, Geronimo was convinced that the general was a "good man," and he switched tactics:

"We want your advice," he entreated. "Consider yourself not a white man but one of us. Remember all that has been said today and tell us what we should do."

"Trust General Miles and surrender to him," Gatewood replied.

Geronimo again asked for better terms. As sunset neared he broke off the conference, promising that the Apaches would hold a council that night and report their final decision in the morning.

Twelve hours later, pickets passed the word that the Indians wanted "Bay-chen-day-sen" (Long Nose, the Apache name for Gatewood). On meeting again, Geronimo, apparently wanting greater assurance, asked for another description of General Miles. Then, his face set in determination, the Apache chief announced that his whole party—24 men, 14 women and children—would go to meet Miles and surrender to him.

Word was sent to General Miles at Fort Apache and the Indians, escorted by Lawton's troops, began moving northward across the border. On September 4, Miles and Geronimo met in Skeleton Canyon where the terms of surrender were repeated.

Geronimo turned to Gatewood, smiled and remarked in Apache, "Good, you told the truth."

Gatewood's mission had been accomplished. His daring had saved the lives of hundreds of people for it led to permanent peace along the border. Geronimo and his band were sent to Florida and still later to Fort Sill, Oklahoma. There he died on February 17, 1909.

Gatewood acted as Miles' aide for four years after the Geronimo surrender and then rejoined his troop at Fort Wingate. From there he went to the Dakotas for the Sioux War of 1890-91, served in the Wyoming Cat-

tle War in the Big Horn and Jackson Hole country. He retired as a First Lieutenant of Cavalry following injuries received from an explosion of dynamite while on active service in 1892. Four years later he died at the age of 43.

His reward for persuading the des-

ARCHEOLOGISTS DISCOVER KIVA ART GALLERY 700 YEARS OLD

An ancient ceremonial kiva, described by an expert as one of the most spectacular ever discovered in the Southwest, has been unearthed at Pottery Mound near Los Lunas, New Mexico. The rectangular kiva's walls are covered with brilliantly painted scenes of Indian life and ceremonials which took place on the banks of the Rio Puerco about 700 years ago.

The paintings are done in at least 10 different colors, and according to Dr. Frank C. Hibben, University of New Mexico archeologist who headed the discovery party, are "very sophisticated and the color combinations are the best found so far in the Southwest." Many of the paintings are life size and depict birds and animals long extinct in the Southwest. Last summer a group of UNM students under Hibben started the excavation of Pottery Mound and

perate and extremely suspicious Geronimo to lay down his arms was a belated, colorless commendation in the Army's General Orders of April 9, 1891—and, in the words of his son, "for himself a free plot of ground in Arlington Cemetery, and to his widow a tardy \$17 a month."

discovered a kiva whose walls were decoratively painted. This year's companion discovery, the archeologist said, makes Pottery Mound a remarkable and important site.

The paint pigments come from red ochre, white gypsum, yellow iron ore, lamp black, and other mixed pigments for orange and maroon. Most common colors used in the two rooms are yellow, white, black and red.

The second kiva has eight layers of wall scenes. When the Indian artist wanted to redecorate, he smoothed on a thin layer of adobe and laid on a new scene. As each layer is scraped by the students, colored slides are made of the four walls and artist Octavio Romano of National City, California, re-creates the scenes in the exact colors in large water color drawings. Each design is different and thus far 54 original paintings have been scraped, photographed and reproduced.—*New Mexican*

Hard Rock Shorty of Death Valley



"Honesty," asserted Hard Rock Shorty, "is still the best policy. Not that everybody practices it, yuh understand, but it's a good idea if it happens to be convenient and don't cost yu nothin'."

Hard Rock leaned back on the bench under the lean-to porch at the Inferno store and lit his old corn-cob while the dudes waited for him to go on with his story.

"Funny thing," he continued, "but one of the honestest fellers I ever knowed, old Deacon Daniels, wuz a poker dealer over at the Silver Dollar. That wuz back in the days when Inferno wuz boomin' and we thought we wuz gonna have a mainline railroad to haul our profits out and our supplies in.

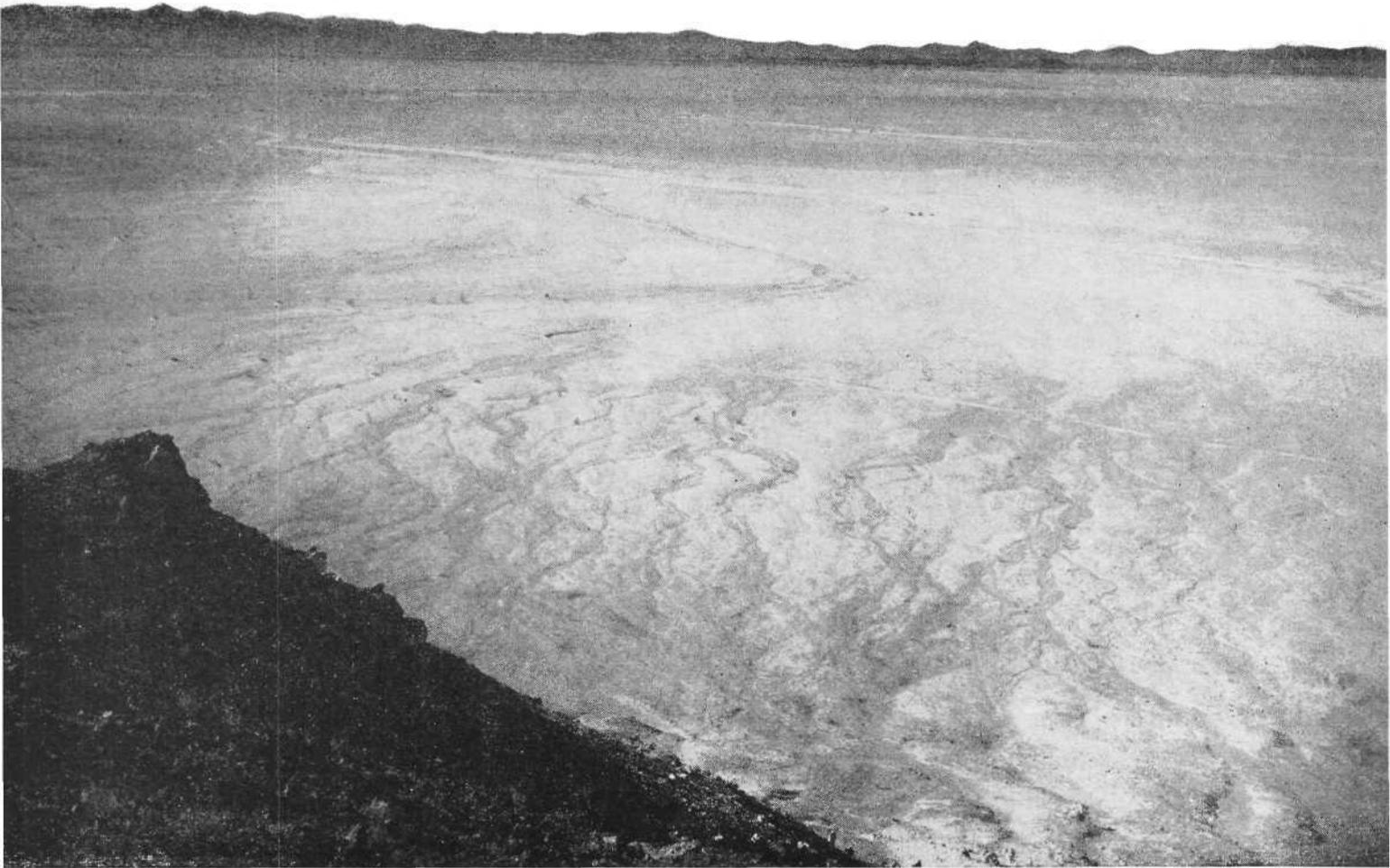
"Deacon wuz about as handy a cuss with cards as wuz legal, an' wuz a real polite gentleman.

He wuz so honest they asked him to pass the collection plate on Sundays.

"I wuz over at the Silver Dollar one time watchin' Deacon play a two-handed game o' stud with a stranger that looked like he wuz jest a jackass prospector in town fer some fun. But I wuzn't so sure. The stranger wuz winnin' pretty steady and they wuz playin' fer big stakes. I wuz standin' right back o' the Deacon when this other feller wuz dealin' an' all of a sudden I nudged the Deacon an' whispered in his ear: 'Say, I jest saw that feller deal from the bottom of the deck!'

"Deacon looked around at me plumb disgusted. He wuzn't excited, nor mad nor nothin'. Jest as calm and confident as a preacher on resurrection day.

"'After all,' says the Deacon—'after all, it's his deal ain't it?'"



Looking out across Bristol Dry Lake. Amboy Crater is that small dark object, upper right. The Marble Mountains are located in the northeastern edge of the Bristol Basin, and water mirages on the dry lake often make it appear that the old fossil beds once more are under the sea.

An Ancient Sea Bed Gives Up Its Dead

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

WHEN WE topped Sheephole Pass early on a June morning and looked into the big, misty basin of Bristol Dry Lake, it was easy to visualize the time when a Cambrian sea covered all that part of California's Mojave Desert. There was no Sheep-hole Pass then, of course, because that ocean antedated both Bristol Dry Lake and its basin by hundreds of millions of years. And no Twentynine Palms Oasis, or Amboy Crater, or road between them. Probably there was only a shallow sea as far as the eye could see.

For there were eyes then, though perhaps none that were ever free from the green mistiness of the sea. The Cambrian was the earliest age of the Paleozoic era, and from it have survived the fossils of the first known animal forms.

And in our Bristol neighborhood on a certain day in that aqueous age—I'm going to say July 4, 400,000,010 B.C., because no one can prove me wrong—a small crustacean awoke (if he ever slept) with severe rheumatic pains and a general feeling of malaise. Although he never knew it, this little beast was a trilobite. His kind had been the dominant life form on our planet for millions of years and had many millions to go.

Four hundred million years ago the dry lake above was under water. Its principal inhabitant was the trilobite, a crustacean living within an external skeleton—one of the first known animal forms. Today the fossil remains of this invertebrate can be found in the hard shale that was once the soft muddy graveyard at the bottom of the sea. Fossil collecting is not an easy task, but veterans say a good fossil is worth a morning of hard work.

Also unknown to our trilobite, he and his relatives were a special variety, differing minutely from others sharing the ancient ocean. That would be decided eons later when members of another dominant life form designated as "professors" would poke and measure and compare and speculate upon the remains of kinsmen of this crustacean. These professors would bestow upon them a name many time longer than their own rather insignificant bodies: Species *Mohavensis*, Genus *Paedumias*, Family *Olenellidae*, Class *Trilobita*.

Paddy—as I must call him because he was not feeling strong enough to tote his entire name—was not handsome by our standards, but was so remarkably adapted to his kind of life that his class survived for more than a hundred million years. He was an invertebrate possessed of an external skeleton—which meant that he lacked backbone. Instead of being largely wrapped around his bones, as we are, he was neatly packed inside them.

His class name, Greek for “three-lobed,” was given because this outer casing of chitin reinforced by lime carbonate with flexible joints between the segments, appeared divided longitudinally into three lobes. He was also in three sections latitudinally: head shield, thorax and pygidium. The head shield, which most often survives in fossil form, was equipped with a very effective mouth, and usually some form of eyes. Thorax segments were embellished with appendages for crawling and swimming. Thus Paddy could chase worms along a sea bed or hover in the water, fanning his feathery swimming limbs to set up currents which brought food bits within reach.

Since Paddy had no more knowledge of aging processes than of race, he could not realize that he was a very old trilobite and that he was cracking up. He only knew that nothing seemed appetizing this morning, and his segments were very stiff and painful when he tried to move them. It was strangely difficult to breathe through his limb fringes. His wet greenish world seemed unusually dim, too, and as the day

passed it grew darker. Then it went black. Paddy sank slowly to the fine, disturbed clay of the sea bed.

He was not alone there. The tiny bodies that preceded him in death lay heaped in confused piles. Others drifted slowly down around him along with the endless mist of finely divided clay that gradually sealed them all away beneath the rising sediments.

And the sea bed built up and the climates changed and the land rose and sank and lifted again and was twisted and compressed and broken and buried and exposed. And the world turned on into the age of fishes and the age of amphibians and the age of reptiles and the age of mammals and the age of man . . .

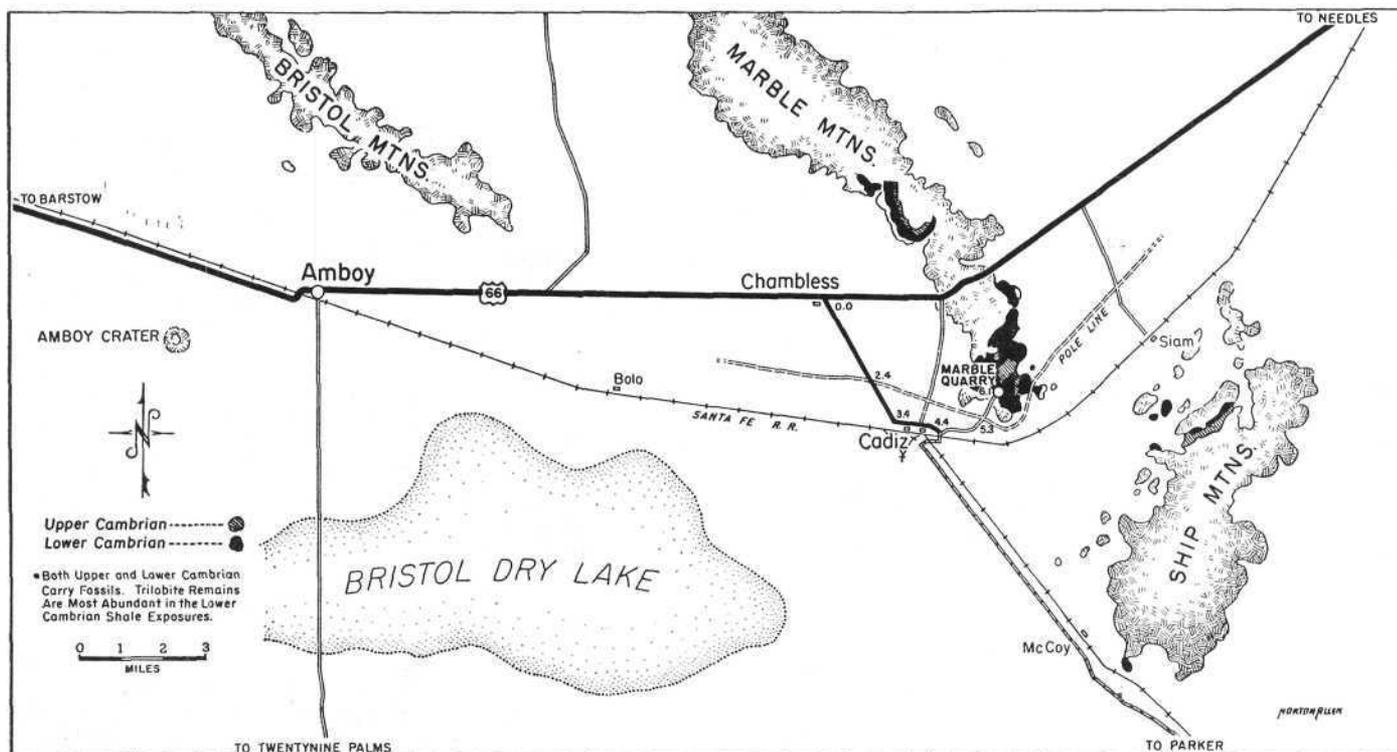
Man, with his eternal curiosity, found this graveyard of trilobites in the Marble Mountains at the northeastern edge of Bristol sink. From below Sheephole Pass, though still nearly 25 air-miles away, we could see the tip of the Marbles where the upturned, step-faulted Cambrian formations are spectacularly displayed.

Lucile and I had fossil hunted there before. The weather had been pleasantly warm, and the gentle slopes below the mountains a wild garden of Phacelias, Yellowheads, Mojave Ghost Flowers, Encelias, yellow Evening Primroses, Desert Stars and lavender-blue Gilias. We had not intended another trip until summer passed but when our friend Bill King saw the trilobite fragments we had found, it was clear he wasn't going to wait until fall before hunting some out for himself.

We agreed we must start early enough to finish digging before the Bristol basin heat worked up its afternoon enthusiasm. That meant Bill, who lives in Beaumont, California, and seldom can get away from his drug store for more than a day, would have to arise early.

He did, arriving at our home in Twentynine Palms with the false dawn. For Bill, while not yet an avid rockhound or fossil collector, has an enormous enthusiasm for tracking down desert oddities and rarities, and simply ignores any discomfort involved. He had seen our trilobites while returning from a night camped alone at a remote spring in Joshua Tree National Monument—one of many such nights he had spent there on the chance of photographing the wild sheep which sometimes come to the spring to drink in the early morning. His patience there has been rewarded by several bighorn pictures.

And as we drove across Bristol Dry Lake toward Amboy, Bill recounted a recent night he had camped on this lake to investigate a story that the salts here fluoresced. With his black light he had found a few areas that glowed a lovely transparent orange and some small intense spots of blue. Bill had been among the first to examine, photograph and meditate upon the peculiar, apparently self-propelled rocks discovered on the Racetrack in Death Valley National Monument. He once jeeped far below San Felipe, Baja California, not to fish but to enjoy watching the giant Ospreys build their



five-foot nests in the Cardones cactus.

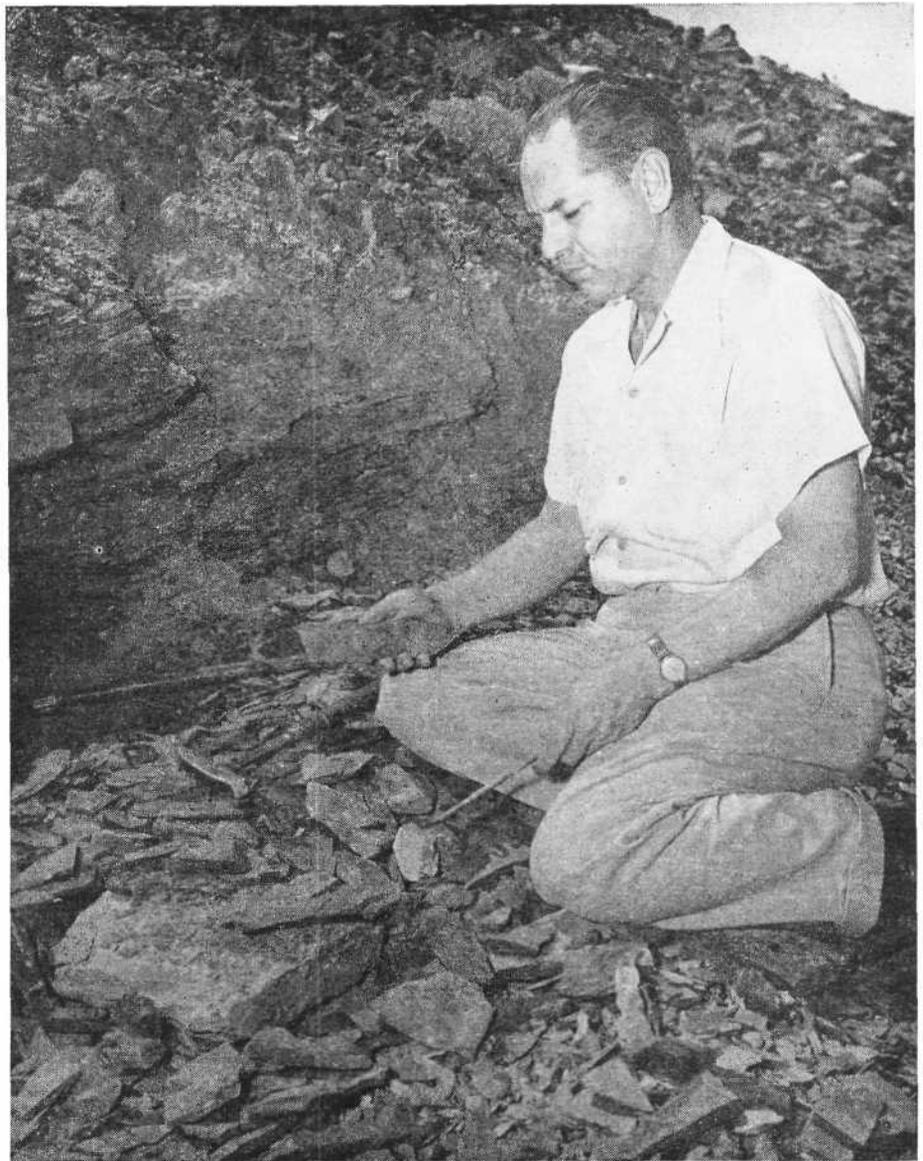
But his most delightful experiment, I think, took place one post-midnight in high Joshua Monument. On a narrow sideroad his headlights caught a big jackrabbit. The animal, dazed by the light, sat bolt upright and stared. He seemed hypnotized. Bill stopped the car to find out if he was. He was able to walk right up to the wild rabbit, circling so he didn't break into the light beam, and actually touch it on the head. That contact broke Mr. Longear's paralysis and he vanished with one jump.

Reaching Amboy on our trilobite trip we turned east and followed U.S. 66 to Chambless, then angled south on the surfaced road to Cadiz station on the Santa Fe. The fossil bed lies about two miles northwest of Cadiz at an old marble quarry. Lucile and I learned its location one day while visiting my sister at Needles. She mentioned casually that the Needles Gem and Mineral Club had been out collecting trilobites. Trilobites have always been a complete fascination for me, and phone calls to other club members soon assembled directions which proved accurate and easy to follow.

At home, before we made our first collecting trip, an investigation among our pamphlets uncovered a bulletin in the geological series of the University of California Press, issued in 1933: *Notes on the Cambrian Rocks of the Eastern Mojave Desert*, by John C. Hazzard. Hazzard spent the summer of 1930 mapping and studying the Bengal Quadrangle—which included the Marbles—for his master's thesis at the university. He found fossils in a number of localities and right where the members of the Needles gem club had directed us, he had discovered the brand new trilobite, *Paedumias mohavensis*.

Hazzard wasn't the first to find Cambrian fossils in the Marbles near Cadiz. N. H. Darton, famed geologist who died only a few years ago, reported on one in the *Journal of Geology* in 1907, though he labeled the Marbles the Iron Mountains. O. A. Calvins in 1915 and Clifton W. Clark—who described several varieties of trilobites from the same section in 1921—both called the area Bristol Mountain. Marble Mountains probably came into usage when that stone was first reported or quarried from the range. It has been the map name at least as early as 1929.

It is possible, with a jeep, to drive the old quarry road to the base of the Cambrian cliffs in which the fossils occur. Low passenger cars will do better to halt in the valley a short distance



Bill King uncovers a trilobite head shield. Bill has an enormous enthusiasm for tracking down desert oddities and rarities that scoffs at discomfort of digging fossils in summer heat.

below. Besides, the rock hunter will find float material that will interest him there—particularly pieces of red-spotted limestone in which the red circles and ovals have been identified as algae. The best of this material will cut and polish into very satisfactory bookends.

The trail divides at the base of the spectacular banded cliffs, the left branch slanting up and around to the little bay of the trilobites. The right leads to the main old marble quarry which apparently has been unworked for at least 15 years. A big wooden boom—part of the tackle that lifted the 15 and 20 ton marble blocks—still stands, tall enough to landmark the canyon for several miles.

This marble was discovered in 1937, according to the California Division of Mines. It was acquired by the Vaughan

Marble Company and operated until October, 1939. About 2000 cubic feet of highly colored, variegated Calevanto marble was cut from this lower quarry and used in such buildings as the Gardena and Oxnard postoffices and the U. S. Mint and the Custom House in San Francisco.

The sun was beginning to assert itself as we hiked to the trilobite shales which crop on the right side of the little canyon. This shale, which parts easily into thin sheets, is a greenish-gray when freshly broken but it weathers rusty-brown. It is a Lower Cambrian formation about 40 feet thick, with quartzite and calcareous layers interbedded. Trilobite and brachiopod remains are abundant.

That's what John C. Hazzard said, but they do not come out abundantly or easily or perfectly for rockhounds.



Calevanto Marble from this long-unoperated quarry in the Marble Mountains near the trilobite collecting area was used in the United States Mint and the Custom House in San Francisco.

Much more patience and effort are involved in collecting these fragile fossils than in picking up pretty rocks. A shovel and pick or mattock, and a thin flat blade—such as a putty knife—prove useful in mining and spitting chunks of the shale.

We opened dozens of barren layers for every fossilization worth keeping but found no entire adult trilobite. Most of their bones were the head shields with their spines. A thorax with its appendages proved a prize strike and we also uncovered the little dots which are said to be trilobite eggs, and the little segmented moults of the small fry, and various other fossil material. In most trilobite deposits only the dorsal shield—the thick upper portion of the external skeleton—normally survives and it often splits between the head shield and the more fragile thorax. The pieces of shale carrying the fossils had to be wrapped carefully in tissues because they were always soft and sometimes still moist.

Despite its problems and disappointments, trilobite hunting is a thrill to me. Even one of these incredibly ancient little creatures sufficiently preserved to be identified is worth a morning's work. The uncertainty of returns guarantees the field will never be stripped by quantity collectors. And since there are many exposures of this shale in the southeastern Marbles, even should the marble quarries ever be put in operation again, fossil hunters can just go out and locate another ledge. Lucile and I, on another trip, followed the pole line road around the tip of the mountain and found an untouched ledge with trilobite remains with only a few minutes prospecting in a likely canyon.

I do not know if Paddy himself was among our finds—or if any of his special variety were. We do have head shields which look identical with the holotype of *P. mohavensis*. But not being a professor of trilobites who has spent a lifetime studying variations in

glabella, intergenal spines and the rest, I can only say they look like Paddy.

Our activities in the shale seemed to fascinate the local wild life. One little brownish bird stalked around us then perched on a rock right beside Lucile—who speculated it might be a pipit—and chirped at her inquisitively. Lizards—particularly plump country-boy chuckawallas—gathered on surrounding rocks and gawked. As the temperature rose they vanished. Toward noon, with the heat waves rolling up around us, we decided we'd had enough, too.

Lucile headed back down to the car to break out lunch. Bill and I decided we wanted a closer look and possibly some photographs of the topsy-turvy geology before we left. We scrambled up the steep and shifty talus toward a break in one of the ledges and there we came upon one of our chuckawalla observers, sprawled on a rock point just outside a miniature cavern.

While I stayed below to beguile Chucky's attention, Bill attempted to circle in close for a good photograph. But the lizard kept one eye on him and slithered into his refuge just as Bill prepared to snap the shutter. But his curiosity kept him sneaking out for a quick look to see what Bill was doing. And each time, almost at the position Bill wanted, he would change his mind and slip back into a crevice. Both Bill and the chuckawalla were determined—the one to photograph, the other not to be photographed. But in the end the lizard won. He had a lifetime, if need be, for the game, and he was in the shade most of the time. We were in the sun—hot and hungry.

So we went on up to the top of the highest tilted ledge. The awesome view it gave us of the upthrust, broken and eroded sediments which had once been level sea bed made the hot climb worth while. Wonderful, too, was the view out across Bristol Dry Lake, which no longer looked dry, drowned in dancing silver water mirages which seemed to be moving toward us.

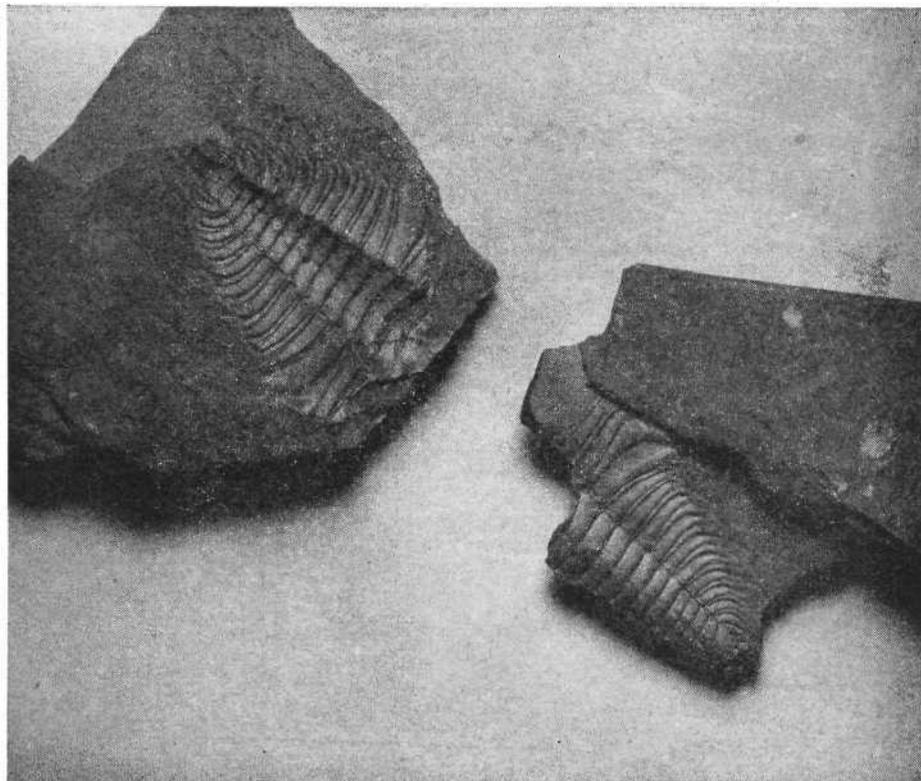
The effect was even more amazing later as we drove home across Bristol Dry Lake between Amboy and Sheep-hole Pass. Looking back across the lake at the tip of the Marbles where we had been, the bases of the mountains seemed to be under water and the peaks themselves were wavering and fading in the rolling heat waves.

Was it a mirage—or the heat-raised ghost of that forgotten Cambrian sea? Or was it a grim glimpse into the future? Those ancient waters had not rolled across the West to join the Arctic Ocean in one sweeping rush. They had inched their way—taking twenty million—perhaps fifty million years. No lifetime could have noticed that slow advance. Perhaps even now that old cycle is under way again, with the change so slight that the whole record-keeping period of science is yet too short to expose the trend. Were we seeing the ghost of a sea 400,000,000 years in the past—or 400,000,000 years in the future?

Or was it—my thoughts were growing as hazy as the dancing heat waves—was it all mirage? The tops of the Marbles had vanished now, and what had been their base was now shimmering, liquid silver. Were those ancient exposed sea beds actually there? Had we really been among them an hour before, grubbing in that miniature graveyard?

I shook my head to clear it. "Will you unwrap one of those fossils for me?" I asked Lucile.

She did—and there it was, that strange little shield-like shape frozen in the hardened mud. So we really



The trilobite was equipped with appendages for crawling or swimming, attached to the segments of the thorax, shown here. The thorax survives as a fossil much less frequently than does the thicker and stouter head shield.

had been among the dead sea beds and we had brought back with us fantastic little tokens from the dawn of

the world's fossil-history, to remind us that there had been life here a long, long time before we came.

BOOK OF DESERT LORE TO BE REPUBLISHED

For many years treasure hunters have been going into San Pedro Martyr Mountains of Baja California seeking the lost Santa Isabel mission where, according to legend the Jesuit padres cached a fabulous amount of gold and silver before their expulsion from New Spain in 1767.

Most of the searching parties have based their quest on the legend told by Juan Colorado in the book, *The Journey of the Flame*, published in 1933, and a Literary Guild selection that year. The book has long been out of print.

Now the Juan Colorado story is to be retold—in a new edition of *The Journey of the Flame* due to come off the presses of Houghton Mifflin early in October.

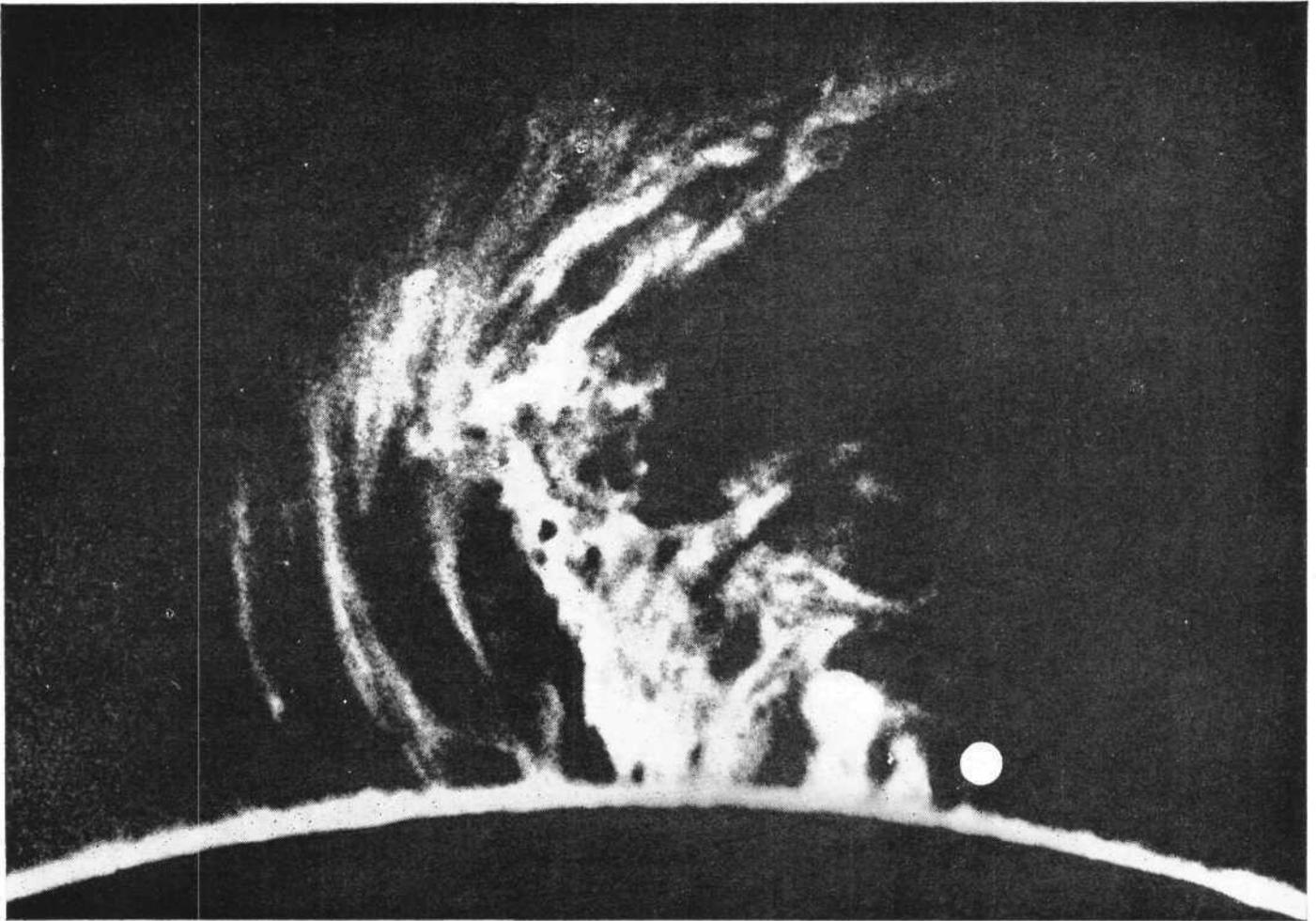
The Santa Isabel legend merely is one of a thousand tales in this amazing book of fact, fiction and lore of the desert Southwest. Actually, *The Journey of the Flame* is a historical novel covering the period in the Californias following the departure of the Jesuits. The reader will wonder constantly how one author could have brought together

such a wide range of information on so many subjects, not the least important of which is the running commentary on the foibles of human nature.

The story glorifies the work of the Jesuit missionaries in Baja California, but is not so complimentary in its references to the Dominicans and Franciscans who followed them in the New World.

While the book includes a factual account of many of the missions founded by the Jesuits, and of the work of Fathers Salvatierra and Ugarte, the tales of the pearl divers of La Paz, the natural tank, "Hell Awaits Thee," and the lost pearl ship of the Southern California desert clearly should be classified as fiction. The reader is in doubt many times as to whether the storyteller is recounting authentic history or mere myth. That is one of the fascinations of this unusual book.

In the original edition, the authorship of the book was credited to a fictitious Antonio de Fierro Blanco, but more recently it has been disclosed that the writer was Walter Nordhoff who had preferred at the time of publication to remain anonymous.



Explosion on sun's surface sends flames 140,000 miles into space. Man's continuing efforts to directly harness sun's energy could lead into new power era. White disc at lower right shows earth's comparative size to sun. Mount Wilson and Palomar Observatories photograph.

WILL THE DESERT BECOME THE *Powerplant for a New World?*

By GASTON BURRIDGE

WILL YOUR desert house have a sun-power collector atop its roof some day? It may be sooner than you think. Will that solar engine keep your dwelling cool in summer as well as warm in winter? Already, refrigerators freeze with a flame. Will all the Southwestern country one day be an important link—perhaps the key region—in a new kind of power industry? Government engineers' and scientists' figuring pencils indicate, "Yes!"

If population growth and electric power demands continue to rise at their present rates, by 1975 it seems likely the supply of fossil fuels—coal

The Desert Southwest—where the sun shines almost every day of the year—may become the key to the Solar Age. Giant collectors will some day gather in the direct energy from the sun and convert it to electricity for use in the great metropolitan areas. Your desert home may be equipped with its own collector sooner than you think. This fall world scientists will gather in Arizona to map a course for future solar energy research.

and oil—will be of such low reserve and high price that solar energy will have to be made available. This, even considering the probable added source of atomic energy.

Thus, the Southwestern desert country with its high percentage of sunshine, has a good chance of becoming the key area to which U. S. and world scientists will turn in their efforts to harness solar energy for man's use.

Our planet receives sun radiations at a continuous rate of 160,000 horsepower for each earth inhabitant. Each 10 by 10 foot piece of the earth's surface receives, at noon, about 11 horsepower per minute. This approaches 5000 horsepower per acre per minute. The sun sprays our globe with energy equal to that liberated by burning 21,000,000 tons of coal during the same length of time.

Having power available to convert and having it in wires ready for use are two vastly different matters. The difference between theory and practice is even more marked in the case of solar energy. Much has already been done, however, and we have more than 50 years of experimentation, research and testing behind us.

Many agencies are working on this problem of converting solar energy to the practical uses of mankind. In France, Francois Moreau, natural scientist, reports the construction of the largest sun engine in the world. It is located at Fort Mont Louis in the French Pyrenees. Trapped sunshine in this machine melts glass in a matter of seconds and liquifies steel as easily as a welding torch.

Recently the Bell Telephone Company announced its solar battery. It is a device which makes electricity directly from sunshine falling upon it. The primary ingredients of this battery are strips of the element silicon. Sand is largely silicon — one of the most plentiful elements on earth.

A battery of strips covering a square yard will produce 50 watts of current. Thus our sun is giving us a thousand trillion kilowatts a day.

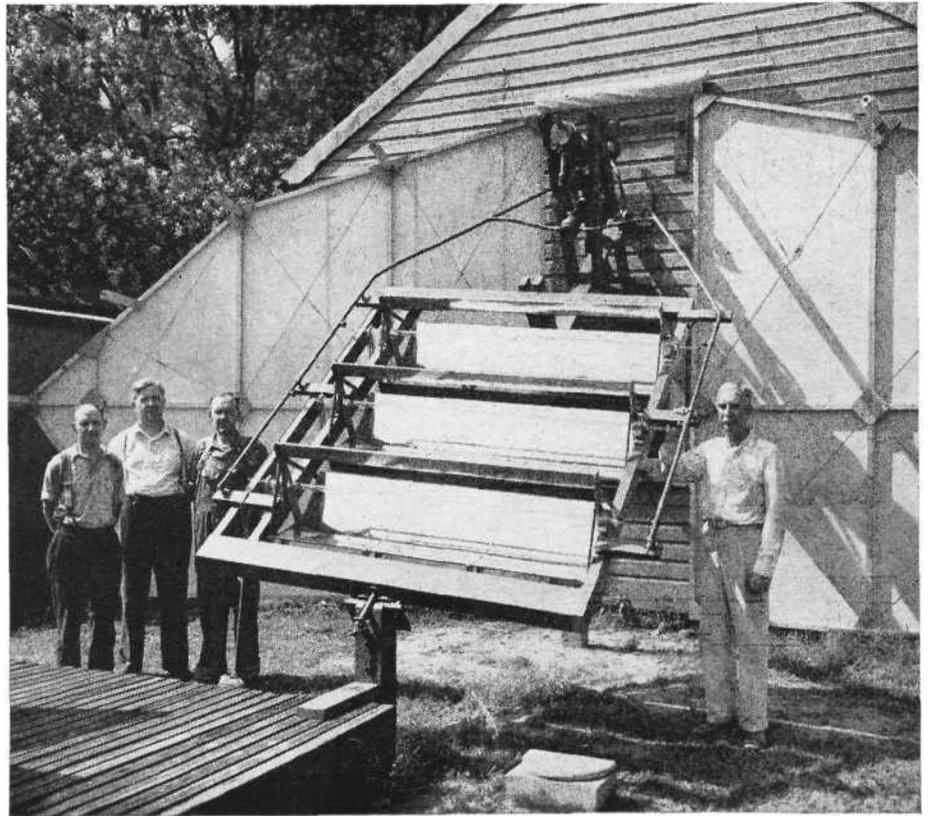
Dr. Charles G. Abbot of the Smithsonian Institution has done much toward converting sun energy into heat. He built his first solar engine in 1915 at Mt. Wilson, California. Dr. Abbot has spent more than 40 years studying the sun, its energy and its effect on the earth's climate.

The Southwest has been party to several early attempts at extracting energy from the sun besides Dr. Abbot's work. In 1903 A. G. Eneas conducted experiments with a solar heater at Mesa, Arizona. He generated 140 pounds of steam with his device. The next year at Wilcox, Arizona, he produced steam to 156 pounds with an improved machine. In 1906-07 the Eyllsie Sun Power Co. built an efficient sun power plant near Needles, California.

Recognizing the possibility of practical application of solar energy to everyday life, a group of Southwestern industrial, agricultural and financial leaders met in Phoenix last year and formed the Association for Applied Solar Energy.

This organization is sponsoring the first World Symposium on Applied Solar Energy to be held next November 2-5 in Phoenix. Major purpose of this meeting will be to chart the direction of future research.

While the scientists working on this problem are conservative in their forecasts as to eventual possibilities, imaginative writers already are predicting the day when you and I may wake



Solar energy pioneer Dr. Charles G. Abbot, right, and project workers stand beside their solar engine and boiler built in 1935-36 to furnish power for Canada to U.S. broadcasting station. Smithsonian Institution photograph.

up in the morning to the sound of a solar-powered alarm clock, eat bread toasted on a solar-powered toaster, and drive to work in a solar-powered automobile.

While solar energy is not a spectac-

ular release like atomic energy, its potential is no less far-reaching, and its significance is especially important to desert people. For on the deserts of the world may be the great power plants of the future.

GOVERNMENT TO KEEP PUBLIC INFORMED ON LAND STATUS

The Interior Department has ordered adoption of a policy to keep federal land applicants better informed about the status of public domain lands. The policy was suggested by Senator Alan Bible of Nevada. Land applicants under the new regulations can find out about land classifications at local county recorder's offices, post offices and government land offices rather than by reading the *Federal Register*, official Washington-published periodical giving legal effect to many government orders.

Hereafter under the Bureau of Land Management's new regulations, applications for withdrawal or restoration will include:

1. A notice of the application published in the *Federal Register*.
2. A copy of the notice, together with a press release, sent to newspapers circulated in the vicinity of the lands and in areas of public interest in the lands.
3. A copy of the notice sent to in-

dividuals and others who have demonstrated an active or potential interest.

4. Copies of the notice posted in appropriate land and district offices of the Bureau.

5. Copies sent to local county recorders, post offices, court houses and other places frequented by interested public, with a request they be posted.

6. Whenever feasible, a copy of the notice posted on land or along roads leading to the land. *Nevada State Journal*

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HISTORICAL THEME FOR DESERT EMPIRE FAIR

RIDGECREST—"The Desert's History" has been adopted as the theme for the 1955 Desert Empire Fair to be held here next October 14-16. W. A. Robb, general chairman of the annual celebration has announced the appointment of committees to prepare the program which is to include a pet show, hobby show, turtle race, whiskerino contest and agricultural and commercial exhibits. *Los Angeles Times*

Rare Mollusks on Desert Slopes



Bob Vannix and Ray Sanders hunting snails in the rough rocks of the Santa Rosa Mountains on the Colorado Desert. Snail hunting is hard work but thrill of new discovery is more than satisfactory compensation. Photograph by the Author.

The thrill of new discovery is not an exclusive province of days gone by. Desert mountain sides, seemingly devoid of life, contain untold forms of plant and animal life as well as land mollusks—snails—that are as yet unclassified. If you decide to explore for snails you had better prepare for a grueling test of your endurance and patience. The naturalist must sometimes dig five or six feet into the rocky hide of desert mountains before discovery is made. And snail areas are more often than not situated in inaccessible places.

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

ONE EARLY spring evening long ago while the earth was still damp from a recent rain I walked from the Cahuilla Indian Village at Palm Springs, California, to my hillside shanty perched among the rocks. On the rough steep mountain-side above me I was fascinated by the sight of a slowly moving light. Sometimes this mysterious yellow glow remained stationary, and then moved erratically forward or backward. For more than an hour it was in view while I wondered who might be responsible for it. Unquestionably it was the light of a kerosene lantern. But who would be up there carrying it, and why?

Next morning when I walked the half-mile foot-path to the village store I learned that other persons had seen the moving light too and that they were as full of curiosity as I.

"Only a person out of his right mind could be prowling around with a lantern at that time of night in a place so rough and inaccessible. And what was there to see and hunt for in such a place anyway?" people were asking.

The following night we saw the same strange light again.

The riddle was only solved the following morning when a professional looking man with well-trimmed beard stopped at my small board-and-shake house, "just," as he said, "to have a little chat about snails."

"Snails?" I exclaimed. "Of all things! They are an interesting topic for conversation, but why are you interested in snails?"

He introduced himself as Dr. Emmet Rixford of San Francisco.

"I've been out for two nights now with lantern in hand trying to collect some live land-snails. There is a rather rare one hereabouts and it is at night that you can best find it. At night it comes out of hiding from beneath the boulders and crawls about trying to find green plants on which to feed.

"I have here in this little box, several dozen of the pretty-banded shells and all with living animals inside. The California Academy of Sciences, knowing that I was coming to Palm Springs, asked me to collect some live ones. To have live ones is very important for only by making a dissection of the internal organs is it possible to make an exact identification."

To me that visit with Dr. Rixford was momentous for it meant the open-

ing up of a wholly new interest in a phase of natural history I had long neglected. At once I decided that I too must begin to explore the wild mountain slopes and rocky hills for beautiful land mollusks.

I have not always been as diligent in my quest as I should have been, but in spite of my lethargy, I have been able to make some interesting and valuable contributions to the knowledge of the distribution of these small, strange denizens of the desert wilderness; at the same time I've had some high adventures in exploration.

My first snail hunt led me into the arid Spring Mountains of southern Nevada, a limestone range of noble proportions and unquestioned scenic grandeur. It was at a time when Las Vegas was still a small village and the mountains were unused by summer vacationists. Our camps were at the ends of roads wholly impassable to any vehicle except Model-T Fords and trucks. Our only companions were chipmunks, nesting robins, occasional Townsend Solitaires and Ruby-crowned Kinglets. It was a paradise for the eager collector-naturalist, for the lime rocks abounded in fossil echinoderms, corals and lamp shells (brachiopods).



The plants and animals of this region had been little studied.

As soon as I began delving into the rock slides for snails, my efforts were at once rewarded by finding a number of small ones some so tiny that they were just visible to the naked eye. I wore my fingernails to the quick as I eagerly dug among the small rocks for the tiny mollusks. As I worked my way along and threw stones to one side, I literally made trenches, some as much as three feet deep and ten feet long. After all these intervening years these sizeable excavations are still discernable. I have often wondered how puzzled the people who came across these diggings must have been. The results of these early labors were wholly satisfactory for they yielded at least three different kinds of snails one of which proved to be a new one to science.

My success in the limestone mountains of southern Nevada led me to believe that if I could find similar terrain westward across the California-Nevada border I could turn up some exciting new mollusk territory in the California deserts. The arid slopes of Clark Mountain, 7903 feet high, seemed a good place for successful prospecting. I knew of no trails to the mountain's summit so I chose, perhaps foolishly, to ascend up the narrow and exceedingly steep, slot-like gorge on its west side. It was a most difficult climb and consumed a half day.

When I reached the top there was not much left of my shoes, shirt, trousers or strength. But of enthusiasm for discovery I still had aplenty. In spite of a close watch I had found no land snails on the way up, but when within a few feet of the topmost ridge, I dug into some plant debris and at once be-

held the coveted objects of my search—a whole handful of dime-sized snails, the first of their kind ever taken.

The snail specimens were later described under the name of *Oreohelix californica*, the only species of that genus on the mainland of California. There is an *Oreohelix* found far to the west on Santa Catalina Island off the California coast and only a full knowledge of the geographical past can explain the relationship between the two species.

Some years later a small group of fellow naturalists and I made a spring-season journey to the Death Valley area. Included in the party was the eminent mollusk specialist Dr. S. Stillman Berry of Redlands, California, and William H. Thorpe of Jesus College of Cambridge University in England, a well known zoologist and authority on animal behavior.

A number of important zoological discoveries were made by us including that of some unique insects which Dr. Thorpe took from the saline pools on



the valley floor. Unfortunately we missed an observation and discovery of great scientific importance when we failed to heed Dr. Thorpe's repeated and urgent request to visit Bad Water, the lowest point in the Western Hemisphere. Only a few months later Allyn Smith of Berkeley, California, skimmed those Bad Water pools and came up with the world's only known soft-bodied invertebrate animal in saturated salt water. And we missed it! It was small as a snail goes but of huge scientific interest. It was given the euphonious scientific name of *Assimineae infirma*.

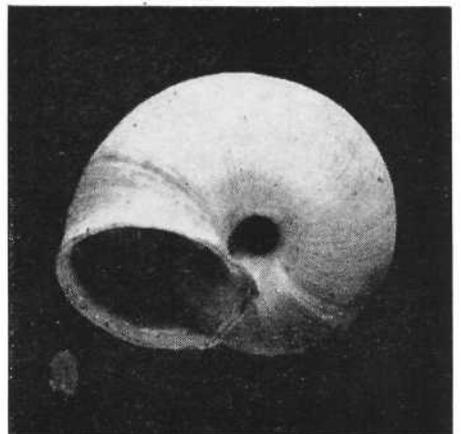
This small water-snail may have attained its ability to survive in these salt-laden waters by a gradual physiological and structural evolution over the many years which elapsed while the brackish water lake (Lake Manly), which once occupied the trough-like depression of Death Valley, gradually diminished in size and notably increased in the amount of its mineral constituents. When, due to increasing

aridity, the lake finally dried up, small remaining populations of aquatic animals, ranging in diversity from small cyprinodont minnows to insects and this snail, persisted in just such places as Bad Water and at Saratoga Springs. It is even possible that representatives of the snail genus *Assimineae* were introduced into Death Valley on the feet or feathers of aquatic or shore-loving birds which were flying eastward from coastal California where snails of this genus are now found living in brackish waters.

As one travels down the black-top highway to the Mexican fishing pueblo of San Felipe on the Gulf of California one sees to the west the high and precipitous Sierra San Pedro Martyr which culminates in the peak known to the Mexicans as La Providencia, El Encantada or Picacho del Diablo (10,136 feet high). Any one with eagerness to explore the desert's wilderness areas cannot fail to be inspired by the sight of this noble granitic mountain.

During this past year I have twice visited the steep-walled, highly picturesque canyons which spew their debris of rock and sand out over the low desert plain below. Upon entering the main canyons we found seemingly numberless small canyons which drain into them and carry the waters of the infrequent rains. It is all a very rough country made beautiful not only by the often grotesquely shaped and intricately banded granitic rocks but also the presence of numerous giant tree cacti *Pachycereus Pringlei*, agaves, two kinds of elephant trees and other strange vegetation found only in this hot southern extension of the Colorado Desert.

Searching here for land snails we soon came upon numerous empty, banded shells. We were well aware that never before had land snails been collected in mountains facing the Gulf of California. We were disappointed in not finding living snails. It never occurred to us then but we probably should have looked for them under



Specimens pictured on this page are land snails taken from the Sonoran Desert. Photographs from Dr. S. Stillman Berry's collection.

the dried leaves of the numerous agaves or century-plants which are so common here.

The first land snail collected in the Sonoran Desert was found by an early explorer and traveler named Frick who was going over the Old Yuma Trail to California. This was in 1865 and the place of discovery was in southwestern Arizona in the barren but beautiful Gila Mountains. In 1894 Dr. Edgar A. Mearns while on the U.S.-Mexican Boundary Survey took a few specimens near the same area. The only other collection of this mollusk was made by two of my students and me in the vicinity of the famous Tinajas Altas along the historic Camino del Diablo. This was in 1934 and was considered a very important rediscovery. This land mollusk was described under the name *Micrarionta Rowelli*.

People often wonder how new plants and animals get their scientific names. A good way to illustrate this is for me to tell of a snail I collected in Black Canyon in the mid-Mojave Desert in 1928. It is an area deeply covered by black volcanic rocks. My snail specimens were sent to Dr. S. Stillman Berry of Redlands, California, recognized as one of the leading western land snail specialists. Because this snail belonging to the well known desert genus *Micrarionta*, was found beneath and around black rocks at the entrance to the canyon, he described it under the specific name of *milanopylon* which is derived from the Greek adjective *melanos*, black, and the noun *pylon*, a gate, an entrance way.

To a snail I discovered in the Eagle Mountains of the Colorado Desert he gave the specific name *aetotes* which is Greek for "of the eagles."

A snail discovered on Sidewinder Mountain (named after the prevalent rattlesnake of the region) was named *crotalina*, derived from the New Latin adjective *crotalinus*, meaning pertaining to a rattle (snake). The stem of this word also occurs in the generic name *Crotalus*, a name chosen by the early Swedish naturalist Linnaeus for the rattlesnakes.

The hilly and mountainous area surrounding the four corners area where Arizona, New Mexico, and the Mexican states Chihuahua and Sonora meet is said to be richest in representation of species of land snails of any place in the United States. Often a single arid mountain canyon will have numerous species, and every somewhat isolated rocky hill may boast of its own snail candidate for scientific fame. Much of it is limestone country where the genera *Sonorella* and *Oreohelix* are in ascendancy, especially in the lower canyon rock-slides. Much

of it is unexplored snail territory and rich rewards await the patient, intelligent collector.

The desert floor of southern Arizona, as is often true of other flat areas, is poor snail country, but the surrounding low mountains and even the low, isolated conical hills are often good land snail territory. But these mol-

luskus may be hard to find since one may have to dig four or five feet to locate them. When the hills are made of volcanic rocks milleniums old, collecting is generally very disappointing, the region having been too recently burned out. The older cinder may yield most interesting material, however.

TRUE OR FALSE

It is too hot these days to be out prowling around the desert — and the best substitute we can suggest for enlarging your knowledge of the Great American Desert is this set of True or False questions. These questions have to do with geography, history, mineralogy, botany, Indians and the lore of the Southwest. Twelve to 14 correct answers is a fair score, 15 to 17 is good, 18 or better is excellent. The answers are on page 38.

- 1—Rattlesnakes normally have four fangs—two in each jaw. True _____. False _____.
- 2—There are 36 sections of land in a township. True _____. False _____.
- 3—The Devil's Golf Course in Death Valley National Monument was built by Death Valley Scotty. True _____. False _____.
- 4—Desert mistletoe is conspicuous for the beautiful coloring of its leaves. True _____. False _____.
- 5—It is tribal custom among the Navajo to burn or abandon the hogan in which a member of the tribe dies. True _____. False _____.
- 6—The Mormon battalion was formed to protect the Mormons from religious persecution. True _____. False _____.
- 7—The only poisonous lizard in the Southwest is the Gila Monster. True _____. False _____.
- 8—Sunset crater near Flagstaff in Arizona is still a smoldering volcano. True _____. False _____.
- 9—The highest mountain in the United States is visible from the California Desert. True _____. False _____.
- 10—Albuquerque is the state capital of New Mexico. True _____. False _____.
- 11—Lake Mead spreads over parts of three states: Arizona, California and Nevada. True _____. False _____.
- 12—Geronimo was a war chief of the Navajo tribe. True _____. False _____.
- 13—Chrysocholla comes from iron mines. True _____. False _____.
- 14—The junction of the Green and Colorado Rivers is in Utah. True _____. False _____.
- 15—Dipodomys is the name of a desert rodent. True _____. False _____.
- 16—Jackrabbit Homesteaders are required to reside on their 5-acre tracts for a year before they can obtain a government patent to the land. True _____. False _____.
- 17—The blossom of the Nolina is purple. True _____. False _____.
- 18—The mesquite tree sheds its leaves in winter. True _____. False _____.
- 19—Davis Dam in the Colorado River is downstream from Hoover Dam. True _____. False _____.
- 20—The reservation of the Goshute Indians is in Nevada. True _____. False _____.

KIT CARSON WAS FEARLESS, BRAVE AND VERY CAUTIOUS

In 1848 a young army officer, George Brewerton, was ordered to ride with Kit Carson, already a celebrated person, from Los Angeles to Santa Fe. Brewerton kept a record of his travels through the Indian infested desert, and made particular note of Carson and his trail habits:

"During the journey I often watched with great curiosity Carson's preparations for the night. A braver man than Kit perhaps never lived. I doubt if he ever knew what fear was, but with all this he exercised great caution. While arranging his bed, his saddle, which

he always used as a pillow, was disposed in such a manner as to form a barricade for his head; his pistols half cocked were laid above it, and his rifle reposed beneath the blanket by his side, where it was not only ready for instant use, but well protected from the damp. Except now and then to light his pipe, you never caught Kit exposing himself to full glare of the camp fire. 'No, no, boys,' Kit would say, 'hang 'round the fire if you will, it may do for you if you like it, but I don't want to have a Digger slip an arrow into me, when I can't see him.'"
—*Old Spanish Trail*, LeRoy and Ann Hafen

LIFE ON THE DESERT

Hens That Lay Wooden Eggs

By INEZ H. GOSS
Photographs by the author

On the Navajo reservation the Navajos cling to their religion—the belief and traditions of their forefathers. The chindees—evil spirits—are blamed for many strange happenings—even for the wooden eggs found in the hen house nests at the trading post.

HOSTEEN BI'LIN TLACHEE—lean, dark-skinned and black-eyed—had finished bringing in the stove wood for White Trader's Wife and now stood quietly in the doorway of her kitchen. Looking toward the south he could see the clean lines of White Mesa, while to the north loomed beautiful, blue Navajo Mountain, sacred to his people as a dwelling place of some of the Holy People. Hosteen was wondering if he would have to do any more chores for White Trader's Wife before he would be free to ride the rocky trail through fragrant sagebrush and pinyon to his hogan. He was anxious to get home to his jolly, plump wife, Arlene, and his four children, and to the hot mutton stew which he knew would be waiting for him.

White Trader's Wife turned to him. "Ahohaih bi'yenzie—the hen eggs," she said. "Feed the chickens and bring in the eggs, please." She handed him a small bucket of grain.

In 20 years of helping around the trading post, Hosteen Bi'lin Tlachee (Red Horse) had never been trusted to care for chickens. But a new *Bili-ganah* (white man) was managing the post now and several new chores had been added to Hosteen's job. Without a word he took the bucket and headed for the chicken house. He opened the gate slowly and scattered the grain gently to avoid frightening the flighty white hens. Then he turned to the hen house, muttering to himself. He wasn't sure he wanted to go inside this strange chicken shelter—not that the building itself was strange to the Navajo Reservation—only the present use of it was strange. This weather-beaten hogan had once served as a Navajo home.

Now it made a snug shelter for the two dozen hens. They were warm in winter and cool in summer. It had all the usual paraphernalia of any hen house: light juniper poles across the back of the hogan made the roosts, and boxes cushioned with straw were set on the dirt floor for nests. To encourage the hens to lay in the boxes rather than on the floor, the trader's wife had placed a white wooden nest egg in each box. And quite contrary to the opinion of poultry experts these hens were

neither unhappy nor unproductive because of the absence of windows to let in sunshine and fresh air.

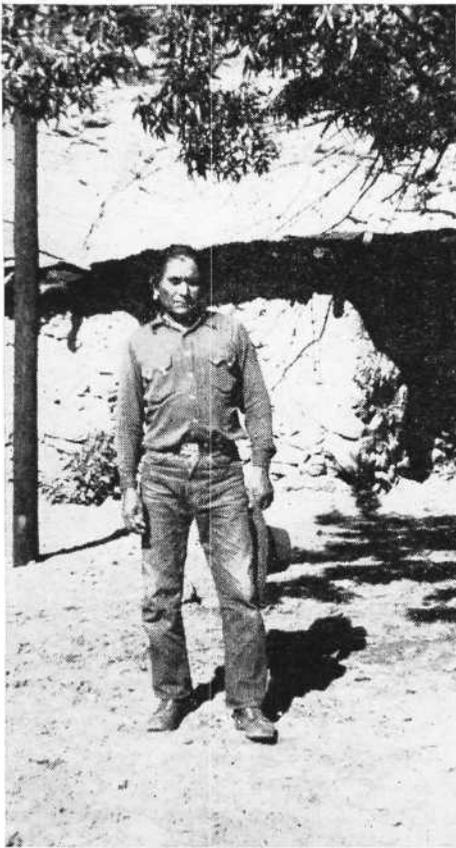
Hosteen did not care one whit about the lack of sanitation for the hens, but he was more than a little worried over a possibility which had just occurred to him. What if some former human

occupant had died in this old hogan? Then the place would be haunted by chindees and would be very dangerous. He hesitated several minutes at the low doorway but finally ducked in, gathered the eggs and hurried out.

Hosteen took the eggs into the kitchen but White Trader's Wife had dis-

The trading post hen house was once a Navajo hogan. Despite belief that it might be haunted, hens are happy and productive in their home.





Hosteen Bi'lin Tlachee, handyman at the Navajo Trading Post, and his wife Arlene.

appeared into another part of the house. So he went out to the corral, saddled his horse and rode home.

When White Trader's Wife came in she was surprised to find the wooden nest eggs in the bucket with the others.

"I sent Hosteen to gather the eggs and he brought in all the nest eggs," she told her husband that night at dinner.

White Trader chuckled. "Wouldn't you think he'd know better than that after 20 years around a trading post?"

"He has never taken care of chickens before and no one has ever bothered to teach him. I wonder if I could explain those nest eggs to him?"

"I doubt it," her husband said. "That would take more knowledge of the Navajo language than either you or I have. Why not just show him they're made of wood?"

The next afternoon White Trader's Wife again sent Hosteen to feed the hens and bring in the eggs. She was waiting for him when he came in. One glance told her he had again brought in the nest eggs.

"Halo—wait," she said as she began sorting the real eggs from the wooden ones. While Hosteen watched she picked up the wooden eggs and dropped them one by one on the concrete floor.

"Shasheal!" cried Hosteen. (This

is a mild expression of surprise among Navajos, "shash" meaning "a bear.")

White Trader's Wife pointed to the wooden eggs, then to the neatly corded stove wood in the bin. "Chiz—wood," she explained.

Hosteen nodded knowingly and went on home. He hustled his horse along the trail, anxious to tell his wife about his latest experience with the new White Lady at the trading post.

Supper was waiting and he sat cross-legged on a piece of canvas spread on the dirt floor, dipping mutton stew from the kettle with a piece of fried bread. When he had satisfied his hunger, he sat back with a big sigh.

Only then did Arlene ask, "Did anything happen at the trading post today?"

"Aou—yes," he said. "You know those white *ahohaih* that they have at the trading post? Well, today some of them laid eggs made of firewood. White Trader's Wife doesn't know why, but I do. There are chindees in that old hogan, and they have put an evil spell on some of the hens. I think that soon all of them will be laying wooden eggs. White people are crazy to take chances like that. Why didn't they tear that old hogan down instead of putting their chickens in it?"

"Aou, white people are foolish," agreed Arlene.

Inez H. Goss, author of this month's *Hens That Lay Wooden Eggs*, and her husband spent the last few years in Navajo land. During the winter of 1948, when much publicity was given to the misery of the snow-bound Navajos, the Gosses became very curious about conditions on the reservation. Two years later, when their youngest son entered college, they decided to find out for themselves about these Indians and went to work at a trading post in an isolated section of the reservation.

"Our curiosity soon changed to personal interest in the Navajos and we became very much attached to our new acquaintances," writes Mrs. Goss.

Mrs. Goss has lived in Arizona since 1927. In 1936 she and her husband established their home near Prescott, Arizona. They are back in Prescott now where Mr. Goss is Superintendent of the Arizona Pioneers' Home. "Here we have made new friends and have new responsibilities, but we have not forgotten our other friends, the Navajos, who live in constant dread of hunger, sickness and death," she writes.

* * *

Powerplant for a New World is author-artist Gaston Burridge's third article to appear in *Desert*—all spaced about a year apart and reflecting his wide field of interest: In December, 1953, appeared *Last of the Mountain Men*, the story of Ben Lily; in April, 1954, *Desert* carried Burridge's *New Source of Water for Desert Lands*; and in this issue we have a Burridge story on solar energy.

A fourth Burridge interest, that of locating underground water, is brought to light in an article he wrote for the June issue of *Radio-Perception*, official journal of the British Society of Dowsers.

He was born in Michigan in 1906 and in 1927 migrated to California where he and his father went into business together. In 1951 the business was sold and Burridge made his painting-writing hobby a full time one. At present he resides in Downey, California.

"Not much has happened since my last article appeared in *Desert*," writes Burridge, "except I'm a bit grayer now—and a bit wiser—I hope."

HOME ON THE DESERT

What Grass for the Desert Lawn?

By RUTH REYNOLDS

SEPTEMBER ARRIVES in this benign old desert without autumnal fanfare. But when the days begin to cool around the edges of morning and evening something tells us the long summer is ending and that it is time to winter-groom the premises of the home on the desert.

To plant or not to plant a winter lawn is a question many of us will ask ourselves at this time—a question to which there would seem to be a fairly simple yes or no answer. Either we plant the reliable Australian Rye, or possibly clover, and have a green winter lawn, or resolve to give the summer lawn a neat mowing and be satisfied with browned-out grass for the months to come.

But there are variations to this pattern—variations, based on long range planning, which include the possibilities of combining one grass with another and overseeding existing lawns. And there is still wishful thinking, if not real hope, of an ideal evergreen lawn cover that is as yet a so-near-and-yet-so-far dream.

Well, there is no harm in dreaming a little—and working a lot—while we wait for science to come up with something better than the lawn paint—green vegetable dye—introduced last winter. A sham and a deception, say I! Still . . . it might suffice very nicely to dress up the premises—for the holidays maybe, or to help sell a house.

Some progress in science and grasses has come to my attention recently, for grass has been much in the news in Tucson: so much so that I have wondered if this were the Atomic Age or the Grass Age—and was not too surprised when I came across the information that the Atomic Energy Commission is concerned with botanical research in which nuclear radiation may play an important part in the future of grass.

My hometown news however is of a newly developed lawn grass, Meyer Z-52 Zoysia, grown commercially here

for the past two years at Milo Perkins' Turfgrass Farm.

Meyer Z-52 Zoysia is a hybrid grass and must be planted vegetatively, not by seed. The Farm, under the management of Robert MacCartee, now does a thriving business—marketing it, bare root, near and—by air express—far.

To inspect this wonder grass I visited the Farm, half expecting to be disappointed—but wasn't. I walked, by invitation, on the beautiful green turf—fine textured, thick and resilient—and examined a block of bare-root sprigs being readied for shipment. The bare-root sprig method not only facilitates shipping but is an actual improvement in the culture of the grass that was originally sold in plugs of sod by which it was propagated, after the manner of other hybrid grasses.

Naturally, the first question in my mind was, "Is this grass for the desert?" Not too intelligent a question perhaps, as they had chosen the desert for its propagation. Still, to grow a grass for sale is one thing; to live with it in a permanent lawn is another. So it seemed significant that its root system does go deeper—two or three feet deeper—than the short hair roots attached to the planting sprigs. Otherwise I should have been skeptical of the infrequent watering it is said to require and of its adaptability to the desert.

It may be planted in either new ground or existing lawns. The sprigs, set eight inches apart, in new ground should cover in one growing season. In other lawns they may take two or three seasons. Being a slow grower it requires less frequent mowing than many grasses and as it welds into a compact turf it becomes self-weeding, crowding out even bermuda in time.

It likes the desert's hottest sun and seems indifferent to our alkaline soil in which it grows disease-free. But any investor—and I do mean investor—in Meyer Z-52 Zoysia should first invest in an adequate soil such as any good lawn requires, and be prepared

Scientists are getting closer to the dream grass for your desert lawn, but in the meantime another autumn is upon us and last year's lawn may need some help. Desert gardeners have a wide choice of grasses for new planting or overseeding the present lawn. Each has its special characteristics—some good, some bad. Here are some suggestions that will help you in your lawn plans for this season.

to coddle it through infancy with water and fertilizer.

In the long run it may very well prove an exceptionally good investment, but it is not yet the dream grass for all desert areas for it stays green only until frost, or at best through one or two light frosts, after which it browns-out until spring greens it up again. But like other summer lawns it may be overseeded for winter with a cool-season grass, at least during its "covering" period.

In the ground cover class, dichondra is a nearly-evergreen lawn possibility. Until recently it had to be planted by plugs but is now grown from seed and may be planted any time from spring to fall. As it grows slowly, a fast growing companion crop—clover or rye—may be planted with it. Rye, being an annual, will disappear after the first winter; clover, that goes well with it because of some similarity to it, will be crowded out more gradually, as will weeds and other grasses unless they had too much of a start.

Dichondra, with its small, miniature lily pad leaves, can make a beautiful lawn. It should be well watered, mowed occasionally and fertilized frequently, preferably with organic fertilizers, as chemicals may burn the leaves. While it is liable to attack by pests—cut worms, red spider, lawn moth—it is troubled less by them in desert lawns than in some other soils. Frost and freezing leave it temporarily unattractive.

For a year around green lawn white clover is perhaps the surest choice, but white clover is the prima donna of lawn covers. Being succulent and easily crushed, it is not for children or puppies to romp on. Nor will it put up a fight against weeds or troublesome grasses and it requires a great deal of water.

With sufficient pampering, however,

it is as showy as—any prima donna. Like all legumes it manufactures nitrogen which makes it especially good as a winter nurse crop with dichondra or lippia.

Lippia is similar to dichondra but has not its resistance to cold. It makes a pretty summer lawn with its small leaves and very small lilac colored flowers. As it is propagated only by runners, it covers slowly and welcomes overseeding for winter with clover or rye.

The summer lawn that most stubbornly resists overseeding is the all-prevailing bermuda.

At the end of its first summer it may be sparse enough to overseed as is, or with a mere surface scratching. But eventually a good bermuda lawn develops a turf so dense that a thorough "scalping" and thinning-out must be done before overseeding—a job requiring professional skill and equipment.

This may be more beneficial than harmful to the bermuda and an application of manure at this time may benefit it as well as the winter grass, while resultant weeds should perish by frost-bite.

Another toughie to overseed is St. Augustine grass. A neighbor of ours has a lawn of it and it is the greenest-green grass I have ever seen. It greens up a little earlier in spring than bermuda and stays green a little longer—through a light frost or two.

This "carpet grass" as it is sometimes called, has coarse, flat leaves that appear to be actually woven over the ground to make a thick, springy carpet. As it must be planted by sprigs it takes time—a year or two—for its weaving, during which it may be overseeded in autumn.

Through our neighbor's generosity we are trying out some sprigs on the badminton court—where it will have to be tough indeed to survive.

On a rocky terrace above the court I have a pet project of my own—a ground cover of verbenas, the little purple, straggling strays that come up in lawns and sometimes make a nuisance of themselves. When they started coming up there on the terrace I was interested to see what water and fertilizer could do for them. What they did for me was to take over the terrace and much of the ground below and above it—to become something of a showpiece, except during a few weeks in winter when they are not in bloom.

My husband likes them especially. He says, "The more verbenas the less grass to mow."

Jackrabbit Homestead Ownership Requires \$2400 Expenditure

Paul B. Witmer, manager of the Department of Interior's Los Angeles office of the Bureau of Land Management, warned prospective jackrabbit homesteaders to investigate government requirements that must be met before land ownership can be obtained, and the subsequent cost of these requirements.

Although filing fee for a five-acre tract is only \$10 and the rental \$15, in order to own a small tract the homesteader should be prepared to spend a minimum of around \$2461, Witmer said. He derives that figure from the following expenses:

Filing and rental fee	\$ 25.00
Cabin (the law requires a minimum of 192 square feet which is only big enough for sleeping quarters. Construction cost will run roughly \$8.00 per square foot).....	1536.00
Water tank, approximately	400.00
Cesspool	250.00
Roads, approximately	50.00
Survey, approximately	50.00
Purchase price of land (between \$150 and \$175 per tract).....	150.00
<hr/>	
Total, not including possible fees to professional locators that vary from \$10 to \$300.....	\$2461.00

Rare Pictures Are Wanted...

Autumn days are approaching—days when the desert landscape will be free from the shimmering haze of July and August—days when the crisp tinge of the morning air will be an invitation to the camera enthusiast to venture forth to discover new subjects for the lense and tripod. Readers of Desert Magazine always like to share in the enjoyment of unusual pictures of the desert terrain, its people, wildlife, sunsets, hidden canyons and rare botanical specimens. In order that the best of these photographs may be available for Desert's pages, two prizes are offered each month for the best Pictures-of-the-Month submitted to the editorial staff.

Entries for the September contest must be sent to the Desert Magazine office, Palm Desert, California, postmarked not later than September 18, Winning prints will appear in the November 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

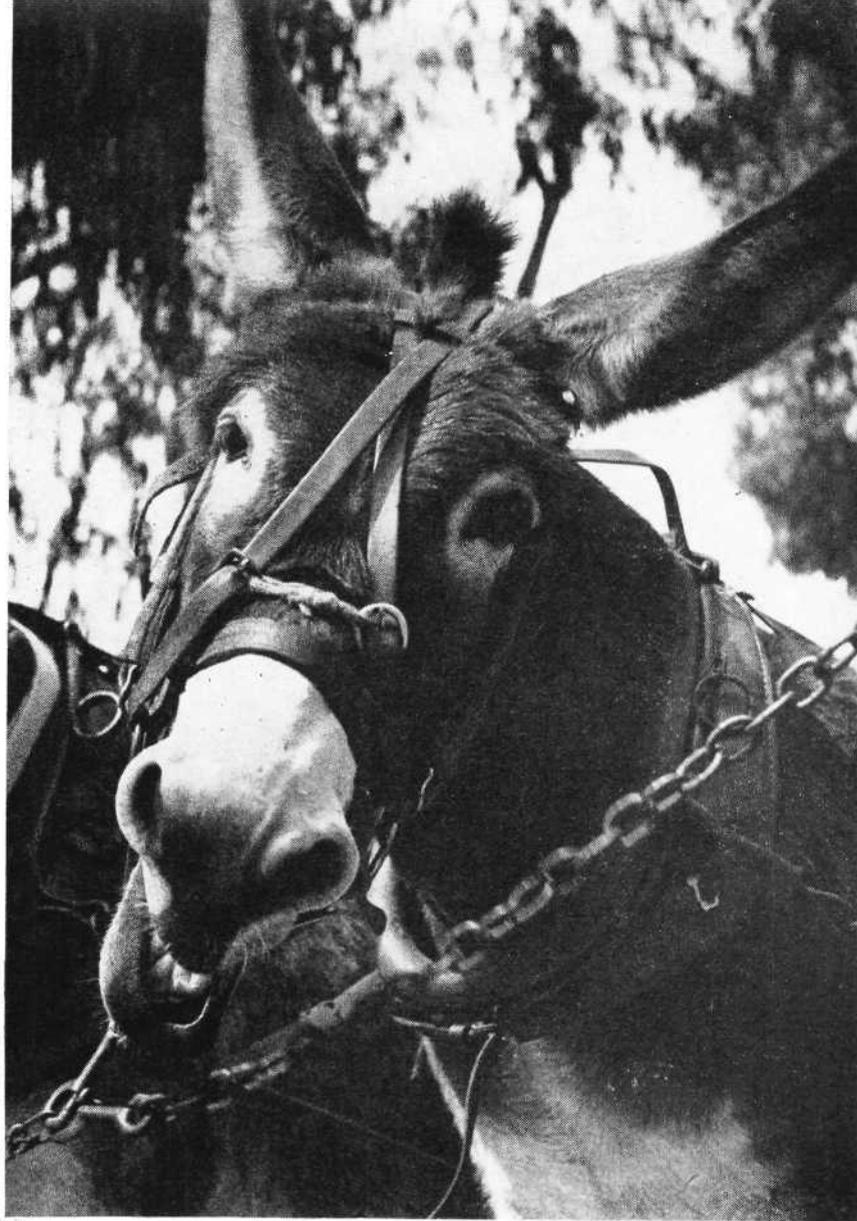
The Desert Magazine

PALM DESERT, CALIFORNIA

PICTURES OF THE MONTH

Desert Donkey

Donkey comment was caught in this photograph which won first prize in the July Picture-of-the-Month contest for Than McIntosh, of San Diego, California. Picture taken with a Graflex f22, Plus-X film, f:5.6, 1/200 sec.



Taos Pueblo

Sunlight, shadows and serenity at Taos won second prize in the contest for William Fettkether, of Bishop, California. Picture taken with a 4x5 Graphic View, 8-in. f:7.7 Ektar lens, 1/25 sec. at f:32, K2 filter, Super XX film.



Montezuma Castle cliff dwelling on north side of Beaver Creek, Montezuma Castle National Monument, near Camp Verde, Arizona. Ladders have been removed since this picture was taken due to human erosion.

MY INTEREST in Montezuma Castle dates back to an evening in August, 1918, when I was camping on the sandy bank of the Verde River in west central Arizona.

I had come to Arizona for my health, and three weeks earlier I had left my cousin's LK Bar ranch near Wickenburg for a leisurely hike to Flagstaff. The Arizona climate and the outdoor life of a tramp had been marvelous tonic for my body.

The coffee was boiling and the flapjacks had just reached the right shade of brown when a stranger came through the thickets along the river and introduced himself as a local rancher, and the owner of my camping plot by the river.

We soon learned that we had many common interests, and we sat by the campfire and talked Indian lore until long after dark. He told me about

Indian sites and old caves he had explored in the Verde Valley, and mentioned the great mysterious cliff dwelling that was not far from where we were sitting.

His conversation stimulated my interest in the old ruins, and early next morning I was on my way to Montezuma Castle which in 1906 had been made a National Monument by presidential decree. The name by which the cliff dwelling is known was the idea of an early day explorer who had a flair for the romantic. No connection has ever been established between this remote cliff palace and the Aztec Indians of central Mexico, or their princely emperor, Montezuma.

I spent much of the day climbing in and through the many apartments of the ancient stone and mud castle, and my rancher friend came to my camp again that evening.

"Tomorrow night I am going to

The Old People had all left in 1918 when Jerry Laudermilk made his first call at Montezuma Castle in the Verde Valley of Arizona, so Jerry moved in and made himself at home in a bedroom once occupied by prehistoric Americans. He found the sleeping quarters a little stuffy—but it was an experience which led to an exhaustive study of the lives of these ancient cliff dwellers.

Night in Ghostly Castle

By JERRY LAUDERMILK
Sketch by the author

sleep in one of those old Indian rooms," I told him.

He did not enthuse over the idea. "It will be a lonely experience," he suggested, "for the ruins are a ghostly place at night."

But I persisted, and he finally gave me a typical Arizona blessing: "Go ahead!" he said. "It's your funeral."

The next afternoon I moved into one of the rooms with my bedroll and a thermos jug of coffee.

The Park Service had placed a visitors' register on a rustic table in the first room to the left of the ladder which ascended to the upper stories, and there on the dusty floor I spread my bedroll. That register was a sort of link with the present.

When darkness came I laid there on the floor and tried to visualize the procession of dark-skinned humanity which had passed through the doorway: women bringing their ollas of water from the river below, men returning from the hunt, children who had never known any life except this.

In imagination I reconstructed what I could of the lives of these primitive people, and in the years which had elapsed I have read what is known of this ancient land and its inhabitants.

Perhaps 20 million years ago, during that period known as the Pliocene, there was a great lake or series of lakes in central Arizona. The main body of water was about 35 miles long and perhaps 18 miles wide in its widest place or a little larger than Pyramid Lake, Nevada. The streams that flowed into the lake carried in vast quantities of limy mud which settled to the bottom and accumulated in thick layers. Finally, the lake waters escaped and the mud solidified into a very impure limestone. Then during the last two or three million years the Verde River and Beaver Creek scoured out their beds and cut down through the limestone to form a cliff about 150 feet high and a half mile long on the north side of a bend in Beaver Creek.

Erosion by percolating ground water finally etched out a great cavern high up on the south face of the cliff. The cavity varies up to 120 feet in horizontal width, 80 feet vertically, and has a depth of 30 or more feet.

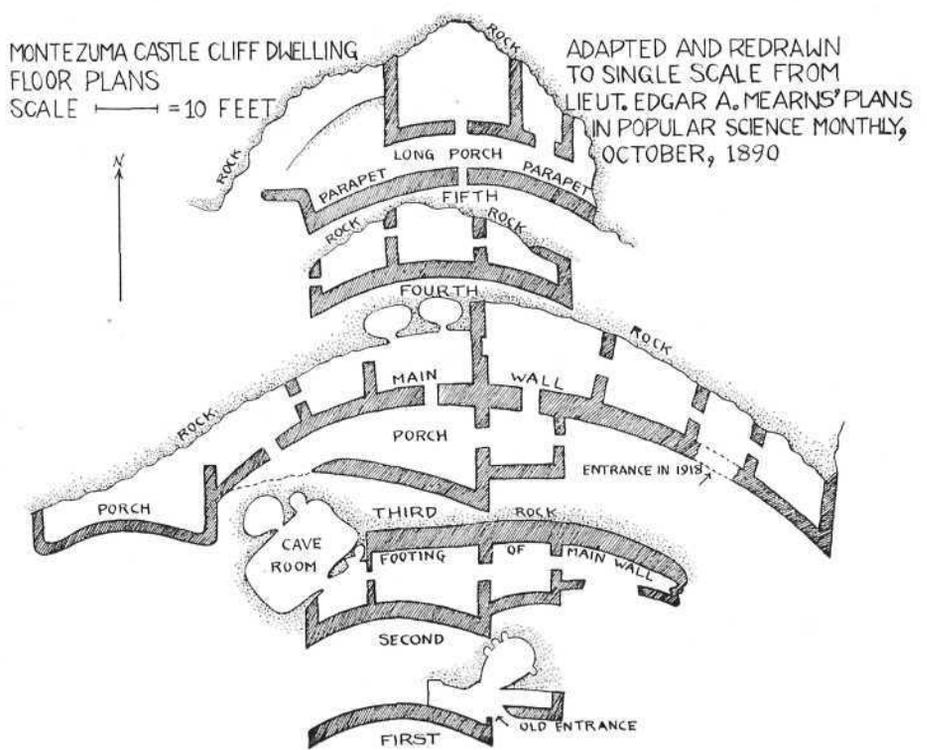
For ages there were no human inhabitants in the valley — or if there were, they left no traces. About 1000 years ago a tribe of Indian farmers from the south, the Hohokam, settled in the valley and grew crops of corn, beans, squash, cotton and a species of sage called chia (*Salvia columbariae*) whose seeds are still used by some of the Arizona tribes.

These folks also helped meet the food problem by gathering mesquite beans, walnuts, hackberries and the sugar-rich basal stems of the mescal, a species of century plant (*Agave* of three or four species).

The farmers lived in small villages of one-room brush huts partly excavated in the ground. Their only problems were food and shelter, and things seem to have gone smoothly until the early part of the 12th century when new arrivals from the north appeared on the scene. The newcomers built more permanent houses than the earlier Indians and constructed strong stone and adobe pueblos on the mesas. Before long the peace was broken by predatory hunting tribes who had begun to appear and found the farmers to be easy prey.

But the peaceful tribe along Beaver Creek had a solution—the cavern in the cliff.

The problem faced by these primitive architects was that of building a huge, impregnable apartment house in the cavern which is shaped like a great bowl standing on edge. There is no actual floor, the rough interior of the bowl being a series of horizontal ledges. The key to the actual construction of their building lay in tailoring their



architecture to fit the contours of the ledges and the shape of the cavern.

The castle has five stories and 20 rooms. The walls are built of stone blocks and cobbles set in a generous bonding of adobe mortar. The construction might well be called adobe-rubble. The inside walls have been smoothly plastered with adobe so that the rubble construction is not visible as it is on the outside walls of the first three stories.

Since the ceiling of one story furnishes the floor for the level above, ceilings had to be extra strong and durable. Large sycamore trunks used for the rafters (which still show the marks of stone axes) were placed with their front ends supported through holes in the wall at ceiling height, the opposite ends were set in niches cut in the rock of the cavern itself. A second layer of poles, usually of the desert willow which is not a willow at all but a species of bignonia (*Chilopsis linearis* Cav.), was laid over the rafters. Across the poles there next came a thick mat of reeds. This beam, pole and reed foundation received a final thick layer of hard-packed adobe, which made a smooth floor for the story above.

This same construction is used today by the Hopi and other tribes of pueblo builders. The adobe floors stand up well under bare feet or moccasins, but hard soles soon grind the surface to powder. In fact, Dellenbaugh, an early-day explorer and authority on Southwestern Indian subjects, once occupied apartments in the

Hopi pueblo of Tewa for a season and says his hard-soled boots were the despair of his Indian landlords, who kept a bucket of mud on hand for their daily repair. In recent years this continual damage to the floors of Montezuma Castle by the hard shoes of sight-seers has been a serious problem to the park authorities. Compulsory rubber soles or rubber mats might be a solution.

One of the amazing things about Montezuma Castle is the fact that although the architects and builders were primitive folks working with only such materials as nature furnished, they built a house so well planned that after more than 500 years it is as strong as when first built.

From their studies of the pottery and other materials recovered, archeologists can date the principal events

The mud floors and sills in Montezuma Castle were able to withstand the bare or moccasined feet of the Indians without undue wear. But under the hard-soled shoes of present day American visitors the floor surfaces deteriorated rapidly after the Castle became a National Monument, and two years ago the Park Service took down the ladders and closed the ruins to visitors.

A fine museum is maintained by the Park Service and rangers-naturalists conduct daily tours along the trails in the Monument for the many visitors who register at the Monument each year.

with reasonable accuracy. They conclude that construction started about the year 1100 A.D. and that the castle was continuously inhabited for about 300 years or up to the time the whole Verde Valley was abandoned.

Some features indicate that the folks left very suddenly. Small, portable treasured items such as beautiful shell and turquoise jewelry were left behind and early investigators found stores of provisions untouched in the storage caves below the castle and in some of the rooms of the castle. In fact, Edgar A. Mearns, Assistant Surgeon, U. S. Army, who was stationed at Camp Verde in 1884 and explored the ruin, says that in the large room on the fifth floor he found the remains of a fire in the hearth and a plentiful supply of firewood within easy reach. Nearby was a basket containing mesquite seeds and there was also food in a pottery bowl.

It is doubtful if the castle was started and finished as a single project. My own opinion, based upon what would seem to be the logical steps to take in handling a job of this type, is that the first story was finished first since the ceiling would make a good working platform for the workmen building the footing for the great main wall, which also makes the rear wall of the second story. The ceiling of the second story would furnish a platform for the builders who were continuing the main wall upward to make the front wall of the third floor. The third floor could have then been finished and it, and the second story could have accommodated several families while the fourth and fifth stories were being built.

I had dropped off to sleep as my imagination traveled back through the years and I sought to reconstruct the daily lives of these prehistoric dwellers.

Three or four hours later I awoke—and sensed such a profound silence as I had never before experienced. For awhile I lay on the floor but before midnight the air became so stagnant I moved outside. I thought how stuffy that room must have been when several Indians were sleeping on that same floor.

There was no more sleep for me that night. I wrapped myself in my blankets and with my back propped against the wall which still bore the imprints of the hands which laid the adobe mortar, I drank my coffee and awaited the sunrise.

I returned to my camp by the river, and as I was mixing my flapjacks the rancher appeared again. He seemed quite relieved to find me physically intact after my night in the castle ruins with the ghosts of its aboriginal dwellers.

LETTERS

Army Moves in . . .

Cambria, California

Desert:

I am glad to see that you are as concerned as I am over the military's taking over any area that apparently strikes its fancy, regardless of what the public interest might be.

I recall seeing a lady from Minnesota in tears because the Army had absorbed a lovely spot in her community that for a hundred years had proudly carried on under its appropriate name. The Army desecrated and mutilated it and finally changed its name to honor some obscure military official we had never heard of. Still later the entire enterprise was abandoned in favor of some other beauty spot.

We lived for a quarter century in a beautiful mountain area such as John Muir would describe as "opening a thousand windows to God." Then the Army came because "it was the only suitable place available, etc., etc." and with mules, dynamite and bulldozers proceeded to make the landscape over. When they moved in God moved out. So did we.

G. D. WERT

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Micromount Photographs . . .

Pasadena, California

Desert:

I read with interest your article in the July issue of *Desert* that told of Floyd R. Getsinger's success in making a special camera to photograph micromounts for 35 mm. color slides. His efforts, however, were not the first in this field as the article inferred.

Eight years ago Jim Smith, now deceased, but then chief engineer for the Hammond Lumber Company, photographed a number of my micromounts and made color slides. These slides were thrown on the screen at a meeting of the Southern California Microscopic Society. Simultaneous with their showing, the actual micromount was placed under the stereoscopic microscope and the members, one by one, looked at the mount under the scope.

Jack Rodekohr of the Mineralogical Society of Southern California has been making 35 mm. Kodachromes from his micromounts for the past year. I have also heard of several Eastern micromounters who are doing the same.

W. C. OKE

Curator of Minerals
California Institute of Technology

Too Much Uranium . . .

Desert:

I am an ardent *Desert* reader and have read with great satisfaction every issue since Volume 1, Number 1. No other magazine has given me a fraction of the enjoyment that your magazine has. Being a lapidary and rockhound I have been on most of the field trips that *Desert* has featured.

I have been dismayed lately, however, at the amount of space *Desert* has devoted to the uranium craze. It might interest you to know that the vast majority of your readers are not interested in hunting uranium, I believe. We are desert lovers, not fortune hunters.

Recently I wrote to six mineral supply houses for specimen listings and available cabochon material. From five I received in reply only uranium advertisements. What has happened to our hobby? Is it about to become engulfed in a craze for easy money?

GORDON S. EDWARDS

Dear Gordon: Please take note that we added four pages to the size of Desert Magazine to compensate the readers for the four pages of uranium ads we carried. Please be as tolerant as you can toward the U-prospectors. There are thousands of them out here on the desert sweating it out through the summer heat. It is a tough, hard game—and very few of them will ever get their grubstake back.—R.H.

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In Defense of the Military . . .

Barstow, California

Desert:

I have, from time to time since subscribing to *Desert* in December, 1954, noticed your caustic editorials and the vitriolic outbursts of others against military acquisition of certain properties of the public domain within the desert area for military use. A case in point is Sam Riley's letter, "Verbotten," in the July issue.

Being a military man I can no longer stand idly by and remain reticent to such ridiculous and unwarranted criticism. To begin with, unlike Prussia the military cannot and does not commandeer land, but procures it legally from your government. Your government and mine represents the majority of the voters' desires and that government, through the military, has a mandate: to protect and provide security for your country and all its people in the best and most economical manner possible.

To provide that security, certain lands are needed for experimental work and training of personnel. Would you rather, through short-sightedness and selfishness, see your military organiza-

tion impotent, untrained and emasculated just so a few rockhounds, prospectors and desert lovers could have their precious public domain for their private use?

I too like the desert. I am a rockhound and an amateur prospector, but when I retire from the service to enjoy civilian life I want the remainder of the public domain to remain free under our present form of Government. The only way that is possible, considering the modern potent weapons required to deter an enemy, is to utilize the vast areas of land for testing and evaluating those sinews of war that are so necessary and vital.

I would rather relinquish all my worldly possessions, give up the vast public domains and sacrifice my own personal desires in order to keep a military posture that is both a deterrent to war and a safeguard to our precious freedom from a tyrannical and enslaving enemy.

The "Prussian" signs posted by the military are for the protection of the would be trespassers. I know of some nations that would allow transgressors to be shot down without benefit of warning signs. Do you know of any such ruthless treatment encountered by citizens of this country?

It seems to me that Mr. Riley has too much film to waste when he resorts to taking pictures of drab military posted signs, and should conserve his talents for more colorful photographs. *Desert* could use such wasted space for more appropriate material.

J. R. COLLINS
Captain, USMC

*Dear Captain: I would expect you to be loyal to the service of which you are a member. Fortunately, one of the many freedoms you and I enjoy is the right to criticize the policies of our government. There are no sacred cows in the good old USA. You have expressed in general terms a viewpoint which would be entirely commendable if we could assume that the generals and the admirals could do no wrong. Unfortunately, the factor of error may enter into the decisions—even of the men in high military and civilian places. You will be interested to know that the *Desert Magazine* staff now has in preparation a rather detailed survey of the extent to which the five federal agencies in the realm of national defense have closed great desert areas to all civilian pursuits. When that report is complete, you and I will be able to discuss this issue more realistically. We expect to publish the findings of this survey in *Desert Magazine* within the next few months.—R.H.*

Best Basket Weavers . . .

Reno, Nevada

Desert:

In reviewing *Basket Weavers of Arizona* you state that "baskets of this Arizona Group are not surpassed anywhere in Indian country." Baskets made by the Papagos, Pimas and Hopis are among the poorest of the Indian baskets of the West. Chemehuevis are rather good weavers, but their designs are colorless and lack imagination. I ought to know: I once viewed a collection of some 4500 baskets belonging to a man who lived among these Indians for years.

The finest and best weavers in the world, bar none, are the Pomos of Mendocino, Lake and Sonoma Counties in California. They gave to the world eight distinctive types of weaving, among them: feather baskets where the quills are woven in such a way as to expose an outer surface of down in beautiful patterns; beaded baskets where the individual bead is caught on the willow as it is being woven, resulting in a solid pattern of beads; and beaded baskets which have an interior pattern distinctive from the exterior.

I have a Pomo miniature basket of perfect design which is no larger in diameter than pencil lead. For many years I have traded with these Indians and sat with them during their ceremonies. At one time I had 2500 baskets alone in my collection.

It seems strange to me that there are few basket collectors left today despite the fact that this art will soon be lost. I do not believe there is a single really good weaver left.

R. B. BERNARD

While Mr. Bernard's observations on the Pomos' basket weaving art is true for they are unquestionably regarded as the most remarkable weavers in North America, the use of the term "Indian Country" in the book review was intended to designate the desert Southwest. This, of course, eliminates the Pomos.—R.H.

• • •

Car Equipment for the Sand . . .

New York, New York

Desert:

I found your July issue with its story on *Dark Gold on the Tabaseca Trail* quite interesting for I plan a prospecting trip to the Chocolate Mountains sometime after October 1 of this year. I would like to know if you have published any other stories and maps on the Mojave and Colorado Desert Areas for I would like to secure them for my trip.

I plan to use a rather unique vehicle for my prospecting trip. It is a 1953 Nash Statesman without automatic transmission. The front seat folds back

to make a bed. I plan to have an extra leaf put into the springs and I will also place aluminum screens in the windows. My emergency equipment will consist of an extra storage battery; five-gallon steel cans of gasoline and water; heavy chains and long strips of canvas to aid the car in moving through deep sand.

Would such a car in the hands of a cautious driver be safe and reliable to travel the trails mentioned in the Tabaseca story?

ARTHUR SMITHSON

*Mr. S.: Please leave those chains at home. They'll probably get you in trouble. Chains are all right where there is a hard base underneath, but in soft sand they'll merely dig you in deeper. I learned this the hard way. Strips of canvas are not much help. The wheels kick them out as fast as you put them in. Leather belting is little better unless it is very wide and heavy. My old Model T running boards do a better job in the sand than anything I have ever found. Put over-size tires on your car and run with low air pressure—and carry a motor pump to re-inflate. A sleeping bag and an air mattress on the ground make the most comfortable bed. Screens on the windows are not important. Yes, we can supply you with 30 or 40 back issues of *Desert* with maps in the area you plan to prospect.—R.H.*

COMBAT FLIES WITH NEW INSECTICIDE, SANITATION

If wishes were as deadly as insecticides, flies would not have a chance, says J. N. Roney, extension entomologist for the University of Arizona. A female fly lays up to 2700 eggs a month and it takes only 12 days for an egg to hatch. Roney's advice to the desert dweller who wants to get rid of flies is that he first get rid of places where flies can lay eggs.

Garbage and refuse should be covered tightly. Good sanitation is the first step in stamping out houseflies. Keep compost piles covered, clean up after pets and use tight-fitting screens on all doors and windows in the house. Cover all foods in the kitchen.

Malathion is the most effective fly killer today. A residual insecticide, it can be used on walls, screens, doorways, fences and inside buildings where you find flies. Malathion is effective where flies have developed a resistance to DDT, lindane, and methoxychlor.

Use a mixture of one part of 50 percent malathion concentrate in five parts water. Apply one gallon of the mixture to every 1000 square feet of area to be treated. *Wickenburg Sun*

Here and There on the Desert...

ARIZONA

Tuberculars Quarantined . . .

PHOENIX — The Arizona state health department has cracked down on California residents who have fled to Arizona to escape their state's stiff tuberculosis control law. State tuberculosis control officer Dr. A. E. Russell has sent letters to city and county health officers asking them to quarantine the California tuberculars immediately. Russell's action marked the first major step taken by Arizona in carrying out the state's tuberculosis control program which went into effect July 1. Under terms of the new Arizona law, health officers are able to place placards on the residences of tuberculars and they, in turn, would not be permitted to leave their living quarters. *Phoenix Gazette*

Scorpion Bill Signed . . .

WASHINGTON—A bill permitting mail shipment of live scorpions has been signed by the President. Backed by Arizona's congressional delegation, the bill sets regulations for packaging the scorpions for mailing. The law is expected to help Dr. Herbert L. Stahnke of Arizona State College who has developed a life-saving serum for scorpion stings. He requires about 10,000 live scorpions yearly to maintain production of the serum and for further research. *Phoenix Gazette*

Hunting Permits Decreased . . .

PHOENIX — Drouth conditions were held as the prime cause for the Arizona Game and Fish Commission's

decision to reduce the number of Kaibab North deer permits by 4000. Also affected were Antelope permits, cut approximately in half, and permits to take elk, reduced by 610. In a surprise reversal, the commission authorized the use of shotguns for turkey hunting and also lowered the legal pull of hunting bows from 50 to 40 pounds. Arrow tip size was reduced to seven-eighths of an inch. Lowering the pull was a move calculated to encourage more archery participation by women. *Yuma Morning Sun*

PHOENIX — The Arizona State Highway commission appointed William Willey division chief to succeed George E. Lang who retired on July 1. Willey joined the highway department in 1932 after graduation from the University of Illinois. Among his achievements is the development of the sufficiency rating system, a highway building priority guide. *Tombstone Epitaph*

Funds for Scientists . . .

TUCSON — The Ford Foundation of New York has made a \$26,500 grant to Stanford Research Institute to assist the participation of foreign scientists in the World Symposium on Applied Solar Energy which takes place in Arizona this fall. Stanford, the University of Arizona and the Association for Applied Solar Energy are co-sponsoring the event. More than 50 scientists and engineers from 30 foreign nations will be able to participate in the affair through contributions of the Ford Foundation and other agencies. Phoenix will be the symposium setting on Nov. 1-4, with a preliminary conference at the University of Arizona at Tucson on October 31 and November 1. *Los Angeles Times*

New Bridge Across Colorado . . .

EHRENBERG—The Arizona State Highway Department has reportedly opened negotiations with the California Highway Department for construction of a new Colorado River Bridge linking Blythe and Ehrenberg. The bridge will cost an estimated \$1,000,000 which will presumably be shared equally by the two states. The project has already been authorized by the Arizona Highway Commission. *Palo Verde Valley Times*

CALIFORNIA

Desert College Hopes Fade . . .

EL CENTRO—The California State Senate voted down a compromise bill that would have provided funds for the establishment of a four-year college in

Imperial County to specialize in desert agriculture. Proponents of the school said the college would have been the most complete desert agriculture institution in the nation. They anticipated a first year enrollment of 800 students.

No Fence for Border . . .

WASHINGTON — A proposal to build a fence from El Paso, Texas, along the Mexican border to the Pacific Ocean was tabled in the house foreign affairs committee. It would have provided for a 696-mile ranch type fence costing \$3,500,000. Primary purpose of the barrier was to control livestock and stray animals.

A week before the bill was killed, the Imperial Fence Co. announced that it had been awarded a contract to build a 17,000 foot section of chain link fence on both sides of the San Luis port of entry. This was to have been the first section of the proposed border fence. Imperial described the fence as 14 feet high with top rail capped by barbed wire.

New State Park Assured . . .

MECCA—Establishment of a new desert state park appeared virtually assured when Riverside County Supervisors agreed to spend \$9600 to help acquire 36 square miles of land in the Box Canyon, Painted Canyon and Hidden Springs areas in Coachella Valley. The state has already agreed to match county funds to acquire the private land for the park site, and to install picnic and camping facilities, to add new roads and improve and service the present Box Canyon highway. The new park will be serviced by park personnel already stationed at the recently established Salton Sea State Park. *Coachella Valley Sun*

Seek Rock Protection . . .

HEMET — Efforts to protect the prehistoric Rinehart Canyon engraved rock are under way. The rock, thought to be 15,000 years old, carries engraved inscriptions resembling Tibetan symbols. Since it is the only engraved stone in a series of symbols from Santa Barbara to the Mexican border, it is thought to be the master symbol. All of them face east. Vandals have recently marred the face of the stone.—*Hemet News*

Piute Butte in Budget . . .

LANCASTER—Newton B. Drury, chief of the California Division of Beaches and Parks, promised residents of Antelope Valley that he would include the establishment of Piute Butte Park in the 1956-57 state budget. The area is rich in Joshua trees, rock formations, pleasant vistas and an Indian museum. *Lancaster Light*

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Indian Roster Completed . . .

SACRAMENTO—The final roll of California Indians, containing 36,126 names, has been completed. Enrolled California Indians who were alive on May 24, 1950, are eligible to receive a per capita of \$150 from the \$5,000,000 judgment fund awarded to the Indians in 1944. About 28,500 have already been paid. To qualify for enrollment applicants were required to submit proof of Indian descent back to 1852 and to have made application before May 24, 1951. Additional claims have been filed against the United States and hearings before the U. S. Indian Claims Commission currently are being held in San Francisco. *Mojave Desert News*

NEVADA

To Investigate "Land Racket" . . .

WASHINGTON—The Justice Department will investigate misleading advertising practices of some private land-locating firms in Nevada and California which offer, at a fee, to obtain five-acre tracts of public land which are for sale or lease by the Interior Department under the Small Tract Act. Under Secretary of the Interior Clarence Davis said the advertising had resulted in the filing of thousands of land applications by persons believed to have little or no information about the land or government requirements that must be met before title can be secured. In one case, Davis added, an advertisement referred to "choice locations near Las Vegas, Nevada," when actually the tracts were 30 miles from the city. Another advertisement indicated falsely that uranium rights were included in the land purchase. *Pioche Record*

Largest Ichthyosaur Found . . .

FALLON — The recently created Nevada State Ichthyosaur park has yielded what scientists believe to be the fossil remains of the largest ichthyosaur ever discovered. Discovery was made by Paleontologist Dr. Charles L. Camp of the University of California who spent the summer at the park. Although exact size of the new find was not made known, it is larger than fossils uncovered in the park's first quarry which measured between 40 and 50 feet long. The latest discovery is believed to be of a different species than the earlier ones. Dr. Carl P. Russell, chief naturalist for the western division of the National Park System, told local residents that the park is the only place in the nation where fossil bones such as these are found in place. *Fallon Standard*

Land For Navy . . .

FALLON — The Navy confirmed rumors that it is seeking approximately 2,750,000 acres of northwestern Nevada grazing and ranching land in order to expand its Black Rock desert gunnery and bombing range. While the Navy estimated an expenditure of \$10,000,000 to acquire the land, northern Nevada sources estimated it might cost five times that amount to buy the land. A Naval spokesman said selection of the area, based on advice from mining and grazing experts, was reached some time ago. The expanded gunnery and bombing range would spread out from the present location, consisting of 200,000 acres, principally into Pershing County but would touch parts of Washoe and Humboldt counties. Grazing of cattle would be permitted in the region year-around and sheep grazing in winter months. All mining claims and privately owned property would be bought outright. *Humboldt Star*

Park Board Opens Office . . .

CARSON CITY — The Nevada State Park Commission has opened an office in the State Capitol Building for the first time since it was created. Newly appointed State Park Director Howard W. Squires will be in charge of the office. This is the start of an overall, long range state park program. Commission Chairman Thomas W. Miller declared. He went on to say that one of Squires' first duties will be to post the presently constituted state park areas located in several of Nevada's counties, and to plan for the withdrawal of additional areas as historical, archeological and recreational sites. The commission also hopes to crack down on park area vandalism. *Humboldt Star*

Claims Jeopardize Homesteads . . .

LAS VEGAS—Approximately 40,000 acres of small-tract federal lands in Clark County are still under sand and gravel placer mining claims, the Southern Nevada Home-Siters organization of Las Vegas announced. Normally the government will not issue leases until claims are cleared up, but many leases and patents have been issued where the sand and gravel claims are still in existence. The Home-Siters' recent search of county records revealed that more than 75 percent of the land already leased or patented as home sites is still in jeopardy as a result of the existing placer claims. A year's extension of lease is available to small tract applicants who determine that a sand or gravel claim exists on their land. *Nevada State Journal*

Gambling Departure Seen . . .

RENO — The new Holiday hotel, slated to open in April of next year, will offer its guests a departure from the traditional Reno gambling-night-club-land of divorce routine and in its place fit itself to the informal needs of the sportsman. The hotel will cater to bird shooters, fishermen and general vacationers for eight months of the year and to skiers in the winter months. The hotel will have at least two 1000-acre game farms as well as a private trout lake. The hotel's builder, Norman Biltz, believes sportsmen outnumber gamblers 10 to one. *Nevada State Journal*

NEW MEXICO

Hyde Park Expansion Set . . .

SANTA FE—Plans to double picnic and camping facilities at Hyde State Park and to station an attendant there on a 24-hour basis were announced by State Park Commissioner Lee Robinson. Present park facilities are chronically taxed to the limit, Robinson said. *New Mexican*

Man Can Influence Climate . . .

LOS ALAMOS — AEC Commissioner John von Neumann, famed mathematician who helped in the development of the A and H bombs, told New Mexicans recently that he believes that the ability of scientists to influence the world's climate will be a definite possibility within the next 20 years. He said this ability will create entirely new problems of international and intercontinental relations. *New Mexican*

War Against Grasshoppers . . .

ALBUQUERQUE — Diego Abeita of Isleta, chairman of the Pueblo Indian reservation irrigation committee, estimated that 50 percent of the Indian crops will be lost unless emergency action is taken to combat grasshoppers which are infesting farm lands in the Rio Grande valley. But it will apparently be up to the Indians themselves to bear the brunt of the grasshopper invasion for Guy C. Williams, director of the United Pueblos Agency, declared that he does not believe that any government agency has funds with which to control grasshoppers on farm land. *Alamogordo Daily News*

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Indian Health Program Shifted . . .

WASHINGTON—The Indian Bureau of the Interior Department transferred its entire health program to the United States Public Health Service on July 1. Involved were 3600 Indian Bureau employees and about 970 buildings. Acting Secretary of the Interior Clarence A. Davis said the transfer is a major step designed to improve and expand federal health services to Indians in the continental United States and Alaska. Congress appropriated \$23,418,898 for the Indian health program for the fiscal year ending June 30, a quarter of the Indian Bureau's total budget. *New Mexican*

Celebration Cancelled . . .

ESTANCIA—The seriousness of the Southwestern drouth is indicated in the New Mexico city of Estancia when officials cancelled traditional Independence Day celebrations. This was the first time in 44 years that festivities were not held. The drouth has kept down grass growth to the point where no local stockman cared to risk losing an ounce of flesh from his livestock in a rodeo, it was explained. Without a rodeo to attract people to town, local Rotarians felt that it would not pay them to sponsor the annual carnival. *Torrance County News*

Sand Moving Toward City . . .

ALAMOGORDO — White Sands National Monument Ranger Gil Wenger told members of the local Explorers-Rockhounds club that Alamogordo lies directly in the path of the slowly moving sands of the monument. He hastened to add, however, that it will be 7000 years before the city will be covered. Moving to the northeast, the dunes at the center of the area are slipping forward 60 and more feet a year. *Eddy County News*

Education Expansion Seen . . .

WASHINGTON — Broader educational opportunities for Indian youngsters from the primary grades through the university level and more effective conservation of Indian soil and water resources are two of the prime benefits expected to result from increased Indian Bureau appropriations for the fiscal year which began July 1. Total enrollment of Indian children in both Federal and Bureau-aided public schools is expected to rise by more than 5000 students. This will bring total Indian enrollment to a record high of 100,000 students. Most of the new enrollees will be Navajo children entering school for the first time as a direct result of the Bureau's Navajo Emergency Education Program launched in 1954. Under the opera-

tion of this program the enrollment of Navajo youngsters in schools of all types was stepped up from a level of about 14,000 or roughly half the school-age population in 1953, to nearly 23,000 during the school year just ended.

UTAH

New Dinosaur Discoveries . . .

DINOSAUR NATIONAL MONUMENT — New fossil discoveries are mounting rapidly at the Dinosaur National Monument's fossil quarry including the remains of a Stegosaurus, oldest of these recent finds. The Stegosaurus was a two-brained monster. The second brain was located in the hip region and it regulated the motor functions of hind legs and spiked tail. The Monument reported 10,500 persons visited the park during the month of June. Superintendent Jess Lombard predicted a record breaking year for attendance and the Monument's staff has been increased from two permanent employees in 1952 to a present total of six. *Vernal Express*

Roadside Park Program . . .

SALT LAKE CITY—Utah State Road Commission Chairman H. J. Corleissen disclosed plans for a statewide system of roadside parks that will serve as a tourist convenience and traffic safety factor. The first six parks out of an anticipated 60 are scheduled to be started this fall and should be completed by spring. Sites have not yet been determined, but the initial plan is to locate one in each of the six highway maintenance districts into which the state is divided. The parks will provide travelers with drinking water, picnic tables, fireplaces, rest rooms and trash boxes. *Deseret News*

Cloud Seeding of No Value . . .

PASADENA, Calif.—The extensive cloud seeding program conducted throughout portions of Southern Utah since 1951 has been of no value, according to a report presented by three University of Utah scientists at the annual meeting of the American Association for the Advancement of Science held in Pasadena. Scientists J. Vern Hales, head of the department of meteorology, Thomas E. Hoffer, meteorology lecturer and Eugene L. Peck, meteorology research assistant prepared the report. In summing up, the trio declared that "the failure of the 23 winter months of cloud seeding in Southern Utah should not be interpreted as evidence of the complete failure of all cloud seeding." They expressed hope that further study of cloud physics and cloud seeding will

result in real progress and benefit to the arid portions of the world. "Careless cloud seeding without adequate field controls or associated true scientific interest should not be encouraged," they concluded. *Millard County Chronicle*

Beaver Pelts Average \$7.25 . . .

DENVER—Utah beaver furs sold for an average price of \$7.25 at a recent Denver auction, a price considered good by the Utah Department of Fish and Game in view of the fact that most of the furs were taken during late winter and spring months when many of them were not prime. Pelt prices varied from 25 cents to \$24.50. *Vernal Express*

Recreation Facility Planned . . .

CEDAR CITY — The way was cleared recently for the development of what should become the most important recreation development in Iron County for many years when final steps were taken to purchase 40 acres of land in Cedar Canyon known as Wood's Ranch. A considerable portion of the mountain recreation area is flat meadowland which will provide ideal grounds for various types of recreation. The new park is located 12 miles from Cedar City. *Iron County Record*

Farm Worker Shortage . . .

SALT LAKE CITY — Available labor to work crops and perform harvest tasks is being absorbed rapidly by increased uranium mining activities in Utah, a recent survey of the U. S. Agricultural Market Service indicated. To meet these shortages, Mexican nationals and Indians are being brought into the area and for the state as a whole the outlook for farm labor through October is not critical, the report stated. *Salt Lake Tribune*

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BOOM DAYS IN URANIUM

New Benefication Process May Open Low Grade U-ore Markets

Charles L. Love, inventor and president of Rocky Mountain Standard, Inc., announced the perfection of a new benefication process which may revolutionize the uranium industry. The new process has raised the value of carnotite and autunite ores obtained from mines in major uranium

areas in five states from 10 to 30 times their original value. Preliminary engineering work has been completed for the construction of the first portable mill which will weigh approximately 80,000 pounds. It will be mounted on skids and it will take only two days to set it up.

The Love process, originally developed and tested by the company he heads, received assurance of its success as the result of pilot work performed at the Bureau of Research, Colorado School of Mines, under the direction of V. L. Mattson. The degree of benefication appears to be affected by the amount of lime and bentonitic materials present in the ore itself. *Pioche Record*

Investors Cautioned on U-Mine Stock Offers

New Mexico State Corporation Committee chairman John Block, Jr., cautioned potential investors to scrutinize carefully stock offerings of mining companies before committing their funds.

"It is always a good plan to know with whom you are doing business," Block said. "While most corporations are for the very legitimate purpose of raising capital for the

exploration and development of holdings, there are always those who seek to take advantage of a situation like that created by the sudden boom in uranium in order to take advantage of the gullible with 'get rich quick' schemes."

Meanwhile in Washington, D. C., the Securities and Exchange Commission recently declared that it will issue a proposed new regulation for small securities offerings. Its main aim will be to make sure money raised for uranium and other mineral explorations is used for exploring and not for fattening the wallets of promoters.

Consolidated Ute Agency in Ignacio reported recently that Ute Indian reservation land may be opened soon to uranium prospectors. Approval must first come from the Indian Service regional office at Albuquerque and the councils of the Southern Ute and Ute Mountain tribes. The AEC recently issued a map showing probable uranium deposits on the reservation. *Dove Creek Press*

The California Fish and Game Commission went on record as being against prospecting for uranium or other minerals on lands owned by the department, unless the surface use of the land will remain unaffected. Permits for prospecting or lease for development of state owned lands must be granted by the State Lands Commission. *Inyo Independent*

The first ore shipment of 17 tons was made recently from the Stumbling Stud Mines north of Badito, Colorado. The uranium ore was trucked to Grants, New Mexico. *New Mexican*

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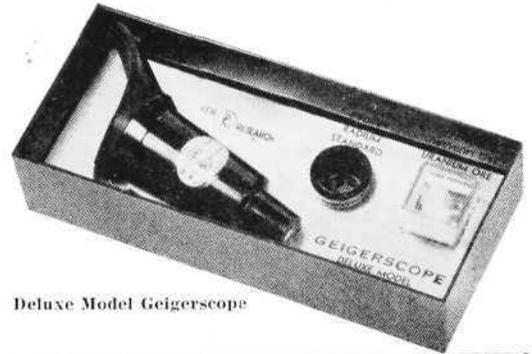
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Increase in Southwest Uranium One Mill Facilities Planned

The nation's largest uranium ore processing mill is scheduled to be built near Moab, Grand County, Utah. Construction cost was set at \$8,000,000. Uranium Reduction Co., a firm organized by uranium millionaire Charles A. Steen and veteran Utah mining man Edward H. Snyder, has entered into a contract with the Atomic Energy Commission to build and operate the mill. When in operation it is expected to employ 175 persons.

Basic ore supply for the mill, due to be completed in a year, will come from Steen's Mi Vida Mine. Capacity will be sufficient to mill production of other mines in the Big Indian Wash district also, it was announced.

The AEC's request for \$1,500,000 for possible further expansion of its uranium mill at Monticello, Utah, was approved by the Joint Congressional Committee on Atomic Energy. Authorization was given

for \$500,000 to purchase a site at Monticello on which to process vanadium bearing tailings. Other authorizations include over a million dollars for construction of 122 miles of access roads to uranium mines and prospects in Utah.

At Shiprock, New Mexico, Kerr-McGee Oil Industries, Inc., announced completion of its \$3,000,000 uranium processing mill. Principal ore for the mill will come from mines on the Navajo Reservation. An all-acid process for production of uranium oxide will be used at Shiprock.

Meanwhile, the AEC assured Senator Alan Bible of Nevada that it will consider establishment of uranium milling plants and ore purchasing stations in Nevada as soon as exploration reveals sufficient reserves to justify such installations. A continuing supply of at least 50 to 100 tons of ore a day is necessary before the expense of building and operating ore buying stations can be justified, the AEC said.

Paramount Uranium Corporation launched its second mining operation recently when it began operations on its Pinch claims on Hart's rim, northwest of Monticello. J. C. Burgess, field consultant for Paramount, originally staked the claims and said they looked extremely promising. *San Juan Record*

Predict Atomic Power Will Make Dams Obsolete

Should the federal government spend millions of dollars in dams for the production of hydroelectric power if atomic energy will make them obsolete in the next 50 to 100 years? This question was asked during recent Congressional hearings on the Upper Colorado River Basin reclamation bill.

Opponents of the Upper Basin legislation took the position that the time is fast approaching when atomic energy will largely supplant hydroelectric power. Representative Carl T. Durham, vice chairman of the House-Senate atomic energy committee predicted that within two years atomic power will be produced as cheaply as energy from oil, coal or water.

Floyd B. Odum, Atlas Corporation president, expressed the opinion that by 1975 a major part of the electricity in the nation will be generated by uranium based plants.

AEC Opens New Uranium Buying Station at Globe

The Atomic Energy Commission's new uranium ore buying station and sampling plant at Globe, Arizona, was opened in early July. The plant will be operated by the American Smelting and Refining Company for the AEC.

The Commission may, from time to time, issue special contracts to individual producers for the purchase of uranium bearing ores which do not meet the specifications of the purchase schedule set up for the Globe plant. Terms of such contracts will depend upon the metallurgical characteristics of the ore. *Dove Creek Press*

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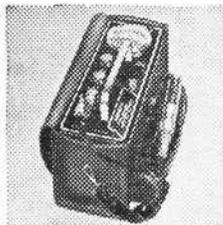
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Uranium Company Sales, Mergers Highlight News

The following mine transactions made news in the Southwest's uranium boom areas:

Directors of British Western America Uranium Corporation of Denver and Pioneer Uranium Corporation of Moab, Utah, have approved merger plans. Between them the two companies control more than 200 claims in producing areas of Wyoming and the Colorado Plateau. Under terms of the merger the companies will operate as British Western America Uranium Corporation and all future exploration and development will be directed by George C. Heikes, internationally known mining geologist and executive vice president of British Western America.

The National Uranium Corporation of Utah has acquired the Diamond Ace Uranium Corp. The merger was made by the transference of stock.

The *Tonopah Times-Bonanza* reports that a Los Angeles interest has acquired a group of eight claims in the Rye patch district near Tonopah, Nevada.

Cherokee-Utah Uranium Co. of Salt Lake City and Ventures, Inc., Grand Junction, Colorado, were to merge into a new Nevada Company to be known as Beaver Mesa Uranium Co. Robert E. Simpson, Grand Junction, was named president of the new company which will operate claims in the Gateway mining district on which ore reserves amounting to 250,000 tons (\$5,000,000 estimated valuation) have been blocked out.

The North Standard Mining Co. announced acquisition of the leases and interests of the Clyde Uranium Co. in Bull Canyon District, Colorado.

The second carload of uranium ore from the H-P-L mine near Atlanta, Lincoln County, Nevada, was sent recently to the Vitro Uranium Co. at Salt Lake City. *Humboldt Star*

TRUE OR FALSE ANSWERS

Questions are on page 20

- 1—False. A rattler has only two fangs—in the upper jaw.
- 2—True.
- 3—False. The Devil's Golf Course is a natural phenomena.
- 4—False. Desert mistletoe is conspicuous for its lack of leaves.
- 5—True.
- 6—False. The Mormon Battalion was formed to help Kearny's Army capture California.
- 7—True.
- 8—False. Sunset crater has long been dormant.
- 9—True.
- 10—False. Santa Fe is the capital of New Mexico.
- 11—False. No part of Lake Mead is in California.
- 12—False. Geronimo was an Apache.
- 13—False. Chrysocolla comes from copper mines.
- 14—True. 15—True.
- 16—False. No residence on the land is required of Jackrabbit Homesteaders.
- 17—False. The blossom of Nolina is creamy white.
- 18—True. 19—True. 20—True.

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MINES and MINING

Sacramento, California . . .

Theme of the November 7-8 Western Governor's Mineral Policies Conference may well be "Are we going to have a domestic industry?" as final plans for the meeting are being completed by the 150-man committee appointed by Governor Goodwin J. Knight of California to plan the convention agenda. The fundamental mining policies formulated during the two-day meeting will be presented to Congress and the President.

Knight declared that the permanent welfare of the mining and mineral consuming industries in the Western states is strategically important to national defense and vital to the vast area's economic welfare. Besides representatives from California, Oregon, Washington, Nevada, Idaho, Arizona, Colorado, Wyoming, Montana, Utah and New Mexico, Knight has invited representation from South Dakota and the Territory of Alaska. *California Mining Journal*

Vernal, Utah . . .

A revolutionary program to manufacture metallurgical coke and high test gasoline from Utah's native gilsonite deposits was announced recently in Vernal by the American Gilsonite Co. The projects call for an outlay of over \$10,000,000. The money will be spent to expand the company's gilsonite mining operations at Bonanza, Utah; to construct a refining plant in western Colorado; and to lay an underground pipe line from the raw material deposits to the new plant. Completion of the program is scheduled for late 1956.

Gilsonite is a unique solid hydrocarbon material that has been mined at Bonanza, near Vernal, for over 50 years. Until recently its principal uses have been in the manufacture of floor tile, storage battery boxes, special varnishes, inks and many other products. American Gilsonite has spent a million dollars in research to determine the method to refine this material on a commercial scale. *Vernal Express*

Bishop, California . . .

Tungsten production at Black Rock mine and mill north of Bishop was increased from 200 tons daily to between 400 and 500 tons, the Wah Chang Mining Corporation announced. The production boost was made possible by the completion of a 12-mile power line from the Owens River Gorge to the mine site. The company also made known that its mine at Tempiute in Lincoln County, Nevada, is now on a six day a week schedule and producing 825 tons of tungsten ore daily. The Tempiute mill is on a seven day week schedule and is treating a capacity 700 tons per day. *Tonopah Times-Bonanza*

Phoenix, Arizona . . .

Arizona's producing mines were studying plans to appeal the Arizona State Tax Commission's assessed valuation figure for the current year, \$30,000,000 over the sum determined in 1954. The commission placed an assessed valuation of \$199 million on the mines. The increase came mainly from three large properties: Phelps Dodge Corporation's new Lavender Pit Mine at Bisbee, valued at over \$12,000,000; Copper Cities Mine near Miami, nearly \$6,000,000; and Silver Bell Mine of the American Smelting and Refining Company near Tucson, over \$10,000,000. *Yuma Morning Sun*

Lincoln County, Nevada . . .

U. S. Geological Survey teams were scheduled to start extensive studies of all ore deposits in Lincoln County, Nevada, in July. USGS Director William Wrather made the announcement following a request for survey by Senator Alan Bible. The work is expected to take two or three years. *Battle Mountain Scout*

Wells, Nevada . . .

Errington-Thiel properties located 65 miles southwest of Wells, Nevada, have been leased to C. H. Ward, Ogden mining engineer. Ward said development plans on the site, which includes the Ruby Mica property, call for airfloat separation of mica, beryl, autunite, lithium and garnet. *Pioche Record*

Tehachapi, California . . .

After almost 20 years of inactivity, quick-silver mining is expected to resume again in Kern County. Western Mercury Mining Co. recently announced plans to return the Cuddeback quicksilver mine to operation.

Nye County, Nevada . . .

High grade mercury ore was discovered recently by the Western Mercury and Uranium Corporation on property belonging to it in Nye County. Preliminary assay sets the ore value at \$60 a ton. Company President J. H. Smith disclosed that ore is being stockpiled and roads are being constructed into the site. Planned for the near future is the construction of a furnace to process the ore at the mine. The discovery is on land recently released by the Federal Government from the Tonopah bombing range. *Nevada State Journal*

Washington, D. C. . . .

Sen. Wallace F. Bennett (R-Utah) reported that a legislative attempt to repeal the silver purchase act has been abandoned, at least for this year. The silver purchase act of 1934 was the target of a handful of Eastern and Midwestern senators. It directs the government to buy all domestically mined silver at 90½ cents an ounce. *Salt Lake Tribune*

Tonopah, Nevada . . .

Argentite silver mining by the Bruhi mining company was scheduled to start in mid-July at Silver Peak. The ore discovery was made by Ernest Shirley, Esmeralda county commissioner and mine foreman. *Nevada State Journal*

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"Facts You Should Know About Uranium" by R. W. Ramsey	1.00
"Uranium Prospectors Hand Book"	1.00
"The Uranium and Fluorescent Minerals" by H. C. Dake	2.00
"Popular Prospecting" by H. C. Dake	2.00
"Uranium, Where It Is and How to Find It" by Proctor and Hyatt	2.50
"Minerals for Atomic Energy" by Nininger	7.50
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Map and Geology (Uranium and Mineral Districts of California)	1.50
Map of Kern County (New Section and Township)	1.50
Map Uranium and Minerals (The Nine Southwest States)	1.00
Book and Map "Gems and Minerals of California" by McAllister	1.75
Book and Map "Lost Mines and Treasures of the Southwest"	2.00

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AMATEUR GEM CUTTER

By LELANDE QUICK, Editor of the Lapidary Journal

With no reflection on any of the past wonderful gem and mineral shows that have been reported in these columns, or upon any personnel connected with them, we wish to say unreservedly that the July exhibition of the California Federation of Mineralogical Societies at San Francisco was the best show that we have ever attended, and we have attended most of the best ones. That it was such a success is a tribute indeed to the folks in the San Francisco Gem & Mineral Society, hosts to the Federation. Their organization, under the chairmanship of Alden Clark, was a marvel of efficiency and understanding of all the ramifications of such an undertaking. All arrangements indicated a close application of the experiences of past shows.

It was most unfortunate for us that, because of a 1136-mile automobile journey

that had to be accomplished in two days, we had no more than about two hours to attend the show as we had to attend the Federation banquet, where we were surprised and highly gratified indeed to receive a fine plaque from the Federation and the San Francisco club for the work we have done through the years to promote the gem cutting hobby.

We could not help but wonder where the hobby would go from here but we are confident that it will go forward and that future shows will be limited only by the capabilities of the personnel handling them. It takes a big club with capable people who enjoy the confidence and receive the help of all the club members with a good *esprit de corps* to be able to handle the Federation shows in the future. We believe that the show will come through next year in fine shape for it is being sponsored by a young club with a marvelous record of accomplishment and in a city with every facility for a big convention and show. The Fresno Gem & Mineral Society will be hosts in Fresno and an old friend, Dr. Asher Hevenhill, will be chairman.

The Los Angeles Lapidary Society was taken into Federation membership after 15 years of existence and it is a foregone conclusion that some healthy competition for club awards will now be expected in the lapidary end of the future shows. This move on the part of the oldest lapidary society is the best indication of the wise leadership of last year's Federation President, Hubert Dafeo, who succeeded in promoting excellent climate within the Federation that has eliminated the wide gulf of feeling and opinion between the mineral specimen collector and the strictly gem cutting groups. The hobby appears united now as it never has before and the two groups belong together as does ham and eggs.

We have just received word from Washington that a new booklet is available for the uranium hunter called *Search for Uranium in the United States*. This report summarizes briefly the information on the common uranium minerals; the kind of deposits in which uranium is found; the methods used in the search for uranium; the im-

portant deposits found in this country thus far; the outlook for future discoveries; and the recent literature on the geology of uranium deposits in the United States. Containing 64 pages it costs 25c and can be secured by sending that amount to the Superintendent of Documents, Government Printing Office, Washington 25, D.C., and asking for booklet 19P or Catalog No. 1 19.3:1030-A.

George R. MacClanahan of Sacramento, a manufacturer of tumbling equipment, has written us the latest information on tumbling; information which doesn't change anything but which bears repeating at this time when amateurs are reporting using everything from sawdust to false teeth in the tumbling process.

The biggest mistake the tumbler of stones makes is to believe that he's operating a ball mill rather than a polishing machine. A tumbler does not require heavy weights, balls or cleats to assist in the breaking action. Removal of material must be done slowly, a little at a time, in order to preserve as much as possible the natural symmetry of the stones. This is accomplished by abrasive action and not by breaking action.

"Best speeds have been found to be those that will carry the load to the highest point before sliding takes place" writes MacClanahan. He continues by saying that "just under that speed would cause the stones to drop rather than slide. The shape of the drum or barrel will be most helpful if it is designed to carry the load to the highest possible point without sliding against the sides of the barrel itself. The hexagon type barrel is therefore the most effective for the purpose. A round drum has little efficiency due to the great percentage of slide between the load and the sides of the drum."

Some truths that MacClanahan has discovered in his wide tumbling experience are these:

Tumbling will not improve color. It will remove waste material but it also removes good material at the same time.

It is not wise to tumble rose quartz with other materials.

Rhodonite should be tumbled by itself and so should obsidian.

Crystalline materials are hard to polish, especially amethyst.

Garnet and beryl may be polished together.

Some chrysocolla will discolor badly unless a rust inhibitor is used.

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18"	65.60	43.20	36.12
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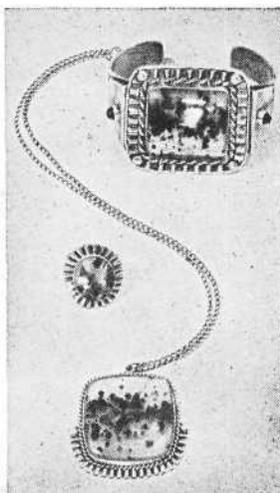
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GEMS AND MINERALS

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The degree of perfection attained by the amateur gem cutter depends upon the amount of care put into his work. One must make correct use of proper equipment, giving close attention to details of cutting procedure. Many cabochons you cut may be unsuitable for mounting due to flawed or soft material, but such pieces, especially those resulting from your own prospecting, give much pleasure as cabinet specimens. Any first grade material you yourself find will double your enjoyment of the cutting because it has been yours from the first glimmer in the dust to the finished gleaming gem.

Before cutting, examine all cracks and try to determine their depth and direction into the stone. Check for crystalline areas and other flaws. Discover if possible where the best color or pattern lies. Grinding a spot here and there may give some clue as to what is inside. These precautions help you avoid the hit and miss sawing that spoils so much good material and wastes so much time.

Gemstones such as tiger eye, banded agate, moss and plume must be properly oriented when sawed to make the most of their unique properties. Lopsided and angular rough stock may prove difficult to chuck into the exact position desired. Small blocks of wood, strategically placed, will often help you to avoid this. A few minutes work at the grinding wheel will prepare spots for the vice to grip. A very badly cracked piece which might collapse and damage your saw should be broken into smaller pieces or molded into a plaster of paris block before sawing.

For best results follow the manufacturers' recommendations as to cutting speed for each mineral. If you need more informa-

tion consult a friend with lapidary experience.

When starting a cut shut off the feed as soon as the blade starts to cut and let it idle there for a few moments—this will give the blade a chance to center itself. When making entry into a knobby or slanted surface, back off and repeat entry a time or two so as to be sure the blade is well started on a true course. Indiana Geology and Gem Society of Indianapolis *GOG*.

New officers of the Wichita Gem and Mineral Society are Cecil Morrison, president; John Gholson, vice president; Nora Lee Dennett, secretary; Harry Brasted, treasurer; Norman Mueller, director. Mueller joins Brace Helfrich and Steve Lee on the board. Appointed to various posts were Marie Gilbert, librarian; Lela Hile, historian; Walter Fisher, curator; Ruth Broderson, bulletin editor; James Carter, field trip chairman; Neil Baskett, finance chairman; Arch O'Bryant, publicity chairman; Mrs. Harry Brasted, membership-fellowship chairman; Mrs. Ellen Harp, social chairman; Bob Sampson, program chairman.

San Jacinto-Hemet, California, Rockhounds were to have participated in a gem show on August 17-21 in conjunction with the Hemet Farmers' Fair. Len Harvey was in charge of the fair's mining and mineral department.

EASY METHOD OF MAKING CRYSTALS FROM CHEMICALS

Timothy Cady, aged 12, of the Minnesota Mineral Club tells how he makes potassium dichromate crystals: First step is to lay a crossbar over a wide-mouthed jar of about three inches in height with a diameter of the same length. On the crossbar he ties a piece of thread on which a small seed crystal is hung. This crystal must dangle free in the jar. With this phase completed he pours a super-saturated solution of potassium dichromate into the jar. This chemical can be purchased at any drug store for about 25 cents. Before long the crystal will begin to grow. If the solution evaporates down to the crystal merely pour more in. The scum formed on the surface can be skimmed off with a spoon. When the crystal reaches the desired size, lift the cross bar out, snip the thread as close to the crystal as possible, and let the crystal dry.

Seed crystal starters can be made by putting a small amount of potassium dichromate in a jar with water and leaving it until the seed forms. When growing crystals the solution must be changed when it is dirty. *Rock Rustler's News*

A miner in Venezuela's southern jungle has just found a 690-carat diamond which ranks close behind the famous Jonker and Vargas diamonds, each of which weighed 726 carats in the rough.

The gradual shift in emphasis in the mining industry from metallic to non-metallic mineral production in California is well illustrated by the growth of the clay industry. California clay production increased more than 400 percent during the period 1940-1953—from 325,000 tons worth \$688,000 to 1,540,000 tons worth \$4,000,000.

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Pastel Shaded Rhodonite, 3 sq. in. \$1.00
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GENUINE TURQUOISE: Natural color, blue and bluish green, cut and polished cabochons — 25 carats (5 to 10 stones according to size) \$3.00 including tax, postpaid in U.S.A. Package 50 carats (10 to 20 cabochons) \$6.15 including tax, postpaid in U.S.A. Elliott Gem & Mineral Shop, 235 E. Seaside Blvd., Long Beach 2, California.

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FOR SALE: Beautiful purple petrified wood with uranium, pyrolusite, manganese. Nice sample \$1.00. Postage. Maggie Baker, Kingman, Arizona.

BEAUTIFUL FREE GOLD — Specimens \$1.00 each. Return if not satisfied. Prices to dealers. J. N. Reed, Box 102, Cabazon, California.

STOP at the new Ironwood Rock Shop. 7 miles West of Blythe, California, Highway 60-70. Many new rocks and minerals.

McSHAN'S GEM SHOP—open part time, or find us by directions on door. Cholla cactus wood a specialty, write for prices. 1 mile west on U. S. 66, Needles, California, Box 22.

ATTENTION ROCK COLLECTORS. It will pay you to visit the Ken-Dor Rock Roost. We buy, sell, or exchange mineral specimens. Visitors are always welcome. Ken-Dor Rock Roost, 419 Sutter, Modesto, California.

OREGON AND California Agates and jaspers. Dinosaur bone, Indian arrowheads and stone implements. Pioneer Trading Post, 7875 Santa Monica Blvd., Hollywood, California.

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TUMBLED POLISHED Baroque Gems, \$2.00 ¼ lb. Tumbled Polished Slabs, Gems, \$3.00 ¼ lb. Crystals for faceting: Topaz citrine beryl quartz, \$2.00 oz. Crystal specimens terminated clusters, singles \$1.00 to \$100.00 each. Ironwood for making jewelry, letter openers, knife handles, carvings—takes a beautiful polish, \$1.00 lb. Agate, jasper, varasite, Howelite, rhodenite, dinna bone, petrified wood, gem quality, \$1.75 lb.; 5 lbs. assorted \$7.00. A. Hugh Dial, 7417 Jamieson Ave., Reseda, California.

ROUGH TURQUOISE! World famous spiderweb turquoise from Nevada's No. 8 mine. Sold in any amount. Price starts at \$1.00 per ounce. Postpaid. Travis Edgar, Battle Mountain, Nevada.

RARE CRYSTALLIZED Cinnabar—bright red on tan limestone. Poverty Peaks, Nevada — only known locality. Matrix specimens, 1" to 5"—50c to \$10 each, according to quality, postpaid. In Reno, Phone 3-1429. Frey Mineral Enterprises, Box 9090, Reno, Nevada.

FINE CRYSTALLIZED minerals and massive ore specimens direct from western mines. Mineralights, fluorescent specimens, and specimen kits for prospectors. No cutting material handled. Write for free list. Rocky Mountain Minerals, P.O. Box 1204, Idaho Falls, Idaho.

NOTICE: After August first we will be located at 2020 North Carson St., Carson City, Nevada. Mail address, P.O. Box 117. Gold Pan Rock Shop, John L. and Etta A. James, prop.

RICH CINNABAR Specimen. Mineral collector's items. Size 2 oz. or over. One specimen 30c. 3 specimens 75c, plus postage. Michael & Chester Reilly, 5684 Waverly Lane, Fresno, California.

LOOK—3-month special on tumbled and polished gem baroques—lb. \$3.95, mixed variety—¼ lb. \$1.10, slabs—15c sq. in. Dixie Rock Shop, 3245 Prospect Ave., So. San Gabriel, California.

RARE TRANO MINERALS — Hanksite, double terminated complete crystals—½" to 1" sizes, 25c, 50c and \$1.00 each, postpaid. Octahedral halite crystals—50c each. Pirssonite crystals—rare hydrous carbonate—vial of 10 crystals, \$1.00 postpaid. Frey Mineral Enterprises, Box 9090, Reno, Nevada.

ROUGH NEVADA Turquoise suitable for cutting. Mixed blue and green. All pieces large enough for jewelry settings. Two oz. \$2.00. Write Chuck Johnson, P. O. Box 38, Fernley, Nevada.

BEAUTIFUL SELENITE Roses—all sizes. Send for price list, Don Schultz, 3341 Del Rio Road s.w., Albuquerque, N. M.

MODERN SCIENCE REDISCOVERS ANCIENT USE OF OBSIDIAN

Obsidian was widely used by North American Indians for arrow points, knives and various other weapons and implements employing sharp edges. Black obsidian was used in Peru and Yucatan by natives there for mirrors. The mirrors made of obsidian are thick and cumbersome, rectangular or circular and not as common as those made from pyrite. During World War II Dr. G. D. Hanna of the California Academy of Sciences conceived the idea of using obsidian mirrors for certain naval instruments. The obsidian from a deposit a few miles northeast of St. Helena, California, was found to be superior to the manufactured glass formerly used for the instruments because of its extreme opaqueness, hardness and scratch resistance. Since then many telescope makers and lens grinders have found obsidian superior to many forms of optical glass and even comparable to fused quartz. Compton Gem and Mineral Club's *Rockhound Call*.

QUARTZ CHANDELIER'S FATE PUZZLES N. M. ROCKHOUND

What has become of the "smoky quartz chandelier?" wonders W. G. Taggart of the Dona Ana County, New Mexico, Rockhound club. Years ago the chandelier was discovered by a prospector named Copeland on the western slopes of the Ramparts in Central Colorado. These mountains are three miles north and west of Florrisant. The chandelier consisted of a flat disc of granite about the size of a dinner plate. In the center of this plate was a perfect crystal of smoky quartz seven inches high and with a diameter of about the size of a 50-cent piece. Finger sized smoky quartz crystals framed the center stone around the plate's edge. When the disc was turned upside down it resembled a miniature chandelier. Taggart offered to buy the specimen from Copeland, but he refused to sell it.

ARIZONA ROCKHOUNDS HEAR THE GRAND CANYON STORY

The Grand Canyon of Arizona is one of the rare places in the world where rock and earth strata representing all five eras of the earth's history are exposed.

So said Dr. M. J. Benham of Phoenix College as he addressed a recent meeting of the Mineralogical Society of Arizona, telling the spectacular story of the four billion year old canyon.

Black granite rocks of the early Archeozoic era, the roots of once lofty mountains, are at the bottom of the canyon. No trace of plant or animal life is found in these rocks, although some forms of life may have been in them before they were altered by extreme pressures.

Traces of the oldest known forms of life are found in the second stratum from the bottom in the Algonkian rocks, layers of limestone. These fossil formations represent primitive one-celled plants called algae. Along the Tonto Trail, in the hardened sand, mud and lime of the early Paleozoic or third era are the fossils of earth's oldest known animal life, the trilobites and their associates, Dr. Benham explained.

Two periods of history in the third era are missing, he said, due to either the original rocks having been worn completely away or the area possibly having been covered by a sea during which time no rocks formed.

The San Francisco Peaks were formed in the last era.

KNOWING STONE'S HARDNESS ESSENTIAL BEFORE CUTTING

Knowledge of the hardness of the various stones used in lapidary work is essential before work can begin. Stones with a hardness, on Mohs' scale, from two and one-half to four may be cut with a hack saw. Harder materials require a diamond saw. A slab of material harder than four may be shaped by chipping the edges with a pair of pliers or tapping it with a hammer. Gem materials that can be polished by hand are amber, soapstone, hardness of two and one-half; coral, three; malachite, 3 and one-half; serpentine, fluorite, willemite, chrysocholla, mother-of-pear, four; variscite, four and one-half; sodalite, five; lapis lazuli, turquoise, five and one-half; amazonite, moonstone, six.

These stones can be shaped with carborundum or silicon carbide scythe stones used with water. Final smoothing can be done with a piece of silicon carbide cloth. Tin oxide mixed to a paste with water, tripoli, rouge or other polishing agents can be used on a hand buff to give the final polish. Hollywood Lapidary and Mineral Society's *The Sphere*.

COMBINED WYOMING GEM SHOW ATTRACTS 4500 VISITORS

More than 4500 persons attended the three-day Rocky Mountain Federation of Mineral Societies-Wyoming State Mineral and Gem Society show at Rawlings, Wyoming, in June. Fifty-three non-commercial and 27 commercial exhibitors showed their work.

Combined with the show was the area convention attended by 118 delegates and alternates. Laramie, Wyoming, was chosen for next year's state convention while the Rocky Mountain Federation will meet in Rapid City, South Dakota. State officers elected at the convention were William Crout, president; Mrs. Merle Weible, vice president; and Mrs. Berniece Weible, secretary-treasurer.

Among outstanding exhibits was the natural stone sphere tree exhibit of Paul A. Broste, Parshall, North Dakota; Ralph E. Platt's collection which won first prize in a national show two years ago; and B. J. Keys' dinosaur gastroliths, sand concretions and fluorescent minerals.

The Santa Cruz, California, Mineral and Gem Society reports that it will hold its annual show in conjunction with the Santa Cruz County Fair at Watsonville on September 22-25.

A name for the new Pearblossom Gem and Mineralogical Society's bulletin was chosen by the organization—*Joshua Nuggets*. Winning entry was submitted by Anna Tyler of Pearblossom.

Frank Graf of the Hollywood, California, Lapidary and Mineral Society puts high stock in the value of lapidary work as a therapeutic. He recently sold the idea of setting up some equipment to the directors of the Brentwood Veterans Hospital. Frank spends his Tuesday evenings teaching and helping the patients with their new hobby. Soon, he reports, a second room will be made available for lapidary equipment.

The Gem County Rock and Mineral Society of Emmett, Idaho, held its first annual rock show in late June. On display were 2000 pounds of opal and agate wood and nearly 50 cases of polished stones.

LOVELAND STONE AGE FAIR IS SLATED FOR OCTOBER 1-2

The 10th Annual Loveland Stone Age Fair of the World will be held in the Loveland, Colorado, Community Building October 1 and 2. Co-sponsors of the event are the Stone Age Fair Association, Loveland Chapter of the Colorado Archeological Society, City of Loveland and the Loveland Chamber of Commerce.

The show's two sections will consist of Indian artifacts and mineral specimens. All rockhounds have been invited to display their collections. Exhibitors can get display information from Miss Marian Henry, El Centro Apartments, Loveland, Colorado.

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If you buy \$5 worth of **Basic Lapidary Supplies** from the following list. A \$10 purchase entitles you to buy 2 lbs. Tin Oxide at \$1.50 per lb. A \$25 purchase entitles you to buy 5 lbs. of Tin Oxide.

NORTON CRYSTOLON GRINDING WHEELS . . .

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	5.95	8.25	12.50
320 grit	3.35	4.50	6.70	9.40	14.20
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CRYSTOLON ABRASIVE for the Lapidary . . .

Grit Size	1 Pound	5 Lb. Lots	10 Lb. Lots	25 Lb. Lots
80, 100, 120, 180, 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—

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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 . . .

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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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8 and 10 inch trim saw units.

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LAPIDARY WORK WAS NO CINCH 20 YEARS AGO

Twenty years ago lapidary work was a far cry from what it is today, reports J. L. Gore of the El Paso, Texas, Mineral and Gem Society. Gore was taught how to saw, shape and polish semi-precious rocks into gems by H. L. Zollars in a little room in the Zollars basement. Zollars didn't use a diamond saw, wet-or-dry sanding cloth, spinning dry-sanding drums and the dozens of other aids for fast gem polishing. Far from it. The small agates and jaspers they worked on were worn in two, not sawed. To do this a plain round metal disc, running in a mixture of clay, abrasive grains and

water, was used. It often took hours to cut a slab that can be divided in minutes today. The abrasive mixture had to be of the proper consistency or it would not do the work. Even then, however, it splashed all over the little room.

To remove scratches after grinding Zollars turned shallow bowls out of poplar wood and then mounted them on the end of an arbor shaft. To polish the gem one of these bowls was lined on its inner walls with a strip of saddle leather or a piece of discarded felt. Tin oxide and red rouge were used as polishing compounds. El Paso Mineral and Gem Society's *The Voice*.

The First Annual Gem and Mineral Exhibition of the Santa Clara Valley Gem and Mineral Society takes place September 17-18 at the I. E. S. Hall, 1401 East Santa Clara Street, San Jose, California. This will be the first dealer participation show ever held in the city and members expect a large attendance. There will be no admission charge.

George J. Huss was elected chairman of the Marquette Geologists Association. Other officers for the new year are Arch J. Nisbet, vice president; Mary Riordan, secretary-treasurer; Mrs. Harold Schwendeman, delegate to the Midwest Federation Convention; and Paul J. Keller, Ray C. Mitchell, G. J. Huss and G. G. Putman, directors.

LIMESTONE CAVES BECOME COLD STORAGE

Limestone caves have been turned into refrigerated food storage rooms near Kansas City, 30 members of the Lawrence, Kansas, Rock and Mineral Club discovered on a recent field trip.

About 15 acres are now under refrigeration, the members learned, with different rooms being cooled to different temperatures for storing a wide variety of foods.

According to club members, the limestone is being mined and sold from wider areas and about 45 acres of underground rooms will furnish refrigerated storage when the project is finished.

L. D. Henderson, of Lawrence, has been elected president of the club, which is sponsored by the Lawrence Recreation Commission.

BLOCK OF EARTH'S CRUST FOUND THRUST 40 MILES

Dwarfing the power of the H-bomb, mountain-building processes in the West, millions of years ago shoved a huge block of the earth's crust 35 to 40 miles from its original position.

The block was recently located in a remote Nevada area by U.C.L.A. geologists. Dr. Donald Carlisle and Dr. C. A. Nelson found the phenomenon while geologically mapping a 400-square-mile area in the north central portion of the state.

The block consists of rocks formed hundreds of millions of years ago, when life on earth consisted predominantly of simple organisms. It was thrust over rocks of equal and even younger ages, forming what is known as a thrust fault.

During the mountain-building processes, huge segments of the earth's crust were shortened as the block folded over in many places. Dr. Carlisle and Dr. Nelson report silver-lead-zinc deposits are associated with this field.

(From *The Sphere*, bulletin of the Hollywood, California, Lapidary and Mineral Society and reprinted from *Science News Letter*.)

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Here is a worthy companion for our larger and more expensive Hillquist Compact Lapidary Unit. The smaller in size, the Hillquist Gemmaster has many of the same features. It's all-metal with spun aluminum tub. You get a rugged, double-action rock clamp, not a puny little pebble pincher. You get a full 3" babbitt sleeve bearing and ball thrust bearing. You get a big 7" Super Speed diamond saw and all the equipment you need to go right to work.

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Felker DI-MET Diamond Abrasive CORE DRILLS—Drills rock samples in a few seconds. Produces exceptionally smooth, straight holes and removable cores. Drill diameters from 1/8" to 2 1/2".

Felker DI-MET UNILAP—A universal lapidary machine designed for multiple operations: grinding, sanding, polishing and lapping! Spindle operates in either vertical or horizontal position for maximum convenience and efficiency. Accessories quickly interchangeable.

Felker DI-MET Model DH-1—Operates like a circular saw, but blade dips into coolant stored in aluminum base. Blade can't run dry! Uses 6" or 8" Di-Met Rimlock or Metal Bonded Blades. Includes rip and angle fences.

Other machines available—Write for circulars on all Di-Met equipment!

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Torrance, California

COLORADOANS LIST FIELD TRIP RULES

Ten good rules for field trips have been established and subscribed to by members of the Colorado Mineral Society. The group has agreed to:

"1. Advise leader of intention to join trip 24 hours in advance, arrive promptly at meeting place and remain with group throughout trip.

"2. Wait for instructions and guidance from field trip leaders at all times, obeying their directions explicitly.

"3. Notify leader when leaving group for any reason.

"4. Always carry warm jacket, own tools, water, pack-bag and lunch when necessary.

"5. Be responsible for all guests, minor children or pets accompanying me on trips.

"6. Respect private property by securing owner's permission to enter; reclosing closed gates, removing all trash and debris and not damaging fences or other property.

"7. Be careful of fire at all times and obtain permission of trip leader before starting camp fire.

"8. Willingly accept duties of field trip leader when asked and will familiarize myself with collecting area and material to be found. Bring specimens of material for examination when possible.

"9. Gladly pay my share of expenses incurred while riding to and from location with others.

"10. Be careful! Avoid mine shafts, stay out of old tunnels and be careful not to dislodge rocks or otherwise jeopardize fellow members." (From *Mineral Minutes*, bulletin of the Colorado Mineral Society.)

The Humboldt Gem and Mineral Society will present its second annual fair on October 1-2 at the Carson Memorial Building, Eureka, California. Special exhibits of jade and Oriental jade carvings will be featured in the Fair. The jade will be shown by Mr. and Mrs. Walter Louis of San Luis Obispo, California, and Mr. and Mrs. Glen Nash of Eureka. Exhibits featuring gold specimens from California will be presented by Mr. and Mrs. Percy Hollister of Eureka and Mr. and Mrs. John Woodruff of Paradise, California. About 1500 cabochons from the Arthur C. Johnson collection will also be featured. Rockhounds were asked to bring their trading material for the swap table.

An emblem was adopted for the San Francisco Gem and Mineral Society at a recent directors' meeting. Chatham emeralds, official gem stone of the society, are featured in the symbol.

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ROCKHOUNDS TELL BEST WAY TO CLEAN COPPER

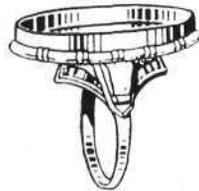
Collecting copper specimens is a lot of fun, and cleaning them for display is even more fun because the results of your work can be very showy, report Joe and Loretta Heininger in the June *Rock Rustler's News*, Minnesota Mineral Club bulletin.

First step is to brush off loose particles before placing your specimen in a glass or fired crockery container containing a one to one solution of muriatic acid and water. The Heiningers warn that the acid should be added slowly to the water and suggest that work be done outdoors if possible to avoid acid damage. The copper should be left in

the solution until it is as clean as desired and then rinsed well in warm water until all traces of the acid are removed. The more porous the specimen the longer it must be rinsed.

Specimens containing calcite crystals should not be cleaned with muriatic acid which dissolves the calcite, but should be soaked in a saturated cyanide solution. Those working with cyanide should use rubber gloves and apron and have access to plenty of water. A tiny scratch that comes in contact with cyanide spells trouble.

San Antonio, Texas, Rock and Lapidary Society will hold its show in October. Exact dates were not announced.



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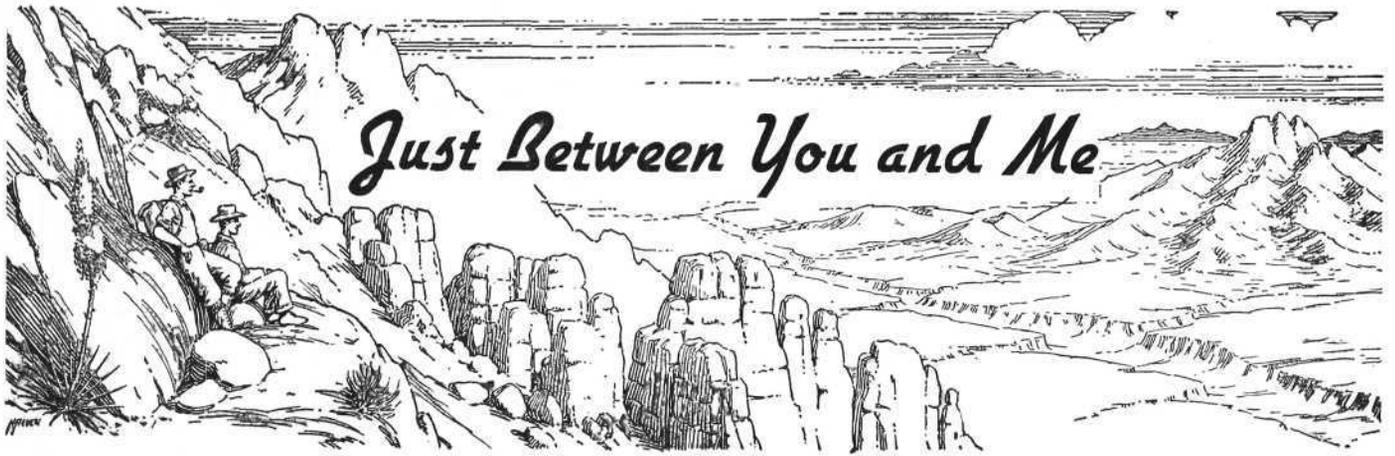
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By RANDALL HENDERSON

THERE'S PROBABLY only one place in the United States where you can travel 149 miles in one direction and never pass a gasoline pump or a cold drink fountain. That is the winding dirt and gravel trail which threads across southeastern Utah from Hanksville to Blanding.

Cyria and I traveled that road in June. It is passable for any type of car, but I wouldn't recommend it for those allergic to the washboard jitters.

We passed several uranium outfits—jeeps, pickups and trucks, but they were always in a hurry and the only time we stopped for an exchange of greetings was at Hite ferry where Art and Della Chaffin have been on duty for many years. The uranium boom has brought much traffic to the ferry—but Art and Della have reached the age of retirement and are trying to find a buyer for their ranch and ferryboat.

Sooner or later there will be a bridge across the Colorado River at Hite, and an improved road which will open up a great new scenic area for the motorist. Actually, the southern Utah region from Zion National Park through Bryce, Capitol Reef and Monument Valley to the Mesa Verde National Park in southwestern Colorado, is the most colorful sector in the entire Southwest. But the greater part of it is still inaccessible.

This is the land of the sandstone cliffs, fantastically eroded and colored in myriad shades ranging from deep red through pink and tan to pure white. Against this backdrop and growing in the coves and on the ledges and ridges are the evergreen juniper and pinyon. It is a land to delight the artist and photographer.

* * *

In Monument Valley we found Harry Goulding out on location with John Ford, director, and John Wayne and a troupe of several hundred other players, mostly Indians, filming a story with the title, "The Searchers." The Navajo Indians, about 300 of them, were playing the roles of Comanches—and liking it. Monument Valley provides only a poor livelihood for the Indians in this part of the reservation, but Harry Goulding is able to bring in a movie company nearly every year to keep ample meal and coffee in the hogans.

* * *

The mail recently has brought many letters of indignation from folks who read in the newspapers that the Los Angeles county board of supervisors is considering a plan to bundle its garbage and rubbish in bales and haul it out to a dump somewhere on the desert.

They've fouled up the once beautiful Southern Cali-

fornia landscape with smokestacks and roadside litter, and now they want to make a dumping ground of the desert. I could be put in jail for what I think of that idea.

I doubt if the people, even in Los Angeles, would go for that atrocity. Too many of them have learned that the desert is the one place where they can go for sunshine and clean air and some degree of escape from the clatter of an over-crowded and over-industrialized metropolis. I think they would like to see the desert kept fresh and clean and inviting.

* * *

Folks who have only a hearsay knowledge of the desert often ask the question: "How do you stand it there when the thermometer goes to 110 or 115 degrees?"

Actually, those 115-degree days are not as bad as they sound—at least not for those of us who spend our time in air-cooled homes and offices. Many of the building mechanics and agricultural workers whose duties keep them outdoors now arrange their working hours to avoid the mid-day sun.

I have learned three simple rules which take most of the discomfort out of desert living in summertime: Drink plenty of water, breath deeply, and keep busy. It is idleness, more than a hot sun, that makes the desert summers unbearable to many people.

Primitive people did not regard the desert summers as a hardship. Witness the great number of tribes who had established homes in the desert Southwest when the white men came to this land, and the archeological ruins which are evidence of the great numbers of prehistoric tribesmen who dwelt here.

Primitive humans, like wild animals, had to hustle for a living. They were fortunate in that respect—fortunate because when man is not impelled by necessity he will neglect many things essential to his well-being. Nature is a wise mother. She knows that tendency in her children toward those habits of indolence and inactivity which invariably end in degeneration. So, upon those who live by her precepts she enforces activity.

Man has been trying down through the ages to circumvent this law of industry. He often deludes himself with the idea that he has done so. But sooner or later he pays a price for his folly. For the laws that Nature has laid down are inviolate.

One of the tragedies of our civilization is that ease and luxury have become the goal of so many of our people. For it is true that to the extent humans attain this goal they bring about their own decay.

BOOKS of the SOUTHWEST

YUMA CROSSING IMPORTANT TO HISTORY OF SOUTHWEST

The great Colorado River was an effective barrier between the center of Spanish American rule in Mexico and California. It had one safe fording place, at Yuma, and there the trails of history came to a common point.

Author Douglas D. Martin believes this crossing merits a more important place in the histories written and taught of the Southwest. He tells why in his fast moving book, *Yuma Crossing*.

Written primarily to entertain, the book nevertheless puts across its historical lesson. The Yuma Indians controlled the crossing and at first were helpful to the Spaniards. Bad diplomacy, however, brought an end to friendly relations and the Spaniards found themselves without a direct land link between Mexico and the California Missions.

American frontiersmen were quick to recognize the ford's importance. Kit Carson knew the trails leading to it better than any man living at the

time. It was he who led Kearny's Army of the West to Yuma and across the Colorado into California. The Indians lost out when Americans by the thousands poured through Yuma on their way to the gold fields. Soon, ferrymen and river boats marked a new era that quickly ended, in turn, with the coming of the railroad. And now, all the early users of the crossing, from conquistadores to explorers to pioneers are gone—except the Yuma Indians.

Published by University of New Mexico Press. 234 pages. \$4.

Hiking, Camping, Mountaineering and Trail-Clearing Equipment, now available in its eighth edition, is a handy buyers' guide for outdoors men and women. Material for the pamphlet is compiled by the Potomac Appalachian Trail Club, 1916 Sunderland Place, N.W., Washington 6, D. C. Close to 200 items are catalogued according to description, weight, supplier and price. Paper cover with index. 48 pages. 50 cents.

CONSERVATIONISTS OUTLINE DINOSAUR MONUMENT ASSETS

Conservationists locked in the current controversy over the proposed Echo Park Dam, which would back up water in the Dinosaur National Monument, have presented their case in a book entitled *This Is Dinosaur*. The book is not a fighting document, but rather it is an exhaustive survey of the Monument. The book's editor, Wallace Stegner, hopes to point out to people just exactly what they will lose if the Echo Park, Split Mountain, Cross Mountain and Flaming Gorge Dams are built as suggested in the proposed Colorado River Storage Project.

The conservationists can see nothing short of disaster should the spirit of the National Park idea be violated at Dinosaur. One misstep toward opening the National Parks to commercialization and exploitation in any form will be fatal, they argue.

Edited by Wallace Stegner. Published by Alfred A. Knopf, New York. Thirty-six pages of photographs in color and black-and-white. 97 pages. Map of Monument. \$5.00.

Books reviewed on this page are available at Desert Crafts Shop, Palm Desert. Add three percent sales tax on orders to be sent to California.

The Journey of the Flame is the story of an epic passage through the three Californias almost a hundred and fifty years ago, and a passionate description of savage feudal life under the hidalgo sons of the Conquistadores. This marvelous tale is told with forceful dignity and poetic simplicity. As a chronicle of blazing life in a primitive land it is a permanent addition to the world's literature.

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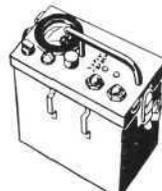
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