

THE

Desert

MAGAZINE



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SEVENTH ANNIVERSARY

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THE CASE OF
MENTO
 THE GREAT

... by your Union Oil Minute Man



Gloria and I notice nothing unusual about him as he pulls up to the pumps, except that he's driving a red and yellow truck with big, gilt letters on the side that say: "Mento, the Great Brain," and instead of a hat, he is wearing a Turkish towel wrapped around his head. On his face he has a long, silky mustache and a scowl. He's the maddest looking guy we've ever seen, this Mento, the Great Brain!

Before I can say anything he holds up his hand like an actor. "Say nothing," he roars. "To Mento the mind is an open book. Babb—five gallons!"

Gloria giggles as she grabs the air hose and starts on the tires. I make with the 76. Mento stands over me. "Like the open book is the mind to Mento," he says. "You were about to tell Mento there is a war on, that you

have not the time to give Mento service; that you are too busy—babb, yah?"

"Babb, no—er I mean no, babb, er—no, sir"—I mumble as I start to check the oil and radiator.

Mento glares at me. "You tell Mento his business? Babb—everywhere I go I read minds. I know what they're going to say before they say it. They push Mento around. Bahh—they are too busy!" Gloria has just finished the windshield and pipes up with "Not at Union Oil Minute Man Stations, Mr. Mento. Sure, we're awful busy, all right, but we're never too busy to be helpful," and she gives him the old wide-eyed smile.

Mento yells, "But this is not possible—Mento reads minds like open books."

"Sure it's possible, Mr. Mento," I tell him. "Look,

we wanted your business before the war; we certainly want it after the war. So we figure the way to keep it is to treat you the best we can now. You don't have to be a mind reader to find that out!"

Mento looks from Gloria to me. "This you are saying—but you also are doing?" Gloria grins at him.

"Well you got your gas, we checked the oil, water and tires and cleaned the windshield. Doesn't that look like we mean it?"

Mento shakes his head and climbs back in the truck. He pulls his crystal ball out from back of the seat. "Mento, the Great Brain, is through! This crystal ball, she is no good! Babb!"—and he heaves it over the back fence, from where we hear a resounding crash, and goes chugging out of the station!

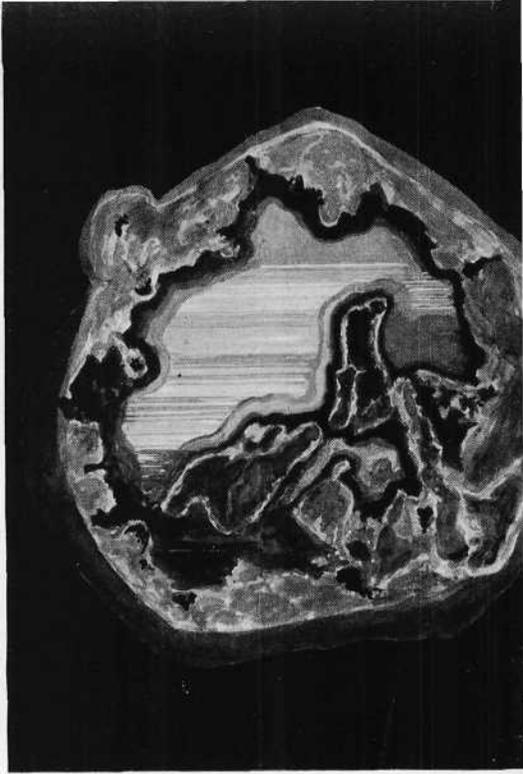
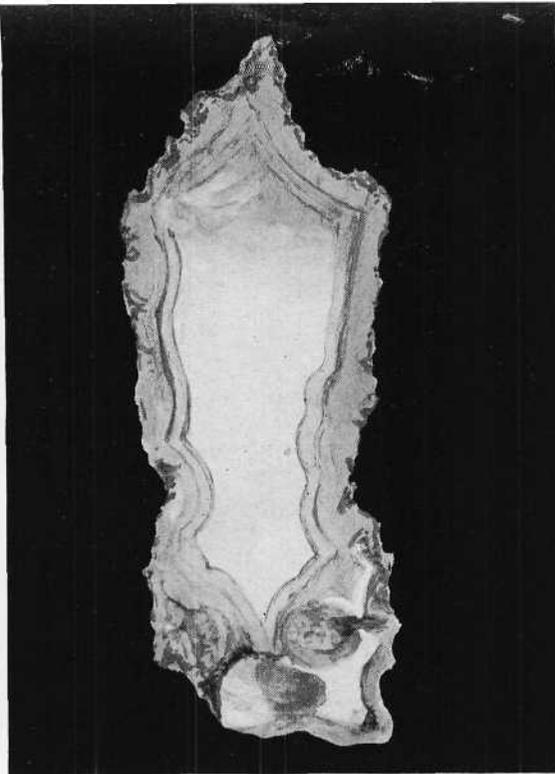
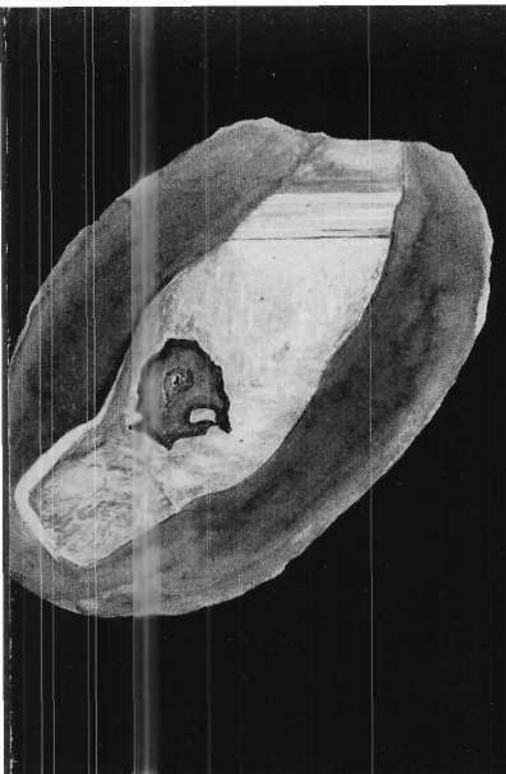
This morning *The Brain* is back. He has a new sign on the truck. It says: "M. Mento, Housecleaning & Gardening." Underneath the sign is another line that reads: "M. Mento is never too busy to be helpful."

The latchstring is always out at Union Oil Minute Man Stations. Courtesy, friendliness and essential motoring services are never rationed. We're busy, yes, as busy as anyone else, but we're...

Never too busy to be helpful!

UNION OIL COMPANY OF CALIFORNIA

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When a lapidary polishes gems and minerals, he often reveals beautiful and unusual patterns. Jerry Laudermilk let his imagination loose on these. 1—Mood over a swamp. Light of a dreary sunset barred with brown sickly orange glows feebly on vapors from a reeking marsh; suddenly the Genius of Malaria appears against the mist. Polished agate thunder egg, Geology Museum, Pomona College, Claremont. 2—Gateway of illusion. White opaque chalcedony surface half reveals portentous forms that drift like changing shapes of smoke. Polished chalcedony nodule, Ellis Johnson collection, Claremont. 3—Sea of Serenity. Beyond chaotic foreground appears an expanse of open water shining in moonlight. Polished agate thunder egg. Johnson collection.

Mystery of the Magical Surface

When Yellow Bird, in prehistoric Arizona days used a stream-rounded quartz pebble as a rubbing stone to smooth her pottery, she did not wonder at the polished surface it acquired after years of use. And when rock collectors and gem cutters today seek a shortcut to obtain a brilliant surface on their prize specimens, few of them know why or how this effect is attained. A rockhound knows that when he licks a rock he picks up in the field or douses it in a pan of water, colors and patterns not otherwise noticeable mysteriously appear. When a gem cutter starts cutting and grinding and polishing, he knows the result will be a beautiful polished surface. But few realize they are dealing with such forces as atoms and energy and light. This month Jerry Laudermilk gives collectors a non-mathematical explanation of a difficult but engrossing subject.

By JERRY LAUDERMILK

IT WAS just after sunrise several thousand years ago, that an earth tremor of no importance shook the ground near Ft. Defiance, Arizona. The shock was barely enough to loosen a pebble of variegated quartzite from its bed in the Shinarump conglomerate and send it rattling to the foot of a canyon wall.

It took a hundred years for the pebble to creep down the talus slope until it reached a wash, where in the rainy season the water ran high. Here, it began once more an active career of battering among the other cobbles and pebbles in the wash. As the years passed it began to take on the soap-cake shape of a typical river pebble while it slowly worked its way farther and farther downstream toward the south. At last it reached the bottom of a spring along the course of a river many miles from the point at which its adventures began. From the clear water it reflected the sunlight and glowed with a curious mottling of red, pink and white against the gray of the

sand. For years only the wild animals of the desert saw this natural gem stone when they crept to the spring to drink.

The pebble lay in the spring for a long, long time. The Basket Makers with their atlatls (spear throwers) and other simple furniture already had disappeared and another people who used the bow and arrow and had a higher culture now dominated the country.

So it was that Yellow-bird, the potter, a young woman of the early pueblo builders, dwellers in big houses, came slowly up the stream in search of fault-gouge (clay-like earth) for pottery. She reached the spring and looking into the water saw the beautiful pebble shining on the bottom. Like all women of her tribe who worked with clay it was part of her art to polish much of the finished ware by rubbing it round and round with a hard smooth pebble. She dreamed beautiful designs and ornamented her dishes and bowls with curious scrolls and geometric forms; polishing

caused the design to stand out boldly. So the colored rock captured her attention, not only by its promise of making a useful tool but as an attractive thing in its own right. She picked the pebble out of the water and dropped it into her carrying basket. Later, when she stopped to rest she remembered the stone and took it out to admire again its colors but they were dulled beneath a surface as dim as the eye of a dead fish.

Yellow-bird knew that it would be like this. Somewhere down in her primitive mind she sensed a correspondence between a surface polished until it seemed covered with a film of water and the showing of a design in its clearest form and brightest hues.

Time passed and Yellow-bird grew old and wrinkled over her pottery. The polishing stone by long continued handling had finally acquired a luster like that it had given to a thousand things of baked clay. Then one day the old potter passed on

down the trail that led to the houses of her ancestors. Her tribes-people buried her in the village refuse heap according to their custom. With her they buried all the things she might need in the next world including the treasured polishing stone that she might give a luster to phantom pots in a phantom land.

Creation of Reflecting Surface

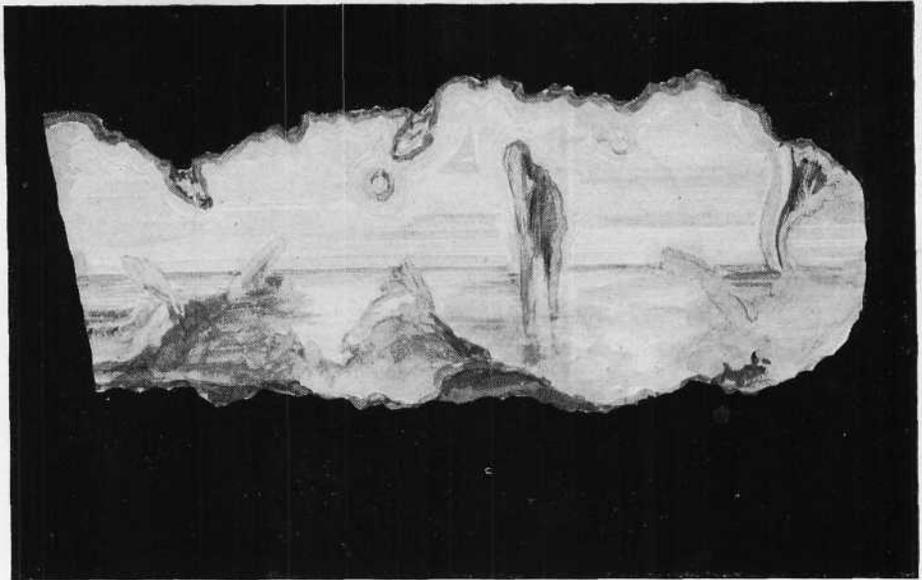
More centuries passed and then white men who curiously sifted the ashes of the dead in search for things that told of ancient ways of the Old People brought to light again the stone of Yellow-bird. The sunlight gleamed from its silky surface as from a shining skin. Its finders looked and wondered at the quality called "polish," how even the hardest stone finally yields to the stroking of softer things to gain the splendor of luster. What had happened to this pebble is wonderful and complex. But usually we accept the beauty of a polished gem without questioning. Since the earliest times the lapidary has achieved systematically and with intention the same effect that Yellow-bird's smoothing stone acquired by chance.

When some Indian artist or his more sophisticated white brother polishes a stone, either by grinding down on a sandstone slab with sand and water or with emery powder on an iron grinding lap, he does some tremendous things with both atoms and energy. In the end he creates a reflecting surface. But what is it that is reflected and *how*?

Qualities of Light

Precisely what light is we don't know. We do know many of its effects. It appears to be a wave-motion of some infinitesimally small but substantial particles since among other qualities light is known to exert pressure—the sun's rays drive the comet's tail ahead of it as it speeds away. It was not until 1903 that two investigators, Nichols and Hull, actually demonstrated the light pressure effect on tiny particles. In an apparatus resembling an old-fashioned hourglass but of infinitely more delicate construction, a concentrated beam of light was focused on a falling stream of excessively small, spherical particles made from the ash of puffball spores. These tiny grains of charcoal actually were pushed out of their path by the pressure of the beam alone. They drifted against the inside wall of the instrument as if blown by a tiny breeze. Since the apparatus had been carefully exhausted almost to a complete vacuum it was reasonably concluded that the effect was due to light alone.

We can imagine a light source, say a burning candle, as being a center shooting out energy (light) in every direction as a series of rhythmic pulsations as if the flame beat like a heart and sent out fantastically tiny waves so that it becomes a point surrounded by concentric, spherical shells



Philosopher. Lost in a wilderness of speculation, he surveys an assemblage of vaguely defined terms. Waterspout at extreme right appears as only definite form in landscape. Sage-green and white chalcedony nodule. Johnson collection.

of waves racing outward like the circles made when a rock is dropped into quiet water. Conditions something like those assumed to exist are shown in figure 1, page 6.

Any one of the radii through these shells as AB, CD, EF, is a single ray of light. A ray then can be thought of as a chain of impulses moving in the direction of the arrow at the rate of 186,337 miles per second (figure 2). A number of parallel rays make up a beam (figure 3). It is of beams of light rather than single rays that the rockhound thinks when he polishes an agate slab.

Reflected Light

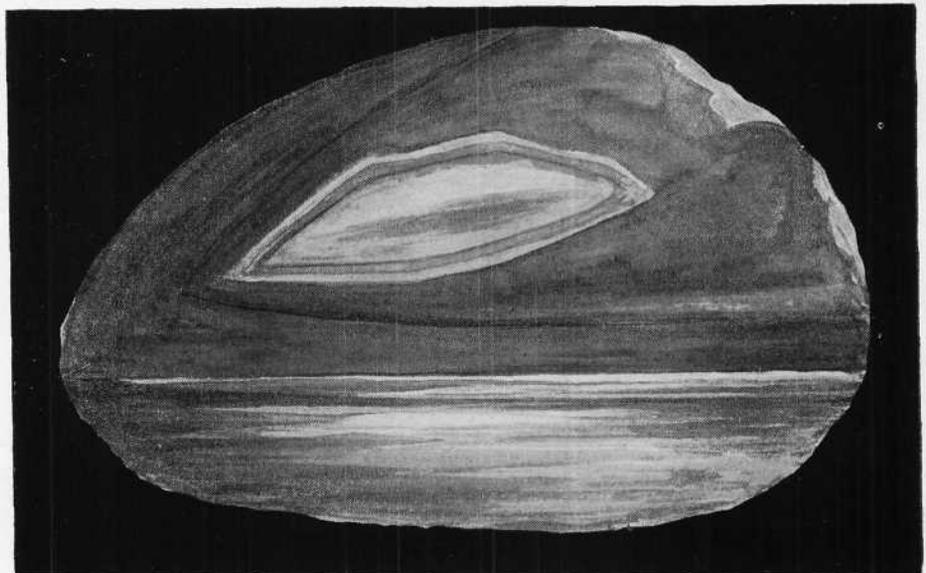
Light can be both reflected and refracted. When reflected from a polished sur-

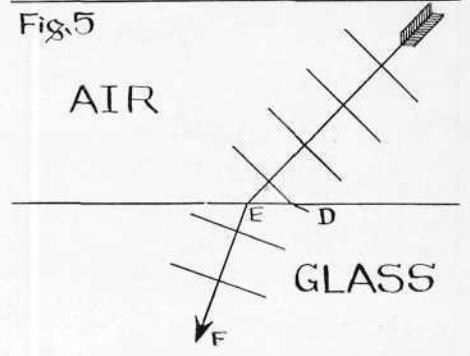
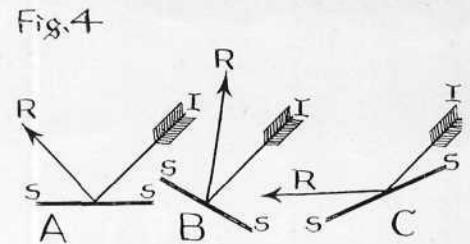
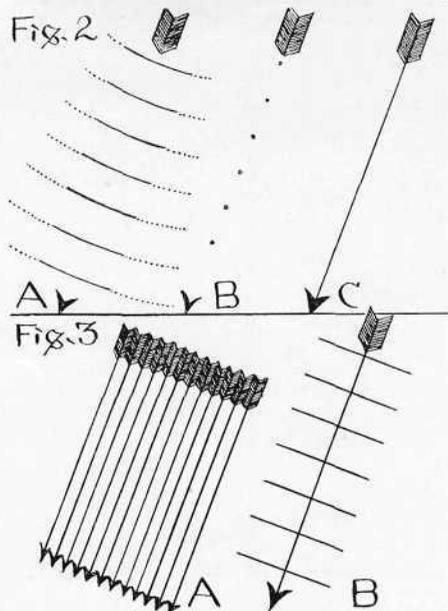
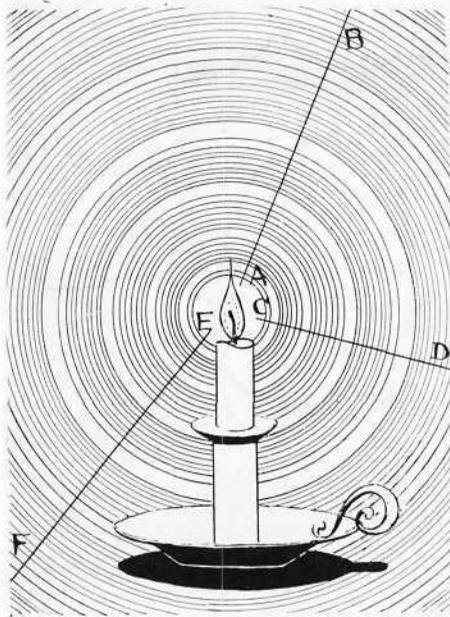
face, the waves can be thought of as bouncing from the surface like a stream of elastic bullets. The impulses rebound at an angle always equal to the angle at which they strike (figure 4 at a, b, c). The light that comes in to strike the surface is called the incident ray, the light that rebounds the reflected ray. Some light is reflected from the surface of any visible object; an absolutely non-reflecting surface such as is presented by a polished slab of plate glass when held at certain angles, is totally invisible.

Refracted Light

Light is refracted when the beam passes from one transparent substance into another of different density. The speed of light is practically the same in air as it is in

Coming destruction. Through a turbid sky the color of hot copper, a vast frightful meteor hurtles earthward above a lurid sea. Polished agate thunderegg, Geology Museum, Pomona College.





1—Luminous flame is a transformer in which chemical energy, combustion, is changed into heat and visible radiation or light. Imagine the flame to be a point surrounded by concentric shells of waves radiating outward in every direction at the rate of 186,337 miles a second. Any radius as AB, CD, EF is a ray. 2—A single ray may be thought of as a series of impulses moving in the direction of arrow (A). The idea is easier to grasp if we consider the impulses to be a series of points (B). Since there is an infinite number of these points moving at terrific speed it is convenient to think of them as making up shaft of the arrow (C). 3—Parallel rays make up a beam. Imagine the beam to be constructed like B. Here the transverse lines represent cross-sections of the beam. A single ray also can be thought of as having this same make-up but in thinking about reflection it is easier to think in terms of beams. 4—Reflection. Ray or beam is reflected from surface SS at an angle always equal to that at which the on-coming ray or beam strikes the reflecting surface. At B, R is reflected ray, I the incident ray. 5—Refraction. Ray or beam passing from medium of one density into medium of different density is bent or refracted. Bending may be due to slowing down or speeding up of ray. In this case beam traveling in air is slowed down by glass.

a vacuum. It moves more slowly in water. Here its speed is only three-fourths as great as it is in air. A refracted beam when passing from a less dense medium to one of greater density undergoes the changes shown at figure 5.

When there is much difference in density between two transparent media, say air and glass, some of the rays are reflected while others are refracted within the mass of glass. If there were no reflections from the surface the glass would be invisible. Reflection of light by a chunk of glass is shown at figure 6. Here, the glass block is in a beaker which rests on a dead-black surface. The glass is visible only by the reflections from its faces and edges; most of the refracted light is absorbed by the black surface underneath. The jumbled light reflected from the faces which meet the incident beams at different angles is said to be "scattered."

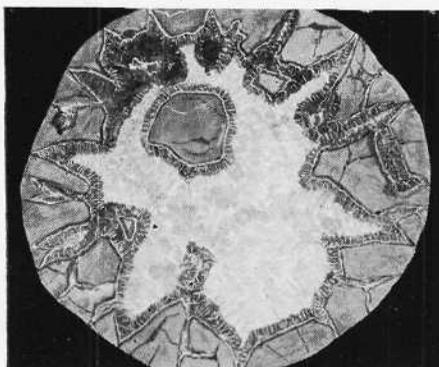
Scattered Light

In figure 7 a layer of coarsely powdered glass covers the bottom of a beaker. This glass appears as a white powder and a line of print cannot be read through it because each tiny fragment throws back the ray that strikes it as a point of white light and these beams are reflected at countless different angles, scattered from a multitude of points. None of the light goes through to be reflected from the print beneath. This scattering from millions of reflecting sur-

faces is the cause of the whiteness of paper where the fibers, although perfectly transparent themselves, act as a sheet of tiny mirrors reflecting at all angles.

Suppose we fill the beaker in figure 6 with clear water. The chunk of glass becomes much less visible now because it is easier for the beam to pass from air into water and then into glass than it is for the beam to pass from air into glass direct; there are fewer reflections from the surface (see figure 8). It is possible to make certain kinds of glass entirely invisible by ordinary light. The resin called Canada balsam can be dissolved in xylene to make a solution which has almost the same refractive index as the glass. If this is used

Polished calcite concretion, in tones of amber, russet and Maltese grey. Johnson collection.



in place of water the glass will be practically invisible. When the balsam solution is poured on the powdered glass the print beneath becomes entirely readable because there is no scattering.

Suppose we frost a piece of glass by grinding one side with emery powder. We rough up the surface with countless, light-scattering pits and facets which have the same effect as the powdered glass in figure 7. The frosted surface is nearly opaque. Wet it and it becomes transparent since the film of water has much the same effect as submerging the chunk of glass in figure 8; the surface of the plate has become regularly reflecting (see figure 9 at a and b). This is the reason why Yellow-bird's rock was beautiful while wet but dull when dry. It is also the reason why a rockhound douses a rough-polished slab with water to see how it will look when polished. It is easy to make a spurious polish on smooth rocks and pebbles by coating them with shellac. This reduces the scattering in the same way as a wet surface. Let's next consider the reflecting surface itself.

Reflecting Surfaces

The ideal reflector would be opaque and non-refracting with no irregular high points or facets to scatter the light. You can see such a surface on the fresh cleavage face of a crystal of galena. Ideally reflecting surfaces are rare and when a beam of strong sunlight is focused on a suppos-

edly smooth surface, if this is examined in a darkened room, a bluish haze nearly always appears around the bright spot showing that some scattering is taking place. Dr. Robert W. Wood, in his work, "Physical Optics," tells how such a presumably smooth surface as that of the best crown-glass actually looks dull by comparison with a freshly split flake of mica.

Flowing Surfaces

Another type of reflecting surface is produced by the action of a soft cloth buffer on a smooth slab of metal, glass, agate, chalcedony, and in all probability upon quartz. This is the highest polish obtainable by mechanical means. Here the surface is made to flow like soft wax. After a few hundred revolutions of the buffer the surface actually is liquefied to the depth of a few molecules and these begin to spread out over the surface in a thin layer that has many of the optical properties of an enamel-like film.

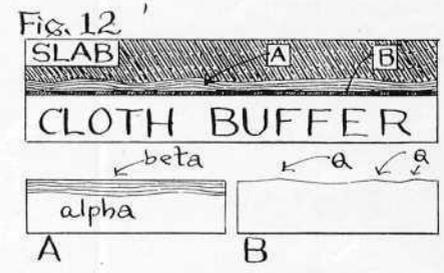
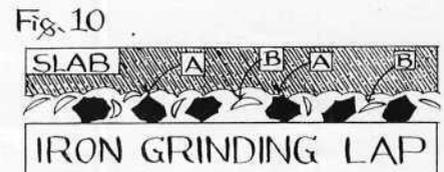
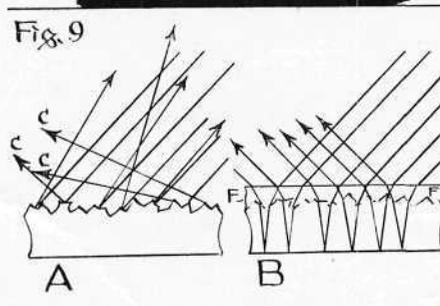
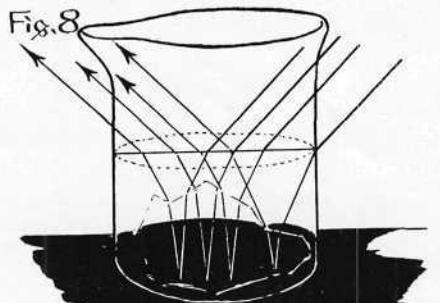
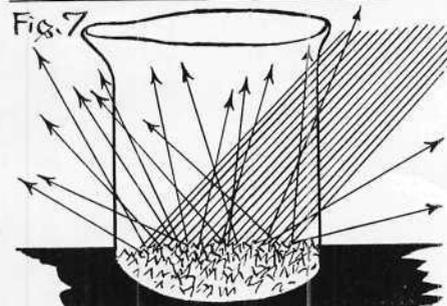
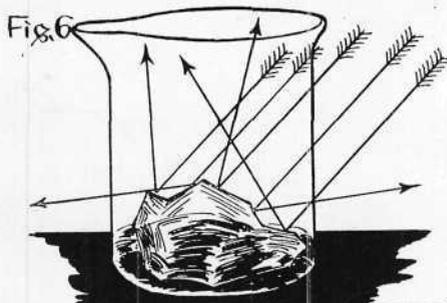
That this flowing of the surface actually takes place was conclusively shown by Sir George Bealby in 1901. Of course, it had been known since the use of metals first began that a lustrous polish could be developed by simply rubbing the surface briskly with a cloth. Just what took place was in doubt. Some thought that the cloth simply removed a thin film of oxide. But there were serious objections to this view because rubbing with a cloth also polished gold, and a gold object would not carry a coat of oxide. In clearing up this question Bealby took advantage of the fact that cast blocks of copper generally contain many minute gas bubbles. He smoothed the surfaces of such blocks with abrasives until as true as possible. Microscopic examination now showed a pattern of brilliant, copper-colored spots, the inside of the sliced bubbles, against a rose-colored background, the solid copper between. He then polished the surface for several hours with a linen buffer. The microscope now

showed a series of blue discs against the rose color. By the use of solvents, the action of light reflected from the inside of the cut bubbles, etc., he demonstrated that the blue spots were excessively thin, transparent films of metallic copper which bridged the bubble cavities as a continuous sheet. In 1917 J. W. French and other investigators proved that a similar flow surface was produced by a cloth buffer on glass and almost certainly on quartz.

When a piece of glass is to be ground from the rough slab to the final "optical" polish developed with the cloth buffer it passes through the following stages.

Processes in Polishing

Coarse abrasives are used first to wear down the surface rapidly. Here, the tiny angular grains of abrasive roll swiftly between the slab and the face of the grinder. As the grains roll about they bump the surface on a microscopic scale with their corners knocking out minute, conchoidal



6—Scattering of light from irregularly reflecting surface (chunk of glass at bottom of beaker). Incident rays, feathered parts of arrows, are cut by reflecting surfaces at different angles and are reflected according to rules at Fig. 4. Result is that component rays of beam reflect in different directions or are scattered. Chunk of glass appears as glittering cluster of facets, corners and edges. 7—Multiple scattering. Conditions in Fig 6 on smaller scale, multiplied many times. Result is jumble of reflected rays scattering light in every direction. Multitude of glittering points produces uniformly white surface. This is cause of whiteness of salt, sugar, cotton or, as in this case, powdered glass. This is also why a plate of ground glass appears white and opaque. 8—Effect of reducing surface reflection. Fragment of glass is submerged by filling beaker half full of water. Water and glass now refract nearly as a unit. Although there still is some reflection from glass most of the rays refract and reflect from surface beneath beaker. 9—Effect of dry and wet light-scattering surfaces. At A is section through glass plate with frosted upper surface. Light is scattered from multitude of facets and points. Notice rays CCC bend toward the horizontal at angle less than 49 degrees from vertical. At B, FF shows effect of covering frosted surface with film of water. Film and plate now refract almost as a unit. Scattering is diminished and objects are visible on opposite side of plate. Such a wet or varnished surface does not reflect so completely as one highly polished because such rays as CCC cannot pass again into the air but are reflected downward by total internal reflection from under side of water-film surface. 10—First stage in formation of polished surface on glass, quartz, agate, etc. Irregularly shaped grains of abrasive whirl rapidly between lap and slab. As they roll their corners, A, batter the glass like a million tiny hammers, knocking out microscopic, conchoidal spalls (B) a ground or frosted surface results. 11—Effect of the pitch-polisher. Face of this tool XX rubs away surface of the slab in thin, brittle layers about 1/5000th inch thick (AA). 12—Cloth covered face of buffer at B actually rearranges molecules in surface of slab so that enamel-like "flow layer" results. This is shown by wavy lines at A. Below, section shows flow layer or beta glass and the ordinary or alpha. At B, below, is hypothetical section of a polished surface produced by near-elimination of light scattering facets. Such surfaces while extremely smooth and polished frequently show ripples as QQ. This is unimportant when the polish is simply intended to show the beauty of the polished material.

spalls (figure 10). Finer and finer grades of abrasive next are used and these simply continue on a more delicate scale the work of the coarse powder. The next step really begins to produce the lustrous surface that is the polisher's ideal. Since a truly optical surface such as we see on lenses and fine mirrors is not needed to show the beauty of a polished rock, this step generally is omitted by the rockhound.

But where the process is followed rigidly the "pitch-polisher" now comes into action. This is a special tool coated with a mixture of pitch and wax and faced with jeweler's rouge or putty powder. The effect of the pitch-polisher is to rub off the surface in thin brittle layers about 1/5000th of an inch thick (figure 11). The surface produced by the pitch-polisher alone is called "gray" and has a low luster. The brilliant shine is put on with the cloth buffer which develops a flow surface as shown in figure 12.

Alpha and Beta Glass

It has been shown that two different types of glass occur on the same slab after the final polish. These are the normal or original glass of the deeper layers, called alpha glass and the strained flow layer developed by the cloth buffer, known as beta glass. The flow layer acts in some respects as if it had been melted and glazed upon the alpha glass base. In fact, under some conditions the polished layer has been observed to flake off in glittering scales. Another indication that the flow layer is of appreciable thickness is furnished by the fact that when "sleeks" or cleanly channeled grooves in a polished slab apparently have been removed by polishing with the cloth buffer, they again will develop in their original positions if the surface is etched by exposure to either weak hydrofluoric acid or caustic soda showing that the sleek simply has been coated over with the flow layer.

Not all surfaces depend on the development of a flow layer to gain a polish. Some materials such as feldspar, basalt, serpentine, fossil bone, ivory, etc., can be made to take a high polish with a soft buffer without flowing. This was the final condition of Yellow-bird's polishing stone. In these cases the highly reflecting surface results from the continued reduction of the tiny surface irregularities to such small dimensions that they no longer scatter all the waves to produce white light and the whole surface becomes in effect, regularly reflecting.

The story I have just told is merely a synopsis of what is known about light, surfaces and reflection. And when some pre-historic Indian craftsman polished a turquoise pendant to hang like a slice of the sky from a white shell necklace, little did he realize the tremendous magic his hands performed with such wonderful things as light and molecules.

TRUE OR FALSE This month's quiz session will give all those less-than-Desert Rats an opportunity to redeem themselves—and it should be a "snap" for the erstwhile Desert Rats and Sand Dune Sages. While most of the answers will be found in various issues of Desert Magazine, others will have been learned as the result of observation or general reading or just plain reasoning. Score ten, and mark yourself up as a Desert Rat. Score 15 or more, and step up into the Sand Dune Sage class. Answers on page 32.

- 1—The Hopi Indian reservation is entirely surrounded by the Navajo Indian reservation. True..... False.....
- 2—The Pecos river of New Mexico and Texas is a tributary of the Colorado river. True..... False.....
- 3—University of New Mexico is located at Santa Fe. True..... False.....
- 4—Father Escalante was the first white man to explore the lower Colorado river. True..... False.....
- 5—Deglet Noor is the name of a famous Cahuilla Indian chief in Southern California. True..... False.....
- 6—From Las Vegas, Nevada, one can see Charleston Peak. True..... False.....
- 7—Bandelier was one of Coronado's companions in the ill-fated quest for the Seven Cities of Cibola. True..... False.....
- 8—Because of the similarity, the Mexicans can understand much of the Navajo language. True..... False.....
- 9—Highest mountain in Arizona is Mt. Humphreys, one of the San Francisco peaks. True..... False.....
- 10—The famous Castle Dome mines in Arizona now are producing lead ore. True..... False.....
- 11—Common name of one of the cactus species is Staghorn. True..... False.....
- 12—There are no active volcanoes in Arizona, Nevada, Utah or New Mexico. True..... False.....
- 13—Chemehuevi is the name of one of the Indian tribes living along the Colorado river. True..... False.....
- 14—Another name of Mescal, or Agave, is Spanish Bayonet. True..... False.....
- 15—The Indian pueblo of Isleta is located north of Albuquerque. True..... False.....
- 16—First Navajo silversmith learned his craft from a Mexican. True..... False.....
- 17—Rose quartz is a more common occurrence in quartz-bearing rock than white quartz. True..... False.....
- 18—All the various Apache tribes of Indians now are concentrated on one reservation in the White mountains of Arizona. True..... False.....
- 19—Museum of Northern Arizona is located at Prescott. True..... False.....
- 20—The crystals commonly known as Fairy Crosses are a crystalline form of jet. True..... False.....

According to Navajo custom an unmarried girl may choose her partner at the *P'tch'osib*, or Squaw Dance. The selectee must dance with her until she is willing to accept silver money for his release. Refusal to dance is an insult. Keetsie's drawing shows the little Navajo maid "about as high as a willow shoot" who pulled Van into the circle of dancers, and her twin who "booked" his companion Tuli. Van finally bought his freedom with a 25-cent piece.

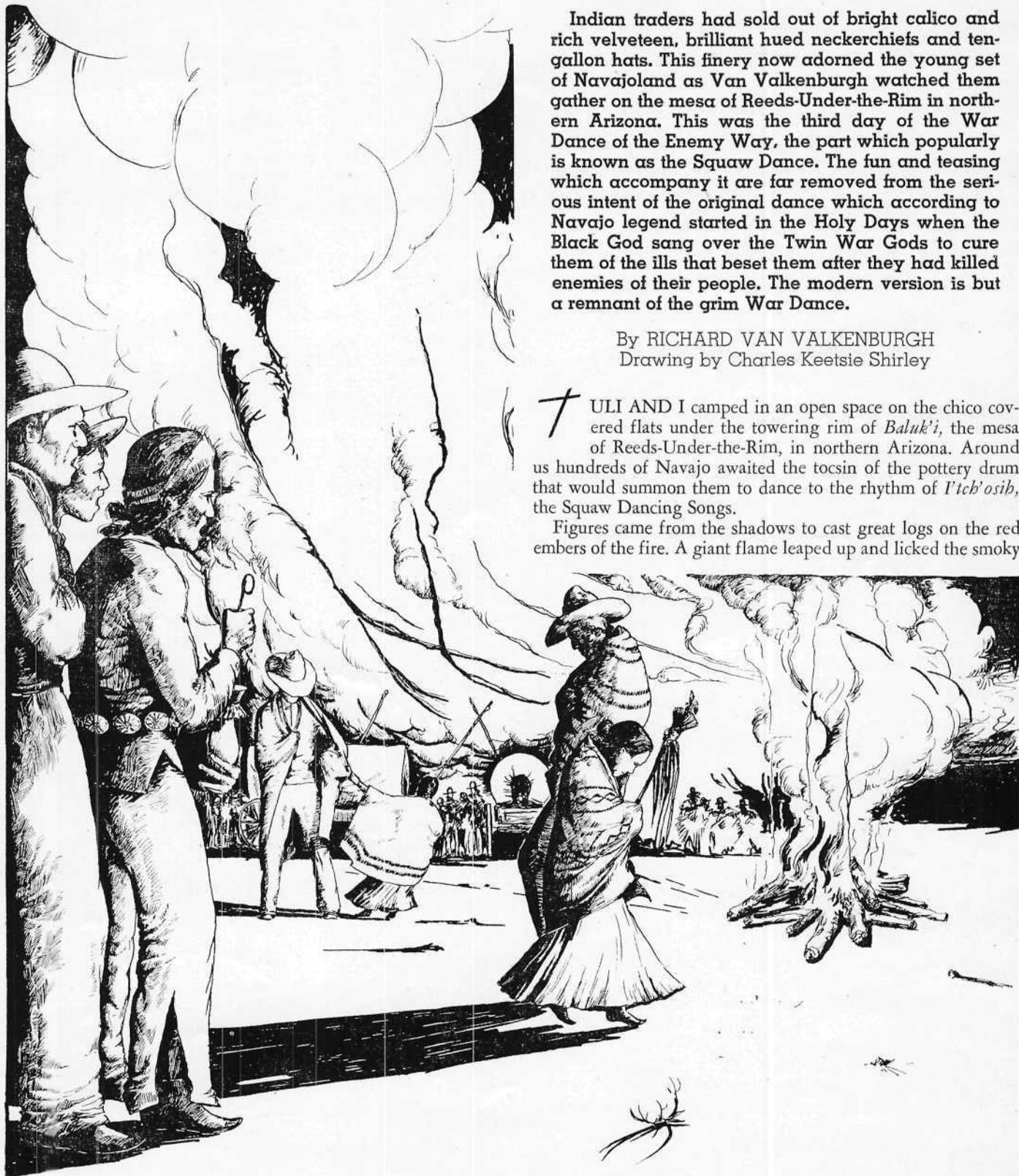
War Dance of the Enemy Way

Indian traders had sold out of bright calico and rich velveteen, brilliant hued neckerchiefs and ten-gallon hats. This finery now adorned the young set of Navajoland as Van Valkenburgh watched them gather on the mesa of Reeds-Under-the-Rim in northern Arizona. This was the third day of the War Dance of the Enemy Way, the part which popularly is known as the Squaw Dance. The fun and teasing which accompany it are far removed from the serious intent of the original dance which according to Navajo legend started in the Holy Days when the Black God sang over the Twin War Gods to cure them of the ills that beset them after they had killed enemies of their people. The modern version is but a remnant of the grim War Dance.

By RICHARD VAN VALKENBURGH
Drawing by Charles Keetsie Shirley

TULI AND I camped in an open space on the chico covered flats under the towering rim of *Baluk'i*, the mesa of Reeds-Under-the-Rim, in northern Arizona. Around us hundreds of Navajo awaited the tocsin of the pottery drum that would summon them to dance to the rhythm of *P'tch'osib*, the Squaw Dancing Songs.

Figures came from the shadows to cast great logs on the red embers of the fire. A giant flame leaped up and licked the smoky



Chas. Keetsie Shirley

sky. In the ruddy glow we watched as the *basin* stood in clusters and "got the news" while the women squatted by their campfires cooking and gossiping.

Attention focused on a bent old man who walked into the half light at the west end of the dance ground. Cradled in his arm was a drum made from a conical bottomed pottery vessel. With a gentle tap of the looped stick on the taut goathide head the soft beat swelled into a stirring monotonic throb.

From out of the night came a chorus. Soon a score of young men grouped behind the drummer. Horsemen dismounted. Figures rose from around campfires and moved to join the singers. "They sing *yik'ish*, or Warming-Up-Songs," Tuli told me.

The *yik'ish* continued for an hour. An abrupt cessation of the drumming startled me. For some moments there was a deep silence. Enlarged now to some 50 singers the chorus linked arms. The drum started to tap a new tempo. Reaching above the background of the chorus soloists pitched their voices to falsetto high-C.

Men started laughing. Women pulled their blankets across their giggles. "What's the joke, Tuli?" I asked.

Laughing he turned to me, "They sing *Il'il'a*, the Teasing Songs. They are making fun of people in the crowd. Right now they are singing about old man Crooked Legs."

The Teasing Songs continued for some time. In his silence Tuli seemed charmed by the pale moonlight that was seeping across the dark mesa and spilling moonbeams down on the canyon floor. After a time he turned to me and said, "*Tl'hona'ai*, the Moonbearer, is bringing his white shell disc from behind the eastern mountain. Watch! The '*ndaa* will start when it gets full and round!"

The tattoo of the drum punctured the silence. Stepping a few feet from the main chorus a dozen men linked arms. Swaying as they swung into the time of the strident beat, their voices shrilled up the scale to an amazing pitch.

Not to be outdone the main chorus unleashed a powerful and haunting chant. After they had sung a set of verses, the smaller group wrested the lead and changed the rhythm. Wilder and more dominant their song held until it again was drowned in the power of the main chorus.

I looked into the excited eyes of Tuli as he told me, "'Tis the first of the Squaw Dancing Songs. Look!"

A large but shapely girl pushed her way through the crowd. As she walked into the firelight her voluminous orange skirt swayed gracefully with her long stride. Her abundance of silver gleamed in the firelight. Clasped in her hand was the handle of a stick topped with an elongated red bundle tipped with feathers.

"'Tis *Záni*, the eldest daughter of Horsebreaker, the brother of the man for whom this '*ndaa* is being held. She was chosen, you might say, 'queen'—the leader of this dance. She's a virtuous girl. The wand she carries is the *aga'tsin*, the sacred rattlestick."

When I probed for more information on the *aga'tsin*, Tuli stalled, "I bin 'way to school too long time. I don' know medicine part. Across from us is *Hatbli Chii*, the Red Singer. He's a singer and knows everything. Let's go set with him."

We picked our way across the dance circle. Red Singer with his veined legs akimbo squatted before a sooty pot gnawing a mutton shank. He released a greasy hand from his bone to shake hands as he welcomed, "*Yá'd'taa*, Good! Sit down and eat!"

"So the *Bilakana* wants to know about the '*ndaa*, eh? La! First we will talk about the *Ana'dji*, the War Dance of the Enemy Way, of which this Squaw Dance is but a small part. Pull out those store cigarettes I see hiding in your pocket—then I can talk better.

"The *Ana'dji* started in the Holy Days. The Twin War Gods killed the chief of the *Ye'itsob*, the Enemy Gods. They carried his scalp home and hung it on a tree near their hogan. Soon they had bad dreams and got sick. Their mother, the Changing

Woman, sent for the Flint People. After singing over the boys they were cured of their bad dreams.

"Then the Twins went and killed eleven more *Ye'itsob*. Again they brought home scalps and plunder. They got sick again. Every time they went to sleep they had visions of the monsters they had killed. Then Hashkezhini, the Black God, came to sing over them.

"After giving them medicine he blackened them. Across their jaws he painted a streak of red ochre. Then with seven yucca cords he touched their joints as he drove out the *chindis*, or ghosts, of the *Ana'dji*.

"When Coyote and other animals came that evening to help with the sing, Black God went home. The animals sang Coyote Song, Owl Song, Talking God Song, Water-Pourer Song, and Changing Woman's Song—the same as those sung today. After this the boys got better. Everyone was happy and they held a big dance.

"In the morning the boys were sick again. Black God was called back. He said to Elder Brother, 'You visited your wife. She was not blackened! We must sing again.' The woman came and was blackened with the Twins. Eleven yucca strings were used this time to drive out the ghosts. Then as Talking God sprayed the east with sputum mixed with white, blue, yellow, and black crystals, he sang, 'You are now well!'

"Tonight's Camp Dance is a vestige of the dance held in the Holy Days to celebrate the recovery of our Twin War Gods. Long ago it was held for warriors who had taken scalps. Now that wars are but a memory the *Ana'dji* is held for people who have a bad experience with *Bilakana* or other alien tribes."

"For whom do they sing tonight, Grandfather?" I asked.

"'Tis Ute Killer. He has been suffering from swooning sickness. Many years ago he killed a Moqui near Walpi. He buried the scalp too near his hogan. Neither did he have the proper 'sing' to purify him from touching the dead one's body. The *chindi* of this '*ayakhini*, of the 'horizon houses,' is making him sick!"

We looked out on the dance ground. A covey of girls had joined the queen. She led the dancing in a skipping hop-skip. The girls followed. Day after day they had planned for this moment. Demands for bright calico and rich velveteen had swamped the traders. Hogans had hummed with busy mothers sewing to outfit their debutantes for their coming-out.

The debts had nothing on the youngbloods. In a swarm they had exhausted the trader's supply of bright hued neckerchiefs, ten-gallon hats, and other attire in vogue with the young men about Navajoland. Those who had no cash had pawned something. The more persistent and wily had finagled a small loan from their old friend the trader.

The queen moved toward the stag line. When she emerged from the thicket of ten-gallon hats she had her man. Looking closely I saw that she had in tow a young "long-hair" whom we knew as Skiddy. His mother had a fine bunch of sheep. And this is an important consideration when a Navajo belle goes husband-hunting!

Hooking her arm through Skiddy's purple sleeve so that they faced in opposite directions she began to pivot—hopscraping from left to right, then back again. After a few whirls she jerked to a stop, then reversed the direction of her orbit.

Skiddy on the inside just didn't get into the spirit of the thing. He was either groggy or plain balky. He shuffled his feet to keep the Amazon from spilling him. Round and round they went—never speaking or glancing at each other.

Following the example of *Záni* the other girls darted into the crowd. Out came their victims. If there was any hesitation they grabbed belts, hats or jerked arms. Sometimes a selectee paid off. But in most cases they allowed themselves to be towed out into the swelling cluster of dancers.

Tuli told me that the men must dance until their captors are willing to accept payment of anything from a nickel to a dollar. Of course the love-birds operated differently—they danced to-

gether all night. Without parental restraint, the payment was either a ring or bracelet.

Pursing his lips across the dance ground Tuli started to laugh. A mammoth fat girl had a little fellow by the tail of his scarlet shirt. Deliberately she was ripping it to shreds. Before she completely exposed him he spoke sharply to her. Grunting she waddled off looking for another victim.

I watched the dance for a long time. The repetition became monotonous to a *Bilakana* who was a product of a society that was fast losing the peace rewarded by simplicity. Glancing at Red Singer I saw that he was ready to talk. He was amiable when I asked more of the *Ana'dji*.

"Two nights ago the medicine man started things. He rode to the hogan which had been prepared near the spring of Hoyé. On the first night he and his assistants made medicine and sang the Drum Songs as they prepared the drum. Before they stretched the goatskin, they put water inside so that it could be swished to keep the hide taut.

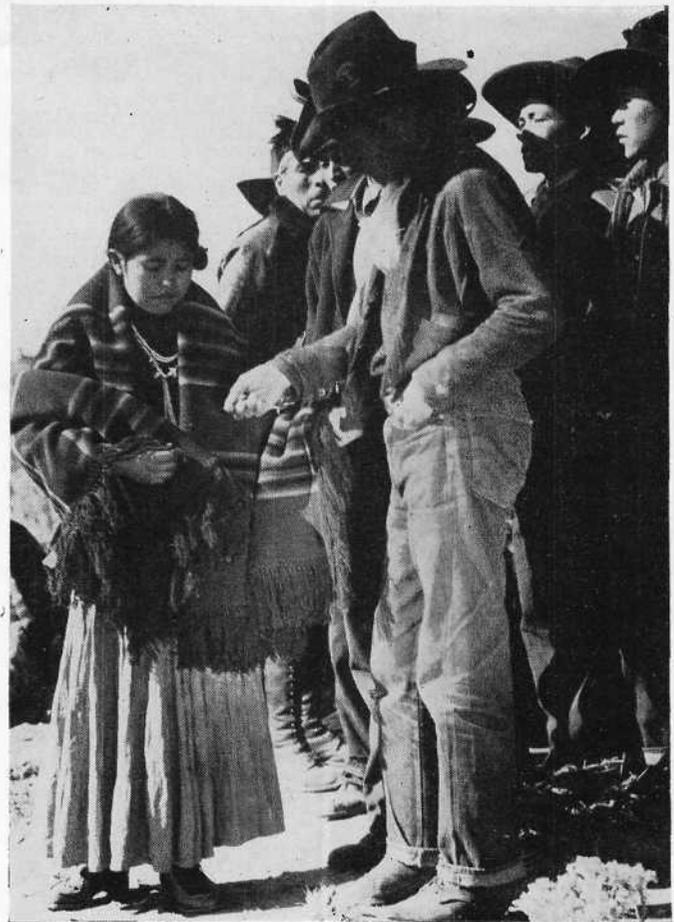
"The next morning they fixed the *aga'tsin*, or sacred rattlesstick. This was made from an unblemished stick cut the length of a man's arm. A small bunch of twigs was left near the tip. Taking a flint knife the medicine man scratched on the Bow Mark of the Enemy Slayer and the Scalp Sign of the Scalper. Openings were left in the designs so that the evil spirits could get out.

"Around the twigs they tied a cluster of turkey feathers, chamiso, rabbit-brush, and sheep-gramma. With a cotton string there were hung three deer-toe rattles, two juniper prayer sticks, a buckskin bag filled with chipmunk corn (grass seed). Then strips of red flannel were tied on. In the old days these were of red-dyed deerhide or bayeta. In finishing they tied on bright colored yarns, the red of which was especially spun.

"When the stick was finished the scalp was buried. About the size of a half-dollar it was carried 100 paces east of the hogan. Then the patient took the rattlesstick. Getting on his horse he led his friends eastward. After a two-hour's ride they reached the Black Ye'ibichai's hogan near Lukaniteel, the Wide Reeds near Ganado.

"After they went into the hogan the Black Ye'ibichai medicine man started to make medicine. Luck Songs were sung over Ute Killer. Then the colored yarn from the rattlesstick was given to the women to weave into blankets for good luck."

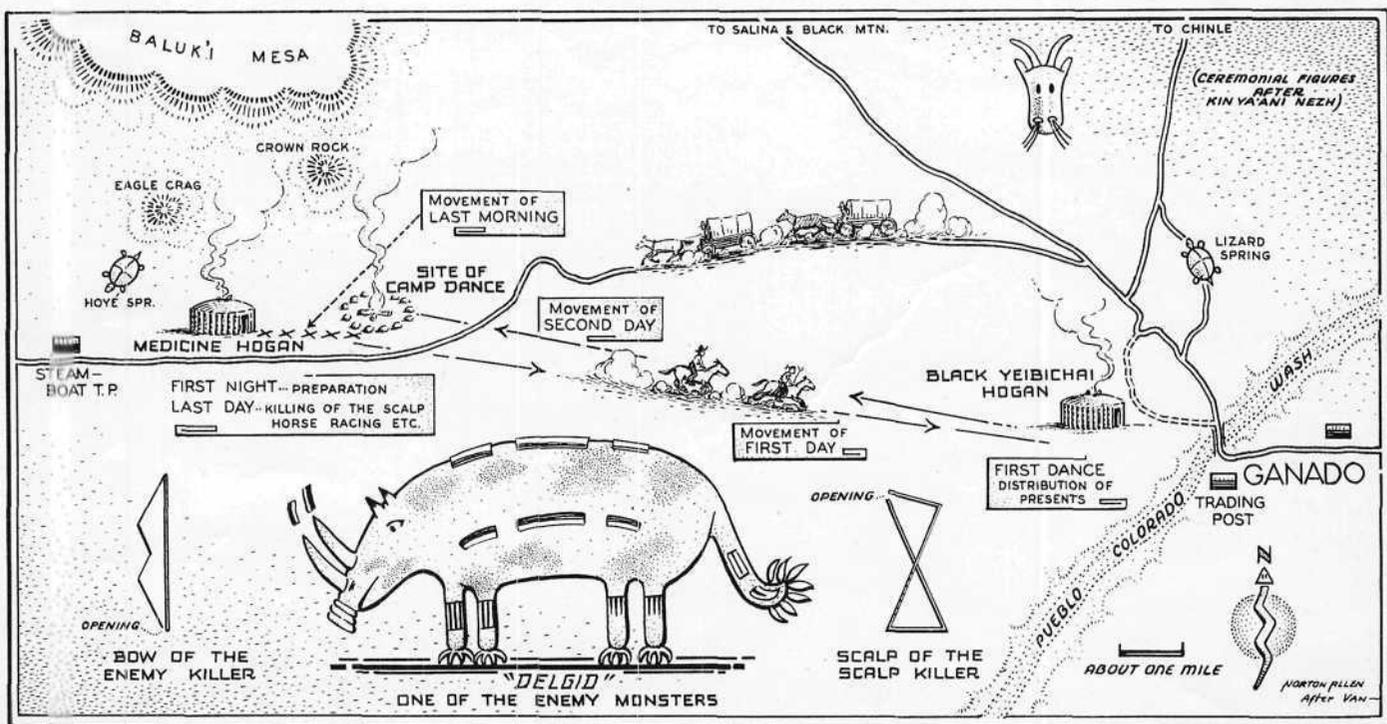
He went on. "That night the medicine man gave the rattle-



A chosen "victim" pays off with a "blue" or silver piece.
Photo by Milton Snow.

stick to Záni. When the moon rose she carried it out to lead the first dance. It was the same dance we are watching tonight. But it lasted only a little while. Then the young folks got a chance to talk together while their parents visited and exchanged the news.

"In the morning the people at the Black Ye'ibichai's hogan



were given presents. There were oranges, stick candy and other little things. These were wrapped in small calico bundles. Then they were thrown out the smokehole of the hogan. Everyone ran to get his share.

"This means more than getting something to eat. This is a custom from the old times. When the warriors returned from a raid they always gave away part of their loot to those who sang the 'swaying' or purification songs over them.

"After the presents were exchanged and eaten everyone got on their wagons or horses. Riding west they came to where we now watch the dance. It is always like this—on the second night the dance moves west to a place between the Black Ye'ibichai's hogan on the east and the medicine hogan on the west. Here the Camp Dance is held."

The steady drone of the drum was narcotic. I became drowsy as time moved into the dawn of the Fourth Day. I lay down with my back to the fire. Just as I was dozing off a hand firmly pulled at my sleeve. Glancing up I looked into the determined face of a little Navajo girl about as high as a willow shoot.

Red Singer clucked through his toothless gums. A twin of my captor was pulling and tugging at the sleeping Tuli. "I guess we're hooked, Tuli. Let's go!" I laughed as I was led out through the grinning crowd into the vortex of the dance.

It was something to be tickled at. My tiny partner, an abbreviated edition of her elder sisters, must have looked even smaller as she started to swing my 225 pounds. Someone wisecracked from the sidelines, "La! *Teli yazhi*, the little Burro pulls the big wagon!"

I never got into time. Finally I gave up and walked. After a few circuits I had enough Squaw Dancing. Pulling my lady out by main force I headed for the sidelines. But she had other plans—with her face hidden in the folds of her blanket she hung on.

Digging into my pocket I pulled out a dime hoping for ransom. Her hand darted out quickly to grab the "blue." Still she hung on and wouldn't budge. Out of the crowd her mother yelled, "Hang on! Make *Hasidih yazih* pay. Don't turn him loose until he pays you *nakiyaal*, a 25-cent piece!"

I watched and listened until the moon started to sink into the horizon of the west. Red Singer's wife stirred up the fire and boiled a pot of coffee. After drinking a few cups, I rolled into my blanket to take a nap. *Bia* had paid off and was a shapeless lump across the fire.

I was hardly asleep when the soft voice of Red Singer chided me awake. "Eighty summers have passed—I am wide awake as *Gini*, the Night Hawk. And my eyes will be bright all day. Hurry! We'll miss the last of this 'sing.'"

Dawn was just a promise when we caught our hobbled horses. Down the shadowy canyon we galloped behind the Old Drum-

mer and the queen. An arrow-flight out of Hoyé, a band of horsemen charged towards us. Crashing together the parties were realistic in their sham battle. Gun shots reverberated in the narrow walls—there was a melee of hat pulling and blanket grabbing!

Suddenly the defenders broke. Whipping their ponies they fled towards the medicine hogan. In close pursuit we chased them. Swerving through the watching crowd we made four circuits of the hogan. Then we dismounted. Laughing, we returned the captured hats and blankets to our enemies.

After a visit to the eating-shade I followed Tuli into the medicine hogan. Ute Killer, the patient, was stripped down to his g-string. The medicine man's assistants had just finished blackening his body with a decoction of plant and animal fat. While they chanted red ochre mixed with mutton grease was smeared across his lean jaws.

Tuli caught me glancing at an oldster sitting near the medicine man. He whispered, "'Tis the Scalp Killer!"

When we went outside for a breath of air I commented, "He seems pretty wobbly to be killing a scalp."

"La! He is old man Tah from *Dzilizhin*, the Blackish Mountain. He has been paid one burro to 'kill the scalp.' Scalps are dangerous. A man only lives a year or so after killing one. He is about through and is willing to take the chance for the pay."

There was a bustle near the door of the hogan. An old man dressed as a warrior came out. In a straight line he walked to a stick that marked the place where the scalp was buried.

Then came the Scalp Killer on his shaky legs. In one hand he held a bag of ashes. In the other was a bow and arrows. Behind him came Ute Killer and an assistant. Both were painted black. While the patient held a crow's head they chanted:

Enemy Slayer walks
Painted black
He carries *Gagi*, the crow
The People watch.

With a shrill war cry the Scalp Killer shot arrows into the scalp. Violently he pounded it with his poker. As he sprinkled it with ashes Red Singer's grim eyes searched mine sharply for skepticism as he grunted, "*Y'a'd'taa*, Good! That finishes that Moqui *chindi*. You *Bilakana* may not believe it—Ute Killer will get well!"

When the feasting and horse racing were over, the *Diné* broke camp and straggled off in every direction. On *Baluk'i* the piñons fringing the rim were changing from a delicate tracery of green to black against the pale blue of late day.

I had seen a great deal—thanks to Tuli and Red Singer. It was satisfying to know that the next time I heard the throb of the drum I would be witnessing a remnant of the grim War Dance.

Left—Squaw Dance in full swing. After moonrise the dancers start their circuit round and round the dance ground.
Right—*Bilakana*, or Americans, are fair prey for Navajo belles. Photos by W. T. Mullarky, Santa Fe.



Name of the little Cream Cactus described by Mary Beal this month applies not only to the color of its flowers but to the thick creamy fluid which quickly heals its wounds and is pleasant to the taste. Although it is a charming species, it is inconspicuous because it grows about two-thirds underground. This habit, and its thick conical fleshy root combine to make it easy to transplant. It will grow readily from seed too, if planted in sandy or gravelly clay loam with partial shade, and kept moist. Unless protected it should not be grown where temperatures fall below 20 degrees. It is especially found in the Baboquivari and Santa Catalina mountains of southern Arizona, where it often is associated with the Arizona rainbow cactus.

Cream Flowered Cactus with Rose-red Wreath

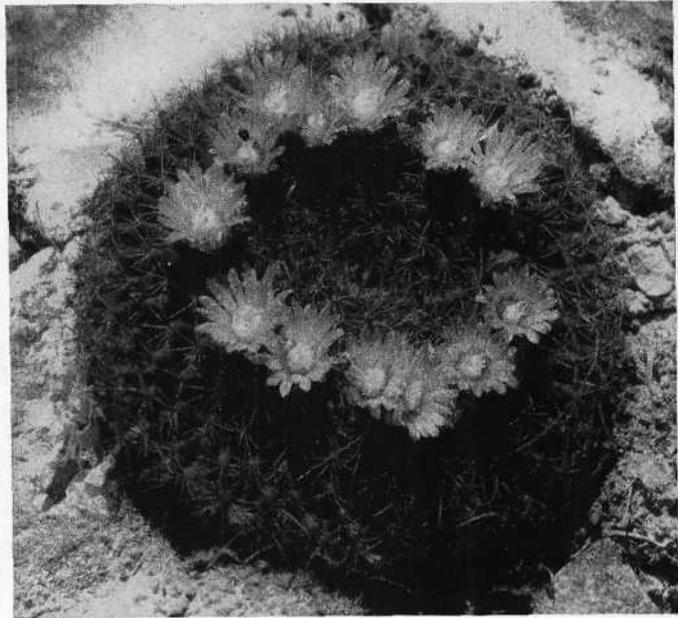
By MARY BEAL

WHEN browsing around the Cactus Paradise of southeastern Arizona, you need to watch your step where the Cream cactus flourishes. Often the younger plants of this species, *Mamillaria macdougalii*, do not rise above ground-level and your attention is called to their presence only when your unwary foot lands upon the flat top of a spiny cushion. The older plants also have a tendency to hug the ground, half or more of the broad thorny "turnip" being subterranean, the other half of the depressed-globose head pushed up only a few inches above ground, even in the most robust specimens. It is easily obscured by the ordinary desert vegetation, especially in grassland, not only in youth but in its prime.

The stems usually are solitary but sometimes are clustered in small clumps, rising from a thick conical root. The flattened head is much broader than tall, fully matured specimens measuring up to 8 or even 10 inches across. The surface of the head is conspicuously covered with spiraled rows of deep-green, strongly-angled, conical tubercles, about a half-inch high, each little cone apexed by a cluster of 10 to 13 short white or yellowish spines and 1 to 3 stout central spines, which are pale red with purplish-brown curving tips and bulbous yellow bases.

An interesting feature of this Pincushion is the thick creamy juice which exudes from the tubercles when pierced or cut. This milk has a pleasing taste but don't think of it as a beverage possibility, for the flow is not copious, the wound healing quite promptly. A mere sample is all it offers. In a wreath encircling the depressed center of the head are the delicate inch-high flowers, the many narrow petals (15 to 25) cream-color to light yellow, recurving into a wide-spreading cornucopia. The sepals are margined by a short fringe. Later on when the fruits mature this floral wreath is replaced by a more colorful circle of deep rose-red. The club-shaped fruits are smooth and naked, about an inch long, and contain wrinkled reddish-purple seeds. In addition to these conspicuous fruits there are some very much smaller ones, tiny green or red spheres, cuddled down between tubercle bases.

The Cream cactus flowers in late March and April, its favorite habitat gravelly and rocky mountain country from 4000 to 6000 feet elevation, thriving best in loam or clay soil. Look for it on rocky crests, especially facing south, in rock crevices or grassy areas, in southeastern Arizona and adjacent Mexico, where they are most prolific, although you also may find them in southwestern Arizona, where the one in the picture was growing.



This cream-flowered little Pincushion Cactus, native to southern Arizona, was named in honor of D. T. MacDougal, outstanding desert botanist who for many years was director of Carnegie Institution's Desert Laboratory at Tucson.

Very similar in appearance and habit is

Mamillaria beyderi

This too is a Cream cactus with two kinds of fruit, both of them a little smaller than those of *M. macdougalii*, the plant itself being on a somewhat smaller scale and perhaps less flattened. The tubercles however are just as prominent and tipped by a sunburst of 20 to 22 white bristle-like spines, the lower ones stouter and longer, in the center of which stands out a solitary stout erect spine, dark brown from tip to base. The flowers are small, not more than a half-inch across, the petals pink or with a lavender tinge and the sepals without fringed margins. The larger red fruits are a bit over a half-inch long and the little globular ones less than a fifth of an inch in diameter.

This species prefers limestone hills from 3500 to 5000 feet elevation and blooms in May, along the Mexican border, rather common throughout the southern parts of New Mexico, Arizona and into Texas.

Another low flat-topped Pincushion of the depressed-globose type is

Mamillaria wrightii

This resembles the two preceding species in general appearance but is somewhat smaller and its half-inch long, cylindrical tubercles yield no milky juice. Conspicuously dominating its armament are the 1 to 3 dark, erect, central spines, long stout fish-hooks, shiny brown to black in color, occasionally only 1 or 2 of them hooked. Radiating from these central hooks are 8 to 15 short, white, fine needle-like spines. The bright-purple flowers are fairly large, an inch or so long and as broad when wide-open, the 13 sepals with fringed margins, the numerous petals (as many as 27) very narrow and tapering to a sharp point. The circle of bloom is nearer the center than the wreath of the Cream cactus but the ripening fruit is moved outward by the continuing growth of the plant. It is a more showy species because the flowers are so bright and the colorful fruit is quite large, the smooth purple berries being an inch or so long and egg-shaped to globular.

It grows in the mountains of New Mexico, reported from the Sangre de Cristo range in the north, down through the state to the southern border and across into the El Paso region of western Texas, and doubtless adjoining Mexico.



Louis Hadley and John Hilton at base of the arch in the Turtle mountains. Walter Ford used much persuasion before John guided him to the arch. Rockhounds will understand—John had just discovered a new gem field to which he returned as soon as this photo was taken.

Walter Ford still thinks the Lost Arch gold might be there. He found the saguaro and natural arch which were to lead him to a tubful of nuggets. But his only reward for digging was hands and knees full of cactus spines. John Hilton however was not distressed for as soon as their desert car got into the rough country of the Turtle mountains in the Mojave desert, he discovered a new gem field of carnelian, plumagate, opal and geodes—what more could a rockhound want? Walter consoles other would-be treasure seekers with the assurance that since the Lost Arch nuggets have remained safely hidden since 1883 they still will be there when postwar jeepsters head for the desert.

By WALTER FORD

We Found the Arch-- but not the Nuggets

ON A withering summer day in the year 1883, a man named Amsden staggered into the little town of Goffs in the last stage of exhaustion, his pockets loaded with gold. Some weeks previous he had departed from Needles with a local prospector on a secret mission into the Turtle mountains, approximately 40 miles southwest of Needles. When he had been revived sufficiently to talk he told about his find—a find so rich that gold nuggets could be had for the mere trouble of picking them up. Amsden stated that they were too intent on adding to their hoard of gold to notice their diminishing supplies of food and water until they found them nearly gone. Taking what gold they could carry and a scant amount of water, they started to make their way back to Needles.

Somewhere along their return journey the prospector succumbed to the heat and Amsden was forced to continue on without a guide. According to accounts, the two emerged from the Turtles on the western side, but when Amsden had to carry on alone he headed down a long wash toward the Santa Fe railroad tracks and finally reached Goffs.

In the hope that Amsden might divulge information leading to the source of his gold, he was given every attention while he was recovering, but as soon as he was able he departed for his home in the East, taking his secret with him.

The foregoing account was given to me by Mort Immel of Barstow, a long-time resident of Needles and the vicinity. Im-

mel was a friend of Dick Colton, one of the men who assisted Amsden when he tottered into Goffs. If this were consistent with most lost mine stories the source of the gold should have remained a mystery, but according to Immel, a few years after the incident Dick Colton received a letter from Amsden, describing the location of the mine as well as he could and enclosing

a map, extremely vague and indefinite as to location and distances. Of this much he was certain: The mine was located in the Turtle mountains, the location was not far from a natural arch, and the find, if made, would be a tub half full of gold nuggets.

With that meager information, Colton organized a party consisting of Mort Immel, Herb Witmire, and himself and start-



The prospector who first told Walter Ford about the Lost Arch mine was reluctant to tell of his quest until Walter divided his provisions with him. Then he would reveal only that his name was Charlie and that he was looking for an arch and a group of cacti, the landmarks that would lead him to a golden treasure. Ivanpah mountains in background.

ed out to find the gold. According to Immel they tramped from one end of the Turtles to the other without so much as sighting an arch. In telling me about the trip, Immel said, "I suppose that we would have been out there yet if our shoes had not given out. The other boys were certain that we were on the right track, but I told them to throw the darn fish story in the fire and forget it."

With the exception of the Lost Pegleg mine, the Lost Arch mine probably has been more sought after than any other of the lost mines of the California deserts. One possible explanation aside from the reward of a tub of gold awaiting the finder, is its apparent accessibility from points of habitation. Another attractive feature was that the searcher had some definite landmark for which to seek. Once the arch was found, he could assure himself that the finding of the gold would be a simple procedure.

Alfred R. Thompson of Los Angeles, who worked in the general store and post-office at Goffs during the early 20's, told me that hardly a week passed while he was there that someone did not arrive to have his try at finding the arch. One such fellow he remembers came all the way from Panama. So secret were his outfitting operations that no one knew of his intentions until he was seen starting toward his goal on a midsummer day, pushing all of his belongings in a four-wheel baby carriage. Fortunately, he was headed off before heat and thirst could claim another victim.

One evening while I was visiting John Hilton at his home across from Valerie Jean's, south of Indio, the conversation turned to lost mines. When I recalled Immel's account of the Lost Arch mine, Hilton remembered that he had seen an arch in the Turtle mountains on one of his gem hunting expeditions. John had not heard the Lost Arch story, so did not attach any significance to finding the arch when he was there, but once having heard it he immediately began to make plans for a return trip. "Could I get away for a few days?" Fortunately, I could. As we sat there making plans for the trip, I could not help thinking how Immel had warned me about looking for gold. "This gold-hunting fever gets you," he said. "There isn't one of us in ten thousand who ever finds it, yet we follow a clue to a lost mine with all the enthusiasm of a boy going to his first circus."

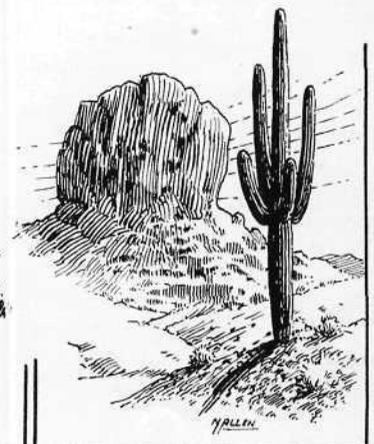
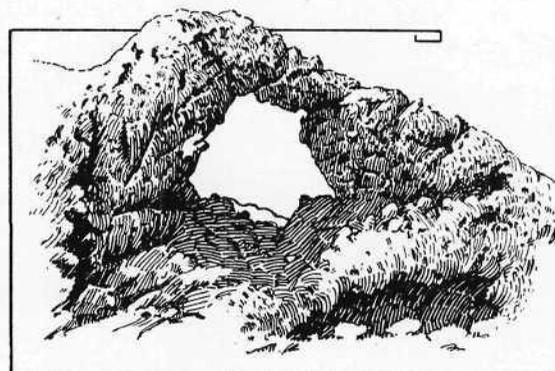
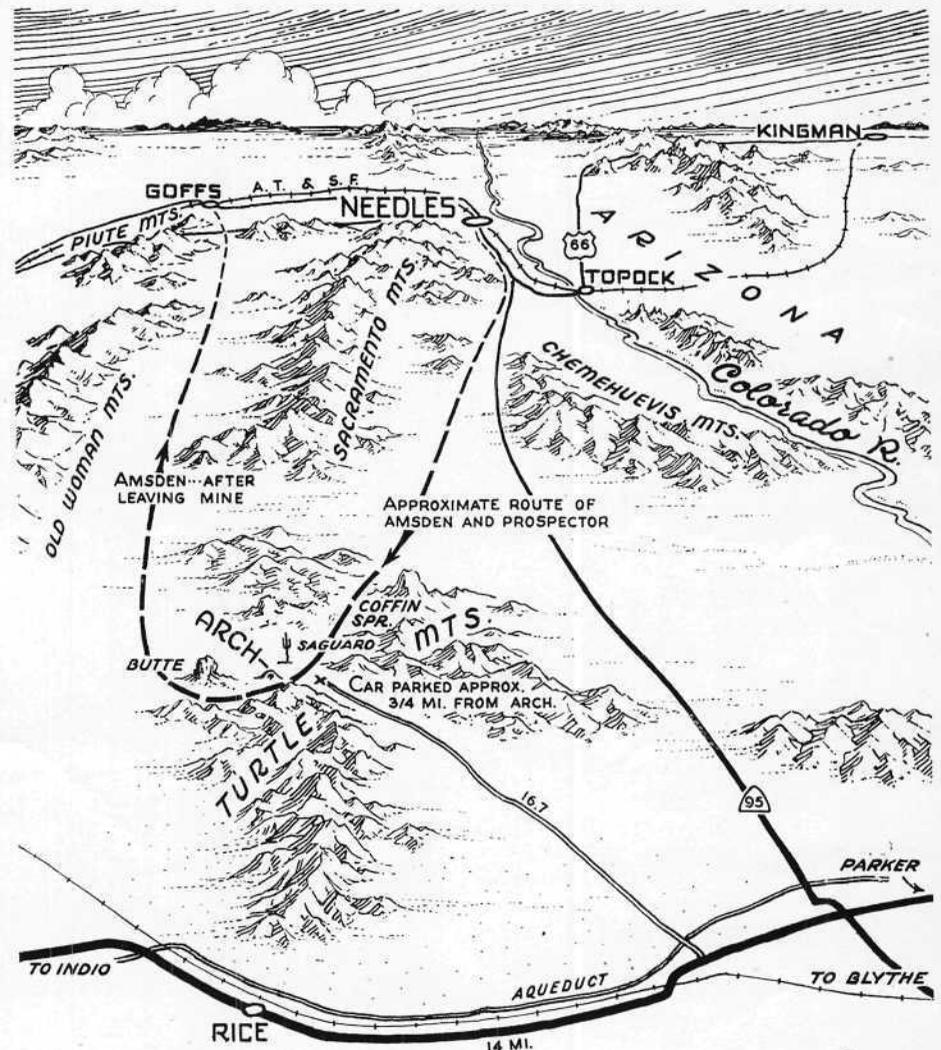
We followed the Parker road to a point 14 miles east of Rice, then turned north toward the Turtle mountains. Since there are no roads as such into the heart of the Turtles, it was just a case of selecting the most likely-looking wash and proceeding with a hope and a prayer. Our car was one especially built for desert driving, yet at times it was necessary to travel foot-by-foot, with one of us advancing ahead of

the car to measure each protruding boulder for clearance.

We had traveled approximately 16 miles over some of the roughest desert country I have ever encountered and were within a mile of where we intended to stop, when we heard a sharp scraping sound from underneath the car. I looked back and saw a thin black line following the car and realized what we had feared most had happened. The oil pan had been punctured. Fortunately the hole was not large, so we were able to close it partly by prying the sides together. Driving a piece of cloth into the remaining hole seemed

to close it completely. We found that we had lost most of the oil, but with some extra cans of oil in the car that we carried for just such an emergency, what might have proven disastrous under other circumstances did not get beyond the petty annoyance stage.

As we started up a slope which Hilton said would lead to the arch, I heard him shout, "See what I found!" I looked at the red-colored object he was holding in his hand. "Gold?" I inquired hopefully. "No!" he exclaimed. "Carnelian, and a beautiful specimen at that." A further search revealed more carnelian, pieces of



plume agate, small opals, and geodes of all sizes—truly a gem collector's paradise. As far as John was concerned, the Lost Arch treasure had been found. I mentioned the arch to him, but he merely indicated a direction that might have included several points of the compass and said, "It's up there." After much persuasion I finally induced him to guide me to the arch, but was able to hold him only long enough to pose for a picture, then back to his gem field he went.

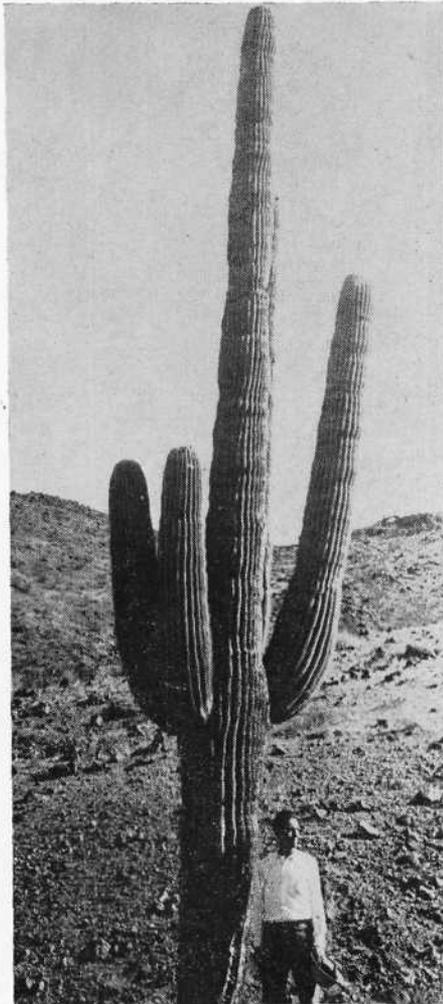
Left to my own devices at the arch, my thoughts turned to the cache of gold that Amsden and his companion supposedly had left behind. The andesite in which the arch is formed did not yield very readily to my prospector's pick, so there seemed to be little chance of the treasure being buried directly under the arch. A few feet away from one column of the arch I found a small opening which appeared to extend toward the arch—a likely hiding place for Amsden's gold. My only reward there was hands and knees full of cactus spines. A packrat had taken possession of the opening and had fortified it liberally with pieces of cholla cactus to guard against just such intrusions.

John D. Mitchell mentions in his account of the Lost Arch mine the possibility of hematite being found in the vicinity of the mine, but a close search around the arch revealed only an occasional piece. As I explored around the arch for possible clues to the treasure, I longed for the electronic metal locator Hilton and I had used on other expeditions. While the device would not distinguish between gold and any other metal, it would indicate the presence of metal, if any, and that would be a distinct aid in searching for the Lost Arch gold.

After covering the ground around the arch, yard by yard, I concluded that Amsden must have used the arch only as a landmark. In common with other lost mine stories where gold was supposed to have been picked off the ground, the location of the arch is definitely not placer ground. The late Adrian Egbert, who administered to the needs of desert travelers at Cave Springs for many years, used to scoff at the idea of gold being picked off the ground in other than placer country. "It's like looking for hickory nuts," he used to say. "You first have to find hickory trees." Chester Pinkham of Eagle Rock, California, who is an authority on desert mining and who is thoroughly acquainted with the Lost Arch country, told me recently that the mine, if it does exist, might be discovered a few miles north of the arch, where placer ground may be found. Pinkham prospected in the Turtles for years and told me that he had seen the arch several times and that to his knowledge it is the only arch in the Turtles.

The arch lies almost at the foot of a huge

castle-like butte which rises to a height of several hundred feet. The butte has served for years as a beacon for the few prospectors who have ventured into the area. As prominently as the butte stands out, none of the authentic maps of the region, such as Blackburn's or those of the U. S. Geological Survey, mention it. Owing to its resemblance to a medieval castle, Hilton suggested that we call it "Castle Butte." The inside measurements are approximately six feet high and ten feet long, a size which makes the arch visible from nearly a mile distant when approached from the north. On the south side a ridge



A giant saguaro grows within sight of the Lost Arch.

prevents its being seen until the observer is nearly upon it.

On the north slope leading down from the arch and about one-half mile from it, I found a huge saguaro cactus growing. While I have seen saguaros growing in the Riverside mountains to the south, this was the first one I ever had encountered so far north. The saguaro is not a rapid grower and the present height of approximately 35 feet of this one near the arch indicates that it must have been of landmark pro-

portions as far back as 1883, when the mine is said to have been discovered. Immel did not mention having seen it on the map that Amsden sent to Dick Colton, but if he and his companion had taken the same route to the arch as that traveled by Hilton and me, the saguaro easily could have been overlooked.

A few years ago while returning from a trip into the Providence mountains, I met an old prospector who had stopped to rest his burro at the junction of Highway 91 and the road leading south to Cima. At first he was reluctant to talk, but after I had given him my unused supply of provisions, he confided that he was looking for the Lost Arch mine and that he intended to strike out from Goffs, in which direction he was headed. That was the first time I had heard about the Lost Arch mine, and beyond jotting down a few notes, I placed it in the category of the usual lost mine story and dismissed it from my mind. Once within sight of the arch and the saguaro, I recalled what the old prospector had told me about the Lost Arch mine. "Once I find an arch," he said, "with a large group of cacti close by, my searching days will be over." There are no large groups of cacti in the vicinity of the arch. Could it be the saguaro the old fellow had in mind? As I stood pondering over the possibility the lengthening shadows warned me that we would have to be on our way, if we intended to reach the highway before nightfall.

Both of us were reluctant to leave. John was just beginning to realize the possibilities of his newly-found gem field, but visions of darkness, a crippled car atop some rocky mesa, or deep in some shady wash, emphasized the necessity of getting under way as quickly as possible. The drive back was a tedious one. Time after time we stopped to make certain that our temporary repairs were holding, but eventually we reached the highway without further trouble.

Even if you can convince your ration board that such a trip would come under the heading of "essential driving," don't venture into the area now. If you were lucky enough to get a stockbuilt car to within walking distance of the arch, the probability of getting out again without mishap is too remote to justify taking the risk. When we get that postwar jeep, or its reasonable facsimile, the journey to the arch will make a grand weekend trip. In the meantime, the gold, if there, doubtless will remain hidden until you can get there. Since it has defied finding these many years, it seems reasonable to assume that it will remain in safe keeping awhile longer. And to those of you, who, like John Hilton, would pass up a nice clue to a tubful of gold for a handful of carnelian or opals, there will be plenty of those, too, for all who venture into the area.



MOJAVE LURE

By CECILE J. RANSOME
Riverside, California

Mojave is my mistress,
She fills my veins with fire.
When she reposes, listless,
How great is my desire!

With heart forever changeless
I call her lovely name;
She woos me with her strangeness,
Her moods of ice and flame.

What beauty in her dancing
With veils of amber sand!
How mad am I for chancing
The lure of desert land!

But should she hold me sleeping,
Upon her tawny breast,
Her yuccas will be keeping
A vigil while I rest.

GHOST-WIND

By EDYTHE HOPE GENEV
Hollywood, California

Ghost-wind, blow from the far Mojave,
Far from the Sawtooth Range;
Rustle the sage and the dormant salt bush,
Down through the valley's change.

Ghost-wind, sing of the far Panamints,
Shoshone and the Funeral Hills;
Moan through the grass and the red creosote,
Of death and of lost salt-rills.

Ghost-wind, wail through the grey smoke tree,
Warm with the desert's rim;
Bring your weird song from the edge of the
world,
Sweet with the sight of him.

Ghost-wind, go back to the far Mojave,
Where the desert sky is blue;
Speed through the night to the far dark moon,
And take my heart with you.

Desert Gifts

By JOY WRAY
San Jose, California

I'll find happiness in a desert shack, alone,
All in this world I can call my own.
The door sags and there's a broken window,
But a sliver from the setting sun will glow
Across the room and penetrate the gloom.

I'll find beauty in a cactus, stiff and stark,
Illumined by the stars against the dark.
And in a desert's sunset afterglow,
There I'll find the God that desert lovers know.

IDEALS

By FRANCES HOPKINS
Newark, New Jersey
Magnifying clarity
Of desert air makes
The climber see
Mountains nearer
Than they are.
Yet he crosses
Intervening space,
However far.

THE DESERT SPEAKS

By FREDERICK HERBERT ADLER
Cleveland Heights, Ohio

I wear the sun for a diadem,
A moon-brooch on my breast.
Here Silence has her ample home
And Solitude's my guest.

My gown by night is blue, with stars;
By day it's gold and dun.
In winter I am garbed in grey
And wimpled like a nun.

Many a lover I have had,
And many more will come.
Let each beware! My burning lips
Are known to leave men dumb.

PYRAMID LAKE

By JOANNE DE LONGCHAMPS
Reno, Nevada

In time of fire, time forgotten
With a slow and mighty thrust,
These silent stones like ragged fingers
Pierced the brittle earth's new crust.

In time of water, time past knowing,
To the hollows of this ground
Then came these strange and lovely waters
With a restless yearning sound.

Where all was chaos, all was furor,
Now there stands complete, alone,
The still blue wonder of deep water,
Ragged figures out of stone.

PHILOSOPHER'S STONE

By DEAN T. SMITH
Twentynine Palms, California

Unnoticed and rough on the ancient shore
Of a long forgotten sea
Lies a pebble, dull, emitting no light
Nor promise of what may be.

But sawed asunder and polished anew
How great a change is wrought;
Behold a thing of beauty bright,
A gem to perfection brought.

But the hours of grinding are long and hard
And the burnishing wheel severe
Ere the beauty inherent within the stone
Shines forth so brilliantly clear.

'Tis so with a soul by fate untried
Lacking aught that is great or fine,
'Til ground in the harsh-toothed mills of life
Its new polished facets shine.

Travail and pain may be its lot,
Full rough its course may run,
But reward is great when it takes, at last,
Its rightful place in the sun.



To take this photograph F. V. Sampson had to work all morning to get back into good standing with the antelope chipmunks who had been frightened by visitors the day before. He took this photo of himself and seven friends by touching a telegraph key with his foot. Springing of the shutter must be done very slowly to avoid startling these usually shy little animals.

He Prospects With a Camera

It was Fred Sampson's love for the desert that led him to develop a hobby to a degree that has made him widely known as the Desert Photographer. He came to the desert to dig for gold; he remained to translate the things that came to mean more to him than gold into a form which others could enjoy. To win the confidence and friendship of desert animals he has lived in close and constant contact with them. He talks to them, feeds and waters them, protects them. They are free to go where they will—which usually is in the close vicinity of their friend. "This," he says, "is interesting but not always entirely pleasant. As for example when a spotted skunk gets into my bed or a pair of them stage a fight beneath."

By CORA L. KEAGLE
Photographs by F. V. Sampson

WHEN a job making sketches for an independent moving picture agency in Hollywood blew up and his nerves began to play tricks, Fred V. Sampson went out to Barstow on the Mojave desert to live in the open and prospect for gold in the colorful Calico mountains.

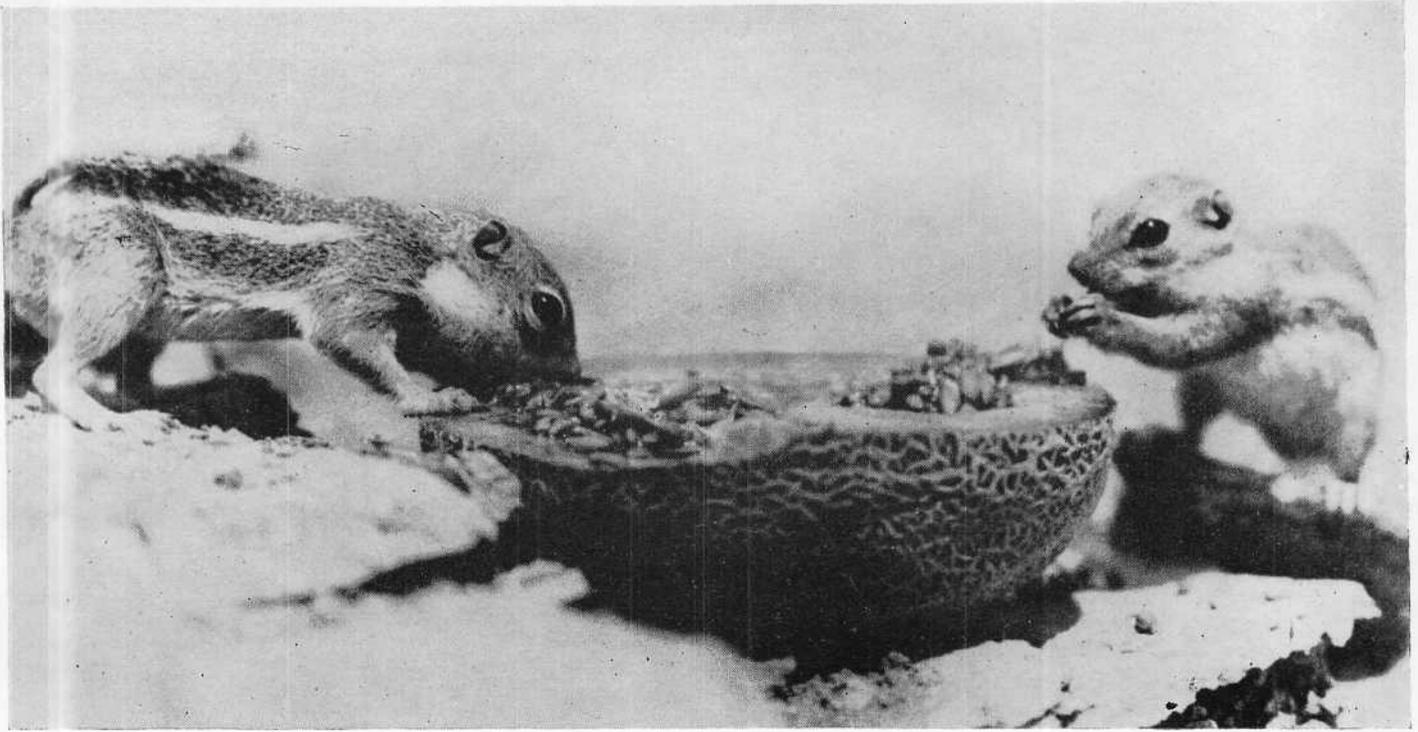
An abandoned shaft in a limestone

quarry looked clean, cool and inviting. He rocked up the front of the shaft, installed a used window and a glass-paned door for light and had an air-conditioned dwelling which was cool in summer and warm in winter, all at a cost of less than five dollars.

But when he moved in he found that previous tenants had preempted claims

there. Little "phobia" skunks, desert mice and packrats scurried about all night long. Skunks eat mice so the skunks chased the mice while the mice scampered in panic. They became bolder as they became accustomed to the presence of the new tenant, and raced over his cot.

In the grey dawn of early morning, the outside world, which had seemed deserted



"Cantaloupe for breakfast! Mm-m."

at midday, teemed with desert life. There was a colony of frisky chipmunks, a waddling old desert tortoise, leathery looking chuckawallas, loping jackrabbits, chattering squirrels and long tailed kangaroo rats hopping about.

At first these denizens of the desert scampered away at the slightest quick movement but Sampson, an ardent lover of wild life, started a commissary for them as one means of winning his way into their confidence. He placed little feeding tables

inside and around the outside entrance. There was grain for the chipmunks, eggs and hamburger for the skunks. The pack-rats and mice were coaxed with birdseed while the rabbits, tortoise and chuckawallas responded to melons and lettuce. Of

"I wonder if my tail's on straight."



course there were always crumbs and seeds for the birds.

One especially tame little "phobia" learned, when Sampson slept later than usual and the pangs of hunger gnawed, to run up and down over his benefactor's cot. If this brought no response, he squirmed under the clothing and scratched at Sampson's toes. This usually brought action.

As the animals grew accustomed to seeing him sitting near, there in the early morning, camera in hand, they appeared to put on special acts for his benefit. One day he saw a tiny field mouse making a brave attempt to climb a spherical cactus. She picked her way daintily up the rounded surface, through the spines. He held the camera in readiness hoping for a good shot. When about half way up she paused, clinging perilously, faced the camera, and waited until the shutter clicked before proceeding on her way.

On another occasion, hoping to get a picture of two jackrabbits who had a habit of battling over their dessert, he sat quietly until the two came out on the ledge of rock and began sparring like veteran boxers. When the shot was developed it re-

vealed two boxing antelope chipmunks on another rock ledge just below the rabbits. In his efforts to get the rabbits in the right pose, he hadn't noticed the chipmunks.

A square, flat rock was a favorite feeding table. Sampson placed little wooden posts at the four corners, stretched three cord "ropes" around it making an arena where dramas were staged and battles fought while the camera clicked off amusing poses for photographs worth more than the gold he hadn't found.

While photographing the arena, other chipmunks would be sitting on his head, shoulders and knees. He has photographs taken with one hand while the chipmunk sat on the other. Another shows a chipmunk daintily sipping from a wine glass held in his hand.

These little chipmunks he has found to be the liveliest and most versatile of all his camera subjects. They actually are little ground squirrels, but their resemblance to the chipmunks of the mountains has led desert people to call them chipmunks. They also sometimes are called ammos, from their scientific name *Ammospermophilus leucurus*.

Sampson calls attention to their decorative white-lined tails tightly curled up over their backs. He says this featherlike appendage is not there for ornament alone. It functions as rudder, propellor and quick starter. When held curved against the back it is in position for a powerful thrust downward to aid a jump forward. When it advances to attack the tail is carried to right or left, to favor a quick jump to the side. For a quick turn it is used as a rudder. For a long leap it is used as an elevator, aeronautically speaking. Sometimes in the countless fights in which they engage, a chipmunk loses all or part of its tail—a loss which well can be a death warrant when a life-saving leap is short of its mark.

He has made a detailed study of the packrat, or the trade rat as it is sometimes called. He says it bears little resemblance to the ordinary rat, either physically or temperamentally. It has a fine, silky grey fur instead of the coarse black hair of the wharf rat.

The packrat is a hard working little animal, always carrying food or nesting material to his home, usually under a rock. He has a peculiar idea of suitable material for his nest. Spoons, spools, cones, bolts or keys are all grist for his mill. When the nest is filled up he expends more energy in selecting some articles which he considers less desirable than others and returning them to the very spot where he has found other materials. This has earned him the name of trade rat.

As an example of the weight a packrat can carry, a miner near by set off a charge of dynamite under a rock on the mountain slope. He was appalled at the force of the explosion which tore away the hillside. Investigation revealed that the packrat had lined his nest with half-sticks of dynamite from a cache near by. The whole nestful of dynamite had been exploded. But the rat escaped and was high-tailing it up the hill when the charge exploded.

As his photographs began to attract wide attention, Sampson found it necessary to have a studio in town. A pair of packrats had built their nest under the front seat of his car and reared their family there, undisturbed by the daily jaunt to town and back.

Sampson says that to know wild animals you have to live with them and observe them through the 24 hours. To have them accept human friendship requires patience, kindness and understanding.

Life on the desert has given him his two objectives—calm nerves and gold. But the gold he sought was not in the crevices of the earth but scampering around on the surface, waiting for their friend, the Desert Photographer.

"Good Morning" is title Sampson has given to photo at left. The two sparring chipmunks at right reminded him of "Patty Cake."





Mines and Mining . .

Washington, D. C. . . .

War production board has ordered further large cutbacks in both aluminum and magnesium ingot production. More than 5000 workers will be affected by end of the year and will be gradually released from plants. Government-owned facilities mainly at Las Vegas and Gabbs, Nevada, and at Austin and Velasco, Texas, will be affected. Complete shut-down of Basic Magnesium plant was included in orders.

Bisbee, Arizona

Important deposit of wulfenite is now opened in northern Sonora by an American group headed by Howard H. Fields of Hermosillo. Ten to 15 tons ore said to be high in molybdenum and lead content has been shipped daily since early September.

Salt Lake City, Utah

Policy to permit gold mining firms to obtain materials and equipment and to rehabilitate properties for immediate post-war operation has been announced by war production board. This does not authorize reopening of mines but only preparation for reopening.

Santa Fe, New Mexico

State oil conservation commission in September approved measures for bonus as incentive for wildcat discoveries. State Geologist John M. Kelly declared the bonuses shall be produced within two years after discoveries. The bonus will apply to discovery of a new pool, a new producing horizon within an existing field, or a two-mile or more extension of an existing pool.

Salt Lake City, Utah

With production record dating back 50 years, Horn Silver mine near Frisco, Utah, has been rejuvenated by Metal Producers of Los Angeles, headed by Geo. W. Clemson. Production is at a rate of 200 to 300 tons per day, ore being shipped to smelter in Salt Lake valley. Recent developments in selective flotation have made complex sulphide ores here commercially valuable.

Santa Fe, New Mexico

State Geologist John Kelly has been named member of five-man committee of National Conference of Petroleum Regulatory Authorities to study Anglo-American oil agreement.

Elko, Nevada

Rich copper ore has been discovered in Queen of the Hills mine in Contact region by Taylor-Yadon lease. Chas. E. Taylor, a leaser, reports vein is more than six feet wide, samples up to 32 per cent copper, six ounces silver and \$4.50 gold per ton, were found in virgin ground short distance from old shaft.

San Francisco, California

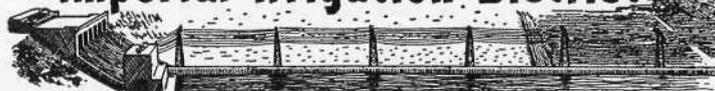
Federal grand jury in September returned criminal anti-trust indictment charging that British-owned Borax Consolidated and German-owned American Potash and Chemical Corp., acting as cartel, exercised world-wide monopoly on mining, production and distribution of war-valuable borax. Wendell Berge, federal assistant attorney general and director of anti-trust division, stated that cartel eliminated American competition by buying small independent refineries and dynamiting their mines, or by slashing prices, or by instituting expensive litigation to induce bankruptcy. Cartel did not refuse to sell to Allied governments but discriminating prices were fixed at whatever traffic could bear, it was declared. Officials of Corp. at Trona office denied charges of illegal activities. Their operations first began in 1929 in Kern and San Bernardino counties which hold 95 per cent of known world supply of borax.

2 Lines of Attack-

At home, on the battle front!

The patriotic farmers of the Imperial Valley and the Coachella Valley, are marching on the battle front day in and day out. They are producing that greatest ammunition of all—food to feed our fighting men and women. As soon as the need became apparent after Pearl Harbor, the farmers of the two fertile valleys turned their resources over to the production of greater crops. Carrots, beef and lettuce from Imperial . . . dates and other foodstuffs from Coachella . . . all to be served on some faraway soldier's daily fare. Let's never forget the part played in winning World War II by our gallant farmers.

Imperial Irrigation District



Use Your Own Power—Make it Pay for the All American Canal

LETTERS...

Squabbles Hereby Ruled Out . . .

Santa Maria, California

Dear Editor:

Please let's not let the letter page degenerate into such a squabble as the October number has. We love Desert Magazine for the peace and quiet it brings to our souls, particularly in these troublesome times. Those pro and con arguments, those bitter explosions, only serve to stir up our own feelings and do no good to Desert. Let those who like the magazine continue as subscribers. Those who do not can go elsewhere. Marshal South needs no one to defend his life and he does not care to hear critics, I feel sure. But let's not take a precious page of Desert for an outlet for personal criticism. We enjoy Desert Magazine for what it stood for at its inception and hope it will maintain that high standard.

ERNEST F. EDWARDS

DM Not Safe in Barracks . . .

New London, Connecticut

Dear Editor:

I would like to take this opportunity to compliment you on your magazine. It ranks top on my list of reading material. And it seems to make a hit with the rest of the men in the barracks. If I leave it lying on my bunk for five minutes it has disappeared when I return. About two weeks later it will turn up, thumbed like the pages of a Saint's bible. In a subtle sort of way it's quite a compliment.

H. E. SIXTY

Flowers for Mary Beal . . .

Miami, Florida

Dear DM:

My August copy is replete with fine commendations from your readers. Perhaps they become monotonous to the editor, but please let me put in my mite for Mary Beal. While I am an amateur geologist-mineralogist, I have a great fondness for our flowers and she presents their stories in a charming way. I would not change DM except to have more and MORE of Laudermilk, Hilton and Beal.

L. M. WRIGHT

Western Life for Easterners . . .

Philadelphia, Pennsylvania

Dear Sirs:

Have never enjoyed any magazine as much as DM. It makes life more bearable to those of us who want to be back there in the West. Mr. Henderson's articles are read with great interest—he is a friend to all mankind. The Souths' life story portrays the way the average person would like to live—maybe not the *average*, but those of us who love nature.

ALYCE UPTON

No More Desert Rats? . . .

El Cajon, California

Dear Editor:

The expression "desert rat" which is in common use, is more or less obnoxious to many desert lovers, including yours truly. Let's line up a list of alternates suggested by DM readers and vote on them to determine the most popular cognomen. As a starter I submit the following:

Deserteer. Precedents — mountaineer, musketeer, etc.

Desertonian. Precedents — Oregonian, Californian, etc.

Desertan. Precedents — Texan, San Franciscan, Yuman, etc.

MARVIN E. SINGLETON

Wants Columbia Desert Included . . .

Yakima, Washington

Gentlemen:

I have often wondered why we have not read in your magazine of the Great Northwest desert. I have seen but one article concerning it. After the war I hope that you will find it possible to include material about our section of the country of which we are justly proud. Our Indian arrowheads are in a class by themselves, and our agates, geodes and petrified woods are considered to be among the best.

JOE L. DOBIE

"Simple Life" Not So Ideal . . .

Banning, California

My Dear Miss Harris:

Occupying the place of honor in your August letter section was a letter I rather liked. It expressed so much that I think many of your readers think but do not have the courage to put on paper. I seldom more than glance over South's articles but I know that they satisfy a craving that some of your readers have.

I have met, and even smiled a bit with a great many who believed "life on a farm—in the wide open spaces—mid mountain solitude—or in our deep dark forest glades" was an "ideal existence" but when they tested such a life they soon returned to an environment for which they were more fitted. In Mary Austin's book "Lost Borders" the trouble of those not fitted for desert life is very well described.

I hope that Mrs. Bauer's letter induces you to edit and your writers to use a bit more care in how they write of the desert and to positively cease any "chest-thumping" or derogatory reference to those who are "chained to a desk" or are forced by circumstances to remain away from "the simple life."

JIM PIERCE

Water for Desert Travelers . . .

France

Dear Lucile:

Since those First Days, DM hasn't lost its savor, its pungent odor of sage flats. That is why this pre-war dweller of 1000 Palms Oasis "whoops" at mail call when Desert Magazine is received "Somewhere in France." Not me alone, for my entire engineer regiment maneuvered in the Mojave, summer of '43, a third of them being converted to a mongrel combination of Rockhounds, Desert Rats and a few—very few, praise Allah—poets.

We commonly agree that the prize article was Intimations of an Unseen World, in the July issue.

You had an item titled "They'll Drink Salton Sea Water." If Salton Sea can be made drinkable, any flow of desert water could be made potable. If these experiments of Cleaver-Brooks prove successful, why couldn't potable units be manufactured for all of us campers so that we wouldn't have to carry tins of drinking water? I'll be customer No. 1!

PAUL P. WILHELM

Postwar Rockhound Plans . . .

Hopkins, Minnesota

Dear Editors:

I almost addressed you "Dear Folks" because I read your magazine so thoroughly that I feel as if I knew you all. A group of us who belong to the Geological Society of Minnesota and to the Mineral and Gem club read your magazine and love it.

We in Minnesota and the midwestern states expect to have our own magazine after the war, but for the present we read and enjoy yours and will use it as a model in the not too distant future. This part of the country is quite interesting geologically. We are a part of the Laurentian Shield and have some of the oldest known exposed rock in the world, namely the Ely Greenstone. We also are overrun with fossils, especially in Iowa, Illinois and Indiana. And of course there are the famous Lake Superior agates. And everyone knows of our great open pit iron mines. We have copper too, and much building stone. A little gold has been found and even a few not too small diamonds. So you see, we have enough to keep innumerable rockhounds busy.

Many of us have cutting and polishing outfits. We are having difficulty getting tin oxide or substitutes. But we use our spare time between bond drives and red cross campaigns for book and laboratory study of our own rocks and plants, against the great X-day when we can wander again. I have acquired maps of most of the 48 states and most of Canada and have mapped many trips for the future. I am reading up on the Southwest so that when and if I get there, I will know what to look for.

MRS. E. J. PROCHASKA

How to Change the Jeep . . .

Cronese, California

Dear Desert Mag.:

About "Jeeps unadulterated." As they are now built for the army they hardly are good enough for real desert going. We want the front wheel drive and compound gear but we don't want the narrow track because we often want to break the road for other cars to follow. We want the standard track jeep only. And we want as high wheels on them as possible, 20x21 at least, and 6-inch or large 4 or 6-ply tires—not the heavy, almost solid tires the army uses.

I have seen jeeps in action out here in the Mojave and as they are now they are not as good as my old Model A on roads where there are high centers and really deep soft sand. But they would be far better anywhere if they were given the same clearance and tires which could be softened by deflation. If the front wheel drive and the compound gear are removed, though, I don't want any. Wouldn't trade my old Model A for a carload of them, that way.

ELMO PROCTOR

. . .

Wants Desert Geology . . .

FPO, San Francisco, California

Gentlemen:

Please send me a year's subscription to your fine magazine. The articles you publish on where to go and what to find are my favorites. It will be good to have a backlog of them when I return. I would like to see you publish a few articles on the basic and detailed geologic structure of some well known and little known sections of the desert. Something we service men can think about and correlate with standard geologic texts until we can return to "our" desert.

HALEY F. HOUGHTON

. . .

Weekend Life-Saver . . .

Los Angeles, California

Dear DM:

Enclosed is check for subscription to your life-saving magazine. Why don't you publish one every week, instead of monthly? You see, after 30 days of office work, followed by 30 evenings of war news and war work, we arrive at the jumping-off-place, but nothing to jump with—no gas or other means of escape. Were we equipped with a copy of D.M. we could get away from it all every weekend. Without gas or transportation of any kind we could wander out across the desert with a companionable little burro trudging by our side, carrying the coffee, flapjack flour, bacon, camera, blankets, jug of water, and a copy of D.M., pitch camp under the stars . . .

But if you can't arrange to make it a weekly treat, we will be grateful for the vacation it gives us every month.

EDNA TAFT

Five-Point Proof . . .

Downey, California

Dear Sirs:

To us the South family and their natural way of living have proved the following: 1. The prize possession in this world is freedom of thought and action. 2. Health of body and mind intensify with such an existence. 3. The greatest pleasure of living is deliberately taking time to live each day. 4. Competitive struggle in so-called civilization cannot bring happiness. 5. Those who get their understanding from the clean desert winds have no time for the envy of others, but are concerned with the truth as it comes to them from the original source.

DR. FRANK L. ROBERTSON

. . .

Substitute for Desert Travel . . .

San Francisco, California

Dear Editor:

For many months I have wanted to say something to the reader (Nov. '43) who criticized you for not printing more facts. Of all magazines I like DESERT best. Your subscription list would double immediately if people knew what they were missing.

The war has prevented my going to the desert this year, but Marshal South's description of spring coming to Ghost Mountain (May issue) is a good substitute. It is one of the most beautiful things I have read in a long time. I shall not argue with Marshal about his idiosyncracies of living as long as he writes such beautiful things. I quit him at first because of his philosophy, but now that he has dropped that, I am all for him.

Unlike other magazines coming to the house, which often pile up unread for six months at a time or of which only certain features claim attention, DM is read by our whole family the day it comes. DM not only equals some of the others in their own specialized fields but covers the whole Southwest.

Now DM serves in lieu of a desert trip. The reader will find in it both history and romance. He will learn about plants and animals by high-class writers who are making DM a new type of textbook easy to understand. His spirit of adventure will be whetted by tales of lost mines and the colorful characters of pioneer days. He will learn where to go for colored stones to ornament his garden or to find gem stones for his collection. So many books have been written about Indians it would seem that nothing new remained to be said. Yet almost every issue of DM has something about Indians that never before has been printed.

And I know of no other magazine to equal its covers. Every one is worth framing.

C. C. WRIGHT

Service Men Want DM Unchanged . .

Boca Raton Field, Florida

Dear Lucile:

Don't let those who want to change Desert into a scientific periodical or an art-poetry magazine influence you too much. One of the things those of us in the service want to find unchanged when we come back is Desert Magazine. Trouble is, the magazine is too good—your audience is expanding. At first just the desert people read it. Now others, with perhaps a casual interest in some feature of the desert, are subscribing and immediately want to make it over. For years DM has been just right, and it still is. Just look back over the issues of the first years and remember that type of publication brought Desert to its present unique position.

As for the poetry page, it often has been—shall we say a little unsophisticated. But then most of us desert people are a little unsophisticated—and thank God for that.

HAROLD WEIGHT

. . .

Laudermilk and Henderson Tops . . .

Riverside, California

Gentlemen:

The articles by Jerry Laudermilk alone are worth the price of Desert Magazine. And Randall Henderson's Sahara Diary is always tops. I have every issue from No. 1 on, and prize every volume.

EDMUND JAEGER

. . .

"All the Things We Miss" . . .

West Los Angeles, California

Dear Sirs:

Having lived in southern Arizona for years your magazine brings us all the things we miss. Also it brings us ideas for the future trips that are ever being planned in our minds. Our hope is that some day we may take that trip to Rainbow Bridge that you describe in May, 1940, issue.

MR. and MRS. W. E. LUNDBERG

. . .

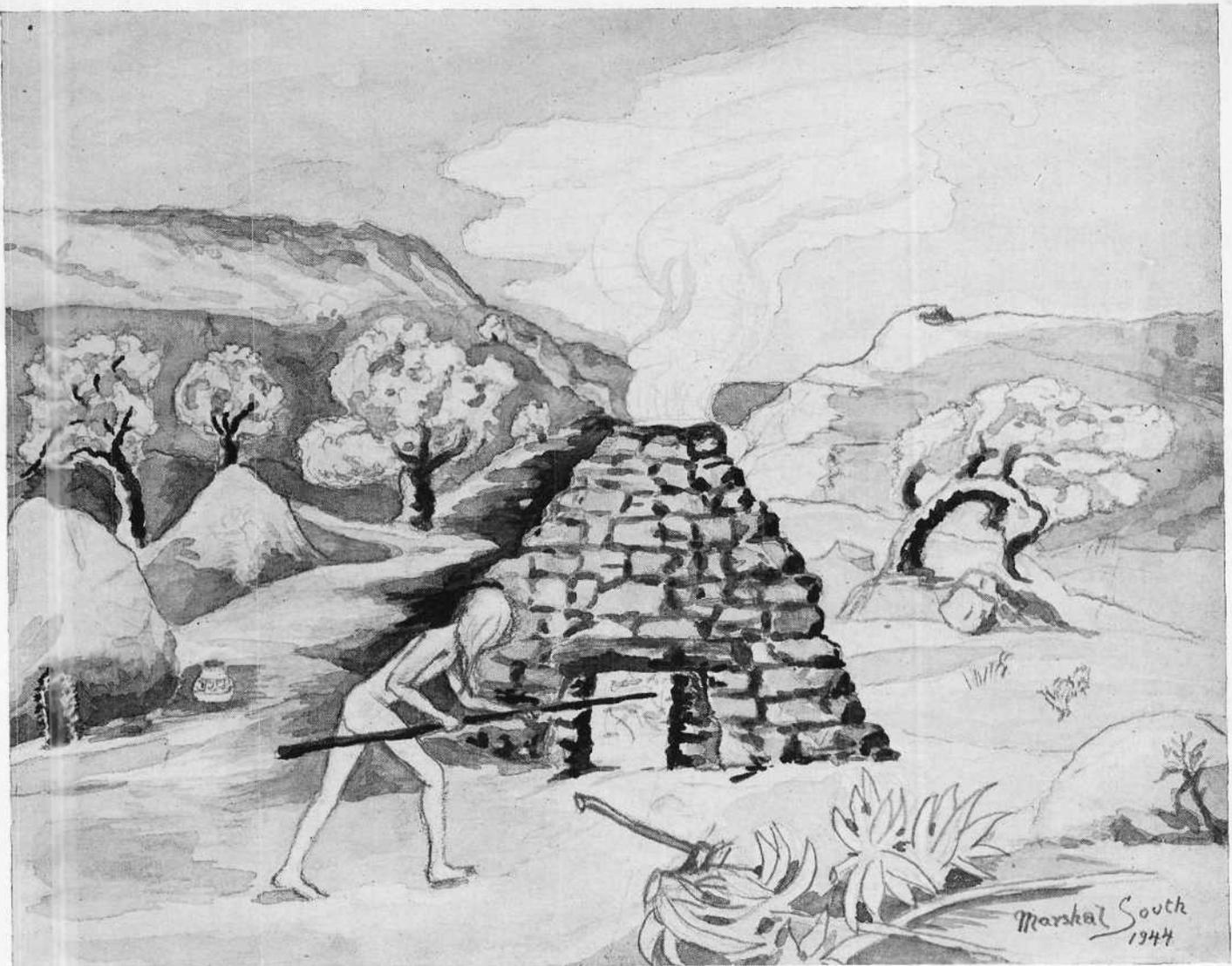
Desert Will Go to Ohio . . .

Upland, California

Gentlemen:

Because I was a resident all my life of Ohio, the beauty and splendor of all California and especially the desert overwhelms me. Both my husband and I are now confirmed desert rats and rockhounds. We "eat your magazine up" from cover to cover and all the back numbers we can find because we are eager to know more of the wonders we have missed all these years. It is too bad more middle westerners are not made familiar with your magazine so they too could see a bit of the magic of California. I intend to send all my relatives and friends back there subscriptions to your magazine so they too can know the beauty of the desert.

MRS. A. RICHARD GOODELL



Rider firing pottery in Yaquitepec kiln. With a long pole he is carefully thrusting fresh fuel into the fire hole.
Drawing by Marshal South.

Desert Refuge

By MARSHAL SOUTH

TO THE southeast, where the dim reaches of desert horizon veil the Rio Colorado, white, puffy clouds of vapor are forming in the morning sky. Again the Thunderbird is at his task of herding the storm heads together. Will he be successful this time or will the unwilling rain spirits again elude him and scatter into nothingness—as they have done so often these past months? *Quién sabe!* But we cling always to hope, so long as a single cloud lingers on the skyline. The dry spell has been a long one.

"Nuh!—no rain," says my cheerfully pessimistic desert friend in whose veins runs the blood of those who possessed this wilderness of sun and thorn before the white man came. "Nuh. No rain. Old Man angry with us." He flashes white teeth and grins as he gestures towards the sky. A mellowed old timer of the desert, neither heat nor cold nor rain nor the lack of it ever upset his good humor. But I catch in his remark a significant reflection of something which I have heard often before. Something which was put into crisp Spanish by a vigorous old Mexi-

On Ghost Mountain, the Souths have abandoned the primitive Indian method of firing pottery, by which they merely had set fire to brush piled over their clay vessels. It not only consumed too many dry yucca trunks and mescal butts; it required too much time to gather it armful by armful, sometimes from considerable distances. Now they have constructed a simple kiln which is a real fuel-saver . . . When the rain comes—if it ever does—and work on the cisterns is finished, Marshal will write a booklet on the simple facts of pottery making—but it won't be a booklet for those who prefer to turn the kiln switch, bringing bolt number 897 down the assembly line on job number 25704!

can lady—the last of an early California family. "In the old days, señor, things were better. There was more rain. We had many more springs. But the good Dios became angry because of the cruelties that were done the Indians. He began to take away the waters."

The sun mounts in the sky. And the shadow of the great rock, beneath the overhang of which I have set up my tiny typewriter table, is shrinking swiftly. Soon I will have to move. But not just yet. It is still cool here, hunched close to the lift of the ancient, weathered granite.

Beyond the rim of sheltering cool the sun beats upon a daz-

zling world of jagged butte and shimmering wash and the grey endless leagues of immensity. Underfoot, where little wandering wind wisps from the desert come also to seek the shadow, the quartz gravel is crisp and white. In deep clefts and hollows that the winds of ages have carved in the stone, cling tiny shy desert plants and diminutive ferns. Stiff, grey-green agaves rim the approaches with their bayonet spines. Nearby, under the shade of a gnarled jojoba bush, a bright-eyed lizard basks. And over all, the dome of the sky, like an inverted turquoise bowl, shuts down upon the silence. "The shadow of a great rock in a weary land."

Well, again the Thunderbird has had no luck with his round-up. The scatter of little puffy thunderheads have broken away from him and bolted, like a bunch of wild desert cattle, into the immensity of space. The only cloud visible in the whole circle of my desert world is the little film of smoke which hangs above the crude kiln among the boulders and junipers where Rider is firing our latest batch of pottery.

From where I sit I just can see his lithe sun-tanned figure as he moves about, now stooping to break up with his axe the dry mesal butts; now carefully thrusting with a long pole fresh fuel into the fire hole. It is a job in which carefulness and judgment must combine. For the right heat must be attained, and at the same time the fuel not be wasted. Fuel, unless one commits the unpardonable crime of destroying scenery, is none too plentiful in the desert. Especially on Ghost Mountain, where the demands of household cooking and winter warmth have always to be met.

So it was really the fuel—or rather, the need to conserve it—which led us to do our pottery baking in a kiln. Formerly we had used the Indian method of these regions, which is simplicity itself: Merely the piling of brush over the assembled pieces and setting fire to it—keeping the bonfire going briskly until the pots are baked.

But this system devours fuel. I always flinch, mentally, when I recall how many dry yucca trunks and good mesal butts are needed to fire a sizable batch of pots. So finally, we resorted to a kiln. The present one—for we have built several, increasingly larger, as our needs and ambitions expand—is a hastily constructed, crude affair. But it does the work. And the saving in wood is startling.

Pottery, one of the most ancient of arts, has like weaving always been closely bound up with man's existence. And its broken sherds, scattered everywhere about the earth, provide a fascinating record of his history, extending far back along age-dim trails from which no other record has survived. Pottery has this strange quality. Though one of the most fragile of creations it is, in fragmentary form, one of the most enduring. The shaft of the spear will rot and the blade of the sword will corrode and vanish into the earth along with the bones of its maker. But bits of painted and burned clay, shaped by the loving fingers of the potter, will endure to tell their story throughout all the changes and convulsions of thousands of years. Whether it be from a pit dug in the ruins of the forgotten Hurrian city of Nuzi, or whether it be a roadside cutting in Smyrna, or the grave of a Cliff Dweller, or from a deep shaft through the strata in the Valley of Mexico, fragments of an ancient art constantly are coming to light to attest man's presence and his residence upon earth for greater spans than are covered by any written or conjectured history.

Pots! How vast has been the number of them. How deep about the earth is the litter of their shattered shapes and the dust of the buried cities in which they were fashioned?

And the broken sherds tell another story too, as well as that of their mere making. For they tell not only the tale of the rise and fall of races and civilizations, they tell also of the flowering and decline of the best fundamental qualities in the character of their makers. If you want to see the unfolding of art and the genuine yearning in men's souls toward the higher things of life you must go back to the primitive handmade pots, fashioned

from the plastic clay with no tools save the skilful fingers of the maker.

Into these pots, after they had passed the first crude era of stark necessity, went the souls of the makers. Into them went a deep, sincere craving for grace and for the beautiful. Crude, if you will, but fashioned with fingers that delighted in their work, and decorated in designs that were generally, as in the case of the ancient Cliff Dwellers, reverent prayers in symbol form, the ancient handmade pot and jar stand supreme as things of soul and grace. Later came the potter's wheel—the dawning of the mechanical method of production. And soul and grace and meaning slowly pass from the clay shapes. Like their owners and their buyers—for soon, in his march of progress, man became too busy and too proud to make his own pots. The jugs and the vases and the bowls become elegant and haughty and ornate and mechanically perfect—and soulless.

But there seems no way of checking the weary cycle. For even today the simple child of nature, unaware of the true worth that he has created in his handiwork, and following, as do his civilized brothers, that deadly will-o-the-wisp "some easier way," soon abandons his beautiful clay jars and ollas for the white man's empty coal oil can.

Which is of course hopeless. You can't do much with a coal oil can as regards art and grace and soul. You can't, with decency, inscribe reverent prayers on it. And even if you decorate it with verses and ditties from Omar Khayyam and play sweet songs to it upon a flute you can't do much. It takes more than verses and the piping of an altruistic ditty to disguise the ulterior motives in a coal oil can—even if you pipe it in Persian.

Nevertheless there should be, by those who care, a return to the simple worth of honest handicraft wares. There should be more home weavers and more home potters. Especially potters. And most especially desert potters. For somehow the arid Southwest, with its mysterious history of the past; with its sand-drifted abandoned cities and its wealth of relics from the fingers of long dead potters whose skill and grace of form never have been excelled, seems peculiarly the region for those whose craving for self-expressive things leads them back to the fashioning of moist clay.

Primitive pottery is not difficult. Its scope for individual exploration and adventure is vast. But its fundamental steps are not hard to master. Unfortunately technical books can't tell you much about it. Their writers have forgotten the simple things and have passed on to those rarified realms of higher learning where you purchase the clay and use prepared glaze and turn the kiln switch—and bolt number 897 comes merrily down the assembly line on "perfect job" number 25704.

But there is another way—the way of the Indian who sat long ago in the shade of his cliff house and put his dream of beauty and his reverence for his Creator into the thing he built with his fingers from the plastic earth. We of Yaquitepec haven't learned yet, by a long way, all there is to know of that ancient Indian's art. But we have discovered a little. Enough to begin with. And it always has been our dream someday to assemble those few crude facts together into a little booklet for the benefit of those who, like ourselves, long to create things with their own hands. Maybe when the rain comes, and the cisterns are finished we will get around to writing it. Again, *Quién sabe*.

PURPOSE

*The stars shine brightest in the sky
Upon the darkest nights,
And poverty can wing on high
The soul to noble flights.
Dread not misfortune. Life is still
Exactly as you make it.
You have a purpose to fulfill.
Then rouse, and undertake it.*

—Tanya South

HERE AND THERE . . . on the Desert

ARIZONA

Snake Clan Doomed . . .

HOTEVILLA—Difficulty in selecting successor to snake priest who died two years ago indicates that Snake clan of this Hopi village in northern Arizona may die out. Of the three men who would have been eligible two were ruled out because they had lived with white people. When the remaining candidate became ill he considered it a sign that he should not serve in the important position. Only five of the 12 Hopi villages still hold the prayer-for-rain ceremonial.

University Plans Construction . . .

TUCSON—Plans for six new buildings and additional plant services for postwar construction at estimated cost of \$1,168,400 are being drawn at University of Arizona. Proposed construction would be supported by federal public works funds following war, according to Dr. Alfred Atkinson, president, and would include aeronautical engineering building, two women's dorms, men's dorm, fine arts building and dairy building.

Fish Planted for Indians . . .

WINDOW ROCK—Navajo reservation streams and reservoirs are being stocked with rainbow trout and bluegill fingerlings, promising Indians new source of food. Project is joint enterprise of Navajo agency and Interior department's conservation program which has built many reservoirs for irrigation purposes and stocked many streams in past few months.

Advises Wounded Son . . .

FLAGSTAFF—Judge Many Children, Navajo, never wrote a letter in his life, but when his son was reported wounded in France he decided it was time for a letter—a long one. Hubert Richardson, trader, wrote the long message as Judge dictated, ending with advice that if wounded in the leg the son should come home; if not wounded in the leg son should get up quick and shoot more Japs. The mere fact that son was in France where no Japs are made no difference—son was to shoot more of them and quick!

Special Deer Hunt . . .

KINGMAN — Arrangements have been made for special deer hunt in Bill Williams Wildlife Management area, state game warden Fred Merkle has announced. Eight hundred hunters, names to be drawn from all those applying, will be issued permits to hunt in area for one deer of either sex regardless of age, for six days, November 18 through 23.

Navajo Schools Closed . . .

WINDOW ROCK — Shortage of teachers kept nine Navajo community schools closed this fall, and many schools opening were understaffed. In pre-war times recruiting was done through civil service but now is done locally, making it extremely difficult to fill positions once taken by teachers from whole nation. Besides teachers, cooks, matrons, Navajo housekeepers and general assistants are needed.

A. S. Henderson of Patagonia died in September, aged 85. He had served on first board of Santa Cruz county supervisors and in '80s had joined in drive against Geronimo.

CALIFORNIA

Sued for Fire . . .

INDIO—Universal Pictures, Inc., of Hollywood, was defendant in an \$18,000 trespass and damage action filed by Carl Barkow, Banning newspaper publisher, and others. Action asserted that in November, 1943, company trespassed upon Willis Palms property, set fire to trees and greatly damaged them while filming battle and fire scenes. Group of 300 native Washingtonia palms, located about 12 miles east of Palm Springs, was nationally famous landmark.

Dangerous Erosion Threatens . . .

WESTMORLAND—Erosion to extent of 2½ miles a year at mouth of Colorado river as it enters Gulf of California is causing concern in many quarters. Cutting back, caused primarily by 30 to 50 foot tides, threatens to fill Salton sea to point below Mexican border and eventually inundate Imperial Valley. It has been suggested this erosion may prove a boon if Mexico and United States cooperated to establish slightly above sea level port about 10 miles south of Mexicali.

Postwar Highways Proposed . . .

BANNING—Proposed road construction plans for postwar period include 6-lane Freeway from Palm Springs to Los Angeles through San Gorgonio pass, Banning and Beaumont, tying in with Freeway laterals from San Bernardino and Riverside at Colton. Freeways to beaches through Santa Ana canyon, providing quick access to all points and eliminating left-hand turns and cross roads, also are planned, James Guthrie, member of state highway commission revealed recently.

Date Crop Good . . .

INDIO—Although three weeks behind schedule, total 1944 Coachella valley date crop is estimated at 17,000,000 pounds of packed dates, 3,000,000 in by-products and 5,000,000 in culls and shrinkage. New packing and grading houses began operations in valley for first time, facilitating handling and shipping of crop.

FAIRY FLAMES PINE CONES



Chemically treated, extremely long-burning pine cones that create fascinating fairyland flames of orchid, cobalt blue, apple green and turquoise and lend magic enchantment to your fireside. Ideal for gifts. 18 to 20 Cones in box, So. Calif. \$1.10—Central and No. Calif., Arizona and Nevada \$1.15—all other Western States \$1.25—Elsewhere \$1.35. All prices postpaid. FAIRY FLAMES, 1104 S. Monterey St., Alhambra, California.

INSCRIPTION HOUSE

THE PAINTED DESERT POST
Tonalea, Arizona

NAVAJO BLANKETS

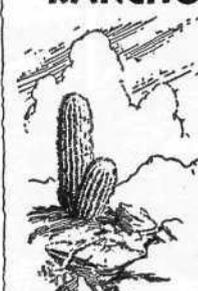
All wool . . . handmade . . . in 3 or more colors. Will wear for years on your floor.

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30x56 in. size . . . \$9.50 Postpaid

Supply Limited . . . Order Now!

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- FINE LINENS

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206 W. TENTH STREET PHONE 246
LANCASTER, CALIFORNIA
THE HEART OF ANTELOPE VALLEY

RILLA CUSTER GALEN CUSTER

Contraband Drug Seized . . .

CALEXICO—Five men and two women were arrested and relieved of more than \$30,000 worth of prepared opium as they attempted to board train in Puerto Peñasco, bound for Mexicali. Gen. Juan Felipe Rico, governor of northern Baja California, stated that women gave complete confessions of well-organized dope ring involving well-known persons in Mexicali, Tijuana, Los Angeles and San Francisco.

Lands Devastated by Fire . . .

INDIO—Valuable watershed and grazing lands were destroyed in August in five-day fire believed to have started at Anza. Forty thousand acres lost are but part of land burned throughout Southern California this summer, but no loss of human life or dwellings has been reported. Entire county fire-fighting equipment, military personnel, and trained fire fighters battled the Anza blaze.

Excellent Flaxseed Yield . . .

EL CENTRO—Possible world's record flax yield for acreage was attained in Imperial Valley this year, according to bulletin issued by Manager Argyle McLachlan. Average is 23½ bushels per acre, on basis of shipments to mills from 27,580 Flaxseed Association acres. This is an advance from last year's unusually low yield of 17½ bushels per acre.

United Date Growers association completed its most successful season by distributing to its members \$250,041.01 in final pool payment on 1943-44 California date crop.

The Desert Trading Post

Classified advertising in this section costs five cents a word, \$1.00 minimum per issue—
Actually about 1½ cents per thousand readers.

MISCELLANEOUS

Gem Village—THE ROCKHOUND COLONY—Now has 23 members. As soon as conditions will permit most will build here. We think this the finest location in the U. S. Lots 100x300 ft. \$150. If interested write. We have a load of as fine thunder eggs as you ever saw, amethyst, quartz, iron pyrites, all Colorado materials. Also materials from all over the world for cutter and collector. Please don't send any lapidary work until we get caught up, or get help. Can still do your silver work. The Colorado Gem Co., Bayfield, Colo.

Indian Relics: 20 genuine Indian arrowheads \$1.00, Catalog, Geo. Holder, Glenwood, Ark.

Large stock of petrified palm. Twenty tons of rock specimens. Navajo rugs, reservation hand hammered silver and baskets from many tribes. Many other handmade artifacts. Daniels Indian Trading Post, 401 West Foot-hill Blvd., Fontana, Calif.

ROCK COLLECTORS—Small (about 1x1) labeled agate specimens, one polished surface, 35c each. Two specimens and four rough specimens, \$1.00 postpaid. Escalante Agate Co., Box 941, Grand Junction, Colo.

FOR SALE—Indian relics, 23 assortments from which to choose, \$1.00 per assortment or \$20 for all 23. All perfect specimens. Choose from these: 10 beautiful prehistoric Indian arrowheads; 10 tiny bird arrowheads; 10 arrowheads from 10 different states; 2 stone tomahawks; 4 spearheads; 5 stone net sinkers; 10 fish scalers; 2 hoes; 4 agate bird arrows; 5 flint drills; 7 flint awls; 10 beautiful round head stunning arrowheads; 4 fine sawedged arrowheads; 4 fine flying bird arrowheads; 4 fine drill pointed arrowheads; 4 fine queer shaped arrowheads; 4 rare double notched above a barbed base arrowheads; 5 double notched above a stemmed base arrowheads; 12 small knife blades of flint; 1 rare shaped ceremonial flint; 3 flint chisels; 7 crystals from graves; 10 arrowheads of 10 different materials including petrified wood. Locations given. 100 arrowheads \$3.00. 100 very fine mixed arrowheads all perfect showy colors including many rare shapes such as drill pointed, double notched, saw edged, queer shapes, etc., location and name given, \$25.00. List free. Lears, Glenwood, Ark.

WANTED, to buy desert cabin with water on land, preferably between Twentynine Palms and Indio, but Arizona considered. Must be modestly priced and beautifully located. Write 5847 Nottingham Drive, Oakland, California.

BENITOITE GEMS—After years of searching, engineer has located many "rough" float boulders up to ten tons of Benitoite matrix. Area is open ground, located in a "Y" double boxed canyon in San Benito County. Responsible people have offered to finance any new strike. For substantial "grubstake" I offer a 50-50 deal. Box K, Desert Magazine.

ROCKHOUNDS ATTENTION: For Sale, best collection fossil wood on Highway 66. "The Old Frontier," Historical Museum and Trading Post. One mile west Joseph City, Arizona. Three Indian Hogans, Ancient handhewed log building, two acres, six hundred feet frontage, Navajo Indian weavers, basket-makers and silversmith returning after war. Finest Rockhound location in West. More wood than you can cut, polish and sell in lifetime. Whole works CHEAP. Write 2104 B Street, Bakersfield, California, for particulars.

Let us do your shopping. Our knowledge of merchandise is at your service. We will buy any article for you from "a button to a steam shovel" for a nominal service charge. Coast Cities Shopping and Buying Service, 623 Storey Bldg., Los Angeles 14, Calif., or 403 Maritime Bldg., Seattle 4, Wash.

For Sale: Collector's item 50c. Beautiful souvenir booklet, "Life and Death of Sitting Bull," in twenty-four photos. T. W. Jerry Hines, 775 Myrtle St., Seattle 8, Wash.

For Sale—Five mineral claims containing veins of good turquoise, gold and silver and obsidian. Three room furnished cabin. Plenty of water. Terms if desired. T. J. Niceley, P. O. Box 927, Tonopah, Nevada.

LIVESTOCK

KARAKULS producers of Persian Lamb fur are easy to raise and adapted to the desert which is their native home. For further information write Addis Kelley, 4637 E. 52 Place, Maywood, California.

We sell Nationally Recognized Fur Producing Karakuls. Have permanent market for wool and furs. Attractive investment for rancher or city investor. James Yoakam, National Distributor, 1128 No. Hill Ave., Pasadena, California.

REAL ESTATE

For Imperial Valley Farms—
W. E. HANCOCK
"The Farm Land Man"
Since 1914
EL CENTRO — — — — CALIFORNIA

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of The Desert Magazine published monthly at El Centro, California, for October, 1944.

STATE OF CALIFORNIA } ss.
COUNTY OF IMPERIAL }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Lucile Harris, who, having been duly sworn according to law, deposes and says that she is the associate editor of the Desert Magazine and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, and business managers are:
Publisher, Desert Publishing Co., El Centro, California.

Editor, Randall Henderson, El Centro, California.
Business Manager, Bess Stacy, El Centro, California.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)
Bess Stacy, El Centro, California; Edna B. Clements, Long Beach, California; Lucile Harris, El Centro, California; Randall Henderson, El Centro, California.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)
None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is (This information is required from daily publications only.)

(SEAL) LUCILE HARRIS
Sworn to and subscribed before me this 18th day of September, 1944.

M. W. WASHBURN
(My commission expires May 14, 1948.)

NEVADA

Hunting Season Extended . . .

LAS VEGAS—Increase in continental migratory bird population has resulted in liberalized hunting regulations this season, reports fish and wildlife service office here. Open season on birds this year will last 80 days, from October 14 to January 1, with a bag limit of 10 per day.

Landmark Condemned . . .

VIRGINIA CITY—Another landmark of historic Comstock Lode disappeared when old Virginia City firehouse was torn down recently. County commissioners condemned building as fire hazard and ordered its removal. Appraisers set salvage value at \$350.

NEW MEXICO

Highway Plans Approved . . .

SANTA FE — Highway commission has approved plans for 158 postwar projects totaling 1951.8 miles, third program of its kind in state. State Highway Engineer Fred Healy said that \$407,527.80 of the \$1,135,174.14 to be spent would be paid by state and remainder by federal government. Work on highways will begin when money and materials are available and will continue for several years.

"Taboo" Bears Killed . . .

GALLUP — Two Gallup hunting parties trapped and killed five bears that had been threatening sheep in Mexican springs and Tohatchi mountain areas on Navajo reservation last month. John Wallace, Navajo member of party, said, "I didn't dare bring the animal to the folks at home for fear they'd run me out." Older Navajo tribesmen will not kill or touch bears, considering them as embodiments of "chinde" spirits of the dead.

Russian Visits Sheep Laboratory . . .

FT. WINGATE—Alexis I. Nikolaev, member of Soviet purchasing commission and professor of animal husbandry at Moscow agricultural academy, was at government sheep laboratory here in September to observe methods being developed to improve sheep strains. Laboratory is developing breed from long-haired Navajo, and Romney and Corriedale strains, to produce heavier meat animal with fleece suitable for hand weaving. Mr. Nikolaev was particularly interested in fleece since wool is important in making felt boots and heavy clothing used in Russia.

Seeks More Indian Land . . .

ALBUQUERQUE — Indian Commissioner John Collier is urging completion of 80,000-acre project of irrigated land along Colorado river, below Parker dam to relieve problem of land needed by growing Indian tribes. Congress is asked to allot \$60 an acre to complete plan which will add 7000 to the 3000 acres already under cultivation by Indians.

Boys Ranch Organized . . .

ALBUQUERQUE — Non-profit corporation is planned by local businessmen to operate ranch home where underprivileged or delinquent boys from 7 to 14 will learn ranching and other vocations, and learn principles of good citizenship through self-government. A. E. Buck, president, states that religion or race will not be condition of admission and boys will come voluntarily, not through court commitment. It is expected that project will be supported by voluntary donations as soon as suitable site has been found. Send inquiries to New Mexico Boys Ranch, Box 261, Albuquerque.

Policaripio (Paco) Baca, ox-team freighter, buffalo hunter, friend of Kit Carson, died August 25 in Santa Rosa, aged 100.

Memorial services were held September 4 at Laboratory of Anthropology, Santa Fe, for Mary Austin, world-known writer who died in Santa Fe 10 years ago.

Sabino Lujan, 83, who gained distinction as jeweler and worker of Mexican filigree ornaments died September 4 in his home in Albuquerque.

Indian affairs subcommittee has postponed trip to Southwest from Sept. 20 until Nov. 9 because of uncertainty regarding congressional adjournment.

UTAH

Winter Weather Recorded . . .

SALT LAKE CITY—Local 1944 dry spell was broken on its 61st day by tenthundredths of an inch of rain in September with a maximum temperature of 56 degrees. Blanket of snow covered ground at Alta and Brighton in first reported snowfall of the season, the temperature dropping to 43 degrees.

Veterans Attend University . . .

SALT LAKE CITY—Fifteen veterans of this war have registered at University of Utah since Sep. 11, making total of 30 now attending there under G.I. bill of rights, Herald Carlston, coordinator, announced. Government is paying tuition and cost of books, plus monthly allowances of \$50 for unmarried veterans and \$75 for those with dependents for period of one year plus amount of time spent in active service.

Plans are being made by state leaders for memorialization in 1945 of old Lewis and Clark trail. Project is directed by American Pioneer Trails association.

Edward Rasmussen, Salt Lake City, retired last month after 28 years in U. S. fish and wild life service.

A WESTERN THRILL

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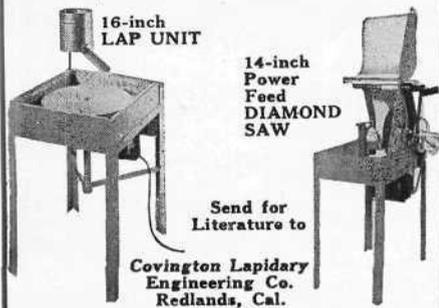
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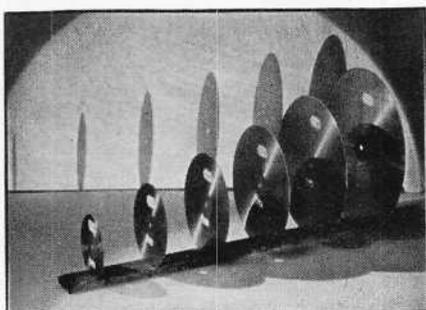
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and polishing equipment. Lelande Quick, who conducts this department, is former president of Los Angeles Lapidary society. He will be glad to answer questions in connection with your lapidary work. Queries should be addressed to Desert Magazine, El Centro, Calif.

By LELANDE QUICK

Whenever I have had occasion to ask for help in any matter the response always has been generous but I never have received as much volunteered information on any subject as I did on "cat's eyes" after my request in September Desert Magazine. Interesting letters came from all over the country and while they duplicated the information some contributed original facts. The most helpful letters came from E. F. Montgomery of Santa Monica, Ralph Jones of Los Angeles, William Pitts and Leo Hertlein of the California Academy of Sciences at San Francisco, California, and Ralph Waldo of Centralia, Washington. It was the shell collectors, rather than the gem grinders, who supplied most of the general information but the pertinent cutting information came from long time and first class gem cutters.

Pooling the information I am able to offer the following facts to supplement my former remarks. The "cat's eye" is the cover or "door" of a marine snail known as *Turbo petholatus*. The cover is called an operculum and is composed of a calcareous material with a layer of horny substance on the under side to which the foot of the snail is attached. The snail has the appearance of our common garden variety and it retires within its shell pulling the operculum after it for protection. The texture of the operculum is very fine and compact and a different structure than the Turbo's shell which probably accounts for its greater hardness in comparison to shells in general. The snail occurs in the western Pacific from the Tuamotu islands to the Philippines and as far west as the Indian ocean. There are many species of Turbos in which the operculum is colored, many of them with a cover as large as a silver dollar, but the true cat-eye is *T. petholatus*, with a shell 2 to 3 inches in height with 5 whorls which are smooth, polished and reddish brown in color with dark bands flecked with white blotches. The operculum from this type is circular, with four whorls and a nucleus placed one third the distance across the face. The outside is convex and shiny with a bright green "eye" at the center and a granular margin of white on one side and brown on the other, which makes the edge softer to grind.

This variety seldom is larger than a dime, as I previously said, and it is the best type for jewelry. It should not be confused with the true cat's eye or chrysoberyl or the green variety of quartz after asbestos mistakenly called tiger-eye. When the quartz crocidolite is brown it is correctly called tiger-eye because that animal's eye is that color and on the same basis I suppose a brown operculum (and most of them are) could be called tiger-eye also if one is a stickler for accuracy. If such terms as "shell cat's eye" and "shell tiger-eye" were adopted it would distinguish the shell from other varieties and distinguish the brown from the green. The shells do not exhibit chatoyancy and their only claim to being called "eyes" is the pupil and iris effect in the marking.

I have seen quite a number of cat's eyes recently and most of them were large and brown but the finest ones were the small green ones. The Turbos themselves are beautiful shells and I have seen some that were ground with a finger-nail file which indicates that their hardness is probably the same as coral—3½. The method of grinding and polishing as outlined in September Desert Magazine seems to be correct although the boys in service have proven that Necessity was Edison's grandmother by

using whatever was at hand to turn out some creditable "lapidary" work.

Continuing the instructions on the coloring of agate I offer the best method of coloring them green as used at Idar. Make a quart of a saturated solution of potassium bi-chromate. A thin piece of agate should be soaked in this solution about two weeks, a half-inch stone about two months. After removal from the bath the stones are placed in a closed vessel containing lumps of ammonium carbonate and allowed to stay there about two weeks exposed to the volatile fumes. The stones then are removed and gradually but strongly heated until the desired shade of green is obtained.

Gloria Wagstaff of Framingham, Massachusetts, is only 14 but she writes to remind me that a Portuguese traveler named Barbosa brought the secrets of coloring agate to Europe from the town of Rotanpur in India in the sixteenth century. Gloria writes from one of the most romantic sounding addresses I have ever seen—No. 1 Old Connecticut Path.

It is not improbable that some reader will have to solve the problem that I recently successfully solved and therefore I am passing along the solution which was highly satisfactory for me. I had promised a friend in the east that I would cut her an opal and after much correspondence about the size and shape and drawing diagrams, etc., I said, "Chew some paraffin and mold it with a pen-knife to the desired shape that looks well on your hand. By doing this you will get the size that looks best on your particular finger." As she intended to surround the opal with small diamonds to complement the gem she drew a diagram on paper and placed the wax in an insert, allowing for the diamonds, and sent the result to me. I could therefore cut the stone exactly as she preferred it, being lucky enough to have the material at hand.

Too many people buy gems with less care than they buy a hat. Many a hat that looks well looks terrible on certain people and many rings that people wear look terrible on their particular hands. The stones are too large for tiny fingers or too tiny for large fingers. I suppose that most rings are purchased as gifts and the wearer exercises no personal judgment or taste in their selection as the purchase depends on the personal whim of the giver. It usually is a situation in which the giver and receiver cannot get together but when possible there should be an agreement of minds on something as personal as a gem that is to be worn almost constantly.

This brings me to the thought of wearing gems at all. They should be worn to accent the dress and personality of the wearer; they shouldn't dominate it. I have seen amateur lapidaries who made members of their families walking showcases of their work, loading them with lapel pins, rings, bracelets, pendants and ear ornaments until they looked like a Christmas tree. One well cut piece complementing a costume looks much smarter than a pound of assorted pieces.

Another business trip taking me east again compels me to postpone the organization of new lapidary societies in the Beverly Hills and Glendale, California, areas until my return in November. At that time I will notify all those who have written me when organization meetings will be held.

GEMS AND MINERALS

ARTHUR L. EATON, Editor

CHIASTOLITE CRYSTAL FOUND IN THE COLORADO DESERT

A very unusual crystal of andalusite, variety chialstolite, was found recently in the desert west of Yuma, Arizona. Without question, it is not of local origin, and therefore must have been washed in by the Colorado river in the remote past.

The crystal shows all the markings of chialstolite, including a fairly well marked black cross in the center. The shape of the crystal itself is normal. But here normal characteristics cease. The relatively soft macle has been completely silicified at some time during its travels, and all rounded sides of the crystal are entirely covered with drusy quartz.

SAN BERNARDINO MINERALS MAPPED IN MINES JOURNAL

San Bernardino county's mineral resources are featured in October, 1943, issue of California Journal of Mines and Geology, just issued. Survey includes history, geography, transportation and summary of both metallic and nonmetallic minerals in the largest county of U.S. A table shows production in tons and value of leading minerals from 1880 to 1941; a large folded map shows locations of mines and deposits as of 1943. Article is further illustrated with photos, maps and charts.

Besides a state map of economic minerals and current notes from various fields, this quarterly issue contains list of publications of U. S. geological survey and U. S. bureau of mines, state surveys, and the reports, bulletins and maps issued by state bureau of mines, and index to Volume 39. For information relative to any of the publications, address State Division of Mines, Ferry Bldg., San Francisco 11, Calif.

SAN DIEGO GEMS ARE SHOWN AT SEMI-ANNUAL EXHIBITION

San Diego mineralogical society announces election of the following officers: W. A. Ross, president; Harold W. B. Baker, vice-president; Catherine Cheatham, secretary; Robert W. Rowland, treasurer; C. A. Scott, James W. Wallace, Donald Young, directors.

Harold Baker was chairman of the semi-annual mineral exhibit staged in the city YMCA October 8 by San Diego mineralogical society. Anyone not strictly commercial was allowed to display whether a member of the society or not. Baylor Brooks, head of geology department, San Diego state college, gave an interesting short talk in the afternoon. Ribbons were awarded for the three most attractive general displays and for the best in the six classes of limited displays. The latter group included San Diego county gem minerals, natural crystals, minerals or ores, polished flats, cabochons, faceted gems.

WYOMING JADE CHOSEN BY CHINESE EXPERT

Chang Wen Ti, famous Chinese jade expert, recently spent a full week as guest of Allan Branham at the latter's home in Lander, Wyoming. Chang is famous for his designs and carvings in jade. He carved the Chinese pagoda for the world's fair at Treasure Island, and managed the twenty-two million dollar carved jade exhibit at the same exposition.

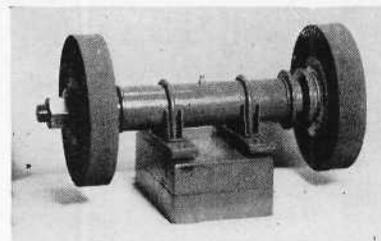
While in Wyoming, he examined Branham's newly discovered jade and was so pleased with it that he purchased 6200 pounds of the material for his own use and for later shipment to China. The opinion of such an expert will go far to establish the reputation of Wyoming jade.

FLUORESCENT MINERALS

FLUORSPAR

Possibly centuries before fluorescence was even suspected in other minerals, scientists had noted the peculiar illumination in fluorite or fluorspar. No one could explain either the cause or the result of the phenomenon. They only knew that fluorite, whatever its natural color might be, under certain lights turned brilliant, livid blue. A beginner, just starting a fluorescent collection, should select his fluorite specimens carefully. They usually are cheap and easy to obtain, but under the black light, very showy. Care should be used to sort out and discard those pieces which, due to impurities and other causes, show very weak fluorescence or even none at all.

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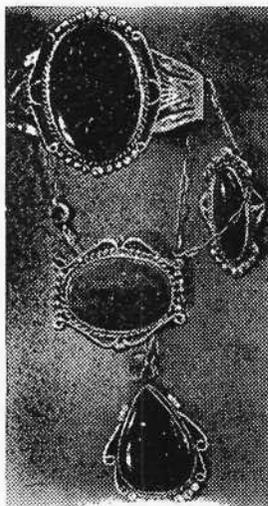
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Minerals, Fossils, Gems, Coins, Glass, Indian Relics. Catalogue 5c. Purple Fluorite, 25c. Aluminum ore, 15c. Rose Quartz, 15c. Copper, 15c. Malachite, 35c. Azurite, 20c. Silver ore, 25c. Quartz Crystal, 15c. Selenite, 15c. Iceland spar, 15c. Feldspar, 15c. Pudding stone, 15c. Talc, 15c. Obsidian, 15c. Tourmaline Crystal, 25c. Fossil Shark tooth, 15c. Fossil backbone, 25c. Fine Fossil fish, \$3.75. Iron ore, 15c. Moss Agate, 15c. Fossil Amonite, 25c. Fossil snail, 25c. Fossil clam, 25c. Cowboy Lemley, Las Cruces, New Mexico.

PRECISION GEM CUTTING—I cut and polish binocular, bomb sight, range finder, etc., lenses for Uncle Sam. Let me cut YOUR stones please. Reasonable prices. Give size, style, number desired. L. E. Perry, 111 N. Chester, Pasadena 4, Calif.

ROCKY MOORE'S Private Collection of 500 rare and beautiful mineral specimens. All or part. A. V. Herr, 5176 Hollywood Blvd., Hollywood 27, Olympia 5052.

12 prehistoric lizard scales, 1 peacock copper, 1 fluorite, 1 pennimite. All four for \$5.00. 10 1 1/2x2 size specimens \$4.00. These specimens are very beautiful and full of color. All from Colorado. Jack the Rockhound, P. O. Box 86, Carbondale, Colo.

Wanted: to buy, sell and exchange specimens outstandingly rare and beautiful. Sam Parker, 2160 East Van Buren, Phoenix, Ariz.

Selling out. Army calls. Assorted gem rocks (rough). 10 lbs. \$2.50. Also cabinet specimens. Leon Hansen, Colfax, Calif.

INTRODUCTORY OFFER—One dollar each lot. Five all different Fluorescent Agates—polished. Thirty rough Mexican Opals. Fifty nice pieces Turquoise. Twenty different polishing specimens. Postage ten cents. Minerals and gems on approval. **DR. RALPH MUELLER**, Professional Building, Kansas City, Missouri.

A varied program entertained Searles Lake gem and mineral society at September 20 meeting. Marshall Farquhar spoke on Basic Magnesium. Eddie Redenbach told about his recent trip to the Bullion mountains, 29 Palms area, Calico mountains and Afton canyon country. Roy Bailey showed colored slides of Zion national park. Chairman Ann Pipkin announced that plans for the hobby show October 21-22 were progressing.

ROCK COLLECTORS ATTENTION—FALL SPECIAL OFFER—24 different, labeled, rocks, minerals, crystals; my selection, colorful, rare, showy. Postpaid \$10.00. Also with this offer, a free cabochon, your choice of moss or marked agate, opal, moonstone, turquoise, petrified wood, carnelian. You name it. The Rockologist (Chuckawalla Slim), Garvey Trailer Park, 941 E. Garvey Blvd., Garvey 32P, California.

Jewelry stones removed from rings, etc. 100 assorted \$2.40. B. Lowe, Box 311, St. Louis 1, Missouri.

Elba Iron Ore: Rare, in blade and crystal form, 25c up to \$5.00 piece. Something new for collectors. Valley Art Shoppe, 21108 Devonshire Blvd., Chatsworth, Calif.

Montana Moss Agates in the rough for gem cutting, \$1.00 per lb. plus postage. Elliott's Gem Shop, 26 Jergins Arcade, Long Beach 2, Calif.

\$2.50 brings you prepaid six rare and beautiful crystallized Arizona minerals. Vanadinite, Dioptase, Wulfenite, Willemite, Chrysocolla, Azurite. Specimens 1 1/2x2 or larger. Wiener Mineral Co., Box 509, Tucson, Arizona.

Choice Palm Root—Full of eyes showing root and trunk structure. Very colorful. Sliced for Cabochons. 25 cents per square inch. Satisfaction guaranteed. **GASKILL**, 400 North Muscatel, San Gabriel, Calif.

50 ring stones, including genuine and synthetic—\$7.50. 12 genuine Opals or Cameos—\$2.75. Plus 20% tax. B. Lowe, Box 311, St. Louis 1, Mo.

INDIAN RELICS, Curios, Coins, Minerals, Books, Old Buttons, Old Glass, Old West Photos, Weapons, Catalog 5c. Lemley Antique Store, Osborne, Kansas.

Oregon Plume Agate in rough slabs for making ring, brooch or pendant sets, \$4.00 to \$15.00. Polished sets \$5.50 to \$20.00. A few exceptional pieces at higher prices. These are the finest agates of Oregon's sagebrush country. E. Lee Sigfrit, 211 Congress Ave., Bend, Oregon.

FOR SALE—Gem Aquamarine, specimen beryl. Large star quartz pieces, 7 pound crystal of Brazil rutile, terminated, semi plume. Moss and saganite agate. 6 inch sphere of variegated jasper, Montana sapphires and garnets up to ten carat gems uncut. The Desert Rats Nest, 2667 E. Colorado St., E. Pasadena, Calif.

Antique Jewelry: 12 articles antique jewelry, brooches, rings, lockets, chains, etc. \$3.60. 12 assorted hatpins—\$3.00. 12 stickpins \$2.75. B. Lowe, Box 311, St. Louis 1, Mo.

Pink Muscovite on Albite Quartz—Something new for the cabinet. Specimens, 75c to \$4.50. Jay G. Ransom, 3852 Arboleda St., Pasadena 8, Calif.

Dr. Harry Behrman, one of the outstanding mineralogists of the world, was killed in a plane crash in Scotland while engaged in war work of a scientific nature. Dr. Behrman collaborated in preparing the new edition of Dana's System of Mineralogy.

Arizona's Rockhound record reports that despite curtailed field trips due to gas and tire rationing several new rock localities in Arizona have been brought to light. Some of these discoveries have been due to detailed study of material already collected.

Dr. Mars F. Baumgart gave an illustrated talk on his vacation trip through the Southwest at September 8 meeting of Long Beach mineralogical society. Long Beach mineral show was held October 15 from noon to 9 p. m. E. A. Just was in charge of the fluorescent display.

Richard Lehman, president of Los Angeles mineralogical society, urges members to volunteer for duty in order to help the nominating committee secure willing officers fitted for their work. This is a timely suggestion for all clubs.

Edwin V. Van Amringe, assistant professor of geology at Pasadena junior college, related some of his experiences as a field trip leader to Los Angeles mineralogical society at September 21 dinner meeting. Van Amringe used colored slides to bring field trip territory to the audience.

October field trip of Searles Lake gem and mineral society was to Inyokern neighborhood. First stop was Wadsworth's claims where the owner demonstrated his dry washer. The group then went to Harvey field at Inyokern. Later they visited Petty's place and climaxed the day with a potluck barbecue at Jack Warner's.

Sequoia mineral society met September 1 in Selma Park, Selma. Meeting date was stepped up in order that past president Dora Anderson, home on furlough, might attend. A newly installed outdoor grill was tried out and the new quarters of Selma lap class were open for inspection. Sequoia membership now exceeds that of 1943.

TRUE OR FALSE ANSWERS

Quiz on page 8

- 1—True.
- 2—False. Pecos is a tributary of the Rio Grande.
- 3—False. It is in Albuquerque.
- 4—False. Hernando de Alarcon in 1540 was first white man to explore mouth of Colorado river.
- 5—False. Deglet Noor is one of the date varieties grown in Coachella valley.
- 6—True.
- 7—False. 8—False.
- 9—True. Elevation 12,794. 10—True.
- 11—True. 12—True. 13—True.
- 14—False. Refers to some species of the Yucca.
- 15—False. Isleta is south of Albuquerque.
- 16—True. Atsidi Sani between 1850-1870 learned silversmithing from Mexicans. Navajo in turn taught the Zuni Indians.
- 17—False.
- 18—False. Mescalero, Jicarillo, Chiricahua and Western Apaches are scattered in New Mexico, Texas, Arizona, and Sonora and Chihuahua, Mexico.
- 19—False. The museum is in Flagstaff.
- 20—False. They are staurolite.

Under the direction of Ben Mabin, field trip chairman, members of Los Angeles lapidary society enjoyed an unusual field trip at Harvard Playground auditorium September 24. Several of the members brought their equipment and demonstrated the various steps in polishing. Lapidary art was demonstrated by H. G. Kirkpatrick, who had his sander and polishing wheel in operation; Mr. Rosenberg with his two grinding wheels; Chas. Maples who did faceting; Mrs. Peters who cut and polished a beautiful agate heart; Mrs. Bennett who showed how her lap could be used with changeable discs. Mr. McCornack showed his automatic drill press and drilled some holes during the afternoon.

Mineralogical Society of Arizona resumed regular meetings October 5 with a business meeting, the only session in the year devoted to business. At the second October meeting the society enjoyed a motion picture on building of the West, showing the part petroleum played in developing the West. The group now numbers 213.

Orange Belt mineralogical society sustains interest by holding exciting meetings. September 3 gathering in Pinetum at Sylvan Park, Redlands was virtually a field trip. Everyone brought his superfluous rocks and all had the privilege of selecting any specimens they could use. Winter sessions began October 5 in San Bernardino junior college.

Bob Sherman of Searles Lake has been giving instruction in astronomy to interested members.

Roy Rand, Brawley jeweler-rockhound, with his sons Gene and Earl collected moss agate and petrified wood during a month's trip through Montana and Oregon this summer. They hiked, traveled by bus and by boat. The boat, which they built to take them down the Yellowstone from Billings, was upset about 25 miles down the river. But losing a packsack and being temporarily marooned on a river island did not stop their collecting. Agate included many fine specimens. Petrified wood was dark but some is replaced with chalcedony. They visited Smith's Agate shop in Portland.

Ralph Merrill of Searles Lake talked on minerals of that region at August meeting of San Fernando valley mineral and gem society. The group has started a postwar building fund to house their specimens, fluorescent lamps, library and polishing equipment. The society has donated a motor and cutting and polishing machine, and polishing material to the boys of Birmingham hospital.

East Bay mineral society resumed meetings September 7 with a brief outline by Julian A. Smith of the coming program of simple identification and the uses of a hardness set and streak plate. R. Whalley showed his set of kodachrome slides of Mojave desert and Death Valley. Marjorie Welch supplied specimens for the display table. Sixth birthday of East Bay was celebrated by the society's first annual potluck dinner September 7. Following the dinner the group visited the mineral display at Bacon Hall, University of California.

Dr. Fleener of Joliet spoke on light metals at September 9 meeting of Marquette geologists association, Chicago.

The production of fluorite or fluorspar is expected to reach one-half million tons for 1944. This material is valuable as a flux in other mining operations, in ceramics, and as the source of hydrofluoric acid.

Cogitations . . .

Of a Rockhound

By LOUISE EATON

A nother characteristick of rockhouns—especially papa rockhouns—is that they jus nacherally xpecks rox to stay put where they deposits um after a field trip or however they acquired th specimens. Mama rockhoun dusts aroun um n pokes um over a bit now n then for a month r two, then puts um away. After a while she forgets what became of um. Then shure as shootin, papa rockhoun wants um right quick.

Earthquakes undoubtedly is serious calamities. But have yu ever heard about th ill wind what blew sum wun good? Earthquakes causes lotsa broken glass—whitch the onlucky owners is glad to have carted away. Rockhouns can cut glass to make shelves r tops for show cases to display their treasures.

If rockhouns ever gets to go on field trips again they'll lick rocks till they gets callouses on their tongues.

Midwest federation held a meeting at Milwaukee in October.

State mineral society of Texas held a meeting September 23 at the home of President and Mrs. A. E. Curry. The Currys have one of the finest private collections in the Southwest, housed in a 24x32 private museum constructed of colorful rocks and minerals.

Harry Ringwald, past president Los Angeles lapidary society, not only will have the thrill of seeing his lapidary outfit "perform" in a motion picture; his hobby earned \$150 for him in six days' rental of the outfit to R.K.O. studios.

Worthen Bradley, president Bradley mining company of San Francisco, was speaker at September 20 meeting of Northern California mineral society. He showed and commented on the company's motion picture on quicksilver mine operations in the western states. The society had raised more than \$20 at the mineral auction August 20.

W. Welch of East Bay mineral society suggests that there's no time like the present to weed out and label specimens. Field trip time could be devoted to the task of constructing cases and arranging personal displays. Illumine cases if possible and put fragile specimens under cover.

Precious stones division, United States National Museum, Washington, D. C., will examine free and report upon the character of supposed or newly discovered precious stones. All such specimens should be sent to them by registered mail with full name and address carefully printed for a reply. All such requests should also contain sufficient stamps for safe return.

George A. Carter, professor of mechanical engineering at University of Utah and special adviser to Salt Lake City in smoke abatement work, spoke at October 3 meeting of Mineralogical Society of Utah on subject of low temperature carbonization coal with special reference to the process adopted by Salt Lake City for its smoke abatement plan. Members exhibited prize specimens collected during the summer months.

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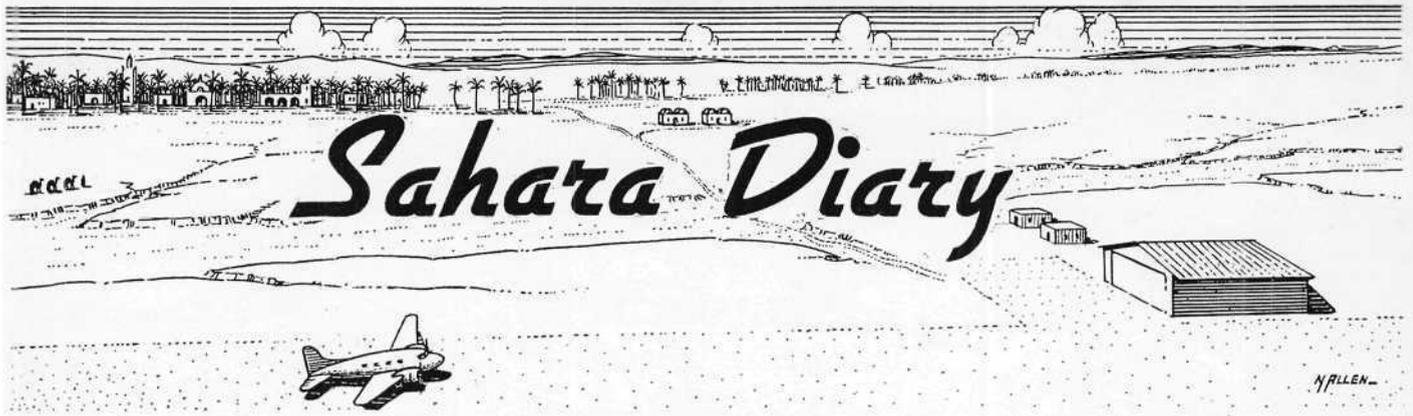
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By RANDALL HENDERSON

WITH THE ARMY AIR FORCE IN AFRICA—We had to part with Jello, the Senegalese soldier assigned by the local French commandant to guard our quarters on the outskirts of this Sahara oasis. The French major changed guards—at our request. Now we have Gabriel, another Senegalese, on duty at our adobe billet.

Jello was the victim of too much kindness. He was big and likeable, and we were rather lax with our discipline. Jello also grew lax. And now his days of ease are gone, and he is carrying mud on his head to build adobe walls at the French fort.

White folks often pay the penalty for the same kind of ignorance. We all are guilty to a more or less degree. Some of the unhappiest soldiers I have met in the army are youngsters from homes where there was too much pampering—the wrong kind of motherly love. They never were made to do hard disagreeable tasks. And now they are paying the penalty for a failure which is not entirely their own. The army is able to overcome the handicap in many instances. But it is a painful experience for the young soldier.

* * *

One afternoon late in July I went into the oasis to take pictures of the annual date harvest. Hundreds of nomad families had moved their black tents in from the desert. Some came long distances. They were camping among the trees until the date crop was gone.

Due to the difficulties of language, I never have been able to get a clear understanding as to the ownership of the thousands of palms which extend many miles along the wadi. The trees grow wild, and only occasionally are a few of them enclosed in rock or brush fences. The palms stand there undisturbed and without cultivation or care throughout the year. Then when the dates are ripe the Arabs move in and without dispute or theft, harvest the crop from the dozen or 20 or 100 trees to which the family claims title. French officials told me that the Arabs have their own laws fixing and maintaining title from one generation to another—and there is seldom any confusion as to the ownership of the trees. There is some "buying" and "selling" of trees just before the harvest—a few rich families have acquired large numbers of them. But the sale really is a lease, for the purchaser acquires title only for the harvest season.

The harvest method is simple. Early in the season when only part of the fruit on each stem has matured, a native boy or girl climbs the tree, shakes the stem, and the ripe fruit falls to the

ground where the women are waiting with wooden bowls to gather it from the sand. Later in the season when the last of the dates are ripe, the entire stem is cut and dropped to the ground. Much of the crop is eaten as it is harvested. The remainder is stuffed into goatskin bags for future use. When all the fruit has been picked, the family packs its tent and its few personal belongings on the backs of camels and the caravan disappears along one of the many camel trails which lead to the distant horizon.

* * *

During my stay on the Sahara I have acquired a high respect for the camel. He has a bad disposition—but gosh, what do you expect from a beast that does a hard day's work and is then turned loose to rustle its own meal in a land where there is nothing to eat but thorn bushes.

He is a faithful beast of burden. But I am not recommending that we substitute camels for the present mode of travel on the great American Desert. I am sure there would have been no Desert Magazine if Grand Canyon, Rainbow Bridge, Monument Valley and a thousand other charming places in the American Southwest were closed to all except those with the time and endurance to view them from the hump of a camel. I am in favor of camels—for the Sahara. But for the home desert I prefer a jalopy or a jeep—even if they do break down sometimes.

* * *

Just to clear up a question often asked about camels: The one-hump camel is the Dromedary. This is the beast of burden found in sandy arid regions of the semi-tropical zone—the Sahara, Egypt, Asia Minor, India and Arabia. The two-hump camel is the Bactrian. It is better adapted to the cool and rocky regions of central and northern Asia—China, Turkestan and other parts of Russia. I have seen thousands of camels come and go at this Sahara oasis—but never a Bactrian.

The caravans which come into the oasis daily carry many kinds of goods: rock salt from the mines in the northwestern Sahara, peanuts from Senegal, cotton yard goods from the traders on the sea coast, goat and sheep and camel hides, charcoal, tea, loaf sugar, wheat and millet, and wood gathered from the desert for fuel. One woman in the market place was selling grass—in tiny sheaves of what looked like dried Bermuda grass. I had seen the same thing in the market place at Algiers. One day when I was wandering through the village in the oasis I learned what it was for. They were using it as a substitute for

Arabs, ranging from 14 to 50 years, employed by the Americans to maintain the airfield.





Typical scene in the market place. Here Arab traders spread their meager stock of merchandise on the ground.



Hamed posed for this picture as he was building a fence of palm fronds to keep the goats out of his father's little patch of garden.



Goats are raised for wool and milk and meat—and are brought to the market place to be sold or traded.

soap to scour their cooking vessels. Later at one of the army camps I saw an Arab employ using it to scrub the cement floor in one of the dormitories. North Africa virtually has been without soap, except that brought in by Americans, since the war started. However, that was no great hardship to the Arabs—they have been using grass for cleaning purposes for countless generations.

* * *

In the black tent of one of the nomad families camped among the date palms, I saw a stone grinding mill. Later when I went back to take a picture of it I learned that the neighbors had it. Evidently it was passed around from family to family. So I went to the neighbor's tent. The mill was a crude affair, but a very definite improvement over the metate and mano of the Mexican and American Indian. It consisted of two disc-like stones about a foot in diameter, one on top of the other. The grain was poured into a hole in the center of the upper stone and ground between the horizontal surfaces. A wooden peg was fitted into the edge of the upper stone for a handle, and as a native boy turned it round and round his sister fed grain into the hopper. By the time the grain reached the outer edge of the grinding surfaces and dropped off onto the goatskin on which the mill was placed, it was fine enough for making bread.

* * *

Friends have sent me English translations of two volumes about the Sahara. From them I learned that the marine fossils mentioned in the May Diary are Stromatoporoids—you don't have to remember the word—one of the corals. They grew in swampy lakes during an age when there was more rainfall on the Sahara than today. There were rivers in this arid region during that period—rivers which never reached the sea. The waters were discharged in inland basins such as the Great Salt Lake basin in our American desert. It was in the brine of these stagnant lagoons that the fossilization took place.

Along the ramp at the airfield we rigged up a display box, and kept it full of these rock specimens. A notice on the box invited visitors to take a souvenir of their trip across the African desert "With the Compliments of the Natural History Society of" My chief recreation is an early morning trip each day over the coral beds gathering specimens to keep the box replenished.

* * *

In previous Diary notes I referred to the local Arabs as Bedouins. That was incorrect. The Bedouin lives in central Arabia—Saudi Arabia as it is known today—and, according to Edward J. Byng in *The World of the Arabs*, he is the only true Arab. The

natives of my oasis, and other parts of the Sahara, are mixed races with the blood of Berber, Sudanese, Turk, Negro and other African tribesmen mingled with that of the Asiatic Arab.

* * *

In this oasis there are many Senegalese, the blackest of all the African blacks. They are big stalwart fellows and many of them have been recruited by the French as colonial troops.

The musicians in the French garrison here are all Senegalese. Nearly every afternoon they go down the wadi to a little grove of palm trees for their daily rehearsal. They are divided in three groups—the buglers in one huddle, the drummers about 30 yards away, and the fife players in another circle.

One afternoon I went out to take their pictures. Each group was blowing or drumming its own tune—and the medley of music which came from that cluster of palms was something to remember. They staged a special concert while I was there—and after I had passed around cigarettes and chewing gum they gave me a salute with many grand flourishes of their instruments.

* * *

Since coming here I have learned why the dome roof is used so generally in the construction of buildings in the deserts of the East. There is no timber for roof trusses. Therefore the roofs are made of mud, on the arch principle. Huge structures are erected here without a stick of wood. Mud is insulation against summer sun—and if the domes are kept sealed with a fresh coat of whitewash at regular intervals they shed water without deterioration. It is a very useful idea.

* * *

Because of the rugged conditions under which we are living, the Air Command rotates the personnel at my station on the Sahara every three months. I found the assignment so interesting I asked for a second tour of duty—and the request was granted.

Early in August I had completed my double tour. And then orders came—a 21-day leave of absence in the United States and following that I was to report to Washington for reassignment.

For over three months the daytime temperatures on the Sahara had not dropped below 100 degrees, and I'll confess, the thoughts of cool ocean breezes and streams of water and broad green fields and shady lanes—the landscape of USA—were most intriguing. But more than these, I looked forward to a reunion with old friends whom I had not seen for nearly two years.

It was with mixed feelings of anticipation and regret that I

They speak no English but are good workers and quick to learn the American way of doing things.





1—Senegalese musicians from the French colonial garrison gather each afternoon for band practice. The drummers, the buglers and the fifiers practice in separate groups, unperturbed by the proximity of the others.

2—Arab workmen build a flagstone road to the army camp's new well in the wadi. These flagstones are of beautifully banded rock, known to rockhounds in the Southwest as "Wonder" or "Rainbow" rock.

3—No terrain is too rocky for the camel caravans. The pad-like feet of these animals cling to the rocks like rubber soles.

4—Each weekend six or eight of the American Air Corps boys took off across the desert on camels, headed for the swimming hole in the canyon 10 miles away. The country was too rough for a jeep.

said goodbye to the boys in my outfit, and to the Arabs who had played so important a part in my daily life for many months. I liked these primitive nomads of the desert. Few of them could read or write even their own language—but I was impressed with the genuineness of their friendship. During my last days in camp many of them brought little tokens of loyalty—fresh dates packed in baskets they had woven from the palm fronds, souvenirs of their metal and leather crafts.

My parting gifts to them were mostly clothes—items from my soldier's wardrobe. They valued these more highly than the candy and cookies which my post exchange ration would permit.

But in giving clothes to natives in the Sahara—or in any of the African colonies—there is one rule that must be observed. With each gift must go a signed note stating that the new owner acquired this article honestly. There is petty thievery in Africa the same as in America, and a dark-skinned native wearing a pair of khaki army trousers is likely to be under suspicion unless he can prove legitimate ownership.

* * *

I spent a few days in Casablanca before starting the overseas hop to American shores. The most fascinating part of the city was the market place where merchants of many nationalities sold colorful craftwork in leather, weaving, metals and pottery. I have a weakness for native crafts—the handiwork of untutored tribesmen. The floor of my home is carpeted with Navajo rugs. But most of my shopping in Casablanca was of the window variety—for the Air Command very properly has imposed a 65-pound limit on the luggage that may be carried by an air transport passenger.

* * *

There was a brief stop in New York and in Washington—and then a glorious flight across America's gorgeous pattern of green fields and wooded hills—and finally the moment when I walked through the rock garden and into the cheerful atmosphere of the office where Bess and Lucile and Evonne and other associates have been performing the thousand and one details of Desert Magazine publication during my absence. They've been doing a magnificent job, and what a thrill it was to greet them again.

* * *

My Diary notes this month were started on the Sahara, and are being finished at Long Beach, California, where I am on duty at the Air Transport Command station.

Just over the range to the east is the desert—the desert which is my home. I am eager to go back there and follow the old trails again and start mapping and writing about some of the trips which Desert Magazine readers will be taking when the emergency is past and there are tires and fuel and time to relax in Nature's great outdoors.

I've served in two wars, and if present plans work out it will not be many weeks before I am back on inactive status again—planning for the days of peace which lie ahead for you and me.



MODERN PIONEERS RETRACE HISTORIC TRAILS OF 49ers

Many books have been written about western pioneers and overland trails, but few if any writers have made their subject as vivid as has Irene D. Paden in *THE WAKE OF THE PRAIRIE SCHOONER*. The realism is genuine, for the author, her husband and son actually retraced the routes followed in the 1800's by the many bands of pioneers on their way to California and Oregon.

In preparation for this modern adventure on historic trails, the Paden family—Dr. and Mrs. Paden and Bill—worked eagerly for nine years unearthing hitherto unknown diaries, taking copious notes, reading every book related to their subject and supplementing this indoor study with summers of exploration out of doors. They wanted to, and did, relive the experiences of the men and women who broke the trails into the heart of the West. The overland routes, with their many cutoffs, were retraced mile by mile in the Paden's own journey. Excellent maps and accurate new data are the results of their careful, authentic identification and reconstruction of history. By thorough research and minute reconnoissances, the Padens added to and corrected much former information about the overland routes.

The book that unexpectedly evolved from this quest contains not a fictitious person nor imaginary incident nor description lightly drawn. It leaves with the reader a feeling of deep respect for and humility toward our pioneer predecessors, and he becomes a witness to the incredibly appalling tragedies that daily and relentlessly met them, barely 100 years ago. Death followed near as they plodded through bleak alkaline wastes and forded turbulent rivers and cautiously slipped through hostile Indian territory. The toll of victims from cholera and smallpox needlessly increased as caravans deserted the ill and dying beside the road, too gripped with fear and panic to answer the cries for pity. But there also were births, courtships, weddings, sermons and songs—all warmly reported by Mrs. Paden. This epic period of American history figuratively lives today through the absorbing pages of *WAKE OF THE PRAIRIE SCHOONER*.

Macmillan Company, 1943. Maps, sketches, biblio., index, 514 pp. \$3.00.

—ALITON MARSH

HOW A HOPI INDIAN MAIDEN GROWS UP

With a warm simple style, Catherine Cate Coblentz tells the story of a little brown-eyed Hopi girl of northern Arizona in her latest book, *BLUE AND SILVER NECKLACE*.

Although A-la's family clung to the ways of Yesterday Americans, still ancient tradition was at times broken for convenience. As when she was permitted the supreme pleasure of tending a little flock of sheep each day, in the shallow canyons of smoky rock and across the gold and lavender sands of the Painted Desert.

During cold winter days, A-la remained inside the clean tiny room that was her home in the pueblo, where her wise and understanding mother taught her the ancient lore and crafts of a gentle people. There she learned how to grind corn and make wafer-thin *piki*. She wove beautiful plaques, dyed sticks and twigs, and carefully shaped apricot-colored pottery, painting on it her own designs.

Not all of A-la's days were so peacefully spent, for there were many adventures on the reservation—like the time she saved the Indian agent's baby from a rattlesnake, or fell from a high cliff and had to spend the night in a Navajo's shelter with a sprained ankle, or saved a national monument from destruction by two dishonest white men.

As A-la and her family slowly become Today Americans, the story comes to a happy end when they move into a new white-man house near the trading post and A-la finds her place as a busy, intelligent Hopi maiden.

Little, Brown and Company, Boston, 1941. Six full-page and many other illustrations by Edwin Earle. 242 pp. \$2.00.

—ALITON MARSH

NYE WRITES TWO MORE YARNS FOR WESTERN FANS

Nelson C. Nye, cowpunching author of Westerns which are noted for their authenticity of background and characterization, recently has written two new yarns about men and cattle, entitled *WILD HORSE SHORTY*, and *CARTRIDGE-CASE LAW*. Mr. Nye's understanding of the West combined with his knack of story-telling and homely humor make these two stories which should appeal to every horse lover and Western fan. Macmillan Co. Each, \$1.75.

—A.M.

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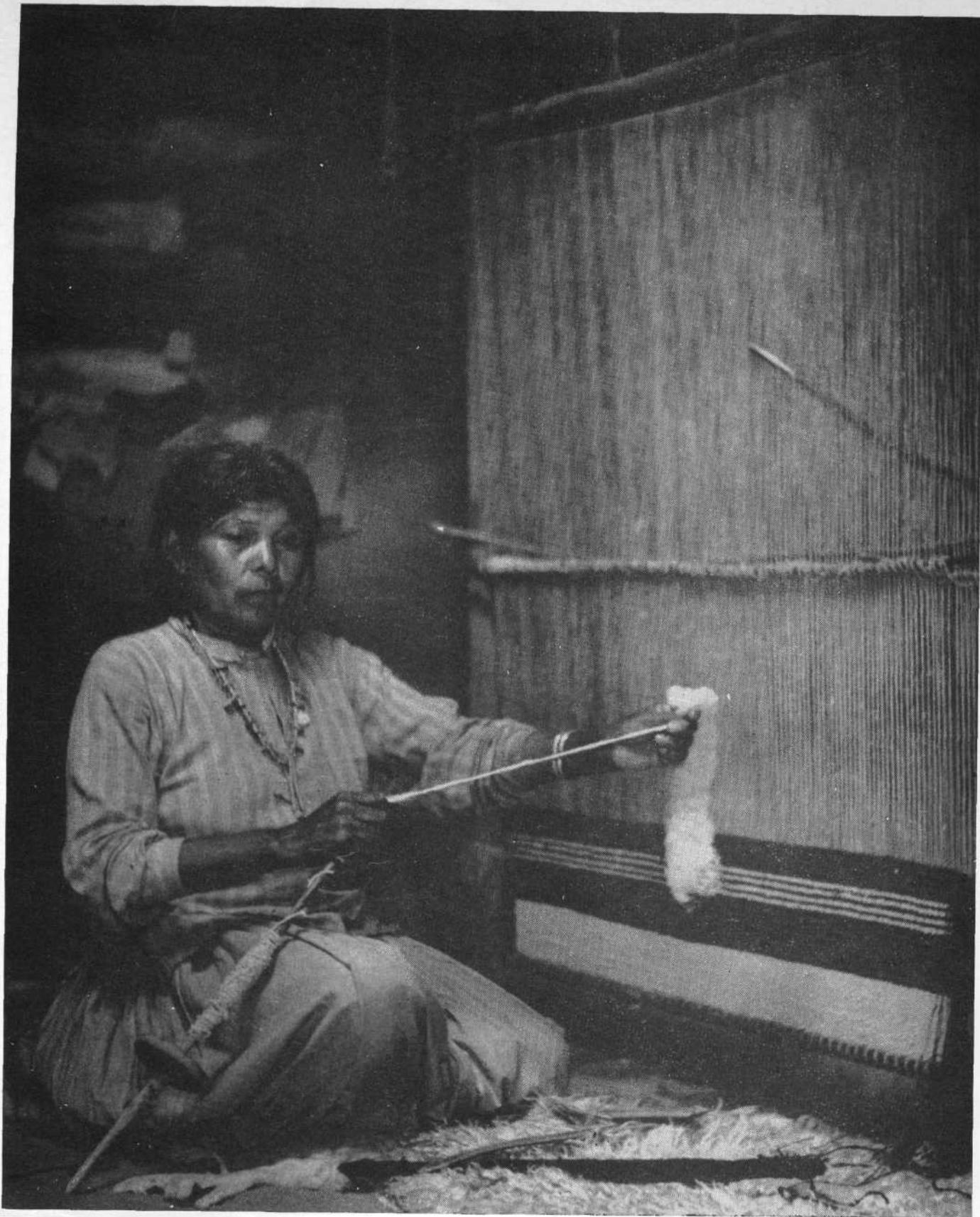
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Here a Navajo woman is spinning wool which she will weave into a rug. Photo taken inside her hogan on Navajo reservation, Arizona, by Arthur C. Miller, Hollywood, California.



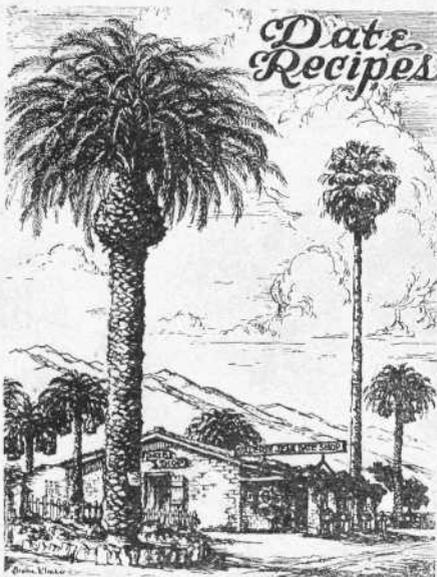
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