S A G U A R O

Bajada Loop Drive

Saguaro National Monument is comprised of two sections — the Rincon Mountain section commonly referred to as "Saguaro East" and the Tucson Mountain section referred to as "Saguaro West."

The Bajada Loop Drive is in Saguaro West.

The Desert

"Hot stinkin' desert" is what some people might call it. To others, it's home.

At first glance, everything in this desert seems to possess spines, thorns, hooks, or claws. But among biologists this region, known as the Sonoran Desert, is one of the most diverse animal and plant communities on the continent.

One of its most outstanding features is that it is home to the saguaro (Sa-WAR-O) cactus. Here — and only here — this symbol of the American West marches up rocky hillsides like so many stiff soldiers, its arms lending it a distinctly human quality. In fact, the range of the saguaro, if overlain on a map, would show fairly accurately the boundaries of the Sonoran Desert.

The saguaro and the other elements of the Sonoran Desert survive because, as one favorite professor says, "they are all Spanish-speaking." From the Gila monster to the mesquite tree, their origins are tropical and subtropical. This upland portion of the Sonoran Desert is its northeast edge, and many species found here are at the northern limits of their ranges. In fact, nearly two-thirds of the Sonoran Desert is part of Mexico.

Its climate, the great determinant of life and landforms, also comes from the south. The two rainy seasons, one in winter and one in summer, originate from weather patterns in the Pacific and the Gulf of California (winter) and the Gulf of Mexico (summer). True, it can be hot — up to 120 degrees F. in July or August. Teeth-gritting, shoulder-slumping heat. And it is dry. Average rainfall for a year may be ten inches. To know what else the desert has to offer, one must spend time with it discovering, learning its eccentricities and soaking in its silence.

The Bajada Loop Drive is a six-mile, graded, unpaved road which will take you through one of the finest stands of saguaro cactus in the world. The drive begins 1½ miles from the Red Hills Information Center. Feel free to stop and explore this desert.

The Saguaro

To the Papago Indians, whose homeland has always been the Sonoran Desert, the saguaro is an Indian. To harm it is to harm one's brother or sister.

The Papago calendar revolves around the saguaro. June, New Year's, is the month of the seed blackening. This is where it begins. Thousands of tiny seeds inside the rosy-colored, ripe fruit are ready to be scattered. As the fruits fall from the top of a fifty-foot saguaro, doves, ants, . . . ground squirrels move in for the harvest. The Papago, too, formerly gathered great quantities of the fruit by knocking it down from the saguaro with poles. They made saguaro wine for their rain ceremonies and ate the seeds like candy.

Of the *billions* of seeds produced by saguaros each year, only a small percentage will become seedlings. Special conditions of moisture and temperature are necessary for germination. Only after shallowly buried seeds have received a good drenching from the summer monsoons in July and August will they emerge as seedlings.

Life still is not easy for the young saguaro. The average life expectancy of a newly sprouted seedling is under six weeks. Less than a quarter-inch high, it is a succulent morsel, again for insects and rodents. Should this vulnerable new plant survive all the obstacles of predation, freezing, and drought in some protected niche among the rocks, it has a chance to grow to adulthood.

In ten or fifteen years a juvenile plant may be recognizable as a saguaro. It will have weathered adolesence with the help of a "nurse" plant, probably a bursage shrub or palo verde tree that provided shelter from the elements. By this time it might be three feet tall. Its growth spurts coincide with the summer rains, as it builds water storage tissue and develops a wide-spreading root system.

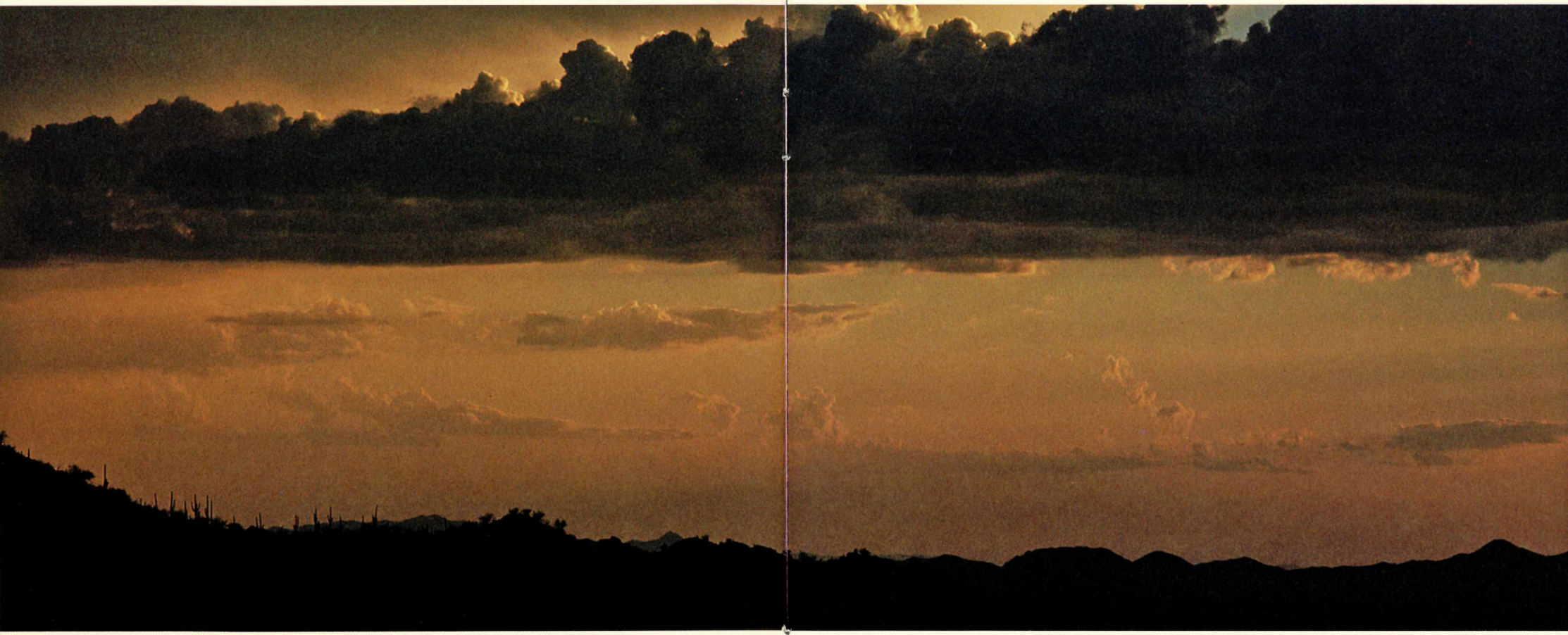
At about age thirty, approximately six feet tall, a saguaro's reproductive life begins. The already painfully slow growth declines even more as the cactus devotes more energy to producing buds, flowers, and fruit. Creamy white blossoms appear at the tips of the arms in late May and early June. At night, when the flowers are open, a long-nosed bat pokes its head in to dine on the nectar and protein-rich pollen. Flocks of bats have been observed to feed for about twenty minutes, then rest, then resume feeding, often taking turns among themselves until the middle of the night.

When mature, a saguaro may reach thirty or forty feet in height. A giant washed down in a rain in the Santa Catalina Mountains north of Tucson weighed in at nine tons, an 18,000-pound obelisk carried down the stream like an oversize toothpick. To support this mass is a root system that is not deep (rarely more than three feet down) but that may extend up to 100 feet out from the cactus. The anchorage these lateral roots supply is essential to a saguaro that would withstand powerful winds and erosion at its base. The strong woody skeleton that runs the length of the saguaro's stem also provides support. These gray ribs can be seen splayed out like a fountain in the surrounding desert.

(Just past the Hugh Norris Trailhead, which leads to Wasson Peak, the Bajada Loop Drive becomes one-way).

The Landscape

(Valley View Trail)



A walk on the three-quarter-mile Valley View Trail ends with a superb look at part of a huge geologic region known as the Basin and Range Province. The Tucson Mountains are good examples of the ranges of this province. They jut up rudely from the valley floor "like after-thoughts modelled in the shop long after the general plans were finished..." said naturalist William Hornaday.

Some 10 to 20 million years ago the earth's crust was stretched, like a giant piece of warm taffy; the breaks and tears that resulted became fault-block mountains. Some were displaced 5,900 to 9,900 feet, and most trended northwest. The valleys, like Avra Valley that stretches before you, are thought to have been formed more by a collapse of the basins than an uplift of the ranges, creating large bowls rimmed with mountains.

The basins filled with river-borne sediments. The fronts of the ranges retreated and the mountains literally began to fall down around themselves. Cone-shaped aprons of rock, sand, and silt carried by streams down the steep slopes, spread out on the floor of the desert basins. These alluvial fans merge to form bajadas (ba-HAH-dahs), which slope gently into the valley like the one below this ridge.

The zigzag-edged, nearly continuous mountains sweeping across the horizon include Picacho Peak and the Silverbell Mountains to the north and the Quinlan Mountains, with the white domes of Kitt Peak National Observatory atop them, and the incisor-shaped Baboquivari, sacred mountain of the Papago, to the south.

The rocks that compose the Tucson Mountains are frosted with a layer of fine-grained rock called rhyolite tuff, which originated as ash flow from a violent volcanic eruption. Valuable minerals often are found where super-hot molten material contacts sedimentary rocks (limestones, sandstones, and shales) underground. This geologic phenomenon, not unnoticed by early prospectors, brought a barrage of miners to these mountains in the 1880s, searching for gold, silver, and later, copper. The Gould Mine, Mile-Wide, Old Yuma, and Silver Lily, to name a few, were started during this heyday of mining in southern Arizona. They never reached the status of their well-known neighbors, Bisbee and Tombstone, possibly because as one old-timer recalls, "it didn't take long before the hard water rotted the drill cylinders."

The Animals

Plants and rocks are stationary, thus are relatively easy to observe. Animals, on the other hand, are mobile. They are seen usually by chance and in the desert, to see them at all, we must adjust our hours to theirs.

Most animals in this desert scrub community move about in early morning, late evening, or at night. About the only ones likely to be seen in midday are lizards or jackrabbits, scurrying or hopping from shrub to shrub in search of shade. Desert animals are no more able to withstand elevated body temperatures than are their counterparts in more temperate zones. They defend themselves from the heat and aridity of their environment by behavioral, physiological, or morphological means.

Kangaroo rats are the archetypal desert animal. They spurn drinking water, instead metabolizing it from seeds they eat. Extra-efficient kidneys concentrate their urine, they lack sweat glands, and large nasal cavities absorb moisture from the air before they exhale it.

Snakes, famed desert dwellers, may be seen slithering across the road on their way to a cool underground burrow. Gopher and coachwhip snakes are common. Not to be confused with the gopher snake, which threatens with a false rattle, is the western diamondback, the largest rattlesnake in the western United States. It is one of four species of rattlesnakes found in the monument.

Birds, or at least their sounds, will probably be the most obvious wildlife on the bajada, along washes, and on the flats. A family of Gambel's quail may strut by hurriedly, or you may hear the sharp, two-note whistle of the curve-billed thrasher among the cholla or mesquite. The haunting *coo-hoo* of the Inca dove is another familiar sound of the desert. Gila woodpeckers raise their broods in cavities, called boots or shoes, in a saguaro; once abandoned, the holes are occupied by elf owls.

The javelina, or collared peccary, a piglike animal, has migrated into southwest deserts from South America. While it needs water, it has a specialized digestive system that allows it to survive solely on prickly pear cactus pads during drought. Desert washes, offering plenty of cover, are their preferred haunts. A coyote might trot by with head cocked sideways, giving a wary stare. Gray fox and mule deer are also common mammals that may be seen in the monument.

(At the intersection with Golden Gate Road, turn left to continue on the Bajada Loop Drive.)

The People

(Signal Hill Picnic Area)

At least eight thousand years ago humans lived in these mountains and valleys. Remnants of trails, some shrines and sleeping circles, weathered rooms of stream cobbles, and tools chipped from stone are about all we have to reconstruct the dim puzzle of their existence. Petroglyphs, like those pecked into the rock near the Signal Hill Picnic Area, are a trace of artistic expression or some form of communication. Archeologists are not sure.

From 300 B.C. on, the story becomes a bit clearer. Archeologists have studied the people who built extensive irrigation systems in the desert. They call them the Hohokam. Their artifacts — etched shells, copper mirrors, and large ballcourts — intrigue all who learn of them. They obtained corn and then beans from Mexico. Tending their fields, they also knew how to fill their stomachs with food from the hundreds of edible plants in the Sonoran Desert.

They are probably the ancestors of the Papago, who in 1898 when ethnologist W.J. McGee visited them, were still migrating from their more-or-less permanent winter rancherías to summer fields constructed at the mouths of arroyos. Spanish missionaries who had come two centuries earlier found the Papago well-adapted to their desert home.

It was in the late nineteenth century that the Southern Pacific Railroad came to the dusty frontier town of Tucson. Miners, homesteaders, and a steady influx of people meant long-lasting changes for the desert. In 1909 naturalist Carl Lumholtz described Tucson as a "cosmopolitan, well-laid-out, and clean city of twenty-four thousand inhabitants."

The Depression years were crucial ones for the land that would become Saguaro National Monument, Tucson Mountain Unit. Local citizens began taking steps to preserve some of the land for wildlife and in 1929 acreage was withdrawn from homesteading and mining to become the Tucson Mountain Park. President Franklin Roosevelt's "Tree Army," the Civilian Conservation Corps, constructed solid masonry buildings in the 1930s that can still be seen throughout the park.

In 1959 attempts to open part of the park to exploration by copper mining companies met strong opposition from citizens, who by then were living in a large city. The intrinsic value of untouched land had become too great. Pressure to reopen the area to mineral entry spurred the U.S. Congress to designate 15,360 acres as the Tucson Mountain Unit of the existing Saguaro National Monument. President John F. Kennedy signed the proclamation on November 15, 1961. Later, the unit's authorized boundaries were expanded to 21,000 acres.

The Washes

Desert washes are a good place not to be when it is raining. These normally dry streambeds turn into roaring brown froths of water during a heavy thunderstorm. They are the avenues along which the gravels and boulders are carried to the base of the steep mountains. They are the bajada-builders. William Hornaday, exploring in the Sonoran Desert in the early 1900s, found the arroyo (Spanish for wash) "not merely a plain and simple product of nature. It is an institution."

Because washes at times play host to water, their vegetation is noticeably different from that on the higher terraces. Mesquite, blue palo verde (with larger leaves than its foothill counterpart), desert willows, canyon ragweed, and desert lavender all form a green band along the edges of a wash. More plants and more water mean more wildlife. Animals, apparently by their sense of smell, seem able to detect water just below the surface that has soaked into the porous, sandy soil of the streambed.

A startling fact about the Sonoran Desert is that it is regarded as having one of the greatest amphibian populations in the world. How can that be? Amphibians, by evolutionary law, must be near water to reproduce and must keep their skin surface moist. In the desert, amphibians have adapted by compressing their life cycles to take advantage of water when it is available. Witness the spadefoot toad. For ten months it lives underground in the sand. Then, taking their cue from a heavy summer downpour, the males emerge and begin bellowing for a mate. Egg laying and hatching take place practically overnight, and in ten days tadpoles have legs with which to hop on land, just before the temporary pools have evaporated. Their entire life cycle is a timelapse photograph.

Just as the washes sustain the spadefoot, so can they sustain us. As a temporary pool nurtures life in the desert, they can nurture a peacefulness and quietness in us that is extremely rare in these times. Linger at dusk beside a wash on a spring night and watch as the sky darkens and the evening star brightens. The wash carries a breeze in which the butter-colored blossoms of a palo verde swim.

Biologists believe that the Sonoran Desert is young. Most lifeforms found here now are a mere 4,000 to 8,000 years old, having set up shop only since the last Ice Age, as the climate warmed and the somewhat predictable two-season rainfall pattern became the norm. The saguaro and the spadefood — through an infinite series of trial and error — have found a home, but it is a home that is continually changing. From day to night, winter to spring, century to century, the competition and cooperation persist; the designs that work stay on to become the essence of the Sonoran Desert.

(To return to the information center, turn left onto Sandario Road. Continue 0.2 mile to a second junction, Kinney Road. Turn left there. The information center is two miles ahead.)

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