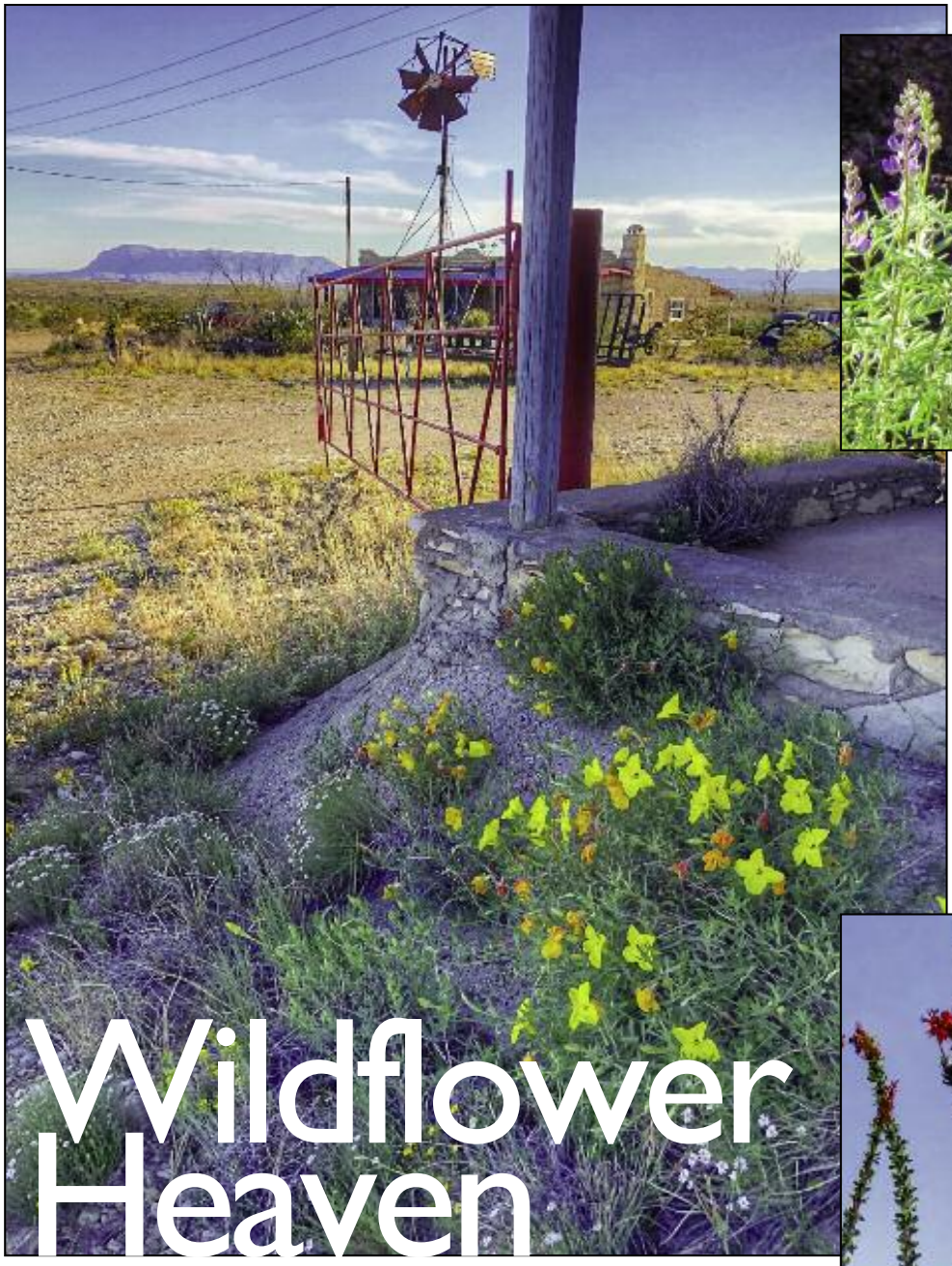
CENIZO

JOURNAL THIRD QUARTER 2019

FREE

"When you realize how perfect everything is, you will tilt back your head and laugh at the sky." ~ Buddha



Wildflower Heaven

Above: Hartweg's Sun drops. Top right: Blue Bonnets. Middle right: Yellow Peril. Bottom right: Ocotillo.

by Voni Glaves

People ask, "When is the best time to see wildflowers in the Big Bend of Texas?" The answer may surprise you. I've seen Bluebonnets as early as December 8. There isn't a month I haven't see some type of wildflower somewhere. It's February as I write this and there are Big Bend Bluebonnets everywhere, including in my cactus garden north of Study Butte. I've seen Pink Mallow, Bicolored Mustard, Mexican Poppy, Verbena and those UYF (ubiquitous yellow flowers) in the middle of "winter." We've had Yuccas in bloom since November, and even the occasional brilliant red bloom of the Ocotillo! And a new-to-me wildflower is taking over my backyard, nicknamed the Yellow Peril.

When we first moved to the Big Bend 13 years ago, I asked my new friend

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contact the Editor-in-chief or the Associate Editor. For all other questions
contact either the Publisher at publisher@cenizojournal.com or the Editor-in-chief.

Cenizo Notes

by Carolyn Brown Zniewski, Publisher and Danielle Gallo, Editor-in-Chief

High summer is here. Gardens are over-flowing with all sorts of fresh produce; zucchini, peppers, tomatoes, broccoli and green onions, to name a few. Corn and squash will be ready soon and then the fruit and nut trees bring us the makings for pies and cakes and finally big fat pumpkins for Halloween. The rains have been so abundant this year that the wild desert crops are ripe for the picking as well. The mesquites are heavy with beans for flour, the cactus tunas are so fat and luscious they are just asking to go into a picnic fruit salad, and if you really want a challenge, there are hundredss of blooming agave ready to be made into our premier West Texas drink.

Speaking of Tequila, summer is the perfect time of year to enjoy a daily siesta. In fact, the heat of the sun demands it. That's your opportunity to read an article or two in this issue of the *Cenizo* and decide what wonderful adventure you will have this next weekend: exploring the dinosaurs at the park, trekking around the galleries in Marfa or Terlingua or Holland Avenue, checking out Murphy Street or the Main Street in Fort Davis for shopping and lunch, or heading to Fort Stockton and the Historical Society there. As for an evening out there is sure to be music somewhere nearby. Good music and stories, good beer, home cooking and the great Mother Nature. That's what we've got out here.

I think I'm becoming a proponent of a twelve-month school year. Hear me out, kids: you'd still get plenty of vacation time, but rather than being on an antiquated agrarian schedule where you get three months off to work the fields and harvest the crops that for the most part no longer exist, you'd have maybe three weeks each quarter. My kids are going a little nutty in the absence of their friends and the benign structure of the school day. They are alternately lazy and increasingly hyperactive. They buzz like bees all around, inside and outside, and then they lie exhausted in sunbeams like the cat, unmoving, unable to lift their limp arms to, for example, wash a dish. I can almost hear their brains atrophying, deflating like a balloon with a tiny puncture, leaking out everything they learned last year with a listless little squeaking noise.

This has been a productive warm season so far: we have baby goats, baby kittens, baby chickens. The weather has produced prodigious storms of epic proportion and even a twister or two over here in Marathon. The fruit trees would have produced a bumper crop if the hail hadn't bereaved us—I've learned not to count peaches before they ripen, so I'm less devasted than in previous years. And this issue of the *Cenizo* has produced some magnificent history, naturalism, poetry and photography for our readers to enjoy. We hope you do!

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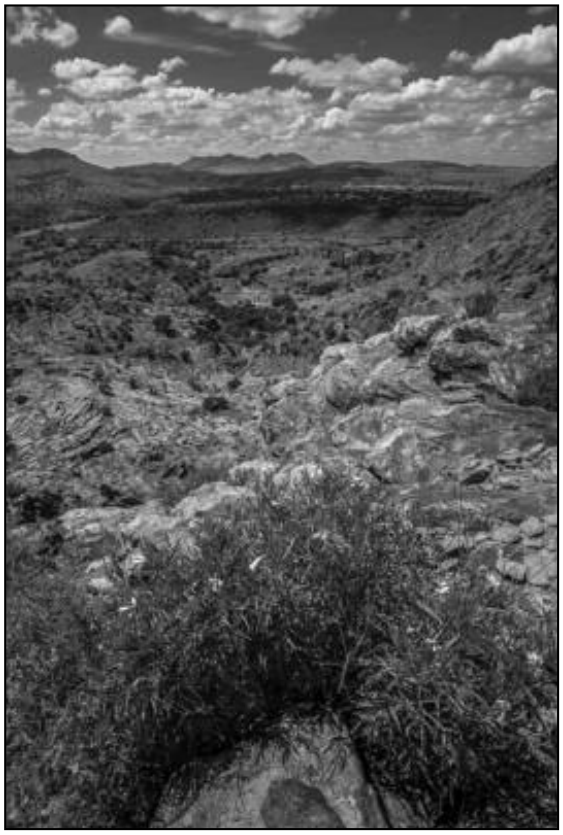
CENIZO JOURNAL STAFF

CDRI Nature Center with Mitre Peak in the Background

You're Known by the Company You Keep

Story by Rick Herrman.
Photographs by Andy Morgan.



The quarry view

Faxon yucca (Yucca faxoniana) in the Botanical Garden

Chihuahuan Desert Research Institute's (CDRI) Nature Center and Botanical Gardens is frequently referred to as a "jewel of the Big Bend region." These may be high-minded words, but a sentiment we are comfortable accepting with appropriate modesty, and willing to defer to the 15,000+ annual visitors to ultimately decide.

Cenizo, for over a decade, has faithfully, with flare and imagination, con-

veyed the stories of the Trans-Pecos region as witnessed and experienced by the region's personalities and institutions. A review of the published authors of articles from the *Cenizo* website reads like a "Who's Who" of the Big Bend. Whether the subject is art, culture, history, or nature, a common theme of respect, appreciation, and a deep connection to this beautiful land abounds. For CDRI to be included in this crowd, for us, is indeed an honor and "company" with whom we're pleased to be associated.

For those of you who may know some facts, or for those who know nothing of CDRI, this article is our attempt to share a bit of the CDRI story, both past and present.

We hope that you will visit and join us in our belief that (void of objectivity) CDRI may well be in the running for "the best rural nature center in Texas."

Feature-Rich With Something for Everyone

It all began with CDRI's legal formation in December 1973, making this technically its 46th year. Like many visionary concepts, the early years were thoughtfully planned and patiently developed. The four primary founders were academics, each connected to Sul Ross State University.

Then, as now, input and guidance were sought from the community and from like-minded naturalists and conservationists via a Board plus a body known as scientific advisors. Each founder pursued his particular specific aspect of the scientific and natural world, all of which are on full and unique display in the Big Bend region of the northern Chihuahuan Desert. Core to their vision was a gathering of fellow researchers to present their published research, focused on topics connected to the Chihuahuan Desert. Six such symposia occurred from 1978 to 2004.

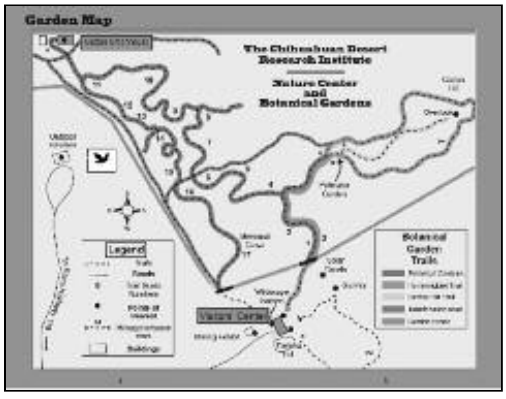
Today's 507-acre Nature Center exists due to the decision, made early on, to secure a "site" which occurred in two related steps: Step 1 occurring in 1978 (the initial 240 acres) followed by Step 2 in 1984 (the remaining 267 acres via exercising CDRI's purchase option). Details of this "Texas Two Step" are captured in a display in the lobby of the Powell Visitor Center, including the extensive list of donors and supporters who helped make the land site purchase possible.

CDRI's first public structure, the outdoor Pavilion, located on a particularly beautiful section of the land site, was built around 1988. It remains in use today for hosting outdoor events, for a very reasonable set-up rental fee.

Today, we are grateful to be able to list all of the elements one can experience at the Nature Center, including:

- Over five miles of safe, well-marked and well-maintained trails: Modesta Canyon with its year-round spring-fed pond; Clayton's Overlook with its inspired 10-panel geologic exhibit, and a variety of more gentle trails meandering throughout the Botanical Garden offering fantastic vistas. (Companion trail brochures complement each of the trail hikes.);
- The 18-acre, fully-fenced Botanical Garden, detailed subsequently herein;
- The Heritage Mining Exhibit, a replica of an 1880s silver mine known as the "Happy Jack Mine." Included is a very friendly model donkey known as Dinamito, and a walking path with a wide selection of regional minerals on display;
- A bird blind with a viewing station and a 30-foot solar-powered waterfall stream which, combined with our year-round feeding program, predictably attracts resident and seasonal migrating grassland birds;
- A 1,400 sq. ft. Cactus & Succulent Greenhouse which displays an accessioned collection of nearly 165 species, subspecies and varieties of Chihuahuan Desert cacti and succulents;
- An approximate 80-linear foot display of regional geology with the oldest specimen dating to over 1 billion years, AND which is paired with a companion exhibit, "The Long Story," inside the Powell Visitor Center, providing a more complete description of the 4.6-billion-year time frame of the planet we inhabit;
- Two large solar panel systems that produce a combined 12+ kW of power, nearly offsetting all of the power requirements of the Nature Center; and
- The Powell Visitor Center itself, which includes restrooms, a full wrap-around porch with rockers, and a thoughtfully stocked gift shop including nature-themed merchandise, CDRI logo items, walking sticks, and a wide selection of books regarding the region (great for taking home and/or giving as gifts).

The Pollinator Garden



It is human nature, when introduced to thoughtfully designed and passionately cared-for botanical gardens or green spaces in general, to almost effortlessly slip into a semi-trance while enjoying the beauty and tranquility of the place, including the sights, smells, and sounds of the experience.

A visit to CDRI's Botanical Gardens is just such a place.

Many of us enjoy delving a bit into the history of these serene natural places, including learning about the sources of inspiration, vision and energy which helped create, and continue to give rise to, the physical space in the present.

CDRI's 18-acre Botanical and Pollinator Gardens, as well as the 1,400 sq. ft. Cactus and Succulent Greenhouse, began taking conceptual shape in 1983. Then known as the

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Chihuahuan Desert Arboretum, a living collection of over 200 species of trees and shrubs was envisioned.

Over the course of three decades, the CDRI Nature Center has thoughtfully planted and maintained native plants in a variety of designated areas, including a Wildscape Garden surrounding the Powell Visitor Center; the Botanical and Pollinator Gardens; the Memorial Grove of Chinkapin oaks (*Quercus muehlenbergii*) and wild roses; and the Cactus & Succulent Greenhouse, home to one of the world's largest collections of Chihuahuan Desert cacti and succulents. Our newest section is a Native Grasses Exhibit, found between numbers 16 and 17 on the garden map on page 9.

On display in the Greenhouse, a visitor will find nearly 165 species, subspecies and varieties of cacti and succulents, including plants from both the higher elevations of the Chihuahuan Desert (which reaches 10,000 feet or more in Mexico, where about 2/3rds of the Chihuahuan Desert is located) which are heat sensitive plants, as well as plants from the lower elevations, which are exposed to the opposite thermal risks, that of cold, much less freezing desert nights. CDRI uses heaters and ventilation and fans to manage the Greenhouse temperatures year round, contributing meaningfully to the diversity and beauty of the specimens on display.

The site map from our Botanical Gardens guide brochure provides a sense of the 18-acre portion of the total 507 acre site, calling attention to the 10 foot tall "game fence" defining the perimeter, without which the preservation of the living collection would be largely impossible. Our site is populated with numerous herbivores (mule deer, javelina, aoudad and an occasional elk) who would view an unprotected garden as a hungry human would view a fully stocked, but unlocked Luby's Cafeteria.

It's worth noting the rather creative Botanical Garden site plan. Beyond a somewhat common and certainly logical grouping of related plant families, the natural elevation change of the Garden (highest to the NE, declining to the SW) is also utilized in regard to the arrangement of plant exhibits, from plant clusters that normally exist at higher elevations, to the plant clusters near the Garden's main gate of plants that are more compatible with heat and more arid desert conditions. An additional noteworthy point is the "pesticide free" aspect of the Gardens. For rodent control in the Cactus & Succulent Greenhouse we use physical traps (including live traps) and have had some success with balsam oil packets, which emit an odor that helps repel the smaller mammals.

Dinomito at the Mining Heritage Exhibit

The Botanical Garden, which includes over 450 labelled specimens, contains representative plants from the following families: Ocotillo; Agave; Beech (oaks, hackberry buckthorn and Tracy hawthorn trees); Acanthus; Catalpa; Rose; Sumac; Legume; Cypress and Pine; Olive; Heath (including Texas madrone); Mint; Verbena; and Figwort. We are fortunate that our entire 507 acre site is generously covered in predominantly native grasses, mostly all of which are in the genus *Bouteloua*.

Hiking Clayton's Overlook

The grasses exhibit (described in the next paragraph) is designed to add a welcomed addition of catalogued and labelled specimens.

A nearly perfect setting such as the Botanical Gardens is often best left alone, unless any changes naturally integrate and serve to enhance the already wonderful visitor experience. Over the past two years, CDRI's gardener (Leslie Spicer, who authors Garden Notes in CDRI's monthly newsletter, the *Desert NewsFlash*) has worked with an "advisor" to complete the native grasses exhibit, since the sky island in which we're located is noteworthy for its grasslands. CDRI's exhibit advisor is none other than Dr. A. Michael Powell, a CDRI co-founder. Dr. Powell's (or Mike as he insists on being called) humility would never allow him to make the claim, but in his case, he literally "wrote the book" on the subject: *Grasses of the Trans-Pecos and Adjacent Areas*, published in 2000 by Iron Mountain Press.

This book is one of many plant-related treasures offered for sale in the CDRI Gift Shop.

CDRI's emphasis on plants is not to the exclusion of the variety of site features we listed earlier, which are focused on geology, biology, conservation and anthropology. It is safe to say that our Nature Center and Botanical Gardens are designed and operated in harmony with, and in furtherance of, our mission to "promote awareness, appreciation and concern for nature generally, and the Chihuahuan Desert region specifically, through the visitor experience, education, and the support of research."

We hope you'll come experience the CDRI Nature Center soon. Better yet, bring a group of 10 or more, and prearrange a Garden Tour or guided trail hike by one or more of our knowledgeable, friendly volunteers. CDRI's dedicated Team is committed to making your visit a memorable and fun experience. Come soon and often!

Adios and best regards from "the best rural Nature Center in Texas."

You can find more information at www.cdri.org. We're also on Facebook and Instagram.

Big Bend Eats

By Carolyn Brown Zniewski

VEGGIES ON YOUR MORNING TOAST

Eat your vegetables. We have all heard that more than once. My mom put chopped spinach in orange Jello to get us kids to eat spinach. You can sauce them with hollandaise, add them to the chili recipe, candy them at the holidays, cream them or turn them into quiche. Here are some recipes that will have you eating vegetables on your breakfast toast.

Jams, jellies and preserves made from vegetables were invented by clever housewives with a big garden and a small budget. With grocery prices going up faster than our paychecks and vegetable gardens flourishing all over Big Bend, these recipes should be fun to try. If you planted zucchini you may have a hard time figuring out what to do with it all. I have the answer with this recipe for marmalade. Too many carrots and not enough bunnies? Try carrot marmalade. It can be a great project for a Grandma-style afternoon.

All these recipes are small batches. You can fill a few jars, screw the lids on and store them in your refrigerator for months without using the water bath method, or if you are making a big batch you can find instructions for a water bath at freshpreserving.com under canning 101, Getting Started. Oh, one more thing, be sure to get a canning funnel if you don't already have one. Available at the hardware store.

CARROT JAM

1 1/2 lb. carrots
2 1/3 cups sugar
2 lemons (zest of 1 lemon, juice of 2 lemons)
½ teaspoon cardamom

Peel and grate 1/4 of the carrots. Set aside. Peel the remaining carrots, chop them and simmer until tender. Puree. Using a strainer, press out excess water. Put the puree and the grated carrots into a large saucepan. Add the granulated sugar. Bring to a simmer, stirring constantly, five minutes. Skim foam if necessary. Stir in the lemon zest, juice and cardamom. Pour into warm, sterilized jars. screw on the lids. Refrigerate.

ZUCCHINI LEMON MARMALADE

6 cups of coarsely grated zucchini (include peel)
3 lemons sliced paper-thin, organic if possible
6 cups sugar
½ teaspoon freshly grated ginger
4 cups water

Coarsely grate 6 cups of squash into a large non-reactive saucepan. Add lemons and water. Let stand overnight. Bring the mixture to a hard boil, 10 minutes. Add sugar and ginger.

Bring back up to a boil. Reduce the volume by about ½ and it will start to thicken. Stir frequently. When the texture of the liquid becomes quite thick you are close. Dip a metal spoon in the boiling mixture and let the marmalade run off the back of the spoon. At first it will just drip. As the mixture thickens, you can almost see it "make" into marmalade. Dipping the spoon back into the mix, the product should not drip but "sheet" off the back of the spoon. Boil 1 more minute. Skim foam. Pour into sterile jars and screw on lids.

TOMATO PRESERVES

6 ripe or green tomatoes (3 ½ cups)
3 cups sugar
½ cup maple syrup
1/4 tsp salt
2 boxes Sure Jell pectin

Chop and crush tomatoes. Mix tomatoes, salt and Sure Jell in a non-reactive pan. Bring to a boil. Add sugar and maple syrup, stirring constantly. Simmer 12-15 minutes until preserves thicken. Pour into sterilized jars and seal.

PRESERVING CHILDREN

1 large field
4-6 children
3 dogs
Goat or donkey (optional)
Grass
Trees
Flowers
Rocks
Pool of water or stream
Hot sun
Deep Blue Sky

Mix the children with the dogs and goat, add next four ingredients. Pour out onto the field near the water. Cover all with blue skies and sunshine, mix in a little rain for variety if you like. Bake under the sun until children are well-browned and happily satisfied. Set them away in the bathtub to cool. Serve them dinner, read a story and tuck them into bed.

In the Footsteps of Apollo

by Pat Dasch

Bill Muehlberger (left), and Alan Shepard (center), inspect rock samples during a day in the Big Bend, April 3, 1964.
Photo courtesy of the Hunter Collection, Archives of the Big Bend, Sul Ross State University, Alpine, TX.

Those of us who are lucky enough to live in far West Texas embrace the expansive other-worldly beauty, but did you know that you can follow in the footsteps of the Apollo astronauts right here in the Big Bend?

As attention turns to the upcoming 50th anniversary of the Apollo 11 Moon landing in July 1969, many are wondering when humans will return to the Moon and why Americans have not visited our nearest neighbor in space since Jack Schmitt and Gene Cernan of the final Moon mission, Apollo 17, left the lunar surface for their return to Earth in 1972.

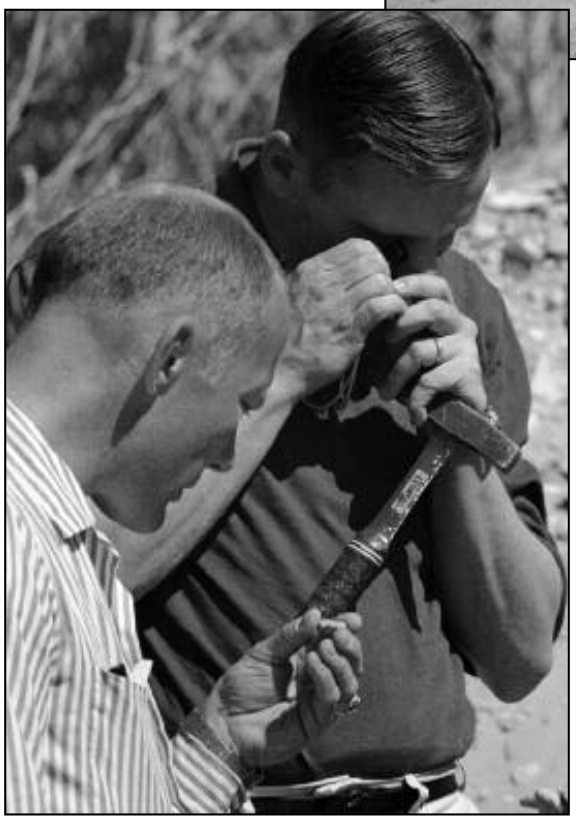
Have you ever wondered how the astronauts prepared for their remarkable excursions on the lunar surface? Are you one of the lucky locals, who, as a child, saw, or maybe even collected autographs from the astronauts on their visits to far West Texas? Every one of the 12 Apollo moonwalkers, and most of the Apollo era

astronauts, came to the Big Bend area to study geology and test equipment that would be used on the lunar surface.

In the months following President Kennedy's 1961 speech to Congress detailing his challenge to send Americans to the Moon before the end of the 60s, the program focused on the engineering challenges: How do we build a rocket to take humans beyond Earth's atmosphere and across the vacuum of space to the Moon? How do you dock and undock spacecraft during space travel? Then there were the human factors: How will the human body react to spaceflight? Can spacecraft or spacemen survive atmospheric re-entry on return to Earth? The first scientists hired at NASA provided information about the harsh environment of space to aid engineers as they set about designing lunar exploration spacecraft.

It was the astronauts, and notably John Glenn, the first American to orbit the Earth, who asked what they might do during their spaceflights.

Buzz Aldrin (left) and Neil Armstrong (right) rehearse photo documentation and collection of samples near Ft. Quitman, TX, February 24, 1969. Aldrin has a weigh bag attached to his right hip. Photo courtesy of NASA.



Buzz Aldrin (left) and Neil Armstrong examine rock samples in West Texas near Sierra Blanca and the ruins of Fort Quitman, about 130 kilometers southeast of El Paso. Apollo 16 and 17 geology team leader and UT geology professor Bill Muehlberger writes, "The Sierra Blanca trip was the only trip specifically on geology for the Apollo 11 crew. They went into the large arroyos to learn how to sample when a variety of rocks are spread out." February 24, 1969. Photo courtesy of NASA.

Training for the first group of Mercury astronauts was much like test pilot training. Flight managers did not want the astronauts distracted from the task of controlling the spacecraft. For his Friendship 7 Mercury flight on February 20, 1962, John Glenn had suggested that he should take pictures of the Earth from space.

There was no budget for such an undertaking and Glenn purchased a Minolta camera from a drugstore near Cape Canaveral. Technicians rigged a trigger so that Glenn could take pictures and he brought back the first astronaut photographs of Earth.

As the Apollo program developed, managers, engineers, and scientists started to ask whether astronauts should be trained for what they would encounter when they got to the Moon. They would have to choose a safe landing site within a pre-selected area, and they would disembark and walk on the lunar surface. Most notably, it was Max Faget, a legend in Texas aeronautical development, the director of engineering at the new Manned Spaceflight Center in Houston, who stated: "it wouldn't look very good if we went to the Moon and didn't have something to do when we got there."

And so began the plan to place scientific experiments and undertake geological exploration on the Moon. Discussions about a program of instruction in geology for the astronauts commenced in 1962 and classroom courses began in February 1964. The astronauts would receive a total of 58 hours of classroom instruction, but no course in geology is complete without field trips. Over time, and as the Surveyor, Gemini, and early Apollo missions taught us more about lunar geology, these field trips would become more elaborate and would take the astronauts to faraway places like Iceland. In the early days of the program, however, all geology training followed the same template. The first field trip, attended by 18 astronauts, was conducted in March 1964 and introduced the astronauts to fundamental stratigraphic concepts including layering and relative ages, at the Grand Canyon. Seven geologists accompanied the astronauts on that excursion and this would be the format for future field trips, with three or four astronauts assigned to each geologist.

The second field trip, attended by 16 astronauts, again accompanied by seven geologists, visited the Big Bend on April 1-3, 1964. Subsequently, all of the Apollo moonwalkers and numerous later astronauts would participate in similar field trips to the Big Bend. The University of Texas at Austin was home to experts in the geology of the Big Bend.

The legendary P.B. King and Bill Muehlberger made a one-week advance visit to outline a plan for the Big Bend field trip. A second group, including the geologists who would act as guides and instructors for the astronauts, then visited Big Bend to ensure they knew exactly what they were going to see, and to

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review the activities planned for each stop.

Alerted by an announcement on KVLF radio a fair-sized crowd, including civic leaders from Marfa and Alpine, and a large number of schoolchildren, descended on the Presidio County Airport just outside Marfa on April 1, 1964. A NASA press release had indicated an arrival time of 3 p.m. When the plane was late some onlookers started to ask whether KVLF had played an April Fool's stunt on them. Some even drove away. The astronauts finally arrived on two aircraft between 5:45 and 6:00 p.m. Alan Shepard, recognized by all present for his heroic 15-minute spaceflight in 1961, was the first off the plane, followed by Buzz Aldrin who would go to the Moon on Apollo 11 with Neil Armstrong and Mike Collins. Reportedly, the astronauts were patient and friendly, talking to the folk who had turned out to welcome them and signing autographs. (Yes, there are still families hereabouts who have notebook pages filled with autographs from that day. One such may be viewed in the Archives of the Big Bend.) Eventually a convoy of vehicles, rented from Casner Motors in Alpine, proceeded to the Bien Venido Hotel in Alpine.

Alan Shepard, famous as the first American to fly in space in 1961, was the first astronaut off the plane at the Presidio County Airport on April 1, 1964. Photo from the Alpine Avalanche provided courtesy of the Archives of the Big Bend, Sul Ross State University, Alpine, Texas.

Opened in 1958, this 39-room hotel was, according to historian Clifford Casey, "one of the larger, most modern motels on the highway between El Paso and San Antonio." After dinner in the hotel's restaurant, Don Green from the NASA public relations department called an impromptu press conference in the upstairs area of the hotel identified as 'the suite.' For reasons we will never know, *Alpine Avalanche* editor Jim Glascock sent Big Bend's famous cattlewoman, Hallie Stillwell, to attend the briefing. At the time, she contributed a weekly ranching column to the *Avalanche*. Green explained that the purpose of the Big Bend field trip was to study geological structures to aid the astronauts in landing on the Moon and making lunar observations. Hallie Stillwell was not alone in her skepticism of the Apollo program at that time. When the event was opened up for questions, she asked: "You people aren't really serious about going to the Moon, are you?" A pregnant silence ensued. It was Gene Cernan, who would be the last man to step on the moon on Apollo 17 in 1972, who responded. No account of the press conference by Ms. Stillwell ever appeared in the *Avalanche* but the following week's newspaper reported "…America's astronauts are dead certain that at least some of them will fly to the moon by 1970. Eugene Cernan said he had no doubts that he would travel to the moon and back. He said all of NASA's 29 astronauts feel the same way."

During that press conference geologist Ted Foss had explained: "We can't say what the moon is like exactly, but it may be similar to the Big Bend area." Field trip coordinator Bill Muehlberger from UT was of the opinion that the Big Bend offered "the greatest variety of geology in the smallest area than [sic] any other place in the United States." Building on their earlier field trip to the Grand Canyon, the Big Bend excursion would include interpretation and mapping of well-exposed stratigraphic and structural relationships, and it would introduce the astronauts to volcanic rocks, a major component of the lunar surface.

April 2 began with a mapping exercise conducted at the Bien Venido Hotel, based on aerial maps. With the classroom task completed, the group headed to a point 14 miles east of Marathon to view faulting and folding on the periphery of the Marathon basin.

On April 3, the group set out in the Casner convoy for a long day in the field. The group made two stops at roadcuts on 118 south where layered volcanic lava and ash flows are exposed. Bee Mountain was the site of a third stop on the journey south, providing an example of volcanic magma or lava that crystallized below the surface that has been exposed by weathering. The Big Bend field trip introduced

Astronauts en route to Big Bend National Park on April 3, 1964 inspect a road cut where layered volcanic lavas and ash flows are exposed on Highway 118 South. Photo from the Hunter Collection, courtesy of the Archives of the Big Bend, Sul Ross State University, Alpine, Texas.

the astronauts to intrusive and volcanic phenomena believed to be similar to what they might see on the Moon. The fourth and final stop of the day was at Santa Elena Canyon to study the large fault scarp. Participants used radios to communicate between vehicles to continue discussion of the geology as they proceeded. Along the River Road topics included badlands and hoodoos, Big Hill, and the Solitario. Driving north from Presidio, the party returned to Marfa and a late flight back to Houston.

A second group from the Manned Spacecraft Center in Houston visited the Big Bend on April 14–15, 1964. Astronauts and geologists rest during their field trip stop at Santa Elena Canyon. Standing: Neil Armstrong (left), Ed White (right). Seated: Scott Carpenter, Bill Muehlberger, and Pete Conrad (left to right). Photo courtesy of W.R. Muehlberger personal files, 2010.

While attending the Big Bend field trips the astronauts would put in 15- to 20-hour days. Even so, encouraged by instruction at the planetarium at the University of North Carolina at Chapel Hill a week before their West Texas field trip, some of the astronauts would stay out into the night to study the stars in the unique dark skies of the Big Bend. Gene Cernan would be remembered as one such enthusiastic stargazer.

The balance of the astronaut corps at that time came to West Texas to undertake an identical field trip on April 15-16, 1964. NASA's fourth group of astronauts, 'the Scientists,' were recruited in June 1965 and they were joined by a further 19 astronaut candidates in 1966. In June of that year Bill Muehlberger led another group of 22 astronauts on a field trip that followed the same route as the first expeditions in 1964.

In February 1968, Apollo astronauts Armstrong, Aldrin and Collins, along with their back-up crew and Jack Schmitt (the only geologist in the astronaut corps, who would go to the lunar surface with Gene Cernan on the final mission, Apollo 17, in 1972) were back in West Texas. This time their visit was mission-specific. They were in the Big Bend to focus on rock sampling and collection. Only a small quantity of material could be carried back from the Moon. It was important that the astronauts hone their skills in the identification of rocks of significant interest. In February 1969, Armstrong and Aldrin would make another mission-specific visit to West Texas just five months before their historic landing on the Moon. This time they tested equipment that they would take to the lunar surface, including a camera attached to a lanyard with which they would record each rock sample in situ before collection. A sample was then placed in a weigh bag (to ensure rocks collected came within the absolute weight limit on total rocks collected), and tongs for retrieving rocks as the limited movement permitted by their spacesuits would make collection difficult.

A motley selection of rental vehicles that Casner Motors rounded up for the first astronaut field trip.

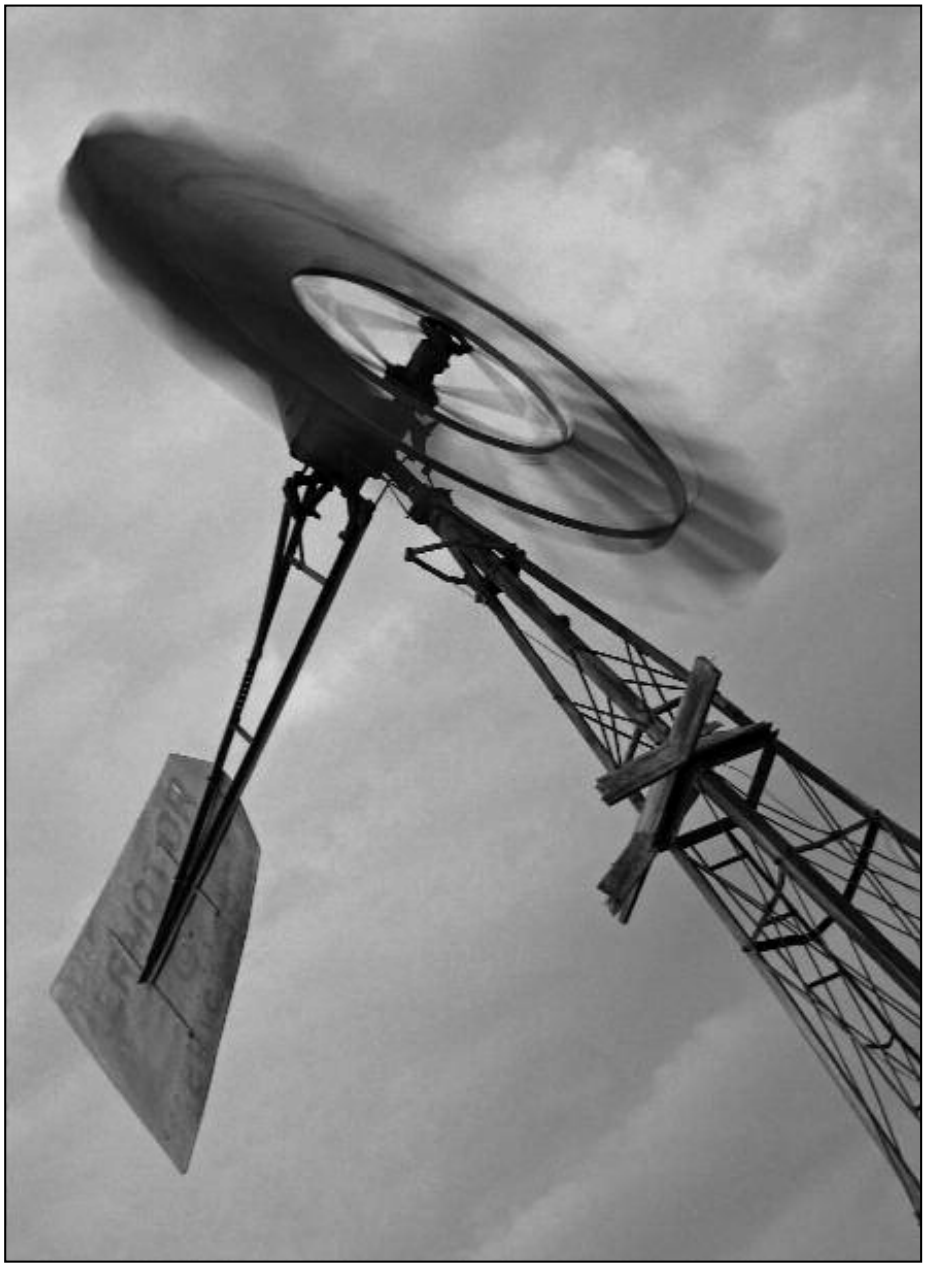
Later Apollo crews would also visit the Big Bend to develop and perfect mission-specific skills. In 1971-72 Gene Cernan and Jack Schmitt were back in the Big Bend as they trained for their Apollo 17 lunar excursions. Analysis of samples returned by the first two Apollo missions had revealed that many of the lunar craters were not volcanic signatures but impact craters. As a result, there were more field trips to New Mexico and Arizona, but Cernan and Schmitt returned to West Texas October 19-22, 1971 to refresh their identification and collection abilities. On March 14-15, 1972, they returned to explore the impact crater east of Highway 385 between Marathon and Ft. Stockton, known as the Sierra Madera Astrobleme. During the exercise, the astronauts completed one exercise using the lunar rover that had featured in Apollo missions since Apollo 15, and one on foot. Both excursions were conducted on the rim of the eroded impact structure. On the first day the astronauts conducted a riding traverse, coring, trenching, sampling, raking, taking photographs, and recording descriptions of their samples at seven stations over 3.22 miles. The exercise lasted for four-and-a-half hours. On the second day, the astronauts walked 1.2 miles, sampling at eight stations.

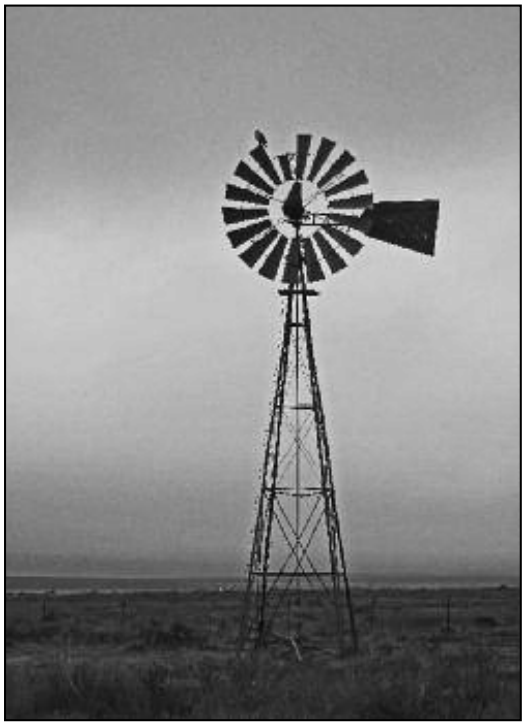
Cernan and Schmitt would spend three days on the lunar surface in December 1972. They set the record for time spent outside the lunar module. Their three lunar excursions, devoted to viewing and photographing terrain, and collecting rocks, totaled 22 hours and four minutes. They traversed 22.2 miles using their lunar rover and collected more rock samples than any previous crews, returning with 246.9 pounds of lunar material.

The Big Bend area provided lunar explorers with key insights into the geology and terrain they would encounter on the Moon. As mission-specific objectives were defined for each Apollo crew, equipment, timelines, and the skills of the astronauts in geological observation and rock collection were repeatedly tested and refined on numerous visits to the Big Bend.

Photo Essay

by Janet Groth



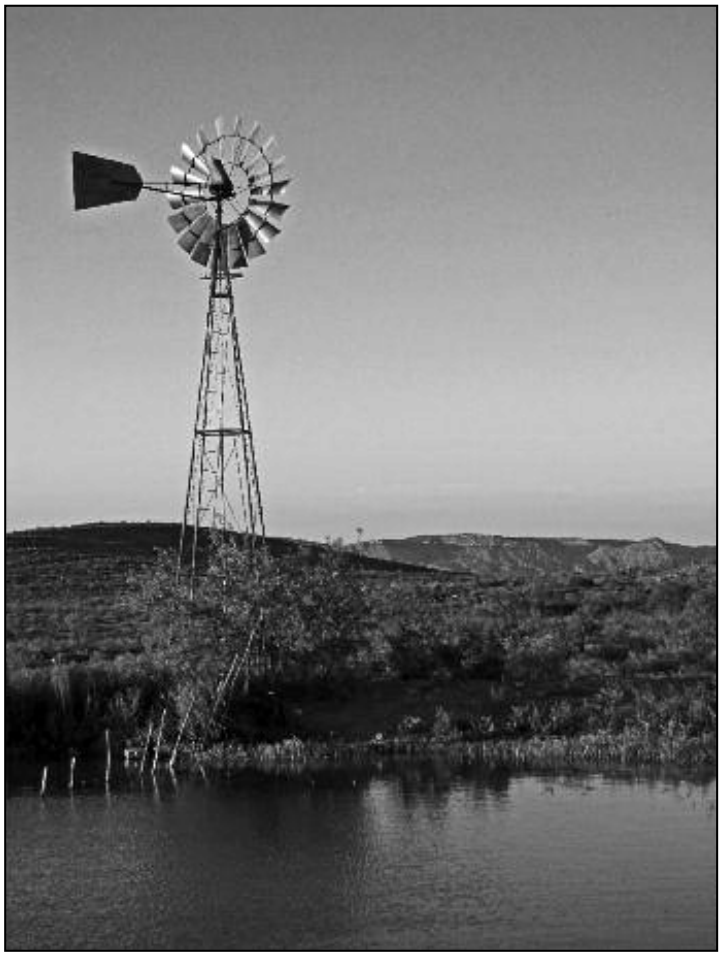


"When the well is dry, we'll know the worth of water."
– Benjamin Franklin, American statesman

"When you're out of water, you're out of everything."
– Walter Groth, long-time Pecos/Brewster County Rancher

Tall, imposing windmills abound in West Texas, offering their services to man and nature. Their critically important function is to bring water to the surface and give life to dry country. Aesthetically, they silhouette themselves against sunsets, serve as perches for ever-watchful hawks, or perform as a beacon to cowhands, lighting the way to their wet delights. The west Texas cattle industry would have been stillborn without them.

The commanding efficiency of a windmill is a thing a beauty, deriving power from the ever-present wind. Whirling blades, the steady rhythm of the rods' push-pull mechanism, and creaking rotors shifting with the direction-changing winds are music to ranchers' ears. If you are ever near enough to enjoy those sounds, stop and listen. The refrain you hear is the music of the water well, singing to livestock and wildlife…come, drink, be renewed.



Museum of the Big Bend Dedication, May 1, 1937

AFTERNOON AT THE MUSEUM

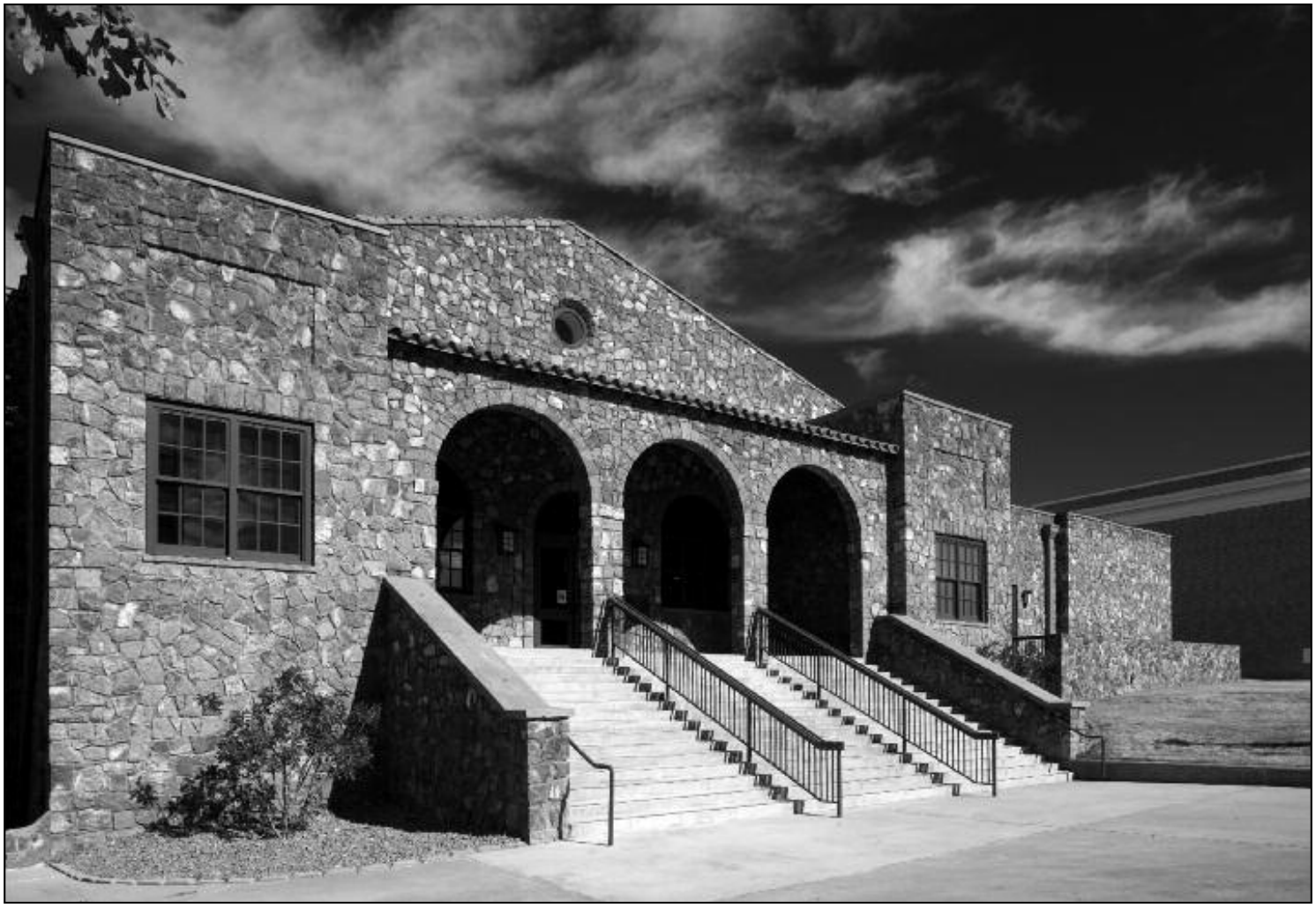
by Mary Bones

The Museum of the Big Bend began with an arrow point picked up west of Alpine in 1921. Placed on a shelf in the Biology Department of the fledgling Sul Ross Normal College, it started the ball rolling to preserve, collect, interpret and exhibit materials that tell the story of the prehistory and history of the Big Bend.

By 1922, the Big Bend Memorial Museum had received more donations, and with the shelf at capacity, a cabinet was built to hold the rapidly growing collections. In 1925, the West Texas Historical and Scientific Society (WTHSS) was formed. It had 25 members that included Sul Ross faculty and local historians, scientists, and public leaders who oversaw the collection.

The burgeoning collection of 2,000 specimens moved from the Biology Department to the Library in 1931. On July 1, 1934, SRSU faculty member Dr. Clifford Case, Director of Research for the WTHSS, appeared before the Advisory Board of Texas Historians in Austin and applied for a grant from the Texas Centennial Commission to build a proper museum.

Fortunately for the WTHSS, Mr. Texas himself, J. Frank Dobie, sat on this commission and argued in favor of Alpine receiving the grant. Two weeks later, the $25,000 grant was approved and with an additional $10,000 from the Works Progress Administration (WPA) in 1935, construction commenced. Former Texas Governor Pat Neff delivered the main address at the Big Bend Memorial Museum dedication on May



Museum of the Big Bend Entrance

1, 1937. The new museum building displayed and stored 12,000 artifacts.

For the following 38 years, the Big Bend Memorial Museum told the story of the area using the materials in the collection. Then in 1965, with a decline in visitation and a large uptick in enrollment, the museum closed and the building turned into the Student Union Building, better known as the SUB.

Ranching

The Museum reopened as the Sul Ross Museum of the Big Bend in the old bowling alley building on campus in 1969. Eight years later, in 1977, the Museum moved to Lawrence Hall and was renamed the Museum of the Big Bend.

With the completion of the R. Vic and Mary Jane Morgan University Center in 2002, work began on the renovation and restoration of the historic museum building. Included in the project were modern exhibits to tell the story of the Big Bend country. In 2007, the Museum of the Big Bend opened its doors to a new generation of knowledge seekers.

Central to the renovated building is the permanent exhibit Big Bend Legacy that highlights the stories of the people and places that make up the Big Bend. Big Bend Legacy begins with the Indians that inhabited the area for centuries before the Spanish began their northern exploration through Mexico. Prehistoric peoples left behind many materials such as arrow points, woven sandals and bags, digging sticks and painted pebbles that are in the museum's collections and are on exhibit.

Included in the exhibit area of the area's indigenous people is Tall Rock Shelter, a significant archaeological site in the Davis Mountains. Tall Rock Shelter is a series of painted panels that are one of the great mysteries of the Big Bend. Researchers do not know who painted these panels nor do they know the meaning of the painted images. To ensure the accuracy of one of the panels to be recreated for the museum, museum staff and exhibit designers traveled to the site. After a harrowing journey, exhibit designers photographed in detail the colors and textures of the rock as well as the colors of the paint used for the panel

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Joni Thibault Mize and Madison Shaye Olivas

DESERT SWIMMER

beyond a barren place,
life and beauty keep watch
over sand and stone, blood and bone
 welling up as a thirsty mirage.

there, hidden holy water
deep enough to sky an oar
reveals sanctuary or salvation
a secret, little, more.

radiating Venus,
the goddess swimmer
immerses herself
in the heat shimmer.

one deep breath, then
a moment to submerge
into fluid contemplation
and another to emerge.

floating upon the surface,
gliding with intent,
drenched in the love of the desert,
this is oasis, this is content.

by Joni Thibault Mize

UNTITLED

I am from the dirt road and Grandma's homemade tortillas
From the wall heater in the hallway and the old tile floors
I am from the smell of Christmas cookies and the taste of refreshing water from the hose
That brought the family to gather in the small kitchen
I am from the apricot tree shading the front of the house
The mesquite pasture where the wild creatures roam across the way
And the blanket of stars that covered me at night

I am from the Fourth of July festivities and the traditional town street dance
From grandma's oldest pecan tree in the county and Dad's coaching on the sideline
I am from the tunes of Spanish music and campfires under the Fort Davis sky
From the constant whistling from my dad to get my attention

I am from birthday and Christmas presents combined to merry birthday to me
I am from Feliz Navidad and our midnight Christmas mass
From Harvard on the hill, Sul Ross University and the Mysterious Marfa Lights
From chicken spaghetti and menudo to fill our bellies
I am from the tubs of memories stored in the attic
Brought down by Grandpa when we wanted to reminisce

I am from the three-day weekend I got with my dad
The short time we had made up for by the endless memories we made
From the Friday night lights to Meemaw's breakfast on Sunday morning after church
Never was it a goodbye but a see you later

I am from those moments
Forever stored and forever cherished
Being shared between two
And being loved by all

by Madison Shaye Olivas

TRASH TALK PART 3

by Rani Birchfield

The remains of four mattresses and a Barcalounger picked up from roads outside Alpine city limits and taken to the landfil by Cathy Wright, Dave Leet, and the author of this story - Rani Birchfield.

Everything's Bigger in Texas, so the saying goes. And this includes things we don't want bigger – like litter.

TEXAS AS A LEADER

Last year, American State Litter Scorecard named Texas as one of the top 10 "most litter-polluted" states in the country. Steve Spacek, a Texas native and director of the Scorecard site, states that:

Inappropriate littering by thousands of Texans creates hurtful conditions statewide. Insects and diseases breed, causing injuries to animals and humans. Furthermore, Texas has more "profiled teenage litterers" than any state, part of an age 16-25 group, from findings in national litter studies, to be most prone, willing to throw wastes onto sidewalks, park lands, beaches, roadways."

The National Highway Traffic Safety Administration recorded that 111 Texans died in litter-attributed crash accidents for fiscal year 2016 (numbers not available for later years), the largest number in any state. Spacek said, "For decades to the present, Texas remains a national leader for total deaths due to these accidents. Texans are dying day and night, under wet or dry conditions, from crashes with ordinary litter, tire scraps, tree limbs, objects from unsecured loads appearing out of nowhere."

NATURAL GAS & PLASTIC

One of the by-products of the natural gas boom is cheap and readily available plastic. The American Chemistry Council states "The reason is simple: because of shale gas, it is more cost effective to produce ethylene in U.S. than just about anywhere else in the world."

Tens of billions of dollars will be invested in new facilities, and plastic production is expected to increase by approximately 50% in the next decade. Polyethylene production is expected to increase by as much as 75%, fueled by expected increases in the demand for disposable plastics, much of which is in developing countries, which may not have the resources to deal with the waste increase. In the next 10 years, "the world will make as much plastic as it has made from the advent of the commercial plastics industry in the mid-20th century until now," wrote Neil Strassman in an article for the *Texas Climate News* last year. Wow.

As we pick up the litter from the past that's choking our planet now, what do we do about the future and the onslaught that's coming? How do we tackle this looming Goliath?

THREE THINGS YOU CAN DO

1) Education

Education and informed shopping practices make a difference. One of the main deterrents to the litter problem is education, and starting at a young age would be beneficial, especially if the largest litter group is the 16-25-year-old age group. (Although I see plenty of people who are definitely of an age to know better oblivious of their trail of trash. What's to be done with these people who should know better, who should set an example?) Teach your kids how important it is to dispose of trash correctly, and lead by example.

Companies like Trader Joe's and even McDonald's are working toward phasing out single-use plastics. Educate yourself and choose to do business with socially responsible organizations. Yeah, maybe you think the trash isn't going to really hit the fan in your lifetime, so why bother. But beware – if karma is a real force in the universe, you may find yourself as a fish in the next lifetime feasting on plastic detritus.

2) Turn Them In

If you witness someone littering, capture the following information:

- License plate number
- Make of vehicle
- Time of day
- Location
- Date
- Who tossed the litter (driver, passenger, or accidental)
- What was tossed

Then, (when you stop driving!) visit the TxDot website to report a litterer at www.dontmesswithtexas.org/get-involved/ report-a-litterer/ or via the Don't mess with Texas Report a Litterer app. TxDOT compares the information through the Department of Motor Vehicles registration database, and when an exact match is located, they send the litterer a Don't mess with Texas litterbag along with a letter reminding them to keep their trash off of our roads.

3) Adopt-a-highway

This was the brainchild of James Evans, an engineer of the Texas Department of Transportation in the late 1980s. The benefit is two-fold: the state saves money by volunteers cleaning the roadsides (as opposed to paid workers), and the volunteers receive a sort of "free advertising." Other groups do it in memoriam of a family member. (Note: Interstate highways are not available for adoption.)

In the last issue of the *Cenizo Journal*, we had a picture of the Tierra Grande Chapter of the Texas Master Naturalists

Section of the Alpine landfill

on one of their highway cleanups. They care for the section of Highway 118 just north of Alpine. Albert Bork is the volunteer coordinator for the chapter, and they've been doing the roadside cleanup for about eight years. When I asked Bork about his experience, here's what he had to say:

In those early years we had large groups & quite a party on several occasions. I recall Ellen & Lou Weinacht serving coffee & donuts from the back of their Suburban. Numbers have dwindled in recent years to where I was the only person on one occasion last year.

Bud Light is a common brand of litter, both bottles and cans. Here, James Anaya has captured a Big Bend sunset - but did not leave his litter.

The amount of trash seems to me to have diminished from my bike rides through our cleanup section. On the other hand, I've been renting an electric bike for the last six months or so and went for a ride the afternoon of our cleanup this April and found eight beer cans that either we had missed that morning or had been thrown out after it!

I have a saddlebag on the bike and decided I would see how long it would take me to pick up the trash from the bike periodically. I did three more pickups lasting about half an hour each at about two-week intervals, filling the saddlebag to overflowing. The most littered was Bud Light.

Here are some of the guidelines for adopting a highway:

- Groups must have an authorized spokesperson for the group as well as an alternative
- Adequate supervision of children / minors (no children under the age of seven allowed)
- Attend a safety meeting before starting and conduct or attend at least two a year
- Two mile sections are adopted for a minimum of two years
- Pick up litter four times a year (once per quarter)
- Obey the laws
- Safety vests, traffic control signs, safety instructions and trash bags are furnished by the Department of Transportation

Other various things may apply – when you sign up for your section of highway, you can learn all about them! www.texassponsorahighway.com or call (800) 200-0003.

Clean areas are less likely to be littered in. So, DON'T LITTER. Pick up trash when you see it – on your walks and hikes. Stop litter before it starts by reducing your waste. For example, get reusable containers for water instead of buying it in bottles, and take reusable grocery bags to the store. Shop at places choosing to make a difference.

Too much trouble to recycle? Fine. At least secure your trash and dispose of it properly. When glaciers melt and the seas rise, and coastal cities are inundated with water, as littoral residents migrate inland in search of higher ground, the Trash Mountains will rise above, offering areas of refuge and escape.

Thank you to Cathy Wright and Dave Leet for picking up mattress litter and old Barcaloungers, and taking me to the dump with them.

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Kathy lots of questions, chief among them, "How do I know which weeds to pull in our cactus garden?" Her advice still rings true. Wait till it blooms, and if you like it, it's not a weed! I set myself to learning the names of each different one I found. Only later did I learn that there are over 1200 species in our Big Bend National Park! Below are a few of my favorites.

YUCCA

Soaring up to six feet tall, the many varieties of Yucca each produce a single flower cluster called an inflorescence, made up of many individual white bell-like flowers hanging downward. Though they are edible, and many people add them to salads, the taste has been described as "bitter artichoke."

They rely on the Yucca Moth for pollination and send off a luxurious scent to attract them. Each variety of Yucca attracts its own specific species of Moth.

OCOTILLO

With its orange/red flame, the Ocotillo bloom would be hard to miss. Though it can bloom any time of the year, it takes a rain event for this desert Fouquieria to send out green leaves, and then more to bloom. It certainly lives up to its common name of Flaming Sword. They are not hard to spot since stems grow up to 15 feet tall. Interestingly enough, if you fertilize it too much or give it rich soil, it may not make it since in prefers harsh conditions.

PERFUME BALL, OR PINCUSHION DAISY

These fragrant wildflowers seem to break all the rules. The leaves are all at the base and a long thin stalk (up to 30 inches long) bursts into bloom, dropping its yellow to orange to red petals very soon, only to show the center, a round ball of perfume!

BLUEBONNETS

When Texas decided to choose a State Wildflower, that part was easy. Bluebonnets, which belong to the Lupine family, grow all over Texas and in fact at altitude all over the world. Rather than choose one variety, the Texas Legislature chose them all! The one we cherish in the Big Bend of Texas is the Big Bend Bluebonnet, *Lupinus Havardii.* They grow only here, and though usually less profuse than their Hill Country cousins, ours can grow close to six feet tall!

Arthur Bullis Cash and Margaret Lipscomb had their record 64.75-inch-tall Bluebonnet listed in the Guinness World Records in 2005. An equally reliable source, the Terlingua Moon's contest listed even taller ones. The plants, and especially the seeds, can be toxic. Though it's perfectly legal to pick them, it is considered by many to be immoral! If you see a splotch of red among the blue petals, you and the bees know that plant has been pollinated.

Yucca in bloom

INDIAN PAINTBRUSH

One particular place in BBNP still has Orange and Yellow and Red Paintbrush. Most of the color you see is actually modified leaves. Even though red is a difficult color for bees to see, they, along with hummingbirds, do aid in their pollination. Native Americans used the seeds as both a love potion and as poison—so beware a Paintbrush tea!

CENIZO

We can hardly talk about wildflowers without mention of the Cenizo, or Desert Sage. A member of the figwort family, it's not a true sage, but anyone who has seen its bloom of profuse flowers that carpets the desert floor around it can ever forget it. Colors range from pink to deep purple. All it takes is a passing of our late summer monsoons to ignite this lovely. In fact, it is told that when it blooms it will rain, though it's also been called a liar bush, because sometimes it does lie.

LECHUGUILLA

This indicator plant of the Chihuahuan Desert has a unique bloom. Over many days it grows a long stalk, varying from 6 to 16 feet, and blooms from bottom to top, almost like a reverse firecracker. Like other agaves, once it blooms the plant dies. Though the plant may appear to be soft like a tulip plant, it has a well earned nickname of Shin Dagger. Its Spanish name of "little lettuce" may have meaning for the javelina that eat it, but if you've ever met one up close and personal, you'll never forget the hard stab.

LIVING ROCK CACTUS

Think the cactus blooms are all gone by fall? Think again. Mid October is the time to find this brilliant magenta flower. Other times of the year, the cactus is level with the ground and its green, brown, or yellow shape is really difficult to find. Because of overcollecting they are listed on the endangered species list. Its base has no thorns, so it really depends on camouflage to keep it safe.

YELLOW PERIL

Remembering back to Kathy's advice, I'm sure she didn't yet know about the Giant Mustard, aka Bastard Cabbage, or Wild Turnip-weed. Their tall airy green plant and four petal yellow flowers beguile. But, left to their own devices, the flowers fade, seeds drop and this annual begins to take over. Their deep taproot easily steals nutrients from other wildflowers and even the trees! It is an annual, and only grows one year, so simple mowing to keep it from forming and dropping seeds is very effective. You too can fight *Rapistrum rugosum*, also known as RARU, so we can continue to see our favorite wildflowers in the Big Bend of Texas.

In a search for information about these beauties, there are books galore, and internet search engines reveal a treasure trove of information. There are even apps for your phone that can identify a wildflower from a photo. It was my

Perfume ball

plan to learn the scientific names as well as the common names of my favorites, but I do confess the common names are more entertaining and easier to remember - like the Angel's Trumpets whose scientific name is Acleisanthes longiflora or Hairy Five Eyes, *Chamaesaracha sordida* or the Nodding Onion, *Allium cernuum*. And more like Hairy Nama, *Nama hispidum*. And there's always Facebook. I love to post a photograph of a new-to-me wildflower and then wait for the responses from friends as to what it is, and so many stories! As W.F. Strong would say, Some of them are true! Betty Alex of Terlingua, a retired botanist from BBNP, is my final authority. If she doesn't know, I don't know who does.

I've only touched the surface of the amazing wildflowers that wait for you. Try this link for a listing of all you might find in Big Bend National Park: www.swbiodiversity.org and here www.americansouthwest.net.

Folkways

by Maya Brown

SUMMERTIME

Photo courtesy Maya Brown

Summer is in full force! We have so many blooms available to us. I'm using flower blooms, I know we don't think of all of these as flowers but they really are.

Dandelion Fritters:

2 cups dandelion flowers with the green bits cut off
1/3 cup flour
1/3 (or so) cup milk, water is fine if you don't have milk
1 teaspoon baking powder
1/3 cup corn meal (adds texture, if you don't have it replace with wheat or corn flour)
1 egg
dash of salt, pepper, thyme and rosemary
oil enough to fry fritters

Mix dry ingredients, add egg and other liquid, mix well. Batter may remain lumpy. Dip dandelion tops fully, covering entire blossom, into batter and add to hot oil, being really careful of splatter. Fry until golden light brown and drain on a towel.

You can do a sweet variation with sweeter spices and herbs too, like cinnamon, a teaspoon of sugar, cloves and cardamom, instead of savory spices and herbs.

Fennel and Figs Bread:

There are still fig trees in the Big Bend area. If you haven't already adopted one you should start now, they are glorious and precious and should be treated as such.

1 cup sliced figs
1/4 cup rum
3/4 cup white flour
3/4 cup whole wheat flour
1/2 cup whole oats
1/2 teaspoon baking soda
1/2 teaspoon baking powder
1 teaspoon salt
1 Tablespoon fennel seeds
1 cup soured or buttermilk (sour milk just has a bit of vinegar added to regular milk)
1 Tablespoon veg oil
1 egg
Optional 3/4 cup pecans

Preheat oven to 350. Soak figs in boooooooze, you won't need to warm the alcohol or anything— your house is probably warm enough, mine is. Mix dry ingredients in a medium mixing bowl. Mix wet ingredients into small bowl. Create a well in the dry ingredients, add wet and mix until similar to biscuit dough. Add figs and nuts. Mix and form dough into a ball and place in a cast iron pan and bake at 350 for 40-50 minutes or until a toothpick inserted comes out clean.

Scottish shortbread:

2 cups flour
1/4 cup corn starch
1/2 cup sugar
3-5 Tablespoons dried EDIBLE flowers. (Don't use all lavender, it'll be too much lavender taste.)
dash of salt
3/4 cup butter, cold and cubed
additional sugar for dusting the top

Preheat oven to 325. In large mixing bowl or food processor bowl combine flour, cornstarch, sugar, salt, and flowers. Use a combination of flowers such as dandelions, roses, lavender, violets and lilacs. They're all yummy. Don't use flowers that have been sprayed with anything. Mix well or pulse. Add butter and cut or pulse into flour mix. This should look like wet sand. Mush into a baking pan, making sure it's flat and firm. Bake for 20-25 minutes, remove from oven and sprinkle with sugar. Score top into pie slice shapes. Allow to cool and serve. YUMMY.

Violet syrup:

Pick as many violets as you can, making sure they aren't sprayed with grossness. Take off the leaves and stems. Boil enough water to cover the violets in a small stainless or glass pan. Turn off the heat and add the violets, cover and let set for 24 hours. Strain, reserving liquid, making sure to press every bit of goodness out of the flowers. For every cup of flower "juice" add 2 cups of sugar. In a glass or stainless pot cook over the lowest heat until sugar dissolves. Do not boil or the color will disappear. To turn the syrup purple add 5-10 drops lemon or lime juice. This will keep in the fridge for six months or so.

Fresh roasted Dandelion root tea:

You lucky duck! You don't spray your garden and you have dandelions! You can make Dandelion root tea!

Harvest dandelion, roots and all. Pluck them out of the ground using a shovel or a dandelion harvesting tool, such as a big fork or spoon. Rinse the whole thing, save the greens for a salad and the tops for the recipes above. chop the roots off the greens. Pat the roots dry and chop like you would a carrot. Roast in a 200 degree oven for two hours or so. If they bend at all, roast them more, this really is a recipe of opinions so you get to decide. When they are dry and roasted grind them up in a home kitchen grinder. Add a Tablespoon of ground roots to a cup and pour hot water over them, let steep for ten minutes or so. Strain and drink. Don't drink dandelion tea if you're on medication for a bacterial infection.

Dandelion FUNDOUGH, like playdough but with dandelions:

A big huge gigantic handful of dandelion flowers
1 cup water
2 cups flour
1/3 cup kitchen salt
2 Tablespoons veg oil
1-2 Tablespoons Cream of Tartar

Add boiling water and dandelion flowers to blender and blend until the dandelions are completely broken up. Add dandelion water and everything else but the flour to a bowl and mix, then add flour. Mix well. Mix with your hands. Gush fundough around. Have fun! Play!

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imagery. When a visitor sees the magnificent reproduction of a Tall Rock Shelter panel at the Museum of the Big Bend, they are seeing as accurate a representation as possible-without having to make the journey!

Ranching and the railroad were critical to the development and settlement of the Big Bend. In the ranching exhibit area, visitors can learn about the impact Mexican vaqueros had on Anglo cowboys, from the types of gear used to the names of gear. People are often surprised to learn how much Spanish is part of the everyday language of the cowboy. Included in the ranching area is the story of the Murder Steer based on the true story of conflict over a yearling bull between cowboy Fine Gilliland and rancher Harrison Powe in the Davis Mountains in 1891.

The coming of the railroad in the late 1800s opened up the remote Big Bend to settlement by Anglos in the late 1800s. Marathon, Alpine, Marfa and Valentine sprang up alongside the rail lines due to the engines needing water every 30 miles. Soon more folks began moving to the area and setting up businesses to accommodate the needs of these communities. As in so many towns, the mercantile was the go-to place for all the residents' needs, from receiving mail to purchasing goods for the home. The museum has a fully-stocked mercantile store display that features a variety of store goods from the 1930s and 1940s.

Museum of the Big Bend Entrance

Tall Rock Shelter

The U.S. Military has a lengthy history in the Big Bend. Fort Davis, established in 1845 and re-established in 1867 after the Civil War, protected travel on the San Antonio-El Paso Road through 1891. Fort Davis from 1867-1891 was home to the Buffalo Soldiers, African American soldiers in the Ninth and Tenth Cavalry and the Twenty-Fourth and Twenty-Fifth Infantry. Artifacts from the museum's collection and in-depth interpretive panels tell the story of this period.

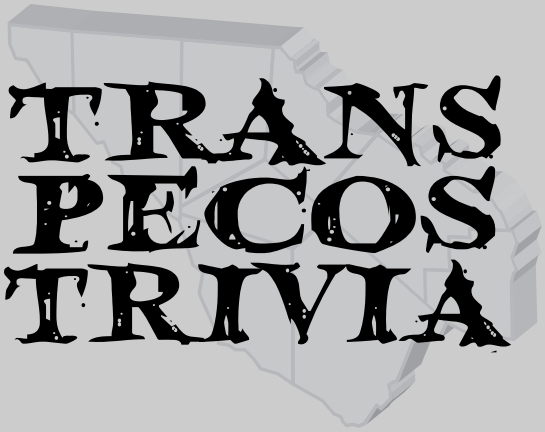
The Mexican Revolution, which broke out in 1910, affected the Big Bend country and eventually prompted the U.S. military to send troops to the border. The museum explores this period of border history with a number of interpretive panels. Additionally, the famous nighttime Battle of Ojinaga is told, along with the panel stories and artifacts retrieved from the battle site.

Down a short flight of stairs is the Yana and Marty Davis Map Collection, boasting over 2,000. This impressive collection is the state's most comprehensive of Mexico, Texas, Indian Territory and World maps. The map room is available to tour by appointment. However, the hallway outside the map room has a selection of maps on exhibit. Currently visitors can view maps that tell the story of Texas before it was Texas.

The Museum of the Big Bend also has rotating exhibits, and the summer show features photography by Burton Pritzker of San Marcos and Austin, Texas. Pritzker writes of his work, "At the core of my photography lies the belief that everything is also something else." The Burton Pritzker's exhibit opens on June 14 and will be on display through September 1, 2019.

The Museum of the Big Bend is located on the campus of Sul Ross State University. Use Entrance 4 to access the campus. The museum is the only native stone building on campus, with a lamella arch roof (learn more about this cool roof design at the museum!). Open Tuesday-Saturday, 9 am to 5 pm and Sunday, 1- 5 pm. Closed on Monday and Major Holidays. Free Admission and Parking. Donations are welcome. Call 432.837.8730 or visit museumofthebigbend.com to learn more!

For subscriptions please see page six



MUSIC IN THE BIG BEND

by Wendy Lynn Wright

1) In 2006, during a spontaneous show at Marfa's local bar, Joe's Place, which artist did not perform?
   a) David Byrne
   b) Robert Earl Keen
   c) Ryan Bingham
   d) Steve Earl

2) Which once popular music fest no longer takes place in the region?
   a) Viva Big Bend
   b) Dude of the Dead
   c) The Terlingua Music Bash
   d) Trans-Pecos Festival Of Music + Love

3) What year was Alpine's historic music venue, The Railroad Blues, established?
   a) 1979
   b) 1986
   c) 1983
   d) 1990

4) Which musician, of the legendary Flatlanders, resides in Terlingua?
   a) Joe Ely
   b) Butch Hancock
   c) Jimmy Dale Gilmore
   d) Terry Allen

5) Which Big Bend resident not only plays a musical instrument, but also creates art?
   a) Collie Ryan, Terlinuga
   b) Todd Jagger, Fort Davis
   c) James Evans, Marathon
   d) Tom Curry, Alpine

Bonus: What year did Wendy Lynn Wright found the (once wildly popular, now defunct) Marfa Music Jam?
   a) 2000
   b) 2003
   c) 2006
   d) 2010

Answers: 1-d, 2-b, 3-c, 4-b, 5-All, Bonus-b

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ANGRY TIAS AND ABUELAS

Eight women from the Rio Grande Valley spent a year dedicated to assisting in a humanitarian crisis on the border. They received the Robert F. Kennedy Human Rights Award. They are still going strong. To find out more, visit them on facebook: Angry Tias and Abuelas of RGV

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