

# CAMP VERDE BUGLE

Tuesday, September 7, 2010

## Moonstruck: The Verde Valley's contribution to the space race

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COTTONWOOD - Not far from the intersection of State Route 260 and Ogden Ranch Road, on the eastern edge of Cottonwood, lies a 35-acre patch of alien landscape.

Although not easily recognizable, numerous worn and shallow indentations lay scattered about the landscape at random intervals.

Most have a discernible layer of soft topsoil at the center, which stands out against the rocky surroundings. Some sport a vigorous growth of desert broom, native grasses or prickly pear at the bottom.

The largest one plays host to a small mesquite forest.

The story of how the holes came to be is barely 40 years old. However, it has been forgotten by many who were around at the time and remains unknown to most who came here since.

It began with a speech by then President John F. Kennedy on May 25, 1961, when the young leader challenged his nation to land a man on the moon by the start of the next decade.

It ended when the Cold War began to thaw -- when our collective interests grew bored with the moon and shifted to building space stations and shuttles.

### The Space Race

Answering a challenge from the Soviet Union, President Eisenhower had authorized the creation of the National Aeronautic and Space Administration in 1958 - into whose hands the space-race baton was passed.



USGS Photo

Astronauts Alan Shepard (left) and Edgar Mitchell were among three Apollo crews that trained in the Verde Valley between 1970 and 1971. They are seen here doing geologic field training while pulling an equipment cart Shepard referred to as the "contraption."

About the time NASA was finding its feet, another young visionary was pondering where the race would lead. His name was Eugene Shoemaker and his hunch was that the first leg would be from Earth to the moon.

He reasoned, quite correctly, that once we arrived on the Moon, the science of space travel would become secondary to the study of what was there.

A geologist working for the United States Geological Survey (USGS), Shoemaker began lobbying his agency to prepare for the challenge, one that would take all that was known about the Earth and apply it to our nearest neighbor.

In 1960, a year before Kennedy's speech, the USGS founded its Branch of Astrogeology.

Shoemaker wasted little time lobbying NASA, his point being that if it was their intention to go to the moon, then they had better prepare their pilots for what they were going to find when they got there, specifically, a lot of craters and even more rocks.



USGS Photo

By the time NASA was finished with the Black Canyon Crater Field, it had 388 craters. Although many of the craters have worn away, some of the larger ones are still recognizable. The field is located approximately one-quarter mile southeast of the intersection of SR 260 and Ogden Ranch Road.

## USGS and Apollo

In October 1963, NASA introduced 14 military pilots to the public, the latest batch of newly-minted astronauts whose job it would be to guide the new Apollo spacecraft to the moon and back.

Four months later they were in geology class, along with all the astronauts chosen for the previous Mercury and ongoing Gemini programs.

By then, the USGS had also created the Surface Planetary Exploration division. It would be their responsibility to teach the astronauts geology, along with mapping the lunar surface for NASA and helping them select the Apollo landing sites.

Shoemaker, along with two geochemists had solved the riddle of Arizona's Meteor Crater a few years before, explaining and proving for the first time where a missing iron meteorite that created the huge crater had disappeared.

Shoemaker and others had also learned a lot about craters, such as how to determine their age and how to use them to tell the story not only of the object that created them, but also the subsurface geology of the ground on which they impacted.

Familiar with the terrain of Arizona's Colorado Plateau, and aware there were sites in Northern Arizona that were in many ways like the lunar surface, the SPE branch, with Shoemaker at the helm, set up shop in Flagstaff.

## Creating a lunar surface

By 1967, it also became apparent that creating a manmade lunar landscape, similar to the ones on which the astronauts would land, would be advantageous.

That year the SPE group began blowing holes in the cinder fields east of Flagstaff and using the alien landscape to train astronauts.

But for all the forethought put into the astronaut training program and the newly created Cinder Lakes Crater Field, the best and the brightest had overlooked one critical point. It gets real cold and sometimes it even snows in Flagstaff.

Looking for a warmer spot they first went exploring around Lake Pleasant. Finding nothing suitable, they came to the Verde Valley in January 1970.

Spotting a nearly flat alluvial fan near where Black Canyon emerges from the Black Hills, they found what they were looking for.

Securing permission from the Prescott National Forest, they began clearing and surveying a 35-acre site.

However, before blasting the craters, the SPE was forced to install seismic equipment at Montezuma Well, to allay the fears of USGS colleagues who believed the explosions would crack the Castle or drain Montezuma Well.

On Feb. 20, 1970, they fired off a round of test shots. On Feb. 24 and 26, using 86,880 pounds of ammonium nitrate, 1,172 pounds of TNT and 50,000 feet of Primacord, SPE crews and contractors blew 366 craters, ranging in size from 6 feet to 82 feet in diameter.

## Moonstruck

For many living in the valley, the explosions and the interruption to traffic passing between Camp Verde and Cottonwood was the first indicator that something was happening.

The Black Canyon Crater Field, as it became known, was designed to mirror Fra Mauro, the landing site chosen for Apollo 13.

On March 15-16, astronauts Jim Lovell and Fred Haise, the primary crew for Apollo 13, along with backups John Young and Charles Duke, arrived in the valley to practice their lunar traverse.

But Apollo 13 never made it to the moon, much less the Fra Mauro.

On Nov. 16, Apollo 14 astronauts Ed Mitchell and Alan Shepard, having been assigned the same landing site as Apollo 13, arrived to take up the geologic field training where 13's crew had ended.

The site would be used again in January 1971 to test "Grover," a lunar rover vehicle simulator.

In April of that year, astronauts Young and Duke along with backup Haise, of the Apollo 16 mission, spent two days training.

## The mission

While at the Black Canyon Crater Field, the Apollo crews simulated their lunar landings and exploration. They learned to accurately report what they saw. They took photos, collected rock and soil samples and tested equipment.

The Flagstaff and Verde Valley crater fields were reported to have been the astronauts' favorite geologic training sites, because of the realistic lunar environment they offered.

The two sites also offered mission planners an opportunity to simulate landing in a cratered area and a chance to test out hand tools and rovers and how best to deploy the scientific equipment.

The mission of SPE and the Branch of Astrogeology came to an end in 1973. The thawing of relations with the Soviets brought a call for joint missions that culminated in a space station occupied by astronauts from both countries.

In 1997, the man whose vision had prepared the Apollo astronauts for the moon, Eugene Shoemaker, died in an automobile accident while continuing to study impact craters in Australia.

Two years later, a capsule containing some of Shoemaker's ashes crashed onto the lunar surface aboard the space probe Lunar Prospector. He is the only person whose ashes rest off the planet.

- [Side notes of the Apollo training in the Verde Valley](#)

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