

River of Time Museum

Tips and Tidbits

GEOLOGY

"Arizona is geology by day and astronomy by night."

John Priestley (on a sheep drive)

Geology is the science that deals with the history of the earth. It is appropriate to include geology in our history museum because to know all the history of Fountain Hills we must know the geological history as well as the human history.

Types of rocks:

Sedimentary

Formed at or near the earth's surface, deposited in layers. Examples are sandstone and limestone. Aged 1.8 billion years ago underneath the ocean floor

Metamorphic

Rocks formed by crystallization under high temperature and pressure when pre-existing rocks are buried deep in the crust of the earth. The metamorphic rocks in the Fountain Hills area are very old - 1.8 billion years. Schist is one type of metamorphic rock. It is common in the McDowell Mountains

Igneous

Rocks formed when a very hot liquid from deep below the earth's surface works its way up to shallow depth, where it cools and solidifies. Granite is one type of igneous rock formed in this way. Granite is found in the McDowell Mountains. It is a newer rock formation

If the hot liquid gets all the way to the surface before it cools, it forms volcanic rocks, which are a different kind of igneous rock. Volcanic rocks are found in the Superstition Mountains and also in other places in the Fountain Hills area

- ◆ Caliche is a rock formed in the soil near the surface. It is formed of calcium carbonate. It is a newer form of rock - only 2,000+ years old
- ◆ The colors on geological maps represent the age of the rocks or formations - darker is older
- ◆ Red Mountain is red sandstone - it is much younger (possibly 35 million years) than the other rocks in the McDowell Mountains which are as old as 1.8 billion years

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- ◆ Camelback Mountain is two different types (ages) of rock: the hump is Precambrian 1-2 billion years old; and the head is red sandstone similar to the rocks at Red Mountain
- ◆ Mid-Tertiary orogeny - mountain building which took place 15-25 million years ago. The Superstition Mountains were formed during this orogeny

When mountains are formed, the basin is formed when the rock (mountain) is dropped; the range is formed when the rock (mountain) is lifted

- ◆ Gunsite Mountain is located just over the CAP Canal on Beeline Hwy to the east. At the bottom it is 15 ft wide and widens as it goes up
- ◆ Red Mountain is officially "Mt. McDowell". Part of the McDowell Mountains, although the sandstone of Red Mountain is much younger than the other rocks in the McDowell Mountains
- ◆ The Superstition Mountains are created from "caldera" which is a huge crater formed by gigantic volcanic explosions during the Mid-Tertiary orogeny. Formed during gigantic volcanic action
- ◆ Weaver's Needle - formed by erosion - the rock is similar to the other rocks around it in the Superstition Mountains
- ◆ Goldfield Mountains are made from volcanic tuff - resulting ash that is cream colored. Its reflective surface creates the glow.
- ◆ Mazatzal is pronounced as it is spelled, also known as "Matazal" for easier pronunciation
- ◆ Four Peaks:
 - the north peak (far left) is 7657 ft high; each succeeding peak is 50 ft lower
 - the world famous amethyst mine is between the 3rd and 4th peak
 - the stones from the mine are shipped to Bangkok for processing
 - the formation was originally named Los Dos Chichis (meaning the two breasts in Spanish) When Eleanor Roosevelt visited she changed the name to Four Peaks
 - located in the Mazatzal Mountains - as old as McDowell Mountains
 - Jim McDaniels found the amethyst mine
- ◆ Needle Rock is 3 mi north of the intersection of Forest Road and Rio Verde Road. It was formed when the Verde River cut through the rock formation that had been deposited by the ancient river when it was much wider and deeper
- ◆ Pemberton Ranch was reported by early cowboys to have had the best water in McDowell Mountain Park because of an artesian well on the property; the Indians used the clay from the banks of the Rio Verde River to make their pottery

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- ◆ The Box Bar Ranch is the best physical site on the Verde River and is one of two privately held lands on the River between Camp Verde and the confluence with the Salt River
- ◆ There are only two parcels of privately owned land on the Verde River; the Box Bar Ranch and the KA Ranch in the Horseshoe Lake area
- ◆ The Verde River flowed from south to north until the disruptive changes in the earth