“Time on the Side”

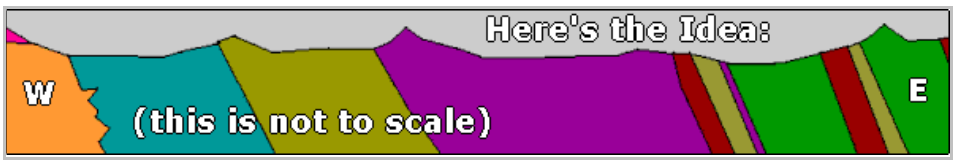
The *Phoenix Mountains*, looking southeast from North Mountain.

Rocks aren’t the most outgoing of creatures. Silent and stalwart, they don’t make friends easily. Many times they hide behind a facade of trees, shrubs, lichens, and weathered discoloration. And even when seen, their public profile belies their true standing in the world of nature. That profile is what you see at first glance, and what you may be used to seeing each day you pass them by, but, just take a long, closer look, and you might be surprised at what you find staring back at you.

Take the Phoenix Mountains, for example. They're the range that roughly slices our city in half, and lots of people here don’t even know that that’s their name. They recognize the landmark peaks, though: Camelback Mountain, Squaw Peak, Shadow Mountain, North Mountain, and Shaw Butte, to name a few.

Barren and rugged, they loom above the houses, streets, and freeways of Phoenix like sentinels of antiquity. And for the most part, the rocks there *are* very old. Except for some dark, almost black rocks at their western reaches (e.g. Moon Hill and parts of Shaw Butte), and the reddish rocks of the Camel’s Head on the western end of Camelback Mountain, they are *really old* – about 1700 million years old. I’ve talked before about them somewhat, particularly in an older GeoStory™, called “Time Travel and other Everyday Things”.

But they are not all just one thing, or one kind of rock. They tell us a whole story, and the above age figure is just a reference point. Their genesis spans a lengthy interval of time. For example, probably as much time as has lapsed between now and the end of the *Age of Dinosaurs* (approximately 65 million years) is represented in the rocks between 7th Avenue and the SR51 Freeway – and that’s just the time in which they were formed, *not since then*.



How rock layers can stand on end-- just an example, and not the same view as above.

When you look up at the Phoenix Mountains from Central Phoenix, let’s say, you see an unevenly serrated profile. Let’s just examine one section of that range. Pick out where Central Avenue runs into North Mountain, and then scan over to just beyond where the 51 Freeway cuts through the low pass in the peaks.

Rocks on the left (western) end of that section are much older than the rocks exhibited at the right (eastern) end. We can say it that way because they are all standing on end here, like books standing upright in a bookshelf. They grade from old to younger, as we progress to the east.

At one time, when they were formed, they laid roughly flat, with the western ones underneath the progressively upward younger ones, in this case like a stack of books lying flat on the bottom one. Things have gotten jumbled up a bit since then, however, as the Earth’s outer layers are in part like a hot plastic, capable of being stirred and bent.

My little inset graphic here on the left shows just the principle of the stacking – *it is not to scale*, and the colors do not denote the real, more complicated layers.

Squaw Peak
and the Phoenix Mountains,
looking south from Shadow Mountain.

Because of their mineralogical makeup, we can determine how rocks were formed – by what processes they came into existence – and therefore determine the environment in which they originated.

Specific minerals in the rocks can then change under different conditions of temperature and pressure, indicating another later environment. All of these factors reveal their life story, and their unique place in the history of the world.

If you were to walk along the easy hiking Trail #100, in the Phoenix Mountains Preserve, from the beautiful new North Mountain Visitor Center, just off of 7th Street, over to the pedestrian tunnel beneath SR51, and through it to the parking area in Dreamy Draw just beyond, you would be walking forward through geologic time.

You would be walking from an ancient deep, seafloor environment, then punctuated by fiery eruptions, right up through a shallower, oceanic setting, and on up into the makings of a prehistoric landscape of river deltas and floodplains.

North Mountain, from Lookout Mountain.

Had you made that journey back then, so to speak, at that point you would probably have emerged into a scene of towering volcanic peaks, and a desert-like panorama much more stark than today's.

It would be similar to walking up from the depths of the Indian Ocean in today's world, onto the beaches of Sumatra, except that no trees, plants, or animals would be there to soften the view. It would be a desolate vista of rocks and sand along the shore, and you would feel very, very alone.

Fortunately, it's not that lonely today, and you will likely see many other people out hiking if you take that route. They will all be walking one direction or the other, up or down "through time", most of them oblivious to the story long kept quiet in the rocks all around.

To learn more about the Phoenix area's engaging rock formations and prehistory, visit **www.gemland.com**, go to the "GeoScenery" section, and click on whichever name on the map interests you. That will initiate a series of images, together with geologic explanations, and you can even send any picture you like to your friends as an E-postcard for FREE!

----- *Richard Allen*

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