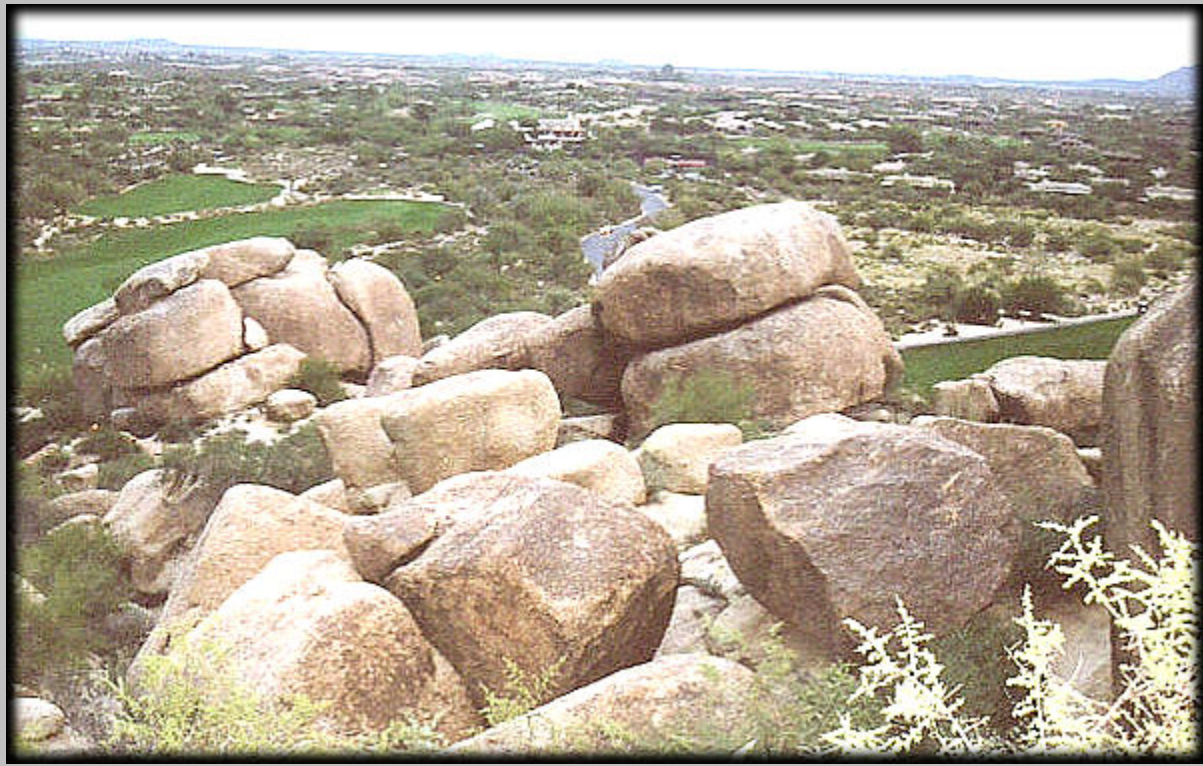


"Bones of the Earth"

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Surrealistically shaped ancient granite looks "stacked up" near Carefree, Arizona

"How did these boulders get stacked up this way?" The tourist who fired off that question to me was impatient, but in a friendly way. We had just started up a trail that wandered over and through a small mountain of weirdly shaped rocks. Below us lay lush carpets of green, lazy golf courses winding through even more rounded, but smaller, boulders. The look from above was that of a carefully tended garden, with tall cacti, *Palo Verde* trees, and *ocotillos* everywhere. Bushes surrounding us filled the air with the pungent, sweet, tarry smell of creosote. The warm autumn sun created shadows on the rocks that only accented their beguiling nature.

Those with me were wearing shorts, tennis shoes, and polo shirts, casually outfitted for the little hike we were on, all eager to learn something about the place to which they had come to escape for a short time the brutal weather at home. Down by the resort, we could see some men that appeared to have just stepped out of a Wall Street office building, looking very smart in their \$3000 suits. New arrivals, we all knew. That manner of dress wouldn't last long. Behind the lobby area there were others wearing not much at all: beautiful

people lounging around the pool, margaritas in hand. There were several girls that were

Oh, yes! Back to the rocks.

The lady was anxious for an answer. She had been pondering an explanation since she had first arrived at the resort several days earlier, and had seen the magnificent display of rocks looming above the luxurious lodge. "We don't have anything like that back home," she said hurriedly, and then started spewing out what she thought might be possible answers to her own question. "Glaciers did it!" "No?" "Floods?"

I get asked that question a lot, even from people that live in the Phoenix area, who have grown up around the picturesque granite boulders providing the exotic backdrop in places like Carefree, Troon, and Reata Pass. People's fascination with them might have something to do with scenes of landscapes remembered from childhood -- like maybe from those western movies where outlaws hid amongst such rocks before ambushing the stagecoach. Apaches disappeared into such settings with the cavalry in hot pursuit, and they appear even in scenes from other planets, like the *Star Trek* episode where Captain Kirk and Spock do battle with an ugly

space monster deep within a wilderness of granite shapes and spires. There is something about them that suggests an alien quality.

But they are not so alien. In fact, in some ways they are the very core of our landscape. Once, I read about an exhibition in New York City, a display of Chinese carvings and garden art in which stone is the central theme. In that show, rocks were called the "Bones of Earth", and I can think of no more apt name for them here. As we all can see, the landscape of Phoenix is one which has been scoured and eroded by the desert climate right down to the stone within.

The granite so exposed around here is very old. About 1400 million years old. It intruded into ancient mountain ranges back then, as a molten mass rising from below, squeezed and reshaped by forces on a continental scale. It never made it to the surface, but cooled slowly, slowly. The evidence of this is seen in the large crystals that can be seen just by breaking a piece of it open.

Later, over the more than one billion years that followed, it became laid bare at the surface. Changes of tension in that process led to fracturing of the rock in many different places and orientations. If you study an outcrop from a short distance, say near The Boulders Resort in Carefree, or the Four Seasons Resort near

Pinnacle Peak, you can see that many of the large cracks running through the granite are somewhat parallel to each other. Some run almost horizontally, some run almost vertically, some are diagonal to those. The important thing is that they intersect in various places, and when they do, they isolate off chunks of stone, many of which are house-size pieces. As weathering works its toll, the cracks widen out, and sharp corners tend to round out.

It's what causes that "stacked" look. They are not piled up at all, like they appear. No glaciers, no floods. It is the way solid rock is breaking down into pieces. Granted, some do eventually roll downslope, and probably every few thousand years one makes a pretty good "thud". They make for some of the most striking scenery in the world -- a setting for which those visitors from Wall Street don't mind paying to experience.

You can see other scenes of these formations, and discover more of our area's fascinating geologic story by going to **www.gemland.com**. Go to the "Geology" section, and on the map called "The Rocks of the Valley of the Sun", click on "Black Mountain", or "Pinnacle Peak", to begin a series of pictures.

--- *Richard Allen*

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Contact Richard Allen at GemLand ®

602-294-6775

info@gemland.com

www.gemland.com