

"Rock and Roll Geology"

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Granite boulder in sandstone on Camelback Mountain
(note one foot long scale)

To the non-geologists next to me, and in the back seat, the puzzle hadn't registered. After I had adjusted our trajectory, and everyone had breathed a sigh of relief, I explained why I had become so distracted.

Here was a classic geologic anomaly. How is it, that this big rock could have been deposited right down into the depth of the fine sand? Think about it. Sand like this is usually laid down by relatively slow moving water, or maybe even wind, as in sand dunes. How did the heavy boulder get carried into this setting, and just dropped off, before being buried by even more sand? And keep in mind that whatever happened here happened about 25 million years ago -- it's not just evidence of an accident yesterday by one of the construction crews finishing off someone's million-dollar back patio!

The sound of a muffled shriek, coming from the seat behind, made me look ahead. I corrected the vehicle's path instantly, putting it back between the yellow lines, so to speak. Fortunately, we had been going only about five miles an hour. What had happened? Well, it was a quick but typical instance of geologist's "Road-Cut Attention Deficit Disorder".

RCADD is little known among the general population, but well known among geologists. It is the tendency to be distracted by the rocks in a road-cut or on nearby cliffs, let's say, while driving past them. (What are those rocks? Where did they come from? What does their structure mean?) It is not the kind of thing you want to have kick in while you are speeding along the edge of a precipice, or on a busy freeway -- especially if the geologist is the driver, and you are the passenger.

In this case, I had been driving some tourists from out-of-town down one of the pretty little residential roads high up on the south side of Camelback Mountain. We had been looking at marvelous views of the valley, peering through people's back yards and over rooftops, at South Mountain in the distance, the Estrellas, and the groves of downtown skyscrapers sprouting out of the layer of brown murk that was no doubt at that very moment causing the eyes of the downtowners to itch and burn.

We had rounded a bend, and that is where I saw it. There, just behind a *Palo Verde* tree, at eye level and only about 15 feet away, was a giant boulder of very old granite about three feet across, rounded along most of its edges, suspended in the midst of the red sandstone that make up the cliffs that tower above the glamorous homes of the neighborhood we had been invading. That was when RCADD had hit me.

That one boulder is to me the most curious example of a type of strange geology you can see in several places around Phoenix. The west end of Camelback Mountain, and the buttes in Papago Park are the best places to see these rocks whose formation stretches my imagination, as well as that of other geologists.

One current theory ascribes their genesis to "long runout landslides", also known as "sturzstroms". Maybe in an instant, on a nice summer morning much like today, by a process not yet well understood, a monstrous amount of sand and rock collapsed from the steep slopes of mountains that stood just east of the present-day metro area. A vast mixture of rock, sand, and debris rolled out over the flats, at first glance possibly looking much like one of the big dust storms we see during the

monsoon season here in Phoenix, but devastating beyond comprehension. The landslide flowed for many miles, basically along a layer of air, and then it just stopped dead in its tracks. The theorized mechanism behind such a phenomenon is given the name "acoustic fluidization".

Hard to believe? Yes. I kind of want to see one before I can really buy into this theory. There are some modern-day cases of smaller events, however, that seem similar. One happened during the large 1959 earthquake near West Yellowstone, Montana.

There, at a place just below Hebgen Lake, a mountainside collapsed, flowed instantly down and

across the small valley, even running part-way up another mountain on the other side of the river. That landslide obliterated a campground, at once killing 28 people, who in their sleep never knew what hit them.

You can see some such unusual rocks just by looking out the window as you drive along McDowell Road between the Papago Buttes. You will see large (and small) chunks of granite caught up in reddish sandstone, like dried-out, jagged bleached plums in rusty, desiccated pudding. If you spend more than a few seconds looking, watch out! You, too, have RCADD.

--- *Richard Allen*

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Contact Richard Allen at GemLand ®

602-294-6775

info@gemland.com

www.gemland.com