

## “ Crown Jewel ”

Cutting the sky southwest of Phoenix is the jagged, long ridge of the *Sierra Estrella*—it dominates the Valley of the Sun. Yet, it is less well known to locals than many smaller, less imposing ranges here, and I will bet that most Phoenicians couldn't even name its more prominent peaks.

I had just set forth up its southwest-facing side—the side opposite from town—and had just barely started along the trail when I was greeted by fields of glitter along the ground's surface. Multitudes of bright flashes caught my eyes, making a rich scintillation amidst the *chollas*, *saguaros*, and *ocotillo* growing in profusion along those lower slopes.

Up to that point, the only thing on my mind had been one thought: what a workout this was going to be. A look up at the high summits above me, one of which was my destination, had convinced me that it was going to be a long, long, sweaty day. Although I was on my way up to one of the less conspicuous points along the sawtooth-like crest, I had heard that this trail was one of the more spectacular hikes in the Estrella Mountains—one not to be missed.

Reaching down to grab one of the sparkles, I saw right away that it was a flat, shiny leaf—but not a leaf of vegetation. Rather it was a thin leaf of stone—a piece of a mineral known as *mica*—that was beaming back at me. It's lustrous surface had captured the strong light of the desert sun, throwing it right back into my face. And I was delighted with that, as I knew that this mineral, and the way it lay strewn all over there in numerous fragments, meant that somewhere up above me, on those steep, rocky cliffs of the Estrellas, was a pegmatite, an example of a rock



A gleaming white pegmatite in the Sierra Estrella, near Phoenix, Arizona.

formation sometimes known as “Nature's Jewel Box”.

*Right up my alley*, I remember thinking. A hike through gemstone country! A treasure hunt, even. Well, not quite, it turned out, but it was *close*. All that was missing were the gems and jewels (saleable ones, at least).

By the time I saw it, I was dripping wet and breathing heavily. I was not sure which smelled more strongly: me (probably), or the pungent, desert brush all around, baked dry by the hot, unforgiving sun. There before me, crowning the mountain, was a great outcrop of quartz, white and glassy, looking like a chunky snow-bank, gleaming with the same sheets of mica that I had seen down in the valley.

If you want to go gem hunting, finding a pegmatite is a good way to start, for pegmatites are rock formations where gem minerals are frequently found. There are other places in and around the Valley where such rock structures also occur. “Swarms” of them are to be found in the Hieroglyphic Mountains, and even Mummy Mountain plays host to some mineralogically-rich ones.

Imagine a gigantic body of molten rock, granite in this case, deep in the Earth's crust. As it intrudes into the rock surrounding it, it forces fractures to run through the enclosing hard stone. Into these fractures flows more molten rock, composed of minerals which are more mobile and volatile—distilled, so-to-speak, off the parent mass.

This “liquor” of fluid rock then cools slowly into a solid, dike-like pattern of large crystals—a pegmatite. Later, when it gets exposed by erosion, its concentration of sharp, angular forms reveals the mixture of segregated minerals within—in this case, quartz and mica.

It was these large mica plates, weathered and washed out of the formation, that I was seeing along my route. They make excellent reflectors. But no emeralds or sapphires here. (I had kind of figured that.) Otherwise, there would have been a mine here, probably a very old mine, as pegmatites have been known since ancient times as good places to find large crystals of beautiful and rare gemstones.

I struggled to the very top of the rocks, where the view was breath-taking. In the distance was the metropolis of Phoenix. I could see its downtown skyscrapers, and several snake-like freeways winding through the Valley's maze of crisscrossed streets and avenues.

I recognized Camelback Mountain, readily distinguished by its reddish profile, and beyond I could even see the McDowells and the far-off Mazatzal Mountains. Once more grateful that I'd achieved my goal—this time with the added bonus of some unexpected beauty along the way—I sat there on the immense white, dazzling, hard exposure of almost pure silica, and had the quick thought that it was a wonderful place to get a good, all-around suntan, too. A little closer to the sun, and heaven, you know....

To learn more about these unusual rock formations and the rest of the Phoenix area's engaging geology, visit [www.gemland.com](http://www.gemland.com). Go to the "GeoScenery" section, and click on "Sierra Estrella" on the map to begin a series of images. There are geologic explanations available in pop-up windows, and you can send any web scene to your friends as an E-postcard for FREE!

--- *Richard Allen*

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