



Arizona Rocks 27

Text and photos by Ray Grant

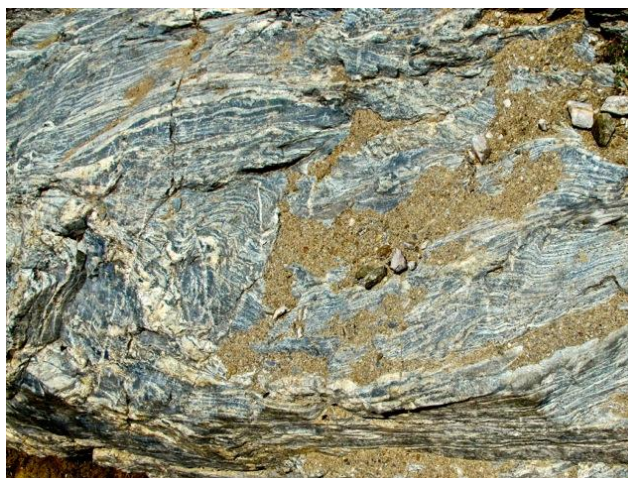
The last foliated metamorphic rocks are ones with a banded texture. It is a combination of foliated and massive textures with a coarse grain size. Some of the minerals present are platy or needle like and some are irregular. This gives the rock a banded look with bands that are foliated and alternating bands that are massive and the name is gneiss (pronounced nice).

Gneiss forms mainly from the metamorphism of igneous rocks. If granite is put under pressure any mica in the granite will line up, the foliated part, while the quartz and feldspar will form the massive bands. This rock would be referred to as granite gneiss. Basalt or gabbro that is metamorphosed to a fairly high grade will contain amphibole the foliated bands, and plagioclase the massive bands. This rock is amphibole gneiss that is often shortened to amphibolite.

In the Phoenix area the Estrella Gneiss is present in the western half of South Mountains, the Sierra Estrella Mountains, and the White Tank Mountains. In these mountain ranges, the Estrella Gneiss consists of amphibole gneiss, biotitic gneiss, and granite gneiss. The Elves Chasm Gneiss is found in the Precambrian rocks in the Grand Canyon, and there are many other scattered locations around the state with gneiss including the Santa Catalina Mountains. The Arizona Geology blog has a connection to a story about gneiss in Sabino Canyon in the Santa Catalina Mountains, <http://arizonageology.blogspot.com/2011/04/sabino-canyons-gneiss-rocks.html>. Next time, the massive metamorphic rocks.



Estrella Gneiss from South Mountain Park



Gneiss in Cottonwood Canyon north of Florence, AZ



Granitic gneiss of the Santa Catalina Mountains
Photo by S. Coté