



Arizona Rocks 28

Text and photos by Ray Grant

The next class of metamorphic rocks is the massive group. Remember, the foliated rocks have flat or needle shaped minerals that grow parallel to each other in response to the pressure during their formation, and the massive texture develops in rocks that have irregular shaped randomly oriented minerals that do not line up. For the foliated metamorphic rocks the texture was used to determine the rock name; grain size (very fine, fine, or coarse) and banding were used. For the massive metamorphic rocks, the mineralogy is used to determine the name.

A rock composed mostly of quartz is called quartzite (or sometimes metaquartzite). Sandstone is the parent rock of quartzite and the difference between them is that the sand grains in quartzite are fused together. Quartzite will look like sandstone, but it has a smooth feel rather than a sandy one. There is quartzite at many locations in central Arizona. Because it is all quartz and well fused together it is the most resistant of all rocks to weathering. It forms the tops of mountains like Piestewa Peak in Phoenix and the top of Four Peaks. Again because of its resistance to weathering, quartzite is the most common material in the gravels of the Salt and Gila Rivers in central Arizona. In some places over 80% of the cobbles are quartzite.

A rock composed of calcite and/or dolomite is called marble. The original rock was limestone or dolostone. Marble reacts with hydrochloric acid. The calcite or dolomite grains in the original rock have been recrystallized into larger interlocking crystals. Marble is present at a number of localities in

Southern Arizona where the Paleozoic limestone formations have been metamorphosed, Arizona Bureau of Mines Bulletin 180 (1969) has the following statement about Arizona marble: "Most of the marble is highly fractured, contains crosscutting igneous dikes, or has color variations which limit the size of blocks or amounts that have uniform color. In general, the localities are not good sources of large blocks of high quality, finished construction stone, but are a source of smaller monument and decorative facing stone." This reference gives 13 possible commercial marble occurrences in Arizona.



Quartzite at Piestewa Peak



Hewitt Canyon marble
Sphere made by D. Duffy
Photo by S. Cote