

Foothills gives examples

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Rocks to many people are something they may notice in the hills and mountains or something they have to dig out of their gardens or just something handy to throw at the neighbor's dog when he decides that the freshly-watered flower bed would be a fine place for a cool nap. Nevertheless, once one becomes acquainted with a few rocks this interest can develop into an absorbing hobby.

The oldest rocks to have been identified and dated in the United States were among the rocks that formed the crust of the Earth and were in place 2.5 billion years ago. So far the oldest rocks found in Arizona are granite, rhyolite (the extrusive form of granite) and the metamorphic rocks quartzite and schist, which date back 1.8 billion years. Shale, sandstone, volcanic tuff and lava flows were here before these metamorphic rocks could be formed from them. This early crust of the Earth has been altered many times and in many ways. Earth movements have thrust up mountains, many of which in turn have been eroded away. Volcanos have spewed out ash, cinders and tremendous lava flows which also may have been completely eroded or buried under later formations.

Arizona has been largely covered by the sea five times. In southwestern Arizona, as the area became elevated, most of the deposits from the bottoms of these seas containing fossils were eroded and washed into the sea or were metamorphosed so few signs of fossils are evident. In northern, central and southeastern Arizona there are numerous limited, but very interesting, deposits of fossils.

Black Mountain furnishes us with specimens of two of the oldest types of rocks. The east side of the mountain is granite while the west side is schist. Granite is made up of quartz, feldspar and usually biotite, a black mica, although light colored micas may also be present. Black Mountain granite is quite coarse, so you can see the minerals from which it is formed. Disintegrated granite makes up much of the soil in Carefree and on eastward for several miles. Schist is a layered rock that will split into thin layers. It contains mica, which is the most visible of its minerals. Black schist may contain the black mineral hornblende as well as biotite. Chlorite colors the green schist and muscovite, a white mica, and is very abundant in mica schist. Chlorite schist can be found along Cave Creek and some washes of this area. Bright, shiny pieces of mica schist are found in the washes leading down from the hills from which the schist has been brought by flood waters.

Basalts from lava flows make up many of the ridges and mesas to the west and north of Cave Creek. Rocks of basalt are dark colored, gray, green, brown or black. Some may be fine grained, but others are coarse grained and contain openings. These openings or vesicles may contain other minerals that have been left by percolating water. Quartz, calcite, clorite and, to the joy of the mineral collector, beautiful zeolite crystals may be found in these vesicles.

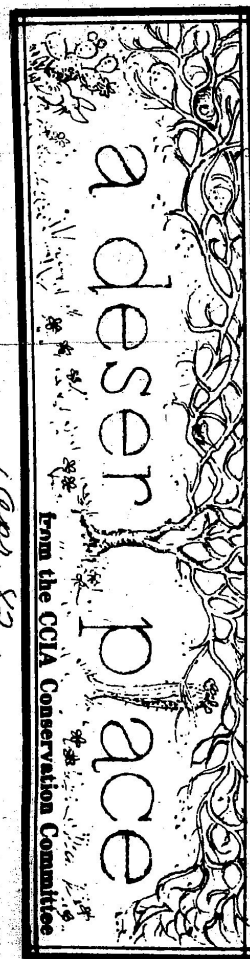
Quartzite is a very hard metamorphic rock made up of grains of quartz which are cemented together by silica so firmly that if you break off a piece you can see that it breaks through the grains, not around them as sandstone will do. It is somewhat glassy, which helps in recognizing it. Since quartzite is metamorphosed sandstone and quartz is changing very little by metamorphism, its colors are much the same as sandstone — brown, yellow, gray, reddish or white.

Rhyolite contains the same minerals as granite, but since it is an extrusive rock it cooled quickly on the surface of the Earth. The crystalline minerals are small-sized and the resulting rock is fine grained; but usually the tiny bits of quartz are visible to the naked eye. Rhyolites are light colored — white, gray, pink, red or purple — and sometimes show the flow marks of the lava from which they were formed.

Creek Semi-regional Park. Walkers can meet in the parking lot of Cave Creek School at 1:30 p.m. and car-pool from there. Passenger cars can negotiate the road with no problem. The walk will be short and easy, and participants should wear rough shoes and clothing. We don't like to compete with the many Fiesta Days attractions, but some flowers just won't wait another week. The abundant rains have resulted in an unusual variety, and this is an opportunity to refresh one's memory of plants learned in previous years.

The line between two different species of rocks is often difficult or impossible to describe as they may grade into one another until only the expert using a microscope or chemical analysis can give a definite answer as to their identification. So any short discussion of the many rocks of the Cave Creek area can only scratch the surface of this subject.

□ **Wildflower walk Saturday afternoon:** This Saturday afternoon the conservation committee of the Cave Creek Improvement Association will sponsor a wildflower identification walk in Cave



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