



## Arizona Rocks 4

Text and photos by Ray Grant

A special rock usually related to granite is a pegmatite. The definition of a pegmatite is an intrusive igneous rock with very large crystals (usually over one inch in size and up to many feet in size). Most pegmatites consist of quartz, microcline, and some plagioclase making them granitic in composition. Pegmatites also may contain unusual minerals. Elements which are small such as boron, fluorine, lithium and beryllium and those which are large such as niobium, tin, and tantalum do not fit into common mineral structures and are left in the solutions forming pegmatites. About 120 different minerals are found in pegmatites in Arizona.

There were three major periods of granite pegmatite formation in Arizona, about 1.5 billion years ago in northwest to central Arizona, about 160 million years ago in southwestern Arizona, and about 60 million years ago in south-central Arizona.

The oldest pegmatites are the only ones in Arizona that have economic importance. The Kingman Feldspar mine operated for many years and was mined for feldspar (microcline) for ceramics. Some of the microcline was in masses 10 to 12 feet thick. Quartz, mica, beryl, and bismuth minerals have been commercially mined from Arizona pegmatites and exploration and limited production has occurred for lithium, tantalum and rare earths.

The economically important pegmatites were in the Kingman area, the Aquarius Mountains, and around Wickenburg. In the Phoenix area, pegmatites are found on Mummy Mountain. They have muscovite, garnet, tourmaline, and a little beryl. Unfortunately, they are now on private land property and not very accessible to the public.



Map of the Arizona Pegmatite belt, the location of the 1.5 billion year old pegmatites.



Pegmatite dike on Mummy Mountain in Phoenix



Kingman Feldspar mine



Beryl with muscovite and quartz from a pegmatite in the Sierrita Mountains, Pima County, AZ  
Barbara Muntyan specimen and Jeff Scovil photograph