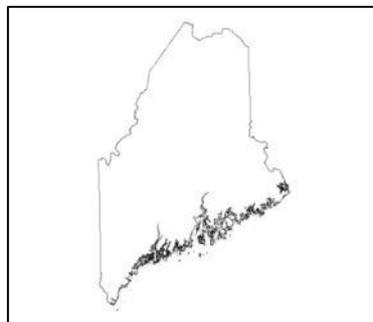


Geologic Site of the Month  
May, 2006

## ***Giant Crystals from Maine***

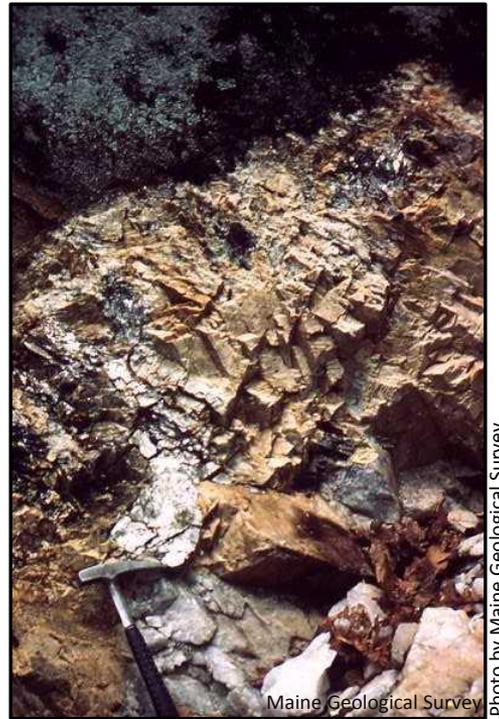


Text by  
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### Pegmatites

The 2006 Maine Mineral Symposium had a talk and exhibits focusing on huge crystals of minerals from Maine. The mineral particles that form ordinary rocks are usually very small and may not be easy to see or identify, but in certain cases they are much larger. The best known examples in Maine are found in a coarse-grained variety of granite called "pegmatite." This igneous rock is composed mostly of ordinary quartz, feldspar, and mica (Figure 1).



**Figure 1.** Pegmatite vein in Stoneham, Maine, showing large masses of milky quartz, pink microcline feldspar, and shiny muscovite mica.

### Pegmatites

Pegmatite minerals usually form massive aggregates that are not especially interesting, but in some places the conditions under which the molten rock cooled and solidified favored the growth of sharply defined crystals of minerals such as garnet, tourmaline, and beryl (Figure 2).



Photo by Maine Geological Survey

**Figure 2.** Coarse pegmatite containing excellent blue beryl crystals, Songo Pond Quarry, Albany, Maine.



### Large Crystals

Less commonly, some of these crystals managed to reach extraordinary sizes (Figures 3-4). If you are the lucky discoverer of such large crystals, you may need to exercise much care and patience with the use of heavy tools to extract them with as little damage as possible. Ideally, any crystal looks best if some of its original host rock is still attached.



**Figure 3.** Feldspar crystal found at the Aldrich Quarry, Stoneham, Maine.

Large Crystals



Photo by Maine Geological Survey

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**Figure 4.** Very large quartz crystal at the Bennett Quarry, Buckfield, Maine.



### Large Crystals

The largest crystals known from Maine are the colossal beryls found at the Bumpus Mine in Albany, back in the early to mid 1900's (Figure 5; Perham, 1987). The largest crystal was 27 feet long, tapered from 4.5 feet wide at one end to only 9 inches at the other, and yielded 26 tons of beryllium ore! It was long believed that such enormous crystals could only form if the pegmatite crystallized very slowly - presumably over thousands or even millions of years - so the crystals would have time to grow so large. However, recent studies indicate that at least some pegmatites probably crystallized much more rapidly, on a scale of days or a few years (Simmons and others, 2003)!

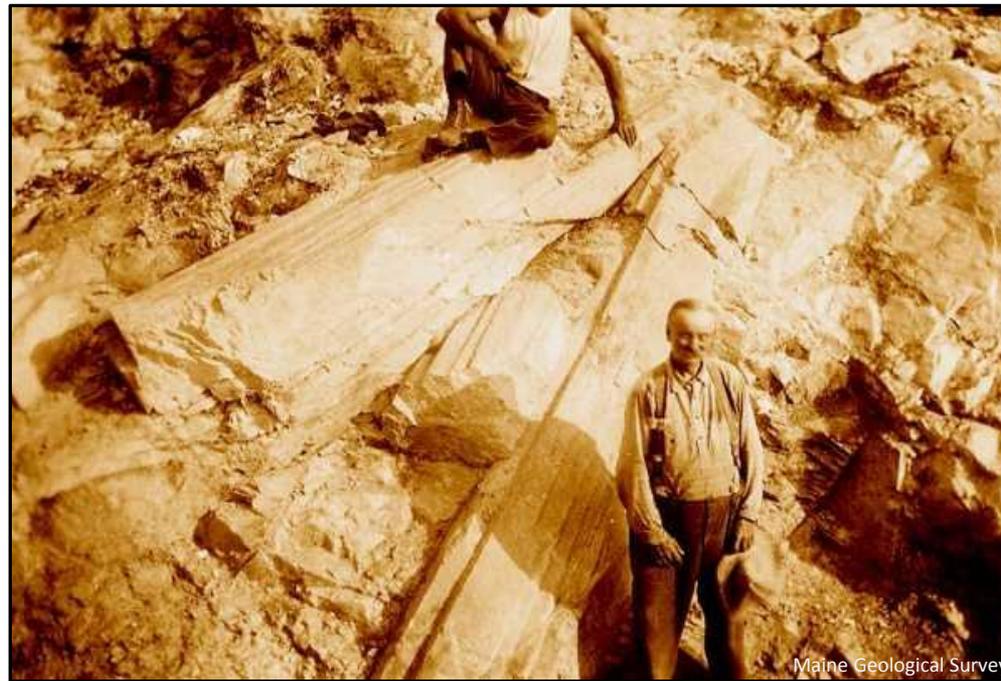


Photo from Perham, 1987

**Figure 5.** Giant beryl crystals exposed in ledge at the Bumpus Mine, Albany, Maine.

### Large Crystals

Giant crystals are best known from pegmatites, but rarely they can be found in the metamorphic rocks of Maine. Crystals of grossular garnet, kyanite, and andalusite to several inches or larger occur in this environment (Figure 6).



Photo by Maine Geological Survey

**Figure 6.** Huge andalusite crystal (center, between hands) embedded in boulder found in the woods, Standish, Maine. Another large crystal segment is lying on the ground in front of the boulder.



## References and Additional Information

- Neumann, G. L., 1952, Bumpus pegmatite deposit, Oxford County, Maine: U. S. Bureau of Mines, Report of Investigations 4862, 15. p.
- Perham, J. C., 1987, Maine's Treasure Chest - Gems and Minerals of Oxford County: Quicksilver Publications, West Paris, Maine, 269 p.
- Simmons, W., Webber, K. L., Falster, A. U., and Nizamoff, J. W., 2003, Pegmatology - Pegmatite Mineralogy, Petrology & Petrogenesis: Rubellite Press, New Orleans, Louisiana, 176 p.

