More About Rocks Ch1: We Love Quartz
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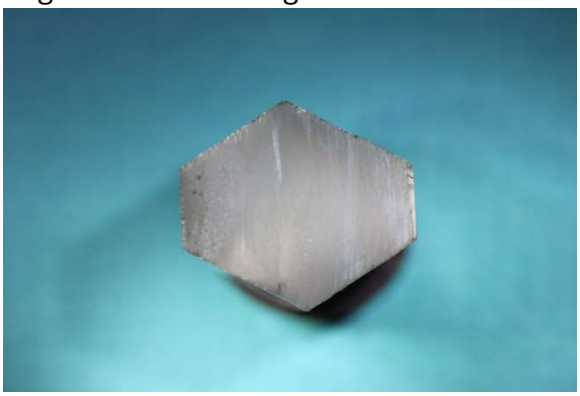
Last Fall our clubs enjoyed two very good presentations, one on Arkansas Quartz and the other on Herkimer Diamonds, also forms of quartz. We all know the classic shape of a perfect Herkimer Diamond, with its double terminations and symmetrical sides. One could say this is the quintessential quartz crystal. For those of us who collect our quartz in local pegmatites, our crystals are not so perfect, but still have great beauty.

Quartz crystallizes in the hexagonal crystal system, and under favorable conditions forms the hexagonal prisms that we tend to associate with quartz. However, quartz crystals commonly occur in a bewildering variety of shapes, some of which may not seem to bear any relationship to a hexagonal form. This is because the crystals are altered and distorted by local conditions and the space in which they can grow. These and other factors control the relative growth rates of the faces. Counterintuitively, as layers of silica are added to a faster-growing face, adjacent faces converge, reducing the size of the faster-growing face, which might even be eliminated entirely. However, even on the most distorted crystal forms, the internal arrangement of atoms is outwardly revealed by the constancy of interfacial angles, which the Danish mineralogist Nicolas Steno described in 1669 by his observations of quartz crystals.

The picture below shows a cross section of a nearly symmetrical quartz crystal. Notice that the angle between each face is the same, 120 degrees, in spite of the differing widths of the faces. The two vertical faces are not as wide as the other four faces. The greater distance between them indicates faster growth, but this crystal maintains the constant 120-degree interfacial angles between faces.



It is elegant indeed, and it helps identify quartz and other hexagonal minerals.

The picture above shows the same crystal on its' side with one of the narrower sides upward. The crystal growth towards the termination produces wide sloped areas above the wider faces, although they are a bit different. Also, the smaller face on narrower side has its termination cut into by an adjacent face. Differences like these are not unusual and reflect the many factors that can affect the external crystal shape. Mineralogy books have names for many of the different shapes of quartz. Also, hexagonal and other crystal types can be numerically quantified by Miller indices. All crystals are beautiful.