

## ***Crystal Peak: Lesser known mineral finds***

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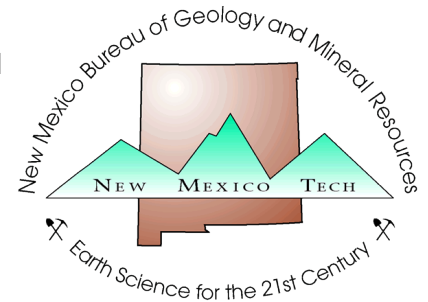
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## CRYSTAL PEAK: LESSER KNOWN MINERAL FINDS

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Most people have seen and enjoyed the smoky quartz and amazonite specimens that have for more than a hundred years been collected from the pegmatites surrounding the Crystal Peak area, north of Florissant, Colorado. Fewer people have seen the rarer minerals from the area. This presentation will illustrate many of these rarer species, a little bit about the environment where they are found and who found them. Most of these rare minerals have been documented in the mineralogical literature but not illustrated. Perhaps the only reason more of these species have not been found is that most people have not recognized their appearance, especially because the crystals range in size from 1-2 cm to micro-minerals. Most of the illustrated specimens were found during the last twenty years.

The largest and most common of the rarer minerals have been topaz, phenakite, cassiterite, and columbite. Topaz on amazonite has been found since the 1870-80s. In Joseph Dorris' collection is a Lazard Cahn topaz (pre-1940) that might have been collected by Ed Over, Willard Wulff or George White. Much more recently, Ray Berry recovered several topaz crystals at his Second Mesabi claim in Park County. In 2017-2018, Joseph Dorris and legal visitors to the Smoky Hawk mine also found etched gemmy topaz crystals scattered in mine debris.

Similarly, phenakite on amazonite and cleavelandite have been found since the 1880s but not frequently. Ray Berry found a few phenakites during his years of collecting. Most recently, Joseph Dorris recovered a handful of loose phenakites from the Buckner pegmatite on the Smoky Hawk claim in 2009.

Cassiterite has been found by several collectors including Daniel Kile, George Fisher, and more recently by David and Linda Leidy, and Joseph Dorris.

Columbite (when analyzed, it was found to be ferrocolumbite) was identified soon after the recognition of Crystal Peak as a mineral locality by Smith (1877). In recent years the best crystals have been found by Bodie and Kim Packham (Figure 1). One of their pocket specimens, with two terminated columbites on a matrix of cleavelandite, was sold to Philip Persson and found its way into the Mines Museum collection. It is currently on display in Golden. The Packhams have retained their largest terminated crystal. Numerous imperfect columbite crystals have been found within matrix at the Smoky Hawk mine.

With the Smoky Hawk mine being the most active mining effort in the Crystal Peak pegmatite field, it also has produced the most rare minerals. Joseph Dorris, as the mine operator, has probably uncovered the greatest diversity of rare minerals. His largest was a single genthelvite octahedron. His other rare minerals were found in thumbnails and sometimes smaller size



Figure 1. Columbite on amazonite, plagioclase and quartz, Repeat Pocket II, Crystal Peak area. Dug in 2011, 6.5 x 4 x 2 cm. Bodie and Kim Packham specimen, Mark Jacobson photograph.

such as acicular milarite crystals, a cluster of glassy monazites and a single crystal of xenotime embedded in amazonite.

Thomas Cheatham with Dorris' permission has collected from abandoned pocket debris on the Smoky Hawk claim for many years, finding an abundance of tiny vugs with micro-minerals. From these vugs, with the photographic help of Brad Meese, they have recovered and documented numerous species. These include anatase, ilmenite, rutile as needles as well as blocky crystals, niobium-rutile, xenotime, monazite, synchysite (in two morphologies), and bastnaesite.

Bob Carnein and allied research associates, during the last few years have reported on other unusual minerals from the Crystal Peak area such as pocket barite found by Eva Germano in 2007, botryoidal SW fluorescent blue apatite (possibly hydroxylapatite) found by Valerie Babbitz in 2017 (Carnein 2019b), and a rare aluminofluoride suite of cryolite, pachnolite, prosoosite, hydrokenoralstonite, and gearsutite in a pegmatite (Carnein, Persson, and Raschke 2021).

Bertrandite from the Crystal peak area is quite rare. Only three discoveries are known. The first was from a pocket dug by John and Barbara Muntyan and Charles Baldwin. The second is one specimen dug by Al Ordway in 1978. In September 2021, Derek Leidy opened an amazonite-smoky quartz pocket that contained numerous clusters of flat, bladed crystals, either loose or on amazonite and smoky quartz (Figure 2). The largest single crystal in one cluster was 4 x 7 mm.

Zircon has been recovered as a single crystal with slightly rounded faces by Daniel Kile, single elongated crystals by



Figure 1. Bertrandite cluster, uncleaned. Largest vertical crystal is 4 x 7 mm, specimen 1.2 x 1.9 cm. Derek Leidy specimen, Mark Jacobson photograph.

Ray Berry, and as a rounded mass of interlocking crystals with cyrtolite morphology by Brent Rovedo.

Richard Frettard from the Holy Moses pocket recovered besides his smoky quartz, microclines, and fluorites, a glassy terminated apatite at 15 x 5 mm in size.

Since lead (with water) has been attributed and proven to be the cause of the green, blue, and blue-green colors of amazonite since the 1960s, the finding of galena has been expected. Don Smith, Sr. noted a large mass of galena in the 1986 Keyhole vug. A sample from this mass was analyzed but never photographed. More recently, Michael Wild in 2019, uncovered a lustrous nodule of galena in one pegmatite on the Henrietta Roy claim.

Pseudomorphic pyrite has been found as crusts of 0.5 to 1.0 mm crystals on smoky quartz by Chris van Cleave from Crystal Peak. At this point, only Daniel Kile has noted lustrous, shiny micro-crystals.

Calcite has been found by a handful of people. Dan Kile before 1997 found a large cluster of calcite crystals, not particularly attractive, but it weighed eighteen pounds (8.2 kilograms). More recently small clusters of yellowish white crystals were found on the PA claim as a late stage mass on smoky quartz. The most attractive was a cluster of lustrous, translucent yellow crystals found by Brent Rovedo in the center of a smoky quartz microcline

pocket. Scalenohedron pseudomorphs of manganese oxide after calcite are much more common. Joseph Dorris and Derek Leidy have both found attractive clusters of these pseudomorphic calcite crystals.

The rhombohedral pseudomorphs of goethite or hematite after what is speculated to be siderite or maybe even after calcite are quite abundant as late stage crystals in miarolitic cavities, but alas, no unaltered or partially altered rhombohedral crystals have been announced by anyone. By analogy to the White Mountain pegmatites of New Hampshire, rhombohedral pseudomorphs have been found with residual, unaltered cores of siderite (Lovering, Falster, and Simmons 2020; Al Falster 2022, personal communication).

Lustrous metallic black rhombohedral crystal clusters, some with fluorite cubes on them are occasionally found. These are almost always labeled as hematite, with the high luster being used by many as proof of hematite. Whether these are primary or pseudomorphic crystals has rarely been discussed.

Manganese oxides, sometimes hydrated, have been found in many pockets but are frequently not saved. Psilomelane is the field term (but not an IMA approved mineral name) for unidentified, relatively hard, black, masses. Specific identification of these black masses though, has always been problematic which is normal for manganese oxide minerals. Collectors have in the past identified them as todorokite (Na-K-Ca-Ba-Sr-rich hydrated manganese oxide), romanéchite (Ba rich hydrated manganese oxide), pyrolusite (manganese oxide), or cryptomelane (K-rich manganese oxide). Without both compositional data and x-ray diffraction (XRD) analysis, identification is suspect – physical properties are not distinctive nor is XRD. One sample of an attractive black branching mass from the Smoky Hawk claim, provided by Joseph Dorris, was from analysis by “The Mineral Lab, Inc. of Golden,” a mixture of several manganese oxide minerals, dominated by cryptomelane (>75%) with minor amounts of romanéchite, pyrolusite, and braunite. Ray Berry’s former collection had todorokite and pyrolusite specimens but it is unknown if these were supported by analyses or x-ray diffraction.

#### References

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