Since its beginnings in 1891, the Cripple Creek district’s 500 or so mines have produced an estimated 22 to 24 million ounces of gold—more than half of Colorado’s total output of gold. The Victor area included the district’s 4 richest mines. The Portland, Cresson, Ajax, and Independence mines together produced more than one-third of the district’s gold, and total gold production for the Victor area is about 12.5 million ounces (Jensen, 2003). Victor is thus the heart of the most productive gold district in Colorado and the third most productive in the U.S.

The city of Victor, on the southwestern side of Pikes Peak, was founded by Frank and Harry Woods. The city began to take shape in 1891, shortly after W.S. Stratton discovered gold nearby. Victor quickly grew from a camp of tents and miners’ shacks on the side of Battle Mountain to a platted city by 1893. The following year, Victor was incorporated. The arrival of the Florence and Cripple Creek Railroad in 1894 and the Midland Terminal Railroad the following year made Victor a center of commerce in the district. Soon Victor was one of the most prosperous and largest cities in Colorado. During the excavation of a hotel foundation in downtown Victor, workers discovered a rich gold vein. The Gold Coin Mine was quickly established to work this vein. The Strong Mine, another mine within the city limits, was also a big producer. Victor soon became known as the “City of Mines.”
In August of 1899, a fire burned much of the city. Within 8 months, a new Victor emerged with a business district built mainly of brick (Feitz, 1967). Many of those brick buildings survive.

Today, Victor is one of the best preserved mining camps in Colorado, with period homes, turn-of-the-century buildings, and historic gold mining structures. Currently, AngloGold Ashanti owns about 85 percent of the district’s productive area, with recoverable gold reserves and resources amounting to several million ounces (Tim Brown, personal communication, 2008). Today, the Cripple Creek and Victor Gold Mining Company operates the largest open pit and heap-leach mine in Colorado. Low-grade disseminated gold (native gold attached to pyrite or within the molecular structure of pyrite) is the target of current mining operations (Hunter et al., 2009). Production for 2009 is estimated at 292,000 ounces of gold (Tim Brown, personal communication, 2009). A continuing exploration program, with the goal of defining additional resources, recently extended the mine’s projected life to 2016.

Most of the district’s gold has come from an altered Oligocene diatreme/intrusive complex exposed over an area of 18 km². The complex was emplaced along reactivated north-northwest-trending basement structures during the transition from Laramide compression to Rio-Grande-rift extension, between about 34 and 28 million years ago. The diatreme occupies a place where four Precambrian units come together: 1.7 Ga metasediments, metavolcanics, gneisses, and schists; 1.65 Ga syntectonic (augen) gneiss and feldspathic granite (known as the Ajax Granite); 1.43 Ga leucogranite (the Cripple Creek Granite or Quartz Monzonite); and 1.05 Ga granite, alkali feldspar granite, fayalite syenite, and diabase (the Pikes Peak Granite).

The diatreme, which flares upward from three sub-basins at depth, is filled with an altered heterolithic breccia (the Cripple Creek Breccia) that was
intruded by hundreds of small plutons having a wide range of mainly phonolitic lithologies and alkaline compositions. Subsidence followed the emplacement of the diatreme. As a result of this subsidence and convection, carbonized wood fragments have been found to depths of over 915 m (Hunter et al., 2009).

The parent magma, which probably came from the asthenosphere, was relatively unaffected by its transit through the lithosphere (Jensen, 2003), but it differentiated with time. Hydrothermal alteration predated and accompanied formation of the diatremal and intrusive rocks, but gold mineralization mostly post-dated magmatism. Late, more mafic magmas may have supplied at least some gold and tellurium. The gold-bearing late hydrothermal fluids (about 28 Ma; Tim Brown, personal communication, 2008), which were mostly of magmatic origin, produced extensive carbonation and potassium metasomatism of the host rocks. Sodium and calcium in feldspathoids were replaced with potassium, forming “adularia” (Lindgren and Ransome, 1906; Thompson, et al., 1985). Mafic minerals in the host rocks were altered to dolomite, magnetite, pyrite, and fluorite, among others. Fluid-inclusion studies suggest temperatures of 125 to 220 °C. Carbonates (i.e. calcite, dolomite) in the veins and altered rocks at depth buffer acids produced by the breakdown of pyrite near the surface, an important environmental advantage for the current mining operation.

Ore minerals, which are mostly gold and silver tellurides, were emplaced in a single phase in swarms of thin seams or narrow veins that sometimes form long, anastomosing or overlapping trends. Besides tellurides, the veins often contain quartz, fluorite, carbonates, “adularia,” pyrite, celestine, barite, and base-metal sulfides (especially sphalerite, galena, and tetrahedrite). Gold mineralization accompanied boiling, cooling, and CO₂ effervescence of ascending fluids and is mainly confined to the upper 1000 m of the deposit. However, deeper exploration targets for both gold and base metals may exist. A variety of
hydrothermal breccias are locally important ores. In the upper 300 m, disseminated microcrystalline electrum (natural alloy of gold and silver) and tellurides accompany pyrite in abundant veinlets. These occur in permeable zones in various host rocks, mainly at structural intersections or along major northwest-trending shears (Pontius, 1992). Throughout the district, mineralization often shows little obvious relationship to particular host rocks, though more mafic rocks commonly occur nearby.

The complex geological history outlined above resulted in an unusually complicated mineralogy for an area of relatively small size. More than 120 minerals have been reported from the ores and host rocks of the district (Carnein and Bartos, 2005), of which a small number are of economic or collector interest. The major historical ore minerals are calaverite, AuTe₂, sylvanite, (Au, Ag)₂Te₄, and krennerite, (Au, Ag)Te₂. Because these minerals are difficult to distinguish, their relative importances are unknown, but indirect evidence suggests that calaverite is far more important than other ore minerals (Jensen, 2003).

Few records were kept of silver production, but it was probably significant. Although native gold was of little importance during the district’s heyday, electrum is an important ore mineral in the current high-volume, low-grade, near-surface mining operation.

Attractive specimens of these and other minerals can be seen in museums and private collections, although native gold specimens of collector interest are very scarce. Other specimen-grade minerals include large amethyst crystals, yellow and purple fluorite, melonite, tellurium, turquoise, and, in a single occurrence from 2001, an attractive assemblage of botryoidal rhodochrosite, purple creedite, yellow and blue celestine, and gearksutite, all from the Cresson open pit. Aside from the recent Cresson finds, poor records were kept with most historical specimens, and locality information for fine specimens was often
fabricated. As a result, and because the geochemistry and mineralogy of the productive zones were relatively uniform across the district (Jensen, 2003), one cannot readily identify minerals that are unique to the Victor area.

References


Thompson, T.B., A.D. Trippel, and P.C. Dwelley, 1985, Mineralized veins and breccias of the Cripple Creek district, Colorado: *Economic Geology*, vol. 80, p. 1669-1688.
An artist’s view of one of the Battle Mountain mines near Victor, Colorado. Original watercolor by Marge Breth.