

The Mines and Minerals of the Copper Mountain Mining District, Morenci, Greenlee County, Arizona, USA

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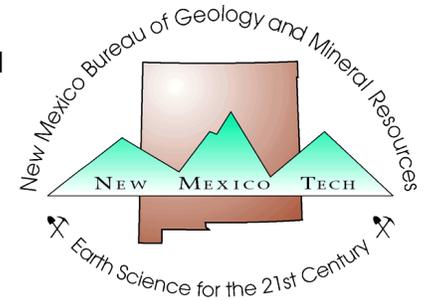
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The annual [New Mexico Mineral Symposium](#) provides a forum for both professionals and amateurs interested in mineralogy. The meeting allows all to share their cumulative knowledge of mineral occurrences and provides stimulus for mineralogical studies and new mineral discoveries. In addition, the informal atmosphere encourages intimate discussions among all interested in mineralogy and associated fields.

The symposium is organized each year by the [Mineral Museum](#) at the [New Mexico Bureau of Geology & Mineral Resources](#).



Abstracts from all prior symposiums are also available: <https://geoinfo.nmt.edu/museum/nmms/abstracts>

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The Copper Mountain Mining District, also known as the Clifton-Morenci Mining District, is located in Greenlee County along the Arizona-New Mexico border near the center of this border. This district was in Graham County until 1911, when Greenlee became a separate county.

The earliest prospectors accessed this area from Silver City, New Mexico Territory, first panning for gold along the various streams and dry river beds. The green and blue stained rocks attracted the interest of prospectors, as well as that of soldiers who were sent to the area to subdue the indigent tribes, mainly the Apaches, for which this was their long-time home (Canty, Greeley and Conger, 1987).

As with all of the early mines and mining districts in the Arizona Territory, the high transportation costs determined whether a mine was profitable or not. This was especially true with the copper districts like Bisbee and Morenci. The early mine owners in Morenci were dependent on ores that had to average 20% copper or better to even consider making a profit.

Morenci's mineral deposits were unique because they were located near the top of the mountains along Chase Creek. The ores were hoisted to the top of the mountain and then moved down to creek bed by way steep railways installed down the sides of these mountains. The ore was trammed downhill about six miles to the smelters at Clifton, where there was a reliable water source at the San Francisco River. In later years several of these mines used a common haulage drift at the base of the mountain and transferred their ores down winzes to the waiting trains.

These ores were stockpiled at Clifton (Eric Melchiorre, personal communication). Any specimens labeled as Clifton came from this stockpile because there were no mines in Clifton. Can you imagine walking across these stockpiles and picking up azurite and malachite specimens?

The collecting culture so prominent in Bisbee did not develop in the Morenci mines. Certainly, there was no general manager like Ben Willians at the Copper Queen who realized a ten-pound azurite specimen was worth far more as a specimen than the copper it contained. Plus, the mineralogy of the Morenci deposits is nowhere near as diverse as those of Bisbee. The major species of interest to the collector are azurite, malachite, cuprite, native copper, diopside, sphalerite, and pyrite, although a total of 90 species have been identified from this area (Hay and Wilson, 2019).

Old Morenci specimens are found more frequently in eastern collections. The same dealers from the East Coast frequenting Bisbee and Tombstone also traveled to Morenci, especially once the railroads were completed around 1890. These high-grade orebodies were depleted by the early 1900s and specimen production dwindled significantly. Then in the late 1920s and early 1930s, the Coronado Mine was turned over to lessors (Dick Graeme, personal communication). One batch of azurite and malachite specimens was sold to a dealer in Oregon where the boxes were rediscovered in about 2015. The specimens were easily dated because they were wrapped in early 1930s newspapers (Mark Hay, personal communication).

Many Morenci specimens are mislabeled as Bisbee. The Arizona collector has to take on the role of the sleuth to correctly

identify Morenci specimens from Bisbee and other localities. Differences in the matrix and a few associated minerals are used to verify the proper localities. For example, the aforementioned Coronado Mine specimens have minor chrysocolla which is a tell-tale sign for Morenci and an association that does not occur in Bisbee (personal communication, Dick Graeme).

Specimen recovery took a huge step forward in 1974 when Wayne Thompson formed Southwest Mineral Associates and acquired the collecting contract at Phelps-Dodge and Company's Southwest Division (Bisbee, Morenci and Ajo). Starting with the Metcalf pit and then various areas of the Morenci Mine, specimens were recovered that otherwise would have gone to the leach dumps. The famous azurite stalactite pocket of 1985 and all of the azurites and malachites from the Northwest Extension are in collections today because of this contract.

Morenci is the largest and most productive copper mine in North America, moving around 900,000 tons per day of rock. The opportunities to collect occur rarely. If an employee or contractor is fortunate enough to be in the right spot at the right time then the occasional specimen is preserved although this is against company policy.

References

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Hay, M. and Wilson, W.E. (2020). *The Morenci District, Greenlee County, Arizona*. Mineralogical Record, 51, 71-118. Tucson, Arizona.

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Figure 1. Azurite and Malachite after azurite – Detroit Mine, Morenci, Arizona. Collected in the 1880s or 1890s. 11cm wide. Les and Paula Presmyk collection. Jeff Scovil photo.



Figure 2. Azurite – Coronado Mine, Morenci, Arizona. Collected in the late 1920s to early 1930s. 21cm long. Les and Paula Presmyk collection. Les Presmyk photo.

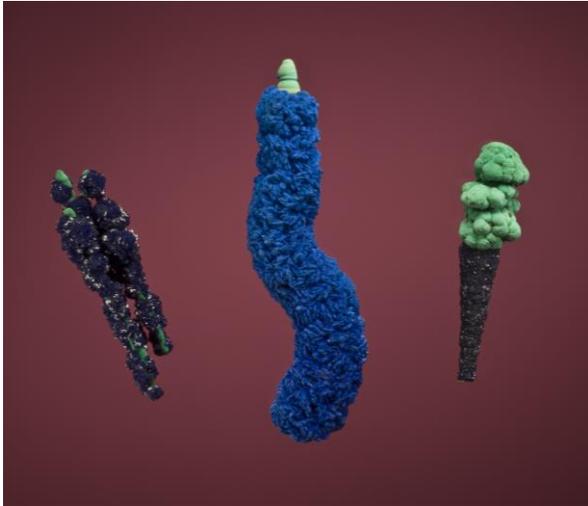


Figure 3. Azurite and malachite stalactites. Morenci Mine, Morenci, Arizona. Collected in 1985 and 1992. The center stalactite is 11.5cm tall. Les and Paula Presmyk collection. Jeff Scovil photo.



Figure 4. Malachite after azurite and Azurite – Detroit/Manganese Blue Mine areas, Morenci Mine, Morenci, Arizona. Collected in 1998 and probably out of the same area as the specimen in Figure 1. 13cm wide. Les and Paula Presmyk collection. Jeff Scovil photo.