Mineral Showcase

Malachite

$Cu_2CO_3(OH)_2$

Malachite is the most common, stable, and widespread of the secondary copper ores. It forms in the near-surface oxidation zone of hydrothermal deposits (usually in carbonate rocks such as limestones) as the result of the weathering of primary copper-bearing sulfide minerals, and is usually associated with other secondary copper minerals, such as azurite, cuprite, and native copper. Due to its abundance, it is often a significant ore in itself.

As likely the first ore of copper, malachite was known and coveted by ancient civilizations, as archaeological evidence indicates the mineral having been mined in Egypt as long ago as 5000 BC. It was also mined in Britain going back at least 3800 years, and in Israel over 3000 years ago. Among its earliest uses was as jewelry, an eye paint, a pigment for glazes and wall paintings in tombs, and for coloring glass.

Believed to have supernatural properties, it was ground to a powder and placed in amulets that were worn by loved ones to keep them safe from evil influences. Like its durable color, such superstition did not fade with time; it was worn as a semi-precious gem in the middle ages to protect the wearer from witches!

Its name is derived from the Greek *molochites lithos* (mallow-green stone) referring to the mallow plant's rich green color. The color is not susceptible to external environmental conditions, thus it is not affected by light, water, or heat (although the mineral itself will fade as it desiccates upon long exposure to weathering). This property made it useful as a colorfast pigment called "mountain green" for fine art paintings from the 15th through 19th centuries. Modern artists utilize a synthetic pigment to achieve similarly rich foliage-green results.

Malachite occurs in numerous habits, such as fibrous/botryoidal crusts, films that stain local rocks, solid compact masses, stalactites and stalagmite, soft velvety sprays of acicular silky needles, and as pseudomorphs after azurite. Crystals are relatively rare and small, seldom found over a sixteenth of an inch in length. However, specimens mined in Kolwezi, Democratic Republic of Congo, attained lengths of up to 4 inches!

In its most dense form, the mineral was cherished for use as decorative ornaments, since its softness made it easy to carve and polish for such items as vases and veneer for table tops. Huge deposits discovered in the Ural Mountains in the 19th century were the source of the banded masses that were fashioned into such things as furniture, artifacts, and even as pillars to decorate Russia's Grand Kremlin Palace.

The verdigris patina on copper/brass/bronze statuary (e.g. the Statue of Liberty), copper roofing material, etc., is composed of a mixture of various oxidized copper compounds, (such as copper carbonate, chloride, and acetate, any of which may dominate in particular environments), including malachite, the carbon dioxide necessary for its formation being obtained from long exposure to the atmosphere.

Today, fine specimens of malachite are still highly sought after by mineral collectors and are found in museum collections the world over.

Classic Relationship Specimen

VII 20 D

Fibrous aggregates of Malachite xls with Calcite and Goethite

Specimen 2.25 x 1.5 inches

Ninety Nine Mine

Goodsprings, NV

Malachite is one of the most popular minerals found in collections, for good reasons. Though quite common, it occurs in numerous habits (e.g. botryoidal clusters, fibrous crystal sprays, pseudomorphs, etc.), presents a silky, rich green color that does not fade with time or exposure to light (as on window sills or in illuminated display cabinets), and is usually found in association with other minerals that make for quite attractive, eye-catching display. This is demonstrated in the specimen above collected in the 90s at the Ninety Nine Mine in the Goodsprings District of NV, in which silky veins of vivid green, fibrous malachite crystals surround cores of white calcite in a matrix of goethitic limonite. Unfortunately a recent visit revealed few, if any, such samples remain in the dumps at this site.

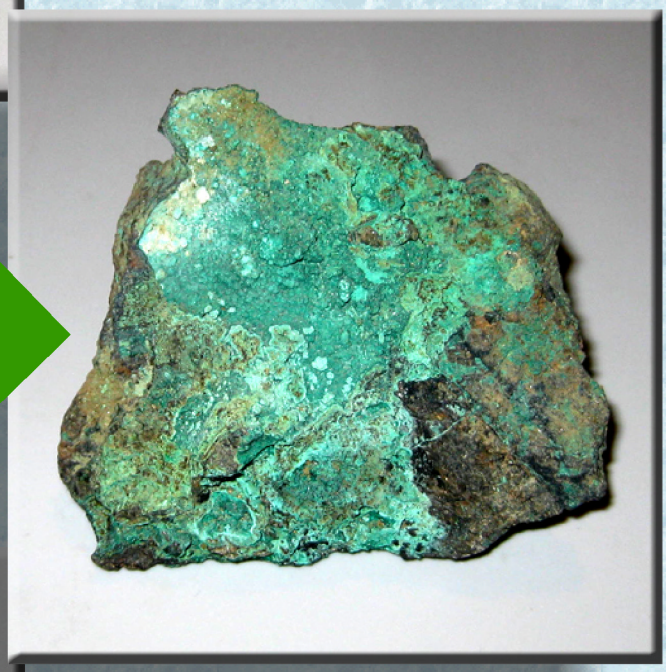
from the G. Miles Lehman Collection

VII 143 D

radial, fibrous aggregates of acicular xls filling vacant seam in matrix

Shaba, Congo

Specimen 2.9 x 2.125 x 1.38 inches



VII 45 D

botryoidal crust on rocky matrix

Key West Mine

Bunkerville, NV

Specimen 2.75 x 2.5 inches

VII 56 D

botryoidal cluster with no matrix

Africa

Specimen 1.5 x 1.75 inches

All specimens from the G. Miles Lehman Collection

Crystal Class: Monoclinic Hardness: 3.5-4 Specific Gravity: 3.9-4 Streak: Light Green

VII 40 D

with sphaerocobaltite on marble

Katanga, Congo

Specimen 2 x 1.5 inches

VII 21 Da

rosette clusters with azurite, limonite

Bisbee, AZ

Specimen 2 x 2 inches

VII 73 D

crystal sprays in gossan vugs

Mohawk Mine

Mountain Pass, CA

Specimen 2.5 x 2.25 inches

All specimens from the G. Miles Lehman Collection