

## MALACHITE



A widespread supergene copper mineral often found with azurite, though in Michigan, azurite is much less abundant. Much of the green powdery coatings seen on the surfaces of specimens of “float” copper or native copper exposed to the atmosphere in mine dumps throughout the Lake Superior copper district is probably malachite. Most of the malachite on copper from the mine dumps is likely of post-mining origin. Only the more prominent localities will be mentioned here. Northern Peninsula.



Figure 98: Malachite crystals on calcite from the Mendota mine, near Mount Bohemia, Keweenaw County. Largest aggregate is 1.4 cm. A. E. Seaman Mineral Museum specimen No. DM 21407, Jeffrey Scovil photograph.

**Dickinson County:** 1. Vulcan iron mine. 2. NW ¼ section 24, T39N, R28W: With azurite, as an alteration product of concretionary masses of chalcopryite in siliceous dolomitic marble (Randville?) (Rominger, 1881). 3. Near Norway, in a rock and gravel quarry approximately 1 km east of Fumee Lake, SE ¼ section 25, T40N, R30W: As rare sprays of microcrystals to 2 mm with chalcopryite in quartz-lined cavities (S. M. Carlson, personal communication, 2000). The quarry is privatey owned, and permission must be obtained before visiting.

**Gogebic County:** 1. Ironwood: With globular calcite in vuggy hematite. 2. With chalcopryite (q.v.) in quartzite on County Road 206, NE ¼ section 5, T45N, R40W, about 13 km northwest of

Watersmeet: As subsurface fracture coatings (Cannon, 1980).

**Houghton County:** 1. *Quincy mine:* With cuprite and as velvety coatings of microcrystals coating native copper. 2. Portage mine. 3. Centennial mine. 4. Champion mine, Painesdale. 5. Laurium mine, Osceola (4 to 5, Morris, 1983). 6. *Isle Royale mine, Houghton:* As bright green, radial sprays of acicular crystals up to 3 mm in basalt vesicles. Also as beautiful microscopic “rings” associated with azurite and cuprite in small vugs in quartz at the Isle Royale Number 1 mine (Tom Rosemeyer, personal communication, 2000).

**Keweenaw County:** 1. *Mendota mine:* As bright green, coarsely crystallized, radiating tufts up to 1 cm on calcite; clearly the finest malachite known from Michigan. 2. Mount Bohemia: Occurs as an alteration of various copper sulfides in veinlets (Bhatt, 1962). 3. Cliff mine: As an alteration of chalcocite in a zone of chalcocite-hematite vesicle mineralization in the Greenstone amygdaloid (Cornwall, 1951a). 4. *Allouez mine:* Green, radiating tufts and some rare crystals occur with chrysocolla, tenorite, cuprite, and quartz in conglomerate (Spiroff, 1964). 5. Delaware mine (Morris, 1983). 6. Clark mine: Spheroidal aggregates on pumpellyite. Also in prehnite with brochantite, replacing chalcocite (Bee and Dagenhart, 1984). 7. *Wolverine Number 2 mine:* Good microcrystals up to 2 mm (T. M. Bee, written communication, 1985).

**Marquette County:** 1. Marquette River: Coatings on copper sulfide veins in Kona Dolomite (Gair and Thaden, 1968). 2. Republic mine: As an alteration of chalcopryite with dolomite (Morris, 1983). 3. Presque Isle: In basal Jacobsville Sandstone.

**Ontonagon County:** 1. *Algomab mine:* Abundant occurrence (Butler and Burbank, 1929) with diopside, cuprite, chrysocolla, tenorite, atacamite, and paramelaconite (q.v.) (Williams, 1962a; Moore and Beger, 1963). 2. Ogima mine. 3. Porcupine Mountains: Found in quartz veins with native copper. 4. White Pine mine: Occurs in veinlets (Carpenter, 1963), and encrustations on native copper (Rosemeyer, 1999). 5. Minesota mine: As sprays of bright green microcrystals between pebbles of conglomerate. Associated minerals are tenorite (black acicular microcrystals) and cuprite (Tom Rosemeyer, personal

communication, 2000). **6.** National mine: With cuprite, coating native copper. **7.** Belt mine: Uncommon in cavities in basalt as curly, pale green aggregates several mm across with quartz (S. M. Carlson, personal communication, 2001). Specimens greatly resemble those described by Wight (1998) from Schwaz-Brixlegg, Tyrol, Austria. **8.** Indiana Mine: Bright green with chrysocolla (Rosemeyer, 2003c).

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#### **UPDATE**

**Baraga County:** See part IV.

**Ontonagon County:** Cuyahoga mine, N ½ SE ¼ section 13, T51N, R43W, west of Silver City: As bright green bow-tie crystal aggregates up to several mm in calcite veins cutting andesite and basalt flows of the Oronto Group.

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