**Minerals of the Bronk Quarry, near Winona, Minnesota**

One of my favorite mineral collecting localities is the Bronk quarry, situated a few miles west of Winona, Minnesota. An interesting set of minerals, highlighted by calcite scalenohedral "dog-tooth" xls. Over 6 inches long, is found. To find the quarry, go to the intersection of Highway 14 and Highway 61 on the north edge of Winona . Turn west onto Highway 14. Highway 14 climbs through a beautiful section of Cambrian and Ordovician rock as it ascends the bluffs. About 2 miles after making the turn, the Bronk Quarry is visible to the right (north) of the highway. I have visited the quarry 4 times on weekends and have yet to find the quarry either working or posted. Please exercise the usual rules of rockhound courtesy to keep this locality open. The quarry walls are high and unstable, and should be avoided. Watch your step as well on the rubble piles on the floor of the quarry.

The bedrock of the quarry is the dolostone of the Oneota Formation of the Prairie du Chien group. This dolostone is a fine-grained, vuggy, grey rock with chert nodules. Large stromatolite mounds (fossil algae) are found here. Several caves, now mostly filled with red bedded clays and silts can be seen on the quarry walls. The minerals of interest are filling vugs in the dolostone. These minerals are quartz, calcite, dolomite, and goethite and hematite pseudomorphs after pyrite and marcasite.

The quartz forms the earliest vug-filling mineral. It occurs both as greyish, occasionally banded, chalcedony rinds and as drusy crystals. The drusy quartz crystals are generally white, but may be stained yellow, orange, brown or black by later iron oxides. Some attractive large specimens of drusy quartz occur here. These particular habits of quartz are common in the Prairie du Chien rocks of the Mississippi and St. Croix Valley regions.

Several generations of calcite are present. The most abundant is a coarse cleavable white calcite which usually fills the centers of vugs. Cleavage faces several inches across are common. A less common tannish calcite also occurs as coarse cleavable cavity fillings. Where the cavities are large enough, the calcite may form large crystals. These are sharply terminated, and dominated by the scalenohedron form. The crystals are partly overgrown with rhombehedral forms. This zone gives some attractive color and shape affects. The scalenohedrons are grey or pale yellow while the rhombohedral overgrowths are white, looking like miniature snowcaps. The rhombohedral crystals also give the large crystal an interesting stepped exterior due to the parallel growth of hundreds of tiny rhombohedrons perched on the larger scalenohedron faces. The calcite of the Bronk Quarry fluoresces mostly blue, red or peach under short wave U.V. light.

Iron oxide, in the formed of goethite and, less commonly, hematite, is found in the quarry. Most often these form masses, nodules and stains on the bedrock and the drusy quartz. Occasionally they show euhedral crystal faces revealing that they are pseudomorphs after (that is, have replaced) earlier pyrite and marcasite. The pseudomorphs after marcasite show the typical thin bladed cockscomb form, and may be up to an inch across. The pseudomorphs after pyrite show equant crystals up to ¼ inch across dominated by the cube and octahedron. Samples containing

lustrous black goethite pseudomorphs set on sparkling drusy quartz or white coarse calcite are attractive.

The last time I visited the quarry, in late May, 1990, it had not been working for a while and the piles were beginning to weather. If the quarry becomes active again and new rock is exposed, collecting should be good. If it isn't, it is possible that other quarries in this formation in the Winona area will turn up similar suites of minerals. Some reconnaissance work I've done just across the river in Wisconsin suggests that coarse calcite vug filling is typical of this region, although euhedral crystals the size of those seen at the Bronk Quarry are unusual. If no great finds should turn up on a trip to Winona, you will at least have had a pretty drive, and an excuse to eat at one of Winona's fine restaurants.

-Dr. Bill Cordua, University of Wisconsin-River Falls