

What's in a Vug?

Interesting crystal specimens can be found throughout our region in the bedrock formation known as the Prairie du Chien dolostone. This sedimentary rock is very widespread forming, for example, the rock on the bluffs overlooking the St. Croix River and Mississippi Rivers in Wisconsin and Minnesota. It is also well exposed along smaller river valleys and in road cuts and quarries throughout adjacent region. It was deposited in a shallow sea about 450 million years ago.

A dolostone is a rock similar to limestone, differing in that it is made mostly of the calcium-magnesium carbonate called dolomite, rather than the calcium carbonate, calcite. Like limestone, dolostone is prone to dissolve slowly in slightly acidic groundwater. As a result the Prairie du Chien dolostone is often honey-combed with solution cavities ranging in size from pin-holes to large-walk in cavities such as Crystal Cave in Spring Valley, Wisconsin. These openings may later be partly or entirely filled with minerals deposited by later ground water solutions. Although hardly "world-class" in quality, the minerals are quite attractive when magnified. Minerals found in these cavities are quartz (crystals and agate), calcite, dolomite, sphalerite, and copper minerals such as chalcopyrite and malachite may also be found.

Quartz is the most common mineral found in the cavities. Many cavities have a lining of bluish grey chalcedony. Occasionally, the chalcedony is broadly banded in pink, white, grey or tan, making agates. I suspect that locally decent cutting material may occur. Quartz is also found as small sparkly "drusy" crystals, usually a few millimeters long. The quartz ranges in color from clear to icy-white to red to brown, depending on the amount of iron oxide intergrown in it. I have seen many attractive samples from the Prairie du Chien, some quite large, honeycombed with cavities filled with quartz crystals.

Dolomite crystals are also common, forming tiny tan rhombohedrons 1 to 2 millimeters across growing on top of the quartz. The dolostone matrix has often recrystallized to a mass of small rhombohedrons. The dolomite may fluoresce and phosphoresce pale blue or yellow under short wave ultraviolet light.

Calcite is often present as small white rhombohedrons growing on quartz or dolomite. Near Winona and adjacent Wisconsin, the calcite forms larger crystals and cleavageable masses several centimeters across. This coarse calcite shows several generations. The earlier generation is tan to mocha colored. The later generation is white and can form scalenohedral ("dogtooth") crystals over 10 centimeters long. Calcite also occurs throughout the Prairie du Chien as travertine, flowstone, stalactites and stalagmites in caves. Such growths, called speleothems, may be collected if the cave has been destroyed in quarry or road construction, but should NEVER be otherwise collected from caves. The calcite may fluoresce and phosphoresce pale blue in short wave ultraviolet light.

Pyrite and marcasite occur as small crystals, crystal clusters and rounded aggregates, generally perched on quartz. These minerals are invariably partly to completely replaced by brown to black goethite, forming excellent pseudomorphs. The most common pyrite forms are octahedron, cubes and cube-octahedron combinations. Marcasite forms tablet-shaped single crystals, twins and

cockscomb or radial groups. These crystals are generally a few millimeters in diameter, however I have found spherical clusters of pyrite (replaced by goethite) 2 to 3 centimeters across.

Galena, sphalerite, chalcopyrite and other minerals have been found in similar cavities throughout the lead and zinc mining regions of southwestern Wisconsin. The closest locality to us for any of these minerals is along the Zumbro River in Minnesota. It is worth keeping an eye out for them, however.

Here are a few suggested spots for those interested in looking for minerals in Prairie du Chien rocks: quarries south of Hudson, Wisconsin along County Routes F and FF; a quarry just south of I-94 near Woodville, WI; a quarry on the north side of Hwy 14, about 2 miles west of Winona, Minn; roadcuts on Pierce County O north of Diamond Bluff, WI, and roadcuts west of the Rush River along Hwy 72 west of Waverly, WI. Be sure and get permission before entering private property. There are lots of other places to see Prairie du Chien rocks. Most of the fun is driving up and down country roads stopping at outcrops you've never seen before. Happy Hunting!

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