The Dinning Rutile Prospect

by Ed Goldberg

[EDITOR'S NOTE: Ed originally wrote this article for Matrix *Magazine, but that publication ceased in 2004 after its editor and co-founder, Jay Lininger, passed away. Visit* http://www.dakotamatrix.com/matrix.asp *for more information about Jay's work.]*

The slice of terrestrial tiramisu that is Maryland has something for every mineralogical taste. Consider "America in Miniature": after an eastern coastal plain with wild ponies, Thrasher's fries, and white marlin, one crosses the Chesapeake Bay Bridge and the Fall Line, at which gypsum crystals grow, to the blessed, fertile Piedmont, home of your author and ancient copper mines, Cockeysville marble, the birthplace of carrolite, a treasure trove of grossular garnets, and on to the Allegany Ridge, where nodules containing iridescent siderite and crystallized barite weigh down the hills. And, in summer, sweet corn, peaches and tomatoes the size of pumpkins!

That said, during every sweltering August, one wonders why the pioneers aboard the Ark and the Dove who dropped anchor in southern Maryland in 1634 didn't hoist it back up and make for the Massachusetts Bay Colony. (I would have.)

This is Maryland, the Old Line State, the Free State, the Land of Pleasant Living. Please pass a cold Natty Boh, hon.

One shakes the head imagining 1852, when hard-rock miners digging in a 300' shaft at the Patapsco Mine discovered a cobalt-copper sulfate later named for Carroll County in which it was found, in turn named for a Maryland signer of the Declaration of Independence. Today you can only find fragments of ore on the site, but then again you can go have coffee and burgers at the nearby Roy Rogers. That's what I call happy trails.

Maryland made mineralogical history again in 2000, when Louis Sentman, Jr. hosted the first-known catered field trip at his home, whose grounds contain the old Dinning Rutile Prospect. Coffee, cider, donuts, and muffins replenished the energies of mineral hunters from Maryland, Pennsylvania, and D.C. who attended the now-legendary "Rutile Picnic."

The Dinning Rutile Prospect

The Dinning Prospect was discovered in 1925. It consists of trenches and collapsed shafts in a metamorphosed serpentinite body that crosses the Mason-Dixon line and extends into Harford County, Maryland and Lancaster County, Pennsylvania. (The Pennsylvania occurrence is known to area collectors as Constitution Road, where rutile crystals turn up in the farm fields and streams near Fawn Grove.) Though never worked commercially, the Dinning Prospect was considered as a potential source of titanium, a strategic mineral.

The serpentinite is steatized and occurs in a large lens 10 miles in length and 0.3 miles in width, enclosed by Wissahickon schist. The green rock variously contains serpentine, steatite, and, most importantly, chlorite.

The titanium minerals ilmenite and rutile occur in the chlorite. Though of lesser consequence and interest, the ilmenite is mentioned first because the rutile derives from it in paragenetic sequence. Massive white apatite and abundant octahedra of magnetite also occur. Pyrite occurs infrequently, and limonite pseudomorphs after pyrite. In rare specimens, the pyrite is caught in the act, turning to limonite.

The apatite that occurs is fluor-hydroxyl-apatite. According to numerous authorities, the occurrence of apatite in ultramafic rocks (here ultramafic chlorite rock) is very rare. (Mitsis and Economou-Eliopoulos, "Occurrence of apatite associated with magnetite in an ophiolite complex (Othrys), Greece," *American Mineralogist*, Vol. 86, 1143-1150 (2001)).

But the main attraction at Dinning is the rutile. It is a red, transparent-to-translucent vari-

When considered with the phenocrysts of white massive apatite, the rock might be considered representative of Christmas colors.

The formation of the rutile is said to have occurred by regional metamorphism, when ilmenite and hematite were converted into rutile and magnetite. Herz and Valentine (1970) represent the reaction as follows: FeTiO (ilmenite) + Fe2O3 (hematite) —> TiO2 (rutile) + Fe3O4 (magnetite).

This proposition makes sense when one finds dark-gray ilmenite masses occasionally containing micro-crystals of rutile.

Though discovered in 1925, the main prospect pit was dug in 1932. Several trenches were cut into the hillside. Ore was found to a depth of 58 feet. (Weaver, *The Geology of Harford County, Maryland*, 1969). Enough rutile and magnetite is contained in the Dinning Prospect area deposit so that it is considered a potential resource, according to the 1968 Emergency Rutile Program of the U.S. Dept. of Interior, in which senior geologists of the Maryland Geological Survey participated.

Up Close and Personal

During the 1960s, the Baltimore Mineral Society field tripped to the site. As a 10-year-old member, I went along. Thirty years later, I went looking for the site, trying to remember the topography from misty memory, and being guided only by the general directions in Ostrander and Price's *Minerals of Maryland* (1940):

The Dinning Rutile prospect is located about one mile northwest of Bushes Corner, and three miles west of Pylesville.

It wasn't until I spoke with legendary Maryland mineral collector Bob Eberle that I learned the exact location of the site: Lou Sentman's backyard.

When I knocked on Lou's door, he welcomed me in and offered me free rein to explore the site. He'd been visited by other mineral folks over the years since purchasing the property. The main collecting site is Lou's tomato patch. We worked out a suitable arrangement: I would dig Lou a new row for planting, replenish my flagging energies with Maryland tomatoes fresh off the vine, and keep the rock I wanted, piling up the rejects at the back of the plot.

I promised Lou that he had only to designate the site of his swimming pool and I could virtually guarantee him enough mineralogical labor to have a deep section. That was when the idea of the Rutile Picnic was hatched.

But the real treasure at the site, for me, has been our friendship. Lou has joined our club and become an avid field collector, along with his son, Lou, Jr. (who has a natural gift for prospecting) and, we all anticipate, Lou III, now age 8.

The author gratefully acknowledges the assistance of the U.S.G.S. and the Maryland Geological Survey. Technical information on the prospect comes from Herz and Valentine, "Rutile in the Harford Couty, Maryland Serpentinite Belt," Geological Survey Research, 1976, U.S.G.S.