THE NEDA IRON ORE OF SOUTHEASTERN WISCONSIN

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The Neda Iron Mine, located between Iron Ridge and Mayville, Wisconsin, is a property owned by the University of Wisconsin-Milwaukee and managed by the UWM Field Station. The site today is a rather unobtrusive ridge of resistant dolomite, not dissimilar to a number of other resistant ridges which mark the presence of the Silurian dolomite in eastern Wisconsin. This dolomite is essentially the same rock formation which dips down under the state of Michigan and reemerges in western New York to form Niagara Falls.

Beneath this resistant dolomite, is a thin surface exposure of red iron ore, known as the Neda. In fact, this site is the type locality for this formation which is found sporadically beneath Silurian rocks throughout the Midwest but extensively in Wisconsin and Iowa.

These iron deposits near Mayville, Wisconsin contributed significantly to the early economic development of southeastern Wisconsin. The ore was first discovered in 1845 by Chester May and his son. A friend of theirs identified the red dirt as iron ore, at which time they sent samples to the Mishawaka Iron Works at Mishawaka, Indiana. The ore was found to make high quality iron, which led to the major development of iron ore mining in the district (Bartsch, 1972). Mining in the Mayville area was active up to the turn of the century and continued sporadically until 1928. Mining activity peaked from 1854 to about 1880. During this time, the area supplied ore to blast furnaces in the Milwaukee and Chicago region, and contributed significantly to making the Bay View works of the Milwaukee Iron Company the second largest iron works in the country in 1870. The mining declined when steel began to replace iron. The high phosphorus content of the ore made it unsuitable for making steel.

From a geologic viewpoint, there are still many unknowns regarding the origin and depositional environment of the Neda Iron Formation. It is always found at an unconformable boundary between the Ordovician and Silurian age rocks in lens-shaped deposits. The formation is about 35 feet thick in the underground mines at Neda. At other locations, such as Katell Falls near Green Bay, Wisconsin, the exposure is only 3 to 4 feet thick. It is generally considered to be Ordovician in age because it blends into the underlying Maquoketa Shale, which is Ordovician in age. The ore is classified as oolitic because it is composed of small round seed-shaped or fish egg-shaped granuals in a hematite or geothite matrix. According to Paull (1977), and Mikulic (1979), the iron ore was probably deposited in a high energy environment such as a near shore environment during

the shoaling of the Ordovician seas. The source of the iron itself is problematic. Some have suggested that it represents the western extension of the Queenston shale from western New York (Kean, 1981). Others indicate that the iron was from a western source such as a midcontinent mountain range (Paull, 1977). To confuse the issue even more, paleomagnetic studies by Kean (1981) indicate that magnetism in the ore is Permian in age which is much younger than the formation age of Ordovician. He attributes this disparity in ages to dehydration of geothite (hydrous iron oxide) during Permian uplift which produced the present hematitic matrix.

In spite of over 100 years of study on the Neda ore, there are still many unknowns. It will inevitably provide fruitful research projects for future students of Wisconsin Geology. Perhaps the most complete compilation of literature pertaining to the Neda Formation is a 1983 field guide from the Wisconsin Geological and Natural History Survey entitled, "The Oolitic Neda Iron Ore (Upper Ordovician?) of Eastern Wisconsin". The site can be visited with permission from the UWM Field Station.

LITERATURE CITED

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