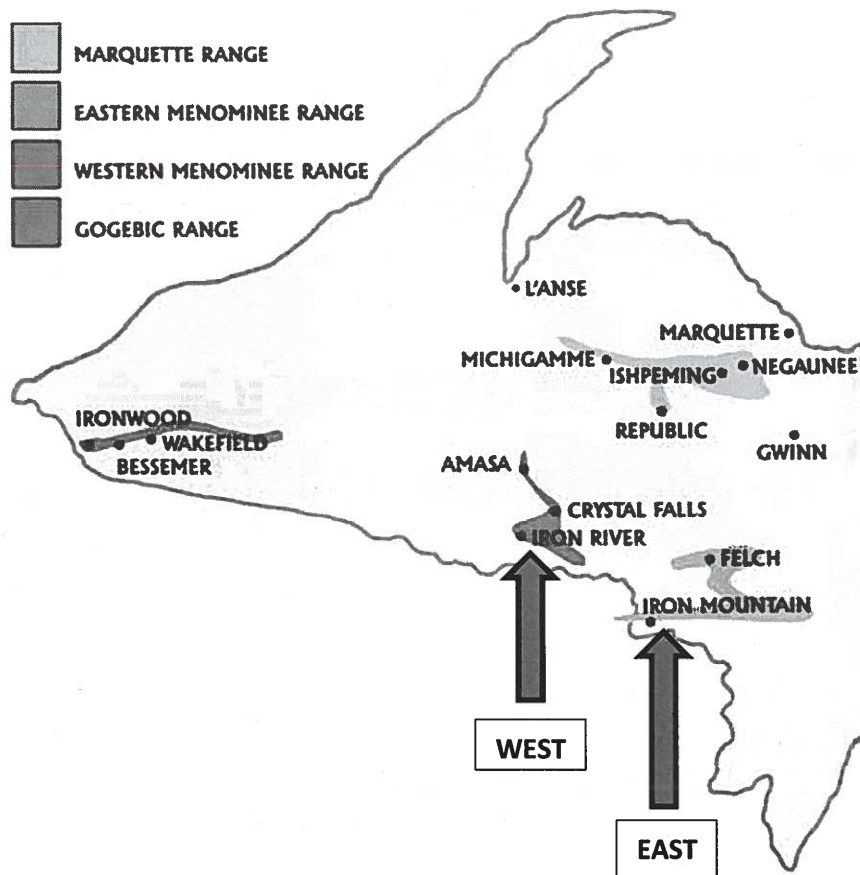


# The Menominee Iron Range

29<sup>th</sup> Annual Conference of the Mining History Association

Sunday, June 9, 2019, Field Trip



The Menominee Iron Range is subdivided into “eastern” and “western” components. (We will visit parts of both.) Unlike the Marquette Range, the steeply dipping orebodies found throughout the Menominee Range caused most of its mines to go underground from the start.

Although federal land surveyors discovered “an outcrop of iron six feet high” in the western range in 1851, an 1866 find in the eastern range became the Menominee Range’s first

producing mine (the Vulcan) in 1870. Once rail lines were established, the Quinnesec, Cyclops and Norway mines quickly followed.

Successful mining on the western range awaited the 1882 extension of rail lines from Florence, Wisconsin, to Crystal Falls and Iron River, Michigan. The first mine to open in Iron County was the Fairbanks (near Crystal Falls) in 1882, followed closely by the Crystal Falls mine, the Great Western, the Youngstown and the Iron River – all in operation by 1883.

Eastern range mining ended well before that on the western range. The Penn mines at Norway and Vulcan, MI, were the longest-lived, shipping ore until 1945. Others, like the Chapin mine, the Aragon, the Pewabic and the Groveland had ceased operations by the mid-1930s, or before.

The western range continued in active production well beyond the mid-20<sup>th</sup> century. M. A. Hanna's Homer-Waseca Group shipped ore until mid-1969, and Inland Steel Company's Sherwood mine remained in operation through 1978.

Virtually all of the Menominee Range's ores were shipped by rail to ore docks on Lake Michigan at Escanaba, MI. Unlike those of Marquette Range ores, such shipments could proceed to steel mills at the foot of the lakes without having to navigate Lake Superior and pass through the locks at Sault Ste. Marie.

## **Point of Interest**

### **The Odgers Location, Crystal Falls, MI**



**The Odgers mine, Crystal Falls, MI, ca. 1923.**

The Odgers mine was one of many operating in the Crystal Falls, MI, sub-district during the early 20<sup>th</sup> century. Opened in 1916 by the Corrigan McKinney Steel Company, the mine shipped ore every year but 1931 until 1935 – totaling 2,101,381 tons. Workings bottomed at 868 feet. The mine was acquired by Republic Steel in 1935, but the lease was surrendered the following year and all operations ceased. Several of the original mine buildings remain in use today.

This 1923 photograph was taken looking toward us from the SSE. We are now traveling right-to-left (west) on a highway which is just out of sight beyond the mine structures shown. The large caved area in the foreground (now flooded) reflects a subsidence issue widespread throughout the range.<sup>1</sup>

“Location” is the vernacular term for small communities of largely company-owned housing surrounding often semi-remote U.P. mine sites. Less than a full-blown “company town,” a location provided centralized housing for miners and supervisory personnel, sometimes a schoolhouse, a small general store and a church – but few other amenities or services. Needs beyond simple day-to-day requirements were met by larger, regional centers of commerce like Iron River, Iron Mountain and Crystal Falls. Although the mines are now gone, many “locations” survive today, scattered across the U.P.’s iron ranges.

## **Stop 1**

### **The Cardiff Mine**

#### **Mineral Hills sub-district, Iron River, MI**

The Wickwire Mining Co. (a subsidiary of Wickwire Steel Co.) began work at the Cardiff mine in 1919, but the mine produced only limited quantities of ore (1922-'23) while in Wickwire’s hands. The mine was later accessed by drifting from the adjacent workings of the Homer mine (later made part of Hanna Mining Company’s Homer-Waseca Group). The Cardiff workings originally bottomed at 530 feet, but subsequent development by Hanna extended to -1130 feet.

During its lifetime, the Cardiff produced no more than about 150,000 tons (including Homer operations) of hard, red-brown, high-phosphorus hematite. It shipped all of its ore by rail to the Escanaba, MI, ore docks.

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<sup>1</sup> Caving ground was responsible for the Menominee Range’s greatest mining disaster. At 9 p.m. on September 28, 1893, the night shift at the Mansfield mine (located about six miles northeast of Crystal Falls, MI) felt the ground crack and tremble as the nearby Michigamme River breached the workings and surged into the mine. Although some of the men were able to climb against the crashing water and regain the surface, 27 miners could not and were drowned.



**The Cardiff Mine – Iron River, MI**

The Homer-Waseca mine, which ultimately incorporated the Cardiff workings, was located across the road to the east of the Cardiff site. It continued to operate until 1969. (Unfortunately, the mine's headframe [shown below] had to be dismantled several years ago due to potentially dangerous structural issues.)

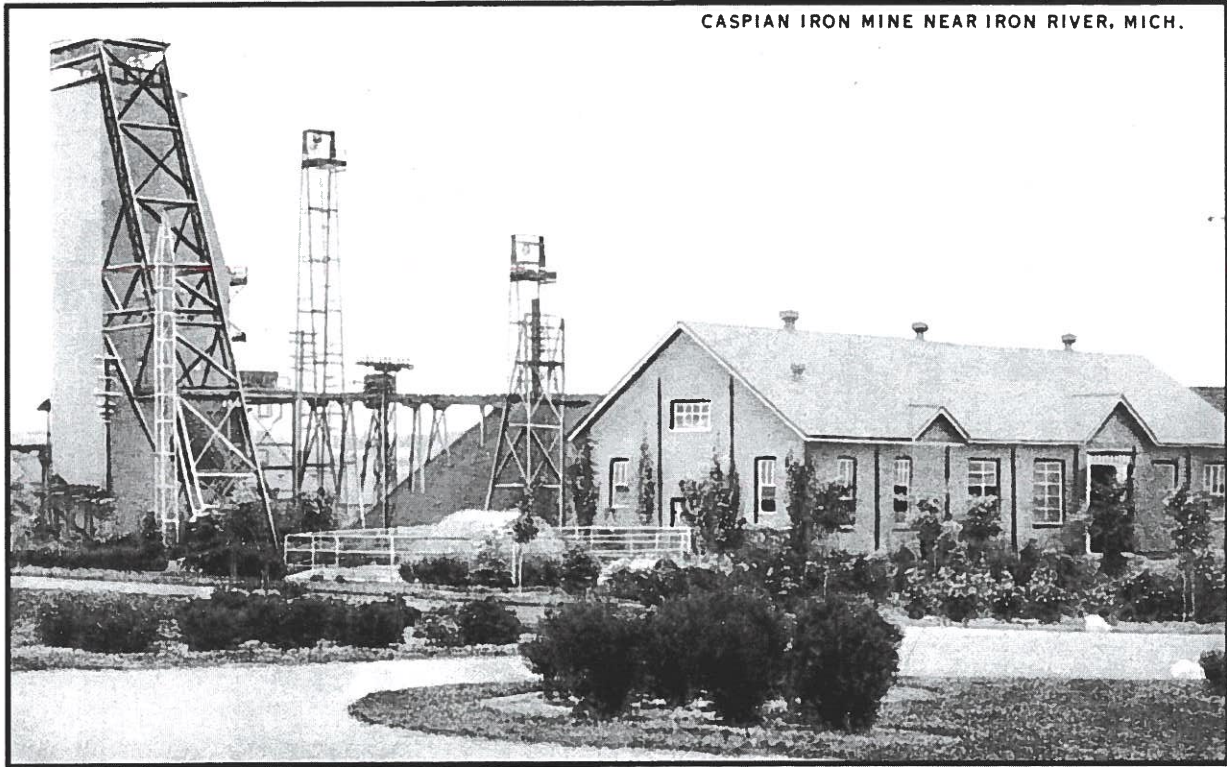


**The Homer-Waseca Mine (ca. 2008)**

## Stop 2

# Iron County Historical Museum & Caspian Mine

Caspian, MI



**The Caspian Mine No. 1 Shaft (ca. 1920s)**

The Caspian mine operated from 1903–1937, shipping some 6.6-million tons of soft, red-brown, high-phosphorus hematite to the Escanaba ore docks. The Verona Mining Company developed and operated the mine, shipping and selling ore through its agent, Pickands Mather & Co.

The No. 1 Shaft, its 105-foot headframe now the centerpiece of the Iron County Historical Museum, bottomed at 530 feet. The steel headframe was erected in 1920 to replace the original wooden headframe at that location. The No. 1 was one of four shafts servicing the mine, and was the primary shaft for hoisting ore to surface.



**The Caspian No. 1 headframe today.**

Much of the Menominee Range's high-grade ores were soft and relatively shallow, and large stopes were the norm. As a consequence, caving ground was fairly common throughout the district.

On June 17, 1937, a small subsidence area next to the Caspian No. 2 shaft began growing. Within hours, it swallowed the 60-foot headframe and shafthouse. Shortly afterward, the wooden No. 3 headframe disappeared into the other side of the expanding and flooding hole. The No. 1 headframe survived, settling only a few inches. The mine, however, was finished.



**The large, flooded subsidence at the Caspian mine -- note additional caving ground to the north and northeast. (Arrow denotes site of Caspian No. 1 headframe and museum.)**



# IRON COUNTY HISTORICAL MUSEUM

**Please enjoy the wide variety of exhibits throughout the Iron County Historical Museum which, in addition to mining, highlight the region's settlement, culture, logging industry, arts and agriculture.**

**A traditional pasty lunch will be served on the museum grounds prior to our departure.**

# Point of Interest

## The Iron Mines of Florence, Wisconsin

The geological realities of the Menominee Iron Range ignored political boundaries. A number of large and successful mines also could be found in the Florence, Wisconsin, environs around the turn of the last century.



Florence Mine, Florence, Wis.

### The Florence Mine

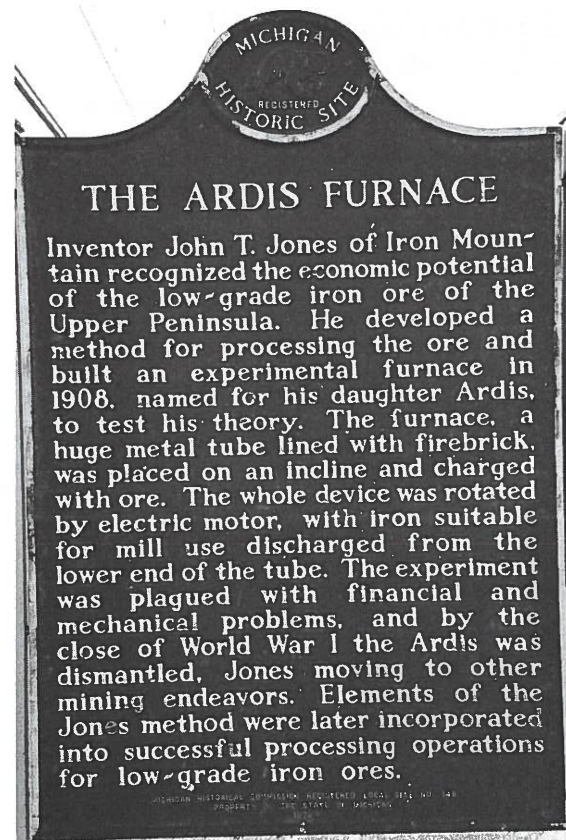


The Commonwealth Mine, Florence, WI



# Point of Interest

## The Ardis Furnace, Iron Mountain, MI



In principle, the Ardis Furnace appears little different than the typical rotary roaster in common use elsewhere for processing various refractory ores.

# Point of Interest

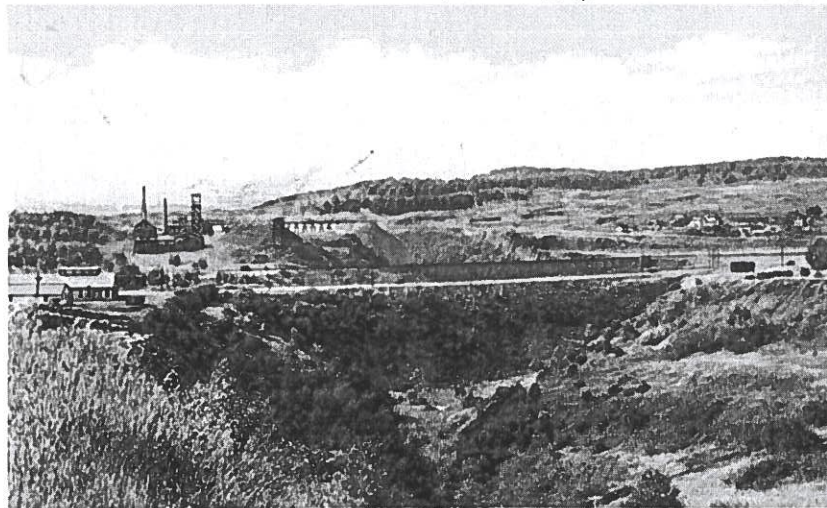
## The Chapin Mine Cave-in, Iron Mountain, MI



At 2 p.m. on May 3, 1940, a 150-foot section of US Highways 2/141 collapsed into the water-filled Chapin mine pit. Four cars and one truck were lost in the 90-foot depths of the pit, but there were no human casualties.

Experts disagreed as to whether or not the collapse was caused by a failure of supports in old mine workings below the pit. There is no doubt, however, that the pit itself was caved ground over extensive stoping in the Chapin mine. The pit flooded when mine pumping stopped in 1934.

*Caved Ground, Chapin Mine, Iron Mountain, Mich.*



©uffdahn

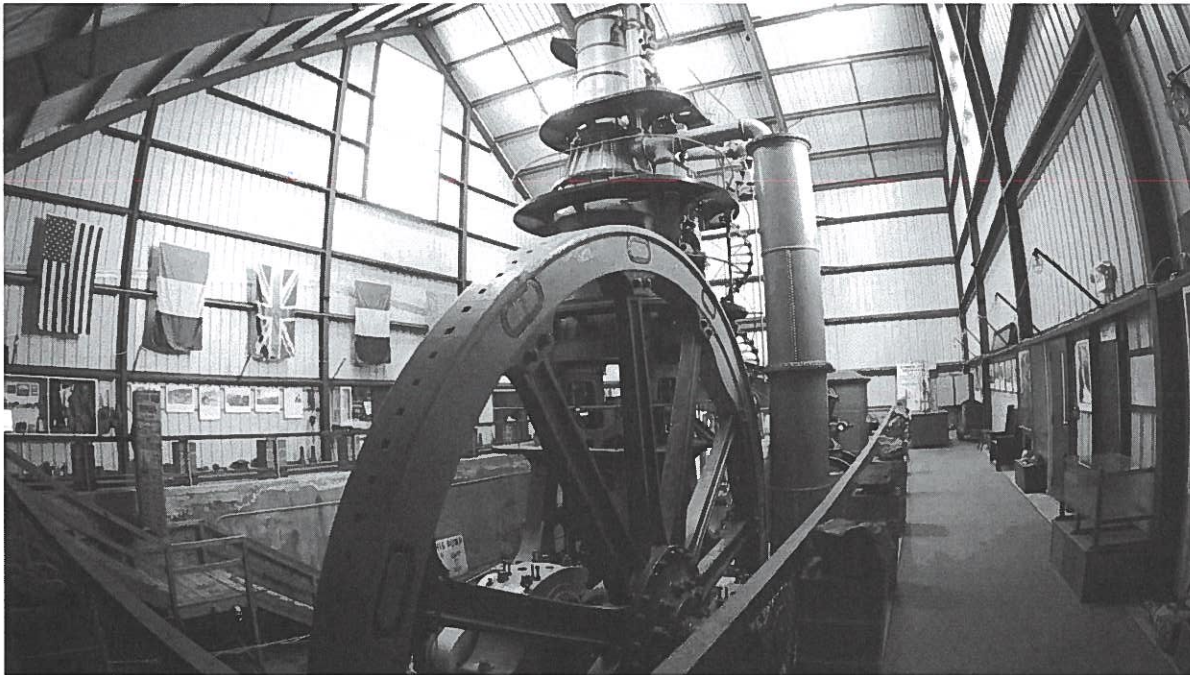
**This postcard view of the active Chapin mine shows the dewatered caving ground over the main orebody, and the fill used to accommodate the highway running across it.**

The Chapin mine began operations in 1880 and, by gradually acquiring and integrating adjacent producing properties, became one of the largest and most significant mines on the Range. It boasted a record employment of 2,400 men in 1890, and shipped some 27.5-million tons of ore before its closure in 1934.

## **Stop 3**

### **The Cornish Pump & Mining Museum<sup>2</sup>**

Iron Mountain, MI



**The Chapin mine's 1893 E.P. Allis steeple compound condensing pumping engine. (No photo can do justice to this magnificent, 54-foot-tall, 725-ton machine!)**

Generally regarded as the largest and most spectacular surviving Cornish pumping engine in North America, this enormous steeple compound condensing steam engine was designed and built by Milwaukee's E. P. Allis Company (later Allis-Chalmers Co.) between 1890 and 1893. This magnificent machine weighs 725 tons, and stands 54 feet above the engine room floor. The flywheel alone weighs 160 tons, and is 40 feet in diameter.

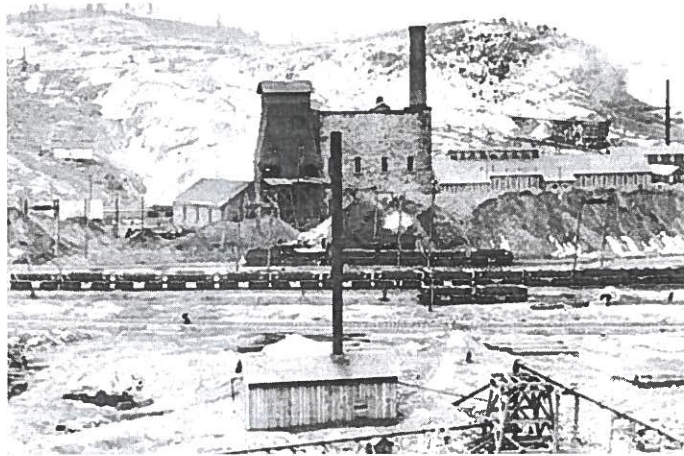
First installed at Iron Mountain's Chapin mine D Shaft, the engine began operations on January 3, 1893. It was dismantled and carefully stored five years later so that the pillar

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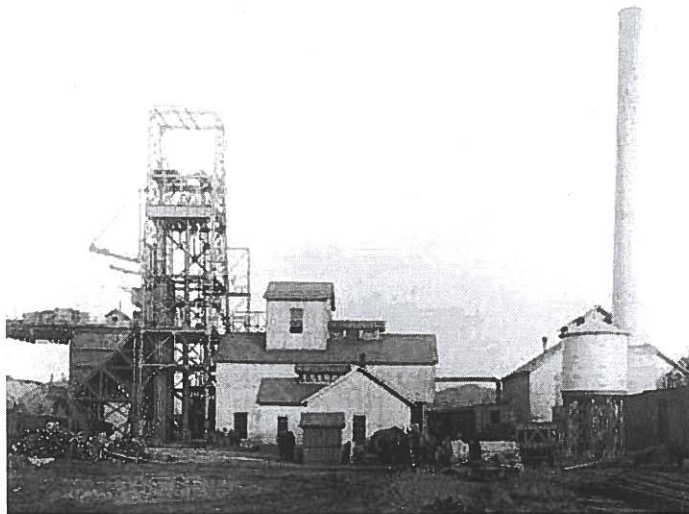
<sup>2</sup> The Cornish Pump & Mine Museum operates in tandem with The WW II Glider & Military Museum, which features a meticulously restored example of a rare Waco CG-4A troop glider. A division of the Ford Motor Company manufactured more than 4,000 of the gliders under license in the adjacent community of Kingston, MI, during the run-up to D-Day and several other major airborne campaigns. You are more than welcome to explore these exhibits, as well, but **PLEASE** keep an eye on the clock.

supporting it (holding more than a million tons of high-grade Chapin ore) could be extracted.

The engine was reassembled and returned to service at the mine's 1,522-foot-deep Ludington C Shaft in 1907, where it remains today. A crew of 60, working three daily shifts, was required to operate the boilers, pump and shaft house. The engine could pump up to 3,190 gpm. Steam-powered pumping came to an end in 1914, when the mine was electrified and the largest electrically driven centrifugal pumps then in mine service in America were installed below. The Oliver Iron Mining Co. donated the engine in situ to Dickinson County in 1934.



**The engine house at the Chapin mine's D Shaft. (Note the distinct resemblance to its Cornish cousins.)**



**The engine house and headframe at the Chapin mine's Ludington C Shaft, ca. October 19, 1912 (where the engine remains today). The headframe was scrapped during WW II.**

## **Points of Interest**

### **“Up in the Hills,” Iron Mountain, MI**

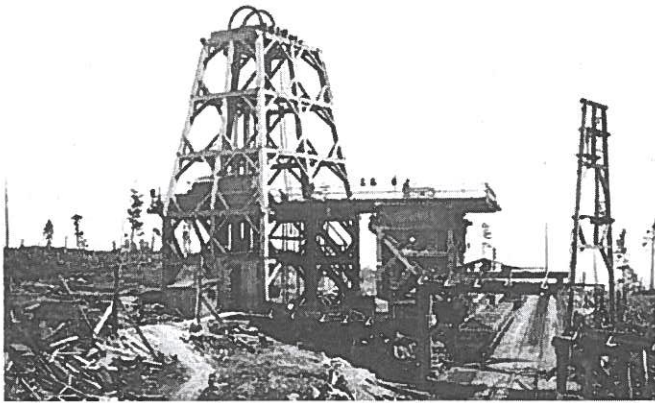
#### **The Millie Hill “Bat Cave”**



In the early 1990s, several Iron Mountain locals discovered that the abandoned and about-to-be-reclaimed Millie mine had become populated by a huge bat colony (population, roughly 1 million). In response, a “crash” cooperative effort by Bat Conservation International and the State of Michigan resulted in the installation of a “bat friendly” enclosure over the collar of the 300-foot shaft, and one of the Upper Midwest’s most important winter hibernacula was thereby spared. The site now attracts visitors to view flights of bats entering and leaving the mine at dusk in the months of April/May and September/October.

#### **The “Pewabic Pit”**

The Pewabic mine opened in 1895 on “Pewabic Hill,” shipped ore consistently from 1887 through 1918, and is renowned for its early development of block caving techniques. Surface subsidence began almost immediately after the mine’s closure (some say the upper workings were intentionally blasted down). Today, an enormous hole (roughly 1,400’ X 700’), known locally as the “Pewabic Pit,” remains.



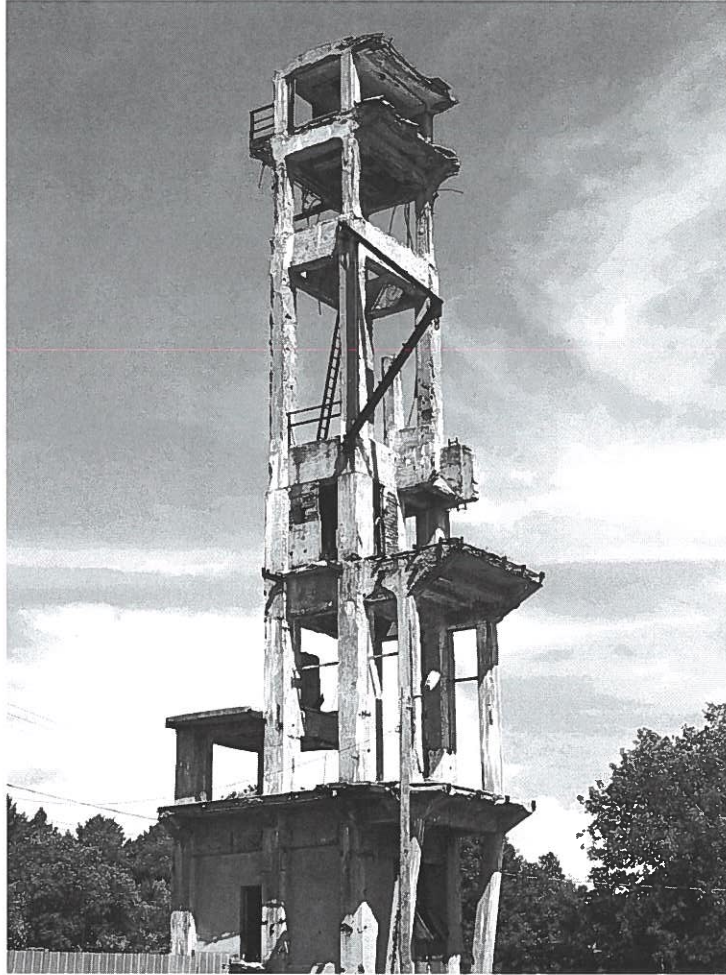
**The Pewabic mine, ca. 1900.**



**The "Pewabic Pit" today.**

# **Point of Interest**

## **The Brier Hill Shaft and Headframe, Norway, MI**



**The remains of the Penn Iron Mining Company's Brier Hill headframe, still standing in Norway, MI, vividly reflect the increased use of structural concrete in the mines of the early 20<sup>th</sup> century. Penn specially designed and reinforced this headframe to accommodate an integrated ore crushing plant. Concrete was also used to line the 2,000-foot-deep circular shaft below. (Penn erected additional concrete headframes at its East and West Vulcan mines.)**

# Stop 4

## The “Iron Mountain” (East Vulcan, Breitung) Tour Mine

Vulcan, MI



**Big John**



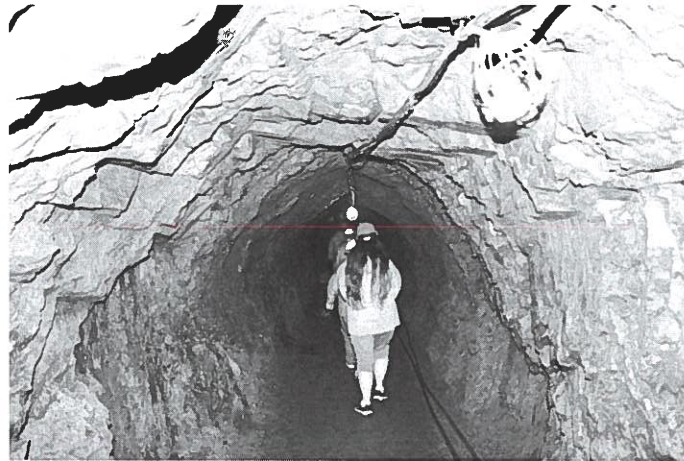
**The mine train that will take us underground.**



The “Iron Mountain” tour mine (part of what was initially called the Breitung and – later, during most of its productive life – the East Vulcan mine) was one of an extensive cluster of mines operated by the Penn Iron Mining Company (and, later, by Pickands Mather & Co. for Bethlehem Steel) around Norway and Vulcan, MI. It began production in 1877 and, with the exception of 1921 and 1932, was in continuous production until 1945.

Four numbered shafts, supplemented later by the East Central shaft, serviced the East Vulcan complex. At its peak, the mine employed almost fifteen hundred men.

The mine bottomed on the 12<sup>th</sup> level at -1281 feet. All workings below the tour level are now re-flooded.



In 1956, three Iron Mountain businessmen researched, re-located, acquired the 1870s–vintage #2 exploratory adit and workings which became the “Iron Mountain” tour mine. The entirely hand-drilled adit remained substantially untouched since the late 1880s, and required an extensive clean-up and development effort. Walking tours began in 1958, and the mine train was added in 1965.



**FINIS!**

