

# Pewabic Mining Co.

by Dave Johnson

The first modern attempt at copper mining in the Lake Superior Region was made unsuccessfully by the Pittsburgh and Boston Mining Co. near Copper Harbor at the tip of the Keweenaw Peninsula in 1844-45. When these attempts failed the company moved south and opened what was to become the first dividend paying mine in the region (1849), the Cliff Mine. The Cliff Mine worked a fissure lode consisting of masses of copper, unlike the later developed and more long term profitable amygdaloid and conglomerate lodes.

In the early 1850's there were only about 800 men working the Lake Superior copper mines. The largest of these mines, the Cliff, employed less than 200 men, while the next three largest employed about 100 men. More than a dozen other companies, trying to establish themselves, employed between 50 and 30 men each. The new Pewabic Mining Co. was on the low end of this employment scale when it was formed and initially searched for a likely lode to work.

In 1855 the Pewabic Lode was discovered north of Portage Lake in present Keweenaw County. With the discovery of this promising amygdaloid lode, one of the first successfully worked, the Pewabic Mining Co. increased its small work force to develop their property. The first workers hired were all single men or men living apart from their families. Between 1855 and 1858 the Pewabic built six boarding houses for its workers, with each house accommodating 18 men. Company employees did not have the option of living in individual houses, they did not exist. By 1859 employment had increased to 211 men and additions were put on two existing boarding houses and five more were built. The same year eight log houses were built for married miners with



*Pewabic Mining Co. check tag.*

families. From 1860 on only single family housing units were built in the form of single houses or duplexes. By 1861 employment stood at 730 men and boarding houses were being phased out in favor of family dwellings. Married workers being deemed more stable - less likely to jump from mine to mine and less likely to be disruptive. Families were encouraged by the company to take in single men as boarders in the hope that their daily contact with the family unit would prove to have a settling affect upon the single men. This method of housing development was typical of early copper mines in the Lake Superior Region.

From its opening in 1855 until 1865 the Pewabic assessed its stockholders \$75,000 for improvements and paid out \$380,000 in dividends. During the 1860's the Pewabic was among the best of the amygdaloid lode copper producers.

By the early 1860's the shafts had reached to about 650' in depth. Always looking for ways to increase production the agent for the Pewabic and adjoining Franklin Mine introduced the first power drills to the Lake Superior Copper mines in 1867. These first drills were "Burleigh" drills manufactured by the Burleigh Rock Drill Co. of Fitchburg, Massachusetts. These first Burleighs were large heavy piston drills. The drill steel was held firmly in a chuck which was connected directly to the forward facing end of the piston. Compressed air reciprocated the double-acting piston, alternately driving the entire drill steel forward and back. The Burleigh used a rifle bar and a ratchet and pawl mechanism (a pivoted tongue or sliding bolt on one part of a machine that is adapted to fall into notches on another part, such as a ratchet wheel, so as to permit motion in only one direction) to rotate the drill a partial turn prior to each of its forward strokes. The Burleigh also featured an automatic feed which added significantly to its weight. The Burleigh "tunnel drill" could bore a hole 36 inches before the drill team had to back it off and insert a longer drill steel. This drill was about 67 inches long and weighed more than 550 pounds without its clamps and mounts. The Burleigh "mining drill" was a foot shorter and could bore a hole 26 inches before changing the drill steel and weighed about 75 pounds less than the heavier tunnel drill.

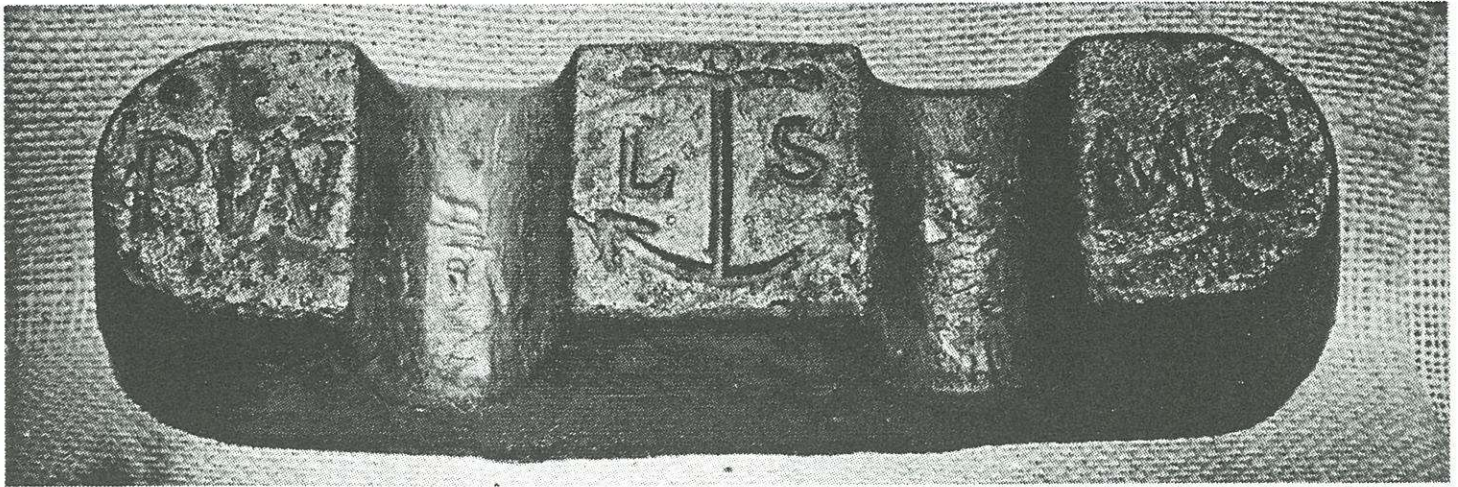
By 1869-71, the Burleigh drill was in use by Calumet & Hecla, Copper Falls, Quincy and other companies. These drills proved to be so cumbersome and difficult to handle that most companies reverted to hand drilling or turned their drills over to contract drilling crews. In 1875 the Franklin Mine, unsuccessfully, tried a Winchester drill, while the Isle Royale Mine tried an Ingersoll drill in 1876. Other mines tried drills manufactured by such competitors as Gardner, Brown, Horton, Duncan, Bryer and Wood.

Between 1879-83 the new Rand compressor and "Little Giant" drill was introduced to the copper mines and found almost immediate acceptance by all the copper mining companies who were only too glad to shelve their remaining cumbersome Burleighs.

The new Rand Little Giant was similar to the Burleigh but lacked the heavy automatic feed, the hand cranked feed reducing the overall weight greatly. The Rand drill had an internal tappet valve that was moved directly by the cylinder, controlling intake and exhaust to the cylinder. This protected valve was a major improvement over the Burleigh's heavier valve gear that was exposed outside the cylinder.

The results obtained with the new Rand drills were impressive. The Quincy Mine was able to maintain the same production level with only 2/3 of the previous underground work force, the Osceola Mine reduced their work force by 80-100 miners by using just 10 Rand drills and Calumet & Hecla was able to produce 20% more tonnage with a 20% reduction in their underground work force.

As well as pioneering the use of power rock drills the Pewabic Mine also pioneered the use of man-engines to raise and lower miners in the United States. Prior to the manengine the miners climbed ladders in the shafts. The man-engine was a "mechanical ladder" of sorts. It consisted of two side-by-side wooden rods about a foot square bolted together end to end. These rods, resting on rollers on the back of the inclined shaft had small platforms attached every 10 feet. The upper end of each wooden rod was connected to a counter-weighted triangular "bob" at the surface, this was connected by another rod to gearing connected to a steam engine. These connections were made in such a manner that when one bob rose up the other dropped causing the rods in the mine shaft to reciprocate in opposite directions. By stepping from one platform to **another the miner could ascent or descend the**



*20 pound Pewabic copper ingot.*

shaft with much less effort than had previously been required on the ladders. The Pewabic Mine installed its first man-engine in 1866.

By the early 1890's many mining companies had phased out their man-engines in favor of man-cars, long specialized skips, usually with ten rows of bench seats with room for 3 men on each row.

In 1891, the nearby Quincy Mining Co., which worked a portion of the Pewabic Lode, purchased the Pewabic for a little over \$800,000 after several years of off-again-on-again mining activity. The Pewabic Lode ran about 1.4% copper on the Pewabic property and richer on the Quincy property, running between 1 % and 4% copper per ton of rock mined. The Quincy Mine was developed after the Pewabic discovered the lode and it was found to extend under the Quincy property. The Quincy became known as "Old Reliable" as a result of its ability to consistently pay dividends to its stock holders, missing only two years between 1861 and 1920.

The 20 pound copper ingot pictured here was salvaged from the sunken wreck of the steamer Pewabic in 1975 in Lake Huron. The steamer Pewabic sank on August 9, 1865 with a cargo

of copper ingots from several Lake Superior copper mines. This particular ingot bears the marks of the Pewabic Mining Co. (PW.M.C.) and the Lake Superior Transit Co. (L.S.T.), the firm that owned the steamer Pewabic. Original marked copper ingots of this age are extremely rare as they were not meant to be kept as ingots but rather to be processed into finished copper products.

#### SOURCES:

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