



Curriculum: Miller Valley Historic Caves

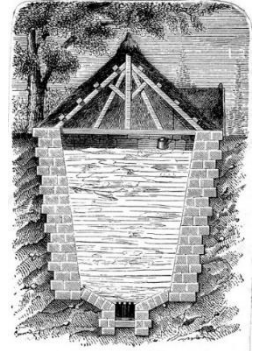
Refrigeration

As kids, we may not be able to partake in the drinking of Miller Beer, but we can learn some fun facts about the Miller Valley Historic Caves and how they were important to the beer breweries from the 1850s-1930s.

Fun Facts about the Miller Caves

These thick brick and limestone cave walls are:

- 36' thick walls and vaults - that is a yard thick!
- 15' wide - that is 5 yards wide.
- 12 -18' tall - that's more than 2 refrigerators!
- 600' long tunnel - that equals 200 yards!
- Held 12,000 oak barrels.



Miller Beer On Ice

Beer production requires the liquid to be cooled. Before refrigeration, they would have needed ice and cool temperatures. Luckily for Miller, they were located near the Menomonee River and bluffs where they could harvest the winter's ice. They would insulate the ice with sawdust, hay, and bricks and put it in the bluff's caves to keep it from melting.

Around the Country

Later, around the 1840s, a man named Frederic Tudor from Boston, the Ice King, changed the way Americans thought about food preservation.

New Invention - The Ice Box

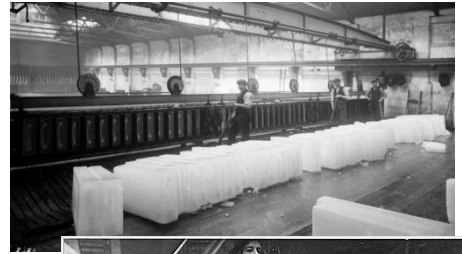
In the past, families would have to salt, dry, or can foods to keep them longer than a day without refrigeration.

Maybe that is how we got the term, "Clean Plate Club," because you did not want to throw the food away. Luckily, the invention of the ice box made it so they could store their perishable food for a longer period. Milk, cheese, meat, and more could be stored in the ice box and kept fresh without those laborious practices. The ice box was made from wood and the inside was lined with either tin or zinc and would have a large block of ice inside to keep the food cool.



Keep it Cool in Milwaukee

In Milwaukee, we had Henry “Ice Bear” Kroeger. His first ice harvest farm in 1844 was on the Kinnickinnic River, then added additional farms to his business by expanding to the Menomonee and Milwaukee Rivers. By 1863, he had 12 icehouses in Milwaukee. Between Milwaukee’s breweries and meatpacking companies, ice was in high demand. They would ship the ice to faraway places and use horse drawn carts for local delivery.



How did Henry Kroeger and others get ice from the rivers? Once the ice was a foot thick, they would score the ice with horse and plows, make 1” thick checkerboard grooves, and then push them off to the river, where someone else would guide them onto a conveyor belt which would put those blocks of ice into the large ice warehouse. The river’s ice could be harvested several times per winter.



In the late 1800s, the rivers were becoming too polluted for quality ice, so Mr. Kroeger and his competitors had to harvest ice in places like Pewaukee Lake. By 1909, a Milwaukee ice company sold more than 260,000 tons of ice.

The invention of the refrigerator occurred in 1908. Yet, refrigerators were not common to most households until 1935 when the New Deal encouraged homeowners to replace their ice boxes with refrigerators.



During prohibition, many ice cream parlors replaced corner taverns.

Hungry for more?

- **Urban Spelunking: Miller Caves** - <https://onmilwaukee.com/articles/urban-spelunking-miller-caves>
- **Clipper Ships** - <https://www.youtube.com/watch?v=xQ3lu-6bX3M>
- **Encyclopedia of Milwaukee: Ice Industry** - <https://emke.uwm.edu/entry/ice-industry/>
- **The Coldest Crop: Ice Harvesting in Wisconsin** - <https://recollectionwisconsin.org/ice-harvesting>
- **Keeping your [food] cool: From ice harvesting to electric refrigeration** - <https://americanhistory.si.edu/blog/ice-harvesting-electric-refrigeration>
- **Experiment to try at home** - <https://frugalfun4boys.com/ice-melting-science-experiment/>