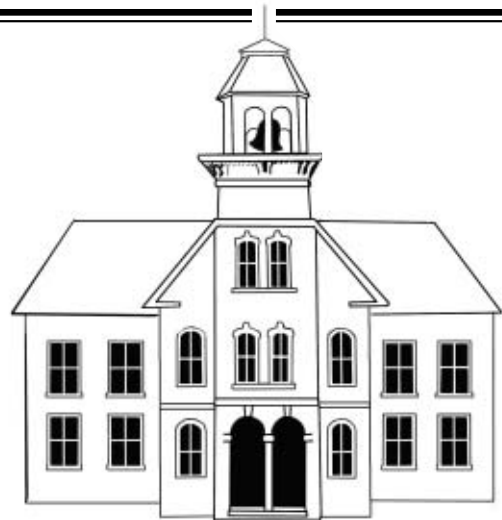
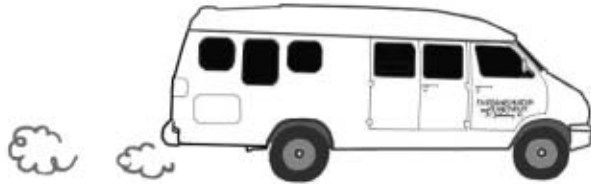


HISTORY *comes to* SCHOOL



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Ice Harvesting

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Ice Harvesting

Introduction

Time was when ice harvesting was a rural ritual of winter. Wintertime saw blocks of ice cut on the ponds, lakes and rivers in the northern United States and used for refrigeration during the summer months. Ice harvesting began locally with small private icehouses in the 1700's. Refrigeration became a major factor in food preservation by 1830's, and by the mid 1850's thousands were employed in cutting, storing, shipping and marketing ice. The natural ice industry reached its peak in 1886 with a yearly harvest of 25 million tons. The decline, with the introduction of mechanical refrigeration, was slow but by 1925 significant commercial ice harvests were hard to find. This lesson will deal with local ice harvesting, both individual and commercial. One footnote to educators that really want to pursue this subject, is that 2003 saw the publishing of Gavin Weightman's book, *The Frozen-Water Trade*. This is a true and fascinating story of Frederic Tudor of Boston who founded a huge industry and after struggling, made a fortune in the ice cutting business.

Goals and Key Concepts

Students will be introduced to the following:

- Local, rural ice cutting and icehouses.
- A brief history of early refrigeration.
- The Handy family and the tools of the ice trade.
- Larger commercial icehouses.
- Ice "signs" and ice delivery.
- "The end of an era"

Class Outline

Local, rural ice cutting and icehouses

Prior to the 1800's, primarily farmers harvested ice for their own and for their neighbors' use. Usually the harvesting took place in January or February, depending on the thickness of the ice, with local folk joining together as they would for a barn raising or corn-husking. The socializing done at the mealtime was always looked forward to. They gathered at the pond or lake with their teams of horses and sleds. The early tools were crude, sometimes only consisting of axes and crosscut handsaws. A first hole was cut in the ice large enough to hold a wooden chute. Some workers cut blocks of ice. These blocks were pulled up the chute on to the sleds. This was done using picks or a rigging device pulled by a horse. The sleds were driven to the farms where other teams of people unloaded the ice blocks into the individual icehouses. Usually a layer of hay or sawdust was put down first on the floor of the icehouse, the same insulation was used between the wall and the ice, and a final layer added to the top. The process was repeated until each farmer had his icehouse filled.

A brief history of early refrigeration

Prior to refrigeration and the first iceboxes, several methods were used to store perishable foods. Root cellars were a storage place, usually under the house but could be dug out of a hillside, where vegetables such as potatoes, onions, squash, carrots, cabbage and turnips could be kept through the winter. Fruits and some vegetables could be sliced, threaded on strings and then hung to dry. Butter might be kept in the spring or the well. Meat could be salted or smoked or put down (pickled) in brine. In the early 1800's, the ice-box (sometimes referred to as ice chest refrigerators) became available. Most ice-boxes were similar in their construction with the outer casing being of wood, often times oak. They were lined inside with slate, zinc, porcelain, galvanized metal or wood, with a wall of insulation consisting of, charcoal, cork, flax straw fiber, or mineral wool, between the lining and the outer cabinet.

Ice Harvesting

In the *Illustrated Catalogue of Cooper and McKee's Refrigerators & Ice Chests*, of 1887, the advertisement reads:

Our Refrigerators are made on the Dry Air principle, are all double-boxed, the inside box covered with Felt Paper, with galvanized iron chamber, made of seasoned lumber, either of hard wood, well finished, oiled and varnished, or pine, painted in imitation of oak, with dark panels, zinc lining, plated or bronze trimmings, and corrugated heavy zinc shelves.

(Fig. 1 shows one of the models)

By the 1850's the importance of air circulation for the most efficient cooling was understood. This is how the model shown here worked:

- The warmer air in the box flows to the ice, causing the ice to melt and the air to become cooler.
- The cooler air sinks to the bottom of the box sending the warmer air upwards.
- The cool air takes heat from the food stored at the lower levels and as the air warms it rises allowing more cool air to replace it.
- Air circulation continues as long as the door stays closed; the more the door is opened, the faster the ice melts!
- Water from the melting ice drained down a pipe that emptied into a pan under the box. Guess whose job it was to empty the pan if you were old enough?

With the coming of the ice-boxes, more and more people needed ice; enter the Ice-men!

Handy Family and the tools of the trade

(Teachers: If you know your own town's ice cutting history, you could fill in this section with your local history.)

Nearly every town had its ice-men and almost every pond or lake could tell a story of its ice harvesting days. Newport, Lyndonville and St. Johnsbury, (to name just three local towns), had the Handy family supplying them with ice in the early 1900's. In St. Johnsbury, the Handy family was the last company to cut ice for its residents, but previously there had been other companies as well. The names of the ice companies may vary from town to town but the techniques and routine are very similar.

Ice cutting actually began when the pond would hold an adult's weight. The following steps were the Handy's, but these were followed by many ice cutters of this period (early 1900's):

- Every time it snowed, the snow needed to be removed from the pond's ice so that the ice would be solid and clear. Snow acts as an insulator and so would produce inferior ice, the top layer being snow crystals, not clear and solid.
- The Handy family would scrape 3–5 inches of snow by hand from the ponds, but snow over 5 inches deep would be cleared with a **snow scraper** (Fig. 2) pulled by a team of horses.
- Scoring of the ice, or marking of the blocks to be cut, was done using a **gasoline engine powered circular saw** that cut into the ice to a depth of 8 to 9 inches. This machine had a guide bar that kept the blade 22 inches away from the last cut. You did not cut all the way through for then you could not work on the ice. The actual thickness of the ice might have been 12–20 inches.
- Once the pond was scored, it resembled a giant checkerboard with blocks being 22 x 44 inches.
- With an icehouse right on the edge of the pond, there had to be a channel opened up so the cakes of ice could be floated down to the house. A **sieve shovel** (Fig. 3) kept the channel clear of chips and pieces of ice. This was a wire shovel that allowed water to pass through it.
- The edge of the ice field not to be harvested right off but already scored had to have its exposed grooves filled with a **tamping or calking bar** (Fig. 4) to keep them from refreezing.

Ice Harvesting

- Next a **hand ice saw** (Fig. 5) was used to cut through the ice on both sides, in a section of the pond that was to be harvested first, so blocks could then be broken off. The hand ice saw blade usually measured 4½ to 5 feet in length, then the handle attachment added another 16–17 inches in length.
- The worker then positioned himself in the middle of the section that had been cut through on both sides and with a heavy **breaking bar** (or **chisel** or **splitting fork**) (Fig. 6) drove it into the cut running perpendicular to the sides. Sometimes this breaking device had two or three tines (teeth) and weighed as much as 18–20 pounds.
- This breaking device split off a strip of 8–9 blocks, which were then individually split from the strip. These individual floating blocks were 22 x 44 inches with an average thickness of 15 inches and an average weight of 500 pounds.
- These free- floating blocks were then directed to the channel leading to the icehouse with an **ice hook** (Fig. 7), sometimes referred to as a **pike pole**. The handle (which may vary from 8–16 feet) is made of wood with the top part consisting of a metal pusher and puller. This enabled the worker to either push or pull the block of ice in the direction of the icehouse.
- To improve footing on the ice, some workers wore **ice-creepers**. These went on over the boots and had mini spikes on the bottom.

Horses provided the power for the early days of ice cutting, pulling scrapers, ice marking and cutting devices. Horses usually wore special shoes that had caulks in them. These were like an enlarged spike in an ice-creeper to make for better footing on the ice. Another precaution when using a horse on ice was to have a rope around the horse's neck with a slipknot in one end. If a horse broke through the ice, the rope was grabbed and pulled hard. By shutting off the horse's wind, the horse would stop struggling thus allowing a better chance of rescuing the animal. Once the horse was rescued, it was important to get it under cover, blanketed and walked, so it would not have its lungs fill up. Loss of one's horses was indeed something to be avoided, but it did happen as you can see from this quote from *The St. Johnsbury Caledonian*, on April 10, 1890,

"Mr. Cloutier met with a serious loss on Tuesday while cutting ice at Joes Pond. A span of horses for which he recently paid \$450.00, broke through the ice and one of them was drowned."

Larger commercial icehouses

Icehouses were built of various sizes and building materials including wood, stone and brick. Small icehouses for the individual family were usually located close to the home or farm buildings. Those families that harvested ice commercially often had large icehouses located near the pond, river or lake where they harvested. Straw and sawdust proved to be the best insulators. In larger icehouses sawdust was placed between board walls with a layer of straw on top. Smaller icehouses simply had a layer of sawdust between each layer of ice. The Handy ice house in Lyndonville on Route 5 had the following features:

- It was 100 feet long, 25 feet high and 30 feet wide.
- An eight-inch space between inside and outside board walls was filled with sawdust. Hay was placed on the top layer with nothing between layers of ice.
- Vents were on the top of the icehouse roof to let warm air out. About 5–6% of ice loss resulted from this system, which was considered to be very minimal.
- The blocks were directed to the icehouse by a pike pole (a shorter version than that used on the ice pond), and then the channel led them to a chute, which carried them up into the icehouse.
- A pulley system was connected to a truck, powered the cable with a hook device in back of the ice cake, pulling it up the chute.
- Once inside, the blocks came down an inside chute. The Handys used bolts that were threaded from

Ice Harvesting

the bottom of the chute up into the slide to control the speed of the ice cakes coming down to the packers.

- Two men could pack the ice blocks. They used a shorter pike pole to grab onto the block as it came on to the ice floor.
- Without it losing total momentum, the packers would direct the block into its final resting place.
- **In-house** or **drag ice tongs** were used in the icehouse for pulling blocks into place. These tongs had longer handles and were used for pulling not lifting.
- **Toothed shavers** were used to smooth any rough spots in the ice floor.
- Once the stored ice reached the level of the top of the chutes these had to be raised so that the blocks were always coming down. Remember that they weighed an average of 500 pounds!
- The channel was cleaned at the end of the day with the sieve shovel removing all the ice floaters.
- Usually the Handys cut a pond twice a season .

In addition to storing ice in local icehouses, ice was harvested on many a local pond and lake with easy access to the railroad where it could be shipped down country. From *The St. Johnsbury Caledonian* of March 27, 1890, we read of two such harvests:

The Ice Harvest

Cloutier and Hastings of St. Johnsbury with a gang of 25 men are cutting ice on Joes Pond. They get out about 25 cords or 2000 tons a day. More than 1200 tons have been harvested and 40 car-loads of the ice will be shipped this week. This party expect to be kept at work 2 weeks longer and they hope to cut some 8000 tons. They are cutting for no special company and will sell the ice wherever it is wanted. The ice is of extra fine quality, very clear and solid and is nearly 2 feet thick. As it is taken from the pond, it is piled up on the shore near the West Danville Railroad Station and all persons wanting to see a fine sight will do well to inspect this immense pile of ice.

L.K. Hazen and Co. have sold 4000 tons of ice at Miles Pond to Providence dealers. They have a gang of 75 men at work and will harvest somewhere near 10,000 tons. Besides this there is a party from Milford, Mass. there who hope to harvest about 5000 tons.

The Boston and Maine railroad anticipates that there will be such a quantity of ice to transport to the cities that an extra train of ice cars will have to be run through the summer or until all the ice is carried to market.

Ice “signs” and delivery

The summer months saw the horse pulled ice delivery wagons, followed in time by ice delivery trucks, delivering ice to customers on their appointed routes. On a hot summer day, youngsters anxious to obtain ice chips from the back of the wagon often greeted the delivery wagons. A retired teacher, who had formally lived on Spring Street in St. Johnsbury, told a delightful story to me. As a youngster in the early 1900’s she had been one of those youngsters that had eagerly awaited the ice-man. Unfortunately their ice-man did not take kindly to being bothered by the kids and was neither friendly nor willing to fulfill their wants. The youngsters tired of this attitude and once hid in the bushes on Spring Street while he made a delivery into a house. Once out of sight they emerged from the bushes, grabbed all the ice chips they could and placed them not in their mouths but on the seat of the ice-wagon!!

To get a sense of the delivery of the ice, let’s return to the story of the Handys. A delivery day might have run from 4:30 a.m. until 7:30–8:00 p.m. The ice blocks had to be gotten out of the icehouse and loaded on to the delivery trucks. Sometimes a **lifting bar** (sometimes called a **separating chisel**) was required to free blocks in the icehouse. To avoid needless stops, the customer was given an ice sign to

Ice Harvesting

place in their window if they wanted a delivery. The Handys had a one-foot square sign with the word “Ice” (Fig. 8). Some other ice signs, depending on how they were placed in the window told of the size of the piece of ice the customer wanted. An average home delivery was 50–60 pounds by the Handys. Delivery wagons or trucks had **ice tongs** (Fig.9) which were shorter handled than icehouse tongs; an **ice axe** which had a cutting edge on one end and a spear on the opposite end for pulling blocks forward; an **ice pick** for trimming a block; sometimes a **dipper** for washing off excess sawdust and, depending on the delivery man, he might have a **rubber ice apron** to protect his shoulder as he carried blocks on his back. Afternoon deliveries by the Handys were to the farmers and creameries where multiple 500 lb blocks were delivered. Handy rates for ice were \$.50 per 100 lb. delivery; \$4.00 a ton to farmers; and \$3.00 a ton to the creameries.

“End of an era”

By the 1940’s the ice harvesting business was winding down and electric refrigerators were replacing the ice-man with his dirty shoes and dripping blocks of ice. Ice-boxes were gladly gotten rid of. The Handy family may have been one of the last to cut ice commercially as they finished in 1952. Interestingly the ice-box has made a comeback as a piece of furniture. Some are the real thing that never made it to the dump and others are reproductions that serve another function other than refrigeration.

Follow-Up Activities

1. Find out which ponds or lakes or even rivers in your area might have been ice harvested.
2. Try to find someone in your community that remembers having an ice-box. Interview them about what they remembered about using it, and what they remember about the ice-man.
3. Pick one of the tools associated with ice harvesting and do a drawing and description of what part it played in the process.
4. Write a story or poem or even a song about ice cutting.
5. Research any old newspaper accounts of local ice cutting.
6. Write a journal entry of “A Day in the Life of an Ice Man” describing cutting, storing or delivering of ice.
7. Perform a skit, as in the story of the deliveryman for example.
8. Field trip to Brookfield, Vermont to see an ice cutting demonstration in January. Check with the Brookfield Historical Society for the date.
9. Check with your local Historical Society to see if they have any of the tools used in ice cutting.
10. Visiting schools can call the Fairbanks Museum & Planetarium and request the Ice Cutting class.

Ice Harvesting

Resources

Books:

Those with * are children's books.

A Day's Work —A sampler of Historic Maine Photographs 1860–1920. Bunting, W.H. Tilbury House Publishers, Gardiner, ME and Maine Preservation, Portland, ME. 1997.

America's Icemen —An Illustrative History of the United States Natural Ice Industry 1665–1925. Jones, Joseph C. Jr. Jobeco Books. Olathe, Kansas. 1984.

Barns, Sheds and Outbuildings. Halsted, Byron D., (ed.). Stephen Greene Press. Brattleboro, VT. 1977. (Chapter X)

Big House, Little House, Back House, Barn. Hubka, Thomas C. University Press of New England. Hanover, NH. 1984.

Farmer Boy. Wilder, Laura Ingalls. Harper & Row, Publishers. New York, NY. 1971.

Field Guide to New England Barns and Farm Buildings. Visser, Thomas Durant. University Press of New England. Hanover, NH. 1997.

Horses In Harness. Fox, Charles Philip. Reiman Publications. WI. 1987.

The Frozen-Water Trade, A True Story. Weightman, Gavin. Hyperion. New York, NY. 2003.

The Ice Horse. Christiansen, Candace, Locker, Thomas (illus.). Dial Books. New York, NY. 1993.

The Seasons of America Past. Sloane, Eric. Funk & Wagnalls. New York, NY. 1958. (pp. 123–5)

Articles:

"Blocks of Ice, Pounds of Potatoes." Beck, Jane. Visit'n, Vermont Folk-Life Cente. Middlebury, VT. Vol. 4.

"The Iceman Surviveth." Canby, Peter. Audubon Magazine. 1981. Check at <http://magazine.audubon.org>

"They still Cut Ice." Heilman, Marjorie Grant. Vermont Life. Montpelier, VT. Winter 1954–55.

Video:

Ice Harvesting Sampler. Northeast Historic Film. Bucksport, Maine.

Ice Harvesting

Vermont Standards

This class is associated with the following standards: 4.6c; 6.4; 6.4c

HUMAN DIVERSITY

Understanding Place

4.6 Students demonstrate understanding of the relationship between their local environment and community heritage and how each shapes their lives.

4.6.c Demonstrate knowledge of past and present community heritage (e.g., traditions, livelihoods, customs, stories, changing demographics, land use) and recognize ways in which this heritage influences their lives.

HISTORY

Historical Connections

6.4 Students identify major historical eras and analyze periods of transition in various times in their local community, in Vermont, in the United States, and in various locations world wide, to interpret the influence of the past on the present.

6.4.c Investigate the impact of new knowledge and inventions (e.g., the knowledge of fire, the printing press, the cotton gin, train, automobile, textile, machine, electricity, steam).