

Middle-Level Activity: How was the Erie Canal built?

From the New York State Great Irish Famine Curriculum, Maureen Murphy, Director, Maureen McCann Mileta and Alan Singer

The Erie Canal, built between 1817 and 1825, was constructed by people who initially had little idea of how to build a canal. However, when it was completed, it was considered an engineering marvel. Problems with constructing the canal emerged early in the project. When the canal company advertised for engineers to design and supervise the work, no one answered the ads. There was not one experienced canal building engineer in the United States at the time. Planning went ahead in spite of this, using land surveyors to lay out the route. One of the surveyors, Canvass White, was sent England to study how canals were constructed. White walked two thousand miles along British canals, sketching locks, aqueducts, and towpaths. His drawings became the instruction manual for the Erie Canal builders. Construction crews also relied on what has come to be known as "Yankee ingenuity" -- the ability to examine a problem and figure out a solution. Essentially, canal engineers and construction crews invented ways to build a canal as they worked.

Activities and Questions

1. Students should discuss some why people thought a canal from Albany to Buffalo would be too hard to build. Students should look at a physical map of New York State to see what construction problems would have to be addressed.
2. Since there were no experts in the United States who knew how to build a canal, Canvass White was sent to England to look at their canals. If Canvass White lived today, he might still visit England and walk along their canals. What other ways could he get information on canal building? Would examining canals still be important to do?
3. Trace the route of the original Erie Canal on a map: Albany, Rexford Flats, Fonda, Canajoharie, Little Falls, Herkimer, Utica, Oriskany, Rome, Oneida, Syracuse, Weedsport, Lyons, Palmyra, Wayneport, Fairport, Rochester, Brockport, Albion, Medina, Gasport, Lockport, Pendleton, Tonawanda and to the Niagara River and Lake Erie. Students will notice that modern maps of New York State show the route of the later Barge Canal. What difference do students notice in the routes? Using different colored high lighters, students can trace the old Erie Canal route and the later Barge Canal route on a modern map of New York State. When canal travelers or goods arrived in Lake Erie what Western states could they reach using the Great Lakes?
4. The Erie Canal had to cross eighteen New York State rivers. How many of the rivers can students find on the New York map? How could a canal cross a river?
5. Digging a canal through the center of New York State meant cutting a path through the frontier. How did the canal diggers clear the forests? What inventions helped them?
6. Elevation is greater at Lake Erie than it is at Albany. How were boats raised and lowered along the canal?
7. Most of the canal diggers were Irish immigrants. One reason that Canvass White recruited the Irish to work on the canal because he was impressed with Irish canal maintenance engineer named J.J. McShane. Many Irish immigrants who were living in cities in New York State found it difficult to get work because they were looked down upon by native-born Americans. What other reasons might Canvass White been glad to hire the Irish to build the canal?
8. What evidence is there that the Erie Canal was a good idea?
9. How are New York State's canals used today?
10. Use the Internet and other resources to locate important canals that are still operating today..

Follow-up Activities: Plan a one-week trip along part of the Erie Canal. It can be a hiking trip, a car trip. Students can map their trips, decide what they want to see and where they want to stay. They are responsible for preparing a budget and a daily itinerary. A place to start their planning is the New York State Canal Systems: 1-800-4canal4, or their website: www.canals.state.ny.us. The Greater Rochester Visitors Association (126 Andrews Street, Rochester NY 14604) offers a brochure called *The Best 100 Miles of the Erie Canal*. It is available by writing the Visitors Association or calling 1-800-677-7282.

Supplemental reading:

Condon, George. *Stars in the Water. The Story of the Erie Canal*. Garden City: Doubleday, 1974.

Hilts, Len. *Timmy O'Dowd and the Big Ditch. A Story of the Glory Days on the Old Erie Canal*. New York: Harcourt Brace, 1988.

Activity Sheet: Building the Erie Canal

Adapted from Len Hilts, "The Erie Canal - Then and Now," in *Timmy O'Dowl and the Big Ditch*.

1. The Erie Canal has been called the first great American school of engineering, because the builders taught themselves as they worked and invented new tools and construction techniques. At first, the canal diggers had only picks, shovels, and muscle to move an enormous amount of dirt from the ditch, and to build earthen walls on each side of it. To make the task more difficult, the canal cut through heavy forests. Trees and underbrush had to be cleared before a shovel full of dirt could be turned.

Using traditional methods, axmen could clear only three or four trees a day because it took so long to remove the big stumps. Canal diggers had to wait for tree crews to get the stumps out before getting on with their work. Newspapers poked fun at the project, saying that the canal might be finished in forty years - if it didn't rain too much.

Finally, someone devised a huge stump puller using eighteen-foot wheels that supported a strong winch. As soon as a tree was cut down, the stump puller was moved in. Chains were tied around the stump and the winch turned. In a few minutes, even the toughest old stump popped out of the ground. Now crews could clear forty or more trees a day.

In many places, a network of tree and bush roots crisscrossed under the soil. Most canal men had been farmers and they understood plowing. One invented a new plow with an extra set of very sharp blades. The plowing blades chopped the roots to bits. This left only loose dirt for the diggers to load. Wheelbarrows were also a canal invention. At first, dirt was carried away in small carts. When someone realized that dumping dirt would be faster than shoveling out of a cart, the one-wheel wheelbarrow was invented.

2. Many politicians argued against the construction of the Erie Canal. They said it was impractical and would be too expensive to build. However, Governor DeWitt Clinton saw the great value of a route that would connect the cities of the east to the wilderness of the western United States. Clinton's judgment was proved to be correct. In its first year, 13,000 eastbound and 40,000 westbound settlers used the new canal. Travel from Albany to Buffalo was shortened from six weeks to as little as six days.

The Erie Canal cost about \$7 million to build - an enormous amount of money in those days. Yet it not only paid for itself in less than seven years, but also made money for the state of New York for many years. Cargo vessels paid a toll according to the weight they carried. Passenger boats paid six cents a mile. Canal traffic produced revenues so great that the New York legislature even considered canceling all real estate taxes and using the canal's income to pay the state's bills.

3. The Erie Canal was more than just a long ditch or a man-made river. Lake Erie is 571 feet higher than the Hudson River. In addition, the land from Buffalo at Lake Erie to Albany on the Hudson River is not level. Canal builders used eighty-three "locks" to lift and lower boats. A lock is like a big box that opens at both ends. When a boat enters a lock and needs to be lifted, the ends are closed and water is pumped into the box. Once the boat floats to the new higher level, the box is opened and the boat continues on its journey. When a boat is being lowered, water flows out of the box until the boat is at the lower level.

4. Today more than 140 years later, the Erie Canal still operates. It is now known as the New York Barge Canal and is very different from the original. It was widened and deepened to accommodate larger barges. It was rerouted. New sections shortened it by fifty miles. The original eighty-three locks were replaced by fifty-seven larger, more efficient units.

The use of the Erie Canal has changed, too. Railroads and airplanes took passenger traffic away from the canal. Freight is now moved by rail and truck. Today, the canal is used chiefly by leisure boats. More than 110,000 recreational boaters enjoy the scenic vistas along the canal routes each year. In addition, eighteen hydroelectric plants along the canal provide electricity for surrounding communities and the canal system supplies fresh water to farmers for irrigation.

The next activity sheet has the text written in both the original and an edited format.

Activity Sheet- Irish Immigrants Work on the Erie Canal

Many of the laborers who dug the Erie Canal were Irish immigrants. They were eager to make the 37 to 50 cents a day that diggers were paid. Read the description of the Irish canal workers from *Stars in the Water* by George Condon (page 67).

Work bank: sluice gate - water gate or floodgate; Clinton's ditch - a nickname for the Erie Canal.

Stars in the Water

Once the sluice gates were lifted and the green tide began to rush into Clinton's Ditch, there was no stopping the surge of Irish workers. Before the construction season of 1818 ended, some 3,000 sons of Erin were at work on the canal, and their work was producing gratifying results. Simply having permanent work crews, experienced and knowledgeable would have accounted for much of the headway and the stepped-up pace of construction that was apparent. But there was also a spirit to these workmen that couldn't be overlooked as a morale-lifting factor. Whether it was simply in their burning desire to make good and climb a rung or two in the social ladder of the New World, or just a basic craving for the kind of substance that the canal job could give them, or a conscientious determination to return honest work for honest pay, there is no telling. No doubt many motives were intermingled, but it is a fact that once the Irish work crews took over, the canal began to take form at an accelerated pace.

1. What happened when the sluice gates opened?
2. Why were the Irish called the "green tide"?
3. Why do you think the Erie Canal was known as Clinton's ditch?
4. Why does the author think Irish workers were a success as canal laborers?

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Once the floodgates were open the green tide began to rush into Clinton's Ditch. There was no stopping the surge of Irish workers. Before the end of the construction season of 1818 was ended, some 3,000 sons of Ireland were at work on the canal and their work was producing good results. Just having permanent work crews who had experience and know how made a big difference. The good spirits of the workmen helped too. It may have been that they wanted to do well and move up the social ladder in America or that canal work gave them a living wage or that they believed in honest work for honest pay. We don't know the reason. Maybe it was all those reasons. What we do know is that the Irish work crews took over the digging of the canal, the work progressed at a faster pace.

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