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The Architecture of the Grain Trade on the Illinois and Michigan Canal

by John M. Lamb

In the 1830s settlers poured into the prairies of Illinois acquiring cheap land for farming. This cheap land ($1.25 an acre) was rich, unbroken prairie soil. Once it was turned over by a sod breaker plow, no cleaning was necessary for lush grain production. The problem these few farmers faced was getting their grain to market. Grain was transported in sacks which were difficult to handle and transport in large quantities.

In the 1840s in Chicago entrepreneurs were beginning to develop ways of handling grain in bulk by using conveyor belts and gravity to move it.

Work began on the Illinois and Michigan Canal on July 4, 1836. This waterway would connect Lake Michigan to the Illinois River, and thus provide a water connection between the East and the Mississippi, as the Illinois flows into the Mississippi.

Amongst those who came to Illinois lured by the canal and its construction was Hiram Norton. Norton was born in New York, but orphaned; he moved to Canada at a young age. Although he would return to New York for schooling, he settled in Canada at Prescott, Ontario. He soon became a leading businessman. He was a partner in a stagecoach line to Montreal. Prescott is located on the Saint Lawrence, and Norton was involved in water transportation, first of all in the manufacture of a steamboat that could safely and swiftly breast the Saint Lawrence rapids. It was not a success, so Norton transferred the power system to his factory.[1] He was also involved in canal construction for a canal on the Saint Lawrence that was never completed. For this project he quarried limestone that was fired into hydraulic cement used for mortar in locks and other underwater structures.

Norton left Canada in 1838, in part because as a Yankee he felt vulnerable. He resigned from the Common House of Assembly to which he had been elected, and headed for Illinois, which he had visited in 1837 to see the I & M Canal construction. He was soon engaged in mining hydraulic cement in Lockport and elsewhere on the canal route.[2] He also in 1842 built the largest grain warehouse on the Chicago River.

This structure was designed to lift grain by means of buckets on a belt to the top of the building from where it could be fed into bins, and eventually into boats on the river. The only trouble was that the power for lifting the grain was supplied by a horse hoisted to the top of the structure, where it toiled with no relief in what was called the "head house." This allowed the movement and storage of grain by bulk, but the power source was a problem.[3]

Norton was very interested in shipping grain from Chicago to the East. In 1842 Gov. John Davis of Massachusetts was investigating, at the request of English and Eastern bankers, the feasibility of loaning additional money for the completion of the canal. He consulted with Norton on the profitability of grain shipments by water. Norton, he acknowledged in his report, knew a great deal about the grain market.[4]

In 1848 the canal was completed, and Norton opened a grain warehouse on the canal in Lockport. The locally quarried stone structure could hold 200,000 bushels of grain. Lifting was powered by steam. It was located near where the grain was produced, so farmers could bring their wheat or corn in wagons, have it weighed, then dump it into a hopper in the basement, from whence it was carried to the head house at the

top of the building. This wood frame structure was seventeen feet tall and of substantial dimensions. It contained the steam-powered machinery, as well as the device used to shift the grain down to the designated bins for storage.

The stone building was a typical square warehouse; it is still in use, although not as a grain warehouse.[5] It had no floors and was held plumb by an exterior iron rosette attached to an interior iron cross bracing. Except for the head house, it was designed like a typical warehouse.

Besides his grain warehouse, Norton also built a flouring mill using water power derived from the canal at a hydraulic basin a few blocks from his warehouse. This became one of the largest flouring mills in the state. His business also had five canal boats. In 1854 he built a three-story addition to the grain warehouse for a dry goods store and offices.[6] In 1872 he converted the power system from steam to water power. The water was drawn off the canal at the warehouse, dropped eighteen feet to power a turbine, and was discharged through a tunnel under the canal to the Des Plaines River. The canal was some eighteen feet above the nearby river. Besides dumps for unloading wagons, the warehouse had a power-driven scoop for unloading canal boats. Power was also used to unload and load railroad cars after 1860.

Two blocks north of Norton's operation, the State Canal Commissioners built in 1838 a warehouse to store and sell equipment to the canal contractors. After the canal opened, it was converted to a grain warehouse by George Martin. The head house was located at the peak of the gabled roof. Grain bins were added and two arched wagon entrances were cut through the stone walls. Martin advertised that his dump could unload a wagon in from two-to-five minutes. Like Norton, Martin in the late 1850s, added a three-story Italianate wing of cut stone for a store and offices. The original 1838 warehouse part had been built from rubble stone cut from the canal prism.

In 1878 Martin went bankrupt. George Gaylord took over the operation, running the store and the grain business until his death in 1886. The building was then used for a number of businesses, but not as a grain warehouse. In the 1980s the structure was restored to its appearance in the 1880s by Gaylord Donnelley, a grandson of George Gaylord. It is now called "The Gaylord Building" and is owned by the National Trust for Historic Preservation. It houses a restaurant, a museum, and offices.

The Gaylord Building and the Norton Building are the earliest surviving examples of the grain elevator. That term began to supercede "grain warehouse" by the 1870s. In 1872 Norton advertised his building as a "Fireproof Steam Elevator Warehouse." [8]

Traveling down the canal about 18 miles west of Lockport, there is the site of the former village of Dresden. It was a town on the canal until 1853, when the Rock Island Railroad was built and established a stop a few miles north of Dresden, called Minooka. As a result, Dresden's businesses and church moved to Minooka. All that was left in Dresden was a cemetery, a farmhouse that had been a stagecoach stop, and an inn. There was also a frame structure on the canal called "the grainery" locally.

The building today resembles a barn. The lower floor had stables and was used as a mule barn when mules hauled canal boats. There were two other floors, now gone, with extensive bracing still in place that was used to store grain in sacks when the canal was in operation. The building was built in the 1850s and indicates that even after the Civil War, farmers were still shipping wheat in sacks, rather than in bulk.[9]

The movement to bulk shipment was well established before that. The Chicago Board of Trade, established in 1848, was by 1854 appealing to other trade organizations in cities like Milwaukee, Detroit and Toledo, to use their influence to grade and measure grain by weight and not by bushels and half bushels. As the Chicago historian Andreas notes: "The [Chicago Board of Trade] effort resulted in bringing about the

desired reform, thereby opening the way for all improved methods of grading, storing, transporting and transferring grain in bulk." [10]

The shipment of grain in bulk had by 1861 created the specialized structure we call "the elevator." That mid-western building type that used the technology for moving and storing grain that Norton had developed, but housed it in higher buildings with a wooden metal-clad fabric. These elevators were the tallest buildings in many a small farm town. The architecture now was defined by the function. The head house was not a separate part of the structure, but an integral part of the building.

One of the earliest of these wooden elevators on the canal still stands in Seneca, Illinois, about 70 miles west of Chicago. There were many of these along the I & M Canal in its heyday, but this is the last one left. It was built in 1862 by John Armour of Ottawa. It was called "Armour's Warehouse" until 1872, when the designation was changed to "Armour's Grain Elevator." [11] The structure is a specialized one that could only be used as a grain elevator or as a museum, as it is currently. This contrasts with the multiple uses the Norton and Gaylord buildings were put to after the grain business on the canal declined. In the Armour elevator the head house is an integral part of the structure; it could not be removed as it was on the Norton Building. The wood exterior was, sometime during the 19th century, metal sided for fire protection. Power was originally steam power; the boiler was fueled by burning corn cobs. By the 20th century a gasoline engine powered the lifting system.

Unlike the Norton or Gaylord operations which used railroad transportation as soon as it was available about 1860, the Armour elevator did not have railroad connections until 1883, though the Rock Island Railroad came through Seneca in 1853. The building was built too low to load railroad cars by gravity, so a power loading dock had to be added.[12] The elevator still has its 19th century machinery and is now owned and maintained by the Illinois Department of Natural Resources.

There were many other elevators on the Illinois and Michigan Canal, but they were torn down or destroyed by fire as the canal's usefulness as a waterway declined. At the beginning of the 20th century the canal was badly maintained by its owner, the State of Illinois. The average depth of the canal by 1915 was four feet, two feet lower than the minimum depth during the 19th century. As a result, boats could not be fully loaded; also, boats could not be docked next to elevators for loading, so in 1915, the final year of grain shipping on the canal, the boats had to be loaded from bridges going over the canal.[13]

The Illinois and Michigan Canal continued to ship grain until the early 20th century. The competition from the railroads did not substantially reduce traffic until the end of the 19th century, when the construction of the Chicago Sanitary and Ship Canal diverted water from the I and M Canal, reducing its minimum depth from 6 feet to 4 feet.

Grain shipment by waterway continues in Illinois on routes parallel to the old I & M Canal. This waterway is called "The Illinois Waterway" and consists of the Chicago Sanitary and Ship Canal and the slack water navigation on the Des Plaines and Illinois Rivers.

Elevators along this waterway still take grain from farmers' trucks dumped into a lower level, then hoisted to the head house from which it is directed to various bins and then moved by gravity to the holds in the barges. It is still the same system Hiram Norton pioneered in 1848. These elevators have head houses crowning their top. The structures themselves are circular silos of poured concrete. They are several stories higher than 19th century elevators and usually have no rail connections. The elevator changed from a warehouse-like structure to an architecture of a very specialized nature, good for only grain shipping, unlike the Hiram Norton Building.

FOOTNOTES

1. 2000 Mackey, Frank. *Steamboat Connections.* Montreal: Mc Gill-Queens University Press. 282-283.

2. 1839 Canal Commissioners. *Report of the Canal Commissioners of the Illinois and Michigan Canal to the Legislature of Illinois.* (Vandalia, Illinois: State of Illinois), 12-13.

3. 1884 Andreas, A. T. *History of Chicago from the Earliest Period to the Present Time*, Vol. I. (Chicago: A.T. Andreas), 579-580.

4. 1941 Lee, Guy H., ed. "John Davis' Diary of An Illinois and Michigan Canal Investigation 1843-1844." *Papers in Illinois History.* (Springfield, Illinois: Illinois State Historical Society), 62.

5. The Norton Building currently houses the Illinois State Museum Lockport Gallery, offices and apartments.

6. 1859-1865 *Yearly Inventory of the Norton Co., Jan. 1859 to Jan. 1865.* Mss. Located in the Lewis University Canal on Regional History Collection. It always lists at least five canal boats.

7. 1986 Phillippe, J.S. *Archeological Investigation of the Gaylord Building Lockport, Illinois*. Normal, Illinois: Midwest Archeological Research Center.

8. 1872 Goodspeed, James. *Will County General Directory for 1872-73.* (Joliet, Illinois: Republican Book and Printing House), 106.

9. 1995 Historic American Building Survey, *Rutherford Barn.* I & M Canal Project Survey [L No. 1151 National Park Service U.S. Dept. of the Interior].
   1991 Cronon, William. *Nature's Metropolis: Chicago and The Great West.* (New York: W.W. Norton), 109-117.

10. Andreas, A. T. Ibid, Vol. I, 584.
    1966 Clark, John G. *The Grain Trade in The Old Northwest*. Urbana, Illinois: University of Illinois.

11. 1995 United States Department of the Interior."Armour's Warehouse/Hogan's Grain Elevator." *I & M Canal Project Historic American Engineering Record IL-26*. National Park Service, 7-8.

12. Ibid., 4.

13. 1918 Putnam, James William. *The Illinois and Michigan Canal, A Study in Economic History.* (Chicago: University of Chicago Press), 179.