Pierce Mill

Rock Creek Park
Washington, D.C.

National Park Service
U.S. Department of the Interior

Robert Lautman

"I was grinding a load of rye for a neighbor when the main shaft of the mill broke," Alcibiades P. White recalled. "I was about half through with the work, and the neighbor had to haul his unground rye away, and I guess he never got it ground. That was the last time the mill operated." That accident in 1897 ended many decades of milling along Rock Creek, for Pierce Mill was the last of eight mills in Rock Creek valley.

Milling became a highly technical operation with the introduction of Oliver Evans' techniques. Millstones (left) represented the age-old methods that remained unchanged. The bolter (right) stood for the latest in mechanical ingenuity.

Milling in Rock Creek

Pierce Mill had actually outlived its time. Newer, more efficient mills using steam to power the machinery already could produce fine, white flour faster and less expensively. Pierce Mill represents the rural society and economy of America in the 1820s when the transition to power-driven machinery replaced centuries-old methods that relied on sheer muscle power.

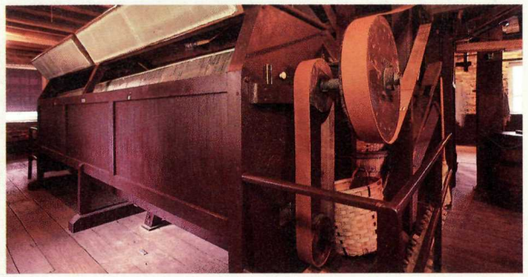
The Pierce Family The Pierces traced their origins back to Isaac Pierce, who left his Quaker parents in Pennsylvania, probably in the 1780s, to seek his fortune in Maryland. Pierce worked for Abner Cloud as a millwright, building and repairing mill machinery. In time Pierce married Cloud's daughter, Betsy. In 1794 he bought a 150-acre tract that included a mill. By 1800, Pierce's holdings stretched from near the National Zoo north to Chevy Chase. Finally in 1820 he and his stonemason son, Abner, rebuilt the mill using blue granite quarried in the nearby Broad Branch area, giving us today's Pierce Mill. When Isaac Pierce died in 1841 he left the property to his son, who managed it until his death 10 years later. The mill then passed to Abner's nephew, Pierce Shoemaker, who owned it until 1891.

Neither the Pierces nor the Shoemakers were millers (one who runs a mill). Isaac was a millwright (one who builds mills), Abner, a stonemason, and Shoemaker, a jeweler. A succession of experienced millers operated the mill for them. Despite the Pierces' lack of direct involvement in milling, they were nevertheless interested in the technological changes milling was undergoing.

New Technology For centuries mills had relied on the miller's strength and that of his burly helpers. A major change in the industry occurred in 1795 when a young miller from Delaware, Oliver Evans, wrote a book—*The Young Mill-Wright's and Miller's Guide*—that revolutionized milling. This book made a science out of what was traditionally a craft. From the time the grain was poured into the receiving bin until dry, clean flour dropped into the holding bins, machinery did all the work. This was Evans' achievement. In 1820 the Pierces rebuilt their mill using the Evans system.

Business was usually brisk at Pierce Mill, especially during the 1860s. Often as many as 12 wagons a day loaded with wheat arrived for grinding. A miller with a helper or two could grind more than 70 bushels a day on each set of buhrs, or millstones.

Today there are three pairs of millstones at Pierce Mill. All the millstones here measure about 4½ feet across and weigh about 2,400 pounds. A miller could not properly operate his mill without the help of the stone dresser, who, with his pick-like millbill, chipped away at the runner and bed stones, sharpening the furrows and shaping the raised areas about every three weeks. Finely ground flour was prized for its baking qualities, so a skilled stone dresser was a valued employee. Adjusting the distance between the stones was the most critical operation the miller performed. The runner stone, balanced on a spindle, revolved at about 125 revolutions per minute a fraction of an inch above the bed stone. An experienced miller could tell by rubbing some flour between his fingers, if the stones were properly positioned and thereby producing the highest grade of flour possible. If adjustments were needed, they could be made easily. Together the miller and stone dresser worked to create a product that satisfied their customers.



Information

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Rock Creek Park, in which Pierce Mill is located, is a unit of the National Park System, which consists of more than 350 parks representing important examples of our country's natural and cultural inheritance. A site manager, whose address is Rock Creek Park Headquarters, 5000 Glover Road NW, Washington, DC 20015, is in charge. Pierce Mill is near the intersection of Beach Drive and Tilden Street within the park. Movies showing early days of milling are available. For special programs and group tours, call 202-426-6908 (voice and TDD). Or write to: Pierce Mill, Rock Creek Park, 5000 Glover Road NW, Washington, DC 20015. Pierce Mill is open 8 a.m. to 4:30 p.m. Wednesday through Sunday; closed on holidays.

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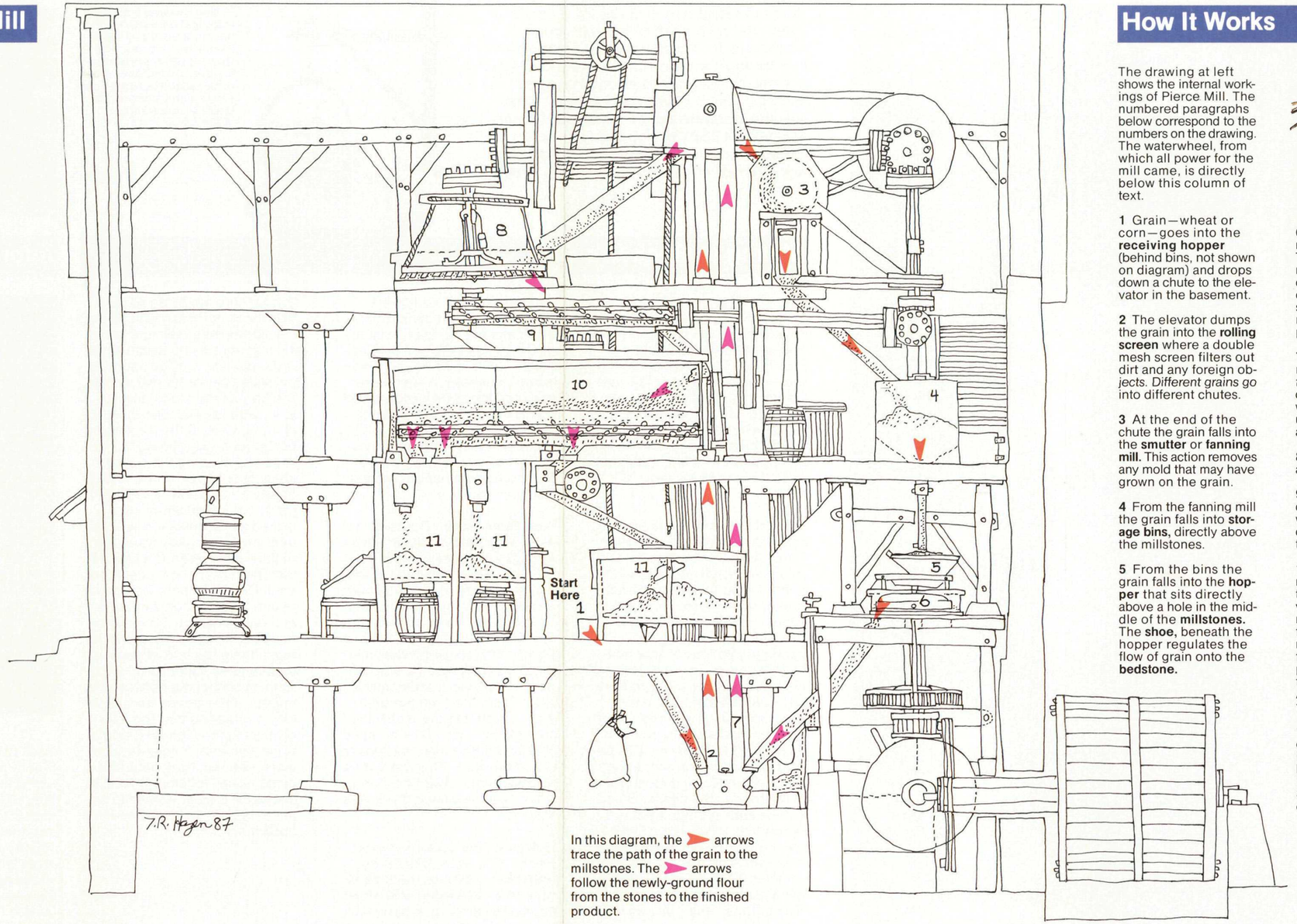
Today at Pierce Mill

In 1890, Congress established Rock Creek Park, and two years later the Federal Government condemned the Pierce Mill property. After the mill ceased functioning in 1897, it served as a public teahouse until the 1930s. In 1934 Secretary of the Interior Harold Ickes suggested that Pierce Mill be restored for visitors as part of a general program of depression-era improvements in Rock Creek Park. The waterwheel and interior machinery were rebuilt, and the old millrace was cleaned out and repaired. Two years later the mill resumed operation, but by 1958, the facility was closed. National Park Service planning for the second restoration began in 1967, and Pierce Mill was opened to the public three years later. Today, visitors can see a largely completed flour mill that operates throughout the year. Pierce Mill is again alive with the sights, sounds, and smells of the 19th-century flour industry.

Waterpower Rock Creek supplies the source of energy that turns the waterwheel. Once rotating, the main shaft turns the wooden gears that provide motion. The result is power that does the grinding, lifting, cleaning, drying, and grading of the grain and its flour. About 60 percent of the power is needed to rotate the mill stones; the rest of the power does all the other work. That nearly all of this machinery is wood suggests the ancient origin of milling techniques. This combination of labor-saving methods introduced by Oliver Evans and the use of wooden machinery marks a transitional stage in the milling industry.



In this diagram, the ➤ arrows trace the path of the grain to the millstones. The ➤ arrows follow the newly-ground flour from the stones to the finished product.

How It Works

The drawing at left shows the internal workings of Pierce Mill. The numbered paragraphs below correspond to the numbers on the drawing. The waterwheel, from which all power for the mill came, is directly below this column of text.

1 Grain—wheat or corn—goes into the **receiving hopper** (behind bins, not shown on diagram) and drops down a chute to the elevator in the basement.

2 The elevator dumps the grain into the **rolling screen** where a double mesh screen filters out dirt and any foreign objects. *Different grains go into different chutes.*

3 At the end of the chute the grain falls into the **smutter** or **fanning mill.** This action removes any mold that may have grown on the grain.

4 From the fanning mill the grain falls into **storage bins,** directly above the millstones.

5 From the bins the grain falls into the **hopper** that sits directly above a hole in the middle of the **millstones.** The **shoe,** beneath the hopper regulates the flow of grain onto the **bedstone.**

6 This is where the major work takes place. The grain falls onto the **millstones** where it is cut, not ground or crushed by the rotating stones that move at the rate of 125 revolutions per minute.

7 The ground grain is now warm and moist *flour. It falls through a* chute into the basement where **elevators** pick it up and carry it up to the attic.

8 The **hopper boy** cools and drys the flour.

9 The cooled, dry flour drops into the **auger,** which moves it, while continuing to dry it, to the head of the **bolter.**

10 A revolving motion moves the flour over the **bolter's** screens that vary from fine to medium mesh. Flour falls through the finest mesh. Middlings—bran flakes with some flour particles—pass through the medium screen. And bran, the coarsest, falls out the end.

11 The flour, depending on its fineness, drops into different **holding bins** and afterwards is loaded into barrels. Sacks did not come into common use until about 1900.