

Chapter 5

THE LOCAL STORY: WATER POWER IN MILL CREEK HUNDRED

A. INTRODUCTION

Mill Creek Hundred was at the center of improvements in power technology during the Federal period. Red Clay Creek, the northeastern boundary of the Hundred, drove merchant grist mills, textile mills, saw mills and ironworks, as well as such specialties as spice and snuff mills. Other streams in the hundred were harnessed, if not as intensively. One of those streams was Pike Creek, subject of this study. This chapter will continue focusing on the project area by examining the history of water power in the Hundred through the industries it supported. The range of industries supported by waterpower in the early stage of industrialization is shown in Table 5.1. Table 5.2 shows the extent of industrialization by 1870, and the degree to which water was still the primary power source (Heite 1997).

B. GRAIN MILLING

The first settlers probably used querns, or hand mills, to grind their cereal grains. Maize, which they got from the Indians, was commonly ground in wooden mortars, some of which have survived from the 17th and 18th centuries. Hand milling is hard work, from which the householder would naturally want release. In rural Sweden, as elsewhere in Europe, small waterpowered mills, in buildings barely large enough to contain the machinery, had served rural communities for centuries. Early in the present century, as part of the New Sweden tercentenary, such a mill was erected near Wilmington on a site near where one of the Swedish colonial mills formerly stood.

1. Early Custom Mills

Community grist mills, or custom mills, were among the first established. Such mills served a limited purpose and probably were quite small. In Mill Creek Hundred, the Swede's Mill at Greenbank and the first mill at Stanton were erected by groups of local farmers during the 17th century. The Stanton seat contained a sawmill as well as a gristmill. Both seats became private mills and then merchant mills during the 18th century, as the hundred became more populous.

Another mill existed before 1684 even closer to the project area. In that year, Mill Creek was already being identified by that name, which indicates that a mill probably existed by then. The first resident of Mill Creek Hundred is thought to have been a Dutch sergeant, Thomas Wollaston, founder of a milling family that operated mills in the current project area. He was a partner in the 1679 mill at Stanton as well (Scharf 1888:915).

When these early records refer to a grist mill, it generally means a custom rather than a merchant mill. By the 19th century, however, most of the mills in Mill Creek Hundred were being operated as merchant mills.

2. Merchant Mills

The merchant mill at Stanton, which was near both tidewater shipping and land transportation, operated from 1772 to 1885 with power from along the race that stretched all the way from Kiamensi (Heite 1997:37). A cooperage shop on the premises

Table 5.1.
 Mill Ownership in Mill Creek Hundred, 1804

Owners	Operations
John Armstrong & Samuel Meter & Co.	1 paper mill, 1 saw mill
James Black's estate	1 merchant mill
Sarah Bailycooper	shop
Henry Brackin	1 merchant mill, 1 saw mill
William and Abraham Barker	1 saw mill
Joseph England	1 saw mill
William Foulk	1 merchant mill, 1 saw mill
Caleb Harlin, Sr.	1 merchant mill , 1 saw mill
Isaac and Benjamin Hersey	1 merchant mill, 1 saw mill
Robert Johnston	1 grist mill, 1 saw mill
Joshua Johnston	1 fulling mill
Ephraim Jackson	1 saw mill
William Little	1 saw mill
Thomas McDaniel (McDannal)	1 saw mill
David Morrison Est.	1 saw mill
Joseph Marshall	merchant mills
James Mendinghall	1 grist mill, 1 saw mill
John Phillips	1 merchant mill
Robert Phillips Est.	1 merchant mill , 1 saw mill
John Reece Estate	1 merchant mill, 1 saw mill
John Robison	1 grist mill
Andrew Reynolds	1 merchant mill
Thomas Stapler	one half of a merchant mill
Joshua Stroud Est.	one half of a merchant mill
Jacob Wollaston	1 grist mill, 1 saw mill
TOTALS	
Sawmill	15 (including 10 on sites with other mills)
Grist Mills	3
Merchant Mills	13
Fulling Mill	1
Paper Mill	1

Source: Scharf 1888:917-918.

Table 5.2.
1870 Census Industrial Returns for Mill Creek Hundred

Name	Product	Power Source	Workforce
Curtis Bros.	Paper	2 water wheels	13 men, 6 women
Joseph Eastburn	Lime		5 men
Olliver & Allen	Custom Flour & Feed	Water wheel	1 man
James H. Taylor (failed last year)	Woolen & Cotton Goods	Steam engine & water wheels	50 men, 8 children or youths, 10 women
A. D. Chandler	Flour & Meal	Water wheel	1 man
W. Phillips & Bro	Flour & Meal	Water wheel	1 man
W. Phillips & Bro	Spokes for Carriages	Water wheel	2 men
Marshall & Co.	Sheet Iron	Water wheel	37 men
Marshall & Co.	Flour & Feed	Water wheel	1 man
George Gibson	Woolen Goods	Water wheel	2 men, 2 women
Lewis Chandler	Blacksmith		2 men
Phillip Chandler	Wheelwright		1 man
William Soward	Blacksmith		1 man
Moore & Mitchell	Blacksmith		2 men
Joseph Chambers	Blacksmith		2 men
John G. Fisher	Blacksmith		2 men
Kiamensi Woolen	Woolen Goods	Water wheels	40 men, 20 women
Guy & Jackson	Carriages		6 men
William Robinson	Custom Flour & Corn Meal	Water wheel	1 man

Source: Microfilm census returns, Delaware Public Archives.

ensured a constant supply of barrels for the product. This was the hundred's largest merchant mill, but the installations at Greenbank, Marshallton, and the Pike Creek project area were on a similarly large scale.

3. Cooperage

A shipload of flour or ship's bread also was a ship filled with barrels. Serious merchant millers were concerned with maintaining the supply of barrels, new or used. The cooper shop at Stanton, which operated as a part of the large merchant mill there, was shown as a separate property on the 1804 assessment, and most coopers were apparently independent businesses. Two property owners in the project vicinity were coopers during this period. Accounts of the Phillips mill in the project area testify to wagon loads of flour being carried to Wilmington or Christiana bridge and to barrels being returned.

C. PAPER

The Meter mill at Newark, later the Curtis Paper Company, was driven by White Clay Creek, which also provided the massive amounts of clean water needed by the process. Throughout its history, this mill produced paper as an end product, but the other paper mills in the hundred produced paper that was intended as the feedstock for vulcanized fiber production. The old Marshall paper mill near Yorklyn converted to making paper as the raw material for vulcanized fiber when the fiber companies began buying from them; new mills specifically for supplying the fiber industry were established early in the present century at Yorklyn, Marshallton, and at Newark in White Clay Creek Hundred. After the ironworks at Wooddale closed, the seat was occupied by a paper mill.

D. TEXTILES

Only one Mill Creek Hundred mill on the 1804 statewide assessment list was devoted to textiles. This was a fulling mill on Pike Creek, which catered to the craft weavers and home processors of local wool, rather than industrial textile mills that would come to the valley only a few years later.

Within a decade, the valley was teeming with textile mills, including spinning and weaving mills, manufacturing everything from fine cloth to blankets and carpets.

1. Carpets and Blankets

Stephen Broadbent operated a carpet mill in Brandywine Hundred, which he moved to the current project area around 1842. With him came an English silk weaver, Richard Pilling, and his son John, then barely 12 years old. The Pillings stayed at Broadbent's factory a few years and then moved on, eventually settling at the Dean mill a few miles away on White Clay Creek. A dyer named Joseph Dean, another Englishman, bought a grist mill near Newark in 1845 and converted it into a woolen mill. In 1861, John Pilling became a partner in the Dean mill, which used power looms to create cloth for military uniforms and blankets.

Blankets and military cloth were among the Dean products, for which Civil War demand would soon bring expansion opportunities. When hostilities began, the Dean firm was ready. The two young entrepreneurs added an upper floor to their Newark mill and began buying or leasing mills throughout the valley. They established the Kiamensi Woolen Company and built the large stone mill there during wartime. Their Independence Mill south of Stanton employed a race that crossed an oxbow of White Clay Creek. Another mill at Stanton drew power

from a long race that began near St. James Church. Kiamensi came to dominate the mill seats around Stanton, supplanting the DuPont and Taylor companies on the powerful seats there.

The Dean and Kiamensi companies managed to stay afloat during the postwar economic trough, but they gradually faded. After the Dean mill at Newark burned in 1886, the only woolen mill in Delaware was the main five story Kiamensi mill on Red Clay Creek, also owned by the Deans and the Pillings. It stayed in business until 1923, supplementing the direct water power with a hydroelectric generator. Specialty textile mills, which enjoyed a niche market, were able to survive on other Piedmont streams, but cotton milling moved south during the first half of the 20th century.

E. ROLLING MILLS

Wooddale and Marshallton rolling mills, on Red Clay Creek, were both served by the Wilmington and Western Railroad, but they had prospered for decades before rail service arrived.

The first of these mills was the Delaware Iron Works, located in a crook of Red Clay Creek in Christiana Hundred. It was first built in 1820, and within a decade came into the possession of the Wood family, who incorporated it as the Alan Wood Company in 1885. During this time, the mill produced 400 tons of sheet iron a year using water power.

John Marshall built a rolling mill near the old Hersey mill in 1835, using the same headrace for power. Steam was added in 1880, and a few years later the capacity was reported to be 2,500 tons of sheet iron a year (Scharf 1888: 927). The site was converted to a vulcanized fiber mill in 1906, and it is now the Haveg plant.

F. SAWMILLS

As late as the beginning of the 19th century, rural parts of Mill Creek Hundred were dominated by log construction. The 1804 assessment lists 199 log houses, 48 stone houses, and 21 brick houses (Scharf 1888:914), but by the end of the century they were little more than a memory. As we shall see, the Springer/Little House followed this pattern. It still had a log house at mid-century, although it was replaced shortly afterwards.

Since the hills of Mill Creek Hundred were abundantly forested, sawmilling became a major side business for farmers and millers. A "sash" or "up and down" sawmill could be operated by one or two people. One such mill can still be seen near Mount Cuba on Red Clay Creek. On Pike Creek, two or three sawmills apparently operated independently or as seasonal adjuncts to grist mills. Sawmills continued to be represented in Mill Creek Hundred throughout the 19th century. Oliver Evans, a millwright on the stream, published a plan for a reciprocating sawmill that probably was the common type in his locality (Hindle 1974:120 141). The 1804 assessment demonstrates that sawmills were a major factor in the local economy.

G. TECHNOLOGICAL CHANGES

Oliver Evans, whose family mill was on Red Clay Creek, revolutionized the milling industry during the decade before the end of the 18th century. At his seat on Red Clay Creek, immediately upstream from the Phillips family's Greenbank Mill, Evans installed the integrated milling and material handling system that would allow a single person to operate a huge merchant mill, whereas older mills required at least four workmen (Wilson 1954:55).

The Evans mill, like contemporary textile mills, was driven by vertically geared (usually wooden) shafts that ran up through the building from basement to attic. These heavy shafts created considerable friction that consumed power. Introduction of the leather belt main drive around 1828 allowed factories to run faster using lighter equipment. The improvement was so significant that some companies changed over immediately, discarding perfectly functional vertical shaft drives.

When loose running, belt driven shaft systems were introduced near the middle of the 19th century, power requirements were considerably reduced and mill construction could be less substantial. The new power systems required faster rotational speed that could be supplied by water turbines, which were introduced about the same time (Hindle 1975:185).

H. COOPERATIVE POWER EXPLOITATION

Power system management required cooperation among mill owners, who jealously guarded their individual rights to the resource. Brandywine mill owners, for example, formed a mill seat company that briefly (1813 to 1829) attempted to control the stream's power (Gibson 1966a:41). Such combinations on other fall line sites, notably at Paterson, New Jersey, and Lowell, Massachusetts, created industrial power systems around communal races (Fries 1975). On a smaller scale, the power of Pike Creek was harnessed by a cooperating group of mill owners.

On Red Clay, Pike, and White Clay creeks, each mill owner managed his own water power source, even when the races actually overlapped one another. The mills were so closely spaced that the foot of one tailrace was in effect the head of the next impoundment downstream. This pattern can be well seen in the project area on Pike Creek.

I. VULCANIZED FIBER FACTORIES

Mill Creek Hundred has been the world's center for production of vulcanized fiber production for a century (Northam 1934). The technology originated in England but matured in Mill Creek Hundred. The current NVF Company (formerly National Vulcanized Fiber) at Yorklyn can trace its origins to the Marshall family's milling interests on Red Clay Creek, which date back to the 18th century. Its parent plant at Yorklyn was built on one of the family's several mill seats in the hundred.

During its formative years, the vulcanized fiber industry was dominated by New Castle County milling families, who had for two centuries ridden the various waves of innovation along the Christina River and its powerful tributaries. In the vulcanized fiber industry, the Marshalls and the Pillings dominated the first half century of developments.