

UNIT TWO

The Mills and Mill Workers

CONTENT AND RATIONALE

Cotton mills were of major importance to Georgia's economy for many years, cotton being by far the most valuable agricultural product for over a century. Your Georgia Studies textbook provides some information about the mills but not in any detail. The cotton mill at Scull Shoals was the first in Greene County and for a time was one of the most productive in the state. The paper mill at Scull Shoals is scarcely known to the general public, yet it was the first in the state.

The Scull Shoals Scholar for this mini-unit presents interesting articles that provide more in-depth information about the mills and mill workers of Scull Shoals which is typical of all such mills of that era in the Southeast. In addition, details specific to the Scull Shoals industries are given as well as information about how paper and textiles were produced.

GEORGIA PERFORMANCE STANDARDS THAT ARE ADDRESSED

- H5 c Cotton gin & other inventions
- E1 Goods and services
- E2 a Trade
- E3 b Entrepreneurs take risks to start a business.

STUDENT LEARNING OBJECTIVES

To achieve a better understanding of early mills in Georgia, and the processes of paper making and the production of textiles as indicated by pre- and post-tests.

To achieve a better understanding of the impact of natural disasters and the Civil War on the success or failure of mills in Georgia, using Scull Shoals as an example, as indicated by pre- and post-tests.

ESSENTIAL QUESTIONS

- How was paper made in earlier centuries?
- What was the historical significance of the Scull Shoals mills?
- What processes were involved in the production of textiles?
- How was the textile industry in Southern states affected by the Civil War?
- How were mills affected by fire, flood and drought?

INTRODUCTORY ACTIVITY OR OPTIONAL PRETEST

The following brief true-false quiz will assess students' prior knowledge and pique their interest in this mini-unit. Its use is optional, of course. The quiz will be provided on a separate page (11), to make copying easier. (Answers: 1, 3, 9 & 10 are False; the others are True.). After the test, you may want to do the Hands-On History paper-making project with your students as an introductory activity.

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OPTIONAL POST-TEST

The post-test will be provided on a separate page (12), to make copying easier.

ANSWERS TO VOCABULARY PUZZLE

1	////	B	L	O	C	K	A	D	E	////	////	////	////
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15	E	N	T	R	E	P	R	E	N	E	U	R	////

(Secret Phrase: A HISTORY SCHOLAR)

CROSS-CURRICULAR CONNECTION

Physical Science: The water-powered (horizontal water wheel) turbine

WEB SITE YOUR STUDENTS MAY EXPLORE

Make Paper by Recycling:

<http://www.gp.com/EducationalinNature/paper/activities.html>

Name _____

Date _____

Class _____

Respond to the following statements by circling **T** for TRUE or **F** for FALSE.

1. T F Paper has always been made from wood fiber.
2. T F Georgia's first paper mill was located at Scull Shoals.
3. T F Most nineteenth-century mills were powered by electricity.
4. T F The mills at Scull Shoals were water-powered.
5. T F Ten-year-olds often worked in the mills during the nineteenth century.
6. T F Some nineteenth-century cotton mill owners became millionaires.
7. T F Both floods and droughts affected the Scull Shoals mills.
8. T F The danger of fire was a real possibility for the mills, especially when they were wooden structures.
9. T F Textile mills in the South were very successful during the Civil War because they made army uniforms for the Confederate troops.
10. T F Turning raw cotton into yarn and cloth was a simple process.

What are some things you expect to learn from this mini-unit?

TEST: Mills and Mill Workers

Name _____

Date _____

Class _____

1. Briefly describe how was paper made in early nineteenth century.

2. What was the historical significance of the Scull Shoals paper and cotton mills?

3. How were mills affected by fire, flood and drought?

4. How was the textile industry in Southern states affected by the Civil War?

5. Who were the cotton mill workers in the nineteenth century?

The Scull Shoals Scholar

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Inviting Georgia Students to Learn About Our Past

Did You Know?

Georgia's very first paper mill was located at Scull Shoals on the bank of the Oconee River. It was built in 1811 by Zachariah Sims and Thomas Ligon. Sims, a successful entrepreneur, had already built a gristmill, a sawmill, a cotton gin, a distillery, and a blacksmith's shop in the village and a toll bridge over the river. He received a loan of \$3000 from the state legislature to help establish the paper-making business.

Unfortunately for Mr. Sims, the cost to get the mill up and running was a lot more than the amount he had borrowed, and he had to put a great deal of his own

personal money into the venture; he even had to sell some of his property.

The war of 1812 began during this time. This was an especially good time to have a paper mill in Georgia because goods could not be imported from England, the primary source for quality paper, at this time. The paper mill was not fully operational until 1813, and by that time Sims was deeply in debt. Newspapers and others were happy to purchase paper produced at the mill, but then the loan was due and he couldn't make the necessary payments.

The Paper Mill Closes

Despite the hard work and quantity of money invested in the mill, it closed in the fall of 1814. Just as Georgians have been dealing with a drought in 2007 and 2008, a severe drought caused the water level in the rivers of Georgia to drop to a very low level in 1814.

The paper mill was powered by the flow of water from the Oconee River. A trench, called a raceway, carried water from the river to the horizontal water wheel

(turbine) that turned the gears of the mill's machinery. When the water level became too low, as it did in 1814, the mill could not operate because not enough water could enter the raceway.

Mr. Sims had sold a 2/3 share in his property to Mr. Thomas Ligon in April of 1814, and in 1815 went completely bankrupt. Ligon took over all of the businesses that Sims formerly owned. However, the paper mill was never revived.

FACT vs. FACT

You've learned in earlier studies that paper is made from wood pulp. That's true now, but not before the 1860s. Then it was made from old rags that were fermented and beaten to a pulp!



Hands-On History!

Would you like to experiment with paper making? This is what you will need:

- 1 to 2 cups of lint from clothes dryer (don't pack tightly to measure)
- water
- rectangular baking pan or small dish pan
- 2 pieces of mesh screening (such as for window screens), each side at least one inch smaller than the pan.
- 4 pieces of white craft felt, the same size as the screens or a little larger
- an iron
- a rolling pin

[See Directions on Page 8.]

How Was Paper Made?

This is how a British paper maker described the process in 1798:

“They cull the rags which are linen for white paper, woolen for brown; they then stamp them in troughs to a pap (pulp) with pestles or hammers like the powder-mills, then put it into a vessel of water, in which they dip a frame closely wired with wire as small as a hair and as close as a weaver's reed; on this they take up the pap, the superfluous water draining through the wire; this they dexterously turn, shake out like a pancake on a smooth board between two pieces of flannel, then press it between a great press, the flannel sucking out the moisture; then taking it out, they ply and dry it on strings, as they dry linen in the laundry; then dip it in alum water, lastly polish, and make it up in quires. They put some gum in the water in which they macerate the rags. The mark we find in the sheets (the watermark) is formed in the wire.”

The version you will make is a lot simpler than theirs! Give it a try.

Are you interested in a way to make paper from old newspapers? To recycle paper, visit this web site: <http://www.gp.com/EducationalinNature/paper/activities.html>

The Thomas Poullain Era: When Cotton Was King in Georgia

Thomas Ligon converted the former paper mill structure into a cotton mill, which he operated for twelve years. He also built storage buildings, cotton packing houses, and simple homes for workers. In 1827, land rich but cash poor, he sold all of his holdings to Dr. Thomas Poullain.

Poullain was a well-to-do and well-educated man. His father had been a prominent physician. Born and raised in Wilkes County, Georgia, he was privileged to attend a private school as a youngster. After earning a medical degree in Pennsylvania, he returned to Georgia to practice medicine in Lexington.

Thomas Poullain bought other land in addition to Ligon's property until he owned over 3,600 acres in the area. He purchased new machinery and expanded the output of the cotton mill; cotton production at this time was flourishing. The business venture was incorporated as "Skull Shoals Manufacturing Company" in 1834 and initially employed 250 people. (Yes, he spelled it with a k.) Soon, he gave up being a practicing physician.

Wealth and prestige were measured by ownership of land and slaves as well as success in agriculture and business; Poullain had all of these. Cotton was grown on most of his land. By 1830 he owned 145 slaves—more than anyone else

in Greene County. He owned all of the businesses in Scull Shoals and the village itself. He controlled his cotton production from seeds to textiles to sales and shipping. At its peak, about 600 people were employed at the textile mill. Business was booming, and by 1845 Poullain was on his way to becoming one of Georgia's first millionaires in spite of a loss of more than \$20,000 due to a major flood in 1841 that damaged his plantation and sent both his general store and his covered bridge down the river. However, in November of 1845 a tragedy occurred that caused him another major financial setback: a fire burned the two largest mill buildings—made of wood at that time—to the ground. The loss was estimated to be \$60,000 to \$70,000—several million in today's money. The mill had to be rebuilt.

Poullain had generously offered to support the mill workers while the mill was closed, a move that assured his work force would still be available when it reopened in 1847. The new mill buildings were constructed of locally-made brick, were much larger and more fire-resistant, and of course had new machinery. The mill, and Thomas Poullain, began to thrive once more.

You can see a photo of one of the buildings on page 5.

Threats from Mother Nature

Heavy rains and occasional floods, some severe, caused erosion. Over the years, much of the valuable topsoil was carried downstream. Because of erosion and farming practices that depleted the soil's nutrients, the soil became much less fertile. Another problem due to erosion was the siltation that built up behind the dams and clogged the raceway that carried water to the mills. This affected both the gristmill and the textile mill, since both were dependent on water power. From time to time, new, higher dams were built to combat the siltation problem. Poullain built a new dam on the Oconee River in 1850.

Who Were the Workers?

It may surprise you to learn that men, women, and children worked in the cotton mills. This was true in both the North and the South during this era.

Times were tough; making a living was very difficult. Farmers could barter with their products, but others needed cash. Sometimes kids as young as eight or ten would work full time to help support their families. As well as being hard work, it was also dangerous. There were many injuries, especially for the children.

Effects of the Civil War

Beginning in the 1850s, there was talk of the possibility of the ending of slavery. This possibility worried both southern plantation owners and mill owners alike. Tending the cotton crops was very labor-intensive and they felt they could not grow cotton without slaves to work their fields. Some blacks also did hard labor at the mills. Thomas Poullain, owner of a large plantation and the mills, was one of the men who argued to keep slavery in place. He was a delegate representing Greene County at the Georgia Secession Convention in 1861, to and voted for secession.

During the Civil War most southern men joined the army and fought for the Confederacy. Textile mills made cloth for army uniforms and other goods that would help the South, but not many male workers were available. There were only 100 mill workers at the Scull Shoals textile mill during the war. Union ships formed a blockade that ended international shipping, and some of Poullain's cotton was seized and burned at the docks in Savannah. One good thing: Sherman's March to the Sea from Atlanta did not take him through Scull Shoals. His men were nearby, but turned south to Milledgeville, the state capital.

Post-War Difficulties

After the Civil War, there were many changes in the South. Not only did plantation owners have to deal with the reality of the ending of slavery, but there was a lack of white laborers because so many men were killed in the war.

At this time, Scull Shoals not having access to a railroad to ship their products and supplies was a definite hardship. Railroad tracks that had been damaged during the war had been quickly rebuilt once the war was over, giving those with access a definite advantage. Unfortunately, the railroad never did come to Scull Shoals.

Plantation owners considered the Emancipation Proclamation, which was signed by President Lincoln in 1863, an unforgivable act. Poullain and others like him had a very difficult time trying to adjust to the differences between the old and the new ways of life. Thomas Poullain retired in 1868 at the age of 73. He and turned his business over to his son, Antoine, who had been managing family business interests in Augusta. Antoine Poullain reorganized the Scull Shoals business and renamed it “Fontenoy Mills.”



The warehouse at Fontenoy Mills, Scull Shoals.

Courtesy of Georgia Archives, Vanishing Georgia Collection GRN201

Financial Problems for Fontenoy Mills

In the 1870s the nation had to endure a serious economic depression as more than 10,000 businesses closed. Even the once-rich Poullains were struggling financially.

To make matters worse, the machinery in their mills was very old and needed to be replaced. The family tried to raise money to update the facilities, but could not. In 1874 they put Fontenoy Mills—virtually the whole village—and their 3,300 acre plantation up for sale. Money was scarce for everyone, though, and nobody purchased the property. Their financial problems continued.

Antoine Poullain had an idea the next year that seemed to be a way to save the village properties. He managed to gather a fairly large group of investors and together they raised \$175,000. This money was intended to pay off debts and finance some improvements to the mills. The business was reorganized and incorporated as Fontenoy Cotton Mills, even though its purpose was stated as “to engage in the business of manufacturing cotton or woolen fabrics, grists, flour and lumber” at Scull Shoals.

Another important part of the plan was to subdivide 3800 acres of his land

into 10-, 20-, 40-, and 100-acre parcels, sell them to individual families, and build new streets and roads throughout the area. However, the subdivision plan did not pan out.

When the state legislature passed a law allowing companies to lease prisoners to work for them, in 1876, Antoine Poullain sold 3280 acres to “The Penitentiary Company Number Three of Georgia” (at a price of \$8 per acre) with limited use rights to the mill. He kept the cotton ginery and the toll bridge, but they did not provide him with much income. He borrowed approximately \$25,000 during the next year—money that he could not pay back. He defaulted on the loan and moved to Baltimore to start a new business.

The mills had a new owner in 1878. Mr. Isaac Powell bought the mills and property for a mere \$16,000—a small fraction of what it had been worth forty years earlier. He kept the mills running for nine years. Mother Nature dealt a final blow to Scull Shoals in 1887 when, after incredibly heavy rains, the entire village was flooded. Machinery and many bales of cotton were ruined. Eventually other owners took over, but the mills were never successful again.

Factoid: The high water mark from the 1887 flood is still visible on the warehouse wall.

Cotton: From Boll to Cloth

A cotton boll, when it is ready to pick, is white and fluffy. Inside each boll are many small seeds that are firmly embedded in its fibers. After the cotton bolls are taken from the **field**, their first stop is the **cotton gin**, where the seeds are removed and the cotton is formed into large bales. Then it is sent to the **mill** where the incredible transformation takes place.

Modern machines are much more sophisticated and much more efficient than they were in the days of Scull Shoals. Keep in mind that the equipment at Scull Shoals was not run by electricity or steam engines; simple water power and human muscle kept their machines going. The procedures described here are those of the 1800s.

In the **blending feeder**: cotton from different bales were mixed together and beat or “fluffed” to get rid of leaves or twigs that may have come with it from the field. More cleaning took place in the **opening machine** and then in the **picker**. When it came out of the picker it was in a flat mass of batting called a **lap**.

Next, the lap was fed into to the **carding** machine. In this machine, which had several large rollers with protruding spikes or teeth, the cotton fibers were straightened

and made parallel to each other to make them ready to be spun. They left the carder in long ropes called **slivers**.

In some mills, the slivers would be combed and carded again to make a higher quality yarn. After the final carding, the next process was called **drawing**. In this process and the next, **roving**, the slivers were drawn into finer strands of yarn. After the roving, the strands were twisted to make them stronger and wound onto a **bobbin**. Then they were drawn into a much finer strand, given a harder twist, and put on a **spool**. Then it was sent to the loom.

The yarn is woven to make fabric (cloth) on a loom. Vertical strings of yarn form the length of the cloth and were strung on the loom first. **Filling yarn** was attached to a **shuttle** that carried it horizontally across it, weaving in and out. **Harness frames** would pack the woven threads together tightly to make a tightly woven fabric. Special finishes may be added to the fabric, and it may be dyed or printed as a final touch.

Now you know how complicated it was to turn cotton bolls into cloth. With so many steps in the process, it's no wonder that the mills employed so many people.

Directions for Making Paper

This procedure will simulate the machine-made paper-making process using lint in place of rag pulp. Try it out! (Ingredients and supplies needed are listed on page 2.)

In preparation: You may want to build a simple wooden frame to support one or both of the screens and make it easier to handle. Use balsa wood and thumbtacks, or any thin strips of wood and small nails. Pick the lint fibers apart somewhat so that your mixture will be smooth.

1. Mix lint with just enough water to make a consistency that's runny enough to be poured—but not too runny.
2. Place one piece of screen into your baking pan (or a small plastic dishpan).
3. Pour this mixture evenly, in a thin layer, on the screen that's in the pan. (This will become your sheet of paper.) Top with the other screen.
4. Carefully lift the paper and screens out of the pan and put (all of) it between two pieces of felt. Press as much water as possible out of the paper with a rolling pin. (The felt will absorb the moisture and, in the next step, protect the surface of the iron.)
5. With the screens and felt still in place, iron it with the iron on low heat. This will help to dry it. Let it dry for several hours.
6. After it is dry, or nearly dry, carefully remove the paper from the screens. Put it between the two pieces of clean felt and iron it again. This will make the paper smoother and finish drying it.)

Questions for Discussion

1. In what ways did “Mother Nature” affect Scull Shoals?
2. What are the good points and the bad points for having children work in the mills?
3. What does the phrase “Cotton was King” mean?
4. What do you think caused the nation-wide economic depression in the 1870s?
5. All of the owners of the Scull Shoals mills had financial problems. Who do you have the most sympathy for—Zachariah Sims, Thomas Poullain, or Antoine Poullain—and why?

Vocabulary Fun

Think of the word that matches each definition, and write it in the grid without using any of the shaded cells. Every answer is a word that is used in the Mills and Mill Workers articles. When the puzzle is complete, one vertical column will spell a phrase that describes you!

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1. Closes off an area of land or water to prevent passage.
2. Lack of precipitation.
3. Place where wheat or corn is ground into flour or meal.
4. The direction a river flows.
5. In business, a risky investment.
6. Able to use one's hands skillfully.
7. Pulling cotton fibers to make them parallel.
8. Thomas Poullain was this. 9. To build.
10. The ditch that carried water from the river to the mill.
11. To have a high level of success.
12. When soil is displaced by wind or water. 13. Used up.
14. Milledgeville, from 1807 to 1868.
15. One who organizes and is responsible for a new business.

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