

Mill Towns

Planning the Perfect Place: Meeting and Economic Need

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Overview

Since the establishment of the first textile mills in South Carolina in the early 1840s, mill towns have been a part of our state's landscape. The purpose of mill towns was to provide for the needs of textile workers as well as an immediately accessible work force for the mill. This lesson will allow students the opportunity to design a mill town. They then will compare their work to maps of South Carolina mill towns. Students will study state maps to locate textile mills in South Carolina and determine the impact those factories and their accompanying communities might have on the economic development in South Carolina.

Connection to the Curriculum

This lesson is specifically designed for social studies classes.

South Carolina Social Studies Standards

3rd grade

Standard 3-5: The student will demonstrate an understanding of the major developments in South Carolina in the late nineteenth century and the twentieth century.

Indicator

3.5.1 Summarize developments in industry and technology in South Carolina in the

late nineteenth century and the twentieth century, including the rise of the textile industry, the expansion of the railroad, and the growth of the towns.

8th grade

Standard 8-5: The student will demonstrate an understanding of major social, political, and economic developments that took place in the United States during the second half of the nineteenth century.

Indicator

8.5.3: Summarize the changes that occurred in South Carolina agriculture and industry during the late nineteenth century, including changes in crop production in various regions, and the growth of the textile industry in the Upcountry.

Social Studies Literacy Elements

F. Ask geographic questions: Where is it located? Why is it there? What is significant about its location? How is its location related to that of other people, places, and environments?

G. Make and record observations about the physical and human characteristics of places

- I. Use maps to observe and interpret geographic information and relationships
- P. Locate, gather, and process information from a variety of primary and secondary sources including maps
- W. Apply geographic models, generalizations, and theories to the analysis, interpretation, and presentation of geographic information

Grade Range

8th grade. The lesson may be modified for younger students.

Time

Two to three fifty minute class periods. Extensions may add more time to the lesson.

Objectives

1. The student will identify key geographic conditions which were necessary for the construction of the first textile mills in South Carolina.
2. Students will identify components of mill towns (ie. mill, housing, schools, town store)
3. Students will use their understanding of community organization to create their own sample community.
4. Students will use maps to determine the organization and distribution of mill towns in South Carolina.

Materials

- *South Carolina: An Atlas*
- Overview of the early development of a textile mill – teacher notes to prepare the class

HANDOUTS (may be made into overhead transparencies)

- MAP A – Horse Creek Valley overview
- MAP B – Village of Graniteville
- MAP C – Village of Vaucluse
- MAP D – Village of Warrentown
- BUILDING A – A Graniteville Home 1846
- BUILDING B – Hickman Hall 1907
- BUILDING C – The McCampbell School at Graniteville 1921
- BUILDING D – A Graniteville Home 1928
- plain drawing paper
- pens, pencils, colored pencils (as desired by the teacher)
- ruler

Procedures

1. Read the prepared notes (enclosed in this lesson) concerning the history of one mill town in South Carolina.
2. Give the students blank drawing paper and what ever tools you choose. Have the students design a mill town for a working population of 100 employees. Make sure that you discuss the following:

- a. The geographic factors that need to be included in their original plan (a source of water to turn the water wheels or turbines). Where might the mill be placed?
 - b. Will the workers be married or single or both? This will impact their housing plans.
 - c. Management vs. employee ratio. Will the managers and owners live in larger homes?
 - d. Community needs in the plan: Schools, churches, stores, medical care
 - e. Any structures the students feel should be necessary in their town should be included.
3. Allow the students the necessary time to develop their plans. This may take anywhere from one to two fifty minute class periods depending upon your expectations. The students may work alone or in groups.
4. Have the students present their plans to the class and use them for a discussion concerning the geographic and human needs being met by their plan. Discuss how they might plan for future growth in their towns or, as many mill towns are dealing with today, the end of the industry.
5. When the students are finished presenting their work, continue the lesson with a discussion of real mill villages in South Carolina using the enclosed handouts. Have them compare their creations to the actual mill villages in the maps. Some points to present with the handouts:
 - a. **MAP A** – Discuss the role of Horse Creek in the location of the three mill villages: Graniteville, Vauluse and Warrenton. Depending on the age of your students, you may want to introduce them to the concepts of site (the unchanging geographical features or physical setting of the mill and its town) and situation (the location of the mill and its town in relation to all other activity around it, such as trade routes or nearness to other towns and cities).
 - b. **MAP B** – Point out the central location of the mill complex, access to a water supply and addition of a canal with expansion of the complex. Have the students locate the school and churches. Make sure to mention that stores, businesses and medical facilities are not marked. Have the students determine where they think they are probably located (centrally).
 - c. **MAP C** – Have the students look for the same characteristics as in map B. Also point out that the history of segregation is noticeable with this map. Have them discuss whether they think the work force was white or African American in 1845.
 - d. **MAP D** – Have the students look for the same characteristics as with maps B and C.
 - e. **BUILDING A** – Discuss the mill house from 1845. Is this a type of housing most families could afford during that time? Why would the owners have built them, who owned them and who was paid the rent?
 - f. **BUILDING B** – This home is obviously the home of the factory owner. Have the students compare the two structures (BUILDINGS A and B) and discuss the difference in the quality of life for the rich and the poor in the typical mill village.
 - g. **BUILDING C** – Have the students discuss why the mill company would be willing to construct schools for the community. Who would attend the school?
 - h. **BUILDING D** – Compare this structure with BUILDING A. Ask the students

- how they are different and who might be living in this house (supervisors?)
6. Discuss the role of the company store in a mill town. The company store was the only place in town people could purchase items to meet their needs including groceries, clothing and household goods. This allowed the owners to charge extremely high prices. Use this discussion to help students understand the importance of competition in the marketplace.
 7. Have the students speculate about the need for continued growth of the mills and the impact of that growth on the development of the towns.
 8. Have the students discuss what impact the closing of the mills might have on the towns.
 9. Using the Textile Mills: 1908 map on page 26 of the atlas, have the students discuss the patterns of development for mill towns in South Carolina. The students should compare the physical map of South Carolina on page 4 to the pattern of mill distribution in the textile mills map and be able to explain the pattern. This can be continued as a lesson extension.

Suggested Evaluation

If you choose to formally evaluate the students' creations, use a simple evaluation tool with a focus on neatness, effective layout of the village, all necessary components of a village included, and creativity.

Extensions

- Students would enjoy seeing photos and reading stories of the people who lived in the Graniteville. Have them research the website listed below, featuring entries written by journalist Richard Pearce, for which he received recognition by the Alicia Patterson Foundation. "Manufacturing Princes" and "Graniteville, a Belated Introduction," provide substantial information.
<http://www.aliciapatterson.org/APF001975/Pearce/Pearce.html>
- Have students study newspaper clippings and articles concerning the decline of the textile industry in South Carolina and its impact on mill villages across our state and make a presentation (written or oral) concerning their findings.
- Have students research the history of local industries and their impact (economic, political and social) on the community. Allow them to create a visual presentation concerning their findings.

Resources

1. William Gregg's vision for industrial growth in South Carolina can be read in his "Essays on Domestic Industry: or, An Enquiry Into the Expediency of Establishing Cotton Manufactures in South Carolina", (1845) Gregg-Graniteville Archives, Gregg-Graniteville Library, University of South Carolina at Aiken, S.C.
2. Information about the engineering involved in the building of the Graniteville Mill came from *Historical American Engineering Record Southern Textile Industry Project; Graniteville Mill Documentation Project, Graniteville, South Carolina* published by Historical American Engineering Record, National Park Service (1998)
3. The diagram of Foureney's turbine and listing of the machinery used in the mill can be located in the Appendix of the above text. (pages 62, 63, and 67)

4. Maps of the mill villages and photos of the buildings came from *Graniteville 1845-1935* by Leavelle McCampbell, Gregg-Graniteville Archives, Gregg-Graniteville Library, University of South Carolina at Aiken, S.C.
5. Descriptions of the village of Graniteville and the lives of the workers came from *The Textile Industry in Antebellum South Carolina* (1969) by Earnest McPherson Lander, Jr.
6. *South Carolina: An Atlas*. Produced and distributed by the South Carolina Geographic Alliance, 1-888-895-2023, www.cas.sc.edu

The Beginning of Large Scale Textile Manufacturing in South Carolina

The Industrial Revolution which began in England found its way to America and took hold first in the New England states. As in England, power to run machinery was first linked to the phenomenon of water falling from higher to lower elevations. The geologic formation of the eastern seaboard blessed the young nation with just such a phenomenon - the "Fall Line", stretching from Georgia to New England and marking the ancient shoreline of the Atlantic Ocean and the transition from the rock underpinnings of the Piedmont to the flatness of the Coastal Plains. As the water of rivers and creeks moved across the Fall Line, it could be harnessed by water wheels which in turn could be attached to belts that transferred the movement to machinery. Even though the more urbanized Northeast was first to industrialize on a large scale, the agricultural South had the same natural resources needed to industrialize, if someone just wanted to try.

One such individual was William Gregg, a watchmaker and silversmith, who had made his mark in business in Columbia, S.C. in the 1820s and 1830s. An illness forced Gregg to sell his business and he relocated to the Edgefield District, the home of his wife, Marina. There he became interested in buying a small, but failing, textile enterprise in neighboring Barnwell District. Turning the business around, Gregg became convinced that establishing the textile industry in the South on a large scale, would be profitable, not only for himself, but also for his state. He toured and studied the mills and mill towns in the mountains of New England and by 1844 began earnestly campaigning to raise public interest in such a venture in South Carolina. Writing a series of letters to the *Charleston Courier* he was successful enough that the letters were republished in pamphlet form entitled "Essays on Domestic Industry or, An Enquiry into the Expediency of Establishing Cotton Manufactures in South Carolina." In an introduction to those essays, Gregg rued the action of southerners who raised the cotton that would make cloth, but failed to see the wisdom of spinning and weaving the cloth themselves. He explained:

“When I saw bags of cotton arrive in those mountainous districts, which had been packed in the interior of South Carolina and wagoned over miserable bad roads, (in some instances one hundred miles), to Hamburg or Columbia, -- thence transported one hundred and thirty-six miles, by Rail Road, to Charleston, where it is sold, after being submitted to the charges of drayage, wharfage, commissions, and perhaps storage; -- thence re-shipped to New York, to undergo similar charges, where it is purchased by one of these manufacturers and again re-shipped to Hartford; and from the last named place, making a dangerous and difficult passage up the Connecticut River, is landed and again hauled, in wagons, some thirty or forty miles, over mountainous roads; and having reached its final destination, (at double its original cost), is manufactured into coarse cloth; going over the same ground again, it reaches New York, where it is re-shipped to Charleston, and finds its way back again, into the interior of our state.

I repeat, when I saw these things, -- knowing as I do, the rich resources of South Carolina, and the facility with which this Cotton could be turned into cloth by the labour around us, which might be applied to it without detriment to other pursuits,

-- could it be expected that I write without using strong terms. (Gregg, Essays on Domestic Industry)

By 1845, William Gregg was able to acquire a charter for incorporation from the state legislature, and within a year had attracted enough investors and raised enough capital to begin construction. The Graniteville Manufacturing Company was born. He located the mill on the Horse Creek in the Edgefield District, designed it and oversaw the construction of both the mill and a village for the future mill employees. His extensive travels in New England during the previous year, made him well acquainted with textile operations in the Lowell, Massachusetts area, and he envisioned a southern version of that successful enterprise.

The site on Horse Creek was chosen for its abundant water supply with more than sufficient fall (40 feet in this case) to rotate a water wheel. That wheel would, in turn, turn the belts connected to the machines in the factory. First, a canal was built to bring water from Horse Creek to the mill about a mile downstream. Then a dam was built to control water flow onto the water wheel. But sometime during the construction Gregg decided to go with a newer technology. Large pipes were used to direct the water to two water turbines which provided more power. Water turbines, probably developed by a French engineer, Benoit Fourneyron, had been placed in some northern textile mills, but Gregg's Graniteville mill would be the first southern mill to use them. (See accompanying diagram.)

"The Fourneyron and other early turbines exerted their force through a vertical shaft. The conventional way of providing power to textile machinery was through overhead or underfloor pulleys mounted on horizontal shafts. A major problem was to change the direction of power transmission from rotary vertical to rotary horizontal. A letter by William Gregg in 1865 implies that the horizontal cross shafting of the mill was driven by gearing from a vertical shaft placed close to the wall of the cloth room. This could be done by using bevel or miter gears on the vertical shaft which would mate with similar gears on the horizontal shaft."(HAER, p. 59)

Once in place, the shaft, gears, and pulleys ran an impressive number of machines, as listed in the Treasure's Report of 1858:

"The machinery consists of:

- 2 Willows
- 7 Pickers
- 126 thirty-inch cards
- 2 Lap Doublers
- 12 Railway Heads with boxes
- 560 Speeder Spindles
- 8 Drawing Frames
- 560 Spooling Frames
- 7 Warping Frames
- 9 Dressing Frames
- 334 Looms
- 2 Engine Lathes
- 1 Turning Lathe

1 Screw and bolt Cutter
1 Upright Drill
1 Planer

We have for driving all the machinery: three turbine wheels, one of 170 horsepower; two of 120 horsepower each, one is kept as an extra one for running Saw Mill and for use in case of accident to others.” (HAER, p.62-63)

All of this was housed in the factory which Gregg designed, made of the abundant blue granite (from which the mill and town took their name) and the pine timber native to the area. The dimensions of the mill, 350 feet by 50 feet, as was the case in all mills of the period, was determined by the placement of the primary shaft and the length from that rotating shaft to the point at which the belts and pulleys could no longer transfer the motion to machinery parts. Since the shafts could be placed vertically, work could be carried out on several floors at one time. Gregg’s Graniteville Mill was two and a half stories high.

The town’s buildings which Gregg constructed for his workers were also made from local materials, in the popular Gothic style of that period. Visitors in 1848 remarked,

“Along the canal were boarding houses, each with gardens and other conveniences, and built with strict uniformity. On the hillsides rested the cottages for individual families. These dwellings, costing about \$400 each, were constructed with peaked roofs, gothic windows, and ornamental eaves. To this picture another correspondent added that every cottage had its garden of flowers and vegetables. He was informed that the company had set out 10,000 rose cuttings, in addition to elm, water oak, and walnut trees, evergreens and grass plots. The yard at the factory was laid out with neatly-graded walks and lined with shrubbery. Gregg himself wrote that the village, comprising an area of 150 acres, contained two “handsome Gothic churches,” an academy, a hotel, ten or twelve stores, and about a hundred cottages containing from three to nine rooms each.” (Lander, p. 60)

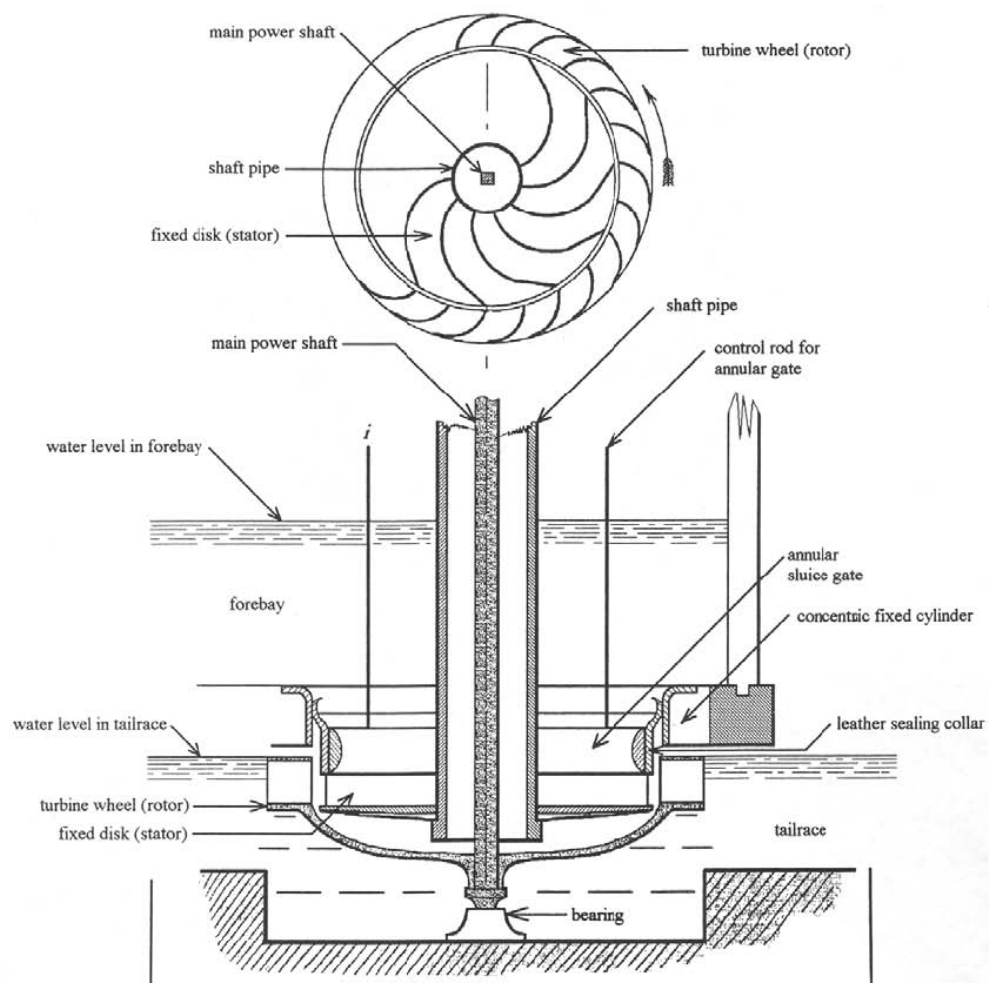
Gregg was careful to construct not only a pleasing physical environment, but also what he considered to be a proper moral atmosphere. Young women were the workers he most wanted to attract and he knew he had to ensure their families that young women leaving the farm were in a safe and wholesome environment. Though he did not attract as many young women as he thought he would, he did find that the mill village attracted families. Older children in the family worked in the mill, while the father tended the garden and the mother tended the house. Sometimes the mother also worked in the mill. To his credit, Gregg refused to hire anyone under 12 years of age and required anyone between six and twelve to attend school. Wages for this work ranged from \$4 to \$5 a week for men, \$3 to \$4 a week for women and \$1 to \$2 a week for children, with an average work week comprising 72 hours.

The mill proved to be profitable from its inception and within the following decades, Gregg and his descendants opened two more textile mills in the Horse Creek Valley.

The Civil War interrupted the southern textile industry, but by the 1880s mills were again being built in South Carolina. Most of these mills would be built in the upstate, but they used many of the same engineering principles employed by William Gregg. Some were sited near a source of water power, so abundant in the upper part of the state, although by the 1880s steam power, fired by coal, meant that the mills were not so dependant on flowing water. Many of the mills used the Graniteville community model for their workers. By this time, the railroad lines (Gregg had also used the early rail line from Hamburg to Charleston, situating his mill only a mile away) and the canal systems of the upstate were available to transport finished goods to markets and ports.

The story of the textile industry in the 20th century was one of change. Electrification, modernization, and computerization meant that cost effectiveness would be determined by labor costs, and eventually competition from overseas producers caused a decline in the industry in South Carolina. Only those mills that were able to change survived. The Graniteville Company was eventually sold, but it does survive today as part of Avondale Mills, and continues to provide needed jobs for the people of today's Aiken County. The original mill constructed by William Gregg is engulfed by larger additions, but it is still visible as one walks along Canal Street in Graniteville - and as one walks, it's fun to wonder what the sights and sounds of that spot were like 150 years ago.

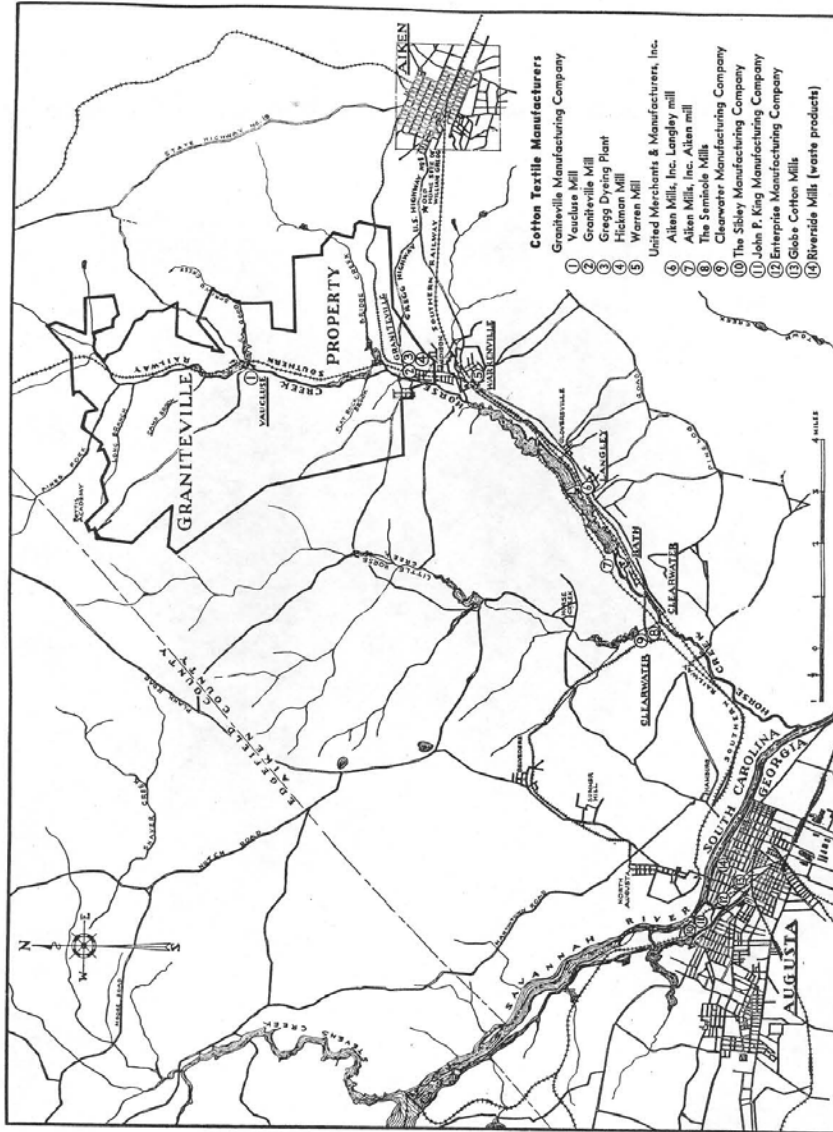
Appendix C:
Graniteville Technology Illustrations



The Forneyron outward-flow turbine - vertical section elevation.
Similar to the first turbine installed at Graniteville Manufacturing Company in 1847

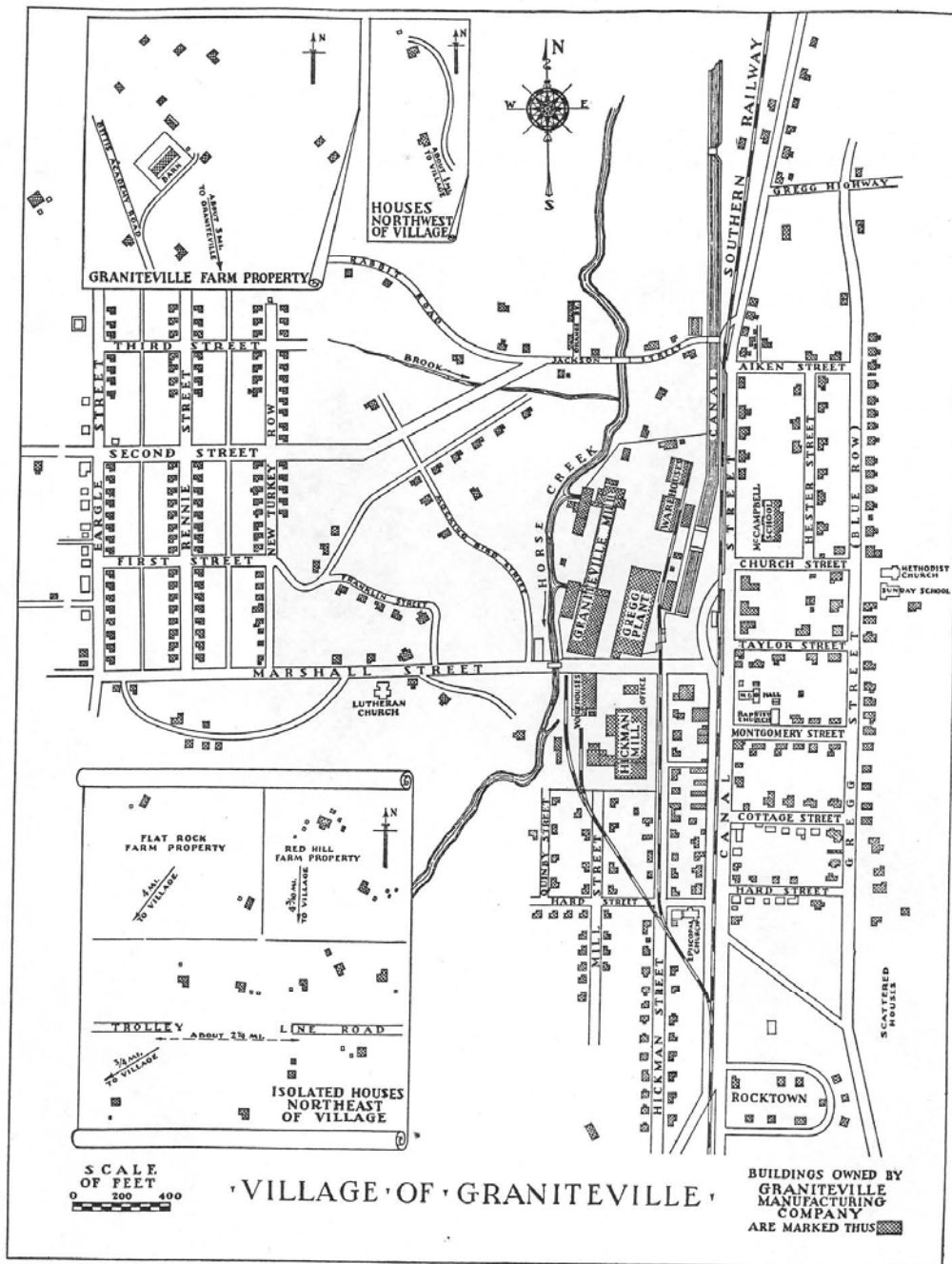
Source: A History of Water Power in the United States
by Louis C. Hunter
Adapted and digitized using Corel50 Software
by R. C. Stewart

MAP A

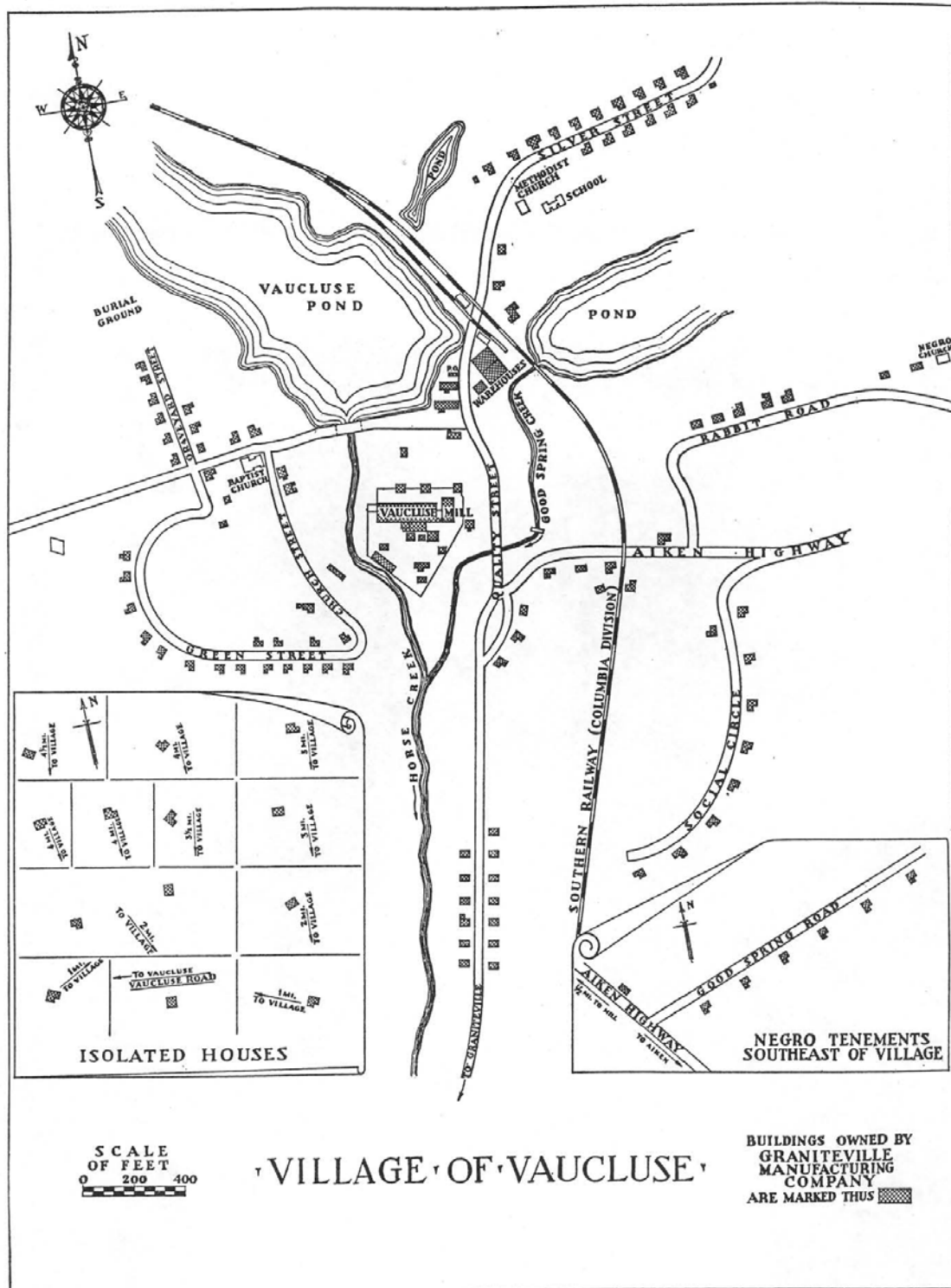


Horse Creek Valley, South Carolina and Augusta, Georgia
sometimes known as The Augusta Textile District

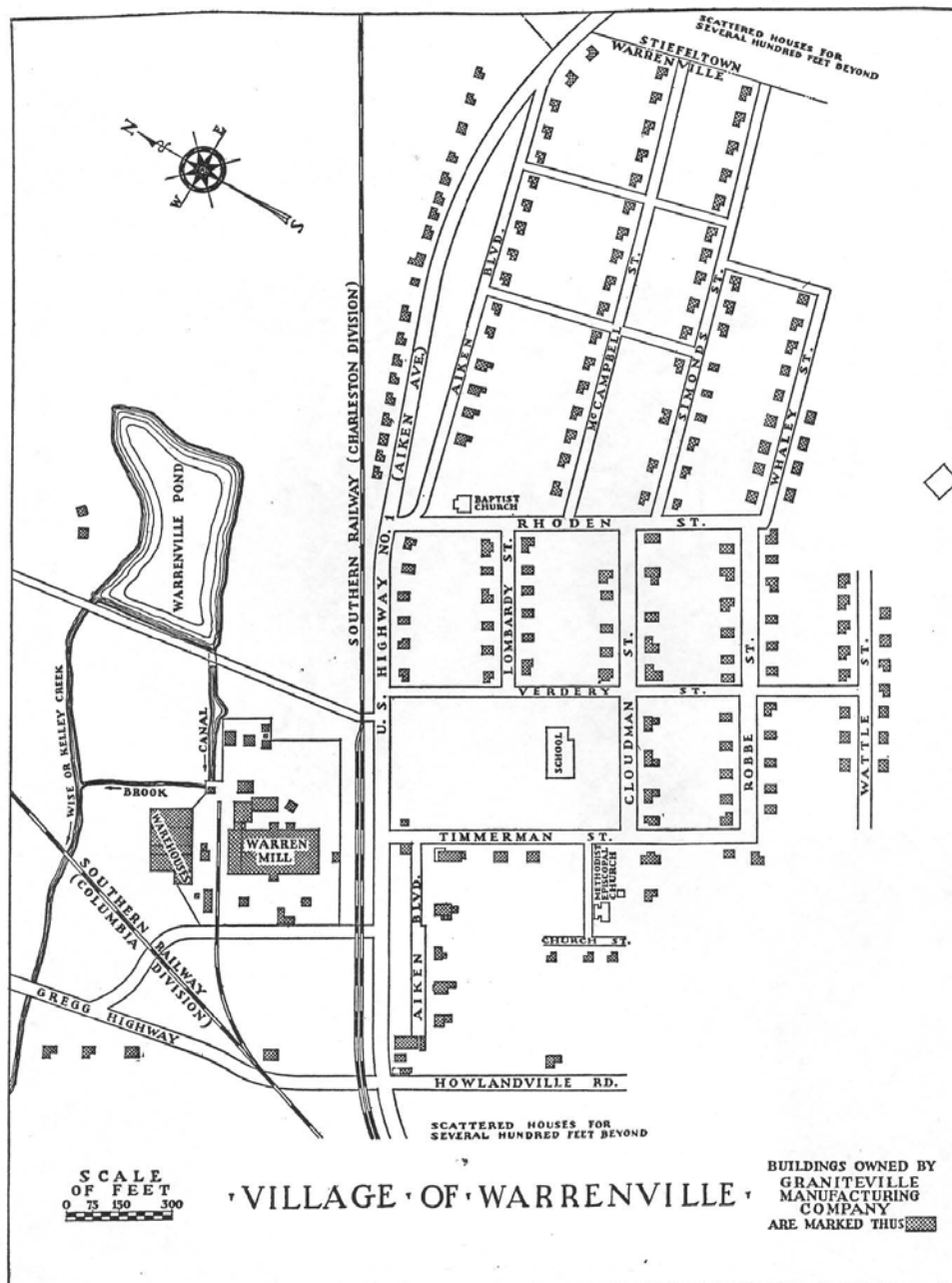
MAP B



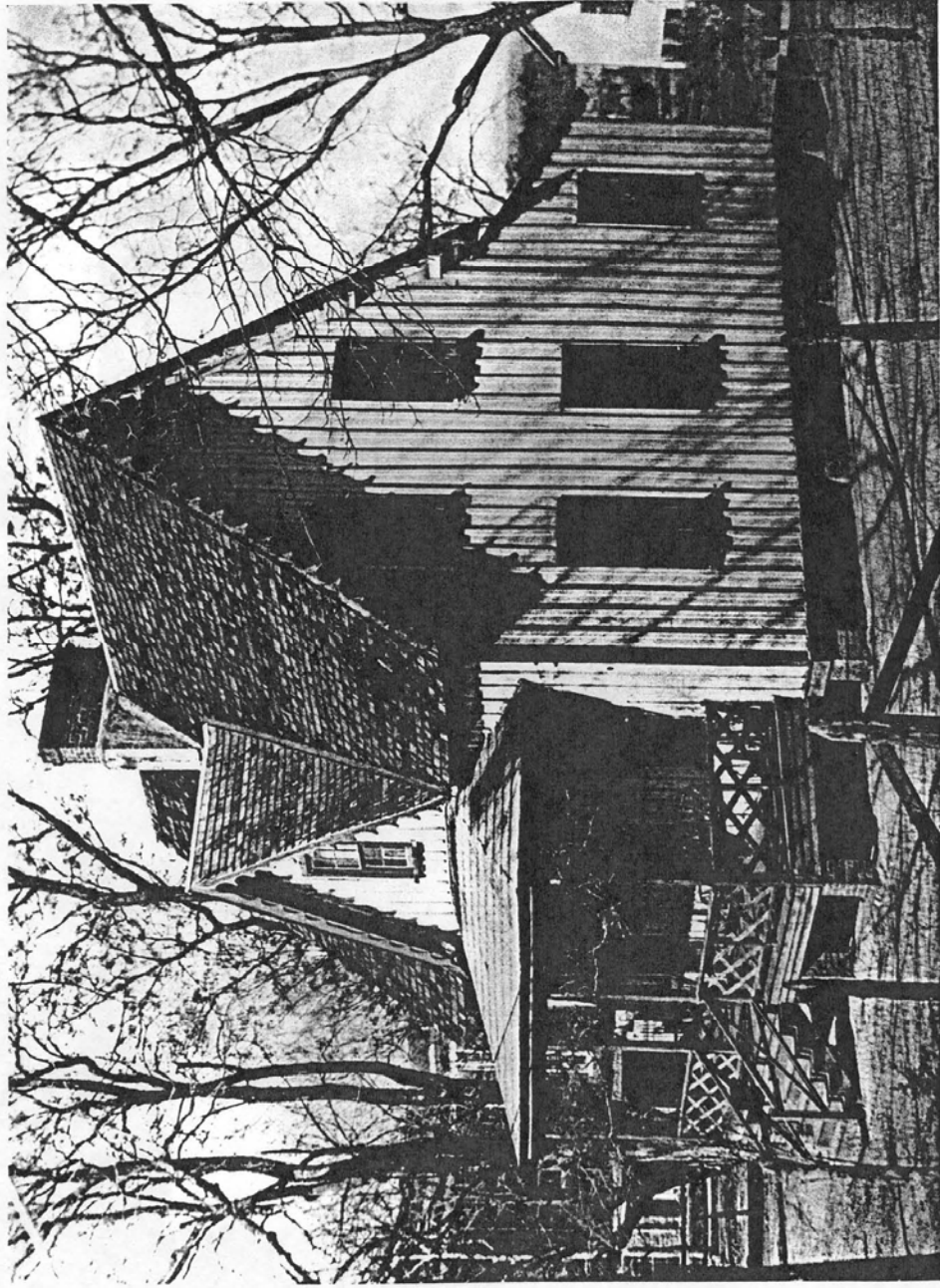
MAP C



MAP D



BUILDING A



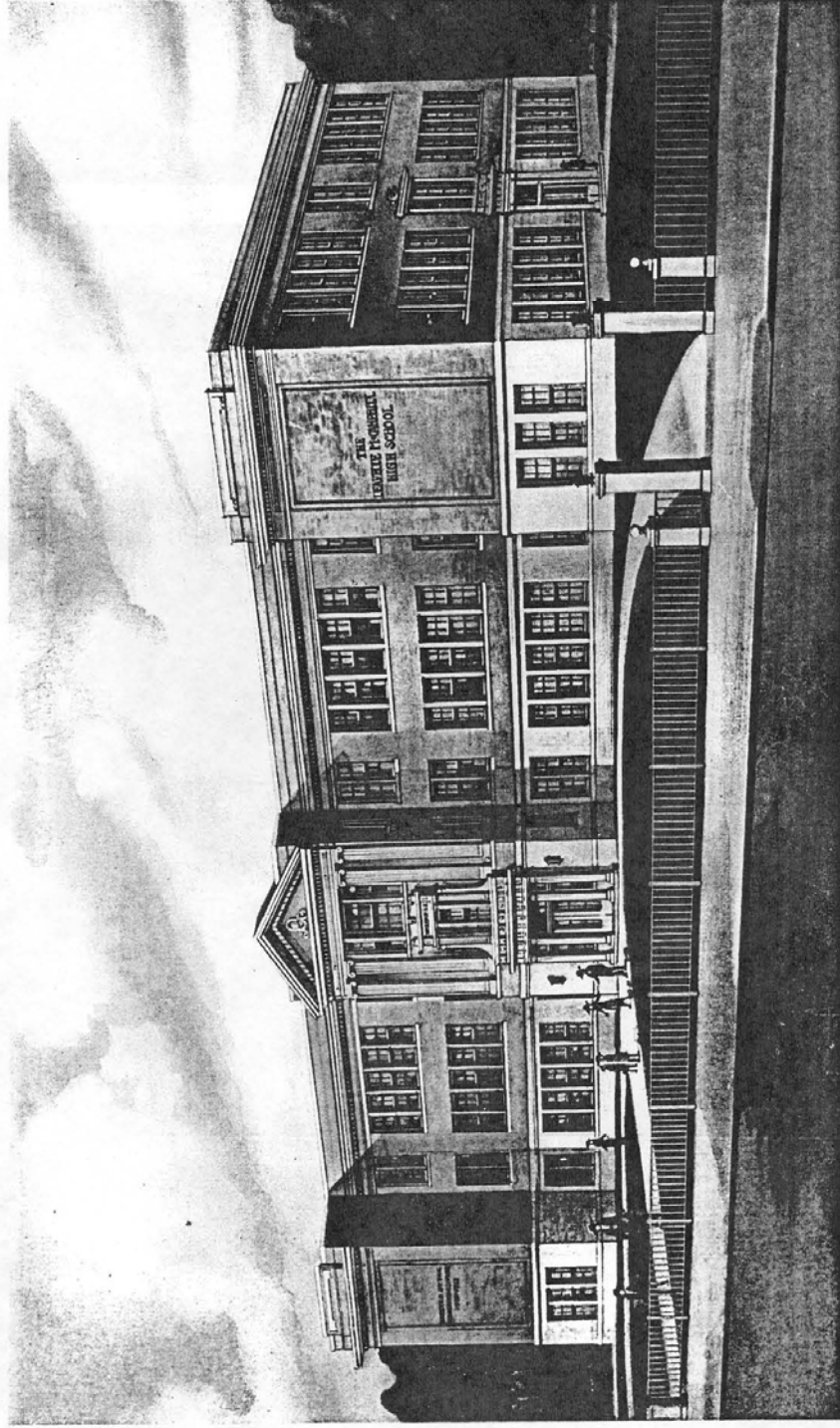
A GRANITEVILLE HOME—One of the cottages built by William Gregg in 1846

BUILDING B



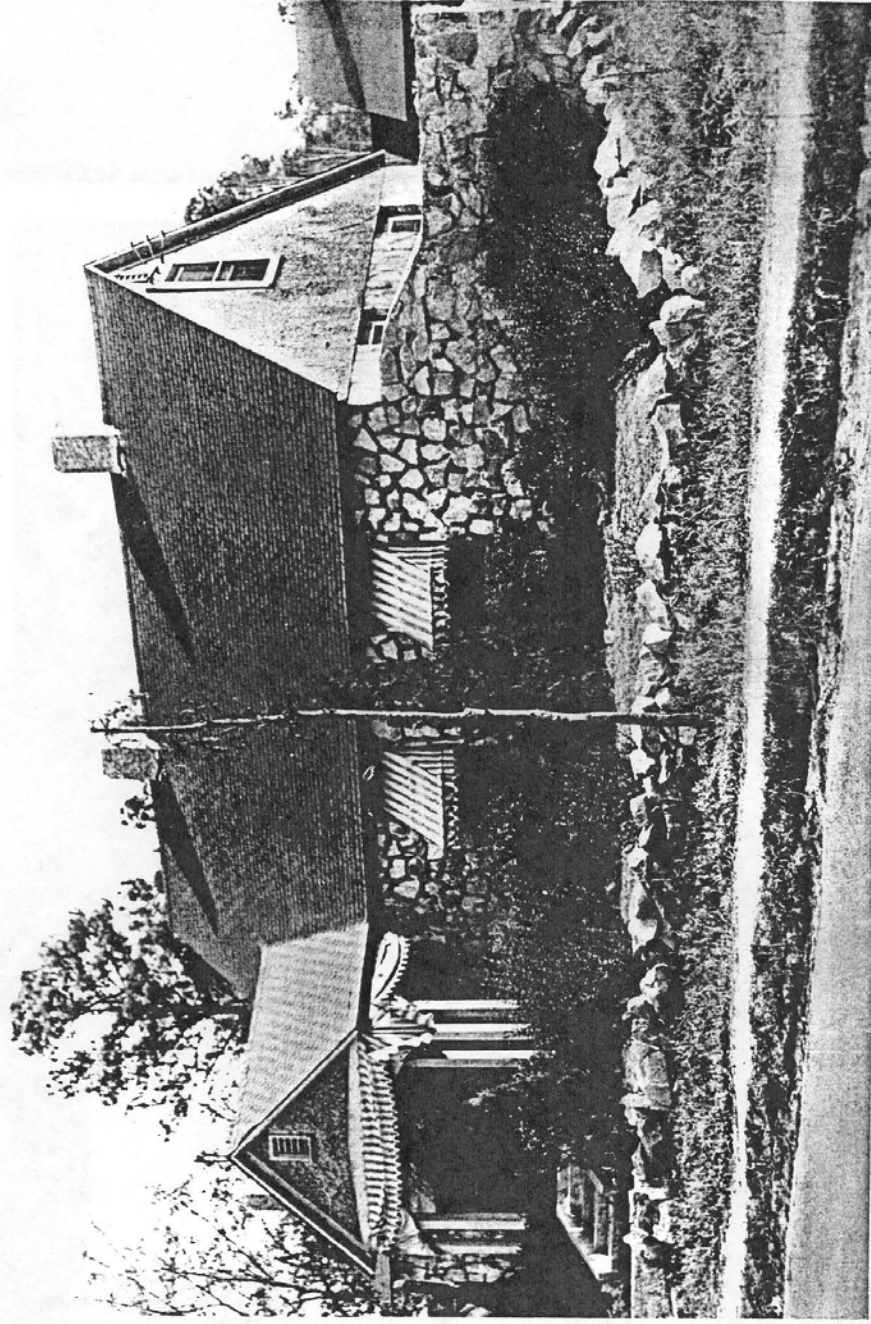
HICKMAN HALL—Built by the Company in 1907

BUILDING C



THE MCCAMPBELL SCHOOL AT GRANITEVILLE—Built by the Company in 1921

BUILDING D



A GRANITEVILLE HOME—One of a group of ten rock houses built by the Company in 1928