Orange Factory Village
Old Orange Factory Road (State Route 1628)
Durham
Durham County
North Carolina

HABS No. NC-9

PHOTOGRAPH

REDUCED COPIES OF MEASURED DRAWING

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Buildings Survey
National Park Service
Southeast Region
Department of the Interior
Atlanta, Georgia 30303

HISTORIC AMERICAN BUILDINGS SURVEY

ORANGE FACTORY VILLAGE HABS No. NC-9

Location: Old Orange Factory Road
Durham, Durham County, North Carolina

Universal Transverse Mercator Coordinates,
U.S.G.S. NW/4 Durham North 15' Quadrangle:
17.691100.4000070

Present Owner: City of Durham
Real Estate Administrator
101 City Hall Plaza
Durham, North Carolina 27701

Present Occupant: Demolished, summer 1984

Significance: The Orange Factory houses, dating from the 1860s, were built to accommodate employees of one of the earliest cotton mills in North Carolina. They assume historical significance as components of a company village, Orange Factory, North Carolina.

Cultural Resources Investigations at Orange Factory,
Lipscomb's Mill and Johnston's Mill
Durham County, North Carolina

INTRODUCTION

Nature of the Project

This report contains the results of investigations conducted by Mid-Atlantic Archaeological Research, Inc. (MAAR) and its sub-contractors at three individual mill complexes along the Little River, Durham County, North Carolina. The investigations were initiated by MAAR after submittal and acceptance of a research proposal to the City of Durham, in compliance with a Memorandum of Agreement between the City and the Advisory Council on Historic Preservation. This MOA concerned the issuance of a permit for construction of the Little River Reservoir and provided for a data recovery operation at three historically significant cultural properties: Orange Factory Historic District, Lipscomb's Mill, and Johnston's Mill.

Each of the three properties had been subjected to prior research (see MAAR 1981) and all had been either nominated to or determined eligible for the National Register of Historic Places. The required research called for historical document studies and archaeological investigations at the industrial complexes of the three mill sites. It also called for the salvage of artifacts from these mills. In addition, the Orange Factory Historic District was to be subjected to historic documentation, archaeological investigation, architectural recordation, and oral history studies.

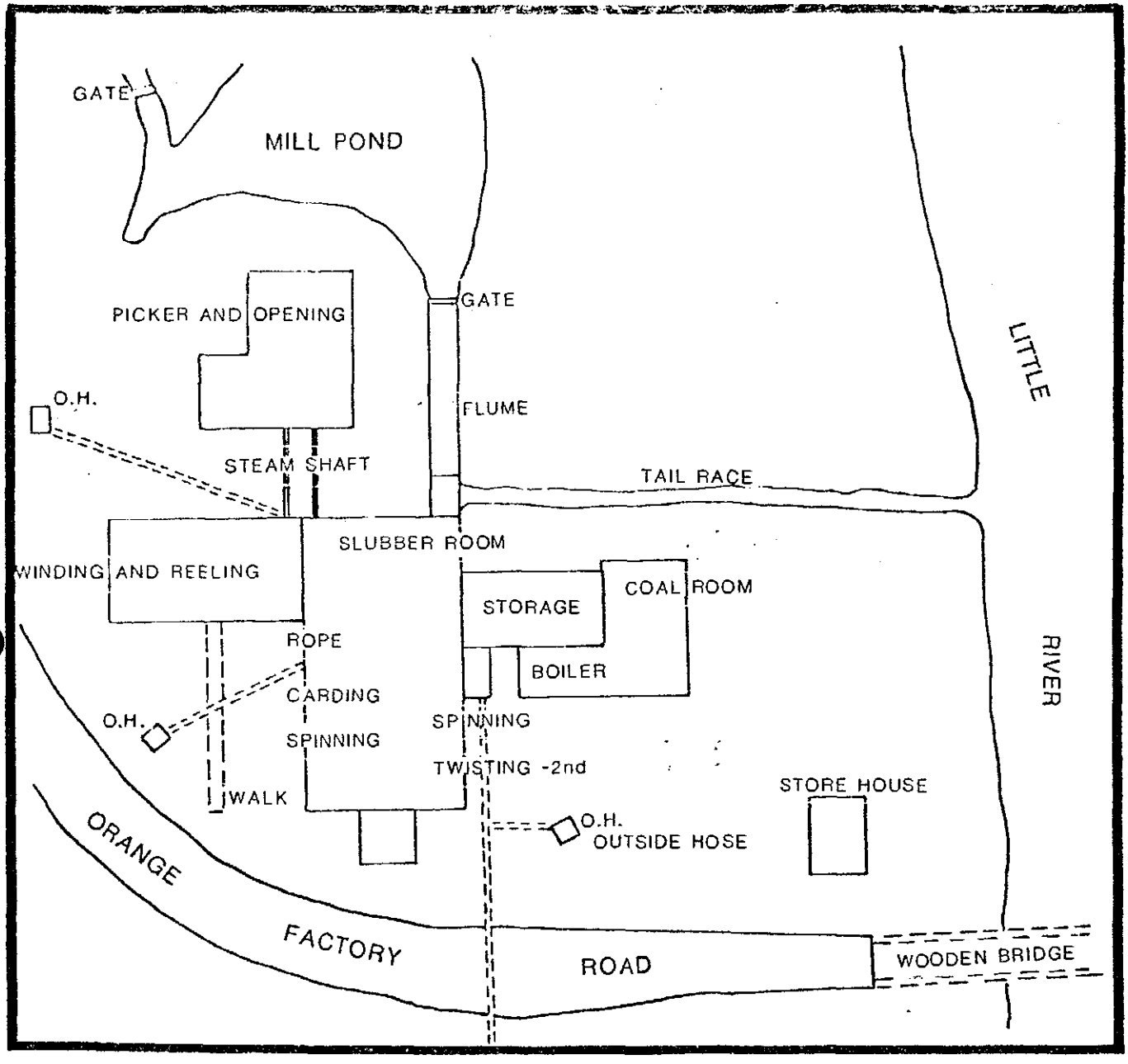
The research proposal submitted and accepted utilized data obtained during the earlier MAAR study (Phase II) and follows the guidelines put forth in Treatment of Archaeological Properties, A Handbook, published by the Advisory Council (1980). It was reviewed and modified by the Division of Archives and History of the State of North Carolina. This report is submitted in fulfillment of the various requirements and guidelines as noted above.

Project Background

In December of 1979 an "Environmental Impact Assessment, Little River Water Supply and Recreation Project" was prepared by Hazen and Sawyer, Engineers of Raleigh, North Carolina, consultants for the Department of Transportation and Utilities, City of Durham. A portion of this volume dealt with an "Investigation of Historic Sites for Little River Water Supply Project and Alternative Sites". This section was prepared for Hazen and Sawyer by their sub-consultant, Laura A.W. Phillips. Among other sites, Laura Phillips identified and investigated Orange Factory, Lipscomb's Mill and Johnston's Mill. The first of these, Orange Factory, previously listed in the North Carolina Department of Cultural Resources survey files, was recommended for inclusion in the National Register of Historic Places and was subsequently nominated.

The site of Lipscomb's Mill was subjected to historical investigation but was not recommended by Phillips for listing on the National Register. It was considered by Phillips that the "..scattered and fragmentary nature of the remains of Lipscomb's Mill Site and to the lack of much, if any definite infor-

LITTLE RIVER MANUFACTURING COMPANY



FRONTISPIECE

TAKEN FROM SANBORN MAP OF 1913

mation concerning its history, this site would not appear to meet the criteria for listing on the National Register".

The site of Johnston's Mill was subjected to historical documentation but was not recommended by Phillips for listing on the National Register. It was considered in the same light as was Lipscomb's Mill.

All three properties were subjected, however, to a Phase II Archaeological Survey during the fall of 1981. This survey, conducted by Mid-Atlantic Archaeological Research, Inc. resulted in the identification of numerous archaeological remains at each of the three sites and led to the determination that the sites had archaeological significance which would allow them to be recommended for a Determination of Eligibility. The following are brief descriptions of the three properties as researched during the Phase II investigations.

Orange Factory Complex

This property consists of an industrial complex and an associated milling town or residential/commercial center. Orange Factory was developed around A.D. 1850 as a combination grist mill and textile factory complex. At that time a large dam was built across the Little River and a race system constructed to serve both the grist mill and the main textile factory. Both mills, and the dam and race system, were modified at later dates. The mill town was constucted by the company to house and serve the textile factory workers, as was the custom throughout the eastern United States at this time. This town included single and douhle residences as well as a store, church, post office and a school.

Orange Factory changed hands numerous times before it ceased operations in 1938 after an 88 year history. The mill village, for all of this time owned by the mill owners, was sold in parcels to former mill workers. At present, many of the buildings have disappeared but a number of former mill workers and their families still occupy the village. The industrial complex is represented by building ruins and archaeological deposits.

Lipscomb's Mill

The ruins of Lipscomb's Mill sit on a tract of land extending downstream of the U.S. Route 501 bridge over Little River. They consist of remnants of the dam, a long raceway with head sluice gate housing, the ruins of an earlier earthen dam, and the grist mill complex ruins. The latter consists of the foundations of the mill building, which include a portion of a metal water wheel. Also present within the complex are several possible ancillary buildings, a road way, and possibly the miller's house (outside of the study area).

Lipscomb's Mill was built sometime around the mid-nineteenth century and was a contemporary of the grist mill at Orange Factory. It served a large community within the area durings its years of service. The mill changed hands several times being referred to on various maps in various records as Terry and Lloyd's Mill and Berry's Mill. Lipscomb's Mill seems to have continued in operation until around A.D. 1920.

Johnston's Mill

This is the earliest of the mills within the proposed Little River Reservoir flood pool and perhaps the earliest on the Little River. It was built by William Johnston who moved into the area around A.D. 1750. The mill later become a part of the large plantation owned and operated by Duncan Cameron. The mill complex differs from Lipscomb's Mill and the mill at Orange Factory, in that it went out of operation much earlier (as per historical documents) and seems to have been a much smaller operation associated with the property holdings and operations of a single plantation.

Project Administration & Schedule

The Little River Reservoir data recovery investigation was administered by the City of Durham, Planning and Community Development Department in coordination with Hazen and Sawyer, Project Engineers. Personnel involved in the direct supervision and review for the City of Durham included Mr. Robert Slade, Director of the Department and Ms. Annette S. Liggett, Environmental Coordinator. Donald Cordell, Project Engineer, represented Hazen and Sawyer. John Clauser served as reviewer for the North Carolina Division of Archives and History, Archaeology Branch.

Mr. Ronald A. Thomas, S.O.P.A., served as Principal Investigator for all phases of the project. Research Associates and Field Supervisors for MAAR were as follows: Orange Factory - Antony F. Opperman; Lipscomb's Mill - Ronald A. Thomas; and Johnston's Mill - Lauren C. Archibald. Field assistance for the archaeological investigations was provided by Luther Hanson, Alexis J. Sieg, Richard L. Green, Edward C. Goodley, Tod L. Benedict, Donald Creveling, and Marian Craig.

Andrea Heintzelman of Historical Enterprises, Incorporated, performed the historical documentation for the project. Ms. Mary-Anne McDonald, of the Oral Studies Program at the University of North Carolina, conducted the oral history investigations. John Milner Associates, Inc. of West Chester, Pennsylvania acted as sub-consultants for the architectural recordation of the Orange Factory residential structures. Mr. James B. Akerman, formerly Staff Archaeologist at the Hagley Museum (Wilmington, DE), served as an archaeological consultant for MAAR. Archaeological and historical report graphics were prepared by Mary-Jo Thomas and Richard L. Green of the MAAR, Inc. staff.

All field investigations were conducted in the late winter and spring of 1983. The various disciplines scheduled field investigations to overlap so as to coordinate efforts among the field personnel. At any one time, as many as eight investigators were in the field. The report preparations began as soon as field operations ceased and have continued into the late summer of 1983.

This project report, and accompanying drawings, consists of independent sections which have been prepared by various researchers, and a brief synthesis which attempts to tie together the common threads pertaining to the people and technology represented by the cultural resources investigated from the Little River dam and reservoir area.

Location and Description

The study area is located within the proposed reservoir site in the Little River drainage basin of Durham County, North Carolina. Durham County is situated in the Carolina Piedmont, near mid-State and within fifty miles of the Virginia border. The reservoir site comes within five miles of the City of Durham, to the north and is northwest of Raleigh, the State capital. After considering several alternatives, the City of Durham decided the locate the dam site at the Johnston's Mill location, downstream from the community of Orange Factory. The closest U.S. Route is 501, which runs north-south from Durham to Virginia. This major highway is located just to the west of the reservoir site (Figure I-1). Interstate Route 85 is a short distance to the east of the site in neighboring Granville County, North Carolina.

The site of Orange Factory is approximately seven miles north of Durham. At this point, U.S. Route 501 intersects with Orange Factory Road (SR # 1628). The community is about one and a half miles east of the intersection and is situated on the north side of the road. The community lies at an elevation of 300 to 400 ft. msl and is on the west bank of the Little River.

Johnston's Mill is within the Bennehan-Cameron Plantation Historic District and is approximately 1.25 miles south of Willardsville. The site is reached over a woods road which extends from the Orange Factory-Willardsville Road south for one mile to the north bank of Little River. The mill site is situated on a narrow terrace of sparsely wooded floodplain, 100 to 250 ft wide. The terrace is no higher than ten feet above the present level of the river and is backed by a steep bank rising 20 to 30 ft above the terrace.

Lipscomb's Mill is approximately 8.5 miles north of center city Durham just east of U.S. Route 501. It is situated on a narrow terrace on the west bank of Little River, 150 to 300 ft in width. The terrace ranges to a maximum of 12 ft in elevation above the Little River and is backed by a slight but steep slope rising to 20 or 30 ft above the river level.

Natural Environment

The following survey of the natural environment in the project area is summarized from an extensive study conducted by Hazen and Sawyer, Engineers (1979) and submitted as "Environmental Impact Assessment - Little River Water Supply and Recreation Project".

Topography: For purposes of simplicity, in the following discussion the term "study area" encompasses Orange Factory, Lipscomb's Mill and Johnston's Mill. The study area lies within the Piedmont Physiographic Province and is characterized by an uplifted and eroded peneplain. The area is within an upland plateau, and to the south the river basin flows through a low wetlands known as the Triassic lowlands, a distinct and significant environmental feature of the region.

Elevations in the study area range from 265 ft to over 400 ft msl. The Little River flows southeasterly with a gradient of 19.05 ft/mi (Hazen and Sawyer 1979). Much of the land adjacent to the reservoir study area consists of slopes of greater than 15% gradient. The river flood plain includes both level wetlands and gently rising terraces. Parts of the river, such as near Johnston's Mill, have incised the valley to form occasional steep-sided gorges. The interstream upland areas are generally broad and undulating with moderate relief.

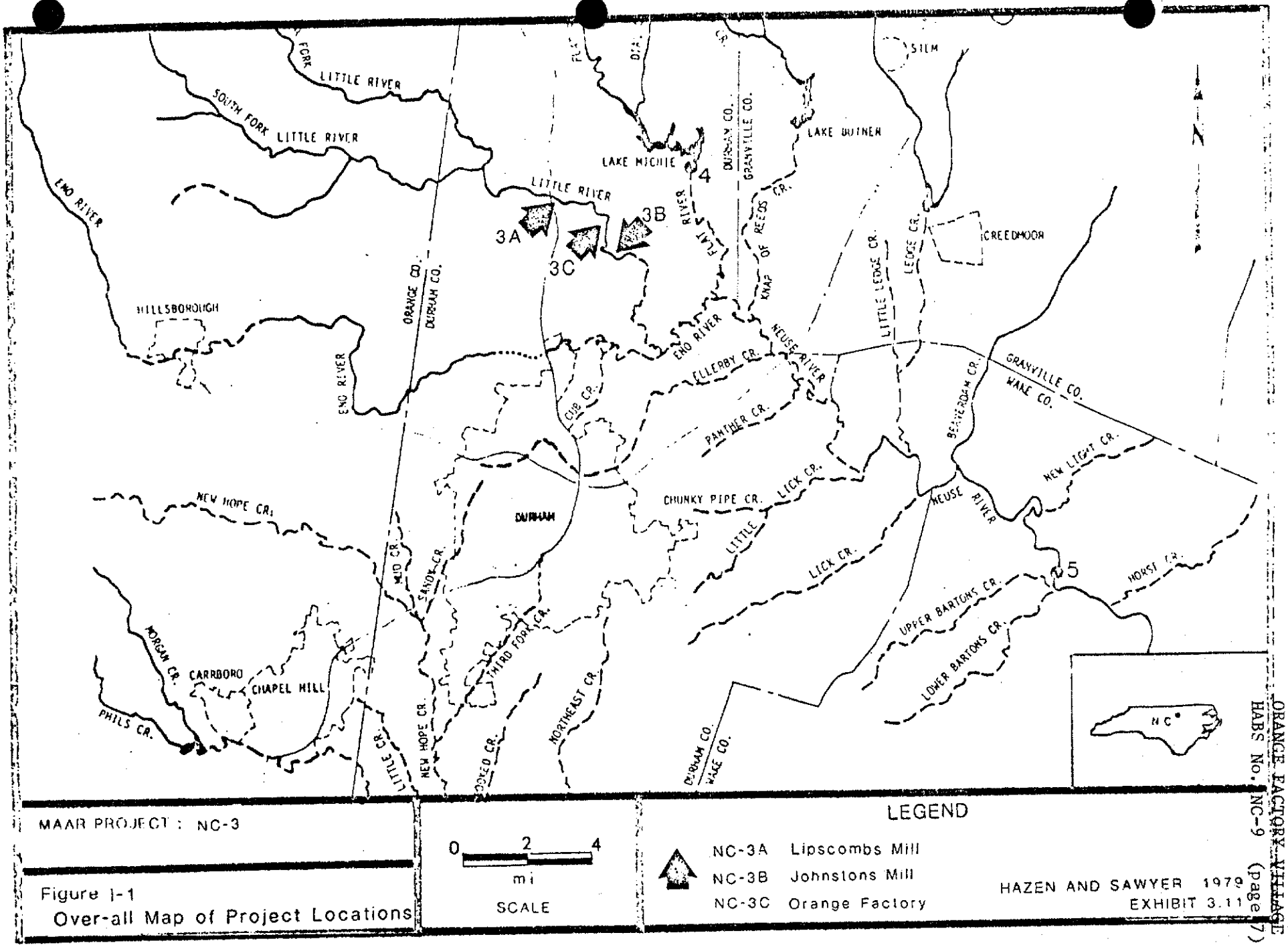


Figure I-1
Over-all Map of Project Locations

Climate: Situated as it is within the eastern piedmont physiographic province, the study area is characterized by climates typical of transition zones between the coastal plain and the areas of the continental interior. The Appalachian Mountains to the west provide a partial barrier to air movements from the interior and lead towards the domination of the area by coastal weather patterns. The region is characterized by short, mild winters, long and hot summers, and a uniform annual rainfall distribution (Hazen and Sawyer 1979).

The Durham County area has a frost-free season lasting for an average of 210 days. Winter temperatures rarely fall below 20 degrees Fahrenheit. The hottest months are July and August with temperatures averaging over 76° F. January is the coldest month of the year with an average of 40.5° F. The yearly precipitation is 42.54 in. with the driest months being October and November. An average of seven in. of snow falls per year.

Geology: The study area falls within Planning Region J of the North Carolina Council of Governments, a regional planning agency. The study area is included within the Carolina slate belt and contains a different set of rocks than exist in neighboring regions (sandstones, claystones, siltstones). The combination of the geology and the climate of the area contribute to the nature of available soils, a factor of significance to an understanding of land use patterns of the area.

Soils - Orange Factory: The Orange Factory grist mill, penstock area and raceway, half of the village site, and the textile mill are located on Herndon silt loam (HrC), 6 to 10% slopes (Figure I-2). These soils formed under forest vegetation, is residue from phylitte, which is the Carolina slate noted above (USDA 1976). These soils have little natural fertility and organic matter content. However, the soil is well suited to most crops grown in the county, the major limitation being an erosion problem due to run off and slope. Permeability is moderate and available water capacity is considered medium. The depth to the seasonal high water table is more than six ft. This soil has a surface layer of yellowish-brown or grayish-brown silt loam. The subsoil is red or yellowish-red, firm silty clay or silty clay loam, often mottled with brownish yellow.

The remainder of the village site is situated on Nason silt loam (NaD), 10 to 15% slopes. A portion to the east of the race near the Little River is composed of Congaree silt loam and the area south of the textile mill is Wilkes sandy loam (WxE).

Soils - Lipscomb's Mill: Lipscomb's Mill, including the raceway, is situated on Goldston slaty silt loam which has eroded into the flood plain from the surrounding slopes. Goldston soils are low in natural fertility and organic matter content. Permeability is moderately rapid. (see Figure I-3)

Soils - Johnston's Mill: Johnston's Mill site lies on Conagree silt loam (Cp) (USDA 1976:11). In a representative profile, the surface layer is brown silt loam about 9" thick. The material beneath this is a friable silt loam with some sand mottling, underlain by silty clay loam. The Conagree silt loam is classified as moderately well suited for pond embankments (USDA 1976:53-55). Such soils would also be favorable for the construction of the raceway embankment and channel. The ability to construct a race that would remain strong and intact for a period of years would have been an attractive feature of the mill site. (Figure I-3)

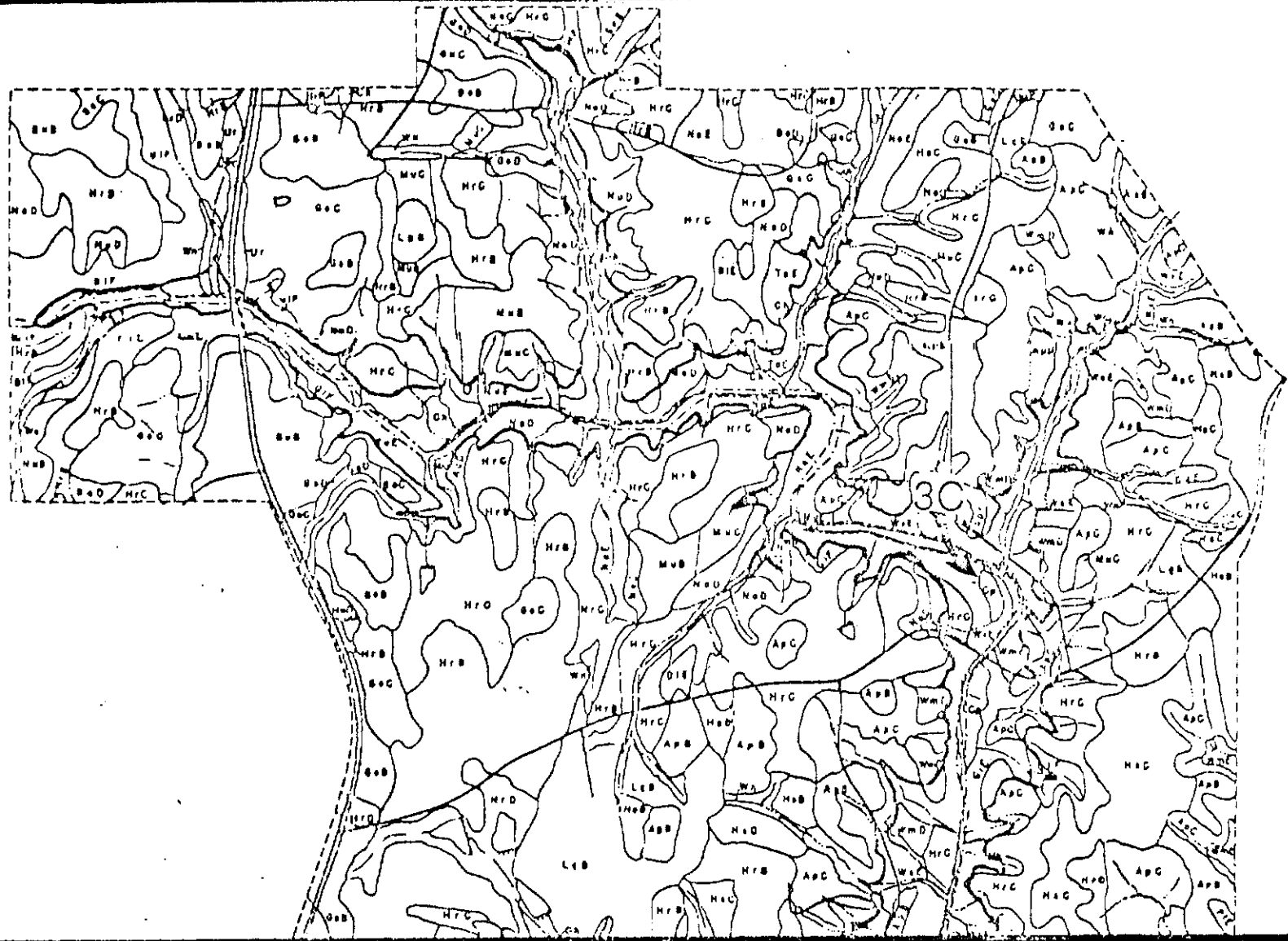
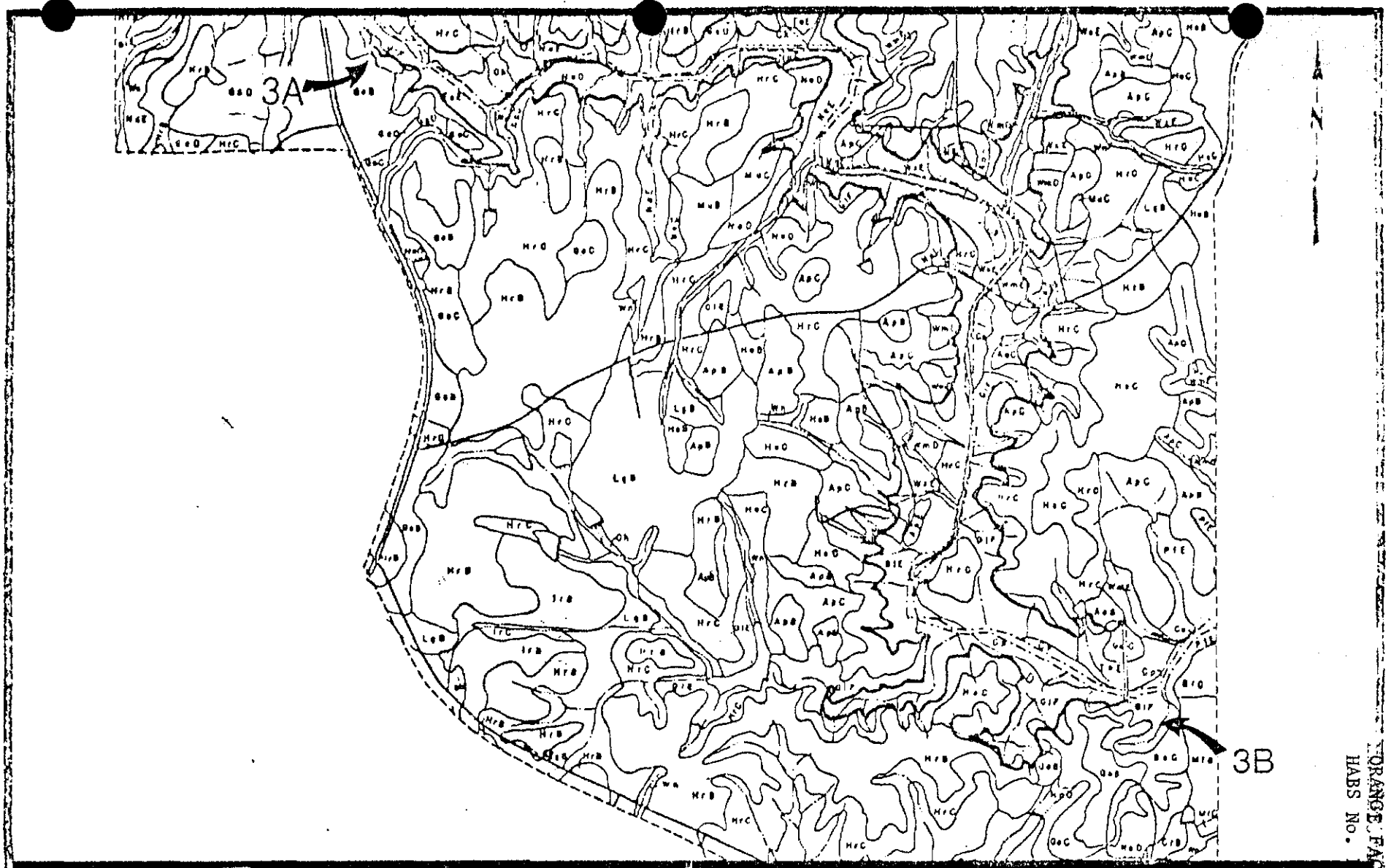


Figure I-2
Soil Map of Orange Factory

ORANGE FACTORY VILLAGE HAER NO. NC-9 (page #9)



MAAR PROJECT : NC-3

Figure I-3
Soil Maps of Lipscombs and Johnstons Mills

0 2000
ft
SCALE

LEGEND

NC-3A Lipscombs Mill

NC-3B Johnstons Mill

PLANNING DIVISION
CITY OF DURHAM, N. C. 1979

ORANGE FACTORY VILLAGE
HABS No. NC-9 (page 10)

Orange Factory Area History

The area that was to become Orange County was slow in attracting settlers, but by 1752, the year Orange County was formed, there were about 4000 inhabitants, settled mostly along the Hico, Eno, and Haw Rivers (Blackwelder in Lefler and Wager 1953:14). North Carolina attracted immigrants (Scotch/Irish, German, and English) principally from Pennsylvania during its earliest years of settlement to about 1790. Following this period, and during the ante-bellum period, settlers of Scotch/Irish and German descent were largely of second and third generation born in North Carolina.

North Carolina, on the whole, had a predominantly agriculturally based economy with cotton and tobacco crops providing two of the major sources of economic revenue for the state. Although cotton mills were generally considered adjuncts of cotton production up to the time of the Civil War, after this period, cotton mills became more of a separate industry capable of providing a large part of the economic structure. Numerous rivers and streams which could power the mills, the cheapness of labor, the low prices paid to purchase raw cotton, as well as the high prices paid for manufactured cotton goods helped to motivate the construction of cotton mills in the state (Griffin and Standard 1957:13). Machinery for the mills, however, had to be obtained from New England manufacturers unless one wanted to pay more by purchasing the equipment directly from England. It was not uncommon, therefore, to see a lot of advertisements in the local newspapers of the day, soliciting southern cotton manufacturers to buy their machinery from the north. Thus by the end of the 1830's, North Carolina had 22 textile mills in active operation. Two other mills, the Iredell Manufacturing Company and the Weldon Manufacturing Company were organized but never built.

Birth of a Textile Mill

Orange Factory, a small rural village was not less than one of the mill town complexes started during the ante-bellum period. The community, located in Orange County just off SR 1628, is situated in a narrow, hilly valley formed by the Little River. The Little River, one of three headwaters in the piedmont physiographic province (others being the Flat River and Eno River), runs in a generally easterly direction through Orange County for a total distance of 20 miles. Since the settling of the river valley by principally Scotch/Irish and German immigrants beginning in the mid-18th century (Rankin 1936:14), the Little River has been a source of power to numerous saw and grist mill operations up to the early 20th century.

In 1852, a textile mill was started which was the first of its kind to operate along the Little River. The community which developed at the site because of the mill was called Orange Factory. The community was named for the new county in which it was located and for William of Orange. The presence of Mock Orange trees around the village only added to the appropriateness of the name.

Records indicate that Orange Factory became a distinct settlement sometime between the years 1850 and 1852 when the land on which the community is located was bought by John H. Webb and John C. Douglass in order to construct the cotton textile manufactory (Orange County Deed Book 33:498). The same property, containing 27.5 acres, was previously owned by John C. and Rachel S. Douglass who sold it to Osmond F. Long on July 23, 1850 (Orange County Deed Book 33:491) for the purpose of building a dam across the river.

Within the next two years, Douglass and Webb built a substantial brick factory building and by the summer of 1852, commenced manufacturing cotton goods. The ginned cotton was made into thread by hand. On February 7, 1852, the Hillsboro Recorded printed the following statement:

> "Messrs. Webb and Douglass have just completed a Cotton Factory on Little River, about thirteen miles east of Hillsboro, and are now receiving their machinery from the North. They expect to commence operations during the summer, and will run 1000 spindles."

Existing documentation did not reveal information about the location from which machinery was purchased, but other studies on mills of this period indicate that machines were purchased chiefly from firms in Providence, Rhode Island, Paterson, New Jersey, and New York (Griffin and Standard 1957:139).

Shortly after beginning mill operations, the proprietors Webb and Douglass erected four residences to provide lodging form some of their first employees, while other workers lives in their own homes located nearby (Boyd 1925:19-20). Research undertaken by Potwin (1927) and Rankin (1936) indicate that it was not unusual for a factory manager to build and furnish housing for his employees at a low rental cost. This practice of housing employees in mill houses centralized the labor force, provided a close knit unit of comraderie among the workers, and as well provided a very inexpensive way for large families to live. Though conditions were crowded, the arrangement was tolerable. Generally, rental costs of a house to a laborer was less than half for like houses in the community - - "prices ranging from no rent charge up to a dollar and half per month per room, with an average at about twenty-five cents per week per room" (Herring 1927).

Some of the early mill houses in Orange Factory remain standing today and lived in by the local inhabitants. Ruth Suggs and Vesta Ellis, once textile factory workers in the 1920's and 1930's, occupy perhaps two of the oldest houses. Although no dates have been established for their construction, reasons for believing they are of an early age stems partially from a general observation of their being off-set from the remaining houses in the community which were most likely built when the street plan was designed. Construction details indicate split log rafters as well as mortice, tenon and peg joints. Of the two houses examined, Ruth Suggs' appears to be the oldest (also known as the "20" House), as determined by the presence of hand hewn timbers found throughout its construction. The chimney locations on the house are also very different from the other houses in the community. Based on the structural design and detail of Suggs' house, it may date to the period of the first four built in 1852 or prior to this time.

Shortly following the opening of the textile factory, a store was built, called Holt's Store after the owner, and which supplied general merchandise and sundry items to the residents of the factory complex. Each house lot maintained a garden plot which provided their basic subsistence needs. It should be remembered, however, that while the mill people maintained small farms, they received little money to live on. Just enough food was grown to maintain a minimum existence with a small surplus generally exchanged at the factory store for articles of food not grown and clothing deemed necessary or essential to their simple life and means (Rankin 1936:27).

At construction, the Orange Factory mill complex consisted of a 35 foot high and 300 foot long wooden dam, a grist mill and a textile mill. Both the grist mill and textile mill utilized water power from the Little River which was redirected through a long raceway to the grist mill first and then 200 feet downstream or down the race to the textile mill. Both generated power by the use of mill wheels, with the textile mill getting additional assistance from

steam power by 1860. This was necessary due to the sizeable operation which the manufactory had become and the large amount of machinery operating the industry. In the 1860 Industry Census Schedule 5 for Orange County, James and John H. Webb are listed as having $30,000 capital invested in the textile mill and 150,000 lbs. of raw cotton valued at $15,000. Water and steam powered the factory. Twenty males and 20 females were employed at the time with average monthly wages totaling $640 and $225, respectively. At year's end, 140,000 lbs. of cotton yarn was produced valued at $28,000. For this same year, Orange Factory was one of 50 cotton manufactories in the state (Griffin and Standard 1957). By now, textile mills in the state were a flourishing young industry boasting 41,884 spindles, 761 looms and 1,755 workers (Herring 1927:14).

From Orange Factory to the Willard Manufacturing Company

On March 18, 1864 (Orange County Deed Book 37:366), William H. Willard purchased the factory land and complex from John H. and James Webb (Table II-1). For the next nine years, Willard owned the mill factory but for reasons unknown, sold the land and mill in 1873 to Sidney W. Holman (Orange County Deed Book 42:165). The same day, Holman mortgaged to Willard the factory merchandise, cotton and stock, retaining for himself the factory building complex, machinery and fixtures (Orange County Deed Book 42:168).

For what reasons Willard did not maintain interest in the factory is not certain since he was apparently quite well off financially. Willard came to Orange Factory a prosperous man, having done well in the mercantile, shipping and manufacturing businesses he indulged in while living in Washington, North Carolina (Flowers 1978:25). During his years as proprietor of Orange Factory, Willard was President of the Round Step Bank in Raleigh and also held a large interest in the Morehead Bank in Durham. In 1872, he bought into and was part owner of the R.F. Morris and Son Tobacco Company which later became part of the American Tobacco Company (Boyd 1925:77). During this same period, Willard also was an agent of the Cane Creek Manufacturing Company and actively promoted and urged "prospective manufacturers to buy their machinery from English manufacturers (one of which he represented)as it was sufficiently improved to be worth the additional 35 per cent import duty" (Griffin 1964:37).

Orange Factory undoubtedly prospered as well as any of the other textile manufacturies did in the state during the Civil War years and just following. Willard, though a northerner from Massachusetts originally, was by this time a staunch and die-hard follower of the Confederacy after moving to the South at age 21. During the conflict between the North and South, it is alleged that the Cane Creek Manufacturing Company (for which Willard was an agent) and Orange Factory both supplied gray cloth to the Confederate soldiers for uniforms (Conner 1929). Dyes were produced from native indigo. Orange Factory continued in operation during the reconstruction period and by 1879, had 1,300 spindles, 42 looms and was producing yarn and cloth (Griffin 1964: Appendix). It appears that during this time of industrial anxiousness, there was never a complete breakdown of the industry in the state (Griffin and Standard 1957:160).

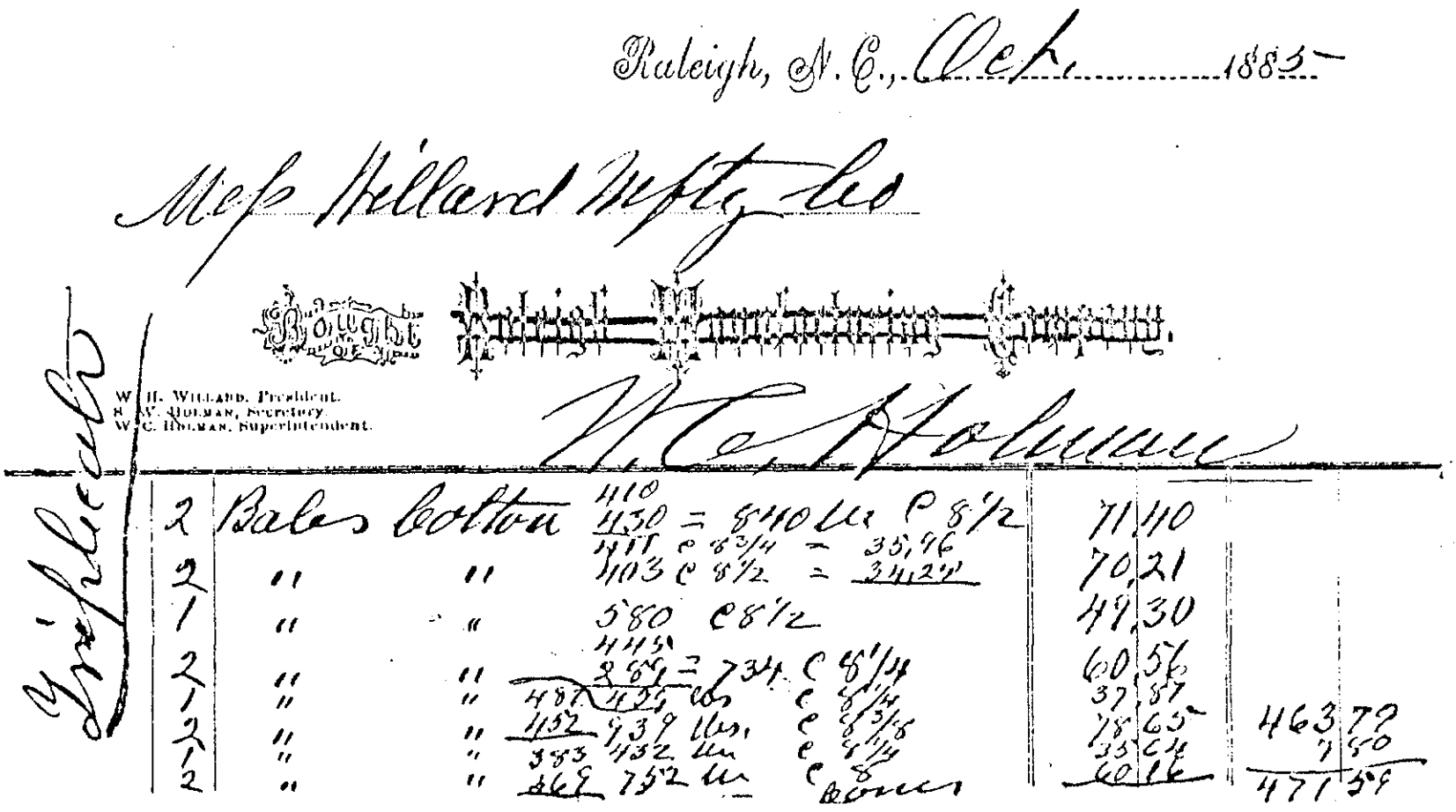
Because William H. Willard had many interests and investments in other profitable institutions and businesses, he most likely decided not to hold onto Orange Factory by 1875. His decision to sell could have been based on the personal financial loss he would incur with the drop in cotton prices. If Willard tied up most of his capital in cotton and public bonds, he ventured to lose a tremendous amount of money following the end of the Civil War. Prices of cotton declined in the world markets after 1869 and in the Panic of 1873, and continued its downward trend through the 1880's (Griffin 1964:40).

It is obvious to see that Willard was aware of the state of the failing economy and wisely decided to sell the Willard Manufacturing Company during the time that cotton prices were experiencing unheard of low prices. Once out of danger of economic collapse, he bought back the factory in 1887 when the cotton prices were making a comeback. This was during a time when the state was enduring a period of industrial "reconstruction" and fairing rather well. In 1883 and 1886, Orange Factory had 45 looms operating as compared to 42 in 1879, and was also manufacturing plaids (gingham) and seamless bags. S. W. Holman was the owner (Handbook of the State of North Carolina 1883:17, and Handbook of North Carolina 1886:297).

As the state bounced back from general economic decline and got its industries once more producing goods for the area and the nation, the next two decades, from 1880 to 1900, showed a marked economic upswing in industry. This was a time of "industrial revolution". An average of six new cotton mills were built each year. By 1880, the textile industry had regained its ante-bellum significance and gained back 41 establishments, 92,385 spindles, 3,343 operatives, and consumption of 27,642 bales of cotton (Herring 1927:17). By 1880, there were 91 establishments, 333,786 spindles, 8,515 operatives, and a consumption of 114,371 bales of cotton (Rankin 1936:19). State newspapers pleaded for more industries, and articles and speakers spoke of the growth of industrialism. Soon local and Southern capital was regained and reinvested in the growing industrial market place. Growth meant promise and success, and soon Northerners were also investing capital in the South. The lure of the South was in cheaper raw materials, fuel and labor, longer working hours, and lower labor costs.

As noted earlier, William H. Willard once again in 1873, received title to Orange Factory or the Willard Manufacturing Company as it had come to be called. This occurred after a number of transactions involving S. W. Holman and also the Raleigh National Bank between the years 1873 and 1887. Willard continued as sole proprietor of the property until his death on February 6, 1898. At that time, Samuel A'Court Ashe, son- in-law and husband to Willard's only daughter Hannah, was given a life interest in the property and named as one of the executors of the estate (Willard Estate Papers, Wake County Records, Archives and History, Raleigh). Gleaned from the private papers of the W. C. Homan Private Collection and the Willard Estate Papers (Archives and History, Raleigh), light is shed on the dealings of the Willard Manufacturing Company from 1872 through 1899.

Of particular interest was the discovery that in 1881, William H. Willard became a partner and stock holder in the Holman Manufacturing Company, the date on which the Holman Manufacturing Company was incorporated (Holman Manufacturing Company Book, Plan of Incorporation, W. C. Holman Papers, P. C. 1273.3.). In 1883, Willard was elected President of the Company. This, of course when he still maintained a mortgage in portions of the Willard Manufacturing Company under the proprietorship of the Raleigh National Bank. A copy of a bill of sale indicating 13 bales of cotton bought by the Willard Manufacturing Company from W. C. Holman (Figure II-1) clearly indicates that W. C. Holman had his own business even as he too was involved in the holdings of the Willard Manufacturing Company. The bill of sale also shows that W. C. Holman either bought the Raleigh Manufacturing Company or owned it already and decided to change the name to W. C. Holman (or the Holman Manufacturing Company). This latter notation further



Raleigh, N. C., Oct. 1885

Mess Hilliard Mfg Co

Bought of

W. H. WILLARD, President.
R. W. HOLMAN, Secretary.
W. C. HOLMAN, Superintendent.

W. C. Holman

Graphich

2	Bales	Cotton	410 430 = 840 lbs @ 8 1/2	71	40
2	"	"	411 @ 8 3/4 = 35 96 403 @ 8 1/2 = 34 27	70	21
1	"	"	580 @ 8 1/2	49	30
2	"	"	4115 865 = 731 @ 8 1/4	60	56
1	"	"	487 425 lbs @ 8 1/4	37	87
2	"	"	452 939 lbs @ 8 3/16	78	65
2	"	"	383 1132 lbs @ 8 1/4	93	24
2	"	"	862 752 lbs @ 8	60	16
					463 72
					7 50
					471 22

MAAR PROJECT : NC-3C
Orange Factory

Figure II-1
Bill of Sale-Raleigh Mfg. Company
(W. C. Holman)

LEGEND

W. C. HOLMAN PAPERS 1885

ORANGE FACTORY VILLAGE
HABS No. NC-9 (page 15)

explains the identification of the Raleigh Manufacturing Company in the 1870 Industry Census Schedule but does not explain the omission of the Willard Manufacturing Company (or Orange Factory) from the inventory of operative textile mills in that year.

Positions of importance within the Willard Manufacturing Company did not change much over the many years that Willard managed it. In 1881, W. H. Willard was President; W. C. Holman, Vice-President, S. W. Holman, Superintendent and A. G. Cox, Secretary-Treasurer. At the time of Willard's death in 1898, little had changed in the chain of command except that Willard had assumed the responsibility of Treasurer along with his role as President, and A. G. Cox held the position of Assistant Superintendent.

Bought and sold by the Willard Manufacturing Company were such items as bales of card room sweepings, card room flyings, card room strippings, spinning room sweepings, weave room sweepings, bale moats and bales of waste cotton, right bower, "orange" and raw cotton (W. C. Homan Papers, Archives and History, Raleigh). No mention was found for the purchase of dyes, although this was certainly a necessary commodity since Willard not only was dying fabric as early as the Civil War but was also making plaids and colored hosiery.

Willard purchased the greatest bulk of his raw material from wholesale dealers in Raleigh as did many of the other regional textile mill manufacturers. Other wholesale dealers which Willard purchased from included dealers in Hillsboro and Salisbury, North Carolina, and Lancaster, South Carolina (W. C. Holman Papers, Archives and History, Raleigh).

Products manufactured in the Willard Manufacturing Company included such items as seamless bags, cotton rope, cottonade, twine, plaids (gingham) and hoisery. Distribution of these manufactured products did not remain in the local market place but were sold to retailers half way across the country. Numerous large orders sent to wholesalers in Kansas City, Missouri and Cincinnati, Ohio testify to the wide area which the Willard Manufacturing Company served.

While the W. C. Holman Papers were helpful in identifying some of the business undertakings of the Willard Manufacturing Company, no references, bills, or purchase orders could be located which might indicate that Willard bought machinery parts or materials to make changes in the textile mill or its operation. No mention was found of where new or used equipment was purchased or at what times changes in machinery stock took place. One purchase order from Dumes, Son & Co. in Philadelphia, Pennsylvania asked that the 33 "bale linters" purchased from the Willard Manufacturing Company be shipped "promptly" (Fig. II-2). Beyond this one note, there was a paucity of information regarding mill changes up to the turn of the 20th century.

Figures II-3&4 are examples of sales slips and receipts for items sold by the Willard Manufacturing Company during the years of its existance. The next (FigureII-5) shows evidence of the company being insured by James Southgate and Son of Durham. Figure II-6A and B is a Weekly Production List of the factory for the last full week in March of A.D. 1899.

Dumée, Son & Co.

105 AND 107 SOUTH THIRD ST.,
LONG DISTANCE TELEPHONE No. 5941

PHILADELPHIA, 2/3nd-99 189

Willard Mfg Co.
Willardville
Durham Co.
N. C.

Dear Sirs:-

Draw on us at sight with B/L attached for 53 bales linters purchased from you, and please ship them promptly

Yours Truly
Dumée & Son Co.
Per [illegible]

MAAR PROJECT : NC-3C
Orange Factory

Figure II-2
Purchase Request to Dumée, Son and Company, Philadelphia

LEGEND

W. C. HOLMAN PAPERS 1899

Orange Factory, Durham Co., N.C. June 30 1887

Mess Holman Bros & Co in Acct with

W. H. WILLARD, President.
W. C. HOLMAN, Vice-President.
W. S. HOLMAN, Superintendent.
A. G. COX, Secretary and Treas'r.

WILLARD MANUFACTURING CO.,

MANUFACTURERS OF

PLAIDS AND SEAMLESS BAGS.

TERMS: THIS BILL MUST BE PAID TO W. H. WILLARD, RALEIGH, N. C.

1886 July	1	To Bal. of Acct due this date	1022.36	
		Less Tax not credited separately WCH	22.36	1000.00
1887 Jun	30	To 12 Mos. Int 8% on $1000		80.00
July	1	Credit to New Acct this date		$1080.00

Willard Mfg Co
R W H Willard Prest

To W C Holman July 8/87

MAAR PROJECT : NC-3C
Orange Factory

LEGEND

Figure ii-3
Bill of Sale-Seamless Bags
-Willard Mfg. Company

W. C. HOLMAN PAPERS 1887

W. H. WILLARD, PRES'T AND TREAS., RALEIGH, N. C.

W. C. HOLMAN, VICE PRESIDENT, RALEIGH, N. C.

S. W. HOLMAN, SUP'T., DURHAM, N. C.

A. O. COX, ASS'T SUP'T., WILLARDVILLE, N. C.

Willardville, N. C. June 30th 1897

M Springfield Waste Co.

Springfield, Mass.

Bought of Willard M'f'g Co.

Manufacturers of Seamless Bags, Cotton Rope and Twine.

TERMS: THIS BILL MUST BE PAID TO W. H. WILLARD, RALEIGH, N. C.

2	B/ Spinning Sweepings 1167 lbs @ 1/2¢	5 84	
5	" Shave " " 2881 " @ 1/2¢	14 41	
7	" Motes 6399 " @ 3/8¢	24 00	$44 25

(10447)

DUPLICATE.

Shipped to Providence, R. I.

From Pearl Cotton Mills

MAAR PROJECT : NC-3C

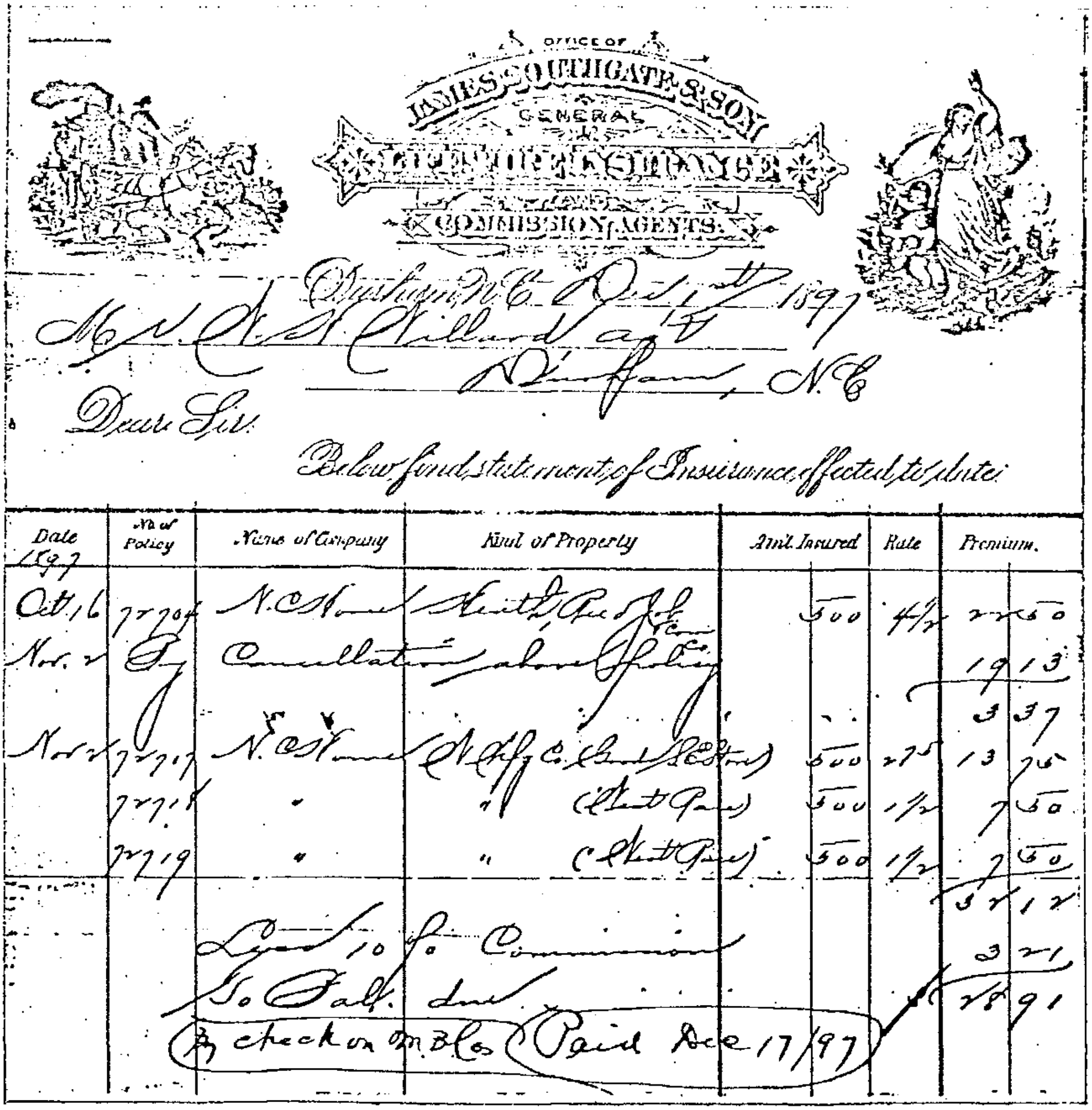
Orange Factory

Figure II-4
Bill of Sale to Springfield Waste Company

LEGEND

W. C. HOLMAN PAPERS 1897

ORANGE FACTORY VILLAGE
HABS No. NC-9 (page 19)



OFFICE OF
JAMES SOUTHGATE & SON
GENERAL
LIFE, FIRE INSURANCE
COMMISSION AGENTS.

Durham, N.C. Dec 4th 1897

Mr. A. H. Hillard Agt
Durham, N.C.

Dear Sir:

Below find statement of Insurance effected to date

Date 1897	No. of Policy	Name of Company	Kind of Property	Amt. Insured	Rate	Premium
Oct. 16	77704	N.C. Home	[illegible]	500	4 1/2	22 50
Nov. 2	By	Cancellation above Policy				19 13
						3 37
Nov 2	77717	N.C. Home	[illegible]	500	2 3/4	13 75
	77718	"	" [illegible]	500	1 1/2	7 50
	77719	"	" [illegible]	500	1 1/2	7 50
						32 12
		Less 10% Commission				3 21
		To Bal. due				28 91
		By check on M. Bros (Paid Dec 17/97)				

MAAR PROJECT : NC-3C
Orange Factory

LEGEND

Figure II-5

James Southgate and Son
-Insurance Company
Receipt

W. C. HOLMAN PAPERS 1897

Aftermath of the Industrial Revolution

The push ahead to revitalize North Carolina's manufactories played significantly in the growth and development of the state during the latter part of the 19th century and the first decade of the 20th century. Prior to 1900, North Carolina's textile industry was based predominantly on local enterprise, management, capital, and labor. Individuals with extra capital to spend were encouraged to invest in cotton manufactories -- this, while the prices of cotton remained their lowest. Those men who were in manufacturing during the ante-bellum period, proved instrumental in getting the factories built and producing goods once again during the period of reconstruction.

One consequence of the growth of textile industries in the South was the flow of Northern capital into the Southern market place. People also began to move from the farm to the factory which resulted in the accelerated growth of towns and cities. Such movement brought material wealth, politics and social influence to the urban scene.

The bulk of the factory workers was made up of unemployed towns-people and small farmers who came in from rural areas looking for work. Due to low wages paid out by industries across the State, entire families were obliged to seek employment. The factory worker faced long hours, low wages and poor working conditions. Even so, wages paid to the factory workers often placed them in better economic status than many still tilling the soil. This was largely the result of the lower cost of living in the state as a whole. Women and children working far outnumbered the number of men working in the factories. Children started to work while very young - - sometimes nine and ten years of age (Seddon, Ulm and Hine 1908; Trachtenberg 1977), and seldom went to school or passed beyond the fourth or fifth grade. While the latter was usual among factory communities, it was a general problem throughout the state and not peculiar to mill workers. It was not unusual for the children to work night shifts. Intermarriage was common among workers of structured factory communities, and Orange Factory was no exception. Although this practice sometimes led to children being born with hereditary problems, none were born with this affliction in Orange Factory.

An outgrowth of the Industrial Revolution was the emergence of a working class and a new direction of class interests and conflicts. Although present since time of settlement, a new class consciousness was developed by the manufacturers. Not eager to "rock the boat", the first generation of industrial laborers tolerated low wages, child labor, some night work, long hours, segregation from the rest of mankind, and the distinction between employer and landlord. However, the second generation became unsettled and nervous when he compared his conditions with that of other economic and social classes, or even with labor groups from other areas. Total dependence on employers for jobs and even housing, plus fear of the employer and general ignorance on the laborer's part tended to break down his confidence in himself.

The American Federation of Labor organized in the early 1880's tried to organize textile labor for the first time in 1898. The federation suffered miserably in its stand due to tough resistance from manufacturers and little if any moral support from factory workers. Appalled at the working hours and conditions set out for women and children, bills generated by the Federation were repeadetly submitted to nearly every legislature but were consistently defeated by manufacturers who feared government regulation.

Another program which came to the aid of labor reform was the National Child Labor Committee. The National Committe was established in the first

decade of the 20th century for the sole purpose of working towards abolition of child labor. It was thought to be un-American and inconsistent with the ideals of American civilization (Adler 1908:1). Because of the pressures placed on children to earn enough money to feed the family, feelings of responsibility developed early as well as the desire to marry early (McKelway 1908:3). By the age of 15 and 16, children were no longer considered such, but young adults. They were capable of doing an adult's work load and expected to take on the responsibilities of adults. This respnsibility also included finding a spouse and starting a family of one's own. Early marriages however, were more common among poorer classes because it meant one less mouth to feed. Life expectancy was also a factor in the need to marry early at this time. And, although early marriages were common among mill workers, it was by no means unique to this group alone.

Sometime after 1910, required working hours for women and children were reduced from 66 to 64 hours per week. However, until then, the following conditions applied under the North Carolina Child Labor Law (Seddon et al 1908):

-Age limit for employment in factories, 13 years

-In apprenticeship capacity, 12 years

-Age limit for night work, 14 years

-Hours of labor for children under 18, 66 per week

-Employment certificates, written statements from parent or guardian

-No factory inspection. Commissioner of Labor has no authority to enter a factory.

-No prosecutions under the law

Gross violations of these laws -- unfair as they were -- were found across the board and throughout the country. However, in order to prosecute manufacturers, the National Child Labor Committee had to catch the manufacturers in the outright abuse of the law.

An individual who devoted many years to exposing the working conditions in industries across the nation was one Lewis Wickes Hine. Already a well-known photographer of social conditions in places like New York and Washington, D.C., Hine was hired by the National Child Labor Committee in August 1908 to take photographs of the mills and factories in North and South Carolina as an effort to awaken public interest in the passage of regulatory legislation (Trachtenberg 1977:18). During the first year of his work, Hine visited 19 mill villages and investigated 17, photographing children and the conditions he found there. In all but two mills in North Carolina, Hine was permitted to take pictures of the children. Before the wave of consciousness in child labor and working conditions regulatory legislation, mill managers had an indifference to the wrongness in employing children (Seddon et al 1908). Hine found that there were more mills in North Carolina which operated at night than there were in South Carolina or any of the other southern states. Children he spoke to claimed they sometimes worked 12 hours on a night shift and during the day, had no special time off for lunch but ate while working. Most children Hine talked to had started working about the age of nine years old and one as early as six years old. Children too young to work in the factories often were found doing piece work at home.

Once efforts were initiated to establish some form of regulating legislation, inspection of the factories for abuse of child labor laws and other working conditions was met with much difficulty by the chosen inspectors. Naturally, no factory manager wanted an inspection official walking through his establishment noting all his abuses of the law. The purpose of the inspector was to be sure that employers cooperated in maintaining fair working conditions. Often times, inspectors checking into the factory office to announce their intention to inspect the factory at that time allowed just enough time for the factory manager to get the children out the back door before the inspector came in for inspection (Morgan 1908:5).

In order to accurately describe the conditions inside the factory, Hine often donned a disguise, sometimes as a fire inspector, post card vendor, a Bible salesman, or a brokendown school teacher selling insurance (Trachtenberg 1977:13). Sometimes he would gain entry by convincing the factory managers that he was an industrial photographer making a record of factory machinery. During his many years of work for the National Child Labor Committee (1908-1918), Hine's photographic record of factory conditions and the blatant use of child labor in the factories proved instrumental in passing legislation on an improved working environment and on conditions. Individuals could argue with one's interepretation of what they said they saw in the factories, but how could you argue about what the camera had seen?

Orange Factory from 1899 to 1916

The working conditions inside the Willard Manufacturing Company were not unlike other textile mills in North Carolina or ones that Hine and others reported during the early 1900's. Residents today of the Orange Factory community remember how they worked as children in the factory for long hours making various products (see Fig. 6A & B). A payroll sheet of the Willard Company for the week ending April 1, 1899 is a telling story of the weaving room wages which existed at that time (Fig.II-7). Out of 70 employees listed, at least 25 were female. Of the total number of persons employed, it is difficult to tell how many were children. Residents of Orange Factory remember working some night shifts, and definately remember getting time off for lunch. The children of both sexes worked in the weaving and spinning rooms and some of the boys worked as doffers. Although children of Orange Factory did not work in the warping room, Lewis Hine found this not the case elsewhere, even as the factory managers flatly denied that they had children working at these types of jobs (Seddon et al 1908).

Residents of Orange Factory today had parents who worked in the textile mill when it was still the Willard Manufacturing Company. At this time, the factory had 80 looms and 1600 spindles. It operated from two-thirds to three-fourths of the year by waterpower alone and the remainder of the year under steam and water combined. Residents today claim that at no time did the factory close down due to lack of power -- even during the summers. The dam was reported to be 21 feet high and 125 feet long with a fall of water at 22 feet at the end of the 1200 foot long race (Swain, Holmes, and Myers 1899:126).

In 1906, the mill was sold by the executors of Willard's estate to the Little River Manufacturing Company (Table II-1). It was during this period of

Product of Orange Factory

WEEK ENDING MAR 25 1899

Rope & Twine on hand Oct 1/98	195	53		
" " " made upto 3-18/99	765	97	1559	05
" " " week ending 3-25/99	35	01	70	02
	996	51	1629	07
Less Rope & Twine sold	853	63		
On hand Mar 25/99	142	88		
Hosiery Yarn &c				
Hosiery Yarn on hand Oct 1/98.	192	5?		
" " made to Mar 18/99	10512		420	94
" " " weekend 3-25/99	331		13	24
	12768	½	434	18
Less Hosiery Yarn Sold	10566	3		
On hand Mar 25/99	2201	¼		
Bags &c				
Bags made to Mar 18/99	26725		1327	00
" " in week ending 3-25/99	2098		109	49
	28823		1436	49
Less Consigned to PH & Co	23000		20753	
	6823		5824	
Less sales of "Seconds"	4400		3975	
On hand Mar 25/99	2423 Bags		1849 lbs	

LEGEND

MAAR PROJECT : NC-3C
Orange Factory

Figure II-6A
Product of Orange Factory
-March 25, 1899

Shipment of Rope & Twine

1899

			7	04	79	½		5	30	76
Mar 21	R	For Mdse Slater, Myers & Co, Richmond, Va 2589½ lbs @ 7¾¢ $200.71 499½ lbs @ 8¢ 39.96 240.67 Len frt @ 28¢ 5.65	2	58	9	7¾	70 Rolls 15 Coils			
			4	99	5	8		2	32	04
" 22	R	J. S. Moore & Sons Richmond Va 2589½ lbs @ 8¢ $207.14 Len frt @ 28¢ 7.25	2	58	9	8	80 Coils Stand	1	99	89
" 23	R	W. S. Dowman & Co. Richmond, Va 2572 lbs @ 8¢ $227.76 141½ lbs @ 10¢ 14.13 263.89 Len frt @ 28¢ 9.00	2	57	2	8	90 Coils Stand 11 Hds	3	41	10	2	54	89
" "	R	Harry Blair & Co, Richmond, Va 696½ lbs @ 8¢ $56.74 Len frt @ 28¢ 1.55		69	6	8	20 Coils		58	29
" "	R	Davis & Atkins, Richmond Va 609½ lbs @ 8¢ $48.06 Len frt @ 28¢ 2.24		60	9	8	65 Coils Stand		61	82
" 24	R	J. D. & R. S. Christian Richmond Va 534 lbs @ 8¢ $42.72 Len frt @ 28¢ 1.50		53	4	8	15 Coils Stand		41	22
" "	R	W. S. Dowman & Co. Richmond shipped to Luken & Long, Roxboro, N.C. 179 lbs @ 8¢ $14.32 Len frt @ 25¢ on lot .25 (5 Coils)		1	79	8			14	07
" 24	R	Wm B. Mott & Co Richmond, Va 1345½ lbs @ 8¢ $107.58 Len frt @ 28¢ 3.78	1	34	8½	8	40 Coils Stand		104	10
" "	R	Clark Hdw. Co. Lynchburg, Va 1936½ lbs @ 8¢ $154.90	1	93	6	8		1	49	68
" 25	R	Stikes Hdw Co., Mobile Ala 496½ lbs @ 8¢ $39.70 Len frt @ 47¢ 2.33		49	6	8	5 Coils Stand		37	37
			8	03	62	¼		6	45	61	47

LEGEND

W. C. HOLMAN PAPERS 1899

MAAR PROJECT: NC-3C
Orange Factory

Figure II-6B
Product of Orange Factory
-March 25, 1899

WILLARDVILLE, N. C.
APR 3 - 1899

Pay Roll of Willard Mfg. Co. for WEEK ENDING APR 1 - 1899

	Days			
J. H. Thompson	6	2.00	12	00
S. E. Cox	½	1.25		63
Willie Coates	4	40	1	80
Mary "	6	40	2	40
Harvie Ellis	5½	40	2	20
Lucy "	4½	40	1	90
Sam Ellis	5½	75	4	13
Geo. Johnson	6	90	5	40
	¼	25		18
Bunch "	5	35	1	75
Bud Roberts	4½	75	4	31
Marg. Vaughan	5½	50	2	63
Willie Blalock	6	40	2	40
	½	25		13
Bill "	4	35	1	40
Florence "	6	40	2	40
Annie "	6	40	2	40
Ode Burnpass	6	50	3	00
Carrie "	5½	40	2	30
Willard "	5½	30	1	73
John "	5½	65	3	58
Richard Blalock	5½	25	1	43
Reuben "	6	30	1	80
Pete "	5½	15		86
Onus Hall	6	35	2	10
Bula "	6½	20	1	15
Dora "	5	40	2	00
Tine Robertson	6	40	2	40
Geo. Pegues	6	75	4	50
Willie Fordwich	6	35	2	10
J. G. Cotton	6	65	3	90
Lizzie Sumter	6	50	3	00
Arie "	5½	20	1	15
Mamie Jones Asst Sec	5½	40	2	10
			87	26

LEGEND

W. C. HOLMAN PAPERS 1899

MAAR PROJECT : NC-3C
Orange Factory

Figure II-7A
Pay Roll of Willard Mfg. Company
-April 1, 1899

W. C. HOLMAN PAPERS 1899

LEGEND

Pay Roll (continued)

Huntsford "			87 26
Robert Jones	5	60	3 00
Richard "	3/4, 2½	60, 65	45, 1 63
Bob Young	5 2	45	2 48
Jim "	5 3	40	2 30
Payton Young	4 2	65	2 93
Henry Jones	6	60	3 60
Lila Rayner	6	50	3 00
Louis "	6	40	2 40
Willey Ashley	5 3	20	1 15
John "	5 3	20	1 15
Will "	5 3	20	1 15
Arthur Vaughan	5 3	40	2 30
Liza Woods	3 3	50	1 88
Ed. Rayner	4 2	20	90
Thos. Reynes	5½	80	4 40
			$121 98
Weaving Time			66 62
Out Side Time			6 55
A. G. Carr	6	2 00	12 00
P. Hampton	6	1 00	6 00
E. J. Forebush	6	60	3 60
			$216 75

Pay Roll for Week Ending -1/99
[illegible]
Apr 3/99

MAAR PROJECT: NC-3C
Orange Factory

Figure II-7B
Pay Roll of Willard Mfg. Company
-April 1, 1899

Weave Room Time				
Marshal Rayner	61	70	3	70
Louis "	54	75	4	13
Hellie "	52	35	1	93
Annie Thompson	6	40	2	40
Lillie "	6	40	2	40
Ella "	6	25	1	50
Wm. Cates	2	60	1	20
Lon Woods	2	50	1	00
Emma McGhee	6	40	2	40
Laura Gill	5	50	2	50
Louis Parish	43	75	3	56
Freda Rhew	6	40	2	40
Mad Painter	397	80	3	18
Ella Howell	266	80	2	13
Libbie Rhew	433	80	3	46
Dorcus Slaughter	367	80	2	94
Marcellus Young	343	80	2	74
Lonnie Jacobs	394	80	3	15
	1/2	50		25
Elbert Burgess	405	80	3	24
Will McGhee	378	80	3	03
	Short			
A. J. Holcombeck	3030	15	4	51
	Hem			
Ida "	3030	10	3	03
D. Rayner	0	3/4		75
			$66	62

LEGEND

W. C. HOLMAN PAPERS 1899

MAAR PROJECT: NC-3C
Orange Factory

Figure II-7C
Weave Room Time-Willard Mfg. Company-April 1, 1899

ownership that a few of the existing residents started working as children in the factory (Odell & Effie Roberts Castle). The factory operated under this name until 1916 with J. B. Mason as President and A. G. Cox as Secretary-Treasurer and factory Superintendent (Flowers 1978:29).

A school was also erected in the Orange Factory community in 1909 when on September 6, the Little River Manufacturing Company sold one and one-half acres of land on the north side of Factory Road to the Durham County Board of Education for that purpose (Durham County Deed Book 38:572). The school was a one-room structure which was crowded with 20 to 25 students when it opened. This of course meant limited attention for any one student except those few which showed particular promise or intellect. There was only one teacher at a time and she was usually one in training from Durham (Pasco 1975:3). As was usually the case with all children living in factory villages, the length of time spent in the educational system was only through the fourth or fifth grade. Orange Factory was no exception. As reported by Deaver Johnson, resident of Orange Factory now and one who worked as a child in the mill:

> "I went to work and then I quit and went back to school. I was in the fifth grade and then I quit and I didn't go back. Had one little schoolhouse set up yonder at the church . . . Eva Lee was the teacher . . ." (Pasco 1978:3).

Further education was available but because of over-crowded classroom conditions and the fact that the children were now of an age that they could be put to work by their families (usually nine or ten years old), they dropped out. Verlie Roberts began work in the mill at 15 -- in 1913 -- and she recalled the procedure as: (Verlie Roberts was the daughter of mill supervisor, Jim Thompson)

> "They worked us 'til 4:00 on Saturday for I don't know how long. I remember that . . . We even went nighttime for awhile, a long time . . . We ran nighttime through World War I . . . We had to work and if we got behind, we'd go back at night and work on it to catch it up" (Flowers 1978:30).

E. O. Castle, an elderly resident of Orange Factory today, reflected on the time his sister decided to quit school at an early age because, even as bright as she was, the mill supervisor would not let his daughter take place behind Castle's sister in school honors as top student. In fact, Castle's sister was held up in a promotion to be assistant teacher (even as she was bright enough to skip a grade each year) in order that the supervisor's daughter could fill the position (Pasco 1975:3).

During the period of operation as the Little River Manufacturing Company, a number of physical changes occurred in the community. Many of the mid-19th century tenant houses had porches added onto them, a fact made clear in the 1913 Sanborn Insurance Map done of the factory and community layout (Figure V-7). Wood burning stoves in houses replaced the need to cook in fire places. By the end of 1916, however, houses still did not have electricity, indoor plumbing or heating. This was not uncommon for villages of this time or in this state. More than 50% of the homes throughout North Carolina were maintained in this manner. Three public wells and nearby natural springs still provided for the community's fresh water supply.

The Laura Cotton Mill 1916-1938

In 1916, the Orange Factory lands and Little River Manufacturing Company were sold to J. A. Long who lived in Roxboro. The company name was changed to Laura Cotton Mill and remained as such until 1938 when the company was sold to the Roxboro Cotton Mill (Table II-1).

Almost immediately after the factory became the Laura Cotton Mill, other changes in the mill complex took place. Electricity was installed in the community and the factory installed a penstock in about 1918 where the race was located. This system of large pipes better channeled and supplied water to the factory grist mill and the textile mill (Flowers 1978: Photograph supplement). Of this developmental change in the factory operations, however, no other records or documents could be located.

Going into the depression years, Orange Factory had a population of 121 and 24 houses. The textile mill employed about 50 workers and produced yarn, thread, and unrefined cloth and hand towels and bagging (Flowers 1978:31). These times were difficult for all, however, mainly due to inflation, high cost of living and scarcity of jobs everywhere. In Orange Factory, workers sometimes only worked three days a week or sometimes were idle for a whole week while the factory shut down. Food was such a high priced commodity that families continued as they had in the past, to maintain small garden plots and to raise chickens, hogs, and milk cows. Of this situation Verlie Roberts reflected:

> "By the time of the Depression, things were so hard. They didn't run it (Laura Cotton Mill) but two or three days a week. Maybe some weeks they didn't run any . . . If it hadn't been for the garden and raising our own meat and all, we would have had to go on welfare before because we had five children then. He finally got a job with the WPA . . . course, he didn't make much, but because raising our own food and all, we had plenty to eat, but that's about all. We didn't have much in clothes and things like that. We never did go on welfare because we had our own meat and all, and I canned everything I could get my hands on. It was awful hard, but we pulled through it" (Pasco 1975:3).

From about 1922 until its sale to Roxboro Cotton Mills in 1938, Laura Cotton Mill sold portions of its adjoining lands to W. E. Ellis, Thomas F. Carroll and Viola Ellis (Table II-1). A section of the Laura Cotton mills in 1928 was found in a Plat Map located at the Durham Register of Deeds and is illustrated in Plat Book 16, page 16. The plat map, unfortunately, does not include the factory complex located along the Little River. In 1933, the Laura Cotton Mill mortgaged from the Citizens National Bank for $2500 a tract of its lands, a portion of the larger tract conveyed to the Little River Manufacturing Company by S. A. Ashe and others. Under this settlement, the Bank assumed all tax payments on the property and the Laura Cotton Mill retained responsibility for maintenance of the mill dam (Table II-1).

Finally on December 16, 1938, Laura Cotton Mills sold out to the Roxboro Cotton Mill located in Roxboro, North Carolina. The textile mill was completely dismantled and removed to Roxboro. Because of Roxboro's location along a main railroad line and its being in a larger industrial community, it had a

much more stable financial base (Flowers 1978:33). This was a time when many of the smaller textile mills could not compete with the larger, well established industrialized complexes in city centers and so were compelled to sell out to them or fold. Garland Roberts, a resident of Orange Factory who was once the foreman of the spinning room and responsible for upkeep of the machinery, remarked on the reasons the textile mill was sold:

> "The mill was so old . . . the machinery was old . . . it was so little, just a small factory. They couldn't compete with these big companies" (Pasco 1975:3).

After the mill ceased operation, people from around the area expected the community to die and become a ghost town -- a relic of the past. But no, the village people of Orange Factory did not leave as they had shared too much together -- their work, their social lives, their hardships, their joys. They were all that each of them had and knew best. They were family, relatives and the closest of friends. Yes, a few took jobs offered them by the Roxboro Cotton Mill, but all decided to continue to live in Orange Factory as they always had. After all, this was home and place that had a unique identity they could call their own. Of course the company owned and run store closed when the mill was sold, but then someone else bought it and opened it to the community once again.

So it was that Orange Factory still survives after so many decades of hard work and close unity among fellow men. It is sad indeed to see this community about to be wrenched from its moorings to make room for progress -- a reservoir which will flood a part of this historic village -- when it was progress which put Orange Factory on the map in the beginning.

Orange Factory, the mill and the community, having survived floods and fire (Figure I1-8), will during the 1980's fall to the normal agents of progress. It served its purpose but will exist only in memory.

WILLARD MANUFACTURING CO.,
MANUFACTURERS OF
[illegible] Seamless Bags,

[illegible]

Orange Factory, Durham Co., N. C., Nov 18 1884

Dear Brother

Yours by Stokes at hand tonight — I think the bay mare is cheap — on the terms you propose but we have not got the old bagging (sold all we had in Atlanta this summer) and the hoops have not got the buckles on them — most of them have been used in baling cloth &c so we cannot trade on those terms I think the black mare will suit us better as she is stronger & tougher — I want you to see Uncle soon as he returns home and tell him the dry room caught on fire yesterday — and I had no idea we could save the factory — but we did so and the only damage done was as near as we can come at it — 150 lbs of dyed filling was burnt up. I want to know if he will make any claim on the insurance company for it we think it must have caught from a spark from the boiler A.G. says Mr Philpott will go to Raleigh for $25 per month & board provided he can come home three Saturdays in the month returning on Mondays.

Wednesday Morning

It is raining this morning and I thought it best not to load your wagon heavy — we have only 3 bales of hay — so I only send two. ~~& send two later start warp~~ — I can make you some 10ᵒ at once — either single or double would make them to day but dont know which way you want them — must know at once as we are about to change off

Figure II-8
Documentation of Fire at Orange Factory

LEGEND

W. C. HOLMAN PAPERS 1884

TABLE II-I

ORANGE FACTORY DEED SUMMARY

Date of Transaction	Deed Book and County	Grantor	Grantee	Comments
July 23, 1850	33:491 Orange	John C. and Rachel Douglass	Osmond F. Long	27½ acres for $500 being the same more or less together wit as much land adjoining as shal be covered by the pond of wate which will be caused by building a dam across the river on this tract.
July 23, 1850	33:498 Orange	Osmond F. Long	John C. Douglass and John H. Webb	Sale of same 27½ acres
Jan. 1, 1860	37:85 Orange	John C. Douglass	John H. and James Webb	Sale of same 27½ acres with Orange Factory Cotton Mill and grist mill.
Oct. 22, 1860	37:86 Orange	John C. and Rachel Douglass	John H. and James Webb	Sale of 42½ acre parcel on east side of Little River
Mar. 18, 1864	37:366 Orange	John H. and James Webb	William H. Willard	Sale of 27½ and 42½ acres containing factory and buildings, mill pond and factory pond.
Sept. 20, 1866	37:367 Orange	Nelson Rhew	William H. Willard	Sale of additional 429½ acres which adjoin land of Willaim Lipscomb, Paul C. Cameron and others.
Jan. 1, 1873	42:165 Orange	William H. Willard	Sidney W. Holman	Sale of 27½ acre parcel 42½ acre parcel and 429½ acre parcel.

Jan. 1, 1873	42:168 Orange	S. W. Holman	William H. Willard	Mortgage of same property and to include only Orange Factory merchandise, cotton and stock; Holman keeps the buildings, machinery and fixtures.
Apr. 1, 1881	Durham	Raleigh National Bank	William C. Holman and S. W. Holman	Sale of Orange Factory land and property for $30,000.
Apr. 1, 1887	9:330 Durham	Raleigh National Bank	William H. Willard	Sale of Orange Factory land and property
Jan. 10, 1899	20:541-2 Durham	W. H. Willard's executors--W. C. and S. W. Holman	Samuel A. Ashe, William W. Ashe and Walter Clark	Deeded Orange Factory land and property.
Aug. 10,1906	37:18 Durham	Samual A. and Willaim W. Ashe, and Walter Clark	Little River Mfg Company	Sale of 352½ acres of the Orange Factory lands and property. Excludes part of Nelson Rhew's original sale of 429½ acres.
Sept. 6, 1909	38:572 Durham	Little River Mfg. Company	Durham County Board of Education	Sale of 1½ acres of land on the north side of Factory Road.
1916	(Flowers 1978)	Little River	J.A. Long	Saleof Orange Factory Lands and property.
	54:413 Durham	Laura Cotton Mills	L.G. Raynor	Saleof 5.5 acres on the west sideof Little River and on the southside Public Road from Laura Cotton Mills to Willardville.

Sept. 14, 1922	72:123 Durham	Laura Cotton Mills	W. E. Ellis	Sale of 3.23 acres which adjoin lands of the Laura Cotton Mill on the North, Edward Parchall on the East, the Church on the South, and Willard public road on the West.
Jan. 10, 1933	108:534 Durham	Laura Cotton Mills	Thomas F. Carroll	A portion of that larger tract of land that was conveyed to Little River Mfg. Company, the name of which has now been changed to Laura Cotton Mills.
Oct. 4, 1933	109:313 Durham	Laura Cotton Mills	Citizens National Bank	For $2500, the tract of land being a portion of that larger tract of land conveyed to Little River Mfg. Company by S. A. Ashe, Executor and others by deed of record. That the Citizens National Bank assumes the payment of any and all taxes. That the Laura Cotton Mills reserves the right to maintain the dam.
Dec. 16, 1938	126:498 Durham	Laura Cotton Mills	Viola Ellis	Sale of .49 acres which is a parcel of land adjoining three sides of Laura Cotton Mills and W. W. Ellis on another (Lot 3).
Dec. 16, 1938	131:35 Durham	Laura Cotton Mills	Roxboro Cotton Mill	Sale of Orange Factory lands and dam. Property adjoining land of Cox, W. W. Ellis, E. W. Hall and others.

Sept. 18, 1939	134:155 Durham	Roxboro Cotton Mill	J. Luther Ellis	Sale of parcel on the north side of second street of Laura Cotton Mill lands (Lot 11).
June 18, 1940	135:621 Durham	Roxboro Cotton Mill	Zack Ellis	Sale of land in village of Lau Cotton Mill surrounded on nort east and south by Lot 1, and on the west by Durham Willard-ville Road (Lot 8).
June 28, 1940	145:317 Durham	Roxboro Cotton Mill	W. O. Ellis	Sale of Lot 5 on south side of second street.

The mill village at Orange Factory is located approximately 75 yards west-northwest of the textile mill and is situated on the side of the hill which slopes gently to the Little River flood plain. Though the community of Orange Factory now includes residences at the crest of the hill some distance away from the mill, it is the core of the village largely distributed along the two parallel streets (running southwest-northeast) with which this study is concerned. It is this core area which will also be most greatly impacted upon by the planned impoundment of the Little River. The specific objectives of this investigation were to document the configuration of the village in terms of percieved boundaries and lot functional arrangement, and to provide information concerning those structures which have disappeared since the close of the mill in the late 1930's. A discussion of each of these topics is provided below.

Village Configuration

The present remnants of the mill village at Orange Factory consist of two parallel rows of houses and a portion of a third row linearly arranged along two southwest-northeast streets (hereafter known as Hill and Main Streets). In addition to these structures, two additional houses are located at the outskirts of the core area along S.R. 1629. The upper pool limit of the planned impoundment includes the bulk of this core village area with the exception of but two of the houses. As will be shown below, the historic configuration of the Orange Factory community was largely similar to that which is present today.

According to the 1913 Sanborn map of the "Little River Manufacturing Company" (see Fig. V-7), the configuration of the Orange Factory mill village was centered on the two principal streets, Hill and Main. With the exception of several destroyed structures, it is this arrangement that is still visible today (see Fig. V-13). This configuration, however, can be contrasted to that presented by Flowers (1978:12) who illustrated an identical distribution of houses on either side of both Hill and Main Streets. This erroneous assumption not only ignores information readily available from the Orange Factory residents, but also neglects to consider the functional characteristics of the structural arrangement visible today and which is historically documented (below).

The absence of houses on the southeast side of Hill Street is particularly reflective of the perceived property boundaries which originated during the factory period of ownership. Since all the property was held in common by the mill during this period, no legally defined spatial boundaries between different house lots exists. Certain elements of the present landscape, however, were once recognized as lot boundaries by the residents. These elements consist of terraces or shallow ditches which divide most of the village into a series of rectangular lots running southeast to northwest (see Fig. V-13). These features are not natural characteristics of the local landscape and were imposed upon this area during the development of the village. The placement of a single dwelling structure on each of the terraces was certainly no mistake and instead represents the manner by which the management sought to structure the organization of the village. The evidence for the resident's perception and recognition of these boundaries consists of the distribution of ancillary structures in the yards surrounding each house. In most cases, the lots delineated by the terraces or ditches are linear and allow more useable space to the rear, rather than to the side of each dwelling. Data concerning ancillary structures, compiled through surface observation, interviews, and from existing photographs demonstrates that outbuildings and activity areas associated with a particular

dwelling were limited and confined to the particular lot (as defined by terraces or ditches) on which the dwelling was located. The most visual example of such an arrangement is provided by the photograph of the rear of House C (Plate V-14). The outbuildings shown in this photograph are linearly arranged in the rear yard and do not extend above the terrace which forms the boundary with House B. The location of ancillary structures and activity areas in other lots also conforms to this pattern (see fig. V-13). Information regarding the location of privies (from Orange Factory residents) provides the best evidence for a rear-yard oriented outbuilding arrangement since the placement of this facility behind a house was practiced even when the resulting location would be opposite the front of another house. This rather uniform and imposed lineality is only modified in the single instance in which the rear of two houses face on another. In that case, each lot allows more space to the side of the house than to the rear. Considering the general uniformity of architectural style, it is thus not surprising that uniformity was also imposed by lot arrangement. If houses had been constructed on the southeast side of Hill Street, this would have interfered with the shape and possible utilization of the yard space allotted to each dwelling.

Finally, the open area north of the core village area (north side of S.R. 1629) was utilized as a common livestock grazing field. The use of a relatively large common area for the keeping of large animals would thus free each yard from such an inconvenient situation. The two structures shown near this common area on the Sanborn map (1913, Fig. V-7) might therefore be livestock and feed barns. Unfortunately, none of the Orange Factory residents has any memory of these buildings. Since they are not shown on the 1937 Sanborn map (Fig. V-8), it is likely that they were destroyed by that time.

Previously Existing Village Structures

The core area of the Orange Factory mill village currently consists of ten houses which were present during the operation of the mill. Six of these houses are located along Main Street, two on Hill Street, and the final two along S.R. 1629 (see Fig. V-13) Architectural details of these structures have been presented by Phillips (1979) and are briefly considered below. According that that study, the majority of the apparently older houses at Orange Factory can be divided into two variations of a single design:

> Both variations are three bays wide, with an end chimney, gable roof and porches . . . Both have 9/6 sash on the first story and 6/6 on the second story, with simple fluted door and window surrounds with plain corner blocks in the Greek Revival style. The differences are that two of the houses . . . have a wider three-bay facade and single shoulder brick chimney. The remaining six are more compact with a much narrower three-bay facade and in several cases, double shoulder chimney with brick stack from the second shoulder up and with stucco-covered stone below. An odd feature of these smaller houses is that two of the second story windows on the front facade have been closed up on each house. The outlines of these windows can be seen in the replacement weatherboarding (Phillips 1979:C-2).

Mention is also made of the two structures along S.R. 1629 which are of slightly different two story design. These structures were alleged by Phillips (1979:C-2) to date to the late 19th to 20th century (see Sec. IV, J. Milner, of this report).

Historically, however, an additonal four houses were present in this core village area along with a Company Store of brick construction. With the exception of a house located along an unnamed street between Hill and Main Streets, the remaining three houses which have since disappeared were once located in the

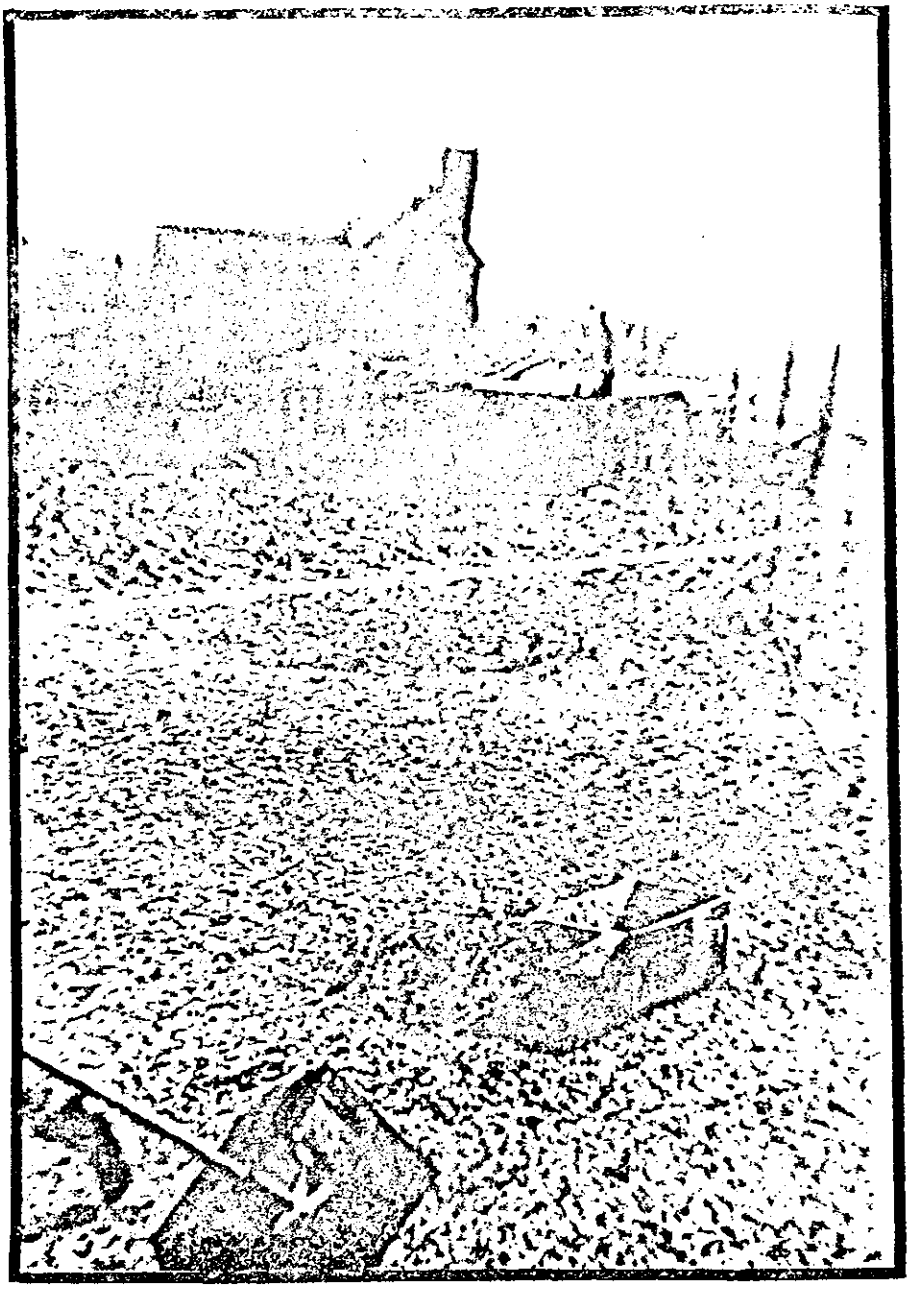


Plate V-14: Sidney Roberts House and Outbuildings
(House C - demolished in 1974)

now vacant lots along the latter two streets. Though little archaeological evidence relating to these houses is present due to disturbances which occurred when the structures were destroyed, documentary evidence is available and can provide a general description of these buildings. It must also be noted at this point that archaeological investigations at the site of the Company Store were prevented by the presence of a modern house trailer on that lot.

The principal documentary evidence relating to the destroyed village structures is the 1913 Sanborn map which includes both the textile mill and the core area of the mill village (Fig. V-7). According to that document, Houses M and C were of approximately the same size as the smaller variant described by Phillips (1979:C-2, above). Houses D and L, however, were much longer, though House L was only one story in height. According to the Sanborn map (1913), the Company Store not only consisted of a large rectangular brick structure, but also had two small wings extending off of the northeast side of the building. Finally, while the majority of houses at Orange Factory possessed only single-story front porches, House D is indicated on the Sanborn map (1913) as having a two story porch. Such a feature if also indicated on the Company Store.

Photographic evidence provides additional details concerning three of the structures noted above. Though no photographs of Houses L or M were available, a number of depictions of Houses C, D and the Company Store were discovered during this investigation. Though a front view of House C is only partially shown on one of the photographs (Plate V-15), it is apparent that the second floor facade of this structure was treated differently than other houses of similar size. Specifically, this difference consists of the presence of two open windows which in the other houses of Phillips' smaller variety (1979:C-2, above) are boarded over and replaced by a single central opening. This double-window arrangement on the second floor is also present on the rear of the building (see Plate V-14) .

Photographic evidence relating to House D confirmed the presence of a two story front porch which was also shown on the 1913 Sanborn map (see Plate V-16). In later photographs, this feature is absent and is replaced by a more typical one-story porch (Plate V-17). Another unusual element of House D is the presence of a chimney at both ends of the structure rather that the usual single chimney found on other houses in the village. Finally, it is also possible that House D may have actually been two of the smaller houses (in design) which were constructed together, possibly to house two families. This possibility is suggested by a vague break in the front facade of this structure and by the placement of the two second story windows in the approximate center of what would be the two halves. If this was the case, then House D certainly would have been one of the more unusual structures of the Orange Factory Mill Village.

A number of features of the Company Store were also revealed through an examination of available photographs. First, it is clear that the two-story porch was an original feature of this building since doors (with original brick arches) were constructed at that height to provide access to the porch from the southeast and southwest sides of the store (see Plate V-18). The delapidated condition of this porch as shown in a slightly earlier photograph (Plate V-19) undoubtedly contributed to its demise. Finally, the impermanent nature of the two northeast wings of the company store is shown on Plate V-18. That photograph, showing an apparently metal shed, clearly indicates that this wing (and probably the other) was not an original construction.

Plate V-15: Bill Johnson with Bulldog, Sidney Roberts House (House C) on Left

Plate V-16: Orange Factory House D (1913 Sanborn Map), in background with two story front porch

Plate V-17: House D with Modified Porch (Castle Residence)

It is finally necessary to comment on a discrepancy between the dates assigned to the various structures by Phillips (1979) and evidence observed during the course of this investigation. This evidence specifically concerns the "Twenty House" which was assigned a late 19th or early 20th century date by Phillips (1979:C-6, Phillips: Structure 16, Sanborn: Structure E). This structure is quite different in elements of its construction technique, including rough sawed floor joists and chimney placement from other structures in the village core area. While an examination of the structural timbers beneath one of the more typical houses (Phillips Structure 8, Sanborn Structure T, Fig. V-7 & 8) revealed mortise, tenon and peg construction with sawn timber, examination of the "Twenty House" revealed similar construction techniques with hand-sewn timber. Considering the availability of sawn timber during the mid to late 19th century, it is likely that the "Twenty House" is one of the older if not the oldest structure in the village. Such an earlier date may account for its singularly unique appearance. Since it was not within the scope of this study to more fully investigate this possibility and to assess such architectural details, additional documentation of this structure may be necessary before it is destroyed.

Orange Factory Mill Village: Summary and Conclusions

Considering the uniform architectural details of many of the houses at Orange Factory (see Phillips 1979) and the overall uniformity and regularity of village configuration, the Orange Factory community can be thus seen as reflective of its single reason for existence: to provide housing for the workers of a single small industrial facility.

> As an institution the company-owned villages in the South have had the practical authority of usefulness. Cotton mills have jobs for men and women, and in the early days for children . . . so that the investment in a house used to mean several workers for a mill. The people, largely tenant or mountain farmers, came to the mill without funds, and wages were low. They had neither the habits of, nor the capital for, home ownership, and they did have the habit of mobility. And so, as nothing else could have done, the company village furnished workers to the mills and housing to the workers (Herring 1949:5).

The fact that the two central elements around which the community revolved, the textile mill and the company store, were constructed of brick also underscores the overall function of the community and significance of those features in its existence.

By the mid 20th century a number of factors had combined to undermine the usefulness of the mill village. These factors, including greater ease in transportation, stricter labor laws, unionization, and the effects of the Great Depression, encouraged many mills to sell their villages (Herring 1949:6). The village at Orange Factory, however, passed into private hands at an earlier date due to the inability of its central elements, the textile mill, to effectively compete in the larger and more aggressive markets of the 20th century. The fact that a sense of community had developed at this place, however, undoubtedly contributed to its survival, with only slight changes, until the present day.

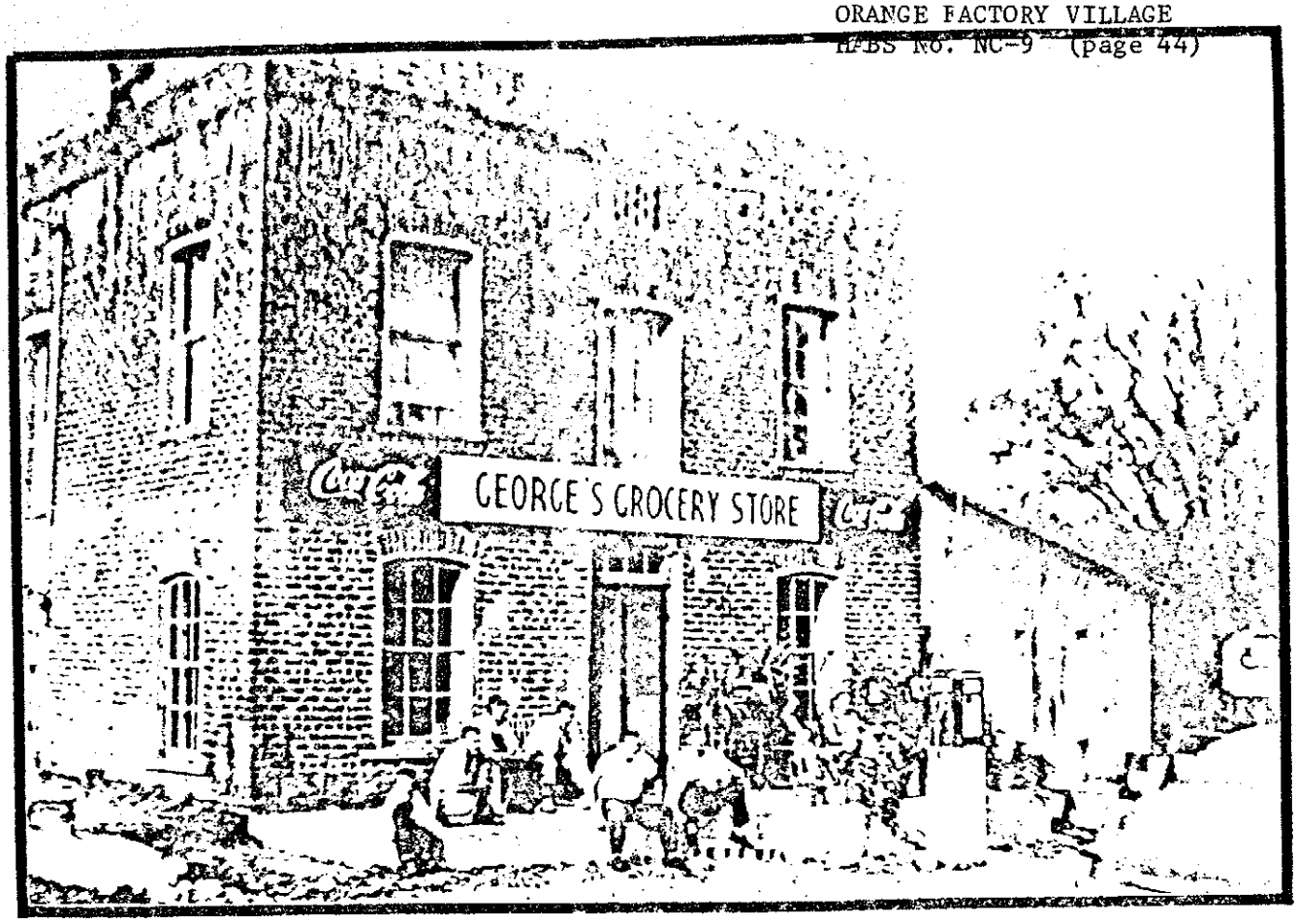


Plate V-18: Orange Factory Community Store, date unknown

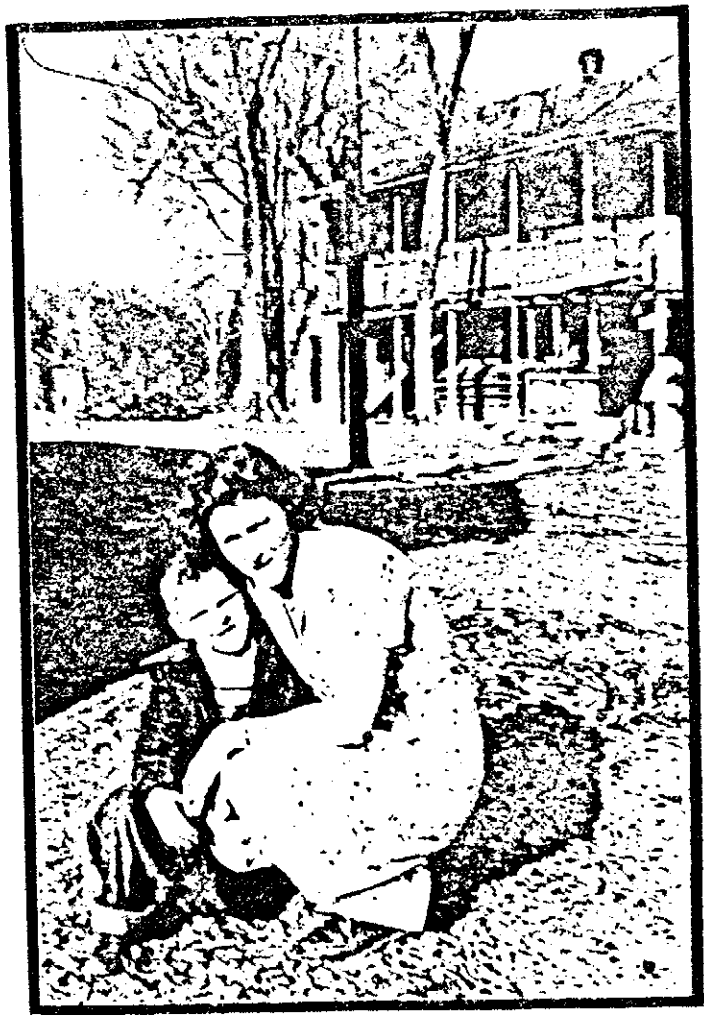
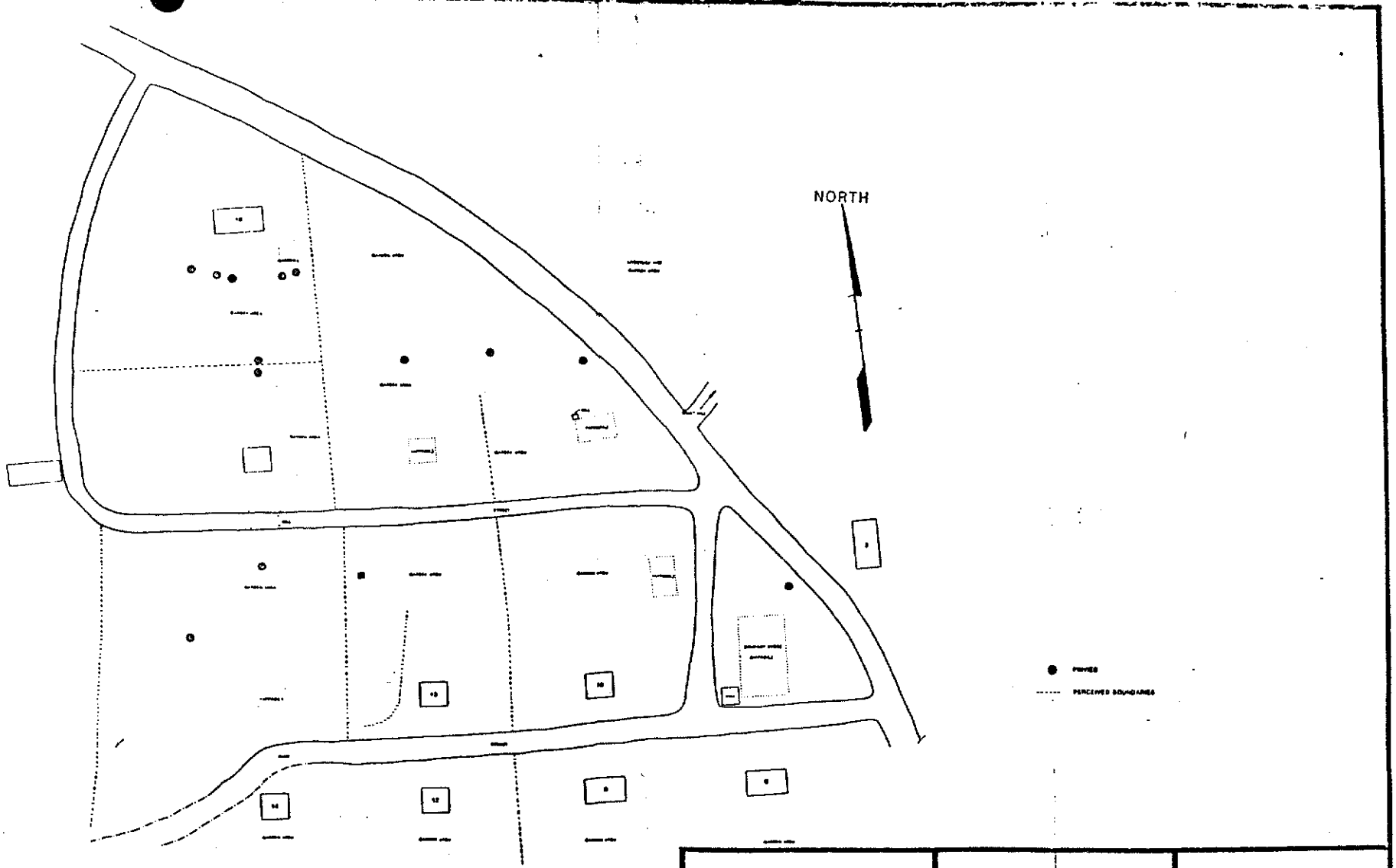


Plate V-19: Early Photograph of Orange Factory Store, Ruth Suggs with newphew George



MAAR PROJECT: NC-3C ORANGE FACTORY	FIGURE V-13 ORANGE FACTORY TOWN MAP	SCALE

REFERENCES CITED

Alder, Felix
1908 The basis of the anti-child labor movement in the idea of American civilization. From Proceedings of the Fourth Annual Meetings of the National Child Labor Committee, Atlanta, Georgia, April 2-5. In The Annals of the Academy, July 1-3.

Advisory Council on Historic Preservaton
1980 (November) Treatment of Archaeological Properties, a Handbook. Published by the Advisory Council (U.S. Dept. of Interior)

Boyd, William Kenneth
1925 The Story of Durham: City of the New South. Durham, N.C.

Copeland, Melvin Thomas
1966 The Cotton Manufacturing Industry of the United States. Reprint of 1917 edition. Augustus M. Kelly, New York.

DeNatale, Doug
1980 Traditional culture and community in a Piedmont textile mill village. Unpublished M.A. these, Curriculum in Folklore, University of North Carolina, North Carolina.

Evans, Oliver
1794 The Young Mill-Wright's and Miller's Guide. Charles Scribners and Sons, Philadelphia, PA.

Flowers, John Baxton III
1978 Orange Factory. Orange Factory Preservation Society, Durham, NC.

Fox, William, Bill Brooks, and Janice Tywhitt
1976 The Mill. Little, Brown, and Co., New York.

Griffin, Richard W. and Diffeo W. Standard
1957 The cotton textile industry in ante-bellum NC - Part II: An era of boom and consolidation, 1830-1860. The North Carolina Historical Review, 34(2):131-164.

Griffin, Richard W.
1964 Reconstruction of the North Carolina textile industry 1865-1885. The North Carolina Historical Review, 41(1):34-53.

Hall, Jacquelyn, et al.
1978-79 Interview guidelines for industrialization of the Piedmont Province, funded by the N.E.H.. Southern Oral History Program, Department of History, University of North Carolina at Chapel Hill.

n.a.
1883 Handbook of the State of North Carolina. Raleigh.

n.a.
1886 Handbook of North Carolina. Raleigh.

Hazen and Sawyer
1979 Environmental Impact Assessment: Little River Water Supply and Recreation Project. Prepared for the Department of Transportation and Utilities, City of Durham, NC., Vols 1 and 2. Hazen and Sawyer Engineers, Raleigh, NC.

Henderson, Charles R.
1908 Social cost of accident, ignorance, and exhaustion. From the Proceeding of the Fourth Annual Meeting of the National Child Labor Committee, Atlanta, GA, April 2-5. In Supplement to the Annals of the Academy, July 1-8.

Herring, Harriet L.
1949 Passing of the Mill Village: Revolution in a Southern Institution. The University of North Carolina Press, Chapel Hill.

Hines, Lewis
1914 The high cost of child labor. In Child Labor Bulletin.

Howell, Charles
1975 Colonial watermills in the wooden age. In America's Wooden Age: Aspects of its Early Technology. Brooke Hindle, editor. Sleepy Hollow Restorations, Tarrytown, NY.

Howell, Charles and Allan Keller
1977 The Mill at Philipsburg Manor Upper Mills and a Brief History of Milling. Sleepy Hollow Restoration, Tarrytown, NY.

Hughes, William Carter
1855(1884) The American Miller and Millwright's Assistant. Henry Carey Baird and Co., Philadelphia.

Hunter, Louis C.
1979 Waterpower: a History of Industrial Power in the United States, 1780-1930. University Press of Virginia, Charlottesville,

Lefler, H. and P. Wager
1953 Settlement and early history, by Ruth Blackwelder. In H. Lefler and P. Wager, Orange County -- 1752-1952. Chapel Hill: the Orange Print Shop.

Lemert, Ben F.
1933 The Cotton Textile Indsutry of the Southern Appalachian Piedmont. University of North Carolina Press, Chapel Hill, NC.

McKelway, A. J.
1908 The leadership of the child. From the Proceedings of the Fourth Annual Meeting of the National Child Labor Committee, Atlanta, GA, April 2-5. In Supplement to the Annals of the Academy, July 1-12.

Mitchell, Broadus
1968 The Rise of Cotton Mills in the South. Reprint of 1921 edition. Da Capo Press, New York.

Morgan, John H.
1908 Essentials in factory inspection. From Proceedings of the Fourth Annual Meeting of the National Child Labor Committee, Atlanta, GA, April 2-5. In Supplement to the Annals of the Academy, July 1-6.

Noel-Hume, Ivor
1978 A Guide to Artifacts of Colonial America. Alfred A. Knopf, NY.

Pallett, Henry
1866 The Miller's, Millwright's, and Engineer's Guide. Henry Carey Baird, Philadelphia.

Pasco, Pamela
1975 Orange Factory, a Mill Village. Unpublished paper, Duke University, History Department. Chapel Hill, NC.

Phillips, Laura A. W.
1979 Investigation of historic sites for Little River water supply project and alternative projects (Appendix C), in Hazen and Sawyer, Environmental Impact Assessment: Little River Water Supply and Recreation Project. Vol. II-Appendixes. Prepared for the Department of Transportaton and Utilities, City of Durham, NC.

Potwin, Marjorie A.
1927 Cotton Mill People of the Piedmont. Columbia University Press, New York.

Rankin, Carl E.
1936 The University of North Carolina and the Problems of the Cotton Mill Employee. Unpublished Ph.D. Dissertation, Columbia University, NY.

Reynolds, John
1970 Windmills and Watermills. Hugh, Evelyn Ltd., London.

Seddon, Rev. A. E., A. M. Ulm and Lewis W. Hine
1908 Child labor in the Carolinas. Pamphlet No. 92, National Child Labor Committee, 1-12, New York.

Sutcliffe
1816

Swain, George F., J. A. Holmes, and F. W. Myers
1899 Papers on the waterpower in North Carolina. Bulletin No. 8, North Carolina Geoligical Survey, Raleigh.

Thomas, Ronald A., Martha J. Schiek, and Robert F. Hoffman
1982 A Report on Two Archaeological Surveys within Proposed Alternatives for a Reservoir for the City of Durham, Durham and Person Counties, North Carolina. Mid-Atlantic Archaeological Research, Inc., Newark, DE. Prepared for Hazen and Sawyer Engineers, Raleigh, NC.

Trachtenberg, Alan
1977 America and Lewis Hine: Photographs 1904-1940. Aperture, Inc, New York.

United States Department of Agriculture
1976 Soil Survey of Durham County, North Carolina.

Vince, John
1980 Discovering Watermills. Shire Publication Ltd. Aylesbury, Bucks, U.K.

Weintraub, David and Lewis W. Hine
1937 Technological Change. Works Progress Administration, Philadelphia.

Zimiles, Martha and Murray
1973 Early American Mills. Clarkson N. Potter, Inc., New York.

Primary Sources

Durham County Records, Register of Deeds, Subgroups: Deeds, Plat Books, Durham.

Orange County Records, Register of Deeds, Subgroup: Deeds, Hillsboro.

W. C. Holman Papers, Private Collections, Archives and History, Raleigh.

William H. Willard Estate Papers, Wake County Records, Archives and History, Raleigh.

Samuel A'Court Ashe Papers, Private Collections 51.6, Archives and History, Raleigh.

Sidney Willard Holman Papers, Private Collections 1365.1, Archives and History, Raleigh.

U. S. Census. Industrial Census Schedules; 1860, 1870, and 1880, Orange County, Archives and History, Raleigh

Library of Congress, Map Collection, Washington, D. C.