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Home weaving, professional weaving, and textile mills in Southeast Iowa, 1833-1870

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Home weaving, professional weaving,
and
textile mills in Southeast Iowa, 1833-1870

by

Deloris H. Connolly

A Thesis Submitted to the
Graduate Faculty in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE

Major: Textiles and Clothing

Signatures have been redacted for privacy

Signatures have been redacted for privacy

Iowa State University
Ames, Iowa

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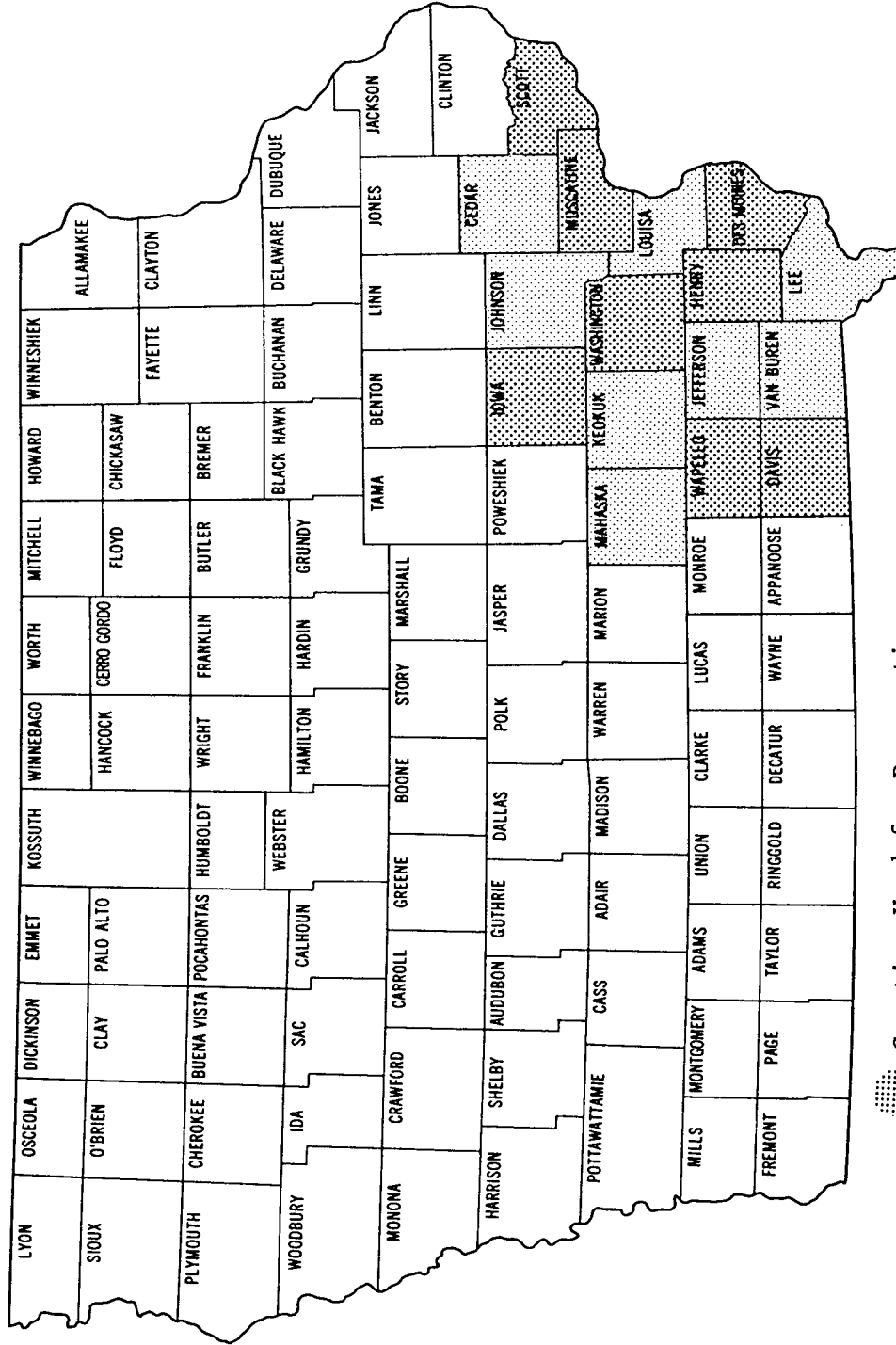
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INTRODUCTION

This study focuses on hand and mechanized weaving in southeast Iowa from 1833 through 1870. During this period, Iowa weavers were working both in their homes, to produce fabric for household textiles and clothing, and in small businesses and mills, to produce fabrics that were sold commercially. The major purpose of this research is to identify extant evidence of textiles woven in southeast Iowa and to document the tools, processes, and products related to: 1) handweaving by family members as a part of household manufacture, 2) handweaving by professional weavers engaged in independent businesses, and 3) mechanized carding and weaving in local mills. Also, the identification of any locally made or Eastern commercial goods that were used in southeast Iowa instead of handwoven goods is important to this research.

The southeastern area of Iowa, consisting of the 16 counties identified on Figure 1, was chosen on the basis of a survey conducted prior to beginning research. Questionnaires were sent to extension home economists in each Iowa county. Letters were then sent to museums, historical societies, libraries, and private collectors that were suggested by these home economists and also as listed in Pratt (1972) and Prady (1978). The response from these letters suggested that the southeast area of Iowa would provide the richest resources for a study of weaving. It appeared that extant artifacts related to handweaving would be available in the greatest numbers and variety in this area. In addition, the southeast region of the state attracted a large proportion of Iowa's earliest settlers and thus would most likely provide a view of



Counties Used for Documenting Professional Weavers in 1860 and 1870

Figure 1. Location of Iowa Counties Included in this Study

the earliest weaving done in the state.

The study starts in 1833 when Iowa was opened for settlement following the Black Hawk Purchase of 1832. The concluding date of 1870 was chosen to encompass any changes in Iowa textile production that may have occurred during or immediately after the Civil War. I consider the chosen time span long enough to encompass the introduction of a variety of technological developments to Iowa, which may have affected local production of woven goods.

Objectives

The objectives of this study are:

1. To identify extant evidence of woven textile products in southeast Iowa from 1833 through 1870 and to determine the process by which these textile products were made by a) home weavers, b) professional weavers, and c) carding and textile mills.
2. To examine the effect that commercially produced textiles and related services, as provided by Eastern textile centers and local craftspeople and mills, had on the home manufacture of textiles.
3. To propose hypotheses related to: a) the reasons that handweavers had to continue to use their skills in Iowa, b) the business methods used by professional weavers to market their goods in Iowa, and c) the extent to which home and professional weaving still existed in Iowa after the Civil

War.

Justification

The extant information presented in this thesis will contribute to a better understanding of textile production as a part of household manufacture¹ and as a part of small businesses and industries in 19th century Iowa. Few studies exist which describe Iowa's craftspeople, small businesses, and manufacturers during its frontier period. Therefore, little is known about the tools these craftspeople used, the nature of their finished products, or how they marketed their goods. Studies of 19th century Iowa artists and craftspeople who were involved in the production of coffins, farm machinery, furniture, and pottery were identified. Studies that dealt with a particular industry or manufacturer in Iowa include accounts of manufacturers of cereal products, ceramics, dairy products, glass, and washing machines. There is also some published information on service related industries such as canning, coal mining, and meat packing as well as flour and lumber milling.

The frontier mill, as a type of industry, has been depicted in general terms in several accounts in the Annals of Iowa, the Iowa Journal of History and Politics, and The Palimpsest. In addition, Swanson (1963) and Swisher (1940) provided two major studies of Iowa

¹Household manufacture includes those processes that were done repeatedly, through a systematic division of labor among family members, to make useable products from raw materials

mills as a prevalent type of industry in the 19th century and early 20th century. These two authors presented the mill as a type of business that used water or steam power to grind wheat and corn or to saw wood. Swisher (1940) mentioned carding and woolen mills in relation to grist and saw mills, as they often shared the same location and the same source of power. He also listed the names of a few Iowa woolen mills in an appendix. None of these previous studies on Iowa craftspeople, industries, or mills presented a picture of the extent or importance of textile manufacturing in 19th century Iowa.

This study will be an historical reference for extant artifacts and primary written accounts related to Iowa's production of woven textiles. In secondary Iowa histories of the pioneer period, descriptions of textile production and use are vague and particularly elusive. Primary descriptive accounts of the household textiles that were used and of the clothing that was worn in Iowa prior to 1870 are widely scattered. This study will serve to draw these accounts together to serve as a single reference.

In addition, the number of professional weavers and their products have been documented for other states but not for Iowa. Information about professional weavers is important as documentation of this occupational group in the United States is incomplete. Apart from three documented weavers in Kansas, Iowa is believed to be the western most state in which professional weavers produced coverlets (Heisey, Andrews, and Walters, 1980). This may be due to a lack of documentation for weavers and their products in western states. However, it must also be

considered that the settlement of most of the states west of Iowa came after the Civil War, when a national railroad transportation system had been organized. The growing industrialization and new technology of the textile industry in the East perhaps affected these states soon after they were opened for settlement. The use of hand methods for textile production was perhaps not as great in states west of Iowa because of this exposure to the advancements already known in the eastern industry.

No published information was found on the commercial manufacture of yarns, fabrics, or blankets by mills in Iowa. The finished products of textile mills and the services offered by carding and cloth finishing mills have not been identified for Iowa. The recording of the tools, machines, and processes used to produce different types of textiles in southeast Iowa homes and businesses will provide an initial documentation of this topic for further research in the rest of the state.

The data gathered by this research will help to substantiate or dispel some popularly held notions about handweaving. Handweaving has been romanticized and dealt with in generalities by writers who give no basis for their assumptions. Handweaving has often been associated with life in log cabins. The notion that handweaving occurred only out of necessity, as "frontier" families did not have access to commercial goods, has been popular in secondary Iowa histories. According to secondary histories, home weaving enabled a family to be self-sufficient but was thought to have been abandoned as soon as commercial goods were available (Faragher, 1979; Tyron, 1917). This study will evaluate this

model for home manufacture of textiles regarding its accuracy for Iowa. No authors that I reviewed considered the possibility that Iowans may have continued to weave their own cloth after the frontier period ended or after commercial textiles became available.

Two other popular historical notions about handweaving need clarification. Accounts of itinerant weavers are common in histories of handweaving in the United States. The idea that professional weavers were itinerants who took their looms to customers to produce goods for them has been repeated over and over without question and without supportive evidence (Born, 1949; Hall, 1966; Homespun, 1977; Kovel & Kovel, 1967; Little, 1931; Swygert, 1955; Thieme, 1974; Tunis, 1957). It has also been accepted that by the time of the Civil War, mechanized weaving had completely replaced the handweaving done by both home weavers and itinerant weavers (Atwater, 1928; Hall, 1966; Little, 1931; Thieme, 1974). These popular historical assumptions need challenging as they relate to handweavers in southeast Iowa in the 19th century.

Limitations

Generalizations made about weaving in Iowa are limited to the 16 county area in southeast Iowa as shown in Figure 1 and related specifically to the period 1833 through 1870. Because the records which remain from the frontier period are incomplete, it was not possible to document all types of handweaving and commercial weaving that may have occurred in southeast Iowa within these years. For example, no records were found in Iowa that allowed the documentation of professional

weavers prior to 1850. Also, due to the large number of people living in the chosen 16-county area by 1860, the search for professional weavers working in 1860 and 1870 was limited to eight counties (see Figure 1).

Another limitation to this research resulted from the difficulty in finding extant evidence of Iowa's textile mills. Through the information returned on the questionnaires that I mailed to home economists, two families presently living in Iowa were identified as descendants of woolen mill owners. Members of these families, the Lonsdales of Dale City (Guthrie County) and the Meeks of Bonaparte (Van Buren County), were interviewed for information about the woolen mills operated by their ancestors. Contact with both families provided a chance to see unpublished written information, photographs, tools, and products pertaining to woolen mills, though information and artifacts were not abundant. The Meek Brothers Woolen Mill in Bonaparte was built in 1856 and was the only extant woolen mill building that was found that had been built prior to 1870. Only one extant record book¹ from an Iowa woolen mill was found through these families and did not prove useful for this study due to its date. Some additional primary artifacts about mills were contained in a scrapbook at the Jackson County Historical Museum in the form of advertising flyers, photographs, a fabric sample, and written histories of woolen mills in that county. Because of the

¹This was a time book from the Meek Brothers Woolen Mill in Van Buren County and recorded employees and their wages for April 1897 to January 1899.

scarcity of primary resources pertaining to carding and woolen mills in southeast Iowa, the information obtained from other counties outside of the 16-county area in southeast Iowa was included in this study.

There are limitations to any study that uses material objects as extant evidence. First of all, material artifacts cannot be indisputably identified as to their origin or means of creation. Thus, my conclusions are limited by the validity of my judgment as to which artifacts were made in Iowa and which were brought into the state. Judgments were made after consideration of primary written accounts of weaving in Iowa and after assessment of how carefully museums or individuals had documented artifacts in their collection.

Second, I do not know to what degree the extant evidence accurately represents the types of weaving in southeast Iowa from 1833 through 1870. I was limited by the data available and located in public and private collections. Also, textile products, like all functional objects, are likely to be used up and not preserved due to their "commonness." Those items that do remain for 20th century study may be representative of only a portion of the products available in the 19th century. With these limitations acknowledged, this documentation of woven textiles in Iowa is presented, with the hope that historians and others will find it to be a useful contribution to the knowledge of Iowa history.

The following chapter will provide the reader with an introduction to the settlement of Iowa in terms of population movement from the southeast to northwest corner of the state, as settlers traveled farther

up Iowa's rivers with each decade. Specific identification of frontier lines within the state will be discussed. Also, a working definition of a frontier will be presented to establish specific dates for southeast Iowa as a frontier. Defining the word "frontier" is important because secondary histories have frequently related handweaving to a frontier stage of settlement.

INTRODUCTION TO SOUTHEAST IOWA

Before discussing hand and mechanized weaving in southeast Iowa, it is important to provide an overview of Iowa and its settlers during the early stages of frontier life. Only by becoming acquainted with this environment can one appreciate and evaluate the importance of skilled handweavers and textile mills within Iowa. The few household textiles and clothes brought by pioneers to any frontier region were subjected to constant use and hard wear. Without a national transportation system or immediate marketing system to ship Eastern goods to Iowa, the replenishing of needed textile goods was by means of handweaving skills.

The movement of population within the state can be followed from the southeast corner to the northwest corner, as steamboats pushed further up the rivers. This chapter will define a frontier and then describe the state's population growth in terms of frontier stages, as people moved in this northwesterly direction. No one has defined the length of time southeast Iowa was actually a frontier. Secondary authors use the term "frontier" in writing about handweaving in early Iowa homes, with no reference to actual time period. In addition, this chapter will give the reader an idea of where the earliest settlers came from and what type of life style they had during their first years of settlement.

Frontier Iowa

By the early 1800s, military posts were established in the region of Iowa, then occupied by Sac and Fox Indians. Government troops were established at two sites in hopes of obtaining access to land west of the Mississippi. Fort Madison, built in 1808 on the Mississippi in present day Lee County, was burned and evacuated by 1813. Fort Armstrong provided another government station close to Iowa land, being built on Rock Island in the Mississippi by 1816 (see Figure 2). These government posts provided a means for Iowa's earliest settlers to obtain some commercial supplies.

In addition to government posts, fur trading posts were established at the sites of Keokuk and Muscatine on the Mississippi River and at Ottumwa, Eddyville, and Iowaville on rivers in Iowa's interior. Fur traders established these stores as a way to bring commercial goods to the Indians in exchange for furs. Old trading books from the Eddyville post indicate that Indians and other early settlers were purchasing broadcloth, calico, ribbons, silk thread, and needles as well as leggings and parasols prior to 1837 (Sabin & Sabin, 1916). The supply center for the government forts and the fur trading posts was St. Louis, Missouri, which was over 350 miles south on the Mississippi. St. Louis continued to serve as the major source of commercial goods and supplies until legal settlement of Iowa began in 1833.

The Iowa frontier was officially opened for settlement on June 1, 1833. This was the result of the Black Hawk Purchase of 1832, which secured a strip of land from the Sac and Fox Indians (see Figure 2).

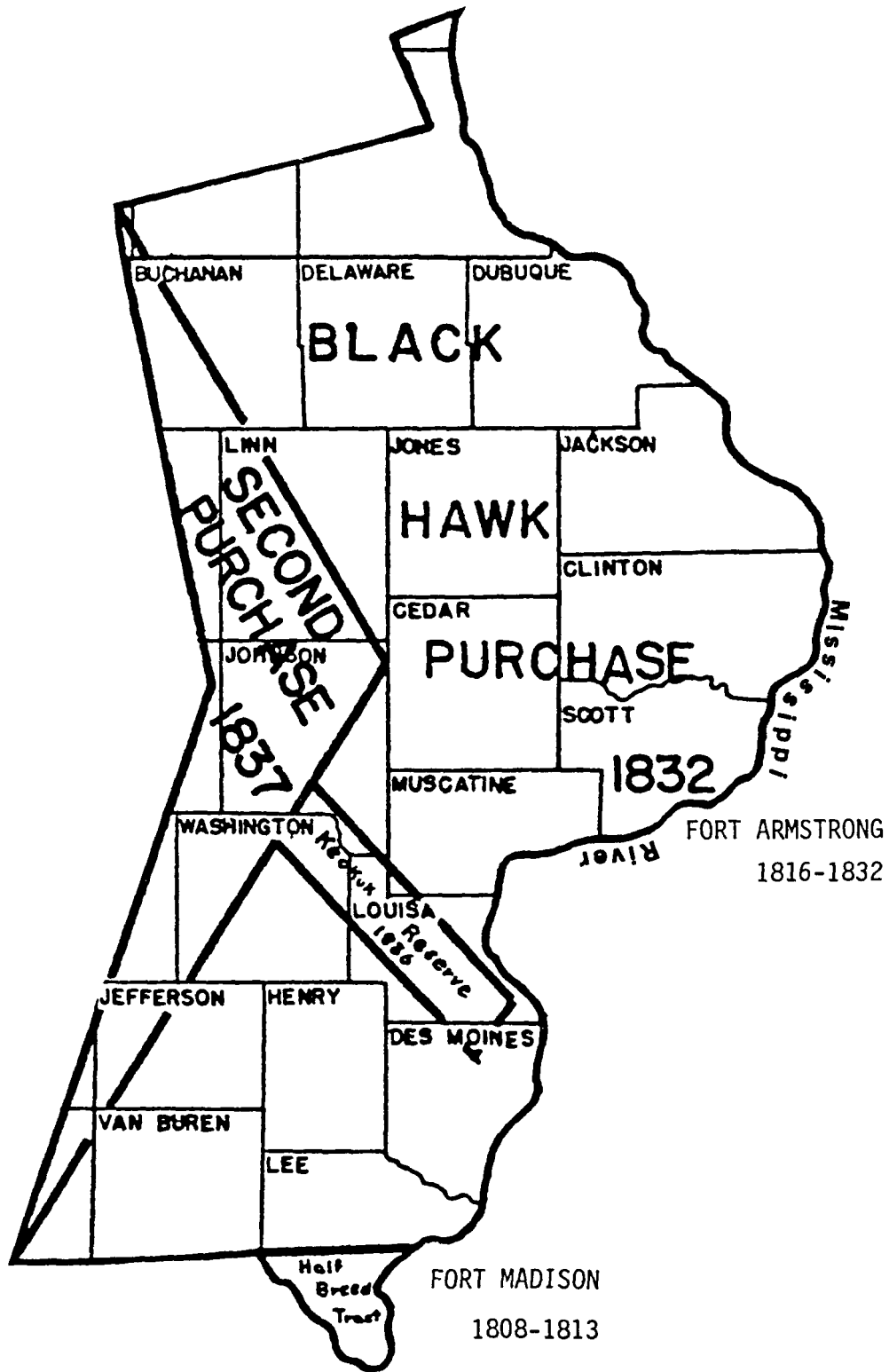


Figure 2. Black Hawk Purchase of 1832

This area was 50 miles wide and bordered the western bank of the Mississippi River from the state of Missouri to Prairie du Chien, Wisconsin. The first census for the Black Hawk Purchase in 1836 found 10,531 people living in the region (Hull, 1883, p. 196). A large number of Iowa's early settlers were attracted to the coal mining region in the area that is presently Dubuque County. Fur traders and soldiers also settled in the present locations of Scott, Des Moines, and Lee Counties. By 1836, Iowa was populated as far west as Jefferson County. Early pioneers had established the river towns of Dubuque, Davenport, Flint Hills (Burlington), and Fort Madison by 1836 (see Figure 3). These towns replaced the government posts in Iowa as supply sources as soon as settlers opened numerous stores and businesses.

From 1836 to 1840, the total population of Iowa grew fourfold. In 1840, the territory of Iowa had a population of 43,112 (Hull, 1883, p. 196). A more centrally located capital was needed. Iowa City in Johnson County succeeded Burlington in Des Moines County as the territorial capital seat in 1839. By 1840, Iowa's population lay east of a line through the established towns of Ottumwa (Wapello County), Iowa City, and Guttenberg (Clayton County) (see Figure 3).

The remaining three-quarters of present day Iowa was settled during the next 30 years, from 1840 through 1870. By 1842, the third and last addition of land to Iowa had been negotiated from Indian tribes. In 1846, Iowa became a state and its present borders were defined. By 1850, people were moving into the center region of the state. Six counties in southeast Iowa could no longer be considered a frontier in

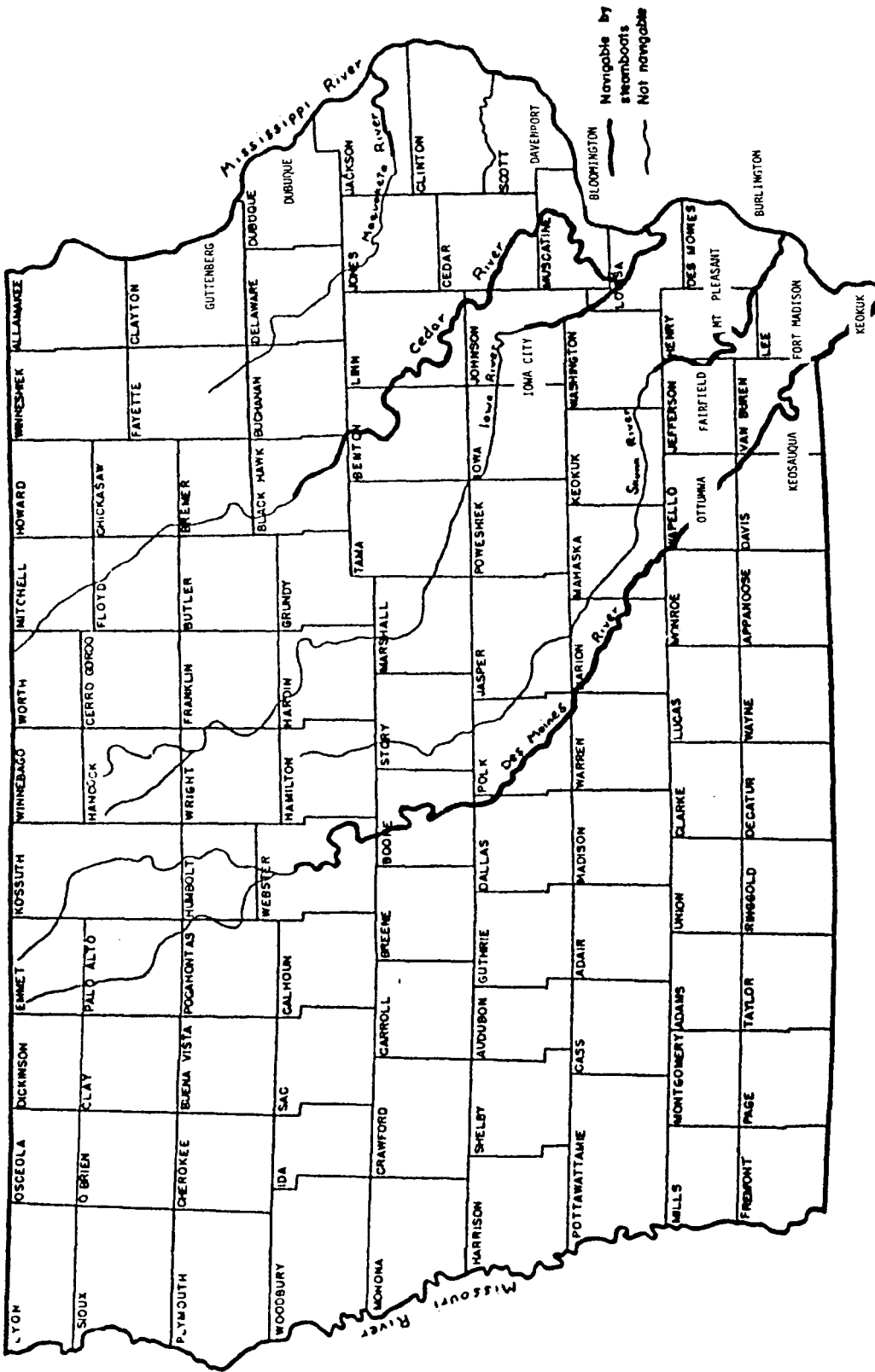
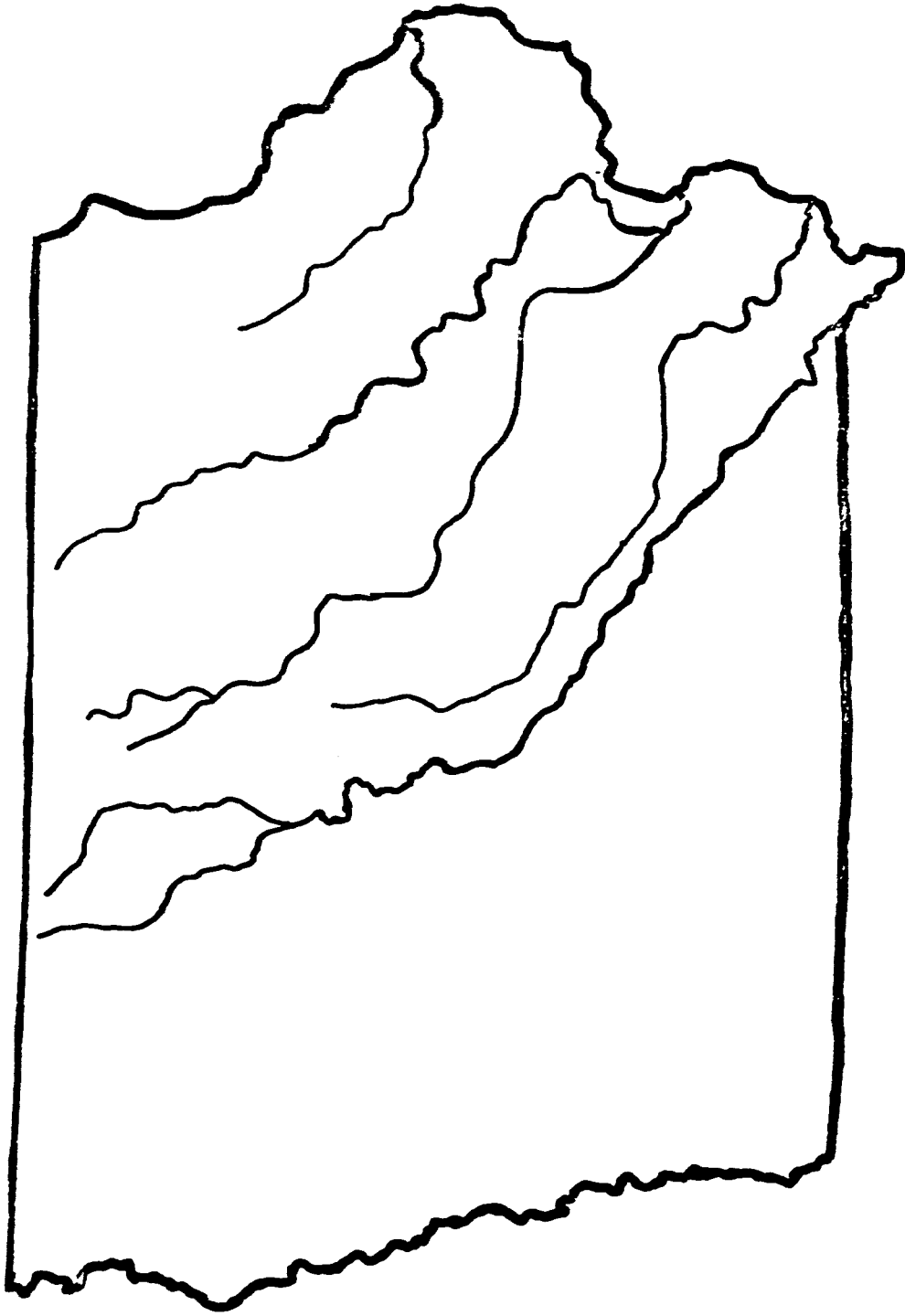
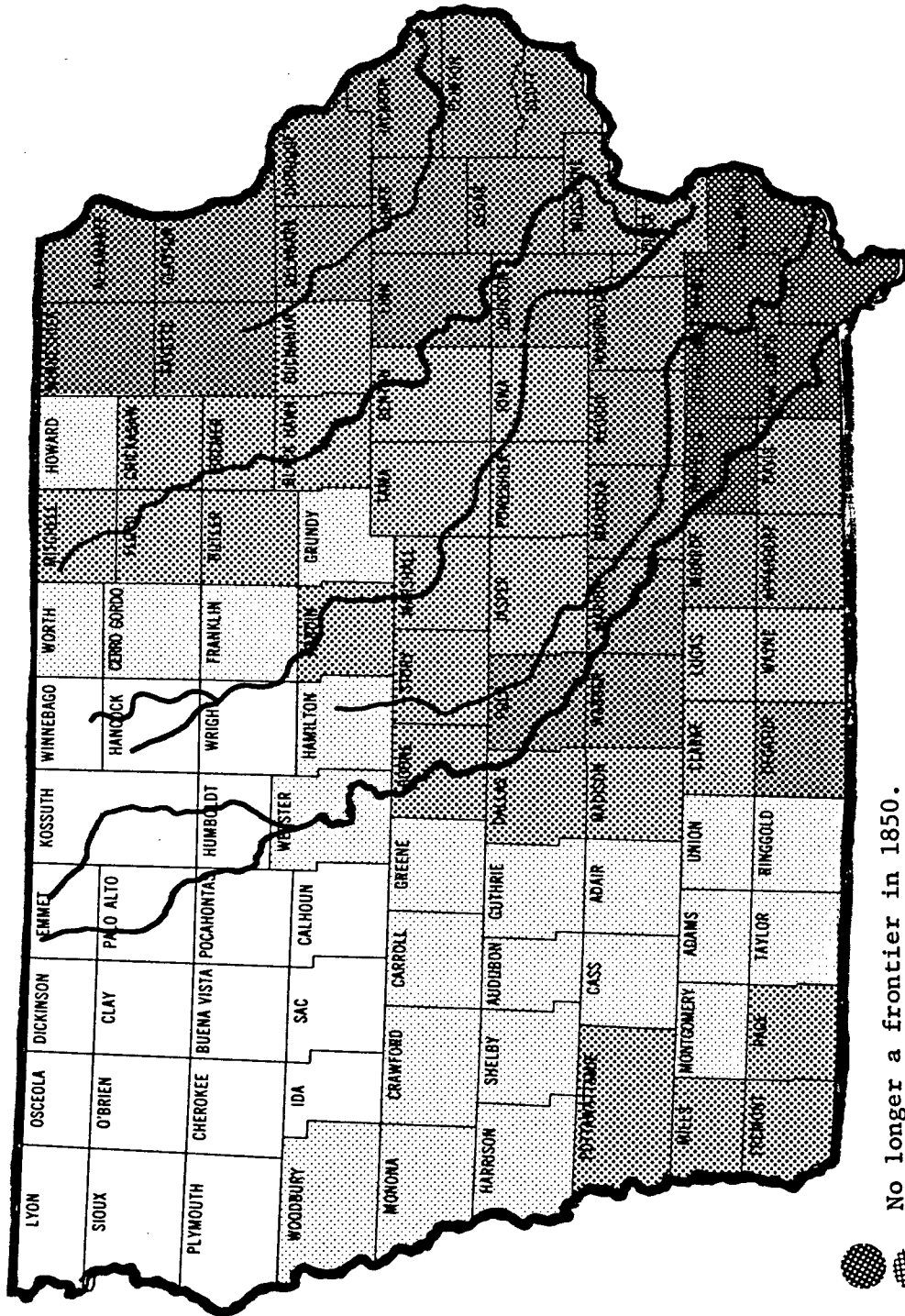






Figure 3. Iowa Towns Established by 1846 and Navigable Rivers by 1860

Figure 4a. (overlay) Location of Iowa Rivers

Figure 4b. Frontier Lines of Iowa, 1850-1880

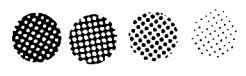




-  No longer a frontier in 1850.
-  No longer a frontier in 1860.
-  No longer a frontier in 1870.
-  No longer a frontier in 1880.



No longer a frontier in 1850.
No longer a frontier in 1860.
No longer a frontier in 1870.
No longer a frontier in 1880.



1850, according to Conzen (1974) who defined a frontier as an area with less than 15 persons per square mile. According to state census reports of the densities of Iowa counties, Iowa had four major frontier lines, or margins of settled areas, from 1850 to 1880 (see Figure 4). By 1860, the settled area of Iowa encompassed 97 counties. Also, the rest of southeast Iowa as defined by this study, with the exception of Iowa County, could no longer be thought of as a frontier region in 1860. In 1870, the United States Bureau of the Census declared the state of Iowa no longer a frontier, even though less than half of its counties had reached a density of 15 persons per square mile (see Figure 4). Even by 1880, the counties in the northwest quarter of Iowa accounted for less than five per cent of the state's total population (Hull, 1883). By the population density definition of a frontier, as stated by Conzen (1974), the northwest quarter of Iowa was still a frontier in 1880. Despite the fact that southeast Iowa was no longer considered a frontier by 1860, on the basis of population density, the region will be considered a frontier for the entire time period of this study, as a large part of the state remained a frontier until 1870.

Iowa Settlers

Iowa's earliest settlers were from Illinois, Indiana, Ohio, Missouri, Kentucky, and Tennessee. Smaller numbers came from New York, Pennsylvania, and Virginia. Easterners destined for Iowa land came by waterways or by land. The Mississippi River was traveled by steamboats as early as 1823. The Upper Mississippi, that portion above St. Louis,

had previously been used by boats destined for the mining region around Galena, Illinois. Once Iowa land was open for settlement, prospective Iowans used the Mississippi during the warmer months to travel from New Orleans. Also, the Mississippi provided a means of getting from the mouth of the Ohio River, at the southern tip of Illinois, to Iowa's eastern border. The Ohio River provided a major waterway route for westward travelers as it was navigable throughout the year. An additional river route was through the Great Lakes to Chicago and then on the Illinois River to the Mississippi. Settlers coming to Iowa used waterways until Congress authorized overland roads in the late 1830s. By 1836 and 1837, the Great Cumberland Road, through Ohio, Indiana, and Illinois, and a second road further south through Peoria, Illinois, were lined with oxen and wagons headed for Iowa.

Well-traveled land routes ended at the Mississippi River. The need for ferries became urgent as thousands arrived at the western edge of Illinois, anxious to enter the new frontier. In 1833, 14 ferries were operating along the Mississippi from the Iowa side to transport people across the river. The need for ferries increased as land travelers increased. Between 1836 and 1846, 54 ferry licenses were granted to get people and their possessions to Iowa land. Within Iowa, overland routes were not well-developed. They consisted mainly of 12-inch Indian trails, dirt lanes, or ox-wagon tracks, with wagon travel no faster than one to two miles per hour. As a result, pioneers eager to select their claims used Iowa's rivers: the Des Moines, Skunk, Iowa, and Cedar rivers, for travel within the state (see Figure 3). The first year for

navigation on the Des Moines and Iowa rivers was 1837. A steamboat travelled from Keokuk to Keosauqua on the Des Moines River in 1837 loaded with flour, corn-meal, some dry goods, whiskey, and Indian supplies (Hussey, 1919). The Cedar River was first navigated in 1838 and a steamboat on the Cedar and Iowa rivers reached Iowa City with merchants' goods in 1841. The Skunk River, through Henry and Des Moines Counties, was also a navigable means of transportation for southeastern Iowa.

The presence of these rivers within southeast Iowa concentrated the early settlement of the state in this region. The forested land next to the rivers was most appealing to those looking for a place to settle. Hunting and fishing areas were available and it was thought erroneously that the forested land yielded better soil than the grass prairie. In addition, the trees provided timber for building cabins, furniture, and tools. Consequently, the earliest population centers and sources for commercial goods were along Iowa's rivers and the population of the state increased in a northwesterly direction up these river routes. Thus, southeast Iowa, from 1837 on, was very accessible to other parts of the country due to its rivers. Although labeled as a frontier region until 1860, the southeast region's rivers enabled commercial goods to reach this area and made it economically active by the early 1840s. Southeast Iowa counties on the Mississippi possibly had access to commercial goods earlier than those counties further west. River navigation played an important role in the settlement of the state as well as enabling Iowa's first merchants to supply settlers with more

commercial goods than were available at government and fur trading posts

Early Life in Iowa

The area of Iowa developed quickly for yet another reason. The procedure for buying Iowa land was relatively simple before 1838. It was necessary for a family to plow five acres and build a cabin, seven to eight logs high, to signify their intentions to buy the land. It was not until 1838 that government land offices opened in Dubuque and Fairfield for the settlers to legally buy Iowa land. When settlers found their claims, they first camped out, lived in their wagons, or slept in an abandoned log cabin until their first homes could be built. The first log homes were built with simple handmade tools: an ax, broad ax, carpenter's adze, auger, and maybe a draw knife (Fisher, 1965). This home was commonly one room with a large fireplace at one end and with two small windows and a door to the south. The roof was of clapboard and the floor either dirt or a puncheon floor of logs split in half and laid flat side up. Furniture was meager. One or two three-legged stools, a pole bed in the corner with a trundle bed underneath, and shelves were all built from native lumber. Sometimes a chest or trunk and a rocking chair had been brought from the East for this first frontier home (Fisher, 1965). A family's first furniture had to be built with no nails and was made quickly. The resulting housing and furniture were rough and functional rather than pieces of craftsmanship and beauty.

Fisher (1965) and Dubell (1941) mentioned the few household textiles that might have been used in these log cabins. Settlers were likely to use worn, discarded undergarments or pieces of blankets for towels. Other household textiles included curtains to cover shelves of dishes and perhaps one or two tablecloths brought from mother's homemade linen. More often, no tablecloth was used because washing such "luxuries" by hand added to the necessary chores. Window curtains were seldom used as they cut down on valuable light in the cabin and windows were kept small and few to reduce drafts. Petersen (1952(b)) mentioned the use of a mattress of hay or straw covered with a homespun sheet in the summer. Two feather beds may have been used in the winter, one as a mattress and one as a cover.

Men's and women's roles were specifically defined once the household had been established. Men were the food gatherers. Abundant fish, quail, deer, prairie chickens, rabbits, and an occasional buffalo were found easily in Iowa territory. As well as building the log cabin and obtaining food, the men broke the sod and planted oats, corn, and wheat as beginning crops. In the winter months, men spent time splitting rails, chopping firewood, making furniture and tools, mending harnesses, shelling seed corn, and tending livestock. Secondary Iowa histories mention that every farm had a patch of flax and some sheep to provide raw materials for the household production of textiles. However, flax and sheep are mentioned in terms of women's work and are not commonly associated with male responsibilities. This may indicate that sheep and flax were not considered a major part of Iowa farm life

in the early years of settlement. Men most frequently did all the outside tasks and worked towards providing the family with cash from surplus agricultural products.

A woman's jobs on the frontier were varied, including cooking, dressing game, cleaning, washing, sewing and mending, spinning, knitting, and weaving. She also was a childbearer, babysitter, teacher, and doctor. A woman's tasks were not only the necessary daily jobs of cooking, washing, and babysitting, but also included cyclical home manufacture which provided the family with butter, cheese, soap, candles, cloth, and clothing. Part of a woman's contribution to a family was to make products at home that could be used as a means to barter for store goods and services. Products of the dairy, henhouse, garden, and loom were commodities to be exchanged for commercial goods. Glass, dyes, crockery, metal utensils, store cloth, coffee, tea, and sugar were obtained by barter if not on credit.

The need for credit stemmed largely from the fact that banks were virtually nonexistent in the early stages of Iowa settlement. The Miner's Bank of Dubuque, operating from 1837 to 1849, was the only official bank in Iowa until 1858, when a law was passed to incorporate the State Bank of Iowa. The first southeast Iowa branches of the state bank were in Davenport, Iowa City, Keokuk, Mt. Pleasant, Muscatine, and Oskaloosa. By 1865, the United States Congress had passed a law that established a National Bank. By March of that year, most state banks were merged into the National Bank system (Gallaher, 1937; Sherman, 1901). It seems that land, at \$1 25 per acre, was the only commodity

for which early Iowa settler had to have cash.

The female's contribution to the self-sufficient life on the frontier was most important in the years before the men were able to produce a surplus crop from the prairie land. A significant part of household manufacture done by women in the early years of Iowa settlement was the production of food and cloth for their families. The need for handmade fabric for household textiles and clothing was great if commercial cloth was not available, if a family did not settle near a center of commerce on the frontier, or if they had no money or goods to exchange for cloth. Secondary authors maintain that the primary motivation for handweaving was the lack of commercial goods. However, they do not give evidence which substantiates the lack of commercial goods or which clearly describes the tools, processes, or textile products that were part of household manufacture. Also, any activities associated with spinning and weaving were assumed to have been done only in a log cabin. Although southeast Iowa can be thought of as a frontier until 1860, the use of log cabins is not thought to have lasted as long as the frontier stage in this area of the state. Dailey (Note 1) indicated that families were likely to live in log cabins for two to three years, only long enough to save money or obtain materials to build a larger three-to-four room house. The ability to build new houses shortly after settlement in Iowa hints at the availability of certain goods. It is probable that if building supplies were available in adequate quantities for most early settlers to build new houses, other goods were also available through the same suppliers.

The question of whether or not Iowa historians have been correct in their accounts of log cabin textile production and handweavers driven by necessity should be evaluated in the light of primary data. The total value of goods produced by household manufacture from 1850 to 1870 will be presented as the best evidence available on the amount of handweaving done in the home. The following chapter will also present the primary evidence found for the existence of commercial goods and services in southeast Iowa. It will serve as a discussion of the effect that commercial goods and services had on increasing or decreasing the amount of household production done in specific counties. Consideration of the extant evidence for these aspects of Iowa frontier life will provide a more solid basis, than that provided by secondary Iowa histories, on which to evaluate the need for handweaving in southeast Iowa.

HOME AND COMMERCIALY MANUFACTURED GOODS

This chapter is intended to reflect the extent of and need for handweaving in southeast Iowa for the earliest settlers. State and federal census records show the total value of goods produced by household manufacture for each Iowa county from 1850 through 1870. Some unknown proportion of these goods included handwoven cloth, according to the census definition of domestic manufacture (Hull, 1883). The value of these homemade goods in each county will be presented and discussed in terms of its general importance in southeast Iowa over the 20 year period. Evidence for the availability of dry goods dealers and craftspeople who constructed clothing will also be presented. This evidence will be discussed as one means for understanding whether or not home weaving was practiced simply because there were no other resources for textile products in southeast Iowa.

Domestic Manufacture

Domestic manufacture was defined by federal census authorities to mean "all household manufacture not included in dairy products; that is to say, fulled cloth, flannel, linen and tow cloth, cotton and mixed goods, maple sugar, etc., etc." (Hull, 1883, p. xx) The "etc., etc." could include other necessary items people made in their home on a regular basis such as candles, soap, furniture, and tools. In general, home manufacture reflected the degree to which commercial goods were available. The majority of settlers would be expected to have bartered for or purchased commercial goods as soon as they were available in

TABLE 1

Value of Household Manufacture per Person in Southeast Iowa, 1850-1870

County	1850	1856	1859	1860	1870	Average Value Over 20 Year Period
Cedar	\$1.47	\$.21	\$.27	\$.49	\$.02	\$.49
Davis	2.22	2.06	1.84	1.41	2.22	1.95
Des Moines	.55	.58	1.60	.17	.14	.61
Henry	1.72	1.32	.68	.39	.23	.87
Iowa	1.35	.33	.16	1.27	2.89	1.20
Jefferson	2.25	1.53	1.81	.95	1.15	1.54
Johnson	1.29	.29	.39	.01	.07	.41
Keokuk	1.91	1.28	1.03	.63	1.07	1.18
Lee	.69	.34	1.13	.15	.05	.47
Louisa	1.36	.64	.83	.18	.80	.76
Mahaska	1.30	1.41	1.18	.68	.25	.96
Muscatine	.59	.46	.33	.16	.27	.36
Scott	.24	3.40	.19	.06	.06	.79
Van Buren	1.92	1.17	1.30	.73	.51	1.13
Wapello	2.30	1.97	.85	.87	.65	1.33
Washington	1.55	.75	1.31	.54	.17	.86

Note. Values for this table were computed by dividing the total value of household manufacture for each county by the total population of that county. The totals were obtained from state and federal census tables.

order to give up the time-consuming hand processes involved in home production. For the settlers in the 16-county area included in this study, an average value of domestic manufacture per person was calculated (see Table 1). The value of goods provided by domestic manufacture generally declined in southeast Iowa from 1850 to 1870. In 1850, the average value of domestic manufacture per person was \$1.42. By 1856, the value had declined to \$1.11; by 1859, it was 93 cents per person; and by 1860, only 54 cents worth of homemade goods was being produced per person in southeast Iowa (Census Board, 1857, 1859; U. S. Bureau of the Census, 1853, 1864). For all counties, except Cedar, Iowa, and Wapello, a dramatic decrease in home manufacture occurred between 1859 and 1860. Exact reasons for the decline are not known. The entire decade of 1850 to 1860 represented a decrease in the value of goods produced within the home. This decrease in home production could indicate a greater reliance on commercial goods in most southeast Iowa counties by 1860.

A small resurgence of domestic manufacture occurred between 1860 and 1870. The average value of manufacture per person in 1870 was 11 cents higher than it had been in 1860 for the 16-county area (U. S. Bureau of the Census, 1872). The major increase in home manufacture for the entire 16-county area was concentrated in Davis, Iowa, Jefferson, and Keokuk counties between 1860 and 1870. It was in these same four counties, along with Wapello County, that the highest amounts of goods had been homemade during the entire period from 1850 through 1870. The production of needed goods by hand in these five counties represents a

degree of self-sufficiency among Iowa families as late as 1870. A possible reason for the slight increase in home manufactured goods from 1860 to 1870 is the occurrence of the Civil War in this decade. Some commercial goods were scarce and costly during the war. Raw cotton, predominantly grown in the south, was less available to the northern textile mills, so cotton yarn and textiles were scarce at this time. Also, Iowa sent more men in proportion to its population to the service during this time than any other state in the union. One-half of the male population in Iowa performed some kind of military service during the Civil War (Riley, 1981). The resulting decrease in income and the hardships faced by many families could have increased home manufacture of goods, especially in those homes that had not completely given up hand processes by 1860 and still had the necessary tools available. Weaving as a temporary necessity for some families during the Civil War will be further discussed in the chapter on home weaving.

The counties that maintained the highest degree of home manufacture from 1850 to 1870: Iowa, Keokuk, Wapello, Jefferson, and Davis counties, have similarities that are proposed as influential factors to this manufacture. None of these counties, with the exception of Wapello County, had navigable rivers for steamboats to bring commercial goods into the area. As well, Jefferson and Wapello counties did not have access to railroad transportation and shipping until 1861. Iowa County was not served by a railroad until 1862 and Davis and Keokuk were the last southeast counties to have access to the railroad. Davis County was reached by rail in 1868 and Keokuk County in 1872 (Cooper, 1958).

Also, these five counties were all within Iowa's interior, which limited their access to the early steamboats that traveled up and down the Mississippi.

In contrast to these counties, four counties on the Mississippi River and two other counties with navigable rivers had the lowest values for home manufactured goods over the entire period. Settlers in Scott, Muscatine, Des Moines, Lee, Cedar, and Johnson counties were producing the least amounts of homemade goods and it seems probable that settlers in these counties had commercial goods available to them at an early date. The navigation of the Mississippi by 1823 and the Cedar and Iowa Rivers by 1841 would contribute to the availability of goods in these counties. The location of the territorial capital in Johnson County from 1839 to 1857 would add to a greater number of people and commercial suppliers in that county. In addition, Scott, Muscatine, Johnson, and Des Moines counties had access to the earliest railroad in Iowa in 1855, with railroads in Lee and Cedar counties completed by 1859 (Cooper, 1958). The introduction of the railroad in these counties in the 1850s could have contributed to the quick decrease in home production by 1860. The location of the counties with the lowest value of household goods produced from 1850 to 1870 suggests that the Mississippi River and early access to railroads brought a greater availability of commercial goods to these counties and made home processes unnecessary. It is probable that a low value of goods produced by home manufacture within a county was directly related to a greater number of dry good dealers as well as more access to craftspeople skilled in clothing construction.

TABLE 2
Southeast Iowa Businesses and Craftspeople Who Made or Sold Clothing and Textiles in 1846 and 1856

Year	Town	Pop. of Town ^a	County	Pop. of County	Dry Goods Dealers ^b	Dressmakers Seamstresses Tailloresses	Clothiers Tailors Merchant Tailors
1856			Cedar	9,481	2	12	
1856			Davis	11,528	4	10	
1846	Burlington	3,000	Des Moines		21	9	
1856			Des Moines	20,198		32	
1846	Mt. Pleasant		Henry		6	3	
1856			Henry	15,395		24	
1856			Iowa	4,873	1	4	
1846	Fairfield		Jefferson		10	3	
1856			Jefferson	13,305		14	
1846	Iowa City		Johnson		7		

1856		Johnson	14,457	6	31
1856		Keokuk	10,616	17	10
1846	Fort Madison	Lee		13	
1846	Keokuk	Lee		8	
1856		Lee	27,273		54
1856		Louisa	9,568		17
1856		Mahaska	13,050	21	16
1846	Bloomington	Muscatine		13	5
1856		Muscatine	12,569	4	32

Note. The information for 1846 is for specific towns and is from Newhall (1957). The information for 1856 is for the total county and is from Census Board (1857).

a Population of all towns was not available.

b Number of dry good dealers was not available for 1856.

TABLE 2 (continued)

Year	Town	Pop. of Town ^a	County	Pop. of County	Dry Goods Dealers ^b	Dressmakers Seamstresses Tailloresses	Clothiers Tailors Merchant Tailors
1846	Davenport		Scott		8		
1856			Scott	21,521		12	77
1846	Keosauqua		Van Buren		5		2
1856			Van Buren	15,921		6	23
1856			Wapello	13,246			10
1856			Washington	11,113		7	12

Commercially Made Textiles and Clothing

A look at the locations of dry good dealers in southeast Iowa in 1846 does indicate that the largest number of these stores were in the Mississippi River towns of Burlington, Fort Madison, and Bloomington (see Figure 2). There were a total of 91 dry good dealers in southeast Iowa at this time. The towns with the largest numbers of dry good dealers were also the largest towns in the area. Tailors and others skilled in clothing construction were not very numerous by 1846. The towns with the largest numbers in such trades were Burlington, with nine tailors serving a population of 3,000, and Bloomington, with only five tailors for 1,600 people.

By 1856, professionals skilled in clothing construction were more numerous in southeast Iowa, although they were still not abundant in relation to the population in the area. As with dry good dealers, the tradespeople who provided for clothing needs, were in the greatest numbers in Scott, Muscatine, Des Moines, and Lee counties along the Mississippi (see Figure 2). A closer look at the number of clothing professionals per person in 1856 reveals that people in Scott, Muscatine, Johnson, Mahaska, and Keokuk had the greatest access to these services, with one professional to every 240 to 400 settlers. The number of skilled craftspeople does not indicate that commercial clothing construction was prevalent in southeast Iowa by 1856. Three of the counties that had the highest values of home manufacture also had the greatest need for clothing construction in the home. There was only one tradesperson available to sew clothing for every 900 to 1000 people

in Davis, Iowa, and Jefferson counties.

The earliest Iowa newspapers, dating from 1838 through 1857, and store account books from 1845 to 1857, were surveyed for the type and variety of textiles and clothing that were available within these years. It was important to see when commercial goods became available as well as what types of textile goods were included in the early stores. These newspapers and account books provided evidence that a large variety of textiles was available at local stores by 1838. Broadcloth, cassimeres, satinets, lindseys (linseys), Kentucky and Keokuk jeans, drilling, and linens were available for purchase as well as finer French and English velvets, silks, calicos, cambrics, and chintzes. However, only smaller clothing items and accessories were available in dry good stores according to newspaper ads of the period. Items such as handkerchiefs, cravats, gloves, shawls, vests, hats, and buffalo robes were being sold in the major towns of southeast Iowa in the 1830s and 1840s (Bloomington Herald, 1846-48; Burlington Patriot, 1838; Davenport Gazette, 1843-44; Espy, 1848-9; Hawkeye and Iowa Patriot, 1840-41; Iowa Territorial Gazette, 1839-40; Kirkwood, 1845-58; Lee County Democrat, 1843-52; McDonald, 1855-57). By the time Iowa attained statehood, Newhall's travel guide, A Glimpse of Iowa in 1846, stated that

In principal towns of Iowa, most every article, both of necessity and luxury, will be found at the stores, in almost as great variety as at the larger establishments of the eastern cities (p. 60-61).

Although the review of newspaper ads for textiles and clothing was limited, it appears that commercial cloth was available in southeast Iowa by the 1840s. Whether or not these textiles were available in

sufficient quantities for the number of settlers is not known. Where goods were available, the barter system made it possible for most families to have access to commercially made textile and clothing items.

The newspapers which were used to find the types of commercial cloth that were available in southeast Iowa were from Mississippi River towns, as these towns had the earliest newspapers. Southeast Iowa towns further west may not have had access to commercial cloth and craftspeople making clothing as early as the towns covered by the papers. However, navigation on most southeast Iowa rivers came quickly after the first settlers arrived. Johnson County to the north was reached by steamboat in 1841 and Wapello and Mahaska counties to the west were reached soon after by steamboats on the Des Moines River. The southeast counties without navigable rivers, Iowa, Keokuk, Washington, Jefferson, and Davis, probably had the least access to commercial products, prior to the availability of trains to ship goods from Eastern suppliers. Household manufacture in these counties without rivers was more likely to be out of need than in other southeast counties. Davis and Keokuk counties, lacking major navigable rivers and being the last southeast counties to have access to railroad transportation, were among the counties that had the highest amount of household manufacture through 1870.

This chapter has provided evidence that the total value of household manufacture in most southeast counties gradually decreased from 1850 to 1870, with a resurgence of this manufacture in some counties in the Civil War decade. The counties that increased home

production at this time were those that already had the highest values of manufactured goods up to 1860. The availability of commercial textiles and tradespeople skilled in clothing construction was found to be greatest in counties along the Mississippi and decreased the need for home produced goods in these counties. The introduction of the railroad into Iowa counties is proposed as influential in bringing a larger variety of commercial cloth than previously available. Because of this, it was an important factor to the decrease of home manufacture in southeast Iowa from 1850 to 1870. The greatest extent of home manufacture did occur in counties inland from the Mississippi with no navigable rivers. Necessity was a possible motivation for the home manufacture in these counties, with no major means of transportation until the 1860s and 1870s.

The next chapter will identify the home weavers that could be documented by extant evidence. It will include a discussion of the tools, processes, and textile products that were made within the home in southeast Iowa. It is expected that the greatest number of handweavers will be found in those counties manufacturing the highest values of goods within the home. In the following chapter, all possible motivations for handweaving will be proposed as working hypotheses for future research.

HOME WEAVING

In this chapter, the following topics will be discussed:

1. The problems associated with the identification of tools and woven products as distinct from those that were brought into Iowa by early settlers.
2. The processes used and types of cloth produced by home weavers as determined by the raw materials available in Iowa.
3. The tools used by home weavers and the sources for these tools.
4. The availability and use of community services and goods to make textile products in the home.
5. The reasons that handweavers used their skills in southeast Iowa.

A major problem in this study was to identify, among extant artifacts, those items that were made in southeast Iowa. Of course, early settlers often brought with them clothing and household textiles that were woven in other states or countries. To cite several examples, Susan Wyatt left West Virginia in 1838 to travel to Iowa with her new husband. In preparation for her married life, she had colored and braided rag strips and sewn them into rugs, woven linen for sheets and pillowcases, knitted lace and tidies for chair backs, and woven sheer linen for curtains (Robbins, 1974). When one of the oldest boys of a family in Washington County, Iowa went back to Ohio for his bride in 1848, she brought with her a dowry chest with 12 linen sheets, 12 linen pillowcases, three counterpanes, and many woolen blankets, all hand-

woven by her (Fisher, 1978).

The same difficulty occurs in identifying textile-related tools indigenous to Iowa. In anticipation of a shortage of stores and supplies on the frontier, home weavers could have brought a personal collection of smaller weaving tools with them from other places. Looms were not likely to have been brought with other weaving tools from outside of Iowa because they could be built from native lumber and were simply too bulky and heavy for the means of transportation available at this time. One of the objectives of this research was to look for any evidence of weaving tools or equipment brought into Iowa during this period. Only one written reference pertaining to this was found in a request by Mary Stephenson of Jefferson County. In a letter to her brother-in-law and sister in 1869, who were intending to immigrate from Sweden, she wrote, "Bring rollers for weaving and shuttles, but not too small. I will buy them of you. They can be had here, but they are expensive" (Stephenson, 1921-22, p. 94). Few extant artifacts exist as evidence that pioneers brought other weaving tools and equipment into Iowa. Two spinning wheels were found that were brought to counties in central Iowa. A wheel in the Boone Library and Museum is believed to have been used in the area and has "1839" carved into it. Since Boone County was not settled until the mid-1840s, it is likely that the spinning wheel was made elsewhere and brought into the area sometime after 1839. Another wheel, found in the Jefferson Historical Museum, also provides evidence that tools such as this could have been brought into Iowa. Thus, some evidence was found that smaller weaving tools,

but not looms, were brought into some areas of Iowa, though no artifacts in southeast Iowa were documented as from another location.

For this study, descriptions and slides were made of any handwoven textiles or related tools that were in public and private collections and that were labeled as woven or used by a home weaver in southeast Iowa. Many textile items examined during the course of the study were of uncertain provenance. Some of these items, however, were documented according to written accounts of textile production in the area in order to serve as examples of what was typical of the raw materials, weaves, and finished products of southeast Iowa weavers.

Raw Materials Used

Flax

In order to weave cloth in 19th century Iowa, people either had to raise or have access to flax, wool, or cotton as raw material or as yarn. The belief that pioneer women in Iowa raised a patch of flax and every farm had a flock of sheep to provide the raw materials for carding, spinning, dyeing, weaving, and knitting has been repeated many times (Anderson, 1923; Augustine, 1923; Caplinger, 1923; Cole, 1921; Faragher, 1979; Fawkes, 1923; Gallaher, 1927; Liesman, 1923; McLeran, 1923; Melloh, 1981; Ollinger, 1923; Paine, 1923; Petersen, 1952(b); Ranger, 1923; Rogers, Note 2; Sabin & Sabin, 1916; Sharp, 1971; Tomlinson, 1923; Trent, 1923; Vanderwort, 1923; Welty, 1968). Census takers recorded the production of flax fiber in the state (see Table 3). Throughout the period from 1850 to 1880, censuses show that flax was

TABLE 3
 Counties in Southeast Iowa Growing One or More Pounds
 of Flax Fiber per Person, 1850-1870

Year	County	Total Quantity Grown in Pounds	Pounds Per Person
1850	Davis	7,877	1
	Keokuk	13,130	3
1863	Henry	63,910	4
1865	Johnson	27,705	1
	Muscatine	32,916	2
1867	Johnson	356,075	16
1870	Johnson	674,500	27

Note. Information for this table is from state and federal census tables.

grown in southeast Iowa. But only a few counties were growing enough flax to provide one pound of fiber per person. In 1850, the total pounds of flax fiber grown in Davis county averaged out to one pound per person living in that county. Settlers in Keokuk County were growing about three pounds of flax fiber per person. Davis and Keokuk were also counties that had high values of home manufactured goods in 1850 (see Table 1). The home production in these counties may have included the use of flax for handwoven cloth. All other counties in 1850 had flax crops totaling less than one pound per person (U. S. Bureau of the Census, 1853).

At the time of the 1860 census, no counties had equal to or over one pound of flax fiber per person. From 1863 to 1870, only Henry County (in 1863), Johnson County (in 1865, 1867, and 1870), and Muscatine County (in 1865) were growing flax in any quantity (Census Board, 1857, 1859, 1867; U. S. Bureau of the Census, 1853, 1864, 1872). Settlers in Henry County were producing very little home goods by 1860. Thus, it is speculated that the large quantity of flax fiber grown in 1863 in Henry County was being used by an industry or as an agricultural commodity. Local industry that could use flax were manufacturers of flax products such as linen cloth, cord, rope, or linseed oil. The production of flax for industry or as an agricultural commodity is thought to be true of Johnson and Muscatine counties as well. Little household manufacture was being done in these counties after 1859 (see Table 1). It is known that Johnson County had a commercial flax manufacturer from 1868 to 1888 (Dockham, 1868-1890). How much of the

flax grown in Johnson or other counties was grown as an agricultural cash crop to supply local industry and how much was grown for use in home manufacture is not known. Nevertheless, there is evidence that some flax was used in home manufacture in southeast Iowa prior to 1850 and used in small quantities throughout the 1870s for various end products.

According to written references, home weavers who did use flax used it for warp and weft yarns as well as sewing thread. Kitturah Belknap, of Van Buren County, wrote in her diary in 1839 that she had spun flax and tow¹ all winter to make summer clothes. In her diary in the spring of 1840, Kitturah mentioned weaving a homemade dress of "cotton warp colored blue and copper and filled with pale blue tow filling so it was striped one way and almost as nice as gingham" (Riley, 1977, p. 35). She did not give a name to this cloth of linen and cotton. In 1848, in preparation for a trip to Oregon she had to spin thread for a linen wagon cover and for six two-bushel bags to hold flour and other staples on the trip (Riley, 1977). In Prudence Elizabeth Billingsley's family of Jefferson County during the 1850s and 1860s, flax was spun to weave sheets (Tomlinson, 1923). The Thomas Brown family came to Wapello County, Iowa in 1846 from Ohio. They raised flax which they processed and spun to weave linen pants and "linsey" dresses (Hamilton, Note 3). One extant piece of linen clothing, a pair of pantaloons or men's

¹Tow is defined as the shortest fibers produced by the flax plant. Tow cloth is considered a low grade of cloth that was used for work clothes, as compared to the finer cloth produced from line fibers, the longer fibers of the flax plant

broadfall trousers, was found in the Lewelling Quaker Shrine in Henry County. These were worn by Owen Garretson of Salem, Iowa and woven and sewn by hand by his mother, Elizabeth Garretson. This family came to Salem in 1837 and Elizabeth died in 1887; therefore, the pants can be dated within this 50 year period. Murray (1968) wrote that in the late 1840s in Jones County the men wore tow linen pants in the summer.

Some extant tools were found that could be related to the production of linen cloth in Iowa. Many hackles¹ were found singly and as a pair in Iowa museums. These were labeled for use with flax or wool. However, the coarseness of the pointed metal teeth set on a stationary board suggests that these hackles were used for linen rather than wool. They were used to separate line flax fiber from the tow fiber. This was done by drawing a bundle or stalk of flax through the teeth (Channing, 1978). Museums often placed two of these hackles together, as with wool cards, but they were properly used consecutively, as the teeth on each board were set different distances apart. The board with teeth farther apart from each other would be used first and the finer toothed board used second to remove more tow and to prepare the flax for the spinning distaff. No other tools were found that could be directly connected to the production of flax fiber.

There were no pieces of linsey-woolsey found though it is one of the most frequently mentioned handwoven fabrics in secondary accounts of the Iowa frontier (Aurner, 1918; Cole, 1921; Faragher, 1979; Robeson,

¹Hackles are also labeled or referred to as heckles, hatchels, or hetchels.

1924). Cole (1900) and Gehret (1978) defined linsey-woolsey as commonly having a warp of linen and weft of wool and as a coarse variety of flannel. Though not usually considered linsey-woolsey, many overshot coverlets, that were found in southeast Iowa, were labeled as being woven with linen warp and wool weft. I did only a sensory identification of fibers but all of the coverlets that I examined appeared to be woven with cotton rather than linen warp.

Raising flax and processing the fiber into yarn was very time consuming, required a series of large tools, and was hard work. This might account for less production of linen textiles in southeast Iowa than textiles of other fibers. Larson (Note 4) recalled that flax was a good beginning crop on the frontier as it helped to break down the root bound prairie. However, it was necessary to plant a sterile crop such as potatoes the following year as flax used up precious nutrients in the soil. Difficulty of growing agricultural crops in the same location where flax was planted, as well as Iowa's climate, could account for less use of flax for weaving. However, despite the difficulties associated with raising flax and producing linen yarn, some home weavers in southeast Iowa made use of flax fiber throughout the period from the 1830s through 1870.

Wool

The most frequently mentioned fiber in Iowa accounts was wool. Evidence of raising sheep, washing, picking, spinning and weaving wool was found from 1839 to 1867 (Anderson, 1923, Bengston, 1926; Caplinger, 1923; Fawkes, 1923; Liesman, 1923; McLeran, 1923, Murray, 1968;

TABLE 4

Pounds of Wool Sheared per Person in Southeast Iowa, 1850-1870

County	1850	1856	1860	1865	1870
Cedar	3	2	2	4	2
Davis	2	2	2	8	7
Des Moines	1	1	1	3	3
Henry	3	2	1	6	6
Iowa	1	1	1	3	2
Jefferson	3	2	2	6	6
Johnson	3	1	1	4	3
Keokuk	2	2	2	3.5	5
Lee	2	1	1	2	2.5
Louisa	2	1	1	4	4
Mahaska	2	2	2	10	6
Muscatine	1	1	-	1	1
Scott	1	-	-	1	-
Van Buren	3	2	2	7	7
Wapello	3	2	2	6	4
Washington	3	1.5	1	6	4

Note. Values for this table were computed by dividing the total pounds of wool sheared in each county by the total population for that county. The totals were obtained from state and federal census tables.

Ollinger, 1923; Riley, 1977; Stephenson, 1921-22; Vanderwort, 1923). Information on the pounds of wool sheared in southeast Iowa was obtained from federal and state census summaries taken since 1840 (see Table 4). In 1840, nine of the 16 counties in southeast Iowa had some settlers raising sheep for wool, but not enough to amount to one pound per person. The amount of wool sheared in 1840 totalled 21,242 pounds (Hull, 1883). By 1850, the amount of wool sheared in all 16 counties had risen to 285,948 pounds, thirteen times the amount of wool in 1840. This amount, divided by the population in the area, averaged out to two pounds of sheared wool per person. A total of 31 carders in the area in 1850 probably carded a lot of this wool as a service to home weavers. From 1856 through the early 1860s, the amount of wool sheared decreased by half. Production of wool fiber increased in 1865 to an average of five pounds per person and then decreased a bit in 1870 to about four pounds per person (Census Board, 1857; U. S. Bureau of the Census, 1853, 1864, 1872).

As with flax fiber, it is not known how many families were raising and shearing sheep to use the wool for home produced goods. In 1850, there were only two documented woolen mills in southeast Iowa in the counties of Henry and Washington. These two mills might have used some of the raw wool sheared in that year for their finished products. By 1856, there were at least six product-oriented woolen mills in the region, five such mills in 1860, eight in 1865, and 13 in 1870 (see Appendix C). The increased production of wool in 1865 may have indicated that Iowa farmers were raising sheep for a profit by this

time, selling the wool to mills or wool buyers and selling the sheep for mutton. It is likely that the small amounts of wool sheared prior to 1860 were being used by home weavers rather than being sold as an agricultural commodity. Written accounts and extant woven textiles of wool support the idea that families in southeast Iowa did raise sheep to use the wool in the home production of textiles.

The first step in wool processing, sheep shearing, was described by Kitturah Belknap of Van Buren County in her diary in May of 1842. In May or June, men turned out to make a sheep pen on the bank of the Des Moines River and the flocks of sheep were driven there. The sheep were taken one at a time to the river where the men would hold the sheep's head out of the water with one hand and with the other rub the wool until it looked clean. The sheep were then put in a clean pasture to dry prior to shearing. After shearing, the wool was laid out "a few days to get the sheep smell off" (Riley, 1977, p. 40).

Wool sorting and picking was necessary after the shearing. In May of 1842, Kitturah Belknap had 65 fleeces to do.

Will sort it over, take off the poor short wool and put it by to card by hand for comforts. Then will sort out the finest for flannels and the coarse for jeans for men's wear. I find the wool very nice and white, but I do hate to sit down alone to pick so I will invite about a dozen old ladies in and in a day they will do it all up (Riley, 1977, p. 40).

Margaret Murray also mentioned the idea of a "wool picking" at her mother's house (Murray, 1968).

The diary of Kitturah Belknap and the set of letters written by Mary Stephenson provided the only written descriptions found of woollen cloth handwoven in southeast Iowa. In July of 1842, Kitturah made a new

flannel dress of a small blue and red plaid. Flannel was defined by Cole (1900, p. 199) as "coarse-threaded loosely woven woolen material." It was usually fulled to give it stability and had a napped surface. It was also variously teaseled, sheared, or pressed for a variety of surface effects. Mary Stephenson wrote in 1867 that she had woven twenty-two yards of small checked blue and red woolen cloth for everyday wear. She also had woven thirteen yards of a dotted blue and red woolen cloth for bedclothes (Stephenson, 1921-22). In January of 1869, Mary Stephenson wrote, "This year I have woven nearly ninety yards of cloth, nearly all wool" (Stephenson, 1921-22, p. 94). Mary Stephenson's dotted fabric could have been like the red and brown birdseye twill woolen cloth that was woven by Johanna Larson. Johanna Larson, a Swedish immigrant, was Mary Stephenson's sister and wove in Henry County from 1869 to 1911. The red and brown birdseye twill as well as a rose and green checked twill are preserved in her grandson's family (Larson, Note 4).

Extant wool clothing that was handwoven is rare in Iowa collections. One explanation for this is that handwoven clothing is more likely to have been work clothing, worn out and not preserved as 'Sunday' or dress clothes have been. Also, any clothing dated before 1870 is rare in Iowa collections. At the Nelson Pioneer Farm in Mahaska County, several leather work vests were found with what appears to be handwoven wool cloth as a lining. The cloth is of a plain weave and natural wool color. The Grout Museum in Black Hawk County has a handwoven dress, labeled as woven in 1850. It appears to be wool and is

of a red and black or dark brown checked fabric. Because of the appearance of the selvage edges of the seams and the irregularity of the yarns, it is very likely that this could be an example of a handwoven garment. These are the only examples of handwoven wool clothing that could be documented. All finished textile products that could be associated with home weavers in southeast Iowa are fabrics that required a two or four harness loom.

Cotton

Faragher (1979) wrote that midwestern farm families in the 1850s produced homespun cloth of flax and wool, supplemented by cotton thread or even a little homegrown cotton. No evidence was found that cotton was raised or spun by any home weavers in Iowa. One cotton spinner was listed as working Scott County in 1856 (Census Board, 1857). Cotton thread was advertised in southeast Iowa newspapers. Bridgeman and Partridge of Burlington advertised three tons of cotton yarns on October 12, 1841 in the Hawkeye and Iowa Patriot. The February 1, 1844 issue of the Davenport Gazette had an ad placed by J. S. McVey of Rockingham, Iowa for a few hundred pounds of cotton for sale, of assorted numbers 5 through 10. A store account book from Rose Hill in Mahaska County, covering August 1855 to November 1857, mentioned sales of bunches¹ of cotton, one bunch for \$1.30 (McDonald, 1855-57). Mary Stephenson wrote

¹ Cotton bunches may denote carded cotton or skeins of cotton yarn. Faragher (1979) mentioned the use of bunches of carded wool for spinning. In this context, bunches is synonymous with rolls of carded fiber.

about the expense of cotton yarn in August of 1864, being \$10 per skein (Stephenson, 1921-22).

No extant textiles woven entirely of cotton were found. Overshot coverlets, with cotton used for the warp and tabby weft, provide the only evidence of the use of cotton as a raw material among southeast Iowa weavers. Jeans¹ was a handwoven fabric mentioned by a number of secondary Iowa sources (Aurner, 1918; Cole, 1921, Faragher, 1979; Robeson, 1924). Cole (1900) defined jeans as a variety of stout twill cloth, woven properly with cotton warp and wool weft, but often composed entirely of cotton. It was woven in widths of 27 to 30 inches and the woolen weft, if used, was commonly dyed in shades of blue, brown, and slate (Cole, 1900). Gehret (1978) defined jeans as having two meanings. It could be used to refer to a twill weave cloth made entirely of cotton or, more generally, referred to a three-harness 2/1 twill fabric of any fiber content. Weaving jeans and men wearing homemade jeans fabric were mentioned by Duffield (1906), Faragher (1979), Murray (1968), and Riley (1977). No extant handwoven cotton fabric or jeans were found. From written sources and visual inspection of extant artifacts it can be assumed that almost all cotton used, predominantly as warp, was store bought. The only extant handwoven textiles with cotton in them, coverlets, reinforce this conclusion as all warp appeared to be machine-spun rather than handspun. Machine-spun cotton is also thought to have been used for weft in some extant coverlets. Thus, cotton was a fiber

¹Also spelled jean, janes, or jaynes.

that was available as commercial yarn for handweaving or knitting but was not found to be commonly spun or grown at home in southeast Iowa.

Finished Products

Wool blankets and cotton and wool overshot coverlets exist in public and private collections as examples of Iowa handwoven textiles. A typical example of such a blanket is a natural-colored one of plain weave in the Apple Trees Museum in Des Moines County. Most blankets or pieces are loosely woven weft-faced fabric and the surface usually is somewhat felted. The most common handwoven coverlets found were overshot weave with natural or white cotton warp and weft tabby and navy blue wool weft. All overshot coverlets found have a center lengthwise seam, with one-half the width usually being 30 to 35 inches. This may indicate that the looms used by home weavers to produce their coverlets were not much wider than 40 inches. Tomlinson (1923, p. 3) mentioned wool "coverlids" of blue and white and sometimes red or green woven in "intricate patterns" by members of her family. Overshot coverlets were one special textile that could be woven in the home. Most of the extant ones in Iowa would require a four harness loom. Overshot coverlets are one of the few end products of home weavers that are not known to have been woven on power looms or ever produced by commercial mills. As well, the similarity and repetition of threading drafts for most of the extant overshot coverlets suggest that they are products of home weavers who copied patterns from each other as many probably did not have the knowledge or desire to draft original patterns. Professional weavers,

especially those within the same geographic area, were more likely to weave unique end products. There is no way of knowing how many extant coverlets were woven in Iowa as few are labeled or documented as to their origin. Overshot coverlets of wool and cotton represent the most common type of handwoven textile in Iowa collections.

One can only speculate on the actual variety of items woven from wool and other fibers by home weavers in southeast Iowa. In addition to clothing, blankets, and coverlets, home weavers probably made other household textiles. The idea that they did weave other items was reinforced by a Bloomfield newspaper article on September 15, 1854 that mentioned awards for household manufacture in the upcoming Davis County Agricultural Fair. Prizes were to be awarded for the best pair of woolen blankets, ten yards of woolen cloth, ten of "janes," ten of woolen carpet, and the best coverlet (Democratic Clarion, 1854). The June 10, 1858 issue of Ward's Own in Bloomfield listed monetary amounts to be awarded in the September fair of the Davis County Agricultural Society. Household manufacture awards were to be given for white and plain linsey, white and plaid flannel, mixed jeans, wool blankets, coverlets, counterpanes, pieced quilts, rag carpeting, socks, stockings, and "stands" of curtains.

Thus, home weavers in southeast Iowa were weaving linsey, flannel, and jeans for clothing such as everyday pants and dresses, as well as producing blankets, coverlets, carpets, and curtains for their homes. Written references and extant textiles and clothing provide only a glimpse of these possible products. Examples found were not extensive

enough to indicate which household textiles or types of clothing were the most commonly woven. However, it is known that handwoven textiles made in southeast Iowa included both handspun linen and wool yarns used with some machine-spun cotton and functioned both as cloth and clothing for Iowa settlers.

Tools Used

An undated newspaper article claimed that Pamela Maxwell near Salem in Henry County had the first loom west of the Mississippi in 1838 (MacNulty, n. d.). It was a barn frame loom, made of native lumber by a local carpenter, and included six-foot six-by-six corner posts. This is descriptive of most of the looms that were documented as built and used in Iowa. Most extant looms are counter-balanced with two or four harnesses. The harnesses are usually hung from an overhead horizontal beam by leather pieces or pulleys. These looms also commonly have overhead beaters. Hanging the beater and harnesses from overhead beams required the construction of a large cube shape frame for the loom, thus the term barn frame loom. All extant looms are of wood with a minimal use of nails or metal and are commonly pegged together. Because of the prevalence of barn frame looms in Iowa museum collections, rather than looms without overhead beaters, it is assumed to be the most common type used by home weavers in southeast Iowa. Many extant looms, however, are preserved in pieces and could not be documented as to type or number of harnesses.

Aurner (1918) indicated that many looms were built locally as

needed. In one county during the winter of 1839, at least nine looms were built for home use. An ax, drawing knife, auger, and saw were the only tools used for making the looms (Aurner, 1918). The simple design of most barn frame looms made it possible for anyone familiar with tools to construct one from local woods. As hypothesized earlier, the very weight and size of a loom made it prohibitive to transport a finished loom into Iowa, given the means of transportation available from 1833 to 1870. No looms with specific provenance outside of Iowa were located. There is, however, one barn frame loom in the Jonathan Conger House in Washington County said to have been brought to Muscatine from New York State in the 1850s. No evidence exists to verify the original owner or to relate how the loom got to Iowa.

Some secondary Iowa histories suggested that one loom may have served several families (Aurner, 1918; Cole, 1921; Taylor, 1970). No evidence was found to support this notion. One possible alternative to fitting a loom in cramped living quarters was found in a description that Mrs. Semira Philips made of her uncle's cabin in Mahaska County. "My aunt had a loom and all other necessities for making cloth. While the weather was warm, the loom was kept in a shed at the back of the house" (Sharp, 1971, p. 25-6) Having a loom in an out building next to the weaver's home was also suggested by Paine (1923) and Taylor (1970)

It was hypothesized prior to research that most home weavers used looms that were built by someone in their families. This hypothesis can be supported for home weavers in southeast Iowa prior to 1850. Another source of looms after 1850, besides home construction, were craftspeople

who were patenting hand looms in southeast Iowa in the 1850s and 1860s. A survey of U. S. patents, issued for hand looms from 1790 to 1873 inclusive, indicated that 14 out of a total of 47 patents were issued to individuals or partnerships in Iowa (Leggett, 1874). Seven of these patents were issued to ten different individuals in Salem, Iowa (Henry County) from May 1850 to August 1866. All other hand loom patents for Iowa fall between 1850 and 1868 and all but one were issued to people in the southeastern quarter of the state. It is assumed that these men would not have patented their loom designs unless they intended to produce them for sale. Also, the disproportionate number of patents issued to Iowans compared to people in all other states perhaps reflected a need for hand looms rather than the power looms that were being patented elsewhere in the same time period. One patented hand loom was found in the Iowa Mennonite Society Museum in Kalona. An inscription on the loom identified it as a "Henderson Loom. Patented in 1865." The design does not correspond to the patent issued to J. G. and H. T. Henderson of Salem, Iowa in March of 1865, but is assumed to have been made by the same men. All of the looms patented are described as two or four harness except for one by Walker and Hartley of Salem, patented in August 1866, which was a six-harness loom (Leggett, 1874).

Despite the fact that many patents for looms were issued in Iowa, a search of the original federal census returns of 1850 through 1870 for counties in southeast Iowa revealed the presence of only one loom builder and one loom manufacturer, both in Lee County in 1870. John Lawson of Fort Madison, a native of Scotland, listed his occupation as

loom builder. J. G. Henderson of Keokuk was a manufacturer of looms in 1870 (U. S. Bureau of the Census, Note 5). He is assumed to be the same J. G. Henderson who patented a loom in Salem, Iowa in 1865 (U. S. Bureau of the Census, Note 5). Many people were listed in the censuses simply as manufacturers, with no reference to the finished products involved. Some may have been manufacturing looms or other weaving tools as Lawson and Henderson were doing in 1870. The use of looms for home weaving is mentioned by Bengston (1926), Paine (1923), Riley (1977), Robbins (1974), Stephenson (1921-22), Taylor (1970), and Trent (1923).

Other small handmade tools that are extant in southeast Iowa are various types of shuttles, mostly of the boat-type with a hollow and a stiff center wire for holding a full quill of yarn. A temple or spreader in the Boone Library and Museum was used to maintain a constant width during weaving. The temple is labeled as a "spanner or spenciric." Shuttles and the temple were made from wood and all appeared to be handmade.

Local Goods and Services Used

Several hypotheses were proposed prior to data collection for this study. One was that the earliest home weavers in Iowa controlled all steps of cloth production from raw material to finished product. A second hypothesis was that home weavers probably made greater use of goods and services outside of the home as southeast Iowa became more populated and had more people offering needed services and had more stores with goods they could use. Home weavers may have used machine-

spun rather than handspun yarns and commercial rather than natural dyes as soon as these goods were available in southeast Iowa. Also, the services offered by local carding and fulling mills were hypothesized as welcome services that home weavers would have used. Most of these hypotheses were supported by finding evidence that many Iowa settlers did use carding mills and commercial dyes and yarns as they became available rather than doing all the necessary steps from raw material to cloth within their homes.

Carding mills processed local wool with the use of power driven carding machines, which was a much faster process than the use of hand cards. Latta (1912) described a job in a carding mill in Louisa County. A man's duty was to spread the wool evenly on a table over which an endless apron revolved and to sprinkle the wool with melted grease. The moving apron carried the wool within reach of teeth on revolving cards and it came out the other side of the machine in rolls, ready for spinning. Burnham (1972) described another type of carding machine that produced wool rolls. Wool was placed on a circular drum covered with leather in which were inserted fine wires. The drum revolved around stationary cards and the wool consequently was spread out evenly and came off of the machine in rolls. Latta (1912) described settlers as coming from 50 miles to the carding mill with their own and neighbor's wool pinned with thorns onto old sheets and blankets. They brought the required amount of grease in old crocks and coffee pots. Record was kept of each bundle and a time set to return the rolls (Latta, 1912). Thus, each customer received back the same wool that they brought to the

mill. The use of carding mills was a way for home weavers to save the time normally spent in preparing fiber for spinning.

The number of carders found in the original census returns indicated that carding services were available in many counties in southeast Iowa from 1850 through 1870 (see Table 5). These carders may have been carding wool rolls for home weavers or may have been carding wool for the finished fabric woven within textile mills. Some of carders in Van Buren County from 1850 through 1870 probably worked in the many textile mills that were in that county through the period from 1850 through 1870 (see Appendix C). However, there were not many woolen mills in the rest of southeast Iowa that were producing finished textiles from 1846 to 1860, so the carders listed during those years most likely were carding wool for home use. There was still a need for carded wool in 1870 as eight carding and woolen mills were producing and selling carded wool rolls at this time (see Appendix B) (U. S. Bureau of the Census, Note 6).

Carding mills were found to be in southeast Iowa from at least 1839 through the 1870s. Such mills will be more completely discussed in the chapter on textile mills. However, their services are mentioned here as a type of local service that was used by home weavers. In the spring of 1839 and in July of 1842, Kitturah Belknap mentioned wool coming from the carding machine in nice rolls (Riley, 1977). Sending raw wool to be cleaned and carded was mentioned by many authors (Bengtson, 1926, Hamilton, Note 3; Latta, 1912; Murray, 1968; Ollinger, 1923; Taylor, 1970; Throne, 1960, Vanderwort, 1923). As well, newspaper ads during

TABLE 5
Number of Carders in Southeast Iowa, 1846-1870

County	1846	1850	1856	1860 ^a	1870 ^a
Cedar	-	2	-	1	-
Davis	-	4	3		
Des Moines	-	2	1		
Henry	-	1	2		
Iowa	-	-	-		
Jefferson	2	5	4	2	1
Johnson	1	-	2	-	2
Keokuk	-	-	1	3	1
Lee	-	4	1	2	1
Louisa	-	1	-	-	-
Mahaska	-	5	4	2	-
Muscatine	-	2	1		
Scott	-	1	-		
Van Buren	-	4	4	9	2
Wapello	-	-	1		
Washington	-	-	1		
TOTALS	3	31	25	19	7

Note. Original federal census returns were used for the total number of carders in 1850, 1860, and 1870. The number of carders in other years was available for 1846 from Newhall (1957) and for 1856 from the Census Board (1857). The number of mills that offered the services of carding to hand weavers in 1860 and 1870 is available in Appendix B. Each of the carders included in the totals here may have had their own carding machine or may have been carding wool for use within a textile mill.

^a Only the following counties were researched for 1860 and 1870: Cedar, Jefferson, Johnson, Keokuk, Lee, Louisa, Mahaska, and Van Buren.

the 1840s provide evidence of carders in business during that time. The January 1846 issue of the Iowa Standard of Iowa City contained two ads for wool carding. One mill, owned by Richmond and Shaw, advertised that wool cards would be ready by May 10, 1845 on the English River in Washington County.

Liberal terms for ready pay. Cash, wheat, wool, dry hides, and beeswax will be received in payment for carding. One pound of grease should accompany every seven pounds of wool (Iowa Standard, May 10, 1845).

Another carder, James Hodges, had a wool carding machine in operation in 1846 on the Iowa River, one mile above Iowa City. An article on Hodge's mill said that, "If it is not well done, he will charge nothing for carding. Almost any kind of produce but promises will be taken in payment for carding." The article also said that Hodge's new machinery could make ninety rolls per minute or card 150 pounds of wool in twelve hours. He had built his own machinery and wanted clean wool free of all burs. Hodges also required one pound of grease to accompany seven pounds of wool or six pounds of Merino wool. Hodges accepted in payment for carding the same kind of goods as received by Richmond and Shaw plus bacon, flaxseed, tallow, beans, and goose feathers. The acceptance of barter by these businessmen would have put the use of their carding services within the reach of almost any weaver.

In addition to carding services for home weavers in southeast Iowa, there is evidence of fulling services in the same region. Two fullers were found in the original census returns in 1850 in southeast Iowa. One was in Henry County and one in Van Buren County (U. S. Bureau of the Census, Note 5). They may have been employed by a mill or had their own

business. No information was found that Iowa home weavers used fulling services but this was a practice in other states to shrink and size the cloth after weaving. The available data do not suggest that commercial fulling was common in southeast Iowa.

Another service available to home weavers was custom spun yarn or stocking yarn.¹ The data collected from the original census returns showed that 39,500 pounds of yarn were machine-spun in southeast Iowa in 1860. Five mills listed yarn as one of their products (U. S. Bureau of the Census, Note 6). By June of 1865, Mary Stephenson was able to have half of her wool spun by machine, indicating that such a service was available in her community in Henry County (Stephenson, 1921-22). In 1870, 11 mills were selling yarn and the total quantity of yarn spun in southeast Iowa was 121,200 pounds (U. S. Bureau of the Census, Note 6). This locally manufactured yarn was used by home weavers or knitters and was available directly at a mill showroom or sold through local stores.

A supplementary process that home weavers needed to do was dyeing their yarn or woven cloth. Research revealed that home weavers in Iowa used a combination of commercial dyestuffs available in the stores and natural dyes that grew wild or were planted at home. Dubell (1941) wrote that every Iowa housewife had her "bluing bag." Indigo was bought by the ounce and came in lumps of any shape or size. A piece was put in a bag, tossed in rinse water, and squeezed until the water was the right blue. From looking at all the extant artifacts of handweaving in Iowa,

¹The term stocking yarn became popular because much of the yarn was used to knit stockings.

it appears that blue and red were the most popular colors for handwoven cloth, especially for such textiles as coverlets. These colors were probably produced by indigo and madder. Native plants were used to produce greens, yellows, and browns. Caplinger (1923) wrote that her grandmother's family in Lee County used sunflowers for yellow to dye their spun yarn. Bengston (1926) and Robbins (1974) both mentioned using the juice of butternut hulls as well as other local barks and berries for dyes. Mary Ann Hem's family in Davis County used logwood for black, walnut hulls for light brown, and madder for red. Yarn for blankets was usually left undyed (Anderson, 1923). Sabin & Sabin (1916) wrote that jeans cloth was dyed with the bark of black walnut or left undyed. Margaret Murray's mother did all her own dyeing and used madder for red, indigo for blue, and peach tree leaves for green. They also kept some black sheep whose wool was left natural for mitten yarn. Petticoats and stockings were always of white, perhaps bleached, yarn (Murray, 1968).

Indigo, madder, and logwood are all dyestuffs that are not native to Iowa and thus had to be purchased along with the chemicals that were to be used as mordants in the dye process. Fitzpatrick and Dorsey of Fort Madison advertised indigo, madder, alum, and copperas in the Lee County Democrat on June 3, 1843. Iowa True Democrat on December 15, 1852 included an ad for Saunders Drug Store in Mt. Pleasant which indicated that indigo, madder, extract of logwood, copperas, alum, and blue vitriol were for sale. These products might have been purchased to dye handwoven cloth or store-bought cloth. Duffield (1906) wrote that

the boys in his family wore cotton shirts on Sunday; white fabric was bought by the bolt and dyed with walnut bark and hulls, chamber lye, copperas, sumac, indigo, or madder. All the girls in the family wore cotton gowns and bonnets of the same dyed cloth on Sundays.

In addition to the availability of dyestuffs for use by home weavers, it is possible that some home weavers made use of the services of professional dyers. One dyer was listed as an independent craftsperson in Burlington in Des Moines County in 1846 (Newhall, 1957). Three dyers were found listed in the original census returns for 1850 (U. S. Bureau of the Census, Note 5). Two were in Des Moines County and one in Johnson County. These professional dyers existed in southeast Iowa but no evidence specifically mentioned the use of their services by home weavers. These dyers, as with carders and fullers, may have had their own business or been employed by textile mills.

Home weavers in southeast Iowa did make use of the services provided by carding mills and were known to buy commercial yarn and dyes as early as the 1840s. These services and goods were available quickly in areas of any population, apparently due to a demand and need. Most home weavers in southeast Iowa did not need to card their own wool by the 1840s or spin their own yarn for weaving by 1860. The presence of local mills that offered carded wool and machine spun yarn and the availability of yarn and dyestuffs at dry goods stores supports the idea that some settlers had a need for these community services and goods and used them in conjunction with cloth production from the 1840s through 1870. In addition, being able to buy a loom from businessmen or

manufacturers that patented hand looms was a service that was available in southeast Iowa in the 1850s and 1860s. The large number of hand loom inventors in southeast Iowa provides further evidence that handweaving continued in the region through the 1860s. The number of inventors in southeast Iowa working on patents for hand looms accounted for almost one-third of all hand loom patents granted in the United States from 1790 through 1873 (Leggett, 1874). Thus, despite the general availability of commercial cloth, due to increasing means of transportation, and a gradual lessening of household production, from 1850 through 1870, handweaving in the home was a part of 19th century Iowa.

Motivations for Home Weaving

An objective of this research was to propose hypotheses as to what motivated home weavers to continue their skill in Iowa. As already discussed, lack of commercial goods can only be supported as a motive for home weavers in some counties in southeast Iowa. It appears from the study to date that some home weavers continued their craft as a means (1) to supplement their income by selling their work to neighbors and friends, (2) to decrease dependency on expensive commercial goods, (3) for the kind of personal satisfaction that comes from continuing a learned skill, and to a smaller degree, (4) to prepare for travel westward to new frontiers. These proposed hypotheses need to be substantiated by future studies of 19th century handweaving

The first hypothesis proposed is that home weavers sold handwoven

cloth for pay. Home weavers probably did not sell cloth on a regular basis, but instead sold it or exchanged it for goods among neighbors on a sporadic basis. A home weaver did not use weaving as a regular means of income or as a full-time occupation as did professional weavers. The following reference was found of a home weaver producing cloth for pay. In 1865, Mary Stephenson wrote from Freeport in Henry County that she intended to sell some more cloth. She had already sold some handwoven cloth to her nearest neighbor for \$2 per yard. In November of 1867, Mary wrote to her parents in Sweden,

Weaving for others is a very profitable employment in this country, wages being twenty cents per yard for coarse weaving. Generally speaking, the Americans do not know how to weave, nor do Swedes who are brought up here. But they do know how to sew- it is necessary to sew almost everything (Stephenson, 1921-22, p 90).

This quote may suggest that even by 1867, professionals skilled in clothing construction were not prevalent in some southeast counties and that most things were sewn in the home. In addition, these counties may have continued to have a market for handwoven cloth as late as 1867. The census reports of 1850, 1860, and 1870 listed some women as weavers (see Appendix A). For this study, these women were considered professional weavers rather than home weavers, but some may have been selling cloth on demand to neighbors, as Mary Stephenson did, rather than running a regular business. Weaving was a way in which women could earn some money at a time when few women worked outside of the home. Weaving was perhaps also a convenient means of earning power for separated, widowed, or divorced women with children at home.

The lack of available money to spend on commercially made goods can be partially supported as another reason for continuing or commencing weaving within the home in Iowa. Swedish settlers found Jefferson County textile prices too high in the 1840s in relation to what they could receive for such home products as eggs and butter. In 1846 in Jefferson County, a pound of butter from home manufacture could be sold for 5 cents and a dozen eggs for 3 cents. However, a yard of calico cost 25 cents and a yard of muslin, 60 cents (Melloh, 1978). Johanna Nelson, of New Sweden in Jefferson County, was one of these Swedish immigrants who continued to weave in Iowa as she had done in Sweden. Johanna Larson and Mary Stephenson of Henry County were also Swedish settlers who wove for their families in Iowa. Their motivation to weave may have come from an economic need to produce cloth for their families or for barter. As well, home weaving may have produced the sort of personal satisfaction which comes from a pride in a national heritage in which weaving skills were passed on from one generation to another.

Economic depressions and personal financial necessity prompted other families to produce their own cloth. Susan Wyatt and her children, near Grinnell, Iowa, found it necessary to weave and sew all their household textiles and clothing after the winter of 1857-58. The hard winter, due both to extreme weather and the economic depression in Iowa, was twice as hard for the Wyatts who had been deserted by their husband and father. Their sheets, pillowcases, comforters, towels, tablecloths, and most clothing were handwoven and sewn by hand. The whole family helped to dye cloth with stain from berries, fruits, and

nuts. Trousers for the boys were from handwoven cloth and called "butternut britches" because they were stained with butternut juice (Robbins, 1974). The use of these hand methods enabled some families such as the Wyatts to replace worn out clothing and replace household textiles when they did not have money to buy commercial goods.

The amount of handweaving done out of economic need was perhaps increased by the economic panic in Iowa in the late 1850s and the start of the Civil War in 1861. The report from the Commissioner of Agriculture in 1862 expressed the idea that the previous decrease in home manufactures would be temporarily checked by the Civil War, "for the high prices of cotton and wool have so advanced the prices of manufacture generally that homemade goods resume their former economical value" (Report of the Commissioner of Agriculture for 1862, 1863, p. 554). Prices in general were high because of the war shortages. Oliver Stephenson, a Swedish immigrant, wrote to friends in Sweden in November of 1863 from New Sweden, Iowa. "The price of textiles have risen fourfold since the outbreak of the war. Clothing is expensive" (Stephenson, 1921-22, p 69). In August of 1864 he wrote, "Cotton cloth a yard and a half wide which formerly cost 10 cents now brings 75 cents, and everything else in proportion" (Stephenson, 1921-22, p 74). The Civil War may have encouraged the continuance or resurgence of home weaving due to high prices during war time. This idea is further substantiated by the increase in the value of home manufactured goods between 1860 and 1870 in some southeast counties (see Table 1).

Continuance of weaving as a craft or learned skill can be found

among foreign immigrants such as Johanna Nelson who wove blankets and underwear in Iowa as she had learned to do in Sweden. In addition, the handweaving of rag carpets, well into the 20th century, may have been an expression of a desire to continue a learned skill and was a way to make use of equipment that was no longer needed to produce cloth for clothing. Woven rugs were an economically feasible product to produce after the need for handwoven cloth had passed. The weaving of rag rugs made use of cloth which was worn and no longer useful for its intended purpose. Rug weaving also made use of commercial cotton warp and eliminated a need to spin yarn at home. Rug weaving has repeatedly been expressed as the last use of a loom kept within a family. The family loom was so commonly used for rag rugs that many people do not presently perceive looms as used for the production of anything besides rugs. Taylor (1970) recalled that the last use of his mother's loom was for carpets. Mary Stephenson wove 24 yards of carpeting for two rooms in 1867 (Stephenson, 1921-22). "Rug Weaver" was included in a list of business establishments in Swedesburg (Henry County) for the late 1860s (Anderson, 1960). Other references to rug weaving were found in the industry sections of the census for 1860 and 1870 (Note 6), in a diary by Jones (1859-1878), in MacNulty (n. d.), and in a history written by the Henry County Bicentennial Commission (1982).

Handweaving may have continued as a skill in those families preparing to travel westward. Iowa was a stopping point for many settlers until they could raise money to go further west. Kitturah Belknap needed to do additional spinning and weaving in the winter of

1847-48 to get ready for a move to Oregon. She made new clothes for all family members, wagon covers, cloth bags, a bed tick, and table cloths (Riley, 1977). It is most likely that only women who were already home weavers would weave a surplus of cloth for such a trip. Others would perhaps have purchased commercially made cloth and clothing prior to a trip since supply stations along the trails west were very limited.

Evidence supports the notion that handweaving continued to be part of the home manufacturing activities in southeast Iowa through the 1860s even though commercially made goods were readily available. Handweaving within the home was continued past the frontier stage of southeast Iowa. In addition, it can be expected that most handweavers in the 1850s and 1860s were not living in log cabins. The model of home manufacture presented in secondary Iowa histories that deal with handweaving only in relation to log cabins and an economically-bleak frontier cannot be substantiated by this research. The evidence for the existence of other types of weaving in Iowa, that done by professional weavers and that done in textile mills, will be presented in the following two chapters. This will provide a more comprehensive picture in order to evaluate and discuss the importance and use of handwoven goods in southeast Iowa.

PROFESSIONAL WEAVING

A professional weaver, as defined by this study, was a self-employed business person who used a hand loom to produce a larger quantity of goods than that produced by a home weaver. The professional weaver produced more fabric than made by the average home weaver and also tended to use more complex looms. The professional weaver also needed to have a means of selling his or her goods in order to make weaving a source of livelihood. In this research, census returns and certain extant artifacts were used to identify professional weavers who worked in southeast Iowa. The original federal census returns identified those people who considered their occupation to be weaving. Because original census returns prior to 1850 were not available, professional weavers were identified for the time period from 1850 to 1870. Also, because of the growing population in southeast Iowa over the two decades covered, the 1850 census was the only one used to look through all 16 counties for the occupation title of weaver. Eight counties from these 16 were chosen as representative of southeast Iowa and reviewed for 1860 and 1870 weavers (see Figure 1). The eight counties used were chosen for a variety of reasons. Cedar, Jefferson, and Mahaska counties were chosen because a review of secondary literature showed that some professional weavers worked in these counties and extant evidence or written references to their work existed. The remaining five counties were chosen because they had certain characteristics which were likely to affect the development of textile industry in the area. Johnson County was selected because the

railroad crossed the county as early as 1855. Keokuk County had the least available means of transportation within its borders, with no rivers, stage coach line, or railroad until 1872. Lee County was chosen as it had the most population and Louisa County because it had the least average population in southeast Iowa from 1850 to 1870. Finally, Van Buren County was included in the eight counties used for a search of the 1860 and 1870 census reports because it had the one of the earliest and largest textile mills. In addition to having the specific characteristics just mentioned, it was thought that these eight counties might be representative of the entire southeast Iowa region because they are uniformly scattered throughout the area.

The census data provided weaver's names as well as information that reflected certain characteristics of professional weavers as an occupational group in southeast Iowa. Discussion of demographic data for professional weavers in this chapter includes: 1) the titles used to denote a member of the occupational group, 2) the number of professional weavers in southeast Iowa and in Iowa, 3) the number of male and female weavers, 4) the birthplace of these weavers, 5) their place of business, and 6) the length of their professional weaving careers in southeast Iowa.

Extant artifacts that are believed to be products of professional weavers are those that required the use of a Jacquard attachment on a loom or a loom with more than four harnesses. The Jacquard attachment was of such complexity and expense that it is highly unlikely to have been used by home weavers. Such attachments could not be built at home

and had to be obtained from companies in Pennsylvania and further east. Multiple harness looms were likewise more complex than those looms used by home weavers. Considerable skill was required to thread the loom and to draft patterns for their use. Since the coverlets woven with a Jacquard attachment on a loom are easily identified and because many of them contain the date and weaver's name and location, they are useful in identifying professional weavers. Extant textiles such as double woven coverlets required the use of a multiple harness loom. These also sometimes included the weaver's name and are important in identifying the professional weaver.

Finding a name and Iowa location woven into a coverlet did not automatically identify that person as a professional weaver. From previous studies, it is known that the name of a customer or person that owned the coverlet was often woven into the coverlet instead of the weaver's name (Davison & Mayer Thurman, 1973; Heisey, Andrews, & Walters, 1980; Montgomery, 1974; Thieme, 1974; Walker, 1981). Because of this, extant coverlets needed to be checked against other evidence, either through census data or written accounts, that such a person was a professional weaver.

Besides discussing demographic data for professional weavers as an occupational group, this chapter will describe their looms and finished products. In addition, the degree to which professional weavers moved into other occupations when the market for their handwoven products declined will be explained. Extant evidence for business locations of professional weavers and methods that they used to sell their products

will be included in this chapter. Alternative meanings for the term "itinerant weaver," as used popularly in secondary histories, will be proposed.

Demographic Data on Professional Weavers

The titles used in the census to identify professional weavers were "weaver," "carpet weaver," and in one instance, "linen weaver." Other studies use titles such as "coverlet weaver" or "coverlid peddler" for related occupations (Heisey, Andrews, & Walters, 1980; Montgomery, 1974; Walker, 1981) but no use of these titles was found in this study. Another term, "itinerant weaver," that is frequently associated with a professional weaver in secondary historical accounts, was not found to be used in any of the census reports.

Number, Sex, and Birthplace

The earliest evidence found of professional weavers in southeast Iowa was in 1850. The original census returns for that year, listed 19 weavers located in nine counties (Note 5) (see Table 6). These 19 weavers came to southeast Iowa prior to the introduction of the railroad to Iowa. Also, there were only four textile mills in the region at this time. All of the weavers located in counties without mills, which supports the idea that they were interested in maintaining their own business rather than pursuing work in textile mills. Of these 19 weavers, only one was female. Professional weaving has historically been thought of as a male occupation, partly due to the complexity and heaviness of looms used and in part due to the popular idea of an

Table 6

Demographic Information by Sex for Professional Weavers in Southeast Iowa, 1850-1870

	1850		1860		1870	
	Male	Female	Male	Female	Male	Female
Total Number of Weavers	19		40		30	
Total Number by Sex	18	1	11	29	17 ^a	13
Average Age	44	27	51	37	47 ^b	35
Number of Native Born	7	1	1	27	3	10
Number of Foreign Born	11	0	10	2	13	3
Percent of Weavers Owning Property	24%		41%		48%	

Note. Information is from the original census returns and does not include any professional weavers identified by other sources (see Appendix A for a list of all weavers). Sixteen counties were re-searched for 1850, eight of these counties were researched for 1860 and 1870.

a Birthplace is unknown for one male weaver.

b Age of one male weaver is unknown.

itinerant or traveling weaver being male. Secondary sources also suggest that the professional weaver was usually a European immigrant or one who was apprenticed to an immigrant weaver (Anderson, Gordon, & Towner, 1979). For 1850, southeast Iowa weavers were almost evenly divided between foreign and native-born. Six out of the nine foreign-born males were from England. The native-born weavers, with the one female weaver among them, came from Pennsylvania, Kentucky, Indiana, Vermont, and Massachusetts.

By 1856, there were a total of 68 weavers in the 16-county area of southeast Iowa. It is not known how many of these weavers were male or female or native or foreign-born as only a total number of weavers was obtained for each county (Census Board, 1857). These 68 weavers were over three times the number working in the area just six years earlier. By 1856, all southeast counties except Cedar, Davis, Iowa, Wapello, and Washington, had the services of professional weavers. It is not surprising to find that Davis, Iowa, and Wapello counties, where there were no professional weavers listed, were also the counties with the highest values for home manufacture. As anticipated in the chapter on home and commercially manufactured goods, those counties which had early access to railroad transportation and thus a ready supply of commercial goods, were likely to be areas in which a large number of professional weavers settled. Des Moines, Johnson, Muscatine, and Scott counties, all accessible to railroad transportation by 1855, were counties that had large numbers of professional weavers in 1856.

Within the eight counties used for a search of the 1860 and 1870

censuses, 14 weavers were working in 1850, 46 in 1856, 40 in 1860 and 31 in 1870 (U. S. Bureau of the Census, Note 5). The sudden jump in professional weavers from 1850 to 1856 and then the decrease in number in the same counties in 1860 and 1870 provides partial evidence that the number of professional weavers in the entire southeast region may have peaked in 1856 and declined after that year. The predominance of females weavers in 1860 may be due to inconsistencies of census takers in recording occupations for males and females. The census taker was to list the profession, occupation, or trade of each person, male or female, over 15 years of age. It was not until 1870 that this was consistently done for each family member. In 1850, some counties listed only the occupation for the head of the household and sometimes listed women as "keeping house," "domestic or house servant," or simply "at home." A few counties had occupations other than domestic responsibilities listed for females. Mahaska County had 16 female weavers in 1860. This may have been a result of a county having a very thorough census taker for that year, listing something for each family member even if it was "at home" or "no occupation." Other counties may have had female weavers that were not listed because the census taker did not record occupations for women. Because of this inconsistency, the number of female professional weavers in 1850 and 1860 may have actually been higher than what is reported by this research. In 1860, there were more than twice as many native-born weavers as foreign-born, with almost all female weavers born in the U. S., largely from Ohio, Virginia, and Indiana. All but one male weaver was a foreign immigrant,

with the greatest number from England.

By 1870, the census takers were more consistent in listing male and female occupations. As in 1850, the occupation of weaving was predominantly a male one. Male weavers were mostly foreign immigrants and most females native-born in 1870 (see Table 6). Native-born weavers came from Ohio and New York in the greatest numbers and male immigrant weavers came predominantly from England and Scotland. The increased number of foreign-born weavers in the 1870 census is consistent with the fact that the greatest increase in foreign-born population in Iowa occurred between 1860 and 1870.

Though the number of professional weavers is thought to have peaked in southeast Iowa by 1856, the total number working in the state of Iowa did not decline until after 1860. The federal census summaries indicated that in 1850 there were 32 male weavers in Iowa, in 1860, 137 weavers, and in 1870, "weaver" had been discontinued as an occupational category (U. S. Bureau of the Census, 1853; 1864; 1872). Other specific occupation titles listed in the 1870 federal summary included as few as seven people so it is not known why the recording of the number of weavers had been discontinued by this time. Although the federal summary tables do not reflect any weavers to be in Iowa in 1870, the original census returns listed weavers in southeast Iowa in the same year. This inconsistency makes one assume there were professional weavers working in other Iowa counties in 1870 as well. If the federal totals for the number of weavers in Iowa in 1850 and 1860 are accurate, over 62 per cent of the state's professional weavers were working in

southeast Iowa in 1850. By 1860, far fewer of Iowa's weavers were still living in this region, indicating that many had moved elsewhere by this time, possibly to less populated areas. Although available data show a decline in the number of weavers from 1856 to 1870 in southeast Iowa, it is clear that some weavers continued to serve a professional role following the Civil War. The idea that the demise of professional weaving was at the time of the Civil War (Atwater, 1928; Hall, 1966; Little, 1931) cannot be supported for southeast Iowa.

Location in Southeast Iowa

Previous studies have suggested that professional weavers were attracted to less-populated frontier areas to avoid textile mill manufacture and because the need for their products was greater in such areas. Identifying the location of professional weavers also reveals whether they chose to reside only in areas with suitable transportation for shipping bulky goods such as looms to their home or business location. Table 7 shows the results of a comparison of the location of professional weavers in eight southeast Iowa counties to the population, transportation means, and number of textile mills in those counties. In 1850, weavers were working in the most populated county, Lee County, as well as in the counties with the least population, Cedar, Johnson, and Louisa. It is not surprising to find a large number of weavers in Lee County as it was an entry county into Iowa for people coming up the Mississippi by steamboat. Lee County was the first county to be reached by many settlers prior to the availability of railroad transportation. Thus, it had 6,500 to 15,000 more people than any other southeast county

TABLE 7
 Comparison of Textile-Related Occupations to Population and Transportation
 in Eight Counties in Southeast Iowa, 1850-1870

County	Year	Population ^a	Number of				Transportation	
			Professional Weavers ^b	Textile Mill Employees ^c	Carding/Textile Mills ^d	Railroad ^e	River	
Lee	1850	18,861	4				X	
	1856	27,273	5				X	
	1860	29,232	10			X	X	
	1870	37,210	6	15	1	X	X	
Van Buren	1850	12,270	2				X	
	1856	15,921	6		2		X	
	1860	17,081	8	30	4	X	X	
	1870	17,672	7	115	4	X	X	
Johnson	1850	4,472	2				X	
	1856	14,457	8				X	
	1860	17,573	3			X	X	
	1870	24,898	4	31	3	X	X	
Mahaska	1850	5,989					X	
	1856	13,050	17				X	
	1860	14,816	21	11	1		X	
	1870	22,508	2	31	2	X	X	

Jefferson	1850	9,904	2						
	1856	13,305	3						
	1860	15,038	1	5	3				
	1870	17,839	3	11	3		X		
Keokuk	1850	4,822	1						
	1856	10,616	4						
	1860	13,271	1	2	1				
	1870	19,434	1	14	2				
Cedar	1850	3,941	3		1			X	X
	1856	9,481						X	X
	1860	12,949	1		1		X	X	X
	1870	19,731	3				X	X	X
Louisa	1850	4,939	1					X	X
	1856	9,568	3					X	X
	1860	10,370						X	X
	1870	12,877	7	10	1		X	X	X

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- a From Hull (1883).
- b Total number for 1850, 1860, and 1870 are those weavers found in the original census returns.
Total number for 1856 from Census Board (1857).
- c Total number available only for 1860 and 1870 from the U.S. Bureau of the Census (1864; 1872).
- d Total number is total listed in the U.S. Bureau of the Census (1864; 1872) plus any others found in other sources used. See Appendix C for a listing of all carding and textile mills that were found. Total number of mills listed in published federal census tables were not found in original census returns for some counties.
- e Information about railroad construction in Iowa from Cooper (1958).

in 1850. It seems reasonable that the county would attract a number of professional weavers reaching Iowa by steamboat

Cedar, Johnson, and Louisa counties also had navigable rivers by 1850 which provided a means of reaching those counties easily, especially if a weaver brought a loom or other tools and products to Iowa. The counties without navigable waterways, Jefferson and Keokuk Counties, only attracted three weavers in 1850. However, because these counties did have seven weavers by 1856, it cannot be concluded that professional weavers were only attracted to less populated areas or were dependent on waterways or railroads to reach their business destination.

A large number of weavers were in Mahaska County in 1856. This county was not the least populated county in that year but was the newest county of the eight researched. Mahaska County was not defined as a county until 1843 while the other seven counties had been organized since 1836, 1837, and 1839. This factor may have contributed to Mahaska County being more attractive to professional weavers looking for a frontier area. Mahaska County still had a high amount of household manufacture going on in 1856 (see Table 1), which could indicate a greater lack of commercial goods in that county than in the others. Less commercial goods would provide less competition for a professional weaver's products and possibly create a greater demand for his or her services.

By 1860 and 1870, most counties in southeast Iowa had at least one textile mill. Some of the weavers listed in those counties with mills may have operated power looms in the mills rather than have been self-

employed hand weavers For this study, data for professional weavers were interpreted to reflect self-employed weavers rather than mill employees. Thus, it is important to look at the number of mills within a county in comparison to the number of professional weavers in the same county to see if they were in the same locations. The lack of textile mills within a specific county reduces the likelihood of the weavers in that county being mill employees No textile mills were known to be operating within the counties in which professional weavers were living in 1850. By 1860 and 1870, a greater number of weavers were likely to be power loom weavers because the number of mills in southeast Iowa was increasing. Within the eight counties included on Table 7, there were ten mills in 1860 and 16 mills by 1870. Because the census occupation title of weaver was not defined, a large number of professional weavers working in Iowa in 1860 and 1870 might have been textile mill employees. While textile manufacturers were increasing in number in southeast Iowa between 1860 and 1870, professional weavers in the same counties decreased However, Louisa County, the least populated county in 1870, had the greatest increase of professional weavers from 1860 to 1870 and also had the most weavers per capita in 1870. Perhaps this partially supports the idea that professional weavers moved to a less populated area as textile mills in a region increased.

In 1850 and 1856, professional weavers lived in the most populated and least populated counties. By 1856, a peak number of professional weavers were working in southeast Iowa. By 1860, although the total number of weavers decreased, they were concentrated in the most popula-

ted counties. By 1870, with the total number of weavers further reduced, professional weavers were perhaps seeking out less populated areas with less textile mill production. By this time, professional weavers could not easily avoid all textile mill production if they wished to remain in southeast Iowa. However, several did choose to reside in a county with the least population and with the smallest textile mill in terms of the number of employees.

Length of Weaving Careers

Over the 20 year period covered by the census research, only four weavers were documented as weaving for more than one census period. Daniel Stephenson of Fairfield, Iowa in Jefferson County, succeeded in being a professional weaver from 1852 to his death in 1892, at the age of 69. In 1848, Daniel Stephenson, an English immigrant, had apprenticed himself as a weaver to a Robert Crossley (or Crosley) who owned a factory in Springfield, Ohio. A draft book in the Art Institute of Chicago indicates that Daniel was in Canada in August of 1850 (Stephenson, Note 7). He was employed there as a head weaver in a textile mill for \$14 per month. He came to Fairfield, Iowa in 1852 with a loom purchased in Ohio (Burnett, 1974; Davison & Mayer Thurman, 1973). It is known that he produced coverlets in Fairfield using a Jacquard attachment on his loom from 1855 to 1876, as evinced by extant dated coverlets. In May of 1864, Daniel wrote to an uncle,

There is plenty of work here now and wages are good. I got a contract last week for to (sic) weave 50 coverlets at two dollars and a quarter apiece which will amount to one hundred and twelve dollars and a half. I think I can weave them all in six weeks. I had more work than I could do last winter. I

manufacture Carpet (sic) and Coverlets (sic) and some other kinds of cloth for sale. I can always sell it about as fast as I can make it (Stephenson, Note 8).

His obituary in the Fairfield newspaper in 1892 stated that he had been a carpet weaver for the last 25 years of his life (Burnett, 1974).

Henry Albright, from Hanover, Pennsylvania, was listed as weaving in Iowa City in Johnson County in 1850 and again in 1870 (U. S Bureau of the Census, Note 5). David Bender, also in Johnson County, is known to have been weaving in 1846 and 1874 (Fisher, Note 9). He was not listed in any of the census reports so he may have had another occupation in addition to weaving. A fourth weaver, Henry Herbst, originally from Prussia, arrived in Cedar County in 1848 after living in the East for two years. He considered himself a weaver in the 1850 census and three extant dated coverlets indicate that he was still a weaver by 1854. He operated a river ferry for three years after coming to Cedar County, in addition to being a weaver. By 1860, he considered himself a farmer and had given up weaving (Frymoyer, 1979). Weavers that were not listed in more than one census may have moved to other Iowa counties that were not researched or continued weaving along with another profession.

Several southeast Iowa weavers, and perhaps many more than could be documented by this study, became farmers. Being able to own land was a common motive for people to move farther west until they found some land they could afford. Henry Herbst and other weavers were found in county directories and were listed as farmers. Henry Abel, a weaver in Keokuk County in 1850, and George Kensler, weaving in the same county in 1870,

were both farming by 1880 (The History of Keokuk County, Iowa, 1880) George Knight, a weaver in Jefferson County in 1870, was listed as a farmer by 1879 (The History of Jefferson County, Iowa, 1879). William Gilmour, born in Scotland and a weaver in Connecticut and Indiana, moved to Mahaska County in 1856. Gilmour had been a coverlet weaver in Indiana, working with other brothers who were also weavers (Montgomery, 1974). Once in Iowa, he bought a farm and was still farming in 1878 (The History of Mahaska County, Iowa, 1878). He must have done some weaving in Iowa, however, as an extant loom in the Nelson Pioneer Farm Museum (Mahaska County) is said to have belonged to Gilmour. An oral reminiscence by one of the donors of the loom in 1945 stated that she knew a lady who took spun yarn to Mr. Gilmour who owned the loom and who lived in Scott Township. She said that he wove fancy coverlets and cloth (Note 10). On a beam of the four harness, barn frame loom is carved "1861." Such information on weavers changing occupations once in Iowa is support for the hypothesis that weavers had additional means of making money or perhaps needed to find other occupations as the demand for their skill was outdated. Farming was one occupation that weavers perhaps aspired to as their products were replaced by those of textile mills and other commercial goods that came into southeast Iowa.

Another means of livelihood that hand weavers could turn to, though with less independence than farming offered, was work in a textile mill. With Iowa mills a long way from machinery suppliers and repairmen, it would have been to the manufacturer's advantage to hire some skilled labor. John Stirling, along with his two sons, are listed as weavers in

the 1870 census. An 1878 history stated that Stirling was employed by Meek Brothers Woolen Mill in Bonaparte from 1868 to 1872 as superintendent of the weaving department. From 1872 to 1878, John was employed as the superintendent of the entire mill (Van Buren County American Revolution Bicentennial Committee, 1976). It is not known if Stirling and his sons did any weaving apart from his mill position. He and his sons opened their own woolen mill in Farmington in 1888, only about five miles away from John's former employers. There is evidence that southeast Iowa weavers had to turn to other occupations such as farming or employment in a textile mill by 1860 and 1870.

It was expected that weavers in 1870 would have had a harder time supporting themselves or their families with the wider availability of textile goods and greater number of local mills than in previous years. According to original census data collected for each weaver, it appears more weavers were property owners in 1870 than in prior years (see Table 6). In 1850, only 24% of the weavers had any real estate or personal property. In 1860, 41% of them owned property; an average of \$700 in real estate and \$239 in personal property was owned by professional weavers. Almost half of the professional weavers in 1870, 48%, were land owners with an average of \$1406 in real estate and \$458 in personal property (U. S. Bureau of the Census, Note 5). These values were intended as indications of income, as yearly income or wages were not recorded by the census takers. As stated previously, it was possible that professional weavers combined this occupation with other means of making money. It can only be assumed that the occupation listed in the

census was the predominant trade for these people and was the major means of income for the majority of the year.

Weaving as a Business

Looms and Products

The fact that professional weavers made use of the Jacquard attachment, looms as wide as 85 inches, fly-shuttle looms, and multiple harness looms allowed them to produce products distinct from those that could be produced by home weavers. In other respects, that is, in the use of raw fibers, dyes, and local services, the professional weaver had access to the same resources that were available to the home weaver.

Daniel Stephenson in Jefferson County and Henry Herbst in Cedar County are the only two weavers that were documented by extant coverlets as using a Jacquard attachment. An extant fragment owned by the Cedar County Historical Society was woven with a Jacquard in Woodbridge, Cedar County, Iowa (no date), but cannot be traced to a particular weaver living there (Frymoyer, Note 11). A coverlet woven and signed as "Made by C. Maddhes, Davenport, Iowa, 1855" in the Putman Museum in Davenport, Iowa may be an Iowa Jacquard. No other information could be found on this professional weaver. It is known that William Gilmour of Mahaska County was very skilled in the use of a Jacquard from his work in Indiana (Montgomery, 1974) but no extant coverlets in Iowa are known to be woven by him. No remaining artifacts of Jacquard attachments were found and no written evidence described their use by Iowa weavers. There is evidence to indicate that a few professional weavers in Iowa

used the Jacquard attachment. However, without more evidence than extant coverlets, the extent of usage of the attachment cannot be determined.

No evidence was found for the use of pre-punched Jacquard cards that could be obtained from companies in the East. Punching holes in the 200 or more cards required for a complete Jacquard-type coverlet was a very tedious and time-consuming task. As a result, many identical coverlets were made from a commercially produced set of cards. Changing any part of the design horizontally or changing the border of a coverlet would require a completely new set of cards. The extant Jacquard-type coverlets in Iowa cannot be specifically matched in design to coverlets found in other states. Henry Herbst's coverlets are very unusual in design when compared to other extant U S. coverlets and tend to reflect German textile motifs. Stephenson's coverlets vary from each other and have not been matched to another professional weaver. It was thought that the coverlets of both of these weavers were their own designs.

Beyond the Jacquard attachment, it is known that some professional weavers had the advantage of wider looms than the common home loom. Stephenson and Herbst both wove full-width coverlets with no center seam as was common in the extant home-produced overshot coverlets. These professionally woven coverlets were all 70 to 81 1/4 inches in width. It can be assumed that these widths would require the use of a fly-shuttle loom and this is supported by the fact that Stephenson had fly-shuttles sent from England (Burnett, 1974; Davison & Mayer Thurman, 1973).

In addition to having Jacquard attachments and wider looms, it was hypothesized that professional weavers had other means for weaving textiles that were beyond the capability of the home weaver. One possible advantage was the use of more harnesses on their looms. Three extant double woven coverlets were found that required more than two or four harnesses commonly found on looms used by home weavers. One double plain weave coverlet in a private collection in Ames in Story County is said to have been woven by a professional weaver in Washington County shortly before the Civil War (Buchanan, Note 12). The coverlet is wool and cotton with a center lengthwise seam and is a pattern that would have required a 12-harness loom. The width of each of the two lengths of fabric that were sewn together to make the coverlet is 36 inches. David Bender of Johnson County also wove double plain weave coverlets. Two of them are in the Museum of International Folk Art in Santa Fe, New Mexico. These coverlets also have a center lengthwise seam as they were woven in two widths. A pattern book that includes Bender's original drafts and a record book is also in the museum in Santa Fe (Fisher, Note 9). Many double coverlets, which would require 16 to 20 harnesses, were seen in Iowa museums but none were documented as to weaver. It cannot be said how many of these extant coverlets in Iowa collections were woven in Iowa. However, because no extant home looms that were documented had more than four harnesses and because of the complexity of multiple harness looms, it is believed that only professional weavers produced double woven coverlets. Many looms in Iowa remain in pieces and are not presently put together so it cannot be said if any multi-

harness looms used by professional weavers are extant.

Jacquard-type and double-woven coverlets were the only extant textiles that were documented as products of a professional weaver in southeast Iowa. However, written references indicate that other types of textiles were made by these weavers. William Walker from Kentucky settled in Washington County in 1843. In October of 1845, he wrote to his son-in-law in Kentucky,

Your mother and Ellen have as much wool as they could spin. Your mother and Will went to the weaver's last week. They will have 49 to 50 yards of flannel we will get home in the course of two to three weeks Also about 25 to 30 yards of jeans for me and Will and Dick and when we get both pieces home, I hope we can keep warm (Fisher, 1978, p. 14-15)

Other products woven by professional weavers might have been blankets, carpeting, and linen fabric It is said that Henry Herbst wove cream colored blankets for his family as well as a coverlet for each of his ten children Only one of these ten coverlets has been located (Frymoyer, Note 11) Federic Albers, from Prussia, was listed as a "linen weaver" in Lee County in 1870 (U. S Bureau of the Census, Note 5) Perhaps this was his skill in Prussia and he was trying to continue it as a means of income in Iowa The Fairfield Ledger on October 11, 1855 listed premiums awarded by the Jefferson County Agricultural Society at their fair held the same month. Daniel Stephenson was awarded \$1 for the best pair of blankets, \$2 for the best coverlet, and \$1 for the second best coverlet In addition, Stephenson is remembered as weaving blankets for Civil War soldiers as well as carpeting during the last 25 years of his life (1867-1892) (Taylor & Taylor, Note 13).

Some professional weavers were identifying themselves as carpet weavers by 1870. The 1860 census included only one carpet weaver, a female working in Lee County. The 1870 census included seven carpet weavers. Three of these, all in Columbus City, Louisa County, were included in the industry section of that county, which was reserved for businesses with an annual profit of \$500 or more. Average production per weaver included using up to 600 pounds of cotton warp and 1800 pounds of rags per year for 1000 yards of carpeting. This carpeting sold at a little under \$1 per yard (U. S. Bureau of the Census, Note 6)

Use of Local Goods and Services

There is evidence to indicate that professional weavers, like home weavers, used commercial cotton warp and the services of local carding mills. Customers of Daniel Stephenson and Stephenson himself went to the Meek Brothers Woolen Mill in Bonaparte (Van Buren County) for carded wool and for machine-spun yarn (Burnett, 1974). One extant coverlet, not signed, but matched in design to Stephenson's other coverlets has a corner signature block, "Made for Meek & Bros. Bonaparte Iowa 1867." It is possible that this coverlet was woven in part payment for carding and yarn made by the mill (Burnett, 1974). It also could have been ordered and paid for by the Meek brothers.

All Jacquard-type and double-woven coverlets found in Iowa, except for one,¹ appear to have commercially-spun cotton as warp. It is possible that cotton was spun by the weaver or the customer but it would

¹One Stephenson coverlet has wool warp and weft.

require an excellent spinner to produce yarn that could stand up to the tension put on the warp threads. A description on a Stephenson coverlet said that Stephenson furnished the "double and twisted chain"¹ and used it along with natural dyed wool provided by the customer (Burnett, 1974). It was found that other clients also prepared wool weft yarn for a professionally-woven coverlet. Mr. and Mrs. James Parker of Brighton ordered four coverlets, one for each of their children, from Stephenson. The whole family helped to shear, scour, and card the wool from their own sheep. The spinning of the wool was done by Mrs. Parker, to ensure a "nice, even thread" (Burnett, 1974). Taking spun yarn to a weaver in preparation for an order was mentioned by Fisher (1978), Ollinger (1923), and Vanderwort (1923).

Marketing of Finished Products

An objective of this thesis was to propose hypotheses concerning the methods that professional weavers used to market their goods. The popular notion of an itinerant weaver going from house to house has been repeated in books since 1912 (Hall, 1966). (See also Born, 1949, Homespun, 1977, Little, 1931; Kovel & Kovel, 1967; Rose, 1981; Swygert, 1955; Thieme, 1974, Tunis, 1957) The use of the term itinerant implies a wandering, nomadic, or traveling weaver. Several people I talked with or corresponded with described the itinerant weaver as a person

¹This chain is assumed to be commercial cotton warp rather than spun by Stephenson. It is assumed that professional weavers, like home weavers, purchased cotton yarn that was for sale in Iowa stores as it was better suited for warping a loom than handspun yarn.

traveling with his loom on his wagon who would come to weave coverlets or whatever a family wanted. But no one could specifically name a weaver that was itinerant or had products that could be specifically attributed to such a person. These people had heard the idea of an itinerant weaver second-hand and no one had actually had a weaver come to their own home.

In searching for evidence of weavers' shops, there was only one indication that a professional weaver in Iowa had a shop apart from his home. Daniel Stephenson is said to have kept his loom with a Jacquard attachment in a shop next to his house in Fairfield (Taylor & Taylor, Note 13). In 1864, Stephenson wrote in a letter,

We have four fine children, three boys and one girl. The oldest is big enough to wind bobins (sic) and spool in the Shop (sic) (Stephenson, Note 8).

This building has been torn down though his house still stands.

Evidence was found of women taking their spun yarn to a weaver to be woven into cloth or a coverlet (Burnett, 1974; Fisher, 1978, Ollinger, 1923; Vanderwort, 1923) This implies that these weavers had a regular place of business or wove in their own home. It is more logical that weavers had permanent places of business rather than being itinerant I hypothesized prior to research that professional weavers in Iowa were not itinerant in the sense commonly used because the size and weight of their looms and the additional weight of a Jacquard attachment made the equipment extremely difficult to move. A Jacquard attachment on a loom might add 130 pounds to a loom already weighing 300 or more pounds (Colwell, 1976) A wide loom such as a fly-shuttle loom

or one up to 85 inches wide would also be difficult to transport any distance with a horse or oxen and a wagon. Transporting such a loom or a Jacquard attachment from house to house and investing the time to set up and adjust the loom at each house is not supported by this research for any weavers in southeast Iowa. No evidence could be found to support the idea of itinerant weavers, as commonly presented in secondary sources.

The use of the word itinerant is proposed as more accurately used in terms of 1) The professional weaver who traveled to take orders and then returned to his or her home or shop to weave. Though not substantiated by extant evidence, this is a realistic possibility for Iowa weavers. 2) The professional weaver who felt the need to move further west with each decade to escape the competition from industry as it became increasingly mechanized during the 19th century. The need to move further west is partially substantiated in this present study by data which showed so few weavers remaining in the profession for more than one census period. By the 1860s and 70s, some weavers changed professions as the need for and possibly the desire for their products declined. For those who did not want to give up their profession, traveling westward was necessary. The idea of immigrants making their way west to deliberately seek out a less developed economy and a less complex society, as well as to escape industrialization, was expressed in letters written by an English immigrant living in southeast Iowa. Abel Stephenson, a weaver from Thurstoneland, England, came to Jefferson County, Iowa soon after 1841 to escape the impact of power loom weaving

in his country. His desire was not to continue weaving, however, but to be a farmer. He believed this occupation to be his only escape from inevitable technological unemployment. Stephenson left England in 1837, at a time when power looms were first appearing in his village. He first worked as a spinner in textile factories in the East, operating power machinery (Erikson, 1972). In April of 1838, Abel wrote to a relative in England from Pittsburgh,

Machinery is increasing fast in this country so that in a little time it will be as bad (sic) as it is in England. I shall not advise to come to this Country (sic) to work in the Manufacturing (sic) Business (sic) for times in the new (sic) England States is nearly as bad as they are in the Old (sic) Country (sic) but it is better in the Western (sic) country. Yet power Looms (sic) is (sic) increasing rapidly (sic) (Stephenson, Note 14).

While in the East to earn money, Stephenson arranged to buy 160 acres of land in Jefferson County and moved there soon after 1841. In 1845, Abel Stephenson persuaded his brother Richard, and his family, which included Daniel, to come west to farm. Richard Stephenson and his family had come from England to New York in 1840. He and his sons were weaving in a factory in New York. Richard, listed in the 1850 census as a weaver in Lockridge township, Jefferson County, continued to weave until his death which must have been previous to the 1860 census.

It can only be assumed that any person who depended on a hand skill for a living would have a desire to move away from the development of the factory system in Europe and the eastern United States and locate in an area where hand skills were still needed and valued. Iowa, at least until 1870, was a place to escape large textile mill production and the increasing mechanization of weaving that was happening in England and

the eastern U. S. In 1850, when there were 32 weavers in Iowa, there were only a total of 70 weavers in territories west of Iowa (New Mexico, Oregon, and Utah). By 1860, when there were 137 weavers in Iowa, more had moved further west. The state of California had 18 weavers, Kansas had 14, and Oregon had 11. The territories of Nebraska, New Mexico, and Utah had 105 weavers, possibly in search of a less developed region similar to what Iowa had been in an earlier time period (U S. Bureau of the Census, 1853; 1864). It was inevitable that the handwoven products of the professional weavers be replaced by those made more quickly in commercial textile mills. For most of those weavers who did not want to change occupations, their option was to be itinerant in the sense of traveling further west in search of new frontiers and new customers.

There is no doubt that there are more woven textiles and coverlets from professional weavers in Iowa museums and private collections that will remain as anonymous pieces, due to lack of signatures or written documentation by succeeding family members. The original returns for the federal census reports proved to be valuable in identifying professional weavers as an occupational group in Iowa from 1850 through 1870. The list of professional weavers and their location in southeast Iowa as provided in Appendix A will be helpful as a reference for Iowa historians or researchers of this topic in the future. Professional weavers in Iowa, like handweaving in the home, provided Iowa settlers with unique handcrafted goods until these products were replaced by those of textile mills. Textile mills started to make their appearance in southeast Iowa by 1839 and continued in business into the 20th

century. Identification of these mills, their tools, processes, and textile products, and their relationship to the decreased need for handwoven goods, will be explored in the following chapter

TEXTILE MILLS

In the period from 1839 through 1870 in southeast Iowa, mills that provided the service of machine carding existed alongside with mills that manufactured finished goods such as cloth, yarn, and blankets. Carding mills speeded up the home weaving process by offering services useful to the handweaver while product-oriented mills duplicated the home process of manufacturing finished cloth from raw materials. Product-oriented mills provided the surrounding community with finished goods as well as some carding, spinning, and finishing services. They could produce finished cloth with the use of power looms at a much faster pace and lower costs than handweavers could. While carding mills initially provided impetus to home weaving by speeding up the necessary wool carding process, mills that produced finished textiles eliminated any need for handweaving in southeast Iowa.

Early textile-related mills made use of a source of power that differentiated their processes and cloth manufacture from that done by handweavers. The harnessing of power to a loom was the technology which most affected cloth manufacture in the United States. Before water wheels were used to run machinery, such as looms, weaving was a hand process. Once a central source of power could be used to run a large number of looms in one location, cloth manufacture in an industry setting became possible. Looms within a woolen mill were connected to a source of power by a wheel or gear on the side of the loom. This gear held a belt that was connected to shafts running along the ceiling in each room of the mill. These parallel ceiling shafts were in turn

connected to the one central shaft that came into the mill from the water wheel or turbine. Power looms greatly increased the speed of weaving that had been formerly possible with a hand loom or even with the use of a fly shuttle on a hand loom. Thus, the use of power, that was not available within a home, moved weaving from a domestic setting to a factory setting.

Sources of Power

The term mill denotes a building or collection of buildings with machinery for manufacturing. The earliest mills in the Midwest were established with small capital investments and ran when local demand warranted their custom services. These mills were what speeded up home manufacture by taking over the processes of grinding wheat, sawing wood, and carding wool and finishing cloth that had previously been done by family members. All mills operating prior to 1848 in Iowa were located on a river or creek to make use of the cheap source of power provided by a water wheel (Swisher, 1940). Because such a wheel or one small steam engine could provide enough power for several different machines, one location often served as a combination flour, saw, carding, and woolen mill. Crockett (1966) labeled these local mills as "residential industries" as their sources for raw materials, employees, and their market existed within their immediate locality. Local mills had the advantage of being close to needed resources and their selling market. This proximity was especially advantageous as long as high freight charges made eastern goods more expensive than locally made ones.

The use of a wooden water wheel on a river or creek was the earliest means of power for Iowa mills. A crib dam, made of a wood log frame filled with clay and stones, or a brush dam, constructed of logs, tree tops, clay, and stones, could be quickly built across the river or creek to create a rise in the water level. Water wheels used were of the overshot, undershot, or breast type. In the overshot method, water was let into buckets at the top of the wheel, which gravity pulled down to turn the wheel. This method necessitated a high waterfall and a large wheel. In the undershot method, water was let into the bottom of the wheel which was less efficient but could be used with lots of water and a small fall. The breast wheel was turned by water let into the center (Hamilton, 1964). Log dams and wooden water wheels could be easily built with common hand tools from native resources so were commonly used for mills in any frontier region. The disadvantage of using water for a source of power was the changes in water level that occurred with changes in the weather or seasons. A variation of three feet or less in the water level could clog a wheel or run it dry (Duffield, 1904). Because of this, mills with water wheels, according to secondary Iowa histories, could only operate for a limited number of months per year, determined by the degree of rain in the summer or amount of ice in the winter.

An alternative source of power for mills was the water turbine. A stream of water from a pipe was discharged against metal blades of a turbine, causing them to rotate at a high speed. The blades in turn rotated a central shaft inside the mill that was connected to many

shafts connected by belts to the mill machinery. This was more efficient than the water wheel and was less dependent on the river's water level. The Lonsdale Woolen Mill, opened in 1858, was powered by a turbine housed in a small wooden building by the river's edge. The mill was situated up a hill from the river, which was an advantage at times of floods (Lonsdale & Lonsdale, Note 15).

The most reliable source of power for mills came with the harnessing of steam engines. The earliest textile-related mills using steam as a source of power were in Connecticut in 1819, in Kentucky in 1829, and in Ohio in 1830 (Wool Technology, 1965). However, steam engines did not become a significant source of power until the latter part of the 19th century for the whole United States. By 1870, only 40% of the total horsepower in American woolen mills came from steam (Wool Technology, 1965).

The first steam engine used in an Iowa mill was in Davenport in 1848 (Swisher, 1940). The 1870 federal census listed the type of power wool carders and cloth manufacturers were using in Iowa. Of the 18 carding and textile mills included in the 1870 census for southeast Iowa, 13 of these were steam mills, four were water mills, and one utilized both methods of obtaining power (U. S. Bureau of the Census, Note 6) A summary of textile mills in all of Iowa in 1870 listed 46 steam mills and 39 water mills (U S. Bureau of the Census, 1872, p 478-9). Thus in Iowa in 1870, slightly more than half of the textile mills used steam power. In southeast Iowa, however, steam powered mills were three times more common than those operating on water power.

It has been historically accepted that steam engines would free Iowa mills from operating on river sites and enable them to remain in active operation for a larger number of months per year. Information on the average months of operation per year for Iowa mills was available in the 1870 industry census. Southeast Iowa textile mills run by water remained in active operation an average of 9.5 months per year, with individual mills open from 5 to 12 months. On the other hand, steam textile mills averaged 7.9 months of active operation per year, with a range of 3 to 12 months (U S Bureau of the Census, Note 6). The use of water power did not hinder the operation of textile mills in southeast Iowa as popularly accepted. They operated, on the average, more months per year than steam mills. No explanation for this was found. Mills dependent on water power could operate the entire year rather than just for a limited number of months, as commonly presented in Iowa histories.

Service Oriented Mills

Fulling and Cloth Dressing in Eastern Mills

In the East, fulling cloth was the first process of textile production to be taken out of the home and mechanized in a mill setting. Fulling, originally done by human feet in a tub, brook, or on the floor, involved treading or beating newly woven wool cloth to cleanse it of animal grease and soil. The process resulted in shrunken cloth of a firmer weaver than that just off the loom. The first professionalized fulling was done at a mill in Massachusetts in 1643 and by 1700 such

mills were numerous in New England and the Middle Atlantic states (Crockett, 1966; Keir, 1920). Horses and humans provided the power for these first fulling mills but by 1794 water power had been introduced for use in fulling cloth. A water wheel was used to operate stocks which alternately pounded, rolled, and shrunk woven cloth. This cloth had been folded in a box containing hot water, soap, and fuller's earth, which helped to remove the natural oils from the wool. Many of the eastern fulling mills gradually enlarged their operations to include dyeing, pressing, and sometimes burling and shearing to further help home weavers in "dressing their cloth" after the weaving was completed. The phrase, cloth dressing, was used in the 19th century in reference to what is today called cloth finishing. Burlers removed knots and loose threads from the cloth after fulling and raised the woolen nap with teasels, burr-bearing plants sometimes called "fuller's thistle." Shearers then sheared the surface of the wool nap to an even height (Rawson, 1970). Thus fullers, dyers, burlers, and shearers were the earliest professional trades that were associated with textile mills in the East. While hand weavers were accustomed to the processes used for fulling, dyeing, and napping woven cloth, the shearing process was added by industry as a means of improving the finished appearance of cloth. Increased fulling that was possible with the application of water power resulted in new varieties of handwoven cloth, with variations in nap and thickness that had not been possible in the home.

Cloth Dressing and Carding in Iowa Mills

In southeast Iowa, cloth dressing, that is, fulling, burling, dyeing, and shearing, did not commonly appear as a separate business but was done in conjunction with mills having wool carding machines. John Tomlinson of Cedar County advertised the services of cloth fulling, wool carding, and cloth manufacture as early as May 1843 in the Davenport Gazette (August 24, 1843). In 1845 and 1846, James Hodges had a carding and cloth dressing business associated with his flour mill. These mills, located close to Iowa City on the Iowa River, made use of water power (Iowa Standard, 1846). In 1846, one carding and cloth dressing establishment, Millikin, White, and Co., was operating in Fairfield in Jefferson County (Newhall, 1957). One dyer, J. Lawrence, who was in business for himself in Burlington in 1846, was the only person found who offered dyeing apart from wool carding or any other cloth finishing process (Newhall, 1957). Other carding mills were operating in the 1840s in Henry, Muscatine, and Washington counties. These mills too may have offered the services associated with cloth dressing.

Table 5, on page 61, shows the number of carders who were documented in southeast Iowa from 1846 through 1870. The peak number of carders offering carded wool for use by home weavers was probably in 1850, even though a smaller number of counties were researched for 1860 and 1870 than in the previous years. The federal census of 1850 included a footnote about the number of males employed by some of the "leading interests" in Iowa at that time. This included all establishments producing over \$500 worth of materials per year. Carding

and fulling mills, with 53 employees, ranked fifth in the state in terms of the total number employed. The actual number of carding and fulling mills statewide in 1850 was not given. Iowa settlers' needs for carding and fulling were exceeded only by the need for and greater use of saw mills, grist mills, beef and pork packing, and brick making (U. S. Bureau of the Census, 1853, p. 954). The industry censuses of 1860 and 1870 give information as to the number of southeast Iowa mills that listed wool rolls as a product (see Appendix B). In 1860, seven carding mills were offering wool rolls for sale at an average of 40 cents per pound. In 1870, five carding mills offered wool rolls at an average of 45 cents per pound while three textile mills also listed wool rolls as part of their products and sold them at an average of 55 cents per pound. Thus by 1870, there was still some use of carded wool in the home or by professional weavers. The mills that offered carded wool as a service in 1860 and 1870 were located in the counties of Cedar, Davis, Henry, Jefferson, Keokuk, Mahaska, Van Buren, and Wapello. Some of these counties are the same ones that were identified as having the highest amounts of home manufactured goods up through 1870.

In Iowa, carding and cloth dressing within the home were simultaneously taken over by mills that used some source of power to speed up these processes. This is unlike textile production in the East where the home processes associated with weaving were more gradually taken over by mills, with fulling the first process to be done with the use of power. The carding mills in southeast Iowa worked in conjunction with home weavers, lightening the load of home production, rather than

competing with home or professional weavers who used their services. An ad for Tomlinson's mill in Cedar County exemplified this mutually beneficial arrangement by stating simply, "The Nelson Factory encourages home manufacture" (Davenport Gazette, August 24, 1843).

The capital invested in carding mills was less than that invested to start other businesses that were listed in the industry census returns for southeast Iowa. This investment would be even less when a carding machine could be added to an already existent flour or saw mill, as the same source of power could be used to run all needed machines. In 1860, the capital invested in carding mills ranged from \$480 to \$6000 with an average of \$2635 needed to start such a business. The average capital spent on starting a carding mill in 1870 had decreased to \$2280 with the range of investments from \$500 to \$3000 (U S Bureau of the Census, Note 6) (see Appendix B).

The machinery needed to produce rolls of carded wool for home weavers was relatively simple. The machinery was called a "set (or sett) of cards" which meant two or three individual carding machines. These sets included a breaker to initially free the wool of knots, burrs, and larger irregularities and a finisher to produce rolls of straightened wool fibers. An alternate arrangement used the breaker, intermediate, and finishing machines in combination to card raw wool (Cole, 1926). Mills could run one set or many more sets of machinery at one time, depending on their source of power. In 1870, a Davis County carding mill, using a double set of cards, was processing 15,000 pounds of raw wool in five months of the year (U S. Bureau of the Census, Note

6). This would involve carding about 100 pounds of wool per day, a much greater amount than was possible with hand carding at home

The end product of carding mills, a roll of wool fibers free from knots and burrs, was more uniform and consistent than that produced by hand cards. Wool rolls were commonly one-half inch in diameter and their length was limited by the width of the carding surface on the machine used (Arlington Mills, 1925). Purchasing machine-carded wool rolls saved time for the handweaver as then they no longer needed to piece shorter rolls of hand carded wool during spinning. An ad for Ozark Woolen Mills in Jackson County included this claim, "Making Rolls two thousand feet long, enabling the spinner to produce twice as much yarn of superior quality in the same time as by the old method" (Scrapbook, n. d.). As a machine two thousand feet wide does not seem likely, this mill may have been using an alternate process to card raw wool. Carding machinery was sometimes locally built as James Hodges did for his Johnson County mill (Iowa Standard, January 1, 1846). Thus, not all types of carding machines and processes used by carding mills could be documented.

Custom Spinning and Yarn Production

The home spinning wheel, which was used in the United States to produce yarn for weaving, was limited to producing one thread at a time. Five or six spinners were needed to keep one weaver supplied with yarn. The first practical spinning machine for wool was the spinning jenny, invented by an English weaver, James Hargreaves, in 1767. It arrived in America by 1775 and was capable of spinning many threads at one time.

In the 1820s, the jack began replacing the spinning jenny in American woolen mills and, from 1830 to 1870, it was the most popular machine for spinning wool. While using the jenny was a hand process for spinning multiple threads at one time, the jack was the first power-driven spinning machinery for wool. The cost of producing yarn on a spinning jack was one-eighth the cost of handspun yarn because of its speed (Wool Technology, 1965).

Custom spinning and the production of yarn were two more early services offered by southeast Iowa carding and woolen mills that contributed to speeding up home manufacture. A description of the machinery used by Iowa mills to spin yarn was not given in any resource. However, labels of types of machines that were used in the mills were obtained from the 1870 census (U. S. Bureau of the Census, Note 6). The terms used: jacks, spinning jack, spindles, double twister, and spinner, refer to mechanized spinning equipment such as that used by eastern mills from the 1820s until shortly after the Civil War. Some Iowa mills in 1870 had only one jack with no indication of its size and others indicated their spinning capacity by the number of spindles on their jacks. The two mills with the largest capacity for spinning yarn in 1870 were the Amana Society Woolen Mill in Iowa County with 1000 spindles and the Meek Brothers Woolen Mill in Van Buren County with 1640 spindles. The Meek Brothers were spinning their own yarn for cloth production while the Amana Society manufactured 48,000 pounds of yarn in 1870 for sale at \$1 per pound. Stocking yarn, so called because it was used for knitting stockings at home, was the Amana Society Mill's

initial and only product in 1860 (U. S. Bureau of the Census, Note 6).

According to the original census return for 1860, 39,500 pounds of yarn was being produced by five southeast Iowa mills in 1860. This yarn was sold at an average of 81 cents per pound. In 1870, twelve mills were spinning a total of 121,200 pounds of yarn. Yarn in 1870 was sold at an average of 74 cents per pound (U. S. Bureau of the Census, Note 6) (see Appendix B). The total amount of yarn spun in southeast Iowa mills was actually higher as some census figures were not readable or available for all existing mills. Newspaper ads for custom spinning and yarn sold by mills other than those listed in the census were placed by the Vernon Woolen Mill in 1868 (Bentonsport Signal, 1868), the Eagle Woolen Mill in Jackson County (Scrapbook, n. d.), and the Davenport Woolen Mill in 1871 (Taber, 1871).

Dyeing

One additional service that some carding or textile mills provided for their local customers was that of dyeing. An advertising flyer for Eagle Woolen Mills in Jackson County not only claimed to offer roll carding, custom spinning, single yarns (numbers 1, 2, and 3 on hand), and custom cloth finishing, but also scarlet and indigo blue dyeing. The ad went on to say that the mill had rose, analine, and pure dye stuffs on hand for sale and would furnish dyeing directions to customers at no charge (Scrapbook, n. d.). One other ad, found in the Iowa Republican, for April 14, 1852, gave an indication of the variety of colors of woolen mill fabrics. Bryan Woolen Factory of Cedar Rapids (Linn County) advertised woven cloth in: "Black, blue black, navy, fancy

and plumb blue, all browns, drabs, smokes, slates, British mud, mixes sheep gray, cadet, steel, black, gold." Flannels came in "black, wines, London brown, Turkey scarlet, madder reds, pinks, oranges, and yellow "

Other articles read and people interviewed mentioned dyeing rooms and dyers within woolen mills. Oakland Mills (Henry County) had a basement used for cleaning and dyeing wool (Virden, 1966). Mrs Edith Meek Baker, the daughter of a later owner of Meek Brothers Woolen Mill, recalled women workers who had permanently dyed forearms from working around dye vats in the mill (Baker, Note 16). A dyer was a skilled professional whose job title was listed in the census reports of various counties that had textile mills.

Mills Manufacturing Finished Products

Power Looms in Eastern Mills

Along with the service oriented operations that early carding mills thrived on, some added or began the manufacture of finished cloth and other products. The woolen process that had been used in home manufacture to produce cloth of medium and coarse grades was duplicated with power machinery to produce greater quantities of cloth than was possible in the home. Weaving was the last major process to be mechanized in the development of the factory system for cloth manufacture. Power looms had appeared in England as early as 1774. In 1791, a U. S. patent was applied for on a water-powered loom to be used in New Jersey and Delaware. Other water-powered looms were in operation in small numbers in the United States by 1810. However, in 1810 there

were only 24 woolen factories in the United States. However, most of these employed hand weavers, either all working under one roof or in a cottage system in which they were supplied materials and they wove at home for a central cloth manufacturer. It was not until after the War of 1812, with the increased demand for textiles and the prohibition against the export of British textile machinery, that American inventors were motivated to further improve methods of cloth production. The first large-scale application of the power loom to weaving in the U. S. came in 1814 in Waltham, Massachusetts where Francis Cabot Lowell and Paul Moody developed a power loom for weaving coarse cotton fabrics. Once the power loom had been perfected, all processes of cloth manufacture could be contained within a factory. All the steps that were necessary for cloth production were then performed by factory workers, a new, separate and distinct occupation from previous skilled trades. Such a factory system diminished the importance of handweaving by family members. By 1840, power weaving in factories had become the dominant method of cloth production in the U. S. and handweaving had largely disappeared from New England (Wool Technology, 1965).

Power Looms in Iowa Mills

The peak number of cloth manufacturers in the state of Iowa was at the time of the 1870 census, with 85 mills in operation (see Table 8). Seventy-three new mills opened for business in Iowa between 1860 and 1870. The majority of Iowa textile mills were not in business for long, however. A loss of 51 mills for the state between 1870 and 1880 indicates that these ten years were a significant period of changes that

TABLE 8

Textile Manufacturers in Iowa, 1840-1880

	1840	1850	1860	1870	1880
Number of Mills	NA ^a	1	12	85	34
Capital Invested	NA	\$10,000	\$82,500	\$1,443,224	\$553,500
Hands Employed	NA	14	120	1,115	499
Value of Product	\$800	\$13,000	\$127,640	\$1,669,471	\$679,904

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Note. Information from Hull (1883) and U.S. Bureau of the Census (1872).

^a Not available.

caused many of them to go out of business (Hull, 1883, U. S. Bureau of the Census, 1872).

Table 9 shows the number of mills found to be operating in southeast Iowa from 1830 to 1900. While the greatest number of textile mills in Iowa closed in the decade between 1870 and 1880, southeast Iowa mills were at their peak number in this period. As in the rest of the state, the majority of textile mills in this region of the state were not in business for very long. Between 1880 and 1889, 27 southeast Iowa mills went out of business. The decline in the number of textile mills in southeast Iowa occurred a decade later than it did in the remainder of the state.

All but one textile mill operating in southeast Iowa from 1839 through the year 1870 was found to be a woolen mill. A flax mill was operating in Iowa City from 1868 through 1888. However, no records of its products were available. Therefore, a discussion of the mechanization of weaving will be in terms of the woolen process which predominated in Iowa.

As early as 1839, a woolen mill had opened for business in southeast Iowa. It was run in conjunction with a flour and saw mill, all situated on the Skunk River in Henry County and was named Oakland Mills (Virden, 1966). Another early woolen mill was Crawford Mills, completed in 1844 along the Skunk. It too was operated in conjunction with a flour and saw mill (Henry County Bicentennial Commission, 1982). John Tomlinson advertised carding, fulling, and manufacturing cloth at Nelson in Cedar County in May of 1843 (Davenport Gazette, August 24,

TABLE 9
Number of Textile Mills in Southeast Iowa, 1830-1900

Time Period	New Mills	Total Number of Mills	Loss of Mills
1830-39	1	1	
1840-49	2	3	
1850-59	6	8	1
1860-69	20 ^a	25	3
1870-79	25 ^b	41 ^b	9
1880-89	7	21 ^a	27 ^a
1890-99	6	16 ^a	11

Note. Appendix C lists all textile mills that were documented for southeast Iowa. All mills were woolen mills with exceptions (see footnotes a and b).

^a Includes one flax mill.

^b Includes two flax mills.

1843). Richmond and Shaw were operating a woolen mill on the English River in Washington County in 1845 (Iowa Standard, January 1, 1846). All these early woolen mills are believed to have used power looms. No evidence was found for the existence of hand weaving within any mills in southeast Iowa. Descriptions of the weaving process or types of looms used were not available for mills prior to 1870. In the 1870 industry census, the terms "narrow" and "broad" were used to describe types of looms used in Iowa woolen mills. These terms refer to the width of the loom and the resulting width of the cloth produced. In southeast Iowa mills in 1870, 51 narrow looms were being used, 25 broad looms, and 36 looms were unspecified as to size. Some woolen mills, like Abel Wilkinson's in Van Buren County, had only one loom, while others had many looms under one roof. The largest number of power looms in one mill was 32, at the Meek Brother's Woolen Mill in Van Buren County (U. S. Bureau of the Census, Note 6). The only information that was available to determine the resulting width of fabric from these looms was information about eastern fabric production. Earliest fabrics in eastern mills were woven in two widths, 22 to 23 inches and 27 inches (Arlington Mills, 1925). These widths were produced on what was considered a narrow loom. The first broad looms were those used for weaving broadcloth and were used in mills in Connecticut around 1825 (Clark, 1916). Some broad looms were two and one-half yards wide to allow for fulling of certain wool cloths in width as well as length (Cole, 1926).

The earliest narrow and broad power looms were made for weaving

plain weave fabrics. The first power loom for weaving "fancy cloth"¹ was used for producing overcoat fabric and was put on the market in 1840 by Crompton Loom Works of Worcester, Massachusetts. A fancy loom or fancy cloth implied the use of more than four harnesses on a loom to weave fabrics. All extant fabrics from Iowa mills were plain weave that would require a two harness loom or twill weave which required four harnesses. The weave of some extant woolen cloths was obscured by the fulling, napping, and pressing that finished the cloth once off the loom. Thus, the variety of products manufactured in Iowa mills was limited by standard loom widths, by a small number of weaves possible, and by the finishing that could be done to shrink the cloth or change its surface.

Finished Products

Southeast Iowa mill owners used raw wool that was obtained from local farmers or from their own sheep herd. McFarland Mill in Washington advertised to buy raw wool from farmers for cash or in exchange for yarn or cloth (Richardson, 1971). State Woolen Mill in Maquoketa, Iowa, as well as other mills, advertised for "WOOL WANTED. The highest market price always allowed" (Scrapbook, n d). Stickler's Woolen Mill near Iowa City advertised the use of local wool in turn for products geared to the needs of the local customers. Their ad stated, "Manufacturing the farmer's wool into substantial fabrics suited to the requirements of the community" (Irish, 1868, p. 195). The local wool

¹Fancy cloth was any cloth not of plain or twill weave.

available was fine but usually lacked length. Many Iowa farmers chose sheep breeds on the basis of the quantity of the fleece rather than on its quality, especially in periods of low wool prices. The unpredictability of wool prices also limited the number of farmers that were interested in breeding sheep for long, high quality wool (A Century of Farming in Iowa, 1946; Ross, 1951). Thus, the fabrics that southeast Iowa mills produced were those that could be made from short fibers that did not require extensive carding or spinning.

The earliest list of fabrics produced by an Iowa woolen mill was found in an 1852 newspaper ad for Bryan Woolen Factory in Cedar Rapids. The mill owners stated that they kept on hand for wholesale and retail sales, "fulled cloths, cassimeres, doeskins, tweeds, satinets, Kentucky jeans, flannels, shawls, and blankets" (Iowa Republican, April 14, 1852). It is assumed that these products were manufactured by the factory rather than obtained elsewhere and just sold by them. The industry census taken in 1860 and 1870 listed woolen mill products and the quantity produced by each mill operating in those years (see Appendix B). The products produced by southeast Iowa mills in 1860 varied dramatically. One mill produced yarn only while other woolen mills produced three or four types of fabrics, blankets, and yarn. Satinet, flannel, and blankets were products that were manufactured by southeast Iowa mills in the greatest quantities in 1860. The same textile products were found in newspaper ads for other mills that were in business prior to 1860.

The production of such fabrics as flannel and jeans increased as

the number of fabric mills increased by 1870 (see Appendix B). These two fabrics were considered lower quality than satinet and cassimere, which were being manufactured in much smaller quantities and by fewer mills in 1870. By 1870, the total quantity of flannel woven by southeast Iowa woolen mills was 320,600 yards. This amount of flannel was over 100 times greater than that manufactured in 1860. Jeans fabric was also far more prevalent in 1870 whereas the production of satinet, cassimere, and blankets only doubled from 1860 to 1870.

Wool flannel was the fabric produced in the greatest quantity in 1870. Cole (1900) described flannel as woven from woolen yarns prepared by minimal carding and only slight twisting in the spinning. The finished product was coarse threaded and loosely woven. Flannel was a popular fabric because it required little time in the preparation of yarn and required only a small amount of fulling. The nap was raised by slight teasing. The nap of the flannel could be sheared after being raised but was more commonly pressed flat. Cole (1900) also wrote that only within the last 25 years (1875-1900) had flannel been replaced by knitted goods for underwear.

Flannel was also used for bed coverings or blankets. Jackson County Historical Museum had a black and white striped piece of wool flannel woven at Eagle Woolen Mill in Maquoketa. This flannel had been woven for special orders for the men's penitentiary in Anamosa and was used for uniforms and blankets. The highly napped surface obscured the weave on one side of the cloth. The weight was what would today be considered a blanket weight. It also appeared to have a cotton warp and

wool weft. Cotton was used in the warp of many fabrics woven on power looms as it could withstand tension better than wool. A newspaper article about the Eagle Woolen Mill said that they also wove flannel for skirts that they manufactured (Woolen Mills, 1954). The flannel produced in Iowa mills was used for underwear, blankets, and outer apparel. It appears that the reason Iowa mills wove flannel was that it required minimal carding, spinning, and finishing steps yet had a greater nap than the flannel that could be made by handweavers.

Two other products of Iowa mills, satinets and cassimere, represented fabrics that were not known to be woven in the home. Satinet, made with cotton warp and wool weft, was introduced to the United States about 1812 by eastern mills. It was a product specifically woven for use in making men's trousers. It was also the first fabric to be produced on power looms (Keir, 1920). Cole (1900, p. 464) referred to satinet as a "cheap and inferior variety of cloth extensively used in the manufacture of men's ready-made clothing." The weave was a four harness twill that resulted in a close smooth surface to imitate satin. Satinet was commonly fulled, sheared close to the surface, and pressed for printing with stripes, checks, or plaids (Cole, 1900). The twill weave of satinet required a four harness loom rather than a two harness loom that could be used to produce plain weave cloth.

Cassimere was an original American product. It ranged in quality from an inexpensive fabric that contained cotton warp and reprocessed wool weft to a fine all wool fabric. It was not usually fulled and sheared as satinet was. Manufacture of this fabric in Iowa mills was

not unusual as cassimere was a general term for a large class of woolen cloth used for men's clothing and was produced in many small mills across the United States. It was commonly made in widths of 27 and 54 inches, was of plain, twill, and other fancy weaves, and patterned on the loom, rather than printed, in plaids, checks, and stripes (Cole, 1900). An extant salesman's sample of a men's suiting fabric woven by Meek Brothers Woolen Mill is possibly cassimere. It appeared to be all wool and was very tightly woven of fine yarns in a navy, white, and black plaid (Meek & Meek, Note 17). The yarns were much finer and the weave tighter than commonly done by hand weavers. The main reason for manufacturing cassimere, as well as satinet and flannel, was that it used yarn that was prepared by carding only. Later the use of worsted yarns, requiring extra combing steps for the wool, came into vogue for men's suiting fabrics and decreased the popularity of woolen cassimeres and satinets.

Jeans (jaynes) and blankets were made by many of the woolen manufacturers in Iowa in 1870. Both were functional products and useful for clothing and household textiles. Extant woolen mill blankets and pieces of blankets appeared to be all wool, and were plain weave of loosely spun yarn. No visual difference in the fabric could be identified between handwoven and mill woven blankets. Woolen mills had an advantage over home weavers in producing blankets as broad looms allowed mills to weave them in one piece and full them to a desired size, while home weavers had to weave two lengths for a blanket and sew the pieces together with a center lengthwise seam. Woolen mill blankets

could also be made in less time and at a cheaper cost than handwoven ones.

Additional fabrics mentioned in newspaper ads for woolen mills were beavers or beaver cloths, doeskins, tweeds, moscows and Astrachan cloakings, ladies' jacket fabrics, all wool sheetings and shirtings, and linsey. Doeskin was a closely woven, fine, twill wool cloth, often black, and was used as a high grade fabric for men's clothing. The name was derived from the smooth hand of the cloth. It was considered one of the most expensive fabrics manufactured of wool and was fulled and finished in a variety of ways for different end products. Tweeds, produced in some Iowa mills, were twill cloths of a soft, open texture, and were produced both in plain colors and loom figured checks and plaids. The surface appeared hazy rather than of a sharp, defined pattern due to extensive fulling (Cole, 1900). With the exception of doeskins and tweeds, other fabrics mentioned in newspaper ads for woolen mills were all fabrics that were produced close to 1870 or after. In the last quarter of the 19th century, small local mills needed to expand their product lines to compete with the greater variety of products arriving via railroad from eastern mills.

The most common products of Iowa woolen mills prior to 1870 were flannels, jeans, satinets, cassimeres, blankets, yarns, and carded wool. Satinets and cassimeres were higher priced goods for Iowa mills, though they were considered cheaper utilitarian fabrics by eastern mill standards. They were both used predominantly for the construction of men's clothing. Flannels and jeans were lower priced and suited more

for work clothes and possibly underwear made at home. Blankets, yarns, and carded wool rolls represent utilitarian products that were needed and used by local customers through 1870. All of the products manufactured by woolen mills made use of the local wool that could be obtained from farmers

The earliest textile mills in southeast Iowa were geared towards an exchange of raw materials for services or finished goods. Wool, as well as other goods, was taken in payment for work done by the mill. The earliest mills made their services accessible to most settlers by accepting hides, beeswax, beans, flaxseed, tallow, and other useable goods for payment. They usually provided carding services in conjunction with flour grinding and wood sawing at a centralized location for the convenience of customers who could use all three services. Mills that took over the more monotonous tasks of carding and cloth finishing were welcomed by home weavers as a way to cut down the time spent providing their family with clothing and household textiles.

The manufacture of yarn and cloth by local mills was a means of expanding from a service related business to one that provided finished products for the community. Woolen products shipped from the East, because they were high in bulk and weight, were more expensive in Iowa than locally made cloth because their prices included high freight charges. The price advantage that local mills had in selling their finished products, as well as their easy accessibility to raw materials, protected midwest mills for a limited time. During this period, local mills could stay in business by providing goods suited to their

customer's needs that were priced lower than eastern products. As railroad shipping costs were lowered, with the increased quantities of goods being shipped, local mills did not maintain their advantage over eastern textile manufacturers.

A shift from service oriented carding mills to product oriented woolen mills occurred between 1860 and 1870 for southeast Iowa. The use of power machinery for carding and finishing cloth temporarily strengthened household manufacturing by eliminating some processes in the home and making cloth production easier for hand weavers. However, the application of power to looms increased the output of cloth and decreased the cost of weaving beyond the abilities of handweavers. Ads for Iowa woolen mills made it evident that they wished to eliminate any need for weaving in the home, by accommodating their potential customers as much as possible. The Bryan Woolen Factory in Cedar Rapids manufactured wool either on shares or by the yard at 25 to 50 cents per yard in 1852. Wool, soap, produce, or other goods were taken in payment for any cloth and they also guaranteed their cloth to be top quality (Iowa Republican, April 14, 1852). The Vernon Woolen Mills exchanged cloth for wool, with no cash payment needed (Bentonsport Signal, April 23, 1868). The production of relatively few types of cloth prior to 1870 seems to indicate that the mills were not producing cloth beyond the needs of their immediate community. They produced only enough fabric to supply the local market and were not involved in the production of a large variety of goods for distribution to a larger market area. The decreasing number of carding and woolen mills in

southeast Iowa and the rest of the state in the latter part of the 19th century does indicate that they were able to provide needed services and finished products for a limited time only.

The protection given midwestern manufacturers by a lack of a national marketing system that reached Iowa was starting to fade in 1870. Iowa woolen mills had been protected by the relatively few changes that had been made in the machinery used for wool manufacture up to the Civil War decade. By 1870 American's preference for worsted cloth, as well as inventions that allowed the production of such cloth, resulted in greater use of worsteds rather than woolens (Clark, 1916, Cole, 1926, Keir, 1920, Michl, 1938; Weld, 1912). Worsted cloth required the use of a longer fiber wool from sheep that were specifically raised for their wool, the use of machinery for combing as well as carding the raw wool, and the use of newer spinning machinery that could produce a smoother, finer yarn than previously had been made. Small local mills could not afford to make the changes that were needed to manufacture worsteds. The trend away from heavier woolen cloth to preference for the lighter, dressier worsteds, as well as the changes in national transportation systems, caused Iowa mills to close between 1870 and 1900. It can be expected that the change in fashion preference from heavier weight fabrics to lighter weight ones after 1870 and the availability of new fabrics produced in the East contributed not only to the decline of Iowa's textile mills but a decline in the use of handwoven cloth as well.

SUMMARY AND CONCLUSIONS

The household manufacture of textiles occurred in some of the 16 counties in southeast Iowa during the period from 1839 to 1870. Evidence of home weaving was found for Davis, Des Moines, Henry, Jefferson, Van Buren, Wapello, and Washington counties. From 1850 through 1870, settlers in Davis, Iowa, Jefferson, Keokuk, and Wapello counties produced the greatest quantities of household manufactured goods, including handwoven cloth. This home manufacture was recorded in the census reports for 1850, 1860, and 1870. All of the counties with hand weavers or a sizeable amount of domestic manufacture were situated away from the Mississippi River. These counties lacked access to the goods commercially produced in the East which were available as early as the 1820s and 1830s in areas bordering the Mississippi.

The means of transportation available to settlers in a certain county affected the degree of home manufacture and handweaving done by Iowa settlers. A search of ads in Iowa's earliest newspapers showed that the counties on the Mississippi River and those with navigable rivers had ready access to a variety of commercial textiles by 1840. As this was shortly after Iowa was open for settlement, settlers in these counties did not have as great a need to produce goods within the home as those in counties without rivers. The counties on the Mississippi River were also the first Iowa counties to be reached by railroad in the mid-1850s. Most of the counties with navigable rivers and early access to the railroad showed a definite decline in home manufacture by 1860. It is proposed that the introduction of the railroad brought a greater

amount and variety of commercial goods to Iowa than was previously available. Thus, the counties that were reached by rail first were able to give up home manufacture and home weaving sooner than those counties that had less means of transportation available to them. Settlers in Davis, Iowa, Jefferson, and Keokuk counties, where railroad transportation was not available until the 1860s and 1870s, were the counties which maintained the highest values for home manufacture into 1870

Evidence shows that fabric production from raw wool was done within the home in 1870 and that a number of mills continued to sell carded wool to home weavers. However, by 1870, this home fabric production could have included knitted as well as woven textiles. By 1884, woolen manufacturers in southeast Iowa were beginning to produce knitted socks, hosiery, gloves, and mittens (Dockham, 1884). It is possible that the local mills were then introducing knitted goods to replace those specific home goods, as they had taken over the production of woven goods in earlier years.

Because handweaving and household manufacture were still present in some southeast Iowa counties in the 1860s and 1870s, secondary Iowa histories are inaccurate in presenting these home processes as done only in a frontier log cabin setting. Six counties in southeast Iowa could no longer be considered a frontier in 1850, as measured by the population density in these counties by that time. By 1860, the rest of southeast Iowa, with the exception of Iowa County, could no longer be thought of as a frontier area. The idea of home manufacture presented in secondary Iowa histories that deal with handweaving only in relation

to log cabins and an economically-bleak frontier cannot be substantiated by this research.

This study provided evidence that other factors apart from necessity influenced the amount of home weaving done in southeast Iowa. Other motives for weaving were proposed as hypotheses to be tested by further research. Since some home weavers sold their hand products to neighbors and others in their local communities, it is possible that handwoven cloth was used as barter in exchange for other goods or for needed services. In addition, it was convenient for an Iowa settler to have the skills required to produce textiles and clothing used within the family in times of economic necessity. The need for home manufacturing and handweaving came at different times for Iowa pioneers. Home goods were used instead of commercial goods when personal finances prohibited the purchase of expensive store goods, during economic depressions within the state, and during times when specific goods were scarce, such as during the Civil War. At these times, the ability to manufacture cloth in the home was a valued skill and enabled a family to replace needed clothing or other textiles.

Another reason that is proposed for some of the home weaving that occurred in southeast Iowa is that weaving represented the continuation of a learned skill that gave the weaver personal satisfaction. The popularity of rug weaving in Iowa by 1870 and in the late 19th century is evidence of this desire of some settlers to continue handweaving past the point of necessity. Weaving cloth for needed clothing and household textiles had probably declined by 1870 and the majority of weavers were

thought to have turned to the production of rugs or other decorative textiles.

By 1850, professional weavers were working in southeast Iowa. Little evidence remains to suggest that these weavers brought looms with them as they settled in the state even though most settled in areas where shipping services were available. Instead evidence shows that professional weavers were more likely to build or have a carpenter build a loom from native lumber. Later, in the 1850s and 1860s, loom manufacturers and builders sold commercial looms in the region for use by local weavers. Most professional weavers avoided the counties in the region with textile mills that were operating by 1850. It appears that the majority of 1850 weavers were interested in pursuing weaving as a small business in Iowa and that they did not move into the state in search of work as a textile mill employee.

The number of professional weavers increased greatly from 1850 to 1856 in the 16-county area of southeast Iowa. A review of the census reports from 1850 to 1870 for a selected group of eight counties within the southeast Iowa area showed the largest number of professional weavers in 1856. The number of professional weavers decreased in 1860 and in 1870. The increased quantities of commercial goods that were brought into Iowa by railroad in the 1850s and 1860s replaced a need for home woven textiles and most likely decreased a need or desire for the handwoven products of professional weavers as well.

The professional weavers who did work in southeast Iowa from 1850 through 1870 are not believed to be itinerant in the sense of

transporting their looms from house to house to obtain business. Itinerant is more accurately used to describe weavers who went house to house to obtain orders and then returned to their business location or home to do the weaving. Professional weavers were also itinerant in the late 19th century in the sense that they needed to be mobile to find work. Their use of hand skills to produce woven textiles was becoming quickly outdated by the increasing availability of eastern textile products and the increasing number of local mills in sparsely populated areas.

The career span of most professional weavers in Iowa from 1850 through 1870 was short. In general, the majority of weavers were found to have used their skill as a source of livelihood in southeast Iowa for fewer than 10 years. It is thought that many professional weavers who wished to remain in southeast Iowa turned to other occupations by 1860 and 1870, or took jobs in conjunction with weaving. Since the number of textile mills in the area was increasing, some may have sought employment as power loom weavers in local mills. Other weavers were known to have turned to farming as an occupation rather than work in a mill or move to a new frontier area.

Professional weaving as well as home weaving did exist through 1870 in southeast Iowa. Weaving as an occupation in this region after the Civil War was dominated by foreign born males from Scotland and England, most likely trained as weavers in their native country. This study partially supports the idea that some of the professional weavers still in southeast Iowa in 1870 sought the least populated county as well as

the county with limited textile mill production. Louisa County, having the lowest population of the selected eight counties, was the only county in which the number of professional weavers actually increased in 1870. Louisa County also had only one textile mill in 1870 with a total of 10 employees, which represents less textile manufacture than was going on in other southeast counties at that time. The notion that professional weavers sought the least populated areas and avoided regions with numerous textile mills needs further research.

As with home weavers, the products of professional weavers in 1870 were different from those produced in earlier years. Weavers who made rag carpets as a business were more common in 1870 than before that year. One weaver in southeast Iowa was documented as continuing a Jacquard coverlet business through 1876 and then he also turned to making carpets for a living until his death in 1892. Another weaver was found to be making double woven coverlets through 1874 in southeast Iowa. With evidence of at least 31 professional weavers working in southeast Iowa in 1870, as well as a sizeable amount of home manufacture in some counties at this time, local or eastern textile mills were not the only sources for household textiles in this region following the Civil War. Thus, the findings do not support the commonly held notion that mill woven products completely replaced handwoven products around the time of the Civil War.

Mills that provided the service of carding raw wool as well as textile mills that manufactured cloth, yarn, and blankets were simultaneously in business in southeast Iowa from 1839 through 1870.

Their use of power machinery moved textile production from the home to one central location and decreased, but did not eliminate, the need for handweaving skills. All the necessary steps of cloth manufacture which had been done by family members were now performed by factory workers. Some woolen mills provided services such as wool carding, cloth dressing, dyeing, and spinning which supplemented home cloth production. Mills that were manufacturing products, such as flannel, jeans, or blankets, duplicated what home weavers had produced. However, mills produced these textiles at a faster rate than home weavers and had the advantage of wider looms for such products as blankets. Satinets and cassimeres, used for men's dress clothing, were two higher priced woolen fabrics that had not been previously woven within the home. All the end products of home weavers and mills in southeast Iowa were considered woolen goods of medium to heavy weights and all were manufactured from coarse, short-fiber wool that was produced by local farmers. Thus, the raw material was readily available and at a low cost. The resulting finished products of the local mills competed favorably with textiles from the eastern states which were more costly due to high freight charges.

A preference for worsted fabrics over woolen cloth and a fashion change from heavy to lighter weight wool clothing occurred in the eastern states by 1870. The notion that fashion trends occurred earlier in the East than in Iowa may be supported by this study as the number of southeast Iowa mills producing woolen fabrics continued to increase after 1870. The production of fabrics and products that were soon to be

outdated, as fashion preferences and changes reached Iowa, contributed to the majority of the state's textile mills being in operation for only a short period. The effect that the railroad would have in speeding up the movement of fashion trends and preferences across the United States, as more goods could be shipped from the East at faster rates and lower costs than previously possible, was not anticipated by small textile mill owners. The change in fabric production in eastern mills from woolen to worsted fabrics by 1870 quickly outdated the processes and machinery used in Iowa mills.

RECOMMENDATIONS FOR FURTHER RESEARCH

Between 1833 and 1870 in southeast Iowa, there was a decline in the use of home manufactured goods and an increased reliance on commercially-made textiles from eastern and local mills. I have found, through limited research, that commercial textiles and some ready-to-wear clothing were available in southeast Iowa counties by 1840. However, I did not research, to any extent, the type or quantity of available textiles and clothing. A future study might focus specifically on the types of textiles and clothing that were sold in Iowa stores throughout the 19th century. This research would reveal when a greater amount of worsted cloth, as compared to woolen cloth, was available in Iowa. Products of Iowa woolen mills could then more accurately be compared to the types of eastern mill products that were sold in the state. Such a study would also provide a better understanding of the changes in fashion preference and home decoration that accompanied a decline in the manufacture of handmade goods.

Iowa textile mills were still at a developmental stage in 1870 and had not yet reached their greatest capacity in terms of quantity and variety of products. Studying Iowa textile mill production in the last quarter of the 19th century would help to determine to what extent Iowa products were able to compete with the greater variety of eastern goods that were available in the Midwest after the Civil War. Limited study has found that Iowa textile mills produced finished apparel and fabric yardage after 1870. Thus, future research of textile mills would contribute to the present body of knowledge on the dress of Iowans as

well as their use of textiles for other purposes in the late 19th century.

Further study of home weaving in other regions of Iowa prior to 1870 or in southeast Iowa after 1870 is not recommended. Through a statewide survey of museums and private collections done prior to this study, I found extant textile artifacts of the 1800s to be scarce and widely scattered. Southeast Iowa had the greatest number of handwoven textiles and related tools, probably because it was settled in an earlier time period than most other regions of Iowa.

The present study found that home manufacture, home weaving, and professional weaving were all still in existence in 1870. A search of the original census data for the years after 1870 would be beneficial to identify further trends in home manufacture and professional weaving. Also, my research identified professional weavers for only a limited number of counties in Iowa. The understanding of textile production in Iowa in the 19th century would be more complete if the census reports were searched for specific weavers who may have followed the frontier regions within the state. Such a study might also determine if the majority of professional weavers changed their occupation to remain in Iowa or if they moved out of Iowa to continue their handweaving skills in western frontier areas. Further documentation of professional weavers is important as their skills, products, and tools were outdated by advances in power looms and industrialization in the 19th century.

Research on hand weavers, their products, and their tools, some of which are now obsolete, is of value as historical documentation of a

craft that has lost its former importance. In addition, study of commercial goods and textile mill products contribute to a better understanding of the relationships between the East and the Midwest as railroad shipping and national marketing increased in the late 19th century. Documentation of the textiles and clothing and related tools available and used in Iowa in the entire 19th century aids in future identification of extant artifacts as well as clarifies unsubstantiated beliefs for future historians. All recommended studies would most importantly add to a heightened appreciation of Iowa history and its early settlers.

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LOCATION OF MATERIAL ARTIFACTS USED IN THIS STUDY

PUBLIC COLLECTIONS

The Apple Trees Museum	Burlington, Iowa
Des Moines County Historical Society	
The Art Institute of Chicago	Chicago, Illinois
Aunty Green Hotel Museum	Bonaparte, Iowa
Davis County Museum	Bloomfield, Iowa
Ericson Public Library and Museum	Boone, Iowa
Fairfield Public Library Museum	Fairfield, Iowa
Grout Museum of History and Science	Waterloo, Iowa
Historical Museum and Archives Division	Des Moines, Iowa
Iowa Mennonite Museum and Archives	Kalona, Iowa
Iowa State Historical Department	Iowa City, Iowa
Division of the State Historical Society of Iowa	
Iowa State University Library	Ames, Iowa
Jackson County Historical Museum	Maquoketa, Iowa
Jefferson Historical Museum	Jefferson, Iowa
Jonathan Clark Conger House	Washington, Iowa

Lewelling Quaker House	Salem, Iowa
The Looms	Mineral Point, Wisc.
Mediapolis Public Library	Mediapolis, Iowa
Museum of International Folk Art	Sante Fe, New Mexico
Nelson Pioneer Farm and Crafts Museum	Oskaloosa, Iowa
Pioneer Historical Society Museum	Farmington, Iowa
Putman Museum	Davenport, Iowa
Van Buren County Museum	Keosauqua, Iowa
Wayne County Historical Society Museum	Corydon, Iowa

PRIVATE COLLECTIONS

Buchanan, I.	Ames, Iowa
Cleveland, O.	Jefferson, Iowa
Davidson, B.	Stanwood, Iowa
Frymoyer, F	Wilton, Iowa
Gobble, L., II	Fairfield, Iowa
Larson, F., & Larson, B	Swedesburg, Iowa

Lonsdale, C., & Lonsdale, C.	Dale City, Iowa
Lyons, B.	Fairfield, Iowa
Meek, D , & Meek, I.	Bonaparte, Iowa
Miller, P.	Des Moines, Iowa
Satterly, R.	Farmington, Iowa
Taylor, B., & Taylor, L.	Fairfield, Iowa

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APPENDIX A

PROFESSIONAL WEAVERS IN SOUTHEAST IOWA, 1850-1870

The following information was found in the original federal census returns available at the Iowa State University Library, Government Publications, Ames, Iowa. Sixteen counties in southeast Iowa were researched for 1850; eight of these counties were researched for 1860 and 1870.

1850 WEAVERS

Name	Age	Sex	Country or State of Birth	Possible Years in Iowa as a Weaver	County	Township	Town
Abel, Henry	39	M	Germany	1847-80	Keokuk		
Adams, I.M.	53	M	Massachusetts	1850-59	Des Moines		Burlington
Albright, Henry	43	M	Hanover (Pa.)	1847-70 (not in 1860 census)	Johnson		Iowa City
Beach, Abel	41	M	Vermont	1850-59	Jefferson		Fairfield
Burnett, William	40	M	Pennsylvania	1850-59	Cedar	Iowa	
Downing, John	35	M	Indiana	1850-59	Cedar	Centre	
Greenwood, John	64	M	England	1850-59	Van Buren	Chequest	
Graham, John	25	M	Scotland	1850-59	Louisa	Wapello	
Herbst, Henry	30	M	Germany	1848-59	Cedar	Centre	
Hilliard, Elisha	41	M	Pennsylvania	1850-59	Lee		Fort Madison
Hilliard, Francis	63	M	Pennsylvania	1850-59	Lee		Fort Madison

Moxley, William	45	M	England	1850-59	Muscatine	Bloomington
" William	20	M	Ireland	1850-59	Muscatine	(Muscatine)
" John	16	M	Ireland	1850-59	Muscatine	"
Pell, John	58	M	England	1850-59	Van Buren	
Platt, James	60	M	England	1850-59	Des Moines	Burlington
Stephenson, Richard	55	M	England	1845-59	Jefferson	Lockridge
Willson, John	59	M	England	1850-59	Lee	Fort Madison
Willson, Nancy (different residence)	27	F	Kentucky	1847-59	Lee	Fort Madison

¹ This time span was determined by: 1) a possible career span from one federal census to the year before the next one, 2) the age of any children of the weaver that were born in Iowa, assuming that the weaver had been in the state continuously since the birth of that child, or 3) extant artifacts or written resources.

1860 WEAVERS

Name	Age	Sex	Country or State of Birth	Possible Years in Iowa as a Weaver	County	Township	Town
Allen, Lockey A.	29	F	Indiana	1860-69	Mahaska	Pleasant Grove	
Bidles, Jacob	54	M	Bavaria	1860-69	Mahaska	Scott	
Borden, Maranda	54	F	Virginia	1860-69	Mahaska		
Brown, Rebecca	41	F	Ohio	1850-69	Van Buren	Village	
Campbell, Jane	55	F	South Carolina	1860-69	Mahaska	Richland	
Canfield, J.J.	51	M	New York	1860-69	Mahaska		Oskaloosa
Carpenter, R. (carpet weaver)	62	F	Virginia	1860-69	Lee		Keokuk
Casey, John	48	M	England	1860-69	Van Buren	Farmington	Bonaparte
Chadwick, Anna	58	F	North Carolina	1860-69	Mahaska	Prairie	
Clark, Ann	27	F	Ireland	1860-69	Van Buren		Vernon
Dysart, Susanna	46	F	Virginia	1860-69	Mahaska	Prairie	
Ehrman, Harriet	15	F	Iowa	1860-69	Van Buren	Vernon	

Engart, Mahelarnat	56	F	New York	1860-69	Lee	Des Moines	Bentonsport
Fisher, Eliza	18	F	Missouri	1860-69	Van Buren	Washington	Fort Madison
Fridley, Hester	32	F	Virginia	1860-69	Lee		Oskaloosa/ Montezuma
Gray, Pricilla	57	F	Virginia	1860-69	Mahaska	Union	
Ialbott, Hulda	36	F	Ohio	1851-69	Mahaska	Prairie	
Linch, Nancy	32	F	Indiana	1859-69	Lee	Des Moines	
Lotten, Mary	25	F	Ohio	1860-69	Mahaska	Prairie	
Lottero, Susanna	52	F	Ohio	1860-69	Mahaska	Richland	
Mitchel, Nancy	71	F	Ireland	1860-69	Mahaska	Prairie	
Morgan, Gazia	35	F	Kentucky	1851-69	Van Buren	Farmington	Bonaparte
Mott, Lydia	16	F	Ohio	1860-69	Mahaska		Oskaloosa
Murphy, John	30	M	England	1860-69	Van Buren	Farmington	Bonaparte
Myers, Catherine	15	F	Ohio	1860-69	Lee		Fort Madison
Myers, Elizabeth	19	F	Indiana	1860-69	Lee		Fort Madison
Myers, Rachel	17	F	Indiana	1860-69	Lee		Fort Madison

1860 WEAVERS cont.

Name	Age	Sex	Country or State of Birth	Possible Years in Iowa as a Weaver	County	Township	Town
Nedrow, Adaline	19	F	Ohio	1860-69	Van Buren	Lick Creek	Keosauqua
Pisks, Elizabeth	26	F	Indiana	1860-69	Mahaska	Jefferson	
Schultz, Fanny	52	F	Virginia	1860-69	Mahaska	Scott	
Sharp, Jane B.	52	F	Kentucky	1860-69	Mahaska	Pleasant Grove	
Sigler, Jacob	40	M	Switzerland	1852-69	Franklin	Franklin Centre	
Smith, Edward	72	M	England	1860-69	Johnson	Graham	
Snyperger, Peter	31	M	Bohemia	1860-69	Johnson	Cedar	
Spairo, Mary (spinner, weaver)	33	F	Ohio	1857-69	Mahaska	Prairie	
Stephenson, Daniel	36	M	England	1851-92	Jefferson		Fairfield
Stone, George	46	M	Switzerland	1860-69	Lee		Fort Madison Penitentiary

Thoma, William	65	M	England	1860-69	Lee	Cedar	Big Mound
Withead, John	84	M	England	1860-69	Mahaska	Pleasant Grove	
Wurro, Wisiey	35	F	Ohio	1860-69	Mahaska	Richland	

1870 WEAVERS

Name	Age	Sex	Country or State of Birth	Possible Years in Iowa as a Weaver	County	Township	Town
Albers, Frederic (linen weaver)	64	M	Prussia	1870	Lee		Fort Madison
Albright, Henry	64	M	Hanover (Pa.)	1847-70	Johnson		Iowa City
Barnes, Sarah	27	F	Ireland	1861-70	Cedar		Mechanicsville
Beamer, John	56	M	England	1870	Jefferson		Fairfield
Blackburn, Mary	38	F	York (Eng.)	1861-70	Louisa	Wapello	Wapello
Blakely, George	47	M	England	1870	Van Buren	Bonaparte	Bonaparte
Brimstead, Louise	23	F	Indiana	1870	Van Buren	Village	Lowaville
Brown, Sarah	32	F	Ohio	1861-70	Cedar		Mechanicsville
Collins, George	50	M	England	1870	Johnson		Iowa City
Dairy, Henry	76	M	New York City	1870	Cedar	Centre?	Tipton
Hanson, Daniel	21	M	New York	1870	Van Buren	Bonaparte	Bonaparte
Kensler, George	52	M	Saxony	1870-80	Keokuk	Richland	South English
Lawson, Margaret (carpet weaver)	39	F	Scotland	1867-70	Lee		Fort Madison

Martin, Elizabeth (carpet weaver)	74	F	Virginia	1870	Lee	Keokuk
Mayhew, Sophia (carpet weaver)	42	F	Ohio	1870	Lee	Fort Madison
McCoy, Mary (carpet weaver)	43	F	Ohio	1861-70	Louisa	Columbus City
Meier, Clemens (carpet weaver)	44	M	Oldenburg	1861-70	Lee	Fort Madison
Powel, Sarah (carpet weaver)	33	F	Ohio	1870	Louisa	Columbus City
Purvines, Nancy	25	F	Illinois	1861-70	Van Buren	Bonaparte
Reider, F.	26	M	Baden	1868-70	Lee	Franklin Centre
Rillett, John	61	M	Ohio	1870	Louisa	Cain
Schneider, Jacob	58	M	Baden	1870	Louisa	Grandview
Stephenson, Daniel	46	M	England	1851-92	Jefferson	Fairfield
Stewart, Jane (carpet weaver)	39	F	New York	1861-70	Mahaska	Oskaloosa
Stirling, John	45	M	Scotland	1867-70	Van Buren	Bonaparte
Stirling, William	20	M	Scotland	1867-70	Van Buren	Bonaparte
Stirling, Joseph	18	M	Scotland	1867-70	Van Buren	Bonaparte

1870 WEAVERS cont.

Name	Age	Sex	Country or State of Birth	Possible Years in Iowa as a Weaver	County	Township	Town
Wasner, Sarah	20	F	New York	1861-70	Johnson		Iowa City
Welsh, _____	18	F	Iowa	1861-70	Louisa	Wapello	Wapello
Wheeler, Carmine (carpet weaver)		M		1870	Louisa	Columbus City	Columbus City

ADDITIONAL WEAVERS¹

Name	Sex	Country or State of Birth	Possible Years in Iowa as a Weaver	County	Township	Town
Adolf, Henry	M	France	1855-65	Mahaska		
Bender, David	M	b. 1824	1846-74	Johnson		
Gilmour, William	M	b. 1807 or 1810	1856-78	Mahaska	Scott	Moody Corners
Leurs, Henry	M	U.S.	after 1852	Keokuk		Sigourney
Maddhes, C.			1855	Scott		Davenport

¹ These weavers were not listed as such by the federal census returns but are believed to have been working in Iowa, as they were documented by extant artifacts or written records.

APPENDIX B

CARDING AND WOOLEN MILLS LISTED FOR 16 COUNTIES
IN SOUTHEAST IOWA IN 1860 AND 1870

The following information was found in the 1860 and 1870 original federal census returns for industries. These returns are available at the Census Department, Historical Museum and Archives Division, Des Moines, Iowa.

1860 CARDING MILLS

County	Name of Owner or Mill	Capital Invested	Pounds of Wool Used Per Year	Cost of Raw Wool Per Pound	Products	Quantity Produced Per Year	Cost Per Unit
Keokuk	D.M. Sean	\$ 480	8,000	.30	wool rolls	8000 lbs.	.45
Cedar	O. T. Just. Ives	2000	3,000	.30	wool rolls	3000 lbs.	
Wapello	Bindiet & Hanver	2400	12,000	.31	wool rolls yarn	9000 lbs. 2000 lbs.	.30 .90
Jefferson	G. Hanson	2500	8,000	.32	wool rolls	7500 lbs.	.44
Jefferson	S. Deeds	3000	5,000	.30	wool rolls	5000 lbs.	.39
Van Buren	R.L. Meoss	6000					
Wapello	Milburn						

1860 WOOLEN MILLS

County	Name of Owner or Mill	Capital Invested	Pounds of Wool Used Per Year	Cost of Raw Wool Per Pound	Products	Quantity Produced Per Year	Cost Per Unit
Iowa	Amana Society	\$ 2,500	20,500		stocking yarn	10,000 lbs.	.80
Des Moines	Davis & Robinson	5,000	20,000	.35	cloths satinet spun yarn flannel blankets	1,800 yds. 1,500 yds. 1,500 yds. 1,500 yds. 1,000 prs.	1.00 .80 .75 .50 .80
Mahaska	Walkers & Company	6,000	9,000	.30	satinet cassimere flannel jeans blankets mixed yarns	4,000 yds. 1,500 yds. 1,500 yds. 1,000 prs. 1,000 prs. 1,000 lbs.	1.25 1.00 .50 .50 .80 .90
Van Buren	Meek & Bros.	10,000	60,000	.33	cloth/yarns	50,000 yds.	.70
Van Buren	Allender	12,000	10,000	.41			

1870 CARDING MILLS

County	Name of Owner or Mill	Capital Invested	Pounds of Wool Used Per Year	Cost of Raw Wool Per Pound	Products	Quantity Produced Per Year	Cost Per Unit
Davis	S. C. Crawford	\$1500	10,000	.40	wool rolls	10,000 lbs.	.60
Henry	W. J. & J. S. Rogers	2000	8,000	.50	wool rolls	3,000 lbs.	.20
Keokuk	S. English	2200	6,000	.42	wool rolls yarn	6,000 lbs. 2,000 lbs.	.50 .60
Wapello	F. Davis	2700	9,955	.40	wool rolls yarn		
Davis	H. Kelsey	3000	15,000	.43	wool rolls	10,000 lbs.	.51

1870 WOOLEN MILLS

County	Name of Owner or Mill	Capital Invested	Pounds of Wool Used Per Year	Cost of Raw Wool Per Pound	Products	Quantity Produced Per Year	Cost Per Unit
Muscatine	Mayer _____	\$ 2,000	10,000	.40	flannel jeans yarns blankets	1,000 yds. 1,000 yds. 700 lbs. 50 prs.	.50 .60 .89 4.50
Wapello	J.H. Benedict	5,000	2,000	.50	jeans flannel satinet yarns blankets	600 yds. 600 yds. 500 yds. 500 yds. 40 prs.	.67 .58 1.25 .90 10.75
Jefferson	G. Hanson	5,000	4,800 3,000	.42 .50	wool rolls yarn cloth	4,000 lbs. 2,500 lbs. 800 yds.	.97 .31 .25
Van Buren	A. Wilkinson	5,000	5,000				
Mahaska	Robb, Proudfit, & Robb	9,000	100,000	.55	cloth/flan- nel yarn	65,000 yds. 48,000 lbs.	.77 1.00
Jefferson	P.M. & J.M. Woods	10,000	40,000	.40	jaynes cassimere blankets other	2,000 yds. 500 yds. 400 prs.	.60 1.10 3.00

Henry	Veitch & Company	\$20,000	500,000	.40	wool rolls yarn woolen goods	8,000 lbs. 6,000 lbs. 2,200 yds.	.60 .70 1.19
Mahaska	Siebel & Company	24,000	31,200	.48	flannel wool rolls cloth stocking yarn blankets	11,000 yds. 10,000 lbs. 8,000 yds. 3,500 lbs. 250 prs.	.55 .50 1.25 .86 8.00
Wapello	Zulaf & Son	24,000	26,000	.45	jeans flannels general cus- tom work		
Van Buren	Meek & Bros.	50,000	120,000	.42	flannel cloth jeans satinet blankets	100,000 yds. 30,000 yds. 20,000 yds. 12,000 yds. 300 prs.	.60 1.17 .60 .83 7.00
Des Moines	Hawkeye Woolen	55,000	45,000	.34	flannel yarn blankets	76,000 yds. 5,000 lbs. 4,000 prs.	.50 .80 1.25
Iowa	Amana Society	70,000	100,000	.55	cloth/flan- nel yarn	65,000 yds. 48,000 lbs.	.77 1.00
Johnson	Resource & Company Home Woolen Mill	75,000	75,000	.40	Jaynes yarn cloth/ cassimere flannel blankets	5,000 yds. 5,000 lbs. 2,500 yds. 2,000 yds. 200 prs.	.50 .50 1.32 .30 2.00

APPENDIX C

TEXTILE-RELATED MILLS IN 16 COUNTIES IN SOUTHEAST IOWA, 1833-1870

This appendix lists all textile-related mills found by this research to be in southeast Iowa from 1833 through 1870.

County	Location	Dates Known to Be in Operation	Name of Owner or Mill	Type of Service or Product
Cedar	Nelson Rock Creek	May 1, 1843	John J. Tomlinson	carding, fulling, and manu- facturing cloth
	Nelson Rock Creek	March 1844- May 1845	John McPherson	carding, fulling, and manu- facturing cloth
	Rock Creek	1850	Miller's Mill	carding
	Rock Creek, S.W. of Tip- ton	1855-57	Stephen Ives	woolen mill
Davis	Rock Creek, S.W. of Tip- ton	1860	O. T. Just. Ives	carding
	Drakeville	1870-72	S.C. Crawford	carding
Des Moines	Bloomfield Township	1870-72	Hanson Kelsey	carding
		1851	William McMillan William Moore	carding
	Northfield	1852	W.F. Robinson Thomas Davis	spinning, woolen mill
		1860-68 1872 1899	Davis and Robinson J.W. & N.F. Roberson & Co. J.W. & W.F. Roberson	

Des Moines	Lowell	1858-65	John Blay & Sons	carding, spinning, and weaving
	Burlington	1867-72	J. Foote Hawkeye Woolen Mills	spinning, woolen mill
Henry	Oakland Mills	1839-53	Robert & James Wilson	woolen mill
	Skunk River	1853-1910	N. Armstrong/C. Clark	
	Mt. Pleasant	1841	Ghalson & Allen	carding
	Trenton Skunk River	1844	Crawford's Mills	woolen mill
	Trenton Township	1845-56	George Hanson	woolen mill
	Salem	1849	Linsey Coppock	carding
	Merrimac Mills	1863-78	W.J. & J.S. Rodgers	carding
	Wayland	1865	Williams & J. Shields	woolen mill
	Tippecanoe Township	1870-72	Veitch & Co.	carding, spinning, woolen mill
Iowa	Homestead	1860-1982	Amana Society	spinning only (1860-62), spinning, woolen mill (1862-1982)
	Marengo	1866-78	Sheuerman Bros. Marengo Woolen Co.	carding, woolen mill
Jefferson	Fairfield	1846	Millikin, White, & Co.	carding, cloth dressing

County	Location	Dates Known to Be in Operation	Name of Owner or Mill	Type of Service or Product
Jefferson	Cedar Township	1860	George Hanson	carding
		1870-72	George Hanson	carding, spinning, woolen mill
	Deedsville	1860	Silas Deeds	carding
		1865	Franklin Sheen	carding
Johnson	Fairfield	1870-	P.M. & J.M. Woods	woolen mill
		1878-88	Woods & Bigsby	
	Iowa City	1845-46	James Hodges	carding, cloth dressing
		1866-70 1872	Home Woolen Mill Resource & Co.	spinning, woolen mill
Keokuk	Iowa City	1868-88	Iowa City Flax Manufac- turing Co.	flax mill
		1868-78	Edward Strickler	woolen mill, carding (1878)
	Sigourney Township	1860	D.M. Sean	carding
		1868	Wm. McMillan	woolen mill
English Riv- er Township	1870-72	S. English	carding, spinning	

Lee	Fort Madison	1868	Sawyer _____	woolen mill
Louisa	Wapello	1868	Botha, Johann, & Co.	woolen mill
		1872-86	J. Jahanna & C. Winter	woolen mill
	Oskaloosa Township	1860	Walkers & Co.	spinning, woolen mill
	Oskaloosa Township	1864	Roop, Harbour, & Co.	woolen mill
1865		Hambleton & McCurdy	carding	
1868		Siebel & Esgen	woolen mill	
1870-1900		Siebel & Co.	carding, spinning, woolen mill	
Muscatine	Oskaloosa Township	1868	G.H. Baugh	woolen mill
		1868	Hamilton, Beatty, & Co.	woolen mill
		1870-78	Robb, Proudfit, & Robb	carding, spinning, woolen mill
Muscatine	Bloomington	1848	E. Stratton	wool carding (first steam mill)
	Bloomington ?		Samuel Lucas	carding
	Muscatine	1868-84	Wm. Moxley & Co.	woolen mill
	Muscatine	1870	Mayer _____	spinning, woolen mill
Scott	Davenport	1863-99	Davenport Woolen Mill	woolen mill
	Davenport	1868-78	Joseph Shields	woolen mill
Van Buren	Bentonsport	1851-1868	Siebel & Co.	

County	Location	Dates		Name of Owner or Mill	Type of Service or Product
		Known to Be in	Operation		
Van Buren	Bonaparte	1856-88		Meek & Bros.	spinning (1856-1869), woolen mill
		1888-1909		Isarah Meek	
	Lick Creek Township	1860		R.L. Meoss	carding
	Vernon Township	1860		Allender	woolen mill
		1867-68 1872		Allender & Ketchum Allender & Gelatt	
Wapello	Village Township	1870		Abel Wilkinson	
		1851			ox-powered woolen mill
	Eddyville	1860		Bindiet & Hanver	carding, spinning
	Ottumwa	1860		Milburn _____	carding
	Eddyville	1868 1870-72		Benedict & Wilmot J.H. Benedict	spinning, woolen mill
	Ottumwa	1868 1870-92		J. Zulauf & Co. Zulauf & Son	woolen mill
	Agency City	1870-72		Francis Davis	carding, spinning

Washington	Washington Township	1840-45	Mathew Dill Ritchey Sr. run by John Stark	carding
	Washington	1843	John Daugherty	carding
	Washington Township	1845	Richmond & Shaw	carding
	Marion Township	1850	Williams J. Williams John Graham	carding
	Washington Township	1855-64	McFarland Woolen Mill	carding, woolen mill
	Brighton	1863-77	W.G. Rodgers	wool carding
	Washington Township	1865-67	Robert Gammel & John F. Wilson	woolen mill
	Washington Township	1867	John P. & L.A. Deautremont	woolen mill
	Washington Township	?	Washington Woolen Mills	
	Brighton	1868	Smedley, Wheelock, & Co.	woolen mill
	Washington	1872-74	Williams J. Williams	carding