WE WORKED HERE: AN INTERPRETIVE PLAN FOR THE THOMAS KAY WOOLEN MILL IN SALEM, OR

by

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A THESIS

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"We Worked Here: an Interpretive Plan for the Thomas Kay Woolen Mill in Salem, OR," a thesis prepared by Jeremy T. Mauro in partial fulfillment of the requirements for the Master of Science degree in the Interdisciplinary Studies Program: Historic Preservation. This thesis has been approved and accepted by:

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While the field of historic preservation has successfully preserved numerous significant buildings and sites throughout the United States, the field would benefit from stronger interpretation of these resources. Because many of the preserved buildings and sites function as public destinations, interpretation has the opportunity to provoke new learning experiences. In this project I examined the Thomas Kay Woolen Mill as a case study for interpretive methods of industrial historic architecture. Through reviewing current interpretive methods, describing a broad historical context, conducting interviews with Salem residents who took part in the work at the mill between the 1930s and the 1960s, and researching specific mill workers' housing in Salem, I found that the inclusion of human stories can benefit the interpretation of the architecture. By offering a specific

human narrative against the background of a wider history, an exhibit can challenge the visitor to see the building in a new way.

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CHAPTER I

INTRODUCTION

In this project I examine how interpretation can contribute to the field of historic preservation. While the majority of the properties saved from demolition do not become historic house museums or history museums, thousands of historic properties across the United States do have such a mission. Chapter Two reviews the ongoing debate concerning historic house museums and history museums. This debate concerns the documented decline in attendance and perceived diminishing public interest in these institutions. The view that public support for historic house museums is declining at the same time that hundreds more are opened each year led Richard Moe, the president of the National Trust for Historic Preservation, to write an article in 2002 titled, "Are there too many house museums?"[1] His article contributed to a larger conversation among preservation professionals, which has grown since he asked the question. Most writers agree that there is a crisis facing historic house museums and history museums even as "heritage tourism" becomes more popular. Many articles call for implementing more sophisticated technological interpretations as a means to connect exhibits or sites with younger generations. I argue that this push for technology is misguided and that what is required is not new means for displaying old stories, but new, more provocative, stories. Although some museum managers such as James C. Rees, the Executive Director of

[1] Richard Moe, "Are There Too Many House Museums?" *Forum Journal* 16.3 (2002): 4-11.

Mount Vernon, wish for a more unified history[2], younger generations are more critical of history and aware of broader perspectives that often are not displayed in the museum. Taking a critical view does not have to mean that the old stories are destroyed but that they become more complex and more open to engagement from the visitor. I examine the Thomas Kay Woolen Mill in Salem, Oregon as a case study to develop these ideas for a specific location.

New interpretation is not the answer for all historic house museums. Some may need to find an alternative to operating as a museum. For these organizations, the recent book *New Solutions For House Museums* (2007) by Donna Ann Harris would be a valuable resource for finding pragmatic solutions to ensure the survival of the historic architecture. She suggests the following strategies: reprogramming the building as a study house with limited tours by appointment; mission-based non museum use; a merger with another house museum organization; adaptive-use; donating, leasing, or selling the property with preservation easements. These solutions continue the mission of the house museum organization by providing for the long-term survival of the house and often allow for sound economic solutions that do not squander the previous efforts of the organization.

Another recommendation I offer for improved interpretation is placing the local historic site within a larger context. I find that to understand the Thomas Kay Woolen Mill (TKWM) and its significance, one must understand the system of production that preceded it as well as the architectural development of mill buildings. Chapter Three

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[2] James C. Rees, "Forever the Same, Forever Changing: The Dilemma Facing Historic Houses," Presentation, American House Museums: An Athenaeum of Philadelphia Symposium, December 1998.

attempts to place the Thomas Kay Mill in a wider historical context. The chapter begins in England in the Middle Ages, follows the rise of industry in England, and then examines the inception of the textile industry in the US. Finally, the chapter focuses on some examples of woolen mills in Oregon and finally the TKWM. Chapter Four contains a study of the housing where workers of the TKWM lived. This study uncovers mill worker neighborhoods during the periods 1900, 1930, and 1960 by using census records, Sanborn Fire Insurance Maps, and Polk Directories. The final part of this chapter is a survey of the neighborhoods, which includes several photographs of the housing as it exists today. This survey looks at private builders' solutions for housing the mill workers. In addition it examines how mill workers who owned land created solutions for housing their family and often a boarder. In the absence of any company housing provided by the TKWM management, these solutions demonstrate creative ways to meet the demand.

Chapter Five is an interpretive plan for the Mission Mill Museum, the non-profit organization that owns and interprets the TKWM today. The plan is in the form of an exhibit overview and relies on the research in Chapter Three and Chapter Four for content and the discussion and conclusions in Chapter Two to form interpretive directions.

CHAPTER II

STATEMENT OF THE PROBLEM AND METHOD

> R.I.P Drive-in movies, traveling circuses, LIFE Magazine, the Scarsdale Diet, contract bridge, zero-base budgets, Lionel train sets, Rock 'n' Roll. Everything we do for fun or self-improvement goes through a life cycle. Once born, it builds, it booms, and eventually and inevitably it busts. Often so do the institutions that provide these experiences. Now gone—or going-going-gone— are regional orchestras, serious bookstores, network news, fraternal lodges, labor unions, the record industry, and country-club Episcopalians.
>
> History museums, and historic house museums in particular, look to be entering the same nosedive to oblivion.[3]

In this passage, Cary Carson, former vice-president of research at Colonial Williamsburg, begins his 2008 article by forecasting the death of the historic house museum and the history museum. While there is no institution that tracks visitor numbers from every historic house museum and history museum in the US, two things support his argument. First, anecdotal information gathered at symposiums[4] on the subject reflects a growing consensus from history professionals that the number of

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[3] Cary Carson, "The End of History Museums: What's Plan B?" *The Public Historian* 30.4 (November 2008): 9-27.

[4] James Vaughan, "Sustainability of Historic Sites in the 21st Century: The Call for a National Conversation, Final Conference Report," *The Forum Journal* 22.3 (April 2007) "At a time when the market for heritage tourism, cultural tourism, and eco-tourism is rapidly expanding, historic sites are drawing fewer and fewer visitors. At the very times when Americans are developing historical amnesia and the need for improved teaching of American history in the schools is critical, historic sites seem to have lost their way. How should the historic site profession (that unique cross section of public history and museum studies) respond to this situation?"

visitors to history museums and historic house museums is decreasing, and second, prominent institutions that track their numbers are showing declines.[5]

Despite growing concern over the number of visitors to historic house museums and history museums, some professionals, such as Max A. van Balgooy, argue that attendance is not the ultimate measure of success. Van Balgooy contends that historic house museums and history museums should be judged by the quality of the experiences they present to the public rather than the number of visitors who attend. While he admits that reaching a consensus on the criteria on which to evaluate qualitative aspects of an exhibit is difficult, he maintains that it is the proper approach when considering the success of an historic house museum or history museum. He states, "Agreement on criteria other than attendance will be a difficult task, but if we avoid the challenge of examining our value and benefit to society, we do not deserve its support."[6] Van Balgooy's desire to change the criteria for evaluating historic sites is based on his resistance to a growing number of museum professionals who believe that the history museum has simply fallen behind technological trends in popular culture. In their view, if history museums are to compete in an increasingly technological world they must invest in sophisticated multi-media exhibits that cater to a perceived short-attention span of technologically savvy younger generations.

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[5] Carolyn Brackett, "Why is Historic Site Visitation Down?" *Forum Journal 19.3* (Spring 2005) "Since 2000, visitation at Monticello has experienced a sharp decline, from an average of 525,000-550,000 annually to 465,000 in 2004. Colonial Williamsburg's annual visitation has declined from 929,000 to 768,000. Mount Vernon has seen a drop in visitation from 1 million in 2000 to 792,000 in 2003."

[6] Max A. van Balgooy, "Crisis or Transition? Diagnosing Success at Historic Sites," Forum Journal (spring 2008).

While Carson rightfully calls our attention to the declining enthusiasm for history museums and house museums, van Balgooy also presents a valid argument against using numbers as the ultimate test of a museum's success. I agree with Carson that studies showing declining visitor numbers, and other surveys that show history museums ranking near the bottom of preferred cultural pastimes, are indications that institutions need to reevaluate their approaches. Van Balgooy helps us to see that the question should not just be how to increase numbers but also how to create meaningful experiences. I agree with van Balgooy that the push for technology is not a panacea for either a decline in numbers or relevance. Although technology is a valuable tool for historic destinations and should be utilized for its potential to disseminate information to the digitally literate public, it does not address the core of the problem. Museums should not invest in improved technologies before investing in an improved message. If their interpretation does not have significance for their visitors, increasing visibility and theme-park type multi-media may only provide a temporary increase in visitation or move the museum too far from an educational and cultural mission and towards a Disneyfied heritage tourist destination. Most importantly, reliance on technology confuses what the historic house museum and the history museum have as their primary resource. This resource is the object or historic architecture. A guiding principal of Richard Rabinowitz's American History Project is "the appeal of the real."[7] In this view, Rabinowitz keeps the object at the center of the show. Museums have the *real* object. In an increasingly virtual world, the real becomes more valuable, not less. In this project, I argue that what matters most

[7] American History Workshop, Inc. (N.Y.), "Six Interpretive Principles," http://www.americanhistoryworkshop.com/interpretivePrinciples.htm

is the interpretation of the real object. Furthermore, I contend that these interpretations need to be guided by a re-examination of the idea of history itself and investment in building connections between the audience and the place.

While the real object takes center stage, interpretation can lead the viewer to see the object in new ways. Instead of confirming the viewer's assumptions about the object, interpretation can lead the viewer to ask questions, see history in a new light, or make connections previously unmade. In his annual address in 2004 to the National Council on Public History, James B. Gardner, Associate Director of Curatorial Affairs at the Smithsonian National Museum of American History, supported the trend in museums that have "shifted from preoccupation with the authenticity of artifacts to issues of significance and meaning [...] and that the artifacts never simply stand as objective evidence."[8] Gardner's point here is that interpretation is necessary to the process of maintaining museums as sites of education, rather than sites of entertainment, or possibly a worse, being considered "quaint, fussy places"[9] with limited relevance to the public they intend to serve.

The insertion of interpretation is not without problems, though. The role of the historian and interpreter has become more difficult as the discipline incorporates broader perspectives that often conflict with one another. The most famous example of this conflict of perspectives is the Enola Gay controversy that took place in 1995 at the

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[8] James B. Gardner, "Contested Terrain: History, Museums, and the Public," *The Public Historian.* 26.4 (November 2004): 15

[9] Patrick H. Butler III, "Past, Present, and Future," in *Interpreting Historic House Museums,* ed. Jessica Foy Donnelly (Walnut Creek, CA: Alta Mira Press, 2002), 40. Butler uses these words to describe the perception some have of historic house museums.

Smithsonian's National Air and Space Museum. At the center of the controversy was an object supercharged with meaning, the B-29 bomber that dropped the Atomic bomb on Hiroshima, Japan. As professional historians sought to present the Enola Gay in a wider historical context using factual information, their interpretation came into direct conflict with the memories and interpretations held by World War II veterans. Tom Crouch, Senior Curator of Aeronautics at the Smithsonian, states the problem of displaying an object to the public when the history surrounding the artifact does not reinforce public expectations. "Do you want an exhibit to make veterans feel good, or do you want an exhibition that will lead our visitors to think about the consequences of the atomic bombing of Japan? Frankly, I don't think we can do both."[10] This extreme example shows that, as the discipline of history becomes more fragmented, interpreting that history to the public is challenging.

Faced with this dilemma, the curatorial staff at history museums and historic house museums has three options. First, they can present the object without interpretation, or with minimal factual information. The second choice is to refuse "revisionist" history and include interpretation that is in line with narratives that have been accepted in the past. The third choice for museum professionals is to present interpretive materials to the public that include a wider perspective than was previously displayed, even if some information may challenge previous interpretations. Faced with these three choices, it is not surprising that many local history museums and historic house museums present a version of either the first or second option to the public. The

[10] Quote found on Web site written by Professor Edward J. Gallagher, Department of English at Lehigh University, "History on Trial." http://digital.lib.lehigh.edu/trial/enola/

first two require the least amount of resources from the organization, and involve the least amount of risk. While the example of the Enola Gay is extreme, it illustrates the tensions that many small museums may feel in relation to their collections and the public they serve. While the option of including a wider history may involve some element of risk, if museum programmers don't take this risk, they face the greater risk of becoming obsolete.

The post-World War II period presented a similar need for interpretive strategies. Although the conditions were different, the interpretive methods that developed from this need can be adapted, in part, to our present concerns. Visits to National Historic Sites, National Monuments, National Parks, and National Recreation Areas rocketed from pre-war levels of 21,236,947 visits in 1941[11] to 59,284,869 in 1957.[12] This increase was a result of middle-class Americans' new found sense of optimism and increased desire to travel due to growing leisure time and wealth. Americans were buying cars faster than ever before, while Congress made a massive $13 billion investment in a new interstate highway system.[13] This trend of setting out on the highway for a family vacation may best be reflected in Americans' newfound love of the recreational vehicle. Sales of these

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[11] United States National Park Service. *Public Use: Tabulations of Visitors to Areas Administered by the National Park Service, 1941-1953* (United States Department of the Interior, February 1954), 1.

[12] United States National Park Service. *Public Use: Tabulations of Visitors to Areas Administered by the National Park Service, 1957-1959* (United States Department of the Interior, February 1972), form 10-59a.

[13] Ronald F. Lee, *Public Use of the National Park System, 1872-2000* (National Park Service, United States Department of the Interior, January 1968), 9.

vehicles increased 143% from 1953 to 1959.[14] Very often the destination of middle-class families was a National Park, which offered both the natural beauty of the American landscape as well as cultural and historical resources that presented the American historical narrative. Faced with their success as a travel destination, the beleaguered NPS needed a considerable investment in their parks to accommodate the growing number of visitors. In 1956, the N.P.S. put forth a plan to meet this need titled *Mission 66*. The plan set out to not only meet the dire critical needs of overextended parks but to offer "the fullest visitor experience"[15] through the creation of museums; roadside markers and exhibits; audio-visual aides; and a new building type—the multi-use "visitor center."

Ethan Carr, in his recent book *Mission 66: Modernism and the National Park Dilemma*, brings to light the national importance of *Mission 66* to the present day profession of interpretation and preservation. He reveals that "The emphasis on interpretation and preservation and the expansion of professional capabilities and activities in these fields made *Mission 66* the most important federal historic preservation effort between the Historic Sites Act of 1935 and the National Historic Preservation Act of 1966."[16] The program expended approximately $1 billion, which provided for the construction of over 100 visitor centers, 584 comfort stations, 221 administrative buildings, and 1,239 units for employee housing and countless roadside and trailside

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[14] Ibid.

[15] United States National Park Sevice. *Mission 66: To Provide Adequate Protection and Development of the National Park Syestem for Human Use* (National Park Service United States Department of the Interior, January 1956), 32.

[16] Ethan Carr, *Mission 66: Modernism and the National Park Dilemma,* (University of Massachusetts Press: Amherst, 2007), 175.

interpretive materials.[17] At the peak of the design phase of the plan, several hundred architects, landscape architects, and associated administrative staff were engaged full-time with project.[18] The decidedly modernist name *Mission 66* belied the plan's intentions to reinvent the N.P.S. interface with the public based on modernist principles of functionality, efficiency, and a desire to adapt the architecture to the surrounding landscape.

Emphasis on interpretation materialized in the plan's focus on creating visitor centers. The new "visitor centers" were intended to be more dynamic than the preceding Depression era museums. The *Mission 66* proposal submitted to Congress concludes that "The visitor center is the hub of the park interpretive program. Here trained personnel help the visitor start his trip with the aid of museum exhibits, dioramas, relief models, recorded slide talks, and other graphic devices, help visitors understand the meaning of the park and its features, and how best to protect, use, and appreciate them."[19] The extent to which the N.P.S. regarded the importance of interpretive material as essential to the visitor's understanding of history can be seen in the 1962 unveiling of the "Cyclorama" building at Gettysburg National Military Park (Figure 1 and 2). The prominent international modern architect Richard Neutra was enlisted for the task of creating an interpretive center that would house the 360 degree "cyclorama" painting, produced in 1884, which captures the battle at Gettysburg, and offers visitors multiple interpretation activities. The plan of *Mission 66* offered park staff, archeologists, naturalists and

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[17] http://www.mission66.com/mission.html

[18] Carr, 142.

[19] United States National Park Sevice. *Mission 66,* 29.

historians resources and facilities where interpretation could be displayed for the public as never before.

The increased need for interpretive material was timely in that it coincided with the publication of Freeman Tilden's *Interpreting Our Heritage*, the first thorough undertaking of an interpretation ethos. While architects gave form to the buildings that would house media intended to enhance the visitor's understanding of the natural landscape and U.S. history, it was Tilden who offered a coherent method and study of techniques that could be used by the emerging profession of interpretation. Tilden offered these six interpretive principles:

1) Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.

2) Information, as such, is not Interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.

3) Interpretation is an art which combines many arts, whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable.

4) The chief aim of Interpretation is not instruction, but provocation.

5) Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase.

6) Interpretation addressed to children (say, up to the age of twelve) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program.[20]

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[20] Freeman Tilden, *Interpreting Our Heritage: Principles and Practices for Visitor Services in Parks, Museums, and Historic Places* (Chapel Hill, NC, The University of North Carolina Press, 1957), 9.

These principles still function as a guide for interpretation today. Indeed, many National Park Service rangers still use Tilden as inspiration for visitor programs. I argue that Tilden's principles are appropriate for history museums as well because they describe the ideal relationship between interpreter and visitor. I will discuss two of the principles here. The first principle provides a good place for history museums to start structuring their interpretation. Tilden elaborates on his first principle in this way: "When a person reads a novel or sees a play, he instinctively measures the fictional behavior against what he imagines his own character and conduct, under such circumstances, would be."[21] What he means here is that fiction and drama can pull the reader in because it presents dilemmas for the reader to resolve for himself. This observation explains the appeal and popularity of the recent *John Adams* HBO mini-series. The mini-series dramatizes the life of this founding father and presents him as a fallible man, putting the viewer in the position of comparing Adams' actions and choices against what the viewer would perceive as the correct course of action, given that viewer's life experiences, personality, and cultural values. History museums and house museums can learn from this by presenting historic people associated with their sites as characters within a narrative. This strategy is used by the Lower East Side Tenement Museum by expressing the specific lives of immigrants who lived in the tenement museum's building, rather than giving the visitor a general story about immigration. While a general story might contain facts regarding the hardships and living conditions of immigrants, the story of a specific person can help put the viewer into an imaginative space where she can judge her life against the character's life.

[21] Ibid., 13.

Tilden's principle, "The chief aim of Interpretation is not instruction, but provocation," can assist history museum exhibit designers to more clearly understand their task. The term *provoke* implies an action on the part of the interpreter that solicits a reaction from the viewer. If the viewer receives the exhibit passively, the exhibit has failed. Yet for Tilden provocation meant more than simply a reaction; he qualifies it by expanding upon this principle: "The purpose of Interpretation is to stimulate the reader or hearer toward a desire to widen his horizon of interests and knowledge, and to gain an understanding of the greater truths that lie behind any statements of facts."[22] From this passage, it is also clear that if the exhibit does not stimulate the viewer towards a *desire* to widen his horizons, then the exhibit fails. As an interpretive ranger, Tilden's task was largely to interpret natural landscapes. His provocative approach for this subject was unlikely to anger, frustrate, or cause a visitor to leave. If we apply his advice of provocation to a museum exhibit dealing with social history, we cannot ensure that some visitors won't be uncomfortable. Curator Susan Crane recommends that we don't allow some discomfort by viewers to limit our approaches. She claims, "It cannot be assumed that education has not transpired, even if the visitor exits angry or feels defrauded."[23] In Crane's experience provocative does not always mean a strictly pleasurable experience. While I agree with Tilden that the goal should be to spark the motivation to learn more, we should accept that the presentation of challenging material might provoke the viewer

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[22] Ibid., 33.

[23] Susan A. Crane, "Memory, Distortion, and History in the Museum" *History and Theory.* 36.4 (1997): 45

or visitor to be uninterested. One solution to this problem may be to offer different layers of interpretation that appeal to varied interests.

Tilden's fifth interpretive principle advocates for the use of stories that appeal to "the whole rather than a part." This is often a difficult undertaking for small history museums or house museums because of the large amount of research required, which may explain why it is the most neglected. Tilden advises making connections between events, rather than displaying objects or histories without a wider context.

By presenting a narrative of a specific character against a wide historical background, a visitor is pulled into a historical story, which helps him make connections to larger historical patterns. In the final chapter of my thesis, I apply this method to a case study at the Thomas Kay Woolen Mill (TKWM) in Salem, OR. The TKWM was chosen as the location for a case study for several reasons. First, as an industrial site it presents a potential opportunity to interpret subject matter that is often overlooked. Andrew Dolkart, Professor of Historic Preservation at Columbia University, expresses the need to interpret immigrant stories in more industrial settings: "Almost all of these [historic house] museums celebrate the lives of historically important figures or were preserved because of their age or architectural significance. The few farmhouses that celebrate ordinary people include farmhouses and log cabins in rural locations. While most of these are worthy of preservation, none focuses on the lives of the tens of thousands of immigrants who settled in American cities."[24] This trend reflects an aesthetic preference to associate *heritage* with pastoral or rural scenes. The overwhelming preference for

[24] Andrew S. Dolkart, *Biography of a Tenement House in New York City: An Architectural History of 97 Orchard Street* (Sante Fe, NM: The Center for American Places, 2006), 114.

pastoral imagery when interpreting "heritage" is a limited and incomplete view. Perhaps this is because nostalgia of the past is better framed in the countryside than within the brick walls of an industrial mill. Nostalgic preferences aside, it is clear that industry holds much heritage, and in a post-industrial America, industrial sites can enjoy visitation as robust as historic house museums accommodated in the 1970s. More than locations to learn about industrial machinery and processes, they are the locations where mothers, fathers, grandmothers, grandfathers, great-grandparents, spent most of their waking hours. While the state of Oregon is associated with pioneer history and the Oregon Trail, there is a more hidden industrial history that often goes unnoticed. At the end of my interview with Alice Lehman, whose parents worked at the TKWM where she helped her mother dress frames in the weaving room when she was a young girl, expressed her familial connection to the mill:

> When you have a grandfather, a mother and a father, and so many aunts and uncles that are tied to something, that really *is* your roots. Just like all the pioneer families that [had] all of their families come across the plains, that's their roots and they will try to keep that [history] going forever. That's the way [my sister and I] felt about the mill. -Alice Lehman.[25]

Ms. Lehman's connection to the mill is as a location of family heritage. In addition to the local stories the mill contains, the TKWM offers an opportunity to display a wider historical context that includes a narrative of industrial revolution in America because woolen mills played a central role in early industrial developments. Additionally, the surrounding neighborhoods the mill contain many houses from the time of the TKWM's construction allowing for a survey of workers' housing, thus gaining a view of the historic landscape of the time.

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[25] The transcript of my interview with Alice Lehman is found in Appendix A of this document.

CHAPTER III

HISTORIC CONTEXT

The Thomas Kay Woolen Mill has been the subject of study completed by Alfred Lomax, a former Professor in the University of Oregon business school, in his two books *Pioneer Woolen Mills in Oregon: History of Wool and the Woolen Textile Industry in Oregon* (1941) and *Later Woolen Mills in Oregon: A History of Woolen Mills which followed the Pioneer Mills* (1974). It has also been the subject of Caryl Gertenreich's Master's thesis, "The Thomas Kay Woolen Mill in Salem, Oregon, 1900-1959" (1978), and included in *Oregon Woolen Mills, 1850-1980*, an 82 page book prepared by Janet L. Baisinger in 1980 for the Oregon Historical Society. In addition to these written histories that compile the available historical records of the mill, in 1968 Salem architects James Hanns and William Lindburg completed 39 drawings of the Thomas Kay Woolen Mill complex to be included in the Historic American Building Survey (HABS) archive. These completed drawings, which show the buildings as they existed in 1968 in detail, are available through the United States Library of Congress, most easily accessed online.

Given the research already compiled on the Thomas Kay Woolen Mill, one may conclude that the subject has been exhausted. When I sat down with Thomas Kay III at the Salem Golf Club to talk about the mill and his family's history, he first challenged me with the question of what I could possibly add to the present written accounts of the mill. My answer to this question is as follows. While the process of collecting available

historic data for the purpose of piecing together a chronology of the mill has been largely completed, there is no scholarship that attempts to contextualize this information beyond including it alongside other studies of Oregon woolen mills, but without a broader consideration of its historical meaning. The current historical accounts, rather than limiting the possibilities of my study with their careful collection of data, offer an opportunity to interpret the data in more meaningful ways.

My interpretive goals, to understand the mill both from the point of view of the worker and within a larger historical context, required additional collection of data and synthesis of that data. For the purpose of understanding the mill's place in history, I conducted a review of secondary literature on the textile industry in the U.S. and visited two other textile mills, the Slater Mill in Rhode Island and the Boot Mills in Lowell, Massachusetts. I found that to place the mill in its context it was necessary to briefly describe English textile mills. Many of the technological advances in textiles took place in England, and technical revolutions in textile production were imposed on top of an already existing dense network of cottage manufactures.

When one is presented with a three and half story mill located in downtown Salem, it is difficult to get a sense of the significance of this building. Mill buildings, as a building form type, or perhaps more accurately, a kind of archetype in our collective national history, conjure up visions of the unending row upon row of uniform six story mills that occupied entire towns such as Lowell and Lawrence, Massachusetts, that were prone to contentious and often violent strikes. They also evoke bucolic visions of a mill pond supplying water to a quietly turning mill stone. While Henry Ford's factory system

and the new modern product it created may tend to occupy a more prominent place in our cultural understanding of the industrial revolution, perhaps no place better embodies the revolutionary nature of the Industrial Revolution than the textile mill, because it contains both images of pastoral life *and* modernization. Henry Ford produced a modern product with modern machinery, while textile mills produced a product that had been made by hand for thousands of years. Woolen and cotton goods manufactures not only created new technologies to produce the textiles, but they required the breaking apart of traditional networks of producing cloth and the transformation of the built environment to house these various modes of production within the mill complex.

Early Development of the Textile Industry in England

The rise of the textile mill in the United States must begin in Great Britain, where the English developed sheep husbandry techniques that produced a wool fine enough for the carding process between 686 C.E. and 1000 C.E.[26] Their high quality wool was unique in the world market. Other countries such as Italy, Asia, and Ireland grew wool, but of a coarser quality not suitable for finer woolen goods. Only the Spaniards who bred the much sought-after and closely guarded Merino sheep during the thirteenth and fourteenth centuries would rival England's quality of fleece. In the period after 1000 C.E., European countries depended on Great Britain's wool to supply their finer garment manufacturing houses. While England was the leading exporter of wool, they trailed behind the Netherlands in the manufacture of woolen goods. They were surpassed,

[26] Kerridge, Eric, *Textile Manufactures in Early Modern England,* (Manchester, UK: Manchester University Press, 1985), p. 2.

however, during the thirteenth century when Flemish wool textile fullers successfully blocked the use of a newly developed technology, the water-powered fulling-mill, or "full-stocks." The traditional technique they were protecting was the practice of "foot-fulling," a practice of walking on the wool textile to produce a fuller density and texture for the cloth.[27] By successfully coercing public officials to ban the use of the fulling-mill, the woolen-fullers protected their craft and means of earning a living, but only for a short time. Even though foot-fulling produced a superior quality finish to the wool cloth, it could not compete with the water-powered invention, which treated textiles in vastly greater quantities and for a fraction of the cost. The English, who it must be assumed put down any such uprising by their fullers, made wide use of the water-powered fulling-stocks. The English system of gathering textiles from weavers working in the home, combined with the implementation of the water-powered fulling machines, was enough to create such a trade imbalance that it forced the Netherlands to prohibit the importation of English woolen textiles. This policy could not be adequately enforced and the Flemish market was soon flooded with inexpensive woolen goods from England. An account from the time compares the tremendous quantities of English woolen cloth entering the Netherlands for distribution to "a great inundation of the sea."[28] This flood of textiles from England was not contained to the Netherlands; by the year 1500 English textile

[27] Ibid. 12.

[28] Ibid. 13.

merchants had developed extensive massmarkets for their cloth throughout Europe and reaching as far as Africa and America.[29]

It is believed that the buildings that housed the new fulling machines were mostly one-story buildings with an attic for storage. Due to the great weight of the stocks and the large quantities of water used, fulling was exclusively a ground-floor operation (figure 3).[30] The combination of the fulling machines with water-wheels, which were housed in these small buildings, generated the first recorded use of water power to perform a textile production task. The remaining processes required in textile production were too delicate and complex for the machinery of the middle-ages to perform without the dextrous hands of an artisan carefully guiding the process. Although Leonardo da Vinci described plans of an improved spinning technique using a *flyer*[31], a device that allowed the processes of twisting and winding to proceed simultaneously, technological gains were nominal until the late eighteenth century.

Having gained a stable market for their goods, the years 1500-1650 mark a period of increasing regulation when the British government passed statutes to standardize the quality of goods made in loosely arranged domestic networks spread throughout rural

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[29] Ibid. 14.

[30] Ian Goodall, *Yorkshire Textile Mills: The Buildings of the Yorkshire Textile Industry, 1770-1930,* (London, UK: Royal Commission on the Historical Monuments of England, 1992), p. 22.

[31] Steve Dunwell, *The Run of The Mill: A Pictoral narrative of the Expansion, Dominion, Decline, and Enduring Impact of the New England Textile Industry,* (Boston, MA: David R. Godine, 1978), p. 6.

areas. These laws also required an apprenticeship program for the producers.[32] It is also during this time that clothing merchants, enjoying growing profits from steady production, systematically weakened the medieval clothing guilds and supplanted the guild based cooperative system with a commission-based system that favored the merchants.[33]

Definition of Textile Manufacture Terms

Before describing the advances that changed the speed, power-source, building size, and quantity of textile production, it is necessary to briefly describe the steps taken to fabricate woven cloth from raw wool. Processing wool requires several steps. The first activity is sorting and categorizing the raw fleece by assigning it a grade based on the quality of breed and the part of the body of the sheep from which it was sheared. Once graded, a cleaning or *scouring* process begins to remove dirt, dung, and lanolin from the wool by agitating the wool in a water and cleaning solution. After the scouring process, the still tightly napped wool fibers must begin to be untangled. This is accomplished by first *picking* the fibers, which involves coarsely tearing apart the fleece, and then in separate operation of *carding* the fibers into a more finely straightened state. In the final stage of carding the wool is pulled to lengthen the wool into loose, thick strands called the *sliver* or *roving* and subsequently fed into a machine for *spinning*. The spun yarn is then transferred to a weaving loom and may be used as the *warp* or the *weft* (the weft is

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[32] Herbert Heaton, *The Yorkshire Wollen and Worsted Industries* (London, UK: Oxford University Press, 1920), p. 233.

[33] Ibid. 89.

also known as the *woof*). The warp thread runs lengthwise, from the back of the loom through the *headles* contained in *frames*, to the front, where the operator is positioned. The weft thread runs back and forth, crosswise, perpendicular to the operator. Once the textile has been woven, its surface must be *fulled* using a soapy solution and an operation that stresses the fibers. The purpose of fulling is to fill out the textile, which has a flat texture with a very visible weave, comparable to burlap. When the fulling is complete, the nap may be teased out further through *teasel gigging*. Finally, the nap is leveled to a uniform height by *shearing* the surface. For plaid textiles, dyeing is completed before the wool is carded and for solid colors the textile may be dyed after it is woven.

Innovation and the End of Domestic Manufacturing

The practices described above were handed down for generations within all self-sufficient families, who, along with growing crops for their needs, would be able to craft garments from either flax or wool.[34] Even as the English system of production became more standardized, production was still based in the home. Throughout the eighteenth-century, small-scale employers acted as the first level of governance over these domestic producers. They set wages and placed orders with the families. They roamed townships and collected carded wool, spun yarn from spinners, and woven cloth, which they transported by horse to deposit at the next dwelling to undergo the next step of manufacture. The employer eventually brought the finished goods to a "cloth hall," where he was granted membership based upon a fee, and given reserved space where he

[34] Steve Dunwell, *The Run of The Mill: A Pictoral narrative of the Expansion, Dominion, Decline, and Enduring Impact of the New England Textile Industry,* (Boston, MA: David R. Godine, 1978), p. 5.

could display the goods to merchants looking to stock their stores or export the cloth abroad.[35] Increasingly during this period, small manufacturing shops were created where the ancient methods of production were gathered within a single building. These shops owned by a "master" were created in the interest of enforcing an uninterrupted workday and shortening the distance the wool goods must travel between manufacturing stages. But even as these modest shops grew in number, the overwhelming location of production was in the home.

It is at the end of the eighteenth century when machinery is introduced that radically transforms the system of production and breaks apart the centuries-old system of domestic production. The new mechanisms, although wood-framed, and in their first iterations often hand-cranked, were nevertheless a significant break with past methods. Spatially, the new machines that were patented beginning around 1770 required environs larger than the home. The social and technical impacts were many as the finesse of the artisan was finally mimicked within the workings of the new inventions. The new productivity the machines provided was amplified by harnessing waterpower and, later, steam-power.

In 1767, John Hargreaves completed the "Spinning Jenny," named after his wife, which automated spinning by performing the drafting and twisting techniques previously done with a spinner's fingers.[36] With one hand, an operator of the machine would crank a large wheel, while moving a carriage back and forth. The process filled approximately 40 spindles, an improvement over the former "double spinner" which held two. Possibly

[35] Ibid. 359.

[36] Dunwell, 8, 10.

more important than the increased production capacity was the development of a mechanism to accomplish what could only be done by hand. The wood frame, hand cranked Spining Jenny was soon replaced by a larger cast-iron machine that was patented in 1779 by Samuel Cromford. His belt-driven Spinning Mule, or "Iron Man," established the form type for carriage spinning that would persist into the twentieth-century. Along with the benefits Cromford's Spinning Mule offered, the machine demanded specific spatial requirements that much exceeded the home shop. The machine needed sufficient room to permit the carriage to travel back and forth. So large was this need that Spinning Mules were best installed in spaces without columns. This resulted in their early placement on the topmost floor of mills, under roof trusses (figure 4).

The Spinning Mule and the Spinning Jenny were still unable to spin a strong enough yarn for the warp. The yarns these machines created were well suited for the softer, filling yarn of the weft. In 1738 John Wyatt and Lewis Paul develop a method of roller spinner but were unable to make it work reliably enough to market the machine. In 1769, building on Wyatt and Paul's method, Richard Arkwright combined roller spinning with a *flyer* and successfully created a machine to spin warp thread that was capable of being water-powered. Richard Arkwright's strong personality and business drive led him to open a water-powered mill in 1771, but it did not become profitable until he partnered with Jedediah Strutt in 1774, who provided the capitol for Arkwright to improve his designs and profit from the machinery. The Arkwright Frame, or simply the "water frame," instantly replaced the skilled spinners (reported to have been exclusively female) who were dotted throughout the countryside by replacing them with less skilled laborers

to operate the machines. These gains in English industrial innovation were guarded as national secrets, to the extent that a law was passed that forbade any worker employed in the textile industry to leave Great Britain.[37] Dissemination of information to other countries regarding the textile machinery could be prosecuted as treason.[38]

The introduction of these machines combined with larger amounts of available capital for investing resulted in the mill system largely eroding the use of domestic production. With the mechanization of carding introduced during the same period, every aspect of textile manufacturing could be waterpowered except weaving. Artisan weavers represented the last holdouts in an endangered way of life. During the same period inventors were working towards the completion of a power loom, and mill owners were eagerly awaiting its arrival.

In 1785, Dr. Edmund Cartwright, a Kentish preacher, completed a rudimentary power-loom.[39] It was a hulking mass of a machine that required two people to crank it, while others manually advanced the material. While it was too burdensome to be widely used and offered no savings in human labor over the hand loom, it established a path for other designers to follow. By 1803 a successful powerloom was on the market and by 1813 fourteen factories in Northern England employed a combined total of 2,400 power

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[37] Everett, Griff, *Samuel Slater-Hero or Traitor? The Story of an American Millionaire's Youth and Apprenticeship in England,* (Derbyshire, UK: Page Whelan, 2006), p. 38.

[38] Ibid.

[39] Dunwell, 29.

looms, 2,000 of these were powered by steam engine.[40] A drastic change was in full swing but not yet complete, for in that same year it is reported that 240,000 hand looms were still in service.[41] The industrialization underway contributed to the swelling of the populations of cities, and this was especially true for the northern cities, in the historic county of Yorkshire, where the textile mills had been established in greater numbers than any other region in England.[42]

Labor Uprisings

In 1811 a combination of forces would cause a desperate situation for domestic weavers. Great Britain would feel the negative effects of their globalized textile market when the United States passed the Non-Intercourse Act of 1811. British exports fell from £48,000,000 in 1810 to £32,000,000 in 1811.[43] As U.S. demand for Engish textile goods evaporated overnight, English stores of cloth rose, causing the price of textiles at the cloth houses to plummet. Additionally, population increases in the growing cities and poor agricultural harvests caused a general inflation of prices. A "quartern loaf" of bread, a staple for working-class families that couldn't afford meat, had sold for 1*d* before 1800,

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[40] Frank Ongley Darvell, *Popular Disturbances and Public Order in Regency England* (First Edition London, UK: Oxford University Press, 1934, Reprinted New York, NY: Augustus M. Kelley Publishers, 1969), p. 57.

[41] Ibid.

[42] Ibid. 50.

[43] Ibid. 19.

but by 1881 was as high as 5*d*, or 8*d* in some areas.[44] In the decade leading up to these events, weavers had watched their wages fall steadily with the introduction of the power loom. The weekly wage of hand loom weavers in the northern town of Bolton, for example, fell from 25*s* in 1805, to 22*s* in 1806, to 18*s* in 1807, to 16*s* in 1809, and to a low of 14*s* in 1810-1811.[45] This decline in wages was directly attributed to the introduction of the power loom.[46] Other textile workers felt the squeeze from technology as well. English *croppers* who sheared the raised nap of fulled cloth by hand in small workshops behind their homes were replaced with the introduction of *gigging* mills in 1802. The introduction of these technologies caused occasional "frame breaking" incidents throughout England. These isolated incidents transformed into a general uprising in 1811 by textile workers who stormed mills and smashed machinery of every sort. At the onset of the disturbances, public opinion sided overwhelmingly with the weavers, thus making the situation beyond the control of local law enforcement. The uprising lasted two years and required the dispatch of infantry and cavalry troops totaling at least 10,000 to put down the rebellion in the north of England, a number larger than what was required for several successful foreign military campaigns.[47] This rebellion is most commonly known as the Luddite Rebellion after Ned Ludd, a possibly mythical figure, who was said to have smashed two frames and to have contributed to the

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[44] Ibid. 33.

[45] Ibid. 54.

[46] Ibid.

[47] Ibid. 260.

organization of the uprising. Whether or not Ludd was a mythical or real folk hero, his image was a unifying symbol for the revolt.

The Luddite Rebellion marks the end of the domestic system of production, and throughout the rest of the nineteenth and well into the twentieth century, centralized mills, containing all aspects of textile production grew in size and number. The riots also marked the change from rural manufacturing to industrial manufacturing. While the nature of the work would change, textile production would remain the largest employer in northern England, employing hundreds of thousands of people each year until it was surpassed by coal mining in the 1920s (figure 5).

Weavers' Cottages, Mill Buildings, and Associated Architecture

During the nineteenth century, the area of West Riding within the historic county of Yorkshire came to prominence as the leading textile area in Great Britain.[48] As early as 1770, Yorkshire supplied roughly one third of all domestic woolen textiles and nearly one half of wool textile exports."[49] Yorkshire contained both agricultural lands suitable for wool growing and expanding urban areas where the goods could be traded. An example of the great amount of goods being traded by the mid-nineteenth century is reflected in the opulent Bradford Wool Exchange, built in 1867 and designed by architectural firm Lockwood and Mawson (figure 6). The style of the building is influenced by the Gothic Revivalism that was popular during the first part of the 1800s in England. Its design is

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[48] D.T Jenkins and K.G. Ponting, *The British Wool Textile Industry 1770-1914* (London, UK: Heinmann Educational Books Ltd., 1982), p. 1.

[49] Ibid.

not strictly historicist, as it does not attempt to precisely replicate a gothic church; rather, it constructs an essentially modern building form--a multi-story commercial office building containing an open trading floor--using gothic arches, hammer beam trusses, and gothic ornamentation. The Exchange's style reveals the tension that existed between the advancing industrialism in the cities, brought on by the textile industry, and the cultural tastes that still preferred the imagery of pastoral life. For example, this prominent building of the wool industry was made possible by wealth created from modern factory production, yet those who held positions of power and orchestrated the end of artisan production in favor of machine produced goods, adopted the style advocated by John Ruskin and William Morris. The woolen merchants' decision to use the Gothic style, which John Ruskin claimed to evoke "the craftman's hand," shows that society was not yet entirely comfortable with the loss of artisan producers.

Writing in 1920, English historian Herbert Heaton offers a description of the typical weavers cottage in 1797 based on documents and first hand descriptions. The architecture described shows how the work and home-life were entwined.

> The houses were all shapes and sizes; the larger possessed two storeys [sic], but the greater number of dwellings enjoyed only one. In smaller dwellings the work was carried on in the living-room or the sleeping chamber, but to many houses a low shed was appended, with a long 'weaver's window,' in front of which the loom was erected. As the type of house grew larger, other rooms and outhouses were added, and the dwelling of the average well-to-do yeoman or clothier could boast living-rooms, pantry, attic, loom-shop, stable, farm buildings, and a yard. The upper storey of many houses was approached by an external staircase [...]. Casement windows with pebble glasses let in the light, and there was often some simple decoration of the exterior by training ivy and creepers over the walls.[50]

[50] Heaton, p. 290

This passage details three types of weaver's cottages. The first kind is the smallest dwelling, one that would be indistinguishable from other non-weaver residences. In these residences the work and living spaces overlapped as the work was done in the living-room. The second type possessed a shed roof constructed for a dedicated space for weaving complete with a "weaver's window." The third type positioned the weaving quarters in the attic and often attached an external staircase and entrance to keep the work and living spaces separate. This last design was further developed by independent builders who constructed groupings of specialized cottages to sell to weaver families or to be operated by a manager who would supply housing to a wage-based workforce. The top floor was accessed by means of an external staircase and the lower floor was the domestic living quarters (figure 7). These weaver's cottages were built in the hundreds between 1770 and 1850 in Yorkshire.[51]

From 1770-1825 smaller multi-storied mills were established to house multiple operations of production and were powered by water wheel or steam engine. Later mill complexes in England covered acres of land such as the Saltaire Mills in Shipley or towered along the riverbanks such as Starkeys' Mill in Huddersfield. While these mills represent the architectural evolution from the weaver's cottage, this development occurred in the United States as well. Entire cities such as Lowell and Lawrence, Massachusetts would exist solely for the production of textiles. At this point we will follow the rise of the textile mill as it occurred across the Atlantic Ocean on the eastern coast of the new Republic.

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[51] Giles, p. 20

The Rise of the Textile Mill in America

Visions of America: Agrarian vs. Industrial

In 1760, concerning the potential importation of Britain's model of factory manufacturing to America, Benjamin Franklin describes public sentiment in the thirteen colonies as widespread unease or outright fear. He used this perceived fear of manufacturing, and his own distaste of it as a means of employment, to persuade readers of his one-shilling gazette to support England's expansionist agenda during the Seven Year War. More land was needed to assure the agrarian lifestyle, he argued. He claimed that laws were not adequate to keep out manufactures, but ample available land to offer citizens would block the development of mill life.

> A people spread thro' the whole tract of country on this side [of] the Mississipi [sic], and secured by Canada in our hands, would probably for some centuries find employment in agriculture, and thereby free us at home effectually from our fears of American manufactures. Unprejudic'd men well know that all the penal and prohibitory laws that ever were thought on, will not be sufficient to prevent manufactures in a country whose inhabitants surpass the number that can subsist by the husbandry of it. [...] Manufactures are funded in poverty. It is the multitude of poor without land in a country, and who must work for others at low wages or starve, that enables undertakers to carry on a manufacture [...]. But no man who can have a piece of land of his own, [...] is poor enough to be a manufacturer, and work for a master. [52]

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[52] Benjamin Franklin. *The interest of Great Britain considered with regard to her colonies and the acquisitions of Canada and Guadaloupe. To which are added, Observations concerning the increase of mankind, peopling of countries, &c. As the very ingenious, useful, and worthy author of this pamphlet (B------n F-------n, LL. D.) is well known and much esteemed by the principal gentlemen in England and America; and seeing that his other works have been received with universal applause; the present production needs no further recommendation to a generous, a free, an intelligent and publick-spirited people.* [Boston], 1760. (Price one shilling). Based on information from English Short Title Catalogue. Eighteenth Century Collections Online. Gale Group. http://0-galenet.galegroup.com.janus.uoregon.edu/servlet/ECCO p.19-20.

Franklin made multiple wide-ranging contributions to society as an inventor and figure of Enlightenment science, yet he viewed the promise of America in an agrarian society rather than a nation of manufactures. As his career testifies, this was not an anti-technological view, but a plan for a society that could avoid the extreme poverty he regarded as a necessity for industry. During the same period, England also desired to keep the colonies free of industry but for different reasons. It was not from interest in social issues of the colonies, but a desire to retain a strong market for British exports and to perpetuate the colonies' dependence on England.

The Declaration of Independence removed England from the discussion of manufacturing in the U.S. and soon after the end of the war in 1780, a debate occurred in the new government between pro-industry members and those who favored agriculture as the mainstay of the U.S. economy. James Madison and Thomas Jefferson argued to exclude industry. Madison observed that, historically, a population of landless poor were easily appealed to by agitators wishing to overthrow a republic and could give rise to a dictatorship. For Madison and Jefferson, land ownership ensured a more stable democratic society. Additionally, Jefferson extolled the virtues of farming as dignified work that fostered a civic-minded population.[53] Jefferson's moral overtures were persuasive but not enough to block the establishment of industry in the colonies. It should also be remembered that the idyllic, pastoral lifestyle Jefferson espoused was every bit as dependent on the exploitation of labor as industry was. Tobacco, the first colonial export to England, was initially wholly dependent on white indentured servants.

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[53] Walter Licht, *Industrializing America: The Nineteenth Century* (Baltimore, MD: The Johns Hopkins University Press, 1995), p. 14.

Indentured servitude was soon replaced by a more efficient and complete means of exploiting labor—the African slave trade. The African slaves could not disappear into the general populace, as indentured servants were prone to do. At the time Thomas Jefferson was elected the third President of the United States in 1801, of the 5.3 million inhabitants in the United States, over 1 million were African slaves.[54] With this fact in mind, Jefferson's views of agriculture as a more democratic culture were flawed. It may be that Jefferson's support of agriculture was as much based on aesthetic preferences as a belief in a democratic republic.

Despite Franklin and Jefferson's concerns, industrialization took hold in America and began to change the landscape. Industry advocates in the U.S. government led by Secretary of the Treasury Alexander Hamilton (appointed in 1789) assisted newly formed mills by making industry-friendly government policies and, in some cases, offering loans.[55]

Rhode Island Style Mills

The birthplace of the new textile industry in the U.S. was along the Blackstone Valley in Rhode Island. The relatively restrained size and scope of the mills would persist in Rhode Island with the exception of a few larger complexes. The modest mills that dotted the Blackstone were built in a variety of styles, although they were essentially similar in their size, massing, and basic character. Their construction was a mix of heavy-

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[54] Ibid, xiii.

[55] Arthur Harrison Cole, ed. *Industrial and Commercial Correspondence of Alexander Hamilton Anticipating His Report on Manufactures* (Chicago, IL: A. W. Shaw Company, 1928).

timber framing and load bearing masonry rubble walls. The first water-powered mill on the Blackstone was likely not considerably more of a challenge for New England builders than a sturdy dwelling, or a perhaps a Shaker meetinghouse, which some of the mills resembled. Moses Brown, an entrepreneurial capitalist who returned to business after a short retirement, constructed the first of these mills in 1793 (figure 8). Brown partnered with Samuel Slater, an English immigrant who slipped out of England with detailed knowledge of the Arkwright "water frame" and the English system of production. Together they constructed the first water-powered textile mill, capable of "perpetual spinning,"[56] along the shore of the Blackstone River in Pawtucket. Sheathed with oak clapboards, the small, 43' x 29', oak, post-and-beam building, which rested on a rubble foundation with brick stemwalls, did not differ remarkably from other buildings at the time. The wide interior span of the beams required the support of a single row of posts running longitudinally down the center of the plan, splitting the interior space in two. This created two (approximately) 12' bays (figure 9). By making no exceptional modifications to the New England timber frame,[57] the builders' showed their confidence in the load bearing capabilities of the building techniques commonly used for stout dwellings or other buildings. Their confidence proved correct and with a few modifications, many mills continued to use heavy timber construction into the twentieth-century. The mill was only 29 feet wide in order to allow maximum daylight penetration. As the mill grew, it was restricted to longitudinal additions in order to preserve maximum

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[56] Ibid. 73.

[57] The builders used 9" x 9" posts and the 10"x10" beams, which were spaced approximately 7' on-center. These dimensions and spacing were common for other buildings. Dimensions found on HABS-HAER drawings.

daylighting of the interior (figure 10). The result of expanding along a singular axis made a long and narrow footprint of 29 feet by 149 feet by 1820. This tendency of an elongated, narrow footprint is a prominent characteristic of American textile mills in the nineteenth century. Another feature of the Slater Mill is the long trapdoor monitor that was installed at the time of the addition in 1820. The roof monitor allowed additional light into the attic space. Roof fenestrations were a common characteristic of the nineteenth century mills and they varied in style. Supplementary power was added to Slater Mill between 1828 and 1832, and a protruding bay was added above the new Jonval turbine, which was surmounted by a cupola containing a bell that replaced an earlier version. Although the protruding bay was installed to contain the vertical line-shafting that transferred the power from the turbine to upper floors, other, later mills in Rhode Island, constructed exterior stair-towers similar to Slater's perpendicular wing. The stair-towers had several advantages over an interior stairway. First, attaching a stairtower outside the rectangular floor plan allowed more room for the large textile machines. Second, as fire was a constant threat, the exterior stair removed an easy path for a fire to reach upper floors, and, finally, it improved safety conditions as it acted as a fire escape. Aesthetically, the tower breaks up the long repeating rhythm of a mill and provides a complimentary location for the bell cupola. The combined bell and stair tower was a ubiquitous element found on the larger Rhode Island mills after 1814 as it was both decorative and useful.[58]

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[58] Martha and Murray Zimiles, *Early American Mills* (New York, NY: Clarkson N. Potter, Inc., 1973), p. 113.

The next stage of development in mill architecture begins in 1809 upon the completion of the Lippett Textile Mill, located in West Warwick, Rhode Island (figure 11). The three-and-one-half stories height and 106-foot length of the mill gives it a prominent size that towered over smaller Blackstone mill buildings occupied with functions such as milling grain, or a singular textile activity such as carding. The new size reflected the new capabilities of mass production, but the overall aesthetic of the mill downplays its revolutionary aspects. The well-proportioned, shingle-clad design of the mill included a large finely detailed cupola that resembled cupolas found on Federalist public buildings. These features show that Col. Christopher Lippitt provided funds to builder George Burlingame for aesthetic concerns alongside the utilitarian requirements. The "fear of industry" that Franklin and Jefferson spoke of had not fully abated and the design of building reveals the mill owners' desire to project an image worthy of civic pride rather than evoke images of English industrial slums. It would be incorrect to consider the overall massing as being determined by much more than utility, but nonetheless the proportions and detail of the building have a simple dignity that would have blended well with the surrounding architecture. Incidentally, it is interesting that the Lippett Mill very closely resembles Richard Arkwright's Lower Mill at Cromford, England built in 1777 (figure 12). Although there is no direct evidence linking the two mills, it is quite likely that Arkwright's mill influenced the design of the Lippett Mill either by means of a description from a recent English emigrant or from an American who traveled abroad. While the Lippett Mill had precedent in England, in the U.S., it was a new type of industrial architecture and its height and plan size established the

general massing of small to middle-sized mills that would be built along the Blackstone over the next century.

The Lippett Mill was built to the dimensions of 35' x 106' compared to the approximate 29' x 100' footprint of the Slater Mill in 1809.[59] The slight widening of the plan necessitated two rows of posts on the interior to support the wider span of the beams, which created three bays (figure 13). Another notable element of the building that was widely used for other mills at the time was the clerestory windows, which more effectively lit the attic space than narrow trapdoor monitors. Like Slater Mill, the Lippitt Mill was constructed using common framing techniques of the time.[60] While these techniques, as mentioned before, were strong enough to carry the weight and vibrations of the machinery, the system of construction had drawbacks as it was highly susceptible to fires. The first effort to lessen this risk was to replace the timber exterior walls with stone-rubble masonry construction. This development can be seen in the Nightingale Factory, a stone textile mill built in Georgiaville, Rhode Island in 1812 that has rubble walls built two feet thick.[61]

Although stone construction did lessen the amount of fuel a fire would consume, and increased the chance of the exterior walls surviving the fire, the interior would still to be completely destroyed. As the interior collapsed, it could bring down sections of the exterior because iron tie bolts connected the large beams to the walls. Nonetheless,

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[59] Dimensions gathered from drawing completed by HABS-HAER documentation.

[60] HABS documentation, "Lippitt Mill RI-338", p. 2.

[61] William J. Pierson, Jr., *American Buildings and Their Architects, Technology and the Picturesque: The Corporate and Early Gothic Styles* (Garden City, NY: Doubleday & Company, Inc., 1978), p. 44.

masonry construction was an improvement in fire suppression and was the material of choice for Rhode Island mills after 1810.[62] Although masonry construction required a lengthier, more labor-intensive building process, it had a long precedent in dwelling construction in Rhode Island.[63] The Nightingale mill is of the second generation size (originally 80' x 36' before four additional bays lengthened its footprint), yet has the older-style trap-door monitors that Slater used and does not have a free standing stair and bell tower that was ubiquitous of the mills built at that time. The windows are not much larger than those found on a house, and with 2' thick walls, this must have left the interior fairly dark. Later developments in mill engineering (around 1850) would make use of arched windows to allow for a greatest possible size of the windows. The Nightingale is more crudely built than other mills of the period, likely due to the frenetic construction of mills at the time to supply wool for soldiers' uniforms engaged in the War of 1812.[64] Even as a hastily built mill, it could not forgo all aesthetic considerations, as the careful curve of the roof of the cupola shows.

The greatest technological development for the suppression of fire in mill buildings during the first half of the nineteenth century was the "slow-burning" frame. This new framing technique, which is first seen in Rhode Island mill buildings around

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[62] Henry-Russell Hitchcock, *Rhode Island Architecture* (New York, NY: Da Capo Press, 1968), plate 31.

[63] Rhode Island "stone enders," which integrated a large masonry chimney into a load bearing masonry wall, had existed for over a century before mills made wide-spread use of masonry construction.

[64] Pierson, 45.

1830[65], removed the problematic joists that acted like kindling during a fire (figure 14). The joists that were required by the post-and-beam building tradition created pockets of air that fed fires and were easily consumed because of their smaller size. These characteristics sustained the flames until they were hot enough to penetrate the floor and completely engulf the building. To solve the problem of floor joists, builders removed them completely. In order to compensate for the loss of structural stability, mill designers increased the width of the beams and posts, and, most significantly, the thickness of the floor was increased from that of a sheathing material to a load bearing size (figure 15). Floors were commonly four inches thick, either achieved through double flooring or a single layer of heavy flooring boards. By removing the joists, the fire was left with smooth surfaces, which inhibit the spread of fire, and beams that would maintain their structural integrity even if they were heavily charred. With the new system, fires took considerably longer to spread, which allowed time to contain and extinguish the fire. The success of the slow-burning frame caused it to become widely used into the twentieth century even as other technological options became available.

Early Mill Housing

Correspondence between mill owners during the inception of textile mills before 1800, reveals that the construction of the mill building was the least of the pioneering industrialists' worries[66]. What *did* trouble the proprietors of these mills were two issues.

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[65] HABS documentation of the Lippett Mill reports that the frame was updated from the older style framing to a slow-burning frame in 1830.
[66] Cole, 7, 71, 109

First, they complained of a lack of skilled laborers, or, *any* laborers for that matter, to operate the machinery. Secondly, the entrepreneurs had much difficulty procuring the machinery before 1800. To solve the issue of a lack of workers, mill owners learned that employing entire families led to the most stable and affordable workforce. This was due to the self-governing nature of a family and the eighteenth and nineteenth century prejudice that otherwise "idle" women and children were well suited for factory work, but only required a fraction of the wages of men, or, in the case of children, no pay at all.[67] To persuade families to work at the mills, it became clear to employers that they would need to construct workers' housing as an incentive. The housing that was built in 1809 at the Lippett Mill (figure 16) is thought to be the first grouping of company housing of its kind in the U.S.[68] The housing at Lippitt continued into the 1850s[69] and as the decades passed the dwellings increased in size from smaller single family cottages to larger tenements built to house eight families.[70] Other Rhode Island mills built worker housing as well, such as the stone construction dwellings for the mill in Georgiaville built in 1812.

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[67] In 1810, English emigrant and mill owner Colonel Humphreys solved the problem of having an unwilling workforce by collecting 73 orphans from the New York Almshouse and placed them in indentured servitude. Humphrey Milford, *The American Wool Manufacture* (London, Oxford University Press, 1926), 235.

[68] William H. Pierson, *American Buildings and Their Architects: Technology and the Picturesque, the Corporate and Early Gothic Styles* (Garden City, NY: Doubleday & Company, Inc., 1978), 57.

[69] Pierson, 56.

[70] A. N. Fowler, "Rhode Island Mill Towns," *Pencil Points* (May 1936, vol. 22): 20

Waltham Style Textile Mills

The Rhode Island textile mills that developed along the Blackstone Valley in the nineteenth century are characterized by their small to moderate size and more independent ownership. These characteristics stand in contrast to the towering, brick mill complex of Lowell, which was run as a self-contained city, owned by a large corporation from afar. These differences may lead to the Rhode Island type being more associated with a picturesque image of the mill and conversely the larger complexes in Massachusetts to being more associated with labor strife, images of the industrial revolution, exploitation, and company owned dorms. While it is true that the Lowell business model can be seen as a wholly new chapter distinct from the Rhode Island mills because it required a major capital undertaking, the two had many things in common. Most differences were of scale and scope rather than a genetic difference. Both had company housing, immigrant workforces, and industrial goals. From the outset, like the early Rhode Island builders, Francis Cabot Lowell was concerned with the social image of his mill. As detailed above, although smaller in scope, the Rhode Island mills built company housing as well. In Rhode Island, the 60-68 hour work week in the early 1800s combined with mill company housing gave owners control over the majority of the workers' daily lives, but it is particularly in Lowell, due to its size, where these paternal elements of control become most organized and intentional, evident from company policies, diaries of the workers, and building campaigns.

Francis Cabot Lowell, a wealthy Boston merchant, went abroad in 1810 seeking rest to better his state of health. He found rejuvenation in England, although not from time spent resting in the quiet countryside, but instead from watching frenetic power-looms weave yard after yard of fabric within English textile mills. As a merchant who heavily financed the shipping-trade, Lowell was allowed entry to many mills where he asked numerous questions about every facet of the operations.[71] As a potential customer of the mill with deep pockets, he was not suspected of gathering information for his own capitalist venture. Upon his return to America in 1812, he set to work at once to reconstruct the power-looms he saw in England and to establish a cotton textile mill that included every process of textile production within a single mill complex, which was known as an "integrated" mill.

Lowell raised the incredible sum of $300,000 through his connections with the Boston Associates, a cadre of Boston shipping tycoons who were seeking new investments due to a downturn in shipping. Lowell had convinced them to invest in an experiment at Waltham, Massachusetts. Lowell's venture was an economic success for the investors, returning steady dividends of nearly 20 percent from 1817 to 1826. Lowell's success was in part due to his decision to attract young farmwomen to operate the machinery. The Rhode Island mills had appealed to families to fill their positions, but the idea to raise a workforce of laborers entirely made up of women was unique to

[71] Hannah Josephson, *The Golden Threads: New England's Mill Girls and Magnates* (New York, NY: Duell, Sloan, and Pearce, 1949), 20.

Lowell.[72] The buildings of Waltham were integral to his mission of a mill that handled all aspects of making cotton cloth and that was operated by a female workforce.

The first mill building at Waltham was completed in 1813. Its footprint of 90 by 40 feet[73] was dimensionally similar to the Rhode Island mills. Yet, it was clearly not a Blackstone style mill. It was substantially taller than the Rhode Island predecessors and the walls were made of brick rather than stone. A painting of the mill shows a grand cupola placed in the center of the mill, which was also a new placement from preceding mills. The mill complex was an idea Lowell borrowed from England. However, he did depart from the English mills in one significant way. Reacting to the scenes of poverty and the coal-stained streetscapes of England, Lowell set up a rigid social hierarchy and established moral codes of conduct for the young operatives. Historian John Coolidge describes Lowell as attempting to establish more than a location of industry but a kind of idealized colonial town with strict social classes: Lowell "visualized the industrial town in terms of an early republican seaport, with community organized as a hierarchy of clearly defined groups. In the industrial town, however, the structure would be utterly rigid, the castes immutably fixed."[74] These desires of Lowell were manifest in hierarchy of architecture, each positioned and designed according to the occupants' social status. When Lowell died in 1817 at age 42, he had set in motion a plan for the industrial town that would be repeated on an even larger scale in the town that would bear his name.

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[72] Ibid., 24

[73] Pierson, 60.

[74] John Coolidge, *Mill and Mansion: A Study of Architecture and Society in Lowell, Massachusetts 1820-1865* (New York, NY: Columbia University Press, 1942), p.32

The first buildings in Lowell built by the Merrimack Company closely resemble the mill buildings that existed at Waltham. These individual mills were arranged in symmetrical groupings, closely sited but not connected (figure 17). These mills were replaced beginning in the 1830s with long, snaking, contiguous rectilinear mills that averaged five to six stories in height. These mills changed the streetscape from a collection of repeating individual mills to a labyrinth of contiguous brick walls (figure 18). Although there was no limit to the building's length, the width was still determined by daylighting needs, as electric lighting generators were not installed in Lowell until soon after 1880.[75] The interiors of the mills continued to use the slow-burning construction, but replaced the large wood posts with slim cast-iron posts. Cast-iron posts had been utilized as early as 1803 in English textile mills. William Strutt's fireproof textile mill in Belper used cast-iron posts as part of its iron frame construction (the mill was the fourth iron-framed building ever built).[76] The use of iron posts had the great advantage over timbers because it created more floor space, and as a modular, readily available building material, was suitable for large building campaigns that would require hundreds, if not thousands of the posts. Yet the constant vibration caused by power-looms could cause structural failure in the rigid, inflexible cast-iron if they were not of a high quality. Poorly manufactured cast-iron posts were determined to be the cause of the catastrophic collapse of a five-story mill building in 1854 at Lawrence, MA that killed 88

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[75] Betsy Hunter Bradley, *The Works: The Industrial Architecture of the United States* (New York, NY: Oxford University Press, 1999), p. 106.

[76] John Winter, *Industrial Architecture: A Survey of Factory Building* (London, UK: Studio Vista, 1970), 37.

people and injured 275.[77] Nonetheless cast-iron posts replaced wood posts in Lowell during the nineteenth century (figure 19). As we turn our attention now to the development of mills in Oregon, the danger of fire will continue to shape this industrial history.

Oregon Woolen Mills

Although Oregon was largely an agricultural state during the middle of the nineteenth century, industry had been established in the form of sawmills and gristmills. These types of mills were plentiful in Oregon at the time. At least 30 saw mills were established in Oregon by 1849 and the first steam-powered saw mill built near Portland in 1850.[78] Gristmills were numerous in Oregon because poor transportation required that their products serve local communities and the simplicity of gristmill buildings and machinery did not require a specialized labor force or large amounts of capital. Prior to 1900, in Linn County alone there were at least twenty-one gristmills at different locations at one time or another.[79]

The first woolen mill in the state was established in 1859 by the Willamette Woolen Manufacturing Company in Salem, the future capital of Oregon (figure 20). Other investors followed their example of establishing a woolen mill as a profitable means of industry in Oregon. Soon after the first woolen mill was built in Salem, the

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[77] Dunwell, 91

[78] Lewis L. McArthur, "Industrial Building," in *Space, Style, and Structure: Building in Northwest America,* ed. Thomas Vaughan (Portland, OR: Oregon Historical Society, 1974), 161.

[79] Ibid., 163.

Oregon City Woolen Mill was built in 1865 near the Falls of the Willamette, a location well-suited for early industrial projects. Despite the complexity of processes necessary to run a woolen mill, this type of mill was a logical choice for a state with wool readily available. The state's wool production was reportedly exceptional and prodigious. In 1862, the Oregon Agricultural Society stated, "If Oregon has a specialty, it is her pre-eminence as a wool growing country." Another reason for their early establishment is because the production of textiles, although an indication of a maturing industrial base and broader economy, has as deep a history in domestic production as the sawing of boards or the milling of grain. This early establishment of woolen manufactures was observed in the 1900 U.S Census *Special Report on Manufactures.* The authors concluded that during the period from 1850-1900 the first industrial structures in otherwise rural areas were most often woolen mills. The Bureau observed that "as population increases, as the comforts of life become more available, and as labor becomes specialized and diversified, the production by machinery of woolen cloth for sale is one of the earliest developments of the manufacturing tendency."[80] As this finding reveals, woolen mills were often among the first industries in small towns. It was the combination of an abundant supply of raw wool and the relatively small capital investment that led to dozens of mills being erected in Oregon during the second-half of the nineteenth century. In addition to these reasons, the Civil War created a large demand for woolen textiles for soldiers' uniforms while simultaneously interrupting cotton supply from the south. Many cotton mills, including the large-scale operations at

[80] 1900 United States Census Report, Edward Stanwood, 4.

Lowell, had to stop production for lack of supply.[81] Local capitalists responded to this opportunity by pooling their money and establishing several woolen mills in Oregon.

The woolen mills built in Oregon during the mid-to-late 1800s were similar in size, plan, and materials. The basic footprint of these mills was approximately 50 feet wide, and varied in length from 75 feet to 200 feet. The mills tended to be two-and-one-half stories high with a full basement, essentially creating four floors of manufacturing space (figure 20 & 21). Their single gable roofs commonly integrated trapdoor monitors that extended across most of the buildings' length. These buildings' characteristics of size, wood-cladding and frame, rectangular sash windows, and simple gables are remarkably similar to the first period of construction in Rhode Island, one exception being that the Oregon mills were slightly wider in plan. While a wider plan created a dark central bay, this bay was not intended to contain machinery, but was used as an aisle to push large carts full of material and was the location of trap doors to drop material through to the lower floor.[82] Another difference between the Oregon Mills and the Rhode Island mills is that although the Rhode Island mills came to consistently use some form of the stair and bell tower, this feature is scarce in the Oregon mills. This may be because the Oregon mills were somewhat less developed architecturally, or because the fire retardant qualities of an external stair were not substantial enough to merit the effort, considering that the mills were constructed of wood rather than stone. While the risk of fire must have been a prominent consideration of the early builders of Oregon's mills, the

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[81] Steve Dunwell, *The Run of the Mill: A Pictoral Narrative of the Expansion, Dominion, Decline, and Enduring Impact of the New England Textile Industry*, (Boston, MA: David R. Goodine, 1978), 104.

[82] Interview with Alice Lehman.

availability of wood in the timber-rich state caused nearly all of the mills to be built from wood. These decisions were not without consequence however. Most of these buildings were destroyed by fire within their first decade of productive use.

In 1889 the first Thomas Kay Woolen Mill was completed in Salem (figure 22). The exterior of the mill was lavishly designed compared to other Oregon mills. Its eclectic Grecian motifs had more in common with the aesthetic of public buildings and finer homes of the time than with the preceding woolen mills in the state. The large windows do not contain horizontal muntins, thus creating a larger surface area of glass to allow light penetration. The top of each window terminates with a low arch. As a timber framed building these arches must have been purely for aesthetic effect. The low arch is repeated in the sets of doors as well. A photo of the mill reveals at least two colors of contrasting paint, which were applied for decorative appeal. There is no architect of record for this mill and this study did not uncover any information regarding an architect. The building was commissioned by Thomas L. Kay, who worked at several woolen mills in Oregon before making a small fortune by purchasing the Brownsville Woolen Mill at auction, turning it into a profitable operation, and selling it for a substantial amount. The 1889 mill he built in Salem was the most decorative of any of the woolen mills in Oregon at the time. Two years after the completion of the mill, it was completely destroyed by fire. This event must have finally convinced Kay of the necessity to build with a different material than wood.

Kay commissioned Walter D. Pugh, who lived a block away from the Kay family[83], to rebuild the mill utilizing the latest practices in mill construction. Pugh would have found articles, drawings, and plans on slow-burning mill construction in architecture and engineering journals of the time. An 1882 article[84] by C.J.H. Woodbury, a mill engineer, gives detailed information on correct size of timbers and their spacing; this article, accompanied with a detailed drawing, is published in many journals and publications of the time. This article, as well as a later bulletin published in 1916 entitled *Heavy Timber Mill Construction Buildings*, closely reflects the methods of construction found in the second Thomas Kay Mill (figure from 1917 publication). The mill was completed in 1895 and had brick exterior walls with a timber frame interior, designed in the slow-burn method. The design of the walls was very sophisticated for Oregon mill construction in 1887 (figures 23, 24, & 25). Pugh's design utilizes brick pilaster wall construction that reflected trends in major US cities that were erecting industrial lofts,[85] mixed use industrial buildings designed to have maximum load bearing capacity and maximum daylighting. William LeBaron Jenny's work in the 1870s developed the industrial loft buildings by increasing window space and transferring loads to vertical piers rather than load bearing walls. Pugh's use of this design is viewed in the brick pilasters that carry the weight of the massive floor beams, allowing for larger windows, and essentially brick curtain walls that only needed to support their own weight. A

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[83] 1900 Salem Census data.

[84] Cited on page 128 of Bradley, Besty Hunter. *The Works*. New York: Oxford UP, 1999.

[85] Betsy Hunter Bradley, *The Works: Industrial Architecture of the United States* (New York, NY: Oxford University Press, 1999), 110.

limitation of the masonry-constructed piers, opposed to steel, is that masonry requires the tapering of walls as they extend upwards, necessitating thick walls on the first floor. The thickness of the first floor of the Thomas Kay Mill does not encroach a great deal on the basement floor plan because the structure is only designed to be three and a half stories, nonetheless the tapering is evident as the piers climb upwards (figure 26). The beams rest in notches within the brick piers and the single gable roof is supported by wood frame trusses that contain iron tensioning rods (figure 26). The use of iron tensioning rods in wood truss members was introduced in 1840.[86] Additional modern features that the mill contained were a freight elevator and a sprinkler system. In view of these design elements, the building methods reflected the best practices at the time for mill construction, and the $80,000 cost of construction reflects these qualities. The use of wood posts throughout was due to the availability of wood, but wood also offered advantages by dampening the constant vibration produced by the machinery. The sprinkler system relied on a large wood water tower for its water supply. Despite this modern hydraulic system, no plumbing was installed for use by the employees. Eventually, indoor plumbing and toilets were installed during the 1930s as a result of a general strike by the workers Previous to indoor plumbing, workers used privies located near the mill. Although the second mill was not as concerned with aesthetic considerations as the first, it was superior to its predecessor as a functional work of industrial architecture and its fire-suppressant qualities must be considered a success due to the longevity of the building.

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[86] Ibid., 181.

CHAPTER IV

MILL WORKERS' HOUSING IN SALEM, OREGON

Mapping Neighborhoods

I conducted a study of workers' housing surrounding the mill by examining the architecture and location of the homes during three time periods, 1900, 1930, and circa 1960. This study was an effort to answer questions relating to the workers' lives and the historic landscape they lived within. Architecture informs our understanding of social history. For example, when one attempts to judge the social history that took place at Lowell, Massachusetts, the rows of workers' dorms reveal answers about their lived experience. The dorms' immediate proximity to the textile mills, the small rooms within them that were shared by the women, and their uniformity inform our understanding of the workers' daily lives as existing wholly on the company's terms and under its surveillance. My interest in investigating the workers' housing of the Thomas Kay Mill was to discover what employee housing could tell us about workers' experiences. Questions I set out to answer were: How far did they walk to work? Where were the workers' neighborhoods? Was it common for entire families to work at the mill? What was the character of their neighborhoods? Because of the historical influences of large cotton textile communities in New Bedford, Lowell, and Lawrence, the textile industry is often associated with tenements. Were there tenements in Salem where the workers lived?

By searching through all of the U.S Census records for Salem in the years 1900 and 1930, I recorded the names of every person listed as working at the woolen mill, their occupation, age, and address. Depending on what I found, I also took note of others who resided in the house and their occupation. For the year 1900, I augmented the list of workers found in the Census by including names from the 1902 Polk Directory of Salem. The data of the last period, circa 1960, was taken from a roll of workers compiled soon after the mill closed. Although I did find that many families worked at the mill for generations, working at the mill for a short period before leaving was more common. This turn-over makes it difficult to distill an exact record for a particular year. The data I collected from the periods 1900, 1930, and 1960 are not intended to be a complete record of every worker who was employed at the mill for each year, but they are adequate representative samples for each year because the number of workers documented in the survey roughly equal the number of workers reported to be employed by the mill. The data I collected was plotted onto Sanborn Fire Insurance maps to show the city limits at the time of the data and correct street names and placement.

Results of Plotting Data

By plotting the location of workers' homes (figure 27), some clear trends became apparent. First, in the first period of settlement mill worker dwellings are the most equally dispersed in a radius with the mill as the center point. This is likely due to the availability of inexpensive housing close to the city center or available land to build on. With the exception of parts of Chemeketa St. and Court St., neighborhoods do not appear

to have distinct socioeconomic boundaries. Another pattern that was unique to 1900 was many mill workers living at the same residence. A substantial amount of these shared housing situations are by unrelated workers, or perhaps a boarder living with a family who worked at the mill. The census shows that boarders were extremely common in 1900. It is unclear if families would advertise for boarders or the boarders located a room through word of mouth, but it is clear that the practice of families accepting boarders into their homes satisfied a considerable part of the need for affordable housing. In the survey that follows this section, there are examples of dwellings that attached a boarder's cottage to a dwelling. By 1930, many workers have moved out of the neighborhood directly north of the capitol mall and directly to its south. The thinning out of workers from these neighborhoods is likely due to the increase of office workers employed at the capitol who tended to live in these neighborhoods, and a more diversified economy which led to more specified neighborhoods. Also during this period a distinct mill workers' neighborhood is established to the southeast of the mill. The dwellings in this neighborhood are typically modest one-story single-family homes (detailed in the next section). The roll of workers at the close of the mill, circa 1960, is a much smaller sample size than the other years, but it points to a movement by the workers from downtown locations to other surrounding areas. For the first time, the data shows the majority of workers living farther than one mile from the mill. The following numbers show the distance workers lived from the mill by year and reveal the gradual movement away from the mill.

1900	
within a ½ mile:	60
from a ½ mile to ¾ mile:	38
from ¾ to 1 mile:	21
farther than 1 mile:	5
1930	
within a ½ mile:	31
from a ½ mile to ¾ mile:	21
from ¾ to 1 mile:	18
farther than 1 mile:	9
1960	
within a ½ mile:	7
from a ½ mile to ¾ mile:	3
from ¾ to 1 mile:	5
farther than 1 mile:	13

For this section of my research, I also plotted workers according to their position at the mill (figure 28). The purpose of this was to discover if certain positions, such as weavers, tended to settle in neighborhoods together. The results showed no clear neighborhoods relating to one's job at the mill. One exception was that people who were listed as "laborer" in the census tended to live farther away from the mill than other positions, likely because they were newer employees who had not moved to shorten their commute, unable to financially live closer in, or were children living with their parents who did not work at the mill. Because the breakdown by employment showed no segregation by employment, I did not repeat the mapping for the remaining years.

Workers' Housing Survey

The second part of the exploration of workers' housing in Salem was to conduct a survey of mill employees' homes and neighborhoods by photographing existing houses where former workers lived and houses that were representative of the neighborhood and time period. I found several extant houses that matched Census records of former employees, as well as, many intact homes from the same time period. Overall, the historic working class neighborhoods of Salem are very intact. Highway construction, the expansion of Willamette University, government buildings, and businesses have cut into the neighborhoods and destroyed homes, yet many houses remain from multiple periods of construction beginning around 1890. Part of the reason for many houses from the 1890s to remain is because new construction was built in-between the existing homes. The 1885 Sanborns show that often just four houses were constructed on a block. A photograph taken sometime near 1900 shows open farmland directly to the east of the TKWM (figure 29), by 1913 the city blocks have dense house construction (figure 30). As decades passed and more housing was needed, the new houses were built as infill, between existing homes. Photos from 1885 shows typical dwellings of the time and their large surrounding yards (figure 31 & 32). Character defining features of the houses I surveyed from the 1880-1900 period are a noticeably high-pitched gable roof, nearly 45 degrees (figure), which runs perpendicular to the front of the house, narrow gothic windows, and are usually plain and unadorned. While the homes share common stylistic elements, they are also very irregular and idiosyncratic which is likely due to their construction by local carpenters hired by owners of small parcels of land, rather than

residential prospectors. Many of these homes have a second gable that intersects the main gable perpendicularly (figure 33, 34, & 35). It is quite possible that the home was built in stages. The first stage would have been a small rectangular plan that would have been added to when the family's resources permitted. It appears that some early owners of land on Salem city blocks split the plot in two causing the construction of a fair number of shotgun houses (figure 36). Occasionally these homes are sited towards the back of the lot creating a large front yard. An interesting part of the cultural landscape that remains from this first building period are low white picket fences. It is very unlikely that any of these fences are the original fences dating to the 1800s but they have been replaced in kind over the decades. I found that a fairly reliable way to spot the oldest homes on a block was to investigate ones with a white picket fence. Photos from this period show that fences ran the entirety of the street in front of houses. From 1915-1925 homes were sited closer to the sidewalk and the gable was lowered (figure 37 & 38). They remained simple in plan but do not often have additional organic additions. While the homes of the earlier period could have quite possibly been constructed in stages, these homes were built all at once, and likely by a professional builder or residential prospector.

Although there were several tenement buildings, or "hotels" downtown, where a few workers lived, it appears that they were a minor housing source for workers. A more prominent housing alternative to single-family dwellings were duplex and triplex apartments, which were intentionally built to blend with their residential surroundings (figure 39, 40, 41, & 42). I found examples of these buildings as early as 1890. Judging by the solutions they chose, builders of multiple family rentals contained on a single lot

were adverse to creating anything that was conspicuously a multiple family dwelling. Duplexes and triplexes appear as single family homes as second entrances are often hidden around corners. Even when they decided to build housing for as many as ten families on a single lot they chose to build small courtyards surrounded by cottages (figure 43). These architectural solutions hide rentals that are usually mixed with residential homes. Another "invisible" housing solution is the attached boarder's cottage. Several of the houses that were surveyed had built an attached room with a separate entrance to accommodate boarders and maintain privacy (figures 44, 45, & 46).

The conclusions I reached from this survey are several. First, an image of textile workers living in rows of company housing, or triple-deckers, or tenements, is not reflected in the housing situation of the Salem workers. The absence of these types of housing can lead to understanding the lives of the workers as considerably improved compared to other textile workers on the East Coast during the same period. The mill workers' neighborhood was largely small, single-family dwellings that appeal to American ideals of individuality and security. What the Census data and the survey uncovered was that many workers were boarders in others' homes, or boarders in attached boarder's cottage, or living in a multiple family rental that blended with its surroundings. At the same time it was common for a mill family to own one of the small houses near the mill. This leads me to conclude that the main difference from East Coast living conditions and the conditions of textile workers in Salem was density and, in the absence of a company housing plan, more creative solutions to housing problems. The survey, along with an interview with Alice Lehman, whose family worked at the mill for

two generations, revealed an industry where workers traded low-wages for security. The industry in Salem was no less trying on the workers than it was in other areas, but it may be that the housing solutions in Salem offered them more autonomy and independence than the eastern company housing and for some, the opportunity to own their homes.

CHAPTER V

INTERPRETIVE PLAN

The Thomas Kay Woolen Mill is part of a larger museum complex. The Mission Mill Museum Association, a non-profit organization, was established in 1964 for the purpose of purchasing the mill, which closed in 1962, and transforming it into a public museum. Soon after the incorporation of the Association, several historic buildings significant to Oregon's early history were moved to the museum's property. Since that time, the Association has successfully fulfilled its mission of acting as stewards of the historic architecture. In fact, due to the hard work of the Association, in 2003 the mill complex was awarded major grant funding through "Save America's Treasures" and designated an American Treasure by the National Park Service. In addition to grants, its sustained success is due in part to its decision to utilize much of the museum property for mixed use. Some of these uses include a restaurant, meeting rooms, office rentals, a textile design center, and retail shops.

In this chapter, I set out an interpretive plan for the second floor of the main mill building, which was historically the weaving room and is now the main exhibit floor. This room is approximately 110 feet by 56 feet, it is divided by rows of posts into three bays. The middle bay is the largest, nearly 20 feet wide, and the outer bays are just slightly narrower. I chose this area for several reasons. First, the natural light of the space, due to the large 6 foot high windows, creates a pleasant environment for visitors to

explore the exhibits. Second, the space is the permanent home to a collection of carders, a spinning mule, an upright spinning frame, and two power-looms. This machinery represents several stages of the manufacturing process and offers a broad range of interpretive possibilities. Third, the central bay is free of all machinery, allowing a flexible exhibit installation and a wide path for visitor circulation.

The plan is presented in the form of an overview that outlines the exhibit using broad brush-strokes, offering an overall picture to which more detail may be added. To understand the space, I constructed a scale mock-up of the second floor, which allowed me to visualize the floor plan and find the most effective locations for the exhibits (figure 47).

Exhibit planner Alice Parman recommends establishing "take-home" messages before setting out an exhibit overview. These messages are "the most important ideas to be conveyed to all visitors."[87] She cautions that if take-home messages are not considered when planning the various themes and aspects of an exhibit, the public will create their own take-home messages that may not capture the best opportunities of the exhibit. I established the following take home messages to guide my exhibit plan:

1) The TKWM is part of a wider history of textile mills and the industrial revolution in the United States.
2) The mill workers experienced a social reality that did not include a safety net.
3) The architecture of the mill represented the best practices of the time.

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[87] Alice Parman, "An Exhibit Plan: Facing Statehood" (paper prepared for Ms. Maureen Thomas, Salem, OR, June 22, 2007). See also page 3 of Parman's book *Exhibit Makeovers,* 2008.

Exhibit Overview

The exhibit materials in this overview are contained in three separate rooms. The first room consists of the space immediately outside the elevator. The second area is the main exhibit hall. The final area is the stairwell accessed when leaving the main exhibit hall. The first room contains a single exhibit that is the focus of the room. The large exhibit hall is more visually layered. When the visitors first walk in, they encounter a colorful exhibit panel that blocks their direct pathway down the central corridor. Along the edges of the main pathway are several vertical 4 feet by 8 feet panels stood on end. These panels are graphically prominent to the viewer. Several contain enlarged photographs of the mill workers. One, containing the *FIRE! FIRE!* exhibit, has a graphic of flames covering its surface. Another prominently displays colorful textile cloth and stands next to a manikin dressed from head to toe in woolen outdoor wear.

Beginnings

Upon exiting the elevator to the second floor, the visitors encounter an exhibit against the east wall. At the center of the display is one of the eighteenth century hand-looms that the museum currently owns. The loom is set on a low platform about a foot high and approximately 8 feet wide by 5 feet deep. Behind the loom is large screen, possibly made from a woven textile, that is a natural white color. An image of a weaver's cottage in a rural setting is projected onto the screen. A button, when pushed, changes the image to another photograph of an eighteenth century cottage. Each time the

button is pushed a different image is displayed. The visitor can scroll through approximately 5-7 images, two of which are interior views of a cottage that make the loom appear like it is inside the interior.

An accompanying descriptive panel explains that thousands of English weavers used a machine similar to the one displayed to earn a living at home. The panel gives a description of a typical weaver's cottage and points out the different places the loom may be located: a living room, an exterior "weaver's shed," or an attic. It goes on to reveal that the practice of weaving at home was both a means to clothe one's family as well as a way to procure an income. The panel goes on to describe the invention of a faster loom that harnessed waterpower and was placed in a multi-story mill building with many other power-looms. The panel points out that the transition from weavers' cottages to mill complexes radically changed the lives of hundreds of thousands of weavers who lived in the English countryside. The workers' discontent with the new quality of life had many factors; loss of a home occupation, reduction in wages, and skyrocketing inflation made it difficult to acquire the essential staples of life such as bread. While the new power-loom was directly tied to these experiences of the workers, other factors worsened their situation: consecutive years of drought caused poor harvest, rising immigration, and a war with America that caused the new country to stop purchasing wool from England.

Then the panel introduces Ned Ludd, a young English weaver who became a mythical figure of growing discontent. Said to have smashed a wooden machine to pieces with a hammer, Ned Ludd represented the increasing desperation of the poor weavers and other textile workers. The panel then explains that from 1811-1813 thousands of English

weavers stormed scores of mills in northern England and smashed frames. Finally, 10,000 troops were dispatched to stop the rebellion, more than were dispatched by England for several military conflicts abroad.

A second button is located at the end of this short narrative. When the button is pushed the images of weavers' cottages are replaced by two side-by-side images. The first is a historic etching of two men breaking a power-loom (figure), and the second is a poster that offers a reward for information that leads to the capture of persons involved in a frame-breaking incident (figure). This exhibit concludes by asking the viewer a question: If you were with Ned Ludd right before he smashed a machine, what advice would you give him? There is a corkboard where people can pin up an index card with their response.

Industry Comes to America: Opposing Viewpoints

From the *Beginnings* exhibit, the visitor walks through a door to the main exhibition hall. She is confronted with a panel that is positioned in the middle of the central pathway. The panel is vertically divided into two graphic sections. On the left side of the panel is an image of a pastoral setting, on the right side of the panel is an image of the buildings and factories of an early nineteenth century English city. The text on this panel describes the debate between US political leaders at the end of the eighteenth century who took different sides on whether or not the English factory system should be encouraged in the US. One side, supported by Franklin and Jefferson, argued that industry would ruin the agricultural landscape of the US, give rise to dirty cities, and

create dependent citizens less likely to engage in civic discourse. Alexander Hamilton and his supporters saw industry as a way to break the new republic's dependency on Britain, encourage skilled immigration, create wealth, and to employ the "idle" populations of women and children. Also included on the exhibit panel is a provocative quote by Benjamin Franklin, with sufficient text explaining its context as a reason given to support US expansion through the Seven Years War.[88] This exhibit ends by posing the question, "If you traveled back in time and found yourself sitting in Independence Hall in Philadelphia, whose side would you support? Why?"

We Worked Here

This exhibit overview outlines a narrative for a family that worked at the mill for generations. Ideally, two other stories would be developed as well. The additional stories should represent other types of workers who were employed at the mill, such as Mary Sheridan, a single woman who worked for decades in the mill's finishing department and shared an apartment with other female finishers, or the Kaufman brothers, Henry, Jacob, and, Joseph who, in their youth, worked as laborers in the spinning department for a period at the turn of the twentieth century, likely to help pay the rent and living expenses for the family. The census data included in the appendices of this document provides more information about possible workers to showcase.

As the visitor leaves the last section he finds a vertical panel to his right that is similar in size to the existing panels in the space, standing on end, approximately 4 feet by 8 feet. The panel is covered with an enlarged historic photo of Fred Lehman (cropped

[88] See page 32 of this document for Franklin's quote.

from the 1920 photo of all the employees) and also an enlarged photogrph of Hulda Lehman. Written on the panel is an explanation of this section of the exhibit. It explains:

> This part of this exhibit aims to show the rich experiences of the textile workers of this woolen mill. The workers at the mill constituted a diverse labor force: mothers, fathers, single men, single women, teen-agers, temporary laborers, skilled workers, and families. In order to bring to life some of these unique stories, the exhibit will select three workers' lives to showcase.

The Lehman panel includes quotes from my interview with Alice Lehman and a written narrative to illustrate themes of tasks at the mill, the daily lives of the workers, and life outside the mill. I have included excerpts from the interview that would highlight these themes well.

> Mother sewed many of our clothes, knitted, crocheted, and embroidered. She also canned hundreds of jars of fruit and vegetables for use during the winter and also baked bread and desserts. I don't know how she had time to do all those things and raise two kids!
> That's part of the culture of this mill you lived in a proximity to your work because you walked to work. –Alice Lehman.

The weavers had a special talent, they could tie knots with one hand. When yarn broke in the power loom it was difficult to reach with two hands. Part of the panel mentions this talent. Also, the panel includes this text:

> Hulda Lehman and her two daughters were talented musicians and performers. The trio often performed for programs at the YMCA and country granges, and the two girls would perform a tap dance and piano performance for the Saturday Matinee. Hulda, who emigrated from Switzerland at age 15, yodeled and sang, Marguerite played piano, and Alice (who began dance lessons at age 4) tap danced. When boss weaver Fred Lehman died at age 42 (figure), the performances stopped. The family lived from their savings, that Fred had earned at the mill, for a year and a half before Hulda returned to the mill to work full time as a weaver. Although Fred paid into Roosevelt's new program of Social Security, he died one month before the program began offering survivor benefits. The Lehmans' hired a lawyer and appealed to Washington, DC. It was unsuccessful. Marguerite continued to take classical piano lessons and by the time she was in high school she was teaching piano to more than a dozen

> neighborhood children. Alice continued with music as well. She played clarinet from 4th grade through high school, and then played in the university orchestra.

Next to this passage is a button the visitor could push that would play Swedish folk tunes.

By the drawing-in frames is a photo of Alice Lehman standing by the frame in 2009. Next to a photo is an explanation.

> Most days after school ten-year-old Alice Lehman would walk from school to the mill because her mother didn't want her to be home alone. Alice helped her mother Hulda with the process of *drawing-in.* Thousands of threads must be threaded through the *heddles* in a specific order during this process. If a thread is accidentally put out of order the entire length of woven cloth will be unacceptable as a finished product. The task of threading the heddles may take a day and a half. While computers and improved machinery of today's modern textile factory has taken over most tasks formerly completed by hand, due to the meticulous nature of this task, *drawing-in* is still completed by hand in modern textile mills. The photo at the left shows Alice Lehman next to a drawing-in frame, in the location of this mill where she assisted her mother by passing her threads from the back of the frame.

FIRE! FIRE!

A large floor-standing panel that displays a graphic of flames with the headline—*"FIRE! FIRE!"* Within the flames are photos of Oregon mills that were destroyed by fire, captioned with locations, dates of construction, dates of the fires, and causes of the fires. The text explains that fires were common at textile mills and that the reason the Thomas Kay Mill is standing today is largely due to fire prevention techniques incorporated into its design. The panel discusses "slow-burn construction" developed in Rhode Island and Lowell, shows a photograph of the Slater Mill's pre-slow-burn joist construction, then asks the visitor to look above at beams and note that there are no joists. The panel also asks them to notice the chamfers on the posts and explains that they were also a fire-suppression method. The panel explains that as the name implies, the design

wasn't fireproof but slowed the spread of fire to allow time for it to be extinguished. Other techniques the panel illustrates are the sprinkler system and water tank. The panel mentions that although there was a plumbing system for the sprinklers, there was no indoor plumbing for the workers until the 1930, when it was installed to meet the demands of a strike. Also, the panel explains that in 1900 the mill employed a fireman, John T. Welch, to further ensure against the outbreak of fire. The panel says that the Thomas Kay Mill was unique compared to other Oregon mills of the time because of its brick construction. It goes on to say that most mills couldn't afford brick, even though the material was superior to wood for mill construction. An image on the panel shows inmates at the Salem Penitentiary making bricks, including bricks made for the TKWM mill. Also, it explains that fires often started in the picking house, which is the reason it is a separate building, and the panel includes a photo of the historic fire extinguisher currently on display in the house. Many times when a mill burned it was never rebuilt, which often ended the largest employer in town, as in the mills at Waterloo and Ellendale, Oregon. The panel continues to say that heat from the machinery combined with dry wool fibers were often the cause of fire. Arson was a significant cause of fire as well. The first Thomas Kay Mill fire is rumored be have been started by a former employee and the Oregon City Mill was very likely arson, started by persons who were protesting the mill hiring of Chinese laborers. Also, the exhibit mentions that all mills had a bell. This bell would ring out each morning to call the workers to their job and it would also ring during a fire. On the side of the exhibit panel is a large bell with a rope and visitors are invited to give it a ring.

Made in Salem!

In front of this colorful panel are two mannequins, one male and one female, dressed in colorful plaid clothes made from wool. The clothes should be bright. For this reason it may be better to use new clothes available from Pendleton, but if bright vintage clothes can be found they are preferable. The male mannequin is dressed in woolen outdoor-gear from head-to-toe, the female may be wearing a wool dress. This panel may be slightly humorous, the clothes should be attractive but louder colors are preferable to more muted colors. The mannequins are not "roped-off" from the visitor and the visitor is welcome to touch the garments. The intention of this panel is to show the beauty of the woolen textiles that were produced at the mill, and to comment on the fact that the mill was a locally owned business. In a recent interview I conducted with Thomas Kay III, he proudly recalled the high-quality of their weaves. He mentioned that other mills in the area would wait to see what the Thomas Kay Mill was producing and then copy the weave. Thomas Kay mentioned that they employed a Scottish textile designer to create the patterns in the cloth. He also lamented that, presently, many businesses in the area are owned by large corporations who do not contribute as much to the community as locally owned businesses.

Book for Comments

As the visitor exits there is a book near the time clock by the door. A sign asks her to share her mill or factory stories. Have you worked in a mill or factory? Do you

have a family member who did, or does? Do you any mill stories that you would like to share, or other comments.

Who Works Here Now?

The Mission Mill Museum is the gathering space and permanent studio for a collection of fiber arts guilds such as the Salem Fiber Arts Guild, the Millstream Knitting Guild, the Saturday Spinners, and the Millstream Quilters. These active groups use the space of the woolen mill to continue the tradition of turning raw wool or yarn into functional pieces of art. The use of an industrial textile mill by folk artists greatly benefits the museum and has the potential to present learning opportunities, and enjoyment for museum visitors. As part of the exhibit *We Worked Here* a secondary piece of the exhibit would be placed within the stairwell outside of the exit door of the exhibit. This secondary exhibit, *We Worked Here: Who is Working Here Now?*, is an exhibition of guild members' fiber artwork accompanied by a biography of each artist and their photograph. This display connects the working history of the mill to the present artisan production of textiles in the mill. It is important to show the aesthetic qualities of woolen goods as a further means of connecting visitors to the process of weaving, and to display the production of textiles by members of the surrounding community to show a continuity of the culture of weaving in Salem.

CHAPTER VI

CONCLUSION

I found that the Thomas Kay Woolen Mill would be an ideal location to interpret themes of architecture, broad historical developments, and local history by creating narratives of workers, and provocative interpretation in an industrial setting. The broad historical research conducted as background for this thesis proved to be a valuable body of information to make connections between the TKWM and the industrial revolution in America and England, architectural development of the mill building, and the social implications of industrial textile production. At the same time, the interview with Alice Lehman and the research on specific workers through Census data, combined with surveying the architecture where workers lived, created a specific and local story for the visitor to connect with.

Interpreting these themes would not only be the best use of the space but would contribute to a larger story of Oregon. While the story of Lewis and Clark and the stories of pioneer families deserve much attention and interpretive efforts, additional efforts to interpret Oregon's industrial history would give a richer view of the past. Historic resources associated with salmon canning, fruit canning, sawmills, gristmills, and textile mills could be organized to form an industrial heritage corridor in Oregon. The interpretive material of this corridor could reinforce and continue the themes of resiliency

and hard work found in pioneer history while offering a more complete picture of the past.

APPENDIX A

EDITED TRANSCRIPT

INTERVIEW WITH ALICE LEHMAN

February 25, 2009
Salem, Oregon
Interviewer
Jeremy Mauro
Transcription
Jeremy Mauro

JM: My name is Jeremy Mauro. We are on the third floor of the Thomas Kay Mill. Today is February 25, 2009 and I'm here with Alice Lehman and we're going to talk about her family's history at the Thomas Kay Woolen Mill.

Alice I understand many of your family members worked at the mill so is there--maybe you could just tell me about that, beginning with your first relative who worked at the mill?

AL: My grandfather started working here in the eighteen-nineties. Maybe even the eighteen-eighties I'm not sure but he was working here when the mill burned down [in 1895] and then he worked here for a while in the new mill. I had three uncles and two aunts who worked here. There were seven children in the Lehman family from this grandfather of mine who started working at the mill. And each of those family members started probably when they got out of what was at that time junior high school. I'm not sure whether some of them went on to high school or not but they started here like when they were fifteen years old.

JM: You said your grandfather had seven children. Did all of them work here?

AL: Five of them worked here: three men and two women.

JM: Do you know what departments they worked in?

AL: I believe one aunt, Ella, was a weaver, my father Fred was weaver, my uncle Otto was a weaver, and my uncle Carl was a weaver. The other aunt worked more in

the finishing department. That was my aunt Dora. My mother came from Switzerland in 1914 and she started working here at the mill probably in about 1916 and met my father here. And all during the First World War they worked here. They weren't married then. They started going out [then] I guess. My father, by that time, was pretty essential to the weaving area so he was given a deferment from the army, in the First World War we're taking about now, he was given a deferment because they needed the wool and the blankets and everything so desperately that he stayed here and worked in the mill. And they put out lots of kaki colored blankets and they even cut those up in strips. I don't know if you've seen the leggings that they wore in the First World War? They wrapped them around their legs they were about that wide. And so they cut up a lot of the material that they made in to leggings and blankets.

JM: So it wasn't just blankets it was leggings too.

AL: Yes. I don't know whether some of the material was sent to be made into uniforms or not. I don't know that history at all. –and that's way before I was born. Then, my parents were married in 1920, somewhere around there, after the First World War. One of things I want to say about the people in that era: anything they had they *really owned.* There was no such thing as a credit card. There was no such thing--well I'm sure there were mortgages for people who were in business who may have mortgaged something to get into business, but I'm not even sure about that. If you had a house you owned the house and you paid for it. So that's what my parents did in the early nineteen--after they knew they were going to be married they saved all their money, they both worked, and they bought their house before they were married.

JM: Where was that?

AL: That was on Seventeenth Street. And that's part of the culture of this mill. You lived in a proximity of your work because you walked to work. And many of the people walked home for lunch. My father came home for lunch every day. My mother fixed a lunch, a sit down lunch, for all of the--me and my sister and my father--and he walked home from the mill and had lunch and then he walked back.

JM: What was that? Probably about an hour? Or was there a--

AL: Oh no. Oh you mean for the lunch?

JM: For the lunch, for--.

AL: Oh yes, yes.

Some of them didn't walk home. They brought a lunch-pail with them and ate out in front. If they could--with good weather.

JM: What were your parents' names?

AL: My mother's name was Hulda, H-U-L-D-A, and my father's name was Fred.

JM: Ok, thanks.

AL: So then my sister was born in 1922 and I was born in 1932. By the thirties my father was foreman of the weave room. He had a very responsible job. One of the unique features of what he did [was] he had to plan the patterns that they wanted for the looms. So he had to figure out what they called, "picks" and "shuttles" and "heddles" and all of that stuff that goes into making up the patterns. There were no computers, which they would use today. I'm sure all those new Pendleton blankets that are coming out were all planned on a computer. My father would bring home these plans and then he'd have to know—do you know what shuttles are?

JM: Yes.

AL: They go back and forth and they come from each area. Well, if they're not planned right they crash in the middle–and the boxes on the end have to go up and down and allow certain colors to go through at the right time. So that along with the yarn coming in from the back off of these big rolls- all of that had to be coordinated. So my father used to work on that on the dining room table at night and my sister, who was older than I, used to help him--and they push all these—he'd have paper things that looked shuttles and heddles and they'd push them around on the dining room table trying to figure out if things would work.

JM: I know there's patterns that go into some of the power looms. Did he ever work on those? Is that a different era?

AL: The automatic looms? No, no.

JM: O.k. this is before then.

AL: The loom they have downstairs is an automatic and I saw those up at Pendleton many years ago.

JM: Ok, so this is an older--

AL: Well, they were power *driven.* They had belts running to them to run the stuff and then they had a big overhead frame with a wheel on it. Which if you had stop

the loom and back it up for a mistake or a broken piece of yarn, you had to turn that big wheel, which was over your head. So the women had to be fairly strong to do that and the shorter the were the harder it was for them to turn that wheel and backup the loom some or loosen it so they could get at the problem.

JM: In the weave room--was it mostly men who worked in the weave room or--

AL: Well, there were some women weavers too and especially during the war there were women weavers. And at that time it was all what you called "piece-work." You get paid for how many feet of fabric you made. It wasn't like you came in at seven and you got so much an hour. You just got paid on what you were able to do. So if the women weren't able to run the machine fast enough, or back it up, or had a lot of breakdowns, they didn't make as much money. So, [you] got paid by the inch or foot or whatever, I don't know. I think--I don't know when they unionized. They did join a union then, later. I would say in the mid-thirties. I'm not sure. And I believe at that time is when they went to an hourly wage versus the piecework.

JM: I read from a couple interviews, that there was maybe a strike during the thirties? Did you ever hear about that?

AL: That could be. Yes, I don't remember that at all. I was too little I guess. But I can understand and that's probably when the union was formed, when the strike happened.

But there were no back-ups to--for people to fall back on. Like there are today. No unemployment compensation, no social security. In fact my father started paying into social security in the mid-thirties and then when he died in nineteen thirty nine they were not paying for any dependant children on social security or wives until January 1, 1940. My dad died on December 14th so by sixteen days he died too soon. A lawyer for my mother even wrote to congress and tried to get something because she had two dependant children and he had paid into social security for a few years. Nothing. Couldn't get it. In fact I don't believe he ever realized anything from the social security the he paid in because they didn't--I don't remember if the paid death benefits but they sure didn't pay any benefits to survivors, so that was interesting.

JM: So your father died of a heart attack when he was forty? Is that what you said?

AL: He was forty-two I believe.

JM: Was he at work or at home when it happened?

AL: He was at home. He worked all day, came home and died after dinner. And of course they didn't know about cholesterol and--He did have what they call a coronary thrombosis but they really didn't know much about the heart at that time and what caused heart attacks. So you lived and when you died you died.

JM: You were talking about social security and benefits. There was probably no health care or anything--was there health insurance?

AL: No, no, no. No health insurance, no nothing. If you went to the doctor you paid for it. So people didn't go to the doctor. Gosh! I think I went to the doctor twice until I was in college. Had to have--well we got shots. We had--some of those were given at school--for small pox and things but there wasn't anything for all the diseases that they give now. I think smallpox was about the only shot that was available at that time.

So let's see. Then my father died in thirty-nine and my mother *had* to come back to work. And at the time my father passed away the woolen mill told her anytime she wanted to come back, for any job she wanted, it was hers. So then she did come back and as I say she did weave for a while and then she did this "drawing in." That's when I was in school and would come in the afternoon after school and stay until we would walk home together.

JM: So, just to clarify, you father had some savings that you lived off of for a couple years and then?

AL: Oh yes. *You saved every penny you could.* And the people today who are so far in debt I just can't believe it because in those days, and even I was brought up that way, you saved money because, you know the old adage "you save for a rainy day." Yes they saved every penny they could. So she lived on that, and *we* lived on it for several years before she came back to work.

JM: When she did return she did "drawing in?"

AL: She did weaving first and then drawing in. and when they needed her they put her down stairs in the finishing room because she could work down there, she could work just about anyplace. And she was during the Second World War then so she'd been here during the First World War and the Second World War. There are some check stubs in the display down stairs that showed two of her check stubs and how much went to the war bonds--because everybody bought war bonds during the Second World War. And of course twenty years later you had the money out of them. It was a sacrifice at the time.

JM: So drawing in, what is that exactly?

AL: There are harnesses that go up and down when you weave and in those harnesses are hundreds of heddles. They're metal things with little eyes in them and ever piece of yarn that comes off of the roll has to go through that eye. And then [the dressed harnesses are brought] up to the loom to be woven. Each one of those pieces of yarn had to be drawn through that heddle. There was another panel that keeps them separated when it is woven and you have to draw *that* in to each one of the slots. I'll show you when we go downstairs.

JM: Ok. I think I know what that is. As I understand it Pendleton--that's still done by hand today.

AL: Is that right?

JM: There's not a computer that can do that. So there are still people who sit there and--

AL: Oh my gosh, well she would have to do it by herself so she'd reach in behind and hold those and then pull them in. Then when I came after school, I sat behind there and handed them in to her. So she got about twice as many done when I was working here. [laughing] Of course she didn't get paid anymore and I didn't get paid anything but it was fun, and something for me to do. And when she was weaving I would fill shuttles for her. You know the shuttle? And then there's the shuttle box that has the arm that comes up and you shove the wool shuttle on it and clamp it down. Then when she needed it she'd put it in the loom. So that kept me busy too.

JM: We were talking before--you said that the weavers had a certain talent? They could tie knots with one hand?

AL: Yes.

JM: When would they need to use that?

AL: When they were weaving and a piece of yarn broke they would have to reach in and put that back together again. And so there was no way they could get two hands in there so they learned to tie these knots with one hand. They'd just roll their fingers around and push it through and they'd have a knot. Of course those knots showed up when they checked all the wool. They checked the fabric. And lots of times they would cut at that place or they'd sell it with the flaw in it because they made flaws when the yarn broke.

JM: The shoddy would break a lot more often?

AL: The shoddy? Yes they used to complain about the shoddy breaking all the time. Now the people in the spinning room had to tie knots much more because I think with those machines one end would separate and come back, then separate and come back, and so that yarn was moving at a fairly fast rate and I think it must have had tension on it too. I really didn't spend much time up there. That's one of the places I think I was somewhat restricted in going but –gosh—I would come here to the mill when I was seven, eight years old walk anyplace I wanted to go, go upstairs and downstairs, and there was no restriction on coming in. Of course everybody knew who I was as a kid, but nevertheless, today there would be all of these restrictions about "children can't be in here without someone taking them around." We didn't live so frightened as people live today, or so pampered,--I guess is another word I want. We didn't have to have somebody help us do everything we had to learn to be responsible for ourselves. *Both* adults and children.

JM: When you walked through the mill was there a lot of--was it a loud place to be?

AL: Oh, it was *incredibly* loud. Have you heard that one loom down there?

JM: I've heard it--yes.

AL: There were probably, I'm not really sure but I would say there were at least fifteen looms on that floor. At one time they ran one loom--each person ran one loom. Then they moved up to another loom, I wouldn't call it an automatic loom but it was a new loom at that time that was a little more functional by itself. And then they turned the looms around so they faced each other so the weavers could work two looms at the same time. There again I'm hazy about when that happened but I know for the last many years before the mill closed all the weavers were working two. They may have even worked four, I'm not sure about that. I probably wasn't in the mill after my mother quit in 1946, 47, somewhere along there. It was at least forty-six. I was not in the mill anymore and I only had one uncle working here at that time. I'm just sure he told us once that he worked four looms but I can't be positive about that.

AL: Have you interviewed who was called the young Thom Kay?

JM: Not yet.

AL: Oh well see he was my sisters age. He was older than I and he spent a lot of time here I think so he can answer a lot of those questions about how many looms they worked.

JM: I'm actually meeting with him a week from today.

AL: Oh good. You know he came to my mother's funeral and my sister knew him and my sister was so surprised to see him there. He said, "The mill would have never run without the Lehman family." All of them put together they put in a lot of years here.

JM: Mostly in the weaving room?

AL: Yes, I'd say most of them were in the weaving room.

JM: So I know that there were a lot of families that worked here. I trying to get a sense of--was it all families? Did different departments have higher turnover?

AL: You really didn't have very much turnover in the early days except for women getting married I guess. Now there were a lot--I won't say there weren't women who were married that didn't work here. I mean they did work here, some of them, but most everyone in those days once they got married they quit. I'm not positive but I don't think there were many families. I remember a lot of families but it was only the husband that was working here. That brings up another point about them doing things together. They did have picnics together--I mean the whole mill would have a picnic together in the summer time. Whether those were union related, after they joined the union, I don't remember. But, there was socialization among some of the groups of people that worked here. Not only just for a whole picnic for the whole group [the entire mill] but they may have been friends outside and played cards together, the kids knew each other. Things like that.

JM: You said earlier, before our interview, the house you grew up in was--I guess it would be [located] southwest of here?

AL: Well it was on seventeenth and Oak [595 17th Street SE]. Let's see, that would be west and south--just barely south. Then some people lived across State Street up as far as twentieth, this being twelfth, that was eight blocks and across State Street, just right along here. Others lived farther south, on Thirteenth, Fourteenth, and--. There was a cannery. Nobody knows where the Dole cannery was anymore and that [building] was new to me, which was out there on thirteenth and Fourteenth Street and the actual Lehman family farm was on--I think it was Oxford Street. That was *way* out in the country at that time and not too far walking distance to here. But the Lehman family boys hunted on there own property, ducks and all that stuff, so they had that kind of meat to eat. And one of the other interesting things, it's not too far from the current airport out there. My father hunted arrowheads out there. I have many arrowheads that he found where is now the Salem airport. Because the Indians were camped out near the mill race. That's another interesting sidelight.

JM: That is. So what do you consider the neighborhood? Was there a mill worker neighborhood or was it just mixed with cannery workers and--?

AL: Not really. They were spread out, sort-of, but probably within a mile radius of the mill.

JM: Because everyone walked to work?

AL: Yes. If you look at the old pictures of the mill in the twenties you'll see maybe three cars out in front. I don't know who those belonged to, maybe Mr. Kay and the bookkeeper. No-,-we had a car starting in 1932 but prior to that time--but even after we had a car my father didn't take it to work.

JM: Did your father have time off from the mill? How would you--?

AL: Oh no, no. There were no vacations. No days off, no vacations, no--

JM: Maybe Christmas off or--?

AL: Yes. Christmas, and I'm not sure, maybe New Years, probably were about the only vacations that they had. And the last year of my father's life, in thirty-nine, my mother had saved pennies and nickels for five years so that we could go on a vacation. So the summer of thirty-nine we went to what was called a "world's fair" in San Francisco and then on down to Mexico.[1] She saved all that money for years and years and years and we did that in the summer of thirty-nine and he died in December of thirty-nine. So she was always *so* thankful because that was the only vacation he'd ever had.

JM: Wow. So was it common to work Saturdays during that time? How many days a week would he work?

AL: I'm sure they worked Saturdays in the early days. I don't remember. I will say no they didn't work Saturdays but I can't be sure. My father was a fisherman and he and the neighbor--and my mother and everybody was packed up to go fishing on the weekend. I think maybe they only went one day because they went fairly close. Once in a great while they would campout someplace so I think that must have been a two-day weekend when they did that.
So anyway when we went to California he just lost his pay for the weeks we were gone. Plus we had to pay for the vacation. You didn't do much traveling in those days.

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[1] The world's fair they visited was named the Golden Gate International Exposition. It celebrated the recent construction of the Oakland bay Bridge (1936) and the Golden Gate Bridge (1937).

JM: You had a car at that point? You just drove to Mexico?

AL: Oh yes, that was in thirty-nine and we had a thiry-two Plymouth. Had to pay cash for it, you know. You had to get it when you had the cash for it.

JM: Tell me again [about] your siblings. You had--

AL: I had a sister. She was ten years older than I. She's the one who left the large bequest to the mill. She requested with this bequest that a plaque be put up in dedication to the Lehman family for that they had done for the mill. She had envisioned it just a little plaque "these people worked here" you know. I brought some articles down that had been left from the family, even back to the grandfather, and then met with the then director of the mill [Maureen Thomas] and [curator] Keni [Sturgeon] they decided that there should be more than just this little plaque because there was so many people involved. Keni developed this plaque that's in what I call the "weave room" now, which lays out some of the history and has some pictures of the family. So there was just my sister and me. The uncles all had children. One aunt had children, the other aunt had no children but *all* of those siblings, all of my cousins, are dead. I'm the last one out of the whole seven people--six or seven people--who worked here who's still alive and who has been in the mill I don't know of any other siblings. Kind of frightening to be the last of the line.

JM: So your sister worked at the mill?

AL: No, no. When she graduated from high school she went to business college and she was a bookkeeper. She did bookkeeping for the cannery across the street, which was a Del Monte cannery--California Packing Corporation. That's where the Japanese study place is now. That was a huge cannery.

JM: O.k. I've seen it on maps--old maps.

AL: I worked there every summer working my way through college. I worked in beans and in many parts of the cannery. But she worked always in the office because she did bookkeeping. She worked for P.G.E. (Portland General Electric) and she worked for what was Mayflower Milk, here in the city.

JM: Your uncles, did any of their kids work at the mill?

AL: No. That was the end of it. My uncles level. The mill, after the war, all of the synthetic fibers started coming in and that sort of was the death knell for the woolen mill because everyone wanted nylon and rayon and orlon. So there was a decline in what people wanted and that sort made the decline of the mill.

JM: Was wool the outdoor--when you would go fishing or hunting was it [in] wool jackets? What were your choices--cotton garment or wool?

AL: Oh, yes. That's all we had. We didn't have any--

JM: Gortex?

AL: --*breathable* material you know like today. It was either cotton or wool, that's all you had. And rubber, I mean boots were rubber. But kids lived such a different life then. We'd buy one pair of shoes and that would be for the winter. If you got a hole in them, you got a rubber thing that you glued on to the bottom, and you put those cleats, cap things, on the heel so the heels didn't wear out and-. It wasn't just because--we were not poor. We were never poor. I don't want to give that impression because poor people--my sister tells, during the Depression, my sister tells about this one boy who used to come to school with overalls on, you know the bib overalls? And she said, "He didn't have any underwear or any shoes, he came to school with his bib overalls on and that's *all he had.*" During the Depression, my mother, the hobos and the bums would come by and knock on the door and want to know if they could work for you to get some money. So she'd have them split wood or do something like that and she'd serve them a big plate of food and give them a dime. So these were the poor people. It's just that, except for the very, very rich, everybody lived a different life, a frugal life. My mother canned all of our stuff for the winter. Canned food, even in the grocery store, was not as prevalent as it is today. And my uncle, my mother's brother, owned a grocery store, over on--just a block from where we lived. He owned the neighborhood grocery store. He carried a lot of people on credit during the Depression. Many of them he never got a penny back from it.

JM: Wow.

AL: So. No. We weren't poor. I don't want you--I don't want anybody to think we were poor--we weren't poor.

JM: Changing topics here. Going back to when you a kid walking through the mill, do remember--was there a lot of lint in the air? Was it hot? Was it cold in the winter or--?

AL: I guess I didn't come that much in the summer, but yes it would have been very hot with all of the machines running. But we didn't dwell on weather like we do now. We didn't hear a weather report. We went to work and if it was hot it was hot and if it was cold it was cold. We didn't say, "Oh, it might rain today!" You just went and did it. One of the things--the lighting was very, very poor. Each of the, I believe, each loom had one bulb that sort of hung down over it. And of

course they were put--the looms were up against the outside walls so they did get some of the outside light, but it was dark. And that bulb gave a reflection so most of the weavers wore a visor cap, that had a green visor on the front of it to keep that glare out. Even though it was dark they wore that to keep the glare out. Very noisy. Oh, just incredibly noisy. My mother's hearing was gone early, mine even has been gone early. I think I was very susceptible to all that noise when I was a child. Today everybody would have to wear earplugs or something to be in that kind of noise.

JM: Do you think the mill was generally a safe place to work, as far as--I mean I know there were a lot of spinning belts.

AL: I think so. I think so. I don't remember anyone getting hurt.

JM: There weren't a lot of accidents?

AL: I can't say they didn't but--people were so careful then. This whole culture that we have come to today that [says], "I can do anything I want to because the surgeons can fix me up. It'll be all right if I break my leg or if I break my neck--or whatever. I'll get fixed up." In those days you didn't get fixed up. If you broke a leg and they couldn't fix it right then you lived with that the rest of your life. I think people were much more cautious of what they attempted and what they did around machinery because they knew how treacherous it could be.

JM: When you were younger, helping your mother, were there other kids that you remember in the mill?

AL: No. No I don't remember any others that were running around like me. [laughs] That's I think partly the culture of the time, when women weren't working--and so the kids went home to their regular home. I did, later on, I'd go home and be by myself but when she first came back to work she didn't want me to do that.

JM: I'm trying to get a sense of your father's attitude or your uncles' attitudes towards working at the mill. If you had any sense of--did they—I mean how did the work compare to other jobs in Salem?

AL: They were happy. They were happy to have a job, and they were happy in what they were doing, and I don't think they ever had any animosity toward the owners or the people that ran the mill. I think that's part of a culture of that era also, that they were glad to have a job and they were able to support their family well, and so they were happy with what they were doing. There wasn't as much, [pause] oh, backbiting and getting ahead, and doing all these things, "I got to do this, and so and so doesn't do their job well." They pretty much lived together and [were] happy with what they did.

JM: So would you have dinners with your uncles? Would they come over to the house sometimes?

AL: Yes, some more than others. We were not real close. But we would get together once and a while with one family--one of the uncles and aunts and another uncle and aunt. After my father died we really didn't do that all that much because we were sort of busy doing--getting by.

JM: Your grandfather, what was his name?

AL: My grandfather's name was August. A-U-G-U-S-T.

JM: Is that German?

AL: Yes. He came from Germany. He went back to Germany to marry my grandmother and brought her over here. Then they lived out here. I don't know where he learned his weaving, whether he learned it in Germany before he came here I don't know. You know how kids are, they don't find out all these things--until he's gone and then you want to know them.

JM: Let me check my list of questions.

AL: My father did--he started here when he was fourteen or fifteen but then he left and he went to California and he worked down there and he worked up in Washington for a while. I think he even worked up in restaurants and things like that. So he wasn't here from the time he was fifteen until he passed away. I think he went away to find out, like young men do, they want to see what the rest of the world is like, and then he decided it was pretty good here and he came back. [laughs] So that's how that transpired.

JM: Well you've done a good job covering everything on my list. Is there anything you want to add, or anything we haven't covered?

AL: Well gosh--as we go through the mill I might think of things that I might want to ad but with the family heritage I guess I've covered pretty much all of it.

JM: When you think about the mill. The mill in [as it relates to] Salem, is there one thing that stands out--or what are your feelings towards the mill?

AL: Oh I was so sad when they closed it and I was thrilled to find out that they were making it into a museum. And that's why my sister left the money to them--because it meant so much to us. It was a stabilizing influence in our lives because

we knew our father had a job and it was a good paying job, and so we were very thankful for that.

JM: That's great. Thank you very much.

AL: You're very welcome. It was my pleasure.

[The voice recorder is turned off for about a minute. Alice continues to explain the importance of the mill to her and her family. I ask her if I may turn the recorder back on and she allows me to continue recording.]

AL: [...]when you have somebody that, a grandfather and a father, and so many aunts and uncles that are tied to something, that really *is* your roots, just like the pioneer families when they have all of their families come a across the plains, that's their roots and they'll try to keep that going forever, so that's the way we sort of felt about the mill. It was great. I'm so glad they did all of the windows and everything all over again, it looks so much better than it did. It's nice to see it--and it's so unique for the west coast! You see a lot of these style buildings in the east coast with the mills but this is one of the few that really looks like one of the eastern mills. It's been great.

APPENDIX B

EMPLOYEE LISTS

List of Employees of the TKWM Between 1900-1902

Data collected from the 1900 US Census and the 1902 Polk Directory for Salem, OR.

Name	Occupation	Address	Age in 1900	Born	Ancestry	Notes	1900	1902
Allport, Thomas	carder	460 State ('00) w s 17th 1 s Mill ('02)	49	1851	Canada/ England	The first address is from the 1900 census, the second is from the 1902 directory.		
Allport, Norman	carder	same	21	1878			x	x
Allport, Maud	weaver	same	18	1882			x	
Anderegg, Ida	weaver	e s 21st 2 n Trade						x
Anderegg, Walter	spinner	same						x
Arnold, Tracy	helper	s s Nebraska bet. 15th & 16th						x
Bailey, Dora	weaver	100 17th				head of household		x
Baillie, Bessie	weaver	Lee sw cor. 19th	38	1862	England	immigrated in 1887		x
Baillie, G. F.	wool sorter	same	37	1862	Scotland	immigrated in 1892	x	
Basey, Joseph	weaver	488 Commercial	25	1874		Died before 1902. His wife is listed as a widow in the 1902 directory.		
Beauchamp, Jessie	weaver	20th nw cor. Lee				boarder		x
Benson, Ray L.	helper	w s Winter 1 s Shipping				boarder		x
Bentley, Roy	spinner (00) foreman (02)	381 Mill (00) 314 Summer (02)	24	1876	England	boarder	x	x
Bishop, Chauncy	finisher (00) weaver (02)	cor. Chemeketa & Capitol (00) 397 State (02)	17	1882	England	son of Fanny Kay and Clarence Bishop	x	x
Bishop, Royal T.	weaver	same	19	1881	England	same as above	x	
Boggs, Harvey	spooler	unknown	15	1884			x	
Breitenstein, Stephen	picker (00) helper (02)	Bellevue ne cor. 17th	34	1865	Switzerland	immigrated in 1886 has four daughters	x	x
Brauning, John	carder	21st ne cor.	16	1883			x	x

		Hyde						
Cameron, J.A.	finisher	430 Ferry	34	1865	Scotland	boarder	x	
Campbell, Frank	weaver	430 Ferry				boarder		x
Cheney, Sabrina	weaver	e s High & Union	24					
Clingan, Fred	spinner	12th nw cor. Oak						x
Clingan, Vernie	helper	same						x
Cordingly, Joseph	machinist	w s 19th bet. Trade and Ferry	41	1858	England	immigrated in 1883	x	x
Cordingly, Sarah	weaver	same	18	1882	England	daughter	x	x
Cordingly, Phoebe	weaver	same			England	daughter		x
Coshow, Robert	executive secretary	100 Mill						x
Deacon, George	warp dresser	510 Misison	28	1871	England	immigrated in 1882	x	x
Donaldson, Charles	helper	79 18th						x
Donaldson, Emil	helper	same						x
Edwards, Martha	spooler	w s 19th 2 n Oak						x
Eschstruth, Wm.		e s 7th 1 s Shipping						x
Fisher, Jacob	finisher (00) weaver (02)	402 15th	22	1877	Germany	Mrs. Fisher is a 54 yr old widow w/ 4 sons.	x	x
Fisher, Philip	carder (00) spinner (02)	402 15th	18	1882	Germany		x	x
Fisher, John	finisher	402 15th	20	1880	Germany		x	
Fromm, Frank	weaver	Columbia sw cor. Front						x
Geren, Fred	helper	16th ne cor. Lee				boarder		x
Gilson, Lottie	weaver	25th n w cor Leslie				boarder		x
Gray, Miner	watchman	20th nw cor. Lee	37	1862			x	x
Greene, Lillian	weaver	w s 12th 2 s Waller	22	1877	Ireland		x	x
Greene, Marie	weaver	w s 12th 2 s Waller	23	1876	Ireland	mother immigrated in 1864, father is deceased	x	x
Gross, Anna	spinner	381 Mill (00) 406 Center (02)	20	1880	Germany		x	x
Hansel, Herman	helper	e s 21st 1 s Asylum						x
Harkins, Etta	finisher	13th ne cor. Mission						x
Harritt, Frank	finisher	307 Church						x
Herbolt, Wm.	helper	e s Winter bet. Market & Oak						x
Hibbs, Walter	helper	487 Marion						x
Hodgkin, Rocky	spinner	356 Capitol	19	1881		boarder		
Howe, Claire	fuller	434 13th (w s 13th 1 n Mission)	25	1874		head of household	x	x
Hug, Frank	helper	15th 3 n Marion						x

Hughes, Daisey	spooler	e s 25th bet. Leslie & Waller						x
Hunt, Wm.	spinner	178 State						x
Hunt, Mattie	weaver	892 Leslie	27	1872			x	
Hunt, Yula	weaver	same	25	1874			x	
Irvin, Anna	laborer	238 Trade	20	1879			x	
Jones, Mabel	spooler	w s 13th 1 n Mission						x
Kantelberg, Gustave	finisher	Nebraska nr. 12th						x
Kaufman, Henry	helper	Capitol nw cor. Division						x
Kaufman, Jacob	spinner	same						x
Kaufman, Joseph	laborer	same						x
Kay, Thomas B.	president	463 Chemeketa	36	1864	England		x	x
Koppe, Clara	weaver	Oak se cor. Turner	16	1883	Germany		x	x
Koppe, Emil	foreman	same	40	1860	Germany	immigrated in 1880, his wife Augusta immigrated in 1881, they had 8 children	x	x
Koppe, Louis	weaver	Oak se cor. Turner	14	1886	Germany			x
Koppe, Paul	dresser	same	15	1884	Germany		x	x
Lattourette, Katie	weaver	12th ne cor. Waller	38	1861		widow with 2 children		x
Lehman, August	weaver	not listed	46	1854	Germany	Just relocated from Portland where he worked as a janitor and was listed as a lodger in a large apartment building. Immigrated in 1885		x
McAllister, May	spooler	unknown	19	1879			x	
McGee, Anna	weaver	347 High	22	1877	Germany	boards at the Academy of the Sacred Heart	x	x
McGee, Frank	wool sorter	High se cor. Oak						x
McGee, Patrick	supt.	High se cor. Oak						x
Miller, Susie	binder	24 Court				boards at the Cottage Hotel		x
Muellhaupt, Otto	spinner	352 Marion	20	1879	Germany	father is a clergyman		x
Munson, Margaret		381 Mill	19	1881	Scotland	boarder		x
Northcutt, Ella	helper	Berry sw cor. Oxford						x
O'Donald, Frank	weaver	Hoyt sw cor. 13th						x
Osborn, Joseph	picker	unknown	30				x	
Ostrander, Charles H.	weaver	379 Waller						x
Owens, Lizzie	weaver	238 Trade (00) 19th sw cor. Lee (02)	35	1865	England	single, boarder	x	x

Parker, Art	spinner	near #1 Commercial	19	1880			x	
Pero, Edward A.	finishing(00) foreman (02)	432 Ferry	46	1854	France	boarder in an apartment w/ J.A. Cameron	x	x
Pero, Edward H.	helper	432 Ferry						x
Pickard, Lewis W.	dyer	276 State						x
Raistrick, Seth	wool buyer/grader	12th Sw cor. Waller	37	1862	England	Immigrated in1892, wife Eliza immigrated in 1893.	x	x
Raveaux, Ross	weaver	e s High & Union	22	1877	France		x	x
Raveaux, Louie	spooler	same	16	1883	France		x	x
Rich, Samuel	weaver	B, Englewood						x
Roth , Emil	weaver	Summer se cor. Oak						x
Rolfe, G.	finisher	432 13th	23	1876		boarder	x	
Rudolph, Bertha	weaver	w s Cottage 1 n Mill Creek						x
Sargeant, Carrie	spinner	304 14th	20	1879				
Sargeant, Clinton	spinner	304 14th	19	1880				
Shultz, George	weaver	17 S 12th	23	1877	Germany	son	x	x
Shultz, John C.	wool puller	17 S 12th	64	1836	Germany	father	x	x
Semke, Henry	loom repair	Winter ne cor. Oak						x
Sheridan, Alice	weaver	487 Marion			Ireland			x
Sheridan, Martha	finisher	487 Marion			Ireland			x
Sheridan, Mary	finisher	487 Marion			Ireland			x
Sheridan, Wm. P.	finisher	487 Marion	20	1879	Ireland		x	x
Smith, Wm.	finisher	Waller sw cor. 17th						x
Stanton, Charles	spinner	430 Ferry				tenement?		x
Thompson, Bill	weaver	379 Mill	22	1878				
Thompson, May	weaver	379 Mill						x
Van Wagner, Grace M.	weaver	379 Mill				boarder		x
Welch, John T.	fireman	377 Chemeketa						x
Wilson, John	wool grader	463 Chemeketa					x	
Wolff, John	dyer	24th ne cor. Oak						
Wolff, Anna	sewer	24th ne cor. Oak				daughter		x
Wolff, Anna	weaver	24th ne cor. Oak				daughter		x
Wolz, Karl	helper	Leslie se cor. 24th				boarder		x
Wright, Perry	spinner	17th nw cor. Bellevue						x
Wright, Samuel M.	laborer	17th nw cor. Bellevue						x
Yantis, Zoe M.		e s 19th bet. Lee & Oak						x
Zwicker, Emma	weaver	s s Leslie 2 e 25th						x
Zwicker, Henry R.	spinner	s s Leslie 2 e 25th						x

Zwicker, Leonard W.	spinner	s s Leslie 2 e 25th						x
Zwicker, Otto H.	spinner	s s Leslie 2 e 25th						x

List of Employees of the TKWM in 1930

Data collected from the 1930 US Census for Salem, OR. Listed by census district.

Name	Occupation	Address	Age in 1930	Relation to head of house	Value of home or cost of rent	Other people in house: w=wife, h=husband, d=daughter, s=son, Status: wd=widowed or widower dv=divorced, s=single	Dist
Shank, Verna	weaver	1216 State	30	roomer		w/ 3 other roomers	55
Page, Albert	filling carrier	1555 Ferry	19	head	R $22	wife Rhea	55
Drager, Lucretia	laborer	1710 State	52	wife	O $	husband is county treasurer	55
Page, Chester	manager	1255 Court	48	head	O $7000	married with 6 children	55
Page, Chester E.	laborer	same	21	son	D		55
Pugh, Walter	architect	441 N 18	66	head	O $8800		55
Okerberg, Carl	carbonizer	457 N 17	54	head	R $25	w, d	55
Stanke, Ardita	operator	1365 Mill	40	head	O $1000	w, s	59
Ohmart, Roy	bookkeeper	2444 S 14	51	head	R $30	w, d, s	59
Hall, Thomas	carder	1596 Ferry	59	head	O		59
White, Gilbert	grader	1740 Ferry	47	head	O $2200	w	59
Comestock, Roy	spinner	1710 Trade	39	head	O $3000	w, s, s, s	59
Noack, John	spinner	365 (17 or 18)?		son		mother is w	59
Thomas, Harry	steam engineer	395 S 17	48	head	O $3500	mother, s	59
Loewen, Wm.	carder	1520 Trade	25	head	O $1500	w, sis, 2d, s	59
Frank, Contreris	weaver	345 S 14	58	head	O $2000		59
Herman, George	loom mechanic	1455 Mill	25	head	O $3000	w	59
Campbell, Milia	burling	450 S 14	58	wife			59
Hall, Ferdig	loom mechanic	465 S 15	34	head	O $4000		59
Manning, Clara	weaver	424 S 16	54	head	R $10	solo	59
Kinney, Edith	weaver	435 S 17	59				59
Apple, Minnie	spooler	1549 Bellevue	41	head	O $2000		59
Comstock, Nadine	spooler	548 S 17	17	head	O $2000	dv	59
Lehman, Fred	boss weaver	595 S 17	34	head	O $2000	w, d (Marguirite)	59
Fisher, Phillip	drawing-in	1440 Bellevue	48	head	O $4000	w	59
Donaldson, George	carder	538 S 14	53	head	O $2500	w,s	59
Meiske, Edwin	hand-in	1375 Mission	22	boarder			59
Donaldson, Helge	spinner	240 S 23	42	head	O $3000		60
Brooks, Donald	finisher	464 S 24	42	head	O $2000		60
Howe, Christine	finisher	1990 Mill	44	head	O $1500		60
Harland, Pearl	dyer	378 S 21			O $3000		60
Shultz, Frank	laborer	2110 Trade	44	son	O $3000		60

Peterson, Nels	extractor	205 S 22	64	head	O $2500		60
Peterson, Elmes	dyer	same	27	son			60
Schmidt, Dietrich	weaver	795 S 22	24	head	O $1400		60
Kingston, Wm.	finisher	940 S 24	48	head	O $1300		60
Wolf, Clara	finisher	1096 S 21	42	wife	O $3000		60
Creson, Hazel	weaver	2276 Ford	33				60
Picha, Clyde	mechanic	1075 S 22	22		O $800	w	60
Cavanaugh, Clark	weaver	625 S 25	42	wife	O $750		60
Papenfue? (smudged)	seamstress	1099 Mill	47	head	O $2000		61
Neolanda, Orlando	weaver	1143 Oak	54	head	O $5000		61
Herman, Christina B.	spooler	425 Winter	28	daughtr	O $5000	mother is wd w/ 2d, 2s, 2 lodgers	52
Baysinger, Florence	weaver	557 Knapp	26	boarder			52
Panic, Robert	manufactur er	765 Summer	59	head	R $75	w,d	52
Conway, Helen	helper	1060 Highland	28	wife	R $30	mother, husband	62
Sagar, Annie	spooler	2964 Brooks	26	daughtr	O $2000	mother, father	62
Hing, Wm.	manufactur er	625 N 20	41	head	O $5000	w,d	65
McCormick, Cecil	furnace feeder	659 (??)oreys Ave	18	boarder			65
Mentzer, Vernon	worker	845 N 17	33	head	O $2000		65
Pero, Edward	foreman finisher	1460 D	50	head	O $5000	w,s	65
Rich, Samuel	weaver	1295 D	50	head	O $5000	w, 2 s, 2 d	65
Mentzer, George	engineer	935 N 17	57	head	O $3000	w	65
Huntly, Arthur	spinner	1140 N 13	39	head	O $4700	w, s, d	65
Lenhardt, Mamie	weaver	1255 14	19	daughtr			65
Carroll, Grover C.	weaver	295 Rt 4	41			apartment w/ 23 lodgers	57
Mentzer, Wayne	mechanic	1755 N Collage	25	w	R $18		63
Myers, Willard	dryer	850 Norway	55		O $2300	s	63
Myers, Daisey	speeder	same	50		same	same	63
Kahler, Bernard	carder	1060 Hood	54	head	O $1000	w, d	63
Van Buren, Fred	fireman	2080 Commercia l	46	head	O $2000	w, 3 s, d	64
Burton, Janet	seamstress	575 20	53	head	R $14	s, d	68
Seamster, Hubert	weaver	520 19	26	head	O $1400	w	68
Seamster, Robert	weaver	2048 Center	37	son	O $1800	w/ 68 yr old wd mother	68
Ward, Hal	finisher	2285 State	45	head	O $2000	w, 3 s, d	68
Jayes, Glems	weaver	btw 2493-2419 State	35	head	R $15	dv, s, d	68
Roberts, Verna	weaver	1185 13	47	mother-in-law	R $25		69
Goss, Kenneth	burling	same	23	brother-in-law			69
Noack, George	spinner	1385 Hines	35	head	R $15	w,d,boarder 3 fam. Apt.	69
Barker, Amos	worker	1715 Lee	55		O $2500		69

Barker, Bertha	worker	same	46		same		69
Printz, John	engineer	1176 Oxford	59	head	O $2500		69
Lehman, Carl	labor	1286 15	35	head	O $2000		69
Lehman, Wm.	weaver	1740 Oxford	33	son	O $1700	w/ August (64), Anna (63), Herman (25)	69
Wickizer, Minnie	shoddy	1085 18	56	wife	R $25		69
Yarnell, Jay	textile	1705 Cottage	30	head	R $12		70
Kerber, Adam	spinner	1745 S Capitol	26	head	R $15		70
Carthew, Mac	spinner	1795 S Capitol	27	head	O $1200		70
Donaldson, Oscar	foreman	1590 S Cottage	43	head	O $2500		70
Green, Lillian	weaver	1027 12	49	head	O $2000	solo	70
Allport, Carl	carder	2090 University	26	head	O $1800	w, s, d	70
Zwicker, Alice	weaver	1335 S 12	21	wife	O $500	h	70
Follrich, Ruth	weaver	1650 Yew	31	wife		h	70
Kay, Ercel	golf club manager	1525 Fairmount	40	head	O $8500	Elenor (31), Thomas (6)	71
Bassett, Edson	washer	150 Vista	56	head	O $12000	w	72

APPENDIX C

FIGURES

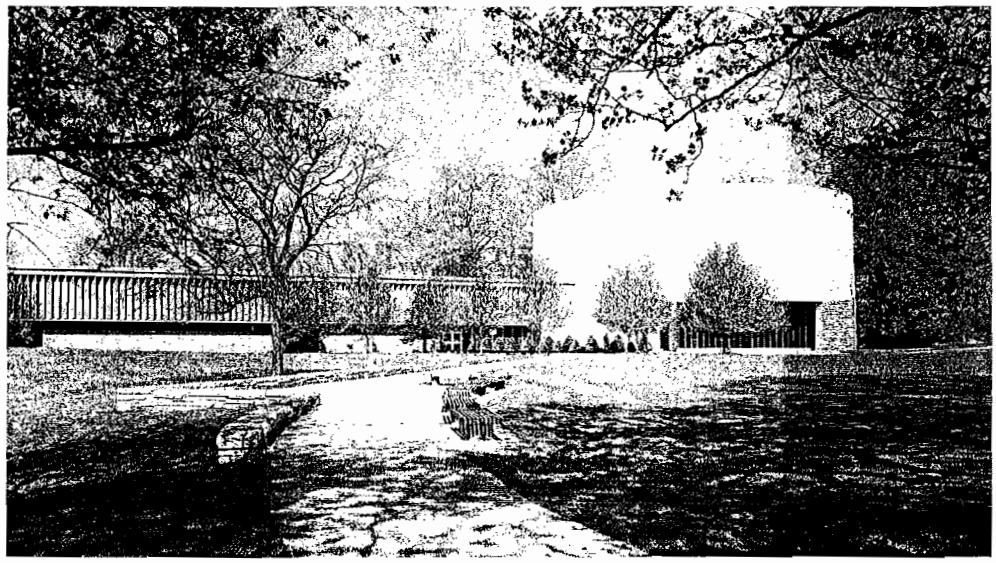

Figure 1. Cyclorama, Gettsburg National Historic Park, Pennsylvania. Historic American Building Survey (HABS), "View from southeast/east with path and retaining wall in foreground," PA-6709-8

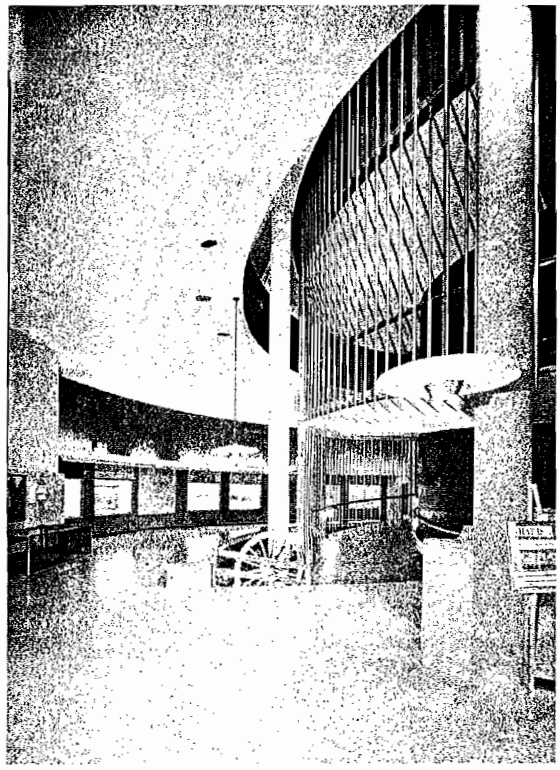

Figure 2. Cyclorama, Gettsburg National Historic Park, Pennsylvania. HABS, "View of entrance to Cylorama ramp and museum exhibit area in first floor rotunda, looking northwest," PA-6709-41

Figure 3. Fulling Stocks. Image found in *Yorkshire Textile Mills*, Goodall, page 12, figure 15

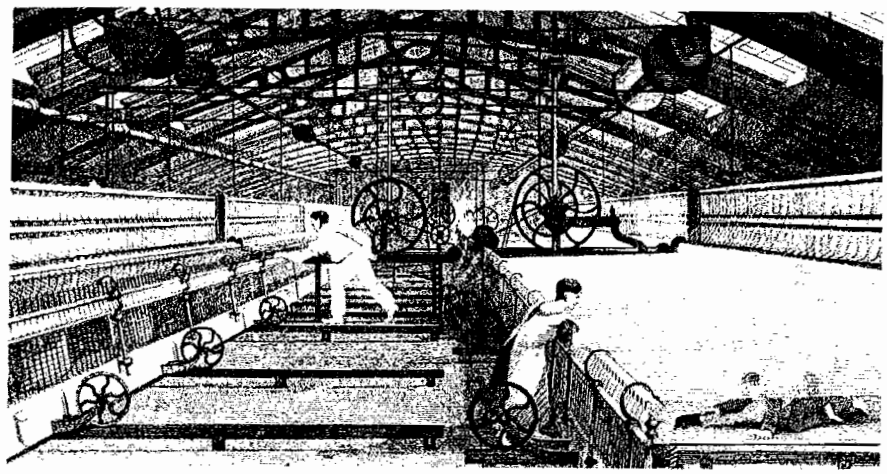

Figure 4. Spinning Mules. Image found in *Run of the Mill*, Dunwell, page 10

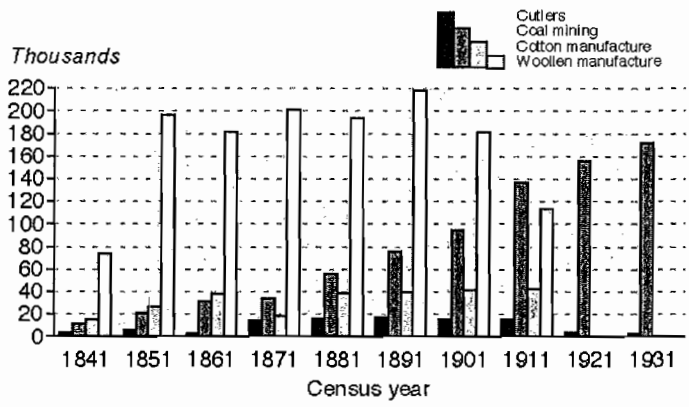

Figure 5. Yorkshire Statistics, "Key Occupations." Office for National Statistics, UK., page 4. http://www.statistics.gov.uk/census2001/bicentenary/pdfs/yorkshire.pdf

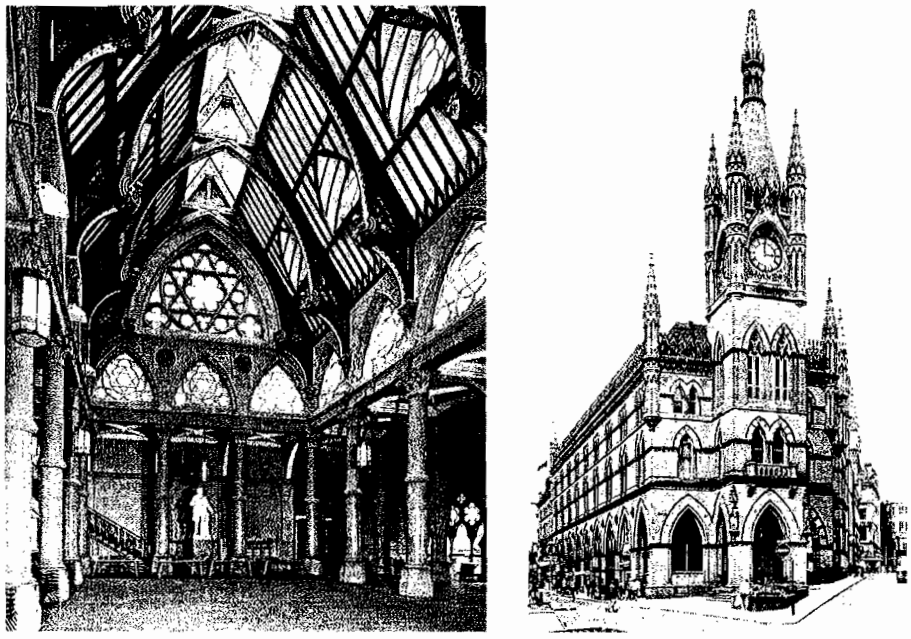

Figure 6. Wool Exchange Building. Image found in *Yorkshire Textile Mills*, Goodall, page 12, page 172 figure 281

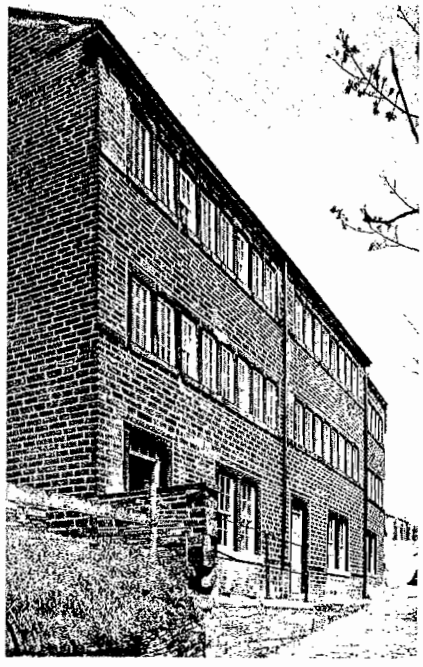

Figure 7. Weavers' Cottages. Image found in *Yorkshire Textile Mills*, Goodall, page 20, figure 28

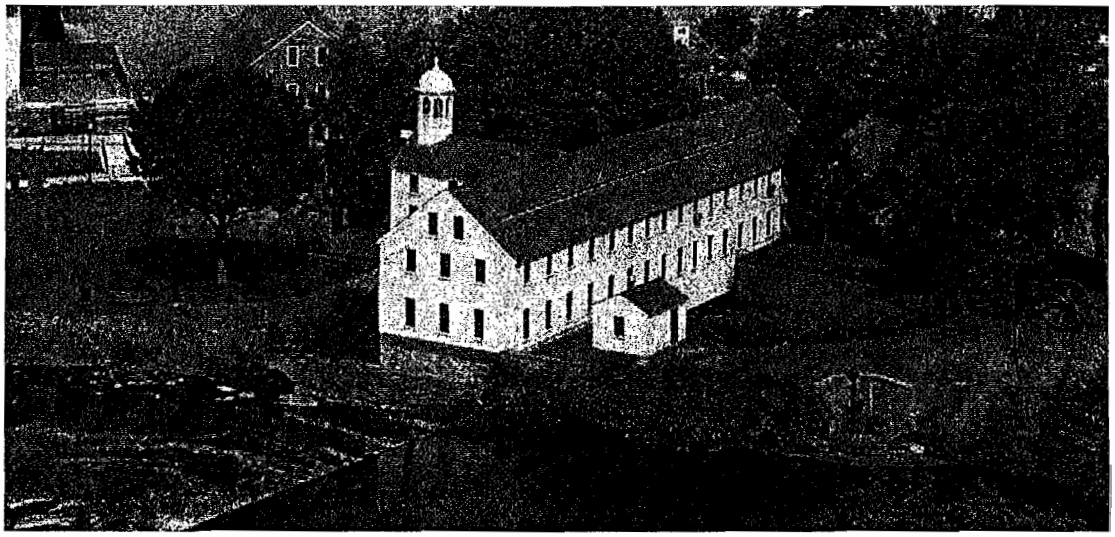

Figure 8. Slater Mill, Rhode Island, Aerial View. HABS, RI-1-1522

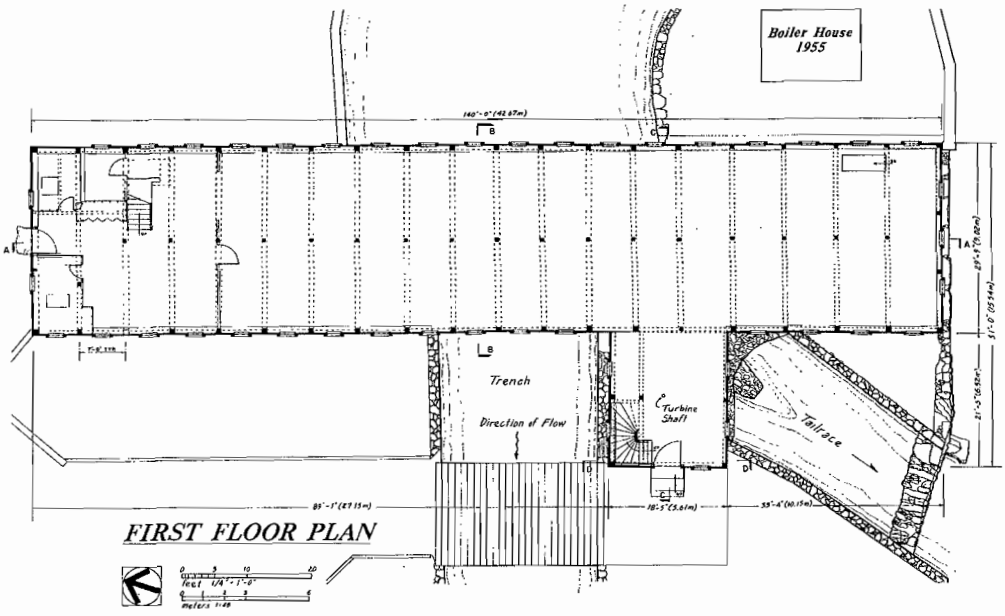

Figure 9. Slater Mill, Floor Plan. Drawn by Lee Ann Jackson and Todd Croteau in 1992, HABS, RI-1-1522, "Slater Mill, c1835, First Floor Plan," page 4 of 24

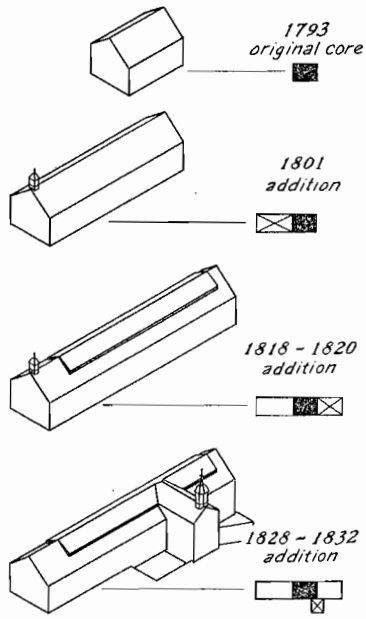

Figure 10. Slater Mill, Additions. Drawn by Robert C. Giebner and Todd Croteau in 1992, HABS, RI-1-1522, "Slater Mill," page 1 of 24

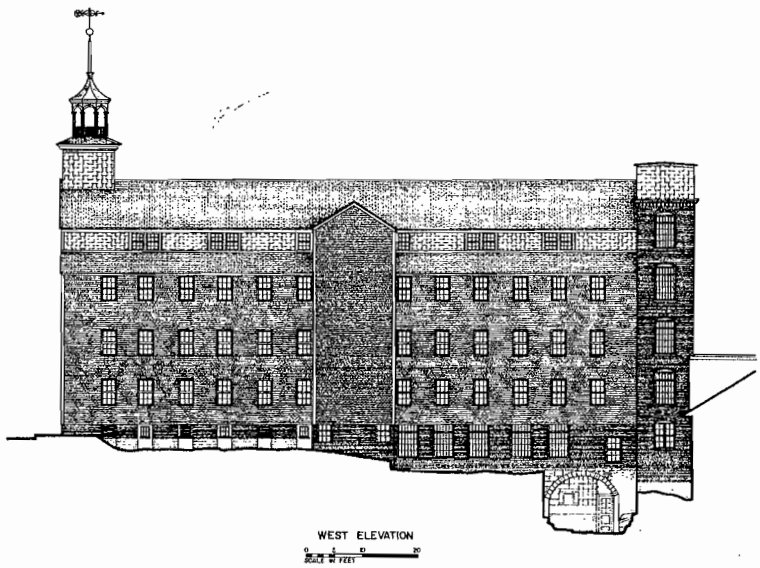

Figure 11. Lippitt Mill, Rhode Island. Drawn by Donald G. Prycer in 1971, HABS, "Lippitt Mill," RI-338, 3 of 4

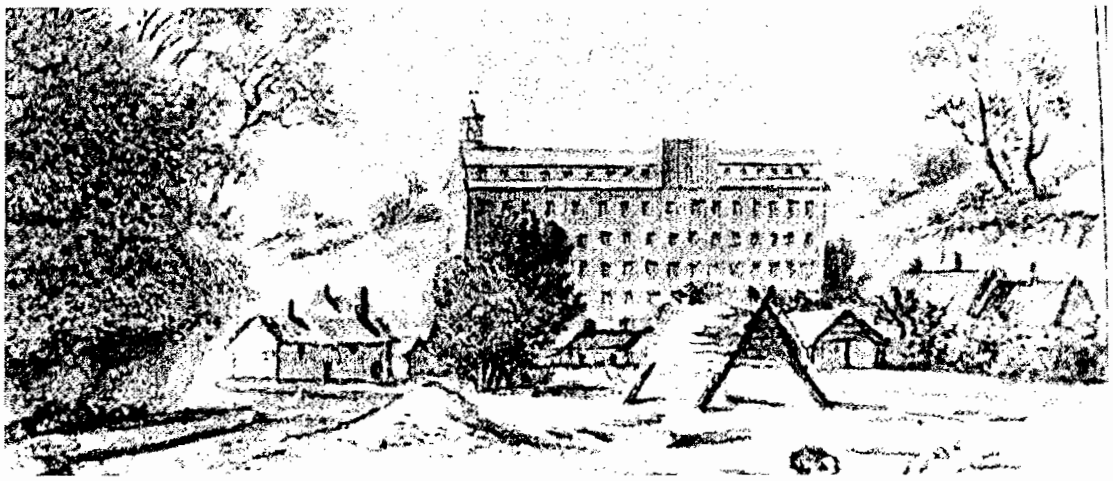

Figure 12. Awrkwright's Lower Mill. Image found in *American Buildings and Their Architects,* Pierson, "Arkwright's Lower Mill," 33.

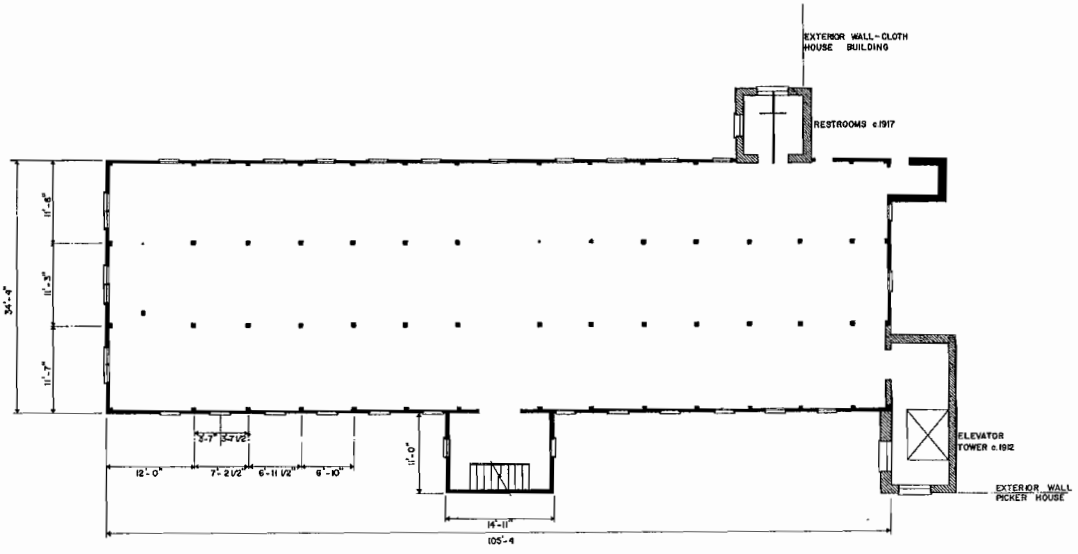

Figure 13. Lippitt Mill Floor Plan. Drawn by Donald G. Prycer in 1972, HABS, "Lippitt Mill," RI-338, 2 of 4

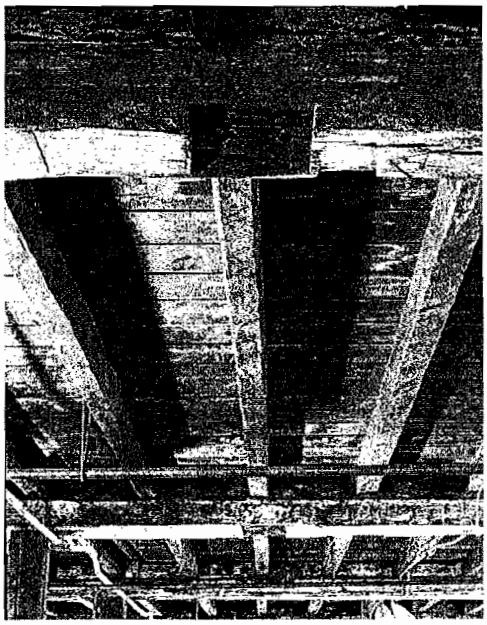

Figure 14. Photo of Joists. Traditional heavy timber construction, photograph shows joists between the beams in Slater Mill. Historic American Engineering Record, Slater Mill, RI-1-26

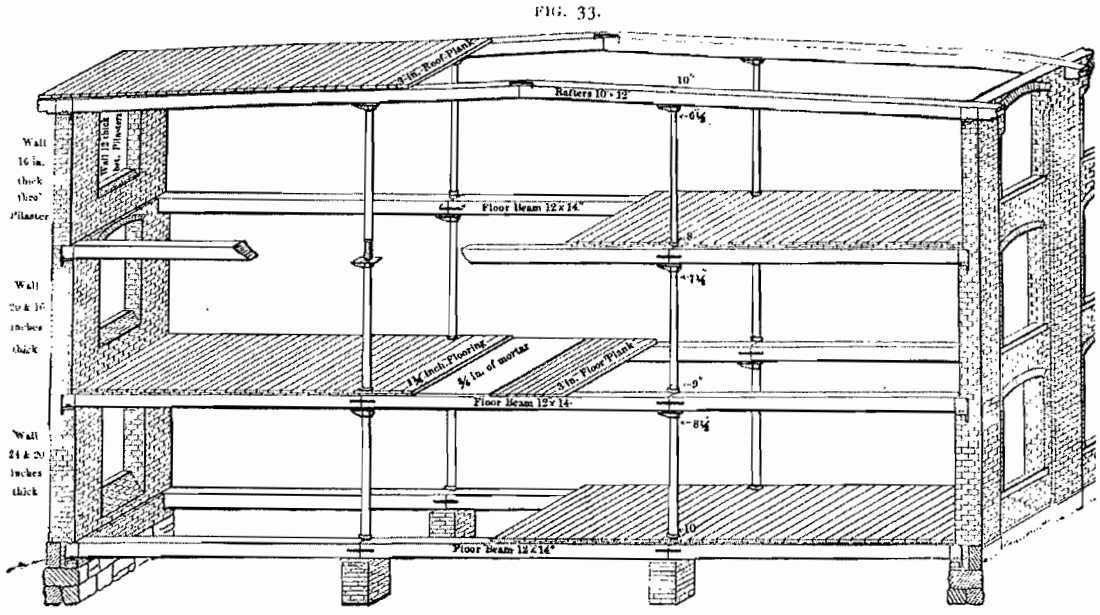

Figure 15. Slow Burn Plan. Heavy floor boards compensate for the loss of structural stability due to the removal of all joists. Also, brick pilasters allow for greater strength and larger window openings. The plan calls for the pilasters to be 24" & 20" thick at the first floor, 20" & 16" at the second, and 16" at the at the third. Originally published by mill engineer C.J.H Woodbury in 1882, reprint found in *The Works*, Bradley, page 128, figure 5.6

Figure 16. Lippitt Mill Housing. Image found in *Pencil Points*, "Rhode Island Mill Towns," Fowler, 1936

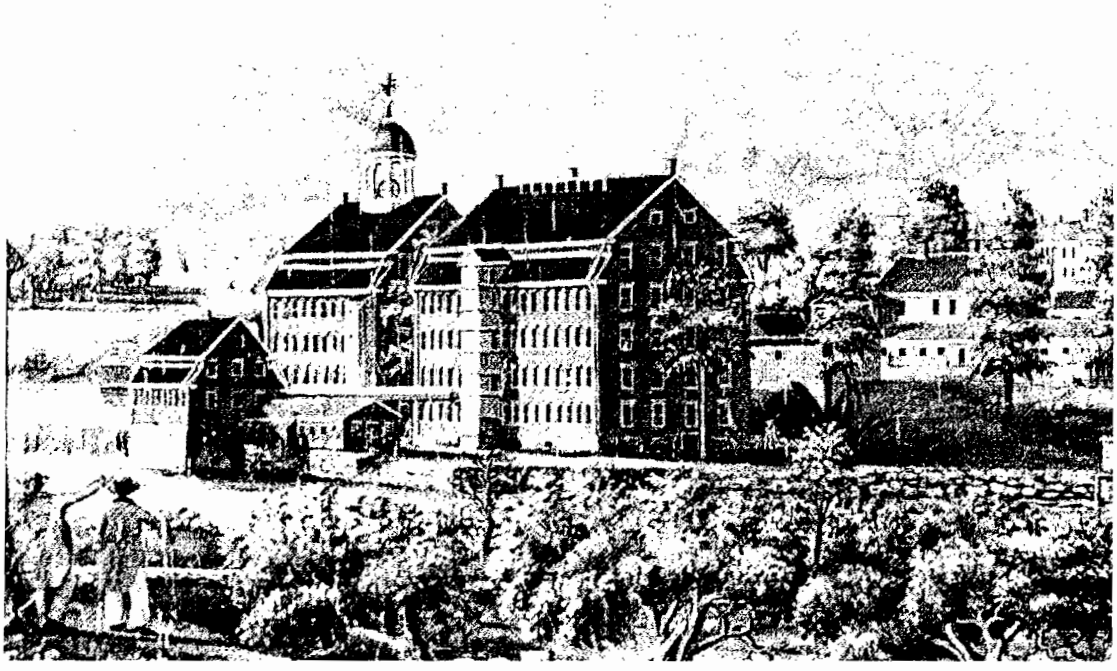

Figure 17. Waltham, Massachusetts. Found in *American Buildings and their Architects,* Pierson, page 60, figure 26

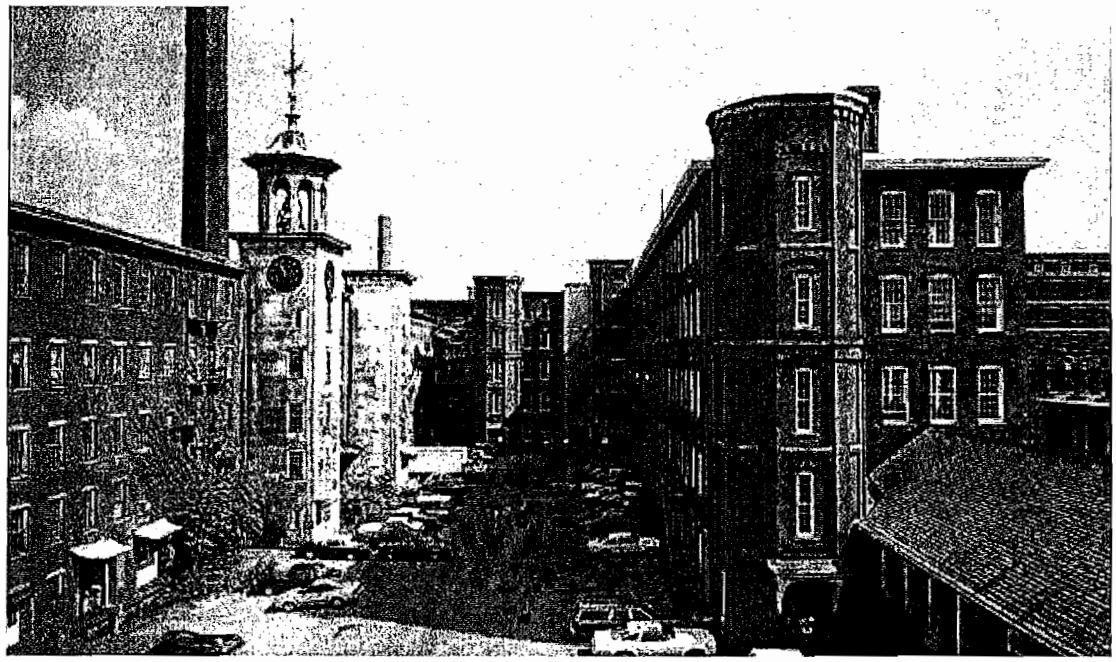

Figure 18. Boot Mills, Lowell, Massachusetts. Historic American Engineering Record (HAER), MA-16-21

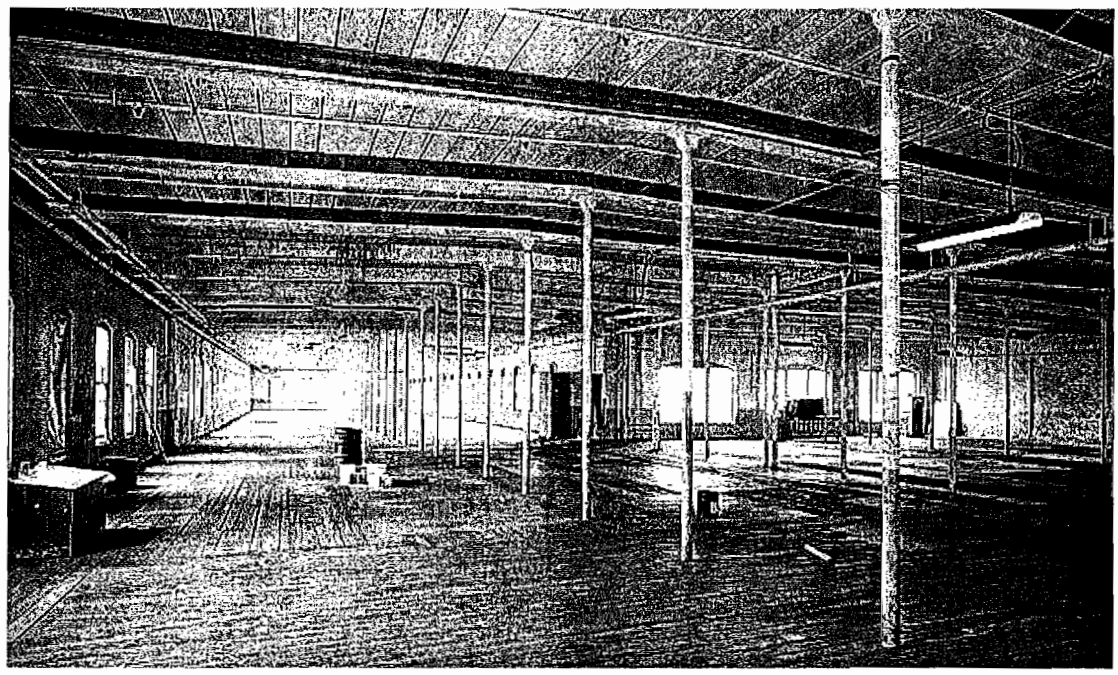

Figure 19. Boot Mills, Lowell, Massachusetts, Interior. Historic American Engineering Record (HAER), MA-16-33

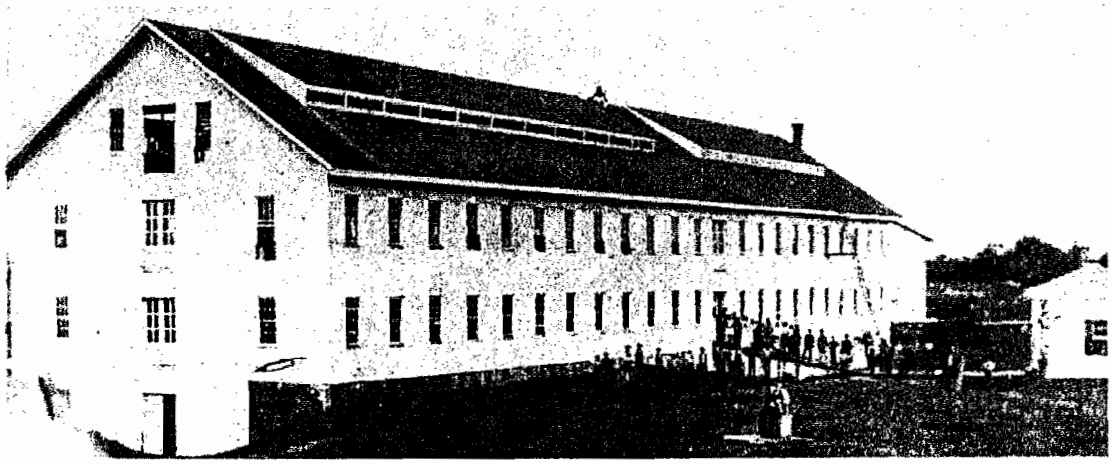

Figure 20. Willamette Woolen Manufacturing Company, Salem, Oregon, built 1862. Mission Mill Archives

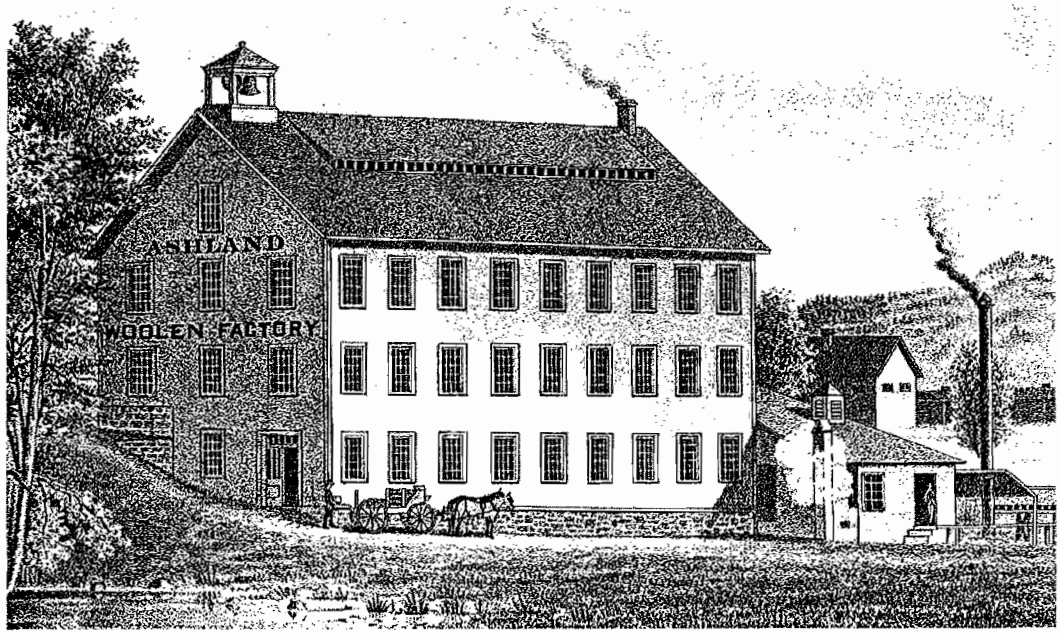

Figure 21. Ashland Woolen Mill, Oregon. Oregon Historical Society, "Ashland Mill," OrHi 104998

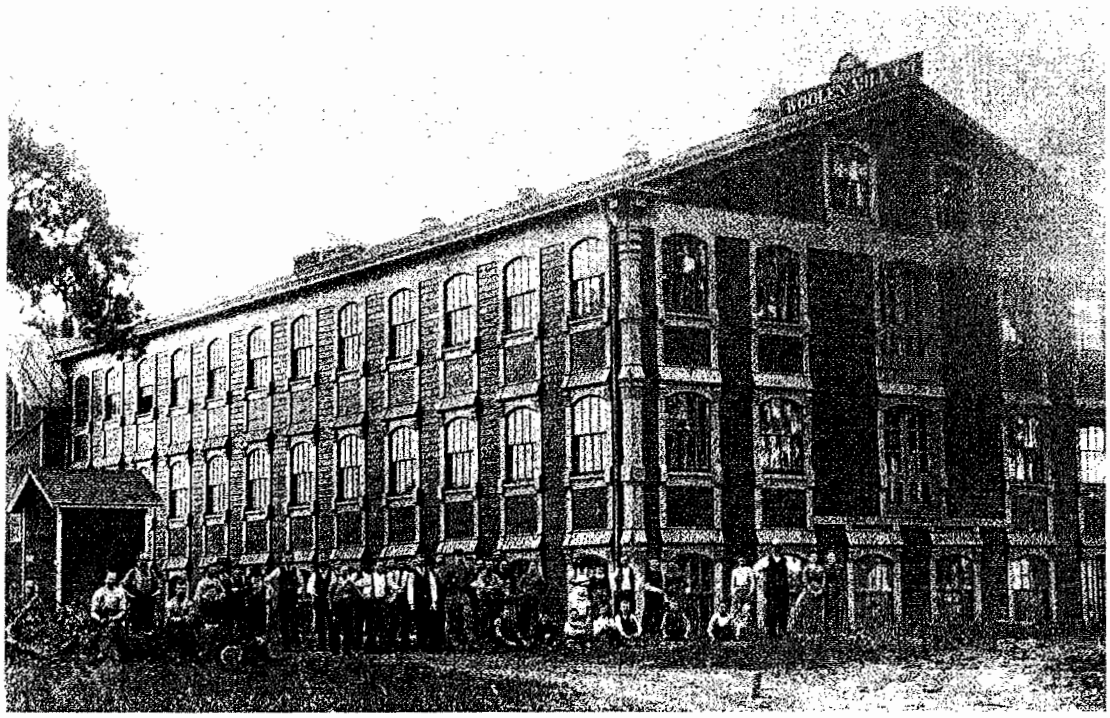

Figure 22. First TKWM, Salem, Oregon. Mission Mill Archives.

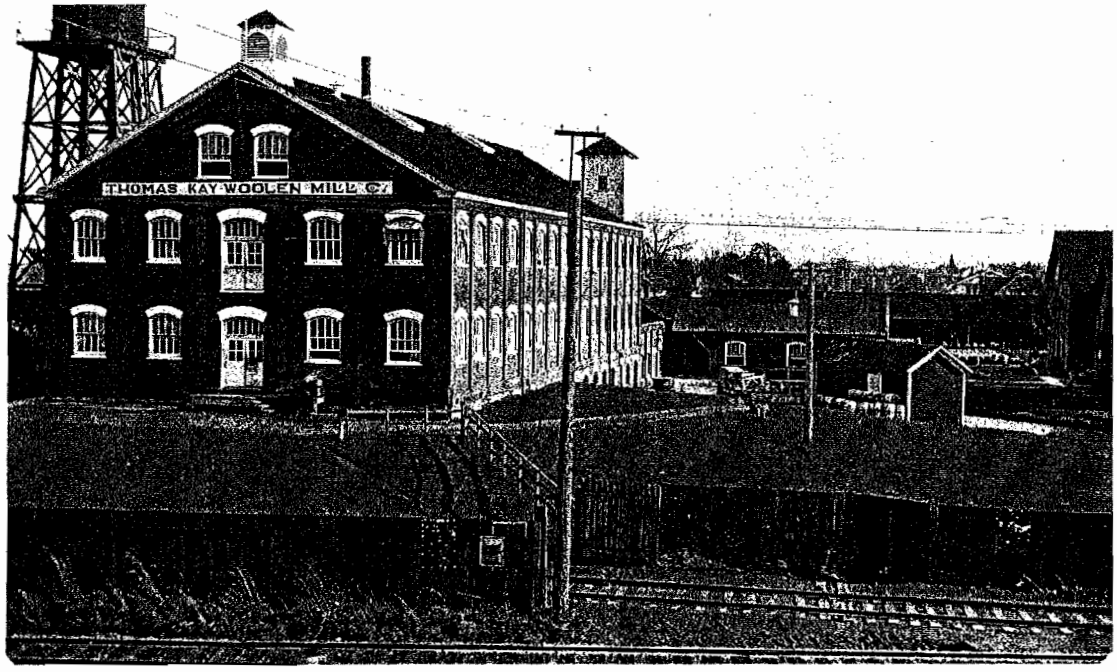

Figure 23. Second TKWM, Salem, Oregon, circa 1910. Mission Mill Museum Archives.

24. Detail of the brick pilasters of the TKWM. Shawn Lingo, 2009.

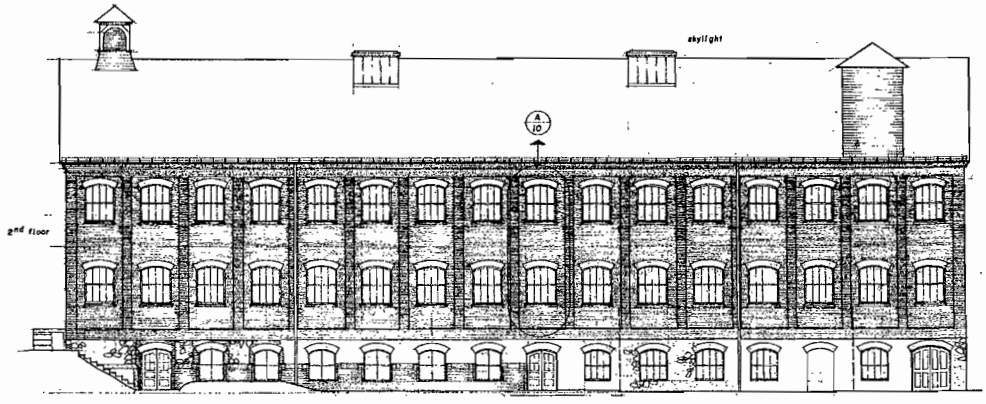

Figure 25. TKWM HABS Elevation Drawing. Drawn by Hanns and Lindburg, HABS OR-54, sheet 11 of 39.

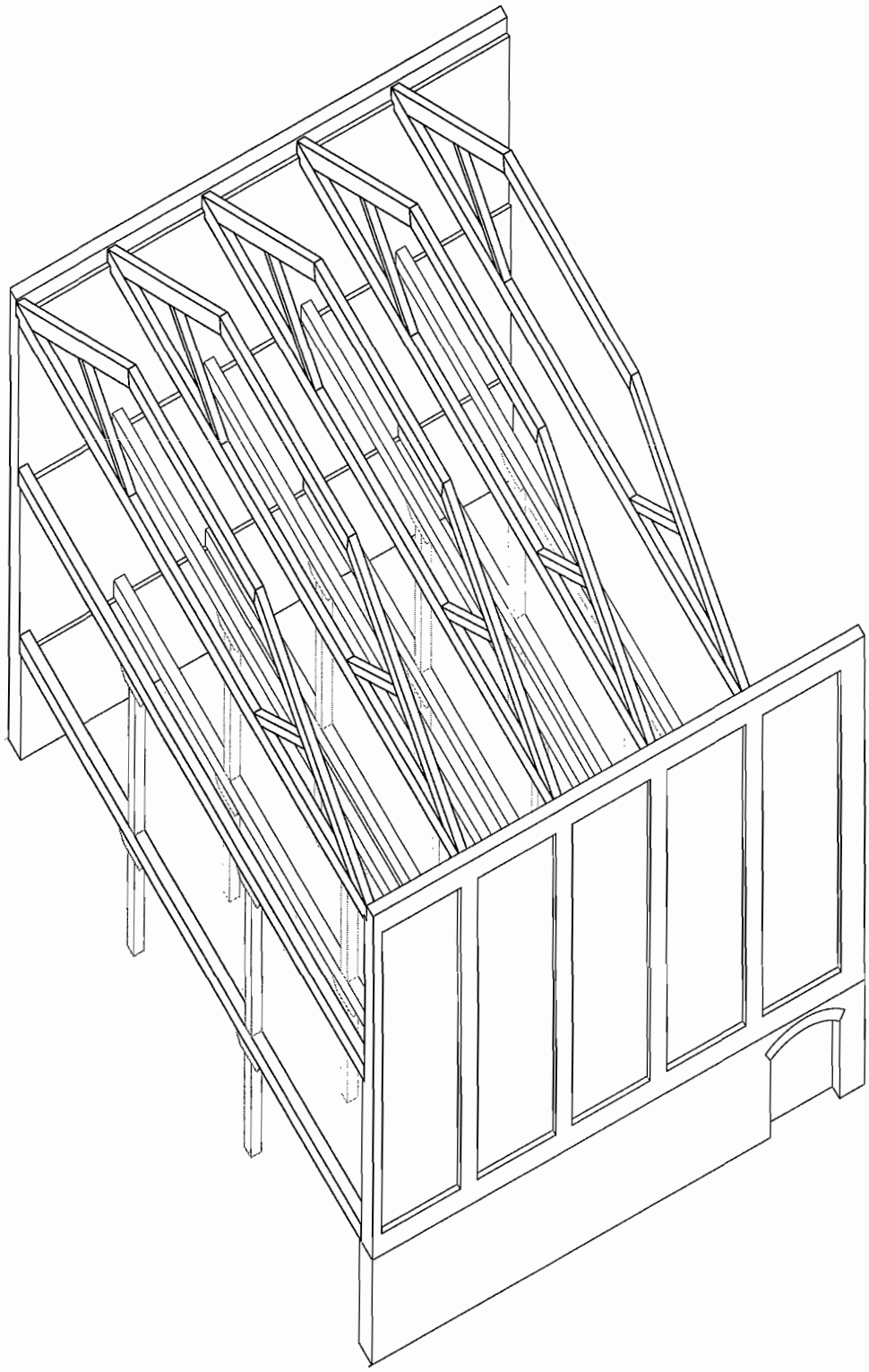

Figure 26. Axonmetric Section of the TKWM. Drawn by Jeremy T. Mauro, 2009. Dimensions taken from HABS drawings.

27. Map showing location of workers' dwellings for the periods 1900, 1930, and circa 1960. Blue circles indicate dwellings in 1900, red is for 1930, and green is for c.1960. Size of the circle and number within the circle indicates number of employees living in each house. Larger dashed circles represent 1/2 mile distance form TKWM, 3/4 mile, and 1 mile. Map is reproduced from the Sanborn Fire Insurance Map of Salem, 1926-1927, ©2008 ProQuest, LLC. Data compiled and plotted by Jeremy T. Mauro, 2009.

Figure 28. Mill Workers' Neighborhoods According to Occupation. This map shows the location of workers' dwellings in 1900, organized according to each employee's occupation at the TKWM. The number of squares stacked on a single "dart" correspond to the number of workers living at that address. Map reproduced from the Sanborn Fire Insurance Map, Salem, 1895, ©2008 ProQuest, LLC. Data compiled and plotted by Jeremy T. Mauro, 2009.

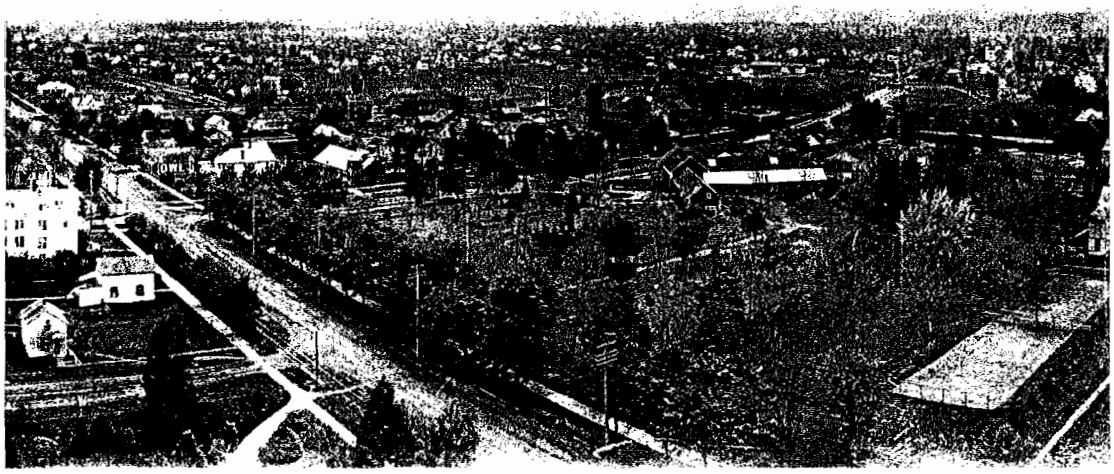

Figure 29. View of Salem from Capitol, 1885. The wood water tower of the TKWM in near the center of this photograph. Oregon Historical Society, 929-A19, Negative 77563

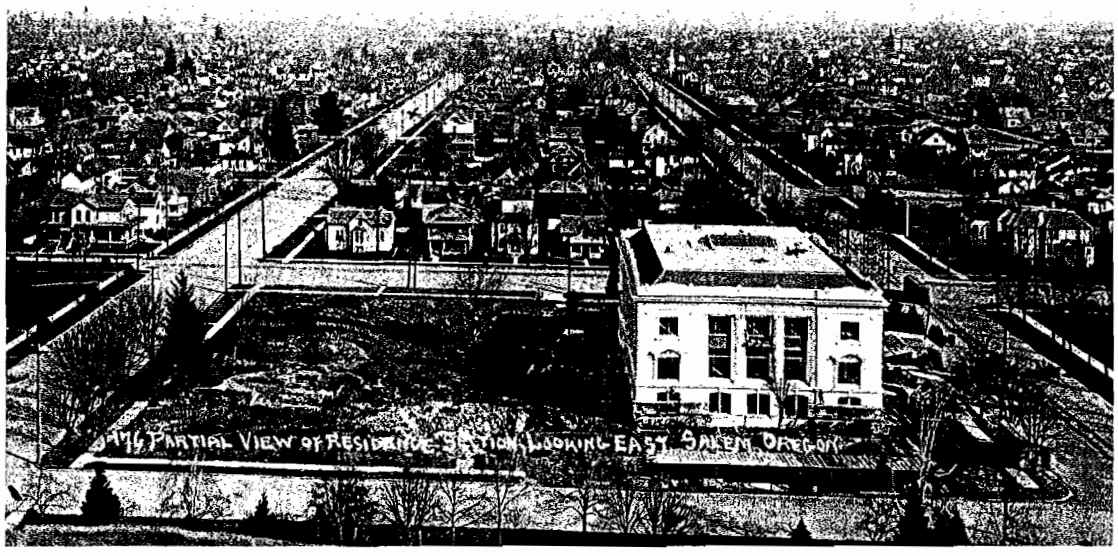

Figure 30. View of Salem fom Capitol, 1913. Oregon Historical Society, 929-A12, Negative 77563

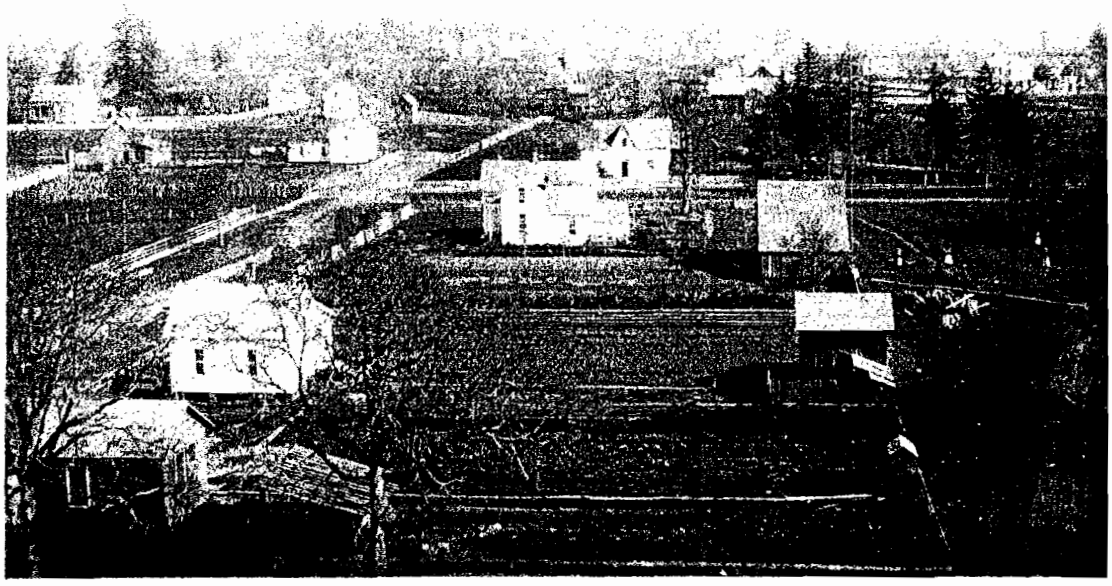

Figure 31. Salem Homes, 1885. Oregon Historical Society, "View of Salem," 929-A22, Negative 170G051

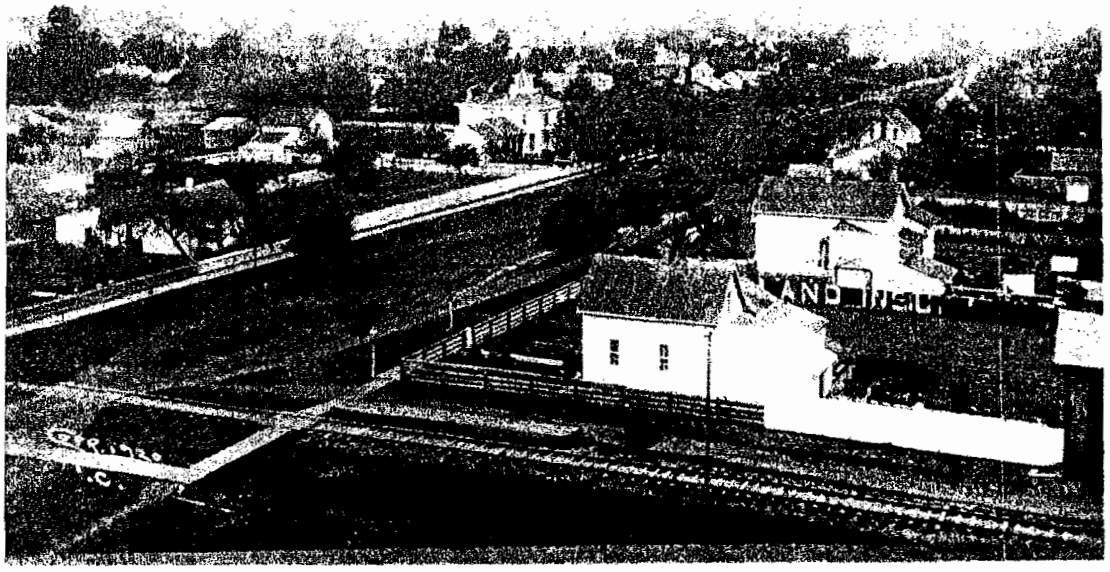

Figure 32. Salem Homes, 1885. Oregon Historical Society, "View of Salem," 929-A14, Negative 24782

All photographs of houses in this section by Jeremy T Mauro, 2009.

Figure 33. 234 14th Street Northeast, Built 1890

Figure 34. 496 Ford Street Southeast, Built 1880

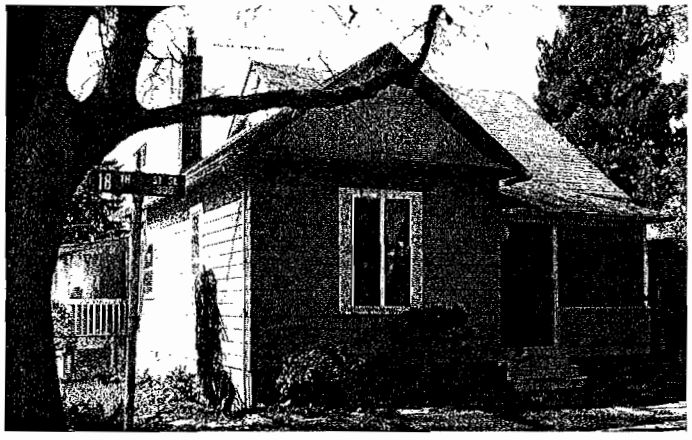

Figure 35. 395 18th Street Southeast, Built 1901

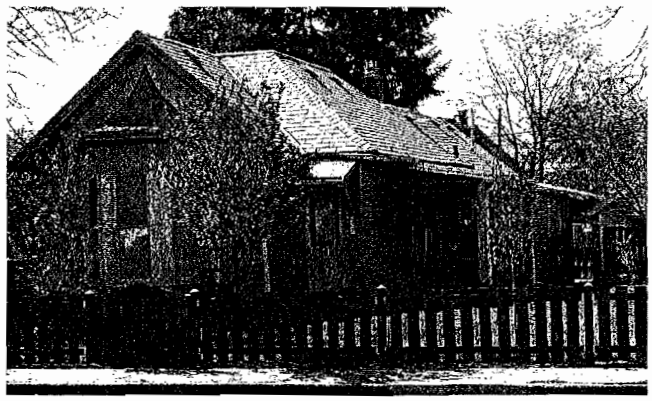

Figure 36. 433 17th Street Southeast, Built 1895

Figure 37. 548 S 17th Street Southeast, Built 1920. Home of spooler Nadine Comstock in 1930.

Figure 38. 435 17th Street Southeast, Built 1915. Home of weaver Edith Kinney in 1930.

Figure 39. 502-504 14th Street Northeast, Built 1900

Figure 40. 524 15th Street Northeast, Built 1901

Figure 41. 1307-1315 Marion Street Northeast, Built 1890

Figure 42. 496 13th Street Northeast, Built 1900

Figure 43. 1527-1537 Court Street Northeast, Built 1910

Figure 44. 2110 Trade Street Southeast, Built 1905. Frank Shultz is listed at this address in 1930.

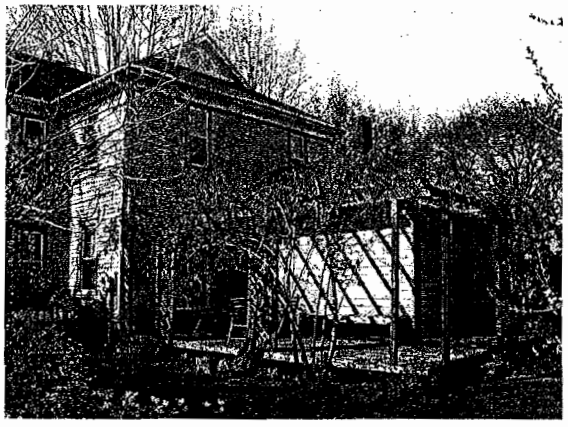

Figure 45. 396 21st Street Southeast, Built 1904

Figure 46. 365 S. 17th Street Southeast, Built 1901. Possible address of spinner John Noack in 1930.

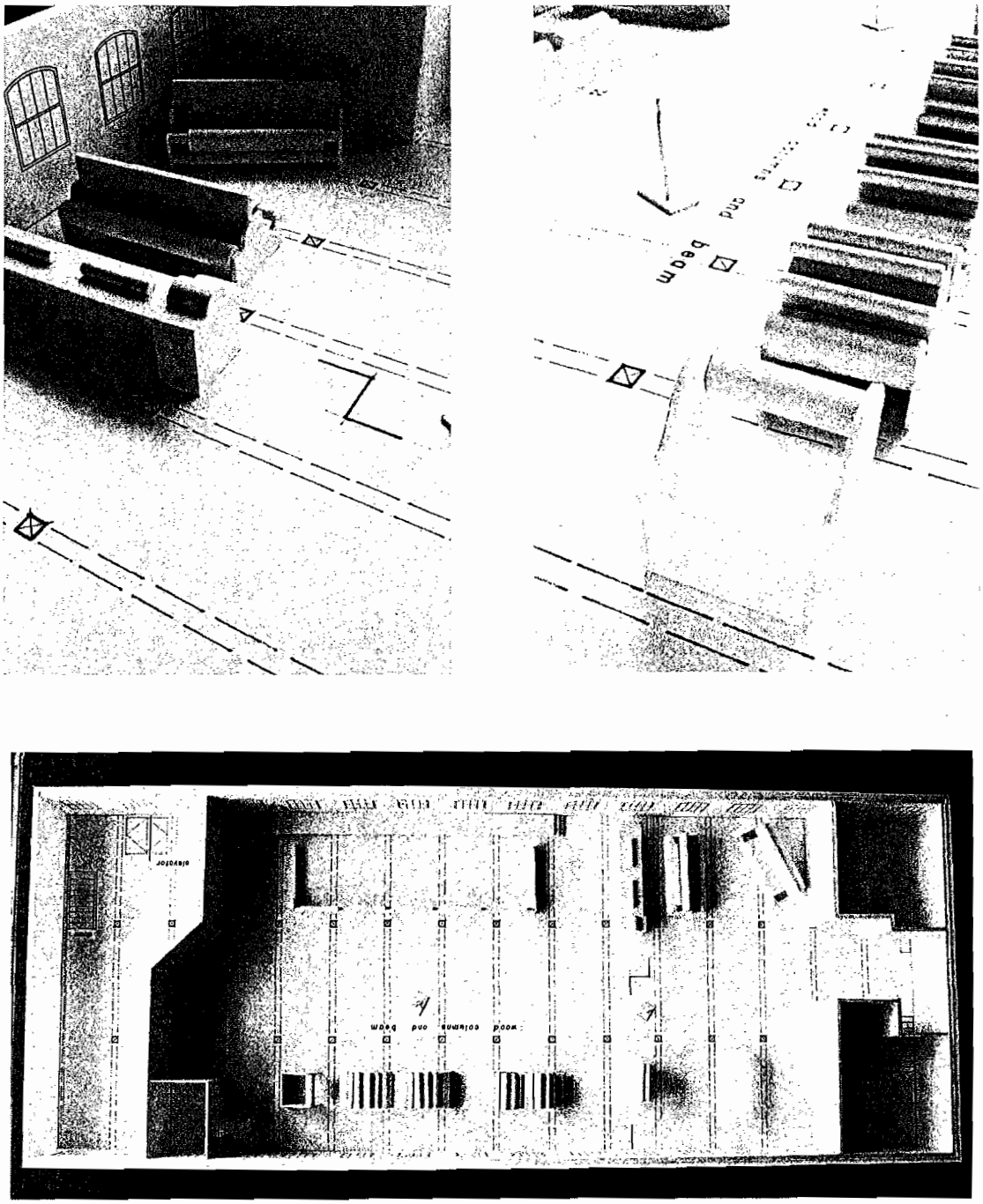

Figure 47. Model of Second floor Exhibit Space of the TKWM. Photos by Shawn Lingo, 2009, Model by Jeremy T. Mauro.

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