

The fresh-water pearl button industry
in Muscatine, Iowa: 1890-1910

by

Rebecca Hatfield Meints

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

Major: Textiles and Clothing

Signatures have been redacted for privacy

Iowa State University
Ames, Iowa

1981

TABLE OF CONTENTS

	Page
INTRODUCTION	1
Objective	2
Assumptions	3
Limitations	3
REVIEW OF LITERATURE	4a
Uses of Buttons in Fashion	4a
Muscatine Until 1890	7
The Founder of the Fresh-Water Pearl Button Industry	8
Location Theory	10
Raw Material of the Industry	13
Gathering Mussels	15
Steps in the Manufacturing Process	17a
PROCEDURES	20
Sources of Information	20
Sources of primary information	20
Preliminary investigation	21
Contact of repositories	21
Interviews	23
Photography	24
Criticism of Sources	24

	Page
FINDINGS	26
Technological Developments	26
Gathering shells	26
Technology--cutting blanks	27a
Finishing blanks	30a
Employment in the Industry	36a
Skills and duties of workers	36a
Conditions of employment	40
Wages	41
Employee-Management relations	42
Industrial Growth	45
Depletion of Natural Resources	51
Industry By-Products	55
SUMMARY AND RECOMMENDATIONS	57
Summary	57
Recommendations	60a
REFERENCE LIST	61
REFERENCE NOTES	66
GLOSSARY	67
ACKNOWLEDGMENTS	68
APPENDIX A. COMMERCIAL MUSSELS AND THEIR FISH HOSTS	69
APPENDIX B. MAP OF IOWA COUNTIES SHOWING THE MAJOR RIVERS	72
APPENDIX C. LOCAL, COUNTY, AND STATE HISTORICAL SOCIETIES, AND BUSINESSES CONTACTED	74

	Page
APPENDIX D. COUNTY INFORMATION LETTER	79
APPENDIX E. STATE INFORMATION LETTER	81
APPENDIX F. BUSINESS INFORMATION LETTER	83
APPENDIX G. BUSINESSES MENTIONED IN THIS THESIS	85

LIST OF PLATES

	Page
Plate 1. Fisherman in John boat with two crow's foot systems (State Historical Society of Iowa)	16b
Plate 2. Mussel fishing apparatus; left, tongs, right, rake (Smith, 1898)	16c
Plate 3. Mussel fishermen's camp (State Historical Society of Iowa)	17b
Plate 4. Original button lathe by J.F. Boepple (Laura Musser Museum, Muscatine, Ia.)	27b
Plate 5. Saw bits, tooth straightener, upper right--water nozzle (researcher's collection)	27c
Plate 6. Shell tongs, saw, Barry Automatic (Longstreth, 1906)	29b
Plate 7. Wooden plug for sawing and drilling blanks, blank gauge (researcher's collection)	29c
Plate 8. Flat tempered steel for saw bits, saw tubes with standard line numbers (researcher's collection)	29d
Plate 9. Men cutting blanks (Smith, 1898)	30b
Plate 10. Women facing blanks (Smith, 1898)	30c
Plate 11. Women drilling holes in blanks (Smith, 1898)	30d
Plate 12. From left, clockwise--facing tools, drill bits, cat's-eye attachment and button with resulting pattern, and drill bits for putting holes in buttons (researcher's collection)	32b
Plate 13. Barry Automatic with Hopkins' improvements (Hopkins, 1907)	33b
Plate 14. Barry Automatic with Hopkins' improvements, view from top (Hopkins, 1907)	33c

	Page
Plate 15. Second improvements to Barry Automatic (Hopkins, 1911)	34b
Plate 16. Second improvements to Barry Automatic, side view (Hopkins, 1911)	34c
Plate 17. Women grinding blanks (State Historical Society of Iowa)	36b
Plate 18. Women sorting buttons, 1898 (Smith, 1898)	39b
Plate 19. Women sorting buttons, 1906 (State Historical Society of Iowa)	39c

LIST OF TABLES

	Page
Table 1. Establishment of button factories in Iowa and Illinois between 1891 and 1989	47
Table 2. Value rank of fresh-water pearl buttons, 1889 to 1914	52
Table 3. Table of commerical mussels and their fish hosts	70

LIST OF FIGURES

	Page
Figure 1. Map of Iowa counties showing the major rivers	73

INTRODUCTION

The state of Iowa has been in existence for only 135 years, and from the beginning of the state farming has been one of the largest occupations. Industry in Iowa has been typically thought of as converting farm goods to marketable products. However, other industries, present and past, have been and are important to Iowa's development as a state. Historic research of this industrial development can bring better understanding of the growth of the whole state.

Historical studies dealing with Iowa industry of the past are scarce and usually general. Brindley (1926) and Hoadley (1928) studied the general industrial growth of Iowa over several decades listing general growth figures and population statistics. Another study by Brindley in 1912 focused specifically on population growth as related to industry, but still discussed all industries, not individual ones. County histories mentioned but did not explain the individual businesses that existed within Iowa. These individual establishments have occasionally published histories, but usually distorted the picture by giving themselves excessive prominence. Studies covering the general economic development of Iowa for a particular decade have also been published (Evans, 1930; Smith, 1942). Some of the industries have had histories written, such as Hartman's study of the sawmill industry in Iowa (1942). These individual works have helped to enhance the whole picture of state history.

One industry that was important to the state of Iowa in the late 19th century and the first half of the 20th century was the fresh-water pearl button industry, centered in Muscatine. In the early 1890s factories in Iowa began producing fresh-water pearl buttons in large quantities and Iowa soon became the center of the industry in the United States (Twelfth Census, 1902). Muscatine had the first factory open in 1891 and soon became known as the "Pearl City." The industry developed very quickly and soon large factories and small, home businesses were competing for places in the market. This boom lasted about 15 years. A slow decline began in 1905 and continued until the 1950s when plastics almost totally replaced pearl as material for buttons (Piller, 1980). Three reasons were listed for the decline of pearl buttons: detergents caused the button to flake; chemicals used in finishing caused the button to (eventually) deteriorate; and plastics were much cheaper and easier to produce.

The purpose of this study is to investigate the fresh-water pearl button industry during the first 20 years of its development in Iowa in a more systematic way. The years of focus will be 1890 to 1910. The objective of the study is listed below.

Objective

To understand the formation and growth of the fresh-water pearl button industry in Iowa, 1890 to 1910, by studying:

1. Methods of manufacturing pearl buttons;
2. Technological change in the industry during the time period; and
3. Growth of the industry through evaluation of published statistics.

Assumptions

1. There is sufficient primary information to form an understanding of the industry from 1890 to 1910.
2. It is possible to critically evaluate the available information.

Limitations

1. The study is limited to Muscatine, Iowa, and the fresh-water pearl button industry in the state of Iowa.
2. The study includes only development of the industry in its initial growth period--1890 to 1910.
3. Primary data are available for only a selected number of businesses in Muscatine.

REVIEW OF LITERATURE

Uses of Buttons in Fashion

Buttons are articles of daily life that are both utilitarian and fashionable. They are also something that people take for granted. Historians have not agreed on when buttons were introduced, but they appeared periodically as fashion accessories beginning in the 12th century A. D. and continued until the 19th century. More information on the history of buttons can be found in Boucher (1967), Davenport (1948), Kemper (1977), and Payne (1965). These sources and all others in the Review of Literature, except one, are secondary.

Fashion periodicals, such as Harper's Bazar and The Delineator, from approximately 1870 to 1890 showed bodices of "dresses" having rows of buttons down the front. Skirts from that time also showed some use of buttons. The cuirass bodice, shown in these magazines, as well as Peterson's Magazine seemed to have been ideal for showing off buttons. These magazines suggested that fashionable use of buttons decreased from 1890 to around 1905. The fashionable "Gibson" style of dressing after about 1905 brought back buttons, and especially pearl buttons to use on blouses and shirts. White tea dresses, or afternoon dresses, made of lightweight washable cotton, were popular, and often buttoned from hip to neck with pearl buttons. Other uses of pearl buttons were undergarments such as drawers, petticoats, and corset covers, and garments for automobile travel, which was fairly new at the time.

Up until the 19th century, clothing had been produced mostly by hand. Suits for men were constructed by a tailor who worked for himself and produced each garment individually for his customers. Purchased dresses for women were made by professional seamstresses. Simple garments and workaday clothes were made by the homemaker. She had many other things to do in a day so these garments were not always well made, but were merely passable or very poor in construction (Walsh, 1979). Trims to complete the garment were also handmade. This meant that the quality of these notions varied greatly.

In the early years of the 19th century efforts were made to start producing clothing for everyone. Much of the movement to a clothing industry was due to the development of machines to increase the speed with which a person could manufacture clothes. With these machines, such as the sewing machine which was first patented in 1842, even a less skillful person could produce better quality garments (Kidwell & Christman, 1975).

By 1890 the mass production of clothing was well underway. Clothing for all ages and both sexes could be obtained, and it was usually of better quality and cheaper than things made by the homemaker or individual business establishment. To go along with the increase in production businesses needed a greater volume and more consistent quality of fasteners. Manufacturers also wanted to find cheaper methods of producing these items that were essential to clothing.

The establishment of a fresh-water pearl button industry in 1891 provided just what the clothing manufacturers wanted--greater volume, consistent quality, and a cheaper product. Rapid growth of the

fresh-water pearl button industry between 1890 and 1910 was due to two aspects of society at the time. One of these was the availability of industrial technology. Machines, as discussed above, were increasingly able to perform more complicated tasks. Use of steam and coal as power sources freed the worker from manually operating machines; thus increasing speed of production. These machines and power sources allowed the worker to be more efficient and turn out a more unified product.

The other aspect of society was the expansion of the market for clothing. This was due in part to the general prosperity of the United States. After 1897 there was a boom in production that lasted for several years. Because businesses were successful, their workers could afford to have more consumer goods, one of which was clothing. Much of the clothing had buttons, so there was an increase in the demand for buttons as well. Inflation during the 20 years of this study increased very little also contributing to the expansion of the market. Excess money from a worker's paycheck was not consumed by high inflation rates, and thus there was more to spend on unnecessary items, such as new clothing, which in turn affected the button industry. A third economic aspect of the general market expansion was the introduction of protective tariffs on the button industry. In 1891 and 1897 Congress placed levies on imported buttons. This enabled the United States industries to charge less for their own product so the demand for U.S. produced buttons increased and stimulated the fresh-water pearl button industry.

Two other aspects of the general expansion during the period of study are population growth and immigration. The population of the United

States was changing in two ways--it was growing and becoming more middle class. The growth in population increased the need for clothing, and that increased the demand, which in turn affected the button industry. As the population became more middle class in structure people bought more clothes because they could afford them, and wanted to show off their improved status.

During the later 19th century and early 20th century immigrants from nearly all of the major countries of Europe came to the United States seeking the golden opportunity of which they had heard. As these immigrants came into the country they affected the economic structure of the United States. These people were available to work, most often at unskilled or semiskilled jobs. Employers hired them and they increased production significantly because of the ready supply of labor. This increase in production took place in the button industry as well as others. Immigrants also affected the production of goods by increasing demand. Most immigrants came to the United States with little clothing and had to buy garments when they arrived. This influenced the increase in production of clothing and findings, including fresh-water pearl buttons. One of these immigrants came to Muscatine, Iowa and, taking advantage of the favorable conditions, started mass producing buttons. A short description of Muscatine and then a discussion of the founder of the industry follow this section.

Muscatine Until 1890

Settlement of Muscatine, Iowa began in 1833 (Richman, vol. 1, 1911). At that time trading with indians of the region was taking place under the command of Major George Davenport. He sent three men to set up a trading post at "Grindstone Bluffs" which is today the site of Muscatine. A small community gathered around the trading post, and became known as the "Town of Pinch 'em Slily" (Pratt, 1977).

The small community grew and was chosen as the county seat. In 1839 the town was incorporated and a survey ordered. The survey, completed in 1840, showed that Bloomington had 33 buildings and a population of 71. Ten years later Bloomington was renamed Muscatine.

By 1890 Muscatine had become a thriving community. Businesses were varied and included a sash-and-door company, a plumbing supply firm, a woven wire works, an awning factory, a clay pipe factor, a bottling works, and a flour mill (Richman, 1911), but no button factories.

The main business of the town was lumbering. Muscatine was a main port on the Mississippi River for the transportation of lumber. Small businesses or individuals shipped cut logs to Muscatine where they were processed into lumber and shipped out for retail sale. The five major companies in Muscatine in 1890 were Hershey Lumber Company, Huttig Brothers Manufacturing, Roach and Musser Company, Muscatine Lumber and Box Company, and South Muscatine Lumber Company. However, by 1890, most of Iowa's forests had been converted to farm land, so the lumbering industry was beginning to decline. This made it necessary for producers

to seek another raw material on which to base manufacturing. The town was at a turning point in its industrial history.

The Founder of the Fresh-Water Pearl Button Industry

Into the changing environment of Muscatine came an artisan with an idea for what he believed to be a profitable industry. The first fresh-water pearl button factory in Muscatine was established in 1891 by a German immigrant named John Fred Boepple. Most of the information (in this section) about Boepple came from a thesis written, but never completed, by O.D. Longstreth in 1906. Longstreth's information was taken from personal interviews he conducted with Boepple. Longstreth, a native of Muscatine and the button factories there, conducted interviews with employers and employees in the button industry in 1905 and 1906. Reliability of this source was checked carefully with other sources.

Born in Ottensea, Germany on July 23, 1854 (J.F. Boepple, 1912), Boepple served as an apprentice in the button factories that were numerous in the area. Those factories manufactured buttons from bone, horn, sea shells, and turtle shells. Eventually, Boepple moved to Hamburg to work in the button factories there. It was in Hamburg that he received some fresh-water shells from America, and began to experiment with them. Boepple concluded that buttons could be made from fresh-water shells. He learned that such shells were plentiful in the Mississippi River and decided to emigrate in 1888.

When John Boepple reached the United States he had little money and could not speak English. Eventually he reached Petersburg, Illinois

where he first found beds of fresh-water mussels whose shells were suitable for buttons. He was advised to go to Rock Island, Illinois where the beds of shells were larger. Encouraged by Rock Island's large shell beds, Boepple decided to settle there and enlist support for his manufacturing venture. He soon discovered that no one was interested in financially supporting the development of a fresh-water pearl button factory.

When Boepple realized that he would not get support he found work on a farm near Columbus Junction, Iowa, which is on the Iowa River near Muscatine. In his spare time Boepple built himself a foot-powered lathe in the corner of the woodshed, on which he cut and finished fresh-water pearl buttons. In addition to buttons, Boepple carved parts of the shells to make ornaments such as stickpins, hatpins, and watch charms. He soon attracted the attention of a Columbus Junction jeweler, Frank Keackeritz, who agreed to sell Boepple's products, and also lent Boepple some of his tools.

Eventually, people began to realize that the buttons Boepple produced were of the same quality as the ocean pearl buttons that were available. More important, they were cheaper.

By 1891 Boepple had gained the attention and support of some people in Muscatine, Iowa. William Molis, superintendent of the Water Works in Muscatine, gave Boepple 10 dollars to support the business. Boepple moved to Muscatine and set up a factory in one room of a small house. The sign on the house read "J.F. Boepple, Manufacturer of Breast Pins, Cuff and Sleeve Buttons, Manufacturer of Pearl Mussele, (sic) Ivory,

Bone, and Turtle Shell Buttons" (Longstreth, 1906). Here the fresh-water pearl button industry in the United States began.

Location Theory

The preceding section suggested that Boepple came to Muscatine to set up an industry merely by chance. However, each business that is established has many reasons to be located in a certain area. Studying the various factors that determine where a company is located can help to put that business in its historical perspective. In this section the theory of industry location is covered.

Location theory began to develop approximately 60 years ago. At that time Weber (1929) first presented ideas that have become widely accepted today. He discussed some of the factors that affect business owners' decisions to locate in an area: resources, process of manufacture, demand, and transportation. Weber discussed each of these factors in depth.

A more concise discussion of basic location theory occurred in Industry in the Pacific Northwest and the Location Theory (Cohn, 1954). Cohn listed the same basic factors of location as Weber; both of the authors discussed resources as the main factor affecting the location of an industry. Resources can be separated into two categories--labor and raw materials. If the resources are widespread, then a business tends to be located near the market for the product. However, when resources are restricted to one area, then the business tends to be located near them rather than near the market.

Concentration of labor occurs in many areas of the country; it affects both industries that process raw materials directly, and those that function at an advanced stage of the manufacturing chain. Raw materials, on the other hand, only affect the location of industries that directly process those raw materials. Cohn also stated that the industry is affected "in proportion to the weight lost in processing" (p. 3). By this he meant that the more weight a product loses in production, the more likely that the industry will locate close to the source of the raw material.

Other factors concerning resources and location of an industry are harvesting the resource and the process of manufacturing a finished product. An industry tends to develop near the raw material if it is difficult to harvest, or if harvesting requires specialized skills. These two factors increase the cost of the raw material; therefore, to avoid adding the extra cost that occurs with transportation, an industry arises near the source of that raw material.

Demand for the finished product is also a factor affecting the location of an industry. If the demand is limited to a relatively small area, then the industry tends to be located as close as possible to that area. Demand and raw materials exert a strong influence together if they are both in the same area. However, if the demand is scattered over a wide area, then the raw materials, power, or transportation decisively influence location.

A third factor affecting the location of an industry is the power or energy required to operate the industry. At present, industry uses

energy that can be easily transmitted. But from 1890 to 1910 wood, coal, and water were the main sources of energy. Because of the cost of transporting these fuels, an industry was at an economic advantage being located near the desired source of power. Industry did have some freedom, though, because coal was a more mobile energy source than wood or water.

Transportation is the fourth major factor affecting location of an industry. If the raw materials come from more than one area, then the industry is more likely to evolve near the center of demand for the finished product and to transport raw materials long distances. If much weight is lost in processing, then the industry tends to develop near the resources and to ship the finished product long distances. Cohn also stated that as the value per unit weight increases then the product is more likely to be shipped long distances.

Raymond Cohn (1977, 1980) discussed another theory of industry location. His theory is that there are two types of industry--resource-oriented and market-oriented. A resource-oriented firm locates near its raw materials. A market-oriented one locates near its market. He further classified industry to be consumer- or export-oriented. Consumer-oriented firms are located in a region mainly to serve that region. An export-oriented firm serves the needs of several regions besides its own. Cohn stated that these four terms can be related to each other. He theorized that a resource-oriented firm is an export-oriented firm, and a market-oriented firm is also consumer-oriented. When an industry is manufacturing products for widespread demand, it is most often

located near its principal resource, which would make it resource-oriented. A market-oriented business, on the other hand, is meeting demand in a small region. Either the resources are available in the area or they are not prohibitively costly to transport; therefore, it is practical for the firm to transport the raw material.

The button industry can be classified by these theories. Factories that produced fresh-water pearl buttons tended to locate near the source of their major raw material, mussel shells. This seemed to have been the deciding factor in most cases because of Cohn's (1954) and Weber's (1929) theories of weight lost during production and the value of the item relative to its weight in shipping. In many cases more than half of the shell was discarded as waste. Buttons were easy to transport because they were small for their value. According to Cohn's (1977) theory the button industry was resource- and export-oriented; the industry located near the source of its raw materials and served the whole United States with its product.

Raw Material of the Industry

Raw material, therefore, was very important to the fresh-water pearl button industry. However, during the years 1890 to 1910 not much was known about the natural history of the raw material used to manufacture pearl buttons--the fresh-water mussel. Research into this animal's habits began in 1911 under the direction of Robert Coker, who was head of the biological station at Fairport, Iowa. The information in this section is taken from reports written by Coker (1914, 1917) and his colleagues at the biological station (Clark et al., 1921; Howard, 1922).

Most streams and rivers in the United States have at one time produced species of mussels which are suitable for manufacturing fresh-water pearl buttons. These mollusks are not often found in lakes because they need well aerated water, and there is not enough movement of water in a lake to provide it. Increased movement of silt and the presence of pollution, both caused by man, can block the air supply in a river or stream and make it uninhabitable for mussels. This was already happening in some of the major rivers in the Midwest in 1900, thus setting the stage for the decline of the mussel populations in the early years of the 20th century.

Several different species of mussels are suitable for use in buttons. The common names of these species, given to them by mussel fishermen, are colorful and help to give an idea of the appearance of the shells; some are called niggerhead, sand shell, pigtoes, three ribs, washboards, and pimplebacks. The first two species, niggerhead and sand shell, are the most valuable because they consistently produced the finest quality shell. The nacre of the shell, its pearly inside layer, is produced by alternating layers of protein and calcium carbonate. The protein is clear and the carbonate is cloudy. Layered, these give the effect of depth that one sees in the shell. The relative balance of these two ingredients influences the hardness or brittleness of the shell. The more carbonate, the more brittle the shell is. It was also stated by Coker that brittleness can vary within a species depending on the area from which the shell was taken. If there is too much brittleness, the shell will flake and crack when it is cut for buttons.

Although there are different species of mussels, they propagate in one basic way. The female mollusk produces thousands of spawn and releases them into the water. These larval mussels then attach themselves to a certain species of fish to act as an intermediate host while they grow larger. Each species of mussel encysts on a particular species of fish; for example, the niggerhead mussels favor the river herring or the moon eye and the sand shell lives best on the gar. (See Appendix A for more specific information on fish hosts.) The young mussels, or glochidia, cling to the fish host for approximately 20 days and then drop to the bottom of the river or stream where they continue to grow. It takes approximately four to six years for the shell of a mussel to reach appropriate size for use in making buttons, with the most profitable sizes being larger. Live mussels feed by opening their shells, and as the water passes over their feelers they are able to detect and capture small particles of food by closing their shells quickly. Their feeding techniques play an important part in the method of gathering mussels for button making.

Gathering Mussels

Information in the sections on gathering mussels and manufacturing buttons comes from Giddings (1907), Haefner (1932), Hurd (1966), Josepsson (1909), and Randall (1949). A mussel fisherman owned a boat that was long, shallow, and square at the ends, called a John boat. The fisherman used one of four tools for collecting mussels: a crow foot, a shoulder rake, a tong, or a fork. The first system, the crow foot, consisted of small pipes with wire fastened on the end in the shape of a crow's foot, which were attached to heavy fishline. Several of

these were tied to a horizontal rope (Plate 1). This rope was lowered into the water so the hooks dragged on the bottom of the river. When the hooks touched the open mussel it would shut quickly and be drawn to the surface with the hook. This tool worked very well when used in deep water, where there were few obstructions.

The size of a bed of mussels varied in width, and sometimes the mussels would be lying on top of each other. A mussel fisherman poled his boat upstream to a point just above the bed he wanted to fish. There he set out the crow's foot and then drifted downriver until he was almost to the end of the bed. After pulling up the crow's foot he repeated the process.

The other three systems were used for other bottom conditions. The shoulder rake was much like its name (Plate 2). It looked like a large rake and had pegs set in the end. The fisherman rested the rake against his shoulder, slid it down to the bottom of the river and caught the mussels on the pegs. This worked very well in water that was not very deep and had rocks and other obstacles on the bottom. The tong was also used among rocks. The tong was simply two rakes fastened together at the top (Plate 2). This was lowered into the water open, then closed and brought to the surface. A fork was used in water that was shallow enough for wading. The fisherman did not use his boat. He used a large pitchfork with prongs set close together to shovel mussels up from the bottom.

When a fisherman had a full boat he went back to shore and "cooked out" his catch, removing the body parts of the mussel from the shell. The shells were put into a vat with a little water and steamed to kill



Plate 1. Fisherman in John boat with two crow's foot systems (State Historical Society of Iowa)

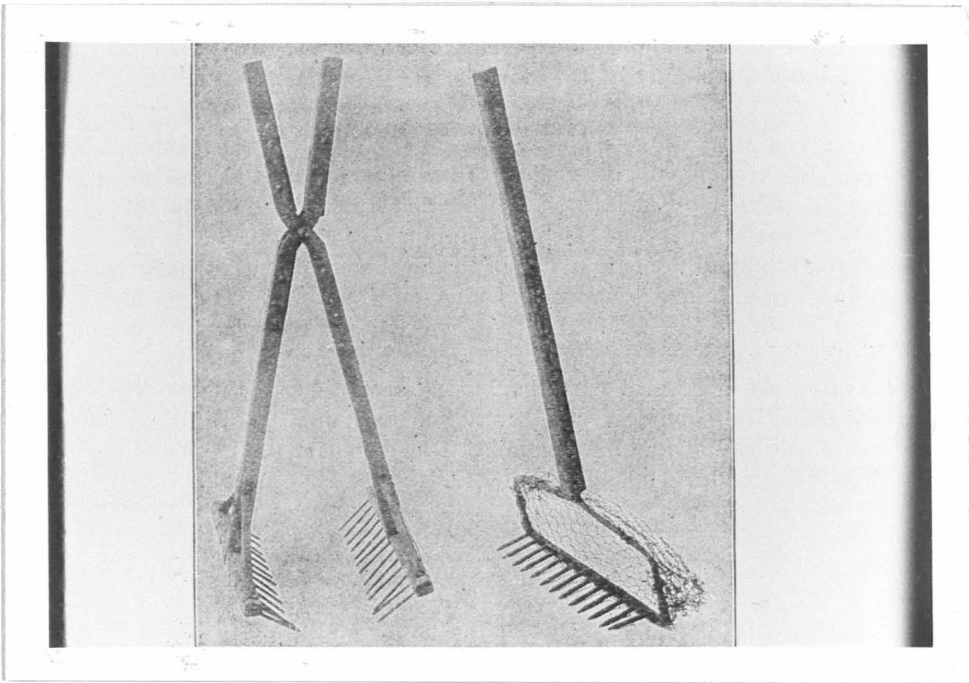


Plate 2. Mussel fishing apparatus; left, tongs, right, rake (Smith, 1898)

the mussel. After this the meat was taken out, sold for hog feed, and the shells sorted according to species (Plate 3).

The fisherman did not have to take his catch to a factory to sell it. An agent from the factory came at the beginning of the fishing season, which lasted from May to October, and contracted with the fisherman to buy all of his catch. During the season the Muscatine button factories would send barges, wagons, or both to collect the shells. Occasionally, some companies used rail transportation.

Steps in the Manufacturing Process

When the shells reached the factory they were sorted. Men piled the mussel shells according to species. Immediately after this the shells were put into vats of water to soak for about a week. Because a mussel lives in the water the shell tends to contract when taken out of the water, and, therefore, flakes when cut. Soaking made the shells easier to cut.

The saw used to cut shells had a circular tube with teeth on the end. A saw operator would get a bucketful of shells from the vats and carry them back to his saw. He then put a shell in a specially constructed pair of tongs and held the shell against the rotating saw blade. Because the saw was hollow, the blanks, or slugs, stayed in the tube until it was full; then the saw operator emptied them into another bucket. Several blanks were cut from the same shell, but they were not always of the same thickness or diameter. Instead of each worker's cutting all the different size blanks, one worker would cut blanks of one diameter. When he



Plate 3. Mussel fishermen's camp (State Historical Society of Iowa)

finished with the shell it was passed on to another saw operator whose saw was designed for a blank of a different diameter.

After cutting the blanks were sorted according to size and thickness and put on a conveyor belt. They were carried to a place where operators with grinding wheels ground the dark bark off and made sure the blanks had a flat surface on both sides. The blanks were soaked in water after this step to keep them from becoming brittle for the next stage.

The next stage in the manufacture of buttons was facing. After the blanks had soaked for a few hours, a woman took a bucketful back to her facing machine. A facing machine was an upright lathe with carving tools instead of a saw. The blanks were put in chucks that were the correct size and in these they passed under the carving tools, which made a decorated surface on the blank. The carving tools got dull very quickly, so there were two or more sets in the machine, one cutting a blank, one being automatically sharpened, and some in between.

After this operation the blanks were passed to the drilling machines. These machines were used to drill the holes in the middle of the button. Two or four were the standard numbers of holes.

The buttons were finished by polishing them in mild acid baths. They were put into this acid solution and tumbled for approximately two hours. This process was repeated, and then the buttons were tumbled in clean sawdust to give them a high polish. Before grading and packing some buttons went through additional treatments such as bleaching and dyeing.

Bleaching was carried out when the dark outer part of the shell had not been completely removed. If a small amount of the dark color showed, the buttons were placed in a mild chlorine solution to try to make them completely white. Dyeing was done to achieve buttons that were of fashionable colors. Inferior quality shells were used for colored buttons because they were not usually uniformly white, but showed streaks of pink, purple, or green. Aniline dyes were used most frequently to color buttons. When the buttons were dyed, they showed streaks and highlights where the shell had accepted the dye differently.

The final stage in making buttons was grading and packing. After the buttons were finished they were graded by color and degree of perfection. They were then either weighed by the gross, boxed and shipped to clothing factories, or were sewn onto cards for the retail market. Often whole families or church groups would card buttons, receiving payment by the card.

PROCEDURES

Sources of Information

The search for information about the fresh-water pearl button industry began at the Iowa State University Library. A key word list was developed and the card catalogue, Reader's Guide to Periodical Literature, and history dissertations were searched. Information from Iowa periodicals and Iowa county histories was also sought. Where information existed, footnotes and bibliographies were checked for other possible sources. This author discovered that published information relating directly to the fresh-water pearl button industry was scarce. The search then proceeded to sources of primary information.

Sources of primary information

Skjelver (1971) defined primary sources as those things that were "created at the time of the event by individuals present at the event or not far removed from the event" (p. 109). Sources of information that fit this description are newspapers and magazines of the period; business records; machines or other artifacts; pictures; city, state, and national records; and personal records. Interviews with people involved with the business at the time of interest are also a type of primary source. Possible repositories for these sources of information include museums, archives, libraries, and public and private collections (Skjelver, 1971). The author decided to search in museums and archives first,

libraries second, and finally, in the records of surviving businesses and private collections.

Preliminary investigation

A preliminary visit to sample the extent of information was undertaken to Washington, Iowa on April 18 and 19, 1980. One town was chosen from the sources that had indicated button factories were in existence during the span of time pertinent to the study. Information obtained at the Historic Conger House, Washington, Iowa, included a booklet published by the button company that operated there, two Washington County histories, three newspaper articles, and 25 pictures. Based on the information available in Washington County, I decided to continue research on the topic of the fresh-water pearl button industry in Iowa.

Contact of repositories

A preliminary library search revealed that the fresh-water pearl button industry in Iowa developed and flourished along the Mississippi River. In no case did a history of a county on the Missouri River mention a button industry. Accordingly, this author decided to confine the search for information in Iowa to the two vertical tiers of counties bordering the Mississippi River (Appendix B). Working from information in the Iowa State University Library, attempts were made to locate the county historical society in each county. If one did not exist, as in the case of three counties, the search continued for any local historical societies. In all of the 18 counties there was at least one organized historical society--county or local. If a county had more than one society, all

were contacted. Five of the eighteen counties had more than one local historical society--Cedar, Clayton, Fayette, Henry, and Van Buren. Clayton, Fayette, and Muscatine did not have a county historical society. Two references were used to find these societies and their addresses. The first source checked was Pratt's Discovering Historic Iowa (1975), which is a book describing historical societies and points of interest in Iowa. Unfortunately, this book is six years old. Telephone books were used as second sources.

Twenty-seven county, local, and state institutions were contacted by letter (Appendix C; with examples of letters in Appendices D and E). Each of the two forms of letters asked specific questions. The questions in the county letter covered business records from fresh-water pearl button factories, actual artifacts or buildings still in existence, and newspapers from 1890 to 1910. At the state institution information was requested on newspaper runs from the towns, business papers, and state or federal documents concerning the fresh-water pearl button industry.

These letters were sent out the third week of September, 1980. Twenty-seven letters produced fourteen replies. Of these 14 letters, 2 answered that there was no known record of a button industry in their county. According to the 12 affirmative replies, 7 institutions contained usable information. Appointments were set up first with the institutions at Muscatine and the State Historical Society in Iowa City, which appeared to have the most information available.

Muscatine and Lansing had both listed button factories still in operation; therefore, letters were sent to these seven companies (Appendix C). The author asked for information that might still be existent in their business records about the button industry from 1890 to 1910. An example of the letter sent is shown in Appendix F. The seven companies, one in Lansing and six in Muscatine, all replied that they had no records from that period in existence. Even the county had no tax records from that time due to a fire in the courthouse.

The first visit to Iowa City focused on the sources available in the State Historical Society's Manuscript Collection. It contained a few manuscripts and many pertinent photographs. The other four visits involved the search for information in city newspapers from Muscatine, Sabula, Lansing, and Columbus Junction. These towns were listed in Rowell's American newspaper directory (1908) as having pearl button industries. Major papers for each town are also listed. These newspapers were compared to listings in the volume of newspaper holdings at the State Historical Society. After this preliminary search for information it was decided to focus on the industry in Muscatine. This town was reportedly the source of the fresh-water pearl button industry. After this decision the search for information was narrowed to Iowa City, site of the State Historical Society, and Muscatine.

Interviews

Contact with the Muscatine Area Heritage Association put the author in touch with three persons who were subsequently interviewed, and their

information on the fresh-water pearl button industry was included in this thesis. William B. Hopkins was the first to be interviewed. Hopkins is an inventor for McKee Button Company in Muscatine. His father worked as a cutting foreman for McKee during the period of interest, and Hopkins spent much of his boyhood in the factory. Hopkins also had relatives who fished for mussels. Arthur Newman, now retired, worked for the Barry Manufacturing Company, a button machinery firm, during the period of study, and continued until his retirement. His sister, Florence Koll, was the third interviewee. She worked at McKee Button Company during the period of interest.

Photography

Some of the primary information consisted of photographs or artifacts; which were photographed by this author after obtaining the necessary permission. Reprints from selected glass negatives in the Manuscript Collection of the State Historical Society were also requested by the author. Prints or negatives could be made from these and the choice was made to reproduce the negative. This helped to get a clearer picture when a print was made. Some photographs did not have a negative available so a photograph was taken, and a negative made from that.

Criticism of Sources

Evaluation of historical information sources is important in determining the accuracy of the facts and reliability of the source. Two types of criticism were used to evaluate the data available on the fresh-water pearl button industry. Internal criticism focuses on the context

of a written source, or the information obtained from an artifact. External criticism "concentrates on the origin of sources" (Skjelver, p.10, 1971). True and completely verified information is the goal of these types of criticism, and to the extent that it was possible every effort on the part of the researcher was made to obtain it.

Internal criticism of a source was achieved through comparison with other sources. If the information from one source matched that given in other sources it was judged more likely to be correct. Comparison of each item of information to at least two other sources of different types, or different authors was attempted by the author. For actual artifacts or photographs their features were compared to other photographs, artifacts, and written descriptions. For example, the information in Plates 2 and 19 was compared to information and photographs in Coker (1917), Hurd (1966), and Smith (1898). Any of the facts not verified in this manner are mentioned.

External criticism involves efforts to verify or judge the origin of sources. These included identifying the author, discovering his/her knowledge of the industry, and determining his/her degree of bias. All sources were checked when possible. Popular magazine articles and promotional booklets tended to glamourize an aspect of the industry and distorted the facts. Authors who had long experience in or contact with the industry tended to be more accurate, as were authors conducting scientific investigations into the industry. These conclusions were supported by both the external and internal criticism.

FINDINGS

The following findings are taken from primary data uncovered during this study.

Technological Developments

Rapid developments in button machinery took place from the beginning of the industry in 1891 until 1910. Boepple set up his one-room shop with a foot-powered saw and hand carving tools in 1891. Almost 20 years later the industry had moved to steam-powered machinery that could face a button and drill holes in it at the same time. This section of the findings discusses technological developments in the button industry in three areas: gathering shells, cutting blanks, and finishing blanks.

Gathering shells

Four methods of gathering shells were presented in the Review of Literature--crow's foot, rake, tong, and fork. The methods using rake, tong, and fork were the oldest methods. Smith (1898) stated that the crow's foot came into use in 1897 and was the most popular method used because it took only live mussels. Once a mussel died the shell became brittle and started to deteriorate. This rendered it undesirable for button making. Catching only live mussels was, therefore, an advantage; time taken to sort dead mussels out and throw them back in the river was eliminated.

Another innovation was the steam dredge. This machine was mounted on a boat and used like a large rake. Smith (1898) listed one owned by a Muscatine firm. The advantage of a steam dredge was that it could catch many more mussels than could one man. The disadvantages of the dredge rendered it unprofitable very quickly. The dredge could be used only in deep water where there were many mussels and few obstructions. Because many of the shell beds were in Iowa and Illinois rivers other than the Mississippi, the steam dredge could not be used--the rivers just were not deep enough. The shallowness of the rivers plus the time it took to sort out bottom debris and dead shells made the steam dredge unprofitable; and by 1906 (Longstreth, 1906) none were in use in Muscatine. Innovation in collecting shells ended with the crow's foot in 1897.

Technology--cutting blanks

Technological changes discussed in this and the next section were local developments, by individuals working in Muscatine.

Improvement in cutting machines was very slight. Boepple manufactured his own blank cutting machine to operate with foot power. Plate 4 shows the upper half of Boepple's original saw, now on display at Laura Musser Museum in Muscatine, Iowa. The left side of the photograph illustrates the saw attached to a wheel with a leather belt around it. The belt runs to the bottom of the machine where it attached to a treadle. To operate the saw one placed his left foot on the treadle and moved it up and down. The device to hold the shell against the saw is to the right center in the plate, and looks similar to a propeller. The end was unscrewed, the shell placed between the two upright boards, and then the end screwed



Plate 4. Original button lathe by J. F. Boepple (Laura Musser Museum, Muscatine, Iowa)

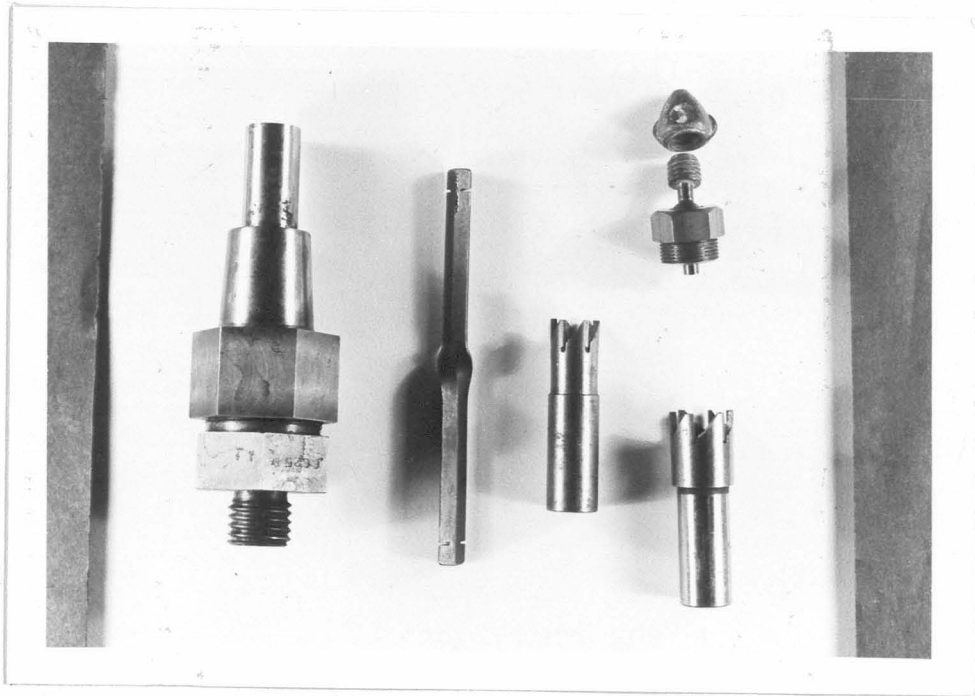


Plate 5. Saw bits, tooth straightener, upper right--water nozzle
(researcher's collection)

shut again. The whole assembly was then pushed into contact with the saw and a blank was cut.

When Boepple expanded his factory to employ 75 workers in 1894, he added steam to drive the machines. Addition of steam power was an innovation only in the sense that it had not been used in the button industry before. Steam engines had been used in other industries several years previously. A leather or woven fabric belt was attached around the fly wheel of each individual machine; this belt ran to a jack shaft near the ceiling of the room. Each of the ceiling shafts was connected by a belt to one main steam engine. Each individual saw could be started or stopped by a device that made the machine belt tense or loose (Plates 9, 10, 11). William Hopkins reported that it took much power to start the steam engine every morning at the McKee and Bliven Button Company in Muscatine (Hopkins, note 1). Hopkins' father was cutting foreman at McKee and Bliven from 1898 to 1948. Hopkins (Note 1) told of the whole factory being driven by a 500 horsepower Allis-Chalmers steam engine. He wrote, "I can remember when I was small and upon start-up the whole factory would creak from all the power needed to turn the shafting." Longstreth (1906) stated that small gasoline engines of two or three horsepower were used in small shops that cut only blanks.

Another improvement in cutting machinery took place in 1900. Up until this time the dust created by sawing blanks from a shell was blown away with exhaust fans. In 1900, an attachment was added to the saw to spray water on the area of shell being cut. This helped the saw cut a smoother blank and kept the pearl dust from floating all over the plant.

A pipe was fitted to the saw above the cutting tube and facing the shell. To the pipe was attached the device seen in the upper right-hand corner of Plate 5. The lower half of the device was a ball in a socket. This part of the device enabled the head, or upper part, to be aimed in various directions to get the best angle. The head was cast lead with a hole in the tip through which the water passed. The head piece screwed to ball-and-socket with a leather washer inside the head to ensure a snug fit. This small device was attached to the pipe and through it a stream of water sprayed the shell while a cutter sawed blanks. An illustration from Barry Manufacturing Company, Muscatine, Iowa (Longstreth, 1906) shows the cutting machine with spray attachment (Plate 6, center machine). Plate 6 also shows another change in cutting machines. The pair of tongs at the top replaced the two upright boards on the hand-operated saw. They were shaped to hold a shell securely. A cutter would place a shell in the tongs, hold it up to the rotating saw with his left hand and push with a wooden plug (Newman, Note 2). Examples of the plug can be seen in Plates 7 and 11, to the right of both pictures.

The actual saw bit did not change at all from the beginning of the industry in 1891 to the end of the period of interest--1910. The saw bit was actually two pieces, the coupling that attached to the machine and the hollow tube with teeth on the end. The saw itself started as a flat piece of tempered steel approximately one millimeter thick. The length was 10 cm and the width varied according to the line desired for the blank diameter. The standard range of diameters was from 8 to 36 lines (Plate 8). The piece of steel was hot forged into a tube with the

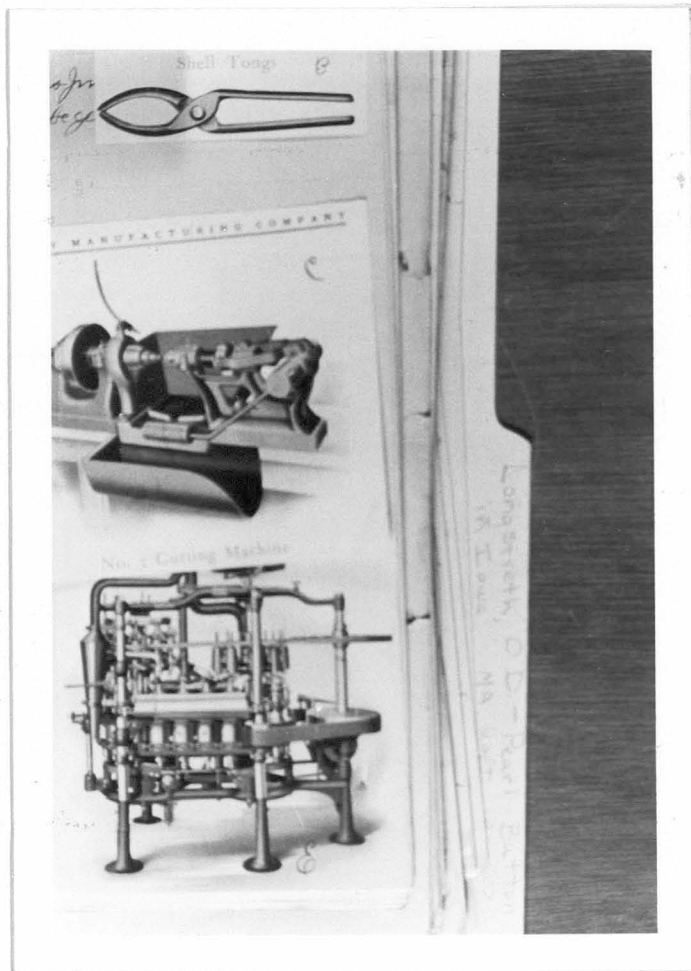


Plate 6. Shell tongs, saw, Barry Automatic (Longstreth, 1906)

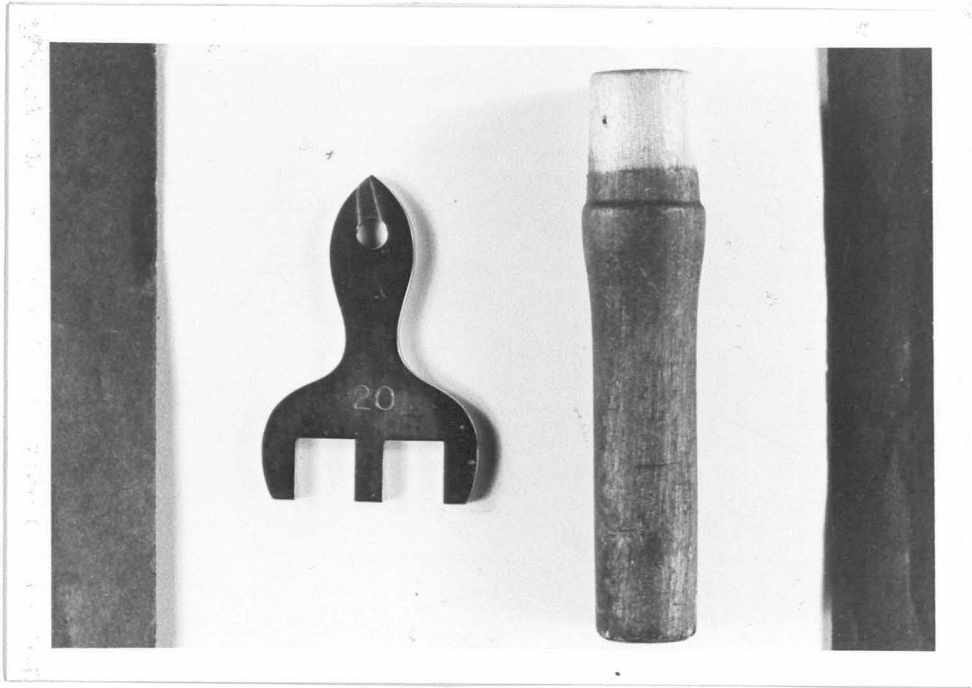


Plate 7. Wooden plug for sawing and drilling blanks, blank gauge
(researcher's collection)

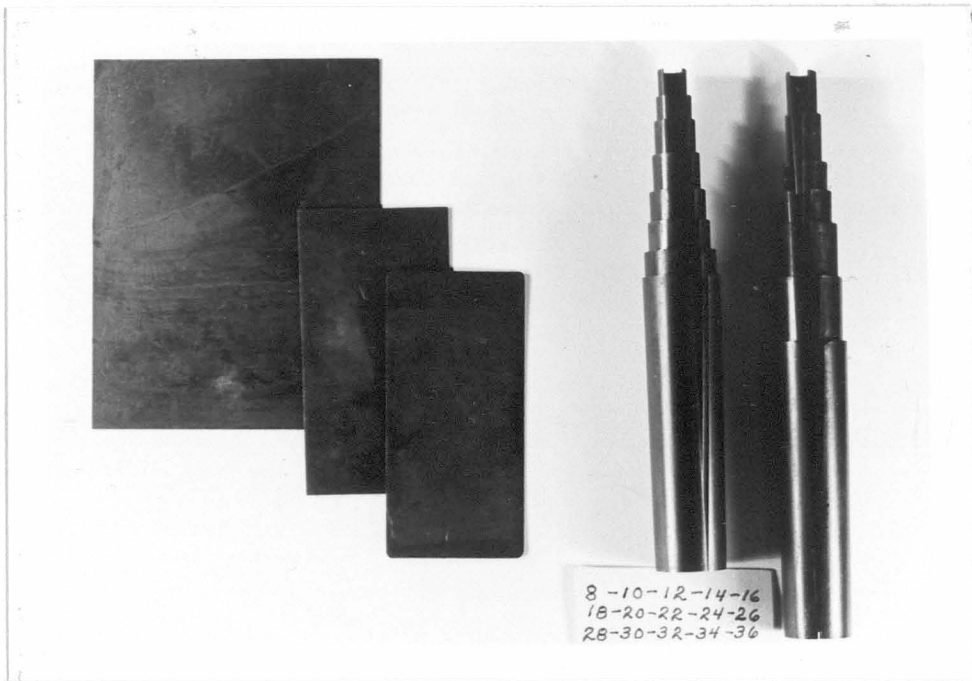


Plate 8. Flat tempered steel for saw bits, saw tubes with standard line numbers (researcher's collection)

ends slanting away from each other to form an open space the shape of a V (Plate 8). Both the coupling and tube were heated and the tube inserted into the coupling. Teeth were cut with one side perpendicular to the tube's rim and the other at a 45 degree angle (Newman, Note 2). The coupling was then attached to the machine, and both the coupling and the saw rotated to cut a blank. The cutting machinery improved from 1890 to 1910 over the basic design that Boepple used in his first business. Finishing machines were used to face and drill holes in buttons, thus reducing the needed steps compared to Boepple's methods in 1891.

Finishing blanks

Converting a blank to a button in 1891 entailed many steps. After a blank was cut it was ground to a uniform thickness by holding it against an emery wheel. After this the blank was passed to a worker who faced each button by hand. Another worker would drill the holes in the button on a foot-powered lathe. The buttons were polished and then packed.

The first improvement came with the addition of moving wooden chucks. Each chuck held one faced blank for the holes to be drilled. The operator of each machine fed the blanks into the chucks and centered the drill on the blank. Each operation was still done on a separate machine. Each chuck stayed in one position as it moved around the machine. Plates 9, 10, and 11 show workers in a factory carrying out the separate operations. These chucks were introduced simultaneously with a conveyor belt for the grinding machine. Blanks did not have to be hand ground individually. Many blanks were manually placed on the conveyor belt with the pearly side down and passed under an emery wheel.

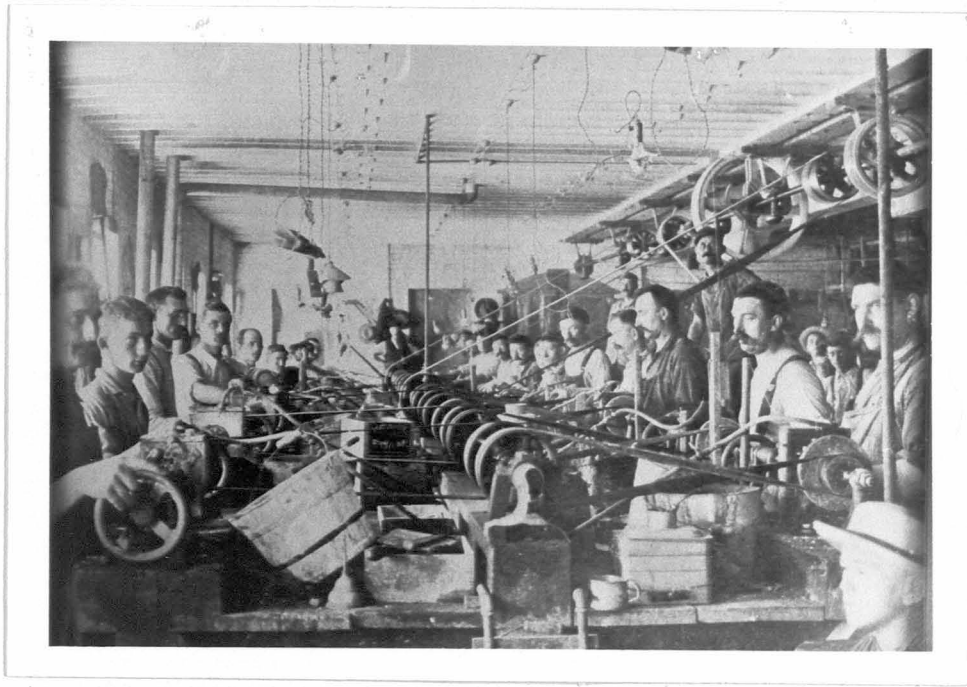


Plate 9. Men cutting blanks (Smith, 1898)

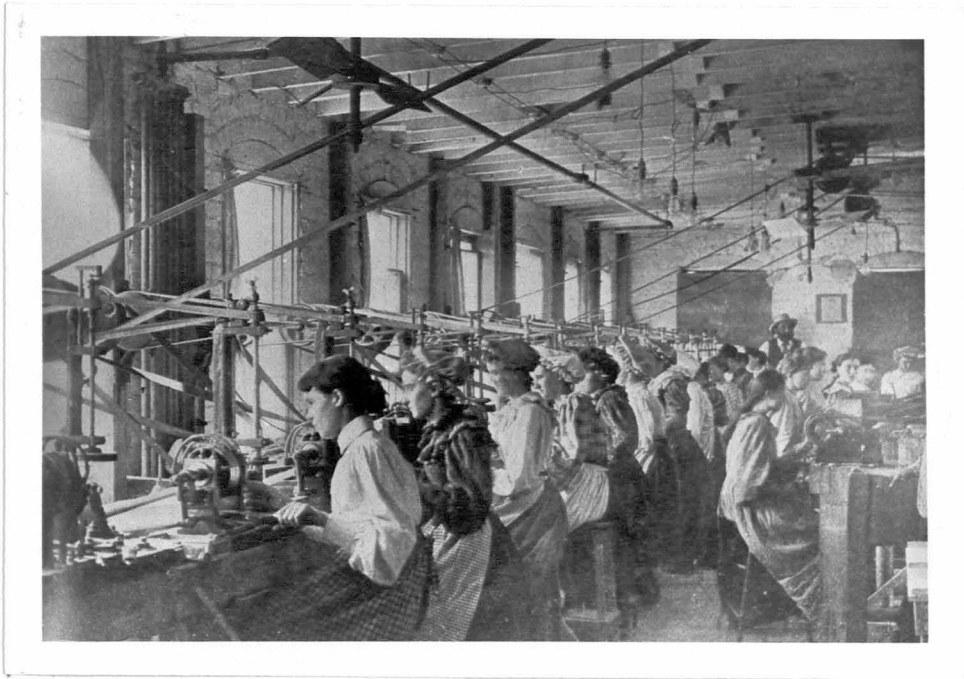


Plate 10. Women facing blanks (Smith, 1898)

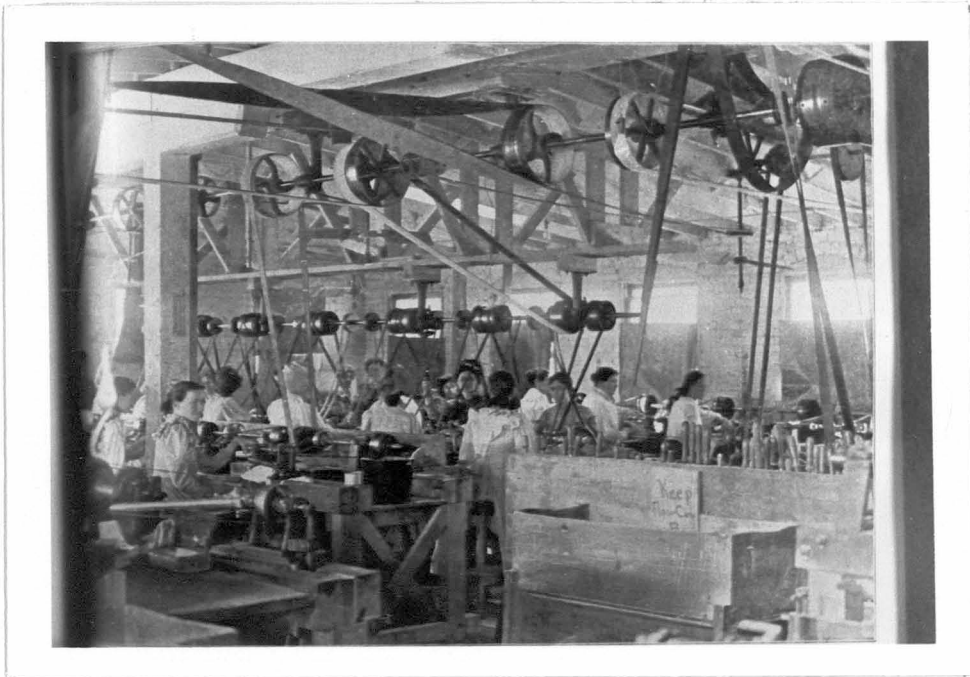


Plate 11. Women drilling holes in blanks (Smith, 1898)

Barry Manufacturing Company in Muscatine, took the next step in improving the fresh-water pearl button finishing machines. Incorporated in 1889 as a plumbing, heating, and gas fittings supplies manufacturer, Barry Manufacturing Company sold out those interests and turned to button machinery (Richman, 1911). By 1910, the firm had become a leading manufacturer of machines; it was the only one listed in the Muscatine City Directory (1910). In 1900, this company developed a finishing machine called the Barry Automatic which performed two operations, centering and drilling each faced blank. This was a great improvement because it eliminated the time required for a worker to center each button. Although it performed two tasks simultaneously, the machine was called a single automatic. Longstreth (1906) recorded that the original price of the Barry Automatic was \$800.

In 1902, Barry Manufacturing Company introduced a new machine called a double Automatic. The added feature of this machine was that it continuously adjusted and sharpened the tools. Until this time the worker was responsible for keeping the tools sharp. This meant that for every two or three buttons drilled, the worker would have to stop the machine, take out the drill bit, and sharpen it to a fine edge; the sharper the tools, the cleaner the holes in the button (Hopkins, Note 1). The improvement eliminated this time-consuming step. The Double Automatic and the Single Automatic were alike in that each machine required a worker to be present to feed the faced blanks into the machine and take them out after drilling. This was necessary because a machine had not been invented that could distinguish between the right and wrong side of the

button, so a worker was employed to do so. The chuck rate of both these machines was approximately 40 chucks per minute, so the worker had to be fast as well as adept (Hopkins, Note 1). Both Hopkins and Newman (Notes 1 and 2) remembered that some of the workers who were very skilled fed the machines with their eyes closed, because they believed they were more accurate that way.

Both the Barry Automatics were also used for facing buttons. Formerly, each pattern was cut on the top of the button with a single tool. If two grooves in a button were desired, they were cut separately. If a cat's-eye, or long groove, was desired in the center of the button, then it was cut separately, also. The Single Automatic did not combine the cat's-eye and other grooves, but it did enable more than one groove to be cut in a button at once. Standard patterns were developed, and tools were designed to cut them into the face of a button. These patterns consisted of one, two, or three grooves around a button at various intervals. Plate 12 (left side) gives illustrations of the various tools used for facing buttons. Each tool was received with a flat end like the tool at far left, and sharpened. The angle given to each tool as it was sharpened determined the curve of the face when the button was done. Tools with shallower angles made flatter buttons. The tool in the upper right-hand corner illustrates the tool used for the cat's-eye groove. These still had to be cut by hand.

In 1905, William C. Hopkins applied for a patent on improvements to the Barry Automatic (Hopkins, Note 3). The first improvement was a chuck on a rotating base, which rose and spread out at a certain point in the

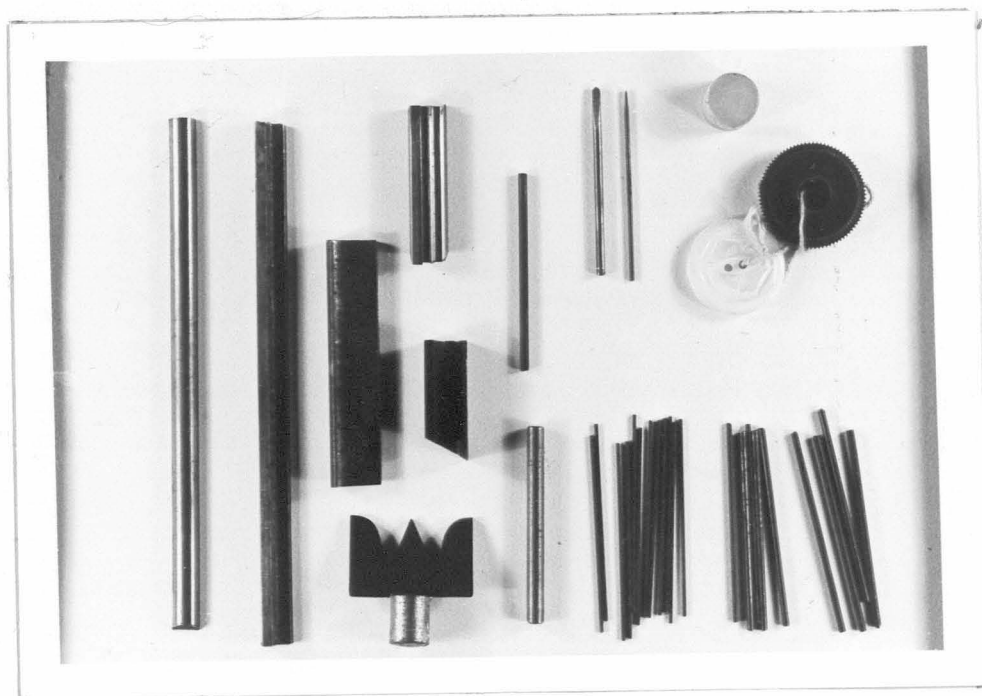


Plate 12. From left, clockwise--facing tools, drill bits, cat's-eye attachment and button with resulting pattern, and drill bits for putting holes in buttons (researcher's collection)

process. Because the chuck spread, it was easier to remove the button and insert a blank. The ability to rotate enabled the chuck to change positions and allowed a design that was not continuously uniform to be carved around the edge of the button. This was especially useful to cut a standard pattern called the "six cut cat's-eye." This pattern had six cat's-eye grooves cut around the edge and one in the center. The chuck was set to rotate only a specific amount to allow for each of the six cuts to be evenly spaced. Before this development this pattern was cut by hand, because of the precision required to space the grooves.

Another improvement by Hopkins was the attachment enabling a cat's-eye groove to be cut on a button along with the facing and drilling operations. The blanks were put in the chucks, and passed under a facing tool. Next, the blank passed under the cat's-eye tool. As the chuck moved, the cat's-eye attachment lowered and came into gradual contact with the blank. When the grooves were carved, the attachment lifted away from the blank and moved into its original position to start on the next blank. The carved blank then passed to tools that drilled holes in the middle. Plate 13 shows the patent illustration of these improvements. Figure one at the top of the illustration shows the facing tool at number four and the drilling tool at number six. The cat's-eye attachment can be seen in cut away overhead view in Plate 14, figure 3. Number 4^S at the top of the diagram is where the cat's-eye attachment operates. The improvements to the Barry Automatic each were mounted on separate movable attachments and operated independently of each other.

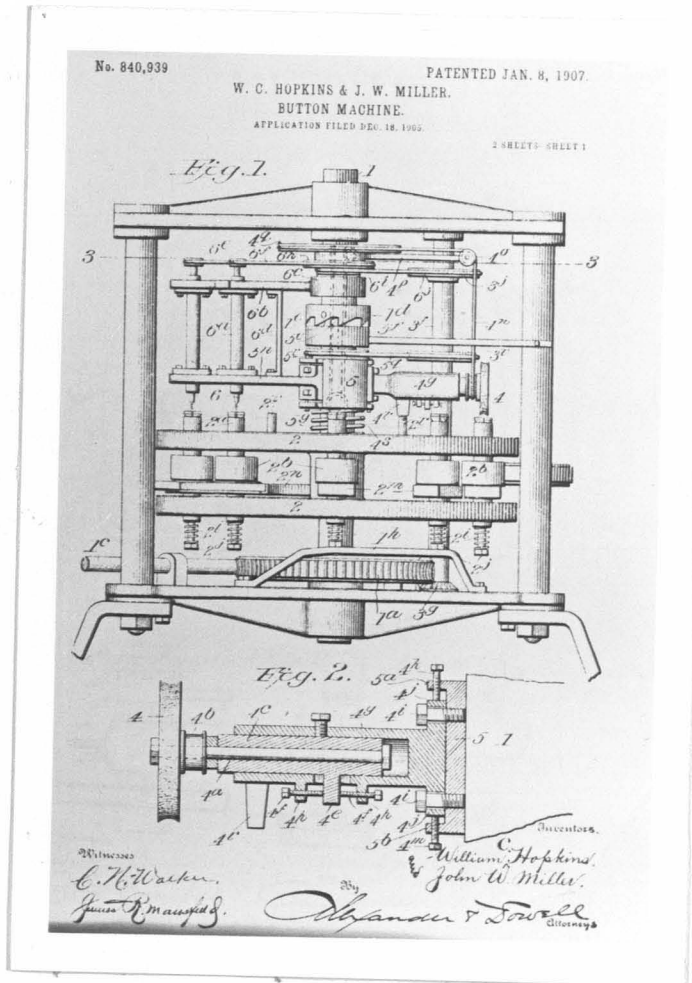


Plate 13. Barry Automatic with Hopkins' improvements (Hopkins, 1907)

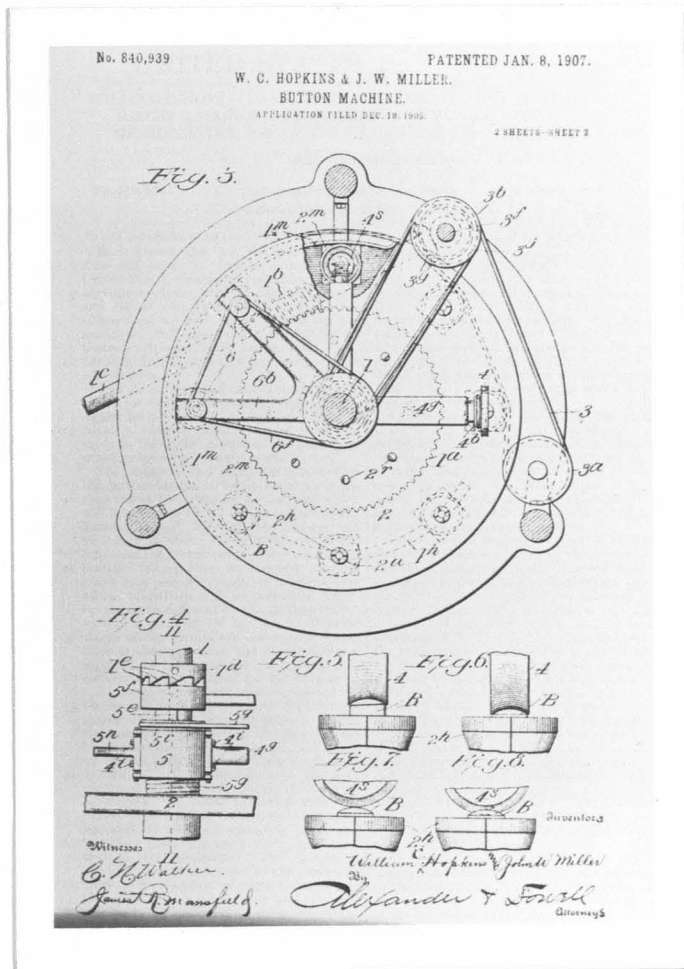


Plate 14. Barry Automatic with Hopkins' improvements, view from top (Hopkins, 1907)

Two years later Fred M. Hopkins applied for a patent for improvements to the Barry Automatic (Hopkins, 1911). Instead of each operation mounted on independent carriers, this patent provided for the three operations to be mounted on a single plate. This plate remained stationary while the chucks moved underneath. To enable this to work Hopkins developed a chuck that moved intermittently, not continually as did the previous methods. Another addition to this patent was the automatic feedings of drills gradually. In previous machines only the cat's-eye attachment had been fed to the blank gradually. In the latest patent the drills and facing tools were allowed to come into contact with the blank's surface gradually to allow for more uniform wear of the tools, and to help prevent the button from popping out of the chuck due to sudden force or removal of force. The attachments to this machine also allowed for continual sharpening of the tools. Plates 15 and 16 show the front and side elevation of the finishing machine with Fred Hopkins' improvements. The tool visible in the center of the illustration in Plate 15 is the drilling tool. Plate 16, the side view, shows the addition of a facing tool--the diagonal attachment at the center of the picture. Hopkins set the facing tool at an angle to shear the face of the blank instead of scraping it like the previous upright tools. Shearing of the blank resulted in a smoother surface, so the blank would need

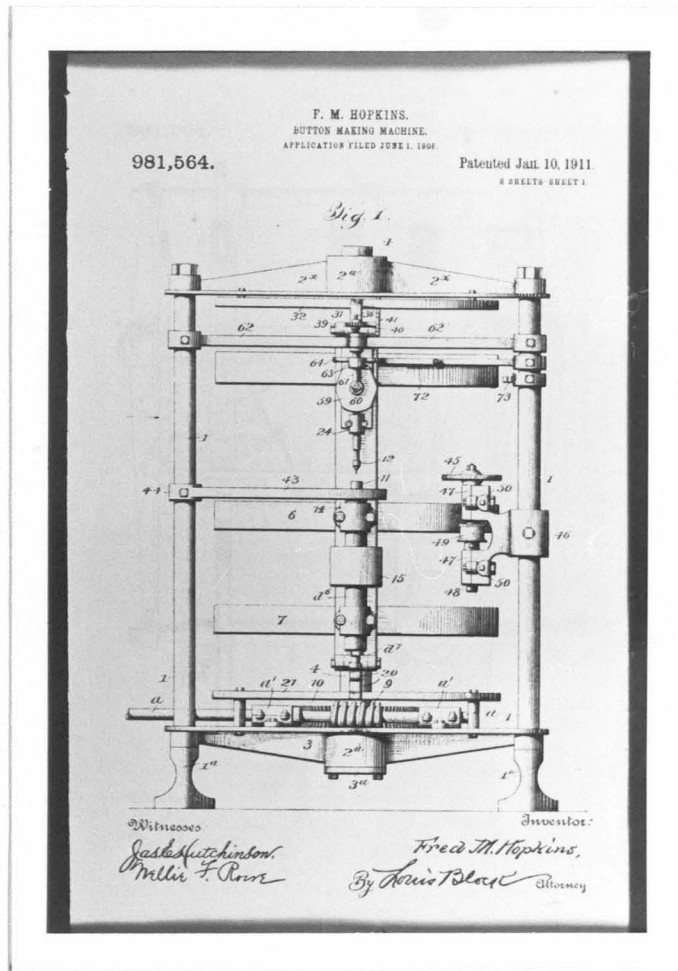


Plate 15. Second improvements to Barry Automatic (Hopkins, 1911)

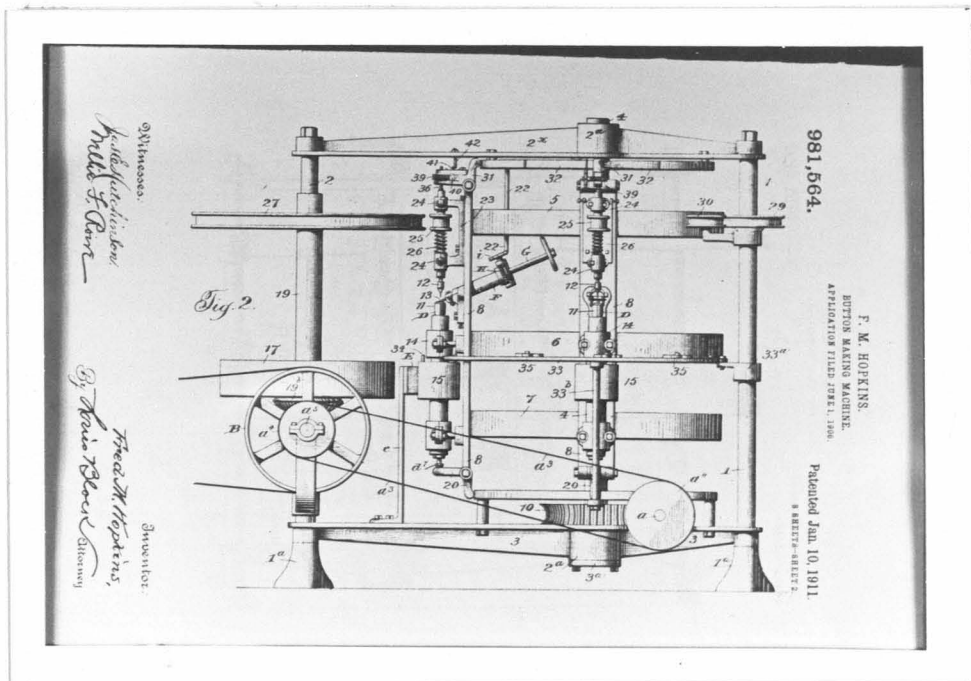


Plate 16. Second improvements to Barry Automatic, side view (Hopkins, 1911)

less polishing. A spring device inside the bit holding both facing and drilling tool kept moving the tool out to a proper length. This eliminated halting the machine to adjust the tools as they were gradually shortened from automatic sharpening.

Each of these improvements in machinery cut the time required to produce a button and, therefore, made it cheaper to produce. Longstreth (1906) recorded that the Double Automatic reduced the cost of finishing buttons from four cents to one cent per gross. The Double Automatic also reduced the number of people required to operate one machine. When each operation was performed on a separate machine, one worker was responsible for each machine. By combining facing and drilling the Automatic eliminated one worker, and with a cat's-eye attachment another worker was eliminated. This enabled the factory to use those workers on other machines, or to let them go and cut labor costs.

It is apparent from the foregoing discussion that change in technology was rapid from 1898 until 1910. Every two years improvements in machinery were made from the horizontal finishing lathe to upright lathe to machines that performed several operations at once. As each of these changes occurred, the factories that wanted to improve output and increase profits adopted the new machinery. In 1898, \$10,000 to \$12,000 was considered enough capital to start a factory. In 1900, when the

Barry Automatic was introduced at \$800, many companies changed. When the Double Automatic was marketed two years later at \$1,200, many of the smaller companies were forced to sell out or consolidate because they could not afford to switch to the more efficient machines (Longstreth, 1906).

Employment in the Industry

Workers in the fresh-water pearl button factories performed many different tasks, such as sorting shells, sawing blanks, finishing buttons, and sorting and packing buttons. Each worker started on one task and most often became specialized in it. Adults and adolescents worked on the same task and were paid on the same wage scale. In this section of the findings four aspects of employment in the button industry are examined: skills and duties of workers, conditions of employment, wages, and employee-management relations.

Skills and duties of workers

To become skillful at cutting buttons a boy or man needed to train on a saw. Some companies hired beginners and expected them to get information or lessons from the more experienced employees. In some cases, the foreman of the cutting department would oversee those who were learning. Several sources (Longstreth, 1906; Richman, 1911; Smith, 1898;

Barry Automatic was introduced at \$800, many companies changed. When the Double Automatic was marketed two years later at \$1,200, many of the smaller companies were forced to sell out or consolidate because they could not afford to switch to the more efficient machines (Longstreth, 1906).

Employment in the Industry

Workers in the fresh-water pearl button factories performed many different tasks, such as sorting shells, sawing blanks, finishing buttons, and sorting and packing buttons. Each worker started on one task and most often became specialized in it. Adults and adolescents worked on the same task and were paid on the same wage scale. In this section of the findings four aspects of employment in the button industry are examined: skills and duties of workers, conditions of employment, wages, and employee-management relations.

Skills and duties of workers

To become skillful at cutting buttons a boy or man needed to train on a saw. Some companies hired beginners and expected them to get information or lessons from the more experienced employees. In some cases, the foreman of the cutting department would oversee those who were learning. Several sources (Longstreth, 1906; Richman, 1911; Smith, 1898;



Plate 17. Women grinding blanks (State Historical Society of Iowa)

"Straight goods," 1909) stated that there was a division of labor in the industry. This dichotomy was by sex and not age. Men and boys worked in the areas associated with sorting the shells as they came into the factory, cutting blanks from the shells, and repairing the machinery. Smith (1898) listed men as grinders, but a photograph taken in 1907 shows women seated at the grinding machines (Plate 17). Women and girls were also employed to face, drill, sort, and card the buttons. The division remained throughout the 20 years covered by this thesis. The women also learned from other employees or on their own.

Men who wanted to cut blanks in a small shop, called a saw works, could learn there and eventually move on to work in a large cutting plant or a combined plant. A cutting plant was a saw works run by a large company and employing 10 to 50 blank cutters (Longstreth, 1906). Longstreth also stated that it took a man approximately three to four weeks to become proficient in cutting blanks. A newspaper article in Labor's Voice gave the same span of time ("Straight goods," 1909). The process of becoming proficient in button work for any department was the same as followed for the cutters: each person got a position and learned.

Men who cut blanks stood at their saws, while most of the women's positions required that the workers sit on stools or chairs. Plate 9 shows blank cutters. Each worker stood in front of his saw and operated the lever to start or stop the machine with his foot. While doing this he held the shell in his left hand and pushed it into the saw with a wooden plug held in the right hand. The photograph shows the saws close together; this gave each worker little room for extra movement. Plate 10 shows the same closeness of the machines for facing blanks, and Plate 11 shows it for the women drilling holes in the faced blanks. The line of wooden plugs at the right in this plate were used by blank cutters, to push the faced blank against the drill for holes. The number of holes varied, but it was usually two or four per button.

In a complete plant there were many different operations to make a finished button. A discussion of each position and its duties at this point helps to clarify the process of button manufacturing until 1910. Sources used for the following discussion were Fack (ND), Hopkins (Note 1), Koll (Note 5), Longstreth (1906), Newman (Note 2), and Smith (1898). The first persons to handle the shells as they arrived at the factory were shell sorters. These men and boys separated the shell by species. This was done because some shells, such as the "niggerhead" and "sand," were more valuable because they consistently formed white, lustrous nacre. Shell sorters were responsible for separating the shells and then placing them in vats of water to soak.

Next, the button cutter took a bucketful of shells from the vat to his saw and cut blanks. The cutter was responsible for the blanks

he cut, the waste shell, and his saw. The cutter weighed his bucket before and after cutting blanks to determine if the amount of waste in the shell was too high. A waste figure of 50 to 60 percent of the shell was considered normal. The cutter strove to get as many usable blanks out of a shell as he could. Responsibility for his saw included replacing the tube when the teeth were completely dull, and keeping those teeth straight. Plate 5 shows sharp drill bits in the lower right-hand corner and the device to straighten the teeth in the center.

A grinder was the next person to handle the blanks. Each grinder man or woman operated an emery wheel and was responsible for grinding the blanks to a smooth surface. Another responsibility of these operators was to put the blanks in water after the grinding process. Women operators of both facing and drilling machines handled the blanks next. Because their responsibilities were similar until 1900 and combined by 1902 with the introduction of the Barry Double Automatic, they will be discussed together. The responsibility of this position was to center the button in the machine and face or drill it. The operator also was required to keep the facing or drill bit sharp. The facing bits were 10 cm long and had grooves to determine the pattern of the button. The end of the bit was sharpened to an angle between 0 and 90 degrees, which determined the height of the button face (Plate 12). After the introduction of the Barry Double Automatic in 1910, the operator did not sharpen his tools since the machine did this. The operator was only required to

insert blanks in the chuck and take the finished buttons out when the process was completed.

Polishing and dyeing of buttons was done by men. Operators of the polishers were required to mix the acid solution in which they tumbled the buttons. Only one reference (Longstreth, 1906) stated the type of acid used and the ratio of water used in the bath. (This was not corroborated by other sources, but is included here with the realization that further information should be sought.) "Nine parts water to one part muriatic acid," stated Longstreth, "was the solution used for polishing buttons." The men polishing the buttons also placed them in clean sawdust and tumbled them. If color was desired in the buttons dyeing was done by the men who operated the polishers.

The buttons were sorted and carded next, always by women. Plate 18 shows a sorting room in 1898, and Plate 19 shows the similarity of the sorting room in 1906. Buttons were sorted according to color and quality. White buttons were sorted into 10 or 12 grades depending on the factory (Fack, ND; Koll, note 5). McKee Button Company used 12 grades and Automatic Button Company used 10. Data were not available for other companies. Buttons that had natural color remaining were called "spots" and sorted into grades by intensity of the color. Koll (note 5) remembered sorting "spots" into several grades for summer work in 1910. Women carding buttons worked in the same area as the sorters. A carder's duty was to sew the finished buttons to cards, usually six to twelve on a card.



Plate 18. Women sorting buttons, 1898 (Smith, 1898)



Plate 19. Women sorting buttons, 1906 (State Historical Society of Iowa)

Conditions of employment

Labor conditions in the factories of the Muscatine button industry were fairly good. A commercial club letter published in Labor's Voice told of clean and pleasant work in the button industry ("Straight goods," 1909). The reply to this letter in the same article stated that the work was not as clean and pleasant as it sounded, but that it was not really bad either. One disadvantage of labor conditions was the number of hours worked per week. The Thirteenth Census of the United States (1912) stated 2,868 of a total 3,172 wage earners in the button industry in Iowa averaged 54 to 60 hours of work per week. At that time, 1910, these figures represented a typical work week.

The only other condition of employment that was not considered good was the creation of a fine dust by cutting, facing, and drilling machines. This very fine dust resulted in irritation to the bronchial tubes and lungs of the workers. Inhalation for an extended period of time produced a cough often complicated by chronic bronchitis or pulmonary emphysema. A report in the Bulletin of the Bureau of Labor (Hoffman, 1909) indicated that the dust emitted by the machines was variable according to the ventilation system used in factories. Large exhaust fans helped move the dust away from workers in well-equipped factories. The wet process of cutting was used in many factories from 1898, and eliminated much of the dust problem. Wet process cutting of blanks used a nozzle mounted on the saw facing the shell. Attached to rubber tubing, the nozzle emitted a spray of water toward the shell, reducing lying dust. A table taken from mortality statistics of the United States Census showed that button

makers had an increased rate of mortality due to "consumption" than the normal males. From 1900 to 1906, 37.8 percent of deaths were due to consumption among button makers and 14.8 percent of deaths for all males in the United States.

Wages

Most of the button work was considered piecework and paid by the gross. Wages for the cutters were figured by a scale regulated per line per gross with the unusable blanks counting against the cutter. Fack (Note 6) and Longstreth (1906) described the two methods for determining a cutter's wages: a test box scale and a computing scale. A test box scale used a weighed box with one gross of buttons on one side of a scale. The cutter placed his day's work on the scale and the number of gross figured against the weight. A computing scale would show the number of gross a worker had when one gross was placed in the center and the worker's amount on the outside. Other positions that accumulated wages by the gross were grinders, facers, drillers, sorters, and carders.

Because the useless blanks counted against a cutter in the test box, he sometimes used a technique called "white washing" to increase his usable blank count. The worker partially sorted the top and bottom of his bucket so there were more good blanks in those sections. He then took the bucket to be weighed. When the scale man took a test box he was more likely to get usable blanks and there would appear to be few bad blanks to count against the worker.

Specific wage figures for factories were not available in any source, but average wages were given in Smith (1898), Haefner (1932), Longstreth

(1906), and Hawkeye Pearl Button Company (1911). In 1898 blank cutters received the highest wages of all positions making five to ten cents per gross. Since an average week's work was 100 to 150 gross, a man could earn five to fifteen dollars per week. Facers and drillers made an average of four to seven dollars per week. Carders averaged four or five dollars per week in 1898. Smith stated that carders at that time were paid three cents per gross of carded buttons.

By 1906, when Longstreth recorded data, the wage rate for sorters had not increased. An average sorter then was making three to six dollars per week with a skilled worker making up to ten dollars. Wages for carding had dropped to two cents per gross. Cutters' wages averaged nine dollars per week in 1909 ("Straight goods," 1909). Very skilled cutters could make 15 to 18 dollars. The same article listed women workers as averaging three to six dollars per week. It can be seen from the foregoing data that wage rates had increased little between 1898 and 1909. The only change was a drop in the carder's wage. Increases in wage rates did not come until late in 1910. By the next year the Hawkeye Pearl Button Company recorded that it was paying cutters an average of nine to twenty dollars per week, and sorters an average of five to twelve dollars per week. This indicates an increase of two to three dollars for men and women.

Employee-Management relations

The increase in wage rates of 1910-1911 may have been affected by the growth of a button workers' union in 1908 through 1910. None of the

sources from 1891 to 1899 mentioned the formation of a trade union for button workers. The terms "trade union" and "craft union" are distinct. A trade union does not have an apprenticeship while a craft union does. A trade union focused on practical needs of working, such as wage rate and length of work week, and is the term applied to this text. A craft union, while concerned with practical problems, maintained membership of skilled workers and provided guidelines for apprenticeship in the craft (Dulles, 1966). This thesis author classified the button workers union as a trade union because there was no mention of an apprenticeship term in any source studied. In addition, union supporters urged anyone to join who wanted to participate in efforts to increase wages ("Button men," 1910).

The first indication of a union occurred in the Twentieth Century Edition of the Muscatine City Directory (McCoy, 1900). Button Workers' Protective Union number 6861 appeared under the heading of Labor Organizations. This union died out and in 1906 Longstreth recorded that no unions were operating in the Muscatine area. A reason given for the decline of the industrial union was there was no need for one ("Button cutters strike," 1908).

Interest in a button workers union revived in 1908, and efforts to organize the union can be followed in articles from Labor's Voice, a state-wide trade union monthly paper. The paper included articles for unions such as the Teamster's, Baker's, Cigar Maker's, and Button Cutter's. The first article in support of a union appeared in April 1908 ("Scales were," 1908). A cutter had called in inspectors because scales in the factory

weighed short causing him to lose 54 cents pay for a week. While the reporter did not definitely say that a union would have prevented the incident, he implied this. Six months later a more definite article appeared ("Button Cutters Strike," 1908). The reporter stated that wildcat strikes were frequent, but not beneficial because of their small scope. He concluded that a union would give the needed unity and strength.

Organization proceeded slowly over the next 16 months. In the regular monthly meeting column of Labor's Voice for February, 1909, the newly forming union emphasized a need for an organizer. Some progress was made and in the monthly meeting column and in an article in the March Labor's Voice an announcement appeared that informed workers that union-made buttons were being sold at Reinemund's dry goods store. The article urged union workers to support the union by patronizing the store.

The last year in the span of this study, 1910, was the year the button workers union became official. The early part of the year, however, union organizers were struggling. An article in the February issue of Labor's Voice ("Button men," 1910) restated the hesitancy of workers to join the union. The reporter expressed frustration with the attitude that a union was useless, saying that button workers were the "most ignorant class of educated people I have ever mixed with" ("Button men," 1910). Efforts of the organizers bore fruit, and in November an article in Labor's Voice ("Button workers are," 1910) stated that a union was forming. The next month an article appeared in the union paper stating that the new union had a name--Button Workers Protective Union Number 12854 ("Rapid growth," 1910). The writer of the article stated that one-third of the workers in Muscatine had joined the union, which had an

initiation fee of 50 cents. The union was stated to have benefits to both employees and management. Employees would have standard wage scales, fair weights, and sanitary conditions maintained. Advantages of a union for management were employees who worked steadily, made a quality product, with lower costs in shell cutting.

From 1891 to 1910, button workers had developed a desire to band together and by the end of these 19 years formed a union to protect themselves. The writer found no record of management disagreement with formation of a union in Muscatine during the period. This may be due to the fact that the union was not large enough to present a threat to management's desire for cheap labor. National unions were beginning to grow in strength during the time of this study, and a management group in industry was just beginning, too. The union encountered its first real opposition in the opening of the decade 1910 to 1920. A discussion of that opposition, however, is not in the scope of this study and the interested person is referred to issues of Labor's Voice for 1911 and issues of the Muscatine Journal for 1911 and 1912.

Industrial Growth

Secondary sources in the Review of Literature have depicted the beginning of the first factory by John Boepple in 1891. Verification of these facts with primary data proved nearly impossible within the limitations established by this thesis; neither time nor funds allowed a trip to Germany to verify facts given in the sources encountered. The information about Boepple was considered somewhat suspect, and

was verified as far as possible by checking obituary notices (J.F. Boepple Obituary, 1912). The information obtained there confirmed the information obtained from secondary sources that Boepple began a factory in 1891.

For the next four years Boepple's factory was the only one operating in Muscatine. The 1893 city directory of Muscatine listed only this factory at the corner of Sixth and Linn Streets. Two years later (Muscatine City Directory, 1895) the factory had not changed addresses. The president of the company was Boepple and the secretary-treasurer was D. S. McDermid. The state census of that year listed only 75 workers employed in the trade of button making, 65 men and 10 women. By this time, Boepple's factory had a value of \$5,000 and produced a product valued at \$14,400 (Iowa State Census, 1895).

The city directory of 1897-1898 listed three button manufacturers. Boepple had moved his factory to the corner of Third and Oak Streets. Besides the two new button manufacturers, there were three saw works established in Muscatine in 1897; to these 25 more were added in the first half of 1898. Table 1 illustrates the growth of the fresh-water pearl button industry until 1898.

A possible contributing factor to the rapid growth of the industry in 1897-1898 was the series of tariffs enacted by Congress in 1890, 1894, and 1897. The McKinley Tariff of 1890 placed a duty of two and one-half cents per line per gross of imported shell buttons. This was a protective tariff for American manufacturers and enabled them to compete with

the cheaper foreign product being imported. Protective tariffs were supported by the Republican section of Congress becoming law October 1, 1890 (Stanwood, 1903). Controversy was great over protectionism generally and this bill in particular; it became a major issue in the political campaign of 1894. A Democratic victory that year was overwhelming, with fewer than 90 of 332 congressional members being Republican. For the most part, Democrats believed in the principle of free trade. They passed an amended tariff that reduced import duties on many products, and eliminated them for shell buttons. A steady increase in imported buttons after this act prompted the Congress to raise duties in 1897 to one and one-half cents per line per gross (Imports and Duties, 1907). It can be concluded that this duty imposed during the early growth of the fresh-water pearl button industry stimulated the expansion of 1898.

Table 1. Establishment of button factories in Iowa and Illinois between 1891 and 1898 (Smith, 1898, p. 308)

Year	Muscatine, Iowa		Other Places in Iowa		Places in Illinois		Total	
	Complete Plants	Saw Works	Complete Plants	Saw Works	Complete Plants	Saw Works	Complete Plants	Saw Works
1891	1						1	
1892								
1893								
1894								
1895	1		2				3	
1896								
1897	3	3	1		1	1	5	4
1898 (to July 1)		25	2	2		7	2	34
Total	5	28	5	2	1	8	11	38

The Muscatine City Directory of 1900 further illustrated growth taking place in the industry. It listed 25 blank manufacturing firms and four button manufacturers. The Boepple Button Company was listed with the others, but Boepple himself had retired from the business (Longstreth, 1906). Button factories were not the only businesses listed in this city directory for the button industry. One firm was listed under the category of Button Machinery, and another was listed under Button Saw Manufacturers.

Figures for the whole United States showed Iowa growth in button manufacturing. A comparative table in the Twelfth Census of the U.S. (1902) listed 53 button firms in Iowa. These factories employed 1,402 individuals and paid \$458,000 in wages (Twelfth Census, 1902). The value of the product produced was listed in the table as \$866,538. The growth of the industry to this time can be seen by comparing these figures to the ones presented in the 1895 State Census. Other figures in the 1900 census also supported the picture of rapid growth in the first nine years of the pearl button industry in Iowa. Table 4 of this census stated that Iowa led other states in the production of fresh-water blanks with 35 cutting plants; all other states had 17 (Twelfth Census, vol. 3, p. 321). From a production output of a few gross in 1891 by one man, the industry had increased output to 4,308,584 gross in 1900 (Twelfth Census, vol. 3, p. 322). Fresh-water pearl buttons had begun to compete with the ocean pearl. The value of ocean pearl buttons in 1900 was listed as \$1,951,558 and fresh-water buttons were close behind with a total product value of \$1,176,285.

Changes were taking place in the industry, causing consolidation of manufacturing firms between 1900 and 1910. The Barry Manufacturing Company introduced a new machine for finishing buttons in 1900 and in 1902. These rapid changes in technology made it difficult for the small factories to keep up with the larger ones that had capital to change to the more efficient machines. Because they did not have the capital needed to modernize, the small factories were forced either to sell or merge to survive. Another change in the industry was the increase of large cutting plants that turned out blanks for one factory. These plants could cut blanks more quickly. Small cutting operations found that factories bought their own blanks to finish, and the market for small quantities of blanks was uncertain. The Muscatine City Directory illustrated the fluctuation of blank manufacturers. The number steadily decreased in succeeding years: 16 in 1902, 14 in 1907, and 10 in 1908. Then, the City Directory of 1910 listed 25 blank manufacturers, a sudden increase of 15 establishments over the 1908 listing. No evidence was found to explain the rapid increase of blank manufacturers in those two years, but a proposed hypothesis might be that the finishing companies were large enough in 1910 to need more output than the 10 blank manufacturers could produce.

While the blank manufacturers were decreasing in number the finishing and combined plants were increasing. In 1902, the City Directory listed five manufacturers of buttons, and by 1910, the number had increased to fourteen. The Census of Iowa (1905) reflected the consolidation of the industry, and the growth of the output of existing factories. The number of establishments for manufacturing buttons had decreased from

53 in 1900 to 51 in 1905. The value of the product, however, increased to \$1,500,945. The increase in number of wage earners, from 1,402 in 1900 to 1,936 in 1905, indicated that the volume of product increased more rapidly than the number of workers. It can be hypothesized that this was due in part to the improvement in machinery. The state census also gives an indication of the ethnic background of workers in Muscatine. Table 13 (Census of Iowa, 1905, p. 519) listed 2,350 foreign born residents of Muscatine County claimed Germany as their place of origin. That figure is slightly over 68 percent of the total foreign born residents of Muscatine, which was 3,439. No listing was given of origin of American born residents so the information is not strong, but it could be concluded that many of the button workers were of German descent.

The City Directory of Muscatine for 1908 listed 12 button manufacturers. In the front section a list of incorporated firms showed the size of the button industry at the time. Of the 12 firms listed, 6 were incorporated. Bishop and Hagermann Company had capital of \$15,000 and manufactured blanks. The other five companies operated complete plants. None of them had capital less than \$30,000. Muscatine Pearl Company with \$30,000, Muscatine Pearl Novelty Company with \$10,000, and Richards-Smith Button Company with \$50,000 in capital were all close in value. Hawkeye Pearl Button Company and Pioneer Pearl Button Company were larger than the other three. Their capital was listed at \$100,000 for each firm.

By 1910, corporations made up 31.4 percent of the factories producing fresh-water pearl buttons in Iowa. Incorporated firms also constituted 31.4 percent of the total and individually-owned firms formed the other

37.2 percent (Thirteenth Census, 1912). However, the value of the product produced by corporations was \$2,398,898 compared to \$1,317,781 product value of firms, and \$318,749 product value of individually-owned businesses. So, while the factory numbers were fairly evenly spread, the corporations were producing almost 60 percent of the pearl buttons and employing 62.3 percent of the workers in the state industry (U.S. Census, 1910, p. 347).

Other statistics from the 1910 census showed how the industry had grown at the end of the decade. The number of factories had increased from 51 in 1904 to 70 in 1909. These 70 factories were employing 3,376 people and paying \$1,412,000 in wages. Adult men employed in the industry numbered 2,611, adult women number 1,002, and people under 16 years of age numbered 86. The value of the product they produced was \$4,035,000, a considerable increase from the product value of 1904--\$1,500,000.

When the industry began in 1891 fresh-water pearl buttons competed with several other kinds of buttons. Ocean pearl was the most important. A testament to the rapid growth can be seen in Table 2. By 1899, fresh-water pearl was the second most important button product in the United States, with ocean pearl being highest in value. By 1904, fresh-water pearl buttons were not only first in importance; they were worth more than the second and third type of buttons combined.

Depletion of Natural Resources

Almost every source mentioned the declining population of mussels in the rivers. From the beginning of the industry in 1891 there was little regard for the quantity of shells taken from one bed

Table 2. Value rank of fresh-water pearl buttons, 1889 to 1914 (Coker, 1917, p. 86)

	1889	1899	1904	1909	1912 ^a	1914
Buttons, total		\$6,467,373	\$9,040,029 ^b	--c		\$16,233,198
Fresh-water pearl	--d	1,176,285	3,359,167	--c	6,173,486	4,879,844
Ocean pearl		1,951,558	1,511,107	--c		2,489,364
Metal		887,251	1,312,741	--c		763,287
Vegetable ivory		1,144,677	1,305,766	--c		2,885,503
Cloth		468,121	766,091	--c		
Bone		137,401	124,454	--c		329,934
All others ^e		701,810	660,703	--c		4,885,266
Button blanks made for sale		656,036	916,003 ^f	--c	2,511,217	
All other products			1,177,737 ^g	--c	137,607	
Aggregate	\$4,216,795	\$7,695,910	\$11,133,769 ^b	\$22,708,065		\$20,791,985 ^h

^aFresh water only.

^bExclusive of buttons to the value of more than \$1,000,000 made in each year 1904 and 1909 by establishments engaged primarily in the manufacture of other products.

^cNot classified.

^dThe product of Iowa and Illinois in 1897 was \$243,655 and in 1898 \$252,570 (Smith, 1898).

^eSome of the materials from which buttons are made, in addition to those indicated in the table are brass, composition (clay, etc), wood, glass, gold, hoof, iron, ivory, leather, paperboard, porcelain, silver, steel, and also, in some cases, skim milk (casein), animal blood, and probably bakelite.

^fProbably fresh-water pearl chiefly.

^gPartly fresh-water pearl products.

^hIncludes blanks, or molds, snap fasteners, and all other products in amount \$4,558,787.

in a short time. Beds of shells in the Mississippi River at Muscatine were exhausted. By 1898, shells were sought from rivers as far away as Missouri and Illinois.

Smith (1898) recorded that there were three reasons for such rapid depletion of shell beds. The first reason was indiscriminate fishing. Mussel fishermen worked a bed of shells until it was exhausted and then moved on to find another bed. Even the exhausted beds were fished occasionally, giving the mussels insufficient time to reproduce themselves in great enough quantities. The second cause of depletion was the taking of undersized shells and selling them to the factories. Undersized shells were taken by some fishermen, especially if there were not enough large-sized shells to make a profitable catch. In some cases, small mussels were picked out of a catch and left on the riverbanks to die. Year-around fishing was the third reason listed by Smith for depletion of shell beds. The most fishing was done from August to October, but some shellers also operated during the winter. Many of the small mussels that would have been thrown back during another season were left on the ice to freeze during winter fishing. Longstreth (1906) added a fourth reason for depletion of shell beds. The practice of throwing back dead shells when brought to the surface may have hindered growth of live shells, because often the dead shells were thrown into the water at the same time, possibly covering the live shells and preventing them from obtaining oxygen and food. The first three reasons were verified in other sources, but the last reason occurred only in Longstreth's study of the industry, so it is a point of possible future research.

Smith (1898) recommended steps for the states to ensure the maintenance of the mussel supply. The first recommendation was limiting the size of mussels fishermen could legally take. A closed season on mussels was the second recommendation. Smith admitted that such a measure would be difficult because the spawning season for each species of mussel varied. Pollution of the major rivers in Iowa and Illinois also contributed to the decline in the mussel population by causing suffocation of the animals by garbage and extra silt entering the rivers, so Smith recommended that pollution be controlled. The fourth major recommendation was a possible limitation in the exporting of raw shells to other states. Although the Fish Commission of the United States published Smith's article in 1898, no action was taken to protect the industry.

The issue of protection for fresh-water mussels remained dormant until 1907. A study was ordered by the United States Congress in conjunction with a bill before the House to provide funds for a biological station to study and promote propagation of fresh-water mussels. The report was completed under the direction of Paul Bartsch, then curator of Marine Invertebrates at the United States National Museum (Marquis, 1939). Congressman Albert Dawson of Iowa spoke in favor of the bill and it was approved May 27, 1908 (Congressional Record, 1908). The dedication of the biological station took place in 1909. Richman (1911) listed John Boepple as an employee of the station. Work at the station centered on the study of life habits of fresh-water mussels and possibilities of artificial propagation of these mollusks. Although establishment of a biological station did not solve problems in the industry,

such as overfishing of beds or taking small shells, it did provide a measure of protection for the rapidly dwindling shell beds. This did not eliminate importing shells from other states as shown by a letter from the secretary of a leading Muscatine pearl button firm (Fack, Note 6). In the letter, Fack negotiated to buy raw shell from Elgin, Illinois. Hopkins (Note 1) stated that this struggle to maintain the raw material did not greatly influence the decline of the pearl button industry. He attributed it more to the increased use of plastics in the 1920s and 1930s.

Industry By-Products

The fresh-water pearl button industry produced only two by-products: fresh-water pearls and waste shell. Normally, one would think of oysters when talking about pearls, but most varieties of mussel produce pearls. A pearl is formed when a foreign body lodges in the fleshy part of a mollusk. The animal secretes a film which covers the offending particle and, eventually, hardens into what we know as a pearl. In the great pearl-producing areas of the world, a foreign object is often introduced into the shell to deliberately make a pearl. This was not the case in the mussel fishing industry along the Mississippi River; fishermen were there to harvest the mussels for their shells. Finding a pearl was a definite boon, and shellers went over their catch carefully after the mussels had been cooked out. Giddings (1907) and Rose (1942) reported that pearls or slugs, baroque pearls, occurred at the rate of one and one-fourth ounce per ton in the early days of the button industry. Hopkins

(Note 1) stated that his aunt's family had been shellers and found a pearl worth \$1,500 at that time. This was an advantage to the sheller who made an average of \$3 to \$10 per week collecting shells (Smith, 1898).

The second by-product of the fresh-water pearl button industry, waste shell, was not so thoroughly exploited as the pearls found in the shells. Waste shell was that left over when the cutter had gotten as many blanks as he could out of the shell. Because none of the curved part of the shell could be used, the shell was often 60 percent or more waste. These shells were given away to firms or individuals who crushed them and used them for various purposes. Some of the varied uses were in road beds, stucco, and fish bowl decorations. The main use for the crushed shells was in poultry feed. The larger button manufacturers maintained shell crushing units in their factories. Hawkeye Pearl Button Company of Muscatine crushed shells and sold them to poultry raisers in three sizes--medium, chick, and fine (Hawkeye Pearl Button Company, 1911). The same source recorded that Hawkeye's several factories produced about 180,000 pounds of crushed shell per day. The foregoing data indicate that this was not a small by-product.

SUMMARY AND RECOMMENDATIONS

Summary

Between 1890 and 1910 the determination of one man, followed by others, built an industry that was to flourish and make Muscatine and the rest of the cities on Iowa's eastern border the fresh-water pearl button center of the world. John Boepple came to Iowa in 1888 looking for fresh-water mussels. Finding them in the Mississippi River, he started a factory to manufacture buttons in 1891; the first decade of the industry had begun. This time could be called the infancy of the industry. The processes of gathering the raw material and processing it were developed by hand. Mussel fishermen went out in small boats and used crude systems for gathering mussels which they then took to shore, cleaned, and sold. The tools to cut the shells were run manually and the designs and holes were cut by hand. As the decade progressed, steam power was harnessed to cut, face, and drill; and each task was done on a separate machine.

The industry began slowly in the first decade. Another factory was founded only after 1895. This may have been due in part to Congress passing tariff legislation. The McKinley Act in 1890 put a duty on imported buttons so that the industry was temporarily protected, therefore, Boepple was able to start his factory. The tariff ended in 1894, when the United States Congress removed the duty on the imports. The market was soon flooded with the cheaper imported salt water product, making it difficult for domestic fresh-water buttons to compete. Congress reversed its decision again in the Dingley Act of 1897. Although the duty on

buttons was smaller than the earlier one, some protection was afforded the American industry, enabling it to grow.

After 1897, there was a sudden, brief growth in the number of blank-cutting operations in the Muscatine area. By this time people had seen that the blanks were not hard to learn to cut, and anyone who could afford a small saw could set up a shop. Soon people working in sheds and garages were putting their blanks on the market to compete with the large blank cutting firms.

Because of the demand for pearl button blanks, mussel fishermen slowly expanded their fishing during this decade. The United States Fish Commission recommended that legal controls be set on the industry. Nothing was done and the problem remained.

By the end of the first decade the fresh-water pearl button industry in Iowa had grown to the point of being listed in the United States Census with other important businesses of Iowa. The fresh-water pearl buttons of the United States had become competitive with other types of buttons. They had become the second most important class of buttons in the United States, exceeded only by ocean pearl buttons.

The second decade of this study, 1900 to 1910, witnessed a steady increase in the industry. This growth was not due to the sudden opening of new factories as in the previous decade. Many small factories and home businesses failed in the early years of this decade. Larger factories improved technologically and absorbed the smaller ones. Large factories cut their own blanks, putting individual cutters out of business.

Part of this consolidation of businesses was due to the change in technology that took place in the second decade. The only improvement to the cutting equipment was the addition of a water nozzle on the saw to reduce flying pearl dust, a health hazard. The major improvements, however, came in the finishing equipment. A machine was introduced in 1900 that centered the blank and faced or drilled the blank. Two years later another machine was developed to face and drill a blank. Further improvements in machinery came rapidly, so that a manufacturer had to buy new equipment every few years. However, only the larger factories could afford to obtain newer, more productive machines; therefore, small businesses were absorbed.

Two other significant aspects of the second decade were the formation and growth of a button workers' union and the efforts to conserve the mussel supply. Interest in a union was not great at the beginning of the decade, although there were indications that people were becoming concerned with their welfare as workers. However, by the end of the decade people were becoming interested, due to the efforts of union organizers. The average laborer worked 50 to 60 hours per week and his wages had not increased substantially since the industry began. A union was formed in 1910.

While decisions about a union were being made the mussel population was still being overfished. Concern for the continued survival of these mussels was evident in all of the popular articles of the time. In 1906, the United States Congress ordered an investigation into the industry. Out of this investigation came a bill for the construction

and support of a biological station at Fairport, Iowa to experiment with artificial propagation of mussels.

In this second decade of the industry growth was evident in the value of the buttons. Ever larger factories were producing greater volume. The fresh-water pearl button industry had surpassed even the manufacture of ocean pearl buttons. In the space of 20 years the industry had come of age.

Recommendations

This study of the industry has only covered the first 20 years of the industry. Further investigation of the pearl button industry could cover the strikes and violence that occurred shortly after 1910. Another possibility would be to follow the industry from the end of the last decade of this study to its ultimate decline in the 1950s, examining the influence of outside factors on the dying industry.

Clothing history is often studied with sources focused on fashion only. Study of production of clothing, textile, and findings, instead of fashionable change, can help to give added dimension to the history of clothing. Studies from a business point of view, such as this thesis, can help to put clothing in a larger economic perspective that can teach students more about clothing and fashion history. Data gathering methods and sources of information in this study can be of value, therefore, to the student of history. They will not give specific sources for other historic studies; however, they can suggest similar places and sources of information that a student of clothing history may not have considered previously.

Certain specific aspects of clothing history could be studied from this business perspective. Iowa clothing industries of the past, other than the fresh-water pearl button industry, such as the manufacture of woolen fabric or men's clothing could be studied with this perspective. On a national level, manufacturing of findings or accessories would be valuable studies. Specific examples of these industries are:

1. development of stay manufacturing;
2. development of hook and eye production;
3. development of snap production;
4. development of zippers;
5. the machine lace industry;
6. the glove industry;
7. the corset industry;
8. men's or women's hat industries;
9. other button industries; and
10. jewelry manufacturing.

Another specific recommendation would be to study the changing production techniques of notions to determine if methods of dating costume could be developed from the knowledge of changing products.

REFERENCE LIST

- Barker, C. I. Charles I. Barker's Muscatine city directory, 1891-2.
Muscatine, Ia.: the Journal Office, 1892.
- Barker, C. I. Charles I. Barker's Muscatine city directory, 1893-4.
Muscatine, Ia.: the Journal Office, 1894.
- Barker, C. I. Charles I. Barker's Muscatine city directory, 1895-6.
Muscatine, Ia.: the Journal Office, 1896.
- Barker, C. I. Charles I. Barker's Muscatine city directory, 1897-8.
Muscatine, Ia.: the Journal Office, 1898.
- Bartsch, P. Glass negative collection, Iowa City, Iowa: State Historical
Society of Iowa, 1907.
- Boucher, F. 20,000 years of fashion. New York: H. N. Abrams, 1967.
- Brindley, J. E. Iowa as a manufacturing state. Ames, Ia.: Iowa State
College Press, 1912.
- Brindley, J. E. A study of Iowa population as related to industrial
conditions. Ames, Ia.: Iowa State College Press, 1926.
- Button cutters strike. Labor's Voice, October 1908, 13, p. 1.
- Button men and their count. Labor's Voice, February 1910, 14, p. 4.
- Button workers are organizing. Labor's Voice, November 1910, 15, p. 1.
- Census of Iowa for the Year 1895, compiled by the Executive Council under
the authority of Chapter 8, Acts of the 30th General Assembly. Des
Moines, Ia.: Bernard Murphy, State Printer, 1895.
- Census of Iowa for the Year 1905, compiled by the Executive Council under
the authority of Chapter 8, Acts of the 30th General Assembly. Des
Moines, Ia.: Bernard Murphy, State Printer, 1905.
- Clark, H. W., Coker, R. E., Howard, A. D., & Shira, A. F. Natural history
and propagation of fresh-water mussels. Bulletin of the Bureau of
Fisheries, 1921, 37, 79-177.
- Cohn, E. J., Jr. Industry in the Pacific Northwest and the location
theory. Columbia University, N. Y.: Kings Crown Press, 1954.

- Cohn, R. L. A locational analysis of manufacturing activity in the antebellum south and midwest. Unpublished doctoral dissertation, University of Oregon, 1977.
- Cohn, R. L. Local manufacturing in the antebellum south and midwest. Business History Review, November 1980, 54, 80-91.
- Coker, R. E. Fresh-water mussels and mussel industries of the United States. Bulletin of the Bureau of Fisheries, 1917, 36, 15-89.
- Coker, R. E. The protection of fresh-water mussels. Bureau of Fisheries Document 793, 1914.
- Congressional Record, Sixtieth Congress, 1st session. Washington, D. C.: Government Printing Office, 1908.
- Davenport, Millia. The book of costume. New York: Crown, 1948.
- The Delineator, 1870-1900 passim.
- Dulles, F. R. Labor in America. New York: Thomas Y. Crowell, 1966.
- Evans, C. M. Labor in Iowa, 1850-1860. Unpublished master's thesis, Iowa State University, 1930.
- Fack, H. H. The American fresh-water pearl button industry. Muscatine, Ia.: Automatic Pearl Button Company, nd.
- Giddings, T. P. Clamming along the Mississippi. Outing Magazine, July 1907, 50, 473-479.
- Haefner, M. Argonauts of the Mississippi. The Palimpsest, December 1932, 13, 473-486.
- Harper's Bazar, 1870-1920 passim.
- Hartman, G. B. The Iowa sawmill industry. Unpublished master's thesis, University of Iowa, 1942.
- Hawkeye Pearl Button Company. Pearls of the Mississippi. Muscatine, Ia.: Hawkeye Pearl Button Company, 1911.
- Hawkeye Pearl Button Company. Hawkeye pearl button company, Muscatine, Iowa. Muscatine, Ia.: Record Printing, 1916.
- Hoadley, R. L. Industrial growth of Iowa. Unpublished master's thesis, University of Iowa, 1928.

Hoffman, F. L. Mortality from consumption in occupations exposing to municipal and organic dust. Bulletin of the Bureau of Labor, 1909, 18, 471-638.

Howard, A. D. Experiments in the culture of fresh water mussels. Bulletin of the Bureau of Fisheries, 1922, 38, 63-89.

Hurd, F. The pearl button industry of Muscatine, Iowa. Annals of Iowa, Fall 1966, 38, ser. 3, 401-409.

Imports and Duties, 1894-1907, House Report, Document Number 1504.

J. F. Boepple Obituary. Annals of Iowa, April 1912, 10, ser. 3, 399.

Josepsson, A. The fresh-water pearl button industry. Scientific American Supplement, June 20, 1909, 65, 385-386.

Kemper, R. H. Costume. New York: Newsweek Books, 1977.

Kidwell, C. B., & Christman, M. C. Suiting everyone: The democratization of clothing in America. Washington, D. C.: Smithsonian Institution, 1975.

Labor's Voice, 1908-1911 passim.

Longstreth, O. D. Button industry in Iowa. Incomplete master's thesis, University of Iowa, ca. 1906.

Marquis, A. N. (ed.) Who's Who in America. Chicago: A. N. Marquis, 1939.

McCoy, W. H. (comp.). Twentieth century edition of the Journal's Muscatine city directory. Muscatine, Ia.: Journal Printing, 1900.

McKee button co., after modest start as small cutting plant, now operates world's largest button factory here. Muscatine Journal, June 10, 1948, p. 2.

Muscatine City Directory, 1889-1892. Omaha, Neb.: Frank Orff Publishing Co., 1892.

Muscatine City Directory, 1895. Omaha, Neb.: Frank Orff Publishing Co., 1895.

Muscatine, Iowa, City Directory, 1902-03. Cleveland, Oh.: Teetzel Directory Co., 1903.

Muscatine, Iowa, City Directory, 1904. Cleveland, Oh.: Teetzel Directory Co., 1904.

- Muscatine, Iowa, City Directory, 1907. West Lorne, Ontario: M. D. Teetzal, 1907.
- Muscatine City Directory, 1909-1910. West Lorne, Ontario: M. D. Teetzal, 1910.
- Muscatine, Iowa, the pearl city. Muscatine, Ia.: Record Printing, 1914.
- Payne, B. History of costume. New York: Harper and Row, 1965.
- Peterson's Magazine, 1890-1900 passim.
- Piller, D. Muscatine's on the button. Des Moines Sunday Register, July 6, 1980, p. 3F.
- Pratt, L. G. The counties and courthouses of Iowa. Mason City, Ia.: Klipto Printing and Office Supply, 1977.
- Pratt, L. G. Discovering Historic Iowa. Des Moines, Ia.: Department of Public Instruction, 1975.
- Randall, W. D. Little known stories of Muscatine. Muscatine, Ia.: Fairall Service, 1949.
- Rapid growth encouraging. Labor's Voice, December 1910, 15, p. 1.
- Richman, I. B. History of Muscatine County (vols. 1 and 2). Chicago: S. J. Clarke, 1911.
- R. L. Polk & Co.'s Muscatine City Directory 1908-9. Davenport, Ia.: R. L. Polk, 1909.
- Rose, E. T. Iowa's clam industry may see war boom for buttons. Union, May 14, 1942, p. 1.
- Rowell's American newspaper directory. New York: Printer's Ink, 1908.
- Scales were slightly off. Labor's Voice, April 1908, 13, p. 5.
- Skjelver, M. Doing historical research. Journal of Home Economics, February 1971, 63, 107-112.
- Smith, H. M. The mussel fishery and pearl button industry of the Mississippi. United States Fish Commission Bulletin, Washington, D. C.: Government Printing Office, 1898, 289-314.
- Smith, K. M. The economic and social development of Iowa from 1860-1870. Ames: Iowa State University, 1942.

- Stanwood, E. American tariff controversies in the nineteenth century, (vol. 2). Cambridge, Mass.: Riverside, 1903.
- Straight Goods About Labor Conditions in Muscatine. Labor's Voice, May 1909, 14, p. 1.
- Taussig, F. W. Some aspects of the tariff question. Cambridge, Mass.: Harvard University Press, 1915.
- Taussig, F. W. The tariff history of the United States. New York: G. P. Putnam's Sons, 1931.
- Thirteenth Census of the United States Taken in the Year 1910, vol. 9, Manufactures. Washington, D. C.: United States Census Office, 1912.
- Twelfth Census of the United States Taken in the Year 1900, vol. 9, Manufactures, parts II and III. Washington, D. C.: United States Census Office, 1902.
- Union labeled buttons. Labor's Voice, March 1909, 13, p. 2.
- Walsh, M. The democratization of fashion: The emergence of the women's dress pattern industry. Journal of American History, September 1979, 66, 299-313.
- Weber, A. Theory of the location of industry (trans. C. Friedreich). Chicago: University of Chicago Press, 1929.

REFERENCE NOTES

1. Hopkins, W. B. Personal interview; Muscatine, Ia.: November, 1980.
2. Newman, A. Personal interview; Muscatine, Ia.: November, 1980.
3. Hopkins, W. C. Patent 840,939. Washington, D. C.: Department of Commerce, Patent Office, 1907.
4. Hopkins, F. M. Patent 981,564. Washington, D. C.: Department of Commerce, Patent Office, 1911.
5. Koll, F. Personal interview; Muscatine, Ia.: November, 1980.
6. Fack, H. H. Business correspondence from H. H. Fack to A. Miller, 1910. Muscatine, Ia.: Musser Public Library.

GLOSSARY

Chuck--A clamp that holds material being worked in a machine such as a drill or lathe.

Complete plant--A fresh-water pearl button factory that cut blanks and finished them in one building.

Cutting plant--A fresh-water pearl button factory that cut blanks and did not finish them. This term is used interchangeably with the term saw works.

Cuirass--A bodice popular in the 1870s and 1880s. It was closely fitted and extended to the hip area.

Gross--Twelve dozen.

Line--The standard unit of measurement for diameter in the pearl button industry. Forty line equal 2.5 cm.

Mussel--A fresh-water bivalve. The term in this study refers to species of the Genus Unionadae which are used to manufacture fresh-water pearl buttons.

Nacre--The lustrous inner layer of the fresh-water mussel. Its structure is almost completely calcium carbonate with a small amount of protein.

Saw works--See cutting plant.

ACKNOWLEDGMENTS

While completing my graduate research at Iowa State University, I received guidance from many people. I would like to extend my appreciation to the following individuals and groups:

To Dr. Jane Farrell, my Major Professor, for all of the guidance in my class work and thesis research, for her support while writing, and for the inspiration that her knowledge of history, art, and historic costume gave me;

To Dr. Agatha Huepenbecker and Dr. Richard Lowitt, members of my committee, for stimulating and challenging me to learn in new areas, with the hope that I will become an historian yet;

To Karen Laughlin and Mary Bennett of the State Historical Society of Iowa in Iowa City for their pleasant and patient suggestions and help in locating information in their collections;

To Mr. William McGonegal, Director of the Laura Musser Museum and Stanley Art Gallery in Muscatine for his enthusiastic interest and support of my topic, and the aid he gave me in arranging personal interviews;

To Mr. William Hopkins, Mrs. Arthur Newman, Mrs. Florence Koll, and Mr. Theodore McKee, veterans of the fresh-water pearl button industry, for the graciousness to grant me their time and information, and for their interest in my topic and myself; and

Especially to my parents, Glen, and my friends who supported and believed in me every step of the way.

APPENDIX A. COMMERCIAL MUSSELS AND THEIR FISH HOSTS

Table 3. Table of commercial mussels and their fish hosts (Clark, Coker, Howard, & Shira, 1921, Table 18)

Scientific Name	Common Name	A. melas, bullhead	A. nebulosus, bullhead	A. calvus, bowfin	A. chrysa, eel	A. grunniens, sheeps-head	D. cepedianum, gizzard shad	E. lucius, pike	F. gibbosus, red-ear sunfish	H. tergisus, mooneye	I. punctatus, spotted cat	L. osseus, long-nosed gar	L. platostomus, short-nosed gar	L. tristoechus, alligator gar	L. cyanellus, blue-spotted sunfish	L. eurycorpus, sunfish
Lampsilis anodontoides	Yellow sand-shell	o	o	a	o	o					o	AN	A	A	no	o
Lampsilis fallaciosa	Slough sand-shell										o		NA			
Lampsilis higginsii	Higgin's eye				n						o					
Lampsilis ligamentina	Mucket	o	o	o	n	o		a			o		a	N		
Lampsilis luteola	Fat mucket	o	o	o	n	o				o	o		o			
Lampsilis recta	Black sand-shell															
Lampsilis ventricosa	Pocketbook														a	
Obovaria ellipsis	Missouri niggerhead					o					o					
Plagiola securis	Butterfly	o	o			NA					o				n	
Quadrula ebenus	Niggerhead	o	o			o	a			o	o				o	
Quadrula heros	Washboard	A	A	NA	N	N	N			Af					A	
Quadrula metanevra	Monkey-face														N	
Quadrula plicata	Blue-point	a	a					N	N		o		A			A
Quadrula pustulata	Warty-back															
Quadrula pustulosa	do	NA	A								An		o			
Quadrula solida																
Quadrula undata	Pig-toe															

^a A great many data regarding the hosts of noncommercial species of mussels had been accumulated, but unfortunately most of the records applying to such species were destroyed with the burning of the laboratory in December, 1917.

Explanation of Table 3.

- N Found on the gills in natural infection.
- Nf Found on the fins in natural infection.
- n Record of natural infection but of doubtful significance.
- A Carried through on gills after artificial infection.
- Af Carried through on fins after artificial infection.
- a Results of artificial infection unsatisfactory or not uniform.
- o Tested and found unsuitable.
- T Tested; development occurred; host perhaps suitable, but experiment not carried to conclusion.

APPENDIX B. MAP OF IOWA COUNTIES SHOWING MAJOR RIVERS

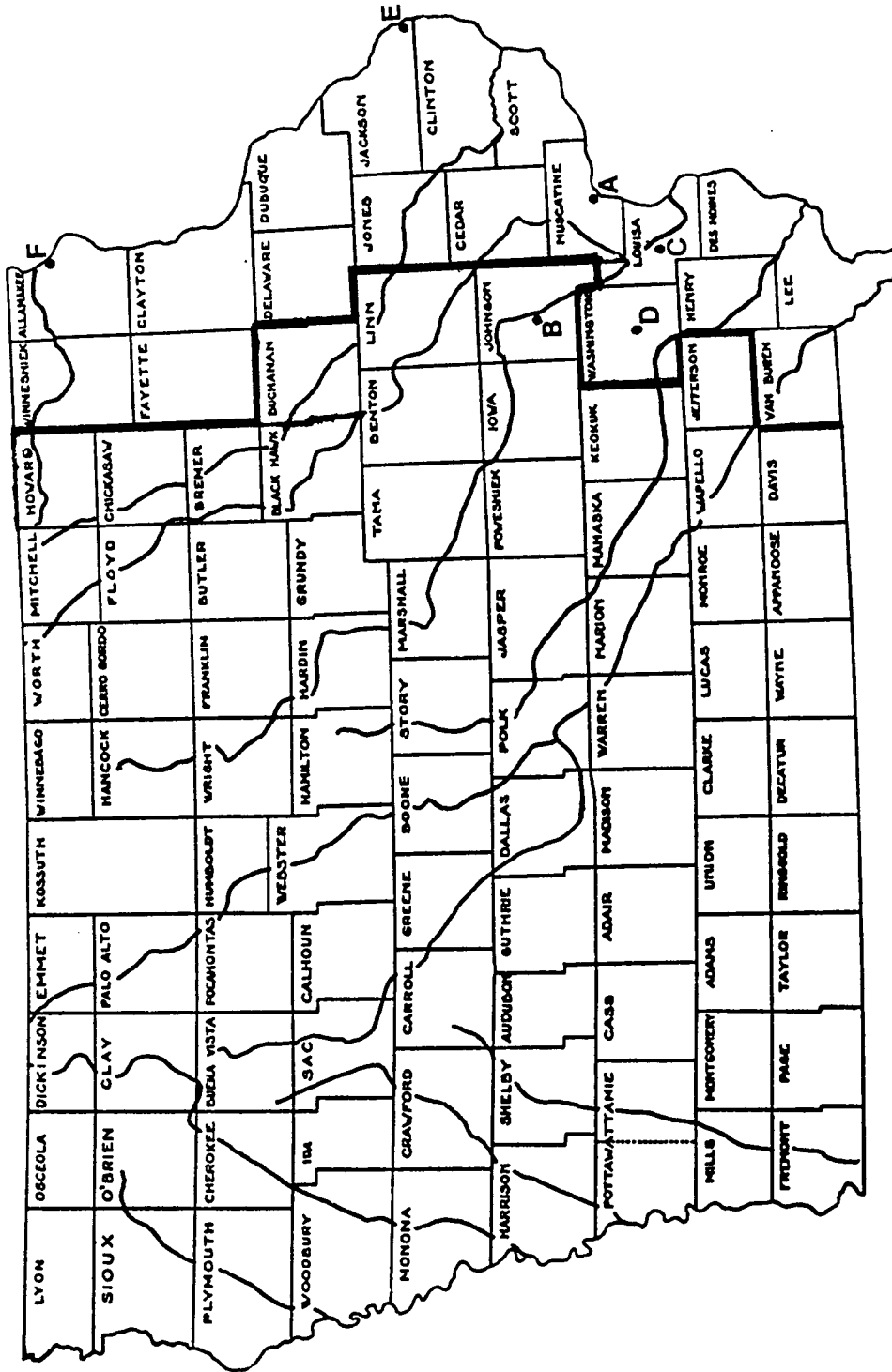


Figure 1. Map of Iowa counties showing the major rivers. The heavier black line indicates the 18 counties contacted. Cities are designated by letter: A-Muscatine, B-Iowa City, C-Columbus Junction, D-Washington, E-Sabula, and F-Lansing.

APPENDIX C. LOCAL, COUNTY, AND STATE HISTORICAL
SOCIETIES, AND BUSINESSES CONTACTED

APPENDIX C. LOCAL, COUNTY, AND STATE HISTORICAL
SOCIETIES, AND BUSINESSES CONTACTED

Allamakee County

Allamakee County Historical Society
New Albin, Iowa

Cedar County

Cedar County Historical Society
Durant, Iowa

Lowden Historical Society
Lowden, Iowa

Clayton County

Garnavillo Historical Society
Garnavillo, Iowa

Monona Historical Society
Monona, Iowa

McGregor Historical Society
McGregor, Iowa

Clinton County

Clinton County Historical Society
Clinton, Iowa

Delaware County

Delaware County Historical Society
Hopkinton, Iowa

Des Moines County

Des Moines County Historical Society
Burlington, Iowa

Dubuque County

Dubuque County Historical Society
Dubuque, Iowa

Fayette County

Clermont Historical Society
Clermont, Iowa

Oelwein Area Historical Society
Oelwein, Iowa

Henry County

Henry County Historical Society
Mount Pleasant, Iowa

Iowa Wesleyan College Museum
Iowa Wesleyan College
Mount Pleasant, Iowa

Jackson County

Jackson County Historical Society
Maquoketa, Iowa

Jones County

Jones County Historical Society
Monticello, Iowa

Lee County

Lee County Historical Society
Keokuk, Iowa

Louisa County

Louisa County Historical Society
Grandview, Iowa

Muscatine County

Muscatine Area Heritage Association, Inc.
Muscatine, Iowa

Scott County

Putnam Museum
Davenport, Iowa

Scott County Historical Society
Davenport, Iowa

Washington County

Washington County Historical Society
Washington, Iowa

Van Buren County

Van Buren County Historical Society
Keosauqua, Iowa

Pioneer Historical Society
Farmington, Iowa

Winneshiek County

Winneshiek County Historical Society
Decorah, Iowa

State Institutions

Jack Musgrove, Director
Iowa State Historical Department
Division of Historical Museum and Archives
State Historical Building
1112 East Grand Avenue
Des Moines, Iowa

Peter Harstad, Director
Iowa State Historical Department
Division of the State Historical Society
Centennial Building
402 Iowa Avenue
Iowa City, Iowa

Businesses

Lansing Company, Inc.
1995 Main
Lansing, Iowa

Iowa Pearl Button Company, Inc.
1009 East Sixth
Muscatine, Iowa

J & K Button Company, Inc.
319 West Mississippi Drive
Muscatine, Iowa

McKee Button Company
1000 Hershey
Muscatine, Iowa

Muscatine Pearl Works
1103 Musser
Muscatine, Iowa

Weber & Sons Button Company, Inc.
1009 East Sixth
Muscatine, Iowa

APPENDIX D. COUNTY INFORMATION LETTER

IOWA STATE
UNIVERSITY

College of Home Economics
Department of Textiles and Clothing
140 LeBaron Hall
Ames, Iowa 50011

Telephone 515-294-2628
515-294-2695

The Textiles and Clothing Department at Iowa State University is continually seeking information about the history of clothing and clothing-related industries in Iowa. As a graduate student in this department I am investigating the history of a clothing-related industry, namely, the fresh-water pearl button industry in Iowa between 1890 and 1910.

My previous investigation shows that the industry developed and flourished in the counties along the Mississippi River. Some specific questions you can help me answer are these:

1. Was there a fresh-water pearl button industry in your county during the years 1890 to 1910?
2. Do records of such companies, or information about them, survive?
3. Would the information be available for study?
4. Are equipment or buildings of the companies still in existence?

If such records are available may I set a time between the last week in September and the end of November to come to your facility to study them? I will confirm any appointment we make.

Any information regarding these questions would be of great use to me in my research. Thank you for taking the time to read this letter and answer it. I look forward to hearing from you soon.

Sincerely,

Rebecca Hatfield
Graduate Student

Jane Farrell, Ph.D.
Associate Professor
158 LeBaron (515) 294-4233

APPENDIX E. STATE INFORMATION LETTER

IOWA STATE
UNIVERSITY

College of Home Economics
Department of Textiles and Clothing
140 LeBaron Hall
Ames, Iowa 50011

Telephone 515-294-2628
515-294-2695

The Textiles and Clothing Department of Iowa State is constantly seeking information about the history of clothing and clothing-related industries in Iowa. As a graduate student of this department I am investigating the history of a clothing-related industry, the fresh-water pearl button industry in Iowa between 1890 and 1910.

My previous investigation shows that the industry developed and flourished in the counties along the Mississippi River. Some specific questions you can help me answer are these:

1. Do you have newspaper runs for 1890 to 1910 available from the following towns and their surrounding areas: Muscatine, Lansing, Washington, Sabula, and Columbus Junction? I am especially interested in the Muscatine and Lansing areas.
2. Do any collections of business papers pertaining to the button industry survive in your archives?
3. Would the information be available for study?

If such newspapers and records are available may I set a time between the last week in September and the end of November to come to your facility to study them? I will confirm any appointments we make.

Any information regarding these questions would be of great use to me in my research. Thank you for taking the time to read this letter and answer it. I look forward to hearing from you soon.

Sincerely,

Rebecca Hatfield
Graduate Student

Jane Farrell, Ph.D.
Associate Professor
158 LeBaron Hall (515) 294-4233

APPENDIX F. BUSINESS INFORMATION LETTER

College of Home Economics
Department of Textiles and Clothing
140 LeBaron Hall
Ames, Iowa 50011

IOWA STATE
UNIVERSITY

Telephone 515-294-2628
515-294-2695

The Textiles and Clothing Department at Iowa State University is continually seeking information about the history of clothing and clothing-related industries in Iowa. As a graduate student in this department I am investigating the history of a clothing-related industry, namely, the fresh-water pearl button industry in Iowa between 1890 and 1910.

My previous investigation shows that the industry developed and centered along the Mississippi River in Iowa. Some specific questions you can help me answer are these:

1. Was your company, or its predecessor, active during the years 1890 to 1910 in the manufacture of fresh-water pearl buttons?
2. Do records from the company at that time survive in your archives?
3. Would the information be available for study?

If such records are available may I set a time between the last week in September and the end of November to study them? I will confirm any appointment we make.

Any information regarding these questions would be of great use to me in my research. Thank you for taking the time to read this letter and answer it. I look forward to hearing from you soon.

Sincerely,

Rebecca Hatfield
Graduate Student

Jane Farrell
Associate Professor
158 LeBaron Hall (515) 294-4233

APPENDIX G. BUSINESSES MENTIONED IN THIS THESIS

APPENDIX G. BUSINESSES MENTIONED IN
THIS THESIS

Button Machinery Manufacturer

Barry Manufacturing Company
Muscatine, Iowa

Button Manufacturers

Automatic Button Company
Muscatine, Iowa

Bishop and Hagerman Company
Muscatine, Iowa

Hawkeye Pearl Button Company
Muscatine, Iowa

Lansing Company
Lansing, Iowa

McKee Button Company
(formerly McKee and Bliven Button Company)
Muscatine, Iowa

Muscatine Pearl Company
Muscatine, Iowa

Pioneer Pearl Novelty Company
Muscatine, Iowa

Saw Mills

Hershey Lumber Company
Muscatine, Iowa

Huttig Brothers Manufacturing
Muscatine, Iowa

Muscatine Lumber and Box Company
Muscatine, Iowa

Roach and Musser Company
Muscatine, Iowa

South Muscatine Lumber Company
Muscatine, Iowa

Of these 14 companies only Lansing Company and McKee Button Company are still in operation.