Pine Mill News

Friends of the Pine Creek Grist Mill Summer 2016 Issue

President's Column

By Tom Hanifan

Spring is a busy time at the old mill. The restoration crew begins the year by removing the worst of the dead bugs and animals. They lubricate the machinery so we can demonstrate it. They are working hard to finish rebuilding the log cabin.

May is crunch time for interpretation. We open the mill to the public. School classes come for a day of learning about the mill and about the daily lives of the early settles. Park staff has asked us to take on a larger role with tours in the summer. Requests will come first to Friends of the Mill rather than to the park staff. So far two groups are coming this summer. Tours that are beyond our skills will be referred back to the park staff.

I normally avoid thanking people in the newsletter. So many people deserve thanks that it is easy to miss someone. But I thank Heather Shoppa for taking over leadership of the interpretation program. We have had to replace many of our interpreters. It is a big job to find and hire new interpreters and to train them.

I also thank Dave Metz and the restoration crew for making great progress rebuilding the log cabin. The end is near. Just this week Ryan Schneider donated and laid 7560 pounds of gravel for a path from the mill parking lot to the cabin. This area was often wet. School classes should appreciate dry feet. We have recently received donations to furnish the cabin. The local Questers club has made many of them.

Kohl's Department store from Moline was good to us again. A crew spent the morning helping us deep clean by removing cob webs, sweeping the floor and cleaning the windows. We would not be ready for visitors without them.

We can always use more volunteers. There are many things volunteers can do. Such as helping with school groups. Helping with our Web site (we contract the technical work). Restoring the mill. No matter what your skill set is, we have a job for you. Besides supporting Pine Mill, you are going to have fun! You can put in just as much or as little time as you want. Some work can be done at home. If you are interested in volunteering, contact one of our officers.

We are looking for someone to demonstrate cooking in the log cabin. School classes gain much from seeing how our ancestors cooked. Contact Heather at 563-571-5213.

Each year it is harder to find ear corn for demonstrations. Do you know of a source? Call Tom at 563-263-4818.

Have you ever wanted to be a bird? Check out the drone video on our Facebook page. The music adds a lot to the experience. If you are on Facebook go to our site at Pine Creek Grist Mill. If you do not use Facebook you can find our page by doing an Internet search for the mill.

The newsletter has entered the digital age. We sent the last issue to many people by email. Many liked receiving it that way. Only a few preferred the traditional print format. Some were not able to open the file. So we learned how to make the digital version small enough to be opened by most computers.

Donors have been exceptionally kind this year. Donors since the last newsletter are listed later in this newsletter. We were surprised to receive a sizeable donation from an anonymous source. Muscatine Charities golf outing made a nice donation. The Community Foundation made a significant donation.

There is a new deck on the front of the mill. The old one had become unsafe, especially for high heeled shoes at weddings. Construction was partly done by students from Durant High School.

Come to a meeting. You will learn about what we do, meet other volunteers, and meet the great park staff. We normally meet at 9 AM on the 2nd Saturday of the month. We meet at the Muscatine County Extension Office on Isett Ave. Come to the back door. The June meeting will be at the mill on May 11th.

Restoration & Cabin Report

By David Metz

For a variety of reasons this spring issue of the newsletter has been delayed and for that I apologize. As I write this we have had two work days at the mill getting it ready for the 2016 season. We have started work on the log cabin and we have make excellent progress on it already..

Our starting work at the mill had been delayed by the spring's bad weather. Working on cold rainy days is no fun so we delayed starting till the weather improved. Eventually the weather did improve except on the days we worked. Both days it was cold and raining. Opening up the mill is same every year. Some of us work on lubricating all of the machinery while others do a preliminary clean up. The worst of the dead bugs and what I call raccoon reminders are swept up and everything put in order the Kohls store volunteers that came a week later. Once we had the mill ready we started all of the machinery and tested it out. I am happy to report that the mill started right up with no problems and all of its machinery ran perfectly.

Dick Stoltenburg is removing one of the mill windows for cleaning.

The volunteers from Kohls Department stores came on April 26 to clean the mill. As always they did a great job, all of the windows have been washed and the floors and equipment all cleaned up. Heather Shopa and Tom Hanifan will get the mill store ready and the soda and water supply stocked before the mill opens.

At the cabin Gary Christenson got work started for the season by laying the stone hearth in front of the fire place. We were able to find suitable matching thin stone at Keller and Keller Landscaping here in Muscatine. Their staff was very helpful digging through the pile of heavy stone slabs to find ones that fit our needs. Gary and Dave Cooney put in a long day working on the hearth; now that it is completed we are ready to have the floor installed. Next Gary and Dave started the installation of the cabin's loft. By the time you read this the loft will be completed.

We have had one problem at the cabin. Just after we started work on it this year someone broke in to the cabin by kicking in the south door. To prevent this in the future we have installed a wood cross bar to secure the door from the inside. The north door will continue to have a padlock and hasp on it for the time being. It was pointed out to me that the window shutters are now the weak spot in the cabin's security. We are looking into ways to better secure the shutters to deter vandals from breaking in through the windows.

The Kohl's volunteers

We are beginning to get some nice items donated to the Friends for furnishing the cabin. Ryan Schneider has two appropriate wood chairs for the cabin and we are restoring the old table that sat in the cabin to go with the chairs. We have had a drainage problem on the north side of the cabin this spring. Ryan solved it by bringing in 7,500 pounds of gravel and spreading it to make a raised walkway to the cabin. Thanks Ryan for getting us out of the mud!

Our old time settler would have made sauerkraut to tide him over the winter (it prevented scurvy). To make sauerkraut you need a kraut cutter to shred the cabbage and a stoneware crock to store it in. Questers (a local antique

Gary Christensen and Dave Cooney are laying the stone hearth in front of the cabin fire place.

Gary has just completed laying out the stone for the hearth.

collecting club) members Mr. & Mrs. Dennis Latimer donated antique kraut cutter for the cabin. To complete things Mr. Mark Latta and his wife donated the stoneware crock. Now we need is some old dishes for our settler to eat off of.

Our new gravel path to the cabin built by Ryan Schneider.

One item we will have to build is a rope bed, after all our old pioneer settler will need to have a place to sleep. Once the bed is done it will need a straw tick mattress. Anyone want to volunteer to sew one for us?

There is more to do at the cabin site than just work on the cabin itself. We have discussed with local arborist Dave Cooney the possibility of planting two fruit frees on the cabin grounds. Something that is forgotten today is that during the latter 1800's Iowa was known for its nurseries and apple orchards. Every homesteader planted an orchard to provide the family with fruit for the winter. Vineyards were planted to provide jelly and wine for the settler's breakfast and comfort. Maybe a few vines would be in order at the cabin.

There are many other things to be done. Dick Stoltenburg has donated a grain bin on his farm to us that has a lot of clean salvageable lumber in it that has the aged appearance that we need. One Tuesday we need to go to his farm and salvage that lumber. Our storage container needs to be cleaned out and organized. There is a lot of stuff in it that we really have no need for anymore. We need to decide what to do with some of it, either use it or discard it. There is a lot of rough cotton wood lumber that is worthless that needs to be sorted out and discarded. Along with the cotton wood there is a lot of good hardwood that can be used for future projects if we can locate it when we need it.

Clarence Klauer is starting work on the restoration of the cabin's table.

What else is coming up this year? There are always mechanical improvements we can make to the mill to make it more dependable and safer. I want to experiment with a possible way to keep the millstone drive belt from coming off of its pulleys when it is over loaded. Something I might add that is very easy to accidently do. I am always on the look out for new ideas for the mill's interpretive displays. To keep the mill interesting to returning visitors we need to refresh our exhibits occasionally. If you have any ideas for new exhibits I would like to hear them.

Work has started on the cabin's loft. Gary Christensen and Dave Cooney are laying the boards out to get the best fit.

Flour

By David Metz

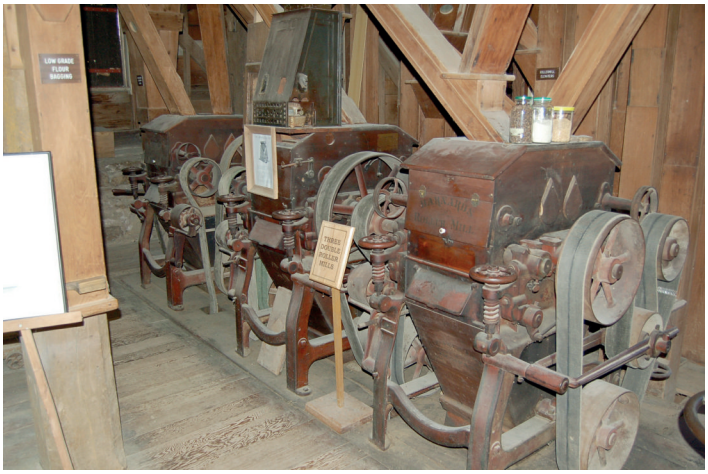
Over the years we have had articles in our newsletter about Pine Mills history, its machinery and the other mills in Muscatine County. What we have not discussed until now is Pine Mills primary product: flour. We who are not professional bakers think that flour today is a simple thing. You walk through the grocery store and see that when it comes to wheat flour you have the choice of "All Purpose" flour or a few examples of what is called "Bread Flour." Pretty simple right? Flour is not simple at all, a little research shows that flour can be a very complex subject.

First let's look at what Pine Mills made during its life time. The History of Muscatine County 1879 says that Nye made a *peculiarly poor grade of flour used to feed southern slaves*. Nye used what is called American Flat Milling at Pine Mills in those days. After a simple cleaning by the cottle screen Nye's wheat made a single pass through the millstones. It then passed to the machine we call the big bolter. It sifted the grist into two grades of flower and bran.

Depending on how Nye managed his millstones and what cloths he had on the bolter reel, it is safe to say that he made two grades of flour. To our modern eyes used to perfectly white flour Nye's best flour would be looked yellowish and had specks of bran in it. His lower grade would be rough stuff with a considerable amount of bran and some bits of the wheat berry that were called middlings by the millers of Nye's day. At the end of the bolter most of the bran would have tail over out of the reel along with chunks of partly ground wheat. This material was either discarded or sold as feed.

The truth is that during the time when the first settlers arrived in what would become Muscatine County anything that resembling flour was considered to be a God send and not looked down upon. Else where in the country where flour milling had become more established flour was sold according to established grades. Millers along the eastern seaboard got top dollar for their exports of what they called *super fine long lasting flour*. While the wheat only made one pass through their millstones like it did at Nye's mill, the grist was processed through multiple stages of bolting. This gave the mill several grades of flour for sale besides the much desired super fine.

It would be good to pause here and review what the grades were called and their description. The terms used to describe the various grades of flour a mill could produce are numerous and somewhat confusing. Naturally a miller tried to produce as much of the best flour possible at his mill and as little of the lower grades as possible. Milling technical literature tells us that this led to a great deal of experimentation with the dress of the millstones, each mills flow chart and fiddling with the adjustment of its equipment. Just to add to our confusion not every mill made all of these grades or used these exact terms for what they made.



Pine Mills Modern Double Roller Mills
Installed by Huchendorf in 1890, the new roller mill plant gave the mill the ability to produce high quality pure white patent grade flour.

Patent: The finest quality of flour obtained by the roller process.
Clear: Good flour is lesser quality than Patent.
Low Grade: Low Quality flour, some bran in the form of dark specs in it.
Red Dog: Poor quality dark flour mostly used for livestock feed.
Sharps: Thirds or the quality between fine pollard and flour.
Ships: Usually low quality flour used for ships biscuits (hardtack) to feed sailors.
Shorts: Refuse from the Bran Duster.
Pollard: Small bran, fine and coarse.
Bran: The outer cellulose covering of the wheat berry.

This brings us back to Pine Mills. The evidence is that it produced its best flour after Huchendorf installed his roller mill plant in 1890. How much flour could Pine Mill produce a day and just what grades did it make? Pine Mill had bagging chutes marked only for: Flour, Low Grade, Shorts and Bran. Milling machinery catalogs of its era say that a

three stand double roller mill equipped like Pine Mill could produce 25+ barrels of flour per 24 hours. A barrel of flour is 196 pounds. That means in an eight hour day the mill could produce a theoretical 8-9 barrels or 1,568 to 1,764 pounds of flour. To do so would require an input of about 2,300 pounds of raw wheat or 38 bushels of wheat at 60 pounds per bushel. A typical small mill had yields as follows:

Patent or Straights: 67%
Low Grade: 3.5%
Shorts or Ships: 15.5%
Bran: 14%

What is Flour?

Roughly flour made from winter wheat will be 10.3% water, 11.5% protein (gluten), 74.3% carbohydrate (starch) and 1.8% ash. These numbers vary slightly for different wheat varieties. Note that gluten is not just one protein, there are two different forms and the ratio of one to the other varies with the wheat variety as does the total amount. How many different flours are available for commercial bakers? Far more than what you will ever see in a grocery store! General Mills™ lists on there web site dozens of flours each with characteristics designed for specific baked goods products.

For example they list their Trumps™ flour as unbleached, unbromated high gluten flour for the baking of thin crust pizza, bagels and rolls. Another example is Harvest King™ made from high gluten winter wheat. It is unbleached and unbromated and designed to be slow fermenting allowing the large holes to develop in artisan style breads. Dozens of other commercial flours are available for specific products like pasta and cake baking as well.

Gluten

What is gluten? It is the protein that gives bread dough its elastic qualities that allows the carbon dioxide gas formed by the yeast fermentation to be trapped. It is the bubbles formed in the expanding dough that cause it to rise. Gluten is a mixture of proteins, the primary ones being gliadin and glutenin, the exact mix varying with different wheat varieties. Grains without gluten like buckwheat and barley cannot be made into bread; this is why for example buckwheat is only made into pancakes and noodles.

A few weeks ago at a convenience store I saw a bottle of water labeled “Gluten Free!” Perhaps this is the place to discuss just what gluten is, why you don’t need to fear it unless you have celiac disease and why the people that put the words *gluten free* on a water bottle think we are all idiots. How did the gluten free craze come about? Celiac disease is a serious autoimmune disorder that occurs in people that have a genetic based immune response to gluten. According to the Celiac Disease Foundation, this response “damages the villi, small fingerlike projections that line the small intestine, that promote nutrient absorption. When the villi get damaged, nutrients cannot be absorbed properly into the body.” It is estimated that 1% of the population has some degree of Celiac disease and therefore must avoid gluten. The other 99% can safely consume it and derive its nutritive value.

Wheat Threshing, Heritage Day 2000
Steam powered threshing machines took a great deal of labor out of separating the wheat from the chaff.

The amount of gluten in the dough also determines the texture of the finished bread. Low gluten content flours are used for making items like cakes and pasta. No one would want a birthday cake that has to be pulled apart when eating it! Those chewy heavy textured artisan breads like Italian bread are made with high gluten flours. If you look at the shelves at the baking department of your grocery store you can find pure gluten. Just a tablespoon added to your favorite bread recipe can dramatically change the resulting bread. Specialty high gluten flours are the secret behind those fancy expensive artisanal breads sold today.

Added Ingredients

When you buy a bag of flour you will notice that the contents are not just wheat flour. It may be enriched, bromated or contain what are called dough improvers or conditioners.

Potassium Bromate: In the past potassium bromate was widely used as a dough improver. Its use reduced the time needed for the gluten to fully develop during the mixing of the dough. During baking the bromate gave a larger loaf for the same amount of flour. If the correct amount was used the bromate was completely broken down during the baking process leaving no residual in the bread. Testing in the early 1980’s showed that in excessive amounts bromate could cause cancer in rats. Since then the FDA has discouraged its use in baked goods.

Malted Barley: Yes this is exactly the same malt used to make beer! There is a close relationship between baking and beer brewing; throughout history beer was called liquid bread. Barley grain contains no gluten thus bread made from

it will not rise making it useless for baking. However if the barley grain is allowed to sprout and then gently dried to kill the sprout, the grain will be rich in what are called diastatic enzymes. These enzymes have the ability to convert the stored starch in the grain into sugar. In baking a small amount of malted barley is added to the flour so these enzymes can convert some of the wheat starch into sugar to feed the yeast that makes the bread rise. Malted barley also adds a nutty flavor to the bread.

Enrichment

A wheat berry contains two components, the germ and the endosperm. The germ is the portion that develops into a new plant; the endosperm the starch and protein that provides the food for the new plant to sprout. The endosperm is also the portion that makes the white flour. The problem is that while the germ contains most of the B vitamin nutriments it also is about 10% oil. If allowed to be ground into the flour the oil in the germ would soon turn rancid shortening the flour's shelf life and eventually ruining it.

During the Second World War the United States Army discovered that many of its inductees (and the general population of the United States and Briton) suffered from B vitamin deficiencies. To improve the general level of heath the Army mandated that all of the flour it purchased had to have the iron and B vitamins lost by removing the germ added back into the flour to enrich it. Since it is almost impossible for a person to avoid eating enriched flour in their diet enrichment became established as a way to improve public health.

A few years ago medical researchers discovered that spinal bifida, a serious birth defect in new borns could be prevented in up to 70% of cases by the addition of folic acid (vitamin B9) to a pregnant woman's diet. In 1998 the FDA mandated that all flour produced in the United States would be enriched with folic acid to prevent spinal bifida. The reasoning being that to be effective folic acid deficiencies must be corrected before a woman even knows she is pregnant. Since all flour contains folic acid even if someone's diet consisted entirely of junk food they would still get all of the folic acid they needed to prevent spinal bifida.

Bleaching

More and more today you will see bags of flour labeled as "unbleached." Just what is bleached flour and why is it done? Let's go back to those pioneer days of Ben Nye again. After the wheat had been cut and dried in stocks in the field our pioneer gathered it in for threshing, the laborious process of freeing the wheat berries from the heads. To do this he would prepare an area of hard packed earth in his yard and spread the wheat stocks on it. He could then either lead is horses and cattle over it hoping their hooves would beat the berries out of the heads, or in a more sanitary operation he could repeatedly strike the wheat with wood flails to free the berries.

Once the threshing was complete he still had to separate the wheat from the chaff, the broken bits of straw that remained mixed with the wheat berries. This he did on a windy day by flinging the wheat into the air. If the wind cooperated it blew the chaff away leaving the heavier wheat berries to fall back to the threshing floor to be collected later.

By now you have figured out the flaw in this process, inevitably our pioneer incorporated a certain amount of good Iowa top soil into is raw wheat. The primitive mills of this period could not remove all of this dirt and after milling the resulting flour was anything but white. One Iowa pioneer boy said of his childhood that he did not know bread could be white until age eighteen. His mother he said complained to his father that the family was "eating our farm one loaf of bread at a time."

Homemakers remembering those days or the stories their mothers told it came that they attributed whiteness of the flour they bought to purity and quality. The whiter the flour the better it had to be for the very wealthy were said to eat bread from pure white flour not the dark speckled flour that came from the early mills.

Recognizing this desire for white flour millers worked hard to perfect their cleaning and bolting machines. The resulting flours still had a slight yellow color no matter what they did for this is the natural color of freshly milled flour. Millers had long known that if you stored flour for a period of time it would naturally whiten as the oils it contained oxidized. As it aged the glutens also gained strength resulting in a better load of bread. This led millers to seek a fast way to whiten their flour without resorting to the costly method of having to store huge quantities at their mill while it aged.

In the late 1800's various inventors came up with chemical methods of instantly bleaching the color from fresh flour. All of the processes involved carefully and thoroughly mixing small tiny amounts of a powerful oxidizing agent with the flour as it passed through the mill's machinery. Some of the chemicals used were later found to be excessively toxic if any traces remained in the flour. The government banned the use of these toxic chemicals long ago. Today some flours are still bleached, for example cake flour is normally bleached with chlorine. Chlorine weakens the gluten and modifies the starch making the flour ideal for cookies and light fluffy cakes. Note that the chlorine used is the same gas that is used to kill bacteria in your drinking water, used properly there is no chlorine left in the finished baked goods.

Another safe bleaching agent used today is calcium peroxide (CaO_2). It is a dry stable solid that when exposed to an acid breaks down to release hydrogen peroxide a powerful bleaching and disinfecting agent. If the peroxide is

properly used none will remain in the baked goods after baking.

Today bleaching has fallen into disfavor with consumers who fear chemical additives. Millers have found that old fashioned aging works just as well as the chemical methods. Having forgotten the dirty flours of early 1800's consumers are no longer bothered by the slight yellow cast of fresh flour.

Whole Wheat Flour

Properly whole wheat flour is just that, flour made from milling the entire wheat berry including the germ that has not been bolted. Everything in the berry including all of the bran is included in the flour. According to World-Grain.com whole wheat flour production has increased from 2% of all wheat flour since the year 2000 to 6% in 2014. This is due to whole wheat's health benefits due to its fiber content from the bran it contains.

Let's go back to our old Iowa pioneer again. He has just returned from a local mill that lacks any way to bolt its flour. This was not such an unusual situation in the early 1800's, bakers and housewives were often expected to bolt their own flour. Let's say our pioneer is fresh from the refined east and is not used to whole wheat flour. The first thing discovered is that whole wheat flour does not rise very well because the fine bran particles inhibit the development of the gluten preventing the dough from rising as much as expected.

The next problem is that because of the oils from the germ whole wheat flour has a much shorter shelf life than white flour before it becomes rancid. Today millers rate the shelf life of whole wheat flours as from 3 to 9 months while white flour shelf life runs 9 to 15 months. Because travel was so difficult our pioneer farming ancestors would buy their winters supply of flour in the fall and hope it would last until spring. Thus they had a preference for white flour since it lasted longer not leaving them without bread during the winter.

Today there is no industry standard for milling whole wheat flour. Every mill has its own method resulting in great variability between different brands of whole wheat. Some flour sold as whole wheat is simply lower grade while flour mixed with some bran. Regardless of how it is made for the best bread it is recommended that home bakers use fresh flour and store their flour in the freezer.

Pine Mills Has a New Loading Dock

By Tom Hanifan

The construction was supervised by park manager Gwen Prentice (left) and Durant High School shop instructor Mr. Tim Rouse (at the right)

Over the past few years the oak boards that made up the loading dock in the front of the mill had begun to deteriorate to the point where the dock was no longer safe. The dock's condition got to the point where it was not practical to continue to replace the bad boards piecemeal. This spring the DNR replaced the entire dock and its supports with new pressure treated wood. The color of the new dock lumber matches the mill siding making for an attractive safe installation. The Friends want to thank the DNA staff and the Durant High School volunteers for all of their hard work.

Durant High School Students at Work

Most of the work on the new deck was done by student volunteers from Durant High School.

The Early Industries of Muscatine

By David Metz

If you were able to see the town of Muscatine before 1890 you would be surprised how dark the town was at night. Before the advent of gas lighting working hours were set by the local sunrise and sunset. A few dim gas lights lit the streets and in the homes and businesses of Muscatine you would see only gas lights, kerosene lamps and maybe a few candles.

This changed when In 1890 Muscatine became an early adopter of electric light. Citizens Electric Light and Power Company established its first electric generating plant located on Front Street just off of Pine Street in the building that now holds J & K Button Company. Because it had direct current dynamos it could only distribute the power it generated within a half mile of the dynamos. It could power only 1,600 lamps! In 1892 a fire at the nearby Stein Lumber Co. damaged the plant and its owners moved it to a location near Front and Oak Streets.

The Citizen's Light & Power Generating Station.
After Muscatine's Municipal was formed it generated power for the Huttig Sash & Door Factory

Many years ago an elderly man told me that an even earlier generating station had been funded by the town's saloon owners. Wires were strung down the alleys of the business district to light the saloons along Second Street. Just before closing time the fire was allowed to die in the generating station's boiler. As the steam pressure fell the engine powering the generator slowed and the lights would slowly dim out telling the those at the saloons it was time to go home.

In those days before natural gas was piped from distant Texas each town made its own gas by distilling coal in retorts. Muscatine had its gas works on the corner of Oak Street and East 3rd. Gas works of the time were most noted for the horrible stench they made and today for the environmental pollution that they left behind in the soil. Muscatine's plant had its coal delivered by horse and wagon. At the rear of the gas works stood a tall steel tank that floated in water filled pit. This was the gasometer that stored the gas the plant made. Citizen's power used the waste heat from the gas work's retorts to generate electricity at the new plant. The generating station also provided DC power for the town's trolley cars and they sold gas stoves at cost to promote the use of town gas. Citizen's shut down in the 1920's when Muscatine formed its own municipal power company.

Through out the historical period from the civil war to the Second World War Muscatine had two predominate industries, lumber (later millwork) and button making. Both soon outgrew the local milling industry. Muscatine's first local saw mills were small affairs that supplied the needs of the early settlers for lumber to build homes and farm buildings. These early mills grew into the huge mills owned by the Musser and Hersey families, names that still resound in Muscatine.

On the site of today's McKee Button Company sat Hersey's North lumber mill one of two that Mr. Hersey operated. At the main mill two inclined plane conveyors dragged the raw logs from the rafts that had brought them down river into the mill. A system of elevated tramways carried the lumber from the mill to huge drying stacks setting throughout the property. In addition to the mill Hersey had a large planning mill that converted the raw lumber into finished dimension lumber and a steam heated lumber drying house.

Hersey's North Saw Mill
The two conveyor ramps are pulling logs from rafts in the river.

Hersey's North Mill was up to date for the 1880's. It had electric lighting and an extensive fire protection system of pumps, hydrants and fire fighting equipment. One thing we would frown on today is a great deal of the waste sawdust that was not burned in the plant's boilers got disposed of by dumping it in the river.

All that remains of Hersey's huge mill today is an apartment house that once served as his office building. It is at the corner of Hersey Street and Elm Street, to the rear on Elm is a another brick building that served as Hersey's stable.

As you travel south through Muscatine and cross over today's railroad tracks from Highway 61 Business to Oregon Street on your left is Musser Park. In the late 1880's there you would have seen the Musser Saw Mill. It covered several square city blocks and had 500 H.P. of steam engines to power the main mill where the logs were cut. The mill employed 250 men, had twelve wood working machines and a shingle mill. It could produce 11,000,000 board feet of lumber a year. Further south sat the planning mill where the rough lumber was planed into finished dimension lumber for construction. Twelve men worked here running the five planning machines and saws. Lighting came from city gas and the plant had its own pump house that delivered river water to fire hydrants about the facility.

Surrounding the Musser plant were several square blocks stacked with huge piles of drying lumber. On some streets the lumber piles were interspersed with the houses. Along the river you would have found huge piles of saw dust from the mills, indeed any depressions in the city were filled with saw dust to dispose of it.

Traveling further south came the huge Hersey South Mill complex. Like the Musser mill it had a conveyor ramp that pulled the logs from the river into the main mill building for sawing. The plant had 200 H.P. of steam engines and a system of conveyors to move saw dust about the grounds. It also had a unique system of overhead tramways that moved the lumber to the drying stacks in the mill yard and back to the planning mill south of the main mill. It also had its own pump house and fire department to guard against the constant danger of fire at the mills.

As the supply of trees from the north diminished, the businessmen who owned the sawmills soon saw that the real money came from finished millwork (doors and windows), not raw lumber. The 1880's already saw Muscatine have several small sash and door works that made windows and doors for homes. These small businesses gave way to large factories with the Huttig and Roach & Musser Companies being the predominant ones. Both my father and my uncle at one time worked for these firms.

In the 1890's a new industry arose in Muscatine that placed even the large millwork companies in its shadow. In 1884 J.F. Boepple an immigrant from Germany saw the potential using the shells of the clams found in the Mississippi River for making buttons and began experiments to this end. His work led to the creation of Muscatine's soon to be huge pearl button industry. Look at any promotional material for Muscatine produced between the world wars and you will see that it proclaims Muscatine to be the "Pearl Button Capitol of the World." In the days before modern plastics, buttons were made from animal horn or pearl. That is, they were ground out of "blanks" (little round flat plugs) cut with a hollow bit from the shell of the fresh water clam. Being made from the humble clam they were cheap to produce and if there was one thing the Mississippi River had in those days, it was an abundance of clams.

Clamming on the Mississippi
Catching and cleaning clams were often family operations. It took only a flat boat and tub to boil the clams in to go into business.

Within a few years "clammers" flat boats dotted the river and dozens of button works sprang up in Muscatine. Many of the old gristmill buildings in Muscatine soon held what the locals called "pearl works." Some of the factories merely cut the blanks that the buttons were made from; others made complete finished buttons starting with the raw shells. My grandfather worked as an itinerant "button cutter" as the men who operated the lathes that cut the blanks from the shells were called. I call him "itinerant" in sense that he told me that since cutters were considered skilled workmen, he could always find work at another button company whenever he got tired of the place he currently worked at. He could literally pick up his tools (a box of shell holder pliers), collect his pay, and simply walk to the next button works and find a job in minutes.

The button companies quickly proliferated throughout the town. Most were small cutting operations that made the blanks that the larger companies made into finished buttons. Often these little cutting operations could be found in backyard sheds and even the basements of peoples homes. Home work became an important part of the button industry; house wives earned extra money by sewing buttons onto display cards. In their teenage years my father and his two brothers earned a little money by carrying cartons of buttons from the factories to the homes where the buttons were carded.

The Button Blank Cutting Department

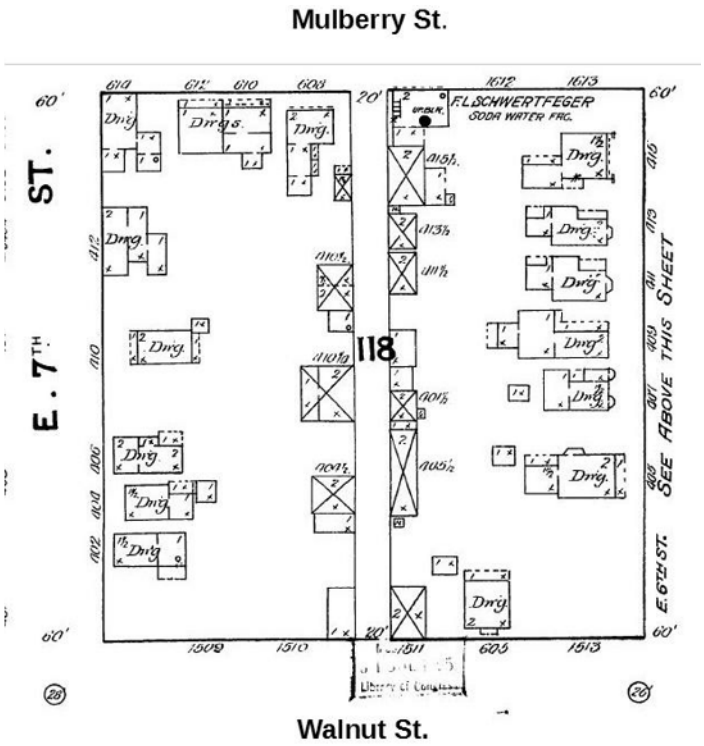
A crew of men "cutting shell" making button blanks at one of Muscatine's button factories. The shell had to be constantly sprayed with water to cool the cutting saw and control the dust the saw made.

Besides many retailers Muscatine had a surprising number of other small businesses besides the button factories and lumber mills. Livery stables were vital service in an age before the motor car. A typical one would be F. Malone's Livery Stable on Mulberry Street for those that did not want to care for their own horse(s). If you examine the segment of a Sanborn map form 1888 shown here you will notice that nearly every home had on the alley at the rear of its lot a building with an X drawn through it. These the home owners stables where they kept there horse and buggy. The number of horses kept in Muscatine must have equaled its human inhabitants. The job of keeping all of those stables clean and the streets clean as well must have been awesome!

On East Second Street between Mulberry and Oak you could find C.W.Mathis Pump factory and blacksmith shop. Further east on the corner sat Adams & Wiles whose sevoen employees manufactured wagons and plows. Close by on Oak sat E. Niver's Lead Trap Works and Foundry that made plumbing parts and gray iron castings. Need carpets? You could find an unnamed carpet weaver on Mulberry Street as well.

Right across 3rd Street from the county court house sat J.G. Gunzenhauser's Foundry & Machine Shop. Equipped with its own shop for making wood patterns and a gray iron furnace Gunzenhauser's twelve employees could build a wide variety machinery from the ground up.

Another machine shop was J. Kleinfelder's Foundry and machine shop located in south Muscatine on Liberty Street. It manufactured steam engines showing that it could machines with a high degree of precision. The foundry had a capacity for pouring up to one ton of cast iron per day. It had a shop for fabricating the wood patterns needed to make the castings and the machine tools to finish the engines. A factory like this could supply the general machining needs of the community.



Stables

A typical neighborhood is shown on this excerpt from the Sanborn Fire Map. The buildings on the alley with the X through them are stables for the homes along the street.

On the corner of Sycamore and Front Street sat the Royal Canning Company. In those days Papoose Creek ran open down the middle of Sycamore. The cannery occupied several buildings on the corner. When the produce came in Royal Cannery employed 300 people, the rest of the year only ten. The Sanborn map notes that a family lived in the cannery building year around.

The third and last part will be continued in the summer issue.

The generosity of donors makes it possible for us to host visitors and provide our school program in 2016. Since the last newsletter many new donors have contributed. We hope you were not missed. In addition to those listed below, many people have donated important smaller amounts.

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Phoenix Club (for the log cabin)

Do you have something for the newsletter? To keep your newsletter interesting we need your ideas, photos and editorial submissions.
Contact editor Dave Metz, davemetz@machlink.com or 563-263-4222

The Friends of the Pine Creek Grist Mill officers are:

David Metz edits your newsletter, contact him if you have any questions about or material for the newsletter.

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Pine Creek Grist Mill is on the web and FaceBook! Get downloads of our publications and see photos of the latest happenings. See us at:

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Donation Form

The Friends Need Your Help

The Friends of the Pine Creek Grist Mill is a volunteer organization. To do the many programs we have like this newsletter, school programs, fund raising, restoration and more we need more help. If the Friends are to continue we need more active members. Regardless of your prior experience there is something for you to. How much time and energy you devote is up to you. This is your chance to help your organization. Our projects are fun and the fellowship with other members is great. Contact Tom Hanifan or Dave Metz (contact information is above) if you are interested.

Name _____

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The Friends of the Pine Creek Grist Mill

Pine Creek Grist Mill is located in Wildcat Den State Park in Muscatine County one mile north of highway 22 between Muscatine and Davenport, Iowa.

The mission of the Friends of the Pine Creek Grist Mill is to restore, operate and maintain the Mill and to share the historical significance of the site through educational programs, public tours and events.

The Friends of the Pine Creek Grist Mill Membership

2016 Membership
Membership is only $20.00 per year. Your membership includes
One year membership in the Friends
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2906 Provence Lane
Muscatine, Iowa 52761