

# MOLDING & MACHINING: METALWORK IN GENEVA

This is a story of change. In the mid-1800s, Geneva claimed the most foundries in western New York State. The metal industry accounted for almost 70% of the city's jobs in the 1950s and remained strong until the 1970s. Today, Geneva has only one major metal fabrication company.

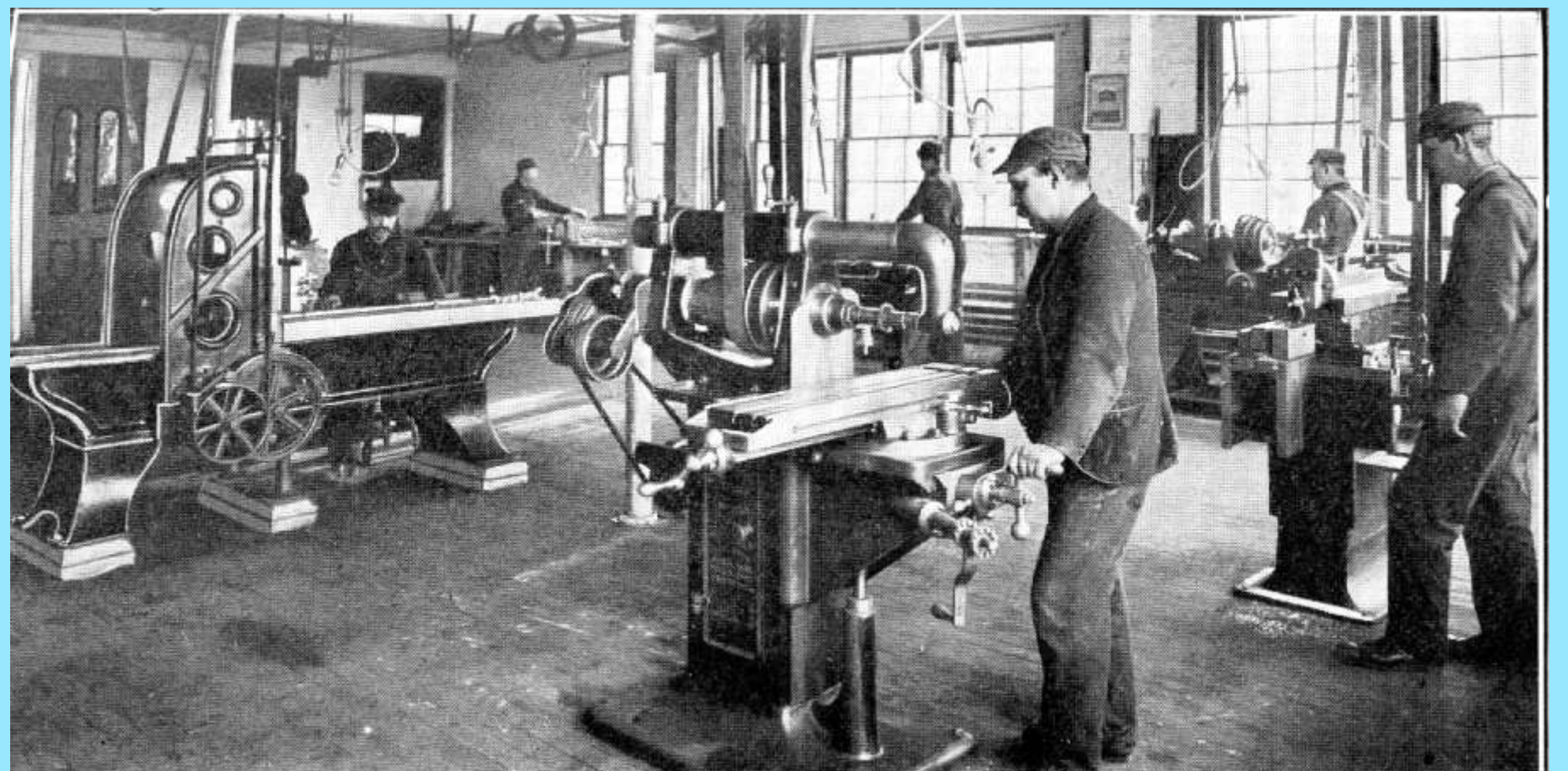
Geneva was not near iron ore or coal but 19<sup>th</sup>-century canals and railroads allowed access to raw materials. Demand for new products, from farm equipment to heating systems, allowed foundries to flourish. New factories changed Geneva's landscape and affected its environment. Ultimately, 20<sup>th</sup>-century changes in technology and economics – and failure to adapt to change – caused most of the city's metal industry to disappear.



Molding room at Phillips & Clark Stove Company

A foundry melts refined iron and pours it into molds to create cast iron. It is brittle but, unlike wrought iron pounded out by a blacksmith, objects can be mass produced in intricate shapes.

Machining is the shaping of metal, and other materials, through turning, drilling, and milling. Machining tools were powered by steam engines in the 19<sup>th</sup> century and later by electricity. Machinists bent sheet metal to make cans, stamped metal for tableware, and milled stock to create machine components.



Tool Room at Herendeen Manufacturing Company, 1907

This is a companion exhibit to **Geneva's Changing Landscapes** in the next gallery, which has more information and artifacts about local industry.

Support for this exhibit is provided by Rosalind Nester Heid in memory of her grandfather Samuel K. Nester, Sr.

# The First Geneva Foundries

Refineries require iron, sand, water, fuel, and people. In the early 1800s Geneva was close to wood and water, but did not have iron, sand, or workers. The Erie Canal (1825) and railroads (beginning in 1841) created access to the missing ingredients.

**BURBALL'S NEW ADJUSTABLE**



**MOWER AND REAPER.**

It is known to the public that I have, for many years, busily engaged in remodeling and perfecting my Mower; and to do this understandingly, fully examined the construction and operation of all the best machines in the market. I have compared their various parts and working qualities; many of them excellent in some respects, but all deficient in others.

To produce a machine comprising all the requisites for perfect work, in the simplest form, has been my aim; and it is a trite remark that the easiest way to do a thing well, is the last found out. I think the Mower now offered to the public an illustration of the fact, and will be found on trial

**THE BEST IN THE WORLD,**

unequaled in compactness, strength and effective power. It is all of iron, is single geared, the draft very light, the cut perfect—guards strong and easily taken off for grinding and replaced in a few minutes. It works well on rough ground, and discharges the grain in the rear or at the side; runs on a large castor wheel in front—has a loose pole and no bearing on the horses for reaping and mowing—has convenient seats for Driver and Raker on the machine, without the use of extra wheels in front for Reaping; it has a nicely adjusted counterpoise and balance wheel, and is thrown out of gear at pleasure. It has, in short, all the best points of the best machines in use in the simplest form, and in addition to these, one recent improvement, found in no other, by which the driver can raise the finger bar to its full height in an instant, for carrying a swath or travel on rough ground, by a touch of his hand, without leaving his seat or stopping his team! Nothing can surpass this beautiful movement, nor can its value be duly appreciated till seen in operation. They have been in use during the past season and given entire satisfaction.

These Machines, with various other Farm Implements, are thoroughly built and Warranted in material and workmanship. Made and sold at GENEVA, Ontario County, N. Y., by

**THOMAS D. BURBALL.**



Thomas D. Burrall

**Geneva Foundry and Machine Shop, (Foot of Castle-Street, Geneva.)**

THE subscriber having recently made many valuable additions and improvements to his machinery, and put the whole in perfect order for business, invites public attention to his Establishment, where he now offers for sale, *Thrashing Machines, Clover Machines and Horse-Powers*, of the 'best kind,' warranted in all respects.

Also, Machine Castings, Fireplaces, and Cooking Stoves, Furnaces, Caudrons, Wagon-Boxes, and a great variety of small Wares, all of which will be sold as low as can be afforded by any Establishment in the country.


Castings of all kinds, Forging and Finishing, Pattern making and Turning in Wood or Iron, neatly executed to order, at reasonable prices.

**THOMAS D. BURBALL.**  
Geneva, May, 1839. 161'

Fertile land attracted farmers to this area beginning in the 1790s. Farm tasks like cleaning seed, planting, thrashing and winnowing grain, and shelling corn were very labor intensive. Thomas Burrall was one of the first Genevans to capitalize on a desire for new and improved farming implements as an inventor and manufacturer, but he was not alone.

**THE FRAME**

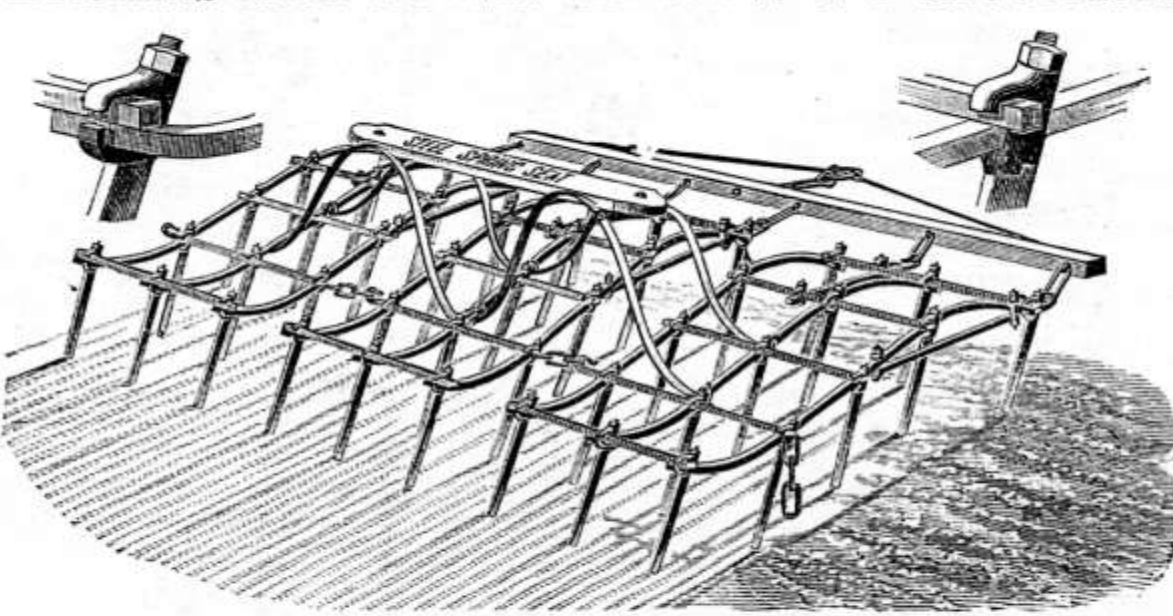
is built of white oak butts carefully selected and thoroughly seasoned. Bolts in front of each tooth and at the ends of each bar prevent the bars from checking and splitting. The hinges, braces, clevises and hooks are well fashioned out of the best horse shoe iron.



*The Harrow as used when Pulverizing.*

**Thomas Iron Frame Harrow and Pulverizer.**

REVERSIBLE STEEL BLADES. STEEL SPRING SEATS.



—MANUFACTURED BY—  
**THOMAS HARROW COMPANY,**  
GENEVA, N. Y.



Edward Herendeen, who had earned his money in horticulture, founded the Thomas Smoothing Harrow Company. New York Central Iron Works, established in 1851, produced steam engines and boilers, but also made "Reapers and Mowers...Clod Crushers, Field Rollers...Cultivators and PLOWS AND PLOW POINTS of old and new patterns."

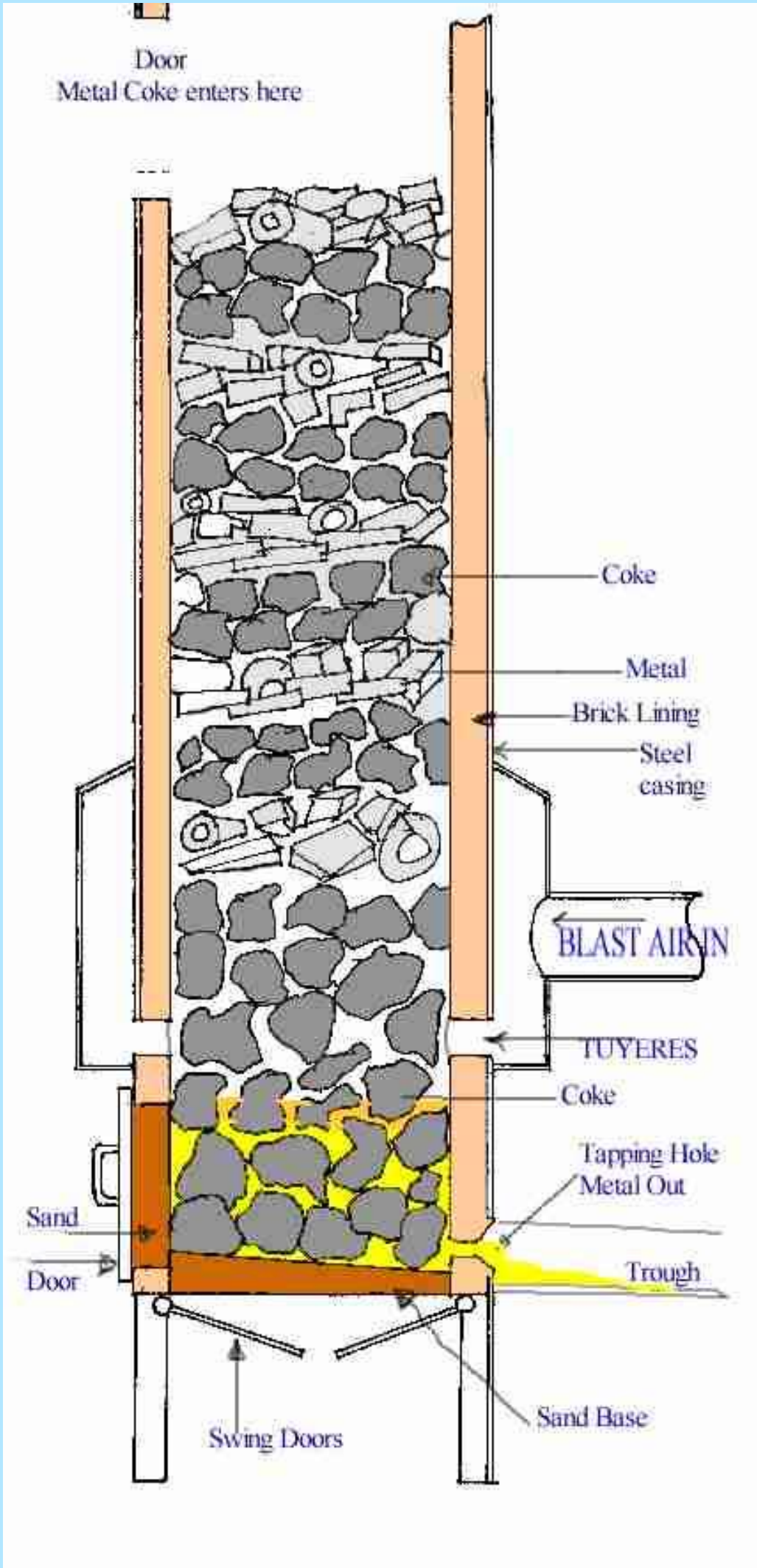
# How a Foundry Works: A Brief Explanation



Design and make a pattern. Engineers, draftsmen, and pattern makers collaborate to make a wood model.

Photos of Geneva Foundry, ca 1970

Create a mold. The pattern is pressed into sand in a box, which makes the outline of the casting. Two halves are joined to make one hollow piece. If the final product is hollow, cores are made to create the cavities.



Fire the cupola. The cupola is a tall stack furnace with a sand floor and a tap hole at the bottom, forced air inlets on the middle, and an opening at top. Layers of coke (distilled coal) and pig iron (refined iron ore) are burned in the cupola; more fuel and iron are added at the top (called "charging") as molten metal is drawn off the bottom.



Pour the molds. Hand-carried ladles are used to pour small molds, while overhead cranes are used for large molds.

*"I tipped that thing down, it was just like pouring three hundred and fifty degrees at you. You get used to that."*  
– John Kenney, Geneva Foundry, on operating the large "bull" ladle

Finish the pieces. After the castings cool, they are shaken out (removed), and they go through a series of cleaning and grinding steps to be finished.

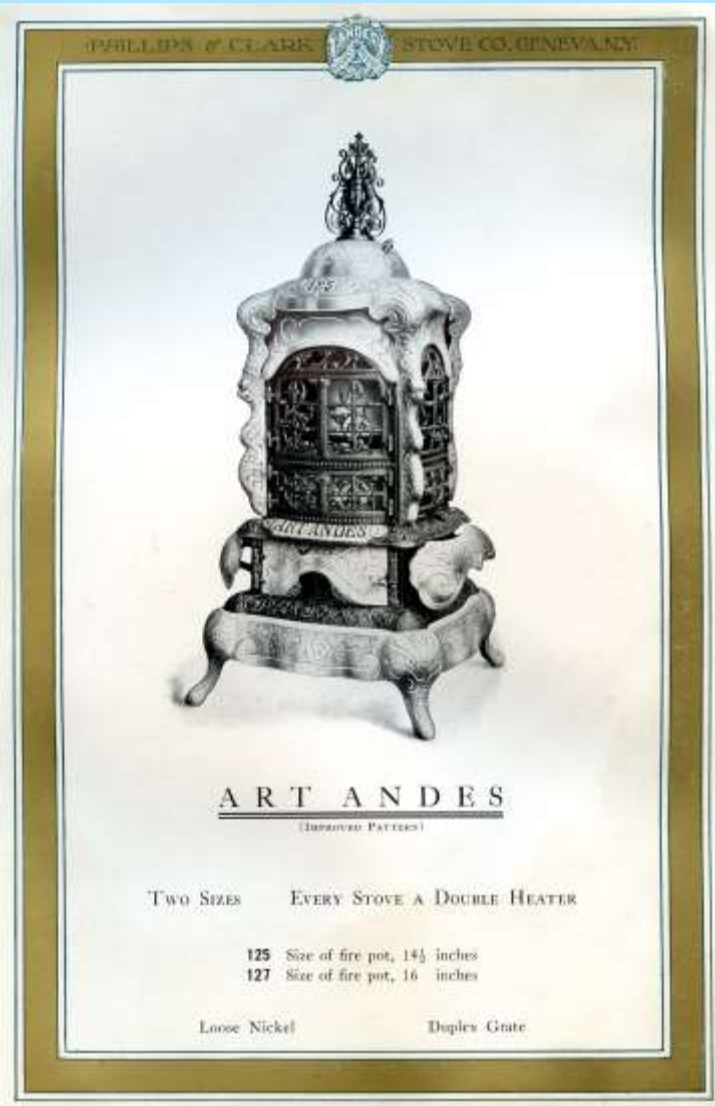
Clean the cupola. Slag (impurities) and sand are emptied from the bottom of the cupola at the end of firing. After cooling, they are hauled away and the cupola is set up for the next firing.



Modern improvements in the late 20<sup>th</sup> century - "stack scrubbers" to reduce pollution, electric furnaces to eliminate the use of coke, and computer automation – have altered foundries, but they remain hot and hazardous.

## The Heyday of Metal

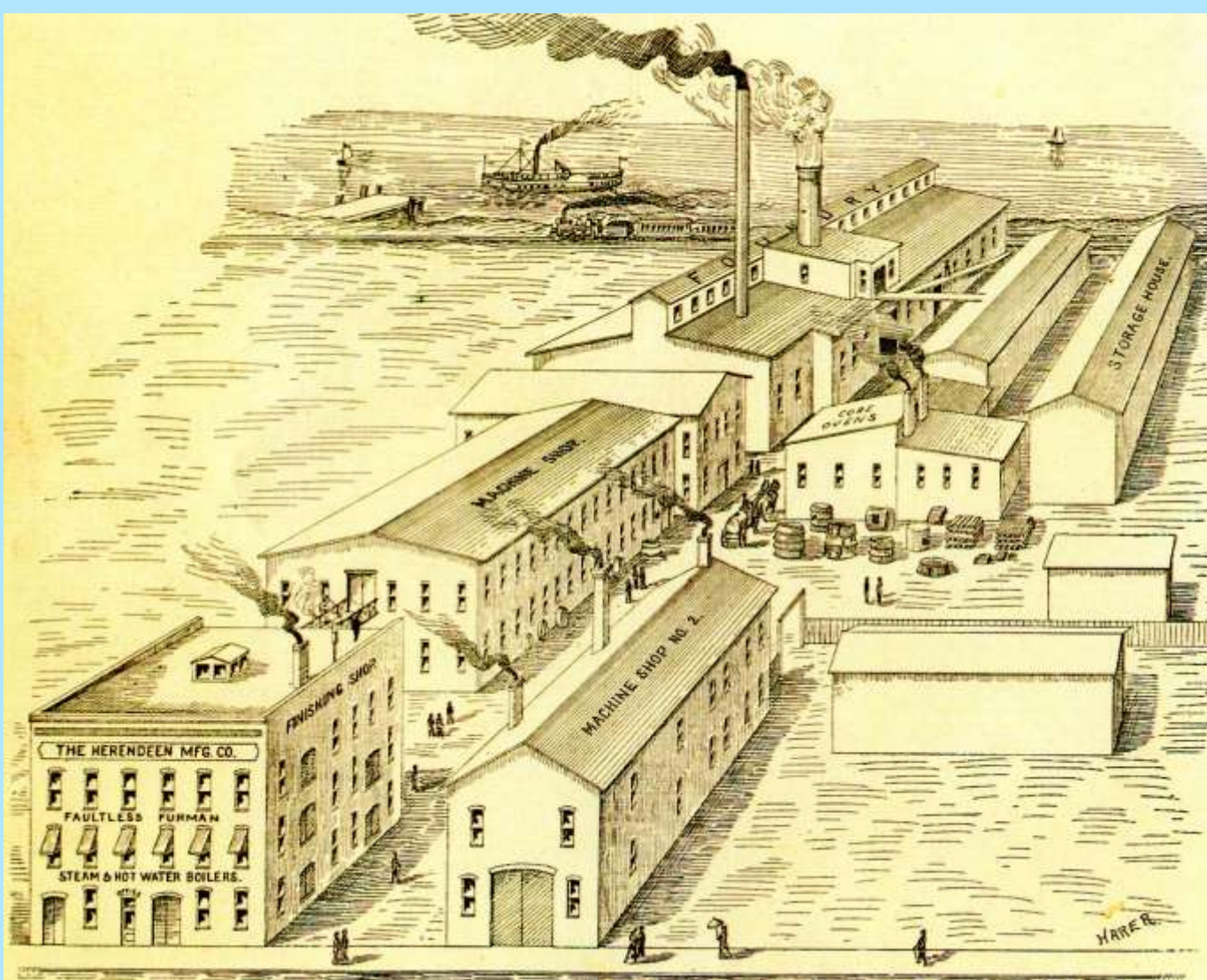
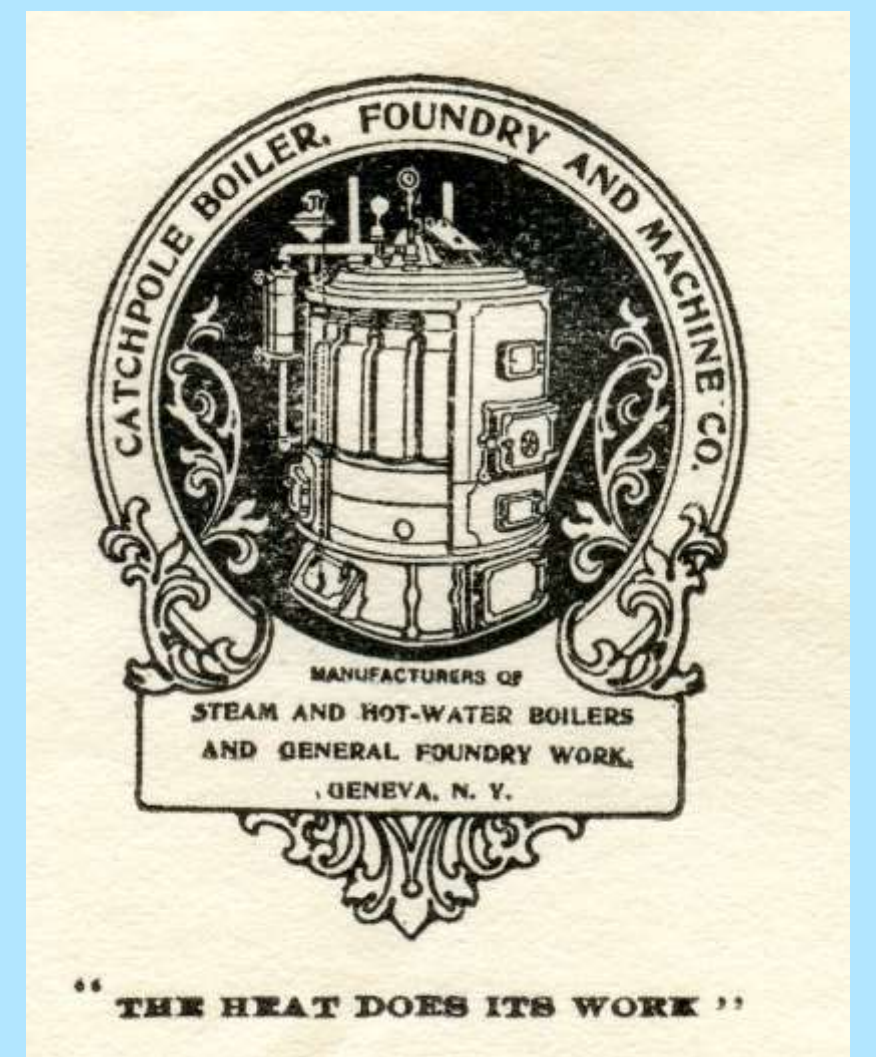
More metalworking factories began operating in Geneva in the late 1800s and early 1900s. In 1877, the Syracuse, Corning & Geneva Railroad provided a direct connection to Pennsylvania coal mines. The Lehigh Valley Railroad built a station in 1892 on the north side of the village. Perhaps because of better transportation and increased job opportunities, Geneva's population rose between 1880 and 1890 and continued to grow until the 1930s.



### Stoves, Boilers, and Furnaces

Parlor stoves evolved through the 1800s, becoming more efficient and ornate. Reliable steam heating became available in the 1850s, but it was expensive to install and was considered complicated and unsafe. For these reasons, parlor stoves remained popular for many years.

Alfred Catchpole established a machine shop in Geneva in 1860. After serving in the Civil War, he resumed his work and focused on steam heating. He invented the "Florida" boiler in 1884, so named to conjure up images of warmth.

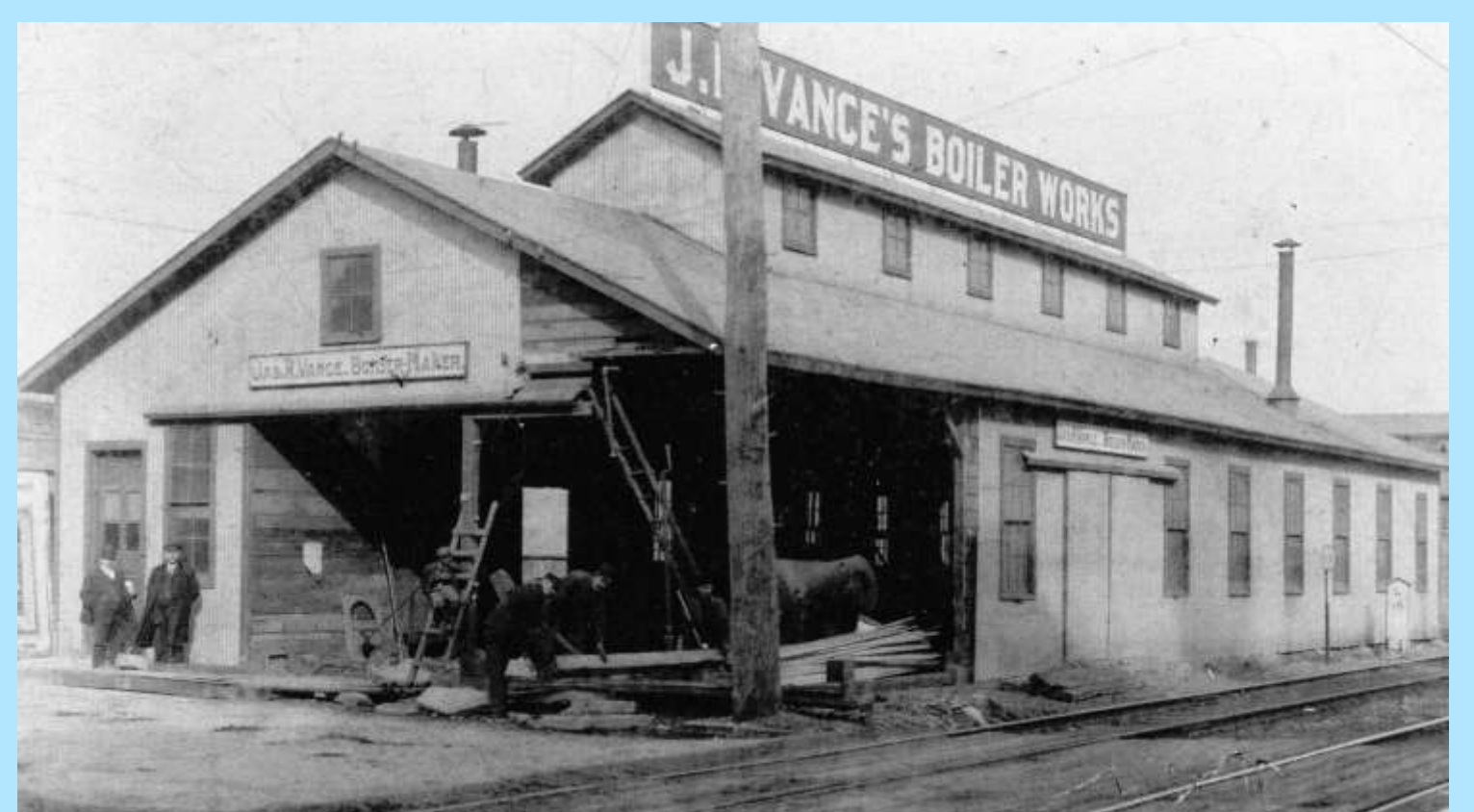


Edward Herendeen shifted from producing farm implements to boilers, particularly the Furman boiler, invented by fellow Genevan Frederick Furman in 1885. Herendeen Manufacturing became part of the U.S Radiator Corporation in 1910; Geneva's role was to continue making boilers.



Small foundries, such as Thomas Burrall's, produced parlor and cook stoves in Geneva. The first major stove manufacturer was the Phillips & Clark Stove Company; they moved here from Troy in 1885. Labor problems in Troy and a better location in Geneva, between the Seneca-Cayuga canal and the New York Central Railroad, brought them to town. In 1897, Summit Stove and Foundry was established near Phillips & Clark. In the early 1920s, Phillips & Clark changed their name to Andes Stove Company, after the name of one model of stove. The company assumed control of Summit around the same time and shifted production to furnaces and enamel cooking ranges.

Established in 1880 by James R. Vance, the Vance Boiler Works began in a shop across from the New York Central Railroad Depot. Vance, a Scottish immigrant, had worked as a boiler maker and a foreman at the New York Central Iron Works. Vance Boiler Works moved to the north side of town around 1902, and back downtown (near the present Lyons National Bank) in 1914.



## Cans

Food preservation technology and urbanization changed America's eating habits. Finger Lakes farms began growing more fruits and vegetables for the canning industry; the Geneva Preserving Company was formed in 1889. The Empire State Can Company began nearby in the 1890s to produce the tin cans. Within ten years it became part of American Can Company, and was eventually converted to a machine shop, making can-closing machines. When the corporation closed its Cincinnati factory, that work was transferred to Geneva.



Vertical mills at American Can



Grinding and polishing room at Geneva Cutlery, circa 1910



## Razors

In the 1800s, shaving was done by straight razor, often by a barber. The Geneva Cutlery Company was formed in 1902 to make straight razors, producing 3,600 a day at its peak. Unfortunately, King Camp Gillette perfected his safety razor with disposable blades around the same time. The U.S. Army issued safety razors to its soldiers in World War I, signaling the decline of straight razors.

## Cutlery

Ekco Products bought the Geneva Cutlery Company in 1934 and changed the name to Geneva Forge. It must have been a lucrative factory for Ekco to purchase it during the Depression; they even made expansion plans in 1939, which were postponed due to the advent of World War II. The Forge made knives, stainless steel tableware (flatware and taperware), and kitchen tools. Flatware was stamped and machined from sheet metal, while the more expensive taperware was hammered from thicker stock.



Above right: Plant manager Don Eades (left) and Congressman Sam Stratton

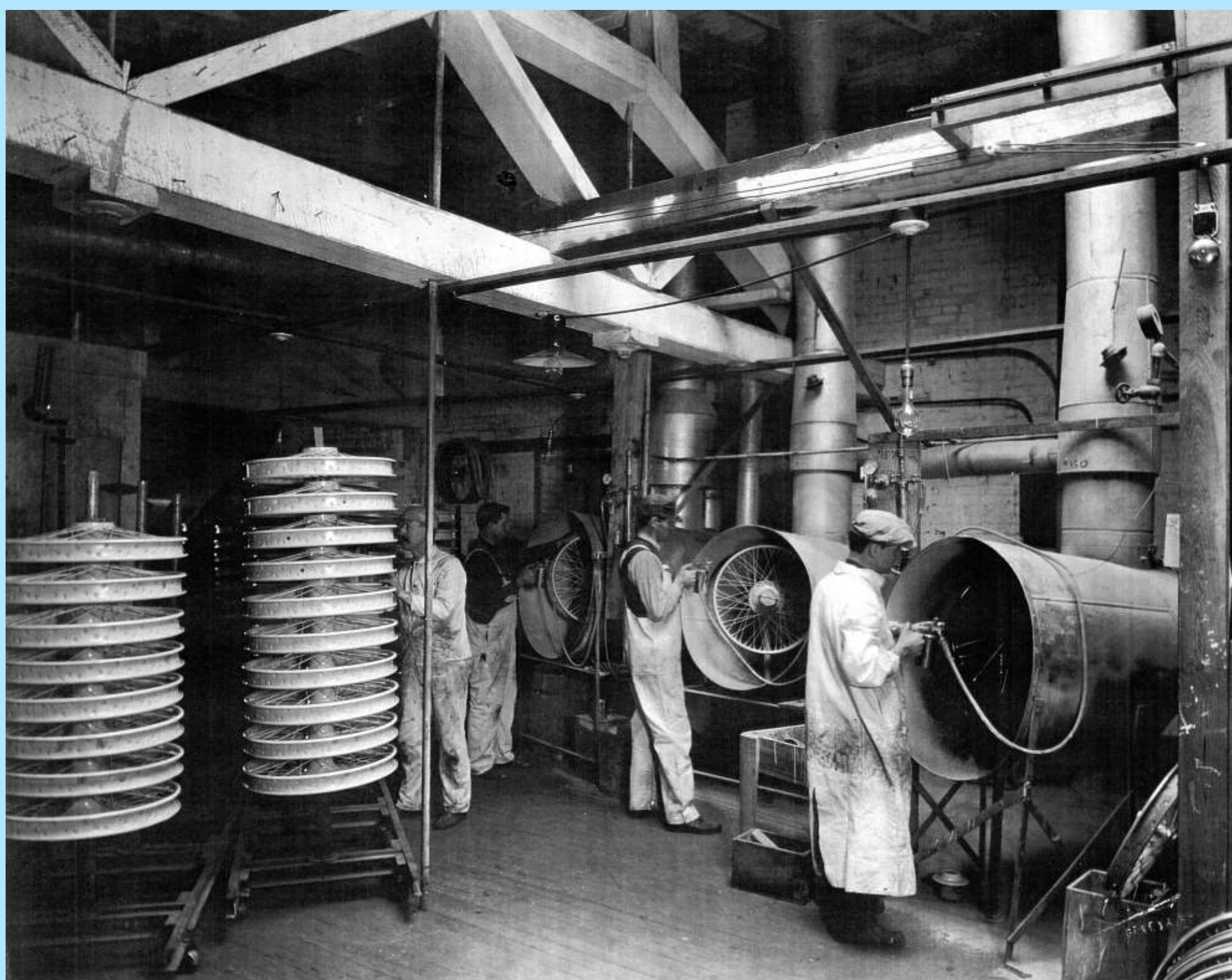
Left: Ekco products made at Geneva Forge, 1950s





### General Casting

William Brennan, Sr. purchased the Catchpole Boiler, Foundry and Machine Company in 1921 and began the Geneva Foundry Corporation. The Foundry did not make retail products but did castings for other companies. Locally, they made parts for American Can and Shuron Optical; out-of-town clients included the Carrier Corporation, General Electric, and Delco.



### Wheels

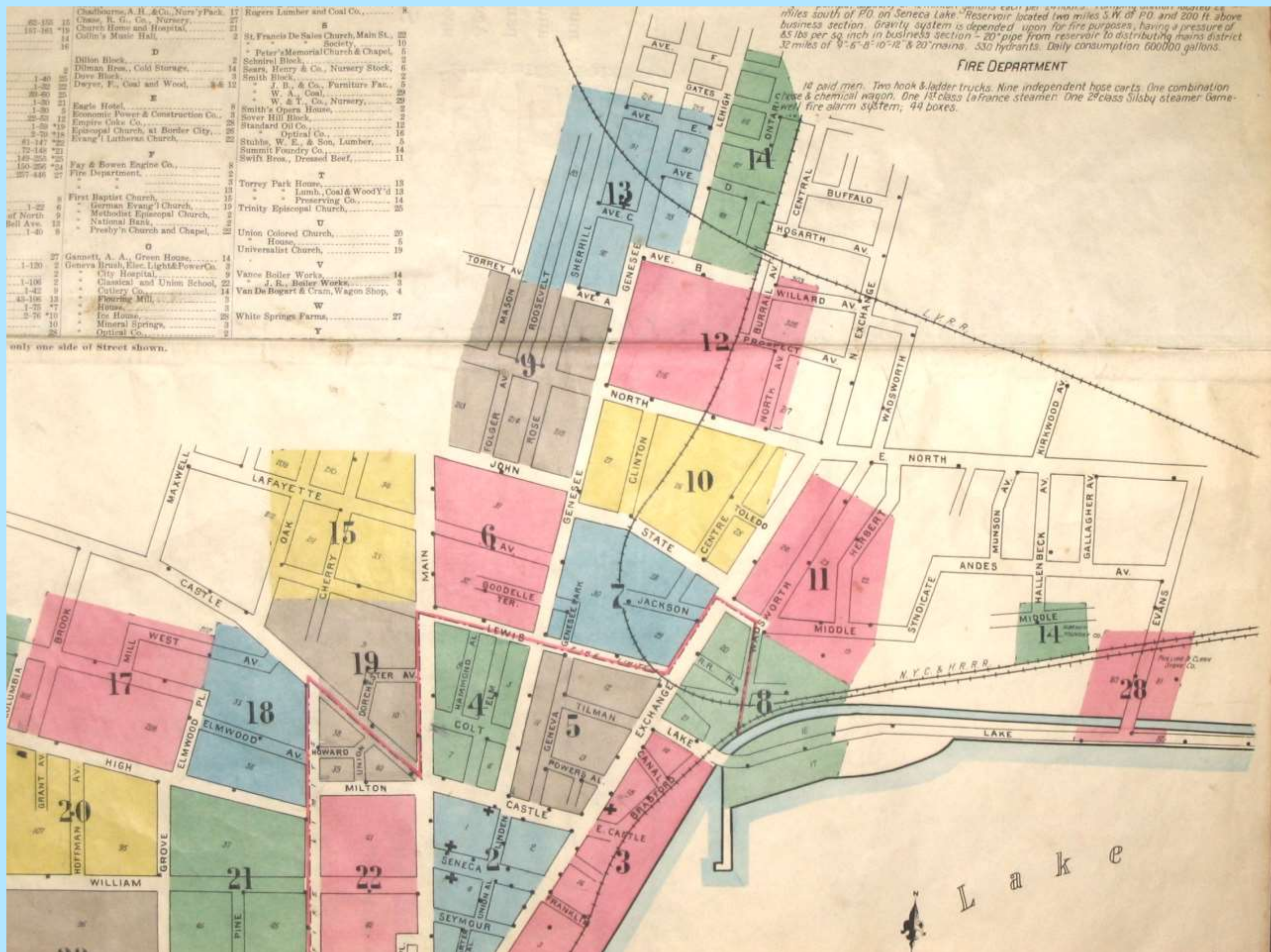
Wire wheels were developed in the 1800s; by the early 1900s, they were used on bicycles, motorcycles, automobiles, and airplanes. The National Wire Wheel Works was located in Geneva on Lewis Street from about 1917 to 1920, then moved to Hagerstown, Maryland. Shop photos, a hub cap plate, and an advertisement are the only surviving information about the company's time in the city.



### Metal Type

Hulse Manufacturing, a subsidiary of the Corona Typewriter Company, came to Geneva in 1920. It moved from Brooklyn to the former National Wire Wheel Works building on Lewis Street. Hulse made metal type for various mechanical printers, from Smith Corona typewriters to coding & decoding wheels for the military during World War II.

# Location: Transportation and Labor



Sanborn fire insurance map of Geneva, 1909. Numbers below correspond to the numbers on the map.

Geneva's industry began at the lakefront, to be close to the canal for receiving and shipping. The railroads built terminals near the waterfront, to tie in with the canal system and to be near existing factories. Early foundries and machine shops, including Thomas Burrall and New York Central Iron Works on Exchange Street (# 5), followed this pattern.

In 1892, the Lehigh Valley Railroad built its depot north of town (# 13). Changing availability of land for factories and the decline of canal traffic contributed to new companies, such as Geneva Cutlery and American Can (# 14), locating away from the lake. There was at least one exception: National Wire Wheel Works built on Lewis Street near downtown (# 5) around 1917, and Hulse Manufacturing purchased that building in 1920.

The areas east of Exchange Street and north of North Street were home to recent immigrants and working class families. Foundries and other industries that built in these neighborhoods hired people who lived there, and new jobs encouraged the development of more working class houses. Foundries did not make the best neighbors; Jackson Street residents (# 7) often complained about the smell and pollution from the Geneva Foundry.



Left and above: Hallenbeck Avenue, near the former Summit Foundry (# 14)



American Can office, 1930s

Metalwork jobs followed 19<sup>th</sup> and early 20<sup>th</sup>-century norms – men did the heavy work, women did the paperwork. Women did move into assembly line work at Hulse (making type and engraving) and Geneva Forge (assembling flatware). Most of the metal industries hired regardless of race or ethnicity but minority workers knew which companies would not hire them. African Americans began as janitors but sometimes were denied access to the higher paying skilled positions such as molder or core maker. Other foundries hired anyone who could withstand the working conditions and trained African Americans and Latinos for skilled labor.



Left: Geneva Foundry picnic, 1970s

Below: Flyer for American Can Company (Canco) picnic at Roseland Amusement Park in Canandaigua, 1952



Many workers recalled family-like atmospheres: clambakes, Christmas parties, helping those in need, and the ability to discuss a problem directly with the owner.

*"If you knew somebody was sort of hard up, maybe had a kid home sick or something, we'd ask 'em, do you need a little extra time, we'll give you some overtime, and we'd just give it to them."* – Sam Martin, supervisor at Hulse



*"[Geneva Forge] had bowling teams, their own bowling league, they had a softball team, they had their own rod and gun club. It was family. Christmastime they'd have a big Christmas party with all the food and everything, and gifts for the kids. They had a profit-sharing plan."*

- Don Eades, plant manager at Geneva Forge

Geneva Forge Christmas dance, 1955



## Where Did the Metal Go?

Beginning in the 1950s, Geneva suffered through the same industrial change that affected the northeastern and midwestern United States. There were numerous factors: product obsolescence, decisions by company ownership, and labor relations.

**Andes Stove 1951—closed**  
**U.S. Radiator 1962—closed**  
**Geneva Forge (Ekco) 1962—moved**  
**Geneva Foundry 1988—closed**  
**American Can 1989—closed**  
**Hulse Manufacturing 1992—closed**

*"What we made is obsolete. We were making candles when everybody else was making light bulbs."* – Sam Martin, Hulse Manufacturing



Hulse building for sale, 1990s

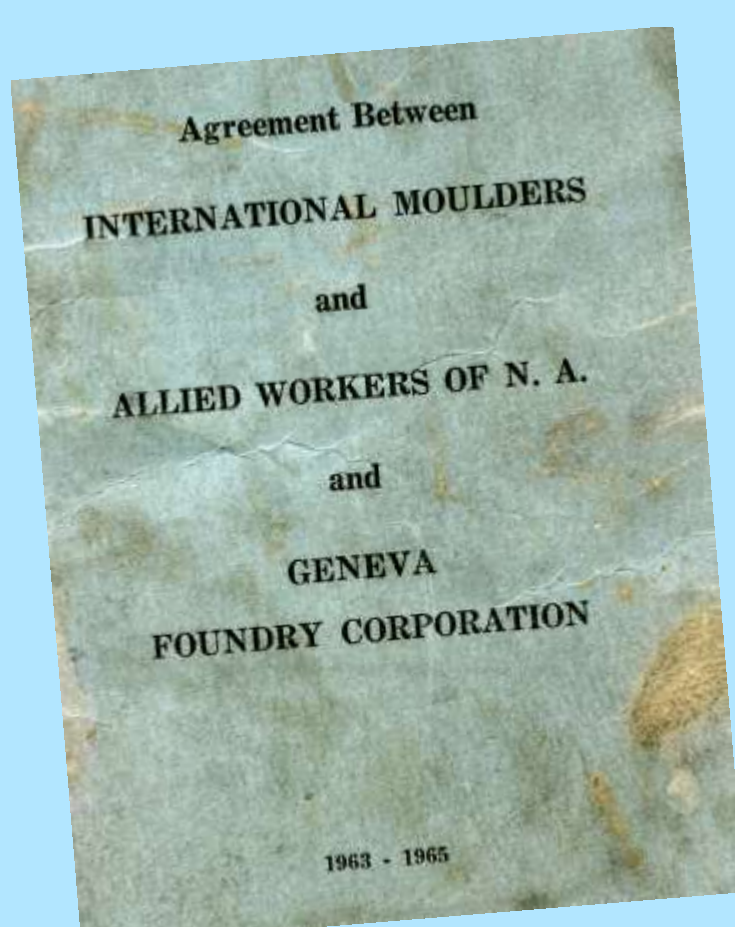
At its peak, Hulse made millions of pieces of type for Smith Corona, IT&T, and foreign customers. Technology shifted from individual type, as found on old typewriters, to characters on wheels and balls, then to plastic "daisy wheels." Smith Corona, the factory's main client, no longer needed Hulse's product. American Can made machines for a three-part can making process, and were hit hard when companies shifted to a two-part can.

The ability to adapt to change did not necessarily rescue a company. In the 1980s, American Can took on more design and production jobs for other companies, but could not afford to keep all its workers. The Geneva Foundry invested in electric furnaces to lower production costs and make new products, but this did not prove profitable.



On the other hand, Vance Boiler Works successfully adapted to change. In the late 1920s, the company shifted from manufacture to repair, allowing it to survive the Depression. In 1945, the company began selling welding supplies and then constructing and installing ornamental iron, including many of the fire escapes in Geneva. A name change—Vance Metal Fabricators, Inc. around 1969- indicated a shift in focus. By 1981, Vance had moved into production and custom weldments.

Today they produce components for corporations that include Eastman Kodak, Carrier, Gleason Works, and Goulds Pumps ITT Industries. Vance also produces stainless steel storage tanks and equipment for the wine industry in the Finger Lakes and several states across the country.



All of Geneva's foundry and machine workers were unionized by the late 1960s. While unionization often resulted in health care insurance and pension plans, some older workers felt it pitted workers against managers and destroyed the friendly atmosphere. Community leaders were quick to blame unions for increased operating costs when companies, such as EKCO in 1961, announced plans to leave the city. Around the same time, American Can workers approved wage cuts in order to preserve their jobs. In reality, foreign competition and corporate leadership exerted more influence on local factories than workers or city leaders.

# Epilogue

Many of the metalwork factories were torn down after the companies closed or left town but three plants survive. They represent different forms of reusing industrial buildings.

In 1963, Zotos, a hair product manufacturer, moved into the former Geneva Forge plant on Forge Avenue and has thrived since then. They are now owned by Shiseido International Corporation and employ about 450 people. While Zotos has been bought and sold, it remains a strong Geneva company, expanding its physical plant and workforce. In 2011, it erected two wind turbines which, when operational, will generate electricity for the factory and opened a retail outlet in downtown Geneva.



Below: Zotos factory, ca 1970  
Right: Zotos ad, 1980s



Why More Salons Are Switching To Zotos Acclaim

In 1994, the American Can building on Genesee Street became the Geneva Enterprise Development Center (GEDC). It leases space, from office to industrial, to emerging companies and currently has 12 tenants. Two businesses, footwear manufacturers Vere Sandals and electronics recycling firm 2trg, have connections to the building; executives of both companies had relatives who worked at American Can.



Since 2007 the Geneva Cutlery building on Lehigh Avenue has housed Miles & May Furniture Works, a small company that handcrafts furniture from recycled and reclaimed wood. The second floor is divided between a 6,000 square foot event space and 4,000 square feet of artist studios. It has hosted art shows, concerts, dance performances, and private events.



Miles & May furniture photographed in the Cutlery building, 2008

