
William James McHugh

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Eighty-five Years of Glass:
A History of the Glass Industry in
Jeannette, Pennsylvania, 1888-1973

A Thesis
Submitted to the Graduate Faculty of the
Louisiana State University and
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requirements for the degree of
Master of Arts
in
The Department of History

by
William James McHugh
B.A., St. Vincent College, 1967
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MANUSCRIPT THESES

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I wish to express my gratitude to my mother, Mrs. Ruth E. McHugh of Jeannette, who has generously shared her home with me for the past year while I researched and wrote this thesis. I am most grateful to Professor John L. Loos, my thesis director, for his help and to Professor Jane L. DeGrummond who first encouraged me to pursue graduate work in history at Louisiana State University.

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This thesis contains a general overview of the glass industry in Jeannette, Pennsylvania, from its beginnings to the present. After discussing the reasons for the establishment of the industry in this part of Western Pennsylvania in the latter part of the nineteenth century, it gives a relatively brief history of each of the companies which were established in Jeannette. It discusses the founding of each company, the construction of its physical plant, the specific products manufactured, the machines and technology of manufacturing, the labor force and working conditions in the plants, and changes in management and ownership personnel and forms. In sum, then, the study contributes to the history of American industry.

Sources of information for this work were limited. All but two of the companies covered were family owned and kept no archives which were available to the researcher. Several of the companies are no longer in existence and have left no records whatever of their activities. None of the concerns published a house organ of any kind. Consequently, the author had to place heavy reliance for information on accounts found in local newspapers and in pamphlets and other handouts which the companies which are still in existence provided. These sources were supplemented by state and federal government documents especially concerning working conditions in the glassmaking industry.
Jeannette, Pennsylvania, a small town about thirty miles east of Pittsburgh, has been principally dominated by a single industry — glassmaking — since its founding in 1888. A town which never had a population of more than 16,500, Jeannette has much in common with other one-industry towns in many parts of the United States which were founded after the Civil War. But no other city in the United States was initially dominated by the glass industry. In this sense Jeannette, though a factory town sharing many of the characteristics of other factory towns in Pennsylvania and elsewhere, is unique. Many of the institutions commonly associated with single-industry towns, such as company stores, and complete company housing, never developed in Jeannette. Competition among the several firms helped make for more democratic living conditions.

The author, himself a native of Jeannette, has tried to explain both why glassmaking developed in this small town and to describe in detail the effect of technological innovation on glassmaking in Jeannette. Indeed, many of the themes common to the process of industrialization in America, business consolidation, the replacement of skilled labor by mechanization, and the vagaries of economic depression, can all be found in Jeannette.

There are a number of problems involved in preparing a history of glassmaking in this small town. There are no city archives nor
have any of the companies, for the most part family owned initially, preserved detailed records. Labor unions have been equally remiss in keeping systematic records of their activities. This is particularly unfortunate because Jeannette, although partially dominated by a single industry, has never been controlled by a single company. The primary source of information has been the local newspaper; but even though the glassmaking industry employed one out of every five of the town’s residents, the local newspaper’s coverage of the industry has not been very comprehensive.

The author has interviewed a number of residents of Jeannette. Having spent the first twenty-eight years of his life there, he is well equipped to give a sense of the social structure of the town. The residents of Jeannette take great pride in their work and in the products which they produce, hopefully this pride will be evident in that which follows.
CHAPTER I

GEOLOGIC ASPECTS OF THE AREA

Geology explains why western Pennsylvania became a major glass manufacturing center. Twelve thousand years ago the most recent glacial epoch came to an end with the melting of the Wisconsin glacier. The glacier left behind an almost inexhaustible deposit of very pure sand. Glass is made primarily of silica, or sand, that substance making up sixty percent of its total composition. In addition to sand, glass is made of lime and an alkali. Lime, which comes from limestones, constitutes about twenty percent of the ingredients. Here again, geology was important, for stored away in the layers of rock of the Pittsburgh district of western Pennsylvania were excellent limestones. The alkali needed to make


glass could be produced locally from wood ashes or the ashes of plants and seaweed, but in recent years has been obtained from natural deposits of compounds of sodium, potassium, and lithium, or alkaline earth bases such as lime or barium.\textsuperscript{3} The remaining ingredients essential for glassmaking, like arsenic, manganese, or other decolorizers,\textsuperscript{4} are used in such small quantities that they could be transported relatively great distances without incurring prohibitive costs.

Fuel is also of an important nature in glassmaking, since except for labor, it is usually the most costly item. For thousands of years wood was used as fuel for glassmaking. This is astonishing when it is realized that temperatures between 2,200 and 2,600 degrees Fahrenheit are necessary. The Pittsburgh district had an abundance of wood, but the actual importance of wood as fuel for glassmaking in the Pittsburgh area, however, is difficult to determine since the first known glass manufacturer in the area used coal to fire his furnaces.\textsuperscript{5}

\textsuperscript{3} Ibid.

\textsuperscript{4} Decolorizers are used to produce glass that is free from the greenish tint which is caused by the presence of a small quantity of iron in the raw materials or in the clay of the pots in which the glass is melted or in the blocks of the furnace. The natural color of glass if no decolorizer is used or nothing is added to it, is light green, like a Coca-Cola bottle.

The principal fuel used in making glass in the Pittsburgh area, however, was natural gas, for gas is an even better fuel for the purpose than coal. Glass manufacturers in the area early recognized the advantages of natural gas as a fuel, but they were reluctant to adopt the new fuel due to the uncertainty of its availability. With the assurance that it was present in a dependable supply and at relatively low cost, Pittsburgh glass manufacturers began to change from coal to gas. The new fuel proved to be ideal for glassmaking. It was clean, easily applied, and very high in thermal units, or heating properties. It eliminated many of the difficulties of glass-making and made possible an increase in production and an improvement in quality.6

Beginning in the latter part of the nineteenth century, Jeannette, Pennsylvania, developed into an important glassmaking center. Jeannette lies in the center of Westmoreland County and is approximately thirty miles east-south-east of Pittsburgh along Pennsylvania Route Number 30 and the Pennsylvania Railroad's main line. The area around Jeannette lies within what is known as the Allegheny Plateau which covers more than half of the state, extending from the boundaries of Ohio and West Virginia northward to New York, and as far as the Delaware River in the northeastern corner of the state. The region is made up of broad-topped divides, often plateau-like, which are crossed by deep, narrow, steep-sided valleys. There are oil and gas wells, and fields of coal, limestone, and sandstone in the southern section of the region. Chestnut Ridge, Laurel Ridge, and

6 Innes, Early Glass of the Pittsburgh District, 1797-1890, 20-24.
the Allegheny Mountains, which extend in a northerly direction from the southern border, form the eastern front of this plateau. Jeannette, itself, lies within the Murrysville sand and Pittsburgh coal beds, as well as within a large clay and limestone section where many gas and oil pools are found.\textsuperscript{7}

Westmoreland County has within its borders a large portion of the Pittsburgh coal seam which has been found to be of a high quality, especially for the manufacturing of glass, and the Connellsville coal seam, which is in the southern portion of the county, produces coal unequaled in the state for the production of coke.\textsuperscript{8}

The Jeannette area also has an abundance of natural gas which originally was available at a lower cost than in most sections of the state. This was perhaps the most important natural resource of the area.\textsuperscript{9} The largest gas pool was discovered in 1878 near Murrysville, in the northwestern part of the county. As early as 1843 salt well drillers in the Jeannette area noted a peculiar odor coming from the salt wells near Grapeville, now considered a part of Jeannette. Natural gas issued from the holes bored for salt water, and the accidental ignition of this gas caused the destruction of the salt works.

\textsuperscript{7} Geologic Map of Pennsylvania; Johnson, Topographic Atlas of Pennsylvania; Fettke, Glass Manufacturing of Pennsylvania.

\textsuperscript{8} Works Progress Administration, "Westmoreland County Anthology", Topic 630, pp. 7-8, (Manuscript in Jeannette, Pennsylvania Public Library).

Years later when natural gas was discovered at Murrysville, someone realized the source of the destruction of the "old salt works" years earlier, and this led to the discovery of natural gas in the Grapeville district. On September 30, 1887, the citizens of the area lit the discovery well to honor President Cleveland and his young bride, who were going through on the Pennsylvania Railroad, and it flared forty feet in the air.

Finally, transportation facilities were also excellent. The Pennsylvania Railroad completed its line through the area in 1852, and was soon joined by other railroads, such as the Baltimore and Ohio, the Pittsburgh and Lake Erie, the Ligonier Valley, and the Pittsburgh and West Virginia which opened main lines, division or branch lines in the district.

The local newspaper reported in 1889 that the mineral resources made the area around Jeannette ideal for glass manufacturing.

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11 Jeannette Dispatch, June 28, 1889.


13 The Jeannette Dispatch, June 18, 1889, reported: "Lying but a short distance from the base of the Chestnut Ridge spur of the Allegheny Mountains, our city is within convenient access to inexhaustible beds of iron ore, lime building stone, fine clay, and a newly discovered stratum of the finest glass sandstone in the world. The extent of this stratum is such as to be sufficient to feed the glass industries of the world for centuries."
all of these advantages, it was not surprising that in the first months of 1888, an area consisting of several small farms lying between the Grapeville Depot of the Pennsylvania Railroad and Brush Creek gradually turned to glass manufacturing, an industry which has continued to operate in the area to the present day.
CHAPTER II
EARLY INDUSTRIAL SETTLEMENT

For many years, trains passing over the Pennsylvania Railroad were supplied with water for the engines from a reservoir near the Seventh Street bridge which, passing over the main railroad line, connected the heart of Jeannette with the residential North Side. The water supply for the reservoir came from a dam built by the railroad company near Saddler's Crossing between Grapeville and Radebaugh, just east of the Jeannette area. Tradition holds that H. Sellers McKee and James A. Chambers were passengers on a train which stopped at the reservoir for water for its engine, and looking out over the meadow adjoining the railroad, saw the derricks of gas wells beyond, which suggested to them the desirability of the place as a factory location with abundant and cheap fuel and transportation facilities. Whatever prompted their action, it is sufficient to know that these two men came and purchased the farms of J. F. Thompson, Solomon Loughner, and J. Gilchrist, comprising about two hundred acres, upon which they proposed to build at least two glass factories. Work on the construction of the factory buildings for the McKee Brothers' factory for the production of table glassware and the Window Glass

factory of Chambers and McKee began in the first months of 1888. As the spring and summer progressed, the buildings took shape and the tall brick stacks for the glass furnaces soon marked the landscape.

While the factory buildings were being constructed, in April, 1888, a town with its business and residential areas was being planned and laid out and rude shelters were erected for the construction workmen. The development of the residence and business sections was in the hands of the Western Land and Improvement Company of Philadelphia. The company's representative, M. J. Alexander, began the job of plotting the new town in 1888. About five hundred acres of farm land was purchased and engineers began the work of laying out the ground for factory and home sites. The factories came first, with the only residences being a shack here and there to house the workmen engaged in construction. In late 1888, George R. Mackenzie and Louis Mackenzie, two expert engineers, came from Philadelphia to lay out the town.²

In August, 1887, the Western Land and Improvement Company's application for a charter had been approved by the state of Pennsylvania. This charter stated that the subscribers to the company were James A. Chambers, H. Sellers McKee, J. Gardner Cassatt, Horace Magee, and B. Maurice Gaskill, the latter three being residents of Philadelphia. These men were named directors of the company, and each held six hundred shares of company stock.³ The capital stock was fixed at


³ The owners of the glass factories thus were numbered among the principal owners of the Western Land and Improvement Company.
$150,000 - 3,000 shares at $50 per share - of which $15,000 was paid directly into the company treasury with the remainder being used to purchase additional land. Streets were laid out, lots were surveyed, and the first large public sale of lots was held in June, 1888.4

The streets themselves ran east and west and north and south, with those laid out in the north-south direction being named First, Second, Third, etc. The members of the Western Land and Improvement Company memorialized themselves by giving the avenues which ran in an east-west direction their last names, Frothingham, Hacker, Gas-kill, Scott, Cowan, Magee, Clay, and Bullitt. J. G. Cassatt, who was also an executive of the Pennsylvania Railroad Company, was honored because one of his railroad sidings paralleled the avenue just beyond Chambers Avenue. The new town itself was named Jeannette in honor of the wife of H. Sellers McKee.5

The Western Land and Improvement Company contracted for the erection of a sizable number of residences including both frame houses and "brick rows". These dwellings were intended to house the glassworkers and their families and the demand for houses on part of the glassworkers was so great that houses were frequently sold almost before a spade of earth had been turned for the foundation.6 Vacant lots in the vicinity of these houses sold at first for $400,

4 The News-Dispatch, May 2, 1938.

5 Ibid.

but before the end of the first year, they sold for up to twelve hundred dollars. Within a year of the plotting of the town, it had a population of fully four thousand. It was the level acreage between Brush Creek and the Pennsylvania Railroad which attracted the attention of McKee and Chambers, but it was not long before the town crept up, and later, over the sides of the adjoining hills. By July, 1889, there were 533 buildings, of which 385 were dwellings, in the new community. The phenomenal growth of Jeannette was new to the people of the county at that time. It has perhaps been equaled but it has not been surpassed by any town building in the county since.

Boarding houses were numerous since it was necessary to accommodate the many hundreds coming monthly to Jeannette. The Neff House on Clay Avenue was a temporary structure which housed the first comers to the town. Occupants were thankful even for any kind of privacy because many had only board partitions between rooms; the rooms were small and very hot in summer and cold in winter. After the first two years, Jeannette buildings and hotels were of a more substantial nature.

E. J. Vinton built a frame structure on South Third Street which had forty bedrooms with a dining room and offices on the ground floor. It was known as the Commercial Hotel. The erection of the more substantial Marion Hotel by the Western Land and Improvement

7 *Jeannette Dispatch*, November 3, 1889.


9 *The News-Dispatch*, May 2, 1938.
Company very early drew from the patronage of the Commercial Hotel which rapidly degenerated into a cheap tenement, and within a few years, became a menace to the community because of the character of its occupants. The old structure was damaged by fire some three or four times, the last fire resulting in the loss of life on the part of the occupant of one of the rooms, after which the building was razed. 10

The Marion Hotel, quite a pretentious structure, was the center of Jeannette social life in the early years. A Mister McKelvey, the proprietor, catered to a large group of young men who came to Jeannette to seek their fortunes either in the offices of the factories or in their own business ventures. 11

The Elkin House in West Jeannette was established early as was also the Pfeister Hotel at the corner of South Third and Magee Avenue. John Albertolitti built and occupied a hotel for the accommodation of Italian people on Division Street and the red brick hotel building, for many years known as the Hotel Star, was erected early in the building operations of the South Side. 12

Although Jeannette was founded primarily around the several glass factories, it was not a company town. It was never dominated by one firm. Some of the glassworkers did live in houses which were company owned, but the majority of them owned their own homes. There was no such thing as a company store, and private enterprise flourished.

10 Ibid.
11 Ibid.
12 Ibid.
M. A. Gillespie was the real pioneer among Jeannette merchants. In 1888, he established a store for the sale of shoes and men's furnishings. That same year Joseph Diebold and his brother-in-law, George Wurzell, established the first grocery store, while Trimble and Ford opened the first bakery. About the same time, J. B. Haines Company of Pittsburgh erected a structure on the main street, Clay Avenue, which became the first department store. Such items as drygoods, groceries, and shoes were sold on the first floor, while furniture and carpets were offered for sale on the second floor. Drug and jewelry stores were soon opened, as well as stores which dealt in paint, wall paper, and hardware, livery and feed, and other such items as were required by any community. Many other establishments, including general stores, grocery stores, restaurants, hotels, confectionaries, millinery shops, laundries, meat markets, and furniture stores also came into existence during 1888 and 1889.

In 1889, the First National Bank was incorporated and opened for business with H. Sellers McKee as president and Charles R. Smith as the cashier. Capital stock of the institution was $50,000. It was known as a commercial bank, receiving primarily checking and commercial accounts, but upon urgent demand from its depositors, a


14 Jeannette Dispatch, June 28, 1889.

15 The men who incorporated the bank were H. Sellers McKee, D. Z. Brickell, Charles R. Smith, Thomas M. McKee, Frank E. Pope, John Barclay, James A. Chambers, William S. Jones, George E. Moore, Samuel H. Weaver, and Lucien W. Doty.
savings department was inaugurated.  

Religious services began in the unfinished packing rooms of the Chambers and McKee Factory in the summer of 1888. Very soon thereafter, the representatives of the leading denominations began gathering to themselves and making plans for the erection of their various houses of worship. Hand in hand with the churches came the lodges. The Heptasophs, the Royal Arcanum, the Maccabees, and the Junior Order of United American Mechanics were the first to claim local members. Since then, fraternal orders have multiplied until it is difficult for some people to find sufficient nights to attend the meetings of the lodges to which they belong. Women's lodges, too, have multiplied following the institution of the first woman's lodge in Jeannette, the Ladies of the Maccabees.  

Thus the town was founded, organized, and established; and with the great influx of workmen for the expanding glass industry, Jeannette grew from a farming community to become nicknamed the "Glass City" with a population of almost sixteen thousand in 1970.  

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16 Souvenir Book: In Commemoration of Armistice Day, 1927, Containing a History of Post 344, the Community and related Industries, 81.  

17 Ibid., 63.  

CHAPTER III

THE MCKEE GLASS COMPANY

The McKee Glass Company, which began operations in Jeannette in 1888, was organized as the McKee and Brothers Glass Works, manufacturers of crystal glassware, in 1853. Unlike many glass tableware firms which started small and grew, the McKee works began as a large concern. The factory was situated originally in Pittsburgh, Pennsylvania, and remained there until it was moved to Jeannette.¹ The company was forced to leave South Side Pittsburgh on account of the lack of space for the expansion of its facilities, the increased cost of fuel, the continuously rising city taxes, and inducements offered by cheap natural gas in the Grapeville gas fields.²

H. Sellers McKee of McKee Brothers, enlisted his acquaintances on the board of directors of the Pennsylvania Railroad Company and Philadelphia bankers to help him relocate his factory. These men gave McKee the financial assistance that he needed. One of these friends was Richard Clay, head of the Loan and Trust Company of Philadelphia who also became a member of the Western Land and Improve-


It initially took forty railroad boxcars to move the first factory equipment from Pittsburgh to Jeannette. When H. Sellers McKee first began the building, he planned a tableware glass factory, the largest of its kind under one roof in the world.

When the McKee factory moved to Jeannette, all of its products were hand blown and the company employed pot furnaces to produce molten glass. The pot furnace contained between three and twelve refractory pots, which were slowly preheated in a special furnace, called the pot arch, to a temperature above 1,000 degrees Fahrenheit, and were transported hot to the pot furnace to avoid the cracking that would occur if they were heated quickly. In this way, several pots could be kept ready for use at the same time. The glass to be worked was taken from a small area on the surface of the pot which had been skimmed and kept clear of surface impurities by a fireclay ring floating on the glass. The gatherer would collect a gob of hot glass on the end of a blowpipe and pass the pipe to the blower who would puff into the blowpipe and shape the glass into the desired article. At times the blower reheated the article in the furnace to keep the glass soft enough to work. The necessary equipment required for the glass blowing process was set up during the summer of 1888, and by September, the first glass product was blown in the McKee

3 Ibid.


factory. It was a candy dish called the "nappy". Additional products which McKee soon began to turn out were blown lamp bases, cut glass bowls and tumblers, and other items for home use.

From the time of the first glass blowing, The McKee Brothers' factory was expanded and improved. In August, 1889, a ventilation system was installed to remove heated and impure air from the factory which was always a major hazard to the workers' health. The fan capacity was listed at 35,000 to 40,000 cubic feet of air per minute. The local newspaper then declared that the factory was provided with every modern improvement known to the trade...beginning with the mixing rooms adjoining the railroad tracks, we find the material conveyed to the three large furnaces with the aid of belts...The immense furnaces are each encircled with cold air flues forming a network of pipes and hose to chill the heated temperature in which the workmen are obliged to toil while on duty. The cold air is generated and forced through the flues by machinery and shows great foresight on the part of the employers in adding every possible convenience to the comfort of their workmen.

That same year an addition to the already immense warehouse measuring 335 feet by 100 feet was constructed, and ground was broken for the erection of a tank furnace. When completed, the new tank furnace was eleven feet, eight inches long, about seven feet wide, and twenty inches deep. This furnace had walls which served both to retain the

6 The News-Dispatch, May 2, 1938.

7 Jeannette Dispatch, August 9, 1889.

8 Ibid., May 3, 1889.

9 Ibid., June 21, 1889.
heat and to hold the glass and had a capacity of about ten tons of liquid glass. It was a continuous furnace; that is, the molten glass was kept at a constant level by feeding raw materials in at one end at the same rate as molten glass was being drawn off at the other. This type of furnace was most suitable for high-speed production.  

The tank system was not entirely new when introduced by McKee in 1888, but it was still, to a large degree, experimental. Until this time, flint glass was produced with the aid of pot furnaces into which were placed from four to twelve individual pots of molten glass which was preheated in the pot arch and moved to the furnace. It was hoped that the many difficulties encountered in the manufacture of flint glassware would be overcome by the new tank furnace of McKee Brothers. The fact that glass could be made cheaper and that fewer pots were required resulted in a great saving in money. Prior to the tank furnace, it was necessary to renew the pots in a pot furnace about four times during a fire, or approximately every nine months. These pots were valued at from $45 to $50 each. This saving alone enabled a successful tank glass manufacturer to undersell all his pot glass competitors simply because he had cut overhead costs. With the new tank furnace, which had a capacity of six pots, each one which would be replaced four times during the year, the total expenditure of about $1,200 was avoided. This new furnace proved a success at McKee Brothers and was generally adopted by most firms in America after 1900.  


11 Jeannette Dispatch, August 9, 1889.
This new tank furnace at McKee Brothers operated in addition to the already three existing furnaces which contained fifteen pots each. In 1895, Michael J. Owens, an American glass blower and inventor, patented a mechanical device for shaping bulbs, lamp chimneys, and tumblers semi-automatically through a combination of vacuum and blowing; and in 1899, Owens perfected a method of pressing and fire polishing glass "blanks" for tableware which could then be finished by skilled cutters. American factories had pressed large quantities of tableware in engraved copper or brass molds by placing a quantity of molten glass into the mold and inserting a plunger into the mold which forced the glass into the desired shape. Since molten glass was always scarred through contact with metal, the surfaces of glass made in this manner lacked luster and brilliance. The surface of the pressed ware could be polished on the outside by exposing it to an intense flame or by touching it up with a polishing wheel, but there was no way to restore the brilliancy of the inside surface, marred by contact with the metal plunger. Owens' device solved the problem. The glass "blank" was first pressed in one mold, transferred to another, and there subjected to a jet of fire which played around the "blank's" inside surface.\textsuperscript{12} With the continuous tank furnace, the McKee Brothers' Glass Company employed these methods along with the older, more artistic method of blowing by hand. The tank furnace greatly increased automatic production and as mechanical methods were developed and perfected, the number of

hand blown articles gradually decreased until by the early 1920's none was blown by hand at all.

By October, 1889, the McKee Brothers' factory complex covered four and one-half acres and employed more than five hundred workmen. The factory continued to operate this way until 1899, when it passed from the McKee family, although H. Sellers McKee resumed business for a short time in the window glass field prior to his retirement in 1900.¹³

On November 1, 1899, nineteen glass companies, representing about one half of the available productive capacity in the general line of glass tumblers, novelties, and tableware, merged to form the National Glass Company of Pittsburgh. The nineteen individual factories¹⁴ were purchased strictly on a cash valuation basis with shares of stock of the National Glass Company. The appraised value of the nineteen companies was $4,000,000. The merger was financed by the Whitney and Stephenson Company, assisted by the Union Trust Company and T. Mellon

¹³ *Jeannette Dispatch*, October 11, 1889.

and Sons, all of Pittsburgh. The new company's first president was Henry C. Fry of the Rochester Tumbler Company.\textsuperscript{15}

Many problems developed and by 1902, only twelve members\textsuperscript{16} remained with National Glass, McKee Glass being one. Other factories had been dropped from the list of members, either because they had closed down or had left the merger to resume business on their own.\textsuperscript{17} Also, dissension developed within the management, and from time to time, some of the ablest men disassociated themselves and became competitors of National Glass.\textsuperscript{18}

The authorized capital stock of the company was $4,000,000, of which only $2,325,000 had been issued up to 1902. On February 16, 1903, the stockholders of the company voted to create an issue of $2,550,000 of preferred stock and to retire $775,000 of the stock at that time. This was done in order to provide a working capital in cash of $775,000.

\textsuperscript{15} C. I. Brockius of the Canton Glass Company was vice-president; John M. Jamison of the Greensburg Glass Company was secretary-treasurer. These, with the following, formed the board of directors: D. C. Jenkins, Greentown, Ind.; W. J. Alford, Summetsville, Ind.; Addison Thompson, Marietta, Ohio; A. Strausburger, Albany, Ind.; L. C. Fletcher, Cumberland, Md.; and A. Hart McKee, Pittsburgh, Pa.; Pittsburgh, National Glass Budget, September 16, 1889.


\textsuperscript{18} Stout, The Complete Book of McKee Glass, 14.
The new stock was non-cumulative bearing seven percent interest. This change made the total capital of the company $4,100,000 divided equally between preferred and common stock.  

The first annual meeting of the National Glass Company was held on August 4, 1900, with seventy-five percent of the capital stock being represented. The financial statement presented by H. C. Fry showed the total operating and general expenses to have been $2,251,011. The gross earnings, including inventories, were $2,574,518, making the net earnings $323,507. The figures presented by Fry indicated that the company had earned about ten percent on its capital stock. The next annual meeting was held on August 13, 1901, and it was reported that nearly 44,000 shares out of a total of 46,000 were represented. Internal dissension had arisen in the company though no specific information for why seems to have survived. Considerable jangling took place over the election of officers and resulted in A. W. Harron being chosen to succeed H. C. Fry as president after Fry left the company. The stockholders at this meeting approved a proposition to increase the bonded indebtedness of the company by $700,000, making the aggregate bonded indebtedness $2,500,000. This action, it was stated, was necessary because the company at its inception did not provide for sufficient working capital. From that time forward, annual meetings took the shape of mere formality and no additional financial statements were issued.

19 National Glass Budget, December 28, 1907.

The next major change made by the National Glass Company took place on January 1, 1904, when it ceased to be an operating company and became a holding company. Those of its factories which had not either burned down or been disposed of were incorporated under the laws of the state of Maine. Usually the old managers of the subsidiary companies remained as presidents of these new corporations. The operations of these concerns varied according to the conditions, general locality, and special products of each; however, the results of the National Glass Company's change from operating company to holding company reduced the expenses of the central offices to a minimum. After leasing the various factories, National Glass held the management of each company responsible for the agreed rentals and maintenance of the leased premises but did not interfere with individual company policies.

The National Glass Company leased the McKee works at Jeannette, one of its finest plants, to the McKee-Jeannette Glass Company, a new corporation with a capital of $250,000. Andrew J. Smith became president, Ernest G. Smith was secretary, and William C. Carle became factory manager and superintendent. All of these individuals were associated with the McKee works when it was an operating part of National Glass. Within months after the new corporation was formed, two furnaces were running, with a prospect of adding the third. The

21 Ibid.


23 Ibid.
plant practically abandoned the production of such things as chimneys, tumblers, and jars, and concentrated on producing higher grade glassware and tableware. The plant became known as the largest flint glass factory in America. In 1904, there were six furnaces and two tanks running, while under the National management, only one furnace had operated.\(^{24}\)

The National Glass Company was greatly overcapitalized and expensively run. The value of the stock in 1901 was $50 a share, but by the end of 1904 it was offered at $10, with $2 as the best bid.\(^{25}\) In December, 1907, bankruptcy proceedings were entered against the Whitney and Stephenson Company, one of the financial backers of the National Glass Company, and immediately application was made for receivers for half a dozen subsidiary concerns of the National Glass Company.\(^{26}\)

Naturally with its financial backers in such a bad state, National Glass had no choice but to declare bankruptcy. In 1908, a newly formed corporation, the McKee Glass Company, took over the properties of the McKee-Jeannette Glass Company which was in the hands of Andrew J. Smith and John W. Keltz. Smith bought the company out of receivership. The receiver, the McKee Glass Company, was under order of the courts to pay all debts incurred by the National Glass Company. The new corporation was formed to take over the operation of the plant after the final discharge by the courts and reorganization took place in 1909.

\(^{24}\) Ibid.

\(^{25}\) Revl, American Pressed Glass and Figured Bottles, 248-249.

\(^{26}\) National Glass Budget, December 28, 1907.
The new McKee Glass Company was incorporated with a capital of $125,000. Its officers included Andrew J. Smith as president, with John W. Keltz, D. B. Pelky and other local area capitalists in control. Due chiefly to the efforts of Andrew J. Smith, the new president, the company was able to pull itself out of the financial crisis and set foot on solid financial ground again.

The new company was, however, not without problems. In 1899, Michael J. Owens developed a process and invented a machine to make glass "blanks", or molded glass pieces which were uncut and unpolished on the outer surface. Owens sold the patent process rights to the H. C. Fry Glass Company of Rochester, Pennsylvania. Since the "blanks" were pressed and fire-polished in deeply engraved molds, and since semi-skilled cutters had only to touch up and sharpen the patterned lines on each piece, Fry was able to market the glass very cheaply. Formerly workers had to trace the designs on each glass object with their cutting wheels which was a very time-consuming operation. In February, 1903, the Libbey Glass Company of Toledo, Ohio, asked H. C. Fry to allow it to employ Owens' process and invention. They reached an agreement the following year whereby the two companies were to share the patented monopoly in pressing patterns on cut-glass "blanks". Libbey Glass agreed to make only forty percent of their combined output, and both promised not to cut selling prices and to pool all existing and future patents relating to the process. The agreement provided that each should pay the other a severe penalty if it made more than its

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27 Stout, *The Complete Book of McKee Glass*, 14; Early in 1910, a court order had been entered for the discharge of Smith and Keltz as receivers for the McKee-Jeannette Glass Works as operated in the days of the National Glass Company.
share of the output or undercut the established price. Later, on June 9, 1910, they agreed to allow the McKee Glass Company annually to make a limited number of pressed "blanks". For this privilege, McKee was to pay Fry and Libbey a royalty which was to be divided on a 60-40 basis, with Fry getting the larger share. But because McKee constantly made more "blanks" than was stipulated for in the contract, it was cancelled on December 31, 1913. Later, the McKee Glass Company filed suit in the Court of Common Pleas of Beaver County, Pennsylvania, sitting in equity against the H. C. Fry Glass Company over the cancellation of its contract. On April 11, 1921, however, the McKee Glass Company filed an Order of Discontinuance, and therefore, no decision was handed down. 28 In the meantime, on November 22, 1907, a Bill of Complaint was filed in the Circuit Court of the United States for the Western District of Pennsylvania by George W. Blair and the H. C. Fry Glass Company against the National Glass Company, McKee-Jeannette Glass Works, and Andrew J. Smith, stating that certain articles of lead glassware were being manufactured under the patent process owned by the H. C. Fry Glass Company. In 1909, supplemental bill was filed against the McKee Glass Company, and on January 9, 1914, an Intervening Petition of the Libbey Glass Company was filed in the United States District Court of the Western District of Pennsylvania in the case of the H. C. Fry Glass Company versus the McKee Glass Company, et al. In April, 1917, the United States Circuit Court of Appeals for the

28 In the Court of Common Pleas of Beaver County, Pennsylvania, Sitting in Equity, Between McKee Glass Company, Plaintiff, and H. C., Fry Glass Company, Defendant, Court Records for the March Term, 1914. Office of the Prothonotary, Beaver County Court House, Beaver, Pennsylvania.
Third Circuit held that the McKee Glass Company had infringed on the Fry and Libbey patents in fact and enjoined them from any further use of the patents in question. The court also granted the plaintiffs all profits which the defendants had realized on the process. Total damages awarded Fry and Libbey amounted to $113,000. The loss of this large sum, of course, did not help the financial condition of the new corporation.

In 1916, patents again played a role in the products of the McKee Glass Company. In that year, the United States Glass Company and the Duncan and Miller Glass Company granted the McKee Glass Company and the Cambridge Glass Company licenses to manufacture certain pressed, figured, and cut products for which United States Glass and Duncan and Miller held the patents. McKee and Cambridge were, of course, required to pay a royalty on each item sold on the inventory of that particular process. Since the glassware industry was highly competitive, profits were not large, and volume sales were, therefore, essential. Any method of production or product design such as those which saved time, money, or both, or increased sales, was greatly to be desired. Ideas and patterns developed by one factory were often

29 In the Court of the United States for the Western District of Pennsylvania, Sitting in Equity, Between George W. Blair and the H. C. Fry Glass Company, Plaintiff and the McKee Glass Company, et al., Defendant, Court Records for the May Term, 1908, Office of the Prothonotary, Federal Court Building, Pittsburgh, Pennsylvania.


31 This meant that United States Glass and Duncan and Miller Glass would and did receive a royalty on the business of the McKee Glass Company in these product lines.
copied throughout the industry. When one manufacturer authorized another to use his patented process, a "notice to the trade" announcement of that arrangement was made. Other manufacturers could not infringe on these patents without being liable to legal prosecution.  

The McKee Glass Company was now able to attract large buyers for its wares, but buyers were requesting immediate or early deliveries of its products, and this, of course, created transportation problems. But the largest problems of all glass houses in the 1916 era came from the shortage and high prices of raw materials and the demand by the workers for increased wages. As a result, the glass manufacturers were compelled to raise their price lists upward. In the early years of World War I, the glass market was very unstable, causing concern for jobbers and big buyers alike. Yet tea and coffee dealers, who were large users of glass, still placed liberal orders and other dealers placed large orders for decorated water and lemonade sets and for table service sets.  

With these orders, the company was able to continue operation and this indeed helped McKee Glass through rough financial times.

About 1920, an agreement was made with the Corning Glass Company to produce heat resistant ovenware by hand under Corning patents. During this time, McKee was producing fifty to sixty percent of the lenses for automobiles, railroad signals, and many custom designed lighting items. The company was also very strong in bar ware, soda

33 Ibid.
fountain, and hotel and restaurant supplies. McKee also produced many glass accessories used for the more modern home electric appliances such as mixers, roasters, and refrigerators.\textsuperscript{34} The company continued with these lines down to the early 1950's.

In 1951, the McKee facilities were purchased by the Thatcher Glass Manufacturing Company of Elmira, New York, to diversify its glass production for the consumer markets. For the next ten years, McKee operated as a division of the Thatcher group. During this period, only minor changes were introduced into the McKee product line, the items turned out by McKee having remained fairly standardized.

During the period of Thatcher control, Jeannette Glass Company, another old established tableware and commercial glass producer, whose factory was located just ten blocks from the McKee plant, decided to acquire the McKee operation. Such a merger would enable the two companies to combine overhead costs and to operate more economically.\textsuperscript{35} On November 1, 1961, the Jeannette Glass Company purchased the buildings and all product manufacturing rights of the McKee Division from the Thatcher Glass Manufacturing Company. All office functions of the new group were integrated into the 12,000 square foot office building located at the McKee site. All research and development operations, as well as machine and mold work, were also to be carried out at the McKee plant. Office and plant personnel were merged, as was the field sales organization in order to

\textsuperscript{34} Ibid., 19; Jeannette's Seventy-Fifth Anniversary, June 7-15, 1963, Souvenir Program, (Jeannette: City of Jeannette, 1963).

\textsuperscript{35} Stout, The Complete Book of McKee Glass, 19.
achieve a stronger sales force and better production and shipping operations, and more favorable buying advantages to the customer due to the resultant decrease in overhead costs. 36

The combined product line of the new Jeannette Glass Company featured the famous "Glasbake" line in heat resistant ovenware and the now almost equally famous "Coffee Hottie", originally introduced by McKee, new glass accessories for the lamp and lighting trade, as well as modern styles of tableware and tumblers.

CHAPTER IV

THE CHAMBERS-MCKEE GLASS COMPANY

James A. Chambers moved his manufacturing concern to the Jeannette area at the same time that H. Sellers McKee and the McKee Brothers Glass Company arrived there. Chambers was another glass manufacturer from Pittsburgh who was associated with the firm of A. and D. H. Chambers which was established there in 1843. The A. and D. H. Chambers Glass Company, like the McKee Company was forced to leave South Side Pittsburgh because of the increased cost of fuel, the continuously rising city taxes, the lack of space for the expansion of its facilities, and inducements offered by cheap natural gas in the Grapeville gas fields. ¹ When the move was made, James A. Chambers became a partner of H. Sellers McKee in the production of window glass, and the new firm was known as the Chambers-McKee Glass Company. The new company applied for a charter on December 15, 1887, and it was incorporated with a capital of $250,000 early in the following year. ² Construction of the factory started soon afterwards. When completed on May 20, 1889, it contained the largest tank process for hand blown


² Ibid.
window glass in the world. The tank itself measured thirty feet wide by one hundred and thirty feet long.

In this hand process for the making of window glass, sufficient glass to produce a cylinder from fifteen to twenty inches in diameter by fifty to seventy inches long was gathered by hand from the tank containing molten glass on the end of a long blowpipe. After suitable forming, the glass blower swung and blew this glass into a cylinder of relatively uniform wall thickness. The ends of the cylinder were removed and the hollow cylinder was split and placed in a heating oven, where the glass was softened and then was flattened by workmen using wooden tools. The glass was then passed through the annealing lehr, another oven where the glass was again heated and then cooled uniformly. After cooling, the glass was cut into various sizes.

At 1:00 p.m. on Monday, May 20, 1889, operations at the new factory commenced. As the Jeannette Dispatch reported:

Within two seconds after the word had been given, the 24 men were gathering the white metal out of the vast sea of molten glass. Rapidly they pulled it out turning the pipe all the time; quickly they ran to the blowing block, alternately turning and blowing until the glass at the end of the pipe assumed extortionate dimensions. Then the gatherers handed the first pipe to their blowers to give them a turn at the work. Gently, these men handled the pipes, first placing the metal into the furnace, and then

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3 Ibid.

4 Ibid.

swinging it to and fro in the pits beneath them, blowing again and again into the pipe. Larger and larger grew the huge bubble shaped bowl, until gradually it changed its shape into a cylinder. Longer and longer grew the cylinder until at last it measured about seven feet.

These cylinders, as already mentioned, were then reheated, split, opened up, and flattened in large sheets. Thus the first window glass plant in Jeannette started operations which would continue down to the present day.

Additional facilities were soon added to the initial plant. In July, 1889, the company began construction of a new warehouse made of solid stone which measured 50 by 350 feet. Two hay houses, each measuring 40 by 53 feet and with a capacity of twenty-five railroad boxcar loads of hay, were planned for the storage of hay for the company's horses. Work also commenced on a new stable, 25 by 50 feet. Another tank furnace with the same dimensions as the first was built and ready for use on September 1, 1889; and in October, ground was broken for a third tank furnace which was to be ten feet wider than the other two. By 1899, the plant complex consisted of four tank furnace buildings, a clay house used for the making and working of clay objects used in the glassmaking process, a garage and carpenter shop, a batch plant where raw materials were mixed, a flattening house in which the glass cylinders were flattened, a cutting room, a box shop where the glass was packaged for shipment, and several warehouses. By 1955, the entire manufacturing facility covered an area of 34.2

6 Jeannette Dispatch, May 24, 1889.

7 Ibid., July 26, 1889; October 25, 1889.
acres. The factory was originally designed to be a hand cylinder operation, and this hand blown operation was used until 1903.

On September 15, 1899, The American Window Glass Company acquired the property of the Chambers-McKee Glass Company. The American Window Glass Company bought forty-one window glass plants located in several different states and was incorporated under the laws of Pennsylvania in August, 1899. The company at this time controlled about eighty-five percent of window glass production in the United States. At this time also, H. Sellers McKee, partner of James A. Chambers and also owner of the McKee Brothers' plant, was irked by friction with Chambers over expansion of the Chamber-McKee plant and decided to sell his interests to Chambers and the American Window Glass Company, and his interests in the McKee Brothers' plant to National Glass. He received considerably more than a million dollars for his assets.

James A. Chambers became the first president of the American Window Glass Company, and he immediately looked for some way to expand production. He found it in a new machine for making sheet glass. The inventor was John H. Lubbers. Chambers financed Lubbers' experiments which resulted, in 1903, in the perfection of the Lubbers cylinder glass blowing machine. Basically an automated hand operation, glass was drawn into cylinders by mechanical apparatus and then cut into segments and flattened by hand. Workers first ladled molten glass from the melting tank into special pots which were heated from


9 The News-Dispatch, May 2, 1938.
beneath and which held just enough glass for one cylinder. Directly above each of these pots hung the drawing apparatus. It consisted of a flanged metal, or "bait", on the end of a large blowpipe which descended into the pot; after the glass had hardened sufficiently on the flange, the bait was slowly raised between two guiding shafts by mechanical power. Compressed air continuously flowing through the blowpipe expanded the cylinder to the desired diameter which it thereafter maintained.

The speed of drawing the bait upward, the temperature of the glass in the pot, and the rate at which air was admitted, determined the thickness of the glass and the circumference of each cylinder. When the pot was about empty, the rate of drawing suddenly increased, and the cylinder broke loose at its base. Workmen then carefully lowered it onto a support so that others could cut away the cap and divide the cylinder into sections. Each section was split, reheated, flattened out, and finally annealed using hand methods.\textsuperscript{10} The entire glass industry adopted the Lubbers machine cylinder process after it was proven at Jeannette.\textsuperscript{11}

The American Window Glass Machine Company was incorporated under the laws of New Jersey in 1903. Its capitalization consisted of $6,998,993 of preferred stock and $12,997,993 of common stock. It assumed control of the American Window Glass Company by a one for one exchange of Machine Company stock for the common stock of the Window


\textsuperscript{11} "Brief History of Factory No. 2, Jeannette".
Glass Company. The company owned the exclusive rights in the United States to patents on machines used for the manufacture of window glass, including the rights to the Lubbers machine. These rights were leased on a royalty basis to the American Window Glass Company. Through its subsidiary, the Machine Company operated manufacturing plants in several cities in Pennsylvania and Indiana. Other companies used Lubbers machines to manufacture glass, but the Machine Company was uniformly successful in protecting its patent rights. In suits charging concerns with using its machines without license, the courts found for the Machine Company and held the defendants liable for every foot of glass made with the machines.\(^\text{12}\) As a subsidiary of the Machine Company, the American Window Glass Company's plant at Jeannette continued to expand its physical facilities and improve its production methods.

Beginning in 1913, the American Window Glass Company improved and expanded its Jeannette facilities significantly. That year its warehouse was gutted by fire with a loss of a million boxes of glass, but the walls remained intact and the structure was rebuilt. A new batch plant was then constructed in 1914. The batch plant is that part of the factory complex where the necessary raw materials are mixed in exact quantities before being placed in the furnace. The plant in the Jeannette complex consisted of seven silo-type storage bins with a total capacity of 4,450 tons of raw materials, a mixing room where actual mixing of the materials took place, a batch mixer

of 7,500 lbs. capacity for mixing the materials, a storage room for raw materials which were hand-weighed for special types of glass with an area of 2,800 square feet, and raw materials unloading facilities capable of handling five railroad carloads of raw materials per eight hour day. In the batch plant, the raw materials were mixed in the 7,500 lb. capacity rotary mixer after which the "batch" of mixed materials was dropped into a bin and then delivered to a bucket elevator by means of a conveyor and then to an overhead bin and stored. From there the "batch" was transported to a thirty-five ton capacity bin above the furnace by an electrically powered four-ton capacity hauling car which traveled the distance from the batch plant to the furnace over a trestle on rails. It was then dropped by gravity to another bin from where it was fed into the furnace.\(^\text{13}\)

In 1919 and 1920, a second tank furnace building was erected at the Jeannette plant and, in 1922, an upstairs cutting room was added.\(^\text{14}\) This cutting room was located on the second story of a two story stone building, and as the name implies, was used for the cutting of the glass sheets to specific desired sizes. The Number 2 furnace building, completed in 1920, had a total area of 46,210 square feet. From the completion of the furnace building until 1930, the Jeannette factory boasted two of the largest glass melting furnaces in the world. Their inside dimensions were 140 feet long, by 36 feet 3 inches wide, by 5 feet deep. Each tank furnace held 1,800 tons of molten glass and had a melting capacity of 250 tons of additional raw materials per day,

\(^{13}\) "Brief History of Factory No. 2, Jeannette".

\(^{14}\) Ibid.
enough to make 3,240 boxes of finished sheet glass per day. These large tanks had twelve Lubbers machines each, and with the eight machines at Tank Number 4, gave the plant a total of thirty-two machines drawing cylinders up to thirty-four inches in diameter and forty-three feet long.¹⁵

In 1930, Tank Furnace Number 2 was rebuilt. The new furnace's inside dimensions were 24 feet by 170 feet with a depth of four feet from the back wall, forward 91 feet. At this point, the depth was stepped up to three feet. Its glass content was 1,334 tons or 33.846 tons per inch near the top and its rated melting capacity was about 240 gross tons per day. This gave a finished production of about 4,450 fifty-foot units of sheet glass per day.¹⁶

The machine room for Tank Number 2 was also remodeled and thirteen ninety-inch Fourcault machines were installed. These machines were used to draw sheet glass automatically. In this process, glass was drawn vertically through a partially submerged refractory boat with a narrow central slot from whose lips the glass was drawn continuously by a series of asbestos-covered rolls placed in pairs above the drawing block. A bait in the form of an iron grille was lowered into the molten glass and when the glass adhered to it, the bait was slowly raised, drawing with it a continuous sheet of glass. The rising sheet was gripped by the first of a series of asbestos-covered electrically driven rollers mounted in pairs and enclosed in a vertical annealing lehr. The process having been started, the bait was

¹⁵ Ibid.
¹⁶ Ibid.
then cracked off and played no further part in the operation. The width of the rising ribbon of glass was maintained, and the glass prevented from twisting, in two ways; first, a steel plate, called the form, which had a machined slot in it, was placed just above the level of the molten glass and the sheet was actually drawn up through and shaped by the slot; second, a pair of knurled, air-cooled rollers gripped the sheet at the edges, cooling the glass, and ensuring that the sheet remained constant in width. Without these devices, the ribbon of glass would quickly have contracted in width, narrowed, and become worthless. Also facing the sheet just as it left the tank were water-cooled steel boxes that served as heat sinks and thus helped to solidify the sheet quickly. Once the bait had been cracked off, the machine took over, the whole process became automatic, and the flow of the sheet was interrupted only when major repairs were needed. Temperature control at every point was automatic, feed of raw materials was related to withdrawal of the sheet, and not until the rising sheet had hardened and annealed and finally arrived in the cutting loft, about thirty feet above the tank, did any manual handling become involved. These sheets were then conveyed to the cutting rooms to be cut to specified sizes. Once started, the machines operated continuously twenty-four hours a day, seven days a week. The drawing machine also acted as an annealing lehr where the glass was cooled uniformly to prevent cracking and tempering of the glass was under controlled conditions. 17

Even with these new machines, the unit was never operated since the slackening demand for sheet glass during this period could be met with the production of the other existing units. In 1936-1937, the tank was dismantled and rebuilt to provide for seven new ninety-inch Fourcault machines which were designed and built by the American Window Glass Company. Operation commenced in early 1937. Later, two more drawing machines were added, making a total of nine. Mechanical break-off machines to be used for the cutting and breaking of large sheets of very thick or heavier than double strength glass were designed by the American Window Glass Company's development department and also installed. Sheets up to 123 inches in length could then be broken off with little trouble. Besides being able to produce extremely large sheets of glass, the development of this equipment helped to minimize distortion and waviness which was a common defect of sheet glass. 18

Tank Number 4 was built in 1932 and was designed to use one of the new Fourcault machines and has since operated intermittently for the production of special types of clear glass and various colored glasses. The furnace held 175 tons of glass and was capable of producing twenty-five net tons of glass per day. 19

The company also had a number of service facilities. Its warehouse was 1,120 feet by 64 feet with an actual storage area of 61,552 square feet. The railroad siding adjacent to it could accommodate

18 "Brief History of Factory No. 2, Jeannette".

19 Ibid.
fifteen boxcars, and the truck siding could handle eight trailer trucks at the same time. A corrugated box department was set up which had a working area comprising 6,000 square feet. A lumber storage shed was built measuring 80 feet by 173 feet with a capacity of about one million board feet, and each day the box department produced about 1,800 wooden boxes, 1,750 cardboard boxes, and about 42 pallets.²⁰

Other facilities at this factory included the laminated glass department which produced laminated safety glass and operated from 1928 until it was transferred to Glass Products, Inc., a subsidiary of American Window Glass, at Ellwood City, Pennsylvania, in 1948. The Cover, or Optical, Glass Department operated from 1940 until 1949, making microscope cover glass of about 0.006 inch gauge through several specific modification processes.²¹

In order to increase and diversify production, in 1958, the American Window Glass Company was merged with the Blue Ridge Glass Company to form the American Saint Gobain Corporation, the only United States producer of all three types of flat glass—plate, sheet, and patterned. A. S. G. Industries carried out a three million dollar modernization program of the Jeannette Facility. During this period of modernization, Number 3 Tank Furnace was rebuilt and designed to produce heavier weight sheet glass and employed two continuous drawing machines. A. S. G. Industries has continued to expand its facilities at Jeannette until it became one of the largest factory complexes in the city.

²⁰ Ibid.
²¹ Ibid.
The Jeannette Glass Company was incorporated on June 14, 1898, and succeeded a firm known as the Jeannette Bottle Works which had been in operation for some time and was engaged in the manufacture of bottles by a hand process. Scarcely had the building of the city of Jeannette been projected when men from nearby Greensburg agreed to finance the building of a bottle factory close to the Pennsylvania Railroad's main line which they named the Jeannette Bottle Works. The factory changed ownership so frequently that it became known as the "fizzle". The officers of the new Jeannette Glass Company which took over the "fizzle" in 1898 were Joseph W. Stoner, president, and W. A. Huff, secretary. The new company carried on the business of the old bottle works and supplied bottles for drugs, soft drinks, liquors, and containers for various kinds of food. The plant itself was under the management of S. R. Hall and, as before, produced bottles and containers by hand.¹

With the introduction of the Owens Bottle Machine in 1899, it became economically advantageous for all manufacturers of this class of glassware to discard to a great extent the hand process and make their wares by machine. This new machine not only gathered and blew

Glass but also made bottles as well as jars. Glass flowed from the melting tank furnace through a clay spout into a special revolving pot which was built just inside the furnace so that part of it extended beyond the furnace walls. The pot was shallow and slowly revolved on its axis, thereby allowing the furnace temperature to keep the glass in it heated and in a workable state. The fact that the pot revolved offered another advantage in that successive gathers were not drawn from that portion of the glass which had been disturbed and made full of bubbles by the immediately preceding gather. Each machine, equipped with six or more "arms" with their own set of blank and blow molds, made several bottles simultaneously and gathered molted glass by sucking it up from the revolving pot. As each arm of the machine came opposite the pot, the arm dipped the bottom of its blank mold slightly below the surface of the glass and sucked up a sufficient quantity to form a bottle or jar. A broad bladed knife attached to each mold automatically severed the glass from that remaining in the pot and at the same time provided a bottom for the mold.  

Once the glass was gathered in this fashion, the second phase of bottle-making began. The blank mold was attached to a so-called neck-ring, which in reality was a full-sized mold for shaping the bottle's top. When the machine sucked up the molten metal from the revolving pot, the glass filled both the blank mold and the neck-ring. In this way, the mouth and lip of each bottle were completely formed.

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before any other part. As the machine continued to rotate on its axis, the blank mold eventually opened and dropped about three feet, thereby leaving the gob of glass suspended from the neck-ring. Then occurred a short, preliminary blowing before the blow mold rose from below and enclosed the glass once again. Compressed air, passing through the bottle's completely formed mouth, inflated the still viscous glass to the dimensions of the second mold. As the machine neared a complete revolution, the neck-ring separated, joined the blank mold once again, and assumed the position necessary for another gathering. The bottle, meanwhile, remained in the blow mold to harden as the mold dropped to its original position below the pot and the dipping arm. The bottle fell onto a conveying belt leading to the annealing oven when the blow mold finally opened and again rose to envelop the second gob of glass which had just been sucked up into the blank. Hence, each arm of the machine made one bottle about every one and one-sixth revolutions. For one-sixth of a revolution, each arm carried a gob of glass in its blank mold and a blown bottle in its other mold. A six-arm machine, consequently, held seven bottles in different stages of completion at any given instant; a ten-arm or fifteen-arm machine carried simultaneously about twelve or seventeen bottles, respectfully. 3 From this description, it can readily been seen how the machine greatly increased production of bottles and jars. The semi-automatic O'Neill bottle blowing machine used with great success at the Jeannette Glass Company was a variation of the Owens machine. The principle of the O'Neill machine was the same as that of the Owens machine with the exception that the molds were not filled with the

3 Ibid.
molten glass by means of vacuum as in the Owens machines, but were filled by hand.

With the adoption of glass containers in a large way by packing houses for use in marketing such products as pickles, olives, relishes, and mayonnaise, there was a large demand for wide-mouth bottles and jars, and the company, finding the competition in narrow-neck bottles to be very keen, turned to this new field with great success. During the time of the introduction of these new machines, S. R. Hall resigned and he was succeeded as plant manager by A. W. Crownover, who was very much interested in the manufacture of wide-mouth bottles and jars. In 1904, with George M. Davis as president, the company had one continuous tank of ten working rings and one three-ton day tank working in conjunction with the semi-automatic machines. The products which they turned out included prescription bottles, bottles for drugs, sodas, mineral oil, wines, brandies, flasks, proprietary medicines, milks, and jars for such things as fruits and preserves.

From time to time, in addition to the products mentioned, the Jeannette Glass Company made automobile lenses, sidewalk glass, glass building blocks, and numerous other pressed ware and also solicited private mold work of various kinds. In 1917, the American 3-Way-Luxfer Prism Company of Chicago purchased the controlling interest in the Jeannette Glass Company to insure their supply of sidewalk glass

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4 The News-Dispatch, May 2, 1938.


6 The News-Dispatch, May 2, 1938.
and prism tile for use in store front construction. The new owner made Isaac Ambler plant manager, and the entire production of the plant was turned from bottle making to the manufacture of pressed ware. In 1920, the company purchased the first entirely automatic pressed glassmaking machine. With this machine and its accompanying flowing device, the company was able to make pressed ware in very large volume without the aid of any skilled labor whatever.  

Under Ambler’s management, the plant was further improved and enlarged. A new packing facility was built and other physical expansions were made. After Ambler’s death in 1924, the management of the company passed to Carl T. Sloan. Shortly after Sloan took over, the company increased the number of different items made on the automatic machines, and, in addition, developed a line of hand-made pressed tableware. During this period, C. P. Mills and C. H. Paschall, who owned the controlling stock in the American 3-Way-Luxfer Prism Company, took an active role in the management of the Jeannette plant.  

In 1926, Mills and Paschall disposed of their interests in the American 3-Way-Luxfer Prism Company but retained control of the Jeannette Glass Company. Paschall became president of the company, while Mills was made vice-president, and Carl T. Sloan was named secretary and treasurer.  

In 1935, the company was reorganized as a publicly owned corporation, and its common stock was listed on the American Stock Exchange in 1936. The company then had 350 employees, but the volume of its production was, and had for some time been, irregular. The glass

7 Ibid.
8 Ibid.
9 Ibid.
melting equipment in use went from two continuous tanks in the years before 1924, to three in that year, to five in 1930. From this high point there was a steady decline, for the number of tanks in use dropped to four in 1933, to three in 1941, and to a low of only two in 1944.10 But during 1945-1946, the capacity of the plant more than doubled to five tanks in response to post-war demands for consumer ware.11

In 1960, the Jeannette Glass Corporation entered an important new phase of its history. That year Maurice L. Stonehill, a Cleveland industrialist, assumed the leadership of the company as president and chairman of the board. Eighteen months later he arranged the purchase of the neighboring McKee Glass Division of the Thatcher Glass Manufacturing Company.

This purchase of November 1, 1961, started Jeannette Glass on an extensive program of diversification and modernization. The addition of McKee's Glasbake ovenware and many industrial product lines not only increased Jeannette's volume potential, but served as an important hedge against the seasonal nature of much of the company's previous production. A new technical glassware department was also developed, thereby adding further diversification and glassmaking skills. Some of the rare glasses produced by this department are one hundred percent chemically pure and have highly specialized physical, chemical, or electrical properties.12 The most dramatic event in Jeannette's

10 Toulouse, Bottle Makers and Their Marks, 272-274.

11 "This is Jeannette Glass", undated pamphlet of the Jeannette Corporation; (Jeannette: The Jeannette Corporation).

12 Ibid.
modernization program was the installation, in 1963, of the world's largest electric glass furnace for melting heat resisting glass. Capable of producing glass better and many times faster than conventional gas-fired methods, this furnace greatly helped the company's expansion and increased sales volume. Less spectacular, but equally important, were the plant wide improvements which increased efficiency and productivity. New warehousing methods, the replacement of old and addition of new equipment, and production innovations, all contributed to a new capability in glassmaking.

In recent years, the Jeannette Corporation has acquired control of several other glassmaking companies. Since 1963, these other companies were purchased with outright cash or with shares of Jeannette stock based upon the value of the other company. Currently, besides the Jeannette Glass Company itself, the firm also controls several subsidiaries such as Harker China Company, Royal China Company, Brooklyn-Royalon, Inc., and Royal Imports, Inc. According to its 1970 financial report, the Jeannette Corporation and subsidiaries had net sales of over $26,000,000 and a net income of over $3,000,000, which averaged to a net income per common stock share of $3.44 in that year. Production and sales have continued to grow. Sales for the first half of 1973 exceeded those for the same period in 1972 by twenty-one percent - $18,697,452 compared to $15,429,207. Sales for the second quarter of 1973 jumped twenty-four percent - from $7,858,764 to $9,756,472. First

13 Ibid.

half 1973 earnings amounted to $477,163, or $0.46 per share, while those for the first half 1972 were $128,110, or $0.12 per share.\textsuperscript{15}

Jeannette Corporation today is a diversified manufacturer of glassware, ceramics, and plastics. Its Royal China plant at Sebring, Ohio, is the largest domestic producer of ironstone dinnerware. Along with consumer products including popularly priced glass tableware manufactured by the Jeannette Glass division, and melamine dinnerware produced by the Brookpark subsidiary in Logansport, Indiana, and Lake City, Pennsylvania, these two Jeannette Corporation concerns supply glass and plastic custom fabricated products for the appliance, lamp and lighting, and institutional markets.\textsuperscript{16} This is a far cry from the company which was known at its start as the "fizzle".

\textsuperscript{15} The News-Dispatch, July 18, 1973.

\textsuperscript{16} Ibid.
CHAPTER VI

THE WESTMORELAND GLASS COMPANY

The main reason that glassmaking companies moved to Jeannette, it has been stated, was the abundance of locally produced natural gas. It was the availability of this natural resource that attracted the Specialty Glass Company. In a letter to the stockholders and employees of the Specialty Glass Company of East Liverpool, Ohio, the company president, George M. Irwin, stated that he had secured a site for a factory and thirteen additional acres at Grapeville Station, where the company would have its own gas well and many other advantages not enjoyed by the company at East Liverpool. Irwin went on to say that gas for any company cost from $300 to $350 per year for the factory building itself, so it was apparent that a company which built in this area would, in a few years, save on gas alone.\(^1\) Thus in the spring of 1889, the Specialty Glass Company moved to the Jeannette area.

In November, 1889, the glass works was incorporated under the laws of Pennsylvania with the name of the Westmoreland Specialty Company, the name of the county in which it was established. The

\(^1\) George M. Irwin to the stockholders and employees of the Specialty Glass Company, East Liverpool, Ohio, undated, (typescript copy, Jeannette Public Library, Jeannette, Pennsylvania).
company's capital stock was set at $75,000, and had the following officers: Major George M. Irwin was president; George R. West, vice-president; and Charles H. West, secretary and treasurer.²

The newly-organized concern began operations shortly after incorporation. The factory was originally 220 feet by 100 feet, for a total of 22,000 square feet, and housed among other things, a sixteen-pot furnace from which hand blown glassware was made.³ On the land adjacent to the factory, forty houses for the workmen and their families were built in conjunction with the building of the factory, and over a period of time, 150 more such dwellings were erected. These houses were built by the company and then sold to the individual workmen and their families.⁴

In the early 1890's, shortly after the new company commenced operations, Irwin left it and went into the brokerage business in New York. He sold his interest to the West Brothers who received assistance in raising the money from Ira F. Brainard. The factory was under West's management. They manufactured package goods, particularly mustard, and containers for these goods. In the early 1900's, they drifted out of that line of business and began to make a better grade of glassware, giving their attention to decorated, engraved, and cut glass. The company also began making milk glass at this time. Most of the items first made were originals, produced from molds designed by the company. When many of the older glass houses closed their factories at the turn

² Jeannette Dispatch, November 22, 1889.
³ Ibid., June 14, 21, 1889.
⁴ Ibid., August 1, 1889.
of the century or before, Westmoreland acquired their molds and made milk glass items from these original molds. These consisted of "Chicken Covered Dishes", "Milk Glass Log Cabin Banks", syrup jugs, cream and sugar sets, napkin holders, and animal covered dishes. Later, reproductions were made of molds that were no longer usable or were unobtainable. Reproductions from these molds were added to Westmoreland's line of original pieces and patterns.⁵

The Westmoreland Specialty Company operated successfully under the West Brothers backed by Ira F. Brainard until 1920. At this time, friction developed between the West Brothers, and George sold his interest in the company to Charles and Brainard. After leaving the Westmoreland Specialty Company, George West devoted all of his attention to the West Brothers Company of nearby Grapeville. This company had been founded in 1914 by George West and specialized in the manufacture of glass candy containers. It continued in operation until about 1930 when it fell victim to the depression. Its buildings and equipment were then acquired by the Jeannette Glass Company.⁶

When George West left the company in 1920, Charles became president; James J. Brainard, son of Ira F. Brainard, became vice-president; and


S. Brainard West was made secretary. In 1923, it became apparent that the name of the Westmoreland Specialty Company was misleading, because it began to receive inquiries concerning many different types of products, including flat silverware for use in the railroad pullman dining cars. It even received a request for guns during World War I.

Although in the early 1900's the company had produced and sold many condiments, such as vinegar, mustard, baking powder, and lemon flavoring, it is difficult to say whether these items were offered for the chief purpose of selling the condiments or the glassware in which they were contained.

During World War I, many glass containers were filled with candy and were distributed by the newsstands and "dime" stores throughout the country. This business proved not to be profitable because, as was mentioned above, glass was the primary product of the company. The glass was of high quality and was manufactured by hand from the pot furnaces. Since World War I, about ninety percent of the company's production has been milk glass of a superior quality.

In January, 1925, the name of the company was changed to the Westmoreland Glass Company.

During the depression of the 1930's, the company was badly hurt, but it never stopped operations. It was reorganized in 1937. At this time several financial setbacks occurred to the West interest


8 Ibid.

9 Ibid.

10 Ibid.
and considerable investment was being risked by the Brainard interest.\footnote{Ibid.} James J. Brainard, who joined the company in 1920 as vice-president and treasurer, became president in 1937, and since that time the company has been strictly a family concern. James J. Brainard died in 1952, and his son, J. H. Brainard, became president and has remained so until the present time.
CHAPTER VII
OTHER GLASS COMPANIES OF JEANNETTE

During the past eighty-five years a number of smaller, and in
some cases short-lived, glass manufacturing companies have operated
in Jeannette. The Jeannette Shade and Novelty Company had its origin
in the Mack Glass Company which was established around the turn of
the century. Throughout the years, this company has continued to
operate and today produces lighting fixtures under the ownership of
the Crock family. The Victory Glass Company began as a bottle
factory in 1889 but eventually came to manufacture glass novelties.
This concern continued to operate until it was destroyed by fire
several years ago. The Fort Pitt Glass Company was another short-lived
concern which produced lighting fixtures; and like many other factories,
it went under during the depression. The J. H. Millestein Company,
the T. H. Stough Company, and the J. C. Crosetti Company all manufac-
tured glass candy containers. This business proved unprofitable for
all, and with the exception of Millstein's, none survives today. The
city of Jeannette also accommodated a small, very short-lived mirror
works during its history.

The Jeannette Shade and Novelty Company was organized in the first
decade of the twentieth century as a chimney factory by three glass
workers named Stevens, Kuntz, and Mack, and the company was then known
as the Mack Glass Company. This company was an off-hand chimney
manufacturer which meant that it produced glass that was hand blown without the use of molds. It also meant that the glass was melted in a pot furnace because the quantities of ware involved were seldom large. The company continued in a small way for four or five years at which time, in 1911, a reorganization was effected and the name changed to the Jeannette Shade and Novelty Company with Mack as president and Alf T. Smith of the People's National Bank acting as secretary and treasurer. Several additions were made to the plant at the time of this reorganization.¹

On August 8, 1919, T. R. Crock and his associates purchased the plant and equipment entirely, following which marked progress was made in the form of new additions and manufacturing improvements.² In the late 1920's, T. R. Crock gained sole ownership of the company by buying out his associates. Following Crock's death in September, 1956, his two sons assumed the management of the company.

In 1972, the Jeannette Shade and Novelty Company employed over 250 men and women, and its wares are shipped all over the United States and to some foreign countries. Its principal products have been wares for commercial and residential lighting and boudoir and table lamps.

In July, 1889, work began on the erection of a bottle factory. The new factory was a subsidiary of Maxwell, Stevenson and Company of Philadelphia. Known as the William Penn Glass Corporation, the new


company originally planned to make only bottles, but later expanded its production to include wide-mouth jars.³

On October 25, 1919, M. H. Miller, Dr. W. O. Linhart, James W. Bugher, and James Edge purchased the William Penn Glass Corporation and formed a new company called the Victory Glass Company. It was incorporated under the laws of Pennsylvania on May 20, 1920, with a capital of $50,000 and the following officers: Joseph T. Sheirer, president; James W. Bugher, vice president; James C. Miller, secretary; and James Edge, treasurer. Several years later, the capital was increased to $100,000.⁴

The company started with one factory building forty feet by eighty feet, and a storage shed 15 feet by 160 feet. It had one small four-ring tank furnace. The principal articles of manufacture were glass novelties, especially candy-filled glass toys, and wide-mouth food containers. In 1926, the factory was expanded physically, and in September of that year, the Corrugated Carton Industry was added to the Company.⁵ When the factory burned in the early 1950's, it employed over 200 people, had a seven-ring continuous tank furnace, and manufactured all the metal parts for the toys and its own wooden packing cases.

After the fire, the entire company and land was purchased by the J. H. Millstein Company and was used strictly for storage until June 22, 1973, when the structure was again completely destroyed by fire. The

³ Jeannette Dispatch, May 24, June 14, 1889, March 14, 1890.

⁴ The News-Dispatch, May 2, 1938.

⁵ Ibid.
name Victory Glass Company is still used by the Millstein Company for marketing purposes; but as a producer, it has not existed since the 1950's.

Dithridge and Company, Fort Pitt Glass Works of Pittsburgh established a plant in Jeannette in 1890. That spring, a Mr. Zimmerman came to Jeannette with his architect to make plans for the proposed factory to produce flint chimneys and plain and decorated opal shades. Construction began soon after, and it was completed in the fall of 1890. The plant covered more than two acres. The company also built twenty-five houses for the workmen and their families on a tract of land adjoining the plant.

In 1902, Dithridge and Company, Fort Pitt Glass Works became part of a larger concern, the Pittsburgh Lamp, Brass, and Glass Company which was formed by the consolidation of the Pittsburgh Lamp and Brass Company of Allegheny, Pennsylvania; the Kopp Glass and Lamp Company of Swissvale, Pennsylvania; the Fort Pitt Glass Company of Pittsburgh, Pennsylvania; and Dithridge and Company, Fort Pitt Glass Works of Pittsburgh and Jeannette, Pennsylvania. The new company was incorporated under the laws of New Jersey with an authorized capital of $1,500,000 equally divided between preferred and common stock of the par value of $100 per share.

6 *Jeannette Dispatch*, March 14, 1890.

7 *Ibid.*, November 14, 1890.


Although retaining the name of Dithridge and Company, Fort Pitt Glass Works, the Jeannette factory was known by such names as Dithridge/Fort Pitt Lamp, Brass, and Glass Company; Fort Pitt Lamp and Brass; and the Dithridge and Company, Fort Pitt Glass Company. The factory in Jeannette employed about 150 people, some of whom were highly skilled artists. It produced electric, gas, and oil lamps; a great variety of lighting fixtures; a general line of products in clear, opaque, and colored glass for lighting purposes; and hand decorated and etched glassware; and a varied line of signal glasses in different colors for use in the navy and on the railroads. ¹⁰

The company closed its factory in Jeannette in the early 1930's due to the depression. Until that time, it was managed by Zimmerman. The Pittsburgh Lamp, Brass, and Glass Company had W. L. Curry as president, Nicholas Kopp as vice-president and general manager, W. F. McNaugher as secretary and assistant general manager, and H. L. Brooks as treasurer when the Jeannette plant closed its doors. ¹¹

With the exception of the J. H. Millstein Company, none of the following glass companies currently is still in existence. All of them produced glass for only a very short period of time. In July, 1943, the J. H. Millstein Company began to manufacture containers for candy. Prior to this time, the company had purchased vast amounts of ball candy which it planned to package and market. This operation

¹⁰ Ibid.

proved unprofitable; it was discontinued after about ten years. In the early 1950's, the J. H. Millstein Company became associated with the National Plastics Corporation and the Sterling Box Company and this relationship has continued until the present day.

Another candy container producer was the T. H. Stough Company which came into being in the late 1930's. This company manufactured novelties, such as a pistol shaped container, for which it received a patent on July 4, 1939, and lantern shaped bottles of several colors. In the late 1940's, the company was sold to the J. C. Crosetti Company which gradually phased out the manufacturing of glass candy containers. The Crosetti Company eventually closed down completely in the late 1950's.

The Jeannette Mirror Works began operations in 1909, and employed a small number of workers in the manufacture of mirrors. Unable to compete with the larger companies during the depression, it was forced to shut down.


14 Matthews, A Collection of Old Candy Containers, 57; "History of Jeannette, Pennsylvania".
CHAPTER VIII

GENERAL WORKING CONDITIONS

Employment in the glass factories in Jeannette in the early years left a great deal to be desired. Work was irregular, and employment of women and children was common. Working conditions were generally unpleasant, or even unhealthful, and sometimes hazardous. One of the evils of employment in the glass factories in Jeannette was its irregularity. One of the causes of periodic unemployment was management's practice of keeping factories in operation for long hours when demand for glass products was high, and cutting back operations and laying off workers when demand declined. Furthermore, employment in the glass industry tended to be seasonal in that glass factories usually closed down for the summer because of the excessive heat. The work week ranged from sixty to more than eighty hours, and the seven-day week was the rule. Advances in technology, in turn, accelerated the pace of production. Rapidly operating machines greatly increased the danger of factory work, while long hours and fatigue increased the number of accidents, injuries, and deaths.

Another consequence of advancing technology was that the machines did more and more of the skilled work. Skilled laborers, such as blowers, remained in demand in the less mechanized plants and performed more complex processes, but in general, with the introduction of the new machines, many skilled laborers were no longer needed and were
forced to work at unskilled tasks.

Each year the production of the individual became greater with the best day's production record of the season becoming the standard for the next. The trade required speed, great skill, and precision in workmanship. Nearly all blowers started to work in glass factories as early as nine or ten years of age. They began as tending boys; that is, they catered to the needs of the gatherers and blowers, and after three or four years, became low-paid apprentices. At the end of a five year apprenticeship, they were made blowers.¹

Work in glass factories was carried on in two main departments, the furnace room and the finishing department. The furnace room was where the raw materials were melted in the furnace and the glass was blown and pressed, molded, or drawn into the desired shapes. In the finishing department took place all the operations performed on the glass products after leaving the furnace room. These operations included cutting, grinding, polishing, decorating, wrapping, and packing. Before being put in the furnace, all of the ingredients needed to make glass were mixed together in the mixing room and were then transferred to the furnace.

If the glass was worked by hand, the tasks were organized into shops in each of which a particular product was fashioned by skilled workers assisted by boys.² In a shop making pressed ware, for example,


the molten glass was taken from the furnace by the gatherer, who twisted it on the end of a rod, called a punty, and took it to the presser's mold. The presser then cut the necessary amount of glass off the punty and dropped it into the mold where it was shaped into the desired object. The mold boy then took it from the mold with a pincers and set it on a board. The carrying-over boy took the object on a paddle or long fork to the warming-in boy. He clamped it on the end of a rod, called a stand, and put it into a reheating furnace, called the glory hole, where the glass was softened and polished. The warming-in boy then carried the glass article to the finisher, who by the use of wooden paddles or other tools, shaped the glass into its final form. The carrying-in boy then carried the glass on a paddle or on the end of a long fork to the lehr, an annealing oven, through which the glass passed slowly on a belt where the temperature gradually declined from about a thousand degrees Fahrenheit to room temperature.\(^3\)

The manufacturing process in blow shops was similar to that employed in press shops except that the glass was blown rather than pressed in a mold. After the object was blown, the snapping-up boy took it from the carrying-over or mold boy, and set it in a small glory hole from which the finisher took it. An additional operation, called cleaning-off, had to be performed in the blow shops. It was the process of scraping the old glass from the end of the blow pipe into some sort of receptacle. This was often done by the carrying-over or carrying-in boys, but was sometimes done by a special cleaning-off boy.\(^4\)

\(^3\)Ibid., 8.

\(^4\)Ibid.
Where production in the furnace rooms was by automatic blowing, pressing, or drawing machines, operators who were usually semi-skilled workers, regulated and serviced the automatic machines. A taking-out boy took the glass product from the molds of the machine with a pincers and set it in a stand called a peanut roaster. The peanut roaster consisted of a covered rack with flames under it which kept the glass hot until it was taken by a carrying-in boy to the lehr where the glass articles were slowly cooled to room temperature.\(^5\)

The operations performed in the finishing departments were less peculiar to the glassware industry than those in the furnace room. They were carried out primarily by women and children. The glass articles were taken from the lehrs, the annealing ovens, by hand and were placed on trays or trucks to be cut, ground, or decorated, or to be packed in boxes ready for shipping. Grinding and cutting operations, necessary when the glass article had some rough or sharp spots, was performed mainly by women or children. It involved grinding the glass by pressing it onto a horizontal grinder. Chipping consisted of striking off the edges of certain types of ware with a knife. Decorating was usually done by women. Etching was accomplished through the use of acid for which the object was prepared by applying to it transfers and wax. Nearly three times as many girls as boys were employed in the finishing department, the great majority of the girls working in selecting and packing jobs and in the decorating of glassware.\(^6\)

\(^5\) Ibid., 9.

A great amount of heat radiated from the furnace where the glass was kept molten at a temperature of at least 2,500 degrees Fahrenheit. The molten glass as it was taken from the furnace by the gatherers or dropped from the furnace into the automatic machines, was at a temperature of not less than 1,900 degrees Fahrenheit. The glass solidified at a temperature around 1,200 degrees Fahrenheit, and it was at this temperature or one somewhat lower that the glass was handled by others in the furnace rooms.¹

Work in the furnace room of a glass factory was done in this intense heat and, consequently, no glass was blown during the months of July and August. During the months of May, June, and September, it was often so hot that glass blowers could not work longer than half an hour at a time.² In factories with poor ventilation, men were often compelled to stop work about every twenty minutes. It was so hot in many factories that the workers perspired freely even during


the winter months. These conditions were very harmful to the workers' health, and coughs, colds, and rheumatic pains frequently developed into illnesses of the throat and lungs sometimes with fatal results. The mortality rates among glass workers from these causes were very high.

The discomfort endured by the worker was determined not only by the temperature, but also by the humidity and movement of the air. The drier the air and the better it was circulated, the greater was the cooling effect. Glass plants were equipped with roof ventilation which allowed the hot air to escape and with fans which drew in cooler air from outside the plant; but they had no means to regulate temperature and humidity. Artificial wind came out of movable pipes which were from two to four inches in diameter. In places where the heat would otherwise have been almost impossible to bear, air was blown on the workmen from these pipes. These strong blasts of air were not without some disadvantages. They sometimes blew oil and dirt on the molten glass or on the workers and gave them stiff necks and colds.

The furnace itself was not the only source of the heat in the factory. Heat also radiated from the lehrs, the annealing ovens through which glass had to pass before it went to the finishing department. The heat from the lehrs was contained in most factories by the use of doors at their mouths. Screens made of sheet metal were also

4 Ibid., 252.
5 Opportunities and Conditions of Workers for Minors Under 18 in the Glassware Industry, 17.
6 Ibid.
used to protect the workers from the heat radiating from the furnaces, glory holes, and lehrs. These screens protected the eyes of the workers from glare as well as from the direct heat. Low wooden platforms were used to protect the feet of the workers from the heat of the floors. These platforms were simply boards laid over the brick or cement floor. They had the added advantage of being less tiring to stand on than the hard cement or brick.

A very effective way of protecting the workers from the heat was to have them work at a greater distance from its source. This was made possible by the use of short conveyors. This method was particularly effective with the use of automatic or semi-automatic machines.

As might be expected, the most common accident hazard in the glass factories was cuts. The handling of glass itself presented many opportunities for accidents. Next to accidents in handling glassware, the most common cause of cuts was the stepping or falling on glass. This was a frequent occurrence in the tableware producing factories. In the window glass plants, the accidents related to cuts were more serious. As has been described, window glass was produced in large plates which made it more difficult to handle. In factories where drawing machines were used, the glass was drawn high above the working floor, and if it broke, a shower of glass could easily fall down to the floor below and injure the workers.

7 Ibid., 18.
8 Ibid.
9 Ibid.
10 Ibid., 21.
After cuts, burns were the accidents which occurred most often. A false move by blower, gatherer, or other worker could mean a bad burn from the hot glass. The iron tools used in handling hot glass were often very hot and could give a severe burn to anyone carelessly grasping or touching them. Canvas gloves were frequently used in handling these hot tools. These gloves, which the workers themselves usually had to provide, sometimes lasted only a week. For just this reason, no doubt, gloves were not worn as often as desirable.

New elements of danger to the health of the workers came with the introduction into the furnace room of the continuous tank furnace. This innovation required that the plant operate day and night. One shift worked from 5:00 P.M. to 2:30 A.M. on alternate weeks. This schedule was hard on all blowers, and especially so on the older men who had been accustomed for years to working out of a pot furnace and only during the daytime. Furthermore, the heat of the continuous tank furnace was much greater than that of the pot furnace, since it contained a much larger amount of molten glass and a correspondingly bigger fire. The alteration from day to night work weakened the workers’ systems and reduced their resistance to disease and other ailments. They became nervous, depressed, and shaken. They suffered the horrors of dyspepsia and indigestion, with a weakening of the system which predisposed them to become the victims of some organic disease. Thus, they lost a great deal of time due to illness. Not only were the

11 Ibid., 22.
12 Ibid.
workmen compelled to endure great heat in plants using continuous tank furnaces, but the furnaces were arranged as to crowd the men more closely together with less air available to them than in plants where pot furnaces were in use. ¹⁴

A United States Senate health report stated that conditions in the glass factories menaced the health of the hollow-ware blowers as well as that of the window glass workers. One, as already noted, was the wearying night hours which placed great strain on the vitality of the workmen. Another was the careless exchange of blowing pipes while working. Numerous instances revealed the transmission of throat and mouth diseases, acute and chronic, by this means. A third condition was the excessive consumption of ice water by the glass workers. ¹⁵

Also, rapidly blowing by pipe into the fused glass involved the burning of the tissue of the throat and mouth. Such work frequently caused pulmonary phthisis, or at least often affected the respiratory tract. ¹⁶

Working conditions generally in the glass factories, but especially in the intense heat, were resisted while youth and vigor remained; but, owing to the early age at which they commenced work, the strength and vitality of the laborers were not given a chance to develop fully or

¹⁴ Ibid., 253.
¹⁵ Ibid.
were almost entirely destroyed at an age when other men were entering the prime of life. Being deprived of a formal education, the workers generally had very little knowledge of hygiene rules or practices; hence, they did not know well enough how to protect themselves against the unhealthy conditions of the factories. The result was that early in life they became victims of rheumatism, catarrh, throat troubles, and tuberculosis. Such being the case, glass workers did their best work between the ages of 20 and 35 with most deaths occurring between the ages of 40 and 50.17

CHAPTER X

EARLY WORKING CONDITIONS FOR BOYS

Under the provisions of the 1888 General Factory Act of Pennsylvania, fourteen years was the minimum age for legal employment of minors. Nearly three-fourths of the minors under eighteen employed in the glass industry worked in the furnace rooms. Of these, boys constituted at least ninety percent and girls less than ten percent.\(^1\) These boys worked essentially the same hours as the adults, including at night, until prohibited by state law in 1915\(^2\). They also worked under the same general conditions with only slight variations depending upon their specific tasks.

The duty of the mold boy was to open and close the mold as required by the blower. This was done by means of a pair of projecting handles, the parts of the mold resting and sliding upon a flat surface. The physical strain of moving the handles was not great except with very large molds. In all factories the heat was a particularly significant factor in the mold boy's work. He necessarily had to be close to the

\(^1\) Opportunities and Conditions of Works for Minors Under 18 in the Glassware Industry, (Harrisburg: Commonwealth of Pennsylvania, Department of Labor and Industry, Bureau of Women and Children, 1927), 6-7.

mold, and to facilitate the operation, the mold was placed near the furnace, directly in front of the working hole and some three feet below the level of the hole. As the mold tender worked, he faced the furnace and his face and shoulders at least were in direct line with the radiated heat from the working hole. In addition to the furnace, there were also certain subsidiary heat sources which added to the boy's discomfort. The mold itself after being used became very hot and gave off considerable heat, and the blowers in lowering the hot gobs of glass into the mold moved it close to the mold boy's face. In several plants the glory holes, at which the finishing work was done, were crowded close to the furnace and little space was left between them and the mold boys. The glory holes were kept at high internal temperatures and added considerably to the heat of the surrounding air.

To reduce the heat, the mold boys had the advantage of the artificial wind which was forced through the air pipes to the molds. Sometimes the general heat of the furnace made the air coming from these pipes almost hot, but at other times it was sufficiently cool so that they materially reduced the temperature under which the mold boys worked.

The articles which the mold boys lifted from the molds were not

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4 Ibid., 48-49.

5 Ibid., 49.
very heavy but the pace at which they worked was rapid. For small ware, the molds were light and easily worked by hand, but large items were heavier and took longer to handle. The heat was greater with the larger ware, because the molds became hotter and the radiation from the molten glass on the end of the blower's pipe was proportionately greater.  

With the advent of automatic machines, the mold boy's work pace quickened, and more manual labor was required to remove the glass articles. Until factories became fully automated, the mold boy's function was of great importance to the production of finished glass articles.

The cleaning-off boy scraped off the collar or clot of excess glass that remained on the end of the pipe after each blowing or mold filling. To do this, he pulled or struck the glass clot upon an iron rasp. This operation, although simple, required some physical strength and skill. The cleaning-off boy's position was by the side of the blower and at a distance of some three to four feet from the furnace. Usually, however, he stood about midway between two working holes and thus partially avoided the most intense heat. Even then, the temperature, especially in a crowded shop, was very high.  

As the stems of blowers' pipes had to be cleaned for each article, and one cleaning-off boy worked for two blowers, he had to work at a very rapid pace.

6 Ibid., 50.
7 Ibid., 50-51.
8 Ibid., 51.
The duty of the snapping-up boy was to pick up the glass article as it was set on the stand by the mold boy, put it in a long-handled holder, carry it to the finisher's bench, remove any portion of excess glass with an iron rasp, and insert it into the glory hole or reheating furnace. He had no time to rest between trips or to loiter on the way. The distance from the mold boy's position to the glory hole varied from five to ten feet. If the distance was too short, the workers and the heating centers were crowded too closely, and the resultant heat and cramping more than outweighed the benefits of the shorter distance. In the handling of most articles, the snapping-up boy stopped in front of the glory hole only long enough to insert the holder in the hole and to see that it was properly placed so as to bring the article in the correct position above the flames. With some varieties of ware, however, he had to manipulate the holder in the glory hole, revolving it and watching it while the glass was being reheated.

The work of the carrying-in boy was substantially the same, whatever the kind of ware his shop was engaged in making. It was his duty to take the ware when the workers at the furnace had finished with it, carry it to the lehr, and deposit it inside. This task had to be accomplished with reasonable dispatch, as newly molded or blown glass would spoil if left too long exposed to the outer air. As a result,

9 Ibid.
10 Ibid., 51-52.
11 Ibid., 52.
the boy made quick trips back and forth carrying a limited number of articles.\textsuperscript{12} In beginning his work, the carrying-in boy laid a long-handled iron paddle or shovel on or by the side of the stand on which the articles had been placed, and with a pincers placed the articles on the paddle. Then, with the articles he walked to the annealing lehr. Coming to the lehr, he inserted the head of the paddle containing the articles and by a turn of the handle removed the articles and arranged them in an upright and compact position upon the floor pan of the lehr. In depositing the ware in the lehr, the boy usually stood at the lehr opening only a few seconds, but during that time, he experienced the full effects of the very intense heat.\textsuperscript{13} The carrying-in boy thus had to be constantly moving and carrying hot glassware from the glory hole to the annealing lehr, both of which produced intense heat.

Factories which used semi-automatic machines for glass production employed machine boys. The machine boy's job was the hottest for boys except that of the mold boy. The machine was placed very close to the furnace in order that the gatherer could collect the glass on his pipe and deposit it in the mold while making little change in his position. As a result, the machine boy was usually only six to eight feet from the working hole of the furnace. Furthermore, the iron of the machine after a short period of use, became very hot and itself became a source of heat.\textsuperscript{14} Air pipes directed artificial wind at the

\textsuperscript{12} Ibid., 53.

\textsuperscript{13} Ibid., 53-54.

\textsuperscript{14} Ibid., 57.
machine and the boy, but in many cases the air was hot before it arrived at the machines. There was also always the possibility of stiff necks and colds due to drafts which were common to a forced air system.

Depending upon the type of glassware produced and upon the general arrangement of the factory, other boys were used to perform several additional functions. There were ball boys, punty boys, bit boys, and the like - all of whom were subject to heat, draft, and strain. In order to vary their positions and the type of work they did, the boys generally exchanged positions from time to time.¹⁵

It was not until glass factories became fully automatic and child labor laws were revised and strictly enforced that the use of boys in the glass factories was phased out.¹⁶ The introduction of even semi-automatic machines in the late 1890's permitted the discontinuance of the use of the mold boys, cleaning-off boys, and snapping-up boys. Carrying-in boys continued to be employed for some time longer, but the introduction of automatic machines in the early 1900's and the later automatic conveyors, eliminated all work formerly done by child labor.

¹⁵ Ibid., 59.

¹⁶ John William Larn
CHAPTER XI
EARLY WORKING CONDITIONS FOR WOMEN

Women performed three types of work in glass factories. A small number carried out totally unskilled tasks, such as cleaning molds and washing or packing glassware; some executed light finishing processes, such as cutting off rough edges of glassware, or grinding and shaping edges by machine; while others were engaged in decorating processes, preparing glassware for etching, stamping designs on glass, or laying on the design by hand. The packing girls stood near the lehrs, surrounded by crates and barrels and tables heaped with fine tissue and excelsior. They wrapped separately each piece of glass as it emerged from the lehr and crated it. With some few varieties of ware, the pace was so slowed that the packers could sit at least a portion of the time. Usually, however, the packers had to stand, for sitting down hampered the work, partly because of the bad placement of the packing tables and partly because the boxes were filled quickly, and the packer had to rise either to remove them or to change position.1

In factories where the surface of the glass had to be cleaned and polished for decorating, the glass had to be washed. In such

cases, the washroom, and not the packing room, was placed at the far end of the lehrs. Although the work of washing was entirely unskilled, it served as a sort of apprenticeship for the decorating department proper, since when vacancies occurred in the decorating room, they were usually filled from among the washing girls.²

The mold cleaners, as their name implies, cleaned and scraped out the molds which had been used at the furnaces in shaping the glass articles. The work was hard and was likely to injure the hands, since the cleaning liquid was a mixture of acid, emery, and oil.³

The work of cutting off varied according to the articles being manufactured. All glass articles when they entered the finishing department had very rough edges and some excess glass on them. Women removed these with the use of a cutting-off flame machine or a wire which could be heated causing the glass to crack when cooled with water. This work was light, clean, and without physical strain.⁴

The cutting-off process left the edges of the glass articles sharp and this meant that they had to be smoothed. The edges were first ground off with an electric-powered emery wheel. Fine dust which was produced was often inhaled by the female operators. After the initial grinding, the finishing girls put the glass articles in metal holding cups and passed them under a white hot flame which slightly melted and smoothed the surface of the glass. The heat from


³ Ibid.

the flame of these machines and from the nearby annealing lehrs made this work especially trying.\(^5\)

After grinding and glazing, the article might be packed for shipment or it might be decorated. There were four main methods of glass decorating; sand blasting, acid etching, cutting by stone or metal wheel, and painting and enameling in color.\(^6\) The usual sand blast apparatus was very simple. It consisted of a box with a small opening at the top. Pipes carried sand under compressed air or steam pressure into the box, and it escaped through the opening at the top. The articles of glassware were held in the blast and the escaping sand chipped away small particles of glass until the surface took on a milky, opaque appearance. The complete surface of the article could be frosted in this way or a metallic plate could be placed over those parts of the article which were not to be frosted, thereby producing whatever designs were desired.\(^7\)

Early sand blasting machines had no special safety features, and the escaping sand and small glass particles flew freely around the work area and filled the air in the room. The women who worked at the machines suffered from irritation of both their eyes and lungs, as well as from fatigue from standing for long periods of time.\(^8\)

Acid etching involved two operations; the preparation of the glass, and the immersion of the article in an acid bath. One method of pre-

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\(^7\) Ibid., 317.

\(^8\) Ibid., 317-318.
paration was to cover the article with wax and to trace the desired design in the wax with a needle. Another involved the use of an engraved metal plate. After putting ink on the plate, it was covered with a piece of tissue paper. When the paper was removed, the tissue paper with the inked pattern on it was then placed on the glass article, ink side down, and rubbed carefully. When the tissue paper was removed, the pattern was thus inked on the glass. Since the ink was not affected by the acid, the design was outlined. This method of etching was used for very intricate designs. After the glass was prepared by needle or by inking, it was exposed to hydrofluoric acid, either through immersion or by exposure to acid fumes. The fumes of the acid were extremely pungent and irritating to the nose and throat and caused intense irritation to the eyes, gums, and mucous membranes. It was extremely difficult to breathe even the weakest of the fumes, and the inhalation of fumes from a strong acid bath was almost impossible. Many factories employed men in acid etching, but many women also performed this type of work.

When the glass article was to become a finished product of cut glass, several operations were involved. The article had first to be marked with the desired design as a guide for the cutters. This was done with a fine brush with red lead of the consistency of thick ink being used as the marking substance. After marking, the article went to the rougher for the first cutting. The rougher held the article

9 Ibid., 319-321.
10 Ibid., 322, fn.
11 Ibid., 321-323.
against a sharp-edged, rapidly revolving wheel, and using the red lines as guides, gradually ground away the glass in sharp-lined fissures. When this process was completed, the glass article went to be smoothed. The worker, using a grinding stone of softer character, ground off the unevenness left by the hard roughing wheel and made the incisions smooth. Finally, the article was to be polished. This process was accomplished by holding the article against a revolving wheel made of wood, cork, or felt, or against revolving brushes.\textsuperscript{12}

Roughing was hard physical work. The operator had to press the article being roughed against a resistant wheel and exerted great physical pressure in order to effect the cutting away of the glass in deep incisions. Particles of glass cut away in this process necessarily filled the air around the machine and presented great hazards to the women's health. Polishing, while requiring no unusual strength, was exceedingly dirty and disagreeable. The soft powders used on the wheels and brushes were thrown directly on the clothes and face of the operators. As some of these powders were very harmful when inhaled, the work was immediately dangerous to health.\textsuperscript{13}

Some glassware was painted by hand, and some was decorated by use of an enameling method. In the latter case, the design was cut or molded on a wooden, rubber, or metal plate, much the same as the plate used in acid etching. The plate was then moistened with a quick drying oil, and the design was put on the glassware by stamping. Enamel powder was then dusted or sprinkled over the article, the powder adher-

\textsuperscript{12} Ibid., 328-329.

\textsuperscript{13} Ibid., 330-331.
ing to only those parts coated with the oil. The article was then sprayed with an oil or turpentine mixture and left to dry and harden. When the hardening was complete, the excess powder was wiped off and the article was fired by passing it through a small lehr, the enamel thereby becoming incorporated with the glass. The enamel powders and sprays which got into the air generally contained ingredients such as lead and arsenic which constituted a great hazard to health.¹⁴

Much had been done to reduce the dangers and hazards to the women workers in the glass factories, but the greatest changes came with the advent of various machines and other equipment in the second and third decades of the twentieth century which replaced the worker, herself.

¹⁴ Ibid., 328-329.
CHAPTER XII
EARLY LABOR ORGANIZATIONS

The first stages of the history of organization among the glass workers of the United States cannot be described in detail or with precision. Some form of cooperative endeavor, perhaps partly social and partly beneficial, seems to have existed at an early date. Not until 1858, however, is there record of a formal union. At Pittsburgh in that year, the Glass Blowers' Benevolent Society was formed, but because of the unfavorable attitude of the employers, the organization conducted its affairs in utmost secrecy. After two unsuccessful strikes in the early years of the Civil War, like so many other early unions, the Society disbanded. Local organizations apparently continued to exist, especially in the eastern cities, but no common program motivated their activities.¹

After the Civil War, in 1869, the Noble Order of the Knights of Labor was founded. Through the Knights of Labor, many glass workers' unions were organized, and all of the many glassmaking occupations were included in these organizations.² The workers in the glass industry in Jeannette were organized into local unions from the beginning.

¹ Pittsburgh, National Glass Budget, August 10, 1901.
² Ibid.
The meeting for organizing Local No. 86 of the American Flint Glass Workers' Union was held on November 10, 1888, and approximately 150 to 200 charter members were enrolled. By 1890, membership, which included many lamp chimney blowers, had increased to about 700. A second union which was organized at the start was Local Assembly 300 of the Knights of Labor. It was a four-trade organization of window glassworkers including gatherers, blowers, flatteners, and cutters, and was a tightly closed body within the plant of the Chamber-McKeé Glass Company.

Workers engaged in the production of bottles and containers belonged to two strong unions - The Green Glass Bottle Blowers' Association and the American Flint Glass Workers' Union. Members of the former union worked in the production of green, or common, glass which was melted in open pots, while Flint Glass Workers made the finer flint glass in closed pots. This division of labor, however, disappeared in 1889 with the introduction of the closed continuous tank furnace from which both types of glass could be made.

Discord developed between these two groups following the introduction of the semi-automatic bottle machine. With the introduction of the machines, the Green Glass Blowers agreed to operate the new machines, but management desired to make use of the more skilled pressers, members of the American Flint Glass Workers' Union; and as a result,

4 Ibid.
members of both unions operated the machines. This was the beginning of a long conflict between the Flint Glass Workers and the Green Glass Blowers for the control of machine production. The Flint Glass Workers claimed that their members should operate the machines because of their control over pressing jobs, and the blowers on the plea that the machine-made bottles displaced blowers. 6

Organized in Baltimore in 1890 as the United Green Glass Workers, this union was part of the Knights of Labor. It later withdrew and remained independent until 1899 when it affiliated with the American Federation of Labor. From the time it left the Knights of Labor until 1896, this organization was known as the Green Glass Bottle Blowers' Association of the United States and Canada. 7 In 1901, bottle blowers in the American Flint Glass Workers' Union were transferred to the Glass Bottle Association, and by 1905, the conflict over the jurisdiction of machine operation was decided in the Bottle Blowers' favor. A final jurisdictional agreement between the two unions took place in 1913. 8

The early policy of the Glass Bottle Blowers was to try to secure machine operator positions for displaced blowers, and in this endeavor the union had moderate success. By 1907, the Owens machine was a widely


used and important competitive factor in bottle production in the United States, and nearly nine-tenths of the hand blowers and operators of semi-automatic machines were members of the Glass Bottle Blow-ers' Association. There were a few non-union plants and a few semi-automatic machine factories under control of the Flint Glass Workers' Union, but neither was important. Furthermore, throughout the period from 1907 to 1917, the Glass Bottle Blowers increased their domination over both classes of workers.

In the first decade of the twentieth century, with the improvement of semi-automatic bottle making machines, the introduction of machines for the manufacture of narrow-mouth bottles, and the appearance and increasing use of the Owens invention, the Glass Bottle Blowers decided to seek the introduction of the three-shift a day system, the reduction of the number of apprentices, and the encouragement of the use of semi-automatic machines.

The three-shift system superseded the two-shift system in 1912 in the hand operated plants and a year earlier in semi-automatic factories, thereby providing additional jobs for union members. Until 1913, employers were limited to using one apprentice for every fifteen journeymen, but then the union negotiated a radical change in work rules, reducing the length of the training period, and increasing the

9 Ibid., 216-217.

10 Ibid.

wages of an approved apprentice. The union sought these changes because it believed that the employers were enjoying large profits by employing relatively large numbers of low paid apprentices. The Glass Bottle Blowers' favorable reception of the semi-automatic bottle making machines was based upon the union's desire to encourage the use of these machines rather than the Owens automatic machines. Though the semi-automatics themselves caused the displacement of blowers, the adopting of the Owens machine offered the prospect of no employment of skilled glassworkers at all. The union also took advantage of the introduction of the semi-automatic machines to secure higher rates of pay.

The introduction of additional improvements in the technology of glassmaking cost more workers' jobs. As more and more improvements were made to the various machines, more and more workers were displaced. This development continued until finally hand blowers had but one field left to them, the manufacture of odd shaped and odd sized articles which were produced in comparatively small quantities. Although these changes required painful adjustments on the part of the workers, there were no major strikes at the several factories in the Jeannette area. Some minor disagreements did arise, but none of these led to any loss of working time.

The effect of the mechanization and automation of the glass plants and decline in the number of workers, especially skilled workers, was

13 Ibid., 217-218.
to weaken the union. By 1924, the wages of the union's members had been reduced nearly to the level of unskilled labor. For example, when the Glass Bottle Blowers' Association was established in Jeannette, it was powerful, but after 1924 it went steadily downward in regard to membership.

The American Flint Glass Workers' Union of North America was organized in 1878 at Pittsburgh after withdrawing from the Knights of Labor. At the time of the establishment of Local Number 86 in 1888 in Jeannette, the union was affiliated with the American Federation of Labor. The American Flint Glass Workers' Union was composed of several departments, each of which embraced those workers specializing in a particular line of ware such as lamp chimney, pressed tableware, or bottles. By the end of 1888 when Local 86 was established, the union had made great progress. It had succeeded in abolishing regional wage and output differentials and had persuaded all manufacturers to cease work during the summer. It had won an agreement with the manufacturers that wage rates and other matters affecting employment would be settled at annual conferences composed of representatives of both parties. In this way industrial strife was avoided until 1892, when

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15 Peterson, Handbook of Labor Unions, 150-151.


probably the greatest strike in the history of American glassmaking occurred.

Contributing to the decline of the power of the unions in the Jeannette glass plants, even though they were not directly involved, was the great strike of the American Flint Glass Workers' Union against the United States Glass Company in 1892. In the previous year, fifteen firms making blown and pressed ware out of lime and flint glass had merged to form the United States Glass Company. The new corporation, capitalized at over $4,000,000, cleared almost $3,000,000 in profit its first year. Almost immediately the company demanded that the union remove all restrictions upon worker output, and this became the central issue of the strike. Long before they were organized, skilled glassworkers had practiced control of output and compliance with the company's demand would have been unprecedented. Quite naturally, the union refused to comply with it. The ensuing strike lasted four years and cost the American Flint Glass Workers' Union approximately $2,000,000 in strike benefits. The United States Glass Company succeeded in staffing its plants with non-union workers and continued to operate while the union suffered greatly. In 1896, the pressed tableware department of the union voted to rescind all restrictions on worker productivity, and the suspension of summer operations was abolished, along with other worker practices. The union's bargaining position was so weakened by the loss of this strike that when new labor-saving machines made their appearance in the

18 Ibid., 236.

19 Ibid., 236-237.
manufacture of glass, the union was unable to fight them effectively.

Despite its weakness after the failure of the strike which began in 1892, the American Flint Glass Workers' Union continued to grow in Jeannette. Local 111, known as "Fort Pitt", was established with the coming of the Fort Pitt Lamp, Brass, and Glass Company to Jeannette. Later Local 103, which included the Westmoreland Glass Company and the Jeannette Shade and Novelty Company plants, was formed.20

Besides the great strike of 1892-1896, there has been only one major dispute between the American Flint Glass Workers' Union and management. A strike was called on September 1, 1951, and lasted twenty-eight days; but as with other glass union strikes, it did not directly affect the Jeannette factories. The strike was called against members of the Glass Container Manufacturing Institute and the National Association of Pressed and Blown Glassware, of which no Jeannette concern was a member.21

Labor disputes in Jeannette plants were minor and work stoppages were of short duration. On September 13, 1889, the gathering boys in the McKee Brothers flint glass factory were on strike for several days. They demanded pay for every bit of glass that went into the lehrs and eventually went back to work at the same wages after only a few days.22 A week-long strike occurred at the Westmoreland Specialty Company in March, 1890, as the result of a dispute over the correct classification of several articles of ware.23

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22 *Jeannette Dispatch*, September 13, 1889.

Before the end of 1880, unions of the window glass gatherers, blowers, flatteners, and cutters had joined forces with the Knights of Labor as Local Assembly 300; and in 1888, a chapter of Local Assembly 300 was established in Jeannette. When the American Window Glass Company was incorporated in 1899, it was confronted by the problem of a dangerous number of competitors, and was also troubled by a shortage of workers caused fundamentally by the union's restriction of apprenticeship. The American Window Glass Company thus entered into a contract with Local Assembly 300 by which a block of stock with a par value of $500,000 was placed in trust for the union, the stock to be paid for by accruing dividends and carrying with it representation on the board of directors of the corporation. The whole transaction was conditioned upon the union's supplying the glass company an adequate number of skilled glassworkers to run its plants during the length of time which was agreed upon.

These threats to their freedom in manufacturing and selling caused the independents, those companies not affiliated with the American Window Glass Company, to expand and organize. But combination among the independent glass manufacturers themselves did not guarantee a sufficient supply of skilled workers. Luckily for those companies not affiliated with the American Window Glass Company, dissension was developing in 1900-1901 within Local Assembly 300 over the $500,000 trust fund set up under the terms of the contract with the American Glass Company.

Window Glass Company. After a little more than twenty years of relative peace, Local Assembly 300 split and the dissidents formed the Window Glass Workers' Association of America, maintaining that it was the rightful Local Assembly 300. This contention being set aside by court order, the union assumed its independent status and new name. Thereafter, members of Local Assembly 300 controlled the plants of the American Window Glass Company, and those members belonging to the new organization controlled the factories of the independent glass companies. Since the only window glass plant in Jeannette was the American Window Glass Company's plant, only Local Assembly 300 had jurisdiction in the area.

From its inception, Local Assembly 300 had attempted to prevent the adoption by the companies of labor-saving devices, and both it and the Window Glass Workers' Association in 1903 adopted by-laws which forbade their members to work in any factory equipped with window glassmaking machines. But due to a weakened position caused by the split of the two organizations, their ability to enforce their rules was greatly reduced. Confronted with the possibility of having to accept drastic wage reductions due to the displacement of skilled workers by machines, the two unions united in 1904 as the National Glass


26 Section 18 of Article I of the by-laws of Local Assembly 300 stated: "No manufacturer or company will be allowed to operate any invention or machine for the purpose of making window glass, at any time, where the scale of L.A. 300, K. of L., is in force. In case this is done, the wage scale of L. A. 300, K. of L., shall be cancelled, and the members will immediately cease work." The Window Glass Workers' Association of America had an identical rule.
Workers of America. Due to the cooperation of hand manufacturers who looked to organized labor for help in meeting the threat of mechanized production, and due to the fact that the Lubbers machine was not then an unqualified success, the new union was able to obtain some small advantages over the large mechanized glass companies.

Before and during World War I there were three unions in the window glass industry: the National Glass Workers, the Window Glass Cutters' and Flatteners' Association of America, and the Window Glass Cutters' and Flatteners' Protective Association of America. The last two were identified with machine production, the second working in the so-called independent machine plants and the third in the plants of the American Window Glass Company. The National Window Glass Workers, the heir of Local Assembly 300, embraced all four skilled trades and was the only organization of the workers in hand-operated plants. But it must be remembered that, although the workers at the Jeannette plant of the American Window Glass Company initially belonged to Local Assembly 300, during the first decade of the twentieth century, they were all members of the Window Glass Cutters' and Flatteners' Protective Association of America.

During the era of the 1930's, due chiefly to technological advancements in production, harmony again reigned among glassworkers, and the three craft unions merged into the Window Glass Cutters'


28 Ibid.

29 Davis, The Development of the American Glass Industry, 190-191.
League of America. In 1935, following passage of the National Labor Relations Act (Wagner Act), almost instantaneous organization took place in the glass plants. Section VII of the act upheld the right of employees to join labor organizations and to bargain collectively through representatives of their own choosing. Faced with a mass influx of unskilled workers into the Window Glass Cutters' League of America, the league set up a special division to make membership available to them, but before long tensions and frictions began to mount between skilled and industrial workers. 30

The result of this growing tension was a constitutional convention which opened March 13, 1934, in Columbus, Ohio, where it was proposed that the cutters and industrial workers agree to function as independent units but have the same set of general officers. The cutters later voted not to accept the proposal, so the industrial workers formed a separate organization, called the Federation of Flat Glass Workers of America, and on April 30, 1934, applied to the American Federation of Labor for a charter of affiliation. 31 This new union had jurisdiction over all window glassworkers with the exception of the cutters who continued as the Window Glass Cutters' League of America.

The new union was formally affiliated with the A. F. of L. on August 7, 1934. The glass companies were reluctant to recognize the new union, and the giants of the industry, Libbey-Owens-Ford, Pittsburgh Plate, and the American Window Glass Company, did so only


31 Ibid.
late in 1934. Of these, only the American Window Glass Company operated in Jeannette.

Meanwhile, the rift between industrial and craft unions continued to widen, and finally on September 17, 1936, the Flat Glass Workers left the A. F. of L. and joined the newly-formed Committee for Industrial Organization. Because a high percentage of eligible workers signed up as members, the C.I.O. granted the organization authority to accept ceramic and plastics workers into the union. Thousands of workers in these related industries became members of the organization; and in 1940, the name was changed to the Federation of Glass, Ceramic, and Silica Sand Workers. The new name served the union for fourteen years. In 1954, Canadian glassworkers were brought into the union, and its name was changed to the United Glass and Ceramic Workers of North America.

The United Glass and Ceramic Workers of North America differed from the Glass Bottle Blowers' Association of the United States and Canada, the American Flint Glass Workers' Union, and the Window Glass Cutters' League of America in that it expanded its membership to include other crafts. As a result, as technological advances steadily reduced the number of workers required to produce glass, and the other unions declined in membership and power, the Glass and Ceramic Workers continued to grow. Today there are four locals of the union in Jeannette, only one of which deals directly with glass production. Local 21 is affiliated with the American Saint Gobain

32 Ibid.; Peterson, Handbook of Labor Unions, 146-419.
33 Ibid.
plant and is concerned with glass production directly, while Local 97 represents the clerical workers of that plant. Jeannette Local 127 is affiliated with the J. H. Millstein Company which has not manufactured glass since 1953, but deals in plastics as does the Sterling Box Company whose workers belong to Local 175.  

Although all of these unions are still active in the Jeannette glass and ceramics plants, they have declined in power and influence since reaching their peak prior to 1920. The strike of the American Flint Glass Workers in 1892, the split of the Window Glass Workers' Association from Local Assembly 300 of the Knights of Labor in 1902, the formation of the Federation of Flat Glass Workers of America after their split with the Window Glass Cutters' League of America in 1934, and other such disputes within the unions, weakened them greatly, and the creation of several locals of each union has diffused the unions' responsibility and power. But the greatest harm to all of the organizations has resulted from the technological advances which have continuously eliminated the jobs of skilled workers. With this being the case, naturally all of the unions, with one exception, have constantly declined in membership and thus, in power.

Despite changes in technology, corporate organization, and working conditions, the glassmaking industry has persisted and, on the whole, prospered during the eighty-five years that it has existed in Jeannette, and the industry initially during that period dominated the economy of the town. Prior to the establishment of such industrial

concerns as the General Tire and Rubber Company and the Elliott Company which gained dominance during World War I, the welfare of Jeannette had depended upon the state of the glass industry. Its entire business life had been largely geared to serving this industry and the people who worked in it. Although for the first several decades of its existence, Jeannette lacked diversity and variety, its people were bound together by a common interest and stake in a single enterprise—glassmaking.
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