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**Craft survival in the glass industry of Southern New Jersey:
The metal of tradition**

Jacobs, Catherine Anne, M.A.

University of Delaware, 1992

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**CRAFT SURVIVAL IN THE GLASS INDUSTRY OF
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**by
Catherine Anne Jacobs**

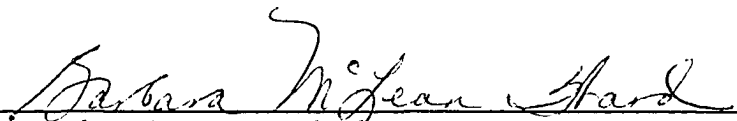
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in Early American Culture

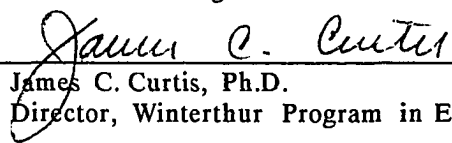
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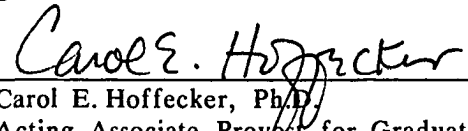
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**CRAFT SURVIVAL IN THE GLASS INDUSTRY OF
SOUTHERN NEW JERSEY:
THE METAL OF TRADITION**

by
Catherine Anne Jacobs

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...when the furnace...is settled, the metal is perfectly calm and plain: but if by accident the metal becomes too cool to work, and the furnace heat required to be raised, the glass, which had before remained in the open pots perfectly calm and plain, immediately becomes agitated or boiling. The glass rises in a mass of spongy matter and bubbles, and is rendered worthless. A change is however immediately affected by throwing a tumbler of water upon the metal, when the agitation immediately ceases, and the glass assumes its original quiet and clearness.

Deming Jarvis
Reminiscences of Glass-Making

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ABSTRACT

The purpose of this thesis is to examine the history of glassmaking traditions in Southern New Jersey. Particularly, attention is given to the persistence of craftsmen who used handcraft skills to make glass after industrial factories became mechanized in the nineteenth century. Special focus is devoted to the personal accounts of trained craftsmen whose experience reflects the factors that shaped traditions and provided for their survival.

Historically, craftsmanship is a unifying factor linking the phases of change and development in the glass industry of Southern New Jersey. Initially, immigrant glassworkers from Europe established glassmaking practices that remained essentially unchanged by the generations of craftsmen who worked between 1739 and the middle of the nineteenth century. Technological advances introduced to glass factories throughout the nineteenth century changed manufacturing techniques, and altered the traditional community relationships that had grown out of occupational ties. At the beginning of the twentieth century, the last generations of factory-trained "Old timers" recognized that industrial opportunities for trained craftsmen had diminished to the point of extinction. These "Old-timers" resisted exclusion from the craft by establishing their own factories for the production of specialty glassware. This precedent was followed by craftsmen without factory training who created enterprises that returned to craft work as the means of factory production. Presently, echoing past history, handcraft skills have been the basis for

the development of modern "borosilica" glass manufacturing. Although the techniques and materials of borosilica glass differ from those used in early glass manufacturing, the tradition of craft achievement and creativity has continued.

The nature of glassmaking traditions is revealed in the history of change in industrial production and the response to those changes by Southern New Jersey glassmakers. Handcraft had been the root of the first industrial successes in glassmaking and played a key role in determining the personal identity and community organization of the men who made the glass and their relationship to the wider community. Yet, when the techniques of production shifted from hand skills to machinery, the force of tradition compelled glassmakers to continue working together to manufacture glass, exploit the creativity of their technical skills, and maintain the continuity of learning from one generation to another.

INTRODUCTION

Craft, tradition, and industrial development are bound together in the history of glass manufacturing in Southern New Jersey. Glass manufacturing was the dominant industry in the region from the founding of the first glass factory in 1739 through the first quarter of the twentieth century. Early factories mass produced utilitarian wares such as window glass, bottles, and flasks. Commercial success was the foremost objective of these factories. Talented glassmakers, skilled in the techniques of handcraft production, provided the means to achieve the goals of industry. Craftsmen underwent a lifetime of training, learning, and refining the complexities of techniques and information about materials and equipment to master the craft. Factory operators recognized and rewarded the value of the glassmakers' skills. The broad compass of factory work also governed social life--one's coworkers were also neighbors. Among their own ranks, glassmakers recognized comparative levels of ability through different job titles, as well as occasional competitions. Workers found opportunities within the factory routine to exercise their creativity by making unique and decorative glassware for friends or family during breaks in the work schedule. Plant and product were the possessions of the factory owners, but craftsmen owned their skills. Each day when they left the factory, they took with them skills that were an occupational commodity and the bedrock of personal identity. These early beginnings in glass manufacturing fostered the development of a craft tradition that grew out of teamwork in the factory, craft skills, and shared

community life. When machinery was devised during the nineteenth century to supplant the skill of human hands, glassmakers drew upon industrial experience to create new contexts for the production of commercially viable handcrafted glass. Coming full circle, the twentieth-century glassware industry specializes in borosilica formula glass and is once again reliant on the craft skills of a new generation of glassmakers. Intrinsically entwined with working relationships, community life and the identity of glassmakers as craftsmen, glassmaking traditions in Southern New Jersey have evolved through time as a composite of customs and skills rooted in industrial production.

Glassmaking in Southern New Jersey succeeded due to the ready market for mass produced bottles, flasks and window glass. The first American glass factory was built in Southern New Jersey by Caspar Wistar in 1739. Wistar imported surplus workers from Europe, where the craft had been well developed, to operate the factory. These men brought with them skills and customs that were unique to the trade. Glassmaking demanded strength, knowledge, and artistry. In addition, glassmakers were responsible for innovations in techniques that helped the industry prosper. Acknowledged in Europe with the status of nobility, the first glassmakers in America were a rare and special group. They were rewarded with good wages, and were much in demand. During the period from 1739 until the middle of the nineteenth century the industry flourished, especially in the counties of Cumberland, Gloucester, and Salem. Throughout this time, industry relied on skills of handcraft that had been essentially unchanged over hundreds of years.

The glassmakers who emigrated from Europe to serve in the factories of South Jersey also used their creativity and technical virtuosity to make whimsies and decorative glass articles, called "offhand" work, after hours or during lulls in

production. As representatives of the glassmaker's art, these items are valued today and highly sought after by collectors. Offhand glass should also be seen as the glassmaker's tribute to the importance of craft for industrial manufacturing. Contrary to the repetitive work of the factory, these items were unique in details of shape, color, and decoration, attesting to the talent of the individual master craftsman.

Similarities among these items reflected the common resources and training drawn on by industrial glassworkers. The glass used for offhand ware was the same glass used in factory production. "Green" glass made with silica, soda or potash and lime was used for bottles and flasks. Clearer "soda" glass, was used for apothecary wares and other fine glass. "Flint glass" made with oxide of lead as a prime ingredient is a fine, heavyweight crystal-like glass, especially used for decorative tableware, but not a staple of South Jersey glass manufacturing. "Lime glass," introduced after the middle of the nineteenth century was a close cousin of soda glass, better approximating the quality of flint glass. Coloring agents made from oxides of metal such as copper, iron, and gold were added to a basic glass formula to produce a broad range of colors from blue to green, amethyst, and ruby. When sand was combined with the other ingredients used to make glass and then heated to a temperature of 2700°F, the resulting molten mixture was known as "metal".

The forms of offhand glass made most often were useful items such as pitchers, vases, and candlesticks. Paperweights, button hooks, darners, witch balls, noisemaker toys, miniature hats, and canes were also made for decoration, amusement, or ceremonial presentation. Whereas early bottles were usually unornamented, masters lavished a variety of skillful decorative techniques on their offhand work. Opaque swags or loops were added to translucent glass, continuous

threading swirled around necks or bases, and a "lily pad" design was created by the addition of a gather of glass to the base of an object and then pulled up the sides like petals.

Unlike the fine arts, offhand glass was not intended for patrons or a consumer public. These wares were made as gifts, to adorn workers' homes, and to mark time with demonstrations of mastery at the glass furnace. The skills glassmakers used were learned in the work situation, and through family ties. Frequently more than one member of a family was employed at the glass trade, and an introduction to the craft was often inherited through ancestral lines. Beyond the work place, many routes existed for the exchange of information, and for reputations to be built. In the isolated rural towns of the glass factories, family was the basis of community. Glassmaking was also a family tradition, introduced by fathers to their sons, and keenly observed by the families who depended on the success of the factories for their sustenance. Colleagues carried friendships and rivalries established in the work-place into social circles or leisure activities such as sports and hunting. Men who worked together were also neighbors, their tragedies were shared, their prospects enjoyed together, and their level of achievement was visible in the gifts of glass they made for friends and family. Their leisure time occurred according to a common schedule of pay days and factory holidays. Thus, the concentric rings of community, in the glasshouse and at home, reinforced the ties between personal identity, craftsmanship, and the values of industrial manufacture.

Despite competition from well established European manufacturers, the glass industry flourished in Southern New Jersey. Compelled by increased competition, innovations were developed to speed and refine production methods. A stream of technical innovations that began in the middle of the nineteenth century that

focussed on improving furnace and flue designs. New fuels were introduced, along with temperature-controlled furnaces that reduced intermittency and informal time in the work routine. Also, continuous tanks for melting the materials of the "metal"--the molten glass--were designed to eliminate the large clay crucibles or "pots" in which the metal was prepared, that had to be pulled from the furnace when empty, filled, and heated to melt a new batch of glass. Overall, these changes reduced opportunities for glassmakers to learn all facets of the craft--from preparation to handling the metal itself. Glassworkers responded by forming labor organizations, launching cooperatively owned factories, and lobbying for the legal protection for their work. However, none of these efforts could ensure the longevity of traditional craft practices and a familiar community structure. By the end of the century, changes in glassmaking had spread to most glass factories in Southern New Jersey.

As the twentieth century opened, glassmakers looked for markets for hand made glass. They found an avenue for the survival of their craft in the production of items that could not be made easily by mass manufacturing techniques. Just as eighteenth-century entrepreneurs recognized the profits to be gained from supplying consumers with bottles and window glass, twentieth-century glass craftsmen saw that they could profit from markets for reproductions of historical styles of glass, particularly ware made in styles of traditional offhand glass. In addition to monetary returns, their reward was the opportunity to continue living and working as they were accustomed. Loathe to abandon the trade by which they were distinguished, 'Old-Timers' initiated small businesses that specialized in reproduction tableware.

The most prominent of these men were the Clevenger Brothers of Clayton, New Jersey. Their glasshouse attracted other noted masters such as August

Hoffbauer and Otis Coleman. Contemporaries joined them and followed suit. Ted Ramp built a small glasshouse in the woods behind his home in Egg Harbor. Their colleagues also included Earl Felber, a glass cutter and engraver who put together an engraving shop at his home when his position at Wheaton Glass became outmoded. During the Great Depression the Works Progress Administration established a furnace in Vineland to provide Old-timers with the means to employ their skills, and teach them to others. Once again, the end product of their work could serve as proof of the time-honored values and status of glassworkers.

The adaptation of new equipment, materials, and market conditions to traditions of handcraft manufacturing provided for the persistence of glass craftsmanship in the twentieth century. The Old-timers were succeeded by a generation of glass craftsmen who benefited by their example, even if they did not learn directly from them. This group included men and women who were inspired by the lore and beauty of handmade glass. However, their training came from new sources. They were artisans, rather than workers in industry. Yet, in their own productive enterprises these predecessors also depended on commercial markets, rather than fine arts markets, to support their work. Like the Old-timers, newcomers like Tom Zinsky create decorative ware. Zinsky learned his craft through a variety of means--the shreds of evidence found in historical collections and archaeological excavations, a few willing Old-timers, and a great deal of trial and error. Craftsmen like Skip Woods found a market niche in the production of scientific glassware with specification that were too precise for larger mechanized factories to handle. Others, like Kenneth Messina, drew on family background.

At the start of the twentieth century, innovations in the makeup of the material itself led to factories using solid borosilica formula glass rather than the

molten metal of "soda" or "lime" glass. Borosilica glass is designed to withstand intense heat, but its solid form can be heated and made pliable with a gas flame. Produced in the form of tubes and rods, borosilica glass is delivered to secondary manufacturers where it is shaped according to the specifications of customers. The process of manipulating the glass into desired form is accomplished by single operators, working at counters with gas flames rather than by teams of workers at a furnace. Consequently, the work-place is climate controlled, laboratory-clean, and without the noise and bustle created by a team of workers. While their role is more that of glass handler than glassmaker, because they do not formulate the ingredients, workers in the borosilica glass trade are also craftsmen. Dozens of companies working with borosilica glass have grown up in South Jersey. Despite their dissimilarities, borosilica glass craftsmen share the same inclination to display their skills and creativity as their counterparts in early glasshouses. In the new realm of the borosilica industry, craftsmen like Nontas Kontes and Gaylord Evey carry on vestiges of the traditions established in the first glass factories of Southern New Jersey.

During the first century of glass manufacturing in Southern New Jersey traditions were shaped by the work organization and techniques required for hand craftsmanship. Work roles were divided according to tasks, determining a progressive hierarchy based on cumulative knowledge. Each task was learned in succession, in a process of learning that required observation and practice. Master craftsmen who rose through the ranks were recognized with wages and respect in their community. As the nature of the industry changed, so did the conditions under which glassmakers worked. Factory streamlining took the place of teamwork production and new technology eliminated the challenges of handcraft. Through the

connections of craft and community, the impact was felt beyond the factory floor. Drawing on a craft tradition that fostered individuality and the ability to create beauty from basic materials, glassmakers responded by identifying new markets for craftsmen made wares. As much as science and technology have worked to formulate a precise and infallible approach to working with glass without the aid of human guidance, craft and industry have remained firmly linked. When craftsmen could no longer work in large-scale factories, they designed their own small factories. Glassmakers were equipped by their training to react to challenges with ingenuity and innovation. The tenacity of the relationship between traditional craft and modern industry benefited both. The requirements of modern industry call once again on the skill and discoveries of craftsmen. Following the pattern of history, these craftsmen hone and display their technical skills in artistic creations. The metal of glassmaking tradition continues to reside in the mettle of the craftsmen of South Jersey.

CHAPTER ONE

THE EVOLUTION OF TRADITION

PART ONE

TRADITION TAKES ROOT

Between the early eighteenth and the middle of the nineteenth centuries the dense pine forests and flat terrain of Southern New Jersey were gradually populated by the factories and workers of a thriving glass industry . Originally, factory towns were isolated from one another by distance and minimal transportation routes. In this isolation close knit communities developed in which occupational associations were integrated with social relationships. The tendency for successive generations of families to remain in the glass trade also contributed to the stability of communities. During these early years, a market for glassware manufactured in America became firmly established. At the same time, skills imported with the first immigrant craftsmen who staffed the factories grew into customs of the work-place and became recognized within the communities of the factory towns. For instance, glassworkers displayed their skills to family and friends by creating unique glassware items as gifts. Also, the cooperative organization of work teams spilled over into leisure-time activities such as sports and game hunting. By the middle of the nineteenth century, glassworkers began to feel the effects of the wave of technological innovation that sparked the Industrial Revolution in America. New equipment was conceived for all aspects of production,

from melting the ingredients of the glass batch, to blowing the glass, and even conveying the product from one point to another within the factory. Conversely, these mechanisms had an impact on the lives of glassworkers. Machinery replaced handcraft techniques, and reduced the number of individuals employed in the process of manufacture. These changes resonated even further, weakening the solidarity of communities once bonded by common concerns, knowledge, and schedules. Through this miasma of change and response, the resilient nature of craft traditions became evident in the response of glassworkers. In an effort to protect their interests, glassworkers formed labor unions, recorded verbal reminiscences about the trade, and participated in demonstrations of historical practices that celebrated the years in which craft dominated the industry, and craftsmen were kings.

Caspar Wistar established the first glass manufactory in Southern New Jersey in 1739. Wistar emigrated to America from Germany in 1717 at the age of 21, settling in Philadelphia. The Wistarburg glassworks was built beside the Alloway Creek, in the region then called West Jersey. The factory attracted craftsmen who, like Wistar, were immigrants--from Germany, the Netherlands, France, and elsewhere in Europe. Caspar Wistar died in 1752, leaving the factory to his son Richard. In 1780 Richard, weary from the tribulations of the Revolutionary War, advertised in the Pennsylvania Journal that the glass manufactory was for sale. His description provides a detailed picture of the factory, and the scope of its physical plant.

The Glass Manufactory in Salem County West Jersey is for sale with 1500 Acres of Land adjoining. It contains two Furnaces with all the necessary Ovens for cooling the Glass, drying Wood, etc. Contiguous to the Manufactory are two flatting Ovens in separate Houses, a Store-house, a Pot-House, a House fitted with tables for the cutting of Glass,

a Stamping Mill, a rolling Mill for the preparing of Clay for the making of Pots; and at a suitable distance are ten dwelling houses for the workmen; as likewise a large Mansion House containing six rooms on a floor, with Bake-house and Washhouse; also a convenient Store-house where a well assorted retail shop has been kept above 30 years, is as good a stand for the sale of goods as any in the County, being situated one mile and a half from a navigable creek where shallops load for Philadelphia, eight miles from the county seat of Salem and half a mile from a good mill. There are about 250 acres of cleared Land within fence 100 whereof is mowable meadow, which produces hay and pasturage for the large stock of Cattle and Horses employed by the Manufactory.

There is stabling sufficient for 60 head of cattle with a large Barn, Granery, and Waggon House. The unimproved Land is well wooded and 200 Acres more of Meadow may be made. The situation and convenience for the procuring of materials is equal if not superior to any place in Jersey.¹

Richard Wistar died before the factory was sold. Management passed to his son John Wistar until the factory closed a few years later.

The process of glassmaking used by Wistar and his contemporaries had undergone few changes for hundreds of years. [Figure 1] The heart of a glass factory was still the furnace. Here the elements for glass were melted. Shaped like an inverted goblet set into the shelter of a building, the wood or coal-burning furnace had a central chimney with a circular base. Openings were spaced around the base of the furnace for the insertion and removal of large clay crucibles, called pots, in which the ingredients of the glass heated until they became the molten metal. The design of the furnace was a matter of intimate concern to factory owners and glassmakers alike. The furnace was crucial to the quality of the molten glass and thus the efficiency of production and competitive success of the factory. Christian L. Stanger at his glassworks in Malaga, New Jersey drafted plans for an eight pot furnace, and two flattening ovens for window glass in 1806 and 1828. His plans, which survive in the archives of Batsto Historic Village, were accompanied by the

following descriptions: "the size of our flattening stones are generally 36 Inches long 29 Inches Wide and 6 Inches Thick," and the "size of the pots 15 by 22-23 In High 14 by 20 Inches at the bottom."² A similar emphasis of interest was expressed by a late nineteenth-century historian of the region who noted that at the Quinton Glass Works in Salem:

one of the most prominent features of the establishment is a Belgium oven, the entire castings of which were imported from Europe, and which produces a quality of glass near equal to the French plate.³

The heat of the furnace (2700 degrees Fahrenheit) enabled shaping and finishing glass objects, but it presented a challenge to one's constitution and physical endurance. A poorly operating furnace could interrupt work and cause a loss in wages. Worse still were incidents when a defective pot broke and disgorged the molten contents, causing the injury of workers and destruction of the factory from a resulting fire.

A series of ovens called *lehrs*--heated from the main furnace and chimney--gradually lowered the temperature of the glass, providing a tempering effect called annealing that guarded against breakage. Nineteenth-century improvements in furnace design led to the development of a single *lehr* in which the temperature reduction could be controlled, eliminating the need to carry ware from one oven to another. By 1849 a small furnace called the glory hole was introduced. Set apart from the blazing force of the main furnace, craftsmen used the glory hole to reheat the glass periodically. This allowed them to refine the shape of the glass before it became cool and brittle, without returning it to the main furnace.

The daily and weekly schedule of glasswork revolved around the tasks of regularly tending the furnace. The clay furnace pots were charged--or filled--with the materials for each batch of glass at the end of a twelve-hour turn or shift, and

monitored during the following twelve hours until the glass had reached the proper state for working the following day. When it was necessary to replace these a group of glassworkers had to work together to maneuver the containers into place. This schedule followed the natural division of night and day into periods of rest and work. In 1971, Vermont Frie, a worker at the Moore Brothers and Company furnace in Glassboro, recalled the five-pot furnace used at Moore Brothers and Company in Clayton between 1901 and 1904, and noted that the F.M. Pierce Company continued to use pot furnaces until 1914.⁴ The onerous task of maneuvering the bulky clay pots into the furnace, in the context of shared and generally despised experience was intoned by Louis Cadley's 1922 poem "The Glass House" [Appendix F]:

The next morn we go in
Our work to begin
And as we hang around,
A note is put up
That would make one go nuts,
To set pots on the afternoon swing.⁵

At Whitall Tatum in Millville, nineteenth-century workers named furnaces in commemoration of events or personalities associated with them. Visible at some distance from the factory, the stacks of the "Union Nest," "Hen's Nest," "Owl's Nest," "York House," and "Pigeon's Nest" attested to a sense of fellowship among the men who drew their metal from these furnaces.⁶

The process of making glass begins with mixing the "batch", the combination of sand, metals, and chemicals that are loaded into a furnace pot and heated until molten. After cooling slightly from a temperature of 2700°F, a portion of metal is gathered onto a hollow steel blowpipe about one inch in diameter and six to seven feet long. The glowing gob of glass is rolled along a flat "marver" stone until the ball was evenly shaped. Then a glassblower holds the pipe aloft and blows air into the

mass of metal. When the desired size is achieved a second glassmaker attaches a solid "pontil" rod to the base of the item, and the blower detaches the blowpipe. During this stage, the glass is manipulated by hand with wooden and metal tools that pushed it into shape. This type of glassware is known as freeblown because no molds are used to impress the glass with patterns or govern the shape of the vessels. The pontil is used to carry the metal while ornament, or additional pieces of glass such as handles are added. While the glassmaker works, the rod holding the glass is kept constantly moving in a rolling motion, otherwise the soft glass would become misshapen or fall off the rod. Ultimately, molds made of wood, wire, and metal were developed to give uniform shape and decoration to the glass. Moldblown glass is made in a similar fashion. However, after the gather of glass is inflated, it is lowered into the mold, which closed around the glass, and the glass inflated once again to conform to the dimensions of the mold. Once the item is finished it is placed in the lehr to cool.

Within the teams or "shops" of men who worked together in the glasshouses each man had specific duties. Originally, a group of glassblowers worked together at each pot of the furnace. Over time, tasks became divided among the individuals of the shop and glassmakers became identified by the increasingly specific titles of their tasks: glass batch mixer, glass melter, window glass roller and flattener, pot maker, molder, shearer, lehr tender, mould boy, and the "gaffer" or master blower. [The apprentice was at the lowest rung of the ladder. Apprentice glassblowers began their experience early--often as boys of ten or twelve years--expecting to devote their entire lives to the craft. Their tasks started with keeping the work area clean. Gradually, apprentices would learn other tasks such as carrying the glass to the lehr, gathering the metal the master would blow, or operating a mold. After completing an apprenticeship, a young glassblower then would travel to other factories as a

journeyman to broaden his experience. Each factory might specialize in different products, or have different glass formulas and techniques for journeymen to learn.]

The division of labor among the team was an efficient means of production and provided each member with the opportunity to learn every aspect of his task. In the course of a shift, members of the shop would begin working with a full pot of glass prepared by the glass batch mixer and melter. Tools for working with the glass were limited to a simple array of hollow and solid rods--the blow pipe and pontil rod--and shears, calipers, and other hand tools for shaping the molten glass, or metal. The gaffer gathered a glob of metal on a long hollow iron rod. After he marvered the gather and began blowing through the pipe to create a hollow center, another glassmaker would open and close a mold into which the hot metal was lowered and blown into shape. If a foot, handle, or lip was required, the shearer would gauge the amount of glass needed and apply it while the blower continued to steady the glass. The next step was carried out by a man who transferred the blown ware onto a pontil rod and briefly reinserted it into the furnace heat to "firepolish," or melt away any imperfections. Lastly, the glassware was carried to the lehr for annealing. By the time a glassmaker was recognized as a master he had acquired the skills required for every function in the process of making glass. Other occupations associated with the glasshouse included making clay pots, burning coal, and crating finished wares.

Early glass factory sites in South Jersey were isolated from other spheres of settlement and activity. The closest urban centers to the region were Philadelphia and Wilmington. A river crossing was required to reach either of these towns, and overland roadways were still few in Southern New Jersey. Factories were located near supplies of silica (sand), stands of wood for fuel, and navigable waterways.

These factors usually convened in remote areas, and it was necessary for each glass factory to host its own world of support services. Factory-owned housing for workers, and factory stores where workers could trade work credits or cash for supplies meant that the glass factories completely controlled the economic lives of their glassworkers.

Thomas Carpenter's accounts of glassworks at Carpenter's Bridge near Salem illustrate the broad scope of functions which early glass factories had to provide for their operation. Carpenter's transactions show that his employees depended on him for their homes. Carpenter noted: "rented the corner house on New St. for \$60" (Jan 12, 1826); "this day rented the Chase House to William Lee for the remainder of this year" (April 23, 1828); and, "Anthony Money moved into my house at the rent of \$15/annum He began to work 3rd day at \$8 per month" (Oct 11, 1828). Carpenter's accounts also mention rent due from eleven men and one woman, who either worked in the factory or, in the case of Martha Falman, were family of glassworkers.⁷ Similarly, Jesse Richards's glasshouse built on his property in Batsto in 1822, supported a range of craft shops as well as company housing, and a company store where script issued for wages could be exchanged for food, fabric, and other commodities.

In addition to satisfying employee needs, the isolation of factories made it necessary for owners to operate their own fleets of marine vessels and overland vehicles to transport raw materials and finished products. The factory of Caspar Wistar near Alloway Creek was conveniently "situated one mile and a half from a navigable creek where shallops load for Philadelphia" and surrounded by 110 acres of meadow to provide the fodder required for the large stock of cattle and horses employed by the manufactory.⁸ The day book kept by Thomas Carpenter of

Carpenter's Bridge (1809-1823) recorded periodic expenses incurred for repairing the stern, pump, mast, and rudder of the glasshouse packet, a type of river steamer with a regular freight and passenger route.⁹ The Whitall-Tatum glass works in Millville operated two sloops, two schooners and a steamboat. The sloop Ann plied the route to Philadelphia, the sloop Franklin traveled to Philadelphia and Baltimore, and the schooner Caroline and steamboat Millville both went to New York.¹⁰ In some cases, as at Marshallville (ca. 1814), Estellville (ca.1835), and the Union glass factory at Port Elisabeth (1811-1818), each company operated its own wharf.¹¹

The unfamiliar sounds of immigrants' foreign tongues, a tendency for raucous and drunken behavior after long shifts of hard work, and a schedule regulated by the demands of the market and the glass furnace, rather than time cycles governed by day and night, the seasons, or agriculture, gave rise to perceptions of glassworkers as a "group apart" from people in other occupations and communities. In fact, in contrast to their farming neighbors, the glassworkers halted their work during the heat of the summer. Glassworkers were also distinguished economically from other laborers.¹² Immigrant craftsmen were most likely to be single men, and the less skilled chaff of a European labor surplus. The shortage of skilled workers led to a fluid job market in which glassmakers were drawn from one factory to another by offers of better pay and working conditions.¹³ In one instance, popular knowledge of the ample wages provided by Jonathan Haines to his employees at the Waterford Works (1824-1880) in Camden County, New Jersey led to coinage of the term "Waterford Wages."¹⁴

Conversely, early observers also recognized the many ways in which glassmakers were a cohesive group. The nomenclature used among glassworkers to classify work roles according to skill level and type gave definition to the cultural

hierarchy of the group. The gaffer was responsible for general supervision of work as well as the ability to understand and perform every task required of those working alongside him. At least two workers were needed to make blown glass, but more complicated assignments required the assistance of additional apprentices, as well as a carrying-in boy who placed finished ware in the annealing oven (lehr).¹⁵ In the craft process, the quality of the product was determined by each individual's proficiency in the execution of his task and everyone's ability to work together as an efficient manufacturing unit. Progressive instruction in each aspect of glassmaking provided through the master-apprentice system of training was, along with the experience simultaneously gained, essential to the individual's ultimate ability as a master to coordinate the sequence of actions involved in producing glass objects, and to meet new challenges with innovative solutions.

Experience and ingenuity with local materials and conditions expanded the resources from which glassmakers could draw. A batch book compiled glass recipes and other special information used in a glass factory. Christian Stanger wrote and down the glass formulas he obtained locally and from foreign factories and bound them together in a volume he titled "Collection of Receipts of Window Glass." The collection contained formulas which may have been named for their originators, regional derivation, or transcribers, including: "Henry Bostwick," "Pittsburgh," "Judge Robinson," "Wm Montgomery," "Everhearts Mirens," "Impsons Mirens," "Boston Flint," "William Coffans Bach at Millville," "Joseph Porter's Bach at Waterford," "French Bach given by a French man at Winslow, Oct 7, 1838," and "For Viels."¹⁶ Stanger was clearly interested in experimenting at his own factory with formulas developed elsewhere, and confident that local factories were generating ideas worthy of recording, and of relevance to his own circumstances.

By 1830 Cumberland County census records show that the remote and rural character of glass factories diminished in the early nineteenth century. Glass manufacturing had opened the region to industrial development. The prosperity of the glass factories also drew other industries to the area that diversified employment opportunities. grew to dominate commercial activity and settlement in South Jersey. Eight glassworks were operating in South Jersey in 1800. Within the next thirty years one hundred attempts to found glassworks were made, and seventy-one of these were operating in 1832.¹⁷ By 1830 Cumberland County census records show that one-hundred thirteen glassworkers were concentrated in the county, the population of glassworkers had stabilized and become part of a more diverse community. [See Appendix A] The glassworkers were concentrated in the townships of Maurice, Millville, and Bridgeton, where they comprised less than one percent of the total population. Among these, 72 percent were household heads, the average age was 32, and only 15 percent were of nativity other than New Jersey. Most were listed as glassblowers, but other titles such as glass cutter, glasshouse manager, glass batch maker, crucible maker, and glass melter were included.¹⁸ Glassworkers' homes are numbered sequentially in the census lists, suggesting that the workers' homes were clustered together.

The development of a standardized network of rail transportation by the middle of the nineteenth century exposed glass factories in South Jersey to greater prospects, and greater demands in industrial competition. A combined effort of glass and iron interests built the Camden and Atlantic Railroad east to Winslow in 1850, and in 1854 extended the route to Abescon (Atlantic City).¹⁹ Whitall Tatum was able to retire their boats from service after the railroad came to Millville in 1863, but the factory needed to maintain more than two dozen wagon teams to cart

wares to the train depot before a branch railroad was constructed to bring freight cars directly to the plant.²⁰

The delivery of sand, fuel, soda ash, minerals, and chemicals by rail enabled manufacturers to access new and varied resources. For instance, soda ash had once been locally produced, but by the mid 1890's most potash for window glass was imported from Germany.²¹ Dependence on imported materials placed factory owners at the mercy of foreign suppliers. Supported by petitions from glassworkers, ironworkers, and shipping interests, in 1870 the Honorable William Moore presented an earnest request to the Congress of the United States that the duties on imported soda ash be reduced or abolished. Tariff policies, he protested, put American manufacturers at a disadvantage in their competition with foreign factories.²² Efforts to obtain fine glass sand for more commercially competitive glass products caused companies to search beyond their own locales. In 1895 the New Jersey Glass Company purchased property in Downingtown, Pennsylvania, where they were

preparing to take out white sand on an extensive scale, a fine deposit of sand having been found on a hill near the stream (the Brandywine River). The company is also constructing a trestle work, on which cars can be run on an endless chain, to convey the sand . . . into the building where the washing is to be done.²³

The provision of raw materials to the glass factories eventually became a separate field of business. In 1906 the Philadelphia Press published a photograph of a "floating sand digger" invented by Richard O. Bidwell of Vineland, "who started life as a poor boy, [and] has in a few years become the biggest glass sand producer in South Jersey."²⁴

Industrial development also translated into changes within the workers' community. Seated at the foci of the new railroad system, clusters of glass factories

led to the growth of urban residential districts. Cities linked by rails were also desirable locations for other manufacturing interests, as well as municipal offices, merchants, and a service industry.

The growth of South Jersey glass factories in size and operations was reflected in census records. By 1850 the number of glassworkers in Cumberland County had grown to two-hundred-ninety-one, and in 1870 there were one hundred ninety three glassworkers in a single ward in the City of Millville alone. [Appendices B,C] The number of glassworkers at individual factories had increased--there were 500 at the Moore Brothers and Company glassworks in Clayton in 1880--as had the physical size of individual glass companies. For instance, in 1880 the twenty acres of the Moore Brothers and Company factory encompassed four bottle factories, one of which was for bottles or stoppers, as well as a steam saw and grist mill, a machine shop, blacksmith shop, warehouses and sheds, a three-story store with offices, other buildings, and the railroad tracks.²⁵ Reflecting the diversity of glass products made by the company, a greater number of job titles were listed in the 1850 census. Shearers, window glass rollers and flatteners, and most notably apprentice glassblowers joined the ranks. In 1870 apprentices were no longer included, but individuals listed with the new term "works in glass house," who were mostly teenagers, were listed in abundance.

Factory towns grew and diversified, but occupational relationships among glassworkers continued to provide a foundation for community life, and this was reinforced in families as successive generations continued to work in the glass industry. Like the English agricultural village described by Ewart Evans, the glassworkers' community was

not formed by a number of people living together in chance association . . . its inhabitants had to work together within the framework laid down by the necessities of time. A more or less common work bound the people together; and out of this work grew the organism which was the old community.²⁶

Census data for 1850 and 1870 show that workers continued to congregate in neighborhoods within the factory environs. To some extent, this was caused by the availability of company-owned row houses. Most of the 400 employees of the Whitney Glass Works in Gloucester County between about 1830 and 1850 occupied 100 company-built houses, some of which had been purchased by the residents.²⁷ About the same time, the holdings of the Malaga Glass Company included "the larger portion of the dwellings in the village of Malaga."²⁸ The increased incidence of more than one glassworker in the same household suggests another basis for community cohesion. Throughout the period, nearly all glassworkers enumerated in the census lived with relatives or with unrelated boarders who were also glassworkers. Frequently, a glassworker's children followed in his footsteps. Before the end of the century, the demographic profile of glasshouse workers had changed in radical ways. The average age had declined, more single men were employed, and fewer glassworkers were New Jersey natives. These alterations reflected a demand for more work at lower prices, and the development of more semi-skilled or unskilled jobs. These changes were similar to those wrought earlier in other industries and were the first indication that the Industrial Revolution was to have a profound effect on the glassmaking industry.

PART TWO

CHALLENGES TO TRADITION

A succession of technological developments in the nineteenth century altered the working environment and the techniques of the craft that were traditional to glassmaking. These changes included new designs for furnace operation, the very heart of the factory. As operation of the furnace changed, work schedules became regulated according to the clock rather than according to rate at which the craftsmen could work. Also, furnaces and mechanical blowing equipment enabled the division of tasks among workers trained only for specific tasks, rather than the comprehensive knowledge of the gaffer. The economics of industry gradually created a division between factory owners and craftsmen. Factory owners turned to machinery as the means to achieve competitive success. In many respects, this was devastating. Nonetheless, just as apprentices were expected to analyze and come up with solutions to problems of manufacture, glass craftsmen took up their new circumstances as a challenge to be explored and answered.

New furnaces and flue designs were introduced to the glass industry beginning in the 1840's. Deming Jarves patented a fire-and-flame chamber in 1846 that extended entirely around the pot for faster and more even melting. In 1853 Brookfield and White borrowed the air-blast system from iron smelting technology to increase and control furnace heat. Initiated by a two-chamber pot designed by William McAfee in 1865, a variety of continuously fed tank furnaces were patented

in the 1860's. Because these furnaces could run constantly, the regulation of glassworkers' schedules according to the rate at which the pot was emptied and replaced was no longer imperative. Philip Arbogast struck a blow to the South Jersey industry when he perfected the coal fired furnace in the 1870's.²⁹ The glass industry in Southern New Jersey had always depended on the region's abundant supply of wood for fuel. Soft coal could be made by burning wood according to the charcoal burners' special methods, but high-carbon coal, the fuel of preference, was not a natural resource in the area. Gas-fired furnaces were introduced as well, and factories in Pittsburgh began using natural gas as early as 1874.³⁰

A small coal-fired furnace, called a glory hole, was introduced about 1849 so that necks and mouths of bottles could be reheated and worked into their final shape without being carried back to the main furnace. To make the most efficient use of this new equipment, men were grouped into shops consisting of two glassblowers, one finisher, and two snapping-up boys. The latter were so named because they used, instead of a pontil rod, a "snap case" in the shape of a small cage at the end of a rod to receive the ware from the blower after it was been blown to final shape.³¹

If they were to remain competitive, South Jersey manufacturers could not disregard modern developments in the industry. It was to the advantage of firms to extract the greatest potential from the coal fuel that they had to import from the mid-west at great expense. In a circular distributed September 1, 1853, Andrew K. Hay of the Winslow glasshouse was named as co-owner of a patent for the use of anthracite coal in manufacturing glass:

The subscribers having obtained Letters Patent, for their new and useful improvement in manufacturing Glass, by the use of Anthracite Coal as a fuel, are now prepared to dispose of the right of using the

same. While they are determined to protect their exclusive privilege from unlawful infringement, they are at the same time willing to dispose of the privilege to manufacturers for reasonable terms.

Application for information may be made to either of the subscribers, or to their attorney, Thomas P. Carpenter, Esq., Camden, N.J.

Andrew K. Hay
Winslow, Camden Co., N.J.
James M. Brookfield
Honesdale, PA.³²

When new technology was introduced to a glasshouse, fundamental changes to the rhythm and work of glassmaking occurred.

Better and larger furnaces cut down on the intermittency which had been part of preindustrial work and made the routine more relentless for workers. Fewer breakdowns and less time spent waiting for the batch to melt meant less frequent informal leisure time. The development of the continuous tank furnace carried this trend towards its ultimate resolution: three shift, twenty-four hour operation. Similarly, the development of separate, portable finishing furnaces cut down on the workers' movement around the floor. The ware was passed from worker to worker as finishing moved away from the main furnace. The continuous annealing furnace (lehr) carried the principle of non-stop regular production through to the end of the process.³³

Throughout the first half of the nineteenth century, industrial changes operated to the benefit of factory owners and workmen by increasing the opportunities available to both. Inventions that could take full advantage of the new furnaces were soon achieved. Henry Inge's introduction of the Individual Section (I-S) Machine in 1825 was the first of a stream of new inventions that, by the end of the century, mechanized and standardized the processes of manufacturing blown glass containers.³⁴

In addition to changes in pace and process introduced with machinery, the glassmaker's exclusive understanding of his craft was eroded by efforts to

standardize the technical information of glass manufacture. The "batch book" was no longer the sole guide to proper combinations of the components of glass. Under the direction of Richard Atwater from 1865 to 1890, Whitall and Tatum operated the first factory laboratory for the development of glass formulas through scientific chemical analysis of ingredients and their properties.³⁵ Practical volumes on glassmaking also became available in this period. Benjamin F. Biser's Elements of Glass and Glassmaking, (1899) provided a historical account of glassmaking: definitions of the properties of glass, information about furnaces, fuels, and clay pots; and numerous recipes for different types and colors of glass.³⁶ The size of clay pots used in the furnace had increased from an average of about 700 pounds in 1820 to 1500-2000 pounds in 1880, and thus Biser's recipes specify quantities ranging from 100 to more than 2000 pounds.³⁷ Between the work of charging the furnaces, and then turning the molten result into a useful product, each day glassmakers handled material that could be measured by the ton. The Crockery and Glass Journal, a trade publication, published a standard recipe for glass:

The best material for glass-making is white quartz. Ordinarily, however, quartz sand is employed, being cheaper. It is reduced to a fine powder together with an alkali of carbonate of soda. At this stage of the process the colors are put in, if colored glass is wanted. For coloring the oxides of various metals are used. Manganese makes a beautiful purple, and uranium a good yellow. Cobalt serves for blue, and the black oxide of copper for green. The red oxide of copper makes an excellent red, but the finest red is produced with Cassius purple, which is a gold compound. The glass mixture prepared in the manner described is melted in a pot at great heat, so as to make it limpid and get rid of gases which rise to the surface and pass off. The stuff is then cooled down to a temperature of about 1000 degrees, when it is of a ropy consistency, and may be pressed or gathered on rods for blowing.³⁸

During the latter decades of the nineteenth century, especially between the 1870s and the turn of the century, South Jersey began to lose ground in the struggle

to remain an important glassmaking center. Decline followed earlier growth, and by 1868 the number of glass factories in the southern counties of New Jersey had dropped to 13, with a total among them of 30 furnaces making bottles and other hollow ware.³⁹ A surge of growth was funded by zealous speculators following the Civil War, but many of these new factories were soon wiped out by the depression of 1873. For example, the Bulltown glassworks supported a community with 60-70 homes, a store, and a hotel at the beginning of 1873, but by the end of the year the factory town was reduced to a mere crossroads.⁴⁰ Between 1879 and 1919 increasing numbers of glassworks moved to sites in the Midwest where natural gas was plentiful and the importance of New York and New Jersey glass factories to the production of the industry as a whole dropped by 50%.⁴¹ The values associated with the glassmaker's craft had been reinforced by the success of the region in the development of the glass industry. However, as the industry shifted to other parts of the country glassmakers stood to lose the honor of this reputation.

In order to compete with Midwestern companies factories in South Jersey responded by modernizing their plants. The Crockery and Glass Journal reported for June of 1892 that at Whitall-Tatum in Millville:

workmen began tearing down the 'Hen's Nest' green glass factory It is one of the oldest factories in the city . . . the 'Union' factory standing alongside will also be torn down, and in their place will be erected two large green glass factories under one roof. The firm is also having a new batch house erected in which the batch will be mixed by machinery."⁴²

No longer distinguished by the abundance of fuel, sand deposits, or a favorable location along transportation routes, South Jersey factories could still avail themselves of the machinery that enabled the success of their competitors.

The outlook for the glass industries of New Jersey is reported as being very much more encouraging than for years past. The stock on hand at the several factories has all been disposed of, while orders for more are being received, and will be filled as soon as the many improvements in machinery are completed.⁴³

Unlike the tableware trade in which the novelty of each season's fashions could stimulate the market, the fortunes of glass factories in South Jersey fluctuated at the mercy of factors beyond the control of industry. The priorities of survival for the factories were determined by the economics of market trends. If a severe frost damaged summer crops, for example, the demand for canning jars would be sharply reduced. On the other hand, a hot summer in 1890 created increased orders for beverage bottles, and it was also noted that "...the consumption of bottled beverages in homes has become greater since the curtailment of the number of saloons"⁴⁴

As the gulf widened between the trained artisan and the businessman owner the relationship between management and workers became increasingly fractious. This tension is evident in an ultimatum issued to employees of the Cohansey Glass Manufacturing Company in Bridgeton in 1895:

unless they accept store orders on the company's store they will be discharged and other workmen given their places. The manager visited every non-union blower, yard hand, packer, etc., and informed them that the orders had come from headquarters to this effect. The men are indignant, but cannot help themselves. The glassblowers held a meeting last night to take action on the matter, but a secret session was held and was not made public.⁴⁵

The company store had become recognized as a device of company coercion rather than a convenience for employees. In 1916 the practice of deducting store charges from a man's wages was outlawed and company stores gradually closed down.⁴⁶ Company housing also went the way of the company store. Although only eight

Millville glassworkers held title to their own homes in 1860, by 1890 45% had become homeowners.⁴⁷ One observer noted in retrospect that as the glass industry took hold and brought prosperity to South Jersey "it was a shiftless worker indeed who did not own his own home."⁴⁸ Increasingly, workers and management lived in separate spheres.

Glassworkers discontented with their new subservience to industry management and concerned for the continued practice of their craft organized cooperative factories. In one issue, the Crockery and Glass Journal informed members of the trade in 1890 that: "It is said that a number of blowers at Millville are endeavoring to organize a new cooperative glass manufacturing company."⁴⁹ More capitalistic competitors blamed these endeavors for a depressed market.

The facts are, there are fourteen firms East employing free labor, operating 34 furnaces, with 950 blowers; and there are less green glass blowers working under union rules now than at any time for the past twenty years. There are about 300 idle blowers East, and trade is very dull and prices low, the low prices being owing largely to the fact that the co-operative concerns endeavor to make wages only, without regard to profit.⁵⁰

In the last decade of the nineteenth century, cooperative glassworks were organized in Salem, Vineland, Hammonton, and Swedesboro, New Jersey.⁵¹ These enterprises set the precedent for glassworkers to establish direct control of their occupation, from ownership, through management and production.

The economics of modern industry aggravated the disintegration of the glassworkers' world. Between the 1870s and 1890s American glassworkers were paid two to three times more than ordinary laborers, but by the 1920's their wages were about equivalent.⁵² The disparity between New Jersey wages (\$13.14) and those of English workers (\$6.85) was identified by a writer in 1912 as the source of the

industry's eventual destruction, along with the dissolution of the institutions of "moral" and "material" uplift supported by the prosperity of the glass industry.⁵³ If America could not compete in international markets, the author presumed, the American industry would collapse, along with associated trades and the institutions of community financed by factories, or glassmakers' wages. While industrialists urged mechanization as the remedy for growing economic imbalances, glassworkers called for protection of jobs.

Union representation of the new concerns around which glassworkers had coalesced signaled a break from the old order in which craftsmen held power by virtue of the value of their skills to industry. The workers at the Wistar plant were credited with having been first in the industry to unionize in 1842. This group, along with others in the region, formed the Glass Blowers League in 1846.⁵⁴ The Green Glass Workers of the United States and Canada formed in 1860 with the purpose of maintaining "a standard list of prices for blown ware, and the affording its members protection and opportunity to become enlightened and responsible citizens."⁵⁵ In 1878 the American Flint Glass Workers Union (AFGWU) formed to represent workers in factories that produced fine glassware and tableware. One of the original objectives of the AFGWU was to combat the widespread institution of Michael Owens's fully automatic blowing machine (1903) by encouraging the use of semiautomatic machinery through contract stipulations pertaining to wages, apprenticeship policies, and the regulation of work shifts. After 1898 union efforts on these matters ceased as the unions conceded the superior efficiency of mechanized production, and the difficulty of keeping up with the pace of technological change.⁵⁶

Disputes between the unions and management reflected the traumatic

conversion of the industry from traditional, to modern modes of operation. Sometimes short strikes proved successful, as in the case of a disagreement at the Gibson, Horton and Company works in Fairton. A dispute over the classification of a bottle as a 'beer' or a 'mineral' type, which would determine the wage scale, was settled in day's time with the help of outside arbitration.⁵⁷ At other times the results were disappointing. When the gathering boys at the Cohansey works struck for a wage increase of fifty cents per day "they were discharged and that ended the matter."⁵⁸ The effects of a failed strike could be much more drastic. When a strike in Glassboro ended in 1891 with the workers' decision to return according to the manufacturer's terms, nine-tenths of their places had been filled, and only fifteen men were allowed back to work.⁵⁹

Signs of discontent with the union appeared in public sentiment and among the ranks of glassworkers. Unable to agree with the union's approach to resolving the issue of the proportion of apprentices to journeymen, in 1886 New Jersey locals in Millville, Clayton and Glassboro withdrew into their own group called the New Jersey League, some of whose members resisted incorporation into the Glass Bottle Blowers Association (GBBA) until 1917.⁶⁰ During a strike over control of the number of apprenticeship positions in their factory, glassblowers for the Moore Brothers and Company firm in Clayton chose to return to work due to their feeling

that the assessments are still continued in order to support idle men, the majority of whom would not work if they could. They claim the strike should be declared off, and assessments stopped, and the idle men allowed to work if they wish to, and can get places.⁶¹

Another group of twenty men and boys were said to have left the bottle works at Woodbury, New Jersey, to go to Gate City, Oklahoma, rather than agree to union regulations.⁶²

Disagreement over the involvement of unions represented an element of reluctance to follow modern industrial practices. It was fortunate for some that the introduction of machinery for blowing bottles did not result in the immediate elimination of glassblowers. It was certainly true that

by 1880 it was clear to anyone who worked in a glasshouse that the road to advancement and skilled work in the factory lay through the machine shop. The routine work performed on the furnace room floor contrasted sharply with the challenging labors of the moldmakers and machinists.⁶³

However, many factories converted to machinery over an extended period of time. Work orders from the Woodbury Bottle Glass Works show that as late as 1905 workers were still grouped in teams made up of two blowers and a gaffer.⁶⁴ Also, where handwork had been the established order it remained protected to a degree by the continued need for small quantities of specialty wares--made in unusual sizes and odd shapes--that could not be economically produced with expensive machinery.⁶⁵ The survival of handwork factories and departments provided a toehold for tradition. This position later was an important foundation for the growth of efforts to maintain the traditions of glassblowing.⁶⁶

The understanding of glassmaking derived through working experience proved still vital to the industry in the twentieth century. As late as 1915 glassblowers were preferred as operators of bottle-making systems in which the glass flowed directly from furnace to mold.⁶⁷ However, mechanization did not create an industry that could be administered by business managers alone. For instance, when Mr. McBride of the Bridgeton glassworks died in 1895, his partner Mr. Kirby closed the works because "Mr. Kirby is a dentist, and finds that glass making is quite a different thing from dentistry."⁶⁸ In 1882 the Woodbury Glass Works replaced

supervisor C.A. Madden with Mr. Jacob Pease. Although the former was lauded for his "selection of none but sober and industrious mechanics . . . [because] . . . not a single day has been lost through drunkenness of the men . . ." two furnace failures were suffered under his supervision.⁶⁹ His replacement with Mr. Pease was received with the glowing report that he was "born and reared in the business, a blower of no mean reputation."⁷⁰ In a similar instance, an appreciation for experience was expressed when it was noted that "the Applegate Glass Works (Vineland, New Jersey) has been sold to F.S., who are practical glass blowers, and will no doubt make the business a success."⁷¹

Occasional competitions among glassworkers also illustrated continued esteem for skilled craftsmanship. William Surran was noted for the forty-five gallon carboys, large bottle shaped vessels, he made at the Whitall Tatum factory between 1882 and 1884, when the twelve-gallon carboy was generally the largest size made in production.⁷² Special notice was made in The American Flint in 1890 when "a window glass blower at the Cohansey Glass Works, at Bridgeton, New Jersey, who is not a large sized man, made a double thick roller 84" long by 48" wide."⁷³ In 1900 a friendly rivalry began between workers at Whitall Tatum and the Alton works in Illinois over who could blow the largest bottle. The competition climaxed in 1903 with the production of a 108 gallon bottle by Whitall Tatum's John Fath and Emil Stanger.⁷⁴ In 1910 John Fath, then 56 years of age, was listed in the census as a bottle blower, and his son M. Michael, 29 years of age, was noted as a gatherer. Theirs were the last generations to participate in the glassmaking craft while it still retained a significant role in large-scale industrial manufacture.

The prospects of mechanization were fully evident by the close of the nineteenth century. In order to remain competitive, glass factory owners in Southern

New Jersey had little choice other than to implement modern technology and management methods. Consequently, the glassworker became less essential to the factory, his practical knowledge was replaced by an academic and scientific approach, his privileges in the work-place were eliminated, and his status as a skilled craftsman was weakened. Labor organizations sought to protect industrial workers. But their efforts were found controversial, in public eyes and among men who were trained craftsmen. In South Jersey, the years of success for the glass factories had occurred while the process was controlled by craftsmanship. Change and development within industry eliminated the conditions and opportunities that fostered the traditions of glassmakers. Nonetheless, the knowledge and traditions of glassmaking remained with masters who felt compelled to create new ways to exercise their craft.

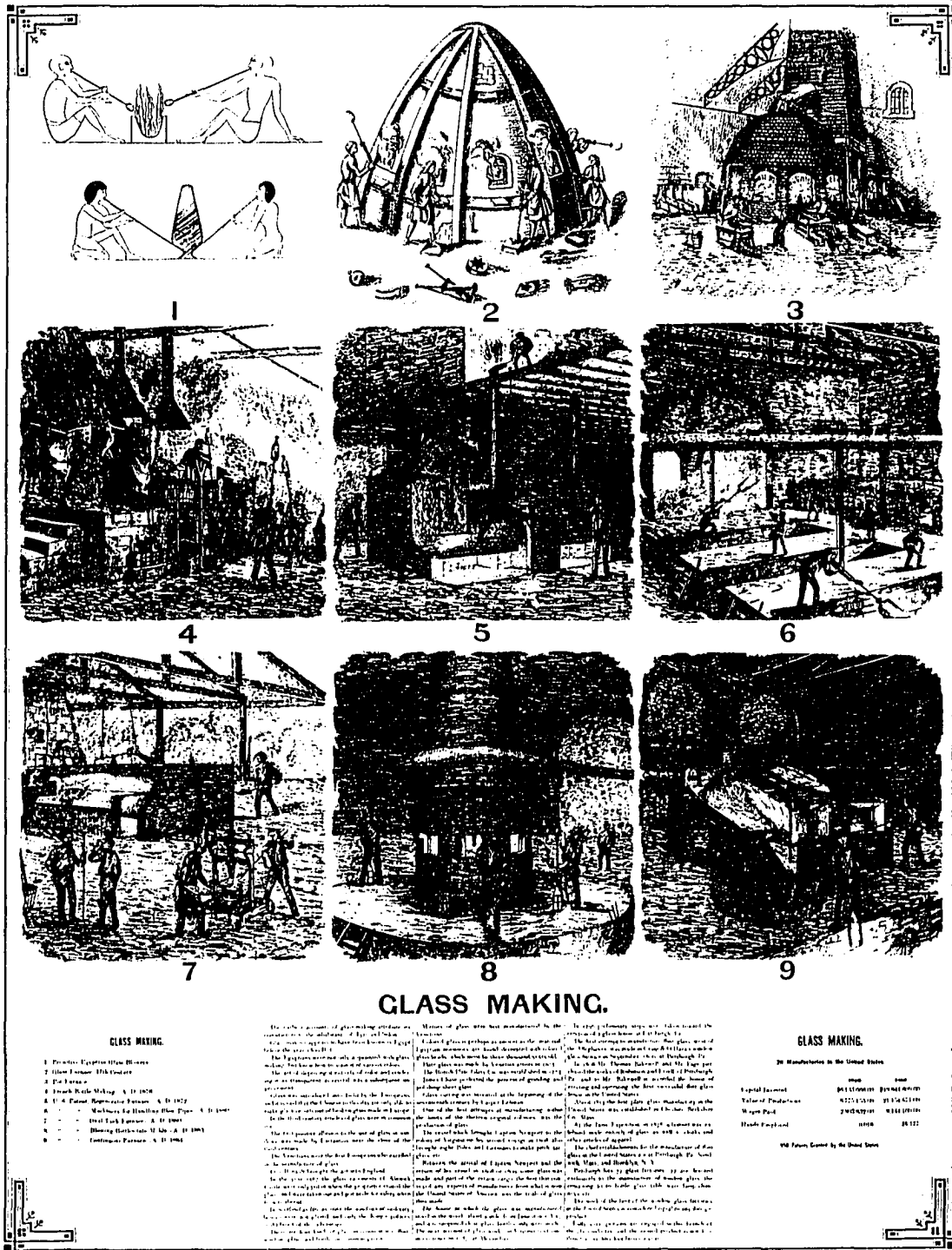


Figure 1

An illustration of historical glassmaking techniques, circa 1881.

ENDNOTES

CHAPTER ONE

1. Sicard, Hortense Fea, "Sidelights on the Wistars and Their Glass-House," The Magazine Antiques 10, No. 4 (October, 1926): 281.
2. Christian Stanger, drawings of oven plans. Batsto Historic Village archives, Batsto, New Jersey, Pfeiffer Collection, "Glass formulas and Oven Plans".
3. Cushing and Sheppard, Histories of the Counties, p. 475.
4. Vermont Frie to S. Fay Silver, February 5, 1971, Gloucester County Historical Society, Woodbury, New Jersey. This caption explained a drawing in the letter, "This is a furnace with five pots. They were 4 feet across 32 inches deep. They held glass for 8 hours for three shops. This dope I got first hand from 1901-1904, that as I can remember was the era of the pot furnace at Moore Bro. (in Glassboro). But F.M. Pierce used pots until 1914." "I worked at both places. In order to use the pot it had to be slowly heated in special ovens 1400 to 1600 F before putting it in the furnaces when they were filled they would sometimes break the first melt. Then again they would last a month or more." This citation accompanied a drawing: "Pot machine used for setting. 14 to 18 Men blowers did this service after work free."
5. Louis Cadley, "The Glass House," The American Flint 13, no.3 (June, 1922): 27.
6. Foster Forbes, "A History of Our Plants," p.4. Also, Crockery and Glass Journal 35, no.24 (June 16, 1892): p. 32.
7. Thomas Carpenter, Carpenters Bridge Day Book, March 13, 1823-1838. Gloucester County Historical Society, Woodbury, New Jersey.
8. Henry Charlton Beck, The Roads of Home: Lanes and Legends of New Jersey (New Brunswick: Rutgers University Press, 1983), 189.
9. Carpenters Bridge Day Book.
10. "History of Our Plants," ca. 1940-41, (archives of the Foster Forbes glass company at Millville, New Jersey), p. 6.

11. "Survey of Historic Glass Factories in Southern New Jersey," prepared for the Office of Cultural and Environmental Services, New Jersey Department of Environmental Protection, L81-44, by the Wheaton Historical Association and R. Alan Mounier, consulting architect (Wheaton Village archives, Millville, New Jersey).

12. Arlene Palmer Schwind, "The Glassmakers of Early America" in The Craftsman in Early America, ed. Ian M.G. Quimby (New York: W.W. Norton, 1984), p. 177.

13. "Survey of Historic Glass Factories in Southern New Jersey."

14. Joan Wallach Scott, The Glassworkers of Carmaux: French Craftsmen and Political Action in a Nineteenth Century City (Cambridge, Mass.: Harvard University Press, 1974), p. 34-35. Joan Wallach Scott notes that in France, "in its origins, glassblowing was a trade restricted to nobles By 1754, though nobles retained sole rights to direct glassworks, the blowers themselves were not usually of noble blood."

15. Scott, The Glassworkers of Carmaux, pp. 23, 61.

16. Christian Stanger, Collection of Receipts of Window Glass, Batsto Historic Village Archives, Pfeiffer Collection, folder titled "Glass Formulas and Oven Plans," Hammonton, New Jersey.

17. "Survey of Historic Glass Factories in Southern New Jersey."

18. Oddly, nobody was listed in the census as an apprentice. This may have indicated a special degree of respect given those working in the glass factories. The youngest worker, George Mossbrook, was 14 and called a glassblower. Similar samples from Gloucester and Salem counties might reveal whether apprentices began at a relatively late age, or whether this appearance is the result of a bias in the census taker's method.

19. WPA Federal Writers Project, Stories of New Jersey: Its Significant Places, People and Activities (Port Washington, New York: Kennikat Press, 1938), p. 311.

20. Foster Forbes, "History of Our Plants."

21. Warren Scoville, Revolution in Glassmaking: Entrepreneurship and Technological Change in the American Industry 1880-1920 (Cambridge, Mass.: Harvard University Press, 1948), p. 263.

22. "Old Gloucester County," letter reprinted from 1870, Woodbury Daily Times (Woodbury, New Jersey), Tuesday, October 27, 1959. (Gloucester County Historical Society clipping file, Woodbury, New Jersey).

23. Crockery and Glass Journal, 42, no. 6, (August 8, 1895): 34-35.

24. "His Machine Digs Sand from the Bottom of Streams," Philadelphia Press,

March 16, 1906. (Gloucester County Historical Society clipping file, Woodbury, New Jersey).

25. Thomas Cushing, M.D. and Charles E. Sheppard. Histories of the Counties of Gloucester, Salem and Cumberland, New Jersey with Biographical Sketches of their Prominent Citizens (Philadelphia: Everts and Peck, 1883), pp. 312-313.

26. George Ewart Evans, Ask the Fellows who Cut the Hay (London: Faber and Faber 1956), p. 241.

27. Cushing and Sheppard, Histories of the Counties, p. 230.

28. Cushing and Sheppard, Histories of the Counties, p. 222.

29. Dennis Michael Zembala, "Machines in the Glasshouse: The Transformation of Work in the Glass Industry 1820-1915" (Ph.D. dissertation, University of Michigan, 1964), pp. 200-210

30. "Survey of Historic Glass Factories in Southern New Jersey."

31. Forbes, "History of Our Plants."

32. Circular signed by Andrew K. Hay and James M. Brookfield, September 1, 1853, Camden County Historical Society, Camden, New Jersey. Honesdale, Pennsylvania is located in Wayne County, in the northeast corner of Pennsylvania, close to the border with New Jersey.

33. Zembala, p. 227.

34. George L. Miller, and Catherine Sullivan, "Machine-Made Glass Containers and the End of Production," Historical Archaeology 18, no.2 (1984): 87.

35. Foster Forbes, "History of Our Plants," p. 4.

36. Benjamin Biser, Elements of Glass and Glassmaking (1899; reprint, Pitman, New Jersey: Roy Horner, 1974).

37. Zembala, pp. 200-213.

38. Crockery and Glass Journal 42, no.16 (October 17, 1895): 32.

39. WPA, Stories of New Jersey, p. 311.

40. "Survey of Historic Glass Factories in Southern New Jersey." and WPA, Stories of New Jersey, p. 311.

41. Scoville, p. 266.

42. Crockery and Glass Journal, 35, No.24 (June 16, 1892): 32.
43. Crockery and Glass Journal 42, no.5, (August 1, 1895): 36.
44. Crockery and Glass Journal 31, no.9 (May 8, 1890): 22.
45. Crockery and Glass Journal 41, no.2 (January 10, 1895): 21.
46. Forbes, "History of Our Plants," p.7, and "Millville's First Glasshouse," South Jersey Magazine 10, no.3, (Summer, 1981).
47. "Millville's First Glasshouse," South Jersey Magazine 11, no.2 (Spring, 1982): 15.
48. "The Desert Made to Blossom," The Unionist Gazette (Somerville, New Jersey), Thursday, October 24, 1912.
49. Crockery and Glass Journal 31, no.3 (January 16, 1890): 22.
50. Crockery and Glass Journal 33, no.8, (February 19, 1891), PAGE .
51. Articles in the Crockery and Glass Journal noted a number of cooperative glass factories organized by glassworkers:
 "A new cooperative green glass bottle factory is about to be added to the list at Salem." 32, no. 9 (August 28, 1890): 25.
 "The green bottle factory now being erected at Vineland, N.J. will, it is said, run on the cooperative plan" 34, no. 13 (Oct 1, 1891): 25.
 "It is proposed to establish a co-operative glass manufacturing company at Hammonton, N.J. A large dealer in Philadelphia offers to put in a part of the capital and take at least \$25,000 worth of glass each year." 34, no. 16 (October 22, 1891): 27.
 "The old works at Swedesboro have been refitted with modern appliances by the new company, who will run them on the co-operative plan, and will start about the middle of September with a good supply of orders. These men mostly come from Royersford, Pennsylvania." 41, no. 26 (June 27, 1895): 28.
52. Scoville, Revolution in Glassmaking, p. 209.
53. "The Desert Made to Bloom," The Unionist Gazette (Somerville, New Jersey), October 24, 1912.
54. Flame and Heart, p. 7.
55. Crockery and Glass Journal 42, no.3 (July 18, 1895): 27.

56. Scoville, Revolution in Glassmaking, pp. 205-207.
57. Crockery and Glass Journal 35, (May 26, 1892): 21. The decision was to call the bottle a 'beer'.
58. Crockery and Glass Journal 31, no.7, (February 13, 1890): 23. In 1881 the Glassboro boys struck against the employment of some Jewish boys. The latter were retained by the factory.
59. Crockery and Glass Journal 34, no.14 (October 8, 1891): 24.
60. Flame and Heart, pp. 15-18, pp. 60-61.
61. Crockery and Glass Journal 32, no.20 (November, 1890): 25.
62. Crockery and Glass Journal 31, no.1 (January 2, 1890): 15. The Journal supported the interests of wholesale and retail agents, in opposition to the union, this certainly flavored their selection and illustration of the workers' feelings.
63. Zembala, "Machines in the Glasshouse," p. 317.
64. Woodbury Bottle Glass Works, Work Orders, Nov 1-Nov 29, 1905, Gloucester County Historical Society, Woodbury, New Jersey (Clipping File).
65. Scoville, Revolution in Glassmaking, p. 237.
66. Miller and Sullivan, "Machine Made Glass Containers," pp. 83-96.
67. Flame and Heart, pp. 56-57.
68. Crockery and Glass Journal 41, no.11 (March 14, 1895): 24.
69. Cushing and Sheppard, Histories of the Counties, p. 183.
70. Cushing and Sheppard, Histories of the Counties, p. 183.
71. Crockery and Glass Journal 42, no.23 (December 1895): 32.
72. "Millville's First Glasshouse," South Jersey Magazine 11, no.2 (Spring, 1982): 17.
73. Crockery and Glass Journal 32, no.25 (December 18, 1890): 24.
74. "Millville's First Glasshouse," South Jersey Magazine 11, no.2, (Spring, 1982): 17.

CHAPTER TWO

OLD TIMERS: CHANGE AND CHALLENGE

It was apparent by the first decade of the twentieth century, if not yet an accomplished fact in every factory, that machinery would eventually eclipse the individual craftsman in the glass factories of southern New Jersey. The continuity of practice and tradition from master to apprentice was at an end. Glassworkers saw a future in which their talents as craftsmen would no longer be recognized, their high wages would come to an end, and their community would dissolve. However, the implementation of mechanization was not swift, and glassmakers were able to ruminate on their prospects. Some chose to train in different occupations altogether while others moved to the midwest where glass manufacturing, albeit highly mechanized, was thriving. Still others sought out the few remaining factories that, either for lack of capital, or because they manufactured products best made with handcraft techniques, were slow to mechanize. About the time Michael Owens invented the fully automated blowing machine in 1903, which seemed sure to replace glassblowers altogether, glassmakers discovered another solution to separate their destiny from the course of industry. In the small towns of South Jersey, glassmakers began to identify markets they could supply from their own manufactories specializing in handmade glass. The Clevenger Brothers of Clayton, New Jersey, are most noted for taking this tack. They built a small glass factory that specialized in producing decorative glass in the style of the offhand ware traditionally

produced by industrial glassmakers in their spare time. Their factory was a magnet for many other Old Timers, and provided inspiration to others such as Ted Ramp, who followed suit by starting their own glasshouses. This course was not limited to glassblowers alone. Glasscutter and engraver Walter Swindell Earling opened a specialty shop behind his home for cutting and engraving glass. Instead of being defeated by modernization, these South Jersey glassworkers created new outlets for the continued practice of traditional workmanship.

Glassmakers expressed their allegiance to their craft through statements of resistance to mechanization. In "The Glassblower Man," a poem published in The American Flint in 1922, A.L. Faulkner advised his fellow workers to "compete if you can, and if not, change your trade."¹ In 1936 Tommie Towler, a union local secretary, observed with sarcasm that for the glassworkers of Salem, New Jersey, "there is nothing to do in this town but fish and drink beer, and, boys, you can't fish in the winter here."² Later in the same year Edward S. Johnson's observations took a more pointed turn when he suggested a resolution to the problems of glassworkers;

while strolling around the plant of the Kimble Co., I happened to walk into the machine and vial department, and the sight that met my eyes was sickening, to see all of the machines working and boxes of ware piled all around the place; hardly room to move about and the boys from the hand vial department walking the streets. The work is gone forever as far as they are concerned This country has gone machine mad . . . so the only thing we can do is wait and maybe the day will come when somebody will enact a law to curb automatic machinery.³

General decreases in consumer spending during the Great Depression of the 1930s were partly responsible for the poor fortunes of glassmakers. Also, the introduction of techniques for preserving food in tin cans reduced the demand for glass jars. However, Towler and Johnson had looked beyond economics to other qualities of

their occupation. Each recognized that mechanization had a negative impact on communities--once active they were now stagnant--and a negative impact on workers who suffered a personal loss of recognition for skilled craftsmen. As a result, they recommended that glassworkers retrain in another trade, or look for a way to stop the onrush of mechanization altogether.

Union publications took a nostalgic approach to presenting information about glassmaking techniques and customs of the glasshouses from the early history of the industry. Nostalgic looks at the past first focused on social aspects of life. For instance, a Vineland, New Jersey, writer for The American Flint asked wistfully in 1922,

what has become of the olden times when at this time of year in each locality we all looked forward to the six weeks' summer stop by organizing fishing clubs to camp along some lake or stream and forget all the hardships of the past fire by having [] on tap from four until eight and beer at all hours."⁴

In contrast, modern industry distanced workers from the heat of the furnace and regulated work schedules to avoid costly annual summer shutdowns.

References to 'olden times' soon led to the addition of a new term in the glassworkers' exclusive vocabulary. 'Old-timers' were recognized as master craftsmen according to skills and qualities instilled by their craft. Old-timers were held up as exemplary models of commitment to the trade, and as a source of strength for the union.⁵ The American Flint published autobiographical essays that described the long hours, collegial pranks, wages, skills, and working conditions the Old-Timers had experienced.⁶ The respect shown to the Old-timers was in keeping with the traditional hierarchy of the factory, in which the master blower worked long years to achieve his status. The value of this commitment to learning is illustrated

in a comment about the special abilities of Old-timers: "each [man] possesses his own ideas and ways of working, acquired by habit, which become "Tricks," and only the devil knows how long it takes to learn those 'Tricks'." ⁷

The integrity of craftsmanship was also cited in lobbying efforts to obtain legislation to protect the jobs of glassmakers. In 1945 The American Flint published a two-part article arguing that the "Survival of U.S. Handmade Glassware Depends on Tariff Protection." Imports were shown to have dropped dramatically from record levels achieved between 1935-37. Continuation of tariffs was urged as a way of guarding against the possibility that future foreign trade agreements would lead to the demise of hand workmanship in the American glass industry. In addition to the economic rationale presented in support of a tariff program an appeal was made for the importance of handcraftsmanship on the grounds of its cultural and artistic significance.

If later handworkers become machine operators, then we as a national people, will become "robot" parts of machines, and the artisans now employed in our hand-made industries will disappear; "freedom of choice of work" is limited, for there is nothing to do but "learn to run a machine."

There are many people who have artistic talent and yearn to work with their hands. They do not want to work on a machine; they are unhappy when they must do it. When legislation is enacted which drives such people into machine production when they really want to produce hand-made products, they become unhappy and dissatisfied. ⁸

However, glassworkers had no direct control over the enactment of laws or economic policies designed to promote their interest. Opportunities to work as skilled craftsmen were not guaranteed through economic protection, legislation, or labor organizations.

THE CLEVENGER BROTHERS

Through the confluence of regional tradition, industrial history, personal circumstances, and conditions in the glass market, three brothers of the Clevenger family in Clayton, New Jersey, struck upon a novel response to the waning of skilled glass craftsmanship. Theirs was a direct approach. The Clevenger Brothers organized a factory where they could practice their skills, and work with others with similar training, all according to their own standards. In addition, they were able to compete in the glass market, where economic success was the ultimate sign of approval for the glassmakers' work.

The practice of glassmaking was a family tradition among the Clevengers. Andrew Jackson Clevenger (b. 10/27/1861) went to work at the Winslow bottle works of Andrew K. Hay at the age of nine, and retired from the Bill Munford chandelier works in Bridgeton in 1921, at the age of sixty.⁹ His older brother William Henry Clevenger (1847-6/27/1920) worked in the window glass factory at Batsto, the Winslow Glassworks, and, after 1890, for the Moore Brothers Glassworks in Glassboro.¹⁰ William Henry was followed in the trade by his four sons Henry Thomas (3/23/1872- 11/14/1934), George H. (9/19/1874- 3/24/1896), Lorenzo ("Reno", 2/16/1877- 2/1950), and William Elbert ("Allie", 2/26/1890- 6/22/1960).¹¹

The early career experiences of the Clevenger Brothers paralleled the gradual decrease in opportunities for glassblowers during the first decades of the twentieth century. In an early published account of their lives records that Tom worked at the Hay Bottle Works in 1883, Reno went to work as a glassmaker in Woodbury in 1885, and Allie began as a handling boy at Moore Brothers in 1901. The young men then worked at various companies until they came together again in 1912 in Wilcox, Pennsylvania, and afterwards dispersed to work for different companies until

1930.¹² Walter Swindell Earling, a glassworker in Millville who conducted business with the brothers, recalled that Tom Clevenger was a master shearer at Moore Brothers, and that Reno and Allie worked turning bottles at a glass factory lehr for a daily wage of eleven cents. As the twentieth century dawned, hard times in the industry led the brothers to seek a living picking apples for a cider company in Clayton.¹³ During World War I the brothers were steadily employed in the manufacture of nitro cellulose for explosives in a plant at Carney's Point, New Jersey. Between about 1920 and 1930 the brothers attempted to establish an independent business. Following the example of their neighbor Ethel Smith, and with a loom provided by Ernest Stanmire, a local antiques dealer, the brothers operated a fairly successful rug making business.¹⁴ When this venture ran into difficulties, the Clevengers established their own small glass manufactory to specialize in handmade reproductions of historical glassware, including freeblown whimsies and moldblown decorative items.

The Clevenger glassworks contained a single pot furnace and an annealing oven housed in a shed behind the family home in Clayton (Figure 2). An early sales catalogue described the site as "an unimposing tiny well worn cottage ... on the original site of the Deckett and Fisler factory. ..."¹⁵ Because the annealing oven was fueled with a variety of woods, rather than a single type, the results were never predictable. Typical work days began at 7 a.m. and continued until 3 p.m., with a break for lunch. The yearly schedule allowed for a summer stop between June and September, and during the gunning season because "they wouldn't miss that!"¹⁶

The brothers had chosen a difficult period in which to begin a new business. James Travis, owner of the Clevenger Brothers glassworks since 1966, insists with certainty that the factory began operations in 1929, but Tom Clevenger's sons Willis

and Tom recall 1930 as the first year of the business. Elsewhere in the industrial world during the 1930s "there was a stirring in labor . . . a demand for unions according to industries and not to crafts."¹⁷ Neither the national economy, suffering under the Great Depression, nor the global spread of new unions offered support to the Clevengers' endeavor. Tom Clevenger's sons explained that desperation inspired their father to encourage his brothers to join the project. He was, after all, the father of a large family and the most skilled glassblower among the brothers. Tom Clevenger explained, "well, my dad loved the glass factory and when Moore Brothers closed up they were lost. He worked at Owens-Illinois in Glassboro for a while but they were making everything by machines."¹⁸

From a business standpoint, investment in the Clevenger glasshouse was a wise choice. The idea for a small factory producing wares of a traditional type with a traditional mode of manufacture relied on the premise that handmade glass would meet with appreciation among American consumers. Local businessmen Ernest C. Stanmire and Philip Glick recognized the potential of the glassworks and provided funding and managerial assistance to promote its success. The market for the wares the Clevengers planned to produce had been primed by a growing impulse for collecting items that represented the American past. In addition, the production of novelty glassware had created a new consumer aesthetic for glass as gifts, and decorative additions to the home. The craze for Americana was summed up in a New York Herald Times article in 1922:

America today is a nation of collectors more cosmopolitan than any the world has ever known. Yet in the midst of cosmopolitanism, our collectors remain firmly national. The most widespread love among them is for the relics of our ancestors This Americana passion is so widespread at present to be an epidemic rage.¹⁹

At the same time, the industry was faced with a spirit of fickleness in the American buying public that could be satisfied only by a constant supply of new designs, colors, patterns, and types of glassware. This created problems for flint glass factories, where too often much of the season's product was still unsold when consumer interests demanded yet another novelty. The tables had turned:

instead of being a dictator as to what will be used in flint glass, the producer has been disarmed and is now taking dictation from the public as to what his plant is to produce if he expects to secure a market for his product."²⁰

Yet, only a few years before the Clevenger glasshouse was started, the Fenton Art Glass Company was noted as "not only the one glass company in West Virginia making exclusively colored glass for household effects, but in the entire country as well."²¹ Like a rainy day for fishing, conditions could hardly have been better for the Clevengers. Collectors of Americana, consumers thirsty for novelties in glass to adorn their walls, windows, and living room tables could all find something among Clevenger wares to satisfy their interests. Clevenger glass was not new, in fact the traditions it represented descended from the roots of the glass industry in New Jersey. The creative forms of decorative glass they made, however, were new to the buying public.

Like the factory itself, the glassware first produced at the Clevenger glassworks represented the resurrection of traditions which no longer existed at industrial sites. In 1934 customers could choose from a list of 31 items; there were two sizes of bowls, three water bottles, three sizes of miniature decorative glass hats, two sugar bowls, four pitchers, four vases, a rose jar, finger bowl, drinking goblet, water glass, sherbet, beer mugs, paper weights in the shape of frogs and turtles, cabin shaped bottles with the word "Booz" molded into them, and witch balls--hollow round

globes traditionally hung near an entry to turn evil spirits away, but recently used for decoration (Figures 3, 4 and 5). The glass was freeblown using blowpipes and simple wooden forms made of cherry wood were used to shape each piece. Handles and feet were applied from separate pieces of glass. The range of goods expanded somewhat by 1935 to include flip glasses, camphor jugs, goblets, lily-pod pitchers, ivy bowls, decorative bottles designed to sit on a window ledge, and a number of bottles and flasks made with molds discarded by handwork bottle factories. The range of colors used for Clevenger glass reflected their experimentation with whatever resources were reasonably obtainable. A 1934 catalogue advertised blue, green, and amber. In 1935 four items--window sill bottles, camphor jugs, ivy bowls, and finger bowls--were sold in red. In 1939 the choices included amethyst, Colonial blue, dark green, amber, light green, and light blue, as well as ruby. A color dubbed 'Amberina' by Phil Glick was developed when the blowers discovered that a particular recipe that appeared yellow when gathered out of the furnace became red when it was returned to the heat for finishing. "Sometimes they didn't put it back far enough and the bottom would be red and the top would be yellow. . . . After they found out how well it sold they made it that way on purpose."²²

Similar to their early predecessors, the Clevengers' knowledge of the materials of glassmaking enabled them to create and adapt recipes according to their resources and the conditions of their furnace. "They were recyclers," said Tom and Willis Clevenger of their father and uncles, mirthfully alluding to the practice of obtaining cullet, or scrap glass, from large factories, and using it as the basis of their batch mixtures. The Clevengers invented their own batch recipe for a selenium ruby that was slightly orange. Young Tom Clevenger was responsible for maintaining, until 1942, the batch book containing both original recipes and "the old ones from all the

other glass factories." A number of the formulas used by the Clevenger Brothers were also recorded on the unused pages of a nineteenth-century general store account book. The same volume contained pages devoted to records of the Clayton baseball team membership, records of hunting excursions, Tom's wife Rose Emma's list of school pupils, and a number of addresses.²³ Glass cutter Walter Earling related a story about a request from the Clevenger Brothers to buy red cullet from Wheaton's automobile and bicycle taillight production. Allie asked,

"do they have any ruby cullet at Wheaton's," and I said "yeah." About that time these stoplights we have on the car didn't come as standard equipment, but you could buy them from Woolworth's and put them on yourself. The lens, Wheaton made it. The broken stuff that wasn't just right they threw away.²⁴

Through Earling, Allie Clevenger arranged to buy the cullet for eighty dollars a ton. Frank Wheaton, Sr. reminded Allie "you can't bring it back," implying he didn't think the cullet could be used successfully. A few weeks later Allie presented Walter Earling with a goblet and instructed him "that's the first piece of ruby I've made out of the pot. I want you to take this and show Frank I know how to make ruby." Frank Wheaton still had trouble believing that the ruby had been made with his cullet.

The Clevengers borrowed marketing strategies from industrial sources in order to introduce their wares to the public. One of the challenges dealt with by industrial manufacturers was the task of inspiring the interest of their buyers, either with tempting descriptions of their ware, or the novelty of new product lines. The Clevengers used both tactics. In 1934 an eighteen-page brochure was published to be given to wholesale clients. The material addressed growing interest in American collectibles, and pointed out that, unlike antiques, Clevenger glass was highly affordable. The Clevengers attested to the authenticity of their work as the product

of true South Jersey glassblowers in a single statement near the end of their sales promotion booklet. New owners of Clevenger glass were invited to submit a small form that would admit them to the "Clevenger Blown Glass Club," "organized for the purpose of preserving the memory of the Old Masters of South Jersey blown glass, and to pay tribute to the few remaining South Jersey glass blowers."²⁵ When collectors became interested in nineteenth-century pattern ware the Clevengers responded by marketing a full variety of glassware blown into closed patterned molds. In a catalogue published in the 1950s, a few of the items advertised in the 1930s were included, but other than a lily leaf all were blown with pattern molds.²⁶

The Clevengers' switch to mold-blown glass in the 1940s, may have been necessitated in part by a need to increase production in order to satisfy consumer demand encouraged by industry-sponsored promotional efforts that highlighted the history of glass. Industrialists, and the arm of labor represented by the unions utilized popular interest in American antiques to increase consumer interest in glass. Beginning in the 1920s and continuing through the 1960s The American Flint published an increasing number of articles about the history of glassmaking in America. An article written in 1924 by Jake Crimmel described "Early Life in the Glass Industry" through his own experience as a glassblower at the Hobbs Glassworks in South Wheeling, West Virginia, and elsewhere.²⁷ Crimmel's account of his work, his colleagues, and his participation in organized labor provided a historical perspective to the celebration of traditional skills.

Soon afterwards, The American Flint printed a three-part series devoted entirely to the history of glassmaking. The third article described Caspar Wistar's factory at Allowaytown in Southern New Jersey. Although the author made no reference to The Wistar factory as the first successful glass venture in the country,

he did provide an account spiced with unusual anecdotes:

The glasshouse aroused the greatest speculation, the excited spectators having heard tales to the effect that glass furnace tenders tossed live puppy dogs in the raging fire at certain periods of the moon's changes, in order to cause the metal to mix more perfectly; but this failed to take place.²⁸

Among the efforts to enlarge public appreciation of American glassmaking one of the most significant concentrated on historical research at Jamestown, Virginia, which was considered to be the site of America's first industrial glassmaking enterprise. The Glass Crafts of America worked in association with manufacturers and the U.S. Department of the Interior to establish a firm body of research about the glasshouse remains discovered at Jamestown through archaeological work conducted in 1931. The point of their work was to provide information to retailers, the public, clubs, schools, and so forth, all with the object of increasing sales, heightening the prestige of handmade American glassware, and adding to the lore that had already helped make collecting American handmade glassware the number one hobby of American women.²⁹ The crowning glory of this effort was the announcement of a "Glass Festival" at Jamestown to mark the 350th anniversary of glassmaking America, by glassblowers dressed in period costume demonstrated their skills at a furnace created specifically for the festival. Five glassworkers assisted in the effort: Axel Ottoson, Ceramic Engineer of the Imperial Glass Corporation supervised construction of the melting and annealing units; demonstrators at the festival were Robert Guthrie filling the role of finisher; Ernie Tomlinson working as the blower; and William McFeeley serving as the warming-in boy or snapper; and Louis Welsh as manager of the gift shop. Though their past experience, and the factories in which they had worked were not indicated, the men were described as Old-timers.³⁰

Several companies sponsored other expositions where visitors could view the making of glass according to traditional handcraft. The Inland Glass Company sponsored a demonstration of glassblowing by Oscar Anderson, "well known bigblower," and "Emil Nelson," "the Globe Trotter," at the second annual Blue Flame Exhibition in Chicago in 1938.³¹ The following year at the New York World's Fair a one-million-dollar Glass Center was built to acquaint the public with the technology and applications of glass manufacture. Ironically, the ultramodern building was located among the World of Tomorrow exhibits, but ironically it featured a demonstration of blown and handmade bowls, pitchers, and goblets, as well as a history diorama.

The history starts with a cave man finding a piece of glass of volcanic origin, shows the crude glass vases made in ancient Egypt to catch mourners tears at funerals, then depicts the development of colored glass, stained glass windows, cut glass and other specialties.³²

The evocative terms in which the glassmaking demonstrations were described indicates the industry's adoption of modern advertising techniques to communicate their message.

The show begins. No lights are dimmed and no curtain is raised. The stage setting is there before you--two fiery furnaces, side by side, working up a temperature of about 3,300 degrees. The audience, 800 persons or so . . . crowd the rotunda . . . ready to watch an exhibition of the ancient art of glassblowing.³³

The similarity of the presentation to the staging of a magic show was appropriate, because the presence of handwork in glass manufacturing was more promotional illusion than fact. Similarly, the Libbey Glass Company of Toledo, Ohio, used a picture of Thomas F. Martin hand finishing a piece of blown glassware in its advertising campaign "for the purpose of demonstrating the skill required in the

finisher's chair to produce their products."³⁴ The Anchor-Hocking Glass Corporation of Lancaster, Ohio, celebrated its 38th anniversary in 1943 with "a replica of a glasshouse of 1843, with the old time glassmaking art demonstrated by 'old-timers' highly skilled in the trade." This area contrasted with a seventy-five foot long display of wooden models of modern equipment and contemporary glassware made in the plants.³⁵

Collectors and entrepreneurs fueled by this new interest in American glassmaking recognized the quality of craftsmanship in the glass produced at the Clevenger Brothers glassworks. The Clevenger shop was small and remote, but occasionally private individuals did take a special interest in the glassworks. Local glass historian Roy Horner bought imperfect pieces and sold them from a roadside stand in front of his home in Sewall, New Jersey. According to local lore, Mrs. Lamont Carpenter, the wife of a duPont company president, and her friend Mrs. Sharp also bought quantities of glass. Mrs. Carpenter was first introduced to Allie Clevenger by a local South Jersey real estate agent. Occasionally, she would drive to the glassworks, or send her limousine, to purchase glass in quantities that ranged up to a full-day's production. Mrs. Carpenter was reputedly also fond of bringing cakes and pies for Allie. However, Allie carefully refrained from a patron-artisan relationship. When invited to be guests at a party given by the Carpenters, Allie and Lorenzo declined on the grounds that they would want to be comfortable and put their feet up. As a master craftsman, Allie knew that his reputation depended more on his skills than social approval for his occupation.

Clevenger glass was recognized for its similarity to historic glass made from molds or as decorative offhand work in South Jersey's first factories. Most customers bought glassworks goods wholesale, a fact reflected in price lists that

stated costs by the dozen. In 1939 the Clevengers had four agents in New York, one in Chicago, one in Los Angeles, and one in New Haven, Connecticut.³⁶ Clevenger glass was not marked with a stamp or inscription identifying the makers until 1966. Wholesale dealers like the Ritter-Carlton Company, Inc. in New York advertised Clevenger glass as "Table Glass in the Colonial Manner," "Early American Glass of Rare Beauty," and "American Glass of Historical Interest," much to be admired, and desirable as family heirlooms. In the manner of their tradition Clevenger glass was not identified of the maker and, contrary to the intentions of the Clevengers, this created opportunities for misinterpretations of the antiquity of their products. Unscrupulous dealers took advantage of the situation. Jack Wiseburn, a local antiques dealer, would apparently purchase a carload of glass from the Clevengers, drive two blocks to his shop on Delsea Drive, and sell the cargo as antique by the time he unloaded.³⁷ Roy Horner remembered traveling with Allie Clevenger to New England where Allie saw a piece of glass he had made being sold for an exorbitant price. When he inquired about the glass he was told by the store proprietor that it was antique. Allie then explained that he had made the glass and that he originally sold it for a fraction of what was now being charged. The proprietor angrily replied that he had paid dearly for the glass.³⁸

These situations led to accusations that the Clevengers planned their glassworks as a way of capitalizing on the fervor of collecting American antiques. Their own advertising materials emphasized the contemporary authorship of the work, and they made no efforts to conceal their work. The glass was unmarked because in the tradition they were following there was no precedent for inscribing offhand glass with identifying marks. The Clevengers did not set out to make reproduction antiques; they worked to continue the skills and traditions of their

craft.

The Clevengers stood to gain little from intentional fakery. If they had been fakers they would have driven themselves out of business once the market was saturated with their work. In the first years, the Clevenger's business was not especially lucrative, but by 1939 (Tom's died in 1934) their glass was in great demand. In fact, it has been speculated that despite Allie's preference for modest attire--overalls--and simple pleasures--sitting in front of the fireplace with his feet propped up and eating crackers--he was a wealthy man by the time of his death in 1960.³⁹ In any case, there seems little reason to doubt that he was comfortably wealthy. Clevenger Brothers had succeeded because of the quality of their glass. Even Ruth Webb Lee, a strong critic of reproduction glass, was satisfied that the Clevengers intended no deceit and were fine craftsmen in their own right.

These reproductions of early South Jersey handblown glass are made by hands which made glass forty or fifty years ago (1888-98); products which are now prized by the lucky collector who can buy them. These reproductions are made adjoining the site where great factories stood for decades and are faithful and true to the old traditions in size, color and style - the Jersey glass which commands a high premium today.

When these skillful men, the last of their type, pass on with the art and secrets handed down to them by their forbears, the same glass will increase in value from year to year.⁴⁰

The skilled workers in the Clevenger shop were contented with the opportunity to remain in their craft and this was the primary source of their motivation. In the words of James Travis, "If you don't enjoy it, it'll kill you. It's too hot." This was even true of Tom Clevenger, whose sons recall that their father had always enjoyed glassmaking. He and his brother Uncle Allie made many unique items especially for family members which have become treasured heirlooms for

their sons. Henry Charlton Beck quoted Allie's explanation that

We work for ourselves, and that's what we like. And perhaps at the same time we prove that beautiful glass can be made the way it was in the beginning and that reproductions made by the old molds are just as good now as they were ever.⁴¹

Occasional additions to the work force of the factory maintained the infusion of new ideas and techniques that journeyman provided in industry. In addition to Tom, Reno, and Allie, the works employed Tom's sons Bert and Tom ("Zimmo"). Tom's son Tom handled business matters, shipping, fired the furnaces, and mixed the glass batch until he joined the Air Force in 1942. Upon Tom Clevenger's death the same year, a new man was needed to fill out the team. Other Old-timers who had worked in South Jersey's glasshouses worked for the Clevengers on an occasional basis, even though the Clevengers' advertising pamphlet implied that the brothers were assisted full-time by only one other blower, Lester Raun. The roster of Old-timers who worked at the Clevenger factory at one time or another includes at least eighteen individuals, many of whom brought unique abilities to the furnace.⁴² For instance, Emil Larson was renowned as a maker of rose paperweights, and was an impeccable craftsman. Tom Clevenger the younger remembers watching him make a set of a dozen gold ruby goblets with crystal stems and bases, and how impressed he was with Larson's precision;

he put calipers on them and they were all the same circumference. When he made those twelve you could have put a level across the top of them, handmade And then he made a gold ruby pitcher with a crystal handle and base.⁴³

Bill Trout was a master shearer and responsible for tending the glass as it melted overnight. Tom Clevenger the younger recalls that Bill

used to take the ware out [of the lehr] in the morning. He didn't see too good. . . . He used to chip a lot of stuff In fact he chipped so many Booze bottles--Allie used to make the roofs right out--Bill chipped so many corners off, that Allie had the molds made to protect the corners They used to make them with the corners and they came out of the molds alright.

Among others, the glass factory employed Sam Keyburtz, "who is clever at reproducing Wistarburgh pitchers"; Johnny Hoffman, "who was once at the old Whitney plant,"⁴⁴ Otis Coleman, who may have been a relation to Mrs. Clevenger, and Grove Green who Tom Clevenger the younger remembered as "the oldest guy I knew who worked for a glass factory," Frank 'Sanky' Schlagle Harry Baker (moldmaker) and Vermont Frie. Tom Clevenger probably summed it up best when he said "many liked to work there because they were old glassblowers who'd worked in the factories" and working for Clevenger Brothers "was just like old times to them"

TED RAMP

The Clevengers were probably the first Old-timers to establish an independent factory specializing in styles of glass traditional among South Jersey blowers, but they were not the last to establish their own glassworks. Ted Ramp established his own small glassworks, Walter Earling organized a glasscutting workshop. In addition, the Works Progress Administration created a glassblowing program for Old-timers in which they produced wares that could be sold to schools and museums to be used for educational programs about the glassblowing craft.

Ted Ramp (1909-1988), originally from Long Island, came to Egg Harbor when he was a boy. At the end of his career in industry, about 1974, he started an independent glassblowing business. He learned glassmaking at the age of fourteen or

fifteen when he went to work for the Liberty Glassworks "You worked there [doing] boys work, then you graduated [to] pit boy." He worked at Liberty until the works closed, and then went on to work in as many as twenty other glasshouses before establishing his own business. Ramp recalled that workers at the Liberty company used to make offhand items for themselves.

Oh yeah, everybody, everybody, they still do it today, some factories they won't let you. You go to Kimble's and they won't let you make a piece of offhand Guys made them for themselves, annealed them, and took them home Every glassworker I ever knew would always make a piece for himself.⁴⁵

Ramp stayed in contact with contemporaries by working with the Clevengers. "I used to go over there and work, maybe a day or two I knew two of the Clevenger boys, maybe even three. They were old time guys, you know I used to go over there and help them." The kind of glass they made was "mostly just piece by piece I made the molds--used wild cherry." Ramp also recalled working with August Hoffbauer in a small Vineland shop producing reproduction glassware. He recalled similar concerns--mostly in Vineland--run by Mat Farabella, Mr. Marks, and Adolph Macho, but pointed out that these men, who were not trained in factory work, couldn't hold a candle to the old masters. "The Old-Timers who'd like to make glass have all died off. Clevengers . . . and a hundred others . . . they were nice guys." When South Jersey glasshouses began closing in significant numbers, the threads that held together the fabric of the glassworker's network became few and far between. "The old guys died off and no new ones came up to take their place." For men like Ted Ramp, Clevenger Brothers provided a situation in which the remaining threads of the fabric of the glassworker's network were pooled. The gathering that resulted provided its members with a sense of continuity, as well as the impetus to continue

using their glassmaking talents.

Ramp established his own glass furnace at his home in Egg Harbor between 1974 and 1976. Installed in a former chicken house at the edge of the woods beyond the house, the glasshouse contained a furnace, lehr, and glory hole (Figure 6). His furnace was made with fire bricks inside a metal kiln frame. The glory hole sat on top of a 55-gallon drum and was lined with clay dug from the woods nearby (Figure 7). Ramp worked for many years at a local hospital during the week, and worked in the furnace on weekends. Sometimes, Mrs. Thelma Howe recalled, his son Billy was the gatherer, and his grandchildren helped operate the molds.

Ramp carved wooden molds from cherry, and also used ribbed metal "optic" molds that open with a hinge (Figures 8, and 9). Ramp explained that he learned to use the optic molds at the Hoffbauer works, and he discovered how to make crackle ware by "watching some nut making something special." Crackle glass derives its name from the lacy surface of veins that result when the hot formed glass is dipped in water before it is annealed. Ramp purchased his glass sand and coloring agents were purchased from suppliers in and around Vineland, and preferred deep, vibrant colors, especially purples, blues, greens, and red (Figures 10, and 11). A certain amount of cullet can be very beneficial in making glass, he pointed out, but if the cullet isn't your own it may have too much "junk" in it for good glass. If you bought it from another factory, he remarked humorously, you could always use it for concrete.

Less skilled in the art of advertising than the Clevengers, or less concerned for commercial success, Ramp never published a catalogue to represent his work. He never established a standard line of patterns and designs. "I made everything out of my head." Customers were alerted "by hearsay, by word of mouth." Mrs. Ramp

remembers that "When he made glass people were here by 6:00 o'clock in the morning, before he even got it out of the furnace." The standards by which Ramp judged his glass were high. His colors were pure, the glass of a consistent thickness, without seeds or stones. Although trained within the factory system, Ramp's affinity for the artistic nature of the craft placed him between the factory production era of the Clevengers, and studio arts production that has flourished since the 1960s. The effects of modernization were equally felt in other skilled branches of the glass trade related to glassblowing. A poem from Millville published in The American Flint in 1920 described the departure of "our friend Sammy." He was a bottle-stopper grinder who, like others displaced by machinery, left his home in New Jersey for Ohio, where the business of cutting and engraving fancy glassware flourished (Appendix I). J.W. Ludlow, a member of the AFGWU, observed drastic changes in the production and quality of the cut-glass business by 1926. Skilled workers had been replaced with children. The use of pressed instead of offhand-glass blanks was adopted. Carborundum and alundum stones replaced quarried blue mitre stones for precise deep cutting. Also, patterns were simplified and glass was only semi-cut or near-cut, instead of the elaborate patterns cut in depth and many layers for the decorative tableware made in the late nineteenth century. Beyond a statistical account of workers displaced, and shops closed, Ludlow emphasized the significant loss of craftsmanship that was evident in good cut glass. He stated that "the blame for [the faltering] condition of the cut glass business, if it is properly placed, is with the manufacturers, in their greed for the almighty dollar and lack of interest in the welfare of the blank business." In the beauty of cut glass Ludlum saw a reflection of the quality of workmanship invested in its manufacture. "Men who cut glass are artists," he said, "they take pride in doing this work" Ludlow asserted a value

for skilled labor that trade agreements failed to take into account:

there should be more pride taken in the quality of ware produced as it belongs rightfully in the arts and what does art mean? According to Webster, art means practiced skill, cunning, artifice, dexterity, ability to produce effects of high value, the opposite to science.⁴⁶

WALTER SWINDELL EARLING

Walter Swindell Earling was like one of the fine craftsmen described by Ludlow--caught between love of his craft and declining opportunities to exercise his skills.⁵⁷ Walter Earling was born June 5, 1898, in Dunkirk, Indiana, the son of a window-glass blower (Figure 12). His family moved to Camden, New Jersey, when he was six years old. "I never finished my schooling at all, I didn't even graduate from high school. I was a sophomore when I quit to go working. We were a family of nine and back there in 1914 a dollar was worth a dollar" He worked for a while in a textile mill, and then as a typesetter, finally going to work in the glass cutting and grinding room at the T.C. Wheaton company in Millville from 1917 until 1939. He remembers Frank Wheaton Sr. fondly. "Father Wheaton was a wonderful man, and he had his ways. He was just as honest as the day was long." Earling specialized in making fancy stoppered perfume bottles, sample oil bottles with perfectly clear bottoms used to evaluate the viscosity of oil, and decorative jars for displays of sugar and flour.

Walter Earling's experience with the modernization of glassmaking paralleled and at some points intersected with the Clevenger brothers.

When I was working with Whitall Tatum Company in 1922-23, the machine was just making an inroad on the hand blowers. They still had hand blowers down there, and this machine. These sample oils I was telling you about, when they came through--there was eight of us down there--and when they came down a little elevator, they would all

... scramble for the hand made ones But as time went on they perfected them and now they have it down to a science.

When machinery was first introduced "Blowers said 'it'll never work, you can't blow bottles by machinery,' and they'd laugh it to scorn." Occasionally during the time he worked at Whitall Tatum Earling noticed that the blowers would make a bowl or pitcher for a wife or mother and bring it to him in the cutting shop where he cut a design into it.

Before change came to the industry, work schedules in glass factory towns were guided by a common rhythm. Walter Earling recalls that when the glass furnaces closed in the heat of the summer, and the "Fire Out" call was sounded on Declaration Day (May 13), people went to work at the bathhouses in Atlantic City, as trolley car conductors, and as farm labor until summer's end. "Fire's In" was called the day after Labor Day and at that time the furnaces were fired up again. Earling recalls that people also shared a sense of community that carried beyond working concerns.

In Millville we had the Masonic Order, the Elks, the Moose, the Red Men--the Indians, the Junior Mechanics . . . we were just besieged with lodges and fraternal organizations. The women they were organized in their own ways. Oddfellows was another, Ladies of Rebecca. You know I never gave it a thought but there were so many, but I've just begun to recap them. And then the big MSAA, the Millville Social Athletic Association, that they tore down--and that's enough to make anyone cry--that was built for the prime purpose of giving the boys in the factory, sort of recreation and a little education. They had classes, a school there for the boys The walls were twelve inches thick. Progress marches on. I hate to see anything demolished now.

The sense of collegueship that existed among glassworkers when Earling worked in the factory is indicated in his anecdote about the custom of singing among the men working in the factory. [Appendix J]

Although Millville's always been known for swinging bands, (there are a lot of singers in Millville. In the factories, you'd go in there and hear quartets singing and working, kept on working and singing. One time, in the cutting shop, now I remember, Old Dr. Wheaton, that's Father Wheaton's father, he was active, he wasn't working but he'd come around the plant and he came in one time and there was three stopper grinders down there on their knees taking stoppers out of the [lehr], and a couple of them was such [great] stopper grinders as you've ever seen, there was four of them. Well they sang a quartet, just made it up themselves. When Dr. Wheaton came in with some visitors he stopped right there, and these fellows kept on singing. Now if you do anything like that you clam up, anymore. I worked at a frame close to the door, and he turned around and he said "hear that, that's what you call satisfied help."

Walter Earling was led to an association with the Clevenger Brother by the same economic pressures that had caused them to begin their own enterprise. Earling recalls that

During the Depression I was looking for work. I'd heard of the Clevenger plant and I went up there one Sunday afternoon and showed him what I could do. And he said "my, I've been throwing those things all away. You take one little chip on the top and throw it away." Well, all I had to do was grind that and smooth it and polish it. At that time I was doing work for ten, twelve, maybe fifteen cents apiece. If he was throwing them away and was selling them for maybe sixty cents, there was a profit to make.

Factories eliminated workshops for hand cutting and engraving when foreign products gradually the cut and engraved glass market. Encouraged by Frank Wheaton Sr., Walter Earling opened his own business in 1940. Earling's shop is divided in two areas. The largest end houses most of the equipment, including cutting, polishing, buffing wheels and a borer. The back room contains a machine for wafer cutting and tools for grinding stoppers to fit. Traditionally, stones like those in Earling's shop were quarried in Scotland, where they were known for their durability and fine grade. He considers these stones superior to the composite stones now manufactured from a material called "carburundum," and feels fortunate to

have obtained his tools from a factory workshop. Through the years, Earling's shop accumulated a diverse collection of glassware in progress, and the back room collected a "compost pile"--a bin filled with the feet of stemmed glasses, other reusable bits and pieces, and glass that customers never picked up. Earling has also ornamented many of the window panes along the sides of the shop with engraving (Figure 13).

Although Earling retired in 1950, demand for his work and his knowledge continued. He employed fifteen people for ten years in the long low workshop behind his home. Many came to the shop because they were fascinated to learn about his work. Some came to build an informed and appreciative sense of the craft that produced so many beautiful glass items. Occasionally, Earling's staff were interested in establishing shops of their own. Few shops were as well equipped as Earling's was to make repairs, or work on small custom orders for decorative or scientific glassware. Reflecting on the value of the training he received in the glass industry Earling observed, by comparison, that the Clevengers "were glassblowers, they didn't learn it by going into it themselves." In contrast, the customers and students who sought Earling's experience after his retirement were a generation of glassworkers who lacked the experience of factory work.

The Clevenger Brothers glassworks attracted Old-timers with the opportunity to carry on the skills, and market production that were the unique combination of glassblowing tradition. Industry had provided the setting for glassworkers to achieve skill and creative virtuosity. The Clevengers and their contemporaries drew on these results of their experience as the prime premise for glassworks they operated and managed. They had not, however, abandoned the cart in order to save the horse. These small glasshouse operators continued to rely on their connections

with large scale industry for their materials and equipment. In addition, they faced challenges in identifying markets for their wares, and developing strategies to sell their products. Among these men, the connection between occupation and identity served as carried them beyond the disruptions to glassmaking wrought by the industrial mechanization. The changes they faced spelled the end of an era. It was now time for glassmaking traditions to continue among craftsmen working in small workshops producing specialty wares.



Figure 2

The Clevenger Glassworks in Clayton, New Jersey.



Figure 3

Three freeblown goblets made at the Clevenger Glassworks.



Figure 4

A freeblown dimpled compote dish made at the Clevenger Glassworks.

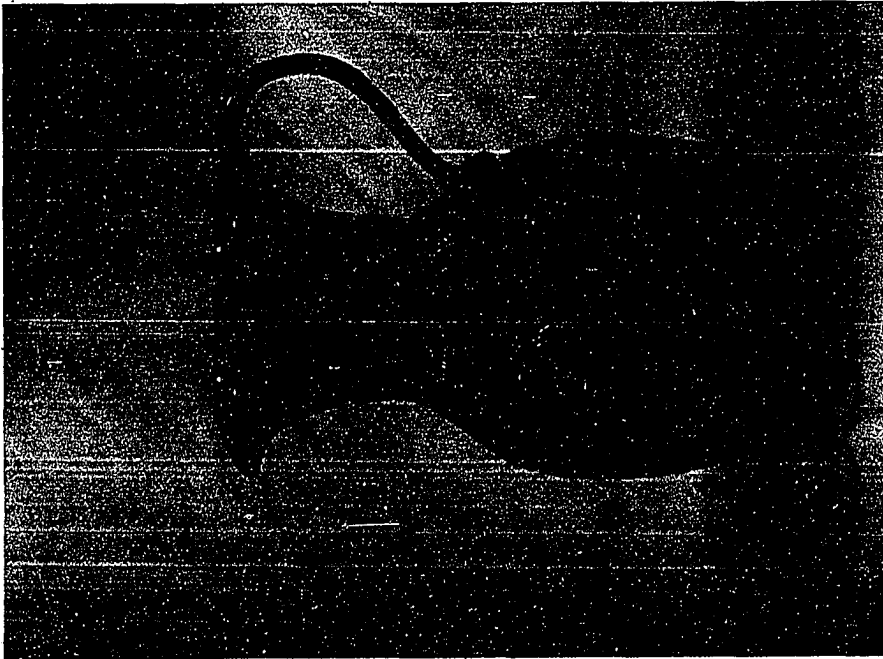


Figure 5

A moldblown pitcher made at the Clevenger Glassworks.

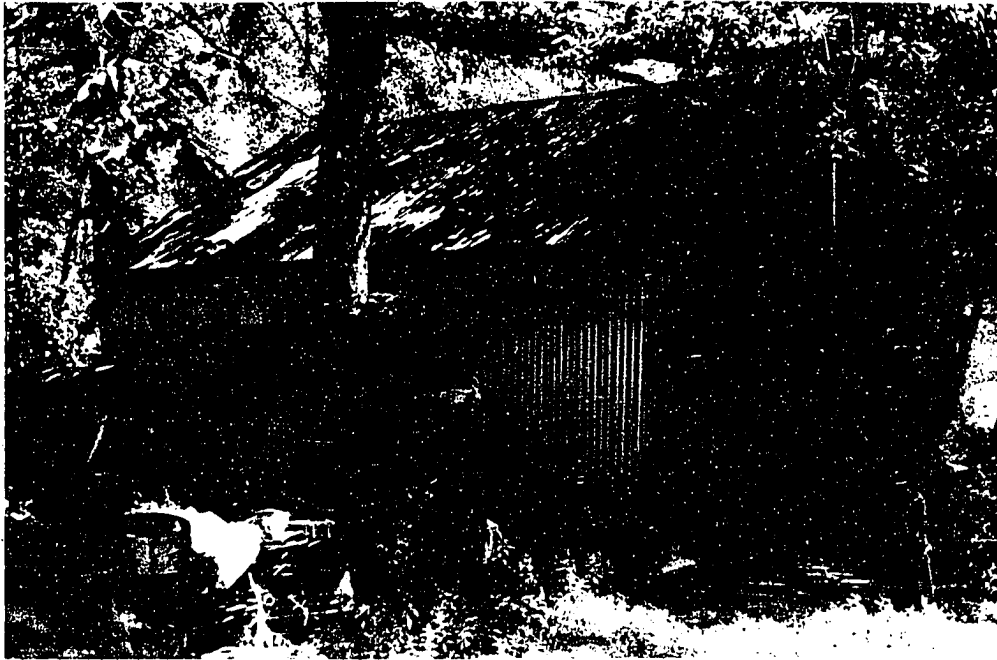


Figure 6

Ted Ramp's glasshouse in Egg Harbor, New Jersey.



Figure 7

The glory hole, Ted Ramp's glasshouse.



Figure 8

Wooden glass mold made and used by Ted Ramp.



Figure 9

Ribbed wire "optic" glass mold used by Ted Ramp.

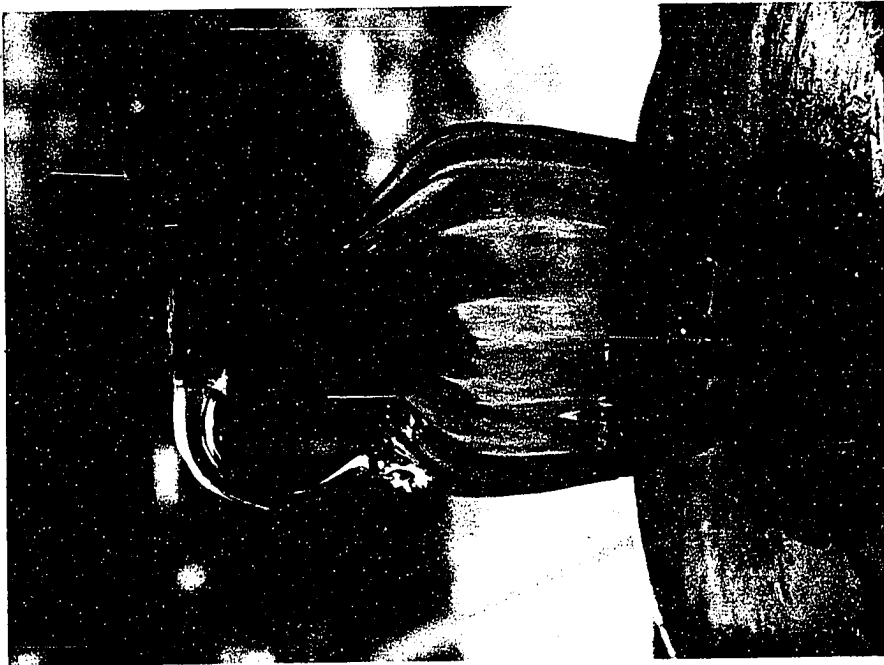


Figure 10

A pitcher made by Ted Ramp with the ribbed optic mold.



Figure 11

A green glass pitcher with decorative white swags made by Ted Ramp.



Figure 12

Walter Swindell Earling examining a cut glass vase in need of repair.



Figure 13

A window pane engraved with floral designs by Walter Swindell Earling.

ENDNOTES

CHAPTER TWO

1. A.L. Faulkner, "The Glassblower Man," The American Flint 14, no. 1 (November, 1922): 24. [Appendix G]
2. Tommie Towler, The American Flint 24, no. 9 (December, 1936): 37.
3. Edward S. Johnson, "Vineland, N.J." [Regional Reports], The American Flint, 24, no. 2 (May, 1936): 51.
4. "By Observer," "Vineland, N.J.," The American Flint 13, no. 7 (May 7, 1922): 45.
5. "Old Timers' Biographies," The American Flint 23, no. 8 (November, 1935): 14-15.
6. Jake Crimmel, "Young Life in the Glass Industry," The American Flint, 25, no. 7 (October, 1936): 20.
7. "Le Pendu," "A Bedtime Story--Glass Fishing," The American Flint 23, no. 9 (December, 1935): 40.
8. H.L. Dillingham, "Survival of Handmade Glass Depends on Tariff Protection," The American Flint 34, no. 4 (April, 1945): 8-13; and 34, no. 5 (May, 1945): 18-20.
9. Andrew Jackson Clevenger's parents were William Clevenger and Elizabeth Jackson. Andrew Jackson Clevenger married Jennie M. Brown 12/24/1884. This genealogy comes from a typescript by Ed Pfeiffer entitled "Old Gunnder Tells of Hunting Thrills," an article by John Carey, 1942, in the archives of Batsto Historic Village, in Hammonton, New Jersey.
10. Henry Beck, "Man With a Glass Memory," Courier Post, February 23, 1942. During the 1870's there were two eight-pot window glass factories, and one eight-pot bottle-glass factory at Winslow. Samuel P. Smallwood recalled that William Surran led a very popular marching band of glassworkers from Winslow, and the Winslow workers also boasted a first-rate basketball team.

11. Genealogy of the Clevenger family compiled by Theda Ashton, in the archives of Batsto Historic Village, Hammonton, New Jersey.
12. The Renaissance of South Jersey Blown Glass (Providence, R.I.: Grant and Lyon, 1934); Catalogue of Clevenger glass, with unnumbered pages.
13. Walter Swindell Earling, personal interview on career as a glass cutter, Millville, New Jersey, August 6, 1986. All subsequent references for Walter Earling are taken from this interview. A full list of all interviews is included in the Bibliography.
14. Willis Clevenger, personal interview on family history, Clayton, New Jersey, August 11, 1986. All subsequent references for Willis Clevenger are taken from this interview.
James Travis provided a version of Allie Clevenger's career that may have received embellishments through time. "Wait a minute, I'll give you the whole story. They was making glass, and they couldn't do any business, the antique dealers hadn't showed up yet (laughs). They was still making offhand items and peddling the (glass) themselves which wasn't too prosperous Ethel Smith's father bought Moore Brothers Glass works at bankruptcy. Ethel is still alive, I'm not sure She had a building left to her which was the old mold shop, which she took and started making rugs--Ethel was a schoolteacher by the way--and she was doing some business. Now Allie, he was starving, he wasn't making no money" Allie figured he'd make some rugs too, but sales were poor. Allie went to the station where Ethel shipped her rugs and copied the names of her customers from the boxes. He tried to undercut her business, but her customers remained faithful. "When I came here the loom was still here and I gave it to Jack Wiseburn." From James Travis, personal interview, Clayton, N.J., July 28, 1986.
15. The Renaissance of South Jersey Blown Glass.
16. Tom Clevenger, personal interview on family history, Clayton, New Jersey, August 15, 1986. All subsequent references for Tom Clevenger are taken from this interview.
17. Upton Sinclair, The Flivver King (New York: Phaedra, Inc., 1969), p.131.
18. Tom Clevenger, personal interview.
19. Michael Kammen, "In Search of America," Historic Preservation Magazine 32, no.5, (September/October 1980): pp. 30-39.
20. "Flint Glass Workers' Problems," The American Flint 21, no. 11 (September, 1931): p.3.

See also; Ruth Seinfel and Avery Strakosch, "Look at the Glass," The American Flint 23, no. 8 (November, 1935): 3-5. "Glass, always the child of fashion, is just now fashion's white-headed boy."

21. "The Fenton Art Glass Company," The American Flint 18, no. 6 (March, 1927): 4.
22. Tom Clevenger, personal interview.
23. Account ledger reused for notes about Rose Emma Clevenger's school children, and notations about the Clevenger glass works. In Clevenger file in the archive of Batsto Historic Village, Hammonton, New Jersey.
24. Walter Swindell Earling, personal interview on career as a glass cutter, Millville, New Jersey, August 6, 1986. All subsequent references for Walter Earling are taken from this interview
25. The Renaissance of South Jersey Blown Glass.
26. Catalogue of the Clevenger Glass Company, 1930s, Gloucester County Historical Society.
27. Jake Crimmel, "Early Life in the Glass Factory," The American Flint 15, no.7 (May 1924): 11-14.
28. Allan Toth, "Allowaystown," The American Flint 19, no. 4 (February, 1929): 13-14.
29. "American Flint Glassware Producers Take Unprecedented Action to Help Retailers Increase Sales," The American Flint 39, no. 1 (January, 1950):6-7.
- See also; Charles E. Hatch, Jr., "The First Landmarks in the Beginning of the Glass Industry," The American Flint 39, no. 7 (July, 1950):4-6.
30. The American Flint 47, no. 4 (April, 1957):8-9.
31. The American Flint 24, no. 9 (December, 1938): 31.
32. "The World of Tomorrow," The American Flint 28, no. 11 (December, 1939): 7-9.
33. Michael Salamo, "Glass Blowers Hold the Stage," The American Flint 29, no. 1 (February, 1940): 14.
34. The American Flint 30, no. 10 (November, 1941): 33.
35. "Chips and Cracks", The American Flint 32, no. 12 (December, 1943): 31-33.
36. John Carey and Henry C. Beck, "The Clevenger Glassworks Story" (provided by members of the Clevenger family), xerox copy of newspaper article from an unknown newspaper provided by Willis Clevenger.

37. James Travis, personal interview on Clevenger Glass, Clayton, New Jersey, July 28, 1986. All subsequent references for James Travis are taken from this interview.

38. Roy C. Horner, personal interview about local glass history, Sewall, New Jersey, August 7, 1986. All subsequent references for Roy Horner are taken from this interview.

39. James Travis, personal interview.

40. Ruth Webb Lee, Antique Fakes and Reproductions (Wellsley Hills, Mass: Lee Publications, 1950), pp. 12-13.

41. Henry C. Beck, The Roads of Home: Lanes and Legends of New Jersey (New Brunswick, New Jersey: Rutgers University Press, 1956), p. 193.

42. People identified as having worked at Clevenger Brothers are Otis Coleman, James Cerione, Archibald Brown, William T. Wilson, Orie Charlesworth, Hester Trate, Charles Westcott, William Bowers, Joe Wright, Harry Robb, Frank Levensgood, Wesley Dilks, Jim Winner, Paul E. Winner, Billy Valentine, Calvin Burton, Jack Carr, Albert Scheeman, Ted Ramp, Skip Woods, Elsie Fogg, Nellie Hoffman, and Naomi Wright.

43. Ariel C. Gunther, Opportunity, Challenge and Privilege (Bryn Athyn, Pennsylvania: Ariel C. Gunther, 1973), pp. 49-60.

Emil Larson was also well noted for his work at a number of New York factories. His father, who was born in Sweden, worked in the glass house at Bryn Athyn, Pennsylvania where all the glass was blown to make the stained glass windows for the cathedral there.

44. John Carey and Henry C. Beck, "The Clevenger Glassworks Story."

45. Ted Ramp, personal interview on career in glass, Egg Harbor, New Jersey, August 14, 1986. All subsequent references for Ted Ramp are taken from this interview.

46. J.W. Ludlow, "What is Wrong with the Cut Glass Business?," The American Flint 17, no. 8 (June, 1926): 18

47. Walter Swindell Earling, personal interview on career as a glass cutter, Millville, New Jersey, August 6, 1986. All subsequent references for Walter Earling are taken from this interview.

CHAPTER THREE

INNOVATION, INGENUITY, AND NEW ROOTS

PART ONE

A REUNION OF CRAFT AND INDUSTRY

Successors to the Clevenger Brothers and their contemporaries furthered the continuity of traditional glass craftsmanship into the second half of the twentieth century. The example of the Clevengers served as precedent and a link for a new generation of craftsmen. The experiences of the Clevengers' successors would be fundamentally different, since the industrial environment in which they had trained no longer existed. This chapter will discuss glassmakers Skip Woods, Tom Zinsky, Kenneth Messina, and Kass Ternay, all of who were fortunate to be able to learn directly from observing the work of Old-Timers, to enjoy their tales, and to gain some sense of the values that were part of glassmaking tradition. Beyond this resource, the New-timers had to rely on family background, historical documents, and the process of trial and error for inspiration and education. For these New-timers, commercial markets still provided the means to survival. Glassblowers and glasscutters alike, each has sought out markets for scientific, decorative, and novelty ware. The commercial nature of their work provides interesting counterpoint to "studio" glass production for the fine arts market. At the Wheaton Village Glass Museum and Village in Millville, New Jersey these two styles of glassmaking exist side by side at a working furnace where glass artists develop

their talents and glassworkers demonstrate historical glassmaking for the public. The introduction of borosilica glass and techniques for handling it provide another area, requiring special skills a different working environment, for glass craftsmen to explore and develop. The work of New-timers was at once a continuation of past practice, and the beginning of a new phase with modern materials and techniques. The opposite ends of this spectrum were linked together by glassmaking tradition.

Although Allie Clevenger's death in 1960 marked the end of a genealogical succession of skilled glassmakers, small glass furnaces manufacturing historical styles of mold blown and freeblown glass continued in operation through the 1960s and 1970s. The Clevenger glassworks was operated by Myrtle Clevenger and Lou Bowers. In 1966 it was purchased by James Travis who had also operated a small furnace on Tuckerton Road, at Chestnut Avenue. About the same time, Bob Dobson founded the Iona glassworks where he worked with a handful of industry-experienced glassmakers. The Iona works produced decorative offhand ware made of multicolored glass such as looped pitchers, paperweights, witch balls, small animals, and fish.¹ In 1959 Thomas Messina began a business specializing in glasscutting and engraving. Messina learned from his father who had owned an independent glasscutting and engraving shop. Following his interest in the manufacture of glass, Messina made his first successful batch of glass at the Messina Glass Company, also known as the Bog-Iron Glassworks in Elwood, New Jersey. Messina researched batch recipes in historical references in order to develop his own. Louis Giacomelli and Bill Valla worked with Messina as glassblowers.² Mat Farabella opened his own furnace in Milmay, New Jersey, where some of the last

timers showed up to help out. Farabella worked with Bill Valla, Eugene Crabtree, and Louis Giacomelli.³ An advertising flier produced about 1970 for the Dorfee glassworks near Tuckerton announced that "Michael Dorofee, a young man with three generations of South Jersey Glass making behind him is the founder and Glass Master" His glassware was all free blown, based on examples of offhand work from the 1790s to the 1860s.⁴ In 1986 James Travis pointed out that skilled workers could no longer be found, and "sales are not plentiful anymore," since the costs of production had risen--especially wages and fuel. These changes spelled the end of an era, and the beginning of a time for glassmaking traditions to continue among craftsmen with as much inspiration as their predecessors, but with new approaches in technology and the conduct of business.

SKIP WOODS

Skip Woods combined handcraft techniques and modern technology in the manufacture of glass at his factory near Vineland, New Jersey. [Figure 14] Skip Woods' introduction to glassblowing came not through ancestral dedication to the craft, or an overwhelming trend within his community for men to enter the trade as means to wealth and recognition among peers. Initially, his education in glassblowing resulted from a practical job choice. However, he was soon inducted into the ranks of craftsmen with a traditional basis of understanding for the artistry and integrity of glassblowing. Lured especially by the artistic potential of glass, Woods initially defined his course with the intent of becoming an artisan, concentrating on developing his creative talents. Ultimately, he realized that his interest in the craft would be fully satisfied only if he combined the craft and business of glassmaking, continuing the basis upon which tradition was built.

The Woods factory was established in 1975 to produce freeblown and moldblown glassware for scientific and electronic applications, as well as orders for decorative glassware such as hurricane lanterns. Originally from Pennsylvania, Woods came to South Jersey in 1950 to attend Glassboro State Teachers College. In order to earn some money before enrolling, he took a job at the Kimble Glass factory in Vineland, where he was put to work at the pot furnace. Tommy Tommaso, the assistant foreman of the Kimble plant, was the first among a number of mentors who were essential to his progress as an apprentice.

He saw me do that and he knew I was bound and determined to master that trade, that art, it's more than a trade, and he from time to time would see me watching some one and he'd come over and tell me--he always called in to the young guys in there 'kiddo'--he'd put his arm around my shoulders and he'd say "Hey kiddo, don't watch him, watch so and so. You want to learn? Always look at the best." So through asking questions and practical experience of who really knew their business and what they knew, I would then determine who I was gonna ask to get him to help me.⁵

Woods also learned a great deal about the techniques of glassblowing and the character of glassblowers from Eugene Crabtree. Woods recollections about the time he spent with Crabtree reflect the lasting impact of the experience:

I guess I learned more about the glass trade sitting out in my boat in the Delaware Bay fishing with Gene than I did probably from any single person inside the glass factory. That gentleman is probably the most knowledgeable living glassworker in the United States today. He's probably forgotten more about hand work than ever was put in a book.

Apprentices benefitted from observing the variety of special talents demonstrated by different craftsmen. Angelo Ponzetta was especially distinguished for his mastery of glassblowing techniques. Woods considers the guidance Ponzetta shared with him about offhand work, including decorative paperweights, with respect and admiration, although Woods also became a master of those skills.

He was born in Murano (Italy), came over here when he was nineteen. Gene and Angelo were on the same level of talent, only Angelo didn't have the experience in one respect as Gene had because Gene traveled from one glass factory to another...I just have stacks of formulas, I have stacks of notes where people would pass these things along to Gene as he would travel around the country. Angelo didn't have that, Angelo just had the talent for doing anything he wanted with the glass. He was a very, very talented man, not enough people know about him. He was probably the best glass worker--one of the best--that ever lived in this area, South Jersey. I saw him do some amazing things with glass.

[The glass at the Kimble factory] was not really good paperweight quality. It was good to learn on and it was still pretty The first rose I made, it took me about an hour and a half to make one. Not only that, but when I learned to make a good one it was taking me an average of three and three quarters to four hours to make one. As I got better there were more things I learned to do. I've had people stand where you are and wonder what kind of liquid the rose is in They have one [of my rose paperweights] down in the museum in Wheaton's I would only make roses when I didn't have orders to fill, and I'd have to pay another guy because you can't make a rose by yourself.

In addition to the unique qualities of experiential knowledge obtained from other workers, Woods also became aware that a willingness to share knowledge was part of the ethic of a true craftsman.

Usually, when somebody's really good at what they're doing, they're not afraid to share it with you because they're not afraid of you getting better than them. It's the guy that is on the border line and is afraid that, he knows that he's not doing too good a job and then he won't show you these little tricks in glass because he's afraid you'll get better than him and take his job.

Skilled workers were also selective about determining who they would share their knowledge with. The favored recipient of another worker's wisdom was the man who displayed talent, an unquenchable desire to learn, willingness to practice and work hard, and respect for those who outranked him in skill and experience.

As his mastery of glassmaking skills grew, Woods recognized the limitations to his

potential imposed by the modern industry. Unlike the days when "the glassblower was the highest paid craftsman in the country," the prospects for steady employment and good wages existed, but were increasingly uncertain. After Gene Crabtree retired, those who took over his responsibilities lacked his qualifications, the quality of the glass suffered, work became sporadic, and Woods was finally compelled to leave the Kimble Company in November 1966 after reductions in his paycheck became intolerable. He became an apprentice electrician, and then returned briefly to Kimble after hearing that conditions had improved. Disappointed to find that the situation at Kimble had changed very little, he went to work at the Wheaton factory in Millville.

Woods responded to the disintegrating environment for handcraftsmanship in the factories by planning a business that would allow him to exercise high standards of craftsmanship. When Woods left the Wheaton factory he worked at Clevenger Brothers in Clayton, on a schedule from 8:30 in the morning until 3:30 in the afternoon, in order to support his family. He found the work unsatisfying and routine, but at least it provided an income. Whereas the Clevenger Brothers glassworks concentrated on producing quantities of offhand styles of glass, Woods was more interested in the process of creative development which had been the inspiration for the types of glass produced at Clevenger Brothers. He sought his own answer by making preparations to build a glass furnace in a garage space at his home in Vineland.

In order to determine the type of work he could market as an independent glass manufacturer, Woods made a trip to Atlantic City with a suitcase full of his paperweights in the company of a blocker, Ike Ocheltree. After canvassing shops in the city, he concluded "there was a void" in the market for paperweights priced in

the range from twelve to seventy-five dollars. He began putting his furnace together in 1970, made the first paperweight in 1972 and "in just a short period people started hearing about me and coming to me for paperweights, in just one month's time, so I didn't have to put the furnace out." During the 1970s his business expanded to include crystal figurines, and commissions for scientific glassware began to come his way from the Wheaton factory in Millville. Between 1975 and 1976 Frank Wheaton, Jr. approached Woods with the possibility that the Wheaton Company might close their handcraft operations and transfer that aspect of the business to Woods. Recognizing that "You don't turn down an opportunity to take over a one-hundred-year old established business," he made plans to expand and purchased the present site of the Woods Glass factory near Vineland.

The Woods Glass factory fills the middle of the spectrum between the Clevenger's small pot furnace operation, and the giants of industry like Owens-Illinois or Foster Forbes. The Woods factory exhibits elements from each extreme, combining nineteenth century attitudes toward glassmaking, with a focus on modern engineering.

The contents and organization of the Woods factory recall the character of eighteenth- and nineteenth-century factories. Woods expanded the physical plant of the site, enlarging it to include a large open building divided into two types of work areas. Later, Gaylord Evey had attempted the Bridgeton Studios glass plant on the same site. The entryway to the building contains Woods's office and an adjoining alcove for administrative work. The remainder of the forward section of the building is devoted to areas for inspecting, packing, and storing finished ware after it comes out of the lehr, as well as finish work such as grinding and polishing. This is also the area where everybody gathers during their coffeekbreaks. The second

story of the front room, which was enlarged when Woods found it necessary to alter the original flat roof to a peaked one, is used for bulk storage and contains racks of pipes, rods, and other equipment, much of which was obtained from factories with hand operations that were closing down.

A partition wall about fifty feet from the front entrance separates the processing section from the main space in the factory, where the hot glass is worked. Immediately within the rear portion is a small machine shop where molds are prepared or altered, and machinery is repaired. The lehr is the centerpiece of the factory. It stretches seventy feet through the furnace area and opens in the processing area. Immediately after a piece of glass is formed it is placed in the mouth of the lehr where it travels for three hours on a conveyor belt through a series of ovens that gradually decrease in temperature. Woods bought his lehr from the Wheaton factory, and had it reassembled by the same crew that had originally put it together.

When factories closed in the West Virginia 'Valley' region, near the Ohio River, Woods was able to acquire machinery at nearly salvage prices. On one side of the lehr is an area where various types of equipment for pressed ware are kept until needed. In the quiet and dim light of a non-workday, the dark outlines of this row of resting machinery communicate the impression that they are lifeless relics from the nineteenth century. However, they are quickly brought to life when needed, and then it becomes apparent that they are maintained in perfect working order. A regular workday begins about seven in the morning, concluding by around three in the afternoon. The number of men, their techniques, and the type of equipment they use all depend on the work orders to be filled that day. As many as eight men, and sometimes more, work together in a work crew, known as a shop. Woods has devised

a pedal operated mould system that will allow a single man to work with some of the smaller molds. Some days the work may concentrate on pressed glass, whereas other days the work may be devoted to orders for blown ware.

An outdoorsman, Woods's gave special consideration to healthfulness in the design of the factory. Appalled by the conditions present in large scale mechanized glassworks, Woods designed his factory to minimize contamination of the work or outdoor environment with harmful materials. He also situated the building and placed the furnaces to gain the maximum advantage from cool breezes, and the reduction of noise in the work-place. The three furnaces he uses, two of 5540 pound and one of 2250 pound capacity, were located along the southeast wall with their stacks (chimneys) built outside the wall so that the prevailing wind helps dissipate their heat. Mold pits built into the floor in front of each furnace are covered with solid metal doors when not in use. The wall opposite the furnaces has large doors that open to admit the breeze. Air compressors are located in a shed outside the main building to reduce noise in the factory. The batch mixer is completely enclosed, and designed to recapture airborne particles that could otherwise be harmful to people and the environment.

Woods's role as a factory owner is inspired by a desire to encourage the growth of glass craftsmanship. His decision to manufacture scientific glassware was not an admission that only dull, repetitive work could be profitable for a factory. The intrigue of the work stems from the craftsmanship employed in the process of manufacture, and the challenge of developing the means to satisfy a client's specifications. Woods asserts that making a piece of glassware according to the precise standards required for scientific apparatus is at least as satisfying as making a beautiful rose paperweight.

In order to do something like this you can't take it back and straighten out a mistake. When you take that out of the furnace it's dying, you're working with something that's now starting to die. You have [just] so much time to do something with it, you can't take that back and reheat it and straighten it back out and do a little bit more and then straighten it back out. Yes, for somebody that knows, it's as satisfying when you're making it.

Because workers in the modern industry no longer develop the depth or range of skills Woods was trained in, and which he requires in his workers, Woods is responsible for conducting most of the training himself. The qualifications he seeks in his employees echo the lessons of his own experience. Studio glass workers, he explains, lack the ability "to do it right now." Work efficiency is a key coefficient in the balance between expenses (such as wages) and income that determines the factory's economic viability. Woods does not actively seek workers, since one of the qualities he considers essential is individual initiative.

The guy that works in the shop and becomes challenged by it and gets interested in it and he attacks it and can't do it and he goes out there like a bulldog because "if this guy can do it, I can do it," with determination, and he knows what he's going to get into...but still he's developed a fascination for it, that's the guy I want to train.

You still have to have the main ingredient--pride. The next ingredient is you have to be willing to have a lot of energy to devote to it. Pride will do that for you.... No matter how brave you are, if the good Lord doesn't give you the coordination between your hands and your eyes, your eyes have to know what needs to be done.... I guess you have to be born with the ability to do it, and then you have to develop it of course.

In addition, his role as supervisor is exercised with sensitivity to the learning process that is constantly undergone by all glassworkers.

If one of my fellows is having a problem....I won't say do this and do that, I'll say 'let me try it'.... Because, even though it might seem obvious to me what the problem is, and sometimes it really isn't too...they can never say when I walk away 'huh, I'd like to see that son-of-a-bitch do it', because that son-of-a-bitch (has) already done it!

Unlike the Clevengers' air of disinterest in the climate of popular regard for their work and history, Skip Woods actively engages in the discussion of general notions about glassmaking. It serves him well to observe what is said and written about glass in order to gauge the future of the market. Woods also recognizes that he is one of a decreasing number of highly skilled glassblowers, and understands that information about glassmaking will, increasingly, be provided through interpreters, rather than living examples of working people. Therefore, he is sensitive to misinterpretations of technical or informal aspects of glassblowing.

When [authors of articles about glassmaking are] describing how glass is blown and what happens when you're blowing glass up before you put it in the mold, what happens after you put it in the mold.... I mean it was just absolutely so far removed from what actually happens that I wonder who the hell they're talking to.

Woods notes that many authors fail to use the correct terminology when they describe glassmaking. To set the record straight, he explains that the proper names--the ones used by glassworkers--for the "foot forming tool" is called a clapper, the "gathering peg" is really a pig, rolling or "marvering" the glass is actually marvelling ("We're not right but that's what we always called it"), and "jacks" or "pucellas" are really known as cutting down tools.

They're referred to [by writers] as pucellas. Any glassworker that would ever call them a pucella would have been whistled out and hee-hawed and laughed at, and would have gone out of the glass factory. Pucella! For a glassworker to call them a pucella, they probably would have brought him a dress to wear the next day.

In this staunch manner, Woods contributes to the continuity of the craft by maintaining even the language unique to glassmakers and through which he teaches others.

KENNETH MESSINA

Following another path of tradition, glass cutter Kenneth Messina relied on the transition of skills from father to son, as a master to apprentice, for the knowledge he now employs in the operation of an independent glass cutting and engraving business [Figure 15]. Prior to World War II, Messina's father was a supervisor in a glass cutting and engraving business in Hammonton. His father worked with large pieces of flat glass, decorating them for installation as bathroom tiles or mirrors, before chrome surfaces became more popular for certain surfaces. After World War II Messina's father, like Walter Earling, created his own glass engraving business and employed Kenneth and two younger sons. Kenneth was the only one of the three sons who followed his father's occupation.⁶

Messina works at his home in a suburban neighborhood outside of Hammonton, New Jersey. Originally, his workshop was located in his retail store a few houses away, but pressure for more retail space caused Messina to move his equipment to the basement of his home. Messina considers his equipment crude in comparison to the beautiful work he creates. The main tools of the craft are interchangeable stone wheels in a cast iron frame that is about forty or fifty years old. Messina speaks admiringly of new equipment with a set of wheels used in single frame. [Figure 16] Bright cutters who made intricate and deeply cut patterns, Messina recalled, worked in teams that included a rougher, a smoother, and a polisher. "Three or four men did a little of each" finished piece of glass. In contrast, Messina works alone, spending two to three hours daily at the wheel, as well as any additional time he can manage. Messina is as much a businessman aware of economic considerations as he is an artisan. Messina carefully measures the market for his decorative glass. Through the general observation that "if you see what's on

the market today it's a mess," and calculations of his investment, Messina determined that the ultimate balance between costs and profit, or workmanship and consumer interest would be achieved by designing his glass for a blue collar clientele. Despite the small scale of his business, he finds great purpose and challenge in the same concerns about production and demand which drive industry.

Traditions of family and craft coincide in Messina's work. Though he spent fifteen years as a miscellaneous worker at the Wheaton factory, Messina's training for glass cutting and engraving took place in his father's shop. "When we came home [from World War II] there was nothing to do so we'd go out and help [my father]." Inexperienced workers were first taught simple patterns, like bunches of grapes or flowers that required only a limited range of shapes. Thus, novices contributed to production while acquiring proficiency in basic skills that would enable them to increase their repertoire. Six or seven patterns were used continuously through the twenty five or thirty years of the family business. Their local customers were able to replace broken pieces from sets purchased years ago, or purchase additional pieces to augment a set. His father's special pattern was the Bridgeton Rose made using a ribbed thousand-mitre wheel to create striated petals. Kenneth Messina still uses his father's flying goose pattern, with some personal variations. Originally inspired by a cigarette ad on the back of a magazine, this pattern shows a goose in flight with wings outstretched and neck extended, its legs tucked up against the body. Cattails may also be included either below the goose or on the opposite side of the glass.

Messina often learned from Old-Timers and contemporary local engravers through the examples of their work that he was able to observe. Messina has collected examples of special patterns used by local engravers like an eagle made by a man who worked with his father. On the other hand, he claims he shied away

from complicated combinations of pattern and technique demonstrated in a particular engraver's work because "I try to keep out of trouble, I learned about four or five patterns." Messina derives a well justified sense of pride from his work. His efforts have been rewarded with a successful business and the appreciation of his customers. He has achieved skills comparable to those of other men for whom he holds a large high of respect. In special pieces made for friends and family his work is unconstrained by economic considerations, so he may enjoy the inner satisfaction of exercising his craft with gratuitous creativity. For example, in return for the hospitality of a local polo club where Mr. and Mrs. Messina attend matches Messina engraved a champagne cooler and contributed it as a tournament prize.

Personally, Kenneth Messina favors the clear cut and engraved glass, but his values and experience as a craftsman have kept him closely linked to glassblowers who work at furnaces with the hot metal they turn into colored decorative ware. His circle of acquaintances has included other cutters like Walter Swindell Earling, and glassblowers such as Ted Ramp and August Hoffbauer, for whom he did some cutting. However, Messina learned his craft through a family business established when the industry no longer required his father's skills. Messina is a member of the generation of New-timers who gained their experience outside the industry. However, Messina must still regard craft and financial solvency equally in managing his business successfully.

WHEATON GLASS VILLAGE

The survival of glass traditions in South Jersey has also been encouraged by industry sponsorship of public education and training. The Wheaton Glass Village and Museum of American Glass, established in 1976, promotes the preservation of

the history and artifacts of glassmaking, along with innovation in glass artistry [Figure 17]. Dr. Theodore C. Wheaton was born in Cape May. He opened a drugstore in Millville in 1884 on West Broad Street, and then in 1890 he purchased the remaining shares of a glass company founded in 1888 by August Letche, Frederick Van Staten, William R. Shull, and Eugene Goodwin in North Millville. During the early years of the T.C. Wheaton Company there were twenty five to fifty employees, and the plant was comprised of a seven pot furnace, a grinding department, a lamp room and an engraving and graduating department. By 1904 the glass company had grown to include two new buildings, the pot furnace was replaced by a continuous tank, three smaller furnaces were introduced, and automatic presses were put into operation. Frank H. Wheaton Sr. joined his father in 1901, and his son Frank H. Wheaton, Jr. entered the business in the late 1930s when the company had about 350 employees. By 1905 Millville was recognized as the equal of Muncie, Indiana, in the competition to dominate the container production industry. In 1966 Wheaton Glass employed 2,500 people and it "had become a unique company, specializing in unique and difficult glass products. No other company can produce the same shapes, compositions and colors."⁷ Presently, Wheaton Industries is a diversified international conglomerate that includes manufacturers of decorative and scientific glassware, plastic products, industrial machinery, with associates for product distribution and technology transfer in four continents.

Frank H. Wheaton, Jr.'s "President's Message" in a 1985 company brochure expresses a philosophy representative of South Jersey's hegemony in glassmaking tradition, as well as a sense of esteem for the experience and innovations that distinguish South Jersey glass manufacturing.

Wheaton Industries is unique. I like to say that we are not a "me too" company. We are a private, family-owned business which allows us to

make on-the-spot decisions.

Our customers know that we are dedicated to manufacturing. We will tackle practically any project if there is a real need for it to be produced. Our strength lies in our accumulated manufacturing knowledge.⁸

Frank H. Wheaton, Jr. planned the Wheaton Village and Museum of American Glass as an institution to provide the public with opportunities to learn about the history of glassmaking in South Jersey, along with facilities for traditional and artistic glassmakers. Wheaton recognized that craft masters have and will continue to make contributions to the industry--the factory still supports a Research and Development hand shop--but the expense of operating a glass furnace discourage most people from learning or developing the skills of glassmaking.

Although Wheaton Village was not dedicated until 1976, from the time its furnace opened in 1968 it attracted local retired glassmakers. Kass Ternay, a longtime Wheaton Village volunteer, recalls that she used to watch Bill Valla and Eugene Crabtree make glass objects even before the village opened to public visitors.⁹ Pete Louis and Jack Choko were also among the men who came to Wheaton Village in their retirement. Wheaton Village's role in historical interpretation provides an important focus for a persistent regional pride in glassmaking heritage. Residents of Millville, Bridgeton, and other towns bring their children, their friends, and out-of-town relatives to Wheaton Village where they can marvel at demonstrations of glassmaking and recognize the drama of human energy, skill, endurance, and creativity that lie within the history and character of South Jersey. In more practical terms, Kass Ternay notes that glassmakers who come to the Village were able to exchange ideas with one another, and with visitors such as the man from Virginia who identified the innovators of some of the mold designs that were

being used at the Village furnace.¹⁰

Others have been attracted to Wheaton Village by the opportunity to fulfill their desire to learn glassmaking. Visitors may pay a fee and make their own paperweight. A fellowship program funds ten glass artists a year who each work in residence at Wheaton Village for a period of six months. During that time they are provided with work space, a furnace, and materials. In exchange for weekly volunteer work, a group of men gather one night each week after public hours to work together making traditional types of glass. None of these men, who call themselves the Anachronistic Glass Blowing and Shad Fishing Society, had industrial experience in glassmaking. Their curiosity about the craft developed because of their interest in the history and connoisseurship of glass.

ROY HORNER and KASS TERNAY

Members of the community at large have also responded to changes in the traditions of the industry. General appreciation for South Jersey glass has been encouraged since the 1920s when writers focused on American glass as a collectible material imbued with qualities that represented the history of the nation and its people. Throughout the glass towns of South Jersey, people are conscious of the glassmaking heritage that surrounds them. Its presence is pervasive. Excavations for building foundations reveal glass shards from back-lot cullet piles, and when people dig in their gardens they discover a residue of glass marbles and chips from glass-factory ash once used as fertilizer. Wheaton Village has provided opportunities for volunteers to conduct research, to teach others, and to participate in programs that enable them to learn the skills of glassmaking. Others, like glass historian Roy

Horner and antiques dealer Kass Ternay in Glassboro, New Jersey, have created their own opportunities. Pitman, New Jersey, resident Roy Horner has been conducting research about glassmaking in South Jersey since the 1950s.¹¹ In the process, he has collected photographs and artifacts, but throughout, he has been especially interested in seeking out working glassmakers, whom he views as the real repositories of glass traditions.¹² Kass Ternay developed an interest in traditional glass through her experience building an antiques business. She, too, sought out the advice of living glass masters, including Bill Valla, Eugene Crabtree, and Mat Farabella, who she met at Wheaton Village and at small glasshouses in the area.

Roy Horner and Kass Ternay have become glassmakers themselves and make paperweights that are hybrids of tradition and innovation. Horner started making lampwork miniatures about 1970 [Figure 18]. He specialized in creating small paperweights, designed according to some of the patterns once popular in the paperweights made from glasshouse furnaces. Ternay learned the techniques for making miniatures from Horner. She also re-creates patterns used among hot glass masters. Horner and Ternay are restricted to miniatures because they work with borosilica glass. However, each has transferred the techniques of the gaffer's bench to their work; a small pontil rod is used to gather the glass, tiny wooden blocks are used to shape the glass, and the finished product is annealed in an oven. Ternay also makes earrings, stick pins, and tie tacks. Their motives for re-creating a bit of glass tradition in miniature may be illuminated by Barbara Kirschenblatt-Gimblett's analysis of miniatures as a form of memorializing the past. "In their extreme iconicity and radical smallness, miniatures offer an economy of scale coupled with a plenum of detail. The careful mapping of a world remembered is another instance of rescuing culture on the threshold of its disappearance."¹³

TOM ZINSKY

The manufacture of decorative offhand glass as a marketable enterprise has also been sustained by glassmakers inspired by the revival of historical information about glassmaking. Tom Zinsky makes traditional types of glass in a small furnace called Downer glassworks, located behind his house on Stanger Avenue--appropriately named for one of the first glassmaking families in South Jersey--in Williamstown near Glassboro.¹⁴ Evidence abounds to indicate the presence of an aficionado of glass. Tall metal gates inset with colored rondos of glass at the driveway entrance announce to the visitor the resident's appreciation of glass [Figure 19]. Beside his driveway, bordering a wooded property, are fields where Zinsky experiments with viniculture, and a large shed building where batch mixes for glass are prepared. Behind the modest bungalow where Zinsky lives, the glass furnace is housed in a corrugated iron shed with a brick and cement floor, about twenty feet wide by twenty-five feet deep. On the ground surrounding the furnace building is a generous border of marble-size glass pebbles. The woods are studded with rejects that Tom occasionally buries as material for future archaeologists to puzzle over.

Zinsky was inspired to start a glassworks by an interest in craft and history generated by local reminders of the glassmaking past of Southern New Jersey. Zinsky grew up in Glassboro. As a child he and his classmates toured the Clevenger works in nearby Clayton, and throughout his youth and young adulthood he frequently saw evidence of his city's history when building projects unearthed brick sidewalks as well as the foundations and rubble of glasshouses.¹⁵

Zinsky worked in a union shop at the Kimble factory for a period of time during the late 1960s, but as Skip Woods also found, most of his coworkers were only

there to labor for wages, and were not much interested in the glassmaker's craft. Zinsky was unable to find an instructional program that would teach him the information and skills he needed to make reproduction glassware for a popular market.¹⁶ Tom and his father Anthony Zinsky therefore resorted to following the examples established by early glass manufacturers. They used old glass batch recipes found in the company ledgers of the Stanger, Whitney, and other eighteenth- and nineteenth-century glassworks. Like their predecessors, much of Tom and Anthony Zinsky's early experience evolved through the process of trial and error until they rediscovered skills dissipated by disuse in the modern industry.

As word of Downer Glass spread, Zinsky was inducted into a network of glassmakers among whom active development of the craft continued. Zinsky realized the importance of learning from colleagues, the fundamental principle of an apprenticeship system, since "you're not just born with the skills." For example, he recalls that "I never knew how to set a handle, and then I went other places and saw how they do it." Zinsky sought out opportunities to work with others in situations like the furnace operated by Wheaton Village. Likewise, between 1978-79 many Old-timers dropped in to the museum to contribute advice. The skills Zinsky practices, as well as some of the equipment he uses, like the wooden molds made for him by Ted Ramp, represent his links with older traditional glassworkers. Although information on the glassmakers' grapevine is slow to reach him, Zinsky keeps abreast of news about others like Skip Woods, Gaylord Evey, Bill Valla, and Bob Dobson.¹⁷

Zinsky has reconnected the traditions recorded in historic company ledgers, and shared with him by craft masters. When their business began, Zinsky and his father produced commemorative flasks and other types of tableware and decorative glass according to historical examples of form and color. The mainstay of business

became commissions for cup plates, pitchers, and other types of these small, pressed ware, because large manufacturers had no interest in the production of small, well-finished items. Like others before him, Zinsky sought a manufacturing niche that would provide his business with economic viability, and thus allow him to exercise and develop his skills. Zinsky maintains extremely high standards for his workmanship. The ware he rejects is turned down on the basis of flaws in proportion or balance, and imperfections in the color or clarity of the glass that are unapparent to the less critical eye. His sympathy with an artistic aesthetic is revealed by his praise for the Wheaton Village fellowship program. He speaks with the same tone of awe and respect whether admiring the achievements of nineteenth century workers who used wood fires and hand tools --"Wow, those people were amazing!" --or Jeff San Martino's contemporary renditions of polar bears on icebergs made in the fellowship program at Wheaton Village. He refuses to call himself an artist, but Tom Zinsky's understanding of the potential for development as a craftsman is evident in the variety of work he has produced, as well as his philosophy that "once you know the technique of making a paperweight, there's so much you can do."

Zinsky responded to modern circumstances with the innovativeness and adaptability that have long been characteristic of glassmakers. One aspect of Zinsky's solution to the problem of balancing costs with profit is to work alone, in contrast with tradition. In addition, he schooled himself in the technology and chemistry of glassmaking in order to reduce operating costs. He speaks with facility and energy about the merits of a recuperated day tank for cracking fuel molecules, and the various properties of covered pots, open pots, continuous pots, refractory materials, lead, barium, oxides and cadmium. Zinsky's willingness to adapt new developments, and combine them with longstanding traditions exemplifies the

elasticity of tradition. Tradition follows an evolutionary process of selection that enables survival even amidst radically alien conditions.

PART TWO

TRADITION COMES FULL CIRCLE

South Jersey regained a place of prominence in the glass industry when borosilica glassmaking processes were invented in the twentieth century. Borosilica glass withstands extreme temperatures, a characteristic especially useful for kitchenware products, popularly recognized under the Corning Pyrex trademark. In addition, when heated over a direct flame, the glass becomes malleable and can be blown and manipulated into complex shapes with great accuracy and control. Borosilica glass is used extensively for laboratory apparatus, and its technology has introduced new techniques into the glass craft. The location of plants specializing in the processing of borosilica into finished products depended only on the feasibility of delivering the manufactured stock and, perhaps because of the historical precedents in glassmaking extant in the region, as well as the availability of land, borosilica plants have flourished in South Jersey. As a result, some of the most basic features of glassmaking have changed. The processes of making borosilica glass and fabricating the glass into scientific glassware are carried out apart from one another. Unlike early glass factories, the skilled craftsmen who fashion borosilica glass into the specialized products requested by the customer are not involved in formulating, mixing, or tending the glass when it is produced. Borosilica glass is handled with different techniques and to different ends, furnaces no longer dominate the workplace, and craftsmen work in isolation from one another. Nonetheless, just as in the

early glass factories of South Jersey, borosilica glasswork demands thorough training, and a high level of technical skill. The techniques involved in the manufacture of scientific glassware have provided new dimensions for glassmaking creativity, and a revival of the symbiotic relationship between craftsmanship and industrial manufacturing.

VINELAND GLASS COMPANY

About the same time that the Clevenger brothers and their contemporaries established giftware factories for hand manufactured glass, the glass industry in South Jersey was becoming increasingly dominated by the production of scientific glassware. A shift in the character of South Jersey's glass factories was foreshadowed in 1897 when the Vineland Scientific Glass company was founded by Victor Durand and his father, immigrant glassworkers from Baccarat, France, who came to the U.S. between 1882 and 1884.¹⁸ Father and son had learned their craft in France, and worked in several factories in America, including Wheaton, before starting their own business. At first, they concentrated on production of lamp chimneys, beer and whiskey bottles, and medicine bottles.¹⁹ Victor bought his father's share of the business in 1899, and in 1904 the factory was rebuilt of iron, brick and stone following a devastating fire the previous year.²⁰ The potential for glassworks that produced tubing, funnels, graduates, and other precision scientific ware was indicated when Durand opened a third tubing furnace on August 23, 1910, in order to supply increasing demand. Two years later, Vineland Scientific merged with the Kimble Glass Co., initiating a stormy relationship that was dissolved in 1914.²¹ Embargoes on imported glass during World War I created new opportunities for American manufacturers, and Durand responded with the development of the

first x-ray tubes and thermos liners produced in the United States. After the war, Ewan Kimble accused Durand of stealing the rights to a patent for an Automatic Lining Machine developed by Joseph Conde. Kimble was the victor in the court case that ensued.²² Victor, along with his brothers Charles and Paul formed the Durand-Koerring glass company in 1916.²³ Between 1916 and 1959 at least twenty-three more manufactories of scientific glassware were founded in Vineland alone.²⁴

In addition to their considerable success in the scientific glassware business, the Durands were unable to resist the temptation so many before had followed to explore the creative facets of the material of their craft. In 1923 Martin Bach came to work with the Durands to develop a shop specially devoted to the manufacture of art glass. Bach brought a store of knowledge and experience from the Quezal company in Long Island, New York, founded by his father Martin Bach Sr. Quezal was well known at the time for the production of art glass. The Durand's began making glass in the contemporary style dubbed Art Nouveau, and it quickly became popular. Durand designs followed the following formula; colorful vases, table and stemware, and lamps, made with opalescent glass in many hues, and decorated with threading, patterns of leaves and vines, and feathery swirls and ribs of color. Durand employed many other skilled glassmakers, including Ralph Barber, William Wiedebine, Henry Britton, Percy Britton, John Trevethan, and Charles Link.²⁵ In 1931 the Durand company employed 1200 workers and Ewan Kimble suggested another merger. However, on April 25, Victor Durand was killed in an auto accident.²⁶ The merger was completed a year later and the company stopped producing art glass soon thereafter.²⁷

THE BRIDGETON STUDIO

Among the successors to Durand, Gaylord Evey's entry into the business of scientific glassware illustrates the attraction of South Jersey's history to the innovators in new methods of glassmaking. Gaylord Evey came to Vineland from Corning, New York, with the intention of opening the Richland Glass company for the manufacture of laboratory glassware.²⁸ He perceived South Jersey, unlike Corning, as an area where "people understand glass and weren't afraid to work with it, and small companies are a way of life." The Richland Company went into operation in 1959, and is similar to a host of other local scientific glass companies. Among the workers of Richland, Evey recognizes a strong degree of satisfaction gained from hand work, the challenges of developing new applications for glass, and solving the problems of fabrication.

Although successful in the business of scientific glassware, Evey omitted important lessons from the traditions of glassblowing in his attempt to manufacture decorative glassware. In 1977 Evey, himself an aficionado and collector of glass and very much involved in the programs and development of Wheaton Village, was intrigued by a suggestion from Sam Farber with the idea of founding the Bridgeton Studio. The workshop would be staffed by studio-trained glass artists to make artistic glassware and paperweights for an elite giftware market. Evey consciously chose not to invest in something more traditional because he felt that the intrigue and market in traditional glass had been saturated. He wanted to do something artistically different, and he felt the degree of difficulty in glass of the type made by Durand and Quezal would be more greatly appreciated than the glass styles peculiar to South Jersey. However, the effort lived a short and costly life when the two employees, both studio-trained artists brought from California neglected their

work. In retrospect, it is easy to see problems in Evey's approach. He had diverged from local standards of clarity and design, and his craftsmen brought outlooks foreign to the region and the approach of industrial workers.²⁹ Where Durand, Clevenger, and others attracted glass masters and members of the larger community because the glassworks served the creative interests of both groups, Evey's studio glassworks made no appeal to the local glassmakers or aficionados who could provide talent and a ready market. His staff also lacked the industrial experience that others recognized in the region as the key to competitive success.

NONTAS KONTES AND JACK KONTES

Nontas Kontes's experience in the glass industry illustrates the course of change that led to the predominance of scientific glassware manufacturers in South Jersey. The original Kontes glassworks, purchased by Kimble Glass about 1985, began in 1942 on the site of the former Durand glassworks in Vineland.³⁰ Nontas Kontes proudly emphasizes that his family name is noted in the area for its long association with fine glass manufacture. Nontas Kontes entered the glass industry by sweeping glass factory floors while he was still in school, and then--along with his brother Jack--gradually mastered the skills of a glassblower. Today, the pair manages the H.S. Martin Company with 250 employees in Vineland. Nontas Kontes's experiential knowledge facilitates his communication with his employees. Each day he spends time working with the glass, either demonstrating techniques, or making a sample to send to a customer. The Kontes brothers learned the skills of glassmaking during a period of transition when the skills of craftsmen who worked at the furnace were still available, and new techniques of scientific glassware were being introduced. They learned both the traditions of the past and the innovations of their

own age.

Unlike the conditions in glasshouses where the materials are taken from a hot furnace, the shop floor at H.S. Martin is quiet, relatively cool (even during a South Jersey summer), and organized into individual work stations [Figure 20]. At each station, workers follow a blueprint and use a gas flame with a selection of hand tools to fashion pre-manufactured rods and tubes of borosilica glass (Kimble Company brand name KG-33) into scientific equipment. Borosilica glass requires higher working temperatures, but is more flexible and forgiving than lime glass and can be worked, and reworked in a patient fashion. The length of the work day is governed by the clock, rather than the depth of molten glass in a furnace, or the pressures of environmental conditions. H.S. Martin is not a union shop. High wages, pensions, and other benefits are insured by the company's need to maintain a skilled work force. As history shows, this was not always the case in large furnace glassworks where many semi-skilled workers were required, only some of whom would accomplish the training to be a master gaffer. Generally, workers have remained with the Konteses for the duration of their careers, reinforcing Kontes's observation that they take pride in doing something more complicated every day, a close parallel to the ambitions displayed by glassworkers who devoted their break time to make the ornate tableware and whimsies through which a tradition of glassmaking in South Jersey was first recognized.

Kontes demonstrates his appreciation for the glass he works with by pointing out its versatility for scientific applications as well as decorative glassware. Nationally prominent artists Paul Stankard, Charles Kaziun, Bob Banford, and Gordon Smith employ borosilica glass to make paperweights and figurines, and their work has brought attention to the creative dimensions of the glass. Mr Kontes

evaluates the work of these individuals highly, further support for the status of the newest branch of the glassmaking industry. In an area set apart from the shop floor by large metal cases, the Kontes brothers have their own station equipped with the tools and materials they use to make paperweights. [Figure 21] The character of their work is similar to that of the men Kontes admiringly referred to. The brothers create floral and foliate miniatures, or patterns in spiral tubing and millefiori design that are encased in silica glass. Working with the glass used in the Konteses' factory requires different skills than those they originally learned as glassblowers. However, through their paperweights the Konteses demonstrate an identification with artistic masters as well as technical masters of the material.

The shift from a teamwork system to the individual task stations of the scientific glassware industry occasioned the development of new approaches to teaching the skills of working with glass. Nontas Kontes noted that when he and his brother first went into business in the 1940s it was necessary for them to provide instruction for their employees. The techniques of the craft had been redesigned, and the traditional relationship between master and apprentice no longer existed in the work routine. In 1959 Joe Luisi, who trained at the Ace Glass company, was asked to design the nation's first scientific glassblowing course for the Salem Vocational Technical Institute of Salem Community College.³¹ Luisi remained at the college for just a year, and then returned to Ace Glass, but the industry soon came to rely on this program to provide skilled employees.

JOE LUISI

Joe Luisi's background lacked connections of family or early exposure to predispose him to glassmaking. Luisi's original direction in life had inclined him

toward a musical career as a singer and guitarist. [Figure 22] However, when he married at the age of 17, he took a job at the Ace Glass company out of concern for supporting his family. He quickly became fascinated with glass, completing a three year apprenticeship, while continuing to pursue his musical interests with a trio that toured throughout South Jersey. A list of Ace Glass employees' nicknames in 1943 called Luisi "Atlas Maiden Gwoon," which he attributes to the reputation he held for being an athletic health nut.³²

In 1979 Luisi left Ace Glass and returned to Salem College in order to head the glassblowing program, which had deteriorated to the verge of being discontinued. About the same time, he began to concentrate on a unique glass "sculpturing" technique he had begun to develop in the 1950s. Once again, in the tradition of the glass industry, Luisi sought to transfer the skills used in factory production to create articles of imaginative design, and artistic expression. "I can draw anything I can see," Luisi explained. In glass, he worked to merge his artistic talents with the technical mastery for which he had already gained recognition. [Figure 22] Luisi's sculptures are miniatures of figures and fanciful scenes rendered in minute detail. For instance, he created a likeness of pianist Liberace seated at a piano, complete with a candelabra, microphone, and even the ruffles on the performer's jacket. Luisi's creations include basketball and baseball stars, an elaborate fairytale castle, female nudes--perhaps his favorite subject--and even a complete swing-jazz band. [Figure 23] In South Jersey, Luisi has been celebrated with news documentaries, and newspaper articles.

In the course of the twentieth century, Glass manufacturing in South Jersey has moved through a range of developments, from the last holdouts of handcraft operation to a technologically advanced industry. In the process, a greater sense of

distinction between technician and artist has developed. Recognition of more diverse opportunities for glass craftsmen has also created a broader variety of avenues for traditions to continue.

Glassblowers still rely on historical precedent, turning to archives of written material, and acquaintances with remaining Old-timers. In keeping with industrial practice, they incorporate innovations in technology with an analysis of market conditions into the development of glass factories where commerce and craft support one another. Tom Zinsky carefully controls the production costs of the Downer Glassworks by implementing modern efficient technology. This enables him to invest his time in making handcrafted blown glassware. Demand for scientific glassware has provided the opportunity for Skip Woods to apply his talents in a practical manner. Woods and his employees continue the process of employing, augmenting, and teaching others their craft skills. In order to carry on his family heritage in the glasscutting craft Kenneth Messina adapts equipment designed for economy of space so that he can work from his home, and he targets a range of glassware that is popular, and therefore profitable, within a local market.

The introduction of borosilica glass enabled the fabrication of material and finished products to be conducted in separate factories. Greater efficiency was achieved, but the basic nature of traditional glassmaking was altered by this division of the glass manufacturing process. Glassblowing in a central furnace factory and borosilica manufacturing are now distinctly separate branches of the trade. Nevertheless, the two have much in common. A market for wares made with traditional glassblowing techniques is provided by the scientific glassware trade that encouraged the development of borosilica glass. The creation of complex scientific equipment from borosilica glass requires a multitude of skills acquired through

training and experience, and rewarded through the profits of industry. Like their colleagues who work from a furnace, borosilica craftsmen value precision, the ability to invent solutions to new problems, the importance of direct teaching methods, and a sense of creative virtuosity. They also share a sense of pride and interest in the historical presence of glassmaking in South Jersey, and a deep sense of personal identity with their occupation as craftsmen.

New techniques, new approaches to working, and new ways of learning have been introduced in glass manufacturing, drastically changing the way in which work is conducted. What remains is the satisfaction of hand work, and the urge to use the material creatively as validation of personal achievement, and the trade itself. As much as new ways have created disparities between technician, craftsman, and artist, craftsmen in all branches of the trade esteem craft mastery, for personal reward, as well as for furtherance of knowledge and skill within the trade. The vitality of glassmaking tradition is fueled by the creative process of innovation, a reciprocal relationship between craftsmen and industry, and the press to achieve through personal development. If glass crafters become no more than technicians, tradition will be relegated to the stillness of museums, and the memories of those who reached out to learn with their own hands.

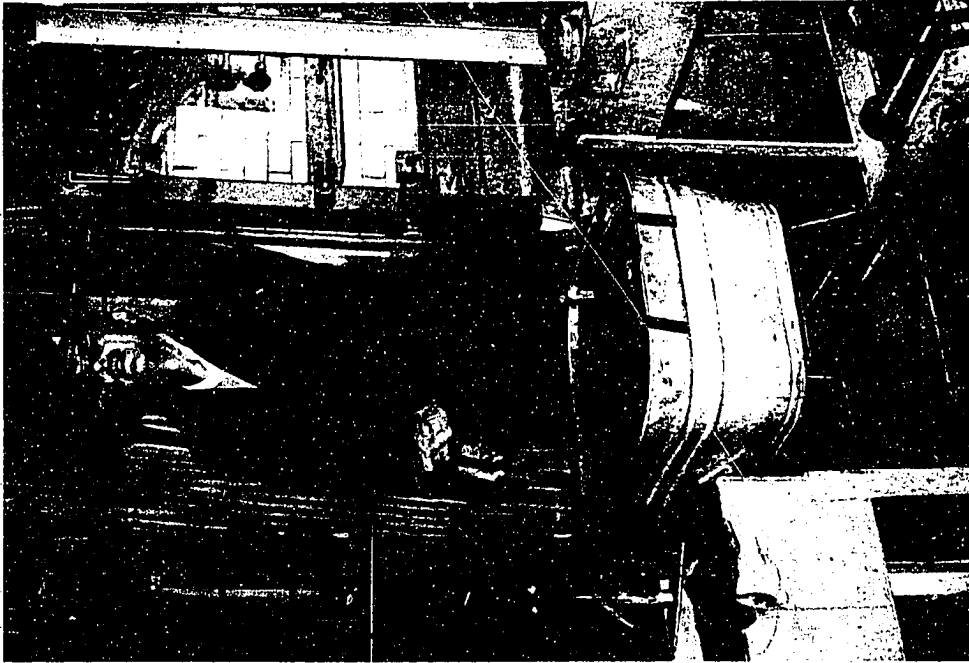


Figure 14

Skip Woods at work preparing a bit of glass for blowing.

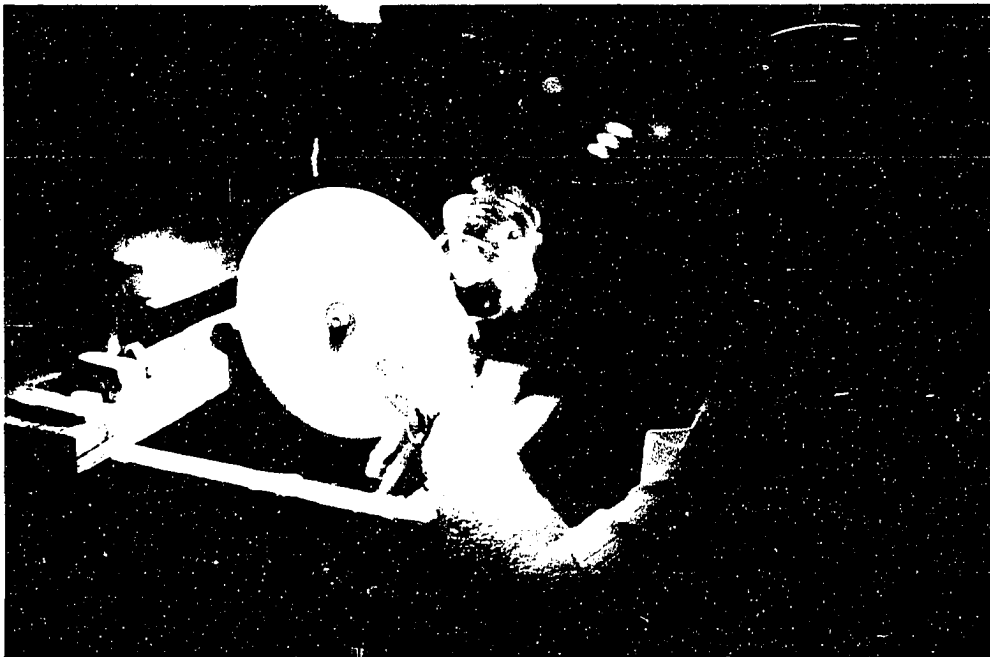


Figure 15

Kenneth Messina working at an engraving wheel.

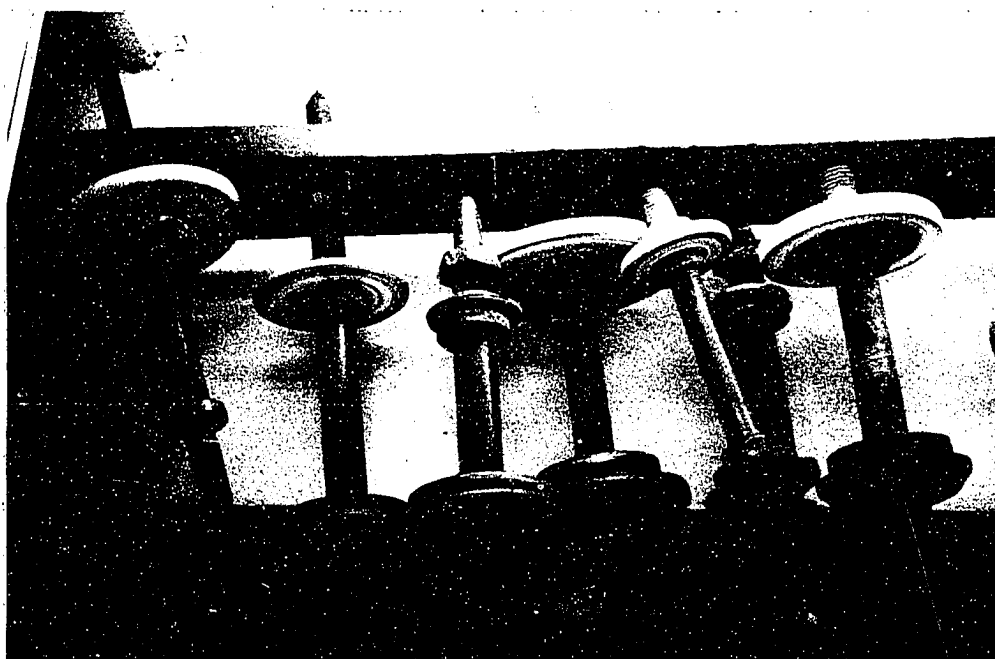


Figure 16

Kenneth Messina's cutting and engraving wheels of different shapes and sizes.

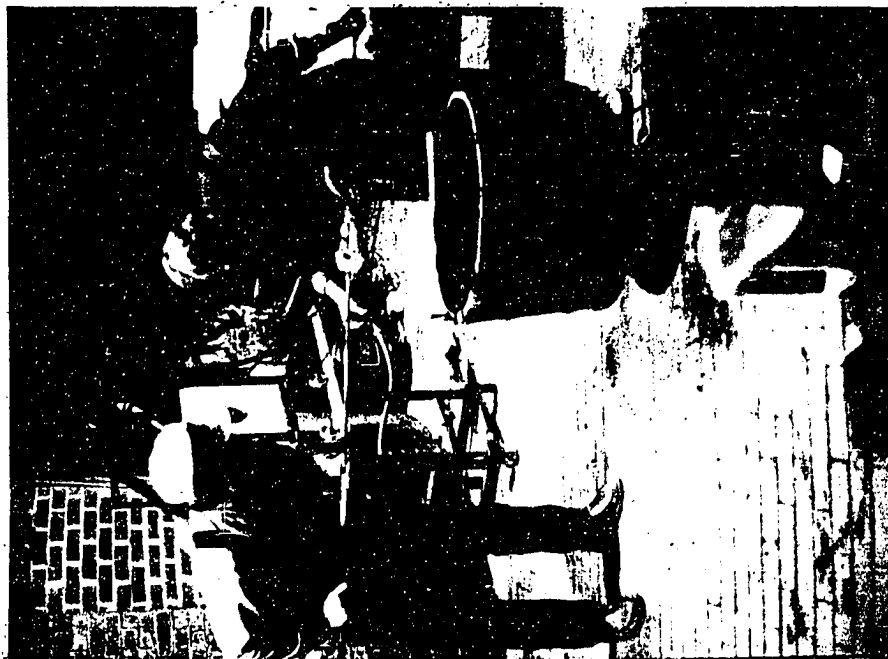


Figure 17

Glassblowers demonstrating historical techniques at Wheaton Village.

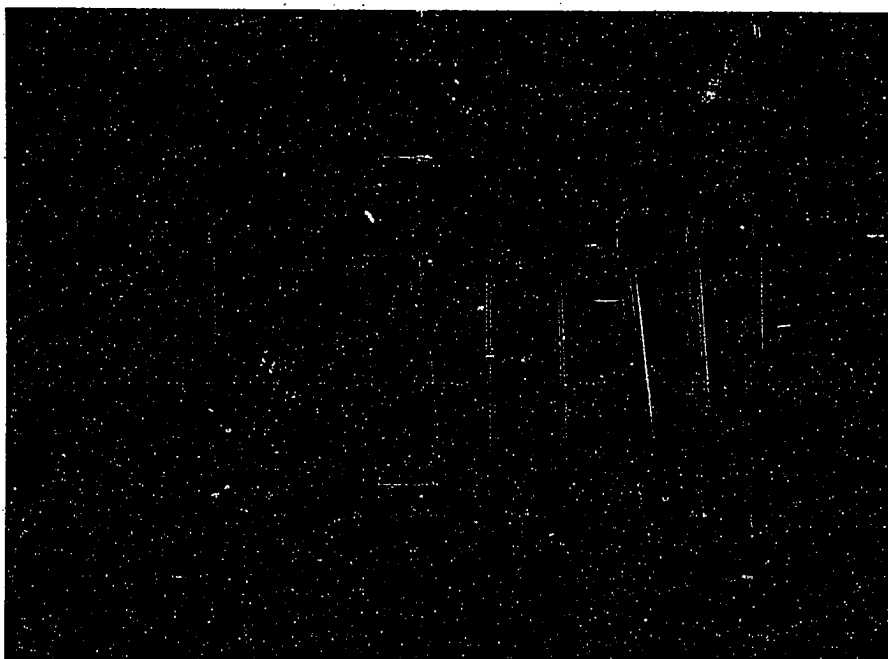


Figure 18

Swizzle sticks made of borosilica glass by Roy Horner.



Figure 19

Glass embellishments in the gates to Tom Zinsky's Downer Glassworks.

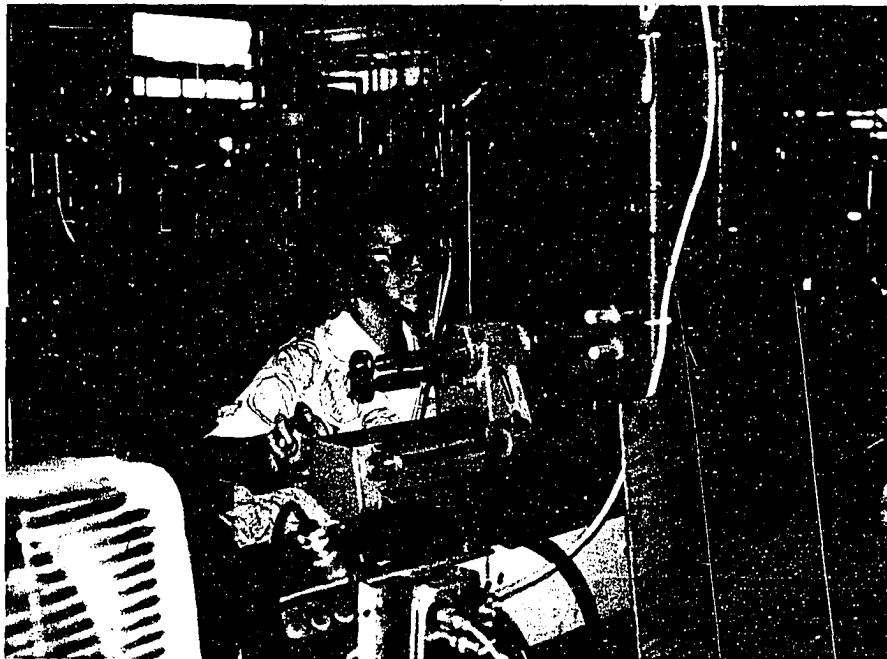


Figure 20

A woman working at the H.S. Martin scientific glassware factory.



Figure 21

Borosilica glass paperweights made by Jack and Nontas Kontes.

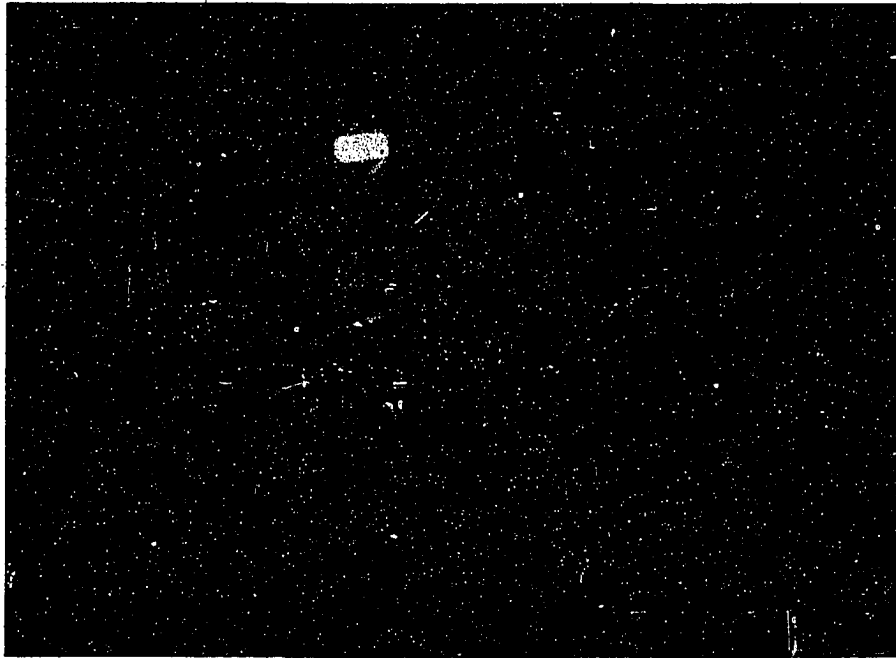


Figure 22

A female nude made of borosilica glass by Joe Luisi.

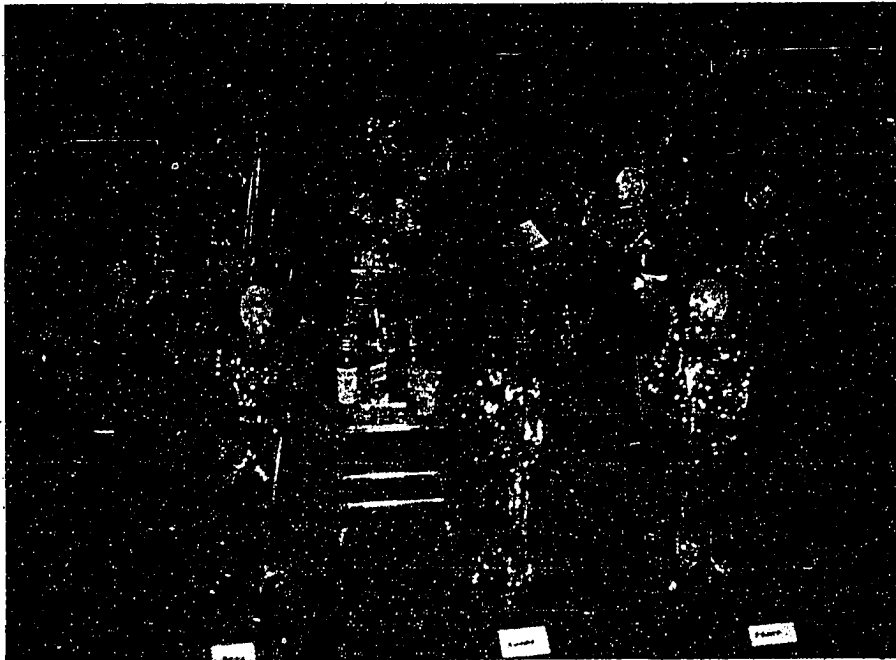


Figure 23

A complete swing-jazz band made of borosilica glass by Joe Luisi.

ENDNOTES
CHAPTER THREE

1. Roy C. Horner, Tempo and the Glass Folks of South Jersey (Gloucester County Historical Society, 1985), pp. 102-109.
2. Norma T. Vivian, "Artisan Hatches Glass Firm in Chicken Coop, Reflects on Long Apprenticeship Under His Dad," The Bulletin, August 6, 1967.
3. Horner, Tempo, pp. 161-163.
4. Reference to Dorfee works.
5. Skip (Oscar) Woods, personal interview on Woods Glass company, Bridgeton, New Jersey, August 20, 1986. All subsequent references to information from Skip Woods are obtained from this interview.
6. Kenneth Messina, personal interview on cut glass business, Hammonton, New Jersey, August 14, 1986. All subsequent references to information from Kenneth Messina are obtained from this interview.
7. "First Glass Factory Founded in 1806," The Millville Daily (Millville, New Jersey), Friday, July 2, 1976, p. 2, 3, 18, (Archives of the Foster Forbes glass company).
8. "Wheaton Industries," ca. 1985. Company brochure.
9. Kass Ternay, personal interview on recollections of old-timers and her own experience making decorative glass, Monroe Township, New Jersey, August 11, 1986. All subsequent references to information from Kass Ternay are obtained from this interview.
10. Kass Ternay, personal interview.
11. Personal interviews with Roy Horner. Personal interview with Kass Ternay, at her home/business/workshop in Monroe Township, August 11, 1986.
12. Roy Horner, Tempo.
13. Barbara Kirschenblatt-Gimblett, "Objects of Memory: Material Culture as Life Review", in Folk Groups and Folklore Genres, ed. Simon Bronner (Utah: Utah State University Press, 1986): 334.

14. Tom Zinsky, personal interview on Downer Glass Works, Williamstown, New Jersey, August 5, 1986. All subsequent references to information from Tom Zinsky are obtained from this interview.

15. Some glass made by Tom Zinsky at the Downer Glass Works is included in the collection of the Heritage Glass Museum, at the corner of High and Center Streets in Glassboro, N.J.

16. Ceil Kozek, "Old Glass", The Gloucester County Times, October 12, 1975, p. B-1. This cited Zinsky's glass works as having recently begun production.

17. Bob Dobson's Iona Glass Works was established in 1969. Dobson's brother-in-law tried to persuade Zinsky to leave his Kimble and assist with the business after when it faltered six months after it began. Frank Smith was asked to redesign the Iona furnace. See Roy Horner's photographs of Iona in Tempo, pp.102-109.

18. Albert Christian Revi, Art Nouveau Glass (Camden, New Jersey: Thomas, Nelson and Sons, 1968).

19. Samuel Farber, "Durand Glass", The Antiques Journal (August, 1960): pp. 12-16.

20. Charles L. Scarani, "The Glass Industry of Vineland, N.J." May 8, 1959 (unpublished paper, Rutgers University) (Vineland Historical Society, Vineland, New Jersey).

21. Scarani, "The Glass Industry."

22. Letters between Ewan Kimble and Victor Durand concerning rights to Joseph Conde's patent for an Automatic Lining Machine, 1916-1917, Vineland County Historical Society, Vineland, New Jersey (Vertical File #2, Drawer 4, Envelope 5).

23. Revi.

24. In addition to Durand, Scarani lists the following Vineland glassworks: Kimble (1900); Hartley Gove's and Sons (1902), laboratory glass; Doerr Glass Co (1916), laboratory glass; Vineland Glassworks (1932), started by August Hofbauer, antique reproductions and paperweights; Lab Glass Inc. (1924), laboratory and scientific glass; Bell Glass Apparatus (1936), laboratory equipment; Chatas Glass (1952), scientific and industrial glass; Ace Glass (1936), very intricate and complex glass instruments; The Colonial Applicator Company (1937); Monarch Glass Co. (1939); M & I Glass Co. (1944); Kontes Glass Co. (1945); Comar Glass Corporation (1947); Tech Glass Co (1957); Research Glass Inc. (1956); Enigma Glass Co. (1924, medicine droppers; Hess Glass Products Co. (1948), laboratory ware; Crystal Glass Co. (1944), medical glass; Polhamus Glass Specialty Works, glass barrels and stopcocks; Alex Caterina, specialty glass apparatus; Herman Greiner (1946), animal feeding tubes; Collini Glass, art glass, August Hofbauer; Ross Neon Sign co. (1943).

25. Revi, and Farber "Durand Glass."
26. Scarani, "The Glass Industry."
27. Farber, "Durand Glass".
28. Personal interview with Gaylord Evey concerning Richland Glass and the Bridgeton Studio project, at the Richland Glass Co. in Richland, N.J., August 12, 1986.
29. Personal interview with Skip Woods.
30. Personal interview with Nontas Kontes and Jack Kontes concerning the Kontes/H.S. Martin company, at the H.S. Martin Co., in Vineland N.J., August 12, 1986. All subsequent references to information from Nontas Kontes and Jack Kontes are obtained from this interview.
31. Personal interview with Joe Luisi concerning experience with experience in the scientific glassware industry, and decorative glass work, at Salem Community College, March 12, 1987. Also Joseph D. McCaffrey, "Class Joins Science, Art," Star Ledger (September 22, 1987): pp. 43, 50. All subsequent references to information from Joe Luisi are obtained from this interview.
32. Nicknames of employees at Ace glass listed in "The Vineland Report," The American Flint 32, no.1 (January, 1943): 53. See Appendix K.

CONCLUSION

The glassmaking traditions of South Jersey have evolved through a process of change and development that continues today. The glassmaking industry based its early success in the region on a providential combination of available materials, geographic features, and entrepreneurs who invested in factories to mass produce bottles and window glass. The relationship between glassmakers and factory owners was balanced between the value of the craftsmen's skills to the owners, and the value of employing the craft to the glassmakers. Glassmakers trained in Europe brought a sensibility that included high self esteem as well as the requisite skills and knowledge to create glass. These characteristics were perpetuated through apprenticeship training and family heritage, and reinforced by a high degree of community involvement in the operations of the glass factories. As glassmaking occupations passed through generations of families rooted in South Jersey, the traditions of glassblowing acquired the distinction of regional association. Thus, personal identity, community, and craftsmanship were tightly interwoven. Glassmakers created material expressions of their abilities with decorative glassware that combined a variety of skills, employed in complex combinations with only the simple materials provided by factory production. Displayed in the homes of friends and family, these testimonials broadcast a message of individual achievement to a broader public than direct colleagues. At the same time, offhand glassware provided a means for glassmakers to share their work with others by an artistic means, rather than solely monetary support.

Towards the end of the nineteenth century the slow but steady progress of change by the accumulation of individual discoveries shared among workers, and eventually from one factory to another was quickened by technological advances. Furnace improvements enabled new fuels to be used, and increased the efficiency of the glassmaking. In order to keep up with this tempo, additional changes were made to the equipment used by glassmakers, and to the organization of the work teams in the factories. The solution to achieving ultimate efficiency in mass production was full mechanization of all aspects of glassmaking. As this prospect became clear, glassmakers voiced their objections and mourned the loss of the community and personal values connected to their craft. Glassmakers' network of relationships, over centuries, countries, generations, and directly among colleagues provided a strong basis for them to take a stand against changes that would end their traditions. This network also became a source to some who utilized the ingenuity typical of glass craftsmen to create new opportunities for the craft.

The Clevenger Brothers, Ted Ramp, and Walter Swindell Earling and other Old-timers are notable for keeping the traditions of their craft alive. Each combined a savvy for business gained through participation in the industry with their abilities to execute their skills into small enterprises that catered to markets for specialty decorative ware. Theirs was the last generation to train in the few remaining factories yet to undergo complete mechanization. They were also the first to carry glassmaking tradition outside the bounds of large industry, capitalizing on general public interest in the beauty and mystique of the craft perpetuated through generations of glassmakers well known within their circle, but known to the public only through the offhand glassware they created. Their efforts could serve as an example to others. However, their experience could never be duplicated because industry had irrevocably

moved in the direction of mechanization and modern technology.

Technological development has furthered the course of tradition taken up by craftsmen inspired by South Jersey tradition. Some glassmakers have combined elements of the Old-timers approach, and historical precedent with modern equipment and materials. On one hand, modern technology enables devotion of more thought and attention in the production of decorative and expressive ware. The booming scientific glassware business supplied mostly by borosilica glass has not overwhelmed the need for specialty scientific ware made using furnace and glassblowing techniques. In fact, improved equipment has made it possible for glassblowers to work with the latter methods more safely and productively than in the past.

The traditions that emerged from handcraft work have been sustained throughout these phases of change. Glassmaking has diversified to include decorative and functional ware, handcraft industry and mechanized industry, glass made from a blazing furnace and glass received in cold form to be reheated and shaped. Each has struck its own balance between process and commerce. Glassmakers, too, have sought and discovered their own balance between the desire to create and the urge to have their efforts validated with commercial success. In this symbiosis, neither element is alone seems sufficient to keep vital the evolutionary process of glassmaking tradition.

BIBLIOGRAPHY

INTERVIEWS

Note: Interview tapes and transcripts are in the possession of the author.

Walter Swindell Earling, glasscutter, Millville, New Jersey, August 6, 1986.

Gaylord Evey, Evey Engineering, Richland, New Jersey, August 12, 1986.

Tom Clevenger, Clayton, New Jersey, August 16, 1986. Elise Clevenger, her husband, and William Clevenger were also present.

Willis Clevenger, Clayton, New Jersey, August 6, 1986.

Samuel Farber, Vineland, New Jersey, August 1, 1986.

Nontas and Jack Kontas, H.S. Martin Company, Vineland, New Jersey, August 12, 1986.

Joe Luisi, Salem County Community College, Penns Grove, New Jersey, March 12, 1987.

Kenneth Messina, Messina Glasscutting, Hammonton, New Jersey, August 14, 1986.

Ted Ramp, Glassblower, Egg Harbor, New Jersey, August 14, 1986.

James B. Travis of Clevenger Brothers Glass, Clayton, New Jersey, July 28, 1986.

Kass Ternay, Lampworker, Glassboro, New Jersey, August 11, 1986.

Frank H. Wheaton, President and Chairman of Wheaton Industries, Millville, New Jersey, September 9, 1987.

Oscar (Skip) Woods, Woods Glass, Bridgeton, New Jersey, August 20, November, 1986.

Tom Zinsky, Downer Glassworks, Williamstown, New Jersey, August 5, 1986.

NEW JERSEY AND NEW JERSEY GLASS

Beck, Henry Charleton. The Roads of Home: Lanes and Legends of New Jersey. New Brunswick, New Jersey: Rutgers University Press, 1956.

Blake, Joyce E., Glasshouse Whimsies. Joyce Blake: East Aurora, New York, 1984.

Bole, Robert D. and Edward H. Walton, Jr. The Glassboro (N.J.) Story. York, PA: Maple Press, 1964.

"Clayton Firm Seeks Glassblowers, 65-75" The Philadelphia Inquirer. Sunday, October 3, 1964.

Clevenger Brothers Glass Works: The Persistence of Tradition, The Museum of American Glass at Wheaton Village, Millville, New Jersey, 1987.

Cohen, David Steven. The Folklore and Folklife of New Jersey. New Brunswick, N.J.: Rutgers University Press, 1983.

Early Arts of New Jersey: Paintings, Silver, Glass, 1750-1850. Exhibition Catalogue. Trenton, New Jersey: New Jersey State Museum, 1952.

Farber, Samuel. "Durand Glass." The Antiques Journal. August, 1960, p. 12-16.

Horner, Roy C. Tempo and the Glass Folks of New Jersey. N.J.: Gloucester County Historical Society, 1969, 1985.

Hufford, Mary. One Space, Many Places: Folklife and Land Use in New Jersey's Pinelands National Reserve Report and Recommendations to the New Jersey Pinelands Commission for Cultural Conservation in the Pinelands National Reserve. Washington, D.C.: American Folklife Center, Library of Congress, 1986.

Hunter, Frederick William. Stiegel Glass. N.Y.: Dover Publications, 1950.

Lanmon, Dwight P, Robert H. Brill and George J. Reilly. "Some Blown 'Three-Mold' Suspicions Confirmed". Journal of Glass Studies. 15, 1973, pp. 143-173.

McCloy, James F., and Ray Miller. The Jersey Devil. Wilmington, Delaware: The Middle Atlantic Press, 1976.

McNamara, Verna F. "Where the Green Glasses Grow." The Beach Comber. August 13, 1970. (Collection of Wheaton Village, Clevenger clipping file).

Palmer, Arlene M. The Wistarberg Glass Works of Colonial New Jersey. Masters thesis, University of Delaware, 1973.

Pepper, Adeline. The Glass Gaffers of New Jersey and their Creations from 1739 to the Present. New York: Charles Scribner's Sons, 1971.

Pettifer, Don. "Glass Folk Art in New Jersey." The Challenge of Folk Materials for New Jersey's Museums. Trenton, New Jersey: New Museums Council of New Jersey, 1986.

Pettifer, Don. "South Jersey Paperweights as Folk Art". Journal of Glass Studies. 25, 1983, pp. 217-220.

Pfeiffer, Ed. "Clevenger Brothers: The Last of the Old Time Jersey Glass Blowers." Batsto Citizens Gazette. Spring, 1967, p. 4.

The Renaissance of South Jersey Blown Glass. Providence: Grant and Lyon, 1934.

Sim, Robert J. Pages from the Past of Rural New Jersey. Trenton, New Jersey: New Jersey Agricultural Society, 1949.

Taylor, Gay LeClaire. "A Record of Centuries: Glass Factories of New Jersey." Journal of Glass Studies. 25, 1983, pp. 213-216.

Toughill, Frank. "11 Craftsmen Keep Alive Ancient Glass Process." New Jersey News. Philadelphia, Pennsylvania, December 29, 1963, p. 1-2.

The Wheaton Story. Millville, N.J., 1960.

GLASS MAKING HISTORY, TECHNOLOGY AND INDUSTRY

Barker, Theodore Caldwell. The Glassmakers: Pilkington: The Rise of an Industrial Company, 1826-1976. London: Weidenfeld and Nicholson, 1977.

Biser, Benjamin F. Elements of Glass Making. A Treatise Designed for the Practical Glassmaker, Comprising Facts, Figures, Recipes, and Formulas for the Manufacture Of Glass- Plain and Colored, Pittsburgh, PA: Glass and Pottery Publishing Company, 1899 (reprinted by Roy C. Horner, 1974)

Bolas, Thomas. Glass Blowing and Working for Amateurs.... N.Y.: Truslove and Comba, 1898.

Diamonstein, Barbaralee. Handmade in America: Conversations with Fourteen Craftmasters. New York: Harry N. Abrams, Inc., 1983.

Davis, Pearce. The Development of the American Glass Industry. Cambridge: Harvard University Press, 1949.

Dodsworth, Roger. Glass and Glassmaking. Aylesbury, England: Shire Publications, 1982.

Dossie, Robert. The Handmaid to the Arts. London: printed for J. Nourse, MDCCLXIV (1764).

Duncan, George, Sang. Bibliography of Glass. London: Dawsons of Pall Mall, 1960.

Gardner, Paul Vickers. Glass. N.Y.: Cooper-Hewitt Museum, 1979.

Hodkin, Frederick William. A Textbook of Glass Technology London: Constable and Co., LTD, 1925.

Hoffman, Miles E. A Contemporary Analysis of a Labor Union: Development, Structure, and Functions: GBBA of the United States and Canada. Philadelphia, 1959.

Jarvis, Deming. Reminiscences of Glass-Making. Boston: Eastburn Press, 1854. (prob at Corning). Also 2nd edition N.Y.: Hurd and Houghton, 1865.

Knittle, Rhea Mansfield. Early American Glass. New York: 1927.

McClinton, Katharine Morrison. Collecting American Glass. New York: Gramercy Publishing Company, 1950.

McKearin, George S. and Helen. American Glass. New York: Crown Publishers, 1948.

McKearin, George S. and Helen. Two Hundred Years of American Blown Glass. New York: Crown Publishers, 1950.

Minton, Lee W. Flame and Heart: A History of the Glass Bottle Blowers Association of the United States and Canada. U.S.: Merkle Press, 1961.

Pellatt. Curiosities of Glass Making. London: D. Brogue, 1849.

Phillips, Charles John. Glass: The Miracle Worker, Its History, Technology, and Applications. N.Y.: Pitman Publishing Corporation, 1948.

Polak, Ada Buch. Glass: Its Makers and Its Public. London: Wiedenfeld and Nicholson, 1975.

Porter, George Richardson. A Treatise on the Origin, Progressive Improvement, and Present State of the Manufacture of Porcelain and Glass. Philadelphia: Carey and Lea, 1832.

Revi, Albert Christian. American Art Nouveau Glass. Camden, New Jersey: Thomas Nelson and Sons, 1968.

Rosenheim, Walter. Glass Manufacture. N.Y.: D. and Nostrand Co., 1912.

Salz, Kay. Craft Films: An Index of International Films on Crafts. N.Y.: Neal Schuman Publishers, Inc., 1979.

Schwind, Arlene Palmer. "The Glassmakers of Early America," in The Craftsman in Early America, edited by Ian M.G. Quimby, N.Y.: W.W. Norton & Company, 1984, p. 158-189.

Scholes, Samuel Ray. Modern Glass Practice. Chicago: Industrial Publications, 1946.

Scoville, Warren C. Revolution in Glassmaking: Entrepreneurship and Technological Change in the American Industry, 1880-1920. Cambridge, MA: Harvard University Press, 1948.

Van Hoesen, Walter Hamilton. Crafts and Craftsmen of New Jersey. Madison, N.J.: Fairleigh Dickinson University Press, 1973.

Waran, H.P. Elements of Glassblowing. London: G. Bell and Sons, LTD., 1923.

Wilson, Kenneth M. "American Contributions to the Development of Pressed Glass". Technological Innovation and the Decorative Arts: A Winterthur Conference Report. Charlottesville, VA: The University Press of Virginia, 1974, p. 167-206.

Robert Hewes Glass Manufacturer. Journal of Glass Studies. 1970, vol 12, pp. 140-148.

ETHNOGRAPHY AND FOLKLIFE

Bronner, Simon, ed. American Material Culture and Folklife: Prologue and Dialogue. Ann Arbor, MI: University of Michigan Research Press, 1985.

Bronner, Simon. "Folk Objects", in Folk Groups and Folklore Genres: An Introduction, ed. by Elliott Oring, Logan, Utah: Utah State University Press, 1986, p. 199-224.

Evans, George Ewart. Ask the Fellows Who Cut the Hay. London: Faber and Faber Limited, 1956.

Glassie, Henry. Pattern in the Material Folk Culture of the Eastern United States. Philadelphia, PA: University of Pennsylvania Press, 1968.

----."William Houck, Maker of Pounded Ash Adirondack Pack-Baskets." Keystone Folklore Quarterly, XII: 1 (Spring, 1967) pp. 23-54.

Goldstein, Kenneth S. A Guide for Field Workers in Folklore. Hatboro: Folklore Associates, 1964.

Huygen, Wil. Gnomes. New York: Peacock Press/Bantam, 1976.

Ives, Edward D. The Tape Recorded Interview: A Manual for Field Workers in Folklore and Oral History. Knoxville, Tenn.:University of Tennessee Press, 1974.

Kirshenblatt-Gimblett, Barbara, "Objects of Memory: Material Culture as Life Review" in Folk Groups and Folklore Genres: A Reader, ed by Elliot Oring. Logan, Utah: Utah University Press, 1986.

McCarl, Robert. "Occupational Folklore," in Folk Groups and Folklore Genres: An Introduction, ed. by Elliott Oring, Logan,Utah: Utah University Press, 1986, p. 71-90.

Messenger, Betty. Picking up the Linen Threads: A Study in Industrial Folklore. Austin, TX: University of Texas Press, 1980.

Nickerson, Bruce. "Is there a Folk in the Factory?" Journal of American Folklore. 87, No. 344, April-June, 1974, p. 133-139.

Pye, David. The Nature and Art of Workmanship. London, Studio Vista, N.Y.: an Nostrand Reinhold, 1971.

Redfield, Robert. The Little Community and Peasant Society and Culture, Chicago: The University of Chicago Press, 1960.

Scott, Joan Wallach. The Glass Workers of Carmaux: French Craftsmen and Political Action in a Nineteenth Century City. Cambridge, MA: University Press, 1974.

Robert Hewes Glass Manufacturer. Journal of Glass Studies. 1970, vol 12, pp. 140-148.

LIBRARIES AND COLLECTIONS

Atlantic County Historical Society
907 Shore Road
Somers Point, New Jersey 08244

Batsto Historic Village and Library
Batsto, R.D.4
Hammonton, New Jersey 08037

Burlington County Historical Society
457 High Street
Burlington, NJ 08016

Burlington County Library
Woodlane Road
Mount Holly, New Jersey 08060

Camden County Historical Society
Park Boulevard and Euclid
Camden, New Jersey 08103

Cumberland County Historical Society
P.O. Box 16
Greenwich, New Jersey 08323

Gloucester County Historical Society
Box 409
Woodbury, New Jersey 08096

Salem County Historical Society
79-83 Market Street
Salem, New Jersey 08079

Vineland Historical Society
P.O. Box 35, Vineland, New Jersey 08360

HUMAN RESOURCES

Kim Burdick. Director, Delaware Folklife Project
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 Mary Hufford. Folklorist, American Folklife Center
 Marjorie Hunt. Folklorist, Smithsonian Folklife Office
 Susan Isaacs and Hugo Freund. New Jersey Folklore Society
 Frank McKelvey. Hagley, University of Delaware
 Rita Moonsamy. N.J. Council on the Arts
 Gerald Parsons. American Folklife Center
 Don Pettifer. Director of Interpretation, Wheaton Glass Village

INSTITUTIONAL COLLECTIONS

American Folklife Center, Library of Congress. Oral history collections
 Corning Glass Museum. Corning, New York. Collection and library
 Flint Glassworkers Union. Toledo, OH
 Gloucester County Historical Society
 Glass Bottle Blowers Association (GBBA). Media, PA
 New Jersey State Museum. Collection.
 Philadelphia Museum of Art. Collection, volunteer curator Mrs. Miriam Mucha (Tuesdays only)
 Wheaton Glass village. Collection, library, foundry, interviews on tape and video
 Winterthur Museum. Library and collection.

APPENDIX A

Fifth Census of the United States, 1830
Population Schedules: New Jersey
vol.3, roll 81,
Washington, D.C.: The National Archives, 1948

Key to occupational abbreviations:

Gb=Glassblower	Gc=Glass cutter
Gpacker=Glass packer	Gbatch=Glass batch mixer
Gm=Glass maker	Gmelter=Glass melter

#	Name	Age/Dependents/Occupation	Birthplace	Father's Occupation
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The Upper Township: pop.1341, 252 dwellings

41	William Hann	21	6	Gb
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Dennis Township: pop.1604, 250 dwellings

121	Thomas Wallace	22	Gb	farmer (Irish)
121	William Wallace	26	Gb	
121	Daniel ?Naippling	19	Gb	

Middle Township: pop.1884, 659 dwellings

Lower Township: pop.1604, 466 dwellings

Maurice Township: pop.2246, 422 dwellings

191	Christopher Getsinger	37	5	Gb
218	Thomas Leach	52	2	Gb
228	Francis Nelson	54	2	Gb
"	John Nelson	24		Gb
235	?Auley Madden	35	3	Gb
255	Watson Ackley	24		Gb
320	Martin Madden	42	8	Gb
371	Henry R. Marshal	30	4	Gc
376	Isaac Scull	28	2	Gb
378	John Burkett	22	2	Gb
379	Alfred Hann	21	1	Gb
380	William Wallace	29	2	Gb
381	Lewis Marks	26	1	Gb

Germany
N.J.

382	Charles Beebe	20	3	Gb	
383	Jacob Oriner	56	3	Gb	
385	George Houser	29	2	Gb	Germany
388	Jonathan Barbour	48	8	Gb	
389	Jonathan Barbour, Jr.	25	1	Gb	
391	David Scull	66	3	Gb	
392	William Lutz	39	4	Gb	
395	John S. ?Mangulden	24	2	Gm	
407	Louis Scull	25	2	Gb	

Downe Township: pop.2341, 494 dwellings

Millville Township: pop.2332, 463 dwellings

36	David Welch	24		Gb		
60	William Lusey	40	4	Gb		
61	James Roley	33	3	Gb		
154	David Welch	25	2	Gb		
156	Isaac Vanaman	22		Gb		laborer
"	Abram Vanaman	20		Gb		
162	Andrew Mossbrook	17		Gb		(mother)
"	George Mossbrook	14		Gb		
164	Charles H. Cobb	32	4	Gb		
170	James Craig	34		Gb		
"	James ?Hosley	22		Gb		
171	Cornelius McKensie	30	4	Gb	OH	
173	Elmer Sander	25	3	Gb		
174	John Unks	38	6	Gb	PA	
176	John Biggs	24	2	Gb		
180	Joseph Murphy	23	2	Gb		
182	Joshua Bodine	25	5	Gc		
183	Anthony Getsinger	30	6	Gb		
184	Joseph Getsinger	38	1	Gb		
185	Joseph Griner?	33	4	Gb		
186	Samuel Downs	35	1	Gb		
189	John B. Madden	30	2	Gc		
196	Richard Hann	30	2	Gb		
198	John Hartman	28	4	Gb		
218	Aron Wescott	26	4	Gc		
281	Brandriff	30	6	Gc		
"	Charles Brandriff	17		Gc		
293	Henry Deal	28		Gb		
"	James Bishop	25		Gb		
"	Thomas Lewis	25		Gb		
305	William Otterson	27		Gb	Ireland	weaver
"	George Otterson	23		Gb		
"	Thomas Otterson	18		Gb		
317	John Claypoole	39	5	Gb		
321	Barnet Griner	43	4	Gb		
340	Hiram Gannon	27	2	Gb		

344	Lewis Payne	22		Gb		mariner
353	William Coleman	24	1	Gb		
354	Thomas Welch	29	3	Gb		
355	James Smith	28	4	Gpacker		
360	Joshua Dawson	44	4	Gb		
"	Joseph Dawson	19		Gb		
361	Lewis Ireland	28	3	Gb		
362	George Woolford	28	4	Gbatch		
364	Jonah Stalford	46	3	Crucible maker	PA	
"	Thomas Stalford			Gb	PA	
366	William Earl	37	2	Gb		
374	Daniel Hunter	20		Gb		(mother)
379	Henry Conover	16		Gb		
383	Joseph Miskelly	21		Gb		carpenter
384	Samuel Miskelly	25	1	Gb		
385	Allen Waller	18		Gb		
386	Jonathan Waller	22	1	Gb		
388	Jacob Leigh	26	4	Gb		
389	Henry Poole	30	5	Gb		
390	Jacob Bethel	21		Gb		
391	Joel Mishie	37	8	Gb		
395	James Reed	38	3	Gb		
401	Charles Payne	29	4	Gb		
402	Samuel Bethel	26	3	Gb		
406	James Lollen	20		Gb		(mother)
408	William McGlaughlin	40	6	Gb	Ireland	
410	Andrew ?Dubow	35	6	Gb		
423	Isaac Cobb	27	3	Gb		
425	Clayton Sharpe	29	3	Gb		
430	David Lawson	36	7	Gb		
431	Joseph Linthicum	50	6	Gb		
432	William Bethel	29	2	Gb		
434	Daniel Gilkey	35	3	Gb		

Fairfield Township: pop.2144, 414 dwellings

Bridgeton Township: pop.2246, 450 dwellings

43	Barclay Beneer	32	6	Gb	PA	
119	Ephram Jones	17		Gb		shoemaker
137	Adolph Hentz	24	5	Gb	Germany	
214	Charles ?Gandy	31	3	Gb		
234	William Hentz	26	3	Gb	Germany	
"	Lewis Andofer	34	4	Gb	Sweden	
283	John Campbell	35	8	Gb	PA	
285	John Pierson	30	3	Gb		
286	John Barden	23	2	Gb		
287	Joseph ?Carle	26	2	Gmelter	Germany	
298	Samuel Pooll	24	1	Gb		
302	Mark Hullings	22	2	Gb		

304	John Young	32	2	Gb	PA
"	Thomas Broadwater	50	3	Gb	
"	Thomas E. Broadwater	21		Gb	
312	Thomas Kincaid	38	9	Gb	
"	William Kincaid	16		Gb	
446	William H. Bodine	26	4	Gm	

Deerfield Township: pop.927, 170 dwellings

Cohansey Township: pop.1034, 210 dwellings

Greenwich: pop.1160, 204 dwellings

Stoe Creek: pop.1093, 196 dwellings

APPENDIX B
Seventh Census of the United States, 1850
Population Schedules: Cape May and Cumberland Counties, New Jersey
roll 446, W.D.C.:The National Archives and Records Service, 1963

#	Name	Age/Dependents/Occupation	Birthplace	Father's Occupation
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Upper Township: pop. , dwellings

Alfred Hann	32	6	Gb	
Lemuel Howel	33	5	Gb	
William Hann	41	5	Gb	
Jonathan Burden	26	2	Gb	
David Bennet	52	5	Gb	PA
Henry Marshall	41	5	Gc	
Jacob Orner	67	2	Gb	

Dennis Township: pop. , dwellings

Middle Township: pop. , dwellings

Lower Township: pop. , dwellings

Downe Township: pop. , dwellings

Wilson Ackley	33		Gc	farmer
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Maurice River: pop. , dwellings

Hosea Harris	15		Gmaker.app	
William C. Mitchell	18		Gb	gent.farmer
Benjamin C.Mitchell	15		Gb	
Charley Townsend	38	7	Gm	
Charley Reeves	33	6	Gb	
Sam Houston	17		Gb	mother
Henderson Biggs	15		Gb.app	laborer
Joseph Getsinger	40	4	Gb	
John E. Barnett	19		Gb.app	laborer
Sam Houston	29		Gb	PA
J. Baptist Stadler	38	3	Gm	Prussia
John Bogeding	58	3	Batch maker	Hanover
Lewis H. ?Nipling	24	2	Gb	

Joseph Stadler	51	1	Gb	Saxony	
Lorenzo Getsinger	32		Gb		
John Getsinger	30	3	Gm		
John C. Stadler	50	3	Gb	Saxony	"
F. Anthony Stadler	24		Gb	"	
William H. Stadler	19		Gb	"	
George Stadler	17		Gb		
Joseph Schmans	50	4	Gc	Bohemia	"
Francis Schmans	18		Gc		
Oliver Town	49	5	Gc	MA	"
George Town	19		Gc	NY	
Joseph Barnett	41	5	Gb		
Lewis Getsinger	28	4	Gb		
John Bogeding	31	4	Gb	Hanover	
Wesley ?	27	2	Glaborer		
? Jones	46	6	Flattener	"	
Joseph Jones	24		Gc		
Edward Grines	37	4	Gb	NY	
Augustus Reiner	53	1	Packer	Saxony	
Thomas C. Marshall	62	5	Gc/Farmer	"	
Frederick Marshall	25	Gc			

Fairfield Township: pop. , dwellings

Bridgeton Township: pop. , dwellings

John R. Hill	?	3	Gb		
Samuel L. Harris	23		Gb		Shoemaker
Charles Francis	24	1	Gb		
Charles Campbell	22		Gb		
Nathan Phillips	30	3	Flattener		
Uriah D. Woodruff	50	5	Pres. glass co.		
William Kincade	25		Gb		mother
Joseph Kincade	21		Gb		
Samue W. Wells	23	1	Gb		
Nathan Pennington	57	?	Pot maker	NY	"
Chalkey Pennington	16		Works in glass		
William Westcott	23		Gb		
Charles Westcott	17		Gb		
Sheppard Westcott	15		Gb		
George Woodruff	38	5	Master Molder		"
William Woodruff	17		Molder		"
George Woodruff	15		Molder		
John L. Parker	27	3	Gb		
Ward Pierce	44	7	Gb		"
Edward R. Pierce	1		Gb		
Samuel Galigar	14		Gb		laborer
Abram Jones	41	7	Gb		
Samuel Hill	27	9	Gb		"

William Hill	20		Gb		
Alexander McGarin	28		Gb	PA	
John Bogan	27	2	Gb	PA	
Joseph Raisley	24	3	Shearer	Baden	
David Potter	49		G manufactory		merchant
Nickolas ?Neipler	45	5	Gb	NY	
James Linsey	40	3	Roller	England	
Joseph Cuthers	35		Bottler	England	
George Harris	21		Gb		laborer
John Burden	35	5	Gb		
Jonathan Burden	25	4	Gb		
A.H. Bond	42	5	Roller		
Joseph Burden	40	8	Gmanager		
Thomas Kingcard	20	1	Gb		
George Spencer	23		Gb		
Samuel Basset	15		Gb	PA	engineer
Adolph Heintz	34	9	Gb	Wertenberg	
Hiram Clark	32	5	Gb		
Jacob Bennett	28	6	Gb		
Davd Clark	23	2	Gb		
Bennett Lutz	48	2	Shearer	Saxony	
Charles Lutz	15		Tends at GH	Saxony	
Burden Pierson	40	7	Gb	DE	
Thomas Able	26	4	Gb		
William Smith	19		Gb		mother
Micall Earley	39	6	Gb		
Walter Simpkin	27	2	Gb		
Joseph Congdon	28	5	Gb	England	
John Campbell	45	7	Gb	PA	"
John Campbell	17		Gb		
Charles Campbell	23	1	Gb		
Josiah Campbell	21	2	Gb		
John Schemeley	28	2	Gb		
Eli Miller	33	2	Roller		
William Williams	28	4	Gb	MA	
William Seaman	21	2	Gb		
Michael Winch	28	2	Master Shearer	Wertenberg	
John Mires	32	5	Batch maker	France	
Lucus Winch	29		Shearer	Wertenberg	

Bridgeton Cohansey Township: pop. , dwellings

William A. Krouse	28	4	Molder		
Daria White	42	4	Roller		
Charles Bacon	30	5	Roller		
William Kenan	30	4	Bottler	Ireland	
Isaac Newcomb	?	?	Roller		laborer

Cohansey Township: pop. , dwellings

Greenwich Township: pop. , dwellings

Stoe Creek Township: pop. , dwellings

Hopewell Township: pop. , dwellings

Deerfield Township: pop. , dwellings

Millville Township: pop. , dwellings

George Corson	20		Gb		blacksmith
Thomas Corson	16		Gb		
Richard Corson	26	4	Gb		
Henry Stanger	20		Gb		laborer
William Seymour	23		Gb		
Henry Seymour	19		Gb		
Charles Paine	40	8	Gb		
George Paine	17		Gb.app		
John Eastward	28	2	Gb		
Charles Wilson	25	3	Window glass flattener		
Jesse Cossaboon	39	7	Window glass flattener		
George Cossaboon	25	2	Gb		
James L. Stratford	23	2	Gb		
Anthony Getsinger	40	6	Gb		
John Getsinger	18		Gb.app		
Samuel Getsinger	16		Gb.app		
Robert Forons	21		Gb		laborer
Alexander Forons	18		Gb.app		
Isaac Vanhook	24	3	Gb		
John Libby	32	3	Gb	Ireland	
Jeremiah Marts	30	4	Gh pot maker		
Irving Marts	23	3	Gpacker		
Ferdinand Smith	20		Gb		
Samuel Stockley	29	3	Gb		
Felix Fumer	28	5	Gb		
Willis W. Mossbrook	23	2	Gb		
Isaac Sharpless	38	5	GH manager	PA	
Lewis Stanley	48	1	Gc	MD	
Isaac H. Hampton	22	2	Gb		
Andrew B. Pierce	39	4	Gb	PA	
David Clark	23		Gb		gent.farmer
Henry Westcott	25				shoemaker
Alfred F. Jones	17		Gb.app		engineer
Gains Strong	44	9	Gc	"	
Charles B. Strong	17		Gb.app		
Joseph Campbell	21	2	Gb		
Francis Doughty	29	4	Gb		
Thomas Pike	27	2	Gb		
Barclay Bingham	21		Gb		mother
Edward Pool	28	2	Gb	PA	

Isaac Mayhew	48	7	Gpacker		
Bolia Smith	24	2	Gb	France	
Richard Headley	21	3	Gb		
Joseph Headley	53	5	Gpacker		
George F. Headley	15		Gb.app		
Silas Shimela	16		Gb.app		laborer
William Mckim	30		Gb	NY	
Thomas Wells	21		Gb		
Anthony Canfield	22		Gb	NY	
Robert Taylor	23	1	Gb		
William Hays	34	3	Gb		
George R. Chew	27		Gb		mother
Daniel Gilkey	40	2	Gb		
John H. Gilkey	20		Gb		
Isiah Sheldon	30	4	Gb		
Clayton Sharp	39	6	Gb		
George S. Hunt	25	3	Gb		
Jeremiah Stratton	23		Gb		mother
Franklin Stratton	22		Gb		
Ruben Cheeseman	17		Gb.app		laborer
Jacob Bethel	30		Gb		
John H. Webb	29	3	Gb		
Thomas Sheldon	24	1	Gb		
Joel Messic	47	5	Gb		
Avery Messic	47	7	Gb		
Lorenzo D. Messic	21		Gb		
Willian Earl	46	3	Ggrinder		
Edwin Conover	33		Gb		teamster
Lewis Pane	31		Gb		seaman
George E. Braniff	20		Gb		livery
Francis Reed	29	1	Gb		
Henry Moore	30	5	Gb		
Joshua Dawson	53	1	Gb		
Wilson Colvin	17		Gb.app		
Joseph Dawson	29	5	Gb	PA	
Thomas Hampton	19		Gb.app		teamster
John Mossbrooks	20		Gb		
George Mossbrooks	17		Gb.app		
John Stiles	50	8	Gpacker		
David Stiles	16		Gb.app		
Francis Murphin	18		Gb.app		
Joseph Jagers	21		Gb		
William G. Keen	18		Gb.app		mother
Joseph Leigh	29	5	Gb	PA	
Joseph Stanger	31	4	Gb		
John Anderson	30	4	Gb		
Daniel Bethell	36		Gb		
Frederick Miller	42	5	Gb	Saxony	
Samuel Miskelly	34	2	Gb		
Joseph Miskelly	30	2	Gb		

William Murphin	28	5	Gb		
Joseph H. Murphy	22		Gb		cooper
William Surran	23	2	Gb		
Thomas Broadwater	59	2	Gb		
Andrew Dooling	48	7	Gb	PA	
Joseph Gibson	36	6	Gb		
John Hursh	41	1	Gb	MA	
Frank Murphin	25		Gb		watchman
William Sharp	21		Gb		laborer
James Lawler	29	2	Gb		
Samuel Pancost	20		Gb		box maker
Joseph Fisher	45	5	Gb		
Lorenzo Messic	21	1	Gb		
Parker Montgomery	32	3	Gb		
Andrew Beebe	22	2	Gb		
Thomas Stratford	59	5	Gb	PA	
William F. Stratford	20		Gb		
John Young	49	5	Gb	PA	
Benjamin Brumin	32	6	Gb		
William K. Bethell	39	8	Gb		
Thomas G. Oterson	29	2	Gb		
Richard Hay	28	2	Gb		
Anthony Gifford	22		Gb		mother
David Reed	19		Gb		
Joshua Tice	56	7	Gpacker		
Lawrence Tice	20		Gb		
Archibald Tice	17		Gpacker		
Dennis Biggs	16		Gb.app		laborer
Bernard Biggs	23		Gb		
William Grinder	34	7	Gb	MA	
William Manks	29	5	Gb		
James Braniff	39	3	Gb		
William McLaughlin	21		Gb		
Andrew Pancost	27	2	Gb		
Abraham Tice	23	1	Gb		
Parker Huntley	42	7	Gb		
Samuel Moore	31	2	Gb		
George Conover	28	3	Gb		
Luke West	59	3	GH pot maker	DE	
Lewis Reed	24	2	Gb		
Frederick Harman	27	1	Gb	Prussia	
William Coleman	30	1	Gb		
Christian Cheeseman	21		Gb		mother
Henry Gaston	35	4	Gb		
Robert Gaston	20		Gb		
John Jagers	33	2	Gb		
William Shaw	25	2	Gb		
William Curtiss	20		Gb.app		laborer
George Beebe	23		Gb		laborer
Ephraim Beebe	18		Gb.app		

James McGill	23	2	Gb		laborer
John Tweed	24		Gb	Ireland	
Thomas McLaughlin	17		Gb.app		
James McLaughlin	31	4	Gb		
Daniel Hunter	25	3	Gb		
William Channel	24		Gb		carpenter
John Channel	22		Gb		
Benjamin Curry	24		G		mother
Elisha Curry	30	1	Gc	PA	
Richard Scull	35	6	Gb		
William Lutts	48	8	Gb	NY	
George F. Hogan	23		Gb		mold maker
James McQuilkin	16		Gb.app		smelter
Henry Hilburg	17		Gb.app	Hessian	laborer
James Hasket	33	6	Gb	PA	
James Smith	31	1	Gb		
Joseph Davis	24	1	Gb		
Samuel Pool	34	3	Gb		
Henry Conover	25	3	Gb		
Howard Brandriff	42	5	Gb		
Henry Pool	37	6	Gb		
Gideon Pike	35	2	Gb		
Thomas Hays	18		Gb.app		
Joseph Madara	25	3	Gb		
William Day	16		Gb.app		laborer
William Branin	23		Gb		seaman
Jeremiah Stratton	26	3	Gb		
Elmer Reynolds	28	1	Gb		
William Libby	28	4	Gb	PA	
Levi Sharp	29	1	Gb		
John Biggs	34	5	Gb		
Ezekiel Madara	19		Gb.app		laborer
Albert Hankins	32	4	Gb		
David Welsh	35	8	Gb		
Thomas Williams	21	2	Gb		
Anthony Vanhook	17		Gb.app		laborer
Andrew Hiles	35	2	Gb		
William Smith	29		Gb		
Casper Smith	24	1	Gb	France	
Robert Miskelly	24		Gb		
William Mckee	25		Gb		
David Moore	30	2	Gb		

APPENDIX C
Eleventh Census of the United States, 1870
Population Schedules: New Jersey
roll 593, Washington , D.C.: The National Archives

Abbreviations for occupational descriptions:

GC = Glass cutter GB = Glass blower
WGH = Works in glasshouse GP = Glass packer
S = Shearer TGH = Tends in glasshouse
TB = Tending boy

193 Glassworkers
51, or 26% were household heads
142, or 74% were not heads of household
21% born in United States, but not in New Jersey
9.8% Foreign nativity
Age range: 8-66 years
Average age: 22.27 years

Millville, First Ward: total population 1660, 284 dwellings

#	Name	Age/Dependents	Occupation	Birthplace	Father's Occupation
26	Lewis Stanley	57 1	GC	PA	
28	Isaac Hampton	32 4	GB		
35	William Hoover	20	WGH		mariner
"	John Hoover	15	WGH		"
36	Henry Stanger	29 1	GB		
37	Samuel Getsinger	27 2	GB		
38	Thomas COssaboon	20	WGH		box maker
"	Alonzo Cossaboon	19	WGH		"
39	George McGonough	19	WGH	Ireland	"
"	John A. McGonough	19	WGH	PA	"
"	Charles McGonough	12	WGH	PA	"
"	James McGonough	9	WGH	PA	"
40	Irwin Mart	35 5	WGH		
"	Andrew Mart	15	WGH		
41	Samuel Ottinger	18	WGH	PA	brick mason
"	John H. Ottinger	14	WGH		
"	George Pancoast	14	WGH		
42	Fred Seymour	29 6	GB	NY	
"	Charles Cobb	24	GB		
43	John Gordon	22	WGH	PA"	William Chilcott

20			GB			
"	Daniel Agen	22	GB			
"	James McGinnis	29	GB	Ireland		
"	Stephen Brady	28	GB	Ireland		
"	Patrick Flannigan	24	GB	Ireland		
44	Reed Westcott	42	2 GP			
45	Jeremiah Corson	20	WGH			blacksmith
46	Thomas Corson	23	2 GB			
47	Levi Sharp	49	5 GB			
48	Lewis Ireland	49	6 GB			
49	Jacob Zimmerman	27	4 GB	Wertenberg		
50	Robert Preburt	17	WGH			laborer
"	Elijah Preburt	14	WGH			"
"	Samuel Preburt	12	WGH			"
"	Lorenzo Preburt	11	WGH			"
51	Charles Fisher	23	2 GP	NY		
52	Henry Campbell	14	WGH			
"	William Campbell	13	WGH			
"	David Campbell	12	WGH			
"	John Campbell	11	WGH			
"	Albert Campbell	9	WGH			
53	John Friesmith	42	6 Manager	England		
"	John Friesmithe	66	GB	England		
54	Henry Brown	36	5 GB	PA		
"	Charles Payne	48	1 GB			
"	L. Leake	20	GB	D.C.		
55	John Daugherty	30	GB			mother
"	James Daugherty	27	GB			"
"	Daniel Daugherty	15	GB			"
56	John Fridler	18	GB			box maker
59	Henry Miller	23	4 GB			
64	Jacob Berry	24	3 WGH			
"	Charles Payne	21	GB			
65	Fritz mWolsman	47	8 WGH	Hanover		
"	Eristace Wolsman	17	GB	Hesse		
"	Charles Wolsman	15	WGH			
"	Lewis Wolsman	14	WGH			
"	Henry Wolsman	12	WGH			
"	Frederick Wolsman	9	WGH			
66	James McLaughlin	56	4 WGH			
"	Ferdinand McLaughlin	16	GB			
"	Fernando McLaughlin	16	GB			
67	Alexander Truins	38	7 GB	Ireland		
"	James Truins	11	WGH	Ireland		
"	John Truins	12	WGH	Ireland		
"	Alexander Truins	9	WGH	Ireland		
67	James Ferril	20	WGH	Ireland		mother
"	John Briggs	44	4 GB			
"	Elmer Briggs	21	GB			
"	Joseph Briggs	17	WGH			

68	Samuel Leeds	13	WGH		
"	Robert Leeds	9	WGH		
"	William Leeds	14	WGH		
69	Joseph Creamer	20	WGH		
"	Lincoln Creamer	12	WGH		
70	Edwin Mayhew	17	WGH		
73	Mathiuas Creamer	12	WGH		ship carpenter
"	Thomas Creamer	9	WGH		
75	David Welch	45	8	GB	
76	Daniel Scull	48	8	Master Shearer	
"	Wilson Scull	15	WGH		
77	George Cossaboon	35	GB		
77	Charles Gaston	35	3	GB	
"	Willie Gaston	11	WGH		
"	Frank Gaston	8	WGH		
78	John Geisinger	16	WGH	PA	laborer
"	Michael Geisinger	15	WGH	PA	"
79	Isaac Bachelor	32	5	WGH	
"	David Campbell	17	WGH		works on farm
"	Albert Campbell	14	WGH		"
"	William Campbell	24	WGH		"
80	John Herrick	16	WGH		mother
"	Elias Herrick	12	WGH		"
81	William Jones	27	1	WGH	
83	John Green	15	WGH		house carpenter
"	Harris Green	13	WGH		"
84	Alfred Marts	34	3	WGH	
"	Arthur Pancoast	22	GB		
"	John Pancoast	26	GB		
"	Charles Pancoast	18	WGH		
90	Samuel Kerins	10	WGH		cordwainer
93	Joseph Barnett	56	5	WGH	
"	Isaac Barnett	19	WGH		
94	John Bartlett	13	WGH		
95	Peter Gandy	23	WGH		
"	James Gandy	12	WGH		
"	George Jones	24	WGH		
96	Alexander Miller	18	WGH		
97	John Jenkins	21	WGH		Painter & glazer
"	Lewis Jenkins	19	WGH		"
"	George Jenkins	17	WGH		"
98	Thomas Moore	16	WGH		mother
"	Josephus Moore	11	WGH		"
100	Thomas Estell	18	WGH		mother
"	Joseph Estell	14	WGH		"
103	William Truins	35	7	S	Ireland
104	Isaac Reed	19	WGH		laborer
"	Eben Reed	14	WGH		"
"	Patrick Reed	9	WGH		"
106	William Maxwell	41	7	S	Ireland

"	William Maxwell	15	WGH	PA	
"	John Maxwell	13	WGH	PA	
"	Robert Maxwell	10	WGH	PA	
107	George Slinker	40 5	MM	PA	
"	George Slinker	16	WGH	PA	
108	John Morris	16	WGH		lawyer
"	Martin Morris	14	WGH		"
109	John Cossaboon	21 1	GP		
110	Charles Reeves	43 8	GB		
"	Harry Reeves	15	WGH		
111	Fred Zimmerman	25	GB	Wertenberg	
116	Jeremiah Mart	40 6	GB		
"	Samuel Mart	16	WGH		
"	Augustus Mart	15	WGH		
127	David Clard	33	GB		
154	George Hawkins	16	WGH		mother
157	Jacob Hawkins	16	WGH		cordwainer
"	Jacob Hawkins	16	WGH		"
"	Benjamin Hawkins	9	WGH		"
161	George Messic	32 4	GB		
164	Jesse Leach	40 5	GC		
167	John B. Madden	46 5	GC		
168	Thomas Sheldon	33 2	GB		
171	Edwin Fayle	46 1	WGH	England	
173	William Zimmerman	21	GB		baker
"	Alber Zimmerman	13	WGH		"
187	Joseph Champion	34 5	GP		
188	Philip Sommers	14	WGH		
191	James Torrens	23 2	GB		
192	William Ford	18	WGH		laborer
"	Joel Ford	17	WGH		"
"	David Ford	15	WGH		"
"	Alfred Ford	13	WGH		"
192	Joseph Dilks	22 2	WGH		
194	George Hughes	35 2	WGH		
"	Edwin Grelance	25	GB		mariner
198	Thomas Griner	20	GB		
205	Edwin Corson	18 1	GB		
206	Joseph Andrew	53 5	GB	Baden	
"	Charles Andrew	23	GB		
"	Christian Andrew	21	GB		
"	Aarin Andrew	18	TGH		
207	? Brandriff	53 3	GB		
210	Lewis Westcott	28 4	GB		
212	Alfred Herrin	19	TGH		
"	John Herrin	13	TB		
215	Smith Sherrin	16	TB		laborer
"	John Sherrin	13	TB		"
"	Derrin Stiles	23	GB		
216	William Edwards	10	TGH		

217	John Surran	42	7	GTender		
"	John Surran	15		TB		
218	David Reagen	18		TB	NY	farmer
"	Cornelius Reagen	18		TB	NY	"
"	William Reagen	14		TB	NY	"
"	George Reagen	10		TB	NY	"
223	Jerry Post	14		WGH		mother
231	Thomas Hogan	34	5	GB		
232	William Day	25		GB		
233	John Brannin	29		GB		
239	Richard Corsin	35	5	GB		
240	John Bennett	12		WGH	DE	laborer
249	William Penn	17		WGH		laborer
263	John Garrison	13		WGH		laborer
"	Albert Garrison	11		WGH		laborer
263	John Hofner	14		WGH		mother
"	Jacob Hofner	14		WGH		"
TOTAL		1660				

APPENDIX D
Fifteenth Census of the United States, 1910
Population Schedules: New Jersey
vol.19, roll 875, W.D.C.:The National Archives

BB=Bottle Blower	BT=Batch Maker
BP=Bottle Packer	G=Grinder
GT=Gatherer	L=Laborer
LT=Lehr Tender	LW=Lampworker
M=Machinist	MB=Mould Boy
MM=Mould Maker	P=Presser
PT=Pot Maker	S=Sorter
SH=Shearer	TB=Tending Boy
TM=Tube Maker	TO=Taker Off

Millville City; First Ward, First Precinct, Enumeration District 119; pop. 1117

#	Name	Age	Dependents	Occupation	Birthplace	Father's Occupation
1	Harry Clark	30	6	BB		
2	James Harvey	65	7	BP		
"	Walter Harvey	31		BB		
"	Frank Harvey	23		S		
3	William McCaw	34	3	SH	Ireland	
5	Louis Shaw	39	6	BB		
6	John Corson	42		BP		
"	Charles Corson	34		BP		
"	Joseph Corson	36	3	P		
7	John Souder	58	5	BB		
8	William Jorden	30		BB		
9	George Bucks	37	5	BB		
10	Andrew Anderson	57	1	S	Scotland	
11	Thomas Cossaboon	59	4	BT		
12	Lorenzo Bowen	36	3	BB		
13	Hamilton Elliot	51	10	L		
"	William Elliot	24		L		
14	David Bell	35	2	BB		
15	Benjamin Atkinson	32	4	BB		
16	Elwood Branin	52	5	S		
"	Maurice Branin	21		MB		
"	Frederick Branin	20		MB		
"	Edward Branin	17		TB		
"	Louis Branin	15		TB		
17	Frank Newcomb	40	3	BB		

18	John Ranagan	30	2	TM	
19	Louis Waltman	53	1	BP	
20	Joshua Corson	48	3	Foreman	
21	Samuel Moore	52	6	PM	PA
22	Claude Reeves	34	2	BB	
23	? Simpkins	39	5	BB	
"	Leroy Simpkins	16		TB	
24	Jonathan Johnson	66	4	TO	
"	James Johnson	21		GT	
"	Wilson Johnson	23		GT	NY
24	Walter Madden	26	1	BB	
25	William Cossaboon	49	2	LW	
26	John Brown	34	3	Engineer	
"	Edward Lawrence	20		TB	
27	Louis Johnson	27		BB	NY
28	Charles Carter	26	5	BB	
29	Lorenzo Compton	60	4	L	
"	A. Judson Compton	26		TO	
"	R. Ralph Compton	25		TB	
"	L. Gilbert Compton	21		TB	
30	Joseph Morgan	47		S	
31	? Campbell	54	2	BB	
"	G. William Campbell	25		TB	
32	Jesse Cossaboon	35	5	BB	
33	Samuel Johnson	33	2	BB	
36	Andrew Laittle	55	3	P	PA
39	Benjamin Heritage	45	1	G	
40	Eli Hoffman	62	6	S	
"	Lainford Hoffman	30		TO	
"	Eli Jr. Hoffman	18		LW	
41	Clara Cole	17		G	
"	Wheaton Cole	16		TB	
44	Leslie Robbins	26	2	LW	
45	Harrison Robbins	46	4	L	
"	Arthur Robbins	22		MB	
"	Oscar Robbins	15		TB	
46	John Sharp	65	3	LT	
47	Arthur Ammel	22	2	BB	
48	George Newell	19		BP	
49	William Cameron	57	4	Foreman	
49	George Hoffman	24	2	M	
50	Benage Lord	41	4	BB	
51	Walter Robinson	24	3	BB	
52	Joseph Marts	45	2	BB	
53	Walter Reich	37	3	BB	
55	John Fath	56	7	BB	Germany
"	F. Peter Fath	31		BB	Germany
"	M. Michael Fath	29		GT	NY
56	Joshua Owens	50	2	MM	
57	Harry Fort	33	3	BB	

58	Edward Robinson	39	3	G	
"	? Furman	15		TB	
59	Francine Rhubart	44	5	BB	
60	William Phifer	44	1	BB	
61	August Key	32	2	BB	
62	Jacob Reich Jr.	42	3	LW	
63	Herbert Long	24	2	BP	
65	Frank Peterson	28	3	BB	
66	Albert Hughes	44	3	M	
67	Basilla Pullen	24	2	L	
68	Florence Pullen	20		BP	mother
"	Albert Pullen	18		MB	"
69	Louis Pullen	21		BB	"
69	Remus Simons	28		L	
"	Romilus Simons	28		L	
71	Meredith Sawyer	16		TB	
72	Samuel Steelman	40		BP	
"	Harry Bard	34		M	
"	Sheridan Cossaboon	31		BB	
75	Gerge Ward	24	1	BB	
78	John B. Webb	46	3	BB	
79	Alex P. Robbins	57	5	L	
"	Otto Robbins	19		TB	
"	Della Robbins	21		BP	
"	Allen Robbins	17		TB	
83	Winfield Jones	32	3	BB	
85	Jeremiah Corson	39		BB	
86	Charles Collins	33	1	BB	DE
87	Charles Jones	48	6	PM	
"	Charles Jones Jr.	18		TB	
"	Delbert Jones	15		TB	
87	Vorus Gale	16		TB	
89	Ellsworth Carmelia	48	2	BB	
90	Somers Ramsay	48	2	BB	
92	Albert Campbell	29	3	BB	
93	John W. Waltman	30	3	BB	
94	John Geisinger	53	3	BB	
95	Harry Beebe	43	1	BB	
96	Robert Hampton	48	4	BB	
101	Daniel Shropshire	47	5	L	
"	Harry Shropshire	21		Blacksmith	
"	Ellen Shropshire	16		Tie-girl	
"	Charles Howard	26		MB	
"	Herbert Robbins	21		Blacksmith	
"	Alla Thompson	18		Wash-girl	
103	William Reeves	27	3	BB	
104	Thomas Cossaboon	22	2	GT	
105	John McDonald	38		L	
"	Charles McDonald	35		L	
106	Milton Corson	23	3	BB	

109	William Curlett	53	2	Glass maker	MD
"	William Brown	42	2	Stopper maker	
111	John L. Peterson	3	1	BP	
112	Salem Cossaboon	51	7	BP	
114	Louis Ramsay	47	8	L	
115	Alexander Torrons	67		BB	
123	John Whilden	54	3	L	
"	Ferdinand Whilden	21		BB	
"	Leon Whilden	18		TB	
124	Fernando Jones	55	4	BB	
131	John Hampton	42		BB	
134	Benjamin Cox	43	5	BB	
139	Mathew Johnson	39		BP	
141	Benjamin Corson	21	1	Book keeper	
142	George Hogan	72		BB	
"	John Hogan	47		BB	
151	Harry B. Shaw	57		L	
"	Ollie Dilks	45		L	
155	Samuel Bennett	54	2	BB	
156	Frederick Van Staden	53	3	BB	MI
166	Charles Loper	46	1	LW	
164	Joseph Camp	62	1	L	
172	William Wallace	35	6	L	PA
174	Charles McGonigal	52		BB	PA
175	James McGonigal	49		BB	PA
176	George Gaston	51	4	BB	
"	Orville Gaston	21		TB	
177	William Angelo	49		BB	PA
178	Harry Geig	45	4	LW	D.C.
179	William Marts	54	1	BB	
180	Warren Beebe	26		TB	
"	Ralph ?Garbow	18		TB	
182	Grover Torbert	19		TB	DE
184	Edmund Garrison	29		L	
184	Walker Reed	22		MB	
186	William Hoffman	21		TB	
"	Carl Hoffman	18		TB	
187	Bernard Sharp	16		TB	
190	Lorenzo ?Burnight	51		L	
"	Edward ?Burnight	21		TB	
"	Stella ?Burnight	19		G	
191	William Gullock	44	4	Blower-window factory	Germany
"	William Gullock	17		TB	
"	Carl Gullock	14		TB	
192	William Pinchard	16		TB	PA
193	John McClough	42	3	L	
194	John Thompson	38	2	BB	
196	William Corson	37		BB	
200	Joseph Law	40	5	BB	
"	Joseph Law	17		TB	

" William Gillaird	32	4	L	
202 Oliver Corson	40	6	BP	DE
203 Stetson Garrison	34		L	
205 Charles Johnson	65	1	L	
207 William Morris	49	4	L	
" Maurice Morris	14		TB	
208 Howard Parsons	27		MB	
209 ? Henderson	37	3	LW	
211 Ephraim Marts	46	8	Teamster	
" Clade Marts	18		TB	
" Harry Marts	15		TB	
" Atwood Stiles	23		BB	
" Rudolph Stiles	28		TO	
212 Joseph Biggs	50	3	BB	
214 William ?Surran	32	6	BB	
218 Joseph Farley	18		TB	
" Stephen Farley	16		TB	
227 William A. Phife	36	4	BB	
229 Albert Loadow	50	3	BB	
" Claude Loadow	28		Tube drawer	
238 Loren Dilks	17		TB	
247 Henry Waltman	50	1	BB	
248 Josephine Davis	39		?Marker	
251 Alfred Corson	52	1	Glass-maker	
253 William Calkin	47	4	Foreman	
" Percy Calkin	21		Nailer	
" Russel Calkin	18		M	
254 Joseph Pettit	32	3	BB	
255 Francis Powell	45	2	BB	
256 Thomas Pettit	44	2	BB	
257 Henry Reeves	55	1	Pattern maker	
258 Ralph Bullock	47		BB	England
259 John Tozer	50	3	LW	
" W. Walter Tozer	21		G	
" H. William Tozer	17		Office Boy	
260 William Bowen	50	1	L	
" Robinson L. Williams	31		P	
261 Samuel Cossaboon	45	1	LW	
262 John Williams	25	2	BP	
265 George Reamer	57	5	L	
" Walter Reamer	21		TB	
" Allen Reamer	16		TB	
265 Roy Hillman	19		TB	
267 John McGonagh	55	1	BB	
268 Edward Reeves	23	2	GC	
272 Harry Vanaman	32	4	MM	

APPENDIX E
Census Statistics, Cape May and Cumberland Counties, New Jersey:1830

Total Population:	23,436
Total Dwellings:	4909
Overall Avg Hsehold:	4.7
Total Glassworkers:	113/.51% of total
Total Householders:	82
Average age:	32.24/range 20-66
Avg hsehold:	4.5
Total non-hseholders:	31
Average age:	21.4/range 14-34
Overall average age:	29.3

Nativity other than N.J.: 17/15% (44% in Bridgeton)
Nativity other than U.S.: 8/7% (21% in Bridgeton)

Job titles: Glassblower-101, Glass cutter-6, Glass manufacturer-2, Glass melter-1,
Glass batch maker-1, Glass packer-1, Crucible maker-1

Census Statistics, Cape May and Cumberland Counties, New Jersey: 1850

Total population:	
Total dwellings:	
Overall avg hsehold:	
Total glassworkers:	291
Household heads:	180
Average Age:	33.8
Avg hsehold size:	4.6
Non hsehold heads:	110
Avg age:	20.9
Overall avg age:	29.0

Nativity other than N.J.: 56/19%
Nativity other than U.S.: 25/8.5%

Number of job titles/average ages for each:	
Glass blower-	209/28.5
Glass blower apprentice-	28/17
Glass cutter-	11/40
Glass packer-	7/42.8
Roller-	6/37.4
Flattener-	4/35

Shearer-	4/32
Molder-	4/24.5
Glass Manufacturer-	4/19
Pot Maker-	3/48.6
General-	3/19
Batch maker-	2/45
Bottler-	2/32.5
Manager-	2/39
President-	1/50
Grinder-	1/46

APPENDIX F

"The Glass House"

by Louis Cadley

Now, boy, get the iron hot.
Say, is the mould up at the pot?
Sure, but the glass is too damn hot.
Well, it's always the way
In the glass house they say,
As such things are cast in our lot.

When the glass is seedy,
We must stop being greedy,
As a turn is all we can get.
So will stop shedding tears,
At the turn in the lehrs,
And plod our way home to rest.

The next morn we go in
Our work to begin,
And as we hang around,
A note is put up
That would make one go nuts,
To set pots on the afternoon swing.

And such is the way,
In the glass house they say,
Our troubles ne'er seem to end;
With what we have to contend,
Our pay has been cut,
We are all in a rut,
And God knows how it will end.

Seedy glass, cordy glass,
Stoney glass, you see,
And the pot goes cold,
Would make one so bold,
To swear like a sailor at sea.

But cheer up, boys,
Better times I see
As trade is picking up
Far across the sea.
So we'll pack our grips
And bid farewell,
To the land we once called free.

The American Flint, June, 1922 (13, no.3): p.27.

APPENDIX G

The Glassblower Man by A.L. Faulkner

A glassblower sat on the foot-bench one day,
His face, sad grim and set and his thoughts far away,
And a look in his eyes that I saddened to see.
For I knew that he saw things that once used to be.
He saw L.A. 300 before the great fall,
The peer of all unions the pride of them all;
And a look of deep loyalty shone in his face
As he mused that no act of his brought it disgrace.

He remembered the time, all old glassworkers do,
When a man could go home when his days work was thru,
With his chin in the air and his job safe and sound,
As independent a man as could ever be found.
He worked ten months a year, and the wages were good,
He had two months' vacation as a glassblower should;
He had plenty to eat and good clothing to wear,
No fear of the future, no worry or care.

Then along came a firm with a blowing machine,
And the end of the hand blower plainly was seen.
The highly skilled blower, with muscles like steel,
Soon the sting of vexation and hunger should feel.
As he likened the past to the present he knew
That his work days were numbered, all ill- paid and few;
So he pensively mused, in his own sordid way,
And wondered where he would end up some fine day.

Many brothers of his had gone out of the trade,
Who had blown as good rollers as ever were made,
Double, single and triple, long, narrow and wide-
For they knew the machine never could be denied.
So he sadly arose, with a dejected air,
And packed up all his tools with deliberate care,
And went out of the plant to look up a new job-
For he knew the machine with his job had played hob!

Moral

Invention and genius can never be stilled,
Nor the wants of necessity ever be filled.
The grim march of progress can never be stayed-
So, compete if you can, and if not, change your trade.

A.L. Faulkner, "The Glassblower Man", The American Flint (November, 1922, No.1):
p.24.

APPENDIX H

"Millville Mould Shop Impressions"

Bel Lawless works on number one,
It's sad to say, but his hair is gone.
And Harry Brown, hats off to him,
He does his work with lots of vim.
We couldn't get to Frank Hayes socner,
He's known around as quite a crooner.
And next is Uhle, the least said the better,
He's known to the girls as a good petter.
And Foster Bostic, a husky wight,
A man that's got both weight and might.
Orie Brown, a good natured bloke,
Always enjoys, a good natured joke.
And Kenny Dodge, we call him "Ears,"
When it comes to meters he has no fears.
Sailor's car is a Chevrolet,
He'd do much better with a one horse shay.
Albertus Hunter, not very tall,
A guy who enjoys a good game of ball.
And Danny Hann, the last on the row,
He's not very fast, and not very slow.
George Bailey does his work by hand,
And plays trombine in the Legion Band.
Knucky Charlesworth, we'll mention him,
He's a darn good guy for the shape he's in.
Harry Daniels, we call him "Bull,"
His hair stands on his head like wool.
Ovid Hay, a fireman bold,
Does engraving on the mould.
And Macken of the shop committee,
We'll mention in this little ditty.
On Warren Anderson we must pause,
He fights for Union and its Cause,
Willard Johnson, "prentice boy,"
Is Laura Cullen's pride and joy
Joe Pancoast toots the clarinet,
No better guy you've ever met.
We come at last to J.H. Finch,

To him close work is just a cinch.
 And Arthur Hand, our genial Sec.;
 Pay up or get it in the neck.
 Edgar Tomblison, neckring man,
 He just bought a Ford sedan.
 Paul Baum runs a Warner and a Swasey,
 He bought a new car and it sure is a daisy.
 Henry Whitaker did right well,
 He paid the costs when he rang the bell.
 Jack Beebe, with his bright red hair,
 Plays the ponies everywhere.
 George Parks has worked in many shops,
 He's liked in every place he stops.

Earl DuBois is a two-gun man,
 He's known as quite a rifle fan.
 George Miller works next to Earl DuBois,
 He works all day without much noise.
 Melvin don't take up much room,
 Last year he heard the "Lohengrin Tune."
 Old Joe Baum is quite a joker,
 He helped arrange for our last smoker.
 Reppard Hand, our youngest boy,
 Is quite his father's pride and joy.
 Junior Maul owns a Terraplane
 He hopes to buy them again and again.
 Cornelius Daley, known as "Nate,"
 Soon to be our delegate.
 George Robinson runs the Cincinnati,
 When he's dressed up he looks real natty.
 Ralph, Cap, and Ed each an inspector,
 Make a mistake, they're sure to detect 'er.
 Benny Cossaboon, pride of the shop,
 On the baseball team he plays short stop.
 Gilbert Flanagan is next in line,
 He vents the molds and does them fine.
 Al Bennett is a worthy gent,
 He fixes molds when broken or bent.
 Floyd Gale is the husky for our shop,
 When he gives a bear hug you want him tostop.
 George Seiferman is a right good Eagle,
 He loves to hunt with gun and beagle.
 Tommy Cox, also known as "Bull,"
 Is slow of speech but never dull.
 If in your eye you have some sand,
 The guy to see is Frankie Hand.
 Rol Tozer works the Pantograph,
 He's always ready for a laugh.
 Glenmore Brown works a Monarch Keller,

On real fine work he's just the feller.
 In the neck ring, Stellman puts the thread,
 To do this you must use your head.
 Warren Riley on lathe or bench,
 He's handy with a hammer and wrench.
 Linwood Allen is no fool,
 When it comes to making a jig or tool.
 Harry Hulson likes to joke,
 He likes his fun, and likes his smoke.
 Josh Owens is our grand old man,
 Find his equal if you can.
 It doesn't matter where he's at,
 George Charleworth is a Democrat.
 And then Joe Channels, short and stocky,
 He really should have been a jockey.
 J.F. Hayes is next on our list,
 He came very close to being missed.
 Mauly, and Gus, and Don, and Bob,
 Run the office and boss the job.
 And last, Johnny Meekins, of him "Nuff SSed,"
 He's the guy who wrote this rhyme you've just read.

The American Flint September, 1935 (23, #7): p.27.

APPENDIX I

In the Millville "To Sammy"

Good luck to our old friend Sammy,
Who never was afraid of toil;
Each day he'd come in, his face all agrin,
And start cutting whirls on each pet sample oil.
He worked in a place known as Shutterville,
A sleepy little New Jersey town,
Always called South Millville by Sammy,
When his lady friends happened around.

Each morning he'd emerge from another slow burg,
Where he lived on the outskirts of town,
And if the weather'd permit he'd climb into his jit,
Then or dust Sammy couldn't be found.

Now this jitney of Sam's was a plain Bolshevik,
Although he would never admit it,
For when the weather got cold it'd go out on strike,
Then poor Sammy'd have to foot it.

He has gone out to Brilliant, Ohio,
Where the name sample oil is unknown,
And he's doomed to cut diamonds on shades
'Till they shine like the name of the town.

His bright ways are missed by all Shutterville,
But we wish him success and good health.
So go to it, Sammy, and forget sample oils,
For you know diamonds signify wealth.
signed - M.U.G.

The American Flint (11, no.5, March 1920): p.31.

APPENDIX J

"Here's Another For the Old Time Singers"

Jake Crimmel, veteran Ohio Valley Flint... contributes the following old time song. So to those who are equal to the task may we suggest they generate the necessary atmosphere and steam, clear their throats and let the welkin ring. Now altogether here it is:

It was down in Casey's Restaurant, in a lager beer saloon,
Where every man in the place was fuller than the moon.
They all began to argue about this thing and that,
And not a man in the place knew what he was aiming at.
At last up jumps the landlord, it was coming to a fight,
No more drinks and less arguments or I'll put out the lights.
I'll make a proposition, I've a pig that is young and big,
And the man who tells the biggest lie is the man who wins the pig.

The first man on the floor was one everybody knew,
The biggest liar on all this earth was Lawyer Donahue.
I've been in distant lands where no man has ever been,
I traveled to the world's end, I found there was a wall,
Upon the wall I cut my name in the stone,
And I raised the American Flag, and it is waving yet,
Twenty thousand miles around I walked all alone.

The next man on the floor was Larry Branning, a liar from his youth,
He took an affidavit that he meant to tell the truth.
He says, "There's Lawyer Donahue, who blooms with empty pride.
He kicked upon the wall while I was on the other side.
I cut my name into a stone and there I raised the Irish Flag.
On the top I danced a jig.
Will the landlord put on another keg, for I think I've won the pig."
Thank you.

The American Flint December, 1936 (25, No.9): p.30.

APPENDIX K

Vineland Report, Joseph Luisi
Nicknames for men at the Ace Glass Company:

Ott Wallen- Tigerass
Austin Mason- Dagwood
Pete Schugt- Mr. Five by Five or Tweedle di Twill
Norman Stalhuth- Egon
Walt Poole- Doc
Charles Calucci- Two-Gun
Joe Luisi- Atlas Maiden Gwoon
Clarence Williams- Pappy
Sam Pangburn- Cangiduser
John Mangelusso- Handsome John

(AF, Jan 1943, Vol XXXII, #1, p.53)