A History of American Glassware With Special Emphasis on the Liberty Hall Archaeological Site

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INTRODUCTION

The history of glassware from its beginning to its use today is an incomplete one. No one knows exactly how glass originated, but there have been numerous theories as to its origin. Most knowledgeable glass historians agree that it originated somewhere in the vicinity of Egypt. Glass is made from a silica and an alkali, such as reeds and straw. This would give credence to the possibility of glass originating there since there is an abundance of straw in Egypt.

Glassmaking spread throughout the eastern countries, and the Roman Empire became the leader in its production, with Venice as the major center of production. It later spread throughout the continent of Europe and England, although England was slower in gaining her knowledge of this craft.

During the reign of Queen Elizabeth, a new type of glassmaking called flint was introduced. This involved adding lead to the glass. This was the state of the art of glassmaking at the time when America was discovered.¹

Most people generally know something about glass manufacture if only they know that one of the techniques is blowing. There is glass that is made by metal molds also. However, both of these techniques are very old. The method of glassmaking by using molds was used by the Egyptians and
the method of blowing glass was used by the Venetians. This
is a general history of glass, but nonetheless covers the
major points that are known to glass historians.

With this short history of glass as a starting point,
I will try to bring into focus a more detailed history of
glassmaking since the discovery of America and some of the
functions that glass had in our country. With this knowledge
of both the history and the uses of glass up through the
early 1800's, I will try to shed some light on glass as it
pertained to Liberty Hall Academy.

American Glass

Before I begin to get involved in the history of
American glass and American glass factories, I would like to
try and describe the early colonial situation in the new
country. In Europe, glassmakers enjoyed much prestige and
took great pride in their work. They were men who went from
town to town showing off their wares and were from all of the
European countries. By being always on the go, these crafts-
men were able to copy other styles of glassmaking from men of
their own country and other countries too. With this practice
of copying certain styles and then spreading these styles in
their wanderings, most of Europe had glassware that was common
throughout the continent.

When America was discovered and settlers began to
arrive, naturally glassmakers came too. These men were from many countries and therefore brought with them the current trends in design and craftsmanship as well as their own individual style. "So, that it is no wonder that early American glass follows closely what was current at the same time in Europe." 2

As soon as the colonists reached America they were concerned about settling down and starting crops in order to survive. For this reason they were less interested in blowing glass to make glasses, jars, and bottles. Instead they probably drank from pewter, wood, or leather mugs and jugs. 3

The first permanent English colony in America was at Jamestown and just as one would expect, the first glass furnace was there also. This furnace was erected in 1607 and bottles were the only type of glass made. 4 After the glass-making furnace in Williamsburg was erected, Salem, Massachusetts was probably the next site for the construction of another furnace. This furnace was constructed in 1638 and closed down in 1670. 5

In 1654 and 1655, two glass-houses were constructed in New York. They were rival companies, but information other than this is quite scarce. There is also a brief mentioning of glassmaking in Pennsylvania, but authorities don't know where it was made.

Window glass and bottles were the only types of glass
made in early America. In the 1600's however, window glass was quite uncommon if not in use at all. Instead of glass for windows, home builders used oiled paper and sliding wooden panels. It was not until the late 1600's and early 1700's that window glass replaced oiled paper.6

Keeping the knowledge of American glass and its role in the early colonial period in mind, I would like to mention a few of the more prominent glass factories of the period.

Wistarberg Glass

Wistarberg Glass was started in 1739 by Caspar Wistar, in Salem County, New Jersey.7 "Frederick W. Hunter states in his book, "Stiegel Glass," that this glass works of Wistar's was the first successful glass industry in America."8

Wistar hired Dutch craftsmen to train himself and his son Richard the art of glassblowing. The Wistar's made glass bottles, window glass, lamp chimneys, snuff and mustard bottles, "electrofying globes and tubes," bowls, dishes, pitchers, canisters, preserve jars, sweetmeat bottles and drinking glasses. At first Wistarberg Glass made just window glass and bottles, but later made the other previously mentioned objects. The company excelled at making these objects in two colors.9

According to Mr. Hunter, Wistar was the first to use flint in his glassmaking and also to use both clear and colored glass. Some of Wistar's colors included: dark blue, turquoise, opalescent, green amber, the rarest color, and brown. Glass
of these colors has been found at the Liberty Hall site. Wistarberg Glass manufactured many bowls, of which many were green in color. They introduced the concept of blowing glass balls to fit the rims of bowls and act as a top for them.10

Wistarberg Glass was in operation from 1739-1780. During this time there were other factories that were founded also. One such factory was the Whitney Glass Works, Glassboro, New Jersey. It was founded by a man who had worked under Wistar. Nearly all of the factories that sprang up in South Jersey were founded by men who had previously worked for Wistarberg Glass. This practice exemplifies the aforementioned practice of artisans roving around and spreading the styles of making glass, even though they are frequently not the personal styles of the artisan.11

Stiegel Glass

William Henry Stiegel began glassmaking in Elizabeth township, Lancaster County, Pennsylvania, in 1763. "He built two glass houses at Manheim; the first one had the fire lighted under the pots on October 29, 1765." This house produced mostly bottles, ranging in size from a pint to a gallon. In 1770, the fires were lighted in the second house at Manheim. Here the variety of glassware was much greater than at the first glasshouse.12

The glass products made at the first glasshouse at
Manheim were sold to nearby towns. In 1772, Stiegel changed the name to "The American Flint Glass Factory." This was Stiegel's most prosperous year.13

His glass house had a variety of glass objects. Among the more popular ones were salt cellars (containers) of clear and blue glass. Also made were vinegar and mustard cruets and sugar bowls. Many of these objects featured engraving done by hand.14

Blue was a very popular Stiegel color. This particular shade was introduced to America by the Bristol, England, craftsmen.15 This exemplifies the way in which craftsmen roamed from town to town and country to country, spreading different styles of glassmaking. Stiegel also had two shades of green: one clear and very brilliant, another one quite pale. Purple was also a popular color at the Stiegel glasshouse. It ranged from a bluish tint to a reddish one.16

Craftsmen from Italy, Germany, and Ireland as well as from England worked for Stiegel. He employed some of the best artisans in order to make cheap, but beautiful glass objects that would compare to the European ones.17 Nevertheless he went bankrupt in 1774 and his business was sold.18

Other Early Glass-houses and Their Relationship to the Natural Ingredients of Glassmaking

Besides the two previously mentioned ingredients of glass,
silicas and alkalis, fuel is a very important ingredient. The western part of Pennsylvania was and is rich in natural fuel such as coal and gas. With the abundance of fuel at hand, it can be easily understood that western Pennsylvania was an important area of glassmaking.

"The first glass-works in western Pennsylvania was started by Albat Gallatin in 1787, on the Monongahela River, about sixty miles above Pittsburg. In 1795 the first factory was built in Pittsburg itself, and both of these works made window glass only."20

According to Mr. Isaac Craig, glass made at the early glass houses was rather crude. Tumblers and decanters were made of green glass. These decanters were for holding whiskey and were usually used by poorer families who could not afford cut glass.21

Other glass houses were started in this vicinity as well as Gallatin's. One of these was the glass-house of O'Hara and Craig, also on the Monongahela.22 The first glass-house that used coal for fuel was established in Pittsburgh in 1797.23

Sand was an integral part of glassmaking due to the silica present in it and fortunately was an abundance of sand in America. Some of the locations where sand was abundant: Juniata County, Pennsylvania; Hancock County, West Virginia; Fox River, Illinois; Crystal City, Missouri and Berkshire County,
Massachusetts. The glass-house in Germantown, Massachusetts was probably founded due to the large sand deposit nearby. 24

Saratoga Glass

Along with Pennsylvania, New Jersey, etc., New York was one of the earliest states to have glass-houses. In 1732, there were two major glass-houses erected. There were also many smaller glass-houses scattered throughout the state. There weren't many records of these small glass-works, only early gazetteers and county histories. 25

"In 1835 the census reports thirteen glass-houses at work, in New York State." 26 The more prominent glass-house was erected on a mountain near Saratoga Springs, New York. The exact date of its erection is not known. Bottles were the only type of glass objects made by the factory, but the workers could make dishes and small wares for their own use. Some small wares were: rolling pins, canes, cans, bowls, balls, hats, darners and Jacob's ladders. 27

The glass objects at the Saratoga works were made in three different colors, light green, dark green, and olive. It seems as though the craftsmen were tasteful because the shape of the objects and the colors of the objects were quite pretty. 28 "The workmen for this factory are said to have come from Rome, New York, and the factory was built and operated by the Granger Brothers. 29

The second glass-house was erected at Sarasota Springs
by the Congress Spring Company. The artisans who came to work for this company came from the other glass-works located nearby. Stoddard Glass

Stoddard Glass was not surprisingly made in Stoddard, New Hampshire. The glass was made by the blown, three mold method. (I will describe this procedure later.) Stoddard Glass had a coarse texture and a dark amber-green color, with window glass, bottles and decanters being the main products. We have discovered some glass at the Liberty Hall site that is of this color, perhaps it was made at the Stoddard works.

Joseph Foster built the first glass-house near Stoddard in 1842. He built a stone furnace nearby, but failed there also.

The works at Mill Village nearby was built in 1846 by Gilman Scripture, John M. Whiten Jr. and Calvin Curtis. This burned soon after its completion and was replaced by another glass-house. Bottles were the main product here.

"Another factory was built in the south part of the town (Stoddard) for the same purpose (making bottles) in 1850 by Tuman Weeks, Almen Woods, Ebenezer A. Rice, Nicholas Hill and Fred A. Gibson, where they carried on business two years, when Messrs. Wood and Hill left the company; after another year Mr. Rice sold out; the business in (1854) carried on by Messrs. Weeks and Gibson; they are doing a good business but something less than the other company."
Although most of Stoddard's glass was coarse in texture and of a dark, amber-green color, there were some types of glass that differed. Stoddard made tableware that was of a rich blue color and even some pitchers of the Wistarberg type and color.  

Keene Glass

Keene Glass was located in Keene, New Hampshire. Henry Schoolcraft—the most important founder, along with Daniel Watson and Timothy Twitchell founded the company. The company made flint glass bottles and decanters. Later it became known as Schoolcraft and Sprague due to Nathaniel Sprague's joining the company and Watson and Twitchell quitting it.

In 1823, the company was under the direction of Justus Perry and John V. Wood. "It was during their ownership that the bottles with eagle design and letters "P.W." were made." Eventually the works closed and moved to Stoddard, New Hampshire. Keene glass, like Stoddard glass, was dark, green-amber in color and had a coarse texture. Some of the bottles had crude designs, but most had no design at all.

The Keene Glass works, like most other glass works, permitted its workers to make glass objects using left over metal. Frequently, these objects were prettier and fancier than those made to be sold.

Pitkin Glass

Pitkin Glass was in operation from 1783 to 1830, in
Manchester, Connecticut. The Pitkin family was very prominent in government affairs, and as a result it was granted the sole right to manufacture glass in Connecticut. 43

"The product of the factory was bottles and demijohns (long-necked bottles), made from olive-green glass which is very bubbly. They occasionally made jars and inkstands. The factory was large enough to employ thirty men, and run on day and night shifts. There was not only a local but an export trade as well. After the bottles were blown they were taken in large quantities to Hartford by ox-team and shipped to the West Indies. The shipper was paid in rum and molasses. 44

Pitkin glass was made for business purposes, not domestic purposes, and as a result was rough and crude. The bottles and demijohns were usually very large and had a huge depression at the bottom where the pontil rod was attached when the bottle was manufactured. 45

I am including a list of all known early American glass factories in use until 1850. This list was taken from Moore's book "Old Glass European and American."
AMERICAN GLASS FACTORIES.

THIS list has been gathered from newspapers, town records, histories, gazetteers, county publications, anywhere in fact that they could be found. In some cases where the records overlap the dates vary a little, but I have left them as I have found them. My intention was not to list anything later than 1850, but in some cases where operation has continued I have set it down. The list is far from complete, but it is at least a step towards gathering the records of this early and interesting industry.

ADAMS GLASS Co. Incorporated, 1812, in the town of Adams, Mass.

ALBANY, N. Y. Van Rensselaer Glass Works, said to have been opened as early as 1807.

ALBANY GLASS WORKS. See Guilderland.

ALEXANDRIA, Va. Glass works established, 1787. M. De Warville visited these works in 1788 and declares five hundred hands were employed.

ALL OVERSTOWN, N. J. See account of Caspar Wistar.

AMELUNG, A. F. Frederickstown, Md. Glass factory established in 1797. Some of his German workmen started to cross the mountains to build a glass-works at what is now Louisville, Ky., but were stopped and taken to New Geneva, Pa., by Albert Gallatin. Amelung is said to have presented to General Washington two flint glass goblets made at his works.

BAKEWELL AND PAGE. Some Germans started a glass factory in Frederickstown, Md., which was soon abandoned. They went to Pittsburgh and started again, but were unsuccessful here. In 1808 this plant was taken up and run by Bakewell and Page, with one furnace of six twenty-inch pots, followed in 1814 by a ten-pot furnace. In Cramer's Navigator for 1813, it states in connection with Bakewell and Page that they have lately built another flint glass house, making two that they have
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in operation, and that “glass-cutting is likewise executed in this place, not inferior to the best cut-glass in Europe.” A German named Eicherbaum is said to have started a cutting-shop in Pittsburgh in 1804, and obtained his glass from Bakewell and Page.

The firm name was Bakewell and Anderson, 1820. Bakewell and Co., 1844. The works were burned down in 1845, but were rebuilt, and were operated under the name of Bakewell, Pears and Co., till about 1860. In 1879 they advertise in the Pottery and Glassware Reporter that they are: “Manufacturers of Crystal and Opal glass Table-ware, Bar Furniture, Dunglasses, Furniture in Crystal and Flint, Gas, Kerosene, Opal, Cone Shades, Globes, Smoke-bells, Round Ornamental Shades and Flint Glass Chimneys. Lantern Glasses and all Kinds of Blown and Pressed Ware made to order.”

Baltimore Glass Works. 1790. Established on a branch of the Patapsco River, at a place known as Spring Gardens. Another branch was started at about the same time at Federal Hill, Hughes Street. They made both amber and aquamarine bottles, which were marked “Baltimore,” and “Glassworks.” Washington design. The present works date from 1839, and they started to make flint glass in 1873.


Boston Crown Glass Co. In July, 1787, Messrs. Whalley, Hunnewell and Co. received a charter allowing them the exclusive right to make glass in Massachusetts for fifteen years, and a fine of $500 was attached to any infringement of this right. Work was not really begun till 1792 owing to the difficulty in obtaining workmen, etc. In 1811 works in Pembroke at Middlesex village, by Hunnewell and Gore of Boston. This town is now a part of Lowell. In 1820, according to Alien’s “History

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of Chelmsford,” the works were in a flourishing condition, but they failed in 1826-27 and about this time were burned down. In 1828 the works were rebuilt, but were apparently unprofitable, since in 1839 the works were abandoned, and the company moved to Simcoo village, Pembroke, N. H. On July 4, 1839, the Chelmsford Glass Co., Pembroke, N. H., was incorporated to make glassware, window glass, and glass plates. All trace and record of this glass-works has disappeared, except that there is still a street in the town called Glass Street. The New Hampshire Historical Society, at Concord, N. H., owns two or three specimens of this glass which came from residents of the town of Pembroke. They are described as a of a “beautiful light green colour and fine texture.”

Chester Crown Glass Works. Cheshire, Mass. In 1812 a factory was started here to make window glass. In 1852 the product was changed to plate glass. They operated only about two months, and then moved to Brooklyn, N. Y.

Chester Glass Company. Chester, Mass. The factory was started here in 1812, was incorporated in 1814. This company as well as the preceding one used the local sand, which was of excellent quality.


Columbia, N. J. 1812-1833. Window glass only.

Corning Glass Works. Corning, N. Y. In 1857 Amory Houghton, Sr., built and operated the Union Glass Works at Somerville, Mass., and ran them till 1864. He then sold out and bought the South Ferry Glass Works in Brooklyn, N. Y. He ran these till 1868, when he moved them to Corning, N. Y. In 1875 the business was reorganized under the name of the “Corning Glass Works,” and is still in operation. They make exquisite glass of all kinds, particularly in colours.

Coventry, Conn. The Coventry Glass Works were organised by some citizens of that place as a stock company, in 1822. They made hollow ware, decanters and tumblers, and later, flasks with designs on them, snuff jars and inkstands. In 1825 the business passed into other hands, and from 1826 to 1830 it was operated by Thomas Stebbins and his successors, Stebbins and Chamberlin. In 1850 Gilbert Turner and Co. purchased the plant and worked it till 1836, when the supply of fuel, wood, gave out, and the works were closed. They made some of the earliest historic flasks, Lafayette and DeWitt Clinton, to commemorate the opening of the Erie Canal, 1825. These flasks are marked “S. & C.” and “Coventry C. T.”

Craig and O’hara. Pittsburgh, Pa. They opened glass-works in 1797. The site has been occupied continuously by glass-works. In 1830 they were called the Point Bridge Works, of Thomas Wightman and Co. It was
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one of the first works to use coal. Up to 1820 no glass-houses except those in Pittsburgh used coal.

Crystal Glass Co., Pittsburgh, Pa., made much household glass with a beehive. Sometimes below it was the motto, "Be industrious." Also bread-trays with a sheaf of wheat, oval; and they were constantly adding to their list of patterns. They made in 1880 "butter plates" with portraits of James A. Garfield and Winfield S. Hancock.

CUMINGHAM AND CO., Pittsburgh. There is a bottle with the design of an Indian, marked with this name.

CURLING AND PRICE. Pittsburgh. They operated in 1828 what was known as Fort Pitt Glass Works. They were succeeded by E. D. Dithridge and Co., who were bought out by F. Lorenz, and he was succeeded by Thomas Wightman & Co.

"The Rev. Dr. Berley wrote to the St. Louis Democrat, 1879, that he baptised Henry Clay in his parlour at Ashland, at the same time administering this ordinance to his daughter-in-law, Mrs. Thomas Clay, on the 22nd of June, 1879, a few special friends being present. The water was applied by the hand out of a large cut-glass urn, which, among his many presents, had been given him by a manufacturer in Pittsburgh, Pa. It is said this urn was the largest piece of cut-glass then known. Mr. Clay was then seventy years old. He was subsequently publicly confirmed in the church. This piece of glass was made at the old Fort Pitt factory on Washington Street, then operated by Curling, Robinson & Co., in 1844, by Edward Dithridge, and presented by Mr. Curling to Henry Clay. It was the largest piece of cut-glassware which had been made at the time, and few have excelled it in either size or appearance. These facts we get from Mr. E. D. Dithridge, of the Dithridge Chimney Co., Ltd., son of the man who made the urn."—American Glass and Glassware Reports.

Kate Field's "Romance of Glass Making" shows the glass bowl used by Henry Clay in 1830. It was exhibited at the Chicago World's Fair, 1893, side by side with a piece of modern cut-glass, one of those over-cut pieces of heavy glass which were so popular at the moment. The picture of these two pieces is in Miss Field's little book, and a mere look establishes the superiority of the former.

Washington Beck during the 70's made many mounds of dishes and other pressed glass objects in "crystal glass style" for the Fort Pitt works.

DENNY AND BEELES. Pittsburgh. 1800. They built a glass-works on the north side of the Ohio, in that part of Allegheny known as Manchester.

DORFLEIN, PHILIP. Philadelphia. Was a mould-maker for bottles and other glassware from 1822 to 1900.

DORFLINGER, CHRISTOPHER. 1852. In this year Mr. Dorflinger organized a

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firm in Brooklyn. Early in the 60's he built the Greenpoint Works, and Hoare and Daily worked a cutting-shop in connection. In 1867 the White Mills Works were built which are still in operation.

DUMMER, GEORGE AND P. C. In 1824 they began to build a mint glass works in Jersey City. These works continued making glass for forty years, but were discontinued about 1860.

DUNEAU, N. Y. Oneida County. Had a glass-works about 1802.

DURHAMVILLE, N. Y. Oneida County. Also had a glass-works about the same time.

DYOTTVILLE GLASS WORKS. Kensington, Pa., 1771. (See Figure 219.) They were founded by Robert Towars, leather dresser, and Joseph Leacock, watchmaker, on Bank Street. The next year the premises were sold to John and Samuel Elliot, who took Isaac Gray into partnership. They built additional furnaces and made bottles chiefly. In 1780 the property was sold to Thomas Lever, tobacconist, who made bottles for his snuff. He kept the place twenty years. In 1800 the owners were Joseph Roberts, Jr., James Butland and James Rowland. They did business under the name of Butland and Co. In 1801 Rowland became owner and under the firm name of James Rowland and Co. they were operated till 1833. In this year they were bought by Dr. Thomas W. Dyott, who in 1838 was convicted of fraudulent insolvency, and the works were idle for some years. In 1833 they were leased by Henry Benners and under different owners have been in operation ever since.

Among the things made by Dr. Dyott when he was operating the Kensington works were three patterns of bottles, and on each of them he placed a portrait bust of himself in connection with some American patriot. Two of these bottles or flasks show the portrait of Benjamin Franklin, and on the reverse, T. W. Dyott; and on the third is a portrait of Washington, reverse, American eagle with shield, arrows, etc., perched on an oval which contains the initials "T. W. D." Around the edge is the inscription, "Kensington Glass Works, Philadelphia." On the other side is "Adams and Jefferson, July 4, A. D. 1783." As late as 1833 the furnaces were crude affairs, designed to run only six months in the year. At this time the Dyottville factory was the most extensive in the United States, melting about 800 lbs. of batch a day and producing vials, bottles, shop furniture, etc. In 1833 this works had five furnaces and from 250 to 300 men and boys were constantly employed.

A contemporary picture of the works is shown in Figure 219.

Dr. Dyott believed in the virtues of advertising, and the following setting forth his wares is taken from The United States Gazette and True American, for January 2, 1833:

"The Subscriber respectfully informs his friends and the public, that Figure 219, page 365.
his glass factories at Kensington are now in full operation." They
made not only window glass but the following hollow wares:
"Pharmacists' Vials from one half to eight oz., Patent Medicine
bottles, Mustard, Cayenne Pepper, Olive, Anchoives, Sweet Oil, Seltzer,
and Cologne Water bottles, Scotch, Rappie and Mackahow Snuff do.
Confectionery and Pharmacists' Show do. Pickling and Preserving
Jars; Half, Quart, Half Gallon, Gallon and two Gallon Bottles; Quarts,
Half Gallon and Two Gallon Demi-johns, Gil, Vitriol and Aqua Fortis
Glass Stopper Bottles; Druggists' wide and narrow mouth packing do,
from Half Pint up to Two Gallons; American Eagle, Ship, Franklin,
Agricultural and Masonic Pocket Flasks, etc.

"T. W. DYOHT,"

Dyott was a most persistent advertiser, agreed to help out country
druggists, and sell them goods, taking produce in exchange. He advertised
for broken bottles, particularly "broken Porter bottles."

Ellenville, N. Y. Ulster County. 1815. Glass-works established by
members of the West Willington Glass Co.


Gaines, Thomas. An Englishman working in a South Boston window glass
factory induced the Boston Window Glass Co. to put in a six-pot
furnace.

Gilliland. The Gilliland family seems to have been in the glass business
for several generations, as agents at least before they became producers.
In 1760, James Gilliland, dealer in earthenware, delft and glass in Wall
Street, New York, advertised the following articles on sale in his shop:
"Enamelled and cabbage teapots, cut and ground glass decanters, tum-
blers, punch and wine glasses." (Interior of ancient glass-works,
Figure 220.) About 1820 some workers from the New England Glass
Works built a factory which was run under the firm name of Fisher
and Gilliland. Plain decanters by them are still in use. In 1823 John
Figure 220, page 366.
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Hammonton, N.J. In 1820 a glass-works was established by William Coffin. In 1836 the firm became Coffin and Hay, who added bottles and flasks to the window glass department. In 1844 William Coffin died and two of his sons succeeded him, making window glass only. The business was closed about 1858.

Hart & Co., John. This name is found on a heart-shaped whiskey flask, in amber colour.

Hemmingray Glass Co. Cincinnati, Ohio. Established in 1838. They made tableware of all kinds, glass lamps, jars, demijohns, flasks, bottles, etc. The works were at Covington, Ky.

Hewes, Robert. From Boston, built glass-works at Temple, N.H., in 1779 to 1820. The works were not successful, and operated only a short time. Harvard College is said to own some of their products.

Hoare, Burns & Daily. In 1834 moved first to the South Ferry Works, Brooklyn, then to Greenpoint, and finally in 1873 to Corning, N.Y. Huestas, Samuel. A glass-blower in Philadelphia in 1850, and owner of a glass-works in Camden, N.J., at the same period. Made bottles with the Kossuth and Jenny Lind designs and always put his name on them.


Kensington Glass Works. See Dyerille. (See Figure 221, made 1825.) Kensington, Pa. In 1830 workmen from New England started a glass-works here, but they quarreled amongst themselves and the business failed.

Keene, N.H. In 1834, by Act of Legislature, the New Hampshire Glass Factory was incorporated. Closed 1850.

Keene, N.H. 1815, the Marlboro Street Factory was built to make flint glass bottles and decanters. Closed about 1842.

Lancaster Glass Works. Lancaster, N.Y. Made bottles; one so marked is a bluish aquamarine with basket design.


Lee, Mass. Glasshouse. One of the grants of land which were set off to the town of Lee was called Glasshouse. The grant was made in 1754 to John Franklin and his associates. In 1774 a further grant was made to encourage the making of "potash, cider, glass and cloth." The venture is said to have been "pecuniarily unsuccessful."

Lenox Furnace. Lenox, Mass. In 1833 the Lenox Iron Co. built a glass-works near their iron furnace at Lenox. After a short run the glass-works were burned, and immediately rebuilt, and leased to James N. Richmond, of Cheshire, Mass., in 1835. He kept them but a year, and then the Iron Company ran them successfully, making rough plate till 1862, when they were again burned. They were rebuilt, and have passed through many hands and under many names.

Louisville, Ky., Glass Works. This lettering is found on a whiskey flask, amber, with design of American eagle. The company was organized by Capt. J.B. Ford in 1875.

Lyndeboro, N.H. See South Lyndeboro.


Martin's Ferry, Va. Excelsior Co. 1850.

Maryland Glass Works. 1850. Founded by John Lee Chapman, at Lancaster and Caroline streets, Baltimore, Md.

Milford, N.J. 1800.

Millville, N.J. 1822. In 1880 there were four "green hollow ware and six white glass furnaces, run by Whitall, Tatum, and Co."


New Albany, Ind. 1859. Works were founded by Capt. J.B. Ford, and operated by W.C. De Pauw, after 1872.


New Bedford, Mass. In 1861 glass-works were started here, but were not particularly successful, and were sold in 1865 to W.L. Libby, who reopened the works under the name of "Mt. Washington Glass Works," and built a large addition to the works in 1860.


New England Glass Co., East Cambridge, Mass., 1873. These works started with a six-pot furnace, forty hands employed. In 1878, Bishop in "American Manufactures," says of this company: "Two flint glass furnaces and 24 glass-cutting mills operated by steam, a red lead furnace capable of making two tons of red lead a week, enabled them to produce every variety of fine, plain, mould and richest cut-glass, as Grecian lamps, chandeliers for churches, vases, antique and transparent lamps, etc., for domestic supply and exportation to the West Indies and South America. Virginia coal, New Orleans lead and Delaware sand and other native materials were used."

The first lead furnace in the United States is believed to be the one built by Deming Jarves of the N.E. Glass Co. in 1818 for the manufacture of lead for glass. It was a success.

In 1823 many beautiful glass vessels of various kinds were made and...
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sent into Boston. Mr. Jarvis states that in 1828 five hundred hands were employed. In 1828 the works were leased to W. S. Libby and nine years later his son moved them to Toledo, Ohio.

NEW JERSEY, PA. Glass-works built by Albert Gallatin in 1797. Moved in 1807 to the Monongahela River, 90 miles south of Pittsburgh. These were operated by Nicholson and Co. in 1814, and are recorded as being at work as late as 1832. The firm name was Gallatin and Co.

NEW LONDON, CONN. About 1860 a glass-works was established here, known as the Thames Glass Works. It operated only a short time. One bottle was made, an eagle design; reverse, anchor and scroll with the words "New London Glass Works."

NEW YORK CITY. Had two glass-works in 1732. (Tenth Census Report.)

NEW YORK GLASS HOUSE CO. This company was allowed by the Common Council of New York through the efforts of Matthew Earnest, in 1752, to construct a dock on city land for the use of the company, rent of one pepper-corn being demanded for the privilege. Previous to this they had used a dock for which the annual payment was no doubt considerably more. The following advertisement appeared for six insertions in the New York Gazette of Weekly Post Boy, for October and November, 1754:

"Notice is hereby given. That there is to be sold by Thomas Lepper, Storekeeper to the Glass House Company, living at the sign of the Duke of Cumberland, Sir Peter Warren's dock at the North River near Mr. Peter Meiser's, all sorts of bottles from one Qt. to three Gallons and upwards as also a variety of other Glass Ware too tedious to mention, any at reasonable rates; and all Gentlemen that wants Bottles of any size with their names on them, or any Chymical Glasses, or any other sort of Glass Ware, may by applying to said Lepper, have them made with all expedition. N. B. Said Lepper gives ready money for ashes and old window glass."

Thomas Lepper acted merely as agent for the Glass House goods, his business being that of keeper of a Gentleman's Ordinary at the Sign of the Duke of Cumberland.

In 1758 an advertisement in the New York Mercury reads: "This is to inform the Publick that the new erected Glass House at Newfound-land within four miles of this City, is now at work, and that any Gentlemen may be supplied with Bottles, Flasks of any sort of Glass agreeable to directions. N. B. Any person that has Oak Wood to dispose of, by bringing to the above mentioned place, will receive the New York Price upon Delivery, by Matthew Earnest."

AMERICAN GLASS FACTORIES

Ten years later the proprietor of the Glass House is spoken of as a bankrupt in a report by Gov. Moore of New York to The Lords of Trade and Plantations. The reason given was, "he was deserted by his servants whom he had imported at great expense."

According to the Census New York State had thirteen glass factories in 1813.

O'HARA GLASS WORKS. Pittsburgh, Pa. "The triumphs of pressed glass came from Pittsburgh. James B. Lyon & Co., of the O'Hara Glass Works, made for many years pressed glass only, and in 1869 made an exhibit at the Paris Exposition and took first prize for fine pressed glassware."

ONEIDA GLASS & IRON MANUFACTURING CO. They began operations at Taberg, Oneida County, N. Y., in 1809.

PITTSBURGH, PA. Flint glass house, 1831.

PHILADELPHIA, PA. Glass worker named John Tittery, said to have arrived in 1853. There was one glass-house in the city in 1820, two in Philadelphia and one each in Wayne and Gwynning counties.

PITTSBURG CUT GLASS CO. 1809. "From 1823 to 1827 when there were only a few glass-houses in Pittsburg, the ware was loaded in flats and taken down the river, usually accompanied by one of the proprietors of the factory and traded for rags, beeswax, produce and whatever could be turned into money."

PORCELAIN & GLASS MANUFACTURING CO. This was established at East Cambridge, Mass., about 1809, the press then being known as Craig's Point. In 1817 this plant was sold at auction, and bought by a new company called the New England Glass Co. In 1833 there were five furnaces with ten pots of 2,000 lbs. each and 500 hands. They moved to Ohio in the 80's. They made both flint and coloured glass. See New England Glass Co.

QUINCY, MASS. Glass House from 1750-1760. Appleton's Cyclopaedia gives the date as 1750 and 1727 the works were probably built by Germans, and that only black glass of poor quality was made.

RAVENNA GLASS CO. Made bottles.

REDFORD. On the Saranac River, in Clinton County, N. Y. Had in 1832 a large manufactory of crown glass, which was erected by John S. Foster. This was carried on with more or less success till 1852 when Figure 222, page 367.
OLD GLASS

Rockville, Pa. A glass-works was started here about 1813; window glass.

Robinson & Ensell, Pittsburgh, Pa. Started flint glass-works in 1807. Sold in 1808 to Bakewell and Page, which later became Bakewell, Pears, and Co. It was Trevor and Ensell, 1813-14. At one time the firm name was Robinson and Son. They were the first makers of "white glass."


Salem, Mass. Glass-house built in 1639 by Ananias Concklin, Obadiah Holmes and Lawrence Southwick. The next year John Concklin was allotted land also for the encouragement of the enterprise. In Dec., 1641, the town of Salem loaned the proprietors £20, the men to repay it "if the work succeeded and they were able to." In 1664, in the Colonial Records, the place is mentioned as "Glass House Field."

Saratoga County, N. Y. Is mentioned as having a glass-works at Mt. Pleasant in 1801.

Sandwich, Mass. See page 338.

Chautauqua Glass Works. Mentioned as "two miles from Philadelphia"; made glass in 1806-07, and a year later in addition to some flint glass made both green and white half gallon, quart and pocket bottles. In 1810 Philip Jones and Co. owned the works. They were closed about 1823.

Chewensville, Pa. On Perkiomen Creek, Pa. Had at one time a glass-house founded by a member of the Pennypacker family.

Chesapeake Glass Co., Morgantown, West Virginia. Made souvenir tumblers with patriotic designs in 1896.


Heets & Duffey, Pennsylvania. Made bottles in clear glass with design of sheaf of wheat. See Dyottsville.

Meiers, Jan. He was the first glass-maker on the Island of Manhattan. "Glass-maker's Street," now South William, was named so on account of the importance of his shop.

Thistle Lyndeborough, N. H. A bottle-works was started here in 1866.


It was finally abandoned. In 1831 Foster went to Redwood, Jefferson County, N. Y., and established a glass-works devoted to the manufacture of cylinder glass. In 1860 a stock company was formed, and manufacture continued under the name of the Redwood Manufacturing Co.

AMERICAN GLASS FACTORIES

Stouvenel, F. 1837. He is the first glass-cutter of whom there is a record. At one time he had a retail shop on Broadway, New York.

Sumner, John. 1809. Advertised cruets, salts, cheap cut tumblers, dishes, etc. Decanters in English flint. Factory closed in 1820.

Temple, N. H. In an article by Leonard H. Burbank, in Antiques for October, 1923, on "Glassmaking in New Hampshire," he gives a very comprehensive study of the efforts of Robert Hewes to start a glass-works at Temple, N. H. Having apparently insufficient funds to start the works himself, he endeavoured to secure a grant from the State of New Hampshire in order to take care of his workmen, thirty-two of them. They were Hessian and Waldecker soldiers who had deserted from the British Army. He also needed help to build his factory. In 1781 the Legislature authorised a lottery with which to raise $2,000 so that Hewes could carry out his project. But the lottery was a failure, and Hewes returned to his home in Boston. His workmen did not fare so well. They were "warned" to leave the town and it is said that sickness carried off a number of them. There were only two firings of glass at Temple, both failures. So it is probable that no specimens exist.


Utica Glass Works. Established at Utica, N. Y., in 1810 or 1811. They were soon abandoned and never revived.


Washington, D. C. "Old Glass House" was operated from 1807 to 1851 under different ownerships. The factory was for window glass, as the following advertisement shows, but jars, toys, bottles and pocket flasks were also made. The works were closed in 1820. The original proprietor was Jonathan Haines, who was succeeded by Porter, Shreve and Co., who continued till 1830, or a little later. The business was sold and was not finally closed till 1880. Made flasks in aquamarine, with eagle design.
OLD GLASS

WELLSBURG, VA. Had a glass-works here in 1815 for making white, flint, hollow and other glassware. In 1827 very beautiful glass was made here. In 1831 there were two flint glass furnaces at work, but in 1854 they were demolished.

WESTFORD, CONN. Business started by Westford Glass Co. in 1857. Name changed to E. A. Buck and Co. in 1863; closed in 1873.

WEST WILMINGTON, CONN. The Wilmington Glass Co., 1830-48, was operated by Gilbert Turner and Co. who also owned the works at Coventry, Conn. In 1847 the company was sold to a new concern, and it was carried on till 1872. Hollow ware and bottles, pickle bottles in aquamarine in many sizes were made. Some of the members of this company established another glass-works at Ellenville, N. Y.

WHALLEY, HUNNEWELL, and their associates, with their workmen Plumbback and Cooper, in 1787 erected a large factory in Essex Street, Boston, for the purpose of making Crown window glass. Their enterprise was unsuccessful till about 1803 when a German named Lint arrived in this country, and was employed in the factory.

WHEELING, WEST VA. First glass-works here 1821. In 1829 John and Craig Ritchie erected a flint glass-house here. It was a great success. Messrs. Sweeney put in a large flint glass-works in 1855; this was followed by the works built by Plunkett and Miller. This was bought and operated by J. H. Hobbs, Brockunier and Co. See Figure 223.

In 1864 a firm at Wheeling, West Virginia (presumably Plunkett and Miller), brought about a revolution in the manufacture of glass by making a clear, brilliant glass with the aid of bicarbonate of soda and lime, at about one-third of the cost of lead or flint glass.

WHEELING, WEST VA. 1863, Central Glass Works established here.

WHITNEY GLASS WORKS. Glassboro, N. J. See Glassboro.

WITTEN, CASPAR. Alloways-town, Salem County, N. J. 1739-1775.

WILLIAMSPORT, PA. Window glass. 1810-1811.
"American glass design, no matter how fussy, is more functional than its European equivalents." With this concept in mind, I will review the techniques of glassmaking up through the early 1800's.

The glassblowers of the 1600's-1800's were primarily concerned with making simple "bottle" window glass in aquamarine, green, olive, or amber. The glass turned the "bottle" colors due to impurities in the alkalis and silicas. This type of glass was called green glass and had a rustic appearance.

Clear glass was made at the beginning of the eighteenth century. One of the most prominent types of clear glass was called flint glass, and was made with lead.

The most basic and by far the most common method of making glass was by using a blowpipe. The craftsman would pick up the molten metal and blow a bubble to form a specific object. By blowing glass this way, a variety of shapes can be made by the craftsman. The variety varies with the skill of the craftsman and the quality of the metal. The glass could be smooth, rough, clear or flawless. Another way of changing the shape or style of the glass would be to add extra gathers of glass to the object while it was hot, or to cut the glass, or even engrave in it.

"After the American Revolution, American-made lead
glass, also called flint glass, was improved. This was a purer product than the ordinary clear glass and lent itself to cut-glass work. Cut, and engraved glass involves ornamentation achieved by grinding into a glass surface. For the best results the glass should be clear and colorless. Cut glass design most frequently has been of classical inspiration with many changes through the years, the result of technical improvements. The glass metal was purified constantly and the mechanics of cutting were simplified to allow for more complex patterns. As technical abilities improved, a good deal of cut glass was made to show off the virtuosity of the craftsman, but there are examples in which engraving is more significant than the cutting.

I discovered a piece of clear, cut glass while looking through the bagged glass taken from the Liberty Hall site. This seems to indicate that the people of Liberty Hall Academy placed an emphasis on aesthetics, since cut glass was much prettier and much more fashionable than the more common blown glass. Although this may seem of little significance, we do know, without a doubt, that these people put some emphasis on aesthetics.

I can also surmise that the people of Liberty Hall Academy were not culturally isolated. The basis for this belief lies in the fact that there was no mention of glass cutting before 1770. "Beginning with the first mention of
glass cutters in about 1770." Therefore, in the short period of time between the first mentioning of cut glass (1770), and the destruction of Liberty Hall by fire (1802), the people had access to this advanced method of glassmaking.

Window Glass

In our excavations at Liberty Hall we have found a tremendous amount of window glass. But, unfortunately we can not place a very accurate date on it. In his book, "A Guide to Artifacts of Colonial America," Hume states that although fragments of window glass are liberally scattered around most colonial and nineteenth-century domestic sites of any consequence, such glass is impossible to date within anything but the widest brackets." Usually the fragments are too small to give hints about the sizes of the panes or the method of manufacture. But if they are large enough to tell us something they can be of great help.53

One method of manufacture which was in use at the time of Liberty Hall was a method that originated in France. This method consisted of blowing a bubble, transferring this bubble from the blowing iron to a pontil rod, then while spinning the bubble, enlarging it with a wooden tool.54 "By rolling it back and forth on the arms of the craftsman's chair the open mouthed bubble spun out into a disc."55 The edge of this disc was larger than the center and had to be cut off and discarded. The center of the disc was up to one inch in
thicknes and had a scar left by the pontil iron. This central area that had been scarred was called a "bullion" or "bull's" eye and was usually thrown away, although it could be trimmed up and used in basement windows where there was no need to look through the window. These large circular pieces of glass were called "crows" and were usually exported to America in crates to be cut to size by the purchaser. In the 1700's there were not many glasshouses in America that made large pieces of window glass (crows) that would compare with foreign glass; as this excerpt will attest. "The increasing competition of foreign glass, the lack of skilled workmen, inadequate equipment, and the heavy cost of transporting raw materials and the finished product all combined to create an impossible handicap for the struggling young industry." I have included two pictures of eighteenth century windows taken from "American Glass" by Mary Harrod Northend because I thought it would be interesting to note pane sizes, number of panes, etc. This may prove beneficial if any evidence of pane structure is uncovered at Liberty Hall.
BULL'S EYE PANES IN THE WARNER HOUSE,
PORTSMOUTH, N. H., 1728

"Bull's Eye" or
"Bullion"
Glass Bottles

It is a known fact that bottles have been in use in America since Jamestown, but little is known about American bottlemaking prior to the American Revolution. We therefore assume that by and large the majority of bottles were manufactured in England. With this concept in mind, I have included a series of drawings taken from "A Guide to Artifacts of Colonial America." This series ranges from about 1652 until 1834.

The method of bottlemaking was not very advanced until the British firm of Henry Ricketts & Company patented mold-made bottles in 1822. Bottles made using this technique had mold marks, the word patent on their shoulders, and an inscription on their base. Soon after this technique was invented, it spread to the colonies and American bottlemaking was up to par with the British. We have found bases of bottles from the Liberty Hall site with inscriptions on the base. This gives more credence to the fact that inscriptions were not placed on the bases of bottles prior to 1822.

In the 1600's the practice of using glass seals to identify bottles was introduced. The earliest seals were made primarily for gentlemen and taverns, but by the late 1600's many people had their own sealed bottles. Seals were used to identify the contents of the bottle as well as to show ownership. The most common type of content seal was used on
Piermont bottles which came from Germany between 1720-1770. The seal read "Piermont Water." There were other types of English and European mineral water seals on bottles in the 1700's. One example: H EYRE PERVEYOR FOR MINERAL WATERS TO HER MAJESTY.  

There was a third type of seal used neither for content nor ownership. This seal was used on bottles made for the Army and Navy during the Georgian and Victorian periods. The seal was the initials of the ruling monarch.  

In the mid 1700's bottles were square bodied and were 8-10 inches in height. They had short, straight necks and were made of pale-blue metal. I find this particularly interesting since I found a piece of pale-blue glass while looking through the bagged glass from the Liberty Hall site. If this glass did come from a bottle of this type, the hypothesis stating that the inhabitants of Liberty Hall were culturally isolated can be attacked. If this type of bottle was first made around 1850, then the people of Liberty Hall were not culturally isolated, since they did have this type of bottle only a few years after its invention.  

Many people think that these bottles were of American manufacture, but since many bottles of this type have been found in England, this evidence suggests otherwise.  

**Glass Pharmaceutical Bottles**  

There were many deep or blue-green vials common to
colonial America in the 1700's. This type of medicinal bottle did not originate until the mid 1600's. When these bottles were first made they were extremely weak in the shoulder and were even shaped like cones, hence, the name "steeple" bottles. As they evolved this "steeple" shape gave way to a more angular shape, with a conical basal kick. The broad, flat lip eventually gave way to a smaller, more rounded one. "By the mid-eighteenth century the same types of vials were beginning to be made in clear glass, and these became increasingly common as the century drew to its close. Molded vials were introduced in the mid 1750's. Nearly all of these were made of clear metal. The earliest known molded vial was made for Robert Turlington's Balsam of Life in 1750. Towards the end of the eighteenth century square-sectioned bottles with molded inscriptions were fairly common. These bottles were clear and had a diagonal mark across the bottom. I have included a series of drawings of pharmaceutical bottles from the early 1600's til the mid 1800's. These drawings were taken from Hume's book "A Guide to Artifacts of Colonial America."
Conclusion

In conclusion, I would like to say that this paper was written in an informative fashion so that I could provide a clearer picture of American glass from its origin to its use in the American environment at the time of Liberty Hall. By giving an introductory history of glass, American glass, techniques of manufacture, window glass, glass bottles and pharmaceutical bottles the future student of Archaeology 377 can have a starting point if he chooses to do research in any of these specific areas. Hopefully, the pictures of the bottles, vials, windows and the list of American glass houses will be of help when someone discovers a glass artifact at the Liberty Hall site.

I have addressed the hypotheses previously stated pertaining to Liberty Hall Academy. I provided evidence that this institution was not culturally isolated and that there was some interest in aesthetics.

One final concept that will hopefully put the role of early American glass in the right perspective: early American glass was functional more than artistic or fashionable. Using the evidence in this paper, I believe that the role of early American glass at Liberty Hall and throughout America was a functional one.
As well as the aspects of glassware covered previously, another aspect worth investigating is the scientific one related to oxidation. I feel that by focusing more attention on this aspect, the archaeologist can reveal a more factual account of window glass as it is related to Liberty Hall itself--Structure Two.

Two other areas of possible research would be: 1) study of aging in terms of the surface decay of buried or submerged glass,\(^6\) 2) "An investigation of the way in which plants absorb the elements in the soil in which they grow."\(^7\)
BIBLIOGRAPHY


Webster's Dictionary.
FOOTNOTES


3. Ibid., pp. 209-212.

4. Ibid.

5. Ibid.

6. Ibid.

7. Ibid., p. 213.

8. Ibid.


10. Ibid., p. 215.


12. Ibid., pp. 220-221.

13. Ibid., p. 224.


15. Ibid., pp. 244-245.


17. Ibid., pp. 248-249.

18. Ibid., pp. 220-250.

19. Ibid., p. 252.

20. Ibid.

21. Ibid.

22. Ibid.

23. Ibid.
25. Ibid., p. 280.
26. Ibid.
27. Ibid.
28. Ibid., p. 281.
29. Ibid.
30. Ibid., p. 282.
31. Ibid., p. 308.
32. Ibid., p. 309.
33. Ibid.
34. Ibid.
35. Ibid.
36. Ibid., p. 310.
37. Ibid., p. 312.
38. Ibid., p. 313.
39. Ibid.
40. Ibid.
41. Ibid., p. 314.
42. Ibid.
43. Ibid., p. 315.
44. Ibid., p. 316.
45. Ibid.
47. Ibid., p. 11.
48. Ibid.
49. Ibid., p. 12.
50. Ibid.
51. Ibid., pp. 81-82.
52. Ibid., p. 81.
54. Ibid., p. 234.
55. Ibid.
56. Ibid.
57. Mary Harrod Northend, American Glass (New York: Dodd, Mead, 1926), p. 84.
58. Hume, p. 60.
59. Ibid., pp. 60-61.
60. Ibid., p. 61.
61. Ibid., pp. 61-62.
62. Ibid.
63. Ibid., p. 62.
64. Ibid., p. 74.
65. Ibid.
66. Ibid.
67. Ibid.
68. Ibid., p. 75.
70. Ibid., p. 622.