

French fold blank lithograph note card. Card opens inside and is blank. The back of card has biography for the scene titled "Baron Stiegel, Glassmaker of Manheim." Card comes with original envelope.

STIEGEL GLASS MANUFACTORY

On this site, from 1763 to 1774, "Baron" Henry William Stiegel made the glass for which he is famous. Erected in 1763, the building was torn down in 1813.

Henry William Stiegel's American Flint Glass Manufactory

James Duguid and John De Caro

Henry William Stiegel was a notable entrepreneur of his time. From his arrival in Philadelphia in 1750 to his close of business in 1774, he owned more than 7,000 acres of land, as well as stores, a mill, a malt house, two iron works, and three glass works. His iron works included Charming Forge and Elizabeth Furnace.

The glass works included one at Elizabeth Furnace and a second and third at Manheim. This third glassworks, the American Flint Glass Manufactory, is where the glass in this article was made. The glass blowers at Manheim melded German, English, Irish, and Italian traditions that led to the development of the Stiegel pattern-molded pocket bottles. This blend of traditions of glass blowing led to the development of bottles and blown glass that can be truly identified as early American glass.

Stiegel was a consummate glass manufacturer, but he was also a force in economic development. With partners, he laid out the town of Manheim, which is near Lancaster, Pennsylvania. He marketed his products widely in local stores in Pennsylvania and stores as distant as Philadelphia, New York, Baltimore and Boston.

Most of the Stiegel bottles are in non-lead glass (soda-lime glass), and they occur in over 17 different patterns that are usually in shades of amethyst. A discussion of the Stiegel pocket bottles, along with pocket bottles from Wistarburgh and New Bremen, can be found in *Speculation on Early American Pattern-Molded Pocket Bottles*, complete



Stove, Elizabeth Furnace, 1769

with color plates of the bottles (Duguid, 2018). Overall, the first Manheim glass and the Elizabeth works were moderately successful. It is likely that most of the soda-lime glass pocket bottles made by Stiegel were blown at the first Manheim glass works.

In 1764, Stiegel traveled to England, which was an enormous undertaking at that time. This trip is documented in the account ledgers of Charming Forge. About a year later, he shipped bariron to London from Charming Forge, which was likely arranged through contacts he made during his trip. Before the trip, he had begun making glass at Elizabeth Furnace (Hunter, 1950). He was determined to make glass products as good as those imported from England, and this trip was likely to gather information about the manufacture of flint glass, a form of low-lead-content glass (McKearin and Wilson, 1978).

In 1767, the Townsend Acts, which were intended to curtail colonial industry, levied import duties on manufactured goods, including glass that was sent to Colonial America from England. In response, colonial merchants signed articles of non-importation, and by the spring of 1769, English glass was in short supply. Stiegel seized this opportunity; he expanded his production and distribution, hired English glass blowers, and constructed his second glass works at Manheim (Palmer, 1993).

Stiegel began constructing his second Manheim glass works, the American Flint Glass Manufactory in early 1769, and by the fall of that year, it was likely in full production. At this glass works, he made a few flint glass pocket bottles. However, they are extremely rare. The reason for their rarity is likely that he had an ample number of soda-lime glass pocket bottles for sale from the first Manheim works. Consequently, he made fewer flint glass pocket bottles.

At the American Flint Glass Manufactory, his production began with a new set of molds instead of using the existing molds at the first Manheim works. This is probably because the molds at the first Manheim works were in constant use. The new molds were likely made at Elizabeth Furnace and finished by the blowers. The patterns of these new molds are 16-vertical ribs, 20-vertical ribs, 16-diamond and 18-diamond.

The colors of items blown in these molds are as follows: 16-vertical rib in green shading to dark amber in the neck; 20-vertical rib in clear and clear with a green tint; 16-diamond in yellow-green, and 18-diamond in black glass (dark amber), black glass (dark purple), yellow shading to amber in the neck, aqua, green, and clear. The 18-diamond flasks and the only known 18-diamond tumbler were blown in the same 18-diamond mold. Other patterns and colors were likely made and are waiting to be discovered.

With permission from the land owner, John De Caro excavated numerous shards of glass from the second Manheim site in 2005. The shards of flint glass were in 16-vertical rib, 20-vertical rib, and 18-diamond. The colors of the shards were yellow shading to amber, clear, clear with a green tint, aqua, and light green. Since then, a few flint glass bottles in these patterns have been identified.

Some flasks from Union Glass Works, Philadelphia, and Keene,

Figure 1: A dark purple 18-diamond flask. Note the rather wide mouth of this bottle, which is characteristic of all of the flint glass bottles.

Figure 2: Base of the same 18-diamond flask above, which is characteristic of all of the bases of the 18-diamond flint glass bottles.







Figure 4:18-diamond aquamarine bottle.

New Hampshire, have unavoidable low-level concentrations or traces of lead, but the common bottle glass from these works is nonlead soda-lime glass. Stiegel went to great lengths to produce his Diamond Daisy and associated soda-lime glass flasks in a traditional Germanic non-lead glass. He also knew that flint glass was far more durable than the traditional soda-lime glass.

The shards found at the Stiegel Flint Glass Manufactory, as well as waste glass, all appear as common bottle glass until they are tested for lead. When tested, all of the shards with no intermixed soda-lime glass have a high and highly variable lead concentration. The reason for the very high lead content is speculative. After the Townsend Act, Stiegel had a seemingly endless surplus of litharge, pure red lead. With the addition of new blowers and new molds, Stiegel would have either had to sell the red lead or use it. The proof that he decided to use it is the fact that the tumbler and the flasks he produced are all loaded with lead. Also, if he were to run out of red lead, he could always buy wagon loads of raw flint cullet.

Stiegel was on the brink of failure but had the heart to keep going and simply put the red lead he owned to use. Stiegel, in keeping with his personality, had to make the best flint glass money could buy. Examples of this flint glass are shown in the figures included.

A dark purple 18-diamond flask is shown in **Figure 1**. Note the rather wide mouth of this bottle, which is characteristic of all of the flint glass bottles. Figure 2 shows the base of the same 18-diamond flask, which is characteristic of all of the bases of the 18-diamond flint glass bottles. Figures 3 and 4 show 18-diamond bottles in aqua and green, respectively. Figure 5 shows a yellow 18-diamond flask that shades to amber in the neck, along with a matching shard that was excavated at the site. Figure 6 shows the only known 18-diamond tumbler, which was blown in the same mold as all of the 18-diamond bottles.

The reason that the flint glass from the American Flint Glass Manufactory has remained unknown for so long is simply that no one ever tested the shards and compared them with whole examples. We can thank John De Caro for his work in making this discovery.

The construction and operation of the American Flint Glass Manufactory consumed all of Stiegel's capital and all the money he could borrow. The economic downturn that preceded the Revolutionary War caused many of the Colonial glass works to fail along with all of Stiegel's operations. The financial strain for Stiegel was too great, and he was forced to close all operations in 1774. He marks this closure with the simple statement in his account ledger on May 7, 1774, "Glass House shut down" (McKearin and Wilson, 1978).

References:

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Hunter, Frederick William, 1950, Stiegel Glass, Dover Publications.

McKearin, Helen and Wilson Kenneth M., 1978, American Bottles and Flasks and their Ancestry, Crown Publishers Inc., N.Y.

Palmer, Arlene, 1993, Glass in Early America, Winterthur Museum Publication.



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Figure 5: Yellow 18-diamond flask that shades to amber in the neck, along with a matching shard that was excavated at the site.



