The Strange Case of the Aetna and Arsenal Glass Works
by Bill Lockhart

[Much of the study below was originally published in Lockhart 2010]

The histories of these two glass houses have been confused and conflated by earlier researchers – a situation that Lockhart (2010) addressed. The following study will be a simplified version of the earlier article.

Histories

Aetna Glass Works, Lawrenceville (Pittsburgh) (1856-?)

Hawkins (2009:10-11) discovered an ad in the 1856 Pittsburgh city directory for the earliest (at least currently known) existence of the Ætna Glass Works (spelled with the diphthong in the ad). William Davidson & Co. (William. Davidson, H. Edwards, and Samuel Stewart) operated the Ætna Glass Works in 1856. The group advertised themselves as “Manufacturers of & Dealers in Vials, Bottles, and all kinds of Green and Flint Glassware, Window Glass &c.” The location on the ad was “No. 28 Market Street” – although that address probably indicated an office rather than a factory (Figures 1 & 2). Unfortunately, we have no further evidence for this company, although it had evidently closed by 1865, when the Arsenal Glass Works occupied that location.
Arsenal Glass Works, Lawrenceville (Pittsburgh) (1865-1869)

According to the 1865/1866 city directory, the Arsenal Glass Works, operated by C. Jeremy & Co., was at the Borough and Chestnut address (Figure 3). The firm apparently became Jeremy, Heitsman & Co. by 1867 and operated on Lafayette Alley in Lawrenceville (Figure 4). Jeremy, Heitsman & Co. (Charles Jeremy and, probably, George Heitsman) continued to be listed until 1869 (Hawkins 2009:11; Innes 1974:178; Roller 1996; 1998a:14). See Table 1 for a chronology of the company.

William Rehen apparently owned the Chestnut lot, with Jeremy leasing the factory. The sale of the Chestnut property by Rehen to William F. Modes in July 1866 probably prompted Jeremy’s departure from the location. Jeremy subsequently sold the Smallman and Charlotte streets lot to Modes and Joshua Nichols in October of that year. The sale of the Smallman and Charlotte lot may have financed the building of a new plant on the Lafayette Alley property. It is also likely that the partnership with George Heitsman, a local glass blower, was (at least in part) financially motivated (see Hawkins 2009:11; McDougald & McDougald 1990:106; Roller 1996; 1998a:14).

<table>
<thead>
<tr>
<th>Dates</th>
<th>Owner</th>
<th>Operator</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1865</td>
<td>William Rehen</td>
<td>Charles Jeremy &amp; Co.</td>
<td>Chestnut &amp; railroad</td>
</tr>
<tr>
<td>1867-1869</td>
<td>Charles Jeremy*</td>
<td>Jeremy, Heitsman &amp; Co.</td>
<td>Lafayette Alley</td>
</tr>
</tbody>
</table>

* Charles Jeremy owned the lot. Jeremy, Heitsman & Co. probably owned the buildings.
Aetna Glass Works, Lawrenceville (Pittsburgh) (1866-1869)

On July 19, 1866, William F. Modes purchased a lot from William Rehen for $1,000. This was a “lot on which is erected a Building for the manufacture of Glass.” This indicates that a glass plant already existed when Modes bought the property. The property was in Lawrenceville, along the Allegheny Valley Railroad (Hawkins 2009:11; Roller 1996; 1998a:14). While this identification is not absolute, it is virtually certain that this was the Chestnut St. lot and the plant was the former Arsenal Glass Works, recently vacated by Charles Jeremy & Co.

An 1866/1867 atlas of Lawrenceville illustrated the Chestnut St. property with the notation “Modes, Ryrie & Co.” (Figure 5). Although no researchers have reported a listing for this firm, Roller found “T.B. Ryrie, glassblower” in the 1865/1866 city directory (McDougald & McDougald 1990:106; Roller 1996; 1998a:14). Thus, Modes appears to have taken on Ryrie as a partner shortly after his purchase of the property in 1866. Neither the firm nor Ryrie appeared in any of our other sources. Modes and Nichols (see Modes & Nichols below) were listed as the proprietors of the Aetna Glass Works in 1868, suggesting that Joshua Nichols bought out Ryrie in late 1867 or early 1868 (Roller 1996).

Although I have been unable to find an explanation, Lorenz & Wightman leased the Aetna Glass Works from at least 1867 to 1868, possibly as late as early 1869. Roller (1998a:13-14) cited an ad from the July 8, 1867, issue of the Pittsburgh Evening Chronicle for patented fruit jars at the showroom of Lorenz & Wightman. The ad also noted that the jars were available at the Arsenal Glass Works “foot of Chestnut Street, Lawrenceville.” The ad was explained by a glassworker’s reminiscence in 1909:
In 1865 to 68, inclusive, a company of bloweres (sic) operated a factory at the foot of Forty-second street, in Lawrenceville, on the site of the present Phoenix Roll Works, known as Modes, Ryrie & Co. Lorenz and Wightman took possession of this plant in 1868 and operated it for several years. . . (National Glass Budget 1909:11).  

The 1869/1870 edition of the city directory listed only W.F. Modes as the proprietor of the Aetna Glass Works at Chestnut (Figure 6). The plant made “black & green glassware, druggists’ ware, bottles, demijohns, porter, ale and soda bottles” as well as fruit jars, including the “Victor” (self sealing) and the “Triumph” (grooved-ring wax sealer). The works and office were located at “Forty-Second (late Chestnut) St” (Hawkins 2009:13; McDougald & McDougald 1990:106; Roller 1996; 1998a:13). The ad must have been submitted shortly before the dissolution of the company.  

The McDougalds noted that Modes sold the factory in 1869 to Bagley, Young and Co., who operated the plant as the Phoenix Roll Works (see Figure 2). This is probably conjecture on their part, although it is likely correct. The 1872 Hopkins map showed Bageley, Young & Co. with the Phoenix Roll Works at that location. The plant remained there until at least 1927 (McDougald & McDougald 1990:106; Roller 1996; 1998a:13).

The closure of the Aetna Glass Works almost certainly occurred in 1869. In May 1869, both Modes and his wife, Mary Kate, were buying (then selling) land in Beaver Falls, Pennsylvania, to build the factory of the Beaver Falls Glass Co. Modes remained involved in the plant until 1879 (Hawkins 2009:13; Roller 1998b). See Table 1 for a chronology of these firms.

---

1 Although this 40-plus-year-old memory was slightly off on the Lorenz & Wightman years, all of the other details describe the Aetna Glass Works quite accurately.

2 For a directory to have been printed in 1869, it could only have information for that year. Each of these double-year directories in effect leave the second year as a blank spot in the historical record.
The involvement of Lorenz & Wightman brings up an interesting speculation. Modes bought the property alone in 1866, but Ryrie apparently also became involved in that year. Lorenz & Wightman leased the factory by the next year. We currently have no way of knowing who actually operated the plant in 1866. It is therefore possible (even likely?) that Lorenz & Wightman leased the factory from Modes and his partners from the ejection of Jeremy in 1866 to some point in late 1868 or even early 1869. The withdrawal of Lorenz & Wightman may have caused Modes to sell the property in 1869. Table 2 presents a chronology of the Aetna Glass Works.

Modes & Nichols, Lawrenceville (Pittsburgh) (1866-1868)

The picture becomes more complex with the purchase of another property in Lawrenceville. On October 27, 1866, William F. Modes and Joshua Nichols bought a lot on Charlotte and Smallman streets from Charles Jeremy for $5,000. Modes sold his share (2/3 of the property) to Christian Modes (presumably a relative) for $4,000 on January 11, 1867, three months later. The 1868 city directory had the following relevant listings:

- W.F. Modes, of Modes and Joshua Nichols, Allen St. near river, Lawrenceville.
- Modes and Nichols, Aetna Glass Works, Chestnut near river, Lawrenceville.
- Christian G. Modes, laborer, Allen St. near river, Lawrenceville.

Christian was listed as a laborer for the Allegheny Valley Railroad the following year (Roller 1996).

Extending north/south, Allen St. was close to the Charlotte and Smallman location (Figure 7). In fact, Charlotte St. dead ended into Allen at its northeastern extreme. The relationship between the lots is currently unknown, and I have been unable to discover anything about the nature of the firm. Modes and Nichols may have only owned property together – rather than operating a business.

Figure 7 – Allen St. in relation to the Lafayette Alley vicinity (1872 Hopkins Atlas)
A final detail is unimportant from a glass aspect but is a loose end. It is very unclear whether Modes & Nichols was composed of William Modes or Christian Modes. Of course, when William sold his interest to Christian, that may have created a reorganization of the group. Since Modes & Nichols was listed as owning the Aetna Glass Works, the firm may have included both William and Christian by that time. The company apparently disbanded in 1868, although it may have extended into early 1869.

Table 2 – Locations, Owners, and Operators of the Aetna Glass Works

<table>
<thead>
<tr>
<th>Dates</th>
<th>Owner</th>
<th>Operator</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1856</td>
<td>Wm. Davidson &amp; Co.</td>
<td>Wm. Davidson &amp; Co.</td>
<td>28 Market St.</td>
</tr>
<tr>
<td>1866</td>
<td>William F. Modes</td>
<td>William F. Modes*</td>
<td>Chestnut &amp; railroad</td>
</tr>
<tr>
<td>1866</td>
<td>Modes &amp; Ryrie</td>
<td>Modes &amp; Ryrie**</td>
<td>Chestnut &amp; railroad</td>
</tr>
<tr>
<td>1867</td>
<td>Modes &amp; Ryrie?†</td>
<td>Lorenz &amp; Wightman</td>
<td>Chestnut &amp; railroad</td>
</tr>
<tr>
<td>1868</td>
<td>Modes &amp; Nichols</td>
<td>Lorenz &amp; Wightman</td>
<td>Chestnut &amp; railroad</td>
</tr>
<tr>
<td>1869</td>
<td>William F. Modes</td>
<td>William F. Modes</td>
<td>Chestnut &amp; railroad</td>
</tr>
</tbody>
</table>

* This identification is uncertain. Modes may have taken Ryrie as a partner immediately after he bought the lot. The business may have only operated under the partnership.
** As noted in the text, Lorenz & Wightman may have operated the plant from 1866 to 1868 or even early 1869.
† Nichols may have been Modes’ partner by this time.

Containers and Marks

A.G.Co.

Knittle (1927:441) attributed the AGCo mark to the Arsenal Glass Co., Pittsburgh. Toulouse (1971:39) followed Knittle but dated the mark (probably without ever seeing it) ca. 1865 to 1868, likely based on the dates for the Arsenal Glass Works. However, Toulouse noted that “no other reference has been found.” Jones (1966:15) agreed with the Arsenal identification and dated the mark “1755-1865 - - ??” then added, “also Avis Glass co, Avis, PA 1906-1910.”

Since neither Arsenal Glass Works or Aetna Glass Works was ever listed as “Glass Co.,” this attribution is almost certainly incorrect. The A.G.Co. logo was almost certainly used on
flasks by the Atlanta Glass Co., although there is a chance that it was also used by the Annapolis Glass Co. The mark was also used on soda, beer, and a few other bottles, but most of those were far to late to have been made by either Arsenal or Aetna. For a complete discussion, see Lockhart and Teal (2011) or the chapter on AGCo.

**A.G.W. (1865-1869)**

Although the A.G.W. mark may have been used by the Alloa Glass Works in Scotland (Toulouse 1971:41), it was certainly used by the American Glass Works at Pittsburgh (ca. 1897-ca. 1901) and the American Glass Works, Inc., at Richmond, Virginia, and Paden City, West Virginia, from 1908 to ca. 1935 (Lockhart et al. 2012; 2013). However, a single flask offered at an eBay auction did not fit either venue.

![Figure 8 – Flask with AGW basemark (eBay)](image8)

The shoo-fly flask from the eBay auction was aqua in color and mouth blown. The applied finish consisted of a single ring offset below the lip or rim – often called a champagne finish, but with a rounded ring on this flask (unlike the squared rings on champagne bottles. The base was either a key or a post bottom (likely a key, but the photo was not distinct enough to be certain). Flasks made by the Arsenal Glass Works (see below) had both types of bases. The “A.G.W.” mark was embossed across part of the base seam (Figures 8-10). When asked, Bill Lindsey dated the flask between the late 1860s and early 1880s – based on manufacturing attributes alone – and noted that the characteristics were especially known on bottles made in Pittsburgh.

![Figure 9 – Closeup of finish of AGW flask (eBay)](image9)

This date range did not fit with our knowledge of the American Glass Works of Pittsburgh, a known user...
of the logo. Prior to ca. 1886, American Glass was almost exclusively devoted to the production of window glass. I have found no data to suggest that American Glass made any bottles prior to the reorganization as the American Glass Works, Ltd, ca. 1886.

However, the dates fit quite well with either the Arsenal Glass Works, a known maker of flasks during the 1865-ca. 1869 period, or with the Aetna Glass Works (ca. 1856; 1866-1869). In its 1869 ad, Aetna made black & green glassware, druggists’ ware, bottles, demijohns, porter, ale and soda bottles, and fruit jars. Although neither flasks nor any form of liquor container were specifically noted, their manufacture was possible. Because Arsenal was a known manufacturer of flasks, it is more likely that flasks marked with A.G.W. were made by the Arsenal Glass Works between 1865 and ca. 1869. We cannot, however, fully discount the Aetna Glass Works as a possible user of the mark.

A.G.Wks.L.

This mark was identified by Innes (1976:216, 229) as used by the Arsenal Glass Works on fruit jars. He noted that the company also made flasks but did not directly associate the mark with any flask. Innes very likely confused this mark with the A.G.W.L. mark used on wax-sealer fruit jars, and “Wks.” may have been a typographical error. We have not found any examples of this mark.

A.G.W.L. / PITTS, PA

There is no question that the A.G.W.L. mark was used by the American Glass Works, Ltd., Pittsburgh, on a variety of bottles and flasks between ca. 1886 and ca. 1897. However, none of these other containers included any embossed reference to Pittsburgh (e.g., PITTS, PA). The Pittsburgh designation only appeared on grooved-ring, wax-sealer fruit jars.

Toulouse (1969:16; 1971:43) attributed this mark (with “PITTS PA”) to the American Glass Works, Ltd. (Pittsburgh) and showed it in the form of AGWL in a downward arch above PITTS PA in an upward arch. Innes (1974:178) attributed the A.G.W.L. Pitts. Pa. on a “preserving jar” to “the mysterious Arsenal Glass Works” (correctly identifying the mark in this earlier work – see A.G.Wks.L. above). Roller (1983:7) described the same jar and added:
It seems likely that these jars were made by the American Glass Works, Ltd., of Pittsburgh, who advertised fruit jars among their wares in the 1880s and 1890s. But, the initials could stand for either Arsenal Glass Works, Lawrenceville (part of Pittsburgh) or Aetna Glass Works, Lawrenceville. Both of these works advertised fruit jars during the 1860s, with the latter works listing “Grooved Ring Wax Sealing” jars.

Creswick (1987:4) showed a drawing of a grooved-ring, wax-sealer fruit jar with “A.G.W.L. (arch) / PITTS, PA. (inverted arch)” embossed on the base (Figure 11). She dated the jar ca. 1866-1880 and attributed it to the American Glass Works. All of the jars in our sample (eBay and Jay Hawkins collection) had a smaller capital “A” in “PA” and either lacked punctuation or had very weak punctuation between the initials.

Roller (1998a:13) referenced the A.G.W.L PITTS, PA mark, citing the jar number from his earlier (1983) book and Creswick’s number for the same jar in his discussion of the Arsenal Glass Works – indicating that he still considered Arsenal or Aetna as a possibility as the user of the mark. Aside from Innes unsupported ascription of the AGWL mark to the Arsenal Glass Works, I can find no other reference to fruit jar manufacture by that company.

While there is strong reference to wax-sealer fruit jars in the 1869 ad for the Aetna Glass Works, no other direct reference exists (at least that I can find). In comparison, the American Glass Works, Ltd., advertised fruit jars from 1887 to 1896. In addition, if the “L” equals “Lawrenceville,” why would “PITTS” be included? As a counter-argument, however, the flasks with the entire Arsenal Glass Works name included a “PITTS PA” designation. See the Discussion and Conclusions section for further discourse.
McKearin and Wilson (1978:175-176, 639) discussed and illustrated three flasks embossed on the front with “ARSENAL / GLASSWORKS / PITTS PA” in an oval frame below an eagle. The reverse of these flasks was embossed with the illustration of a prospector. There is virtually no question that these flasks were made by the Arsenal Glass Works at some point between 1865 and 1869. Eatwell and Clint (2001:149-151) illustrated all three variations of the flasks, one in quart size, two in pints, noted in the McKearin and Wilson numbering system as GXI-13, GXI-14, and GXI-15 (Figures 12-14).

Eatwell and Clint (2001:138) also noted basal characteristics. Although each base of the three Arsenal Glass Works flasks had a slightly different style, the bases of the two pints were both what is often termed “key” bottoms. These had a mold line that extended across the long axis of the oval base with a semicircular bend in the center. The quart base had a post bottom.

Although the figure on the reverse resembles a hobo from a later period of history, Freeman (1964:100) and McKearin & Wilson (1978:496-499) used the word “prospector” to describe him. Eatwell and Clint (2001:133, 138) discussed this figure and identified it as a prospector, miner, gold-seeker, or traveler.

During the mid-1800s, this depiction of a man with a stick over his shoulder and tools or belongings in a bag tied to the stick was the symbol of the “traveler” walking his way to the gold fields.
Eatwell and Clint (2001:148-149, 151-152) also noted that Wm. McCully & Co. used the same molds to make its version of both pint flasks (Figures 15 & 16). It seems likely that McCully purchased the molds when Arsenal ceased operations. The name “ARSENAL” was peened out, and “W.McC&Co” was engraved in its place. McCully likely made the flasks shortly after Arsenal closed.

Eatwell and Clint (2001:138) also included a rarity scale. According to their system, all three Arsenal flasks were rated “scarce 36-75 known.” The McCully flasks, however, were “rare 25-31 known.” Unfortunately, this could be interpreted in two ways: 1) McCully made the flasks first (older, less likely to survive); and 2) McCully just made less flasks.

TRIUMPH Nº. 1 (or 2 or 3) (ca. 1869)

Roller (1983:362) reproduced the 1869 ad by the Aetna Glass Works that included “TRIUMPH” jars. Although “TRIUMPH” was offset from “GROOVED RING” in the ad by separate quotation marks, the jars are noted as having a grooved wax seal. Each of these jars was made in a three-piece mold and had a distinct shoulder that tapered up to the grooved-ring finish. “TRIUMPH / Nº 1” (or Nº 2) was embossed on the shoulder.
Creswick (1987:209) added a “N 3” and illustrated the jars, also citing the Aetna Glass Works as the maker (Figures 17 & 18). She added that the “shoulder was pressed down while hot to form the groove.” Roller (2011:521) illustrated the jar with a high-quality photo but added little information.

Modes only operated the Aetna Glass Works alone for a very short period – no more than a year, possibly a much shorter period. This brings up questions and gives cause for speculation. Given the short period of production by Modes, could he have made three separate numbers? Or do the numbers only indicate three different molds? Was Modes the only manufacturer of the Triumph jar? Although the jar was not one listed in the 1867 Lorenz & Wightman ad, could Modes have inherited the jar from them?

Three other jar types – Union, OK, and C.K. HALLE & CO. – were very similar, although none of these were ever mentioned in Aetna or Arsenal ads. Each of these jar types was produced in a three-piece mold, had an upwardly tapered shoulder with no (or very little) neck, and was topped with hand tooled, grooved-ring, wax-sealer finishes. Each of these should be considered in this analysis.

**Union No. 1 (or 2 or 3 or 4)**

At least superficially, these closely resemble the Triumph series of jars. The combination of a three-piece mold, upwardly tapered shoulder, grooved ring, and the use of “No. x” immediately below the name seems likely to be more than just a coincidence. Creswick (1987:211) described the finish of these jars as “wax seal groove, with lugs or ears on each side of neck.” This addition of lugs to hold on some kind of lid (almost certainly metal) is a likely improvement on the Triumph (Figure 19).

Roller (2011:525) described the same three-piece mold process with grooved-ring, metal cap, and tooled groove finish. He noted that the “jars were very similar to the ‘PEORIA’ stoneware ‘tomato jars’ used for many years.” He agreed that the lugs were in place “to hold down the metal lid.” Roller also identified five variations of these jars:
1) UNION / Nº 1
2) UNION / Nº 2
3) UNION / Nº 3
4) UNION / Nº 3
5) UNION / Nº 4

Each embossing of “UNION” and the number was placed on the shoulder. Because the jars were blown into the dip mold, then lifted out, any embossing made on the body would have been erased during the removal (Figure 20 & 21).

Creswick (1987:211) suggested that the manufacturer was “Union Flint Glass Works, Pittsburgh, Pa. for J.P. Smith & Co. (or J.P. Smith Son & Co.) Pittsburgh, Pa. circa 1868-1885.” As often was the case, she did not explain why she reached this conclusion, although she almost certainly chose the Union Flint Glass Works because of the “UNION” name on the jar. In discussing the OK jar (see below), Creswick (1987:166) stated that J.P. Smith & Co., advertised OK jars. Although she added the dates when Smith (a glassware jobber) was open (ca. 1868-1885), she did tell us when the ad was placed. She also failed to state whether Smith also advertised Union jars or if she made the inference based on the similarity between the two jar types. However, J.P. Smith & Co. was established in 1862, so it would have been in business during the full tenure of the Aetna Glass Co. (Thurston 1876:242).

John Hay and William McCully established a plant at Pittsburgh in 1829. The two parted company ca. 1832, and the factory was then operated by a series of owners. By 1849, Wallace, Lyon & Co. had gained control, with James B. Lyon & Co. taking change in 1852 (Creswick 1987:285; Hawkins 2009:400-401; Pittsburgh City Directory 1888; Welker and Welker
1985:97). It is uncertain how long the plant operated under the title of the Union Flint Glass Works. Virtually all advertising, however, was placed in the name of the operating company (e.g., James B. Lyon & Co.) – not in the name of the factory.

The timing is almost certainly irrelevant in this context, however. Lyons and probably most of those who preceded him made tableware. The few containers offered were high quality table bottles, including toilet bottles of amber glass, bitters bottles, and water bottles (Creswick 1987:280; Innes 1976:67, 433, 486). It is highly unlikely that the plant ever made common fruit jars or other “green” (i.e., aqua) common bottles.

The editors who revised the Roller book (Roller 2011:525) suggested that William F. Modes may have “made these jars since he sold similarly shaped ‘TRIUMPH’ jars . . . in 1869 as well as other shapes of UNION jars.” This suggestion almost certainly indicated the UNION jar series made by Modes at the Beaver Falls Glass Co., started by Modes in late 1869, as soon as he left Pittsburgh.

This series of jars was made in the more typical two-piece mold configuration, although they were embossed “UNION / No 1” on the upper part of the body. Roller listed No 1, N° 2, N° 3, No 4 as well as two variations embossed “N1” below UNION, one with “5” below UNION, and one with three dots below UNION. A variation marked “N1” was also embossed “BEAVER FALLS GLASS Co. BEAVER FALLS, PA.” on the base.

OK

Roller (1983:268; 2011:397) noted a jar embossed “OK” on the tapered shoulder and described it in almost the same terms that he used for the Triumph and Union jars. Creswick (1987:166) illustrated the same jar but had little information (Figure 22). A major feature – distinct from the other tapered jars – was “a rib below the groove ring finish.” We describe the “rib” as more of a ring around the base of a very short neck that rose slightly.

Figure 22 – OK jar (Courtesy of North American Glass)

Figure 23 – Finish of OK jar (Courtesy of North American Glass)
above the tapered shoulder of the jar (Figure 23). She noted that the OK jars were “advertised and sold by J.P. Smith & Company, glass jobbers in Pittsburgh, Pa., c. 1868-1885” (actually established in 1862 – see above). Creswick (1987:167) also described and illustrated an identical jar without the “O.K.” embossing.

**C.K. HALLE & C°**

Roller (1983:508; 2011:227) described three variations of a jar with essentially the same embossing (with very minor differences. The variation of interest to us was embossed “C.K. HALLE & C° (arch) / 121 WATER S° / CLEVELAND O. (both horizontal)” on the shoulder. The configuration of the jar was again very similar to the ones described above. In fact, it was virtually identical with the Vicrory series. According to Creswick (1987:77) and McCann (2012:170), C.K. Halle & Co. was in business from 1866 to 1870. Creswick illustrated the jar (Figure 24).

**VICTOR**

The Aetna Glass Works 1869 ad also included the “VICTOR Self Sealing” jar. The only Victor jar, shown in both Roller (1983:371-372) and Creswick (1987:214) was patented in 1899 and 1900 – far too late to be the jar in the Aetna ad. The shape of the Victor jar made by Aetna is unknown; the jar likely had no embossing.

**W.F.M.**

Creswick (1987:148) illustrated a jar embossed “MASON.S (slight arch) / 2 / PATENT NOV 30TH / 1858 (all horizontal)” on the front and “W.F.M.” on the base. She also noted that a variation of this jar had an unmarked base. Leybourne (2001:266) noted two minor variations, one with “W.F.M. (plated out) with mold #214.” Whitten (2010) identified the mark as belonging to the “Aetna Glass Works (William F. Modes, Proprietor), Pittsburgh, PA (circa 1869).” In a personal communication (3/12/2010), David said that he based the identification on the 1869 Aetna Glass Works ad. I suspect that the initials do represent Modes, but the 1869 ad
did not specify Mason jars. The jar was probably made by another Modes factory (of which there were several).

**Discussion and Conclusions**

This study disagreed with many of the older histories of the Aetna and Arsenal firms and factories, although that is not pertinent to this work. For those interested, see Lockhart (2010) for a summary of the older publications. The important issues here, of course, are the jars and bottles.

**The Perplexing A.G.W.L. / PITTS, Pa Fruit Jar**

Although there is virtually no question that the American Glass Works, Limited, made the beer/soda bottles, Hutchinson bottles, and strap-sided flasks with the AGWL mark, the identification of the same mark (with PITTS, Pa) on grooved-ring, wax-sealer fruit jars is not so easy to place. As noted above, both Innes (1974:178) and Roller (1983:7) suggested that the fruit jar mark could have been used by the Arsenal Glass Works (or Aetna Glass Works). In this interpretation, Lawrenceville provided the “L” at the end of the logo.

Ads cited in Roller (n.d.) listed fruit jars for the American Glass Works, Limited, from 1887 to 1901. The Arsenal/Aetna situation was much more complex. The original operating firm advertised a variety of bottles and vials but did not specifically mention fruit jars. However, there is a vast empty space in our knowledge until the William F. Modes ad of 1869 (Hawkins 2009:12; Roller 1996). Only the 1869 ad (Aetna Glass Works) specified the Victor, Triumph, and “Grooved Ring” fruit jars.

The inclusion of both “L” (Lawrenceville) and “PITTS” seems redundant. The argument that the “PITTS” would have been superfluous, if the “L” indicated “Lawrenceville” is somewhat nullified, however, by the flasks that bear the entire Arsenal Glass Works name and “PITTS PA.” But the flasks have no “L” to create a redundancy. Of course, neither argument is conclusive.

Although this may be irrelevant, another point concerns the shape of mark. Except for the wax-sealer fruit jar base, all other examples of the A.G.W.L. logo that the Bottle Research Group has found were embossed in a straight line either at the heel or across the base. Although
a change in a single jar type is possible, the fruit jars do not fit the pattern observed in all other uses of the mark. See Figures 25 and 26 for a comparison.

If the 2001 value for the jars marked “A.G.W.L.” ($30-35) is any indication of scarcity (Leybourne 2001:5), then they must be fairly common. Of course, the lack of side embossing may have made them less popular. Tom Caniff (personal communication 3/9/2010) stated that the A.G.W.L. jars were not common, but there was also almost no demand for them. Jay Hawkins (personal communication 2/15/2010) noted that he had seen these jars “with some regularity” – suggesting that they cannot be too scarce in the Pittsburgh area.

The Triumph jars (from the Aetna period), on the other hand, were valued at “$500 and Up” during the same year (Leybourne 2001:366-367). Like Leybourne, McCann (2010:184) did not specifically discuss rarity, but he *did* state that Triumph jars were “not available.” Tom Caniff added that these “are indeed as scarce as the price guide suggests. You don’t see them often.”

Admittedly, trying to compare these jars by level of scarcity is tricky at best. As Bill Lindsey (personal correspondence 3/11/2010) warned, “The Triumph jars are unusual and uniquely shaped and body (shoulder) embossed raising their desirability multi-fold over the base embossed AGWLs - even with the same rarity level (or even if the AGWLs were much rarer than the Triumphs).” Even with these cautions, we could expect jars made by Arsenal (or Aetna), produced during an earlier period (1856-1869) to be more scarce than ones made by the American Glass Works, Limited (ca. 1886-1897). This look at scarcity supports the hypothesis that the A.G.W.L. jars were made by American Glass.

If we limit our search to the Arsenal Glass Works, the length of time in business becomes equally important. We would expect more jars to have been made (thus, a probable greater survival number) during the decade-long tenure of the American Glass Works rather than the
possible four-year period when the Arsenal Glass Works was in business. The scarcity factor favors a manufacture of these jars by the American Glass Works, Limited.

After this lengthy and speculative discussion, however, the maker of the wax-sealer jars embossed “A.G.W.L.” remains in some contention, although the bulk of the evidence leans toward the American Glass Works, Limited, as the maker of them. At this point, there is no reason to believe that the Aetna Glass Works used any marks on any of its products. The Arsenal Glass Works certainly used its full name on the faces of two flasks and probably used AGW on some flask bases. Neither firm used an AGCo mark. The Aetna Glass Works almost certainly made the Triumph series of jars, although some of those may have been manufactured by another company either before or after those made by Aetna.

**Triumph, Union, and Related Fruit Jars**

Out of the literally hundreds of fruit jars recorded by Toulouse (1969), Roller (1983; 2011), and Creswick (1987), only four types had grooved-ring finishes, tapered shoulders, and a manufacture in three-piece molds (Figure 27). Although this is hardly scientific, all of the jars look related. In addition, two of them use the “No. x” system directly beneath the name.

These jars were manufactured using a technique that was already outdated by the late 1860s. Roller (2010):525) described all these jars as “wax seal, grooved ring and metalcap.” They were “hand blown” with “tooled groove, ground lip.” The “double tapered jars were made in specially constructed three-piece molds.” Each “had a seam around the circumference of the jar . . . and have two opposite side seams running upward from the central seam to the lip.”

This describes a traditional three-piece mold, where the bottom section was a dip mold. A dip mold was the earliest type of mold, consisting of a hollowed out section of wood or metal into which the blower blew the basic cylindrical shape of the bottle or jar. These must be slightly flared from the base to the shoulder so that the bottle may be pulled upward out of the mold. The
two side pieces are hinged to the dip mold, so that they open out to the sides rather than the doorway type of opening found in later two-piece molds (Figure 28). The finish was then tooled as the final operation before the container was sent to the annealing oven.

Three-piece molds were used in the U.S. by ca. 1830 but were mostly phased out by ca. 1870. Some used continued into the very early 20th century, but bottles and jars made with this technique became increasingly less common after the 1860s (Lindsey 2013). This suggests that these jars were made by a technique that was somewhat outdated by the latter part of the 1860s. Their use after the Aetna Glass Works period should therefore have been quite limited.

If price indicates scarcity (which is debatable but likely in this case), then we can rank the scarcity of these four jar types (Table 3). Both the Halle and OK jars are rare. There is no question that the Halle jars were a special order, almost certainly placed only once. Halle used other jar types (including the more typical wax-sealer configuration) very likely replacing the tapered jars.

Table 3 – Probable Scarcity of Tapered Jars

<table>
<thead>
<tr>
<th>Jar</th>
<th>Leybourne 2008 (page #)</th>
<th>McCann 2012 (page #)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.K. HALLE &amp; CO.</td>
<td>$1,000+ (179)</td>
<td>$1,000+ (170)</td>
</tr>
<tr>
<td>OK</td>
<td>$750-900 (339)</td>
<td>$1,100-1,700 (245)</td>
</tr>
<tr>
<td>TRIUMPH (No 1-No 3)</td>
<td>$400-500 (415)</td>
<td>$605-742 (300)</td>
</tr>
<tr>
<td>UNION (No 1-No 4)</td>
<td>$350-500 (417-418)</td>
<td>$350-500 (301)</td>
</tr>
</tbody>
</table>

The OK jar is less certain. This, too, could be a special order, although it could also be the earliest jar in the series – the prototype. The prototype hypothesis would explain both the scarcity and slight difference in configuration (the “rib” at the neck) from the other tapered jars. Creswick (1987:211) stated that J.P. Smith & Co., a glassware jobber, advertised the OK jar at Pittsburgh. Smith was in business between 1862 and ca. 1885, although Creswick did not include the date of the ad. This tends to more support the special order hypothesis.
The Triumph series of jars (No. 1-No. 3), while still uncommon, is much more available today. We have somewhat solid evidence that the Aetna Glass Works made the Triumph series of jars by at least 1869 (Roller 1983:362). Since there was no design change, No. 1, No. 2, and No. 3 may have been an early method of mold numbering. Modes likely discontinued production of these jars when he closed Aetna and moved to Beaver Falls.

The most plentiful (but still uncommon) jars of this type were the ones in the Union series (No. 1-No. 4). If the numbers are mold codes, then Union jars should be the most common of the group – as, indeed, is the case. These appear to have been an improved version of the Triumph – with glass “ears” at the finish, presumably to secure some kind of wire device that held the metal lid in place. Logically, these would have followed the Triumph in production.

This type of logic suggests that the Union jars were made by someone after the demise of the Aetna Glass Works. Creswick (1987:211) suggested the Union Flint Glass Works, which – like Aetna – was situated at Pittsburgh. As explained above, it is highly unlikely that the Union Flint Glass Works made fruit jars, despite the similarity in the name and the location.

However, there is a competing set of information that supports a different hypothesis. Another series of jars is made in the more typical grooved-ring wax-sealer configuration and is embossed with “UNION” above various numbers, including No. 1, No. 2, No. 3, N 1, 2, and 5, as well as one with no number (Creswick 1987:211). At least three of these are also embossed “BEAVER FALLS GLASS Co. (arch) / BEAVER FALLS, PA. (inverted arch)” on their bases (Figures 29-31).

Since William Modes was the former owner of the Aetna Glass Works, then moved immediately to Beaver Falls to open the Beaver Falls Glass Works, he would likely have continued his tradition in wax-sealer fruit jar production, albeit with the latest in technology. However, changing the name of the jar from Triumph to Union makes little sense –
unless he had already used the name at Pittsburgh. In the tapered “UNION No. 1” and other numbered jars of the same type were the other “GROOVED RING” jars advertised by Aetna in 1869, the progression fits nicely into place.

Future Research

Future researchers still have much to learn, especially about the 1856 Aetna Glass Works. Was the plant open earlier? Where was the factory? How long did the company remain in business? Although the time periods seem to be set for the Arsenal Glass Works and the later Aetna, many details need to be filled in – for example, did the Arsenal Glass Works actually begin in 1865, as the listing indicates, or was it 1864 – but too late in the year to be included in the directory? It would also be nice to know more about the mysterious firm of Modes & Nichols. As noted in the entry on the Triumph jars, there are many unanswered questions related to them. Finally, there remains slight doubt about the identification for the maker of the A.G.W.L. fruit jar. Some more solid evidence would be nice. I wish good luck to the next researcher who arises to stand on the shoulders of the group that brought us this far.

Acknowledgment

Although I wrote this article alone, I need to thank the other members of the Bottle Research Group (Bill Lindsey, Carol Serr, Pete Schulz, and Beau Schriever) for proofreading and support. We have been working together for so long, now, that there is literally nothing I can write about bottles that is not strongly influenced by each of them. Gratitude also to Jay Hawkins, Tom Caniff, and the many other collectors/researchers who contribute ideas and support.

Special thanks to Doug Leybourne for allowing the Bottle Research Group to use the drawings from the Alice Creswick books in our articles and to Greg Spurgeon for granting permission to use the photos from North American Glass. And a final bouquet of gratitude to my wife, Wanda Wakkinen, for listening to my endless speculations.
Sources

Creswick, Alice

Eatwell, John M. and David K. Clint
2001 *Pikes Peak Gold*. Effective Graphics, Las Vegas, NV.

Freeman, Larry

Hawkins, Jay W.

Hopkins Company Maps
http://digital.library.pitt.edu/pittsburgh/

Innes, Lowell


Jones, May

Knittle, Rhea Mansfield
Leybourne, Douglas M.

Lockhart, Bill

Lockhart, Bill, Pete Schulz, Beau Schriever, Carol Serr, and Bill Lindsey

Lockhart, Bill, Carol Serr, Beau Schriever, and Bill Lindsey

Lockhart, Bill and Harvey S. Teal

McCann, Jerry

McDougald, John & Carol McDougald

McKearin, Helen and Kenneth M. Wilson

National Glass Budget
1909 “In a Reminiscient Mood.” National Glass Budget 25(9):11.
Roller, Dick


Thurston, George Henry
1876 Pittsburgh and Allegheny in the Centennial Year. A.A. Anderson & Son, Pittsburgh.

Toulouse, Julian Harrison


Welker, John and Elizabeth Welker

Whitten, David
2010 “Glass Factory Marks on Bottles.”

Last modified, June 22, 2013

238