

*Journal of the
American Musical
Instrument Society*

VOLUME XLIII • 2017



Copyright by the [American Musical Instrument Society](#).
Content may be used in accordance with the principles of fair
use under [Section 107 of the United States Copyright Act](#).
Content may not be reproduced for commercial purposes.

Jamestown Revisited: Another Trumpet Mouthpiece from Colonial Virginia

STEWART CARTER AND SABINE K. KLAUS

In 2011 the present authors reported on a mouthpiece for a brass instrument, almost certainly a trumpet, discovered by Preservation Virginia archeologists on the site of Historic Jamestowne, Virginia. Our article on the context, physical characteristics, and metal analysis of this mouthpiece, which we dated to the late sixteenth or early seventeenth century, appeared in the *Journal of the American Musical Instrument Society*, vol. 37 (2011).¹ Recently Beverly A. Straube, who helped us immensely with the earlier discovery, informed us of the recovery of yet another mouthpiece (fig. 1), also on the grounds of Historic Jamestowne, the site of the first successful British colony in what is now the United States. In the summer of 2014 Straube invited the authors to study the mouthpiece at Historic Jamestowne's preservation laboratories. We examined and photographed the mouthpiece, then visited John Watson, then Conservator and Curator of Musical Instruments at nearby Colonial Williamsburg, who assisted us in arranging for analysis of the metal, as he had done with the other mouthpiece. For the sake of convenience, in this article we refer to the mouthpiece described in the earlier article as "Jamestown I;" the more recently discovered mouthpiece, as "Jamestown II."

Jamestown I was recovered from a trash pit that can be dated with some degree of confidence to ca. 1610; thus the mouthpiece was manufactured sometime prior to that date, possibly sometime between 1570 and 1610. Jamestown II, however, was

recovered in September 2013 from unit/strata JR3595B, which is a disturbed brick rubble layer from the area of the 1906 Memorial Church. The layer dates to the modern era, i.e., post-1906. Other finds from the deposit include a section of cast iron stove and copper alloy percussion caps that date to the Civil War or later. . . . The deposit included artifacts from the 17th,

Acknowledgements: Beverly A. Straube, Merry Outlaw, John Watson, Emily Williams, Hannes Vereecke.

1. Sabine K. Klaus and Stewart Carter, "The Jamestown Mouthpiece: A Historical, Technical, and Comparative Study," *Journal of the American Musical Instrument Society* 37 (2011): 19–44.



FIGURE 1. Trumpet mouthpiece (Jamestown II), recovered from a trash pit in Historic Jamestowne, Virginia. Photo by John Watson.

18th, 19th, and early 20th centuries. Most of the deposit seems to date to the 18th century.²

The ground in the area of the discovery was subjected to considerable disturbance ca. 1906, when Memorial Church was built, thereby making it difficult to ascribe even an approximate date, based on the excavation context, to the second mouthpiece.

As to the provenance of Jamestown II, we can do little more than speculate. It seems likely that the mouthpiece once belonged to a signal trumpet, since Jamestown in the seventeenth century had no significant concert life. It further seems likely that the object was discarded some-

2. Merry Outlaw (Preservation Virginia), personal communication, February 19, 2015.

time before 1699, for in that year the capital of the colony of Virginia was transferred to nearby Williamsburg, and Jamestown essentially ceased to exist as a town. A considerably later date for the mouthpiece is certainly possible, since mouthpiece design apparently did not change drastically between the late seventeenth century and the mid-nineteenth century.

We have found no evidence of the presence of a trumpeter in Jamestown during the second half of the seventeenth century. If the mouthpiece were once associated with a military trumpet, as seems likely, it might have been used at the time of Bacon's Rebellion in 1676. This uprising against the rule of colonial governor William Berkeley resulted in the burning of the town. It was eventually rebuilt, but there was much fighting in the area, involving local militias as well as regular British troops sent from England.³ Since many merchant ships called at Jamestown during the seventeenth century, the mouthpiece also could have belonged to a ship's trumpeter.⁴

Jamestown I was originally constructed in three parts: a bowl, a shank, and presumably a ferrule covering the junction between bowl and shank, though the ferrule and shank are missing, and only the cast bowl remains.⁵ The most obvious physical difference between the two mouthpieces is Jamestown II's one-piece construction: it was cast as a single piece of brass, with handsome turnings, as is typical of mouthpieces from the late seventeenth through the early nineteenth centuries (fig. 1). But like Jamestown I, Jamestown II has a broad, flat rim and a bowl-shaped cup with a sharp-shouldered throat (fig. 2). The crucial dimensions of Jamestown II can be seen in the technical drawing in Figure 3 and in Table 1. These dimensions may be compared with those of Jamestown I, in Table 2.

The dimensions of both Jamestown mouthpieces may be compared with those of other early mouthpieces for trumpets and trombones, as listed in Appendix 3 of the authors' article on Jamestown I.⁶ However,

3. Concerning Bacon's Rebellion, see, *inter alia*, Stephen Saunders Webb, *1676: The End of American Independence* (New York: Alfred A. Knopf, 1984); and James D. Rice, *Tales from a Revolution: Bacon's Rebellion and the Transformation of Early America* (New York: Oxford University Press, 2012).

4. See *An Accidence or the Path-way to Experience Necessary for all Young Sea-men* (1626) 19 [3:22], 25 [3:23], and 35 [3:27]; and *A Sea Grammar* (1627), 35 [3:83], 39 [3:86], 60 [3:102], 62 [3:103], and 72 [3:110]. Brackets identify the location of these passages in *The Complete Works of Captain John Smith*, ed. Philip J. Barbour, 3 vols. (Chapel Hill: University of North Carolina Press, 1986).

5. Klaus and Carter, "The Jamestown Mouthpiece," 22–25.

6. *Ibid.*, 41–44.



FIGURE 2. Jamestown II, rim and cup. Photo by John Watson.

since we have theorized that Jamestown II was manufactured several decades after Jamestown I, it may be useful to compare it to mouthpieces made in the late seventeenth century through the early nineteenth century. Given Jamestown's heritage, it is reasonable to suppose that an early mouthpiece discarded there was manufactured in England. In this regard Eric Halfpenny's article on British trumpets and their mouthpieces, though now several decades old, is particularly helpful.⁷ None of the mouthpieces in Halfpenny's illustrations exactly match the outward appearance of Jamestown II, but several of them are reasonably close (Halfpenny J and K in particular). A characteristic of many English

7. See Eric Halfpenny, "British Trumpet Mouthpieces," *Galpin Society Journal* 20 (1967): 76–88; and idem, "Four British Trumpets," *Galpin Society Journal* 22 (1969): 51–57, here 54.

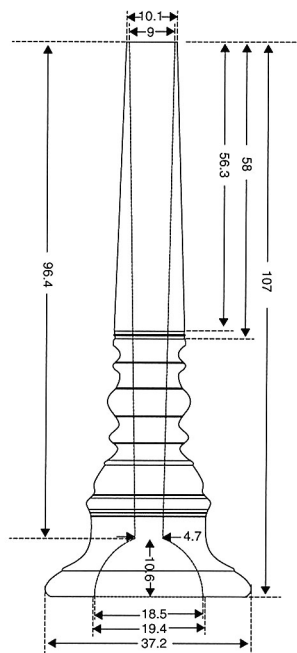


FIGURE 3. Jamestown II, technical drawing (measurements in millimeters by John Watson and the authors). Drawing by Sabine K. Klaus.

TABLE 1. Jamestown II, dimensions (in millimeters).

total length	107
external diameter rim	37.2
internal diameter rim	18.5
throat diameter	4.7
depth of cup	10.6
outlet – external diameter	10.1
outlet – internal diameter	9.0

TABLE 2. Jamestown I, dimensions (in millimeters).

total length	n/a; shank missing
external diameter	33.5
internal diameter	23.5
throat diameter	9.8 / 8.7
depth of cup	18
outlet – int.	n/a; shank missing
outlet – ext.	n/a; shank missing

mouthpieces is an external cup shape that is concave beyond the rim section, a design less common in continental-European mouthpieces.⁸ A mouthpiece associated with a trumpet by William Bull (Figure 4) is an example of this exterior cup design; the same design is also found in a drawing of an ideal mouthpiece in Thomas Harper Sr.'s *Instructions for the Trumpet* (1835, 1837).⁹ Harper states that he had been using this mouthpiece design for the past twenty years, thereby dating it to approximately 1815, if not earlier (fig. 5).

As Table 3 shows, four of the late-seventeenth-century mouthpieces included in Halfpenny's survey apparently were made, like Jamestown I, in three separate pieces—a bowl, a shank, and a ferrule covering the joint between the two main components. Three further mouthpieces in his survey appear to have been made in two pieces, similar to the three-piece mouthpieces but lacking a ferrule. All of the other mouthpieces in Halfpenny's survey, like Jamestown II, are cast in one piece. Most of these are from the late eighteenth century or the early nineteenth, and in order to conserve space, only the design of Thomas Harper Sr. is shown here (fig. 5). Notice also that one mouthpiece from the late seventeenth century—that associated with Augustine Dudley, dated 1666—was also cast as a single piece. Judging from this data it would appear that

8. See the following publications for continental-European—in particular, German—trumpet mouthpieces from the eighteenth and early nineteenth centuries: Herbert Heyde, *Musikinstrumenten-Museum der Karl-Marx-Universität Leipzig, Katalog*, Bd. 3, *Trompeten, Posaunen, Tuben* (Leipzig: VEB Deutscher Verlag für Musik, 1985), pl. 47; John Henry van der Meer, *Verzeichnis der Europäischen Musikinstrumente im Germanischen Nationalmuseum Nürnberg*, Bd. 1, *Hörner und Trompeten, Membranophone, Idiophone*. (Wilhelmshaven: Heinrichshofen's Verlag, 1979), 201; and Frank Bär, *Die Sammlung der Musikinstrumente im Fürstlich-Hohenzollernschen Schloß zu Sigmaringen an der Donau* (Tutzing: Hans Schneider, 1994), 240–41.

9. Thomas Harper [Sr.], *Instructions for the Trumpet with the Use of the Chromatic Slide, also the Russian Valve Trumpet, The Cornet à Pistons or Small Stop Trumpet, and the Keyed Bugle* (London: Thomas Harper, [1835]; facs. rpt. of the 1837 edn., Homer, NY: Spring Tree, 1988), unnumbered page facing p. 11.



FIGURE 4. Silver trumpet mouthpiece associated with a trumpet by William Bull (late 17th century) with concave exterior following the rim. Cambridge, Ashmolean Museum. From Halfpenny, "Early British Trumpet Mouthpieces," pl. XIII. Published with permission from the editor of the *Galpin Society Journal*, Lance Whitehead.

the late seventeenth century was a time of transition for British mouthpieces, from three pieces to a single piece with tapering backbore.

Among the single-piece mouthpieces with backbore, Halfpenny distinguishes between those with longer and those with shorter shafts, as well as thicker and thinner cup walls. The earlier, pre-1700 single-piece mouthpieces have a longer shank of ca. 55 to 56 mm, the dimensions also found in Jamestown II. Later nineteenth-century mouthpieces, on the other hand, have a considerably shorter shank of ca. 35 mm. Some

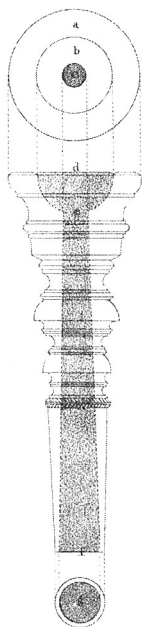


FIGURE 5. Drawing of trumpet mouthpiece, from Thomas Harper [Sr.], *Instructions for the Trumpet*, [1835], p. 10. © The British Library Board, h.2202.e.

nineteenth-century mouthpieces, including one by the Köhler firm of London with a shank length of 45 to 48 mm, fall between these two groups, and they also display thinner cup walls (Halfpenny L to O). The external cup shape of Jamestown II matches the latter group best, but its cup wall is thicker. Therefore, it is more likely that Jamestown II belongs to the earlier group of pre-1700 single-piece English mouthpieces, which accords well with the historical context of Jamestown, described above.

Of the mouthpieces listed in Table 3, Jamestown II is the largest in external cup diameter, yet its throat diameter places it among the smaller ones, as does its cup depth. Probably these last two dimensions—cup

TABLE 3. Selected British trumpet mouthpieces, ca. 1666–1850. Dimensions in millimeters.

Maker of associated instrument	date	Cup \emptyset , ext.	Cup \emptyset , int.	Throat \emptyset	Length overall /shank	depth of cup	no. of parts	location
Anon. (Jamestown I)	before 1610	33.5	23.5	8.7–9.8	n/a	18	2-3*	Jamestown Rediscovery
Anon. (Jamestown II)	n.d.	37.2	19.4	4.7	107/58	10.6	1	Jamestown Rediscovery
'Williamson' trumpet ^a	1666	35	20.5	7.2	117/73.5	13.2	3	Oxford, Queen's College
Augustine Dudley (B) ^a	1666	27.1	15.5	4.5	91/55	9.5	1	London Museum
Simon Beale ^b	1667	33.5	20	6.1	76/53	13	2	Oxford, Bate Collection
Thomas McCuir ^a	1669	31.4	20.5	6.0	111/65	12.3	3	Marquis of Brute
Robert Brock (D) ^a	n.d.	31.4	20.5	6.0	111/65	11.8	3	Marquis of Brute
William Bull, London (E) ^a	n.d.	35.0	19.0	5.5	108.5/56	11.5	1	Cambridge, Ashmolean Museum
Bull (F) ^a	late 17c	35.0	19.0	5.0	108/56	11.2	2?	Ex Ronald Lee
Bull (G) ^a	late 17c	32.5	20.0	4.6	89/55	8.5	1	London Museum
Hofmaster (London) ^c	ca. 1750/60	28.7	18.0	4.5	96/43.3	12.8	1	Private collection
Thomas Harper Sr., <i>Instructions</i>	ca. 1815	31	17.5	5.0	88.5/33	11.9	1	

NOTES FOR TABLE:

* incomplete

information and measurements for mouthpieces derived from the following references:

- Eric Halfpenny, "Early British Trumpet Mouthpieces," *Galpin Society Journal* 22 (1967): 76–88, here 81–88. Capital letters in parentheses refer to drawings of mouthpieces in this article.
- Idem, "Four Seventeenth-Century British Trumpets," *Galpin Society Journal* 22 (1969): 51–57, here 53.
- Idem, "Two Later British Trumpets," *Galpin Society Journal* 24 (1971): 79–83, here pl. XI.

depth and throat diameter—are the most crucial ones. The large external cup dimensions in combination with the fairly small cup volume result in quite massive cup walls, following Harper Sr.'s comment that “[a] heavy mouthpiece is recommended as laying steady on the lips and not requiring so much pressure as a light one.”¹⁰ Moreover, all of these mouthpieces have a relatively sharp-shouldered throat, as do Jamestown I+II. Hannes Vereecke notes that

A mouthpiece with a sharp-throated edge is generally perceived by performers as being more difficult to play, since it is more difficult to “lock into” the desired note. On the other hand such mouthpieces are assessed as providing more flexibility in timbral contrast in comparison to a mouthpiece with a more curvilinear/smooth throat design. Furthermore, musicians state that a sharp throat-edge results in improved accuracy of attack in the higher register and allows for a more “centered” playing behavior and tone, though it is also responsible for some unwanted noise in the radiated sound. Musicians note in particular that a chamfered throat-edge makes the playing characteristics more equal in all registers.¹¹

Vereecke further states that a sharp-shouldered throat “encourages a *flow separation*” in that area (fig. 6).¹² After separating from the wall of the mouthpiece at the throat, the jet of air reattaches itself to the wall at some distance down the stem. This flow separation at the throat decreases the effective diameter at that point.

Metal Analysis

Emily Williams (Jefferson Laboratory, Colonial Williamsburg Foundation) conducted a detailed analysis of the metal in Jamestown II, taking readings from three points on the mouthpiece, and reported those results to the authors (table 4). Ms. Williams warned us that we should be “very cautious in using them (because corrosion will remove some elements preferentially . . .) . . . [S]ome [results] may be contributions from the soil (we see iron as a contaminant on some things that I do not expect to contain iron).”¹³ Williams’s caveat no doubt explains

10. Ibid.

11. Hannes Vereecke and Stewart Carter, “Mouthpieces for Brasswinds in the Writings of Victor-Charles Mahillon: A Historical and Analytical Review,” *Historic Brass Society Journal* 25 (2014): 43–61, here 54–55.

12. Ibid.

13. Personal communication, January 2015.

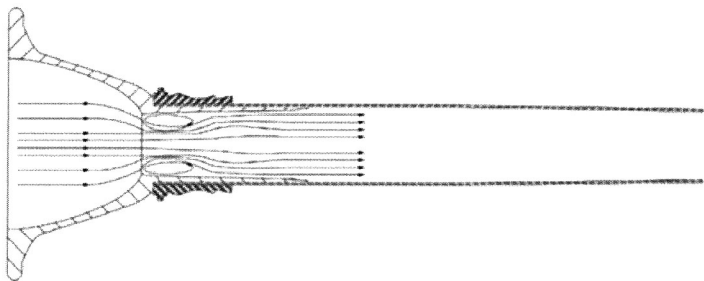


FIGURE 6. Schematic depiction of flow separation caused by a sharp-edged mouthpiece throat. Drawing by Hannes Vereecke. Reproduced by permission from Vereecke and Carter, "Mouthpieces for Brasswinds," 54.

the relatively high iron content (approximately 5.5%), although it may also be partially explained by the casting method (table 4).

The metal used to make brass instruments, historically as well as today, is an alloy typically consisting primarily of copper and zinc, usually with a small amount of lead and some trace elements; nickel also is occasionally present. Using XRF-fluorescence, Hannes Vereecke analyzed the metal in eleven original trombones from the sixteenth century. He determined that on average these instruments were made from an alloy consisting of approximately 80% copper, 19% zinc, and 0.9% lead, with a few trace elements.¹⁴ These findings are consistent with the work of Karl Hachenberg on a broader sampling of items of brass from Nuremberg.¹⁵ Hachenberg's analysis extends over a much longer time period and shows that by the seventeenth century the copper content had fallen to 72–73%, while the zinc content had risen to 26–27%. Both Vereecke's

14. Hannes Vereecke, "The Sixteenth-Century Trombone: Dimensions, Materials and Techniques" (PhD diss., Institute of Musical Acoustics, University of Music and the Performing Arts, Vienna 2014), 154–55.

15. Karl Hachenberg, "Der Werkstoff Messing im Musikinstrumentenbau vom 16. bis um Ende des 18. Jahrhunderts," *Michaelsteiner Konferenzberichte*, no. 70 (Augsburg: Wißner Verlag, 2006), 433–48; idem, "Nürnberger Musikinstrumente aus Messing: Chancen und Grenzen der Herkunftsbestimmung durch Materialanalysen," in *Anzeiger des Germanischen Nationalmuseums 2002* (Nuremberg: Verlag des Germanischen Nationalmuseums, 2002), 201–13; idem and Helmut Ullwer, *Messing nach dem Gamleiverfahren: Drei Handschriften des 18. Jahrhunderts experimentell erläutert* (Hamburg: Disserta Verlag, 2013), 323–39.

TABLE 4. Metal analysis of Jamestown II, by Emily Williams, Colonial Williamsburg Laboratories.

	trump jt mouth side1	trump jt mouth side2	trump jt top side
Mn	0.3	0.3	0.4
Fe	5.6	5.5	5.5
Co	0.6	0.6	0.7
Ni	0.0	0.0	0.2
Cu	61.4	60.8	55.5
Zn	18.6	19.0	26.5
As	0.7	0.8	0.5
PbLb1	3.0	3.3	2.7
BiLb1	0.2	0.2	0.2
Zr	0.6	0.6	0.7
Nb	0.5	0.5	0.6
Ag	0.4	0.4	0.4
Sn	0.4	0.4	0.4
Sb	0.3	0.3	0.4
total	92.6	92.7	94.7

and Hachenberg's studies focus on sheet brass, used for the construction of tubing for trumpets or trombones, and in particular for the bell; sheet brass is usually of much higher quality than brass made by casting, which was used for mouthpieces. Ductile and malleable metal is needed to form the bell by hammering and burnishing, and for refining the seamed tubes by drawing. Since mouthpieces are formed by turning from a solid piece of cast brass, a different, harder alloy is preferable, and the quality matters less. Scrap metal was frequently added to mixes used for casting, therefore making the metal composition somewhat random and more prone to contamination. Therefore, according to Hachenberg, it is important to evaluate the metal composition of cast brass objects separately from those made of sheet brass.¹⁶ For example, the presence of iron in cast objects can be explained with the use of iron tools during the casting process; however, in Jamestown II, the iron level is exceptionally high, and this also may be attributable to environmental contamination.

Conclusion

The discovery of a previously unknown mouthpiece for a brass instrument is always noteworthy, since far fewer mouthpieces than instruments survive for the period before 1800. Jamestown II presents an interesting case of a mouthpiece that was likely made in England and used in America. Dating an unsigned mouthpiece is often more difficult than dating an unsigned instrument, since there are so few surviving mouthpieces by known makers. At this point the present authors can do little more than to suggest that the mouthpiece was made in England in the late seventeenth century, although a date as late as the mid-nineteenth century cannot be excluded.

16. Hachenberg, "Nürnberger Musikinstrumente aus Messing," 203.