A Fresh Look at "Some Ingenious Mechanical Contrivance"—The Rodenbostel/Woodham Slide Trumpet

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Charles Burney, the famous eighteenth-century musical traveler and writer, had a habit of criticizing trumpeters of his time, even the most famous ones. In a report of the concerts which took place during the commemoration of George Frederic Handel's birth centennial and the twenty-fifth anniversary of his death in Westminster Abbey on 29 May 1784, Burney wrote,

> The favourite Base song, "The Trumpet shall sound," … was very well performed by Signor Tasca and Mr. Sarjant [James Sarjant], who accompanied him on the trumpet admirably. There are, however, some passages in the trumpet-part to this Air, which have always a bad effect, from the natural imperfection of the instrument. In HANDEL'S time, composers were not so delicate in writing for Trumpets and French-horns, as at present; it being now laid down as a rule, that the fourth and sixth of a key on both these instruments, being naturally so much out of tune that no player can make them perfect, shall never be used but in short passing notes, to which no base is given that can discover their false intonation. Mr. Sarjeant's tone is extremely sweet and clear, but every time that he was obliged to dwell upon G, the fourth of D, displeasure appeared in every countenance; for which I was extremely concerned, knowing how inevitable such an effect must be from such a cause (a).[1]

Burney refers to the out-of-tune eleventh (between *f″* and *f♯″*) and thirteenth (the flat *a″*) partials. In a footnote to this passage, he suggests,

> (a)… It is very much to be wished that this animating and brilliant instrument [the trumpet] could have its defects removed by some ingenious mechanical contrivance.[2]

Art Brownlow, in his excellent overview of the development of the English slide trumpet, assumed that Burney's criticism and footnote may have triggered the invention of the mechanical slide trumpet, which dominated British trumpet history in the nineteenth century.[3] Such an instrument is first described in John Hyde's method *For the Trumpet & Bugle Horn*, from ca. 1799.[4]

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> Observations on the Chromatic Trumpet
> Invented by J. Hyde, and made by Woodham.
> The plain Trumpet being so imperfect, and so confined in its scale, I found it necessar [*sic*] to invent something to make it perfect and more universal before I could feel any satisfaction in playing it, D^r^ Burney in his History of Music, has taken particular notice of the imperfect fourth and sixth, which imperfection is completely remedied by the Chromatic Trumpet; which besides makes a number of notes never thaught [*sic*] of on that Instrument as will appear from the Scale.[5]

This quotation provides the principal evidence that Hyde was the inventor of the English slide trumpet. The scale that follows Hyde's text is not fully chromatic; it cannot be, because the instrument's harmonic series on D is lowered only by a semitone.[6]

English natural and flat-trumpet design as a basis for the mechanical slide trumpet

The mechanical slide trumpet that emerged in the late eighteenth century in London was rooted in a distinct English trumpet-making tradition. This trumpet style had features that deviated from contemporary continental design. Unlike a Nuremberg trumpet which is assembled in compact form with overlapping joints and squeezed firmly together at assembly (Figure 1), an English natural trumpet could easily be disassembled even after completion. In the seventeenth-century English design only the joints under the short ferrules overlapped, while the tubing under the long ferrules abutted (Figure 2) and could, in theory, be moved for slight adjustments in pitch.[7] In the later eighteenth century this principle was retained, although the ferrules were made of more or less equal length

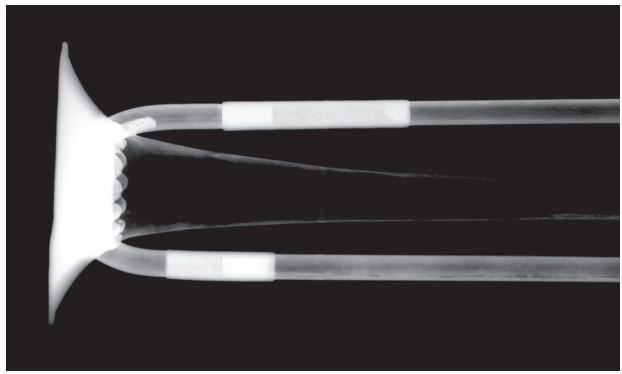


Figure 1: X-ray showing overlapping joints in a natural trumpet by Johann Carl Kodisch, Nuremberg, ca. 1700 (National Music Museum, The University of South Dakota, Vermillion, SD, (In the following abbreviated as NMM) catalog number, NMM 10782).

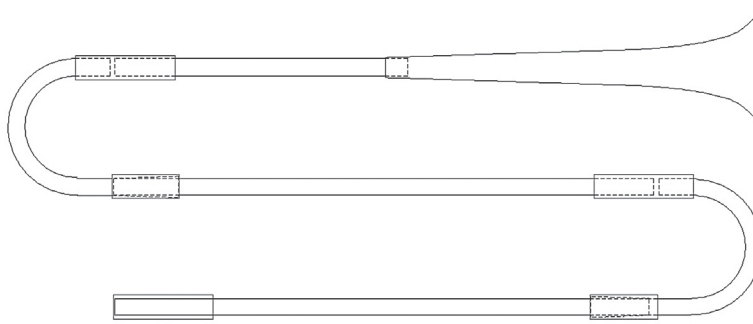


Figure 2: Joint design of a typical seventeenth-century English natural trumpet.

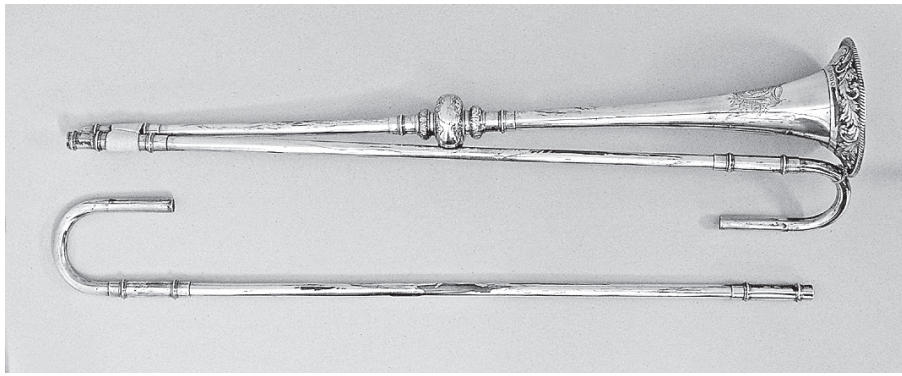


Figure 3: Natural trumpet by John Christopher Hofmaster, London, ca. 1760, disassembled at the abutting joints (Edinburgh University Collection of Historical Musical Instruments, inventory number 3280).

(Figure 3). Later still, nineteenth-century English natural trumpets might have all tube joints abutting (Figure 4). The slide was thus a musical possibility that slumbered in the English natural trumpet, as pointed out by Halfpenny.[8]

Since the front bow was wired to the bell, only the back bow could be developed into a slide. This idea was used in the flat trumpet described by James Talbot in his manuscript from ca. 1700.[9] The English flat trumpet—the term used by Talbot referred to the fact that the instrument could play in minor or "flat" keys—had a slide at the back bow with one male and one female slide leg (Figure 5); this slide lowered the pitch by a minor third, making the instrument fully chromatic from the second octave upwards, and was used for example in Henry Purcell's *Funeral March for Queen Mary* (1695).

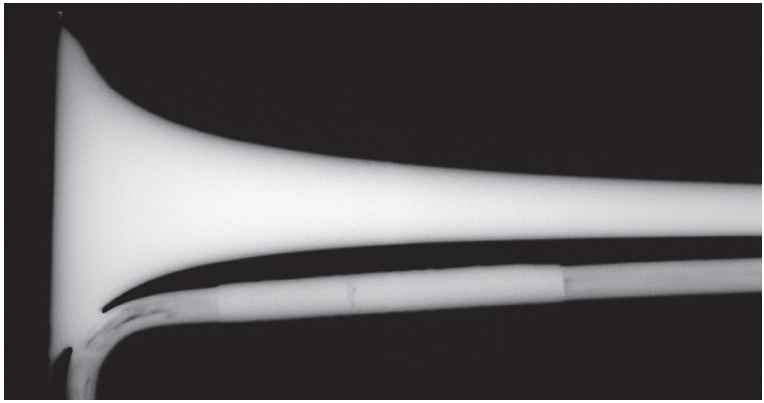


Figure 4: X-ray showing abutting joint in a natural trumpet by John Nichols, London, 1846/47 (NMM 7162).

Figure 5: Barry Bauguess with a reproduction of a flat trumpet by John Webb London, 1993 (NMM 7082).

The Rodenbostel/Woodham slide trumpet

On the basis of these observations it is not surprising that the earliest surviving mechanical slide trumpet was converted from a natural trumpet (Figure 6). It is engraved *Geo^r Hen^y Rodenbostel Maker Piccadilly London* on the garland (Figure 7); a second engraving on the clock-spring cover of the slide return mechanism refers to Richard Woodham, who was responsible for later changes to the instrument (Figure 8).

Figures 6a–c: The Rodenbostel/Woodham Slide Trumpet in F with crook for D. London, before 1797/8 (NMM 13505).

Figures 7a–b: Signature of George Henry Rodenbostel.

Figure 8: Signature of Richard Woodham on the clock-spring mechanism.

This trumpet has an impressive history of ownership. It was once in the possession of the eminent musical instrument scholars Canon Francis W. Galpin (1858–1945) and subsequently Reginald Morley-Pegge (1890–1972); most recently it was owned by Canon Galpin's grandson, His Honor Brian Galpin (1921–2008). In October of last year the Utley Foundation had a chance to buy the trumpet for the National Music Museum, The University of South Dakota, Vermillion (now catalog number NMM 13505).

The importance of this instrument for the history of the English slide trumpet was recognized early on; Francis Galpin mentioned it in his book on *Old English Instruments of Music*.[10] It is discussed in Cynthia Adams Hoover's article on the slide trumpet and Art Brownlow's book on the same topic,[11] but it received by far the most

extensive study in an essay by Peter Barton published in 1989, to which the reader is referred.[12] The purpose of the present article is to introduce more detailed photos of the instrument than hitherto published, to elaborate on some new insights into the alteration process and dating, to contribute more contextual information on other related trumpets, and to offer additional biographical details on the two instrument makers who were involved.

Some biographical notes on George Henry Rodenbostel

Not much is known about the trumpet maker and plate worker George Henry Rodenbostel. The name suggests German origin; a village called Rodenbostel is located northeast of Hanover in an area that was ruled by the Hanoverian Kings of England (George I, II, and III) in the eighteenth century. In this village, Rodenbostel also occurs as the name of a fairly prominent family with a respectable estate.[13] Within this family the names Jürgen (a German form of George) and Heinrich (German for Henry) frequently occur, making it at least possible that George Henry Rodenbostel descended from it.

Unfortunately, I have been unable to locate any documentation in London archives that would confirm a link between George Henry Rodenbostel and this German family. The marriage entry at St. George's Church, Hanover Square, from 8 October 1776, does not provide any information regarding Rodenbostel's age, parents, or origin; it reads,

> 437. George Henry Rodenbostel and Katherina Dorethey Hoffmaster both of this Parish were married in this Church by Licence this Eighth Day of October in the Year 1776 by me R: Pith. Curate.
>
> This marriage was solemnized between us { George Hennery Rodenbostel / Katherina Dorethey Hoffmaster
>
> In the Presence of { Caleb Greville / In. M. Laughlin[14]

George Henry Rodenbostel is registered in the Westminster Rate Books in Piccadilly between 1763 and 1789.[15] From 1764 to 1767 he paid rates for premises between Berkeley Street and Dover Street; from 1768 until 1789 the rate payer is listed as George Rodenbostall.[16]

Maurice Byrne established that there was a relationship between Rodenbostel and the trumpet maker Johann Christopher Hofmaster, who had his workshop next door at No. 70 Piccadilly in 1763.[17] Hofmaster (originally Johann Christoph Hoffmeister) may possibly have come from Borgholzhausen in Westphalia,[18] approximately 100 miles southwest of Hanover, thereby lending credence to the idea that Rodenbostel could have originated from that same area of Germany. George Henry Rodenbostel took over Hofmaster's premises after the latter's death on 11 March 1764.[19] However, Byrne's assumption that Rodenbostel's wife Katherina Dorethey Hoffmaster was John Christopher

Hofmaster's daughter is incorrect. Louise Bacon discovered that Hofmaster had two daughters, named Margaret Sophia and Ann Mary; Katherina Dorethey therefore may have been a niece, or another relative.[20]

On 5 December 1778 Rodenbostel entered the mark "GR" as Plate Worker at Goldsmiths' Hall (Figure 9).[21] According to Arthur G. Grimwade, no apprenticeship or freedom from apprenticeship relating to Henry Rodenbostel is documented in the London Goldsmiths' records.[22] Entries in the London Directories from 1772, 1774, and 1779 list a "Rodenbostle, Henry, silver-smith and hardwareman, Piccadilly,"[23] suggesting that making trumpets and horns was not his only occupation. A small plain mug with threaded hoops with his mark survives,[24] testifying that Rodenbostel was indeed making household goods, not just brass instruments. His final years are as obscure as his beginnings. Louise Bacon searched the parish churches for Piccadilly, but did not find any burial record.[25] Nor is Rodenbostel listed in the Index of Burials at St. George's German Lutheran Church in London, a German-speaking congregation founded in 1763. If he were indeed of German origin, this would have been a logical church for him to join.[26] George Henry Rodenbostel was dead by 1790 when his widow Katherine is registered as living at No. 70 Piccadilly.[27]

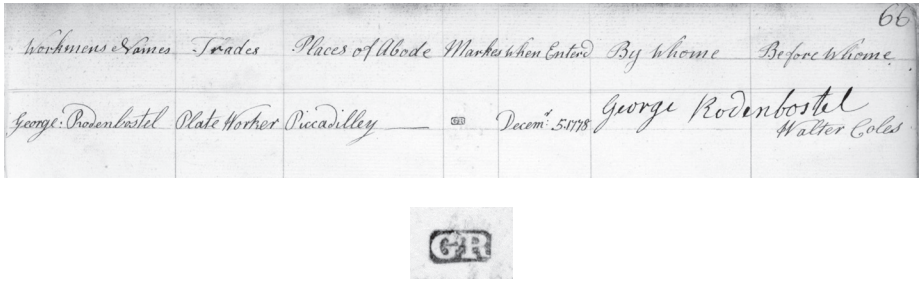


Figure 9a–b: George Rodenbostel's entry and mark as plate worker in the Goldsmiths' Hall in London (© The Goldsmiths' Company).

Rodenbostel's natural trumpet

Louise Bacon noted that Rodenbostel imitated Hofmaster's style in a horn at the Gloucester Folk Museum (F1536);[28] his natural trumpets follow Hofmaster's design as well. Before being turned into a slide trumpet, Rodenbostel's natural trumpet resembled two surviving examples by the same master, one at the Bate Collection in Oxford (pc72, Figure 16),[29] the other at The Royal Military School of Music at Kneller Hall in Twickenham near London (KH 148). Both trumpets share with NMM 13505 the inscription style and garland design in repoussé, depicting roses, scrolling foliage, and an empty cartouche in the center, flanked by a trumpet and a banner on each side. The Rodenbostel natural

trumpet at the Bate Collection resembles the natural trumpet NMM 13505 particularly closely, sharing not only the garland design and ferrule style, but also the tripartite cast ball with floral ornament (Figures 10, 11).

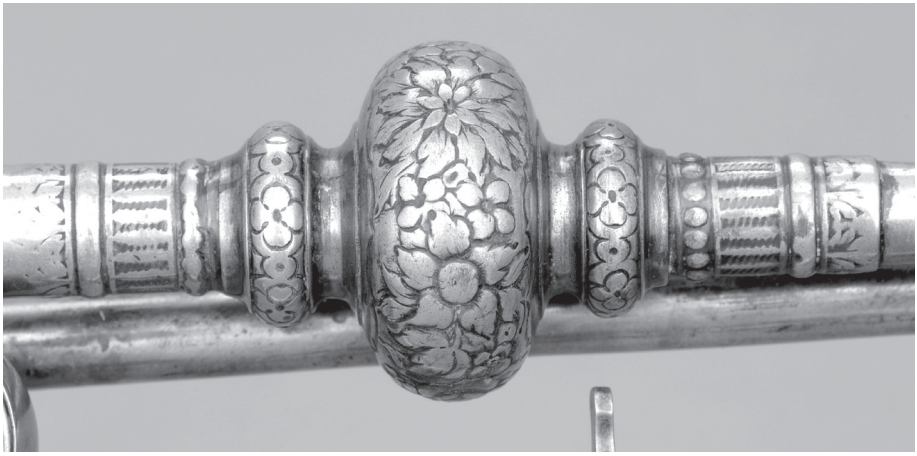


Figure 10: Ball of Rodenbostel slide trumpet (NMM 13505).

Figure 11: Ball of natural trumpet (Bate Collection, Oxford, pc 72).

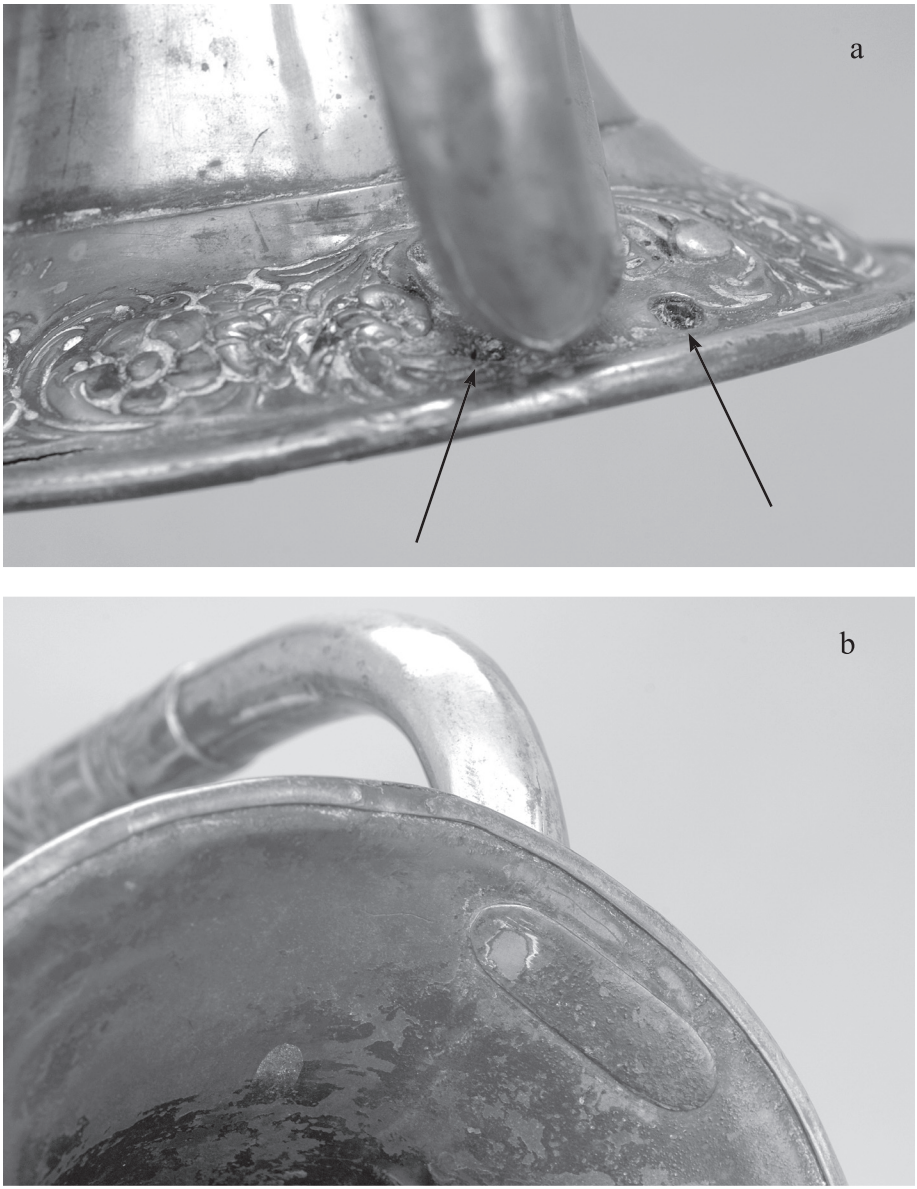
Both Rodenbostel natural trumpets are firmly assembled now and cannot be taken apart. The front bow of the instrument at Kneller Hall is soldered to the bell (Figure 12), while at the Bate Collection it is still attached with a wire tied through two holes in the bell (Figure 13). This was the traditional way of affixing the front bow to the bell in England, while just one hole was used for the same purpose in Nuremberg trumpets.

Figure 12 (left)**:** Natural trumpet, Kneller Hall (KH 148), with front bow soldered to bell; two holes in the bell, originally for attachment of the front bow, are visible.

Figure 13 (right)**:** Natural trumpet, Bate Collection, with two holes in the bell; wire still present.

The slide trumpet with Rodenbostel's name on the garland has the same two holes for wire attachment visible at the garland, but they are not in use now and a patch covers them on the inside of the bell (Figure 14). This detail confirms the fact that the instrument started its life as a natural trumpet, as was first observed by Peter Barton.[30]

The trumpet at Kneller Hall appears to be designed in the typical English manner described above, with overlapping joints between the first yard and the front bow, and between the second yard and the back bow; meanwhile, the other two joints (front bow to second yard and back bow to bell) appear to abut under the ferrules. This design may be conjectured from the fact that both overlapping joints widen slightly (to 12 mm) as the tubing approaches the ferrule, while the abutting joints do not show any analogous change in diameter, but measure between 11.5 and 11.6 mm right through to the ferrule (Figure 15). Although the trumpet is now rigidly soldered, this may indicate that it was originally possible to disassemble it in the way illustrated above for the Hofmaster trumpet (Figure 3). Due to alterations the original joint arrangement is less clear in the Rodenbostel trumpet at the Bate Collection, and this instrument may have been shortened.



Figures 14a–b: Rodenbostel slide trumpet, (a) with two holes in the garland (see arrows) and (b) the patch covering them on the inside of the bell (NMM 13505).

Figure 15: Front bow joints of the trumpet by George Henry Rodenbostel at Kneller Hall (KH 148).

Some biographical notes on Richard Woodham

It is of great significance that the clock-spring mechanism on Rodenbostel's trumpet is signed *Woodham / Inventor / & Maker / EXETER COURT / STRAND LONDON,* referring to the very man Hyde mentions as the first to manuafacture the "chromatic trumpet." Richard Woodham moved into the house at 12 Exeter Court, The Strand, in the Parish of St. Clement Dane's in London on Lady Day [25 March] 1774, and is registered there for the next two and a half decades.[31] In the Westminster Poll Books, Richard Woodham is also listed at Exeter Court; in 1774 as music ruler maker (i.e., maker of rulers for drawing staves), in 1780 without mention of a profession, and in 1784 and 1790 as musical instrument maker.[32] Algernon Rose provides the following information about Woodham in his *Talks with Bandsmen:*

> In 1780, Mr. R. Woodham, who was a watchmaker in the neighbourhood of Red Lion Square, established a workshop with his business for the making of brass and copper musical instruments. In the same year, he received into his employ, as an assistant, Samuel Keat … Mr. Woodham achieved a

> reputation in the making of trombones, French horns, bugles, slide trumpets and ophicleides. For the brass instrument department in the business of Mr. D'Almaine, he received numerous orders. At Mr. Woodham's death, 15 years later, the business passed into the hands of his assistant.[33]

However, the Westminster Poor Rates and Poll Books record Richard Woodham at Exeter Court in 1780, as already mentioned, not at Red Lion Square or its neighborhood. Watchmakers were located at Red Lion Square—for example, the workshop of Harris and Son, listed in the 1763 London Directory, but no watchmaker of the name Richard Woodham appears in the London directories.[34] In his standard work on horology, Brian Loomes does not mention Richard Woodham either, but he lists two watch- and clockmakers named James Woodham, one in London active before 1761, the other recorded in Hungerford, Berkshire, in 1795.[35] A connection between the instrument maker and this family of horologists may have existed, since the marriage of a Richard Woodham is recorded in Hungerford, Berkshire in 1767.[36]

Richard Woodham's name occurs for the last time in the Westminster Poor Rates under the Exeter Court address in the period from midsummer until 28 September 1798. But curiously Elizabeth Woodham is listed as the occupant in the previous period (25 December 1797 until 3 May 1798), suggesting that Richard Woodham had already died by then. In 1799 his son Joseph was the occupant of 12 Exeter Court. No burial-entry for Richard Woodham was found in the Parish records of St. Clement Dane's in the respective period.

Richard Woodham's alterations to the slide trumpet

Like the two natural trumpets by George Henry Rodenbostel at the Bate Collection and at Kneller Hall, the slide trumpet under discussion (NMM 13505) is now pitched in F.[37] The conversion of a natural trumpet in F into a slide trumpet of the same pitch involved only minor changes. The most profound difference between the two designs lies in the arrangement of the tubing. While the natural trumpet has a twist for reasons of stability (Figure 16), in the slide trumpet all the tubing must be parallel and in the same plane in order for the slide to work properly; stability is instead achieved by braces. This explains the kink in the bell where the slide starts (Figure 17, arrow). This angle is present not only in natural trumpets converted into slide trumpets, but is also a feature found in later slide trumpets that were made as such from scratch (Figure 18, arrow).

Richard Woodham chose a double clock-spring housed in a spring box as the slide-return mechanism discussed in greater detail below (Figures 20a–b). This feature may explain why he has generally been regarded as a watchmaker, although this remains somewhat conjectural, as outlined above. Even if he had no formal training as a watchmaker, a music ruler maker might have had the appropriate skills to make a clock-spring as well. This profession demanded skills in forming thin wires or pins. J.O. Thain describes the process of making a two-stave music ruler in detail (Figure 19a–b).[38] It requires precise filing and bending of pins, and accurate spacing of them to ensure that the ink carried

Figure 16 (left)**:** Twist in the Rodenbostel natural trumpet in Oxford (Bate Collection, pc72).
Figure 17 (middle)**:** Kink (see arrow) in the bell line in the slide trumpet by Rodenbostel/Woodham (NMM 13505).
Figure 18 (right)**:** Kink (see arrow) in the bell line in the slide trumpet by John August Köhler (NMM 7115).

by these pins is distributed correctly and evenly on the paper. When forming a clock-spring, proficiency and precision in handling and bending small strips of metal is needed as well.

The function of the double rather than a single clock-spring in early mechanical slide trumpets has been debated. The two clock-springs move in opposite directions, clockwise and counterclockwise.[39] Both are connected with a gut string, one guided within a hollow central rod and ending at a disk just below the cross-brace of the slide (Figure 20c), the other ending outside the spring box in a brass block (Figure 20a). This block was reconstructed by Peter Barton, based on marks of wear on the outer clock-spring casing that were caused by a similar original device.

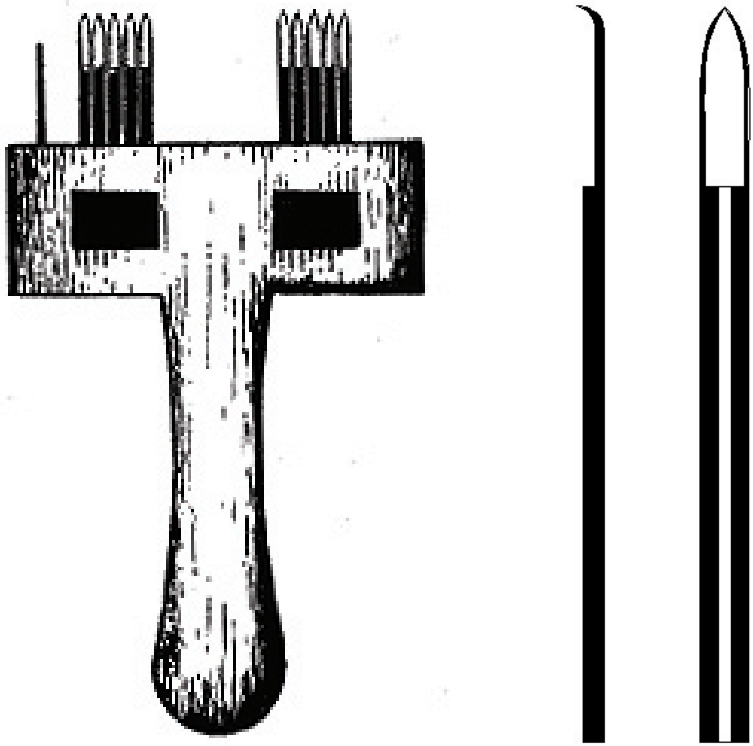


Figure 19a–b: Two-stave music ruler as illustrated by J.O. Thain in *The Musical Times*, March 1921, p. 192. The drawing on the right shows an individual pin in side and front view.

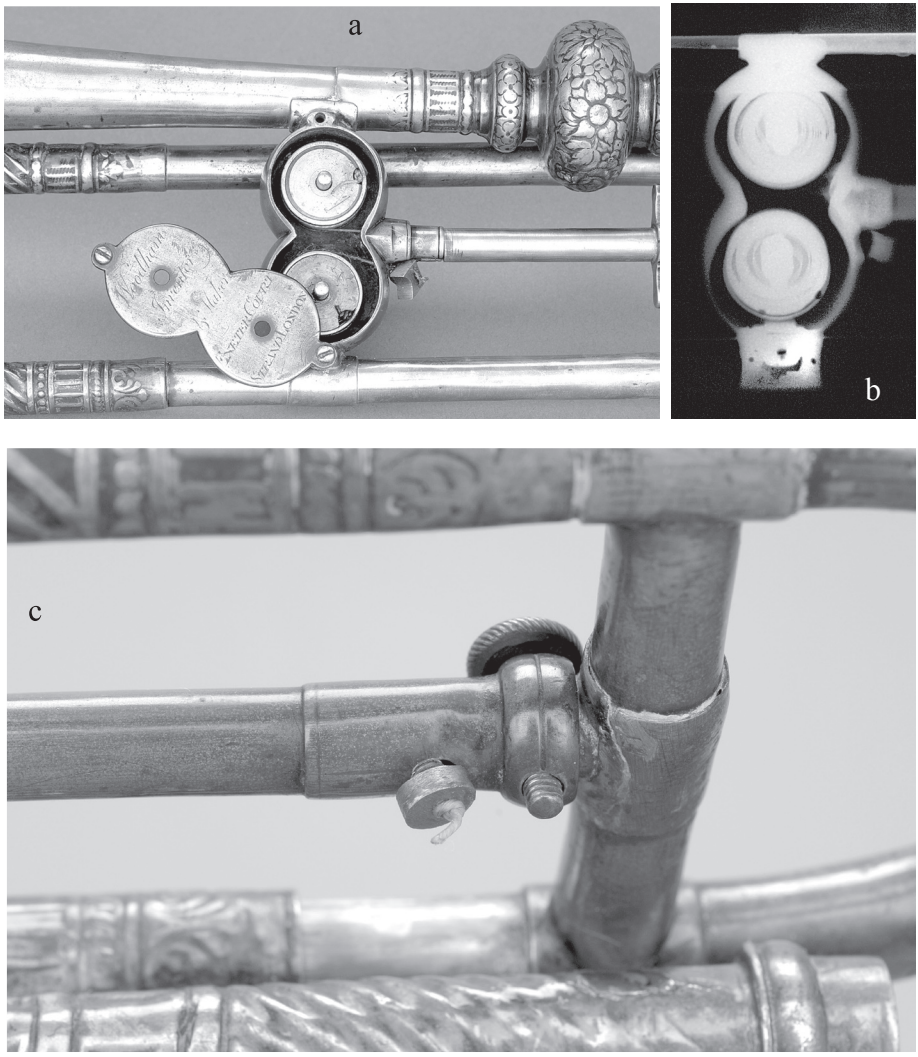


Figure 20a–c: Slide trumpet NMM 13505. (a) The double clock-spring return-mechanism (inner cover-plate of the top spring replaced). (b) X-ray of the springs inside. (c) The end of the gut string on a disk.

Barton originally suggested that the second gut string served as an adjustment for the slide tension,[40] while Brownlow favors the hypothesis that it was designed as a spare in case the main gut string broke.[41] The latter assumption seems to be more plausible,

since it takes little effort to tie the spare gut string to the slide finger-pull, but it is a very cumbersome operation to replace a broken string housed within the spring box. Later trumpets of this design have a notched finger-pull crossbar, but in the Rodenbostel/Woodham trumpet this notch is not present (Figure 21); the spare gut string would have had to be tied around the finger-pull in a makeshift fashion.

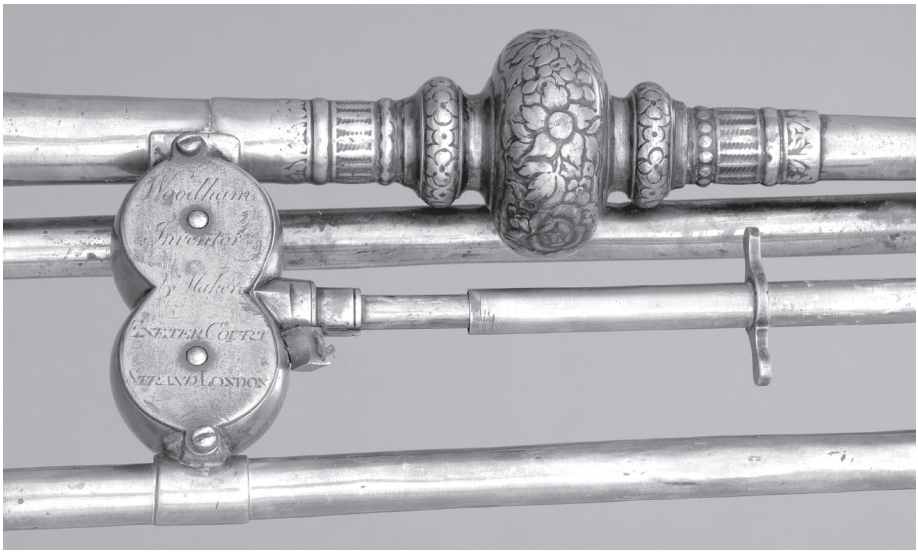


Figure 21: The spare gut-string could be wound around the finger-pull crossbar in the event of the main gut-string breaking.

The overall length and therefore the pitch can be adjusted with a fine-tuning device located at the central push-rod (Figure 22). It consists of a sleeve with comb-shaped perforation locking into brass lugs soldered onto the push-rod. When locked into the last lug the overall pitch is lowered by a maximum of 10 Hz, adding 44mm to the effective slide length. Barton assumes, without a compelling reason, that this fine-tuning device is unlikely to have been part of the original design.[42] Cynthia Hoover describes a similar device in an unsigned slide trumpet at the Smithsonian Institution.[43] She suggests that this device served to adjust the slide length to suit the various different pitches obtained when crooks were added. Indeed this device is needed to adapt the slide length when the existing (although not original) D crook is used with NMM 13505.[44] It is therefore likely that this fine-tuning device was affixed to the instrument around the time of its transformation from natural trumpet to slide trumpet. The slide design with one inner and one outer slide (Figure 22b)—rather than two outer slide tubes as in a trombone—is probably a legacy of the English flat trumpet.

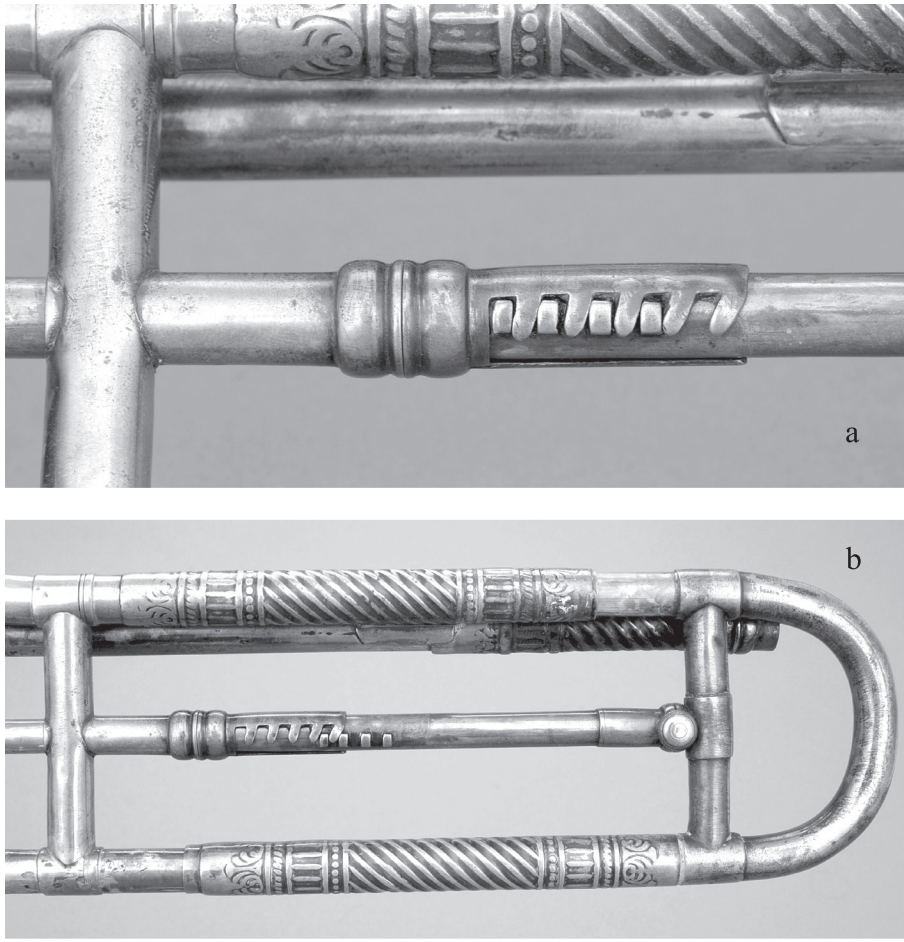


Figure 22a–b: Fine-tuning device. (a) closed position;
(b) maximum slide extension, also showing the male/female slide leg design.

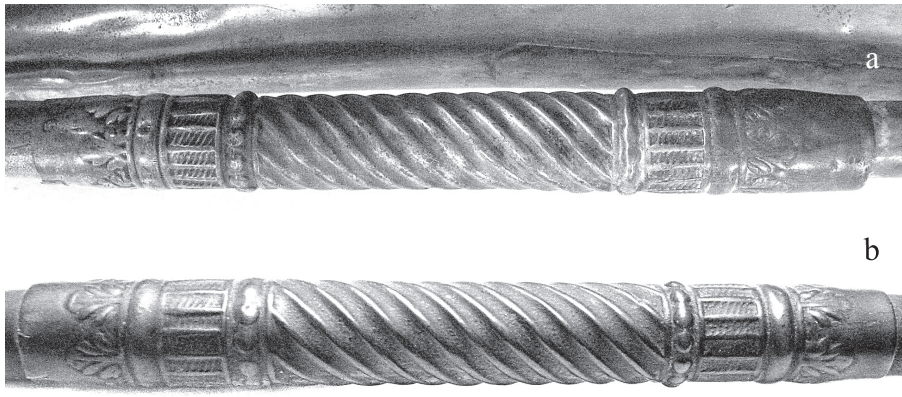
Did Rodenbostel and Woodham collaborate?

The periods of activity of George Henry Rodenbostel and Richard Woodham overlapped, and the two craftsmen lived and worked in adjacent neighborhoods in London, in Piccadilly and The Strand. Morley-Pegge imagined that Rodenbostel went to Woodham with his unfinished trumpet to have a slide mechanism fitted, and then took it back to his own workshop and finished it there.[45] Barton questioned this idea without further elaborating on the reason for his skepticism. If Morley-Pegge's theory is correct, the instrument should show a relatively homogenous appearance, but a closer examination reveals that this is not the case. The ferrules associated with the slide differ from

the original Rodenbostel style, suggesting that they were replaced in the course of the alteration. Typical Rodenbostel ferrules and ball sleeves show hatched stripes, a dotted ring that is often quite worn in places, and a plain band (Figure 23, top, and 24a–b), while the replaced ferrules lack the hatching and have a cord pattern instead of the plain band (Figures 22b and 23, bottom). Thus it seems likely that Woodham undertook the changes independently of Rodenbostel. Otherwise, the latter would probably have supplied identical ferrules for the entire instrument, which he appears to have had in stock over a longer period of time, since they are found on all three of his trumpets discussed here (Figures 23–24).

Figure 23: Top ferrule by Rodenbostel; bottom ferrule presumably replaced by Woodham (NMM 13505).

These observations may have implications for dating the trumpet. Woodham could have converted the natural trumpet into a slide trumpet as late as 1797 or 1798, which would place the conversion close to the publication date of Hyde's trumpet method. Brownlow even went so far as to speculate that Hyde may have been directly involved in the conversion.[46] However, there are no compelling reasons to assume that Woodham did his work after Rodenbostel had died; Woodham could have done the alteration during Rodenbostel's lifetime without consulting the original maker. In this case the alteration could have been done as early as 1785, shortly after the publication of Burney's critical remarks.



Figures 24a–b: Rodenbostel's ferrule design on the natural trumpets at the Bate Collection (a) and at Kneller Hall (b).

Some observations on other slide-trumpet conversions

Although probably the earliest slide-trumpet conversion, the Rodenbostel/Woodham is not the only one. Other English natural trumpets—for example, two instruments by John Harris—were also converted into slide trumpets; one is at the Royal College of Music in London (no. 189, Figure 25), the other is at the Bate Collection in Oxford (no. pc 70, Figure 26). These instruments were once owned by the famous trumpeters Thomas Harper Sr. (1786–1853) and Thomas Harper Jr. (1816–98) respectively, the two foremost virtuosos of the English slide trumpet in the nineteenth century.

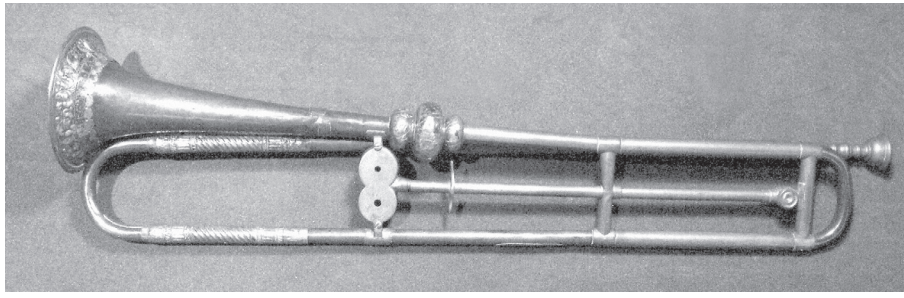


Figure 25: Natural trumpet by John Harris, London, ca. 1715/20, converted into a slide trumpet in the nineteenth century (Royal College of Music, London, no. 189).

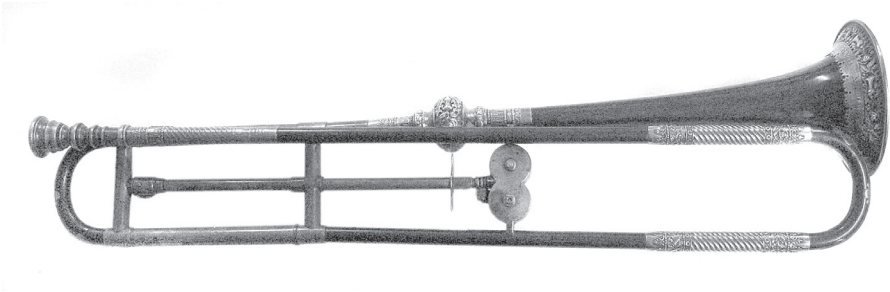


Figure 26: Natural trumpet by John Harris, London, ca. 1715/20, converted into a slide trumpet in the nineteenth century (Bate Collection, Oxford, no. pc 70).

The conversion of the trumpet at the Royal College of Music is attributed to Thomas Harper Sr. himself, while the Bate's Harris allegedly served as a model for slide trumpets by John August Köhler (1805–78). The information on Köhler's involvement in the conversion of Harris's trumpet at the Bate was passed down from Thomas Harper Jr. to W.H.F. Blandford, who owned the instrument at one time.[47] However, there appears

Figure 27: Garland on slide trumpet by John Harris (Royal College of Music, London, no. 189).

to be no documentation that would support the assumption that Harper Sr. altered the Harris trumpet at the Royal College.[48] But the different degrees of alteration could well be explained by the fact that one trumpet was altered by a musician, the other by a professional trumpet maker. Both natural trumpets were shortened from their original pitch in D to F, the pitch of their current state. The converted slide trumpet at the Royal College retains its complete garland and the original ball (Figures 27–28).

Figure 28: Ball on slide trumpet by John Harris (Royal College of Music, London, no. 189).

The Bate Collection's Harris trumpet shows a greater degree of alteration, as all the ferrules, the ball, and probably the lower part of the garland were replaced by Köhler (Figure 29). The two holes typical of English natural trumpets are visible in the bell, but they are absent in the lower part of the garland, thus suggesting that at least this section of the garland is not original. It is even conceivable that the entire garland was replaced and engraved with the name of the original maker of the natural trumpet, but further comparison with other Harris trumpets is required to confirm or dismiss this idea. The ferrules on the Harris trumpet in the Bate Collection (Figure 30) resemble those found on later slide trumpets by the Köhler firm, for example one from ca. 1881 in the Utley Collection (NMM 7115, Figure 31).

Both conversion slide trumpets have the double clock-spring return mechanism described above. In the trumpet at the Bate Collection the spare cord ends in a wooden block and can be conveniently hooked into the notched finger-pull in the event of failure of the main cord (Figure 32).

Figures 29a–b: Garland on slide trumpet by John Harris (Bate Collection, Oxford, no. pc 70). The lower part of the garland was replaced by Köhler.

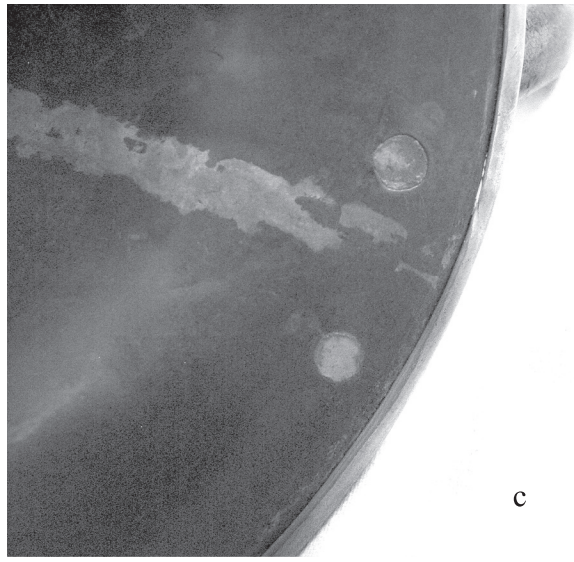


Figure 29c: Holes in the bell, but not in the garland.

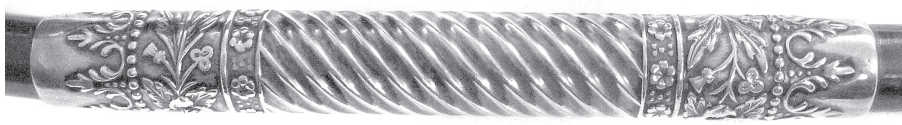


Figure 30: Ferrule by Köhler on the Harris slide trumpet in the Bate collection.

Figure 31: Typical ferrule on a slide trumpet from the Köhler firm, ca. 1881 (NMM 7115).

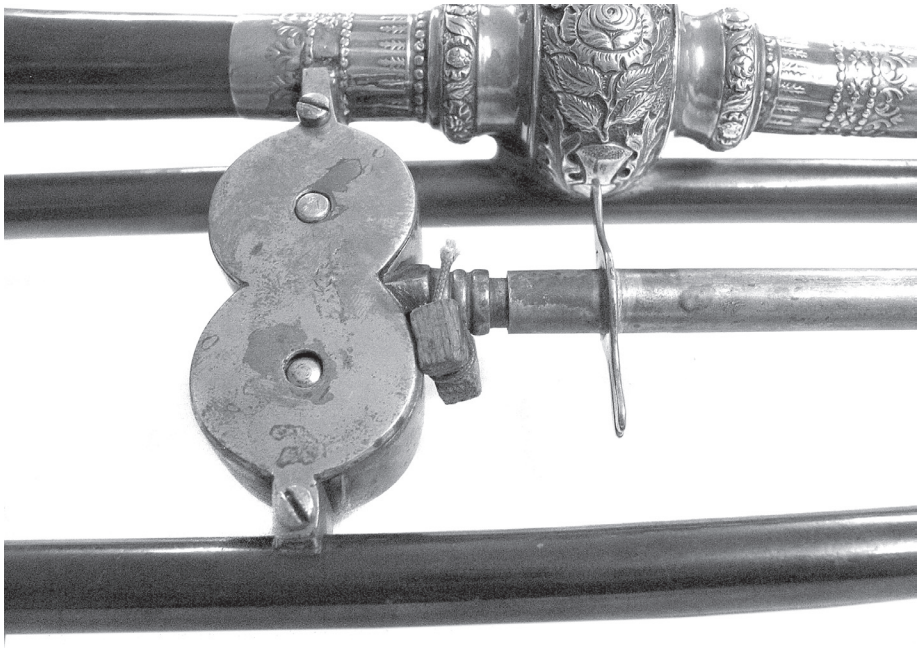


Figure 32: Double clock-spring mechanism in the converted slide trumpet by John Harris in the Bate Collection. The spare gut string ends in a wooden block; the finger pull is notched.

What did the slide mean musically?

The slide of these early trumpets is not long enough to change the pitch by a whole step, but suffices only for a semitone, when applying the commonly used rule-of-thumb calculation that a whole-tone is 1/8[49] and a semitone 1/16 of the overall tube length. The length of the air column in the Rodenbostel/Woodham slide trumpet measures 1747 mm; the slide extension adds 122 mm. For a semitone a 109 mm slide extension is needed, but a whole tone would require 218 mm, more than what is available. Equally, the Harris trumpet at the Royal College of Music has an air-column length of 1762 mm, but the maximum slide extension is only 108 mm, barely long enough for a semitone (1762 ÷ 16 = 110), and not sufficient for a whole tone. As Brownlow states[50] and J. Hyde confirms, the late-eighteenth-century English slide trumpet was thus not fully chromatic, and was in this respect inferior to the flat trumpet from around 1700, which was chromatic from the second octave upwards. But chromaticism was not the main purpose of the English mechanical slide trumpet; rather it was primarily an improved

natural trumpet that solved the problem of out-of-tune notes. This situation is evident in Thomas Harper Jr.'s *Trumpet School* from ca. 1875, where he writes,

> There are difficulties at present in the Trumpet-parts of Handel, Bach, and their contemporaries, which existed not at the time when such parts were written. This is because it was formerly the custom for some players to devote themselves to the practice of the high notes particularly, so as to fit themselves for the first Trumpet-parts of that day, which generally range higher than those now written; while other players applied themselves to practicing the middle part…; a third class of Trumpeters practiced the lower notes almost exclusively,… On the contrary, it is now the custom for a player to exercise himself equally throughout the compass of the Trumpet, and to discard the advantage of different sized mouthpieces, suited to the easier articulation of higher or lower notes.[51]

Harper believed that this loss of specialized skills caused by the demand for greater versatility was compensated for by the introduction of the slide.

> It in some degree counterbalances the evil of this universalizing system that, within these hundred years, the slide has been added to the Trumpet.[52]

As Brownlow notes, Thomas Harper Sr.'s tutor confirms that the slide was used primarily to correct the eleventh and thirteenth partials—the very notes about which Burney had complained.[53] An improved natural trumpet was all that was needed for most of the repertoire that was played in the highly popular music festivals around Britain throughout the nineteenth century; they included principally works by Handel and the classical composers Haydn, Mozart, and Beethoven, which have trumpet parts originally written for the natural instrument.[54] Thomas Harper Jr. was engaged in many of those music festivals, which featured local orchestras and choirs and renowned soloists and vocalists from London. Surviving concert programs at the Royal College of Music in London show that Thomas Harper Jr. played "The Trumpet Shall Sound" numerous times.[55] Harper did this flawlessly—not faltering like James Sarjant a hundred years earlier—thanks to the help of the slide that had been invented to aid him and his struggling colleagues.

The title of Brownlow's book, *The Last Trumpet*, hints at the notion that the slide trumpet represented the last stage of development of the old natural trumpet, an opinion first expressed by Christopher Monk.[56] Even with the slide extended this trumpet was still acoustically a natural trumpet, with the same sound and timbre for all notes. Thus, I agree with Brownlow that adhering to the English slide trumpet—although anachronistic—would have been a viable option for the revival of the Baroque trumpet instead of introducing vent-holes.[57] The slide-trumpet conversions described here were at least based on natural trumpets from the Baroque era and therefore represented an unbroken tradition. The Rodenbostel/Woodham was created from such a natural trumpet with

the objective of overcoming the difficulties of performing Baroque repertoire at a time when the old skills were in a state of decline. In this sense it is not *the last trumpet* of a bygone era, but *the first trumpet* of the Early Music Revival.

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Photo references:
Figures 1, 4, and 20b: David Vassy; Figure 3: Antonia Reeve, reproduced by kind permission of the Edinburgh Collection of Historical Musical Instruments.; Figure 9a–b: Goldsmiths' Company, London; Figure 19: The *Musical Times*, 1921; Figures 5–8, 10, 14a–b, 17, 18, 20a, 20c, 21–23, and 31 by Mark Olencki, © National Music Museum; all other photos and drawings by the author (publication by kind permission of the Bate Collection, Oxford, the Royal College of Music, London, and the Royal Military School, London).

NOTES

[1] Charles Burney, *An Account of the Musical Performances in Westminster Abbey and The Pantheon, May 26th, 27th, 29th; and June the 3rd, and 5th, 1784, in Commemoration of Handel* (London: Printed for the Benefit of the Musical Fund, 1785; rpt., New York: Da Capo Press, 1979), 86–87.
[2] Ibid., 87.
[3] Art Brownlow, *The Last Trumpet: A History of the English Slide Trumpet* (Stuyvesant, New York: Pendragon Press, 1996), 57–58.
[4] Albert R. Rice, "A Selection of Instrumental and Vocal Tutors and Treatises Entered at Stationers' Hall from 1789–1818," *The Galpin Society Journal* 41 (October 1988): 16–23, esp. 19. Hyde's first name is frequently identified as "John" (e.g., Brownlow, *The Last Trumpet*, 37). In the Integrated Catalog of the British Library and in the source quoted by Rice he is listed as "James Hyde."
[5] J. Hyde, *A New and Compleat Preceptor for the Trumpet and Bugle Horn… A Scale of the Chromatic Trumpet… And a Collection of Bugle Horn Duets* (London: Printed and Sold at Thompsons Warehouse, [1800]), 51. Hyde's trumpet tutor can be dated between 1790 and 1802 since it was published by Thomson's Warehouse (see Cynthia Adams Hoover, "The Slide Trumpet in the 19th Century," *Brass Quarterly* 6, no. 4 [Summer 1963 as of Fall 1964]: 164). See also John Webb, "The English Slide Trumpet," *Historic Brass Society Journal* 5 (1993): 267.
[6] The scale is reproduced in Brownlow, *The Last Trumpet*, 35.
[7] Eric Halfpenny, "William Bull and the English Baroque Trumpet," *The Galpin Society Journal* 15 (March 1962): 19–20; idem, "Two Oxford Trumpets," *The Galpin Society Journal* 16 (March

1963): 49–63; idem, "Four Seventeenth-century British Trumpets," *The Galpin Society Journal* 22 (1969): 51–57.
[8] Halfpenny, "William Bull," 20.
[9] Anthony Baines, "James Talbot's Manuscript," *The Galpin Society Journal* 1 (March 1948): 21, 26. Christ Church Library in Oxford, Ch. Ch. Mus. 1187. For experiments in reproducing and a discussion of the flat trumpet see Andrew Pinnock, "A Wider Role for the Flat Trumpet," *The Galpin Society Journal* 42 (August 1989): 105–11; Crispian Steele-Perkins, "Practical Observations on Natural, Slide and Flat Trumpets," *The Galpin Society Journal* 42 (1989): 122–27; David Rycroft, "Flat Trumpet Facts and Figures," *The Galpin Society Journal*, 42 (1989): 134–41; Frank Tomes, "Flat Trumpet Experiments," *The Galpin Society Journal* 43 (March 1990): 164–65; John Webb, "The Flat Trumpet in Perspective," *The Galpin Society Journal* 46 (March 1993): 154–60.
[10] London: Methuen & Co. Ltd, 1910, pl. 42.
[11] Hoover, "The Slide Trumpet of the Nineteenth Century," 162, 164; Brownlow, *The Last Trumpet*, 46, 47, 49, 50.
[12] Peter Barton, "The Woodham-Rodenbostel Slide Trumpet and others, employing the 'Clock-Spring' Mechanism," *The Galpin Society Journal* 42 (August 1989): 112–20.
[13] Hofgeschichte: Rodenbostel in Rodenbostel, no. 4. Private research by Dr. Hellmuth Hahn, Wedemark-Bissendorf, Germany. See also Annemarie Buschbaum, *Chronik Scherenbostel und Schlage/Ickhorst* (Wedemark: Gemeinde Wedemark, 2008), 16–21.
[14] London, Westminster Archives, Marriages St. George's Church, Hanover Square, 1776, 8th October, no. 437.
[15] William Waterhouse, *The New Langwill Index* (London: Tony Bingham, 1993), 331–32.
[16] Lyndesay G. Langwill, *An Index of Musical Wind-Instrument Makers*, 6th edn., revised, enlarged and illustrated (Edinburgh: Lindsay & Co. 1980), 149. This entry provides more information than that found in Waterhouse, *The New Langwill Index*, 331–32.
[17] Maurice Byrne, "The Goldsmith-Trumpet-makers of the British Isles," *The Galpin Society Journal* 19 (April 1966): 82.
[18] Alice Louise Bacon, "A Technical Study of the Alloy Composition of 'Brass' Wind Musical Instruments (1651–1867) Utilizing Non-Destructive X-Ray Flourescence" (London: Thesis submitted to the Institute of Archeology, University College of London, University of London, 2003), 1:320.
[19] Byrne, "The Goldsmith-Trumpet-makers," 82.
[20] Bacon, "A Technical Study," 1:178–79, 183–84.
[21] Goldsmiths' Hall, London: Mark Book from 8 March 1773 to 21 Nov. 1782, 66. See also Arthur G. Grimwade, *London Goldsmiths 1697–1837. Their Marks and Lives*, 3rd edn. (London: Redwood Press Ltd., 1990) 72, 644.
[22] Grimwade, *London Goldsmiths*, 644.
[23] London Directories, printed for T. Lowndes. Microfilm copies available at the Westminster Archives, London, and the London Metropolitan Archives.
[24] Sir Charles James Jackson, *English Goldsmiths and Their Marks* (New York: Dover, 1964; rpt. of the second edition, 1921), 217.
[25] Bacon, "A Technical Study," 1:183.
[26] London Metropolitan Archives, Index of Burials, St. George's German Lutheran Church.
[27] Bacon, "A Technical Study," 1:183; and Byrne, "The Goldsmith-Trumpet-makers," 82.
[28] Bacon, "A Technical Study," 1:186.
[29] On loan to the Bate Collection from Queen's College, Oxford.
[30] Barton, "The Woodham-Rodenbostel Slide Trumpet," 113.

[31] Westminster Archives, Poor Rates, St. Clement Dane's, 1774–98.
[32] London Metropolitan Archives: Westminster Poll Books for the years 1774, 1780, 1784, 1790 (Database also kept at the Westminster Archives).
[33] Algernon S. Rose, *Talks with Bandsmen* (London: William Rider and Son, 1894; rept., London: Tony Bingham), 347.
[34] *The Universal Director of the Nobleman and Gentleman's True Guide by Mr. Mortimer* (London: J. Cote, 1763), 80.
[35] Brian Loomes, *Watchmakers and Clockmakers of the World: Including Makers of Scientific Instruments, Sundials and Barometers* (London: N.A.G. Press, 2006), 856.
[36] This Richard Woodham was married to Eliz[abeth] Biss in Hungerford, Berkshire, on 8 July 1767, and Joseph Wodham, a son of Richard and Elizabeth Wodham, was christened there on 1 January 1768 (International Genealogical Index, British Isles, IGI Individual Records). The son of the musical instrument maker Richard Woodham was named Joseph, and his wife's name was Elizabeth (see Westminster Archives, Poor Rates 1798 and 1799). The date of Joseph Wodham's christening in Hungerford appears to agree with the life span of the musician Joseph Woodham (1767–1841) of London, of whom Brownlow assumed a probable relation with Richard Woodham the instrument maker (Brownlow, *The Last Trumpet*, 229). A Joseph Woodham died at the Strand between January and March 1841, and he could well have been Richard's son (England & Wales, FreeBMD Death Index: 1837–1983, 1:371). It is therefore also possible that there is a connection between the watchmaker James Woodham in Hungerford and the musical instrument maker Richard Woodham in London, who may have lived in Berkshire just briefly, although this is not supported by existing documention, apart from the records of his marriage and christening (information provided by the Archivist of the Hungerford Historical Association, Fred Bailey, in an email to the author, 16 September 2008). The watchmaker James Woodham in London could have been a relative too. However, neither assumption can be proven at this point and further research is required. If the Richard Woodham who married in Hungerford, Berkshire, is indeed the man who made the clock-spring slide mechanism on the Rodenbostel trumpet, he may actually have had some knowledge of watch- or clock-making, although this occupation does not appear in the Westminster records.
[37] The Rodenbostel natural trumpet at Kneller Hall in London (KH 148) seems to be relatively undisturbed and in its original length; the other one at the Bate Collection in Oxford (x 72) has suffered some alterations and may have been shortened.
[38] J.O. Thain, "A Two-Stave Music Ruler, and How to Make it," *The Musical Times* 62, no. 937 (1 March 1921): 192–93.
[39] A detailed drawing of the function of the two clock-springs can be found in Barton, "The Woodham-Rodenbostel Slide Trumpet," 115, 116.
[40] Barton, "The Woodham-Rodenbostel Slide Trumpet," 117–18.
[41] Brownlow, *The Last Trumpet*, 47.
[42] Barton, "The Woodham-Rodenbostel Slide Trumpet," 119.
[43] Hoover, "The Slide Trumpet in the 19th Century," 163.
[44] The air-column length resulting from the D crook is 2107 mm, which requires a slide extension of at least 132 mm for a semitone (calculation see below). The slide without the fine-tuning device provides only 122 mm slide-extension.
[45] Hoover, "The Slide Trumpet in the 19th Century," 164.
[46] Brownlow, *The Last Trumpet*, 50.
[47] Bacon, "A Technical Study," 2:406.

[48] Ibid., 1:167, 2:403. Bacon's statement that the Harris trumpet at the Royal College of Music was changed into a slide trumpet by Harper Sr. seems to be based on a misunderstanding of a description of this instrument in Scott Sorenson and John Webb, "The Harpers and the Trumpet," *The Galpin Sociey Journal* 39 (September 1986): 43. Crispian Steele-Perkins states (without giving the source for his assumption) that this trumpet was fitted with a slide mechanism by Clementi & Co., ca. 1820 (Steele-Perkins, "The Trumpet," *Early Music Today* 6, no. 1 [February/March 1998]: 11). A search of documents related to Harper at the Royal College of Music has not revealed any relevant information on this matter.

[49] In equal temperament the mathematically correct figures for lowering the pitch by a semitone requires an increase in effective length by the 12th root of 2. The exact increase for two semitones is the 6th root of 2 or 1/8.2 of the basic length.

[50] Brownlow, *The Last Trumpet*, 86–89.

[51] Thomas Harper, *School for the Trumpet. Observations on the Slide and on the Mode of Writing Music for the Trumpet* (London: Rudall, Carte, [ca. 1875]), 2.

[52] Ibid., 2.

[53] Brownlow, *The Last Trumpet*, 86.

[54] Ibid., 119.

[55] Ibid., 166.

[56] Ibid., 213.

[57] Ibid., 212.