REVIEWS

Don L. Smithers. *Trumpets, Horns, and Bach* Abschriften *at the Time of Christian Friedrich Penzel: Probing the Pedigree of BWV 143*. Frankfurt am Main: Peter Lang, 2015. 144 pages. ISBN 978-3-631-66322-6. $42.95.

Don L. Smithers surely is one of the most highly respected of scholars in the realm of brass history. His *Music and History of the Baroque Trumpet before 1721* (1973, rev. 1988) has been and will be required reading in the field for the foreseeable future (hopefully we will not have much longer to wait for the much-anticipated post-1721 volume). In the meantime he has written the present study on the authenticity of J. S. Bach's Cantata No. 143, *Lobe den Herrn, meine Seele.* A first observation is the oddity that he decided to publish this as a monograph instead of trimming it down to a succinct journal article—especially given the heavy footnote word count (even within the realm of Bach studies). At least, given his choice, it is safe to say that he has here spoken his full piece on BWV 143.

As Smithers notes, BWV 143 is an odd work within Bach's output in terms of orchestration, key, and filiation. While scholars long held it to be authentically by Bach, that all changed in 1998 when the latest revision of the Bach catalog (Dürr, Kobayashi, and Beisswenger's *Bach-Werke-Verzeichnis*) deemed it "not securely authentic" ("Echtheit des Werkes nicht gesichert," p. 145). Since then *New Grove* (in *Oxford Music Online*) has placed it in the "doubtful and spurious" section of Bach's output without further comment. Smithers's argument, in fact the whole *raison d'être* for his study, is to place the work back within the list of authentic Bach works.

A disclaimer of sorts is perhaps warranted at this point: there is quite a lot of detailed argument involved that cannot be accurately distilled in a short book review. With that caveat in mind, Smithers works to convince us of BWV 143's authenticity using something like a five-point approach as follows:

1. While no autograph is extant, Christian Friedrich Penzel, who copied the earliest extant copy of the work and who also copied and performed many of Bach's other works, believed BWV 143 to be by Bach. He is generally reliable as a witness.
2. The odd *corno da caccia* parts in B♭ are a misreading of a *Chorton*/*Cammerton* transposition error and were originally in written C as was customary with most brass parts in the era.
3. The *corno da caccia* parts transcribed by Penzel are also an octave too low (given that the lowest often goes below the basso continuo).
4. Thus Penzel's *corno da caccia* indication was a call generically for brass where the presumably lost manuscript actually called for *Tromba da caccia* in the manner of Bach's Second Brandenburg Concerto (a work in which Penzel made a similar substitution by indicating *Tromba, ô vero Corno da Caccia*).[1]

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5. The work, when performed up a step with trumpets up an octave, "sounds like Bach" and has clear stylistic similarities to Bach's authentic cantatas that reinforce that the work is authentically by Bach.

The first four of these points are well taken and argued effectively for the most part. Penzel is generally reliable as a witness, even if his contact with Bach was potentially indirect. Penzel's reliability as regards textual readings is questionable—and apparently especially so in the case of BWV 143—but as Smithers points out his credibility as to the authenticity of Bach's works is very good. In any case, it is not Penzel's fault that the autograph later went missing. Inevitably the work sounds more idiomatic and less bizarre when played with trumpets up an octave, confirming to me at least Smithers's re-reading of the brass parts. Penzel made something of a habit of substituting horns for trumpets, undoubtedly a result of his not having access to capable trumpeters in the same way Bach did. Smithers seems to me to be standing on solid ground with that assertion.

This is not to say that Smithers's case is airtight, however (and this is where publishing it in a peer-reviewed journal would have instilled more confidence). It is difficult to believe that Penzel, experienced as he was with Bach's music, would have made a careless error on *Chorton*/*Cammerton* transpositions. Horns in B♭ were not really that uncommon at the time, and while trumpets were less common in that key they were still to be found. The weakest point in Smithers's transposition case is the one he makes regarding key affect. He says the text and tone of the work are more fitting in C than B♭ (pp. 94–96). He would have been better advised to steer clear of the issue of affect entirely in that key affect is such a slippery thing that it weakens his credibility on other issues. Having said this, I do not know that the composition needs to be in C in order for the non-affect aspects of Smithers's argument to work.

Smithers's notion that BWV 143 is by Bach based on stylistic analysis smacks of old nineteenth-century musicology in a way that damages the whole of his case needlessly. When he says "no one has previously mentioned much less discussed the most indicative parts of this work bearing Bach's undoubted stylistic fingerprints" (p. 59), my natural inclination is to try to find all the parts that are not Bach-like and indeed to even question what "Bach-like" really means. In fact, one can do a quick internet search and find a plethora of arguments exactly to the contrary on BWV 143—that it has more non-Bach fingerprints than anything else! Why make such a subjective argument when better, more objective points stand in his favor? The stylistic argument is to me both a red herring and a flashing red warning light. The history of musicology is littered with the corpses of musicological tomes that stated definitively, "this work is/isn't by so-and-so because it *sounds* that way," only to be proven totally wrong when new evidence (such as an autograph) later turned up in some forgotten archive. The history of Haydn's cello concertos serve as a stark reminder to us all, and Smithers should have steered clear of this whole big ugly underbelly of "old" musicology. To

change Penzel's readings to make it sound "right" and then to argue that the "right" sound is Bach's sound ends up being an entirely circular exercise.

An ancillary circularity in Smithers's reasoning is his apparent concern with the idea that no other composer was capable of writing BWV 143. He points out various approaches to writing for brass employed by Bach and shows them to be present in BWV 143. Yet Dürr, in demoting the work to "questionable," argued from the opposite perspective that the work does not present the quality of workmanship shown in Bach's authentic cantatas (partly because the text does not fit the supposed liturgical placement for the readings after Christmas) and posited that the work, if it was indeed by Bach, surely must have been an early cantata (Dürr apparently is not immune to the dangers of stylistic filiation either). To me, some parts of BWV 143 sound like Bach and other parts do not (even with Smithers's brass transposition). Either way, surely there were other composers capable of writing the work, for better or worse. The issue hardly matters, given that there is no winning this type of speculative argument.

There are two other areas in which Smithers's study disappoints needlessly. The most recent secondary source listed in the bibliography dates from 2000. Is there no relevant literature from the past fifteen years? I bring this up because Smithers so often resorts to pointing out the primacy of his ideas—that he was the first to posit this point or another "thirty years ago" (see for example p. 52). Primacy does not equate with authority or accuracy, though he tacitly seems to believe it does. I respect Smithers a great deal as a scholar, but respect only goes so far on issues such as the authenticity of a work.

My second disappointment is related to my first, but is more crushing on a personal level: Smithers's obvious disdain for scholars generally, and especially anyone who argued against his position on BWV 143. The "doctors" who pass "judgments from on high" (p. 58–59), the "nay sayers" (p. 59), and those who cannot "play a natural trumpet *naturally*" (p. 54, emphasis in original) find themselves in some kind of Orwellian (p. 37) conspiracy to deprive Bach of one of his finest pieces of music. We sometimes get too passionate about our research—Bach scholars seem especially susceptible in this regard—but for neutral parties who do not really care one way or the other where BWV 143 is listed in *New Grove* so long as it is accurately placed, ad hominem attacks of this sort throw Smithers's whole argument into question. Such language reveals why this is a book instead of a journal article: no journal editor would have allowed such writing to make its way into print. I first read *Music and History of the Baroque Trumpet before 1721* in college, and I think I have read just about everything Smithers has ever published. That book is my bible in all matters related to trumpet history up to the end of the Baroque. Reading Smithers's language in the present study, which is just too over-the-top to be acceptable, shattered the image of one of my musicological superheroes.

Setting all of this scorched-earth rhetoric from both BWV 143 camps aside, let us return to the question at hand: will Smithers's argument return BWV 143 to the authentic column in *New Grove* or will it be left in the purgatory of "doubtful and

spurious?" I do not think it will move, not necessarily because Smithers is wrong but because of the way he has presented his case. The lack of an autograph is, to be sure, not justification enough to make it doubtful, and Dürr et al. may have overstepped, but on the other hand all Dürr said was that BWV 143 is "not securely authentic." They raised questions, and Smithers offers such a heavy-handed response that he obscured his finer and better-argued points. Given all of the apparent errors and/or edits made by Penzel in copying/editing the work, it is worth questioning how much of what he preserved is actually Bach's anyway. Are the errors confined to the key and the brass parts? At what point does the BWV 143 cease to be "by Bach" anyway? Smithers and Dürr et al. draw their lines at different points in the proverbial sand. Smithers has raised important issues that will at least require the *New Grove* editors to make an annotation to their entry even if they choose not to move the work back into the authentic column. For what it is worth, I think Smithers is correct on the issue of transposition and he may well be correct that Bach wrote the thing.

Bryan Proksch

[1] On the trumpet and horn in Bach's Second Brandenburg Concerto, and on related problems of transposition and oddly-keyed brass see my "The Context of the Tromba in F in J. S. Bach's Second Brandenburg Concerto, BWV 1047," *Historic Brass Society Journal* 23 (2011): 43–66.

Adolphe Sax, His Influence and Legacy: A Bicentenary Conference. Proceedings of the international conference, 3–5 July 2014, Musical Instruments Museum, Brussels. Edited by Anne-Emmanuelle Ceulemans, Géry Dumoulin, and Howard Weiner. *Revue Belge de Musicologie/Belgisch Tijdschrift voor Muziekwetenschap*, vol. LXX, 2016.

The Sax bicentenary in 2014 provided an opportunity to re-evaluate the historical importance of Adolphe Sax. During that year, the SAX200 exhibition held at the Brussels Musical Instruments Museum became a pre-eminent focus of attention and activity. Magnificently laid out and presented, it was an inspirational visitor experience. The proceedings of the international conference held in the museum are captured in this collection of thirteen papers, five in French, six in English and two in Flemish/Dutch. They encapsulate Sax's achievements and cement his towering reputation as an inventor and instrument maker.

Sax's creative life was energetic and complicated. There is just so much. What these papers demonstrate is that, as a maker of wind and brass instruments, he was in a class of his own. Disruptive technologies are not only a twenty-first century phenomenon. In his own times, in the field of music, Sax was a disruptor in the Elon Musk mold. An

inventor surpassing normal imaginations. Kettledrums without cauldrons. Breathing machines. Ophicleides with clarinet mouthpieces that transmuted into saxophones and flourished in a genre of music yet to be invented at the time of their first appearance.

In this collection of thirteen papers, Sax's biographer, Malou Haine, comes first, writing about Sax's network of influence. The behind-the-scenes political machinations that went on to frustrate Sax's promotion through the ranks of the honorific *Légion d'honneur* from *chevalier* to *officier* level are worthy of dramatization. This is a valuable article full of primary source material—letters between luminaries such as François-Joseph Fétis and Jean-Georges Kastner, and between government ministers and various functionaries that draw out the "deep net" of resistance to the disruptive technologies of Sax. This article aids our understanding of the labyrinth of malign opposition Sax met in Paris throughout his life. Despite, or perhaps because of gaining the only *Grand Prix* at *l'Exposition universelle* of 1867 in Paris, he was denied official recognition of the elevated status he enjoyed in the esteem of his most celebrated musical contemporaries. The following article, also by Haine, demonstrates the depth of the esteem Hector Berlioz held for him. Berlioz's leaflets and letters extolling Sax's virtues are phrased in the most poetic and elegant of terms.

The authors of the articles in this collection are totally immersed in their subject. They really know what they are talking about. Patrick Perronet writes about the factional conflicts in military hierarchies regarding Sax's *fanfarisation* of military music. *Fanfarisation* is an evocative invented French term for transforming a wind ensemble into a brass band. The infighting that followed Sax's famous victory over Carafa at the Champs de Mars in 1845, in effect, turned this seeming triumph into a hollow victory.

After immersion in the "Comedy of Errors" (as far as Sax was concerned) of French political maneuvering over the first quarter of this collection, it is refreshing to rise above the suffocating atmosphere of the contemporary social order, which, in hindsight, placed such restrictions on Sax's progress. The helicopter view that Trevor Herbert's article gives of Sax's international legacy gives a most convincing picture of Sax's posthumous global influence. Using the neat conceit of comparing Sax to the other inventors of eponymous products such as Làzlò Birò and William Henry Hoover, Trevor Herbert manages to capture the full extent of the importance of Sax, his saxhorns, and the other instrument which carries his name, the saxophone, whose latent potentials were not realized until the emergence of jazz. This was a form of music that even Sax, visionary though he was, could never have imagined. Trevor Herbert also invents a handy label, "the Saxhorn effect," that compellingly describes the phenomenon of the global adoption of saxhorns or saxhorn-like instruments. "The Saxhorn effect" transformed both amateur participation in music and professional practice across the world.

The remaining articles cover a broad cross-section of interest in Sax's instruments, their design, and their use. Olivia Wahnon de Oliviera writes an immensely detailed article about Fétis and his introduction of the first saxophone class at the Royal Conservatoire in Brussels in 1867. Interesting here is the blow-by-blow account of

Fétis's dealings with the Belgian government's Minister of the Interior and his benign interventions on behalf of the Sax family. Would that our present-day politicians took as much interest in music as they seemed to in nineteenth-century Belgium. Bradley Strauchen-Scherer and Malou Haine with Ignace De Keyser write about Sax from the collector's perspective, Strauchen-Scherer from the point-of-view of an American collector, and Haine and De Keyser from the point of view of Sax himself. The American collector Mary Elizabeth Adams Brown, a major contributor to the present strength of the collection at the Metropolitan Museum in New York, missed some wonderfully cheap opportunities to buy because of the general perception at the time that wind and brass instruments possessed a social and professional status inferior to that of keyboards and strings. In so far as Sax's own collection is concerned, Sax seemed to instinctively know his place in history, and as well as instruments from around the world reflecting his boundless curiosity, his own collected instruments were those best placed to reflect the evolution of his designs.

The papers devoted to organological aspects of the instruments are punctiliously detailed and make strong points. Marten Postma in his article about "le cone parabolique" demonstrates that Sax paved a new way in unknown acoustic territory. Adrian von Steiger makes the important point that only slightly more than one percent of the instruments that Sax produced still exist. Almost all of his production for the Army has disappeared, and it is only the *collected* instruments that survive.

This collection of essays ends with a demonstration of Sax's immensely long reach. Ignace de Keyser writes entertainingly on the saxophone diaspora in Sub-Saharan Africa, and its use in popular and jazz forms such as *tsaba-tsaba*, *marabi*, *highlife* and Congolese *rumba.* Brief outlines of prominent bands and the careers of several influential African players are sketched out. Of the musicians mentioned, Fela Kuti is the best-known outside Africa.

The whole collection rewards reading from cover to cover and thereafter retaining as an essential reference point on Sax. The editors and contributors are to be congratulated in assembling a collection that will surely be the springboard for much future research on this amazing instrument maker and the entire area of Romantic-period brass.

John Wallace

Romantic Brass: Französische Hornpraxis und historisch informierter Blechblasinstrumentenbau. Symposium 2. Reihe Musikforschung der Hochschule der Künste Bern 6. Edited by Daniel Allenbach, Adrian von Steiger, and Martin Skamletz. Schliengen: Edition Argus, 2016. 500 pages. ISBN 978-3-931264-86-4. €59 (amazon.de).

This compilation is the culmination of some years of research by the team in the Bern University of the Arts and presents the results of the work of research staff and collaborating partners alongside the work of invited experts. As such, the book draws together very focused investigations along with contributions providing valuable background, context, and comparisons. This proves a successful formula for the rounded treatment of the nineteenth-century French brasswind and the horn school in general, and of one of the last great hand horn players (Chaussier) and his instrument in particular. The five papers in French, four in English, and thirteen in German provide a satisfying outcome for an ambitious portfolio of research.

The organizers of the work are to be congratulated first on identifying substantial and significant research topics giving scope for a multifaceted approach, and second in bringing together an international group of experts capable of delivering a group of papers relevant to the topic and extending our knowledge of related and parallel areas. The authors bring a range of experience to their writing: musicologists, players, teachers, scientists, and instrument makers.

Inevitably in a compilation of twenty-two papers there is a range of research and writing abilities, but good editorial control has resulted in a coherent collection of papers in which each author makes an original contribution. As a book the compilation will provide the standard text for many years to come on its central themes, and individual chapters will be welcomed as specialized essays. Taking the contributions in turn (with initial page numbers):

Cyrille Grenot, "La facture instrumentale des cuivres dans la seconde moitié du XIX^{e} siècle en France" (p. 11). Continuing the work of Malou Haine in documenting French brasswind making, this paper draws on archives not previously exploited in organology, especially bankruptcy accounts. This is a substantial and wide-ranging chapter, covering in some detail nineteenth-century French manufacturers' business practice, factory organization, workforce, handcraft and mechanized techniques, inventions and improvements to instruments, marketing, export, and commercial success or failure. This work is original research, highly relevant to the themes of the book.

Claude Maury, "Les cors omnitoniques" (p. 103). This welcome review of the omnitonic horn discusses the use of the term as applied to the horn, the various inventions, and the level of use (or non-use) of the various models. This is the first comprehensive survey of omnitonic horns in fifty years and incorporates recent and original research. The article culminates in discussing the Cor Chaussier and its bespoke repertoire.

Daniel Allenbach, "Französische Ventilhornschulen im 19. Jahrhundert" (p. 154). This review of nineteenth-century French method books for horn takes a subject previously discussed by Jeffrey Snedeker and by the author himself, elaborating with more detail and critical discussion of the levels of playing technique indicated, also illuminating the state of play between natural and valve horn. As such it is a valuable contribution to the literature.

Daniel Lienhard, "Werke für mehrere Hörner aus Frankreich 1800–1950" (p. 172). This paper discusses the French repertoire for two to four horns (trompes and orchestral horns), in particular the simultaneous use of hand and valve horns crooked in different tonalities. The paper nicely complements the preceding and succeeding papers in the compilation.

Anneke Scott, "Jacques-François Gallay. Playing on the Edge" (p. 198). A well-researched essay on Gallay, painting a detailed picture of the social and cultural background to his performing and composition, this provides a very valuable contribution to the book's main topic and to musicology more generally.

Martin Mürner, "Meifred und die Einführung des Ventilhorns in Frankreich" (p. 223). This paper presents a detailed analysis of the earliest valve horns used in France, combining objective acoustical investigation of early valve horns and their response with information about the first valved horns in France from contemporary writings. As such, it is an entirely original and relevant contribution on the playability of mid-nineteenth-century horns in France.

Jean-Louis Couturier, "Aperçu historique de la pratique du cor naturel en France et de son emploi dans les ensembles à vent" (p. 234). A short article reviewing the cultural background to the enduring appeal of the natural horn, its continuation in use as a tradition being strongest in France. There is perhaps less original content here than in the other contributions.

Vincent Andrieux, "L'univers sonore d'Henri Chaussier. Perspectives sur le jeu des instruments à vent en France au début de l'ère de l'enregistrement (circa 1898–1938)" (p. 258). Detailed discussion of the playing styles of French wind instrument players as revealed by the first generation of sound recordings. This is of particular importance in providing the context for the artistry of Chaussier. This chapter will also be of value to students of period performance of instruments other than the horn.

Michel Garcin-Marrou, "L'École française du cor. Fondements historiques, cornistes, facteurs, orchestres et questions de style" (p. 303). An overall view of the concept of a national school of playing style, taking the French horn as the example. Discussion of how virtuoso players and leading Conservatoire teachers shaped the French style, with reference to French instrument models. This contribution constitutes a valuable professional player's perspective.

Edward H. Tarr, "The Genesis of the French Trumpet School" (p. 316). A detailed scrutiny of trumpet playing and pedagogy, describing the introduction of the valve trumpet and the earliest French teaching methods. This is valuable context for the main themes of the book.

Jeroen Billiet, "Belgium, France and the Horn in the Romantic Era. Tradition, Influences, Similarities and Particularities" (p. 328). The author compares the horn, instrument models, technique, and teaching in France and Belgium; in particular the different stances in the debate between advocates of natural and valve horns. The analysis of the characteristics of the Belgian "school" is valuable and a new contribution.

Martin Skamletz, "...und gar nichts, wodurch sich der eigene schöpferische Geist des Komponisten beurkundete«. Cherubini, Hummel, Konzerte, Opern, Quodlibets und Trompeten in Wien zu Beginn des 19. Jahrhunderts, Teil 2: Aus dem Repertoire der Kaiserin" (p. 340). At a first glance this essay on Austrian instrumental music might seem out of place in this compilation since it is not directly on the theme. It is in fact the second part of a long paper, the first part of which was published in *Romantic Brass I.*[1] Nevertheless it provides a valuable comparison with the French brass theme, giving as it does insights into parallel Viennese brass activities at the start of the nineteenth century.

Ulrich Hübner, "Das Cor Chaussier. Ein Praxisbericht" (p. 363). A detailed analysis of the Chaussier model horn, discussing its use both as a chromatic horn and as a natural horn, its ergonomics and specific fingering, its timbre, and the repertoire composed for it (including the Saint-Saëns *Morceau de Concert*), and the extant example in the Brussels Musical Instrument Museum.

Adrian von Steiger, "Historisch informierter Blechblasinstrumentenbau. Ein Projekt zur Erforschung der Handwerkstechniken in Blechblasinstrumentenbau in Frankreich im 19. Jahrhundert" (p. 377). Overview of the project based in the Hochschule der Künste Bern to develop scientific methods for investigating brass instrument construction. A model cooperative venture involving laboratory, organology and instrument-making expertise.

Jean-Marie Welter, "The French Brass Industry in the Nineteenth Century" (p. 384). This paper presents a history of brass, in particular brass as a material for musical instrument manufacture in France. As such it provides a very necessary component for a full understanding of French brass instruments. This is a refreshing new contribution to organology.

Marianne Senn, Hans J. Leber, Martin Tuchschmid, and Naila Rizvic: "Blechblasinstrumentenbau in Frankreich im 19. Jahrhundert. Analysen von Legierung und Struktur des Messings zugunsten eines historisch informierten Instrumentenbaus" (p. 398). This is an important analysis of brass used in the various components of nineteenth-century French instruments, discussing the ratios of zinc to copper and the presence of important trace elements such as lead and tin. The documentation of the changes in the composition and crystalline structure of French brass through the nineteenth century builds on the metallurgical research of Louise Bacon and Hannes Vereecke to bring fresh data to light. The Swiss Federal Laboratories for Materials Science and Technology were a valued partner in this work which prepared for the re-creation of "period" brass for period instrument making.

Hans-Achim Kuhn and Wolfram Schillinger, "Herstellung bleihaltiger Messingbleche mit modernen industriellen Verfahren (p. 420). An account of present-day industrial brass production, especially sheet brass, and its mechanical and workability properties.

Adrian von Steiger, "Zur Vermessung von Wandstärken historischer Blechblasinstrumente" (p. 431). A fresh approach to the vexed question of the importance of wall materials and thicknesses in brass instrument behavior, using rapid thickness measurement techniques to make extensive measurements of historic instruments. The result is a nuanced discussion of French brasswind makers' selection of materials.

David Mannes, Eberhard Lehmann, and Adrian von Steiger, "Untersuchungen von historischen Blechblasinstrumenten mittels Neutronen-Imaging" (p. 439). Application of neutron imaging to historic brass instrument research and a comparison with the more familiar radiography. This places a new tool at the service of organology.

Martin Mürner, "Blechblasinstrumentenbau im 19. Jahrhundert in Frankreich. Historische Quellen zur Handwerkstechnik" (p. 446). This original work describes the actual handcrafting techniques employed in the French brass industry in the nineteenth century. It draws on the bankruptcy documents which have only recently come to the attention of scholars to identify the tools actually used. The example of the Courtois aîné bankruptcy in 1860 is used as a case study.

Gerd Friedel, "Von der Information zum Instrument" (p. 463). Insights into the practicalities of reconstructing a historical horn using carefully researched materials and techniques. The author gives an account of the experiences of the horn reconstruction work carried out as part of the wider project in the Egger workshop in Basel. This is a valuable communication of hands-on experience.

Rainer Egger, "Zur Frage der Wandvibrationen von Blechblasinstrumenten: Wie wirkt sich das Vibrationsmuster der Rohrkonstruktion auf die Spielcharakteristik eines Blechblasinstruments aus?" (p. 469). An eminent instrument maker's approach to the contentious question of the importance of wall materials and thicknesses in brass instrument behavior. The voice of the instrument maker is rarely heard in academic organology: this begins to redress the balance.

Arnold Myers

[1] *Romantic Brass: Ein Blick zurück ins 19. Jahrhundert, Symposium 1*, edited by Claudio Bacciagaluppi and Martin Skamletz, Reihe Musikforschung der Hochschule der Künste Bern 4 (Schliengen: Edition Argus, 2015).

Hannes Vereecke. *The Sixteenth-Century Trombone: Dimensions, Materials and Techniques*. Turnhout: Brepols, 2016. 253 pages, 174 figures. ISBN 978-2-503-56639-9. €75.

This is an excellently produced book: every aspect of its production and publishing has been carried out to a very high standard. All photographs are clear and at high resolution; charts, line drawings, and diagrams are sharp and precise; and the printing and paper quality are of the finest. The foregoing is, of course, an impression on first opening the book; now let's get into specifics.

Although this book is entitled *The Sixteenth-Century Trombone*, it would be more accurate to include *Nuremberg* in its title, since all but one of the surviving instruments were made there. The outlier—a bass trombone made by Pierre Colbert of Rheims—is mentioned only once, in Table 1.1, and is not included in the study. However, this is hardly consequential when one considers the consistency in material specifications, manufacturing techniques, and production style of a very conservative and protective Nuremberg craft regimen. In dealing with the ten extant Nuremberg instruments it is possible to create a tight and definitive research sample within which comparisons can made and clearer conclusions drawn. Colbert must wait for a similarly detailed study, although to judge by the depth and detail of this book, he might have to wait a considerable time. The subtitle *Dimensions, Materials and Techniques* is quite misleading in that the techniques of construction are not dealt with at all. Small sections on the fabrication of test bells are included, but these were made using essentially modern methods, so a reader looking for insights into the techniques of the Nuremberg craftsmen of the sixteenth century will come away disappointed.

In his introductory chapter, Hannes Vereecke describes several previous studies of the trombones of this early period, but observes that even though these authors provide detailed information, their work falls far short of an in-depth understanding of the subject. A systematic analysis and documentation of this small, representative set was clearly demanded. And in no uncertain terms, this author has set about and completed the task. Every aspect is examined, including acoustics, engineering, scientific analysis, extant mouthpieces, and brass in both its chemical and physical properties and its historical context. The book is organized in such a way that the reader is taken through some heavy scientific and mathematical treatments of acoustics and engineering, and so through to discussion of brass and a series of experimental investigations. Vereecke and his colleagues published the core data of their analytical findings previously in the *Historic Brass Society Journal*, so it is gratifying to see a much expanded and systematic treatment appearing here.[1]

A reader who comes from a musical or instrument-making background may have a hard time with the scientific and mathematical sections, especially as they tend to stray away from the specific promise of the book's title. But even though this is an extremely systematic and academic book, the reader is often struck by down-to-earth aspects of its approach. The author often directs comments to the needs of instrument makers, players, and collectors, and it is clear that the intentions are twofold: to offer

a practical guide as to what is important in recreating and using facsimiles in their historical context, and to provide scholars with a means of dating original instruments and their components. The entire approach stands in stark contrast to certain academic works that analyze and hypothesize microscopically and acoustically but provide no useful guidance on what to do with the information. For those of us who make things, this is a continuing source of frustration.

Chapters 2, "Brasswind Acoustics," and 3, "Brasswind Engineering," take the reader away from the realm of sixteenth-century trombones, discussing in detail modern mathematical treatments of both acoustics and engineering. In this respect, these chapters belie the title of the book, but the information they provide is extremely well researched and cogently presented. But the reader would need to be a specialist to follow the physical and mathematical threads of these two chapters (as this reviewer is not). The closing section, "Bell pre-cut" (p. 60), has an interesting discussion on the difficulty of extrapolating a flat pattern from a finished three-dimensional bell. Vereecke is correct in questioning the hypothesis that the early makers used "proportions," although it is doubtful if his suggestion of further research is likely to produce any elucidation. The outline of the literature sources that provide practical guidance is useful, but even today, the most experienced bell-makers still use approximations and trial and error to achieve the optimal pattern. There is one strange assertion: that mandrel makers "usually make the mandrel somewhat larger than indicated in the construction drawings," presumably to allow for the bell not fitting back on the mandrel after contraction takes place (p. 61). To the contrary, in traditional practice, mandrels are made to the inner size of the required bell to a high degree of precision. The bell under fabrication is hammered on an anvil to the rough shape, then forced onto the mandrel and burnished to bring it into intimate contact. When removed and returned to the mandrel, the fit will be as tight and exact as it was before. In fact, if a wet bell is left on a mandrel too long, it will get stuck. This contrary observation may perhaps be due to the creation of test sample bells using non-traditional methods. The subject of practical bell-making is left at this point, and resumes at the close of Chapter 4.

Chapter 4, "Brass," provides an excellent overview of the chemical and physical properties of the material, the sections on corrosion, dezincification, and stress cracking being particularly applicable to the study of historic instruments. When it comes to the preparation of experimental bells, I have many reservations (pp. 74–77). To ensure experimental consistency, it seems obvious to me that the set of six test bells would be prepared using essentially the hand techniques of the original construction. Only then could valid comparisons be made. The sixteenth-century maker would have burnished his bell on the mandrel to bring it into close contact, rather than forcing a lead ring over it mechanically, which is a more recent development and requires powerful machinery. This new bell is then burnished fairly lightly (to judge by the size of the tool in the photograph) rather than using the original method, where a large and heavy steel burnishing rod is applied vigorously over the whole surface. It is unlikely that the metallographic results of these two approaches would be comparable, and in

the absence of imaging from extant historic originals, this work meets a dead end. I frankly couldn't see the point of this study in relation to the fabrication methods of the sixteenth century. But, as the author goes on to describe, the exact conditions of annealing contribute greatly to the resultant grain structure, and thus hardness or flexibility. He suggests an optimized annealing protocol for modern makers, but leaves the question of its effect on performance characteristics open to further research. The state of the bell when it left the maker's workshop in sixteenth-century Nuremberg will probably never be known, and as a complication, it is understood that the hardness of brass changes over time. There is necessarily a wide degree of conjecture. However, from a practical craftsman's standpoint, the maker would surely burnish his bell on the mandrel, thus leaving it in a hard, durable state, the better to withstand the rigors of use.

Chapter 5, "Scientific Analysis Methodology," is a thorough description of all the processes applied to the set of instruments under study, from pure metric data gathering, to ultrasonic methods, and into material and acoustic analysis. One extremely important discussion concerns the surface condition of brass when using x-ray fluorescence analysis, particularly with regard to the value for zinc. Samples of brass were artificially patinated to represent a surface "visually comparable" to that found on historic instruments (p. 91). A deviation of some 1.5% zinc content was recorded between the most heavily patinated samples and the untreated control sample, which was stated to be within the margin of error of 1.5–2%. However, I found it hard to understand how this "margin of error" had been derived. There is no further explanation of it. Does this imply that the patination (oxidation) on the surfaces of historic instruments can be discounted when making measurements? At this point I expected a discussion of surface condition and its impact upon the accuracy of the results. As a museum restorer, I have often noted how cleaning and polishing, particularly chemical treatments such as citric acid, have an effect on brass surfaces. It is known that certain cleaning protocols are prone to attack the zinc at the surface preferentially—the phenomenon known as dezincification, which is well described on p. 72—and so a discussion of the potential effect of cleaning protocols on data acquisition would have been helpful. This is not to say that I distrust the data provided in the appendixes; it is just that I would have welcomed a clearer description of how potential variations in surface condition were allowed for.

The mouthpiece is the key element, and in Chapter 6, "Trombone Mouthpieces," Vereecke provides an excellent survey of historical writings and modern practice. Included are beautiful photographs of extant examples, input-impedance measurements, and physical modelling of their various features. A fascinating aspect of this treatment is the section on subjective assessment, where a series of double-blind tests is described to assess the virtues of sharp-edged mouthpiece cups as opposed to ones with a more comfortable, chamfered edge. The conclusion is that players of exact copies of sixteenth-century trombones would do well to use mouthpieces in a three-part construction with sharp throat-edge and belly-shaped backbore, but further research is still called for in refining the characteristics.

For the instrument maker, collector, and researcher, Chapter 7, "Nuremberg Trombones," provides solid data with measurements and curatorial details. This is the geographic center of the book. Each of the surviving instruments is described in one brief and concise section, which includes overall photographs, important details, and technical drawings. Vereecke rather self-effacingly refers to the drawings as sketches, but they are much better than that; they are clear and precise, and include tables of dimensions, particularly the key measurements of bell profile. This chapter has a very user-friendly way of presenting the information, because the full analyses of the metals of these instruments, with their multiple sampling points, colored bar codes, and page-size tables of constituents, consume ten very dense appendixes, from B to K. The attention to detail and the methodical quality of these appendixes is quite astonishing. Five instruments from the sample set of ten, chosen for their intact original state, were subjected to acoustic analysis, the results of which are appended to this chapter. Measurements of input impedance lead to the conclusion that the two instruments of Anton Schnitzer (1579 and 1581) and the trombone of Anton Drewelwecz provide a particularly suitable basis for creating reconstructions.

Chapter 8, "Sixteenth-Century Nuremberg Brass," is equally central to the book's theme. Four main research questions are formulated: what material to use, how it differs from modern products, whether metal analysis can be used for dating, and how one might distinguish original parts. Although the author states that this chapter does not attempt to answer these questions, it goes a great deal further than any preceding work. The chapter describes production, research, analysis, and identification of Nuremberg brass in great scientific detail. In a chart of zinc percentage values (Table 8.3), Vereecke is right in criticizing earlier studies on the metals (including my own from a quarter of a century ago)[2] for their sparsity of useful information. He states that, from this data: "Extracting a representative value for a 'sixteenth-century alloy' is highly suspect" (pp. 174–75). This is especially true since none of the figures in this chart is actually earlier than the century following. In view of this and other shortfalls, there is a "compelling need for a comprehensive scientific study," and his research does exactly that; as this chapter shows, the state of knowledge has been pushed much further than in any previous work. I was pleased to see a large section on the classic work of Michener, Mortimer, and Pollard on brass jetons[3]—the dates of forty-two of which fall in the period under study—and on Karl Hachenberg's revisiting of their data and his further analytical work.[4] This research is key to our appreciation of the variations in zinc content of the brass used in Nuremberg over several centuries. Without going into great detail, the author shows that a brass containing 19% of zinc and 0.9% of lead would be typical for a sixteenth-century trombone. Certainly there is a need for more data as the sample size (ten instruments) is small, but this can be augmented by studies of other instruments of the period, and also non-musical objects made of sheet brass, such as the portrait medals referred to on pp. 173–74. A good argument is made for all metal industries in Nuremberg (and elsewhere) using essentially the same raw material supplied by the foundries. This work therefore provides a practical tool for

museum personnel in assessing the authenticity of instruments and their parts, and also provides instrument makers with a standard for sheet brass from which to make accurate copies.

Nevertheless, Vereecke (and colleagues) have stated elsewhere that "In spite of intensive research and considerable progress in this field, one of the most persistent questions still remains: What is the significance for historically informed performance of the use of a historically correct alloy in reproductions of brasswind musical instruments?"[5] This is the key issue: is it worth sourcing such an exotic material in the modern world if there is no need? Certainly, in order to fulfill these criteria, 0.9% of lead would need to be *added* to the 81cu/19zn brass, instead of being found as an impurity left by the earlier cementation process. Should it be possible to produce a brass of these specifications, is it actually necessary? What might be its impact on musical quality, if any? And what of instruments of other dates, where the percentage of zinc in the brass supplied to the makers varied, as shown in the analytical studies of jetons? This begins to get complicated. Answers to many of these questions are plagued by the idiosyncrasies of individual players and auditors, while common discussion on the subject is rife with opinion and subjective evaluation. In addressing this issue, there is an interesting discussion in Chapter 2 dealing with psycho-acoustical research that attempts to answer some of these questions. Certainly double-blind tests can be used to eliminate the subjective component of the players' and auditors' perceptions. Additional research would be of considerable value, and it was with some disappointment that I found that the bell-making and testing described in Chapter 4 did not proceed further along these lines. It is certainly a fruitful subject for future research.

There are a few further points of slight contention. In criticizing the analytical methodology of the Theins, the author suggests that early makers might have selected different alloys for the parts of an instrument (bell, tubing, garland and ferrules): "Because of the different mechanical requirements for these various parts, it is entirely possible that different alloys were used" (p. 174). In truth, aside from cast components, it is highly unlikely that a Nuremberg instrument maker of any earlier period would have been able to make such a choice, let alone have the freedom to do so. Sheet brass was supplied from the foundry, it was cut to size, and all components were made from it. The analyses cited in Chapter 7 and Appendixes B to K show this is so. Certainly the proportion of zinc to copper might vary slightly between batches, but this is a matter of happenstance, not one of reasoned choice. Again, in describing the earlier production method of hammering sheet brass, the author states that, "the cast block of brass was not milled down as in the case of in [*sic*] contemporary sheet production…" (p. 163). This is probably a nuance of language, but contemporary sheet brass is not milled, but passed through a roller to bring it to the chosen thickness. On the same topic, it is stated that, "The surface conditions [of some components] indicate that the material was rolled instead of hammered" (p. 176). From the experience of an instrument maker, it is my contention that such original surfaces have undergone so many processes—forming, soldering, filing, drawing, scraping, burnishing, and

polishing—that no trace of original hammering could be seen. In addition, a hammered sheet from the watermill would first be passed along to a *Messingscharber* for scraping, thus removing hammer marks and rendering the sheet even in thickness. The maker himself would not see hammer marks on his sheet metal, so an observer, centuries in the future, would be even less likely to do so.

The table of contents is extremely thorough, as are the lists of figures and tables, but, as a reference work, I found the lack of an index quite frustrating. A subject index would be expected in a book of this size and quality. I came across a few trifling errors, such as the slipped footnote ruling on p. 19, and the consequent loss of the full reference, and a change in font size at the top of p. 93. The Conclusion (8.3, p. 180) is erroneously given the header "Chap. 9: Conclusion and Further Work" on the following page. In fact, a concluding Chapter 9, summarizing the entire contents of the book, would have been an improvement. There are a few other smaller typographical errors.

In summary, *The Sixteenth-Century Trombone* is a monumental study that stretches and very often breaks the bounds of its title. The central thesis of the book—a metric, acoustic, and metallographic analysis of the extant sixteenth-century instruments—is carried off in fine style. The quality of all the documentation is of the highest standard, and the book achieves its aim in providing instrument makers and scholars with solid, reliable information on which to base their studies. Without question, we are now sure from a technical standpoint what material was used by the makers of the period under study. The acoustic analysis tells us how three of the instruments perform today, but also suggests fairly convincingly how they might have behaved when new. One thing this book does, quite unashamedly, is to indicate where information is lacking and where more research should be conducted. To this end, while the books stands as a definitive study, aspects of it may well see further resolution in the near future as its author, and others stimulated by studying it, continue probing this fascinating subject. I wish Hannes Vereecke the best of fortune in his future studies and congratulate him on a fine piece of practical scholarship.

Robert Barclay

[1] Hannes W. Vereecke, Bernadette Frühmann, and Manfred Schreiner, "The Chemical Composition of Brass in Nuremberg Trombones of the Sixteenth Century," *Historic Brass Society Journal* 24 (2012): 61–75.

[2] Robert Barclay, *The Art of the Trumpet-Maker* (Oxford: Clarendon, 1992).

[3] Michael Mitchiner, Catherine Mortimer, and Mark Pollard, "Nuremberg and its Jetons, c.1474 to 1888: Chemical Composition of the Alloys," *Numismatic Chronicle* 147 (1987): 114–55.

[4] Karl Hachenberg, "Der Werkstoff im Musikinstrumentenbau von 16. Bis zum Ende des 18. Jahrhunderts," in Monika Lustig and Boje E. Hans Schmuhl, eds., *Jagd- und Waldhörner: Geschichte und musicalische Nutzung*, Michaelsteiner Konferenzberichte 70 (Augsburg: Wissner-Verlag, 2006), 433–48.

[5] Vereecke et al., "Chemical Composition."

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