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The Secret of the Bagpipes: Controlling the Bag. Techniques, Skill and Musicality: Cassandre Balosso-Bardin, Augustin Ernoult, Patricio de la Cuadra, Benoît Fabre & Ilya Franciosi

Abstract: Despite their many organological and esthetical differences, bagpipes are all played by the movement of the arm on a bag, creating enough pressure to activate the reeds and produce sound. In 2016, an interdisciplinary team of acousticians and an ethnomusicologist within the inter-institutional Geste-Acoustique-Musique project focused on understanding how a bagpiper exerts control on their bag, enhancing our comprehension of the importance of the arm during a musical performance. In this article, we observe what role the arm plays in controlling the instrument, whether a player controls the bag for musical purposes, and whether this influences repertoire and the performance itself. Evidential material consists of acoustical data collected during two experiments in different cultural contexts and with musicians of different levels, together with the statistical and empirical results of an online questionnaire about bagpipe bag techniques. With acoustic measurements, quantitative and qualitative data as well as an ethnomusicological framework, this research offers the first multidimensional and interdisciplinary study of the control of the bagpipe's bag.

Tracking Flutes on Nineteenth-Century Pohnpei: Queries about Instruments and their Movements in the Colonial Pacific: Brian Diettrich

Abstract: This article explores flutes on the island of Pohnpei in the Caroline Islands of Micronesia across the nineteenth century and into the first decade of the twentieth century. During this time Pohnpei became a prominent port for ships in the northwest Pacific, and together with the subsequent colonial administrations by Spain and Germany, the musical and material transformations on the island are demonstrated by the influx of new musical instruments. This article focuses on the documentation of flutes, of which a variety of types have been reported for the island, as well as a relatively unknown reed aerophone. In providing a close and comparative reading of the historical documentation of instruments, I track the types of flutes on Pohnpei and examine the existing uncertainties and queries about these instruments. I also compare the few existing visual representations of Pohnpeian flutes, and I analyze in detail one ornately decorated Pohnpeian nose flute collected in 1880 and now held in Vienna. This study aims to better understand the types of flutes played on Pohnpei in the nineteenth century, and it is the first detailed examination of aerophones undertaken for this area of Oceania.

New Insights into the Life and Instruments of Gérard Joseph Deleplanque, Maker in Eighteenth-Century Lille: Christine Hemmy, Philippe Bruguière & Jean-Philippe Echard

Abstract: Gérard Joseph Deleplanque was arguably the most prominent stringed instrument maker in Lille (northern France) in the second half of the eighteenth century. Indeed, more than 60 of his instruments—including guitars, guittars, violins and viols—survive in public museums and private collections. Biographical information concerning this maker is scarce, however, and until now based solely on the examination of instrument labels. The main focus of this article is the presentation of newly-gathered biographical data on this maker. Extensive research in the *Archives municipales de Lille* and *Archives départementales du Nord* led to the discovery of primary sources concerning his dates of birth and death, genealogy and family events, and more importantly, to his professional activity: his apprenticeship and installation as an instrument maker. This documentation enables us to (i) identify the years at which he remained at each workshop address, thus explaining the diversity of the labels in surviving instruments, and (ii) re-attribute the instruments dated after his death (in 1783) to his successors, who continued to use labels bearing his name until the late 1790s. An appendix of surviving instruments, as well as an analysis of the workshop production, is also presented.

The Billingsgate Trumpet Re-examined and Re-assessed: Sabine K. Klaus & John Schofield

Abstract: In 1984, during construction of an office building next to the former Billingsgate Fish Market in the City of London, parts of a medieval trumpet were found in thirteenth- or fourteenth-century river silt by an archaeologist of the Museum of London. Several short articles described the find in the 1980s and 1990s. This article is the first comprehensive assessment of this instrument—the only surviving European straight trumpet from the Middle Ages—since its excavation some 30 years ago. A detailed analysis of the physical structure of the trumpet parts is given as well as an assessment of its function, based on acoustical measurements of a playable reproduction, and a reassessment of its date based on more recent research in the context of the entire Billingsgate excavation project. This article is an enlarged version of a report that will be published in John Schofield et al., *London's Waterfront 1100–1666* (London: The City of London Archaeological Trust, projected publication date 2018).

The *Gudok*, a Russian Bowed Lute: its Morphology, Tunings and Playing Techniques: Ulrich Morgenstern

Abstract: Until the mid-nineteenth century, the *gudok* was one of the most widespread musical instruments used by Russian peasants. While the *gudok* has attracted the attention of Russian and Western ethnographers and organologists since the late eighteenth century, no historical examples survive, and there are no known transcriptions of the music or recordings of this instrument. This paper aims to reconstruct the morphology of the *gudok*, its tunings and playing technique, as well as the musical texture of *gudok* playing. The work is based on historical sources (iconography, written sources, and recent fieldwork) and on a critical assessment of nineteenth- and twentieth-century organological writings. At the same time, certain popular misconceptions are questioned and answered. These include a confusion between the medieval Byzantine lyres from Novgorod and eighteenth- and nineteenth-century descriptions of the *gudok*; the identification of an 8-shaped fiddle of the Perm region with the *gudok*; as well as the supposed survival of *gudok* playing in recent fiddle traditions of South Russia and the borderland of Russia and Belarus. The texture of *gudok* playing has survived less in fiddle playing than in balalaika playing with the rare unison-fifth tuning. The Russian *gudok* can be understood historically as the result of *violinization* (Ewa Dahlig)—a process that has transformed bowed lutes in numerous countries of Europe.

Made in Manchester: Instruments of the Higham Firm: Arnold Myers

Abstract: Of all the provincial British brass instrument makers, the firm of Joseph Higham was the longest-lasting and the most productive and innovative, energetically competing with the major London makers. The firm was established in Manchester by Joseph Higham in 1842 and operated independently until 1923, and then as a subsidiary until 1939; the name was revived as a brand for some 20 years post-war. Joseph Higham, and latterly J. Higham Ltd, did the bulk of their business with the brass bands of Northern England, but also exported around the world. Their instruments were mostly mainstream models differing little from those of their London competitors or from French imports, but their production did include instruments with special features and some of innovative design. This article provides a brief company history and describes the firms more inventive and characteristic models.

The Shape of the Mouthpiece – A New Parameter in Recorder Making?: Naomi Nordblom

Abstract: While the recorder maker is usually responsible for the construction and maintenance of the instrument, the player is in control of its use. But what happens at the connection between the instrument and the player? Does the shape of the mouthpiece change the sound of the instrument, and if so, which frequencies are changed? In this survey, three people were recorded playing the same instrument with two different shapes of mouthpieces, the traditional shape and the other with a plastic 'hat' to change the shape of the mouthpiece. (The 'hat' had been developed by the author with the support of Stefan Kopp, Professor of orthodontics.) The frequency spectrum of the recorded notes both with and without a hat was then analyzed. The spectra showed some changes, the frequency area of the changes depending on the presence of the 'hat' and on the register of the played note. The results might open new perspectives for researchers, instrument makers, music teachers, and performers; moreover, they could be applied to other instruments, too.

The Quest to Tune the Guitar Bridge, *c*1830–1956: Charles Pardoe

Abstract: Throughout history, guitars have attracted efforts to make them louder. It is nearly as well known that guitarists who are heard do not always play in tune. If only they would practise. Less familiar, however, is the intricate web of obstacles which long plagued those who sought to tune the instrument to the standard which some instrumentalists enjoyed far sooner. With snapping strings, flying bridge pins, and bum notes, guitarists have often been obliged to explain themselves, though it is in fact their instrument which demands an explanation. In this article, the author traces a more than century-long endeavour to improve one component upon which guitars depend for proper tuning: the bridge. An ostensibly simple device, this element had by 1956 attracted over 100 patents which claimed to obviate shortcomings commonly ascribed to performers. This literature is in places bleak, with some even presaging the instrument's demise. Yet amidst the haze, eventually, sprang bridges which have decisively assisted Beethoven's 'miniature orchestra' in becoming one of the world's most popular instruments.

How the F-hole Arose: Soundhole Shapes and Bridge Position on Bowed Instruments between 1500 and 1800: Wim Raymaekers

Abstract: The question concerning how the f-hole emerged has remained largely unanswered until now. By comparing surviving instruments and iconographical evidence, the evolution of soundholes for bowed instruments becomes clearer. The f-hole appears to have evolved by rotating one half of the C-hole. This explains why the inner nicks are still lower on modern violins than the outer ones, and why the indentations were not, as often assumed, designed as a reference point for locating the bridge. Before 1800, most bridges were not located between the indents, as statistics based on over 1,000 representations from the seventeenth and eighteenth centuries indicate. This account of the origin of the f-hole also explains most idiosyncrasies in soundholes during this period, all originating from a prototype, which here is referred to as 'early Baroque'. This type of f-hole predominated before 1650, and was characterized by sharp edged wings, asymmetrical notches, and upper and lower circles of the same size. The reason why f-holes became the norm for the violin family may be acoustical, but it is arguable that convention also played a role.

Additional Information for *Four Centuries of Musical Instruments: the Marlowe A. Sigal Collection* : Albert R. Rice

Abstract: This article supplies supplemetary information for the author's book that was reviewed by Jenny Nex in the previous issue of this journal.

The Romero-System Clarinet: A Landmark in the Age of Woodwind Mechanization: Pedro Rubio

Abstract: Antonio Romero y Andía (1815–1886) was one of the most active and interesting figures in nineteenth-century Spanish music. He was an exceptional clarinettist, a publisher, a brilliant oboist, a gifted composer, a music critic, a dealer and maker of musical instruments, and the founder of *Salón Romero*, the most important concert hall in Madrid of its day. In 1849 he was appointed clarinet professor at the Conservatory of Madrid. He won his position playing a 13-key clarinet, and, shortly after, he switched to the Boehm-System clarinet introducing it to Spain; however, when initial interest in that system waned, he conceived his own system in 1853. The clarinet was manufactured in Paris by the celebrated maker Lefêvre. The nineteenth century was the era of the mechanization of woodwind instruments, a period in which the elegant designs of the previous century became authentic pieces of engineering with the highest level of sophistication. The Romero-System clarinet came to light during those years of technological innovation.

The *Wa kăpung dyo* of the Tangsa in North East India, and a Suggestion for the Classification of Thermoacoustic Instruments, Thermophones and Pyrophones: Jürgen K. Schöpf

Abstract: A recent field work find, the fire driven sound tool *Wa kăpung dyo* in North-East India leads Jürgen Schöpf to follow the tracks of heat driven musical instruments and sound tools in general. Two more independent traditions of such thermoacoustic instruments can be found: one in a centuries old Japanese Buddhist/Shinto ritual, the other in the nineteenth-century pyrophone of Frédéric Eugène Kastner, the latter being derived from eighteenth- and nineteenth-century experimenters' laboratories and glass blowers' benches. Kastner's pyrophone has given inspiration to several modern incarnations in the area of sound sculpture and sound installation. They are subdivided into two groups by their timbre, evidenced by spectral analysis. An effort to understand the common physics of these thermally driven instruments draws from physics' sub-discipline of thermoacoustics. In conclusion, thermally driven instruments are placed in the widely used Hornbostel-Sachs classification of instruments as a new sub branch of Aerophones, with several subdivisions. This suggestion extends to assigning new roles to the terms 'electrophones' and 'thermophones' and argues for the inclusion of loudspeakers as musical instruments.

Mordaunt Levien and his Instruments: Hayato Sugimoto

Abstract: Mordaunt Levien (*c*1784–1854), an English musician of the nineteenth century, is widely known as the inventor of the *guitare harpe* (patented in Paris, 1825). Unlike other harp lutes, this instrument reflects certain French influences: black and white inlayed purfling and rosette; an ebony pin-bridge with moustaches on both ends. The substantial number of surviving examples suggests this instrument was commercially successful, and the *guitare harpe* became a synonym for Levien's devotion to French fashion. Little is known, however, about Levien's life or his instruments built in the English style prior to 1825. Using a variety of sources—newspaper adverts, census returns, plus marriage and death certificates—this article provides the first outline of Levien's career. It also explores Levien's contribution to the development of the harp lute during the first half of the nineteenth century, examining his series of innovative designs in relation to contemporary musicians and music sellers. Moreover, it will be shown that despite the prevalence for the continental style of guitar making, Levien in fact maintained a preference for the traditional English style throughout his career.

An Investigation of a Baroque Musette Bourdon Using Micro-Computed Tomography:

Francis Wood, Fiona Brock & Jeremy Uden

Abstract: The drone system or *bourdon* of the aristocratic French bagpipe, the Baroque musette, is an extraordinary invention. Neatly contained within a cylinder of ivory or ebony typically and approximately 15cm long and 3cm in diameter are a number of longitudinal bores drilled in extreme proximity. Most are grouped and joined serially to provide longer sounding lengths. The example under discussion has 14 bores with provision for five reeds, arranged to create discrete drones configurable in several tonalities. The skill required to effect such function within a relatively tiny volume is impressive indeed and the methods are not without risk of error. The sophisticated manufacture of such an item results in many concealed features, particularly in the arrangement of the connecting cross bores, and on some *bourdons* these are largely invisible, depending on the methods used whether external, or internal as with the present example which has survived apparently undisturbed. This paper describes the investigation of such a *bourdon* using micro-Computed Tomography, noting a number of findings which would otherwise be virtually impossible without this technique. In particular it describes the internal positional information retrieved, as well as evidence of errors encountered during manufacture, together with the maker's remedial measures to correct these. Additionally, the paper speculates on the probable technologies employed to produce this masterpiece of organological miniaturisation.