

SMALL IS BEAUTIFUL: THE *TROMPE DE LORRAINE*

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Although, as we learn from his diary, the 17th-century Englishman Samuel Pepys, a keen amateur musician, was frequently to be found playing his flageolet in such varied surroundings as a coach while travelling, or a small boat during an outing on the river, it is difficult to imagine anyone, however enthusiastic a musician, doing likewise with a tuba or a trombone. Brass instruments are usually not the right size for carrying in one's pocket. Nevertheless, there have been people who wanted to blow a horn or a trumpet while making their way about the town or the countryside, either on foot or on horseback, without having to carry a bulky instrument over their shoulder or under their arm, and this has led instrument makers at various times over the past four centuries to exercise their ingenuity in reducing such instruments to a shape and a size that a gentleman or a huntsman would find convenient.

Tight, concentric coils, as found in certain hunting horns, pos thorns, and even Baroque trumpets, were the most obvious and probably the earliest solution. Plate VIII of Praetorius' *Theatrum Instrumentorum* (1620), Jan Breughel's painting *The Sense of Hearing* (c.1618) and Haussmann's portrait of Reiche (1727) contain well-known representations of such coiled instruments (see Figure 1). Another means of compression was to arrange the tube in spirals to form a cylinder or other convenient shape. This is the principal behind the *Bachsentrumpete* ("trumpet in a can"), examples of which, made in Germany during the first half of the 18th century, are to be found in a number of German museums. In these instruments the tube winds down inside the double wall of the bell before returning straight upward to open into the neck of the bell.

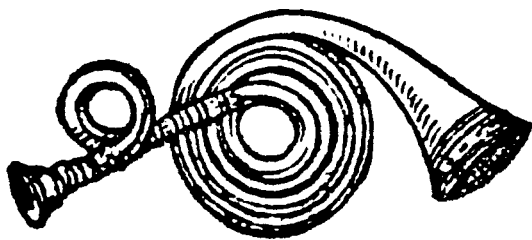


Figure 1
Praetorius' *Jaeger Trommet* (*Theatrum Instrumentorum*, 1620)

If Samuel Pepys had lived a little longer he would surely have bought himself a cane flute. The fashion for musical walking sticks began in the 18th century. At first it was primarily flutes that were produced in this form, but violins soon followed. Although

walking-stick oboes were rarely made, by the end of the 18th century a clarinetist could play his favourite instrument during country rambles. Even the trumpeter was eventually catered to. A number of makers set their minds to designing walking-stick trumpets, with varying results. In most cases the bore descended and ascended inside the "shaft" of the stick. In one 19th-century model by J. B. Dupont (Paris Conservatoire Museum), the descending and ascending bores are intertwined, like ivy around a branch. An earlier designer, a member of the Steinmetz family from Nuremberg, converted the bell into the handle of the stick (Narodny Museum, Prague) but others provided a removable bell that was carried in the pocket along with the mouthpiece. Such was the case of Thomas Harper's "newly-invented walking-stick trumpet," made by J. Kohler in the first half of the 19th century, which "possesses all the fixed Tones of the Trumpet in a superior degree," according to the contemporary sales prospectus. One of these trumpets can be seen in the Royal College of Music Museum in London.

Walking-stick trumpets were generally natural instruments, but towards the end of the last century the *Union Artistique* of Geneva developed a valved model that can be seen in the Musikinstrumenten-Sammlung of the Historisches Museum in Basle. The three valves of this enterprising product, which bear Mahillon's stamp, had to be carried separately, like the bell. In most cases the bells of brass walking-stick instruments were made of metal, but there is at least one (Paris Conservatoire Museum) made of papier-mache.

A few years ago a curious horn with over 4.5 meters of tubing, but standing only 27 cm high, caught my eye in the Barcelona Museo de la Música (instrument no. 295), and set me off on the track of the *trompe de Lorraine*. It has been claimed that the immediate predecessor of the *trompe de Lorraine* was the *cornet-trompe*. In his *Dictionnaire pratique et raisonne des Instruments de Musique* (Paris, 1886), Albert Jacquot defined the *cornet-trompe* as follows:

Cornet-trompe. Instrument inventé par Sax, ayant la forme d'une très grosse corne de chasse, en cuivre, autour de laquelle s'enroule extérieurement un tube en spirale. C'est le premier essai de réduction de la trompe de chasse. M. Theodore Gregoire de Nancy a perfectionné ce système en mettant 6 tubes à l'intérieur.

(*Cornet-trompe.* An instrument invented by Sax in the shape of a very fat curved hunting horn made of brass, around the outside of which a tube is wound in spirals. It is the first attempt to reduce the hooped hunting horn. Mr. Theodore Gregoire of Nancy has perfected this system by arranging the tubes inside the instrument.)

The identity of the *cornet-trompe* is further clarified by the entry in C. Sachs's *Real-lexikon der Musikinstrumente* (Berlin, 1913), which cites instrument no. 1105 in the Metropolitan Museum of Art, New York, as an example. The instrument in question has a height of 33.9 cm (perpendicular to the bell) and a bell diameter of 22.5 cm. It is unsigned and neither Jacquot nor Sachs specified which member of the Sax family invented the *cornet-trompe*.

Various organologists have attributed it to either Charles or Adolphe Sax. In fact it was invented by Alphonse Sax, who presented it at the International Exhibition held in London in 1862. An illustration appeared in the French periodical

L'illustration of November 8, 1862 (see Figure 2), where it was described as "une nouvelle trompe de chasse" ("a new hunting horn"). The curved bell fits quite snugly around the player's ribs and under his arm. This instrument is smaller and more manageable than the conventional large or medium-size hooped models. *L'illustration* of October 9, 1869 published an engraving (see Figure 3) of a new hunting horn invented by M. Theodore Gregoire from Nancy, called the *trompe de Lorraine*. Although it appears to be a very simple instrument, the construction is quite complex. Albert Jacquot presented an example to the Paris Conservatoire Museum (no. 582). The entry in G. Chouquet's catalogue of the collection, published in Paris in 1875, reads as follows:

Trompe de Lorraine, en re. Cette nouvelle trompe de chasse, en forme de conque, a ete imagine vers 1867 par M. Theodore Gregoire de Nancy. C'est dans la paroi et non dans un tube que circule la colonne d'air. Cette division de cuivre en spirale, qui partage l'espace compris dans la paroi en une colonne d'air progressivement conique, a une longueur de 4.62 m. (Don de M. Albert Jacquot).

(Trompe de Lorraine, in D. This new hunting horn in the shape of a conch was designed around 1867 by Mr. Theodore Gregoire from Nancy. The air column circulates inside the wall of the instrument and not in a tube. This spiral brass partition, which divides the space between the walls into a gradually conical air column, has a length of 4.62 metres. (Gift of Mr. Albert Jacquot).

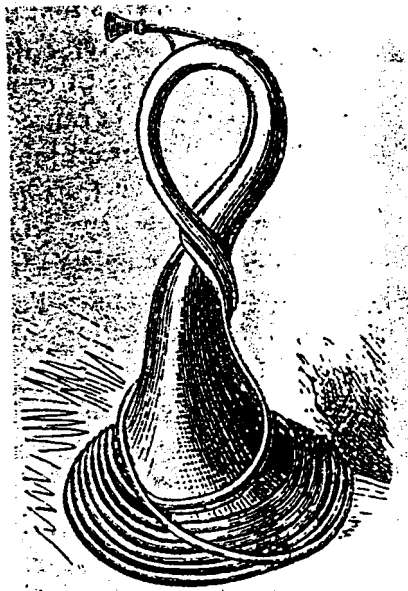


Figure 2

Alphonse Sax' nouvelle trompe de chasse (*L'illustration*, 1862)

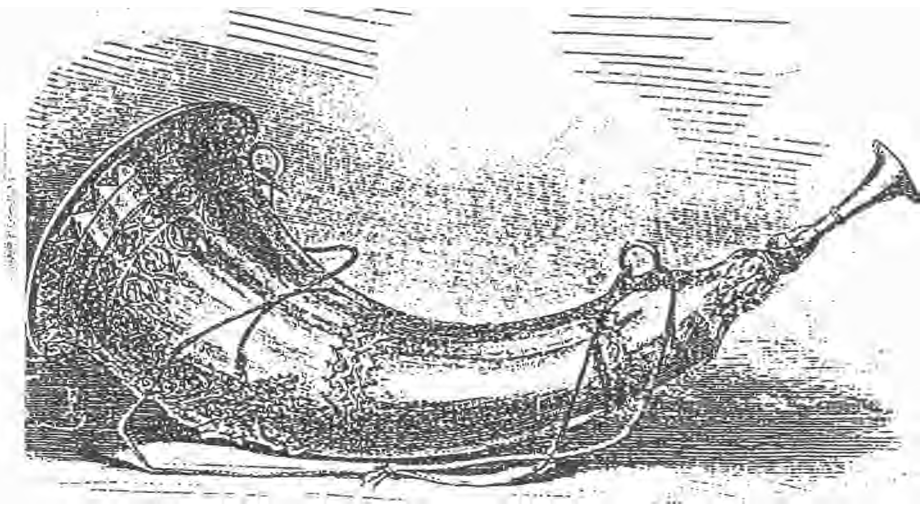


Figure 3

Theodore Gregoire's *trompe de Lorraine* (*L illustration*, 1869)

In his dictionary Jacquot himself gave 1866 as the approximate date of its invention and stated that the internal tube spirals were formed by the process of galvanoplasty.

Figure 4 shows an X-ray of the *trompe de Lorraine* in the Metropolitan Museum of Art (no. 89.4.1143), the bell of which is engraved "Raoux Brevets s.g.d.g. 66, rue d'Angouleme, Paris." In fact, according to Constant Pierre (*Les Facteurs d'Instruments de Musique*, Paris, 1893), M.A. Raoux's stock and trade name had been taken over by J.C. Labbaye in 1857, i.e., before this instrument was made. The socket that receives the mouthpiece has a circular cross-section but merges into a flat-walled, gradually expanding tube that spirals down inside the double wall of the bell. When the tube reaches the bottom it makes a U-turn, opening into the space between the down-coils. The air can thus circulate upwards again, passing at the top through an opening in the external wall into a round tube that makes a loop before merging into the bell neck. This loop is covered by a metal cap bearing the serial number 111, while the body of the instrument is encased in a smooth, brown, leather sheath. There is none of the elaborate engraving that appears in *L'illustration's* picture. The sheath, however, is decorated with a copper shield, engraved TROMPE DE LORRAINE, carrying a boar's head in relief (superimposed on crossed swords and surrounded by an oak wreath), alluding to the instrument's function as a hunting horn. There are two eyelets for attaching the shoulder strap.



Figure 4

Lateral X-ray of a *trompe de Lorraine* (photo courtesy Department of Musical Instruments, The Metropolitan Museum of Art)

The path taken by the air inside the double wall of the bell can be traced in X-rays of the Metropolitan Museum of Art's instrument, but it is not possible to confirm the surprising use of galvanoplasty, a process which one might expect to be used for the decorative shield but not for the internal tubing. There is another *trompe de Lorraine*, however, which owing to its poor condition can shed further light on the construction of the instrument's outer wall normally concealed by the leather sheath. This is instrument no. 3019 in the Musikinstrumenten-Museum in Berlin, which seems to be identical to the MMA's example, but must predate it since the serial number is 77. Its inscription reads "Raoux Brevete s.g.d.g. 14, rue des Minimes Paris." As the lower part of the instrument is badly crushed on one side it is no longer possible to take reliable measurements or read the entire inscription. According to the museum's 1976 *Katalog der Blechblasinstrumente*, its height is 24 cm and its bell diameter, 15 cm. The catalogue also states that the *trompe de Lorraine* was already being made in 1855, but the source of this information is not specified.

Since the Berlin instrument's leather sheath has split and is now loose, it can be removed. This reveals a pattern of soldering on brass: a roughly straight line from the top of the bell to the rim and another spiraling down the bell approximately ten times. Taken in conjunction with details in a frontal X-ray of the MMA's horn, this indicates that the outer wall was made not in one piece but in sections. Each section consists of one wide spiral strip of brass that is soldered to two successive spirals of the downward bore (as well as to the preceding and following strips) thus completing the enclosure of the upward channel between the downward spirals (see Figure 5).

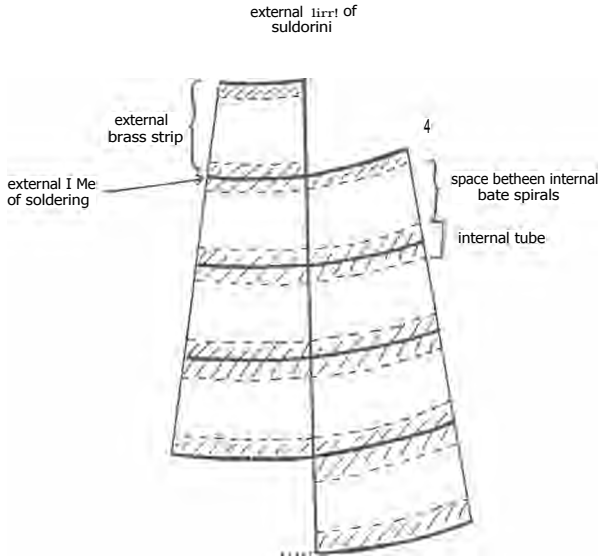


Figure 5
Construction of outer wall of Raoux's early *trompe de Lorraine*

Gregoire's method of reducing the hunting horn to a more compact size is ingenious and attractive but perhaps not the most appropriate from the maker's point of view. For this reason the firm of Raoux and its successors continued to keep the *trompe de Lorraine* in its catalogue, but modified its construction. The Brussels Musee Instrumental owns an example of the later model (see Figure 6). In this instrument (no. 3154) a tube of circular cross-section spirals down and up the outside of the bell in twenty-two coils. A feature not included in the Gregoire type of instrument is a drainage hole located where the tube turns back on itself at the bottom of the instrument. The all-brass horn (in D) stands approximately 26 cm high and has a bell diameter of 16 cm. It is signed "RAOUX MILLEREAU 66, RUE D'ANGOULEME PARIS" and was donated to the collection by Schoenaers, who was then head of the Millereau firm. (Millereau had acquired the Labbaye firm, including the Raoux tradename, in 1878.) A leather-covered example is to be found in B. Kampmann's collection. Both the covered and the uncovered models were illustrated in the 1910 catalogue of the Millereau firm (see Figure 7), which by then had moved to 15, rue Gambey, and was in the hands of H. Schoenaers. They are stamped "RAOUX-MILLEREAU-PARIS" and are described as "Nouvelle Trompe red uie pour chasse Spied, dite de Lorraine" ("a new horn reduced in size for hunting on foot, called the Lorraine horn"). The leather-covered model was priced at 120 francs and the uncovered one at 100 francs.



Figure 6
 Later model of the *trompe de Lorraine* (photo: Musee Instrumental de Bruxelles)

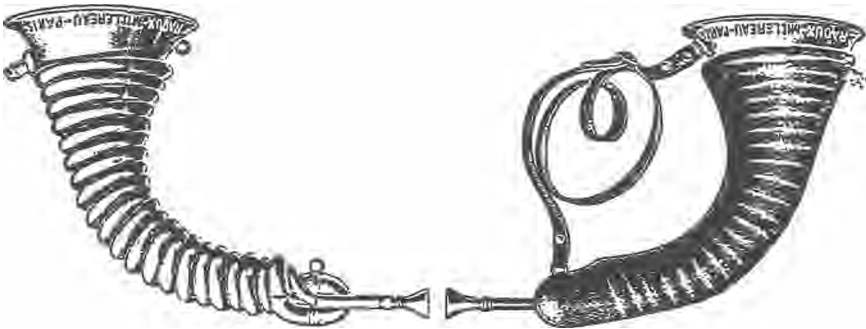


Figure 7
 Leather-covered and plain *trompes de Lorraine* (Millereau catalogue, 1910)

The Barcelona horn is almost identical to the instruments just described. It is, however, unsigned, and has a white metal bell beneath the twenty-two yellow brass coils. The screw cap for the drainage hole is missing and only part of a laced leather cover remains. Since Schoenaers exported to Spain at the beginning of the present century, advertising in the Spanish trade books as Millereau's successor, this instrument may be a product of the Millereau firm, or a pirated Spanish copy.

It may be asked what inspired Gregoire to produce his unnecessarily complicated

design. The surprising answer is to be found in an article written by A. de Lostalot that accompanied the picture in *L'Illustration* and which unwittingly reveals that Gregoire's invention—the result of fifteen years' research—was based on a false premise. Lostalot, presumably reproducing Gregoire's own reasoning, argued (fallaciously) that sound was produced in wind instruments by air striking the walls of the instrument. According to this argument, the intensity of the sound is directly proportional to the surface area struck by the air in the tubes, irrespective of the volume of air set in vibration. The *trompe de Lorraine* has a considerable surface area in relation to its volume. The tube, which has the innovative shape of an elongated rectangle, observes the true principles of acoustics. A round cross-section would give the greatest volume with the smallest perimeter, whereas what was sought was the greatest perimeter with the least volume. The *trompe de Lorraine* is convenient, portable, and of a shape that symbolizes its traditional purpose. It needs only a turn of the hand to rid it of the water accumulated as a result of condensation. The article concluded with the announcement that production had only just begun. Those who wished to examine the instrument should apply to M. Raoux, instrument-maker, rue Serpent 9, Paris. (The reference to Monsieur Raoux at his old address is intriguing. Was Raoux still working as a maker even though he had sold his firm and tradename to Labbaye twelve years earlier or was he merely continuing a private collaboration that had already begun before he retired?)

Gregoire's ideas run counter to the generally accepted objective of minimizing friction in the tube of a brass instrument after the sound waves have been generated via the lips and mouthpiece. Raoux, or his successors, obviously recognized some of the constructional and acoustical disadvantages of Gregoire's design, since the later model was designed with a round-walled tube placed more accessibly.

Although it was claimed in Lostalot's article that the shape of the *trompe de Lorraine* did not affect its timbre or its power, in practice this is not the case. What the instrument lacks in quality of sound, however, is compensated for by its convenient form. It is surely the *ne plus ultra* in brasswind compression. Sax' *cornet-trompe*, though relatively small, is wider and slightly taller. It may be pointed out in passing that the *cornet-trompe* can hardly be regarded as the *trompe de Lorraine's* predecessor if the latter was first conceived around 1854, as stated in the magazine article. The *Buchsentrumpeten*, on the other hand, are appreciably smaller but contain only half the *trompe de Lorraine's* length of tube. One cannot but admire the combined ingenuity of Gregoire and the firm of Raoux (and Millereau) in reducing the large hunting horn to an eminently transportable instrument.

Acknowledgments: I should like to thank the Barcelona Muse^o de la Musica, the Musikinstrumenten-Museum of the Staatliches Institut fur Musikforschung PK in Berlin, the Brussels Music Instrumental Bruno Kampmann, and the Metropolitan Museum of Art in New York for kindly allowing me to examine their instruments.

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