

HISTORICAL INSTRUMENTS

Euphonium: A Potential Overtaken by Events?

BY CLIFFORD BEVAN

If you haven't heard the name Ebenezer Prout before, you might guess that he is a character from the novels of Charles Dickens, alongside Quilp, Gradgrind, and Mr. Wackford Squeers. Yet if you look inside the dull brown covers of one of Ebenezer's books on music theory, you will find something typical of the final years of the 19th century that is still useful and mainly reliable today. *Double Counterpoint and Canon* and *Harmony Its Theory and Practice* can be safely ignored; there is more fascination in his two volumes dealing with *The Orchestra*, the first covering individual instruments and the second, the way they are combined in a score.

Here, in Volume I, immediately preceding THE OPHICLEIDE, we find THE TUBA:

THE TUBA (often indicated in scores as "Basstuba") is an instrument belonging to the family of Saxhorns, so named after their inventor, the instrument maker M. Sax, of Paris. The other instruments in the same class are used only in military bands and need not detain us here; but the tuba plays so important a part in many modern works that some details about it are necessary.

The tuba is a brass instrument, played with a mouthpiece similar to that of the trombone, and furnished with valves or pistons. To the three pistons already described in speaking of the horn, a fourth is added which lowers the pitch by a perfect fourth. From what was said earlier the

student will realize that when this fourth piston is used with others the note will be too sharp. The player, however, is able to some extent to correct this by their blowing. By means of the fourth piston a complete chromatic scale can be obtained through the entire instrument.

The tuba is made in three sizes. The smallest, often called the *Euphonium*, is in B flat, an octave below the cornet, and therefore in unison with the tenor trombone. Its compass for orchestral purposes is [see **Figure 1 (a)**]. A few notes more are possible at each end of the scale, but the highest notes are difficult, and the lowest ones weak.

The tuba more frequently used is that generally known under the name of the *Bombardon*. It is pitched in E flat, a fifth lower than the euphonium, and its lower register is fuller and richer.¹

Prout then adds a brief description of the CONTRABASS TUBA, showing the low D1 in Wagner's *Siegfried*.

Two years later, Albert Lavignac, Professor of Harmony at the Paris Conservatoire, produced an extraordinarily wide-ranging 592-page book entitled *La Musique et les Musiciens*. Here is a translation of parts of pages 147-149.

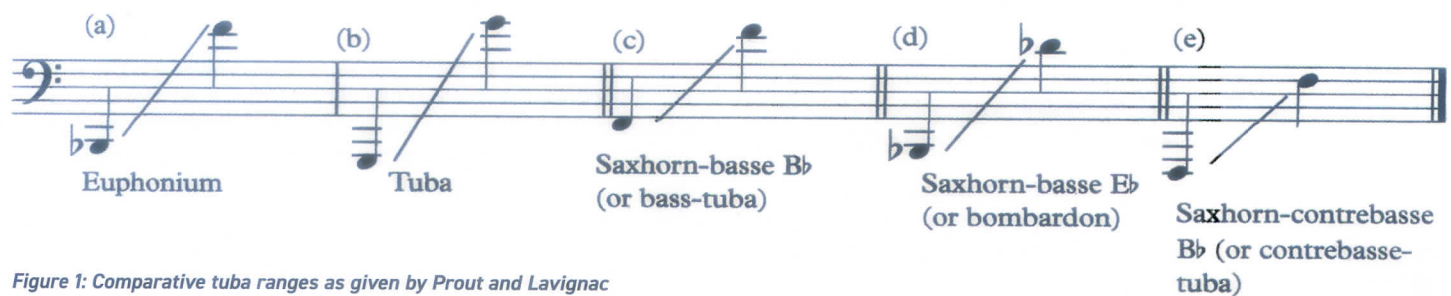


Figure 1: Comparative tuba ranges as given by Prout and Lavignac

Tuba or Bass-Tuba

Brass instrument, of the saxhorn family.

Provided that excessively rapid passages are not demanded, the tuba may be used over this range [see Figure 1 (b)].

Equipped with valves, it is chromatic; but it is best to avoid notes that are too high, and all the lower octave. Its tone is extremely strong, very solemn, mysterious, and gloomy in *pp*, and provides in all circumstances a superb bass to the brass section. It is the only representative, in the orchestra, of the family of *saxhorns*, of which a variety feature in bands of military music and brass bands.²

The article concludes with details of some published methods (Arban, etc.).

If we compare the range of the Euphonium (Prout) with those of the *Saxhorn-basse Bb* and *Saxhorn-basse Eb* (Lavignac) taken together, we may conclude that they are fairly accurate. (It's always the individual player who ultimately decides on their instrument's range.) But perhaps more significant is that the given range of the euphonium covers the *combined* range of the *Saxhorn-basse Bb* (euphonium) and *Saxhorn-basse Eb* (Eb tuba). (Presumably Lavignac deduced the range of the tuba by analyzing scores, because unlike the range he gives for saxhorns, his tuba's lowest given note doesn't relate to any particular pitch of instrument.)

While Prout is quite right to bracket his description of the euphonium with that of the tuba, the question that arises is the restriction of the euphonium to what is effectively an afterthought on the part of both Prout and Lavignac.

Organological Ancestry

The family tree of the bass tuba is short. Director of Prussian army bands William Wieprecht felt the need for a contrabass wind instrument, looked to his knowledge of harmonics as a violinist, made calculations, and had his colleague, Prussian Court Instrument Maker Johann Moritz, build the first *Baß-Tuba* in 1835. Over the years its precise form and dimensions have changed from time to time, but present-day tubas are still recognizable descendants of the original.

The euphonium has a longer line of descent. While both it and the bass tuba rely on valves for their chromaticism, Wieprecht had to wait until he had a valve capable of changing the direction of the air-column in a relatively wide tube without leaking the air under pressure. He achieved this in 1833 with the *Berliner-Pumpe*, another invention with Johann Moritz, but by then euphonium-type instruments were already benefiting from existing valve technology as their tubing was narrower, making it easier for the craftsman to ensure they remained airtight in every situation.

The first viable piston-valve was probably developed by horn-player Heinrich Stölzel by 1814 (possibly as early as 1811), and four years later he and mine-band oboist Friedrich Blühmel (who had been working on similar devices) took out a joint patent for valves. These were all first applied to the French horn where their dimensions were relatively small since the tubing they controlled was of small diameter.

Following this, the rapidly emerging instruments of euphonium pitch were considered to be bass instruments, and composers and arrangers treated them as such. The euphonium's predecessors were numerous, among them:

Pre(?)–1825	Heinrich Stölzel Pszczyna	Tenorhorn (baritone)
1829	In Wieprecht's Trompeten-Corps	Tenorbasshorn, three valves
1835	Gustave Pelitti Milan	Bombardino
1838	Carl W. Moritz Berlin (son of Johann Moritz)	Tenortuba (?), two valves for each hand
1843	Ferdinand Sommer Weimar	Baritonhorn, Bariton, Baryton, Tenorbasshorn or Tenorbass In German, Tenorhorn came to mean baritone, Tenorbasshorn, euphonium (wider bore)
1843	Adolphe Sax Paris	Saxhorn Baryton/ Saxhorn Ténor en si bémol (equivalent of baritone) Saxhorn Basse en si bémol (equivalent of euphonium)
1844	Ferdinand Sommer Probable maker Franz Bock, Vienna	Euphonion, Sommerophone, four rotary valves
1844	Ferdinand Hell Brno	Hellhorn

Wieprecht's *Baß-Tuba* patent document is a lesson in how to set out a complex argument in a clear and logical way. Yet there is one curious inconsistency about his Bass Tuba; it is not a bass instrument, as he named it, but a *contrabass* instrument, as he planned it. Many of the euphonium precursors' names printed above include the adjective "bass," yet the distinctive sound of the euphonium is easy to recall, along with the pitch of its contributions to both solo and ensemble performance. We hear it in its familiar repertoire of solos (often virtuosic) and melodies/counter melodies in the band. One of the dictionary definitions of "bass" is "lowest of a family of instruments," but in terms of actual usage, aren't we here discussing something playing in the tenor range? Perhaps one of the German names for the instrument, *Tenorbass*, acknowledges the situation most accurately.

It will not have gone unnoticed that one name is missing from the chronological list of inventions above: euphonium. A similar name first appears around 1843 when Ferdinand Sommer of Weimar conceived a tuba in tenor pitch called Euphonion, derived from the Greek word *euphonos*, meaning “sweet-voiced.” With an enviable gift for PR, he brought the instrument into prominence in 1851 at the Great Exhibition in London’s newly built Crystal Palace. Using the name possibly chosen by the instrument’s likely maker, Franz Bock of Vienna, Sommer performed Euphonion solos with organ accompaniment that led to some discussion in the Jury and swooning appreciation by Queen Victoria herself.³ His later attempts to substitute the name Sommerophone for the instrument were fortunately unsuccessful.

It is possible that Sommer (who was a member of Jullien’s famous band) pioneered the idea of the euphonium as a solo instrument; so far no earlier instance of its being used in this way has been discovered, although it is thought that virtuoso Prussian trombonist Friedrich Belcke may have been the first soloist on Stölzel’s *Tenorhorn* (baritone).

One notable aspect of the Great Exhibition was that the cooperation (or self-interest) of the railway companies enabled workers from all over Britain whose products were on display to attend and admire them. The country was already home to the extraordinary brass band movement involving thousands of working men and reliant on its wider popularity through a system of classes (leagues) and contests not dissimilar to professional football. Significantly, standard band instrumentation came to include two euphoniums. When, for whatever reason, a full band was unable to compete in a contest, or sometimes as an adjunct to such a contest, quartets of two cornets, tenor (i.e., Eb) horn, and euphonium would demonstrate their skills. Here, the euphoniumist would provide the bass of this smaller ensemble. Often called “the cello of the band” because of its tenor-register virtuosity, in this situation it became “the cello of the brass quartet” because of its ability to provide the vital bass role in an equivalent group of four-part brass.⁴

In France, the ophicleide, invented there, possibly influenced the choice of the lowest instrument in the orchestral brass section. Until the 1960s the usual French orchestral tuba was pitched in C, a whole tone higher than the euphonium, although the addition of extra valves allowed it to descend much lower. In general, this practice failed to influence orchestral tuba practice in other countries, but exceptions can be found. The French tuba in C was used in Monaco, the second smallest state in the world (after Vatican City) that shares land borders with France, along with some political and cultural links. In the mid-19th century Monaco’s population was about 1,200, relying on the income from growing carobs, oranges, and lemons along with the manufacture of straw hats. A casino was opened there in 1858 and today the population is some 39,000, with 30 percent of them millionaires. There is no personal income tax; the economy benefits from the profits of its banking services and the casinos. Music and musicians benefit from the presence of a symphony orchestra, opera house, and ballet company.

Until the middle of the 20th century many musicians throughout Europe and North America also benefited from the existence of summer season holiday resort orchestras and, situated on the Mediterranean coast between France and Italy, Monaco was no exception. The flyer for a concert promoted by the *Cercle des*

Etrangers de Monaco in 1905 gives the program for an afternoon performance which, unusually, lists orchestra members (Figure 2). The low brass section consisted of two trombones and Asé, *bombardino*, the only instrument given not its French name but its Italian. (Bombardino should not be confused with *bombardone*, the Italian for bombardon, or tuba.)

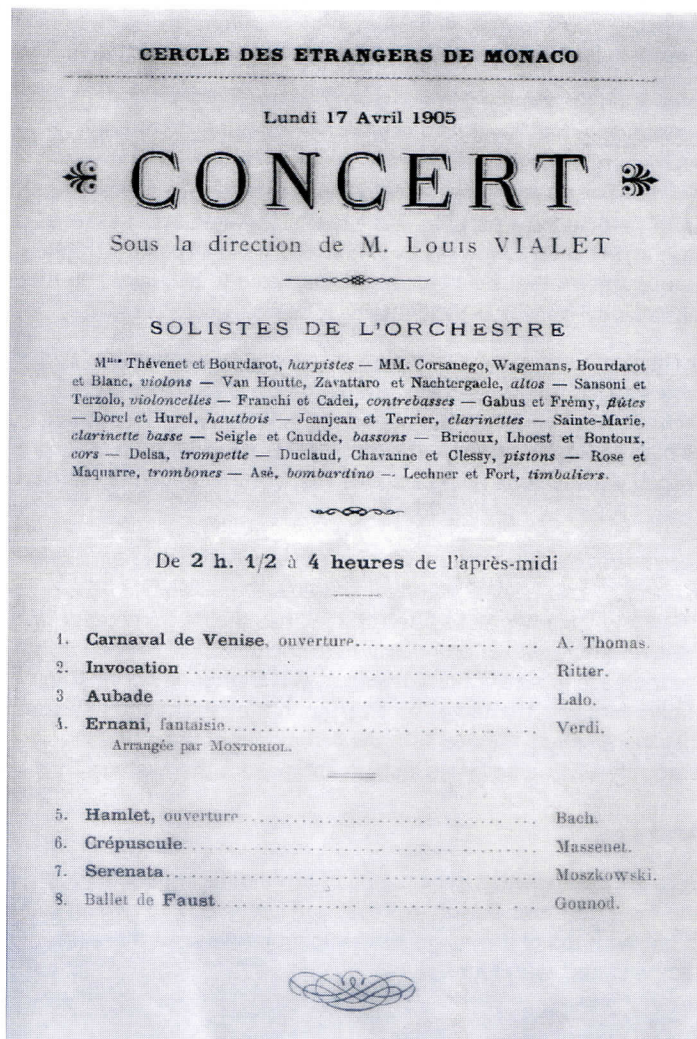


Figure 2: Program for a 1905 orchestral performance in Monaco

Bombardino means euphonium, and the fact that no tuba is mentioned in an orchestra of this size may seem puzzling until the type of trombones in the section is borne in mind. All would have been narrow-bore “peashooters.” Sluchin and Lapie state that the section was “uniquely three tenor trombones, distinctively in France, up to 1860 bore 10 mm, bell diameter 12 cm; afterwards bore 11.5 mm, bell 12 cm,” ensuring that the balance between the instruments in the low brass section would have been appropriate to the program being presented.⁵ It is possible that in an orchestra with only two trombones, the euphonium, capable with four valves of reaching lower notes, could also have fulfilled the function of the bass trombone found elsewhere.

While the influence of the ophicleide on later French composers was mentioned above, British orchestral low brass was influenced by what went on across the English Channel to the extent that sets of parts for light music (no full scores were provided) sometimes contained one for euphonium but never one

for tuba. In 1865, the orchestra for Luigi Arditti's concert season at Her Majesty's Theatre in London included two bombardons (tubas) and two euphoniums, while the orchestra at London's possibly most extravagant variety theatre, the Alhambra, consisted of 41 players with euphonium, but no tuba. The five males among the 60 members of a "ladies' orchestra" at Covent Garden for *Noah's Ark* in 1894 played two cornets, two trombones, and euphonium. (Women readers may wish to ponder this fact. Some may even feel the approach of a subject for their dissertation.)

In 1863, an Eb bombardon and a euphonium replaced the ophicleide in the Royal Artillery Orchestra, but by 1884 only the euphonium remained, succeeded by a tuba in 1926. As late as 1930 the British composer Arnold Bax's *Overture to a Picaresque Comedy* included a part for "Tuba in Bb" (notated in bass clef a tone higher than sounding, as in a *saxhorn basse* part). Its agile nature implies that the composer expected it to be played on euphonium—on which, incidentally, it lies very comfortably.

Orchestral tubists are aware that it was in France that the "Bydlo" tuba solo in Ravel's masterly orchestration of Mussorgsky's *Pictures from an Exhibition* appeared, in 1922. While it reaches as high as G#4, elsewhere the part descends to G1: perfect for a French small C tuba with its six valves, but the movement almost always requires a euphonium elsewhere.

The reason the euphonium, with its extremely wide range, never achieved its orchestral potential and was relegated by such as Prout and Lavignac to an afterthought was the rapid increase in the overall breadth of orchestral tone, including (or necessitating), the increase in size of horn, trumpet, and trombone bores. If the euphonium was treated as an afterthought by Prout and Lavignac, they were simply aligned with the remainder of the musical fraternity—including brass instrument makers themselves.

And yet...

Here are comparative dimensions of three different euphoniums, one from the same period as Prout and Lavignac and two on sale today, both top of the range professional models. All three are compensated, with four valves:

Boosey number 60738, c. 1901
Bore 15.00 mm.
Bell diameter 253 mm.

This compares to present-day Besson⁶ model BE20522-2, which has the following dimensions:
Bore 15.00 mm.
Bell diameter 304 mm.
Bore diameter is surprisingly consistent in other makes currently available, although bell diameter may be greater; for example:

Willson model 2950 TA
Bore 15.00/16.80 mm.
Bell diameter 310 mm.

While brass players tend to look to bore and bell measurements as indicators of an instrument's particular characteristics, acousticians point out that bore profile (the vibrating air column's shape from mouthpiece to bell) is the greatest determinant of an instrument's tone.

As previously noted, until the 1960s French orchestras used a distinctive design of tuba, with six valves and similar overall dimensions to the euphonium, including a height of some 24 inches (609.6 mm). Here are the crucial dimensions of a Couesnon 6-valve French tuba from c. 1985⁷ (probably, therefore, one of the final models):

Bore, valves 1–3, 16 mm; valves 4–6, +16 mm.
Bell diameter 279.4 mm.

When these dimensions are compared with those of the euphoniums, we may be surprised to find that they are similar to those of the Willson (although with a significantly smaller bell diameter) and not all that different from the Besson euphonium of more than 80 years earlier (which, incidentally, stands ½ inch taller).

Perhaps this article is incorrectly titled. Was the euphonium's potential achieved after all, even though it took a change of name and orchestral practice in a particular country to get there?

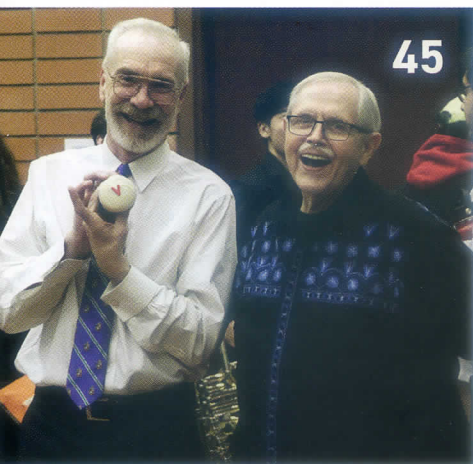
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Endnotes:

1. Prout, E., *The Orchestra*, 2 vols. (London, Augener, 1897): Vol. 1: 287, Vol. 2: 290
2. Lavignac, A., *La Musique et les Musiciens* (Paris, Lib. Ch. Delagrave, 1899). This publication covers acoustics, instruments, "grammar of music," aesthetics, and musical history from the Assyrians to the end of the 19th century.
3. O'Connor, M. B., "A Short History of the Euphonium and Baritone Horn" in Bone, L. E., jnr, and E. Paull, *Guide to the Euphonium Repertoire* (Bloomington & Indianapolis, Indiana University Press, 2007): 1-18. O'Connor reprints Queen Victoria's comments on p. 7 and provides an illustration of Sommer in performance on p. 8.
4. This theme has been well-researched by Gail A. Robertson. See "Restoring the Euphonium's Legacy As Cello of the Wind Band," iteaonline.org/abstracts/restoring-the-euphoniums-legacy-as-cello-of-the-wind-band/ and the *ITEA Journal* (Vol. 46:1, Fall 2018).
5. Sluchin, B. & R. Lapie, *Le trombone à travers les âges* (Paris, Buchet/Chastel, 2001): 120.
6. The Besson company is descended from Boosey & Co.
7. From The Vincent and Ethel Simonetti Historic Tuba Collection, Durham, North Carolina, simonettitubacollection.com.

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Jim Self at his "Swan Song" retirement celebration concert at the University of Southern California Thornton School of Music on March 4, 2024

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