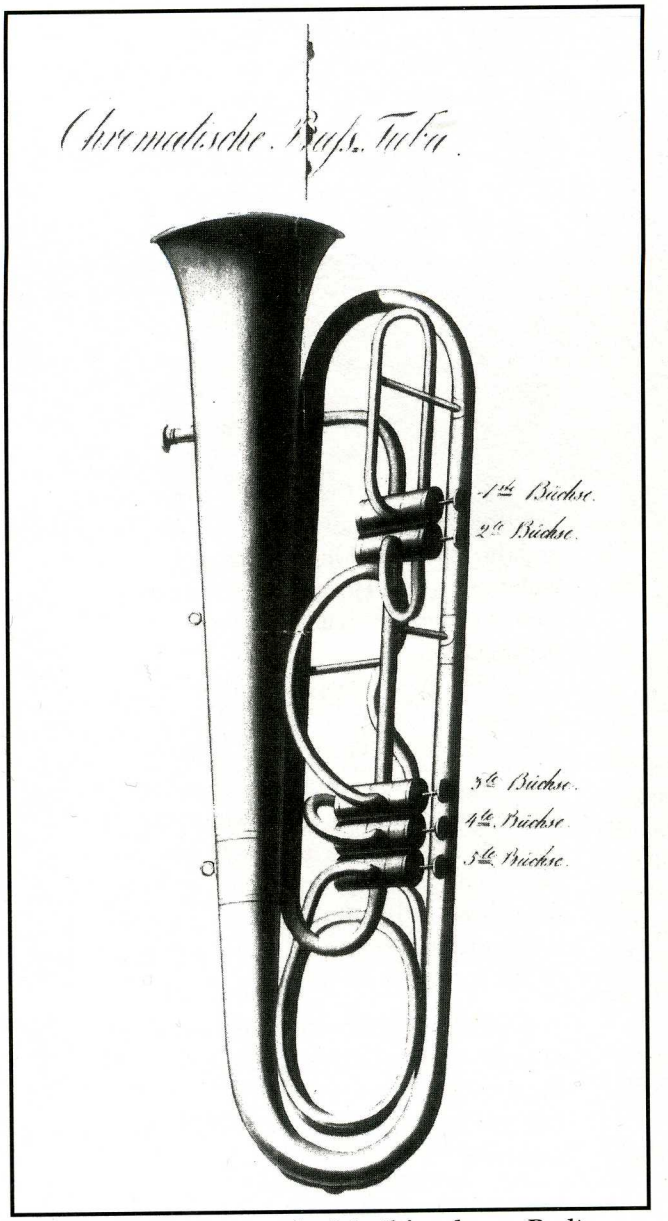
THINK ME UP A TUBA

By Clifford Bevan

Music seems to have got on quite well before the tuba appeared. From plainchant to Paganini, masque to Mozart, the baroque to Beethoven, what composers and directors didn't have they seemed not to miss. Yet, pre-tuba times were not easy for those playing instruments that supported the rest of the brasses, the serpentists, ophicleidists, players of bass horn and early cimbasso. As any present-day performer on these instruments knows, intonation may be less than secure, variations in the quality of different notes can almost be assured and best fingerings seem to vary on almost a day-by-day basis. Players lucky enough to be in Prussian military bands had been able to take advantage of valved instruments since the 1820s, but these were not capable of providing what we would nowadays think of as true bass parts: at their lowest, they might cover tenor trombone range. Existing instruments suggest that intractable technical problems in manufacture and often primitive design features scarcely made life much easier for their players than for their colleagues with keyed instruments.



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We owe it to Wilhelm Wieprecht, bandmaster in chief of Prussian military bands, that he became aware of these problems and set out to overcome them. As he wrote in his tuba patent document: "For 10 years now I have been working with military bands, and have felt, I suppose, most sorely the need of a true contrabass wind instrument." He follows this frustrated band director's statement with a step-by-step account of how he explored the acoustic basis of the air-column of a brass instrument, comparing it with the strings of a stringed instrument (he himself had been a professional violinist) and computing how best to use valves, which had appeared only twenty years earlier, to construct a brass instrument capable of obtaining these deep notes "three notes lower yet than the double bass."

Having calculated all the theoretical aspects he contacted Johann Moritz, member of a distinguished brass instrument-making family and his colleague at the Prussian court. Together they had to make decisions about the design of their new instrument. And this is where we should perhaps pause to consider the immensity of their task. Anyone who has considered modifications to a tuba will be aware of the problems faced, but these men had set themselves the task of a designing a completely new instrument, a concept without precedent. The result is shown in the accompanying illustration, the lithograph which illustrates the Baß-Tuba patent document (and which forms part of Veronica Lawson's translation in the second edition of *The Tuba Family*, space not having been available for its inclusion in the first edition).

While looking at the vaguely familiar form, think of it as representing the junction of what went before and what was to follow. Wieprecht refers in the patent to the serpent, the English bass horn, the bass trombone and the ophicleide. He was aware of their structure and compasses and points to the advantages of his bass tuba. He does not refer to any of the valved instruments, which already existed in the German States in a bewildering profusion. By 1835, three valves had become the norm, and three-valved trumpet-shaped instruments were familiar to anyone involved in military bands there. The bass tuba was too big to lie in a horizontal plane, so Wieprecht and Moritz put it into the vertical form of the ophicleide invented in France eighteen

years earlier. The tuba had a wider bore than existing brass instruments, and the two men devised Berliner-Pumpe valves to control the flow of air through larger diameters in 1833, two years before completing their new instrument. The reason for there being five valves lay in the acoustic requirements for the production of deep notes. As with the ophicleide, the player was required to position the left hand above the right.

What is quite extraordinary is how similar the prototype tuba is to present-day instruments. The Baß-Tuba was made from brass with German silver fittings; it had five valves and was pitched in F and C, like many instruments currently in production. Against this can be set the conformation, with bits of tubing apparently roaming about within the outer limits of the instrument in a somewhat arbitrary way. The most familiar aspects are probably the twice-curved tubing inside the bottom bow and the valve tubing just below the large branch, both of which have remained common in German tubas. It is likely that the reason for the roaming tubes elsewhere is the very sound one of limiting the number of abrupt turns.

Other noticeable differences from modern instruments are found in the limited sizes of bell, bell flare and overall bore. Within ten years other makers had introduced more features which are closer to those of the modern instrument, although it was arguably Adolphe Sax who expanded the profile to more acoustically effective proportions in his deeper saxhorns, patented in 1843 and 1845.

Still, in 1835 the bass tuba had finally appeared and the world of music had become immeasurably enriched. The reactions of contemporary musicians to the new arrival will be considered in a later column.

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