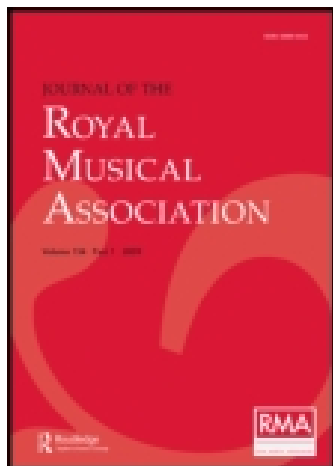


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JULY 2, 1877.

WILLIAM CHAPPELL, Esq., F.S.A. IN THE CHAIR.

ON IMPROVEMENTS IN THE TRUMPET.

By HENRY BASSETT, Esq., F.C.S.

THE two instruments which I have the pleasure of describing to the Association are the results of my endeavours to remedy some of the shortcomings of that ancient and important instrument, the trumpet.

In its original form its capabilities were of course very limited, by reason of the small number of notes to be obtained, these being no more than the natural series of harmonic intervals, though something was done to supplement them by the use of the hand in the bell, as in the case of the French horn.

By the addition of the moveable slide a great advance was made, as by this means many other intervals were rendered available. Still, however, the lower part of the scale remained imperfect, as, for various reasons, it was not possible to have a sufficient length of slide to supply all the notes for a complete scale, as is done by the trombones, the most important being that, from the great length of the tube in relation to its pitch, the instrument is what is called 'tender' or uncertain, and the use of a long slide, by altering the diameter or bore of the tube for too great an extent, has a very bad effect on the tone.

By the invention of valves or pistons a so-called complete scale was obtained on all brass instruments, together with great facility of execution, and the old slide trumpet has been in consequence to a great extent superseded by trumpets and cornets with three valves: a fact which is, I believe, generally regretted by those who have given attention to the subject, as these instruments, besides being decidedly inferior in quality of tone, are most faulty in intonation. It is not difficult to show by calculation, from the varying lengths of tube brought into action by the valves, that many of the intervals resulting from their combination are not in accordance with either the just or tempered scales. The unfortunate practice of transposing parts written in widely

different keys, so as to use only one or two crooks, greatly increases these errors, besides sacrificing the benefit of the natural true intervals and distinctive qualities of tone of the different crooks.

My first attempt was to construct a valve trumpet which should avoid these faults of intonation, and I claim for my 'Comma trumpet,' the production of a more correct scale than is given by any other valve instrument.

The first and second valves remain as usual : that is to say, they lower the pitch by the intervals of a major tone and a diatonic semitone respectively. The third valve *raises* the pitch of any note produced by the first valve by the interval of a comma ; in other words, the first and third valves *together* lower the pitch a minor tone. When used with the second valve, or alone, it gives, of course, other modified intervals.

This system of valves, which is also applicable to the French horn (formerly called the tenor trumpet) enables the player to produce a practically perfect diatonic scale in the tonic, dominant, and subdominant keys, with the advantage of having only two valve slides to tune when changing the crook, the alteration theoretically required in the third valve being so small as to be inappreciable. This instrument nevertheless did not entirely satisfy me, for the following reasons :—

In the first place, though having a better tone than any other valve trumpet I have met with, it is distinctly inferior in this respect to the slide trumpet.

Secondly, the A \flat below the staff is wanting ; a note however which should be seldom required, as it might be easily avoided in composition by taking advantage of the facilities offered by a change of the crook or key of the instrument ; moreover the lower notes of the trumpet should not be used too freely, as they are difficult of production, and would be much better rendered by the alto trombone. Still much military and dance music can only be played on the usual three-valve trumpet or cornet, which latter is really much better suited for the purpose.

Thirdly, the advantages in correctness of tune will only be fully obtained by a performer having a sufficient theoretical knowledge of music to be aware of the slight differences in intonation, and consequently in the fingering, required by a change of key, whereas in a slide instrument, the trombone for example, these difficulties are overcome by the marvellous instinctive co-operation of the ear and the hand.

These considerations led me to further attempts, and I may say I have succeeded in attaining my object in the simplest possible manner : this second instrument, which I call the Telephonic or perfect-sounding trumpet, being nothing more than the ordinary slide trumpet, with the addition of a single valve tuned in unison with the open D, or harmonic ninth—in other words, lowering the pitch a minor tone. This valve is worked by the

first finger of the left hand, the instrument being held exactly in the usual manner, and does not injure in the slightest degree the pure tone of the old trumpet, the bore of the tube remaining perfectly straight.

By the use of this single valve and the slide, separately or together, it is possible to produce a complete scale, major or minor, with a perfection of intonation only limited by the skill of the player, as it is essentially a slide instrument. The valve not only supplies those notes which are false or entirely wanting in the ordinary slide trumpet (including even the low A^b and E^b when playing on the higher crooks), but greatly facilitates transposition and rapid passages, while comparatively little practice is required to become familiar with its use.

I may say in conclusion, after some months' practice with the instrument, that it answers all reasonable requirements in the most satisfactory manner, and from the increased facilities which it offers, I believe that its adoption in the orchestra would have no inconsiderable effect in rescuing the legitimate trumpet from the neglect into which it has fallen of late years, with great advantage to the proper rendering of all classical music.

DISCUSSION.

The HON. SECRETARY asked Mr Bassett if every note in the scale could be played on his 'Telephonic trumpet'?

Mr. BASSETT said that all the chromatic intervals could be played, but it was not suitable for very rapid passages, which indeed were not so well adapted for the trumpet, and could be as well played on the cornet. For legitimate trumpet music, however, his instrument was all that could be desired. In reply to Mr. Stephens, he said the instrument acted equally well in all ordinary keys.

Mr. STEPHENS asked how low a scale could be played? He had seen crooks for A.

Mr. BASSETT said it was very undesirable to crook so low as A, as the tone became very uncertain and 'tender,' and the notes would be apt to split.

Dr. W. H. STONE said he had asked Mr. Bassett to bring forward this Paper because he felt very strongly the importance of applying true temperament to the orchestra, where he believed there was the greatest chance of its being attained. It was rather singular that this question had always been attacked from its most difficult side, viz., that of keyed instruments. It was far more easy of treatment in the case of instruments like those of the orchestra, which had a certain power of altering their tone, modifying the pitch, and bringing the chords into true intona-

tion. There was no doubt that this result had long been attained in the orchestra instinctively, to a certain extent, and this probably explained the superior power and force of the orchestra. But they ought to rise from *ρίχνη* to *ἐπιστήμη*, and every credit ought to be given to Mr. Bassett for having made the first step in this direction. He was not aware of any other instrument which spoke with true intonation, or in which an attempt had been made to alter the recalcitrant commas, as in the 'Telephonic trumpet,' or to attain the power of modifying the large intervals obtained by the slide. Mr. Bassett had mentioned in the course of his remarks what one seldom heard from players—that the valve slides required tuning; he had found the most marvellous ignorance prevailing on this subject. A great deal of the falsity of tone sometimes noticeable arose from the fact that horn players were not taught to tune their slides at all. No doubt they generally found that when crooked to play in such a low key as to render the horn almost double in length, it was desirable to make the valve slides longer, but, as a rule, the proper tuning of these slides was an unknown art. Another important remark was that with respect to the alto trombone. The trumpet was decidedly out of fashion, but some of the faults charged upon it no doubt arose from the fact that its natural neighbour in the orchestra, the alto trombone, had been removed. The trumpet led down to the alto trombone, that to the tenor, and that to the bass, and there you had the only quartett of instruments in the orchestra which was perfect, except the strings, and yet this quartett was sacrificed. He was sorry to say that even Sir Michael Costa allowed the quartett to consist of a trumpet, two tenor trombones, and a bass, which was destroying one of the voices (*stimme*) of the orchestra. By restoring the alto trombone, you would not only gain the intrinsic beauty of the instrument itself, but would support the trumpet and strengthen those notes which the latter could not produce efficiently, if at all. The principle might be applied to other instruments, and he had, he believed, succeeded in doing so with the clarinet, though he was not yet in a position to bring it before the Society. He had obtained 19 notes in the octave, which gave abundant means of doing all that was required for true intonation. But there was one other thing which must be done simultaneously, and this bore somewhat on the question which, he believed, Mr. Bosanquet was about to deal with. You must tell the unfortunate player which note he was to play in each instance. Hitherto the necessary accommodation had been effected in a rough way by the ear, but if this idea were to be carried out the scores must be gone through, and the notes marked which required to be sharpened or flattened. When this was done, the requisite perfection in instruments being attained, and the music properly marked, they might hope that the orchestra, in *éclat*, splendour, and brilliancy of tone, would surpass anything which had yet been heard.

Mr. BLAIKELY said that, as a manufacturer of brass instruments, he entirely agreed with what had been said by Dr. Stone regarding the want of knowledge on the part of players of the use of the valve slides. It was quite common to have instruments returned for repair after being in use for years in military bands, with the valve slides stuck fast, so that the extent to which they must have often been out of tune was far beyond the slight differences of a comma. It also appeared to him that there was a difficulty in the way of the player who had only his own part before him. Unless he was guided by his ear, he could not tell whether the passage or chord he was playing was in C or F. It was evident, therefore, that improved instruments would be useless unless the music were properly written or marked.