



Pl.1: The cornu under trials at the Royal Military College of Music, Kneller Hall.

ON MAKING A ROMAN CORNU

Peter Barton

In 1984 I was approached by the Roman Military Research Society to make a Roman military cornu; this was to be a real instrument which would produce an effective and viable sound as well as reproducing an original instrument.

Initial researches revealed considerable confusion, especially over nomenclature, as to what a cornu was. It transpired that a cornu is in fact a generic term covering a great variety of musical horns made of a variety of materials - sheet iron, brass, cast and sheet bronze, and animal horn. Their length too varied from less than 100cm up to nearly 4 metres. Reference was made in Roman times to the sound of the Tuba (tube) as 'horribilis sonitus', 'terribilis sonitus', 'fracti sonitus', 'raucitas', 'rudor', 'clangor', and 'gravis'.

Amongst the family of Cornua, authorities distinguish - insofar as there is agreement - between the following species:

1. Lituus and Carnyx: Beginning straight but curving in the bell section. 35cm to 80cm, probably used by cavalry. The carnyx usually decorated with animal head bells. Conical bore.
2. Tuba vero directa: Straight, short, of bronze or iron, and somewhat longer than but akin to the short English hunting horn (for fox hunting), and varying in length from 105cm to 180cm. Also conical bore.
3. Cornu/Bucina/Tuba Curva: A group of considerable confusion! All curved, some helical, some almost full circle, with a wooden cross-piece, ranging in length from 140cm to nearly 4m.

The horn required by the Society was the military type, Group 3 above, found in Pompeii and now in Naples, but illustrated in the 'Pompeii AD79' catalogue¹ and described as follows:

'Bronze horn (cornu); height 1.28m width 1.10m; diameter 1.20m. Naples Museum, old inv. 1277. From Pompeii. The tube is approximately 3.3m long, bent almost into a circle and held by a transverse strut (probably covered in ivory), which rested on the player's shoulder so that the bell of the horn appeared above his head.'

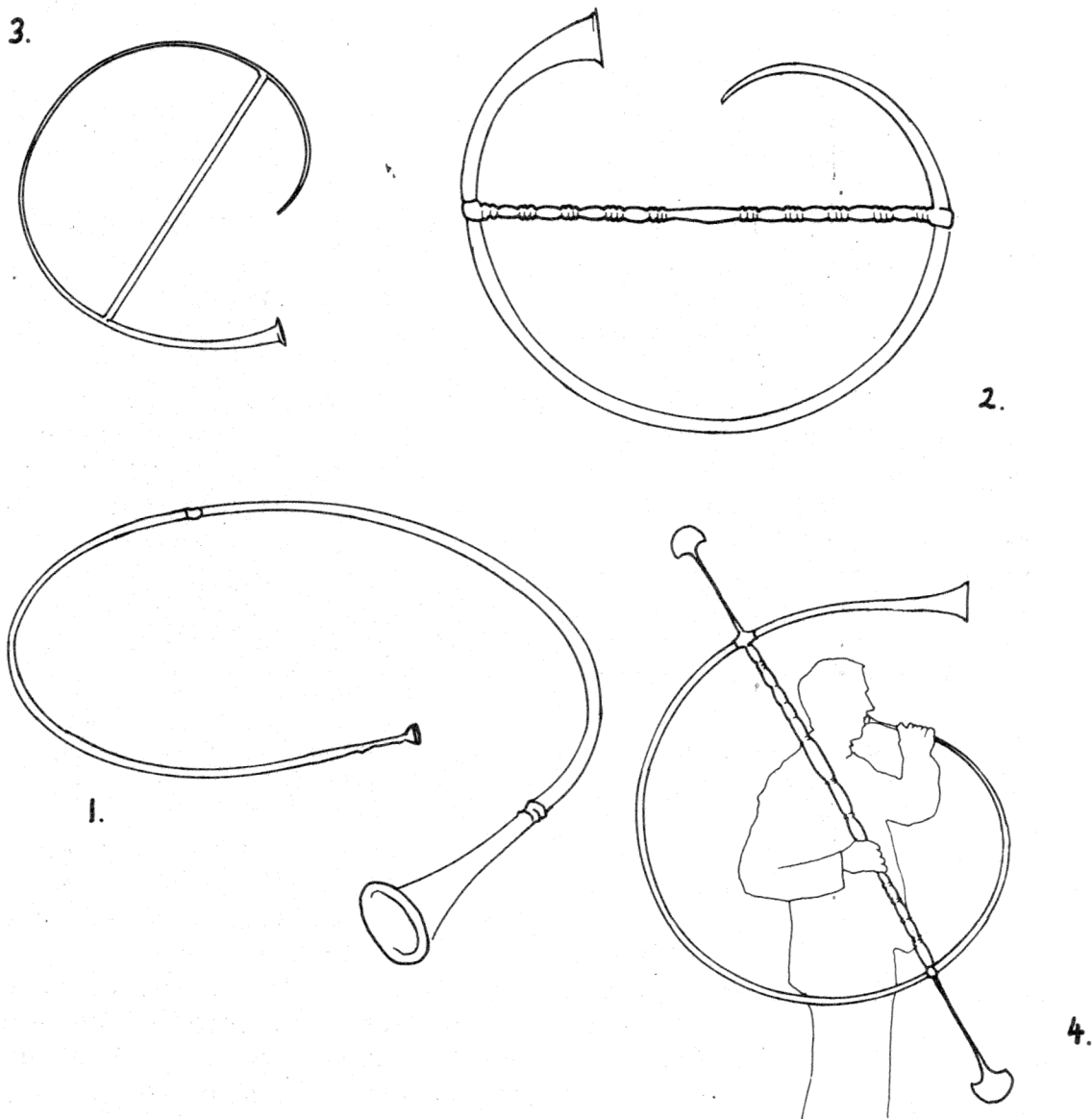


Fig.1: The Pompeii cornu (1), with the reconstructions of Mahillon (2 & 4) and Alexander (3).

Several copies of the instrument have already been made but with a variety of inaccuracies. The first copy was by Mahillon of Brussels; the second by Alexander of Mainz² and another by Mahillon - this time in Florence.³ There is one further example in Brussels.⁴

As a military instrument was needed it seemed that the Pompeian example would be the most appropriate. Many of the oft quoted Latin references to the sound of the Tuba would suggest a longer rather than a shorter instrument, especially 'gravis' which would hardly be appropriate to the short Tuba vero directa or to the Lituus or Carnyx.

Another important consideration was that the Pompeian original, which was playable, was in G (10ft) and readily produced the fundamental and all the harmonies up to the 16th with ease.

It was therefore decided that a reconstruction of the Pompeian instrument should be attempted, in brass, with a basic and unadorned structure dictated by the limits of funds available.

So, from a consideration of the evidence available, of the photos of the modern 'reconstructions' by Mahillon and Alexander, and the exhibition catalogue photo of the Pompeian original, it was clear a modern reconstruction of the Pompeian original, in brass, would be far closer to an original than anything else on show at present.

From the photo of the Pompeian original, I estimated that the lengths of the three sections were roughly in the proportion 1:3:1, i.e. Bell section to top T socket of handle 726cm; length between T handle sockets 1886cm; 'mouth-pipe' to beginning of receiver 697cm. This made for a shorter mouth-pipe section than that of the Alexander reconstruction (Fig.1,3) but produced a finished article more in keeping with photos of existing originals (Fig.1,1 & 5). The Alexander 'reconstruction' appears to attempt to maintain the curve of the back-bow into an almost full circle.

I was also supplied with dimensions of the Mahillon 'reconstruction' in the Brussels Museum: bell-end internal diameter 110mm; tubing OD at top T 22mm; at bottom T 16mm. These, being easy to copy, I took as those of the Pompeian original, so used them. Receiver and mouth piece measurements I took from plastic casts taken from an exhibit in the Colchester Museum.

THE 'BELL' SECTION

A comparison of the illustration of the Pompeian original (Fig.1,1) with those of Mahillon's (Fig.1,2 & 4) and Alexander's (Fig.1,3), is enough to indicate that these made no attempt to match the original's bell profile and rim. Alexander's looks like a narrow bore trombone bell, while Mahillon's, which does have a reinforced rim of sorts, is still as straight as a flower vase.

Examining the photo of the 'original' I was struck by its similarity at the bell-end, to that of a Nigerian Kakaki which I

had once restored. This had a wide flat rim at right angles to the bell-end, with as much width again inside the bell, hammered 90° to the rim.⁵ This protective appendage must have been

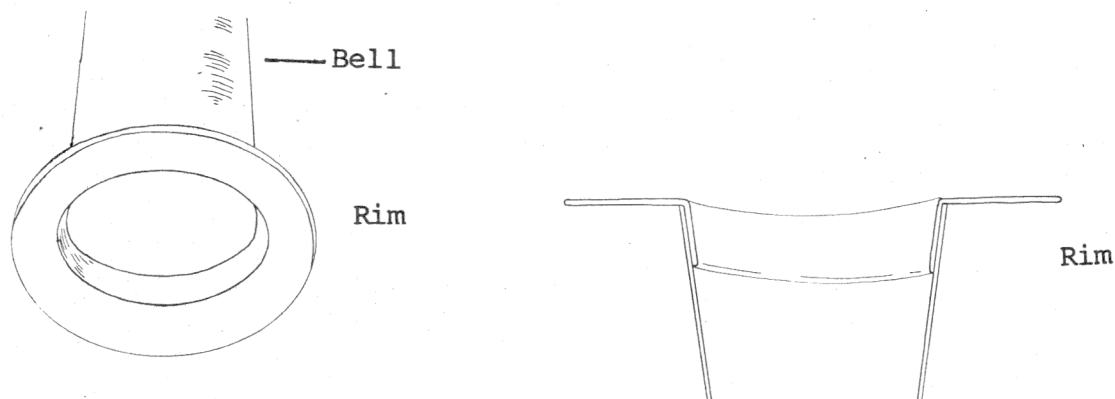


Fig. 2: Details of Kakaki bell.

an early forerunner of the bell-frame or Garland. I therefore decided that such a strengthening of the bell-end would be most appropriate. However, as the rim brass had to be fairly thin to allow of it being hammered and stretched to lie along the inside of the bell, it was not very strong. So I cut another ring, slightly larger in circumference, to slip over the finished bell to lie back to back with the first rim.

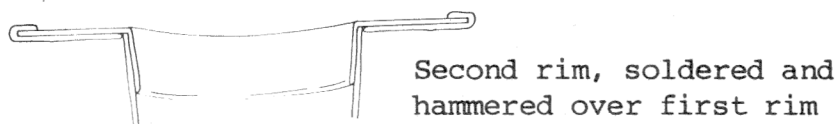


Fig. 3: Details of construction of bell.

BELL PROFILE

The flare was intended to begin at 22mm at the top T socket and increase regularly to a diameter of 110mm at the end of the bell. The curve intended can be seen from the illustration of the Pompeian original (Fig. 1, 1). I treated the bell section rather like an outside, self-adhesive patch for a tapered tube.

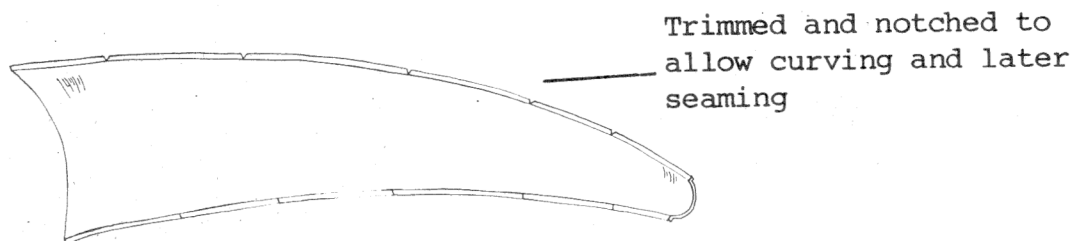


Fig. 4: Details of construction of bell.

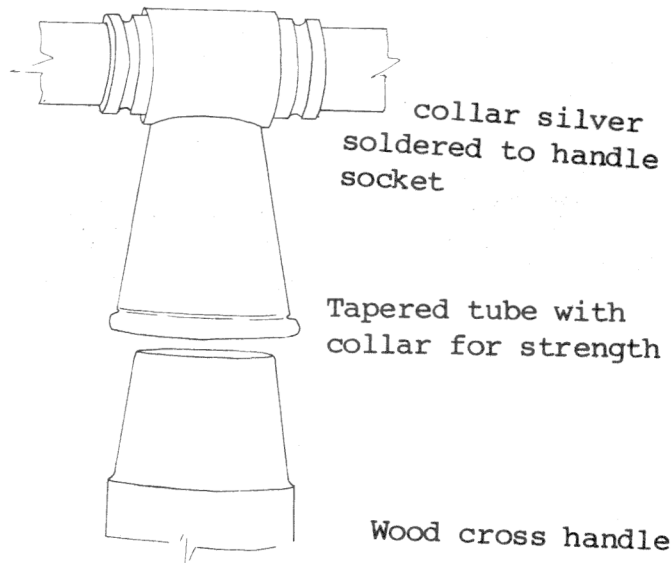


Fig.5: Details of handle socket.

The result left much to be desired, but did look convincing. The two T sockets to hold the wooden cross-piece were built up out of 2 layers of 1mm wall tubing, with a filler of 0.5mm.

BACK-BOW

This, a length of 1.9m, was taken in one piece from 19mm outside diameter 0.5mm thick tubing, tapered to 16mm at one end and expanded to 22mm at the other. Thus the joints, potentially weak points, are inside the T sockets.

'MOUTH-PIPE'

This looks short (0.7m), compared with those on other modern reconstructions, but as already stated above, the original from Pompeii shows similar proportions. Another point worthy of consideration is that this first section is apparently only supported at one end and is therefore extremely vulnerable. But, on this point M. Mahillon must have pondered this problem too, since for one of his reproductions (Fig.1,2), he supplied a supporting piece of brass between the receiver and the wooden cross-piece. I have supplied a similar support but ringing the receiver just below the mouth-piece.

RECEIVER AND MOUTH-PIECE

Many originals, being of thick metal, have been unearthed

by archaeologists and Behn provides a selection of possibilities.

The receiver is almost cylindrical outside, just tapering slightly to the detachable mouth-piece.

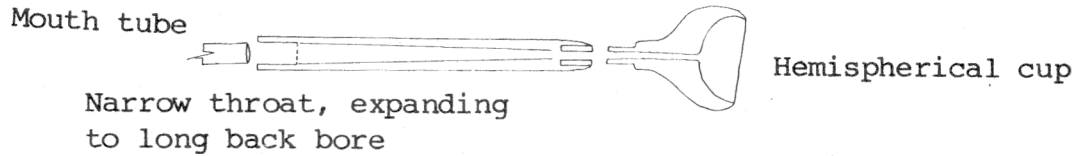


Fig.6: Mouthpiece.

I found the mouth-piece, with sharp edge and narrow throat, made centering notes very difficult, and for playing purposes, supplied a cut-down cornet mouth-piece.

Using this latter I was able to produce a good fat, incisive tone, from the fundamental up through 16 harmonics. played softly, the instrument produced a sound not unlike the French Horn in F, but, played Brassé, it produced the sort of

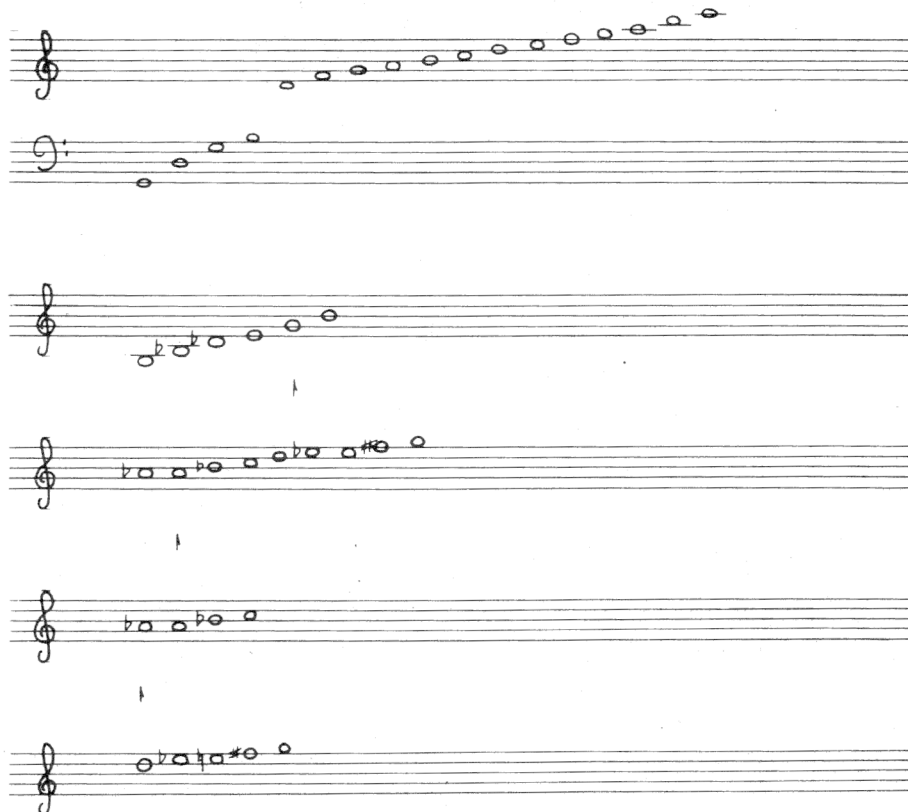


Fig.7: The above are the harmonic series which represent the range of the reconstructed cornu - this range is specific to the instrument and any change in internal shape, or volume would produce a different range of sounds.

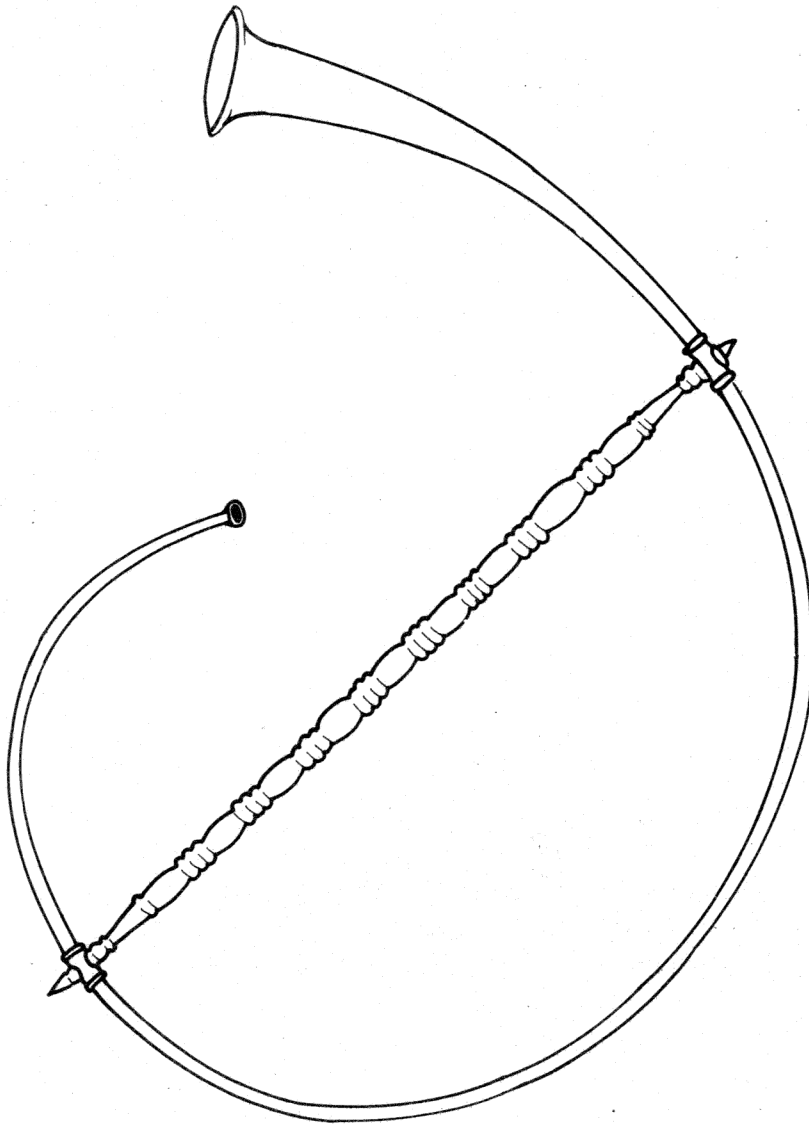


Fig.8: The completed cornu. Although ostensibly a spiral, the cornu is based on three distinct curves.

sound characterised in the Latin quotations mentioned earlier. And, it could certainly sound 'Grave', if this adjective corresponds to the much valued Roman quality of 'Gravitas'.

Designed as a signal horn, it should possess good 'carrying' qualities and test were subsequently carried out on the instrument.

THE TESTS

The reproduction of the cornu had been originally conceived to test its efficacy in the field - to establish its material range and potential carrying power.

The cornu reproduced by P. Barton was subsequently tested in the field by the Roman Military Research Society. Firstly at the behest of Mr John Eagle at Gresham's School, Norfolk the cornu was used in a demonstration by the Society and produced three perfect and loud notes. Further experiments showed that the instrument besides the 'terribilis sonitus' was capable of more subtlety producing a haunting quality when played softly.

A third test was carried out by the army at Kneller Hall,⁶ where a bugler, using his own mouth piece played several modern calls. He ended with a 'Trumpet Voluntary' and these, together with a full demonstration of the harmonics were recorded on cassette and reproduced at the Nottingham conference.

NOTES

1. WARD-PERKINS & CLARIDGE, 1976, Item 303.
2. BEHN, 1912, 41 and accompanying illustration.
3. '111 (N164) Tuba Curva, 19 copy by Mahillon, Tuba Romana from Pompeii, length 343cm: Conservatorio di Musica Luigi Cherubini, Palazzo Vecchio Firenze.'
4. No.466 'cornu' length 140cm (Musée Royale d'Art et d'Histoire, Brussels Catalogue, vol.I) - from its length this should however be a Bucina, although it is described as follows: (Branch D - instr. a Imbouchure) 466 Cornu. 140cm, including mouth piece.
5. From an example restored by the author, see also BAINES, 1980, Pl.III, 3 & 5.

6. Royal Military School of Music, Kneller Hall, Twickenham.

APPENDIX by N.P. Wickenden

Trumpet mouthpieces, probably for use on the cornu, are known in Britain from Colchester,¹ Verulamium,² Lydney Park,³ and Wickford, Essex.⁴ The last example came from the excavations by Warwick Rodwell in 1971 in advance of a housing development on the site of a late pre-Roman Iron Age settlement/Romano-British villa. Military presence on the site is strongly suggested by a number of bronzes, including part of a martingale and hinged harness mount; pre-Roman and Claudian coins; Claudian-Neronian brooches; and a length of 'military-style' ditch. The coin list from watching briefs carried out in 1978 produced an as, probably of Tiberius, counterstamped TIB.IM, as used on coins at the Rhine frontier fort of Moguntiacum (Mainz).⁵ Post-excavation work on Rodwell's excavations is being undertaken by Chelmsford Archaeological Trust, and a report will appear in due course.

The Wickford mouthpiece (Fig.9,4) is of copper alloy, incomplete, with a low moulding around the base of the mouth. The hole, as seen in the broken end, is not central.

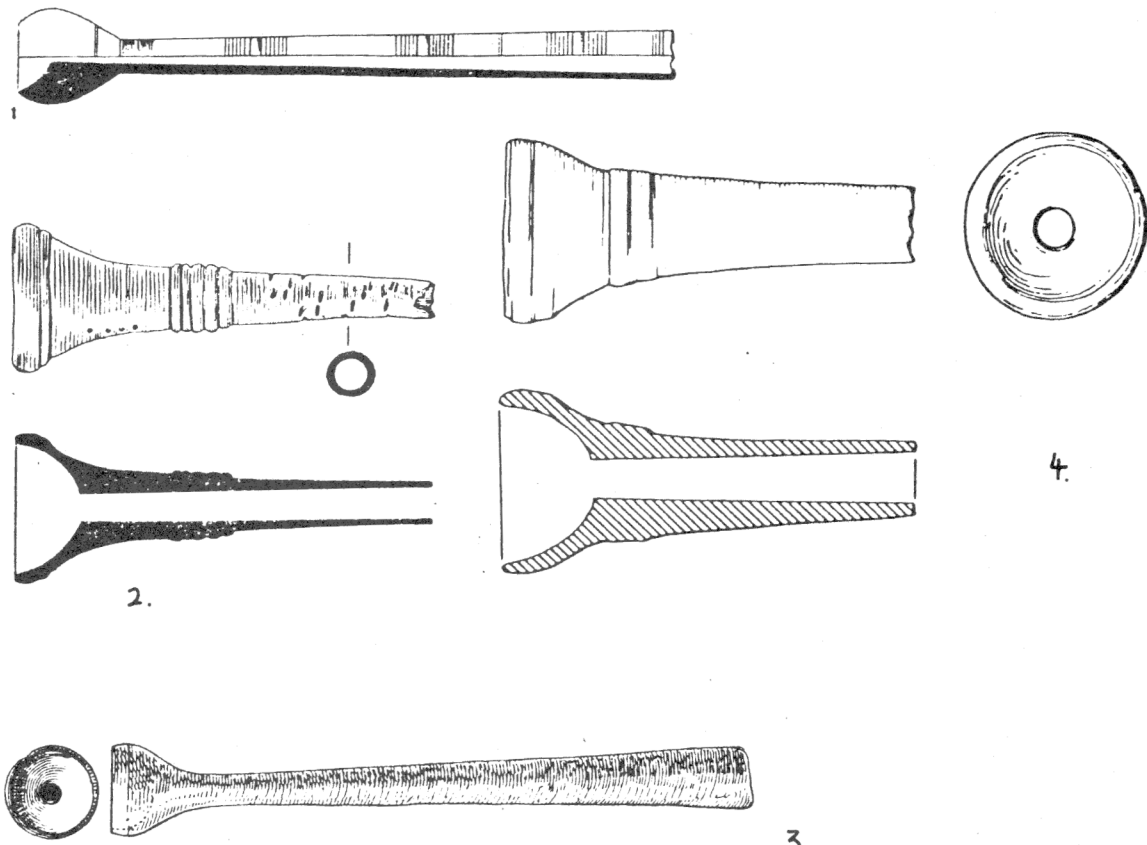


Fig.9: Trumpet mouthpieces from Colchester, Verulamium, Lydney Park, and Wickford.

NOTES (numbers as Fig.9)

1. Colchester Museum Report 1937-44, 28-9 and plate 4.
2. FRERE, 1972, Fig.40,129.
3. WHEELER & WHEELER, 1932, Fig.16,47.
4. WICKENDEN forthcoming. Context Cat.3128.
5. M. Hammerson in COUCHMAN, 1979, 43-4.

BIBLIOGRAPHY

- BAINES 1980: A. Baines, Brass Instruments: Their History and Development, (London 1980)
- BEHN 1912: F. Behn, 'Die Musik im römischen Heer', Mainzer Zeitschrift 7, 1912, 36ff
- COUCHMAN 1979: C. Couchman (ed.), 'Work of Essex County Council Archaeology Section, 1978', Essex Archaeol Hist 11, 1979, 32-77
- FRERE 1972: S.S. Frere, Verulamium Excavations, 1, Soc Antiq Res Rep 28, (Oxford 1972)
- WARD-PERKINS & CLARIDGE 1976: J. Ward-Perkins & A. Claridge, Pompeii AD79, (Bristol 1976)
- WHEELER & WHEELER 1932: R.E.M. Wheeler & T.V. Wheeler, Excavation of the Prehistoric, Roman and Post-Roman Site in Lydney Park, Gloucestershire, Soc Antiq Res Rep 9, (Oxford 1932)
- WICKENDEN forthcoming: N.P. Wickenden, The Prehistoric and Roman Settlement at Beauchamps Farm, Wickford, Essex, Chelmsford Archaeological Trust Rep. 8, (forthcoming)

