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The Oldest English Oboe Reeds? An Examination of Nineteen Surviving Examples

THE search for original oboe reeds is fraught with confusion, red herrings and closed doors. Due to their extreme fragility and because their usefulness has been recognized only recently, examples of early oboe reeds are extremely rare. The paucity of original specimens has meant that modern oboists have relied more on empirical investigation in their search for reeds for historical oboes than on copying original specimens. While this has certainly yielded positive results, the extent to which authenticity has been compromised remains a moot point.[1]

This paper is an attempt to review critically some of the claims made by recent writers in the field of reed research and aims to describe three English collections of oboe reeds dating from around 1800 – to our knowledge the oldest in the country – with sufficient accuracy to enable players of historical oboes to reconstruct an authentic 'set-up' as closely as possible.[2] The reeds are held in the private collection of Dr Nicholas Shackleton in Cambridge, in the Bate Collection of Historical Instruments at the Faculty of Music in Oxford, and in the Pitt-Rivers Museum, Oxford.

Appendix A lists all known locations of reeds for pre-Triébert oboes.[3] This brings up to date all previous listings.[4] Inevitably there will be some incorrect entries and omissions: please help if you have additional information. Appendix B gives measurements of several Continental reeds from the eighteenth century which can be used for comparison with the English examples.

Any oboist will agree that trying to describe a reed and hypothesize on its performance without playing it is an almost impossible task. Reeds are made to be played and should be judged on this – not their appearance. But, as it is unknown what damage could be done by wetting and playing these reeds, those in the Bate and Pitt-Rivers collections are permanently withheld from use. Dr Shackleton, while in favour of allowing his reeds to be played, is waiting until tests can be carried out to determine something of their playing history. Moreover, how much can be learnt from playing them is open to question: time would almost certainly have affected them adversely.[5] The aperture of the reeds will have been affected by the long period of dryness: one can only speculate on their original openings. Consequently, we have to rely upon visual examination and results from facsimiles. The documentation here is based on the criteria established for measuring bassoon reeds by Paul White,[6] amended where necessary.

DATING AND ASSOCIATION

All reeds examined are associated with one or more oboes. When were they 'associated', and by whom? Were the reeds necessarily made at the same time as the oboe? Were they made and bought sometime later? The playing characteristics of a reed and its suitability for a particular instrument are very subjective and so establishing the acoustic relationship between the reed and staple and the instrument is not easy. Arthur Benade and Jürg Schaeftlein discovered that the frequency of reed and staple alone remained more or less constant whilst playing the fundamental scale of an oboe. Benade concluded that 'for a conical woodwind instrument to work properly, the equivalent volume of the reed cavity added to the mechanical volume of its staple (or bocal or neck) must closely match the volume of the missing part of the cone'.[7] This is represented by the equation:

$$F_{rs} = v/2x_0$$

F_{rs} = frequency of reed and staple alone when playing fundamental scale.
v = velocity of sound in air.
x_0 = length of the missing apical cone.

This formula was tested empirically using Baroque and Viennese oboes. Divergences in the F_{rs} are evident where the tuning or response of certain notes (e.g. those using cross-fingerings) is modified by adjusting the breath and/or embouchure pressure. The formula assumes that the end of the staple and narrowest point in the bore are precisely coupled, but this is not always the case. The two reeds in the Bate collection now go 13 mm into the well of the associated Milhouse oboe, no. 203 in the same collection, but this is far from the narrowest point of the bore which is 5.1 mm in diameter, 46 mm from the top of the oboe. Consequently, there is a short section of narrowing taper before the bore flares outwards which is not considered in the formula. Also, testing the equation, we have found it best to ignore the bell of the instrument when calculating the instrument's conicity to arrive at a value for x_0. This is still only approximate because the distorting effect of the holes and the unevennesses in the bore itself are not considered.

By relating the basic pitch of the reed with bore conicity, Benade has taken differences between various players' embouchure and breath-pressure into account, explaining why different players may need reeds of different length to play the same instrument at the same pitch. Likewise, variation in preferred staple conicity results from differences in the technique of overblowing from player to player. On the other hand, there are many ways of producing the same F_{rs} by balancing the pitch-determining variables in different proportions. To take a simple example, a reed with very wide cane and short staple may give the same F_{rs} as one with a longer staple and narrower cane. The test of a good reed is that the F_{rs} is as close to constant over the whole range of the instrument as is possible. While it may help to give a rough gauge of reed dimensions required to play the critical notes and octaves in tune on a given instrument, this formula does not allow for the subtle modifications every instrument needs to assure the response of cross-fingered notes and various other compromises. Thus it is not accurate enough to verify the reed-to-oboe associations.

Although association is not necessarily a clear-cut method of dating, it is necessary to fall back onto this and, by plotting the intersection of the careers of the oboe makers and the known reed makers, propose an approximate date for the reeds.

The work of Thomas Ling (1787–1851)[8] is represented in each collection. His are the only extant oboe reeds to have been stamped with the maker's name. Little is known about his life, but he seems to have come from a musical family.[9] His father, also Thomas (*c.* 1750–?) is listed in the New Music Fund of 1794 as a performer on the violin, bassoon and oboe. He played in the Ancient Concerts and Grand Handel Festivals at Westminster Abbey. Thomas II's brother, William (b. 1775) was a composer and, from 1819 to 1830, organist at St Dunstan in the West, London. A recently discovered manuscript in the Deutsche Staatsbibliothek, West Berlin contains seven concerti by William Ling, dated 1796–1800: six for oboe and orchestra, and one for oboe, bassoon and orchestra.[10] The title pages of two of these concerti indicate that William Ling was the soloist at their first performance.[11]

What experience did the reed maker, Thomas II have as an oboist? *The Harmonicon* records the participation of Mr Ling (no Christian name given) in several concerts in London and the provinces (1823–1829) suggesting that there was no confusion as to which member of the family the writer meant.[12] Carse inferred that it was William who replaced Griesbach in the Ancient Music Concerts, July 1823, and was praised three years later as 'decidedly the best performer on the instrument left us'.[13] Most references to Ling which do not specify a Christian name probably refer to William: he would have been more famous through publication of his music[14] and through concerto performances. The account of the Birmingham Musical Festival of October 1826 in the same journal is the only evidence we have found which proves Thomas Ling played the oboe in public. This lists the oboists as: 'W. Ling, Witton, T. Ling, Knowles'.[15] That William was the first oboist confirms the supposition that he was more highly esteemed than his brother as an oboist.

Thomas Ling gained notoriety through his reed-making. His workmanship was praised highly by William Bainbridge, who wrote in his *Observations on the Cause of Imperfections in Wind Instruments,* '. . . I have seen very good oboe reeds made by Mr Ling . . . I know the great reputation which Mr Ling's reeds bear among professors'.[13] He is listed in Robson's London Commercial Directory as a musical reed maker from 1835–1848, and the 1841 census gives 'Thomas Ling, musician, 45', resident at 31 Cirencester Place.[17] We do not know whether Ling tailored his reeds to the needs of his clients and their instruments. Of course, it could be just a coincidence that Ling's reeds have been found in association with three William Milhouse oboes, but it is tempting to speculate a commercial arrangement between the two makers. Perhaps Ling reeds were supplied with each Milhouse oboe, or perhaps Milhouse recommended Ling's reeds to his customers. Ling also made bassoon reeds. He sold a couple through a Colchester music dealer to the church of St Ove, Fingringhoe, Essex in 1823.[18] His wife, Emma (or Amirella or Anna) continued the business after his death from 31 Cirencester Place.

From the number of records of purchases of reeds and the professional quality, it would appear that many oboe players in the eighteenth century dispensed with the trouble of making their own reeds.[19] All the same, it is unreasonable to assume that oboists were completely unused to making reeds and unfamiliar with simple techniques of adjustment. See, for example, the extra binding on reeds nos. 12 and 13, and the lengthening to the scrape of Ling reed no. 3.

SHAPE

Changes in the shape of the cane are the most visibly apparent developments to have taken place in oboe reed design. The shape is a highly idiosyncratic part of reed making, so it is no wonder that there is considerable variation to be found in surviving early reeds. The width of the cane along the edges from the binding to the tip affects primarily the pitch and tone of the reed but also its response, intonation and, to some extent, aperture. The wider the reed, the flatter its pitch and darker its sound. As pitch rose and a brighter tone came to be favoured, the width of reeds narrowed. The Baroque reed (8.5–10 mm wide) suited to the wider bores of early eighteenth-century oboes, developed into the narrower reeds (7–8.5 mm) with lighter tone and greater ease in the higher register for Classical and early nineteenth-century oboes.

This change was not uniform throughout Europe. Although it is hard to generalize about national preferences, the 'Classical' oboe was born in Italy where narrower-bored instruments had been favoured almost since the adoption of the instrument in that country.[20] Italian influence spread quickly to Germany. In France, Classical instruments were slower to catch on, and older-style lower pitched instruments and wider reeds seem to have been in use for longer than elswhere. Garsault's *Notionaire ou mémorial raisonné* (1761) depicts a wide French reed, while the portrait of the Italian oboist, Sante Aguilar, painted only six years later shows a much narrower reed, probably developed some time before.[21] It was from the Germans that England learnt of Classicism. Johann Christian Fischer (1733–1800) took a Classical oboe[22] with him to London in 1768. The narrow bore of this instrument and smaller reed were new to the country. Zoffany's portrait of an English oboist (*c.*1770), clearly shows an instrument set-up like Fischer's.[23]

While the English were still content with the early German Classical oboe, makers such as Grundmann, Floth and Bormann in Dresden and Sellner in Vienna were making further developments to the instrument by introducing extra holes for chromatic notes controlled by additional keys. These achievements were soon outdone by the Triébert dynasty in Paris from the second quarter of the nineteenth century. It was then that the oboe lost its military associations and was 'effeminised', acquiring (in the words of Berlioz) '. . . *un caractère agreste; plein de tendresse, je dirai même de timidité*'.[24]

'In England, the broad reed seems to have persisted longer than anywhere else.'[25] There, a dark, resonant tone achieved by using a broad reed was favoured over the lighter French sound into the nineteenth century.[26] An article entitled 'On the Oboe and Bassoon' signed 'I.P.', in *The Harmonicon* (1830, p. 192) includes an interesting comparison of reeds used by four oboists who had recently been heard in London. It states that J. C. Fischer (1733–1800) used a 'rather small reed of a moderate strength'; Johann Friedrich Alexander Griesbach (d. 1824) 'made use of a very large, strong reed, almost the size of a Bassoon, hence the fine quality of his tone'. The Frenchman, Gustave Vogt (1781–1870) was known for playing on a 'remarkably small, soft reed . . .', while the younger [Grattan-] Cook (1808–89), Griesbach's successor, used reeds between Vogt's and Griesbach's.[27] Despite the fact that both were German, Fischer and Griesbach used reeds of quite different widths; and while one would expect the younger player's reeds to be narrower, the opposite was the case. The French had developed a preference for a lighter tone from a narrower reed.

It is possible to get an impression of the absolute measurements of the narrowest reeds discussed by 'I.P.' from French iconographic sources. Reeds of width *c.* 7 mm are depicted in Vogt's *Méthode pour le hautbois* (MS, in collection of Paris Conservatoire *c.* 1813) and Brod's *Méthode pour le hautbois* (*c.* 1826). All the reeds here are noticeably narrower than the Italian and English reeds shown in the portraits of Sante Anguilar and by Zoffany. But, at the other end of the spectrum, how wide was Griesbach's reed 'almost like a Bassoon'? A picture of a reed used by Rossini's oboist, Baldassarre Centroni, is reproduced in the article on the oboe in the first edition of Grove's *Dictionary of Music and Musicians (A.D. 1450–1889)*.[28] It is shown to scale with a contemporary English reed. Assuming the latter was 7 mm in width, Centroni's would have measured 16 mm![29] William H. Stone, the writer of the article, says that this reed resembled those used by Grattan-Cook. Ling's shape (*c.* 8.5–9 mm) would probably have been considered wide and may have been comparable with Griesbach's reeds. It must be remembered that, up to the first decade of the nineteenth century, English reeds were 'old fashioned' in comparison with the Continent – at any rate with regard to their width. The English were won over to the French ideal by Barret, a champion of the Triébert system, who was active in London from 1829.

STAPLES

A reed's intonation and response can be affected as much by staple design as by the treatment of the cane. Oboe and staple need to be carefully matched; so, even if the technique of forming staples from sheet metal has changed little, modifications to the construction of oboes since the eighteenth century have necessitated changes in staple dimensions. Brass (of thickness 0.25–0.5 mm) seems always to have been the most commonly used material.[30] It is curious to find that one of the reeds examined is tied onto a staple that has rusted.[31]

Even though the full length of the tube was sealed with thread, Ling soldered the staples of the reeds in the Shackleton Collection. The Bate reeds are unsoldered. Does this indicate that they were made earlier? As long as the tube is airtight, whether it is soldered or not has little effect on the tone of the reed: more important as contributive factors are the thickness and temper of the brass. The harder the brass, the more ringing and projecting the tone. The thickness and tightness of the binding over the tube will also play a part in affecting the quality of tone. The most important parameters of a staple are its end dimensions and length. A slight variation in one of these will change playing characteristics. For example, by retaining the end dimensions and lengthening the staple, its conicity is reduced, resulting in narrower octaves.[32]

Philip Bate believed that staples were *not* carefully tailored to particular oboes in the eighteenth century because their tuning '. . . was intentionally marginal';[33] but as Halfpenny has commented, 'we look in vain for any evidence of the precision which is now regarded as essential in the modern corked staple . . . but this does not mean that the original data were any less precise to those who understood and used them'.[34] When a double staple (one brass cone placed inside another) is used, the resistance to the air caused by the step at the top of the lower tube introduces a further complication. Compound staples, even when their end dimensions and conicities are identical to a one-piece system, behave quite differently. As yet their mechanics are not fully understood. All that can be said is that they are different.[35]

With the cane and binding intact, it is very difficult to measure staples accurately. It is possible to measure the bottom diameter and the thickness of the metal – although it is quite likely that the brass has been thinned at the end – but the aperture of the top of the staple is more difficult to ascertain. This is compounded by the fact that the tube becomes oval-shaped towards the narrower end and, in old reeds, is often blocked with dirt. Regretfully, readings for this measurement are not as accurate as we would have wished. Staple tops of reeds in the Shackleton Collection could be compared by eye with no. 4 which was accurately measured when dismantled. As there is minimal variation in more easily observable details in the Ling reeds, it can be assumed that the staples are virtually identical.[36]

THE PREPARATION OF THE CANE

To determine how a reed sounded, an examination of which strata of the cane were exposed in the gouging and scraping processes needs to be carried out, and considered along with the other measurements.[37] Cane is made up of concentric strata of varying densities. Below the single layer of cells which comprises the bark is a series of tightly-packed fibres of whitish colour. Their appearance is easily distinguished from the smooth, yellow complexion of the layer immediately below – the dermis. These strata are the hardest parts of the cane and are what give the plant support. Closer to the centre of the cane is the parenchyma in which the fibrous vascular tissues can easily be seen. These become less closely spaced further away from the bark. We have divided the parenchyma into dense and broad in the sketches of the reeds below, although there is no definite division between these two areas.

The most marked difference between the scrapes of twentieth- and eighteenth-century reeds is in the portion of the cane left in the reed. Old reeds use more of the harder cane close to the bark; in modern reeds, this tends to be discarded. How that is achieved depends upon the way the gouging of the cane from the inside is balanced with the scraping of the outside. The blades of two reeds may be identical in thickness but one may have been gouged thinner and so has harder cane from near the bark. Generally it can be said that it will have a brighter tone, faster response, and its tuning will be more stable. All the reeds examined were made before the invention of the gouging machine,[38] so the reed maker would probably have used tools similar to those pictured in Garnier's *Méthode* to eliminate the softer layers from the middle of the cane.[39]

In the eighteenth and nineteenth centuries, makers seem to have favoured thicker gouges than those used today for either modern or historical oboes. (Old reeds vary between 0.65 and 1.0 mm at the thickest part of cane; Jurg Schaeftlein and the Viennese Baroque oboe reed style favours gouges as thin as 0.55; Dutch makers prefer 0.6–0.7). When gouging by hand, it is easy to vary the thickness of different areas of the cane. From the exposed dermis and bark at the edges of the scape on some old reeds, it seems the gouge was tapered from the back towards the tip, and from the centre to the sides. This was verified in the case with reed no. 4 when it was taken apart. 14 mm from the tip (beyond the end of the scrape), the cane was 0.7 mm at the centre and 0.54 and 0.56 on either side.[40] These measurements, taken 3.5 mm from the centre give a variation of approx. 0.043 mm per mm of width. By tapering the gouge from the back to the tip, harder cane was retained for the tip.[41]

Tapering on the inside of the reed was apparently even more carefully done than scraping on the outside. Besides the evidence of the reeds themselves, Brod seems to imply this when he says: 'Having succeeded in this [gouging, shaping, tying on] it is only a question of making it speak'.[42] Tapering the gouge towards the tip apparently did not die out entirely with the advent of the gouging machine. Vestiges survive even today on modern Viennese gouging machines, where the rail tips slightly towards the middle. The following passage from A. M. R. Barret's *Complete Method for the Oboe*, which contains the first description of the gouging machine, can be read to imply a tapering of the gouge towards the tip:

Take the cane out of the groove and if the inside be found too thick on account of its roughness, and the knife of the gouge have no effect on it, scrape the middle part with . . . [the scraper] until the cane is of a proper flexibility . . .[43]

Once the cane is bound onto the staple, its original shape is lost and there is consequently no reliable method for calculating the diameter of the tube of cane from which a reed has been made. Nevertheless, the age and texture of the cane can be used as clues to approximate the original size of the tube. Being monocotyledonous, the vascular tissues which transport nutriments up the stalk of *Arundo donax* are spaced irregularly in the parenchyma, not grouped together in an outer ring, as is the case of dicotyledons (such as hardwoods).[44] Thus cane has no growth rings, nor does the spacing of the fibres become any different as the plant ages. Instead, they expand and become woodier. Generally, the grain increases in size in proportion to the diameter of the cane. For the musician, the cane's texture, resulting from the size of the vascular tissues, is critical. Finer-grained cane produces reeds of brilliant, projecting quality, more stable in intonation (not always a positive factor) which tend to last longer (because the harder cane is more resistant to wear and tear and acidic breakdown by saliva). Tubes up to 16 mm come from growth from the first year of a plant's establishment, or later in cases where growing conditions have been poor and the plant has been starved of nutriments. Fred Palmer favoured cane from tubes of diameter 24–25 mm for making copies of Ling reeds. In our experience, this size of cane, which is used for bassoon reeds, gives neither the tone quality nor pitch stability required for historical oboes. Also, none of the reeds we have seen (including no. 15 which Palmer copied) could have been made from cane of this type: they all show fine-grained wood characteristic of tubes 14–18 mm.

The edges of some of the old reeds were bevelled to allow a perfect fit when tied onto the staple,[46] viz.

FIG. 1.

Ling always did this as well as thinning the ends of the cane to avoid cracks when tying on. He also wrapped an 8 mm wide strip of goldbeater's skin around the folded cane. This was partially covered by the binding and guarded against leaks at this point.

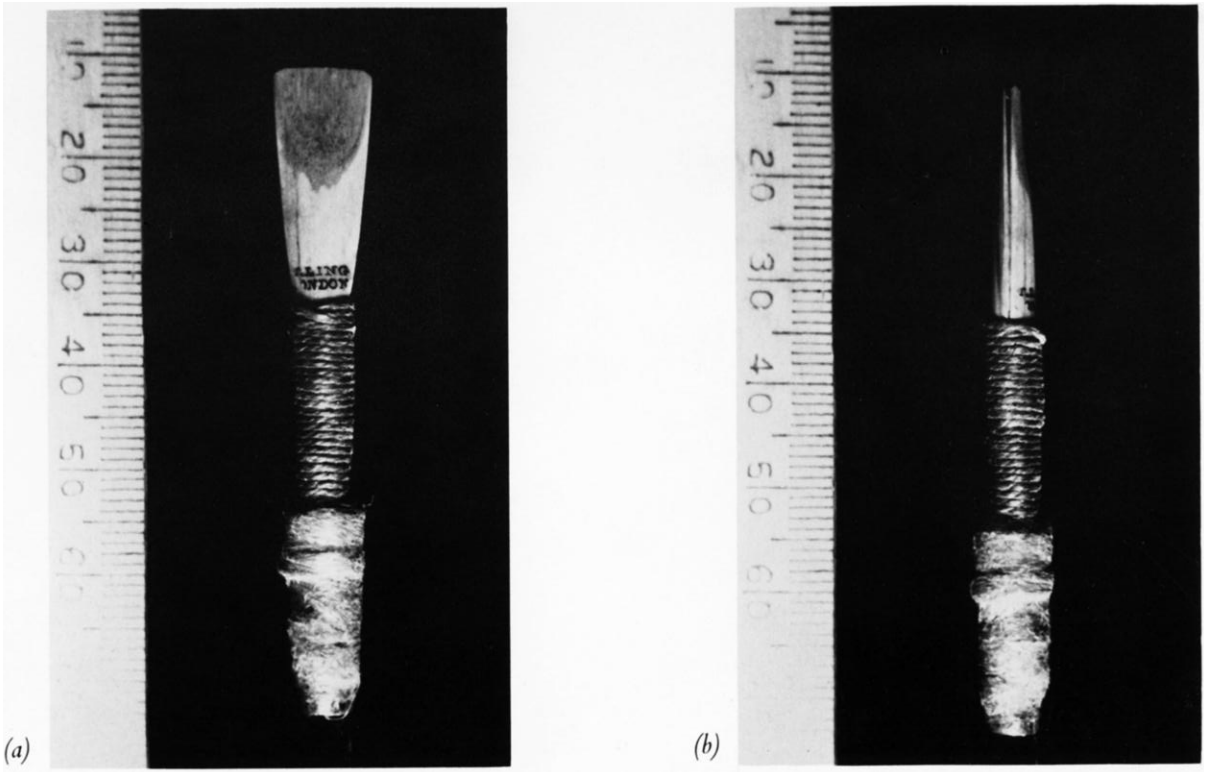


PLATE I

(a) Shackleton reed no. 2; (b) Shackleton reed no. 2.

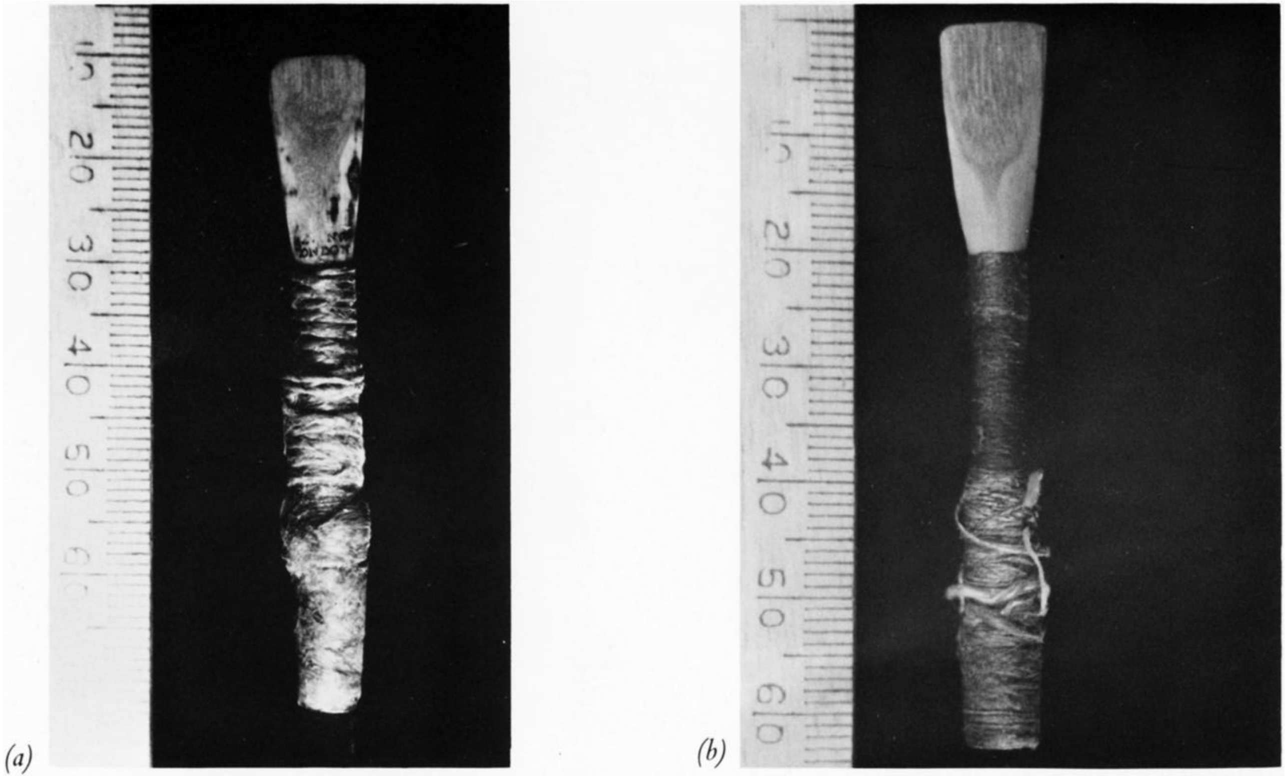
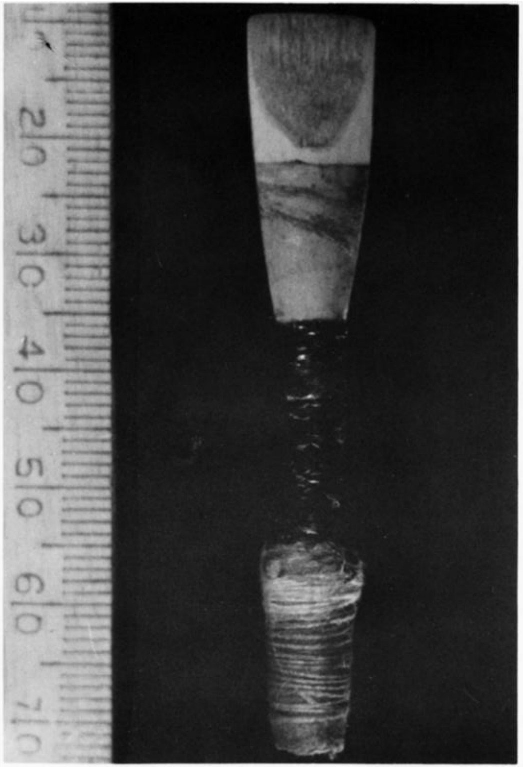
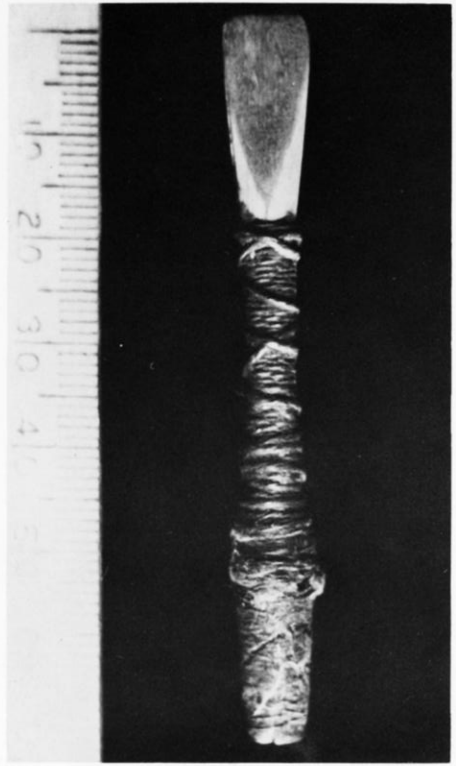


PLATE II

(a) Shackleton reed no. 3; (b) Shackleton reed no. 6.



(a)

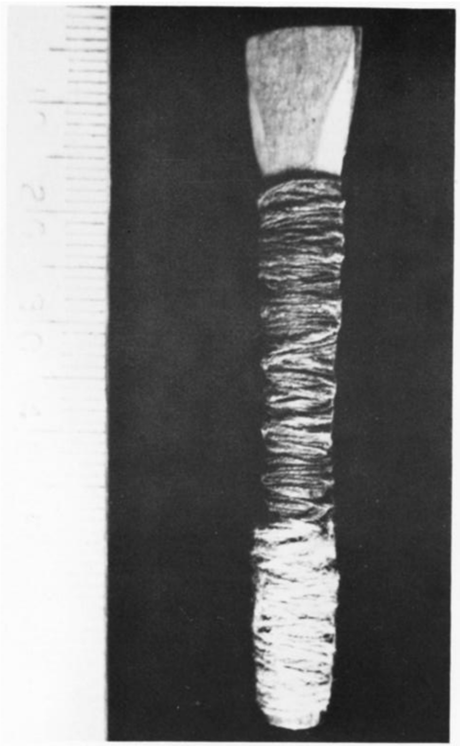


(b)

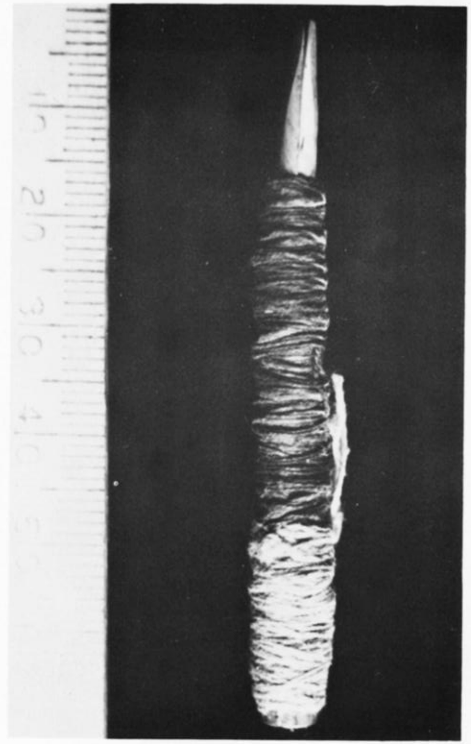
(c)

PLATE III

(a) Shackleton reed no. 7; (b) and (c) Shackleton reed no. 8.



(a)



(b)

(c)

PLATE IV

(a) and (b) Shackleton reed no. 12; (c) Bate reed no. 2.

TYING ON

The modern player of the Paris Conservatoire system oboe binds the cane as tightly as possible to the staple, with the tops of binding and staple exactly coinciding, and with the width of the shape such as to make the edges of the cane come together slightly (*c.* 0.5 mm) below the top of the binding, and, relying on the high tension of the string, conform exactly to the staple. These factors produce the best response (i.e. freest vibration) throughout the range of the instrument whatever the personal variations in the scrape. Old oboe reeds can differ from this in two respects. Firstly, not all makers felt it necessary to stop the binding exactly at the top of the staple. The binding of the Ling reeds stops short of the end of the staple by about the thickness of one thread. Other examples from the Shackleton collection were overbound: even as far as to cover the end of the scraped portion of the cane. This extra thread was probably used to control the aperture of the reed.[47] Secondly, the shaped edges of the cane were not always bound to conform to the staple. In some examples, it is clear that a gap was left between the cane and top of the staple,[48] viz:

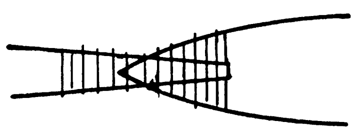


FIG. 2.

To what extent this space affects the performance of the reed is difficult to tell. From our experience, the relative response of fundamentals and their harmonics seems to be affected.

The type of thread used may be an important consideration. Of the four types of fibre in common use in eighteenth-century England, wool can easily be ruled out as not being strong enough. Cotton was expensive as it had to be imported, and was often difficult to obtain.[49] Silk thread was sufficiently strong but also expensive.[50] Linen, however, was relatively cheap, usually locally produced, and very strong.[51] All Ling reeds in the three collections use thread of the same thickness. The thread used for binding most of the historical reeds we have seen appears to be identical, even as to thickness, to that which was used in the binding of books from the sixteenth through to at least the eighteenth century, and in fact is available today and used in repairing old books by hand.[52] The strength and thickness of linen thread is important because it shows that reed makers in the eighteenth century had the option to pull the thread as tightly or loosely as they wished. This linen is at least as strong as the nylon now in use, and thus the relative strengths of the natural materials placed no constraints on how tightly reeds were tied; thus, tying reeds less tightly to produce the gap, as pictured above, must have been deliberate. The coarseness of the fibres of the linen thread is more evident when the thread is no longer under pressure, as in the case of reed no. 4. In comparison with new linen bindings of identical gauge used in the conservation department of the Folger Shakespeare Library, the flax fibres of the reed bindings seem to have swollen with age, or become not as tightly twisted.[53]

To further understand the physical relationship between cane, thread, and staple, consider the simple experiment of a thin plastic ruler lying on a table so that about two-thirds of its length protrudes beyond the table's edge. Three fingers hold the ruler in place against the table. If the fingers press firmly, placed so the edge of the first finger coincides with the edge of the table, the free two-thirds of the ruler will, when set in motion, vibrate freely and evenly for a long time. Pressing with a finger on the ruler beyond the edge of the table damps the vibration and shortens the length of time of the vibration. Likewise if the fingers are moved inward from the edge of the table, vibration becomes progressively more damped and, for want of a better term, flabbier. Moreover, if the fingers hold the ruler only loosely in any position, vibration is damped. Pressing gradually more reduces the damping effect up to a certain firmness, where damping is at a minimum. Pressing harder beyond this *point of firmness* does not reduce damping or promote vibration. The tightness with which modern reeds are tied goes beyond this *point of firmness.* Ling's reeds also seem to be tightly bound onto the staple. The top wind of the thread on Ling's reeds comes consistently below the top of the staple by one or two winds of thread. Our attempts to duplicate this practice suggest that this is because the thread is thicker than that used today. That is, maximum vibration or minimum damping are not achieved when thread and staple ends agree. This effect is seen clearly with the ruler experiment, where the thickness of the fingers may be analogous to the thickness of the thread: where finger and table ends agree, the actual pressure point of the finger is back slightly from the edge of the table.

The relation of the shape of the cane to these factors is also important but more difficult to express. Attempting to make the width of the shape agree with the top dimensions of the staple at that point, modern reed makers pull the sides of the cane tightly against each other with no bunching effect of the cane. If the width of the shape at the end of the staple is very much greater than the end of the staple, the thread cannot be pulled so tight, or leakage of air will occur somewhere further up along the exposed blades of cane. We have found that it is possible to tie on, not quite as tight as usual for modern reeds, but tight enough so the sides of the cane, slightly wider at the top of the staple than usual, will close against each other, while still achieving the above-mentioned *point of firmness*. Reeds thus bound have a pleasant tone and very free vibration, but response in the second octave became less reliable as the thread got looser. But since there are so many factors to be balanced against each other, this conclusion must remain tentative.

The different relationship between the width of the shape where it meets the top of the staple, and string tension, observed in the old reeds, may have continued subtly until the advent of nylon thread, only 40–50 years ago: silk thread of about the same thickness of F weight nylon thread was used in the nineteenth century, and even when beeswaxed heavily it cannot be pulled as tightly as either linen or nylon without breaking.[54] It can be concluded from empirical evidence, that the strength of the thread is a decisive factor in the width of the cane at the top of the binding.

Having noted the importance of the width of the cane at the top of the binding, it must be added that it is very difficult to measure accurately once the reed has been tied on. Because of the pressure of the string bowing the cane, however much that is, this is true even with a reed like no. 4, which has been taken apart. To try for more accuracy in obtaining this dimension, a ribbon of paper can be bent around the cane at this point, marked either side of the cane, then straightened and measured. This was carried out for Bate reeds and given in the data. The measurement, of course, corresponds with that of a piece of cane which has been totally flattened. To obtain the measurement one would use when shaping the cane, the original diameter of the cane must also be considered. A usable formula might result from taking the average based on estimates of cane diameters used in the eighteenth century, or *c.* 15 mm.

THE SCRAPE

Significant differences between early and modern reeds are to be found in the way they are scraped. Modern reeds are strengthened by a central spine which continues to within 1–1.5 mm of the top of the reed; this is thicker than the edges and tip, and contains harder cane. In many old reeds the hardest cane is left at the edges and there is no distinction between 'tip' and 'heart' (or spine): the scrape is much more uniform up to a 'bump' at the point where the scrape meets the bark. They are closer to modern American or Dutch than German or English scrapes.

FIG. 3. *Cross-section of the centre of a modern oboe reed blade.*

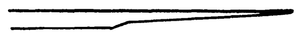


FIG. 4. *Cross-section of the centre of the blade of a Ling reed.*

THE THREE ENGLISH COLLECTIONS

A. THE SHACKLETON COLLECTION (Reeds 1–13)

Dr. Nicholas Shackleton bought his collection of reeds from a dealer in Canterbury who had apparently acquired them together with a flute and two oboes – one by George Miller,[55] the other by W. Milhouse.[56] The collection consists of the thirteen oboe reeds described here, two bassoon reeds (one by J. Gerrand of London) and a single-bladed reed and mouthpiece for oboe. The presence of the bassoon reeds suggests a bassoon was at one time part of the set of instruments: provided that all items shared the same provenance. All the reeds were purchased in an elliptical wooden box. Five of the oboe reeds (nos. 1–5)[57] are stamped T. LING LONDON and are remarkably consistent but for no. 3 which has an extended, V-shape scrape atypical of the proportions of other reeds by Ling. All are made on soldered brass tubes.

At this stage, it is not possible to ascertain which reeds were played with which oboe. Differences in the binding where the reed was inserted in the instrument are minimal and therefore inconclusive: they all appear to have been inserted 17–18 mm into the oboe. Likewise, any identification of the makers of the anonymous reeds is speculative. It is nevertheless tempting to attribute no. 6 to Ling because of its similarity to nos. 1–5. Also, no. 7 may be by J. Gerrand as it uses the same finish over the thread as a bassoon reed in this collection. Gerrand may have supplied it along with the bassoon reed but was unable to stamp it because of its size.[58] Nos. 9 and 10 may have been modelled on the Ling reeds: the attempt of a less skilled hand. Also, both 8 and 11 could have originated from one maker as they are both narrower reeds bound onto longer staples. Reeds 12 and 13 form another pair, characterized by wide, short blades, clumsily over-bound. Apart from nos. 9–12, all the reeds are probably playable.

B. BATE COLLECTION (Reeds 14 and 15)

The two Ling reeds in the Bate Collection were bought by Reginald Morley-Pegge in Norwich, probably with the W. Milhouse oboe no. 203. The instrument can be dated from the address 337 Oxford Street which appears on the bell and where Milhouse is known to have lived from 1799 to 1828.[59] The pairing of these reeds with the oboe is more certain than with the Shackleton specimens because they fit well into the top of the oboe. It is possible that Ling made them to be sold with the instrument or, equally, that he made them sometime before his death in 1851. The first evidence of his reed making activities dates from 1835, but this does not prove that he did not make reeds before that date. Thus, the association of a 'late eighteenth-century oboe' with reeds from a maker 'mainly of the second quarter of the nineteenth century',[60] may not be as incongruous as Maurice Byrne suggests.[61]

These reeds are very similar to the specimens of Ling's work in the Shackleton Collection. They differ only in that their brass staples are unsoldered and their scrapes are slightly longer. The latter seem to be authentic and may have been due to differences in the cane Ling was using, the instrument for which he was making the reeds, or simply his own whim.

Because the cane of reed no. 15 is longer it would appear that either the tip of no. 14 is missing or that Ling made two reeds to play at slightly different pitches. In the event of the first possibility, one would expect the scrape of no. 14 to be shorter – instead it is marginally longer, and Ling's proportions are retained in the scrape. That the second played flatter is supported by the fact that it protrudes slightly further out of the oboe. But it must be emphasized that it is impossible to predict the pitch a reed will play at without being able to test it. Measurements can tell one only so much.

C. PITT-RIVERS MUSEUM (Reeds 16–19)

A leather-covered papier-mâché box owned by the Pitt-Rivers Museum holds four reeds in its compartments (cat. no. 1900.67.1. 1, 2, 3, and 4). They were bought by Henry Balfour at the Bateman Saleroom in 1900 along with an oboe by W. Milhouse (no. 1900.67.1). It was presumably on the basis of this information that Philip Bate described the reeds as 'some important though damaged specimens in the Pitt-Rivers Museum in Oxford [which] can be dated by association at *c.* 1770'.[62] But from the stamp, *100 Wardour Street, Soho* on the bell of the oboe, we know that it dates from the period 1788–98.[63] If these reeds were made at the same time as the oboe they would be older than those in either of the other collections.

All the reeds are badly damaged, which accounts for the inconsistency in our documentation. Sometimes the existing cracks have provided the opportunity for taking more extensive measurements than usual. Reed no. 18 differs from others made by Ling because of the greater area of the scraped cane; there is also a larger surface of exposed dermis. A 'bump' normally found at the transition from bark to dermis is more apparent where dermis meets parenchyma. The cross-section of the scrape exposed by the split '0' side is uncharacteristic. In summary, this is a curiously mixed bag to be associated with a single instrument.

NOTES ON THE MEASUREMENTS

The two blades of each reed were measured using a dial gauge[64] mounted with a tongue which slips inside the reed. Readings in 2 mm increments were taken from the tip along the edges, centre and midway between the edge and centre on either side. Care was taken not to damage the cane by forcing the tongue too far into the reed. In some cases the reed had already been damaged in such a way that allowed the tool to extend further into the reed.[65] Also, it should be noted that because of the curvature of the cane, this gauge becomes less accurate further down the reed. The given thickness of gouge (i.e. the thickness at centre of cane below the scrape, where the bark is exposed) of most reeds must consequently be viewed with some caution. This will always be somewhat bigger than reality. To give an idea of the inaccuracy factor, measurements of reed no. 4 taken before it was dismantled have been included.

The width of the cane is given in 5 mm increments, and the thickness of the reed on the minimum axis at the top of the binding is also included. A sketch of the cane of each reed is provided to show the exposed strata. Our schematic representation is modelled on Paul White's,[66] except for the identification of the tightly-packed white strands immediately below the bark.

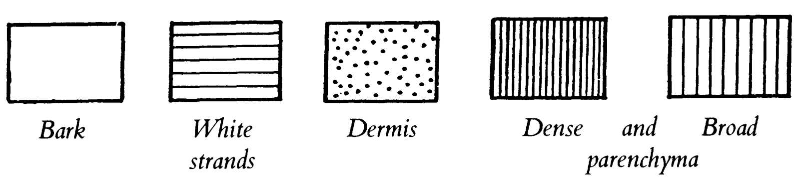


FIG. 5.

In an area as small as the scrape of an oboe reed, it is difficult to distinguish these areas and one often merges into another. The drawings are all enlarged in the following scale (mm).

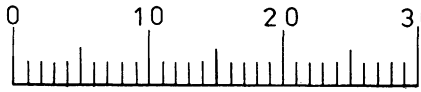


FIG. 6.

Photographs of several of the reeds are included, and the location of illustrations of three more reeds in standard reference works is cited.

The measurements of staples are given as follows:

$$\frac{\text{(bottom max./min. diameter)} \times \text{(top max.} \times \text{top min. dia.)}}{\text{length}}$$

The staple lengths of the reeds in the Shackleton and Bate Collections were measured with a no. 11 metal crochet hook, with side bulges filed away. In the case of the Pitt-Rivers reeds and where accurate results could not be obtained using this method, the length from the base of the staple to the top of the binding was substituted. This data is differentiated from the other readings by being placed in square brackets.

The blades of each reed are labelled to avoid confusion. For the Ling reeds, the side stamped with his name is termed 'L', the reverse 'O'. On other reeds, sides 'A' and 'B' are identified by markings on the cane, splits, differences in the scrape, the way the binding is tied or the location of the twist of the wire.

Measurements are in millimetres, except those of the thickness of the blades which are in hundredths of a millimetre.

MEASUREMENTS OF THE NINETEEN REEDS

1. total length 63.5

staple $\dfrac{(4.7/4.8) \times (2.5 \times 1.3?)}{42.65}$

0.25 mm brass; all Ling reeds have green/brown linen(?) thread

length of thread: 42.1

thickness of cane:

—	18	20	20	15
		25		
	36	34	40	
	52	42	50	
		62		
		78		
	5 {	82		
		110		
		L		

20	20	21		18
	23	24	26	
	28	28	30	
	52	33	47	
		50		
		86		
		O		

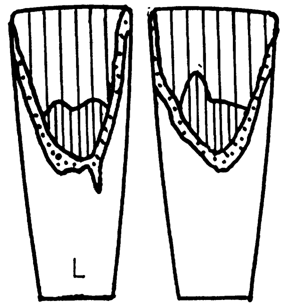


FIG. 7.

cane length 21.5

scrape length L–12; O–13 scraped slightly to the right on each blade

shape:

thick-ness	width	distance from tip	(all in mm)
	9.8	0	
	9.0	5	
	8.3	10	
	7.0	15	
	6.3	18	
4.5	/5.4	21.5	

2. See Pl. I (*a*) and (*b*)

total length 61.45

staple $\frac{(4.4/4.6) \times (2.8 \times 1.3?)}{40.1}$

0.25 brass; smaller at top than no. 4

binding 39.15

—	20	20	20	—
	22	22	22	
	26	24	36	
	37	35	35	
	61	55	60	
	12 {	80		
		95		
		L		

—	20	20	20	—
	22	22	30	
	22	26	34	
	38	33	40	
	60	60	59	
	12 {	80		
		95		
		O		

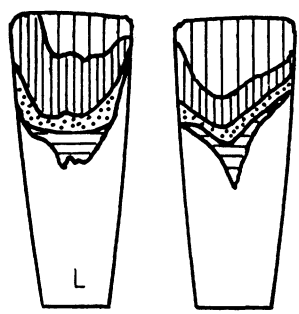


FIG. 8.

cane 22

scrape 12

shape		
10	(with corners trimmed)	
9.3	5	
8.4	10	
7.5	15	
6.4	18	
4.4/5.5	22	

3. See Pl. II (*a*)

total length 62.8

staple $\frac{(4.65/4.8) \times (2.7 \times 2.8?)}{43}$

0.25 mm brass; top tiny bit smaller than no. 4

23	20	19	22	22	23	20	20	20	22
	22	20	22			23	22	26	
	32	22	24			38	24	28	
	52	41	44				55		
		70					75		
		85?							
		L					O		

cane 20.5

scrape L–16; O–18 more cut off corners than others; scrape may have been extended by someone other than Ling

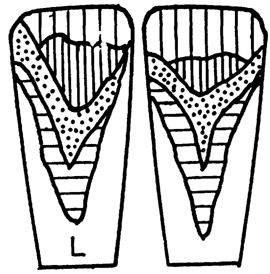


FIG. 9.

shape	9.4	
	9.0	5.0
	8.2	10.0
	7.0	15.0
	6.3	17.5
	4.5/5.5	21.5

4. Dismantled for examination

total length 63.6

staple $\frac{(4.5/4.8) \times (3 \times 2.3?)}{41.5}$

Strong impressions in the cane indicate that the thread was pulled tight enough, probably when the cane was wet, to make it conform to the staple. Thread impressions into the cane begin at the top of the binding. Beeswaxed thread at the bottom of the staple is thick and coarse underneath (of a lighter colour, as with the Bate Ling reeds), with finer beige (natural colour) thread wound over it, this last probably added later.

Soldered brass *c.* 0.25 mm thick; scored to make cane and twine grip; 8 mm band of gold-beater's skin wrapped around cane before tying on; wrapping covers just the bottom of the band; green linen(?) wrap 39.6 mm – so not to top of staple; 16 mm of cane under binding of which 12/11.5 mm is thinned to approx. 0.25 mm.

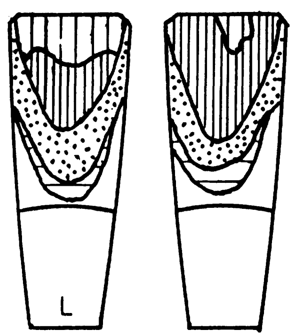


FIG. 10.

20	25	21	25	20		*20	24	29	26	20
22	30	24	29	22		21	30	30	32	20*
*24	35	32	31	30		23	32	32	32	27
28	40	35	38	36*		31	38	40	40	40
34	55	39	51	41			48	49	50	
	70	68	62	65			52	58	60	
		70					52	64	68	
		80					54	70	56 (on bark)†	
		L						O		

* indicates point to which bark extends on sides of reed.

cane 24

scrape 12.5

shape		
	9.5	
	9.2	5
	8.2	10
	7.0	15
	5.8	20
	4.5/5.1	24

† Measurements of blades before reed was taken apart:

26	—	22	—	25		28	—	23	—	27
—	—	—	—	—		—	—	—	—	—
35	—	30	—	33		33	—	32	—	32
—	—	—	—	—		—	—	—	—	—
41	—	45	—	47		40	—	38	—	40
—	—	—	—	—		—	—	—	—	—
—	65	68	60	—		—	60	59	62	—
	—	—	—				—	—	—	
	78	80	78		on bark		76	63	76	
		L						O		

5. total length 62.3

staple $\dfrac{(4.65/4.7) \times (2.8/2.7 \times 1.9)}{42.4}$

0.25 mm brass; top about same as no. 4
binding 41.2

22	22	22	22	22		25	22	22	22	27
	22	24	22				29	22	25	
	29	24	27				30	26	30	
	35	30	32				42	29	41	
	52	40	50					34		
		55						48		
		70 (end of scrape)						62		
		L						O		

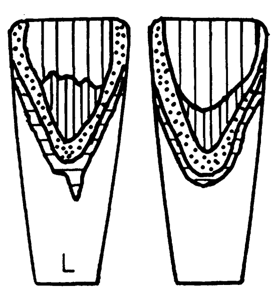


FIG. 11.

cane 21.5	shape	9.25	
scrape L–12.5 (+ 0.3) O–13		9.0	5.0
		8.3	5.0
		7.2	5.0
		6.0	3.5
		4.6/5.5	3.0

6. See Pl. II (*b*)
total length 63
staple $\frac{5.5 \times (2.5 \times 2.4)}{41.8}$

0.4 mm brass; top smaller than no. 4. Thread at bottom of staple is different colour (and material?). Binding thread could be silk. Cane is fairly tightly bound to almost conform to the staple, allowing a slight gap, still probably adequate for *point of firmness.* Thinner thread than nos. 1–5; edges of cane bevelled. Length of binding 42.8

24	22	21	22	25	25	23	22	23	27
	30	32	37			34	30	32	
	36	36	40			40	32	37	
	45	42	50			45	40	55	
		58					57		
		68					75		
		A					B		

cane 20
scrape 13

shape	9.0	
	8.9	5
	7.7	10
	6.7	15
	6.0	18
	4.3/5.2	20

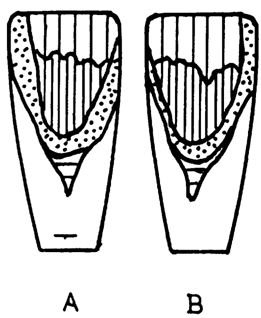


FIG. 12.

7. See Pl. III (*a*)
total length 62.25
staple $\frac{4.9 \times (2.6/2.7 \times 1.8/1.9?)}{30.5}$

0.3 mm brass; top smaller than no. 4. Binding is tight with Ling-like thread, the surface coated with black paint or shellac. Brown flax is wound around the staple at the bottom. Goldbeater's skin was applied before tying on. Finish similar to J. Gerrand bassoon reed in same collection; edges of cane bevelled. Binding is 31 mm.

	25	22	22	23	20		25	27	22	29	20
thinner		25	27	23				28	29	30	
than B		29	23	23	(*sic!*)			29	27	31	
		40	24	36				42	34	44	
		60	46	50				57	55	68	
		1 {	76						80		
			95						100		
			A						B		

cane 26

scrape 12/11.5

shape	11.25	
	10.75	5
	10.30	10
	10.00	13
	7.75	18
	7.00	23
	3.7/5.75	26

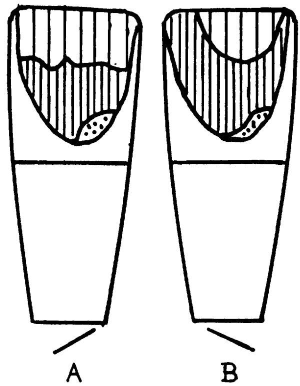


FIG. 13.

8. See Pls. III (*b*) and (*c*)

total length 69.2

staple $\frac{4.5 \times ?}{47.15}$

0.3 mm brass, unsoldered; top considerably smaller than no. 4; binding 49.4; edges of cane not bevelled; criss-cross binding of waxed linen(?)

24	27	28	27	24	23	30	30	29	28
	32	35	32			34	32	37	
28	40	38	38	35	27	39	37	43	39
	45	39	49			48	44	52	
	52	43	58			59	49	61	
		48	70			70	55		
		83					59		
		78					82		
		A					B		

cane 20

scraped to binding

shape	8.5 (with frayed edges)	
	8.0	10
	7.2	10
	6.3	15
	3.5/5.5	20

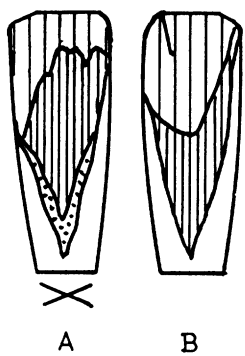


FIG. 14.

9. total length 69.2

staple $\frac{4.8 \times 2.2}{[46]}$

0.4 mm brass unsoldered; because of dirt in reed, hard to see size of top of staple or to measure the length of the staple accurately; cane tied on loose at throat. Binding is similar in thickness to no. 8, otherwise these reeds have little in common. Binding is quite loose, probably well below *point of firmness* necessary to prevent damping of the cane's vibrations. A wire, with point where ends are twisted together at one side of the blades of cane, appears just below the top of the thread; the thread above the wire may have been added later. Thinner thread has been wrapped around the bottom of the staple. The blades of the cane are very displaced.

—	10	20	20	—	—	26	32	31	—
	21	30	22			40	37	36	
	40	36	27			51	41	40	
	50	45	33			62	49	52	
	60	59	50			80	55	56	
		68					70		
		80					84		
		A					B		

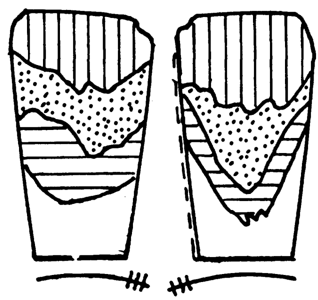


FIG. 15.

cane 20; blades are incomplete

scrape B–17

shape	10.5	
	10.0	5
	8.9	10
	8.2	15
	4.0/7.3	20

10. total length 53.5

staple $\frac{(4.8/5.0) \times (2.7?)}{34.8}$

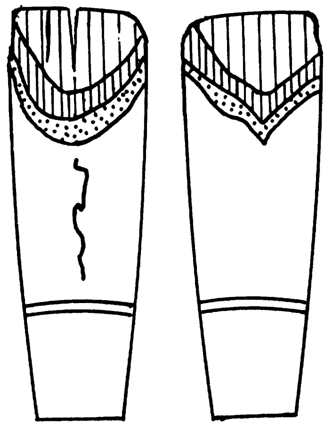
0.4 mm brass; edges of cane probably not bevelled. Thick Ling-like thread (from bottom of staple to top of binding is 31mm) loosely binds the cane to the staple, probably below *point of firmness* necessary to prevent damping. The staple top end comes considerably above the end of the binding, and the width of the shape seems unusually large at this point. The reed was loosely bound, so the cane was bowed hardly at all. A band of goldbeater's skin is wrapped around the thread 3–4 winds of thread from the top of the binding.

34	30	22	22	15	36	28	23	19	20
	35	29	30			37	23	23	
	44	38	39			48	35	35	
	52	55	50				52	55	
		61					60		
		70					72		
		A					B		

cane 27.25

scrape A–9, B–8

shape	11.5	
	11.5	5
	11.0	10
	10.0	15
	9.5	20
	7.0	25
	5.0/6.3	27.25



A B

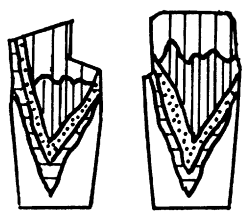
FIG. 16.

11. staple $\frac{4.6 \times ?}{45.15}$

0.3 mm brass; impossible to tell size of top because of dirt; quite likely overbound; tips are badly broken. The thick binding thread (length 49) has been pulled tightly. Other thinner thread appears to have been added to the top 4 mm later, possibly to prevent leakage. Lighter coloured flax is used at the bottom of the staple.

—	20			15 from	23	23	23
—	—			binding	23	27	25
	30	28	30	11 from	27	27	27
	45	34	38	binding	32	28	34
		45			30	42	
						65	
		A				B	

cane A–15; B–15.3



A B

FIG. 17.

Scraped almost to binding. Although much of the tip of one blade is broken off, it would appear that the tips of the reed were clipped off. Two attempts at clipping at slightly different angles are visible, indicating that the person who clipped it may not have been as skilled as the maker. Reeds 11–13 all seem to have been modified in this way, possibly to keep them playing after the original tips had become frayed, or damaged. Of the three, no. 11 seems to be the most expertly made.

shape	7.3	5
	6.5	10
	3.5/5.5	15

12. See Pls. IV (*a*) and (*b*)

total length 63.5

staple $\frac{4.3 \times ?}{35.8}$

0.25 mm brass; staple is bent/damaged; cane is also bent; splits from throat up sides of blade A; top of staple too dirty to measure; loosely wrapped twine over ends of cane and scrape. Thread, 49 mm in length, is red underneath, overwrapped with black. Both red and black are visible almost to the top, which is wound in black. The red is the usual linen seen on the Ling reeds; the black is slightly thinner. The binding seems loose. Light-coloured, possibly cotton thread is at the bottom of the staple.

28	30	30	20	20	—	36	35	34	—
	35	30	33			45	43	49	
	48	36	52			60	51	68	
	65	47	74				70		
		60					83		
		65					86		
		78							
		A					B		

cane 14 (top missing?)

scrape to under binding

shape	11.0	
	10.0	5
	8.8	10
	4.5/7.0	14

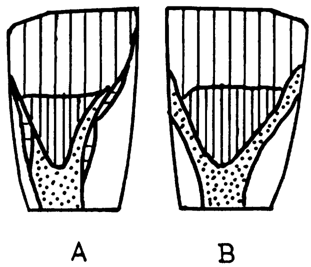


FIG. 18.

13. total length 63

staple $\frac{(4 \times 2.3) \times ?}{[50]}$

0.2 mm brass; top smaller than no. 4; similar to no. 12 but wrapping different; edges of cane bevelled. The binding appears loose; it is difficult to tell whether *point of firmness* is achieved. Layers of different thread have been added at the top of the binding. The staple is not perfectly round at the bottom. It is difficult to tell whether it is soldered. A crochet hook will not go in far enough to measure the staple length.

—	19	14	18	—	—	20	20	20	—
	30	19	26			27	24	30	
	44	22	40			30	33	45	
	59	31	60			45	45	60	
		58					74		
		81							
		90							
		A					B		

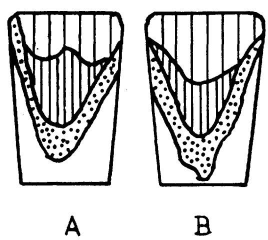


FIG. 19.

cane 12.5; although very short, seems to be complete

scrape to below binding

shape	8.6	
	7.9	5.0
	3.5/6.5	12.5

14. See Pl. IV (*c*)

blades are shorter than no. 15

total length 63.5

staple (4.5/4.4) × (2.8 × 1.9?)

42.8

0.25 mm brass; seam on minimum axis of oval; binding 41.8; exposed length of binding when in oboe 28.4.

13	15	19	20	17	13	20	20	20	—
	25	22	25			24	22	24	
	33	30	35			28	28	29	
	40	40	42			48	30	33	
	52	44	52			60	33	48	
	60	55	58				50		
		62					58		
		80					78		
		L					O		

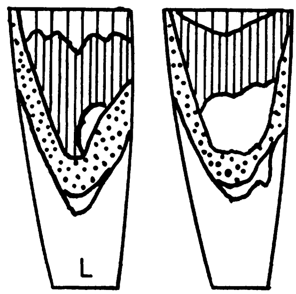


FIG. 20.

in profile, the scrapes are visibly different

cane 21.5

scrape 15

shape	9.0		
	8.7	5.0	
	7.9	10.0	
	7.3	15.0	
	6.2	18.5	
	4.5/5.0	21.5	circumference: 7.45

15. A photo of this reed is reproduced in A. Baines, *Woodwind Instruments and their History* (London, Faber and Faber, 1957, Pl. VI, reed 2).

total length 65

staple (4.5/4.4) × (2.6 × 1.9?)

43.3

0.25 mm brass; seam is off centre of minimum axis of oval; length of binding 42; exposed length of binding when in oboe 29. A few small cracks are visible just above the binding.

20	20	20	22	20	20	22	21	21	15
	27	27	24			29	26	29	
	34	24	28			34	27	32	
	41	29	30			48	32	37	
	48	39	42			55	36	48	
	65	52	52				47		
		70	end of scrape				52		
		90	on bark						
		L					O		

cane 23.3

scrape 14.5/14.8

shape	9.0		
	8.7	5.0	
	8.3	10.0	
	7.4	15.0	
	7.0	20.0	
	4.4/5.1	23.3	circumference: 7

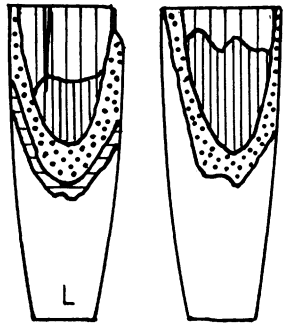


FIG. 21.

16. Shown in A. Baines, *Woodwind Instruments and their History,* Pl. VI, reed 1.

staple (4.4/4.2) × ?

[49]

3.0/3.5 mm brass; the bottom of the staple is not cut straight; top quite oval; probably soldered; white thread covered with brown linen(?) thread; also fine cotton(?) 11 mm from bottom.

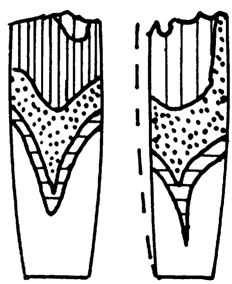
—	26	30	25	23		—	
	33	30	27	28		—	19
	25	29	28	34	22	22	40
	35	39	41	42	43	39	40
	48	50	50	49	50	49	
		60		53*		60	
		70		60*		70	
		85		62* on bark		85	
		A				B	

*these measurements possible because of crack.

cane 19

scrape 15 cane is very yellow/orange

shape	(of blade A)	
	7.7	
	7.3	5
	6.8	10
	6.4	15
	3.4/5.4	19



A B

FIG. 22.

17. Pictured as reed (a) in Pl. 12 of P. Bate's article 'Oboe' in the *New Grove*.[67]

badly broken

staple $\frac{(5/5.3)\ ?}{[46]}$

0.3 mm brass; quite oval at top; unsoldered white binding and bottom wrapped in brown (linen?) thread.

— — 28 — —
32
40
48
55
62
82
97 (on bark)
A

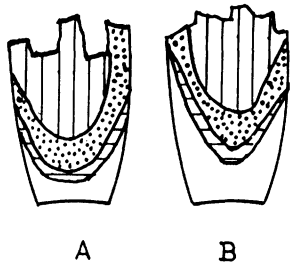


FIG. 23.

cane – only 13.5–14 mm survive;
impossible to tell how much is missing.

scraped to within 1–2 mm of binding

shape	9.0	
	8.9	3.5
	8.2	8.5
	3.2/6.0	13.5 (flattened?)

18. By Ling; also damaged

staple $\frac{(4.6/4.4) \times (2.8 \times 1.9)}{43}$

0.25 mm brass; same brown linen thread as Shackleton Ling reeds; N.B. binding is 42 (the crack exposes end of staple).

		28	
—	30	30	34
	*49	38	40 'bump'
	59	53	50
	68	65	62
	82	69	70*
		80	
		95 on bark	
		L	

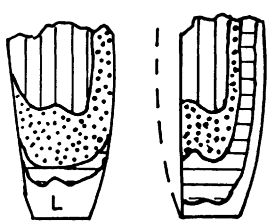


FIG. 24.

* bark extends this far on edges.

cane 15 remains

scrape to within 1–2 mm of binding

shape	8.2	
	7.5	5
	6.6	10
	5.9	12
	4.8/5.0	15

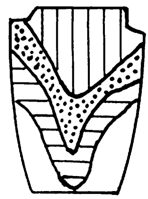
19. staple $\frac{5.1 \times ?}{43.5}$

Staple is badly damaged and blocked with rust! Thread is brown and waxed, extends 6 mm above end of staple.

Little cane remains.

— — 36 — —		
41		
48		
60		—
70		—
(90)	at binding	(70)
A		B

shape 7.5 at binding.



A

FIG. 25.

APPENDIX A

AN INTERNATIONAL CHECKLIST OF LOCATIONS AND CITATIONS OF EARLY OBOE REEDS AND ACCESSORIES

Where the present whereabouts are unknown, the entry is preceded by an asterisk.

AUSTRIA

Graz, Joanneum Abteilung für Kunstgewerbe: three oboe reeds a) 8 mm wide, 65 long, scrape 10, b) 8 wide, 68 long, scrape 9, c) 8 wide, 7 long, scrape 12; from G. Stradner, *Musikinstrumente in Grazer Sammlunger*, Vienna, 1986, p. 38. Old reeds?

Linz Museum: reed associated with Ludowic oboe no. 118; information from P. Hailperin; catalogue soon to be released.

Stift Kremsmunster: Cor anglais reed, information from Paul Hailperin.

Vienna, Zuleger's shop, Phorusgasse: early oboe reeds were on display at International Double Reed Society Conference, 1985: catalogue forthcoming. Bate relates how E. Halfpenny discovered Zuleger's cor anglais reeds worked well in English Baroque oboes (*The Oboe*, p. 14).

CANADA

Vancouver, Guido and Mirella Gatti-Kraus: 2 oboe reeds from a larger collection (now dispersed) of reeds in the Collezione Ethnografico-Musicale, Firenze (catalogue published, 1901) put together by Alexander Kraus between 1875–1912 (information from P. White).

ENGLAND

Cambridge, Collection of Dr. Nicholas Shackleton: thirteen oboe reeds and a single reed and mouthpiece for oboe; once associated with oboes by G. Miller and W. Milhouse, including five by T. Ling.

Chesham Bois: Edgar Hunt: reed case providing a maximum width of 10 mm for oboe reeds; mid-eighteenth century? (Bate, *The Oboe*, p. 13).

Edgware, Boosey and Hawkes Collection: oboe reeds dating back to at least the mid-nineteenth century.

Haddon Hall; Derbyshire: 'Item 52 – portion of a wind instrument, 17th century': unsoldered staple of $\frac{c.5.0 \times ?}{33.9}$ (top completely flattened and so not able to be measured), with deteriorated thick linen thread at base; no cane or binding; probably for shawm (information from P. Hedrick).

*London, Brixton, Mr J. Payne: 'REED OF AN OBOE, "very old and curious"', lent for special exhibition 1873; Catalogue of the Special Exhibition of Ancient Musical Instruments, 1873, Science and Art Department of South Kensington Museum, p. 29.

*London, Sotheby's: reeds sold with an Astor oboe at an auction just prior to Dec. 1974 (information from M. Piguet).

*London, Putticks: report of sale of Grenser oboe complete with cane and reed box in 1935 (information from W. Waterhouse).

*London, Dr W. M. Stone: six reeds which 'belonged to the oboist who accompanied Rossini on his first visit to this country in 1823' and pictured in 'Oboe' in Grove's Dictionary, 3rd ed., 1927.

*Reeds and staples associated with the Galpin oboe: 'No 205: Oboe in *a* [*sic*]. An old English watchman's waight or hoboy of the latter part of the 17th-century . . . length including crook 25.5 . . .' *Catalogue of the Royal Military Exhibition* (1890). The oboe is illustrated in F. W. Galpin, *Old English Instruments of Music* (1910) minus the crook but with a reed. In the same author's *Textbook of European Musical Instruments* (1937) it is pictured with a short crook and no reed (E. Halfpenny, *GSJ* II, Pl. III). Whether any of these reeds were original is unknown.

Oxford, Bate Collection: two reeds by T. Ling associated with W. Milhouse oboe no. 203.

Oxford, Pitt-Rivers Museum: four reeds, one by T. Ling, associated with oboe by W. Milhouse, 1900.67.1.

Warwick, Warwickshire Museum: Halfpenny reeds and reed tools, oldest mid-nineteenth century (see *GSJ* II, p. 25); as well as a pre-1850 reed with a staple the same length as those in the Pitt-Rivers Collection.

FRANCE

Paris, Musée Instrumental du Conservatoire National Supérieur de Musique: tools used by Delusse and possibly Brod, plus at least one early-nineteenth-century reed.

GERMANY (EAST)

? Leipzig, Musikhistorischen Museums von Wilhelm Heyer reeds from Firenze collection? (see entry under Vancouver).

GERMANY (WEST)

Bonn, J. Zimmermann Collection: two reeds with H. Grenser oboe no. 97 (2/10 keys); collection formerly at Düren; measurements from P. Hailperin.

Munich, National Museum: late-eighteenth-century reed case with four reeds (no. 147MW); probably only two are old; measurements from R. Weber.

ITALY

Naples, Conservatorio: oboe reed without staple.

Parma, Conservatorio: *c.* thirty oboe reeds; some measurements from P. Grazzi.

Rome, Private Collection, formerly Hortus Musicus music store: bocal and reed associated with Lesti oboe of *c.* 1820.

Ditto, Museo degli Strumenti Musicali: staple with Anciuti oboe dated 1718; reed with Biglioni oboe.

JAPAN

Musashino, Music Academy Instrumental Museum: six reeds associated with two oboes by C. Palanca; measurements and photographs from Masahiro Arita.

THE NETHERLANDS

Amsterdam, Collection of Han de Vries: reeds associated with oboes by Grenser, Triébert and Koch.

PORTUGAL

Lisbon, National Museum: eighteenth-century oboe reed and several later (larger oboe?) ones.

SWITZERLAND

Basel, Michel Piguet collection: at least two staples and one eighteenth-century reed; details to be published in *Baseljahrbuch*.

Berne, Historical Museum: five reeds in reed case once containing six reeds associated with Fornari oboe, 1814 – three badly damaged, one is as new (information from P. van der Poel); staples with Bühner and Keller oboe no. 5448; measurements by M. Kirkpatrick.

?Binningen, Mr Ernst Buser-Fruh owns early oboe reeds?

Lucerne, Tribschen Wagner Müseum: two reeds with Schlegel oboes nos. 125, 126; possibly a misassociation: oboe da caccia reeds?; reed with English Horn by C. Lesti of Ancona, no. 123; information from S. King.

USA

Cincinnati OH, Art Museum: reed found with Denner oboe d'amore; thought to be eighteenth century, but not to belong to the d'amore; P. Hailperin '3 Oboes d'amore from the time of Bach', *GSJ* XXVIII, p. 36 and XXX, p. 153.

Washington DC, US National Museum: brass tube with Grassi oboe; from Museum handbook and J. Grush, 'A Guide to the study of the Classical Oboe', DMA thesis, Boston University, 1972, p. 121.

APPENDIX B

MEASUREMENTS OF OTHER OLD OBOE REEDS

French

Garnier's reed, to play on a Delusse oboe; measurements from scale drawings in *Méthode* (*c.*1800). The problem of the scaling of Garnier's drawings is discussed in P. Hedrick's edition of the *Méthode* (op. cit.). His measurements are given in parentheses.

staple $\frac{5 \times 3.4}{43}$ $\left(\frac{6.2 \times 3.6}{41.6}\right)$ = flat brass $\left(\frac{16 \times 11.14}{40.7}\right)$

cane 23 (22.6)

scrape not shown

shape	8.0	tip
	8.5 (8:32)	at widest
	4.0	binding
		(6.7 before tying)

Cane appears to be tied loosely onto staple although Garnier says 'fasten the two blades tightly'.

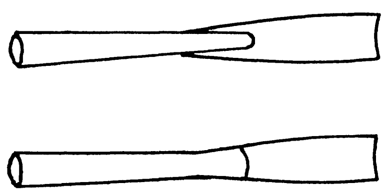


FIG. 26.

Henri Brod's reeds were fashioned to play his own instruments modelled on oboes by Delusse, with additional keys. Measurements from his *Méthode pour le Hautbois* (*c.*1823).

staple $\frac{5 \times (2 \times 3)}{46}$

cane —

shape 7 mm at widest.

Italian

Six reeds with Palanca (fl. 1719–83) oboe in Musashino Museum, Japan. Only samples given here.

staples $\frac{4.6/5.0 \times (1.4 \times 3.1)}{[50.6]}$

$\frac{(4.9/5.0) \times (1.4 \times 3.1)}{[52.8]}$

others of similar end dimensions with binding lengths 49.1, 45.4, 47.2

top measurements only by eye.

a	14.3
a′	15.7
b	4.8/4.9
c	7.4, 7.7
d	5.25, 5.5, 5.05
e	(minimum axis at throat) 3.6, 3.35, 3.25

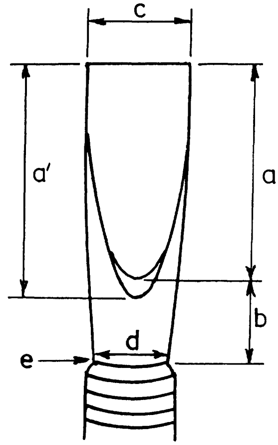


FIG. 27.

Reed with Fornari oboe, Berne Historical Museum, dated 1814. Detailed measurements by M. Kirkpatrick.

staple $\frac{4.9 \times (2.9 \times 1.75)}{42.4}$

0.4 mm brass; ± 1 mm longer than binding; binding is green (cotton?) above, linen (?) below; good fit in oboe; reed extends 52.8 mm.

thickness of blades at tip ± 0.22

cane 23.8

scrape 13.5

shape	8.6	
	8.25	13.5
	6.0	20.0
	5.1	23.8

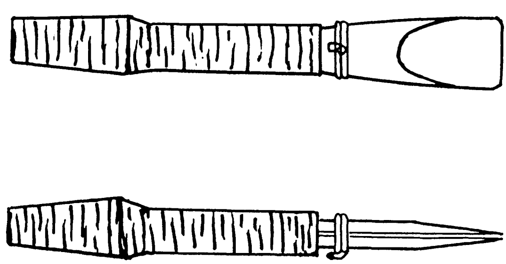


FIG. 28.

German

Damaged reed associated with an oboe by J. G. Ludovic (end 18th century?) in Linz Museum; although damaged, P. Hailperin was able to play it.

0.4 mm brass staple

0	5.1
10	4.3 × 4.7
20	3.6 × 4.2
30	3.2(?) × 3.4

gouge ± 0.7 mm

much wood scraped from the middle; i.e. probably similar to Ling scrape.

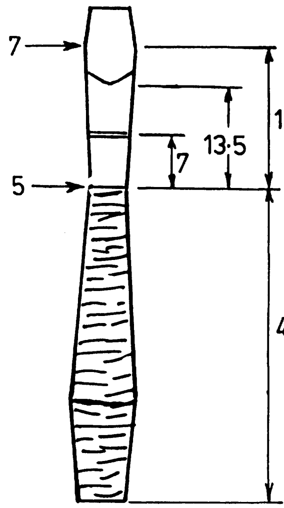
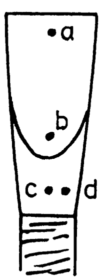


FIG. 29.

An Anonymous (18th-century?) oboe reed in M. Piguet's collection, Basel.

staple $\frac{4.6 \times (3.1 \times 2.2)}{44.5}$



a	0.3
b	0.6
c	1.0
d	0.6

FIG. 30.

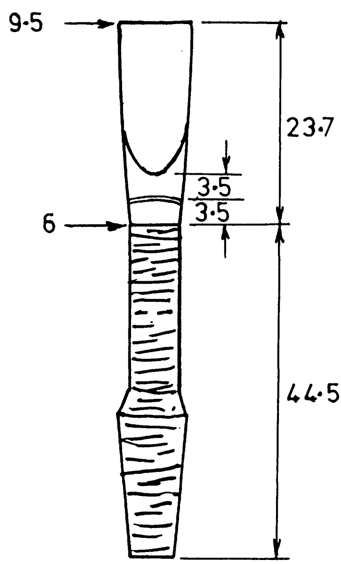


FIG. 31.

ACKNOWLEDGMENTS

Many people need to be thanked for their help in collating this information – particularly the curators of the Oxford Collections, Jeremy Montagu and Hélène La Rue, and Nicholas Shackleton; Bruce Haynes who instigated this research project, Ronald Burgess who drew the sketches, and numerous others from around the world who have generously offered information.

Sydney, 1988.

NOTES

[1] For accounts of modern methods of Baroque oboe reed making see: H. vas Dias, 'Making Reeds for the Baroque Oboe', *Journal of the International Double Reed Society* (hereafter *JIDRS*), IX (1981), p. 48, and B. Haynes, 'Making Baroque Oboe Reeds', *Early Music* (hereafter *EM*), IV (1976), pp. 31 and 173.

[2] In his article 'Reconstructing an 18th Century Oboe Reed', *GSJ*, XXXV (1982), pp. 100–111, Frederic R. Palmer described reed no. 15. He provides measurements of this reed, which he believes suits many 18th-century oboes. His paper has a number of shortcomings. Firstly, as will be proven later, the reed dates from 1799 at the earliest, so using it to play 18th-century instruments is anachronistic. While it is true that this reed is amongst a small number which are 'the closest link to reeds that were used during the first half of the 18th century' (Palmer, p. 100) in terms of original specimens, the similarities between early 18th-century oboes and the reeds they require with those from the end of the century in no way outweighs the differences. Both 'Baroque' oboes (e.g. Denner, Stanesby, Schlegel, Richters, Rottenburgh models) and 'Classical' instruments (e.g. Milhouse, Collier, Cahusac in England; Grundmann, Delusse, Anciuti on the Continent) need reeds which respond easily to overblow the octaves and produce the cross-fingered notes. The shorter and narrower bores in later oboes, which affect the balance of registers and intonation, place different demands on reeds. As his conclusion, Palmer tabulates the pitches of nine oboes from the Bate Collection when played with his copy of the Ling reed. In several cases, these results go against the opinions of makers and players who have had considerable experience with originals and copies of the same models. To give two examples: Schlegel oboes are known to play best lower than A=415, not near 435; similarly oboes by T. Stanesby Jr are generally played at 415 or slightly lower, not 421. Other problems with Palmer's methodology are pointed out later in this paper. B. Haynes 'Double Reeds, 1660–1830: A Survey of surviving written evidence' (*JIDRS*, XII (1984), p. 14) is the most complete documentation of the written sources, and N. Post's The Seventeenth-Century Oboe Reed' (*GSJ*, XXXV, and repr. in *JIDRS*, XIII (1985), p. 57) discusses early iconographic sources in detail.

[3] This has been taken as the cut off point because it was then that reeds similar to those still in use were developed. 'Since 1830 the fundamental concept of tone production becomes almost identical to our own day.' (L. Goossens and E. Roxburgh, *Oboe*, Yehudi Menuhin Music Guide, London,

1977, p. 18.) The invention of the gouging machine (*c.* 1845) also revolutionized the technique of reedmaking.

[4] H. Lange and B. Haynes, 'The Importance of Original Double Reeds Today', *GSJ*, XXX (1977), pp. 145-51; B. Haynes, 'Early Double Reeds: Prospectus for a Survey of the Historical Evidence', *JIDRS*, IX (1981), pp. 43–47; Maurice Byrne's 'Reed Makers', *GSJ*, XXXVII (1984), pp. 99–101, and G. Burgess, ' "A Profile of Mr Ling" or English oboe Reeds around 1800', *Fellowship of Makers and Researchers of Historical Instruments* (hereafter *FoMRHI*), XLVII (1987), Comm. 804, p. 68.

[5] Despite this, Michel Piguet has one old reed which he says still plays excellently.

[6] See Paul J. White, 'Early Bassoon Reeds: A Survey of Some Important Examples', *Journal of the American Musical Instrument Society* (hereafter *JAMIS*), X (1984), pp. 69–96.

[7] Arthur H. Benade, *Fundamentals of Musical Acoustics,* Oxford University Press, 1976, p. 469.

[8] Lyndesay Langwill in *An Index of Musical Wind-Instrument Makers*, 6th ed. printed by the author, Edinburgh, 1980, p. 107, incorrectly gives 1794–1835. These dates derive from records relating to other members of the family who have since been distinguished from the reed maker.

[9] See E. M. Ennulat, 'William Ling, a rediscovered English Mozart?', *Journal of Musicological Research*, V, pp. 35–49 for most information on this family.

[10] Ibid.

[11] No. 4 (1794) 'A Third Concerto for the Oboe, Composed by Wm Ling and performed by him . . .'; and no. 6 (1799) '. . . and performed by the author . . .'. Quoted, Ennulat, op. cit., p. 36.

[12] Passim. *Harmonicon*, I (1823) – XI (1833). Entries in Langwill's, *Index* presumably drew on this source.

[13] An anonymous review in *Harmonicon*, I (1823), p. 101. See A. Carse, *The Orchestra from Beethoven to Berlioz . . .* (Cambridge, 1948), p. 174.

[14] Several musical dictionaries include details on W. Ling. Among them are *A Dictionary of Musicians from the Earliest Times*, ed. J. S. Sainsbury, London, 1825, repr. New York, Da Capo, 1966; Fétis, *Biographie Universelle des Musiciens*, 1840; and Eitner's *Biographisch-Bibliographisches Quellen-Lexicon*, 1901. (Both the latter two have almost direct paraphrases of Sainsbury.) *The Catalogue of Printed Music in the British Library to 1980* (K. G. Saur, 1984), vol. 35 lists some twelve printed works by Ling in addition to the concerti cited above. Several of these were reviewed in *The Harmonicon*. Langwill falsely assumed that the William Ling of the Ancient Concerts, 1823, was the father of Thomas (*Index*, p. 107).

[15] *Harmonicon*, IV (1826), p. 217.

[16] London, 1823, pp. 14–15.

[17] Langwill's *Index* is the only source which gives the number as 35.

[18] Langwill, *Index*, p. 107. Two of his bassoon reeds found in the Collection of Henk de Wit, Amsterdam, are described by Paul White (*JAMIS*, X, p. 79).

[19] See particularly Haynes, *JIDRS*, XII, and references to sales of reeds to the oboists employed at Eszterháza, in H. C. Robbins-Landon, *Haydn at Eszterháza, 1766–1790*, vol. 2 of *Haydn: Chronicle and Works*, London, Thames and Hudson, 1976.

[20] See A. Bernardini, 'Oboe Playing in Italy from the Origins to 1800', unpub. diss., 1985.

[21] Gasault's drawing is reproduced in Haynes, *JIDRS*, XII, p. 25; Sante Aguilar's portrait in *Tibia*, III (1980) and in Bernardini, 'Oboe Playing in Italy'.

[22] 'Crone, later Sattler, early Grenser?' (Haynes, 'A Preliminary Checklist of iconography for oboe-type instruments, reeds, and players, *c.*1630 – *c.*1830', *FoMRHI*, XLV (1986), Comm. 764, p. 65.)

[23] For reproduction of this, see 'Oboe' in *The New Grove* (1980 and 1984); and Haynes, *JIDRS*, XII, p. 20.

[24] H. Berlioz, *Traité d'Instrumentation et d'Orchestration*, Paris [1843], repr. Gregg, 1970, p. 104.

[25] Philip Bate, *The Oboe: An Outline of its History, Development and Construction*, 2nd ed., New York, Philosophical Library, 1962, p. 14.

[26] The following comment is typical of the English taste: 'Mr Vogt . . . performed charmingly himself, in spite of his tone, which, though the true one of the oboe, is not pleasing to English ears: we have been accustomed to a fuller, less reedy sound.' (Anon. review of his benefit, 31 May, 1828, *The Harmonicon*, VI (1828), p. 168.)

[27] Apart from Cooke, all these players were exponents of the two-keyed Classical oboe. Vogt incorporated a low *b* and *f'* key on what was basically a two-keyed Classical oboe; according to Léon Goossens (L. Goossens, and E. Roxburgh, *Oboe*, London, 1977, p. 22), Cooke played a simple system English oboe with about eight or nine keys throughout his life.

[28] London, Macmillan, 1877–1889, repr. 1900. Centroni had given this reed to Mr Waddell, formerly of the First Life Guards.

[29] This startling result may be explained in a forthcoming paper by Alfredo Bernardini on the subject of Centroni to be printed in *Il Flauto Dolce*, 1988.

[30] See Goossens and Roxburgh, *Oboe*, p. 35.

[31] Reed no. 19.

[32] For more details see B. Haynes, *EM*, IV, pp. 31 and 173. This fact should be kept in mind when considering Palmer's recommendation for a modified 'copy' of reed no. 15 which uses a staple of different conicity.

[33] Bate, *The Oboe*, p. 19.

[34] From E. Halfpenny, 'English 2- and 3-keyed Oboes', *GSJ*, II (1949), p. 25.

[35] Palmer's 'reconstructions' of Ling staples in two pieces should be viewed with this in mind.

[36] See section on 'Tying On'.

[37] This summary is derived from R. E. Perdue, 'Arundo-donax – Source of Musical Reeds and Industrial Cellulose', *Economic Botany*, XII (1958),

pp. 368–404; J. M. Heinrich, 'Le Problème de l'Anche: Aspect Botanique et Microstructural', *Bulletin du Groupe d'Acoustique Musicale,* Université de Paris, VI, 71/2 (1974); P. White, *JAMIS*, X, pp. 69–96.

[38] According to W. Waterhouse, *c.*1845 (White, *JAMIS*, X, p. 74).

[39] J. F. Garnier, *Méthode raisonnée pour le hautbois*, Paris [*c.*1800], facsimile and Eng. trans. P. Hedrick, Early Music Facsimiles, Columbus, Ohio, 1987; illustration reproduced in T. E. Warner, 'Two Late 18th-Century Instructions for Making Double Reeds', *GSJ*, XV (1962), p. 25; B. Haynes, *JIDRS*, XII, p. 24; and P. Bate, 'Oboe' in *New Grove* (1980 and 1984).

[40] On blade opposite that with Ling's stamp.

[41] A technique ignored by Fred Palmer.

[42] Peter Hedrick, 'Henri Brod on the Making of Oboe Reeds', *JIDRS*, VI (1978), p. 10. The article contains an English translation of Brod's *Méthode* (*c.*1826) dealing with reed making. Probably a little later than the Ling reeds, it represents the most detailed surviving description of hand gouging and shaping.

[43] A. M. R. Barret, *Complete Method for the Oboe*, 2nd ed., *c.*1862, repr. London, Boosey and Hawkes [n.d.], p. 12.

[44] Note that D. Plesnicar is mistaken when he talks of 'bark, cambium and pulp' in cane, in his paper 'All About VB' (published by the author, Albuquerque, 1984).

[45] Palmer, *GSJ,* XXXV, p. 107.

[46] This technique is seen in bassoon reeds of this time. (See White, *JAMIS*, X, pp. 73–4.)

[47] See reeds 12 and 13.

[48] See Haynes, *EM*, IV, pp. 31f and 173f. This practice is still followed by makers of Northumbrian pipes as evidenced by specimens in the Pitt-Rivers Museum.

[49] Daniel Defoe, *A Plan of The English Commerce* (London, 1728), p. 174: '. . . the Calico and the Silk Manufacturers in the East Indies are . . . so great, that spreading into Europe, they become a general Grievance, and are already prohibited from being imported in several Kingdoms and countries in Europe . . .'.

[50] T. S. Willan, *An Eighteenth-Century Shopkeeper: Abraham Dent of Kirkby-Stephen* (Manchester University Press, 1970), p. 14. Based on records dating from May, 1762 to October, 1765, Dent sold a little silk [thread] at 2s. to 2s. 6d. the *ounce*, and much flax for spinning at 8d. to 1s. 4d. per *pound*.

[51] George E. Linton, *Natural and Man-made Textile Fibers* (Metuchen, New Jersey, 1956), p. 365. Tensile strength in lbs/sq inch of natural fibres is given thus: flax – 6.6 dry; silk – 5.6 wet; cotton – 2.0 dry. Synthetic fibres, including various polamides (nylons) are assigned various strengths, with few as strong as flax. Defoe (*A Plan*, p. 173) mentions the general availability of locally grown flax throughout Europe.

[52] This information is from a conversation with Frank Mowerey, head of the Conservation Department of the Folger Shakespeare Library, Washington, D.C. The weight most commonly used and seemingly like what Ling used is

no. 18, 3 cord (plies), now produced by Barbour's of Lisburn, Northern Ireland.

53 See n. 49.

54 See n. 48.

55 Known mainly as a clarinet maker, active from 1777 to 1810 (Langwill, *Index*); sold to Nora Post who subsequently re-sold it.

56 Post-1800. Now owned by Clare Shanks.

57 Not four as recorded by Byrne, *GSJ*, XXXVI, p. 100.

58 The marking on this reed is more likely to be G. GERRARD/LONDON than GEBRAND as reported in Byrne, *GSJ*, XXXVII, p. 99.

59 See L. Langwill, *Index*.

60 See Maurice Byrne, 'Thomas Ling, 1787-1851, reed maker', *FoMRHI*, XLIX (1987), Comm. 826, p. 22. Byrne agrees that it may be more accurate to say active in the first and second quarters of the 19th century.

61 *GSJ*, XXXVII, p. 100.

62 Bate, *The Oboe*, p. 11.

63 See Langwill, *Index*.

64 Accuracy *c.* 0.01 mm, but because of the softness of cane this tolerance must be increased.

65 E.g. reed no. 16.

66 See White, *JAMIS*, X, p. 82.

67 Bate incorrectly assigns this reed to the Bate Collection.