

Reed Making and Bent Staples

A sequel to Ruth Blatt's Paper on Preventing Overuse Injuries

By Her Students

Dear Mr. Stolper,

You will recall having published in *The Double Reed* Vol. 13 No. 2, Fall 1990, a paper from Ruth Blatt, describing her experience with over-use injury. After her untimely death in April 1991, her students decided to document, from notes taken during lessons, the method which Ruth had successfully demonstrated, and had taught them to use.

Six students spent many Sunday afternoons drafting this document, two copies of which are enclosed for your perusal. It is thought that this may be a suitable item for one of your publications, for which, incidentally, the students continue to contribute. The unique nature of the authorship may be of interest.

It is most likely that you receive many papers on reed making methods, but it is thought this paper is different in that it gives precise details and dimensions of the reed making method taught by Professor Karl Steins. During the preparation of this paper Ruth's husband, Erik Gustavsson, who learned from the same teacher as Ruth, visited Australia and spent one afternoon discussing the draft paper with the students. Erik also took away a copy, and on his return to Norway, sent back further comments.

This means that the paper has already been checked by a very experienced professional oboe player, but it would be appreciated if you would advise whether it is of interest to you.

Yours sincerely,
Eric Adam

[We are happy to publish this fascinating and informative paper.-DS]

SUMMARY

When Australian oboist Ruth Blatt won a Churchill Fellowship in 1973, it enabled her to study oboe with Professor Karl Steins of the Berlin Philharmonic Orchestra. It was at this time that she learned his reliable system for making oboe reeds.

In 1974 she became solo oboist in the Norwegian Opera, and for the next twelve years had a varied career, including recitals, concertos, chamber music and examining. When she

returned to Australia in 1987 and began teaching, she also taught her students her version of Professor Steins' reed making method. After her untimely death in April 1991, her students decided to continue making their own reeds by this process and also to fully document it for the benefit of other oboe players. They also decided to continue using the bent staples described and illustrated in her paper (*The Double Reed*, Vol. 13 No. 2, 1990). The following described Ruth's method.

INTRODUCTION

It is not claimed that this is the only way to make a good oboe reed, and it is known that details of other methods, favored by prominent oboe players, have been published. It is also realized that a reed which works well for one player may not be suitable for another player, or in another oboe.

Ruth investigated at least four different methods of making reeds and found the one described in this paper to give the most consistent and reliable results. Her discovery of the considerable advantages to be gained from using staples with a 20 degree bend, (as described in her paper published in *The Double Reed*, Vol. 13 No.2, Fall 1990) enabled her and her students to adopt a more relaxed playing posture.

Oboe teachers who provide their students with reeds will naturally follow the practice with which they are most familiar, but most teachers will also be prepared to assist a student with the final scrape if that student is able to carry out the preparatory work described below.

Although this paper sets out to accurately record the method used and taught by Ruth, it is hoped that it will also be of value to oboe players who wish to follow their existing procedure, and to adopt the advantages of the bent staple.

As reed making is a constant source of problems for performers, teachers and students, Ruth's method is recorded in the expectation that many readers will gain benefits from adopting at least some of these techniques.

1. CANE

There are a number of suppliers of cane, but Ruth purchased her requirements from A.L.F.A. France, 22 Qual de Bondy, F69005, Lyon, France. The

size specified was 9.5 to 10 mm diameter, and in June 1990 cost 595 F Fr/kg. As delivered the canes vary in length from 10.5 to 15 cm, and average about 400 canes per kg. dry weight. The cane is generally straight, with clean yellow bark. This indicates that it has been harvested when quite mature. It should be noted that this material is not bamboo, but is a reed which is grown and matured in favorable climatic conditions.

2. GOUGING

The selected canes are soaked overnight, of sufficient quantity to make a batch of at least 10 reeds. The gauge shown as Figure 1 is used firstly to check the diameter of each cane, which, for this method, must be no more than 10 mm and no less than 9.5 mm diameter. The gauge must also be used to check that the cane diameter is consistent along its length, and acceptably even in circular shape. If the outside diameter is not correct, the gouged sections will not have the correct thickness along the entire center and sides.

Canes 10 mm diameter can be split into three sections, 9.5 mm into two sections. The gauge shown in Fig. 1 can be used to mark, with a pencil on the end of the cane, where the cane is to be split lengthwise, using a sharp Stanley knife or similar. Each section of split cane should be quite straight. If not, it should be discarded.

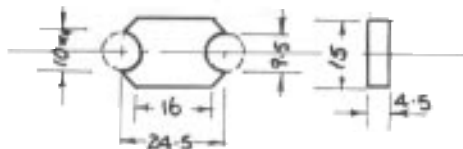


FIGURE 1 - GAUGE.

The Gouging Machine (supplied by F. Sassenberg, 1 Berlin 21), includes a guillotine, which is used to cut each cane section to length of 7.6 cm. [*This company no longer exists, but Georg Rieger supplies similar machines that gouge to German measurements.]

The split section of cane is placed in the gouger, being held in position by a spring loaded gripper at one end, and a solid stop at the other end. The planing action of the gouger is then used to remove cane from the bore of the section. After taking several gouging cuts, the section should be removed and the thickness measured as described below, using the dial gauge. (Ruth obtained these measuring instruments from Georg Rieger GmbH, Postfach 1446, 7560 Gaggenau. The equivalent device could be fabricated locally using a commercial dial gauge and

a suitable frame to provide a base and also to carry the tongue on which the cane is placed while measuring its thickness.) Students would need to have their own measuring instruments but could share the gouging machine and prepare a supply of gouged cane.

The thickness of the gouged section is measured at the center, and at each side, and gouging continues until these measurements are 0.50 mm on the center line and 0.25 mm at each edge. After taking each thickness reading, the section should be turned end for end in the gouger, so as to cut in both directions alternately, and to ensure consistent thicknesses over the full length.

The gouging machine enables adjustments to be made so that, when correctly set, the blade will stop cutting when the correct dimensions are achieved. This also means that the cutting edge of the gouge blade must be sharp, precisely shaped and held firmly in place. When this has been done, it is important not to alter any setting or to damage the blade.

The German Method uses thinner gouged sections and a shorter scrape than the French or British Methods.

3. BENDING OVER AT THE CENTER LINE.

When satisfied that the cane has been accurately gouged, place it on the cutting easel, and then make a clean cut through the bark only, across the full width, at the center of the length. There is a groove at the center of the easel to indicate where this cut should be made. Easels are usually made from genadilla wood and are available from a number of sources, including Edmund Nielsen, Woodwind Instrument Service; 53 E. St. Charles Rd.; Villa Park, IL 60181.

An easel is a cylindrical spindle with a shoulder at each end, as shown on Figure 2. The gouged cane is placed on the Easel and fits neatly between the shoulders. The groove at the center of the Easel is used to indicate where the clean cut is to be made across the full width of the gouged cane section, in preparation for bending.



FIGURE 2 - EASEL.

The section can now be bent over the back of the knife so that it is doubled over with the bark and

on the outside. If the cut has been made square, the two halves will be in line. If not, or if it is apparent that the grain is not straight, the cane section should be rejected.

4. SHAPING

If the reed section has dried out, it should be soaked again for about one hour before placing in the shaping jig. This jig, offered by Georg Reiger as a *Faconschneider*, holds the double section firmly so that a sharp knife can be used to pare cane off each side until its shape conforms with the shaper base in which it is held. [*Before placing the cane in the shaper, make sure that both sides are of equal thickness, and that the width is only slightly wider than the tip of the shaper.] It is important that the double section should be placed correctly in the shaper, so that the grain of the cane is in line with the center line of the shaper, to ensure that the two halves will be identical and balanced.

It will be appreciated that the dimensions obtained from the shaping operation vary according to the type of shaper used. The one described above produces reed sections which are 7 mm wide at the center, and 4 mm wide at each end, and the edges are not straight, but follow the profile of the shaper. These dimensions have been adopted to match the shape of the staple on which the reed is to be bound, and to also ensure that the dimension at the tip of the reed is correct and constant.

[*It is essential that the gouged cane is in the middle of the shaper when the shape is cut. In practice, cut thin slices off the sides of the gouged cane until its width is only slightly wider than the shaper. While doing this, check that both sides are of equal thickness. There are many different shapes on different shapers. The preferred type does not have straight, but curved sides, which shut evenly without pinching or without leaving them partly open. The curved sides give 'stomach,' which influences sound and intonation.]

Equipment of the typed described above need not be held by every reedmaker. One such set can be shared by a number of reedmakers, who can use the equipment in turn. This procedure was encouraged by Ruth, and her students are now sharing equipment in this way. But, to be effective, each reedmaker will need to possess the items described below, so as to complete the procedure.

5. FORMING SMALL ENDS ON AN EASEL.

The cane section has now been accurately

gouged, folded and shaped. It has now to be formed so as to make a good fit on to the staple. For this purpose, a long easel is required, having a shape similar to the section of the staple on to which the reed is to be bound. The easel is heated at the tip over a candle until it is hot enough to sting the thumb when touched. {It has been noted that it would be preferable to use a spirit lamp or small gas jet if available, because a candle flame can leave a deposit of soot on the easel, which must be wiped after being heated in this way. Electrically heated easels are also offered in some catalogs, or can be made from a small soldering iron.}

Some students have found that this operation can be performed better if the easel is held in a suitable small vice at an angle of about 30 degrees to the horizontal, leaving both hands free to carry out the following process.

While the easel is at the correct temperature, the small end of the damp reed is slid over the end of the easel to about 15 mm. The ends are then bound against the heated easel with dental floss or suitable thread, so that they will be formed into the tapered cylindrical shape required for later close contact with the staple.

For this operation, it is necessary to ensure that the two small ends of the reed fit into each other correctly, that is, so that the two sides of one of the ends wrap around the two sides of the other end. When the easel has cooled, the temporary binding thread is removed; the small ends should now have a circular tapering, symmetrical appearance, and should fit neatly on the small end of the staple for the next operation.

6. LOCATING AND BIND THE REED ON THE STAPLE.

Make a mark with a soft pencil 26 mm from the tip of the reed. This will indicate the position of the end of the staple when it is inserted 12 mm into the reed. Fit the staple on to the short easel, which is shaped to suit the internal shape of the bore of the staple. Insert the staple into the reed at the small end. Keep the reed halves together temporarily on the staple with a half hitch of thread, with the end of the staple in line with the 26 mm mark.

Make sure that the ends of one side of the reed are laying inside the ends of the other half, as described above, and that the reed is positioned evenly and with the tip in correct alignment on the bent staple. (This is one of the factors which must be taken into account when considering using bent staples, but it is not a serious difficulty.)

To bind the reed onto the staple, it is necessary to use suitable thread. Ruth preferred Glotin Red Binding Thread. The free end of the thread is tied to something firm, to maintain the correct tension while the thread is being bound onto the reed. Holding the easel on which the staple is mounted in one hand, use the other hand to do the binding.

Start binding a distance equal to at least 4 turns down from the pencil mark and then bind the thread up to the mark, then cross back with one turn over the four original turns, and bind down to the small end of the reed. Finish the binding with three half hitches, cut the thread then cover the binding with clear nail polish.

With the reed still on the easel, use a Stanley type sharp knife to scrape away a small amount of bark at the top end of the reed, both sides, going down at least 3 mm from the cut edge. This is done to prevent the reed cracking when it is cropped later (Section 7).

Remove the reed assembly from the easel and allow it to dry out completely before commencing scraping.

7. FINISHING THE TIP.

Make a mark 25 mm from the small, or bound end of the cane reed. This will be about 1 mm from the top end, and indicates where the end must be cropped. The end of the reed is cut squarely across at this mark, while the top end of the reed is being held firmly on a cutting block. This should be done with a very sharp knife so as to get a good clean cut, without damaging or cracking the cane along the cut, as these edges will form the ends of the tip of the reed.

The cutting blocks are made from ebony, and for oboes are 27 or 35 mm in diameter.

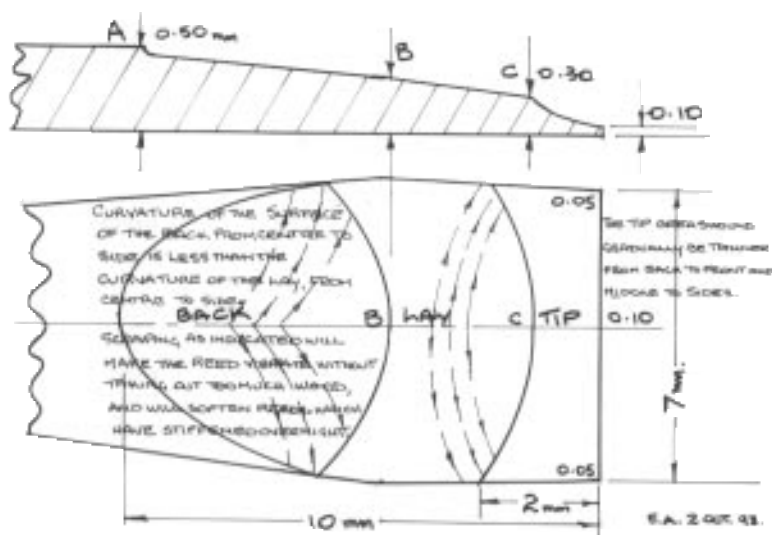
Make a U shaped pencil mark 10mm [*to 10.5 mm] from the tip, on both sides of the end of the reed. Insert a plaque between the two tips to provide support for the next operation. Plaques are blades which are made from steel, grenadilla, or equivalent material, contoured so as to support the ends of the reed when pressure is applied by the scraping knife. As with other

items, they can be obtained from Edmund Nielsen or Glotin, or can be made locally.

With the plaque in position, both top ends of the reed are shaped to form the tip as shown on Figure 3, and the lay is also shaped as shown. Bark should be removed using a scraping action, but the scraping is done using a hollow ground reed knife, with a firm, light, planing action, moving the cutting edge toward the top and towards one side, so as to develop a surface which curves toward the top and also curves toward each side, as indicated on Figure 3.

It is essential to maintain a very sharp cutting edge on this knife. If necessary, arrange to be taught how to do so by a specialist in that field.

FIGURE 3



8. FINAL FINISH

Assuming the work done up to now is of high quality standard, the finishing of the double reeds still requires care and skill. The shaping of the two sides of the reed is described in general terms on Figure 3, but players must learn how to achieve the best shape to suit their individual requirements.

In a longitudinal direction, the profile along the center line must be a modified smooth curve as the reed section is reduced toward the tip.

The knife is used to scrape the cane to give a rounded cross section forming a triangular core with its apex at the tip. This is done by scraping the cane from the U and progressing on lines about 45 degrees across and down one side, then returning to the U and repeating the scrape down

the opposite side. It is essential that there should be no dips or grooves, and only smooth transitions downwards and sideways as the ends are shaped [except between the tip and lay].

The dial gauge must be used to progressively check the thicknesses of the remaining cane, to finish with the dimensions shown on Figure 3. It is essential that the two 'blades' of the tip should be identical and balanced. Another important requirement is that there must be a suitable 'double curved' opening between the tips when inspected end on. If the 'core' is too thin, the edges will be too straight and will not have sufficient curve to ensure a correct opening. In this case, the tips will be parallel and almost closed, and may close completely and prevent air flow when blowing pressure is applied, and the intonation will be unstable.

If, however, the core section is too thick, the curvature will be excessive, and the reed will not vibrate but will have a 'dead' sound and no dynamic range.

Having the dial gauge indicator, it is possible to use it to take series of measurements of the critical areas of a very good reed and use these measurements as a guide when making subsequent reeds. (This procedure is used by a number of professional clarinet players, using a dial gauge equipment called a PerfectaReed). Because of the varying nature of cane, no two reed dimensions will be precisely the same, but progressive check measurements can be helpful. The best results will only be achieved by trial and error and accumulated experience.

The tip edge should be as shown in Figure 3, that is 0.10 mm at the center and 0.05 mm at each side. Top and bottom tips must be as close as possible to identical. It will be appreciated that with a straight staple, and where the two sections may not be identical, it is possible to turn the reed over to check which way gives the

best response. Although this cannot be done with a bent staple, the other advantages of using a bent reed weigh strongly in its favor, for reasons set out in Ruth's paper.

A further check should now be made by blowing through the reed to obtain the correct, characteristic 'crow.' [The crow should be loose, low, not shrill, tense or high. The main tone in the crow should preferably be B natural or possibly E.] In the early stages, it is essential to work with an experienced player who can advise on how this test should be carried out and the type of sound which should be heard. This 'crow' will indicate whether more scraping is needed, and also where to scrape.

As a general guide, Ruth indicated that:

1. If the center section is too thin, the sound will be bright, but unstable.
2. If too much is taken off the sides, there will be less dynamic range and the low notes will be poor quality.

The final shaping should be done over a period of several days, allowing the fibers to settle a little after each scraping, and testing the reed by crowing and also playing in the oboe, so as to decide what, if any, additional scrape is required. With use and rest the vibration will usually lessen and the reed will seem stiffer. ♦

Ruth Blatt's students wish to acknowledge the assistance of oboist Erik Gustavsson of the Norwegian Opera Orchestra and engineer Eric Adam and Ray Holliday in preparing this paper.

This paper was written using notes made as students of Ruth Blatt by:

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