

THE CHANTER REED

The beauty and curse of piping

By Patrick Sky ©2004

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Introduction

If you want to learn to play the Uilleann pipes, learning to adjust and fit reeds to your chanter is an absolute must: there is no escape. Even after a reed is fitted properly and playing well, it will not stay that way. Every good piper constantly makes minor, and sometimes major, adjustments to the reed. You also must be willing to take the chance of destroying your reed if you want it to play well. Sometimes you simply go too far and either break and split the reed or adjust it to death. You will not be satisfied playing a bad reed for long: eventually it will drive you nuts and you will give up.

There are now many different pipe makers turning out pipes. I hate to admit it but quite a few of them, although beautiful to look at, are questionable as to playability. Rather than go into detail let me just say that if you have a chanter and after many different attempts by a reputable reed maker you cannot seem to get the thing in tune, throw it in the trash and get another one.

On the other hand, if only one or two notes are constantly off pitch they might be corrected by undercutting, which is done by removing some of the material from inside of the tone hole. Return the chanter to the maker for this type of alteration.

There are also on the market several reed making books, videos and web sites that address the different methods of reed making. I am not going to discuss or comment on which method of reed making is best, but will try to center on techniques that will apply to all of the reeds produced by these methods.

A quick note on using this book: when dealing with a problem I suggest going through the steps in order.

Most of these books and films, my own book included, fail to address in detail the problem of fitting and adjusting the reed to fit the chanter, although we all have a few tips. What do we do with a sharp or flat reed, the sinking back D, etc.? In this booklet I will try to deal with as many of these problems as I can and with as much detail as possible. I suggest purchasing at least a couple of, or even all of the books below and reading as much as you can, especially the parts on sanding, scraping and adjusting the reeds.

BOOKS

I have listed here only those books and sites that deal with reed making that I am familiar with.

Patrick Sky “*A Manual for the Irish Uilleann Pipes*”. Self published. May be purchased at:
Patrick Sky - 2000 Ridgewood Rd #312. Chapel Hill, NC 27516

David Quinn's *The Piper's Despair* Reed making for the Northumbrian and Uilleann pipes. It is available through the Irish Pipers Club, *Iris na bPiobairi*, in Seattle)

The *Uilleann Pipe Reedmaker's Guidance Manual* by Dave Hagerly, is available from NPU and the Seattle Piper's Club.

Tim Britton. "My Method" Book and Video. May be Purchased on his web site.

Web Sites

Pipe maker Seth Gallagher has a reed making site. <http://www.uilleann.com/reeds.html>

David Daye's Bagpipe Page- <http://www-bprc.mps.ohio-state.edu/~bdaye/bagpipes.html>

Evertjan 't Hart's beautiful sites with moving graphics:

For measurements: <http://www.hartdd.com/reed/>

For Reed making: <http://home.wxs.nl/~ejthart/Reed/reed.html>

Tim Britton: <http://www.skep.com/britton/tools.htm>

Na Píobairí Uilleann <http://www.pipers.ie/en/default.lasso>

FORWARD

Learning to play in tune

Before you even begin to fool around with the reed, make sure that the problem is not in the reed. All reeds have notes that are not exactly as we want them and to overcome this we have to learn to *play them in tune*.

Let's assume that you have a new chanter and it comes with a reed that, according to the maker, is a good reed. You strap the chanter on and some of the notes are sharp or flat. You then take the chanter to a good piper that you know and he plays the chanter, and it is in perfect pitch. He says that it is a very good chanter and reed. What is wrong? Most likely the problem is your inability to "control" the chanter. A new reed, in most cases, is not going to help you.

I have been playing the pipes for over 30 years and I have never found the perfect chanter/reed combination; that is, a chanter that plays in perfect tune in both octaves with only the slightest change in pressure. When I play my chanter it is in great tune and pitch. When Todd Denman plays my chanter at first it is not in good tune, but after a few minutes it "comes in". Why is that? It is because some of the notes have to be forced to play in tune either by using a different fingering or by increasing or decreasing the pressure. Getting these "wild" notes in tune is what I mean by control. All master pipers know this.

For example, on most chanters the 2nd octave **G** is flat. I almost always force the note by lifting the chanter and applying more pressure.

Then there is the problem of the first octave **E** being sharp, and then flat in the 2nd octave. On most chanters one has to place a small piece of tape across the E hole to flatten the first octave and then lift the chanter off of the knee when ever the 2nd octave **E** is played, this produces an E note with a "whooping" sound, which adds color to the music. Listen to Liam O'Flynn—

almost all of his 2nd octave **E's** have a "whoop" sound as he lifts the chanter. That is because Liam's Rowsome chanter is flat in the 2nd octave **E**.

Next we have the 2nd octave **A**. If the hole for the **A** is large enough to produce an on pitch note by lifting the **G** and **F#** fingers, then the **B** will be sharp. Most pipe makers make the 2nd octave **A** note slightly flat so that the **B** will be in pitch. To bring in, and sharpen the **A**, simply play the **A** with the **G** finger down or sometimes with the **F#** finger down. You just have to practice this fingering until it feels natural.

The problem of the **C** natural being sharp has to be mastered by keeping your finger in contact with the chanter and "pointing" so that you half hole the **C#** note. This will produce a nice sliding effect and bring the **C** note into tune.

Finally, remember that the thumb hole **D** must be adjusted so that it will play with the same amount of pressure as the 2nd octave **E**.

As I said in the first paragraph, you must learn to "control" your playing or you will never play in tune. Every chanter is different so try moving your fingering around to locate the proper fingering and pressure of each individual note. By using different fingerings on my Kenna **B** chanter I can get 3 distinct **A** notes in the 1st octave (one being on pitch and 2 not on pitch) and the same for the **F#** in the 1st octave. This will seem like piping hell at first, but after a while you will get used to it and not even think about it.

Fixing that Reed

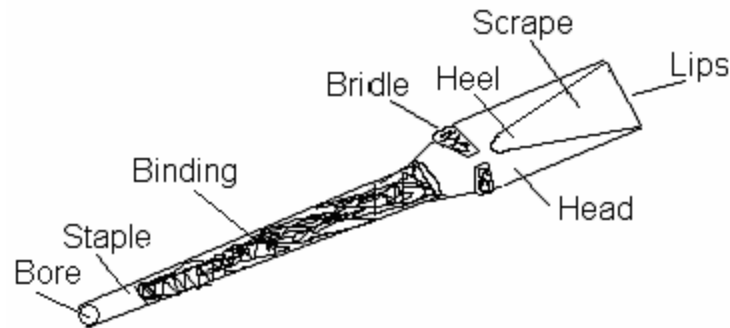
Before I begin discussing the how and whys of reed and chanter adjustment I have to make a few assumptions. First that you have a pretty good reed that has an overall good tone but has problems that need to be addressed; and second that you have a decent chanter.

I also must assume that you are able to use tools, have a steady hand and have a small assortment of tools needed to adjust the reed: Needle nose pliers; a mandrel; binding thread (I use waxed dental tape); sand paper (#320 black carborundum paper), and a reed knife (or a box cutter, etc. In general you do not need all the tools that are used in actually making a reed. Most adjustments can be done with sandpaper, pliers and binding thread. To adjust the reed you may have to do the following:

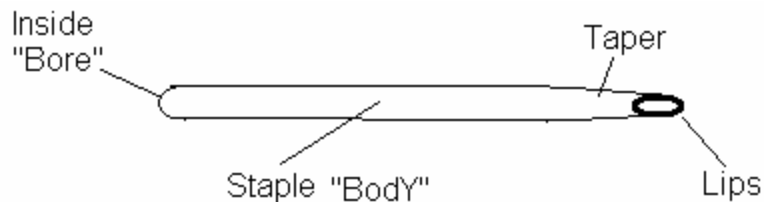
- 1) Either squeeze or move the bridle with your finger or with pliers.
- 2) With a razor, cut or scrape the reed
- 3) Either make or purchase a new staple and install it in your reed head.
- 4) Sand and scrape the reed
- 5) Disassemble and reassemble the reed
- 6) Most importantly have patience, care and a proper Zen attitude toward failure and disappointment... and also of elation with success.

I do recommend an electronic tuner because when adjusting a reed you play the same notes over and over again, as you do this your ear becomes "tired" and you lose the ability to tell sharp from flat. A tuner solves the problem. Get the kind that has a meter type needle and not just lights. Bottom line is a tuning fork, whistle or pitch pipe.

The Reed and its parts described in this book:



The staple and its parts:



There are two ways to set up a chanter: the relative pitch method and the concert pitch. By the relative pitch method, I mean to adjust the reed completely to the chanter so that it is in pitch relative to itself and not care if the chanter is sharp or flat to concert pitch 440-A. This is the easiest method for setting up the pipes. To most flat set pipers this is the method of choice because they usually play solo or with a musician, now and then, that is willing to tune down to their chanter. For example: Tommy Reck's beautiful Kenna flat set was set to play somewhere between Bb and B. While working with Tommy on his recording "A Stone in the Field" I made one chanter reed and it fit right away. The only adjustment needed was to push the reed either in or out to bring the octaves in harmony. I made several reeds for Tommy over the years and the reeds just fit right in.

To the pipers that play the concert D pipes the relative pitch method, although the easiest, is not the preferred method, because these pipers are usually playing in sessions or groups that contains fixed pitched instruments, such as the concertina, where an agreed upon pitch is needed.

Most of the modern pipe makers have worked on redesigning the old concert D pipes so that they play in 440-A. The older Rowsome type chanters, that are 14" to 14 $\frac{1}{8}$ ", inches long, tend to play a bit sharp to concert pitch. The newer chanters are from 14 $\frac{1}{4}$ " to 14 $\frac{1}{2}$ " inches long bringing them closer to the 440-A. However, most of the concertinas, accordions and whistles today have a pitch that is 10-20 cents sharp to 440-A. In other words even concert pitch varies.

Whether relative or concert pitch the following methods work for both. The pitch that you settle on is up to you.

New Reed:

You just got a new reed, you put it in your chanter, set it in the reed seat all the way in, strap the set on and start to play. The good properly adjusted reed will have what I call the "sweet" spot where the reed should match in both octaves, be easy to play and have a nice tone. The tone should be crisp and sweet. If the reed does not meet these criteria, consider a new reed before you spend a lot of time on the reed. Sometimes the tone improves with adjusting and playing, but most of the time it does not.

However, it is possible to get a reed that plays well but has a poor tone. There is nothing that you can do to improve the tone of such a reed. The simple solution is to either throw it in the trash or use it for a regulator reed. Cane is the main source of a good tone, followed by good craftsmanship. If the cane is good then careful manipulation of the reed can produce the desired tone.

So! the tone is good but the 2nd octave is flat or sharp or some of the notes are off, what do you do? Do not panic! Play the reed for 10 minutes before making any adjustment. **Do not** adjust a cold reed. If some of the notes are off a bit, see if you can control the pitch of the notes by increasing or lessening the pressure or changing your fingering. All chanters and reeds have to be "controlled", every note on the chanter can be sharpened or flattened simply by varying the bag pressure. Spend some time with the reed before you decide that something is wrong. If you are unsure, go to a good piper and have him play the chanter and see if he plays it in tune. I myself have had dozens of beginning pipers, over the years, bring me their chanter and I play it in tune right away ... to their amazement.

Here are a few general rules of thumb, I'm sure there are more but these the main ones:

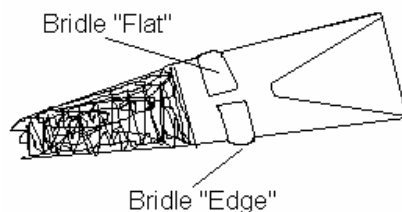
- 1) Pushing the reed in or pulling it out of the chanter affects the 1st octave most. So if the 2nd octave is sharp seat the reed deeper into the chanter thereby sharpening the first octave. If 2nd octave is flat seat the reed further out, etc.
- 2) When the reed is opened by squeezing the bridle edges, or by sliding the bridle toward the lips, the reed becomes tougher, flatter and the back D goes sharp. If you slide the bridle toward the binding or squeeze the flat, the reed becomes softer, sharper and the back D goes flat.

- 3) The longer the overall length the flatter the reed and the shorter the reed the sharper.
- 4) The larger the bore of the staple the sharper the upper octave; the smaller the bore the flatter.
- 5) A new reed follows a reverse bell curve. When it is new and first starts to crow it is hard to play and really sharp and loud. As the reed is shaved it gets weaker and starts to drop in pitch, the volume goes down and the tone gets softer. Further shaving will eventually reverse the results so that as the reed becomes very easy to play, it rises in pitch and the back D sounds flat. Opening the reed a bit makes it harder to play and flatter--- the opposite of when you started.
- 6) Very small adjustments can produce large changes. Moving the bridle a miniscule amount can grossly effect the reed. Moral: work slow and be careful.
- 7) Any reed can only be adjusted to a point. If after following the steps below several times and the reed either packs it in or does not come around there comes a point when it is time to get another reed and start again. Keep a detailed list of all of the work that you did to tell your reed maker.
- 8) All reeds must be air tight. A leaking reed will squeak and not play properly.
- 9) The most difficult notes on all chanters are the back thumb D, the bottom D and the 2nd octave E. Some of the problems are: The back D is either sharp or flat; is too weak; or squawks; The bottom D most often has a gurgle sometimes called an "Auto-crann"; The E note is sharp in the first octave and flat in the 2nd octave; The 2nd octave E has a squawk.

OCTAVE PROBLEMS

Problem: 2nd Octave is *slightly flat*

Reed is hard to play: If the reed is hard to play, it may be too open; you need to close the lips a bit to see if that makes its easier to play and raises the 2nd octave. If a reed is adjusted to play easier then the 2nd octave will rise in pitch. If the reed has a sliding type bridle then slid it, a tiny bit, back toward the staple end. If it has a permanent bridle, (you can also do this with the sliding bridle) take the needle nosed pliers and gently squeeze the bridle on the flat to close the reed a small amount. You may have to do this several times to hit the right spot.

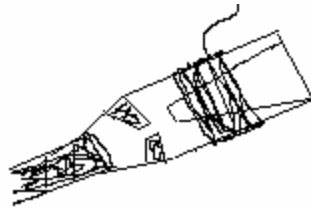


Re-seat the reed: The reed is now a bit easier to play but the 2nd octave is still slightly flat. Remove the reed from the chanter and wind a small amount of string around the bottom of the staple so that when you put the reed back in the chanter it does not go in as far; this will flatten the first octave. Do this several times to see if the octaves will match up.

Adjust the bridle: If the reed is still flat in the 2nd octave try readjusting the bridle toward the lips of the reed and squeezing the bridle on the flat side to close the lips. What you have now achieved is to shorten the reed head. This will raise the 2nd octave a small bit. Try different positions for the staple.

Trim the lips: If you have tried all of the above and the 2nd octave is slightly flat, take a reed knife/razor, lay the head of the reed on a flat hard wood surface and shave a 1/64" sliver from across the lips of the reed. Do only one or 2 times. Note: this will also sharpen the back D.

Re-bind the reed: If you have tried the above and the 2nd octave is still flat, try re-binding the reed. Wrap several rounds of string around the head, tie it off and remove the all of the binding from the reed, as follows:



Once the binding is removed carefully loosen the head away from the staple, push the staple further into the head (1/16" or so) and tie the head back on with fresh binding. Next, start from the top and try the different steps again.

Sanding the scrape: Now we get to the tricky part--shaving or sanding the reed. Take a piece of the black #320 Carborundum sand paper and lay it on a flat surface. Now take the reed and sand the "Scrape" a few strokes on both sides, readjust the staple and play it. Be careful, not to shave through the corners of the lips; this can ruin a reed. Try and apply the pressure so that more is removed from the "Heel" of the scrape to produce more of a U shape rather than a V. Keep sanding and readjusting the staple until you find the right spot. As the reed gets weaker the 2nd octave will rise.

Try another staple: The last trick is to either alter your staple or try another staple with a larger inside bore. If you do not have another staple, unbind the reed, remove the head, insert a tight fitting mandrel into the staple bore and taking a small hammer tap along the body of the staple to expand the inside diameter of the staple.

Try an extension of the staple: Finally as a last resort you can get a small piece of tubing and fit an extension to the bottom of the staple so that you can seat the reed further out of the chanter. If the over all pitch of the chanter is sharp, this can be a pretty good solution, If the chanter is very close to concert pitch 440-A then this can flatten the chanter so that it is not at the desirable pitch.

Now what? You have tried all of the above and the 2nd octave is still flat. At this point you can do one of three things. Scrap the reed; Start at the top of the list and do it all over again until

the reed packs it in; or call your pipe maker, or reed maker and get another reed. Better still: it's time to consider learning to make your own reeds.

Problem:

2nd Octave *very, very* is flat

This is a major problem. In this case start with the above gross adjustments: First use a staple with a larger bore; or insert the staple deeper into the chanter head; or trim the lips to shorten the reed head. If the reed is really that bad you may have to do all three. Once you have done this and the reed is now only slightly flat repeat the above adjustments, starting from the top, to try and get the reed to come around.

Problem:

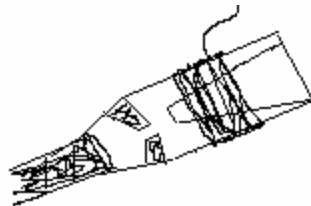
2nd Octave *slightly* is sharp

Re-seat the reed: Same as above, you put the reed into the chanter and this time the 2nd octave is slightly sharp. This is a harder problem to deal with. If the 2nd octave is sharp, generally the reed head is either too short or has a staple that has a bore that is too large, or both. But first see if the reed will sit deeper into the chanter. Sometimes the problem will be solved right away.

Tape or Rush: Usually it is the upper notes of **A** and **B** that is sharp and a little bit of tape across the holes will help. Or you can insert a long wire "rush" into the bore reaching past the back **D** thumb hole; try different diameters to fine tune. But if you are like me, that is literally like putting a band aid over a hole. I prefer to get the chanter in tune without the help of tape or rushes. However, sometimes the old tape or rush is the only answer and is a perfectly legitimate solution. The main thing is to get the chanter in tune. I know several pipers that have tape all over their chanter and a rush inside.

Adjust the bridle: If the reed is still sharp in the 2nd octave try readjusting the bridle toward the binding of the reed or squeezing the bridle on the edge to open the lips. What you have now achieved is to lengthen the reed head. This will lower the 2nd octave a small bit. Try different positions for the staple.

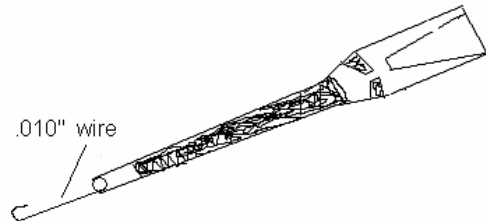
Re-bind the reed: If you have tried the above and the 2nd octave is still sharp you must try to re-bind the reed. Wrap several rounds of string around the head, tie it off and remove all of the binding from the reed. as follows:



If the reed head is *too short* to pull the staple out and lengthen it, then you will have to get a new reed.

Once the binding is removed carefully loosen the reed head away from the staple, pull the staple out of the head (1/16" or so) and tie the head back on with fresh binding. You may have to do this several time to get the octaves to match.

Insert a wire: If the 2nd octave is still sharp take a small piece of .010 " x 1" guitar string, bend one end to form a loop to hold it in place, and insert this into the bore of the staple. You can somewhat fine tune the staple by varying the length and or diameter of the wire.



New staple: If you have come this far it is time to try a new staple with a smaller inside diameter. Wrap string around the head, remove the binding, insert the new staple and re-bind with fresh binding and go through the above steps again. Keep this up until you either solve the problem or purchase/make another reed.

Problem:
2nd Octave is *very, very* sharp

Start with a new staple right away then go to the top of the list, re-seat the reed, and go through the steps again.

Problem:
Reed does not want to jump to, or stay in the 2nd octave.

Scrape the scrape: This problem is usually caused by a reed that has been sanded to thin along the center line of the scrape. It can sometime be fixed by taking a reed knife and shaving the edges of the scrape on both sides to make the lips thicker in the middle. You may have to remove the head, lengthen the reed by pulling the staple out a bit, re-tying and clipping the lips to make them thicker. David Daye has discussed this problem on his website.

Edges are leaking: Another cause is that the reed is leaking along the edges. If the edges are too thick, remove the head and take some fine sandpaper and thin the edges so that they close properly.

Staunch the leaks: A small leak along the edges can be sealed with wax. I use the soft red wax that can be found on Gouda cheese in the supermarket. Make a small 1/2" ball of the wax, hold the reed in your hand and rub the wax ball along the edges of the reed head two or three times until it seals. DO NOT glue the edges. This will ruin a reed.

Problem:**The E is sharp in the first octave and flat in the 2nd.**

Advice: Here is a good piece of advice from Seth Gallagher:

Concerning the concert pitch D chanter: The note to watch, or actually listen for, is the second octave E. How this note sounds will tell nearly all on how far open lips of the reed should be. And as you will surely find out, a little difference in the aperture makes a great difference in the sound. If this note is very sharp, approaching F natural, or so unstable that a little pressure causes it to go sharp, then the lips need to be opened. The optimal aperture is the minimum that produces the slightly flat second octave E. If the lips are too open the sound will be too loud, harsh, flat pitch-wise, and hard to blow.

Control it: The easy solution is to develop a technique where you raise the chanter slightly off the knee when ever you play the 2nd octave E, thereby raising the pitch. I do this and so does Liam O'Flynn and quite a few other good players. This technique is hard at first but can solve a problem right away.

Tape it and play it: I hate to say this but this is a case where a little tape may be the only answer. Place a small piece of tape over the small E hole covering around 1/3 of the hole...more or less. Notice that this will flatten the first octave and to a less extent the 2nd octave also.

Problem:**There is a squawk in the 2nd octave E**

Play it: As you go to the high E try increasing the pressure and see if the squawk goes away, if it does then learn to use this technique. The E should take the same amount of pressure as the back D.

More tape: First take Seth's advice above, if that does not work then place a bit of tape over the E_b hole.

Try a rush: Take a short piece of wire/rush and cut it to length so the wire extends almost to the F# hole, and insert it into the bell of the chanter.

Alter the staple: If you have tried the above and the 2nd octave still squawks you can try to re-bind the reed and alter the staple. Wrap several rounds of string around the head, tie it off and remove all of the binding from the reed. Next take the staple and with a pair of pliers close the eye of the staple a few thousands. Rebind the reed with new binding. Make sure that you mark the staple so that you replace the reed head in its exact previous position.

NOTE: Some say that the reeds that have a "Tone Chamber" avoid the problems with the E note. I have not verified this.

Problem:**The G note is flat in the 2nd octave.**

Play it: If the G is on in the first octave but flat in the second there are only two solutions.

First is the increase the bag pressure and force the note to pitch or under-cut the tone hole.

Tape it: If it is sharp in the first octave but flat in the 2nd then go through the steps used to correct the E note including trying a bit of tape.

Compromise: Your pipe maker can sharpen the G in the first octave as much as 5cents and no one will notice. This will also sharpen the 2nd octave.

THE BACK THUMB D

The back D can present a multitude of problems: It is so weak that it collapses; it is flat; it is sharp; and the famous “sinking” D. It is unstable. This is one of the most frustrating notes on the chanter is take a deep breath and set to work.

Problem:

The back D is weak and drops in pitch.

Move the bridle: Try moving the bridle to open the reed a bit. This will strengthen the note and sharpen it a bit.

Trim it: Take your reed knife and trim 1/64” from the lips. This strengthens the reed. Sometimes you have to trim it two or 3 times. Remember also that trimming the reed will sharpen the 2nd octave.

Problem:

The reed is unstable and you cannot control the back D.

Close the staple lips: This problem is usually caused by the staple having an aperture that is too open. Unbind the reed and with the pliers, close the lips a bit. An opening of around .060” will usually work.

Re-bind and trim the reed: Another cause of instability is that the reed has been shaved too thin. Remove the reed head and pull the staple out 1/8” and re- tie it. Next take the reed knife and trim the 1/8” from the lips. This should make the reed tougher and more stable. You might even have to shave it a little more

Problem:

The reed is perfect except the back D is flat.

This is the point where the D hole needs to be either, enlarged, moved or undercut. Send the chanter to your pipe maker.

Problem:

The reed is perfect except the back D is sharp.

Tape it: The fastest and easiest solution is to simply put a bit of tape across the hole.

A more permanent solution is to have your pipe maker move the hole.

Problem:

The famous “sinking” back D; This is a problem where the D continues dropping in pitch as the pipes warm up.

If you are in a session the best thing to do to stabilize your pipes is to play a few tunes and then quit for a few tunes. This will let the reed “cool off” and it will usually stay in tune-- this is what I do. The other main cause is humidity. Pipes love humidity, so much so that a few of the professional players now carry a humidifier along with them to blow moist air across the pipes as they play. However, pipes hate heat and especially heat and humidity and will get very weak and unstable if the temp/humidity ratio is off.

Treat the reed: David Daye and others have had success by soaking their reeds in “Neatsfoot oil”. Seamus Ennis used to rub Kerosene into his reeds.

NOTE: On my own chanter I purposely make a reed that is sharp on the back D so that as the reed warms up the D starts to drop in pitch and settles in after 10-15 minutes of playing. Learn to control your reed and plan ahead.

Problem:

The reed plays great and is perfect except the entire chanter is sharp

Insert a wire: Take a length of wire the size of a coat hanger or smaller and insert it into the chanter bore the entire length just past the back D hole. This will flatten the entire chanter,

The bottom D

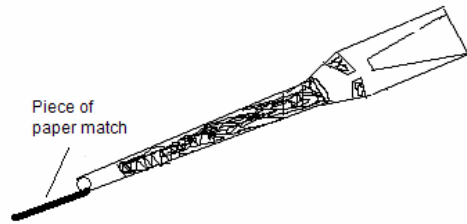
Problem:

The “gurgling” bottom D or auto-crann

Open the reed: If the lips of the reed are too close or the reed is weak, open the lips by adjusting the bridle.

Shim the chanter throat: The other main cause is that the chanter throat is too large and sets up sympathetic vibrations in the bore that produce the familiar gurgling sound. Take a small piece of thin stiff paper around 3/8” long and roll it into a small tube and insert this into the chanter throat. You may have to increase the thickness of the paper.

Create a tail: Another method is to take a paper match and peel it in half, then tie a tail onto the bottom of the reed as follows:



Shave the scrape: If the reed is too stiff it will gurgle. With your reed knife, scrape away some of the material from the “Heel” of the scrape.

Close the staple lips: This problem is can also be caused by the staple having an aperture that is too open. Unbind the reed and with the pliers, close the lips a bit. This can also affect some of the other notes on the chanter.

The reed squeaks:

The #1 cause is the reed leaking along the edges of the reed head. Take a small ball of the red wax that comes from Gouda cheese and rub it lightly along the edges of the reed. The wax should staunch any slight openings. Check the reed for leakage by squeezing the lips together and sucking on the end of the staple: the reed should be air tight.

Check the corners of the reed lips to see if they have been sanded off. If they have and it is only slight, then the problem can be solved by clipping the corners of the reed at an angle.



Well that’s it for now. I will continue to update this booklet. If you have any suggestions or “Tips” feel free to send them to me and I will include them when and if I can.

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