1.10 Reconstructing chanter reeds / A John Coyne chanter.

John Hughes.

Craig Fischer writes, in his notes about reed-making, that split reeds can be cemented with cyanoacrylate (super-glue). Recently, I had the opportunity to do just that, so if what follows seems like piracy of someone else's idea, let me give credit to Craig for placing the idea in my head in the first place.

The late Seán McAloon gained a reputation as a fine reed-maker and "maintenance engineer" of Uilleann pipes. Indeed, there are probably about a dozen or so pipers from the Belfast area and surrounding districts who, without Seán's help, would not be playing today - myself included - but, as Seán did not make staples, it was necessary to obtain a staple appropriate to your chanter before Seán could set to work. This invariably meant untying one's old non-functioning chanter reed to cannibalise its staple.

Recently, I was lucky enough to discover three of these staple-less chanter reeds, one in the possession of Ken McLeod and two in the possession of Robbie Hannan. I am grateful to Ken and Robbie for letting me experiment on these relics. At this point, you may be asking the question - why attempt to repair a reed which has broken rather than make a new one? Let me state my reasons:-

1. It is better to keep for posterity that which other reed-makers before you have made, so you can compare your own and other reed-maker's work to theirs and, if possible, improve on it.

2. It is much easier to make a reed for a chanter, if you already have an example of a reed to measure which works in that chanter.

3. Because you can. Regardless of what you think of my methods here, isn't it a better alternative to doing nothing with it, or worse still, throwing it away?

The method consists of untying the reed, separating the reed blades and cleaning off any dirt or dust. I gave them a wipe over with surgical spirit on a piece of cotton wool although this may not be necessary, as soon as the reed cracks or sustains damage it stops playing and thereafter accumulates no further dirt. If it is a reed that has just recently cracked then perhaps it might be better not to attempt to clean it with solvents at all. Don't apply the nozzle of the super glue tube directly to the crack as you will end up with super-glue everywhere, and more probably than not, stick you fingers to it, or stick your fingers together (making it quite difficult to play rolls). Instead, put a single drop of super-glue onto a horizontal surface and use a piece of wire or a pin to apply the glue to the crack, rather like a diminutive paint brush. Set the reed blade length-wise.

By this stage you should have two reed blades restored to their original condition and ready to re-tie onto their staple. If you look carefully at the inside of the blades, you will see marks where the staple pressed into the reed blade, and you should be able to establish where the top of the staple should be, or better still, measure the overall length of the reed before you untie it and aim for this same measurement when you re-tie. If the maker of the reed has gouged the tails, as some do, then this is an easier matter.

Retie the reed in the usual manner, binding the blades together at the top with soft hemp to keep them lined up with each other, and keeping the tips of the blades aligned to each other. If you have the original bridle, there is no reason why you shouldn't use it again, but you will have

to fit the bridle before you insert the staple between the blades. Try to line it up with the mark it left on the reed blades, which should be clearly visible, and try to keep it in the same orientation as it originally was i.e. keep the seam to the original side and keep it the same way up.

My own method when tying reeds is to apply a little cobbler's wax to the surfaces of the staple which come into contact with the reed blades, in order to provide a better grip. Some reed-makers stick their blades onto the staple for this same reason, but this strikes me as irreversible and creates problems if it is found necessary to re-tie using a different staple. In my early days of trying to make reeds, I have had the things separate in my hands when thinning the blades down with a knife.

Use hemp or similar synthetic material well saturated in cobbler's wax, starting at the tips of the blades working upwards as far as the bridle, then back down again. If you are using tubular staples, it is not necessary to go downward from the tips of the blades, but if, like me, you roll your own staples, it will, of course, be necessary to wrap the seam to make it airtight.

When retying these reeds I found it necessary to wrap on an accumulation of hemp at the point where the hemp meets the bridle, as a means of providing support for it, as I found the bridle had a tendency to slip back down the reed. Here I would like to pass on a point that for years I had missed in my early attempts to make reeds, and that is that the reed MUST be 100% airtight. If the reed leaks at the sides, or at the wrapping, all manner of problems will result, from a reed that feels hard to blow, to a reed without a full upper octave, to a reed which just won't play at all. Test the reed after you have finished re-tying by holding the blades together between thumb and first finger and sucking on the end of the staple. You will feel if it is leaking.

If, like me, the reed came into your hands without a staple, tuning of the octave is best done by adjusting the staple diameter (or, more correctly, the cross-sectional area) as you are not going to start chopping about with a reed head which you know once worked.

As the diameter of the staple onto which the reed is tied has a direct effect on the tuning of the upper octave relative to the lower one, I find it very useful to make my own staples. Where a reed plays and feels well but the upper octave is not in tune with the lower, the problem can be remedied by tying the reed head onto a different sized staple. I am fortunate in being in possession of a small centre lathe on which to make moulds and formers for making staples, but to those who are not so equipped, the problem can be overcome by "planishing" the staple i.e. gently and repeatedly beating the staple with a hammer around a former to stretch the walls of the staple in order to make it larger, or by inserting wire into the staple in order to make it smaller.

Decreasing the staple diameter, or inserting a wire, makes the upper octave flatter; increasing the staple diameter makes the octave sharper. I wouldn't be too liberal with my use of wires in a staple, as over-use of the method seems to leave the reed that it cannot obtain notes above the upper A. Staple length seems to be a matter of some controversy. I have often read and heard that the rule of thumb for determining staple length for a chanter is allow one eighth of an inch for every inch length of the chanter, plus one eighth e.g. for a chanter of 16 ½" (C pitch) the staple length would be 2 3/16" My own experience has not borne this out, in that I have never felt the need to use a staple over 2" long, even in chanters of 17 ½". In this instance, I started with a staple of exactly 2", even though I knew that the reed was originally made for a chanter of 17 ½", for the simple reason that I buy my brass shim in 6" wide rolls and cutting the strip evenly in three leaves me with 2" long staple blanks. Again, I wasn't going to cut the reed head to

tune it; instead I intended to cut a little off the bottom of the staple if the back D turned out to be flat, or make a longer staple and re-tie the reed.

Let me emphasise at this point that I do not set myself up as an authority on reed-making. There may be thousands of you out there who have reed staples whose measurements correspond exactly to the 1/8" per inch of chanter length plus 1/8" formula, which work perfectly well, and who can successfully make and tune reeds on standard-sized tubular brass, but I am taking this opportunity of passing on some of my findings and emphasising that it is possible to return old cracked and damaged reeds to playing condition. If I can do it, believe me, so can you.

Here are the dimensions of the Sean McAloon reed made originally for Robbie Hannan's 17½" chanter, the most successful of the re-ties:-

Width at top	0.447"/11.3mm
Width immediately above bridle	0.377"/9.6mm
Length of blades	2.165"/55mm
Thickness at tops of blades	0.009"/0.2mm
Thickness at beginning of scrape (slip thickness)	0.047"/1.2mm
Tip of reed to top of staple	1.2"/30.4mm
Tip of reed to top of winding	1.065"/27mm
Thickness of strip bridle	0.034"/0.86mm
Width of strip bridle	0.095"/2.4mm

Staple dimensions, for which I can take the blame / credit :-

Length	2"/50.9mm
Diameter	0.133"/3.38mm
Staple eye	0.185" X 0.068"/ 4.7mm X 1.73mm

Length overall of reed (including staple)	3.2"/81.28mm

This reed also works very well in my 17 ½" chanter, of which the internal dimensions are very close to Robbie Hannan's B chanter.

The re-constructed Seán McAloon reed.

17 ½Chanter – possibly John Coyne.

The following dimensions are in millimetres.

Diameter	Distance from top of chanter	Diameter	Distance from top of chanter
5.5	1	5.1	76
5.4	2	5.2	79.5
5.3	2.5	5.3	84
5.2	3.5	5.4	86
5.1	5.5	5.5	89.5
5	6.5	5.6	94
4.9	6.5	5.7	100.5
4.8	7	5.8	106
4.7	8	5.9	115
4.6	8.5	6	126
4.5	9	6.2	141
4.4	9	6.4	154
4.3	9	6.6	165.5
4.2	9.5	6.8	177
4.1	9.8	7	188.5
4	10	7.2	201
3.9	10.2	7.4	211.5
3.8	10.2	7.6	221
3.7	11	7.8	236
3.6	Throat	8	249
3.7	14	8.2	262.5
3.8	18.5	8.4	273
3.9	24	8.5	279
4	29	8.6	284.5
4.1	34	8.8	307
4.2	38.5	9	328
4.3	43	9.2	337
4.4	47	9.4	344.5
4.5	52	9.6	353
4.6	54.5	9.8	363
4.7	58	10	376
4.8	62	10.85	428 *
4.9	66	10.95	444 *
5	71		

*****There is something of a gap here because my drill blanks only range up to 10mm.

I noticed a slight oval effect towards the bottom of the chanter, but I estimate this to be about 0.1mm.

Towards the top of the chanter there seemed to be a 4 lobed effect, [1] but very slight.

Finger holes:-

	Diameter	Distance from top
Back D	4.7	134
C#	4.2	152
B	4.3	187
A	4.3	222
G	3.8	267.5
F#	4.4	297
E	3.8	330.5
Ghost E	3.8	366

The above measurements were obtained by inserting drill blanks into the holes. The nominal diameter refers to the diameter of the blank which passes through the hole e.g. where I give a 3.8 dimension, the hole was somewhere between 3.8 & 3.9 (the 3.9 blank did not pass through the hole). I found little evidence of undercutting in this chanter. In some holes, reverse undercutting was present i.e. the finger-hole was larger towards the outside of the chanter.

Keyholes (the above comments apply here also):-

	Diameter	Dist. from top	
High D *	2.7	143.5	* Between C# & back D
C Nat.	3.5	170	
Bb	3.5	205.5	
G#	3.4	246.5	
F Nat.	4.1	312	

External Dimensions:-

Diameter	Dist. from top
19.5	71
24.3	395

End.

[1] Editor's note. Geoff Wooff suggests that this could have been caused by reamer chatter.