

## **Traditional 'Irish' Marching Band and Session Flutes (Nov 2020)**

There is no such thing as a 'traditional' Irish Flute but there is a traditional style of playing (defined by metre, articulation, tone, and ornamentation) that is much easier to achieve on some instruments compared to others.

### **Irish 'Session' Flutes**

These are Simple System 'Concert' Flutes pitched in 'C' (originally used in concert bands and Orchestras) and are often used nowadays to play traditional Irish dance music. The naming system for these flutes is based on the orchestral naming system – the instrument is named according to what note is actually heard when the note referred to as 'C' on the instrument is played – so whether the lowest note is D or C these flutes are 'in C' (in contrast the note referred to as C on Tenor Sax actually sounds a Bb - so Tenor Saxes are 'in Bb').

With study and close attention to detail the metres and articulation of traditional Irish dance music can be replicated on any flute, it is the tone and ornamentation which is more problematic. A wooden flute is considered to produce a more traditional tone and certainly at least a wooden head-joint (with a traditional embouchure – refer to Info sheet Piccolo 2 for an article on Embouchure holes) should be used when playing traditional Irish music. The ornamentation used in traditional Irish Flute playing ought to mimic the ornamentation used when playing the Tin whistle and Uilleann pipes; not only is this different from modern flute ornamentation but it is acoustically impossible to achieve on all but true Simple System Flutes.

### **Irish Marching Band Flutes**

This is the family of Simple System Flutes (including Fifes and Piccolos) that are used by Marching Flute Bands in Ireland (and elsewhere). These flutes are typically six keyed instruments but with no low C or C# (the keys are Eb, short F, long F, G#, Bb, and high C). The naming system for these flutes is not the orchestral system described above but an alternative system as used by the Tin Whistle – they are named after the pitch of the lowest note they produce. The flutes are in the following (descending) pitches: F (piccolo); Eb (Piccolo); Bb - also referred to as a Fife (it has a slightly different bore and usually carries the melody); F Flute; Eb Flute; Bb bass Flute (really an alto flute); F bass Flute; and Eb bass Flute.

### **Simple System Flutes**

Simple System Flutes are defined as having at least some tone-holes that are covered directly by the fingers. In addition to the tone-holes covered by fingers, there are often keys that the fingers can operate to cover or un-cover other tone-holes indirectly.

The Simple System Flutes of the Renaissance period had a cylindrical body bore and a limited compass. The development of the cylindrical head bore and reverse conical body bore in the C17 enabled the compass of Baroque Simple System Flutes to be extended to beyond two octaves. The gradual addition of keys in the Classical era made the instrument playable in various key signatures with greater accuracy of pitch. Marching Band Flutes tend to have 6 keys whereas Simple System Concert Flutes have 8 keys (although, as many of these keys are not needed for Irish dance music, it is common to see modern Concert Flutes fitted with less than 8 keys).

## **The tuning of Irish Simple System Flutes**

There are three aspects to the tuning of any instrument – the 'pitch centre', the 'temperament', and the 'intonation' (please refer to Info sheet 'Playing the instrument 3b – Tuning matters too' on this website for an introduction to these aspects).

### **The pitch centre of Irish flutes**

The modern concert pitch of A=440 Hz has only been widespread since 1945, prior to that date the actual frequency for A could be anywhere between 392 Hz (French Baroque pitch) and 466 Hz (Baroque church pitch).

Marching Flute Bands that still use the Simple System Flutes are tuned to high pitch A=452.5 which can be traced back to 1890 and was the pitch used by the London Philharmonic Orchestra at the time and adopted by the British Military in 1896. Marching Flute Bands that have converted to Boehm system flutes use the pitch centre A=440.

There is no 'official pitch' for 'A' in Irish traditional dance music but the convention is to use modern concert A=440. Old English 8 keyed Concert Flutes can be anywhere between A=433 and A=452.5, although quite a number were produced at A=439 which was the continental standard pitch. It is possible to adapt the pitch centre of instruments that aren't quite at A=440 to play in tune with other A=440 instruments by adjusting the position of the slide and Head-cork (see below) but it is easier to play in tune on an instrument that was built to A=440.

### **The temperaments used by Irish flutes**

If the music played stays in a few home keys, and if the harmony used is relatively simple, then the intervals between notes in the harmony sound particularly beautiful in unequal temperament.

So, for Marching Flute Bands it could be desirable to use a form of unequal temperament (as long as all the instruments are using the same form of unequal temperament) but in traditional Irish dance music the issue is more complex. The music has a very limited compass, is based around a few home keys (modes more accurately) and originally there was no harmony so equal temperament was not necessary, but because there was no harmony there was no beautiful sounding of harmonious intervals that unequal temperament offers. It could be that the 4 modes used in Irish traditional music (Ionian, Mixolydian, Aeolian, and Dorian) have stronger characters in certain unequal temperaments (in early music theory each mode was described as having a distinct mood or character) but that might not be the case (it would seem to be very subjective) so it is hard to be definitive about any particular temperament. The relevant fact today is that the (wider) tradition now includes instruments from other music genres that are tuned to equal temperament (fretted string instruments and piano accordions) and to play along easily with these newer equal tempered instruments that are now regularly encountered in traditional Irish dance music, it is as well to have a flute tuned to equal temperament.

It is possible for unequal tempered flutes instruments to be played in tune with equal tempered instruments – it just requires a good ear and a good embouchure technique to do so – advanced Recorder players regularly do this; most Recorders are copies of unequal tempered Baroque instruments - when playing an individual piece accompanied by Piano the player brings the instrument in tune to the equal-tempered Piano - when playing in a Recorder consort the player matches the unequal temperament of the other Recorders to achieve a more beautiful harmonious sound.

### **Intonation**

When testing the tuning of older flutes (and exact copies) against a tuning meter at A=440 there are often notes that are significantly out of tune (more than +/- 20 cents). Apart from the possibility that the flute has a different pitch centre other than A440 and/or because it was tuned to an unequal temperament there is yet another cause for poor intonation: most C19 flutes were originally designed to play over three octaves, to achieve this makers often compromised the intonation of some notes in the lower two octaves of the instrument. Nearly all these older flutes had an intonation tolerance greater than +/- 20 cents: the makers of the flutes expected the players to use cross fingerings for particular notes, to tune other notes by holding open particular closed keys (most commonly the Low Eb), and to bring other wayward notes into tune with their embouchure.

## **The 8 keyed C19 English flute**

The 8 keyed English Simple System Flutes of the C19 common just prior to the Boehm revolution in flute design, are considered the best flute for traditional Irish dance music (and these flutes are often the template for modern Irish Session Flutes) but like other C19 Simple System Flutes they are often tuned to unequal temperament, have a pitch centre other than A440, and the intonation has been further compromised in order for the instrument to play over a compass of three octaves.

Today, most players of Irish traditional dance music want a Simple System Flute that has a pitch centre of A440 and is tuned to equal temperament; also players do not want to have to open closed keys to tune particular notes or use cumbersome cross fingerings. In short, most players want a Simple System Flute that has the fingering pattern of the (two octave diatonic) Tin Whistle and therefore some modern makers design their Simple System Flutes to be played like this rather than copying an original C19 century instrument.

### **Obtaining a ‘starter’ Irish Session Flute**

A complete beginner should start with the Tin Whistle. The player does not have to develop an embouchure (a controlled mouth shape) to play the Tin Whistle and can concentrate on breath control and developing finger technique. Once the player has some mastery of the Tin Whistle I recommend they buy a ‘Tony Dixon’ plastic Flute (in D) for approximately £40 – visit his website ([www.tonydixonmusic.co.uk](http://www.tonydixonmusic.co.uk)) for more details. Initially it will be awkward for the player to cover all the finger holes (tone-holes) but in most cases the player will learn to do so. The chief concern is for the player to develop their embouchure so they can reliably produce stable notes on the Flute. Once the player has made some progress on the Tony Dixon Flute and has a stable embouchure they can start to try better instruments - testing other flutes for tuning, intonation, and tone; the player can also compare the spacing of the finger holes to see if some flutes are (subjectively) easier to play.

### **Obtaining a ‘proper’ Irish Session (or Marching Band) Flute**

If you are looking for a new instrument there are two flute makers I highly recommend, I won’t comment on the sound the instruments make because that is subjective, but both makers produce excellent instruments. The first maker is Martin Doyle – he has developed his own design of flute particularly for traditional Irish players and makes flutes to order, he offers variations in key-work etc – visit his website ([www.martindoyleflutes.com](http://www.martindoyleflutes.com)) for more details. The second maker is Tony Millyard who (in conjunction with Mona Lemmel) makes flutes based on the two most popular makes of C19 English 8 keyed concert Flute (the Pratten and the Rudall Rose) again he makes flutes to order and offers variations in key-work etc - visit his website ([www.millyard-molem.com](http://www.millyard-molem.com)) for more details. For restoration work on old flutes I would recommend Jem Hammond who specialises in Simple System Flutes – visit his Facebook page ([www.facebook.com/jemtheflute](http://www.facebook.com/jemtheflute)) for more details.

### **Adjusting the ‘tuning’ of Irish flutes**

As stated earlier in this article the pitch centre A=440 has not always been standard. In order to allow flutes some flexibility in tuning to other instruments built with a different pitch centre, C19 flutes were fitted with a ‘slide’ head. Such flutes were designed to play ‘in tune’ with the slide pulled out approximately half way, however, if the flute player had to play alongside an instrument tuned to a slightly different pitch centre the player could flatten the flute (by pulling out the slide) or sharpen the flute (by pushing in the slide). This was not a perfect solution because pulling out the slide (or pushing in the slide) does not evenly flatten (or sharpen) all the notes – the notes produced from the tone-holes closer to the slide are more affected more than the notes produced by tone-holes further from the slide; to compensate for this the location of the Head-cork also needed to be adjusted and the player was expected to further compensate for this distortion of tuning by means of their embouchure. Now days, with A=440 being standard, there is no actual need for a slide head however some modern Irish flutes still are fitted with them (see below). If a player is performing in a period instrument ensemble that is tuned to an older pitch centre (for example A=415) then the player will have a specific flute for this made with the pitch centre of A=415. This is common amongst professional Recorder players who will have sets of instruments (Sopranino, Descant, Treble, Tenor, Bass) tuned to different pitch centres.

## **The extent the slide is pulled out**

Whatever the pitch centre of the instrument there will be an optimum position that the slide (if one is fitted) should be pulled out to - *and this position should be known to the player*; the player *should not* alter this position (except during assembly) unless the player *deliberately* wants to distort the intonation of the instrument (see below). The reason the slide (and sometimes the head-cork) were designed to be adjustable is that in the past players sometimes had to change the pitch centre of their instrument to match other instruments with a different pitch centre because there was no commonly agreed concert pitch (unlike today); the slide is no longer needed to serve this function (and it has always distorted the intonation of the flute anyway!). Any movement of the slide (or head-cork) from its optimum position will adversely alter the intonation of the flute! The slide is not there to be altered as the instrument warms up – the instrument should be warmed up *before* you start playing (by holding it in your hands – not blowing into it).

## **The location of the Head-cork**

Whatever the pitch centre of the instrument there will also be an optimum position for the head-cork - *and this position should be known to the player*; the player *should not* alter the position of the head-cork unless the head-cork has slipped or the player *deliberately* wants to distort the intonation of the instrument (see below). The position of the head-cork determines the tuning of the octaves from the first to the second register (the third register is not used in Irish music - except in very rare instances for top D). The head-cork will deteriorate over time and occasionally slips out of position – if possible measure and record the distance from the face of the head cork to the centre of the embouchure hole so that from time to time you can check it has not slipped. The head-cork slides out of position gradually over a long period of time so initially the player subconsciously compensates for the adverse tuning effects; eventually the player becomes consciously aware the flute has a problem but is unable to identify it.

## **‘Re-tuning’ an Irish Flute**

Because players of traditional Irish music are only interested in using the first two octaves of the instrument there is some leeway for an instrument maker or specialist repairer to ‘re-tune’ an old flute (or a copy of one). By adjusting the position of the head cork and slide (if fitted), and physically altering some of the tone-holes and/or the bore, the pitch centre and intonation of an instrument can be modified and the need for cross-fingerings reduced, this is usually at the sacrifice of the 3<sup>rd</sup> octave but if this octave is not used then this not an issue for the player.

## **Deliberate Distortion of tuning to correct for poor embouchure technique**

Some players want to deliberately distort the intonation of the flute by moving the head-cork and slide from their optimum position in order to correct for errors in their own embouchure technique.

Moving the head-cork towards the embouchure hole sharpens the lower register a bit and the second register some more; moving the head-cork away from the embouchure hole flattens the lower register a bit and the second register some more. The sharpening and flattening effect on each tone-hole is reduced the further away the tone-hole is located from the embouchure hole. Pushing the slide in sharpens the lower register a bit and the second register some more; pulling the slide out flattens the lower register a bit and the second register some more. The sharpening and flattening effect on each tone-hole is reduced the further away the tone-hole is located from the embouchure hole.

Moving the Head-cork and moving the Slide both alter the tuning of the second register more than the first register – but moving the Head-cork alters the tuning of the second register to a greater extent. This difference between the effect of moving the Slide and the effect of moving the Head-cork enables the player to partially correct for poor embouchure technique.

Some Players with poor embouchure tend to play the second register sharp (playing ‘wide’ octaves) – this is because they achieve the second register notes by blowing harder, rather than by the correct method of narrowing their embouchure to create a ‘faster’ air stream. In these cases the flute can be tuned to partially correct for this - by moving the head-cork away

from the embouchure hole to flatten the second register on the flute - this will flatten the bottom register as well but less so; the whole flute will now be flat but by pushing the slide in, the player can bring the instrument up to pitch – this will also sharpen the second register again but not as much as it was flattened by moving the Head-cork. By experimentation the player can find a compromise position for the Head-cork and the Slide which partially corrects for the 'wide' octaves – it is only a partial correction because moving the head-cork and slide affects the octaves at the tone-holes nearer the embouchure hole to a greater extent than the tone-holes further.

If the player tends to flatten the second register notes (plays 'narrow' octaves) – then by experimentation the player can find a compromise position for the head-cork and the slide which partially corrects for the 'narrow' octaves.

### **Deliberate Distortion of tuning to change the tone of the flute**

Moving the head-cork can also alter the tone of the flute – and a player who is able to correct for the intonation errors introduced by moving the head-cork (using their embouchure) might experiment with the position of the head-cork (and slide): if the head-cork is moved further from the embouchure hole it can produce a darker and punchier sound.

## **Problems with Simple System Flutes**

### **Tenons and cracks**

Most older flutes have, or have had, cracks. These are usually repaired by adhesive but they may have been pinned if the wood is thick enough and the crack substantial. Most cracks occur in the sockets so constant monitoring of the tenons and sockets is required. Where cracking is an issue the best set-up is a tenon that has been corked to just under the thickness required and then lapping thread is wound on to make the joint just tight enough not to leak; the player must judge if thread should be added or removed each time they assemble the instrument. Generally the joints will be tighter or looser in different seasons of the year. On flutes where the socket wall is thick and cracking is not an issue there is less need for lapping thread and it is generally best to have corked tenons.

Make sure each joint is reasonably warmed before assembly, and once assembled continue to warm the instrument in your hands before playing it; never blow down the instrument to warm it up – this will just cause condensation problems as well as initially distorting the tuning. Playing outdoors in cool evenings when the instrument keeps cooling down is best avoided, but this problem can be mitigated to some extent by keeping the flute in your hands to help keep it warm when you are not playing it.

### **Pads and leaks**

Leaking pads will affect the tuning, intonation, tone, and response of the flute. If you find that certain keys are never used and they also leak, it may be as well to have the tone-hole sealed with wax (which can be easily removed later if required) or to wedge the key shut.

### **The foot-joint**

Pre-Boehm style foot-joint key mechanisms for low C and C# are unreliable and the touch-pieces are often awkwardly located. If you do use the C key for a particular tune then it is acceptable to rotate the foot-joint to the best position for the note required. Likewise the foot-joint can be rotated to another position for the C# and Eb if required. Obviously if the tune requires 2 or more foot-joint notes this won't work.

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