The Northumbrian Smallpipes Tutor

by John Liestman

A manual on how to play and maintain the Northumbrian Smallpipes

with sections on reed making, resources, buying a set of pipes, reading music
and lots of tunes for the beginning and intermediate player

Especially designed for the teacherless student

View of some of those fabulous Northumbrian sheep, enjoying a sunny day near The Lady's Well.
No sheep were harmed or inconvenienced in the making of this book.

Version 2.6 - Last Edited 4/9/2016

Preface

The Purpose

Playing the Northumbrian Smallpipes is neither an easy nor an impossible task. The ease with which the student learns depends on a number of factors including the amount of exposure to other players (recorded or preferably live), whether a live teacher or a printed tutor is available, previous musical experience, amount and frequency of practice, and the condition and playability of the pipes themselves.

While it is impossible to beat regular contact with a live teacher and other players, you can learn to play the instrument in a geographic isolation by using a printed tutor designed for this purpose in conjunction with listening to recorded performances of good players and, hopefully, periodic contact with other live players.

This book is aimed at beginning and intermediate pipers, especially those living in North America. This book is designed to:

(a) teach the basics of piping

(b) teach maintenance of the instrument and

(c) give resources that the student can use to get music, recordings, maintenance materials, organizations, and publications pertaining to Northumbrian Smallpipes.

Not the purpose

This book is ***not intended*** to be the ultimate (and only) resource that a piper needs. Rather, it is a stepping off point to help the North American student overcome the problems caused by the fact that we cannot run over to Northumberland every week for our lessons and maintenance. It has also proven very helpful for others, even those living in Northumberland, if they can adapt to a little United States English.

This book and the author do not pretend to be the absolute answer and the only correct viewpoint on any topic. The information presented here is information that I have learned from a variety of sources (see *Acknowledgments* below) and are what I have learned from my own work in building, repairing, and playing pipes since I first was loaned a set of pipes at the North Hero Northumbrian Pipers Convention in 1986.

Other players and builders will have differing opinions on some topics. I have tried to only present what has absolutely worked well for me, and what I feel I can recommend to others. I have also tried to be clear which statements are matters of personal preference or opinion. However, inevitably, all words in this book are my own personal opinion and are shaded by my own experience. I am interested in receiving other viewpoints in written form to continue my own personal growth, so long as these viewpoints are based on actual personal experience and not just in theory.

Acknowledgments and Name Dropping

While we are on the topic of isolation, I would like to point out that this book was not put together by the author in isolation. Numerous pipers, pipe makers, and other helpful people have contributed to this book by acting as my teachers, mentors, and friends. Most of what I know about pipes and piping comes from my contact with the following. I am deeply indebted to all of them for their unselfish sharing and for putting up with me in general:

Colin Ross (Grand Poobah of Pipes, what else can you say?)

Barry Say, Julia Say, and Peter Dyson (a pipemaker, a pipemaker's assistant, three pipers, and three authors all compacted into three souls devoted to helping me understand these things called "English people" and their music - they have a tough job - and who have given vast help in making this book understandable and correct on "Both Sides the Pond")

Mike Nelson, Dave Shaw, David Quinn, Kirk Lynch, and Ray Sloan (a finer bunch of pipe makers and nicer bunch of folks you will not find)

Anthony Robb, *Richard Butler, Chris Ormston, Dick Hensold, Andy May and Ian Lawther* (they could teach a pig how to play pipes)

Richard Shuttleworth (for advice, contacts, knowledge and Canadian content)

to my fabulous children, *Ellery Liestman Hale* and *Adeline Liestman Hale*, born Feb 26, 2004, who are just cute as bugs, amazingly talented, and great people,

and especially my beloved wife *Terry Hale* (harpist, violinist, master of British style cake decoration, serious swing dance queen, keeper of the our ever-changing flock).

Barry Say, Julia Say, and Colin Ross at the session at The Sun Inn, Morpeth

How to use this book

I am hoping that a wide range of people will buy this book. I have tried to put the book in order for the absolute beginner.

If you do not read and understand music well

Please go through the book in sequence, returning several times to re-read the "Basics of music" section. You will get something new with each reading.

If you already read music but are new to Northumbrian Smallpipes

I encourage you to read the "Basics of reading music" as well, as it has important bits of relevance to pipers that do not much apply to, say, violinists.

If you are already playing the Northumbrian Smallpipes

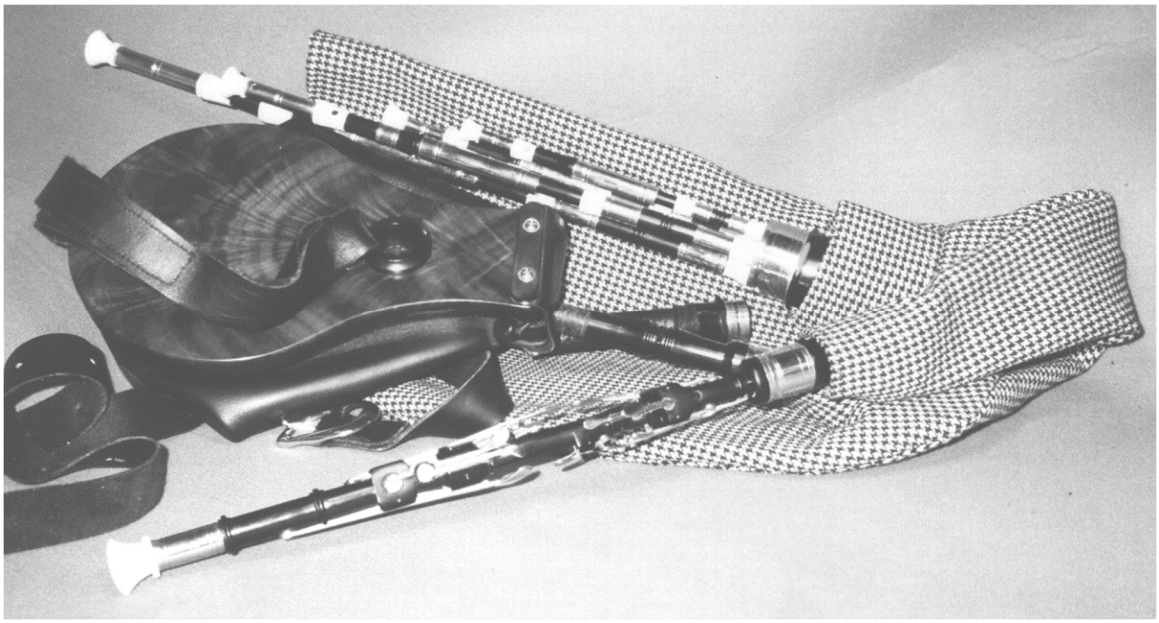
In this case you are already addicted and will read every word anyway.

About the author

John Liestman (that's me) is a "serious amateur" maker of Northumbrian Smallpipes and has been trying to play the rascals since 1986. One of his sets won the 1997 Northumbrian Pipers' Society Annual Competitions Pipemaking Division (darn right, I am proud of that - apparently the first overseas winner in history). He has been First Mate of the Houston traditional (sort of) band *Terry and the Pirates*, who put out two glorious cassettes before all their guitarists kept moving out of town. He plays Northumbrian Smallpipes and the lovely tenor banjo as a part time member (there are no full time members) of the *Texas Chainsaw Ceili Band* and *Jigzilla* and is a long-standing figure in the local Irish session scene, into which he injects Northumbrian tunes by claiming that they are from the "extreme east bit of Ireland, sure it is from County Hexham it is".

Mr. Liestman has played Northumbrian Smallpipes to thrilled audiences at weddings, funerals, barbecues, parties, festivals, and homes tours throughout North America from Texas to the North Slope of Alaska, and can be found on a few local recordings as a "studio piper", neither of which you are likely to find at your local shop.

The author (before he discovered piping) and his big brother in an early crowd-pleaser.



An 11 key F set by the author in 1997 in African blackwood and nickel
with drones "fully mounted" in imitation ivory and fancy walnut bellows

A "plain" keyless set by the author in 1999 in Hounduras Rosewood.
Shown with riveted bag, no cover, bellows not shown.

Chapter 1 - What are Northumbrian Smallpipes?

What they are and from whence they come

Northumberland is the northeastern part of England, home of Hadrian's Wall, the towns of Morpeth, Hexham (say "hexum"), Bellingham (say "bellinjum"), and Alnwick (say "onick"), and about half a gazillion sheep. It is a wonderful place to visit for history, people, and music. Northumbrian Smallpipes are the smaller of the two types of bagpipes native to Northumberland, the other being called "half longs" for reasons unknown to me. They are very delicate sounding and sweet toned. As opposed to the Highland pipes, built for marching off to war, our pipes appear to be designed for calming the sheep and entertaining your neighbors at the local quiet pub.

The sum of it's parts

I will briefly describe here the main parts of the instrument for the purpose of the beginning student. A more in depth look will be given in the "Maintenance" chapter. I will describe a modern keyed set. The primitive sets have most of the same parts, and are either lacking some parts or have fewer of them.

The instrument is "powered" by both arms, one of which "blows" with the bellows while the other squeezes the bag. The melody pipe hangs by itself and has finger holes and (in the case of keyed sets) metal "keys" which serve to play notes not playable by the finger holes alone. The drones lie in a cluster and produce the constant humming accompaniment sound characteristic of bagpipes.

Northumbrian Smallpipes differ from most other bagpipes in that they have these keys to play non-finger hole notes, are bellows blown, and have drones which can produce more than one note per drone (not at the same time). They are also distinctive in that the drones are held together in one common stock (what connects tubes to the bag) and the chanter can be completely closed by the fingers, as the end is closed, making no sound at that time.

See the next page for a stunning graphic of just what these "parts" look like.

Stunning graphic of parts and their names

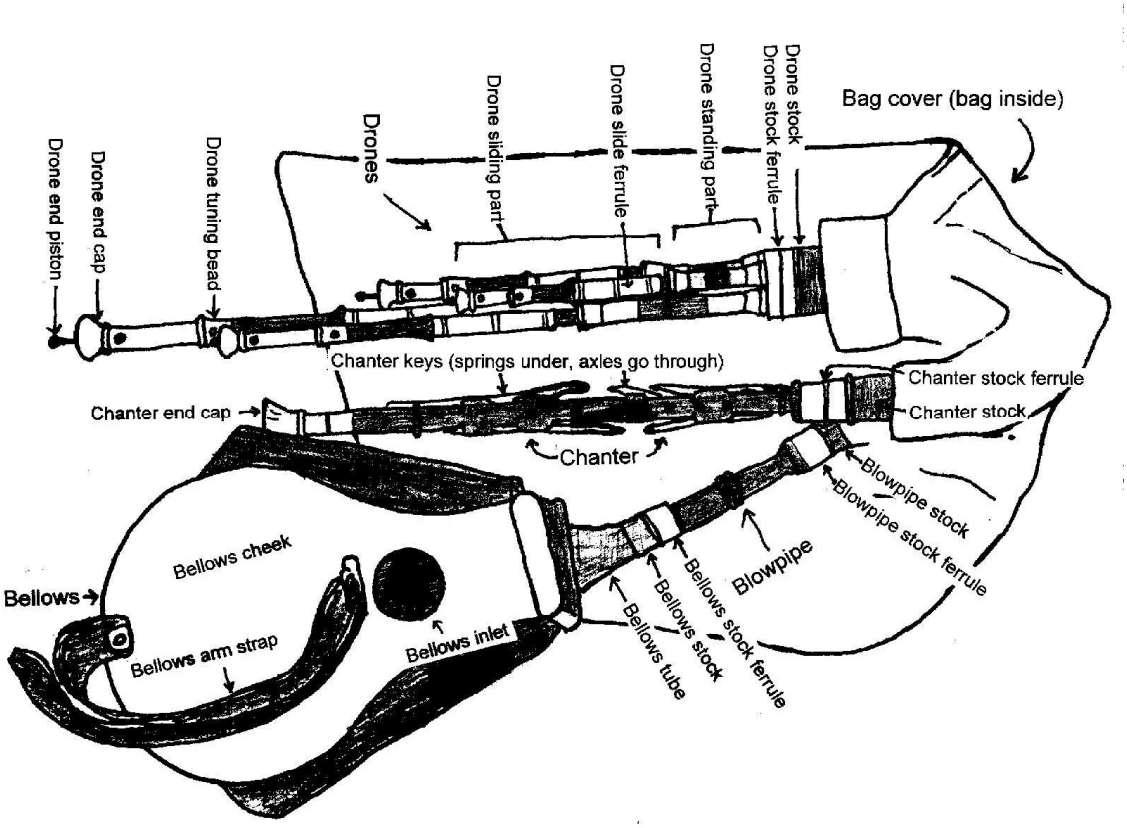
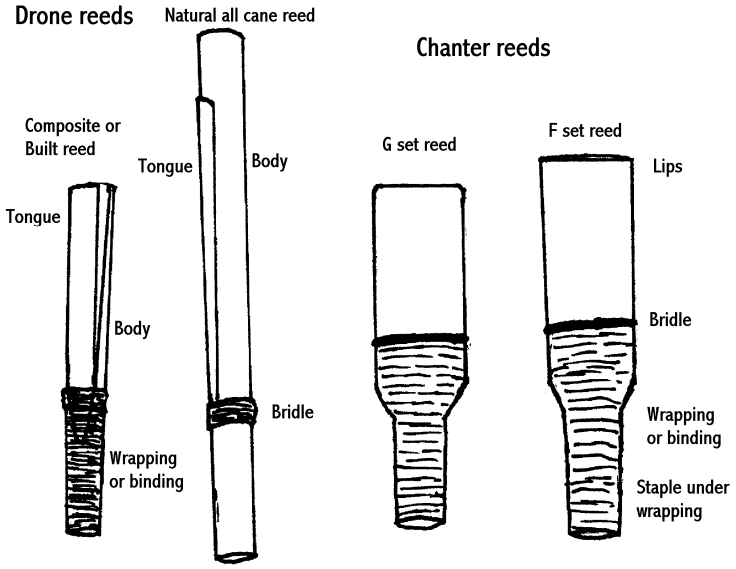


Diagram of various types of reeds and their parts



A very thorough history of the instrument . . .

is available in other texts. Numerous articles in the magazine of the Northumbrian Pipers Society relate the rich and intriguing history of our instrument. I am not in a position to improve on their accounts and, since you need to seek these things out anyway, will leave that for your future work. For now, I will leave you a very brief account of the history, mostly so that some names of important figures will stick in your mind and give you a beginning reference.

The first thing that really looks like our pipes (that has been well dated)came out about the last half of the 1600's and was a simple pipe (no keys), open ended with three drones. The most notorious Northumbrian Smallpiper, Jamie (or Jimmie) Allen, would have played this type as well as other pipes, as he charmed his way around the country, entertaining and stealing whenever he was not in Durham Jail.

Not much is known about the pipes and their makers from there until the earliest 1800's when John Peacock and John Dunn in Newcastle started adding keys to the now closed-ended chanter and increasing the number of drones. Also in the first half of the 1800's, Robert Reid and James Reid in North Shields began to incorporate fine metal work into pipemaking, giving us the elaborate sets of today. The early 1900's saw Tom Clough and Billy Pigg become great enough pipers that we still play lots of their arrangements. Taking up where they left off, Joe Hutton (who died while I was writing this chapter) and Jack Armstrong kept the pipes going strong from the 30's through to the present era of players and makers including Alistair Anderson, David Burleigh (maker), Richard Butler, Pauline Cato, Chris Ormston, Adrian Schofield, Dick Hensold (an American), Ian Lawther, Anthony Robb, Ged Foley, Colin Ross (maker/player), Dave Shaw (maker/player), Ray Sloan (maker/player),and Kathryn Tickell to name but a few of whom you may hear in North America. Lots of other well known makers and players have made their mark also and, for fear of offending some by exclusion, or shocking them by incorrectly presuming that they are dead, I will simply point you reading articles in the society newsletters and magazines and insist that you go to The Bagpipe Museum, currently in Morpeth, Northumberland.

A typical day in the Pacific Northwest, U.S.A. - From the left, Arthur Hixson, Gail Gibbard, Peter Dyson, Dick Hensold's back, the top of Jane Jeffrey's head, Lance Robson, Paul Hickey, Michael Korchonnoff (all playing various F sets) and Phyllis Solter on fiddle
Lakewood, Washington, August, 1999

Ray Sloan happily playing Liestman pipes. (OK, he doesn't usually play Liestman pipes. He probably plays Sloan pipes, but I thought this would make a great publicity shot.)

Chris Ormston holding his Dave Shaw G set

(he would not fall for posing with my pipes, smart guy!)

Chapter 2 - Buying a set of pipes

Stop right there!

Before you go any further. . .If you do not know how to read music and do not know what is meant by "keys" (such as G major versus F major), you need to learn this stuff (see the "Reading Music" chapter in this book) and then read and understand the topic below.

Absolute pitch versus Nominal pitch: A very important concept

"Absolute pitch" is the pitch of a note compared to an exact standard. Modern concert pitch is set to the standard where A is equal to a vibration of 440 cycles per second. Electronic tuners and modern keyboard instruments are set to this standard as their default. Given that A has an exact definition, the modern pitch of any other note can be calculated. However, historically A440 was not always the standard. Therefore, if you play a "nominal pitch" of A on a historical instrument (meaning that you finger it to produce an A), you may get a different "absolute pitch" than 440 cps.

The absolute pitch of Northumbrian Smallpipes

Northumbrian Smallpipes are, in a way, historical instruments. Fingering to produce a "nominal" G on a set from the 1800's will produce an "absolute" pitch between F and F#. These sets are the classic sets and really any variation from them is a change from that standard. To better allow playing music with other instruments, the "traditional F pitch" sets are sometimes reeded to bring the pitch down to where a nominal G fingering produces an absolute pitch of F based on the modern standard A440. All other notes are similarly affected and the spacing of the finger holes and the fingering of the instrument does not change. Some modern makers actually lengthen the chanter slightly to keep the classic reed dimensions and still produce a modern standard F pitch. Either technique (reed changes or chanter lengthening) produces what I call a "concert F pitch" set.

In more modern days, to further ease the playing with other instruments, makers have produced "concert G pitch" sets, where the fingering to produce a "nominal" G actually produces an "absolute" pitch of G based on the modern standard A440. This has been done by shortening both the reed and the hole spacing on the chanter. Again, the fingering does not change and only the absolute pitch of each note is affected.

In addition to these three types of sets, makers also occasionally make larger / lower pitched sets. In the same way that the violin family includes larger members (viola, cello, bass) who tend to be used for harmony playing, pipe makers produce sets where a "nominal" G fingering produces an absolute pitch of "D" or "C". These can be played solo just as if they were regular F or G sets.

Special note to you band instrument kids - others please do not read because it will just confuse the issue: In the same way that a typical trumpet is usually called a Bb instrument because it produces a note 1 step lower than written, these "concert F" pitch instruments are "Bb instruments" in classical music terms. So if you play trumpet, clarinet, sax, etc., think of it that way. The "concert G" sets are C instruments, and for extra credit you can tell me what the pipes in D and C would be called. I prefer to keep this instrument classification out of piping, as it would be pretty confusing to remember that an F set is a Bb instrument whose music is typically written in G. Huh?

All of these different sets of Northumbrian Smallpipes use the same fingering and music. The differences are only in the absolute pitch of the music that comes out (which affects playing with other musicians) and some differences in tone and finger spacing (due to the physical changes in the chanter layout). See the table that follows to help you decide which type of set you should get.

This section of this book is the only section where I discuss the absolute pitch of a given note. In the rest of this book, when I use the nominal note names, I am only referring to the fingering position and whatever note is actually produced will depend on which type of set you have. For example, in the rest of this book, when I say "low G" I am speaking of the note that comes out when you lift your right little finger off the chanter regardless of the actual pitch produced.

Tuning and temperament

The history and names of temperaments

This is pretty much a note for people with advanced musical knowledge and for those planning on playing a lot with other musicians. Complete treatments of this topic are available in musical physics and theory books. Feel free to skip this for now if you are new to music or just want to get on with learning to play.

In short, physics will show that for any given scale there is a "sweetest possible" absolute pitch (causing the least interference of the two wave forms on an oscilloscope and the least discordance to our ears) for each note in that scale compared to the tonic note (i.e. when both notes are played at once). If you build a scale with the "natural, by the laws of physics" method based on say G as the tonic, you will get an certain absolute pitch value (cycles per second) for the other notes, for example D. However when you use this pitch of D and build a scale with D as the tonic, you do not get the exact same absolute pitch of G that you started with, nor will either one produce the same B absolute pitch. Contrary to most basic modern music education, the B that sounds best in the key of G is not the same pitch as the B that sounds best in the key of D.

In the pre-Baroque days most instruments which played fixed pitch notes (such as harps and early keyboards) were tuned so that they sounded best in one key (using the least discordant notes for that key, as we did above). This "temperament" is called "Just" or "Perfect" and is the scale where all notes are perfect for that scale. (Non-fixed instruments such as fiddle or flute could "bend" the notes into tune to achieve a "Perfect" scale in various keys.) With the Baroque, keyboard players wanted to be able to play in all keys without retuning, so they invented the "Well" or "Even" tempered scale, in which all the notes were a compromise so that none sounded too bad in any one key. (Hence the title of Bach's "The Well Tempered Clavier".) This is why a "perfect fifth interval" on a modern piano still exhibits a slow "beating" - it is not the most perfect fifth.

How this affects John Q Piper

First, you will undoubtedly tune your drones to a "Perfect" fifth rather than a "Well" tempered fifth, since you will tune them to eliminate the beating sound caused by an imperfect fifth. Let's say that you are playing a recital with your pianist friend. You tune your G drone to a piano (presumably tuned to the "Well tempered" scale) then you tune your D drone for the sweetest sound. Now you play your duet in G and the crowd goes wild. You next, to show your ability, want to play a tune in D. So you turn off your G drone and check the tuning of the D drone to the piano. You will almost certainly find that the piano has gone out of tune and is just a hair too flat (or maybe, could it be, that your pipes have gone a bit sharp???). What has happened is that the best D for the key of G is about 2 cents sharp from the compromise pitch of the modern "Well tempered" scale. The best B in the key of G is even further off the "Well tempered" scale.

Which pitch set should I buy?

Table of Set Types and Differences

Set types / names	**Absolute pitch produced when you finger a nominal G**	**Pros and cons of this set type**
G or concert G pitch set	G	Easiest to play with other instruments. Drawback is finger holes very close together, people with larger fingers have problems. Tone can be "brighter" than some people want but this varies with the maker and the reed used. Excellent for playing in all kinds of "mostly non-piper" jam sessions and dances.
F#, traditional F set, F set (see next box below also)	a little sharper than F but not as sharp as F# usually	The traditional pitch for the instrument. Good for matching pitch of some recordings and for playing with other pipers. Not good for playing with other instruments if they do not want to or cannot retune to you. Some say these have the best tone but I think these and F sets share that honor.
F, concert F, F set (see next box above also)	F	Better than F# for playing with others, nice for playing with recorders and harps but still not as convenient for other instruments as a G set. **If a set is advertised as an "F set", find out if they mean exactly concert F or somewhat sharper than F (next box up).**
D, concert D set	D	Long chanter, more like spacing of Highland pipe chanter, low pitched and mellow. At first glance this would seem to be a good pitch for playing with other instruments, but keep in mind that the highest note is likely to be the F# on the top string of a fiddle. This can be limiting. Lovely for playing harmony with a G set and great for larger fingered folk.
C, concert C set	C	Even lower than a D set, wide finger spacing, lovely for playing harmony with an F set. Not at all common. Colin Ross may be the only maker (he made the first).

A shoppers warning

I have seen numerous sets for sale by individuals where the set was an F set but the ad said it was a G set, simply because the sheet music they played on it was in G. A good way to inquire is to verify that fingering a "G" on the instrument produces a "G" on an electronic tuner or piano. If the person does not know, the odds are extremely good that it is an F set, as G sets are much less common and are generally played by musicians knowledgeable in such matters. If they say it is a Concert G set, this is another indication that they know that it really is a G set.

Why choose? Get them all!

It is not uncommon to have a set made with more than one chanter. These sometimes have an extra set of drones as well which are changed along with the chanter. These combination sets save some of the costs over buying two or three complete sets and are more adaptable to playing with a variety of other instruments and other pipers than a single chanter set.

When in doubt, follow the crowd

Bottom line: Most people buy an F or F# set as their first set and then maybe expand to the other pitches. G sets are next most common and are more for playing with non-pipers.

How many keys (if any) should be on the chanter?

Unkeyed sets

Primitive sets (more politely called *unkeyed sets*) are the old (i.e. 1600's) style of Northumbrian Smallpipes. They are fine instruments in their own right, but many players consider them limiting. The notes available are G, A, B, C, D, E, F#, and G (a one octave range). These sets can play in the keys of G and a bit in A minor. These sets are mostly used by either beginning students or by people who wish to preserve the history of the unkeyed sets.

Keyed sets

Keyed sets come in a variety of numbers. Some people consider 7 keys to be standard and most of the standard repertoire for the instrument can be played on these sets. Three of these keys extend the range down from the range of the primitive set and give low D, E, and F#. Two more extend the range upward and give high A and B. The remaining two keys give additional notes within the range of the primitive sets, specifically C# and D#. These sets can play in the keys of G and D major and in A and E minor. They typically have tuning beads on the drones which allow the harmony to be changed to suit the key of the music.

More than 7 keys

Beyond the 7 keyed sets, 9 keyed sets (usually a 7 keyed chanter with high and low G# added - allowing playing in A major), 11 keyed sets (9 keyed chanter plus high and low F naturals - handy notes found as "accidentals" in various tunes, especially Irish music), 14 keyed sets (either an 11 keyed set extended downward with low B, C, and C# or the range of 7 keyed chanter but including all natural and sharp notes), and 17 keyed sets (all flats, naturals, and sharps from low B to high B - two full octaves) are made, although any number under about 23 has been made as a custom item. Generally the drones are made with increasing complexity to allow for the increase in ability of the chanter. This is done most commonly by adding tuning beads which allow the drone to be tuned to one additional note per tuning bead, but can also be done by adding more drones, mostly to avoid having to retune as frequently when changing drone notes (each drone could be a separate note and be tuned in advance). Sets are also available with interchangeable chanters and even interchangeable drones, allowing the player to unplug and plug their way to a large variety of keys without requiring multiple full sets of pipes to be bought. Each of these configurations (and more) are available and each has their supporters and detractors.

Each addition of keys gives the player an increased range of music which can be played but also increases the cost and the maintenance of the set. It is important to realize that the scale of the primitive set remains the scale given by the fingers on any set and that all keys are played with only the left little finger or the right thumb. While it appears that a 17 keyed set could play in any musical key, the little finger and thumb would get very tired. In practice the more complicated sets allow the player to play more embellishments in the form of notes not usually associated with the classic keys of G, D, A, E minor, and A minor.

> Personal opinion*:* I find that the 11 keyed set is the best balance of flexibility, cost and maintenance for the music which I personally choose to play. A browse through any Northumbrian pipers tunebook or "folk" tunebook will find few tunes that cannot be played on an 7 keyed set and very few that cannot be played on an 11 keyed set.
>
> Others disagree on what is the ideal key arrangement. Use your own judgment, but you should realize that lots of incredible music can be made with a 7 keyed set and that getting more keys will not make you a better player.

How fancy a set should you get?

Generally Northumbrian Smallpipes are made either plain or "fully mounted". In a plain set, the standing drone parts are all one piece of wood. Often the only metal work on the drones is pieces that reinforce joints and these are simply decorated with grooves (if at all). "Fully mounted" sets usually have a drone standing part with an imitation ivory piece and a metal piece at each end (not including the tenon over which the sliding part slides). Often on these sets any metal work is also decorated more fully. The plain-style sets offer a good value to the player wishing to save a few bucks, have a clean visual appeal, and should sound the same as a fancier set.

The fancier sets will cost more and will look more intricate and "fine". In some instruments, makers seem to spend more time fine-tuning and tweaking their more decorative models and use their best wood on the fancier instruments so that they actually sound better. In pipes this seems to hold true as well, although I have heard no makers actually come out and say this.

Is a case important?

Only if you plan on ever playing the set again. Great cases for travel (i.e. to a session or workshop) are fiberglass and are a little more expensive than other cases but well worth the cost. These tend to be really watertight so, when you get stuck in the rain, your pipes stay happy. Since they seal so well, they also help keep your pipes at a more constant air temperature and humidity, so you have less maintenance problems. The disadvantage in having a really tough case is that you are more likely to treat your pipes rough while they are in the box. Don't do that.

Also great are flight-type cases (metal frames surrounding plastic- or metal-covered plywood panels with foam padding inside). These are what I currently use and supply to my customers. Some "flight cases" are heavy things with 1/4" thick plywood sides and are built for checking as baggage on airlines or similar rough handling. You do NOT want to ever check a set of pipes or treat them that roughly, so I go for the lighter cases, meant for hand carrying but still offering good protection.

A well made wooden case is also nice. I have one that looks very nice and "folksy" in an elegant sort of way. These can be really airtight (see above) or not, depending on the construction. Its downfall is that it is more likely to look beat up if you travel with it a lot, so if it is really pretty mahogany, for example, you will find yourself treating it like fine furniture. It also contributes to the "folksy" or "one of a kind, handmade" or atmosphere of the instrument, which is good or bad depending on your intentions.

Next down the pole is a cardboard-covered-with-book-binding-paper case, prevalent in lower priced sets. These work fine, if you put some extra padding in, but you have to worry more about rain and temperature and they look pretty nasty after a few cuts in the paper have torn. They still beat no case at all.

Whatever the case you choose, still carry your pipes around as if they were not in a case. Do not bump them around a lot. Keep the pipes in the case whenever you are not actually playing them. They will require less maintenance, stay in tune better, and your (*fill in pet type here*) will not (*fill in pet activity*) on them.

"Dang, John has his pipes locked safely in their case. I guess I will have to play with this instead. Awwwwk."

Ditto (parrot #2) inspects the Northumbrian Pipers' Society pipemaking trophy. The trophy was not harmed but Ditto was sent to his cage for an hour.

Of what materials should the instrument be made?

The wooden parts

The standard is African Blackwood. Indistinguishable (by the novice) is Gaboon Ebony. Both of these will be coal black and both make excellent pipes. Many other woods also make excellent pipes, including Honduras Rosewood, Lignum vitae, Cocobolo, Kingwood and Ziricote. In the hands of a good maker, many woods can produce an excellent set of pipes and some people will prefer the tone of Rosewood or Ziricote over African Blackwood. Bellows are made from various hardwoods. I have never seen bad wood used for bellows, so relax.

If the set sounds good *to you* and *you* like the look, the type of wood the pipes are made of should not be important.

Back in "the old days", pipes (all or part) were also made from elephant ivory. Do not even consider buying anything new with real ivory in it unless you have no environmental consciousness and don't even buy an old set unless you never want to take the pipes to another country (it can be a hassle to prove to customs that these pipes are old enough to not be banned from bringing into the country). I am not necessarily criticizing those who play the old sets, I just do not want to see any more made.

Metalwork

The metalwork on pipes is almost always brass which, in some cases, is plated with nickel. I really prefer nickel plating or chrome plating, as unplated brass tarnishes so badly. Solid silver is fine but tarnishes quickly. (Nickel looks like silver and some people with nickel plated sets think it is silver. "Nickel silver" is just nickel.) Keys should be "forged", not "cast" as cast keys, unless very thick, are too pliable.

Mountings

The mountings on pipes are partly decorative and also serve (often) to protect the ends of long pieces. These are most often imitation ivory. The newer forms are better than the old "plastic" looking forms and do not yellow like the old stuff. The proper name for the new stuff is "cast polyester resin". Also popular are natural substances such as wood (not very crack resistant) and horn (perfectly fine).

Bag, belts, bag covers

Traditionally, bags were made of leather which had been seasoned to keep them airtight ("seasoned" = pouring a mixture of oil, resin, and wax in and sloshing it around). These are fine, until a reed falls into the goo, and many fine players use these bags.

More recently, bags are being made of "elk hide" which is cowhide put through a tanning process to make it supple and airtight. I like these better than seasoned leather since they have no goo.

These are not actually made from the hides of elk. Also used by some makers, rubber coated canvas bags have the same "lack of goo" attraction. These bags last a long time, as do leather bags, and are lighter in weight. They lack the charm of a leather bag, but vegetarians prefer them. (I personally make both canvas and leather bags, as I like both meat and veggies.)

Belts are made of leather with (usually) metal buckles or (in the case of my sets) Velcro brand closures (to eliminate buckles which can scar the pipes or the guitar of the gent sitting next to your when you fling your belt around in a crowded room). Bag covers are made of 100% cotton velveteen or wool almost without exception. I would avoid wool if you are allergic to it or will be playing in short sleeves. Bag covers are sometimes made of nothing (as in "there is no cover"), but in my mind this detracts from the finely crafted appearance. Then again, there is something to be said for the "Harley-Davidson" look of a nice piece of leather with rivets showing!

Where should you buy a set?

Addresses for these sources are listed in the "Resources" section of this book.

New versus used versus classic

To me, it is best to buy a set made by someone who is still alive and in the business. They will be the best person to do any needed serious repairs, should the need arise. As for whether to buy new or used, it is up to you. Pipes don't necessarily improve much or deteriorate (if well maintained!!) with age. A used set will be a bit cheaper but pipes are not like cars, for which the price really drops because it is used.

Keep in mind that "rare old classic sets", although of historical interest, were not made with modern standards of tuning in mind. These sets may be difficult to get to play in tune with others. Also, a lot of the old sets have real ivory in them (or are made mostly of ivory). At best, this can cause hassles at customs when traveling in and out of most countries. At worst, well . . . don't mention it to any one interested in animal rights or ecology. It is also a bit hard to find anyone who is willing to repair a classic old instrument, especially in ivory.

Societies and makers

The Northumbrian Pipers Society will send you list of their recognized makers, complete with how to contact them. In addition to these, there are several other makers who either produce sets more sporadically or who are simply not on the NPS list for some other reason. New sets by these makers and used sets by any maker tend to be advertised in either the NPS newsletter or on the Internet mailing list for Northumbrian smallpipes (see next paragraph).

On the "Net"

The Internet provides an immediate and international way of finding a set. As the net is constantly changing and growing, it would be useless to give specific addresses in a book which no doubt will live for centuries. Just do a query on the World Wide Web looking for the words "Northumbrian smallpipes" and you will get lots. If you add “John Liestman” to the search you will find my website, wherever it is at the time. My website has a link to help you subscribe to the Northumbrian smallpipes mailing list also. Keep in mind that almost everyone who just says "bagpipes" is speaking of Highland pipes, but there are lots of other kinds of bagpipes and they all are finding there way into the Internet.

Stores

I am not aware of any stores in the U.S. currently selling Northumbrian Smallpipes made by someone else at a fair markup price. It will usually be best to deal with the maker directly for a new set or with an individual or reputable dealer in the case of used sets. McGillivray Piping Partnerships, in Canada, do sell some high quality sets for a reasonable markup over what the maker charges and are fine folks to deal with. Also, *Traditional Music* (run by Gordon Mooney, in Scotland) usually has a couple of used sets for sale. The one person I know who bought a used set from there got a fair deal. They also sell new sets.

In what condition should a used set be?

Most problems with a set of pipes will prohibit the set from being played easily and sounding in tune with itself. If possible, play a used set before buying it, or, if you don't play yet, have the seller play it for you. You might also be able to have a third party give you their impression of the set (the seller would send them the set for their candid evaluation - may be a little politically odd but, if the set is in great shape, the seller should not mind). If dealing with long distances, the seller or the third party can play it for you over the telephone or send you a tape.

The set should sound in tune with itself and should not take great efforts to play. If someone is playing it for you, see if they have to struggle to keep the bag filled. Preferably, they are able to play it with a smooth motion and an absence of gnashing of teeth.

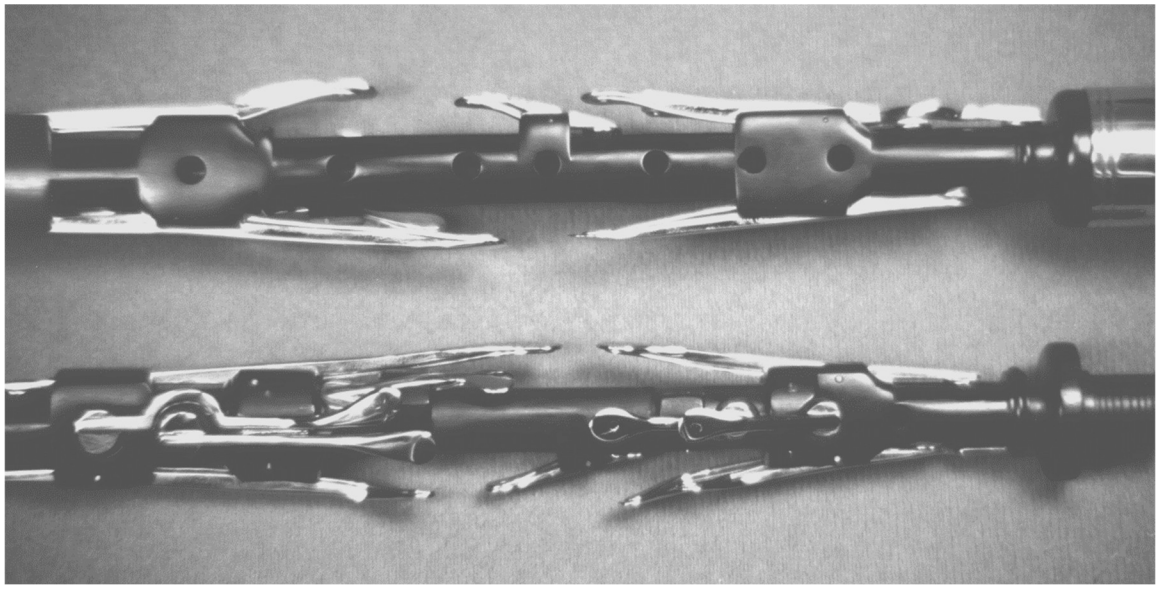
Press the keys. Each key should have a smooth easy action and the force needed to press a key should be constant from key to key.

If you already play somewhat, close all the keys and finger holes and drones. Blow up the bag and see if the whole instrument is fairly airtight (i.e. when squeezing at standard playing pressure the bag holds 1/2 of the air for at least 12-15 seconds, no hissing sounds of escaping air detectable). This is a good test of the average condition of the set (not just the bag, as some might first think) and any leak will affect the playability and "in tuneness" of the set. (You will probably never get a set to be absolutely airtight, but the tighter the better and the above test is a good minimum requirement.) Leaks are repairable, but this should be considered.

Another indicator of the care the set has received is that the owner has oiled them (the pipes should have a slight oily glisten) and that the pipes look in good shape, without a lot of dents or repairs evident. If the set is in need of repair and you are experienced with doing minor repairs,

you may want to buy it and fix it up yourself, but if you are a novice, only buy a set that is currently playing well.

Ferrules for 3 sets waiting for Majid "the plating man"



Front of an F chanter and back of an 11 key G chanter

Chapter 3 - Reading Music

Shortcut

If you already are a whiz at musical notation, you may skip ahead at your own risk. But you ought to at least read the section called "Keys as they apply to Northumbrian Smallpipers". As for the rest of this section, don't feel guilty about all the hours I spent writing this, just to have you blow me off. Go ahead. It won't hurt my feelings. Really.

Why you need to read music

While Northumbrian Smallpipes could be considered a "folk" instrument, there is not much of a tradition of people playing them "by ear" as is often the case with fiddles and banjos. I have never met a good Northumbrian Smallpiper who could not readily read music.

Please do not just learn to play by ear

If you do, you have to (a) be in a position to hear everything you ever want to play being played by someone else and (b) have a good ear for unraveling someone's grace notes and ornamentation or you will miss it. These limitations severely restrict your playing in the long run. While some find the notion of the old-time fiddle player who disdains written music a romantic and "pure" one, I would challenge you to ask any good musicians you know whether or not they read music. Especially if they play more than one type of music, they will answer "Well, of course."

Please do not just learn to play by musical notation

Musical notation does not capture quite every aspect of hearing a fine player, but it does at least capture which notes are played and their duration. To completely learn how to play any musical instrument, you must first learn the notation (so that musical ideas can be communicated, preserved, and analyzed) and also learn the sound for which you are striving. You can not learn any certain style of music without lots of listening to examples of good players playing in that style. And it is handy to be able to learn a given tune by ear.

I will make this as easy as possible

This tutor is intended to teach the student at least enough about musical notation to play the pipes. For now I will only cover the essentials for the Northumbrian Smallpiper. There is a great deal more to musical notation than is included here, so if you pick up some music and it is in keys not covered here or has funny markings not covered here, you will need to find other musicians who can instruct you in these areas.

Basics of reading music

Written music shows you at least the following essentials:

what musical key to play
the order of notes to play
the duration of those notes

Applying written music to your chosen instrument requires that you:

know what finger positions will produce those notes

We will first tackle what notes there are to chose from, how they are shown graphically, and what musical "keys" are. Then the duration of notes, and finally (the best part) how to finger those notes so we can get on with jammin'.

Notes and their names

Each pitch is named with a letter. We only use the letters A through G, and then we start over. For example, if we were singing notes, going higher and higher, we might sing:

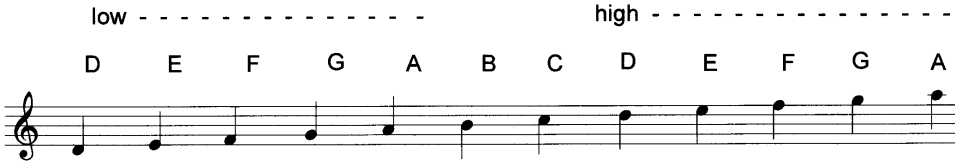
A	B	C	D	E	F	G	higher A	higher B	higher C	etc.

Intervals

There are names for the distances between these pitches ("intervals"). The interval from the any one note to any other note can be gotten by counting, with the original note counted as 1 and including the note you end up on. So in our singing example above, from A , you could say that C is a third up from A, E is a fifth up from A, and higher B is a fifth up from E. Rather than continuing from "fifth" to "sixth" to "seventh" to "eighth", they call the last one an "octave" (as in "octagonal"). This pertains to your pipes in that you will have, on a typical set, more than one octave of notes, and your drones will be tuned in octaves and in fifths. Also some people talk in intervals a fair bit, so it is nice to understand them.

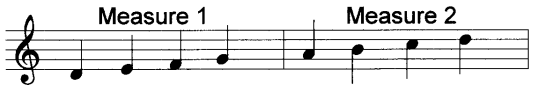
Showing these notes graphically

Music is written on 5 lines called a "staff". Each note is represented by a oval on that staff and the position of the oval on the staff (either on a line or in a space between the lines) shows the pitch of that note. Here are the ovals, with their names labeled:



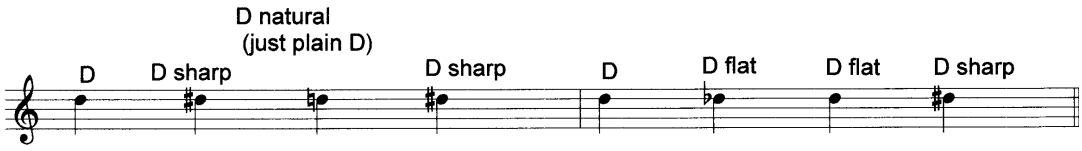
Special plea from experienced music teachers everywhere: Please do not write the letter notes on the page of your music. I did that here just to teach you, but you do not want to do that to your real music. Just learn to recognize the notes by their position in the music. Writing the letters above the notes on the page will severely hamper your chances of learning to play and winning a Grammy.

The staff is divided horizontally into "measures" or "bars" by vertical lines. (The terms "measures" and "bars" are used interchangeably, although Brits prefer "bars" - I mean the musical kind, well, perhaps I don't. I will call them "measures" in this book mostly). More on this later.



Sharps and flats

It would appear that we only have 8 notes (A through G) to work with in any one octave. But really we have notes that are in between these notes as well. The original 8 notes are called "naturals". Notes that are in between these are called "flats" (lower than a natural) and "sharps" (higher than a natural). For example, the note D sharp is higher than D (but not as high as E). These sharps and flats are shown on the music as the note with a "b" just to the left of it (for a flat) or a "#" just to the left of it (for a sharp). These flats or sharps act on all notes of that name from the time they are shown until either the next measure line (after which the note is reset back to "natural" - neither flat nor sharp) or until you see a "natural" sign by the note. An example of a natural sign is shown in the example below along with flats and sharps. The following piece of music would be played as shown in the text over the notes:



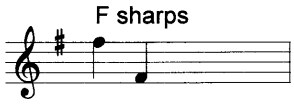
Due to circumstances beyond my control, there is a little more complexity here that you need to know. For whatever reason, the distance between all these notes is not the same. There is either a "whole step" of distance from one named note to the next or there is a "half step". All the named notes have whole steps between them except for between B & C and between E & F. Since a sharp or a flat changes a note by one of these half steps, it works out that a D sharp is the same thing as an E flat (D sharp is a half step above D which is the same as a half step below E). The complexity comes in that there is no whole step between B & C and E & F, so there is not really any such note as B sharp (since it would be C) or any such note as F flat (since it would be E). When we write about music, we put the flat or sharp signs to the right of the letter, so D sharp is written D#.

So, the complete set of notes that we have to chose from is:

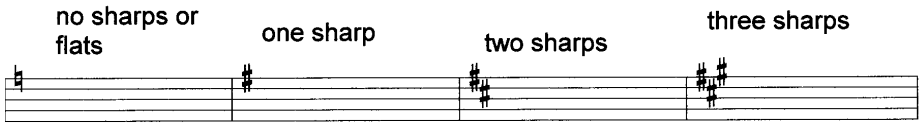
A A#(Bb) B C C#(Db) D D#(Eb) E F F#(Gb) G G#(Ab)

Keys and Key Signatures

You can also put a sharp or flat symbol (or more than one) at the start of the music, which tells the player that you want all the notes of that name to be sharp or flat. For example if you wanted all the F's in a piece to be played as F#, you would write the music like this and the player would play any F (high or low) as F#:



This *en masse* setting of flats and sharps tells the player what "key signature" you want them to play in. We Northumbrian Smallpipers only generally play in "sharp keys", that is the keys that have some notes "sharped" (in America or "sharpened" in British English). There are four "key signatures" used by most Northumbrian Smallpipers. (You can play music not originally written in these keys on your pipes but you will have to "transpose" the music to one of these keys. Transposition is beyond the scope of this book. Have a musical friend show you all about it when the time comes.) These four key signatures, in order of use from most common to least common are one sharp, two sharps, no sharps or flats at all, and three sharps and are shown at the start of the first staff as :



Notice that if there is one sharp it is always F#, the next sharp added is C#, and the next is G#. Each of these key signatures then defines the set of notes used in that piece of music. For example, since in the key signature of one sharp all F notes are played as F sharp (F#), the notes used in that music (also called the "scale" for this key signature) would be :

A B C D E F# G higher A higher B higher C etc.

What is the key of that tune?

Do this, really. I know it sounds silly but it really will work for you.

> Hum some tune, for example *Happy Birthday.* At the end of the tune, hold that last note ("to you") for a while. Feel how it seems to be the basis of the tune. If you can possibly con somebody into helping you, hum that last note and imagine that you are the drone of a bagpipe. Keep humming the same note while your accomplice hums the whole tune. This will help you get a feel for that note being the "basis" of the tune. That note is the *"key*" note of the tune. This "key" note is also referred to as the "tonic" note of the key.

The key that the music is in is named for this "tonic" note. In the case of *Happy Birthday*, if that last note ("to you") was a G, then you hummed the tune in the key of G. If you wrote out the tune in musical notation, you would have the last note ("to you") as a G and the music would be written with a key signature of one sharp (F# to be precise). It happens that "G" is the name of the key with one sharp (F#) so the music you would write would use the notes listed above and your writing would be in the key of G.

> Usually the tonic note (for which the key is named) is the last note of a tune. Also it is often the first note of the tune.

But I have heard of "major" and "minor" keys. What are they?

Short version

I will only cover this in an over-simplified way for now (as this is aimed at fresh beginning Northumbrian Smallpipers). The notes above (A, B, C, D, E, F#, G) belong to one key signature (one sharp). In our *Happy Birthday* example, the tune was based on G (it's "tonic" is G), and used the scale which is considered the key of G Major (G, A, B, C, D, E, F#, G). If you use this one sharp scale but base the tune on E, you get a tune in E minor. You can even use the same notes and base the tune on A and get a tune in A minor. The key signatures are the same, the notes are the same, but the tune will be a tune like *Greensleeves* or like a lot of Irish tunes and will have a sad, mysterious, or "dark" sound to it. Once you play your pipes a little bit and play tunes in both major and minor keys, this will make sense. Leave yourself a note to come back and read this again.

Long drawn-out and painful version

You know how we have discussed that there is either a whole step or half step between any note and the next note up or down in a scale? Major and minor scales are made up of the following patterns, beginning on the tonic note (for which the key is named) and going up in pitch:

Major - tonic note, whole step, whole step, half step, whole step, whole step, whole step, half step (which brings us back to the tonic note an octave higher than where we started). You then continue on up or down, repeating the whole step/half step formula in forward order up or reverse order going down.

Minor - tonic note, whole step, half step, whole step, whole step, whole step, half step, whole step (which brings us back to the tonic note an octave higher than where we started).

In real notes, using our one sharp scale, this would make:

G Major - G, A, B, C, D, E, F#, and G. (Notice that B-C is a half step and E-F# is a whole step.)

G minor - G, A, Bb, C, D, E, F, and G.

Notice that you can take the major scale and flat the third and seventh notes to make it the minor scale. It also works out that the notes in one major scale will happen to be the same notes as in some other minor scale. For example, the G Major notes are also the E minor notes. Compare these to the G Major scale above:

E minor - E, F#, G, A, B, C, D, and E. (Same notes as G Major, but a different key note.)

When this is the case, they call this minor key the "relative minor" of the major key. (Side note to those who know guitar players: This similarity is why sometimes guitar players will hear you playing in E minor and, by mistake, play along with you as if you were playing in G Major.)

These "whole-whole-half" things are the "classic" major and minor key formulas and 90% of all the popular music in Western civilization uses them. But, music never being as simple as it could be, these are not the only scale formulas. The ancient Greeks figured out that, given those same seven notes (our one sharp scale, for example), you could actually write music "based" on any of those seven notes and come up with a different key and a different feel to the music. They named these key formulas "modes". Of these seven Greek modes, we Northumbrian pipers (and other British Isles traditional musicians) like four of them. Two of these are the same as the above "classic" major and minor. The other two sound similar (one sounds major, the other minor). So using the same one sharp scale, you get four different "modes". I have shown these notes, the key formula, the mode name, what "key" they represent below. In the "FORMULA" column, I have used "1" to represent a whole step and "1/2" to represent a half step, to save space. So the first formula should be read as "starting with the tonic note, go up a whole step, up another whole step, then up a half step, etc."

Keeping the notes constant, we get:

NOTES	FORMULA	MODE NAME	KEY NAME
G,A,B,C,D,E,F#,G	1, 1, 1/2, 1, 1, 1, 1/2	Ionian	G Major
E,F#,G,A,B,C,D,E	1, 1/2, 1, 1, 1/2, 1, 1	Aeolian	E minor
A,B,C,D,E,F#,G,A	1, 1/2, 1, 1, 1, 1/2, 1	Dorian	A minor
D,E,F#,G,A,B,C,D	1, 1, 1/2, 1, 1, 1/2, 1	Mixolydian	D Major

I have spaced the "formula" column so that the same notes are vertically aligned. In other words, the E in each formula is aligned over the other E's. This helps illustrate that if you take the same notes in a scale but start off or base your tune on a different note, you get a different mode.

Keeping the key name more or less constant, we get :

NOTES	FORMULA	MODE NAME	KEY NAME
G,A,B,C,D,E,F#,G	1, 1, 1/2, 1, 1, 1, 1/2	Ionian	G Major
G,A,Bb,C,D,D#,F,G	1, 1/2, 1, 1, 1/2, 1, 1	Aeolian	G minor
G,A,Bb,C,D,E,F,G	1, 1/2, 1, 1, 1, 1/2, 1	Dorian	G minor
G,A,B,C,D,E,F,G	1, 1, 1/2, 1, 1, 1/2, 1	Mixolydian	G Major

Ionian is the classic major scale.

Mixolydian is just a major tune that has the seventh note of the scale played flat (remember, the key note is first). It is still major and major chords will sound good with it, but it has a little bit of an odd sound, maybe a little mysterious sounding. ***Warning: Highland pipes discussed hereafter:*** This is the scale that Highland pipes use, so a lot of Scottish kinds of tunes will be in this scale.

Aeolian is the classic minor scale (major scale with a flat third and seventh note).

Dorian is just a minor scale with the sixth note of the scale sharped.

If you have firmly grasped the above long version of how keys work you will now understand this next section.

The keys in which you may be playing

If you play music which shows:	you may be playing in the keys of:
one sharp	G major E minor A minor (Dorian) D major (Mixolydian
two sharps	D major B minor * E minor (Dorian) A major (Mixolydian)
three sharps	A major F# minor * B minor (Dorian) * E minor (Mixolydian)
no sharps or flats	C major * A minor D minor (Dorian) G major (Mixolydian)

* Northumbrian Smallpipes are extremely unlikely to have drones which can be used for playing in F# minor and C major. Some (where there are two tuning beads on the large G drone) can have drone accompaniment in B minor (a single B drone).

Notice how many repeated key notes there are! You can be playing in some sort of D key using one sharp, two sharps or no sharps at all! **But wait, there is hope.**

Keys as they apply to Northumbrian Smallpipers

When you play, set a drone to this "tonic" note, whether you are in major or minor or Dorian or whatever, which ever drone is the lowest one that will produce this note. Set the next higher drone to the note that is fifth note of that scale, and you have your harmony! For example, if you are in G major, you set your low G drone to play a G, and set the next higher drone to play a (let's see, G, A, B, C, D!) D note. If you look at the section above you will see that D is the fifth note no matter what mode you are in G. If you can and/or want to, you can then set the next higher drone to the octave of the tonic for the fullest sound of the drones. Then if you want you can set the high G drone to play a high G and you are ready to play the tune.

Given that a typical set of Northumbrian Smallpipes has drones that can produce G, A, D, and E, you are pretty much prevented from playing in such keys as F# minor. But notice for most of the keys above, you can tune your drones to the tonic and also the fifth. The chart below shows the key (whether major or minor), what the drone notes you ought to use as a minimum, and two other notes that are optional (one or the other or both - your decision - whatever you think sounds best with that particular tune on that particular day).

Keys and the drone notes to use

Key (major or minor)	**Drone note you need (tonic of the scale)**	**Drone notes you can add (fifth and octave of the scale)**
G	G	D, higher G
D	D	A, higher D
A	A	E, higher A
E	E	B, higher B
B	B (lots of pipes do not have these)	F#, higher B (you probably won't have these)

Using only the fifth notes as drones

You can just use the fifth notes (i.e. two D's in the key of G) without the tonic notes as drones. This will produce a Highland pipe sort of sound. This will also allow you to play in the key of C, using your G drones.

Medleys in different keys

It is common at dances to play "medleys" (more than one tune, strung seamlessly together by repeating one tune for a while, then moving on to the next). Often, for variety, medleys are made of tunes in different but "related" keys. For example, a medley may begin in D major and move on to G major. You can still do this as a Northumbrian Smallpiper to some extent. Notice that many of the keys above have some drone notes in common (for example, G and D both share the use of a D drone). If you put together a medley of tunes in keys that share one drone note, just play that same drone note during the entire medley. This will not sound as well when playing solo, but can still be an interesting effect for the solo piper.

This can also be used for tunes that change keys from one part to another, again if they are the right combination of keys.

Summary of how all this affects you, the piper

You can look at the music (especially the last note and maybe the first) to figure out the tonic and therefore the name of the key, look at the key signature and see if it jives with the information in the second table up from here. From this, you will know what key the music is in. You can then use the table immediately above to decide what drones you will need and what others you can optionally add.

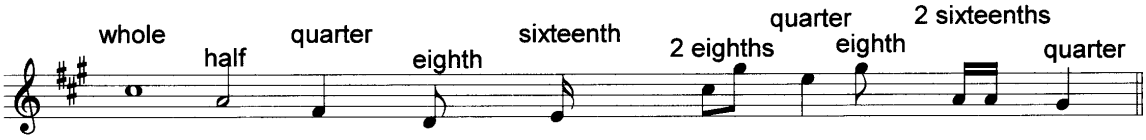
In some cases, i.e. "The Peacock Followed the Hen" in this book, tunes do not end or begin on the tonic note and you will need to experiment with what drones sound best (along with the key signature) to determine the key.

By keeping the key signature in mind, you will know what notes to play natural and what notes to play flat or sharp. This will allow you to play all the right notes in the melody and on the drones. You can also tell other musicians what key you are playing in so that they can play along. (*Remember that part earlier in this book about Nominal versus Absolute pitch? If you do tell other musicians what key you are in, tell them that, for example, your pipes are an F set and that you play "G" on the page you actually produce a "F" out of the instrument. They will adapt to this if they can, or will tell you that "they would rather hear you play solo because your pipes sound so nice" if they can not adapt and are polite people.)*

Note duration

Duration - American system

You remember notes on a page, like we discussed way before all this talk of keys? Music is not only what notes you play, but also how long you play them. Some notes last longer than others. Notation shows you this too. The longest notes we have are called "whole notes". The next shorter notes are called "half notes", and then we have, you guessed it, "quarter notes", "eighth notes", "sixteenth notes", all the way down as far as you want to go with fractions. Each of these divisions causes the note to last half as long as the previous kind of note. For example, a quarter note lasts half as long as a half note. These notes are displayed in music as such:



Duration - British system

The British have apparently been writing music since before math was invented, so they never took to the fraction-based system used in the U.S.. They use the following terms instead. However, this is MY book and I live in Texas, so you will have to translate the rest of the book using this nifty table. Sorry, but I have faith in your abilities. Thanks for understanding.

American	Whole	Half	Quarter	Eighth	Sixteenth	Thirty-second
British	Semibreve	Minim	Crotchet	Quaver	Semiquaver	Demi semiquaver

Flags and stems

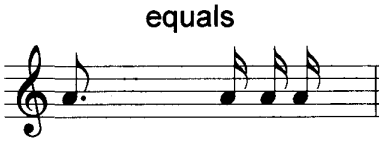
All notes shorter than a half note have a "stem". This stem can either be written going up or down. Whether they go up or down makes no difference, they just draw them to be the easiest to read.

All notes shorter than a quarter note have "flags" on their stems. Each flag on the stem cuts the duration of that note in half. For example, a note with 2 flags (a sixteenth note) is half as long as a note with 1 flag (an eighth note). If you have more than one note with a "flag" on it in a row, they are shown tied together as in the example above.

Notice that these durations are all relative. A quarter note lasts twice as long as an eighth note, but does not necessarily last for .23 seconds or any other specific length of time. It is just relatively longer.

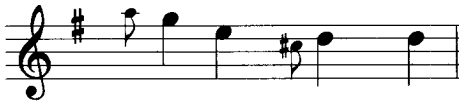
Dotted notes

To further get more precise, if you want a note to be half again as long as one duration (i.e. half again as long as an eighth note), you place a dot after the note. This gives you "time and a half" for the note. So, in our example, a dotted eighth note lasts as long as an eighth note plus a sixteenth note, which would be the same length as three sixteenths notes. The diagram here shows an equality of **duration** only. The player should not play the note three times, it is just that the one dotted note takes the same duration as the three shorter notes:



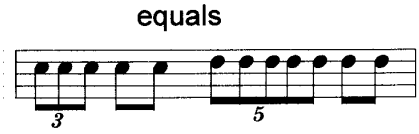
Grace notes

Sometimes music is written with some of its "ornamentation" or decoration written in the notation. The most common of these ornaments in written form is the "grace" note. These notes are written very small, have very short values and generally take away their duration from the note before the note which they decorate. Grace notes are not added to the total number of beats in any measure. For example, the measure below still has the duration of four quarter notes. The A and C# notes grace the G and D notes. The G and D are still played on the beat. The A and C# are played just before those beats and "steal" their time from the tail end of the preceding notes.



Triplets and quintuplets

For the final refinement, if you want to squeeze three notes into the space of two notes, you put a bracket over the three notes and write "3" over the bracket, telling the player that, for example, "these three eighth notes should be played with equal length and take up the total duration normally given two eighth notes". This can also be done with any other odd number, although I have only seen it with "3" and "5". These "triplets" or "quintuplets" look like this:



"We got the beat"

Anyone who has ever listened to music can tell that usually there is a strong beat to the music. In the later chapter "Basics of British Isles traditional music", I will discuss how each type of tune has its own beat pattern. But for now, we simply are interested in how all music is written on a page and how the timing of that music is shown.

The beat of the music versus the duration of the notes

Some people think that each note in music is a beat. To dispel this notion, march around the room while humming a lively tune. It can be a Country tune or a Rolling Stones tune or a Souza march. You will no doubt walk around, stepping on the beat of the tune, but there will be more notes in the tune in between those beats. The durations of the notes have nothing much to do with the beat of the music.

Measures

In most music, especially that meant for dancing. There is a repetitive beat pattern. For example, in a waltz, that pattern is "ONE two three ONE two three". In other types of tunes, the pattern may be "ONE two THREE four" or "ONE TWO ONE TWO". Whatever the pattern, the pattern generally repeats throughout the tune. In musical notation, we put vertical lines in the music where the beat begins to repeat. In our last example, this would be "ONE TWO (vertical line) ONE TWO". These vertical lines are called "measure lines" and the space between them is called a "measure". These are also called "bars" especially in popular music. (No, they are not called "pubs" in England.)

In music written for more than one person, the writer or the performer frequently numbers the measures in sequence so that, during a practice, the performers can agree on where to begin without undo hassle.

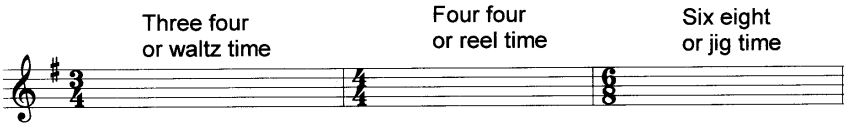
Time signatures

Musical notation begins with, in addition to showing you what notes to play flat and sharp, a designation of how the timing is divided up. At the beginning of the first measure there is a numerical description resembling a fraction which tells the player how many beats there are per measure (shown as the top of the time signature) and which duration of notes equals one "beat" of the music (shown on the bottom).

In our example of a waltz beat above, we described how a waltz rhythm sounds like "ONE two three ONE two three". From this we know that there are three beats to the measure, so the top number should be "3".

The "which duration of notes equals one beat" number is a bit arbitrary. Since note durations are only relative, you could write out a waltz where a sixty-fourth note was one beat. However, as this would mean that most of the notes would have three or four flags on them, this would be difficult to read. So by convention (which works out to be what is easiest to read) music is written with half notes, quarter notes, or eighth notes representing one beat.

This gives a time signature of $^{3}_{4}$ for waltzes, $^{4}_{4}$ for reels, $^{6}_{8}$ for jigs, etc.:



Since so much music is written in $^{4}_{4}$ time, it is sometimes called "common time" and is shown with a "C" on the staff as the time signature. Similarly, music in $^{2}_{2}$ time is called "cut time" and is shown with a "C" with a vertical line through it on the staff. (See the *General Written Music Warning* at the very end of this chapter unless you are confused at this point. If so, then read it later please.)

> It is important to remember that this whole duration and time signature business is relative. You could have a tune in $^{6}_{8}$ which is a fast and lively jig or a sad slow lament. Time signature just shows the distribution of beats.

Which beat is strongest

Notice that I wrote "ONE two three" as the beats of a waltz. In waltzes, the first beat of each measure is strongest. Nothing in the time signature clearly tells you this - you are expected to know this somehow - but you, my friend, are in luck. In the "Basics of British Isles Traditional Music" chapter, I have laid this out for you. You can also just listen to the music and develop a feel for it.

Absolute timing

Metronomes are mechanical or electronic timers used in music which emit a beep or click at a standard, adjustable pace. *They are really handy to practice with to keep your timing steady.* Some music will have "metronome settings" at the top. These are rare in traditional music but look like a note, an equal sign, and a number. There tell the player that a note of this type equals one beat of a metronome set at the speed equal to that number of beats per minute.

> More often in traditional music, tunes are played at a dance speed which is learned by example. Non-dance tunes, such as laments, should be played at whatever speed the author had in mind (they may tell you in side notes or may hint at slowness by calling it a "lament" or "air") and/or whatever speed you think sounds best AND whatever speed you can play. NEVER try to race through something where you must trade speed for playing the proper notes with the proper feeling. Many rip-roaring reels sound lovely at a slower speed. Any tune sounds better well played at a slow pace than poorly played at warp speed.

A few more odds and ends

Staccato marks

In some music, especially music for fiddlers and pipers, there are little dots directly above some notes. These are called "staccato" marks and mean that this note should be played "short", i.e. a quarter note played staccato is played like an eighth note followed by an eighth note rest. The opposite of staccato is "legato". Legato playing sounds like "blaa-blaa-blaa". Staccato playing sounds like "bip bip bip". The closed nature of the Northumbrian chanter makes this quite easy (although lots of practice is required to make tunes sound right with staccato notes) and staccato playing is a highly used feature in Northumbrian music.

Pick up bars

Not a smoky booze hall. "Pick up bars" or "pick up measures" (more technical term for a pickup bar is an "anacrusis") are partial measures of music played at the start of a part which are kind of an introduction. If you hum the Christmas carol "God Rest Ye Merry Gentlemen", you will notice the word "Rest" is a strong beat. This is in fact the first note of the first full measure. The word "God" comes before this but is only one note. It is a pick up bar or pick up measure. (Music for this tune is elsewhere in this book. The tune "Durham Rangers", also in this book, is another example, having pick up bars before the "A" and "B" parts of the tune.)

"A" and "B" parts of tunes

Most dance music is repetitive. The musicians play one part, then another, and then start the whole mess over again. Usually there are two of these "parts" which repeat in an "A-A-B-B-A-A-B-B-A-A-B-B" pattern until the musicians or dancers have had enough and move onto another piece or stop all together. Traditional musicians refer to these parts as the "A part" and "B part" of the tune. This does not mean that these parts are in the keys of A and B, as some people have thought. It is just a way of denoting the two parts of the tune. Some tunes have more than two parts, so the additional parts are given letters accordingly. The "normal" " A-A-B-B" repeating tune is said to be in "double time" (I guess because each part is doubled) and "A-A-B-B" represents once through the tune. Some tunes (less common) are written and played "A-B" repeating and are said to be in "single time" and "A-B-A-B-A-B" would be considered three times through the tune. Don't worry, if you are learning by ear you will pick that up immediately and if you are learning from written music, it will be written that way.

Repeat signs

Given that dance music is basically repetitive, somebody came up with an easy way to avoid writing out the same notes over and over. These are called repeat signs and they are shown in the example below - the heavy lines with two dots at the end.

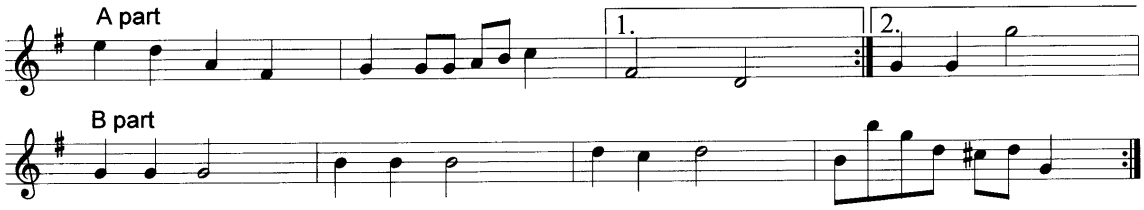
Repeat signs tell the performer to play the piece until this point, then return to the start of that "part" (to the beginning of the piece or back to the "back side" of the last repeat sign, whichever you back up to first) and continue. The next time they reach the repeat sign, the sign is ignored and the piece continues.

Since frequently the A part or the B part of a tune is actually made of a phrase with is repeated (as above described - "A-A-B-B") (i.e. 8 measures which when repeated give a full 16 measure A part), repeat signs are often found at the end of an A or B part. See "Durham Rangers" in this book as another example.

It is also common that the beginning of a repeated section is denoted by a backward repeat sign, telling the player to come back to this spot when playing a repeat. See "Buttered Peas" in this book as an example.

Frequently these phrases which make up the A or B part will have a slightly different ending, to flow into the next part. These are shown with numbers and brackets over the two endings. The intent is for the player to play the A part and include the measure under the "1", return to the beginning and play the A part, skipping over the measure under "1" and playing instead the measure under "2". The player then continues on and plays the B part. "Whittingham Green Lane" in this book is an example of numbered repeats.

There is usually no indication on dance tunes to continue playing piece over and over ("A-A-B-B-A-A-B-B-A-A-B-B"). Repeat the tune as you see fit. Frequently tunes are played two or three times for a listening audience or many more than that for dancing, depending on local custom, taste, and the will power of the musicians.

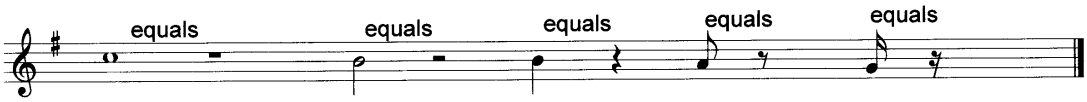


Accidentals

You will recall that the key of G major has a C natural and a D natural note but no C# note. Sometimes tunes do have notes not shown by the key signature. These especially occur as "passing notes" (i.e. notes that are not central to the tune but which glide the tune from one note to another). They are not accidents, but that is what they are called. Go figure.

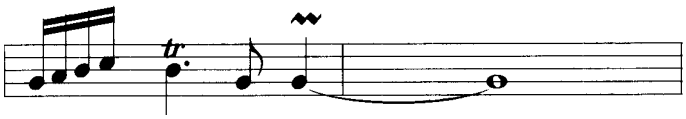
Rests

Occasionally in traditional music and more common in other music, you will see rectangular boxes or squiggles where a note should be. These are called "rests". These represent a silence (of the chanter only, for you pipers) and the rest has the same duration as its corresponding type of note. Shown here are the types (durations) of rests with their corresponding type of notes:



Trill marks ("the trill is gone, baby") and vibrato

Both of these marks are sometimes shown in music to denote that the player should "wobble" a note's pitch. "Vibrato" marks (a zig zag above the note) gives a subtle, rapid, and slight wavering in pitch, as in when a violinist shakes her wrist or when B B King shakes his hand while holding down one note. Vibrato more or less maintains the same note throughout. "Trill" marks (a little "tr" over the note) are asking for a more pronounced effect where the player actually plays the note and either the note above it or below it in rapid succession, back and forth. In the example below, the dotted quarter note B is trilled and the next to the last G is played with vibrato. How to actually do these on pipes is described in the "Intermediate Playing" chapter.



Ties

The "tie" symbol is used when you need to write two notes of the same pitch which really sound as if it were one note whose duration is the combination of the two notes. This is usually because the note spans a measure bar, as shown in the example above (the last two G notes are tied). Also see "Whittingham Green Lane" elsewhere in this book. Notice that not all consecutive like-

pitched notes in this piece are tied. For example, in "Whittingham Green Lane", the first two F# notes should be sounded separately as they are not tied, whereas the last G is sounded over two full measures continuously, due to the tie.

Practice makes perfect

This is true beyond your wildest dreams and there is no time like the present to start. Look at the music found later in this book and go through each tune, naming each note in terms of note name (don't forget the flats and sharps caused by the key signature) and note duration. This will work well enough, but if you can get a friend to quiz you on it, so much the better. (It would help if they know music, to prevent you from cheating. No, of course you wouldn't.)

> One of the most important things I have learned in music is that 10 minutes of practice a day everyday will do wonders for your playing and is way better than 2 hours a day every other week.

General Written Music Warning

Two things for you to know:

> Written music is just an attempt at documenting what REAL MUSIC should sound like.

There are limits as to how many symbols and marks anyone should have to read and people who write down tunes are aware of this. If a tune is to be played very mechanically - think of early computer games and the annoyingly stiff little tunes that played in the background - it is simple enough to make written music accurately depict the sound. On the other end of the scale, think of an opera aria, with the voices getting louder and quieter, faster and slower, vibratos here, sliding from one note to another there. While there are musical symbols for all these things, traditional music folks just don't use them much. So tunes that are supposed to be played bouncy may be written without a "bouncy" symbol - because you are presumed to either know it should be bouncy or have heard it played by another musician bouncy.

and

> Folk musicians are not perfect or consistent at writing out music and neither is anyone else.

This is EXTREMELY evident in the way certain tunes such as hornpipes are written (a bit more on that in Chapter 5) and any tune written in "Cut Time". Take, for example, *Whittle Dene Hornpipe* and *Proudlock's Hornpipe* on the same page 15 of the Northumbrian Pipers' Society Tunebook (the first tunebook in the series - and I am only going off the edition that I have). Both are shown to be in Cut Time. *Whittle Dene* has groupings of 4 notes barred together whereas *Proudlock's* is shown in groupings of 2 notes barred together. Both have the basic dotted eighth sixteenth pattern, both have the same "duration" per measure. Both should be played in the same manner, but they are written out differently (in the number of notes barred together). Then looking in the same book at *Queen Hornpipe* (page 44) and *Redesdale Hornpipe* (page 45), *Queen* is shown in Common Time and *Redesdale* is in Cut Time, but they are identical in note duration pattern. My point is NOT to criticize this book (it is THE book to buy, just in case you do not already have it). My point is that different people (or the same people on different days) may write the same tune differently. As a piper you should just accept this and move on about the business of making good sounds. If you want to get bogged down in discussing the proper way to depict a tune, be my guest (there are definite improvements to be made) but this little warning is all the paper I care to spend on the topic. (Except maybe later in Chapter 5.)

Chapter 4 - Beginning Playing

Beginning without a teacher

If you are teaching yourself and do not have another Northumbrian Smallpiper around, please stop right here and build yourself a water manometer. It will cost about $2, it will delay you about an hour, and will save you all kinds of hours, money and hair down the road. See the "Tools and Gadgets" chapter. Also be sure that you have some sort of tuning device (see same chapter).

The first time you put on the pipes

Rotate all tuning beads on the drones to the "off" (holes are closed) position. Close the end of all drones as well by pushing in the piston, pushing in the drone end pin, or rotating the end tuning bead, whichever you have. Remove the sliding part of the little G drone and attach the water manometer that you have just made to the end of the little G drone standing part.

Getting strapped in

Pick up the bellows and tuck them under your right arm with the shorter strap on the outside and secure the belt around your midsection at the level of the lowest rib (not down where jeans fit). The end of your elbow should be at or lower than the bottom of the bellows cheek. The air outlet tube should be facing forward.

You will have to figure out on your own how the shorter strap attaches. It will strap your biceps to the outer cheek of the bellows and keep your arm from covering the air intake valve. It may be a strap which goes over the arm and connects to a hook or loop near the intake or it may go all the way to the end of bellows and loop around the end of both cheeks. If there are two strap loops or bootlaces, one goes under the arm, the other goes over the arm, through the other strap and around the end of the bellows. Make it so. I will wait.

> It may be that these straps and belts are not sized right for you. Fix them or get them fixed. A local leather shop, shoe repair shop, or a pipe maker can fix these for you. Remember that you may range from wearing a thick sweater to wearing nothing at all, so have the belts fixed with some room to adjust.

Holding the pipes

The first task is to pick up your pipes (the right way) and strap yourself in. You can be standing or sitting. If you sit, don't slouch. Sit upright with good posture.

> **NEVER** let the chanter go! If you do, and the connection is a bit loose, it will fall out of the stock, do a half flip on the way to crashing the reed into the floor, as I did with my first set of pipes. You will never forget this moment if it happens to you.

See the photo. See how my left hand picks up the pipes, gripping both the chanter (not just the chanter stock) and the drones.

Getting plugged in

See the next photo. Tuck the bag under your left arm, up nice and high and, in a daring one handed motion, snugly connect the bellows tube to the air supply tube leading to the bag. The drones should be resting across your chest, a bit on top of your right forearm. The chanter will rest across there as well if you need both hands to attach the tubes. Always hold onto the chanter. At no time do I let my chanter dangle.

Place your fingers on the chanter

Once you are all attached, swing the chanter down and cover all the holes with your fingers. The left hand covers the top holes (closest to the bag) using the thumb to cover the back hole and the first three fingers covering the first three holes in front. Cover each hole with the finger tip (center of your fingerprints) not with the side of the finger as with flutes and Highland pipes. See the next photo. Rest the right thumb in the bare area between all the keys on the back.

Remember, FINGER TIPS. The closer to covering the hole with the end of your fingernail, the better. Also, try to keep your wrists straight, not bent, so that you do not develop carpal tunnel problems (such as can be gotten by typing too much with bad wrist position).

> Do not squeeze the chanter like Arnold Schwartzenegger. You simply need to press gently so that you make the hole airtight and gently enough that you can move your fingers nimbly. R E L A X !

You should now be holding the instrument as shown in the photo below. The drones will not "stand up", as shown, until you blow up the bag. See next section on drone position.

Secrets of "Optimal Drone Angularity" Revealed

A quick look around a typical roomful of Northumbrian smallpipers will reveal a mixture of drone angles. Some have drones which hover only slightly above the bellows and arm, others are

standing proudly at 45 degrees so that the drones scream right in the players ear. I prefer the "hover" for my F set and the "scream" for my "session-master" G set. If your drones are not standing the way you like them, you can partially inflate the bag and then wrestle it around under your arm, moving the bottom seam toward your body to raise the drones. The "standard" is to have 1/2" between the fold at the top of the bag and the closest edge of the drone stock. However heavier or lighter than average drones will require a slightly different drone stock position to bring about the "optimal drone angularity" - which of course is the opinion of the player. So wrestle the bag if you need to to get the drones up off the arm while playing and get a new bag (and cover) made if necessary.

Same set as on previous page, but with bag wrestled to provide higher drone angle

Blowing up the bag

Without squeezing the bag (except enough to keep it in place), pump the bellows in a steady all-the-way-open to all-the-way-closed motion. This should blow air into the bag.

Check to be sure that the tube leading from the bellows is not getting pinched off where it joins the connection to the air tube coming from the bag. If it is, reposition the bag and bellows until it allows a free movement of air through the tubes. It may be that this tube is too long or too short for your build and you will need to fix this or have it fixed before proceeding. See the "Maintenance" chapter under "Tying one on" for instructions on how to retie the ends.

Using a steady motion, pump the bellows to fill the bag to about 3/4 full. A little squeeze on the bag may help. (There are little one way leather valves in there that are closed by the resistance of the bag getting squeezed.) When the bag gets mostly full, squeeze the bag gently with your left arm until the water manometer shows your desired pressure (i.e. 16 inches of water).

You have closed all the drones so they are not making any sound. If you are covering all the finger holes properly, you should not hear any sounds. Chances are really good that you are hearing some weird noise. If you move your fingers around a bit, it should stop. When it stops, you have your fingers placed properly.

If all attempts to get the noise to stop fail, you must have a leak somewhere. Turn to the "Maintenance" section and fix the problem, then return to this spot. You will want to work through the "Unstable notes and squeaks from your chanter" section, which should get you fixed. You may want to work through some of the other sections if you believe they apply or if you can see or hear what the problem is.

You are not squeezing your fingers in a death grip are you? White knuckles and finger tips tell me that you are. RELAX.

Playing your first note on the chanter

This section is a "shakedown cruise" for your instrument and your fingers. If your pipes arrived mail order, you will more than likely need to spend a bit of time in the "Maintenance" section of this book at first. Do not be discouraged. This is normal and this sort of maintenance will become simple to you after a short while. While you should expect to have to adjust the reed openings and maybe do some oiling, you should not have to do anything major. If you believe you do, I would contact the party that sold them to you immediately. The odds are good that, if you are an absolute beginner, the fault lies in your fingers and bag/bellows operation and not so much in the pipes.

While squeezing the bag (forget the bellows for now), lift your right little finger. If the manometer says you are at the right pressure, you should hear some sort of musical note. It may not be pretty but it is your first note. If you do not hear what could be described as a musical note, your pipes are out of adjustment. Turn to the "Maintenance" section and proceed. Once you have solved the problem, return to this spot.

Put your finger back down. You should hear silence again. If not, adjust your fingers until you do. You may need to refill the bag with the bellows again. Use a smooth steady all-the-way-out and all-the-way-in motion.

> At this point you are likely to sometimes play a nice note and sometimes play a very high shrill note. Do not worry. By doing this, you are not hurting the instrument or the reed. You are "overblowing" the reed, which Uillean pipers do to get half of their notes, and what you can do intentionally as a more advanced player. "Overblowing" at this stage means that your reed or bag squeezing need adjustment or that you are not completely covering a hole (your keys or your fingers leak).

Spend the next few minutes (do not be in a hurry) squeezing the bag, lifting one finger only at a time (try all your fingers but only one finger at a time off the chanter, don't forget the left thumb) and replacing them. Each will produce a musical note and you should be able to return to silence again. Refill the bag as necessary.

Continue this "note - silence - note" exercise for several more minutes. This time, try to hold the pitch of each note constant for a few seconds while the bag deflates. Use all of your fingers that cover finger holes, one off the chanter at a time, the rest closing the finger holes. When you are able to return to silence after each note, continue to the next section.

We now know that the pipes in general are in good condition (air tight), you can fill the bag with a full and smooth bellows motion, you can squeeze the bag pretty well with some degree of control, your fingers don't leak, and you are relaxed all over especially in the fingers.

Try a drone now

While holding onto the chanter so as to not let it fall (you knew that), open the large G drone (largest drone on a 3 drone set, second largest on a 4 drone set) by either pulling the piston out or by rotating the tuning bead, whichever will open up the furthest out hole. Go get the electronic tuner that you bought (see "Tools and Gadgets" chapter).

Reposition yourself with your fingers confidently covering all the finger holes and the drones resting across your chest. Refill the bag and squeeze. Be sure that no sound is coming from the chanter. With the water manometer indicating that you are playing at proper pressure, the large G drone should now make a musical sound.

If the drone is not sounding, you need to adjust the drone reed. Turn to the "Maintenance" chapter - "Everyday Adjustments - Drone Reed" section, fix it, and come back. I will wait.

Sound the drone by squeezing the bag at the desired pressure. Use the electronic tuner to tell you if the note being sounded is correct Remember, if you have a "Concert F" set, the "G" drone actually sounds an "F". Refer back to the section of buying pipes and refresh your memory as to which pitch the tuner should show for your set of pipes.

If the note is not correct (flat or sharp) you will need to tune the drone.

Tuning a drone

You can tune a drone by one of several methods.

Method 1

Cover all the finger holes on the chanter and sound the drone. If it is not correct, stop squeezing, and adjust the drone slide. If the note is flat, gently slide the sliding part of the drone in toward the bag (over the skinny part of the standing part of the drone). This will sharpen the pitch. If the note is too sharp, gently slide the drone further out, flattening the pitch. If the drone will not adjust enough to produce the right pitch, go back to the "Maintenance" section and "tune" the reed.

Method 2

Cover the finger holes assigned to the thumb and first two fingers of the left hand only (so that the chanter sounds a D), sound the drone, and use your right hand to reach up and adjust the drone slide as above. Ignore the chanter note or (with experience under your belt) use it as an aid.

Method 3

Twist or fold the neck of the bag with the left hand so that no air is allowed to go through the chanter. You can also use your thumb as a cap to seal the top of the chanter stock, inside the bag. Sound the drone and tune it with your right hand. This is actually the method which I use the most. It seems like it would lead to a leaking bag neck over time, but I have not actually found this to be true for *me* and for the pipes that I have owned so far (made by me and by others).

Try a drone now (continued)

Refill the bag and sound the large G drone. Sound this note as steadily as possible until the bag is pretty well emptied. Refill the bag and repeat this process several times. You want to be able to hold the drone note steady. This requires learning subtle control of the bag and it will take most people anywhere from minutes to hours to get the hang of it.

Blowing and squeezing at the same time!

Pumping the bellows and squeezing the bag at the same time is the next skill that you must acquire. The goal is to present a constant air pressure to the reeds at all times, even while filling the bag.

Refill the bag. While squeezing and sounding the large G drone, replace the air in the bag every so often with a gentle, smooth, all-the-way-out and all-the-way-in motion of the bellows.

> Get into the habit of refilling the bag in a smooth motion, where you are making a bellows stroke at about the same interval of time, i.e. stroke pause stroke pause and NOT stroke stroke stroke pause pause stroke pause stoke stroke.

When you squeeze the bellows, you will need to ease off on the bag arm a bit to make room for the air. The left arm controls the pipes, not the bellows.

Keep the drone note going steadily. Keep filling the bag and squeezing the bag and playing the drone note. It may take several minutes or several hours to get the hang of it.

Stay relaxed. Do not fight the pipes (they will win). Only work on it for a few minutes up to a half hour at a time. This will soon become second nature.

Each time you begin and end, try to do so crisply. Do not slowly bring the bag up to pressure, rather, begin with a crisp squeeze, producing the drone sound instantly. Do the same at the end of each session. This is the way you will begin and end each tune later on.

Practice blowing and squeezing and sounding the large G drone until you can keep the note very steady. Make sure all your motions are relaxed and flowing. When you can do this, move on to the next section.

You can also now remove the manometer and reattach the drone end, since you now know the proper pressure required. But, especially during these early stages, use the manometer every so often to be sure you are staying at the correct pressure.

Two drones at once

Close the large G drone for the moment. Open the next smaller drone (the small D drone). Using the same techniques as described above, get the small D drone working, producing the right pitch note ("C" for a "Concert F" set) at the right pressure (according to the water manometer).

Now open the large G drone also. Fill the bag and sound the drones. They should both sound and they should sound nice together.

Fine tuning drones to each other

For reasons beyond the scope of this book, you need to fine tune your drones to each other. Use the following procedure:

Which one do you believe?

You have tuned both drones to your electronic tuner. Take the one that is the "key" note of the key that you will be playing in as the "truly tuned" drone. For now, assume that is the large G drone.

Beating drone notes

If the drones are perfectly tuned to each other, they will almost sound like one very rich note. (In fact, any naturally produced musical sound is a combination of one pitch and bits of others thrown in called "harmonics". These harmonics are related to the "fundamental" pitch and give each musical sound its character.)

If the drones are not perfectly tuned to each other, you will (with experience) be able to hear a "beating" - that is, a subtle "wah wah wah" aspect to the sound caused by the interference of the harmonics of one drone with the harmonics of the second drone. If you slowly move the second drone note in and out of tune you will hear that this beating gets faster when the drone notes are further out of tune and slows to a stop as the drone notes are moved into tune. It may take some time to hear this effect, kind of like getting used to seeing those three dimensional pictures that are so popular these days. Once you hear it, you will know it. Use this "beating" phenomena to get your drones perfectly into tune.

Fine tuning the chanter to the drones

We now have well tuned drones. Inflate the bag and squeeze, using the manometer as a guide. Keeping all else closed on the chanter, lift the lowest finger (right little finger) off the chanter. The chanter should sound and this note should be in tune with the drones. It will play a nominal G. It will be an octave higher than the low G drone. Some people will describe this as "the same note, but higher". If all the reeds are in tune, the notes will make a pleasant threesome. If not, carefully adjust the chanter reed opening until they sound nice together (see the "Maintenance" chapter).

Where we are now

We now can play our pipes drones, constantly and smoothly refilling the bag with gentle full strokes of the bellows, we can keep the drone notes sounding smoothly, we can tune them perfectly to each other and to the chanter, we know that we are playing at the right pressure (thanks to our trusty manometer), and we know that our fingers can seal the finger holes perfectly on command. (Well, if not, go back and practice some more. It will be worth it.)

We also can read music. We know what a low G is, what a rest looks like, and how to tell if an F should be played sharp or natural based on the key signature and the sharp symbols in the music. (If not, go back and refresh your memory.)

The basics of playing melodies on the pipes

The fingering system is very simple: One hole equals one note. Each hole in the chanter, whether closed by the fingers or a key, corresponds to one note. The closer the hole is to the reed, the higher the pitch. To go down in pitch you open a lower hole. Only one hole is open at any one time (I will fudge on this a little later on. Nothing is ever as simple as it first appears).

> Use the fingering diagrams and music notation that follow to help you associate the fingering with the musical note as you work through this section

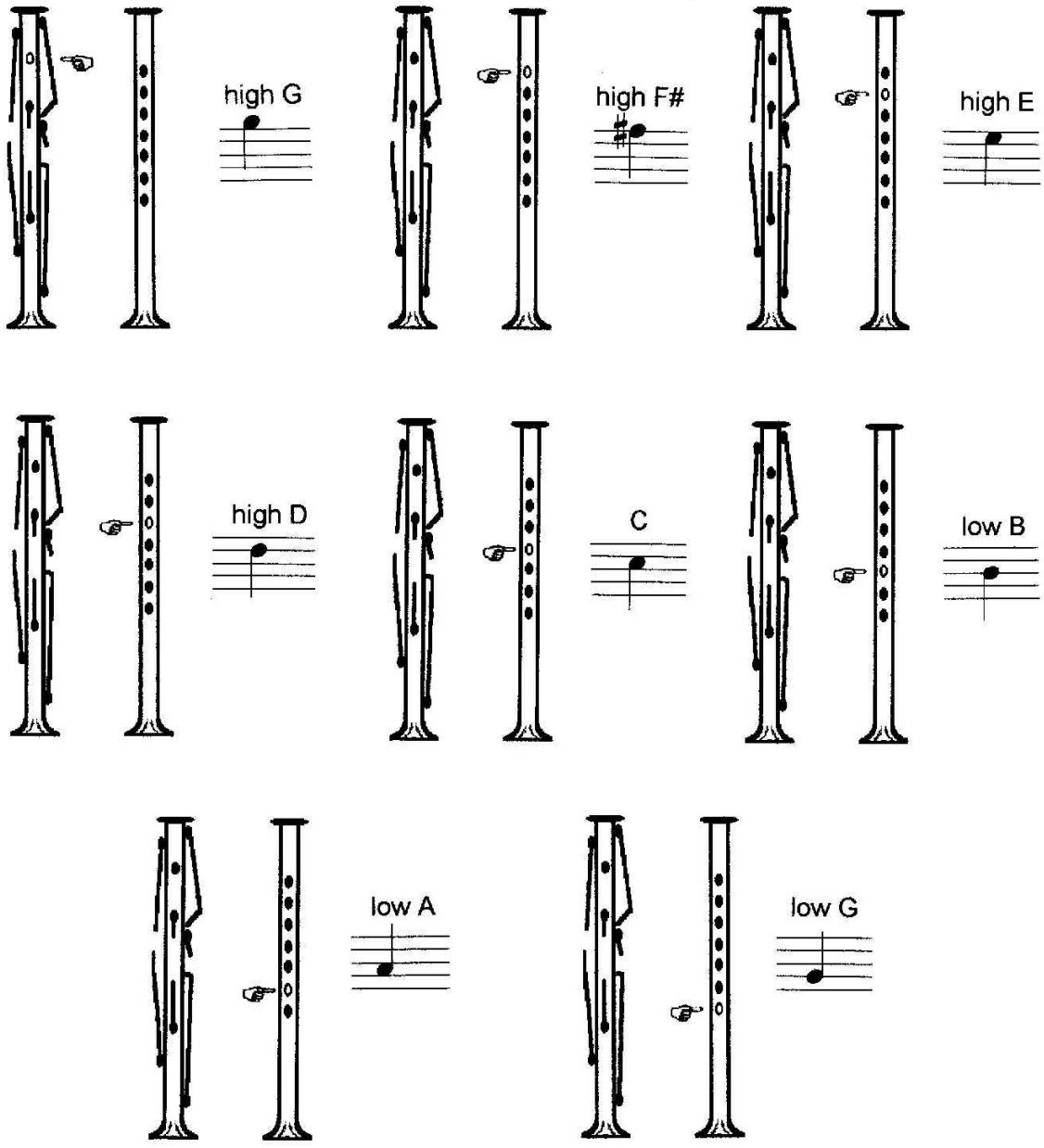
We will begin with the fingered notes which produce eight notes, the scale of G major. Hold the pipes in playing position, but for now do not inflate the bag or squeeze. Concentrate on finger positions.

Close all fingers over their holes. The lowest finger (right little finger) when lifted will produce the G which is the next to bottom line in the music. Lift this finger and then replace it, covering the hole. Say "G" (at least in your mind) while you do this and visualize its position on the music staff. The next finger up (right ring finger) will produce the A which is the space above the G. Lift this finger and replace it, saying "A" while you do so and visualize its position on the staff. The fingers continue up: Right second finger is B (say it), right first finger is C. Remember, only one hole should be open at any time.

The left hand little finger is not on the chanter. Skip it for now. The left hand ring finger produces D, then E with the second finger and F# (remember, in the key signature of one sharp, the F is sharp) is played by the left hand index finger. Completing the scale, we play high G by lifting our left thumb off the back of the chanter. Remember to close each finger before or at the same time as you lift the next finger and only one hole should be open at any time.

Run over this exercise a few times, replacing each finger, naming each note and visualizing its place on the staff shown. It will help to play the low G drone during the exercises. When you get comfortable with them, try adding the high D drone as well. Do this for all the tunes that follow the exercises also.

Fingering chart for finger holes



Begin with a simple scale

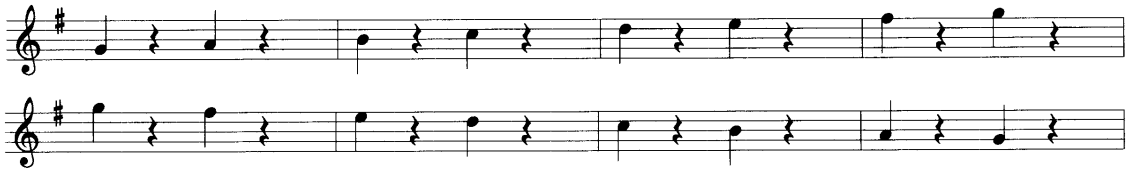
Using the same "note - silence - note" method that we used when we first sounded the chanter, your knowledge of musical notation, and the fingering learned above, blow up the bag, sound a drone or two (one is easier) and play the following piece of music. You should hear a simple scale, with the chanter making a note, then silence (indicated by the rest signs), and it should "sound right".

If it does not sound in tune, you need to adjust your reeds and/or tune your drones until the notes all blend together nicely. See the "Maintenance" section.

> Never try to use the bellows to "beat out the time". The rhythm with which you pump the bellows has nothing to do with the rhythm of the tune being played.

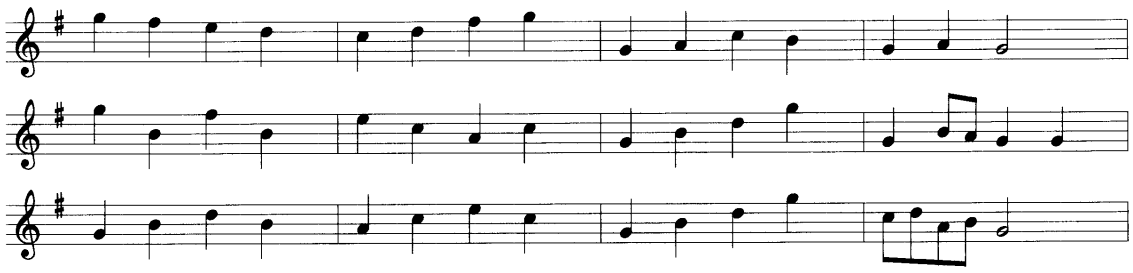
Practice playing this scale until you can do it very easily. Play each note as long as every other note, since they have the same duration. Remember to be smooth and full with the bellows, do not grip the chanter too hard, and achieve chanter silence between each note (that is what those rest signs tell you).

finger hole notes



> Notice that after you move your finger off the finger hole just a little ways, moving it any further doesn't buy you anything, it just requires more effort. Work right from the start at keeping your fingers close to the chanter. Yanking them way off the chanter will only slow you down and keep you from getting that million dollar recording contract. Keep the fingers close to their holes.

Now let's try some notes of different durations, without all those rests. Play the following exercises. Practice one until it comes easily, then move on to the next. Speed is not required. Smoothness and precision is. Don't make me hurt you. Slow and steady does it. Remember, the half notes get played twice as long as the quarter notes. Tap your foot or count "one two three four" out loud for each measure if it helps you. Repeat each line over and over until you it becomes easy, then try the next line.



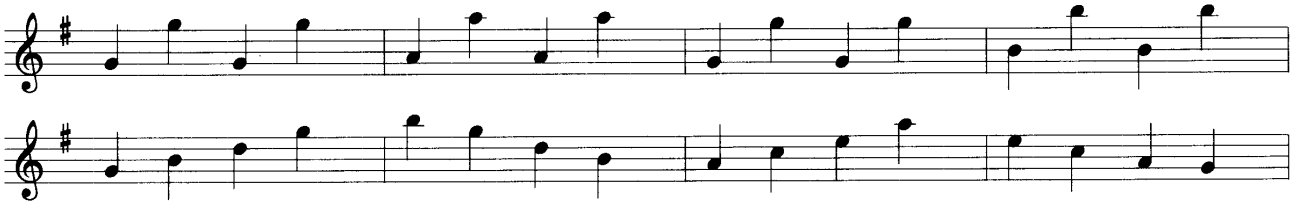
Extend the scale with those "keys"

Presuming you have a keyed chanter, we next will turn our attention to the keys. As with the finger holes, only one hole should be open at any one time. The position of the hole which is opened by depressing each key is therefore in logical succession (high notes are the holes closer to the reed, etc.).

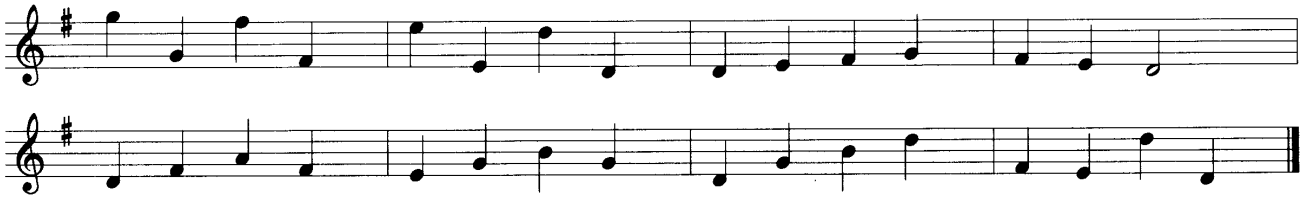
Use the fingering diagrams and music notation that follow to help you associate the fingering with the musical note as you work through this section. All of the keys on a 7 key chanter are operated by keeping your fingers covering the finger holes and depressing the key with the right thumb, except for the two notes whose keys run straight up the left side of the chanter. These are depressed with the left little finger.

Repeat each line until it becomes easy, then continue. The notes in this exercise are in octaves, so they should sound very harmonious. If not, you are either pressing the wrong key or have an odd sense of harmony.

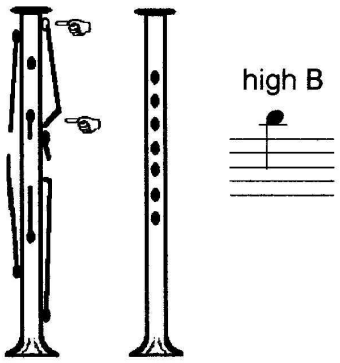
top keys notes and exercises

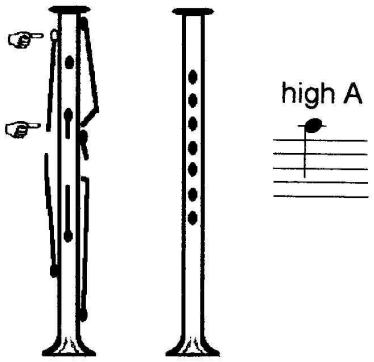


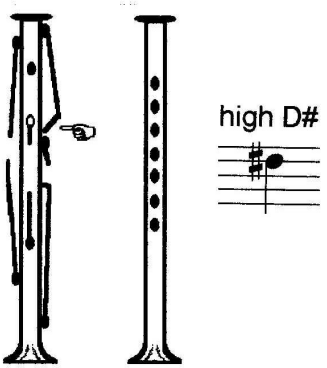
bottom keys notes and exercises

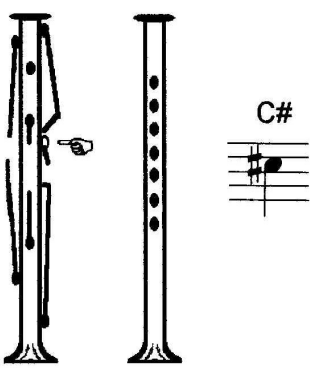


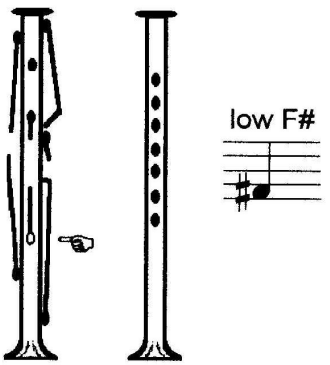
Fingering chart for key holes

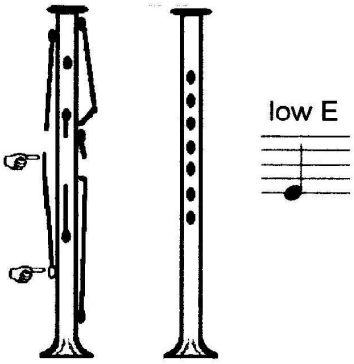


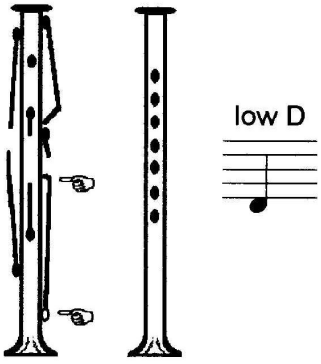








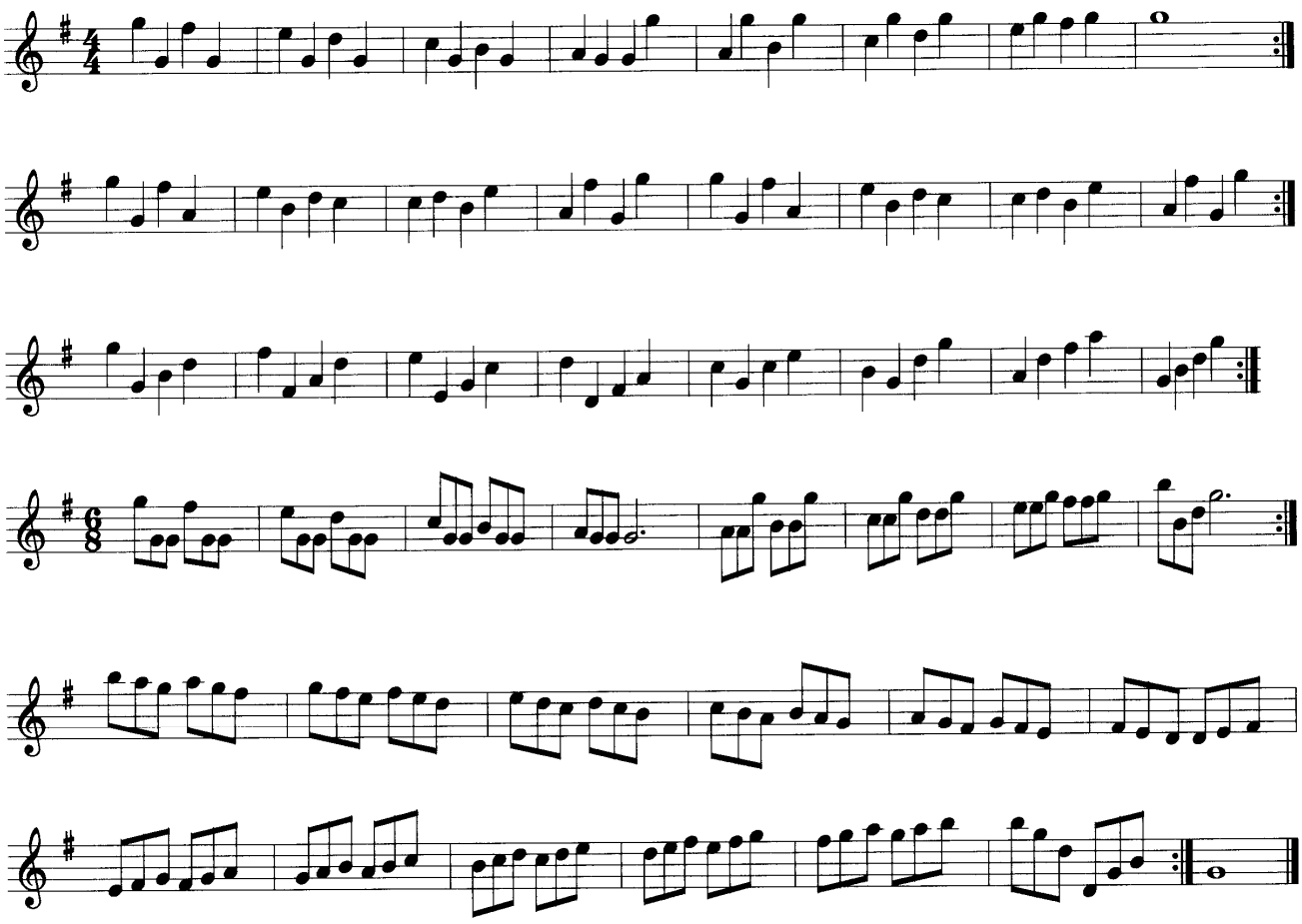




One last set of exercises before we move on

Practice each line of the next exercise until you can play it very well. This is the final preparation before we move on to playing real tunes.

Exercises in Key of G - play each one both legatto and stacatto



How to get the most out of your practice time

This is a good time to talk about how to practice. Probably so far in this chapter you have realized that you need to take breaks. For most people, the attention required to learn an instrument is intense and is not sustainable (without getting cranky) for more than 1/2 to 1 1/2 hours at a time. It is far better to practice in short, frequent sessions than to practice in marathon sessions, especially if this means only practicing once a week. Short daily efforts will produce much faster results and a more pleasant experience. Maybe block out a certain time each day to practice. Whatever works for you.

In everything you practice, aim for playing the correct notes, cleanly and with the proper relative timing, and smooth flowing sound. Do not try for speed. Fortunately, much Northumbrian Smallpipes music is simple and designed to be played at a leisurely pace.

Occasionally practice sight reading (playing tunes from music you have not seen before) to maintain your reading skills.

Practice parts with which you have trouble by themselves, a measure at a time. Your fingers have to learn to move in new ways and by stumbling over the same part time and time again, you are training them to stumble.

Try playing each tune (even the exercises) for a loved one or friend and get their honest feedback. Most people know what music should sound like. Also, try tape recording yourself and listen to the tape. It is sometimes difficult to listen to yourself while you are playing. You will no doubt hear timing problems and such that you did not notice while playing.

Finally, practice at least occasionally with a metronome and always with an electronic tuner handy. These devices will promote your ability to play with a steady rhythm and in tune. Lack of these abilities will cause other musicians and listeners to avoid you and further the bad image some people have of folk music.

Are you ready ? (the "TRAMP" test)

Learning this first batch of tunes will take quite some time, so work on playing them for a while and read the rest of this book in the meantime. Some of the topics in the remainder of this book will be of use in learning these tunes or at least in playing them the way they ought to be played. But first, let's review a few things that people commonly get sloppy on:

The "T" words

Progress is slow to come. Do not rush it. Take the Time to get each tune right. Get each new Technique right before blasting on to the next. This will work out to be the fastest way to learn. And pay attention to your Timing. If you have bad timing, no one will want to listen to you or play with you. Don't you want to be popular?

The "R" word

Try to keep your whole body Relaxed and having a good time. If you have are cutting off the circulation to your finger tips, Relax your death-grip on the chanter. If you are tightening up your shoulders in a nervous fit, Relax them.

The "A" words

Avoid all unnecessary movement. Only move as much as you have to (some would apply this to all of life). Do not move your fingers too far off the chanter, just enough to sound the note. If you move too much, you will never be able to play the faster tunes well. The same applies to the bellows. Take long easy strokes, not a bunch of short frantic ones.

The "M" words

Maintain your pipes. Keeping them in tip top condition will make them much easier to play will actually make them (and, therefore, you) sound better. If it takes a gorilla to squeeze the bag, stop and either fix the leak (if that is the problem) or adjust the reeds (using your manometer).

The "P" word

Practice usually works best in short frequent intervals. Ten minutes a day will work wonders and is better than one hour a week. If you are getting frustrated, give yourself a break (I mean that in every way).

Beginning tune list and playing comments

In this last section of this chapter, I direct you to several tunes in order of increasing difficulty. As with the exercises above, practice each one until you can easily play it smoothly and confidently. Use just the low G drone at first, adding the high D drone when you get the tune sounding better.

Turn to the "Tunes" chapter and, one at a time, with a great deal of practice and patience, learn to play the following tunes in order. TIP: this will take quite some time. In between practice sessions, go ahead and read the chapters "Basics of Traditional British Isles Folk Music", "Maintenance", and "Resources".

Please learn to play these tunes well. Practice each tune until you can play it smoothly, with confidence. Time spent getting your technique right here will make the future much less frustrating. I have added some "extra credit" tunes in a couple of places. These are in the "Northumbrian Pipers' Tune Book" and are at this same general level, to give you extra practice:

Twinkle Twinkle Little Star

A tune that (I hope) everyone knows, to ease the trauma of turning those dots on a page into music. It should come out sounding like you remember it. (I don't really expect that a year from now you will be playing this tune or the next any more. I have included them here since, presumably, you know what they should sound like and this should make it easier to begin.)

Camptown Races

Another tune that you probably know if you live in the US, with the same objective and disclaimers as "Twinkle". Obviously, neither "Camptown" or "Twinkle" are Northumbrian, so for extra credit tunes: "Chevy Chase" and "Noble Squire Dacre" - play each gently and slowly. Both tunes are very Northumbrian.

Frere Jacques

A tune from your childhood, getting a bit closer to England, included to satisfy those wild French Canadians. This tune uses a key to play the low D note. If you are having trouble sounding the lowest notes, you probably have a leak somewhere, either in your pipes or, more likely, in your fingers. Seal the finger holes completely but keep a relaxed hand.

Auld Lang Syne

Getting closer yet to Northumberland, another tune which you should recognize, this one uses the keys to play low F#, E, and D. It also has more complicated timing. If necessary review the section above on note durations and the fingering chart for the keyed notes.

Winster Gallop

The first Northumbrian tune in the book and possibly the first one that you have never heard! A simple enough tune that you ought to really be able to play it sprightly and cleanly. Keep the notes distinct and separate. Do not make this "Winster Sprint", keep it bouncy and not too fast. Extra credit tune: "Johnny Armstrong" played gently.

Whittingham Green Lane

A delicate little tune in $^{3}_{4}$ time (3 beats to the measure). Make sure that your long notes are of constant pitch. Remember that those tied notes are only played once and last for the duration of the entire tied section. If you play the repeat correctly, you will play a total of 32 measures, not including the two little "pick up" notes at the start.

Bobby Shaftoe

Another jaunty tune, this time with repeated notes (i.e. three low D's in a row). Keep these clean and separate. Again, do not play this so fast as to play it sloppily.

Gentle Maiden

This is the same time signature as "Whittingham" above, but should be played more slowly. Really make the pitch of those long notes constant. After you get into the intermediate section of this book, come back and play this tune with vibrato and grace notes. It is really beautiful.

Prince William

An English country dance tune that you will hear on everything from commercials to BBC specials as background music. This is not a very fast tune, just play it as if it were a royal processional and, again, keep the notes clear and distinct.

Sweet Hesleyside

Another beautiful slow air. Resist the temptation to play this like a waltz (play it more slowly). Again work on making the long notes steady and pure.

Jamie Allen

See the "A very thorough history of the instrument . . ." section. Another jaunty little tune, introducing the high A key.

Sir John Fenwick's The Flower Amang Them All

One of the reasons I took up the pipes. A beautiful slow tune which also sounds good at moderate pace. For right now, ignore the squiggle over the high E notes. Work on getting this piece flowing, yet with distinct and clearly separate notes. By the way, the title of this tune does

not, as I have been told, imply anything about Sir John's nature or appearance - it actually simply tells the reader that this is Sir John's tune called "The flower amang them all".

Buttered Peas

While playing this sprightly tune, keep those repeated notes and the descending runs distinct. Also be sure that the high and low A notes in the last line are in tune with each other.

Lamb Skinnet

A bouncy jig (first in this book). Please read the section describing jigs in the next chapter. Emphasize the first and fourth beats of the measure by playing those notes just a hair longer than they are written, especially the first note, so that you hear ONE two three FOUR five six (or really ONE two ONE two as described under "Jigs").

Queen's Jig

Another English country dance tune, this time in jig time.

Extra credit tune: "Happy Farmer" played with bounce.

The Black Gate area of Newcastle-Upon-Tyne, on the way to the High Level Bridge

Helen Cook and her multi-talented family, Ian Lawther, Colin Ross and Johnny Handle after the High Level Ranters reunion concert at The Bagpipe Museum, Morpeth, October 1998

15-key D set in blackwood, chrome, and imitation ivory, Liestman 2001

Chapter 5 - Basics of traditional British Isles folk music

Types of tunes typically played on the pipes

While airs, jigs, reels, and hornpipes are the most common type of tune played traditionally on the Northumbrian Smallpipes, many other traditional tune types also can be played. The list below is not meant to be complete but will help explain the most common types of tunes and their distinguishing characteristics.

But first . . .

If you did not read the section *General Written Music Warning* back in Chapter 3, please do so. Even if you did, please re-read it. I'll wait right here for your return.

Air

Often the melody of a song, these are usually played slowly for listening only. "Danny Boy" is an all-to-familiar example. Also called "slow air". These can be in any time signature and are often played with a very free time (some would say they are played in no time signature, the player holding onto the longer notes as long as he pleases). If your local guitar player tries to make these into waltzes (and he will), set him straight.

Contra dance

Not so much a type of tune, but a New England dance form (think "barn dance") with two opposing lines of dancers. These are usually jigs or reels (see below) but can be other types of tunes. They are often British Isles tunes that have been adopted (and possibly renamed) by New Englanders.

English country dance

Another dance form, these tunes can be any speed. Some have a more stately air than contra dance tunes, some became contra dance tunes. In the U.S., "English country dance" often refers to "early music" or "Playford" type dancing. Modern "English country dancing" uses a different repertoire although Playford is still done as a revived specialty.

Fancy

Not really a type of tune either. Many tune names end in "Fancy". These are either tunes written for someone or tunes associated with the named person so much that they are known by that persons name. (OK, Julia, in the 16th/17th Century, Fancy was a type of tune.)

Fling

The Irish name for a tune with a Scottish flavor. Also called a Highland or a Highland Fling. These are fast tunes with a strong beat and are usually about one octave in range (like a Highland bagpipe tune).

Hornpipe

First Pass Understanding

"Hornpipe" is a word that can mean many things and sometimes different things to many people and "hornpipes" are clearly not just one type of tune. There is a dance called a hornpipe and some would say that "if you can dance a hornpipe to it, that tune must be a hornpipe tune". On the other end of the spectrum, sometimes some people play tunes that one could not possibly dance a hornpipe to, yet the tune is called "The Something-or-other Hornpipe".

The two main types of hornpipes are the bouncy ones and the faster, non-bouncy ones. The theme music for "The Addams Family" television show was a bouncy hornpipe. British readers may want to use the theme for Captain Pugwash as an easy example of one that is faster and not bouncy. Usually in movies or cartoons about sailors in the old days, the music in the background is a hornpipe.

The most common type of hornpipe is a bouncy tune played at either a walking tempo or somewhat faster. Dancing to this type of hornpipe usually involves intricate steps, so the tune is played slower than a reel, with a definite bounce caused by a "dotted rhythm" (i.e. a dotted-eighth-note-then-a-sixteenth-note pattern of notes). Written in $^{4}_{4}$ time signature or maybe Common Time or Cut Time. The written music seldom express the true timing and bounce of the tune, so listen to some recorded hornpipes to get the feel for it, keeping in mind that the amount of bounce that a player puts into a hornpipe varies by tune, player, and region.

To some of you, the word "bounce" will convey the right idea, to others the word "swing" might do it. But since I do a lot of swing dancing (which I believe you Brits call "jive") I will try to keep my two worlds apart and use the word "bounce" here. (Count Basie tunes on pipes, hmmmm.)

Warning about other books: Many other books show hornpipes written in all eighth notes rather than the dotted-eighth-note-then-a-sixteenth-note pattern shown in this book. They intend you to play them the same way that I do, but assume that you know to "translate" their notes into the dotted-eighth-note-then-a-sixteenth-note pattern since the word "hornpipe" is in the title. They have written it to be a little easier to read. Hornpipes are a big part of the Northumbrian Smallpipers repertoire and really sound well on the instrument.

Next Level of Understanding

I have received lots of input from a variety of notable sources including Colin Ross, Matt Seattle, Dick Hensold, Richard Shuttleworth, and Ian Lawther, plus listening to the recordings of a good many more. It is clear that there are different interpretations of the word "hornpipe" to different people. A good resource for this is the book *The Master Piper* (see the *Resources* chapter).

The first thing that is generally true is that when a hornpipe is played "bouncy", the music is commonly written in a dotted rhythm described above. If one was playing mechanically, this would produce a duration ration of 3 : 1 (dotted eighth to sixteenth). If you play the tunes that way, they sound very "jerky" and not "bouncy". When actually played, about the "bounciest" one hears is a ratio of 2 : 1 (much as if the tune were written in $^{12}_{8}$ time using eighth notes and sixteenth notes, no dotted notes at al). The least "bouncy" one hears is as if the tune were a reel (ratio of approximately 1.1374798 : 1, somewhat even tempo of all eighth notes, with just enough bounce to make it sound human).

The tempos of hornpipes also vary. There seem to be two broad categories: "Sailor's Hornpipes" (played at a faster tempo in the area of 108 beats per minute - the well-known tune "Sailor's Hornpipe" does indeed fit into this category) and the "Clog" (played at a walking tempo of 80 beats per minute). Sailor's Hornpipes are typically played with very little bounce, whereas Clogs are played very bouncy, but this is only a broad generalization. Let the complaints fly.

And a few stragglers

Some tunes called "hornpipes", especially common in Northumbrian pipe music, were written in $^{3}_{2}$ time and are distinctively different from any other tunes. See "Go to Berwick Johnny" in this book. These are sometimes called "old hornpipes" or "double hornpipes" or sometimes "single hornpipes". They do not use the "dotted-eighth-note-then-a-sixteenth-note" pattern of notes but they are some of the best tunes to my ear. There also were tunes in $^{9}_{4}$ (old way of writing $^{9}_{8}$) which were called "hornpipes".

Jig

Jigs are generally associated with Ireland and are written in $^{6}_{8}$ time. Variants of this form are "slip jigs" or "hop jigs", in $^{9}_{8}$ time, "slides" in $^{12}_{8}$ time and some French Canadian forms in $^{4}_{4}$ time (only Canadians can get away with this sort of thing).

Within Irish dance circles, the $^{6}_{8}$ jigs are divided into "single", "double", and "treble". Single jigs are characterized by a hornpipe-like quarter-note-eighth-note pattern. Double jigs are pretty much all eighth notes. Treble jigs are simply other jigs played very slowly. Certain tunes work well for this, others do not. All these tunes emphasize the first (especially) and the fourth beat, so what you hear is : ONE two three Four five six. *When you start to play these, count all six beats. After you get the feel for it, just count (or tap your foot) on the ONE and Four beats, giving ONE Two ONE Two.*

In $^{9}_{8}$ time, slip jigs sound: ONE two three Four five six Seven eight nine. Slip jigs seem to be hard for some accompanying musicians to hear as different from a regular jig. You may have to either work with a bodhran or guitar player to get them right or ask them to sit out the tune. At very least, warn them of an impending slip jig if they are not die-hard Irish musicians. *When you start to play these, count all nine beats. After you get the feel for it, just count (or tap your foot) on the ONE and Four and Seven beats, giving ONE Two Three ONE Two Three.*

Lament

Basically a slow air (any time signature, played very slowly) written for a very sad occasion. To me, one of the most beautiful tunes ever written is the "Lament for Ian Dickson", written by Anthony Robb and published in the "Northumbrian Pipers' Duet Book" by the Northumbrian Pipers Society. Remember, traditional music is alive and not all the best tunes are centuries old. This tune is already solidly in the Northumbrian pipers "tradition".

March

A strong two-beat tune built for walking proudly. These are not just for marching off to battle, but also, in the ballroom, for marching around the room checking out your fellow dancers. The first beat is a bit more emphasized than the second.

Morris

Not a type of tune really, but a name for one of the ritual dances of England. Morris dancing is a spring fertility ritual sort of thing, with "sides" all over North America, involves dressing funny with some people dressed as fools, some shouting, some singing, some beating of sticks, that sort of

thing. The tunes are simple and often have an interesting irregular beat. An example in this book is "Princess Royal".

Planxty

Many Irish tune names begin with "Planxty". This is an Irish word meaning "in honor of". These tunes tend to be slow and pretty but can be any tune type and any time signature.

Polka

Not just for Lawrence Welk, polkas abound in Ireland and in English country dance music. These are in $^4_4$ and should be played slower than reels for dancing, although they are all to often played faster than reels by over zealous beginners because they are typically easy to play.

Rant

A North England delicacy in $^4_4$ and played moderately fast for dancing. Quoting from Mr. Ian Lawther, ranter and piper extraordinaire, "Rants and reels are both dances in $^4_4$ time and musically look the same. However because of its particular *step, hop, step, rest* stepping pattern the rant is slower. The tune is likely to take on a small amount of this rhythm, hanging slightly on the steps and shaving the hop/rests notes. The even stepping of the reel allows it to be faster and more lively".

Rave

A form made popular by Buddy Holly. (Humor. Get over it.)

Reel

Tunes in $^4_4$ played fast. Probably the most popular form for dancing in North America but not as common with Northumbrian Smallpipers. Often (some players, some tunes) reels are played with a hint of the bounce that hornpipes have. The first (especially) and the third beats are emphasized. *When you start to play these, count all four beats. After you get the feel for it, just count (or tap your foot) on the ONE and Three beats, giving ONE Two ONE Two.* Many people will be more familiar with the Irish style of playing reels (i.e. flat out, really fast). Northumbrian players play reels a bit slower than that, more like a rant.

Strathspey

Unique to Scotland, these are newer tunes, having originated in the 18th century and are more at home on the violin. The rhythm that makes these unique is sort of a perverted hornpipe with an eighth-note-dotted-quarter-note pattern alternating with a regular hornpipe pattern. The eighth-note-dotted-quarter-note pattern usually occurs at the beginning of a measure. Also common in strathspeys are measures of typical hornpipe rhythm, other measures of all eighth notes, and flourishes consisting of long runs of triplets at the end of musical phrases.

Waltz

Waltzes are in 3/4 time and are common all over. Many airs are also written in this time signature but are played with less of a beat. I find waltzes go really well on the pipes.

Style of playing

Traditional versus Modern

There is much discussion among some players as to what constitutes the "proper style". I find that this really depends on what you are trying to do: play Northumbrian Smallpipes music or play music on the Northumbrian Smallpipes. By this, I mean, in the first case, you may want to play in such a way as to preserve the traditional way that pipers played in the middle 19th century in Northumberland. This is the classic Smallpipes stuff and is a grand tradition to carry on. The second case is one where the player wants to play whatever is in their soul and happens to pick the Northumbrian Smallpipes as their instrument. This can lead to great personal expression, which is also a grand goal.

I have come to two, I think important, conclusions:

> You can not help but put yourself, your culture, and your experience into your own playing
>
> and ....
>
> You can not really play anything new until you have mastered what is old.

On the first statement, it is important to put some of your own into traditional music. This is what keeps it vibrant and is in fact what has kept it alive for so long. Traditional music is alive and, as such, people are constantly writing new tunes (please feel free to do so), finding new ways to play old tunes and adding their own touch to the music.

However, bearing in mind the second statement, you will notice that no one ever makes a serious contribution to music by not fully understanding what has gone before them. Kathryn Tickell has recorded some of the most "out there, 90's kinda stuff" on pipes but only after she was one of the most respected traditional players. The Beatles did not just appear out of a vacuum, they first mastered the older styles of music on which they built their sound.

For at least twenty years now, there have been bands who promise to "drag folk music into the (*insert decade here)*". The ones that are successful at making a contribution, do so with a great insight and ability at the traditional side of the music first. (The Battlefield Band, The House Band, Planxty, Steeleye Span, and Moving Hearts are good examples of this.) The ones who fail are the ones who take on the same trappings (synthesizers, electric instruments, funky rhythms, etc.) but lack sufficient understanding of traditional music to know what to keep and what to change. Develop a solid basis in the traditions of the instrument and then use that knowledge to add your own contribution to the history of the pipes, but be aware that what they really do best is what they have done for a very long time.

Elements of traditional style

Traditional Northumbrian Smallpipes style really shares its components with most traditional music of western Europe (probably more but that is all that I know about). The music should always be played in a lyrical fashion, with grace, fluidity, verve, variation, and confidence.

> Traditional music is always relaxed, lyrical, flowing and human.

The audience should never hear playing that sounds mechanical, as if a computer was playing it with mathematical precision. I am not saying that you should ever play out of tune or play at an erratic tempo (especially for dancers). I am also not saying that you can never play staccato and rapid. But in general, you should bend the duration of the notes to produce a living, flowing, musical sound with a human quality, what Irish musicians call "lift".

While you can work out specific arrangements to be played in a band or contest, in general, playing is always best where you throw in a little variation or ornamentation a bit differently each time. This only comes after mastering the basic tune and you should always be in control of the music so that you can replicate anything that you care, but keep the tune alive by not stagnating into just playing the version that is in your tune book. Tune books show a bare essential view of the tune, on which any good player will build. In the "Intermediate Playing" chapter, I will give you an example of how to build variations and ornamentation on a tune.

> Only play a tune as fast as you can COMFORTABLY play it.

This is the most common mistake made by bad players, new and otherwise. The fastest, wildest reels still sound nice at a moderate speed so long as they are played with style. (And, actually, playing them at a more moderate tempo is more authentically Northumbrian.) It is better to play a simple tune slowly, with ornamentation and feeling than to play it quickly in a nervous frenzy, stripped to the bone. Watch any great player in any kind of music. They are able to look around, enjoy the listeners, maybe even crack a joke because they are playing in their comfort zone. This comfort is conveyed to whoever is listening. So is nervousness and uncertainty.

> The best players always sound like they are playing slower than they really are.

This may sound odd at first, but listen to any good traditionally based music recording (Chet Atkins, Kathryn Tickell, B B King, Altan, I don't care). The best players are actually playing pretty darn fast, but it doesn't sound that fast (until you try to play your instrument along). This is so because they are playing in their comfort zone, which happens to be faster than your comfort zone. Never abandon fluidity and "feeling" just to play faster. Speed will come, but you can not develop speed first and then go back and add feeling later.

Beyond that, what Northumbrian Smallpipes music has in the way of style must be heard.

One could analyze it and make such pronouncements as "there are an abundance of sixth intervals" and such, but really the best way to soak up the style is by listening. The recordings

listed in the "Resources" chapter of this book will get you started. Keep in mind that you do not have to only listen to Northumbrian pipers. If you can get a recording of "The High Level Ranters" or some other Northumbrian group, listen to the fiddle and the accordion. You can learn from them as well.

A good way to listen is to find the tune being played in a tune book and really analyze what the player is doing that is not on the page before you. Actually take notes on how the player varies the tune each time through.

Remember when you begin this that a lot of "style" comes from the very subtle effects that the player uses that a novice may not even notice at first. I think it is safe to say that if you hear a good fiddler or piper play a tune and think that they played exactly what is in your tune book, you are wrong and have missed twenty five embellishments. Listen again. And again. (They played a little quick A before that G, they held that note a little longer this time, etc.)

Listen to the effect their changes have on the music. They may be trying to emphasize the rhythm at one point, throw in a little flashy run somewhere else, keep you in suspense with a longer than usual note somewhere else, and tie it all up with a nice ending which gently slows and comes to rest.

Listen for their intent as well as their method.

Did I mention you need to listen to as much good music as possible, especially Northumbrian?

And maybe go to piping workshops, competitions, even, dare I say, go to Northumberland?

Hostile takeover of a pub by The London Pipers and guest from Texas, April 2001 –

“No one gets a drop ‘til we play these things!” (Francis Wood / Graham Wells – ringleaders)

Ian Lawther, me, and Dick Hensold damaging the reputation of a nice Vermont town.

North Hero piping workshops, August 1999

Peter Dyson demonstrates great fingertip position on the chanter

Chapter 6 - Intermediate Playing

Intermediate tune list and playing comments

Turn to the "Tunes" chapter and, one at a time, slowly but surely, learn to play the following tunes in order. Please learn to play them well, smoothly, with confidence. As before, time spent getting your technique right here will make the future much less frustrating.

This would be a good time to return briefly to the "Beginning Playing" chapter and retake the "TRAMP" test.

I have added some "extra credit" tunes at the end. These are in the "Northumbrian Pipers' Tune Book" and are at this same general level, to give you extra practice and to make you more popular at parties:

Sir John Fenwick's The Flower Amang Them All - variations

This is my own bizarre scheme to show how some traditional players might actually play this piece. ***Do not just play it as shown.*** Read the section below on "Variations", especially the subsection "Examples of ..." for instructions on how to make this work. Keep this way of playing in mind for the rest of your life. It applies to all tunes played in an informal setting and gives you some ideas as to how to start coming up with your own arrangements for more formal playing.

Sweet Hesleyside - variations

Another tune written to be played using the same scheme as "Sir John Fenwick's . . .".

Go to Berwick Johnny

An "old-style" English hornpipe in 3/2 time. Keep it jaunty and full of bounce, emphasizing especially the first beat by either playing it staccato or just a shade longer than written. This tune has gazillion variations and any number of parts. This is a version which I have made from several other versions. As always, keep your playing clean and clear. A great and popular tune.

Rusty Gulley

Another great 3/2 tune. Note vibrato marks in B part. Read up on how to play them in the rest of this chapter. (If you meet folks who call this tune "Risky Gulley", they may have learned it from previous versions of this book, where I had the name wrong. So sue me.) To quote Ms. Julia Say, in her attempt to educate me on things British: "A Gulley is a large domestic knife such as a breadknife. The sort of thing employed in incidents of domestic violence, not unknown in the history of NE England". Rusty means rusty.

Bielbie's Hornpipe

Hornpipes are a favorite of Northumbrian Smallpipers and this is one of my favorites. Play it with lots of bounce. It should sound fun. Remember that those triplets (with the little "3") take the duration of two notes, i.e a triplet of eighth notes takes the time of two regular eighth notes. Be sure to play the first and fifth full measures of the B part (with the high B and high A) with a "straight" timing, before resuming the bouncy hornpipe beat in the next measures. Those high Bs and As should really "sing".

Proudlock's Hornpipe

A lot of notes but still fairly easy if you take your time. See if you can come up with your own variations and ornamentation. I knew you could. Actually, of course, those triplets are themselves variations hung on the "bare bones" tune and you could reduce them back to two eighth notes as part of your own version of the tune.

Marquis of Lorne

Good practice with the high keys and with quick triplets. Keep those triplets crisp. You may want them to be staccato.

Athole Highlanders

A classic Highland pipe tune, a nice sounding piece on our pipes, and a great finger exercise. Work up to playing this tune fairly fast but, as always, keep it clean. Side note: Most non-pipers play this in the key of A, so you may have to have your fiddler friends relearn the tune to play along with you.

Exercises in Key of D

OK, this is not a tune but these will prepare you for the next tunes as we leave the Key of G and move on! Remember, in this key signature, the C notes are sharp (C#).

Si Bheag Si Mhor

A classic Irish slow air by Turlough O'Carolan. Any Irish musician knows this one. Watch that those high B notes are of solid pitch (bad whistle players always torture this tune on these notes). Can be played as a waltz but works much better very slowly.

For this and the other tunes in the key of D, use your low D and high D drones (tune the low D to match the high D that you have already been using). For this tune, I prefer using just the two D drones.

Durham Rangers

On this tune, which has a stronger jaunty feel than the last tune, I prefer to play the two D drones and add the A in between. To do this, see the section below called "Different drones for different keys".

Wild Hills of Wannies

Our first tune in A minor. From the previous tune, you have tuned your low G drone to A. Now turn off the low D drone, adjust the tuning bead on the high D drone so that it plays an E. (If it does not, see "Maintenance".) Play this tune as a touching slow air, very moody. Try "gracing" the high Gs with either a high A or a high F# just before it. Try vibrato on the long E notes. Do not turn this one into a waltz. Stretch it out.

Dear Tobacco

A faster tune in A minor. The original tune (played with pretty much all eighth notes) is nice but this is the way Ged Foley of the House Band plays it, arranged as a strathspey. Really snap those E to A changes, as in the first two notes of the tune. Try playing "Wild Hills . . ." and this tune as a medley (the first tune a couple of times through, followed by this one two or three times through).

God Rest Ye Merry Gentlemen

This should be a very easy tune for you to begin playing in E minor. You already have your high D drone tuned to E, so shut off the G (A) drone and tune the low D drone (using the tuning bead) to match the drone E (and hopefully the E notes on your chanter). If your low G drone has two tuning beads, you should be able to tune it up to a B and you may like this drone combination (E B E) for this tune. I prefer just the two E drones. This is a simple tune and maybe one that you could embellish with your own variations and ornamentation.

Bonny at Morn

Another E minor tune, similar to "Wild Hills . . ." in that it is a haunting slow air.

Rights of Man

A classic E minor hornpipe that all Irish session players know. Try it as the second part of a medley with "Bonny at Morn". This is one of those tunes that uses a series of notes involving high G and high B, where you kind of drop the chanter because both thumbs are in motion. Either cut the first note a little short to be able to play the second note on time or use the method in the section below called "Alternative fingering of high B". A third method is to sit and rest the end of the chanter on your leg.

Princess Royal

Back to G major (too much minor key stuff makes one melancholy). This is a Morris dance tune and is played (for dancing) fairly much at a walking pace, but I play it more sprightly for just listening. Part of its unique charm is the 12 measure B part (almost all British Isles dance tunes have 8 measure parts). Play this tune with alternating A parts (repeated) and B parts (repeated). The "Capers section" is part of the Morris dance and is played as an alternate to the A part. I play it every third time through. All but the last four measures of the Caper section is played painfully slowly. (Watch someone dance this if you can.) Note the vibrato marks throughout the tune.

Rondeau by Moret

(The theme of Masterpiece Theatre.) Play this one so it sounds just like on TV. If you have not heard it, play it so it sounds very regal, not too fast, in a swaggering-down-the-Great-Hall-of-your-own-castle kind of style.

Trumpet Voluntary

(By Jeremiah Clarke, used to be attributed to Henry Purcell.) Played on the organ at half the weddings you have ever been to, this sounds great on pipes. I have changed the normally G#s in the first and fifth measures of the B part to G naturals, as I find they sound better on pipes. Find a pianist or organist to play this with you (they will have to transpose unless you play a G set) Oddly enough, many people think this is the theme for Masterpiece Theatre.

The Peacock Followed the Hen

This is our first slip jig. See the 'Basics of traditional British Isles folk music" chapter for a discussion of slip jigs (under "Jigs"). Count the measures ONE two three Four five six Seven eight nine at first, progressing to a more simple ONE two three with practice. Play this at a lively pace and work on getting your finger work crisp. This is one of those rare tunes that does not end on the key note. Trust me. Play it with A drones and maybe the E in the middle. And, yes, John Peacock did play and publish this tune.

I used to believe that this tune was about a fine dinner and not really about a barnyard stalking incident. However, Barry and Julia Say have informed me that "a dandy in the late C17 / early C18 was sometimes called a peacock. So…probably a barnyard incident after all, but of the rolling in the hay variety. It's a mid C17 tune at the latest, so John Peacock didn't compose it, just played and varied it."

Cuckold Come Out of the Amrey

One last A minor tune to help work on your finger crispness. This tune, like "The Peacock ..." is a very old tune, playable on the unkeyed chanter.

Extra credit tune recommendations

All from the first "Northumbrian Pipers' Tune Book" - Jaunty / polka-ish / march-ish tunes "Salmon Tails Up the Water", "Herd on the Hill", "Lamshaw's Fancy", "Nancy", and "Jenny Bell"; the air "Crooked Bawbee"; jig "Hexham Races"; waltz "Archie's Fancy"; hornpipes "Barrington Hornpipe" and "Friendly Visit"; and the Baroque sounding, bottom-line-reason-I-started-playing-the-pipes tune "Sir Sidney Smith's March". After you learn these, learn every other tune published by the NPS or Matt Seattle. Go ahead. I'll wait.

Playing with all three drones and in different keys

Three drones

Now that you can successfully play all those tunes with the large G and the small D drones, you may want to add the third drone, the high G. Open it (pull out the piston or rotate the end tuning bead, whichever you have) and tune it to match the other two drones as they sound.

You can play any tune with whatever combination of drones you prefer. For example, some tunes in G sound best with both G drones without the D at all. I find myself playing with mostly the low G and the high D and hardly ever use the high G. Nobody seems to use all four drones at a time.

(OK, Tom Clough did, but no one today does as a general practice.) Using different combinations on different tunes helps to give your piping performance some diversity.

Different drones for different keys

Use the chart up in the "Reading Music" chapter called "Keys and the drone notes to use" to determine what drone notes you want to use.

Using tuning beads

Usually pipes are made with a tuning bead on at least the low G drone which enable the drone to sound an A. Often there are also beads on the D drones allowing them to sound E and a bead on the high G drone to allow it to sound an A. For changing the pitch of the drone using the tuning bead, the common misconception is that all you do is rotate the tuning bead. This is true if your reeds are set up perfectly. You should rotate the bead to produce the desired note and then re-fine-tune that drone to get that drone in tune. If you can not move the drone far enough to get the promised pitch, you must adjust the drone reed or repair the drone (see "Maintenance").

It is generally best to first tune the low drone note for which the key is named (i.e. the low D drone for the key of D) to either an electronic tuner or to the chanter (if you know it is playing in pitch), then tune its octave (high D in our example), and finally tune the "fifth" drone (from our chart that would be tuning the low G drone to an A by rotating the tuning bead and then fine tuning).

If you have more than 4 drones

Some sets are made with more than 4 drones where the extra drones are low A and possibly other notes to allow key changes without retuning (as the player has already tuned the added drones). These sets have a switch where the drones meet the drone stock to turn on and off certain drone combinations. You will have to figure out how yours works for yourself.

Ornamentation and variations

Ornamentation and variations are what keeps a simple tune alive for centuries. Loosely, ornamentation is how you play a given note and variation is how you change what notes are played. Both are done to add vitality and musicality to a piece of music. Also, given that you can not play louder or softer on the pipes, ornamentation is a way of emphasizing certain notes, providing the impression of dynamics.

Again, the tune as shown in a tune book is merely the bare bones on which a musicians build their version of the music. You should include as much ornamentation as the tune, playing situation, and good taste call for.

Vibrato

Vibrato is the quivering of a note's pitch, like opera singers do their voice. This gives the note a gentle, human voice quality and is good for notes of longer duration. The player achieves this by opening and closing a hole which is below the hole producing the note. For example, if the note being played is an E, the player might move their D finger back and forth over the hole. Try this on the long E notes in "Sir John Fenwick's . . .". Notice the vibrato marks over those notes in this book. Do not wait for a publisher to ask you for vibrato, use it when you fell it helps the tune.

You can also achieve a vibrato by keeping your fingers in place and shaking the chanter. This is especially useful for lower notes.

The player must experiment with their own set of pipes to determine what kind of vibrato on any given note is produced by moving any given finger or by shaking the chanter. On one set, it may

be that a strong variation in pitch is achieved on the E by moving the D finger, whereas moving the C finger produces a more appealing pitch variation. This will be different on another set of pipes. You need to find how to achieve the vibrato that you want on for each note your pipes. Also, you may want a stronger vibrato for one tune and a weaker vibrato for another.

Vibrato can be constant on a note or can either speed up or slow down as a note sounds. Usually speeding up sounds better if you are next going to play a higher note and slowing is better if the next note will be lower, but use your own sense of taste.

You will also notice that vibrato helps sweeten the tone of notes which conflict with the drones. For example, in the key of G, the G, B and D notes sound nice with the drones (they are in fact the notes of a G major chord) but some other notes (especially F#) sound as though they do not fit well. On a long-held F#, vibrato helps by disguising the pitch a bit, making it fit better. Try it.

Trill

A trill is played on our pipes by first playing the base note (the one shown in the music). Then (generally without replacing that finger) rapidly lifting and lowering the finger above the open hole, repeating as long as taste and time dictates, ending once again on the base note. For example, play a D by lifting your left ring finger. Now repeatedly lift and lower the left middle finger (E). End by lowering the middle finger, back to D.

Trills are used to really accentuate a note, often the note just before the end of a tune which is drawn out extra long for climactic effect.

Staccato

Staccato notes are achieved by simply playing the note for about half of its written value, followed by silence. Staccato playing is a trademark of Northumbrian Smallpipes, especially as few other pipes can do this. Staccato notes can really emphasize the rhythm and add punch to a tune. I have shown staccato notes in some tunes in this book (i.e. "Rusty Gulley" and "Trumpet Voluntary") where they are almost required, but you can place these in many more places to get the sound you desire.

Try practicing each of your tunes played entirely staccato. It will not sound "right" but is a good practice technique to add finger crispness to your playing.

Legato

The reverse of staccato, this means playing where all notes flow into each other with no breaks. This is a smooth style of playing but does not show rhythm well.

Grace notes

Grace notes are generally one or two notes played before the "real" note and they take time away from the start of that note (rather than take time away from the duration of the previous note).

Single grace notes

Single grace notes are often the note immediately above the real note (i.e. high A before high G) but can also be below (i.e. a C or C# before a D). Gracing with the note below the real note gives a softer sound. Single grace notes can also evoke a very "bagpipy" sound by being considerably lower or higher than the real note (i.e. a low G before a high D). "Popping" a very quick high D just before a low G is one of my favorite ornaments, if done so quickly as to not really be able to identify the pitch of the grace note. This is especially nice where there are two low G's in a row.

Another very effective way single gracing technique is to use an "accidental", that is, a note not in the key of the music, but in this case immediately below the note being graced. Examples, in the key of G, would be gracing a high D with a C# or gracing a high E with a D#. Both of these draw a lot of attention to the note being graced.

Turns, rolls, runs and arpeggios

Multiple grace notes tend to be one of three categories: a short turn, a run, or an arpeggio.

Short turns are simply a grace note of the same pitch as the real note, the note above, and finally the real note (i.e. D grace, E grace, D). In this case, it is up to the player as to whether or not to replace the D finger before playing the E. A different effect can be had either way. It is also up to the piper as to which additional note to play (i.e. D grace, E or G or A grace, D). Irish pipers (and fiddlers) refer to these short turns as "half rolls". A "roll" goes both up (as does a half roll usually) and also down before landing on the real note (i.e. D grace, E grace, D grace, C# grace, D). These are difficult on our pipes but well worth trying. Irish fiddlers play them so fast that you probably will not recognize them as such at first. Again you should generally aim to play turns so quickly as to not really be able to identify the pitch of the grace notes.

Runs are some fragment of a scale, ending on the real note (i.e. D grace, E grace, F# grace, G).

Arpeggios are the notes of chords, played in rapid sequence. We have not covered chords in this book, but the early exercises contained several arpeggios. An example would be a G arpeggio with low G grace, B grace, high D grace, and high G. Another would be an A minor arpeggio with low A grace, C grace, high E grace, and high A. As much or as little of an arpeggio can be used, with different effect. You may either find arpeggios for yourself by trial and error or, if you wish to learn more about chords so that you can get the right arpeggio first time / every time, ask your friendly guitar player or piano banger.

Slides or bends

Uillean pipers and whistle / flute players often slide or bend up into a note. This can be done, especially on slower tunes, with practice on our pipes. In a tune going from C to D, the player will play C, then smoothly remove the D finger in a smearing, sliding or rolling motion without yet replacing the C finger. This opens the hole a little at a time, causing the pitch to slowly move from C to D. This can be done across multiple notes (i.e. C to D to E) and some call this a "glissando".

Alternative fingering of high B

Often tunes have a sequence of notes moving directly between high G and high B. If you are not quick enough, you drop the chanter, because both thumbs come off the instrument. At the very best, you are forced to play the first note staccato to have time to replace the first thumb. It is handy to develop the ability to play high B by pressing the key down with the side of the right first finger, without removing it from covering the C finger hole. This is not only helpful for these sorts of tunes but also is a handy skill used in the next section.

Alternative fingering of high B

There have also been some pipes made with an extended B key, so that it comes closer to the right thumb, allowing the player to rock that thumb knuckle forward, pressing the key down with the knuckle or fleshy end of the thumbnail.

Altissimo, Harmonics, or overblown notes

When you first started, you probably accidentally made your pipes make some very high shrill notes, until you learned to totally cover all the finger holes. You were in reality doing a very advanced technique called "overblowing". If you do this on purpose you can get a few extra notes at the top end of the scale to add to your arsenal.

To learn the concept of overblowing, play a high B. Remove your low G finger from the chanter and slowly replace the B key. If all is well, you will now be playing a D above your high B. (Some reeds resist overblowing, others make it easier. Good luck.) Keep trying until you get the feel of it. Notice that quick movements tend to make the pitch jump back down.

I hope you learned in the previous section how to play a high B with the side of the right index finger. Once you can do this, use the technique for overblowing described above but, instead of lifting your low G finger, press the F# key. This will produce a high C#. Continue pressing the F# key for all overblown notes. Lifting the low G finger produces the D and lifting the low A finger (without replacing the G finger) produces the E. The next note (F#) is produced by leaving the low B finger down and instead lifting the C finger so that only the middle finger and thumb of the right hand are pressing against the chanter and the low F# key. You can experiment with other fingerings for this highest F# and for the notes above there. (They get pretty shrill, weird to finger, and are probably not going to be of much use.)

Some chanters and reeds will do this better than others. These notes sound better on lower pitched sets. They do ease the use of a D set in playing with others as they extend the sets range to better duplicate that of a fiddle. Also you will find that these notes work better for runs of notes in sequence (D, E, F#) than for interval jumps (D, F#, C#). Try it out and see if you want to use this technique. Many excellent players do not find it useful. Many do.

Variations

There are two extremes of the spectrum of "variations". At their simplest, the player takes a phrase of at least one note and changes it in a pleasing way. Rather than "decorating" the given notes, as is done by ornamentation, variation is actually changing the notes themselves. This can be done by changing the pitch, adding notes, or subtracting them. This is the most common form of variation and is useful in almost any playing circumstance.

At the opposite end of the spectrum, the player can (with extreme advance planning) make a totally new part to a tune which only preserves the length and key of the original. Most of the Northumbrian Smallpipes tune books on the market will have examples of tunes with arrangements by some famous piper. These often begin with the simple variations, move on to nearly complete rewriting of the tune, and finally end with a restatement of the original simple tune. These pieces are mostly for solo playing, often for competitive playing, and are a real test of technique. Some are so clearly identified with the arranger that they are played just as they played it and should be credited to that piper whenever played.

The pinnacle of development of the "variation as an art form" can be found in the fabulous publication "A Repertoire of Variations for the Northumbrian Smallpipes", listed in the "Resources" section. (Yes that was a shameless plug for the book, but it really is great.)

Examples of ornamentation and variation

I have outlined the common methods of ornamentation and variation as they apply to pipes and also given examples of some of these in the "expanded" versions of "Sir John Fenwick's the Flower Amang Them All" and "Sweet Hesleyside" in the "Tunes" section of this book. In these versions, I have written numbers above some of the measures. When playing these tunes, play the basic tune most of the time but each time through make one or more substitutions, playing for example the substitute measure 3 instead of the basic measure 3. You could substitute one measure or many. The idea is to mix and match so that the tune has a little more interest than if it were played the same way every time. This is the way most players will play this type of music in an informal setting.

I have not written out any of the "competition" style variations, but would direct you to see the tunes which are either credited with being arranged by someone or which say "with variations" in their titles in "The Northumbrian Pipers' Tune Book", "The Northumbrian Pipers' Second Tune Book", and "The Charlton Memorial Tune Book". Also see the tunes in "Peacock's Tunes" and "Bewick's Pipe Tunes - 51 Gems" which seem to have more than 4 parts. These are in reality mostly 2 part tunes with several variations following.

Playing with others

While I am a big fan of solo piping, to me nothing takes the place of playing with other musicians. Besides the music sounding more full, the teamwork that is learned, the camaraderie that is felt, and the improvement in one's playing by having to play together makes this the most rewarding of musical experiences.

Playing pre-arranged duets or trios

When playing duets or trios, it is customary for only one player to use their drones. It is also essential that the two chanters be closely in tune with each other. They need not be the same type of chanter (i.e. C chanters play well with F chanters and D chanters with G).

Duet and trio music is the sole form presented in "The Northumbrian Pipers' Duet Book", "The Piper's Companion" and "The Piper's Companion Volume II" (with some quartets in Volume II). I prefer the "Duet Book" as it has more variety of styles of second parts (being written by numerous arrangers), but "The Piper's Companion" (not Volume II) does have guitar chords which may be of some use.

Pretty much all of these duets are written for two instruments tuned to the same pitch (i.e. two F sets of pipes). Those who do not play a Concert G set of pipes who wish to play with a different instrument (i.e. flute, violin, harp) will need the other musician to either retune to the pipes or transpose their part. Retuning is much easier if that can be accomplished.

Playing in a jam session

Northumbrian Smallpipes fit in well with many session or band settings (especially Concert G sets). In a session, you need to both be able to play something solo (many people will want to hear what your pipes sound like by themselves) and also as part of the group sound.

Before joining in with an unfamiliar jam session, it is most proper to first ask if you can join in. (In reality, especially in that part of reality called "Great Britain", musicians rarely ask - they just join in and are seldom asked not to. But it never hurts to be polite, especially when new to a session.) Next, if invited to join, you should try to fit into what the session is doing. Only play a tune if you actually know it and can play it well. Be aware of how the other musicians are responding to you. A few casual frowns may tell you that you are not blending in as well as you think. Do not overstay your welcome. If you are fitting in, chances are that the session players will ask you to play something by yourself. This is a good time to play that special slow air or lament that you have worked up to perfection, as these sorts of tunes are not usually played by the masses at sessions. Again, do not overstay your welcome. After your stunning solo, take your bow and turn the session back to the main players. If you fit in, the players will let you know it and you can really join their party. You may want to bring a photocopy of some common pipe tunes that you know so that some of them can learn them in time for the next session. Whether they learn these tunes or not will also tell you how you are fitting in.

One last topic here: Most sessions in the U.S. that you will find will be either OId Timey or Irish sessions. Northumbrian session just don't exist that I am aware of outside of that wonderful area. So be aware that (1) Northumbrian smallpipes are not a Celtic instrument, (2) the other session players will probably know very few if any Northumbrian tunes, (3) the other players will likely not know how to play or accompany the tunes in Northumbrian style, and (4) bodhrans, if present, will likely not sound right against the pipes.

Playing in a band

Playing in a band generally involves adding the ability to rapidly tune your instrument (no whining about reeds is tolerating), remembering pre-planned tune arrangements (not a lot of untested ornamentation or variations), and using sound equipment.

For tuning, getting your reeds as stable as can be will help. It is also good to start the evening with everyone tuning to reliable electronic tuners. However, once the music gets going, you should tune to the other musicians. Otherwise, no matter who is right or wrong, the whole thing will sound out of tune. Be sure to play your pipes in the same environment as the performance will be for several minutes before making final tuning adjustments, so that the reeds can acclimatize.

Sound equipment is mostly not designed with the piper in mind. There are some small microphones made that can attach to the pipes and which will sound good. The trouble is that, unless you have your own mixer or preamp, you can not get away from the microphone to tune between sets. You also can not fade in or out like you can by moving into or away from a stationary microphone. I find the best answer is to use two microphones. I place the best microphone available just in front of the chanter about the level of the low E hole angling upward. I place the second microphone just in front of the drones, just past the large G drone, pointing in towards the drone stock. It is almost impossible to get a good sound under loud stage conditions with just one microphone, but if it is a quiet, slightly amplified performance, one will work fine, placed midway between the chanter end and drone ends, with the bass turned up a bit on the mixing board. In either case, it helps to assure the soundman that these are "quiet" bagpipes. Otherwise, they generally turn you off because they know how loud bagpipes are.

Way more music is available

First, I would point out that I have chosen the tunes printed herein for several reasons. I have, of course, picked tunes that would provide the needed succession of difficulty, but I have only included "traditional" tunes (i.e. those for which the author is unknown) to avoid the hassles of getting the author's permission. Lots of my favorite tunes have been written in more recent times by Tom Clough, Billy Pigg, Jack Armstrong, Archie Dagg, Kathryn Tickell, Chris Ormston, Adrian Schofield and Matt Seattle (to name a few). Music for the Northumbrian Smallpipes is a living tradition, so do not hold it against a tune simply because it was recently composed. In fact the Northumbrian Pipers' Society has Composition as one of their yearly competition categories. Keep up the tradition and write something yourself!

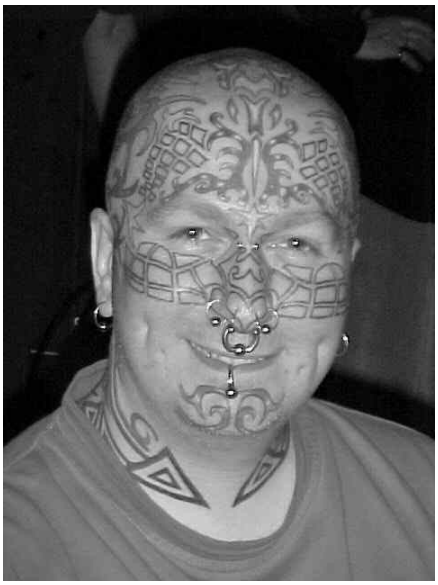
But first take advantage of all the other people who have already written fabulous tunes. See the list of tune books in the "Resources" chapter. Many of these are available through the other "resources" listed as carrying books. I will go out on a thin limb here and list the books for you in that chapter "in my order of preference", as in what order I think you should acquire the books. This is, of course, merely my opinion.

In several of these tunes (especially those not written out for Northumbrian Smallpipes), the tune may go below the range of your instrument, usually just down to a C or B below your lowest note D. If you do not have an extended range chanter and lack these notes, you can do what Irish flutists do and substitute either the higher octave notes for these (which doesn't usually sound that good) or change the tune by substituting a harmonizing note. As an example, if playing in the key of G, usually a low E will substitute for the C and a D will substitute for the B. Do some experimenting and figure out what works best for each tune.

Barry Say playing a Liestman "Harley-Davidson" set

I think he will stick with sets of his own manufacture - but he liked the leather fringe!

Pauline Cato has just washed her pipes and is letting them drip dry.
Don't try this at home.(Photo by Danny Cato.)



Adrian Schofield, early 1999, never washes his pipes.
Don't try this at home either.

Chapter 7 - Maintenance

A brief word about maintenance

To be blunt, Northumbrian Smallpipes are a high maintenance instrument, at least compared to pennywhistle or concertina. You really must know how to keep the pipes in top form and are not likely to be able to take them easily to anyone else to fix. However, if you keep them maintained, you should have relatively little trouble. The only big problems that I have seen are with sets that have laid untouched for years. Play them at least weekly, keep them oiled and airtight, and they will be little trouble.

The other seemingly big problems that I see are with beginners who just received their first set in the mail (as happened to me). They (and I) have to adapt the reeds to the humidity and temperature conditions under which they live AND learn to play the things all at the same time. I spent 6 months doing this and it cost me frustration and a whole new set of reeds, despite several calls to very helpful people in England and the fact that the pipes were probably fine to start with. If you are a beginner, please take the following advice:

> Take it easy on any maintenance until you are sure of what you are doing.
>
> Spend the time to build a manometer - this will greatly ease the reed adjustments.
>
> Call the maker - they bend over backwards to help as best they can.
>
> Try to get together with a piper who already plays - this book is good . . . but hey.

Triple A does not fix pipes

So, you will have to do it yourself. All the pipers I know carry a little maintenance kit with their pipes to handle common problems that show up when you are away from home. I will list here what I typically carry and suggest that you find a neat little bag that will securely hold these items in your pipes case. (Non-US residents - Triple A is an auto service here.)

Spare reeds - Chanter and drones if possible. Find a plastic medicine bottle that they will fit in, wrapped in a bit of tissue paper.

Oil bottle - I use an old glass fingernail polish bottle (clean it out with nail polish remover / acetone before use) with a brush in the cap. The brush works great and they are virtually unbreakable. In the bottle there lives a bit of neatsfoot oil for oiling the pads and chanter bore.

Small gob of beeswax - Used for plugging up a leak, helping seal a loose wrapping, etc.

Leather bootlace - Used if something breaks on your bellows (strap, hinge, etc.).

Thread - Big size, little size, a few feet of each for doing emergency rewrapping of joints, drone reed repairs.

White glue - Fixing a broken reed or other temporary repairs.

Spare key pads and axles - In case one comes off and is trampled by your fans just before your encore.

Rubber band - In case a spring breaks, you can maybe save the day by wrapping this around the chanter.

Knife - To cut thread and bootlace, etc. Remember this is in your pipes case before trying to carry them on an airliner (experience talking here).

Parts names

See Chapter 1 for two diagrams showing the names of all the parts of Northumbrian Smallpipes. I have tried to use the names that I have heard other reliable sources use. There are certainly other names for some of these parts (such as the charming "bladder" used by more anatomical types in place of the word "bag", the word "stick" used for "chanter" by hipsters like Colin Ross, etc.) but the meaning can usually be deciphered when taken in context.

Everyday adjustments

These are not really done everyday, but may be required on a weekly basis or so, depending on the weather, the condition of the pipes, and how much you like to fidget. Fight the urge to adjust everything everyday.

Adjusting drone reeds

Your drone slides should give you enough latitude to make small corrections to your drones pitch to adapt to that days weather. You should not need to actually adjust the drone reeds on a frequent basis. If so, fix them so that become stable or make/get new reeds.

If some days your tuning beads land you right on the correct pitch and some days they are a little off, your drone reeds and drones are just reacting to the environment. It is probably not worth messing with to try to "fix" this. If they wildly change pitch from time to time, not related to bag pressure, consider that you have a loose fitting wrapping and see the "Loose reed bridle" section below. If they change pitch with small changes in playing pressure, they need to be "tuned", so see the "Drone reed repairs" section below. Again, I would not try to "fix" a reed that is generally reliable.

Chanter reed

Back in the "Beginning Playing" chapter, I described how to tune a drone to a standard and then how to check that the chanter reed was playing in tune with the drone. I am assuming here that an experienced person has "set" the chanter reed (stuck it into the socket) for you. If not, see the "Fine scraping and tuning the reed" in the "Reed making" chapter. Unless you are either experienced or willing to ruin a perfectly good reed in the name of learning a hard lesson, I would not start carving or scraping on the reed. Usually the adjustments in this section having to do with opening and closing the lip opening and inserting the reed further into the chanter (or setting the reed further out of the chanter) will suffice unless you are making the reed yourself. In that case, turn to the start of the "Reed making" chapter.

Reeds (both chanter and drone) operate on a set of variables. I will describe all the variables in the "Reed making" chapter, but here you only need be concerned with the width of the reed tip opening.

> If the reed is a little too far open, the pitch of the reed at a standard pressure (where is your manometer?) will be too low. Conversely, if the reed is too far closed, the pitch will be too high.

The reed opening on an average reed is roughly 1 mm but the adjustments you need to make are on the order of a tenth of a millimeter. You will hear the difference rather than see it. Adjustments to the reed opening are made in VERY SMALL INCREMENTS. Be cautious at first. If you go too far in either direction, the "guidelines" by which we are working will cease to operate as will the reed.

> Do all reed adjustments with very clean hands. Even the natural oil on your hands can injure a reed, not to mention salt, perspiration, and beer. Watch out for the oil that you put on your pipes!

Advanced chanter reed adjustment tip

If you are a beginner, you might want to skip over this for now. The following is information that is not found anywhere else in print that I am aware of and which I find to be invaluable:

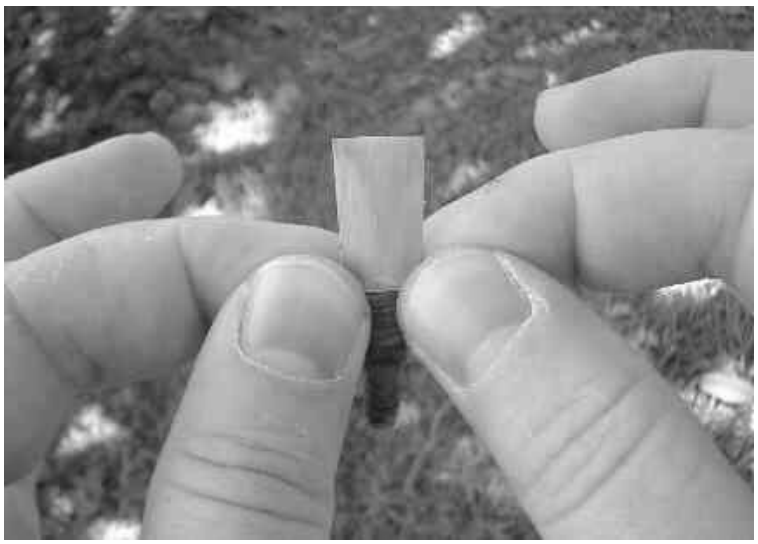
While you can alter the pressure a bit to make a slightly-out-of-tune reed play in tune, you will find that you have to alter the pressure differently for high notes than for low notes. (Maybe the reed has adapted to a different temperature and humidity than it was made in.) This makes it more difficult to play and gives you one more thing to think about (and who needs that extra challenge?). If you are in mid-performance and notice that you have to squeeze harder to get the high notes in tune, you need to open the reed while the audience is applauding. (This will lower all the notes, but will lower the lower notes much more, so that when you squeeze harder to get the low notes up to pitch, the high notes will be on pitch as well.) Conversely, if you have to "back off" the pressure to keep the high notes from being sharp, close the reed. If you live in an area with wide climatic swings (don't all North Americans?), maybe you should consider making some reeds in different seasons, so that, as you change your wardrobe you also change your chanter reed. You may find that you are doing less adjustments than keeping the same reed in all year.

Removing the chanter from its stock

Do not bypass this paragraph as something that any idiot knows. Many a chanter reed has been broken by not following this procedure (experience talking here). Grip both the stock and the chanter, one in each hand. Try not to touch any keys (especially if you have a high G# sharp key, the B key protrudes as it goes around the G# key and you can easily bend it out of shape). Anchor the end of the thumb gripping the chanter against some part of the other hand. Gently, with some twisting, pull the chanter out of the stock. If the chanter is in tightly and it finally comes out, the natural tendency of your hands will be to push back in instantaneously, probably smashing the reed into the stock. The braced thumb acts to limit this instant reaction.

To close a chanter reed

See the photo below. To close the reed, place both thumbs on one side of the reed on the bridle and place your index fingers on the opposite side of the reed. Squeeze gently. You should only see a tiny movement in the tip. When you release, the reed will open back up a little bit. You may have to repeat this with varying amounts of force to get the hang of it, but take it easy. If you squeeze too hard you will change the shape of the staple (the brass tube inside) and the reed will be damaged forever.



To open a chanter reed

See the photo below. Opening the reed is generally NOT done by squeezing the other way. If you must, because the reed is so far closed you can't believe it, squeeze the pointed edges of the bridle (where the reed halves meet) with thumb and forefinger. This will open the reed but runs the risk of damaging the seal on the sides of the reed. THE BETTER WAY TO OPEN A REED is to move your thumb and fingers up to the top of the reed and squeeze on the sides of the reed itself. You will notice how pliable the end of the reed is (and how much it springs back). This is a much safer way to go.

Ongoing maintenance ("well-pipes")

Check for leaks, especially before you have one

Leaks are the most common thing to go wrong with an instrument that relies on airtightness to work. Every month, when you are making the payment on your Rolls, close all drones and cover all chanter finger holes, inflate and squeeze the bag. The bag will ideally remain full forever. Realistically, the bag will only VERY slowly deflate. If it doesn't hold half its air for at least 12-15

seconds while you are squeezing at typical playing pressure, you have a serious leak. Leaks smaller than this can be fixed but will not give you serious playing problems. I offer this advice under "Ongoing Maintenance" because it gives you a quick idea of the general condition of your pipes and gives you a baseline from which to judge leaks.

Oiling the pipes - wooden bits

Major warning

Always keep all oils, cleaning products, and anything that is not air away from your reeds. Oil will kill them and you will be sad.

Why oil the pipes and how to do it

Most everybody agrees that woodwind instruments sound best when their bores are oiled regularly. With mouth blown instruments, this repels the water (i.e. spit) which goes into the bore from the players mouth and lungs. With our pipes, it appears that the benefit is either one- or two-fold. Oiling makes the bore "appear smoother" to the air vibrating in it, improving the tone. Everyone agrees with this. Secondly, there may be some benefits related to humidity changes. See the next paragraph for that one. But the bottom line is oil the chanter bore every month or so, dependent on the weather (more often when it is dry, less when it is damp - don't forget that furnaces and central heating make it incredibly dry in your house in the cold months, no matter how foggy or damp it is outside). The cheap way is with a little scrap of an old piece of underwear either pushed through with a tiny dowel rod or pulled through with a string. (Some people recommend putting a drop of oil in a few of the finger holes instead, letting the oil distribute itself, but I do not see how this would uniformly coat the bore.) For the deluxe way, see the "Tools and Gadgets" chapter under "Bore oiling / buffing rods". Either way, use just a bit of oil and get it well distributed (no puddles, rub it into the wood as best you can). You will really hear the difference if you ever oil an ill-cared for set and compare the tone before and after - the chanter will clearly sound brighter.

Here we go into "hot water territory". Not everybody agrees that you should oil the outside of pipes. Those in the "oil inside only" camp believe that oiling the outside provides no benefit and indeed can corrupt whatever finish is on the outside of pipes and generally gum up the works. Those in the "smear it all over" camp believe that the oil penetrates the wood a little, slowing moisture exchange, so your pipes react more slowly to climatic changes, stay in tune better, and have fewer leaks. They also like the "glisten" that the oil brings. I am of the "smear it all over, let it soak in a couple of minutes, and buff it off really well" camp. I do believe in the slowing of moisture exchange and believe my pipes are more stable because of it. I do concede that the oil must not be allowed to build up, especially around the keys, so I carefully apply the oil to the wood only and follow with a good buffing with old cotton underwear to keep the pipes looking good and "gum-free". (Undies washed sufficient times are very soft and have no lint.) If you have no old underwear, try ordering some mail order from the resources in this book.

What kind of oil - 30w or 2 cycle?

Neither. The best oil in my humble opinion is neatsfoot oil, usually sold where shoe polishes and shoe treatments are sold, also sold at saddle shops for those of us who live in areas which are horse-prone (hey, this is Texas, after all). For many years, the battle raged between whether olive oil or almond oil was better for this purpose. Finally the evidence shows that neatsfoot oil does not harden key pads as the vegetable oils can, and seems to do just as good a job on the chanter bore, so neatsfoot is now the oil of choice. I use Kiwi brand which is about $8 per 8 oz bottle. It is clear golden oil. You may also find a variety of “Neatsfoot Compound”. As long as they are oil and not opaque, they should be fine. A “neat” is our friend, the cow. The oil is made from hoofs and

shin bones and such, so it is sort of a bi-product of steak. If you wish to be a true vegetarian, you can still use olive or almond oil on your presumably non-leather key pads.

Never ever ever put a petroleum based oil on wooden musical instruments. This includes the "bore oil" or "fretboard oil" sold in any music store. These oils have a tendency to creep up the bore and infect the reed (bye bye, reed) because they are so slippery. But more importantly, they are not hydrophilic and will not actually penetrate the wood. The oil that is naturally in wood is hydrophilic and much more like neatsfoot or vegetable oil than a petrochemically-derived oil, which is hydrophobic. (I have been working in the Houston oil business for 20 years, trust me on this one. If I could recommend one of our companies products, I would, but I can't.)

The best oil container is an old nail polish container (glass with a little brush attached to the cap), cleaned well with acetone or nail polish remover. These fit well in your case and the brush is perfect for oiling key pads and such.

Oiling the other parts too

Key pads

Also of prime importance, is keeping the key pads oiled. This keeps them sealing nicely and is essential to an airtight set of pipes. To oil them, raise the pad, dab a bit on with the brush in the nail polish bottle, smear it around the pad, and let it soak in for a few seconds. Take a piece paper towel and place it under the pad, where it will meet the chanter. Close the key and reopen to remove the towel. The paper should absorb any excess oil. Check for build up around the hole at this time and scrape it away with a tooth pick if there is any to be found.

Drone slides

Occasionally oil the hemp wrapping on the end of the standing drone part, over which the sliding part slides. When you do this, work the slide back and forth to evenly distribute the oil. This will keep the drone joint airtight. Wipe off any excess that is left on the wood of the standing part.

Other hemp wrappings

The other hemp wrappings (where the standing part of the drone plugs into the drone stock, where the chanter plugs into its stock, etc.) are done with waxed hemp thread and should not be oiled. Oiling them will cause the joint to be loose (the joint is a friction fit and oil defeats friction).

Cork bits

There are cork beds underneath your tuning beads. These must be kept resilient to remain airtight and must also slide smoothly. These should be oiled every so often (maybe every third time you oil everything else) with a little petroleum jelly. I do not know why, but the argument above (animal-based versus plant-based versus petroleum-based oil) does not hold true for cork.

Leather parts

If you have a leak attributable to the leather valves on the instrument, use the neatsfoot oil to oil them. One is the flapper on the inlet of the bellows. The other is the flapper at the inside-the-bag end of the blowpipe. (Brits call these "clack valves".) Do not oil these on a regular basis, only if you have a leak. This will keep the bellows-filling-the-bag process efficient. You can use standard leather cleaner and moisturizer on the belts and straps and bellows if you like, as appropriate, to keep them looking showroom new.

Keep your pipes clean and polished

Metal parts

The metal parts on pipes, whether brass, nickel or silver, will corrode with time. Use a good non-abrasive metal cleaner to keep these parts clean. (If you wait too long, the corrosion could cause real damage or at best, it will be harder to clean off.) My favorite metal cleaner is "Nevr-Dull" brand, is called "magic wadding polish", and is available at hardware stores and car parts places. It is not a paste. It is cotton wadding soaked in some sort of solvent that really works and does not discolor nearby wood. You can also use "Brasso" or "Flitz" but these are pastes that have some abrasives in them and can leave paste in the decorative crevices in the metal and in the metal/wood joint areas. Whatever you use, wipe it off well before using the pipes.

While you are polishing your pipes, look for oily buildup around the keys and fix this at this time. Some of this "Nevr-Dull" wadding can be smushed around in there to help clean it up.

Wooden parts

Keep the wood clean by wiping off perspiration or "spilled liquids" with some more of that old underwear. If you have a serious spill, clean the wood with a damp cloth, followed by drying/oiling/buffing with a dry cloth. I would not use furniture cleaner, waxes, or Pine Sol on my pipes.

Keep your pipes in tune and playing at the right pressure

Check your pipes tuning with standards such as an electronic tuner and a manometer frequently. It is easy to drift into playing at too high a pressure and your arm soon adapts to squeezing the notes into tune. Especially if you seem to be having a little trouble playing some day, the first thing to do is get out the tuner and the manometer.

Protection

How much did you pay for your pipes? How long will it take you to get another set? Keep them in a case at all times unless they are strapped to your person. Keep in mind that dogs, parrots, and children like to chew things and investigate the unknown - keep the pipes in the case and the beasts out of the case. Also keep that case in a nice climate. Do not lock them in a closed car in Houston in August or in Buffalo in January (Euro-translation: Cairo in summer or Oslo in winter). Even letting your pipes get a little warm can melt the beeswax that is holding in your reeds. If they do get cold, for example the case is in your car on the way to that pub in Buffalo in January, bring them into a pleasant environment and try to let the case warm up unopened for at least half an hour, allowing the wood and metal to slowly warm up and not crack or become unglued.

While your pipes are in the case, imagine that they are not in a case. Banging around the case can dislodge reeds and give you dented pipes. DO NOT CHECK THEM AS BAGGAGE! For light jostling, wrapping the chanter in a cloth or slipping a sock over it is a good idea. Same goes for the drones. If you need to seriously jostle them (i.e. ship them, take them canoeing), wrap them up and fill the case with "packing peanuts" so that nothing moves when you shake the case.

Humidity problems

Even though I live in the sauna that maps call "Houston", we do have dry conditions indoors in the winter time (which is that second week in January where it freezes two nights). When humidity changes (seasonally or with travel), keep an eye on how tight the fittings on your pipes are. (Wood and cane shrink with lower humidity.) If the chanter is loose in the stock, add another small wrapping of thin thread so that the chanter will not come out during playing or fall out (as

happened the week I got my first chanter - took 3 months to get another reed). Same goes for drone slides. Reverse this with higher humidity as needed.

If you must subject your pipes to extended periods of very dry weather (heated indoors in winter, desert during summer) you may have trouble with wood and leather cracking and even reeds cracking. The best solution here is to keep a humidifier in the case. This can be a store bought item from a guitar shop (they have them, just ask) or even a damp sponge in one of those travel soap boxes. "Dampit" brand humidifiers for guitars are great, since they also give you a little card with a color-based humidity gauge to keep you informed as to the humidity in the case. The deluxe alternative is to get a humidifier for your house.

As for reeds, chanter reeds can crack when played under very dry circumstances. For this case, I recommend you make or buy (see "The Wee Piper" in "Resources") a plastic reed. This will allow you to play through the dry season. Also a cane chanter reed can develop a loose bridle in dry conditions (like Winnepeg). See the section "Loose reed bridle" 3 pages ahead for help with this.

Diagnosis of a few non-obvious problems

Unstable notes and "squeaks" from your chanter

Diagnosing the problem

First a disclaimer: I am assuming the thing worked OK at some point in the past and now it doesn't. I am also assuming that you use good judgment in what you can do and what is best left to someone else. By "unstable notes" I mean ones that go in and out of tune more easily than other notes - unstable second by second or maybe month to month. Also, by "squeaks", I mean unintended overblowing into higher notes.

Probable causes are (in order of occurrence as I see it): a beginner not covering all the finger holes properly, the chanter reed is too far closed, a leaking chanter, a loose chanter reed bridle, a leak somewhere else, or a good reed gone bad.

If your chanter reed is too far closed, you probably will notice that it is too high pitched and/or playing at too low a pressure, so I will not cover this any further.

Most of the other problems are leak-related. If you suspect a leak, the first thing to do is to oil your pipes and key pads, like you should have been doing all along. (After watching Colin Ross repair pipes for hours on end at North Hero, I have come to the conclusion that 90% of pipe repair is oiling someone's dried out pipes or fixing the results of not oiling.) Close all drones and cover all chanter finger holes, inflate and squeeze the bag. The bag will ideally remain full forever. Realistically, the bag will only VERY slowly deflate. If it doesn't hold half its air for at least 12-15 seconds while you are squeezing at typical playing pressure, you have a serious leak. Leaks smaller than this can be fixed but will not give you serious playing problems. (Before you have a leak, this is a good thing to do, to get a feel for how airtight I am talking about now while your pipes are playing well. Then you will have something to compare it to when they are misbehaving.)

Leaking chanter:

If the chanter appears to be the guilty party, it may be a leaking key pad, a joint leak, or a crack. Leaks of the pads are the most common. Whether the key has bent or the key pad needs replacing, you can find the leak by building a bore light (see "Tools and Gadgets" chapter). Darken the room and pass the light down the chanter bore, stopping at each pad. If you can see light leaking through around the pad, even just a moderate glow, you have a leak.

To determine the cause of the leak, first check for debris or oil buildup on the key seat. Clean it away with a toothbrush or similar. If the leak is still there, check the key head and pad. Either bend the key head to seat properly or replace the pad if the pad is the culprit. I have written short sections on each of these topics in the next part of this chapter. If the key pad seats well, but there is a faint glow coming through the edges of the pad, you may need to adjust the key springiness. See the section about "Key and key pad repairs" in the next section for all these situations.

Check each pad several times with the light, closing it gently sometimes and firmly others. It may seat well when allowed to snap into position (the cushiness of the leather makes the seal) but not seat well when closed slowly. Leaks caused by poor joints with the chanter stock or the chanter end cap and leaks caused by cracks in wood will not show up with the bore light technique. After checking for leaks with the bore light, if you still have a leak, check the end cap seal by filling a sink with water and dipping the end of the chanter in while playing. (After any "water test", dry everything well and reapply oil to chanter and pads and allow to thoroughly dry before reinserting the reed.) If there is a leak, you will see a stream of bubbles. The leak here will either be that the wrapping at the end of the chanter has begun to leak (rewrap it) or the end cap has cracked. Get it fixed (see "Fixing cracked ivory bits" below) and, if time does not permit that, seal the end of the chanter with a little dab of Silly Putty (a.k.a. "plasticine" to Brits) or bees wax between it and the end cap in the meantime.

To check for cracks, remove the reed and buy a piece of hose that tightly fits over the reed end of the chanter. While blowing into the hose, submerge the chanter, covering all holes, in the sink of water. Cracks will produce a bubble stream. Cracks are very serious problems. Have a pro fix these, such as a pipe maker or at least a good woodwind repair person. If you absolutely have to use your pipes before getting them repaired, tape over the crack with electrical tape as a short term fix.

Other leaks:

To check for leaks of all kinds, such as the chanter-chanter stock joint, the common solution is to blow smoke into the pipes and look for smoke coming out. A better solution for us non-smokers is to buy a stick of incense, get into a breeze-free room, and have an assistant slowly move the burning incense stick around the pipes. A leak will disrupt the smokes rising path. When finished, the pipes will smell good too! You can also use a "process of elimination" approach - for example, replace a drone reed with a plug of silly putty. If the pipes still leak, you know the leak is not in that drone. You can even mold silly putty (should temporarily seal the leak) or put some soapy water (bubbles will show the leak) around joints between the bag and a stock to decide if that is the location of the leak. Or you can have your assistant move their ear around listening for a hiss (after taking off the bag cover). Either way, check for leaks everywhere (bag, joints, leather valve in blowpipe, etc.) A leak anywhere seems to be able to affect the chanter. Once you establish what kind of leak you have, see the appropriate section below.

> Curing a leak can make a dramatic difference in the stability of your pipes and their sound. I would do the "turn everything off and see how airtight they are" test every month, just to ensure that you notice any problems as they develop, before they get severe.

Loose chanter reed bridle

If the reed bridle is loose (nudge it a little, it should not move easily), this can really cause problems. See section on "Loose reed bridle" below.

Good reed gone bad

Try another reed. Some reeds are just squeaky by nature, but if it worked OK last week and this week it squeaks (and you have tried all the tests above), the reed may be dirty. In this case, see "Dirty reeds" below.

Drones sound out of tune while playing but not while tuning

By this I mean that as you squeeze a little harder or softer while playing a tune, the drone notes gets a little sharper or flatter. This is a common problem with beginners and is probably caused by the drone reeds not being "tuned" properly. One or more are changing their pitch with your changing pressure. (I say this is common with beginners in that they may not know that they do not have to put up with this and also that they probably have bought their pipes mail-order from a far distant and climatically different land, where the reeds worked perfectly.) The solution to this depends on what style of drone reeds you have. See the "Tuning drone reeds" section below.

You have to work furiously to inflate the bag

You may have a leak, so go back up to that section. If you have never played before, it is likely that you are either covering the air intake to the bellows with your arm or sleeve or you are pinching the hose that comes out of the bellows towards the blowpipe.

If your sleeve is covering the intake you can either correct this by keeping your arm well back on the bellows or, better, revise the strap configuration. Straps are usually made where they somehow connect to the bellows cheek just back from the intake to solve this problem. If yours will not do that, you can engineer a solution. Insert a cup hook just behind the intake so that your strap goes down to it before going off to the end of the bellows for attachment. Another approach is to add a strap. One strap (perhaps a leather boot lace) which is a loop will go under your arm against the bellows out to the intake. The original strap will go over your arm, down through the end of the added strap loop, and on to the end of the bellows as before. Some bellows are made with this strap design as original equipment.

If the hose is being pinched, try moving the bag and/or bellows back a bit. If this corrects the situation and is comfortable, fine. If it corrects the situation but is uncomfortable, you need to shorten the hose. Carefully cut away and remove the binding from one end, cut the hose a little, and reattach the binding using the "tying one on" procedure found below. In the case of a plastic or rubber hose, this may just be a press fit and binding is not required.

The chanter doesn't always sound

Check the reed opening (see "Everyday adjustments" above). If the reed opening is good and the chanter does properly sound sometimes, you are probably crimping the neck of the bag somehow. Push the chanter out in front of you and try twisting it from side to side. You may just need to position the bag a little differently. The problem may also be that the chanter reed is not sealed into the top of the chanter properly. If not, see "Sealing reeds into their sockets" below.

General weirdness with a chanter - some notes suddenly out of tune

Two problems can cause this. Some chanters come fitted with a fluffy piece of cotton (as found on the end of those sticks used to clean ones ears) at the bottom of the bore. While some chanters do not require this and some makers insist that the fluff should NOT be there (because it allegedly diminishes the higher harmonics of the tone), some chanter and reed combinations absolutely seem to require this piece of fluffy cotton. If you have a chanter and reed that require this cotton, the cotton has to be in the original shape and size intended by the maker to fix whatever problem they were fixing. Often the tuning of some or all of the upper notes seem to be

affected, but I have heard of lots of oddball tuning problems caused by the cotton being now soaked with oil (which destroys its fuzzy nature) or removed. You might consider replacing the cotton and playing with it (pull the toward-the-reed end into a nice puff), making it longer or shorter or whatever.

If the top of the chanter has gone flat but the rest of the chanter is fine AND the tone has gone dull compared to what it used to be, trim just a whisker (1/64" or less) off the tip. Apparently the tip can "age" and cause all these symptoms. This is reasonably common with older reeds.

Fixing things where you know what is wrong

Reeds - both chanter and drone

Sealing reeds into their sockets

First make sure that the reed fits the socket to start with. If it is loose, wrap the base with waxed thread, whatever size and type gives a good fit. For chanter reeds, make sure that you do not change the position of the reed relative to the chanter as this will affect the tuning. Make sure the reed doesn't wobble and is unlikely to fall out with just this friction fit. Now roll a little beeswax around in your fingers to soften it and form it into little sausages. Press these in around the base of the reed. Smear it with your finger to seal the joint. Reeds not snug in their sockets are unstable and can fall into the bag.

Yep, my reed fell into the bag

You may luck out, especially if you have a bag that has not been "seasoned" with goo. Best solution is to remove the chanter, close your hand around the inside-the-bag end of the chanter stock so that the reed does not get blocked by that shoulder, and gently shake the bag as you hold it over a soft surface like a bed. The lost reed should make an appearance and will likely be undamaged. If your bag has been seasoned, follow the cleaning procedure under "Dirty reed" below.

Loose reed bridle

For chanter reeds, position the bridle where it was made to be (usually right against the top of the wrapping) and tack it down with a little dot of superglue or epoxy, one small dot on each "corner" of the reed, out where the two halves meet. In cases where the climate now is way drier than it was when/where the reed was made, the cane may have shrunk away from the bridle, causing it to be loose. In this case either twist ends of the bridle wire a bit more with some needle nosed pliers to produce a snug fit (being careful not to crush the reed) or (possibly safer) replace the bridle using the "Reed Making" chapter as a guide.

For drone reeds, if you have a long-time stable all-cane reed or a composite metal/cane or metal/plastic reed, you can glue the thread that is the bridle down a bit. A little coat of shellac over some of the bridle can stabilize it. I would not glue down the thread on a new, untested all-cane reed, as you may want the adjustability that this would eliminate. A loose bridle on either drone or chanter reeds can cause lots of reed instability and drive you crazy.

Dirty reed

This is especially prevalent in pipes played in pubs and restaurants. Reeds also seem to attract pet hair. Put a piece of paper in the reed, squeeze the reed gently against the paper and pull the paper out. This may clean it well enough. If not, buy some Energine brand cleaner (brown can at

the hardware store) or a typewriter (remember those?) cleaner. Dry cleaning fluid also works if you can get it, as will any cleaning fluid that is mostly toluene or acetone. These all have nasty fumes so avoid breathing them. Dip most of the cane end of the reed in the cleaner solution for several seconds and then allow to dry. Do not let the solution touch the wrapping at any stage. This may also save a reed that has been touched by oil and works for chanter and drone reeds as well. Do not use any of these solvents on plastic reeds.

Chanter reed repairs

Occasionally the chanter reed will leak a little along the edge where the two halves meet. You can try a tiny smear of white glue (like Elmer's, the kind school kids use) along the joint. This may seal it. You can test the seal by covering the tip opening with your finger and sucking on the staple end of the reed.

If you ever crack a chanter reed, you should first see if the crack affects the reed's performance. My favorite reed had a crack in it for two years once which just never really affected the sound. If you need to fix the crack, try a smear of white glue, work it into the crack a little, and let it dry. You can then carefully sand away the remaining glue with 400 grit sandpaper and see if it works. It might, it might not.

Any other "repairs" to chanter reeds are most likely fitting a new reed into an existing chanter. I will cover these in the "Reed making" chapter.

Drone reed repairs

If the tongue of the reed is cracked, fix it with white glue as in the section above. If the tongue on a composite reed becomes "uncentered" on it's base, reposition it. You may need to retie the binding/bridle in this case. Other "repairs" are the same as getting a new reed to work in an existing drone and I cover that in the "Reed making" chapter.

> The most common complaint about drone reeds (if the player knows enough to complain) is that they vary in pitch with changes in playing pressure. This makes the instrument very hard to tune and play and should definitely be dealt with. I have seen many reeds by professional makers that had just this problem and the beginner, unaware, assumes that this is just part of the challenge. It is not. Turn to "Reed making" and read, understand, and implement (if need be) the appropriate actions under "Tuning drone reeds". The maker who supplied your reeds may not have been able to try them in your drones and has left this "fine tuning" to you or may live in a very different climate than yours. Do not necessarily blame the maker.

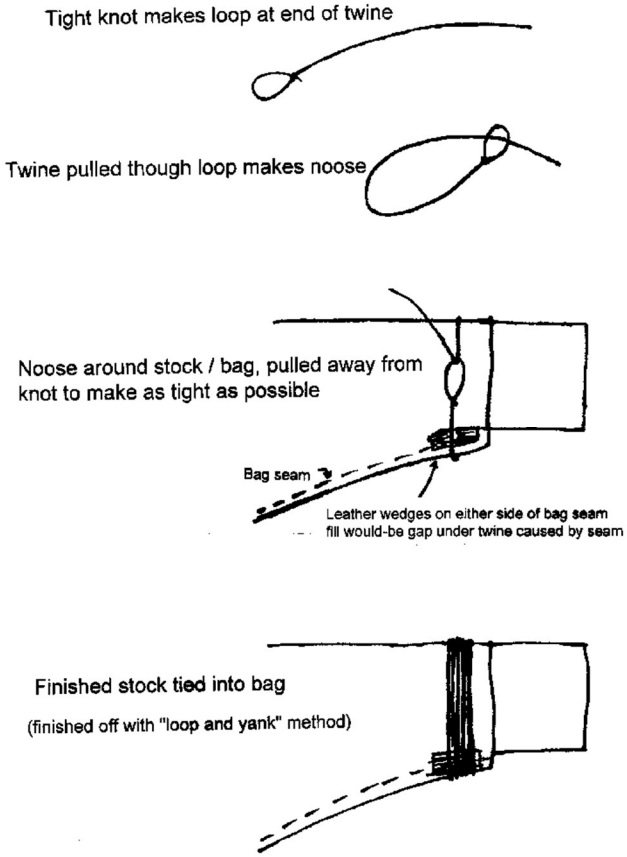
Wrappings, bindings and such

Tying one on

The most common wrapping / binding repair is redoing the binding which ties the stocks into the bag, all of which must remain airtight. This is called "tying in the stocks" in the bagpipe-biz.

First, remove the old bindings and clean up any old glue that may have been used. In the case of all but the chanter stock, shove the stock all the way into the bag and then pull it out to where the rut that the binding rides in is even with the cuts in the bag that make the hole. For the chanter stock, just push it so that this rut is a little ways into the bag. In the case of the drone stock, you can position it a little cockeyed, so that in playing position it will point slightly upwards. This will make the drones stand up further. You may need to try it both ways to see what you prefer. I play frequently in loud sessions where I appreciate having a drone near my ear to aid me in playing.

Once you have the stock into position, you will need the binding material itself. I prefer the waxed heavy duty "thread" or twine that leather working shops sell. This stuff is about 1/16th of an inch in diameter, about 4 times as thick as bagpipers hemp thread. Another popular binding material is thin nylon twine. You will see why it must be very heavy and strong in a moment. But first, take a 1 foot piece of the twine and tie it into a loop. Position this and a sharp knife or scissors right by a strong door. Take about 9 feet of the twine for the drone stock or about 4 feet for the others and tie a small (1/2 inch) loop in one end. Pull the middle of the twine through this loop making a noose. Close this noose around a the door knob (on a door which will reliably remained closed during this procedure - alert your spouse).



If you have a leather bag and are tying in the chanter stock, you will need to make some little leather wedges or rolls. These are placed on each side of the "seam" of the bag, to take up the space around it and present a rounder surface over which to wrap. Without these wedges, you will have a leak at those points.

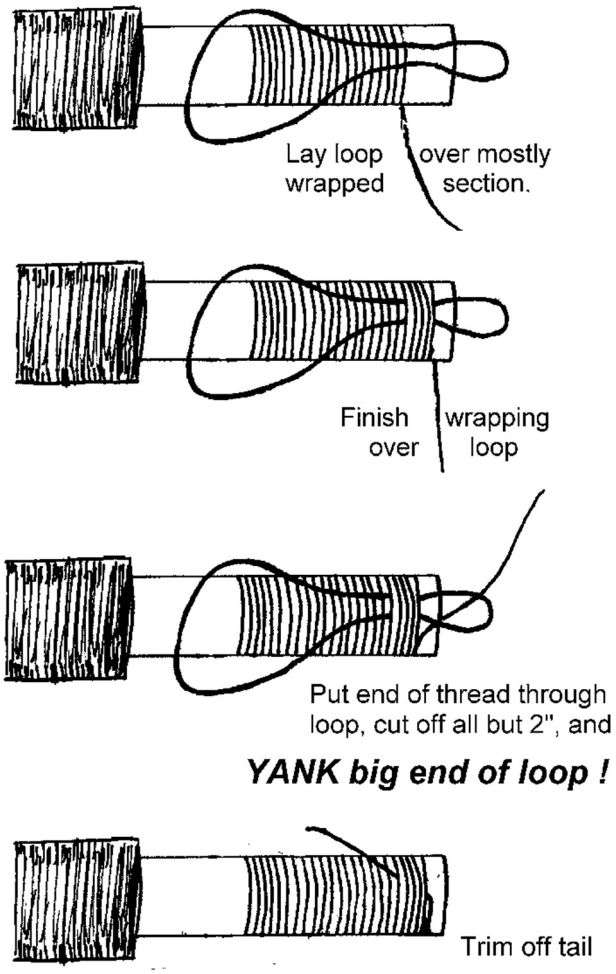
On the other end of the twine, make another noose. Close this noose around the stock and bag. Begin wrapping going away from the knot in the loop, pulling the noose very tight as you begin to wrap. You should be able to lean away from the door knob, using your body weight to make a very tight wrap. (Do not worry about collapsing the stock, but you may want to worry about breaking the twine. Keep a stable foot position. If you almost break the twine, you are doing it just right.) Wrap until you have at least five strong wraps and have completely sealed the bag to the stock.

We will use the "loop and yank" method described below to finish off the wrapping. Hold it tight while you place the loop across the wrapping. Wrap three more times (at least) over this loop, cut the twine leaving about a 6 inch tail, pass it through the loop and yank! For tying in stocks only, I

like to be sure this tail-pulled-through stays in place, so I put a little drop of superglue on it where it comes out from under the wrapping, and then cut off the excess tail.

Loop and yank method of ending a wrap

See the diagram after this paragraph. About the time you have three more turns of a wrapping to go, lay a small loop of the stuff you are wrapping with over where you are about to wrap. Lay it on the wrapping so that it stretches out along the cylinder being wrapped, oblong. Continue the wrapping so that the last three wraps go over the loop, leaving a little of the loop at the end of the wrapping and most of the loop laying back over the main section of wrapping. At the end of the wrapping, feed the end of the thread into the small part of the loop. Hold it down with your thumb. Grab the bigger end of the loop with your other hand and, in one mighty yank, scream "Hai!" and pull the loop and the trapped thread end through. (Do not gently pull, yank the sucker!) This will plant the end of the thread firmly under the last three wrappings, eliminating the need for a knot. Clip the loose end of the wrapping close and you are done.



Replacing hemp wrappings

This section covers replacing the wrapped thread that makes the seal at either end of the drone standing part, the chanter / chanter stock seal, etc. They all get wrapped the same way but may be finished differently.

Remove the old wrapping by cutting a couple of threads with a razor or very sharp knife and pulling off the thread. Keep a count of how many layers there are, as you will want to repeat this as a first guess. The bottom layer may be lightly glued to the wood with shellac or some other glue. If so, get the old thread off as best you can and use some alcohol to dissolve the old shellac. (I am talking about the kind of alcohol used as a solvent, not the kind you drink. Buy it from a paint dealer and be sure that it will dissolve shellac.) Light scraping with the side of the knife may be required, just don't remove any wood. Clean the underlying wood with alcohol (the kind that will dissolve shellac) or acetone to make a better seat for the thread.

Paint a light coat of shellac on the wood, to help the thread stick, and wrap fresh hemp thread over the wood. Wrap it very uniformly, pulling it very tight and keeping it one layer thick. Keep pulling the thread back toward the already-wrapped section, trying to get as many wraps per inch as you can. If you do not, the wrapping will slide and come undone later. At the end of one complete layer, pull the remaining thread to one side and tape it to the thing being wrapped with masking tape (or just hold it). This will allow the shellac to dry and not let the shellac wick up into the second layer. Take a few minutes and let it dry.

Continue to wrap in the same way (without any more shellac) until the desired number of layers are completed. You can test the fit by cutting the thread off, leaving a few inches tail, and not doing the "loop and yank" yet. Go for a very tight fit, as the thread will compress. You can speed this process by rolling the wrapped item on a hard flat surface. Do this before testing the fit.

When satisfied with the fit, undo most of the last layer. If this is a wrapping which fits into a stock, run a piece of beeswax along the thread to make it a bit sticky (so that the thing stays in the stock), rewrap the last layer and complete the job with the old "loop and yank" method. If this is the wrapping that the drone slide slides over, do not use any beeswax , complete the wrapping with a "look and yank" and oil the wrapping with the neatsfoot oil.

Bag and bellows repairs

Fixing holes in leather

Your best bet here is only a temporary fix. Either make a new bag or have one made (see "The Wee Piper" under "Resources" or any pipe maker). In the meantime, buy some contact cement and follow the instructions to glue a piece of scrap leather (if your bag is leather) over the hole. It will do for a short while. If you have a rubberized cotton bag, you can do the same procedure using a heavy duty plastic bag (zip lock bags are thick enough) or a piece of rubberized cotton. Rubberized cotton is merely cotton canvas painted with the liquid latex used in ceramics mold work. A couple of coats on each side is sufficient. The cotton patch will work indefinitely. The plastic bag will get through the week.

Sealing leaks at seams

Leather bags sometimes develop leaks at the seams (the most likely place). If you have a leak and want to fix it, rather than replace the bag, locate the leak and try to glue it shut with a dab of gap filling "super glue" (cyanoacrylate adhesive). Be sure that it is not the cheap drugstore type. Get the kind hobby shops sell in 4 oz. bottles. Do not let the glue run way into the bag or you will glue your bag shut. Just glue the seam closed. Also take care to not glue your fingers to the bag.

Rubberized cotton bags also may develop leaks. These are best treated by a quick coat or two of liquid latex, again, of the type used in ceramics work, over the leaking area.

I advise against dumping any kind of "seasoning" goo into the bag to seal leaks, as some would advise. A goo-less bag will never kill your reeds and seasoning a bag is a messy procedure not made for amateurs. You can do it, it's just a pain.

Replacing flapper valves (clack valves)

The flapper valves act as one-way valves controlling airflow into the bag and bellows. They are cut to cover the hole which they seal and hang by a small extension (acting as a hinge) which is tied to the air intake tube or ring. To replace them, take the old one off, cut a new one to match including the shape of the hinge area (the leather is thinned or nicked at the hinge point) and tie it back on as the old one was tied on. It should be positioned so that the valve hangs down when in playing position, helping it to close. When replacing the valve on the blowpipe, be sure that the leather is trimmed small enough to not hang up on the blowpipe stock in which the valve lives its life. Test the valve by alternately blowing and sucking on the air intake. It should seal airtight when being sucked.

Replacing straps or torn/broken bellows hinge parts

Worn straps can be quickly replaced or repaired by a competent leather worker or by yourself. A visit to a leather hobby shop will provide all the instruction you will need. If you are replacing belts or straps that have metal buckles on them, you may wish to consider doing them the way I do mine - having them close with Velcro. This provides a lot of adjustability and does away with metal buckles that can scar your pipes or the guitar of the gent sitting beside you as you undo your pipes at the session.

Bellows hinges are generally of two varieties - the "leather boot lace tied through two holes" type (how to fix them ought to be easy enough) and the "one big piece of leather" variety. If you can, get the one piece kind as they can hardly break. If you have the boot lace style, carry an extra with you wherever you go. You can not play your pipes if that thing breaks. . . and they do.

Key and key pad repairs

Key spring springiness

Let me first clarify that by key spring springiness, I really mean how much force has to be applied to a freely moving key to raise the pad off the hole. This translates as the amount of pressure the closed key is exerting on the pad to help it seal. Different makers spring their keys differently. I prefer a light springing (as I believe most informed players do). The springing that I consider optimal can be tested by getting an empty glass 4 ounce baby food jar. The weight of this jar (65 grams), when placed on the end of the key, should cause the key to open easily. Some sets I have played that felt fine would require that jar to be 1/4 filled with water (95 grams). If any more weight than this I would consider the key to be too heavily sprung. Yes, this is a matter of personal taste. I am not advocating taking a heavily sprung set and changing the spring pressure yourself. I merely point out this pressure range as a guidelines for selecting a set of pipes. I only advocate changes in springiness to return a key to the original way the maker made the set.

First let me tell you how keys are made (briefly). The key is cut out of brass (usually) and formed by filing, beating, soldering, and polishing into the form that you see. Then a spring is hammered out of a brass rod to just the right degree of temper. The spring is then cut and filed to shape, bent to a gentle curve by hammering on a soft piece of wood (no sharp bends or it will snap) and delicately riveted with a small piece of brass wire onto the key. My point is that if you break a spring, the typical homeowner will not be able to replace it. Therefore, the last thing you want to do is to try to bend the spring itself (it actually has to be quite brittle to be springy).

You can still change the springiness of the key. You can bend the end of the key opposite the pad a tiny bit up to increase the springiness or down to decrease resistance. (This only works if the spring runs the entire length of the key. Some makers stop their springs half way up the longer keys.) This bending changes the position of the spring relative to the point at which it hits the chanter and is much safer than messing with the spring itself. A tiny amount of bending can have a profound effect on a short key. Longer keys do not do as well with this treatment. Still I would

only do this if the key used to be the right springiness and now is not. (You have probably bent the key somehow.) If the keys were not sprung right when you got the set, you could send them back to the maker for adjustment. Call them first to discuss or better yet play one of their chanters first before you buy a set so that you know what to expect. Of course, they may say that that is the way they like their springs, and my baby food jar test is just for my tastes. Do not tell them they are wrong just because of what I say.

Key spring replacement

What, didn't you read the previous section? Send it to a pipemaker, along with the chanter. If a spring breaks on a long key, you may make it through that all-important gig by looping a rubber band around the chanter, pulling the key down at the pad end, but this is a very short term remedy.

Removing a key from the chanter

Remove the key from the chanter by poking the key axle out with a very small brass rod or similar (see "key axle poker-outer" in the "Tools and Gadgets" chapter). Keep in mind that the axles are generally tapered so that they will move in one direction only. Close inspection at each end will tell you which end is bigger. Also, sometimes people glue these in place with a little shellac if they were having problems with the axle coming out during playing. If you have to push too hard to remove the axle, try putting some denatured alcohol around the axle to dissolve any shellac.

Whenever you remove a key, clean out the key slot and the key pad seat with an old toothbrush or toothpick. Also, big fingered types might want to buy some needle nosed pliers to help handle the key axles. Just don't scar the chanter with them.

Bending a key back into shape

Remove the key from the chanter. First try bending the key with your fingers. If this does not work, wrap your pliers in masking or electrical tape to avoid marring the metalwork and take it easy. Be aware that the head is almost always soldered onto the key body and this joint may be relatively weak. Adjust the key head to seat well when closing very slowly.

Replacing a key pad

Remove the key from the chanter. Pry or scrape off the old leather, make a replacement out of the same thickness of leather (leather working stores sell punches of various sizes for a nice round pad), clean off the old adhesive with alcohol and remount the key in the chanter. Place a dab of shellac (premixed shellac from the paint store - most other glues will fail because of oiling the leather pad) on the shiny side of the leather, lift the key and slide the pad into place. Let the key return to rest which clamps the pad into position and let dry. Oil the pad, and flick key several times to let the leather be impressed by the hole. Check for airtightness.

Tightening up a key in it's slot

Sometimes key slots wear or were made for a loose fit to the key in the first place. If the key can be easily moved more than 1/2 mm for a short key or 2 mm for a very long key (side to side) the fit may be too loose. You can remove the key and smear each side of the slot with epoxy. Carefully avoid the exact place where the hole comes through that will hold the key axle (you do not want to have to drill through the epoxy later, as you will need a very specialized very small drill bit to be successful). Try to get it evenly distributed. After it dries, a small fine file can smooth the epoxy to provide a smooth surface and a perfect fit.

Drone sliding problems

Removing the end cap

Usually drone sliding part end caps are held on by the friction of an underlying binding and can easily be pulled off. If this is not the case, then the end cap has been glued in place and must be removed by placing the end cap (and as little of the wood as possible) in a very hot cup of water (almost boiling). The heat will melt the glue and allow the cap to be removed. When regluing these types of caps, use a very weak glue, like water soluble white glue.

End piston

End pistons can get bent (straighten them as best you can) or loose. If the piston gets loose (slides too easily) first check for a cracked drone end (which allows the drone end to expand).

If the drone end is cracked, remove the end binding, dip the end in acetone to clean the wood, force a little epoxy or thin superglue into the crack and wrap it temporarily with hemp to hold the crack together while the glue dries. Make sure there is no glue sticking into the bore. If there is, clean it out immediately before it dries. After the glue dries, rewrap the end binding again to tightly fit the end cap.

If there is no crack in the wood, simply rewrap the binding on the piston for a tighter fit. Keep the binding well oiled.

Tuning beads

The tuning beads ride on a bed of cork and should rotate easily and seal completely when in the closed position. Keeping the cork lubricated with petroleum jelly (i.e. Vaseline) should prevent any problems. Occasionally the cork will compress with age and this joint will become loose. If this is the case, remove the tuning bead. If the bead has no securing pin, simply slide it off. If it has a pin, this pin must be removed first. To remove the pin, try pulling it with some very fine pliers. If it does not come easily, it has been glued in place. In this case, try to dissolve the glue (maybe they used shellac) with drops of alcohol on the pin. If this doesn't work, try to heat the pin with the tip of a soldering iron, to melt the glue, and pull it out. If this still does not work, I would send them off to a pipe maker for them to worry about.

Once you have the tuning bead off, there are two ways to revitalize the cork bed. The quick solution (which almost always works well) is to clean the petroleum jelly off with a quick swipe of acetone and, after it has dried, moisten the cork with a damp sponge. Once the cork is nicely moist, light a candle and rotate the cork through the very top of the flame. You should make the outer part of the cork darken just a bit. Under cooking it will be fine, overcooking will be disaster, so take it easy. The heat will expand the water in the cork and puff the cork up just a bit, hopefully, just enough to make the fit tight again.

If this does not expand the cork enough (after several attempts), you will need to have the cork replaced. You can try to do this yourself, but I recommend sending it to a pro. If you do it yourself, buy some 1/16" natural cork (not reconstituted cork) from a music store that sells woodwinds. Remove the old cork with a razor knife and clean away the old glue with acetone. Mark with tape on each side of the cork bed where the tone hole is and measure the distance to the center from both sides. Cut a piece of cork to accurately fit around the drone, making sure that the cork is thick enough to be too thick. Glue it in place with epoxy or yellow wood glue and bind it with hemp to keep it in place while the glue dries. Do not wrap the hemp so tightly that it really makes big dents in the cork. After the glue dries, remove the binding and carefully sand the cork to a tight fit, using a small flat sanding block and 220 grit sandpaper. You want a tight fit, as the cork will compress some the first few weeks and you have to be very careful to get the cork perfectly round. Finally, make a hole in the cork matching the underlying tone hole in the wood by either

carefully using a drill or by carving with a very pointy razor knife. Grease the cork with petroleum jelly when you are finished.

Sliding part sticks / standing part comes out of stock while tuning

Ideally the standing part (with its waxed binding at the reed end and its oiled binding at the sliding part end) stays put when you slide the sliding part in the process of tuning. If the slide moves too freely, either add a bit of thread to the existing binding (more of a seasonal fix) or rewrap the binding. Some players use Teflon plumbers tape to make the binding a little bigger. If this works for you, great. I have found that it sometimes bunched up on me after just a bit of use, but when used sparingly it can be wonderful stuff.

If the slide does not slide freely, the first thing to do is to oil the binding over which it slides. If this does not fix the problem, remove any extra wrapping that you have added or rewrap the hemp binding with a little looser fit and keep that binding oiled with some of that good ol' neatsfoot oil.

It may also be that your either your drone slide has warped out of round or the small end of the drone standing part has warped out of being straight where the slide moves over it. To diagnose the first, see if the drone slide moves easily side to side in one direction but not at a right angle to that direction (i.e. it wiggles a lot front to back, but not up and down). Try wiggling the drone slide in several directions to find this problem. To diagnose the second case, remove the wrapping, place the "neck" of the standing part (the part usually inside of the sliding part) on a table so that you can roll the neck on the table while the rest hangs off the table. When you roll the drone, you will be able to tell if that part is straight or warped by how it rolls. Either of these problems should be dealt with by a pipe maker - they will probably need to replace the piece.

Drone mount problems

Fixing cracked ivory bits

This really applies to imitation ivory only. I would only have a maker with ivory experience work on real ivory. It is generally best to have the maker repair imitation ivory parts also, as they are "showy", but if you want to do it yourself, here we go.

Imitation ivory is a bit pliable so gently open the crack with your fingers while an assistant places a dab of gap filling "super glue" (cyanoacrylate adhesive) in the crack. This is not the little tube at the drugstore stuff, this is the expensive bottle of stuff at the hobby shop. Alternatively you can use epoxy. Do not use shellac or wood glues. Once you get a little glue in the crack, release your grip and keep from gluing your fingers to the ivory. Wipe off any excess glue and let it dry.

To refinish the cracked area which now has a little glue on it, sand away any excess dried glue smear with 320 and then 400 grit silicon carbide sanding paper, then buff it with finest steel wool. If the original finish was shiny, this was almost certainly done by buffing it with "Brasso" or "Flitz" brand metal polish or with auto body buffing compound. The maker used a lathe or buffing machine, so you have to use your arm a lot, but a shine will eventually show up. Use a dab of polish (be sure you shake up the Brasso) and a piece of old underwear as a buff.

Loose ivory or metal bits

Structural pieces

The only structural metal or ivory pieces on drones are the drone sliding part ferrules (metal) and the drone end caps (ivory). Treat the ferrules just as you do stock ferrules and use the instructions below. Reglue these immediately upon loosening if they have wood under them for their whole extent. If the wood only provides a shoulder at one end, this is much less critical. The drone end caps are structural also, as they act with the underlying binding to prevent the end of

the drone from splitting. If these caps are loose and nothing is cracked, simply redo the binding for a tighter fit.

Drone end pistons

If you have a piston mechanism in your drone end caps, for controlling the drones lowest note, either the piston can be loose in the drone bore (remove and rewrap to make a tight but sliding fit - oil the thread to ensure this) or the knob at the end can become loose. The knob can either be glued in place (making rewrapping a pain) or can be threaded onto the rod. If in doubt, try to contact the maker. If the knob becomes loose and is threaded, do not use glue unless you really have to, and then use shellac so that you can later remove it by soaking in alcohol. Use a very tiny amount on the threads closest to the shaft of the rod.

Decorative pieces

Ivory mountings on our pipes are only decorative (i.e. they do not prevent the wood underneath from splitting) except for the chanter end cap. Metal mountings on the drone standing parts are also purely decorative. These mountings are usually glued to the wood with shellac or in some cases white glue. Never use epoxy or any other permanent glue, since you may need to take these pieces off eventually for other repairs. If one becomes loose, clean off the old glue with alcohol (for shellac) or water (for white glue), reapply more of the same glue, and hold the mounting in place with masking tape while the glue dries. If the fit is a bit loose you may try putting a very small piece of masking tape on the wood to act as a shim or (better) use a razor to carefully score the wood a little. Scoring will raise up some of the grain which will tighten the fit.

Stock problems

About the only things that can go wrong with stocks are related: a ferrule can come loose and the underlying wood can crack. Stock ferrules are very important structural elements of a set of pipes and are what keep the wood underneath from cracking. Reglue these immediately upon loosening. (In the case of drone slide ferrules, this is less important if the wood only provides a shoulder at one end.) To reglue, clean off the exposed wood with denatured alcohol or mineral spirits and glue the ferrule on with epoxy. Use the slowest curing type available, avoiding the 5 minute type. Smear the epoxy evenly over the wood and rotate the ferrule while pushing it on to help distribute the epoxy.

If the underlying wood has cracked, I suggest you tightly bind the wood in with waxed hemp, to keep the crack from getting worse, and send the whole piece (ferrule included) off to a qualified repair person. You could try your luck with a local woodwind repair technician or send it to a pipe maker. The former would be quicker, the latter would be safer.

Chapter 8 - Reed making

But I already have reeds

Sure you do . . . now. But if you break one or one goes bad, how do you plan to replace one? Order one from the maker? How long do you think that will take? How long do you want to not play your pipes while you wait for transatlantic mail? And most importantly, right now you have a reed that works well in your chanter, so you have something to use as a model to use in your own reed making (your chanter may need a bit sharper or flatter reed than the "standard" which I describe in this book).

Go ahead and try your hand at reed making now. It can be exasperating but, when you get it right, you will feel much more comfy and will understand your instrument better. And given that your reeds were made under the climatic condition where you live, the reed may be more stable.

Supplies and tools and where to get them

In the "Resources" chapter, I offer several sources for buying reed cane and tools. Under the following sections, I have listed the specific tools needed for making each type of reed. You may also want to see the "Tools and Gadgets" chapter for additional info on (what else?) tools and gadgets.

If you intend to make reeds more than once, I strongly urge you to "devote" these tools, gadgets and supplies to the cause. Get a cheap average sized tool box that will hold all the tools (except the manometer) and supplies and keep all your reed making stuff in it. Never use these tools for other jobs and you will always have them at your ready.

Raw material choice - cane or plastic?

In a nutshell, reeds have been made of various materials over the centuries, but the vast majority of the world has settled on using "reed cane" as the material for reeds for almost every reeded instrument. With the advent of plastics, and their notable stability, various people have done a lot of work to make plastic reeds (and to make them work well).

I have heard a fair number of plastic reeds in other types of bagpipes and they sound very well indeed. I must admit to only having tried one plastic reed (made by a maker very adept at plastic reed making) in my own chanter and have never heard another set of Northumbrian Smallpipes with a plastic chanter reed. Therefore, on this very limited sample, I can tell you that I like the sound of cane better and find the better tone of cane to be well worth the added hassle of frequent adjustments. I found the plastic reed to lack the high overtones that make the pipes both mellow and bright at the same time. I will report that, contrary to several informed sources who told me it would not work, the plastic reed could be made to play on pitch throughout the range of an 11 key chanter.

My resistance to plastic was simply that I did not like the tone (others may prefer the tone). I do however whole-heartedly endorse plastic drone reeds. Plastic reeds of both types may well be the answer for someone tired of adjusting a cane reed whenever the weather changes, and for

people living in extreme dry conditions. Michael MacHarg (see "The Wee Piper" in "Resources") is, for my money, the most experienced person in the plastic reed field and I suggest you contact him if you are interested. In this book I will concentrate on cane chanter reeds and several kinds of drone reeds and will let you make your own choice.

Chanter reeds

They come in two sizes

I will describe below the methods that I use to make chanter reeds for all pitches of Northumbrian Smallpipes. All of the pitches except for concert G chanters use what I will refer to as "F reeds". Concert G chanters use "G reeds".

Credit where credit is due

The dimensions of chanter reeds which I use are exactly copied from a "landmark" article by Colin Ross in the 1990 (volume 11) edition of "Northumbrian Pipers' Society Magazine" entitled "Towards standardization in pipemaking". He credits his dimensions to Forster Charlton and a pamphlet by Cocks and Askew dating back to the 1930's. Colin has published these dimensions with hopes of making a standardized reed (just as all modern woodwinds have, to some extent). This will, I hope, eventually eliminate the need for making the reed for a specific chanter, as must be done with historical instruments from the previous century.

I have scammed my techniques from the following sources (in order of influence): Picking Colin's brain by mail, personal visits, and phone calls; a reed making workshop by Colin and Ray Sloan (the inventor as far as I know of the "teapot steam" method); Mike Nelson (phone, fax, and his booklet "The Northumbrian Smallpipes - Descriptive Details, Workshop Plans"); personal advice / support from Richard Shuttleworth and Dave Shaw; and the book "The Piper's Despair" by David M. Quinn. My point here is that what I call "my method" is really a compilation of these other fine folks methods, as it distilled in my warped brain.

Reed cane and its selection

The cane used for reeds is *Arundo donax* (common name "Spanish cane"). It looks like bamboo. It is not. Never try using bamboo, many a man has tried and . . . you get the picture. Cane of this species is grown in various parts of North America, but it tends to yield a dull sounding reed, at least from my experience. Cane grown in Spain and France is the best (they really know how to "raise cane").

It is best just to buy it from somebody in the cane business or a pipe maker (who almost certainly bought it from someone in the biz). For under $40 you can get a pound of bassoon reed cane (specify 1 inch diameter) and a pound is a lifetime supply (about 16 sticks, each 9 to 10 inches long, which would produce 160 chanter reeds if you were perfect). For that reason, you may want to just buy three or four sticks from a pipe maker. I have never known anyone to sell bad cane if they are a pipe maker or in the cane business.

Tools needed

Gouge

The oddest tool of them all, you need a 5/8 inch (9/16 to 3/4 inch will do) gouge with a #6 or #7 sweep, which translates to a 1/2 inch radius in some peoples terminology. The odd part is that the gouge must be an "in-cannel" type gouge, that is, the bevel is ground on the inside of the curve. These usually come unsharpened and must be kept razor sharp. You will sharpen it about once per reed. Use a slip stone type sharpening stone, followed by stropping with a piece of leather glued to a 1/2 inch dowel, charged with jeweler's rouge. Never sharpen the gouge on the outside. Only sharpen by working on the bevel and take care not to round over the edge.

The "#" of the gouge is somewhat questionable. Apparently, different makers use different curvatures and call them the same number. My #6 gouge, bought from a bagpipe supplies person in the "Resources" chapter is perfect for my use, but it matches exactly the curvature and size of the 5/8" #7 gouge pictured in a woodworking catalog that I have. I would suggest ordering one from a bagpipe source. They will get you what you need. If you don't, be sure the curvature of the gouge is more than or equal to the curvature of the cane and be sure it is ground with the bevel on the inside of the curve.

Reed trimming block

Called a "billet" in the trade, what you need is just a stable chunk of a very hard wood with a flat face on it which is "end grain", that is, where the ends of the grain fibers all come out that face. Usually boards are cut so that the grain fibers run the length of the board. This is used to trim the end of the reed, using a razor knife (i.e. a beefy Exacto knife).

An alternative to a trimming block and knife method is to get a very good quality pair of parallel jaw wire cutters (also called "end nippers"). If you want to go this route, get a really sharp pair that look appropriate for trimming your finger nails with. You can not use the big bulky kind that electricians typically use. The kind I use are spring loaded, so they are open unless you squeeze them. Be prepared to pay over $10 for this tool.

Scraping knife

You need a knife with a straight edged blade about 1 1/2 to 2 1/2 inches long. A pocket knife will often have a blade like this. You will put a burr on the blade of this knife and it will be pretty worthless for other use, so buy one and reserve it for reed making.

To prepare this knife, sharpen it on the stone as usual, using a sharpening oil. When you are done, pull the blade back across the stone where the blade is tipped toward you about 10 or 15 degrees, "dragging it" if you will. You may do this a few times. You will create a burr (turned up edge) on the side away from the direction of travel. You can feel it, but be careful. (Woodworking stores also sell "burnishers" to help put this burr on scrapers of all sorts.) This burr will turn the knife into a scraping tool. To use it, push it away from you, with the burr in the direction of travel. If held at the right angle (experiment to get the hang of it), it will scrape off a very fine controlled amount of cane. You will need to resharpen and/or re-burr the edge frequently, whenever it no longer produces results easily.

Trimming knife

This can be a single edged razor blade (no sharpening hassles but a little hard on the fingers) or a good quality, sharpened-to-perfection-every-time-you-use-it straight edged knife, pretty much like the scraping knife. I use an Exacto brand "#2" razor knife, available at every hobby shop and hardware store. Or use nippers, as discussed two topics up - what, weren't you paying attention?

Sharpening stuff

Whoever sold you the gouge should have sold you a sharpening stone and maybe told you how to use it. If not, a woodworking store will be able to help. Get a slip stone with a rounded edge, to use on the inside bevel of the gouge. Never sharpen the outside edge of the gouge. Also use the flat side of it for sharpening your scraping knife and your trimming knife. For the gouge, you will also need a strip of leather glued to a 1/2 inch dowel and a little bit of jeweler's rouge (very fine polishing/sharpening compound), to use as a strop.

Needle nosed pliers

These are for forming the staple (the brass part sticking out the bottom of the reed) and for twisting the bridle wire. Any decent strong pair will do, from 4 to 6 inches long in total.

Staple forming mandrel

See the diagram in the section called "Making the staple" which shows the shape at the end of the staple. While you can use just needle nosed pliers and ingenuity to form this shape, it is easier to file a large nail to this shape, around which you can form the staple.

Fine saw

A hacksaw works. I use a hobby-type saw by Exacto, with interchangeable wood and metal-cutting blades that looks like a mini-back saw. This is for rough cutting the cane to length. It just needs fine teeth.

Tubing cutter

Most hardware stores carry tubing cutters capable of cutting 3/16" brass tubing. If the "fine saw" that you have can cut the tubing, then you do not need one these, but they are easier to use.

A needle file or two or repairman's tapered reamer

Hardware stores always have a little mini-file or needle file kit for cheap. You just need a little roundish file for removing the burr left inside the 3/16 inch brass tubing after you cut it. Better is a repairman's tapered reamer, built just for this sort of thing, about $4 at tool supply shops and better hardware stores. Sort of T shaped thing. Be sure it is small enough to fit in the tubing.

Reed making block

Not a necessity but I like mine. See "Tools and Gadgets".

Shooting block

See "Tools and Gadgets" for making your own. Also, the reed making suppliers listed in "Resources" probably can sell you one.

Dial calipers

See "Tools and Gadgets" for a description of what to buy and how to best modify them.

Reed making rack

Not at all necessary, but nice. Take a small piece of wood an put some 1/8" dowels into it, protruding about 1/2" or less and spaced about an inch apart. This allows you to work on a batch of reeds at a time and keeps the reeds organized and out of harms way.

Sanding rod

This is just a tube or rod (dowel rod, PVC plumbing pipe, etc.) of 1" diameter at least 6 " long on which sandpaper is placed for sanding the inside of the cane. It may be helpful to clamp this into a vice or have some other way to hold it steady on a work table.

Reed holding mandrel

Not a necessity, but you can make or buy a mandrel for oboe reed making that is a handle with a rod coming out one end. The rod is round, fitting inside the brass tubing discussed below, and has the end flattened. This flat end engages the flattened / oval end of the staple and allows you to handle a reed in progress much more easily and safely. Make a staple first (discussed below) and them make a mandrel to fit it.

Vice

This should be any kind of vice that you can make to hold the end of a piece of wire and it should be bolted to a work bench. This is not required but is handy to have.

Supplies needed

Cane

See the above discussion of raw materials. You need 1 inch diameter reed cane from a reputable supplier. The finished piece will be 3 1/2" long for an F reed or 3" long for a G reed. Cut the cane you get to length, leaving just a little extra length to be trimmed later.

Brass tubing

You will need a bit less than an inch per reed of 3/16" outside diameter brass tubing with 1/64" thick walls. This is available at any hardware store and I haven't seen any 3/16 tubing with any other wall thickness. This is for making the staple.

Copper wire

For making the bridle. I use 20 gauge copper wire (roughly 1/32" diameter). You can use 22 gauge but you will have to double it up. You may be able to find 20 gauge in a small spool without a coating used for electrical work or you may have to strip this plastic coating off.

Sandpaper

Silicon carbide paper in 180, 220, 320, 400, and 600 grits. Available at hardware stores.

Reed binding thread

Almost any thread will do, but the bigger the thread, the quicker you will get done (fewer wraps). I use the smaller thread sold at leather working stores which is about the same size as 20 gauge

copper wire, about 1/32" inch diameter. This is also about the same size as hemp thread sold from bagpipe suppliers but is pre-waxed and maybe a little bigger. "Button and carpet thread" from any fabric store will do nicely as well and you can make your reeds distinctively colorful by using fuchsia or mauve. Whatever you use, wax it first as described below.

Shoemakers wax

This is also called "thermowax" or "heel ball" and is black and sticky. Run your thread through this a little before wrapping reeds to strengthen the thread and make it stick to the cane better.

Shellac

Pre-mixed shellac is fine. This seals wrappings and provides high drama (discussed later).

Slow curing epoxy

Do not get the stuff that sets up in 5 minutes if you can avoid it.

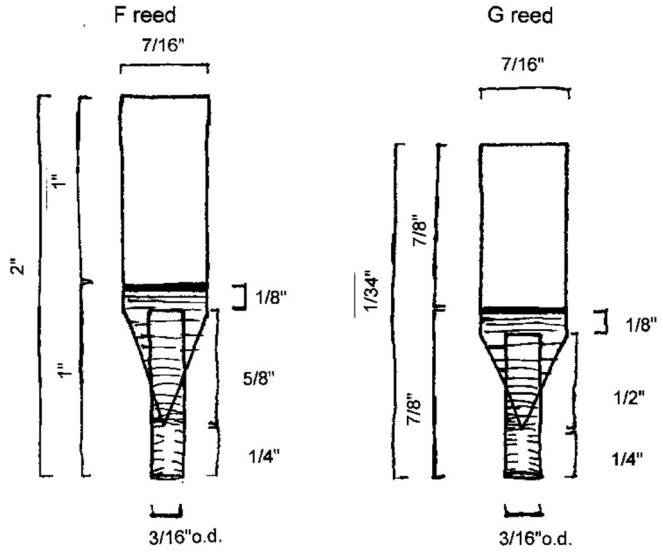
Lighter, candle, or matches

See "high drama" later.

Make reeds in batches

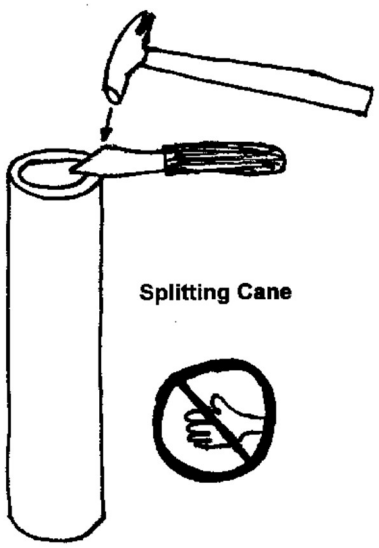
Keep in mind that a beginning reed maker should plan on making chanter reeds in batches of 6 at a time and can hope to make anywhere from 1 to 3 rather nice reeds from each batch. Even the most experienced reed makers do not come up with a winner every time. Also, if you do make 10 playable reeds, chances are that one or two will be better than the rest (and you do want to sound your best, don't you?) It is way easier to make a batch of 10 reeds than it is to make 5 reeds one at a time.

Diagram of "standard" reed dimensions



Cutting and splitting the cane

Using a fine back saw or hack saw, cut the cane tubes into appropriate lengths (just over 3/12" for F reeds, just over 3" for G reeds). Mark the end of the cane tube into 5 equal parts, each being at least 7/16" in width (measured straight across at the outside diameter, ignoring the curvature). Always keep your hands above the knife in this procedure. Use a hammer to gently tap a knife with a handle (do not use a single edged razor blade) into the cane at one of the pencil marks until the knife is about 1/4" into the cane. Continue to force the knife down the length of cane using hand pressure, steadying the cane with the other hand at the top of the tube. You need to split the cane along the fibers, not cut the cane. Continue splitting until you have all 5 pieces.



Gouging the cane

Gouging the cane is fairly daunting when you begin. The object is to remove the inside of the cane until the final product is a "slip" of cane of .025" thickness all over. Make sure your gouge is extremely sharp. Place the slip into the shooting block. Carefully use the gouge in smooth controlled strokes to remove fine shavings of cane from the inside. Do not try to start at the end of the slip closest to you, rather, begin somewhere near the middle and flip the slip frequently to keep both ends even. The thickness you are going for is thicker than a modern-day business card by almost double. Use the calipers (modified as described in the "Tools and Gadgets" chapter) to check your progress frequently. If you take out a big chunk and that spot gets below .025 inches thick, throw it away and start on another. The cane should end up with a smooth surface, ideally, free of bumps and tears. Gouge the cane until the thinnest parts are .025" and the thickest parts are as close as you can get to .025". The thickness should be uniform from side to side (i.e. the slip should not thin out toward the outside edges). You can also check the relative thickness by holding the slip up to a strong light, where thicker spots will show up as darker.

Sanding the cane

Depending on how perfect your gouging was, wrap either 320 grit (mediocre gouging), 400 grit (really good gouging), or 600 grit (can I have your autograph?) sandpaper around the sanding rod and tape it into place. You need to gently rub the slip back and forth in the long direction of the sanding rod to smooth the gouged surface, take away any small bumps, and to produce a slip of .025" thickness all over. Use the coarser grit paper to remove the bumps, moving to finer paper to

make a smooth surface, finishing up with 600 grit. I find it helpful to make a little tube of masking tape, rolled long-ways. I place this tube between the cane and my finger tips to grip the cane and overcome the friction of the sandpaper.

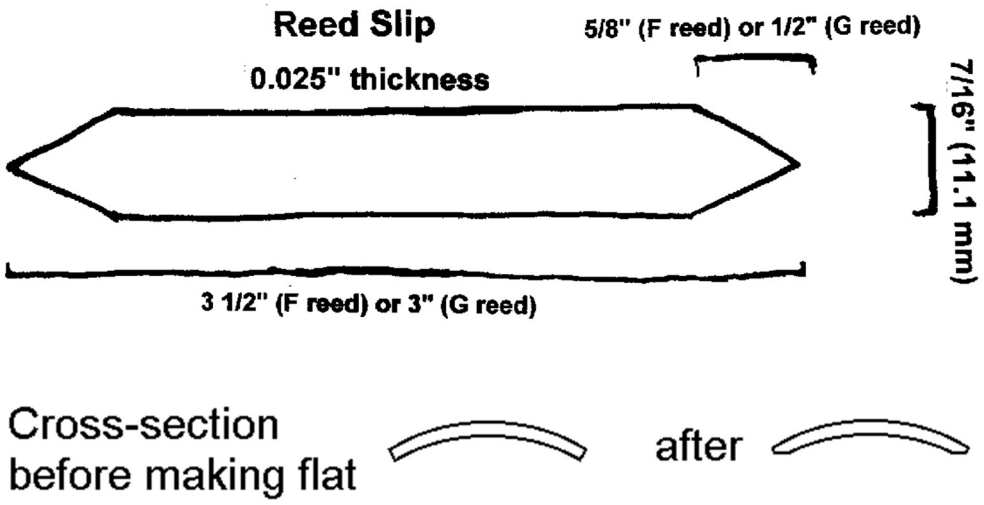
Once the inside is finished, use the 400 grit paper or the scraping knife to very carefully remove just a bit of the outside shiny part of the cane. The object is to just remove the shine and not to remove a noticeable or measurable amount of material.

Sizing the cane slip

Either using a reed making block and razor knife (see "Tools and Gadgets") or by rubbing the edge of the slip on a fine flat file laid on a table, trim the slip until it is exactly 7/16" (11.1 mm) wide, with parallel sides. Use the reed trimming knife or fine saw to trim the slip to exactly 3 1/2" long for an F reed or 3" for a G reed. Trim the ends of the slip to a point with the measurements shown in the diagram.

Next, on a very flat surface (glass table tops work nicely) lay a sheet of 400 grit sandpaper. Run the slip over this sandpaper just a bit, so that only the two outside edges are sanded, making a little flat spot on each edge, maybe half the width of the thickness of the cane. These edges will meet in the next step and these flat spots will help the two edges meet and seal.

Finally, lay the staple on each end of the slip and mark where it will lie with a pencil. Carefully gouge out about half the thickness of the cane right where the staple will rest. This will make room for the staple and will make the slip less likely to crack when binding it later. As an extra precaution against this cracking, you can also scrape or sand off the bark of the cane from the point up to where the wrapping will end, which is the whole of the pointed end plus 1/8” of the straight section of the slip, at both ends of course.



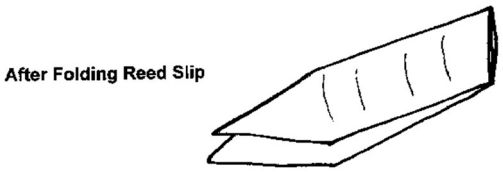
Folding the slip

Cut about a foot and a half of any kind of thread per reed, pull the pieces through some beeswax and set these aside. These will only serve as temporary binding.

The object here is to fold the slip back on itself, end to end, with the concave halves coming together at their edges. To begin, very accurately mark a line across the cane at its mid-point, perfectly perpendicular to the perfectly parallel sides of the slip. With either the point of a sharp trimming knife or a very fine saw, carefully score this line into the cane, cutting about half way through.

From here there are two ways that I know of to go, each having their own merits. The "riskier" way, is to steam the mid-point of the slip over the out-spout of a boiling tea kettle. This moistens the area to be bent and softens the fibers without wetting the whole slip, so you can move on to future phases of reed making more quickly. The "slower and safer" method is to soak the slips for an hour in water, wetting the whole darn thing. I get fewer cracked slips with the soaking method so, since I am not in it for the big bucks that professional reed makers get paid, I can afford to wait a while between stages.

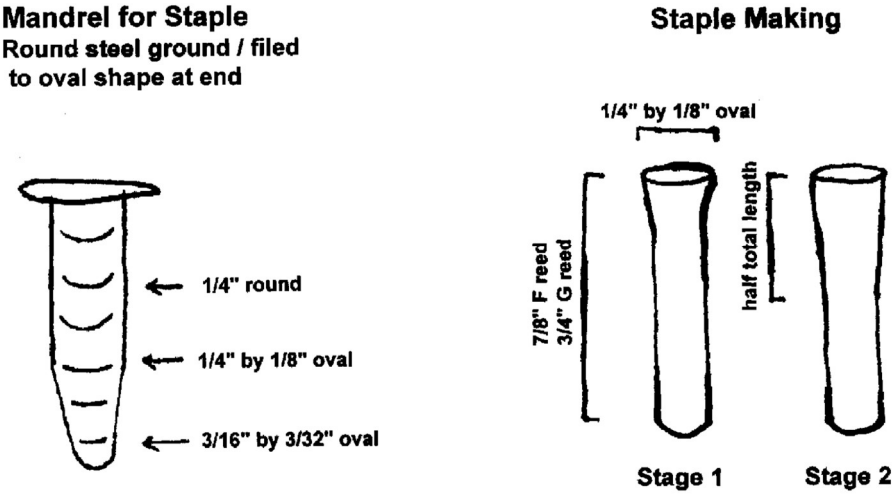
Either way, soften the middle of the cane, place the scored line over an edge (table edge, reed making block, whatever) and fold the cane to a right angle (90 degrees). It should remain intact and go flat across the folded line. (You can still make a good reed if the cane opens at this point, but I find it easier if it does not since the sanding stage is easier to get right since the closed end is flat. If the reed does open at this point, you might as well unfold it, place the slip on the sanding rod, and cut cleanly through, to avoid any tearing of the fibers.) Pick the slip up and continue the fold so that the two halves come together as shown in the diagram. The two halves should line up and the two pairs of edges should mate perfectly. You may true the ends up if needed with sandpaper or a sharp knife.



Wrap the temporary binding around the cane, holding it in fully bent position. Keep the wrapping on the half closest to the fold. If you did the soaking method, set the cane aside to dry overnight.

Making the staple

Cut the 3/16" brass tubing to the proper length (7/8" for F reeds, 3/4" for G reeds). Use a small round needle file to remove any burr on the inside of the tubing, resulting from the cutting process and smooth any outside rough edges with the 400 grit sandpaper. Hold the staple (with the needle nosed pliers) in a flame (a soldering or welding torch or kitchen gas stove) to anneal (soften) the metal. You only need to anneal what will be the top half of the staple, but it will not hurt if you anneal the whole thing. You don't have to get it glowing cherry red, but the resulting staple, after cooling in air, should to be much more pliable than when you started. (If it is not, you did not get it hot enough. Do it again.) Let the staple cool completely before proceeding.



As shown in step 1 of the diagram, press the mandrel into the top of the staple and, possibly with the assist of the pliers if you did not quite anneal it enough, make the top of the staple conform to

the 1/8" by 1/4" oval shape of the mandrel. Keep the mandrel in the top and, by gently working from alternating sides with the pliers, continue the shaping of the staple so that the shape changes slowly and smoothly from the 3/16" circle at the bottom to the oval at the top as shown in step 2 of the diagram. Clean up the staple with a little 320 grit paper if needed. *Note: If your reeds are always “too open”, you may change the opening down to 5/64” instead of 1/8”, as most English makers use. This is why my mandrel is shaped to be used for 1/8” down to 3/32”.*

Attaching the cane to the staple

Mark a little line on each side of the staple 1/4" up from the round end. This is where the pointed tip of the cane will end up, making the top of the staple line up with the shoulder where the pointed tip meets the side of the cane (see the "Diagram of standard reed dimensions"). Carefully slide the staple into the folded cane, pushing in one corner first and then straightening the staple into position. This is just a "dry run" to make sure that everything is the right length. The staple should be parallel with the long axis of the cane (or else the reed will bang the sides of the chanter stock later and cause problems).

Mix up a little bit of the epoxy and put a thin coating on the flatter sides of the top half of the staple. Do not coat the whole end of the staple, just put the epoxy where the metal will touch the cane in it's current condition. Slide in the staple and carefully align it. Carefully set it aside for the epoxy to cure, preferably in a reed making rack. Be sure you do not bump the reed out of alignment. Also be sure that there is not any significant bulge of epoxy in the corner where the staple and the reed meet. If there it, carefully remove it with a toothpick and use less glue the next time.

The sides of the reed will meet up where you have the binding, but the reed sides will no longer meet at the shoulder, where the pointed section begins. It is normal to have about a 1/32" gap there at this point.

Binding the reed to the staple

The object here is to (1) tightly secure the staple to the cane, (2) make the sides of the cane meet along the entire length of the parallel sides, and (3) seal the bottom of the reed completely air-tight.

After the epoxy dries, use the 320 grit sandpaper to delicately smooth over the edge of the cane along the pointed section. Thin the point where it meets the staple "blending the two surfaces together". Cut and wax about 3 feet of the reed binding thread (the actual length will drastically vary with what size thread you use). If you have a mandrel to help hold the reed during wrapping, put the reed on it now. Begin just below the pointed tip, wrap the thread around the staple, overlapping the end of the thread with the first few wraps. Keep the binding very uniform and tight. Continue wrapping up the staple and reed.

This is the stage at which I have broken several reeds. As you wrap the angled section closer to the shoulder, you must wrap tightly enough so that each wrap brings the sides of the reed a little closer together and either the wrap at the shoulder or the one just previous closes the sides perfectly. If you wrap too tightly early on, you may split the reed. If this happens, throw it away and move on. If you find this happening too much for your sanity, either thin that area a little more with the 320 grit sandpaper before beginning to wrap or moisten that area a little before wrapping or scrape the bark off of the pointed ends up to where the binding will end (1/8” up from the shoulder). Any of these will make it more pliable and less likely to crack.

Once you are past the shoulder, continue to wrap the reed until you are exactly 1/8" above the point of the shoulder. With this last wrap, make a half knot (slip the end under the last wrap before pulling it tight). The wax on the thread should hold it snug. If not, a little dab of shellac can be used to tack it in place.

The high drama of reed making

The thread binding will produce an almost airtight seal, but this seal must be completed and the thread must be sealed together so that it does not unwrap. Several ways of doing this all involve coating the thread with a layer of some finish (epoxy, lacquer, varnish, glue, sparkle fingernail polish, you name it), but my favorite method I learned from Colin Ross.

Holding the reed either with the needle nosed pliers or the reed holding mandrel, carefully paint the thread wrapping with a thick layer of shellac. IMMEDIATELY light the shellac on fire (the shellac on the wrapping, not the stuff in the can) with a match or whatever. Hold the reed sideways so that the flame does not burn the cane and roll the reed around so that the flame burns all the shellac. Repeat this process once or twice for the best results. I then apply one last coat of shellac and leave it to dry unflamed.

Preparing the bridle wire

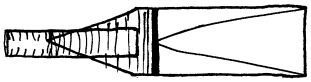
Take the wire for making the bridle and cut a 1 foot length. Secure one end in a vice that is bolted down to a work bench. If you lack a vice, you can drive a nail into something solid, like a work bench or a grand piano, and secure the wire to it by looping the wire around the nail and making several twists of the tail around the wire at right angles to the wire (like the end of a guitar string). Once the wire is secure, pull it with some pliers, stretching the wire a little bit (maybe half an inch or so). This will harden the wire just a bit and make a better bridle. When pulling the wire, keep in mind that it may slip out of your grip or come loose at the other end, so do not hurt yourself. Brace yourself in case this happens.

Attaching the bridle

Wrap the wire around the reed at the top of the wrapping. If you are using 20 gauge wire, go once around the reed. For 22 gauge wire, go around twice. Cut off the excess wire, leaving enough to make one complete twist to "tie off" the wire. When twisting this "knot", be sure that the twisting is taking up any slack in the wire as well as connecting the ends. It takes a little practice but you need to get the wire to really conform to the reed shape and be tightly binding it without cracking it. The bridle should not be easily moved when you are done. To really lock the bridle in position, tack it down with a little dot of superglue or epoxy, one small dot on each "corner" of the reed, out where the two halves meet.

Sanding the reed

Sanding the reed is done to give a subtle profile to the reed blades and is a very important step. Place a piece of 180 grit sandpaper on the edge your workbench and tape it down at the corners. If your workbench does not have really square edges, cut a piece of wood with sharp edges and clamp this to your work surface. The first phase is to hold the reed more or less flat on the work surface and sand the reed, producing a triangle or "V" shape. The top of the "V" will be at the corners of the reed and the bottom of the "V" will be just above the bridle. Do not sand so furiously as to bump the bridle out of position. (If you do, reglue it as before.) Continually flip the reed to ensure sanding both sides evenly and also be sure to sand the left and right side of each face evenly, concentrating on the middle. Holding the reed up to a strong light, you will be able to see your progress and can gauge the thickness of the cane by the lightness or darkness of the light passing through. A small halogen desk lamp is great for this. Fluorescent lights do not work well. **From here through the rest of the reed making process** comparing your reed to a known good reed by holding each up to a strong light will be worth pages of discussion of where to sand and where to scrape. Chances are that if your reed has the same light and dark gradations from tip to bridle and across, it will work the same as the known good reed.

Sanding "V" 

Sand this "V" until the tip reed measures .015" for the combined thickness of both pieces. The reed should be the same thickness from left to right. At this point the tip of the reed may already be open. If not, take the trimming knife and block (or the end nippers) and carefully, with one strong stroke, cut 1/32" or less off the end. This will separate the two blades. If using a knife, be sure to not use any sawing action or rock the blade, as this will crack the reed. The reed should now sound when sucked.

Making an even profile across the reed

Once the reed is open, another great technique exists for getting an evenly profiled reed. Squeeze the reed tips closed with your fingers place a bit back from the edge and in the center. An evenly profiled reed will close across the opening all at once. If the reed closes on one side before the other, that one side is weaker, so the other is probably thicker. For example, we have already said that the combined thickness of both pieces of the reed should be .015", so each piece is about .0075". If in fact one piece is .006" and the other is .009", the .009 side will not flex much, so the .006" side will move much more when pinching closed. Rotate your thought now by 90 degrees. Assume both pieces are about .0075" thick in the middle, but one side is .009" thick a little left of center. That part will be stiff and it will close last when you pinch the reed. Thin that area that resisted closing, until the whole reed closes together.

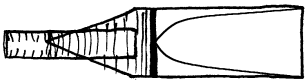
Sucking reed

When testing a reed (and the reed maker's progress), the reed maker sucks the reed. You should never blow through the reed (i.e. by putting in your mouth) whether in the chanter or not. The acids in your saliva can seriously damage the reed and the moisture will change the way the reed responds and the reed will sound differently once it has dried. After sanding, the reed should make some sound when sucked. If not, the opening of the lips (the reed lips, not yours) is probably too large. With both thumbs and forefingers, squeeze the bridle gently to close the reed to something around 1/32" or less. If the lips combined thickness is .015", the reed will sound when the proper opening is achieved.

Also at this point, and from here on out, check the airtightness of the reed by carefully sealing the lips with one finger tip while sucking the reed. The reed must be airtight when sucked this way. If it is not, try to figure out where the leak is and apply some white glue very lightly along the edge where the leak is occurring. If the leak is not along the edge, reseal the binding with more shellac.

The "crow" of the reed

The sound that you are after from now on is best described as a crow, with lots of high harmonics. This sound is a raspy, edgy, harsh sound. Presuming you already have a good reed in your pipes, take it out and suck it to hear the sound. Keep in mind that reeds vary in quality quite a bit, and you may well end up making better reeds than the one that you are currently playing. Aim for getting your reed to be at least as harsh and edgy on the crow as the reed that you are playing. Also the reed, when completed, should sound easily and loudly when sucked and you should feel like the reed is vibrating a lot. Lastly (and this is done in the fine tuning stage) the reed should sound a C natural or a C# for most chanters and somewhere between a C# and an E for a G chanter. This pitch is "absolute" pitch (i.e. a C or C# on your electronic tuner, not the nominal C on your pipes). Admittedly, you can change the pitch a lot by sucking harder, but, again, use your good reed that is in your pipes as a "go by". (I don't know how the first pipemaker built the first pipe reed - sort of a "chicken and egg" problem there.)

Scraping "U" 

Scraping the reed

Chances are incredibly good that your reed is not perfect after sanding. From here you need to refine the "V" into more of a "U" by scraping the reed. Using your specially-sharpened scraping knife, push the knife away from you to remove a tiny bit of material at a time, mostly from close to the bridle to achieve a "U". Be very careful not to damage the very thin lips of the reed. If they need to be thinned, use 320 grit sandpaper. Suck the reed every so often to hear the difference that you are making.

The taper (as seen by holding the reed up to the light) should be gradual and gentle from the "U" shaped base of the reed to the .015" thick lips. The more cane that is removed from the sides of the "U", the easier the reed will be to sound. However, removing too much cane from the sides will make the reed dull sounding (both on crowing and in playing) and will make the reed more susceptible to climatic changes. Remember that the width of the opening is very touchy and a little, invisible change can produce sound where there was no sound before. When you test the reed, make sure that the opening is right before you assume that you need to remove more cane. Once you cut away cane, you can not put it back, so be patient. Scrape the reed until it "crows" more or less like the reed that you have in your pipes while sucking at the same sort of pressure. More scraping makes it easier to sound.

Going for a really good reed

I suggest that you scrape all the reeds in one batch until they all sound more or less easily when sucked. I would then scrape and tune them until they play well in the chanter, as will be described in the next section. I would then try to "fine tune" the best of the lot by further scraping, testing frequently in the chanter, trying to get at least one of the batch to be a really good reed. You may lose a few in the process, due to over scraping, but will learn valuable lessons. Also, you need to be willing to risk a mediocre reed to try to make it into a great reed, provided that you have a playable reed to fall back on.

Put all the reeds in your batch into the chanter and try them out. Adjust the opening so that the reed is making a decent sound at 16" water pressure, using your manometer. See which ones have the best, brightest tone and do not worry too much about what pitches they play. The ones that sound dull may still be too thick, especially around the center just above the bridle, or you may have sanded too much off the sides. Do some more scraping there to see if you can improve them up to the standard of the best in the batch.

Especially when beginning, you might want to number each reed and take notes on each step you take and the effect that it had (and eventually how the reed ended up).

Fine scraping and tuning the reed

From here to the end of this section, you need to basically do all of these activities in a repetitive cycle, doing scraping and tuning, setting the reed, adjusting the reed, probably more scraping, more setting, more adjusting, getting ever closer to the perfect reed. Take your time and go through no more than a couple of cycles a day. This way, the reed will have time to get used to it's new dimensions and your nerves and relationships may well survive intact.

Put the reed in the chanter and see what pitch you get at 16" water pressure. Probably the pitch will be too low, relatively worse at the higher notes and not so far off on the lower notes. This means that you need to shorten the reed or you may need to scrape the reed or open or close the

lips. Use the chart below to decide the best course of action and work in small incremental changes, continually checking the reed both by sucking and in the chanter.

ACTION TAKEN	***EFFECT***
Thinning the blades	Lowers the pitch Lowers the pressure required to reach a given pitch Affects the higher notes more than the lower notes
Shortening the blades	Raises the pitch Increases the pressure required to reach a given pitch Affects the higher notes more than the lower notes
Closing the opening of the lips	Raises the pitch overall Reduces the pressure required to reach a given pitch Affects the *lower* notes a tiny bit more than the *higher* notes*
Opening the lips	Lowers the pitch overall Increases the pressure required to reach a given pitch Affects the *lower* notes a tiny bit more than the *higher* notes*
Inserting the reed further into the chanter	Raises the pitch overall Strongly affects the higher notes much more than the lower notes
Setting the reed further out of the chanter	Lowers the pitch overall Strongly affects the higher notes much more than the lower notes

*See "Chanter reed" in the "Everyday adjustments" section of the "Maintenance" chapter.

How do all these factors interact?

The pitch of any two notes on the pipes is determined by the ratio of the distance from the end of the reed to the top edge of the finger hole (where it meets the bore, not the outside) plus some constant which is determined by the nature of the reed itself (its internal volume, its pitch, etc.). Sparing you the theory and sticking to what I actually know from experience, the idea is that the further you insert the reed into the socket, the more all the notes go up in pitch, but the ones closer to the reed see more of the effect than the lower notes. In other words, if the low D is almost the right pitch but just a tad flat and the high B is considerably flat, inserting the reed just a

bit further (1/32") into the socket may put both in perfect pitch because the 1/32" that you moved the reed is a larger percentage of the distance from the tip to the B hole than the 1/32" is to the distance from the tip to the low D hole. *Bottom line: inserting the reed further really changes the relationship between the notes.*

Somewhat like inserting the reed further, if you trim the end of the reed (say 1/32") you will again shorten the distance and the pitch of all the notes will go up, especially the lower ones. However you have also changed the pitch of the reed itself (remember that "constant" in the previous paragraph?) You will find that when you trim the reed length, you will need to close the lips back down to their "pre-trimmed" opening and thin the lips back down to .015" to get back to the reed playing at the right pressure. This further raises the pitch of all the notes, so trimming results in several kings of increases in pitch compared to inserting the reed further. However, notice that about half of the pitch raise is due to shortening (which affects different notes differently) and the other half is from closing the reed (which is more uniform). *Bottom line: trimming the reed changes the relationship between the notes less than insertion and more uniformly raises the pitch.*

Notice that thinning the blades, opening the lips, or setting the reed further out of the chanter will all lower the pitch. As with inserting the reed more, pulling the reed further out affects the relationships between notes very strongly. And similar to trimming and closing the reed, the act of thinning the reed and opening the reed affects the pitch of all the notes in a more uniform manner.

If your chanter came with a piece of cotton stuck in the bottom, or maybe even if it didn't, please be sure you read the somewhat cryptic section in *Chapter 7 - General weirdness with a chanter - some notes suddenly out of tune*.

OK so what do I do now?

My recommendation is to slowly go through all the processes in small increments, doing what seems appropriate to move you closer to a perfect reed, until either you destroy the reed or you have a really good reed. Take notes on your actions and the results. Use your existing reed as a guideline. Your own finished reed will probably stick out of the chanter about the same distance (plus or minus 1/32"). First, I would pay more attention to getting the reed positioned right (by inserting the reed the right distance), so that the notes are in tune with each other. Once the notes are pretty much in relative tune, I then would focus on refining the reed so that the whole thing plays at the right pitch (more by adjusting the opening, trimming, and by scraping). Obviously, if you trim a lot off, you may have to go back to adjusting the reeds position, but cycling through these processes, zeroing in on perfection, is the best way.

Whatever adjustment you make, suck the reed and open or close the lips until the reed sucks to the same pitch as your existing reed with the same effort. Try the reed in the chanter and see how it plays. Readjust the lip opening to get the best sound and pitch that the reed can currently deliver and plot your next adjustment. Do these final adjustments over a period of days and take it easy on the reeds and your nerves.

Thinning the blades

This is done by scraping just as you have done before. If the high notes sound fine but the low notes are a bit weak, scraping in the center, just above the bridle may give the lower notes more tone and volume. To generally thin the blades, scrape along the "U" as before and sand the lips to maintain a .015" thickness.

Shortening the blades

This is done by carefully trimming the reed with the trimming knife and block or with the end nippers. Only cut a maximum of 1/32" at a time. After each trim, recheck the thickness of the lips and sand them back down to .015" total, and readjust the opening so that it sounds well at 16" pressure. If the reed pitch needs to be lowered or if the reed needs to play at a lower pressure, scrape the reed some more, especially near the center of the "U" near the bridle.

You may want to compare the reed that your are currently playing with the reeds you are making. In general, when seated in the chanter, the existing reed and the new reed will protrude above the chanter by the same distance, plus or minus 1/32". (This difference is due to differences in how deep different makers make their reed sockets. Variation between reeds for the same chanter will be caused by differences in internal dimensions, staple shape, and the phase of the moon in Bora Bora when the pipe makers mother was born.) Anyway, this will give you some idea of the final length of the reed. Mine end up measuring from 21 1/2 to 22 1/2 mm from the bridle to the tip of the lips for an F reed and right at 21 mm for a G reed. (Remember the G reed does have a shorter staple, plus I play my G reeds at a slightly higher pressure to get more volume out of them.) Trimming the reed affects the bridle to tip distance. Variations in staple length will have to be made up for by either making the staple a bit longer or shorter to start with, or by trimming the staple after the reed is nearly complete. Again, you may wish to model your next batch of reeds after the reed that you are currently using rather than the standard that I have described here.

Closing the opening of the lips

To close a chanter reed, see the "To close a chanter reed" section, in the "Maintenance" chapter. Again, be aware than a subtle change in opening, undetectable to the eye, will produce a dramatic change in the pitch and pressure required.

Opening the lips

If you already know how to do this, please read "my" method anyway, it may be different and was taught to me by "the big boys in the biz" and they think, as do I, that it is an important difference.

To open a chanter reed, you guessed it, see the "To open a chanter reed" section in the "Maintenance" chapter.

Inserting the reed further into the chanter

This can be accomplished in two ways. First, try to do this by varying the amount of thread wrapped around the base of the completed reed. (I am not talking about the wrapping that you sealed around the staple with shellac, I am talking about additional thread used to seat the reed in the chanter.) Make sure that the thread-wrapped staple fits snugly into the chanter and that the thread prevents the reed from rocking from side to side.

If this does not allow deep enough insertion, try trimming a bit off the end of the staple with a fine hack saw or by filing. Be sure to remove any burr on the inside of the staple after cutting or filing to length. You should never have to actually cut away any of the chanter. After all, the maker got a reed to work in there, right?

Once you get the reed at the right position, put a little beeswax around the base and lightly smear and push it into place, sealing the top of the chanter airtight and making the reed that much more secure. When you pull the reed out, either to finish making it or for day to day adjustments, this beeswax collar will help you reseat the reed at the same place every time. This is very important in fine tuning the reed, where you likely will remove and replace the reed a dozen times or more.

Setting the reed further out of the chanter

Wrap more thread around the base to make the reed protrude more. Again, seal it airtight and immobile with some beeswax once you get it situated in the right position.

Drone reeds

In the section above on chanter reeds, you had to concern yourself with very specific dimensions and with what pitch of a chanter you had. Drone reeds are much more variable in dimension (i.e. two rather different sized reeds may end up sounding the same in the same drone, one makers reeds for an F set may look very different from another makers F set reeds, etc.) and generally do not vary depending on the pitch of the set (one makers F sets use the same drone reeds as that same makers G sets). What I know about drone reed making comes mostly from conversations with Richard Shuttleworth, David Quinn (and his book "The Piper's Despair"), Tim Britton (and his book "My Method"), and Kirk Lynch, along with some long hours hunched over my workbench.

Two types of reed construction

Drone reeds fall into two categories of construction: "built" reeds and "natural" reeds. "Built" reeds are built from different components by the maker, resulting in a partly closed tube with a vibrating tongue attached. "Natural" reeds are made by taking a naturally occurring tube and cutting and binding it into a working reed. "Natural" reeds are by far the oldest but both styles enjoy wide popularity today.

Among natural reeds, by far the most popular material is Spanish cane, the same stuff used to make chanter reeds, only in a much smaller dimension. These pieces come from the tops of the cane plant and, unfortunately, are rather hard to find these days for reasons unknown to me (except that we are probably the only people in the world who want the stuff in this small size). Perhaps one of you have connections with a French reed cane company and can pull some strings?

Built reeds (which I believe have come about in our pipes only since the 1970's) originally were made of all brass (which gave them a harsh tone) but have now settled into predominantly being a composite of brass bodies with a cane tongue (generally called "composite" reeds). Composite reeds are also being made of brass with a plastic tongue. While I used to think them inferior in tone to brass / cane reeds, I now find that they can be made with the same tone, are easier to make, and more stable in weird weather.

Composite brass / cane reeds are the most common type of reed used by the touring performers whom I have met and, I believe, among the better makers. Their supporters claim that they are more stable and reliable than the natural reeds and the materials are definitely easier to get and much more uniform in nature. However, many staunch supporters of natural cane reeds exist, so I will cover both in this section.

Keep in mind that several different dimensions of reeds may work in a drone, but part of the art is not just getting one to work, but getting the sound you want. In general, the larger diameter the reed, the louder that reed will be, the more air it will take, and the brassier the tone. Make several sets of working reeds for your drones and use the best sounding combination. I personally use all brass/plastic composite reeds.

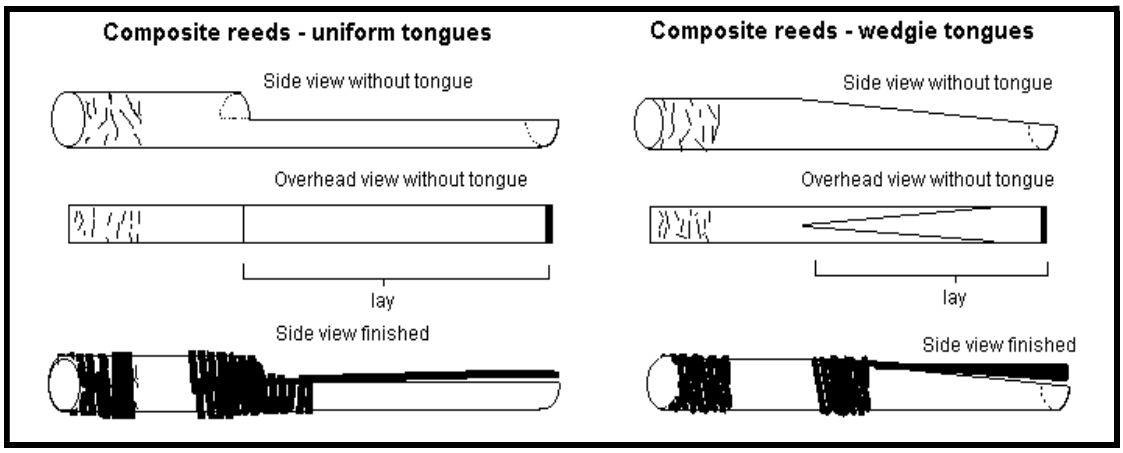
Two types of reed tongue shape

There are two main kinds of drone reeds from a structural point of view (either type can be either natural cane or composite). Each can work beautifully and different people will argue for the merits of each type. The first type I call "uniform reeds" and these have a more or less uniform

thickness along the length of the tongue. You can make composite reeds in the "uniform" style by simply making the cane tongue of uniform thickness (about 1/32") and by using a composite base of about the same length as a natural cane reed. Natural cane reeds basically begin life as "uniform" reeds and will remain so if you simply remove material from them.

The second type I call "wedgies" since the tongue has a wedge shape or at least is much heavier at the tip than toward the bridle. This is the style of most composite reeds and is the style I have described making above. You can also make a natural cane reed into a "wedgie" (and this is frequently done) by weighting the end with sealing wax or small bits of electrical solder attached to the end of the tongue with super glue or epoxy.

I think in general "uniform" reeds are capable of a softer tone and more of a humming quality of sound whereas "wedgie" reeds are more prone to being louder and stronger toned. I think also that the "wedgie" reeds stay better at the same pitch with changes in weather. I recommend you try both (spending lots of time to get the best sound from each style) before you decide on your preferences.



Making natural cane reeds

Tools and supplies

Find some Spanish cane of diameters 1/8" up to 3/16" from one of the sources listed in "Resources" or elsewhere. (If you find another source, please let me and the rest of the piping world know.) In addition, you will also need some of the same things used for chanter reeds, such as a trimming knife, a 4-6" triangular file or fine saw, some binding thread (all cotton "button/upholstery" thread from a fabric store works best), beeswax, a small round needle file able to be inserted into the cane, and some sealing wax (the wax used for sealing letters and imprinting an insignia on a document, available at some stationary stores). A candle which stands on its own may also be helpful in the adjustment phase. Optional supplies are some small "O" rings (small enough to fit snugly over the cane) or some 1/8" surgical tubing cut into 3/16" lengths, some electrical solder, either some gap-filling super glue (cyanoacrylate glue) or epoxy, and a pair of needle nosed pliers.

Cut to length

Using the fine saw or trimming knife, cut the cane to length so that there are no nodes (they look like elbows or knots) in the finished length. The final length of a nice sounding drone reed can vary a fair bit, due to differences in internal dimensions of the cane, how much you remove from the tongue, and other factors, but as a starting point, use the following:

Cane outside diameter	small g drone	small d drone	large G drone	large D drone
1/8"	1 5/8"	2"	2 1/2"	3"
5/32"	1 1/2"	1 3/4"	2 3/8"	2 3/4"
3/16"		1 3/4"	2 1/4"	2 1/2"

Clean out the reed and close one end

Use a needle file to clean out any debris inside the tube of cane, so that air can pass freely through it. Then heat a stick of sealing wax until it is very soft and dab a little on one end of the tube, sealing it off. Do not leave so much wax that it protrudes away from the cane, just close the end. If you have picked a piece of cane with a natural and airtight node at one end, this will suffice and the wax is not necessary. Lacking sealing wax, epoxy can also be used, although you may need to dip the end a couple of times to totally close the end.

Binding the reed

Using some thread pulled through a block of beeswax, wrap the tube several times about 1/3 of the way from the open end to the closed end. End the wrap with the now famous "loop and yank" method. It may be a good idea to coat the wrapping with just a dab of shellac to keep the wrap together but do not glue the wrapping to the cane. Do this binding step even if you intend to use an "O" ring or surgical tubing as a tuning bridle.

Split the tongue

About 1/8" away from the closed end of the tube, cut 1/3 of the way through the tube with our razor knife. Do not cut straight down but will tilt the knife back toward the closed end just a few degrees so that you are cutting a little toward the open end. Before making the cut, mark your intended cut with a pencil and use the triangular file to just nick the surface along the line of the cut. This prevents the cane from splitting where you don't want it to and is a very important step. Now take the razor knife and complete the cut, leaving the knife in the cut.

Using the knife as a wedge, pry up the tongue, splitting not cutting the cane. As you proceed, move the knife in the split. Do not cut. Hold onto the open end of the tube firmly. Continue to split until the split reaches the wrapping. If you get any extra splits happening, you probably did not score the outside well enough with the triangular file, so throw out this tube and start again.

Preparing the tongue

Using a finger nail, carefully lift the tongue up just a few millimeters and let it snap back down a few times. Roll the tube around in your hand vigorously to help the tongue seat well on the rest of the tube. Test the tube for airtightness by holding the tongue closed with one finger and trying to suck air through it. It must be airtight. Releasing your grip, the reed will probably sound when sucked.

Install the tuning bridle (optional)

The binding will work as a tuning bridle and can be slid up and down the reed to vary the characteristics of the reed. I prefer to use surgical tubing or small "O" rings as a tuning bridle, leaving the wrapping in place close to the open end for added security. If you want to do this, cut the 1/8" tubing into a 3/16" piece and stretch it in place over the closed end, working it down to about 1/3 of the way from the open end. "O" rings can also be used in a similar manner. Keep in mind that the tightness of the bridle will affect the lift of the tongue (a tighter bridle produces a higher tongue, increasing the air pressure needed and the volume produced). The surgical tubing width can be adjusted (by cutting wider or narrower) to produce the right amount of pressure. With "O" rings, you just have to find the right size.

Fine tuning natural cane drone reeds

Skip ahead to the section called "Adjusting and tuning drone reeds", which follows the section on composite reed making.

Making composite brass / cane reeds with wedgie tongues

Tools and supplies

Use the same Spanish cane as you use for chanter reeds. The diameter of this cane is not important, as you will shape all the diameters yourself anyway. It should be at least 1/2" in diameter, so you can either use offcuts from making chanter reeds or use cane that was not quite the right size for chanter reeds. Some makers, to both reduce gouging time in chanter reed making and to save money, split a chanter reed slip (providing the cane is thick enough) giving a still-thick-enough slip to make a chanter reed and the inside part (that would be gouged away anyway) which may yield enough cane to serve as a drone tongue. The other main part of the reed is made from brass tubing in 5/32", 3/16", and 7/32" outside diameters. These are usually available at local hardware / model makers / hobby supply stores in 12" lengths. Buy one of each size.

You will also need some of the same tools and supplies used for chanter reeds, such as a trimming knife, a scraping knife, a 4-6" triangular file or fine saw, a hack saw or tubing cutter, some binding thread (all-cotton "button/upholstery" thread from a fabric store works best), beeswax, and a small round needle file able to be inserted into the tubing. A candle may also be helpful in the adjustment phase. Also like chanter reed making, you may need either some electrical solder, super glue (cyanoacrylate glue), and a pair of needle nosed pliers or some sealing wax (the wax used for sealing letters and imprinting an insignia on a document). Unlike chanter reed making, you will either need some sort of metal soldering equipment (this can be any kind of solder made for metals including brass and does not have to require a soldering torch - hobby stores and Radio Shack sell stuff that works with an electrical gun or even a match and this works just fine) or some epoxy glue, a small sheet of brass about 1/32" thick, and something to cut it with (tin snips, jewelers saw, fine hack saw, computer driven laser mill, whatever is handy).

Sizes of components

As with natural cane drone reeds, a variety of sizes of composite reeds can be made to fit various sets of pipes. There are also two shapes of tongues used in making composite reeds. Some makers make a composite reed that mimics a natural reed in that the cane tongue is relatively uniform in thickness and the whole reed is about the same size as a natural cane reed. You may want to experiment with making these. I prefer the "wedgie" style tongues, which produce a shorter reed body and a very robust end of the tongue. I find it more difficult to damage this type

of tongue when working with it and also prefer the shorter nature of the finished reed (less likely to stick out of the stock and be fouled up by the bag). The following chart reflects the wedgie-style reeds that I have made for my pipes. If anything, you may want to reduce the size of the tubing used for the low D and possibly the low G if you want them to be quieter than I prefer. You may also want to check the socket into which your drone reeds will be set, to ensure that the tubing will fit.

Component	small g drone	small d drone	large G drone	large D drone
tubing outside dia.	5/32"	5/32"	3/16"	7/32"
tubing length	1 1/16"	1 1/8"	1 1/2"	2"
cane wedge thickness	4/64" ---> 1/64"	4/64" ---> 1/64"	5/64" ---> 1/64"	6/64" ---> 1/64"

Making the brass body

Using the hack saw or tubing cutter, cut the proper size tubing to length. File the inside and outside of each end to remove any burr and to make them smooth and flat. Cut a piece of 1/32" brass sheet to cover one end (it can be too large but not too small) and solder or epoxy it on, making an airtight seal at one end of the tube.

If you used a "real" solder (i.e. easy or medium flow solder applied with a torch or soldering iron), you will have a very strong bond and can use a disk or belt sander to speed the next process. Otherwise, I suggest using a file and going gently. File or otherwise remove a wedge of the tubing so that you are left with half the original diameter of the tubing at the closed end, tapering back to reaching the full original diameter about 1/3 of the way from the open end. You will have a long V shaped opening in the side of the tubing, with 1/3 the length of the tubing undisturbed. The V shaped opening is called the "lay" of the reed.

On a very flat surface, rub the lay on a piece of 400 grit silicon carbide paper until the surface is smooth, polished, and absolutely flat. Use the razor knife and/or needle file to remove any pieces of brass hanging down inside. Again ensure that the surface is flat and smooth after removing any brass burrs.

Finally, use the triangular file to rough up the 1/3 of the tubing that has not been filed, so that thread will stick to it better.

Making the cane tongue

Using your fine saw, trimming knife, file, and sandpaper, form a wedge of cane which is long enough to cover the tapered flat that you have just made on the reed body and tapers from the maximum to the minimum thickness shown on the chart above. First cut the cane to length, then to the widest width of the tubing. Again using a very flat surface, use 400 grit silicon carbide paper to make the bottom of the cane very flat and smooth. Then, with a trimming knife or reed making gouge and using several passes, taper the top of this rectangle of cane from maximum to minimum thickness as carefully as you can. I usually do not begin the taper right at the thick end, but leave the thick end at maximum thickness for the first 1/8 - 1/4". Most of my tapering ends up being in the middle 1/3 of the tongue length, with the thinnest 1/3 being 1/64" constant thickness. Finally, use the trimming knife to shave the sides of the thin end of the taper to conform to the shape of the lay that you filed in the tubing. The cane can hang over the edge of the tubing at the thick end a bit (this may even be desirable to ensure a good seal) but needs to conform to the V shape at the thinnest 1/3 as this will be where the binding and tuning bridle rest.

Binding the reed

Lay the cane tongue on the lay of the reed body. Apply a little bit of shellac to lightly glue the thin tip of the cane to the brass and begin wrapping waxed thread around the body. Begin in the "unfiled" section, just beyond the cane tongue, and wrap carefully until you have covered about 1/6 of the total length of cane. Stop here, let the shellac dry and then proceed with testing the reed. If you are going to use a tuning bridle (I usually don't, since these reeds are very stable), put it on the base of the reed now and roll it up to help hold the wrapping in place while the shellac dries. I use a piece of surgical tubing for this until I finalize how far the wrap must go.

Test the reed in the drone and use the techniques below for tuning the reed. When you arrive at the final amount of wrapping and the reed is the way you want it to remain, bring the tail of the wrapping thread back down over the other wrapping layers several wraps and shellac the tail into place, gluing it to the previous layers. Be careful not to get the shellac too near to the cane itself.

Installing the tuning bridle (optional)

Install the tubing or "O" ring tuning bridle the same way as was done with the natural cane drone reeds above. I find these are usually not necessary on composite reeds.

Making composite brass / cane reeds with uniform tongues

Sizes of components for composite reeds - uniform tongues

Use some sort of calipers which are calibrated to 1/1000" to measure the tongue thickness. It needs to be pretty close to the measurements below and of uniform thickness all along the tongue. Metric tubing sizes are shown in addition to inch sizes. If you can find metric sized tubing, it is usually thicker and arguably easier to work with (the lay will have more surface area where the "rubber meets the road").

Component	Small g drone	Small d drone	Large G drone	Large D drone
Tubing outside dia. (inside dia. 1/32" less)	5/32 " (4 mm)	5/32 " (4 mm)	3/16 " (5 mm)	3/16 " (5 mm)
Tubing length	1 1/8 "	1 1/2 "	2 "	2 1/4 "
Tongue thickness	.008 "	.010 "	.016 "	.020 "

Difference in brass body construction from that described for "wedgies"

Instead of filing/sanding the lay at an angle to the brass tubing, file or sand the lay parallel to the tubing as shown in the chart below. The lay should be flat so that there is half of the original tube diameter remaining all along the lay. The "inside corner" where the tube goes from full diameter to half diameter should be sharp and not rounded.

Difference in cane tongue construction from that described for "wedgies"

Using the same chanter cane described for "wedgies", a knife and sandpaper, make cane tongues of uniform thickness to match the sizes shown in the chart below. The best way I have found for gripping the cane while sanding is to apply carpet tape (sticky on both sides, used for holding down carpeting) to a flat smooth chunk of wood and stick the cane to the tape. Cut the cane to approximate size before sanding. The smallest tongues are quite thin and extra care will be needed to peel them off of the tape. Be sure no adhesive remains on the cane after sanding.

Difference in binding the reed from that described for "wedgies"

Do not attempt to shellac the tongue to the base, there is simply not enough of a surface there to work. Also, the "inside corner" will need to be wrapped with several layers of thread to ensure an air-tight seal.

Making composite brass / plastic reeds

Materials and tools

Materials: brass tubing (available from hobby shops), either brass sheet (enough to cover the ends of each drone, about 1/16" thick) if you can do silver soldering or epoxy if you can not solder, .010" and .020" thick polystyrene plastic sheet (available from hobby stores specializing in model building - other kinds of plastic will likely not work as well), thread, and beeswax.

Tools: Something to cut shape brass (a band saw, jewelers saw, or tubing cutter), something to shape brass (a 1" bench belt sander is great but a file will work fine), 240 or 320 grit silicon carbide sandpaper, a utility knife or scissors to cut the plastic, and soldering equipment (optional).

Body construction

Make a brass drone reed body as described in the section above.

Tongue construction and installation

Using the lay as a pattern, cut a piece of the polystyrene to fit over the lay. The plastic must fit over the entire lay and can even be a little oversized, just so it seals against the lay. At this point, I slip a doubled-over or tripled-over 1/4" orthodontic rubber band over the reed body and tongue near the closed end to hold the tongue in place for the next step, but you can use your fingers.

Cut off a few feet of thread (yellow pipers hemp thread works great but any large diameter thread or fine twine will do). Pull it several times through a chunk of beeswax so that it will grip the reed well. Beginning at the "inside corner", carefully wrap the thread around to bind the tongue to the body. Wrap about 1/4" of the tongue, then go back and wrap over the "inside corner" to seal the opening where the whole tube meets the half tube. Continue to wrap up the tongue as far as indicated in the diagram and data table. (The part of the tongue left unwrapped is the vibrating length of the tongue. The dimensions shown in the table will be plus or minus a few wraps, depending on your drone bore size and length.) Do not tie off the thread yet, but wrap it around itself several times. Use a bit of tape (or I use my orthodontic rubber band) to hold the thread while you tune the reed. Finally, wrap some thread around the base of the reed so that it provides a snug fit into the drone reed socket.

Fine tuning and tweaking

The tongue will need to be gently bent to an open position. To do this, use a finger to pull it up to something like a 45 degree angle and let it snap shut. The more you do this, and the higher the angle, the more open the reed will remain when it settles down. (If you over-do this, either make a

new tongue or use a quick pass through a candle flame as you hold the tongue closed to reset it to flat.) These reeds, with a given openness ("elevation" to use the correct term), will be very stable in pitch over a range of pressures. If it is stable at low pressure but gets unstable at normal pressure, you need to open the reed some more. If it is only stable at too high a pressure, you need to close the reed (or make a new, more closed tongue). The plastic will tend to go part way back to its original state in the next few minutes after each adjustment, so you may need to adjust the reed over the course of a few hours or maybe a couple of days in some cases. Once it gets stable at the desired pressure range, it should remain stable indefinitely.

As you are adjusting the reed for pressure, you need to also adjust it for pitch. Do this by simply removing the rubber band (to free up the thread) and adding more wraps (shortening the vibrating length of the tongue and raising the pitch) or removing a few wraps (lengthening tongue, lowering pitch). This may also affect the pressure, so you have to make both adjustments simultaneously. Once you have the pitch and pressure exactly right, tie off the thread permanently with a couple of knots.

Component	Small g drone	Small d drone	Large G drone	Large D drone
Tubing outside dia.	5/32 "	5/32 "	3/16 "	3/16 "
Tubing internal dia.	1/8"	1/8"	5/32"	5/32"
Tubing length	1 1/8 "	1 1/2 "	2 1/4 "	2 3/8 "
Tongue thickness - Plastic	.010"	.010"	.020"	.020"
Vibrating length of tongue	5/16"	3/8"	11/16"	1 1/8"

Adjusting and tuning drone reeds

The ultimate drone reed performs three amazing feats. It stays at the desired pitch regardless of changes in playing pressure, it produces the volume of sound that you want, and it produces the quality of sound that you want. Getting all three of these properties to exist in a single reed is not really very hard, but it does require that you juggle several variables. Each action you take (like making chanter reeds) results in more than one reaction from the reed. You simply have to find the right combination of actions to move your just-completed reed in the direction of perfection. Again, the best course is to make slow, small modifications, noting the result of each modification, gradually zeroing in on the perfect reed. Also like chanter reed making, you are best to make more than one reed at a time and use the best of the batch.

Balancing uniform style reeds

The key to uniform style reeds is getting a balance of tongue weight along the vibrating length of the reed. I do not necessarily mean to imply that these reeds are exactly uniform in thickness (they often end up being a bit thinner toward the free end than they are near the bridle), but the reed maker does work toward the balance that will make the reed stable. The only place (other than here) that I know about this being discussed is in Tim Britton's book and it was a personal meeting with him that really made this all make sense to me.

Along with the other actions described below, when you work on a uniform style reed, you change the weight of the reed by either carving or scraping away material or by weighting the end with sealing wax. Play the reed in the pipes. If it smoothly goes up in pitch with increasing pressure (the way a chanter reed does), you need to remove weight from the free end. If the reed goes down in pitch with increasing pressure, you need to either remove weight from the bridle end of the tongue or add weight to the free end of the tongue.

This balancing act works to some extent also with "wedgie" style reeds (which of course are much heavier at the free end than at the bridle), but is crucial to making a good "uniform" style reed.

Opening and closing the reed

Similar to chanter reeds, a larger opening in the reed will require more air, be lower in pitch, and will produce a louder note. More importantly, most drone reeds need to be gently opened a bit after you have completed their construction (see below). If the reed is not open enough it will clap shut under normal playing pressure. Too open and the reed will hardly (or not at all) sound unless you use too much playing pressure and will sound harsh and raspy at normal pressure if it sounds.

The first factor controlling the reed opening is the shape of the tongue itself. Cane is flexible and somewhat more plastic than elastic. To increase the reed opening, catch the tongue with your fingernail and GENTLY hold it up while stroking your thumb (same hand) down the tongue toward the open end. Keep a tight grip on the reed at the bridle when doing this maneuver. You are simply trying to bend the tongue very slightly in a curved upward shape. This stroking will temporarily open the reed a great deal and the effect will mostly go away after a few minutes of playing, but the reed will stay open a little more than it was in the first place. Repeat this whenever necessary. To close a cane tongue opening, hold the tongue closed with your finger, turn the reed so that the tongue is down, and pass the reed quickly above a candle flame. You really are just trying to warm the cane with the flame, not burn it. Pass it through an inch or two above where you can see the flame so that the bridle end is heated. Hold the tongue closed for a few seconds after you pass through the flame. The heat will set the tongue in this new position. Stroke it open if you go too far. To close a plastic tongued reed, turn the tongue over and retie it.

The second factor that controls the reed opening is the tightness of the bridle. Too loose a bridle can allow the reed to stay closed or be unpredictable. A too-tight bridle tends to bend the tongue down at that point which raises the other end, opening the reed. When making the reed, try varying how tightly the bridle hugs the tongue (by wrapping the thread tighter or by using a wider piece of surgical tubing) and find the best "tightness of wrap" to give the desired opening. It should always be tight, but sometimes the tightness as if a 4 ounce hamburger was hanging off the thread as you wrap it and sometimes as if 3 hamburgers and a hotdog were hanging. (After happily using with a reed for a long time, if the reed starts to fail, try redoing the bridle. It may be that the bridle has gotten loose and replacing the bridle may be all you need to do.)

Changing the tongue length

Increasing tongue length lowers the pitch, increases the air required, and makes the reed louder. Increasing the tongue length can be accomplished by moving the bridle away from the free end or, in the case of "wedgie" reeds without bridles, by removing wraps of binding thread. If these changes still do not produce a long enough tongue for your purposes, remake the reed with longer materials.

Decreasing the length is done by moving the bridle toward the free end or by adding wraps of binding. This raises the pitch, decreases the air required, and quiets the reed. It also frequently corrects an unsteady reed (i.e. where the pitch is not constant even at constant pressure).

When changing tongue length by moving a bridle or changing the wrapping, keep in mind that you must keep the bridle or wrapping snug and that this will affect the reed opening (see above).

Thinning the tongue

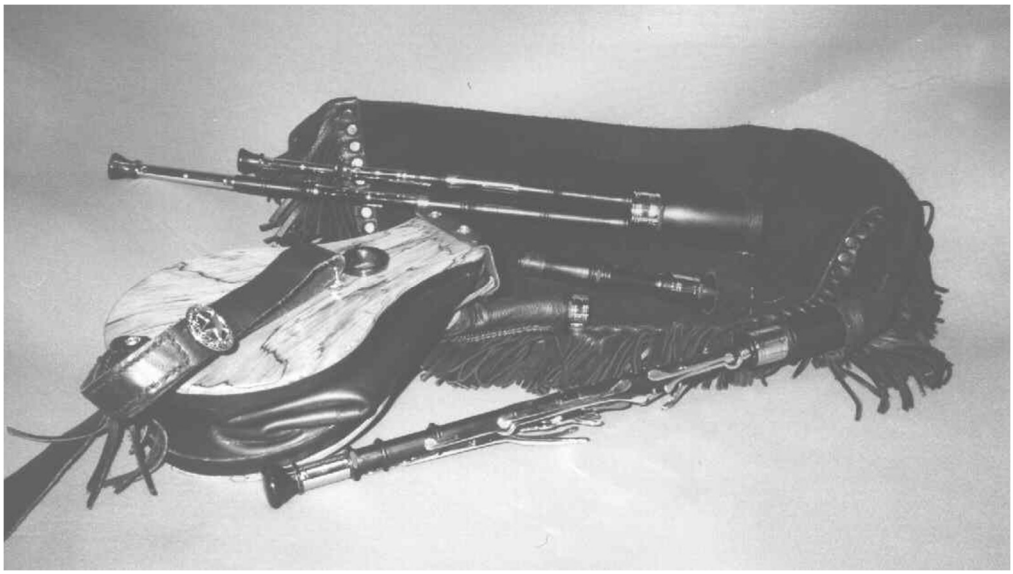
Using the scraping knife or sandpaper, you can remove small amounts of the reed tongue from either end or the middle. In addition to the "balancing" discussed above for "uniform" style reeds (to get a stable pitch), removing material from at the bridle end lowers the pitch, makes the reed require less air pressure, and may stop a reed from clapping shut. Removing material from the middle or the free end raises the pitch and makes the reed require more air pressure.

Weighting the tongue

Once you cut material away you can not replace it, but you can get the effect of thickening the tongue by adding weight. Using super glue or epoxy you can glue small pieces (at most 1/8" long) of electrical solder to the free end of a reed. You can also use sealing wax, adding a small dot toward the end of the reed. Sealing wax is the more traditional but it can be hard to find in modern day North America. Either accomplish the same effect but I prefer super glue and solder, as you can easily file away any of the solder to get just the right weight. If you have removed too much cane from the bridle end, you will generally need to remake the reed but you can try brushing on a little white glue (flexible water soluble glue). Thickening or weighting the free end lowers the pitch, makes the reed require more air pressure (slightly), and may stop a reed from clapping shut. On "wedgie" style reeds, this will also tend to stabilize the pitch of the reed, especially on the larger reeds.

Changing the reed internal diameter

For a given reed you can not increase the internal diameter so if you want a larger bore reed, you have to remake the reed with larger starting materials. Using larger diameter material in the first place will produce a louder reed which requires more air. You can decrease the diameter of the reed by inserting a section of a plastic or paper drinking straw in the end. Cut the straw to length and then slit it lengthwise and roll it tighter before inserting it. It will then unroll inside the reed. Do not use a piece which is so long that it goes past the bridle and would touch the moving part of the tongue. Decreasing the diameter will quiet the reed and the reed will take less air.



The Texas Lonestar Harley-Davidson set

Black leather fringed bag, chromed rivets and metal work, home-grown spalted sycamore bellows, 15 keys

So which one do I do now?

As with chanter reeds, understand the above actions and their effects. Notice that each action has multiple effects. Do whichever action will move you toward a better reed, just a little change at a time. Some reeds will require several rounds of treatments, others will be fine right from the start. Whatever you do, be patient and make small changes. The chart below should help you decide which action to take, now that you have read the paragraphs above:

Action Taken	**Pitch goes ...**	**Air pressure goes ...**	**Volume goes ...**	**Comments:**
Thin bridle end	down	down		Helps if pitch is going down with increased pressure
Thin free end	up			Helps if pitch is going up with increased pressure
eight free end	down			Helps if reed claps shut
Open reed	down	up	up	Helps if reed claps shut
Close reed	up	down	down	
Lengthen tongue	down	up	up	
Shorten tongue	up	down	down	Helps if reed unsteady in pitch
Decrease internal diameter		down	down	
Increase id.		up	up	
Tighten bridle				Helps if reed unsteady. Also affects reed opening.

Fine tuning

Once you get working reeds, continue to refine them using the chart above to get reeds which will make your tuning beads work well. In other words, you want it so that you do not have to drastically retune the drone when changing from a G to an A and from D to E, using the tuning beads. Remember how the notes on the chanter depend on the distance from the reed tip to the sound hole to determine relative pitch? Same goes for the drones.

Set your G drone (for example) to sound a nominal G, matching the G on the chanter. Now open the tuning bead. If the pitch produced (should be A) is too sharp, the relative distance from reed tip to the A hole is too short compared to the distance from reed tip to the G hole. Sliding the drone sliding part further out will correct these relative distances but then both notes will be flat. You need to sharpen the reed so that when the relative distances are correct (i.e. the drone slide is at the correct position), the actual pitch of the notes is also correct. Then the tuning beads will produce the desired notes without retuning (or without much retuning).

It is not likely that you will get your reeds so perfect that they will always produce notes that are spot on, but this is the ideal for which we are aiming. Use the same techniques as above in very small amounts to fine tune the drone reeds.

Gun-drilling a bore at "Liestman's House o' Pipes" (some safety equipment removed for photographic purposes) - 100 PSI air pressure going down a 1/32" hole - Now THAT is Livin' !

Chapter 9 - Tools and Gadgets

Players stuff

Reed bottle

Why you need it

I hope that you have more than one chanter reed and maybe even extra drone reeds. If so, you need a good way to protect them and carry them with you in your case.

How to make it

Take a drug store ("chemist" for you British folk) tablet bottle - the plastic kind where the lid is slightly larger than the cylindrical bottle itself, preferably with a screw-on seal. A bottle 1 1/4" wide by 3" long is perfect. Cut a 3/4 inch long piece of pipe cleaner. Drill or poke a tiny hole in the center of the lid just big enough to accept the wire center of the pipe cleaner. Glue the pipe cleaner into the hole so that the pipe cleaner will stick straight into the bottle. The chanter reed should easily push onto this pipe cleaner and be held in place by the friction. It will be suspended in mid air inside its strong, safe, plastic home, free from various wrapping material fluff and free from being smushed out of shape. For the truly devoted spare-reed-types, use a larger bottle and space numerous pipe cleaners glued into holes in the lid to hold multiple chanter reeds and spare drone reeds. For larger bore drone reeds you may need to double the pipe cleaner over.

Pipe socks

Why you need 'em

Pipe cases are not form fit to the instrument and the pipes will rumble around in there. Scratches and other damage can result, so these will protect the pipes.

How to make 'em

Buy some fake fur or other soft, heavy fabric of your choice. Cut out some two long rectangles and fold them in half along the length. Sew the two long, cut edges and one of the short cut edges, making what looks like a long straight sock or stocking. Make one so that it is a loose fit over the chanter and the other a loose fit over the drones. You will have to figure out the dimensions yourself. Extra points for outlandish material.

Water manometer

Why you need it

Beginners learning away from others need a standard. In brief, you have to squeeze the bag just right and have the reeds adjusted just right to play in tune with yourself. When you first get your

pipes, not knowing how hard to squeeze, you don't know if you are squeezing wrong or if you need to adjust the reeds or both. Using a manometer tells you exactly how hard to squeeze and eliminates this variable.

Playing at the wrong pressure ("wrong" for that reed and that set of pipes) can even injure your reeds. I will admit that the first 6 months that I had my first set of pipes, I played them at a very high pressure, got very frustrated, and ruined my reeds. Many thanks to Tim Britton for coming to my rescue and straightening me out and to Colin Ross and Mike Nelson for telling me about manometers.

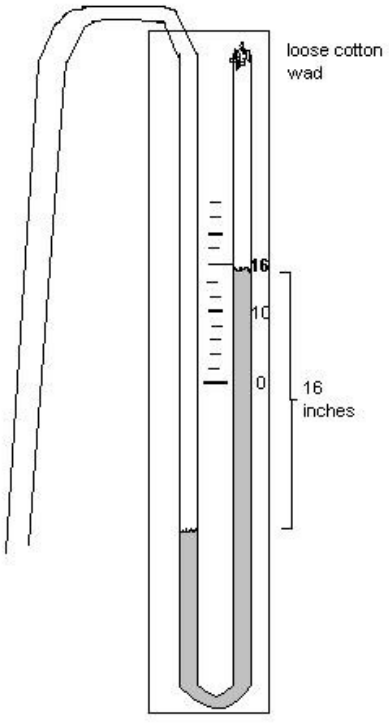
Using a manometer while practicing is a major help in keeping constant bag pressure (which is not as easy as it looks and is crucial). Lastly, when you are building reeds and/or pipes, using a manometer gives accurate results.

> Special note about other kinds of pipes: I have never seen any other kind of pipe which plays at as low a pressure as Northumbrian Smallpipes. Highland pipes and Uillean pipes play at considerably more pressure.

Building it

A water manometer is a pressure gauge using the weight of water in a tube to measure pressure. For pipers, this is an excellent and cheap way or knowing at what pressure you are playing. Playing pressure is critical for playing in tune with yourself and with others. These tools are used by most pipe makers that I have visited and ought to be used by every reed maker and player.

Take your set of pipes to a hardware store (the clerk's expression when he sees them will be worth it). Remove the sliding part of the drone and tuck it away safely. Find some *clear* plastic tubing which will fit snugly over the end of the smallest drone. Be careful not to break it off, they are not made of steel. You need an air tight seal. Buy about 8 feet of this tubing and some "U"-shaped nails which will fit easily around this tubing. Also get a piece of wood about 2 or 3 feet tall by at least 3 inches wide. I will presume that you have a hammer and a straight nail and a drill. If not, buy those too and help the local economy.



Use the "U" nails to nail the tubing (without pinching it) to the board in a 2 foot tall "U" shape. It does not have to be wide. On mine, the two sides of the "U" are an inch apart. Leave the leftover 2 feet worth hanging from the left side of the "U". On the right side of the "U", the tubing should go to the top of the 2 foot "U" and stop.

Halfway up from the bottom of the "U" make a mark on the board. Using a ruler, from your halfway-mark to the top of the "U", make a mark every 1/2 inch. (You should have about 24 of these marks if the "U" is 24 inches tall.) Number each of these marks from 0 (for the original halfway mark) to 24 or however many you have. In other words, each 1/2 inch you increment your number by 1. Drill a hole at the top of the board, so that you can hang it off of a nail. Alternatively, you can clamp it to something or nail a big "foot" on it so that it stands up by itself. You do not want to prop it up as it can easily fall over, spilling the water all over your floor.

Drag the whole mess to a sink and fill the tube (through the short end of the "U") with water until the water reaches the "0" or halfway mark. You can use plain water, but if you add a bit of food coloring it will make it easier to see (and harder to clean up if you spill it on a nice rug - your choice). A small funnel is helpful at this stage. When you have filled the tube to "0", plug the short end loosely with a bit of cotton or paper towel. You now have a completed water manometer.

"U"sing it

Hang up or otherwise get the manometer vertical and stable. Put on your pipes and remove the smallest drone sliding part. Attach the long, free end of the tubing to the standing part of the smallest drone. Fill the bag with the bellows and squeeze the bag as if playing. You will see the water moving away from the pipes-end of the tubing due to the pressure with which you are squeezing the bag. If the water moves down an inch on one side and up an inch on the other, the total displacement is two inches. (This is why we labeled each half inch as if it were an inch.)

Ask your pipe maker at what pressure your pipes are designed to play. Anywhere from 8 to 22 inches of water is common, with 16 inches being the most common and, some would say, standard. If the pipe maker can not be contacted, assume 16 inches.

Play the pipes so that the water level stays rather steadily at the desired pressure mark. Practice keeping the level steady and get a feel for how hard you are squeezing. Recheck your pressure whenever you think you may need to adjust a reed or whenever your pipes seem to be uncooperative. When adjusting the reeds, always adjust them to where they play in tune at this desired pressure.

Metronome

What they are and why you need one

This is not an enclosed sports arena in a large city. This is a clock-like device that beeps or clicks at a steady pace. This pace ("Tempo" - related to Harpo and Zeppo) is adjustable to suit the music which you want to play. A metronome will keep you playing with a steady beat which is crucial to either playing just for listening or especially for playing for dancing. Playing at an erratic tempo is probably the most common sin of folk musicians everywhere and is the one that most of them are unaware that they are committing. Believe me, the audience is aware.

What kind to get

The best kind to get, in my opinion, are the mechanical ones used by piano students and available in most piano-and-band-instruments music stores. These give a nice loud but pleasant click that can be heard over your pipes. There are also electronic ones, but they are often not loud enough to be heard over your pipes. Some electronic metronomes are built into tuners (see above). If it works for you, fine. Try them out.

There are also kinds that blink instead of make noise. These just don't thrill me because (a) lights are not sound and sound is what we are doing and (b) how can you watch the light and read the music at the same time?

Using it

Practice frequently using the metronome, slowly at first, using faster settings as you master each tune, up to the "perfect" pace of the tune. Set the metronome so that it clicks twice per measure for tunes in 4 or 6 beats per measure or once per measure for tunes in 3 beats per measure. This way you can preserve the bouncy feel of bouncy tunes but still keep the same pace throughout the tune. You probably do not want to use a metronome for slow airs.

Tuners

What they are and why you need one

Tuners offer a standard pitch against which you compare your instrument. They keep you playing in tune with yourself and others. A set of pipes will just not play in tune with itself if it is tuned to some other standard that the standard used in their making. Using a tuner frequently will eliminate another of those variables that adds frustration to learning and playing the instrument. Ask the pipemaker (if possible) about the tuning standard that they used to make your pipes and use your tuner to keep to that standard. For example, they may have made the set to play in the F# traditional pitch and tuned them to "25 cents sharp of F" or perhaps it is a Concert G set and was tuned right at G. A good tuner will have a scale showing how many cents flat or sharp you are and this is invaluable for pipers.

Be aware though that not all notes on a chanter will be right at standard. For reasons beyond this book, some notes will be a bit flat or sharp to sound better against the drones than they would if they were tuned to the modern standard. Just use the tuner to adjust the reeds so that the nominal G's sound best and you will do fine.

What kind to get

There are two broad categories of tuners - automatic electronic tuners and those that are a pain to deal with. Non-electronic tuners are either inaccurate (i.e. pitch pipes, using a tin whistle - the problem is the harder you blow the higher the pitch that comes out) or are cumbersome to use for the piper (i.e. tuning forks). Electronic tuners are mostly "automatic" these days, meaning that you play a note into them and it tells you what note that was closest to, whether it was flat or sharp, and by how much. I have found that a couple of the cheapest work best for me (the Zen-On brand 331 model and the Korg AT-2 model). These cost about $70 mail order, with some local stores asking a bit more. You can go up to several hundred dollars but I don't think these are any better for the piper. The two models mentioned also seem to work better than the more expensive models for harps and banjos, if that is a consideration. I prefer models with a lit dial, as I play frequently in pubs with low light levels. If you prefer mail-order, see "Andy's Front Hall" or "Melody Music" in the "Resource Addresses". Really any automatic electronic tuner should work, but it is nice if you can try several models and see which one works best for you.

Bore oiling / buffing rods

What they are and why you should care

These are simply rods (metal or wooden) which are wrapped with hemp thread to closely fit the various bore of the pipes, to ease oiling and buffing the bores. They are luxury items and help one make a grand production out of playing the pipes - more mysterious things to inspire awe in your audience, but they do serve a purpose and I love mine.

How to make them

Buy some brass rod at the hardware store in 1/8 inch size about 20 inches long. (For working on the smaller drones, also get some in 3/32 inch size about a foot long.) You can do this yourself if you have access to a lathe (metalworking or woodworking type) or find somebody to do it for you. Turn away some of the rod, maybe 2 inches long, ending just shy of one end, to make a seat for the hemp. If you turn away about 1/32 of an inch, that will be fine. It should be a uniform amount, so that the thread wrapping will be flat, but the exact amount is unimportant. On the other end of the rod, either bend the end into a loop, to serve as a handle, or turn a wooden handle and glue it on the end.

Brush a little bit of glue (epoxy or shellac work well) onto the turned part of the rod and wrap hemp around it so that it makes a snug but sliding fit in the chanter bore (or whichever bore you are concerned with). This will probably take a couple of layers of hemp and that is best. Only glue the bottom layer. To finish off the wrapping, use the "loop and yank" method, described in the "Maintenance" chapter.

You can oil the bores by dripping a little oil into it and hoping that it will magically move itself to where it is needed, but the oiling rod will evenly and lightly oil the whole bore. A smooth oiled bore will make a clearer, brighter sound than a dry, neglected bore.

How to use them

I use one small one that fits in all my drones for oiling (it only snugly fits the smallest drone) and then two for the chanter (both of which fit snugly). One of the chanter rods I use for oiling - brush a little oil on it and swab it up and down, being careful not to bump the reed. The other I keep dry and use less often to clean and buff the bore - take the reed out and swab it up and down vigorously. I do this buffing only on new chanters, as part of the building process, and whenever I feel the urge to really clean and polish my pipes.

Repairing your own pipes stuff

Key axle poker-outer

When you need to remove a key (to change a pad, clean things up, etc.) you can find some little thing to poke it out with, and probably scar up your chanter when you slip, or you can build a custom "key axle poker-outer" ("kapo" for short). To make a kapo, take your pipes to the hardware store (yes, the guy at my local shop knows I am a weirdo). Buy a piece of brass rod that appears to be the size that will fit in the smaller end of the key axle hole (axles are often tapered and you have to push into the smaller end to free the axle out the other). If you are a woodworker or have a friend who is, get a little handle made, maybe about 2 inches long and 1/2 inch diameter, and imbed some of the brass rod in it so that 1/2 inch sticks out. (Lathe turned handles go nicely.) If you are not a woodworker and don't know any, buy a bit of "plumbers epoxy". This comes in a tube. You mix it up in your hand and it turns a uniform gray. In about 20 minutes or less, it hardens like a rock. Imbed the rod in it before this happens and form it to suit your fancy.

In either case, keep the non-rod end fairly small with a flat end. You can use this to finish pushing the axle back into place, saving your self the pain of slipping and having the rod go up under your fingernail (experience talking here).

Bore light (not a low-cal beer for dweebs)

Why you need one

Bore lights are staples of any repair technician who works on woodwinds. Of course, theirs are expensive and too big for the dainty bore of our pipes. However, ours cost about $5 to build, most of that tied up in the battery. These lights are used to detect leaks where a pad is bad or a key is bent or whatever. Surprisingly, I am unaware of any pipers or makers using these other than myself. Either it is a secret that I just blew, or maybe this is a small pay-back I can give to the piping world who have taught me so much. Whichever, I have found this light worth its weight in reeds when solving problems with chanters.

How to make and use it

Go to a hobby supply store, especially where they sell model trains or miniatures for doll houses and buy a "grain of wheat" light. These are tiny light bulbs, pre-wired, that are small enough to fit down the chanter bore. (Maybe take your pipes with you to be sure. They will think you are weird, but that is part of being a piper.) I bought a 6 volt (the biggest, I think) for maximum light output. Attach the lead wires to some small wires (telephone wire works well), long enough to reach down the chanter and attach at the other end to a battery of matching voltage. It helps to then tape a thin (1/16") brass rod to the wires to make it a stiff assembly. Darken the room and pass the light down the chanter bore, stopping at each pad. If you can see light leaking through around the pad, you have a leak, caused by the key or the pad or something keeping the pad from closing over the hole.

Reed makers stuff

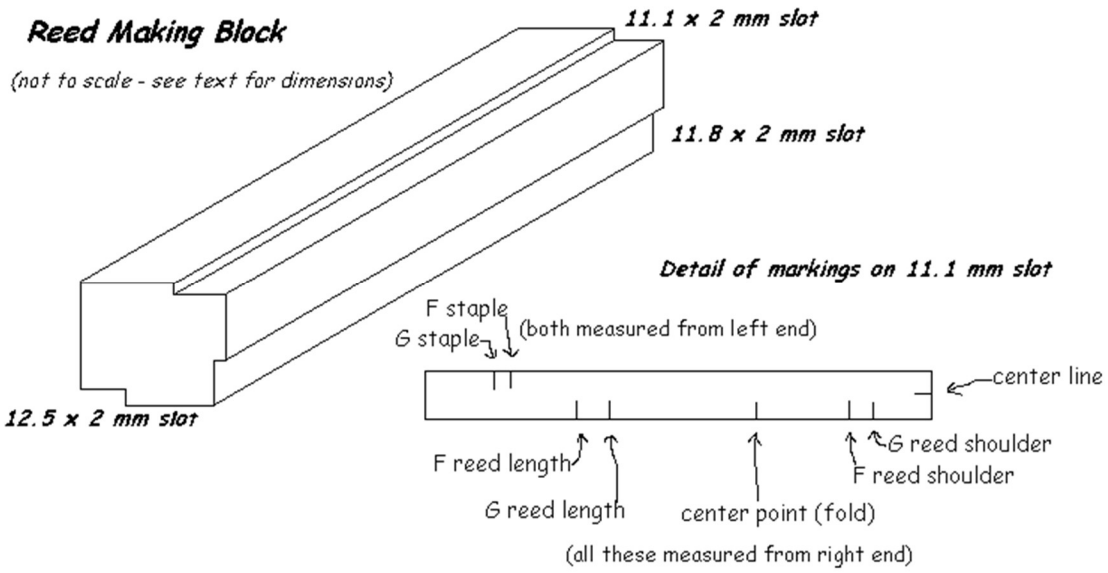
Reed making block

What it is and why it is nice to have one

When you get into making your own chanter reeds, I would either make one of these or have one made. One pesky part in reed making is getting a slip of cane cut down to 11.1 mm wide with parallel sides. This block helps with that and simplifies some of the other processes as well. This may seem like a lot of work to go to if you just want to make one or two reeds. First of all, let me assure you that you should always make reeds in batches of 10 or 12. Secondly, usually your first batch produces one or three decent reeds but your third or fourth batch produces the reed that you want to play for the next ten years, so this will save you some time and, more importantly, gives you repeatable results.

How to make it

The block consists of a chunk of very hard wood (or it could be metal) about 5 inches long and 1 1/4 inches square. Along three of the long edges, mill slots about 2 mm deep by about 12.5 mm, about 11.8 mm, and EXACTLY 11.1 mm (7/16 inches) wide. I purposely said "mill" because I doubt that you will be able to make this accurately enough with a table saw. You may have success with a very precisely set up router table. A vertical mill makes this really easy. You can simulate a vertical mill if you have a drill press by using a milling vice clamped to the table (the jaws move in two directions with cranks). Find someone who is a machinist and have it made if you don't happen to have a vertical mill.



How to use it

With your slip of cane roughly cut to size and gouged to roughly final thickness, put the slip in the widest slot, hold firmly and run a single edged razor along the outside edge. Do not flex the cane flat, leave it arched as it is naturally. This will produce a slip about 12.5 mm wide with one side reasonably straight. Put the straight edge in the corner of the next widest slot and repeat the razor trimming. You now have an 11.8 mm wide slip with the most recently cut side very straight. Finally, put this last-cut side into the corner of the narrowest slot and trim with the razor. You now have an exactly 11.1 mm slip with perfectly parallel sides. This really beats the method used by most reed makers (in my opinion). I am not sure but I believe that I invented this tool. (It will no doubt be on the Home Shopping Network in time for Christmas.)

Fancy add-on features

To make this tool extra-fine, I have added a couple of slots about 1 mm wide and 1 mm deep which run at right angles to the principle slots. These mini-slots are 3 inches and 3 1/2 from the ends of the two larger big slots. Their function is to automate my measurement of cutting the slips to length (3 inches for G reeds, 3 1/2 inches for other reeds). I cut the slips to length with a hobby size hack saw, made for metals (Exacto brand).

I have also marked the center of the end of the 11.1 mm slot at both ends with a small mark, made while mounted in the vertical mill with a pointed milling cutter. This mark is used to mark the center which will be the point on each end of the slip. I have also made marks that show me what angle to cut the point, and marks to show me how long to cut the staples. Anything you can do that adds consistency to your reed making will help take away the voodoo mystery of it all and make it a less frustrating experience.

Special mutant reed making calipers

Why you need them

When gouging out the cane slips used to make chanter reeds, you are asked to measure the thickness of a slightly curved chunk of vegetable flesh. While they make special micrometers for

this purpose, it is way cheaper to buy a plastic caliper and modify it. Without modification, it is difficult to use flat jawed calipers to measure the thickness of a curved surface.

How to mutate them and use them

I got a 6 inch caliper, graduated in 1/1000ths of an inch with a dial readout for about $12. You need the dial kind, both for ease of use and for the adjustment that they allow. (You need two really, one for other uses, such as measuring the tip thickness of the reed, and this one for gouging the slip.) Open the caliper a little and put a BB or other small rounded object in the jaws. Close the jaws on the BB and get it all lined up, nicely centered. Apply a little dab of epoxy or other glue (if you are not "truly dedicated", use a water soluble glue so you can undo this act later) to where the BB meets ONE jaw. You have now glued the BB to one jaw. Now, with the jaws closed on the BB, rotate the dial to show zero. When you measure the cane slip, place the BB-less jaw on the convex side and the BB-laden jaw on the concave side. This way, you can measure accurately all over the slip without any problems from the curvature of the cane.

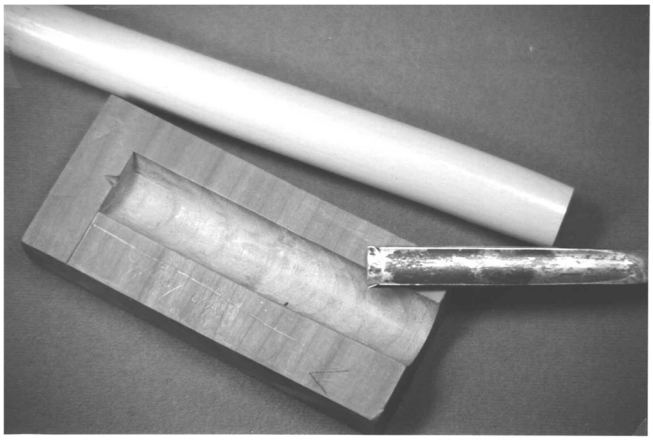
Shooting block (gouging block)

Why you need one

This is a block with a rounded slot in it. You have to have one to make chanter reeds.

How to make one

Take a piece of hardwood at least 5 1/2 inches by at least 2 1/2 inches long and at least 3/4 inches thick. It will work best if the grain runs in the 2 1/2 inch direction. Cut an identical piece of pine or some other scrap wood and clamp the two pieces together big face to big face. Clamp this assembly onto a drill press and use a 1 inch Forstner or brad point bit to drill a hole 4 1/2 inches down the long axis, centered right between the two pieces, so that when you unclamp the whole mess, you have your piece of hardwood with a half of a hole running most of its length. Now to attach it to your work table you can either drill a couple of holes in it and screw it down when in use (this messes up your table but is easiest for working) or you can screw a block on the front end of the bottom so that as you push into it, the block keeps it from crossing the table. You could make the whole block wider and clamp it to the table, but the clamps will get in your way and tick you off. Also, you can take some .025” thick metal (steel, copper, brass) and make some strips about 1/8” wide. These are glued or otherwise attached to the upper sides of the slot, to both guide the gouge from going too deep and to act as a visual reference for how thick you are aiming. These “shooting block training wheels” are quite handy.



Cane tube, shooting block, and well-worn gouge

Chapter 10 - Resources

A personal plea

We Northumbrian Smallpipers gotta stick together. If you find a valuable resource that you can recommend, spread it around! Help each other out, my brothers and sisters!

Getting help from other Northumbrian Smallpipers

See "Organizations" below. Join at least the North American one. I have never met a Northumbrian Smallpiper who was not eager to get a novice hooked and help out in any way they could.

Getting help from other kinds of pipers

Other pipers of all kinds can be a valuable resource for information, contacts, suppliers, etc. However:

> Be forewarned: Northumbrian Smallpipes are rather different from any other kind of pipes. Highland and uillean pipes, for example, play at a much higher bag pressure than we use. Do not try to adjust your Northumbrian Smallpipes to play the way it feels right to a Highland piper or Uillean piper. Bag pressure is but one example of the differences.

Also, Northumbrian Smallpipe reeds are different from any other, even Scottish Smallpipe reeds. A Northumbrian reed will generally work for Scottish Smallpipes, but generally not the other way around (the Scottish reed is not made to be able to make the highest notes on a Northumbrian chanter, since the Scottish instrument does not go that high). Highland players play wet (since they are mouth blown) and I have heard of them chewing on a Northumbrian reed to get it to play right (by doing so, they destroyed the reed).

Use other kinds of pipers carefully and they will be valuable to you. (Be sure to tell them why your pipes are better than theirs, they love it. And don't forget to tease the Highlanders about wearing a dress and carrying a purse.)

Organizations

There are two organizations specifically devoted to Northumbrian Smallpipes. The Northumbrian Pipers Society has been around since the 1800's and is based in Northumberland. The Northumbrian Smallpipes Society of North America is newer and is based in the northeastern US and neighboring Canada. Both are fine organizations, well worth joining, and offer newsletters, activities, and general support. See their addresses in the "Resource Addresses" section.

There are other societies that may also be of interest, specifically the North American Association of Lowland and Border Pipers and the Lowland and Border Pipers Society. Again, their addresses as listed below.

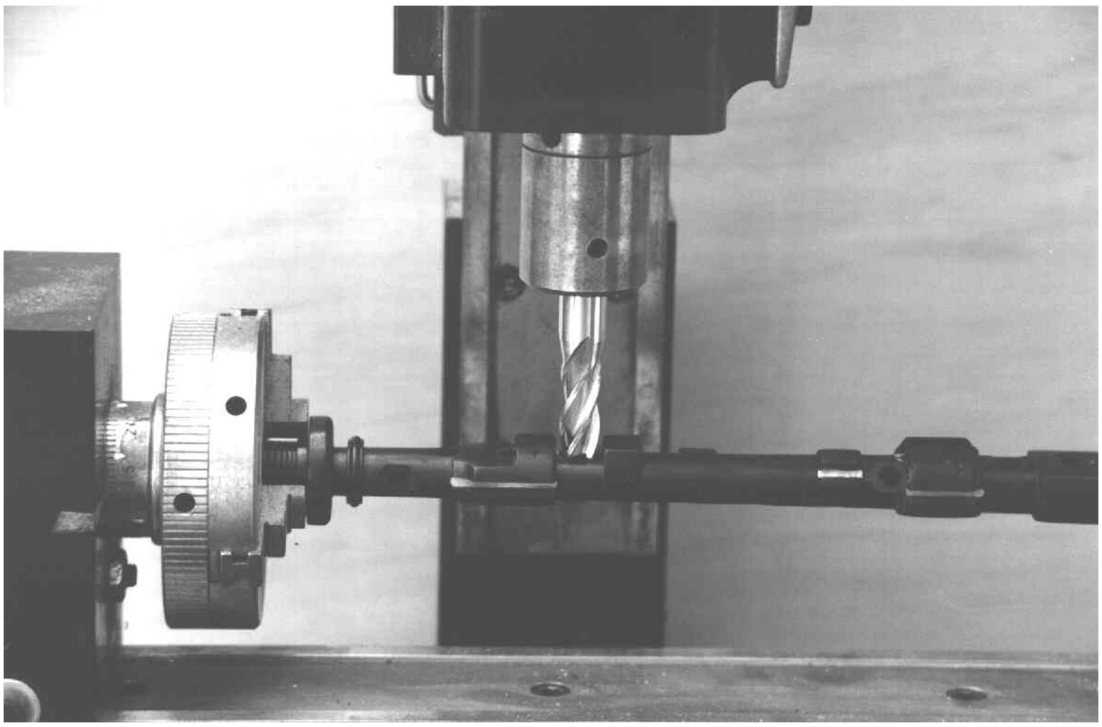
Events

There is absolutely no substitute for getting together with other pipers in person to learn and get inspiration. There is a convention of Northumbrian and other pipers in Vermont the last weekend of August each year (so far, hope it continues). There are workshops, festivals, and competitions galore in England and some in Germany. All of these are well publicized in the newsletters of the societies mentioned above, so JOIN UP and GO!

Available Recordings

While nothing beats hearing good players playing right in front of you, you can learn a lot about the style and feel of music by listening to recorded performances. Unfortunately, albums featuring Northumbrian Smallpipes are not terribly easy to get at the typical North American mall. There are a few excellent mail order sources who fill this void well and some are listed in table at the end of this chapter.

When picking which recording to buy, you must consider why you are buying it. If you are buying it to really hear the pipes, a solo recording or one with only a few supporting musicians will be best. If you want to learn classic style and tunes, the more traditional ones will be best, whereas if you want to hear the pipes taken to their modern limits, the more arranged, jazzier ones are good.



Milling key pad seats at "Liestman's House o' Pipes"

Without critiquing any of the available recordings (these people are all my idols and play better that I ever hope to play), I would recommend the following, partly because I love them, partly because you have some chance of finding them in North America:

Kathryn Tickell	Of her many recordings, “On Kielderside”, “Common Ground”, “Back to the Hills” and “Debatable Lands” are my faves.
Joe Hutton	Solo or with Will Atkinson and Willy Taylor, superb music played by a master dance musician, "the real stuff".
The High Level Ranters	Pipes, fiddle, accordion, guitar, like sitting in a pub in Newcastle.
The Cut and Dry Band	Two albums, pipes solo and in combinations, classic repertoire.
Chris Ormston	*Time Out of Mind* – **get it right now, dinner can wait.**
Adrian Schofield	See comments under Ormston. He does have a cassette out but it is apparently only available under the Tyne Bridge on alternate Thursdays.
Various - yesterday and today	*The Northumbrian Small Pipes* on Topic (TSCD487) - old and newer but not brand new recordings (translate that as "classic wonderful stuff"), Tom Clough, Billy Pig, Joe Hutton, Cut and Dry Band, High Level Ranters. This CD is easily available and is probably the best overall view of "the pure tradition". **If I had to point a beginner to one recording it would be this one.**
Andy May	**Or maybe it would be this one.** “*The Yellow Haired Laddie”*. Great and mostly pipes with a bit of accompaniment. Get this one.
Various - yesterday and today	*Northumberland Rant: Traditional Music from the Edge of England* on Smithsonian Folkways - old and new recordings, Billy Pigg, Cato, Hutton, Ormston, Anthony Robb, Colin Ross, K. Tickell - over half of the CD is pipes and the rest fiddle or band stuff, lovely long booklet, compiled by USA guy Burt Feintuch
Various - today only	*Spirit of the Border: Northumbrian Traditional Music* on Nimbus label - produced by Brit-turned-Canadian Alan Jones, recorded straightforwardly in one hall in Northumberland in 1998 - Butler, Jones, Ormston, Schofield, Anthony Robb on pipes and some great fiddlers too. Photos and bios of the musicians in booklet.
Richard Butler	Classic, traditional and showy, with lots of fast little notes, pretty much solo.
Pauline Cato	Her solo recordings have lots of unusual tunes but her recordings with Tom McConville are my favorites of all.
The House Band	Not much piping on any one album, but a wonderful multi-cultural blend.
Alistair Anderson	Mostly a concertina player but plays some pipes on most albums.
Northumbrian Pipers Society	Available from the society, lots of styles and players.

Available tune books

As I said in a previous chapter, these are listed in the order that I think the average North American piper should buy them. This is only my opinion. Feel free to ignore it.

Please notice that I said "buy". All of these books are copyrighted material. The authors and publishers make little enough money off of them as it is. (Ditto for the book in your hands right now.)

Please make it worth their while to continue to produce these books by purchasing them and not just photocopying them.

***Northumbrian Pipers' Tune Book* published by The Northumbrian Pipers' Society -** The absolute basic repertoire of the piper. Don't be caught without one.

***Northumbrian Pipers' Second Tune Book* published by N.P.S. -** More of the same.

***The Northumbrian Pipers' Duet Book* published by N.P.S. -** Mostly classic tunes, many arrangers gives this collection a lot of variety. Features my favorite tune ever, "Lament for Ian Dickson", my second favorite "Sir Sidney Smith's March" and lots more.

***A Repertoire of Variations for the Northumbrian Smallpipes* published by N.P.S. -** Variation sets from other NPS tunebooks but laid out for easier playing.

***Billy Pigg - The Border Minstrel* published by N.P.S. -** Billy Pigg was one of the giants of the instrument. Includes a biography, lots of on-location photos, the result of years of research by Adrian Schofield and lots more work by other folks. A great publication even if you took out the tunes. Billy lived up until the 1960's.

Pauline Cato's Northumbrian Choice* by Pauline Cato / Dave Mallinson Publications -** 89 tunes, nicely presented, slathered with nice photos of (where else) Northumberland. Chords marked for the bouzouki/guitar/keyboard crowd. One of the best features of this book is that there are two matching CDs (named ***Minstrel's Fancy and ***Bonny at Morn***) with all the tunes in the book, grouped into nice sets with sparse accompaniment. They are sold separately from the book and separately from each other. The CDs are just great music to listen to, but when you add in that they also serve as teaching aids, you are all set to learn the tunes from both sheet music and the recording! The recordings were made on a G set of pipes, so if you play an F set, you can not play along with the recording. BUT you can certainly do well by listening and then trying to play what you hear. Way better than no recording at all PLUS it is a great way to get non-pipers to learn these tunes.

***Small-pipe Tunes from the Northumbrian Minstrelsy* published by N.P.S. -** This book is a reprinting (re-typesetting, not just facsimile) of the tunes from Bruce and Stokoe's "Northumbrian Minstrelsy" book from 1882, with quite a lot of notes and lyrics to the songs as well. A great book for getting back to the roots of the music.

***The Piper's Companion* and *The P. C. Volumes II through some other number* by Derek Hobbs -** As above, great tunes and nice arrangements. Get these if you like to play a lot of duets.

***The Fiddler's Fakebook* by David Brody / Oak Publications -** This is obviously not made for pipers but if you want to play with others and play what *they* want to play, you need this book. Some of this will not go well on pipes but try the many pieces by Turlough O'Carolan (the famous blind Irish harper, see "Sheebeg Sheemore", "Lord Inchiquin", "Morgan Megan", "Give Me Your Hand" and the three tunes beginning with the word "Planxty" - all these are great on our pipes). This book also has a huge number of popular Irish, Scottish, and American tunes. It has guitar chords as well and offers a listing of albums on which the tunes can be heard.

***The Northumbrian Piper's Pocket Yellow Book* and *The N P P Green Book*, by Matt Seattle / Dragonfly Music -** This guy has put out lots of time to research music from Northern England. These books have lots of trickier reels and hornpipes and odd tunes not found in the N. P. S. collections, gathered from a variety of sources. Guitar chords are shown for most tunes.

***The Northumbrian Pipers' Third Tune Book* by the N.P.S. -** Lots of mostly modern compositions including some from Kathryn Tickell, Adrian Schofield, Willy Taylor, Alistair Anderson, Neil Smith and Neil Archbold. Even has a Texas tune, "Midnight on the Water". Yee haw.

Alnick Pipers' Society by that society - There are two books but they both seem to have the same title. The smaller says it is Book Two inside. Both are collections of solid tunes, for the intermediate or advanced player, written by local players including Will Atkinson, Willy Taylor, Alistair Anderson, and a bunch of other people I have mostly never met who apparently write great tunes. The first book has a lot more tunes. Some real finger twisters here.

The Charlton Memorial Tune Book by the N.P.S. - This one has some of the harder hornpipes and reels to test your abilities.

Peacock's Tunes published by the N.P.S. - John Peacock and John Dunn were the gents who added keys to the pipes. This collection is a photographic facsimile of a manuscript from Peacock showing the tunes popular around 1800. Lots of fine variations on simple tunes, all written out and lots of historical interest.

Bewick's Pipe Tunes - 51 Gems published by Matt Seattle / Dragonfly Music - Robert Bewick was taught by Peacock and both had a highly developed, decorated style. These have been selected from 5 books of manuscripts by Matt and are mostly the best of what Bewick played that Peacock did not publish.

The Morpeth Rant published by Matt Seattle / Dragonfly Music - A collection of Northumbrian music, old and new, not otherwise available. Lots of new tunes, many by Matt himself, others by some of the same people in collections above. Also a wonderful treatment of old tunes, including text and tunes to show the variations in style between players. This part includes fully ornamented transcripts and analysis of 6 versions of "Morpeth Rant" as played by the previous generation of great fiddlers and pipers. Well worth it just for the photos of famous Northumbrian musicians of yesteryear and today.

The Master piper - Nine Notes that Shook the World written by William Dixon in the 1730's and now published by Matt Seattle / Dragonfly Music - Border bagpipe music from the 1730's, including a short history of each of the 40 tunes, many of which overlap with the Northumbrian smallpipes repertoire.

The Lads Like Beer by Graham Dixon / Random Publications - A book about the life, times, and tunes of James Hill (mid 1800's Tyneside fiddler and composer of some very popular tunes including "Random", the best jig ever put on paper - personal opinion). Several of his tunes are played by pipers and this book is basically 10 good pages about his times and a good collection of his tunes, with lots of commentary on their titles and history. Since this is the same time period as the development of keyed pipes, it is a nice book to have.

Pipers In Harmony by Myrna Luff and Jane Robson - A collection of 25 duets arranged by M. Luff for Smallpipes that contains quite a few tunes not found in the books. This book benefits the North of England Cancer Research Campaign. The easiest way to buy this book is from Matt Seattle.

The Christmas Companion by Derek Hobbs- Despite being subtitled "Christmas music for two instruments" and picturing five other instruments but no pipes on the cover, this book is clearly duet arrangements of 32 Christmas tunes specifically arranged for Northumbrian Smallpipes. About half of them are really common tunes in North America (even "We wish you a merry Christmas", like we need to hear that one again) but the rest are much less common and provide interesting material. Guitar chords for playing with both G and F pipes.

ANY OTHER BOOK THAT COMES OUT by the Northumbrian Pipers society and its disciples or any of the other folks above - New glorious books are always being planned and worked on. Buy them all. In the works are rumored to be another book on Vickers, the Clough family, and a pipemaking book (for the truly deranged).

Other tutors and such

The first published tutor that I am aware of is *Instruction Book for the Northumbrian Small-Pipes* by J. W. Fenwick, first published in 1896. It was later retitled at least by the 3rd edition to *Tutor for the Northumbrian Small-Pipes* that was printed in 1974 by the Northumbrian Pipers Society. (If anyone has an extra first edition, my birthday is coming up. All I have is the 3rd.) It has six tunes, three paragraphs on reed making, and five small pages on how to actually play the darn things. I mention this tutor really for historical purposes only.

When it was reprinted, ace piper and swell guy Richard Butler must have said "I can do better than that", so he did and then some. In 1976 (reprinted in 1982 and maybe since then) he published *A Basic Tutor for the Northumbrian Small Pipes.* This is largely where I learned to play as have many others. Lots of tunes and a fair bit of instruction, but still geared more toward someone living in Northumberland, preferably with a teacher. In 1987 he published a much-needed maintenance manual called *Richard Butler's Handbook for the Northumbrian Small Pipes.* Richard's two books have been the standard must-have set since they were published.

I am aware of no other published tutors that I can recommend. Please let me know if there are others that you can recommend.

Other available (maybe) books on the general topic of Northumbrian Smallpipes are *The Northumbrian Bagpipes* by W. A. Cocks and J. F. Bryan, published by the NPS in 1967 and reprinted at least in 1975. (The later edition was available in "Hard Back" or "Limp Cover" - don't you just love the British terminology?). This book is mostly an overview with lots of drawings and covers shuttle drones, primitive sets, and keyed sets. My copy is "hard back" and makes a nifty coffee table book from which you can annoy your house guests by showing them all the little parts that make up your delightful instrument. With care, and consultation from a pipemaker, you could also make a very good set of pipes using the drawings and limited instruction as a basis.

The book that I have gotten the most about actually building pipes from is *The Northumbrian Small Pipes - Descriptive Notes, Details, Plans* by Michael Nelson. This book is mostly very fine detailed drawings of engineering precision with full dimensions and lots of notes on the process of pipemaking. Also the Northumbrian Pipers' Society is due out with a pipemaking book "soon".

Not just a book but also a website, *The New Geordie Dictionary* by Frank Graham is somewhat more for tourists than serious dialect students, but still contains lots of those funny words found in Northumbrian pipe tunes and songs at http://www.geordiepride.demon.co.uk/dictionary.htm . The book is an abbreviation of Heslop's *Northumberland Words* (1892).

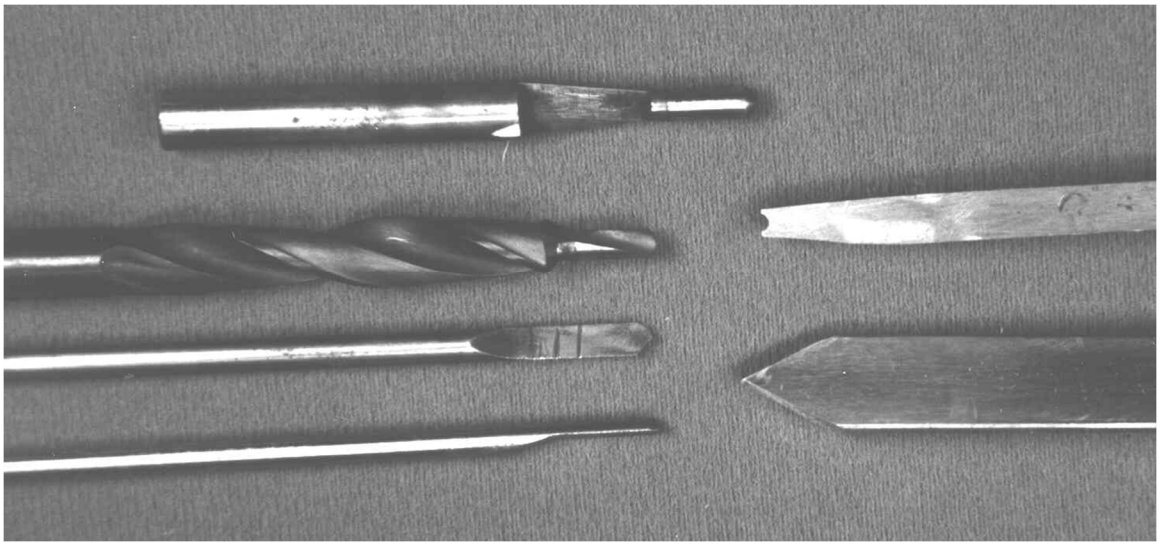
15-Key D set under construction. Chanter is the two pieces in center after turning. Oops, you didn't know extended chanters are often made in two sections? Dang, I let another pipemakers secret slip out!

Resource addresses

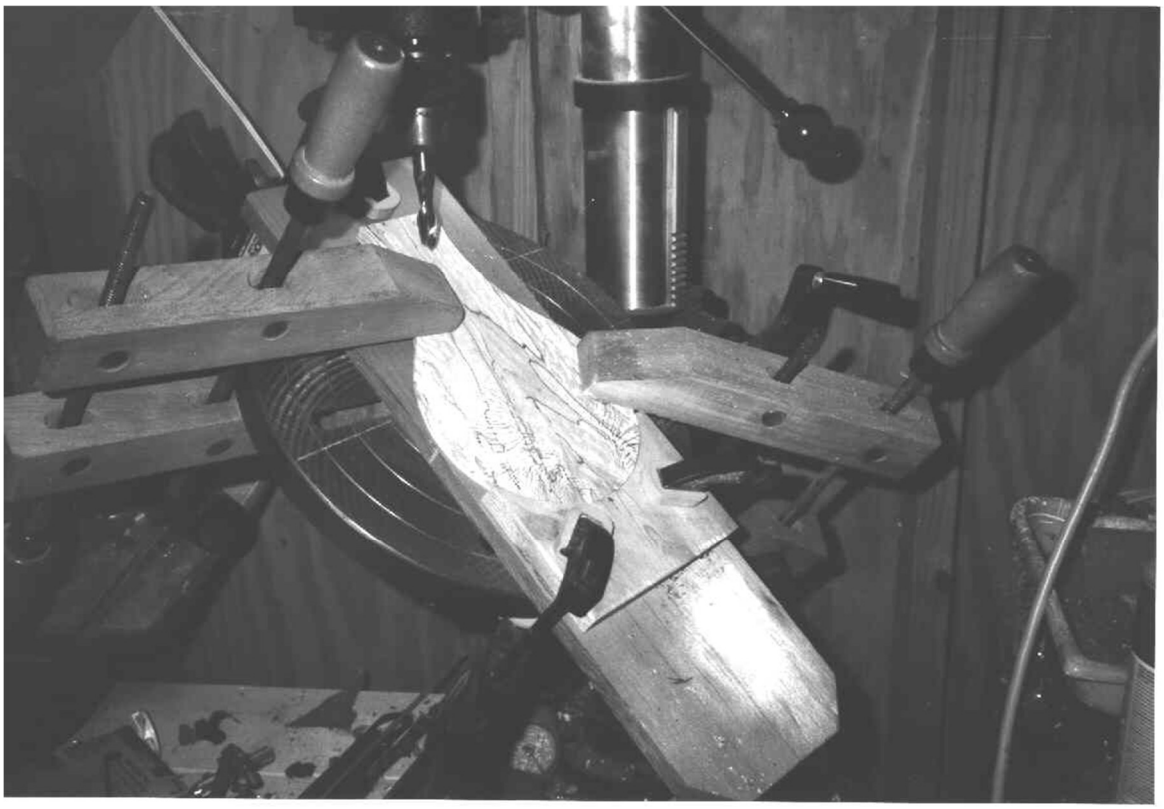
Name	Nature	Address
Andy's Front Hall	Recordings, tune books, electronic tuners, and lots of folk stuff. Get their catalog, order by phone or mail (they take Visa & Mastercard)	P.O. Box 307, Wormer Road Voorheesville, New York 12186 USA inquiries: (518)765-4344 orders: (800)759-1775 E-mail: fennig@aol.com
Celtic Fire , Ltd.	General bagpipe supply, recordings, books. They take E mail or phone orders and accept credit cards	PO Box 1294 Forestdale, MA 02644 USA (508) 833-3724 www.celticfire.com
Charles Double Reed Co.	Cane for chanter reed making (order 1" bassoon cane *Charles* brand - in half pound increments - half a pound will do you for lots of reeds)	30 Pleasant Street P.O. Box 2610 Conway, NH 03818 USA (603) 447-1110 (800) REED TIP for orders
Irish Pipers Club of Seattle	Uillean pipers society (next closest thing to Northumbrian Smallpipes)	Wally Charm - editor P.O. Box 31183 Seattle, WA 998103 USA E-mail - charm@carson.u.washington.edu
Kirk Lynch	Uillean pipemaker who can supply reed cane, including small diameters for natural drone reeds	PO Box 128 Weston, Missouri 64098 USA (816) 386-2163
Lowland and Border Pipers Society	Related musically and physically to our pipes	Secretary - Manuel Trucco 107 Marchmont Rd Edinburgh EH91HA Scotland UNITED KINGDOM
Matt Seattle - Dragonfly Music	Books published by himself and others for NSP and other instruments, takes credit cards and ships to anywhere	PO Box 13772 Peebles EH45 8YE SCOTLAND Tel (/Fax) 01721-724707 matt@dragonflymusic.idps.co.uk
Melody Music, The Harp Store and Folk Center	Electronic tuners, metronomes, and lots of harps, hammered dulcimers, and mountain dulcimers (in case you care). Get their catalog and order by phone	14641 Gladebrook Houston, Texas 77068 USA Orders (800) 893-4277 Other calls (713) 583-1090 www.folkharp.com

	or mail with Visa or Mastercard	
Morpeth Chantry Bagpipe Museum	The place. Museum of all kinds of pipes, especially Northumbrian. Books, recordings, concerts, center of the universe.	Morpeth Chantry Bagpipe Museum, Bridge Street, Morpeth, Northumberland UNITED KINGDOM tel 01670 519466
New Zealand NP Society	If your sheep wonder really far south, get ahold of these folks. Very active, growing constantly.	Helen Cook Ngahereiti 107 Hurworth Road RD1 New Plymouth,New Zealand E mail helen.cook@paradise.net.nz
Nick Whitmer	Reed making supplies and tools, reed cane (has in the past had some small enough for natural drone reeds)	Rt. 1, Box 58 Port Republic, VA 24471 USA (703) 249-5410 E-mail nwhitmer@leo.vsla.edu
North American Assoc. of Lowland and Border Pipers	Like the Lowland and Border Pipers Society but based in North America	Contact Brian McCandless 243 W Main Street Elkton, Maryland 21921 USA
Northumbrian Pipers Society	Society, newsletter, activities If the whole society were in one place, that would be the center of the universe instead of the Bagpipe Museum.	Secretary: Jim Richmond 7, Halton Drive, Wideopen Newcastle upon Tyne NE13 6AA United Kingdom (Phone: (0)191 236 5724) E-mail: Seumas@richmond77.freeserve.co.uk As the secretary position changes, can also contact through the Morpeth Bagpipe Museum above. There is lots of info on a website which is NOT the official Society website but is, um, closely related to the Society: www.nspipes.demon.co.uk/nsp/
Richard Shuttleworth	Makes reeds and general Canadian contact for Northumbrian smallpipes.	1867 Theoret Brossard, Quebec J4W 2K6 Canada E mail rjs@mbr.centra.ca
Tayberry Music	50-page celtic and folk music mail order CD catalog, and a	760 Ragin Lane

	shorter music book/instrument catalog	Rock Hill, SC 29732 phone 803-366-9739 www.tayberry.com
The Proboe Shop (Guy Hardy)	Chanter reed cane, may also have diameters needed for natural drone reeds	3611 Tyler Lane Bloomington IN 47403 USA (812) 336-1173
The Wee Piper (Michael MacHarg and company)	General piping supplies, including various kinds of bagpipes, bags, hemp, wax, reeds, reed making supplies, tutors, repairs, service, plastic reeds.	RFD2 Rt. 14 Box 286 South Royalton, Vt 05068 USA (802) 763-8812
Timothy Britton	Reed making tools and supplies, reed making book for Uillean pipes but helps with Northumbrian	608 S 3rd Street Fairfield, Iowa 52556 USA (515)472-4005
Traditional Music	Recordings, some new and used pipes, tune books Order by phone or mail (they take Visa - easiest way to pay in pounds)	Piperscroft 1 Hazeldean Meadow Newstead Melrose Roxburghshire Scotland TD6 9DZ UNITED KINGDOM
McGillivray Piping Partnerships	This is where I have my cases made. Also hemp thread and tuners and such. For a single F or G set, they sell a "flight case" specifically designed for Northumbrian smallpipes that they call the Traditional smallpipes case. They might be able to get other sizes made as well.	http://www.piping.on.ca/ or search the web for McGillivray Piping Partnerships
Your local or distant pipemaker	For reed making supplies and tools, I recommend contacting a pipemaker. They can often sell you small amounts of the right kind of cane and can sell you or point you to where to buy tools. Be sure to send a stamped envelope if inquiring by mail.	Either find them by searching on the internet, contacting the Northumbrian Pipers' Society, or go to www.nspipes.demon.co.uk/nsp/ and find the list of pipemakers there.



A few tools - chanter reed seat reamer, drone slide drill, beading scraper, 2 D drills, parting tool

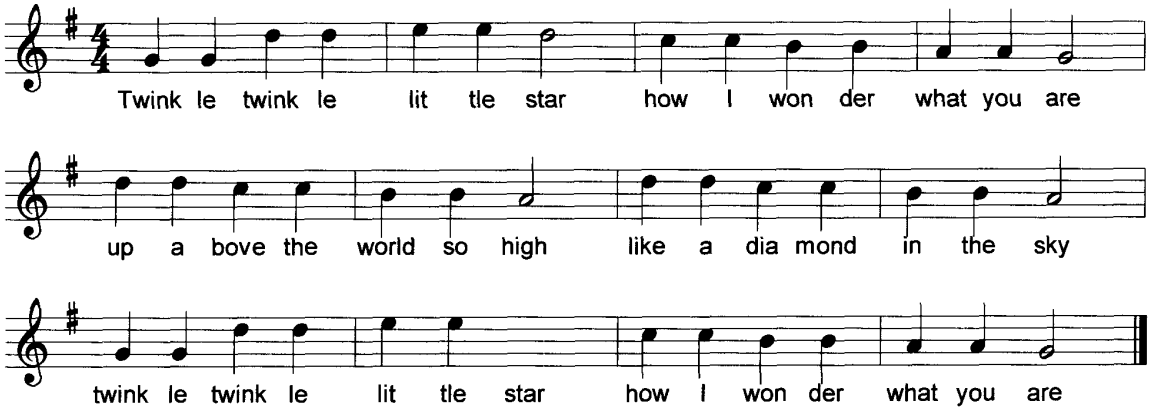


Bellows cheek in "the dentist chair" - here comes the drill

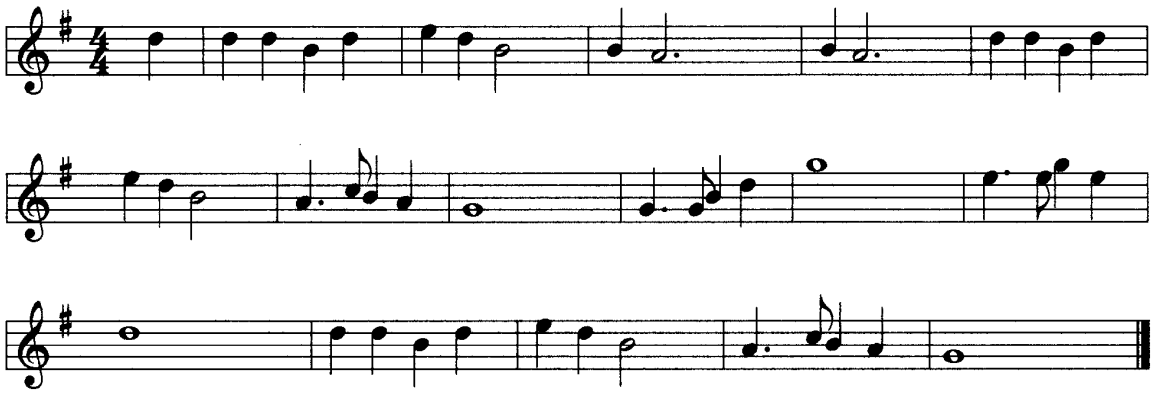
Chapter 11 - Tunes

Beginning Tunes

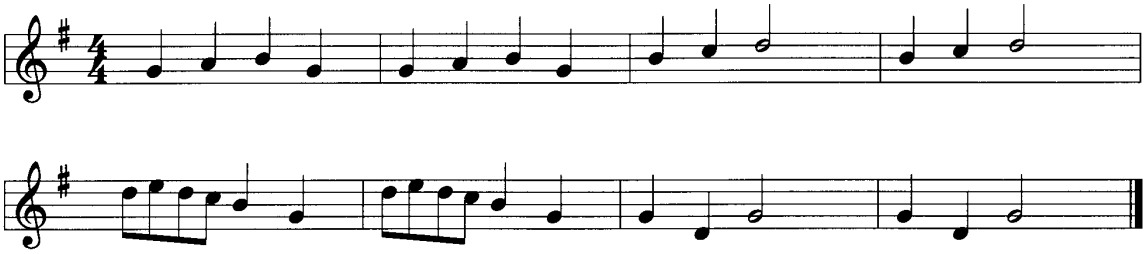
Twinkle Twinkle Little Star



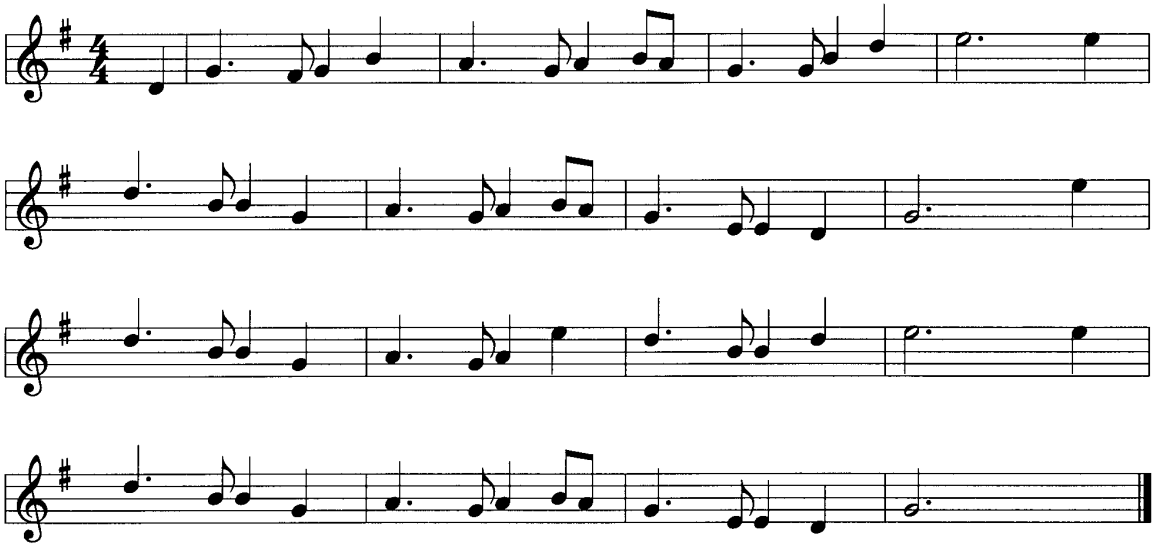
Camptown Races



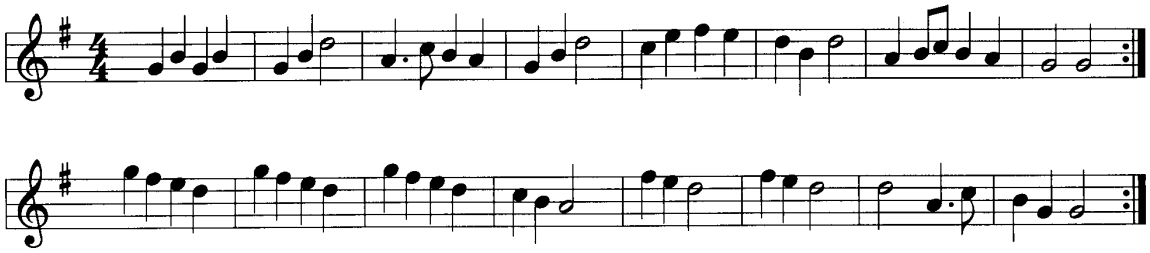
Frere Jacques



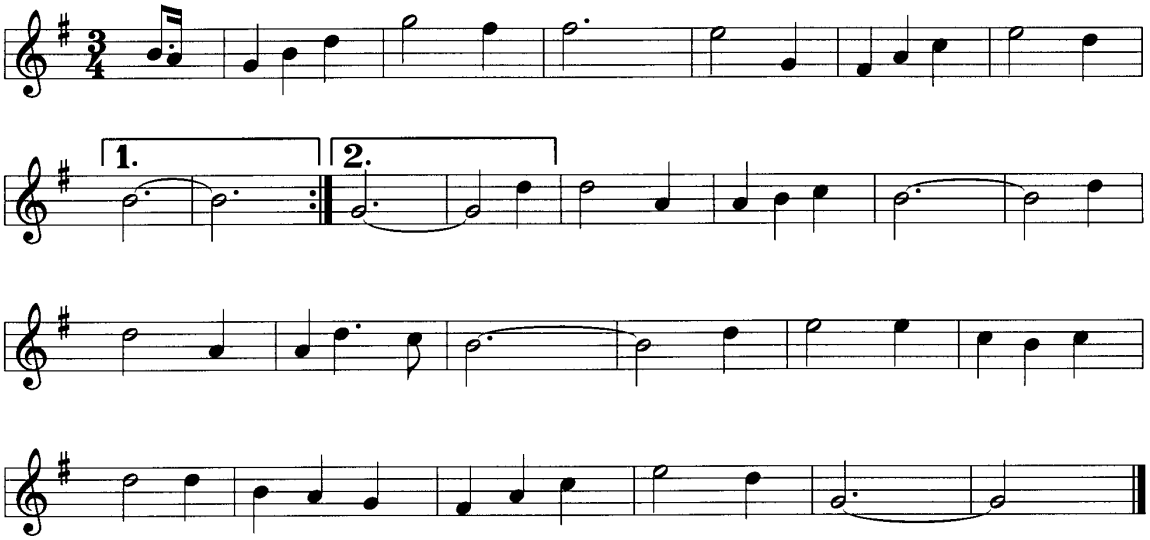
Auld Lang Syne



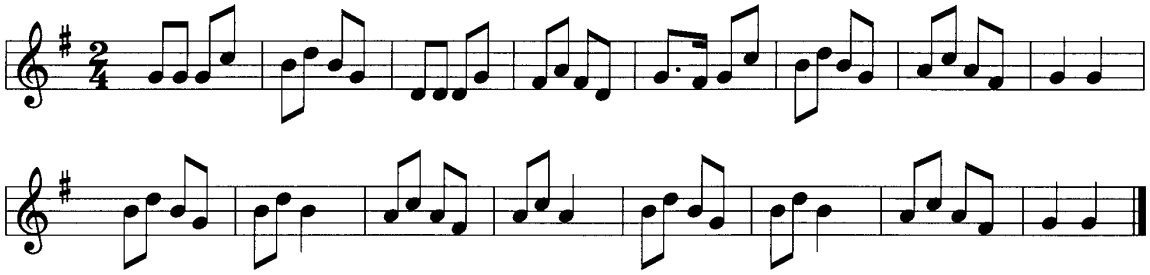
Winster Gallop



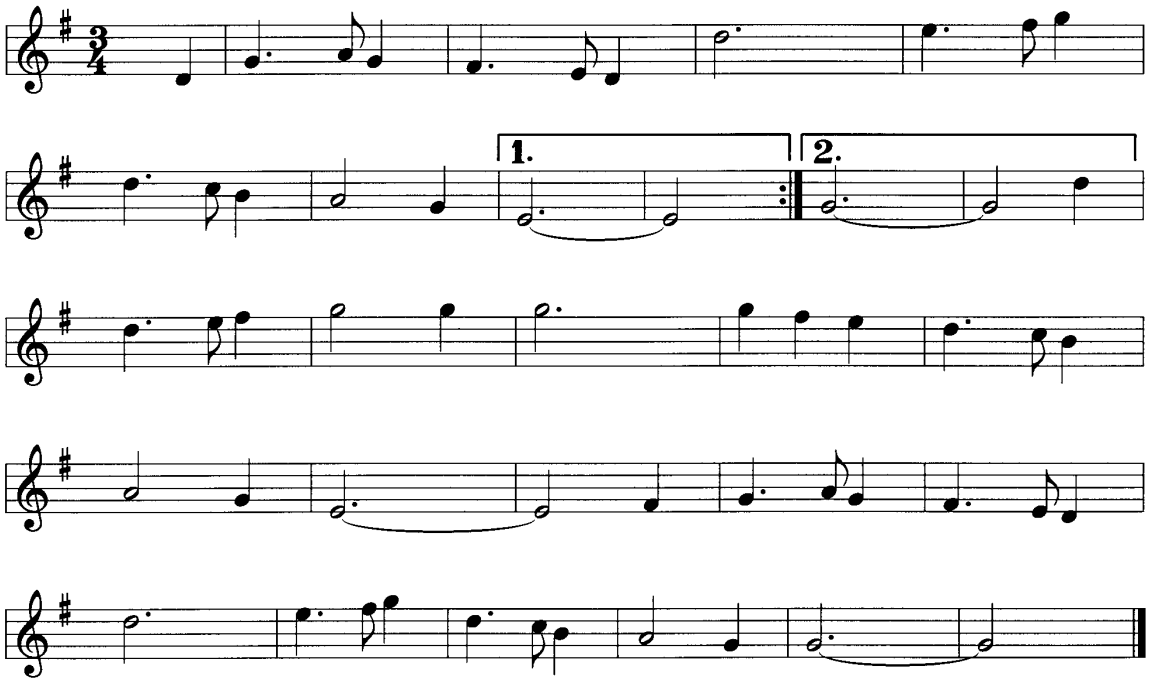
Whittingham Green Lane



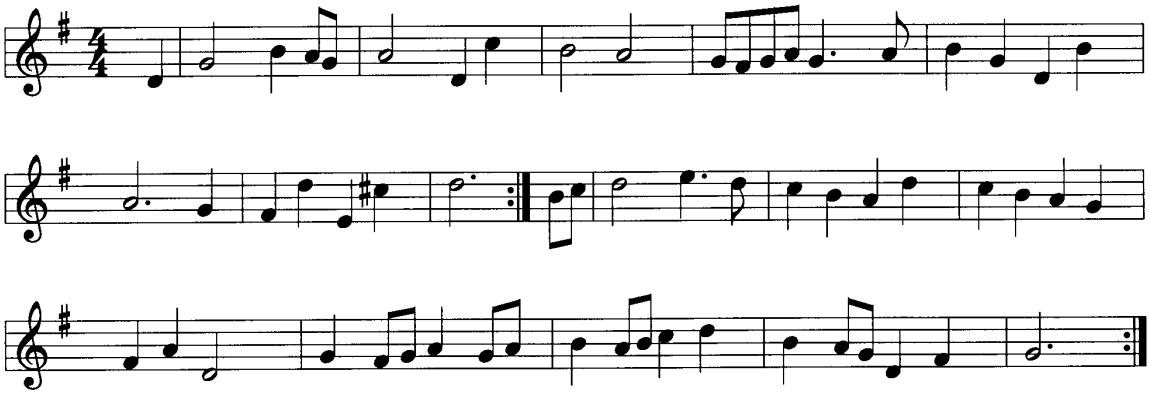
Bobby Shaftoe



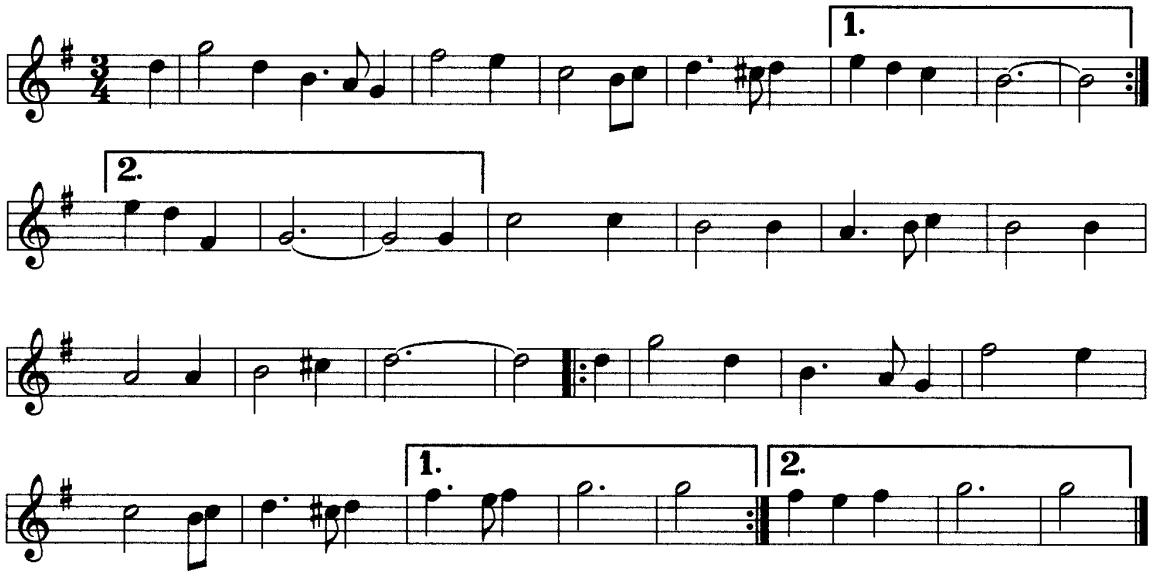
Gentle Maiden



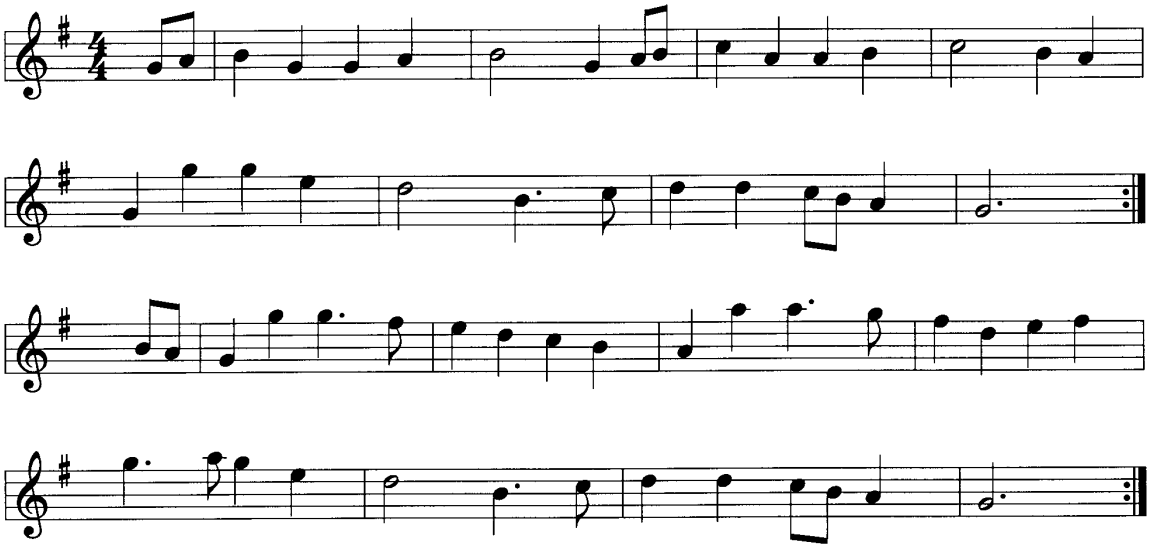
Prince William



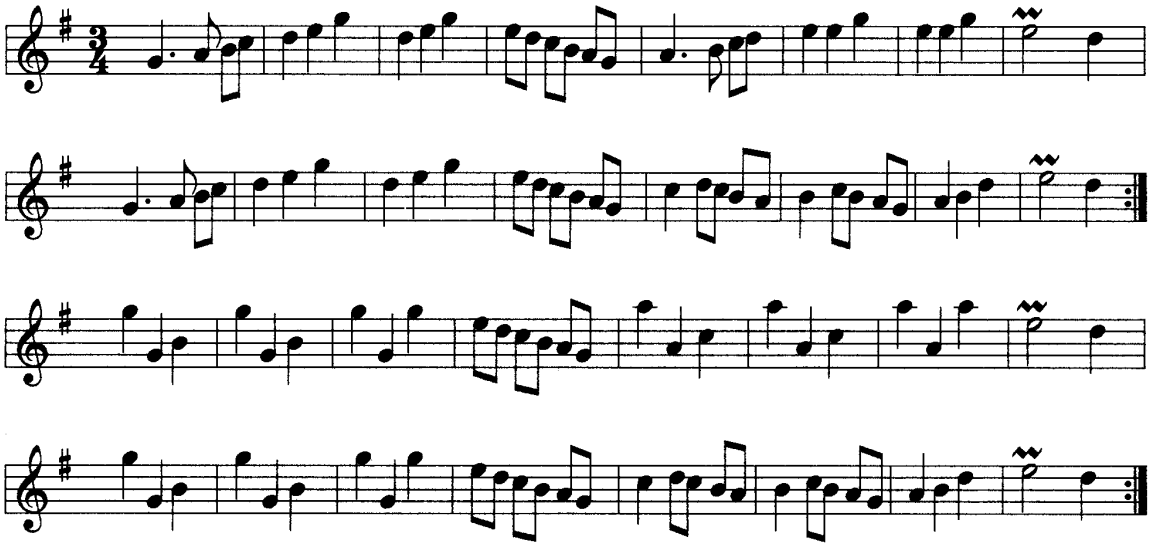
Sweet Hesleyside



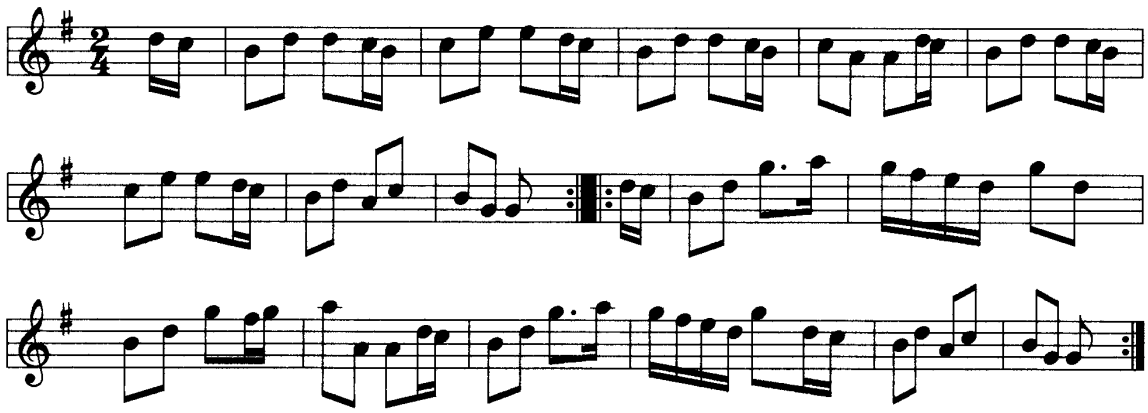
Jamie Allen



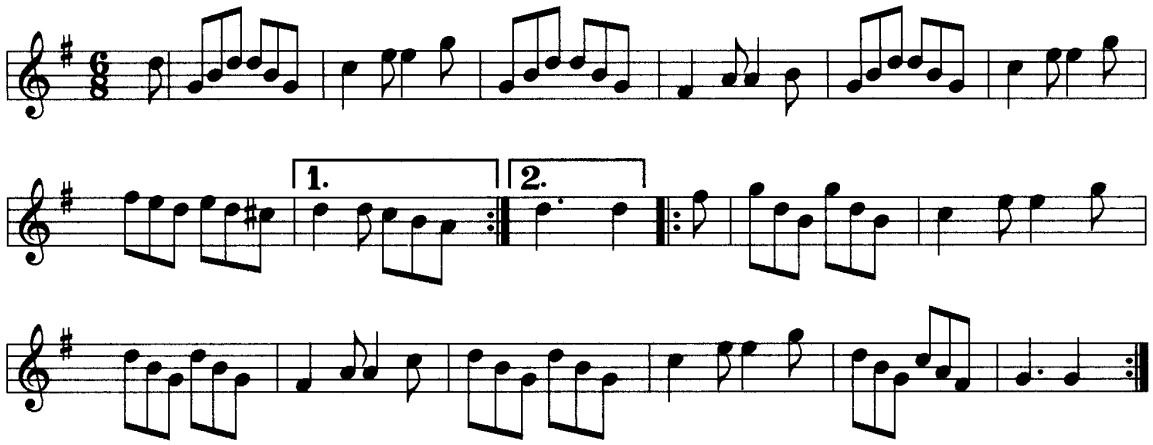
Sir John Fenwick's The Flower Amang Them All



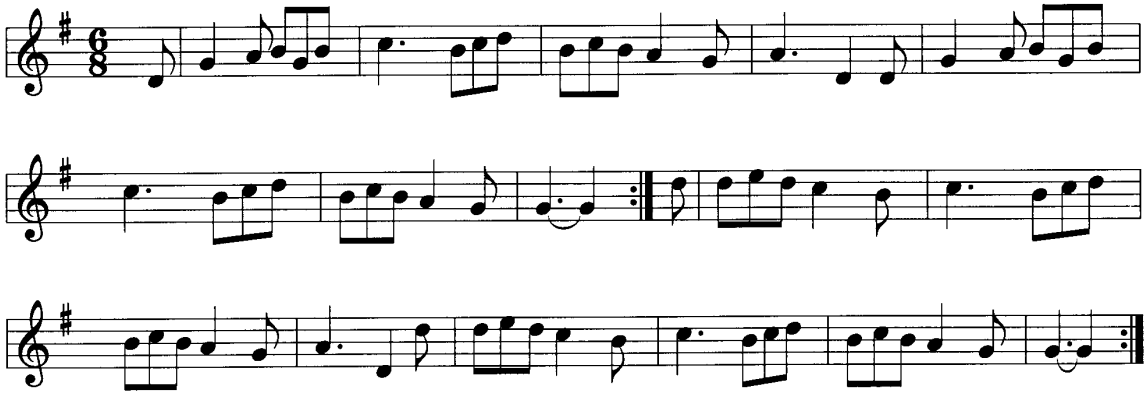
Buttered Peas



Lamb Skinnet

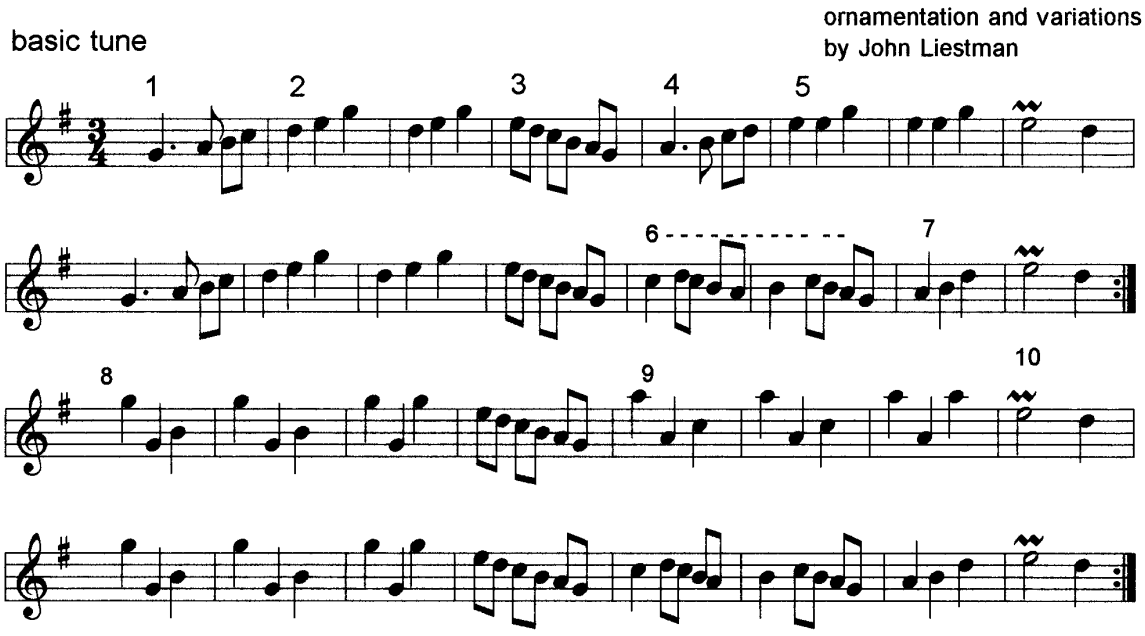


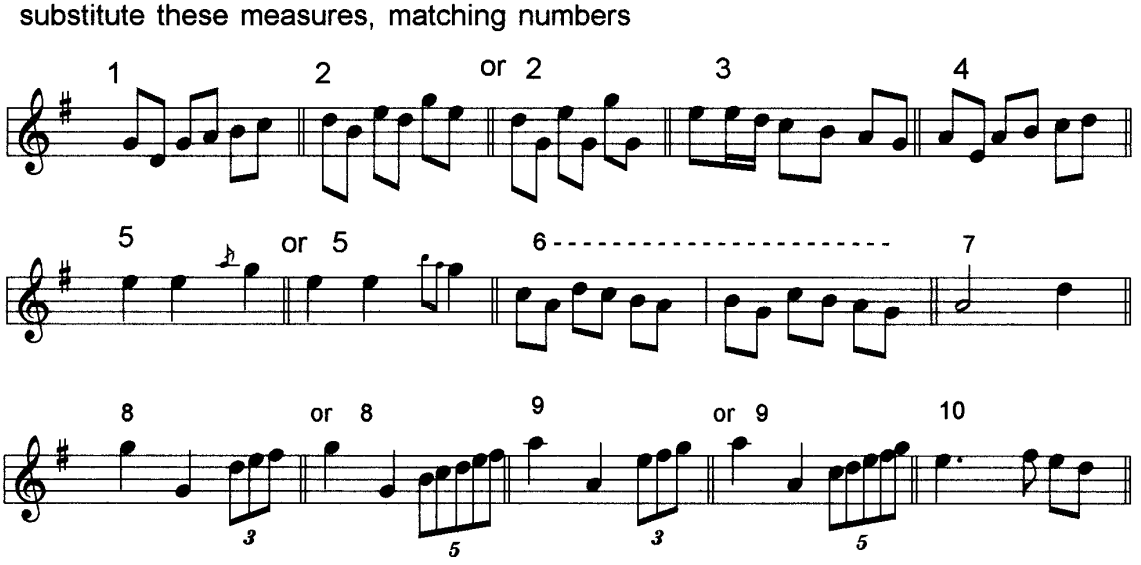
Queen's Jig



Intermediate Tunes

Sir John Fenwick's The Flower Amang Them All - variations

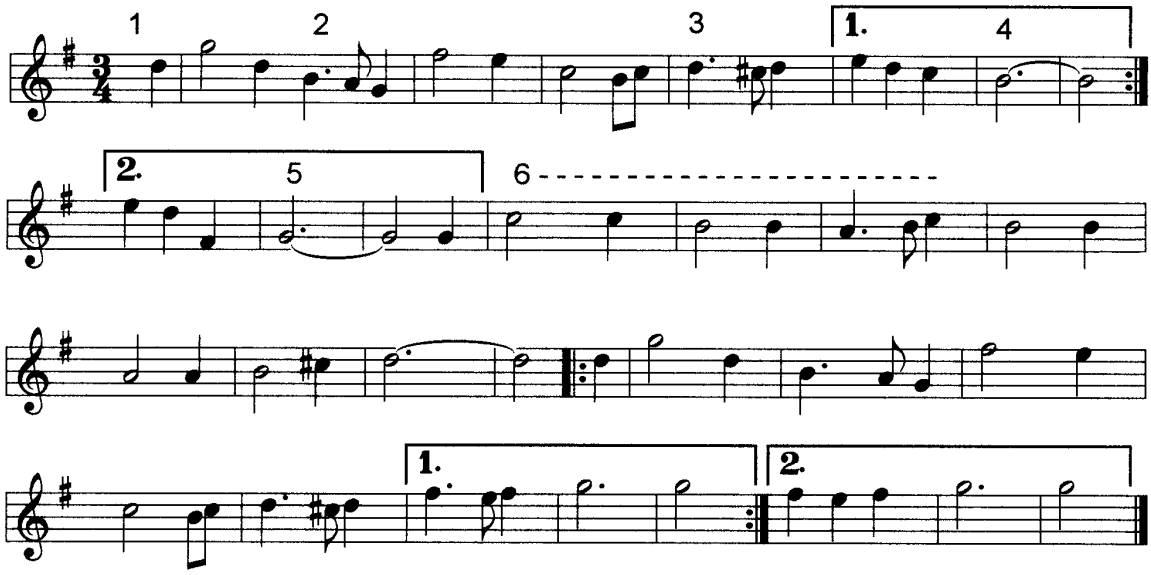




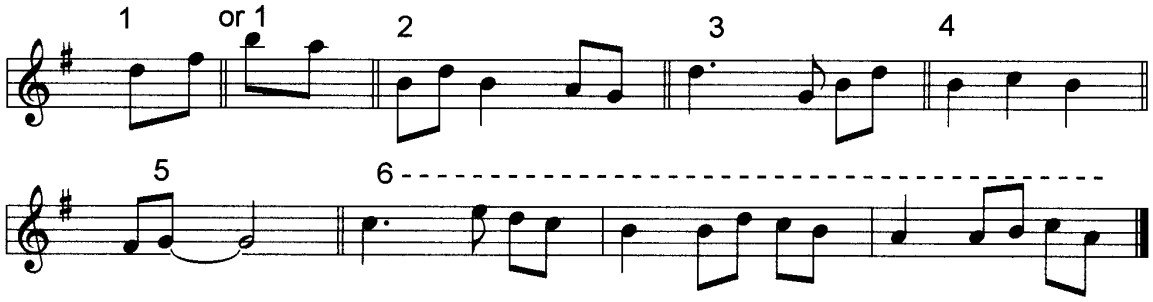
Sweet Hesleyside - variations

ornamentation and variations
by John Liestman

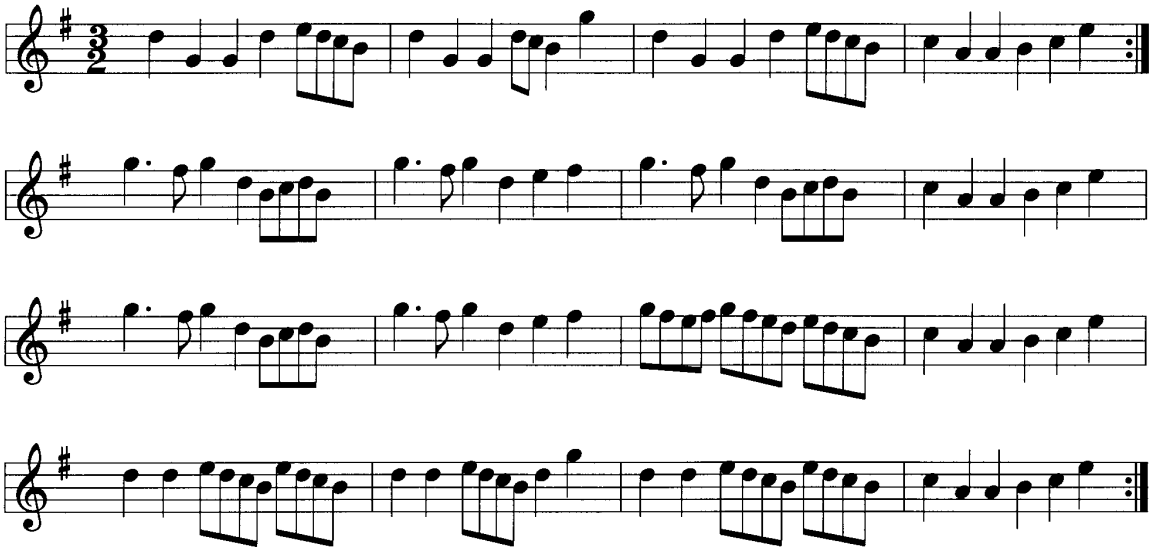
basic tune



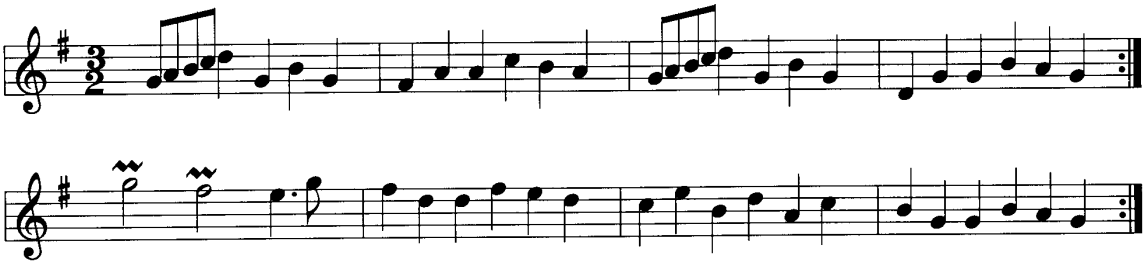
substitute these measures for those above with matching numbers



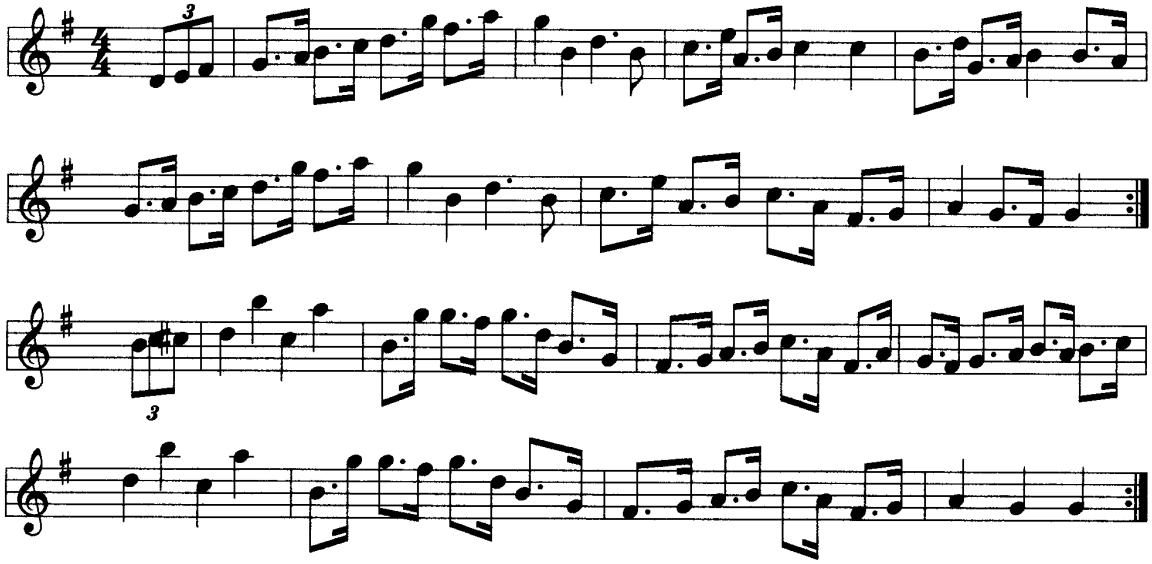
Go to Berwick Johnny



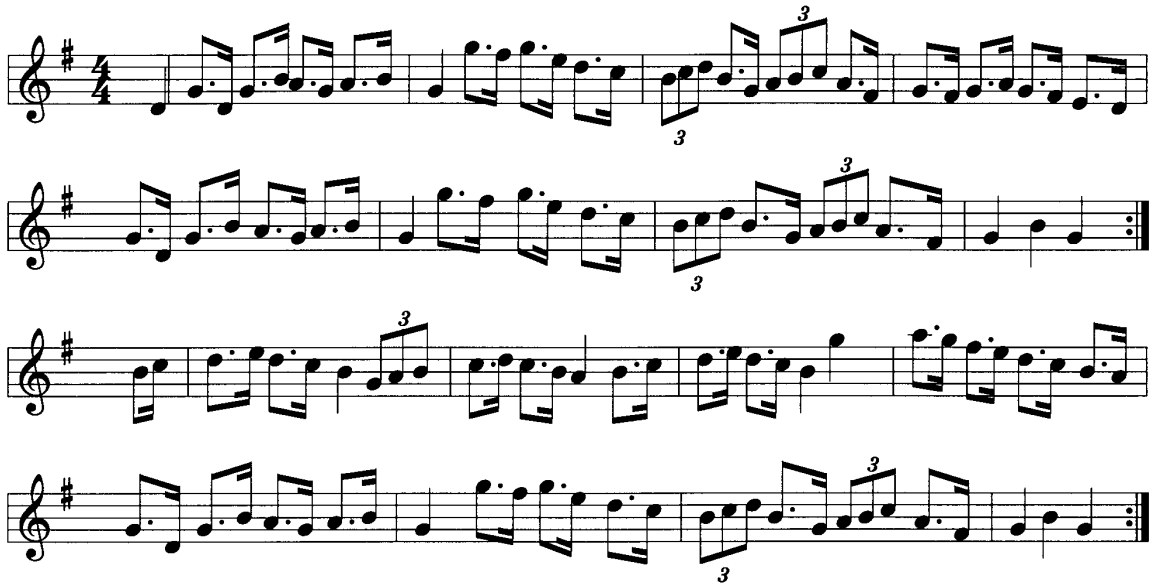
Rusty Gulley



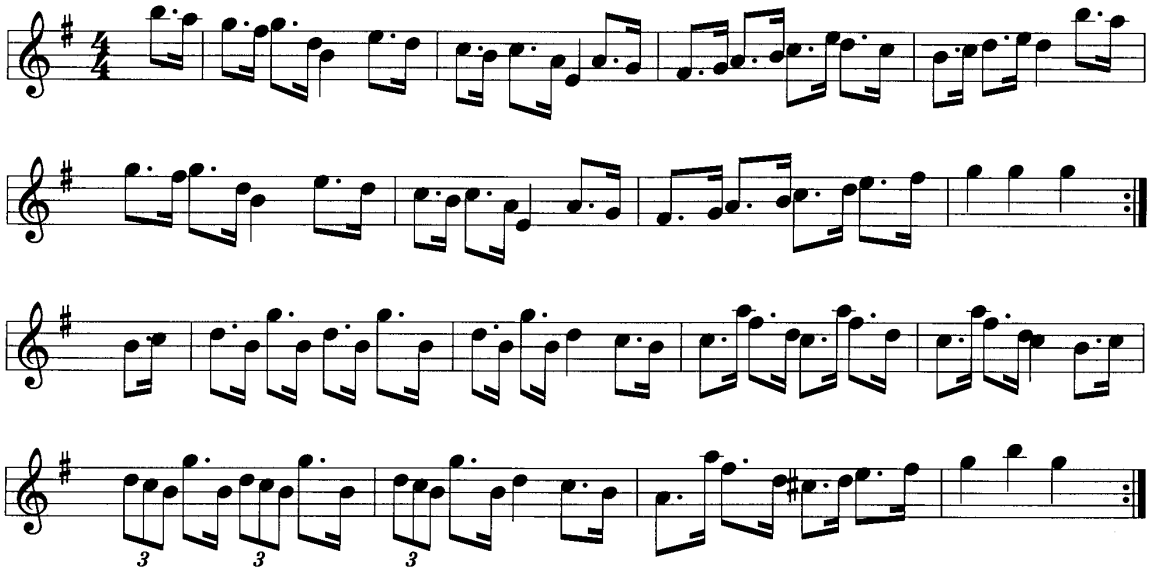
Bielbie's Hornpipe



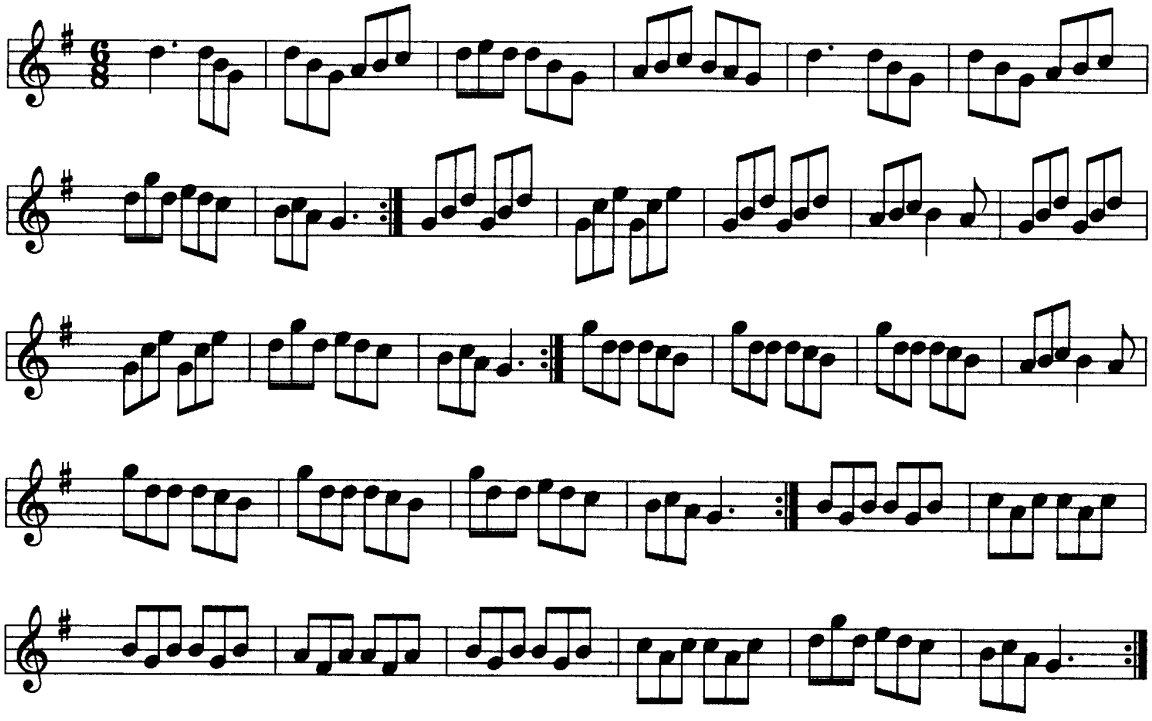
Proudlock's Hornpipe



Marquis of Lorne



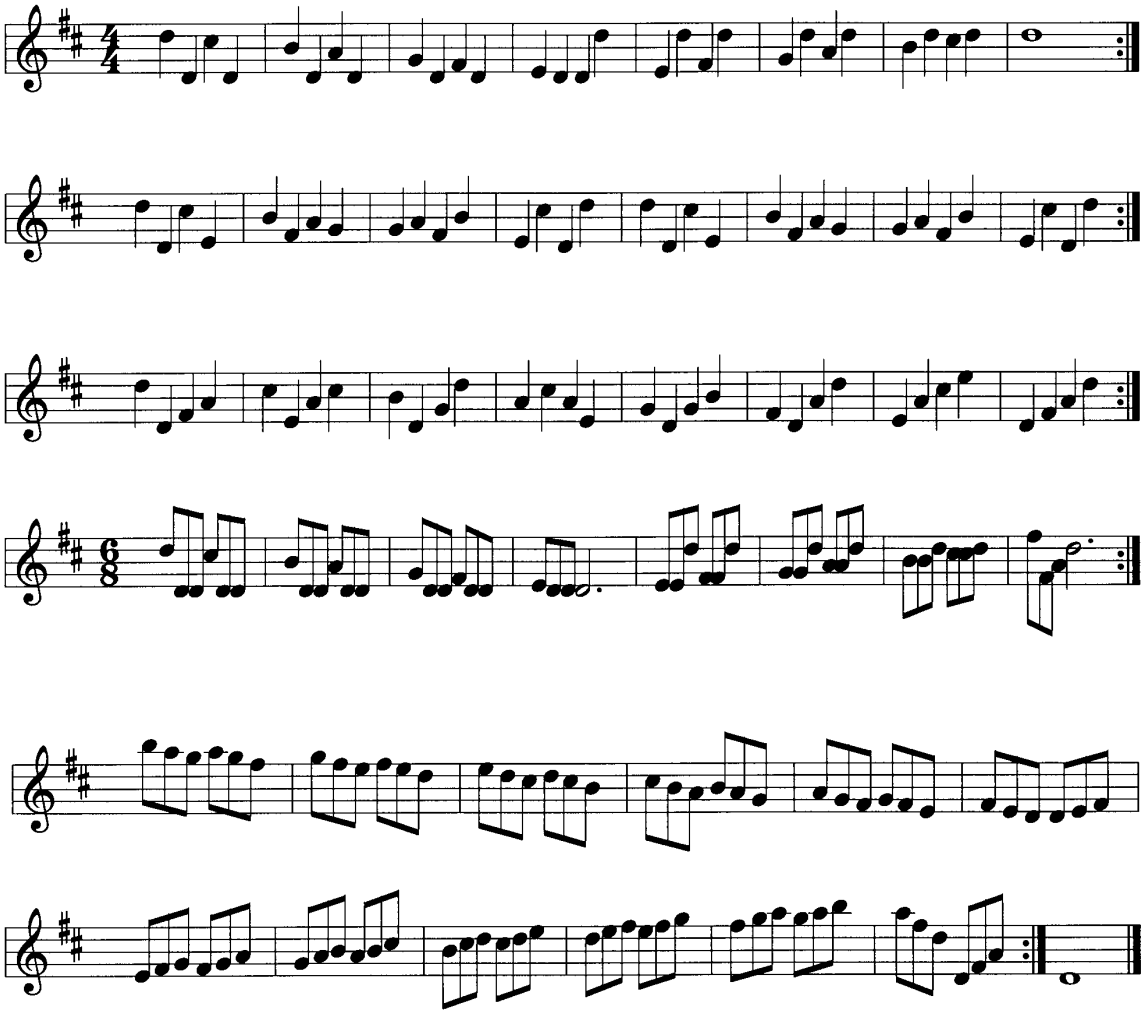
Athole Highlanders



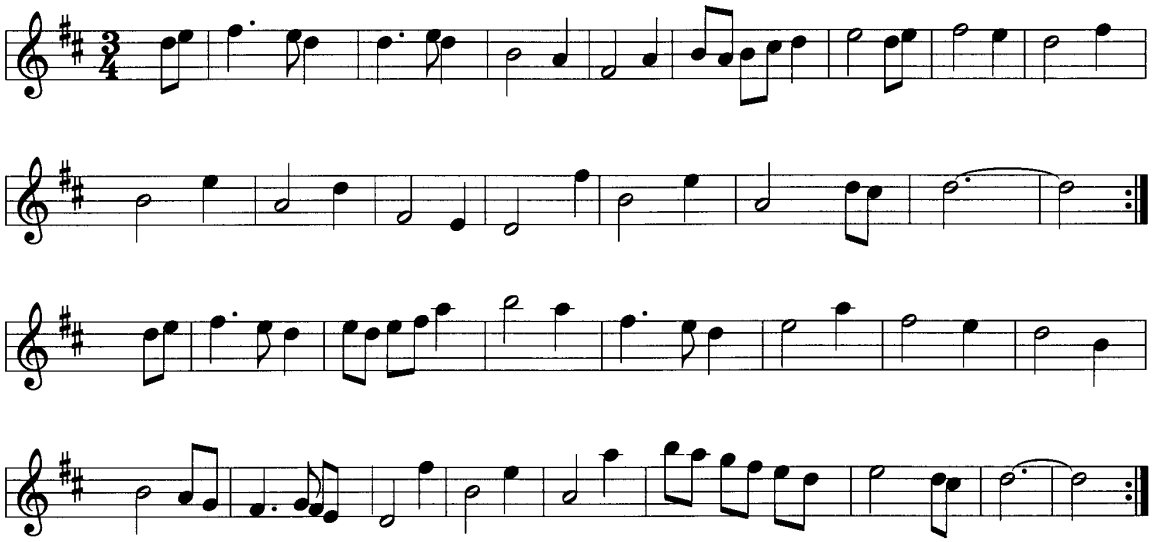
Exercises in Key of D

Play each exercise both legatto and stacatto until you can't stand it any more.

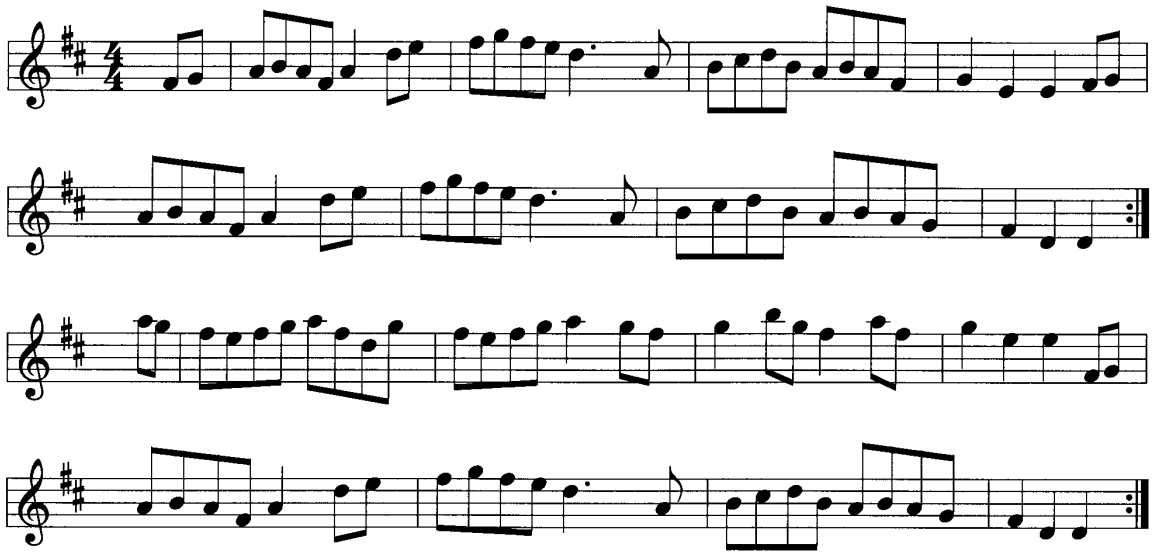
(Remember the C's are sharps)



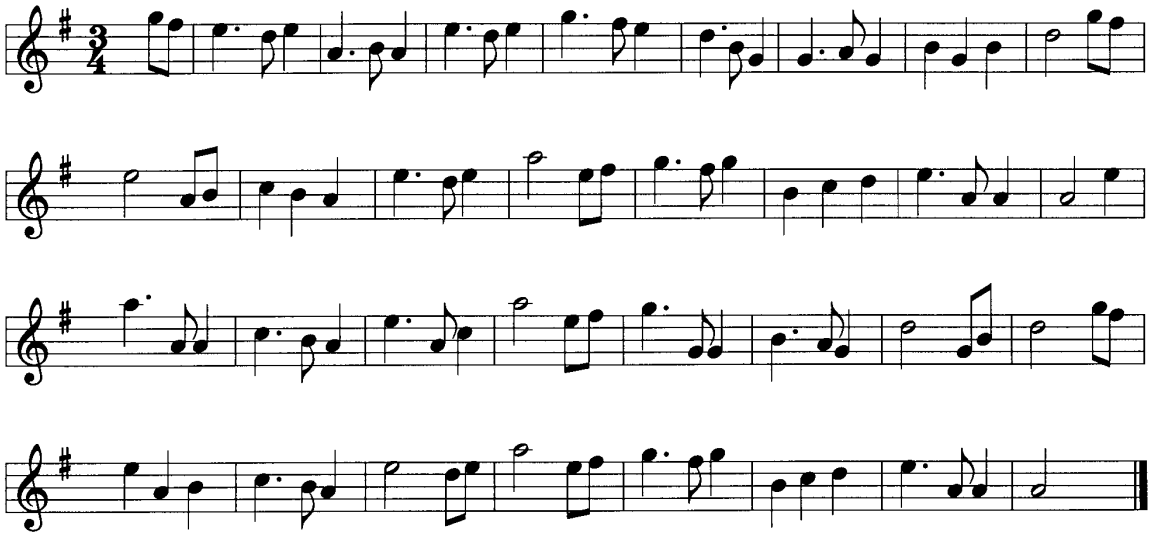
Si Bheag Si Mhor



Durham Rangers



Wild Hills of Wannies

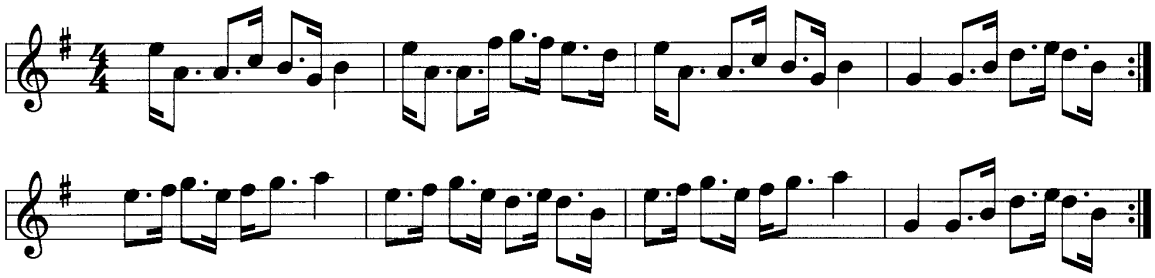


Dear Tobacco

Key of A minor

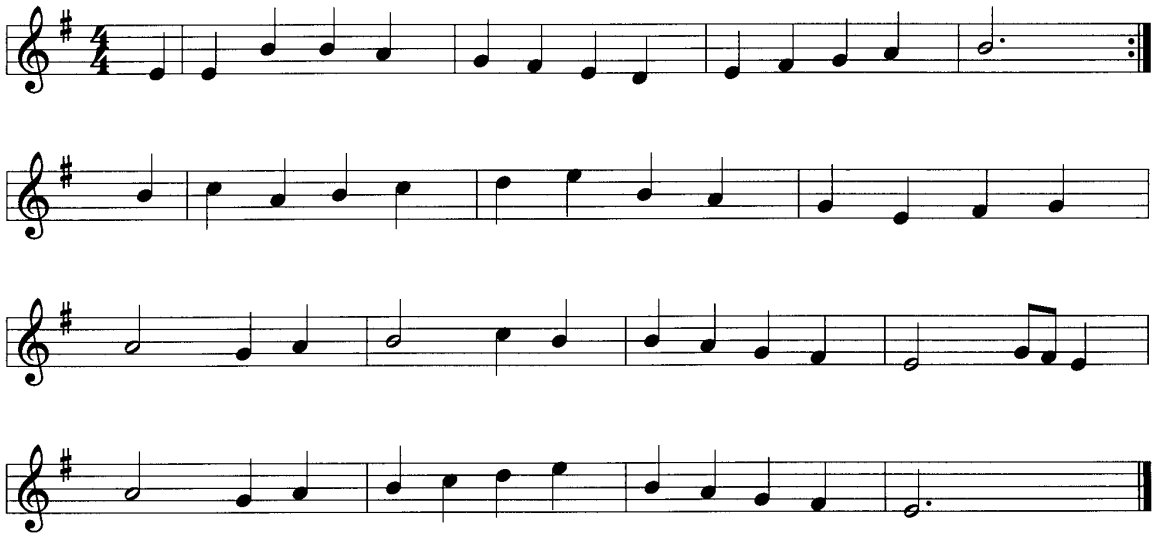
Shown "strathspey style", as played by The House Band

Make all eighth and sixteenth notes into eighth notes for the traditional setting



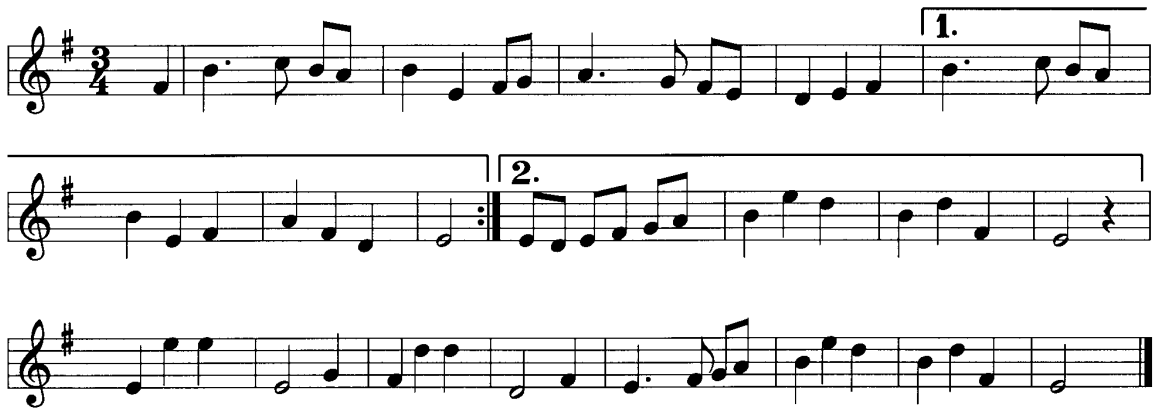
God Rest Ye Merry Gentlemen

Key of E minor



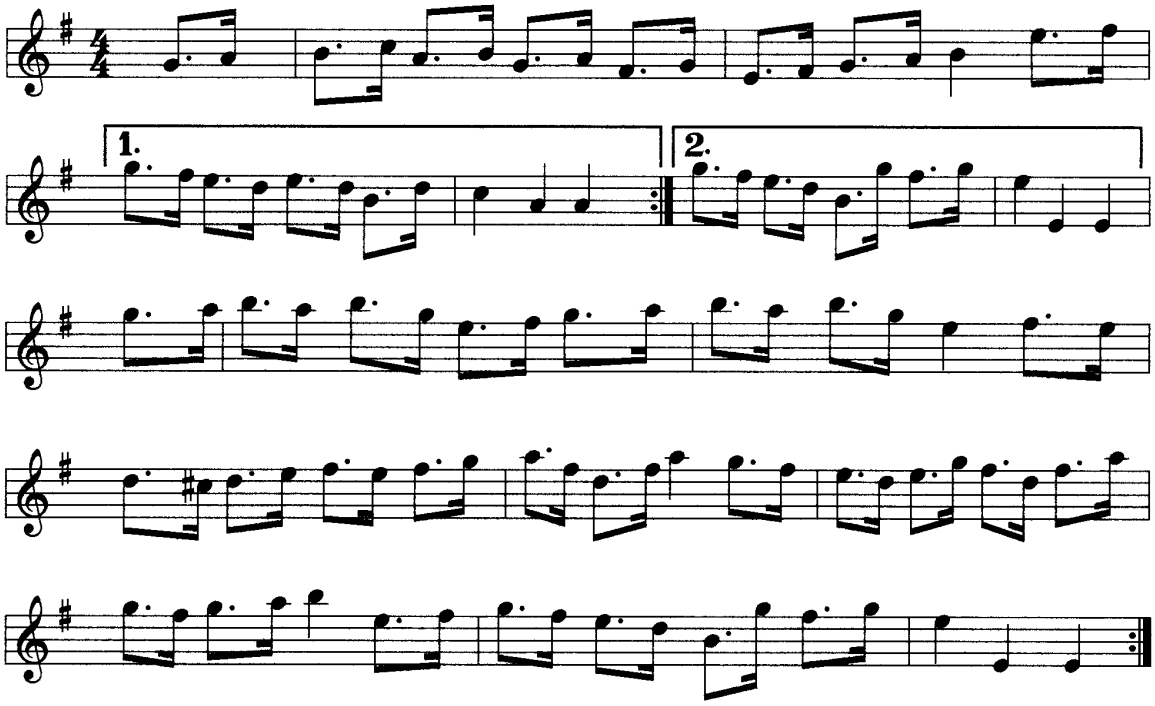
Bonny at Morn

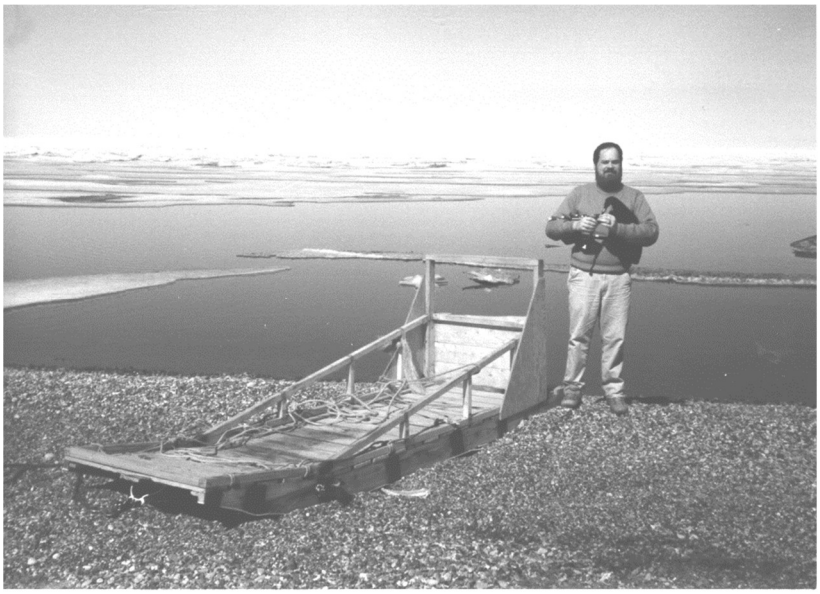
Key of E minor



The Rights of Man

Key of E minor

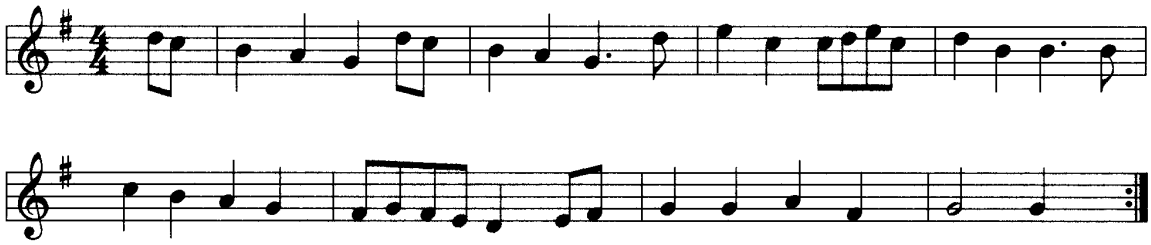




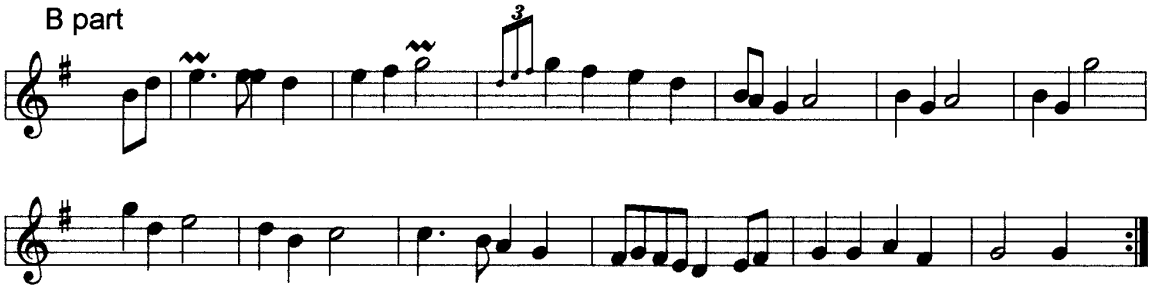
The author serenades his dog sled and the melting pack ice, Kaktovik Island, North Slope, Alaska

Princess Royal

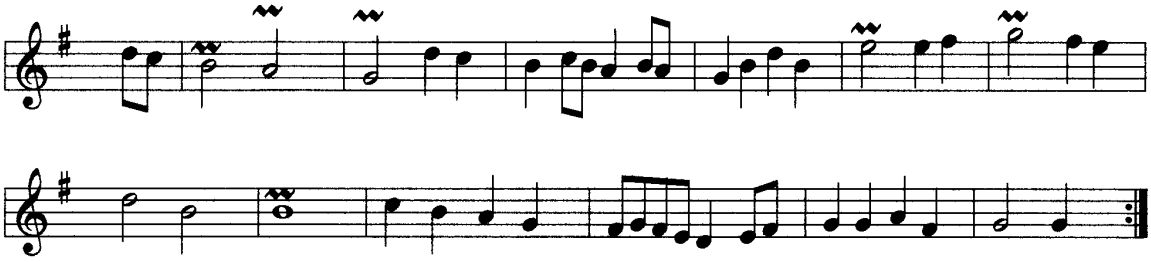
A part



B part

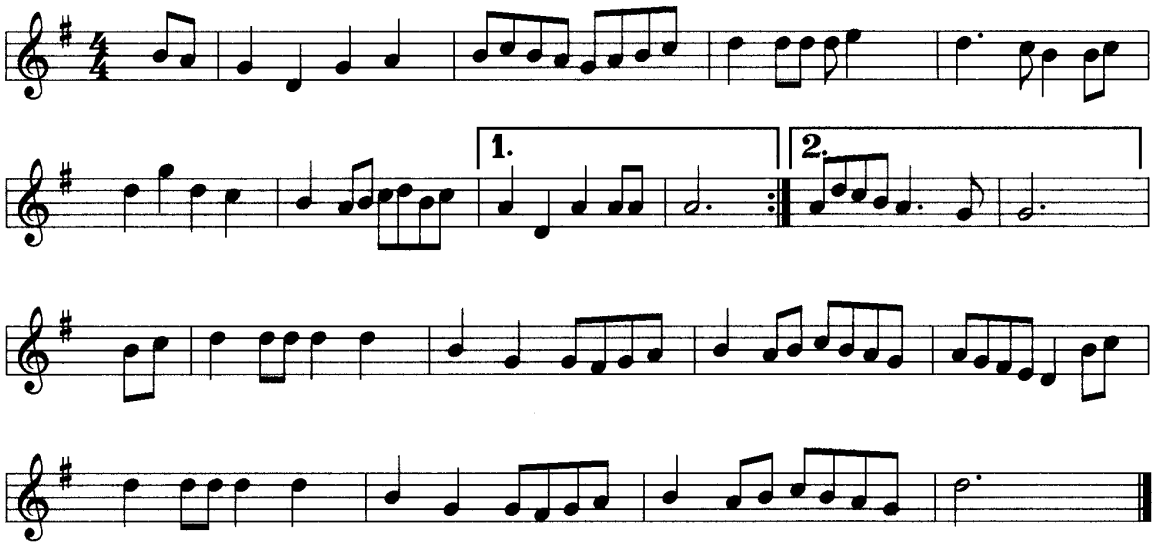


Capers section (played as alternative to A part as per the dancers)



Rondeau by Moret (theme from "Masterpiece Theater")

Play A part with repeats, B part again,
and finally part A with repeats again



Fiddlers can't always play pipes, pipers can't always play fiddle

Fiddle tunes aren't always good pipe tunes and pipe tunes aren't always good fiddle tunes

Trumpet Voluntary

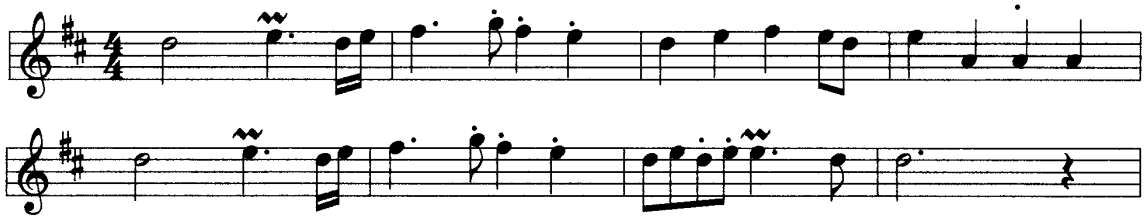
by Jeremiah Clark

Key of D

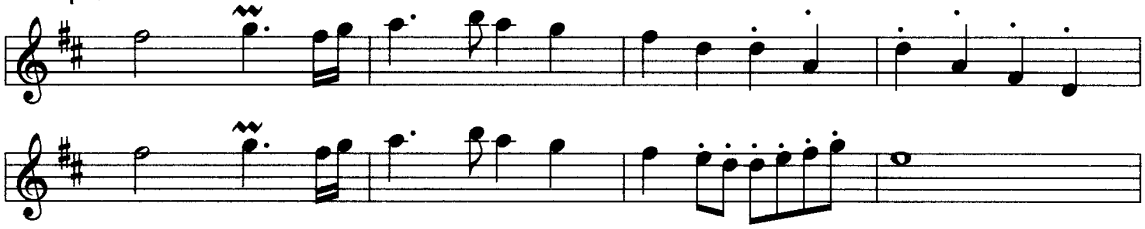
Play parts in A B A C A order, moderate tempo

Arranged for pipes by John Liestman (proper version has G# in first and fifth measure of B part - some of you won't have that note and it sounds a bit odd against drones)

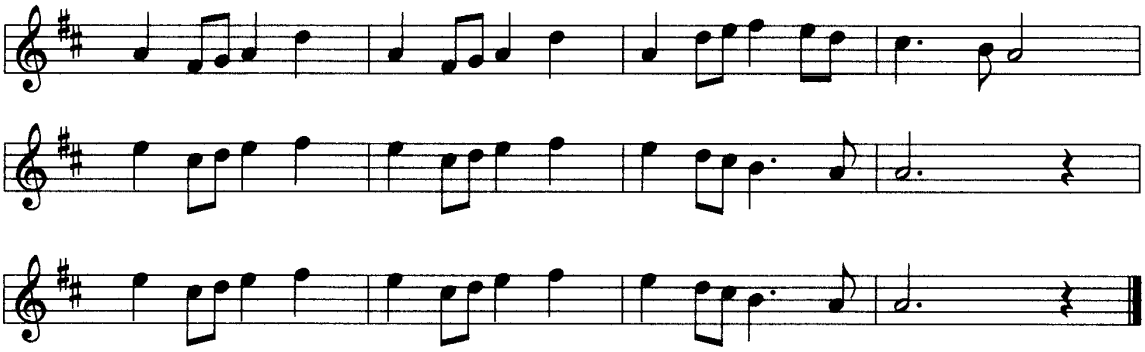
A part



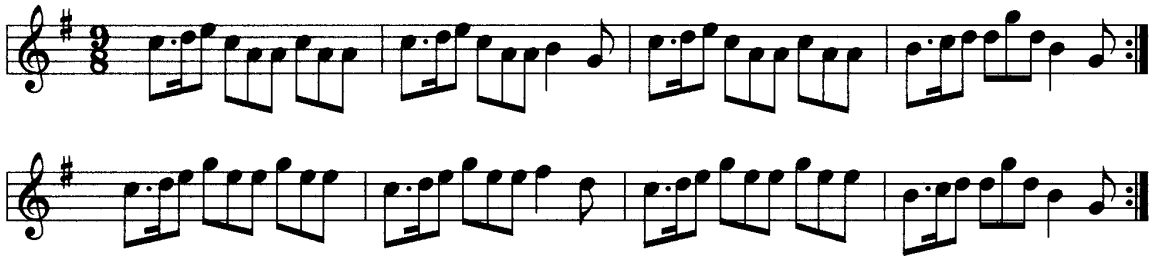
B part



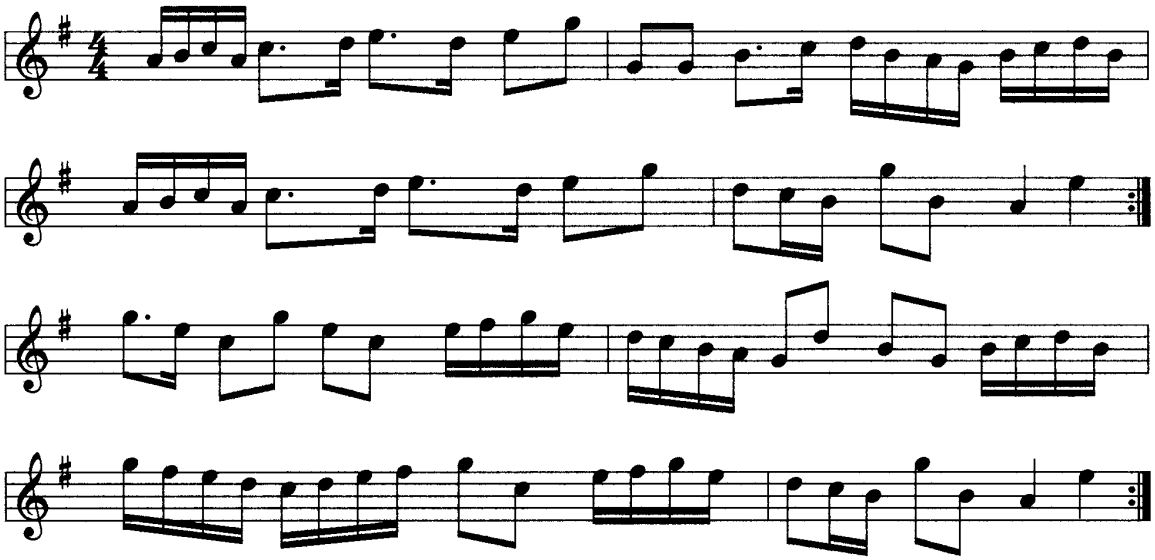
C part (3 lines)



The Peacock Followed the Hen



Cuckold Come Out of the Amrey



That's it. Practice hard and enjoy your piping!

The entire purchase cost of this book is being donated to Medecins Sans Frontiers.

Please do not allow it to be copied or distributed without payment.

John Liestman

Conroe, Texas

USA

I am known as john@liestman.com *but of course that could change in a cyberbeat. Cheers to you and your pets.*

"Pump here, squeeze there, move your fingers in this general area, there you have Northumbrian smallpiping, no problem. That will be 10 pounds please."