Highland Bagpipe Tutor
Instructor Manual

1st Edition

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WELCOME

The interest in the *Highland Bagpipe Tutor Student Manual* - now in its fourth edition - prompted the development of a companion manual for the instructor. The intent is not to duplicate the materials in the *Student Manual*, but to provide additional information on the subject and to provide a solid foundation for those providing instruction.

This manual is a compendium of materials for the experienced and inexperienced instructor. It is founded on the premise that a manual of instruction must be as diversified as the topic and the students it will be serving.

It is designed to serve the new instructor who has had little or no exposure to the field of education – walking them through the process of successful instructional design and implementation – as well as the experienced teacher who may be looking for new and insightful ways to approach a piping lesson.

There are no panaceas in teaching. What may work in one situation with one student is not a guarantee for success in subsequent efforts. The key to the success of any endeavor involving people is learning to adjust to their needs.

I hope you enjoy reading this manual as much as I enjoyed putting it together.

Commitment and Involvement

We tell each of our new students that joining the Band is a joint venture, The Band's commitment is to provide structured instruction, create an enjoyable learning environment, and support and challenge them to play at their potential. Their commitment is to practice regularly, support the Band to the best of their ability, and have fun in the process.

But there is commitment and there is involvement…

Those who succeed as students as well as instructors are *committed* to the endeavor.

The Pipe Major

Leading the endeavor is the Pipe Major. The Pipe Major (PM) is responsible for the determination of priorities. The PM is ultimately responsible for the instruction of all student pipers. PMs must concentrate on the elements that matter in each stage of a piper's development. The necessary psychological attributes of a PM include confidence, experience, determination, drive, aggressiveness, mental toughness, and high goals. Innate or acquired, these are the qualities that determine whether PMs do their job.

The Support Team

The PM's support team (Pipe Sergeant, Drum Sergeant, instructors, etc.) provides a great deal more than just help during practice. They must be able to think and contribute to the morale of the Band. They should be selected for their enthusiasm. Practice will perfect performance and experience can provide understanding, but there is no good substitute for determination and desire. Another essential attribute of a good support team is stability under pressure; if confusion undermines precision, or if the desire to win is not evident, then the support team is not an asset to the PM or the Band. A good support team delights in adversity for the opportunity it provides to make even greater contribution. They believe in victory. They support the PM, encouraging him or her.

There are Ten Commandments which the support team must commit to:

1. Helping each other be right – not wrong
2. Looking for ways to make new ideas work – not reasons why they wont
3. When in doubt, checking it out
4. Helping each other win and take pride in each other's victories
5. Speaking positively about each other and about the Band at every opportunity
6. Maintaining a positive mental attitude no matter the circumstance
7. Acting with initiative and courage as if it all depends on them
8. Doing everything with enthusiasm – it's contagious
9. Learning to give away what they want – enthusiasm, commitment, recognition, respect, etc.
10. Never losing faith– never giving up

The Student Bill of Rights

As instructors, know that your students have rights. Every student has the right to be served by those who put into practice the following principles:

1. ***The more you know about a person with whom you are dealing, the more effective you are going to be.***

   Each student is unique and wants to be treated as an individual as well as a Band member. The better you understand them, the more effectively you can meet their needs and match their style and pace. Get to know your students as individuals.

2. ***Success demands opening up your senses – talking less and listening more.***

   Listen to what your students are telling you. Ask them, what's working well, what's not, and how you can help.

3. ***Those who deal most effectively with students are those who "park their ego at the door."***

   Forget about yourself and focus on your student. Weave in personal experiences when it *supports* the lesson – don't make it a personal biography.

4. ***Remember, your conscious and unconscious are the basis for the relationships you form with your students.***

   When you communicate, watch your words *and* your body language. Your words and body language send a message – make certain it's the message you intend.

5. ***There is no excuse for "almost right." The student has the right to expect "right."***

   Students expect expert help and quality instruction, and they deserve it.

6. ***"Promises broken are business lost."***

   It's an old saying, but you will only have students as long as you follow through on your promises.

7. ***"Patience pays dividends."***

   They may try your patience but invest in your students; the return on that investment is well worth it.

8. ***Remember that only those who do nothing never make mistakes.***

   TRY not to make mistakes, but when you do, admit it. Similarly, remember that your students are just beginning their journey and will make mistakes – it's part of the learning process.

9. ***Students are not interruptions but incentives.***

   Communicate, communicate, communicate. Your students are going to have questions and will turn to you for help – that's your job. Respond to all inquires in a professional and timely manner.

10. ***"A smile has no value unless it is shared."***

    Another old saying but one with particular relevance to instruction. A smile can make a major difference in your lessons. Smile – it increases your face value.

Planning for Success

Effective planning is the foundation for ongoing success. There are a number of personal characteristics the effective instructor brings to the endeavor. Successful instructors:

- give support and encouragement when needed
- exercise self control
- try to be kind and fair
- strive to be decisive
- earn the students' respect
- try to be empathetic
- assume responsibility
- cooperates

- has a game plan
- shares a sense of humor
- is a master of communication skills
- is flexible
- is creative
- has the ability to work with people
- is industrious
- has personal and professional projection

Conveying the Message

As an effective communicator, there are essentials for conveying a message:

- ***Be professional at all times*** – you personally represent the Band.

- ***Listen*** – a great deal can be learned just by listening.

- ***Be diplomatic –*** abrasiveness is always counter-productive. Stay in a nurturing adult mode of communication.

- ***Understand the policies –*** know what rules and guidelines you have to work within and support them.

- ***Take an interest in your students –*** people know when you are genuinely interested in them and it makes a difference.

- ***Tone sets the stage –*** it not only sets the stage it directs the players. Create a supportive tone in your communication.

- ***Give feedback –*** communication is a two-way process. Feedback lets your students know that you are actively involved in their learning process.

- ***Keep your voice pleasant –*** use voice inflections to keep conversations and demonstrations interesting and dynamic. Vary the pitch and melody.

- ***Admit when you are wrong –*** learn to use the four magic phrases; please, thank you, I'm sorry, and I've made a mistake.

- ***Smile –*** the face you see in a mirror will be the voice your students hear.

By this time you're probably saying to yourself, *"I've heard all of this before."* I make no promises that what you will read will be anything new and different. There are few "breakthroughs" in instruction.

There is a lot of truth in the statement that it's not always what you know, but what you do with what you know. The best intentions do not always result in success. Not everyone can, or should, instruct. Not every great athlete makes a great coach. Similarly not every great piper makes a good instructor. Successful instructors present an image of professionalism in all that they do. It is a commitment of time, energy, and talent combined with a mastery of skills. The skills can be taught; the commitment cannot.

I challenge you to take a hallmark approach to instruction; make a commitment to excellence and convey that commitment in everything that you do.

The Adult Student

Learning is change in the behavior patterns of the individual. There are two basic kinds of learning patterns, 1) spontaneous interaction, and 2) systematic learning.

The first, spontaneous interactive learning is essentially caused by a confrontation with one's environment. Generally, this is known as learning from experience. In the course of an individual's lifespan, things happen that affect changes in knowledge, perception, skills, and attitudes. This is spontaneous learning; accidental or incidental, but with no predictable measurement of results.

The Role of Experience

Experience is essential to the maturation process, but it does not provide in and of itself for personal growth and development. Experience can have adverse and hindering effects on the learning and growing process. One example is the experience of failure. Many people do not learn from experience per se. There is a basic difference between *experience* and *having an experience*.

The second type of learning is systematic learning. This is a deliberately planned effort to bring about specific, observable, and measurable learning. These changes in knowledge, skills, attitude, and behavior are carefully organized in an effort to cause desired changes in the behavior patterns of the learner with observable and predictable results.

Conditions for Systematic Learning

Systematic learning should be the basic learning pattern about which all instructional development activity is focused; thus some generalizations must be drawn to delineate specific conditions for effecting change in the behavior of the student. These conditions are crucial:

- ***The student is the central figure in the learning process***. There is nothing new about this idea. However it should be pointed out that there are many people who act as though the instructor is the central figure in the learning process.

And

- ***Although the instructor is part of the learning environment***, learning is presumed to be in the hands of the student and not in the hands of the instructor.

The Instructor's Role

There is no doubt that the examination of good instruction demonstrates strong, dynamic relationship between instruction and learning; students and instructors are involved in a reciprocal relationship – students shape and affect instructor behavior, and, in turn, instructor behavior shapes and influences student behavior. The instructor is guided by the goal of student achievement and effective performance and brings to the lesson such skills and abilities that influence, direct, and motivate students to realize their potential.

The instructor's role is to help the student achieve his or her goals by providing;

- an environment conducive to learning,
- alternatives in the problem-solving process, relevant and meaningful experiences that satisfy the student's perceived needs, and
- clear and concise instructions as to expectations.

Concept of Adult Learning

When dealing with adult students (I will leave the subject of younger students to those more qualified) there are a number of concepts about their behavior to keep in mind:

- ***Adults must want to learn*.** This is the fundamental factor in an effective adult learning situation. A great deal of effort on the part of the instructor should be spent on instilling an appreciation for and recognition of the constant need of upgrading knowledge and skills. The instructor's primary task is to help the student perceive a need for learning.

- ***Adults benefit most from active participation in the teaching-learning process.*** When applied situations are simulated in learning experiences, the prospect of success is dramatically increased.

- ***Adults respond better in an informal atmosphere.*** When adults are comfortable and relaxed, they are likely to participate more.

- ***Adults maintain interest better when a variety of methods are used.*** Adults have experienced their learning in many ways and seek to have these experiences reinforced.

- ***Adults required reinforcement at each step.*** Adult students neither care to invest effort if they are not confident that they are moving in the right direction, nor want to commit resources such as time, energy, enthusiasm, only to find that they are misplaced. Reinforcement provides the adult with continuous assurance that he or she is on the right track. Adults want and expect instantaneous feedback.

- ***Ambiguity has no place in adult instruction.*** Adults respond better when they have a clear understanding of what is expected of them. They are particularly sensitive about miscues and false directions, and they move cautiously until they know that they have a reasonable promise of success.

- ***Adults should be permitted to practice new skills without threat.*** Fear of failure increases among adult students. You must create a safe environment where adult students feel comfortable in making mistakes.

Adult Development

As you prepare to work with adult students, it is important that you understand how people change, biologically and physiologically, over the adult portion of their lifespan – how they develop. If you are armed with increased understanding, you will have another tool to use in facilitating learning.

Generally speaking, as people age their reaction time decreases. It takes longer for information from the environment to be perceived, processed, and acted upon, It follows that the speed at which people learn new skills also decreases with age. However, even though reaction time diminishes with age it is not a critical factor in terms of effective instruction. This is especially true if the student can control the pace. Experience and consistent effort negate any loss of sheer reaction speed. In fact, the performance of older students is often superior to those of their younger counterparts for these very reasons. Also important to remember is the fact that reaction time varies widely among adults. There is no “typical” adult student.

Many adults are active long after 60 years of age but their activity may be hampered or limited by physical difficulties – including dexterity and muscle memory. Be aware of any physical barriers to your instruction and learning environment and compensate for them.

For example, human beings see best at about the age of 18. After that age, they experience a relatively steady decline in visual acuity, with the most noticeable decline occurring between ages 40 and 55. Their eyes lose their elasticity, react less quickly to changes in illumination, and have a narrower field of vision. People also become more prone to cataracts and defective color vision as they age. Accommodating adult students with large-print music can be a simple and effective aid in learning.

The loss of auditory acuteness may be among the most significant biological changes that occur as people age. There is generally a gradual decline in hearing ability until the mid to late sixties. After that point, there is a marked decline. The loss is most noticeable at very high frequencies and very low frequencies. It is estimated that the loss of auditory acuity – enough to interfere with normal conversation – ranges from about 5 percent in children under the age of 15 to approximately 65 percent in adults over the age of 65.

The implications of these changes are important, especially in a psychological sense. Adults who have difficulty in hearing the spoken word are likely to lose confidence in their ability to interact with others. This loss of confidence may result in avoidance behavior. The anxiety inherent in hearing loss may also affect the learning process. High anxiety levels reduce the ability to learn. Tuning can present a challenge to even the best of pipers. Those experiencing hearing loss truly may not be able to hear well enough to tune themselves and may act out their frustration. Work with them using mechanical tuners.

The issue of adult intellectual abilities has provided continually fertile ground for difference of opinion. This is to be expected, since the issue is extremely complex. Differences of opinion exist in terms of what “intelligence” actually is, how it should be measured, and even the value of attempts to measure it. Rather than discuss the merits of various research designs and assorted explanations of what intelligence is, a summary of adult learning capabilities will best suit our purposes.

- The ***speed*** of learning is reduced in a number of areas, but the ***power*** to learn is generally not reduced in adults. Integrating new skills and information takes longer.

- The ability to remember remains relatively stable throughout adulthood, although short-term memory may be a little less efficient in older students.

- On the whole adult students are less effective when learning tasks that are complex (if sufficient learning time is not provided).

- Overall, the learning ability of adults is little diminished over their lifespan until very old age.

- Adult students sometimes experience difficultly when assessed or tested. They may feel threatened by this activity.

It is essential to keep these biological changes in perspective. Although they can be very important in some cases, most adults will not experience physical decline serious enough to affect their ability to learning piping. Continuous awareness on your part of the potential for physically-based problems and knowledge of the general steps you can take to deal with them are needed if you are to make your instruction with adults as effective as it can be.

Psychological Changes

A great deal more is known about how adults change physically than about how they change mentally. For one thing, it's much easier for a scientist to measure a person's reaction time, for example, than it is o measure or understand a person's psychological state. For another, research in this area has only recently become more popular.

The instructional process can be affected because people bring their psychological states with them to the lesson and practice. People have attitudes, value systems, opinions, self-images, likes and dislikes, fears, anxieties, and so on - and these kinds of psychological elements are often linked to or are affected by the developmental stage through which the person is passing. Adult development theory – not the subject of this manual – provides a means by which you can better understand some of the factors that can affect the learning process.

Characteristics of Adult Students

While generalizations may be dangerous, there are certain characteristics that distinguish the adult student form their younger counterparts. Among these are:

- ***Adult learners are likely to be more rigid in their thinking.*** Through their years of living they have acquired a set pattern of behavior, and set ideas f what is right and wrong, fact and fiction. This pattern has to be "unset" in order for learning to take place.

- ***Adults usually require a longer time to perform a learning task.*** While adults' capacity to learning may have remained essentially unchanged as age has progressed, the older they become the slower is their reaction time and the less efficient are those senses on which learning depends – sight and sound.

- ***Adult learners are more impatient in the pursuit of learning.*** They are also less tolerant of "busy work" that does not have immediate and direct application to their objectives.

- ***Adult students suffer more from deprivation of success than does the younger student.*** And they are motivated more by the usefulness of the material to be learned.

- ***Adults are less willing to adopt new ways, or even try new ways of doing things.*** But they are less distracted by social interests than their younger counterparts, and tend to be steadier in their pursuit of learning tasks.

- ***Older students have more compelling responsibilities competing with their time.*** You must create a "need" and "purpose" for activities to have a perceived value.

Principles of Learning

Adopting the previously mentioned characteristics of adult learners, there are also principles of learning that should exist in any learning environment. They include:

- ***The desire to learn must come, ultimately, from the learner.*** What the instructor and Band can do is establish an education program under conditions that most readily produce results from students, and then maintain these supportive conditions as the program continues.

- ***Active involvement in the learning process is even more important for effective learning in adults.*** Action is fundamental in the creation and maintenance of interest in learning new skills and knowledge. When adults are kept in a passive dependent role, in which the instructor tells them what they should know, their interest rapidly dwindles. When activity is perceived as relevant, the knowledge that it is intended to convey is learned much more quickly and permanently than if it is absorbed passively.

- ***Feedback should be understood to mean the information by which students determine what is going on and how well they are doing.*** They gather clues and indications from what the instructor says and does, from the behavior of other students, and from their own reflections on the events taking place. The intent of feedback is to motivate learning. Feedback accomplishes this by rewarding students through recognizing their contributions through validating that they are on the right track. Lessons and practices should have liberal opportunities for feedback. Instructors have the critical responsibility for developing these opportunities. The tone and manner in employing feedback should be positive and encouraging; sarcasm or ridicule is virtually always fatal to effective teaching. Adults will gravitate away from, rather than toward, the learning objectives.

- ***Engaging and maintaining interest of students is fundamental to any program.*** It is frequently observed that children have short attention spans; the same characteristic is also common among adults. To hold the interest of students, novelty, variety, and challenge must be deliberately employed by instructors.

Building Rapport

The subject of learning/cognitive styles is complex, and a wide variety of models have been conceived. It is not the intent of this manual to delve into these models. Although there are many ways of describing how people learn, don't let the complexity of the subject prevent you from learning more about cognitive styles and learning preferences. For our purposes, we will focus on establishing an adult-to-adult rapport.

The simplest key to establishing rapport with adult students is remembering who you are and who they are. Many instructors have developed a mindset about the instructor-student relationship, and it usually has to do with authority. These instructors tend to view themselves as authority figures, and the students as subordinates.

However this attitude is volatile when we are talking about adults. People who have reached adulthood generally expect to be treated as adults; as people who have intelligence and are capable of learning; as people who have a broad range of interests and talents from which to draw; as people who are generally self-motivated and will work hard for what they want; as people who do not have time for a lot of silly rules or time-wasting procedures.

At the same time, it is important to recognize that not all adults are ready to step up and take charge as independent learners. Some adults may need your help in structuring their practices to produce the desired results.

In order to develop a productive learning environment for adults, you will need to establish adult-to-adult rapport. There are a number of techniques you can use.

Sometimes building adult-to-adult rapport with students is just a matter of the way you look them in the eye. Sometimes it's the tone of your voice, your posture, facial expressions, gestures, or the interest with which you listen to what they have to say that demonstrates your acceptance of them as mature individuals who have something important to offer. Constantly monitor your verbal and nonverbal signals.

It is important to remember that for adult students, learning to pipe is not the only thing going on in their life. It may not even be a primary endeavor. Find out just where piping fits into the general priorities for each of your adult students. Work within their parameters.

To develop rapport with adult students, you need to treat them with respect and earn their respect in return. It is important to show that you regard them as peers or contemporaries who can make contributions to the Band. Use vocabulary that respects their adulthood – more about that later.

Many of your students have lived as long as or longer than you. They may find an "I know" attitude on your part to be offensive. While you may be viewed as a subject matter expert, don't present yourself as the absolute authority.

In your instruction, you will be focusing on the structured lessons and experiences of the student. However, there will be opportunities when it is appropriate to share something from your own experiences to illustrate a point you are making. These moments have another equally important purpose; they set a model for openness and for informal sharing that can help the student share in the same way. The instructor's willingness to expose the fact that he or she has the same difficulties helps to establish a common ground.

Real rapport can grow from a sense of camaraderie. Let your students know that you are interested in them and encourage them to come to you if they need help. When they do, take the time to listen. Let your students know how they can reach you outside of practices.

The Role of the Learner

One concept that differentiates adult education from other forms of learning is the role of the learner. In tradition academia, the role of the learner is to listen to the teacher and respond when called upon. In adult education, the student's role is to participate. An optimum adult learning environment is egalitarian, democratic, cooperative, and collaborative; people working as equals.

Getting adult students to adopt this view of their responsibility for their own learning and progress may not be easy. They need to leave their very first session with you knowing that this is different – they are responsible and you are there to provide the structure and support.

For example, early in your instruction you may want to find an agreement with each of your students on:

- their understanding and expectations
- their level of commitment (how much time they can commit to lessons, practice, etc.)
- pacing of instruction (check on this regularly)
- learning materials (Student Manual, support materials, music, etc.)
- optional activities, and
- evaluation of progress

People have different learning styles, preferences for different kinds of activities, and varying levels of ability in different learning skills. Offering students choices in how they learn specific portions of the lesson allows them to tailor their experience to meet their needs. Similarly, you can suggest additional activities (workshops, music camps, concerts, solo competitions, etc), to further their studies and hone their skills.

When learning is a collaborative endeavor, both the instructor and the students learn, and both teach. You can help this happen by using students as resource persons when you find they have particular expertise that would benefit another student or the Band in general. For example, in a group setting you can involve students in such activities as:

- tutoring another student and/or welcoming prospective students,
- serving as an aid,
- presenting information on a given subject or sharing their knowledge, experience, and expertise

Some adult students may doubt their ability to learn how to play the pipes. Adults in a new learning environment tend to gravitate toward dependence on a friendly face, especially one who is sensitive to their needs. They may expect you to lead them, make decisions for them, and otherwise help them avoid taking responsibility for their own learning. It is important to give them as many opportunities to set their own goals, make their own decisions, and accept responsibility for their own learning and progress as they are prepared for. Begin with their current levels of dependence or independence, and bring them gradually to a point of self-direction and self-determination.

The Influential Instructor

Effective instructors demonstrate values beyond those that can be specified as behavioral competencies. Theirs is a dedication to the principles of a mission of providing opportunities for student success, regardless of the level of readiness or special needs. They believe that good instruction and good instructors make a difference to student success, and they demonstrate a willingness to do whatever is necessary to accomplish this principle, and they creatively employ motivation and influence as essential dynamics to facilitate learning.

Exemplary instructors:

- are actively involved in the teaching-learning process: planning strategies for success, analyzing the environment and situation, continuing to update and increase their own knowledge and skills

- recognize and engage students' desire to learn. Instructors are fully cognizant that without students there can be no instruction and that their responsibilities are to draw from their students willing participation in the learning experience

- increase opportunities for student success: instructors live by their teaching philosophies; they place high value on the concept of learning and on their own ability to facilitate learning. And perhaps, just as important, they place equal value on maintaining high expectations from their students

- offer positive orientation, guidance, and direction by coaching and mentoring students: instructors offer well-defined lesson organization, repeat goals and objectives as expectations for performance, identify and affirm student responsibilities with clearly communicated expectations, and encourage student efforts with timely and positive feedback

- use their own performance as a model or expectation for student performance – they seek to empower students: instructors set, uphold, and model skills; they demonstrate the relationship between practice and application.

- work to eliminate or reduce learning obstacles: instructors assess and resolve individual problems; they listen, explore alternatives, and modify the instruction in an effort to maintain a supportive learning environment. They spend extra time and effort with students providing help and encouragement outside of lessons and practice

- motivate students to increased satisfaction, greater involvement, and a developed sense of accomplishment: they empower students with risk-taking skills developed through motivation, confidence, and empowerment. They create a relationship built on trust and respect

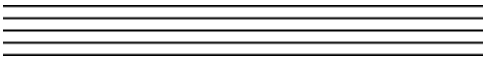
Music Notation

Music notation or **musical notation** is any system that represents aurally perceived music, through the use of written symbols. The earliest form of musical notation can be found in a cuneiform tablet that was created at Nippur, Iraq in about 2000 B.C. The tablet represents fragmentary instructions for performing music, that the music was composed in harmonies of thirds, and that it was written using a diatonic scale. A tablet from about 1250 B.C. shows a more developed form of notation. Although the interpretation of the notation system is still controversial, it is clear that the notation indicates the names of strings on a lyre, the tuning of which is described in other tablets. Although they were fragmentary, these tablets represent the earliest recorded melodies found anywhere in the world.

Modern music notation originated in European classical music and is now used by musicians of many different genres throughout the world.

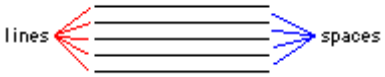
Staff

In standard Western musical notation, the **staff** or **stave**, is a set of five horizontal lines and four spaces, each of which represents a different musical pitch, or, in the case of a percussion staff, different percussion instruments. Appropriate music symbols, depending upon the intended effect, are placed on the staff according to their corresponding pitch or function.

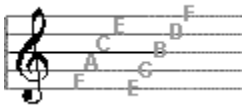


The Staff as we know it today originated from musically annotated text, through the Gregorian Chants around the 12th to 13th centuries. Until this time, symbols were used in conjunction with text to represent pitch. However, when the chants were written, people began to use lines to represent pitch, in addition to the pitch symbols above the text. While at first only one line was used, eventually the system expanded to four lines and used mainly dots among those lines to represent pitch. However, different numbers of lines were used throughout Europe for different instruments. France soon began to incorporate five lines into its music, which became widespread by the 16th century, and was the norm throughout Europe by the 17th century. The names of the staff in some languages such as the Italian *pentagramma*, reflects the importance of five lines.

The vertical position of the notehead on the staff indicates which note is to be played: notes that are higher in pitch are marked higher up on the staff. The notehead can be placed with the center of its notehead intersecting a line (*on a line*), or in between the lines touching the lines above and below (*in a space*). Notes which fall outside the range of the staff are placed on or between ledger lines - lines the width of the note they need to hold - added above or below the staff.

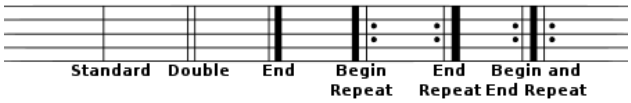


The Lines designate the following notes, in order from the bottom, up : E, G, B, D, F. This is easily remembered by using the pneumonic "Every Good Boy Does Fine" The spaces are for the notes F, A, C, E, in order from the bottom up.



Bars and Measures

In musical notation, a **bar** (or **measure**) is a segment of time defined by a given number of beats of a given duration. Typically, a piece consists of several bars of the same length.



The word *bar* is British English, while the word *measure* is American English, although musicians generally understand both usages. In American English, although the words *bar* and *measure* are often used interchangeably the correct use of the word 'bar' refers only to the vertical line itself, while the word 'measure' refers to the music *contained between bars.*

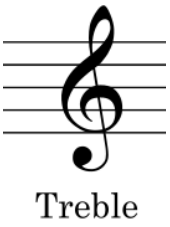
A *repeat sign* (or, *repeat bar-line*) looks like the music end, but it has two dots, one above the other, indicating that the section of music that is before is to be repeated. The beginning of the repeated passage can be marked by a *begin-repeat sign*; if this is absent the repeat is understood to be from the beginning of the piece or movement. This begin-repeat sign, if appearing at the beginning of a staff, does not act as a bar-line because no bar is before it; it's only function is to indicate the beginning of the passage to be repeated.

Bars and bar-lines also indicate grouping: rhythmically of beats within and between bars, within and between phrases, and on higher levels such as meter.

Clef

A staff (or stave, in British English) of written music generally begins with a clef, which indicates the position of one particular note on the staff. A **clef** (French: *clef* "key") is a musical symbol used to indicate the pitch of written notes. Placed on one of the lines at the beginning of the staff, it indicates the name and pitch of the notes on that line. This line serves as a reference point by which the names of the notes on any other line or space of the staff may be determined.

There are three types of clef used in modern music notation: *F*, *C*, and *G*. Each type of clef assigns a different reference note to the line on which it is placed. Bagpipe music is written in “G” clef.



When the G-clef is placed on the second line of the staff, it is called the treble clef. This is the most common clef used today, and the only G-clef still in use. For this reason, the terms G-clef and treble clef are often seen as synonymous. It was formerly also known as the violin clef. The treble clef was historically used to mark a treble, or pre-pubescent, voice part.

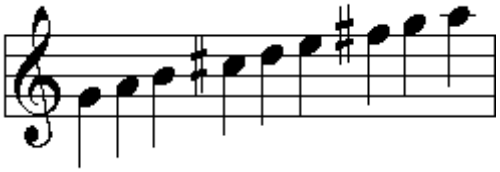
Following the clef, the key signature on a staff indicates the key of the piece by specifying certain notes to be flat or sharp throughout the piece, unless otherwise indicated.

Key Signature

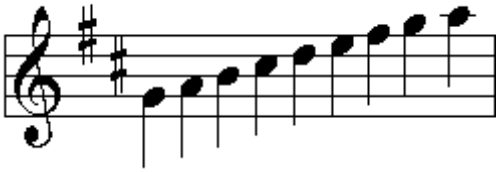
In musical notation, a **key signature** is a series of sharp symbols (#) or flat symbols (*b*) placed on the staff, designating notes that are to be consistently played one semitone higher or lower than the equivalent natural notes (for example, the white notes on a piano keyboard) unless otherwise altered with an accidental. Key signatures are generally written immediately after the clef at the beginning of a line of musical notation, although they can appear in other parts of a score, notably after a double bar.

The purpose of the key signature is to minimize the number of accidentals required to notate the music. In principle, any piece can be written with any key signature, using accidentals to correct any notes where it shouldn't apply.

For example, here is the bagpipe scale using the appropriate symbols:



Instead of placing a sharp (#) in front of every “C” and “F”, the key signature tells the musician that throughout the music there will be 2 sharps; “C” and “F”. Here is the same scale written with the key signature:



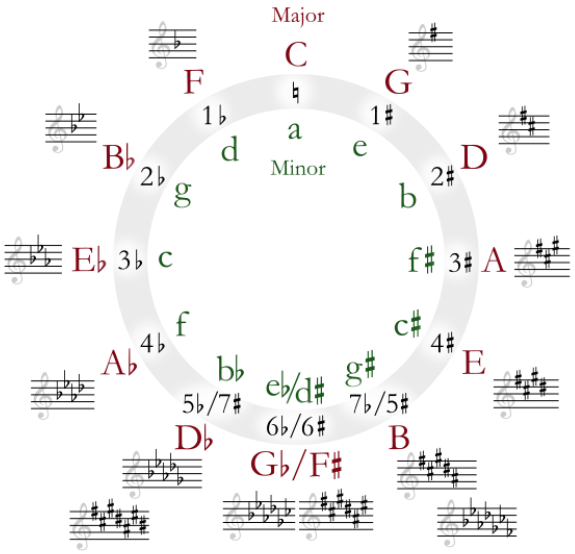
Key

A key signature is not the same as a **key**; a key signature is merely a notational device. The key identifies the tonic triad, the chord, major or minor, which represents the final point of rest for a piece, or the focal point of a section. A key may be major or minor. Although many musicians confuse key with scale, a *scale* is an ordered set of notes typically used in a key, while the *key* is the center of gravity, established by particular chord progressions.
For key signatures with sharps, the first sharp is placed on F line. Subsequent additional sharps are added on C, G, D, A, E and B. Bagpipe music, written with two sharps, is in the ***key*** of B minor or D major.

In baroque times, B minor was regarded as the key of passive suffering. The theorist Christian Daniel Schubert regarded B minor as a key expressing a quiet acceptance of fate and very gentle complaint, something commentators find to be in line with Bach's use of the key in the St. John's Passion. By Beethoven's time, however, the perception of B minor had changed considerably: Francesco Galeazzi wrote that B minor was not suitable for music in good taste, and Beethoven labeled a B minor melodic idea in one of his sketchbooks as a "black key".

It is a common key used in rock, folk, country and other guitarist-based styles because the standard tuning of a guitar causes all the open strings to be scale degrees of B minor.

The illustration below (circle of fifths) illustrates the relationship between key signature and key in both major and minor scales.



Time Signature

Following the key signature is the time signature. Measures (bars) divide the piece into groups of beats, and the time signatures specify those groupings. The time signature appears at the beginning of the piece, as a time symbol or stacked numerals immediately following the key.

In a Time Signature, the top number gives you the number of beats per measure and the bottom number gives you the type of note that takes the beat. The Time Signature is not repeated at the beginning of each system. It is only repeated if the Time Signature changes.

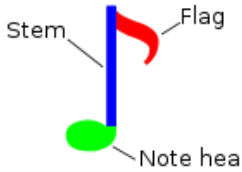
There are various types of time signatures, depending on whether the music follows simple rhythms or involves unusual shifting tempos, including: simple (such as 3/4 or 4/4), compound (e.g., 9/8 or 12/8), complex (e.g., 5/4 or 7/8), and mixed (e.g., 5/8, 3/8 or 6/8, 3/4).

A semicircle, or  , is sometimes used for 4/4 time, also called common time or imperfect time The symbol is derived from a broken circle used in music notation from the 14th through 16th centuries.

In compound meter, subdivisions of the main beat (the upper number) are split into three, not two, equal parts, so that a dotted note (1.5 times longer) becomes the beat unit. Compound time signatures are named as if they were simple time signatures in which the one-third part of the beat unit is the beat, so the top number is commonly 6, 9 or 12 (multiples of 3). The lower number is most commonly an 8 (an eighth-note): as in 9/8 or 12/8.

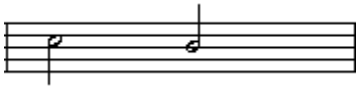
Notes

In music notation, a **note value** indicates the relative duration of a note, using the color or shape of the *note head*, the presence or absence of a *stem*, and the presence or absence of *flags/beams/hooks.*



A **whole note** (American) or **semibreve** (British) is a note represented by a hollow oval note head, like a half note (or *minim*), and no note stem. Its length is typically equal to four beats in 4/4 time.

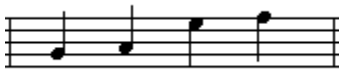
A **half note** (American) or **minim** (British) is a note played for half the duration of a whole note (or *semibreve*) and twice the duration of a quarter note (or *crotchet*). In time signatures with a denominator of 4, such as 4/4 or 3/4 time, the half note is two beats long.



The British names go back at least to English renaissance music, and the terms of Latin origin had international currency at that time. Obviously, *longa* means 'long', and the rest mostly indicate relative shortness. *Breve* is from Latin *brevis*, 'short', *minim* is from *minimus*, 'very small', and *quaver* refers to the quivering effect of very fast notes. The elements *semi-*, *demi-* and *hemi-* mean 'half' in Latin, French and Greek respectively, while *quasi-* means 'almost'.

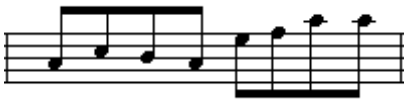
The chain semantic shift whereby notes which were originally perceived as short came progressively to be long notes is interesting both linguistically and musically. However, the *crotchet* is named after the shape of the note, from the Old French for a 'little hook', and it is possible to argue that the same is true of the *minim*, since the word is also used in palaeography to mean a vertical stroke in mediaeval handwriting.

A **quarter note** (American) or **crotchet** (British) is a note played for one quarter of the duration of a whole note (or *semibreve*). Some people will say that a crotchet is one beat, however, this is incorrect, as a beat is decided by what time signature the music is in. Quarter notes are notated with a filled-in oval note head and a straight, flagless stem.

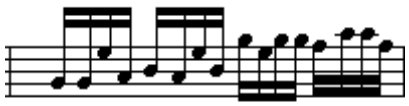


An **eighth note** (in the US and Canada) or a **quaver** (other English-speaking countries) is a musical note played for one eighth the duration of a whole note, hence the name. Eighth notes are notated with an oval, filled-in note head and a straight note stem with one flag.

In music, a **sixteenth note** (American) or **semiquaver** (also occasionally **demiquaver**) is a note played for one sixteenth the duration of a whole note, hence the name. The semiquaver is half of a quaver which is an eighth note. Sixteenth notes are notated with an oval, filled-in note head and a straight note stem with two flags.



A **thirty-second note** (American or "German" terminology) or **demisemiquaver** (British or "classical" terminology) is a note played for 1/32 of the duration of a whole note (or *semibreve*). It lasts half as long as a sixteenth note (or *semiquaver*) and twice as long as a sixty-fourth note (or *hemidemisemiquaver*).



Beat

The **beat** is the basic time unit of music, the pulse, also known as the **beat level**. However, since the term is in popular use, it often connotes the tempo of a piece or a particular sequence of individual beats, the meter, rhythm or groove. It refers to particular beats in the measure. Much music is characterized by a repeating sequence of stressed and unstressed beats (often called "strong" and "weak") organized into measures and indicated by the time signature and tempo.

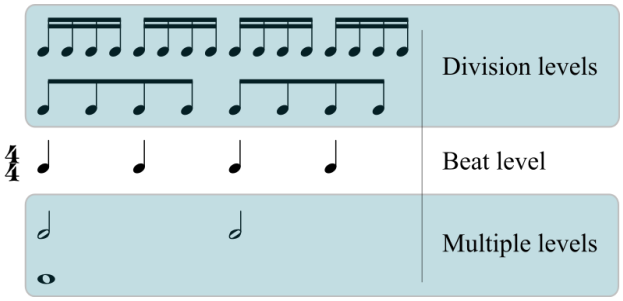
The downbeat is the impulse that occurs at the beginning of a bar in measured music. Its name derives from the downward stroke of the director or conductor's baton at the start of each measure. It frequently carries the strongest accent of the rhythmic cycle. However, in some cases, the downbeat may not be emphasized. Such departure from the normal stress pattern of a measure is form of syncopation.

In 4/4 time, counted as "1 2 3 4, 1 2 3 4...", the first beat of the bar (down-beat) is usually the strongest accent in the melody and the likeliest place for a chord change, the third is the next strongest: these are "on" beats. The second and fourth are weaker - the "off-beats". Subdivisions (like eighth notes) that fall between the pulse beats are even weaker and these, if used frequently in a rhythm, can also make it "off-beat".

So **off-beat** is a musical term commonly applied to syncopation that emphasizes the weak even beats of a bar, as opposed to the "normal" on-beat.

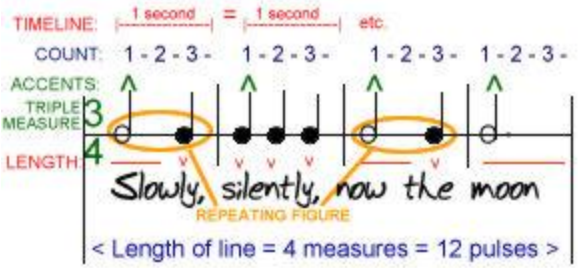
Meter

Meter or ***metre*** is a term that music has inherited from the rhythmic element of poetry where it means the number of lines in a verse, the number of syllables in each line and the arrangement of those syllables as long or short, accented or unaccented. Hence it may also refer to the pattern of lines and accents in the verse of a hymn or ballad, for example, and so to the organization of music into regularly recurring measures or bars of stressed and unstressed "beats", indicated in Western music notation by a time signature, note-lengths and bar-lines. 1 whole note = 2 half notes = 4 quarter notes = 8 eighth notes = 16 sixteenth notes



Metric structure includes meter, tempo, and all rhythmic aspects which produce temporal regularity or structure, against which the foreground details or durational patterns of any piece of music are projected. **Metric levels** may be distinguished: the beat level is the metric level at which pulses are heard as the basic time unit of the piece. Faster levels are **division levels**, and slower levels are **multiple levels**. A rhythmic unit is a durational pattern which occupies a period of time equivalent to a pulse or pulses on an underlying metric level.

Chapter 1 in the *Student Manual* has a section dedicated to "Basic Counting." Here is another illustration emphasizing the length of each note, time signature, and counting.



Letter Notation

Letter notation is a system of representing a set of pitches, for example, the notes of a scale, by letters. For the complete Western diatonic scale, for example, these would be the letters A-G.

The earliest known letter notation in the Western musical tradition appear in the textbook on music *De institutione musica* by the 6th-century philosopher Boethius. A modified form is next found in the *Dialogus de musica* (ca. 1000) by Pseudo-Odo, in a discussion of the division of the monochord.

Scale

In music, a **scale** is a sequence of musical notes in ascending and descending order that provides material for or is used to conveniently represent part or all of a musical work including melody and/or harmony. Scales are ordered in pitch or pitch class, with their ordering providing a measure of musical distance. Scales are divided, based on the intervals between the notes they contain, into categories including diatonic, major, minor, and others, with a specific group of notes. The distance between two successive notes in a scale is called a scale step.

Scales are typically listed from low to high. Most scales are *octave-repeating*, meaning their pattern of notes is the same in every octave. An octave-repeating scale can be represented as a circular arrangement of pitch classes, ordered by increasing (or decreasing) pitch class.

The scale on the chanter is in **Mixolydian** mode, which has a flattened 7th or leading tone. It has a range from one whole tone lower than the tonic to one octave above it (in piper's parlance: Low G, Low A, B, C#, D, E, F#, High G, and High A; the C and F could or should be called sharp but this is often omitted).* Yet the notes played are actually in the key of B ♭ . Although less so now, depending on the tuning of the player, certain notes are tuned slightly off just intonation, for example, the D could be tuned slightly sharp for effect. However, today the notes of the chanter are usually tuned in just intonation to the Mixolydian scale. The two tenor drones are an octave below the keynote (Low A) of the chanter) and the bass drone two octaves below.

Types of Tunes

Music written for the Great Highland Bagpipes falls into one of three categories:

- **Ceol Mor**—the Great Music: a repertoire consisting of salutes, gathering tunes, marches, *cumha* (laments), and *brosnachadh* (incitements to battle)
- **Ceol Meadhonach**—the Middle Music: slow airs and jigs
- **Ceol Beag** (or **Ceol Aotrom**)—the Little Music: strathspeys, marches, hornpipes and reels

Ceol Mor / Piobaireachd

Piobaireachd (pronounced *pea*-broch, with that gutteral *ch* sound) is another name for the *Ceol Mor*, the classical music of the bagpipe. The word itself is Gaelic for "what the piper does," from the root words ***piob*** (pipe) and ***piobaire*** (piper).

Like other forms of classical music in Europe, piobaireachd focuses on a single central theme. Serial variations are presented until the theme is said to have been exhausted; the piece then reverts to the original theme at the finish. Depending on the nature of the composition and the number of variations explored, a piobaireachd tune can last anywhere from eight to 25 minutes. Every tune in the piobaireachd repertoire follows a similar, regimented pattern and structure.

Tune Structure in Piobaireachd

In the specific case of piobaireachd, the theme is called the *urlar*, meaning ground or floor. This is the starting point for any piobaireachd tune, as well as the ending. This is the basic air, a slow melody ornamented by grace notes. In the next stage, known as *siubhal* (wandering), variations are introduced that are regular and rhythmic. The variations get increasingly complex and technically challenging in the next stage, the *taorluath*, which leads into the *crunluath*, or crowning movement, during which three notes are added to every bar of the music. The crunluath may be the final section of the piece, or it may be followed by a *taorluath a-mach* or *crunluath a-mach* segment before the mandatory return to the theme of the urlar. This return to the urlar brings the tune full circle, and underscores the cultural concept that the piobaireachd, as a musical form, has no end.

Historical Notes: The Repertoire

Some experts think that piobaireachd must be a very ancient art form. By the time the MacCrimmons touched off the gilded age of piobaireachd during the 16th century, it was even then already very highly evolved and complex as a musical form, as if it had been in existence for several centuries.

The whole piobaireachd repertoire comprises slightly more than 300 tunes, some dating back to that golden age, and some composed only within the last century. The playing limitations of bagpipes have had a fundamental impact on the repertoire itself. Because the bagpipes are not capable of dynamic emphasis of notes (playing some notes louder for emphasis), composers of music for the pipes have instead had to extend the length of certain notes to emphasize them over others.

With this built-in predisposition for drawing notes out, it's no wonder why the piobaireachd repertoire is characteristically slow and meditative. Another characteristic of the repertoire is its highly emotional quality. Included in the repertoire are laments, salutes, gathering tunes, and marches, each type designed to stir a different set of feelings. It is said that in the right hands, the bagpipes can convey the entire spectrum of human emotions, as well as mimic any sound in nature.

Historical quibbling aside, the piobaireachd truly begins with the advent of the most influential family in the history of piping—the MacCrimmons. The MacCrimmons were not only blessed with musical genius, but seemingly cursed as well, enduring tragedy after tragedy—the family survived deaths, murders, incarcerations, and epidemics, but never ceased piping and composing. This interplay between genius and despair led to the creation of many of the finest pieces in the entire piobaireachd repertoire.

The MacCrimmons

The MacCrimmons of Skye were hereditary pipers to the clan MacLeod of Dunvegan for more than 200 years. Back in the day, pipers were esteemed professionals, well-paid by the clan chief who employed them, and it was not all that unusual for their compensation to include an endowment of real estate. Early in the 16th century, the MacCrimmons received use of the MacLeod estate at Boreraig, rent-free for as long as the MacCrimmons remained pipers to clan MacLeod. The family lived and worked at Boreraig until 1770, when the last hereditary MacCrimmon piper, Iain Dubh, quit his tenure and surrendered the lands to the MacLeods.

Boreraig became the center of piping in Scotland, for it was there that the MacCrimmons established a world-renowned academy to which chiefs or lords would send their pipers for instruction. The MacCrimmon course of study took at least seven years to complete; to become MacCrimmon-certified as a master of composition and theory of pipe music, a piper had to learn a minimum of 196 tunes, but even learning this portion of the repertoire was a daunting task that took some students over a decade to accomplish.

The MacCrimmons were famed not only as the most sought-after teachers of piobaireachd (they worked out an oral system for teaching the repertoire, called ***canntaireachd***—see below), but also as its finest composers and pipers. If the legends surrounding MacCrimmon family history are to be believed, then some of the piobaireachd tunes composed by the MacCrimmons must have been created under some pretty amazing circumstances. Here are two notable examples of tunes with astounding origin tales behind them.

A Flame of Wrath for Squinting Patrick
Donald Mor MacCrimmon, then-occupant of the position of hereditary piper to the MacLeods, had a brother, Padruig Caogaich. This brother's facial tics earned him the derogatory nickname Squinting Patrick. Patrick was slain by his foster brother following a dispute, and Donald Mor MacCrimmon was hell-bent on revenge. His patron MacLeod interceded, and guaranteed Donald Mor that justice would be delivered within a year's time. When 12 months came and went without satisfaction, Donald Mor resolved to take matters into his own hands. He traveled with friends to Kintail, the village of Squinting Patrick's murderer, and knocked on many doors demanding his surrender. At each house, he was told that the murderer had gone out. This was the last straw for Donald Mor and his friends; they nailed the doors shut and set fire to 18 houses, at a cost of several lives. Donald Mor's song inspired by these events, *A Flame of Wrath for Squinting Patrick*, is said to demonstrate the power of bagpipes to invoke any of the human emotions, even rage and anger.

Cumhadh na Cloinne
("Lament for the Children")
This heartbreakingly beautiful lament is one of the most famous tunes in the entire piobaireachd repertoire, composed by the son of Donald Mor MacCrimmon, Patrick Mor. Patrick Mor had eight sons, all grown up. Father and sons were extremely close, the sons frequently accompanying their father on errands around town. One day, a ship from abroad arrived in Dunvegan port whose crew and passengers had contracted a deadly fever. The epidemic claimed all of Patrick Mor's sons save one, and the resulting lament expresses every shred of Patrick Mor's overwhelming sense of grief and loss.

Among piobaireachd instructors, lineage and tradition can be of critical importance in establishing a reputation and successful career. Some of the best piobaireachd instructors working today can trace their educational pedigree back hundreds of years, to a teacher who studied directly under one of the MacCrimmons.

The Fairy Chanter of the MacCrimmons: Soumsair Airgiod na Mna Sithe
The line of MacCrimmons linked to the MacLeod family began with Iain Odhar, the first hereditary piper to the MacLeods. Iain Odhar was born circa 1500, but little else (of a factual nature, anyway) is known about him. The legends, however, abound -- including the tale of the fairy chanter. The unprecedented playing abilities of the MacCrimmons were said to derive from their ownership of the ***Soumsair Airgiod na Mna Sithe*** -- the silver chanter of the fairy woman –- given to Iain Odhar in a place called ***Uamh nan Piobairean*** (the Pipers' Cave).

Legend also has it that Iain Odhar received the tune for his first piobaireachd piece while fasting and meditating in the Pipers' Cave. The spirit of an ancestor appeared to Iain Odhar, and played a tune on the pipes for him. To his dismay, the tune was too long and complex for Iain Odhar to learn in one sitting. He continued his meditation and fast for two more nights; both nights, the spirit piper appeared and played the tune. By the end of the third night, Iain Odhar had learned the tune perfectly. (The tune in question, by the way, is known as *MacCrimmon's Sweetheart*.) For hundreds of years afterward, the MacCrimmons went on retreat to the Pipers' Cave whenever a new composition was required for a special occasion, steadfastly refusing to break their fast until the tune was completed.

Canntaireachd: Teaching the Repertoire
The first book containing written music for the piobaireachd repertoire, compiled by Joseph MacDonald, was published in 1803. Prior to the onset of written notation, however, how was the

music of the early composers of piobaireachd handed down?

The MacCrimmons are credited with developing the strong oral tradition known as ***canntaireachd*** (pronounced *can*-troch, with the gutteral *ch* sound), which has been used to teach pipers the piobaireachd repertoire for almost five centuries now. In canntaireachd, the teacher sings the tune using a system of vocables, consisting of combinations of vowels that represent the melody notes, and consonant combinations representing the grace notes and embellishments.

Other than the bagpipes, the human voice is the only other musical medium that is capable of accurately conveying the nuances of a piobaireachd tune—its emotion and shading—with the requisite power and subtlety. For this reason, the canntaireachd tradition continues to be handed down from teacher to piper, to this very day. Around the middle of the 18th century, canntaireachd lost its rigid standardization; nowadays, each individual teacher or school is likely to employ their own method, system, and collection of vocables.

The Legacy of Piobaireachd
The Great Highland Bagpipes have maintained their standing as the central instrument in Scottish music, and efforts continue to research and revive ancient piping traditions, from centuries-old instruments to playing styles. At the same time, the appreciation and playing of the Great Pipes has extended to every continent on the globe. The Great Highland Bagpipes are more popular today than they have been for the last several centuries, and many feel that the key factor behind the bagpipes' longevity and continued popularity is the timeless, enduring quality of the piobaireachd repertoire itself

Modern Appoint of Hereditary Piper of MacLeod
The MacCrimmon piping dynasty is honored in the form of cairn built in 1933, at Borreraig. This cairn, which overlooks Loch Dunvegan across to Dunvegan Castle, was paid for by clan societies and donations from around the world. The Gaelic inscription on the cairn reads in translation as: "The Memorial Cairn of the MacCrimmons of whom ten generations were the hereditary pipers of MacLeod and who were renowned as Composers, Performers and Instructors of the classical music of the bagpipe; *Near to this post stood the MacCrimmons' School of Music, 1500 – 1800".*

In the last century, with a revival in clan interest, the modern chiefs of Clan MacLeod have instated two MacCrimmons as hereditary pipers to the chief. Malcolm Roderick MacCrimmon, a Canadian born in 1918, started piping at the age of eight. With the start of the Second World War he joined the Calgary Highlanders and subsequently joined the pipe band. At some point in time he wrote to Dame Flora MacLeod, chief of Clan MacLeod, asking for approval and support of his decorating his bagpipes in the MacLeod tartan. The chief then wrote to the regiment's Commanding Officer and permission was granted. In 1942, MacCrimmon is said to have made a verbal agreement with the clan chief and became the ninth "hereditary piper" to the Chief of Clan MacLeod. MacCrimmon claimed there was proof of his descent from the MacCrimmons of Borreraig, and as such, that he was a descendant of the hereditary pipers to the Chief. In 1978, John MacLeod of MacLeod, 29th chief of Clan MacLeod, while visiting Calgary, Alberta, Canada, formally made Malcolm's son, Iain Norman MacCrimmon, the tenth hereditary piper to the Chief of Clan MacLeod.

Ceol Meadhonach

Ceòl Meadhonach is the Gaelic-language term for "middle music," which in bagpiping includes such forms as slow airs and jigs. The genre thus includes "tunes as are neither constructed to the measure of Piobaireachd, nor adapted to the quick march or dance.

Slow Air
Generally, airs are graceful, elegant, polished, often strophic songs (i.e., songs having the same music for each stanza), typically dealing with amorous subjects. But many are lively and animated, full of rhythmic subtleties, while others are deeply emotional works that gain much of their effect from bold, expressive harmonies and striking melodic lines.

Jig
The "**Irish Jig**" is a popular tune-type within the traditions of Irish dance music, second only to the reel, and popular but somewhat less common in Scottish country dance music. It is transcribed in compound meter. "**Double jigs**" are always transcribed in 6/8; "slip jigs" are always written in 9/8. "**Single jigs**" are most commonly transcribed in 6/8, but sometimes also in 12/8. "**Slides**" are transcribed in both 12/8 and 6/8.

Ceol Beag

As mentioned, Ceòl Beag is the Gaelic-language term for "little music," which in bagpiping includes such forms as marches, strathspeys, reels, and hornpipes.

Military step or **march** is a regular, ordered and synchronized walking of military formations. The steady, regular marching step was a marked feature of Roman legions. Vegetius, the author of the only surviving treatise on the Roman Empire's military, *De Re Militari*, recognized the importance of *"constant practice of marching quick and together. Nor is anything of more consequence either on the march or in the line than that they should keep their ranks with the greatest exactness. For troops who march in an irregular and disorderly manner are always in great danger of being defeated. They should march with the common military step twenty miles in five summer-hours, and with the full step, which is quicker, twenty-four miles in the same number of hours. If they exceed this pace, they no longer march but run, and no certain rate can be assigned."*

Quick March is an instruction to begin marching at the Quick March speed with the left foot. The standard pace is 120 beats per minute with a 30in. step, although there are variances to this, based on the individual regiments, the pace given by the commander, and the speed of the band's rhythm: British light infantry and rifle regiments, for example, Quick March at 140 beats per minute, a legacy of their original role as highly mobile skirmishers. Highland Regiments, which march to bagpipe music, march at 112 paces per minute.

A **Retreat March** is a form of departing music. It is believed that the term comes from the French *Retraite* meaning retire or return to bed in the evening.

Strathspey refers both to the type of tune, and to the type of dance usually done to it (although strathspeys are also frequently danced to slow airs). It is named after the Strathspey region of Scotland, in Moray and Badenoch and Strathspey. A strathspey is a dance tune generally in 4/4 time (usually set to quavers or eighth notes). It is similar to a hornpipe but slower and more stately, and containing many snaps. A so-called *Scots snap* is a short note before a dotted note (cut-dot). These days there are at least four, some would say seven, varieties: the bouncy schottische, the strong strathspey, the song or air strathspey, all three of which can be enjoyed for dancing, and the Competition strathspey for the bagpipe, primarily intended as a display of virtuosity.

The **reel** is a folk dance type as well as the accompanying dance tune type. It is one of the four dances which comprise Scottish country dancing, the others being the jig, the strathspey and the waltz. It is very rhythmic and very quick tempo. It is believed that the reel was originated from an old Irish dance called the *Hey* in the mid 1500's. Today many Irish reels are supplemented with new compositions and by tunes from other traditions which are easily adapted as reels. It is the most popular tune-type within the Irish dance music tradition.

Reels are generally written in a 4/4 or 2/4 time and have the same structure, consisting largely of a quaver movement with an accent on the first and third beats of the bar. Most reels have two parts (AABB) which are repeated. Each part (A or B) has eight bars, which again are divided into four and then into two. These are called phrases. The structure obeys to a scheme of question-answer where A is the "question" and B is the "answer" to A. The group of thirty-two bars (AABB) is repeated three or four times before a second reel is introduced. The grouping of two tunes or more in this manner is typical in all dance tunes.

The term **hornpipe** refers to one of several dance forms played and danced in Britain and elsewhere from the late 17th century until the present day. The most common use of the term nowadays refers to

tunes in 2/4 or 4/4 time. It is danced wearing a hard shoe. This type of hornpipe is generally thought of as a sailors' dance, and perhaps the best known example is the *Sailors' Hornpipe*. There are two basic types of common-time (4/4) hornpipe, ones like the *Sailors' Hornpipe*, moving in even notes, and ones like *The Harvest Home*, moving in dotted notes.

Bagpipes

The "Oxford History of Music" makes mention of the first documented bagpipe being found on a Hittite slab at Eyuk. This sculptured bagpipe has been dated to 1,000 B.C. Biblical mention is made of the bagpipe in Genesis and in the third Chapter of Daniel where the "symphonia" in Nebuchadnezzar's band is believed to have been a bagpipe. These early pipes or "Pan" pipes, without the bag or reservoir, were probably the second musical instrument to evolve. Musical history dictates that pipers have to take a back seat to percussion instruments in this case. These early pipes used materials with a natural bore (hollow reeds, corn stalks, bamboos, etc.)

The Roman bagpipes or "tibia utricularis" represented a major innovation, the addition of the reservoir. Historians have noted that Roman coins depict Nero playing the bagpipe, not the fiddle.

The early "Dudel-Sack" gave rise to a number of European, Asian and African folk bagpipes, namely, the Volynka (U.S.S.R.), the Bock (German), the Zukra (North Africa), the Gaita (Portugal and Spain), the Zampogna (Italy), the Cornemuse (France), the Moshug (India), the Zumarah (Egypt), and Flemish, Polish, Greek and Hungarian examples. An extensive and thoroughly documented collection of these instruments can be found in the Musical Instrument section of the Metropolitan Museum of Art in New York City. In addition, examples of early folk bagpipes can be found in the paintings of Breughel, Teniers, Jordaens and Durer.

The French Musette can be seen as a logical explanation for the evolution or refinement of the instrument into a number of examples of chamber pipes (i.e. those that operate via the use of bellows rather than the tradition bags as a reservoir).

Examples of different forms of such chamber pipes can be found throughout Ireland, France and England. The Northumbrian region of England has been a "hotbed" for bagpipe evolution. It has not only witnessed the emergence of its indigenous shuttle pipes, but also its own small pipes, half longs and great war-gathering pipes.

Likewise, Ireland has experienced the evolution of its own Uillean (chamber/bellows pipe) and war pipe (Brian Boru). The evidence exists to substantiate the belief that pipes may have been common throughout the remainder of Britain prior to their emergence upon the Scottish landscape.

Nevertheless, there is no question that the Bagpipe was very popular throughout England. Middle Ages Pre-Reformation churches reveal carvings of bagpipes. Chaucer refers to the Miller playing pipes in "The Miller's Tale," *"A bagpipe well couth he blowe and sown."*

Documents from the Lord High Treasurer of Scotland (1498 and 1506) refer to payments to the English piper. Shakespeare's "Henry IV" refers to the "Drone of a Lincolnshire Bagpipe". The Irish are believed to have played pipes for Edward I at Calais in 1297 and at the Battle of Falkirk in 1298. In fact, both Henry VII and Henry VIII are believed to have enjoyed pipers.

Questions remain as to when and where the first, second and third drones were added to the "piob-mhor" along with the questions as to when and where the bagpipe entered Scotland. However, the fact remains that this is an instrument whose growth and movement parallel civilizations and early history. It is a musical instrument which not only reflects Scotland's early history, but also the evolution of culture through history.

When they arrived to Scotland, they quickly became a part of Scottish life. Every town would hire a bagpiper, usually out of special taxes from the wealthy families in the area, who would pipe for townspeople on all occasions. In some places the piper would play in churches in place of an organ. As time went on, the bagpipes in the British Isles evolved and various types of pipes and piping were developed. Marches, strathspeys, hornpipes, and reels were perfected and played on the Highland Bagpipes, the Lowland Bagpipes, the Northumbrian pipes, and the Irish Union pipes.

The Scottish people have made the bagpipes one of the outstanding parts of their culture. In some many songs, stories, and poems, the Scots have celebrated their pipes, and unlike many other cultures they have kept the pipes alive as part of their musical tradition.

Great Britain

- **Great Highland Bagpipe**:
- **Northumbrian smallpipes**: a smallpipe with a closed end chanter played in staccatto.
- **Border pipe**: also called the "Lowland Bagpipe", commonly confused with smallpipes, but much louder. Played in the Lowlands of Scotland. Conically bored,

sounding similar in timbre to the Highland pipes, but partially or fully chromatic.
- S**cottish smallpipes**: a modern re-interpretation of an extinct instrument. Possibly a descendant of the Northumbrian pipes, but without the stopped end (no staccatto).
- **Cornish bagpipes**: an extinct type of double chanter bagpipe from Cornwall (southwest England); there are currently attempts being made to revive it on the basis of literary descriptions and iconographic representations.
- **Welsh pipes** (*pibe cyrn*, *pibgod*): Of two types, one a descendant of the pibgorn, the other loosely based on the Breton Veuze. Both mouthblown with one bass drone.
- **Lancashire Great-pipe**: another extinct type of English bagpipe that enthusiasts are attempting to "reconstruct" based on descriptions and representations but no actual physical evidence.
- **Pastoral Pipes**: Although the exact origin of this keyed, or un-keyed chanter and keyed drones (regulators), pipe is uncertain, it was developed into the modern Uilleann bagpipe.

Ireland

- **Uilleann pipes** : Bellows-blown bagpipe with keyed, or un-keyed chanter and keyed drones (regulators), from Ireland. The most common type of bagpipes in Irish traditional music.
- **Great Irish Warpipes**: Carried by most Irish regiments of the British Army (except the Royal Inniskilling Fusiliers) until the late 1960s, when the Great Highland Bagpipe became standard. The Warpipe differed from the latter only in having a single tenor drone.
- **Brian Boru bagpipes**: Carried by the Royal Inniskilling Fusiliers and had three drones, one of which was a baritone, pitched between bass and tenor. Unlike the chanter of the Great Highland Bagpipe, its chanter is keyed, allowing for a greater tonal range.
- **Pastoral pipes**: Although the exact origin of this keyed, or un-keyed chanter and keyed drones (regulators), pipe is uncertain, it was developed into the modern Uilleann bagpipe.

Eastern Europe

- **Volinka** (волынка, also spelled *volynka*), of Russia
- **Gaida** (also the large *kaba gaida* from the Rhodope Mountains in Bulgaria): Southern Balkan (i.e. Bulgarian and Macedonian) and Greek and Albanian bagpipe with one drone and one chanter
- **Gajdy** or *gajde*: the name for various bagpipes of Eastern Europe, found in Poland, Serbia, Slovakia, and Croatia.
- **Dudy** (also known by the German name *Bock*) : Czech bellows-blown bagpipe with a long, crooked drone and chanter that curves up at the end.
- **Magyar Duda** or Hungarian *duda* (also known as *tömlösíp*, *börduda* and Croatian duda) has a double chanter (two parallel bores in a single stick of wood, Croatian versions have three or four) with single reeds and a bass drone. It is typical of a large group of pipes played in the Carpathian Basin.
- **Istarski mih** (Piva d'Istria), a double chantered, droneless bagpipe whose side by side chanters are cut from a single rectangular piece of wood. They are typically single reed instruments, using the Istrian scale.
- **Cimpoi**, the Romanian bagpipe, has a single drone and straight bore chanter and is less stringent than its Balkan relatives. The number of finger holes varies from five to eight and there are two types of cimpoi with a double chanter. The bag is often covered with embroidered cloth. The bagpipe can be found in most of Romania apart from the central, northern and eastern parts of Transylvania, but nowadays it is only played by a few elderly people.
- **Torupill**, of Estonia.

France

- **Musette de cou**r : French ancestor of the Northumbrian pipes, used in folk music as well as classical compositions in the 18th century French court. The shuttle design for the drones was recently revived and added to a mouth blown Scottish smallpipe.
- **Biniou** *or* biniou koz (old style bagpipe): a mouth blown bagpipe from Brittany, a Celtic region of northwestern France. It is the most famous bagpipe of France. The great Highland bagpipe is also used in marching bands called *bagadoù* and known as *biniou braz* (great bagpipe).

- **Veuze**, found in Vendée, similar to Galician gaitas.
- **Cabrette**, played in Auvergne.
- **Chabrette** or chabretta, found in Limousin.
- **Bodega**, found in Languedoc, made of an entire goat skin.
- **Boha**, found in Gascogne.
- **Musette bressane**, found in Bresse.
- Bagpipes of central France: (French *cornemuse du centre* or *musette du centre*) are of many different types, some mouth blown. It can be found in the Bourbonnais, Berry, Nivernais, and Morvan regions of France and in different tonalities.
- "Chabrette poitevine," found in Poitou but now extremely rare.

Flanders and the Netherlands

- **Doedelzak**: the type of bagpipe made famous in the paintings of Pieter Brueghel the Elder

Wallonia

- **Muchosa** or muchosac, found in Hainaut

Germany

- **Dudelsack**: German bagpipe with two drones and one chanter. Also called *Schäferpfeife* (shepherd pipe) or Sackpfeife. The drones are sometimes fit into one stock and do not lie on the player's shoulder but are tied to the front of the bag.
- **Mittelaltersackpfeife**: Reconstruction of medieval bagpipes after descriptions by Michael Praetorius and depictions by Albrecht Durer, among others. While the exterior is reconstructed from these sources, the interior and sound are often similar to the Scottish Great Highland Bagpipe. Commonly tuned in A minor and used by musical groups specialising in medieval tunes. Often to be seen at medieval festivals and markets.
- **Huemmelchen**: small bagpipe with the look of a small medieval pipe or a Dudelsack. The sound is similar to that of the Uilleann pipes, or sometimes the smallpipes. Seldom louder than 60 or 70 dB

Greece

- **Tsampouna** (also *tsambouna*, *tsabouna*, etc.) [Greek: **τσαμπούνα**]: Greek island bagpipe with a double chanter, no drone and a bag made from an entire goatskin. Pronounced "saw-bow-nah".

Iberian Peninsula (Portugal and Spain)

- Portuguese and Spanish gaitas: *Gaita*, *gaita-de-fole*, *gaita de boto*, *sac de gemecs*, *gaita de fol* and *gaita de fuelle* is a generic term for "bagpipe" in Spanish, Portuguese, Galego, Asturian, Catalan and Aragonese, for distinct bagpipes used in Galicia (Spain), Asturias (Spain), Cantabria (Spain), Catalonia (Spain), Aragon (Spain) and also Trás-os-Montes e Alto Douro (Portugal) Estremadura (Portugal), Minho (Portugal) and Beira Litoral (Portugal). Just like "Northumbrian smallpipes" or "Great Highland bagpipes," each country and region attributes its toponym to the respective *gaita* name: *gaita galega* (Galicia, Spain), *gaita transmontana* (Trás-os-Montes, Portugal), *gaita asturiana (Asturias, Spain)*, *gaita sanabresa (Sanabria, Spain)*, *sac de gemecs (Catalunya, Spain) gaita de boto (Aragon, Spain)* etc. Most of them have a conical chanter with a partial second octave, obtained by overblowing. Folk groups playing these instruments have become popular in recent years, and pipe bands for some models.
- **Sac de gemecs** : used in Catalonia (Spain). In Mallorca Island, this same bagpipe is called a "Xeremia" and is played in a duet with a Flabiol (one handed whistle) and drum.
- **Galician gaita** is a traditional bagpipe used in Galicia and Northern and Central Portugal.

Italy

- **Zampogna** : A generic name for an Italian bagpipe, with different scale arrangements for two chanters (for different regions of Italy), and from one to three drones (single drone versions can sound a fifth, in relation to the chanter keynote).Other drones are tuned higher or lower than the chanters, and the drones, like the chanters, can be single or double reeded. The double reeded version of the Zampogna is generally played with the *piffero* (called *biffera* in the Ciociaria]; a shawm, or folk oboe), which plays the melody and the *zampogna* provides chord changes, "vamping" or rhythmic harmony figures or a bass line and a soprano harmony as accompaniment. This double reed tradition would include the Ciociaria (Latium, southern Abruzzo and Molise), that of southern Basilicata (Pollino) and nearby areas of Calabria, and some areas of Sicily (Siracusa, Palermo). Single reed versions are played solo in the Calabrian tradition of the *surdullina* (Cosenza), and a version with a plugged chanter called the "surdullina Albanese,"

and the Sicilian *ciaramedda* or *ciaramèddha* (Messina and Reggio Calabria). The chanters and drones vary, according to the tradition, from a few inches long (*surdullina*) to two meters in length, such as used in the cathedral of Monreale (Palermo) and nearly every size in between. The word *tzimpounas*/*tsimponas* still used for bagpipe in Pontic Greek and Turkish (Trebizond region of northeast Anatolia; its Romanian counterpart is *cimpoi*, which also means "symphony" or "many sounds played together."

- **Piva**, used in northern Italy (Bergamo, Emilia). A single chantered, single drone instrument, with double reeds, often played in accompaniment to a shawm, or piffero. The old Bergamo type is called Baghèt.
- **Launeddas** of Sardinia. While not strictly a bagpipe in that it is played in the mouth by circular breathing, it is nonetheless a cousin and likely ancestor of the Italian zampogna, in that it has two chanters and a drone, all single reed. They vary, according to the tradition, from about a foot long to almost a meter in length.

Malta

- **Żaqq** (*with definite article*: iż-żaqq): The most common form of Maltese bagipes, sometimes erroneously referred to as the *zapp* due to a spelling error in a 1939 English-language publication. There was also a smaller type of bagpipe known as the *qrajna* (a diminutive of *qarn* ["horn"]). The Maltese word *żaqq* literally means "sack" or "belly" and derives from Arabic *ziqq* ("skin" [as a receptacle]). It is sometimes stated that *żaqq* derives from Italian *zampogna* but this is not the case. Very similar to the bagpipes of North Africa, the Maltese *żaqq* consists of a chanter (*saqqafa*) with two side-by-side pipes (*qwiemi*) made of cane and set into a wooden yoke, using two single-reeds (*bedbut*). A single bull's horn bell (*qarn*) is typically attached to the end of the chanter. There are no drones. The bag was traditionally made of (preferably) dogskin, but goat- and calfskin were also used; there are ethnographic reports that skins of large tomcats also served. The use of the *żaqq* in daily life came to an end in the 1970s, but there are ongoing attempts to revive it by various folk music ensembles such as Etnika.

Poland

General name of bagpipes in Polish are *kozioł* (buck), *gajdy* or *koza* (goat), sometimes are also wrongly named *kobza*. They are used in folk music of Podhale, Żywiec Beskids, Cieszyn Silesia and mostly in Greater Poland, were are known four basic variants of bagpipes:

- *dudy wielkopolskie* (Greater Polands bagpipes) with two subtypes: Rawicz-Gostyń nd Kościan-Buk
- *kozioł biały weselny* or shortly *kozioł biały* (white wedding-party buck or simply white buck)
- *kozioł czarny ślubny* or shortly *kozioł czarny* (black wedding buck or simply black buck)
- *sierszeńki*
- In Podhale there is one type of dudy called *koza* or *gajdzica*.

Sweden

- **Säckpipa**: Also the Swedish word for "bagpipe" in general, this instrument was on the brink of extinction in the first half of the 20th century. It has a cylindrical bore and a single reed, as well as a single drone at the same pitch as the bottom note of the chanter.

Anatolia

- **Pontic** bagpipe/dankiyo/tulum consist of :1 . Post - Skin (bag) : Animal Skin, 2 . Fisaktir - blowpipe : Wood or Bone, 3 . Avlos - flute : Wood & Reeds, 4 . Kalame - Reeds: Reeds
- **Dankiyo**: A word of Greek origin for "bagpipe" used in the Trabzon Province of Turkey mentioned in the text of Evliya Çelebi (17. century, Ottoman Era): "*The Laz's of Trebizond invented a bagpipe called the* dankiyo...." Etymology: Ancient Greek το ἀγγεῖον *to angeíon* "skin, bagpipe."
- **Tulum**: skin bag; Turkish bagpipe featuring two parallel chanters, (and no drone) usually played by the Laz and Hamsheni people.
- **Gaida**: Usually played by Thracians Turks and Pomaks in Turkey.

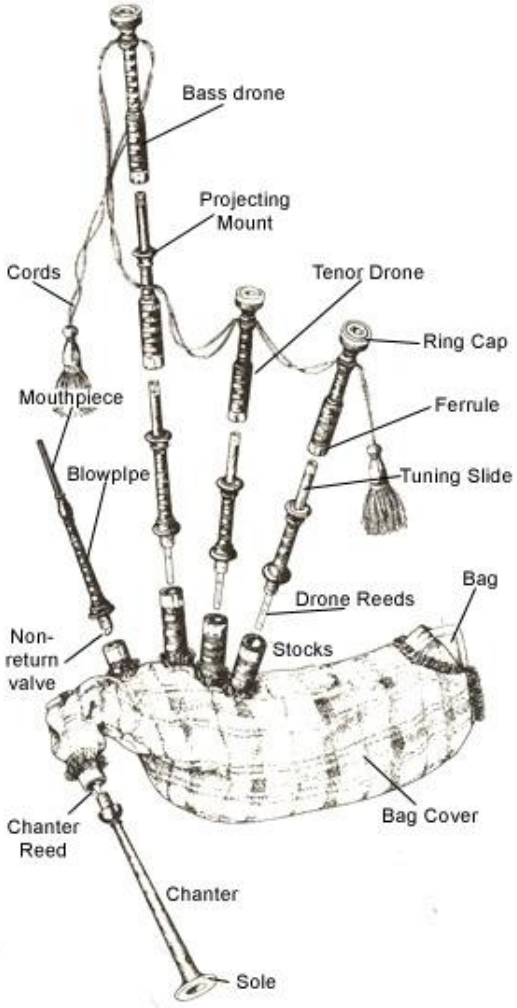
Iran

- **Ney anban**: Persian bagpipe from the south of Iran; bag made from animal skin

North Africa

- **Mizwad** (Arabic ; plural *mazāwid*): Tunisian bagpipes; often referred to as *mezoued*, a French form of the Arabic word. *Mizwad* literally means "sack". The *mizwad* is also known as the *zukrah* (; pl. *zukar*), a word literally meaning "(wine)skin".

The Great Highland Bagpipe



Construction (from Ringo Bowen)

There are a great many examples of early bagpipes where we can only speculate as to their origin. Why are there so many different styles and dimensions? There couldn't have possibly been that many individual makers. To understand we need to go all the way back to the beginning.

There are different schools of thought regarding the origin of bagpipes in Scotland. Perhaps they were brought over by the Irish during their colonization or perhaps they were brought by the Romans during their failed occupation of a most inhospitable land and people. What we do know is that they looked and sounded nothing like bagpipes of today.

The MacCrimmons of Skye were hereditary pipers to the MacLeods of Dunvegan and as such established a school of piping in the 1500's. Their compositions endure today as the classic music of the Great Highland Bagpipe. Pipers were a status symbol among the wealthy and were sent from the whole of Scotland to Skye to learn at the feet of the masters.

It is not fully understood just how these early bagpipes were manufactured. Some feel that the MacCrimmons themselves made bagpipes. However it happened, it is plausible that pipers left Skye with some knowledge of how the instrument was made. As pipers travelled the land one can only imagine how new bagpipes would have been manufactured. Certainly there were few, if any, woodworkers with the knowledge and skill to manufacture a bagpipe.

A period known as "The Renaissance" occurred across Europe during the 17th century. Prior to this time, harmonics did not exist in music. Instruments of the early Middle Ages were monophonic, in that music was not orchestrated. Instruments were played in isolation of one another.

There is no doubt that events of those times brought different instruments together. As various sounds mixed and co-mingled "harmonics" were discovered. Now whether the discovery of harmonics as it pertains to the GHB was direct or an adaptation of other woodwind instruments that had already provided for drones of different pitches will never be known. What we do know is that the GHB with two tenor drones and one bass drone appeared sometime in the middle of the 18th century.

Why this lengthy preamble? How would one go about having a bagpipe made? There were certainly few who knew the craft. Further, how would one go about creating a revolutionary add-on, the bass drone?

In a letter dated 1774 there is a recommendation regarding "one Robertson, a turner at Edinburgh, who makes them quite well when under the inspection of a skillful person." There is strong evidence that the "skillful person" was a piper. In other words, bagpipes of that time were custom made in close cooperation between the turner and the musician.

One should consider that musicians did not necessarily have knowledge of turning, boring, or other manufacturing processes. They may have had a general understanding of these matters however we have to wait until the late 1700's or early 1800's to find anyone with skill in both areas. One can imagine the musician trying to explain to the turner what the various pieces should look like, how they

were supposed to operate, and the sounds they were supposed to produce. What we do know is that the GHB started to look and sound much the way it does today sometime during the early 1800's.

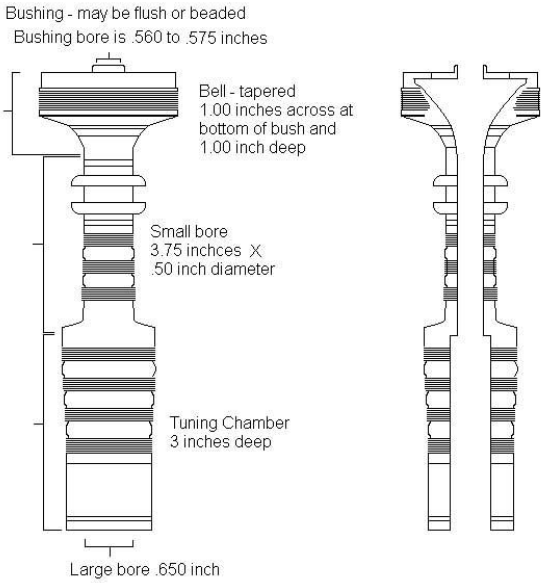
Most of the surviving examples from these early days are unique in look if not in sound. There is some commonality however there is also general uniqueness which speaks to the notion that bagpipes were very personal and made in collaboration between the maker and the musician. Not until the late 1700's do we have evidence of professional GHB makers. Even as such we have a dramatic difference in the look of bagpipes even by the same maker during these early years of commercial making.

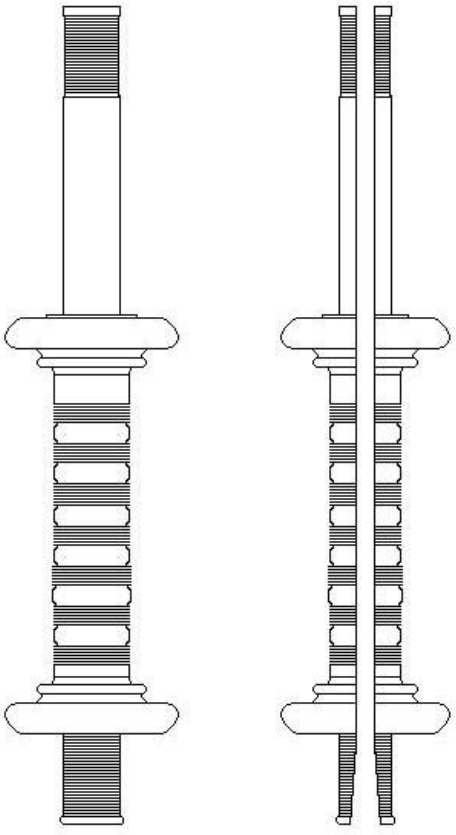
In conclusion, there are many factors that contribute to the growing size of the "unknown" section of this museum. Obscure makers are discovered periodically however these are more so in "modern" times (post 1900) than in earlier times. One friend and fellow researcher refers to the "mythical" Hugh Robertson bagpipe. This is only because we do not have an authenticated example of Hugh Robertson's work. And if we did it might only provide clues as to the identity of other Hugh Roberson bagpipes that might currently be "unknown".

Anatomy of a Bagpipe (from Ringo Bowen)

The images at the right shows the cross section of a tenor drone. They all work in concert (along with the stock, reed, and tenor bottom section) to produce the sound and behavior that you experience on your shoulder. These measurements are general and it is possible to find measurements both over and under from Henderson to Henderson or from Lawrie to Lawrie. This is perhaps due to shrinkage in wood over the years, differences in tooling (both deliberate and accidental) by the maker, or it may be that the set was re-worked by someone years later.

An undersized bore will produce a quieter sound and a flatter sound. An old test is to slide a # 2 pencil into the bottom bore. It should go in easily without being sloppy. Another quick test is to measure the depth of the tuning chamber. If it's deeper than 3 1/8 inches, this too could be causing the drone to tune low.





Historic Manufacturers

John Adamson immigrated to Boston around 1905 and opened a bagpipe importing and repair business. The documentation below confirms that he was in business at least until May 1941 however he is believed to have closed the business shortly thereafter.

George Alexander began making bagpipes with Charlie Wicks in 1955 in London, England. Charlie was related to Henry Starck and worked for Henry Starck Bagpipes as early as 1937. He left in 1946 and worked for other musical instrument makers before returning to bagpipe making with Alexander. In 1970 Alexander moved the business to the Isle of Wight. The business ceased operations in 1990.

Boosey and Hawkes were manufacturers of woodwind instruments and publishers of music. Like other notable london music firms (John Grey & Son, Rudall & Carte, Miller Browne) they, at one point or another, had bagpipes made and branded under their own name. Boosey and Hawkes purchased what was left of the Henry Starck business around 1955 or 1956. They immediately shut down the bagpipe making operation however continued with the flute making business.

John Chisholm is listed in the Glasgow classified directory as a bagpipe maker in 1901. The listing changed to Chisholm and Hunter in 1912. Hunter appeared earlier as dealing in antiques and musical instruments and many other items. It appears that the bagpipe business continued until about 1949. According to one source who joined the Royal Scots as a band boy at age 15, "old time pipers played Chisholm pipes in the regiment band as they were the best."

Hugh Douglas was a maker of bugles and military instruments. They appeared in the Glasgow trade directories from 1914 to 1925 as bagpipe makers and musical instrument makers.

Jack Dunbar apprenticed in Peter Henderson Bagpipes prior to WWII and went back to Henderson's after the war. He made bagpipes for Hector Russell and for Piob Mhor Highland Industries prior to coming to Canada in 1951. He settled in St. Catharines, Ontario and started doing bagpipe repairs for John Kirkwood, who operated a bagpipe supplies business. John was also a member of the Clan MacFarland pipe band. By 1985 Dunbar bagpipes had moved from Jacks residence to its own shop. Today, Dunbar is one of the most respected names in the industry.

Gillander bagpipe making business seems to begin sometime in the late 1800's with Robert Sr. working as a turner for John Center, The MacDougalls of Aberfeldy, and finally Thow of Dundee. Robert Jr. also worked for Thow until finally going into business (making bagpipes) for himself in 1932. The company became R. Gillanders & Son in 1959. In 1972 Iain McLeod, Pipe Major of the World Champion Edinburgh City Police Pipe Band bought into the business and it became Gillanders and McLeod.

David Glen began making bagpipes with his father, Alexander Glen. He opened David Glen Bagpipe Maker in 1873. Son's Alexander (Sandy) and David Jr. continued the business as David Glen and Sons until David Jr retired from the business in 1949. The remaining stock was sold to J & R Glen. Andrew Ross ran the business from 1951 to 1954, when under the terms of an agreement he inherited J & R Glen Bagpipes. Andrew died in 1979 and the Glen business closed shortly thereafter.

George Grainger and Neil Campbell founded the business in 1946. Their bagpipes and chanters were very highly respected and enjoyed great popularity in the 1960's and early 1970's. The business closed in 1989.

R. G. Hardie learned his bagpipe making skills from Robert Reid. After WWII he had a brief business relationship with Jack Dunbar and Piobmor Highland Industries before opening his own business in 1950. Hardie Bagpipes enjoyed great popularity and demand in the 1950's, 1960's and early 1970's. Hardie chanters also won several World Championships during those years and are still greatly respected by solo pipers. RG Hardie & Co. is part of the St Kilda Group that includes Gaelic Themes and St Kilda Retail.

Peter Henderson is known to have started his bagpipe making business in 1880, having taken over the premises of Donald MacPhee. Henderson advertising states that the family had been making bagpipes since 1868. I have seen one Henderson bagpipe with silver that is hallmarked 1865. It is believed that Peter's father, Donald, made those Henderson bagpipes that pre-date 1880, although there does not seem to be definitive proof of this. The Henderson bagpipe is preferred by bands and solo players alike for its powerful rich sound. Many of the very early Henderson bagpipes are ebony or cocus wood.

James Hutcheon was born in Edinburgh in 1823. He first appeared in the classified directory in 1856 as a turner. His son, William, apparently followed in his footsteps. They may have sold the business, because in 1911 the listing is for Hutcheon and Smith. The following year there is a listing for James Smith, bagpipe maker, successor to J and W Hutcheon.

R. G. Lawrie was said to have worked for Peter Henderson until 1890 when he started his own business. Early Lawrie drones are very difficult to distinguish from Henderson drones of the same era. In 1911 John McColl became shop manager for Lawrie and excellent bagpipes were made until his retirement in 1935 or so. The quality of sound, performance, and workmanship declined in the years following and was never re-captured. Lawrie stopped making bagpipes in the 1980's.

Donald MacDonald made exquisite bagpipes in Edinburgh between 1806 and 1840. Few examples of his work are with us today, however they remind us of the skill and care of old world craftsmanship.

Allan MacDougall moved from Taymouth Castle, where he was employed as a piper, to Perth sometime between 1781 and 1790. In 1790 he married and opened a bagpipe making business. His son, John MacDougall (January 31, 1802), took over the business around 1834.

Duncan MacDonald took over his father's business (John) in 1857. He moved the business to Edinburgh a few years later, where it remained until 1873 when he returned to Taymouth Castle as Piper. He continued his pipe making business in Aberfeldy until his death in 1893 at age 61.

Gavin MacDougal took over his father's business in 1893. Changes were made to the bagpipe and some claim the magic was lost. Gavin died in 1910 from pneumonia and the stock was apparently bought up by R. G. Lawrie Bagpipes. Duncan MacDougall was never known to cut beads (grooves) into ferrules or rings.

Malcolm MacGregor appears to have moved from Glasgow to London at some point between 1802 and 1810. He made the prize bagpipe for the Highland Society of London from 1812 to 1815.

Donald MacPhee was born in 1841 and was an outstanding piper and bagpipe maker. He operated a successful business from 17 Royal Arcade (Glasgow) until his death in 1880. According to Jeanne Campbell, Donald died of general paralysis of the insane over the duration of about one year.

MacPherson bagpipes were actually made by Wm. Sinclair, Leith. Jim Tweedie also worked for Sinclair and strong similarities can be seen in all three makes of pipes. MacPherson was said to have purchased Sinclair's business in the late 1940's but then sold it back to Sinclair a couple years later.

Donald MacKay was born in 1794 and was the eldest son of John MacKay, Raasay and brother to Angus MacKay. Angus was Queen Victoria's first pipers and the author of a piobaireachd collection published in 1838. Donald won the Prize Pipe in 1822 and became piper to the Duke of Sussex. He is said to have made bagpipes from 1840 to 1850.

Duncan MacRae was not a piper however he used his considerable skills and imagination to create an enduring bagpipe. He first appears as a bagpipe maker in the Glasgow business directory in 1909. He is best known for inventing hempless tuning slides, pictured at the very bottom below. He also invented the first non-leather blowpipe valve.

Robert Reid was the most dominant piper in the world in the 1920's and 1930's winning some of the most prestigious piping contests over and over again. He also made bagpipes from 1932 to 1947.

Hugh Robertson. Even from very limited documentation we know that bagpipes were being made commercially prior to 1750. Entries relating to Hugh Robertson, turner, date back to 1767. He is listed in the Edinburgh Trade Directory in 1775 as a "pipe maker" Castle Hill, Edinburgh.

William Ross was born March 27, 1823 and enlisted in the Black Watch in 1839. In 1854 he was appointed piper to Queen Victoria and operated a bagpipe making business while living in London. In 1880 he went into partnership with Henry Starck.

William Sinclair started making bagpipes commercially around 1931. He had a close relationship with the MacAllisters of Shotts and Dykehead fame. He also had a close relationship with Hugh MacPherson, actually selling the business to him and then buying it back a couple of years later. Sinclair is known for their famous chanter, which has been a favorite among top competing bands for over thirty years.

Henry Starck made exquisite bagpipes. Their motto was "Only the best is good enough" and this is reflected in the detail of Starck bagpipes. Starck, a flute maker, was persuaded to make bagpipes by William Ross, when he was piper to Queen Victoria in the 1880's. Starck bagpipes went out of business in 1962.

Jim Tweedie was a turner for Wm. Sinclair and Hugh MacPherson during the 1960's before going out on his own in the 1970's. It is very difficult to distinguish the three makes from each other.

Williamson and Jeffray were employed by Henderson bagpipes prior to this time. Williamson was an apprentice at Henderson's just prior to Jack Dunbar and was known to be an excellent turner. Jeffray tied in pipe bags and otherwise made the finished product ready for the customer.

Modern Manufacturers

McCallum Bagpipes is one of the best known and most advanced bagpipe manufacturers in the world today.

MacLellan Bagpipes, custom makers of the highest quality Great Highland Bagpipes and chanters.

Kintail bagpipes are turned and finished by hand by the Sharp family and their small team of craftsmen in the Kintail workshops in the heart of Glasgow.

RT Shepherd and Son Ltd are manufacturers of Bagpipes, Smallpipes, Pipe Chanters, Reeds, Tone Enhancers and a range of other Piping Accessories since 1966.

When Leslie Cowell started the company in 1976, **David Naill & Co**. made its mark by producing instruments with precision tooling and unequalled craftsmanship.

Wallace Bagpipes are manufactured by Craig Munro of Shotts and Dykehead.

Gillanders & McLeod has been making pipes since 1972 under Iain McLeod.

C.E. Kron & Co. has been making traditional Highland bagpipes since 1987.

J. Dunbar Ltd. was established in 1967. Jack Dunbar worked for Henderson Bagpipes, where he apprenticed in the 1930's.

Bagpipe Materials

You also have several choices in materials. Here are some of the most common.

Ebony (*Diospyros ebenum*), also known as **India Ebony** or **Ceylon Ebony** depending on its origin, is a tree in the genus *Diospyros*, native to southern India and Sri Lanka. It is noted for its heavy black, fine-grained heartwood. Ebony has a long history of use, with carved pieces having been found in Ancient Egyptian tombs. The word "ebony" derives from the Ancient Egyptian *hbny*, via the Greek *ebenos*, by way of Latin and Middle English. There are some older pipes made from ebony, however modern uses are largely restricted to small sizes, particularly in musical instrument making.

African Blackwood

Ebony has been largely replaced by African Blackwood or Mpingo (*Dalbergia melanoxylon*). Blackwood is a flowering plant in the family Fabaceae, native to seasonally dry regions of Africa from Senegal east to Eritrea and south to the Transvaal in South Africa. It is a small tree, reaching 4-15 m tall, with grey bark and spiny shoots. The dense, lustrous wood ranges from reddish to pure black. It is generally cut into small billets or logs with its sharply demarcated bright yellow white sapwood left on to assist in the slow drying so as to prevent cracks developing. Good quality "A" grade African Blackwood commands high prices on the commercial timber market.

The tonal qualities of African Blackwood are particularly valued when used in woodwind instruments, principally Highland pipes, clarinets, oboes and Northumbrian pipes. Furniture makers from the time of the Egyptians have valued this timber. A story states that it has even been used as ballast in trading ships and that some enterprising Northumbrian pipe makers used old discarded Blackwood ballast to great effect.

Due to overuse, the blackwood tree is severely threatened in Kenya and needing attention in Tanzania and Mozambique. The trees are being harvested at an unsustainable rate, partly because of illegal smuggling of the wood into Kenya, but also because the tree takes upwards of 60 years to mature.

Cocobolo
Some bagpipes are available in Cocobolo. Cocobolo is a hardwood from Central America yielded by two to four closely related species of the genus *Dalbergia*. The best known and probably the species contributing most of the wood in the trade is *Dalbergia retusa*, a fair-sized tree, reported to reach 20-25 m in height. Because of its great beauty and high value, this species has been heavily exploited and the tree is now in danger of extinction outside of national parks, reserves and plantations.

Cocobolo is a very beautiful wood, known to change color after being cut. It usually is orange in hue, with a figuring of darker irregular traces weaving through the wood. It is fine textured and oily in look and feel, and stands up well to repeated handling and exposure to water. Cocobolo is also extraordinarily dense, and even a large block of the cut wood will produce a clear musical tone if struck. Only relatively small amounts of this prized wood reach the world market and it is expensive. Care must be used when working this wood, as its sawdust is dangerous; many people develop an allergy when exposed to it.

Rosewood
Because of the expense, some pipes are being made from Rosewood. Rosewood belongs to the family papilionaceae. The pre-eminent rosewood appreciated in the western world is *Dalbergia nigra*, Brazilian Rosewood. It is also known as Rio rosewood or Bahia rosewood. This wood has a strong sweet smell, which persists over the years, explaining the name "rosewood". Because of its density and strong resonance, Honduras rosewood, Dalbergia stevensonii is a favourite choice for makers of marimba and xylophone keys, although many such instruments are not made of this wood for reasons of cost or durability in outdoor playing environments. Brazilian rosewood is (was) a popular wood for musical instruments however, due to its protected status and spiraling prices, Indian and Madagascar rosewood are being used extensively in its place.

Lochaber Oak
Cameron Bagpipe Company uses Lochaber Oak (oak from Lochaber, Scotland) in the construction of their bagpipes. The term oak can be used as part of the common name of any of several hundred species of trees and shrubs in the genus *Quercus* (from Latin "oak tree"), and some related genera, notably *Cyclobalanopsis* and *Lithocarpus*. Oak is not a “traditional” or widely used wood for instrument making.

Mopane
The mopane or mopani (*Colophospermum mopane*) tree grows in hot, dry, low-lying areas, 200-1,150 m, in the far northern parts of southern Africa, into South Africa, Zimbabwe, Mozambique, Botswana, Zambia, Namibia, Angola and Malawi. Mopane wood is one of southern Africa's heaviest timbers and is difficult to work because of its hardness. However this also makes it termite resistant. For this reason it has long been used used for building houses and fences, as railway sleepers and as pit props. The termite-resistance and rich, reddish colouring also make it popular for flooring. Outside Africa, mopane is gaining popularity as a heavy, decorative wood, its uses including aquarium ornaments and bases for lamps or sculptures.

It is also increasingly being used in the construction of musical instruments, particularly woodwind. Suitable quality African blackwood (*Dalbergia melanoxylon*), traditionally used for bagpipes, is becoming harder to find. Mopane is fairly oily, seasons very well with few splits or shakes, and produces instruments of a warm, rich tone.

Delrin
A modern synthetic material used in pipe construction is Delrin. Delrin is the brand name for an acetal resin engineering plastic invented and sold by DuPont. Delrin was first synthesized by DuPont's research chemists around 1952. Often marketed and used as a metal substitute, Delrin is a lightweight, low-friction, and wear-resistant plastic capable of operating in temperatures in excess of 90 degrees celsius (approx 200 degrees Fahrenheit). According to the material safety data sheet from DuPont, the material has a slight odor of formaldehyde.

Delrin has found use in the manufacturing of Irish flutes (traditionally made of wood), tin whistles (traditionally made of metal) and bagpipes (traditionally made of wood). Delrin flutes and bagpipes sound similar or identical to wooden version, but have none of the shrinkage or cracking issues usually associated with wooden instruments in hot, cold, or dry environments.

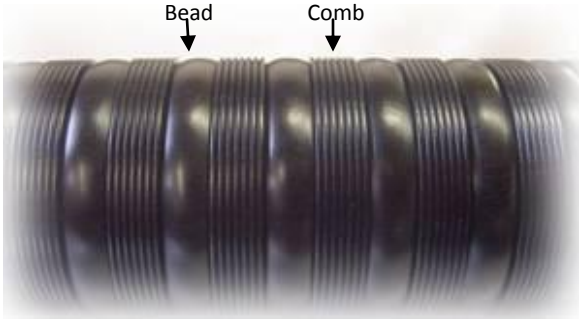
Terminology

There is a lot of terminology used when ordering pipes. Let's begin with the basics.

There are a number of terms used to describe the pattern of carving used on the drones, blowstick and stocks of the bagpipe:

Combed = a woodworking term meaning a series of tightly spaced "V" shaped groove cut into the wood.

Beaded = a woodworking term meaning a rounded "∩" cut.



Antique/Chalice = indicates a smooth style without beading or combing.

Mounts

Bagpipes can be decorated with metal, natural materials - such as ivory or horn - and other materials as accents. "Mountings" refers to what is decorated. Ferrules, caps, projecting mounts, and tuning slides serve both to protect and adorn the bagpipe. Mountings will not alter the sound of the pipes.

Quarter Mounting

- 4 tuning slides

Half Mounting

- 4 slides
- 9 ferrules
- 3 ring caps

Full Mounting

- 4 slides
- 9 ferrules
- 3 ring caps
- 8 projecting mounts
- chanter sole
- mouth piece

Engraving and Other Options

Engraved, hand engraved, chased, cast - similar but different terms when it comes to metal work. Some is done by machine or laser or a pattern is pressed into the metal.

Engraving is the practice of incising a design on to a hard, usually flat surface, by cutting grooves into it. It can be done mechanically or by hand. **Chasing** is also known as **embossing**. **Casting** is a manufacturing process by which a liquid material is usually poured into a mold.

Slides, ferrules, ring caps, mounts, soles and mouth piece can all be made of engraved, chased, or cast metal.

Pipe Bags

The purpose of the bag is to serve as an alternate source of air pressure for when you are not blowing. This lets the piper breath naturally while maintaining the necessary pressure to keep the chanter and drones playing. Five stocks are tied or fastened directly to the bag. Air enters the bag through the blowpipe stock and exits the bag through reeds contained within the drones and chanter.

As with the pipes themselves, you have a number of options with pipe bags and bag covers. Again, look around and talk to other pipers to see what works.

Bagpipe bags fall into three primary categories; tanned leather bags, synthetic material bags, or a combination of leather and synthetic materials.

Ross Canister System and Pipe Bag

This Ross system provides Excellent Moisture Control. The moisture amount can be adjusted to suit your needs for both the drone reeds and the chanter reed. If drone plugs are used, they must be fitted before installing the drone hoses. If they require adjustment, the process becomes more time consuming since the hoses must be disconnected and reinstalled after each system test.

The basic installation steps are simple. The system is a well thought out design and a complete instruction booklet is included. The pictures and text are very helpful. The hoses and canisters are also color coded. The zipper must be lubricated with a special waterproof grease which is included. The Pipes will require a larger case for storage due to the bulk of the canister and the hoses. Additional care must be taken not to crimp the hoses during storage periods. Caution must be used during installation to NOT over tighten the clamps which could possibly crack the stocks. Make sure the clamps are only tight enough to keep the bag airtight. The clamps are a little bulky and can snag the bag cover or possibly scratch an adjacent wood component. The system without drone plugs can be more difficult to strike in or cut off. Proper practice can overcome this problem.

The system works very well. There is a Limited Warranty for 6-12 months - bags can be returned to Ross for repair. (Keep in mind you will be without a bag if you have to send one to Australia for repair. The system makes for a heavier set of pipes. Not essentially needed for beginners. The Ross Sytem is currently the most expensive system to purchase. The relatively high cost of the Ross bag does not insure extended bag life.

Canmore Pipe Bag

Canmore is made from a special "Gortex" material. The bag is designed to be airtight, while letting moisture pass through. Very simple installation for the drone and blowpipe stocks, however, the chanter stock must be tied on. It is also possible to tape the chanter in place to protect the bag with additional tape and an automotive type clamp could be used. Caution must be used during installation to NOT over tighten the clamp which could possibly crack the stock. The zipper version is slightly easier to install, since the swan neck shape is closer to the diameter of the chanter stock and there is not as much extra bag material. This shape also makes for a better chanter placement and more comfortable feel than the non zipper model. Special rubber sealing tape is included which is a little tricky to use. The bag feels a little "spongy" compared to hide. This makes for a more difficult strike in and cut off. This will require some additional practice. The bag has been well proven and has an excellent track record. Good solid performance. The zipper must be kept lubricated with special waterproof grease, which is included. The bags are backed up with a 2 year full warranty. A tube type watertrap may be required in damp conditions. The zipper version is included in the standard set up for Shepherd Bagpipes. At Henderson's, we use the Canmore Zipper as our standard for most sets. Canmore pipe bags do not include a step by step installation instructions. Seems to wear well and provides a fairly long bag life.

Bannatyne Synthetic Pipe Bag

Like Canmore, these bag allow moisture o pass through. Probably one of the easiest bags to install. Special collars seal to the stocks. Tape can be used to insure the system is airtight, but in most cases is not necessary. The chanter stock can be clamped or tied on. The zipper must be kept lubricated. Waterproof grease and one clamp is provided Well designed for a comfortable feel which is stiffer than Canmore and closer to hide. Bannatyne bags come with a choice of a tube type water trap or the newly designed water trap sleeve. This is a spring assembly with a nylon sleeve that wraps around an absorbent sleeve. Bannatyne bags are the suggested default pipe bag for all McCallum bagpipes. One year warranty.

Bannatyne Combination Hide/Synthetic Pipe Bag
Just as easy to install as the synthetic bag. All the same attributes - plus more of a hide bag feel, very solid. Hide exterior, synthetic interior. For those that want the traditional feel of a hide bag, plus the lower maintenance and greater hygiene and of a synthetic, the Bannatyne Hide Synthetic may be the answer. Special collars seal to the stocks. Tape can be used to insure the system is airtight, but in most cases is not necessary. The chanter stock can be clamped or tied on. The zipper must be kept lubricated. Waterproof grease and one clamp is provided. Easier "strike ins" and "cut offs".

Shepherd Hide Bag
Similar to Bannatyne - except the system is currently designed as a synthetic zipper bag inside with a separate hide outside shell. The amount of moisture can easily be monitored by examining the water bottle . Only the inner synthetic bag is airtight. The Shepherd Bag includes a tube type water trap. Since there is a cavity between the inner and outer layers the playing temperature is more constant and perceived by Shepherd to be an improvement over some of the other combination bags. Good stiff feel. The Shepherd bag has gone through a series of design changes to improve quality. As a company, Shepherd Bagpipes, has made the decision to only offer full Synthetic or Synthetic/Hide combination pipe bags for their pipes. Easier "strike ins" and "cut offs".

Hide Pipe Bag
The Standard cowhide bag is still a viable option for pipers. Hide was the only type of bag for hundreds of years. The proliferation of synthetic bags, zippers and a host of add-on accessories for the bagpipes, has made using a hide bag a real matter of choice. There are still very valid reasons for choosing a hide bag. They are excellent bags under most circumstances. When playing for extended periods or if used in extremely moist climates, a blowpipe stock watertrap or tube type watertrap is recommended. The hide bags are stiff, comfortable and available in a variety of sizes. Since the holes for the stocks are generally cut in, the bags can be custom fit for any individual. Pipers come in all shapes and sizes, so the ability to position the drone stocks and blowpipe stock outside of the normal positions can be extremely valuable. Comfort is a key factor when playing the pipes, so a hide bag may be the right choice for you. A hide bag is more difficult to install, and requires some practice to get the stocks tied in correctly. If you have never tied a bag on, you may want to send your stocks to a dealer to have this one for you. We suggest visiting a bagpipe dealer if any special requirements are needed o the bag can be properly "fitted". Easier "strike ins" and "cut offs". Hide bags also need to be periodically "seasoned". This is done to keep the bag supple and airtight. We suggest Hardie's Airtight Seasoning.

Sheepskin Pipe Bag
Often called the "Cadillac" of bags, sheepskin is the choice of many top solo players and pipe bands. It has all the characteristics of a cowhide bag - but it is more supple and allows moisture to pass through more quickly. It dries out so quickly it requires frequent playing to keep the system at the proper moisture level. Sheepskin bags are really geared to the professional player or anyone who devotes a great deal of time to playing. Like the cowhide bag they come in different sizes and can be fitted and tied in to suit ones size and needs. They are comfortable and responsive. In addition, many players feel sheepskin bags provide the best tone. The drawbacks to the sheepskin bag are they are costly, difficult to tie in and have a relatively short lifespan.

Selecting a Bag Size

Probably the most common mistake pipers make is getting a bag that is too large for them. Things that affect appropriate bag size are overall arm length, chest shape, and blowing technique. If you are having trouble comfortably reaching the chanter (assuming your stocks are correctly positioned on the bag), or have a lot of pressure from the bag on the inside of your forearm, then your bag is too large. Sometimes a short, large chested person can have a custom *longer* bag made to compensate for a smaller circumference. Small bags mean less air, less air means more reliable cut-offs. But bag size will also slightly affect the tone of your pipes, which may or may not be an issue for you. Some pipers swear that they get noticeably better resonance and tone with a larger bag. Others say they have to blow less often with a larger bag.

The bag should fit under your arm with almost no visible space between your underarm and the top of the bag. If this is not the case, you will not have a secure grip on the instrument, the bag will slide down, and your left arm may go numb.

The more comfortable your bag is, and the more of your left forearm is free from pressing on the bag the easier your pipes will be to play and the better you will play.

While many people say that a 'slippery bag cover' is the major reason for their bag sliding down, the real culprits are generally either a bag that is too big, a blowpipe that is too long, or both. These are common problems, and many manufacturers and dealers don't address them.

Playing a bagpipe that is perfectly sized for you and set up in great playing condition pays dividends for the rest of your piping career.

Below are my recommended bag sizes and blowpipe lengths according to height. Blowpipe length is measured from where the projecting mount on the blowpipe meets the stock (the top of the hemp) to the tip of the mouthpiece. A blowpipe that is too long will make piping uncomfortable or even painful, and can cause the bag to slip down under the arm. Note that Ross bags tend to run a bit large. This chart is just a guide.

5' 2" or shorter Ross extra-small 8" or less blowpipe	**5' 10" to 6'** Ross small or medium All other makes: medium Blowpipe length 10" to 11"
5' 3" to 5' 6" Ross extra-small All other makes: small Blowpipe length 8" to 9"	**6' to 6' 4"'** Ross medium or large All other makes: medium or large Blowpipe length 11"
5' 7" to 5' 8" Ross small or extra-small All other makes: small Blowpipe length 9" to 9.5"	**6' 4" or taller** Ross medium or large All other makes: large Blowpipe length 12"
5' 9" to 5' 10" Ross small All other makes: small or medium Blowpipe length 10"	

Moisture Control Systems

The single most important aspect of bagpipe maintenance is the issue to moisture control. An instrument that varies with respect to moisture can never be stable or reliable.

Water traps, desiccant systems and pipe bags must be chosen to be suitable for the climate in which you live and the proper considerations for maintaining an appropriate moisture level.

Moisture absorbed into a reed makes it both heavier and more flexible, so the native pitch of a wetter reed is different (generally lower) than that of a dryer one. If the pitch changes as you play, you'll have a problem. If the level of moisture in the bag is too high, the reeds will become wet in the short term and will mildew in the long term. (Mildew is evidenced by a black color on the reeds.) For this same reason, the pipe chanter should never be left inside the bag when not in use. It should be kept outside the bag with a reed protector in place. We also recommend swabbing out the chanter stock after each day's playing to remove water or saliva that may be absorbed into the wood. Swab out the drones and chanter stock on cold days.

Condensed moisture in the drones results in funny noises, instability and eventually drone "shut-down". It can swell hemp leading to frozen joints. If it soaks into the wood, it can cause cracks. This moisture comes from the passage of your humid breath into the drones where it hits cooler ambient air. When the extra moisture content coming from your breath is more than the ambient air can hold, you'll get condensation. A "little" condensation can be tolerated, but at some point, you're in trouble.

The amount of condensation depends upon the air flow through your drones (lots of moist air flow = lots of condensation), the relative humidity of that air (desiccated air contains less moisture than non-desiccated = less condensation) and the ability of outside air to accept the extra humidity going up the drones (lower relative humidity in the outside air and/or warmer temperature = less condensation).

This is a good place to bring up the fine point that, on a given day, plastic pipes may have more condensate than non-plastic pipes. The thermal conductivity of plastic is higher than that of wood, so when you are playing on a cool day, the bore of a plastic pipe will be losing heat faster than a wooden pipe and will be colder than that of a wooden pipe. A colder bore represents a surface for more or earlier condensation.

OK, so where does that leave us? We know that the air leaving our pipes has some amount of moisture in it. That moisture needs to be absorbed into the ambient air. If it cannot be absorbed at the temperature in the bores, the moisture will condense in our drones. The water runs down the drones and into the drone reeds shutting them off.
There are two major forms of moisture control systems, 1) water traps and 2) desiccants/ absorbents.

Moisture traps (Bannatyne, Shepherd) deal mostly with spit (yes spit!). The first thing they do is divert the spit away from the chanter reed toward the back of the instrument. This is usually done with an elbow a tube. If the trap has an elbow, then the larger water/spit particles will be knocked out because they aren't carried along in the flowing stream of air. The medium sized "bits o' spit" will fall out of the air stream and collect in the tube. This is an aerodynamic issue in which particles obey "stoke's law". This law says that big particles fall faster in a viscous fluid and that small particles will remain suspended longer. The slower the fluid is moving, the more efficiently the particles are removed. This is best done in a large diameter, long tube so that the air is moving slowly and you catch most of the particles that fall out. There are obvious practical there are practical limitations. In particular, very small particles of water will remain suspended for a long time and will go through the trap.

Desiccants and absorbents (Ross) are materials which have the ability to attract moisture from the air. If desiccant is dry, has a high surface area and the flow rate is slow, the relative humidity of the air can be significantly reduced before it reaches the reeds. Desiccants do have limitations in that the humidity of the air passing over the desiccant will increase as the desiccant becomes more and more laden with moisture. Hence, you should use "dried" desiccant on those cold damp days when you know you need it. The ability of a desiccant to absorb moisture is also a function of temperature.

Whichever system you choose, controlling moisture is part of pipe maintenance and will dramatically affect how your pipes play.

Pipe Bag Maintenance

Caring for your pipe bag is an important part of keeping your whole bagpipe system working optimally and sounding its best. The condition of the pipe bag can affect air efficiency and reed performance, so taking time to check the bag regularly and complete a few maintenance tasks is well worth it. Maintenance tasks vary depending on bag material and type, but in general, think clean and airtight.

Caring for Synthetic Pipe Bags
Synthetic bags and hybrid bags (bags with a hide exterior and a synthetic interior) are very easy to care for. If your bag has a zipper, make sure it is kept lubricated per the manufacturer's instructions. Leave the zipper open when you are not playing, to help the bag dry out. A damp bag can become unpleasant and unhealthy quickly.
Check the stocks often to make sure that they are all secure. If you're using a Ross Canister system or other system with loose desiccant, vacuum the interior periodically to avoid dust accumulation in the bag and on your reeds.

Caring for Hide & Sheepskin Pipe Bags
Leather bags perform better when they are played regularly. It is frequent playing of the pipes that keeps the bag supple, not seasoning. Of course, these bags should also be seasoned, as needed, to keep seams airtight and to improve moisture control. Make sure to use the type of seasoning and sealing products recommended by the maker of your bag. L&M's Scotian bags, for example, require a special sealant and conditioner, and do not use Airtight.

Bag Lifespan: For hygiene reasons it is recommend that you keep a sheepskin bag for a maximum of three years and a hide bag for no longer than five years.

Seasoning Overview

It is important to season regularly, but it is equally important not to over-season. It is necessary to do a long and thorough seasoning on a new bag. After that, maintain the bag with seasonings targeted at the main seam. For cow hide bags, the purpose of seasoning is to keep the stitching airtight. Seasoning will not improve moisture control in these bags, and too much of it may make a mess of the inside of your bag. Sheepskin bags require more attentive seasoning, not only to keep the stitching tight but to treat the skin also. The pores are not as close together as hide, so seasoning is required to keep the skin air tight and to improve moisture control.

Directions for Seasoning a New Hide or Sheepskin Bag with Airtight:
This is for the most traditional types of hide and sheepskin bags. If you have a zippered hide bag, it may require a different treatment process. Always check the manufacturer's recommendations before treating.

Seasoning your bag will be a messy process at first, but you will get better at it.

Prep: Remove drones, chanter and blowpipe. Cork all five stocks.

Heat: Carefully heat an open plastic jar of seasoning in the microwave, just until it liquefies.

Pour: Pour seasoning into the bag, through the chanter stock. For new bags, you'll likely need just 1/2 of the container. (For subsequent maintenance seasonings, you may need as little as a few teaspoons.) Squeeze out as much air as possible and replace the cork.

Knead: Rub the seasoning vigorously into the skin, paying special attention to the welt (seam) of the bag, making sure the seasoning is worked in thoroughly. For a bag's first seasoning, this may take 30-45 minutes.

Inflate: Remove the cork from the blowpipe stock and replace the blowpipe. Ensure that the remaining corks are s*ecure,* and blow up the bag as tight as possible. This will force the seasoning into the stitching. Tilt the bag back and forth so the liquid can be heard running along the welt. Squeeze bag while doing this.

Test: Test for air-tightness by inflating the bag, first making sure that all the stocks are securely stopped and the blowpipe valve is functioning properly. Wait 30 seconds. If you are unable to blow any more air into the bag, then the bag is considered airtight. Remember, no bag is so airtight that it will remain inflated indefinitely.

Drain: Carefully remove the blowpipe and cork the stock. Hang the bag using the loop at the back. Remove the cork from the chanter stock and let the seasoning drain out. Make sure the other stocks are kept upright, so any seasoning can drain down into the bag and out of the chanter stock. Work your fingers around the part of the chanter stock that is tied into the bag to ensure that excess seasoning does not get caught there and congeal. Be sure that all excess seasoning has drained out before proceeding.

Clean: Once the excess seasoning has drained out of the bag, clean all of the stocks meticulously. Use paper towels or rags for this. Make sure the bottoms of the stocks are not clogged with seasoning. You can check the drone stocks by holding the bottom of two stocks together and looking through. Check the blowpipe and chanter stocks by holding under a light. If they are clogged remove the congealed seasoning with a stiff brush. The more you season your pipe bag the more this may become an issue. Your drones will not function properly if seasoning builds up in these areas, and it's easiest to remove at this point in the process.

Tying in a Pipe Bag

This is a guide to tying in a hide bagpipe bag. As with any instructions, it is recommended that you read them completely before diving in. If you are given the opportunity to watch someone else doing this first hand, take advantage of it. Ask to tie-in one of the stocks while being supervised because, worst case, it will simply need to be tied over again.

Materials required

- New hide bag
- Two small strips of hide for the neck
- Tie-in cord
- Two 12" (30cm) pieces of sturdy wood, such as a cut broom handle
- Roll of dental floss or a little thread
- Sharp utility or hobby knife or razor blade
- Scissors
- Marking pen

A Note About Tie-In Cord

A "tie-in" kit available from a dealer ($3-$10) will typically contain tie-in cord—sometimes enough to do more than one bag, a couple leather pieces for the chanter stock, and perhaps a rudimentary instruction booklet.

For tie-in cord—especially if you plan to do a number of bags—it will be worthwhile to purchase a roll of artificial sinew (usually made of Dacron, a trademarked type of polyester fabric made by DuPont) which is a bit sticky and can often be found at craft/leather supply stores. Purchase a heavier cording (if available) as thinner versions can snap with the tension required for tie-in and they can also cut into the leather. Others recommend "masonry twine" (braided nylon). Nylon has excellent elasticity and likes to shrink, keeping the tie-in tight.

An alternative for tie-in cord—this works out to be more expensive, but easily found—you can use waxed unflavored dental floss. (But don't get the floss made of Teflon.) Hammer a nail in the top of a fence (or some immobile wood object) and loop your dental floss over it, in one hand hold the loose end and with the other hold the dispenser. Walk backward about 50 feet (15m) then cut it from the dispenser. Tie the two loose ends together then double it up a second time, then a third, then a fourth so that you have about a 6 foot (2m) piece. Then twist it (keep the "looped end" on the nail) maybe 20 times then run your fingers over the length and—viola!—instant tie-in cord. Figure on two

rolls of dental floss for one bag. Once you've done the tie-in and snipped off the excess cord, you can melt the ends with a lighter or matches to keep it from fraying.

Because it is waxed it will tend to slip tighter around the stock. Because the individual strands are thinner than other cord materials, it will form more of a solid mass of cord once the stock is tied-in.

More exotic alternatives can be found in heavy-duty plastic cable ties, telephone industry "12-cord," automobile hose clamps* (a metal collar tightened by a worm screw—such as Jubilee Clips) and an assortment of other twines, cabling, etc.

Procedure

1) If you are replacing an existing bag, loosen the stocks by carefully cutting the tie-in cord with a seam ripper (a sewing item) or a sharp knife—avoid cutting too harshly with the knife, there's no need to gouge your stocks. Don't be too surprised if you find some skanky looking build-up on bottom of your stocks. Hopefully it won't be there, but it may be. This can be washed off with warm water and a little elbow grease—sometimes very gentle use of a blunt butter knife or toothbrush can be helpful if the deposits are stubborn. Some people even use bore oil to help remove buildup. I'd avoid using soaps or detergents; these may affect the natural oils found in the wood. If you wish to oil your stocks, this point would be a convenient time.

2) Mark the new bag where the stocks will go. You can use your old bag for reference, if you have one. (Keep in mind that if you were uncomfortable with the positions of any of the stocks in your old bag, now's the time to change their positions.) If you don't have a bag for reference, you can follow the following method for determining center points for the hole locations for an average size piper:

a. **Middle (Tenor) Drone Stock:** Laying the bag flat, fold the bag in half front to back and mark the top of your fold at the factory crease dividing the body side of the bag from the arm side of the bag.

b. **Bass Drone Stock:** Lay the bag flat, body side up. Measure 3 inches (76mm) straight down from the center point of the middle drone stock and then 3/4" to 1" (19mm to 25mm) toward the neck and mark it.

c. **Outside Tenor Drone Stock:** Lay the bag flat, arm side up. Measure 3 inches (76mm) straight down from the center point of the middle drone stock and then 1/2" to 3/4" (13mm to 19mm) away from the neck and mark it.

d. **Blowpipe Stock:** Lay the bag flat, body side up. Fold the bag front to back so the end of neck meets the center point for the Middle (Tenor) Stock and make a temporary mark at the fold. Unfold the bag and measure 1/2" to 3/4" (13mm to 19mm) straight down from the temporary mark and then mark the center point for your blowpipe stock

Mark a small "X" to indicate your future openings, as dots may be hard to locate later.

3) Prepare your tie-in cord: Tie one end around one of your heavy dowels, loop the remainder all around the other dowel, leaving about 3 feet (1m) loose between the two. If you are using several short pieces of cording, you'll need to repeat this step before tying in each stock.

4) Feed a tenor stock* through the neck into the body of the bag. Use dish soap to ease sliding if it's a tight fit. (You'll want to clean any soap off as soon as possible.) Center the top end of the stock under its corresponding "X" on the bag.
**Some pipers prefer to start with the bass drone stock, which is fine too.*

5) Cut your opening: Using a very sharp knife, cut from the center of the "X" to just shy of the interior edge of the opening in your stock. Be *very* careful not to nick your stock, particularly if it has ivory ferrules! *See "**Cutting the Opening**" below.*

Cutting the Opening
Most pipers like to use a star shaped opening, that is, eight cuts from the center to form the opening. As everything, there's advantages and disadvantages. This method results in an opening that will allow the stock to pass through a little more easily. The images show an "X" shaped opening, a little quicker to execute than the star shape, but much less common since it's a bit more prone to tearing unless you are very experienced with it. (I prefer eight cuts or circular myself.)

A sure-fire way to avoid nicking your stocks with a blade is to indicate your opening by pressing the ferrule end of the stock very hard down onto the outside of the bag in its intended location, then use a wide wooden stick inserted into the bag and under the opening as a cutting surface (to prevent cutting the opposite side of the bag).

An alternative is a circular opening. A U.S. 25-cent coin can serve as a cutting template. Or some pipers who do a lot of bags, purchase a copper T-joint pipe—about a 1 inch diameter—from a hardware store, then file down the edge of the bottom of the "T" to make it sharp enough to cut the hide. It can then be twisted it into the bag at the appropriate spot, using a wide wooden stick inside the bag under the opening to prevent cutting through both sides of the bag. Make sure your circle is centered correctly. The upside of this method is there's no chance of nicking your stocks with a blade and there are no weak spots that are more likely to tear. The downside is that you don't have the "spikes" of the star method to use as "handles" to pull the bag into position around the stock and there's always the chance of poking a hole all the way through your bag if your cutting surface inside the bag is in the wrong position.

6) Trim the opening as necessary. Try and slip the stock up part-way through the hole. It should be a tight fit and require a fair amount of force. If it's just not going, use your knife or sharp scissors to expand the opening. Trim as little as you think will make a difference. Remember that you can always trim more, but you can't put it back!

7) Position the stock in the hole for tie-in. (Some pipers wet the leather to help it stretch. It will shrink later and make for a tight fit.) It's a good idea to start with about 1/2" (13mm), since after you are done there should be at least a 1/4" (7mm) of material above the groove in the stock. Some pipers experience problems with their stocks slipping while they tie them in and to rectify the problem use a hose clamp (a notched collar that tightens when a worm-screw is turned) to temporarily secure the stock in place. Once the stock is tied in, the hose clamp is unscrewed and removed.

8) Tie-in the stock: Secure one of your two dowels under your feet, with the cording coming up between. Wrap the cording once around the stock, creating a half-hitch knot—a half-hitch is the very first step of tying your shoe after pulling the laces tight—then pull it tight making sure the cording stays in the provided groove in the stock. Three such loops around with the cording, pulling tight each time will sufficiently hold the stock in place, though some pipers use more. Secure the loose end of your cord.

Tying In
Instead of the second dowel, some pipers like to use a door knob or a strong hook as a fixed point from which to pull the cording tight around the stock. However you do it, keep your back straight and use good posture, especially if you are doing more than one bag at a time.

Finishing Off the Wrapping around the Stock
There's some debate about the best method of securing the cord once you've finished wrapping it around the stock. Here are a few methods:

After looping securely around the stock a few times, lay a "U" shape of a separate length of cord perpendicularly across the wrapping so it protrudes either side. Finish off all your wraps. Place the end of the main cord through the closed end of the "U". While keeping tension on it, cut off the excess, then pull on the two loose legs of the "U" (or tie the loose legs together for a better grip for use with a dowel) thereby pulling the end of the main cord underneath the body of the wrapping, to be hidden and held. This method is used with the "slip loop" method of wrapping.

Once done wrapping, simply tie a few half-hitch knots—the simple knot you make when tying your shoe prior to making any loops—and be done. (If the cording is synthetic, some people use a flame to melt the knot into a permanent mass of material.)

Once done wrapping, tie a clove hitch knot and if you want to be extra careful, finish it with a couple of half-hitches. (Again, if the cording is synthetic, some people use a flame to melt the knot together.)

9) Check the success of the tie-in by very aggressively trying to turn the stock loose. If it rotates at all, it needs to be redone. Make sure that there is intact leather visible above the tie-in cord around the entire stock, if not, it will probably not be airtight and should be redone.

10) Repeat steps 4 through 8 for the second tenor stock.

11) For your bass stock, do the same as for the tenors, but make sure the stock is leaning back and toward what will be the player's shoulder.

12) The blowpipe stock can sometimes be the trickiest part of the show. Ideally, it should be tied in a position that will minimize the likelihood of the blowstick swinging away from your mouth should it slip out of your mouth while playing. This means you are going to have a lot more material on the side of the stock closest to your mouth than the opposite side. Do a very preliminary tying of the stock, insert your blowpipe, plug the drone stocks and then inflate the bag and see how the blowpipe acts in relation to your mouth. Depending on your physiology and how you hold your bag it may not be possible to tie the stock such that the blowpipe just sits in your open mouth when the bag is full, but get as close as you possibly can to that goal.

13) Chanter stock. Two loose pieces of rolled leather are needed on either side of the neck seam to create an airtight seal for the chanter stock. Sometimes this leather comes with the bag, other times you can just cut sections from an old bag, or simply reuse wads from the previous tie-in. Create a noose out of hemp (dental floss or thread will also work) to hold the two leather pieces in place. (You may also wish to secure the rolls themselves so they stay rolled.) You will probably need more material on the side of the stock facing your body so that the chanter will hang down and

perhaps slightly back toward you. You may wish to check the position of your stock with the chanter in place and bag inflated prior to completing the tie-in. Many pipers do a second wrapping off-angle from the stock's channel to provide additional support for this twisted and pulled stock. The chanter stock is often the most tricky to get airtight. Some pipers always slip a 2" piece of cut bicycle tire inner tube (from a mountain bike or cruiser) over the groove of the chanter stock before tying it in. Others wrap various tapes over the groove. Some stuff the groove with kneaded eraser material or putty used to hold posters to walls. If your chanter stock leaks despite your best efforts, you might opt for one of these methods.

Tying in a sheepskin bag is different than cowhide. You can download instructions at: http://www.bowesbags.com/pdfdocuments/tieinfactsheet.pdf

All Things Drones

Synthetic Drone Reeds

Synthetic drone reeds offer pipers adjustment options, reliability, and stability, but they are not without complications. In most cases, your drone reeds will come set up well from the factory, but these settings can be changed over time and use, or they may need to be adjusted for your pipes. This guide may help in troubleshooting reed issues and better understanding the type of synthetic reeds you or your students use.

General Tips for Synthetic Drone Reeds

- A little change goes a long way, so make very small adjustments and test them
- Blowing reeds without the drone may damage them
- Only "flick" reed tongues if this is recommended in the manufacturer's instructions
- Make sure to keep the reeds away from extreme heat
- Keep reeds clean by keeping the pipe bag clean and free of desiccant material
- Twist reeds in and out of the drone to avoid snapping wood tenons

Plastic-tongued drone reeds have a reputation for producing a broad and mellow tone. However, they do, arguably, take more time to settle in and adjust than Carbon Fiber tongues. Plastic tongues tend to take all the air the player allows them. The bridles must be adjusted into the optimal position over time and will require regular checks to ensure they remain air efficient.

With some makes of plastic-tongued synthetics, it is often difficult to tell if the reed is performing in an air-efficient manner. The reed may appear to be functioning properly, but you will be working harder than you should be. You may not be able to put your finger on the problem right away. Be on the lookout for the following indicators that your drone reeds may be taking too much air:

- drone will not blend
- drone is excessively loud
- drone tunes very low
- no double tone (foghorn like) or hard to blow through double tone (tongue may be misshapen)

The bridles on synthetic reeds require only *a very fine* movement in order to make a big difference in the performance of the reed. A good way to ensure that your reeds are taking only enough air to make them function is to shorten the tongue so the reed does not sound at all. You should then work back, lengthening the tongue a tiny amount at a time until the drone sounds. Ensure the drone is not shut off easily, but, at the same time, is not impossible to shut off. Test the reed in the pipes after each adjustment. Stop the other two drones and work on one reed at a time. I strongly recommend you add new drone reeds one at a time. Allow each reed 4 - 5 hours of playing before introducing the next.

Remember, the strength your drone reeds is dependent on the strength of your chanter reed. The chanter reed will govern the overall strength of your bagpipe. With this in mind, set your chanter reed first, give it time to find itself and add the drone reeds one at a time. If you're still finding your pipes too difficult to blow, there may be another issue affecting air efficiency.

When you are happy with the strength of your reeds, you should make the necessary pitch adjustments in order to achieve the correct tuning position. You can do this by repositioning the reed in the reed seat and moving the tuning plug/screw. It is not advisable to move the bridle for tuning position if you are happy with the strength of the reed.

Plastic tongues will wear out over time. It will depend on the amount they are played. Many professional players will change their reeds every year to ensure reliability. However, the average player should expect 3-4 years out of these reeds. Some manufacturers allow for only the tongues to be replaced. With other makes you will have buy a new set. Different makes will also require different blowing in periods. I recommend you read the manufacturer's instructions before playing and adjusting your new reeds.

Carbon Fiber-tongued reeds are renowned for their rich harmonic sound, steadiness and overall reliability in wet conditions. These reeds are generally easier to set up than some plastic tongued reeds and settle in very quickly.

Most carbon-tongued reeds have rubber o-ring bridles. These require very fine adjustment and should be slid over the tongue, not rolled. You may experience problems if your pipes have narrow diameter stocks, as the o-rings are very bulky. Care should be taken when removing and inserting the reeds not to bump them on the side of the stock as the bridles may move easily.

When setting the reeds up in your pipes, I again recommend you work on one at a time and test in the pipes after each adjustment. It is not advisable to blow the reed by mouth as saliva can clog the movement of the tongue. You should not attempt to bend carbon tongues unless recommended in manufacturer's instructions. Most carbon tongues are stiff and are designed to lay straight on the reed body while being held open by the bridle and change in gradient of the reed body at the back end of the reed. Flicking will have no effect on most carbon tongues. In theory, carbon reeds should last a lifetime. The o-ring bridles will likely break down over time but can be replaced easily.

Glass Fiber tongues, arguably, are the most harmonically similar to cane. Some makers stress that their tongues should not be manipulated, while others state that their tongues can be shaped like cane tongues. It depends on the thickness of the tongue material itself as to whether it can be shaped without putting a permanent kink in it.

Like Carbon Fiber, Glass Fiber tongued reeds have a very long life. They may settle eventually and need adjustment. However, they should not need as frequent tweaks as plastic tongues.

Cane Drone Reeds

While synthetic drone reeds have largely replaced cane reeds, many pipers still believe that cane produces a superior tone, and some will play little else. With reed companies like MG Reeds making cane reeds, cane drone reeds are also enjoying a resurgence of interest.

When setting up your cane reeds, I recommend the following procedures:

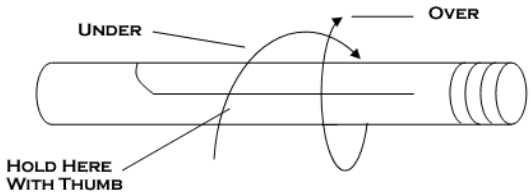
Examine the reeds. Gently lift the tongue a little and while holding up to the light, check for a clean interior. If you find the inside is rough, take some very fine sandpaper; roll it to fit the diameter of the reed and sand out the reed until clean. If the tongue has slivers of cane attached, pull them free gently. Do not cut them off.

In an ideal situation, you should blow the tenor reeds in at the same time. The bass reed is usually easier to deal with. You should blow your cane drone reeds in on their own without the chanter.

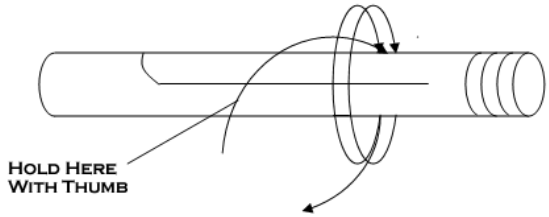
Insert the tenor reeds in the drones and with the chanter stock corked off, blow up your pipes. Keep the pressure low. The reeds will probably stop. This is normal. Lift the tongues gently. Now the reeds will play for a while but may stop again. Lift the tongues again gently. Expect them to stop again. You have to train the tongues into the correct position. Patience is the key.

At this point, examine the bridle. The tension of the bridle is critical to the performance of the reed. Many makers will tie the bridles too tight, or they become too tight as the cane expands with the absorption of moisture. If, even after playing, a bridle is too loose, it will have to be re-tied.

The following diagrams demonstrate one way of tying a bridle. Use only black waxed hemp.



Continue winding while moving to the left. Again, the correct tension is vital so you may have to do this a few times. Test the reed before tying off the hemp. A squeak indicates the bridle is too tight.



Three wraps is sufficient. Tie off the end in a half hitch. Cut off the excess hemp strands.

When you are happy with your bridle you can set the strength of the reed by moving up or down the tongue. Closer to the drone will strengthen and flatten it. Closer to the waxed end will weaken and sharpen it.

The scope for pitch adjustment of cane is limited, as there are no tuning plugs. This means you have to establish what diameter of cane you need. This all depends on the make of your pipes. A wider diameter is lower pitched and a narrower diameter, higher pitched. Narrow bore drones tend to be inherently lower pitched (will require higher pitched reeds - narrower diameter cane) and wide bore inherently higher pitched (will require lower pitched reeds - wider diameter cane). Even when buying synthetic reeds, you should take these facts into consideration as some synthetics have very little scope for pitch adjustment. In these cases you

should be thinking about the diameter of the reed body and the compatibility with your make of drones. We will be happy to help you in choosing the right drone reed.

Cane drone reeds are notoriously sensitive to changes in moisture. To keep them in playing condition, they must be played every day. You must closely monitor the amount of moisture they get. They will not perform steadily if too dry and they will swell and become sluggish when too wet. Allow new cane reeds to absorb some moisture before adjusting them. If you do not, expect them to be unresponsive to the adjustments you make. Cane reeds are not impossible to play and maintain and pipers should not be intimidated by them. Having a solid knowledge of cane will stand you in good stead for understanding the mechanics and capabilities of your synthetics. In addition, they are inexpensive. Take note of the effects your adjustments have and you will gain experience quickly.

Air Efficiency

Regardless of whether you are playing cane or synthetic, below is checklist of areas you should examine if you feel your pipes are just too hard. It may be down to a single problem or it may be a combination of problems.

- Check stocks are securely attached to bag
- Check the bag is airtight. Do not take this to the extreme. No bag is completely airtight. If you cannot put a significant amount of air into the bag after 30 seconds, it is tight enough. Do not dunk the bag in water. Put a small amount of water inside the bag instead.
- Check for cracks in wood, pay particular attention to the blowpipe and blowpipe stock
- Check your blowpipe valve is functioning properly. A little mac valve is very durable and convenient but will restrict the amount of air you blow into the bag. We might advise against this if you have any physical problems which hinder your blowing. Consider purchasing an Airstream blowpipe
- Check the hemp job. Loose joints will lose air. If you do not keep your pipes in god order, do not expect them to perform for you
- Read the information **"Blowing & Pressure"** If you cannot blow steadily you will not be comfortable with your instrument and it will always be a struggle to keep it going.
- Check your reeds are secure in the reed seats. If your reeds are wobbling in the reed seats, remove some of the hemp and push them in further. If this does not remedy the problem, ream out the reed seats a little or get new drone reeds with narrower tenons.
- Check the strength of your chanter reed. This is the first reed to check. See the information on chanter reeds.
- Check the air efficiency of your drone reeds. Move the bridles to shorten the tongue and stop the reed. Work back until the reeds take the minimum amount of air i.e. they do not shut off when you play but can be shut off if you try.

Adjusting the Drone Reeds

Let me preface by saying that not all drone reeds are "ideal" with all drones. Some drones tune **way** too high with some brands of reeds. Some drones sound "rough" with some brands of reeds. Talk to other instructors and other band members if you are considering a change in drone reeds.

First off, you need to first adjust your reeds to the air needs of your pipes. For most modern brands, you'll only need to adjust the bridle to set the air consumption. You should just be able to "blow out" a drone reed by blowing really hard - don't give yourself a hernia! - but it should "shut down" at very high pressure. If not, it's too open and you're wasting energy that you could put into playing.

Remember that most reeds will become more pliable with temperature, so play for a minute or two to warm up the reed. Then set the reed so that it will just barely shut off when you blow really hard by adjusting the bridle up or down in millimeter increments. If you get tired in this process, you may have to tweak it again tomorrow, but make very small adjustments.

Once the air flow is right for your drone/reed combination, then move the screw/plug to get the drone to tune to the right spot on the hemp for your chanter.

At this point, you are done.

Squealing Drones

Why do my drone reeds squeal? If you are, first and foremost, sure that your reeds are properly adjusted, it's a matter of learning how to deliver what is needed by your combination of pipes/reeds. The bottom line is that you'll need to adjust your strike-in technique to meet the needs of your drone/reed combinations - so that they don't squeal.

Squealing is the drone reed vibrating at the wrong harmonic - usually two or four times the intended frequency. Depending on the air flow characteristics of the pipes, your reeds may start vibrating at the wrong harmonic if the air pressure comes up too quickly or too slowly - or if it goes back down and back up again!

Some drones squeal if struck in an a given way with some kinds of reeds. I know that a very common brand of reed in a certain highly regarded brand of bass drone will commonly squeal upon a normal strike in, but a very gentle strike will do just fine. Some reed/drone combinations "like" a strike-in right under the bass drone - or not! - or with a certain strength. This sounds odd, but it's all true. Experiment and you'll find the right way for YOUR pipes.

The most common cause of squealing is that piper who actually hits the bag, bounces off a little and then pushes again. This causes the pressure to spike up, fall off and then come back up. I see this most commonly amongst inexperienced pipers that are trying to strike in and get both hands to the chanter in two beats!

A controlled squeeze - faster or slower - from the right initial pressure - not too high or low - is what you want. Once you start the pressure going up, keep it going up - never allow it to back off - and you'll do very well.

Experiment by starting out without striking in at all, blow up your pipes by mouth bringing up the pressure slowly from a low initial point and see what happens. From here you can add in a gentle strike. Learn what your pipes need and learn to deliver it.

For additional information on drone reed adjustments, check out Andrew Linz's web page: http://www.bagpipejourney.com/articles/dronereedadjust.shtml

Drone Valves

Drone valves may seem like an easy solution to achieving a clean cutoff. Like anything on the bagpipes…there is no easy solution. Drone valves serve a variety of purposes and as you will read they have been around since at least the mid 1800s.

Drone valves are placed at the base of the drone stock to help regulate air through the drones. Or if the piper is using a hose moisture trap, the drone valves can be in-line. The intent is to stabilize changes in bag pressure with regard to the drone reeds, so the piper has steadier sound, easier starts and crisper stops. Volume is reduced slightly. I do not recommend students first starting out on the pipes to install drone valves.

Most valves are certainly most practical with a zipper or clamp-back bag however, some allow insertion through the drone stock.

Contrary to the assumptions of many, drone valves are not a new invention, having been employed by the early 19th century and perhaps even earlier.

McDonald-made Pressure Regulators
Introduced: Before 1840

The image to the left shows a drone regulator made by Donald McDonald (a bagpipe maker) who died in 1840. The regulator was made from the same billet of wood as the accompanying stock so was turned at the same time and was not added at some later point in time.

Some of the more common drone valves include:

McCallum Drone Valves
Manufacturer: McCallum.
Introduced: 2001

These devices also contain a desiccant to absorb moisture. These are most practical with a zipper or clamp bag.

Ash Plugs
Manufacturer: Alan Ash of Canada.
Introduced: 2001

These are modeled after the McCallum valves, but have some design differences and retail at a much lower price than the McCallums.

There are also drone valves to work with the Ross Canister System:

Hylands In-Line Drone Valves
Inventor/Manufacturer: Nigel Hylands and co-developer Ian Lyons, both of Melbourne, Australia
Introduced: March 2004

These valves fit in-line on most hose moisture control systems. Strength of the valve is adjustable via a hex screw located on the side of the valve collar (clockwise tightens).

I do not recommend students just starting on the pipes install drone valves. You first need to learn to strike in and cut cleanly without the valves. They can be added at any time.

Oiling the Drones…or not

Oiling is one of those issues that cause heated arguments. Obviously for those of you playing pipes made from Polyplenco material…this discussion is irrelevant.

As a maintenance issue - on a well conditioned, frequently played, well cared for pipe, not exposed to extremes of heat or humidity- you probably don't "need' to oil it. However, if you occasionally leave your pipe in the car, near a radiator, play in high humidity/rain or leave you pipes unplayed for a few weeks or more - you might want to oil them.

If we consider "oiling" to be an "answer", the underlying "question" is, "how do I prevent my pipes from ever cracking?"

Let's understand the issue...
When you play, you put very humid air into the inside of your instrument. That's why most pipers play with a moisture control system. If the moisture is absorbed by the wood, the wood will swell to accommodate the molecules of water. Only the wood near the bore will swell, not the rest. This creates a stress in the wood which can result in a crack or split.

Although it is sometimes presented that oil creates a layer on the surface of the wood so that moisture can't get to the wood - **more correctly**, moisture can only get through the oil and into the wood "slowly". This lets the wood swell slowly. As long as the rate of swelling is slow, moisture can migrate through the wood and allow the entire piece to swell slowly. In this way there is minimal stress built up in the wood and minimal internal forces to cause a crack.

Oils

Let's first understand that we want a layer that moisture cannot easily/rapidly penetrate. Commercial woodwind bore oil is often simply a particular viscosity of mineral oil. This is a simple hydrocarbon (paraffin) mixture like common motor oil. It is rather incompatible with wood and only coats the very surface. It basically never dries and seems to lose its effect after several weeks.

Oils which are biologically derived from natural sources (i.e., almond, tung or linseed) may be slightly more "soluble" in wood, but when spread out in a thin layer, will cross-link and "dry". These oils tend to last longer after application.

Paraffin waxes or biological waxes are just higher molecular weight versions of petroleum and biological oils, respectively.

My advice would be that commercial bore oil won't hurt and can be applied once or twice a year. I oil my pipes in the spring and fall.

Another reason for oiling the bores is to help smooth the surface of the bore. A rough bore acts like a filter to remove some of the harmonics of the sound. In general, smoother bores have more high frequency content in their harmonics. Polishing or oiling results in a smoother bore and increases the fraction of high frequencies coming out of the drone. Depending upon your point of view, this may or may

not be a good thing! Some pipes have the reputation for having gun-barrel-smooth bores and do not require oiling.

A rough bore also presents more surface area for absorption of moisture from your breath into the wood. Rough surfaces have more surface area and, therefore, take up moisture faster and potentially result in a more rapid build-up of stress. If the rate of moisture uptake is slowed sufficiently to allow equilibration of the moisture level between the wood on the inside and outside of the drone, the wood will not build up stress and will not crack. Once the wood is equilibrated to a humidified level and the drone is played regularly, the moisture level in the wood will not change and the drone will not split.

The roughness of the bore can be treated by either oiling or polishing. Oil or wax creates a water-resistant layer that slows the uptake of water into the wood; it also fills in the imperfections in the wood surface making the surface smoother. Polishing reduces the surface area available for absorption of moisture and thus keeps the rate low. Both techniques will reduce moisture uptake. Both approaches will alter the sound of the drones.

The decision to oil or not is ultimately yours to make.

Drone Cords (by Andrew Lentz)

Drones are held by twin large, long cords that are joined together at each end by a tassel. The drone cords are secured in four places: outside tenor drone top to the middle tenor drone top to the middle section of the bass drone, to the top of the bass drone. (Not counting the final knot of the cording itself at the bass drone.) Drone cords are traditionally made of wool or silk but can now be found of other materials, including polyester. These cords are available in a range of colors.

Positioning and Securing the Cords

What to use. These days there are two common means of keeping the drones in position along the cords. First is by thread, or hemp. Second is by plastic cable ties. Many brands of pipes are now shipped with the cable ties as they are very quick to install. I, personally, don't like the appearance of cable ties as seems incongruous to a ancient instrument, but they do lock in place quite well, seldom slipping when installed tightly. Thread/hemp is the traditional method, is usually less conspicuous but over the course of months or years can work loose more easily, unless sewn through the cording. Cable ties have to be removed by cutting with a sharp knife or snipping with thin shears, while thread/hemp can be partially cut then unwound which is typically less risky to the cords.

Since cable ties and thread come in some different colors, I'd recommend matching the cord color as best you can. If you have dark cords, go with as dark or darker ties. If you have light cords, go with as light or lighter ties. Thread is easy to match. Hemp you will find usually either in black or yellow.

Another less common method of securing drone cords is rubber O-rings, which can be purchased at most hardware stores. (These will be practically impossible to install if your tassels are permanently affixed to the end of your cords.) The advantage of O-rings is that changing cords becomes quite easy. Simply roll the O-rings away from the drones and slip off the cords.

A variation on the hemp/thread method is—after positioning has been determined—to sew/tie one side permanently together but for the other side of the drone secure it temporarily by sewing snaps or a hook/eye combination. To remove the cords, unsnap or unhook.

Yet another method is to use wire twisty-ties like those used to seal plastic bags or secure computer cables.

Positioning. There are a few different schools of thought on the spacing between the drones. There are those that say it should be approximately 7" between bass and middle tenor and 5" between center tenor and outer tenor. Another says seven inches center to center. Some recommend simply using the length of a dollar bill to determine the spacing. These methods make no allowance for differences in stature of the piper. Another school says to use your hands for determining distance, i.e. full hand span (thumb tip to pinky tip) between bass and tenor centers, and span with thumb in (side of thumb to pinky tip) for tenor to tenor centers.

However you determine the measurements, the bottom line is that it should be comfortable for you. If it's not, change it.

The drones will sit between the two parallel cords. Once you have placed the cords on either side of the cord channel on the drone top and level to the middle bass drone section, you are ready to secure.

Securing. I recommend that you start with the outside tenor. The idea with the length of the cords is that while holding the pipes at your side by the bottom section of the bass drone, arm hanging down, drones spread as far as the joining cording allows is that the tassel should not drag on the ground. For an average size male, the measurement from tenor drone to end of tassel should be around 14" (give or take an inch). If you can move the tassel up later and trim the excess, you've got the luxury of erring too long. If you tassels are permanently fixed at the ends of the cords, it's better to go too short.

One option for tying is to position the cords at a 90 degree angle from each other on the outside tenor (when looking down from the top of the drone, one facing toward the middle tenor and one facing the back), 180 degrees on the middle tenor (right and left), 90 degrees for the middle portion of the bass drone (toward the middle tenor and the other back) and for the top of the bass drone, tie them as close together as you can get, maybe half an inch apart, these will both hang toward the back of the pipes. Another other option is to simply keep them all at 180 degree angles to each other, it makes the cords a little more "loopy," but since it's tradition, it's fully acceptable. Or you can do a combination of these two options.

Make sure that after you've secured the cords to the middle section of the bass drone and you are about to secure the cords to the channel in the bass drone top that you leave enough slack to be able to remove your drone top! You don't want it taut, and you don't want it so loose that it droops more than 4-6 inches.

For installing cable ties, I'd recommend that initially only tightening them to the point where they are snug but moveable so that they can be repositioned during the installation process. Once you are sure of the placement, draw it as tight as you can get it. Clip one tightly on one side of the drone, pull the cords tight, and slide the second tie up as close as you can to the drone then tighten it. Carefully cut off the excess cable tie and you are done.

For thread/hemp, I'd recommend a similar approach. Position the drone in question, tie one side tight—looping thread around a dozen times or so (half that for hemp) then tying it off—then proceed to push the drone against your new knot, then tying a second knot as tight as you can get it to secure the drone in place. If you are using thread, you can actually sew directly through the cord. This will prevent the thread from slipping away from the drone and getting loose.

Tying off the bass drone. Once you've the cords all secured in place you are left with a somewhat long drone cord hanging off your bass drone top. You're going to want to tie this off a bit so it doesn't catch on things or build up momentum and swing your drone back and forth.

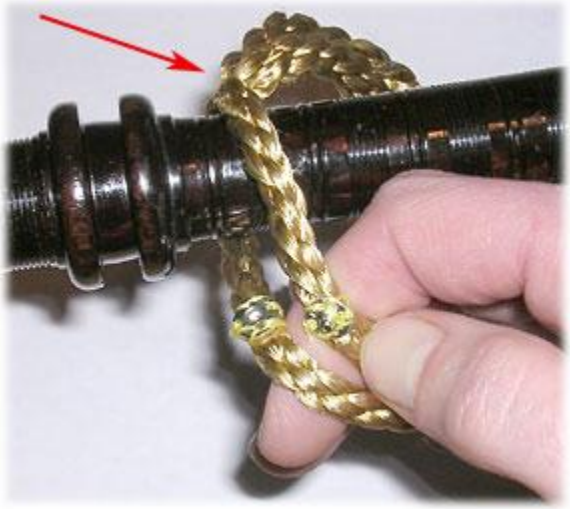
Now, how to do that bass drone knot? You have two portions of cord to deal with, the part that connects from the drone top to the middle drone section and the tassel part. Take the tassel cord and line it up so it's parallel to the other cord, i.e., the cord is doubling back on itself—so, up from the middle section, up to the groove, back down. About a quarter to a third of the way down, pinch the two together and loop the tassel cord around the other cord. Once the tassel cord has passed the loop starting point, feed the tassel (and cord) down through the loop toward the bag, and pull it tight.

Adjusting. If you find that the drone spacing is just not quite right, you have a couple options. The first is obvious: redo your ties. The second is not as obvious and will have a little visual impact. You can remove the drone top and rotate it around the cord (like spinning a propeller), this will twist the cords and shorten the distance between that drone and the adjacent drone. If you twist the center tenor it will shorten the distance between both the bass drone and the outside tenor—unless you had twisted some of the cording in the opposite direction previously! If you find that in order to get the correct distances that one stretch has the cords very twisted and the other not, you might consider for the sake of esthetics redoing your tying for one drone.

Quick-Change Drone Cords

If you need or want to change your drone cords easily, a good alternative to sewing or cable ties is either snaps or a hook and eye combination—or you can read the O-ring discussion above. I'm going to only discuss snaps, but a hook and eye system will be similar.

Only move onto a snap system after you are sure of your drone positions. It takes me about 90 minutes to sew one set of drone cords with snaps. You may be faster than me, but nonetheless, it's not something that you'll want to repeat over if it's wrong. (I usually set myself down in front of a movie while sewing so I don't get completely bored!) Resist the temptation to use tiny snaps to be inconspicuous. They won't hold, particularly between the middle tenor and the bass drone. Use snaps at least the full width of the cord diameter. You should be able to find snaps in at least black and silver and perhaps other colors. If you are very particular, you can color the snaps with thin coat of enamel paint, finger nail polish, or with an enamel paint pen often found in art supply stores.



You only need snaps on one side of each of the cord grooves as releasing one pair of snaps will allow removal of the cords from that drone. The snaps should be placed on the inside of the outside tenor, the bass drone side of the middle tenor, the middle tenor side of the bottom bass drone section, and finally, the tassel side of the cords for the top section of the bass drone. The hardest part is getting the correct placement of the snaps relative to their companion permanent wrap/stitch on the opposite side of the drone. Too loose and the cords may slip from their groove. Too tight and the snaps unexpectedly open. Once done, you can use your completed set of cords as reference for placement of snaps on other sets of cords.

You should be able to remove one set of snap drone cords and replace them with another in under one minute. I've timed it. It's very quick.

How to make your own drone cords

Unlike a bag cover which requires sewing, it is quite easy to make your own drone cords. I've found that making your own drone cords doesn't save you much money, the materials cost more or less the same as buying a completed set of cords, but you do get to customize the cords as far as length, type of tassels, and color combinations. And in a pinch, you can make them very quickly if commercial replacement cords aren't readily available.

Finding materials. A trip to a home decor shop or a fabric store will often provide you with the raw—if you can call them that—materials: cords and prefabricated tassels. Keep in mind that it is traditional to have the tassels the same color as the cord. (As a beginning piper, in the first set I made, my tassels matched the trim of my custom bag cover and the cord match the body of the cover—I received some strange looks at band practice.) Store bought tassels are usually a little wider and the dangling braids thicker than prefab bagpipe cords, but they don't look bad.

You will need 10-12 feet of twisted cord. These will be doubled up to make the two parallel lengths. Or you can get several 6-7 foot lengths of assorted colors if you wish to braid your cords. You will also need the two tassels.

Assembling materials. If you want to braid your cords, you'll have to look elsewhere on how to do it. (It's been recommended to investigate both lanyard weaves and linear macramé braids—of which I know nothing about.) The only advice is remember with braiding is to leave a little extra space around the drones in case you wish to remove the cords without completely unbraiding them.

From tassel top to tassel top should measure somewhere in the neighborhood of 62". I measured three sets of commercially manufactured drone cords and the exposed cord measured 62.5", 61.5" and 61" respectively. So some variation is obviously acceptable—no one's going to come up and measure your tied up drone cord!

Tassels typically have some mechanism for securing the cord inside the "bell" of the tassel, sometimes just a plastic insert with grooves to accept the cord. If you'd like, you can put the tassels on after you secure the cords to the drones, or you can lightly place the tassels, and tighten them down after you are sure of the lengths.

Chanter Reed Basics

Let me preface by reminding you, **DO NOT ADJUST THE BAND CHANTER REED**. The reed you play in a band setting is the responsibility of whoever is tuning the band. If you fiddle with the reed, it will take longer to tune the band. Most pipers have a separate chanter for solo/non-band playing. The reed you have in your solo chanter is yours to do what you choose.

Anatomy of a Chanter Reed

Mouth. The mouth of the reed is the opening located at the top of the reed and is formed by the two opposing pieces of cane, the "blades," sometimes also called "tongues." The very top of the cane portion of the reed is called the "lips" or "tip" of the reed.

Shoulder. This is the area across the central portion of the exposed cane. On a ridge cut reed, the shoulder is fairly pronounced.

Binding. To hold the two pieces of cane to the staple, they are wrapped with black hemp. This is called the binding. *If the binding starts coming loose, clear finger nail polish will provide for a good repair.*

Hemp. The hemp is not technically part of the reed itself, but facilitates positioning the reed correctly and snugly in the "reed seat" which is the hole located at the very top of the chanter. The hemp should not even partially block the hole at the base of the staple as this will affect the reed's performance.

Staple. At the base of the reed is a cylindrical/conical piece of metal, typically copper or brass that provides a support for the rest of the reed. (If you are lucky, might get to see an old reed with a staple made of silver.) The staple opening is round at the bottom and elliptical at the top. The staple is a soft metal because sometimes it is desirable to alter its shape and, consequently, also the reed's sound. This alteration is accomplished with a tool known as a mandrel.

There are two basic reed shapes or cuts:

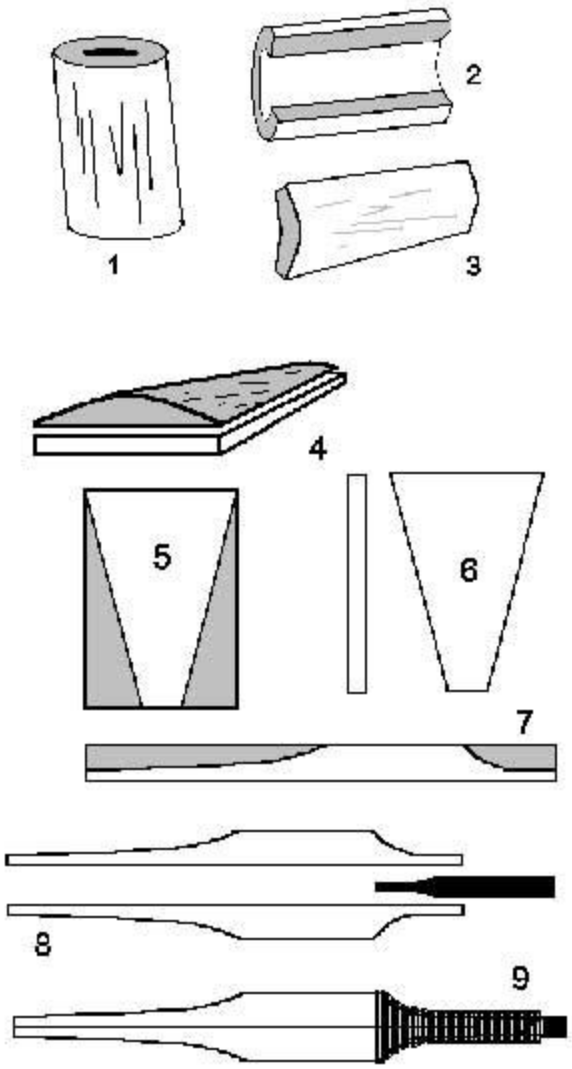
A "Molded" Reed
This is an example of a "molded" reed. Notice the gradual taper from the binding to the top of the reed. Due to their shape, a molded reed's blades get most of their support from the staple.

A "Ridge Cut" Reed
This is an example of a "ridge cut" reed, rarely also referred to as "french cut" reed. Notice the distinct step at the shoulder, though not all ridge cut reeds are quite this obvious. The blades of ridge cut reeds get the most of their support from their thick base.

Making a Chanter Reed

The bagpipe chanter reed is perhaps the single largest source of frustration for a piper. New reeds are usually difficult to blow and can make blowing your bagpipe a physically and emotionally draining experience. All reeds weaken after an initial "blowing in" period. Some pipers, however, try to avoid the process by selecting weaker reeds or hasten the process by performing "rites of passage" on the reed.

Spanish cane, (*Arundo donax*) grown in the Mediterranean region, is cut and sun cured to produce a dry, hard cane product. Reed makers try to select cane that is relatively close-grained and very hard.



Cane selected for chanter reeds is about one inch in diameter. The walls of the cane are about 3/16 to ¼ inch thick. Eight inch lengths are split in half and shortened to two inch lengths.

The inside surface of these short lengths are now planed to produce a slight radius. This is done manually or otherwise on a specially built planer. This produces the finished inside surface of the reed. This "blank" is then placed into a cutting block and the vertical sides of the reed are cut. All cutting tools are extremely sharp so that the cut will not otherwise damage the cane fibers. The next step is to cut the outside horizontal surface. This removes the bark of the cane and leaves us with a reed blank that is roughly the size and shape of the finished product. Because we have already finished the inside surface of the blank to have a slight radius, the outside surface must be cut while the blank is held flat. Otherwise the reed will be thin in the center and thick along each edge.

Up to this stage of production, the blades can be mass produced and stored almost indefinitely, provided they are kept in a stable environment. They are still quite hardy and able to withstand normal handling and storage. The next step is quite another story. The blades and the neck are both cut to a finished thickness by means of a precision cutting machine. This leaves the blades very delicate and subject to damage.

After soaking the necks of the blades in water for about ten minutes, (the water is actually absorbed up into the body of the blade) the blades are tied onto a copper tube called a staple. The staple is tubular at one end and flattened into an oval shape at what will be the top end.

Now we have a pretty rough reed. The blades are long at this point and will be finished to about 16mm above the hemp line in a couple of days. This settling of two or three days is necessary to ensure the reed forms properly as it dries. Remember, it was tied onto the staple when wet. Before finishing, the reeds are carefully inspected to ensure that no splitting has occurred during the drying period. The reeds are finished to the maker's standards and the blades are shortened to finished length.

Effects of Moisture on Reeds

As a chanter reed is played, it will absorb moisture. This moisture will soften the cane, which normally would lower the pitch, however there's a second effect on the reed. When played, a reed experiences air pressure upon it, forcing it to close up, which raises pitch. This means that if a piper picks up a set of bagpipes and tunes the drones to a relatively dry/unused chanter reed, the drones will be out of tune after a brief time (5-10 minutes usually) as the chanter reed pitch rises.

One might think that it would be advantageous to keep the reed very moist—eliminate one variable, so to speak—perhaps by leaving the chanter attached to the bagpipe bag. However, moisture is a catalyst for mold growth. Mold breaks down a reed and will greatly reduce its life span.

Consequently, most pipers remove their chanters from the bag and use a "reed cap" (sometimes called a "chanter cap" or "dry stock") to protect the reed while it is seated in the chanter. On the other hand, if your reed is still developing mold while in the reed cap, more air circulation would be wise. Drill a few holes in your reed cap. Later if your reed is drying out, some or all of these holes can be sealed with tape.

Pay attention to the moisture level in your pipes. Don't believe the myth that chanters must always be kept out of the pipes. Experiment for yourself and you will find what works best for you in the particular environment in which you play. Much depends on the conditions. There are many top pipers who leave their pipe chanters in their pipes. If the climate is humid then capping the chanter after playing is probably a good idea. If the climate is dry (let's say below 40% humidity) then you may want to leave the chanter in the pipes. It is advisable to take the chanter out immediately after playing, check it for moisture, leave it out for a couple of minutes if need be, dry the chanter stock and then replace the chanter in the pipes.

Remember not to leave your chanter reed exposed to excessive dry conditions for more than a few minutes. This is enough time for it to turn into garbage. If you do experience dry conditions where you live you should take precautions to protect your reeds and your instrument or expect the worst. Your pipes will be prone to warping and cracking and your reeds will be dry, brittle and lifeless. Use a case humidifier. You will find one at any music store. Violin or guitar case humidifiers are probably the best. They are inexpensive and your pipes will thank you for it

Setting up a Reed

In short: *"In/up, out/down."* Lowering the chanter reed into the chanter shortens the distance between it and the holes in the chanter and raises the pitch. Raising the reed lowers the pitch. Changing the quantity and position of the hemp on the binding will affect where the reed seats. If the bottom of the staple is in direct contact with the reed seat—with no hemp acting as a cushion—the pitch of the reed will be raised even more than you may expect. Whatever you do, you want the reed seated very firmly as a loose reed will be flat and erratic.

The top hand notes' pitches are more greatly affected by raising or lowering the reed. This means that if the lower notes are in tune and the top hand is flat, it may very well be corrected by pushing the reed slightly deeper into the chanter. This also means that the scale is stretched as the reed is seated deeper.

This relationship is useful when setting up a solo chanter with a new reed. Here's the basic procedure:

How to Set-up a New Reed in a Chanter for Solo:

1. Place your reed in the chanter.
2. Tune a single tenor drone to low-A.
3. Check high-A to see if it's in tune.
4. If high-A is sharp, raise the reed in the chanter. If high-A is flat, lower the reed in the chanter.
5. Go back to step 2 and repeat until low-A and high-A are in tune.
6. Check each note on the chanter, if none are flat then tape any sharp notes,* you're done! (At this point you can read the Low-A note with a tuning meter to determine the chanter's natural pitch in Hertz for future reference.) Otherwise you either sacrifice the chanter & reed's natural pitch and push the reed in to sharpen the flat note, you modify the reed (see below), or if you really know what you are doing and it's a consistent problem, you might consider carving that hole on your chanter.

**Sharp notes can be made flatter by placing a piece of tape (I recommend pin striping tape) over the top portion of the corresponding hole.*

Some notes are easy to tune, High A and E for instance. Many pipers have the most trouble with F. Tune as best as you can against a tuned tenor drone then play a tune that you know well and hear how it sounds. If a note sounds out of whack, then it probably is. If you are not sure if a note is sharp or flat, put your finger a little over the top of that hole and listen. If it sounds better, then the note is sharp and needs tape, but if it sounds worse, it's flat and

you'll probably have to either sink the reed to sharpen that note and tape the holes above *or* perhaps carving top of that hole of your chanter.

Matching a Reed to the Chanter

Matching the right reed to the chanter is essential in creating a unified “band sound.” Take the same chanter reed and stick it in another chanter and it may not sound the same. Similarly, take a chanter and stick in various chanter reeds and the sound will change. This is why we all use the same brand of chanter (and usually reed) when competing. Chanter reeds vary from brand to brand and perform differently under different conditions. Some reeds do well in dry conditions – while that same reed goes limp in humidity. For the most part, we will supply you with a chanter reed for band performances. But you will also want to have a supply of reeds for personal/solo use. There are many excellent pipe chanters and reeds on the market. Henderson’s bagpipe supply suggests the following pipe chanter/reed combinations. This is not the last word in pipe chanters and reeds but it is a good place for beginners and less experienced players to start.

Reeds	Strength Available	Works well in
Shepherd	Hard	Shepherd, Gibson, Naill
Warnock	Easy, Medium, Hard	Warnock, Gibson, Shepherd, Dunbar
Apps	Easy, Medium	Naill, MacCallum
Abedour	Easy (beginner), Medium	Gibson, Shepherd, Dunbar
McCann	Easy, Medium	Gibson, Shepherd
McAllister	Hard	Naill, Gibson, Hardie
EZEE PC	Easy, Medium, Hard	Naill, St. Kilda
Ross	Medium, Hard	Naill, St. Kilda, Kintail, Shepherd, Gibson

If you find you cannot get any of the above combinations to work then you may want to examine the way in which you break in or store your reeds. You should not have to blow through hundreds of reeds in order to find a good one for your chanter.

Blowing in a Chanter Reed

Being a piper means dealing with reed issues, so here is some information that may help you to avoid, identify or understand these. Other than the tried and tested method of "blowing in" a good chanter reed, I do not advocate one method of reed manipulation over another. After some experimentation, you'll find what works best for you. Every top piper has ruined innumerable good reeds in gaining knowledge; there is no substitute for experience, but here are a few tips:

- **Choose a reed that is harder than what you would like to play. It will come down in strength in a short time and will ultimately last longer.**
- **Put the reed in the chanter and blow up and down the scale two or three times.** This will provide the reed with some initial moisture. It is not advisable to lick, soak, squeeze, poke or actually do anything else to the reed at this point. Manipulate the reed only if it is too hard for you to get a sound. Hold the lips of the blades together (between your thumb and forefinger). You can hold this for up to a minute. If you are experiencing a "weird" sounding F, don't worry. This is called a double toning F and can be easily remedied. GENTLY, using your thumb and forefinger, squeeze the sound box of the reed until you feel it give. This will fix the F problem. Be careful not to squeeze too hard or you will collapse the sound box. If you do this, the reed will be useless.
- **Now put the chanter in the pipes, cork all your drones and play** (you may want to remove the drones altogether). The reed may be hard but keep blowing. We do not recommend that you blow in a chanter reed while playing your good drone reeds, especially if they are cane drone reeds. You will be playing at a much higher pressure than normal and will probably ruin your drone reed set up.
- **Play for 5-15 minutes** (depending on how hard the reed is) and stop. Take care not to strain yourself.
- **Take the chanter out and inspect the reed.** If it is wet, dry any excess moisture from the stock and around the reed. If there is significant moisture present in 20 minutes or less of playing then you might want to think about getting a water-trap or even examining the condition of your bag. Store your spare reeds in an airtight container. Good spare reeds should be blown every couple of days for a few minutes to keep them in good condition. Take care not to let them dry out.

- **Repeat the above playing time three or four times a day.** Don't blow the new reed for hours at a time and, again, take care not to strain yourself. Patience is the key. The "blowing in" period is made easier if you have two pipe chanters. If you stagger the process you will have one "good" reed that you won't have to fiddle with while you work on others in a second chanter.

The overall blowing in period can take weeks or months. Your reed will change during this time so don't worry too much about taping notes etc. It will not sound perfect right away. You will learn through experience when the time is right to play the reed with your drones. The reed may need some minor adjustments to help it along (see tables). We would suggest that you do not carry out any adjustments too early. Wait until you feel the blowing in process is nearly done. This is only one method of blowing in a chanter reed. It works. It's well worth the effort. With experience, pipers usually develop their own methods. A single pipe chanter reed that has been properly blown in and is well cared for can last years.

Modifying the Chanter Reed

Let me again preface by reminding you, **DO NOT ADJUST THE BAND CHANTER REED!** Modifying the band reed is the responsibility of whoever is tuning the band. What you do with your solo chanter and reed is up to you.

Altering reeds is a controversial subject. Some pipers swear by barely touching their reeds at all. Others have scraped so much that they could do it in their sleep. Problem is, the reeds you get are sometimes going to require more pressure than you can muster and are not always going to match the characteristics of your chanter. Unless you want to just toss the reed into the trash (which some pipers do), that's where sanding, scraping, pinching, poking, squeezing comes in.

Reed is too hard.
If a new reed is a "gut buster" here are a few things you can do:

- **Play it until it softens up.** This can take weeks, but is the safest method and leaves you with the strongest reed. Just plug up the drones and play it as long as you can, it may only be five or ten minutes. Over a week or two, when comfortable, add a drone until you have your full set going. If after a few weeks it's stopped getting easier to play and it's still too hard, then think about taking a more proactive step.
- **Hydrate the reed.** Dip it in water for a second or two, then shake it out and dry it off, then play it. New reeds are usually pretty dry and need moisture. (Unless you get a "Piper's Pal" humidity control product for storage of new reeds.) Avoid using saliva as it may contain microbes that will begin to eat the reed—there are no enzymes in human saliva that digest cellulose, it's only the microbes we'd worry about. Don't soak a reed, it can warp. You can repeat this, but less dramatic hydration is better. Store the reed in a reed cap to keep it from drying out too much, or ideally, use a Piper's Pal cap to help regulate humidity.
- **Pinch it with your fingers.** This will temporarily ease a reed (and raise its pitch). Try to keep pinching to the top third of the reed. If you squeeze too low and too hard you will collapse the sound box and destroy the reed. You can repeat pinching, but again less is better. If you overdo it, a mandrel may help open the reed back up.
- **Install a rubber band bridle.** Slide an orthodontics rubber band wrapped a few times over the staple up past the hemping to a point about 1/5 of the way up the exposed cane of the reed. If this makes it too easy, slide it down a bit. If it's still too hard, scraping may be in order or move the bridle up a bit—too high though, and the top hand will sound a little thin. After a few weeks to months and the reed eases, this bridle may be removed or gradually worked down the reed as time goes on. If you wrap the rubber band very tight or the reed is weak or you just want to be safe, it'll be best to only slide the bridle up during playing sessions, and to lower it back to the supported staple area after.
- **Pinch the staple with pliers.** This is more drastic and usually unnecessary. Needle-nose pliers either well wrapped in tape or covered with leather works well. If you squeeze too hard, but haven't damaged the blades, you can open the staple back up with a mandrel. I've also "bitten" the staple with my teeth, but a pair of pliers is easier to control.
- **Sand/Scrape it.** This is irreversible. Removing part of the cane from the reed cannot only reduce required pressure, but can also have the unintended side-effect of changing the sound of a reed. Dangerous

"red zone" areas that typically affect sound also are: the top strip of the reed, the sound box, and the area down the center of the blades. (*See image above.*) Where you scrape depends some on the type and make of reed. A very drastic step is to carve notches at both edges of the reed a bit above the hemp line—only if you really have to, such as "the parade is tomorrow!" On a ridge cut reed, you can scrape/sand down a bit on the pronounced ridge itself. Don't take a brand new reed and scrape it down to your usual comfortable blowing pressure. Always leave "room" for the reed to weaken. If you start at soft, it'll turn to mush later.

Reed is too soft
If the reed shuts down easily with normal blowing pressure, it probably won't last long and you should consider discarding it. (Unless you are a hard blower, in which case you can pass it along to another piper.) However, there are a few options if for some reason you wish to chance it.

- **Pinch the edges of the reed to open its mouth.** You might have to do this repeatedly.
- **Moisten *then* pinch the edges of the reed to open its mouth.** You might have to do this repeatedly.
- **Use a mandrel to open up the staple and force the mouth open.** Just be careful to keep the blade symmetrical—that is, the blades should be an equal distance from an imaginary center line across the length of the mouth.
- **Cut off the tip of the reed.** We're talking about a reed that's on its deathbed anyway (even if it's a new reed), so amputation may not out of line as extreme as it is. This will also increase the pitch and will most likely alter the relation of the high notes to the low notes. Use a very sharp blade and cut precisely even. Cut off small (0.5mm) amounts—as long as you can keep it even—since you can't put it back!

Mandrel. While a mandrel looks like a small screwdriver, it differs in that the end of the blade is a quite rounded on the two sides. A cross section of the end would reveal a stubby rectangle with rounded corners though mandrels vary in shape somewhat.

Reed just doesn't sound right
Customizing chanter reeds for sound can be a bit of a mystical art, sometimes shrouded in secrecy. Reeds are by nature organic and therefore somewhat variable. To further complicate the issue, reeds are made differently by different makers as you would expect. What works for some reeds can be a disaster for others. Adjusting the high notes produced by a reed is the best understood, but it's problematic trying to change the reed to affect just a single note on the scale.

Here's a few situations you might run into:

If the top hand is too sharp, you can sand/scrape off some off the top fifth (or so) blades. Careful, you don't want to sand all the way through the lips of the reed. *An alternative to modifying the reed is to tape the top of the chanter holes to flatten notes that are too sharp.*

If the top hand is too flat, the reed is too soft, see the remedies given above. *An alternative to modifying the reed is to sink the reed farther into the chanter to sharpen notes that are too flat.*

If the High-A is too sharp, you can sand at the very tip of the reed. Again, you don't want to sand all the way through the lips of the reed. *An alternative to modifying the reed is to tape the top of the chanter hole to flatten the note that is too sharp.*

If the High-A has too much "crow", aside from just blowing through it (blowing harder) or giving a new reed some time to break-in, you can sand at the very tip of the reed as you would to flatten High-A. Again, don't sand all the way through the lips of the reed as this will actually make the blades shorter.

If the High-G is too sharp, gently sand about 1/16" down from the top of the reed.

F is inconsistent or flat relative to other notes.
An inconsistent F is known as a "collapsing F" or as a "double-toning F." The note varies wildly with small changes in pressure. It is usually caused by three things: the sound box being too open, the blades being a little too long, or the reed being positioned incorrectly in the chanter's reed seat.

- For some very odd reason, sometimes the F note can become flat when the reed is pushed too far *into* the chanter. I have yet to hear a good explanation for this counter-intuitive phenomenon. If you are in a non-band situation, try moving the reed out (or in) to correct a problematic F.
- Try gently pinching the sound box, repeat as necessary.
- The easily reversible procedure to try is to tie hemp around the sound box creating a bridle to apply a little pressure. You can also try a small rubber band (such as used in orthodontics) as a bridle around the sound box, but since this applies more pressure, it would be wise to roll this type of bridle down onto the binding when you are done playing the reed, otherwise you may gradually collapse the sound box.
- The drastic option is to cut a bit off the end of the reed, which will also make the reed harder to blow. On the other hand, you don't have to worry about bridles shifting.

Unfortunately, there's no great substitute for experience. The road to true mastery of reed scraping and sanding will be littered with destroyed reeds. Just go easy, start timid.

Some Tips for Ridge-Cut Reeds

These reeds can be worked on more or less in the same manner as regular reeds. The sound box may be pinched gently to ease the reed. This will also eliminate a flat/double toning F. Rather than sanding, it is preferable to scrape the blades with a very sharp utility knife or scalpel. You may find that a curved blade works better and reduces the chance of snagging the lips when scraping up into the corners of the blades. Scrape lightly and a little at a time. Play for a while before making further adjustments. We do not recommend that you remove any cane from the sound box. Ridge cut reeds do not perform well when dry. If you do not play every day you may want to moisten (a little) the lips of the blades.

Blowing and Pressure

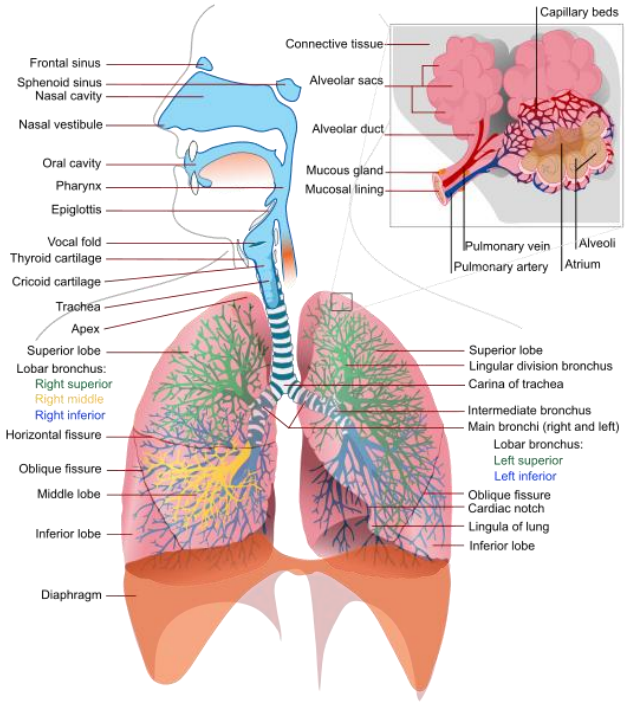
The most important area to concentrate on for the beginning piper is blowing the bagpipe steadily. Many pipers never master this, even after years of playing. The reason for this is that they did not take time in the beginning to practice it. You must master steady blowing in order to get good tone from your instrument. Even the best Bagpipe in the world will not produce good tone unless it is blown steadily.

But let's begin with the basics – understanding breathing.

One of the cornerstones of learning to pipe is knowing how to breathe correctly and learn to control your breathing so that it is used to optimum effect when you play.

When we are born our breathing is naturally correct, babies can breathe, yell and scream with optimum effect because they use their lungs without conscious thought. As we grow older, some people become lazy in their habits only using the upper part of the lungs, taking a shallow breath instead of a normal one.

To understand how correct breathing and breath control works, first you need to understand the process that it uses to operate.



Surrounding your lungs is a muscle system called the diaphragm which is attached to the lower ribs on the sides, bottom and to the back acting as an inhalation device. When you breathe in the muscle lowers displacing the stomach and intestines. When you breathe out the diaphragm helps to manage the muscles around the lungs (abdominal muscles) control how quickly the breath is exhaled.

If you breathe out quickly, the diaphragm does nothing but when you breathe out very slowly the diaphragm resists the action of the abdominal muscles. A piper learns to use this muscle system to control the breath as it is being exhaled.

Hold a finger close to your lips and breathe out slowly, the breath should be warm and moist and you should notice the action of the diaphragm as you exhale. This is the correct amount of breath used when piping. The stomach area should move naturally inward toward the end of the breath, the stomach should not be 'sucked in' as it prevents the diaphragm from working effectively. Instead the abdominal area should remain expanded to the level it was when you inhaled and allowed to gradually decrease naturally at the end of the breath.

This is where the 'control' comes into play - the piper expands the lungs by inhaling and 'controls' the amount of air expelled when blowing a note by allowing the muscle support system to remain expanded - this doesn't mean the stomach is pushed out, rather that it is blown up like a balloon when the air goes in and the piper slows down the natural rate at which it goes down. In most people the breathing is shallow and only the top half of the lungs are used - breathing correctly uses the whole of the lungs so that more air is available, the piper then uses the natural action of the muscles (diaphragm and abdominals) surrounding the lungs to control the amount of air that is exhaled when piping.

Piping does not require great physical strength - although having toned abdominal muscles helps. Remember....the diaphragm doesn't exhale for you - just helps to control the amount of air exhaled.

Breathing from the Diaphragm

Diaphragmatic breathing, abdominal breathing, belly breathing, deep breathing or costal breathing is the act of breathing deep into one's lungs by flexing one's diaphragm rather than breathing shallowly by flexing one's rib cage. This deep breathing is marked by expansion of the abdomen rather than the chest when breathing. You can easily spot a piper who is primarily using their lungs instead of their diaphragm by the sway in their drones. As their lungs expand

and contract, the drones sitting on their shoulder go up and down.

To breathe diaphragmatically, or with the diaphragm, one must draw air into the lungs in a way which will expand the stomach and not the chest. It is best to perform these breaths as long, slow intakes of air – allowing the body to absorb all of the inhaled oxygen while simultaneously relaxing the breather.

Breathing Exercise

- To find out if you are breathing correctly, place a hand on your belly button. This area should expand first when you breathe in and then spread upwards until your chest is expanded (don't lift the shoulders or push the stomach out). If you feel you are not breathing properly, practice the following exercise.
- Lay flat on your back.
- Place your hands on your waist, fingers pointing towards your belly button.
- Focus on filling up your stomach from the bottom to the top taking a slow deep breath. (The aim is not to fill yourself to bursting but to inhale enough air so that you can feel the difference between a shallow breath taken when breathing from the chest).
- You should feel your stomach rise and your hands being raised gently up and outward until you feel your chest expanding. The expansion is not only at the front of the body but also to the sides and back as well.
- Breath out slowly to a count of 5
- Repeat the exercise 10 times

Practice daily before you rise in the morning and prior to sleeping at night for 5 - 10 minutes gradually increasing this to 3 or 4 times a day.

Once you get it right, practice as often as possible, sitting, standing and while at work until you are breathing naturally from your abdomen.

Transitioning to the Pipes

The following are guidelines for students transitioning to the pipes.

Drones Only

When beginning on the bagpipe it is a good idea to play the chanter and drones alternately. First remove the chanter and cork the stock. Also, cork two of your drones, the middle tenor and the bass. Now practice blowing the bagpipe. Listen to the drone and try to keep a steady tone. Keep in mind not to blow too hard as you are only playing one reed. It should not be hard to blow. The key is the rhythm of your blowing and controlling the pressure on the bag.

When you blow, relax your arm slightly, feel it being blown off the bag. When you need to take a breath, increase the pressure on the bag. It is the transition between blowing/relaxing the arm and breathing/increasing pressure that you must work on making perfectly smooth. Apply the pressure to the bag with your elbow, not your forearm. If your bag is the correct size and your blowpipe the correct length, this should be comfortable. Remember to keep your arm working. Don't forget about it. As you get more comfortable with the bagpipe and your blowing becomes steadier you can add the other drones one at a time.

When you have more than one drone going you will have to tune them together. The sooner you start tuning your drones the better. The key here is to listen. Do not expect to be an expert at tuning right away and to not use a tuner as a substitute for your ear. It will take a lot of practice. However, tuning your drones without the chanter will be easier. Make sure you can blow one drone steadily before trying two drones. Try bringing on the middle tenor next. Move the middle tenor up or down on the tuning pin until your two tenors sound the same This should not be too difficult. Turn the drone on the pin as you move it. Choose one direction for down and the opposite for up. Stick to this method for all the drones. Blowing the drones without the chanter is a good exercise for steady blowing and is practiced even by professional players.

Chanter Only

Cork all the drones and blow the bagpipe with the chanter only. Forget about playing tunes at this point. Play long notes (at least 10 seconds each), listen to the notes and try to maintain a steady tone. You will probably find that the higher notes (F, High G & High A) are more difficult to keep steady so spend more time on these. Also, be careful not to over-blow the High G and the High A. This is a very common habit. Listen for a good octave between the Low A and the High A.

You should practice blowing long steady notes on the chanter as often as possible, even after you are playing the chanter and the drones together. The more you do this the steadier your bagpipe will be. Do not worry about playing tunes on the pipes at this point. You will progress more quickly and ultimately be able to produce better tone by concentrating on steady blowing from the outset.

Piping Posture

The bagpipe might be considered ungainly, unsymmetrical and, certainly to the learner, an awkward collection of bits and pieces. It is capable of being (and often is) played in all kinds of strange postures and positions. Perhaps the best advice we can give to anyone is to be as natural as possible when playing the pipes. Don't adjust yourself to fit the pipes – adjust the pipes to fit you.

It's a balance between posture, pipe bag size, blowstick length, diaphragm control, etc., etc., etc.

Here are a few things to keep in mind:

- **Don't blow out your cheeks** (face cheeks that is) – This is a bad habit some pipers get into. Blow with the cheek muscles tensed so that your face does not blow up like a balloon. Your neck will swell regardless of how you blow.
- **Don't blow pipes that are too strong for you** – It's easy to spot an expert piper and a beginning student. The expert makes piping look effortless while the novice makes it look like a struggle. Pipes are a physical instrument; there is no doubt about it. Don't make it more difficult by playing reeds that are too strong. Talk to one of us if you are having problems.
- **Don't hold the mouthpiece at the corner of your mouth** – apart from encouraging head-twisting, the mouthpiece at the corner of your mouth leads to the escape of air when your lips get tired.
- **The pipes are not an elbow instrument** – your right elbow (assuming you are right-handed) should be held away from the body in a natural position. Don't squeeeeeeeeeze the bag to maintain pressure; maintain pressure using your diaphragm.
- **Don't squeeeeeeze the chanter** – you should be able to feel the vibrations above each hole of the chanter.
- **Look straight ahead –** with the blowstick in the middle of your mouth.
- **Keep your eyes on the Pipe Major –** when in the circle.
- **Keep your head erect –** not thrown back or twisted to the side.
- **Keep your body erect –** but not stiff. Don't turn towards the PM in the circle; this affects the overall tone of the circle.
- **Your left shoulder will be higher than your right –** again assuming you are right-handed. Don't overcompensate.
- **Make sure your chanter is in a comfortable position –** so that your fingers can rest on it in a relaxed posture. If you cannot, check the length of your blowstick, pipe size, and general setup.

The Strike-in (from Chris Hamilton)

The proper strike-in is a learned skill that only experimentation and practice can ensure. The key is Strike, Blow, and Maintain.

Assuming that your reeds are properly adjusted in the first place (bridles not too low or too tight):

Fill the bag as much as possible, until just about when the drone gives a little toot. If you have plugs or valves or enhancers or what have you this is an easy step.

Strike / spank the bag firmly with your open palm, using your (left) forearm as an anvil to the palm's hammer. You'll need to experiment to find the "sweet spot" on your bagpipe where the reed. The anvil concept is very important. If you let the left arm move with the spanking motion, you will get a howl.

Blow immediately (ie, a nanosecond later) thereafter to maintain the pressure level just created by that strike.

If you reverse the order of the above, it will howl every time.

Keep the pressure level the same as you push the bag up under your arm, via a combination of blowing and arm pressure. Do NOT let the pressure drop, or the howls will begin. Do NOT increase the pressure, or the chanter may sound early.

Once you have the bag solidly under your arm and both hands in place on the chanter, sound a note (preferably "E").

If at any point during this process you get a howling tenor, a roaring bass, an early chanter, or a false note, STOP. Try it again. Continue until you master this. It's a learned skill and can be mastered by anyone with enough work.

Pipers who strike in their bagpipe in a howling uncoordinated mess of random notes and squeals will always project a very unpolished image to the general public, let alone the piping community. Even someone who knows nothing about piping can figure out that it's not supposed to sound that way.

When a professional musician on other instruments commences to play, it's in an orderly and controlled fashion. Why should we as pipers tolerate anything less?

Granted, in a solo contest this is not part of the score, but a poor strike-in certainly does not project an aura of competence or confidence to the listener.

Tuning

Tuning is a mechanical and rational procedure. The guidelines for tuning are straightforward and sensible. It's a skill every piper needs to know and every piper can learn.

To understand the process, we have to first understand sound. **Sound** is generally known as vibrational transmission of mechanical energy that propagates through matter as a wave and is perceived as hearing. Hearing is performed primarily by the auditory system: vibrations are detected by the ear and transduced into nerve impulses that are perceived by the brain. Sound is further characterized by the generic properties of waves, which are frequency, wavelength, period, amplitude, speed, and direction.

So, sound is a wave. It is defined as the number of cycles, or periods, per unit time (frequency). The unit of frequency is hertz (Hz), named after the German physicist Heinrich Hertz. For example, 1 Hz means that an event repeats once per second, 2 Hz is twice per second, and so on. Each note produces a frequency measured in Hz. For example, the concert "A" is measured at 440 Hz. That means that a concert "A" produces 440 cycles per second. What you "hear" is the brain's interpretation of the hertz (and sometimes it hurts).

Pitch represents the perceived fundamental frequency of a sound. It is one of the major auditory attributes of musical tones along with duration, loudness, timbre, and sound source location. Pitch allows the construction of melodies; pitches are compared as "higher" and "lower", and are quantified as frequencies (hertz), corresponding very nearly to the repetition rate of sound waves. However, pitch is not an objective physical property, but a subjective psychophysical attribute of sound.

Concert pitch is the pitch reference to which a group of musical instruments are tuned for a performance. Concert pitch may vary from ensemble to ensemble, and has varied widely over musical history. The **A** above middle C is usually set at 440 Hz (often written as "A = 440 Hz" or sometimes "A440"), although other frequencies are also often used, such as 442 Hz; historically, this A has been tuned to a variety of higher and lower pitches.

The highland bagpipe scale, however, doesn't match a concert scale. The "A" isn't "set" to 440. The "A" on a bagpipe can range from 470 to 480 Hz depending on the reed, the weather, and the musician. As a band, we set our pipes so they all match as closely as possible. That's why we use a tuner and one person is primarily responsible for tuning the band. What they are listening for is whether or not you are sharp or flat as compared to the designated "tuned" pipe – usually the person doing the tuning.

Tuning the Chanter (from Oliver Seeler)

The interplay between the melody notes sounding against the steady tones of the drone(s) creates an effect that is the defining characteristic of a bagpipe. It's a case of the sum being greater than the parts - a drone heard alone is hardly impressive, and most chanters played alone don't sound like much either. But put them together and all sorts of fabulous fireworks ensue - if they are in tune. This is because the sounds of an in-tune chanter and the drones reinforce one another in complex and dramatic ways. If they're not in tune, not only is this effect lost but a discordant noise, rather than music, is generated. It's a huge, huge difference.

But what does "in tune" mean? That simple term is loaded with all sorts of different meanings. In a very basic sense, it means that when individual musical tones are played in a sequence, one at a time as in a melody, they are perceived by the ear as having a pleasing or at least a logical relationship to one another. Likewise, when two or more tones are played simultaneously, as when strumming a chord on a guitar or when playing a bagpipe with its drones and chanter sounding, "in tune" again means that the tones have a pleasing effect together.

But then what defines "pleasing"? Isn't that merely subjective, perhaps just a reflection of what the ear is used to hearing in a particular culture? To a certain extent that might be true, but it happens that tone sequences and combinations that most people find pleasing have distinct and identifiable relationships to one another that can be expressed in simple mathematical terms, and that can be exploited when adjusting, or "tuning" an instrument. For example, in the above examples the nice-sounding combination consists of two tones with

a mathematically expressed ratio of 3:2. That is, for every three sound waves of the higher tone that arrive at the ear, exactly two waves of the lower tone arrive. So the pattern created when the two are sounded together repeats itself often - about 100 times per second, in this instance. Thus the sound of the combination is smooth and regular, and that's why the graph also looks so regular. In the other, evil-sounding combination the two tones have a relationship of 77:56. That means that for every 77 arriving waves of the higher note, 56 waves of the lower note arrive. Now the pattern made when both of these tones are played repeats itself only about three times per second - the ear rebels at this, and labels the combination as noise, not music.

The Chanter Key Note
Concert pitch is taken for granted by almost all western musicians ... except, you guessed it, pipers.

Makers of Great Highland Bagpipes generally accepted this standard at first, along with everyone else, but for a number of reasons that are beyond our scope here the pitch didn't remain there. Rather, it crept higher and higher during the next century, to the point today where the *A* of many pipes is up around 470Hz (and some pipes are being heard with the *A* as high as 485 Hz). All bagpipes being essentially solo instruments, the consequences of being out-of-tune with mainstream orchestral instruments were and remain minimal. Furthermore, even when the *A* of a GHB matches the *A* of an orchestral or band instrument, the pipe will not be in tune with that instrument elsewhere on the scale, as will be explained below.

A consequence of the GHB's *A* hovering around 470 Hz is the often heard but incorrect statement that the instrument is in the key of B-Flat. In modern concert pitch, B-Flat is 466 Hz, so quite close to the bagpipe's *A*, but the similarity stops there. The relationship is coincidental, nothing more. There is a slight practical value in that an orchestral B-flat can be used to get the *A* of the bagpipe in the ballpark.

The Rest of the Chanter Scale
Also affecting the piper is another more or less modern convention not employed in bagpipes - the "equally tempered" scale used in almost all modern Western music and instruments. By a quirk of fate and the laws of mathematics, the seemingly simple modern Western scale consisting of twelve divisions of an octave has a serious flaw. The ratios between some notes do not stay constant as music is shifted ("transposed") into other keys and octaves. So for example if a piano, which has a range of several octaves, were tuned so all the notes of the lowest octave were exactly doubled to create the next higher octave, and doubled again to make the third octave and so on, then certain combinations of notes would sound unexpectedly nasty. So the tuning of many notes is "tempered" - an interesting euphemism, because these notes are in fact intentionally tuned a bit off from true harmonic intervals, so they will not clash violently when played with certain other notes. It's a matter of spreading the problem around "equally," to accommodate the needs of modern musical gymnastics. A better name might be "equally compromised tuning." There exist many schemes for such "tempering." The bagpipe, which can only sound one melody note at a time over a limited range, and with which shifting keys is not an issue, has no need to employ such compromises and retains true harmonic intervals. This again eliminates using ordinary instruments or ordinary electronic tuners as tuning aids.

Tuning the Drones (from Jim McGillivray)
Tuning the drones on a bagpipe is regarded by many as being a very mysterious operation. Hence, far too many pipers do not give themselves credit for being able to do it. They either don't bother trying to tune their drones at all, or they let their pipe-major do it at band practice ("because he has a good ear") and hope that their pipes will stay in tune by themselves for the rest of the week (two weeks if they can't make it to the next practice). It is not surprising then that the general public often likens the sound of a bagpipe to that of several cats dying painfully. This description is all too often true.

Surprisingly though, while the quality of sound obtained from the pipe may depend upon one's "ear," drone-tuning itself is a mechanical and rational procedure requiring almost no musical ability whatsoever. If the drones won't come into tune, invariably this indicates a problem with the reeds, not with the person tuning them. In fact, an inability to tune the drones is most often what signals that the reeds aren't functioning properly. The rules for drone tuning are straightforward and sensible. The keys to success are practice and a commitment to doing yourself and the

piping community a favor by simply never performing on an instrument which is not in tune.

Tuning one drone at a time

Begin by striking up your bagpipe and shutting off the bass and middle tenor. Play low A and listen. Is the drone in tune or not? If not, continue to listen while you ease your blowing off very slightly. As you slowly let pressure off, the pitch of your chanter will flatten. If the drone seems to come into tune as the chanter flattens, it follows that the drone itself must be flat. To sharpen it, blow a clear high A, pull the drone top down, and try the test again.

If easing off does not bring the drone into tune, blow normally for a moment until you are settled and then overblow slightly. This sharpens the pitch of the chanter. If the drone seems to come into tune as the chanter sharpens, then the drone must be too sharp for the chanter. To flatten it, blow a clear high A, pull the drone top up and test again.

If neither underblowing nor overblowing seems to make a difference, then the drone is probably too far out of tune for this method to be useful. In this case, you must listen to its pitch in comparison with low A, guess which way the drone should be moved and move it about three-quarters of an inch in that direction. While the pressure-variance technique is helpful once the drone is within half an inch of being tuned, you must be able to get it in the ball park by ear. If you cannot do at least this, perhaps you should consider seeking some instruction from a qualified source.

Once you have one drone in tune with your chanter, the most important part of the process is finished. You will now tune the bass to the outside tenor, and then tune the middle tenor with all three drones going.

Blow a clear high A, try to disregard your chanter, and concentrate on the sound of the drones. Beginning with the bass, move the drone so that you can hear it starting to come into tune. Even when you think it is in tune, continue moving it. Once you hear it beginning to go out of tune move it back the other way until it again comes into tune and begins to go out. This establishes the upper and lower boundaries of your tuning range. Continue to experiment within this small range until you are satisfied that you have found the middle point at which the drone seems least out of tune. Do the same with the middle tenor.

It may help as you do this to be aware of the volume of your drones: drones which are in tune give the illusion of being quieter than those which are not (in fact, the opposite is probably true). This can be used as a rough guide in your tuning. It may also help to listen for the sound of the pulsating “beats” which occur between the tenor drones as the middle tenor is brought into tune with the outside one. As these two drones come closer together in pitch, the beats become longer in duration (from a quick “wow-wow-wow-wow” sound, to a slower “woooow-woooow-woooow”) until finally the beats disappear into the continuous hum which indicates that the tenors are in tune.

Frequently, pipers have more difficulty tuning one drone to another than to the chanter, especially bass to tenor. A good way to overcome this is to practice tuning the drones with the chanter eliminated completely. Tune the outside tenor to the chanter to obtain the correct pitch for the drones. Then stop, remove the chanter and cork up the stock. Now just work on tuning the drones together. Get used to the sound of the drones and to the quality of the sound they exhibit when they are in tune and out of tune. After twenty minutes you will be surprised at how clearly you can hear your drones even after the chanter is replaced. Very simply, you have trained your ear to hear the drone sound better.

Tuning two drones at once

Tuning two drones to the chanter simultaneously requires above all an ability to tune those two drones accurately to each other. Aside from this, the rules are the same as for tuning one drone. Reach up and shut off your middle tenor (or the outside one). Settle yourself for a moment, blow high A, disregard your chanter completely, and tune the bass to the remaining tenor. Once these two drones are tuned together, consider them to be one drone and perform the pressure-variance test described above. This will tell you the direction in which the two drones (as a unit) should be moved. Once you have decided this, blow high A, disregard the chanter again, move the tenor in the desired direction, and follow it with the bass. When you have these two drones in tune together, test them with the chanter once more. As soon as you are satisfied that the bass and tenor are in tune with each other and with

the chanter, turn on the middle tenor, give it several seconds to steady itself, blow high A, and pull this last drone into tune with the others.

Three at a time

As before, the greatest help to tuning three drones at once is an ability to bring the drones into tune with each other in spite of the sound of the chanter. Steadiness of blowing will also be an asset here, particularly when you are reaching up to adjust the slides.

After striking up and settling yourself, blow a clear high A, disregard the chanter and the bass as much as possible, and try to tune the middle tenor to the outside one. With the bass bellowing away in your ear, this may be a new adventure in confusion, but be patient with yourself. When the middle tenor is as close to being in tune as you can get it, bring the bass into tune with the tenors. Once the bass is more in tune, you may find that you can go back to the middle tenor and get it even closer. Repeat the process as often as is necessary to being the drones in tune with each other.

With the three drones now tuned together, pretend that they are one drone and test them with the chanter. Having decided which way they should go, blow high A. Disregard the chanter and move the outside tenor in the desired direction. Tune the middle one to it, then tune the bass to the tenors. Test again. Repeat this entire process as often as is necessary to tune your instrument.

If you are not achieving much success, there could be two causes. First, and most likely, the reeds themselves may be unsteady. You can be certain that if one of your drones is even slightly unstable your bagpipe will frustrate you completely as you try tuning three drones at once. Several methods may be used to determine the reason for the unsteadiness, but these are best left to a future discussion. Secondly, if you are certain that your pipes are steady, you are probably just not hearing the sound of the drones very well. Again, the importance of practicing tuning the three drones together while the chanter stock is corked cannot be overstressed.

Some hints

1. The true test of one's ability to tune three drones at a time is in pulling the pipes straight from the box and tuning them without ever shutting off a drone. However, if you are still just learning the ropes you are wiser to begin by tuning two or even just one until the pipe is settled and is holding its tone. Then you can experiment.
2. It is important to remember that your chanter reed is often in a state of flux. During the first few minutes of playing, or each time you begin again after a break, this reed will sharpen up substantially. The drones will require frequent tuning during this crucial 15 or 20 minutes as they pursue the rapidly changing pitch of the chanter reed. This is a natural reaction of the cane to moisture and vibration, so don't expect your pipes to stay tuned for very long until the chanter reed has stabilized. In terms of reed steadiness, it is advisable never to take the first quarter-hour of your practice time too seriously.
3. In addition, you will have trouble tuning your drones if the individual notes of the chanter are not in tune relative to each other. This can be a major problem, and as such is best left to a separate discussion.
4. Any time you physically handle a drone reed to adjust the bridle or manipulate the tongue, that reed will perform very unsteadily for ten minutes or so. During this time you will find that the drones will not stay in tune for more than a couple of minutes. Be patient until the reed settles.
5. The concept of easing off or overblowing the chanter reed to determine which way the drones should be moved is a useful one; however, these efforts must be imperceptible to your listeners. No one wants to hear a piper doing an impression of a warped record, so once you have acquired the proper tuning techniques try to employ them in a manner as inoffensive as possible to anyone listening, including yourself.
6. The use of Teflon tape on tuning slides is becoming popular because of the self-threading properties of this material. Purchase a roll at a hardware store, apply a couple of layers over the hemp, then “screw” the drone top on, slowly pulling it down as you turn it counter-clockwise. The tape will now be invisibly

threaded so that turning it counter-clockwise causes it to move down, and turning it in a clockwise direction moves it up. Rethreading is accomplished over the same tape simply by pulling the drone top off and screwing it on again. Experiment so that you can move the three drones up and down the same distance by turning them the same amount to the right or left. Such a convenience is a tremendous boon to tuning two or three drones at once.

7. Finally, your ability to tune drones will improve if you expose your ear to well-tuned bagpipes. If you have limited access to live playing, there are many recordings available by top players performing on superb pipes. Train your ear as you would your fingers, with practice and repetition. Nothing will inspire you more than a vibrant, well-tuned instrument. A poor sound stifles any music you try to produce; a good sound enhances it ten-fold.

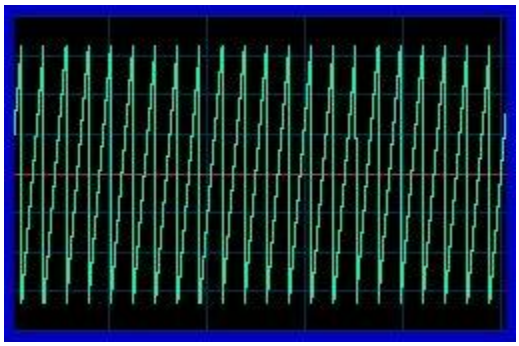
Beating (from Oliver Seeler)

As already discussed, when two tones are out of tune their respective sounds interfere with one another, with nasty results that are heard as noise. However, if two tones are close, but not exactly, in tune with one another, the interference between them produces a recognizable effect that itself is the key to bringing the sounds into perfect tune. This effect is heard as a "beating" sound, oooooooooowaaoooooooooowaaoooooooooowaaoooooooooowaaoooooooooo.

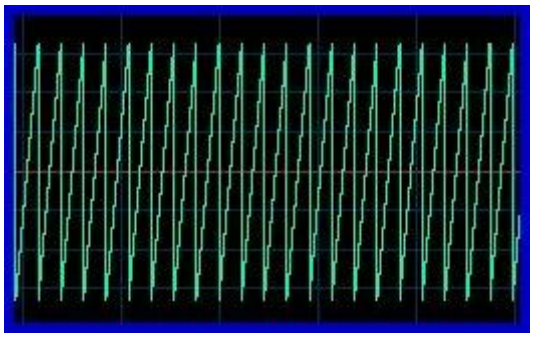
This rhythmic pulsing is the result of one set of sound waves meshing periodically and briefly with another slightly slower set, as both sets arrive at the ear. Imagine a string of race cars passing another slightly slower string of cars as you sit by the side of the track. Most of the time a car from either one or the other of the groups will go by you alone, and you might not hear much if any difference between them. But now and then (regularly, if the speeds of the two groups are constant), two cars - one from each group - will go by you together, and that will of course produce a recognizably different sound.

Learning to hear this beating sound when two tones are close to being in tune is not difficult, and has nothing to do with any ability, or lack thereof, to distinguish the pitch of a tone, or whether one tone is higher or lower than another, or even if there is a difference at all.

Here are graphics and sounds illustrating what we're talking about. The below two waves are 220Hz and 218 Hz.

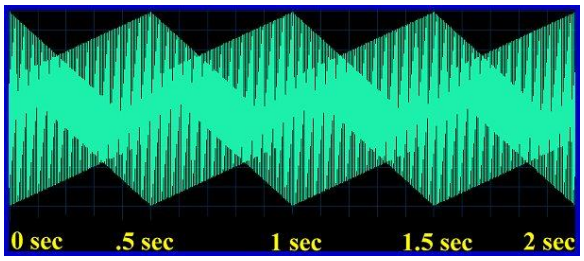


220 Hz



218 Hz

When played together they look like this:



There is a strong pulse or beat every half second. If we now gradually change the frequency of either of our tones, the beating will become faster or slower. For example, if instead of sounding 220Hz and 218Hz, we sound 220Hz and 216Hz, the beating will occur four times per second. The two tones are further from being in tune than before. Continuing in that direction, as our second tone is moved further and further away from the first the beating becomes faster and faster, until the ear can no longer distinguish the individual beats, at which point we're back to

making nothing but useless noise.

But if we move the other way, bring the tones closer together, the beating becomes slower. At 220Hz and 219Hz there is only one beat per second. At 220Hz and 219.5 Hz there will be one beat every two seconds. As we get very close to perfection, the beating becomes ever slower and again it will be difficult or impossible to hear, even though it is still present. And of course at 220 and 220, there is perfect harmony, with no beats at all.

The easiest way to train the ear to hear and use the beating sounds is to experiment with the two tenor drones, or one tenor drone and the bass drone, of the Highland pipe, with the chanter stock corked off and the likewise the third drone either removed or corked at its business end. Fire up the two drones and slowly shorten and lengthen one of them until you detect the beating. Once you hear the beating, move the sliding section in the direction that causes the beating to become slower. Keep going until you can't distinguish the beating any longer - the drone you've been adjusting is now very close to being in tune with the other one. Now go even further in the same direction, and soon you'll start hearing the beating again as you go past the point of perfect unison. Go even further - the beating will become faster and faster until you can't distinguish it (watch for the cat, the dog, and neighbors carrying club-like objects at this point). Now go back the other way, towards being in tune, with the beating again slowing. Again pass the point of unison as the beating disappears, and note how far you're moving the drone section before you can again pick up the beating. What you want to do is develop a feel for the area in which you lose the beating when it becomes too slow to hear - the center of that area is the point of perfection. To land exactly on that sweet spot using only the beating as a guide, you'll need to split the distance between losing and regaining the beating sound. It's like dialing in a station on an old-fashioned radio or adjusting a TV antenna on the roof (for those of you who remember those days...): Find the sweet spot by going back and forth past it, and then zero in on it.

Roughly how far must a drone sliding section be moved to get from the point at which beating is heard to the point where the pipe is in tune? Well, a GHB bass drone is about 32 inches long when playing (depending on a number of things, that measurement may vary by a few inches) and a tenor drone is about 16 inches long (this because half the length produces a sound one octave higher). If the target frequency for the bass drone is 110 Hz (a concert-pitch *A*), and the drone is currently sounding, say, 105 Hz, simple math reveals that it will need to be shortened about 1/20th of its length to bring the pitch up to the desired point. This would be about an inch and a half. If the drone is closer to the desired pitch, say within 1 Hz, the movement would be much less, about a quarter inch. We have seen that half a Hz is easily heard, and an eighth of an inch will change the pitch by that much. A tenor drone is twice as sensitive, so the corresponding adjustments are half the distance - 1/16th of an inch will be significant.

What may not be obvious but must be remembered is that the beating will be the same whether the drone you're tuning is too high-pitched or too low-pitched. The math is the same in both directions - 220Hz on one drone and 218Hz on the other drone will produce two beats per second, but so will 220Hz and 222Hz. Now, a well-practiced (or naturally blessed) ear will detect the 222Hz as sharp in relation to the 220Hz and the 218Hz as flat, and so its owner will know right off in which direction to move the drone to approach harmony. Everyone else, however - and that's most of us - will often simply resort to sliding the drone top in a random direction to start, and if beats don't develop then reversing and looking in the other direction. The object is to get into the beating zone, and it doesn't really matter if you land above or below the other drone's pitch as a starting point.

Remember that with all else being equal, a shorter pipe will produce a higher pitch than a longer one. Many pipers substantially lengthen a drone that is to be tuned, flattening the pitch well below the target, and then bring the sliding part downward, shortening the overall length and thus raising the pitch gradually into the beating zone. By throwing the drone to be tuned well off to begin with, the question of what direction to move to begin with is answered, and many people find that moving a drone section inward can be done with more physical control than moving it outward. (This also eliminates the embarrassing possibility of moving a drone section right off its pin while tuning.) But it's a matter of taste (and your instructor's wishes) and there isn't any fundamental difference between

entering the beating zone from above or below.

Rotating the movable drone section while moving it can be helpful in making fine adjustments smoothly, as the hemp wrapping on the tuning pin acts a bit like fine screw threads, and having the sliding section in rotary motion when lengthening or shortening it will help prevent any jerkiness.

With an understanding of the above and some practice, it is possible to quickly and accurately bring any number of drones into tune with one another. But tuning drones to one another at some random basic pitch doesn't ultimately do a thing for having an in-tune pipe overall. It will do no good to have the drones in harmony with each other if the chanter notes don't also harmonize with them.

Tuning the Rest of the Chanter

So now we have a chanter that sounds good together with the drone(s) at the top and bottom of its scale. But what about the middle notes? Because of all the variables, it is as likely as not that one or more of the middle notes will be off - either sharp or flat. If a middle note sounds "off," check it with the drone-tuning technique and determine if it is sharp or flat. This will not be easy or even possible in all cases - the beating technique has its limitations, especially when trying to tune the notes that do not have simple and direct mathematical relationships with one another. Beating is easily heard when approaching some target intervals but not others. If we are tuning to an octave, beating when we're close will be strong. Beating when approaching other intervals may be less obvious or absent. But at least some of the middle notes can be set in this way, by beating them against a drone's *A*. For example an *A* and a D or an *A* and an E both are powerful harmonic combinations that produce strong beating when they're out of kilter. (Again, it is beyond the scope of this article to detail the reasons for these differences.)

Traditionally, pipers used beeswax applied in small amounts inside the top edges of individual fingerholes to change the relative pitch between notes. By filling in part of the upper edge of a fingerhole, the hole is effectively moved downward on the chanter, thus lengthening the bore above it and flattening the tone. So a note that is sharp can be adjusted this way. Today, most Highland pipers accomplish the same thing by covering the upper edge of a fingerhole with a wrap of thin black plastic tape rather than using wax.

However, the pitch of a note cannot be raised using tape - blocking off the lower edge of a hole won't do that. The only way to raise the pitch of the note produced by a single fingerhole without affecting the pitch of any other note is to physically remove material from the top edge of the hole, thus moving it upward on the chanter. This is essentially an irreversible adjustment and should only be undertaken by someone who has the knowledge and experience to, first of all, be certain that it is really necessary and/or desirable and, secondly, who has the skill to carry it out properly. Such changes can affect the tone quality of a chanter as well as the pitch, or have other subtle effects that may not be desirable.

So, are we stuck if a flat middle note needs to be raised to be in harmony? No, but here's where it gets tricky. A possible solution is to re-set the reed further into the chanter, sharpening the offending note enough to get it into tune. But that's going to make other notes sharp. Those notes can then be brought back down to pitch with tape. It's not unusual to see Highland chanters with tape on numerous holes. Eventually this can become quite a juggling act. There are also other problems that can arise - occluding more than a little bit of a hole can affect tone and volume. Ideally, it shouldn't be necessary to tape more than a couple of holes, if any at all, especially if the pipe is being played solo. If a chanter can only be brought into tune by massive taping, it may be time to look for other solutions, such as working on the reed itself.

Carving the Chanter Holes

(from a letter by Andrew Fuller)
No doubt many chanters have been ruined by excessive practices, however from a band perspective my experience with carving holes has been a very rewarding one and I'd encourage you to research this more as you will discover it is 'the norm' in this day and age.

I've played with several grade one pipe bands, most notably Victoria Police Pipe Band (1998 World Pipe Band Champions), and the tune-up regime has, with a few subtle differences, been the same in every band. Victoria Police (Vic Pol) was regarded as having a very "broad",

"accurate" and "powerful" sound and yet we didn't play 'big' gut-buster reeds. The power of the sound came from the accuracy of tuning and the harmonics we achieved.

It has been my experience that every top grade band, for as long as I can remember, has carved holes (mostly undercut) to achieve the desired tuning. This practice, in the hands of the right person, is very effective and quite safe. When Strathclyde Police were dominating the pipe band scene their Sinclair chanters had holes that were so big one could barely cover them and yet the sound was sweet and deadly accurate.

The Sinclair chanters (at Vic Pol), after individual testing, were carved typically on B, C, D, a bit on E, F and a bit on High A. The other notes typically needed to be flattened once the 'balance' of each chanter had been identified. The carving was overdone to allow for some scope to further sharpen the note by lifting the tape. Tape was then used to control the size of every hole and we would then seat the reed in its optimal position to ensure that:

- holes were not over-taped
- tape coverage was relatively equal on each hole
- the chanter felt and sounded 'free' and vibrant
- the scale was harmonically accurate against the drones
- desired pitch was achieved

Those responsible for tuning the Vic Pol pipe corps would always tune their chanters against their drones to get the intervals correct and a harmonic effect on every note. Electronic tuners were never used to set notes on the scale, it was always done by ear. Tuners were only used for setting the drones of the whole pipe corps en masse.

Carving holes also enabled the band to work around variable playing conditions (i.e. wet, cold, hot, dry etc.) but note due to the design and physics of the chanter (thicker walls at the top and thinner walls at the bottom), temperature is conducted at differing rates e.g., the bottom hand will usually change quicker than the top hand due to there being less material therefore faster conductivity of temperature. In fact, all notes move at differing rates due to the taper of the internal bore of the chanter which gradually thins the walls towards the bottom. This is why tuning to Low A, when the pipes have come straight out of the box, can be risky (especially in cold conditions). Low A (bottom hand in general) climbs in pitch quite quickly during the initial warm-up period and this can result in 'tail-chasing' if the piper is inexperienced and has put all his or her eggs in the Low A basket - i.e. they tune to Low A but the top hand sounds sharp against the drones so they tape-down the top hand notes without realizing the bottom hand is actually flat (but won't be for long!) which eventually results in a bottom hand that then gets up to running temperature (and would have balanced-up with the top hand had it been left to settle) and a top hand that is now flat (because it was flattened when it was actually more accurate than the bottom hand in the beginning). Sometimes E is a better reference point when first starting up as it rarely changes at the rate of Low A due to there being more timber/material at that point of the chanter. It also allows the piper to gain a better appreciation as he or she can hear the bottom hand coming up to meet the drones that are tuned to E as they warm-up their pipes.

There are no two reeds alike but generally speaking there is a certain position in the reed seat that will best suit a particular reed/chanter marriage. The opposing view (of driving a reed into the seat to lift certain notes and to avoid carving) can have a dampening effect on the overall tone of the chanter. This is because the reed can sometimes be 'strangled' and cannot vibrate as freely if it is seated well into the throat of the chanter. It can also lead to that dreaded double tone on F that pipers fear.

Carving holes allows each individual note to be isolated from the others and enables accurate and fast tuning with more options available at the time as opposed to uncarved holes that still ultimately rely on reed manipulation. In Vic Pol we almost forgot what our chanter reeds looked like because it was virtually all done with tape, 'cold steel' and a reed of good tonal quality. Furthermore, the less tampering with a reed the more likely it is to last longer than a reed that is constantly handled, plus it is more likely to remain stable and reliable and in the end that's what this caper is all about.

Caring for Pipes

You're finished playing your bagpipes and aren't quite sure what to do with them when you are done. What steps are necessary to properly stow your pipes after playing will depend on a number of factors, primarily having to do with moisture control. The following advice pertains to the care of wood bagpipes. Poly pipes also have maintenance issues and moisture is a primary concern.

Chanter

Most pipers remove the chanter from its stock and place the chanter in a chanter cap which covers the end of the chanter and protects the reed. In most locales, a chanter reed will develop mold more quickly if the chanter is left attached to the bag when not in use. And sometimes the chanter may become stuck in its stock—not exactly the most desirable situation! Remove any beaded moisture on your reed by gently pressing it with a tissue for a few seconds, though some pipers go so far as checking the reed against their lip for any wet feeling. Some recommend leaving the reed exposed to air for 5 minutes before stowing it in a cap. If you do air out your reed, be extremely protective of it, you don't want it getting whacked or rolling off of a table or chair!

If you are in a dry climate such as Denver, Colorado (high altitude) you could just leave the chanter in its stock on the bag to help the reed retain moisture. In cold temperatures or after lots of playing, moisture may condense on the inside of your chanter. Ideally, this condensation should be wiped out after playing.

Drones

Most pipers can get away without doing much to their drones after playing. But again, you don't want moisture sitting inside the bores of your drones. If this is an issue for you, a "pull through"—a string with a rag strips at one end—may be used to wipe out the larger bores of your drones.

Now, if you do happen to own a set of poly pipes, you'll find that condensation beads up more easily on plastic than wood and that moisture may run down and clog your reeds. It wouldn't hurt to check your bores and wipe them out when necessary.

Drone reeds

Condensation on the tongues of synthetic drone reeds is very common, even with dry blowers. It's good practice to dry the body of the reeds after playing and wipe out under the tongue using a thin durable paper—paper currency (i.e., a dollar bill) works well since it's designed to not tear easily. Nose tissue and toilet paper is not recommended (too fragile)—nor is a business card which may have the unintended consequence of springing the tongue, affecting both efficiency and tone.

Bag

If you have a synthetic or hybrid bag with a zipper, then you will probably want unzip your bag to allow it dry out. With a hide bag, you want to avoid having it dry out, but you also don't want it super moist either. You can help retain moisture by plugging any open stocks with a cork. A hide bag will gradually dry out even with all the stocks plugged—particularly if it's a sheepskin bag. If it's necessary to dry an overly-wet bag then leave one or more of the stocks open.

Into the Case

A pipe case serves a number of purposes. It allows you to carry quite a number of items easily; it protects your pipes from impacts, and can also somewhat serve to prevent rapid changes in temperature and humidity. When you place your pipes in their case, you don't want so much leeway that the pipes knock around and chip, scratch or dent. You also don't want to force the pipes into the case so that they are on the verge of cracking—while drones and stocks are reasonably solid overall, the tuning pins are particularly vulnerable as is the chanter. And remember, if you employ a hose system, make sure these lie flat as you don't want any kinks.

If your case is overly stuffed you might consider weeding out nonessential items (particularly items that could scratch or otherwise damage your pipes) or if they are all things you need readily available, investigate a larger case.

Storing/Moving your Pipes

A good piece of advice is to think of your bagpipes as your baby. Don't leave it in a car unattended. Play with it often. Don't drop it or throw it. Don't leave it wet (empty/dry your moisture traps). Don't force things to move if they are really stuck. If it screeches, it probably needs some attention. And singing tunes to it (canntaireachd) won't hurt!

Bottom line; treat your pipes to a mild environment that would be very comfortable for you personally. So if your car is a very mild environment and will stay that way while you are gone, then, yes, you can leave your pipes on the seat—but it better be a very overcast and not too hot or too cold of a day!

If you take good care of your bagpipes, they will take care of you. Yes, some pipers are lucky and can get away with not taking proper of their pipes, but sooner or later, it's going to come back and haunt them!

Cold Weather Piping

At some point we've all been asked to play in cold conditions. As a student you should know the hazards of playing in cold weather:

Thermal stress

I know of a piper who split and broke a $250 chanter from the thermal shock of playing it in the cold. Replacement drone parts take typically 4-8 weeks if you can order a new part - and the ferrules and projecting mounts won't ever really match. The repair cost for a set of drones which is still made (e.g., Hardie, MacLeod, Gibson) will be about $200 per part. For those with drones where the manufacturer is out of business (e.g. Tweedie, Lawrie, Grainger) the repairs can be very expensive and can take several months because there aren't many people who do that kind of work. The cost will be upwards of $1000 if mounts (i.e., imitation, ivory and/or silver) have to be removed. Consequently, most people won't want to take the risk.

Water condensation

Moisture from your breath condenses in the drones and chanter. If you can see your breath, it's cold enough that this is an issue. The humidity in your breath is pretty constant. As it gets colder outside the air can hold less moisture and, more of the moisture in your breath is wrung out in the drones and chanter. The moisture builds up, floods and eventually shuts off the drones. Hence, reliability is an issue. Playing time is limited by the outside temperature (cold=short). The piper will usually play minimally to avoid a disastrous (on a performance basis) build-up of moisture. This moisture will commonly drip down into the tuning joints in the pipe and can cause splits. The high tech bags with desiccants really don't help much because normal desiccants don't work real well in the cold! At a minimum - after playing in the cold, the pipe must be taken apart and meticulously dried. Commonly, a fairly complete overhaul is needed including removal of hemp from the tuning pins as it will likely be soaked. If you plan to play a wooden pipe in the cold, please oil it first to minimize moisture uptake.

Flexibility/Pliability of the reeds

The main plasticizer in a wooden reed is the water. It is possible to set up a bagpipe to play within the range of 40-90 degrees F because the differences in flexibility of the reeds are not large over that range. When it gets near freezing, the chanter reed will stiffen and not play. When you play in the cold and then stop, the reeds will cool off and stiffen to the point that they won't play (chokes) or will only squeal.

The player

The cold is very hard on the player. The heat loss due to the physical exercise and the exchanges of air going through the lungs is significant. The heat loss out the hands is also significant. The loss of heat requires a great deal of energy, so exhaustion is a common side effect. Dehydration due to the need to add so much moisture to the air is another issue. Raw throats are common. Frostbite becomes a problem because you're blowing warm moist air past cold fingers where it eventually begins to freeze. Depending upon the flexibility of the skin, cracks eventually form near the edges of the nails. The left thumb is particularly prone because of the moisture dripping down the bore of the chanter and out the hole in the bottom. Chapping of the lips is an issue due to the need to keep a seal around the blow stick. Fluid flow from the sinuses becomes quite large due to the degree of exercise and many people have burst eardrums after playing in the cold (sniff-sniff-kaboom). Head and chest colds are common after such gigs. When I do play in these conditions, I wear shooter (fingerless) gloves and am dressed in multiple layers to absorb the sweat.

The music

The physical ability to play the instrument is strongly affected when you get cold. Assuming that you can generate a decent sound with a scale that's in tune - for at least a brief period of time before the water condensation issue shuts you down - the lack of feeling in your hands limits your ability to play much of any music.

Your reputation

Think about it. What will it mean if you try, but don't sound real good? Do you believe that the audience will remember more strongly that you tried, or that you sounded bad? In my experience, if the event is meaningful for the attendees, they'll remember that you tried. If it is a "fluff" event, they'll only remember that you sounded bad.

In short, if you're going to play in the cold for a given event, you need to decide what it's worth to risk your health, in both the long and short term, as well as your pipes. Once you decide that - best wishes!

Playing in the Rain

Sooner or later, you will experience playing the pipes in the rain. Andrew Lenz offers the following suggestions for playing in the rain.

The first thing to keep in mind is that Scotland is not exactly a desert wasteland and, traditionally, rain is no stranger to bagpipes. They've survived hundreds of years in that very moist environment, which includes rain. Your pipes aren't going to explode in a million pieces as soon as it starts to drizzle, particularly with modern bagpipes made of oily African Blackwood. That said, most of us have seen the undesirable swollen rings left on varnished tabletops from cold moist glasses or cans. There are steps to take to help prevent something bad from really happening.

If you do a lot of playing in the rain, you might consider a few investments:

1. a set of poly (plastic) bagpipes
2. an Inverness cape
3. an extra set of cheaper shoes (wingtips) for muddy performance spots (e.g., graveside)
4. maybe an extra cheap kilt (of which only a portion would show anyway under a cape)
5. a pipe bag which has easy internal access.

For the following discussion, we're going to assume that you have a set of wood bagpipes. Just know that if you are playing a set of poly bagpipes, standing water isn't going to hurt any plastic parts.

Preparation for Your Performance

While it's good practice to play your pipes often anyway, if there's a likelihood of rain for your performance, playing your pipes every day to build up the moisture content will help your pipes cope with a sudden influx of water. Absorbing a lot of water quickly can split the pipes.

If the outside of your pipes are not varnished, then treating the outside of your pipes could be helpful. Waxing or oiling them will help repel rain. Lightly oiling the inside of your bores may also be a good idea. Oil is much more stable than water, and therefore your pipes will expand and contract less having absorbed oil rather than water. There is a lot of controversy about oiling bagpipes, so if you are concerned, talk with more experienced pipers in your area about their approach to maintaining their pipes in that particular climate.

If you play cane reeds, you might consider using a synthetic set for a rainy performance since synthetics will be much easier to dry. Otherwise, just be aware that the reeds will absorb a lot of water and could fail. Plus they will require a longer recovery time to return to nominal moisture content.

Tuning pins can be a problematic area when it comes to rain. If you use plain unwaxed hemp, it will swell significantly in the rain and may bind. Waxed hemp, while it doesn't eliminate absorption completely, does reduce the speed and extent of absorption. Teflon tape or cork grease can be helpful as a barrier to rain. If you are inclined to go traditional and have your pins redone with cork, cork stands up very well to rain.

On the day of the performance, if it's wet *and* very cold, consider acclimating the pipes to the playing conditions. If they are stored in a warm house, place them in a location where they can slowly cool to something closer to the outside temperatures. The shock of an extreme temperature change can crack wood pipes.

Put a few towels, swabs and pull-throughs in your car for quick access after the performance. And extra pair of socks and shoes wouldn't hurt either. Also handy may be a large plastic garbage bag to throw wet clothing into.

During Your Performance

If you have a cape, use it to cover up your pipes while you are not playing. Be most protective of your wood chanter since it has the thinnest—and most fragile—walls. Also while not playing, keep your drones pointed toward the ground so the rain won't get in.

If you get any opportunity to dry your pipes do so. If you don't have enough time to rustle up a towel and dry the pipes, try to at least remove and blow out your drone reeds from the seat end of the reeds to keep them operational. A dollar bill (durable paper) slipped under the tongue will absorb trapped condensation.

After Your Performance

Use the towels in your car to remove standing liquid from the instrument as soon as possible after the performance, starting with your chanter if it's wood.

Completely disassemble your pipes and use swabs and pull-throughs to dry the inside of the bores. Try to dry your hemping as well by pressing on them with a towel. Let your pipes dry disassembled. Dry your drone reeds. In the unlikely event that any residual moisture is colored, rinse them out with fresh water.

Remove the cover from your bag. If you bag has zipper or clamp access to the inside of the bag, wipe out it out. If it doesn't, hang it chanter stock down for a while. If nothing drips out, but the bag is saturated, plug the stocks of the bag then fill the bag with air and hang it to dry fully inflated—while it takes longer to dry, this will help prevent the bag from wrinkling. Once it's dry on the outside, it should be good to go after some seasoning (if that is recommended by the bag maker).

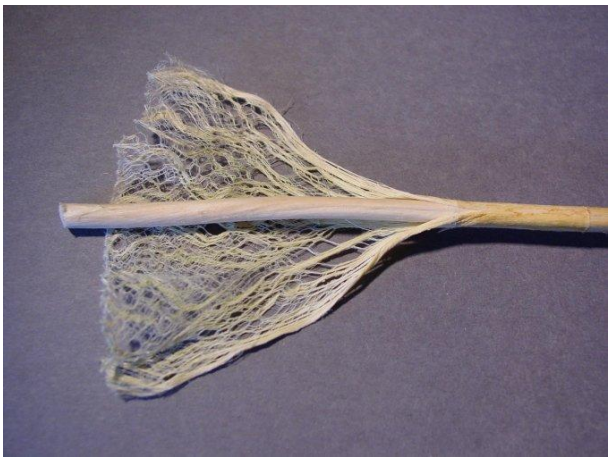
While you may be in the routine of capping your chanter after playing, you might consider airing out your reed to alleviate the excess moisture trapped in the reed. Sealing up a very wet reed may provide you with a black and fuzzy reed next time you open it up. If you have chanter cap with holes drilled in it, you might get by just capping the reed. Even if you have a Piper's Pal (moisture control) cap, it would be a good idea to air out the reed.

Whatever you do, don't stick your pipes on a heater, next to a fire, or over a heater vent—unless you like the sickening popping sound of splitting wood. Let the pipes dry at their own pace at normal room temperature.

Hemping

As with most aspects of bagpiping, there are a lot of varying opinions as to how to best hemp the tuning pins on your bagpipes' drones. The term "hemping" comes from the time of when the string material used to wrap the tenon of a tuning pin was, in fact, made from hemp.

Hemp (from Old English *hænep*, see cannabis (etymology)) is the common name for plants of the genus *Cannabis*, although the term is often used to refer only to *Cannabis* strains cultivated for industrial (non-drug) use. Hemp is cultivated virtually everywhere in the world except for the United States, and its cultivation in western countries is growing steadily.



The fiber is one of the most valuable parts of the hemp plant. It is commonly called bast, which refers to the fibers that grow on the outside of the woody interior of the plants stalk, and under the most outer part (the bark). Bast fibers give the plants more strength, which is especially true with the hemp plant. Hemp fibers can be 3 to 15 feet long, running the length of the plant. Depending on the processing used to remove the fiber from the stem, the hemp naturally may be creamy white, brown, gray, black or green.

These days it's made of linen and is usually found in one of two colors: yellow and black.

Yellow Hemp comes in 1 and 2 oz. prewaxed and unwaxed versions. Keep a spool of both prewaxed and unwaxed yellow hemp in your kit.

Black Hemp also comes in 1 and 2 oz. and is dyed black. It is saturated with a sticky wax. Keep one spool of black hemp in your kit.

In order to tune your drones, the upper section of the drone must slide up and down (usually twisting at the same time) on the tuning pins using one hand—but not so loose that they move unintentionally. Also, for sake of tonal quality, you'd like the tuning pins to be as airtight as possible; again this means you don't want them to be too loose such as rocking side to side.

In addition to hemp, keep a roll of Teflon tape in my pipe case. **Teflon (plumbers) Tape** is easily available at almost all hardware stores in 1/2" widths and is used to provide a snug but easily moveable fit.

Other materials some pipers use include:

Cobbler's Wax (resin). This black sticky resin is applied by those who want to create a very sticky hemp. This resulting hemp would be used as a solid base for top layers of a less sticky hemp.

Beeswax. Another wax commonly used to wax unwaxed hemp. Beeswax is on the "sticky side" of waxes. Not too many decades ago, waxed hemp was unavailable—or at least, not introduced to the piping community—so you *had* to make your own. Some people prefer to use this old method.

Waxed Dental Floss (Unflavored). This very easy to get item can be used on the pins when waxed hemp is too thick, but you need it just a little bit tighter. Not the most aesthetically pleasing to the eye—and hence not very common—but stays in place over waxed hemp if pressed in well.

Toilet Seal Wax. Toilets typically use an large oily wax ring to seal their connection with the sewer pipe at the floor. These seals are quite cheap and are readily available at a hardware store. Some piper discovered that this oil-impregnated wax works very nicely as a lubricant for tuning pins. One down side

to this method is you may find lint/grime from your pipe case sticking to your exposed pins, or the wax rubbing off on your bag cover.

Paraffin/Candle Wax. Some pipers like to use paraffin as the final outer coating of the hemping to provide a smooth slide. Paraffin is available at grocery stores and any store selling candle-making supplies.

Cork grease. Cork grease is designed for preserving and lubricating cork fittings on wind instruments—such as clarinets. (There are different types, avoid cork grease made from petroleum.) Some pipers use cork grease over their hemping to ease sliding.

There are NUMEROUS opinions on what combination of materials to use. Like everything else in piping, the final decision is yours. Some options require more maintenance than others. Talk to others and find out what they do. Attend workshops to learn what the professionals recommend.

I use a combination of materials. I generally lay a base of black waxed hemp on all joints and finish them off differently depending on the joint. Remember, unwaxed hemp can draw and retain moisture.

Here's what I use:

Blowstick: Waxed hemp covered with a layer of Teflon tape. I'm a wet blower and the blowstick is the first and most direct contact for moisture.

Drone Stocks: Waxed hemp of various diameters. That's it. When I lay down layers of waxed hemp I am careful to lay them down evenly and then roll the joint on a hard surface to seat the threads together. I like my drone to set snug so that they do not move when I tune but yet can be removed when necessary.

Tuning Pins: Heavier black waxed hemp for the bottom, covered by a top layer of waxed yellow hemp (although many people use a layer of unwaxed yellow), and covered by a layer of Teflon tape. The Teflon tape serves as a moisture barrier and helps the pin to slide easily. The temptation is to overuse Teflon. If you have NUMEROUS layers of Teflon tape on your pins, consider removing some of the layers and adding additional hemp.

If your hemping is too loose, the drone top will shift or rock back and forth or your stock will move in the base. If this is the case, it should be tightened up in some manner.

Competitions

Competition. The word makes some pipers shake their heads knowingly. Been there, done that—or tried that. Others relish the thought. If you've never competed, you may wonder what drives a piper to compete and what drives a piper away from competition.

I recommend all students compete as a soloist. Here are a few reasons:

Specific Goals. A competition gives you a specific goal with a drop-dead deadline to improve your skills. You'll have to push yourself, perhaps be more disciplined than you might be otherwise.

Objective Feedback. Rather than a subjective opinion of your skill level—some pipers have a too high an opinion of their own playing—you get an objective view and hopefully constructive specific feedback from the judge on where you can improve.

Overcome Pressure. By competing, you will learn to play under pressure in a new unknown environment in front of strangers. Though some may feel differently, aside from high-profile band competition, there aren't many venues with equal (or more) pressure.

Camaraderie. Highland games are a great opportunity to meet other pipers doing the same thing as you. Granted that you don't have to compete to rub elbows with other pipers, but there's something to be said for being "under fire" together.

Inspiration from Great Piping. If you are at a competition, you usually have the opportunity to see exceptional pipers live. It's one thing to hear a recording, another to be there in person. Seeing how well they perform gives you a target to strive for. Again, you don't have to compete to see them, but you might not even be there otherwise.

Focus. Competition gives you a reason to learn a tune at a very focused level, usually with more attention to detail than you would otherwise or have drive to learn. No dropped grace notes allowed. Every nuance can be critical.

Encouragement. If you do well, you'll get a "pat on the back" from the judge and other pipers. Fellow competitors are pretty supportive usually. If your drones shut off in the middle of your competition piece, odds are it's happened to them too and they'll tell you so. I've never had an unkind remark come from another piper at a competition. Most pipers understand that it's not about beating other pipers, but the piper trying to do his or her personal best.

Legitimized. There are those that assume that non-competing pipers are less skilled (or at least an unknown quantity) and by competing you put those prejudices to rest. There is a certain respect given to pipers who overcome all the potential problems and compete regardless.

Bottom line, whatever you decide, it's to enjoy your bagpiping—***it's supposed to be fun!***

Your First Competition

Sound advice from Andrew Lenz…

WHAT TO EXPECT/DO:

Before the competition

Join your Piping Association. Preferably at least eight weeks in advance. In order to track your piping history, the association needs to know who you are. They don't want someone winning every Grade IV event for 10 years without moving up in grade.

Send in your Registration for the Games ASAP. Sign up as early as you can. Generally, the last sign-ups have to play first—not the best playing position, since judges may leave "room" points-wise in case someone after you performs better (though the bottom line is that you will win regardless if you play the best). If you don't have your association membership number but have applied for one, just put "Membership number pending" where asked for.

Select an Appropriate Tune. You will score better playing an easy tune well than a hard tune poorly. Don't overreach. Pick something that you can be comfortable playing with your current skill level even on a bad day.

Record yourself. If you don't do it as part of your normal routine anyway, record yourself to study before the competition. Video, if you can do it. You'll be surprised what you see/hear as an observer of your own performance.

Play in Front of People. This can make a big difference. You learn to play the bagpipes for the benefit of other people, not just yourself, so get used to being watched. The less you know the listeners the better, but start with people you know, of course. You'll be surprised how much you can mess up while feeling a little self-conscious. (But beware

poisoning strangers' appreciation for the pipes by playing a poorly tuned instrument for them, or simply playing poorly. They may think that's the way they are supposed to sound and get a negative impression!)

Watch Other Competitions. If you are lucky enough to get the chance, go to a competition and watch everything—the bagpipers, the stewards, the judges. Concentrate on the events in which you plan to compete. Don't short-change your solo piobaireachd observations—if that's one of your events—to go listen to the bands play.

Mental Preparation. Take a few minutes once in a while to relax and then, closing your eyes, visualize yourself playing perfectly at the event. Go through with as much detail as you can imagine—greeting the judge, walking to a starting spot, starting the tune, walking, etc.—all in "real-time." If your event takes six minutes, take six minutes to visualize. It may be helpful to practice in the outfit you will be competing in. Olympic athletes do this. It'll assist with piping too.

Don't just Memorize, Internalize. Once you think you have your tune down cold, try this: play and read at the same time. Grab a newspaper or magazine and read for comprehension while playing your tune, the tune should be secondary in your head. (Record yourself.) When your are done make sure you remember the entire article. If you can successfully play well and read well simultaneously, you've internalized the tune—you're better prepared for any distractions.

Practice with a Metronome. Again, if you don't do it as part of your normal practicing anyway, play along with a metronome.

Practice As You Intend to Play. If the tune has repeats, play the repeats. If you will be competing outdoors, it will be helpful to practice at least some also outdoors—remember to try both shade and sun.

Hold a Mock Competition. Convince your instructor to hold a mock competition for you. Have his/her sit in a chair (ideally behind a table) with a paper to write comments. Follow the procedures outlined below on this page for the competition day, that is, walk up to the "judge," state your tune, prepare, play, exit. Then discuss it with your instructor. If you can get a few other pipers to watch your "mock performance," that's the best.

Play Longer. Be able to easily play at least double or triple the time required for performing your tune. If your tune is 2 minutes, you should be able to play 5 to 10 minutes straight on your bagpipes without your technique breaking down. The longer the better, so while practicing, push it. Play past the point where your lip starts to give out or your arm is tired. *But* if your fingers start to go (usually the last to go), play something other than your competition tune since you don't want to "absorb" bad habits. At that point, it's probably best to do embellishment drills or just stop. Remember to stretch those fingers and wrists.

Have a Back-up Chanter Reed. My first competition was marred by a chanter reed that decided to limp into death about 48 hours before the event. I didn't have a second reed worked in. It was the worst public performance I've had so far, i.e. the reed was wavering into extreme flatness a few times and it choked (stopped) a couple times.

Get safety pins to attach your competition number. If you forget pins, sometimes they'll have a box of them at the registration table, but don't count on it! If the competition doesn't provide a numbered kilt label, you'll be expected to wear the number provided to you for the season by your piping association.

Double check your instrument. Make sure all the tape on your chanter is in good shape (not slimy or peeling up), make sure your tuning pins are sliding correctly and not rocking, make sure all your stock joints are tight, if you are using hoses or contraptions in your bag then make sure those are all in fully working order as well.

Get directions to the games. If aren't sure of where you are going, get complete and detailed directions to the competition venue. These days, online mapping services are very handy—particularly those incorporating satellite photos. A map of the region would be good back-up if you get accidentally get off the correct route.

Consider the climate's effect on your instrument. If you are traveling to a location known to have significantly different weather conditions from that of your home area, prepare appropriately. Ideally, travel to the location beforehand to play. If not, try and replicate the conditions as best you can at home, e.g., if it's a humid venue, play in your bathroom with the shower running. (Don't forget your earplugs!) Certain things you can't really simulate, such as high altitude. If you don't—or can't—practice

in similar conditions, give yourself extra time at the games to adjust your instrument.

Get directions for the competition location at games. Try and get very specific instructions as to where the competition area will be at the games. Some venues are quite large and knowing *exactly* where to go may save you half an hour or more.

If you are driving yourself, don't forget to fill up. Some of these games are hours from home, remember to make sure you have enough fuel to get to where you are going. With all the preparations, it's easy to forget this essential thing.

The Competition

Depart to the games early. Give yourself a comfortable amount of time to get to the games. You should be on-site about an hour before your first competition time. If you've never been at the piping competition before (even as a spectator) 90 minutes would be better. Add time for more unknowns—that is, if you don't have exact directions, if there might be bad traffic, if you have travelers in your car that might need breaks on the trip—then leave even earlier. It's much better to get there with extra time to kill than to have to race into an event unprepared.

The first order of business is to find the competition area. At most games, the ticket sellers, gatekeepers, parking attendants, and other staff will have no clue where the piping competition is. If you didn't find out where it is in advance, other pipers are a good bet, though some may be band players who don't compete. Solo competitions usually happen early in the day and band performances are usually later in the day. If you get to the games early—which is pretty typical anyway—you going to run into more solo players and less band members and that will increase your odds of asking someone who knows the answer you are looking for. Regardless, if you ask enough people carrying bagpipes, you'll get your answer.

Check in at the registration table as soon as you arrive at the competition to make sure you are registered. Try and arrive at least an hour before you are expected to play. You'll also be expected to check in with the "steward"—this person is usually holding a clipboard at the platform/playing area (also called the "boards") for each event. They are not usually the judge, who is usually sitting at a table in the playing area. Double check to make sure that you're not registered for something you didn't sign up for.

Check your Playing Area, Especially If You Play First. As the first player, you get to discover any problems with the "boards. Arrive early, look for any hazards beforehand, and just get a feel for the area, no matter what position you play.

Make sure your drone reeds are in tight and chanter reed is not loose. You don't want a drone reed dropping into the bag or your chanter unstable due to its reed moving.

Warm up your bagpipes with few tunes and/or exercises. If you don't, the tuning will be all over the place and so will your fingers. A practice chanter run can't hurt either, but get your pipes warm. Just remember to not overdo it. The last thing you want to do is push yourself to fatigue before you step on the boards. Warm up in the same conditions as the playing area, i.e. don't warm up in the sun if you'll be playing in the shade and vice versa. Most games don't have a designated tuning area, so follow the lead of other pipers—if they are tuning in up in the parking lot, that's probably a good place!

Double check your outfit. Make sure your hose are pulled up, your tie is snug, etc. Just do your best to project a professional, clean, efficient appearance. (Baseball cap, sunglasses, etc. are not considered proper competing attire.) Wear your kilt number to make the steward's job easier.

Make arrangements for minding your possessions. The judge and stewards are not security guards. If you are alone, find a place for your things where you will be comfortable leaving them. The last thing you want to do is be worrying that someone is going to steal your pipe case while you are trying to concentrate on playing.

Tune up with a friend or instructor. Get some help tuning. You probably aren't super experienced at this. And also try to get in some final fine drone tuning just before you play, as when the person immediately ahead of you is starting. Out of courtesy to any competing pipers, try and do it as far away as is practical.

Check how your event is progressing. Check with the steward periodically to see how the competition is going and how soon you will play. He/she will tell you when you are next. If you are toward the end of

the event, the time may be dramatically different from the schedule. Events sometimes run early and sometimes run late. Make certain that you are at least a few minutes early to your competition area for your *true* performance time.

Dry your instrument, if necessary. Depending on the weather, your instrument, warm up time, how you blow, etc., you may wish to dry out your drone reeds (a dollar bill under the tongues works wonders) and swab out the drones. If you have a moisture control system in your instrument, you might check your system. Even without a moisture control system, this step may be unnecessary for many pipers.

Try to relax. This is probably the hardest thing to do. Close your eyes and take a few slow deep breaths and release all the tension in your body. You will play better if you aren't all tensed up. No one is going to repossess your home or eat your children if you don't do well! Remind yourself at the time that you are doing this for fun. Sure, you want to do well, but just let everything go and just play the tune.

Walk up to the judge when it is your turn. Verify with the steward that it's your turn. Wait at least ten to fifteen feet away while the judge is writing up the previous score sheet, and he/she will make eye contact with you to indicate it's okay to proceed. (Or once he/she starts shuffling papers, that's also a good sign it's time.) It's best to walk up, make eye contact, nod or salute, and formally say, *"Good morning/afternoon. I'm [your name], and I'd like to play [tune name]."* If not, the judge should ask your name and your tune. Also, if you happen to know the judge, try and stay reasonably formal and don't boisterously shoot the breeze.

Take Your Time (to a point) and Know the First Notes. The judge expects you to take a few minutes to compose yourself, tune your instrument if necessary and play a bit of another tune to test the tuning. Face away from the judge when doing this. Run through part of the first line of the tune in your head. Think about which note you start on. If you do tune the drones yourself, it's best not to stop the pipes to verbally tell the judge you are ready—the drone reeds could settle differently after another strike-in. When you are fully prepared after a few minutes (or less) face the judge make eye contact and give him or her a nod or other indication that you are now ready to perform.

Play slower? Pipers often times get excited playing before people, especially a judge. The adrenaline usually results in a quicker tempo than wanted. Whatever you do, don't suddenly change the tempo in the middle of your tune if you realize you are playing too fast, just stick to it.

Focus. Avoid looking at (or listening) to the judge, crowd or friends. These are distractions. The only thing you are living at that moment is the tune. Try not to think about the embellishments. Think about where you are in the tune. Don't freak out if the judge starts writing, he/she may be writing something good. (Once I ruined a perfectly good performance by getting freaked out when the judge was just writing "playing confidently" on my sheet!) Don't listen to that voice in your head commenting on your playing. Shut it out and focus on where you are in the tune.

Pause before exiting. Stop playing, hold for a few seconds then respectfully exit the playing area. It's good to make eye contact with the judge, say "thank you," and exit with a salute or nod. You do not want to strike up a conversation with the judge at this point—unless they talk to you first. The judge must drive any conversation. If you have questions, find the judge *after* he/she has turned in that event's adjudication sheets.

Exit Gracefully. Don't swear, shake your head, or give any other negative signs. The judge knows what you did wrong—and right. And if he missed it, you don't want to give him any reason to think he did.

Don't Forget to Check Results and Get Your Evaluation. Results are usually posted within a couple hours. The grading sheets used by the judge are usually filed at the registration table—try not to pester them too often for your sheet, can you imagine every bagpiper asking several times if the results are out for an event? *After* results are posted, ask for your sheet(s) by event number. Sometimes you may not be able to read all the judges comments—rather like doctor's prescriptions!—or have questions. You can try to find the judge and ask him/her when he/she is not judging another event.

Competition Checklist:

ATTIRE

- ☐ Ghillies (shoes)
- ☐ Kilt Hose
- ☐ Flashes
- ☐ Sgian Dubh (optional)
- ☐ Kilt
- ☐ Kilt Belt
- ☐ Sporran
- ☐ Shirt (short/long sleeve)
- ☐ Tie
- ☐ Waistcoat (vest)
- ☐ Kilt Jacket (optional)
- ☐ Glengarry
- ☐ Inverness
- ☐ Polo Shirt (as directed)

Necessities

- ☐ Bagpipes
  - ☐ Check all fittings
  - ☐ Chanter(s) with reed protector(s)
  - ☐ Practice Chanter
- ☐ Registration/entry form/ ticket
- ☐ Competition music
- ☐ Supplies
  - ☐ Safety pins (pinned to the back of the kilt)
  - ☐ Drone/stock corks
  - ☐ Hemp (waxed and unwaxed)
  - ☐ Extra chanter reeds
  - ☐ Plumbers/Teflon tape
  - ☐ Ear plugs
  - ☐ Scissors/knife
  - ☐ Drone brushes
  - ☐ Extra moisture control
  - ☐ Tuner (optional)
- ☐ Driving directions

NICITIES

- ☐ Hat
- ☐ Sun glasses
- ☐ Jacket/gloves as needed
- ☐ Water/juice
- ☐ Chair(s)

What Grade Should I Compete?

As a student you have the opportunity to compete as a soloist at area competitions. You begin competing as a junior or senior novice. This is the beginner level. Competitors typically try to get through the tune without any glaring errors. Tunes are played very slowly. Most competitions require you to play a 4-part, 2/4 March. Yes…you play from memory in front of a judge.

Typically, you change grades when you register between seasons, usually around January. You *might* be able to change mid-season if you were to be blowing away all your competition, placing first in every event and the judges all giving you AGLs ("Above Grade Level") on your forms. It would be quite the rare thing indeed, but who knows. You might be a Mozart of piping. Associations strongly discourage and may even deny a mid-season change as it reeks a bit of havoc on the scoring bean-counters at the association, but it has been done.

After your season is over (or earlier if there's a prior cut-off for submissions), if you think you did well enough, write a letter to the competition/grading committee asking for an upgrade http://www.pdcpd.org/mwpba/RegradePetition.pdf . The important thing is, if you want to move up, ***ask*!** When you petition, you should send them copies of your score sheets, a letter of recommendation by your instructor and/or a judge and/or a well-known top piper. Committee members want to be convinced that you are capable of winning prizes in the next grade and that you won't be placed in a position for which you aren't ready and get frustrated and discouraged.

Now the bad news. If you placed high but competed against subpar pipers, you may not be ready to perform well at a higher grade. You have to understand that you may be one of the pipers that may never be ready to upgrade, whether it's lack of quality or quantity of practice, motor skills, proper instruction—whatever—it does happen too. You have to be ready to accept that also.

You should be playing the pipes for fun. If it's not fun, don't do it. Or at least change your approach or attitude about playing until it *is* fun. If you do want to advance and you are not and the judges' comments reflect that you are where you belong, you need to change the way you practice.

While it's exciting to win and advance grades, you should be competing to improve yourself, not to beat other players or to prove anything to anyone. It's easy to get caught up in the whole competition mentality and lose the focus: *music* and *entertainment*.

What do piping judges listen for?

It may be somewhat foolish for someone who is not a certified piping judge (and I'm not!) to try to provide a definitive answer, but the truth of the matter is that the principle role of the piping judge is to preserve the art-form. Consequently, judges are listening for "good piping" from a technical and musical viewpoint.

The judge will listen to the sound quality of the instrument: both tuning and timbre.

1. Are the drones tuned together and in tune with the chanter?
2. Is the chanter well balanced and in tune?
3. How is the tonal quality - full, or thin, or dull?

The judge will evaluate the technique and execution.

1. Are the embellishments and notes played accurately and precisely?
2. Is blowing steady throughout or does it degrade with time or during difficult passages?
3. Does the player have control of his instrument?
4. Are there "chokes" (i.e., the melody cuts out for a note or two) or "squeals" from the chanter?
5. Is the tune appropriate for the player's ability and the level of the contest?

The judge listens to the "music".

1. Does the player understand and play this type of tune correctly?
2. Does the music "flow"?
3. Is the interpretation correct?
4. Is this an appropriate "setting" of the tune?

A piping judge is not influenced by and does not assess the following:

genealogical background, years of experience, connections to other pipers and individuals, pride, costume, dress (beyond enforcing minimum standards for the game), deportment, military rank, marching, weaponry, weather, the actions of others on the field, or anything else that isn't related to the music and sound of the bagpipe.

Piping scores aren't like a math test where you get points for each question. You don't earn a set number of points for each properly played embellishment or for consistent tempo or for each correct melody note.

You should consider the points you get for a performance for that event only. If you score 50 on one day, it could be an 85 from another judge for the same performance. The only truly meaningful comparison of your own performance scores over time would require the same judge, the same event, same competitors playing the same tunes in the same playing order, under the same circumstances— impossible.

It is the opinion of some judges that the primary purpose of a score sheet is to justify the result, not to be used as a lesson for improvement. Since in many instances there are more faults than can be covered on the form, especially given the time constraints, many judges just comment on the fundamental flaws first. This means that even if the *mentioned* flaws were corrected in advance, that piper still *may not* have won a prize for that event.

Where you place in an event is much more telling than the score on your sheet. Use the feedback to polish your performance and improve your piping skills.

Band Competition

We use the terms "Grade 4" and "Grade 5" frequently but what do they mean?

Pipe band competitions are either sanctioned or non-sanctioned. Sanctioned games are approved by a pipe band association, of which there are many. For example, the **Alliance of North American Pipe Band Associations** (ANAPBA) includes:

- Alberta Society of Pipers and Drummers
- Atlantic Canada Pipe Band Association
- British Columbia Pipers Association
- Eastern United States Pipe Band Association
- Midwest Pipe Band Association
- Pipers and Pipe Band Society of Ontario
- Prairie Pipe Band Association of Manitoba
- Saskatchewan Pipe Band Association

- Southern United States Pipe Band Association
- Western United States Pipe Band Association

The Omaha Pipes and Drums is a member of the **Midwest Pipe Band Association** (you can click on the link above). Other pipe band associations around the world include:

- Australian Pipe Band Association
- Bagpipe Association of Germany
- B.C. Pipers' Association
- Irish Pipe Band Association
- Nederlandse Organisatie van Doedelzakbands
- Pipe Band Association of Scandinavia
- Pipe Bands Association of South Africa
- RSPBA North of Scotland Branch
- Royal Scottish Pipe Band Association
- Saskatchewan Pipe Band Association
- RSPBA - Lothian & Borders

Each Association has grading guidelines for pipe bands. "Grade", is how a pipe band is classified. The ANAPBA (North American) grades bands from Grade 1 to Grade 5 (Grade 1 is the uppermost grade). The Royals Scottish Pipe Band Association (RSPBA) grades bands from Juvenile, 4B, 4A, 3B, 3A, 2, and 1. For a comparison, a Grade 5 ANAPBA band would compete in 4B in a RSPBA event.

The Omaha Pipes and Drums currently compete as a Grade 4 band. Under MWPBA and ANAPBA regulations, bands may only compete in their assigned Grade. So how did we get to be a Grade 4? We "challenged" up to the next grade. We petitioned the MWPBA for re-designation under their guidelines.

You can read the MWPBA contest rules and regulations at: http://www.pdcpd.org/mwpba/2007%2019%20THE%20RULES.doc . Become familiar with the regulations and keep a copy with you in your pipe case.

For pipe band competitions and massed bands, each band must meet the minimum player requirements for their grade:

MINIMUM PLAYER REQUIREMENTS

Grade	Pipers	Snares	Bass	Tenors	TOTAL
1	8	3	1	1	13
2	8	2	1	1	12
3	6	2	1	1	10
4	6	2	1	*	9
5	5	2	1	*	8

* Tenors are optional in Grades 4 & 5

For pipe band competitions, each band must be prepared to submit the following selection(s) according to grade:

GRADE	BAND MUSIC		
1	2 MSR	1 Medley	(5-7 minutes)
2	2 MSR	1 Medley	(4-6 minutes)
3	1 MSR	1 Medley	(3-5 minutes)
4	1 QMM	1 Medley	(3-5 minutes)
5	1 QMM	- - -	

To explain the abbreviations:

Quick March Medley (QMM)
Any number of quick marches of any common or compound time signatures played in succession.

March Strathspey & Reel (MSR)
Minimum: 4-parted 2/4 March, 4-parted Strathspey, 4-parted Reel

Medley (Med)
Minimum of 4 different tune categories

- Grades Four and Three play within the time limit 3-5 minutes.
- Grade Two plays within the time limit 4-6 minutes.
- Grade One plays within the time limit 5-7 minutes.

The Competition Area

The pipe band competition generally consists of a number of areas marked off for solo competitions and a "competition circle" for band competitions. Remind all students to give a wide birth to the solo competition areas and avoid walking through the area during tuning and competition.

The band contest area consists of:

Band Circle – 25' diameter (12' 6" radius)
Judges Circle – 40' diameter (20' radius)
Spectator Barrier – 60' diameter (20' radius)
Starting Line – 45' from the center of the circles
Final Tuning Area – 50 yards from the band circle and 25' in diameter.

There must be a clear path from the final tuning area to the starting line, but again, remind students to avoid the area during competitions.

There are a number of stewards at each competition to aid the judges and the bands. The number varies:

Station Stewards: each station should have a steward to check-in the soloists, to help adjust schedules of those who may need to be in more than one place at a time. Steward does not chase nor seek a competitor. Stewards should move about in their area and take charge of it. The steward attends to the judge's need for drinks, short times away, transfer of scoresheets to the scorekeepers, keeping audience away from soloist and keeping the judge on time.

Line Steward and a **Final Tuning Steward** will assist bands to be timely.

Exit Steward may also be used particularly for crowd control when a circle with entry and exit is used.

Judging a Band Competition

Each band's performance is evaluated by a panel of two (2) Piping Judges, one (1) Drumming Judge and one (1) Ensemble Judge. Additional Judges (e.g. Bass Section, Dress & Deportment, Apprentice/ Shadow) may be allowed to evaluate certain portions of the band contest, but has no bearing on the outcome of the contest. Secondary prizes such as "Best Bass Section" or "Best Marching and Discipline" may be noted by these additional judges, but only at the discretion of the Games Sponsor and with the permission of the MWPBA.

At a Mini-Bands contest, only two judges are employed, one piping and one drumming, and they use the point-score method. A Judge's comments, critiques and criticisms are recorded on their scoresheets.

Piping Score: The pipe section's performance is evaluated in the following areas:

- Introduction or attack
- Tempos, breaks between tunes & finish
- Execution
- Tuning and Tone of chanters & drones Expression

The piping score may be the sum of the scoring points awarded by the two piping judges or the sum of the converted points-to-placements. The maximum piping point-score is 200 points (100 per judge). Judges do not place/rank.

Drum Score: The drum section's performance is evaluated in:

- Rolls
- Tone
- Tempo
- Execution
- Rhythm & Expression
- Quality & Variety blend

The drumming score is the point-score awarded by the drumming judge or the converted points-to-placements. The maximum drumming point-score is 100 points. Again, judges do not place/rank.

Ensemble Score: The band's performance is evaluated in the following areas:

- Introduction
- Band sound
- Tempo
- Arrangements
- Musicianship
- Breaks
- Finish

The maximum ensemble point-score is 100 points.

Bass Section Score: is judged by the drumming judge (or the bass section judge, as noted above) within the context of the band contest in each grade. The Bass Section includes the bass drummer and any tenor drummer who, at any time during the performance, strikes the drum. A Best Bass Section Award is made at the discretion of the sponsor but shall have no bearing on the outcome of the actual band contest.

The following judging criteria are used:

- Rhythm & Expression
- Tone
- Execution

Final Score and Placement

In contests of three or less bands, the band score is determined as the sum of the two (2) piping judges' scoring points, the drumming judge's scoring points and the ensemble judge's scoring points, minus infraction points if any, with a perfect score being 400 points. The band with the highest total point score is declared the winner of the competition unless that band has been banned from the prize list. When adding scores, the possibility of a tie exists and is broken by the following criteria (in descending order): the highest ensemble score; the highest total piping score; the highest total drumming score; a special meeting of the judges of that contest.

In contests of four or more bands, the scoring points of each judge is converted into that judge's band placings. After converting, the placings/ rankings of each judge are tallied and the lowest placing points wins; e.g. the four judges award placings for one band as $3^{rd}+2^{nd}+2^{nd}+5^{th}$. Outcome is 12. For another band they place as $2^{nd}+1^{st}+3^{rd}+2^{nd}$. Outcome is 8. The "8" is closer to winning than is the "12." The lowest possible placings outcome is $1^{st}+1^{st}+1^{st}+1^{st}+1^{st}=4$. Ties will be broken by (in descending order): lowest ensemble place; lowest total piping places; lowest drumming place; special meeting of the judges of the contest.

World Pipe Band Competition

The **World Pipe Band Championships** is a pipe band competition held in Glasgow, Scotland every August. The event has been operating regularly since 1930, when the Scottish Pipe Band Association (today known as the Royal Scottish Pipe Band Association) was formed. For competitive bands, the title of World Champion is highly coveted, and this event is seen as the culmination of a year's worth of preparation, rehearsal and practice.

The entirety of the World Championships takes place on one day in August, on Glasgow Green. Typically several hundred bands attend, traveling from all over the world. Bands arrive early and are required to perform in a qualifying round which takes place in the morning. The top bands at the end of the qualifying round play in a second event in the afternoon to determine an aggregate winner. To win, Grade One bands must perform in two events, a March, Strathspey & Reel event (known as a "set" or "MSR") which consists of three pre-arranged tunes, and a Medley event, which consists of a short selection of music chosen and arranged by the band.

Prizes at the World's are awarded in the following eight categories:

- Grade One
- Grade Two
- Grade Three "A"
- Grade Three "B"
- Juvenile
- Grade Four "A"
- Grade Four "B"
- Novice Juvenile

In the Novice Juvenile and Juvenile categories, band members must be under the age of eighteen, with the exception of one "adult" player, often instructors, who may serve as the Pipe Major or Pipe Sergeant. The remaining categories have no age restriction, but are based on proficiency. Grade One is the highest of these categories, and Novice is the lowest.

Grading and eligibility are overseen by the RSPBA, and bands must apply for downgrading or upgrading.

The highly coveted Grade One title remained in Scotland until 1987, when the Canadian 78th Fraser Highlanders Pipe Band became the first overseas band to win. In recent years, the title has returned to Canada 6 times with Simon Fraser University Pipe Band, and has travelled to Northern Ireland 6 times with the Field Marshal Montgomery Pipe Band, as well as travelling all the way to Australia with the Victoria Police Pipe Band in 1998. In 2010 the Grade One title travelled to the Republic of Ireland for the first time with St. Laurence O'Toole Pipe Band. The most successful pipe bands in this competition remain Strathclyde Police Pipe Band (winning twenty times - from 1912 to 1975 known as City of Glasgow Police Pipe Band), and the House of Edgar Shotts & Dykehead Caledonia Pipe Band (winning fifteen times). Other winners include the Dysart and Dundonald Pipe Band (winning twice), the Edinburgh Police Pipe Band (winning seven times), and the Muirhead and Sons Pipe Band (winning eight times).

History of Glasgow Green

Glasgow Green, once known as **Kinclaith**, is situated in the east end of the city on the north bank of the River Clyde and is the oldest park in Glasgow dating back to the 15th century.

In 1450, King James II granted the land to Bishop William Turnbull and the people of Glasgow. The Green was quite different from what it is today, being an uneven swampy area composed of a number of "greens" (divided by the Camlachie Burn and Molendinar Burn), including the High and Low Greens, the Calton Green and the Gallowgate Green. The park served a number of purposes in its first few centuries; as a grazing area, an area to wash and bleach linen, an area to dry fishing nets and for activities like swimming. The city's first *steamie*, called *The Washhouse*, opened on the banks of the Camlachie Burn in 1732.

An area of land, known as *Fleshers' Haugh* was purchased in 1792 by the city from Patrick Bell of Cowcaddens, extending the park to the east. In 1817 and 1826, efforts were made to improve the layout of the park. Culverts were built over the Calmachie and Molendinar Burns and the park was leveled out and drained.

From 25 December 1745 to 3 January 1746, Bonnie Prince Charlie's army camped in the privately owned *Flesher's Haugh* (which would become a part of Glasgow Green in 1792), while Charlie demanded that the city equip his army with fresh clothing and footwear.

In 1765, James Watt, while wandering aimlessly across the Green, conceived the idea of the separate condenser for the steam engine. This invention is credited by some with starting the Industrial Revolution.

To alleviate economic depression in the aftermath of the Napoleonic Wars the Town Council of Glasgow employed 324 jobless as workers to remodel Glasgow Green. The Radical movement for parliamentary reform grew, and in 1816 some 40,000 people attended a meeting on the Green to support demands for more representative government and an end to the Corn Laws which kept food prices high. In the spring of 1820 the Green was one of the meeting places for conspirators in what became the "Radical War", with strikers carrying out military drill on the Green before their brief rebellion was crushed. Later James Wilson was convicted of treason for allegedly being a leader of the insurrection, and hanged and beheaded on Glasgow Green in front of a crowd of some 20,000 people.

When the Reform Act of 1832 passed in Parliament, increasing the electorate from 4,329 (1820) to 65,000 (1832), a large demonstration of over 70,000 people was held on the Green with a procession lead around the park by a Bridgeton band. The Chartism movement that grew in response to the Reform Act, later resulted in what is known as the *Chartist Riot* of 1848. William Ewart Gladstone's Reform Act of 1867, which increased the electorate to 230,606 (1868), brought further meetings to the Green.

The park was used as a meeting place by the women's suffragette movement from the early 1870s to the late 1910s. In April 1872, the women's suffragette society, that had formed only two years before, held a large open-air meeting in the park.

OP&D at the Worlds

In 2004, the Omaha Pipes and Drums competed for the first time in their history in three competitions in Scotland; Bridge of Allan, North Berwick, and the World Pipe Band Championships. The band finished in 6th place in Grade 4 at Bridge of Allan, 8th Place in Grade 4 at North Berwick, and 7th place in the qualifying rounds of Grade 4B at the World Pipe Band Championships.

The North American Championships

Although there are many more things to do and see at the Glengarry Highland Games besides piping, it is the piping that makes these Games unique. The Games are the home of the North American Pipe Band Championship™ and it is said if you win at Maxville then you can proudly say you are the best on this continent. The next stop after Maxville is the Worlds in Glasgow, Scotland and many winners at the Games have gone on to success there as well.

The Glengarry Highland Games are the only games in North America to host the Piobaireachd Society Gold Medal Competition that is sanctioned by the Piobaireachd Society of Scotland. To ensure proper acoustics for this prestigious competition, the Piobaireachd is held in the United and Anglican churches in Maxville outside of the Games site.

Maxville's roots stretch back to 1869, the year Duncan MacDougall constructed a sawmill on the site of the future village. Named "Macksville" after the numerous Macs living in the area, the village flourished as a commercial hub for the young farming community. In 1882, the village received an added boost when it was chosen as a stop on the new railway line between Montreal and Ottawa. Ten years later, the village was incorporated and continued to grow until 1900, when its population numbered 749 people. Maxwell is situated close to Ottawa, Cornwall, and Montreal.

The Band Uniform

Proper attire, deportment and attitude are crucial elements in establishing a professional demeanor and gaining respect on and off the competition field. While not part of the scoring system in the United States, Dress and Deportment is judged in Scottish competitions.

Pipe Bands around the world wear a variety of uniform styles reflecting the culture of the country and history of the Band.

Early photo of the band in front of Joslyn Castle, Omaha, NE

The uniform worn by the Omaha Pipes and Drums has changed over the Band's 40-year history. The white, then black traditional military looking "Class A" (shown above and below).

Each component of the uniform has its own history and significance. Starting from the bottom and working up…

Ghillie Brogues

Ghillie or ***gillie*** is a Scottish dialect term that refers to a man or a boy who acts as an attendant on fishing or a hunting expedition. In origin it referred especially to someone who attended on his employer or guests. A ghillie may also serve as a gamekeeper employed by a landowner to prevent poaching on his lands, control unwelcome predators and monitor the health of the wildlife.

The origin of this word dates from the late 16th century, from the Scottish Gaelic *gille*, "lad, servant", cognate with the Irish *gile* or *gi-olla*. Historically, the term was used for a Highland chief's attendant, also sometimes called a Gallowglass if he was also a soldier or guard, but this use became rare before the 20th century.

A **gilhie-wetfoot**, a term now obsolete (a translation of gillie-casfiiuc/s, from the Gaelic *cas* foot and *fliuch* wet), was the gillie whose duty it was to carry his master over streams. It became a term of contempt among the Lowlanders for the 'tail' (as his attendants were called) of a Highland chief.

Brogues, often called **wingtips** in the USA, are low-heeled shoes that are made of heavy and untanned leather, said to have originated in Scotland. *Brogue* also refers to Oxford shoes that have fringe or wing tips. The term *wingtip* derives from the toe cap pattern, which forms a W and resembles the profile of a spread bird wing. The term *brogue* also survived in American English as the term "Brogans" in the Appalachian and Southern dialects. The word "brogue" is derived from the Scottish and Irish Gaelic

word *bròg* meaning "shoe". The plural ("shoes") is "*bròg*an".

Ghillies, or Ghillie Brogues, are a type of shoe with laces along the instep and no tongue, especially those used for Scottish country dancing. Although now worn for dancing and social events, ghillies originated as a shoe that would dry quickly due to the lack of a tongue, and not get stuck in the mud because of their laces above the ankle. Because they are associated with a lad or servant, many Scotsmen will not wear ghillies preferring instead to wear a dress wingtip.

There are a number of different brands of ghillie brogues on the market and there can be a significant difference in weight of the shoes as well as slightly different cuts of the shoes. You may wish to try on a few different brands when acquiring new shoes. Also when purchasing shoes, keep in mind that with some shoes the soles are only glued (which typically will be adequate for mild weather) while others' soles are stitched for durability (these can hold up better in the extremes of very hot and very wet weather).

Tying your Ghillies


There are two ways to tie the laces of your ghillies, one is to the side, and the other is to the front. Our regulations state they are to be tied in the front.

Step 1

For the front of your shoe, pull the laces reasonably tight—make sure there isn't slack back and forth through the eyelets—then twist them around each other. The number of twists (half rotations) usually numbers between three and six. If the twists are too loose, they look floppy and your laces may slip later. If they are too tight, the laces become an unpleasing jubbled mass of laces. I should note here that some pipers prefer to do a half-hitch with the laces prior to doing any twists—others don't.

Step 2

At the rear of your leg, pull the laces tight then again twist them around each other. The number of twists usually numbers between 2 and 4 turns—though some do no turns at all. The only real rule is to have less turns in the back than the front. Again, some pipers prefer to do a half-hitch with the laces in the back prior to doing any twists—others do not.

Step 3

Some—many competing drum majors, for instance, they like things symmetrical—tie the bow on the

front, others tie it on the side. The pipers in the Scottish regiments tie the knot directly under the flash. Regardless of where you place your bow, do a typical half-hitch prior to tying the bow as you would when tying a regular shoe.

Some pipers make the mistake of tying the laces too high up the leg. It should wrap no more than a couple of inches above the ankle bone. Better too low than too high.

If you end up with lots of extra lace, you can wrap the laces once again around your ankle. Another option, depending on the construction of your tassels, would be to cut the laces shorter then resecure the tassels—these are also called "toggles"—on the ends. I recommend using the extra length and tying a second knot.

If you want really exacting control over the length of your dangling tassels once the knot is tied, you can go back and make the length of lace on one side of the untied shoe longer than the other—3" to 4" longer can work well. Most pipers don't bother with this, but if you are a perfectionist and the lengths for the bow aren't exactly right to you, it's a good solution.

Slipping Laces

If you find that your laces slip down over the course of a day, and you aren't just tying them too high on your leg, you have a few options. First would be just to live with the inconvenience and just retie them as needed. Second, pull them very tight, though this can be uncomfortable after a relatively short time. Yet another option—if you are not limited by a band uniform requirement—would be to purchase a pair of heavily textured hose to help support the laces (see the piper on the right at the very top of this page for an example). Yet another possibility is to try flat laces if you are using round laces, as flat laces will behave differently. Still another option is to use a small safety pin on the inside of your hose and slip the pin through the laces knot to secure it in position—if you don't mind a small safety pin resting against your skin for a while. But most pipers, if they don't tie the laces too high, don't have a slipping laces problem.

Kilt Hose

Let's take a step back into history and look at the very first type of kilt hose worn – the *cadadh*. These hose were cut and sewn from tartan cloth. They were not necessarily the same tartan as the kilt – most often they were a different tartan entirely. In fact, two tone red and white (or red and black, blue and white, and other color combinations) were popular. The important thing here to remember is that these were not knitted hose. They were made from cloth, cut and sewn with the tartan pattern on the bias (diagonal) for elasticity, with a single seam running down the back of the calf and the bottom of the foot.

The earliest portrait of anyone wearing the *cadadh* with a kilt is from the early seventeenth century. Since the earliest evidence we have of anyone wearing any form of kilt (the belted plaid) is from 1594, it would seem that the Highlander has been wearing *cadadh* for as long as he has been wearing the kilt. Today's knit tartan hose are the modern descendants of the *cadadh*.

The Hon. Stuart Ruaidri Erskine in 1901 writes:

Formerly hose were made of the same stuff with the kilt. Nowadays tartan hose are not worn, save with evening dress, and not always with that…. [after some discussion of the traditional cut and sewn hose] Nowadays, however, hose are invariably knitted, and modern fashion decrees that tartan shall not be donned for day wear.

Tartan hose should not be worn for day wear, unless by livery servants, pipers, or some other in "day full dress." For day wear he prefers simple, plain colored hose, and for evening for formal wear, diced hose of whatever color looks well with the kilt. White is always appropriate for formal occasions.

The top of the hose should be folded over to a uniform length. In a sitting position, hook your thumb on the outside of your leg behind the knee wrapping your fingers forward. The top of your hose, folded over, should touch the bottom of your hand (sorry, I don't have an illustration or photo of this).

Flashes

Flashes are yet another matter. Originally hose were kept in place by wrappings. Some of you may have seen me wear traditional hunting flashes with my kilt. They are still available.

In "*The Kilt and How to Wear It*," the only color garters Erskine mentions at all is scarlet, worn with any kilt. Hamish Bicknell, a frequent poster on the X Marks the Scot kilt forum, and full-time kilt wearer, has some good advice. His strategy is to match the color hose to the shirt you are wearing, and match the flashes to the dominant color of your kilt. In this way, your kilt is "framed" so to speak by your shirt above and your hose beneath. If your hose match your shirt, you can even get by with wearing a color that is not in your kilt at all. I've seen lovat blue hose paired with light blue or denim shirts to good effect, in tartans that are red and green.

A good rule of thumb is to find a secondary color in your tartan and get a flash to match that. Modern flashes come in a variety of colors and styles.

The Band Dress and Deportment regulations state:

Both flashes are worn under the hose turn-overs with the loops and ribbons extending from under the turn-over. The garter will not be visible. The ribbons from both flashes will hang at the same length on both legs. The trailing edge of the front ribbon will be vertically centered on the front of the leg (although most wear them to the side)*. If the hose has a pattern, the leading edge of the ribbon will line up with the pattern. Flashes will look identical on both legs.*

Sgian Dubh

The **Sgian Dubh** (pronounced "skee(a)n doo") is a ceremonial dagger (Gaelic *sgian*) worn as part of the modern Scottish Highland dress along with the kilt. It is worn tucked into the hose with only the pommel visible. "Sgian" means knife or dagger, "dubh" means black. Skyelander touched upon 'Dubh' being black in his poem, 'Dubh Water.' Also there is in Celtic Mythology there is the black natured God "Dubh". There is discussion about the meaning of black in this connotation. The word Dubh, (black) comes from the usual color of the handle of the little knife, but the great majority of pundits believe that it means secret, or hidden, as in 'hidden away'. Also, some give credence to the story that because it was secreted away, - it was a dark weapon, others use the term "dubh" or black as in 'blackmail'.

Another theory suggests that the Sgian dubh evolved from the sgian achlais (ochles), the "armpit dagger" mentioned in connection with the Scots in the 17th and 18th century. This was a knife slightly larger than the sgian dubh and was carried in the upper sleeve of the jacket and drawn from the inside through the armhole, and sometimes even in the lining of the body of the jacket, under the left arm. If one were left handed of course, the whole process was reversed.

Courtesy of the times required than when entering the home of a friend or casual acquaintance, no weapons could remain concealed. Some say that when the armpit dagger was removed, the top of the men's hose was a convenient place to display it, (securely held by the garter (or flashes). Displaying it thus, showed the Scot had no dark intentions at the gathering.

Another theory is that the sgian dubh evolved from the small skinning knife that was a part of the typical set of Gralloch (or hunting) knives. Some of these do exist. They include a butchering knife with a blade of nine or ten inches and a skinning knife with a blade of only three to four inches. The Gralloch knives usually have antler handles, and do not fit the term black in either carry or color. There are still today, Sgian Dubh made with antler horn handles. This theory does have two facts in its favor: (1) Many early sgian dubhs are fitted with antler or horn handles, and (2) the skinning and butchering of wild

game after the successful hunt was a duty of the upper class hunter's ghillie, literally "boy" in Gaelic. The well-to-do huntsman would not stoop to do such work. The attitude of officers in the military regiments suggest they resisted carrying of sgian dubhs, as they were initially considered fit only for "ghillies and serving rascals." The lower -- medium class clansmen had no such qualms as they did their own butchering and skinning and never depended on ghillies or servants.

When the sgian dubh first began to be worn full time in the stocking top, it is shown in oil paintings of the early to mid 1800's. Most nobility had their pictures painted in full dress and show the sgian dubh. In these paintings, around 1805 - 1812 the nobility and the Chieftains both had sgian dubh in their stockings and were easily seen in the paintings because of the kilts. There is a portrait in the National Portrait Gallery of Scotland showing the 15th Chief of MacDonells of Glengarry, wearing what appears to be a sheath that holds two nested knives. The National Museum of Antiquities of Scotland has a similar sgian dubh in its collection.

Colonel MacDonell was the last of the great clan chiefs, in the sense that he always dressed in Highland attire, and never went anywhere without his suite of attendants. He was the inventor of the Glengarry bonnet, and became notorious for killing the famous Flora MacDonald's grandson in a duel, and for spending his clan into poverty. He was acquainted, perhaps friends with Sir Walter Scott, and was the model for the character Fergus MacIvor in Scott's novel "Waverly.*" In Waverly there is a passage dealing with the sgian achlais. That little knife was not fully accepted by the upper classes is hinted at by the fact it is not worn by "that wee German Laddie," King George IV, when he was painted in full Highland regalia during his "jaunt" to Scotland in 1822. However by the 1850s' the sgian dubh was universally worn.

The early sgian dubhs were often crudely made by local Scottish smiths, with antler horn handles and were mounted in brass, with a simple leather sheath. They were longer than today's sgian dubh, by an inch or so. The handles were full round, with little consideration given to how the knife would fit the anatomy of the wearer. As time went by the sgian dubh was accepted as a full partner to the dirk; it then began to be decorated in the same way as the dirk, and frequently made to match each other, sometimes made 'en suite' with it, and kept in the same fitted wooden case with its larger companion. At this time, they were made, like the dirk, with carved ebony and occasionally, ivory handles. The carving was normally of the simple basket weave pattern that had become popular on the dirk, with silver pins at the corners of the carved panels. The handles were almost invariably black, flattened to lay against the leg, and some had the owner's crest or coat of arms mounted on them. Some had caringorns in the topmost point of the handle. Also some were black handle, Celtic carved, decorative motif. Military sgian dubhs frequently had some form of the regimental insignia on them. Rarely were the handles carved with the earlier style of Celtic knot work that had been popular on the dirk in the sixteen or seventeen hundreds, only when custom made 'en suite' with a dirk with that early style carving. The pommels held mounts and stones to match the dirk, and the occasional matching sporran and plaid* brooch.

The earlier blades frequently had a clipped point, a style that is now associated with the bowie knife. Some had scalloped filework on the back of the blade that is common on all Scottish knives. As time proceeded, the blades were shortened slightly. The shape was altered to a spear point, and filework became universal. At least one sgian dubh is known that had a solid silver blade, useless for most chores due to it's softness. Strictly for show. Some regimental sgian dubhs had blades etched with regimental symbols.

The early leather sheath, like those on the early dirks, evolved into highly decorated pieces of art. Reinforced with wood and fitted with silver throats and tips, pierced and engraved. While this makes for great bragging rights, there was no practical purpose, as the sheath is hidden in the stocking while the sgian dubh is worn.

Victoria became Queen of England in 1837, and the Scottish romantic period began. She had Balmoral Castle in the Highlands renovated with many changes including tartan carpets, tartan covered furniture, tartan cloths everywhere. Lavish dirks and sgian dubhs reached their peak around the end of her reign in 1901, and continued until World War I, which ended that romantic period. However, her influence on the dress and the Clans of the Highlanders was immense. She brought Highland dress and weaponry into fashion in the Lowlands, where it had always been looked down on as the "strange Highland Dress". After Victoria arrived, every noble and large castle or mansion owner got his very own tartan and had made for his family; the

"strange Highland dress" he so despised prior to Victoria. Victoria made it the fashionable thing to do. Sgian dubhs found themselves buried in the mud of the Somme and Neuve Chapelle. After the war the gaudy military dirks and sgian dubhs were largely gone, but the flamboyant period saw some very extravagant civilian sets made. One set, made in 1925 for the Prince of Wales and now in the Tower of London Royal Armories, was auctioned in 1987 for $403,333.

On the other hand, the tradition of the antler handled dirk and sgian dubh returned in the 1800s. Usually mounted in brass, they were and still are, worn for informal day wear. Most have some type of brass or silver pommel decoration, and some have stones mounted.

Over time, legends have grown around the sgian dubh. One is that the stone mounted in its pommel is carefully weighed and placed to properly balance the knife for throwing..... ridiculous, to anyone who has ever thrown a knife. It was 'not' a throwing knife, it is a stabbing knife. Another; - that like the dirk and the Gurkha Kukri; the sgian dubh is never to be drawn for trival or mundane purposes and must taste blood before it can re-sheathed, even if the user must nick his own finger...not true, but it makes an excellent tale.

In the Victorian age one piece dirks and sgian dubhs were made for young boys who couldn't be trusted with a real knife. Considering the recent laws passed in Britain against carrying knives, this may be the only way a Scot can support an honored tradition. The other alternative might be what was done by some members of kilted regiments - having the image of a sgian dubh tattooed on the leg.

The Kilt

The history of the kilt stretches back to at least the end of the 16th century. Although the kilt is an item of traditional Scottish highland dress, the nationalism of that tradition is relatively recent. It was only with the Romantic Revival of the 19th century that the kilt became irreversibly associated with Highlanders, and was subsequently adopted by Lowlanders and the Scottish Diaspora. Other modern Celts such as the Irish, Cornish, Welsh and Manx, have also adopted tartan kilts in recent times, although to a lesser degree.

The word *kilt* comes from the Scots word *kilt* (fancy that) meaning to tuck up the clothes around the body. The Scots word derives from the Old Norse *kilting*, from Norse settlers who wore a similar, non-tartan pleated garment.

The Great Kilt

The *Breacan an Fhéilidh* or *Féileadh Mòr* was originally a length of thick woolen cloth made up from two loom widths sewn together to give a total width of 54 to 60 inches, and up to 7 yards in length. The great kilt, also known as the belted plaid, was an untailored draped garment made of the cloth gathered up into pleats by hand and secured by a wide belt. The upper half could be worn as a cloak draped over the left shoulder, hung down over the belt and gathered up at the front, or brought up over the shoulders or head for protection against weather. It was worn over a *léine* (a full sleeved garment gathered along the arm length and stopping below the waist) and could also serve as a camping blanket. For battle it was customary to take off the kilt beforehand and set it aside, the Highland charge being made wearing only the *léine* or war shirt.

The Small Kilt or Walking Kilt

Sometime early in the 18th century the *fèileadh beag* or philabeg using a single width of cloth hanging down below the belt came into use and became quite popular throughout the Highlands and northern Lowlands by 1746, though the great kilt also continued in use. The small kilt developed into the modern tartan kilt when the pleats were sewn in to speed the donning of the kilt.

The "Dress Act"

The Jacobite Risings demonstrated the dangers to central government of warrior Highland clans answering only to their chieftains, and as part of a series of measures the government of King George II imposed the "Dress Act" in 1746, outlawing all items of Highland dress including the new kilts (though with an exception for army uniforms) with the intent of suppressing highland culture. The ban remained in effect for 35 years.

Although the kilt was largely forgotten in the Scottish Highlands, during those years it became fashionable for Scottish romantics to wear kilts as a form of protest against the ban. This was an age that romanticized "primitive" peoples, which is what Highlanders were viewed as. Most Lowlanders had viewed Highlanders with fear before 1745, but many identified with them after their power was broken. The kilt, along with other features of Gaelic culture, had become identified with Jacobitism, and now that this had ceased to be a real danger it was viewed with romantic nostalgia.

Once the ban was lifted in 1782, Highland landowners set up Highland Societies with aims including "Improvements" (which others would call the Highland clearances) and promoting "the general use of the ancient Highland dress". The Celtic Society of Edinburgh, chaired by Walter Scott, encouraged lowlanders to join this antiquarian enthusiasm.

The kilt became identified with the whole of Scotland with the pageantry of the visit of King George IV to Scotland in 1822, even though 9 out of 10 Scots lived in the Lowlands. Scott and the Highland societies organized a "gathering of the Gael" and established entirely new Scottish traditions, including Lowlanders wearing the supposed "traditional" garment of the Highlanders. At this time many other traditions such as clan identification by tartan were developed.

After that point the kilt gathered momentum as an emblem of Scottish culture as identified by antiquarians, romantics, and others, who spent much effort praising the "ancient" and natural qualities of the kilt. King George IV had appeared in a spectacular kilt, and his successor Queen Victoria dressed her boys in the kilt, widening its appeal. The kilt became part of the Scottish national identity.

Military Use

2nd Lieutenant Donald Callander commissioned in The Queen's Own Cameron Highlanders (the Tartan we wear)

From 1624 the Independent Companies of Highlanders had worn kilts as government troops, and with their formation into the Black Watch regiment in 1740 their great kilt uniform was standardized with a new dark tartan. Army uniforms were exempt from the ban on wearing kilts in the "Dress Act", and as a means of identification the regiments were given different tartans. These regiments opted for the modern kilts for dress uniforms, and while the great kilt remained as undress uniform this was phased out by the early 19th century.

Many Scottish units wore kilts in combat during WWI. In particular, the ferocious tactics of the Royal Highland Regiment led to their acquiring the nickname "Ladies from Hell" from the German troops that faced them in the trenches. The kilt was last worn in action at the start of WWII. Irish troops have no tradition of wearing the kilt in battle, though pipers in Irish regiments of the British Army have traditionally worn a mustard-colored saffron kilt.

Fabric

The typical kilt as seen at modern Highland games events are made of twill-woven worsted wool. The twill weave used for kilts is a 2-2 type, meaning that each weft thread passes over-and-under two warp threads at a time. The result is a distinctive diagonal weave pattern in the fabric which is referred to as the twill line. This kind of twill when woven according to a given color pattern, or *sett*, is called **tartan**. In contrast, the Irish kilt traditionally was made from solid color cloth, with saffron or green being the most widely used colors.

History of the Tartan

What is a tartan? Tartan is a woven material, generally of wool, having stripes of different colors and varying in breadth. The arrangement of colors is alike in warp and weft -- that is, in length and width -- and when woven, has the appearance of being a number of squares intersected by stripes which cross each other, this is called a 'sett. By changing the colors; varying the width; depth; number of stripes, differencing is evolved. Tartan patterns are called "setts" and by this is meant the complete pattern, and a length of tartan is made by repeating the pattern or sett, over and over again.

The history of tartan, while interesting, is also controversial, and from time to time discussion has arisen regarding the antiquity of Clan tartans. Arguments are generally involved and can only be understood by those who have studied the subject in depth.

References to tartan in early literature supply ample proof that tartan was worn many centuries ago. What may be the earliest written reference to tartan is contained in the accounts of the treasurer to King James III, in the year 1471 where mention is made of tartan purchased for the use of the King and Queen of Scotland.

It is improbable that the early tartans were as gaily colored or as tastefully arranged as were the tartans of later years. The skill of the weaver and the availability of plants likely to supply vegetable dyes were the chief factors in determining the colors of a tartan. Colors used would be restricted to the plant dyes found within the various districts. The early tartans would have been similar to a checked, muted material of wool. As chemical dyes became more common, the weavers enlarged their range of colors and introduced more colorful variations to the old patterns. When limited to vegetable dyes, the people of each district were forced by circumstances to use the same colors in their tartans and it is probable that the people of the various districts were recognized by the colors in their tartans.

District tartans, as these early patterns are called, might also have served as the Clan tartan, because the people inhabiting Clan districts were, as a rule, members of the same Clan. However there are many instances whereby many different Clans lived and functioned as member of the district. By adding a stripe of different color or by varying the arrangement of colors it is thought that branches of the Clan evolved their own tartans, yet by the similarity of pattern, they displayed their kinship with the main Clan.

What may be the earliest recorded reference to a Clan tartan appears in a Crown Charter of 1587 to Hector MacLean of Duart, wherein the feu duty payable on the lands of Narraboll, Islay, is stated to be "sixty ells of cloth, of white, black and green colors." These colors correspond to the colors in the tartan we now call MacLean hunting, but it is doubtful if their exact arrangement was the same as that in use at the present time.

Written evidence regarding the use of Clan tartans prior to the Battle of Culloden are not available. It is generally supposed that each Clan had a special pattern of its own which was worn by the clansmen of the Clan as a means of identifications and as a symbol of the Clan kinship.

From this absence of written proof, critics maintain that Clan tartans as we know them today are modern inventions, probably dating from the Battle of Culloden, or around the time of the Jacobite Civil Wars. These critics also aver that while tartan cloth is undoubtedly ancient, it has no Clan meaning and that the clansmen wore the tartan of their fancy and that inside of each Clan the people wore a medley of tartans.....not so! The evidence of the oil paintings of the seventeenth and eighteenth centuries is sometimes accepted as proof to support the critics' claims. Many genuine oil paintings show figures in Highland dress, but the dress displays different tartans in vests, coats and plaids. It should therefore, be pointed out that the figures depicted are usually gentlemen of importance (many Lowlanders), and it is well known these gentlemen dressed differently from the ordinary clansmen. One such famous painting 'does' show ordinary clansmen. This painting was executed at the command of the Duke of Cumberland and was painted by the French artist Morier. The scene depicts an encounter between regular troops of the British Army and some Highland clansmen. Jacobite prisoners were taken from the Tower of London, and the 'Tollboth', to pose for this picture. Here again the Highlanders are shown wearing a variety of tartans in coats, vests and kilts, not one pattern being recognizable and all unlike any tartan known today. Too much importance *should not* be placed on this painting. The brutal treatment of the Jacobite prisoners of war, who were often stripped of their clothing, makes it highly improbable that the men were wearing their own clothing. It is unlikely that the captors would have taken the trouble to supply the men with their own Clan tartans. While this painting is interesting as illustrative of Highland dress of the period, and the artist had the reputation of being accurate in copying details, *it should not be accepted as refutable proof that there were no Clan tartans.*

Several writers have given descriptions of tartan which might infer that Clan tartans were worn before the Battle of Culloden, although they do not call them Clan tartans. Puzzling?? *Martin* in his *Description of the Western Islands of Scotland*', published in 1706, tells us, "...Every Isle differs from each other in their fancy of making Plads, as to the Stripes in Breadth and Colous. This Humour is as different throughout the main land of the Highlands, in-so-far that they who have seen those Places, are able, at the first view of a Man's Plad, to guess the Place of his Residence....." These words would seem to imply that the people of each isle and

district wore a common pattern to each, whereby a stranger might identify their Clan district.

After the Jacobite defeat at the Battle of Culloden in 1746 the Government determined to purge the Highlands of all unlawful elements and to destroy the Clan system. Accordingly an Act of Parliament was passed which not only aimed at the complete disarming of the Highland Clans but made the wearing of tartans a penal offense. This section of the act was strictly enforced. In 1782, the ban on tartans was removed, but by this time the Highlander had become accustomed to the dress worn in other parts of the country and showed no great enthusiasm to rush into tartan clothing. Tartan had, in fact, become only a memory. Many of the old weavers had died out and with their passing old patterns were forgotten.
Interested gentlemen and organizations collected the old tartans where ever these could be found, and it is from these early collections that the most reliable information can be found.

"ACT OF PARLIMENT (ENGLISH), passed in 1746 prohibiting the wearing of the Highland Dress.

HIGHLANDERS OATH AGAINST TARTAN ('The Oath' every Highlander was forced to repeat (take), and swear on the threat of DEATH), 1746.

('Those who refused to take it were treated as rebels.' and killed or arrested.)

I, _____, do swear, as I shall answer to God at the great day of Judgement, I have not, nor shall have in my possession any gun, sword, pistol or arm whatsoever, and never to use tartan plaid, or any part of the Highland Garb; and if I do so may I be cursed in my undertakings, family and property, -- may I be killed in battle as a coward, and lie without burial in a strange land, far from the graves of my forefathers and kindred; may all this come across me if I break my oath."

This was an especially cruel oath by Highlanders, because most were still Catholic and to 'lie without burial, and blessing, etc' was a devastating punishment.

Many died because of the 'wearing of the tartan', and 'not giving up their weapons', just as many died in Ireland for the 'wearing of the green'.

In 1822 King George IV visited Edinburgh and the Highland chiefs were persuaded to attend the levies and other functions, all attired in their Clan tartans (a majority did not go). Almost overnight tartan became popular and families, who probably had never before worn tartan, (and hated the Highlanders), became the proud possessors of family tartans.

Tailors and manufacturers alike were seldom at a loss to "find" a clan or family tartan, but the bitter truth is that these so-called ancient tartans 'were invented for the occasion' (and they are being invented again for the occasion). Two gentlemen, known as the Sobieski-Stuart brothers, and who claimed to be grandsons of Prince Charlie, supplied details of tartans to many Clan chiefs and heads of families, claiming to have obtained their information from some sixteenth century manuscripts in their possession. Their failure to produce the manuscripts for examination cast doubts upon their information and when in 1842 they published a book on tartans called the Vestiarium Scoticum it was dubbed a forgery.

Many of the tartans in use today have no great authority other than the fact that, their acceptance during the past 100 years -- has given them an 'antiquity' of their own, just for being around so long.

During the second half of the nineteenth century (1800's) many books were published giving descriptions and illustrations of tartans, all the authors claiming that the patterns given were old and genuine. To distinguish between *true and bogus* was becoming more and more difficult. Towards the end of the century many new tartans were invented, but of these it can be said NO claims to ANTIQUITY were ever advanced.

Today the confusion of fifty years ago has been regulated into some semblance of order and patterns are now, more or less, standardized into recognized settings.

Although many old patterns have been preserved these merely show the beauty of the old vegetable dyes and the hard-spun weaving of the eighteenth century. Very few of them are now recognizable as Clan tartans. The greatest number of tartans today are less than 100 years old; a fairly large number may be dated to the opening years of the nineteenth century, while only a very small number are of more ancient date.

Tartans are described according to the purpose for which they are named:

CLAN TARTANS are patterns for general use by clanspeople. It is not uncommon to find a Clan tartan of recent origin described as "Ancient Clan tartan." The use of the word "ancient" is most misleading, as it is merely an indication that the tartan has been woven in lighter colored shades, as ancient tartans were of lighter vegetable dye shades.

DRESS TARTANS were originally worn by the ladies of the Clan who desired lighter colored patterns. As a rule they had white as the background color and were variations of the Clan pattern. Wearing of dress tartan is now confined to functions and other dress occasions. At one time:

MOURNING TARTANS were worn for the purpose for which they were named. They were generally of black and white. Many are now worn as dress tartans. In recent years there has been a tendency to refer to –

CLAN DRESS TARTANS woven in light weight material as "DRESS" tartan. This causes the confusion and should be avoided. Clans who do not possess a dress tartan usually wear the Clan pattern, in light weight material, as a dress tartan, but this does not justify the description of a Clan tartan as a "Dress" tartan. (Confused yet?).

HUNTING TARTANS are worn for sport and outdoor activities. Brown, black, dark blues, greens and grey are generally the predominant colors. When a Clan possessed a brightly colored tartan it was found unsuitable for hunting purposes, and hunting setts were devised to make the wearer less conspicuous. The colors are arranged so that concealment in the woods and heather, - the tartan blended with the surroundings.

CHIEF TARTANS are the personal tartans of the Chiefs and should never be worn except by the Chief and, if he allows, his immediate family. His clan members would wear the tartan he directs, which was usually very much like his.

DISTRICT TARTANS are probably the oldest of our tartans from which Clan tartans may have developed. There are a number of District tartans which are, nowadays, worn by the people residing in, or having their place of origin in the district, always provided they are not entitled to wear a Clan tartan. [Update** District tartans are now printed for every district, spot, hill and crevice. City tartans abound. Families who never had tartans, now have them, and the Lord Lyons is permitting this.

Whilst tartan continues to excite the admiration of peoples everywhere, it is impossible to lay down hard and fast rules regarding choice of tartans. In all probability the would-be wearer of tartan will select the "tartan of his fancy." *Although this is frowned upon by authors such as myself,* there is little that can be done if the impolite person decides to wear someone's tartan, short of censure. One caution may be voiced. The Royal tartans are for the use of the Royal family and should not be worn by anyone outside of the Royal family, except by consent. Exception, the Royal Stewart. A tartan made up for the "would be king" that did not come to fruition

Military tartans are for the military use only. Also known as Regimental tartans

The Band Tartan

As you know (or maybe you didn't) the Omaha Pipes and Drums wears the Cameron of Erracht tartan.

We actually wear the "modern" tartan shown here

as opposed to the "ancient" or "muted" version

The tartan is unique among Scottish Regiments owing to the fact that it was not derived from the 42nd Government (Black Watch) Tartan.

Ewen Cameron of Lochiel took as his second wife Marjory MacKintosh. Their son Ewen was the first of what would become the Camerons of Erracht. This was in the early 16th century and by 1745, Donald Cameron, 7th of Erracht, was second in command of the Camerons at Glenfinnan when Prince Charles raised his standard. The tartan is said to have been designed by the wife of Donald, 7th of Erracht in 1793 (there are many theories as to its origin, none of which seem entirely satisfactory). This combination of the Cameron and MacDonald tartans uses a deep red, dark blue, green and a fine gold line. It was created for the use of the original 79th Regiment, later known as The Queen's Own Cameron Highlanders, raised in 1793 by their eldest son, General Sir Allan Cameron, K.C.B. Regardless of its origin, this tartan has been in use by The Cameron Highlanders since their late-eighteenth century inception. It is often used as a day or "hunting" tartan, because of its "serviceable" colors. At times it has been strictly reserved for use among the regiment, but is now in wide use among Clan Cameron. This tartan was not created as a tribal clothing specifically for the Erracht Camerons. Therefore, if any Cameron ancestors owned this tartan, it does not mean that they were Camerons of Erracht. Quite the contrary, it probably indicates a regimental affiliation or even a school uniform, as some Highland academic institutions required students to dress in this tartan.

Fabric

Kilting fabric weights are given in ounces per yard. They run from the very heavy regimental worsted of approximately 18–21 oz. down to a light-worsted of about 10–11 oz. The most common weights for kilts are 13 oz. and 16 oz. A kilt for a typical adult uses about 6–8 yards of single-width (about 26–30 inches) or about 3–4 yards of double-width (about 54–60 inches) tartan fabric. Double width fabric is woven so that the pattern exactly matches on the selvage (uncut edge). Kilts are usually made without a hem, since it would make the garment too bulky and cause it to hang incorrectly. The exact amount of fabric needed depends upon several factors, including the size of the sett, the number of pleats put into the garment, and the size of the person.

Setts (Tartan Patterns)

One of the most distinctive features of the authentic Scottish kilt is the tartan pattern, or *sett*, they exhibit. Many of these patterns have come to be associated with Scottish clans or families, but there are also tartans for districts, counties, countries, corporations, States and Provinces, schools and universities, individuals, commemorative, and simple generic patterns that anybody can wear. Setts are always arranged horizontally and vertically, never on the diagonal. They are specified by their thread count, which are the sequence of colors and their units of width.

Setts are further characterized by their size which is the number of inches (or centimetres) in one full repeat. The size of a given sett depends not only on the number of threads in the repeat, but also on the weight of the fabric. This is so because the heavier is the fabric weight, the thicker the threads will be and thus the same number of threads of a heavier weight fabric will occupy more space when woven.

The colors given in the thread count are specified as in heraldry, although tartan patterns are not heraldic. The exact shade which is used is a matter of artistic freedom and will vary from one fabric mill to another as well as from one dye lot to another within the same mill. Tartans are commercially woven in four standard color variations that describe the overall tone. "Ancient" or "Old" colors are characterized by a slightly faded look intended to resemble the vegetable dyes that were once used. Ancient greens and blues are lighter in shade, while reds appear orange. "Modern" colors are bright and show off modern alkaline dyeing methods. The colors are bright red, dark hunter green, and usually navy blue. "Weathered" or "Reproduction" colors simulate the look of older cloth weathered by the elements. Greens turn to light brown, blues become gray, and reds are a deeper wine color. The last color variation is "Muted" which tends to earth tones. The greens are olive, blues are slate blue, and red are an even deeper wine color. This means that of the nearly 5,000 registered tartans available there are four possible color variations for each, resulting in nearly 20,000 tartans.

Setts are registered with the Scottish Tartans Authority which maintains a collection of fabric samples characterized by name and thread count. In all, there are approximately 5000 registered tartans. Although many tartans being added every year, most of the registered patterns available today were created in the 19th century by commercial weavers who had a large variety of colors to work with. The rise of Highland romanticism and the growing Anglicization of Scottish culture by the Victorians at the time led to registering tartans with clan names. Before then, most of these patterns had little or no connection to any clan. There is therefore nothing symbolic about the colors, and nothing about the patterns is a reflection on the status of the wearer.

Pleating

A kilt can be pleated with either box or knife pleats. A knife pleat is a simple fold, while the box pleat is bulkier, consisting of two knife pleats back-to-back. Knife pleats are the most common in modern civilian kilts. Pleats can be arranged relative to the pattern in two ways. In pleating to the stripe (middle picture), a vertical stripe is selected and the fabric will be folded so that this stripe runs down the center of each pleat. The result is that horizontal bands appear along the back and sides of the kilt, which will look different from the front than it does from the back. It is often called military pleating because this is the style adopted by most military regiments. It is also widely used by pipe bands. In pleating to the sett (right picture) the fabric is folded in such a way that the pattern of the sett is repeated all around the kilt. This is done by taking up one full sett in each pleat, or two full setts if they are too small. This causes the kilt to look much the same both front and back.

Length

A kilt too long, too short, or fitting improperly is an embarrassment. The proper length is measured the easiest by simply kneeling down; if the kilt just barely touches the floor it is the proper length. This method dates back to regimental Quartermasters who, needing to quickly measure the fit of a kilt would have soldiers kneel.

Other Types of Kilts

The **Northumbrian kilt** is almost identical to the Scottish Kilt, but usually of plainer weave and less colorful. Although of a cross-weave, the fabrics used are not a true tartan. Plain monocolor weaves or "Northumbrian tartan" are popular choices.

In contrast to the Scottish kilt, the **Irish Lein-croich** traditionally was made from solid color cloth, with *saffron* and green being the most widely used colors. Solid colored Irish kilts can often be seen in 19th and early 20th century photos in Ireland especially at political and musical gatherings.

A **Welsh Kilt** (Welsh: *Cilt*) is a type of kilt worn in Wales and by Welshmen. Although not considered a traditional component of Welsh national dress, the kilt has become recently popular in the Celtic nations as a sign of Celtic identity. The St David's Tartan or brithwe Dewi Sant is one of the most popular tartans in Wales, but individual family tartans are being produced.

The Kilt Pin

Our Band Uniform Regulations state, *"No unauthorized kilt pin or accessories will be worn."* We adopted this as a result of a former member who liked to attached paraphernalia of all sorts to his kilt – he looked like a walking haberdashery. A uniform is meant to be just that; uniform. The intent is for everyone to be dressed similarly. While we are competing or performing as a band, and until the Band authorizes the wearing of a kilt pin, a pin should not be worn. However, when not performing with the Band.

The history of the kilt pin originates with Queen Victoria, who, upon observing a kilted soldier standing at attention with the wind whipping his kilt up around his ears, came to his rescue by pinning the aprons of his kilt together with a pin she was wearing. Thereafter, it was decreed that all Scottish regiments would wear some device to hold their kilts down. Regiments such as the Black Watch, however, opted for rosettes of ribbon.

Many people object to the kilt pin because of its feminine origins and some men refuse to wear a kilt pin at all; while some don't feel dressed without one. This is certainly optional and my sentiments tend to fall somewhere between the two extremes. If you do decide to wear a kilt pin, the proper place to wear it is three inches from the bottom of the kilt and three inches inward from the right side of the apron. The kilt pin should only go through the top apron and not be pinned to the bottom apron. Any variation in this general area is considered ok, and if you have a double thickness on the right side of the apron, you might affix it to that area. The biggest objection I have to the kilt pin is its predilection to getting snagged and the possibility of tearing the kilt. Again, as with the sgian dhub and the sporran, the kilt pin should be appropriate for the level of dress and the occasion. Silver or gold kilt pins with jewels are properly only worn with evening wear. A plain silver or brass kilt pin is appropriate for daywear.

Some people have problems with the clasp of their kilt pin coming loose and their pin falling out and being lost. To prevent this, one idea it to take the eraser off of a pencil and run it through the back of your pin as you pin it on your kilt. If the clasp should come loose, the eraser will keep your pin from falling off.

The Sporran

With the kilt, a sporran is a real necessity. A **Sporran** is a pouch (the word is simply the Scottish Gaelic for 'purse'). The official Band sporran is the issued black leather “day” sporran without cantle. The top of the sporran should be worn a hand’s breadth below the belt buckle or just below the bottom of the waistcoat.

Now a decorative part of Highland dress, it was originally an everyday practical item. Made of leather or fur, it usually has more or less elaborate silver or other ornamentation, especially on the clasp or hanger. It is worn on a chain or belt around the waist, allowing the sporran to lie below the waist of the person wearing a kilt.

Since the traditional kilt does not have pockets, the sporran serves as a wallet and container for any other necessary personal items (such as a hip-flask). It is essentially a survival of the common European medieval belt-pouch, superseded elsewhere as clothing came to have pockets, but continuing in the Scottish Highlands because of the lack of these accessories in traditional dress.

The sporran also protects a person's decency. This was originally because the ancient 'great plaid' (Gaelic *breacan an fhèilidh*), formed of a long draped cloth, had a gap at the front, and in more modern times because the kilt is traditionally worn without undergarments. Historically, the sporran was used to carry a day's rations.

There are several categories of sporrans, each with their proper attire:

“Day Sporrans", like we wear in the Band, are usually simple brown or black leather pouches with little adornment. Traditionalists prefer brown or buff-colored sporrans, belts, and shoes for day wear.

“Dress Sporrans” (following page) are larger than the day variety, and are more ornate. Victorian examples were often ostentatious, and very different from the simple leather pouch of the 17th or 18th centuries. They usually have chrome or silver cantles trimming the top of the pouch and a fur-covered face with fur or hair tassels. The cantle may contain intricate filigree or etchings of Celtic knots. The top of the cantle may have a set stone, jewel, or emblems.

"Military Sporrans" may be worn with regimental attire. Pipers will often wear the most flamboyant sporrans with long horsehair that swishes from side to side as the piper marches.

New legislation in the European Union to protect vulnerable species could affect kilt wearers, who may need a license to show that sporrans made later than 1994 do not come from endangered or illegally killed animals. The law is aimed at protecting wild animals such as badgers, otters, hedgehogs and wild cats.

Silver-mounted sporrans should be reserved for more formal occasions. Plain leather or animal masked sporrans are appropriate for daywear and, interestingly enough, the animal masked sporran is one of the few all-purpose sporrans that can be worn with the most formal dress or the most informal wear.

One item of interest is that when a gentleman is dressed in Highland attire and dances with a lady, he should move the sporran to his left hip. The sporran should also be moved to an unencumbered hip when sitting down to the table. This removes the sporran from harm's way so you don't spill on it and makes your lap unencumbered for a napkin. In general, it's just considered good manners.

Kilt Belt

Belted Plaids were worn as early as the 16th century. While once worn to hold the Great Kilt closed, the modern Kilt Belt is primarily an accessory – if a kilt fits properly, a belt is not needed – it is an accessory. The **Kilt Belt** worn by the Band is a traditional military style and is not worn with the waistcoat.

The **Waistcoat** (or vest) is one of the few articles of clothing whose origin historians can date precisely. King Charles II of England, Scotland and Ireland introduced the waistcoat as a part of correct dress during the Restoration of the British monarchy. It was derived from the Persian vests seen by English visitors to the court of Shah Abbas. It has become the standard dress for many competing soloists and pipe bands.

The Glengarry

Glengarry (also **Glengarry bonnet** or **Glengarry cap**) is a type of cap which Alasdair Ranaldson MacDonell of Glengarry invented and wears in the portrait to the right: a boat-shaped cap without a peak made of thick-milled woollen material with a *toorie* or bobble on top and ribbons hanging down behind.

Colonel **Alasdair Ranaldson MacDonell of Glengarry** (1771-1828) was a personality well known to Walter Scott, a haughty and flamboyant man whose character and behaviour gave Scott the model for the wild Highland clan chieftain Fergus Mac-Ivor in the pioneering historical novel Waverley of 1810. As was customary for the chieftain of a clan, he was often called simply "Glengarry".

He was born in 1771 and became the 15th chief of Clan MacDonell of Glengarry in 1788, shortly afterwards raising troops for a regiment of Fencibles. As part of their uniform he invented the *Glengarry*, a type of cap which he wears in his portrait. Glengarry considered himself the last genuine specimen of a Highland chief, always wore the Highland dress (kilt or trews) and in the style of his ancestors seldom traveled without being followed by his "tail", servants in full Highland dress with weaponry who had traditional duties like carrying his sword and shield, standing sentinel, acting as bard and carrying him dry across streams.

In January 1828 Alasdair Ranaldson perished trying to escape from a steamer which had gone aground. As his estate was very much mortgaged and encumbered his son was forced to sell it and move to Australia with his family. The estate was purchased by the Marquis of Huntly, and in 1840 it was sold to Lord Ward, Earl of Dudley, then in 1860 his lordship sold it to Edward Ellice. After a lifetime of betrayals, Alasdair Ranaldson's death was not mourned by the people of Glengarry.

The Glengarry continued to be worn in dark blue or rifle green by all regiments of the Scottish Division up to the amalgamation of all Scottish units into the Royal Regiment of Scotland, as an alternative to the tam o'shanter, particularly in parade dress (when it is always worn, except by the Black Watch, who wore the Balmoral bonnet) and by some regiments' musicians (who wear feather bonnets in full dress). The current type of blue Glengarry worn by the Royal Regiment of Scotland is with a red 'tourie', red, black and white dicing, black silk cockade and the regimental cap badge surmounted by cockfeathers, a tradition taken from the Royal Scots and King's Own Scottish Borderers. Other Commonwealth military forces, who also have Scottish and Highland regiments, also make use of the Glengarry. The Irish Defense Forces also employ the Glengarry and it has been issued since 1922 to all units of the Cavalry Corps and Reserve Army officers. The Irish Glengarry differs somewhat to its Scottish forbearer in that the Irish is more akin to a Caubeen with tails. The Glengarry is also commonly worn by civilians, notably civilian pipe bands, but can be considered an appropriate hat worn by any males with Highland casual or evening dress.

The correct method of wearing the Glengarry has changed since the end of the Second World War. Prior to 1945, Glengarries were generally worn

steeply angled, with the right side of the cap worn low, often touching the ear, and the side with the cap badge higher on the head. The trend since the end of the war has been to wear the Glengarry level on the head.

Hackles

The band stopped wearing hackles when it retired the Class A uniform. The **hackle** is a feather plume that is attached to the headdress. In the British Army and the armies of some Commonwealth countries the hackle is worn by some infantry regiments, especially those designated fusilier regiments and those with Scottish and Northern Irish origins. It was commonly attached to the feather bonnet worn by Highland regiments (now usually only worn by drummers, pipers and bandsmen).

The color of the hackle varies from regiment to regiment and in many instances has a history. However, the origin of the Royal Scots Borderers (1 SCOTS) has no apparent precedent. It may be that the black hackle of simulates the black-cock tail feathers originally worn in the 1904 pattern Kilmarnock Bonnet and latterly in the regimental Glengarry Cap by the Royal Scots and King's Own Scottish Borderers, who merged in August 2006 to form 1 SCOTS. Alternatively, it may be a sympathetic gesture to a former Lowland regiment, the Cameronians (Scottish Rifles), disbanded in 1968, who wore a black hackle in their rifle green dress Balmoral.

The **Inverness Cape** has come to be almost universally adopted for rainy weather by pipe bands the world over, and many other kilt wearers also find it to be the preferable garment for such conditions. Unlike most raincoats, the Inverness cape has no sleeves. Instead, there is a wide cut in the sides to accommodate the arms. This enables the wearer to access a sporran without unbuttoning and opening up the cape. The opening in the side is covered by a short cape, which can be buttoned in the front.

The Band rule is that if one member of the Band forgets his or her Inverness and it is raining, the entire Band goes without wearing theirs.

DRESS AND DEPORTMENT
UNIFORM REGULATIONS
4/28/2008

The following band uniform regulations apply to all mini-band and full band performances and competitions. The uniform regulations do not apply to personal performances, solo competitions, or solo performances on behalf of the band where personal attire is deemed appropriate:

Ghillie Brogues* – will be clean and polished. Ghillies will be tied by twining the laces together (as opposed to tying an overhand knot) or wrapping them together for two or three turns, passing the ends behind the leg above the ankle, and back to the front where they are tied off in a standard lace bow.

Kilt Hose – will be kept clean and neat. The top of the hose will sit below the bone on the outside knee about four fingers down. Patterns and seams will be vertically straight on the front and back of the leg. Both hose will be identical. Both top turn-overs will be of equal length and will not turn past the horizontal seam at the base of the turn-over. The

top edge will be horizontally level on all sides of the leg.

Flashes – will be clean and pressed. Both flashes are worn under the hose turn-overs with the loops and ribbons extending from under the turn-over. The garter will not be visible. The ribbons from both flashes will hang at the same length on both legs. The trailing edge of the front ribbon will be vertically centered on the front of the leg. If the hose has a pattern, the leading edge of the ribbon will line up with the pattern. Flashes will look identical on both legs.

Sgian Dubh* – will be clean and polished, worn tucked inside the hose on the right leg, centered in the front-right quarter of the leg with only the handle showing. The scabbard will be completely concealed by the hose. The sgian dubh is option dress and prohibited at some games and events.

Kilt - will be kept clean and pressed. The length of the kilt will hang at the top of the kneecap - the edge of the kilt may cut the kneecap, but will not hang below it. No unauthorized kilt pin or accessories will be worn.

Sporran – will be clean and polished. The official sporran is the band- issued black leather “day” sporran without cantle. The top of the sporran will be worn a hand’s breadth below the belt buckle or just below the bottom of the waistcoat.

Kilt Belt – will be clean and polished. The kilt belt will not be worn under the waistcoat. When worn, the belt and buckle will be of standard band issue.

Shirt* – will be clean and pressed. The short and long sleeve shirt is white with or without button-down collar tabs.

Knit Shirt* - will be clean and pressed. The short sleeve knit shirt is worn in lieu of the shirt, tie, and waistcoat at the discretion of the Pipe Major.

Tie* – will be clean and tied in a standard full Windsor knot. The tie is black without pattern.

Waistcoat – will be clean and pressed. The waistcoat will be worn closed during performance. No unauthorized personal or organizational identification or additional jewelry will be worn on the waistcoat.

Glengarry* – will be clean. Pipers and Drummers will wear a plain black/navy Glengarry with red toorie. The ribbons will be worn loose and flowing. The OP&D Clan Badge will be worn.

Inverness – will be clean.

Pipe Bag Cover – will be clean. The pipe bag will be black velvet or velveteen with silver accents. The length will be sufficient to completely cover the pipe bag.

Pipe Cords – will be clean. The cords will be silver silk.

* Indicates items purchased by band members

Marching

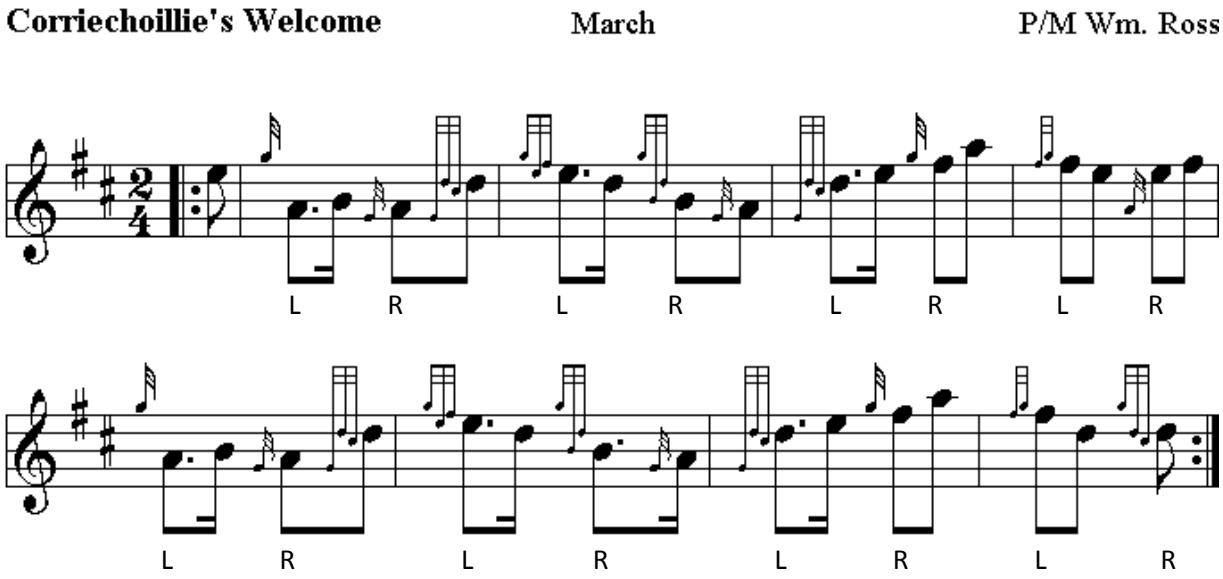
Military step or **march** is a regular, ordered and synchronized walking of military formations.

Quick March is an instruction to begin marching at the Quick March speed with the left foot. The standard pace is 120 beats per minute with a 30in. step, although there are variances to this, based on the individual regiments, the pace given by the commander, and the speed of the band's rhythm: British light infantry and rifle regiments, for example, Quick March at 140 beats per minute, a legacy of their original role as highly mobile skirmishers. Highland Regiments, which march to bagpipe music, march at 112 paces per minute.

Marching while playing an instrument takes concentration and determination.

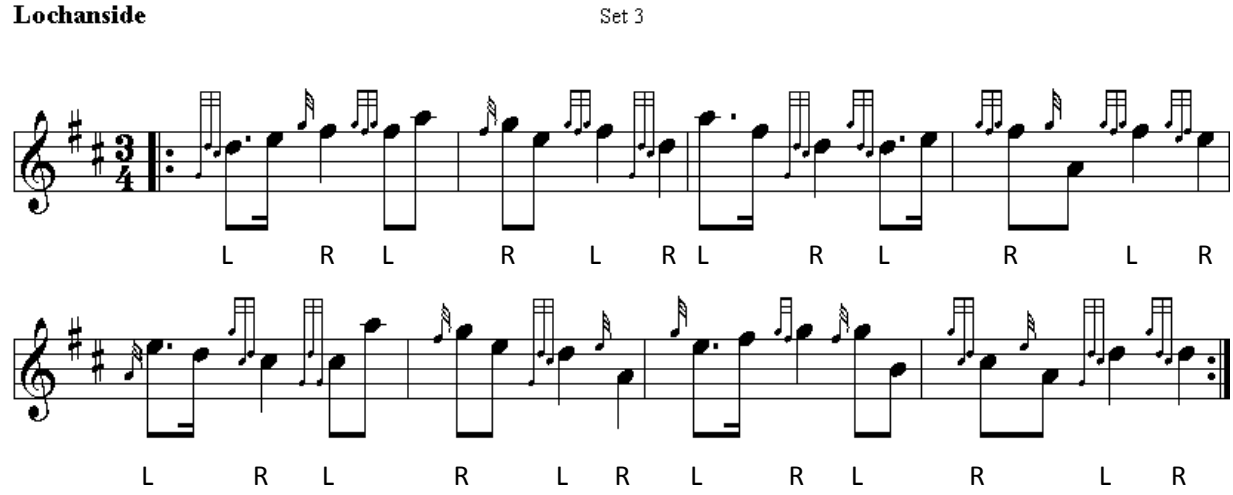
Marching in time. Hit the ground on the downbeats. *Specifically*, the foot hit's the ground on the grace note. Mark your music (L, R) to learn when each foot hits the ground for each tune.

For example, in a 2/4 tune…



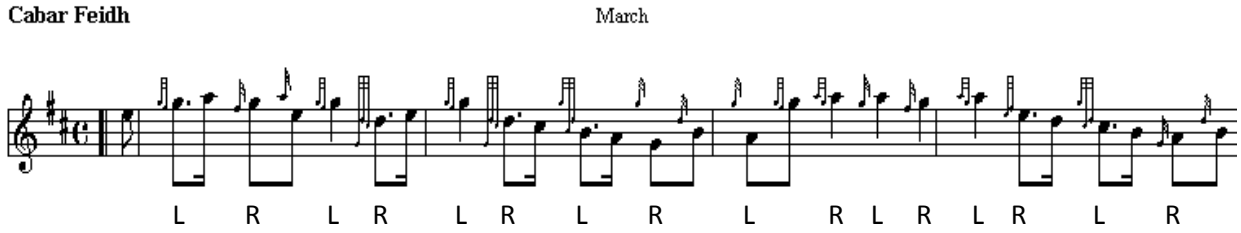
Notice how each coupling of notes begins with a step. In a 2/4 tune, there are two steps (one left, one right) for each measure. Each line begins on the left foot and ends on the right.

In a 3/4 tune, there are three steps in each measure (left, right, left)…



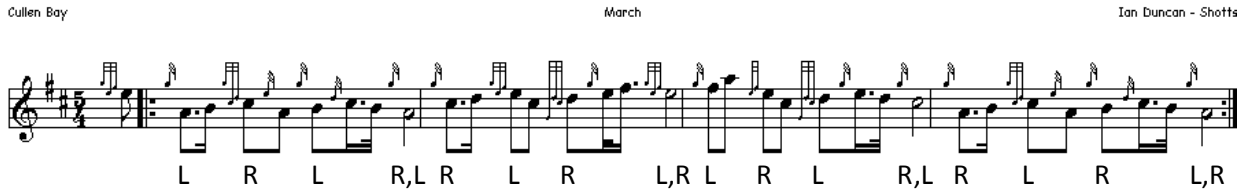
Again, each line begins with the left foot and ends with the right.

In a 4/4…



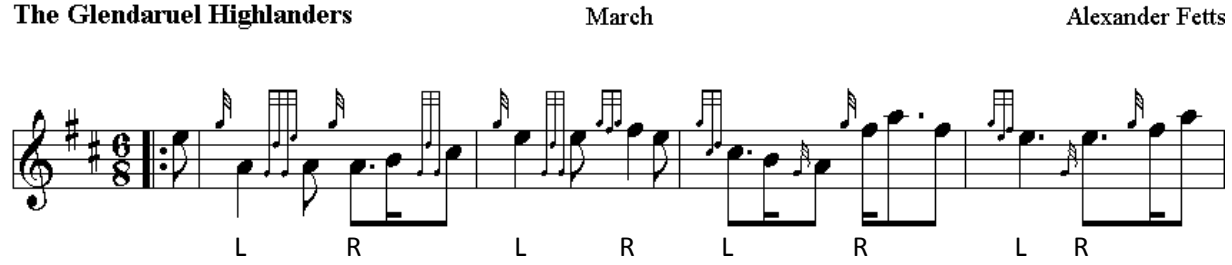
There are four steps to each measure.

In a 5/4…



There are five steps to each measure. That's what makes a 5/4 different. The line still begins on the left foot and ends on the right.

In a 6/4…you get the idea?



Practice marching to a recording with the music in front of you until you are comfortable with where each foot falls in the tune.

Drum Major

A Sergeant Major of the Drums or **Drum Major** is the leader of a marching band, drum and bugle corps, or pipe band. The Drum Major is usually positioned at the head of the Band or Corps and is the figure who stands out in the public eye. The Drum Major is responsible for providing commands either verbally, through hand gestures, or with a mace in the military or with whistle commands or a baton in the US civilian bands to the ensemble regarding where to march, what to play, and what time to keep.

The position of Drum Major originated in the British Army with the Corps of Drums in 1650. Military groups performed mostly duty calls and battle signals during that period, and a fife and drum corps, directed by the Drum Major, would use short pieces to communicate to field units. With the arrival of military concert bands and pipe bands around the 18th century, the position of the Drum Major was adapted to those ensembles.

Traditionally, a military Drum Major was responsible for:

- Defending the drummers and bandsmen (The drums and bugles were communication devices)
- Military discipline of all band members
- The band's overall standards of dress and deportment
- Band administrative work
- Maintain the band's standard of military drill and choreograph marching movements

A Drum Major in the armed forces is these days an appointment and not a rank.

The Regimental Drum Major Association http://drummajor.net is one of a number of organizations preserving the heritage, history, and pageantry of drum majoring.

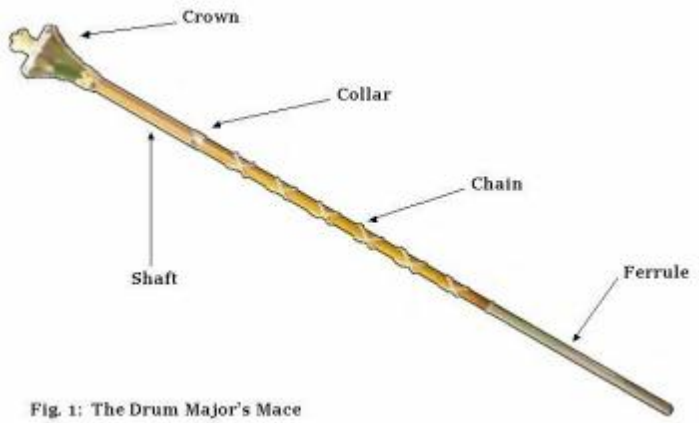


Fig. 1: The Drum Major's Mace

The mace has long been associated as a symbol of authority. The drum major uses the mace to convey signals to the pipes and drums. Mace commands vary from regiment to regiment and historically have been handed down from drum major to drum major. Generally, starts, stops, and

counter march commands are similar amongst the regiments since these commands are those commonly used with massed bands and tattoos.

The mace derives from the medieval weapon of the same name. It was composed of a spiked head attached by a chain to a wooden handle. The mace was swung around the head to clear a path or to strike an unhorsed opponent. The basic parts remain, although adapted. The body or shaft of the mace may consist of Malacca cane, wood, or fiberglass. The shaft may be wrapped in either chain, cord, or be left plain. The proper length of the mace is shoulder height from ferrule to finial.

There are a number of competitions for Drum Majors including Field Inspection, "L" and "I" Pattern, and Field Conducting.

Field Inspection is a judging of the Drum Major's dress and deportment. **Field Conducting** includes parade, festivals, field shows, and conducting with or without a band.

"I" Pattern consists of a step-off, salute, and halt in an area approximately 150' in length with Salute line in the middle.

"L" Pattern consists of a retraced "L" measuring 150' by 70'. Competitors must execute the following commands in the given order:

1. **2-3 Vocal Commands**
2. **Forward March**
3. **Left Turn**
4. **Counter March**
5. **Right Turn**
6. **Salute**
7. **Mark Time**
8. **Halt/Dismissal**

Competitors must execute some kind of Beating of Time following each command. **Time limit is four (4) minutes.** Timing begins on the first count after the execution whistle or vocal for Step Off and ends after the dismissal of the band.

Massed Bands

When it comes to Massed Bands performances at highland games, anything is possible…although you are not likely to see the precision of execution demonstrated at the Beijing Olympics. More often than not, instructions are given on the fly. A good rule of thumb is, follow the person in front of you and do what they do, when they do it, and where.

There are a few basic Drum Major signals, commands, and rudiments of massed bands that are helpful to know. Let's walk through a typical Massed Bands performance. For a more extensive discussion on Drum Major signals, refer to: http://www.drummajor.net/documents/RDMAMaceManual_v3.pdf

The "standard" Massed Bands tunes for the Mid West Pipe Band Association (MWPBA) can be found at: http://pdcpd.org/mwpba/music_reqs.htm and includes:

- Scotland the Brave
- Wings
- Barren Rocks of Aden
- Highland Laddie
- 79th Farewell to Gibralter
- Balmoral
- Green Hills of Tyrol
- When the Battle's O'er
- Bonnie Dundee
- Glendaruel Highlanders

- Road to the Isles

Massed Bands is generally performed at noon and again at 5 PM. Bands are usually required to perform at both if they want to receive their travel money, so in that respect we are being paid to perform. A Band who is the first competitor in the afternoon is frequently excused from the noon performance.

If there is a Drum Major, they may or may not use standard regimental signals and commands. If they don't, be prepared for anything. If they do, here are some of the more common commands.

Attention

ATTENTION is the position from which all other positions or movements derive. All movements retain some attributes of the ATTENTION position.

Drum Major
Cautionary Command:
Count One: *"Pipes and Drums"*
Preparatory Command:
Count One: *"Atten"*
Executive Command:
Count One: *"SHUN"*

For Pipers, ATTENTION means the right elbow is tight against the body. The fist is closed and the thumb points downward along an imaginary pant/kilt seam. Heels are together, feet are at a 30 degree angle, and weight is evenly distributed. The pipes are tucked up under the left arm.

Pipes Up

As the name implies, this is where the pipes are moved from under the arm to the shoulder. We will practice "Pipes Up" and "Pipes Down" to help you understand the movements.

Drum Major
Cautionary Command:
Count One: *"Pipes and Drums"*
Preparatory Command:
Count One: *"Pipes"*
Executive Command:
Count One: *"UP"*

Forward

Forward is short for "Forward March."

Drum Major
Given from the ATTENTION position:
Cautionary Command:
Count One: "*Pipes and Drums*"
Preparatory Command:
Count One: "*By The Right*"
Executive Command:
Count One, Two: "*QUICK, MARCH*" (successive beats.)

Watch your spacing as compared to the piper in front of you and to your right. The term "by the right" is in reference to how bands are spaced. Individuals in the front rank except those on the extreme right side turn their heads to the right and raise their right arms parallel to the ground in order to get the proper distance from each other. Every subsequent line lines up in the same manner.

Individuals begin marching, ***always setting off on the left foot***. The initial pace follows immediately after the command is given, and is a reduced pace of 20 inches, compared with a full marching pace of 30 inches. The command is usually preceded by the command "By the left (right, centre), depending on which file (left, right or centre) they are take their dressing from, not which foot they use to step off on.

Counter March

Counter marching can be a royal pain if the bands are not sufficiently spaced. Counter marching is marching in the opposite direction between the existing rows…if that makes sense. The signal for the counter march is illustrated below.

Where the Drum Major turns and marches in the opposite direction is the point at which every line is supposed to turn. The turn is to the right. The front line is responsible for ensuring alignment after the turn. Every subsequent line makes the necessary spacing adjustments based on the piper in front of them and to their right. When all else fails, follow the person in front of you and do what they do.

Mark Time

Mark Time is marching in place. The signal (illustrated below) can be difficult to see. When the Drum Major stops, the bands are supposed to stop and continue marching and playing in place.

Halt

A “Halt” refers to the marching…not the playing. From “Mark Time” the mace signal looks like this:

When the mace comes fully down, usually at the end of a phrase, the bands stop marching but continue to play. Stop marching on your right foot. Heels are together, feet are at a 30 degree angle, and weight is evenly distributed.

The Cut Off

The Cut Off is the signal to stop playing. From the “Halt” the signal looks like this:

Pipes Down

The opposite of Pipes Up; the movements are performed in reverse order.

Drum Major
Cautionary Command:
Count One: *“Pipes and Drums”*
Preparatory Command:
Count One: *“Pipes”*
Executive Command:
Count One: *“DOWN”*

You are at attention at this point - the right elbow is tight against the body. The fist is closed and the thumb points downward along an imaginary seam. Heels are together, feet are at a 30 degree angle, and weight is evenly distributed. The pipes are tucked up under the left arm.

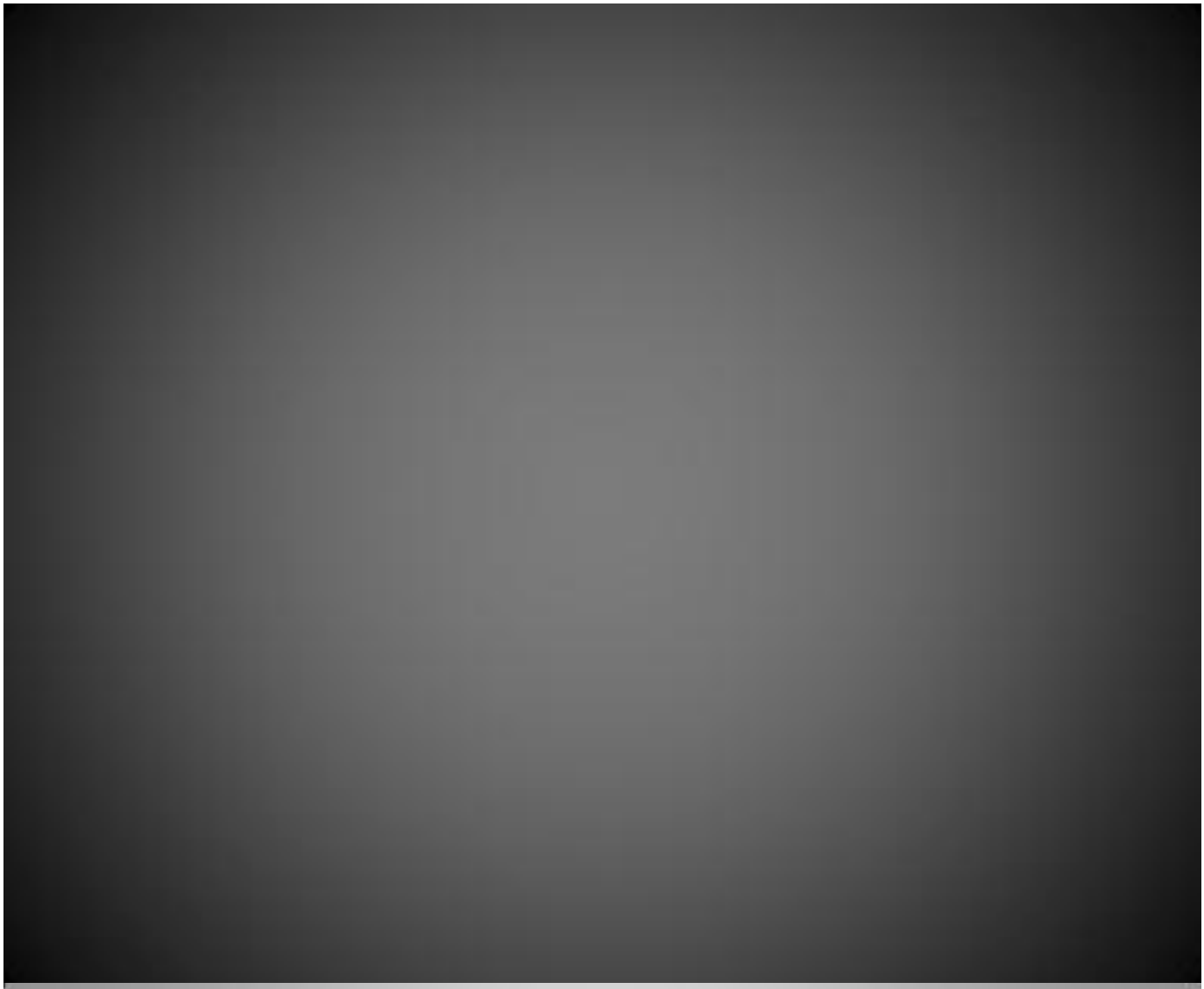
Stand At Ease

Individuals move the left foot so that both feet are shoulder width apart, bringing the right arm behind so the hand is in the small of the back, palm out. Pipes are still tucked under the arm. The Drum Major stands as illustrated below.

Stand Easy

Individuals are permitted light movement, but are not allowed to talk or move their feet. You can hold your pipes and stand however is comfortable.

There are additional signals for wheels, and circles but this should get you through the majority of Massed Bands performances.



1st Edition

Highland Bagpipe Tutor Instructor Manual