

Books

A Guide to the Pipe Organ for Composers and Others by Sandra Soderlund
Wayne Leupold Editions, 1994

A New History of the Organ: from the Greeks to the Present Day by Peter Williams
Cambridge University Press, 1980

Videos

Voices in the Wind from Organ Historical Society, P.O. Box 26811, Richmond, VA 23261

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The Organist: A Total Musician from American Guild of Organists

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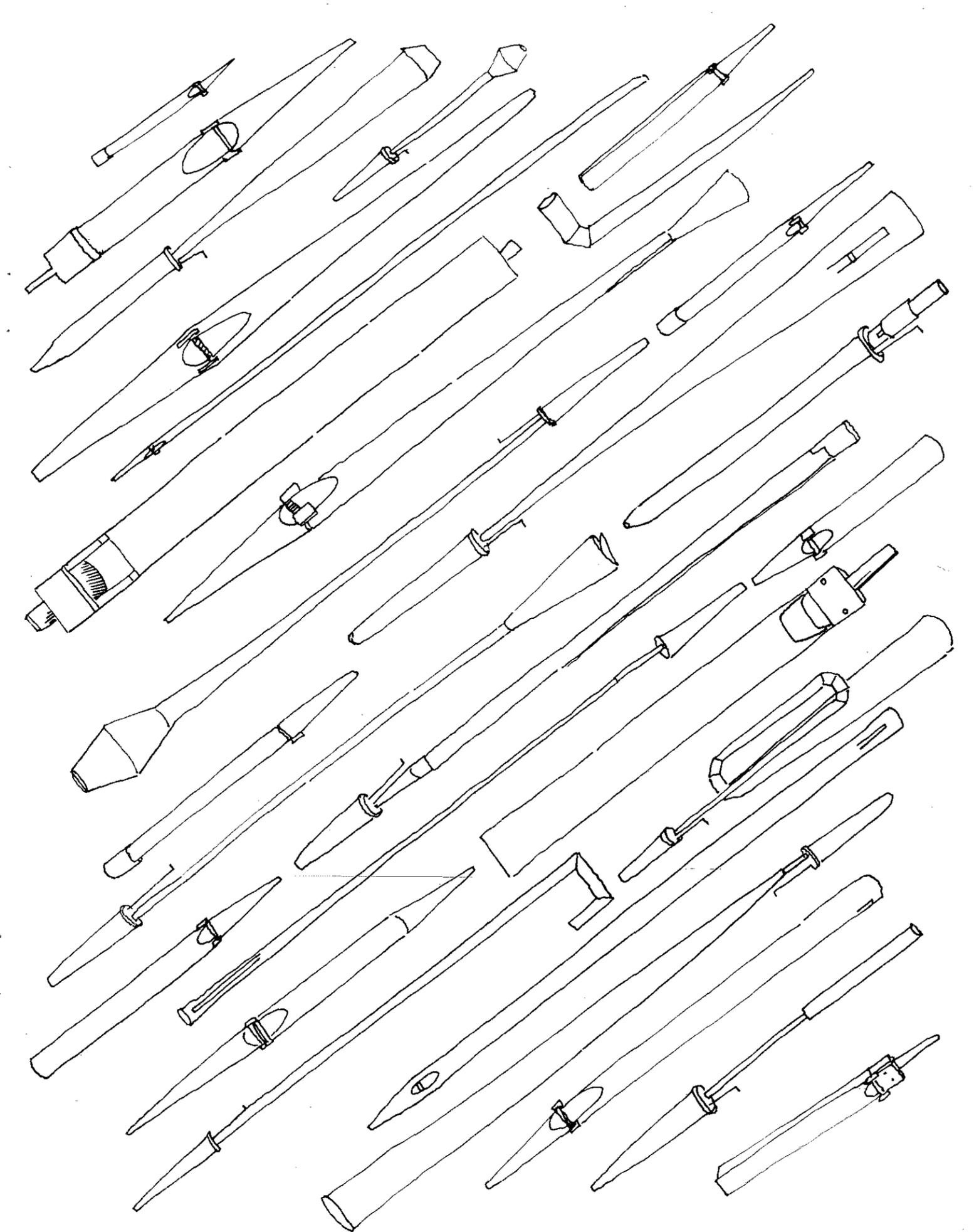
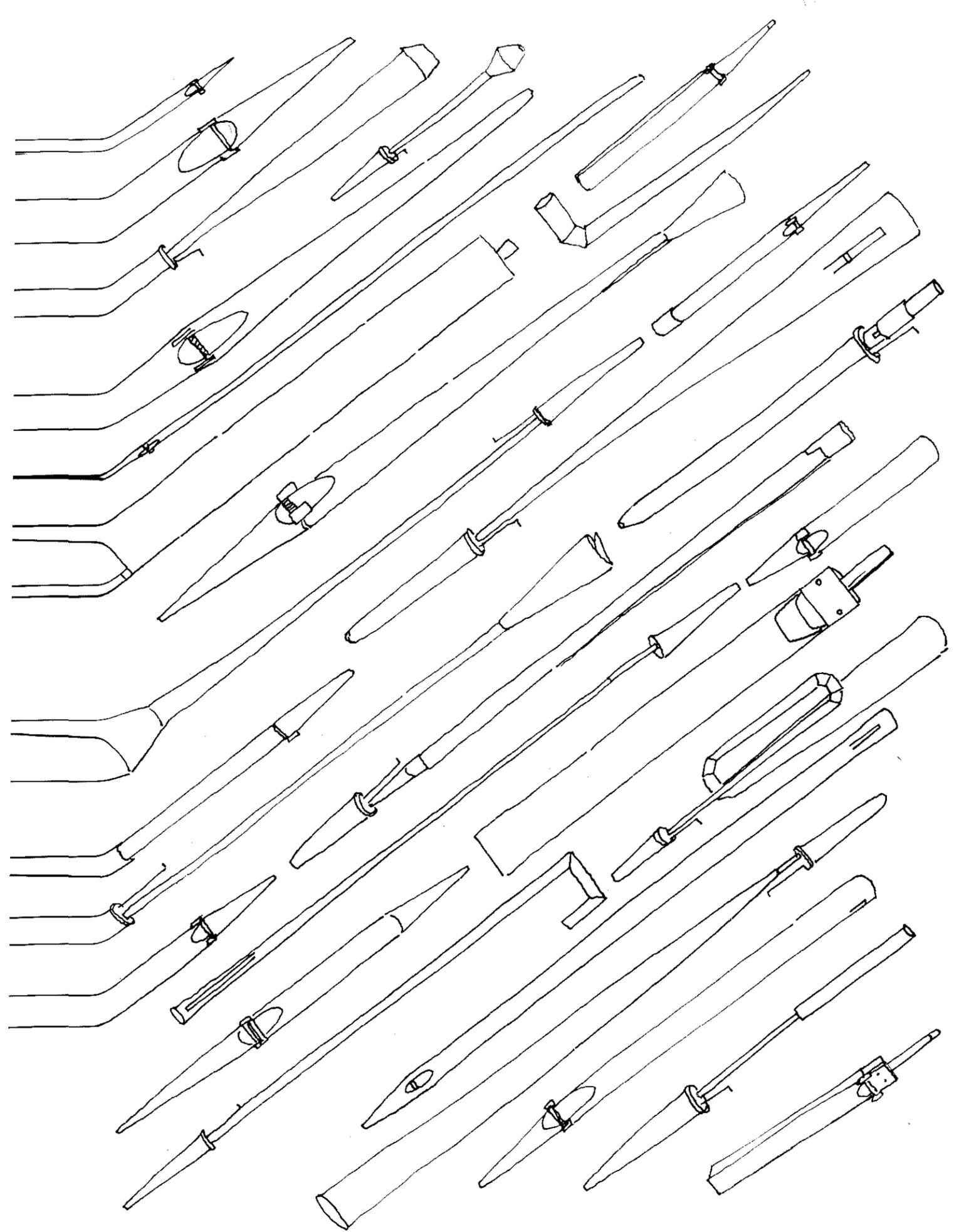
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A Young Person's Guide to the Pipe Organ

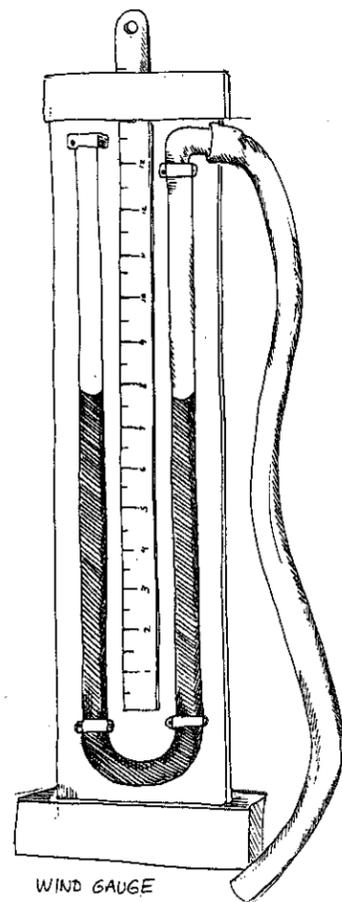
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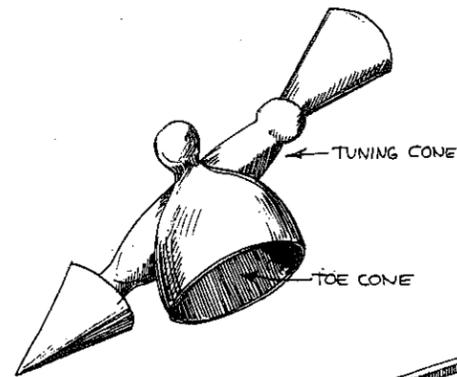


Tierce
 Toe Stud
 Tracker
 Tremolo
 Trombone
 Trumpet
 Tuba
 Tutti
 Twelfth
 Viola da Gamba
 Voix Céleste
 Vox Humana
 Windchest
 Zimbelstern
 Zink

a 1 1/2' mutation stop that sounds two octaves and a third above the written pitch
 a large button near the pedal keyboard that operates a piston
 a rod that connects the key to the pipe valve in mechanical-action organs
 a device that shakes the wind, making the sound of the pipes waver
 a low-pitched reed stop of the trumpet family
 a reed stop whose pipes have conical resonators
 a reed stop of the trumpet family, often on high wind pressure
 a piston that brings on full organ, usually reversible
 a mutation stop of 2 3/4' pitch, usually made of principal pipes
 a string stop
 a rank of string pipes tuned sharp to cause beats with its companion rank
 literally "human voice"; a reed stop with short resonators
 a box on which the pipes stand, filled with air
 a wheel with bells on it, used as a special effect on some organs
 a reed stop with short resonators

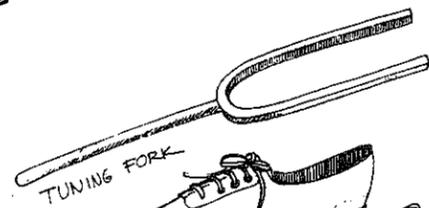


WIND GAUGE

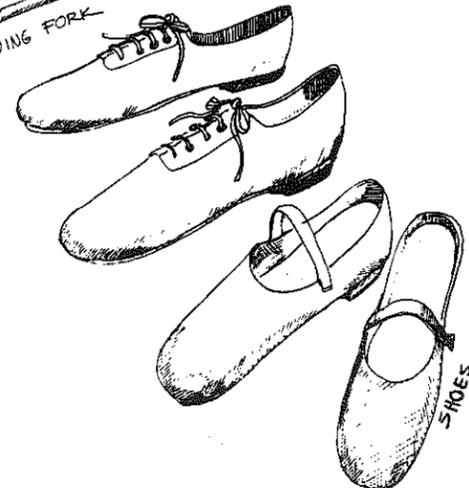


TUNING CONE

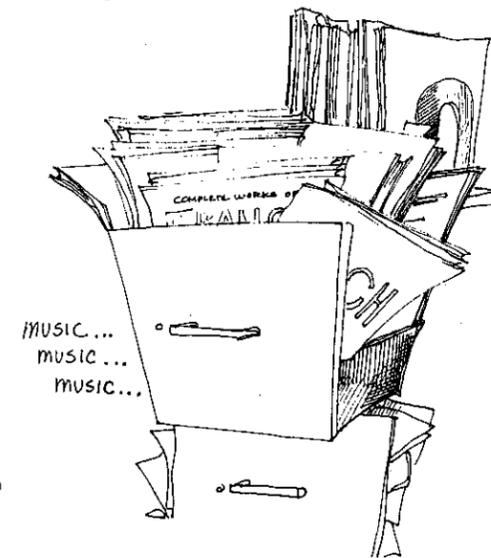
TOE CONE



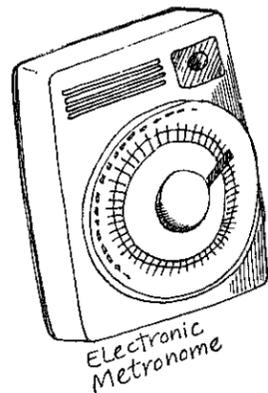
TUNING FORK



SHOES



MUSIC...
 MUSIC...
 MUSIC...



Electronic
 Metronome



A Young Person's Guide to the Pipe Organ

text by Sandra Soderlund

drawings by Catherine Fischer

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In the beginning...

pipes were made of hollow stems in different sizes and strapped together to make an instrument called the Pan Pipes. The pipe organ was invented when someone decided to play a set of pan pipes with a keyboard instead of blowing into each pipe. The pipes were placed into holes on a box called a wind chest.



Portative organ after painting by Hans Memling

A bellows was attached to provide the wind. Some of the earliest organs could be pumped and played by the same person. They were called portatives because they could be carried around by a strap over the player's shoulder. According to paintings and stained glass windows, portatives were particularly popular with angels.

Gamba	a string stop, named after the early instrument
Gedeckt	the German name for a stopped flute pipe
Gemshorn	a hybrid flue stop with a sound between a flute and a string
Grand Orgue	the French name for the Great division
Great	the main division of an organ, usually played from the lower of two or the middle of three manuals
Harmonic	one of the series of high pitches that are present in musical tones produced by natural means
Hauptwerk	the German name for the Great division
Hautbois	the French name for oboe
Krummhorn	a reed stop of the clarinet family
Languid	the "block" of a metal pipe that sends the wind against the upper lip
Larigot	a mutation stop of 1 1/4', that sounds two octaves and a fifth above the written pitch
Mechanical action	action that uses rods called "trackers" to connect the keys with the pipe valves
Mitered pipe	a pipe bent to fit into limited space
Mixture	a stop of more than one rank of pipes at various high pitches
Montre	the French word for principal, from the verb "to show"—meaning the pipes that show in the case
Mutation	a rank of pipes that sounds a non-octave pitch above the written note
Nazard	a mutation stop of 2 3/4', that sounds an octave and a fifth above the written pitch
Oboe	a reed stop used as a solo and in combinations
Octave	an interval of eight scale tones; a principal rank, usually sounding an octave above the main principal rank in any division
Orchestral Oboe	a solo reed stop found in romantic organs
Organo Pleno	the term used for principal chorus with mixture
Partial	any of the harmonics above the fundamental in the harmonic series
Pistons	buttons and toe studs that change stops and couplers and may be set by the organist
Plein Jeu	literally "full stops"; the French term for Organo Pleno; one of the names for a mixture
Plenum	another word for principal chorus with mixture
Pommer	a flute stop
Posaune	literally "trombone"; the German name for a low-pitched reed stop of the trumpet family
Positif, Positiv	German and French for Positive—a division of the organ, usually open and bright in sound
Prestant	a principal stop
Principal	the type of pipe that makes typical organ tone
Principal Chorus	principal stops at 8', 4', 2', sometimes 16', 2 3/4', with mixture(s)
Quintadena	a flute stop voiced to sound its third partial prominently
Quinte	a stop of 2 3/4' pitch, usually made of principal pipes
Rank	a row of pipes of one tone color brought into play by a stop knob or tablet
Rankett	a reed stop with short resonators
Récit	the French name for the Swell division
Reed	an organ pipe that makes sound by the vibration of a reed against a hollow tube called a "shallot"
Regal	a reed stop with short resonators
Register	another name for stop
Resonator	the body of a reed pipe, which amplifies and modifies the sound of the reed itself
Reversible	a piston that turns something both on and off
Romantic	refers to instruments and music of the 19th century or in that style
Salicional	a string stop
Scale	a series of diatonic notes; the relationship of the diameter to the length of a flue pipe
Schalmei	a reed stop of the oboe family
Scharf	a mixture
Schwellwerk	the German name for the Swell division
Sesquialtera	the name for a stop which pulls two ranks—2 3/4' and 1 3/4'—into play
Sforzando	a name for the tutti combination piston
Shallot	the hollow brass tube against which the reed vibrates in a reed pipe
Shutters	the wooden slats that enclose a swell box
Solid State	combination action controlled by a small computer, containing several memories so that the entire organ can be set up several times at once
Solo	a division of the organ that contains solo stops and often loud reeds, usually played from the top of four manuals
Specification	a list of the stops or ranks found in an organ
Spotted metal	a combination of tin and lead used for metal flue pipes
Stop	the knob or tablet that pulls a rank of pipes into play
Stopped Diapason	a flute stop
Stopped pipe	a flue pipe that is closed at the top with a cap or stopper, making it sound an octave lower than an open pipe of the same length
Strings	flue pipes of narrow scale, voiced to have many harmonics
Swell	a division of the organ enclosed in a box with shutters
Tempered	tuning that is not mathematically exact, but adjusted to allow for performance in all keys



Glossary

- 1½' a mutation stop that sounds two octaves and a fifth above the written pitch, usually called Larigot
- 1¾' a mutation stop that sounds two octaves and a third above the written pitch, usually called Tierce
- 2' indicates a stop that sounds two octaves above the written pitch
- 2½' a mutation stop that sounds an octave and a fifth above the written pitch, usually called Nazard or Twelfth
- 3' another name for a 2½' stop
- 4' indicates a stop or coupler that sounds an octave above the written pitch
- 5½' a stop that sounds a fifth above the written pitch
- 8' indicates a stop or coupler that sounds at the written pitch
- 16' indicates a stop or coupler that sounds an octave below the written pitch
- 32' a stop that sounds two octaves below the written pitch
- Action the parts of an organ that connect the keys with the pipes
- Antiphonal a division of the organ that is separate from the rest of the pipes; also question and answer effects
- Bellows an apparatus of wood and folded leather that collects wind and delivers it to the wind chest
- Blower an electric fan that provides wind for the pipes
- Bombarde a division of the organ, also a large reed stop
- Bourdon a stopped flute stop of metal or wood
- Case the wood box built around the pipes, to focus and blend their sound
- Celeste a rank of pipes tuned slightly sharp to cause beats with its companion rank
- Chamber a room housing the pipes of an organ, opening into the main room
- Chest the box on which pipes stand, filled with air
- Choir a division of the organ, usually played from the lowest of three manuals, often enclosed
- Choralbass a 4' principal stop found in the pedal division
- "Chorus" reeds reed stops designed to be used in combinations with flues
- Clarion a trumpet stop, usually at 4' pitch
- "Color" reeds reed stops designed to be used as solo stops
- Combination action a device allowing the organist to change stops with buttons or toe studs
- Console the control center of the organ
- Cornet a combination of stops at 8', 4', 2½', 2', and 1½'
- Coupler a device that makes the pipes from one division sound on another keyboard than its own, or at another octave
- Crescendo pedal a pedal that brings on stops and couplers gradually
- Cromorne a reed stop of the clarinet family
- Cut-up the height of a flue pipe mouth
- Cymbal a high-pitched mixture
- Diapason a flue pipe with basic organ tone
- Division a section of the organ, usually with its own keyboard and pipes
- Dulzian a reed stop in the clarinet family
- Echo a division of the organ, usually enclosed and across the room from the rest of the pipes
- Electric action action that uses electricity to open and close the pipe valves
- En chamade the placement of reed pipes on their sides to project their tone
- English Horn a color reed stop in romantic organs
- Erzähler a hybrid flue stop with a sound between a flute and a string, usually soft
- Façade the front of the organ chamber or case
- Fagott "bassoon" in German; a reed stop of the oboe family
- "Floating" division a division that has no special keyboard, but plays by being coupled to another keyboard
- Flue an organ pipe that makes sound by setting a column of air vibrating
- Flute a flue pipe of wide scale, made of wood or metal
- Fourmiture a mixture
- French Horn a color reed stop in romantic organs
- Fundamental the bottom pitch in the harmonic series
- Gallery a balcony, one of the places organs are located

To play most early pipe organs, one needed an assistant to pump the bellows. It was handy to have a family member willing to do this boring job.

From the beginning pipe organs were made in all different sizes.

Large organs were built in churches from at least 1100. These instruments had many pipes and required several huge bellows to provide their wind. The job of a calcant, or bellows-pumper, was quite taxing.

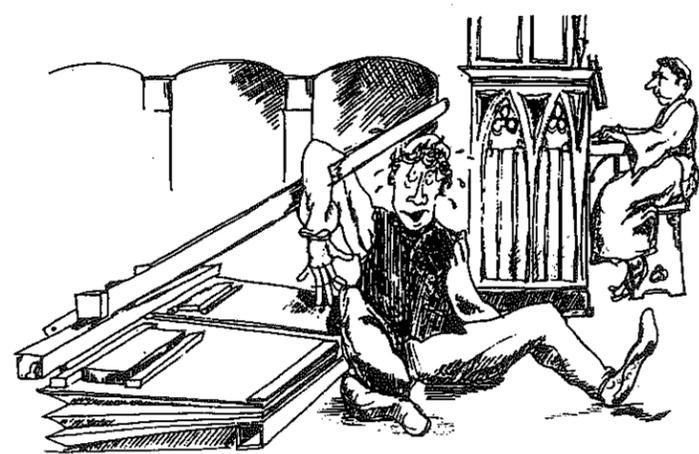
One got to rest during the sermon, but then would be wakened by a bell rung by the organist when it was time to start pumping again.



Positive organ after engraving by Israel von Meckenem

Today the organ is still a wind instrument controlled by one or more keyboards.

When a key is pressed, it opens a valve under a pipe or pipes. The wind enters the pipe, causing a tone that is constant in pitch and volume until the key is released. Both the attack and the release of the tone are controlled by the player. This is different from the piano, whose tone has a natural decay. Continuous tone is the organ's most important characteristic. (The history of the organ has always been about an ongoing attempt to control wind.)



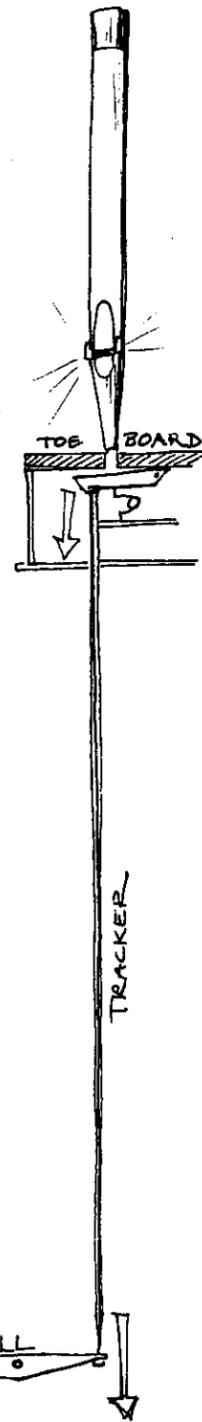
Types of Whistles

The connection between the key and the pipe valve, called the "action" of the organ, can be achieved by mechanical or electrical means.

In a mechanical action instrument long rods or "trackers" pull down the valves under the pipes. Obviously the keyboards must be close to the pipe valves or the action may be hard to play. Usually the keyboards and pipes are all built in a case with the pipes directly above and in front of the player.

The best thing about mechanical action is that the player can feel the opening of the pipe valves and can make different kinds of attacks and releases by pressing and releasing the key slowly or quickly. Until electricity was discovered, all organs used trackers to connect the keys to the pipes.

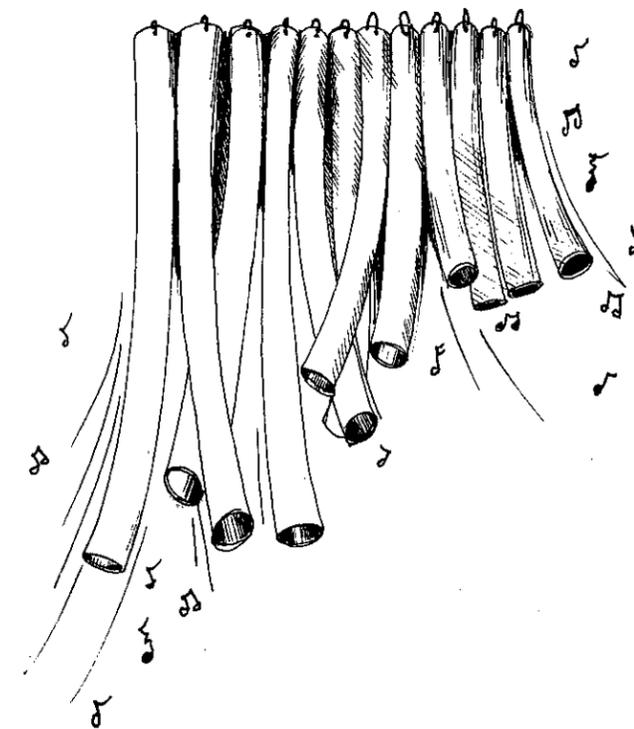
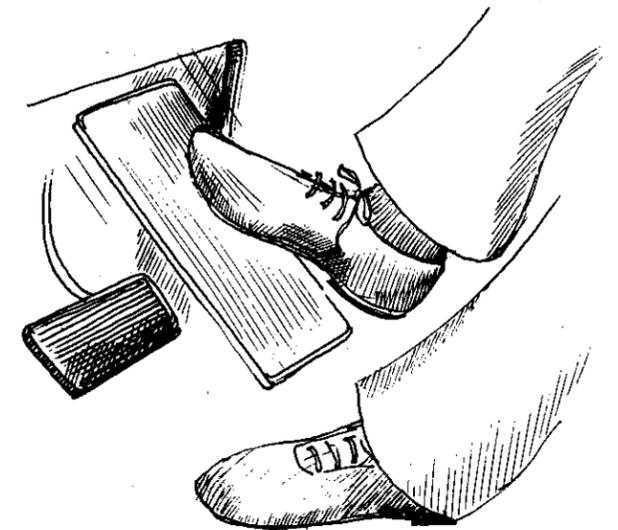
Today, many builders make mechanical action instruments.



Whistles

Crescendo Pedal

On most electric action instruments there is a pedal to the right of the swell pedal called the "crescendo pedal." This device brings on stops and couplers gradually from the softest to the loudest sounds on the instrument. The crescendo pedal operates within the instrument, so the stop knobs do not actually move. Therefore it is impossible to tell except by ear what stops are engaged and when. Also, in many instruments the order and timing of the stops in the crescendo pedal cannot be changed by the player but must be done by a technician. The crescendo pedal is another quick way to get full organ.



Percussion

Some organs contain percussion stops played by electric or mechanical devices. **Tubular chimes**, similar to those in an orchestra, are the most common of these. The range of the chimes is usually twenty-one notes from A below middle C. They may be played from one of the manuals or possibly from the pedal.

The *Zimbelstern* is a group of very high-pitched bells mounted on a wheel, producing a jingling sound like sleigh bells. It is activated by an on/off switch.

Bells and Action

Pistons

Most electric action and some mechanical action organs have what is called "combination action." This is a system that allows the player to change stops quickly and easily by pushing buttons under the manual keyboards called "pistons." The newest instruments today have solid-state combination actions that store information on computer memories. This multiplies the number of pistons available to the player by as many memories as the system has, allowing the entire instrument to be reset at the click of a switch. Most instruments have individual manual pistons, which control the stops of each division, as well as general pistons, which affect the entire instrument, including couplers. Some or all of the general pistons, as well as those controlling the pedal division, will usually be available on large buttons near the pedal keys called "toe studs."

Tutti

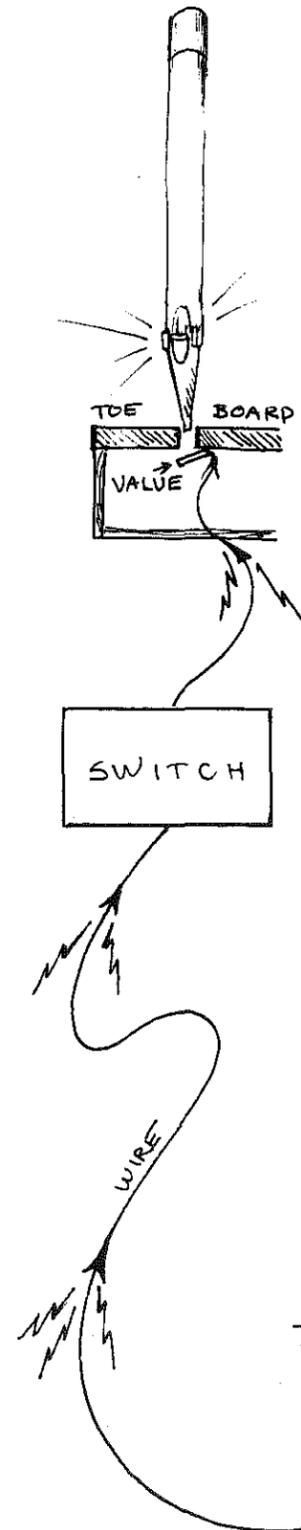
Many instruments have a special piston and/or toe stud labeled "Sforzando" or "Tutti." This is a quick way to get full organ. The Tutti combination is often set by a technician and can't be changed by the player. The piston is usually a "reversible," which means that one pushes the Tutti button to bring it on and pushes it again to take it off. If there are both a Tutti button and a crescendo pedal on an organ, the Tutti combination is the louder of the two.



Tremolo

The tremolo (tremulant, tremblant) is a device that causes the wind supply to shake, causing the sound to waver. It may affect a single stop, a whole division, or the entire organ. The speed of the tremolo varies between instruments, and may be controlled by the player on some organs. The effect of the tremolo is more obvious than that of a celeste. It is traditionally used with the Vox Humana. It is often used with other reeds, too, particularly in lyric solos.

Action



In electric action instruments the pressure of the key activates a circuit to an electro-magnet which opens the pipe valve. This means that the console can be separated from the pipes with no effect on the key pressure. Usually the pipes are in chambers, cases, or otherwise mounted in the room and the console is put in a convenient place. Since the console can be attached to the rest of the instrument by a cable, it is often movable. If it is far from the pipes, there may be a time delay between the pressing of a key and the sound heard by the player. Because the console is usually some distance from the pipes of electric action organs, the player can often hear the balance between the sounds of the divisions better than with tracker instruments.



Pitches Available on the Organ

Organs may have one or more manual keyboards and a pedal keyboard. The number of keys on the manual keyboards varies somewhat, but the lowest note is always low C. Most American organs have 61 notes on the manuals—to C above high C. Pedal keyboards are also different lengths, but low C is also the lowest written note. Some have 30 notes—to F above middle C; others have 32—to G above middle C.

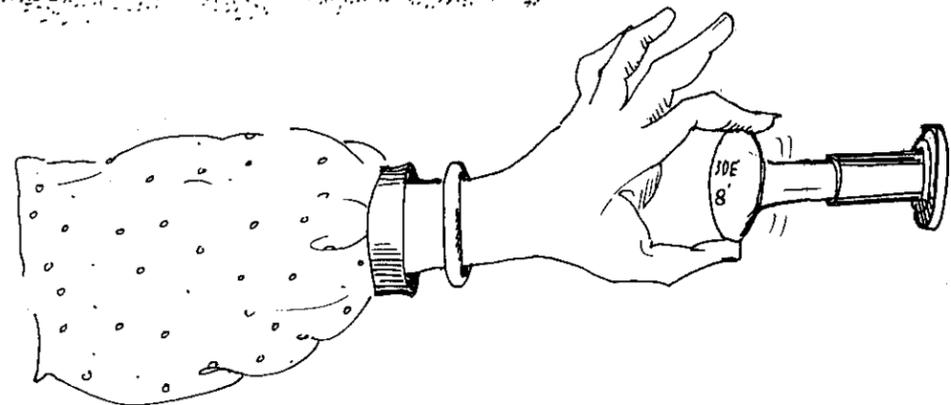
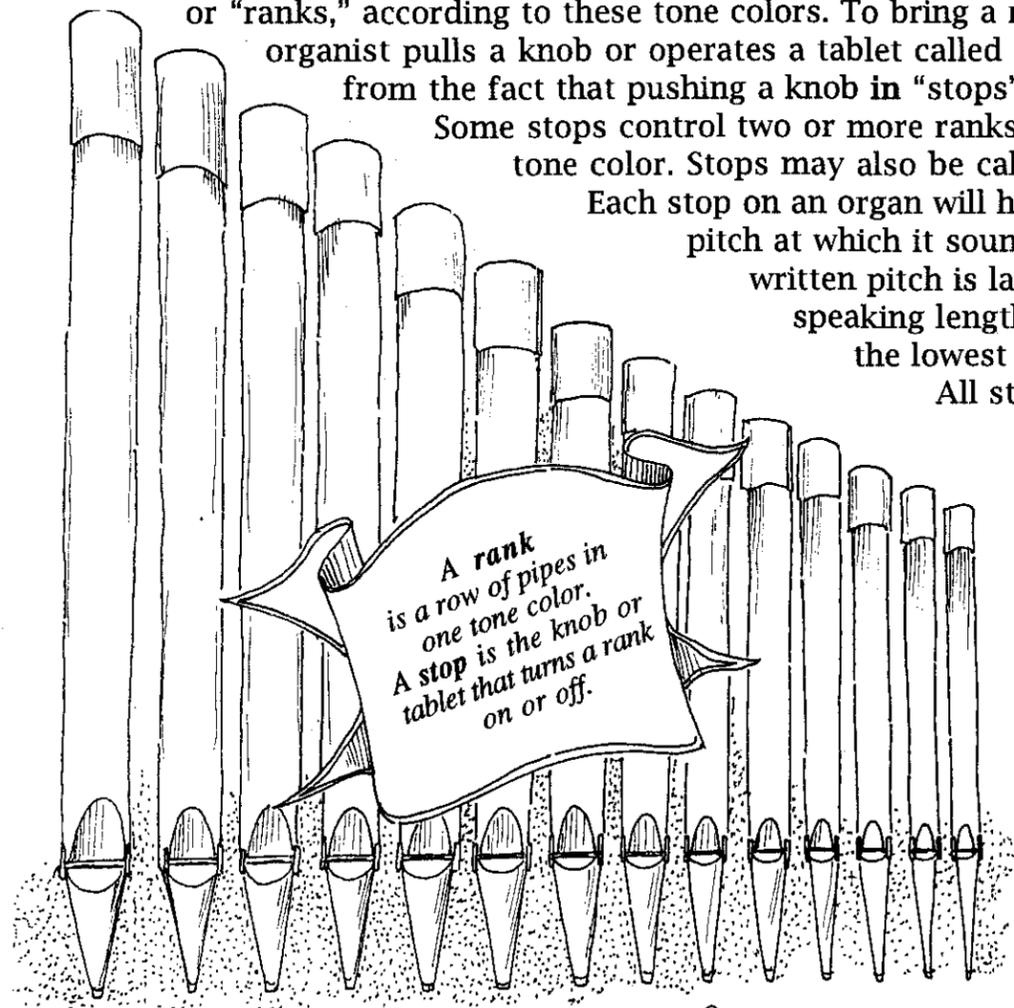


There is a separate pipe for each key in every tone color. The pipes are arranged in rows or "ranks," according to these tone colors. To bring a rank of pipes into play, the organist pulls a knob or operates a tablet called a "stop." (This term comes from the fact that pushing a knob in "stops" the pipes from speaking.)

Some stops control two or more ranks, which blend to make one tone color. Stops may also be called "voices" or "registers."

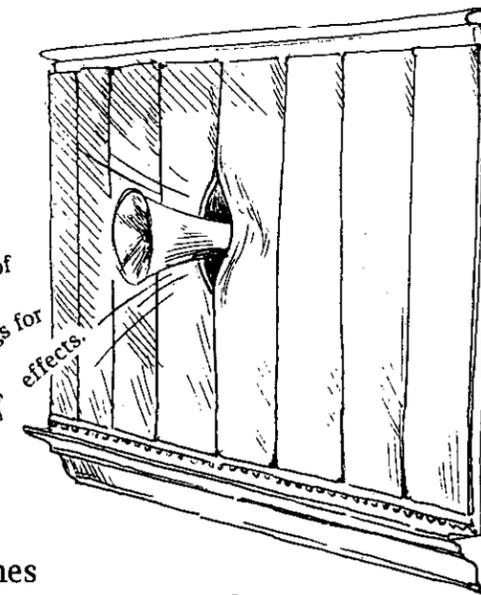
Each stop on an organ will have a number that tells the pitch at which it sounds. A stop that sounds the written pitch is labeled 8'. (This refers to the speaking length of an open pipe at low C, the lowest written pitch on the organ.)

All stops that sound the written pitch are called eight-foot stops, even if their low Cs are not actually eight feet long.) Stops of 4' pitch sound an octave higher than written; 2' stops sound two octaves higher, etc. As you might expect, 16' stops sound an octave lower than written and 32' stops sound two octaves lower.



The Echo

If the pipes in an Antiphonal division are enclosed in a box, it is usually called the Echo division. As with the Antiphonal division, the Echo may be "floating" or playable from the Solo or another manual. It may have a pedal near the swell pedal to operate its shutters. A small, enclosed Echo division may only have

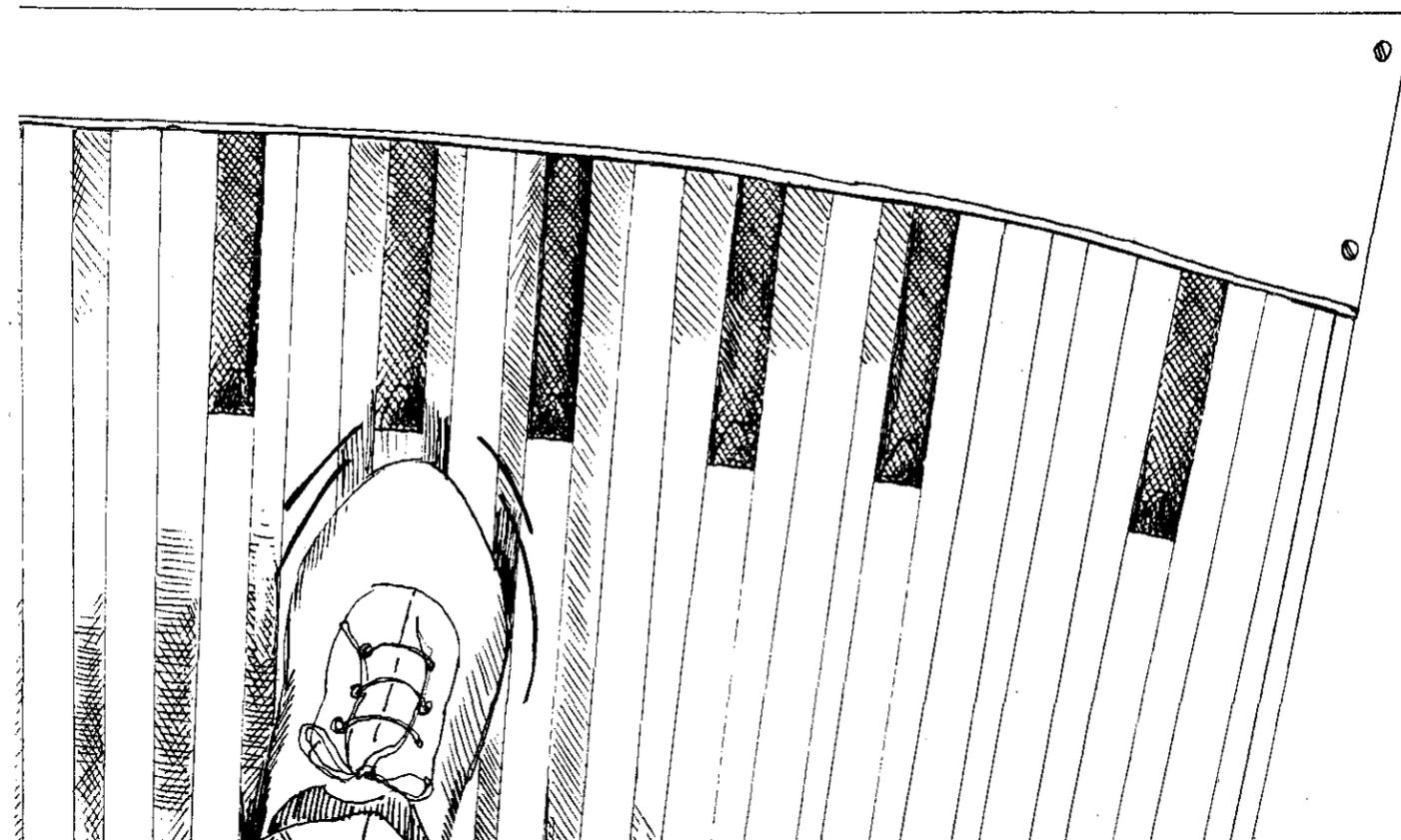


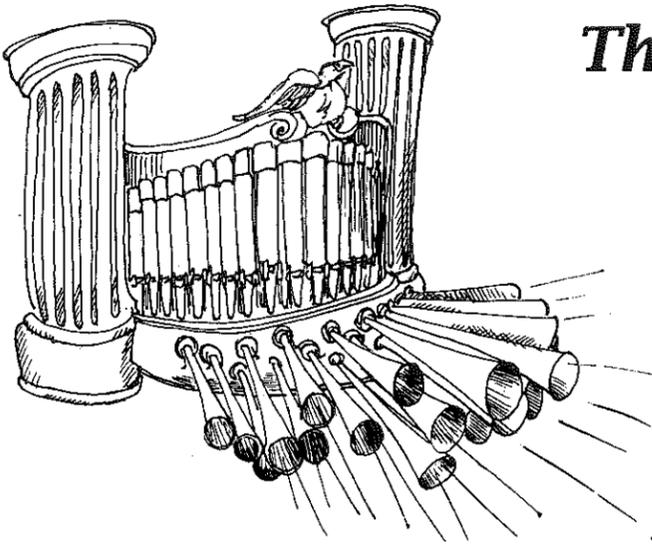
a flute or two in it, and maybe a set of ethereal strings for "other-worldly" effects.

Division

A large instrument will have lots of Pedal reeds, sometimes even a 32' Bombarde. There is often a 4' color reed for playing tenor melodies. Even a tiny Pedal division will contain a flute or other light flue stop at 16' and often at 8' for soft bass accompaniments. A bass line that is melodic will usually require other stops added to these, from the manuals if necessary. Large romantic organs will usually have string stops at 16' and 8' in the Pedal, very nice for soft pedal melodies. There may be an open 4' flute in the Pedal, a lovely sound.

The Pedal keyboard is made like the manual keyboard except that the keys are larger so that they can be played with the feet. The organist has the equivalent of four fingers to use on the pedal keyboard—two toes and two heels. Playing on the pedals is fun and can be learned rather quickly. One can even learn not to look at one's feet. The most difficult thing in learning to play the organ is teaching the hands and feet to work together, especially the left hand and the feet.

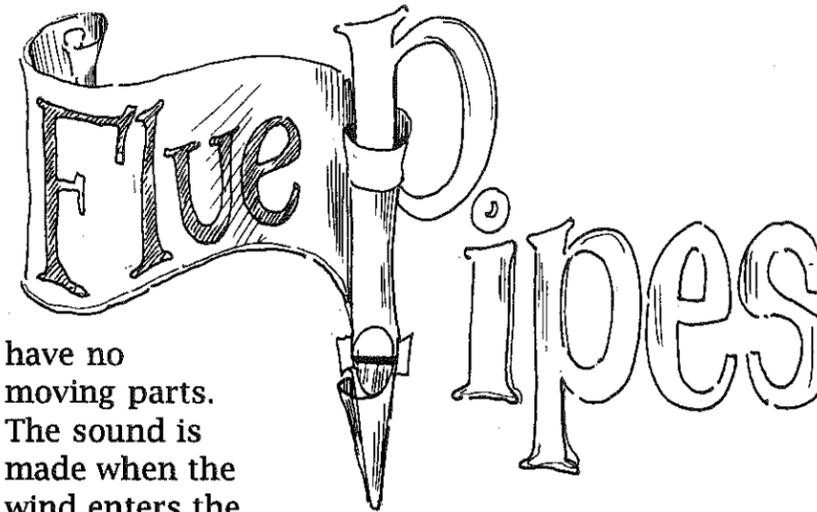
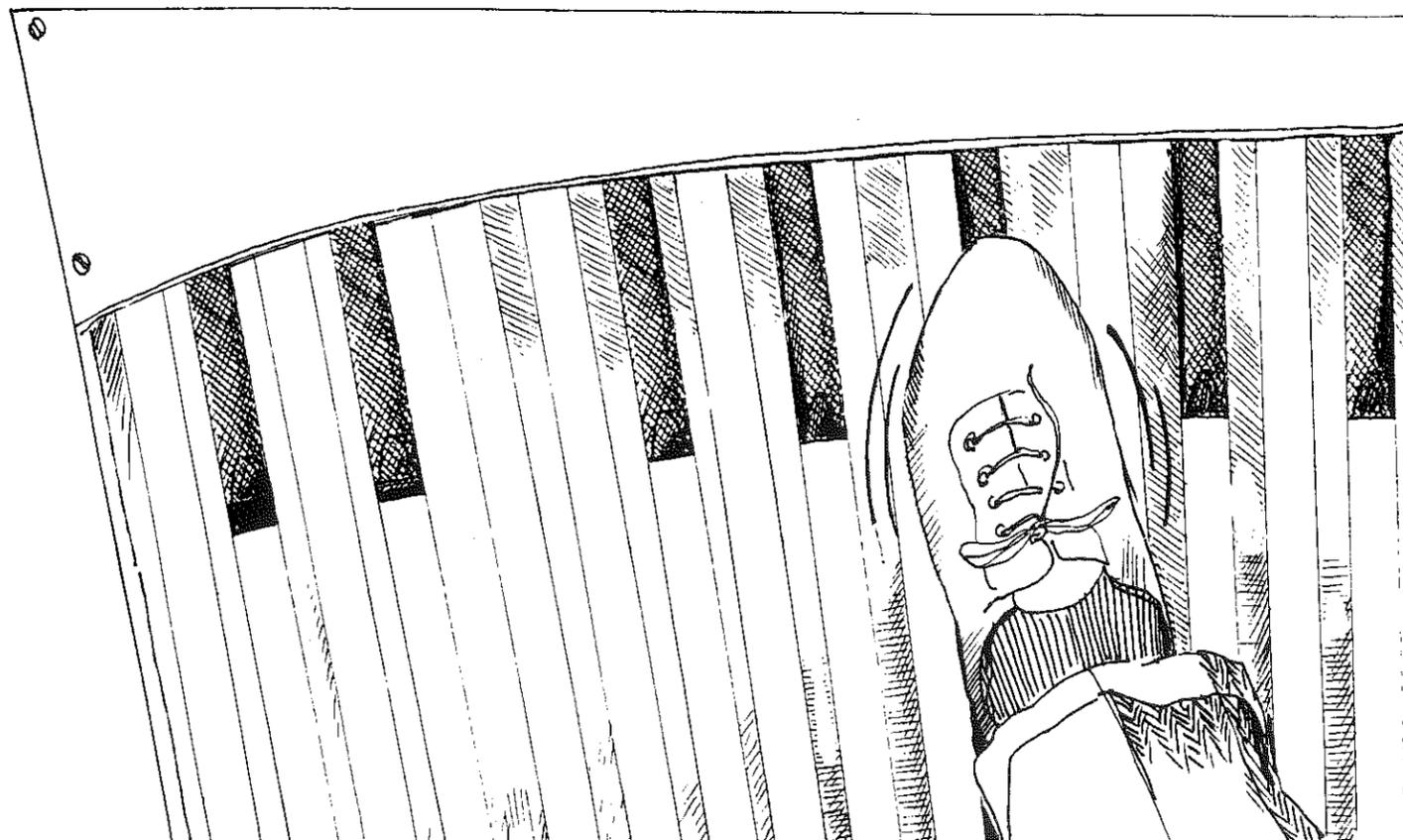




The Antiphonal Some organs have pipes at the other end of the room from the main instrument. If these pipes are not in a box, the division may be called Antiphonal. There may be a separate manual for the Antiphonal, it may be "floating," or it may be playable from the Solo or another manual. A large Antiphonal might have a full principal chorus and a *Trompette en chamade*, for bringing in the bishop or the bride.

The Pedal

The Pedal keyboard of an organ has its own special pipes. Also, all of the manuals can be coupled to the pedal, often at 8' and 4', so all of the tone colors of the instrument can be played by the feet. The Pedal's own division may have one or two stops or it may be very large. The written notes for the Pedal keyboard are the same as the lowest thirty or thirty-two notes of the manual keyboards, so the Pedal part will not be heard as a separate line unless there is at least one 16' stop sounding at all times. A large organ will have a complete 16' principal chorus in the Pedal—principals at 16', 8', 5 1/3', 4', and mixture. A very large instrument will have a 32' principal chorus in the Pedal, particularly if there is a 16' principal chorus on the Great. The 4' principal on the Pedal is often called Choralbass (not always spelled so). This stop is often used alone for slow melodies in the tenor range. There is usually a 16' reed in the Pedal, even on small instruments, to bring out the bass line in full combinations. It may sound funny by itself.



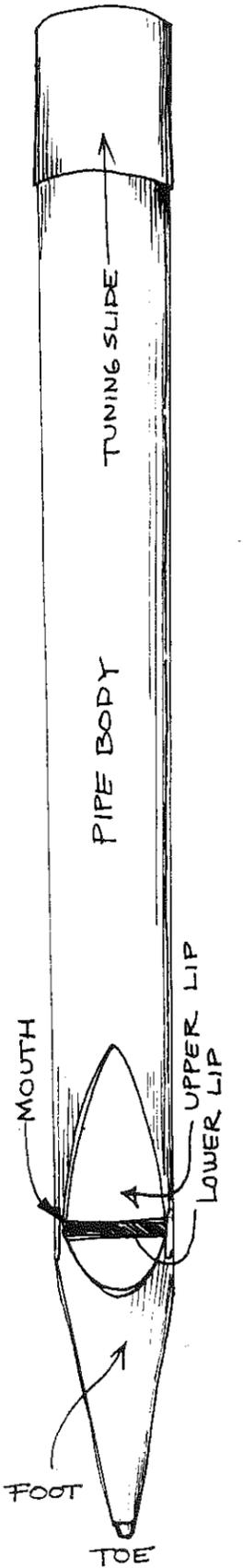
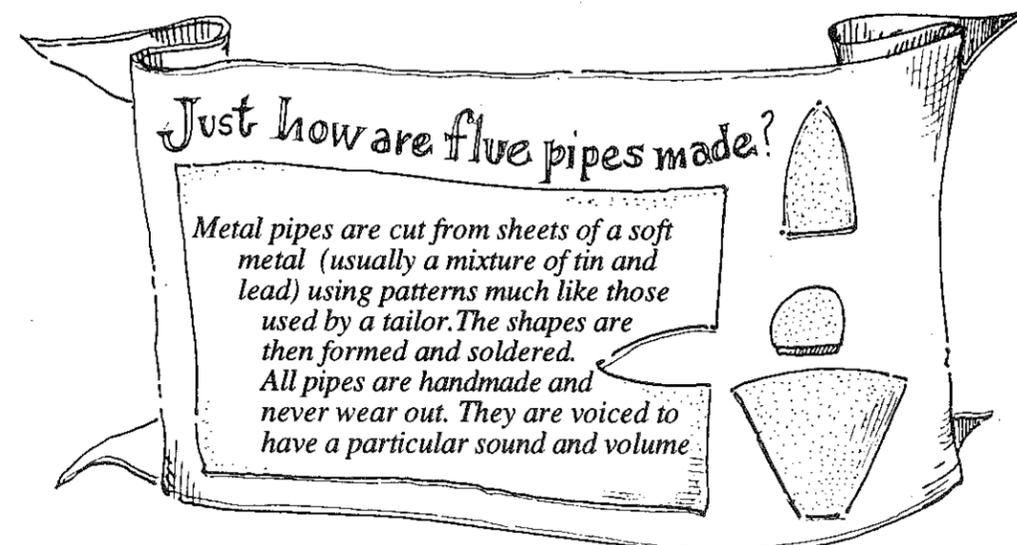
have no moving parts. The sound is made when the wind enters the

foot of the pipe and is directed outward against the upper lip of the pipe mouth. This lowers the air pressure in the pipe, causing the wind to be sucked back in. Then the cycle starts again. This process causes the column of air in the pipe to vibrate. The number of vibrations per second, and therefore the pitch of the sound, is determined by the length of the pipe and whether it is open at the top or closed by a cap or stopper. (Stopped pipes sound an octave lower than open pipes of the same length.) The tone color of the pipe is affected by its scale (ratio of diameter to length), the material from which it is made (wood or various metal alloys), and by modifications that can be made to its mouth or shape. Flues are divided into groups according to their tone colors.

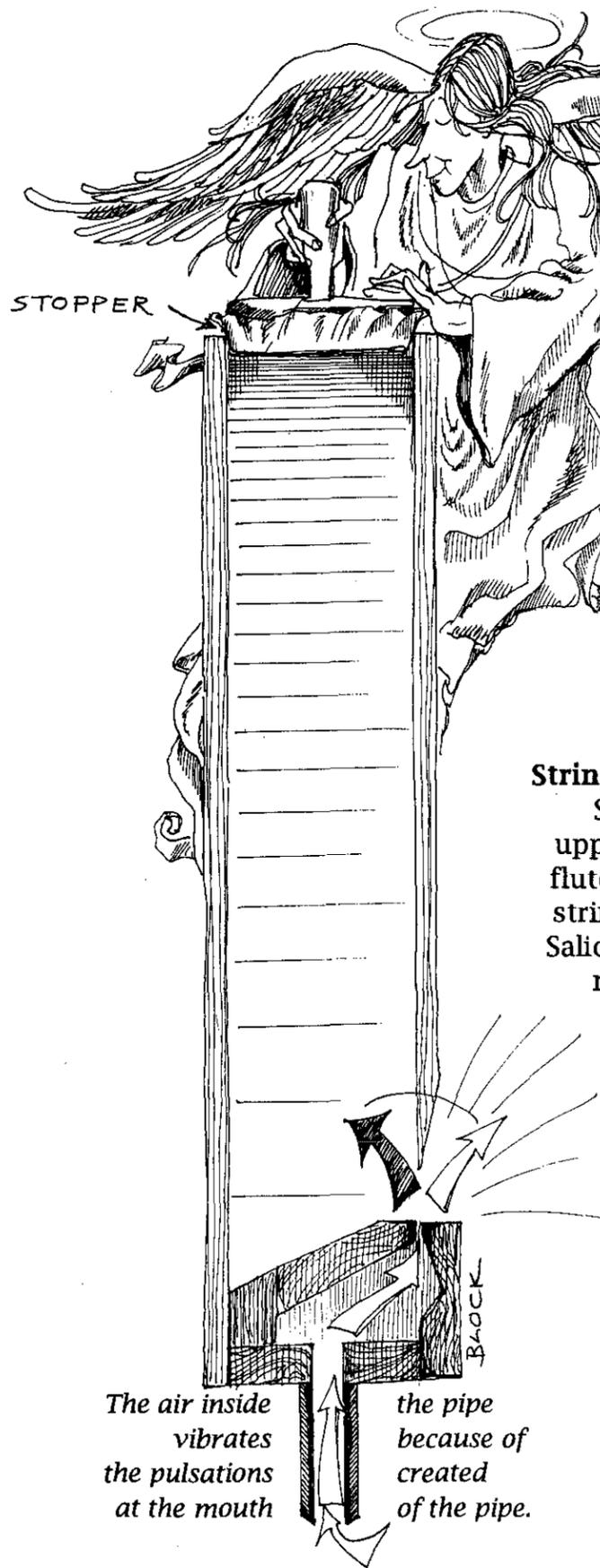
The basic flue groups are Principals, Flutes, and Strings.

Principals

Principals are the most basic organ pipes. They represent organ sound and do not try to imitate any other instrument. They are usually made of metal and often appear exposed in the front of the organ. They come in many pitches and usually appear in every section or division of the instrument. They may be called Principal, Diapason, Montre, Octave, or Prestant.



Open Metal Pipe



Stopped Wooden Pipe

Flutes

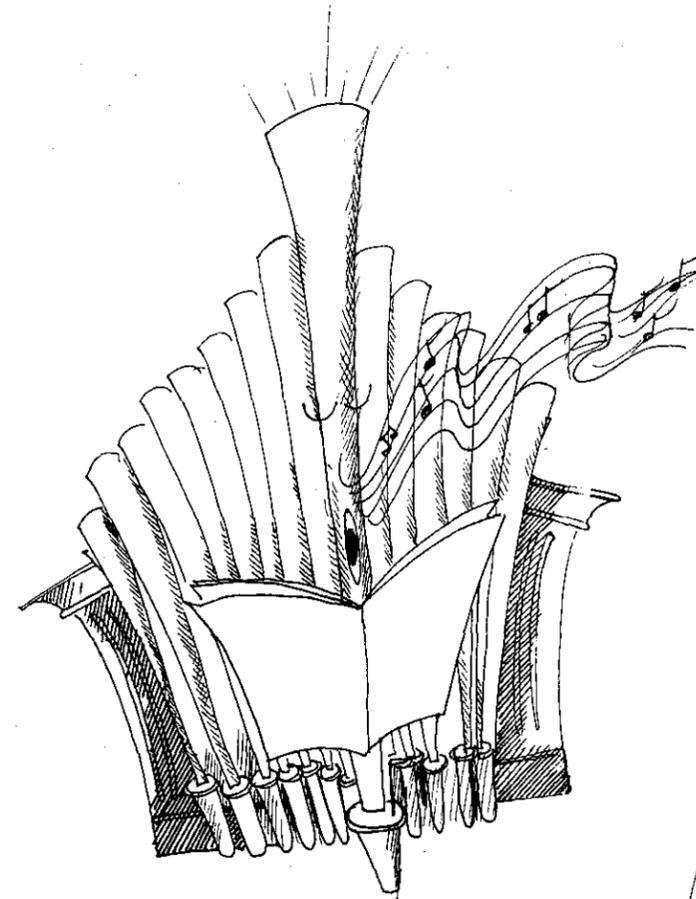
Flutes are the most prevalent pipes in most organs. They come in every pitch level and appear in every division of the instrument. They are wider in scale than principals, and may be made of wood or metal. They may also be stopped and therefore half length. Harmonic flutes are double length with tiny holes in the middle of the pipe bodies. The air column thus divides in the middle, making the sound an octave higher than that of an open pipe. Flute stops sound like real flutes or like recorders. Flutes are called Flute (in whatever language and with various prefixes, such as "Hohlflöte"), Gedeckt, Bourdon, and Pommer. A Quintadena is a stopped flute voiced to sound prominently the harmonic an octave and a fifth above the fundamental. It has a soft but unusual tone because of this. (Strange fact: a Stopped Diapason is actually a flute.)

Strings

Strings are narrow in scale and made to be rich in upper harmonics. They are not nearly as common as flutes or principals. In fact some organs do not have string stops. They are usually called Viola da Gamba, Salicional, Voix Céleste. Any stop with "Celeste" in its name has a special function. This rank of pipes is tuned slightly sharp to cause beats with another similar rank at standard pitch. This causes an undulating effect, which was very popular with romantic composers. The Celeste rank must be used with its companion rank (usually Gamba) and **not** used in other combinations. Sometimes both ranks are found on one stop knob (usually with a II on it, showing that the knob pulls two ranks of pipes). It is possible to make a flute céleste as well as a string celeste.

Hybrids

There are some flue stops that do not fit neatly into these categories. These hybrids sound somewhere between string and flute tone and are usually called Gemshorn or Erzähler. They may also have celestes.



The Bombarde

Some American instruments are built in imitation of large nineteenth-century French organs. These organs will often have a Bombarde manual division as a fourth or fifth manual, or as a "floating" division. This means that it has no separate keyboard, so is brought into play by coupling it to one of the other manuals. The Bombarde division usually contains chorus reeds at 16', 8' and 4', and a very large mixture. If it is the fourth manual, it may also contain solo stops of various kinds. It is primarily for loud, brilliant effects like the final step in a huge crescendo.

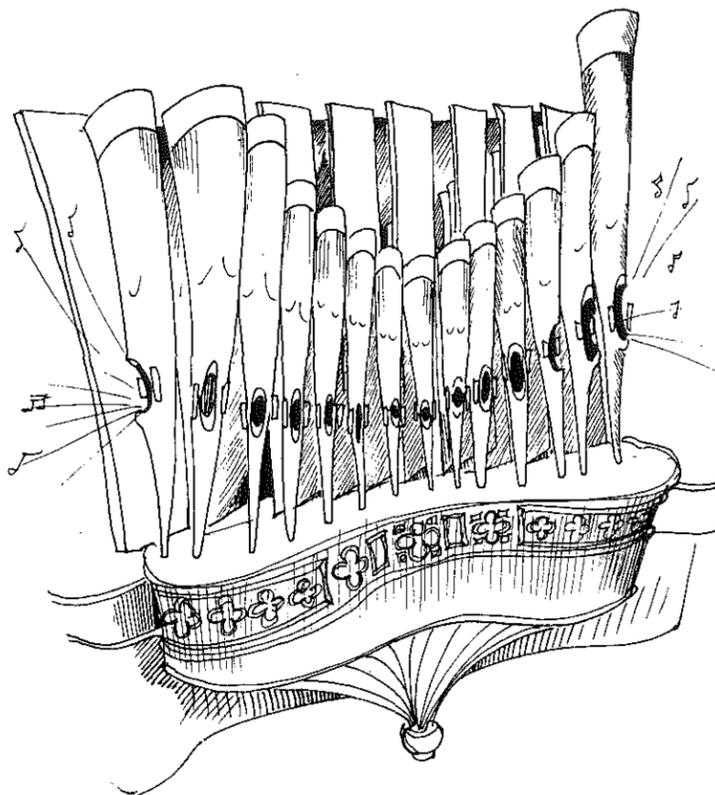
The Solo

The fourth manual division is usually called the Solo. Its keyboard is the top one on four-manual instruments, above the Swell. As one would expect from its name, the Solo contains primarily solo stops. There will usually be a large reed at 8', sometimes *en chamade*. There will also be softer reeds such as the English Horn or Orchestral Oboe. Sometimes there is a large flute and/or a set of very distinctive strings. Solo divisions vary widely from one instrument to another. Usually the Solo division is enclosed in a box and so will have a pedal for its shutters.



The Choir

If there is a third manual, it will usually be the lowest one on the console. It is often called the Choir, and may be enclosed in a box like the Swell, in which case there will be another pedal, usually to the left of the Swell pedal, to operate its shutters. The Choir can nearly always be coupled to the Great, often at 16', 8', and 4', and also to the Pedal. The Swell can also be coupled to it, often at 16', 8', and 4'. Many three-manual instruments will have a small Choir division, in a box, with some light flute stops, a color reed or two, and often a Gemshorn or Erzähler with Céleste. This division is intended to accompany the choir, to accompany solo effects on the Swell, and to provide soft, ethereal sounds for service playing.

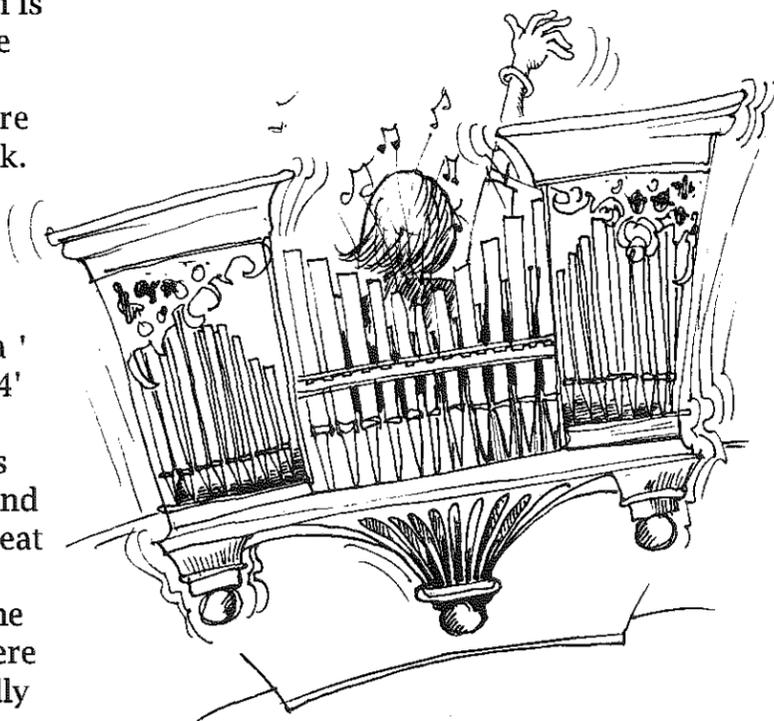


The Positive

When the third manual division of an organ is not in a box, it is usually called the Positive (Positiv, Positif). If the instrument is in a gallery, the pipes of the Positive division are often on the gallery rail at the player's back. Then the division is called *Rückpositiv* in German.

The Positive will often contain a small principal chorus with a bright mixture. In a small Positive division, there may be only a 2' Principal with mixture so that the 8' and 4' pitches must be supplied by flutes. The function of this Positive principal chorus is to play antiphonal effects with the Great and to add brightness when coupled to the Great chorus.

There are usually flutes at 8' and 4' in the Positive, and one or more mutations. If there is not a Cornet in the Swell, there will usually be one in the Positive. There is often a Krummhorn or other color reed as well. The Positive is used for bright solos and duets or antiphonal effects with the other manuals.

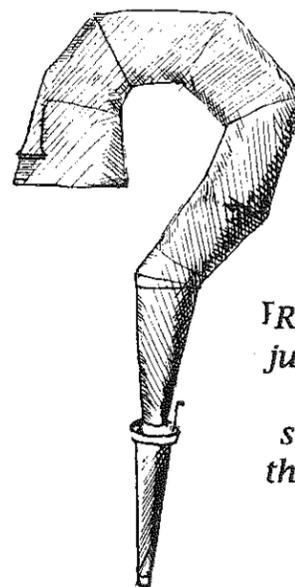


Reed Pipes

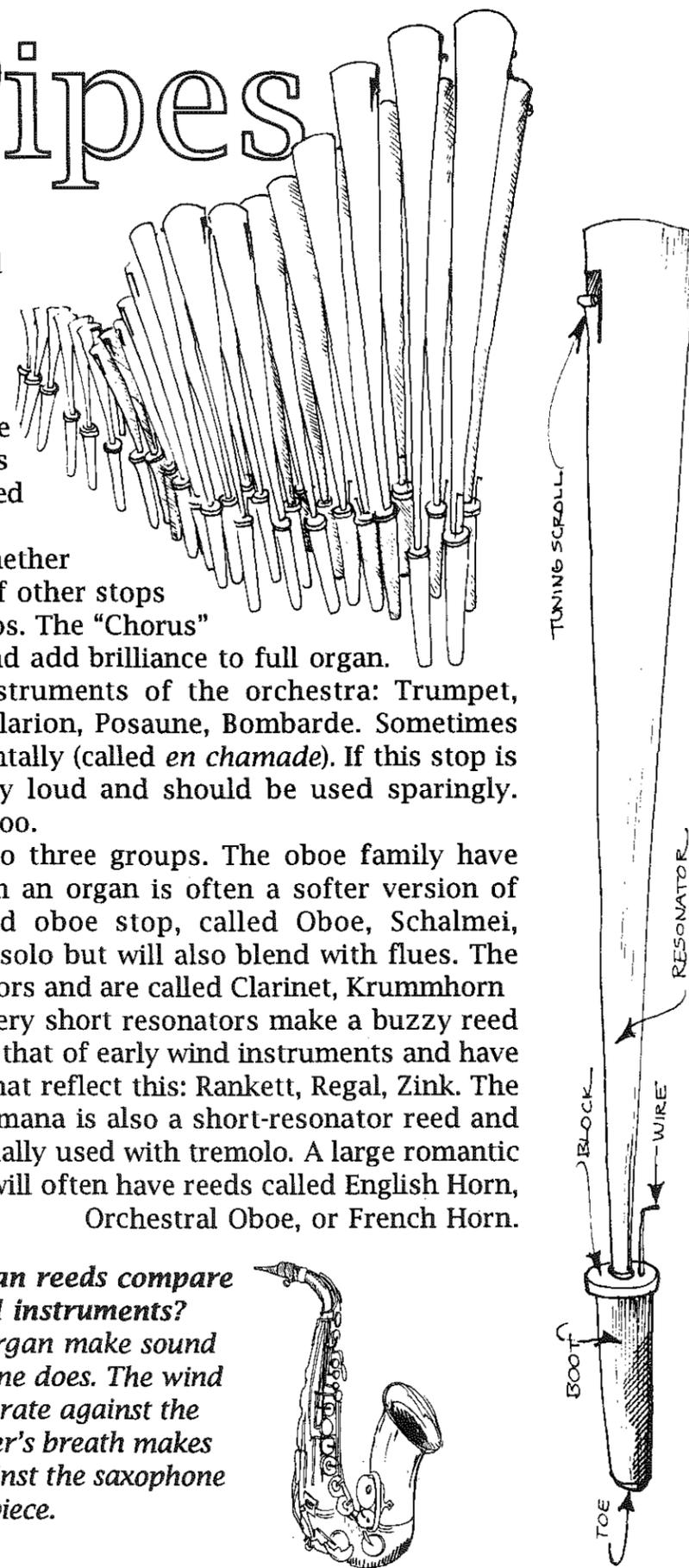
Reed pipes have a metal tongue that vibrates against a brass tube called a shallot to produce the sound. The reed and shallot are inside the boot of the pipe. The sound is magnified by the resonator, which can be of metal or wood. Reed resonators come in many shapes and sizes, all affecting the tone of the pipe. The sound of reed pipes is pungent and distinctive, even when used with flues.

Reeds are grouped according to whether they can be used with combinations of other stops or whether they are better used in solos. The "Chorus" Reeds have cone-shaped resonators and add brilliance to full organ. Some have names like the brass instruments of the orchestra: Trumpet, Trombone, Tuba. Others are called Clarion, Posaune, Bombarde. Sometimes trumpet pipes will be mounted horizontally (called *en chamade*). If this stop is on high wind pressure it can be very loud and should be used sparingly. Chorus Reeds can be used for solos too.

The "Color" Reeds are divided into three groups. The oboe family have slim, conical resonators. Oboe tone in an organ is often a softer version of trumpet tone, and therefore a good oboe stop, called Oboe, Schalmey, Hautbois, or Fagott, can be used as a solo but will also blend with flues. The clarinet family have cylindrical resonators and are called Clarinet, Krummhorn (Cromorne), or Dulzian. Very short resonators make a buzzy reed sound like that of early wind instruments and have names that reflect this: Rankett, Regal, Zink. The Vox Humana is also a short-resonator reed and is usually used with tremolo. A large romantic organ will often have reeds called English Horn, Orchestral Oboe, or French Horn.



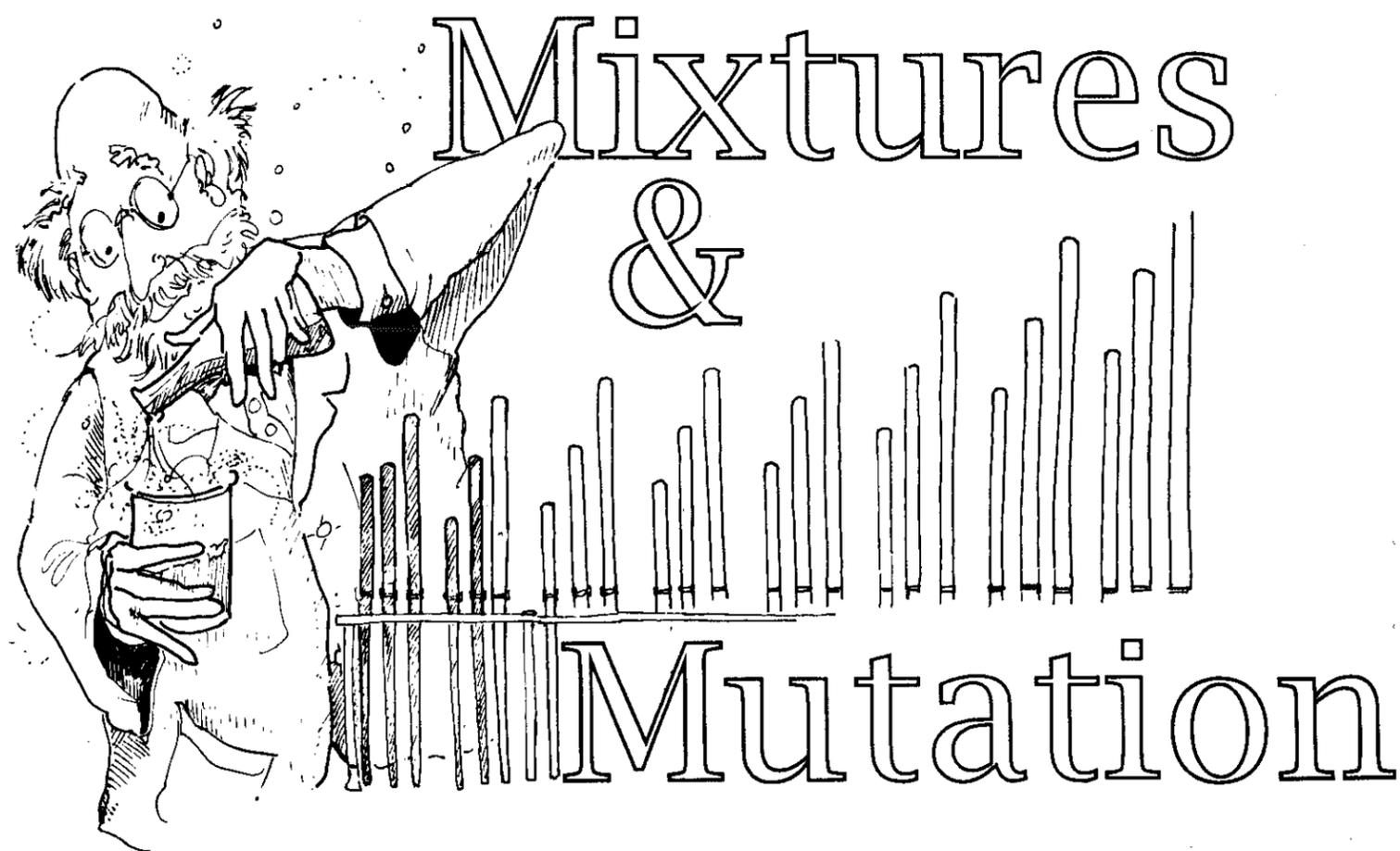
How do organ reeds compare with other reed instruments?
 Reed pipes on the organ make sound just like the saxophone does. The wind makes the reed vibrate against the shallot like the player's breath makes the reed vibrate against the saxophone mouthpiece.



Mixtures

The natural harmonic series contains pitches other than octaves, and organ builders through the centuries have made use of stops sounding these pitches to add tonal color to their instruments. It should be mentioned that pipes sounding upper harmonics must be tuned absolutely to the fundamental and not tempered. There are two types of stops which sound these harmonics: Mixtures and Mutations.

Mixtures have been a part of organ design since the early history of the instrument. They are usually octave- and fifth-sounding ranks of principal pipes that are made to give brightness to a combination in the low and middle registers and breadth in the upper register. Two or more ranks are controlled by one stop knob. The number of ranks is indicated by a Roman numeral. The stop may be called Mixture, Fourniture, Plein Jeu, Scharf, or Cymbal. The various ranks break back in different octaves so that high pitches are sounding in the low register and lower pitches in the high register. To hear this, put on a mixture stop by itself and play a scale. If the stop knob has an Arabic numeral on it, that number indicates the length of the longest pipe at low C on the keyboard. The sound of principals of 8', 4', and 2' with several ranks of mixture on top is the basic full organ sound, often called Principal Chorus, Organo Pleno, or simply Plenum.



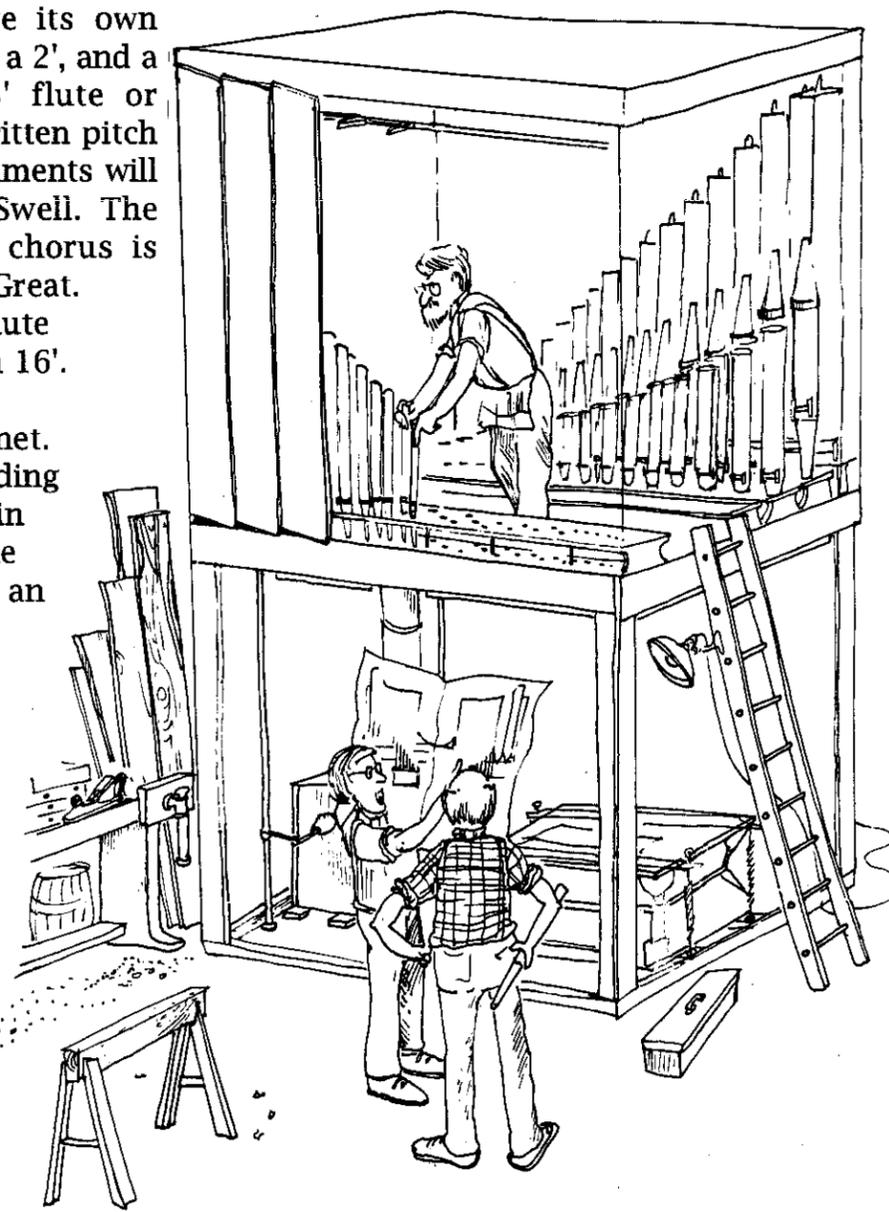
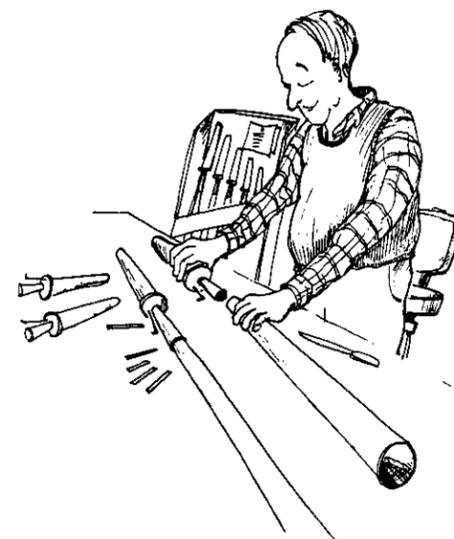
of the Organ

The Swell

The upper manual on most two- and three-manual instruments is the Swell (Schwellwerk, Récit). It is so called because the sound of its pipes can be made to swell and diminish. Its pipes are housed in a box with shutters on one or more sides. These shutters are like large Venetian blinds that are controlled by a pedal. When the shutters are closed, the sound of the Swell division pipes is muffled. When the shutters are opened, the sound gets louder and also more brilliant. The Swell division often has more ranks in it than the Great. It can be coupled to the Great and to the Pedal. If there is a third manual, the Swell can usually be coupled to it, too. Rarely can anything be coupled to the Swell, although on some organs it may be able to be coupled to itself at 16' and 4'.

The Swell will usually have its own principal chorus—a 4' principal, a 2', and a mixture. One must use an 8' flute or string, or both, to sound the written pitch in this chorus. Only large instruments will have an 8' principal on the Swell. The sound of the Swell principal chorus is often brighter than that of the Great.

The Swell typically includes flute stops at many pitch levels, even 16'. It will usually have mutations as well—often those making a Cornet. If there is a set of strings (including Celeste) on the organ, it will be in the Swell. There will often be one or more reeds, most commonly an 8' Oboe, maybe trumpets at 8' and/or 4', and a 16' Bassoon.



Divisions

Each keyboard of the organ (manual or pedal) usually controls a separate division of the instrument with its own pipes and stops. There is no standard number of stops in these divisions, so one can't tell how large an instrument is simply by the number of keyboards it has. The nice thing about having more than two manual keyboards is that tone color changes may be made simply by moving the hands to another manual instead of by changing stops.

Couplers

Stops may be played on another keyboard than their own by means of couplers. On a large electric action instrument, these couplers (usually found on tablets above the top manual) are available at different pitch levels—16', 8', and 4', which means that all of the stops can be coupled at their normal pitch, or an octave lower, or an octave higher. On many organs one can also couple a manual to itself an octave higher or an octave lower.

The Great

The Great (Hauptwerk, Grand Orgue) is the main division of the organ. It is generally the lower manual on two-manual instruments and the middle manual on three-manual organs. The other manuals can usually be coupled to the Great, so the loudest sounds are played on it.

The Great can also be coupled to the Pedal. It will nearly always contain some sort of principal chorus—principals at 8', 4', possibly 2 $\frac{2}{3}$ ', 2', and one or more mixtures. A large organ may have a 16' principal chorus on the Great—principals at 16', 8', maybe 5 $\frac{1}{3}$ ', 4', 2', a low mixture and a high one. Instead, there may be a 16' stop on the Great such as a Bourdon or Quintadena to add to the 8' chorus. There will usually be flute stops on the Great—a rather wide-scale 8' flute and possibly 4' and 2' flutes as well. On two-manual instruments one will often find mutations and solo reeds on the Great also. If there is a string, it will usually be a big 8' Gamba. If there is one reed, it will often be an 8' Trumpet. On large instruments there might be chorus reeds at 16', 8', and 4'.

Mutations

Mutations are single ranks of pipes tuned to sound particular non-octave pitches in the harmonic series. The most common of these is the 2 $\frac{2}{3}$ ' (sometimes called 3') that sounds an octave and a pure fifth above the written pitch. If it is made of principal pipes, it is usually called Quinte or Twelfth. If it is made of flute pipes it is called Nazard. When it sounds with the 8' and 4', it adds color to the combination.

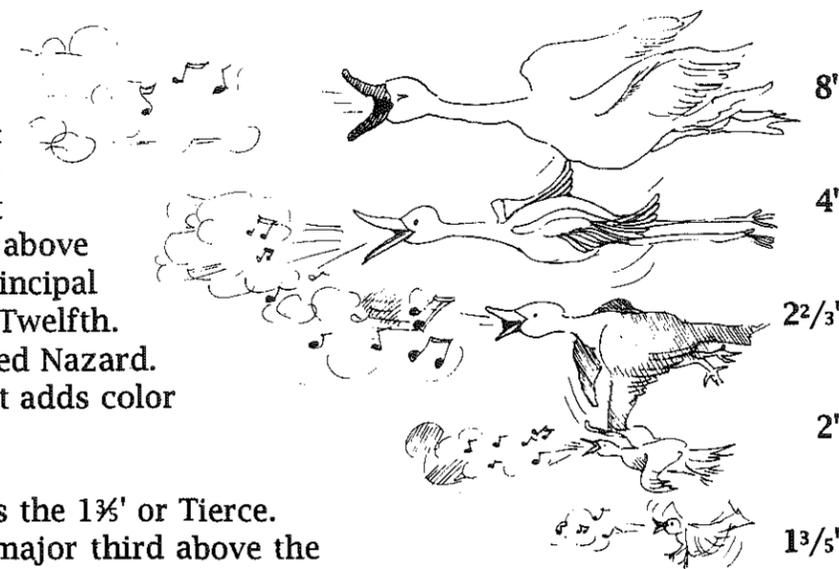
The next most common mutation is the 1 $\frac{3}{5}$ ' or Tierce.

It sounds two octaves and a pure major third above the written pitch. It is generally made of flute pipes and is found on the same manual as the Nazard because it is usually used with it. Sometimes the two are on one stop knob, which is called Sesquialtera. It may have a II on it because the knob draws two ranks of pipes. The Nazard and Tierce, together with flues of 8' and 4', produce a sound something like a clarinet. Add a 2' to this and the combination is called Cornet, which has a rather trumpet-like sound and is important in early music. Some or even all five ranks of the Cornet (8', 4', 2 $\frac{2}{3}$ ', 2', 1 $\frac{3}{5}$ ') may be on one stop knob on some instruments.

The 1 $\frac{3}{5}$ ' sounds two octaves and a pure fifth above the written pitch. It is usually made of flute pipes and called Larigot. It adds further color and glitter to the Cornet sound.

It has also been popular used with flutes of 8' and 4' in neo-Baroque registrations, producing a sparkling, chirpy sound.

Other mutations are sometimes available, but are not nearly as common as these.



Cornet



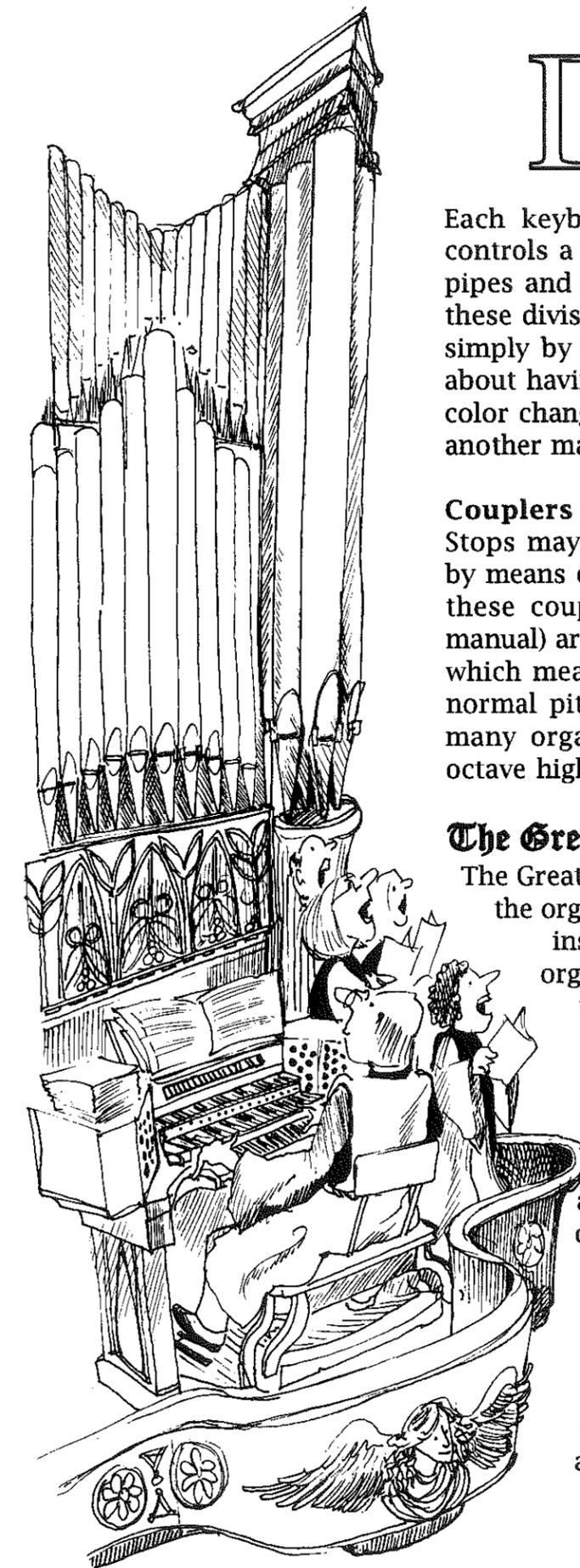
Sound Possibilities

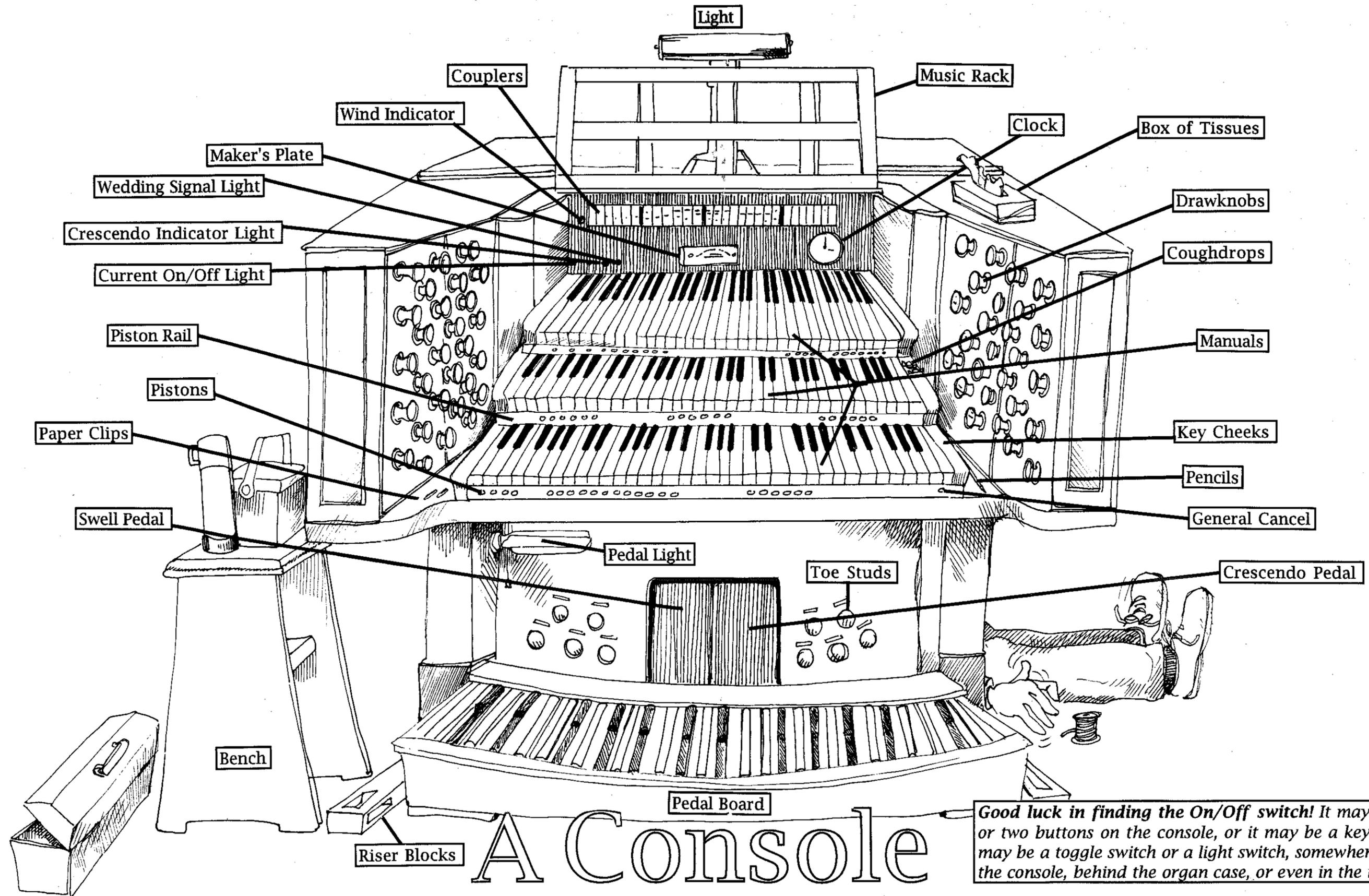
1 $\frac{1}{3}$ '

1 $\frac{3}{5}$ '

2 $\frac{2}{3}$ '

Written Pitch





A Console

Good luck in finding the On/Off switch! It may be a button or two buttons on the console, or it may be a key in a lock. It may be a toggle switch or a light switch, somewhere on or near the console, behind the organ case, or even in the next room!