

## CHAPTER I

### ABOUT THE ONE-KEYED FLUTE





## ON THE FLUTE

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The one-keyed flute was developed from the keyless, cylindrical-bored Renaissance flute, possibly by 1660. Its beginnings are sketchy at best. Historians have traditionally credited the Hotteterre and Philidor families at the French court of Louis XIV with the “perfection” of the flute. New evidence has challenged that position (Powell, 1996), but we, as yet, have nothing to replace it. Regardless, early one-keyed flutes had three sections: a more-or-less cylindrical head joint, a conical middle joint with six tone holes, and a foot joint with one tone hole covered by a key. Later, probably by about 1720, makers divided the middle section into two parts.

A Bit of History

The one-keyed flute, with some modification, was in use for well over one hundred years. Many professional flutists used it as the instrument of preference to near the end of the eighteenth-century. Some amateurs used the one-keyed flute even longer. One could purchase a one-keyed wooden flute in the Sears, Roebuck Catalogue in the United States in 1908 for \$1.55.

In the eighteenth century, the flute was the most popular of all wind instruments. It was considered very fashionable, as evidenced by Frederick the Great of Prussia’s great passion for the instrument. Composers found a market for flute music among both amateurs and professionals, and consequently the eighteenth century is rich in flute literature.

The one-keyed flute has many names. Eighteenth-century tutors refer to it as the one-keyed flute, the cross or transverse flute (*la flûte traversière*, *die Querflöte*, or *flauto traverso*), and the German flute (*flûte d’Allemagne*). (Be aware that in the early part of the eighteenth century, the simple term “flute” [*flauto*] usually referred to the recorder.) Today the instrument is variably referred to as the “one-keyed flute,” the “baroque flute” (certainly appropriate for the early eighteenth-century instrument), or the “traverso,” a shortened version of its Italian name. I shall refer to it as the one-keyed flute.

Names

Historically, one-keyed flutes have been made mostly of wood. Quantz (1752) declared boxwood to be the most common and durable, but he preferred ebony for its clear and beautiful tone. Tromlitz (1791) said both ebony and grenadilla produced a flute tone that was brighter and stronger than boxwood. Kingwood and ivory were also used. However, ivory was used more often to decorate wooden flutes, and many flutes featured ivory ferrules at each joint and an ivory end cap.

Materials Used

The range of the one-keyed flute is d' to a'''. However, I recommend that the beginner limit the first efforts to the more traditional range of d' to e'''.

Range



traditional range

During the first part of the eighteenth century, the highest practical note was considered to be e'''. Hotteterre (1707, pp. 45-46) writes:

Concerning the  
Highest Notes

The notes above e''' are forced notes, and cannot enter naturally in any piece. Furthermore you must not persist in wanting to find them at the beginning, as it is a trouble which you must spare yourself until you are very advanced.

Quantz (1752, p. 57) agrees, saying, "The highest usable note that you can invariably produce is e'''. Those which are higher require a particularly good embouchure."

The third octave f is a bad note on some instruments. Hotteterre (1707, p. 46) finds that it "can almost never be done on the flute" and omitted it from his fingering chart. The third octave f sharp and g are easier to play.

Despite the difficulties of the third octave, it is not uncommon to find the flute's range extended beyond e'''. One notable example is J. S. Bach's *Partita in a minor* for solo flute where we find an a''' at the end of the first movement.

In the latter part of the eighteenth century, notes beyond e''' appear with increasing frequency. Flute construction during this period tended to favor the high register a little more and the third octave spoke with greater ease.

## ON THE PARTS OF THE FLUTE

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Because there were many instrument makers, and because the one-keyed flute evolved and changed over the course of more than a century, many variations of the one-keyed flute exist. Although some makers added keys, foot registers, and tuning slides, the simpler one-keyed flute described below was the most standard flute in use during the eighteenth century and remained in use well past the beginning of the nineteenth century.

The earliest one-keyed flute had three parts: a head joint, a middle joint, and a foot joint. Today one such three-piece flute is referred to as the “Hotteterre” flute because it resembles one with distinctive ornamental turnings attributed to the Hotteterre family of instrument makers.

Three-Piece Flute



A “Hotteterre” Flute

By about 1720, makers had divided the middle joint of the flute into two parts, an upper-middle joint and a lower-middle joint. Four-piece flutes are replicated more frequently by today’s flute makers than the three-piece instrument described above.

Four-Piece Flute



head joint.....upper-middle joint...lower-middle joint...foot joint

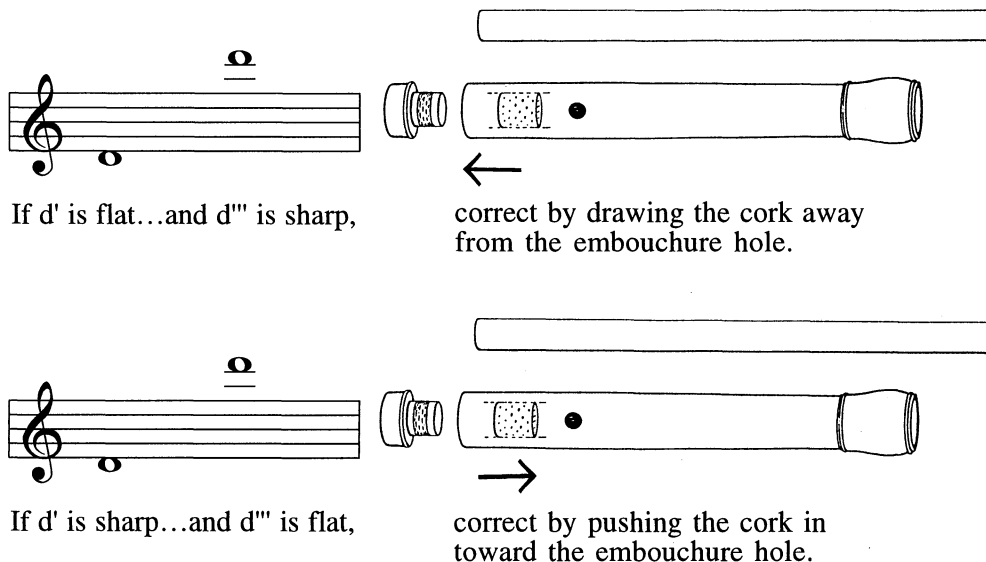
The tenon is that part of the flute joint which fits into the socket of the adjacent joint. Tenons are traditionally wrapped in thread (silk, cotton, or linen) that has been rubbed with wax.<sup>1</sup> Modern replicas sometimes have cork-covered tenons. Regardless of whether the tenons are wrapped with cork or thread, they must be waxed or greased regularly.

The Tenon

<sup>1</sup> See Tromlitz, *Unterricht* (1791), transl. Powell, 33–37 to learn how to wrap the tenons with thread.

The cork at the end of the head joint is movable and its placement is critical for good intonation. First, set the cork somewhere between .75 and 1 inch (20–25 millimeters) from the center of the blow hole. An easy way to measure cork placement is with a wooden dowel rod. Purchase a 12-inch (30 centimeters) length measuring about one-half inch (12.5 millimeters) in diameter (available at craft shops or lumber yards) and simply measure and mark the dowel rod with a pencil about .75 inch (20 millimeters) from one end. The dowel rod, placed inside the head joint, serves the same purpose as the metal rod furnished with today's modern flutes; adjust the head cork so that the pencil mark falls in the center of the embouchure hole.

Next, you must further refine the cork's placement to suit your own way of playing. Each flutist may have a slightly different cork placement, reflecting individual embouchures and ways of blowing. Using the fingerings from the Basic Fingering Chart on page 63, tune d' with d'' and d'''. If the octaves are true, the cork placement is correct. However, if you find the d's are not in tune, you will need to adjust the cork (and subsequently your pencil mark on the dowel rod). Quantz (1752, p. 33) recommends the following adjustments.



The cork must also be adjusted if the player chooses to use a longer or shorter upper-middle joint. (See *Corps de réchange* on page 9.) Lengthening or shortening the flute in this way disturbs the correct proportions of the instrument and the intonation suffers.<sup>2</sup> To remedy this problem, the cork is pushed in toward the embouchure hole when a long upper joint is used and drawn back when a short upper joint is used. The cork can be moved by using the same half-inch dowel rod you used to measure the cork placement.

<sup>2</sup> See Tromlitz, *Unterricht* (1791), transl. Powell, 33 for a discussion of why the flute is thrown out of tune when exchanging the upper middle joints.

Some flutes are fashioned with a screw attached to the cork. The screw cap is a simple mechanism for adjusting the position of the cork and is especially useful when changing middle joints. The player simply turns the end cap to draw the cork out. The following illustration of a Quantz head joint (Reilly translation of Quantz, *Versuch*, 1985) shows the cork with a screw attached.

#### The Screw Cap



The Screw Cap

Some flutes may have a foot register, which is a telescoping, adjustable foot joint useful for making adjustments in tuning when changing middle joints. The foot joint is made a little shorter for each shorter middle piece (*corps de réchange*). Some makers of modern replicas offer the foot register as an option. Quantz (1752) was among those eighteenth-century flutists who strongly opposed the use of the foot register because, in his opinion, it throws the flute out of tune.

#### The Foot Register



Flute with a Foot Register

## ON PITCH

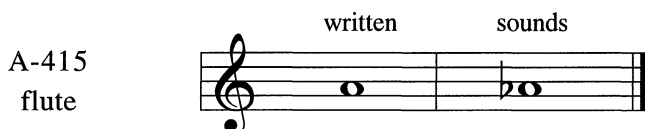
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Pitch was not standardized in the eighteenth century. It varied greatly from country to country, from city to city, and even within the same city. We find evidence that flutists were required to play at every imaginable pitch standard from very low (A-c.392 and lower) to very high (A-440 and higher).

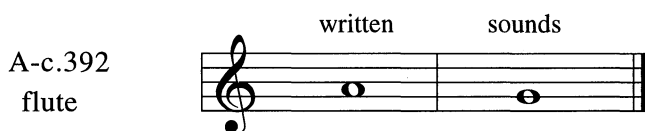
Quantz's (1752) personal preference was for lower-pitched flutes, which he found to be more pleasing, moving, and majestic; he found higher-pitched instruments to be more penetrating.

A-415 has been adopted as a useful compromise for today's performers of most baroque music. Modern replicas of one-keyed flutes are most commonly, but not exclusively, made at A-415.

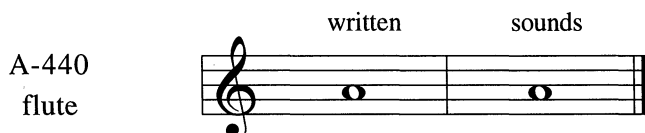
Modern  
Replicas



Modern replicas may also be pitched a whole step low (A-c.392) or lower. "French chamber pitch," as this is sometimes called, is appropriate for the music of early eighteenth-century French composers and the music of J. S. Bach, and was the preference of Frederick the Great.



Some twentieth-century flute makers will make a modern replica at A-440, referred to as "modern pitch," to accommodate players who are working with other musicians using this pitch standard.





The one-keyed flute is used today in several professional orchestras which specialize in the use of period instruments. Baroque orchestras usually require the use of flutes tuned at A-415. However, Classical orchestras have established a higher pitch as a basis for tuning and require a one-keyed flute (or more keys for later Classical repertoire) tuned at A-430 or even higher.

It would of course have been impractical for eighteenth-century flutists to own many instruments, each built to a different pitch. The more practical solution to the need for flexibility to play at varying pitch standards was in place by about 1720. According to Quantz (1752) flute makers began to make anywhere from two to six or more upper-middle joints of varying lengths.<sup>3</sup> The French call these interchangeable joints *corps de réchange*.

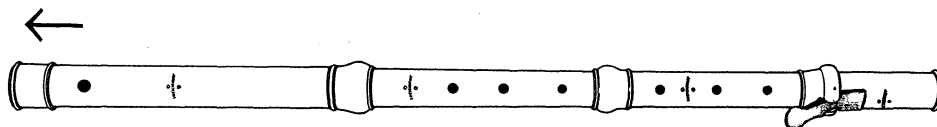
*Corps de réchange*

The use of longer *corps de réchange* lowers the pitch, and the use of shorter *corps de réchange* raises the pitch, allowing the flutist to play at different pitch standards.



Flute with two *corps de réchange*

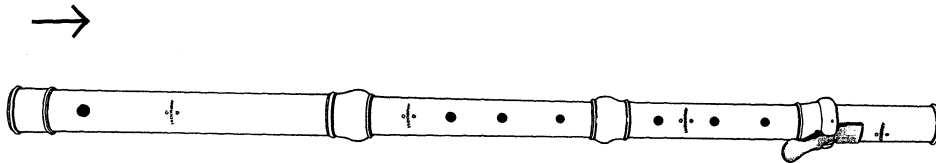
Some makers of modern replicas make a flute with two or more *corps de réchange*. For instance, one may be tuned at A-415 and one at A-392. This way the flutist can own one instrument, yet has the ability to play at two pitch standards. An adjustment of the cork is necessary when changing joints. When playing at A-415 the player uses the shorter *corps de réchange* and draws the cork away from the embouchure hole.



Move the cork away from the embouchure hole  
when playing at A-415

<sup>3</sup> Traverso-player Christopher Krueger told me that most surviving eighteenth-century flutes with *corps de réchange* show significant wear on only one *corp*, and the playing characteristics vary considerably with each one. Personal communication, October, 1997. Also see Tromlitz, *Unterricht* (1791), transl. Powell, 33–37 for more information about *corps de réchange*.

When playing at A-392, the player uses the longer *corps de réchange* and pushes the cork in toward the blow hole.



Draw the cork in toward the embouchure hole  
when playing at A-392

Be aware that it is very difficult to design a one-keyed flute with two or more *corps de réchange* (and therefore two or more pitches) that plays equally well “in tune” at various lengths and pitches. Most often, one pitch has been favored, and the flute will simply play best in tune at that pitch. Discuss this concept with your flute maker to see how he or she has handled the problem.

## ON CHOOSING A FLUTE

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*A good instrument that is tuned truly reduces the task of playing by half.*

Quantz (1752, p. 51)

Today's players of one-keyed flutes can choose from among high-quality modern replicas made by craftsmen around the world, including the United States, Canada, Australia, Europe, South America, Russia, and Japan. Replicas are usually copies of specific historic flutes from the eighteenth century. And of course a few fine antique instruments are available on the market as well.

There are many decisions to be made when selecting a flute. Ask for assistance from a professional player. Also seek the guidance of flute makers who know by the orders they fill which flutes are most in demand. Look for a flute with good workmanship, with the tone color you desire, designed in a style to suit the music you will play, and that plays well in tune and is pitched according to your needs.

Three important decisions you will need to make are (1) the pitch of the flute, (2) the style of the flute, and (3) the type of wood used in its construction.

Determine what pitch you would like the flute to be. The common standard today for most baroque music is A-415. Choose a pitch that allows you to play with colleagues and friends. Does your harpsichordist normally tune the instrument to A-415? Is there another flutist with whom you wish to perform? What pitch is his or her flute? The tone of the flute is markedly different at different pitches. A higher-pitched flute is more brilliant and penetrating; a lower-pitched flute is softer and more mellow.

Pitch

You may wish to match the instrument to the music you will play or to the circumstances in which you will play. Will you do orchestral playing? Or will you find yourself more often in intimate chamber music settings? While some replicas can be used for a variety of music, others are more specialized or suited to a smaller range of styles. A flute designed for the music of Hotteterre won't be suitable for late eighteenth-century Mozart. Ask your flute maker for advice. Some popular reproductions today are modeled after instruments by Hotteterre (French maker, after Graz original c.1700), Denner (Nuremberg maker, after original played by Hünteler, early eighteenth century), Bressan (London maker, pre-1730), Rottenburgh (Brussels maker, after original in the

Style

Kuijken collection, c.1770), and August Grenser (Dresden maker, second half of the eighteenth century).

You may be asked what type of wood you prefer. Today's replicas are commonly made of boxwood, ebony, cocus wood, rosewood, or grenadilla. Grenadilla is the most dense and rosewood the least dense. The type of wood used in flute construction affects its tone quality, although modern makers tell me that the shape of the bore and cut of the tone and embouchure holes have a much more profound effect on the tone than the choice of wood. Try several and see which you prefer. A popular "beginning model" by Aulos of Japan is made of plastic. Because of international laws governing the sale of ivory, few replicas are made of ivory or have ivory trim.

Woods

Don't shy away from purchasing a used instrument. According to Quantz (1752, p. 51), "Generally a good and accurately tuned flute that has been frequently played is always preferable to a new one."

Used Flutes

## ON CARE

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*Now if you have such a flute...spare no effort to maintain it so that it cannot be spoiled.*

Tromlitz (1791, p. 40)

The one-keyed flute has its own unique set of requirements for proper care. Many fine flutes from the eighteenth century have survived, evidence that with proper care, a flute can last for centuries. I am indebted to flute-makers Roderick Cameron and Ardal Powell for much of the following information on flute care.

- ☐ Never store the flute in extreme heat or cold. Never allow your flute to lie exposed to the rays of the sun. Never leave the flute near a heating vent or fireplace. Never leave your flute in the trunk of your car in very cold or very hot weather. These cautionary measures will help guard against cracking.
- ☐ Never bring the flute into a warm room from the cold outdoors and play it immediately or it may crack. Don't blow warm air through the flute to warm it up. Allow it to gradually warm to room temperature.
- ☐ Never store the flute in low humidity environments. A wooden flute will dry out quickly in low humidity and may crack. Winter conditions in the Midwest and on the East coast of the United States produce low humidity factors, as do conditions in a heated home or studio. As a measure of prevention, carry a commercial humidifier (look in tobacco shops for a tiny humidifier the size of a tube of lipstick called a Humistat) in the case during the dry winter months; check it frequently and keep it damp. Store a wooden or ivory flute (in its box) in a plastic bag or plastic box (like a Tupperware container) during periods of low humidity and also when the flute is not in use for an extended period of time.
- ☐ Never assemble the flute if the joints feel too tight. If the tenons are wrapped with thread, adjust the wrappings for a proper fit.
- ☐ Never put the flute away wet in a horizontal position. Lindsay (1828–30) says that doing so will cause the water to accumulate on one side of the tube, expand that place, and throw the instrument out of tune for the moment; the flute will eventually rot from such treatment.
- ☐ Play a new flute or a newly acquired antique flute only ten minutes on the first day and gradually increase the playing time over a ten-day period. This allows the moisture on the player's breath to permeate the wood evenly, which helps to avoid cracking or warping the bore.

Checklist

- ☐ Lightly grease the tenons before each assembly. Use cork grease, petroleum jelly, or even Chapstick. Here is a recipe for homemade tenon grease: melt one part petroleum jelly (Vaseline) with one part beeswax, mix, and pour into a jar to cool.
- ☐ Swab the flute after each use to remove all moisture. A silk cloth is especially good for absorbing moisture; cotton is also good. Silk cloths on a long string, made for oboists, are available at music stores.
- ☐ If the flute is not swabbed or taken apart, place it upright on a peg so that the water may easily drain off.
- ☐ Wipe the outside surface with a soft, lint-free cloth.
- ☐ Be sure the tenons and sockets are dry before putting the flute away.
- ☐ If the pad on the key is sticky, apply a little talcum powder to the key pad.
- ☐ Keep the flute in a plastic bag when flying in the pressurized cabin of an aircraft. When the air pressure drops, the moisture is quickly sucked from a wooden flute.
- ☐ Oil a wooden flute regularly (about once a month) inside and out. A new flute will need to be oiled even more often until it is “played in.”

What type of oil should be used? The answer to this question depends in part on the flute you own. If you are playing an antique flute, it will be helpful to know that Quantz (1752) recommended almond oil. Tromlitz (1791) preferred rapeseed oil (also known today as canola oil), saying almond oil was too light and disappeared too quickly.

## Oiling the Flute

If you are playing a modern replica, contact the maker and ask what type of oil was used when the flute was crafted. It would be logical to use the same oil. Almond, canola, peanut, and olive oil are among the oils preferred today.

Linseed oil has been somewhat controversial, both in the eighteenth century and today. Lindsay (1828–30) recommended oiling the bore of the flute with cold-drawn linseed oil with a feather. However, Tromlitz (1791) found linseed oil to have too much substance and said it is known to form a crust inside the flute which changes the bore and spoils the flute. Flute maker Rod Cameron warns against the use of linseed oil, saying it is a hardening oil. Flute maker Ardal Powell reports that some makers of modern replicas use raw (not boiled) linseed oil as a finish because it forms a water repellent skin; these flutes can subsequently be oiled with raw linseed oil or other oils. I recommend avoiding the use of linseed oil unless it is recommended by your flute maker.

Before you begin to oil the flute, be sure the wood is dry—don’t oil the flute immediately after you’ve played it. To protect the key pad from being

damaged by oil, remove the key. Then be sure the key hole is free of oil before replacing the key. Or you may follow the advice of Lindsay (1828–30), who recommends placing a piece of paper, doubled, under the key pad before the oil is applied to keep the pad from absorbing the oil. Also consider removing the cork in the head joint before you begin oiling.

Now you are ready to oil the flute. First wrap an ordinary pipe cleaner around the end of a wooden chopstick to form a tight spiral about 1.25 inches (3 centimeters) long. Dip the stick into the oil and wipe it partially dry, then use it as a paintbrush in a spiral screw-thread motion down and through the bore of each joint. Tromlitz (1791) cautions us to use oil sparingly, saying that too much oil deprives the wood of its elasticity and damages the tone.

After letting the oil sit inside the bore of the flute for about half an hour, wipe out any excess with a paper towel rolled around a wooden chopstick.

Tromlitz (1791, p. 40) admonishes those who, believing that oil improves the tone, apply an excessive amount so that “it runs about inside” the flute.