

have warmed the flute up to room temperature, and then to breath temperature, then adjusted the tuning slide and our embouchure so it seems we are playing at the right overall pitch level, next we need to attend to the intonation of the individual notes we play.

Some of the information in the following paragraphs was given in the last chapter but it bears repeating here, especially if you are not a whistle player and did not read the last chapter. As is the case with whistles, when different players try out the same flute, one may make it sound more in tune to your ear than the others do. No flute has inherently perfect intonation; or perhaps it is more accurate to say that the meaning of “in tune” is subjective. It necessarily changes from situation to situation and it often involves compromise when playing with other people. Experienced players do their best to play what sounds sweet to their ear in any given situation. That personal judgment of good intonation very often does not conform to equal temperament. Instead, we tend to prefer the sound of “pure intervals.” It may be more useful to think of playing in-tune intervals rather than in-tune notes, for it is the relationship between notes that we are really tuning.

For instance, sometimes the third degree of the Ionian mode (or major scale)—let’s consider F-sharp in the D-Ionian mode—sounds better to our ears, in relation to D (the tonic note), if it is played slightly flat of an equal-tempered F-sharp. In another mode, such as E Dorian, a sweet or correct sounding F-sharp may be sharper than the sweet F-sharp in D Ionian. Why this is so is a long story, one much written about by others, which has to do with pure intervals and the harmonic series that we explored when playing the *Working with Harmonics* exercise, above. I won’t delve very far into this controversial area in this book. Suffice it to say that equal temperament is a rather artificial, though very useful, system that is not based closely on the natural harmonic series. When given a choice, our ears usually prefer the sweeter, pure intervals.

When we play unison melodies with fixed-intonation equal-tempered instruments, such as accordions and concertinas, we need to adjust to them or at least compromise. When we are accompanied by instruments such as guitars, bouzoukis, keyboards, etc., we may also need to make some adjustments. The open strings of fretted string instruments are not always tuned to equal temperament, but their frets do produce equal-tempered intervals. This is a tricky area. As always, let your ear lead the way.

It is impossible to know exactly how 19th-century simple-system flute makers thought about the problem of intonation, and why they made the design decisions they did. We do know that they were building instruments to play throughout three octaves. Irish flute players, almost without exception, use only the lower two octaves.

In these flutes, the third octave notes had a natural tendency to play sharp. One theory is that, in order to adjust those pitches flatter, design decisions were made that had an impact on the intonation of some the lower-octave notes. You may have noticed that, with these old flutes, F-sharp tends to be flat, A tends to be sharp, C-natural tends to be sharp, and C-sharp tends to be flat. In addition, the low D is often flat. At least that’s how these notes sound compared to equal temperament. Add to these complexities the fact that there was not a standard pitch level in those days. The pitch of the note A ranged somewhat above and below our present standard of 440 Hz.

Though we cannot understand the exact reasons behind the intonation profiles of these old flutes, it is interesting to note that the same kinds of pitch “distortions” mentioned above as being typical of simple-system flutes are also typical of the uilleann pipes and tin whistle, and are even observed in Irish fiddling. Since fiddlers determine their intonation by finger placement, and by comparison of fingered pitches to those of open strings, these pitch “distortions” are clearly a matter of choice, though probably an unconscious or conditioned one. It seems that there is a kind of natural intonation “profile” or “dialect” that is inherent in the design of the simple-system instruments (flute, whistle, uilleann pipes, perhaps even the Neanderthal bone flute mentioned in Chapter 3). It is also inherent in the nature of traditional Irish music and other musical traditions as well.

We can say for certain that simple-system flutes do not naturally play an equal-tempered scale. It is tempting to surmise that at least some of the intonation oddities of simple-system flutes were in fact intentional. By radically redesigning the flute, Theobald Boehm really created a new instrument, one that came very close to having an equal-tempered scale. His invention sparked a storm of experimentation and controversy among the flute makers and players of his time, and well into ours. I think that the more equal-tempered intonation of the Boehm flute is one of the factors that, to most Irish flute players, makes it sound “odd” when used for Irish music. Those who succeed in getting a traditional sound on the Boehm-system flute do so in part, I feel, by emulating the intonation profile of simple-system instruments.