As an indicator of historical pitch, the cornett has much to recommend it. Its one-piece construction makes it difficult to shorten without throwing internal intonation out of balance. Its basic design remained stable over a long period, and during that period, the majority of cornetts came from one place. Anthony Baines writes,

Among the [cornett] survivors in the big collections, those of Venetian manufacture predominate, which is appropriate, since Venice seems to have been the principal focus of design during the period. German courts, for instance, frequently bought their wooden wind instruments from Venice. This, and the constant migration of players from one country to another, led to some degree of standardization in instrumental playing pitch. Cornetts made in Venice were frequently exported to other parts of Europe: a contract with the Bassanos in 1559 speaks of customers "qui dela cita come de fora." Vincenzo Galilei said that the best cornetts of his day were made in Venice. Nuremberg, which in the 16th century had virtually no competition in selling its brass instruments, was not able to compete as successfully on the woodwind front. Ekkehart Nickel writes,

The Munich court, for instance, between 1550 and 1600 obtained most of its trumpets from Nuremberg, while the only woodwinds registered in the royal bursary records... came from Venice; likewise the court at Graz in about 1600 bought trumpets and trombones from Nuremberg, but cornetts and flutes from Venice. The Innsbruck court also purchased most of its trumpets and trombones from... Nuremberg, but ordered cornetts in 1585, a "Doltan" in 1588,...and a "large Concert Flaut" in 1591 from Venice.

The fact that most cornetts came from a single city (and one with strong guilds) indicates a uniformity of design, and suggests that surviving instruments offer pitch information that is generally valid for the places cornetts were played. That the basic design of the curved cornett changed little in the course of the 16th and 17th centuries is also an indication of the stability of its pitch level.

The reliability of pitch information from cornetts

Two historical indications of the relative inflexibility of cornett pitch are Michael Praetorius' allusion to moving the mouthpiece in and out and Bartolomeo Bismantova's description of tuning joints for the cornett. Praetorius wrote,
Auch einem Cornet, dergestalt: dalI man oben das Mundstück weiter herausser oder tieffer hinhein stecke / zuhelffen ist.

Even a cornett can be helped into tune by moving the mouthpiece in or out.

Bismantova wrote in more detail in 1677:

...Procurando ancora di sentire prima il tuono chorista del Organo; 6 altro [G2 clef] et in caso, che fosse pit' alto il Cornetto de Organo; bisognera mettervi una 6 pitt Giunte; et se fosse per il contrario pin basso di voce; all'hora bisognera levarne.

Occorendo aggiungere al Cornetto, Giunte di sopra, fuori del solito; per essere l'Organo assai basso; sari prima necessario, mettere per di sotto, dentro alla bocha del fondo, di detto Cornetto; una Giunta a proporzione, alto un Dito traverso, 6 occorendo, e che detta Giunta sia di legno; e che sia forata; con il bucco largo, come la bocha del Cornetto; e che vi sia la sua imbocatura, che vadi ben serrata per di dentro alla bocha del Cornetto; e che sia detta Giunta fatta, e forata al Torlo; e si questo; accie• slongando it Cornetto di sopra, e di sotto, le voci tune; e in spetie l'acute, venghino giuste; come l'istesso, si fa del Flauto; e l'aviso serva, con iuditto; overo se nel fondo di detto Cornetto vi sara per adornamento, la Legatura d'Argento, alta, e movibile; si portra questa slongarla; che fara effeto, che fa la Giunta.
If we take this extreme lengthening, that of "a joint of approximately one finger's width or possibly more," to be 2 cm, plus 1 cm at the top of the cornett, the total difference in pitch (based on the general relation between length and pitch discussed below) can be estimated at about 66 cents. Since both here and in what follows, Bismantova counts on being able to tune not only lower but higher, it would seem his instrument was normally tuned at about the midpoint between the extremes. The differences he discusses would therefore be on the order of 33 cents in either direction. If the average pitch of a cornett was A-471, it could be lowered by these operations to A-462 or raised to A-481. The fineness of this tuning, with a range of a third of a semitone in either direction, indicates how specific Bismantova (who was a cornett player himself) considered the instrument's pitch to be.

This would seem to be a case of an adjustment within a single pitch standard; we cross

Se per sorte si trovasse Organi, o Cembali, che fossero assai bassi del Corista; e che il Cornetto non si potesse accordare, ne accomodarsi con le voci a quel Tuono; in occasione di suonare, Sinfonie, 6 altro; in questo caso bisognera accordare it Cornetto una voce piu alta; e puo suonare, una voce piu bassa; e bisognasaper suonare per tutte le Chiavi, per poter suonare Spostato ne bisogni. 

If by chance organs or harpsichords are found that are lower than the Corista, and if the cornett can neither be tuned nor accommodated in pitch to the mode in which Sinfonie or other [pieces] are being played, it will be necessary to tune the cornett one step higher and then to play one step lower. It is therefore necessary to know how to play in all the clefs in order to be able to transpose, if necessary.

the line into a different standard in Bismantova's next passage:

On the face of it, Bismantova's statement is illogical; to "accordare it Cornetto una voce piu alta; e puo suonare, una voce piu bassa" would be to arrive where one started. But Bismantova probably means "tune the cornett one step higher than the Corista" and then play one step lower than the Corista," in other words, tune up a semitone and transpose down a whole tone. This must have been an approximate solution, since (as we have just seen) the player probably had a range of less than a semitone to "accordare it Cornetto."

Despite these early estimates of the precision of cornett intonation, the common wisdom nowadays is that differences in pitch between cornett players are extreme, and therefore pitch data from the instrument is unreliable. I have found, however, that most professional players (those whom Rainer Weber graciously calls "wirkliche Zinkenisten") do not share this attitude. As we will discuss below, the available data shown in Graph 1 seems to show consistent patterns, suggesting that it is fairly accurate. We will also consider how sounding length can be roughly correlated to pitch, offering a cross-check on accuracy.
### Graph 1

Italian and German Cornett Pitches
One experienced player, Douglas Kirk, demonstrated various sizes and shapes of mouthpiece for me. Their "popping frequencies" varied by a fifth. On the instrument, however, and under real performing conditions, all of them played at exactly the same pitch. Kirk, like other professional players I have consulted, makes a clear distinction between information provided by occasional players and that of experts who perform regularly in concerts. These players seem generally to agree that the instrument's pitch is consistent and that they would (and do) all report approximately the same levels.

The pitches of original instruments

Surviving Italian and German curved cornetts of the 16th and 17th centuries in reasonable playing condition are listed in Appendices 1 and 2 and are also shown in Graph 1. Several patterns emerge from this graph.

The German pitches are clearly consistent; they average exactly A-465 in both the 16th and 17th centuries. Italian 17th-century cornetts are in three clusters: the lowest ranges from A-435 to A-450 and averages A-442. The middle ranges from A-460 to A-472 and averages A-466. The highest (represented by only three examples) is just below A-490. Pitches in the 16th century in Italy are more diffuse but there appear to be two clusters, the first ranging from A-435 to A-452, the second from A-457 to A-484. The pitches above A-484 are spread and (compared to the lower clusters) do not appear to indicate a particular level. Of the two clusters, the lower averages A-444 and the higher A-471.

If we are able to trust the reports of players, then, we can conclude the following:
1) There was a lower cornett pitch (in Italy only?), in both centuries, at A-443, or C.
2) A second pitch shows a central core at A-470, which is C. This pitch was by far the most usual, and was common to both centuries and both countries.
3) A few instruments (again only in Italy) show scattered levels above A-484 but are not frequent enough to indicate a specific standard.

On the basis of surviving instruments, then, there is a reasonably unambiguous level that we can assume was considered "cornett pitch:" although it was less specific in the 16th century, its center was never far from C (A-470).

In theory, the accuracy of the pitch information shown in Graph 1 could be checked by comparing sounding length to pitch. By drawing a "regression" line through x and y coordinates, their correlation could be tested. But in practice, there are several obstacles to this approach. The biggest is the uncertainty as to how lengths have been obtained: the inside curve is obviously shorter than the outside, and an average is different again. Also, length is not the only factor that determines a cornett's pitch. Other factors include "fingerhole size and placement, bore profile and polish, and airtightness, not to mention the effect of the performer."

The establishment of a correlation between length and pitch will probably be possible when more physical data is available, and could not only serve as a check on pitch reports but also help in estimates of pitch when length alone is known. Based on the present data,
pitch apparently changes about 6 Hz for every centimeter of length. Using the averages of the pitches reported in Appendix 1 together with calculations of the lengths of cornetts depicted in Praetorius’s *Sciagraphia*, it is possible to estimate that one of his cornetts at 58.3 cm would play at about A-460 and the other at 57.6 cm at about A-464. Like the violin, the curved cornett was in the highest of the three. While the highest normal clef for singers was C1 ("soprano clef"), cornett parts were usually notated in "violin" or G2 clef. For singers, the use of *chiavetta* normally implied downward transposition. But by the beginning of the 17th century the upper instrumental part in violin clef is sometimes marked *come sta o all’altra aca* to prevent transposition downward. Banchieri (1601) wrote that the violin clef was more common for instruments than voices because

```
the suonando così all’altra fanno phi viva
l’harmonia.*
```

when they are played thus at high pitch they make a more lively sound.

This passage reminds us of Praetorius’s comment,

```
Dann je holier ein Instrumentum in suo
modo & genere, als Zincken / Schalmeyen
und Discant Geigen intonirt seyn / je
frischer sie lauten und resoniren....
```

For the higher-pitched an instrument (within its class and type) is made, as with cornets, shawms, and descant fiddles, the fresher they sound....

By Banchieri’s time, downward transposition was apparently not expected of instruments playing alone or performing obbligato parts, even when their parts were notated in *chiavetta*. This principle is found in other sources as well. Compare instructions such as Croce’s (1594): "Alla quinta bassa, e in tuono per sonare" ("At the fifth lower [when performed by voices], and at pitch when played by instruments"); and Banchieri’s, for different pieces in his *Sinfonie a 4* (1601):

```
trasportato alla quinta per le voci... In
tuono per voci & strumenti... In tuono
per cantare, & una quarta superiore per
gli strumenti.
```

transposed a fifth for voices... At pitch for voices and instruments... At pitch for voices, and a fourth up for instruments.

But as Bismantova pointed out in the passage cited above,
Bisogna saper suonare per tutte le Chiavi; per poter suonare Spostato ne bisogni. It is...necessary to know how to play in all the clefs in order to be able to transpose, if necessary.

He wrote this about situations in which the organ was not at the usual cornett pitch. But what did he mean by chiavi? The term was understood at the time to mean def plus key signature, so in fact (as can be seen in Aurelio Virgiliano, "Modi tutti da sonar il cornetto," ca. 1600) Bismantova is suggesting that his readers learn to play in all the possible modes/keys (which was approximately like learning the scales of all the standard tonalities) 34

Half-step transpositions were impractical because of meantone tuning and the fingering of the instrument. Simple scales such as C would turn into B and Ct. Whole-step and minor third transpositions were much easier and more practical. It would therefore have been useful to have on hand curved cornetts at pitches a semitone apart; this could explain why the most common cornett pitches were at -Ct and -C. It is conceivable that players owned two or even three instruments pitched in consecutive semitones, allowing whole-step transpositions in various combinations to produce any required scale. 35 Graham Nicholson points out that cornett number EA1 51 X 1952 at The Hague is probably by the same maker as the two well-known Oxford Christ Church instruments; 37 the former is at -CI, the latter two at -C. A sign of the prevalence of these two pitch levels is Charles Foster's reconstruction of Praetorius' bassanelli. Using Praetorius' measurements, he found the pitch to be 472 to 446, or a little above -0 to -C. The bassanelli, Foster believes, is designed to be played at any pitch between these extremes: "It plays at a variety of pitches, variable within the range of a semitone, with good intonation on every note, including those produced with the aid of cross-fingerings." 38

While it seems cornetts were predominantly at instruments a semitone lower would have been useful in Rome (where most organs were tuned to -136 39 and in the north where some organs starting around 1600 were at -D (like the Antegnati at S. Maurizio in Milan), since in both cases the transposition would have been a simple whole-step. We know that cornetts were sold in pitches a semitone apart, as can be seen in a contract made in 1559 between three Venetian wind players in the service of the Doge of Venice and two instrument makers of the Bassano family:

...corned aid si de mezo ponto come etiam de tuto punto L4 luno de picoli corneti muti de tuti i toni L2s8 luno....

Mezo punt° and tutto punto are therefore probably the names of the pitch standards at -Ct and -C respectively. These terms were also used by the organist and builder G.B. Morsolino (Morsselino) in documents relating to the pitch of the organ of the cathedral at Cremona:41

... loud [curved] cornetts, both at mezo ponto and tutto ponto, four lire di picoli each, mute cornetts at all pitches, 2 lire and 8 soli each.... 40
Tutti gli organi che ho visto a vita mia et in Italia et fuori et massime ove si fanno concerti con uomini rarissimi tutti dico gli ho trovati nel tuon del cornetto di mezo punto, the e pits alto un tuon del nostro di che Nora trattamo; it quale a nel tuon del cornetto di tutto punto; che un tuon pits basso dell'altro di mezo punto. Onde avviene che non volendosi scomodar gli organi peril riguardo de gli stromenti da fiato, si lassano nel detto tuon di mezo punto... 

Mute cornetts

Mute cornetts remain to be discussed. Appendix 2 lists surviving mute cornetts in reasonable playing condition. Few modern cornettists regularly play the instrument, so the reports of players are less reliable. The mute cornett often seems to have had a different musical role from the curved one. This may be reflected in the difference in pitch between curved and mute cornetts. Praetorius notes in two different plates (viii and xiii) that the mute cornett is in G, i.e., a whole tone below the "normal" curved cornett in A. Myers calculated that Praetorius' mute cornett in Plate viii no.9, with a length of about 66 cm, suggests a pitch of about A-409 if it is considered to be in A. An instrument inventory for the city of Nurnberg drawn up in 1575 lists:

Item ein Cornet umb ein Secund grober als die andem. --which could refer to a mute cornett.

Graph 2 shows mute cornett pitches assuming (for the sake of comparison) the instruments are in A. The average, as can be seen, is considerably lower than that of cornetts with separate mouthpieces.

As Anne Smith suggests, instruments of this period appear to have characteristic pitches. According to Praetorius, shawms were a tone higher than cornetts and sackbuts; cornamuses were at Chorthon, a tone below Cornettothen. The distinction between instruments in different pitch categories (strumenti acuti or high instruments—probably at
mezzo punto—and strumenti coristi or instruments at corista) may explain why certain instruments like Renaissance flutes (whose surviving pitches are mostly at A-405) and mute cornetts were normally pitched lower than curved cornetts, violins, and other "treble" instruments. Weber wrote that "Transverse flutes and mute cornetts are... those wind instruments which appear together with strings in the so-called 'Still' or 'Broken' Consort."
Smith noticed that these instruments are often called for together in both religious and secular settings. Among other examples, she indicated works by Schutz and Schein. Praetorius noted that,

Die Bitten and andere *Instrumenta* in solchem niedern Thon lieblicher/als im rechten Ton lauten/und fast gar eine andere art im gehor...mit sich bringen. Flutes and other instruments are also more beautiful when tuned lower than our normal pitch, and at the lower pitch give quite another effect to the listener.

Most other instruments such as recorders and krummhorns were used primarily for chamber music, and were usually, like the more "normal" curved cornett, at the higher *Cornettenthon/CammerThon*. It seems likely, then, that the mute cornett (unlike the curved cornett) was usually classified among the *strumenti coristi*.

The significance of identifying "cornet pitch"

Cycles per second (or "Hz") were not commonly used and understood until the 19th century. Prior to that time, musicians quite logically identified their pitch levels in relation to other reliable and commonly available sources. In France, for instance, the most stable reference was the pitch of the opera orchestra at Paris; *Ton d'Opera* was therefore the common reference pitch. In England and Holland, the recorder was often used as a bearing (cf. "Consort Flute Pitch" and *Fluit of Kamer-Toon*). In Italy and Germany, since it was widely used, the most practical (and apparently reliable) reference was the cornett.

The contract for the organ of the Collegiata di S. Prospero in Re:io Emilia built by Baldassarre Malamini in 1609 describes the instrument as "di died piedi, un tuono pill basso del cometto." In 1577 the Cathedral organ at Feltre was repaired by the Federici firm so that the said organ be put in its regular pitch, that is, in the cornett pitch of *mezo ponto*.

As noted above, Morsolino had related organ pitches to the "tuon del cornetto" of *mezo punto* and *tutto punto*. Antonio Barcotto wrote in 1652:
The organs of Venice are among the highest used in that state, and must be tuned to the pitch of comets. Chamber organs, though, at Venice, Padua, Vicenza, and other cities, are a tone lower, [corresponding to] the human voice, which is called corristi. This difference of pitch is used to accommodate voices and instruments, since organs that are high work well with lower voices and violins, which are for this reason more spirited.

T.B. Janowka, writing in Prague at the beginning of the 18th century, also described pitches in relation to the cornett:

Concordantix sunt organa in Germania & Boemia ubique usitata, qvx concordantia vulgo Zincle= seu cornett tonus vocatur; posterioris seu demissioris & qvidem uno integre, tong in Italia & Gallia audiiour; qua' concordado choral tonus seu Chor=thon vocatur, & cum hac posteriori concordant Gallic Fletnz seu Fletuse, Clarini humiliati, qvx omnia Instrumenta in sua clavi c cum Organo nostro in clavi b unisonant....

Janowka followed here the old north-Italian system in placing Chor.thon (originally called Tuono chorista in Italy) a second below instrumental (i.e., cornett) pitch. Praetorius had noted with approval this usage and associated it with Prague; he sporadically and inconsistently used the term ChorThon in the same sense in his book. It is also found in Alessandro Poglietti’s instructions for tuning the harpsichord:

Cornetten ist umb ein Ton hochar, als Chorton. Cornetten is a tone higher than ChorThon.
The pitches of a number of early German organs that were originally identified as at \textit{Cornet ton} have been preserved:

<table>
<thead>
<tr>
<th>A in HZ</th>
<th>Standard name</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>467</td>
<td>Cornet- oder Chor-Tono$^{65}$</td>
<td>Freyberg, Dom</td>
<td>1714</td>
</tr>
<tr>
<td>464±</td>
<td>Cornett- oder Chor-Tono$^{66}$</td>
<td>Freyberg, St. Jacobi</td>
<td>1717</td>
</tr>
<tr>
<td>464</td>
<td>Cornet$^{67}$</td>
<td>Eisenberg</td>
<td>1733</td>
</tr>
<tr>
<td>458</td>
<td>Cornet-Ton$^{68}$</td>
<td>Sulzbach</td>
<td>1746</td>
</tr>
<tr>
<td>460±</td>
<td>Cornet$^{69}$</td>
<td>Gau-Odernheim</td>
<td>1771</td>
</tr>
<tr>
<td>466±</td>
<td>Cornett ton$^{70}$</td>
<td>Frammersheim</td>
<td>1775</td>
</tr>
<tr>
<td>466±</td>
<td>Cornet Ton$^{71}$</td>
<td>Gensingen</td>
<td>1779</td>
</tr>
<tr>
<td>460±</td>
<td>Corneton$^{72}$</td>
<td>Morstadt</td>
<td>1786</td>
</tr>
<tr>
<td>460</td>
<td>Corneton$^{73}$</td>
<td>Nieder-Florsheim</td>
<td>1784</td>
</tr>
<tr>
<td>450</td>
<td>Corneton$^{74}$</td>
<td>Kleinich</td>
<td></td>
</tr>
</tbody>
</table>

The frequency averages A-462. It is similar to the most common cornett pitch shown in Graph 1.

A document written before 1681 about the organ at Corvey (Detmold) prescribes that

Die Orgell mug Cornetten Toen sein, so konnen alle musicalische Instrumenten einstimmen.$^{75}$

The organ should be at \textit{Cornet ton}, so that its pitch will agree with every [other] musical instrument.

When Gottfried Silbermann’s organ at the Jacobikirche in Freyberg was finished in 1717, one of the ways it was tested was described as follows:

Ob das Werck in richtigen Cornett- oder Chor-Tono stehe, einige von denen Stadtpoefifer mit Trompeten und Zincken blasen lagen...$^{76}$

[To determine] if the organ stood at standard \textit{Cornet or Chorton}, some of the Stadtpfeiffer tried playing trumpets and cornets accompanied by the organ, and found that it was quite in tune with them....

The instrument was at a-467.$^{77}$

Johann Kuhnau, Bach’s predecessor as Kantor at Leipzig, wrote that \textit{Cornet ton} had been the pitch there as well:

Ich babe aber fast von der ersten Zeit meiner Direction der Kirchen-Musik [at the Thomaskirche in 1701] den Cornet-Ton abgeschaffet, und den Kammer-Ton...eingeführet.$^{78}$

Almost from the moment I took over the direction of church music, I eliminated the use of \textit{Cornet ton} and introduced \textit{Cammerton}..
As late as 1772, Johann Andreas Silbermann wrote,

> In gantz Teutschland ist vor diegem der Cornetthon iiblich gewesen, sonderlich haben sich die Orgelmacher degen gerne bedient, weilen dadurch die großen Pfeffen wenig platz einnernten...aber dieser thon wegen seiner Mlle dem gesang beschwerlich war... \( ^{79} \)

All over Germany, the most common pitch used to be Cornet-ton. It was especially popular among organ builders because the largest pipes took up less room, requiring no unusual lengths. But this pitch was troublesome to singers because it was so high....

That pitch standards used for tuning other instruments like organs had names such as *tuono del corneto di mezo ponto* and Cornet-ton testifies to the consistency of the pitch of cornets. As Douglas Kirk has pointed out, cornets were not the fixers of pitch; they were simply made at certain standards. But although they did not initiate pitch standards, they carried them reasonably faithfully, so they were considered a handy and easily portable pitch reference. It is fortunate for us that cornets were given this role, since once it is possible to determine what their usual pitch frequencies were, a number of other questions about early pitch standards can be approached with more assurance.

Bruce Haynes has been playing early oboes since the 1960s. He taught at the Royal Conservatory in the Hague from 1972 to 1983. He has written a number of articles and a book on his instrument, and is now working on a doctoral thesis on the history of pitch standards.

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**NOTES**

(NB: An asterisk indicates that the information was supplied in private correspondence or conversation)


Innsbrucker Hof hatte nach 1581 einen Großteil seiner Trompeten und Posaunen von... Nürnberg bezogen, während er 1585 Zinken, 1588 eine "Doltana"... und 1591 eine "große Flaut per Concert" in Venedig besorgt hatte.


6. This uniformity was not complete. Praetorius (Syntagma musicum, part 2, De Organographia [1618; reprint, Wolfenbuttel, 1958], p. 15) noted that "Wiewol der Englische Thon an Instrumenten nosh umb etwas / doch ein gar geringes / niedriger ist / welches an ihren Zincken / Schalmeyen oder Hoboyen (wie sies nennen) so daselbst gefertiget werden / zuvernehmen."

"The English pitch, however, is a very little lower, as the instruments made in that country show, for instance cornets or shawms (‘hoboys’, as they call them in England)." Transl. David Z. Crookes, Michael Praetorius: Syntagma musicum II, De organographia, parts I and II (Oxford, 1986), p. 31.

7. Praetorius, Syntagma 2: 35.

8. Tranl. in Crookes, Praetorius, p. 46. I am indebted to Herbert W. Myers (* 23 Mar 1993) for this reference.

9. Cf. the use of this clef for the strumenti acuti (discussed below under "Transpositions").

10. Bartolomeo Bismantova, Compendio musicale (ms., 1677), pp. [103-05].


12. This is almost exactly, by the way, the range of the middle cluster of cornett pitches in Italy in the 16th century (see Graph 1).


15. This interpretation was suggested by Bruce Dickey (* 27 Apr 1994), who added, "In any case I think it must be a whole-step transposition, because half-step transpositions (especially in 1677 with cornetts playing mainly in D major... and C major) would just be too impractical."


17. The sound produced by tapping the playing end of the mouthpiece on the palm.

19. Ralph Bryant (* Jan 1993) and Rainer Weber (cited in Arthur Mendel, "Pitch in Western Music," 24), however, suggest that most players use inappropriate mouthpieces that distort the pitch. This is disputed by other consultants, who believe that mouthpiece design (which can vary considerably) does not significantly influence pitch. Kirk's demonstration supports the latter opinion. Bruce Dickey (*27 Apr 1994) points out that using a "trumpet-style" mouthpiece that is too big for the instrument will produce an effect of "wobbliness."

20. Much of this information comes from Edward H. Tarr's important catalogue ("Ein 'Catalog erhaltenner Zinken," ed. P. Reidemeister, Bas ler Jahrbuch fur historische Musikpraxis 5 [1981]: 11-262). The pitch information in the catalogue is a compilation of reports by a number of different players. Douglas Kirk ("Cornetti and Renaissance Pitch Standards in Italy and Germany," Journal de Musique Ancienne 10, no. 4 [Summer 1989]: 16-22; here p. 22, n. 15) writes, "Although it is well-known that cornetti can respond differently in pitch to different players, I feel reasonably confident of the pitch data represented in Tarr's article. Tarr is a competent player, and tried the instruments together with other good players, among whom was Bruce Dickey. Furthermore, I have played a significant portion of the instruments myself, together with Don Smithers, and our results are very similar to those presented by Tarr."

Tarr divides the present condition of specimens into four categories; the data here includes only the three best of these. Three instruments whose sounding lengths indicate serious aberrations are omitted (New York MM 89.4.1134, Paris E. 581, and Bologna M 1778).

21. These highest pitches may be similar to a level to which Praetorius (Syntagma 2: 15) alluded: "Now there have been some who have sought to raise this present pitch of ours a semitone higher still." ("Es seyn aber etliche gewesen I welche diesen jtzigen unserm Thon noch umb ein Sem ionium zu erhithen /sich unterstehen wollen.") Eng. trans! by Mendel, "Pitch in the 16th and Early 17th Centuries," Musical Quarterly 34 (1948): 24-45, 199-221, 336-57, 575-93. Reprinted in Studies in the History of Musical Pitch (Buren, 1968).

22. In Italy there were organs as high as -D1 (see Bruce Haynes, Pitch Standards in the Baroque and Classical Periods [PhD diss., Universite de Montreal, forthcoming], section 2), so the existence of some cornetts at -D is not surprising.

23. I designate pitches by note names, following a system based on A-440, which is called "-C." A semitone higher is called -C1, a minor third below -C1 is -Bb, etc. A tolerance of 1/4 tone is assumed.


25. Length calculations made by Herbert W. Myers.


27. Patrizio Barbieri ("Chiavette and Modal Transposition in Italian Practice [c. 1500-1837],"
Reccercar 3 [1991] : 5-79) gives a transcription of Adriano Banchieri's (Carte lha overo regole [Bologna, 1601]: 111-36) chart of the twelve modes subdivided into the three instrumental categories, with their appropriate clefs. Strumenti acuti are consistently at pitch and always in G2 clef. Strumenti acuti and
strumenti gnvi are, by the way, an octave apart, recalling Mersenne's grand et petit choeur (see Marc Ecochard, "Les hautbois décrits dans l'Harmonie Universelle de Mann Mersenne: Accord, Classification, Filiation," [unpublished draft, 1993, p. 20]). The division of instruments into three choirs is seen in a number of works by Italian composers contemporary with Banchieri (see Barbieri, "Chiavette," p. 69).


30. Cited in ibid., p. 42. C.f. Thomas Morley, A Plaine and Easie Introduction to Practicall Musick (1597; reprint, London, 1963): "Take an instrument, as a Lute, Orpharion, Pandora, or such like, being in the naturall pitch, and set it a note or two lower it will go much heauier and duller, and far from that spirit which it had before...."


35. Ecochard ("Les hautbois," p. 20) points out that Mersenne's description of recorders hints at the possibility of instruments with six-finger G and six-finger A, that is, instruments tuned a second apart.


37. Based on its characteristic maker's stamp.


41. This organ (made by G.B. Facchetti, 1546) was replaced in 1937 (R. Lunelli, Der Orgelbau in Italien [Mainz, 1956], pp. 386f.). Carl Ellis ("Nachwort des Übersetzers" ["Translator's Afterword"] in Lunelli, Orgelbau, p. 211) gives calculations for pitch of something more than a whole-tone below A-440, which must be different from its pitch when it was built.

43. I have been advised by Douglas Kirk on information from Andrew Parrott that the "non" found at this point in the text as transcribed in Cesari & Pannain (and which renders the sentence nonsensical) does not exist in the original document.


45. For a number of reasons, Morsolino must mean "semitone" for *tuon*. The question is treated in detail in Haynes, *Pitch Standards*, p. 60.

46. Praetorius’ depiction of the mute is more than 13% longer than the curved cornett; a whole tone is about 12%. It is also about 5.6% longer than a good modern cornett that plays at A-440 (* Herbert W. Myers, 11 Feb, 15 Jun 1993).

47. E. Nickel, *Holzblasinstrumentbau*, pp. 338-41. The same entry is found in an inventory for the city dated 1598 (also possibly that of 1609, referred to as *I Secund Zincken*).


49. Praetorius, *Syntagma* 2: 37, 41.

50. Of twenty-eight surviving specimens, seventeen (61%) are at this pitch; eight are at 430-435. See Haynes, *Pitch Standards*, Appendix 3.


55. The distinction of role was certainly not hermetic; the two types of cornett evidently overlapped functions occasionally. Dickey (* 27 Apr 1994) notes that there is music that calls for mute and curved cornetts together. Dickey is skeptical about the notion that a different pitch was associated with the mute cornett, and suggests that the material presented in Graph 2 may for several reasons (mainly insufficient data) give an inaccurate picture.

57. Ibid., p. 74.

58. Barcotto elsewhere in this book uses tuono to mean "semitone," so its meaning is unclear here.

59. G.A. Bontempi (Historia musica [1695; reprint, Geneva, 1976], p. 188 reported that "gli Organi in Venetia di S.Marc... sono un tuono intero più acuti degli altri dell'altre Chiese...." This goes much further than Barcotto, however, who speaks only of "portatili." We may assume that St. Mark's was yet a whole tone above the tuono dei Cornetti.

60. Antonio Barcotto, Regola e breve raccordo (Ms Bologna Cons C-80); cited in R. Lanelli, Collectanea Historiae Musicae 1 (Firenze, 1953): 142-55, art. 9.


62. The translation of clarini humiliati is not certain, but humiliati means soft, and a document from Augsburg from the same period (19 Oct 1697) uses the expression "zwei Cornetisten oder Clarinisten" (cited in Markus Spielmann, "Der Zink im Instrumentarium des Süddeutsch-Österreichischen Raumes 1650 bis 1750," Bernard Habla, ed., Johann Joseph Fux und die barocke Bläsertradition. [Tutzing, 1987], p.128). The mute cornett would make sense in this context, being normally a tone lower than Chor= or Zinck=thon.

63. Praetorius reserved the term CammerThon (although it had other names, such as rechte Thon and Cornettenthon) unambiguously for the higher instrumental pitch.

64. Alessandro Poglietti, Compendium oder kurzer Begriff, und Einführung zur Musica (Vienna, 1676), p. 100.

65. J. Kuhnau, Gutachten über ek Freiberger Domorgel (1714), Staatsarch iv Freiberg, A all/I, 60a, Bl. 59f. Since 1983 at 476; earlier at 474, according to Frank Harald Greg (Die Klanggestalt der Orgeln Gottfried Silbermann [Leipzig, 1989], pp. 109-110) and Werner Lottermoser (Orgeln, Kirchen und Akustik [Frankfurt, 1987, 2: 175 and 1: 41]). Ricercar (RIC 113101) gives 467. In Haynes, Pitch Standards (Section 5-3b), I consider the relation between Cornet-ton and Chorton. The evidence I have found indicates that the former is conceived as a specific pitch level, while the latter is a more general concept (approximately equivalent to "church pitch") that often coincides with -Cl.

66. Werner Muller, Gottfried Silbermann, Personlichkeit und Werk (Frankfurt, 1982), pp. 54, 428; Greg, Klanggestalt, pp. 23, 111; Ulrich Dihnert, Historische Orgeln in Sachsen (Frankfurt, 1980), p. 114. The original pitch cannot be determined, although the restorers believe it is this one.


68. Restoration report.

70. A pipe is marked *Terz Cornett ton*. Bosken, *Orgelbau familie*, p. 53; idem, *Quellen*, p. 302; Forster & Nicolaus (*November 1992*).


77. A dispute about the pitch of the Domkirkes organ at Roskilde in the 1760s was resolved in much the same way; the instrument's maker and its organist proved "with the municipal Stadtpfeiffer, who appeared with 'cornets and trombones,' that the pitch was correct" ("...durch den Stadtmusikanten, der mit 'Zincken and Posaunen' erschienen war, clag die Tonhohe korrekt war"). Cor H. Edskes, "Zur Geschichte der Domorgel," in "Roskilde Domkirkes Orgel" (concert program, 1991), p. 15.

78. Johann Kuhnau, letter to Johann Mattheson, 8 December 1717, published in Johann Mattheson, *Critica Music a*? (1722): 229-39. Among the cornets now in the possession of the Musical Instrument Museum of Karl Marx University in Leipzig are four curved trebles of the type played by the Stadtpfeiffer in the late seventeenth and early eighteenth centuries (catalogue numbers 1564, 1566, 1569 and 4030; apparently of Saxon origin, probably 16th-century, exact dating unsure; see Tarr, "'Catalog,' pp. 136-38). They could be the instruments used by Kuhnau and Bach. All are at A-466. According to Herbert Heyde, three of the instruments belonged together originally, with four others now in other museums (Stadisches Museum, Braunschweig 62, Historisches Museum, Basel 160, and Hohenzollern-Museum, Sigmaringen 4958 and 4959). The latter four are pitched at A-465, 460, 465, and 465.


80. * 1 April 1993.
Appendices

The entries are ordered by century (1st number), pitch (2nd number), and sounding length (= SL; in cm; 3rd number when present). Other data that are included (when known) are present location (a list of museums with their abbreviations can be found at the end of these appendices), museum number, maker’s name, date (16C = 16th century, etc.), city of origin, country of origin, nominal pitch (given as a single letter), remarks, and information sources (bibliography also at end1). Brackets indicate information that is not secure.

Appendix 1. Italian curved cornetts (76)

16 438.64.1 Augsburg: M-M 3004. [? Italy]. A. Tarr 1981: 37.
16 445.61.8 Vienna: KHM 235 (C.246, 8592). 16C, Venice. A. Part of a set that includes also 232-34, all from Catajo (near Padua; owned by the Obizi family). The others are not in condition to give reliable pitches. Tarr 1981: 256.
16 465.57.4 Linz: OL 74. 16-17C, [Italy]. A. Tarr 1981: 143.


16 471.57.6 Verona: AF 13264. !! !! [Bassano, J.], Venice. A. From Catajo; probably from the same workshop as 230 and 231. Tarr 1981: 257; Kirk xi.93.


17 435.61.6 Linz: OL 73. [17C; ? Italy]. A Tarr 1981:143.


17 440+. 43.1 Linz: OL 70. D C'tino. "Etwas höher als 440 (McCann: "Mundstück um 1,00 gezogen") [Somewhat higher than 440 (McCann: mouthpiece pulled out 1.00 cm)] Tarr 1981: 142.


17 464. 57.7 Paris (ex Chambure): 979.2.27. [? 17C, ? Italy]. A. Tarr 1981: 211.

17 465. 57.8 Nuremberg MIR 42. A. Tarr 1981: 184; Kirk xi.93.


Appendix 2. German curved cornetts (23)


16 460. 57.7 Berlin: MM 3065. 16-17C, [? Germany]. A. Impett gives 467 with smaller MP. Tarr 1981: 59.

16 460. 58.2 Vienna: KHM GdM 207. [? Germany]. A. Tarr 1981: 258.


Appendix 3. Mute cornetts (28)

16 411.69.3 Verona: AF 13262. \[? Bassano, J.\], Venice. A. Weber gives 452 [presumably in G].
  252; Stradner 1987: 111.
16 417.69.5 Verona: AF 13263. \[? Bassano, J.\], Venice. A. Weber gives 452 [presumably in G].
16 430.65.1 Brussels: MC 1192. \[? Bassano, J.\], Venice. A. Weber (who restored it in 1974) gives
16 430.73.8 Verona: AF 13256. \[? Bassano, H.\]. Tarr gives 413; one-half step lower than
HAYNES

17 446.64.5 Hamburg: MfHG 1924,205. c1600, Germany or Italy. A. Tarr 1981: 130.

Collections:

Augsburg: MM Maximilian Museum
Basel: HM Historisches Museum, Sammlung alter Musikinstrumente
Berlin: MM Musikinstrumentenmuseum des Staatlichen Instituts fur Musikforschung
Beningen: Buser Ernst Buser (private collection)
Bologna: MC Museo civico
Bonn: BH Beethoven-Haus
Braunschweig: SM Stadisches Museum
Sources Cited in Appendices I-III

Kirk 1989

Kirk xi.93

Lasocki 1983

McCann 1991

v.d. Meir iv.93

Stradner 1987
NOTES TO APPENDICES I-III

1. As will be clear from the entries, most of this list is derived from Tarr 1981.

2. Lasocki (1983) suggested a connection between the large number of instruments with one to three pairs of “rabbit ears” or exclamation marks (!!) and the Bassano family. Kirk (1989: 19) reported a study of all the instruments bearing these marks and proposed that instruments marked !! were by Hieronymous Bassano at Venice, those with !! !! were by his son Jacomo and/or Santo Griti, and those signed !! !! !! were made by members of the English branch of the family (Arthur and Anthony II).