

in the assessment of the length and pitch at the time of deposition), measurement of the acoustical effects of a small insertion in one of the secondary sections, and practical assessment of the effects on performance of mouthpiece type and tube irregularity.

The final archaeological report is currently in preparation and will be submitted to the *Antiquaries Journal*. A further paper, which will give full details of the find's dimension, weights, metallurgy, construction and repairs, will be submitted to this journal.

ACKNOWLEDGMENTS

The writers wish to thank the following for their collaboration: Brian Spencer, Suzanne Keene, Kate Starling, Peter Stott (Museum of London); Mike Cowell (British Museum); Tony Allen (Society of Thames Mudlarks and Antiquarians).

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FILADELFIO PUGLISI

A Survey of Renaissance Flutes

1. INTRODUCTION

'RENAISSANCE flute' is a comprehensive term designating the transverse flutes used in the cultured art music of renaissance Europe. From iconography, early organological citations and the surviving museum specimens found so far, it is possible to say that the renaissance flute is distinguished by certain characteristics:

- (a) It is a consort instrument, made in different sizes, for performing part music.
- (b) It is a keyless flute, with a number of geometrical characteristics peculiar to it, which will be illustrated in this article.

Instruments with these features appear in sources from the early 16th to the second half of the 17th centuries, when the renaissance flute probably existed alongside the baroque-type flute.

The sources we have give a mass of information which is sometimes obscure or contradictory, and this article is an attempt to provide a comprehensive view of the information which can be obtained from the surviving museum specimens. I give below a checklist of the extant flutes known to date, followed by comments on those features common to all flute sizes and a discussion of their specific features size by size.

2. CHECKLIST OF EXTANT SPECIMENS

To make a systematic study of 16th- and 17th-century flutes we must be able to discriminate between the genuine article, fakes, and later flutes of similar type. This is a most troublesome problem.

We have extant flutes of unknown origin and others which form part of documented collections begun in renaissance times. Both documented and undocumented collections may be 'contaminated' by later keyless fifes which are difficult to distinguish as such, or by late 19th-century imitations made during the first wave of antiquarian interest in these instruments, or indeed by recent copies made during the contemporary early music revival.

However, in order to avoid eliminating practically all the specimens we have, we must not be too strict in our requirements. I have therefore considered as sufficient authority for authenticity a reasonable amount of historical documentation or, in its absence, both a similarity to early

iconography and a firemark of 16th- or 17th-century style. It would take a very determined and malicious forger to fake an authentic-looking early firemark, for this would take nearly as much work as to make a flute. Indeed, I have never heard of such a case.

Table 1 lists the forty-three flutes I have so far been able to locate which seem to satisfy the above conditions. This number would probably double, if incomplete specimens were included. However, in order to draw some statistical conclusions, I have not listed these, or others which do not meet the above requirements, such as the three well-known flutes in the Vleeshuis Museum in Antwerp. Another well-known descant (Brussels No. 1063) is still missing from the collection and is therefore not included here.

The surviving flutes range from the approximately two-foot size (tenors) to the three-foot size (basses) with the exception of a small descant in Brussels.¹ The list makes no claim to be complete, and I apologise for any omissions or any mistakes which it may contain, since it is the first published attempt of its kind.

3. SOME COMPARISONS

Table 1 allows us to make some comparisons, starting from the benevolent assumption (nothing better being available) that the surviving instruments form an unbiased sample of the renaissance flute used in the 16th and 17th centuries.

(i) Location

Figure 1 shows the earliest known locations of the surviving flutes I have been able to determine to date. It seems that most of them are clustered around the area of Venice or along the 'Via Tedesca' — the trade route which has, since medieval times, linked Venice to central Europe via the Brenner pass.

(ii) Pitch and Size

The largest group of surviving renaissance flutes is constituted by tenors. An approximate idea of pitch can be inferred from their speaking lengths, and it is therefore useful to compare these.

If we put the flute speaking lengths side by side, as in Fig. 2, we get an almost continuous succession of sizes from about two feet to something over three feet (with the exception of the Brussels descant mentioned above) (see Pl. XI). Since we are dealing with consort instruments, it is of some interest to decide where possible 'basses' end and 'tenors' begin. My personal choice is to consider a flute to be a possible tenor if a bass flute (that is, a fifth below it) could conceivably be related to it. There

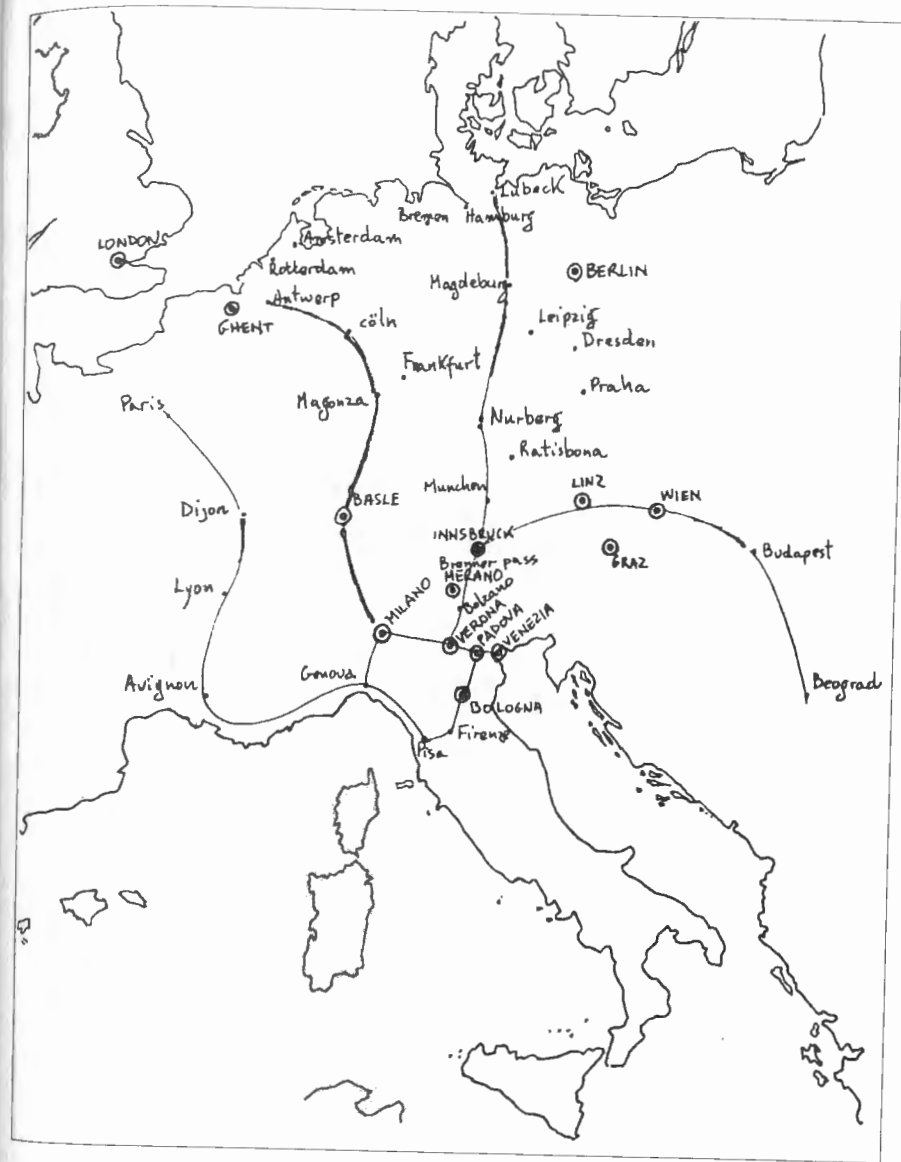


FIG. 1. Earliest known locations of surviving flutes and historical main trade directions between Italy and continental Europe.

is in the Accademia Filarmonica, Verona (A.F.V.) a long tenor, No. 13287, whose bass, though incomplete, has been restored (No. 13281). I believe this bass is the longest which could conceivably be managed without keys, and it is certainly the longest bass which we know to have survived. I will therefore consider this A.F.V. tenor as the longest tenor surviving, as it is difficult to imagine that a playable bass could be constructed a fifth below the next longest flute (Merano, No. 6857) since such an instrument would have to be about four feet in speaking length!

There is a striking predominance of ~A410 tenors, well represented by the A.F.V. flutes (twelve flutes, coming from five collections, out of a total of 24 tenors of all sizes).

(iii) Marks

Flute firemarks are of three kinds: symbols, letters or monograms, and full or abridged names with coats of arms (see Pls. XII and XIII). It is noteworthy that generally the symbol marks are 'in negative' — that is, the shape is impressed into the wood, while the name type of mark is generally 'positive', the letters standing out in relief against the burned background. Name marks are not many: H. VITS, G. VASEL, IA.NE, and, especially important, the RAFI marks.

For dating marks we have only a few references:

- a date 1501 on a flute marked $\begin{matrix} 1501 \\ >< \end{matrix}$ in Vienna (No. GDMF 88);
- Ganassi's references to the makers whose marks were f, A, B in 1535;
- Settala's mark, which is of the same style as RAFI, VASEL, VITS and all the marks showing a name, i.e. an elliptical section with a name, accompanied by a shield with a coat of arms. Since Settala uses this mark on his instruments, we can assume that this style was used in the middle of the seventeenth century;
- all styles of marks can be mixed in the same consort or relate to the same pitches.

Some of the most beautiful renaissance flutes bear the mark RAFI. This mark has several variants, indicating that the RAFI were a family of makers.²

(iv) Bores

The renaissance flute has an essentially cylindrical bore. By dividing the sounding length by the internal diameter, the tenor shows a ratio of between 30 and 33. The modern flute has a ratio of about 30 (the

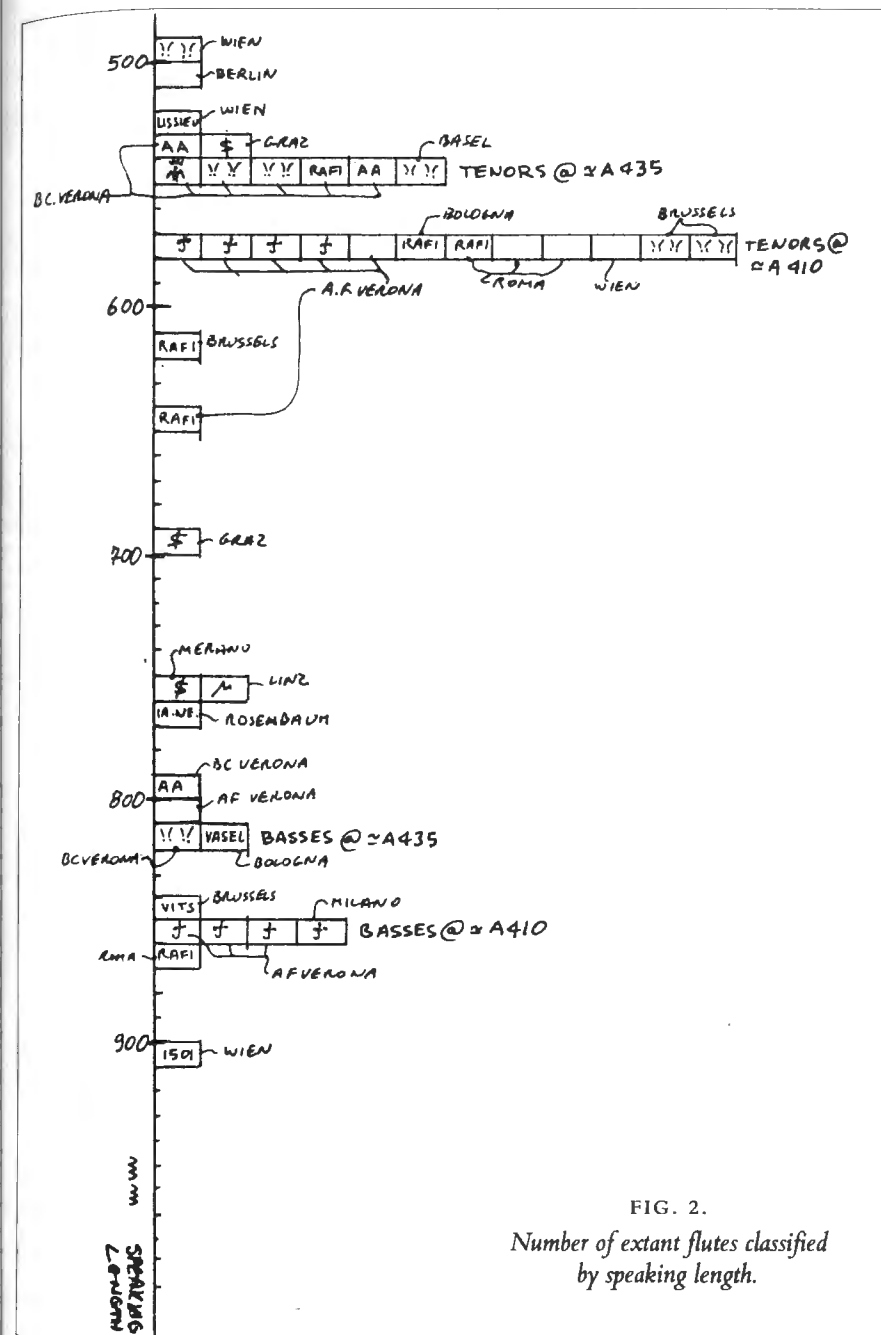


FIG. 2.
Number of extant flutes classified
by speaking length.

slenderer the better for octave tuning). Basses are penalised in this respect, probably because a high tessitura was not expected of them, and a ratio of about 28 is normal for basses.

X-rays of renaissance flutes tell us practically nothing, except to confirm that their bore is almost cylindrical, as found by simply checking with an internal gauge.

Local enlargement to tune up difficult octaves, such as II – IX, must have been common, because the surviving specimens are usually quite good in this respect.³ From personal experience in making copies, I would say that tenor and descant instruments are just bearable with a straight cylindrical bore, while basses are hopeless unless local adjustments are made in the bore diameter.

(v) *Embouchure*

Renaissance flute mouthholes are very small, usually ovoid with the long axis across the flute, and slightly rotated clockwise. This seems to indicate that the flute would be played inclined slightly away from the player, or the player's head rotated towards the flute. The air stream must be extremely well gathered together and precise. Embouchure undercutting is probably more extensive than in baroque usage and varies somewhat — for instance, the Biblioteca Capitolare, Verona (B.C.V.) flutes show a clearly intended asymmetrical undercutting, giving more slant to the chimney portions on the fingerhole side (see Fig. 3). Other flutes, such as those of the A.F.V., have symmetrical undercutting. Special care seems to have been taken with the internal rim of the embouchure, with signs of re-undercutting or rounding.

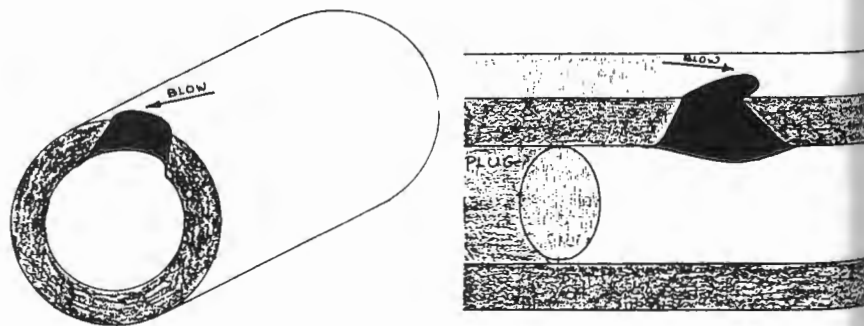


FIG. 3. *Embouchure, Biblioteca Capitolare, Verona.*

(vi) *Tuning*

Modern uneasiness in playing, for instance, the renaissance tenor flute in the key of D arises from considering it as the counterpart of the baroque tenor flute. The latter is a true D instrument, that is, a reasonably tuned scale of D major is expected to be produced by lifting the fingers one by one starting with the bottom note (and with some help from the key when needed). However, the tenor renaissance flute is not tuned to a D major scale, because the renaissance flute originated as an instrument for modal, not tonal music. Two early theoretical sources (Jambe de Fer and Praetorius) point out that flat modes, i.e. keys which include all of the natural notes of the gamut as well as B \flat , are better suited to the renaissance flute than others. This is usually corroborated not only by the surviving specimens, but also by music where the renaissance flute is specified. This is important for the maker, because normally both fork fingers and main notes cannot be made to be in tune. Therefore the maker is faced with the dilemma of tuning the third step upward to a good F and a bad F \sharp or the contrary, and chooses the former combination. When he is faced with the seventh step of the scale (either to get a good B \flat and a flat B \natural , or the contrary) he chooses a good B \flat .

(vii) *A Note on Military Flutes*

In table 1 two historical flutes in Graz have been included. Indeed these are the only two of the instruments that were very probably meant for military purposes and must therefore be studied on their own because of the insistence of early authors in setting military flutes apart as a very special type.

One is a tenor which would sound d $_4$ at about modern pitch, the other is a fourth lower. From the original instrument case, still surviving, it appears that they once belonged to a quartet. They are marked by the master J , of whom another bass exists, in Merano, and were donated by Ferdinand in 1674 to Graz Town Hall, together with other military relics.

Notwithstanding the early authors' (particularly Mersenne's) insistence on the narrowness of the bore and shrillness of sound of military flutes, these two have in effect a larger than usual bore for their length. Being less slender, they are less fit for the third octave and more fit for a powerful and round sounding first octave! Very astonishing is their straight cylindrical exterior, with no particular tapering anywhere, which has been noticed as one of the most characteristic and delicate features of the renaissance flute.

Moreover, the all-fingerholes-open position does not give the semitone below the ○●● ●●● position, but sounds a tone lower. Since the Merano bass, by the same maker, is of much more usual design, it is thought that the features of the Graz flute are intentional. However, the two flutes are too few to generalize upon, and the military type of flute in the 16th and 17th centuries is still practically unknown.

4. FLUTE SIZES

(i) *Descants*

Only one small flute, Brussels No. 1062, survives that may be called a descant. Its very rough workmanship, the absence of a firemark, and its unplayable condition do not make it a reliable specimen to elaborate upon.

(ii) *Tenors*

The tenor is the most important size, both because of the abundance of surviving specimens, and because it survived the abandonment of the 'consort' idea during the second part of the 17th century, and developed into the three-piece baroque flute.⁴ Practically all tenors show a narrowing of the external diameter from the head to the foot (except Graz), a feature shared by the other sizes (giving due consideration to enlargements at the tenon in the basses).

Figure 4 shows the tenor's outside appearance.

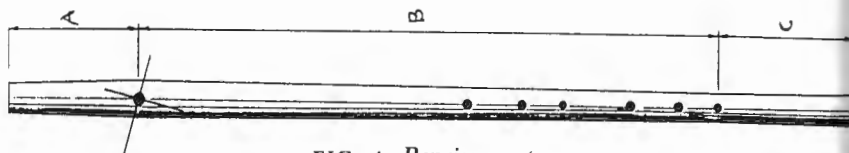


FIG. 4. *Renaissance tenor.*

Since the bore is fundamentally cylindrical, the wall thickness must be controlled by careful tapering of the external diameter. The thickest point is at the mouthhole, where the wall is about 4 to 4.5 mm thick. This is somewhat less than the modern Boehm flute chimney height, and indicates, together with the slenderness of the bore, a preference for a good emission in the high register.

If we examine the wall thickness as it changes from the head to the foot of the instrument, along section B, it tapers down rather quickly until it reaches fingerhole 1, then more slowly until it reaches fingerhole 6. This is sometimes the thinnest point of a flute, about 2 to

2.5 mm. (For section B, there are two exceptions to the above state of affairs, to my knowledge.) Tapering on sections A and C is less carefully controlled, but normally the tapering of both is adjusted so the thinnest parts are at the two ends of the flute.

A tenor is a very light instrument for its size, about 90 to 170 grams, depending on pitch and type of wood. The fingerholes can be divided into two groups of three, with interspaces being about equal within each group. This is for the benefit of players holding the flute to the right or to the left.

Tenor instruments are usually well balanced. The long, inactive section above the mouthhole moves the centre of gravity of the flute to about an inch above hole No. 1, where the hand supports it.

(iii) *Basses*

There is a clear intention to avoid fitting keys on the renaissance flute. Fingerhole spacing is strained to acoustically inconvenient places to accommodate the fingers without the help of mechanical means.⁵

This is carried to extremes in the basses, where holes 3 and 6 have been moved so far towards the mouthhole that they are of a smaller diameter than the corresponding holes in a tenor. The consequence is a very small venting and a weak sound, and the fingers still have to be painfully stretched.

However disappointing it may be, we must conclude that there was some unwillingness to add a key of light design suitable for the thin-bodied renaissance flute. Even the obvious solution of offsetting holes 3 and 6 from the main body axis to ease hand strain is found in only one specimen in the A.F.V. (Of course, this solitary specimen has been heavily copied by modern replica makers.)

However, more than finger strain, I believe the worst problem for players of the very long basses is neck strain and the painful twisting of the near wrist. Still, these instruments were played.

It is worthwhile looking at bass sockets since here we see the only concession to inessential turned decoration in the renaissance flute. The renaissance bass has the socket in the body, rather than in the headjoint like the baroque flute (see Pl. XIV). Some kind of reinforcement is needed, owing to the long distance between the point at which the player's lips push against the flute and the socket, which builds a high bending moment at the socket. The reinforcement is usually a metal band. Nevertheless, the maker sometimes cannot resist adding below the band some kind of wall enlargement in the form of decoration. I see a kind of development from the smooth body of the A.F.V. through the series of rings of the B.C.V. flutes (very similar to Praetorius' drawing)

to the rings of the Linz bass flute, which are similar to those used in the Hotteterre type of baroque flute.

This is a possible indication of an experimental attitude well in accord with 17th-century aesthetics.

5. RENAISSANCE VERSUS BAROQUE APPROACHES TO FLUTE DESIGN

Since the beginning, the one-keyed baroque flute design has been adaptable to the performer's needs. The headjoint can be turned inward to adapt to flute holding habits. Flute tuning can be adjusted by pulling out one or the other, or both, of the intermediate joints. The foot joint can be turned in order to position the key to the length of the player's little finger. Surviving baroque specimens show great differences in mouthhole shapes and diameters. The exterior turning is in no way identical in any of the dozen or so three-piece flutes extant. All these things put together show a different approach to the performer's personality in renaissance flutes than in baroque flutes.

The renaissance flutes convey the idea that there is an optimum design that overrides the maker's and performer's personal wishes. If it is possible to imagine each single baroque flute to be a personal (maker's and performer's) variation on a basic model designed to give a certain type of sound, the renaissance flute suggests a situation where maker's and performer's individuality counts for very little.

With the renaissance flute, once the pitch required is decided upon there is very little left to consider. For instance, whether the player's lips are large or small, the tenor will have a mouthhole between 8 and 8.5 mm. His neck and arm stretch are normally no excuse for putting double holes at the third and sixth fingerholes. The existence of some exceptions (such as the double third and sixth holes in an A.F.V. bass body) confirms the unwillingness to introduce such facilitation in the majority of cases.

This points to what I would call a Platonic view of the instrument. The optimum instrument design of the renaissance flute is independent of the player and justifies itself as an 'ideal' flute.

This point of view needs, of course, further discussion, since it does not hold true for other renaissance instruments, where many different design features are present.

6. CONCLUSIONS

— Surviving renaissance flutes seem to come from a wide spread of time, from the early 1500s to late in the 17th century, but there are still

not enough clues to trace a line of development or to date a given museum specimen judging from design alone.

— An overview of the collections shows almost only tenor and bass sizes, with less of a spread in pitches than one might expect, many flutes having pitch in the region of A410.

— The tenor flute type is especially constant and I wonder if it is possible to speak of any true development in tenor design during the Renaissance. The bass type is a little more variable, and this type will probably give some clues in the future to tracing the history of the renaissance flute.

— Notwithstanding early organological references there is still no way of distinguishing military flutes from those used for art music judging from flute design alone.

— What about the modern player of the renaissance woodwind? The relative uniformity of museum specimens dictates very strict requirements to the replica-maker and leaves no room for personal input from the builder. To use the renaissance flute properly, the player must come to terms with the fact that the instrument is in itself the final balance between musical requirements and human and material limitations and so corresponds exactly to the ideal of 'perfect balance' of the renaissance mind.

ACKNOWLEDGMENT

I thank Mr. Bernard Trebuch of Vienna for giving me the information about renaissance flutes in Austria.

NOTES ON COLLECTORS AND COLLECTIONS

Ambras — Castle near Innsbruck.

Catajo — Castle at Battaglia Terme (Padova, Italy). Obizzi's collection comes from there.

Contarini, Marco (1631–89) — Founder of a music school at Piazzola sul Brenta, Padova, whose musical instrument collection passed later to the Correr family, and was then dispersed between 1869 and 1886 among a number of European museums.

Correr — see Contarini.

Giusti — Veronese Count whose family collection has passed to the Rome Museum of Musical Instruments.

Heyer — see Kraus.

Kraus — A collector in Florence. He and his son A. Kraus published several catalogues of the collection in 1878, 1901, 1910 and 1911 (Florence). The collection then passed into the Heyer Collection in Cologne, which was transferred in 1926 to the Museum of the University of Leipzig.

Marcello, Benedetto — Collected a number of musical instruments, including most of the renaissance woodwinds now in the Rome Museum of Musical Instruments.

Obizzi family — see Catajo.

Snoeck, C. C. (d.1898) — Published in Ghent in 1894 a catalogue of his extensive musical instrument collection. From 1902 the collection was distributed to the Berlin Hochschule für Musik, the Brussels Royal Conservatory and the St. Petersburg Museum of the Imperial Court.

LOCATIONS OF RENAISSANCE FLUTES

Antwerp	Vleeshuis Museum, Vleeshouwersstraat 38, B-2000 Antwerp, Belgium.
Basel	Historisches Museum, Sammlung alter Musikinstrumente, Leonhardstrasse 8, Basel, Switzerland.
Berlin	Musikinstrumentenmuseum des Staatlichen Instituts für Musikforschung Preussischer Kulturbesitz, Berlin, West Germany.
Bologna	Museo Civico, via Musei 8, 40125 Bologna, Italy.
Bologna	Accademia Filarmonica, via Guerazzi 14, Bologna, Italy.
Brussels	Musée Instrumental du Conservatoire Royal de Musique, Place du Petit Sablon 17, 1000 Brussels, Belgium.
Graz	Landeszeughaus, Raubergasse 10/1, A-8010 Graz, Austria.
Leningrad	Musej Muzykalnych Instrumentov Teatra, Muzyki i Kinematografii, Isak. Ploscad 5, Leningrad.
Linz	Oberösterreichisches Landesmuseum, Museumstrasse 14, A-4020 Linz/Donau, Austria.
Merano	Landesfürstliche Burg der Stadt Meran, Galileistrasse, I-39012 Meran, Italy.
Nuremberg	Germanisches Nationalmuseum, Kartausergasse 1, D-8500 Nürnberg, West Germany.
Prague	Narodniho Muzea, Velkoprevorske Nam. 4, Mala Strana, S-1100 Prague, Czechoslovakia.
Rome	Museo degli Strumenti Musicali, Piazza S. Croce in Gerusalemme 9A, Roma, Italy.
Rosenbaum	Dr. Robert Rosenbaum, 154 South Morris Lane, Scarsdale, New York 10583, USA.
Verona	Accademia Filarmonica di Verona, via dei Mutilati 4/L, 37100 Verona, Italy.
Verona	Biblioteca Capitolare, Piazza Duomo 13, 37100 Verona, Italy.
Vienna	Kunsthistorisches Museum, Sammlung alter Musikinstrumente, 1010 Wien I, Neueburg, Austria.

TABLE 1. Checklist of renaissance flutes.

Location	No.	Catalogue No.	Mark	Speaking length (centre of mouthhole mm to bottom)	Provenance
Biblioteca Capitolare, Verona (B.C.V.)	1*	1	Crowned eagle	540	same
	2*	2	!! !!	545	"
	3*	3	!! !!	544	"
	4*	4	C. RAFI	549	"
	5*	5	AA	538	"
	6*	6	AA	540	"
	7*	7	!! !!	816	"
	8*	8	AA	795	"
Accademia Filarmonica, Verona (A.F.V.)	9	13282	f	574	same
	10	13283	f	575	"
	11*	13284	f	575	"
	12	13285	f	576	"
	13	13286	erased	575	"
	14	13287	G. RAFI	640	"
	15	13276	f	855	"
	16	13279	f	851	"
	17*	13277	f	855	"
	18	13278	anonymous	807	"
Museo Civico, Bologna	19	not inventoried	C. RAFI	575	same
	20	not inventoried	B. VASEL	817	"
Conservatorio di Musica, Milano	21	6752	f	854	same
Museo degli Strumenti Musicali, Roma	22	2788	M. RAFI	860	Verona
	23	2789	C. RAFI	577	"
	24	2790	anonymous	573	"
	25	2791	anonymous	573	"

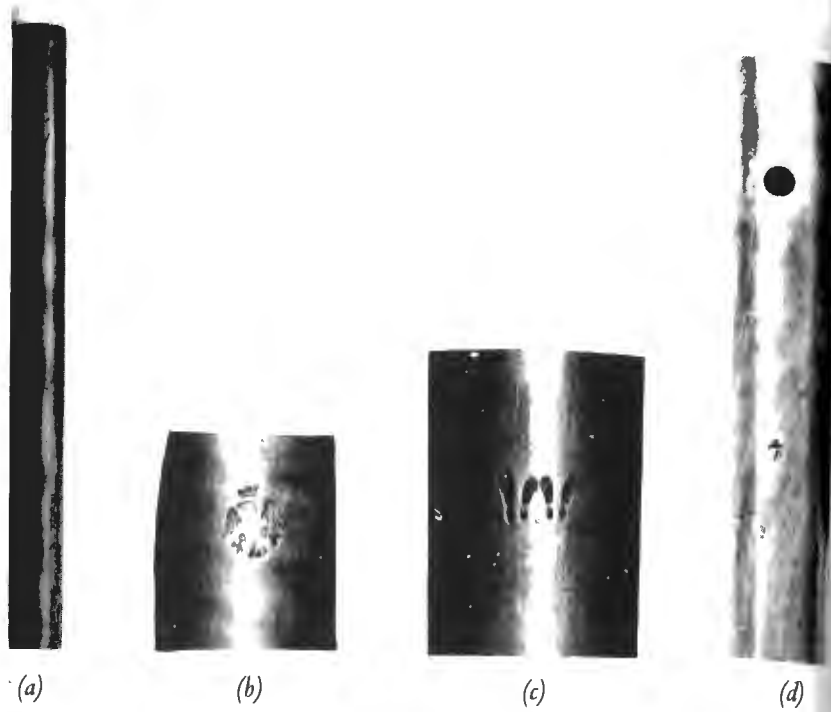
TABLE 1 (continued).

Location	No.	Catalogue No.	Mark	Speaking length (centre of mouthhole mm to bottom)	Provenance
Landesfürstlicheburg Museum, Meran	26*	6857	§	755	same
Musej Muzykalnych Instrumentov	27	437			Snoeck collection, Gand
Teatra, Muzyki i Kinematografii, Leningrad	28	438			
Oberöster- reichisches Landes- Museum, Linz	29	Mu3	√	759	Krems- münster
Kunst- historisches Museum, Vienna	30	185	!! !!	491	Ambras - Innsbruck
	31	186	anonymous	574	Catajo - Padova
	32	187	LISSIEU	526	
	33	GDMF 88	1501 X	904	Vienna
Landeszeughaus, Graz	34	M1	§	691	same
	35	M2	§	530	"
Musikinstru- mentenmuseum, Berlin	36	2663		507	same
Historisches Museum, Basel	37	1907-8	!! !!	542	same
Rosenbaum, New York	38*		IA.NE	764	London
Musée Instrumental, Brussels	39	1062	anonymous	317	Padova-Venice (Correr)
	40	1064	!! !!	573	"
	41	1065	!! !!	570	"
	42	1066	C. RAFI	615	"
	43	2695	H. VITS	848	Snoeck, Gand



PLATE XI

Tenor flute types: (a) A.F.V. 13284 (No. 11); (b) Rome 2790 (No. 24);
(c) Basel 1907-8 (No. 37); (d) Graz M2 (No. 35).
Bass flute types: (e) Linz Mu3 (No. 29); (f) Bologna (B. Vasel) (No. 20);
(g) A.F.V. 13279 (No. 16); (h) Rome 2788 (M. Raffi) (No. 22).

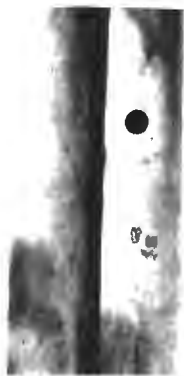


(a)

(b)

(c)

(d)



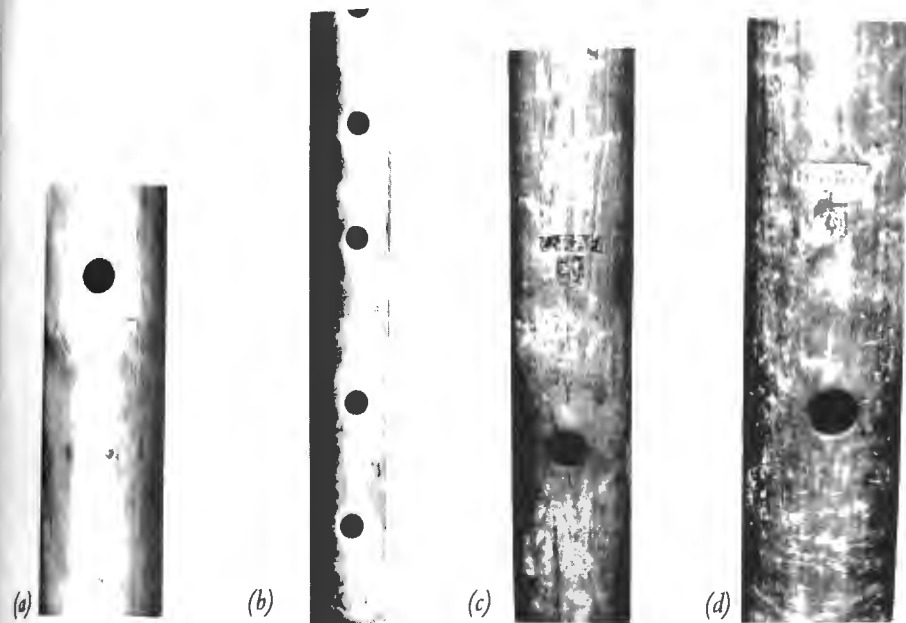
(e)



(f)

PLATE XII

Symbol marks: (a) Graz M2 (No. 35); (b) B.C.V. (No. 1);
 (c) B.C.V. (No. 2); (d) A.F.V. 13284 (No. 11); (e) Linz Mu3 (No. 29);
 (f) B.C.V. (No. 5).

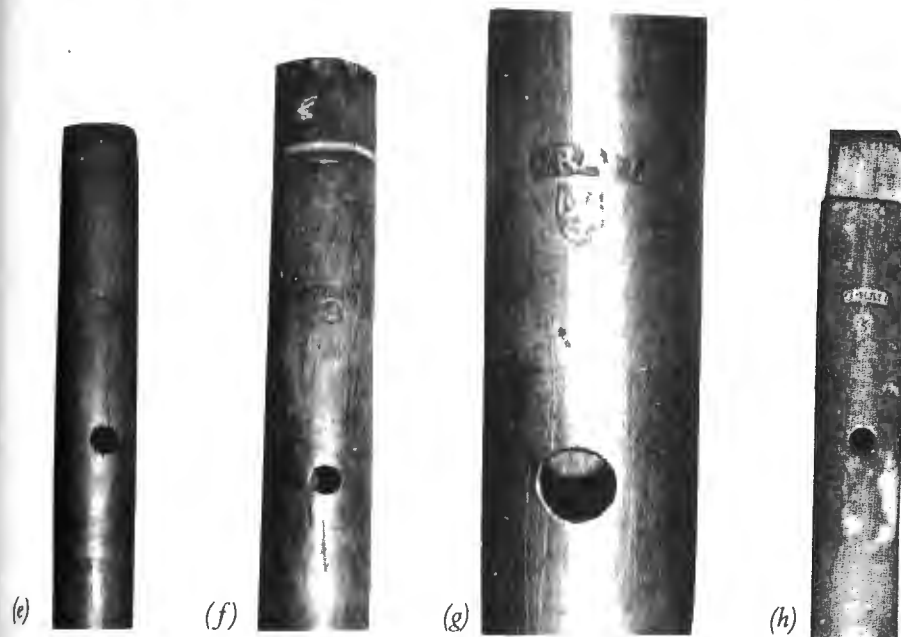


(a)

(b)

(c)

(d)



(e)

(f)

(g)

(h)

PLATE XIII

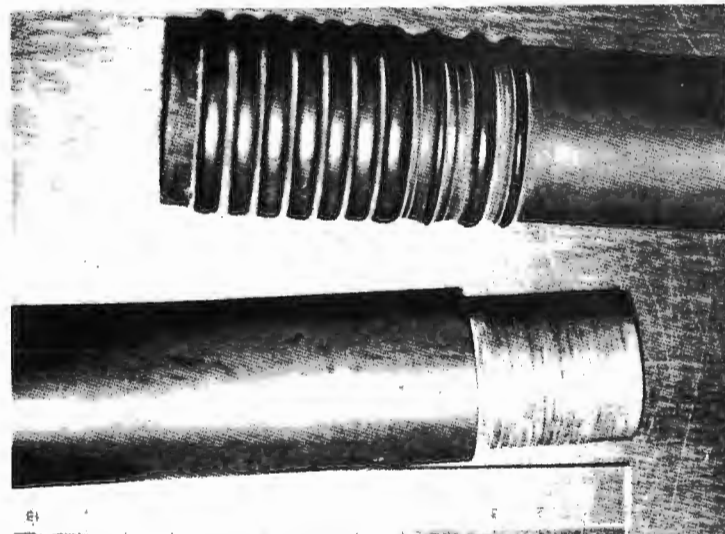
Date and name marks: (a) Vienna GDMF88 (No. 33); (b) Vienna 187 (No. 32).
 Name marks: (c) Rome 2789 (No. 23); (d) Rome 2788 (No. 22);
 (e) Bologna (No. 19); (f) Bologna (No. 20); (g) B.C.V. (No. 4);
 (h) B.C.V. (No. 5).



(c)



(b)



(a)

PLATE XIV
Decorated socket of bass flutes: (a) B.C.V. (No. 7); (b) B.C.V. (No. 8); (c) Linz 175 (No. 29).

TABLE 1 (continued).

- * Nos. 1-8 are described in F. Pughisi, 'The Renaissance Flutes of the Biblioteca Capitolare of Verona', *GSJ XXXII* (1979), p. 24.
- Nos. 11 and 17 in M. Castellani, 'Two Late-Renaissance Transverse Flutes', *GSJ XXV* (1972), p. 73.
- No. 26 in W. Roos, 'The Musical Instrument Collection at Meran', *GSJ XXXII* (1979), p. 10.
- No. 38 in E. Halfpenny, 'Two Rare Transverse Flutes', *GSJ XIII* (1960), p. 38; and 'A Renaissance Bass Flute', *GSJ XXIII* (1970), p. 116.

NOTES

¹ As for the other woodwinds, surviving smaller flutes are exceedingly rare. This is probably because they are easy to steal, since the iconography shows ample evidence of all sizes.

² I know of nine instruments which bear RAFI marks (this list supersedes that given in *GSJ XXXII*, p. 37):

- G · RAFI — I100 Eisenach basset recorder
- low pitch tenor flute No. 13287, d', A370, Accademia Filarmonica, Verona (Checklist No. 14)
- C f RAFI — low pitch tenor flute No. 1066, d', A385, Brussels (Checklist No. 42)
- tenor flute No. 4, A435, Biblioteca Capitolare, Verona (Checklist No. 4)
- tenor flute d', A410, Museo Civico, Bologna (Checklist No. 19)
- C . RAFI — tenor flute No. 2789, d', A410, Rome (Checklist No. 23)
- tenor recorder, No. 10, d', A435, Accademia Filarmonica, Bologna
- basset recorder No. 11, g', A440, Accademia Filarmonica, Bologna
- M · RAFI — bass flute, No. 2788, g', A410, Rome (Checklist No. 22)

All the above marks are accompanied by a shield with a griffin, which is the symbol of the city of Lyons, but not necessarily only that. It is well known that a Claude Rafi was active in Lyons from 1510, and he died in 1553. French poets of the middle of the sixteenth century mention him as a flute maker. However, we also have a much later reference: the antiquarian collector of the Milan area, Manfredo Settala, tells us in the catalogues of his collection of 1664 and 1666, that he owned four consorts of flutes made by Graffi, which may well be G · RAFI. We learn that this G. Rafi is not Italian and he is very famous. (Incidentally, only one of the consort is at normal singing pitch, two being a tone below and one a tone above. Another interesting detail is that a consort has all sizes and not only the basses built in two joints.)

(See also *GSJ XVIII* (1965), p. 126, *Ed.*)

Dutch Wind-Instrument Makers from 1670 to 1820

THIS article attempts to give some insight into the activities of Dutch wind-instrument-makers in the given period, and to place them in a national and international context. To this end information has been drawn from archives and other sources concerning the period 1670–1820 which until now was hardly known. In determining the period, the year 1670 has been taken as a starting point because it was around this time that the production of wind-instruments began to develop in the Netherlands, and we have a fair amount of relevant information from the period at our disposal; the year 1820 has been taken as a finishing point since the mechanisation of wind-instrument production then began to gain more definite form, fundamentally influencing the nature and character of the instruments.

In the 17th and 18th centuries instrument-making flourished remarkably in the Netherlands, and particularly in Amsterdam. Following the fall of Antwerp in 1585 various instrument-makers travelled to the north and found employment there.

The production of wind-instruments in the Netherlands only really got under way with the arrival of Richard Haka, an instrument-maker who came to Amsterdam from London in about 1670. He established a large school of wind-instrument-makers there which existed from 1670 to 1770. Further, highly capable builders with a high productivity were to be found particularly in the area to the east of the rivers IJssel and Maas. There the profession of cabinet-maker and turner was highly respected, and instrument-makers were required to have a thorough grasp of this before they became apprenticed to a maker of wind-instruments. A number of them travelled from this area to Amsterdam, especially after 1700, since in the 18th century musical life there was particularly active.

Wind-instrument-makers in this period too, were often primarily makers of recorders and traversos. This was due to the enormous popularity of these instruments through the centuries. But in addition, particularly under the stimulating influence of Richard Haka, many oboes (The Richters brothers) and bassoons (Aardenberg, Boekhout and Wijne) were made in the Netherlands.¹

Now let us consider the following:

(a) It seems unlikely that Settala would be speaking in such terms of a maker dead for over a century, unless he had indeed been enormously famous. In that case probably some other reference should appear to him in other sources.

(b) Moreover, Settala used in the middle of the seventeenth century, on an instrument he made himself, a type of firemark of a style identical to the Rafi marks.

(c) Except for the Rafi whose initial is M, the instruments by Rafi are in collections probably datable from the last quarter of the sixteenth century (A.F.V.) to the middle of the seventeenth century (Accademia Filarmonica Bologna). All this probably indicates that these members of the Rafi family are much later than the Claude Rafi who died in 1553.

³ The only way to check this would be by non-destructive testing by ultrasound or similar on the wall thickness. There has been an attempt to do this on the Brussels Rafi by the maker Collier of San Francisco, whose results show at least two enlargements that might be intentional in order to tune octaves II/IX and IV/XI. I, personally, know nothing more on this subject.

⁴ The transition from the renaissance flute to the baroque three-piece type, called the Hotteterre type, is one of the most fascinating and obscure in flute history. Jane Bowers, in 'The development of the baroque flute', in *AMIS* 1977, shows the possibility of the Lissieu flute of Vienna being a transitional type. (I should add that in the Diderot and d'Alembert Encyclopedia in Table IX of musical instruments, there is indeed a flute looking extremely similar to the Lissieu.) French engravings of the middle of the seventeenth century show that the flute bears turned decoration. Mersenne's flute shows decoration on the body plus a fingering table from which a conical bore may be inferred, since for high A he gives ●●○ ○○○ and not ●●○ ●●● as is normal with a cylindrical bore. Some eighteenth century fifes still retain the aspect of earlier flutes, as is usual with the fife. For instance, the three fifes Nos. 1076, 2654 and 2700 of the Musée Instrumental, Brussels, and Figure 2, plate IX of the Diderot and d'Alembert Encyclopedia strongly remind me of the Mersenne flute. To add to this superimposing of features, a three-piece flute in Assisi, described in *GSJ XXXVII* (1984), p. 6, is of the Hotteterre type, but with a renaissance looking mouthhole. All the above will probably provide interesting ground for future research.

⁵ Renaissance key-work is very heavy by modern standards, while the flute holding position makes balancing quite exacting. I have the feeling that renaissance makers went to any lengths, even at the cost of torturing the player's hands, just in order to avoid keys. The result is the feather-light bass flute in Rome (No. 2788 — checklist No. 22) that well repays hand strain by the indefinable feeling of holding an A460 bass of about 230g.