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ROBERT AUSTIN WARNER and
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The Baroque Recorders in the Stearns Collection of Musical Instruments

IN 1914, the recorders in the Stearns Collection of Musical Instruments were crowded into a new wall display case along with a vast number of related and unrelated musical instruments. Not an inch of space was wasted; for the Collection, even at that time, was cramped in its new quarters in the second floor foyer of the recently built Hill Auditorium. The kaleidoscopic effect of the strange and exotic instruments must have made a brilliant spectacle but scarcely served to call attention to such instruments as the recorders, which were at that time little more than a curiosity anyway. Furthermore, the information in the *Catalogue*¹ was only mildly provocative. In the decades when the Stearns Collection (and the musical instruments in many other museums) were merely collecting dust, the recorders looked even less attractive. The late fifties, however, brought a change. When the Collection was dismantled, renovated, and reorganized, the recorders were given a prominent place in the new display, not only because of the intrinsic beauty of their turning but also because several of the instruments were obviously important. Nevertheless, it was only within the last few years that time and money became available for the authors to study and restore these instruments and to explore their musical qualities.² Four recorders, a bass and three trebles, are instruments of the middle and late Baroque; of these, one is unique; the others, rare. They are well worth special attention.

The Baroque recorders best known today to scholars and performers are those of English origin, a situation undoubtedly stimulated by the active interest of the English starting as early as 1898 with a lecture by Christopher Welch,³ and the fact that most successful modern instruments were modeled on instruments of English origin. (The Arnold Dolmetsch recorder, created by necessity to replace his lost Stanesby, spearheaded the twentieth-century revival.⁴) When the Germans became interested in the manufacture of recorders about 1925, most of the makers created a simplified 'improved' version.⁵ In

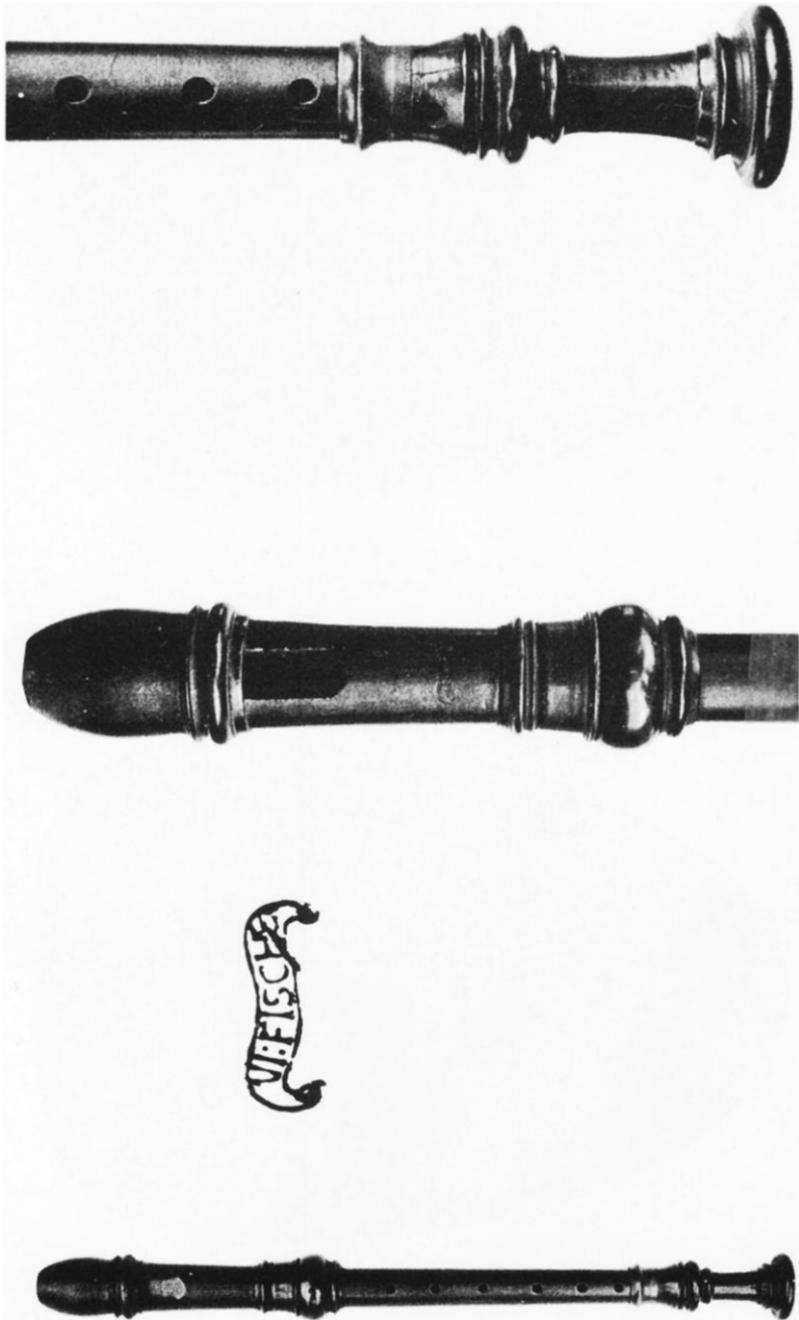


PLATE X *Treble Recorder by J. F. Fische*

spite of the many fine recorders made in recent years by German craftsmen, the outstanding specimens from prominent German collections are never quoted as the point of origin; and only recently has the work of scholars focused on early German instruments, notably on those of the Denners.⁶ The four Baroque recorders in the Stearns Collection have further interest, then, because three represent German makers and one appears to be of French or Belgian origin.

SOUVÉ⁷

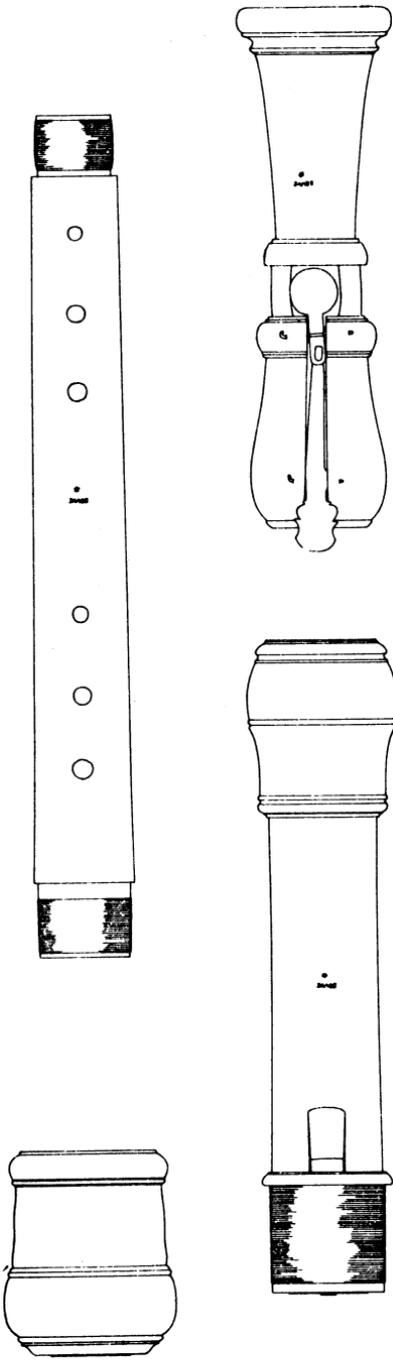
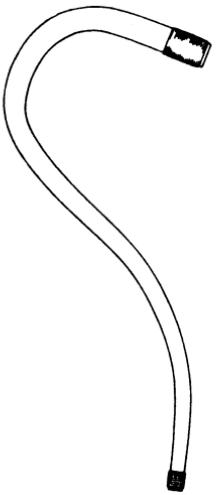
The bass recorder, No. 576 in the *Catalogue*, is not identified there, although all three sections are clearly stamped with the name of the maker and with a five-pointed star as an emblem below.⁸

Since the name Souvé does not appear in Lyndesay Langwill, *An Index of Musical Wind Instrument Makers*, nor in that writer's unpublished supplementary information, it must be considered a unique specimen.⁹ The instrument is in remarkably good condition in spite of numerous worm holes, all of which were carefully filled at an early date. The wood is maple, dyed black, the dye having partially worn off in the areas of greatest handling and on the bulges, leaving a light and slightly reddish brown color. On the lip and under the single key, however, the typical amber of maple can be seen. The turning and general design is exquisite and resembles in certain respects instruments of Rottenburgh, a relevant specimen for comparison being a superb bass recorder preserved in the Gemeentemuseum at The Hague.¹⁰ The pitch is F approximately one-half step below A 440; the useful range, one octave and a sixth.

The blow pipe is of brass entering the head vertically from the top. It resembles a rather large Baroque bassoon bocal, even to the inclusion of a small speaker hole on the side. Bocals were commonly used for blowpipes on Baroque bass recorders. The bend of the crook is consequently formed with a gentle contour rather than the relatively abrupt U-shape characteristic of the true blowpipes of bass recorders. The ivory mouthpiece is reminiscent of those used on the flageolet and may have been added at a later date.

The head of the instrument is remarkably similar to the previously mentioned Rottenburgh bass. The block, black with age, is original and still provides the instrument with a good voice. Looking from the top, the curved windway is approximately two millimeters in thickness and tapers to about one millimeter at the window. The head ends in a wide bulge providing strong evidence of its origin among the earlier of the recorders influenced by the Hotteterre family. Notable in the middle section and the foot are the large holes widely undercut with

SOUVE *



Bass Recorder by SOUVE

a gouging tool and left with no attempt to smooth the inside surfaces.

The turning of the foot is typical from the goblet-shaped bulge at the top to the expanded 'bell' at the bottom. (There is no strut.) The key is typical in its general functional design and unique, for its slightly asymmetrical shape reveals handwork not controlled by a set pattern. The tone hole cover is a simple round plate, somewhat imprecise in its circumference. The end of the stem where the finger falls lacks the projections found on the usual swallow tail or butterfly 'wing'. Possibly a 'wing' could have broken off and the other 'wing' then removed for the sake of appearance; or just possibly, the design may have simply departed from the historic pattern. As Hermann Halbig has mentioned in his thorough description of the early open-standing key:

Die äussere Form, des Stieles gewährte den Instrumentenbauern ein reiches Betätigungsfeld für Fantasie und künstlerischen Geschmack. Es finden sich wohl kaum Klappenstielformen, die einander genau gleichen. Selbst die Erzeugnisse ein und desselben Instrumentenbauers sind in der Form meist voreinander verschieden.¹¹

The exterior form of the stem furnished the instrument builder a rich field of activity for fantasy and artistic taste. Indeed, there are to be found scarcely any forms of key stem that are exactly alike. Even the products of one and the same instrument builder are often different in form.

The present restoration has replaced the original worn leather pad and added a tiny covering of leather at the end of the stem where pressure on the extension of the plate section in closing the key caused an irritating noise. The click, inherent in the design of the early open-standing key, is now negligible; in fact, the key is efficient in its operation, its fragile mechanism well protected by the complementary goblet shape of the top of the foot.

The tone of the Souvé is nasal, delicate, and beautiful. The sound is of moderate intensity, requiring little wind pressure for the tones within its normal range, which is, incidentally, small compared to the more advanced Denner and Rottenburg instruments. Above *d''*, however, the notes that are possible must be articulated with a strong 'whoot', except for *g'''* which still emerges with ease. Although the design is similar to that of Hotteterre's instruments, the fingering does not demand the buttress technique. It emerges, in fact, as the pattern considered normal today for Baroque recorders. Nevertheless, the various factors of range, design, and workmanship combine to place its origin in a period of about 1680 to 1720. The instrument was obviously used extensively in its time as shown by the wear patterns on the finish. Furthermore, it has been treated with care. The Souvé remains an excellent if not an outstanding instrument of its type.

FISCHE

The oldest of the three treble recorders is one bearing the label of J. I. (or possibly U.) Fische on the head section (Plate X). Another instrument of his creation is found in the Claudius Collection in Copenhagen. The Stearns Fische, listed as No. 507 in the Catalogue, is attributed to J. L. Fischer and described as an eighteenth-century boxwood recorder in A-flat.¹² This brief information is wrong in three respects: although some doubt might be expressed concerning the initials, which are too closely carved into the scroll for clarity, there can be no doubt that the surname is Fische rather than Fischer; the instrument is made of plumwood rather than boxwood; and its pitch is approximately G-flat, implying a treble in G in the customary Baroque chamber pitch for woodwind instruments.

The head of the Fische is beautifully formed with a relatively short beak and a prominent bulge at the socket. The turning in general produces a fairly elaborate and a nicely proportioned design, truly Baroque in its flamboyant curves. The tapering of the windway is normal and the block original. The amount of air which could pass through was so small, however, that it was necessary to enlarge the windway slightly in the process of restoration. The original free flow of air had obviously been restricted by the changes in the instrument over the years. Special care was taken not to enlarge it beyond the intentions of the original maker, and actually little increase of volume was attained.

The middle section contains a small knot approximately behind the fourth hole, which shows on the interior surface as a slight irregularity. The holes are only moderately undercut.

The foot shows an excellent example of competent and contemporaneous repair. The prominent bulges in the plan of this profile call for a proportionate swelling at the joint. Two cracks extending from the rim of the socket to the beginning of the flare of the bell, however, reveal an early problem with the instrument. Whoever repaired the foot carefully reduced the bulge in size, then capped it with a complete ring of horn to make a secure but unobtrusive reinforcement.

The tone of the Fische is small but sweet, responding best with a relatively strong wind pressure. Several tones require unusual fingering for the best intonation; in many cases but by no means always, the buttress fingering principle works. Tones above d''' become somewhat strained; tones above g''' are either treacherous or impossible.

The design of the turning on the Fische suggests an instrument built in the early Nuremberg tradition, showing more structural similarities to the instruments of Johann Christoph Denner (1655–1707) than to

those makers of the next generation. The use of plum wood again gives a clue to its age and place of origin. J. C. Denner and other early German makers frequently used plum wood. Furthermore, its pitch in G follows the early German tradition revealed in Virdung, Agricola, and Praetorius, strengthening the evidence of its early date.¹³ Although this instrument would have been ineffective in large ensembles, it undoubtedly fulfilled with grace a more modest function in smaller groups and solo performance.

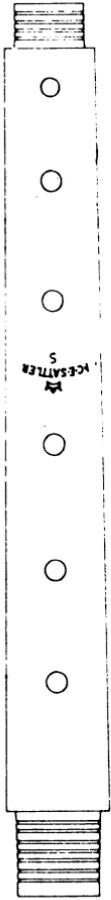
SATTLER

A finer instrument is the specimen by Johann Cornelius Sattler, No. 505 in the Collection and correctly labelled in the *Catalogue*. According to Langwill, a Sattler recorder is listed in Stockholm as No. 162 in the Musikhistoriska Museet and oboes of his make are found in the Deutsches Museum of Munich (No. 18868); but the Stearns Sattler appears to be unique in the United States.¹⁴ The turning is distinctive and elegant, distinguished by its relatively short beak and thick bell. The instrument bears a worn but distinguishable label on the head and center sections, the name appearing below a crown with an S in a different stamp below. Only the crown is found on the foot.

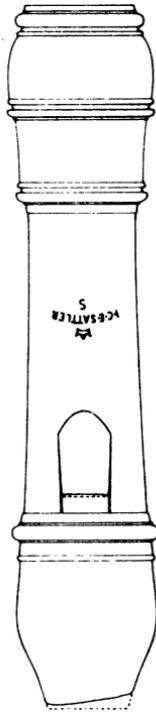
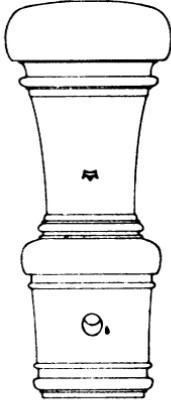
At some time in its history, this instrument had been badly damaged. The beak was broken off, the labium cracked, and a crude new block inserted. Nevertheless, the instrument showed excellent workmanship and made the repair of this delicate area in the head well worthwhile. The recorder is made of boxwood aged to a golden amber. Its pitch is in F about a half-step below A 440.

The head has moderate bulges in the top and the bottom. The mid-section shows excellent workmanship, the finger holes only slightly undercut. The turning of the foot balances that of the head beautifully, and its single hole is bored obliquely.

Although the tone is weak below *b-flat*''', beginning with that note, the instrument projects well with a full, somewhat reedy quality. The high notes are available to *c''''*, although no fingering will produce *a'''*, and the notes above the latter pitch are shrill. The instrument was perhaps designed to use Hotteterre's buttress fingering, since the ring finger of the right hand is frequently demanded for the best tone and the purest intonation and since it can be frequently used at other places without audible effect. The instrument is remarkable not for its power but for the ease in playing in its upper register. It is tempting to speculate that this recorder may have been even more effective when it was new. In spite of painstaking restoration, the instrument may still be different from its original condition due to shrinking of the




I.C.E. SATTLER
5



Treble Recorder by I. C. E. SATTLER

wood over the years. Radical changes in the voicing and bore, however, were not appropriate in restoration, when the object was the preservation of a rare original.

The fascination of the Sattler is perhaps as much in its association as in its intrinsic merits. Johann Cornelius and Gottfried Sattler are known to have made woodwind instruments in Leipzig between 1718 and 1745,¹⁵ dates significantly overlapping Bach's residence in that city (1723–1750). Arnold Schering gives a detailed and fascinating description of the flourishing industry in instrument making there. Wind instruments were needed for both military music and also for municipal ceremonial functions.¹⁶ In cantatas and larger choral forms composed for the St. Thomas church, Bach sometimes required the recorder. The reconciliation of pitch between the woodwinds and the organ was accomplished by transposing the continuo to a suitable key.¹⁷ Was Sattler's instrument used for performance by Bach in Leipzig? No one knows, but it has qualities in its high register capable of projecting in the ensemble for which Bach scored, and it may have been the medium for the pastoral quality which Bach so often associated with the recorder.

DENNER

It is equally possible that the recorder by Jacob Denner (1681/2–1735), No. 506 in the Stearns Collection might have been used by Bach's musicians; for Doppelmayer, Walther, and others indicate that instruments by the Denners were eagerly sought far and wide.¹⁸ Musicians might well have brought a Denner recorder to Leipzig in spite of the flourishing productivity of the local industry there, and furthermore they might have used Denner's instruments as well in Mühlhausen, Cöthen, or Weimar. In addition, the Denner instruments indeed might have been used for performances of the music of Telemann and other famous Baroque composers.

Since the Stearns' Denner has been the subject of a previous article by the present authors, it will not be necessary to treat it in detail.¹⁹ It will be recalled, however, that the head of the Stearns specimen was not original, having been replaced in the eighteenth century by someone who may indeed have been familiar with the original head. The important specifications differ little from a similar instrument now owned by the Musikhistorisk Museum at Copenhagen (No. 134). Fortunately, von Huene was permitted to take careful measurements and make line drawings of the Copenhagen Denner, so it was possible for him to copy an original Denner head for the Stearns instrument. Demonstrating the marked individuality among existing Baroque

recorders, the restored Stearns does not respond in the same way as the Copenhagen specimen, even with the replica of the Copenhagen head. It is nevertheless a superb instrument in its own right, capable of expressing all the sensitivity and nuance of the music of the high Baroque and representative of the product of one of the greatest of historic recorder makers.

OTHER RECORDERS IN THE STEARNS COLLECTION

The Stearns Collection also contains three recorders which date from the nineteenth century, when the instrument had regressed from its artistic height to become either a folk instrument or a toy. Two French instruments, No. 503 and No. 504, are interesting in their evidence to the decline of an art instrument. One was made by Prosper Colas, who is listed by Langwill as the maker of five small bagpipes and a trombone in the Cassadesus collection in Barcelona.²⁰ A more interesting instrument is a four-keyed beak-flute, No. 508, made by Carl Kruspe, Jr. of Erfurt in the late nineteenth century. Although Kruspe had won honors as a woodwind instrument maker, his beaked flute can hardly be considered a recorder in the normal sense but rather displays traits common to the English flageolet, which was still in use at that time.²¹ Such well-made instruments, along with similar hybrids, are numerous enough to merit more research than they have hitherto been accorded.

CONCLUSIONS

The restoration and study of the recorders of the Stearns Collection has been a worthwhile project, for it brings to light Baroque recorders which are unique in the United States and one which is apparently unknown anywhere. Although the unknown makers must rank no higher than the many competent craftsmen of the period who made their contribution to society without attaining great importance, their instruments nevertheless remain as a witness to the development and growth of both craft and artistry. The Sattler and particularly the Denner illustrate the Baroque recorder at the height of its development as made by master craftsmen. The instruments would be important if they were mute. That they can now be played makes them still more significant; for, with the reservations noted above, we can duplicate the musical resources of such composers as Bach and Telemann as far as recorders are concerned. With the revival of the magnificent literature written for recorders, it becomes increasingly worthwhile and gratifying to explore the beauties of this music with the contemporaneous instruments as the performing media. In spite of the problems engendered by changes in pitch standards, in tuning systems, and

in individual approaches to fingering, articulation, and breath control, a few discerning artists have found a richly rewarding experience in the return to the original instruments or their carefully constructed replicas. At the very least, a first hand acquaintance with the products of the great craftsmen of history can only yield depth and understanding to the art of playing the recorder.

APPENDIX

The Fingering Charts

The charts given below demonstrate the differences in fingering patterns among the three treble instruments. For easy comparison, all were considered in *f'* even though they varied in pitch. Disregarding trill fingerings and those designed for special uses, the diagram shows the fingerings which produce the best tone from the standpoint of purity and intonation. No distinction is made between enharmonic notes, the use of sharps and flats merely reflecting the most frequently indicated chromatic inflections. The full range from *f'-c''''* is provided, even if certain notes are impractical because of quality or response to articulation. In common with many charts, *o* indicates the thumb, and the seven digits represent the finger holes from top to bottom. The hyphens show uncovered holes. Since none of the instruments have double holes, the slash through a figure indicates either (1) the pinching of the thumb or (2) the shading or partial coverage of the affected finger-hole. As every recorder player knows, these indications are inexact, the amount of pinching, shading, and coverage differing widely between notes and varying in relation to breath pressure; and of course, the distinct but frequently subtle modifications of articulation and force of breath, so necessary for good response and fine intonation, are impossible to express within a chart. Numbers in parentheses indicate optional usage. Wherever possible the buttress finger (6) was added following the example of Hotteterre. Some of the fingerings, for example *b^b'* and *c[#]'* may not have been common usage, but offer the best intonation according to equal temperament. The usual fingering *o 12-4* for *C[#]'* may have been acceptable to baroque ears but sounds flat today and therefore was not listed. With six as the most frequent option, the implication of the buttress technic is obvious.

The differences between the three instruments belie any completely standard Baroque prototype. Nevertheless the fingering for the Souvé is omitted, since its pattern throughout its usable range at least contains no surprises.

	Fische	Sattler	Denner
I <i>f'</i>	o 123 4567	o 123 4567	o 123 4567
II <i>g'</i>	o 123 456	o 123 456	o 123 456
II \sharp <i>g\sharp'</i>	o 123 456	o 123 456	o 123 456
III <i>a'</i>	o 123 45	o 123 45	o 123 45
IV \flat <i>b\flat'</i>	o 123 4-6	o 123 4-6(7)	o 123 4-5(7)
IV <i>b'</i>	o 123 -567	o 123 -567	o 123 -56(7)
V <i>c''</i>	o 123	o 123	o 123
V \sharp <i>c\sharp''</i>	o 12- 45(6)	o 12- 45(6)	o 12- 45(6)
VI <i>d''</i>	o 12- -(6)	o 12- -(6)	- 12- -(6)
VII \flat <i>e\flat''</i>	o 1-3 -56	o 1-3 -56	o 1-3 -56
VII <i>e''</i>	o 1- -5(6)	o 1- 4-(6)	o 1- -(6)
	o -23 -567	o -23 -56	o -23 -56
I' <i>f''</i>	o -2- 4-6	o -2- 4-6	o -2- -(6)
		o -2- -56	
I \sharp ' <i>f\sharp''</i>	o	o	o
	- 12- -(6)	- 12- -(6)	- 12- -(6)
II' <i>g''</i>	- -23 -(6)	- -2- 4-(6)	o -2- (4)-(6)
		- 123 4567	- 123 4567
II \sharp ' <i>g\sharp''</i>	- 123 456	- 123 456	- -23 456
III' <i>a''</i>	o 123 45	o 123 45	o 123 45
IV \flat ' <i>b\flat''</i>	o 123 4-6	o 123 4-6	o 123 4-7
			o 123 4-6
IV' <i>b''</i>	o 123 -5	o 123 -5	o 123 -5
V' <i>c'''</i>	o 123	o 123	o 123
V \sharp ' <i>c\sharp'''</i>	o 12- -5	o 12- -5	o 12- -5
		o 123 4567	o 123 4567
VI' <i>d'''</i>	o 12	o 12	o 12
VII \flat ' <i>e\flat'''</i>	o 12- 456	o 12- 4-6(7)	o 12- 456
		o 12- -567	o 12- -56(7)
VII' <i>e'''</i>	o 12- 45	o 12- 45	o 12- 45
I'' <i>f'''</i>	o 1- 45	o 1- 45	o 1- 45
I \sharp '' <i>f\sharp'''</i>	o 123 4567	[>] o 123 4567	o 123 4567
II'' <i>g'''</i>	o 1-3 4-6	o 1-3 4-6	o 1-3 4-67
II \sharp '' <i>g\sharp'''</i>	o 1-3 -67	o 12	o -23 -56
		o -23	
		o -2 or	
III'' <i>a'''</i>	o 12	o 12	o -2(3)
IV \flat '' <i>b\flat'''</i>	o 123 456	o 123 4567	o 123 4567
IV'' <i>b'''</i>	o 12- 4	o 1- 45	o 12- 45
			o 12- 45
V'' <i>c''''</i>	o 1	o 1	o 1- 4

NOTES

¹ Albert A. Stanley, *Catalogue of the Stearns Collection of Musical Instruments* (2nd ed.; Ann Arbor, Michigan: The University of Michigan, 1921).

² The Horace H. Rackham School of Graduate Studies of The University of Michigan provided Warner, Professor of Music and Curator of the Stearns Collection of Musical Instruments, with a research fellowship and a grant to pay for restoration of Stearns Collection recorders and for other expenses incurred in this study. Von Huene, a Boston maker of historical woodwinds, agreed to restore the instruments. Von Huene's recent fellowship from The John Simon Guggenheim Foundation had allowed him to make detailed studies of numerous recorders in European museums, consequently providing him with information invaluable in the restoration and study of these instruments. The present article is the second resulting from this study, the first being, "A Jacob Denner Recorder in the United States of America," *GSJ*, XXI (1968), 88-95.

³ "Literature Relating to the Recorder," *The Proceedings of the Musical Association*, XXIV (1897-98), 145ff. Edgar Hunt, *The Recorder and its Music* (London: Herbert Jenkins, 1962), p. 130f presents a brief résumé of this and other early scholarship related to the recorder.

⁴ Carl Dolmetsch, "English or German Fingering: Which?," *Hausmusik*, XV (1951), p. 156. Hunt, *op. cit.*, p. 131f, however, refers to the lost instrument as a Bressan.

⁵ Hunt, p. 132ff, summarizes the development of the "German" fingering system. The controversy is highlighted in two articles in *Hausmusik*, XV (1951), 156ff, by Carl Dolmetsch, *op. cit.*, attacking the "German fingering," and by Peter Harlan, "Die Entstehung der neuen Griffweise," defending it. Significant in this context is the statement of Harlan, p. 158, that he had obtained a Denner from Sachs and that he possessed the first replica of this instrument. He rejected the fingering system, however, as an error of early flute makers, p. 158. Later, according to a conversation between F. J. Giesbert and von Huene in May, 1969, Harlan stressed the "German fingering" as a means of making the recorder more accessible for playing folk music and admitted a careless attitude in his earlier consideration of Baroque fingering.

⁶ Cf., for instance, Phillip T. Young, "Woodwind Instruments by the Denners of Nürnberg," *GSJ* (1967), 9-12; Horace Fitzpatrick, "Jacob Denner's Woodwinds for Goetweig Abbey," *GSJ* (1968), 81-87; and Warner and Von Huene, *op. cit.* Note, however, Dietz Degen, *Zur Geschichte der Blockflöte in den germanischer Ländern*. (Kassel: Bärenreiter, 1939).

⁷ A vertical line follows the letter e on each impression made by the stamp on the instrument. Since the spelling would seem to imply an accent acute, it is tempting to interpret this line as a misplaced diacritical mark. It is more likely, however, an impression made by the end of the stamp. The use of the accent acute on the e, then, is based on the authors' assumption of national origin of the name and the recorder.

⁸ p. 90.

⁹ (2nd ed.; Edinburgh: Published by the Author, 1962) and a personal letter

to Warner dated June 30th, 1967. The present writers are indebted to Langwill for his courtesy in checking his unpublished data in a search for this instrument and for other information relevant to the Stearns Collection instruments.

¹⁰ For contrast and comparison in various details, see Eric Halfpenny, "The Bass Recorders of Bressan," *GSJ*, VIII (1955), 27–31; and "Technology of a Bass Recorder," *GSJ*, XV (1962), 49–54. A Johann Christian Denner bass, reproduced in Hunt, *op. cit.*, Plate XV, also bears resemblances in exterior design. The Stearns Collection contains an oboe of Rottenburgh, No. 667, that compares in general conception of the profile.

¹¹ Hermann Halbig, "Die Geschichte der Klappe an Flöten und Rohrblattinstrumenten bis zum Beginn des 18. Jahrhunderts," *Archiv für Musikwissenschaft*, VI (1924), 35.

¹² p. 81. The remaining Stearns recorders described in this article are listed on the same page.

¹³ Hunt, for instance, shows anonymous boxwood trebles pitched in G with similarly rounded beaks located in the Historical Museum at Basel (Plate XIV) and the anachronistic trebles is this key by Heironymous Kynsker (*ca.* 1700), found in the German National Museum at Nuremberg (Plate VII), but he labels none of the numerous other trebles with this pitch. The G treble recorder seems to have been retained longer by the Germans than by makers from other countries.

¹⁴ Langwill, p. 102.

¹⁵ Arnold Schering, *Musikgeschichte Leipzigs*, II (Leipzig: Fr. Kistner & C. F. W. Siegel, 1926), 296.

¹⁶ *Ibid.*, p. 295ff.

¹⁷ Cf. Von Linde Hoffer-Winterfeld, "Die Blockflöte in den Kantaten J. S. Bachs," *Hausmusik*, XVII (1953), 106–116. See also Hildemarie Peter, *The Recorder: Its Traditions and its Tasks*, trans. Stanley Godman (Berlin: Robert Lienau, 1953), p. 57, and Sanford Terry, *Bach's Orchestra* (London: Oxford University Press, 1932), p. 155ff.

¹⁸ The original information on the Denners found in Johann Gabriel Doppelmayr, *Historische Nachricht von den Nurnbergischen Mathematischs und Kuntstlern* (Nurnberg, 1730), p. 305, forms the basis of the article on I. C. Denner in Johann Gottfried Walther, *Musikalisches Lexikon oder musikalische Bibliothek* [1732], Faksimilie-Nachdruck, ed. Richard Schaal (Kassel: Bärenreiter 1953), p. 202, who quotes Doppelmayr directly. Other sources base their information on these. Kurt Reinhard, "Johann Christoph Denner," *MGG*, III, 192, however, contributes some new information.

¹⁹ Warner and Von Huene, *op. cit.*

²⁰ p. 20.

²¹ Langwill, p. 64.