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## A Bass Clarinet by the Mayrhofers of Passau

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A UNIQUE and extremely important woodwind is in the Musikinstrumentenmuseum of the Munich Stadtmuseum, a collection not yet as well known as it deserves to be. I first saw the instrument in 1975 and have since made two preliminary reports about it, the first as part of a paper given at the AMIS meeting at Yale in 1978 and the second at the CIMCIM meeting in Leipzig in 1979. Both reports offered only a conjectural analysis of the unusual construction of the instrument and promised a more detailed study to come, pending an opportunity to have full X-ray photographs made. These were necessary since the instrument body is covered with a thin binding of leather in cornetto fashion, obscuring seams and joints in the curved wooden tube. It has now been possible to commission such X-ray photographs and therefore to offer this final report, accompanied by the photographs, which are reproduced here for the first time.<sup>1</sup>

This is one of four known instruments which bear the stamp "ANT. et MICH. / MAYRHOFER / INVEN. & ELABOR. / PASSAVII," as shown in

1. I am grateful to the University of Victoria and to the Social Sciences and Humanities Research Council of Canada for a grant for making these photographs. I am pleased to acknowledge as well the kindness of Dr. Manfred Hermann Schmid, Director of the Musikinstrumentenmuseum of the Munich Stadtmuseum, for allowing me to examine this instrument on many occasions and for permission to have the X-rays made and reproduced here (figs. 5-8) along with regular photographs of the instrument (figs. 3 and 4). The X-ray photographs were prepared in the facilities of the Bayerisches Nationalmuseum, Munich, with the generous cooperation of its director, Dr. Georg Himmelheber. Thanks are also expressed to Dr. John Henry van der Meer, Germanisches Nationalmuseum, Nuremberg, for permission to reproduce the photographs of the Mayrhofer basset horn shown here in figures 1 and 2. I am also indebted to my colleague, Prof. Jesse Read, for helpful comments in the preparation of this study.



FIGURE 1. Stamp on kasten of Mayrhofer basset horn, Germanisches Nationalmuseum, Nuremberg (MI 133).

figure 1. All four are low clarinets with a curved “sickle-form” tube bound with thin leather. Three of the four specimens have been recognized for some time as probably the earliest basset horns and have been dated approximately 1770. One is the instrument labeled MI 133 in the Germanisches Nationalmuseum, Nuremberg (fig. 2); another is now in the Oberhausmuseum, Passau, the gift a few years ago of the Museum für hamburgische Geschichte, Hamburg<sup>2</sup>; and the third is now in the collection of the Beethovenhaus, Bonn, acquired recently as part of the collection of the late Dr. Josef Zimmermann,

2. This instrument is shown (unfortunately with its kasten and bell turned the wrong way) in the well-known photograph of seven basset horns from the collection of the Museum für hamburgische Geschichte reproduced in F. Geoffrey Rendall, *The Clarinet*, 3d ed. rev. by Philip Bate (New York: W. W. Norton & Co., 1971), pl. 6, and in Oskar Kroll, *The Clarinet* (New York: Taplinger, 1968), pl. 15. It is also illustrated individually (correctly assembled) in Anthony Baines, *European and American Musical Instruments* (New York: The Viking Press, 1966), pl. 641, and, along with a description, in Konrad Ruhland, *Alte Musikinstrumente aus niederbayerische Werkstätten*, Bavaria antiqua: Verborgene Kostbarkeiten der bayerischen Kulturgeschichte (Munich: Bayerische Vereinsbank, 1978), pp. 46–47.

Düren. Other sickle-form basset horns exist, at least one bearing the stamp "Franz Schofftlmayr, Passau"<sup>3</sup> and several others without a maker's name, but there is no evidence as yet to suggest that any of them was actually made by the Mayrhoferes or that they predate the four known Mayrhofer instruments. The fact that the Mayrhofer stamp says "*Inventors and Makers*" cannot be ignored. No other claim of this type was made on a wind instrument until the nineteenth century.<sup>4</sup>

The fourth Mayrhofer instrument is the subject of the present study.<sup>5</sup> The Munich Stadtmuseum's Instrument Museum uses display labels that are largely the work of Dr. Jürgen Eppelsheim and are exemplary in providing what the informed visitor needs and wants to know. The labels specify the type of instrument, its precise stamp, its maker, his workplace, and its presumed date (if any of these last three are omitted from the stamp), its pitch, the pitches produced by each of its keys and how many there are of these, its lowest tone, and whatever part of it is missing, not original, and/or replaced in the course of restoration. The Eppelsheim label identifies this Mayrhofer instrument as a basset horn in B flat, a fifth lower than the usual basset-horn pitch. In fact, it is not a basset horn at all, but rather a bass clarinet, the earliest one known bearing a maker's stamp, and perhaps even the first bass clarinet altogether.<sup>6</sup>

The instrument was acquired by the Stadtmuseum in the early 1950s, lacking bell, mouthpiece, barrel, speaker key, and a portion of the upper end of the upper joint. Restoration was entrusted eventu-

3. Museum Carolino-Augusteam, Salzburg, no. 18/31.

4. For example, the American maker George Catlin so stamped a bass clarinet, ca. 1810. See Robert E. Eliason, "Oboe, Bassoons, and Bass Clarinets made by Hartford, Connecticut, Makers before 1815," *Galpin Society Journal* 30 (1977): 43-51.

5. The statement in Ruhland, *Alte Musikinstrumente*, p. 46, that three Mayrhofer instruments survive does not take into account this instrument in Munich.

6. By usual definition, a basset horn is a low clarinet, usually in F and thus a fourth lower than the soprano in B flat, with additional tube length and additional keys to extend its range a major third lower to written *c*. Its bore diameter is the same or only slightly greater than that of the typical soprano, unlike the later "alto clarinet" (in fact, a tenor). The sound of a basset horn is therefore less "heavy" and "thick" than that of other low clarinets, including the bass. The bass clarinet is pitched a full octave below the soprano in B flat and invariably has a disproportionately larger bore and therefore "heavier" sound.



FIGURE 2. Mayrhofer basset horn,  
Germanisches Nationalmuseum,  
Nuremberg (MI 133).

ally to the eminent instrument maker and restorer Rainer Weber, who has generously provided me with a copy of his detailed notes and photographs of various steps in the restoration. Since there was no Mayrhofer instrument of similar size or pitch from which to take direct measurements, Weber studied the Nuremberg and Hamburg-Passau basset horns and deduced that the Munich instrument had been larger by the ratio 1:1.55. Replacement pieces were made to this scale, and a new section with octagonal exterior, lightly curved, was spliced onto the upper end of the upper joint. The accuracy of Weber's computation is proven by an instrument that plays well throughout its compass and with excellent intonation. The musical and visual result is awesome testimony to the current state of the restorer's art in general, and in particular as practiced by Rainer Weber.

Few other bass clarinets exist that may precede or even be contemporary with this instrument. Gilles Lot's "basse tube" of 1772 is

known only from a Paris newspaper clipping of that year, and no specimen has yet been found. Gilles himself is of negligible importance but for this newspaper account.<sup>7</sup> The Mayrhofer bass clarinet almost surely precedes his. The only other rivals for the distinction of being the earliest bass clarinet are even greater enigmas: four similar, strange instruments for which we have neither dates, nor makers' name(s), nor even country of origin. The oldest of these, possibly predating 1750 in the opinion of the late Geoffrey Rendall, was no. 2810 in the Berlin Musikinstrumenten-Museum, but it was a casualty of World War II.<sup>8</sup> The other three are Brussels 939,<sup>9</sup> Florence 160,<sup>10</sup> and an instrument in the Museo storico civico in Lugano. The Brussels example is the only one I have been able to examine personally, and I have severe doubts as to its authenticity, at least in the state in which it has survived. Its neck and bell appear to be of much later date than the leather-wrapped, wooden body. Thus constituted, it played badly according to Mahillon.<sup>11</sup> In contrast, the restored Mayrhofer instrument plays well, and we know exactly what Rainer Weber replaced on it and how these parts were designed.

The Mayrhofer bass clarinet is pitched in B flat like the modern instrument, a full octave below the common soprano. The overall length of its air column is about 177 cm., and its bore varies from 1.58 cm. to 1.67 cm. This proportion of air-column length to bore is that of the bass clarinet, not the basset horn. For comparison, the instrument long held to be the earliest bass clarinet, made by Heinrich

7. It is quoted in full in Rendall, *The Clarinet*, p. 139, where additional details of these four anonymous specimens are given.

8. Fortunately it is illustrated by a photograph in Curt Sachs, *Sammlung alter Musikinstrumente bei der Staatlichen Hochschule für Musik zu Berlin* (Berlin: J. Bard, 1922), pl. 29.

9. It is illustrated by a drawing in Victor-Charles Mahillon, *Catalogue descriptif & analytique du Musée instrumental du Conservatoire royal de musique de Bruxelles* (1893-1922; reprint ed., Brussels: Les Amis de la musique, 1978), 2: 219, and by a photograph (no. 243) in Phillip T. Young, *The Look of Music* (Vancouver: Vancouver Museums and Planetarium Association, 1980), p. 197.

10. I wish to thank Dr. John Henry van der Meer for calling this instrument to my attention. It is illustrated by a drawing in Vinicio Gai, *Gli strumenti musicali della corte medicea e il Museo del Conservatorio "Luigi Cherubini" di Firenze* (Florence: Licosa, 1969), p. 221.

11. Mahillon, *Catalogue descriptif & analytique*, 2: 219.

Grener and dated 1793,<sup>12</sup> has almost the same air-column length and a somewhat smaller bore. On the other hand, the Mayrhofer basset horns, as well as typical angular-form basset horns of Grundmann, August Grener, Heinrich Grener, Kirst, and Griessling & Schlott have an average air-column length one-third less and bores often as much as one-quarter less than this Mayrhofer bass clarinet.<sup>13</sup>

This instrument has seven brass keys providing (written) *c*, *e*, *f*, *f sharp*, *g sharp*, *a'*, and speaker. As is characteristic of all four Mayrhofer instruments, keys are mounted in brass saddles, there are brass ferrules, and the body is of octagonal exterior covered with chestnut-brown leather. Unlike the three basset horns, which have a one-piece body of curved tube, the bass clarinet's body is made in two sections joined by a tenon and socket between the two groups of three finger holes each. The right thumb is given the long, closed key for *f sharp* as well as the open "basset keys" for low *e* and *c*.

The most interesting feature of the instrument can be seen in figures 3 and 4. Instead of a *kasten*—the triple-bored separate section found on all basset horns between their main body sections and their bells until well into the nineteenth century, devised to compress the lower end of the long air column into a more manageable length—this bass clarinet has a full 360° loop of wooden tube, covered in the same leather and forming a tight coil only 10.3 cm. in outside diameter.<sup>14</sup> Seeing this unique feature, one is immediately reminded of a doughnut!

The curve of the main tube was achieved by making saw cuts from what was to become the inside surface of the curve, the cuts going through the bore but stopping short of the outside surface. These saw cuts seem somewhat haphazardly made, not at measured intervals (although close to it) along the tube and not consistently perpendicular to the bore. The result, as clearly seen in figures 5 and 6, suggests

12. Musik Museet, Stockholm, no. 1957-58/28.

13. Basic details and measurements of all four Mayrhofer instruments and of these basset horns by other makers are given in Phillip T. Young, *2500 Historical Woodwind Instruments: An Inventory of the Major Collections* (New York: Pendragon Press, 1981).

14. The stamp identifying this instrument as the work of the Mayrhofers is found on the back surface of the coil on the side facing the player. Similarly, in the other three known Mayrhofer instruments, the stamp is on the *kasten*.



FIGURE 3. Mayrhofer  
bass clarinet, Stadt-  
museum, Munich.  
Right-side view.

FIGURE 4. Mayrhofer bass clarinet,  
Stadtmuseum, Munich. Front view.



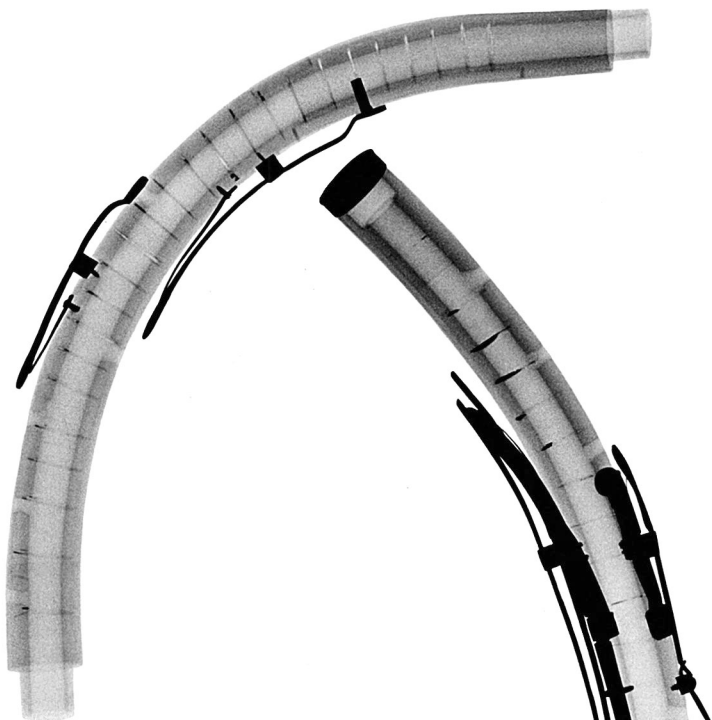
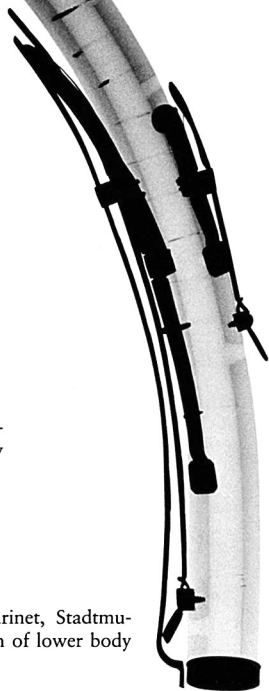


FIGURE 5. Mayrhofer bass clarinet, Stadtmuseum, Munich. X-ray photograph of upper body section.

FIGURE 6. Mayrhofer bass clarinet, Stadtmuseum, Munich. X-ray photograph of lower body section.



at first that here and there actual wedges were removed in order to permit the curving. (This is the method first described by Philip Bate.<sup>15</sup>) After much study, however, I have concluded that only single saw cuts were made, their kerfs providing enough space to permit compression into the desired curve. (This is an alternative method described by Cary Karp in his description of the construction of the two oboes da caccia by J. H. Eichentopf, Leipzig, dated 1724.<sup>16</sup>) The saw cuts appear as a single line directly under the X-ray lens but assume an increasingly oval shape toward the edges of the X-ray plate. As shown in figures 5 and 6, the usual spline has then been glued to the inner surface of the curved tube to give rigidity and strength to what is at best a flimsy construction. One can also see precisely where Rainer Weber's replacement section is spliced onto the original tube, above the speaker-key saddle at a distance of one and a half saw cuts. Weber has prudently elected to use a thicker spline than did the Mayrhofer. Similar X-ray photographs of the Germanisches Nationalmuseum's Mayrhofer basset horn (MI 133) show that the body curve is achieved in exactly the same way, erratic spacing and angling of saw cuts included. There, as well as on the bass clarinet, the saw cuts are not placed so as to avoid intersection with fingerholes, which is curious to say the least.

The most interesting single feature of the bass clarinet is also the most striking detail in its X-ray photos, and this of course is the wooden coil. It is constructed of actual wedge-shaped sections cut from a straight tube, arranged in a loop that eventually bypasses itself. A spline is used along the inside of the coil, but not on the outer surface. Surprisingly, the bore surface turns out to be quite irregular. Successive wedges cut from a single straight section should join internally far more smoothly than is the case here. Despite this, the wooden coil succeeds in condensing circa 34 cm. of air column into a section only circa 12 cm. in overall length—a compression that would seem very close to what the typical kasten accomplishes.

It seems certain that this bass clarinet was made before any instrument with a kasten. Surely once devised, the conventional kasten

15. Philip Bate, letter to the editor, *Galpin Society Journal* 6 (1953): 100–101.

16. Cary Karp, "Structural Details of Two J. H. Eichentopf Oboe da caccia," *Galpin Society Journal* 26 (1973): 55–57.

FIGURE 7. Mayrhofer bass clarinet,  
Stadtmuseum, Munich. X-ray  
photograph of coil, left side.

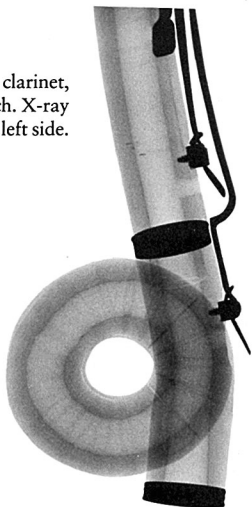
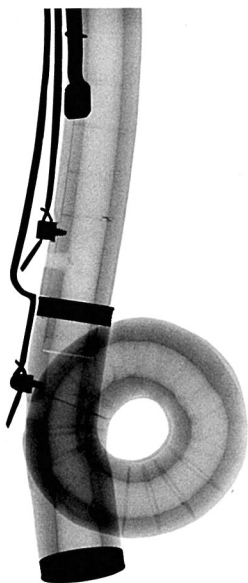


FIGURE 8. Mayrhofer bass clarinet,  
Stadtmuseum, Munich. X-ray  
photograph of coil, right side.

would not have been replaced by a piece so complex in design, especially one so potentially weak structurally and therefore susceptible to eventual leaking. Further support of this chronology is to be found in the obvious fact of how much simpler it is to mount basset keys on the kasten's flat surfaces than on a tightly wound loop. The full loop was probably an early, logical solution to the awkwardness of the 177 cm. required for this bass clarinet, succeeded very soon—perhaps immediately—by a section made with the old parallel-bore device used centuries earlier, for example, in the rackets and early Bohemian bagpipe. Perhaps we will never know for certain whether or not the Mayrhofers also devised the kasten. It seems quite possible and, barring discovery of an earlier kasten-instrument by another maker, logical.

All this suggests three further probabilities: first, that the Mayrhofers invented the bass clarinet or at least believed they had done so (depending upon how one regards the four instruments cited at the beginning of this report); second, that the Mayrhofers soon thereafter invented a similar, smaller instrument with a bore much closer to that of the soprano clarinet, which has been known since as the basset horn (“invented” depending upon how one regards the rectangular “basset horn” by Eisenmenger in the Bayerisches Nationalmuseum, Munich<sup>17</sup>); and third, that the Mayrhofers also were the first to devise the kasten as a means of shortening the length of low clarinets. More evidence will certainly be found one day to corroborate or contradict these probabilities.

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17. No. MU 128; it is illustrated by a photograph in Young, 2500 *Historical Woodwind Instruments*.