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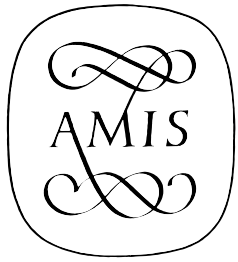


The Typology and History of the Bass Clarinet

JOHN HENRY VAN DER MEER

WHILE IT IS A WELL-ESTABLISHED FACT that one of the Denners at Nuremberg—either Johann Christoph, the father, or Jacob, the son—invented the clarinet at the beginning of the eighteenth century, it is less well known that the bass clarinet too has its roots in the first half of the eighteenth century. The typology that will be presented here, describing the early designs for the bass clarinet in relation to those of other instruments, allows us to clarify certain aspects of the instrument's history.

A Bass Clarinet in Dulcian Shape

The Museum Carolino Augusteum in Salzburg possesses an extremely interesting instrument more or less in the shape of a dulcian or *Choristfagott*: the main part of the body has an oval section and two parallel bores, and at the end of the tube a funnel-shaped bell of wood is added (fig. 1). Indeed, Karl Geiringer[1] included the instrument among the dulcians; but this is not at all probable, as the bore is not conical, but mainly cylindrical.

Kurt Birsak,[2] who in 1973 considered the instrument to be a sordun, avoided Geiringer's mistake, but this classification also seems unlikely for several reasons. First, the instrument, built by one W. Kress, shows in the moldings of the bell and in some characteristics of the keys (shape, mountings in saddles, springs underneath the key levers) that it dates from the first half of the eighteenth century; and no treatises of that period mention the sordun. Second, the bore (19 mm) is far too wide for a sordun, as the Viennese sorduns have a bore width of about 8 mm. Third, the disposition of the holes and keys clearly points to the fact that the instrument is a kind of chalumeau or clarinet.

According to Birsak, who applied a double-reed crook to determine its pitch (the original crook is missing), the instrument is in C, the fingerings

1. Karl Geiringer, *Alte Musik-Instrumente im Museum Carolino Augusteum Salzburg* (Leipzig: Breitkopf und Härtel, 1932), no. 197.

2. Kurt Birsak, "Die Holzblasinstrumente im Salzburger Museum Carolino Augusteum: Verzeichnis und entwicklungsgeschichtliche Untersuchungen," *Salzburger Museum Carolino Augusteum Jahresschrift* 18 (1972): 9–152, especially 83–94.

FIGURE 1a.

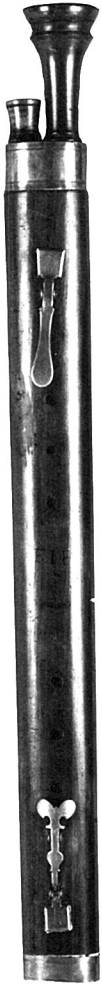
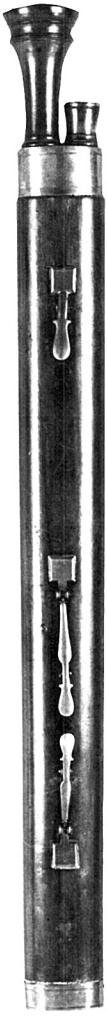


FIGURE 1b.



FIGURES 1a and 1b. Bass clarinet by W. Kress, ca. 1700. Salzburger Museum Carolino Augusteum.

corresponding to the notes rendered.[3] In the descending part of the tube there are closed keys for *b*♭ and *a*; a thumbhole for *f*; six front fingerholes for *e, d, c, B*♭, *A,* and *G,* and an open key (instead of a hole, which would be beyond reach) for the fourth finger of the lower hand, for *F*. The compass of this chalumeau or clarinet is, however, extended towards the bass: the ascending part of the tube has an open thumb key for *E,* a thumbhole for *D,* an open thumb key for *C,* and a thumbhole for *BB*♭.

The instrument in question is, therefore, without any shadow of doubt, a bass chalumeau or bass clarinet, i.e., a chalumeau or clarinet an octave beneath the clarinet, two octaves beneath the soprano chalumeau, or one octave beneath the tenor chalumeau. This has been pointed out by Jürgen Eppelsheim,[4] who identifies the instrument with the "Basson(e)," "Basso

3. For instruments in B♭ the actual sound will be a tone lower than the pitches indicated in the fingerings.

The bass clarinet, like the clarinet, has seven fingerholes on the front, and a thumbhole (higher on the tube than the highest front fingerhole) on the rear of the tube. Closing the holes one after the other renders the following notes: thumbhole, *f*; fingerhole I, *e*; fingerhole II, *d*; fingerhole III, *c*; fingerhole IV, *B*; fingerhole V, *A*; and fingerhole VI, *G*. The seventh hole on a bass clarinet is always beyond the reach of the fingers and therefore has an open key sounding *F* when closed. The note *g* can be produced by opening the thumbhole and all the fingerholes, leaving the *F* key open.

From the second half of the eighteenth century on, woodwind instruments have been played with the left hand uppermost, so that the thumbhole and fingerholes I–III are closed by the left hand thumb and first, second and third fingers, while fingerholes IV–VI and the open key over the seventh hole are closed by the first, second, third and fourth fingers of the right hand. In the nineteenth century, as the holes for these notes came to be bored more and more in the acoustically correct positions, so that they lay beyond the reach of the fingers, open keys began to be applied.

Three other categories of keys can be used: 1. Chromatic keys and keys increasing the upwards extension, which usually have the following fingerings: *b*♭ (on the rear), left thumb; *a* and *g*♯, left first finger; *f*♯, right first finger; *e*♭, left third finger; *c*♯, left fourth finger; *B*♭, right third finger; *G*♯, right fourth finger; and *F*♯, left fourth finger. In some cases, the *B* fingerhole being too low on the tube, there is a closed vent key for *B* for the right fourth finger that is opened when *B* is played. 2. One, and later two or even three speaker keys for the left thumb, making overblowing possible (overblown *E* becomes *b*, etc.). 3. Clarinets with downward extension always have additional keys. All bass clarinets, like clarinets, have an open *E* key for the left fourth finger, which, when overblown, makes possible the otherwise missing *b*. Most of the bass clarinets discussed here have additional keys for the downward extension: *D, C* and *BB*♭ are usually open keys; *E*♭, *C*♯ and *BB* can be open or closed. *E*♭, *D,* and *C*♯ are usually for the right thumb, and *C, BB* and *BB*♭ for the left thumb. (Some makers, especially Streitwolf and Stengel, deviate from these fingerings in some cases.)

4. Jürgen Eppelsheim, "Überlegungen zum Thema 'Chalumeau'," *Studien zur Aufführungspraxis und Interpretation von Instrumentalmusik des 18. Jahrhunderts,* vol. 19, *Zu Fragen des Instrumentariums in der ersten Hälfte des 18. Jahrhunderts* (Blankenburg am Harz: Kultur- und Forschungsstätte Michaelstein, 1982), 76–99 and especially 85–90.

Schalamaux (Chalamaux)," "Basson di Chalumeaux," and "Schalimo basso" called for from 1707 onwards in the scores of many Viennese court operas, the first being Attilio Ariosti's *Marte placato.*

The identification of the large instrument at Salzburg with a bass chalumeau, or with what was called a bass chalumeau in the first half of the eighteenth century, would explain the enormous difference in price between the "normal" chalumeau and the bass of the instrument in two accounts for the supply of woodwind instruments written by Jacob Denner, one in 1710 to the Count von Gronsfeld [5] and one ca. 1720 to the Benedictine abbey of Göttweig in Lower Austria.[6]

The "basson" parts in Viennese operas have the compass *C–e♭′*, skipping *C♯*, *G♯* (both impossible to perform, there being no forked fingerings for these two notes) and *c♯′* (which would be possible in principle, but never appears). In any case, the compass exceeds the top *b♭*, so that it was obviously possible to overblow the notes from *E* to *G♯*. Moreover, the *a* and *b♭* keys are not diametrically opposed, but the *b♭* is higher up the tube than the *a*. For these reasons, the instrument at Salzburg, even if it is identified with the *basson de chalumeau* of the first half of the eighteenth century, can be considered a true bass clarinet.

The earliest bass clarinet is thus an instrument in dulcian shape with a compass extension down to *BB♭*. In view of the existence of this Central European bass clarinet, the appearance of the *basse-tube* by Gilles Lot at Paris in 1772 seems less sudden. As described in an article in the Paris *Avant-Coureur* of that year,[7] the *basse-tube* or *Basse de clarinette* descends as far as the bassoon and has a compass of three and one-half octaves, therefore perhaps *BB♭–f″*, with "several" keys for chromatic notes. Unfortunately, we know nothing about the shape of the instrument—which was "quite unusual"—but the downward compass extension seems unmistakable.

5. Ekkehart Nickel, *Der Holzblasinstrumentenbau in der freien Reichsstadt Nürnberg* (Munich: Katzbichler, 1971), 251.

6. Horace Fitzpatrick, "Jacob Denner's Woodwinds for Göttweig Abbey," *Galpin Society Journal* 21 (1968): 81–87. I interpreted the Viennese "Basson" erroneously in *Johann Josef Fux als Opernkomponist,* vol. 2 (Bilthoven: A. B. Creyghton, 1961), 181–82 and 276–77, and in "The Chalumeau Problem," *Galpin Society Journal* 15 (1962): 89–91, an error unfortunately copied by Colin Lawson, *The Chalumeau in Eighteenth-Century Music* (Ann Arbor, Michigan: UMI Research Press, 1981), 41 and 48–49.

7. Quoted by Constant Pierre, *Les facteurs d'instruments de musique* (Paris, 1893; reprint, Geneva: Minkoff, 1971), 103–4.

Bassoon-shaped Bass Clarinets

The dulcian having been superceded by the bassoon, unmistakably bassoon-shaped clarinets soon emerge at Dresden. The two Grensers, Carl Augustin and his nephew Johann Heinrich, were famous for their bassoons, and it is therefore not surprising that they applied the bassoon shape to the bass clarinet also. Their instruments in this category had a downward compass extension to *BB*.[8]

Johann Heinrich Grenser, who worked in his uncle's workshop until 1796, invented a *Clarinettbass* in 1793. A bassoon-shaped bass clarinet with his mark and with eight keys, obviously corresponding to the instrument invented by the younger Grenser, is still extant in the Musikhistoriska Museet at Stockholm.[9] The uncle, Carl Augustin, evidently made similar instruments before retiring in 1796, for a bassoon-shaped bass clarinet dated 1795 is found in the Hessisches Landesmuseum, Darmstadt.[10] As in a proper bassoon, fingerholes I–III (plus the *a* and *b*♭ keys) are on the wing, and fingerholes IV–VI (plus closed *B*♭ and *G*♯ and open *F* and *E* keys) are on the butt. Two or three further keys are on the rear side of the butt and on the bass joint. Both instruments have a crook, fittings, keys, and a bell, all of brass.

Whatever the shape of the *basse-tube* may have been, there is no doubt about the bassoon shape of the *basse-orgue* made by François Sautermeister of Lyon, which appeared in 1812. Like the earlier instruments, this type also had a downward compass extension, in this case down to *C*.[11] In 1830 Sautermeister took up partnership with his nephew Louis Müller, who succeeded his uncle in about 1835 and continued the workshop until 1867; his bass clarinet, similar to Sautermeister's, was named the *Müllerphone*.[12]

I have not been able to study a bassoon-shaped bass clarinet in the Smithsonian Institution, Washington, D.C. If the instrument is indeed by

8. Ernst Ludwig Gerber, *Neues historisch-biographisches Lexikon der Tonkunstler,* vol. 2 (Leipzig, 1812–14: reprint, Graz: Othmar Wessely, 1966), col. 393.

9. Inv. no. 1957–58/28. See Phillip T. Young, *The Look of Music: Rare Musical Instruments 1500–1900* (Vancouver: Vancouver Museums and Planetarium Association, 1980), no. 245, and *Twenty-Five Hundred Historical Woodwind Instruments* (New York: Pendragon Press, 1982), p. 51.

10. *Musikinstrumente aus dem Hessischen Landesmuseum, 16.–19. Jahrhundert* (Darmstadt: Hessisches Landesmuseum, 1980), no. 50 (catalog of the exhibition, June 26–August 31, 1980).

11. Pierre, 344.

12. Pierre, 345.

George Catlin of Hartford, Connecticut, ca. 1815, the type came to America remarkably early. The instrument, which has a wooden knee joint instead of a crook, makes a slightly more primitive impression than the sophisticated instruments by the Grensers.[13]

An extremely interesting instrument, unfortunately unsigned but probably to be dated ca. 1830, is in the Germanisches Nationalmuseum, Nuremberg (fig. 2).[14] Because of its very narrow bore (18 mm) it is probably of German provenance. It is bassoon shaped, or, strictly speaking, in the shape of a bassoon with a split butt in the style of the English basshorn: after the wooden knee joint there follow two descending tube parts (parts 1 and 2), a horizontal connecting joint with a brass coating (part 3), two ascending tube parts (parts 4 and 5) and the bell. Like most bassoon-shaped instruments, this bass clarinet is of maple, with fittings and keys of brass; the brass bell has a German silver garland with engraved floral ornaments. Parts 1 and 2 represent a clarinet in the low octave down to *F*. Part 1 has three fingerholes plus keys for *b*♭ (left thumb), *a* and *g*♯ (left first finger), *f* (an open hinged key for the left thumb), *f*♯ (right first finger), *e*♭ (left third finger) and *c*♯ (left fourth finger). On part 2 there are three fingerholes and keys for *B* vent, G♯, and open *F* (all right fourth finger), *B*♭ (right third) and *F*♯ (left fourth finger). An open *E* key for the left fourth finger is mounted on part 3.

So far there is very little difference between this pattern and that of a thirteen-key Müller-like clarinet. However, there follow part 4 with open *E*♭, *D*, and *C*♯ for the right thumb, and part 5 with open *C* and *BB*♭ for the left thumb. These five open keys have, however, not a double but a single lever. The thumb is inserted between the lever and the body of the tube, and the keys are closed by outward pressure (!) against the levers. The overall length of the instrument is ca. 164 cm, which would yield a sounding *AA*♭ from the *BB*♭ fingering. This bass clarinet is, therefore, in B♭.

A famous bassoon-shaped model with seventeen to nineteen keys, in C or B♭ with a downward extension to *C* or *BB*♭, is the work of the ingenious wind instrument maker Johann Heinrich Gottlieb Streitwolf at Göttingen in 1828. The same maker is to be credited with the invention of both the chromatic basshorn and the contra-bassethorn. A considerable number of bassoon-shaped bass clarinets from his workshop survive, for example in the Deutsches Museum at Munich, the Musikinstrumentenmuseum der

13. On Catlin's work see Robert E. Eliason, "George Catlin, Hartford Musical Instrument Maker," this *Journal* 8 (1982): 16–37 and 9 (1983): 21–52.

14. Inventory no. MI 338.

FIGURE 2a.

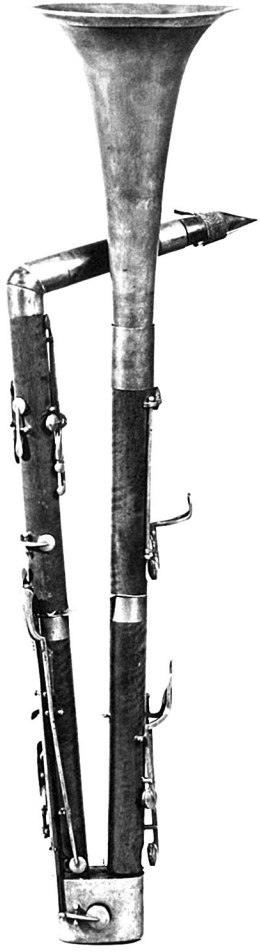


FIGURE 2b.

FIGURES 2a and 2b. Bass clarinet made in Germany ca. 1830. Germanisches Nationalmuseum, Nuremberg, inventory no. MI 338.

Karl-Marx-Universität at Leipzig, and in the Gemeentemuseum at The Hague.[15] A nineteen-key bass clarinet with compass extension down to *BB*♭ by this maker that has "Erfunden und verfertigt von G. Streitwolf in Göttingen" engraved on the upper ring of the butt is in the Rück Collection in the Germanisches Nationalmuseum, Nuremberg (fig. 3).[16]

This instrument is bassoon shaped and made of maple, with crook, fittings, keys, and bell (elegantly fastened with a bayonet catch) of brass. The wing has three fingerholes and keys for *b*♭ (left thumb), *g*♯ and *a* (left first finger), open hinged *f* (right thumb, or left thumb in conjunction with *D*), *f*♯ (left third finger!), *e*♭ (lateral for the right thumb!) and *c*♯ (left fourth finger). The butt has two fingerholes and keys for open *G* and closed *B*♭ (both for the right third finger, with touchplates in front, pins through the butt and key covers on the rear side), *G*♯ and open *F* (right fourth finger), *F*♯ and open *E* (left fourth finger) and open hinged *D* (right thumb, also closing *f*). The differences between this instrument and a normal thirteen-keyed clarinet are considerable: there is no *B* vent key; there is an open *G* key instead of a fingerhole; the *G* and *B*♭ keys penetrate the butt; there are unusual fingerings for *f*♯ and *e*♭; and the open *D* key is on the butt. The bass joint has the extension keys beyond *D*: *E*♭ (left thumb with an additional lever for the right thumb), open *C* (right thumb), *C*♯, open *BB* and open *BB*♭ (the last three for left thumb). Since the overall length is ca. 165 cm, the instrument is in B♭. The bore is fairly narrow (21 mm).

Similar bassoon-shaped bass clarinets with extension keys were made in Germany by makers such as Wilhelm Beck of Weimar and the Stengel firm at Bayreuth.[17] An instrument by one of the members of the Stengel family is in the Rück Collection in the Germanisches Nationalmuseum, Nuremberg (fig. 4). It has two speaker keys and is therefore built after the Sax model of 1838; for this reason, according to the research of Rita Fischer, it is attributed to Johann Samuel Stengel (1803–1885, master in 1828).[18] This instrument, probably of maple stained black, with fittings, keys and bell of

15. Leipzig: Georg Kinsky, *Musikhistorisches Museum Wilhelm Heyer in Cöln. Kleiner Katalog der Sammlung alter Musikinstrumente* (Cologne: Wilhelm Heyer; Leipzig: Breitkopf und Härtel, 1913), p. 173, no. 1539. The Hague: Young, *The Look of Music*, no. 248.

16. Inventory no. MIR 477.

17. Rita Fischer, "Die Holzblasinstrumentenmacher Stengel in Bayreuth (1805–1902). Ein Beitrag zum deutschen Holzblasinstrumentenbau des 19. Jahrhunderts," *Archiv für Geschichte von Oberfranken* 64 (1984): 341–427; on Johann Samuel Stengel, see pp. 360ff, and on two of the bass clarinets in bassoon shape (Brussels and Florence), see p. 423. One of Wilhelm Beck's bass clarinets is now at Leipzig; see Kinsky, p. 173, no. 1540.

18. Inventory no. MIR 479.

FIGURE 3a.

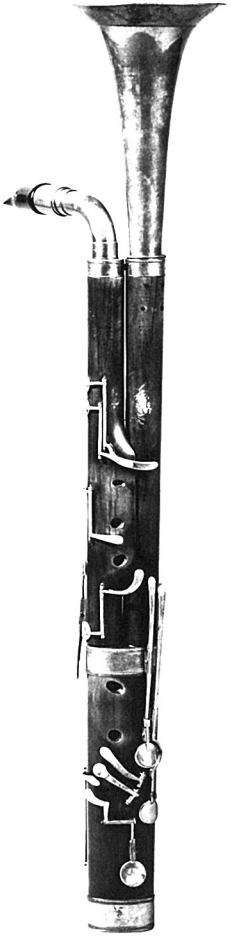
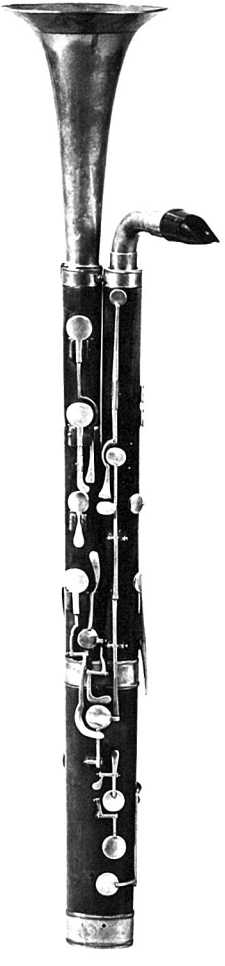


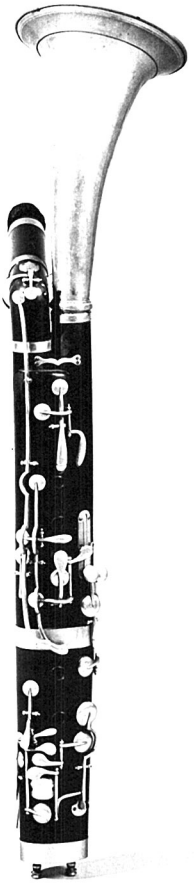
FIGURE 3b.

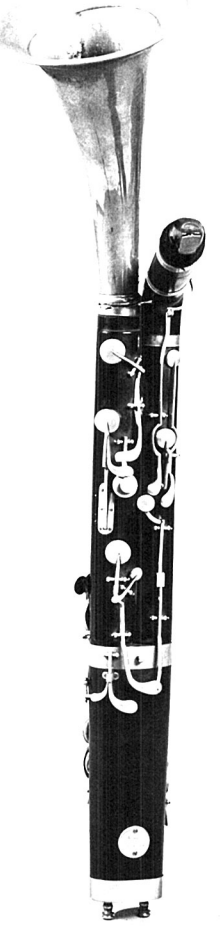


FIGURES 3a and 3b. Bass clarinet by Johann Heinrich Gottlieb Streitwolf, Göttingen, between 1828 and 1837. Germanisches Nationalmuseum, Nuremberg, Rück Collection, inventory no. MIR 477.

FIGURE 4a.

FIGURE 4b.





FIGURES 4a and 4b. Bass clarinet by Johann Simon Stengel, Bayreuth, probably made between 1850 and 1885. Germanisches Nationalmuseum, Nuremberg, Rück Collection, inventory no. MIR 479.

German silver, has a wooden knee joint with the *b* (right first finger) and second speaker key (left thumb).

The fingerholes, two on the wing, and two on the butt, are ebony lined. There is both an open *G* (right third finger), and an open hinged *c* (left third finger), as well as an open *B* vent (right fourth finger). The keys *b*♭, *a*, *g*♯, open *f*, *f*♯, *e*♭, *c*♯, *B*♭, *G*♯, open *F* and *F*♯ all have the normal fingerings: the *B* vent, *G*♯ and open *F* are all for the right fourth finger; the *B*♭ and open *G* are both for the right third finger; and *F*♯ is for the left fourth finger, which also has to shut the open *E*, as we shall see.

Two details are to be observed: *f* can be closed not only by the left thumb, but also by the right thumb in conjunction with *E*♭; furthermore, *F*♯ has an additional fingering for the left thumb with a lever around the butt. The keys on the butt are all on the front, as there are no keys through the butt. On the bass joint are open *E* on the front (hinged for the left fourth finger); on the rear are the extension keys open *E*♭ (right thumb, also closing *f*), open hinged *D*, open *C*♯ (also closing *D*) and open *C*, these last three for the left thumb. *E*♭, *B*♭, and *e*♭ are double keys, obviously for better venting. The instrument, therefore, has twenty-one keys (if each of the double keys is counted as one) or twenty-four keys (if each is counted as two). The keywork shows an early stage in the use of rod-axles. Since the overall length is 152 cm, the instrument is therefore probably in C. The bore is slightly wider than that of the preceding instrument, but it is still comparatively narrow (25 mm).

There are similar instruments by Stengel in the Conservatorio Luigi Cherubini at Florence[19] and in the Musée instrumental du Conservatoire royal de musique at Brussels.[20] The Brussels clarinet, one of the very few instruments expressly signed "J. S. Stengel," is beyond any doubt by Johann Simon Stengel, and the clarinet in Florence is probably by the same maker. These two instruments are practically identical: they have metal crooks without keys on them; and since they lack a second speaker key, the number of keys adds up to only twenty. The profusion of rod-axles with fingerplates makes a progressive impression, but since the absence of a second speaker key seems slightly conservative, the instruments are difficult to date. Johann Simon Stengel obviously applied certain principles in various ways in his bassoon-shaped bass clarinets.

19. Vinicio Gai, *Gli strumenti musicali della Corte Medicea e il Museo del Conservatorio "Luigi Cherubini" di Firenze* (Florence: LICOSA, 1969), no. 161.

20. Victor-Charles Mahillon, *Catalogue descriptif et analytique du Musée instrumental du Conservatoire royal de Bruxelles, 2d ed., vol. 2* (Gand: A. Hoste, 1909), no. 943.

Two other makers of bassoon-shaped bass clarinets of wood must still be mentioned. Catterino Catterini of Bologna, according to A. Gandini,[21] successfully introduced his *glicibarifono* at the (still existing) Teatro Comunale at Modena in 1838. The term "bassoon shaped" is not entirely accurate in this case, for in devising his instrument Catterini returned to the ancient dulcian shape: the body of the instrument consists of a single block of boxwood of oval section with two parallel bores; on it stand the brass crook and the flaring bell (according to Gandini of brass). The only existing specimen seems to be the one in the Bate Collection at Oxford.[22] I have as yet not been able to study the instrument, which has a wooden bell, seventeen keys, and a compass downwards to *C*. The catalogue indicates that this bass clarinet sounds in C; the length of the tube without the mouthpiece is 149.3 cm.[23] The bore (22 mm) is fairly narrow at the beginning, but expands through most of the ascending part of the tube.

A similar instrument was made by Paolo Maini at Milan, as a specimen in the Brussels Musée instrumental du Conservatoire royal de musique confirms.[24] This instrument also has seventeen keys (closed *b♭ a, g♯, f♯, e♭, c♯, B♭, G♯, F♯*, and *E♭*; open *f, e, c, G, F, C♯*, and *C*) and therefore a compass extending down to *C*. The overall length of the tube is 170 cm, which suggests a tuning in B♭ rather than C, as Mahillon indicates. (George Kastner wrote in 1844 that Catterini's *glicibarifono* stood in B♭ too.[25])

A contrabass clarinet in bassoon-like shape (or rather in the shape of an English basshorn), the *Batyphon* in C, devised in 1839 by Wilhelm Friedrich Wieprecht at Berlin and constructed by Eduard Skorra in Berlin and Carl Kruspe in Leipzig, must not be completely overlooked in this connection. A specimen by Skorra is preserved in the Musikinstrumentenmuseum des Staatlichen Instituts für Musikforschung at Berlin.[26] It stands in C, but unlike the other bassoon-shaped bass clarinets does not have an extension below *EE*. All note holes have keys (open *EE, FF, GG, AA, BB, C, D, E* and *F♯*, closed *FF♯, GG♯, BB♭, C♯, E♭, F, G♯, A* and *B♭*). The eighteen keys are com-

21. A. Gandini, *Cronistoria dei teatri di Modena*, vol. 1 (Modena, 1873; reprint, Bologna: Forni, 1969), 363.

22. [Anthony Baines], *The Bate Collection of Historical Wind Instruments: Catalogue of the Instruments* (Oxford: Oxford University Press, 1976), p. 43, no. 496.

23. Information on length provided in a private communication.

24. Mahillon, vol. 2, no. 941.

25. Georges Kastner, *Traité général de l'instrumentation, Supplément* (Paris, 1844).

26. Curt Sachs, *Sammlung alter Musikinstrumente bei der Staatlichen Hochschule für Musik zu Berlin, Beschreibender Katalog* (Berlin: Julius Bard, 1922), no. 2904. See also Mahillon, vol. 1 (Gand, 1893), 216–220.

manded by touchpieces, some of which are at a great distance from the key covers, their functioning made possible by long rod-axles.

It is obvious that the dulcian- and bassoon-shaped bass clarinets, perhaps with the exception of the Kress instrument at Salzburg, were not devised for orchestral use until 1836, when Giacomo Meyerbeer called for one in his opera *Les Huguenots*; for no composer before Meyerbeer required the bass clarinet. The *Clarinettbass* by the Grensers, the *basse-orgue* by Sautermeister, the *Müllerphone,* the instrument in the Smithsonian Institution perhaps by George Catlin, the Nuremberg bass clarinet with the curiously shaped extension keys, and the bass clarinets by Streitwolf were evidently made for wind instrument bands.

Such bands had one weak point: the basses. The sound of the bassoon was too reedy, and the intonation of the serpent, when played by an inexperienced player, was of critical concern to say the least. But the bass clarinet has a powerful sound and a secure intonation. A bass clarinet in B♭, an octave under the normal clarinet of the period, with a compass down to *E* (sounding *D*), could play parts written for the serpent, but could not reach down to the bassoon *BB*♭. However, a bassoon-shaped chalumeau or clarinet down to *BB*♭ was already in existence in the first half of the eighteenth century, and needed only to be developed in order to play bassoon parts—hence the comparatively sophisticated bassoon-shaped bass clarinets at the end of the eighteenth century and in the nineteenth century right up to about 1875, sometimes in C, sometimes in B♭, but always with a downward compass extension to (written) *C, BB* or *BB*♭ (in the latter case sometimes without *BB*, a note also absent in the early bassoon).

Before the introduction of rod-axles, brilles and fingerplates, large wooden instruments with fingerholes had one great disadvantage: the theoretically proper position of the open fingerholes was such that only the legendary giant would be able to reach and cover them. A solution was first found in the dulcian and the bassoon: the fingerholes were drawn together in groups, I–III and IV–VI; their bores were adapted to their nonacoustical position (holes I, III, IV, and VI had a slanting bore through the rather thick tube wall); and the bassoon had a wing joint thickened by the excrescence that gave it its name. The problem having for the time being been solved in the bassoon, it was obvious that the same problem could be solved in the bass clarinet by giving it the shape of a bassoon, wing joint and all—another reason for the popularity of the bassoon shape in the early development of the bass clarinet.

In the course of time basshorns, ophicleides, and finally tubas were developed and introduced as powerful bass instruments in the band, of

course, and these instruments caused the disappearance of the bassoon-shaped bass clarinets. But the type was slow to die. In the first place, the instruments by Beck and Stengel mentioned above were probably primarily band instruments (the downward extension of the *glicibarifono* also points in this direction, despite its use in the municipal theatre at Modena). In the second place, metal bass clarinets, also with downward extension keys, appeared quite late in the nineteenth century.

Ophicleide-shaped Bass Clarinets

In metal bass clarinets, all the holes are usually covered; rarely does an open hole have a brille. The starting point for such instruments was obviously not so much the bassoon as the ophicleide, another instrument with a large downward compass, usually down to *BB*. Like their models, ophicleide-shaped bass clarinets consist of a crook, a descending portion of the tube, a **U**-shaped base, an ascending portion, and a flaring bell. Technical improvements were applied to them: extensive use was made of rod-axles, touchpieces, and fingerplates; and sometimes a second speaker key was provided.

The *bimbonclarino* by Giovacchino Bimboni of Florence (fig. 5) is a comparatively simple instrument of this type devised probably toward the middle of the nineteenth century. (Bimboni also invented an ophicleide-shaped trombone with seven lengthening valves operated by keys, called the *bimbonifono.*) The *bimbonclarino* is an ophicleide-shaped bass clarinet of brass. A specimen is preserved in the Rück Collection in the Germanisches Nationalmuseum, Nuremberg,[27] in which the descending and ascending portion of the tube were lacquered black at a later date. There are twenty-one keys: on the descending part of the tube, open *f* (hinged for the left thumb), open *e, d,* and *c* (for the left first, second and third fingers respectively, all with angular levers and touchpieces mounted on a plate between the ascending and the descending parts of the tube), open *B* and *G* (for the right first and third fingers respectively, with fingerplates), open *A* (with brille over the hole for the right second finger, and with a vent key), and open *F,* as well as closed *b*♭, *a, g*♯, *f*♯, *e*♭, *c*♯, *B*♭ and *G*♯, all in the usual fingering. *F* and *G*♯ are both for the right fourth finger, with rollers. On the **U**-shaped base we find closed *F*♯ for the left fourth finger. Open *E* (left fourth finger) and the extension keys *E*♭ and *D* (right thumb) as well as *C*

27. Inventory no. MIR 482.

FIGURE 5a.

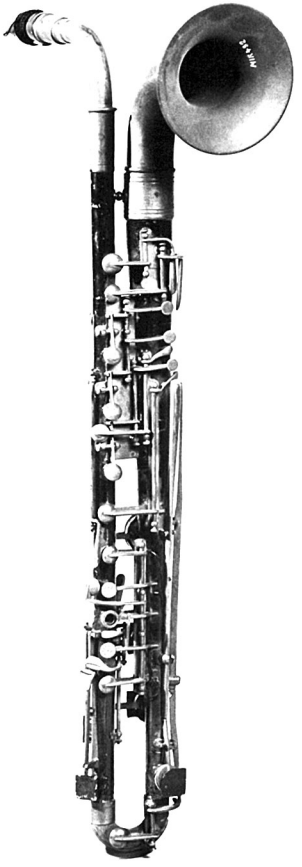
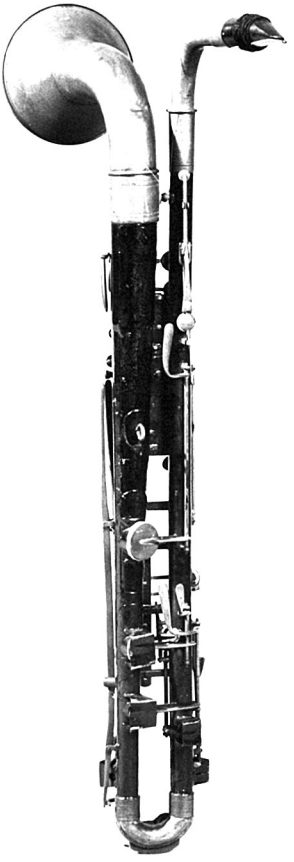


FIGURE 5b.



FIGURES 5a and 5b. Bass clarinet (*bimbonclarino*), probably made by Giovacchino Bimboni, Florence, ca. 1850. Germanisches Nationalmuseum, Nuremberg, Rück Collection, inventory no. MIR 482.

(left thumb) are on the rear of the ascending part of the tube. The instrument is in B♭ and has a narrow bore (21 mm).

A similar bass clarinet was devised in 1867 by Franz Losschmidt at Olmütz (a town of some importance in Moravia, with a German-speaking majority up to World War II; now Olomouc). Specimens are preserved in the Metropolitan Museum of Art in New York and in the Rück Collection in the Germanisches Nationalmuseum, Nuremberg (fig. 6).[28] The crook and tube of the Nuremberg instrument are of brass, the fittings and the twenty-three keys are of German silver, and the bell, elegantly fastened with a bayonet catch, is of brass with a German silver garland. The disposition of the keys is identical to that of the *bimbonclarino* with the following exceptions: there are two speaker keys for the left thumb; *e♭* (now missing) is for the right first finger instead of the usual left third finger; *A* is a normal open key without a special vent opening; there are no rollers on *F* and *G♯*; and finally, there are four extension keys on the rear of the ascending part of the tube, all open: *E♭* and *D* for the right thumb, and *C♯* (partly missing) and *C* for the left thumb. The instrument stands in B♭; the bore (28 mm) is considerably wider than that of the *bimbonclarino,* but not yet as wide as it is in French bass clarinets.

A Serpent-shaped Bass Clarinet

If the ophicleide could be taken as a starting point for the development of the bass clarinet, so also, in principle, could the serpent. A bass clarinet inspired by the serpent—a woodwind instrument albeit one played with a cup-shaped mouthpiece (from which the mouthpieces of the basshorn, ophicleide, and tuba were derived)—also had six fingerholes arranged in two groups of three. Nicola Papalini of Chiaravalle (a village southeast of Milan, built around a still existing Cistercian abbey from the twelfth century, and now part of greater Milan) designed a serpentine bass clarinet in about 1810. Its body is made like the serpent's: it is carved from two separate slabs of maple or pearwood, glued together, but left uncovered (the serpent was usually covered with leather). The upturned bell is of brass. The body has seven fingerholes on the front and two on the side, two thumbholes, and five keys. Fingerholes I and VI on the front are doubled. The difficulty with the instrument lies in its fingering, similar to that of the Giorgi flute: two lateral holes are to be covered by the lower joints of the left and right first fingers. The instrument is in C with a downward extension

28. Inventory no. MIR 481.

FIGURE 6a. FIGURE 6b.

FIGURES 6a and 6b. Bass clarinet by Franz Losschmidt, Olmütz (Olomouc, Czechoslovakia), after 1867. Germanisches Nationalmuseum, Nuremberg, Rück Collection, inventory no. MIR 481.

to *C*, and was therefore also primarily a wind-band instrument. Specimens of Papalini's slightly surrealistic-looking invention are preserved at Brussels, Paris, and Leipzig, as well as at New York and Boston.[29]

Bass Clarinets in Clarinet Shape

The normal clarinet, like the bassoon, ophicleide, and serpent, could also be a starting point for the development of the bass clarinet. Indeed, four basses with downward compass only to *E*, from the eighteenth century or about 1800 at the latest, are or were in existence at Berlin, Brussels, Lugano (Museo Civico), and Florence.[30] In all four instruments the problem of the acoustically wrong position of the fingerholes is solved by thickening the body of the instrument towards the lower end of the front, and by boring holes I, III, IV, and VI on a slant. All four instruments have metal bells, those in Berlin and Brussels with bells pointing upwards, and those in Lugano and Florence with bells pointing downwards. The Berlin instrument is probably the earliest, having only the *E* key, while the specimens at Brussels and Lugano have three keys (*b♭*, *a* and *E*); the Florence instrument is slightly more complicated, having open *E* and *F* as well as closed *b♭*, *a*, *e♭*, and *G♯*. The Berlin bass clarinet may well date from the first half of the eighteenth century, while those in Brussels and Lugano are probably from the middle of the century, and the Florence instrument may be from ca. 1800. This last bass clarinet was found in 1928 in the house of Domenico Del Mela, the inventor of the first vertical pianoforte (a specimen dated 1739 is still in existence in the Florence museum). It has been suggested that the Florence clarinet was also one of Del Mela's inventions,[31] but the probably late date of the bass clarinet makes this virtually impossible.

These four primitive instruments surviving in Berlin, Brussels, Lugano, and Florence were the starting point for the development of the present bass clarinet. Since this later development is widely known only a brief sketch is included here.

In 1807 Desfontenelles at Lisieux in Normandy devised a bass clarinet

29. Brussels: Mahillon, vol. 2, no. 940, and Young, *The Look of Music*, no. 246. Paris: Musée instrumental du Conservatoire national supérieur de musique, no. 550. Leipzig: Kinsky, p. 173, no. 1538. New York: Metropolitan Museum of Art, no. 2545. Boston: Nicholas Bessaraboff, *Ancient European Musical Instruments* (Cambridge, Mass.: Harvard University press, 1941), no. 119, and Young, *The Look of Music*, no. 247.

30. Berlin: Sachs, no. 2910 (lost in World War II). Brussels: Mahillon, vol. 2, no. 939, and Young, *The Look of Music*, no. 243. Florence: Gai, no. 160.

31. A. Bonaventura, "Domenico Del Mela e il primo pianoforte verticale," *Bolletino della Società Mugellana Studi Storici* 4 (1928): 9–10.

with an upturned wooden bell[32] (a specimen is preserved in the Musée instrumental du Conservatoire in Paris), and in the same year Dumas, of Sommières in Provence, devised in Paris his *basse guerrière* (so termed in the *Archives des découvertes* in 1811[33]), which, according to an account in the *Revue et Gazette musicale de Bruxelles* of 1834[34], had a straight body, i.e., a downward-pointing bell. Both instruments had thirteen keys at a time when the clarinet itself was not yet built with this number. The comparatively complicated arrangement of the keys alarmed clarinet players, and the two instruments were not developed any further at that time. If we are to believe Henri Lavoix,[35] Dumas was greatly disappointed, and at his death in 1832 entrusted his instrument to Isaac Franco Dacosta, a solo clarinettist and early bass clarinet player who at that time cooperated with Louis Auguste Buffet (*le jeune*); but whether or not Buffet developed the instrument is not known. As the name *basse guerrière* suggests, the instrument was intended primarily for band use. Nothing is known about its downward compass extension, if any. But it must have been for an instrument of this kind—or perhaps for a first development from it by Buffet *le jeune*—that Meyerbeer wrote the first solo part for bass clarinet in B♭, in the trio in the fifth act of *Les Huguenots* of 1836. As the composer does not write lower than *E* for the instrument, it can be assumed that the bass clarinet for which he wrote had no downward extension.

In 1838 Adolphe Sax, then still at Brussels, perfected a model with a downward-pointing bell that had all tone holes covered (therefore, open keys for *E, F, G, A, B, c, d, e,* and *f*) and two speaker keys for the left thumb. It was undoubtedly such an instrument that Hector Berlioz describes in his *Traité d'instrumentation* of 1844, where the compass for the B♭ bass clarinet with twenty-two keys is given as e–g''' (notated in the treble clef), therefore indicating an instrument without downward extension.[36]

Whatever Dumas' influence on Buffet *le jeune* may have been, the Buffet-Crampon bass clarinet in the Rück Collection in the Germanisches Nationalmuseum, Nuremberg (fig. 7),[37] made at Paris between 1838 (when Sax devised his new model) and 1855 (when the Buffet stamp was changed) plainly shows Sax's influence. The instrument has a body of boxwood, with crook, fittings, keys, and upward-pointing bell of brass. The

32. Pierre, 49–51.

33. *Archives des découvertes* 3 (1811): 222. The first names of Desfontenelles and Dumas are unknown.

34. *Revue et Gazette musicale de Bruxelles* (1834), 348.

35. Henri Lavoix, *Histoire de l'instrumentation depuis le 16e siècle* (Paris, 1878), 124.

36. Hector Berlioz, *Instrumentationslehre*, ed. and trans. Richard Strauss (Leipzig: C. F. Peters, 1904), 237–38.

37. Inventory no. MIR 478.

FIGURE 7. Bass clarinet by Buffet-Crampon, Paris, made between 1838 and 1855. Germanisches Nationalmuseum, Nuremberg, Rück Collection, inventory no. MIR 478.

crook has the two speaker keys for the left thumb, while the bell has open *E* and closed *F*♯, both for the left fourth finger. The keys *f, e, d, c, B, A, G,* and *F* are all open, mounted on rod-axles, partly double and providing a perfect venting system. The closed keys, not only for *a* and *g*♯, but also for *f*♯, *e*♭, *c*♯, *B*♭, and *G*♯ (which may be compared with the Dorus *g*♯′ on the Boehm flute), do not interfere with the venting system. The instrument has a very wide bore (32 mm), a French characteristic.

The upturned-bell model became usual in France, England, and Germany. A slightly old-fashioned specimen with a kind of bassoon wing on the upper middle joint by A. Nechwalsky of Vienna, now in the Smithsonian Institution in Washington, D.C., shows that this type was also made in Austria.[38]

Bass clarinets are still occasionally made in Germany with downward-pointing bells of wood. An instrument of this type in B♭ by Johann Simon Stengel in Bayreuth, ca. 1880, is found in the Händel-Haus at Halle an der Saale.[39] It is of cocus, with a brass crook, fittings and keys; its sixteen keys and two brilles are all mounted on rod-axles. A similar specimen in B♭ by the Heckel firm of Biebrich (patent number 706557), of stained maple (the Heckels were primarily bassoon makers) with crook, fittings, and keys of German silver, is in the Rück Collection in the Germanisches Nationalmuseum, Nuremberg (fig. 8).[40] As in the Buffet-Crampon instrument, the keys are mounted on rod-axles, and there are open keys for *f, e, d, c, B, A, G, F,* and *E*. This instrument has three remarkable features: there are three speaker keys for the left thumb, all automatic, with an additional *b*♭ trill key for the right first finger instead of the usual left thumb; the key cover of fingerhole I (*e*) is perforated, undoubtedly to facilitate some of the higher notes; and finally, there is a *D*♯key for the right thumb, enabling the player to perform, on an instrument in B♭, the note produced by the *E* fingering for the obsolete bass clarinet in A. These German instruments have a narrower bore than the French ones: the cylindrical portion of the Stengel has a diameter of 20 mm, and while that of the Heckel is somewhat wider (27 mm), it still does not reach the French diameter of over 30 mm.

Since the bass clarinet was at the beginning a wind-band instrument, the eighteenth-century instruments described that have a downward compass to *E* must have proved unsatisfactory because of the missing lowest notes.

38. Nicholas Shackleton, "Bass clarinet," *The New Grove Dictionary of Musical Instruments,* vol. 1 (London: Macmillan, 1984), p. 169, fig. 1c.

39. Herbert Heyde, *Katalog zu den Sammlungen des Händel-Hauses in Halle,* vol. 7, *Musikinstrumentensammlung: Blasinstrumente, Orgeln, Harmoniums* (Halle an der Salle: Händel-Haus, 1980), 232–33.

40. Inventory no. MIR 480.

FIGURE 8. Bass clarinet by Heckel, Biebrich, ca. 1900. Germanisches Nationalmuseum, Nuremberg, Rück Collection, inventory no. MIR 480.

Perhaps as early as 1760 Anton and Michael Mayrhofer devised at Passau what may be a bass clarinet with a limited compass extension. The instrument, now in the Stadtmuseum, Musikinstrumentenmuseum at Munich,[41] is well known. It has the curved shape of the bassethorn, but with a curious 360° coil of wooden tube instead of the triple-bored flat block of wood usually found in early bassethorns. The curved tube and the coil are not bored and bent, as is usual in early bassethorns, but made in two sections glued together and covered with leather. A metal bell (a replacement made when the instrument was restored) is stuck into the end of the coil. The keywork is that of the normal five-key clarinet (*b*♭, *a*, *G*♯, *F*♯, and open *E*) with an extra open *F* key to which is added only one extension key, open *C*. The whole instrument is in B♭, so that the lowest note is the bassoon *BB*♭; but there is a gap between this note and the sounding *D* of the *E* fingering.

There are two reasons for doubting that this instrument is in fact a true bass clarinet. In the first place, the gap between the two lowest notes does, indeed, bring to mind the bassethorn, especially since Johann Georg Albrechtsberger points out that bassethorns could stand not only in G or F, but also in E, E♭, or D (I agree that he does not mention a tuning in B♭). The fact that low bassethorns existed has been observed by Jürgen Eppelsheim.[42] In the second place, the Munich instrument bears the same stamp, "ANT: et MICH: MAYRHOFER INVEN: & ELABOR: PASSAVII," as on the three existing bassethorns by these makers (Passau, Nuremberg, and Bonn). The designation of the instrument as either a bass clarinet or a bassethorn is all the more difficult because, as Eppelsheim observed after carefully measuring a great number of examples, it is impossible to draw a sharp distinction between the two instruments. In any case, whatever the Munich instrument may be, it is not the oldest bass clarinet in existence.

It has also been observed that the invention of a practicable bass clarinet for the orchestra did not immediately banish the instrument intended for the wind band. Indeed, even Sax continued to offer for sale basses with an upturned metal bell and a compass extension down to *C*.

An English bass clarinet in B♭ in The Museum of Fine Arts, Boston,[43] of boxwood with a German silver crook, fittings, keys, and bell, is an interme-

41. Young, *The Look of Music*, no. 244. See also Young, "A Bass Clarinet by the Mayrhofers of Passau," this *Journal* 7 (1981): 36–46.

42. Eppelsheim, "Bassetthorn-Studien," *Studia organologica, Festschrift für John Henry van der Meer zu seinem fünfundsechzigsten Geburtstag*, ed. Friedemann Hellwig, Wissenschaftliche Beibände zum Anzeiger des Germanischen Nationalmuseums, 6 (Tutzing: Hans Schneider, 1987): 60–125, especially 90–94.

43. Bessaraboff, no. 120.

diary instrument. The main body of the instrument descends down to *E* and enters into a butt containing the *E*♭, *D*, *C*♯ and *C* keys; the upward-pointing wide-flaring bell is fixed into the butt. The instrument, comparable to certain types of *cor anglais* of French manufacture that may have inspired it, can be considered to be either a bass clarinet that has an upward-pointing bell with a butt at the lower end, or else a bassoon-shaped bass clarinet without a bass joint. In any case, use in wind bands was obviously a consideration, for the compass extends down to *C*. One is tempted to identify the (unfortunately) unsigned eighteen-key Boston instrument with the bass clarinet invented in 1833 by the London maker George Wood, which, according to Geoffry Rendall,[44] also had eighteen keys.

* * *

The bass clarinet, as I have indicated, was at first used primarily in wind bands, where it was needed to replace the bassoon and the serpent. The earliest sophisticated bass clarinets, in fact, took the shape of the bassoon or a related instrument (dulcian, basshorn), and later on that of the ophicleide; and Papalini developed a bass clarinet in serpentine shape. All of these instruments have a downward compass extension to *C*, *BB*, or *BB*♭.

The bass clarinets developed from the clarinet were, at the beginning, without compass extension, and were therefore far less sophisticated. As band instruments they were useless. Only in the nineteenth century did France develop a useable bass clarinet for the orchestra without a downward compass extension—after the experiments of Desfontenelles and Dumas, Sax and Buffet had laid the foundation of the modern bass clarinet, which, to quote Rendall, "differs singularly little from that of 1838."

In the course of working out this account of the development of the bass clarinet, a certain amount of new ground has been covered, such as the tracing back of the bass clarinet to the early eighteenth century (the Salzburg instrument), the discussion of the bass clarinets in the Germanisches Nationalmuseum, Nuremberg (among which the one with extension keys to be closed by outward pressure of the thumbs and the *bimbonclarino* are probably the most interesting), and the doubts about the designation of the Munich instrument as a bass clarinet. But my chief motive has been the making of the typology itself, for I am of the opinion that such a typology of the bass clarinet helps us to understand its history far better than can any mere summing up of chronological sequences.

Fürth, West Germany

44. F. Geoffrey Rendall, *The Clarinet: Some Notes on Its History and Construction*, 3d ed. rev. by Philip Bate (London: W. W. Norton and Co., 1971), 144–45.