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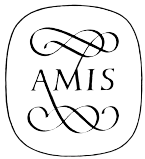

Sarrusophone, Rothphone (Saxorusophone) And Reed Contrabass

GUNTHER JOPPIG

UNTIL THE BEGINNING of the French Revolution, military music ensembles in France, with their eight to twelve musicians, would have been indistinguishable from the corresponding bands of England, Austria, Prussia or America.[1] But scarcely a year later, Paris had a professional wind orchestra with about forty-five members: Bernard Sarrette (1765–1858), an administrative secretary responsible after 1789 for the regimental musicians of the *Garde française,* had arranged for the new music corps of the *Garde nationale* to have a budget of its own, eliminating its dependence on donations from the officers. By 1790, the music corps had grown to seventy-eight members, only to be reduced to fifty-four in 1792. These men, however, were given the responsibility of instructing 120 young citizens in a music school opened for the purpose (the predecessor of the Paris Conservatory, founded in 1795). The list of teachers gives us an approximate idea of the instrumentation used: three flutes, four oboes, thirteen clarinets, eight horns, three trumpets, one trombone, five bassoons, and two serpents.[2]

The bassoon had the nimbleness but not the carrying quality necessary for the open-air concerts of such bands; one could only try to compensate for this defect by providing for a sufficient number of them. The serpent, on the other hand, was difficult to play in tune because of its principles of construction:

> The tube's serpentine form was for better handling. But because it would have been impossible to close acoustically correct holes, given the span of the hand and the size of the fingertips, it was necessary to make the borings small and in

This article, translated into English by Griffin Anderson, was published in a somewhat different form in the original German in *Alta Musica* 7 (1985): 77–122. It is based on a paper presented at the 1984 Congress of the International Double Reed Society in Graz, Austria, where many of the instruments mentioned were exhibited concurrently in the Grazer Stadtmuseum.

1. Cf. David Whitwell, *Band Music of the French Revolution* (Tutzing: Schneider, 1979), 16–17.

2. Cf. Pamela Weston, *Clarinet Virtuosi of the Past* (London: published by the author, 1971), 61.

two closely spaced groups of three. The tone was seldom thought of as pleasant.[3]

Sarrette's *tuba curva,* though loud enough, could produce only a very few tones; and the bass trombone, because of its length, the volume of breath it required, and its general lack of fluidity in rapid passages, could only be played with difficulty. For a considerable while, then, it was customary to use from six to ten string contrabasses. At the end of the eighteenth century, a series of improvements to the serpent was attempted: as experience was gained in the construction of tightly closing keys, additional keys were built on;[4] and a modified bore based on that of the bassoon was also tried. (It was quite normal to adapt the construction principles of one type of instrument to the needs of another, for instrument builders knew nothing of the strict differentiation between the woodwind and the brass families that would develop late in the nineteenth century.)

In 1795, August Grenser (1720–1807) had built a bass clarinet in the form of a bassoon, a construction which in all probability served as a model for many later instruments.[5] The serpent was also redesigned in the shape of the bassoon and called the English basshorn or Russian bassoon; this form allowed its bore to be narrower and its fingerholes more comfortably arranged and acoustically "correct." The tone was finer than the serpent's, though softer, and the handling of the instrument while marching was greatly improved. Chromatic notes, however, were still a problem, and had to be produced by means of cross fingerings or the partial covering of fingerholes.

The instrument maker Jean-Hilaire Asté, known as Halary, who had settled in Paris in 1804, expanded the keyed bugle (patented by Joseph Halliday in 1810)[6] to a family through the addition of deeper-toned instruments. In 1817, he presented the Academie des Beaux-Arts with a *clavitube* or *trompette à clef* in different pitches, a *quinticlave* or *quinte à clef* (F or E♭ alto

3. Bruce Holcomb, "Die Ventil-Metallblasinstrumente (Tuben) in Salzburger Museum Carolino Augusteum und ihre Stellung in der Musikinstrumentenentwicklung," *Salzburger Museum Carolino Augusteum,* Jahresschrift 22, 1976 (Salzburg: Museum Carolino Augusteum, 1977): 67. Translations of quotations are by Griffin Anderson.

4. More information on the development of the key at the beginning of the nineteenth century can be found in Gunther Joppig, *Die Entwicklung der Doppelrohrblatt-Instrumente von 1850 bis heute und ihre Verwendung in Orchester- und Kammermusik* (Frankfurt: Das Musikinstrument, 1980), 23–42.

5. Hessisches Landesmuseum, Inventory no. KG 67:133.

6. Commissioners of Patents for Inventions, *Patents for Inventions: Abridgements of Specifications Relating to Music and Musical Instruments, 1694–1866* (London: Eyre and Spottiswoode, 1871), 61.

keyed bugle in bassoon form) and an *ophicléide* or *serpent à clef* in C or B♭, also in bassoon form. The ophicleide, patented in 1821, was rapidly accepted in French military and theatre orchestras.

From this time on, the thought that any musical instrument could be built in many sizes greatly influenced French builders of wind instruments. This idea can in no way be said to have originated with Adolphe Sax (1814–1894), as William McBride seems to suggest:

> Between the time of the first bass clarinet and the first saxophone patents, Sax was developing the general idea that the characteristic sound of a particular instrument could be realised through a family of instruments, the composite range of which would go from the deepest bass to the highest soprano.[7]

Developments in Germany during these years were governed by different tendencies. Scientific methods for the calculation of instrument bores and fingerhole placement allowed instrument makers to break radically with tradition. In 1820, Johann Heinrich Gottlieb Streitwolf (1779–1837) introduced a chromatic bass horn. Karl Almenräder (1786–1843), in conjunction with Gottfried Weber (1779–1839), brought out their first improvements to the bassoon in 1825, Weber having based his work on *Die Akustik,* published in 1802 by Ernst Florens Friedrich Chladni (1756–1827). These pioneers were among the first generation of musicians and instrument makers to show a theoretical as well as practical interest in the construction of wind instruments.

It is indicative of the situation in Europe that inventors and musicians preferred to announce their discoveries and improvements in Paris.[8] Almenräder's improvements were first accepted in France (as I have remarked elsewhere),[9] and Schott published his "Abhandlung über die Verbesserung des Fagottes" (Treatise on the Improvement of the Bassoon) in German and French.

Streitwolf's chromatic bass horn became popular in Prussian military bands, and was often used together with the ophicleide, which outclassed it in volume, but could not equal its tonal beauty and purity.[10] Noteworthy

7. William McBride, "The early Saxophone in Patents 1838–1850," *The Galpin Society Journal* 35 (1982):115–116.

8. Details and documents will be published in Gunther Joppig, *Die Klarinette,* Unsere Musikinstrumente (Mainz: B. Schott's Söhne, in preparation).

9. Gunther Joppig, "Speech Given on the Occasion of the 150-year Jubilee of the Firma Wilhelm Heckel KG in Wiesbaden-Biebrich on March 11, 1981," *150 Jahre Heckel-Biebrich* (Wiesbaden: published privately, 1981), 4. An abridged version was published as "150 Jahre Heckelinstrumente," *Tibia,* 1981, 345–50.

10. A chromatic basshorn in the author's collection carries the engraved name of the

characteristics of the chromatic bass horn were the arrangement of the tone holes according to acoustical principles, the keyboard-like arrangement of the four to five key touches for the left hand, and the replacement of the typical bassoon-like butt with a **U**-bend of metal joining the two tubes. Notable, too, is the bore, which, compared to that of the ophicleide, is much less conical, and therefore very close to the bore of the corresponding bass sarrusophone. In 1828, Streitwolf introduced his own model of bass clarinet:

> This instrument is made of boxwood and is played exactly like a clarinet or bassethorn; a whole octave lower than the common C clarinet, it can go down below the low E to a contra-B♭, in other words, as low as a bassoon. Even so , it is only 2 1/4 Kallenberg feet long [85.5 cm, or 33.7 in.] including the bell, which is made of brass. It is like a bass horn in appearance . . .[11]

The supposition that Adolphe Sax was acquainted with this bass clarinet of Streitwolf's goes back as far as Altenburg:

> It is not impossible that Sax used an original Streitwolf in his first experiments, and later, perhaps similar inventions by X. Lefèvre and by L. Müller in Lyon as well.[12]

It is difficult to substantiate such speculations, as there is no instrument of Streitwolf's in the auction catalog of the Sax collection; but there is, under the number 259, a "Batyphon," a contrabass clarinet by Wieprecht and Skorra, Berlin.[13]

Wilhelm Wieprecht (1802–1872) not only invented new instruments (the bathyphone and tuba), he also succeeded in reforming the Prussian military bands, an accomplishment which won Hector Berlioz's enthusiastic admiration and provoked his critical remarks with regard to the French during Berlioz's visit to Germany in 1840–41.[14]

Adolphe Sax, who made a brief visit to Berlin in 1842, excited a good

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former owner, "Garde Regiment I." The instrument's protective rim, containing Streitwolf's signature, is missing.

11. A. Wendt, "Anzeige über die neu erfundene Bass-Klarinette und Kontrabass-Klarinette," *Berliner Allgemeine Musikalische Zeitung* 7, no. 21 (1830):167.

12. Wilhelm Altenburg, *Die Klarinette: Ihre Entstehung und Entwicklung bis zur Jetztzeit in akustischer, technischer und musikalischer Beziehung* (Heilbronn: Schmidt, [1904]): 32.

13. *Catalogue du Musée Instrumental de M. Adolphe Sax* (N.p., n.d.), 21. The instrument in question is described in the *Catalogue descriptif et analytique du Musée Instrumental du Conservatoire Royal de Musique de Bruxelles* I:216–20, and came, by way of the Snoecksche Collection, into the Musikinstrumenten-Museum Berlin.

14. Hector Berlioz, *Memoiren*, ed. Wolf Rosenberg (Munich: Rogner und Bernhard, 1979), 297–98.

deal of attention with the introduction of his bass clarinet and bass saxophone in that year, and the discussion about the instrumentation of French military bands was thus given fresh impulse. Both Berlioz and Georges Kastner actively promoted him: Berlioz, in his *Grand Traité d'instrumentation et d'orchestration* (1844), had included the saxophone, saxhorn, saxtrumpet, and saxtuba, devoting a chapter to each; and Kastner had mentioned Sax quite favorably in his *Manuel général de musique militaire* (1848). Berlioz's remarks about Prussian military music show that a reform of French military music was considered imperative in his circles. In 1845, after Sax had been given an opportunity to present his instruments directly to the royal family, a royal commission for the reorganization of military music was ordered to investigate his proposals. To this commission belonged the musical advisors Spontini, Saint-Andréa, Auber, Halévy, Adam, Onslow, and Carafa, as well as Gudin and Riban, the conductors of military bands. In addition, an acoustical consultant, Savart, and a technical consultant, Séguier, were named. The commission was chaired by Minister of War de Rumigny, who also drafted the final report.[15]

After a study of Sax's proposals, the commission arranged a contest between a conventional military band and one equipped according to Sax's suggestions, the former to be directed by Carafa, the latter by Sax himself. The date set was April 22, 1845. Carafa's infantry band consisted of forty-five musicians:

1 small flute
1 small clarinet
2 solo clarinets
7 first clarinets
7 second clarinets
4 oboes
4 bassoons
2 natural horns
2 valve horns
2 Sax valve trombones
2 *cornets à pistons*
3 trumpets
4 ophicleides
4 percussionists

For reasons which are not clear, Sax used only thirty-eight of the forty-five musicians provided him. Six trumpets built to his specifications were not

15. Cf. Georges Kastner, *Manuel général de musique militaire à l'usage des armées françaises* (Geneva: Minkoff, 1973), 253–54.

used, and one percussionist was missing. A bass clarinet was also used instead of a contrabass saxhorn:

1 small flute (in D-flat)
1 small clarinet (in E-flat)
6 clarinets (in B-flat)
1 bass clarinet
2 *cornets à pistons*
2 small saxhorns in E-flat
4 saxhorns in B-flat
4 saxhorns in E-flat (alto)
4 saxhorns in E-flat (bass), two with three valves, two with four valves
3 contrabass saxhorns in E♭
2 valve trombones
2 trombones
2 *ophicléides à clefs*
4 percussionists

In this list, from Kastner's *Manuel général,* the *ophicléides à clefs* (fig. 1) are almost certainly the first form of saxophone (known to us through the patent application of 1846), which were occasionally called *ophicléides à clefs et à bec.* McBride has found the name *ophicléide à bec* in the *Revue et Gazette Musicale de Paris* for March 13, 1842, p. 99.[16]

The commission acknowledged that Carafa's group produced "une grande variété de timbres," but said that the Sax ensemble was marked by

> . . . a more powerful and more homogeneous sonority; by a remarkable fusion and rare plenitude (of sound) in the *forte* as well as in the *piano*; finally, by a carrying quality and volume such that, even at a considerable distance, no detail of this harmonious ensemble was lost to the ears of the satisfied and charmed listeners.[17]

The commission then worked out an instrumentation through which, by using Sax's constructions, France was to have been assured the predominant position in European military music. Particularly interesting in the report are the remarks on oboes and bassoons. It called for eight military oboes and four military bassoons that differed from the standard instruments with respect to their bore and the reeds they used: ". . . ayant une plus grande dimension et une anche plus forte que les hautbois dont on fait usage en France."[18]

16. McBride, 120.
17. Kastner, 267.
18. Kastner, 269. A military bassoon patented by Jean Winnen (1795–1867) in France in 1844 was made of metal and called the *bassonore.*

FIGURE 1. Caricature from "Le Charivari." Lithography by Frederic Bouchot, "Les Bonnes têtes musicales" no. 6 (Paris: Aubert, 1847).

According to the commission, the ideal instrumentation would require seventy-four musicians:

1 small flute
2 small clarinets in E-flat
8 military oboes (first and second parts)

16 clarinets in B-flat (first and second parts)
2 alto clarinets in F
2 bass clarinets
2 saxophones
4 military bassoons
4 Sax valve trumpets
2 small saxhorns in E-flat
4 saxhorns in B-flat
4 alto saxhorns in E-flat
4 bass saxhorns in B-flat
4 contrabass saxhorns in E-flat
4 horns (two natural horns, two valve horns)
3 trombones (alto, tenor, and bass)
3 valve trombones (alto, tenor, and bass)
5 percussionists

Later, however, a reduced instrumentation of fifty-four musicians for infantry music was decided upon:

1 small flute in C
1 small clarinet in E-flat
14 *omnitonique* clarinets in B-flat (first and second parts)
2 bass clarinets in B-flat (according to Sax's plans, with a metal bell)
2 saxophones
2 oboes *(modèle allemand)*
2 bassoons *(avec pavillon de cuivre)*
2 cornets with three valves
2 trumpets with three valves *(système Sax)*
4 valve horns
1 small saxhorn in E-flat
2 saxhorns in B-flat
2 alto saxhorns in E-flat
3 bass saxhorns in B-flat with three or four valves
4 contrabass saxhorns in E-flat
1 valve trombone *(système Sax)*
2 trombones
2 ophicleides
5 percussionists

The *omnitonique* clarinet mentioned above, also developed by Sax, could be played cleanly in all keys, it was claimed. The saxhorns were the first complete family of instruments that Sax developed. The bassoons were to be fitted with a flared metal bell like those used on bass horns (fig. 2) or on the contrabassoons then current in Germany and Austria, both compromise solutions that offered a further challenge to the ingenuity of the instrument makers.

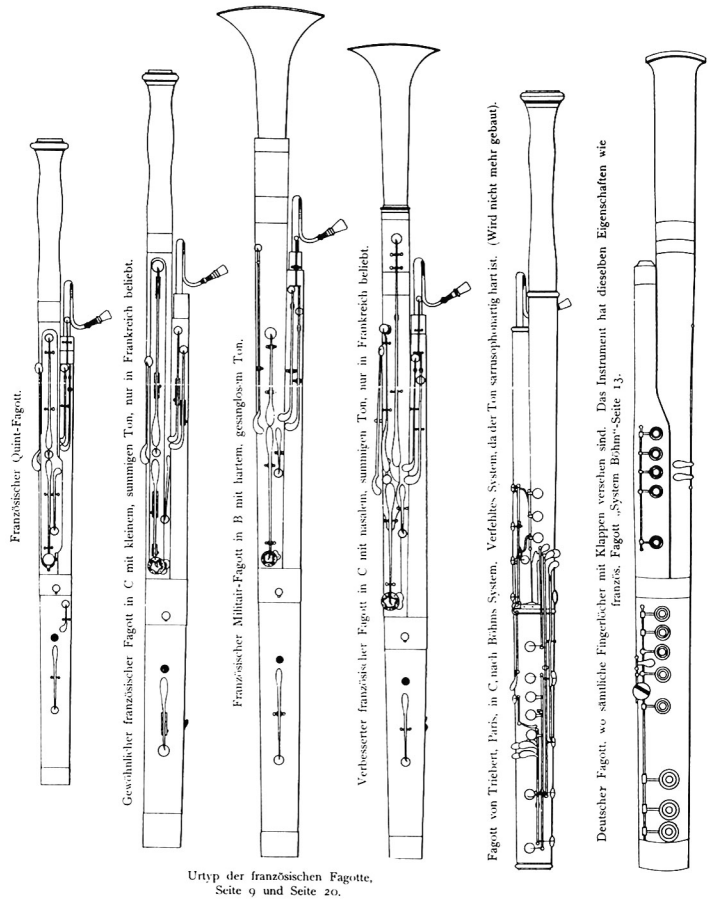


FIGURE 2. Various bassoons from Heckel, "Der Fagott," 1899.

Berlioz also advocated the adoption of Sax's instruments, but at the same time suggested expanding the double reed register to include the quintbassoon and the contrabassoon:

> *In the high range,* the quintbassoon is to the bassoon what the English horn is to the oboe *in the lower ranges.* . . . Its sound is not so delicate as that of the English horn, but stronger, and it would have an excellent effect in military music. The sharp, brass band sound would be effectively modulated by the addition of a number of large and small bassoons, and it is quite annoying and disadvantageous that we have come to exclude these instruments almost totally.

As to the contrabassoon, he writes:

> For the wind band, it is quite valuable, yet only a small number of musicians are prepared to play it.[19]

Berlioz's textbook on instrumentation aroused great attention immediately after its publication, as Hans Bartenstein has shown[20]; and Sax, who had patented the saxophone in 1846, took account of these suggestions that Berlioz had made in it when he applied for further patents. In 1851, a new bassoon and a contrabass clarinet, both made of metal, received their patents.

By the mid-nineteenth century, the wind orchestra had developed enormously; and innovation became necessary, for traditional instruments, particularly those in the bass register, were being pushed to their limits as their players struggled to meet increased demands as to tone quality, volume, and playing technique. It was perhaps only natural that instrument builders followed the precedent of the late eighteenth-century development of a clarinet family, and sought solutions along similar lines in a series of instruments of different sizes constructed according to uniform principles.

The Sarrusophone

The desiderata for improving the bassoon, derived from the experience of military bands, may be summed up as follows:

1. The instrument should produce more volume, which could be attained by means of a larger bore combined with larger tone holes.

19. Hector Berlioz, *Grosse Instrumentationslehre,* ed. Felix Weingartner (Leipzig: Breitkopf und Härtel, 1921), 102–3; 94.

20. Cf. Hans Bartenstein, *Hector Berlioz' Instrumentationskunst und ihre geschichtlichen Grundlagen; Ein Beitrag zur Geschichte des Orchesters* (Baden-Baden: Koerner, 1974).

2. Individual instruments, from soprano to contrabass, should produce as homogeneous a tonal timbre as possible; this could best be attained by building them a fifth apart.
3. The instruments should be practical as marching instruments and have a good sound distribution: they should be handy and not hinder the legs, and the bell, ideally, should point upwards. Wieprecht's criticism of Sax's bass clarinet shows how important ease of handling was considered for the marching musician:

> If Mr. Sax had made this instrument easy to carry, somewhat like the bassoon or the bathyphone, this bass clarinet would be very commendable for military music in place of the bassoon.[21]

These needs, then, in combination with the nineteenth-century passion for mechanical perfection and invention, seem to have been the starting point for what was to become a whole family of new instruments.

However, it is possible that vindictiveness also played a role: the Parisian instrument manufacturers Raoux, Halary, Gautrot, Buffet, and Gambaro, all competitors in the normal course, filed suit on August 6, 1847, against both of Sax's patents: that of 1843 ("Chromatic instrument system"), and that of 1845 ("A musical instrument, called the saxotromba, whose principles of construction may by means of slight modifications, be applied to saxhorns, cornets, trumpets, and trombones"). The complaint of the instrument manufacturers was based on the claim that Sax's improvements had long been known at home and abroad;[22] the suit went through five appeals and ended in 1854 with a victory for Sax. An answer from the manufacturers was not long in coming, this time from the workshop rather than from the law court.

It is interesting to speculate as to how closely de Pontécoulant hit the mark in his 1861 *Organographie* on patents with this remark among the entries for 1856:

> *Gautrot,* seeking to counterbalance the success and the vogue of the *Saxophone,* came up with the idea of producing a gross imitation under the name *Sarrusophone.*

21. Wilhelm Wieprecht, "Reise-Briefe an Herrn L. Schneider, Erster Brief, Koblenz den 16. August 1845," *Berliner musikalische Zeitung* 2, no. 41 (1845). Cf. Jürgen Eppelsheim, "Das 'Subkontrafagott'," *Bericht über die erste internationale Fachtagung zur Erforschung der Blasmusik, Graz 1974,* ed. Wolfgang Suppan and Eugen Brixel (Tutzing: Schneider, 1976), 250, note 48.

22. Legal brief of the prosecution printed in A. de Pontécoulant, *Organographie: Essai sur la facture instrumentale: art, industrie et commerce: tome second* (Paris: n.p., 1861), reprinted in *Facsimiles of Rare Books on Organ and Organ Building* 9 (Amsterdam: Knuf, 1972), 278.

This is one of the first appearances of the name sarrusophone in French technical literature. It provides interesting evidence that, at the time, the method of sounding an instrument, whether with single or double reed, was not seen (at least by M. de Pontécoulant) as justification for a patent. But it was Adolphe Sax's habit to take out a patent on even the smallest improvements—as a Belgian, and thus a foreigner, he felt compelled to do this to beat out the established Parisian competition). This led to a flood of patent applications and new names. Eduard Hanslick described the situation quite accurately:

> In no other field of practical music do we find so many claims of priority and so much bickering among inventors as in that of the brass instrument manufacturers. The advertisements and brochures of almost all prominent exhibitors teem with complaints about this or that rival who has taken an invention that they, the "first" inventors, have made, imitated it, renamed it, got a patent for it, and so on. Those thus accused usually throw the charges back in the face of their accusers. It is possible that individual, or even numerous cases of dishonesty do happen in this respect, as, for example, one cannot deny that the French and English have appropriated quite a few German inventions, and then seen to it that they were brought out with ten times the noise and ten times the success. However, the majority of these correspondences in this specialty must really have been unintentional. The same need leads in countries of the same cultural level to the same invention.[23]

Exact information about the Gautrot family is not to be had, and the little material about the Gautrot brothers that does exist is partially contradictory. Lütgendorff writes:

> A Gautrot from Mirecourt founded a factory for musical instruments in Chateau-Thierry in the 1850's. The violins that carry the name "Barzoni" were probably produced here.[24]

23. Eduard Hanslick, "Classe XVI, Musikalische Instrumente," *Österreichischer Bericht über die Internationale Ausstellung in London 1862*, ed. Joseph Arenstein (Vienna: K. und K. Hof- und Staatsdruckerei, 1863), 440. (The author wishes to express his gratitude to Karl Ventzke, Düren, for calling his attention to this article.) According to Richard Stegemann, "Das Patentwesen," *Das Goldene Buch des Deutschen Volkes an der Jahrhundertwende*, ed. Julius Lohmeyer (Leipzig: Weber, 1900), 57:

> Protection for commercial inventions in Germany, as a feature of the general German law [structure], dates from the year 1877. Whereas before that time there had been a confusing diversity of patent regulations in the individual German states, unified legislation governing the protection of inventions was provided for the first time through the patent law of May 25, 1877.

24. Willibald Leo Lütgendorff, *Die Geigen- und Lautenmacher vom Mittelalter bis zur Gegenwart: Unveränderter Nachdruck der 6. durchgesehenen Auflage* 1 (Tutzing: Schneider, 1975), 104.

In the second volume of his alphabetical catalog of violin and lute makers there are two entries:

> *Gautrot ainé [the elder] & Cie.—Paris. Founded 1827*
> Well-known firm of musical instrument manufacturers, which mainly produces flutes, but also violins. The firm is now called "Couesnon & Cie Succrs. of Gautrot ainé & Cie."
> *Gautrot.—Chateau-Thierry. 1855. 1877*
> A member of the family from Mirecourt founded the factory in 1855, in which violins and bows were also produced.[25]

Rene Vannes, citing Lütgendorf, mentions the Gautrot brothers, and adds some details:

> Clair, the elder. Maker of wind instruments.

and

> Pierre-Louis. Brother of the above. Born at Mirecourt about 1830 . . . occupied himself with the construction of stringed instruments.[26]

The patent application for the sarrusophone clarifies matters as follows:

> *Descriptive memorandum* filed in support of an application for a *Patent* of fifteen years' duration for the invention of a family of brass musical instruments called sarrusophones. By *Gautrot* ainé (Pierre-Louis), maker of musical instruments, rue St-Louis 60 (Marais) Paris.[27]

According to this, Pierre-Louis is clearly the maker of wind instruments, and Clair therefore the maker of stringed instruments. The year of birth, 1830, must also apply to Clair, for as early as 1846 Pierre-Louis owned his own firm, called "Gautrot ainé et compagnie" by 1850. According to Constant Pierre, in 1845 Gautrot took over from Guichard a firm founded in 1827.[28] In 1847 he obtained a patent for a tuning slide for the ophicleide. The following addresses of the firm are attested in the *Almanach du Commerce* by Didot-Bottin:

1846:	Gautrot et compagnie, makers of musical instruments, 6–8 rue du Cloître Notre Dame.
1850:	Gautrot ainé et compagnie, 64, rue St.-Louis au Marais.
1868:	Gautrot ainé et compagnie, 80, rue de Turenne.

25. Lütgendorff, v. 2, p. 159.

26. René Vannes, *Dictionnaire universel des luthiers* 1 (Brussels: Les Amis de la Musique, 1975):123. Information from Vannes' work has been taken over *en bloc* by Karel Jalovec, *Enzyklopädie des Geigenbaues* 1 (Prague: Artia, 1965), 330.

27. P. L. Gautrot, brevet français (French patent) 28.034, June 9, 1856.

28. Cf. Constant Pierre, *Les Facteurs d'instruments de musique* (Paris, 1893; reprint, Geneva: Minkoff, 1971), 363.

1876: Gautrot ainé, Durant et compagnie, 80, rue de Turenne.
1884: Gautrot ainé et compagnie (Couesnon-Gautrot et compagnie, successeur), 90, rue d'Angoulême.[29]

Gautrot signed his instruments in various ways. In addition to the designation "Gautrot ainé," "Gautrot Marquet" is quite often found, frequently with the addition "breveté s.g.d.g. Paris."[30] According to Jansen, since Marquet was Gautrot's wife's maiden name, used by the company after 1860, the name is analogous to "Buffet-Crampon." In 1881, the firm took over the Triebert company, and in 1882, Pierre-Louis Gautrot's son-in-law Amédée Couesnon took over leadership of the company, a position which he held until 1931.[31] The dating of extant instruments with Gautrot's signature is complicated by the fact that, well into the twentieth century, the brands "Gautrot ainé," "Gautrot-Marquet," "Toulou," and "Triebert" were used. The brand names designated instruments of different qualities, which were also available without engraving if the client so desired.

Hanslick's report published in 1863, mentions the firm as follows:

> Gautrot's splendid wind-instrument factory distinguished itself with a rich exhibition of all families and forms [of instrument]. This Parisian firm (which as early as 1855 employed around 300 workers) owes its imposing reputation not so much to artistic perfection as to the astonishing quantity and diversity of its products and their reasonable prices.[32]

In 1884, the firm called itself "la plus grande manufacture du monde," as Pierre tells us.[33]

A comparison of the second saxophone patent (1850) with the sarrusophone patent of 1856 shows interesting parallels in the relative pitches of the two families:

Saxophone patent (1850)	*Sarrusophone patent (1856)*
Soprano en Si♭	Soprano en si♭
Alto en Mi♭	Mezzo Soprano en mi♭
Ténor en Si♭	Sarrusophone en si♭ ténor
Baryton en Mi♭	
Basse en Si♭	Sarrusophone en si♭ basse
	Sarrusophone en si♭ contrebasse

29. The author is grateful to Karl Ventzke for making available the information he received from the Prefecture de Paris, Direction des Services d'Archives.

30. According to Karl Ventzke, the abbreviation means "sans garantie de gouvernement," that is, that the government did not guarantee the legitimacy of the patent claims.

31. Will Jansen, *The Bassoon: Its History, Construction, Makers, Players and Music* (Buren: Knuf, 1978), 351 and 375.

32. Hanslick, 443.

33. Pierre, 346.

When one examines the drawings for Sax's first saxophone patent [1846], similarities to certain earlier instruments—the basshorns and ophicleides—become obvious there as well (fig. 3a): number one Sax called a *Saxophone en mi♭ tenor,* a baritone saxophone according to later nomenclature; number two shows an *ophicléide à bec,* playing in the bass range, which Sax has here designated as *Saxophone en ut;* number three shows the body of a *Saxophone en sol contrebasse* and number four a *Saxophone en ut bourdon.* The contrabass model in G would be comparable in pitch to a half contrabassoon or semi-contrabassoon and the *bourdon* to a contrabassoon.

Gautrot also supplied his patent application with a sheet of illustrations (fig. 3b):

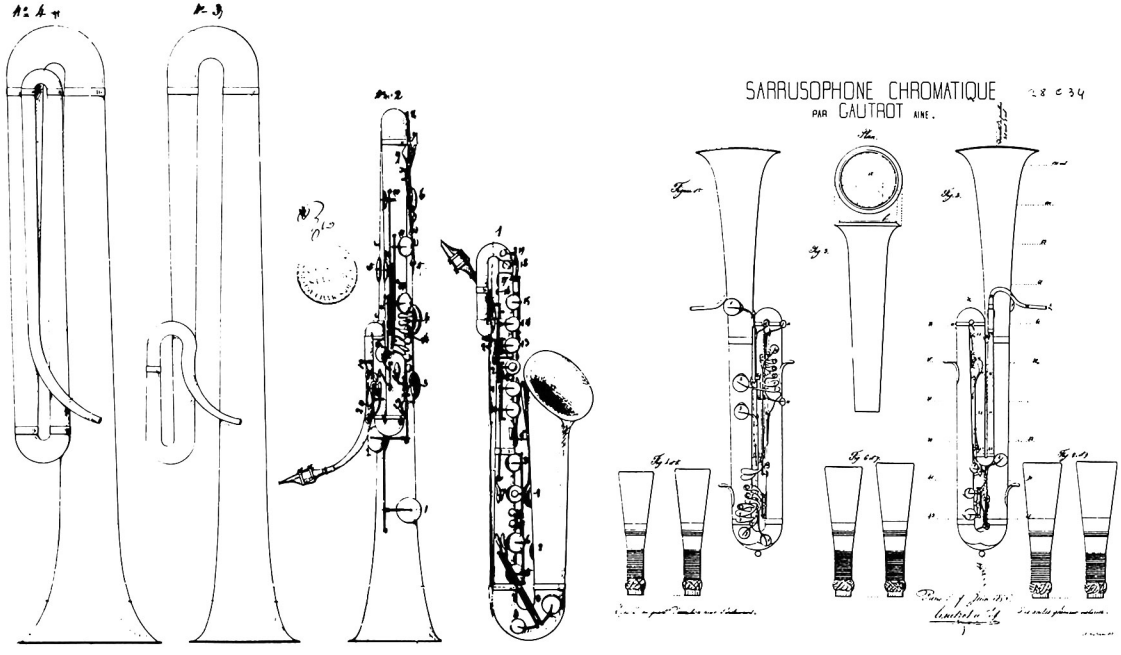
1. Baritone sarrusophone in B-flat.
2. The same instrument, seen from the opposite side.
3. Illustration of the bell alone.
4, 5, 6, 7, 8, and 9. The reeds used for the sarrusophone family.[34]

On the accompanying table of ranges, the instrument illustrated is called a *sarrusophone en si♭ basse.* It differs in several respects from the sarrusophones later built by Gautrot and other firms. The bore of this instrument is considerably larger, and the bell is placed higher up over the upper **U**-bend. Also, the keys still strongly resemble those of the ophicleide. In this original form, the bass sarrusophone is similar to Sax's *saxophone en ut.* One also finds that Gautrot's contrabass model is constructed in the form that Adolphe Sax, in his 1846 patent, had foreseen for his contrabass saxophone. Thus it would seem that Eppelsheim is mistaken when he attributes the invention of the contrabass instrument with four folds to Cerveny:

> Of all the fairly reliably-dated examples of metal contrabassoons of a short form with more than one bend, Cerveny's Tritonicon, unquestionably attested for 1854, is probably the earliest.[35]

But even Sax's model with four parallel tubes (number four in his 1846 patent) has a precursor in the *Hipernicon* invented by Joseph Rogerson Cotter, and patented in England in 1823 under the number 4849: ". . . its tube is about double the length of those bass instruments hitherto in use called the serpent or the bass horn."[36] Such an instrument, with an overall length of 1.35m (about 53 inches), signed by Thomas Key in London, has a straight tube length of 4.52m (178 inches). It is entirely of brass, has eight keys

34. Patent 28.034, 2.
35. Eppelsheim, 247.
36. Commissioners of Patents for Inventions, 93.



FIGURES 3a and 3b. A comparison of the patent drawings of the saxophone and sarrusophone.

which are closed in their released position, and is pitched in C. This specimen, certainly remarkable in the development of compact instruments of the contrabass range, is preserved in the Bate Collection of Historical Wind Instruments in Oxford.[37]

It has yet to be seen just how much Sax and Gautrot were influenced by two other earlier instruments: the *Contrabassophon* (fig. 4), which Heinrich Joseph Haseneier (1798–1890) developed in the 1840's, and Carl Wilhelm Moritz's *Klaviaturkontrafagott,* from perhaps about the same time but first patented in 1856, both of which have four parallel tubes.

Gautrot's patent application is dated June 9, 1856. Just three days later, on June 12, Sax filed suit against him for alleged infringements of his saxophone patents. After several appeals, the case ended in acquittal for Gautrot, for, despite several similarities, his instruments produced a completely different sound.

Gautrot later improved and enlarged the sarrusophone family to nine instruments, from the sopranino in E-flat down to the contrabass in B-flat. While the sopranino is completely straight, the soprano in B-flat combines the straight form with a crook like that of the oboe d'amore. The tube of the alto sarrusophone in E-flat (fig. 5) is bent like that of the bass-horn. Its consequently diminutive size was lengthened for ease of handling by means of a dummy tube, which is the most prominent external feature distinguishing it from the only slightly larger B-flat tenor sarrusophone.

The baritone in E-flat has a loop like that of the ophicleide. In the bass in B-flat, the loop descends further, and only the contrabass sarrusophones in E-flat, C, or B-flat have the four distinctive parallel tubes.

According to the patent application, the range of the soprano, mezzo soprano, and tenor sarrusophone was from b up to g''' in the treble clef notation which was common to all three of them. Soon, though, lengthened instruments made possible an expansion of the range down to $b\flat$. The less conical bore of these improved sarrusophones added notes at the top of the range as well. The "Tabulature des sarrusophones alto et ténor" published by Gautrot (fig. 6) gives a range from $b\flat$ to $b\flat'''$. The higher-pitched members of the family, from sopranino to tenor, each have two independent octave keys; their lower-pitched relatives have three.

Although Gautrot was granted a patent in Belgium (no. 4873) in 1857,

37. Cf. [Anthony Baines], *The Bate Collection of Historical Wind Instruments: Catalogue of the Instruments* (Oxford: University of Oxford, 1976), 46, no. 531. This instrument is featured in Emilie Mende, *Stammbaum der europäischen Blechblasinstrumente in Bildern seit dem frühen Mittelalter* (Moudon: Editions BIM, 1978), table 1 no. 8a and p. 8.

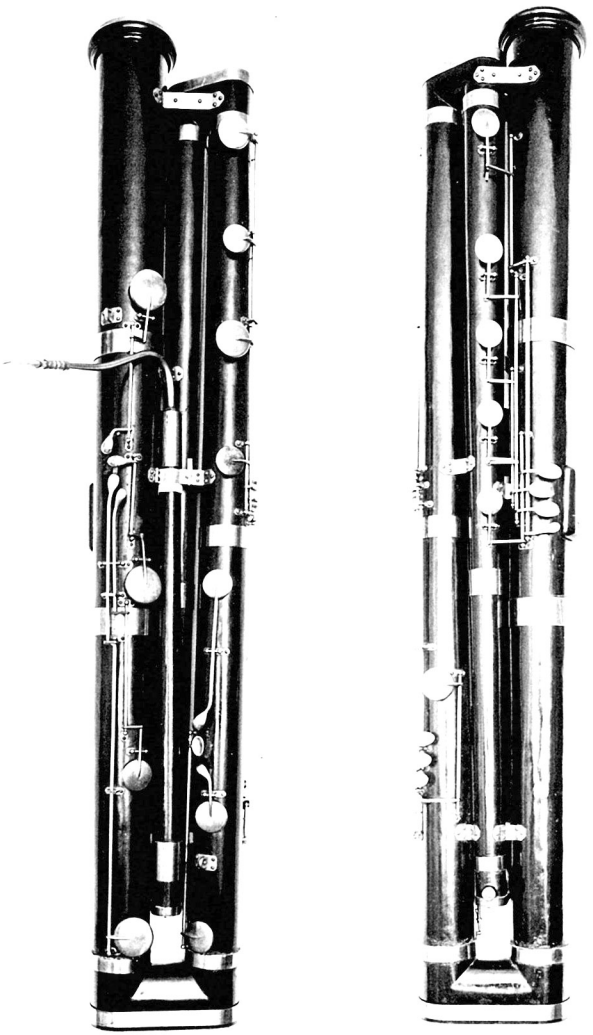


FIGURE 4. Contrabassophone from the auction of musical instruments at Sotheby Parke Bernet and Co., London, on November 27, 1975 (lot 40).

FIGURE 5. Bassoons and sarrusophones from the auction of musical instruments at Sotheby Parke Bernet and Co., on November 8, 1979 (lot 35–38).

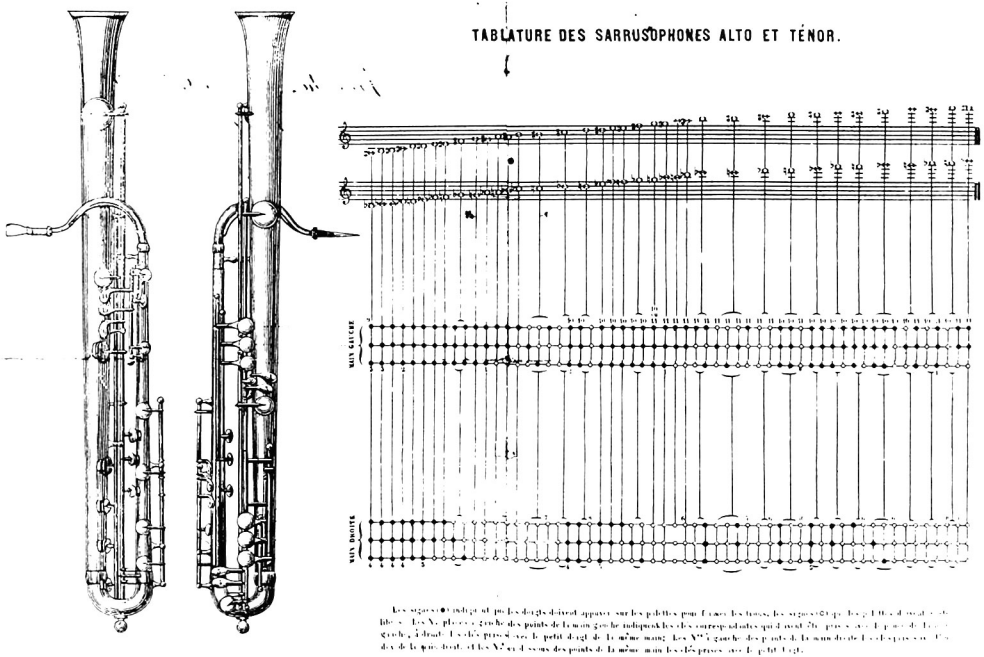


FIGURE 6. Fingering chart for alto and tenor sarrusophone from Gautrot ainé, Paris; after 1868.

the sarrusophone never became very popular there.[38] Nor did the instrument catch on in England.

Adolphe Sax experimented with sarrusophones in a small way, developing a small saxophone-like mouthpiece with which it was possible to play the sarrusophone as a single-reed instrument.[39] It cannot be proved that Adolphe Sax ever made any sarrusophones, but two tenor sarrusophones are signed "Henri Sax," a nephew who lived from 1856 to about 1920, and who collaborated with his uncle.

While Gevaert's 1863 work on instrumentation, second in importance only to that of Berlioz, considers the various instruments of Sax, mentioning even his contrabass clarinet and the bass saxophone, the sarrusophone had not become popular enough at that time to attract his attention. (He still describes the quintbassoon, noting that it is "never used.")

While it is true that Hanslick is the first to mention the sarrusophone in German-language literature (in his report on the International Exhibition in London in 1862), his attention to the instrument certainly goes no further:

> If there are ten new improvements to the common flugelhorn, or to the ophicleide, one may be sure that they will be introduced to the world of music as ten new instruments, often under the most arbitrary and incomprehensible names. One finds in the catalog of exhibited brass instruments, among others, the following: the swan horn, the glyceide, the euphonion, the tritonikon, the phonicon, the trompettin, the zvukoroh, the baroxyton, the sarrusophon, the pelitticon, the Königshorn, the helicon, and a half-dozen compounds including the name "Sax," etc., etc. All these fabulous creatures could be easily filed away under one of two or three familiar names.[40]

As a result of various exhibitions, the public rapidly became familiar with the sarrusophone, at least to a certain degree. This family of instruments was shown at the 1867 *Exposition Universelle* in Paris, creating a sensation when the contrabass sarrusophone was included in a gala performance of Saint-Saens' *Les Noces de Promethée* in the place of an unserviceable contrabassoon.[41] After this, until the beginning of the twentieth century, when a French-system contrabassoon had developed to the point where it

38. Ignace de Keyser, "La Composition des harmonies et des fanfares: origines et évolution," *150 Ans de fanfares et harmonies en Belgigue,* exhibition catalog ([Belgium]: n.p., 1980–81), 50–51.

39. Adolphe Sax, Brevet français, 70.895, March 19, 1866.

40. Hanslick, 441.

41. Cf. R. Leruste, "Le Sarrusophone," *Encyclopedie de la musique et Dictionaire du Conservatoire* (Paris: Delagrave, 1926), 1668.

could reclaim its erstwhile position, the contrabass sarrusophone was used by preference in symphony orchestras, even on parts originally for the contrabassoon in works by such composers as Haydn, Beethoven, and Brahms.

A striking illustration of the rise and fall of the sarrusophone family in the second half of the nineteenth century may be seen in a comparison of the two editions of Rambosson's history of musical instruments. In the first edition, we read:

> *Sarrusophones* are new brass instruments to be credited to M. Gautrot; he has named them in honor of M. Sarrus, head of the military bands, who gave him the first idea for their construction. Their tonal quality destined them to replace the oboes and bassoons in our military bands, which they have indeed done. At present, there is a complete family of these instruments, comprising eight members . . .[42]

In the second edition, which contains only descriptions of instruments, only four are described as in current use:

> At first, these instruments formed a family of eight members. Only four have survived: the soprano in B-flat, the baritone in E-flat, the bass in B-flat, and the contrabass in E-flat. Only the last was ever employed in symphony orchestras.[43]

Ernest Guiraud (1837–1892), in his *Traité pratique d'instrumentation,* completed in 1891 and published in 1894, still speaks of seven sarrusophones, and highlights the use made of the contrabass in symphonic music.[44]

Charles-Marie Widor (1844–1937) described the contrabass sarrusophone as having exceptional sound quality when played by a competent musician:

> The contrabassoon has a rival, indeed, be it said without hesitation, one with many advantages with regard to tonal attack and volume: the sarrusophone. . . . There has been criticism of the sarrusophone here and there because of its somewhat nasal tone and its peculiar way of vibrating, for it trembles between the lips like a series of rapid blows; . . . These charges are very unjust. In the hands of a player familiar with the bassoon, these shortcomings disappear for the most part. The instrument shows then its rich, full tone, proving

42. J. Rambosson, *Les Harmonies du son et l'histoire des instruments de musique* (Paris: Firmin-Didot, 1878), 506–7.

43. J. Rambosson, *Histoire des instruments de musique: Revue et augmentée par Yvanhoé Rambosson* (Paris: Maison Didot, 1897), 168.

44. Cf. Ernest Guiraud, *Traité pratique d'instrumentation: Nouvelle édition completée et revisée par Henri Busser* (Paris: Durand, 1933), 93.

itself a wonderful wind bass which can drop without hesitation down into the deepest orchestral deeps, an octave lower than the bassoon.[45]

But it was only a few years later that the contrabassoon, in a completely new design by the Buffet-Crampon firm, was able to win back the lost ground, as we may gather from Emile de Rey-Pailhade's *Essai,* published in 1911:

The contrabassoon currently in use is constructed of brass, having a conical bore bent upon itself several times, the total length of which is 4.685m [15 ft. 4.25 in.]; it is sounded with a double reed, like the other instruments of the same family, and is provided with 15 keys.[46]

One also finds references to the sarrusophone in literature by German specialists, although with a certain time lag. After a remark about the admittedly pure but not very ingratiating tone of the Boehm flute, Wilhelm Heckel (1856–1909) writes in 1899:

In the *sarrusophone* one has another proof of just how correct was the author, W. Heckel (who has spent considerable time in Paris and other musical and artistic centers), to use only those results of the theoretical acoustic law which are necessary and practical: for the sarrusophone is an example of how a hard, sonorous tone comes of a construction according to theoretical acoustic principles. Had the sarrusophone a more gracious tone, it would surely have been accepted; but not even in the French military orchestras has it been fittingly appreciated, but rather has been supplanted by the saxophones.[47]

A Heckel catalog of the period notes that "Ophicleides, sarrusophones, and similar instruments will be supplied on demand."[48] Wilhelm Hermann Heckel (1879–1952), eldest son of Wilhelm Heckel, after an apprenticeship in the family firm, volunteered as an unpaid assistant at Couesnon's, as one reads in the Heckel family chronicles:

In Paris, I volunteered for a short time at Couesnon et Cie in the rue d'Angoulême, the great brass instrument manufacturers, who at that time were our friends.[49]

45. Ch[arles]-M[arie] Widor, *Die Technik des modernen Orchesters: Ein Supplement zu Berlioz' Instrumentationslehre,* trans. Hugo Riemann (Leipzig: Breitkopf und Härtel, 1904), 56.

46. Emile de Rey-Pailhade, *Essai sur la musique et l'expression musicale et sur l'esthétique du son: Les instruments de musique anciens et modernes* (Paris: Fischbacher, 1911), 125–26.

47. Wilhelm Heckel, *Der Fagott; Kurzgefasste Abhandlung über seine Historische Entwicklung, seinen Bau und seine Spielweise* (Biebrich: printed privately, 1899, p. 14; reprint, Leipzig: Merseburger, 1931), 19–20.

48. Wilhelm Heckel [Fabrik], *Preisliste über Elite-Instrumente* 203 (Biebrich: privately printed, [c. 1906]), 9.

49. Wilhelm Hermann Heckel, *Fast ein halbes Jahrtausend Heckel: Zwölf Geschlechter* (manuscript, 1924–25), 35.

While the Couesnons, in 1900, carried only the soprano in B-flat, the bass in B-flat, and the three contrabass models in E-flat, C, and B-flat in their catalog, Evette et Schaeffer (earlier Buffet-Crampon) used the occasion of the *Exposition Universelle de Paris* of 1900 to reintroduce the complete sarrusophone family. The key positions had been made completely identical to those of the saxophone. The *Sarrusophones à méchanisme perfectionné Système Evette et Schaeffer* are advertised in the 1907 catalog at about the same prices as the best saxophones of the same register; nevertheless, from 1919 to 1923 only forty-nine sarrusophones were manufactured, of which twenty-two were contrabasses in E-flat.[50] Between 1920 and 1930, French manufacturers stopped producing the sarrusophone—just as the big bands in America were beginning to experiment with them. The American saxophonist Sidney Bechet performed occasionally with a contrabass sarrusophone, and Paul Whiteman used it as well. The Paul Whiteman Orchestra was made up of twenty-three musicians who played approximately thirty-six instruments:

2–3 violins (increased to eight for special effects)
2 basses (also played the tuba)
1 banjo
2 trumpets (also played the flugelhorn)
2 trombones (one also played a euphonium)
2–3 horns
3 saxophones (each could play three registers, from soprano to bass, and could alternate with the clarinet, etc.)
2 tubas (also played string basses)
1 sarrusophone
1 sousaphone
2 pianos (one alternating with a celesta)
1 kettledrummer who also played various other percussion instruments[51]

American military bands also experimented with the contrabass sarrusophone. The famous bandleader Patrick Sarsfield Gilmore (1829–1892) seems to have been the first to introduce both a saxophone sextet and a sarrusophone into his band. In 1889 Leon Mead wrote in the *Supplement to Harper's Weekly* (September 28, pp. 787–88):

> The size of his band enables Gilmore to bring out the full effect of the most intricate musical compositions. He has always been an experimentalist, and is pro-

50. The author is most grateful to Messrs. Kurz and McBride for the information on the construction of the sarrusophone at the Buffet-Crampon factory.

51. Cf. Karl Jul. Sommer, *Was man vom Orchester und der Instrumentation wissen muss. Ein Beitrag zur Instrumentation* (Reichenau: Marx, 1927), 69.

> gressive in his theories concerning instrumentation. Unlike Signor Cappa and other great band-masters, he believes in the employment, where permissible, of saxophones. Other peculiar instruments used in this country only by Gilmore's band (with possibly one or two exceptions) are the antoniophone, surasophone [sic], the helicon tuba, and the orpheon.

A description given later in the same article makes it clear that it is the sarrusophone that is meant:

> The surasophone is an English [!] instrument, copied from the ophicleide. It is pitched in E-flat, and is employed as a contrabassoon both in stringed and military bands. It has a rich, organlike tone peculiar to itself.

According to a brochure printed by the Conn Company of Elkhart, Indiana, when they introduced their sarrusophone in 1921, the United States Government ordered 148 of the contrabass sarrusophones.[52] From about this time until 1931, a sarrusophone was used in The United States Army Band (Pershing's Own):

> The 1922 T.O. & E. did call for a Sarrusophone. During the period 30 September 1924 to 3 October 1931, a Pvt. George Six was assigned to The United States Army Band, and did actually play a Sarrusophone. However, on a 1922 unit roster, Pvt. Six appeared as a Bassoonist.[53]

In a later advertisement the Conn firm speculated about adding other members of the sarrusophone family to their program from time to time (facsimile in *The Double Reed* 8 no. 2 [Fall, 1985]: 43), a plan that never became reality, it seems; and the European manufacturer Orsi in Milan announced six sizes, from soprano in B-flat to contrabass in E-flat, in its 1937 catalog (fig. 7).

A list of sarrusophones preserved in public and private collections compiled by the present author and Günter Hart shows that sarrusophones have been manufactured in Spain by Ramon Sanchez Gavina, Valencia, and in Italy by the Rampone and the Rancilio firms, both of Milan, as well as by Orsi. In addition, there are the manufacturers Alziati and Bottali, who built rothphones, a further development of the sarrusophone.

52. Sarrusophones still appear in Conn catalogs as late as 1946, as André P. Larson stated in a letter to sarrusophone collector Boris Koval (Monrovia, Liberia) that came to the author's attention through the courtesy of William M. Fetcher, Norfolk, Va.

53. Private communication from Col. John R. McCann of the American Embassy in Bonn. The author wishes to express his gratitude to Col. McCann for this information.

Sarrusofoni

124

Numero di Catalogo		OTTONE	NICHELATO
122	**Sarrusofono** Soprano Si♭ . L.	1200.—	1260.—
123	» Contralto Mi♭ . »	1600.—	1680.—
124	» Tenore Si♭ . »	2000.—	2090.—
125	» Baritono Mi♭ . »	2400.—	2500.—
126	» Basso Si♭ . . »	2800.—	2900.—
127	» Contrabasso Mi♭ »	3200.—	3340.—

I Sarrusofoni sono provvisti del Si♭ basso

125

Accessori

Numero di Catalogo		Soprano	Contralto	Tenore	Baritono	Basso	Contrabasso
1301	Ancia extra . L.	13.—	15.—	18.—	22.—	24.—	30.—
1302	Cuscinetti la muta	10.—	12.—	15.—	18.—	22.—	25.—
1303	Borsa	60.—	80.—	100.—	120.—	140.—	160.—
1304	Astuccio . . .	110.—	130.—	150.—	170.—	—	—

127

Il Sarrusofono Orsi è il più quotato!

122

123

126

FIGURE 7. Sarrusophones from the Orsi *Catalogo generale* 48 (Milan, 1937).

Rothphone or Saxorusophone

Hanslick's criticism of new names in connection with every improvement to a musical instrument was certainly justified in the case of the relatives of the sarrusophone. If one considers that the word "sarrusophone" may have been coined because of its similarity to "saxophone" (something like "gautrotphone" would have been much more in keeping with the customs of the time), Ferdinando Roth (1815–1898) may be said to have proved his innovative capacity in choosing a completely new name, *rothphone,* even though he used it to designate an instrumental concept which contains nothing original at all. All in all, rothphones are nothing but sarrusophones built in saxophone form. When the Orsi factory of Milan came into possession of the prototypes, these instruments were offered to the public as *Saxorusofoni* in their *Catalogo Generale* 48 of 1937 (fig. 8).[54] The portmanteau word "saxorusophone" indicated, first, a combination of the construction principles of the saxophone with the sounding principle of the sarrusophone, and second, a union of two families of instruments that had been, from the very beginning, bitter opponents.

The Roths themselves originated, as did a whole series of instrument-making dynasties, in Adorf in the Vogtland. In the lists of special tax levies for defense against the Turks in 1531–32 and again in 1542, the name Roth appears beside those of Heckel, Hembach (Embach), and Pfrotschner (Pfretzschner).[55] The instrument-making activities of these families in the eighteenth century are known through examples of their craft that have been preserved; towards the beginning of the nineteenth century, many members of these families emigrated and founded respected firms. Ludwig Embach (1783–1842) established a wind instrument factory in Amsterdam in 1820, and took out numerous patents for improvements; Johann Adam Heckel I (1809–1866) founded a renowned workshop for brass instruments in Dresden in 1836; and his cousin Johann Adam Heckel II (1812–1877) began building bassoons with Carl Almenräder (1786–1843) in the town of Biebrich near Wiesbaden in 1831.

In 1838 Ferdinand (Ferdinando) Roth opened a firm for the construction of brass instruments in Milan. This firm soon enjoyed a good reputation, and was recommended as supplier for the Italian military bands: a

54. Roberto Orsi and Carlo Molteni, from the management of the Orsi company, were very helpful in supplying reproductions from this catalog, and much other information concerning the history of the firm, for which the author is deeply indebted.

55. Thanks are also due to August Heberlein of Wedel, Schleswig-Holstein, for his information on the geneology of the Adorf families.

DITTA PROFESSOR ROMEO ORSI - MILANO (ITALIA

Saxorusofoni

Il Saxorusofono ha la medesima estensione e la medesima voce del Sarrusofono ma ha in confronto a questo il pregio di avere una meccanica perfetta: semplice e solida e il grande vantaggio di avere la forma e le posizioni del Saxofono si da presentarsi facile allo studio di qualsiasi anche modesto suonatore di clarinetto, saxofono, oboe e fagotto!

122 S 123 S 124 S 125 S 126 S

Numero di Catalogo			OTTONE	NICHELATO
122 S	**Saxorusofono** Soprano Si♭	L.	1000.—	1060.—
123 S	» Contralto Mi♭	»	1300.—	1380.—
124 S	» Tenore Si♭	»	1500.—	1590.—
125 S	» Baritono Mi♭	»	1800.—	1900.—
126 S	» Basso Si♭	»	2000.—	2120.—

I Saxorusofoni sono provvisti del Si♭ basso

Per gli accessori valgono i prezzi di quelli da Sarrusofono

33

FIGURE 8. Saxorusophones from the Orsi *Catalogo generale* 48 (Milan, 1937).

"Provrista degli strumenti" of the last century mentions the Roth Company as purveyor to the military of "Cornette, Flicorni, Trombe, Corni, Clavicorne, Tromboni, Bombardini, [and] Pelittoni."[56] After Roth's death, the firm was carried on by the Bottali brothers, who also patented and built the rothphone. In Paul de Wit's *Welt-Adressbuch der Musikinstrumenten-Industrie,* 1912 edition, there is the following entry:

> Ditta Ferd. Roth Flli. A. M. Bottali Succ., Piazza Andrea Doria 6. Holz- und Metallblasinstrumenten-Fabrik. Gegr. 1838. Massime onorificence. Esportatione mondiale. La più grande e completa fabbrica italiana. Becken- und Tamtams-Fabrik.[57]

The Bottalis also took over the Milan workshop of Luigi Alziati, whose signature is to be found on the tenor saxorusophone currently in the Horniman Museum (fig. 9). In the catalog of the museum, the instrument is described as follows: "The 'Saxorusofoni' is [sic] believed to be a unique example of an experimental instrument similar in character to the sarrusophone but following the key-mechanism of the saxophone."[58] As this instrument, except for the bell, is identical with a Bottali instrument from the author's collection, it is possible that Alziati had carried out only a modification to the bell, which, with its sound holes on the side, is reminiscent of the heckelphone.

Italian manufacturers did take an interest in the heckelphone (first exhibited in 1904) as is shown by a heckelphone model by Rampone e Cazzani to be found in the Museo di Storia Quarnese e degli Strumenti Musicali de Quarna Sotto.[59] The Cazzani firm (Milan) merged with the Rampone firm (Quarna) in 1920. There are additional double reed instruments by Rampone e Cazzani in Quarna Sotto: an alto sarrusophone, an alto saxorusophone, a reed contrabass, and a tenor prototype that was to have been built for a band in New York in 1920, as well as wooden models of a baritone and a bass sarrusophone and of a reed contrabass. An oboe with saxophone fingering and a bassoon complete this section of the collection.[60]

56. *Giornale Militare Ufficiale,* Dispensa 38a (1884) 16.

57. Breslau, Verlag Paul de Wit. This citation was brought to the author's attention by Herbert Heyde.

58. Horniman Museum, *Wind Instruments of European Art Music* (London: Horniman Museum and Library, 1974), 45.

59. This section is contained in *I Musei del Cusio e del Mottarone* ([Italy]: Comunità Montana Cusio-Mottarone, 1980), 57–79.

60. The author wishes to express his gratitude to Signor Saltameranda, of the firm FISM Rampone e Cazzani, who was gracious enough to show the author through the museum and

FIGURE 9. The Alziati saxorusophone in the Horniman Museum, London.

In the list of suppliers of instruments to the military mentioned above, the name of Camillo Sambruna, Milan, appears along with that of Roth. Langwill's index shows that without doubt Sambruna was the representa-

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the factory, and to Don Luigi Dresti, who provided information from the church registers of Quarna Sotto.

tive in Milan of the Paris firm of Couesnon et Cie from 1886 to 1906.[61] It is possible that a series of sarrusophones were brought to Italy as a result of this connection, although this instrument was never officially approved for use by the Italian military bands.

The sons of Antonio Bottali signed the tenor rothphone in the author's collection as follows:

BREVETTO BOTTALI / PRIMARIA / PREMIATA FABBRICA / F.LLI A.M. BOTTALI / MILANO / (ITALIA) / MASSIME ONORIFICI / ESPOSIZNI MONDIALI / MARCA FERDo ROTH / 64

Rothphones (fig. 10b) were shown at the world expositions in Milan in 1906 and in Turin in 1911. Their key structure resembles that of the saxophones (fig. 10a) made at about the turn of the century: the octave keys are still separated, the tone holes are provided with brazed-on flanges, and the deepest tone of the soprano is *b*, not *b♭*. Only the Orsi soprano saxorusophone had a range including *b♭* at that time. Judging from a 1905 advertisement, Bottali tried to interest the military in the rothphone as a complementary instrument to the reed contrabass: "Rothfoni (Brevetto Bottali), Nuova Serie di Strumenti ad ancia doppia, a complemento del contrabasso ad ancia."[62] As the reed contrabass had been officially introduced in 1901, the construction of a contrabass rothphone became superfluous, and rothphones were built only in the following registers: soprano in B-flat, alto in E-flat, tenor in B-flat, baritone in E-flat and bass in B-flat.

Though neither the rothphone nor the sarrusophone was ever introduced in Brazil, the remark by Florencio de Almeida Lima in his textbook on the fundamentals of music, published in Brazil in 1953, that the rothphone was introduced into the Italian army bands with great success in 1912, supplied Luiz Cosme with the information on the rothphone which he used in his *Dicionário Musical,* the source which gave this author his first indication that such an instrument existed.[63]

Reed Contrabass and Brass Contrabassoon

The reed contrabass (Italian, *contrabasso ad ancia;* French, *contrabasse à anche*) is the last descendent of instruments of the ophicleide type still cur-

61. Cf. Lyndesay G. Langwill, *An Index of Musical Wind-Instrument Makers* (Edinburgh: printed privately, 1980), 153.

62. Langwill, 151.

63. Florencio de Almeida Lima, *Elementos Fundamentais da Musica* (Rio de Janeiro: n.p., 1953), 209. Cf. Gunther Joppig, *Die Entwicklung der Doppelrohrblatt-Instrumente,* 153.

FIGURES 10a and 10b. A comparison of a saxophone quartet with a rothphone quartet (below), both from the author's collection.

rent today. The reed contrabass (fig. 11, center) is distinguished from the contrabass sarrusophone and the contrabassoon by its simple system of keys, most of which are closed in their state of rest. Indeed, its mechanical parts are astoundingly simple when one considers the fingering systems of the other woodwinds, which have multifarious, mutually dependent keys and (in part) open tone holes.

The simplified arrangement, however, requires a completely different playing technique. Though it is quite possible that Adolphe Sax considered an ophicleide-like fingering system (see fig. 12) for his saxophone, he followed, in any event, the suggestions of Boehm's system; and although neither the saxophone nor the sarrusophone was originally conceived with tone holes that were to be closed by the fingertips of the musician, the final result was an instrument with a mixed system of open keys (generally for the whole tones) and closed keys (mostly for the half tones). This was advantageous for the musician, who could use the new instruments as secondary instruments, playing them with the habitual fingerings. Although manufacturers of the manifold reed contrabass constructions that have been described by Eppelsheim[64] usually gave the name "contrabassoon" to their creations, there were so few similarities to the positions of keys, the fingerings, and the bore relationships of the normal bassoon that bassoonists could not easily accept them. It was possible to introduce the instrument only in the military sector, where musicians are more subject to the dictates of authority than in civilian artistic life.

The introduction of the *contrebasse à anche* was considered in the eighties of the last century by the Belgians; Mahillon recommended it for groups of forty-four or more musicians. In their definitive instrumentation, however, decided on in 1894, the instrument is not mentioned.[65] Only in Italy does the *contrabasso ad ancia* seem to have been introduced by means of administrative fiat,[66] and there the instrument is still in use even today in the large Italian *bandas*. In Germany and Austria, it seems, the *Rohrkontrabass* was not able to assert itself against the contrabassoon, for which a certain place in the military bands was a tradition reaching back to the eighteenth century, as can be seen from the literature and the examples of instruments which have been preserved. In comparison to the number of nineteenth-century contrabassoons that have come down to us, there are

64. *Musica Alta* 1 (1976):233–72. See also Jürgen Eppelsheim, "More Facts about the 'Subkontrafagott,'" *The Galpin Society Journal* 32 (1979):104–14.

65. Cf. de Keyser, 51 and 53.

66. Atto 216: Disposizione varie, Musiche dei regimenti di fanteria, Sept. 16, 1901.

Saxofoni e Contrabassi ad Ancia

Numero di Catalogo		Ottone	Nichelato
121	**Contrabasso ad ancia** in Do, perfezionato, 4 rotelle coi grani imbottiti . . . . . L.	1100.—	1200.—

120 121 114

La Casa Orsi è all'avanguardia nella produzione mondiale di Saxofoni!

FIGURE 11. Saxophones and *contrabasso ad ancia* from the Orsi *Catalogo generale* 48 (1937).

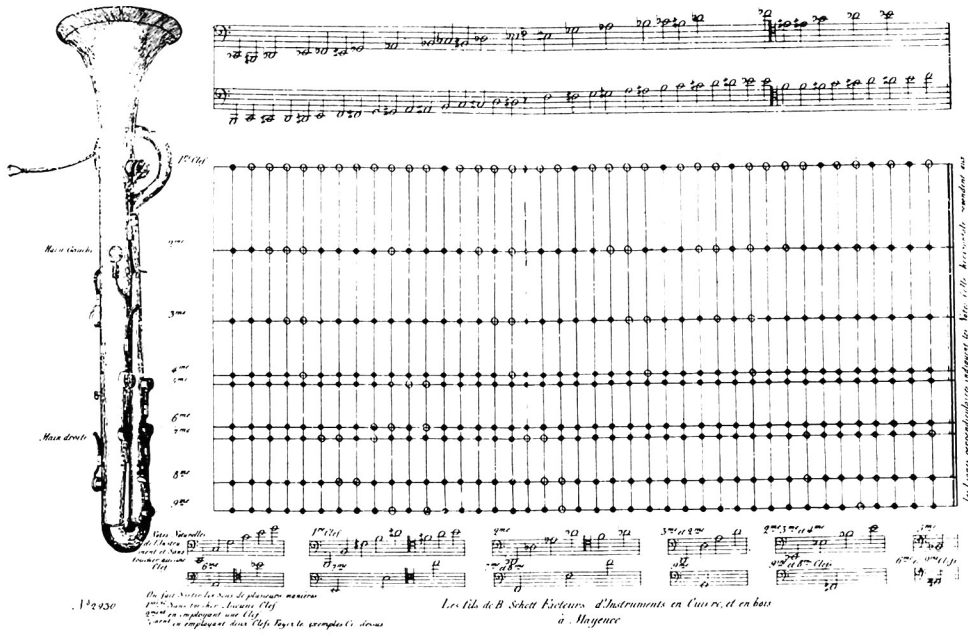

FIGURE 12. Fingering chart for ophicleide, first published in *Caecilia* 9 (Mainz: B. Schott's Söhne, 1928), before p. 130.

relatively few harmony basses, tritonicons, and reed contrabasses. Of Moritz's *Klaviaturkontrafagott,* or contrabassoon with a piano-like keyboard, there is only the well-known drawing in the "Soldatenfreund."[67] Information from the Prussian patent of 1856 attests that he also built conventional contrabassoons, one of which has been preserved in the *Deutsches Museum* (catalog number 16794).[68] The contrabassophone, which had a bore between that of the contrabassoon and that of the reed contrabass in length, was in use until Johann Adam Heckel II and Friedrich Stritter developed a contrabassoon based on the heckelbassoon that could be played just as easily as a normal bassoon (fig. 13).

In France, as has been mentioned, the contrabassoon was as good as unknown. Martin Thibouville's *Contrebasson en métal,*[69] introduced at the Paris Exhibition in 1889, was played just as were the bassoons then current in France, though the left-hand fingers had to be extended quite far around the instrument in order to reach the keys, a result of laying four tubes parallel to each other. In this respect, Evette et Schaeffer's *Contrebasson ut, tout en métal,* presented to the *Jury de l'Exposition Universelle de Paris* in 1900, was less problematic. According to the current management of the firm, not many metal contrabassoons (fig. 13) were made, for compact wooden contrabassoons were soon being built that differed from the Heckel contrabassoon only in fingering system. This fingering system, more comfortable for the bassoonist, might have been the decisive factor in the choice of the contrabassoon over the contrabass sarrusophone.

Richard Strauss, in a footnote in his supplement to Berlioz's textbook on instrumentation, mentions that he had "heard played in the Brussels Conservatory, through the kindness of the director Gevaert, a contrabass oboe, the tone of which had nothing at all to do with deep bassoon tones."[70] Assuming that it was not the bass sarrusophone that Strauss heard, it might have been a model of the reed contrabass about the size of a bassoon. Such prototype instruments are to be found in the Orsi model instrument collection in Milan (fig. 14) as well as in the Museum of Quarna Sotto.

67. Cf. Gunther Joppig, *Oboe und Fagott* (Berne and Stuttgart: Hallwag, 1981; Mainz: B. Schott's Söhne, 1984; London: Batsford, in preparation), 111.

68. Illustrated in Heinrich Seifers, *Katalog der Blasinstrumente* (Munich: Deutsches Museum, 1980), 72 and 74.

69. *Musica Alta* 1 (1976), pl. 5, p. 272.

70. Hector Berlioz, *Instrumentationslehre: Ergänzt und revidiert von Richard Strauss,* pt. 1 (Leipzig: Peters, 1904; reprinted, 1955.), 204.

FIGURE 13. A Stritter-system Heckel contrabassoon and Buffet metal contrabassoon, both from the author's collection.

FIGURE 14. Contrabass oboe from La Casa Orsi, Milan.

* * *

Just why the sarrusophone and similar constructions did not prevail is a question that has often been discussed.[71] In his autobiography, *A Mingled Chime,* Sir Thomas Beecham, who was often confronted with the need for bass oboes and sarrusophones when performing works such as those of Delius[72] and Holbrooke, has this to say:

> Now the bass oboe, like certain other members of the single- and double-reed families, is to be endured only if manipulated with supreme cunning and control; otherwise its presence in the orchestra is a strain upon the nervous system of conductor and players alike, a danger to the seemly rendering of the piece in hand, and a cause of astonishment and risibility in the audience. A perfect breath control is the essential requisite for keeping it well in order, and this alone can obviate the eruption of sounds that would arouse attention even in a circus.[73]

Recently, however, there has been a growth of interest in the sarrusophone, not only among museums and collectors, but among musicians as well. Orsi exhibited, at the 1982 Music Fair in Frankfurt, a tenor and a contrabass sarrusophone; and in 1984 Schenkelaars and Brekoo, a firm located at Eindhoven in the Netherlands, brought out a bass sarrusophone.

Musikinstrumentenmuseum
Stadtmuseum, Munich

71. Gunther Joppig, "Rohrblech," *Tibia,* 1982, 103, contains a series of statements about this problem by bandmasters, musicologists, and musicians.

72. Parts written for contrabass sarrusophone are to be found in "A Song of Summer," "The Magic Fountain," "A Poem of Life and Love," and "A Dance Rhapsody." Cf. Rachel Lowe, *Frederick Delius 1862–1934: A Catalogue of the Music Archive of the Delius Trust, London* (London: Delius Trust, 1974).

73. Thomas Beecham, *A Mingled Chime: Leaves from an Autobiography* (London: Hutchinson, 1949), 80.