

As pretty much everybody knows, the most familiar type of clarinet today is the Boehm-system instrument, invented by Louis-Auguste Buffet *jeune* in the early 1840s. It is also common knowledge that this clarinet has changed little from Buffet's original design, patented in 1844. The patent documents relating to Buffet's *application des anneaux mobiles aux clarinettes et hautbois* (application of movable rings to clarinets and oboes) contain interesting observations and allow us insight into the man who profoundly changed the clarinet by creating the Boehm-system instrument.

In 1839, Buffet exhibited a clarinet with ring-keys (*anneaux mobiles*) at the Paris Exhibition. As we shall see below, this model was certainly not the Boehm-system clarinet we know today, but probably a first experiment with new ring-key configurations. Buffet had already worked extensively with ring-key designs for his conical Boehm-system flutes, which he brought to a level of perfection. For the 1839 clarinet model, it seems likely that Buffet added a pair of rings to the right hand joint in order to produce *b*/*b*[♯] with the first finger of the right hand, something several other makers did at roughly the same time. In Brussels, for example, Adolphe Sax had produced a 24-key clarinet for the Brussels Exhibition of 1835 (possibly with ring-keys?), and patented a variety of clarinet models with ring-keys in 1840 and 1842. Clarinets with ring-keys were also being built by makers such as Wilhelm Hess and Benedikt Pentenrieder in Munich *c.* 1840. One of these designs can be seen here. (Illustration Nos. 1 and 2)

Presumably Buffet's 1839 instrument fell short of his goals, for it was at this time

he teamed up with the clarinetist Hyacinth Klosé, professor at the Paris Conservatory, to construct a new type of clarinet designed to eliminate all of the instrument's faults. In Buffet's words:

The thirteen-key clarinet [Müller-system], at first regarded as perfect, leaves much to be desired. The original position of the



Patent drawing for a clarinet with fourteen keys and five rings, by Adolphe Sax (Brussels, 1840)

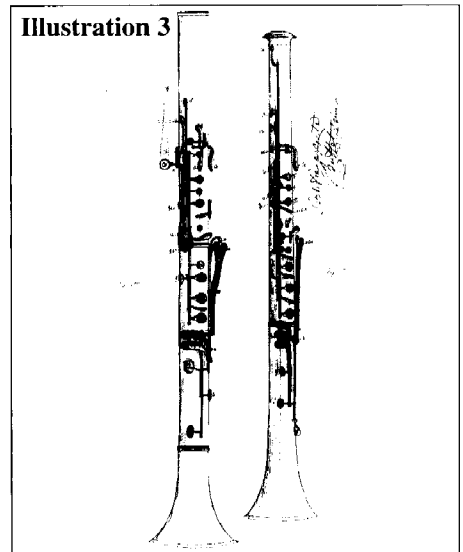
THE ORIGIN of the BOEHM-SYSTEM CLARINET

by Eric Hoeplich

tone holes, based only on the space between the fingers, produces weak, muffled notes or the contrary; the mechanism, which makes it obligatory to slide between keys, creates insurmountable difficulties for fingering, which prevent playing easily in different tonalities; and finally, the cross-fingerings sound poor because it is necessary to tune many notes by means of only one hole.

Voilà, the difficulties it has therefore been necessary to overcome, the inconveniences, the mistakes it has been necessary to correct, the goal that I intended to reach is here, and it took five years to achieve it. What sacrifices did I not make, how many experiments resulting in defective instruments did I not attempt? But, fortunately success rewarded me for my trouble, and at last I could apply the rings to clarinets and oboes, and apply these in such a way as to produce an instrument that is in tune and more perfect than the old one; in

other words, actually to re-create the instrument. Indeed, the application of the rings to clarinets and oboes can be seen as the solution to a problem, the unknown factor being how to apply them to make a perfect instrument. For before making an instrument such as the ones described, of course I applied the moveable rings, but I had to start over many times before finding the best way to use them. One will easily understand that since the slightest detail such as a badly placed or badly bored hole affects the perfection and intonation; the goal was only reached when the instrument was judged favorably by the masters.



Drawings of a clarinet and oboe with *anneaux mobiles* by Louis-Auguste Buffet *jeune* from his patent application (Paris, 1843)

Illustration 2

Boettchen mit beweglichen Röhren - Flöten



Patent drawings for a clarinet by Adolphe Sax (Brussels, 1840) and a clarinet and flute with half-moon ring-keys by Benedikt Pentenrieder (Munich, 1842)

Buffet's concern was to create an instrument that was absolutely even in sound, perfectly in tune and convenient to play; in this he could be said to have succeeded. As advanced as the well-established Müller-system clarinet with thirteen keys was, by this time it had clearly outlived its usefulness, even in its incarnation as the Albert-system clarinet. It appears Buffet was also not really content solely with rectifying various shortcomings of the Müller model, but wanted to go a few steps beyond that. As he puts it, not without a certain arrogance:

This invention does not consist only of the addition of rings but also of the manner and orderliness of the design, for a small change is enough to create an instrument that is supe-

rior to the old ones, but it would still be inferior to mine.

Along the way it became necessary for Buffet to develop other aspects of the instrument's design, such as mounting keys between pillars screwed directly into the wooden body of the clarinet and inventing the needle spring in order for the ring-keys to move smoothly and freely. Although Buffet's first models had "salt-spoon" key cups, he later developed key cups with angled sides and flat pads, like those of today. Early models feature other small differences such as mounting the long keys for the left little finger on one axle and providing shorter levers for the right little finger than on today's clarinet. By duplicating keys for the right and left little fingers, Buffet basically re-invented the clarinet and made the instrument truly *omnitonique*, a claim that had been made by Müller some years earlier.

Somewhat surprisingly, Buffet mentions neither Klosé nor Theobald Boehm, figures that played a central role in his work. Already in the 1830s, flautist and instrument-maker Boehm had recognized the advantages of adding ring-keys to the flute. Despite earlier achievements both as a flautist and flute-maker, Boehm felt compelled to make drastic changes in design of the flute after hearing the virtuoso Charles Nicholson. In his *Die Flöte und das Flötenspiel* (1868) he describes his initial motivation.

I did as well as any continental flutist could have done, in London, in 1831, but I could not match Nicholson in power of tone, wherefore I set out to work to remodel my flute. Had I not heard him, probably the Boehm flute would never have been made.

It was not until much later that he applied his theories to the clarinet, by which time the Buffet clarinet model had become well established.

In the introduction to his *Méthode*, Klosé gives his own account of the origin of the Boehm-system clarinet.

As the successor to Berr at the Royal Conservatory of Music, desirous of conscientiously carrying out the laborious tasks with which I had been entrusted and wanting to raise the clarinet to the status which it deserves because of the beauty of its sound as a melodic and accompanying instrument; I had to set about to completely eradicate the flaws

which I have mentioned above.

After a long period of work and much experimentation, the ring-keys seemed to solve the problems with which I had been confronted for several years, and it is to M. Auguste Buffet *jeune*, who took up my ideas, and successfully applied them, that I owe the instrument which I present today to professionals and amateurs alike.

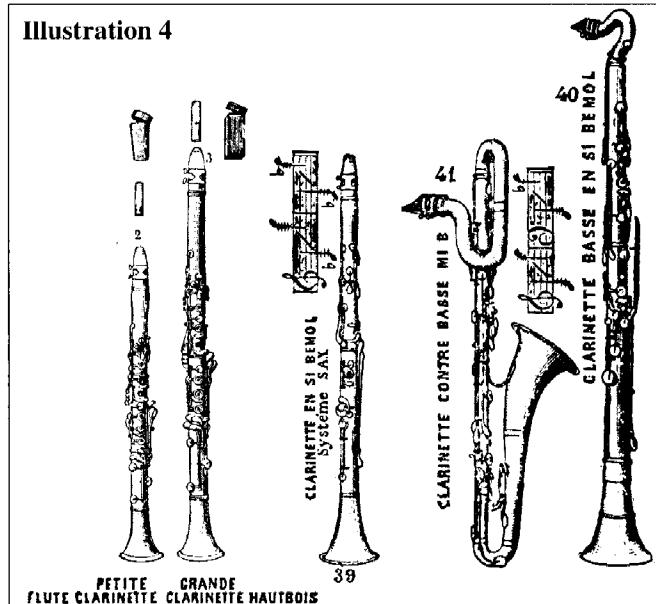
This instrument combines the most perfect intonation possible over the entire range with superior tonal purity and the facility of an improved fingering system, allowing complete equality in all tonalities.

The old fingerings are maintained with few exceptions, the only noteworthy changes concern the fork fingerings which were always defective and have been eliminated. There is therefore no need for players to relearn the instrument; a few days of practice should suffice to familiarize oneself with it. I never intended to create a new instrument, I endeavored to give the clarinet tonal evenness and equality in all the tonalities without sacrificing its characteristic qualities. (*Méthode pour servir à l'enseignement de la clarinette à anneaux mobiles et de celle à treize clefs*, Paris, 1843)

The similarities to Buffet's remarks are obvious; the goals of Klosé and Buffet were one and the same. Klosé is not entirely correct in stating that fork fingerings "have been eliminated" from the new instrument, and exaggerates when he writes that the "old fingerings have been maintained with few exceptions." But to judge from the popularity of the instrument after more than a century and a half, the logic and convenience of their new model have overcome most objections.

It may be difficult for us today to understand how the initial reaction to the Boehm-system clarinet could have been anything other than wildly enthusiastic,

Illustration 4



Clarinets from the Adolphe Sax catalogue (Paris, 1867)
The two clarinets on the left are Boehm-system instruments.

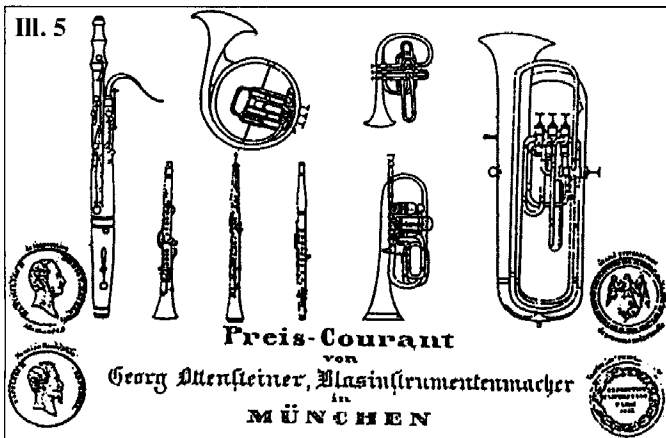
but in fact it was at best merely tepid. As late as 1881, the great Henry Lazarus, who played on Albert-system clarinets, wrote of the Boehm-system clarinet that:

On its appearance it was rejected, as generally are all new improvements, by the artists who being ill-disposed against the little trouble in the change of fingering, left it abandoned during some years. (*New and Modern Method for the Albert and Boehm System Clarinet*, London, 1881)

More than 10 years later, Constant Pierre, writing in Paris in 1896 noted:

In spite of the incontestable superiority of the clarinet with movable rings, called Boehm, the old system with thirteen keys, perfected by Mssrs. Mahillon and Albert continues to be used by our neighbors. We have not searched for the cause of this, but we cannot believe we are wrong that the opposition against the Boehm system is motivated mainly by the instrument makers and the economy of the artist. (*La Facture Instrumentale*, Paris, 1890)

Nonetheless, plenty of makers both in and outside France made Boehm-system clarinets based on Buffet's design. His patent was only good for five years, so by 1849 the design was freely available. Even Adolphe Sax, whose own clarinet with ring keys had the approval of Berlioz and other luminaries, offered Boehm-system clarinets in his 1867 catalog.



Preis-Courant
von
Georg Ottensteiner, Musikinstrumentenmacher
in
MÜNCHEN

empfiehlt seine Instrumente sorgfältigen Abnahme.

Druckerei und Verlag, Leopold Dörmann, München, 1850.

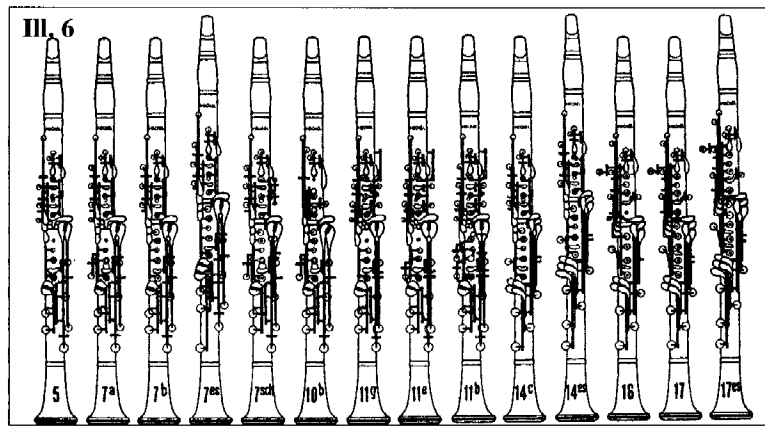
		Preis der Klappen			
		E.	S.	S.	S.
Eine Klarinette von Buchs, Heeringklappen, zwei Horn garnirt		2.	2.	17	12
delle	auf Holzschon lackirt	2.	2.	22	22
delle	aus Holzschon garnirt	2.	2.	22	22
delle	aus Holzschon garnirt u. Silberklappen	2.	2.	22	22
delle	aus Holzschon garnirt u. Silberklappen	2.	2.	22	22
Eine Halb-Klarinette oder 1 Clarinet d. 1.		1.	1.	11	11
Flöten von Buchs, Heeringklappen u. Horn garnirt		1.	1.	11	11
Eine D. oder F. Flöte.		1.	1.	11	11
delle	mit 1/2. Flöte	1.	1.	11	11
delle	mit 1. Flöte	1.	1.	11	11
delle	mit 1/2. Flöte u. Silberklappen garnirt	1.	1.	11	11
delle	mit 1. Flöte u. Silberklappen garnirt	1.	1.	11	11
delle	mit 1/2. Flöte u. Silberklappen garnirt	1.	1.	11	11
delle	mit 1. Flöte u. Silberklappen garnirt	1.	1.	11	11
Eine Flöte systeme Baermann von Brenndille-Holz u. Messingklappen		1.	1.	11	11
delle	mit Silberklappen	1.	1.	11	11
delle	ganz von Metall	1.	1.	11	11
Eine Flöte in E.B. von Buchs u. Heeringklappen		1.	1.	11	11
delle	mit Brenndille-Holz u. Messingklappen	1.	1.	11	11
Amelholz, neuer System		1.	1.	11	11
Flageoletten von Buchs u. Messingklappen		1.	1.	11	11
Fagotte mit 10 Klappen		1.	1.	11	11
delle	16	1.	1.	11	11
Klarinette (ganz Baermann) Messinggarnitur		1.	1.	11	11
delle	Silbergarnitur	1.	1.	11	11

Georg Ottensteiner's Preis-Courant featuring the Clarinette système Boehm (Munich, c.1850)

Considering the current prejudice against the Boehm-system clarinet in German-speaking countries, it comes as a surprise to see how many German firms offered Boehm-system clarinets at the mid-century. Georg Ottensteiner, known for his connection with Brahms and Mühlfeld, featured the "système Boehm" clarinet fourth on his price list and even illustrated one at the top, as seen here.

Other well-known makers from the 19th century, such as Heckel, Kruspe, Zimmermann and Mollenhauer built Boehm-system clarinets, and often provided quality instruments at a low price to the French market. Heckel's catalog of 1936 shows a variety of Boehm and full-Boehm models.

Even though most German players preferred non-Boehm-system instruments throughout the 19th century, as they do today, Boehm's principles did not go unnoticed in his native land, as Carl Baermann's account in his *Clarinet-Schule* shows.



Heckel clarinets from their 1936 catalogue. Five Boehm-system models can be seen on the far right.

I worked for a long time with Ottensteiner, and at last we succeeded in producing the clarinet illustrated in this work, in which Theobald Boehm's system of fingering is utilized... (*Vollständige Clarinettschule*, Offenbach, 1864)

The so-called Baermann-Ottensteiner clarinet is illustrated in the Baermann method today, and although it would be difficult to

say exactly what Boehm's influence might have been, the suggestion here is that German makers appear to have considered any application of ring-keys to be "Boehm's system of fingering." That Baermann specifically mentions fingerings in the quote above belies a true understanding of Boehm's principles of creating an instru-

ment where the natural scale is produced simply by removing one finger at a time, as on Buffet's clarinet.

In summary, it appears the initial motivation for creating the Boehm-system clarinet was to improve the Müller-system clarinet and to simplify fingerings. (Several makers from the mid-19th century specifically claim to have made it as easy to play in c major as in c# major.) Along the way, Buffet made the fingerings more logical as well and, importantly, also added the duplicate keys for the right and left little fingers obviating the need for sliding — a technique still required on German clarinets. The new fingerings and unfamiliar keys initially put off clarinetists who were used to their Müller and Albert instruments and prevented immediate success. But time has shown that even though the instrument did not catch on right away, it can now be seen indisputably as the work of a genius.

(The author's book on the clarinet, published as part of the Yale University Press series on musical instruments, will appear in January 2008.)

KRISTIN BERTRAND WOODWIND REPAIR

EXPERT CLARINET REPAIRS IN THE HEART OF MANHATTAN

(646) 670-6565

SPECIALIZING IN THE SERVICE OF PROFESSIONAL CLARINETS
AND OBOES INCLUDING CRACK REPAIR, VOICING, TUNING,
CUSTOM KEYWORK, PADWORK, AND ADJUSTMENT.