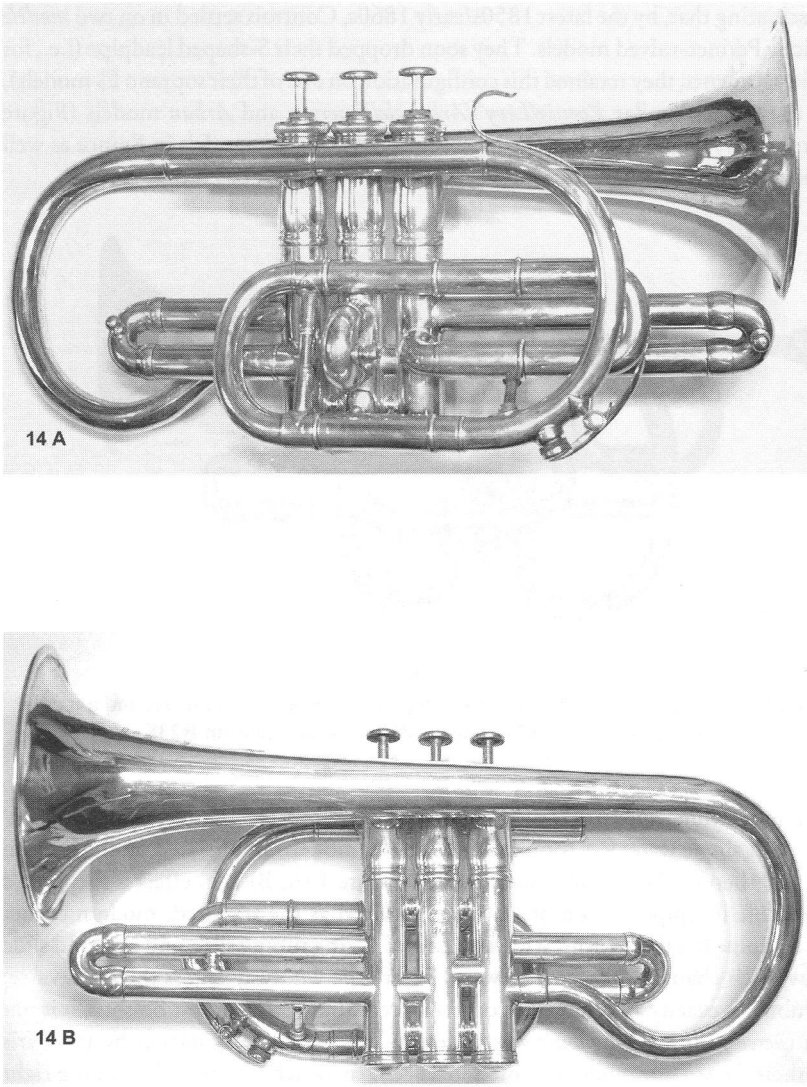


Figure 14.
Besson *Desideratum* (London nomenclature!) *modèle anglais* cornet—forerunner of Besson's (Paris) *Concertiste* model, and thence the modern cornet. Paris (92 rue d'Angoulême), serial no. 7125 (early 1870s); bell length 12½" (ca. 32.4 cm.); restoration by Frank Griesemann; authors coll.

There were, of course, other models by other makers, but few instruments survive to lend substance to catalogue descriptions and illustrations. Many makers produced their variant versions of Courtois single-lever double-water-key and Besson single-water-key models, sometimes referring to them (not always accurately!) as their "Courtois" and "Besson" models. Some copies of Besson designs (usually, though not necessarily, cheaper instruments) eliminated the second, high/low pitch slide, and often had a soldered joint connecting the first and third 180° bends of the leadpipe. When the English firms of Hawkes and Son, Higham, and Boosey and Company (who bought out Henry Distin in 1868) began manufacturing their own high-quality instruments, their models were patterned closely after especially Courtois, but also Besson. These models had evidently become established in the cornet-purchasing public's mind as the standard, in both form and quality, so that little deviation from the standard few designs was apparently possible up through to the end of the century.

Similarly, when musicians in the United States began to abandon string-action rotary models in favor of Périnet-valved instruments, manufacturers such as Lehnert, Fiske, Conn, Boston Musical Instrument Manufactory, Standard Band Instrument Company, Missenharter, etc. likewise produced more-or-less faithful copies of Courtois and Besson instruments. To be sure, Conn's (Elkhart, Indiana) *Four-in-One* instrument[58] of the late 1870s had many non-conventional design aspects to the windway, presaging further experimentation and innovation by this company in the early 1880s, and then again, intensely, in the first one-and-a-half decades of the twentieth century (see below). But shortly after dissolving his partnership with DuPont in 1879,[59] Conn produced a short run of close Besson and Courtois copies—before turning to his series of *Wonder* cornets (Figure 15A-C), which in effect were Courtois double-water-key copies with a change in the configuration of the intervalve tubing.

Likewise, Boston Musical Instrument Manufactory's famed *Two Star* and *Three Star* cornets were, with their double water keys, essentially Courtois-like, but utilized the Besson "stepped down" intervalve tubing configuration in *perce droite* format (Figure 16A-C). It was a "mix and match" of components, but no one on either side of the Atlantic deviated all that much from the basic designs developed by Courtois and Besson for the last three decades of the nineteenth century.

The low-production maker John Heald of Springfield, Massachusetts may have been the last of the U.S. manufacturers to produce double-water-key, removable-shanked cornets (Figure 16D). Today his cornets are highly prized, with many collectors/players finding them among the best (some think *the* best) cornets ever made, by any maker, of any age, on either side of the Atlantic.

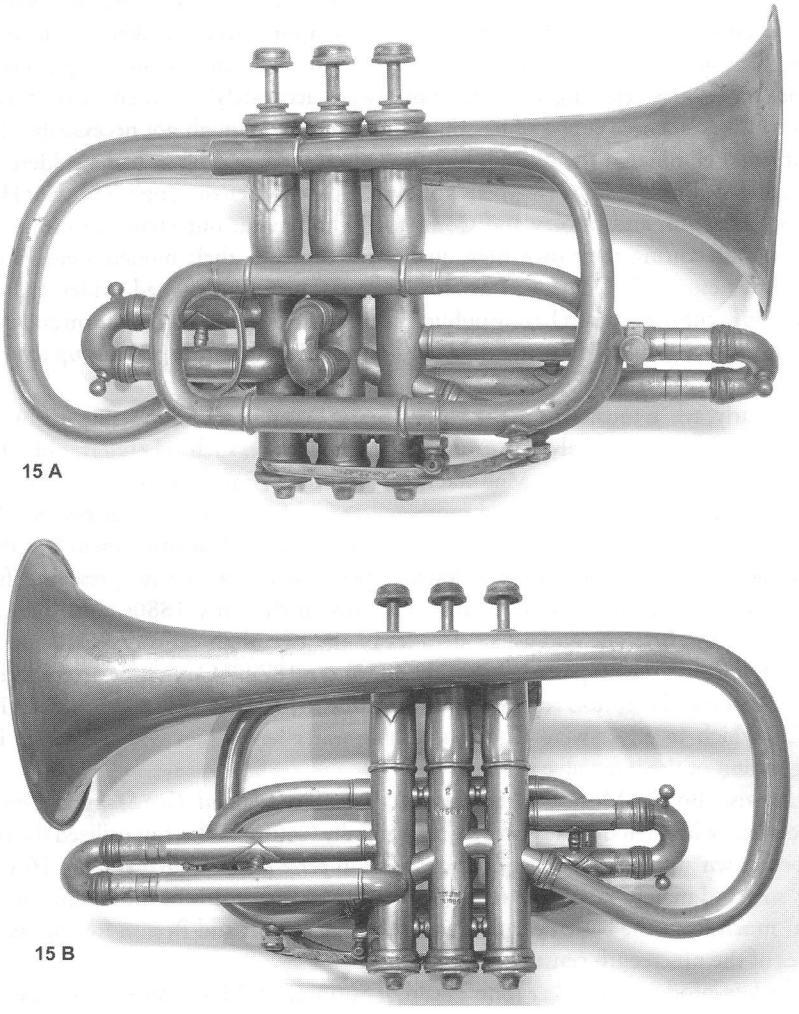
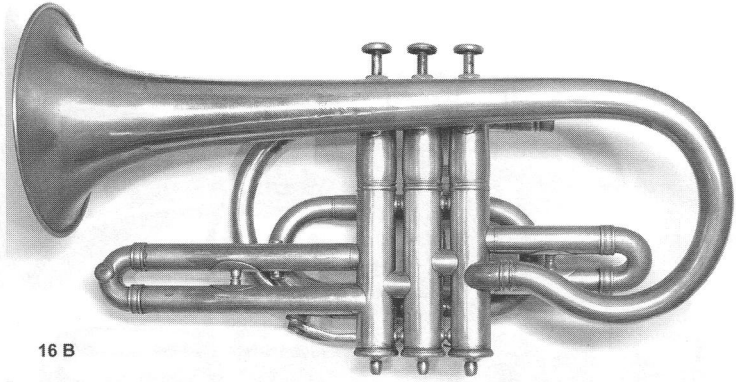
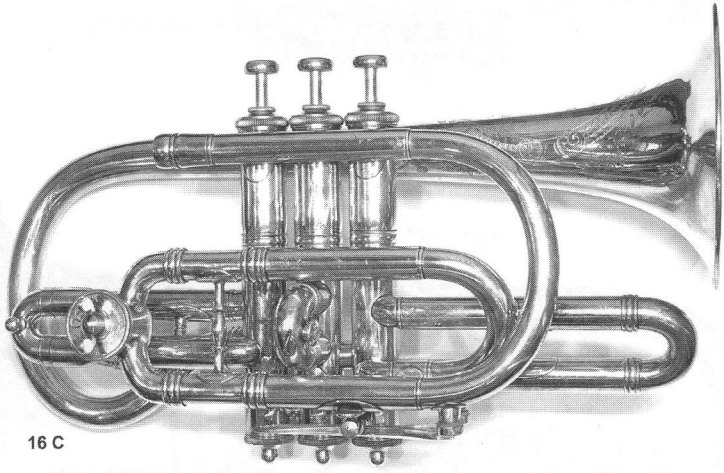


Figure 15.
Conn *Wonder*, first and second models, both stamped "Elkhart & Worcester."
15A, B: Conn *Wonder* # 1, serial no. 17509 (ca. 1889); bell length 12" (ca. 30.5 cm.); in C/B♭/A—with score marks on valve slides for appropriate pitch tuning lengths; note intervalve tubing (15B); author's coll.; 15C: Conn *Wonder* # 2, serial no. 54113 (ca. 1899); bell length 13" (ca. 33 cm.); B♭/A only; author's coll. Note modifications in intervalve tubing.
These two Conn *Wonders* resemble the differences between the Courtois *Arbuckle* (also *Levy's*, etc.) and *Arban* models (see Figure 12), in that a major difference between the two models from both Conn and Courtois depends largely upon whether or not the leadpipe passes through the upper and lower branches of the third valve tube. Though not by any means exact replicas of the Courtois cornets, these two double-waterkey Conn *Wonders* were clearly inspired by, and meant to compete with, the Courtois designs.

Figure 16.
Three premier American double-waterkey cornets. Though Courtois-like in overall design, note Besson-like intervalve tubing in all three instruments. 16A, B: Boston Musical Instrument Manufactory in nickel silver; no model name, no serial number; bell length 13" (ca. 33 cm.); model identical to one offered in 1869 catalogue, thus among the older American-made Périnet piston-valve designs; author's coll. 16C: Boston Musical Instrument Company, the famous *Three Star*, serial no. 18344 (ca. 1908), bell length 12⅝" (ca. 32 cm.); author's coll.; 16D: Heald cornet, serial no. 2306 (?1890s); bell length 13½ " (ca. 34.3 cm.); restored by Nick DeCarlis. Note Heald's patented upturned waterkey lever.



16 B



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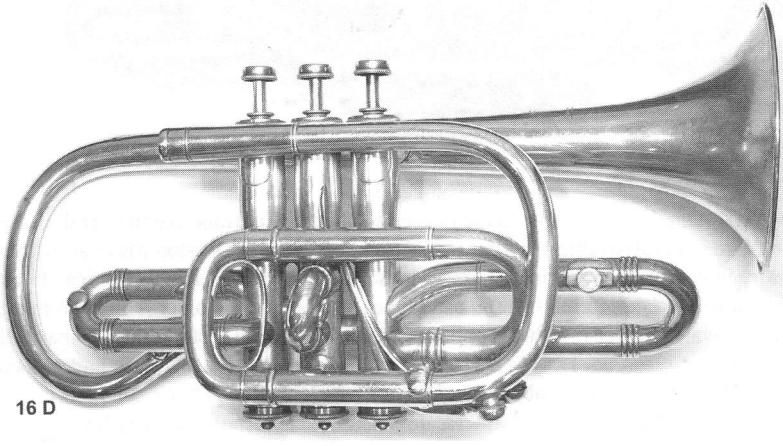


16 D

Millennial designs

In the 1890s some makers on both sides of the Atlantic started to produce single-water-key, Besson *Concertiste* (= English Besson *Desideratum*) style cornets—retaining the removable shank system for the leadpipe, but substituting, for the usual interchangeable high/low pitch slides at the second crook, a slide equipped with a calibrated stop rod for changing the nominal pitch of the instrument (generally from B-flat to A,[60] without necessitating removal of the shank. Conn's *American Model Orchestra Cornet* and the aptly named *Fin-de-siècle* ("End of the Century") model of the Association Générale des Ouvriers Réunis in Paris were early examples of such instruments (Figure 17A, B).

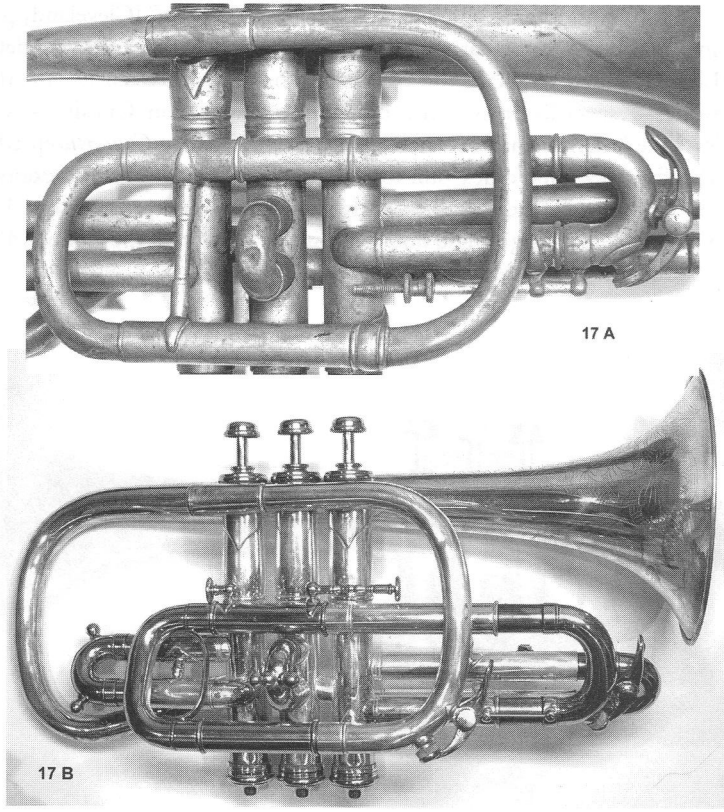


Figure 17.

Two early *Fin-de-Siècle* model cornets designed in the 1890s—both retaining removable shanks. 17A: Association Générale des Ouvriers Réunis B♭/A cornet; close-up of tuning slide and pitch-change slide equipped with stop rod. No serial no., ca. 1905. Distance between waterkey and rear of tuning slide ca. 8 1/2 " (ca. 21.6 cm.); author's coll. 17B: Conn *American Model Orchestra* cornet; serial no. 24040 (ca. 1892), bell length 13" (ca. 33 cm.); instrument restored by Frank Griesemann; author's coll. Valve slide and pitch tuning slide (equipped with stop rod) with pitch positions scored on tubing; pitch slide stop rod not original.

As noted above, most Périnet-valved cornets produced in the last three decades of the nineteenth century no longer came routinely equipped with a full set of shanks to lower the pitch to F and lower. With a mechanism for a quick change of a B-flat instrument to A (or from C to B-flat) newly invented, makers were now free to abandon the removable shank system entirely in favor of a "fixed leadpipe"—i.e., where the mouthpiece receiver is soldered to the leadpipe proper, often with additional bracing to the valves. Though it is impossible at this point to determine which maker first produced fixed-leadpipe cornets,[61] they were especially—and immediately—popular in the United States, where the old-fashioned removable-shank-system cornets virtually became extinct in the earliest years of the twentieth century.[62] New American makers such as Holton (Chicago, then Elkhorn, Wisconsin), York (Grand Rapids, Michigan) and White (as "King" [Cleveland] produced fixed-leadpipe, *fin-de-siècle*-style cornets (Figure 18) among their earliest models, while Buescher (Elkhart) opted to retain the removable shank on their entry into the field. European makers—especially firms such as Bohland and Fuchs from Graslitz—were quick to send copies to the American market. These cornets resembled their *Concertiste* predecessors in all but the fixed-leadpipe/quick-pull-to-A mechanism, retaining, for example, the shepherd's crook. But they tended to be slightly longer than their predecessors: 13½-14" (ca. 34.3-35.5 cm.), continuing a trend noticeable in the very last of the Conn (14½") and Boston (13") double-water-key cornets.

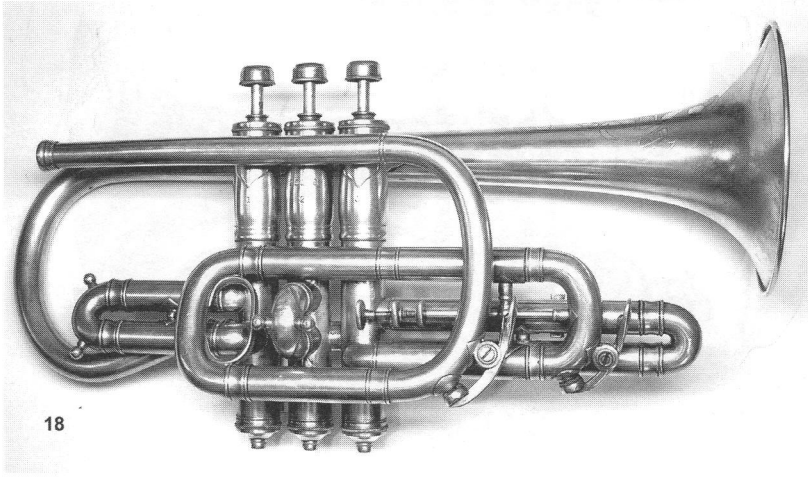


Figure 18.
A typical American fixed-leadpipe *Fin-de-Siècle* model of the early twentieth century; J.W. York & Sons "Professional," serial no. 20348 (ca. 1907—John Swain, unpublished research); bell length 13½" (ca. 34.3 cm.); author's coll. York at times marketed virtually the same instrument under the model name *Monarch,* and further manufactured these instruments for sale by other concerns (e.g. Wurlitzer).

A case can perhaps be made that fixed leadpipes represent an improvement in acoustical design, for the simple reason that the ends of the shanks, as well as the leadpipe receivers for the shanks, are easily and often dented out-of-round, and are thus a not uncommon source of leaks. Elimination of such a weak link would therefore seem to constitute an improvement in acoustical design, as further suggested by its immediate acceptance in the form of the fixed leadpipe *fin-de-siècle* and, almost immediately thereafter, in the spate of additional configurations in the United States. But against this line of reasoning lies the obdurate fact that, though such instruments were available (e.g., by Boosey and Co. in 1910, and in a slightly different configuration by Besson, London, perhaps even earlier), short, shepherd's-crook cornets with removable shanks, most notably the single-water-key Besson *Concertiste*-style cornets, remained the instruments of choice in Great Britain at least until the early days of World War II.[63] Likewise, in Belgium and France, short shepherd's crook *modèle anglais Concertiste*-style cornets with removable shanks remained the norm, with such firms as the tradition-minded Couesnon company still producing such instruments in the 1950s. To be sure, Couesnon and Besson (both Paris and London) produced fixed-leadpipe cornets (of various different configurations) for the American market, but production for the European market heavily favored the traditional style left over from the previous century, at least until after World War II.

If an acoustical argument, then, cannot be defended as the prime cause for the switch to fixed-leadpipe configuration in the United States, the next most likely explanation is simply the change of century itself. Conn advertising associated with its various models (see below) was rife with words like "new" and, especially, "improved." It is very much as if the new century awakened a desire for modernity. In the United States, at least, not only were the Conn *Wonder* and the dual-water-key Boston *Three Star* soon to go: so were imports of the classic Courtois *Levy's/Arbuckle* and *Arban* models, and all their imitators (Couesnon, for example, plus other makers from eastern Europe).[64] Out with the old double water keys, removable shanks, bottom valve caps with elongate drip spouts. The old Bessons, with their single water keys and smooth-bottom valve caps (prototypes for virtually all such caps to the present day) survived, though the London branch, from 1895/96 under separate, British ownership, had quickly added fixed leadpipes to its models, especially, it seems, for export to the U.S. For although a few single-lever double-water-keyed cornets have survived from the early twentieth century (though few from prominent makers), and although various makers have, from time to time, achieved the triple purpose of (1) tuning, (2) key (i.e., nominal pitch change, e.g., B♭ to A), and (3) high/low pitch adjustment, all with a single valve slide, the two single-waterkey, double-slide Besson designs were "pre-adapted" to the fixed-leadpipe, second-slide A-change. Thus there arguably is a functional, mechanical reason for the persistence of Besson designs, and the extinction of Courtois designs, into the twentieth century.

And, at least in the United States, in with the new. The trend to increased length continued immediately. Conn (the *Perfected Wonder* and later, similar models) and Buescher both started building cornets with the old reverse S-shape configuration to the fixed leadpipes within a few years of the century's turn (Figure 19). Many other makers,

domestic and foreign, followed suit; S-shaped leadpipe cornets were perhaps the dominant model of the decade 1910-20, and continued to be sold well into the 1920s, if not longer. These instruments (i.e., those built in B♭) had shallower shepherd's crooks and hence even longer bells, reaching, in some cases, 17" (over 43 cm.). In Conns, the first crook, facing forward, was apparently meant to be used for tuning, as the larger, second slide, still facing to the rear, was equipped with the stop-rod quick-to-A mechanism; however the situation was reversed in the Bueschers: there, the first slide, facing forward, was equipped with the A-change stop rod. And though Buescher for a time experimented with a tube connecting the third with the first valve air passages (the bell exiting the second valve), the leadpipe in these S-shaped instruments otherwise still entered the third valve.[65] Standard Band, H. N. White ("King"), and Martin also built S-leadpipe cornets, as did Couesnon and a number of eastern European manufacturers—most likely mainly, or perhaps even solely, for export to the United States.

But then all hell broke loose—as far, that is, as American cornet design was concerned. In the period between the turn of the century up at least until the entry of the United States into World War I in 1917, the leading manufacturers indulged in what was probably the most intense period of design foment in the entire history of cornets. Most of these instruments were elongated, almost trumpet-like instruments; some dispensed with the shepherd's crook entirely. And they were further "united" by odd, experimental configurations of the airways in and around the bell, often coupled with a wide assortment of never-before-

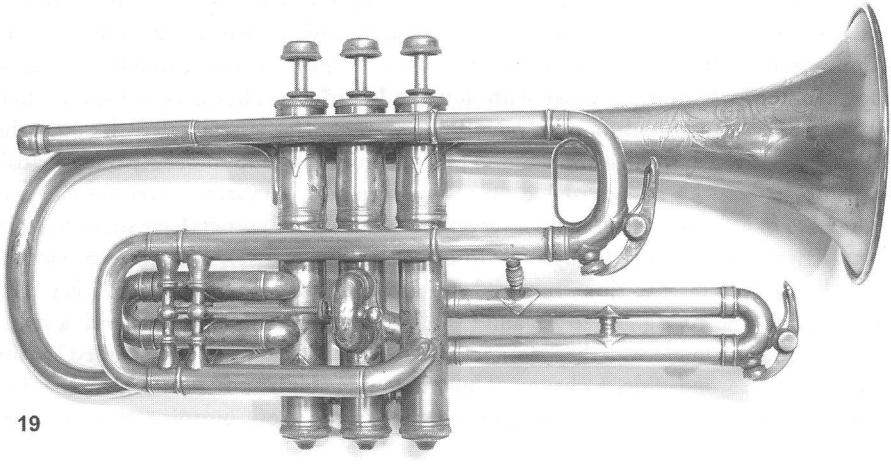


Figure 19.
Typical American S-leadpipe long-bell cornet. Conn *Perfected Wonder*, serial no. 91660 (ca. 1905); bell length 14½" (ca. 36.8 cm.).

seen configurations of the leadpipe and/or bell. According to patents and advertising, most of these "improvements" were made in the name of enhanced efficiency in airflow in and around the valve section. Interestingly, all these models were short-lived, calling into question exactly how much improved efficiency was actually attained. Indeed, from the rate of slight modifications even within some models (especially the two distinctly different Conn *ConnQuerors* and the two equally different Conn *Wonderphones*—a pattern of almost constant tinkering), production of these unusual configurations both within single firms—and of course among competing firms—more likely represents foment in stylish exterior design than any real mechanical/acoustical improvements. Especially with the Conns, there is a distinct sense of planned obsolescence on a year-by-year basis throughout the first decade of the twentieth century.

Among the earliest to be produced was the Conn *ConnQueror*, a model name that actually encompassed two very distinct cornet designs produced seriatim from about 1902-03, then 1904 to ca. 1910[66] (Figure 20A-D). The only features in common between these two *ConnQuerors* were the presence of a quick-change-to-A slide on a crook that ran between two of the valves, and the presence of a fixed leadpipe with forward-directed main tuning slide (i.e., like a modern B♭ Périnet-valved trumpet), the leadpipe connecting to the second valve.[67] In the first *ConnQueror* (typically some 13_", or 34.3 cm., in bell length), the airflow then proceeded from the second valve to the first valve by a conspicuous loop (i.e., not a simple direct intervalve tube) running on the left side of the instrument; the air column left the first valve in a long tunable crook (with quick change to A), symmetrically placed below the main tuning slide loop of the leadpipe, returning to the third valve, and then exiting to the bell.

In the second *ConnQueror* (bell length typically 15", or 38 cm.), the air column left the second valve on the left side of the instrument and ran backwards, forming a quick-to-A change (sometimes equipped with an extending bridge to change from C to B-flat), then running forward to connect with the third valve; the air flow continued through a bridging tube between the third and first valves on the right side of the instrument, continuing out the first valve into the bell.

Interestingly, Conn had produced cornets with a similar experimental design in the early 1880s—an unnamed model with removable shank, with the leadpipe running to the *first* valve, the air column then running by a curved bridge tube on the left side to the third valve, thence into a forward-directed tube on the right side (with bridge for C-B-flat-A pitches), connecting back into the second valve, from which the bell exits on the left side.[68] Thus in a sense the *ConnQuerors* represent a resumption of design tinkering with air flow that Conn had been experimenting with early on in his production years. Instruments similar to the *ConnQuerors*, i.e., with quick-change slides on loops running between two of the three valves—were also produced by the Martin Band Instrument Company and by at least one British firm, Rudall Carte.

Conn's two *Wonderphone* models, produced seriatim from ca. 1907-ca. 1910 (*Wonderphone* # 1 to 1908; *Wonderphone* # 2-1908-1910), share only the fact that both are bell-tuning models (Figure 21A-D). In *Wonderphone* # 1 (bell length ca. 13 1/2", or 34.3 cm.),

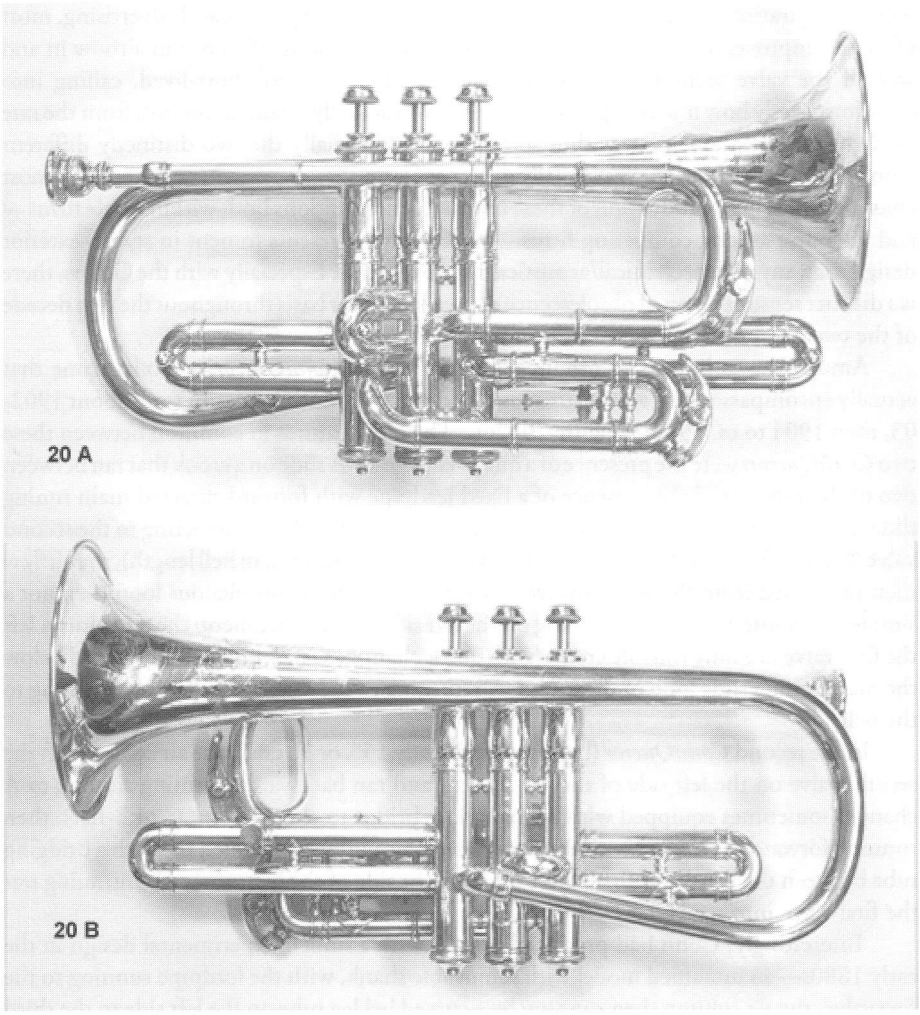
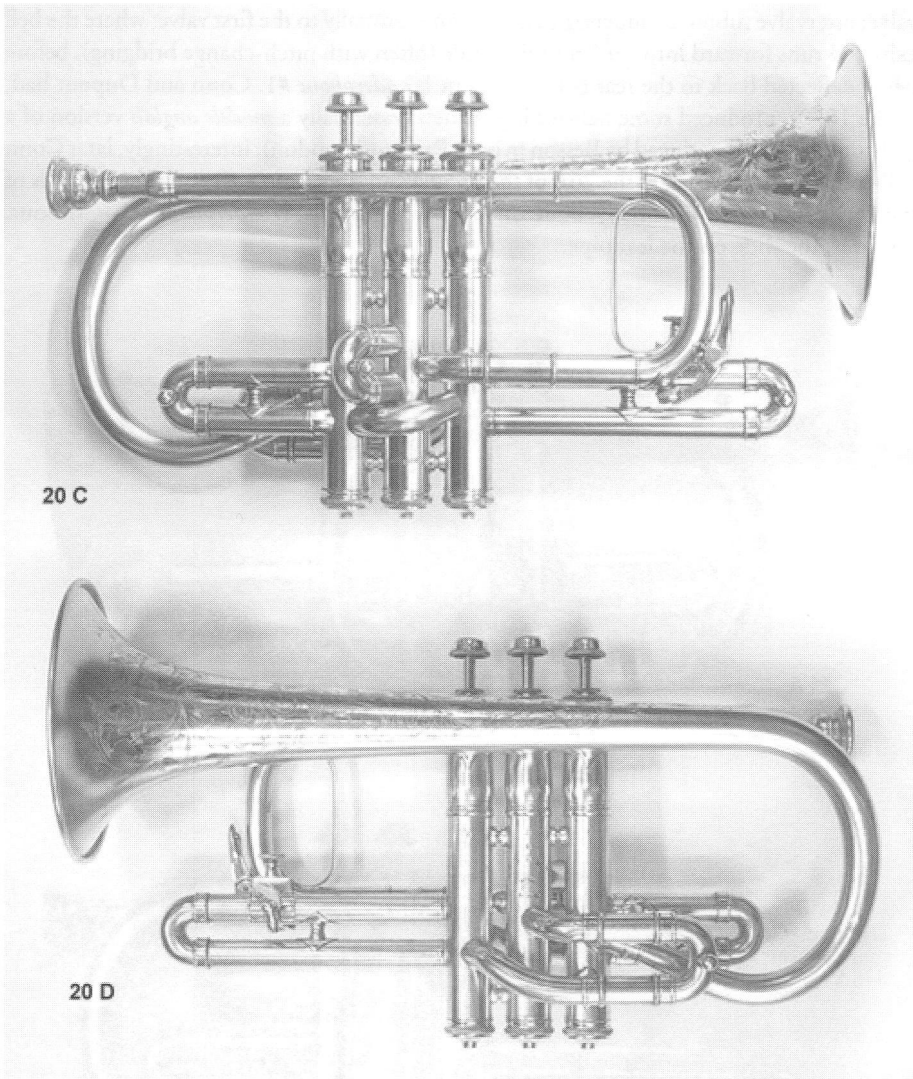


Figure 20.
The two Conn *ConnQueror* models. DeCarlis coll.; restoration and photographs by Nick DeCarlis.
20A, B: *ConnQueror* #1; serial no. 77755 (ca. 1903); bell length 13½" (ca. 34.3 cm.);
20C, D: *ConnQueror* #2, serial no. 92292 (ca. 1905); bell length 13" (ca. 33 cm.);
"Vocal" model, i.e. C/B♭/A



the fixed leadpipe is drawn back into a narrow loop with quick-to-A slide, before running forward into the first valve; thereafter, intervalve tubing directs the air from first to second, thence to the third valve; the bell exits the third valve and runs forward and is reflected downward into a tuning slide; the bell then runs back and is deflected upwards in a deep, non-shepherd's crook rear bell bow. *Wonderphone* #2 (bell length ca. 15", or ca. 38 cm.), in contrast, had the leadpipe deflected downwards into a tuning slide equipped with quick-to-A stop rod (some instruments lack a slide in this position) and then connecting to the third

valve; intervalve tubing conducts the air column eventually to the first valve, where the bell exits and runs forward into a main tuning slide (often with pitch-change bridging), before being deflected back to the rear bell bow, as in *Wonderphone* #1. Conn and Dupont had, in the 1870s, produced some bell-tuning cornets (essentially a *modèle anglais* version of a bell-tuning model produced by Besson in both Paris and London); interestingly, later Conn bell-tuning models (such as the 26A of the 1930s) and the *ConnQuest* and other models of the 1950s/60s were essentially built on the same plan as *Wonderphone* #1—without, however, the slide on the leadpipe.

Figure 21.
The two Conn *Wonderphone* models. DeCarlis coll.; restoration and photographs by Nick DeCarlis.
21A-B: *Wonderphone* #1; serial no. 103155 (ca. 1907); bell length 11¼" (ca. 28.6 cm.);
21C-D: *Wonderphone* #2; serial no. 115234 (ca. 1909); bell length 14½" (ca. 36.8 cm.).

But Conn was not the only player in this game of high cornet design experimentation in the first decade of the twentieth century. H.N. White, for example, made two very different instruments both marketed as the *Perfecto* (Figure 22A-C). *Perfecto* #1 (bell length 15 3/4", or ca. 37.4 cm.), had a fixed leadpipe with main tuning slide, entering the third valve after a single 180° turn; the air then left the third valve in a forward-running crook equipped with change-to-A stop rod, then doubled back into the third valve! (The Conn *ConnQuerors,* the Martin, and the Rudall Carte instruments, all had the air leaving one valve and entering another in these special quick-change loops). Thereafter the air column flows back to the first valve then out to a demi-shepherd's crook—a setup, in other words, exactly like a B♭ trumpet.

Perfecto #2 (bell length 15 3/4", or ca. 40 cm.) is also configured like a trumpet, with the main tuning slide facing forward on the leadpipe; the quick-to-A is accomplished by an additional full bend in the bell, equipped with quick-to-A slide and water key (which must have leaked a lot on the player's clothing!).

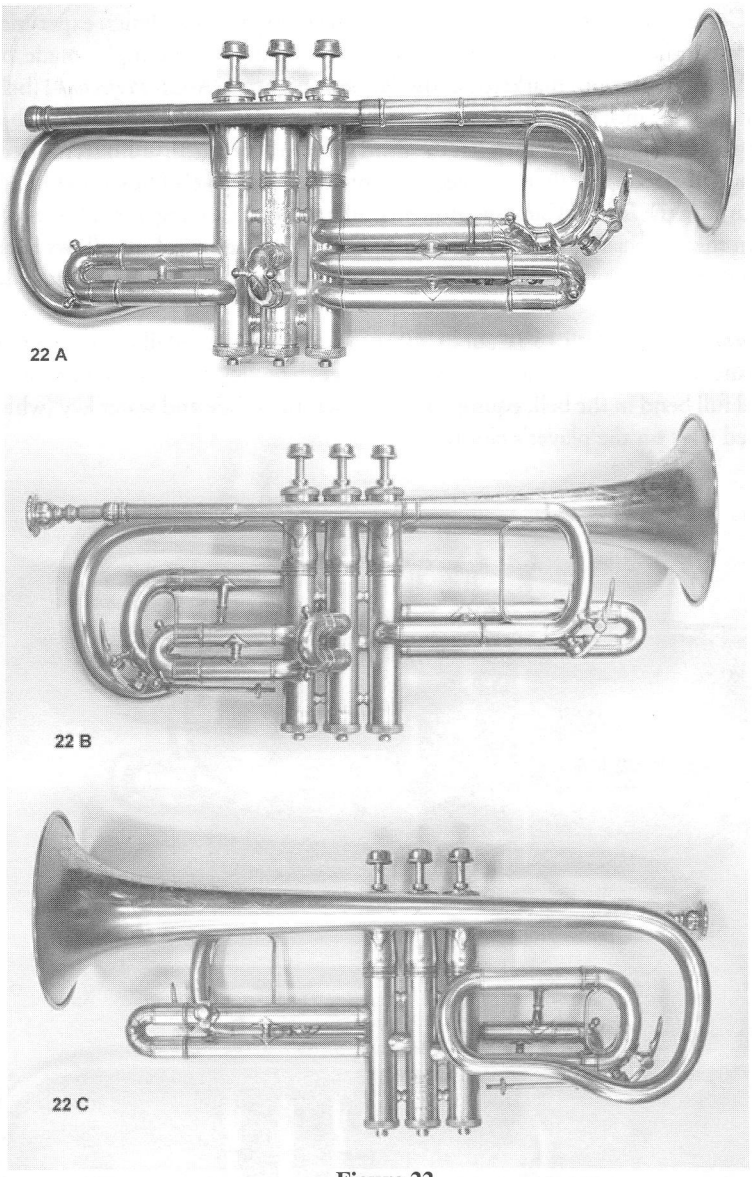


Figure 22.

The two King *Perfecto* models. 22A: *Perfecto* #1; serial no. 8099 (undated); bell length 15 1/4" (ca. 38 3/4 cm.); though not visible in this photograph, this is the model where the extra windway tubing (i.e., between the third valve tubing and the main tuning slide) exits, then re-enters, the third valve; it is equipped with a stop rod for quick-change-to-A; author's coll. 22B, C: *Perfecto* #2, serial no. 14517 (not dated); bell length 14 3/4 " (ca. 37 1/2 cm.). DeCarlis coll., restoration and photographs by Nick DeCarlis.

Buescher, in a addition to its two S-leadpipe long-bell models, also produced two versions of its famous *Epoch system*, consisting of instruments with valves with unequal length and unusual air flow; they also produced a bell-tuning model reminiscent of Conn *Wonderphones,* where the deep forward curve of the leadpipe was equipped with a tuning slide before entering the first valve; the air column, however, was then connected to the third valve by the same bridge tube of their early S-leadpipe models, thence back to the second valve and into the forward-directed bell, with tuning slide, that was then deflected back as in the Conn *Wonderphones.*

Meanwhile, Holton apparently pioneered a style of long-bell cornets—variably termed the *New Proportion* (a name first used for their *fin-de-siècle* model!), the *Revelation* (not, apparently, ever stamped as such on the bell), and then finally the famous *Holton-Clarke*—that were essentially modified S-leadpipe designs, with the extra loop now placed entirely in front of the third valve (as had been in fact the case with the King *Perfecto* #1). These and all other cornets mentioned henceforth have the original configuration of (1) three full turns to the leadpipe, the leadpipe entering the third valve, and the bell exiting the first valve, with no unusual intervalve tubing, crooks, etc. The long-bell Holton instruments in question were built from at least 1911 into the 1930s; all were variations of the same basic design (Figure 23).The *Revelation* was a full 16 3/4 inches (42.5 cm.) long, with no trace of a shepherd's crook; tuning and quick change to A were accomplished on the same forward-directed slide. The *Holton-Clarke* model was similar, but, in the version equipped with a shepherd's crook, was only 15" (38 cm.) long. Boston Musical Instrument Co., Standard Band Instrument Co., and H.N. White all produced versions of this design so closely associated with Holton, as did F.E. Olds somewhat later (i.e., the Olds *Special*).

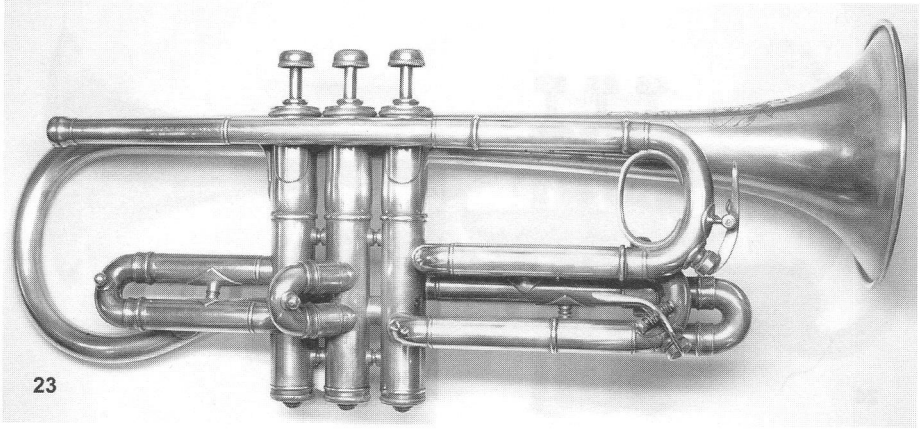


Figure 23.
Holton *New Proportion* (long-bell model), serial no. 25801 (ca. 1914); bell length 15 1/2" (ca. 39.4 cm.); author's coll.

York, too, made a widely copied long-bell instrument, the *Perfectone* (bell length ca. 16½", or 42cm)—another "modified S," with the extra turn (with the quick-to-A stop rod) placed symmetrically against the valve casing (Figure 24). This design was current sometime before 1913; it was copied by Bohland and Fuchs and other European makers.

Three long-bell cornet designs were especially important, as they not only attained popularity when first marketed prior to World War I, but also because they became the dominant surviving cornets of the 1920s up through the 1960s, one of them (the long-bell *Concertiste*) surviving to the present time as long since the *de facto* standard cornet model (Figure 1).

This latter model, with its Besson-designed valve assembly and simple three-turn "wrap" dating back to the early 1870s, is effectively a long-bell (i.e. non-shepherd's-crook) *fin-de-siècle* without the second slide with stop rod for quick change to A. Some makers in the 'teens and '20s (e.g., E. A. Couturier [through York, later on his own], Gronert [Elkhart], Besson [London], and Buescher) offered cornets of this simple wrap, but with rotary-valve change-to-A on the leadpipe. Martin may have produced a long-bell cornet of this type, without a quick-change-to-A, by 1921. Otherwise, Vincent Bach (who brought his Besson *Concertiste* with him when he emigrated to the United States in 1914[69]) appears to have been among the first to drop the quick-change altogether. Bach began making simple long-bell *Concertiste*-style cornets (i.e., like the Muck cornet of Figure 1) in ca. 1926 (Bix Beiderbecke played this model, after having played the Conn *New Wonder*/80A); by the 1930s other makers had joined in (Blessing's *Super Artist*, and, somewhat later, the Martin *Committee*, being well-known examples). These instruments, without shepherd's crooks and with fixed leadpipes, were simply longer, brighter versions of the Besson design going back to the earliest 1870s. Musical styles and usages had changed away from using cornets and trumpets

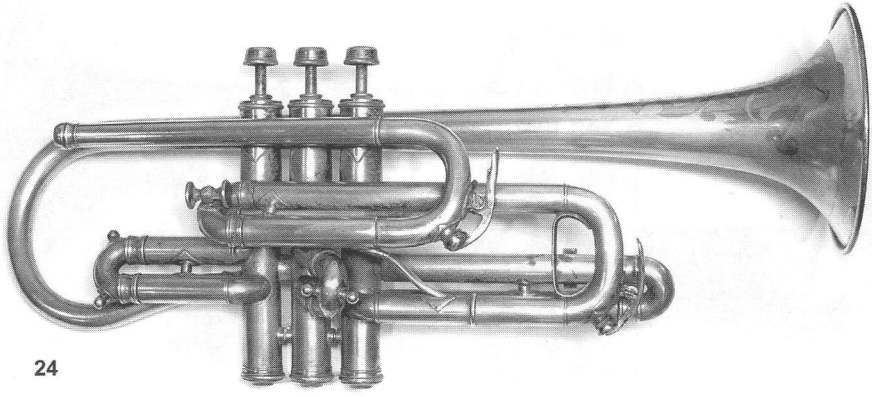


Figure 24.
J.W. York & Sons *Perfectone* model; serial no. 49775 (ca. 1915; J. Swain, unpublished); bell length 16½" (ca. 42 cm.); author's coll.

pitched in A, and certainly by the time the International Standard Pitch (A=440) was adopted in 1939, there was no longer any need for separate slides (or valves governing tubing loops), either to change or to adjust pitch;[70] rather, a single, simple tuning slide sufficed.

But there were two other models that were also pre-eminent, with tremendous staying power, appealing to the relatively few holdouts for cornets in the post-trumpet takeover days of the 1920s and beyond (Figure 25A, B). Both were invented ca. 1915, and both, like their diverse congeners described above, were a bit unconventional in their design. The renowned *King Master* (Figure 25A), for example, had the leadpipe running back opposite the lower valve section, and then reflected into a turn around the back of the valve (site of the tuning slide), and then running forward to the third valve; the windway is otherwise a normal cornet/trumpet configuration. Without a shepherd's crook, an early example has a 16" long bell; it has a tight bell and plays rather brightly. Consistently popular, the *Master* model was manufactured well into the 1960s, and perhaps later. It was imitated at various times by Buescher and Conn.

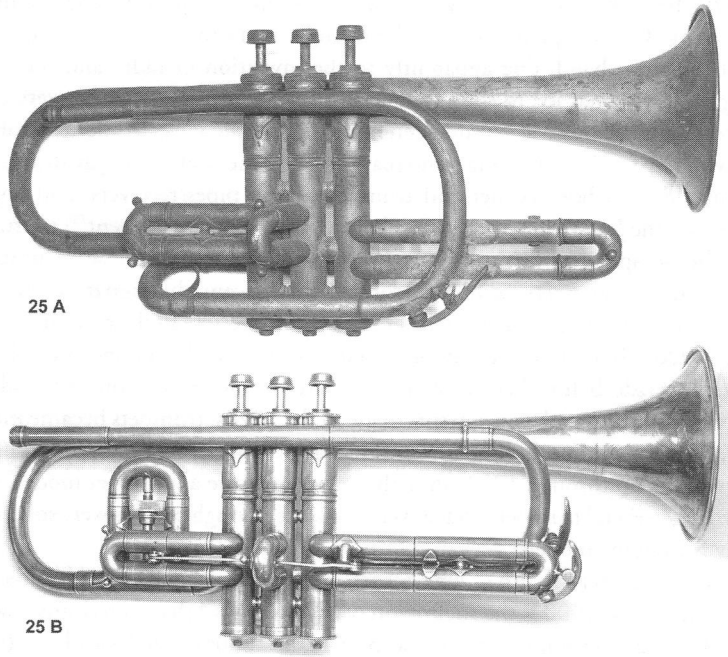


Figure 25.

Two long-ranging (i.e. mid-teens to ca. 1960s) long-bell cornet models; author's coll.
25A. H.N. White *King Master*; serial no. 26386 (undated early example); bell length 15¾" (ca. 40 cm.).
25B. Conn *New Wonder*, serial no. 137114 (ca. 1915); bell length 16¾" (ca. 42½ cm.). Note "linkage" system for extending lengths of all three valve slides the appropriate amount when the main slide (in this case, the quick-to-A slide) is pulled, as tuning is by micrometer dial on the extra bell loop.

Conn's *New Wonder, Victor New Wonder,* or 80A (with variant versions, such as the slimmer, more trumpet-like 8A of the 1930s—Figure 25B) was unusual primarily because of its hump-shaped loop on the lower section of the bell just to the rear of the first valve. With a micrometer wheel, the instrument was intended as a bell-tuner, though there was also a forward-directed slide on the leadpipe that was, at least through the 1920s, equipped with a stop rod for quick-to-A; some of the earlier instruments also were equipped with a linkage system that adjusted valve slides when the change was made between B♭ and A. Bell lengths varied somewhat, but 16 3/4" was common in the 1920s. Never to my knowledge copied by anyone else,[71] this model was sold at least through the 1960s; older ones in good repair are the favorites of many modern players in the traditional jazz idiom.

No question about it: cornets were getting longer as the new century wore on. They were also, by all reports and assessments of surviving instruments, becoming brighter.[72] As is well known, the ratio of cornets to B♭ trumpets flipped dramatically sometime in the mid-1920s. But it is quite clear that cornets, at least in the United States, had for a long time prior to the 1920s been well on their way towards becoming trumpets, raising the immediate question: Why? Older explanations for the trumpet replacing the cornet—including the demise of the town band, due apparently to the invention of radio and the rise of the recording industry—has led to the speculation that brighter instruments were called for, perhaps for simple acoustical reasons demanded by the new electronic technology. The famous switch by Louis Armstrong (who played, for a time, a Harry B. Jay instrument that came equipped with both cornet and trumpet tuning pipes/receivers, and appropriate mouthpieces—the Jay was an appropriate hybrid, transition instrument[73]) to trumpet (he has been photographed with, variously, a Buescher 10-22 and Conn 58B trumpet before settling on the Selmer *Balanced* model trumpet that became his signature for the entire remainder of his long and brilliant career) took place sometime in the early-mid 1920s (no later than 1926). It is notorious among collectors that B-flat Périnet-valved trumpets demonstrably made before World War I are rare-to-uncommon on both sides of the Atlantic, while starting with instruments made in the 1920s, trumpets became much more common, and soon outnumbered cornets. The Sears Roebuck catalogue appears not to have carried trumpets up through 1923 (though they did feature a "trumpet model" cornet in 1923); by 1927, several trumpet models were available, though cornets were still prominent (especially S-leadpipe models).

Perhaps nearer to the truth of why cornets started to look and sound like B♭ trumpets starting as early as ca. 1900 is the suggestion of H.M. Lewis[74] that Americans always had a preference for brighter sounds, starting way back in the 1800s when the lead instrument was an E♭ soprano cornet. Additionally, the possibility exists that a preference for B♭ Périnet-valved trumpets was being developed in at least some orchestras prior to World War I, thus suggesting the further possibility that cornets were becoming more and more trumpet-like, as if fighting a sort of "rearguard" action against trumpet encroachment that was to turn out to be ineluctable in any case.

In favor of this interpretation (but, admittedly, lacking the requisite information to support it unequivocally), is the well-known historical separation in the origin, literatures, and uses of trumpets vs. cornets from the days even preceding the invention of valves. Consider the following phrase from the famous letter from Herbert L. Clarke to Elden Benge in 1921, in which Clarke tells Benge to stick to the cornet because the trumpet "is only a foreign fad for the present time, and is only used properly in large orchestras of 60 or more, for dynamic effects, and was never intended as a solo instrument. I never heard of a real soloist playing before the public on a Trumpet. One cannot play a decent song even, properly, on it, and it has sprung up in the last few years like 'jaz' music, which is the nearest Hell, or the Devil, in music. It pollutes the art of Music."[75] This is quite an onus to place on the "regal and noble" trumpet; and in any case, one must agree with H.M. Lewis and John Wallace[76] that, in the United States, by the time Clarke pecked those words out on his typewriter, his own instrument was a lot closer to the trumpet than the Conns and Bostons he had begun on in the late nineteenth century, though he undoubtedly continued to use a proper, funnel-cupped cornet mouthpiece[77]. The cornet had long since effectively evolved itself out of existence—again, especially in the United States.

But one final note of caution must be raised in any analysis of the increasing length ("trumpetization") and brightness of sound in American cornets in the first two decades of the twentieth century. It is generally agreed that the most important determinant of the tonal qualities of a brasswind instrument is the shape of the oral cavity of the player. Next in line, however, is the shape of the cup of the mouthpiece (width of cup, as well). A 1915 King *Master*, with its tight bell, plays very bright with a trumpet-cup cornet mouthpiece, but is much more mellow and dark when fitted with an old-fashioned funnel-cupped cornet mouthpiece. The third and least important of the three variables determining tonal quality is the resonator, i.e., the instrument itself. Manufacturers were still equipping cornets with funnel-shaped mouthpieces in the 1910s-20s (though shallow mouthpieces for cornets survive back to the preceding century—there was always a variation in preferred sound!). Just how "bright" these longer-belled, more trumpet-*looking* cornets actually sounded, then, is a matter that needs more investigation.

The rise of the B♭ Périnet-valved trumpet also marked the end of any further innovation in cornet design. Cornets continued to be used by players who preferred a more compact instrument, though jazz players such as Rex Stewart played with a sound at least as bright as their fellow trumpeters. Cornets retained a reputation among many teachers that their still somewhat more compact length, plus whatever conicity the windway retained, made them easier instruments for beginning students. And though band and orchestra arrangements still called for separate trumpet and cornet parts, the two were considered interchangeable, and though musicians (from students through professionals) could in general feel comfortable adopting either instrument, most of course played B♭ trumpets.

Thus the 1950s Muck[78] emulation (Figure 1) of a Bach long-bell, fixed-leadpipe, non-shepherd's-crook cornet—itself a lineal descendant of Besson cornets dating from the earliest 1870s—had been in place at least since the mid 1920s. However, many trumpetized

designs were still being manufactured in the 1930s, including models (many of them in the cheaper, "student" lines) that had an extra turn in either the leadpipe or the lower part of the bell as it exits the first valve.

But the height of "cornet" emulation of trumpet design has to be the thoroughly professional models produced by Conn in the 1930s-60s. In the 40A (cornet mouthpiece) and the 40B (trumpet mouthpiece) rimless *Vocabells,* and later in the *Connstellations* of the '50s and '60s, there was little, and sometimes literally no, difference in external design between the "A" (i.e., cornet) and "B" (trumpet). One took a cornet mouthpiece and had a more tapered leadpipe than the other; both had .438" bores in each of these two examples. The *Connstellation* trumpet-style cornet was advertised as the very brightest of the series of cornets Conn was offering in the 1950s/'60s; they also produced a more traditional *Concertiste*-style, fixed-leadpipe cornet, also called a *Connstellation,* with a bore size in excess of .480".

Since the 1980s, a wave of design nostalgia has gripped the industry, with the shorter style shepherd's-crook cornets, albeit with fixed leadpipe, making a strong comeback. Though highly subjective, the opinion of most players/listeners is that the dark sound of the old cornets is seldom achieved in these newer instruments, though some appear to come closer than others in this respect. The Monette Corporation, in addition to producing a shepherd's-crook short model, has, meanwhile, produced a long-bell cornet with a "drooping" first turn and similar shepherd's-crook droop to the rear bell branch. Though possessing no more turns to the tubing than a B♭ trumpet, and equipped to receive a wider-than-normal shanked mouthpiece *sui generis* to the instrument, the instrument is sold as a cornet (in either C or B♭) because of the long, French-horn-like taper to the leadpipe (there is no tuning slide—tuning effected by an adjustable mouthpiece receiver, much like a fluegelhorn or older E♭ soprano cornet). The instrument does produce a darker, softer sound than a trumpet.

John Wallace[79] has called for a return to the darker sound of the older cornets. He correctly observes that fluegelhorns have in large measure taken up the slack when mellower sonorities are called for. In my view, fluegelhorns (if used, at any rate, with proper funnel-shaped mouthpieces) lack the focus offered by cornets, which are true intermediates between trumpets and flugelhorns in tonal qualities.

Questions remain: How traditional in tonal quality—i.e., beyond mere appearance—did European cornets remain while the American instruments were busy evolving themselves out of existence? And what were the true reasons for the progressive trumpetization of the cornet in America?

Finally, as noted at the outset, no single system of classification of the myriad cornet designs suggest itself, nor is it in theory even possible to formulate such a classification. Division into short-bell and long-bell models, for example, ignores the differences developed in far earlier cornet leadpipe configurations. But pinpointing the sequence of design innovations through time at least provides some simplification of the details of cornet design history.

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NOTES

[1] Preliminary versions of this paper were presented at the joint Historic Brass Society (HBS) and American Musical Instrument Society (AMIS) meeting in Toronto in November, 2000, and at the AMIS meeting in Asheville, North Carolina in May, 2001 (Abstract, with illustrations: Niles Eldredge, "The French Connection," HTTP://www.vintagecornets.com). I would like to thank in particular Jeffrey Nussbaum (President, HBS) and Laurence Libin (AMIS) for giving me the opportunity to develop these thoughts on cornet history. I also thank Géry Dumoulin, Rick Flynn, Kenneth Fung, Roy Hempley, Bruno Kampmann, Sabine Klaus, Doug Lehrer, H.M. Lewis, Arnold Myers, Jeff Nussbaum, Dave Pinardi, Al Rice, Rick Schwartz, Robb Stewart, and two reviewers for comments on an earlier version of this manuscript.

During the course of the past ten years or so, I have benefited enormously from the hospitality and assistance offered to me by both private collectors and curators of publicly held collections of soprano brasswinds. Among the former, I thank Tony Bingham, Nick DeCarlis, Patrick Delile, Steve Dillon, Bill Faust, Rick Flynn, Sid Glickman, Frank Hosticka, Doug Lehrer, Martin Lessen, Bruno Kampmann, Tom Meacham, Frank Mesich, Hal Oringer, Dave Rogers, Marty Schmitt, Robb Stewart, Frank Tomes, and the late Joe Utley for access to, or information on, cornets in their collections. I thank Margaret Downey Banks and Sabine Klaus (Shrine to Music Museum—especially, though not exclusively, the Utley collection); Géry Dumoulin and Ignace De Keyser (Musée des Instruments de Musique, Brussels); Laurence Libin and Herbert Heyde (Metropolitan Museum of Art); Arnold Myers (Edinburgh University Collection of Historic Musical Instruments); Al Rice (Fiske Museum of the Claremont Colleges); and curatorial staff of the Streitwieser Museum (formerly Pottstown) and The Royal College of Music, London. Jacques Cools, Nick DeCarlis, Bruno Kampmann, Sabine Klaus, Arnold Myers, Rick Schwartz, and Robb Stewart have been especially helpful in many ways during the preparation of this paper—as have members, unnamed, of the "Cornet Conspiracy."

Finally, I dedicate this paper to the memory of my good friend and colleague, Patrick Delile, of Paris.

[2] I have recently concluded (Niles Eldredge, "Biological and Material Cultural Evolution: Are There Any True Parallels?" in *Evolution, Culture and Behavior*, eds. F. Tonneau and N. Thompson, *Perspectives in Ethology* 13 [2000]: 113-53; and "Memes in Material Cultural Evolution: A Case History," [in preparation]) that, because of the mode of inheritance of material cultural information—including "lateral transfer" coming from teaching, copying and outright theft of design—no material cultural system (e.g. "automobiles," "computers," "musical instruments," etc.) can be expected to yield a single valid classification, or even a classification likely to be deemed preferable or optimal by a majority of users. Rather, any such system—certainly including cornets—may be classified in a number of equally valid (yet potentially equally dissatisfying) ways. This contrasts with classifications based on biological evolutionary history, which in principle, at least, yield a single classification reflecting the nested sets of taxa (biological groupings) of the branching evolutionary ("phylogenetic") tree.

[3] Early nineteenth-century cornets, while commonly pitched in B♭ (though lack of true pitch standards in those days makes this designation exiguous), were routinely equipped with as many as eight shanks (Fr.: *tons*, the removable mouthpiece-receiving tube of varying shapes and lengths) that lowered the

pitch down as low as alto D; the lower shanks disappeared first, and later nineteenth-century cornets usually had B♭, A, and A♭ shanks only, although companies such as Couesnon offered a full system down to F into the twentieth century (cf. Anthony Baines, *Brass Instruments: Their History and Development* [London: Faber & Faber, 1976/1980], p. 227); the entire pitch-altering removable shank system disappeared shortly after 1900 in the United States (see text), but persisted in Europe, in many places as the preferred arrangement, at least until World War II; Couesnon was still offering cornets with *tons* in the 1950s, and replicas are currently being produced in India.

[4] Sharp et al. (David B. Sharp, Arnold Myers, and D. Murray Campbell, "Using Pulse Reflectometry to Compare the Evolution of the Cornet and Trumpet in the 19th and 20th Centuries," *Proceedings of the International Symposium on Musical Acoustics, Edinburgh, 19-22 August 1997,* ed. A. Myers [*Proceedings of the Institute of Acoustics* 19 (5), 1997], pp. 541-48) have convincingly demonstrated that cornets, from their earliest day, often had proportionally more cylindrical tubing than this often-stated ideal, for which reason Myers (Arnold Myers, "Preface," *Post-horns, Cornets and Ballad Horns,* vol. 2, part H, fascicle vii [new edition], *Historical Musical Instruments in the Edinburgh University Collections,* ed. A. Myers, [Edinburgh: Edinburgh University Collection of Historic Musical Instruments, 2000], pp. 3-4) classifies *all* cornets (i.e., not merely the later, "trumpetized" instruments of the twentieth century) as "intermediate brasswinds."

[5] Adam Carse, *Musical Wind Instruments* (New York: Da Capo Press, 1965); Baines, *Brass Instruments.*

[6] Indeed, according to Carse (*Musical Wind Instruments,* p. 246), most if not all of the earliest cornetists were horn players.

[7] By "design," I refer primarily to external configurational changes as well as such readily observable internal features as valve type. I consider internal shape of the tube, important though it may be, only in passing, and do not analyze "bore size" (i.e. diameter of the windway as it passes through the valves) at all, as there is no consistent pattern in the history of cornets (or of trumpets, for that matter) in this regard.

[8] See Arnold Myers, "Design, Technology and Manufacture since 1880," *The Cambridge Companion to Brass Instruments,* eds. T. Herbert and J. Wallace (Cambridge: Cambridge University Press, 1997), pp. 115-30.

[9] Baines, *Brass Instruments*; Carse, *Musical Wind Instruments*; Günter Dullat, *Metallblasinstrumentenbau* (Frankfurt: Erwin Bochinsky, 1989); Malou Haine and Ignace De Keyser, *Catalogue des Instruments Sax au Musée Instrumental de Bruxelles* (Brussels: Musée Instrumental Bruxelles, 1980); Herbert Heyde, *Das Ventilblasintrument* (Wiesbaden: Breitkopf & Härtel, 1987); Bruno Kampmann, *Collection d'instruments de musique à vent,* vol. 1 (Paris: Association des Collecteurs d'Instruments à Vent, 1986); Bruno Kampmann, "Les Systèmes de Pistons des Instruments de Musique à Vent," *Larigot* no. 3 (October 1988): 15-18; Victor-Charles Mahillon, *Catalogue descriptif & analytique du Musée instrumental du Conservatoire Royal de Bruxelles précédé d'un essai de classification méthodique de tous les instruments anciens et modernes* (5 vols.; Gand: C. Annoot-Braeckman, 1880-1922), vol. 1 (1880; reprint of 2nd ed. of 1893, Brussels: Les Amis de la Musique, 1978); Myers, "Design, Technology and Manufacture since 1880."

[10] Baines, *Brass Instruments,* p. 226.

[11] See Richard Schwartz, *The Cornet Compendium: The History and Development of the Nineteenth-Century Cornet* (privately published, 2000), p. 10. (http://www.angelfire.com/music2/thecornetcompendium), for an acoustical argument supporting the notion that it was the German posthorn, capable of producing four registers of sound, rather than the French version, said to have been limited to three registers, that was indeed the instrument that became the valved cornet.

[12] Carse, *Musical Wind Instruments,* p. 244.

[13] Ibid., p. 245.

[14] Albert Hiller (*Das grosse Buch vom Posthorn* [Wilhelmshaven: Heinrichshofens Verlag, 1985], p. 285) illustrates two early semi-chromatic posthorns (one each from ca. 1830 and ca. 1840); both are fitted with clapper keys rather than valves, and both retain the circular shape of the natural posthorn.

[15] See, e.g., Edward Tarr, "The Romantic Trumpet." *Historic Brass Society Journal* 5 (1993): 213-60; for discussion, see Schwartz, *Cornet Compendium,* p. 7.

[16] Arnold Myers and Raymond Parks ("Introduction," *Post-horns, Cornets and Ballad Horns,* p. 6 [Edinburgh: Edinburgh University Collection of Historic Musical Instruments, 2000]), provide the original French: "Le cornet dit à piston, connu depuis quatre ans environ, n'avait, dans son origine, que deux pistons; depuis, on en avait ajouté un troisième."

Interestingly, in her entry on "cornets," Sybil Marcuse (*Musical Instruments: A Comprehensive Dictionary* [New York: Doubleday, 1964], p. 127) reports that "The cornet is a descendant of the old coiled post horn; at the beginning of the 19th c. this was provided with crooks and a tuning slide, and around 1825 it was fitted with 2 valves by Halary (Jean Hilaire Asté) of Paris.... In 1829 Étienne-François Périnet added the third valve"—clear evidence that research by either Marcuse or some other brass historians had already uncovered this information, though it had not been incorporated into subsequent accounts.

[17] Baines, *Brass Instruments,* pp. 171, 226.

[18] Early makers of the two-valved cornet—mostly French, mostly Parisians—include Halary (Asté, the purported inventor), Collin, Darche, David, Guichard, Labbaye, Périnet, and Rivet, as well as the Belgian Charles Joseph Sax; many of the surviving instruments are unsigned.

[19] The earliest use of the terms *modèle français* and *modèle anglais* I have seen is in the Belgian Import Patent 35077 of 1874, issued to Mme. F. Besson, based on her Paris-issued patent for the *Nouvelle Étoile* model, also in 1874. While the *Nouvelle Étoile* patent primarily concerned the configuration of the windway through the valves, drawings were also furnished to illustrate that the bell could be placed on either side of the valve assembly, referred to in the text as *modèle français and modèle anglais.* Both *modèles* were in regular production in Paris for a few years prior to the patent date of 1874. I am very grateful to M. Jacques Cools for providing me with a copy of the Besson 1874 patent.

[20] Makers known to have produced early three-valved cornopeans (i.e., Stölzel-valved *cornets à pistons*) include Pace and Köhler in England, in addition to the French makers Besson, Antoine Courtois, Auguste Courtois, Gautrot, and Guichard (who may have been among the more prolific of the makers), as well as the Belgian-born Parisian maker Adolphe Sax. Many surviving instruments, often with a highly distinctive "knot" at the end of the third valve tube, are signed by dealers rather than makers: e.g., Metzler (London), Collin (Paris) (see Figure 4a, b), Moitessier (Montpelier), etc. (though some of these latter were supposed to have been makers as well, the identity of these instruments suggests a single, common maker).

[21] E.g., some cornopeans by Köhler; see Carse, *Musical Wind Instruments,* Pl. XXII, A.

[22] Interestingly, however, some manufacturers years later reintroduced offset valves (e.g., the Olds *Recording* model cornets and trumpets of the 1950s and '60s, where once again the second valve was offset to the left). A similar configuration was patented in 1938 by an inventor named Davis (see Jim Kennedy and Kathy Murter, eds., *The Patent History of Brasswinds* [privately published, 2001]). Inasmuch as the second valve tube had long since been relocated to the right side of the valve in these Périnet-valved instruments, the functional reason for the offset valves was simply that the middle digit of the human hand is longer than both the forefinger and fourth finger, suggesting retrospectively that such a function could hardly have escaped the notice of the designers of the early three-valved cornets.

[23] These two seem to have been the most common three-valved cornopean windway designs, judging

from surviving instruments. Other designs are of course known. Köhler, for example, manufactured a cornopean where the leadpipe entered the first valve, the bell exiting from the bottom of the third valve, as seen, for example, on an instrument on display at the Victoria and Albert Museum in London.

Stölzel-valved *cornets à pistons* with the leadpipe entering directly into the side of the third valve later became commonplace—after the second valve tube was relocated to the right side of the instrument sometime, no later than the early 1860s—when cornopeans became the cheaper-grade cornets available. In these instruments, the valves are in-line, and came in either *modèle français* or *modèle anglais* configurations.

[24] This order of valve placement was retained unchanged when Périnet valves were introduced, and of course remains standard today in all cornets and trumpets (and in lower brass as well) regardless of valve type. The late Joe Utley compiled a database of surviving instruments (predominantly German) with the first and second valve tubes in effect reversed, i.e., the first lowering the pitch a semitone, the second a full step (Joe Utley, "First Valve-1/2-Tone Brass Instruments," paper presented at the meeting of the American Musical Instrument Society, Washington, D.C., 1997; and at the 13th Early Brass Festival, Bloomington, Indiana, July 1997; Sabine Klaus, pers. comm). Though Besson & Co. (London) was still offering such instruments (marketed as "Irish" models) early in the twentieth century, I have so far encountered only one Stölzel-valved *cornet à pistons* with this configuration of the valve tubing.

Though in some European makers' instruments the third valve lowered the tone a full two steps, I have yet to encounter this arrangement in piston-valved cornets.

[25] Myers and Parks, "Introduction"; Gautrot Ainé & Cie, *Catalogue des Instruments de Musique,* 1867, reprinted 1999, *Larigot* no. 10 Spécial. It must be remembered, as well, that "bugles" continue to the present day to be built as natural horns, or with one, two or (recently, in the United States at least) three valves (Périnet these days), the valved instruments being used in the numerous "drum and bugle corps."

[26] Baines, *Brass Instruments,* p. 228.

[27] See, e.g., Mahillon, *Catalogue descriptif,* p. 285, for such a comment.

[28] Robb Stewart, pers. comm., e-mail 8 July 2001.

[29] See also reproductions of Sax' advertising in Haine and De Keyser, *Catalogue des Instruments Sax,* and in Wally Horwood, *Adolphe Sax 1814-1894,* revised edition (Herts: Egon Publishers, 1983). Period illustrations of players holding their instruments in this manner include one of Hermann Koenig, arguably the first commercially successful cornet virtuoso, reprinted in Adam Carse, *The Life of Jullien* (Cambridge: W. Heffer and Sons, Ltd., 1951), p. 43. Interestingly, an apparently photographic (self?)-portrait of a young Alexander Graham Bell (b. 1847) grasping a cornopean in this fashion is in the Grosvenor Collection of the Library of Congress.

[30] See also Myers, "Design, Technology and Manufacture," p. 122. A two-Stölzel-valved cornopean by Périnet is listed as missing from the collections of the Musical Instrument Museum in Brussels. Fortunately, an illustration of this instrument was provided by Victor Mahillon in Vol. 5 (1922), p. 133 of his *Catalogue descriptif,* and is reprinted by Dumoulin in the present number of this journal.

[31] E.g., F. W. Galpin, *A Textbook of European Musical Instruments. Their Origin, History and Character* (London: Williams & Norgate, 1937).

[32] The instrument bears the serial no. 1056 on the bell, and is, according to its owner Bruno Kampmann (pers. comm.), one of the oldest known instruments of any type made by Adolphe Sax after his arrival in Paris in 1842.

[33] And apparently even beyond—see the advertisement of Husson & Buthod, ca. 1860, reproduced as Figure 7.

[34] Horwood, *Adolphe Sax.*

[35] See William Waterhouse, *The New Langwill Index: A Dictionary of Musical Wind-Instrument Makers and Inventors* (London: Tony Bingham, 1993) p. 29.

"F. Besson" is still conventionally assumed to mean "Fontaine Besson"—the said Fontaine having married Gustave and Florentine Besson's daughter Marthe and entered the family business for some time in the 1880s and 1890s (Waterhouse, *New Langwill*, p. 29). Yet "F. Besson" appears on bell stamps on Parisian Besson instruments as early as the 1850s, and surely reflects the fact that Besson, in "1858 in order to escape paying Sax damages incurred in a lawsuit, first transferring his assets to his wife quit Paris for London..., leaving her as proprietor" (ibid., p. 29). Besson's wife's maiden surname was Ridoux (originally inferred from an entry in ibid., p. 30, but now fully substantiated in the Belgian/French patent of 1874 issued to "Mme Besson née Florentine Ridoux"; see note 19)—this is in agreement with the fact that Besson bells in both Paris and London were stamped "FR" until the late 1880s in London and the mid-1890s in Paris; data and interpretation from Eldredge (Niles Eldredge, "A Database of Besson Soprano Brasswinds: 1845-1960," in prep.).

[36] Though Waterhouse (*New Langwill*, p. 348) especially mentions that Gautrot and A. Courtois made horns designed and licensed by Sax, there is no evidence as yet to support the contention that Sax cornet designs were licensed to other makers. Arnold Myers (pers. comm.) makes the useful observation that known examples of Sax-designed instruments produced by other makers under license bear a facsimile of the Sax monogram.

[37] One is in a private collection in New York. At least two more are in the collections of the Musical Instrument Museum in Brussels (see Géry Dumoulin, *Cornets à Pistons, Cornetten, Cornets*, [Brussels: Musée des Instruments de Musique, 2001; Booklet 10]; Haine and De Keyser, *Catalogue des Instruments Sax*). Horwood (*Adolphe Sax*, pp. 30, 31, 78, 128 and, perhaps especially clearly, 151), reprints drawings and advertising sheets from Sax's career. The handbill from ca. 1850 (ibid., p. 151) shows (1) a French-model Stölzel-valved cornet, with the windway entering the bottom of the third valve, the bell exiting from the side of the first valve; (2) an S-shaped leadpipe instrument, albeit a "hybrid" with two Stölzel valves and a central Périnet valve (see text and compare with Figure 8, an otherwise identical, fully Périnet-valved instrument; this instrument is also shown being grasped by the left hand of a player very much in the manner depicted in Figure 5); and (3) the early Périnet-valved model shown here in Figure 6.

[38] Gautrot was offering a choice of pins vs. the later methods of valve alignment in their models as late as 1867. Interestingly, Gautrot also offered a French-model Périnet-valved cornet with an upper ("baluster") assembly that was threaded on the bottom for screwing into the lower section of the valve casing. This feature, together with the "treble-clef" like composite bracings on the instrument (Figure 9), is reminiscent of a deep-bodied cornopean-like Périnet-valved instrument by E. Courtois in the Utley collection at America's Shrine to Music Museum (catalogue no. 6815). The Courtois cornet A712 (Figure 11), dated 1854/1855, and the Courtois cornopean of Figure 4d of approximately the same age are among the oldest examples known to me of an internal multi-pinned (two or three) washer system enclosed in a housing surrounding the spring in the upper section of the valve.

[39] I thank Robb Stewart (pers. comm.) for his very helpful comments on this and other comparative aspects of valve design in brass wind instruments.

[40] However, at least one maker (Muller of Lyons) found a way to bring the second valve tube to the right, with an ingenious and seemingly wholly original design. Much later, cheaper Stölzel-valved instruments did indeed emulate Périnet-valved instruments, in transferring the second-valve tubing to the right side of the instrument, evidently accomplished through a slight widening of the space between the upper and lower branches of the main tuning-slide tubing.

[41] The modern instrument maker David G. Monette—in examining a range of nineteenth-century cornets—once observed (pers. comm.) that wide spacing of upper and lower branches of valve tubes contributes to timbre and intonation problems, possibly suggesting an acoustical reason why early makers of Périnet-valved cornets quickly turned to narrower construction of valve tubes. However, two of the premier makers of Périnet-valved cornets of the nineteenth century—A. Courtois and the Boston Musical Instrument Manufactory, as well as others, produced models reverting to a rather wide spacing between upper and lower branches of the valve tubes.

[42] See n. 22.

[43] Horwood (*Adolphe Sax*) provides an interesting account of the relation between the Distins and Adolphe Sax, each side claiming to have been the reason for the other's success. One of the sons, Henry, of course went on to great fame as a manufacturer of brasswinds—first in London, then in New York, Philadelphia (working for J.W. Pepper before once again striking out on his own), and, culminating a long and productive life, in Williamsport, Pennsylvania. Distin cornets produced in all the venues for over a half century are close copies of Courtois instruments—except at the very end when, in Williamsport, he began (as did Courtois for the first time) to produce a very popular Besson design—adopted as the most common design by his successor in 1908, Brua C. Keefer.

[44] Myers, "Design, Technology and Manufacture."

[45] Reprinted in *Larigot* no. 6 (1989): 7.

[46] These are extremely interesting instruments. Three are by Adolphe Sax, each with S-shaped leadpipes, two of which are in the Brussels Musical Instrument Museum of Brussels; see Haine and De Keyser, *Catalogues des Instruments Sax*, p. 100, for description and illustration of serial no. 8923, made ca. 1850). A very similar instrument by Courtois is in the collections of the Royal College of Music, London. All are *modèle français* with pins, showing a "pinching" of the valves slides as they meet the valve casings. Like all cornopeans, and many subsequent Périnet-valved cornets (especially, e.g., those by Courtois), the intervalve tubes are in-line and halfway between the upper and lower valve tube connections. But most striking is the fact that the entrance of the leadpipe to the third valve, as well as the exit of the bell from the first valve, are *also* in-line with the intervalve tubes. Mme. F. Besson states in her 1874 patent that this "straight bore" (i.e. *perce droite*) configuration, "long known as the Besson system," is one of the earliest of Besson designs—a highly improbable assertion, as no evidence so far has emerged that the Besson firm ever used this particular valve design. But there can be no doubt that this configuration was among the earlier of the valve systems used on Périnet-valved cornets. Examples are known of the sporadic persistence of this design into the twentieth century.

[47] E.g., Mahillon, *Catalogue descriptif* (1880); Eugene Dupont, "Letters of Patent No. 249323, Nov. 8, 1881," in *The Patent History of Brasswinds;* Constant Pierre, *Les Facteurs d'Instruments de Musique* (Paris: E. Sagot, 1893; reprint, Geneva: Minkoff, 1971); the Besson Patent of 1874.

[48] Waterhouse, *New Langwill Index*, p. 197.

[49] Ibid.

[50] Algernon S. Rose, *Talks with Bandsmen* (London: William Rider and Son, Ltd., 1895; reprint, London, Tony Bingham, 1996), p. 173.

[51] The London branch of the Besson firm referred to instruments with the bell to the left of the valves as "reversed bell," rather than as "English model." See also above, n. 19.

[52] The Parisian branch of the Besson firm did not start making *modèle anglais* cornets until the 1870s (arguably, though not yet certainly established, after the London branch had conceded to fashion and came forth with its own *modèle anglais* cornet). This early model (the *Desideratum*—see Figure 14a, b), patented in 1874 and manufactured for fifteen to twenty years on both sides of the Channel, is the oldest known model cornet with the modern system of intervalve tubing—though manufactured in

perce droite ("straight bore") rather than the knuckled-out style (*perce pleine*) that is the overwhelming configuration of modern cornets and trumpets. Interestingly, the justifiably famous French Besson trumpets made between the two World Wars (and even later) never had the *perce pleine* of some of their cornets.

[53] Waterhouse, *New Langwill Index*, p. 74.

[54] For detailed drawings of Courtois and Besson *modèle anglais* cornets (as well as other maker's models), see Eldredge, "French Connection" and "Biological and Material Cultural Evolution."

[55] The four "new model" Courtois cornets known to me include A712 (author's collection—*nouveau modèle*), one in the Musical Instrument Collection of the University of Edinburgh, one at the Royal College of Music (London), and one in a private collection.

[56] These instruments include one in the collection of the Fiske Museum (Claremont Colleges), one in a private collection, and one illustrated by Carse, *Musical Wind Instruments*, plate XXII, D. Once again, Sax seems to have been in the lead, as Horwood (*Adolphe Sax*, pp. 151 and 160) reproduces a ca. 1850 Sax advertisement showing a hand gripping a cornet with two Stölzel valves and a (middle) Périnet valve.

[57] The *Levy's/Arbuckle/Emerson* models were externally identical, differing (according to catalogue copy from the 1880s) only in bore size (small, medium and large, respectively); the *Arban* model (never stamped on the bell with that name) was medium bore, and differed from the others mainly in that the leadpipe passed between the upper and lower branches of the inclined third valve tubing. Earlier models (i.e., 1860s, early 1870s) sometimes applied the names of these cornetists differently—e.g. calling what was later advertised as the *Arban* model a *Levy's* model.

[58] See Margaret D. Banks, *Elkhart's Brass Roots* (Vermilion: The Shrine to Music Museum, 1994).

[59] Ibid., p. 2.

[60] Note that this "key" change is not at all the same as the change from "high" to "low" pitch that reflects the vagaries and multiplicities of pitch standards at different times and places in cornet history.

[61] I.e., in the United States at the end of the nineteenth century. Fixed-leadpipe models were made from time to time by various European makers much earlier in the nineteenth century.

[62] Conn's last *Wonders*, produced (with longer bells) in Elkhart, Indiana through ca. 1903, plus the last of the famed Boston *Three Stars* (produced now by the Boston Musical Instrument Company—a name change that occurred in 1902, according to unpublished data of Robb Stewart), some of which also had elongated bells, were among the last of the removable-shanked, traditional cornets to be produced in the United States, along with those of John Heald, as already noted.

[63] Arnold Myers, pers. comm.

[64] Indeed, it appears that Courtois stopped making its classic cornets for sale anywhere, turning instead to copies of Besson models not long after the turn of the century. On the other hand, Boosey & Co. made their *Acme* model cornets—essentially Courtois *Levy/Arbuckle* copies with a different intervalve tubing configuration—at least until ca. 1920.

[65] This is the model for which Buescher received a patent in 1906 (see Kennedy and Murter, *Patent History*) for an S-shaped leadpipe cornet with three slides: the first for quick-to-A, the second for tuning, the third (on a crook extending forward on the bottom) for high/low pitch changes (though Buescher says in the patent text that the slides for any of these purposes can be, in effect, interchanged—i.e., they need not occur in the order drawn).

[66] Dates based on Eldredge, unpublished data, and Conn 1910 advertising.

[67] The *ConnQuerors*, as well as the Conn *Wonderphones* and some of the other makers' models briefly discussed in this section, were produced in various bore sizes, pitches (i.e., C-B♭-A as well as B♭-A) and, in some, models that were either in Low Pitch or both High and Low Pitch, thus accounting for

variations in bell length and other dimensions not documented further in this paper.

[68] See Banks, *Elkhart's Brass Roots*, p. 21, for an illustration of this model.

[69] See Andre M. Smith, "The Life and Work of Vincent Bach (1890-1976): 1941-1976 (and Beyond)," *Journal of the International Trumpet Guild* 19/3 (1995): 4-34, for an illustration (Figure 11) and discussion (p. 21) of Vincent Bach's cornet.

[70] However, makers such as the Vincent Bach Corporation (New York) continued to offer slides and rotary-valve options for A-change as special orders, at least until the 1940s (Roy Hempley, pers. comm.).

[71] A contemporaneous long-bell cornet by Boosey & Co., however, does have a hump-shaped loop to the bell tubing in this position, but did not come equipped with a tuning mechanism in that position.

[72] H.M. Lewis has performed the nearest thing to an independent "experiment" demonstrating the increasing brightness in sound of cornets from the 1880s-1930s (H. M. Lewis, "How the Cornet Became a Trumpet—The Instruments and Music of a Transitional Period in American Music: 1880-1925," *ITG Journal* 16/1 (September 1991): 17-26 (where a copy of Clarke's letter to Benge is reproduced); also lecture demonstration, ITG 2001 Conference, Evansville, Indiana; reported by A. Molitierno. *ITG Journal* 26/1 (October 2001): 23; and pers. comm., e-mails to author, 11/2001). In his 2001 presentation, Lewis used a J.W. York and Sons #11 mouthpiece (except on the Bach, where he used a Bach Mt. Vernon #1 mouthpiece with a 23 throat) as he demonstrated to his (and presumably the audience's) satisfaction that the sound indeed became brighter in a series of cornets including a York *Monarch* large bore, a Conn 1898 *Wonder*, a Conn *New Invention* (a 1911 successor to the *Perfected Wonder* reversed-S model), a York *Improved* Model 43 (another reversed-S-leadpipe instrument), a Conn *New Wonder* (1915), a Holton *New Proportion/Couturier* (1913), and lastly a New York Bach (1930) long-bell model. Because evaluations of "brightness" are subjective (unless defined narrowly and measured acoustically in a laboratory, of course), it is good to have an independent demonstration of the claim, anecdotally acknowledged by many for years, of the increasing brightness of cornets around the turn of the nineteenth/twentieth centuries.

It is also striking that, in the same issue of the *ITG Journal* reporting Lewis' demonstration, John Wallace, in his master class, similarly remarks that the sound of the cornet became more "brilliant" over time.

[73] I am grateful to Nick DeCarlis for his insights on the significance of Harry B. Jay instruments as "transitional" between cornets and trumpets.

[74] H.M. Lewis, pers. comm.

[75] See Lewis; "How the Cornet Became a Trumpet," for a printed source of this letter.

[76] See ibid.

[77] I have found no evidence that Clarke ever abandoned his deep-cup, oddly scalloped-rim, mouthpiece, however "trumpetized" the Holton-*Clarkes* and other cornets had become by 1921.

[78] The Muck *Citation* cornets and trumpets (Figure 1) used the same valve assembly (as did those of Bach and other manufacturers); copies of Bach *Stradivarius* models (themselves copies of Bessons), parts for the Muck instruments were manufactured in the old York factory in Grand Rapids, Michigan, which had been bought in 1940 by the Carl Fischer Corporation of New York. The instruments were assembled at the Carl Fischer premises in New York by Mario Marcone (Marcone, pers. comm.), as by the 1950s Carl Fischer had a controlling interest in the Rudy Muck company.

[79] Comment attributed to John Wallace in his master class at the 2001 ITG Conference, Evansville, Indiana, as reported by Arthur Molitierno. *ITG Journal* 26/1 (2001): 28.