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VISITING POST-DOCTORAL RESEARCH ASSOCIATE, 1970-71

DIVISION OF MUSICAL INSTRUMENTS • NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY

Keyed Bugles in the United States

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COVER: Keyed bugles made by E. G. Wright and Graves & Co. of Boston. The instrument on the left is from the Rhode Island Historical Society; the center bugle is from the Henry Ford Museum in Dearborn, Michigan. Both are by E. G. Wright. The bugle on the right is by Graves & Co., and is from the collections of the Smithsonian Institution.

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Keyed bugles are soprano brass instruments with side holes and keys like a clarinet or saxophone. They flourished for several decades after 1810 when the Royal Kent Bugle was patented, and before valved instruments became popular. Their melodic ability made possible the first brass bands in the United States, and these instruments remained popular in this country until the Civil War. During the 1840s and 1850s, many excellent players including the famous Ned Kendall amazed their listeners with intricate solos played on the bugle. Fine examples of American bugles with as many as 12 keys survive in several collections.

KEYED BUGLES IN THE UNITED STATES

A remarkable period of military and municipal band history in the United States began about 1815 with the arrival in this country of the newly invented keyed bugle. This instrument, variously called the Royal Kent Bugle, patent Kent Bugle, or keyed bugle, was a large-bore brass instrument with side holes and keys similar to those on clarinets and other woodwind instruments. Without keys or mechanism of some kind, a brass instrument was severely limited in the number of notes it could produce. Bands before this had depended on woodwind instruments for the melody, using their bugles and trumpets largely for rhythmic and harmonic parts. The bugle with keys was the first successful soprano brass instrument capable of playing all of the notes in any scale. It preceded valved instruments by about five years and rapidly became the leading melodic voice in bands of the period. It also became a favorite solo instrument, and successfully competed with valved brasses in the United States until the Civil War.

The keyed bugle was patented by Halliday of Dublin in 1810 and named the Royal Kent Bugle in honor of the Duke of Kent, then Commanding Officer of British troops in Ireland.¹ The basic idea of keys or the covered-hole principle as applied to brass instruments had been around for at least fifty years and had met with some success on the trumpet around the turn of the century.² The Kent Bugle was another application of the well-

Origin

known idea, but quite a bit more successful. It was so successful, in fact, that several others claimed credit for the invention. Two of the most interesting of these stories are quoted below. The first is from an interview with Henry Distin, a famous English brass player and manufacturer whose father was undoubtedly experimenting along the same lines as Halliday, although a year or two later.

My father, John Distin, was born in 1798, in Plympton, Devonshire, England. At 11 years of age he, in company with a brother two years younger, appeared in public in a flute duet at a concert given by the band of the South Devon Militia, and not only achieved a great popular success, but so impressed the band-master of the regiment that he obtained their enlistment as band boys under his instruction. Two years later John's ability as a performer on the chromatic trumpet was already a matter of public fame, and at the age of 14 he played first trumpet in a performance of Dettingeu [sic] Te Deum at a grand music festival in Exeter so successfully that he was presented with £10 as a reward. That sum, which was a fortune for a boy of his age, indirectly cheated him out of the honor of being the inventor of the keyed bugle, and came near losing him his life. Just about that time the regimental band with which he was connected was supplied with new bugles, and in the work of testing them, to which John Distin was assigned by the band-master, he found one through which a hole had been punched by the careless driving of a nail in the box inclosing them. That hole gave another note. Stopping it with his finger, he made the instrument sound like all the others. That accidentally discovered note suggested to him an idea. The old bugles of the band were auctioned off, and he, purchasing one of them, set to work cutting holes in it, and fitting them with corks to find new notes. Only one member of the band, named John Tucker, was taken into his confidence. Guy Fawke's Day, an anniversary then celebrated with much explosive demonstration was near, and some of the

6 *band boys who had picked up a lot of blank cartridges after a*

review, appealed to John as a capitalist—in view of that gift of £10—to buy two pounds of powder and join them in getting up a quantity of squibs and other fire-works for the celebration. He did so. While they were all at work making their squibs, a mischievous boy touched off a cartridge which exploded all the rest of the powder, almost under Distin's nose, and injured him so severely that he was laid up for three months in the hospital. When he was convalescent, John Tucker came to him and said, 'Ah, I am so sorry John but an Irishman named Halliday has got ahead of you on your invention while you have been laid up. He has produced a three-keyed bugle, which has been highly approved of by the Duke of Kent, and it is already making a great effect as the Kent Bugle.' The boy's disappointment was very keen, but he subsequently earned some distinction for himself by adding two more keys to the Kent Bugle, making a new instrument as far ahead of Halliday's as that when invented, was an improvement upon the common field bugle, and this perfected instrument was christened the Royal Kent Bugle.³

The second is a more dubious account of an American, Nathan Adams.

And here we make another digression to speak of Nathan Adams—sometimes called 'Captain Adams.' . . . Previous to coming to Lowell, on land and sea he had roamed about the world considerably. For several years he was on the United States man-of-war Constitution, with Commodore Hull, not as a sailor but as a band-master. Besides being a musician—playing several instruments and singing well—he was a successful composer, but we do not know that a note of his work in that direction now exists. He was a veritable jack-at-all-trades, and if alive to-day would undoubtedly be regarded as a first-class crank. He was a bachelor, and while in Lowell he slept in his little shop, took his food there or wherever he happened to be when hunger came upon him, if convenient, and if not went without for the time being; it seemed to make very little difference whether his stomach was

full or empty. . . . Adams was a good man to work when in the right mood, but entirely indifferent in the matter when not. He was generally socially inclined, full of music and anecdotes, well-informed for a man of his standing in society, and a favorite among those who knew him best.

While on the Constitution (as we have already intimated) he conceived the idea and really invented the diatonic or natural scale for, and was the inventor of, the bugle (superseded in later years by the cornet), which was the precursor of all the valve musical instruments. It came about in this way: In an idle moment on one occasion, while handling a seahorn (so called at the time—an instrument used in the daily routine exercises of the ship), it occurred to him that it might be improved and made useful for another purpose. He proceeded to cut a proper hole in it, near the mouth or bell end, and experimented by opening and closing the hole with the palm of his hand, and thus he got a modulated tone. The result was encouraging, and he proceeded to cut other orifices until he had scaled the instrument off for seven keys or valves. In this way he satisfied himself that he could make a new and valuable instrument. When in the course of time he reached London he went to a musical instrumentmaker named Kent and made known his invention to that gentleman. The result was that Kent constructed an instrument, brought it before the musical world, and in the end received the credit of both inventing and making it, while its real inventor was never recognized as having anything to do with its production, consequently no credit has heretofore been accorded to him. Those who knew Adams well, had the best of reasons for believing this story of the origin of the bugle, which came from his own lips, entirely true, and thus have we found warrant for telling the tale as 'twas told to us.⁴

Unfortunately, both of these claims were a bit late; Distin's in 1812, and Adams' about 1824. The Distin story of having added the fourth and fifth keys is also in error, since the patent of 1810 described five keys.

The arrival of this instrument in the United States, at least by 1815, occurred with little fanfare. An advertisement in the *New England Palladium* of Boston offered “. . . patent Kent Bugles, with keys . . .” on October 27, 1815. Whether they were preceded here by the keyed trumpet is not known, but likely.

*Arrival in the
United States:
Richard Willis*

Although a few of these instruments were undoubtedly imported earlier, the event that firmly established the Kent Bugle in the United States was probably the arrival from Dublin of Richard Willis, arranger, composer, and performer on the keyed bugle and several other instruments. The following account of his arrival and a performance on the double flageolet appeared in the *New York Evening Post* of April 18, 1816.

R. Willis, from London, professor of Music, arrived in this city, a few days since, and has brought with him that new, elegant, and sweet toned instrument, called the double flageolet—Bainbridge, London, inventor, 1812. He was the first that performed a Rodondo [sic] on that instrument in the Dublin Theatre, which was received with unbounded applause. He will perform this evening a concerto duetto, with some Irish and Scotch airs, and Rondoe's at Scudders Museum, 21 Chatham St.

Tuesday, May 28, 1816, is the earliest mention found of a performance by Willis on the Kent Bugle. It appeared in the same newspaper.

If we are correctly informed, there will be a chorus of nearly 200 fine voices, aided by upwards of 70 instruments. These will consist first, of a patent Kent Bugle of the finest and most commanding tones which will be played upon by a Mr. Wyllis lately from Ireland.

Two performances had been planned, but these were so well received that a third and then a fourth performance was necessary.

More of Willis' background was presented in the following article from Boston's *Euterpeiad* of September 1, 1821.

Mr. Willis received his musical education in Ireland, and when quite a youth, was employed by Sir John Stevenson to travel the several counties in search of original Irish airs from the peasantry, whom he would hire to sing, and from this species of oral performance, he obtained a very large portion of those exquisite melodies which Sir John Stevenson and Mr. Moore have published in several elegant editions. Mr. Willis's acquirements are numerous, he performs with much execution upon every instrument in his band, and the facility with which he executes the chromatic passages on the Kent Bugle is the result of many years practice under the celebrated Mr. Logier of Dublin, whose improvements have brought this useful and much admired instrument into general use.

Mr. John Bernhard Logier, under whose instruction Willis is said to have mastered the keyed bugle, is perhaps best known for his invention of the chiroplast, a controversial apparatus for developing proper hand position on the piano. Probably around 1820, Mr. Logier published a *Complete Introduction to the Keyed Bugle*, one of the earliest method books for the instrument.

Shortly after his arrival, Willis became master of the band at the United States Military Academy at West Point, for the following theater bill appeared in the *New York Evening Post* of September 17, 1816.

Point of Honor or The School of Soldiers

The band of the Military Academy at West Point will play the new grand battle piece of the Siege of Ft. Erie composed by Mr. Willis, the master of the Band. Mr. Willis will likewise, in the course of the evening, play a solo on the patent six keyed camp bugle.

The official appointment of Willis as professor of music and instructor of the band is given by Dr. Sidney Forman as June 16, 1817, nine months after the above performance.⁵

By September of 1817, two Kent Bugles had been purchased for the West Point Band—one for \$70, the other for \$40—and no doubt Willis had begun to instruct some of his band members on the instrument.⁶

The efforts of Richard Willis with the band were well received and appreciated by many who heard them. The following is from the West Point papers of Sylvanus Thayer, commanding officer at the Academy at that time.

In 1817 an act of Congress established the position of teacher of music at USMA and appointed Richard Willis, a well known civilian composer and arranger as well as a “celebrated performer on the Kent Bugle.” He was paid \$50 per month. One of his compositions, “The Grand Canal March,” written for the opening of the Erie Canal, is still played by the USMA Band for special occasions. At the time he took charge of the band, that group numbered 14 players. For the first time musical affairs took on an increased stature, not only on the post, but for many miles around. Crowded Packets from New York to Poughkeepsie used to drop anchor off West Point to give their passengers an opportunity to listen to Willis and his band as they played evening concerts from a prominent position overlooking the Hudson River.⁷

Willis also found time to take the band to Boston, New York, Philadelphia, and probably other cities on the east coast. Many advertisements and announcements for concerts appeared in newspapers and music magazines of those cities during Willis' tenure (Figure 1).

Compositions performed on the keyed bugle by Willis included orchestral trumpet parts, obligatos to songs and choruses, and popular airs with variations. Following are some of the compositions known to have been played by Willis from published programs.

New York, May 28, 1816

Air and Chorus, "Strike the Cymbal" Pucitta
accompanied by the 6-keyed patent bugle
Grand Double chorus, "The Horse and His Rider" Handel
(with keyed bugle)

Philadelphia, November 14, 1820

Solo on the Kent Bugle, "Jessy the Flower
o' Dom Blane" Mr. Willis
"Eveleen's Bower" with variations and embellishments
Kent Bugle obligato by Mr. Willis
"The Hunter's Horn in the Morning," Phillips
Kent Bugle, Mr. Willis

Philadelphia, December 29, 1825

"Dolce Conento," with variations for Nicholson
the Bugle
Polonaise for the Bugle Stumph
Finale—Yankee Doodle with variations
for bugle and orchestra Willis

Philadelphia, January 4, 1826

Polacca Stumph
Song, "At Morning's Dawn," bugle accompaniment

Philadelphia, December 27, 1826

"Di Tanti Palpiti," with variations Rossini

The following compositions were often played by Willis, but it is not certain if he used the keyed bugle or played them on the trumpet.

Boston, August 18, 1821

"Let the Bright Seraphim," trumpet Handel
accompaniment by Willis

Philadelphia, January 4, 1821

Concerto for the Common Trumpet, Winter
full orchestra accompaniment

In addition to his many other accomplishments, Richard Willis is also known to have tried his hand at inventing. A program of December 29, 1825, published in the Philadelphia *National Gazette* of that date included a "Solo on the Vox Humana, an instrument invented by Mr. Willis." Also in the same paper of December 27, 1826, the following note appeared on a program: "Mr. Willis will perform on a small pocket bugle of his own invention; its tone is superior to his Vox Humana." The United States Patent Office records a patent awarded to R. Willis of West Point, New York, for a Kent Bugle on November 10, 1827, number 4923x. To date, however, a copy of this patent has not been found.

Soon other musicians began to take up the new instrument. In Boston a young man with the unlikely name of George Frederick Handel Plimpton began playing publicly late in 1820. It was reported in Boston's *New England Palladium* of December 22 in that year that ". . . Master George Frederick Handel, a son of Mr. Plimpton, will accompany the Apollino with the Kent Bugle and French horn." The Apollino was a mechanical music instrument inspired by the devices of Johann Maelzel of metronome fame.

In the following year, the *Palladium* of July 27 noted that another Kent Bugle player, a Mr. Campbell from London, had joined Mr. Plimpton's family for several concerts.

In Philadelphia, Willis' concerts in 1820 stirred unusual interest in the new instrument.

*. . . performances of Mr. Willis surpassed in effect and in powerful execution every expectation . . . and on the bugle particularly surprising, as well as from the compass or range as from the truth of his notes. It would scarcely be conceived that on the bugle there should be distinctly and harmoniously performed the sharp and flat notes.*⁸

Keyed bugles in quantity were available there at least by late 1821. In an advertisement in the Philadelphia *Franklin Gazette*

*Other Musicians
Take up the New Bugle*

MR. WILLIS'S CONCERT.

MR. WILLIS, of West Point, respectfully informs his friends and the citizens of Philadelphia, that he will give a Concert in the Grand Saloon at Washington Hall, on Thursday evening, Nov. 16, assisted by *Mrs. De Luce* and most of the principal professors of this city.

Leader of the Orchestra, Mr. De Luce.

PART I.

Overture to Lodoiska. Trumpet obligation to Mr. Willis, Kreutzer
Solo on the double flageolet, Mr. Willis; "The Blue Bells of Scotland," with variations, Willis
Song, Mrs. De Luce—"Let Fame sound the Trumpet," accompanied on the trumpet by Mr. Willis, Shield
Solo violin, Mr. De Luce, Kreutzer
Kent Bugle Solo, Mr. Willis. "Jessy the flow'r of Dunblane."
Echo Song, Mrs. De Luce, accompanied by Mr. Blondeau, Bishop
"O Dolce Conento," and Pollacca, by Mr. Willis on the Kent bugle, with which he will lead the orchestra; arranged by Mr. Willis

PART II.

"Eveleen's Bower," with variations and embellishments; Kent Bugle Obligation, by Mr. Willis Composed by Mr. Willis
Flute Solo, Mr. Blondeau.
Song, Mrs. De Luce—"The Soldier Tir'd" accompanied on the trumpet by Mr. Willis, Dr. Arne
Solo double flageolet, Mr. Willis; "Oh Nanny wilt thou gang with me," Scotch Air
"The Hunter's Horn in the Morning," Kent Bugle, Mr. Willis, Phillips
Song, Mrs. De Luce—"At morning dawn," accompanied on the Kent Bugle by Mr. Willis, Rimbault
Finale, Solo, Kent Bugle, "Yankee Doodle," with variations, accompanied by the orchestra, the variations composed and arranged by Mr. Willis
Concert to commence at 7 o'clock.

Ticket at one dollar; to be had at Mathew Carey's bookstore; Mrs Phillips's Circulating Library; Messrs. Bacon & Hart's music store; of Mr. Willis, No. 10, Sansom street, and at the door of the hall on the evening of performance.

Nov 13—d4t

Figure 1. Program of a concert by Richard Willis in Philadelphia published in *The Franklyn Gazette*, November 14, 1820.

THE DEATH OF WILLIS.

Verfes written on the death of

RICHARD WILLIS

OF
Oldest Point New York

BY
J. FRANOR ESQ

OF
ALBANY

Music Composed by

FRANCIS JOHNSON,

Musician of Philadelphia, as a tribute of respect to his memory for the unusual and kind attention to him in forwarding him in a knowledge of that fine and martial instrument, the Kent Bugle, when first introduced in this Country.

PHILADELPHIA,

Print, Meighen & Co. 117 Chesnut Street.

Enlarged

Figure 2. The title page of "The Death of Willis" by Francis Johnson. (Photograph courtesy of the United States Military Academy library, West Point, New York.)

of December 15, 1821, it is stated that G. E. Blake "has just received from Holles' Manufactory, Dublin, a case of Patent Kent Bugles, octave bugles with keys. . . ."

About 1821, a talented, young, Negro bandleader, Francis Johnson (Figure 3), began playing the keyed bugle. His band, associated with the Philadelphia State Fencibles from about that time, played for all sorts of parades, drills, and celebrations in Philadelphia, and for many of the most fashionable balls. General Lafayette's visit to Philadelphia in 1824 was climaxed by a Grand Ball in his honor with music provided by Francis Johnson's band.⁹ For several years beginning in 1825, Johnson's band was featured at the popular resort areas around Saratoga Springs. He rapidly gained renown as a keyed-bugle player equal to Willis, and in 1837 visited Europe with his band.¹⁰

Johnson was also a prolific composer and arranger with many published songs, marches, quicksteps, and other popular dance pieces to his credit. He acknowledged his long friendship and admiration for Richard Willis by composing a song in his honor after his death in 1830. The title page (Figure 2) has the following inscription:

THE DEATH OF WILLIS

Verses written on the death of Richard Willis of West Point, New York by J. Tranor Esqr. of Albany/Music composed by Francis Johnson,/Musician of Philadelphia, as a tribute of respect to his/memory for the unusual and kind attention to him in/forwarding him in a knowledge of that fine and martial/instrument, the Kent Bugle, when first introduced in/this country.¹¹

It is not surprising that as the keyed bugle's popularity spread, its construction tempted Yankee ingenuity. The earliest evidence of keyed-bugle making in the United States is a 7-keyed instrument in B \flat (Figure 4) made by Nathan Adams in Lowell, Massachusetts, about 1825.¹² From published accounts of Adams, he



Figure 3. Francis Johnson, about 1792-1884. A recently discovered drawing used with the permission of Arthur La Brew.

*Keyed Bugles Made
in the United States*

seems to have been a competent mechanic and a somewhat eccentric old bachelor. He was born in 1783, served as bandmaster on the U.S.S. *Constitution*, worked on musical instruments along with other mechanical repair work from about 1824 to 1835, and spent the remainder of his life until 1864 as a mechanic and a repairer of ships' chronometers.¹³

At least five other bugles of similar construction marked by other firms in the United States have survived. Although these can be dated only approximately, all seem to have been made or imported in the 1830s or early 1840s. Two of these, one with six keys (Figure 5) and another with eight keys, are marked Klemm & Brother, Philadelphia. The other three, a six-key and two eight-key bugles, are marked by Firth, Hall, and Pond, New York.¹⁴ Both of these firms were primarily music publishers and dealers and may well have imported the instruments. In any case, no lasting progress toward a brass-instrument industry in the United States was made as a result of either Adams' work or that of the two music stores. It took a transplanted London instrument maker to show the Yankees how to build the Royal Kent Bugle.

Probably in the mid-1830s, James Keat, one of the four sons of of Samuel Keat, a well-known London instrument maker emigrated to the United States and settled in Winchester, New Hampshire. James Keat worked for Graves & Co., an established musical-instrument firm, and evidently passed on to the Americans the latest in keyed-bugle design. In the museum at Deerfield, Massachusetts, is a seven-keyed bugle in B \flat marked "J. Keat for Graves & Co., Winchester, N.H." There is also a seven-keyed instrument with similar markings in the collection of William Gribbon, Greenfield, Massachusetts (Figures 6 and 7), and one with nine keys belonging to Fred Benkovic of Milwaukee, Wisconsin.

In 1837, Keat purchased one-half of the second story, including waterpower privileges, of a four-story building, the upper two floors of which were occupied by Graves & Co.¹⁵ He evidently

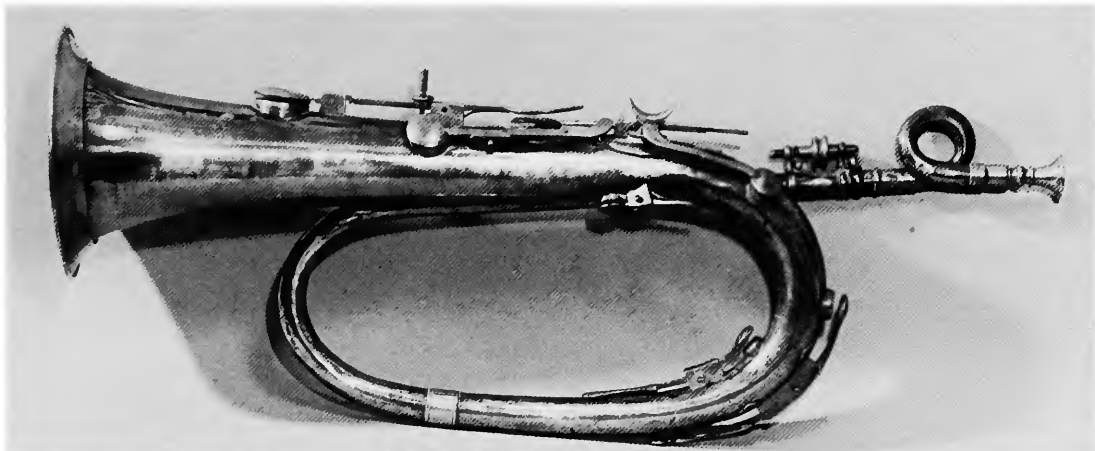


Figure 4. The earliest known American-made keyed bugle by Nathan Adams, Lowell, Massachusetts, 1825. It is in *B* \flat with seven keys in box mounts. Displayed on board the U.S.S. *Constitution*, Boston Naval Shipyard, Boston, Massachusetts.

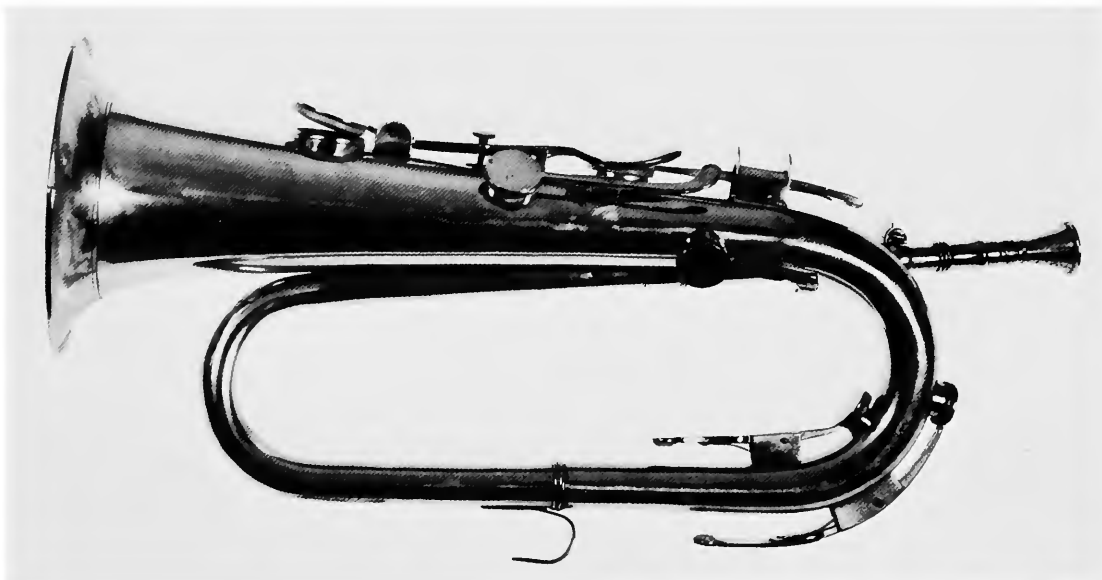
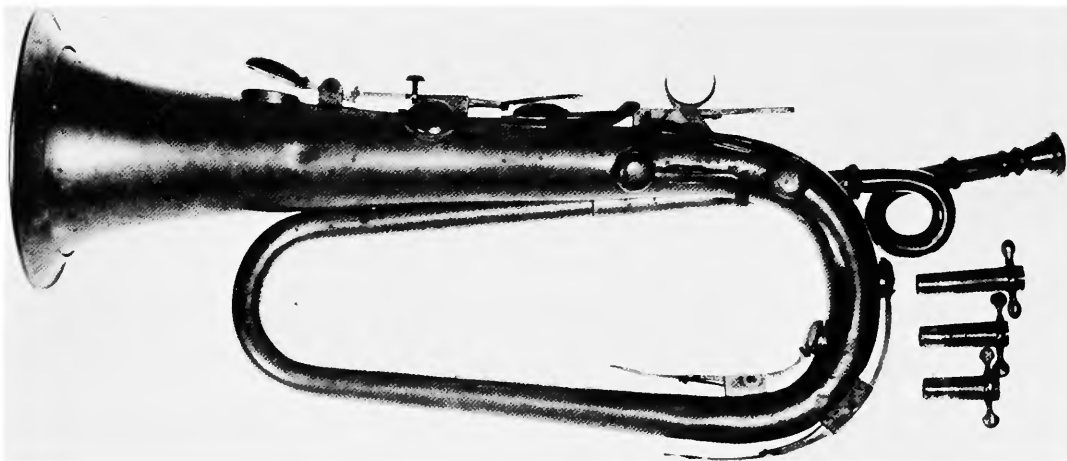


Figure 5. Keyed bugle marked "Klemm & Bro., Philadelphia," circa 1835. In *B* \flat with six keys in box mounts; probably imported. Mouthpiece not original. From the collection of Professor Martin Lessen, Rochester, New York.



Figures 6 and 7. Keyed bugle marked "J. Keat for Graves & Co., Winchester, N.H.," circa 1837. In B \flat with seven keys in box mounts, crook and tuning bits. From the collection of William Gribbon, Greenfield, Massachusetts.



intended to start his own business and may actually have produced instruments for a time. His health failed, however, and in 1842 he sold the shop.¹⁶ Keat died in 1845. If his tombstone markings in the Winchester Cemetery are correct, he was born in London on May 7, 1813, making him the third of the four sons of Samuel Keat.

Graves & Co. began making keyed bugles of their own, and many examples of their copper bugles with brass trim are found in collections in the United States. The earliest Graves & Co. models were probably made in the late 1830s and early 1840s and were almost exactly like Keat's examples. One of these early Graves & Co. bugles (Figure 8) is in the collections of the Smithsonian Institution (USNM 237,754); and another in the Pillsbury Collection (number 517), at the Henry Ford Museum, Dearborn, Michigan.

The next step in the development of the keyed bugle in this country was the turn to the smaller bugle in e \flat . Such instruments were known in Europe earlier, for keyed bugles in e \flat and f were included in the 1821 patents of the Parisian maker Jean Hilaire Aste, better known as Halary.¹⁷ Following is an excerpt from a magazine article by Allen Dodworth, soloist, conductor, and arranger for the Dodworth Band of New York, one of the outstanding bands of the 1840s.

Many are under the impression that a brass instrument that is not imported cannot be good; this is very erroneous, as it is a question whether as good instruments are made in the world, as can be, and are made in this country. The best e-flat bugles I have ever seen, were first made in Boston, by a person who was not a musical instrument maker, but a machinist, Mr. Sibley, who mathematically reduced the proportions of a B bugle to the size necessary for an e flat, and was so successful, that his pattern has been used ever since, by nearly all the bugle makers.¹⁸

Development of the Smaller e \flat Bugle

One surviving bugle made by Henry Sibley is a nine-keyed instrument in e \flat in the collections of the Smithsonian Institution (USNM 237,755). It is shown in Figure 8 with a Graves & Co. B \flat bugle. At a time when mechanical ability was usually applied in several different fields, it is not surprising that Sibley did not always work as a musical-instrument maker. He appeared first in Boston directories as “musician” in 1832, and contemporary concert programs included him among the trombone players. In 1834, his listing changed to “wooden leg maker,” and then, a year later, to “musical instruments.” In 1846, he was listed as a machinist and instrument maker, and from 1848 until 1859, a machinist. Sibley entered a “silver bugle with keys” in the Massachusetts Charitable Mechanic Association fair in 1841. In awarding a silver medal, the committee remarked:

*This instrument, made by Henry Sibley of Boston, the committee pronounces to be a first rate piece of workmanship. Of the quality of its tone, and the correctness of its intonation they have not had a very favorable opportunity to judge for themselves; but they understand, from persons on whose opinions they can rely, that it is equal in these respects to the best imported instruments.*¹⁹

About this time another important maker of keyed bugles, E. (Elbridge) G. Wright, started business in Boston. Wright is listed in the Boston directories as “musical instrument maker” in 1841. It is possible, however, that he worked earlier in a nearby town, for there is an ophicleide in the Essig collection in Warrensburg, Missouri, marked “E. G. Wright, Roxbury.” Wright eventually became even more famous for his keyed bugles than Graves & Co.

An interesting experiment in materials for keyed bugles was tried by George W. Shaw of Thompson, Connecticut, and protected by United States patent 4,132 of August 4, 1845.

A patent has been granted for a mode of making keyed bugles of
20 *tortoise shell. In this ingenious and beautiful device the brilliant*



Figure 8. *Top*, keyed bugle marked "Graves & Co., Winchester, N.H.," circa 1840. In B \flat with nine keys in box mounts. Mouthpiece and crook not original. USNM 237,754. *Bottom*, keyed bugle marked "H. Sibley, Boston," circa 1840. In E \flat with nine keys in post-on-footplate mounts. Mouthpiece and shank not original. USNM 237,755.

*tone of the bugle is preserved, while the instrument is made extremely light; and from the elasticity of the material, it is not subject to deterioration of tone from indentations. The instrument is made in 5 parts, which are welded together in an ingenious and perfect manner.*²⁰

At least two of these instruments survive, one e_b or f with nine keys (Figure 9), in the collections of the Smithsonian Institution (USNM 251,395), and another small model in high b_b with nine keys belonging to the collection of Fred Benkovic in Milwaukee, Wisconsin.

Samuel W. Richardson, a partner in Graves & Co. from 1832 until about 1845, evidently established his own shop in Rochester, New York. A nine-keyed bugle in e_b marked "Richardson & Co., Rochester, N.Y." is found in the collection of instruments at the University of Illinois at Urbana. Directories show Richardson as an instrument maker in Rochester beginning in 1847. Demand for the small e_b bugle could not have been too great in Rochester, for by 1851 Richardson had become an upholsterer. His subsequent listings are also interesting: "foreman Burr's Perfumery Factory" beginning in 1859 and "Patent Leg Maker" in 1866.²¹

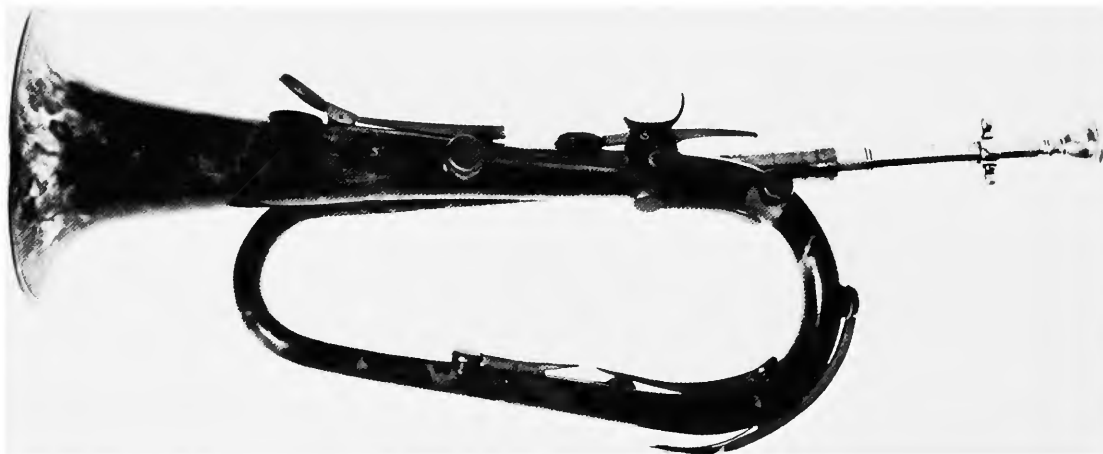


Figure 9. Tortoise-shell bugle marked "George Shaw, Thompson Ct.," patented 1845. In e_b or f , nine keys with channel-shaped shanks over block mounts. Hole covers are cupped for stuffed pads. Mouthpiece and shank not original. USNM 251,395.

The small e \flat keyed bugle became increasingly popular with bandleaders and soloists in the United States, and it was on this instrument that this country's most famous keyed-bugle player, Edward (Ned) Kendall (Figure 10) amazed his listeners. Kendall was born March 1, 1808, in Newport Harbor, Rhode Island. His father was in the military and previously had been stationed at Savannah, Georgia, where an older son James had been born. Ned and his brother James are said to have been playing for military musters in Newport by 1823. Both became famous players in later years, Ned on the bugle and James on the clarinet and trombone.²²

A concert at Boylston Hall in Boston on May 27, 1825 featured James Kendall on the clarinet and also included the following: "Finale to 1st Part—Military Symphony, Haydn, with the introduction of the Kent Bugle."²³ Although the performer is not named, it seems likely that it was Ned Kendall playing the trumpet part with the orchestra on his Kent Bugle.

What may have been Ned's first solo performance on the instrument appeared on a program of 1830 which has been preserved in the Boston Public Library. One item on the program is a "Solo, Kent Bugle (first time) Mr. E. Kendall."²⁴ Ned took up where Richard Willis left off, perfecting even greater skill in playing and spreading the popularity of the instrument.

In 1835 after playing with the Boston Brigade Band directed by his brother and leading other small bands for several years, Ned formed the Boston Brass Band which was one of the first such organizations in the country (Figure 11). With the reputation established as leader and soloist with this band, he was soon in demand as a soloist by bands and concert groups throughout the country. Many stories exist about his excellence on the keyed bugle, and there is no doubt that he traveled widely. The Kendalls and a celebrated Boston vocalist, Miss Anna Stone, formed a concert company in the 1840s and appeared as concert soloists in many eastern cities. Ned and James are also known to have visited Europe.

The famous contest between Ned Kendall on the keyed bugle and Patrick Gilmore playing the valve cornet was held in Salem, Massachusetts, in December 1856. Although it was more of a crowd-pleasing publicity stunt by the showman Gilmore than a contest, it was an exciting affair and is entertainingly described by Harry A. Schwartz in his *Bands of America*.²⁵ Neither contestant could be said to have won the contest, and it is probably only in retrospect that some significance is attached to the outcome. The fact that a young band director could play as well on the cornet as this country's finest player of the keyed bugle seemed to spell out the beginning of the end for the keyed bugle. Even before this, the cornet, easier to play and more consistent in tone quality had begun to replace the older instrument.

For a few of his declining years, Ned "traveled with Spaulding and Rodgers' Circus, leading the band; and was a great card as a bugle soloist."²⁶ Upon his death on October 26, 1861, the following obituary appeared:

Death of Ned Kendall. Edward Kendall, the celebrated bugle player, died at his residence, No. 9 Piedmont street, Saturday morning of consumption. He has been quite ill for the last two years. His age was 54 years.

For many years Mr. Kendall was connected with the military bands of this city, and he has been the leader of several of them. He also travelled abroad, and wherever he went his bugle playing excited the greatest wonder. He was doubtless the best performer on that instrument in the world. Those who have heard him play the "Wood Up Quickstep," or the "Winslow Blues Quickstep," can never forget him. He leaves several sons and daughters. The Funeral will take place tomorrow at 1 p.m. from Hollis Street Church.²⁷

The brass band Kendall was leader of for so many years was present at his funeral and played three pieces.

While the band was playing the first piece E. H. Weston (a former pupil of the deceased) walked up and took from its case



Figure 10. Edward (Ned) Kendall (1808–1861) in 1841. Drawing from *The Globe*, Boston, January 26, 1890, page 19.

Figure 11. Program of the first performance of the Boston Brass Band from the *Boston Daily Advertiser and Patriot*, March 28, 1835, page 3.

GRAND CONCERT.

MR. J. KENDALL respectfully announces to the public of Boston and its vicinity, that his **FAREWELL CONCERT** will be given at the Masonic Temple, **THIS EVENING**, March 28, previous to his departure for London, on which occasion he solicits the attention of that kind public, under whose patronage he has been so long fostered. He is happy to say that all the principal talent of the profession have generously volunteered their aid. By the generosity of the Manager of the Tremont Theatre, the entire strength of the Musical Department of that establishment will assist.

Principal Vocal Performers—Mrs. Andrews, Miss A. Woodward, Mrs. Kellogg, Mr. Comer, and Mr. Andrews.

Principal Instrumental Solo Performers—Messrs. Hill, Downes, E. Kendall and J. Kendall.

Director—Mr. T. Comer. *Leader*—Mr. Ostinelli.

Mr. Jones will preside at the Piano Forte.

The Orchestra will be the largest and most complete ever offered to a Boston public.

In addition to which he has the pleasure of introducing for the first time in America, a *Military Band of brass instruments only*, consisting of twenty performers. *Leader*—Mr. E. Kendall.

PART I.

1. Grand Overture, composed for and dedicated to the Amateur Society of Boston, and played now in public for the first time. Isenbec. Calcott.
2. Glee—Red Cross Knight. Calcott.
3. Solo—Clarinet. Mr. J. Kendall. Nel cor piu, with variations, composed by himself, arranged with orchestral accompaniments, by U. C. Hill. Mozart.
4. Trio—Mrs. Andrews, Miss A. Woodward, and Mrs. Kellogg—"Spirits of Bliss." Burglmeister.
5. Solo—Kent Bugle, Mr. E. Kendall. Air and Variations—"Sul Margine." Kendall.
6. Song—Mrs. Andrews—"Should he upbraid." Bishop.
7. Solo—Violin. Mr. U. C. Hill. Souvenir de Pologne—Variations and Rondo. Hill.
8. Comic Song—Mr. G. Andrews—"Professional Dinner Parties,"—in which will be included Hair Dressers, Tailors, Shoemakers, Tallow Chandlers, Dancing Masters, Music Masters, Lawyers, Painters, Actors, &c. &c.
9. March—Brass Band and pas redouble. Walsh.

PART II.

1. Grand Overture—"The Bride of the Brigand," 1st time in America. F. Ries.
2. Song—Miss A. Woodward—"Come, come." Maeder.
3. Duet—"Ebben per mai Memoria"—Mrs. Andrews and Miss A. Woodward—from La Gazza Ladra. Rossini.
4. Song—Mr. Comer—"King Deaths," 1st time. Neukom.
5. Solo—Flute—Mr. Downes—Tema and Grand Variations. Drouet.
6. Recitative and Song—Mrs. Kellogg—"I'll follow thy fairy footsteps." Lee.
7. Waltz and Quick Step—Brass Band. Mazzinghi.
8. Glee—"Foresters sound the cheerful Horn"—Bugle Obligato. Mr. E. Kendall, arranged with accompaniments, by T. Comer. Bishop.
9. Solo—Trombone—Mr. J. Kendall—Introduction and Aria—"Oh no we never mention her," and Rondo from Der Freischutz, "Hunting Chorus,"—accompanied by the Brass Band, and Orchestra entire. Weber.

Tickets 50 cents each, to be had at the principal Book and Music Stores, and at the door of the Temple on the evening of performance. Concert to commence at 7 o'clock precisely. WSis mh 28

*the silver bugle, whose strains had entranced millions, and laid it on the coffin, where it remained through the deeply impressive services.*²⁸

The Brass Band Era

The instrumentation of bands in the United States varied a great deal, but up until about 1835 had consisted generally of four or five clarinets and perhaps a flute; a trumpet or bugle, and a pair of French horns; and some combination of bassoons, serpents, or trombones. The Salem band of 1805 or 1806 is reported to have consisted of five clarinets, two flutes, bugle, trumpet, two French horns, bassoon, trombone, and drum.²⁹

About 1835, probably as a result of similar changes made in European bands, most bands in the United States became all brass by discarding their clarinets and flutes in favor of keyed bugles, and their bassoons and serpents for the advantages of ophicleides or valved basses. A writer in the October 1835 issue of New York's *American Music Journal*³⁰ did not find this change to be much of an improvement. Among several causes for the "not very flattering" state of military bands in New York, he reports the following:

*Another cause has been in operation lately, viz: the revolution or rather the transmigration which these bodies have been undergoing to the state of brass bands, which seem at present to be all the rage. Brass bands when they play in tune are good things to march after; but it is not in the nature of things that they can produce the beautiful effects of the old bands. A full band ought to consist of:*³¹

<i>8 clarinets</i>	<i>2 bassoons</i>	<i>1 bass drum</i>
<i>1 E flat clarinet</i>	<i>2 trombones</i>	<i>1 pair cymbals</i>
<i>1 piccolo flute</i>	<i>1 serpent</i>	<i>1 [set] Chinese bells</i>
<i>2 horns</i>	<i>1 bass horn</i>	<i>1 muffled drum</i>
<i>2 trumpets</i>		

By this time the Dodworth Band of New York had become all brass, and the Boston Brass Band had been organized under Ned

Kendall. Very soon, virtually all bands followed their example. The first concert of the Dodworth Band after the change has eluded this author's search, but the first appearance of the Boston Brass Band took place on March 28, 1835, in conjunction with a vocal and orchestral concert. The newspaper program stated: "Introducing for the first time in America, a military band of brass instruments only, consisting of 20 performers, leader Mr. E. Kendall."³²

The instrumentation of these first brass bands is not known exactly, but was probably similar to that of the Salem Brass Band of 1837: e \flat bugle, B \flat bugle, trumpet, E \flat alto, post horn, three tenor trombones, bass trombone, baritone, two basses, snare and bass drums;³³ or the American Brass Band of Providence in 1838: one e \flat and three B \flat keyed bugles, E \flat trumpet, B \flat post horn, two French horns, tenor trombone, bass trombone, bass horn, bass drum, small drum, cymbals, and fife.³⁴ Additional examples of instrumentation are suggested by band arrangements found in the *American Journal of Music and Musical Visitor* of 1844. In the May 4 issue, the "Lucy Long Quickstep" was arranged by B. A. Burditt for B \flat bugle 1, B \flat bugle 2, or post horn, fife, tenor trombone, bass or ophicleide.³⁵ In the July 16, issue, "Hewitt's Quickstep" by Burditt is arranged with a larger instrumentation of e \flat bugle, two B \flat bugles, E \flat trumpet, two B \flat post horns, two tenor trombones, bass trombone, two ophicleides, bass drum, cymbals, and side drum.³⁶

Bands became a very popular form of entertainment during the 1840s. Almost every town had its military band loosely attached to the town militia, and some towns had independent bands as well. They played for militia musters and drills, marched in parades, and put on concerts with other town musicians. They were often engaged for political events, picnics, and dances. Occasionally, they played in places of general entertainment such as Niblo's and Castle Garden in New York. On occasion, they could also be heard at the theaters before the first curtain and between acts.

The change to brass bands with the keyed bugle as the leading solo voice encouraged a number of soloists on the instrument. Inscriptions on gift instruments and newspaper accounts of other gift bugles tell of G. R. Choate, leader of the 35th N.Y.V. Regimental Band; Rufus Pond, leader of the Milford Brass Band; S. Wells Phillips, leader of the Greenport Brass Band; D. Chase of the Clinton Brass Band; Francis W. Morse and Jerome H. Smith, leaders of the Salem Brass Band; J. C. Greene, leader of the American Brass Band of Providence; A. R. Fitch of the Fitchburg Cornet Band; Captain Ed Pier of Corning; D. C. Hall, leader of the Lowell Brass Band; and A. W. Fisher of Bangor, Maine.

Some measure of the honor given these men is found in the cost of gift bugles presented to them. An E. G. Wright silver e♭ bugle with 12 keys for A. W. Fisher cost the citizens of Bangor \$350 in 1851. Another similar instrument presented to J. H. Smith in Salem in the same year cost \$480, more than half a year's salary for a skilled tradesman.³⁷

The excitement over the new brass bands also led several American composers to write marches, quicksteps, and other pieces for brass bands. Names most often appearing on programs of the period were Allen Dodworth, B. A. Burditt, S. Knaebel, Charles Zeuner, Oliver Shaw, and J. Holloway whose "Winslow Blues" and "Wood Up Quickstep" were outstanding favorites.

Mechanical Improvements

A number of mechanical improvements were made in the bugle from 1840 to 1860. The number of keys increased from nine to ten, eleven, and finally twelve; the key mounts which earlier had been of the box type were replaced by posts on footplates; and tuning bits and crooks were discarded in favor of the telescopic tuning shank. On some very late bugles, cupped hole covers and stuffed pads replaced the flat covers and leather pads of earlier models (Figures 6, 8, 14, 15). Materials used included brass, silver, gold, German silver, and even tortoise shell as well as the traditional copper.

Figure 12. Table of written and sounding pitches for $c\flat$ and $B\flat$ bugles. Fingering charts from Dodworth's Brass Band School for $c\flat$ and $B\flat$ bugles with eleven keys. $\frac{33}{4}$ indicates that either key 3 or keys 3 and 4 may be used. The same applies to other similar groupings.

SERIES OF NOTES
PRODUCED BY A BUGLE
WITH ALL KEYS AT REST

AS WRITTEN

AS SOUNDED

$B\flat$ BUGLE

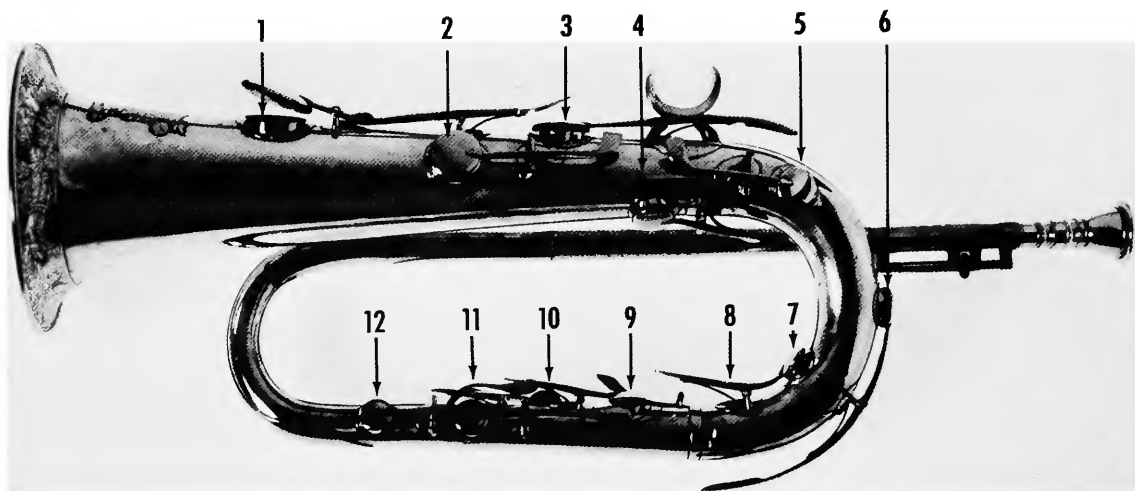
$E\flat$ BUGLE

FINGERING CHARTS

$E\flat$ BUGLE (SOUNDS THREE SEMI-TONES HIGHER)

$B\flat$ BUGLE (SOUNDS TWO SEMI-TONES LOWER)

The function and fingering of at least the first seven keys remained unchanged. Key 1, which stood open, gave written b when pressed and c' when at rest; key 2, $c\sharp'$; key 3, d' ; key 4, an alternate fingering for d' and vent for $d\sharp'$, $b\flat'$ and $e\flat''$; key 5, $d\sharp'$; key 6, e' ; and key 7, f' (Figure 12). The notes $f\sharp'$ and g' were then produced by starting the series again with key 1. This time the sequence needed only to be followed to key 5 for written $b\flat'$ before beginning another sequence on b' and c'' with the first key. Since the open or natural tones were closer together in the



Key	B \flat	e \flat							
1	13.6	9.7	x	x	x	x	x	x	x
2	21.3	16.7	x	x	x	x	x	x	x
3	27.2	20.9	x	x	x	x	x	x	x
4	31.9	24.4	x	x	x	x	x	x	x
5	40.0	30.0	x	x	x	x	x	x	
6	46.6	35.4	x	x	x	x	x	x	x
7	50.9	38.8	x	x	x	x	x	x	x
8		42.6	x						
9	62.3	46.9	x	x	x	x	x		
10	70.1	49.9	x	x	x				
11	74.8	53.0	x	x	x	x			
12		56.6	x	x					
Number of keys:			12	11	10	9	8	7	6

Figure 13. Key placement on B \flat and e \flat bugles. Columns two and three of the chart give the distance of each tone hole from the bell on representative B \flat and e \flat bugles. Checks in columns four through ten show which keys are included on bugles with less than twelve.

higher range of the bugle, only the first few fingerings were theoretically necessary after the first octave. The fingers used for the first seven keys were invariably 5, 4, 2, 1, and 3 of the right hand, followed by 1 and then 2 of the left (thumb being 1).

Additional keys were added in an irregular, but consistent way. Of the twelve keys with which the later bugles were equipped, an eleven-keyed instrument has all except key 8; a ten-keyed instrument has all except 8 and 12. In addition to the basic seven keys, a nine-keyed bugle has keys 9 and 11; and an eight-keyed instrument, key 9. Six-keyed bugles lack the fifth key of the first seven. Figure 13 includes a photograph of a bugle showing the placement of the tone holes, and a table giving the distance of each hole from the bell on representative B \flat and e \flat bugles. Checks in columns to the right indicate the keys normally found on bugles with less than the full compliment. Although the e \flat bugles often have twelve keys, no American B \flat bugles have been found, so far, with more than ten keys.

The exact function of the additional keys beyond the standard seven remains an area of inexact knowledge. Three additional keys added in 1822 by Halary of Paris were clearly intended to extend the downward compass of the instrument. The fingering chart given in the patent for a ten-keyed bugle is different from that for the seven-keyed instrument only in that it includes a lower octave fingered with combinations of keys including the added three.³⁸ Adam Carse describes additional keys on some bugles as trill or shake keys. "Some eight-keyed bugles are provided with two shake keys for the left little finger, one of which was to be used when the instrument was in c, and the other when it was crooked in B flat."³⁹

This author has been able to locate only three keyed-bugle instruction books published in the United States: *The Complete Preceptor for the Bugle* by B. A. Burditt; *Dodworth's Brass Band School* by Allen Dodworth; and *The Instrumental Director* by Ezekial Goodale. The following statement concerning extra keys is quoted from Burditt.

*The compass of the bugle is about the same as that of the post horn, with this exception,—the notes are not good below B (some bugles having extra keys for producing high and low notes with.)*⁴⁰

Fingering charts given in *Dodworth's Brass Band School* for both e_b and B_b keyed bugles with eleven keys indicate the use of keys 8, 9, 10, and 11 (9, 10, 11, 12 on a twelve-keyed bugle) only on the highest four tones of the two-octave chromatic compass: a'' , b_b'' , b'' , and c''' (Figure 12).

No doubt the added keys on American bugles provided some or all of the functions described above, but the possibility of ornamental or prestige value should not be overlooked. Most of the twelve-keyed bugles were gift instruments presented to famous bandleaders and soloists.

*Three Outstanding
Examples of Workmanship
in the United States*

The summit in keyed-bugle design in the United States was reached by E. G. Wright and Graves & Co. of Boston in their exquisitely made and highly decorated presentation bugles. These instruments are alike in function and mechanical detail, but each is unique in its decorative design. So far eight of them have been examined by the writer, seven having twelve keys and one having eleven keys, all dating from 1850 to 1862. Three of these are illustrated and described here in some detail. They are a silver Graves & Co. model presented to Captain Ed Pier in 1860 (USNM 63.610); a silver, E. G. Wright instrument with gold keys and trim given to J. C. Greene in 1850 and preserved in the Rhode Island Historical Society Museum; and a gold, E. G. Wright bugle presented to D. C. Hall, also in 1850, and now in the Henry Ford Museum in Dearborn, Michigan (cover illustration and Figures 15 through 24).

Functionally and mechanically, the instruments are nearly identical, and can be described together. They are in e_b and have

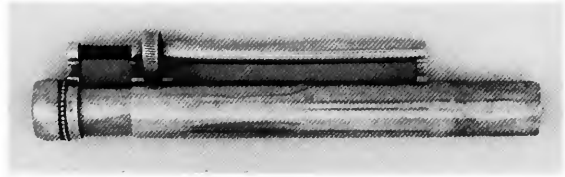


Figure 14. Left, mouthpieces from Hall and Greene bugles by E. G. Wright. Right, tuning shank from the Hall bugle.

twelve keys or tone holes. The keys are mounted on axles between short posts as can be seen in several of the photographs. The footplate on which these posts are attached is shaped in the form of a heart. A flat spring is attached beneath the key, its free end sliding in a small, iron-reinforced channel on the footplate. The key nearest the bell stands open, the rest are closed keys. The Pier instrument by Graves & Co. has cupped hole covers for stuffed pads; the others, flat covers for leather pads. The Hall bugle's keys have tiny sleeves of harder metal protecting the axle holes on which they pivot.

All three instruments were equipped with a telescopic tuning shank adjustable from seven to about thirteen centimeters by means of a screw mechanism. The Hall instrument, however, is the only one of the three which still has the original shank. Mouthpieces survive for both the Hall and Greene bugles. They are alike in general outline, but not identical. These are shown in Figure 14 with the tuning shank from the Hall instrument.

The Pier bugle is made of silver, as is the body of the Greene instrument. The Hall bugle and the keys, trim, and mouthpiece of the Greene bugle are of a gold and silver alloy.

The bell of the Pier bugle is engraved with an eagle above swirls of plumage and the inscription "Presented to Capt. Ed 33

Pier by his Corning Friends, 1860." On a banner below is the maker's mark: "Made by Graves & Co. Boston" (Figure 15).

The Greene bugle by E. G. Wright is the most striking in appearance with its silver body set off by gold keys and fittings. The bell-garland in gold is intricately engraved with plumes, nude cherubs, musical instruments, and other figures. On top of the bell, the maker's trademark is engraved in the silver of the main body of the instrument: "E. G. Wright, Maker, Boston" with a small flourish of decoration. Below this, there is an elaborate gold medallion with banners, plumes, an anchor, and an eagle engraved: "J. C. Greene Providence Nov. 5, 1850."

The Hall bugle is the most elaborately decorated of the three. The top of the bell is engraved with a handclasp, armor and a

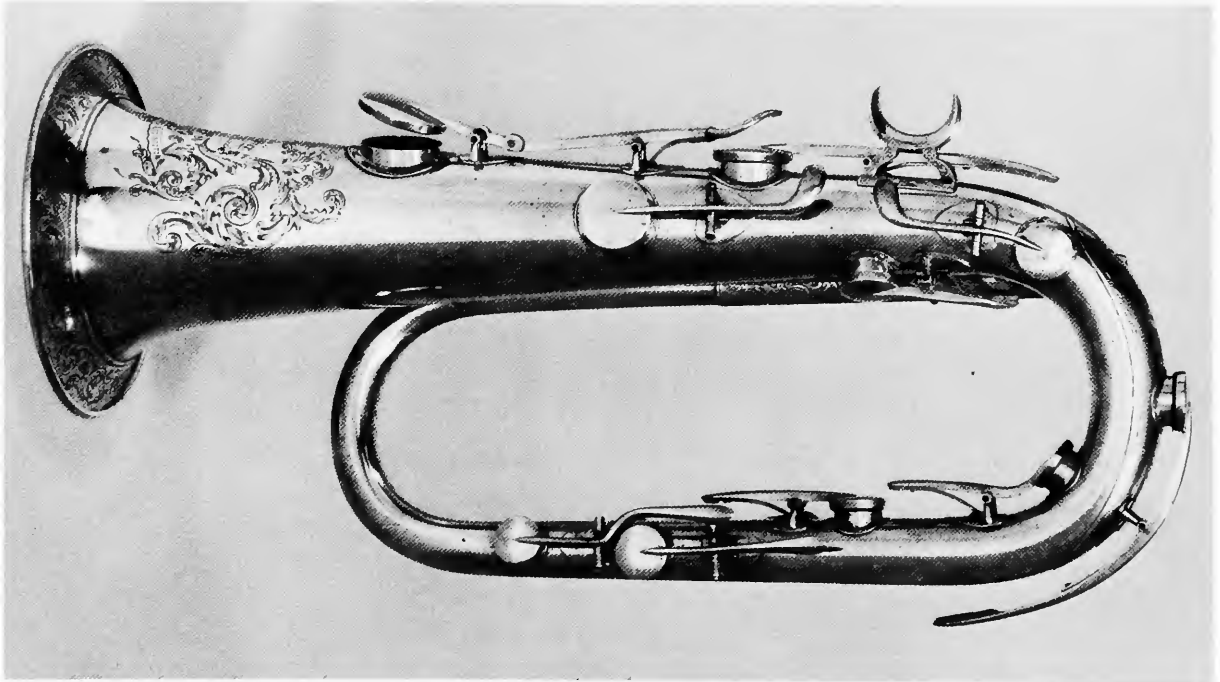


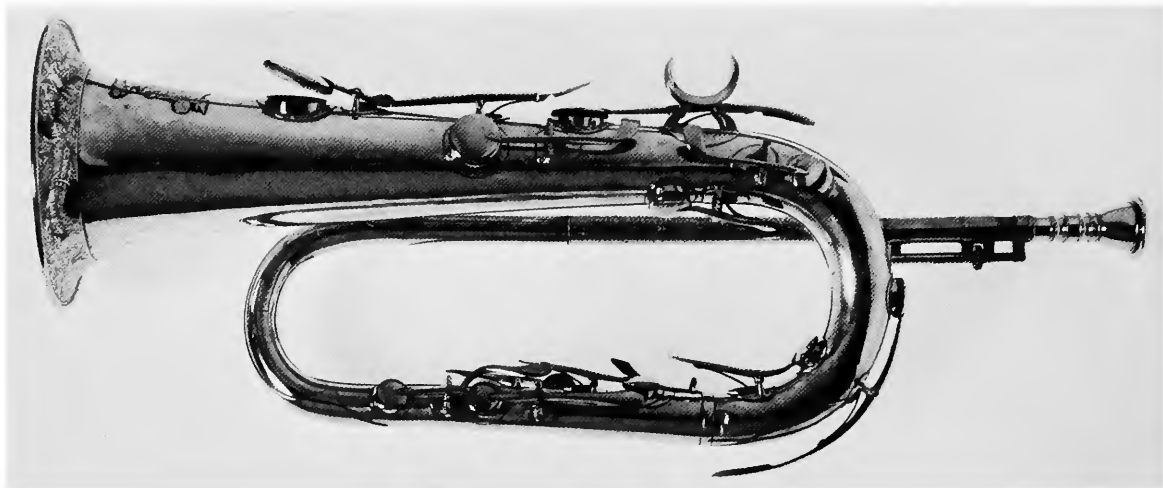
Figure 15, the Pier bugle, side view. Figure 16, the bell of the Pier bugle photographed from the top. Figure 17, a detail of the Pier bugle showing the saddle-rest, lead-pipe, tone-hole-border, and end-plate engravings.



16

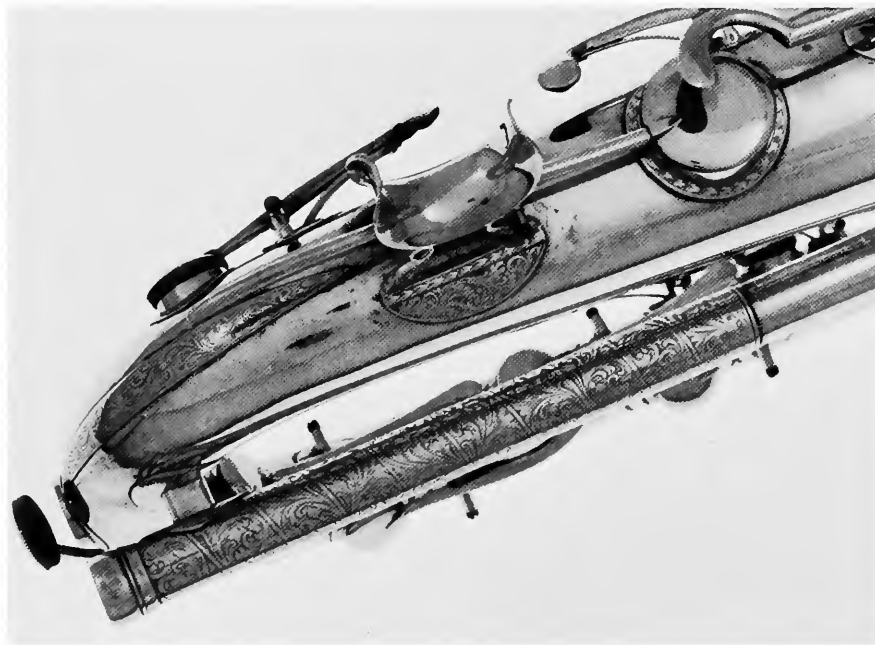
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18

Figure 18, the Greene bugle, side view. Figure 19, the bell-garland of the Greene bugle. Figure 20, the bell of the Greene bugle photographed from the top. Figure 21, a detail of the Greene bugle showing the saddle-rest, lead-pipe, tone-hole-border, and end-plate engravings.



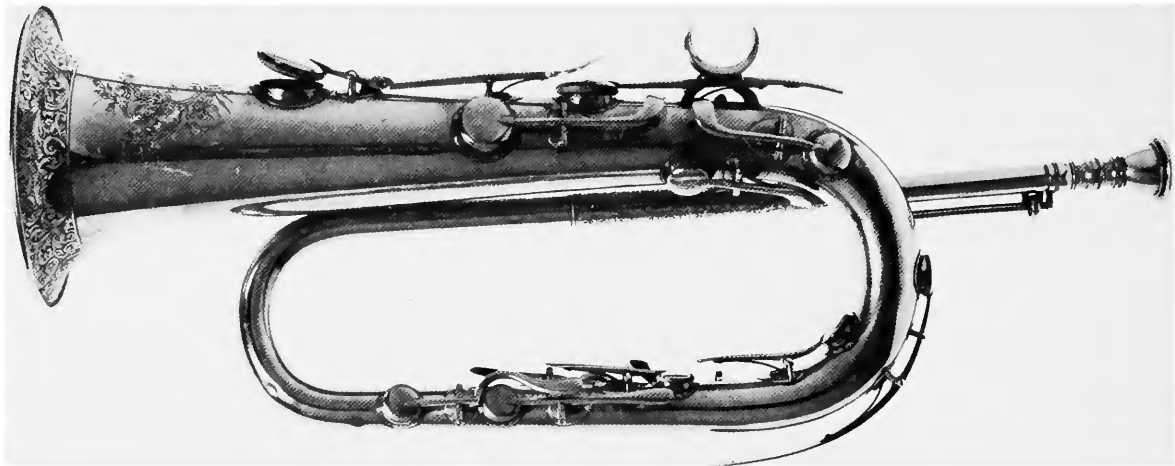
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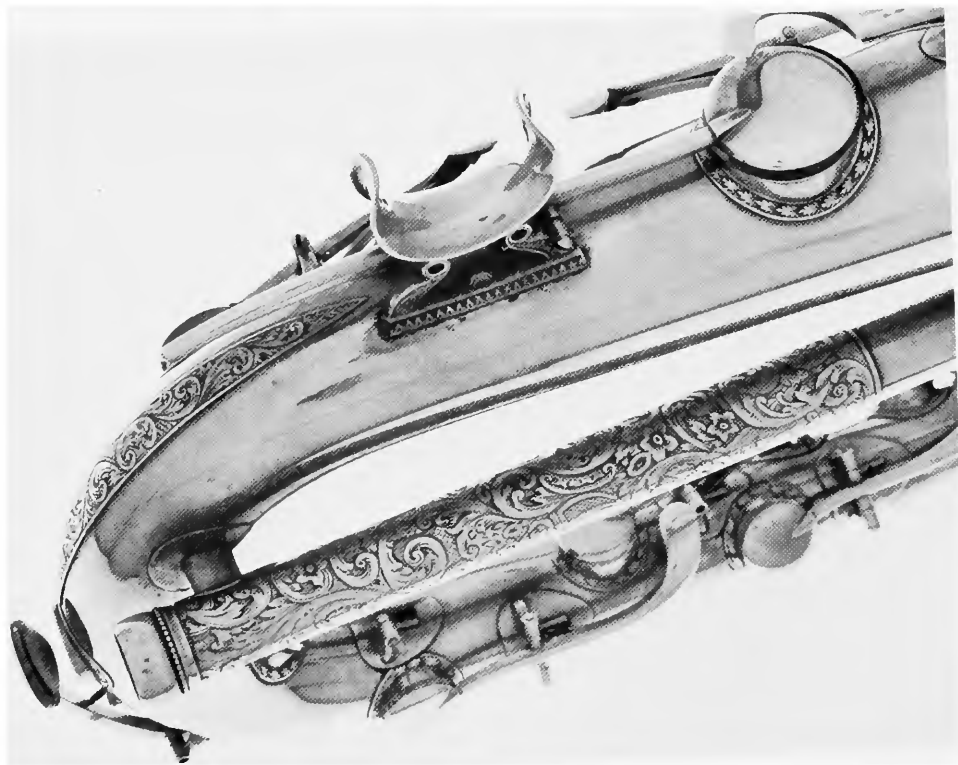


21





22



23



Figure 22, the Hall bugle, side view. Figure 23, a detail of the Hall bugle showing the saddle-rest, lead-pipe, tonehold-border, and end-plate engravings. Figure 24, the bell of the Hall bugle photographed from the top.

shield, spears, a bayonet, horns, a banner, and the following inscription: "Presented to D. C. Hall Esq by the members of the Lowell Brass Band April 15, 1850." Below this elaborate design is the maker's trademark, "E. G. Wright, Boston" (Figure 22). Mr. Hall evidently valued this instrument too highly to use it as his regular playing instrument for he made a duplicate of brass, plated with gold, which is preserved in the Henry Ford Museum.⁴¹

Decline Neither the workmanship of Graves and Wright nor the virtuoso playing of soloists like Ned Kendall could forestall for long the advance of the valved cornet. As early as 1831 valved instruments began to appear on concert programs. The following was heard on a program of February 12, 1831, at Boylston Hall, Boston: "Solo—Tyrolese Air, with variations by Kendall, (James) on a newly invented instrument called the VALVE TENOR TROMBONE, made by Mr. Whitney of this city."⁴² In 1845 at Providence, Rhode Island, an attempt was made to form an entire band of valved instruments. An advertisement in the March 12, 1845, issue of the *Providence Gazette* stated that the new Providence Brigade Band would be ready for engagements on the first of May. "The wind instruments, 12 in number, are to be upon the improved plan, operating with valves." By 1850 almost all advertising of band instruments in newspapers and magazines featured saxhorns and other valved brasses. The contest, already mentioned, between Ned Kendall on the bugle and Patrick Gilmore with his valved cornet took place in 1856 and helped enhance the image of the valved instrument. Ned Kendall died in 1861, and the Civil War bands forming at that time outfitted themselves largely with valved instruments. In 1871, E. G. Wright passed away after helping to form the Boston Musical Instrument Manufactory, a company that produced only valved brasses. In 1877, Henry Distin emigrated to this country and brought with him the latest knowledge of the Périnet piston

valve. In that year, Graves & Co. ceased business in Boston. The field was then left entirely to the valved-instrument makers.

The heritage of this era when the Royal Kent Bugle was the most popular band instrument in the United States is preserved in the history of many fine bands and bugle soloists, in music written for these bands, and in the many beautifully made instruments of Graves, Wright, and other early craftsmen. The American band tradition of air and variation solos, so popular with the Sousa band, began with the keyed-bugle playing of Willis, Johnson, and Kendall.

1. R. Morley Pegge, "Key Bugle," *Grove's Dictionary of Music and Musicians*, vol. 4, p. 733.
2. Phillip Bate, *The Trumpet and Trombone*, pp. 118, 119.
3. "The Famed Distin Family," *The New York Times*, August 7, 1881.
4. *Contributions of the Old Residents Historical Association*, vol. 5, pp. 179-181.
5. Spiedy Forman, *The 1802d Special Regiment*, p. 11.
6. Major Sylvanus Thayer to the Adjutant General, Records of the Office of the Adjutant General, United States Military Academy, National Archives, item 321.
7. Sylvanus Thayer, "The West Point Papers, 1808-1872," Index.
8. *The Aurora*, Philadelphia, November 20, 1820.
9. Thomas S. Lanard, *100 Years with the State Fencibles*, pp. 16-18.
10. Louis Cephaz Madeira, *Annals of Music in Philadelphia*, pp. 44, 45.
11. Francis Johnson, "The Death of Willis" (Philadelphia: Fiot, Meignen & Co., 1830).
12. On board the U.S.S. Constitution, U.S. Naval Shipyard, Boston, Massachusetts.
13. *Contributions of the Old Residents Historical Association*, vol. 5, pp. 179-181.
14. The Klemm & Bro. instruments are found in the collections of Clifford Allanson of Delmar, New York, and Martin Lessen of Rochester, New York. The Firth, Hall, and Pond instruments are in the collection of the University of Illinois, Urbana, Illinois; the Henry Ford Museum (no. 29.2951), Dearborn, Michigan; and in the collection of Fred Benkovic, Milwaukee, Wisconsin.

NOTES

15. Cheshire County Registry of Deeds, vol. 145, p. 119.
16. *Ibid.*, vol. 147, p. 122.
17. French patent 1,849 of 1821.
18. Allen Dodworth, "Brass Bands," *The Message Bird*, New York, June 15, 1850, p. 361.
19. *Third Exhibition of the Massachusetts Charitable Mechanic Association at Quincy Hall in the City of Boston, September 20, 1841* (Boston: T. R. Marvin, 1841), p. 84.
20. *Annual Report of the Commissioner of Patents* (Washington: Government Printing Office, 1845), p. 38.
21. Rochester, New York, city directories for 1851, 1859, and 1866, respectively.
22. "Kendall's Silver Bugle," *The Globe*, Boston, January 26, 1890.
23. Program reproduced in James W. Thompson, "Music and Musical Activities in New England, 1800-38," p. 650.
24. *Ibid.*, p. 655.
25. P. 31-36.
26. Op. cit. (note 22).
27. *Boston Evening Transcript*, Monday, October 28, 1861.
28. Op. cit. (note 22).
29. Thomas Carroll, "Bands and Band Music in Salem," a paper read before the Essex Institute, April 16, 1900, p. 3.
30. P. 251.
31. "The State of Military Bands in New York," *The American Music Journal*, New York, October 1835, p. 251.
32. *Boston Daily Advertiser & Patriot*, Boston, March 28, 1835.
33. Op. cit. (note 29).
34. James W. Thompson, "Music and Musical Activities in New England, 1800-38," pp. 417, 419.
35. P. 304.
36. P. 348.
37. *The American Musical Review*, New York, January 1, 1851, and March 1, 1851.
38. Op. cit. (note 17).
39. Adam Carse, *Musical Wind Instruments*, p. 284.
40. *The Complete Preceptor for the Bugle*, p. 2.
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