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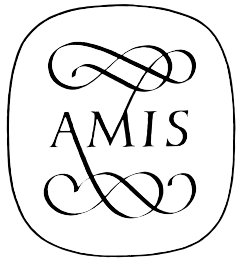


William Whiteley, Utica, New York, Musical Instrument Maker

Robert E. Eliason and Frederick R. Selch

In the summer of 1965, in the small upstate New York hamlet of Knoxboro in the town of Augusta, Oneida County, a young couple with a growing family decided to expand the attic section of an old house they had recently purchased. Their home, one of the original dwellings constructed in Augusta (settled 1795), had once belonged to a member of the pioneer Knox family, among the first settlers to move into that part of the county. When the construction workers broke through a temporary wall at the back of the third floor in the extension over the ell, they discovered in the gloom a wood-turner's workshop complete with a great wheel lathe and many unfinished wooden items lying about helter-skelter. By chance, they had inadvertently found the last location of the musical-instrument-making activity of a long-forgotten relative of the Knox family, William Whiteley.[1]

Whiteley ran a music store and instrument-maker's shop in Utica, New York, from 1810 to 1853, evidently making mostly woodwinds and retailing instruments of all kinds. More than fifty instruments signed by him are known, including a barrel organ, two bassoons, flageolets, fifes, flutes, and clarinets, and he is especially significant for the volume and variety of the latter. He also published one of the earliest American instruction books, *The Instrumental Preceptor*, in 1816. The discovery of the remains of his shop would now reveal in some detail his instrument-making process.

This article is based on the pioneering work of Frederick R. (Eric) Selch (1930–2002) and Victor Fell Yellin (1924–2005) in finding and preserving the remains of Whiteley's shop and collecting related materials. Selch was one of the first scholars to study and collect materials relating to American musical-instrument makers in the Federal period (1790–1830), and his research on Whiteley and the Whiteley shop artifacts was one of the earliest and most significant efforts in this field.[2]

1. Biographical details as told to Eric Selch by Arthur Sanders of the Deansboro Musical Museum, Deansboro, New York.

2. Invaluable assistance was provided by Edward L. De Sanctis on behalf of the Oneida County Historical Society; many collectors, especially Douglas F. Koeppe, provided ideas, observations, and photographs of their instruments.

Early Years and Training

William Whiteley (1789 or 90–March 25, 1871) was born in Lebanon-Goshen, Connecticut.[3] No record of his birth or baptism has been found, but church, town, cemetery, and census records show that his grandparents were William Whiteley and Mehetable Fitch, married September 30, 1741,[4] and that his father was John L., the eighth of their nine children, baptized May 7, 1758.[5] Censuses of 1790 and 1800 show a male child of the right age in the family of John L. and Rebecca (Waterman) Whiteley. John L. died in 1809, and before the 1810 census the family had moved to Utica.[6]

There were two local instrument makers with whom Whiteley could have trained. George Catlin worked in Hartford, thirty miles from Lebanon-Goshen, and advertised for apprentices as early as 1802, when Whiteley would have been about the appropriate age (twelve or thirteen).[7] No evidence exists, however, that Whiteley was ever in Hartford; and the only similarity in their work was the building of barrel organs for their respective churches. The more likely possibility is Erastus Wattles (1778–1839), who worked in Lebanon-Goshen in 1801–1839. While there is no direct evidence that Wattles and Whiteley worked together, the proximity is compelling and there is some circumstantial evidence.

Wattles bought a house, shop, and barn in Lebanon in 1801,[8] and Lebanon deed records show other property transfers in 1805, 1817, and 1833. He married Sarah Thomas on June 2, 1802,[9] and had certainly built his instrument-making and dealing business by 1807, when he

3. George McClean Milne, *Lebanon: Three Centuries in a Connecticut Hilltop Town* (Canaan, NH: Phoenix Publishing, 1986), 59. As the original town of Lebanon grew, new church areas called societies were formed around it. The north, or second, society was formed in 1720 and became the separate town of Columbia in 1804. The third society, formed to the west in 1727, was the Goshen society, which remained part of the town, thus the name Lebanon-Goshen.

4. Frederic W. Bailey, *Early Connecticut Marriages as Found on Ancient Church Records Prior to 1800* (n.p., 1896–1906; revised ed., Baltimore: Genealogical Publishing Co., 1968, ed. Donald Lines Jacobus), 2:42.

5. Baptisms, Goshen Congregational Church of Lebanon.

6. A monument was erected for him in the Augusta/Knoxboro cemetery near Utica, citing his birthplace and Revolutionary War service. For a record of this burial, see "Cemeteries of the Town of Augusta and Knoxboro Cemetery" (typescript, Limestone Ridge Historical Society, Oriskany Falls, NY), 336.

7. *Connecticut Courant,* January 4, 1802, p. 2, col. 5.

8. Lebanon deed records, vol. 20, 322.

9. *New London Gazette,* June 2, 1802.

made a barrel organ for the Lebanon-Goshen church. A booklet commemorating the instrument's completion described it:

> This organ is of that kind which is called a barrel or hand organ; but of uncommonly large size: its largest pipe is 12 feet in length: it has ten stops, two of them reed pipes . . . any person with but a moderate acquaintance with musick, may perform on this organ; and thus the whole expense of an organist is saved.[10]

Wattles's 1821 advertisement in a Hartford newspaper gives some indication of how his business had developed by that time:

> Music and Musical Instruments
> The subscriber having on hand a number of musical instruments, wishes to dispose of them on reasonable terms viz: two church organs, four barrel do.— one very elegant, made by Clementi & Co.; piano fortes, guitars, clarionetts, trumpets, horns, flutes, and fifes. Also, a pedal harp with instructions, strings & c.
> Likewise
> A new collection of the most popular music for the piano forte.
> Application to be made to the subscriber at Morgan's Coffee-house. Erastus Wattles.[11]

But according to the Hartford writer Nathan H. Allen:

> It is not to be supposed that Mr. Wattles had all these instruments with him at the time of advertising. Since he built the barrel organ for the church in his home town Lebanon in 1807 he had branched out as an itinerant vender of various instruments with headquarters in New York.[12]

Two clarinets made by Wattles survive: a five-key instrument of quite ordinary construction in the collection of Douglas F. Koeppe, Wimberley, Texas; and a most unusual twelve-sided instrument with ivory mouthpiece and keys in the Church of Jesus Christ of Latter-Day Saints Church History Museum, Salt Lake City, Utah.[13]

A boy interested in musical-instrument making could hardly have ignored the beginnings of this activity happening in his own small town

10. William Lyman, *The Design and Benefits of Instrumental Musick Considered in a Sermon Delivered at Lebanon-Goshen May 7, 1807 on the Occasion of Having an Organ Introduced as an Aid in the Worship and Melody of God's House* (New London: Ebenezer P. Cadt, 1807), 16.

11. *Connecticut Mirror,* July 30, 1821, p. 3, col. 4. Repeated the next week.

12. Nathan H. Allen, "Music in a New England State, From Psalmody to Symphony in Connecticut, 1636–1900" (manuscript, Watkinson Library and Trinity College Archives, Hartford, CT, 1922), 725.

13. For a description of the twelve-sided clarinet, see Albert R. Rice, *The Clarinet in the Classical Period* (New York: Oxford University Press, 2003), 228n124.

and church congregation, but the only evidence that some relationship existed between Wattles and Whiteley is that two compositions by Wattles, "Owen's March" and "Governor Strong's March," appear in Whiteley's *Instrumental Preceptor* (see Appendix B below).[14]

Utica, New York

Utica, to where the Whiteley family moved in 1810, had long been an important transportation hub. It grew on the site of old Fort Schuyler, established by the British to guard a ford over the Mohawk River during the French and Indian Wars.[15] In 1800 the Seneca Turnpike was constructed through Utica.[16] The Erie Canal reached the town in 1819, and was extended to Buffalo in 1825. In 1836 the ninety-seven-mile Chenango Canal was completed, connecting Utica to the coalfields of Pennsylvania to the south.[17] The first railroad connection between Utica and Syracuse was established the same year.[18] John Melish in his *Travels in the United States of America* describes the commerce of Utica in 1811 as consisting of:

> dry goods, groceries, crockery, hardware, and cotton, imported; and of grain flour, provisions, ashes, &c. exported. The chief part of the commerce is with New York, but it is said a considerable smuggling trade has of late been carried on with Canada.[19]

The availability of waterpower and good transportation encouraged the growth of manufacturing in Utica. The first cotton-spinning mill was established in 1809, and cloth-producing businesses soon followed.[20] Utica's population grew rapidly as the roads, canals, and railroads were built and industry grew. From about 1,650 inhabitants in 1810 it more

14. William Whiteley, *The Instrumental Preceptor. Comprising Instructions for the Clarinet, Hautboy, Flute and Bassoon. With a Variety of the Most Celebrated Airs, Marches, Minuets, Songs, Rondeaus, Trios, &c.* (Utica: Seward & Williams, 1816), 31, 57.

15. New Century Club, *Outline History of Utica and Vicinity* (Utica: L. C. Childs & Son, 1900), 2.

16. Ibid., 7.

17. Ibid., 55.

18. Ibid., 56.

19. John Melish, *Travels in the United States of America, in the Years 1806 & 1807, and 1809, 1810, & 1811.…* (Philadelphia: T. & G. Palmer, printers, 1812), 2:390–91. The Non-Importation Act of 1806 and the embargo of 1807 had severely restricted trade with foreign countries, creating conditions where smuggling was the only way to carry on any trade at all with Canada.

20. New Century Club, *Outline History of Utica and Vicinity,* 34.

than quadrupled in size to 8,373 in 1830, and doubled again to 17,556 by 1850.[21] As a prospective site for opening a business, Utica had these advantages in 1810, the year in which Whiteley established his workshop: convenient river and road transportation to older and new settlement areas; waterpower available for manufacturing; a cotton-spinning mill in operation and other mills in planning; a skilled, financially able population, supported by employment in farming, commerce, and manufacturing; and a location further inland and thus less affected than coastal cities by the 1807 trade embargo.

Another factor significant to Whiteley's business was the number of German immigrants in the area, first along the Mohawk River east of Utica in what became Herkimer county, and later in Utica itself. By 1840, noted Philip A. Bean, "there were over 400 Germans in Utica, then a city of about 10,000—a substantial immigrant community had rather suddenly come into existence."[22] These music-loving immigrants were not only a good market for Whiteley's instruments, but may have influenced the kinds he produced.

The Whiteley family had friends and acquaintances in the Utica area. One of the founding fathers of the city, Erastus Clark, was from Lebanon.[23] The Whiteleys probably also knew the Knox family of nearby Knoxboro, for a monument to William's father was placed in the cemetery there after the arrival of his widow and family in Utica. In 1819 William built a house in Knoxboro for his mother,[24] and he lived there after his retirement.

Music in Utica is mentioned in several sources and evidently included church singing, locally composed musicales, the Utica City Band, and instrumental music for dancing, as well as visits by many concert groups. A leading light in the early nineteenth century was one Henry J. Curphew, amusingly described in a 1906 newspaper article:

21. Nancy Bashant and Virginia B. Kelly, *The History of Oneida County: Commemorating the Bicentennial of Our National Independence* (Utica, NY: Oneida County, 1977), 99; *A Biography of the History and Life of Utica: A Centennial Celebration* (Utica, NY: Printed by Goodenow Print Co., 1932), 230.

22. Philip A. Bean, " 'Deutschtum' on the Mohawk: Utica's German-American Community," in *Ethnic Utica,* ed. James S. Pula (Syracuse, NY: Syracuse University Press, 2005), 49.

23. Ibid., 30.

24. *Utica, New York Daily Press,* May 22, 1939, p. 14, col. 5.

> At this time [c. 1812], and for some years subsequent, the village possessed an accomplished choirmaster and all-round musician in the person of Mr. Curphew. Upon him the community seems to have wholly depended for such entertainment as might be had between visits of professional talent. More rare than angels' visits were the latter and the choirmaster, with his amateurs, were given many opportunities to shine. Promoted by Curphew and managed by Curphew and played by Curphew's band, these musicales consisted largely of selections composed by Curphew under the personal direction of none other than Curphew.[25]

Seven of Curphew's compositions appear in Whiteley's *Instrumental Preceptor*, more than by any other named composer.[26] Curphew was also mentioned by other historians:

> John C. Bull, from Hartford, Connecticut, was a coach, sign and ornamental painter, but in truth quite as notorious as an amateur violinist, and fiddled as faithfully as he painted. He was a pupil of one Henry J. Curphew, who gave lessons in instrumental music, terminating his course with a public concert that was a grand event for the times.[27]

In 1822, the Utica City Band was formed. Until the late 1830s at least, it was probably made up mostly of woodwind instruments, providing a small but local market for Whiteley's flutes, clarinets, and bassoons. Some idea of the overall prosperity of the town and the band's success is conveyed by the following description:

> The Utica City Band was organized early in 1822 by Thomas Davies and for more than sixty years occupied a place of distinction in the musical world. In 1824 the band joined the Eighth Regiment of Artillery and adopted a uniform which was ornate. The jackets were of white and the trousers were also of the same color, trimmed with black. These uniforms did not serve very well, though they were adorned with gold lace and epaulets and though the headgear was so ornate that it attracted attention whenever the band appeared. The mud in the streets in the days of unpaved roads ruined the white uniforms. Soon the uniform was changed to a blue color and a new long skirted coat was adopted to cover the rotundity of some of the members. In 1825 the band welcomed Lafayette when he made his triumphant tour along the newly opened Erie Canal.[28]

25. Caroll T. Waldron, "A Hundred Years of Amusement in Utica," *Utica Sunday Journal,* 1906, quoted in John J. Walsh, *Vignettes of Old Utica* (Utica: Dodge Graphic Press, 1982), 90.

26. Whiteley, *Instrumental Preceptor,* 22, 32, 38, 41, 42, 62, 64.

27. Moses Mears Bagg, *Pioneers of Utica: Being Sketches of Its Inhabitants and Its Institutions, With the Civil History of the Place from the Earliest Settlement to the Year 1825* (Utica: Curtiss and Childs, 1877), 290.

28. Ibid., 313.

In 1822 Washington Hall was erected at the corner of Broad and John Sts. The third floor was often used for dances and occasionally for concerts and entertainments. In 1825, on the occasion of the opening of the Erie Canal, a grand ball was held there, the social event of the year. A dancing master by the name of Cobleigh conducted classes for the young ladies and gentlemen of the town.[29] Ned Kendall's brass band and Spaulding's North American Circus were in Little Falls, New York, on May 25, 1847, and in Utica a week later.[30] Jenny Lind sang in Utica on July 15, 1851. Over one thousand tickets were sold and more than two thousand additional people crowded around the Bleecker St. Baptist Church to hear what they could from outside.[31]

In summary, Utica was not just a frontier town supported by agriculture, but had the additional advantages of being a transportation hub and manufacturing center. Its citizens enjoyed and encouraged local musical events as well as traveling entertainers. Even though the city was far from the musical centers of Boston and New York, it certainly had promise as a market for musical instruments.

Whiteley's Utica Business

Moses Mears Bagg had this to say about William Whiteley in his *Pioneers of Utica*, published in 1877, just a few years after Whiteley's death:

> To William Whitely [*sic*] music was by no means the amusement of an amateur, on the contrary its making was the life work of forty years and upward. In July 1810, he set up "a musical factory." An industrious mechanic, an honest, quiet and exceedingly modest man, he prosecuted the manufacture of musical instruments until 1853, and then retired to spend the remainder of his days with a married [actually an unmarried] daughter at Knox Corners [Knoxboro]. He is to be remembered as the first organist of Trinity Church at a time when church organs were rarer than at present. . . . For we read that on the 20th of July, 1811, Mr. Whiteley leased to Trinity for two years, at

29. John J. Walsh, "From Frontier Outpost to Modern City: A History of Utica 1784–1920" (typescript, Frank E. Gannett Memorial Library, Utica College, 1978), 46.

30. "The Hall Letters" (typescript, Benson Ford Research Center at The Henry Ford, Dearborn, MI), 65: Rhodolph Hall in Roxbury to Sarah and Lucy Hall in New Haven, May 19, 1847; ibid., 72: D. C. Hall in Columbus, OH, to Lucy Hall in New Haven, July 26, 1847. The Hall letters are preserved at the Benson Ford Research Center at The Henry Ford in Dearborn, MI. See Robert E. Eliason, "Rhodolph Hall: Nineteenth-Century Keyed Bugle, Cornet, and Clarinet Soloist," this JOURNAL 29 (2003): 7.

31. Walsh, *Vignettes of Old Utica*, 197, 198.

sixty-eight dollars a year, an organ with three cylinders of fifteen tunes each, engaging to perform on the same at all the regular services.[32]

Whiteley's shop prospered from the first, undoubtedly assisted in no small way by the renown of his church barrel organ, in Trinity church (fig. 1). Deed records show that he bought property on Broad St. in 1811 for $625, a considerable sum in those days.[33] In 1815 he advertised his business in the local paper:

William Whiteley & Co.
Manufacturers of Musical Instruments

Respectfully inform the public that they continue the above business in Utica, where they have constantly on hand the following instruments, viz. Bassoons, Clarinets, Hautboys, Cymbals, Triangles, Bass Drums, Bass Viols, Violins, Guitars, Flageolets, Flutes and Fifes, & C. which will be afforded on as reasonable terms as can be purchased in the state. Utica Jan 4, 1815.[34]

The variety of instruments offered in this advertisement suggests that Whiteley not only had a musical-instrument-making shop, but a retail establishment as well. His publication of the *Instrumental Preceptor* the following year was another indication of the breadth of his musical activities. An advertisement with an accompanying woodcut engraving in the Utica city directory of 1832 shows a clarinet, violin, English guitar, bassoon, flute, flageolet, and a music book, no doubt representative of Whiteley's activities in instrument making and retailing at that time (fig. 2).

On August 14, 1815, Whiteley bought three adjoining lots on a triangular block at the corner of Bridge, Mary, John, and Blandina Sts. near Chancellor Square for $1,100 (fig. 3).[35] This property, at the address 84 John St., would eventually be his home, and sometimes his business as well, for the rest of his career. Later that year he sold the Broad St. property purchased in 1811. On November 22, 1815, he married Emily Parmelee (1794–1836).[36] A son, James, died at birth in 1816; a daughter, Mary Elizabeth (later Mrs. James C. Knox), was born December 2, 1818

32. Bagg, *Pioneers of Utica,* 290–91.

33. Oneida County deed records book 27, p. 344.

34. *The Patrol,* January 5, 1815, p. 3, col. 3, and continuing, usually on p. 4, col. 3, through August 28, 1815.

35. Oneida County deed records, book 27, p. 579.

36. Royden Woodward Vosburgh, ed., "Records of the First Presbyterian Church of Utica in Oneida County, N.Y.," transcribed by the New York Genealogical and Biographical Society (typescript with facsimiles, New York City, 1920; held in the New York Historical Society Archives).

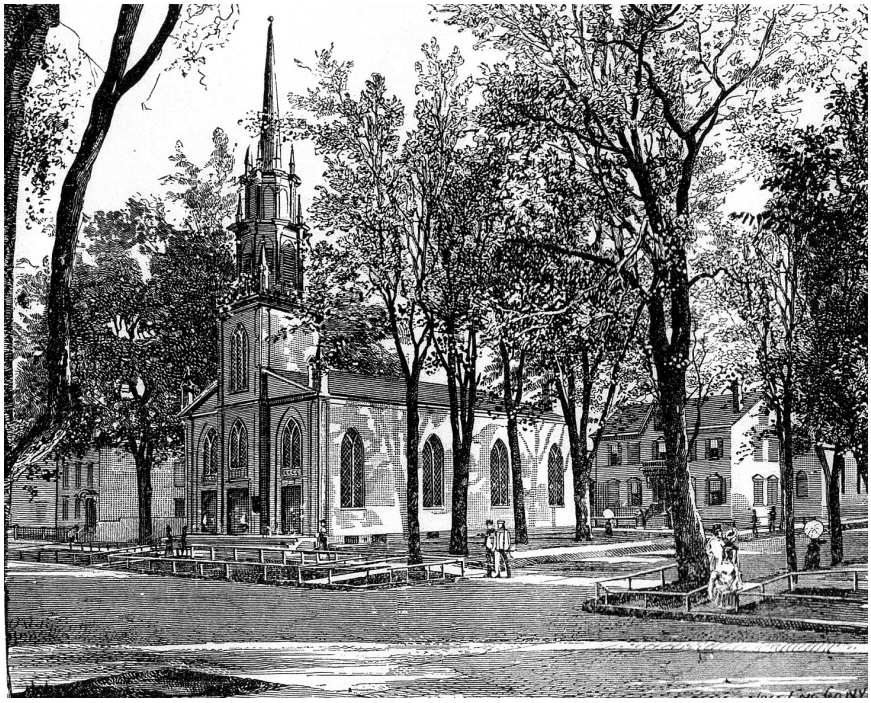


FIGURE 1. Trinity Church, Utica. Photo courtesy of the Oneida County Historical Society, Utica, New York.

(died in Knoxboro in 1897);[37] and a son, William Jr., was born May 4, 1820 (died in New York in 1865). Sons born in 1823 (John) and 1825 (Theodore) died at birth. Three more daughters are known: Emily P. Whiteley (1826–1892), Frances (Fannie) E. (later Mrs. Manchester, 1830–1894), and Sarah I. (later Mrs. Myrtalu W. F. Smith, 1835–1907).[38]

The earliest Utica city directory, published in 1817, showed Whiteley's business at 60 Genesee St. on the west side of the street opposite the end of Broad St. Genesee St., depicted in figure 4, was one of the main streets of Utica, described five years earlier as having

> 20 or 25 Stores, neat in their appearance, with Mechanic Shops built up Genesee street as far as what is now called Bond street, and a few scattering

37. Obituary of Mary Elizabeth Knox, *Utica New York Semi-Weekly Herald,* February 9, 1897, p. 7, col. 5.

38. Obituary of F. Smith, *Waterville Times,* March 14, 1924, p. 8, col. 3.

FIGURE 2. Whiteley advertisement in the 1832 Utica city directory. Photo courtesy of the Oneida County Historical Society, Utica, New York.

> buildings further up. . . . Genesee street was then, as it is now, a wide beautiful thoroughfare, leading out West to New Hartford and Clinton, well macadamized over the logs of which it was originally made. . . .[39]

39. "Utica As It Was In Appearance In 1812," *Roman Citizen* (Rome, Oneida County, NY), July 31, 1850, p. 2, col. 4.

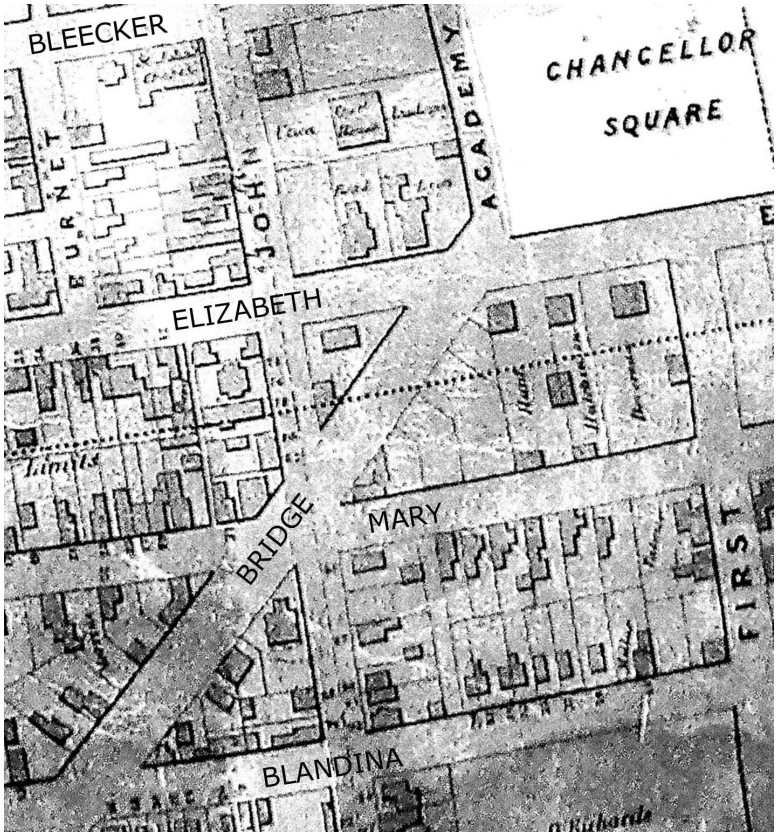


FIGURE 3. L. M. Taylor, *City of Utica* (New York: Snyder & Black, lithographers, 1850), detail showing location of the Whiteley home and business near Chancellor Square, as identified by deed records. The buildings, at the address 84 John St., sat on the small triangular block at the corner of Bridge, Mary, John, and Blandina Sts. Photo courtesy of the Oneida County Historical Society, Utica, New York.

At the same business address were the offices of the local newspaper of the time, the *Utica Patriot & Patrol*, its owner Aeshel Seward, and the printer and bookseller William Williams, who in 1816 printed Whiteley's *Instrumental Preceptor*. Whiteley's home address at that time, 126 Genesee, must also have been a multi-unit building, for the directory shows that publisher Aeshel Seward lived there and that Benjamin Wilsey, upholsterer, had his business on the upper floor. Evidently Whiteley had not

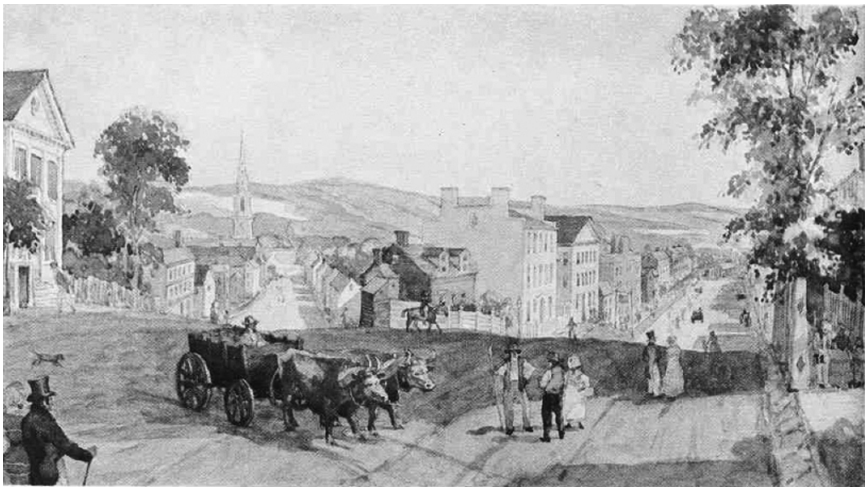


FIGURE 4. 1838 scene looking north down Washington and Genesee Streets toward the Mohawk River. Watercolor, probably by Egbert Norman Clark. Photo courtesy of the Oneida County Historical Society, Utica, New York.

yet built a house on his property near Chancellor square, though he bought two more adjoining lots there on July 3, 1818.[40]

By 1828 a house and shop had been built at 84 John St., and according to Utica city directory entries for 1828 and 1829 Whiteley both lived and worked there in those years. But by 1831, when the following advertisement appeared, he had again established a shop separate from his home in the main part of town.

> William Whiteley
>
> Musical Instrument Maker, and Music Seller, on the corner of Genesee and Whitesboro' streets, No. 29, up stairs, Utica.
>
> Patent and all other Flutes, Clarionets, Flageolets, Fifes and other Wind Instruments, Bass Viols, Violins, Bows and Strings, Bassoons, Serpents, and Clarionet and Bassoon reeds, wholesale and retail.
>
> (pointing hand) Instruments repaired Jan 11, 1831 2m3.[41]

Throughout the rest of his career Whiteley's shops were located mostly along Genesee St. (fig. 5 shows Whiteley-related sites in Utica). The Utica city directory entries for the years 1832–34 indicate that he had moved his shop across the street from 29 to 28 Genesee (fig. 6). The great fire

40. Oneida County deed records, book 30, p. 268.
41. *Western Recorder,* January 11, 1831, p. 8, col. 2.

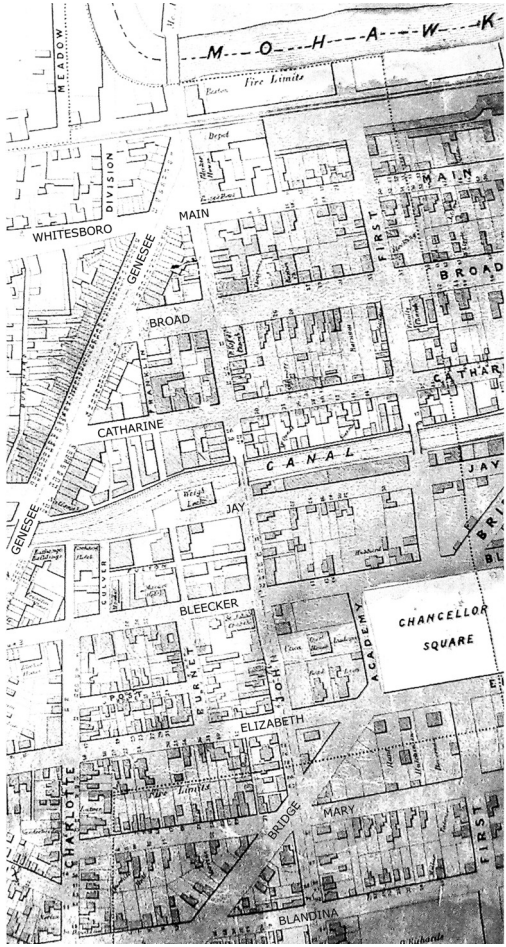
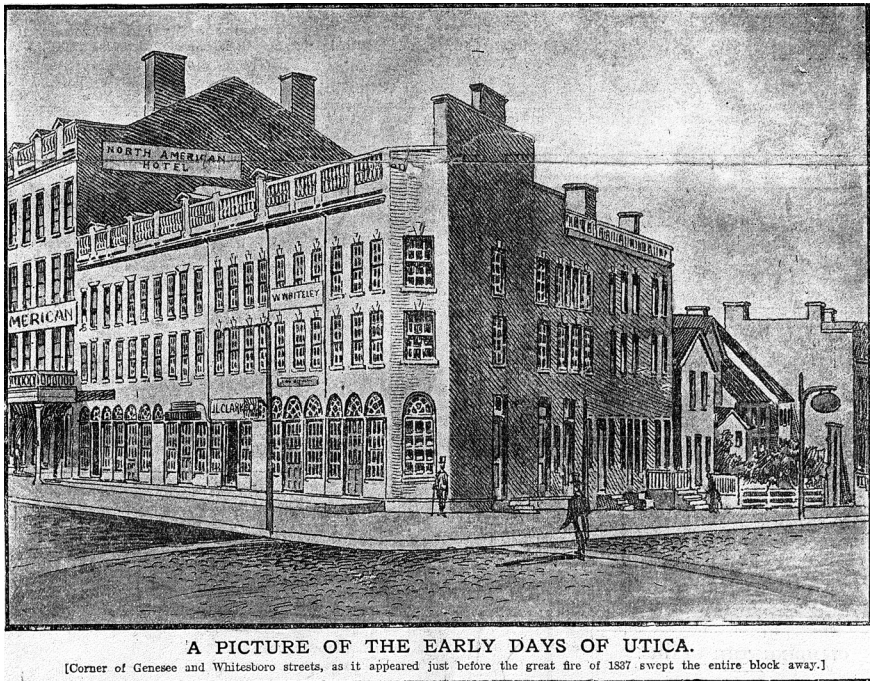


FIGURE 5. L. M. Taylor, *City of Utica* (New York: Snyder & Black, lithographers, 1850), detail showing Whiteley-related sites. Photo courtesy of the Oneida County Historical Society, Utica, New York.

Trinity Church on First St. between Broad and Catharine Sts.
1817 – shop at 60 Genesee St. opposite Broad St.
1828 – shop and home, corner of Bridge, Mary, John, and Blandina Sts. (84 John St.).
1831, 32 – shops at 28 and 29 Genesee St., corner of Whitesboro St., upstairs.
1839 – shop at the corner of Division and Whitesboro Sts.
1840 – shop in the Exchange Building, 131 Genesee St. (at the far left below the canal).
1848 – shop at 121 Genesee St. (just above the canal).



A PICTURE OF THE EARLY DAYS OF UTICA.
[Corner of Genesee and Whitesboro streets, as it appeared just before the great fire of 1837 swept the entire block away.]

FIGURE 6. *Utica Saturday Globe*, September 23, 1905, line drawing showing the building at 28 Genesee St. in 1837 with the Whiteley shop sign on the third floor.

of March 31, 1837, destroyed much of lower Genesee St., including Whiteley's shop, forcing him to move to temporary quarters first at his home, 84 John, then at the corner of Division and Whitesboro, as shown in the directory entries for the years 1837–38 and 1839–40. This catastrophe, combined with the financial panic of the same year, dampened Utica's growth for some years; no more Mechanics' Association fairs, for example, were held until 1845.

In 1840 Whiteley moved his shop to the upper floor of the Exchange Building on the east side of Genesee, just south of the Erie Canal (fig. 7). Among the remains of his shop was the sign that directed customers up the stairs to his Exchange Building place of business (fig. 8). The same sign-painter must have been used for detailing on the barrel organ described below (see Appendix A). Note the peculiar rendering of "4th" here and similar usage on the organ stop label (see fig. 18c).

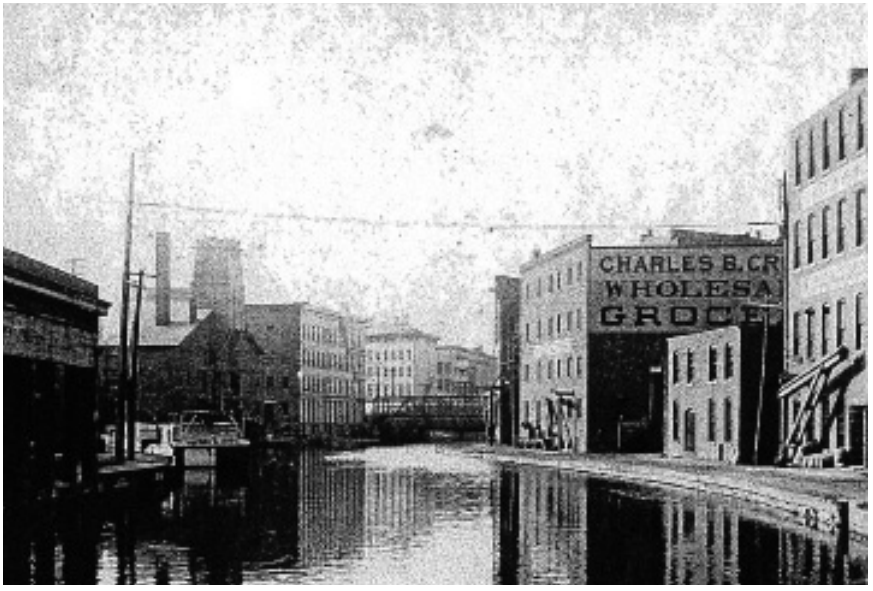


FIGURE 7. View of the Erie Canal looking west from John St. to Genesee St. about 1900, showing the Exchange Building at 131 Genesee, the four-story building on the left of the canal just before the bridge. Photo from an unidentified scrapbook, courtesy of the Oneida County Historical Society, Utica, New York.

If Whiteley's success can be judged by that of his neighbors around 84 John St. in 1839, he must have been doing quite well. Nearby was Jeremiah Van Rensselaer, one of the five original village trustees, former village president, trustee of the Utica Academy, and director of the Ontario Branch Bank. Further to the east lived Ward Hunt, prominent attorney and later associate justice of the United States Supreme Court. Hunt was the son of Utica banking founder Montgomery Hunt. On the east end of the block was Nicholas Devereux, successful merchant, vice president of the Schenectady Railroad, and trustee of the Utica Savings Bank. Across the street to the south was Circuit Judge Philo Gridley, and across Bridge and John Sts. to the west lived Dr. Thomas Goodsell, president of the Oneida County Temperance Society.[42]

42. L. W. Devereux, *Historical Map of Utica in 1839,* "published to commemorate the 100th anniversary of the Savings Bank of Utica, 1839–1939" (n.p., 1939).

FIGURE 8. Whiteley business sign from the 1840s. Photo courtesy of the Frederick R. Selch Collection, Oberlin College, Oberlin, Ohio.

Whiteley had at least one apprentice, as shown by the Utica city directories beginning in 1832. James A. Rich, age fourteen, joined the business that year and boarded with the Whiteley family for the next twelve years. Their association continued for the rest of Whiteley's career, and Rich took over the shop following Whiteley's retirement.

Whiteley's Instruments

Whiteley flutes and clarinets are signed "Wm WHITELEY/Utica," or "WHITELEY/UTICA," sometimes preceded by an eleven-ray sunburst (fig. 9). The earliest inscriptions seem to be those with the sunburst. Of the many known flutes signed by Whiteley, very few, if any, are similar in design. Each instrument has uniquely formed end caps, ferrules, socket swellings, decorative features, and keys. The maker evidently designed each one as he worked. The instruments range from simple one-key models to eight-key examples with brass-lined heads, tuning barrels, ad-

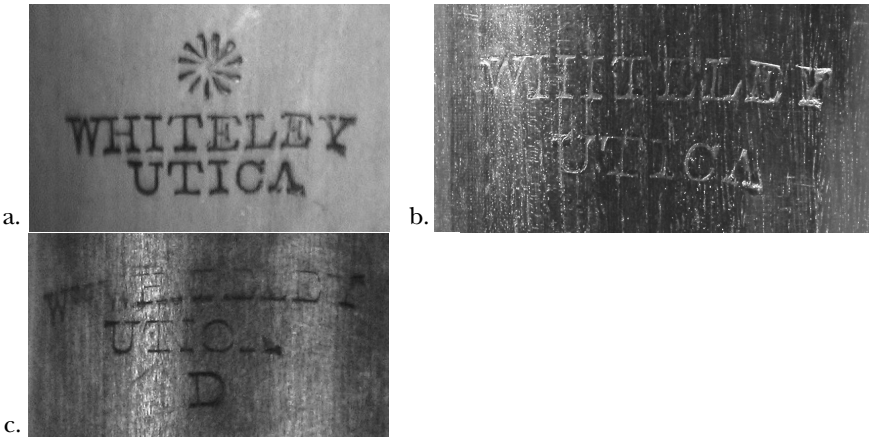


FIGURE 9. Inscriptions on Whiteley instruments.

a. Flute DK1083.411. Photo courtesy of Douglas F. Koeppe, Wimberley, Texas.
b. Left-handed flute in C. Collection of Robert E. Eliason.
c. Clarinet in D. Photo courtesy of Nophachai Cholthitchanta, Fayetteville, Arkansas.

justable stoppers, and foot to C (figs. 10 and 11). The key-flaps start out square, then are rounded, and in the later years are domed for stuffed pads. The example of fig. 11f has an ivory head and barrel, and pewter plug keys for C and C-sharp. The flute with four domed keys (fig. 10f) is left-handed, having the F, C-sharp, and B-flat keys opposite their normal right-handed positions. The D-sharp key can be twisted with the foot to either position. One flute in A-flat is known (fig. 10a), and the remains of Whiteley's shop include lathe models and mandrels for the C and E-flat sizes. Whiteley mentions a flute in high G (F in modern terminology) in his *Instrumental Preceptor* and includes several musical pieces with parts transposed for it. So far, however, no examples by Whiteley of this size have been found.

None of Whiteley's flutes show any of the advances in flute design of the 1830s and 1840s: the larger tone holes used by the flute virtuoso Charles Nicholson around 1831, the diatonic flute invented by Abel Siccama in 1842, or the Boehm flutes of 1832 and 1847. Though Whiteley's instruments were listed at Utica Mechanics' Association fairs, he did not exhibit at any of the larger fairs in Boston, New York, and

a. b. c. d. e. f.

FIGURE 10. Earlier Whiteley flutes.

a. Small flute or piccolo in A-flat (the RH section is unmarked and may be a replacement), 1 key, #524. Photo courtesy of the Frederick R. Selch Collection, Oberlin College, Oberlin, Ohio.
b. Flute in C, one key. Photo courtesy of Marlowe Sigal, Boston, Massachusetts.
c. Flute in C, one key, #1204. Photo courtesy of the Library of Congress Dayton C. Miller Collection, Washington, D.C.
d. Flute in C, one key, #0932. Photo courtesy of the Library of Congress Dayton C. Miller Collection, Washington, D.C.
e. Flute in C, four keys, #538. Photo courtesy of the Frederick R. Selch Collection, Oberlin College, Oberlin, Ohio.
f. Left-handed flute in C, four keys. Collection of Robert E. Eliason.

a. b. c. d. e. f.

FIGURE 11. Later Whiteley flutes.

a. Flute in C, six keys, #540. Photo courtesy of the Frederick R. Selch Collection, Oberlin College, Oberlin, Ohio.
b. Flute in C, four keys, #0397. Photo courtesy of the Library of Congress Dayton C. Miller Collection, Washington, D.C.
c. Flute in C, six keys, DK1083.411. Photo courtesy of Douglas F. Koeppe, Wimberley, Texas.
d. Flute in C, six keys. Photo courtesy of Tyler Sinclair, Baltimore, Maryland.
e. Flute in C, eight keys, 71.70.25. From the collections of The Henry Ford, Dearborn, Michigan.
f. Flute in C, eight keys, T2008.15.616. Photo courtesy of the Musical Instrument Museum, Phoenix, Arizona.

Philadelphia, where makers such as James D. Larrabee, Alfred G. Badger, Charles G. Christman, William Hall & Son, Hugh Cottier, and Chabrier de Peloubet were showing flutes with these improvements.[43]

His choice of finish for the key metal was varied. The six-key flute (Koeppe 1083.411: fig. 11c), which shows very little wear, appears to have pot metal[44] keys with a gold wash; gold wash was an old process, but not very durable. The left-handed four-key flute (fig. 10f) has silver-plated brass keys. The more lasting silver electroplating process, introduced in England about 1840, was advertised in Utica by the mid-1840s.[45]

The advertising of "Patent and all other flutes," in 1831 suggests that Whiteley was selling some of the latest flute designs even if he did not make such instruments. These were probably imported instruments, but might have included American inventions as well. The United States Patent Office burned in 1836, and although some patents issued before this date were lost, many were reconstructed from other sources. A patent was granted to William Schaffer for a German flute on June 6, 1814.[46]

The number of surviving specimens suggests that Whiteley made more clarinets than any other instrument. They range from simple five-key instruments to some with nine and ten keys (fig. 12). Earlier examples have square key-flaps and complete turnings or rings for key mounts. Later ones have round key-flaps and blocks for key mounts, and a few have integral thumb rests and F-sharp keys with raised touches (fig. 13). Long F-sharp keys are first cranked, then straight, and are mounted either in the stock swelling or, when the right-hand and stock sections are combined, in a block above the swelling.

Whiteley's clarinets show even wider variation in style than the flutes (fig. 14). Every instrument is different, perhaps made to each customer's preferences or Whiteley's whim. Barrel shape, ivory ferrule design, key

43. See Robert E. Eliason, "Charles G. Christman, Musical Instrument Maker in Nineteenth-Century New York," this JOURNAL 27 (2001): 95, 96. See also Ardal Powell, *The Flute* (New Haven: Yale University Press, 2002), 179–81.

44. Pot metal is an alloy consisting of inexpensive, low-melting-point metals, used to make fast, inexpensive castings. Common metals used include zinc, lead, copper, tin, magnesium, aluminum, iron, and cadmium.

45. *Utica Daily Gazette,* June 17, 1846, p. 1, col. 3.

46. "Schaffer, William; German Flute; New York NY 6 Jun 1814," see UNH School of Law, Intellectual Property, Commerce & Technology, "List of all U.S. Patents and Patentees 1790–1829," accessed January 7, 2011, http://www.ipmall.info/hosted_resources/PatentHistory/poinvtrs.htm.

FIGURE 12. Whiteley clarinets in different sizes.

a. Clarinet in F, five keys, DK3008.111. Photo courtesy of Douglas F. Koeppe, Wimberley, Texas.
b. Clarinet in E-flat, five keys, DK3009.111. Photo courtesy of Douglas F. Koeppe, Wimberley, Texas.
c. Clarinet in D, ten keys, 1985.714. Photo courtesy of the Smithsonian National Museum of American History, Washington, D.C.
d. Clarinet in C, five keys, DK3011.211. Photo courtesy of Douglas F. Koeppe, Wimberley, Texas.
e. Clarinet in B-flat, eight keys, 1982.328. Photo courtesy of the Museum of Fine Arts, Boston.

a. 

FIGURE 13a. Integral thumb rest of Whiteley clarinet 5923. Photo courtesy of the National Music Museum, Vermillion, South Dakota.

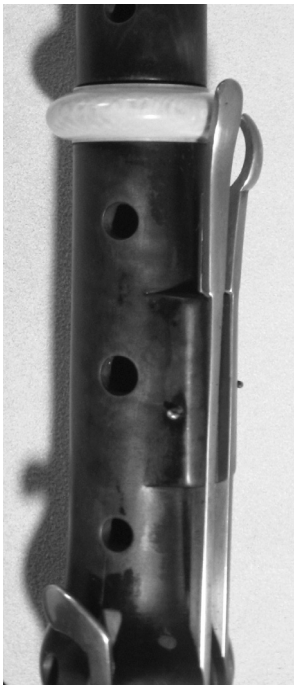
b. 

FIGURE 13b. Raised F-sharp key touch of Whiteley clarinet DK3014.311. Photo courtesy of Douglas F. Koeppe, Wimberley, Texas.

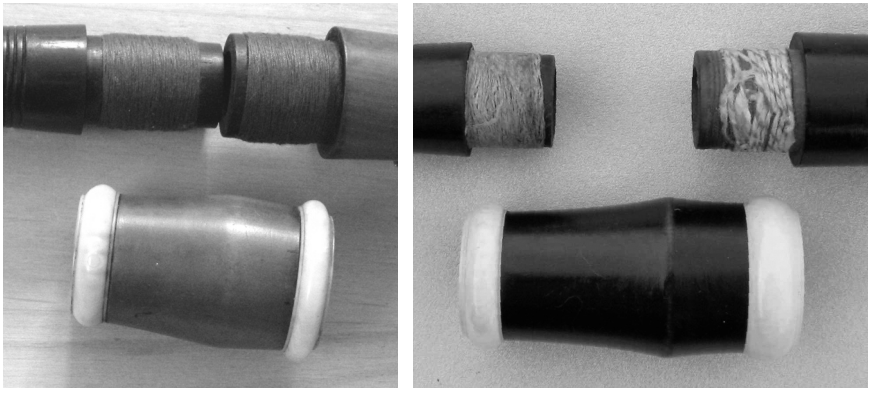
touches, stock swellings, and bell flares all vary from instrument to instrument. Ivory ferrules are round, flat or angled in shape, and can be narrow or quite wide. Some follow English design with short, ogee-profile (S form) barrels, long-tenon mouthpieces (fig. 15a), half wood, half ivory left-hand-section socket swellings, cranked F-sharp levers, and bell-shaped stock swellings;[47] but others are more in the Continental style with convex barrels, short-tenon mouthpieces (fig. 15b), straight F-sharp levers, and rounded stock swellings. Some instruments show characteristics of both styles. It is possible that the large and very musical German population along the Mohawk River and in nearby Herkimer,

47. *Grove Music Online,* s.v. "Clarinet," by Nicholas Shackleton, accessed November 28, 2010, http://www.oxfordmusiconline.com/.

a. b. c. d. e.

FIGURE 14. Whiteley C clarinets in different styles.

a. Clarinet in C, five keys, #577. Photo courtesy of the Frederick R. Selch Collection, Oberlin College, Oberlin, Ohio.
b. Clarinet in C, five keys, DK3011.211. Photo courtesy of Douglas F. Koeppe, Wimberley, Texas.
c. Clarinet in C, five keys, #580. Photo courtesy of the Frederick R. Selch Collection, Oberlin College, Oberlin, Ohio.
d. Clarinet in C, five keys, DK3013.311. Photo courtesy of Douglas F. Koeppe, Wimberley, Texas.
e. Clarinet in C, nine keys, #584. Photo courtesy of the Frederick R. Selch Collection, Oberlin College, Oberlin, Ohio.



a. b.

FIGURE 15. Tenons on Whiteley clarinets.

a. Long-tenon mouthpiece and barrel from a Whiteley C clarinet. Collection of Robert E. Eliason.
b. Short-tenon mouthpiece and barrel from a Whiteley B-flat clarinet, DK3014.311. Photo courtesy Douglas F. Koeppe, Wimberley, Texas.

and a wave of new German immigration to the area in the 1830s, influenced Whiteley toward the Continental style. At the very least, he was able to study Continental-style instruments brought to him for repair.

In clarinet design as well as flute, Whiteley was not in the forefront. Although examples of eight-, nine-, and ten-key instruments are known, he continued to make the basic five-key model even to the last instruments left unfinished when he retired. He did, however, make clarinets in more sizes than most other makers of his time. Examples of clarinets in B-flat, C, D, E-flat, and even one in F are known, and the entry from the list of exhibits and premiums for the 1835 Utica Mechanics' Association fair suggests that some of his B-flat clarinets were provided with extra sections to put them in A: "Mr. William Whiteley, Utica, best B [flat] clarionet (having an A joint;) do. best flute—a diploma."[48]

Surviving examples confirm that Whiteley made flageolets and fifes. Two flageolets are known; one (known by description only) of maple with no keys and an ivory mouthpiece inserted into the side of the fipple

48. *Oneida Whig* (Utica, NY), January 27, 1835, p. 4, col. 2.

cap;[49] and another of boxwood with ivory mounts and one round, flat brass key in a block mount (fig. 16a). Two fifes have survived: one made of boxwood in two sections with ivory ferrule and tips, with a brass band (a repair) around the head; and one made of stained boxwood or maple with divided ivory tips (fig. 16b).

Of the two Whiteley bassoons currently known, a nine-key instrument in the collection of the West Deutsche Rundfunk, Cologne,[50] has not been examined in detail. The other (fig. 17), in the collection of Sid Glickman, Riverdale, New York, is a handsome specimen made of maple with five brass keys and signed "W. WHITELEY/UTICA" with a caged bird above. This is the only Whiteley instrument signed in this way, which may suggest that it was one of his earlier efforts. Although the wear mark where the spring rested shows that the instrument's G-sharp key functioned at one time, the key is missing and the hole has been plugged—features that led Phillip T. Young to believe that the hole had never been drilled through.[51] Interestingly, the bore of the bell section has the usual choke through most of its length, but then flares to more than double size in the last 10 cm.

Newspaper and city directory advertisements mention oboes, violins, bass viols, serpents, triangles, cymbals, and bass drums, of which no surviving examples have so far been found.

Whiteley was not the only woodwind-instrument maker in this relatively small but busy commercial center. City directories show that John D. Douglass worked in Utica making woodwind instruments from 1833 to 1837, when he moved to Cincinnati. Douglass advertised in the city directories as a "Musical Instrument Maker and Seller," and listed a much more ambitious stock of instruments than Whiteley, as well as such services as tuning and recommendations for "teachers of established reputation." Both makers exhibited instruments at the 1835 Utica Mechanics' Association fair, and Douglass received a diploma for best C clarinet.[52] At

49. Described in Victor Fell Yellin and Frederick Richard Selch, "A Provisional Inventory of Artifacts Relating to the Musical Activities of William Whiteley (1789–1871): Musical Instrument-Maker of Utica, New York" (unpublished handout accompanying a paper presented at the meeting of the American Musicological Society in Toronto, Canada, November 6, 1970).

50. William Waterhouse, *The New Langwill Index* (London: Tony Bingham, 1993), 427.

51. Phillip T. Young, *4900 Historical Woodwind Instruments: An Inventory of 200 Makers in International Collections* (London: Tony Bingham, 1993), 254.

52. *Oneida Whig* (Utica, NY), January 27, 1835, p. 4, col. 2.

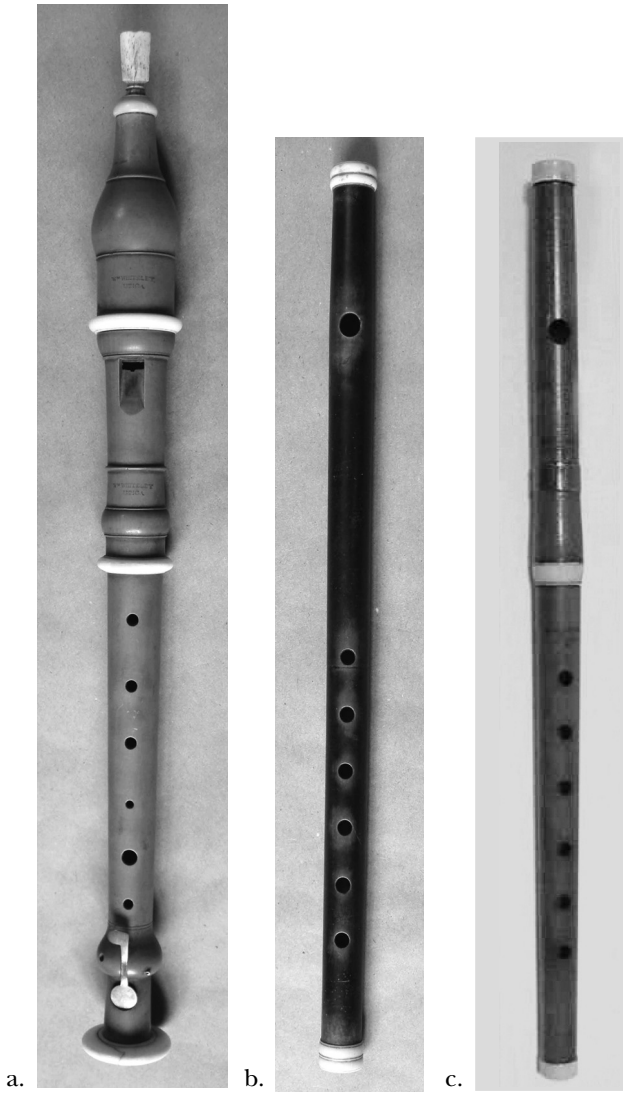


FIGURE 16. Whiteley flageolet and fifes.

a. Flageolet #519. Photo courtesy of the Frederick R. Selch Collection, Oberlin College, Oberlin, Ohio.
b. Fife #533. Photo courtesy of the Frederick R. Selch Collection, Oberlin College, Oberlin, Ohio.
c. Fife in A-flat, DK2004.211. Photo courtesy of Douglas F. Koeppe, Wimberley, Texas.

FIGURES 17a–c. Whiteley five-key bassoon. Photo courtesy of Sid Glickman, Riverdale, New York.

the 1836 fair, both received diplomas as well as commendation from the fair committee:

Musical Instruments

No. 63 B [flat] Cocoa, silver mounted Clarionet by William Whitley, Utica; a first rate instrument both in tone and finish. The Cocoa six-keyed flute, by the same, a very superior article and the best exhibited. The Ebony Flute, by the same, a good instrument and highly finished . . . . . Diploma of the Association

No. 82 E flat, Box Wood Clarionet, and eight-keyed Flute, by J. D. Douglas, fine toned Instruments, Particularly the last . . . . . Diploma of the Association.

> The Committee remark that the instruments presented by Messrs. Douglas and Whiteley are all highly finished and reflect great credit upon the skill and workmanship of the makers, and they doubt the ability of any of our sister cities to produce better instruments of their Kind. . . . Diploma of the Association.[53]

Most Whiteley flutes and clarinets were made of boxwood with ivory mounts and brass keys. Although there are examples of flutes made of more expensive materials, this report is evidence that on occasion he also made clarinets of finer woods and with silver mounts and keys.

The Arrival of the Brass Bands

The 1830s were the peak years for Whiteley's woodwind-making business, but also years that saw changes that would soon threaten it. Brass bands were formed in many cities in the late 1830s, and by the early 1840s the new keyed and valved brass instruments were replacing woodwinds in bands everywhere. There was even some direct competition of this kind in Utica. In the mid-1830s John C. Rosenbeck began a business making brass instruments. According to the report of the 1835 Utica Mechanics' Association fair, Rosenbeck was awarded "1st Premium on best trombone. This instrument, the judges say, is not excelled by anything they ever saw. Do. best keyed bugle, a splendid instrument—a diploma."[54] In 1837 he exhibited a trombone, made for New York soloist Felippe Cioffi, at the annual fair of the American Institute of the City of New York.

The 1842 newspapers show two retail firms offering brass instruments of all kinds, one of them (Huntington's) in the same building as Whiteley's shop:

> Greatest Assortment of Band Instruments
>
> B [flat], C and E Flat Ophicleides, Bass Horns, Bugles, Trumpets with valves and plain; Cornopeans, Cornetts, French Horns with crooks or with valves; Cymbals, Triangles, Drums, Clarionets, Piccolos, & c., & c. Warranted and cheaper than can be bought elsewhere. Come and examine the Catalog. Also Double Basses, Violoncellos, Violins, Guitars, Flutes, Flageolets, Strings, Reeds & c. GEO. DUTTON.[55]

53. *Oneida Whig,* February 9, 1836, p. 3, col. 4.
54. *Oneida Whig,* January 27, 1835, p. 4, col. 2.
55. *Utica Daily Gazette,* February 9, 1842, p. 2, col. 4.

Band Instruments

Ophicleides, Bass Horns, Trombones with slide and valves, Bugles, Cornopeans, Cornets, Trumpets, plain and with valves; French Horns, Cymbals, Triangles, Drums, & c., & c.

The subscriber is now receiving a large stock of the above instruments, which have been very recently selected with great care, both in Boston and in New York by an experienced person. Bands furnished on short notice and upon the most reasonable terms. Purchasers in want of good instruments will do well to call and examine them, where they will find every article in the music line, and he has no hesitation in saying that he will sell as low as any other house. All instruments warranted.

C. T. Huntington, 4 Exchange Building.[56]

In the next few years, Whiteley's former apprentice and now associate, James A. Rich, learned to make brass instruments as well as woodwinds, for from 1844 to 1848 he listed himself in the directories as a "Brass musical instrument maker," at the same shop address as Whiteley, then 131 Genesee St.[57] The Mechanics' Association fairs of 1845 and 1846 listed exhibits of Rich's brass instruments:

No. 41. Case of Brass Musical Instruments. Specimens of highly finished articles manufactured by James A. Rich.[58]

No. 99. Case of Brass Musical Instruments manufactured by James A. Rich. These are fine instruments and finished to the last degree.[59]

Utica city directories show that in 1848 Rich continued in the Exchange Building shop while Whiteley set up a new shop at 121 Genesee, just north of the canal and a few doors away. Then, in 1853, Whiteley closed the shop at 121 Genesee and moved back in with Rich. So far no instruments signed by Rich have been found.

Whiteley's entry in the 1849 Utica Mechanics' Association fair indicated the esteem in which he continued to be held by his fellow mechanics:

56. Ibid., p. 2, col. 5.

57. The directory entries are as follows. 1840–48: William Whiteley, musical instrument maker, 131 Genesee, 4th story (moved to 3rd story in 1846). 1840–43: James A. Rich, musical instrument maker, boards at Whiteley's. 1844–48: James A. Rich, brass musical instrument maker, 131 Genesee, 4th story, boards at Franklin House.

58. *Utica Daily Gazette,* September 18, 1845, p. 1, col. 5.

59. *Utica Daily Gazette,* September 10, 1846, p. 2, col. 2.

> Case of Flutes & c., by Wm. Whiteley whose instruments have the double value of being equal to those of foreign manufacture, and of being products of home industry.[60]

The 1850 census listed Whiteley, age sixty, as an "Instrument Maker" with $4,000 in real estate. On January 9 of that year he had purchased a lot in Knoxboro, southwest of Utica, probably in anticipation of his retirement.[61] Two months later, he sold some of his property at 84 John St.[62] In 1854, with the market for woodwinds disappearing, Whiteley, then in his early sixties, evidently decided to retire. On May 1 he sold his properties at 84 John for $2,600[63] and moved to Knoxboro. He lived with his unmarried daughter Emily P. until his death in 1871. The 1860 census shows Whiteley and Emily P. living with the family of William W. and Julia A. Pierce at Knox Corners (Knoxboro) in the town of Augusta, Oneida County, New York. Whiteley's profession is listed as "Manufacturer of Musical Instruments," with $2,000 of real estate and $1,000 of personal estate. The 1870 census lists Whiteley and Emily P. in their own home at Oriskany Falls in the town of Augusta, Oneida County, New York. Whiteley's profession is listed as "Retired from business," and he then had $2,000 in real estate and $1,700 in personal estate.

Significance

Whiteley was one of the foremost American woodwind makers of his day in volume and variety, if not in sophistication. Most of his surviving instruments are flutes and clarinets, but clarinets seem to have been his specialty. Unlike other makers of the time, he made them in both English and Continental styles and in some of the more unusual sizes. Whiteley was a true craftsman, in that every instrument he made was unique, made to the customer's requirements and his own changing designs. His one publication, the *Instrumental Preceptor*, was a landmark for its time, offering solid music instruction and a variety of musical examples for small ensembles. The fortunate discovery and preservation of some of the remains of his shop show how Whiteley's woodwinds were made and how such a business was carried on—in particular the type of

60. *Oneida Morning Herald,* Utica, NY, October 27, 1849, p. 2, col. 2.
61. Oneida County deed records, book 216, p. 339.
62. Oneida County deed records, book 148, p. 155 (March 9, 1850).
63. Oneida County deed records, book 180, p. 416 (May 1, 1854).

lathe used, the instrument patterns and mandrels, and the blanks and tools used to cast and finish metal keys (see Appendix C).

Whiteley was not an innovator or in later years even quite abreast of the instrument-making trends of the period, but he produced some interesting combinations of the English and Continental woodwind styles. That his production was based almost entirely on eighteenth-century technology can be explained by the market he served—away from the large coastal cities that had more frequent European contact. Though he made instruments of more basic design, he made many of them, and made them well. In spite of a very small, hand-powered shop employing no more than two or three men, more of his clarinets and flutes have survived than by almost any other maker of the time, attesting to their quantity, usefulness, and durability.

APPENDIX A

Barrel Organs

In addition to the barrel organ made for Trinity Church, several others by William Whiteley are known, including a fine example handed down in Whiteley's family and preserved at the Munson-Williams-Proctor Arts Institute, Museum of Art, in Utica. At the time this organ was donated, a newspaper article mentioned the existence of two others in the vicinity: "The organ is one of what are believed to be the only remaining three of this kind. There is one in the church in Pierrepont Manor, Jefferson County, and another in Henderson House, Mrs. Theodore Douglas Robinson's home, near Jordanville."[64] The inventory of Whiteley materials prepared by Frederic R. Selch and Victor Fell Yellin lists another Whiteley barrel organ that was once in the "Farman/Henty house, Knoxboro, N.Y."

In a 1976 exhibition catalog, the Munson-Williams-Proctor organ was described as:

> a barrel organ with a penciled signature inside, which according to family tradition was made by Whiteley for his own use before he established his business. An early date, perhaps before 1810, is corroborated by the design

64. Joan Martin, "Century Old Pipe Organ Among Latest Treasures Of Historical Society," *Utica New York Observer,* December 8, 1935, p. 3B, col. 2. The organ in the church in Pierrepont Manor has since been determined to be by George Jardine.

> of the organ, which is Federal in style, the false pipes contained in an oval and the front outlined in cross-banding and stringing, and by the addition of a second bellows in the roll storage compartment below the organ. This was necessitated by an error in the construction of the main bellows, which made them inefficient, suggesting the work of an inexperienced craftsman.[65]

The organ has a drum and a triangle (upper left), and there appear to be 29 small round pipes, 43 square open pipes, and 36 square stopped pipes, although a few may be out of sight (figs. 18a and b). On the front of the organ case are seven buttons or pulls controlling the selection or combination of pipes and percussion (fig. 18c). Their labels and the ranks shown in fig. 18b that they probably control are:

1. Dr — Drum
2. DIpn — Stopped Diapason (stopped square rank at the front of the case [at the lower edge of fig. 18b])
3. Pr — Principal (open square rank, second from front)
4. Ft — Flute 4 (third rank from front)
5. 12^{th} — (round rank with some square basses, fourth rank)
6. 15^{th} — (all-round fifth rank)
7. Tr — Triangle

The active barrel or cylinder is inserted into the upper opening on the side of the organ, and the other two are stored in the bottom compartment. On the inside of the upper compartment door is a paper sheet listing the tunes on each cylinder.

Cylinder No. 1

1. Soldiers Joy
2. Money Musk
3. Irish Washerwoman
4. Hob Bob
5. Pops goes the Weasel
6. McDaniels Reel
7. Cameromian Reel
8. Fishers Hornpipe
9. Durangs Hornpipe
10. Fairy Dance

Cylinder No. 2

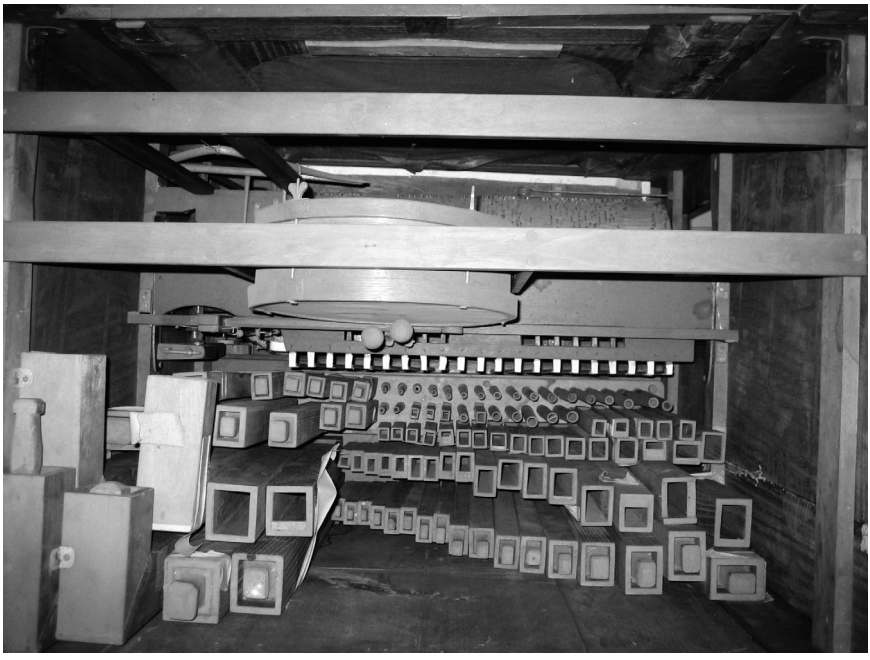
1. Washington Grand March
2. Yankee Doodle, with variations
3. Bonapartes March
4. Bonapartes March Over the Rhine
5. Westminsters Slow March, with finale
6. March in the Pisarro
7. Handel's Clarionet with Turkish Music
8. Blue Bells of Scotland, with finale
9. Indian Philosopher

65. *Made in Utica* (Utica: Museum of Art, Munson-Williams-Proctor Institute and Oneida Historical Society, 1976), 15. Published in conjunction with the exhibition of the same name, April 11 through September 5, 1976.

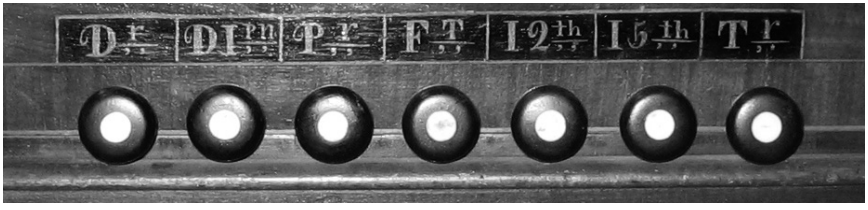
a.

FIGURE 18. Whiteley barrel organ. Munson-Williams-Proctor Arts Institute, Museum of Art 62.46. Photos courtesy of the Museum of Art and the Oneida County Historical Society, Utica, New York.

a. Case, with doors open to show mechanism.



b.



c.

FIGURE 18. (*continued*)

b. View from the top, showing the interior components.
c. Detail of the stop pulls and labels on the front.

Cylinder No. 3
1. Washington's March
2. Hail Columbia
3. Marseilles Hymn
4. The Cuckoo
5. Killkrankie

6. Emigrants Grand March
7. Titus March
8. Bugle March
9. Home, Sweet Home, with finale

The last tune listed, "Home, Sweet Home," first appeared in the opera *Clari, or the Maid of Milan* produced at Covent Garden in 1823, the music by Henry Bishop and the lyrics by John Howard Payne. Unless there was an earlier song by the same name, which seems unlikely, the third cylinder at least, and perhaps the entire organ, must date from 1823 or later. Eight of the same or similar titles appear in Whiteley's *Instrumental Preceptor* of 1816: "Fairy Dance," "Yankee Doodle with Variations," Bonaparte's Favorite," Bonaparte's Retreat," "Westminster Slow March," "Handel's Clarionet," "Blue Bells of Scotland," and "Emigrant's Grand March." That the organ remained a source of local pride is confirmed by its appearance in a 1941 cartoon (fig. 19).

APPENDIX B

The Instrumental Preceptor

In 1816 Whiteley published *The Instrumental Preceptor. Comprising Instructions for the Clarinet, Hautboy, Flute and Bassoon. With a Variety of the Most Celebrated Airs, Marches, Minuets, Songs, Rondeaus, Trios, &c.* (Utica: Seward & Williams) (fig. 20). It was one of the earliest American instrumental method books, following Samuel Holyoke's *Instrumental Assistant* (vol. 1, 1801; vol. 2, 1807).[66] The *Instrumental Preceptor* contains a section on music notation (in breves, minims, crotchets, and quavers); instructions for clarinet, hautboy, flute, and bassoon; and, as the title proclaims, "a variety of the most celebrated airs, marches, minuets, songs, rondeaus, trios, etc." (fig. 21).

Quotations on the title page from psalmist William Tans'ur (1700–1783) and composer and instrumentalist Christopher Simpson (ca. 1602 to 1606–1669) suggest Whiteley's familiarity with early English vocal and instrumental publications. Tans'ur introduced the form of fuging-tune that caught on in the American colonies and was used by William Billings, among many others. Simpson is best known for his book of instructions for the viol, *The Division-Violist, or an Introduction to Playing*

66. Samuel Holyoke, *The Instrumental Assistant,* 2 vols. (Exeter, NH: H. Ranlet, 1801–7).

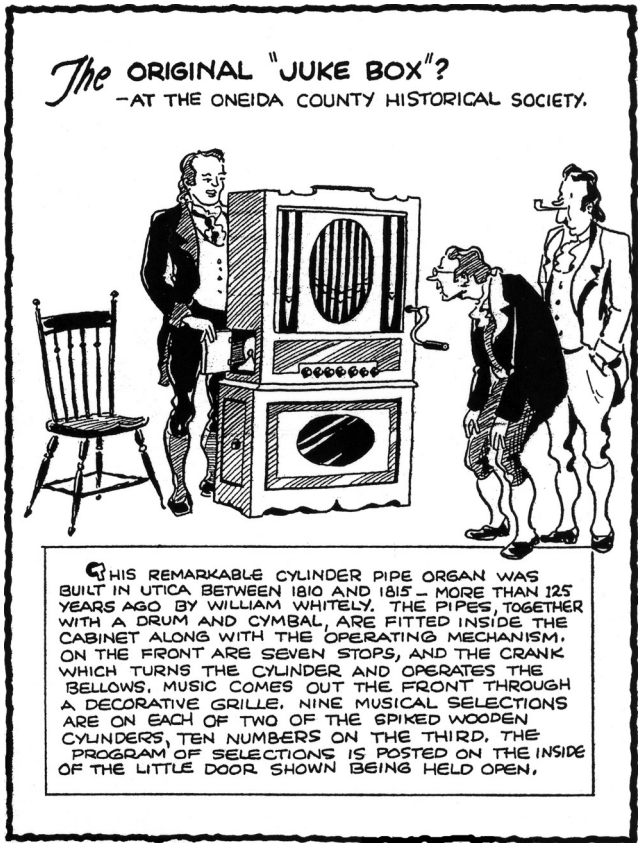
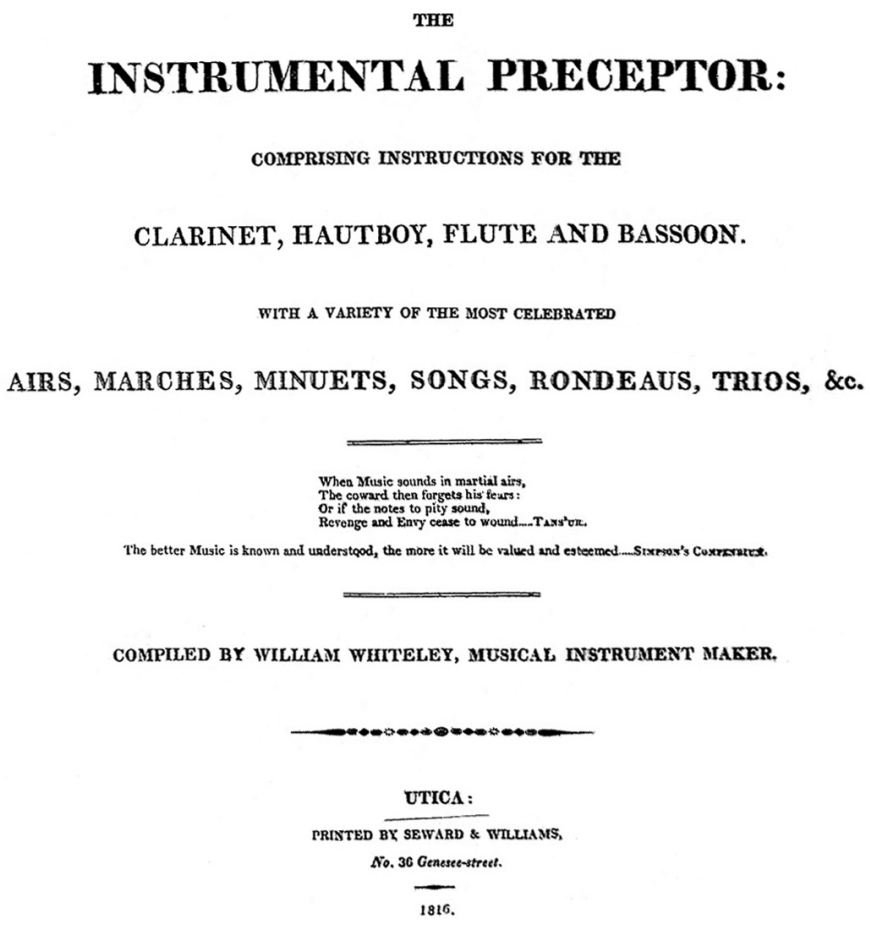


FIGURE 19. Cartoon of the barrel organ as the first jukebox. *The Way To Wealth* (Utica: Savings Bank of Utica, 1941), 6.

upon a Ground (London, 1659), but the quotation is from *A Compendium of Practical Musick*, a guide to musical composition (London, 1667).

The first few pages of the *Preceptor* are a concise presentation of musical notation, along with key signatures for major and minor keys. Two paragraphs of particular interest in this section are headed: "Directions for Beating Time," and "Address to the Scholar." The first of these is not, as one might expect, concerned with conducting, but with time-beating with the foot:

> In both Common and Triple Time, the foot goes down at the first note in each measure; the only difference being in the rising thereof. In Common



THE

INSTRUMENTAL PRECEPTOR:

COMPRISING INSTRUCTIONS FOR THE

CLARINET, HAUTBOY, FLUTE AND BASSOON.

WITH A VARIETY OF THE MOST CELEBRATED

AIRS, MARCHES, MINUETS, SONGS, RONDEAUS, TRIOS, &c.

When Music sounds in martial airs,
The coward then forgets his fears:
Or if the notes to pity sound,
Revenge and Envy cease to wound.—Tans'ur.

The better Music is known and understood, the more it will be valued and esteemed.—Simpson's Compendium.

COMPILED BY WILLIAM WHITELEY, MUSICAL INSTRUMENT MAKER.

UTICA:

PRINTED BY SEWARD & WILLIAMS,

No. 36 *Genesee-street.*

1816.

FIGURE 20. William Whiteley, *The Instrumental Preceptor. Comprising Instructions for the Clarinet, Hautboy, Flute and Bassoon. With a Variety of the Most Celebrated Airs, Marches, Minuets, Songs, Rondeaus, Trios, &c.* (Utica: Seward & Williams, 1816). Title page. Microfilm of a copy at the New York State Library, Albany.

> Time, the foot is half up and half down; but in Triple Time, when the Music consists of three minims, crotchets, quavers, &c. in a measure, the foot goes down as in Common Time, at the first note, and rises at the expiration of two-thirds of the measure. All odd notes, before the measure commences, should be performed with the foot up, and rests must be beat, as if they were notes. In the following example, the letter D shows where the foot must go down, and the letter U, where it must rise.[67]

67. Whiteley, *Instrumental Preceptor,* v.

BASSOON Quick March	29	42d Reg't Favorite Slow March	25
Bonaparte's Favorite	20	Felton's Gavot	20
Bonaparte's Retreat	53	Finale in Inkle and Yarico	55
Blue-Bells of Scotland	39	Flitch of Bacon	21
British Muse	18	Fresh and Strong	18
Brunswick Waltz	66	God Save the King	51
Curphew's Farewell to Utica	32	Gov. Strong's March	57
Dirge on the Death of Washington	64	Grand March in Henry IV.	58
Dog and Gun	21	Grand March of the 8th Reg't.	26
Drink to me only	19	Grand Parade March	50
Durham March	30	Hail Victory	62
Embassador's Minuet	62	Handel's Clarionett	52
Emigrant's Grand March	34	Hayden's March	28
Fairy Dance.	33	Holden's Favorite Quick March	36

FIGURE 21. List of music from the last page of the *Instrumental Preceptor.*

Samuel Holyoke also mentioned foot-tapping technique in his *Instrumental Assistant*, volume 1 of 1801, but in a more refined manner, using just the toe: "To beat the above marks of time, let the toe fall at the beginning and rise in the middle of each bar. In Triple Time the toe must fall at the first note, and rise at the third. . . ."[68]

Foot (or toe) tapping, along with many other things, was evidently much slower in those days. While we frantically tap each quarter or eighth note, our forebears were beating a leisurely once or twice per measure, at least some of them delicately with just the toe.

Whiteley's "Address to the Scholar" contains a few instructions on caring for a new instrument and choosing woodwind reeds, and then addresses two problems that have always plagued music instruction.

> Time is the most curious branch of musical performance: in this your thought must guide the motion, and not the motion drive the thought into hurry and confusion: this is governed by a person's own thoughts, and not by another's motions; for unless a person can count his time in his thoughts, as he sees it, it is impossible for him either to beat it, or perform in concert, as he ought to do. Never attempt to play any lesson or tune quicker than you can read it.[69]

In other words, take it slow enough to give all the notes their proper values and don't rush! Whiteley also includes the following familiar instruction: "It is absurd to think of practicing common well-known tunes, which are caught by the ear, to the total neglect of those rules, so neces-

68. Holyoke, *Instrumental Assistant,* 1:21.
69. Whiteley, *Instrumental Preceptor,* 7.

sary to be inculcated at a very early period by those who wish to excel in music."[70]

Pages 8–15 provide specific instructions for clarinets with five or eight keys, hautboys (oboes) with two keys, flutes with one key, and bassoons with six. No further advances in key-work are described. Different sizes of clarinet are not mentioned, but the author acknowledges a smaller flute: "For the management of the G or fourth flute, take the instructions of the D or German Flute and Scale."[71] Whiteley's shop remains include a lathe model and mandrels for F (E-flat) flute, but there are no surviving G (F) flutes or anything in his shop remains to suggest that he made this size.

The oboe was certainly in use at the time, though less popular than the clarinet and flute. So far, none by Whiteley have turned up, and since there were no oboes or oboe parts in the remains of his shop, he may not have made them, but sold those made by others. The instructions for the oboe include this interesting suggestion: "The method of softening and improving the tone of this instrument is to insert some cotton, or wool, in the bell, which must not be put up higher than the air holes."[72] A similar instruction appears in Holyoke's *Instrumental Assistant,* where the introduction of the technique is attributed to the celebrated oboist Johann Christian Fischer (1733–1800).[73]

Although the *Instrumental Preceptor* included some original ideas, Whiteley copied fingering charts and instructions from earlier publications. Some of the clarinet instructions, for example, were copied from the *New and Complete Instructions for the Clarionet* (London: Preston & Son, ca. 1797), and most clarinet fingerings from *The Clarinet Preceptor* (London: G. Goulding, ca. 1803). Whiteley repeated oboe fingerings found in Holyoke, *The Instrumental Assistant,* vol. 1 (1801) or in Johann Christian Fischer, *The Hoboy Preceptor* (London, ca. 1800). Some of the instructions and fingerings for the flute were taken from Holyoke, *Instrumental Assistant,* vol. 1 (1801) and the bassoon fingerings from Holyoke's *Instrumental Assistant,* vol. 2 (1807).[74]

70. Ibid., 7.

71. Ibid., 12.

72. Ibid., 10.

73. Holyoke, *The Instrumental Assistant,* 1:17. For a detailed discussion of muting history and techniques, see Janet K. Page, "To Soften the Sound of the Hoboy: The Muted Oboe in the 18th and Early 19th Centuries," *Early Music* 21 (1993): 65–81.

74. Albert R. Rice, "Clarinet Fingering Charts, 1732–1816," *Galpin Society Journal* 37 (1984): 29; Bruce Haynes, "Oboe Fingering Charts, 1695–1816," *Galpin Society Journal 31*

Page 17 of the *Preceptor* provides preludes in all the common keys. Those in the key of C and the sharp keys are in cut time, and the ones in flat keys are in common time. They could be used as introductions to any of the musical selections in those keys and time signatures.

Musical examples on pages 18 through 71 are mostly marches, minuets, jigs, and popular melodies in two or three parts. Where four parts are shown, the third part is a doubling of the melody in unison or at the octave above. There is one five-part score (p. 33), but the third part again doubles the melody, so it is really a quartet; and there is one four-part score with four independent parts (p. 67). The last piece is an early version of "Yankee Doodle" with a somewhat overwhelming twenty variations on the first part of the melody. It is written on four staves, but the third part doubles the melody.

The two upper parts of all of these arrangements are in treble clef and suitable for flute, oboe or clarinet in C. The lower part is a bass-clef part playable on bassoon or other bass instruments such as bass viol or serpent. The one quintet has the upper four voices marked "1st Clarinet," "2d.," "G flute," and "3d. Clar." There is no marking for the lowest part.

The third part of the quartets and the quintet is transposed to sound a fourth higher (or a fifth lower) and is usually marked "G flute." It invariably follows the melody in the first part in unison or an octave higher and was undoubtedly intended for the small G or fourth flute mentioned in the instructions. This flute, often called a "song flute," was commonly used at that time for song obbligatos, and transposed parts for it were sometimes included in sheet music.

On four occasions the third part is transposed in the same way and doubles the melody, but it is marked "G clarinet," and was probably intended for a small clarinet in F. Whiteley simply used the English flute terminology (D flute plays in C; G flute plays in F) for the small clarinet.[75]

Although there are many examples of Whiteley clarinets in B-flat, C, and D, and a few in E-flat, only one example of the F clarinet is known. Among the remains of Whiteley's shop there were lathe models for B-flat, C, and D clarinets, but none for A, E-flat or F clarinets. Jane Ellsworth cites a number of sources in her article "Early American

(1978): 79; and Paul White, "Early Bassoon Fingering Charts," *Galpin Society Journal* 43 (1990): 100.

75. This conclusion was arrived at through conversations with Jane Ellsworth, Douglas F. Koeppe, and Albert R. Rice, noted clarinet scholars and writers.

Clarinet Makers and Sellers" to show that these smaller clarinets were in use in European military bands from about 1780. She also cites advertisements including F clarinets by Boston music merchant Gottlieb Graupner beginning in 1812.[76] F clarinets were known to have been used in German bands of the early nineteenth century, and the many German settlers near Utica may have influenced Whiteley to supply them and write music for them.

In three of the compositions, "God Save the King" (51), "Westminster Slow March" (56) (fig. 22), and "Yankee Doodle" (69), the third part is written in the concert key, but in the mezzo-soprano clef (middle C on the second line). This part doubles the melody like the other third parts and is therefore written high in the staff or on ledger lines above. One wonders at the purpose of using the mezzo-soprano clef. Halfway through "God Save the King" Whiteley gives up writing the part on ledger lines and writes it an octave lower with the instruction: "8va continued." No high soprano instrument that I am aware of requires this clef, and it is certainly no help in making these high parts easier to read. Perhaps Whiteley just wanted to include examples of the use of the C clef without inconveniencing the players too much. The parts look just like the transposed G flute and clarinet parts and, with the mental addition of a sharp, could be read in exactly the same way.

Composers identified in the collection include Holden, "Grand March of the 8th Reg't"; Wattles, "Owen's March" and "Governor Strong's March"; [Henry T.] Curphew (seven pieces); and [Christoph Friedrich] Ely, "Minuett."

76. Jane Ellsworth, "Early American Clarinet Makers and Sellers," this JOURNAL 32 (2006): 83.

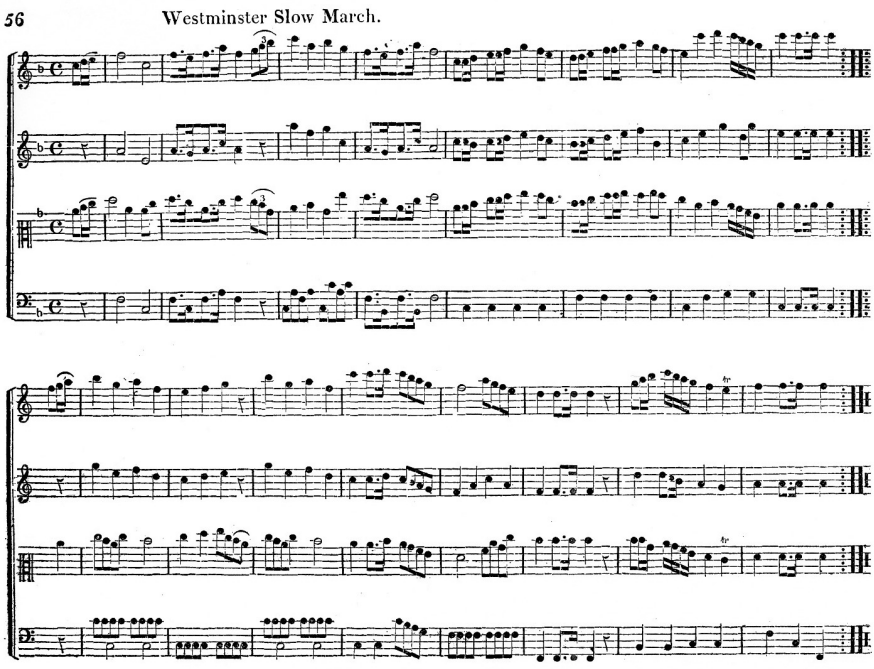


FIGURE 22. Whiteley, *Instrumental Preceptor*, 56. "Westminster Slow March," with third part in mezzo-soprano clef.

APPENDIX C

Shop Remains

The materials that survive from Whiteley's shop give a reasonably good picture of how he worked, but they are uneven in date and far from complete. Some items, such as the models, mandrels, and B-flat clarinet parts, appear to date from around 1852 (figs. 23–25), when the shop at 121 Genesee St. was closed. Others, such as the great wheel lathe pulleys and head or tailstocks (figs. 26–27), look like worn-out discards from long before, perhaps the remains of equipment cleaned out of his 84 John St. home before its sale in 1854.

There are models and mandrels for flutes of several sizes and for every part of several sizes of clarinet except the mouthpiece, for which patterns or tools are lacking; there are likewise no finished or unfinished

FIGURE 23. Mandrels for clarinet bells and small flute sections, with the bells and sections they fit. Photo by Robert E. Eliason before the collection was moved to Oberlin in 2009.

FIGURE 24. Mandrels for flute and clarinet sections of all sizes. Photo by Robert E. Eliason before the collection was moved to Oberlin in 2009.

mouthpieces. Many other tools are also missing. For every one of the dozens of mandrels, there should be drills and reamers for cutting the bore of the section they fit into. There should be saws, chisels, and planes for cutting the original wood stock, trimming key-mount turnings

FIGURE 25. Unfinished B-flat clarinet parts. Photo by Robert E. Eliason before the collection was moved to Oberlin in 2009.

FIGURE 26. Great wheel lathe pulleys and stocks. Photo by Robert E. Eliason before the collection was moved to Oberlin in 2009.

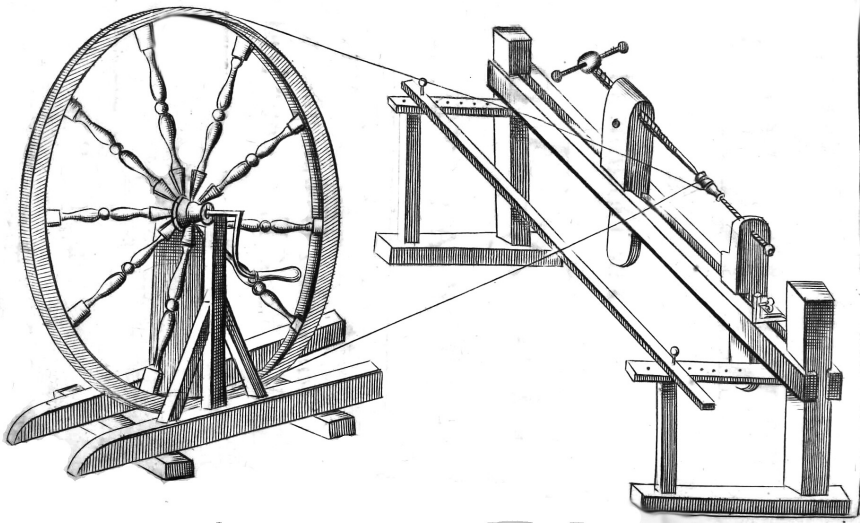


FIGURE 27. A great wheel lathe. Joseph Moxon, *Mechanick Excercises, or, The Doctrine of Handy-Works* (began January 1, 1677, and intended to be monthly), vol. 1, 1684? after page 192 (illustration pages are not numbered). Courtesy of Dartmouth College Library, Dartmouth College, Hanover, NH.

to blocks, and cutting key slots; lathe tools for turning; drills for tone holes and pin holes; and files for shaping keys. Perhaps all the metal tools found were sold for scrap before anyone realized their significance.

All of the surviving patterns and clarinet parts are for a Continental-style clarinet similar to MFA 1982.328, (see fig. 12e). The barrels are all more or less convex, designed for short-tenon mouthpieces, and the stock swelling is rounded, not bell-shaped as on English-style clarinets.

Among the many brass keys are examples of long F-sharp keys in straight form for Continental-style instruments and other such keys with a jog or crank, as found on English-design instruments. Key heads or flaps include flat and square, flat and round, and domed examples. There were no keys like those on the surviving bassoon.

Other tools found included three dapping punches for sizing and strengthening domed keys (fig. 28), and a key die for a set of small flat round keys (fig. 29). There were no key dies for larger flat round keys or for square or domed keys.

Among items found in boxes marked "Whiteley" in the Selch collection, but not included in the original inventory, was a smaller lathe

FIGURE 28. Dapping punches. Photo by Robert E. Eliason before the collection was moved to Oberlin in 2009.

FIGURE 29. Key die. Photo by Robert E. Eliason before the collection was moved to Oberlin in 2009.

(fig. 30). Since none of the mandrels fit this headstock, it is not known exactly how it was used in his operations.

Although many tools are missing, it is possible to reconstruct a probable outline of how the work was done:

FIGURE 30. Small lathe. Photo by Robert E. Eliason before the collection was moved to Oberlin in 2009.

- Split and saw blocks of boxwood for each instrument section
- Drill and ream the bore to the exact inside dimensions
- Mount on a lathe mandrel fitted to the bore, and, using a softwood model, turn to the exact outside dimensions, leaving raised socket swellings and turnings (rings) for key mounts
- Trim away some of the turnings, leaving blocks for key mounts
- Drill holes and insert threaded pins across the grain in vulnerable areas near key mounts. These pins add strength against cracking.
- Shape note-hole surfaces and drill pilot holes
- Drill and shape each note hole
- Stain, if the instrument is to be stained
- Cut slots in turnings and blocks for key shanks and drill key-mounting holes
- Cut tenons and sockets to size; mount ivory ferrules and turn to shape
- Varnish
- Wrap tenons with thread to fit sockets, ready for assembly
- Stamp each section with the Whiteley mark
- Sand-cast keys from wooden or brass key models; strengthen and size by hammering in a key die; and polish them to final form and finish
- Drill key-shank mounting holes; attach leaf springs to the shanks and leather pads to key-flaps
- Mount keys with brass pins and adjust to proper function

APPENDIX D

Selch and Yellin Inventory

When the remains of Whiteley's shop were discovered in an attic in 1965, a local antique "picker" was called in to clean it out. Happily, much of the material ended up in the hands of Arthur Sanders of the nearby Deansboro Musical Museum, who, while initially not recognizing the uniqueness of the materials, kept them from being broken up, and brought them to the attention of Eric Selch. The artifacts were categorized by Sanders, and some of them were placed on display in the Museum. Sadly, the lathe itself was destroyed during removal from the attic and its "great wheel" converted into a chandelier for a rumpus room in a local residence. Selch, along with Professor Victor Fell Yellin of New York University, photographed and cataloged all the material, and instituted a search for other surviving shop materials and Whiteley-made instruments. This included digging unsuccessfully for the lost lathe wheel in the Poolville, New York (Madison County), dump.

Reproduced below is the inventory of Whiteley artifacts prepared by Selch and Yellin for their presentation on November 6, 1970, at the Toronto meeting of the American Musicological Society. In September 1998 the Deansboro Musical Museum was disbanded, and the most important materials were purchased by Selch. These, along with the rest of the Selch collections, were donated by Selch's widow, Patricia Bakwin Selch, to Oberlin College, Oberlin, Ohio, in 2008, for the Frederick R. Selch Center for American Music at the Oberlin Conservatory of Music.

A Provisional Inventory of Artifacts Relating to the Musical Activities of William Whiteley (1789–1871): Musical Instrument Maker of Utica, New York

Victor Fell Yellin and Frederick Richard Selch

This provisional inventory describes the artifacts attributed to William Whiteley. The greater part of these items was discovered recently in the Knoxboro, New York, house where Whiteley spent his retirement. The instruments and a few examples of the tools found there are on display in the Deansboro (NY) Musical Museum. The balance of the workshop's contents is presently in the possession of the authors in New York City. [Since 2008, these materials have been held by Oberlin College.]

Unfinished parts of instruments. The preliminary sorting of the workshop material indicates that Whiteley was in the process of finishing a "job lot" of B-flat clarinets. Unfinished joints for between ten and twenty instruments are found. Most of these indicate by the number and position of the key blocks that they would be of the simple five-key type. A few might have seven keys; one might be a nine-key instrument. Some joints are stained a dark brown: others are still in their natural wood color.

ITEM	DESCRIPTION
Clarinet, Barrel	For B-flat clarinet – no sockets cut, ferrules not fitted. Length – 60 mm, bore 14 mm. 1 Dark stained 2 Natural wood
Clarinet, left-hand joint	For B-flat clarinet – rings for speaker and A key run completely around the instrument. The A ring is sliced off at rear to allow for action of speaker key. Brass-wire strengthening pins are inserted below key positions. Tenons are not finished and holes not drilled. Length (with tenons) 225 mm. Bore at upper end 14 mm, 13 mm at lower. 4 Dark stained 1 Natural wood
Clarinet, left-hand joint	For B-flat clarinet – key blocks for speaker and A keys. Otherwise identical to above. 2 Dark stained 8 Natural wood
Clarinet, left-hand joint	For B-flat clarinet – key blocks for speaker, A, B, and C-sharp keys. Otherwise identical to above. 2 Dark stained
Clarinet, left-hand joint	For B-flat clarinet – key blocks for speaker, A, B, C-sharp, E-flat, and trill key. Otherwise identical to above. 1 Natural wood
Clarinet, upper right-hand joint	For B-flat clarinet – no key blocks or rings – tenon and sockets not finished, holes not drilled, and ferrules

	not fitted. Length (with tenon) – 111 mm. Bore at upper end 14 mm, 13 mm at lower. 4 Dark stained 4 Natural wood
Clarinet, lower right-hand joint	For B-flat clarinet – A ring runs completely around for articulation of E key. A narrow guide block is present for F-sharp key and there is the bulb-like swelling for the G hole/G-sharp key. Brass-wire strengthening pins are inserted below positions for key. Tenon and socket are not cut and holes are not drilled. Length (with tenon) – 157 mm. Bore at upper end 14 mm, 13.5 at lower end. 1 Dark stained
Clarinet, lower right-hand joint	For B-flat clarinet – key block for articulation of E key. Otherwise identical to above. 2 Dark stained 5 Natural wood
Clarinet, one-piece right-hand joint	For B-flat clarinet – key block for articulating of F key, F-sharp guide block, G hole/G-sharp key "bulb." Brass-wire strengthening pins contiguous to block, guide, and bulb. Tenon and socket not cut, holes not drilled, and ferrules not fitted. Length (with tenon) – 246 mm. Bore at upper end 14 mm, 13 mm at lower end. 1 Dark stained 2 Natural wood
Clarinet, bell joint	For B-flat clarinet – socket not cut and ferrules not fitted. Length – 118 mm. Bore at upper end 14 mm, widens to 67 mm at bottom. 1 Dark stained 1 Natural wood (only roughly turned)

Lathe models. These softwood workings of instrumental joints indicate the size of the bore; outside circumference; position and size of ferrules, tenons, sockets, and key blocks and rings; and the size and position of holes.

ITEM	DESCRIPTION
Lathe model for B-flat clarinet	Marked in ink "B". Model for left-hand joint, upper and lower right-hand joints. (No model for barrel or bell joint.) 3 pieces
Lathe model for C clarinet	Marked in ink "C". Model for left-hand joint, upper and lower right-hand joints. (No model for barrel or bell joint.) 3 pieces
Lathe model for D clarinet	Marked in ink "D". Model for head joint, left- and right-hand joints. No key block indicated. (No bell joint model.) 3 pieces
Lathe model for F flute	Model for head joint, left- and right-hand joints. No key block indicated. (No bell joint model.) 3 pieces
Lathe model for D flageolet	Model for body and fipple joint. (No cap model.) 2 pieces
Lathe model for D flute	Model for head joint and right-hand joint; no key blocks indicated. (No left-hand joint or bell joint model.) 2 pieces
Lathe model for D flute	Model for left-hand joint of 8-key flute. (No head, right-hand or bell joint model.) 1 piece

Lathe mandrels. Among the workshop articles were a number of wooden mandrels with squared-off drives for fitting into the lathe chuck. These mandrels were inserted snugly into the bore of an instrument joint, allowing it to be turned on the lathe. Identification of these mandrels is difficult; only the following are associated with a particular instrument.

ITEM	DESCRIPTION
Lathe mandrel for F flute	Marked in ink "F". 3 mandrels which fit exactly into the bores of the F flute lathe model. 3 pieces
Bell finishing mandrels	These mandrels are conical in shape and fit into clarinet bell joints. They allow the lathe operator to work inside and outside the lower edges of the bell in finishing the ivory ferrule. 5 pieces

Workshop articles: lathes, lathe parts, other tools. With the Whiteley tools discovered in his attic was a wooden lathe. It had a short bed of no more than forty-eight inches, and was powered by a heavy, hand-cranked wooden flywheel, over five feet in diameter. Unfortunately, the lathe was disposed of piecemeal by a local antique trader. We have attempted to track down the parts with the following partial success.

ITEM	DESCRIPTION	DISPOSITION
Lathe bed	About 48 inches in length. The working area between the stocks as set up was less than 18 inches.	Destroyed – "cut up for curley maple content."
Flywheel	Heavy curly maple with gracefully tapered spokes – over 5 feet in diameter with hand-wrought iron crank.	Lost – sold in Hamilton, NY, area to be converted into chandelier for den. Thrown out on Poolville dump in 1970
Headstocks	Two oaken headstocks have been salvaged. They resemble those illustrated in Diderot.	New York
Headstock key	A wedge for locking the headstock into the lathe bed.	New York
Drive pulleys	Two maple pulleys driven by continuous belt from the flywheel have also been salvaged. They have squared drives which key into the chuck.	New York
Dapping punches*	Small steel punches for shaping domed key heads.	New York
Small lathe*	About 20 inches in length. Headstock and drive pulleys, tool rest.	New York
Violin mold*	For forming ribs.	New York

Cello clamps*	Wood screw clamps.	New York

* Not on the original list, but found in boxes marked "Whiteley" as materials were packed for the move to Oberlin.

Key models and keys (New York). A wealth of keys and key models for all sizes of clarinets and flutes was discovered. In this treasure were 439 round-head keys in 78 different sizes; 258 square-head keys in 36 different sizes; 18 cup-head keys in 7 sizes; and 62 shanks (for E keys) in 13 sizes. While it is easy to identify all of the requisite keys for a five-key clarinet and the fiddle-shaped touch of the D-sharp key of a one-key flute, other keys are more difficult to categorize. Comparison with the keys of known instruments will be the best means of their identification.

There are two kinds of key model: wooden and white brass. These are smooth keys without the pin hole drilled and with a riveted spring lug. Apparently, these models were supplied to the brass founder for the creation of the impression for the molten brass.

Examples of keys in all stages of finish are found, from the roughest example fresh from the founder's sand to a finely polished key ready for the instrument.

Key hardening die or anvil (New York). Sand-cast keys as delivered by the foundry were porous, soft, and slightly shrunk. To strengthen them, a light forging was necessary. In order to harden and size key blanks, Whiteley hammered key heads on a solid steel anvil with shallow round depressions. The heads of the keys fit into these depressions, suggesting that the anvil would have been used in the hardening and shaping process.

Workshop articles: ivory tusk rings. The ivory ferrules on Whiteley instruments were finished from rough ivory tusk rings such as those found among his tools. These rough rings were steamed and sweated onto the instrument and turned down to size.

Workshop articles: miscellaneous. Aside from the articles mentioned above, there are small items, many of which cannot now be identified with certainty. There are others, however, whose use is self-evident, such as tools for cutting out leather pads, lengths of spring brass, a piece of his name stamp, and his shop sign.