

# THE BELL CASTERS OF TROY

by Sydney Ross

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During various periods between 1808 and 1952, in the upper-Hudson communities of Troy and West Troy,<sup>[1]</sup> four different foundries shipped bells of all sizes world-wide. The rise and fall of this thriving nineteenth-century industry mirrors what has taken place over a wide swath of the industrial northeast, where once-novel technologies first arose and then perforce gave way to more modern competition.

Located across the Hudson River from one another, Troy and West Troy are well situated geographically for manufacturing enterprises. The Hudson was navigable from the Atlantic to Troy as was the Erie Canal from Troy to Lake Erie and the Great Lakes. In its industrial heyday, Troy was also at the confluence of trunk railroad lines. By both rail and water, Troy was at one of the crossroads of the country and, therefore, of the world.

## Col. Benjamin Hanks and His Progeny (Gibbonsville and Troy)

In 1808, Col. Benjamin Hanks established, for his son Julius, in Gibbonsville, a bronze bell foundry, as well as a shop to make surveying instruments and town clocks. Hanks had built the nation's first bronze cannon and bell foundry in 1785 on Hanks Hill in Mansfield, Connecticut and, in 1808, wished to take advantage of new western markets. New England at that time was in an economic depression, but new territories had been opened by the Louisiana Purchase, and people were rapidly moving west. The Hudson and Mohawk river valleys provided the easiest route west, and there had been much talk of canal construction as well. Unsettled lands needed to be surveyed and new communities required tower bells and clocks.

Shortly after the completion of the Hanks manufactory, in 1808, Col. Benjamin transferred the business to Julius. Julius's younger brother, Horatio, and Andrew Meneely apprenticed at Gibbonsville. In 1818, Horatio moved to Auburn, New York, where he made surveying instruments and small bells. Andrew Meneely joined Horatio in Auburn in 1823, and it was there that he met Horatio's niece, Philena Hanks, whom he married in Mansfield in 1826.

In 1825, Julius purchased a corner lot at Fifth Street and Elbow (now Fulton) in Troy from Jacob Vanderheyden and moved his entire operations to that location. His shop there was a two-story frame structure that faced Fifth with a foundry behind, where he continued to cast bells. In 1834, financial difficulties forced Julius to turn the business over to his son Oscar. From the early 1830s until the Hanks shop ceased operations in Troy in 1845, the manufacture of surveying instruments assumed a larger share of the business.

### Andrew Meneely and His Eldest Sons (West Troy)

Julius Hanks's abandonment of his Gibbonsville factory in 1825 was fortunate for Andrew Meneely who, with the completion of the Erie Canal, quit Auburn and returned to the Troy area. With the Hanks site tailor-made and available for immediate occupancy, he launched a business that would etch his name into the history of communities around the world.

Andrew Meneely was born in Gibbonsville on 19 May 1802. His parents, Andrew and Eleanor Cobb Meneely, had come to the United States from northern Ireland in 1795. Because of his father's untimely death and the family's narrowness of means, Andrew had little formal education, for which he made up by studying at night. At fifteen he was apprenticed in Julius Hanks's shop that, less than a decade later, he would occupy as its proprietor.

In 1826, the Gibbonsville factory was just a cluster of wood frame buildings, but gradually it grew into a complex of several brick structures. The business was successful, but at the cost of Andrew's physical well-being. By 1836, his health had deteriorated so badly that he was forced to take on a partner, Volkert Oothout. In addition, he pressed his younger brother, James, into service making surveying instruments. By 1841 Andrew had regained his strength to the extent that he resumed sole proprietorship. He died on 14 October 1851, at the age of forty-nine. By that time his oldest son, Edwin, had joined him in the partnership of Andrew Meneely & Son. After his father's death, Edwin formed a partnership with his brother George, who took over the management of the works while Edwin managed the office. By that time, the factory covered a total of nine lots in the heart of West Troy.

In 1857, the company failed, probably as a result of a combination of unexpected competition from across the river and management inexperience. It only recovered when Andrew's widow, Philena, took over management of the operation. During that period of recovery, it cast bells under the name Andrew Meneely's Sons, Agents. By 1863, the business was again solvent.

George R. Meneely had developed a series of improvements in the manner of attaching bells to their yokes. They allowed the bell to be rotated so that the clapper would not always strike the bell in the same place, which can lead to wear with the attendant danger of cracking the bell, as had happened to the original Liberty Bell. Provisions were made to

cause the clapper to swing in the same plane as the bell's swing, with the clapper secured to prevent its getting out of alignment. The whole purpose is akin to the switching of tires on an automobile to avoid excessive wear on one spot. On 28 July 1868, Meneely secured U. S. Patent 80,422 for these improvements.

### **Jones & Company (Troy)**

In 1852, James Harvey Hitchcock, a brother-in-law and employee of Andrew Meneely, withdrew from Andrew Meneely's Sons and, with the financial backing of Eber Jones, set up the bell foundry of Jones & Hitchcock in Troy, operating as the Troy Bell Foundry. With the departure of Hitchcock in 1857, the company became Jones & Company. Upon the death of Eber Jones in 1867, his son, Octavous, took over and ran the company until it closed its doors in 1887.

In 1853, soon after its inception, the company cast the first complete chime of bells made in the United States,<sup>[2]</sup> composed of nine bells in the key of D, which weighed a total of 12,798 pounds and were placed in the belfry of St. Stephen's Church in Philadelphia. Of this chime, the Rev. H. W. Ducachet wrote to the company:

No Bell can be better than the grand chime of nine which you made for St. Stephen's Church, and which we have had in our tower more that eight years with undiminished satisfaction. I have heard many English and Spanish bells, but none surpasses yours. We have three chimes in this city, two of them English, and the other cast by you; the former do not compare to ours.

Three months previous to the suspension of operations in 1887, a Jones bell was placed in the belfry of City Hall in Troy. Fifty-one years later, it was destroyed by fire when City Hall burned in 1938.

### **The Meneely Bell Company (Troy)**

Clinton H. Meneely, the youngest son of Andrew, had worked as a clerk in the West Troy factory until the outbreak of the Civil War. He joined the Union Army, against the protests of his family, served in many campaigns, including Gettysburg, and retired with the rank of Colonel in 1866. Not owning a share in his older brothers' business, but possessing a

knowledge of bell casting and a musical ear, in 1869 he formed a partnership, called Meneely & Kimberly, with his brother-in-law, George H. Kimberly. Their foundry was established in Troy and quickly became competition for the West Troy namesakes.

Anticipating that the two bell foundries with the Meneely name and the Troy and West Troy addresses would be frequently confused by the public, Edwin and George sued Clinton for the unlawful use of their surname. The 1871 case, *Meneely vs Meneely*, also known as the *Meneely Trade Mark Case*, moved through the New York courts until, in 1875, the Court of Appeals established the legal right of persons to use their own names commercially, even if it conflicted with earlier enterprises using the same name. The West Troy foundry did what it could to maintain its priority, advertising itself as ♦The Old Meneely Foundry♦ and even, shamelessly, as ♦ye Olde Bell Foundrie of Meneely & Co.♦ Both companies made and shipped world-wide many thousands of bells, peals, chimes and, after 1928, carillons.[3]

We cannot leave the subject of the Meneely Bell Company in Troy without a tribute to its long-time foreman and chief rigger Eddie Kehn, who placed two and a half million pounds of bells in towers all over the country during his fifty-odd years of experience with the company. He began that work under his father and ended by handing it on to his two sons. One of them, Edward William Kehn, was later to set up Kehn♦s Bell Service, which electrified many church bells in the northeast. Edward Kehn remained president of his company until the age of 85. He died on 19 January 1999 at the age of 99.

### Memorable Bells Cast in Troy

In its various catalogs, the Trojan Meneely company boasted of its major accomplishments. A notable achievement was the mounting of 4 Meneely bells on the outside of the 46<sup>th</sup> story of the 50-story Metropolitan Life Insurance Tower in New York City. These bells are 700 feet above the ground and are by far the highest hung bells in the world. Their sound has been reported by voyagers at sea, beyond Sandy Hook, New Jersey, fully 28 miles from the tower, and by others on Hudson River boats, equally as far to the north.

A reproduction of the old ♦Liberty Bell♦, which announced the signing of the Declaration of Independence on the 4<sup>th</sup> of July 1776, was cast by Meneely & Kimberly in June 1876. Although the original bell weighed only about 1500 pounds, the Meneely reproduction weighed 13,000 pounds, each 1000 pounds to represent one of the original 13 states. The reproduction is, therefore, much more impressive than the original, but it was made perfectly to scale with all the original inscriptions: *Glory to God in the highest, and on earth peace and goodwill to men* encircles the crown; *Proclaim liberty throughout all the land, unto all the inhabitants thereof* encircles the mouth; *A new commandment I give unto you, that ye love one another* is on the face. Called the Centennial Bell, it now hangs in the belfry of Independence Hall in Philadelphia, the original cracked bell having been placed for exhibition inside the Liberty Bell Pavilion on the green opposite Independence Hall.

The Meneely Bell Company was commissioned to cast another reproduction of the Liberty Bell for the World's Columbian Exposition held in Chicago in 1893. This bell also weighed 13,000 pounds. Its metal was supplemented by some amazing items donated from all over the world. Among them were George Washington's surveying chain, the flintlock from Thomas Jefferson's musket, Simon Bolivar's watch chain, hinges from Abraham Lincoln's house in Springfield, Illinois, Lucretia Mott's silver fruit knife, and a quarter-million pennies sent by children from around the globe. After leaving the Columbian Exposition, the bell was to be sent on tour about the country, but the grand scheme was not completed because of insufficient funds. The underwriters were forced to surrender the bell to a foundry in Baltimore where it was melted down and lost to posterity.

Another bell of historic interest was an exact-size replica of the Liberty Bell cast on 31 March 1915 for the suffragist movement. This Women's Liberty Bell, at a cost of \$2000, was donated to the cause by Mrs. Katherine Ruschenberger, whose twelve-year-old niece operated the lever that controlled the flow of molten metal into the mold. The casting was witnessed by an assembly of leading suffragists and sympathizers, who crowded into the yard of the Meneely foundry in Troy. The bell, with its clapper chained to mute it and adorned with a yellow banner proclaiming VOTES FOR WOMEN, was then paraded around every county in the state of Pennsylvania prior to 7 November 1915, the date of the referendum on the issue. In spite of these efforts, women's suffrage was defeated at that time. Five years later, on 26 August 1920, the 19<sup>th</sup> Amendment to the Constitution was adopted and the women of the United States were enfranchised. The clapper of the bell was unchained and the Women's Liberty Bell rang in triumph in Independence Square in Philadelphia. This bell is treasured as a monument to the early movement; it is now displayed in the rotunda of the Washington Memorial National Carillon and Patriot's Tower at Valley Forge Park, Pennsylvania.

By that time the Meneely Bell Company had the reputation for making large-scale replicas of the Liberty Bell. But the next order came from a surprising quarter. Henry Ford was notorious for his dictum that ♦history is bunk♦, so one might logically conclude that he would be the last person on earth to yield to a sentiment based on history. Yet in September, 1929, he paid the price of 4 of his Flivvers for a 2020-pound Meneely Liberty Bell for his Institute of Technology in Dearborn, Michigan.

### Chimes in Troy Churches

It would be surprising if Troy, the place that was home to so many bell casters, did not have its share of Troy-cast bells. The list of Troy-cast bells surviving and in use in Troy and its environs is too numerous to include here; the number of chime sets, however, is also impressive. The following are taken from a list of chimes compiled by Mr. Joe Connors of Troy:

| Location                   | Foundry | Year | Bells | Remarks       |
|----------------------------|---------|------|-------|---------------|
| Holy Cross<br>Episcopal[4] | M of WT | 1853 | 6     | Manual        |
| Woodside<br>Presbyterian   | M of WT | 1869 | 9     | Manual chime  |
| Ascension<br>Episcopal     | M of WT | 1870 | 9     | Manual chime  |
| St. John's<br>Episcopal[5] | M of WT | 1870 | 11    | Replaced 1911 |
| St. Peter's R.C.           | M of T  | 1896 | 10    | Electrified   |
| St. John's<br>Episcopal    | M of T  | 1911 | 11    | Manual        |
| St. Joseph's R.C.          | M of T  | 1920 | 12    | Electrified   |
| St. Patrick's R.C.         | M of T  | 1923 | 12    | Manual        |

◆M of WT◆ is ◆Meneely of West Troy◆ and ◆M of T◆ is ◆Meneely of Troy◆

### Chimes Manufactured by Major American Bell Foundries

The following table, also provided by Mr. Connors, indicates just how dominant the three chime-casters of the Greater Troy area have been in the production of chimes in the United States. Out of a total of 555 American-made chimes, the three foundries of Troy and West Troy cast 382, or 69%:

| Manufacturer | Location       | Years of Operation | Number of Chimes |
|--------------|----------------|--------------------|------------------|
| Meneely      | West Troy, NY  | 1826-1952          | 195              |
| Meneely      | Troy, NY       | 1869-1952          | 165              |
| McShane      | Baltimore, MD  | 1881-now           | 136              |
| Jones        | Troy, NY       | 1852-1887          | 22               |
| Van Duzen    | Cincinnati, OH | 1890's+            | 17               |
| Stukstede    | St. Louis, MO  | 1830's+            | 12               |

|              |            |           |   |
|--------------|------------|-----------|---|
| Blake/Hooper | Boston, MA | 1860-1874 | 8 |
|--------------|------------|-----------|---|

## Carillons

The height of achievement in musical bell-casting is the production of a carillon, 23 or more bells, tuned to a chromatic scale, and made to be played as a musical instrument. The Meneely foundries were the only American firms to have produced carillons and, together, they made about a dozen. The 32-bell Deeds Carillon in Dayton, Ohio, was made by the Meneely Bell Co. in 1942, and is hung in a unique, vertically cascading arrangement in which every bell is visible. Meneely and Company made the lower 28 bells in the Washington Memorial National Carillon in Valley Forge, Pennsylvania. These 28 were added to the 27 Piccard bells from France to form one of the world's finest carillons. This is considered the apex of achievement in bell-founding, because the new bells had to match perfectly the existing bells. It is ironic that the Valley Forge bell tower was not completed until 1953, after bell casting had ceased in Troy.

## The End of an Era

The Troy area bell casters suffered a decline in business during the twentieth century and, after 1952, they were both out of business. World War II and the Korean War brought restrictions on the supply of metals for anything other than indispensable products. By the time those restrictions were lifted, competitors with more modern techniques were on the scene. Not only were the older factories at a technological disadvantage, the market for cast bells was being supplanted by electronic chimes. The Tariff Act of 1930 provided no protection against foreign imports of large bells, and an investigation by the Tariff Commission in 1931 all but closed the door on such relief. Two decades later, a chapter in local industrial history was brought to a close.

## How Bells Were Made

The first requirement was to make an engineering drawing, or tracing, of the shape of the proposed bell. The tracing of a bell rests on a fixed empirical basis, called the *Bell-scale* or *Jacob's Staff*, the result of long experience handed down from generation to generation among bell founders. It depends on certain proportions which, like the modules in architecture, serve to regulate and to harmonize the different parts of the bell. The sound-

bow (the thickest part of the bell that is struck by the tongue or clapper) is taken as the unit used for all the other dimensions.

These proportions were finally expressed by several empirical formulas having entries for the weight, the dimensions, and the number of vibrations per second corresponding to the key note of the bell. The formulas were designed to produce bells with the greatest possible gravity of tone, using the least possible amount of metal. An example of one of those formulas is  $W = 0.25D^2S$  where  $W$  is the weight of the bell in pounds avoirdupois,  $D$  is the diameter of the mouth of the bell in inches,  $S$  is the sound-bow in inches. The sound bow is the thickest part of the bell, which is the part of the barrel struck by the tongue or clapper, and 0.25 is a dimensional constant.[6]

An exact tracing of the inner and outer contours, using the formulas, was laid out on a piece of board, which was then cut out and was used to shape the two moulds for the bell by sweeping around the loam (a stiff paste composed of sand, clay, and water) constituting the moulds. A photograph of one of the Meneely sweeps, from the original in the Gateway Museum is shown on the next page.

After the bell was cast it would be found that the key note was only approximated. Precise tuning required that some metal be shaved off until the precise note was achieved, as determined by comparing it by ear with a tuning fork. (A set of the tuning forks used at the Meneely foundry is now a Gateway Museum exhibit).

The following passage is taken from Appleton's *Cyclopaedia of Applied Mechanics*, New York, 1880: ♦The method of casting bells employed by Messrs. Meneely & Co. of Troy, N.Y., is shown in Fig. 309. In the upper case is made the outside mould of the bell, and upon the lower the inside mould. The material of the mould is a porous clay loam, put on from one to three inches in thickness, according to the size of the bell. The proper shape and finish is given to it by means of sweep-boards, cut respectively to the shape of the outer and inner vertical sections of the proposed bell, and which are made to revolve upon a center representing that of the bell, fixed in the center of the cases. Before the clay is put on the inner mould case it is wrapped with straw-rope, which, becoming charred with the heat when the bell is poured, permits it to shrink in cooling without straining. The perforations in the cases serves to make the clay more firmly adhere to them, and also to vent the mould. In the old method of casting, the moulds, being entirely of clay, were necessarily packed about with sand in order to withstand the pressure of the metal, and the confined air within not entirely escaping would cause a porous casting, or, being converted into an inflammable gas, would take fire and explode. In using these cases, the bell is poured above-ground, and whatever gas may be generated in the mould permeates through the clay and burns off at each hole in a pale jet of flame, thus being entirely removed.♦

The next illustration shows the two flasks clamped together for casting, with a section removed to show the inner arrangement. This manner of casting bells in perforated metallic flasks was conceded to be the greatest modern improvement in the manufacture of bells. It was invented, patented, and first introduced by the Meneely Bell Company. It rendered the vibration perfect and more lasting, and produced from the bell not only the greatest amount of sound of which the metal is susceptible, but that which is richest, most



musical and most agreeable.

### The Care of Historic Bells

The many owners of historic bells made in the Greater Troy area frequently inquire of the Hudson Mohawk Industrial Gateway about the best way to care for an old bell. Many of those inquirers have one or the other or both of two very mistaken notions about these old bells. One, many think that an old bell should be polished back to its original sheen. This is a mistake, known as **skinning** the bell, and it removes the protective patina from the outside surface of the casting. Two, many think that a secret layer of gold or silver was added to the bell to make it **sound better**, and therefore the bell is possessed of much very valuable metal that could be retrieved if it were melted down. This is a myth. The bells made in the Greater Troy area were almost always composed of 78 per cent copper and 22 per cent tin. Occasionally, some rings or buttons or other heirloom items were melted in for sentimental reasons, but never in such quantities that they significantly affected the composition of the bell.

The best way to care for an old bell is simply to wash it carefully with mild detergent and a cloth, a sponge, or a very soft brush.

Papers of the Meneely Bell Company of Troy repose at the Hudson Mohawk Industrial Gateway, Burden Iron Works Museum, Foot of Polk Street, Troy, NY 12180-5539, and at the Rensselaer County Historical Society, 57 2nd Street, Troy, NY 12180. The papers of Meneely & Company of West Troy (Watervliet) are also at the Rensselaer County Historical Society. Thanks to the following for their assistance: Gene Burns, P. Thomas Carroll, Joe Connors, Lynn Grice, Dan Meneely, Bill Skerritt, and E. F. C. Somerscales.

### Chronology of the Four Bell Firms

HANKS

Benjamin Hanks◆ 1808

Julius Hanks◆ Gibbonsville◆ 1808-1825

Troy◆ 1825-1834

Oscar Hanks◆ 1834-1845

## WATERVLIET MENEELY

Andrew Meneely◆ 1826-1836, 1841-1849

Meneely & Oothout◆ 1836-1841

Andrew Meneely & Son◆ 1849-1851

Andrew Meneely◆s Sons◆ 1851-1863

E.A. & G.R. Meneely◆ 1863-1874

Meneely & Co.◆ 1874-1951

## TROY MENEELY

Meneely & Kimberly◆ 1869-1879

Clinton H. Meneely Bell Co.◆ 1879-1902

Meneely Bell Co.◆ 1902-1951

## JONES

Jones & Hitchcock◆ 1852-1857

Jones & Co.◆ 1857-1887

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[1]The Hamlet of Gibbonsville became part of the Village of West Troy in 1836, and that in turn became part of the City of Watervliet in 1896.

[2] This claim has to be carefully qualified. Andrew Meneely & Son has a prior claim, having cast a chime of 9 bells in 1850. These bells were exhibited at a fair of the American Institute in New York. A gold medal was awarded. There is no record, however, that these bells were ever hung. Therefore, the Jones claim, made later in the century, included the wording *now existing* in its specification.

[3] A *peal* is a set of swinging bells, usually 3 or 4 in number, tuned to the first, third, fifth and, if included, the eighth of the musical tones of the major scale; a *chime* denotes a set of 8 or more stationary bells, with a popular combination being 10, tuned to the intervals of a major scale, and played by some kind of apparatus for hand or electric chiming; a *carillon* is a highly developed and elaborate chime of at least 23 bells having at least 2 octaves (often 4 octaves), with all the sharps and flats, suited for complicated harmonies as well as simple melodies.

[4] One of the bells in this chime, weighing 550 pounds, was found to be in the wrong key, and Jones & Co. was called upon to recast it.

[5] In 1870, Mr. T. A. Tillinghast of Troy wrote: ♦In handing you a check for the Chime of eleven Bells placed by you in the tower of St. John♦s Church of this city, I desire to convey to you the entire satisfaction that is felt not only by the donors and congregation, but the citizens generally. They are pronounced very sweet in tone, and delight all who hear them♦ (*Meneely & Company, Bell-Founders, West Troy, N.Y. (Opposite Troy)*)♦ [n.p.: Weed, Parsons and Company, Printers, 1874], p. 62).

[6] From Spon♦s *Dictionary of Engineering*.