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"The Old South Church, too, still pointed its antique spire into the darkness, and was lost between earth and Heaven; and as I passed, its clock, which had warned so many generations how transitory was their life-time, spoke heavily and slow the same unregarded moral to myself."

Nathaniel Hawthorne,
"Twice-Told Tales," 1837/1842

The Clock and the Bell at the Old South Meeting House

by James Storrow (NY)

This article describes the 2009 restoration of the clock at Old South Meeting House, Boston, and the 2011 installation of the Old South's fourth bell. This material was taken directly from a small-format booklet written and designed by James Storrow, and effort has been made to capture the style of that very well-designed booklet. As you read this article, keep in mind that James intended this text for general readers, not the *W&C Bulletin* readership. Although James suggested "judicious cutting" to remove that which might seem "pompous, pendantic, or even insulting to your readers," the original, beautifully written text is presented here.

The Clock

Town clocks, though technologically obsolete and generally ignored today, were once both significant public investments and important local landmarks. A town clock would be placed in the most prominent location possible, to be seen and heard by the greatest number of citizens. They were also the very highest quality available; since medieval times town clocks have been objects of considerable local pride. By regulating all other clocks, the town clock regulated the town itself; the ticking of the town clock was a town's heartbeat.

Notions of separation of church and state notwithstanding, church steeples were frequent homes for town clocks; their architecture and their locations made them ideal for such installations; so it was at Old South Meeting House in Boston.

The Old South steeple had always been intended to house a clock, but it was more than 40 years—the building was built in 1729, but the clock was not installed until 1770—before it finally got one. It still has that clock, believed to be the oldest tower clock in America still at work.

The Bell

Church steeples often have a bell. In addition to conventional church purposes, when there was a clock such a bell would also often sound the hours. Such bells were also used for fire alarms, to call the citizenry to meetings, and for a surprising variety of other civic purposes. Tax monies were actually expended to have the bell at Old South rung at five in the morning, at 11 in the morning, and at nine at night: "conducting materially to the order and regularity of our movements. ... The proper ringing of the bell at the time mentioned [9:00PM] is of great importance to the comfort, order, and even to the morals of this metropolis" (H. A. Hill, *History of Old South Church*, 1889).

Old South had a bell long before it had a clock; in fact, it's had three bells. In its first building, Old South had a bell dated 1669; both building and bell are now long gone. Its second building (the present 1729 structure) got a new bell in 1731, but that bell broke in 1815 while being struck for a fire alarm. A third bell was promptly procured and it remained at Old South until about 1875, when the Old South congregation moved to its magnificent new home at Copley Square.

For the last 136 years the Boston town clock at Old South Meeting House has been silent.

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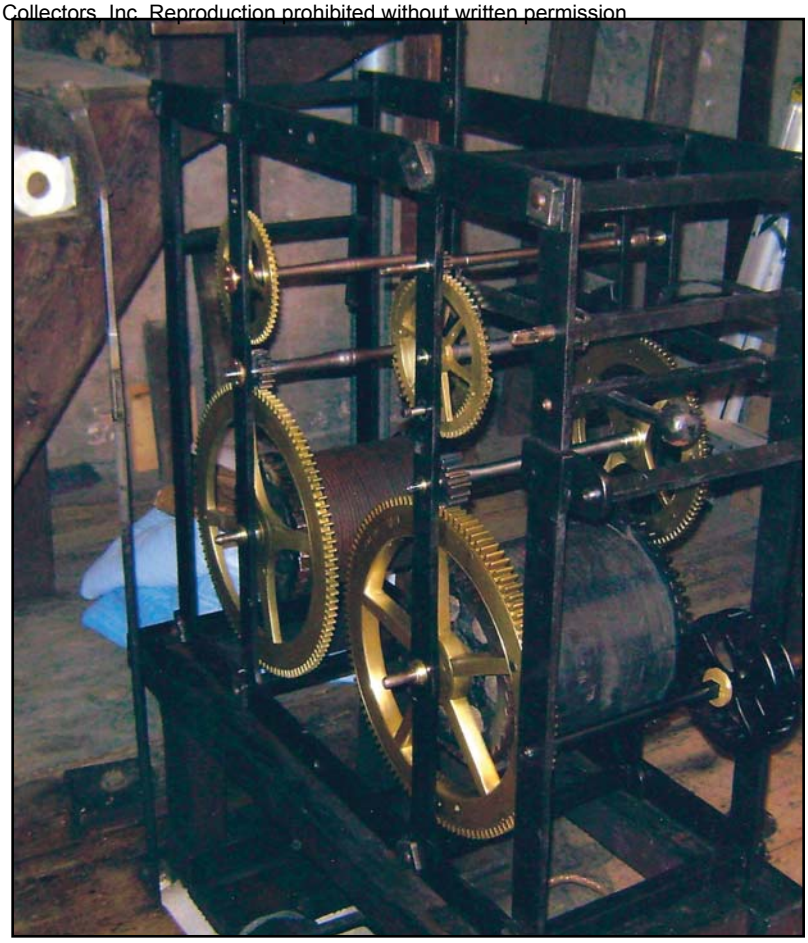
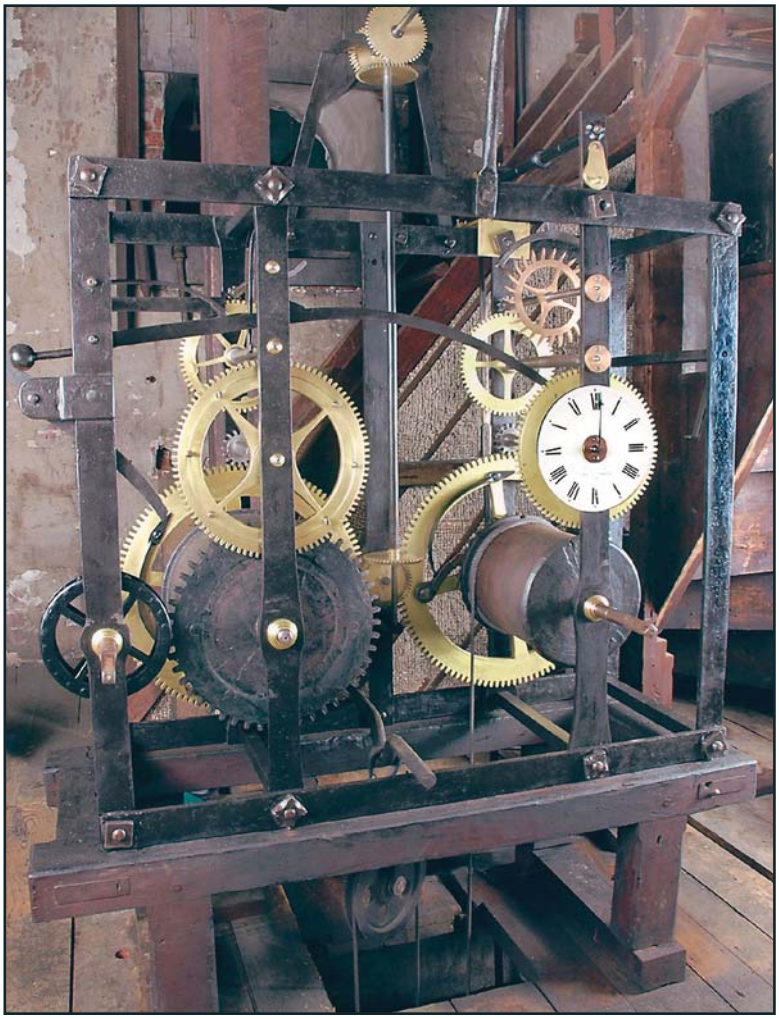
The clock was made in Boston, specifically to go in Old South, by English immigrant Gawen Brown (b. 1719–d. 1801). It is signed and dated 1766 (see facing-page photo). At right it is shown restored but only partially assembled. It is about three feet wide, three feet high, and a foot and a half deep. The large winding drums are made of wood, the frame is iron, the arbors (axles) and pinions (small connecting gears) are steel, and the major wheels are brass.





At left the clock is shown more completely assembled. The winding squares are visible in front, and the cable for the time side weight is hanging through a hole in the floor. There are two weights to wind each week: one for the time (180 pounds, reduced to 60 through pulleys) and one for the strike (230 pounds, reduced to 115 through one pulley).

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Mr. Brown came to Boston in about 1749 and set up a shop where he made clocks and watches and sold imported goods.

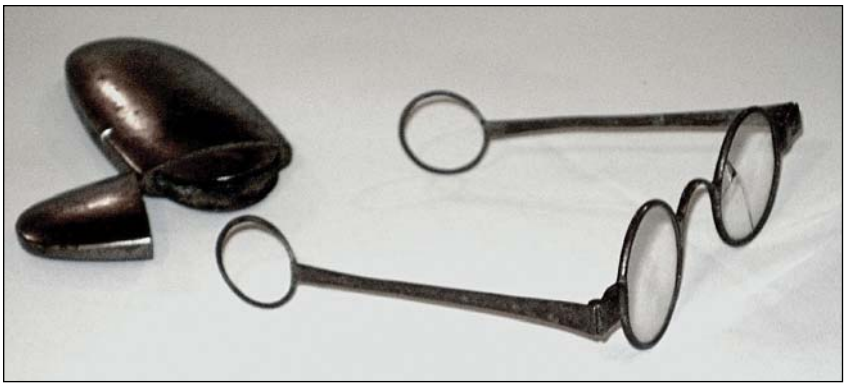
Imported from LONDON, *and Sold by*
GAWEN BROWNE,
Clock and Watchmaker, below the Exchange in Kingstreet Boston.

A Variety of new Silver Watches, and some double gilt Pinchback Watches, Stone Seals set in Silver, curious Pinchback Seals, with a great Assortment of common Seals, Watch Keys &c. Likewise all Sorts of new Clocks either repeating or plain at the lowest Prices.

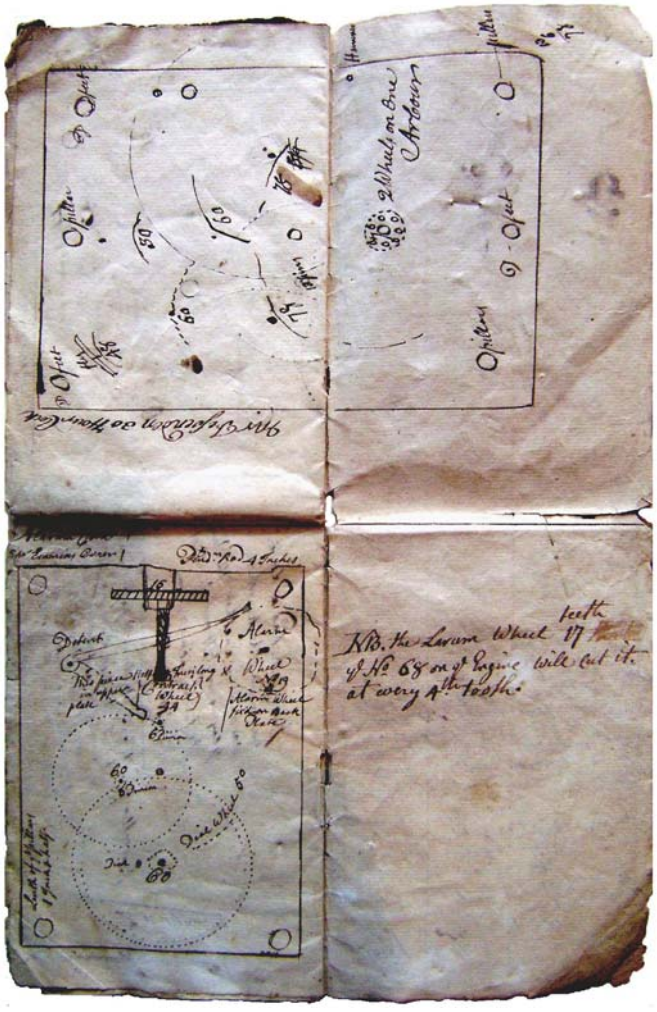
Boston Gazette JUNE 6, 1752

King Street, where Mr. Brown's shop was located when he placed this ad, is just two blocks from Old South Meeting House. Mr. Brown must have seen Old South's empty tower every day.

"King Street," was its name during colonial times. After the revolution it became "State Street."



We will all leave traces of our time on earth: descendants, letters or books or music we've written, personal items we've owned or used, houses or bridges—or clocks—that we've built. A somewhat unexpected artifact to have been kept all these years is shown above: Mr. Brown's glasses and their iron case, from the collection of the Bostonian Society.



The Massachusetts Historical Society has what Mr. Brown referred to as his "Calibre Book," not really a book at all but a collection of 32 pages of his handwritten notes with dates from the 1750s (left). Although it predates the tower clock, it nonetheless gives an interesting look into what a 35-year-old clockmaker thought important in 1754.

In addition to the expected wheel diameters and tooth counts, profiles of clock hands, and notes of the effect of temperature on various materials, the "Calibre Book" also includes the themes of all the 26 sermons delivered by George Whitefield, a hugely famous English itinerant preacher, one of the founders of Methodism, who came on a crusading visit to Boston in 1754.

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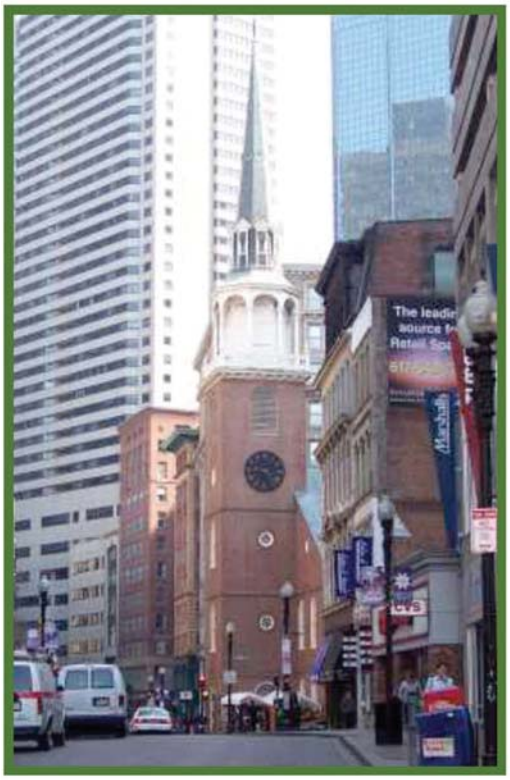
Gawen Brown made clocks and watches and sold imported goods. Today, clocks with his name on them can be found in museums and prestigious collections across the country, and when they come up at auction, they are highly prized.

His signature can be found on the particularly beautiful tallcase clock in the Old State House in Boston (shown on the facing page).

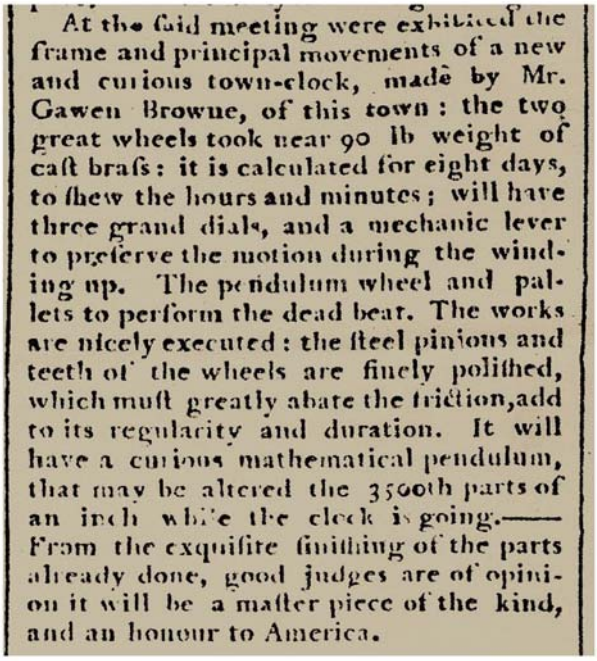


Old South Meeting House, built in 1729, had a bell and included a place for a clock, but until Mr. Brown, acting as a private individual and entrepreneur, made this machine it did not have a clock.

The clock was exhibited in Faneuil Hall in 1768 and was installed at Old South in 1770, where it has been ever since; it is thought to be Mr. Brown's only tower clock. Mr. Brown made and imported clocks and watches for the well-to-do, fought in the Revolution, and had three wives and 13 children.

The watch shown at left, from the Massachusetts Historical Society, has Mr. Brown's name on it in three places. Notwithstanding, it is believed to be an English-made import. It is a "pair case" watch, meaning that it has an outer case (not shown here) that protects the inner case.

In 1768 much of the clock, which was apparently still unfinished, was shown to the public at Faneuil Hall, as described in the *Boston News-Letter* of March 17, 1768, shown at right.



At the said meeting were exhibited the frame and principal movements of a new and curious town-clock, made by Mr. Gawen Browne, of this town: the two great wheels took near 90 lb weight of cast brass: it is calculated for eight days, to shew the hours and minutes; will have three grand dials, and a mechanic lever to preserve the motion during the winding up. The pendulum wheel and pallets to perform the dead beat. The works are nicely executed: the steel pinions and teeth of the wheels are finely polished, which must greatly abate the friction, add to its regularity and duration. It will have a curious mathematical pendulum, that may be altered the 3500th parts of an inch while the clock is going.—— From the exquisite finishing of the parts already done, good judges are of opinion it will be a master piece of the kind, and an honour to America.

The word "curious," as used above right and in Mr. Brown's advertisement shown earlier, presumably used an obsolete meaning for the word, given in the *Oxford English Dictionary* as "careful or elaborate workmanship, perfection of construction."

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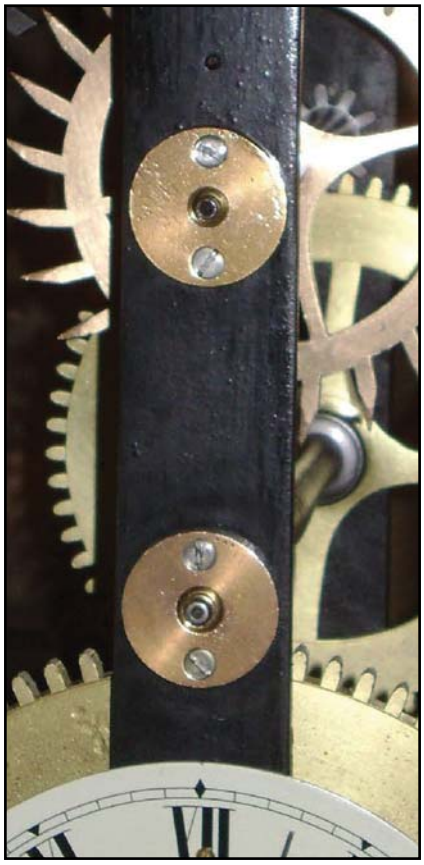
Curious Mechanical Features of This Curious Clock



You will see brass rings around the ends of the steel axles where they are held in the vertical iron bars. These brass rings are called bushings, and they reduce friction, a clock's worst enemy. In this clock there are two styles of bushings: the original style on the left and some later replacements on the right. The newer style has the advantage of being removable, allowing individual wheels to be removed without having to disassemble the entire clock. A careful look throughout the clock reveals that almost never does steel work against steel, or iron against iron, or brass against brass; it is almost always one metal working against another.

Although of different sizes on the different sizes of wheels, the teeth are all one shape—all, that is, except on what is called the "escape wheel," the one wheel on this particular clock that is of a different, slightly reddish, color (see above). Believed to be a later replacement, note the pointed shape of these teeth; only the very tips of these teeth are used.

This is the business end, the beating heart, of the clock. As seen in the picture above, the pull of the weight makes the escape wheel want to turn clockwise; this is prevented by the steel foot that it is shown touching. That foot, being attached to the pendulum, swings back and forth, into and out of the way of the teeth of the wheel. There is another foot attached to the other side of the pendulum, and thus as the pendulum swings back and forth, the red wheel is allowed to "escape," one tooth at a time. This makes the ticking sound and is the way the pendulum is kept in motion, the way the falling weight drives the pendulum.

Mechanically, this clock is described as a time-and-strike (meaning that it tells the time and strikes a bell), birdcage (the style of the frame), and deadbeat, meaning the type of escapement, the assembly that makes the ticking sound. It has a particularly long pendulum—88 inches—presumably based on the theory that the longer the pendulum the more accurate the clock. (A standard grandfather clock has a 39-inch pendulum.)

The clock, when freshly cleaned and serviced, keeps remarkably accurate time; when it was new, according to a newspaper article (*The Boston Gazette and Country Journal* of April 16, 1770) it "goes with such regularity and exactness, that for this 14 weeks it has not lost but two minutes of time."

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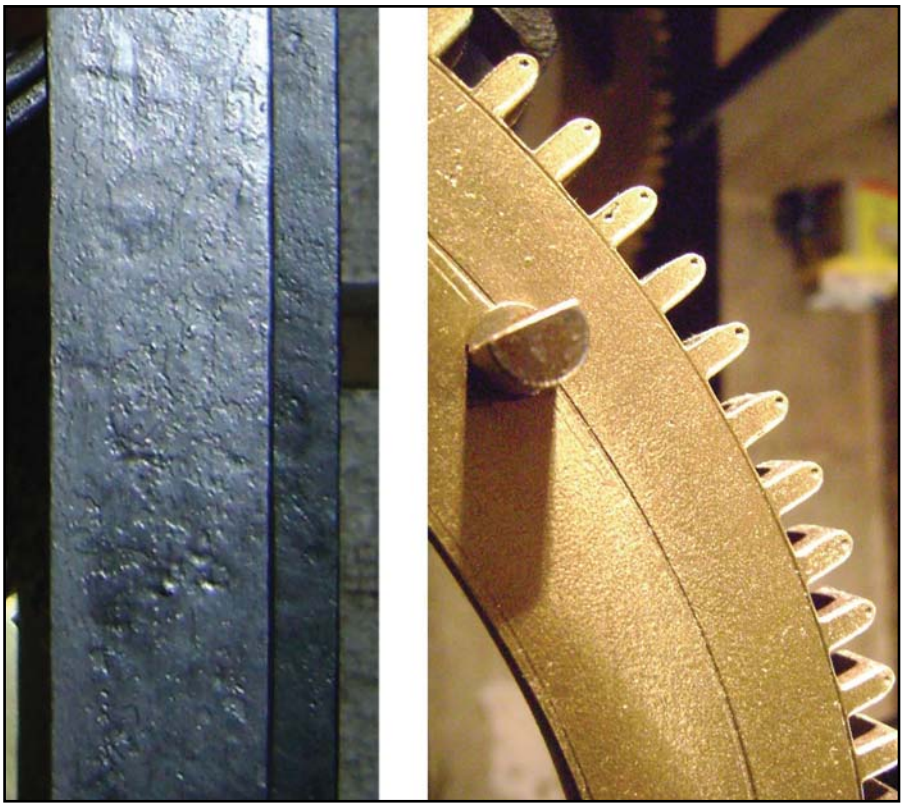
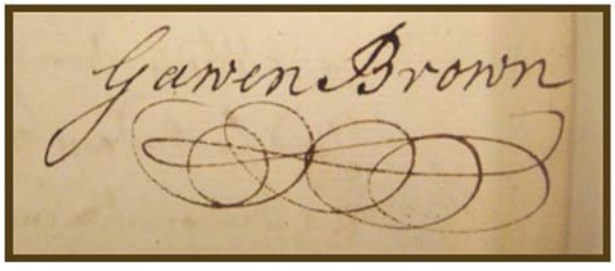
Many clocks actually run backward as they are being wound. Thus, if it takes a minute to wind a clock, as it does here, unless you adjust it every time you wind it, the clock is automatically two minutes slow every week. In modern life this would not matter: a glance at a quartz watch or cell phone or turning on the radio makes correction easy, but not so in 1766. To solve this problem, this clock has what is called "maintaining power," which in this case is this rather crude mushroom-shaped lead weight that serves as a temporary auxiliary power source to keep the clock running forward as it is being wound.



Look carefully at the surfaces of the iron straps above left; the roughness of such surfaces hint at the hand forging and hammering that went into making them.

In addition, on a couple of the wheels, if you examine the tips of each tooth you will see a little dot. These dots were how the wheel was initially laid out and how the teeth were spaced; once the dots were punched on the wheel blank, Mr. Brown (or an apprentice) would have hand cut and filed each tooth using that dot as a center for the curve at the tip of each tooth. No modern clock would have such marks.

Any clock of this age will have had a multitude of hands working on it over the years. Perhaps as a matter of pride this clock has the names of at least six different clockmakers on it. An easy glance will show you Mr. Brown's name and three others; a more careful look elsewhere will reveal more. The one-hand setting dial on the clock (see page 135), which indicates the minutes only, is a modern replacement and has the name David Hochstrasser, the man who restored the entire clock in 2009; yet another clockmaker's name is on an entirely hidden surface. Aaron Willard Jr.'s name is one of those on the locking plate shown at right; he was one of the clock's early restorers.



For most people the epitome of a tower clock is Big Ben in London. Without intending any disrespect, it might be noted that Gawen Brown's clock was already a hundred years old when Big Ben began ticking in 1858. (Big Ben is actually the name of the bell, not the clock.)

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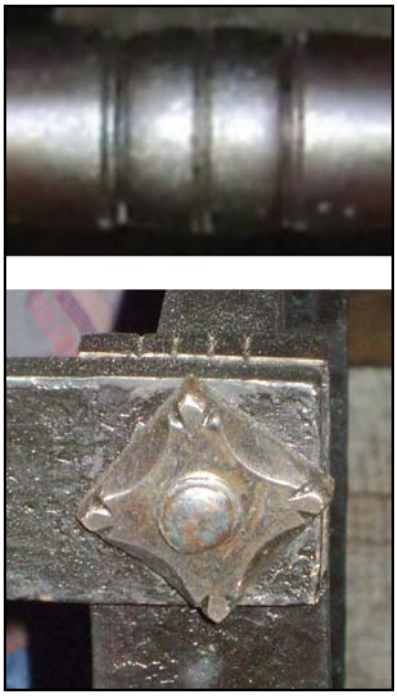
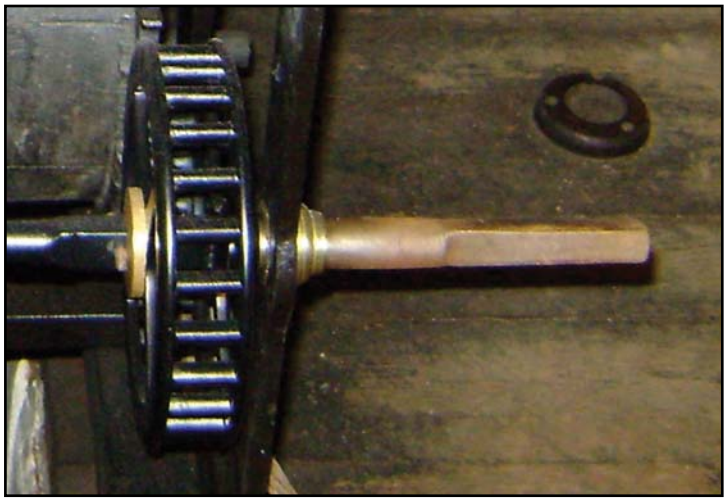


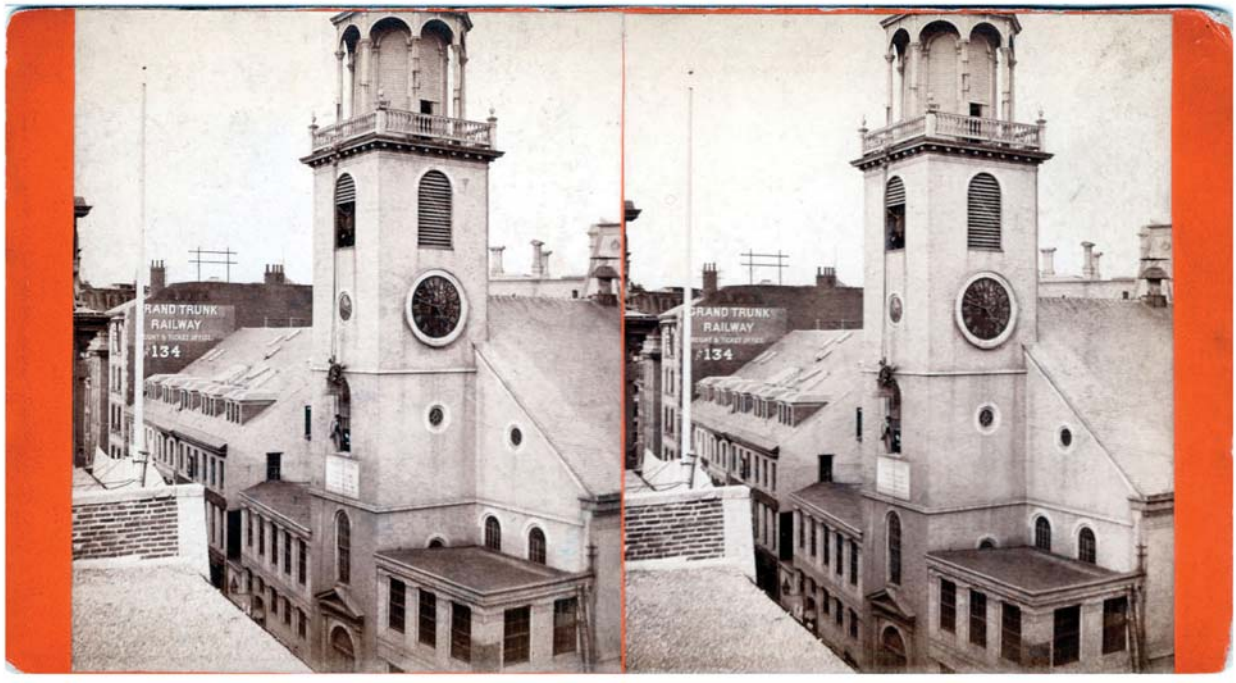
It being locally made was probably also quite helpful: the quality of the clock, it was asserted, would be "an honour to America."

There are unexpected ornamental touches that give elegance to what is essentially a utilitarian machine. Why were they put there, when virtually no one would ever see them?

Presumably, because once Mr. Brown made the clock, he still had to actually sell it. Toward that end in 1768 it was put on public display in Faneuil Hall and was spoken of in the press as being "superb" and "stately" and described as the "exquisite finishing of those parts already done."



One of the more curious pieces in this clock is this peculiarly shaped wheel (above), called a "winding jack." Note that it is on one of the "winding squares," the places where one puts the winding key. (There are two such places on this clock; this is on the strike side.) The use of the winding jack makes it much easier to wind, much like using low gear on a bicycle as you are climbing a hill.



When this clock was installed, there was a bell upstairs that the clock would strike each hour. The last bell (this building has had two) was removed about 1875, as shown in this stereograph from the Bostonian Society. The result was that the striking mechanism of the clock had been neither needed nor consequently serviced since. As part of the 2009 restoration it was decided to restore the entire clock, including the strike side. When the clock was disassembled, the entire room was filled with a pungent and distinctly unpleasant organic smell; it is believed that this was produced by rancid—very, very rancid—whale oil.

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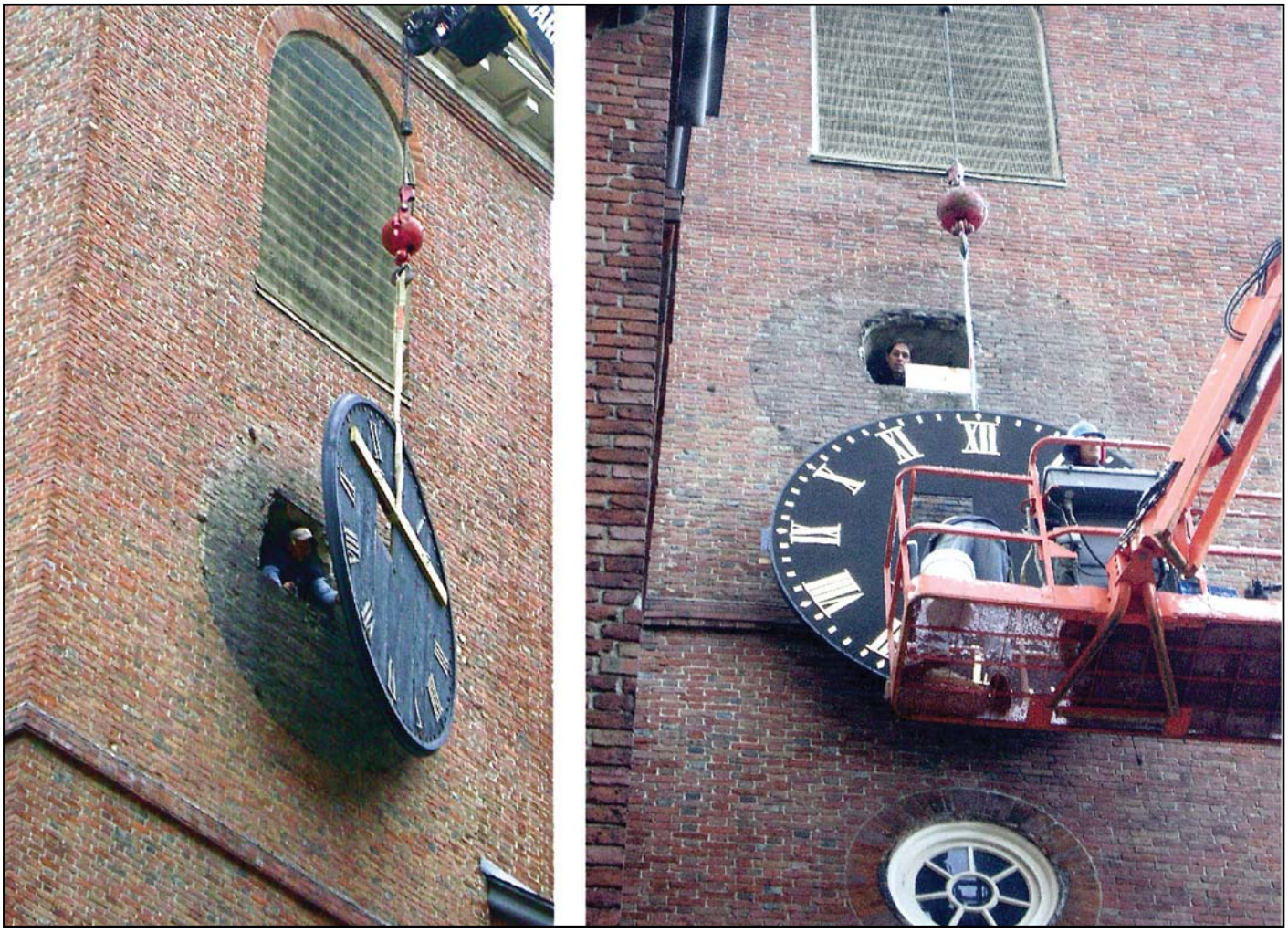
It may be hard for modern minds to realize, but time was once a public amenity—something that was expected to be supplied by the public authorities for the public good—much as we today might think of water supply or fire departments or roads. This clock was just that: a public service, an official town clock, bought and maintained with public monies. It should be remembered that when this clock was made, the mass production of clocks was several generations in the future. Although wealthy Americans of this period might own a clock (one recent estimate suggests that when this clock was made only one person in 250 did), absent the correct time being given by a public clock such as this, most Bostonians would have had to rule their lives by the tides, the seasons, the sun, and the moon.



As part of the 2009 restoration of the clock, it was determined that both dials were in pressing need of attention. Accordingly, early on a Sunday morning in late August (the only time the busy streets around Old South could be closed) the dials came down.

The dial shown on the left was found to be beyond repair and had to be replaced; the other dial was restorable. All the bezels and hands were also replaced. On another quiet Sunday morning in December 2009 the dials went back up.

When the new hands were installed a week or two later, the restoration of the time side of the Gawen Brown clock, the "curious" Gawen Brown clock, was complete.

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The Bell

The Old South Church tower clock was made to strike a bell every hour, and it did so for many years.

In fact, this building had a bell long before Mr. Brown's clock arrived, one donated by the estate of Timothy Cunningham, described as "a brisk likely young man" who died at sea in 1728.

The Cunningham bell was in use from 1731 until 1815 and was struck for religious and various civic purposes: fire alarms, important deaths, news, certain tea parties, etc. Once the clock was installed in 1770, it was also struck every hour; the Cunningham bell was a hardworking bell.

But it broke in 1815 while being rung for a fire alarm, and its metal was sold for 19 cents a pound.

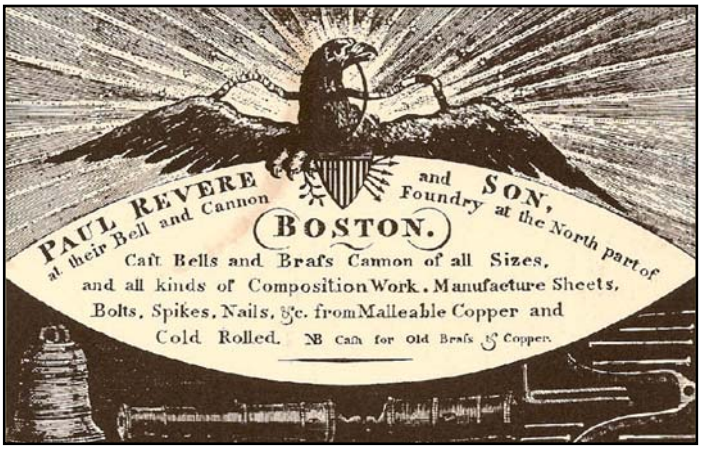
It was soon replaced by a new bell cast by a man named Thomas Mears at what is now the Whitechapel Bell Foundry in London.

The Whitechapel bell rang until about 1875. When the Old South congregation moved out of the building, that bell was removed and is now lost. Thus, other than ticking and tocking, the clock has been silent for 140 years. For this to be a full restoration, a replacement bell had to be found.

There is an aftermarket for old bells and a surprising number of them are available. But to put just any used bell in Old South Meeting House seemed to insult the dignity of both the clock and the site.

Thus, discussions were entered into with Whitechapel Bell Foundry in London. It was thought the resonance of the new bell might be increased, historically if not acoustically, by having it made by the same firm as the now-lost bell. Founded in 1570, Whitechapel prides itself on being the oldest manufacturing entity in Britain.

In May of 2009, Brian W. J. LeMay, president of the Bostonian Society, revealed that the former First Baptist Church in Westborough, Massachusetts (a town about an hour west of Boston), had closed in 2007 and its bell was available. This bell was not just another used bell, but a true rarity: it was cast by Paul Revere.



Revere, of course, is best known for his "Midnight Ride" made famous in the poem by Henry Wadsworth Longfellow. Many people also know he was perhaps the finest silversmith in the colonies. Less well known is that he founded the first copper mill in this country, rolling the sheathing for the *USS Constitution*. He is also noted for his engravings; perhaps his most famous is called the "Boston Massacre of 1770," the first bloodshed of the American Revolution, which happened just a few blocks from Old South Meeting House.

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But few people know that in 1792, at his foundry on Lynn Street, where he had been casting cannon, braces, and pintles and "all kinds of composition work," at the age of 57 Revere started yet another career: casting church bells.

At least 23 church bells remain that Paul Revere himself was involved in casting before his retirement in 1811. The Westborough bell is one of them.

A Paul Revere bell seemed a natural, compelling, even a resonant fit for Old South Meeting House.

Accordingly, in June of 2009, an offer was made to the board of the now-closed Westborough church to buy its bell.

PAUL REVERE & SONS,
At their BELL and CANNON FOUNDRY,
At the North-part of Boston, N. E.

CAST and finith BELLS and brafs CANNON, of any fize or weight, equal to any imported.

They Manufacture, and keep ready for fale, BOLTS, SPIKES, NAILS, &c &c—drawn from malleable copper, and cold rolled, equal to the Britifh manufacture.

All kinds of COMPOSITION and BRASS WORK, caft at the fhorteft notice.

BRACES and PINTLES, SHEATHING NAILS, SHEVES, Windlafs and Mill BOXES, COGGS, &c &c

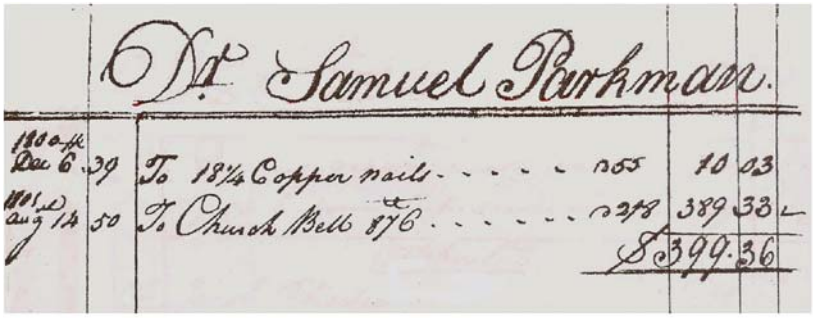
N. B. Cafh given for old Copper and Brafs. jan 14

CHURCH BELLS.

PAUL REVERE & SON,
At 13, Lynn Street, North End, BOSTON,

HAVE conftantly for fale CHURCH and ACADEMY BELLS, of all fizes, which they will warrant *equal* to any made in Europe, or this *country* From perfonal information obtained in Europe, and twenty years experience, they are affured they can give fatisfaction, and will fell, on as good terms, as they can be imported for, or obtained in this country

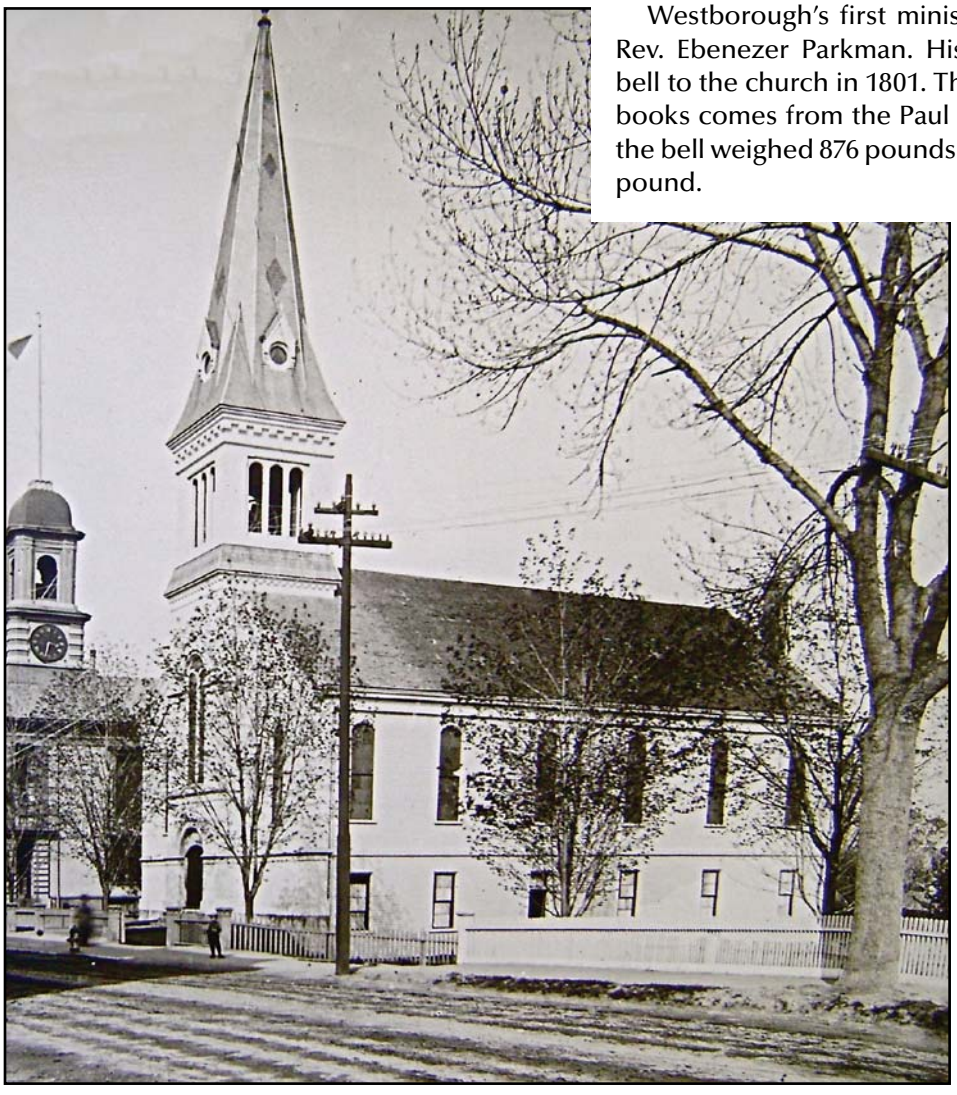
Boston, May 7, 1807. (79.6m.)



Mr. Samuel Parkman.

1800 Dec 6	39	To 18¼ Copper nails	365	10 03
1801 aug 14	50	To Church Bell 876	2/8	389 33
				£399.36

Westborough's first minister, who began his work in 1724, was Rev. Ebenezer Parkman. His son, Dr. Samuel Parkman, gave the bell to the church in 1801. This entry (above) in the Revere foundry books comes from the Paul Revere House in Boston; it shows that the bell weighed 876 pounds and was sold for 2 shillings 8 pence per pound.



The Westborough bell has led a surprisingly varied life. Cast just a few blocks from Old South Meeting House, Dr. Parkman originally ordered it for the First Congregational Society in downtown Westborough, which added a steeple to accommodate it. That building is now gone.

For a time the bell was rented to the Baptist Society in Westborough, which later purchased it and placed it in their 1850s church (left). It remained there for the next 150 years.

But even then its life was not without incident.

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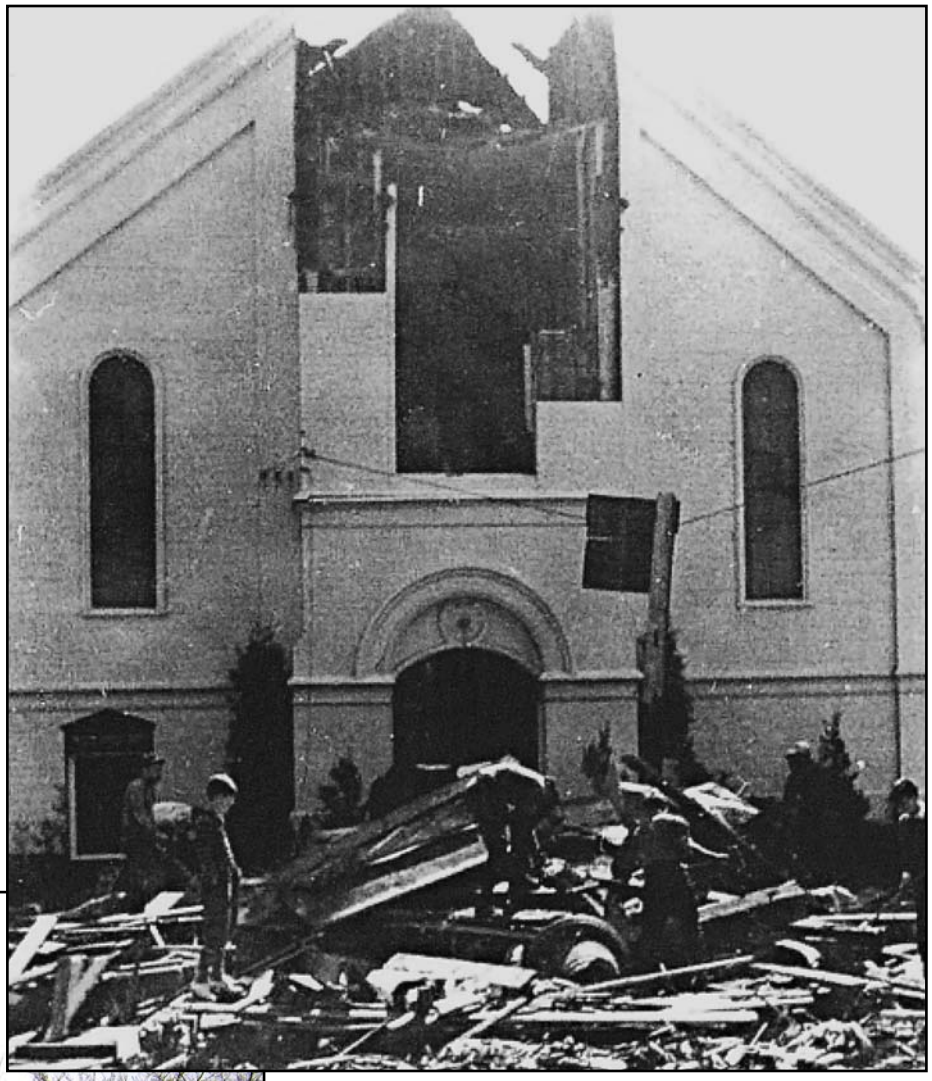
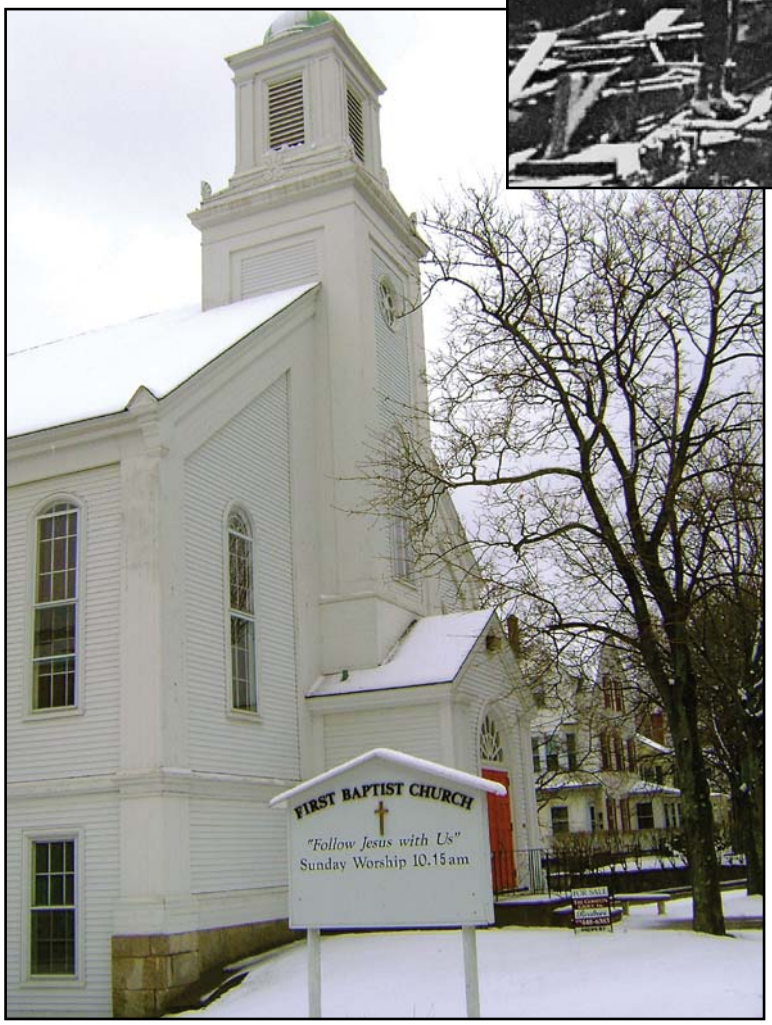
In September of 1938 a truly massive hurricane hit New England; to this day it is still considered New England's worst. It killed about 750 people, destroyed 57,000 homes, and caused close to five million dollars (in 1938 dollars) in damage.

Among its many casualties was the steeple of the First Baptist Church.

Mr. Revere's bell can be seen in the rubble in the foreground in the photo at right. Despite its fall it was undamaged.





In a somewhat truncated form the steeple was rebuilt and the bell was returned.

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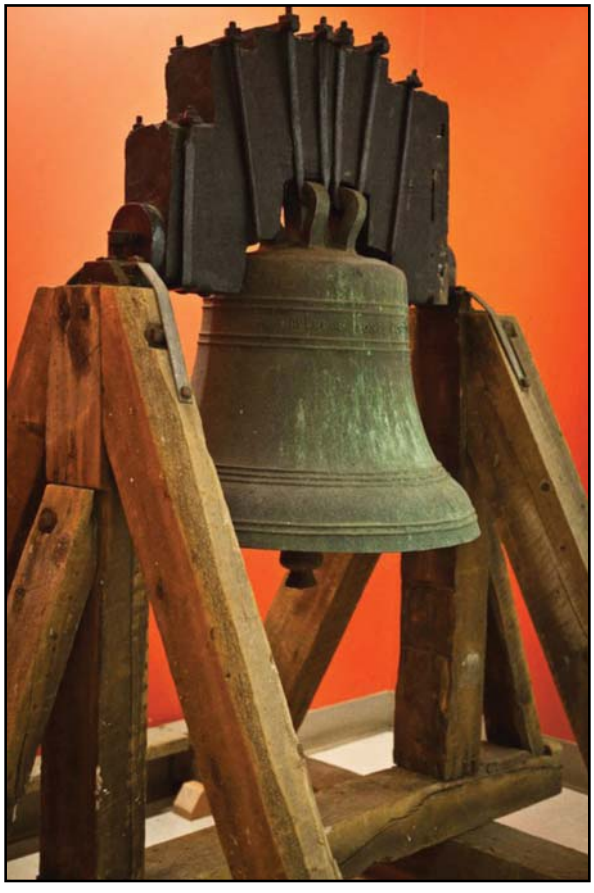
In May of 2011, two years after the initial offer was made, the trustees of the church finally agreed to sell the bell to Old South, and preparations were made to remove it.

In late June of 2011 the bell was put on display at Old South while the belfry was prepared to receive it. The tower had not held a bell for many years, and some restoration work was required. In 1872 a colossal fire had burned much of downtown Boston. Old South itself was only barely saved by citizens placing wet blankets on the roof. In a later fireproofing effort, brick walls and windows were placed behind the louvers; as there was no bell to ring, there was no concern about sound.



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The original wheel that activated the bell was presumably destroyed in the hurricane of 1938. Its 1939 replacement, unpainted and essentially out in the weather for 80 years, was considered unusable. Old South board member Jeff Makholm created the new wheel.

Bill Parrett of Northland Restorations, who had supervised the removal and replacing of the dials, was also in charge of the installation of the bell.

Once the belfry was reopened on October 16, 2011, in a public event filled with music and bombast, by bells and crowds and cookies and choirs, the bell was raised to the strains of "The Battle Hymn of the Republic."

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Above, the bell finally in place in the tower of Old South. It was first pealed on November 20, 2011, and the clock first struck it officially on January 12, 2012. The town clock of Boston had at last regained its voice, and its voice was Paul Revere's.

Factum est.

About the Author

James Storrow wrote, "Along with a number of my friends (all long-suffering victims: George Blanchard, Jim Capralos, Bill Crawford, Aubrey Kinney, Mel Smith, among others) I have been involved with the restoration of a number of tower clocks: an 1840s Smith clock in Springfield, MA; an 1890s Howard in Pine Plains, NY; an 1870s George Stevens in Ossining, NY (which has the wonderful-but-difficult Crane "walking escapement" on the strike side); and our first, done now almost 15 years ago, a truly singular 1872 Charles Fasoldt clock in Newburgh, NY, the last of his clocks left where Mr. Fasoldt put it. Although born in Boston, I left as a teenager and only returned to do the conventional tourist sites some 50 years later. That was when I first saw the Old South tower clock, all silent and still, and that was when this particular four-year snowball first began rolling."

See page 169 this issue for the In Memoriam in honor of James Storrow (1948-2013).