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A PRELIMINARY REPORT:
CHRIST CHURCH BELL TOWER

BY: CHARLOTTE WORSHAM

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DRAFT

Old North
Box

The brick Christ Church was built in 1723 as the second Anglican church in Boston. In 1740, the wooden spire was completed, crowning the tower on the west end of the structure.

In 1742, Abel Rudhall of Gloucester, England was contracted to furnish the tower with a ring of bells. He recommended eight bells with a tenor of approximately 14 cwt as appropriate for the brick tower. The bells were cast in 1744, the first ring cast for North America, and arrived in Boston in the early summer of 1745.

Rudhall had intended to send a bell-hanger with the bells, but as the man was unable to attend at the time of shipping, Rudhall sent a model of the frame and written instructions for installing the headstocks and wheels and recommended the services of a Philadelphia bell-hanger. No traces of the model or the instructions exist today.

The bells have rung full circle infrequently since their installation in the mid-eighteenth century. Early records are vague; however, in 1750 a band of ringers were formed. How regularly the bells were rung during the remainder of the eighteenth century is uncertain. "The Geographical Gazeteer of the Towns in the Commonwealth of Massachusetts" refers in 1784 to a ring of eight bells at Christ Church, indicating a familiarity with method ringing terminology. The city arranged for the "repair" of the bells and the

ringing of a peal on the occasion of Lafayette's visit to Boston in 1824.²

Throughout the remainder of the nineteenth century, the bells were chimed in melodies. It is important to note that while the bells have not been rung full circle for much of their life, they have been regularly chimed from 1750 to the present.

Proprietors' minutes for March 31, 1841 indicate that arrangements were made with Henry N. Hooper, E.W. Snelling, and Samuel Aspinwall to repair the bell frames and "put them in complete ringing condition, they paying all expenses and repairs."³ In a 1904 article relating the history of the bells and their re-hanging in 1894, Dr. Arthur H. Nichols, who was active in the revival of change ringing in Boston at the turn of the last century, recalled watching as a child when the bells were lowered to the ground to facilitate "the renewal of their cage and wheels" in 1847.⁴ The proprietors' minutes for May 4, 1848 reveal that after the major rebuilding of the steeple in the fall of 1848, Judah Sears, also contracted to install a new bell frame and deck, and the chiming apparatus was replaced.⁵ Prior to this, the committee for repairs to the church reported that their investigation of the tower found the timbers of the old frame to be rotten at the ends and recommended a new frame, deck, and timbers and an "Asphaltum" covering for the deck, "although an article of considerable cost, the Committee trust that it will prove the most economical covering that could be placed in that very exposed situation."⁶

"In 1894 the bells were completely overhauled and supplied with new headstocks, baldricks, ground-trucks, stays and sliders, but the original gun-metal brasses . . . were found as perfect as when made, and are still

in use." ⁷ However, in 1912, the old brasses were replaced and the bells ⁸ apparently re-hung in new headstocks and fittings. ⁹ After the 1894 re-hanging, the bells were rung irregularly. A lack of trained ringers and frequent complaints from neighbors curtailed consistent ringing, although scientific ringing was practised as late as 1919, when a "touch" was rung to celebrate the armistice -- a month late because two of the ringers were in the army. ¹⁰

In an 1895 article on the Christ Church bells by American church architect ^{Critic of} Ralph Adams Cram, it is implied that the 1894 re-hanging was necessary in order to resume ~~ch~~ringing at Christ Church. He infers that the bells had last been re-hung in such a manner as to prevent their swinging full ¹¹ circle in the bell pit. An article in the Boston Post on February 13, 1894 states that for "many years the wheels have been confined by planks nailed ¹² down to the adjacent beams." Minor adjustments at the time of the 1894 re-hanging made possible the continued use of the existing frame.

The form of the present frame is similar to type V in Figure E, page 34 ¹³ of The Towers and Bells Handbook. The positions of the bells are shown in the axonometric drawing (see attachment). The 1847 "asphaltum" deck beneath the frame slopes down approximately eleven inches in fifteen feet from south to north. The frame is supported by blocks of graduated heights. The two-inch random width splined decking is supported on joists mounted at graduated heights above a "grillage" of two sets of four foundation timbers set perpendicularly to each other. These transmit the forces generated by ringing to the tower walls along both horizontal axes. Tie-bolts extend from the frame heads to the sills; an additional seven modern tie-bolts attach the top of the sill to the foundation timbers. Three early tie-bolts

now extend past the frame and through the decking only. The distance from the bottom of the sills to the top of the foundation timbers is approximately two feet. It would seem likely that the original frame sat on a level deck applied directly to the foundation timbers and was unprotected from the moisture penetration which eventually caused the failure of the steeple itself. The form of the original foundation timbers is uncertain. The brickwork in the pockets holding the timbers is chipped and disturbed, indicating that the timbers were not planned for in the tower's construction.

Since their first hanging in 1745, the bells of Christ Church have been subject to a continuing cycle of restoration and neglect. Beginning with the 1824 repairing, the bells have been forgotten and remembered, allowed by church authorities to decay and then restored in a burst of effort by dedicated individuals. In the 1840s, the church wardens turned their attention to the bells, and during the extensive renovation of the steeple some of the timbers of the bell frame and its foundation were judged to be unsound and the frame and its supports were replaced. Additional measures were taken to protect the timbers from moisture. The restoration was chiefly undertaken to allow a continuation of chiming the bells, which had taken place since the 1750s, and the weatherproofing generated some structural discontinuity in the framework by raising the frame a short distance above the supporting timbers.

In 1856, the cause of change ringing -- never entirely forgotten in Boston --

was taken up in a newspaper editorial, although no full-circle ringing resulted directly from its influence. In 1894, a group of vocal enthusiasts campaigned for the restoration of the hanging to allow method ringing, and they cited the neglect of the bells and consequent decayed condition of the fittings and some of the timbers, also stating that the bells had not been rung in over seventy years. These remarks raised a controversy as the community and church-goers protested the denigration of chiming the bells and statements concerning the disreputable condition of the tower expressed by an English expert. The bells were completely overhauled, with respect for the fittings, the form of the hanging and the frame, retaining most of the timbers from the 1847 restoration. Within several years, the bells were once again being chimed and their fittings largely neglected. In 1912, another re-hanging was performed, and once again little change ringing followed that work.

Interest in the bells was renewed again in 1975 on the advent of the bicentennial celebration. With the assistance of a federal matching grant administered by the Massachusetts Historical Commission, the firm of Maurice A. Reidy, Engineers made a thorough structural analysis of the tower and bell frame. In his final report issued in 1977, Mr. Reidy stated that "the brick tower itself and the main structural members supporting the bells are more than adequate to accommodate the forces produced by all eight bells in full swing. The timber bell cage itself is amply strong and well-braced to form a rigid unit." The engineer's only recommendation was to strengthen the connection of the frame to the foundation timbers.

When the church subsequently received another federal matching grant to strengthen the steeple, additional tie rods were installed to secure the bell

frame to the foundation timbers. From 1977 to the present, the bells have been consistently rung in full circle twice a week.

The object of the current restoration proposal is to lower the bells below the level of the existing foundation timbers to prevent excessive movement and to allow the installation of sound- and weather-proof systems above the bell frame. Based on the results of the engineering study, the frame, foundation timbers, and tower are more than capable of withstanding the forces generated by ringing the bells full circle in their current position.

A less drastic means of protecting the bells from the weather should be considered. It is possible to combine weatherization with a sound control system in the present bell chamber. Installing a sound-absorbing material behind the louvres in the arches of the bell chamber and a weather-proof sound control floor above the bells could be accomplished without major alteration to the existing features of the tower. Again, there is no need to disturb the bell frame in the process.

Restoration of some of the bell gear should also be investigated. Fittings that require attention should be repaired, or if necessary, replaced duplicating the historic form and material.

Any work that is done within the tower should proceed with caution, taking into consideration both the historic fabric of that structure as well as the bells and their hangings and the method of eighteenth century change ringing that is still practiced at Christ Church. The current proposal for lowering the bells calls for re-hanging them on a steel frame with ball bearings. Not only would the plan involve the loss of the 1847 frame, asphaltum deck,

and foundation timbers, the 1745 rope guides, and portions of the early nineteenth century stair stringer and rail, it would also mean that the character of eighteenth century change ringing would be altered. The present fittings which date from the turn of the century reproduce the traditional eighteenth century bell gear and, thus, maintain the historical continuity that has been respected in past re-hangings. Boston is fortunate to have a virgin peal of bells in excellent condition that are still rung and chimed in the traditional fashion. Replacing the gudgeons and brasses with ball bearings would mean both an historical and a physical change in the way the bells are rung.

The Towers and Bells Handbook, a publication of the Towers and Belfries Committee of the Central Council of Church Bell Ringers, states that "although it is often thought that metal frames demand less maintenance than timber, the opposite is the case. A timber frame will last indefinitely if the tiebolts are tightened once a year and the timber is sprayed with a combined fungicide and insecticide perhaps four times a century, but the steel parts of a metal frame, if not cleaned and repainted at least every decade, can be useless in 50 years or less. Climatic conditions should also be considered. Where much driving rain is experienced, steel will need extra care and protection, and near the sea even cast iron will rust very rapidly." In the Principles agreed between the Central Council of Church Bell Ringers and the Council for Places of Worship (British), paragraph (h) states that "ancient wooden bell frames should be carefully preserved wherever possible if sound and fit for continued

It would appear that the re-hanging is being undertaken chiefly to perfect the "going" of the bells and maximize the time available for extended periods of ringing by reducing the sound volume and the level of regular maintenance. Ball bearings mounted on a steel frame will cause the bells to revolve much more rigidly and regularly because the natural friction and slight resilience of traditional fittings and frame have been eliminated. Oiling of bearings is unnecessary and the occasional tightening of the frame is obviated. These are not sound preservation considerations, and will in the long run not benefit the church, community, or the bells. The counter-proposal presented in this paper is in no way intended to restrict regular ringing as it is now conducted, which includes twice weekly practice and occasional lengthy peals. Other towers in the Boston area are equipped to allow frequent and lengthy ringing, and it is suggested that Christ Church be maintained as a tower where the character and feel, as well as the tone of an historic ring, may be experienced.

The significance of the bells, their fittings, the tower, and the tradition of change ringing should be considered preparatory to hasty re-hanging, and all existing conditions should be recorded before any restoration is undertaken.

Charlotte Worsham

FOOTNOTES

1

Susan Foley, "Christ Church, Boston," Old-Time New England 51 no. 3 (January - March 1961) as found in Penelope Hartshorne Batcheler, Historic Structures Report, Old North Church, Architectural Data (Denver: Denver Service Center, National Park Service, United States Department of the Interior, /April 1981/), p. 22.

2

"Chimes in City's Churches -- Efforts on Foot to Popularize Their Ringing," Boston Herald, December 11, 1893.

3

"Records of the Proprietors of the Pews; Christ Church, Boston, 1840 - 1855", May 31, 1841.

4

Arthur H. Nichols, "Christ Church Bells, Boston, Mass.," New-England Historical and Geneological Register (January 1904): 11.

5

"Records of the Proprietors of the Pews, Christ Church, Boston, 1840 - 1855", May 4, 1848.

6

Ibid.

7

Nichols, p. 11.

8

Batcheler, p. 166; letter from William A. Theobald, Whitechapel Bell Foundry, London, England, November 16, 1982.

9

Letter from Theobald.

10

"Christ Church Chronicle," March 1919.

11

Ralph Adams Cram, "Christ Church Bells," The New England Magazine 11 no. 5, (January 1895): 644.

12

"After 60 Years Christ Church Chimes Will Peal Again in the Old English Way," Boston Post, February 3, 1894.

FOOTNOTES (continued)

13

The Towers and Belfries Committee of the Central Council of Church Bell Ringers, comp., The Towers and Bells Handbook (Brackley, Northamptonshire: Smart and Company Printers Ltd., 1973), p.34.

14

Hall's Summaries of Christ Church Records.

15

Maurice A. Reidy, Engineers, "Old North Church, Study of Tower Bell Supports," (Boston, 1977), pp 7-8.

16

The Towers and Belfries Committee of the Central Council Church Bell Ringers, pp. 35-37.

17

Ibid., p. 62.

Christ Church:
Axonometric drawing of bell
frame in brick tower

