New England's Gasholder Houses

Mary E. Pyne

The gasholder house is a rare kind of building constructed by gaslight companies and early mill owners to contain holding tanks for coal gas. Once commonplace in New England's cities (and presently used as the Society for Industrial Archeology's logo), these houses are now a vanishing species; obsolescence combined with the cost of upkeep has led to their destruction. A survey of the six New England states located 13 buildings in good condition (see table 1). Some of these are "newly discovered"; others have appeared in earlier partial lists. The goals of the survey were to find the intact gasholder houses, to collect some preliminary data on each one, and to photograph as many as a limited budget would allow. Survey work will continue, to try to discover more buildings and add them to this list.

Introduction

The technology of coal gas manufacture was invented in Europe in the early 18th century and used by New England textile mills during the War of 1812. The gaslight enabled the mills to operate beyond dusk and thus to increase production. Gaslight was very successful and soon provided light to small business establishments near the mills and streetlighting for virtually all cities; eventually its use spread to homes. The city of Baltimore was the first to have gaslights in 1816, with Boston following in 1822.[1] By 1850 gaslight companies were commonplace, started either solely to serve cities' lighting needs or as factory-owned gasworks that changed to separate utilities. New England cities used manufactured coal gas until the early 1950s, when more efficient natural gas was made available by pipelines from the South and Southwest.

After coal was baked in retorts, the gas was carried underground to the gasholder to be stored until needed. The gasholder is a bottomless iron or steel cylinder that rode up and down within a tank of water; the water provided a seal where the cylinder met the ground. In addition to being a place for storage, the gasholder kept the gas at the correct pressure. Gasholders were sometimes called "gasometers" because the quantity of gas stored was indicated by the position of the tank. Pressure was measured not by pounds per square inch but by the number of inches of water that could be supported in a column. The Troy, New York, gasholder, about the size of the one in South Boston, maintained an average pressure of 4.5 inches.[2] As the use of coal gas became more popular, larger cities needed several gasholders around the city to store sufficient gas for the peak times of day.

Only a small fraction of gasholders were sheltered by houses, constructed to keep the water seal from freezing and, more important, to protect the holder from high winds and snow load that could impair the operation of the lift. An equally important function of the structure was to make the presence of the gas tank in a city or neighborhood more acceptable. Gasholder houses were nearly always round brick buildings, with a conical slate roof. A cupola on the top allowed any leaking gas, which was flammable and by the 1870s a known health hazard, to escape with relative safety. Gasholder houses often exhibited fine masonry craftsmanship to an extent not usually seen in industrial buildings. In some cases they were given a distinctly residential look, belying their industrial use. And the gaslight companies were quite proud of the buildings. In North Attleborough, Massachusetts, for example, competition for lighting contracts with new electric companies was intense and controversial; so the handsome gasholder building may have been an important part of the gaslight company's public image and reputation for efficiency and safety.

One of the survey's purposes was to record how the buildings were being used and to see which uses were the most successful. Of the 13 known gasholder houses in New England, four are vacant, two are warehouses or storage facilities, and six are in full use as rehabilitated commercial space. The Concord, New Hampshire, house is in a class by itself. It holds the last completely intact gasholder, in a gasholder house, in existence in the United States. The gasholder houses that remain in use in their second life are the best preserved. The house in Woonsocket, Rhode Island, rehabilitated in the 1920s, is an excellent carpenter's shop. Attempting to convert these buildings into trendy, even elegant, spaces, as was tried in Northampton, Massachusetts, is not economically feasible. The feeling and history of the building are well preserved with a working atmosphere, and the capital investment needed is much less. The four vacant houses are in Sprague and Brooklyn, Connecticut, Biddeford, Maine, and Attleboro Falls, North Attleborough, Massachusetts.

Massachusetts

1. Boston, 1870. Built by the Roxbury Gaslight Company, Boston's last gasholder house stands at the corner of Gerard Street and Massachusetts Avenue (figure 1). It has a diameter of 110 feet, three stories, and a segmental metal dome for a roof instead of the typical cone. Its huge size and dome top make it comparable to the famous gasholder in Troy, New York. They both housed double-lift, telescoping tanks. Unlike the beautifully decorated cousin in Troy, however, Boston's gasholder house is unadorned.

The building was taken out of service as a gasholder in 1905, and it probably was then that each of the elongated round-topped windows were bricked in, and rows of windows were added to the second and third stories. The base for the missing cupola is evident on the roof. Although the missing cupola compromises the building's architectural integrity and original appearance, it is still important to Boston's history as the best-preserved remnant of the coal gas industry which played a vital role in the city's development. Boston's gasholder is used as a garage and warehouse.[3]

2. Brookline, c1855. In the second half of the 19th century, Brookline became the desirable Boston suburb where the wealthy built beautiful homes and estates. On one such estate there is a gasholder house, built for the owner to store fuel for the main house and numerous secondary buildings. The small structure is square and relatively low to the ground, making it a very unusual gasholder house (figure 2). This house and the one in Lisbon, Maine, are the only known square gasholder buildings in New England. The Brookline example has an octagonal roof with the sections at the corners going down into points that give the roof a hat-like appearance. The building is only about five feet tall at the entrance and three-and-one-half feet at the corners. It was converted to a laundry in the 1930s and is now used as an exercise room by its present owner.[4] Built to serve the needs of one family, this gasholder house is the only one of its kind in New England.

3. North Attleborough, 1865. North Attleboro boasts two gasholder houses. The East Street building is the earlier of the two and somewhat marred with a coat of white paint (figure 3). It has a shallow conical roof of asphalt shingle and a large octagonal lantern on top, the largest and most distinctive cupola of the group. This 1865 building housed the second gasholder built by the North Attleborough Gaslight Company.[5] It was located about a mile-and-a-half from the retort house in Attleboro Falls and provided gas for downtown North Attleboro. There is a moderate amount of alteration—a garage door faces the street, and several new window openings have been put in at ground level. The building serves as a garage and warehouse. In spite of the

Figure 2. *The gasholder house built c1855 by Samuel Cabot in Brookline, Massachusetts.* Photographed in 1983 by the Brookline Historical Commission.

paint and the alterations, it is a fine, intact gasholder house and is needlessly overlooked by locals in favor of the other North Attleboro gasholder building.

4. Attleboro Falls, North Attleboro, 1874. In the second half of the 19th century Attleboro Falls was a busy industrial neighborhood with the H.N. Daggett Braid factory at its center. The gasworks was built by and for the factory c1848 and was located across the street.[6] The existing house held the third holder for the town and is located about a quarter mile from the site of the retort house.

The Attleboro Falls house is the least altered of the Massachusetts gasholder buildings (figures 4,5). The water tank is still open under the building, although the holder itself was removed in the 1950s. The interior remains open with only a small alteration to one window opening. This building has beautiful stonework and a well-proportioned main entry. The prominent location at the intersection of Elm and Mount Hope streets, and the tall maple trees that have grown up around the building, make this site the most beautiful of all those visited. Although it is vacant now, the owners are planning a commercial rehabilitation.

5. Northampton, 1856. The Northampton gasholder building won a Massachusetts Preservation Award in 1986, given by the Massachusetts Historical Commission for certified historic rehabilitation. It housed the first of three holders in the city and is now the second oldest in the six New England states.[7] Rehabilitation converted the gasholder and the adjacent gasworks buildings into attractive office and commercial space, but they have sat vacant for two years. The buildings are in an urban setting.

6. Pittsfield, 1873. The Pittsfield gasholder building on Deming Street is the home office for the Berkshire County Association for Retarded Citizens. Built by architect Charles T. Rathburn for the Pittsfield Coal and Gas Company, it is 75 feet in diameter and displays elongated round-topped windows and a simple entry.[8] The conical roof, covered with asphalt shingles, is topped with a small ventilator. The brickwork is plain with no prominent ornamentation. Twelve narrow pilasters and a modest cornice surround the building. In spite of the alterations to some window openings and the replaced roofing material, this is a fairly well-preserved building in stable condition with a viable new use.

Connecticut

7. Sprague, c1874. The Baltic Mill in Sprague is an empty stone mill that has a small concrete gasholder house with a dome roof. Its windowless design and lack of ornamentation make it unusual to the extent that its use as a gasholder building has been questioned. Its purely utilitarian design is due to the fact that it was part of an industrial complex built by and for the mill. Barlow Insurance Survey records

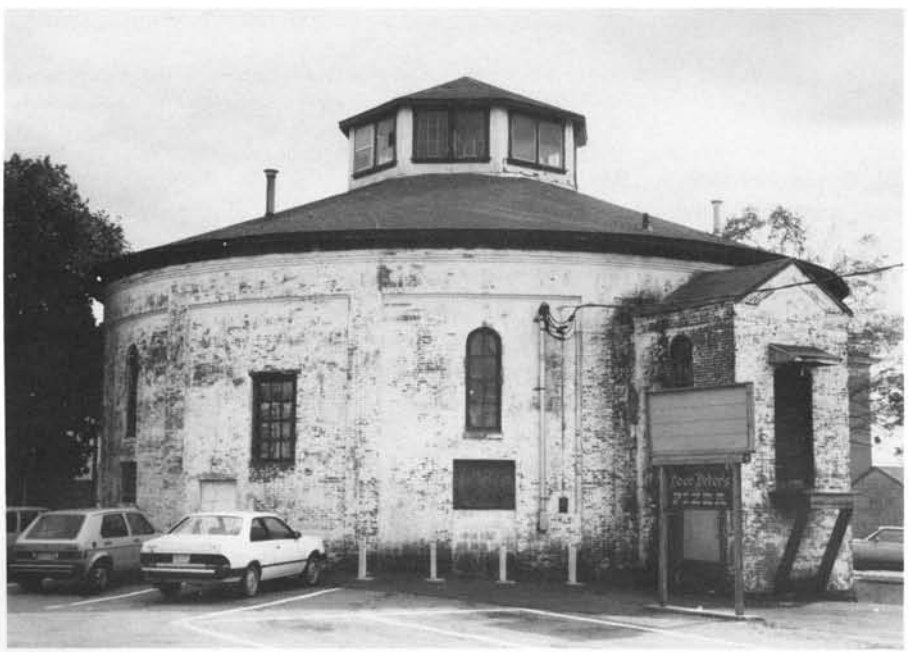

Figure 3. *1988 view of the East Street gasholder house in North Attleborough, Massachusetts.* Photo by author.

Figure 4. *1987 view of the Attleboro Falls gasholder house in North Attleboro, Massachusetts.* Courtesy of the *Country Gazette*. Franklin, Massachusetts.

confirm it was used as a gasholder in 1874. The smaller-than-average gashouse is octagonal with a tiny ventilator at the peak of the roof. The Baltic Mill gasholder building is well preserved in its industrial setting next to the retort building, but its future is uncertain.[9]

8. Brooklyn, 1875. The only other known gasholder building in Connecticut is at the Quinebaug Cotton Mills in Brooklyn. It has elongated window openings, corbeled cornice, octagonal cupola, and an unbroken wall surface. The retort house adjacent to it is now a two-car garage. The Brooklyn gasholder building also appears to be in good condition. Based on current observation, it is vacant, with no apparent use in the immediate future.[10]

Rhode Island

Only gasholder buildings that passed the minimum criterion of having their roofs intact are included in this survey. Remnants of gasholder buildings in Rhode Island beyond the one listed here are the flat-topped remains at 120 Manton Avenue, Providence, and the gasholder building at the Saleslville Mill on Lonsdale Avenue in Central Falls.

9. Woonsocket, 1865. One of the most unusual gasholder houses is on 313 Pond Street. Local builders Gardiner and Emory Warren constructed it for the Woonsocket Gas Company. Its unique twelve-sided design is articulated by a twelve-sided roof, pilasters at each angle along the wall surface, and a decorative cornice of corbeled and denticu-

Figure 5. *1987 view of the cupola on the Attleboro Falls Gasholder house, North Attleboro, Massachusetts,* Photo by author.

lated brickwork (figure 6). At the peak of the roof is a small chimney that resembles a simple smokestack more than a cupola. This relatively small gasholder building has a single story and is only 70 feet in diameter. When it was converted to a woodworking shop in 1925, the original narrow, round-topped windows were replaced with pairs of standard-width windows.[11] The Woonsocket building is the only intact gasholder house in Rhode Island.

Maine

10. Biddeford, c1891. Biddeford's gasholder house is an important city landmark and a distinctive part of the waterfront architecture. It sits on the edge of the Saco River between Saco and Biddeford. Its prominent location and

Figure 6. *1988 view of the gasholder in Woonsocket, Rhode Island.* Photo by author.

unusual outline have established it as an important landmark worth preservation. It is one of the larger surviving gasholder houses and may have contained a two-tiered gasholder instead of the more common single-lift holder. The building has simple pilasters, a plain cornice band, small cupola, and two rows of elongated arched windows (figure 7). It lacks decoration and has an industrial appearance.

The Biddeford gasholder house was built by the York Light and Heat Company (which had been the Saco and Biddeford Gas Light Company) sometime after 1891.[12] The City of Biddeford is trying to acquire the site for redevelopment from the current owners, the Pertolane Corporation, with the intention of turning it into a Franco-American historical cultural museum or a maritime museum. Hazardous waste deposits in the soil around and inside the building have halted the program. The cost of cleaning up the coal tar in the soil is the responsibility of the current and previous owners.

11. Lisbon, 1876. The Farwell Mill gasholder building in Lisbon is a rectangular structure (figure 8) built in 1876 and confirmed to be a true coal gasholder by the Barlow and Bancroft Insurance Survey of 1874. The insurance records show the rectangular building, containing the round gasholder, in the planning stages. It has been preserved in front of the retort building at a newly rehabilitated elderly housing complex at the mill. It was first converted to a machine shop in 1905 and continued in that industrial use until the mid-1980s. Each side of the one-story building has three

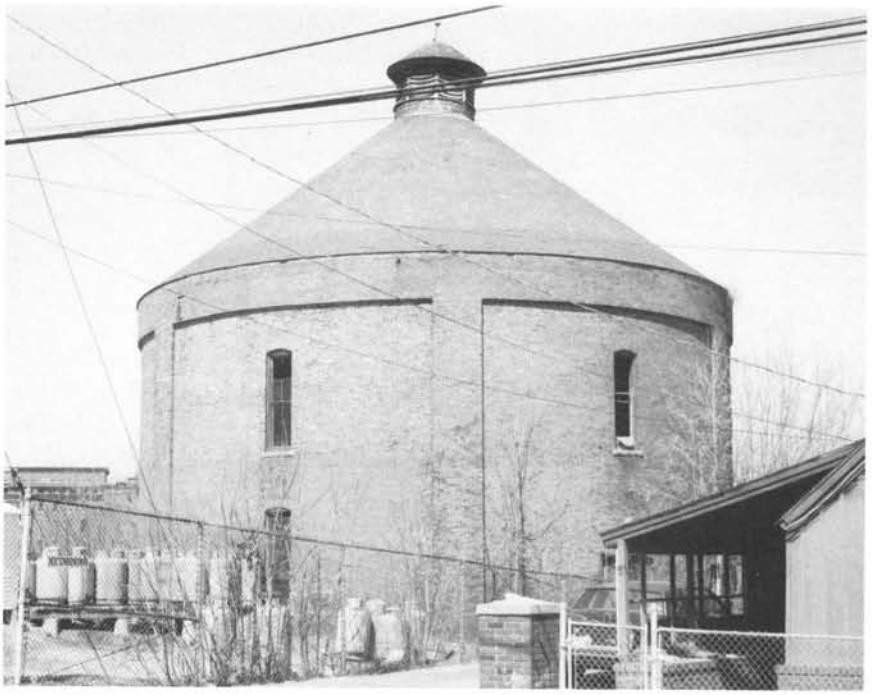

Figure 7. *Gasholder in Biddeford, Maine, as viewed in 1988.* Photo by author.

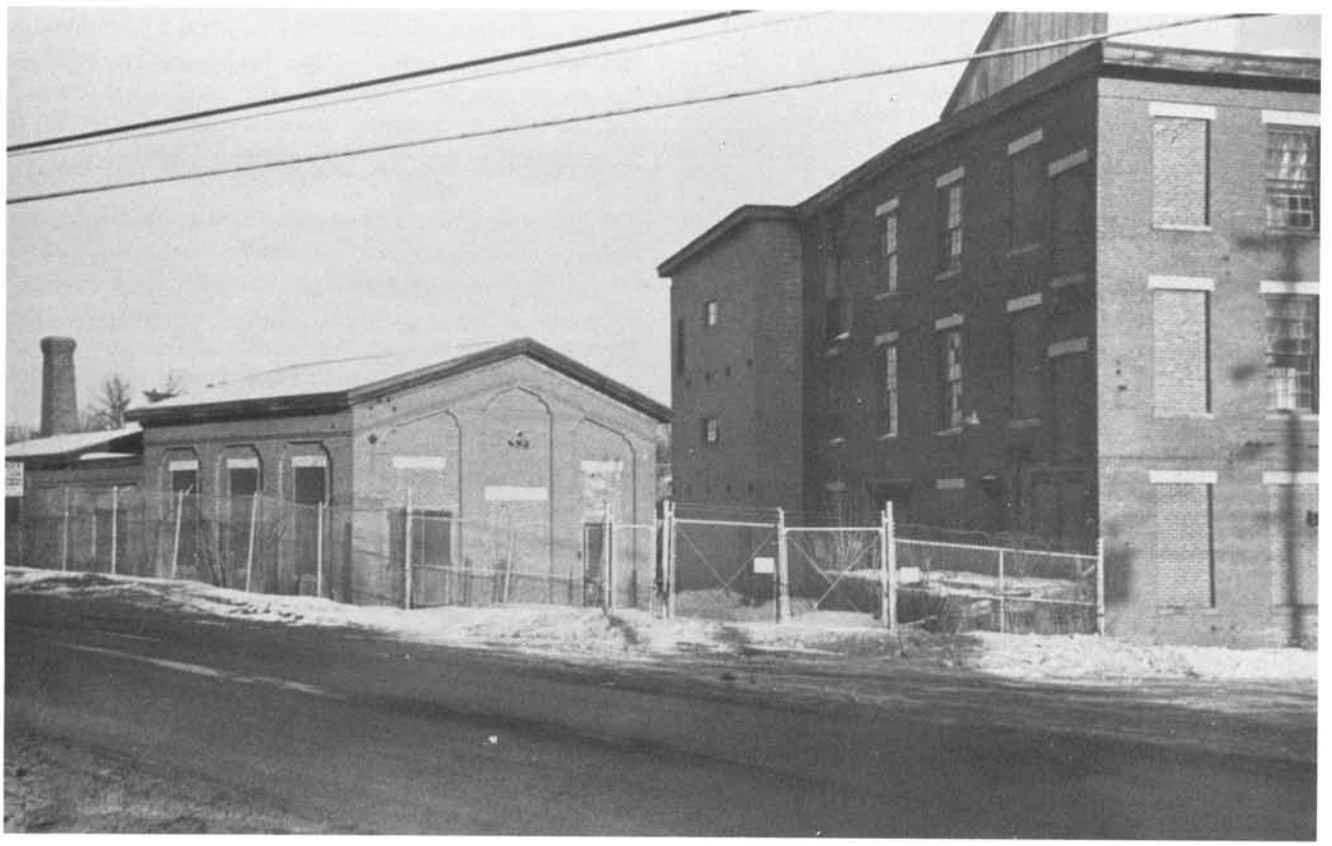

Figure 8. *1986 view of the rectangular Farwell Mill gasholder building (left) in Lisbon, Maine.* Photo by author.

blind arches with rectangular windows, or a door, in each bay. The window openings, mostly unaltered, have granite lintels and sills. Although the small ventilator has been removed, plans have been made to restore it. The owners of the mill plan to donate the small building to the Lisbon Historical Commission to be used as a museum.[13] The significance of finding square and rectangular gasholder houses is that there may be many more such buildings that have been overlooked because the round shape is the most common and recognizable.

New Hampshire

It had been suggested that there was a gasholder building at the State Asylum in Concord. This small building was visited and found to be an old cistern or well house, 50 feet in diameter and 15 feet deep. The roof is supported by a square column in the center, and it is only seven feet high.

12. Concord, 1888. The gasholder house on South Main Street in Concord was built by the Concord Gas Light Company to supply gas to the city. It alone contains its gasholder and was the subject of an *IA* article by William Taylor.[14] The holder is owned and has been preserved by the Concord Natural Gas Corporation, a subsidiary of Energy North, Manchester, New Hampshire. With a reasonable amount of effort the Concord gasworks and gasholder could again produce coal gas.

In comparison with the other gasholder buildings in the study, the Concord building is a fairly large one, 86 feet in diameter (figure 9). Besides housing the best preserved gasholder, the building is beautifully crafted, displaying twelve pilasters, narrow elongated windows with semicircular window hoods, stone window sills, and a corbeled cornice.[15]

13. St. Paul's School, Concord, 1880. The gasholder house at St. Paul's was built for the school by the Concord Gas Light Company (figure 10). Its uniqueness lies in its ownership by the school and the fact that the gas stored there was only for the school. The gasholder was probably removed well before World War II, and the building was subsequently used as a meetinghouse and later as a freezer locker. Its present use as the school post office began in 1968.

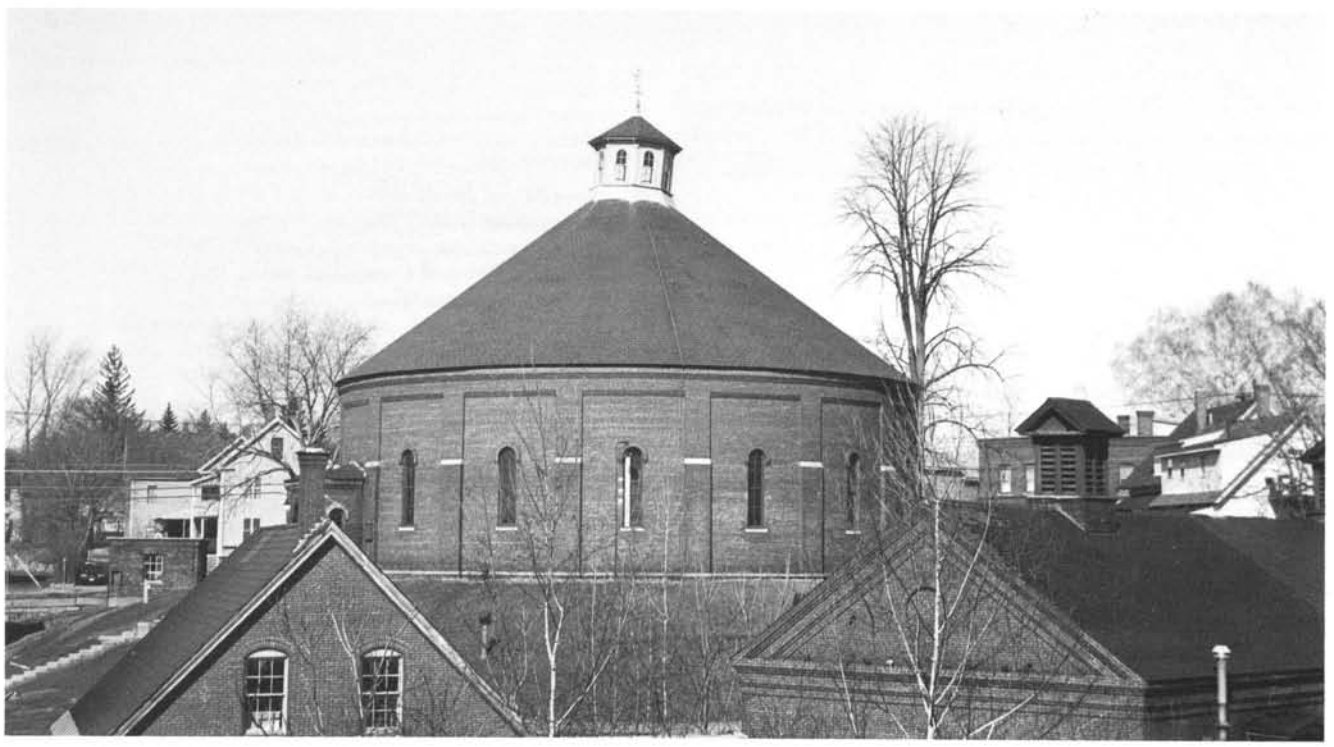

Figure 9. *The gasholder house in Concord, New Hampshire. This is the only gasholder house left in the United States that still has the holder inside. The retort building is on the right, and the oil shed is on the left.* Photographed in 1989 by Christopher Closs.

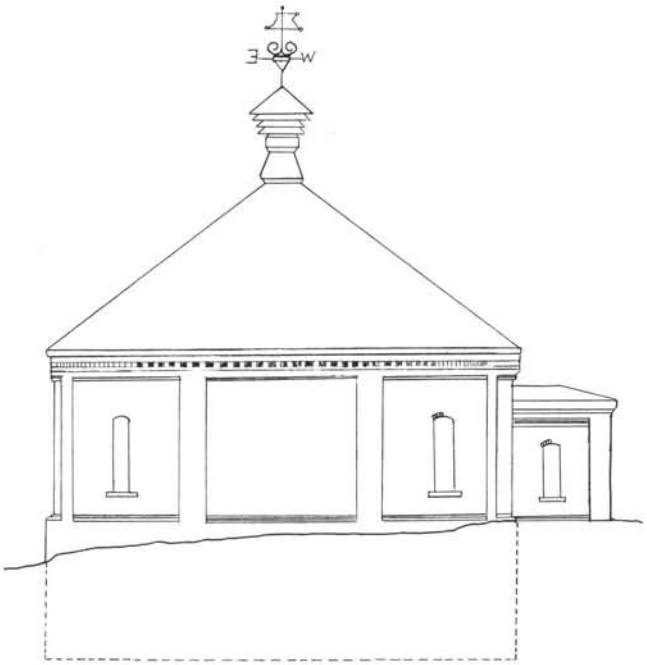

Figure 10. *The St. Paul's School gasholder in Concord, New Hampshire*. Drawing by Alexander Gratiot.

Vermont

According to Chester Liebs of the Historic Preservation Program at the University of Vermont, there are no standing gasholder buildings in Vermont. This was also the opinion of the Vermont State Archeologist, Giovanna Peebles.

Conclusion

The list of 13 gasholder houses in New England described here is tentative. Those who care to preserve the buildings should realize that some of them are in danger and that they can come down very quickly. The list is also tentative because it is hoped that more gasholder houses will be found and added to it.

The lack of investment incentives for the owners makes the reuse of the buildings difficult. The costs involved in restoration of the masonry are high, while usable space is not great. Cities and towns should offer some tax abatement to owners of rehabilitated gasholder buildings because the 20 percent investment tax credits available to National Register properties are not enough to interest developers. Certified historic rehabilitations are sometimes so restrictive that they defeat their original purpose of investment and preservation.

The added burden of hazardous waste cleanup can complicate the situation. Cleanup costs and the other liabilities that can be levied on the owner can make the importance of the building pale. How demanding should we be of owners of historic sites that have some contamination? Should the public sector pay some of the cost to protect the building? City and town officials, departments of environmental protection, developers, and preservationists need to work together if these buildings are to survive into the next century.

Acknowledgments

I would like to thank all of the people on commissions, in libraries, and elsewhere for their generous assistance in locating these buildings and for their willingness to share information and photographs. A special thank you to Cedric Dustin for his sleuthing at the Concord Asylum and to Robert Vogel, now retired from the Smithsonian Institution. If readers know of other gasholder houses in the six New England states that have their original roof structure, please contact the editor of *IA* with the information, so that newly found buildings can be added to this survey.

Notes

1. William L. Taylor, "The Concord (New Hampshire) Gasholder: Last Intact Survivor from the Gas-Making Era," *IA: The Journal of the Society for Industrial Archeology* 10, 1 (1984): 1.
2. Diana S. Waite, "Gasholder House 1873: Troy Gas Light Company, Troy," in Robert M. Vogel, ed., *A Report of the Mohawk-Hudson Area Survey,* Smithsonian Studies in History and Technology, no. 26 (Washington, D.C.: Smithsonian Institution Press, 1973), p. 47.
3. Boston Landmarks Commission, Roxbury Gaslight Co. survey form.
4. Brookline Historical Commission, survey form no. 128/439.
5. North Attleborough Historical Commission files.
6. North Attleborough Historical Commission, survey form no. 34.
7. Preservation Certification Application, Curran Associates, Inc., Northampton, Mass., March 1986.
8. Interview with Bobbie Gibson, Executive Director, Berkshire County Association for Retarded Citizens, Inc., Pittsfield, Mass.
9. National Register Application, Baltic Historic District, Sprague, Conn., 1987.
10. National Register Application, Quinebaug Mills, Brooklyn/Killingly, Conn., 1985.
11. Gary Kulik and Julia C. Bonham, *Rhode Island: An Inventory of Historic Engineering and Industrial Sites* (Washington, D.C.: U.S. Government Printing Office, 1978), p. 280.
12. Richard Candee, from a report on National Register eligibility prepared for the City of Biddeford, 1981.
13. Interview with Christopher Closs, planner for the rehabilitation of the Farwell Mill.
14. Taylor (n. 1 above), pp. 1-16.
15. Interview with Cedric Dustin, past president of the Concord Natural Gas Corporation.

Table 1
New England Gasholder Houses

Location	Construction Date	Original Owner	Building Size (feet) (Diam. x Ht.)	Tank Capacity (est. cubic feet)	Preservation Factors**
1. Boston, Mass.	1870	Roxbury Gaslight Co.	110x50	330,000*	1
2. Brookline, Mass.	c1855	Samuel Cabot	17x17x5 (est.)	1,000	1
3. North Attleborough, Mass.	1865	N. Attleborough Gaslight Co.	56x28	47,000	1
4. Attleboro Falls, Mass.	1874	N. Attleborough Gaslight Co.	67x27	67,000	3
5. Northhampton, Mass.	1856	Northhampton Gaslight Co.	63x28	60,000	3
6. Pittsfield, Mass.	1873	Pittsfield Coal & Gas Co.	75x25	85,000	1,3
7. Sprague, Conn.	c1874	Baltic Mill	30x11 (est.)	4,000	2
8. Brooklyn, Conn.	1875	Quinebaug Mfg. Co.	35x11 (est.)	6,000	2
9. Woonsocket, R.I.	1865	Woonsocket Gas Co.	70x22	57,000	1
10. Biddeford, Maine	c1891	York Light & Heat Co.	70x28	82,000	3
11. Lisbon, Maine	1876	Farwell Mill	30x36x14 (est.)	5,000	1
12. Concord, N.H.	1888	Concord Gas Light Co.	86x28	125,000	3
13. Concord, N.H.	1880	St. Paul's School	35x14	7,000	1

*Based on capacity of Troy, N.Y., holder, which has same-sized gasholder house.
**1-early use change with some alteration; 2-remote location; 3-architectural/historical merit in a prominent location.

Figure 1. *1988 view of the gasholder in Roxbury, Massachusetts*. Photo by author.