

WAGNER FREE INSTITUTE OF SCIENCE
1700 West Montgomery Avenue
Philadelphia
Philadelphia County
Pennsylvania

HABS No. PA-6667

HABS
PA
51-PHILA,
751-

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HISTORIC AMERICAN BUILDINGS SURVEY
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HISTORIC AMERICAN BUILDINGS SURVEY

WAGNER FREE INSTITUTE OF SCIENCE

HABS No. PA-6667

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51-PHILA,
751-

Location: 1700 W. Montgomery Avenue, southwest corner of W. Montgomery Avenue and Seventeenth Street, Philadelphia, Pennsylvania.

**Present Owner/
Occupant:** Wagner Free Institute of Science.

Present Use: Museum and educational institution.

Significance: The Wagner Free Institute of Science exists as a rare, if not entirely peerless, relic of American Victorian educational-institutional architecture. The Institute remains essentially unaltered in "its original program, uniting the functions of a museum, research institution and a private school."¹ The structure's interior and exterior fabric reflects this organizational continuity as the edifice retains its turn of the century character almost totally from the lecture hall "amphitheater" seating to the library bookshelves to the specimen cases in the museum.² **Furthermore, the building's engineering employed the use of an experimental truss system for spanning the spacious exhibit space on the second floor**.

The Wagner Free Institute of Science was an integral part of the institutional expansion occurring in the region north of the Spring Garden District and west of Broad Street in the decades prior to the Civil War.³ This expansion tended towards institutions of education and reform, whose often novel missions and physical forms could develop free of the constrictions, both literal and figurative, of the established city center.

The Wagner Free Institute of Science's direct association with renowned biologist, Joseph Leidy, and its embodiment of major nineteenth-century movements in education and educational philanthropy further mark the building's unparalleled importance.⁴

Historian: James A. Jacobs, Summer 2000.

¹Eugene Bolt and Susan Glassman, Wagner Free Institute of Science National Historic Landmark Nomination, 4 Apr. 1989, sect. 8.

²*Ibid.*

³Richard Webster, *Philadelphia Preserved: Catalog of the Historic American Buildings Survey* (Philadelphia: Temple University Press, 1976) 285, for the attraction of institutional development in this region.

⁴Bolt, sect. 8.

PART I: HISTORICAL INFORMATION

A. Physical History:

1. Date of erection:

1859–1865. Excavation began during the winter of 1859–1860 and the cornerstone was laid on June 2, 1860.⁵ The building was dedicated on May 11, 1865.⁶

2. Architect:

John McArthur, Jr. McArthur lived his entire life from the age of ten to his death in Philadelphia; from 1848 to 1890 he was among the most noted and busiest architects practicing in the city.⁷ His career opus was the Philadelphia City Hall (1872–1901), a hard-won commission for which he turned down a position offer for the Supervising Architect of the Department of the Treasury.⁸ McArthur provided the formal drawings for the Wagner Free Institute of Science, but did not oversee the building's construction, a task taken-up by William Wagner.

Collins & Autenrieth. Edward Collins and Charles Autenrieth, both German born and educated, founded an architectural partnership by 1854 that eventually became “one of the most important architectural firms in Philadelphia.”⁹ Between 1855 and 1904, the firm completed over seventy-five various commissions in and around Philadelphia. The Trustees' choice of Collins & Autenrieth to plan and oversee the extensive renovations beginning in 1885 has been described as “representative of the continuity of purpose and conservatism that characterizes the Institute, and its founder as well;” Edward Collins worked in John McArthur, Jr.'s office early in the 1850s.¹⁰

G. W. Hewitt & W. D. Hewitt. Brothers George W. and William D. Hewitt formed their firm in 1878, after George W. had worked successively with

⁵Emma E. Garman, “History of the Wagner Free Institute of Science and Its Contributions to Education,” diss., Temple University, 1941, 29.

⁶*Ibid.*, 36.

⁷Sandra L. Tatman and Roger W. Moss, *Biographical Dictionary of Philadelphia Architects: 1700–1930* (Boston: G. K. Hall & Co., 1985) 510–511.

⁸*Ibid.*, 511.

⁹*Ibid.*, 156.

¹⁰Bolt, sect 8.

architects Joseph Hoxie, John Notman, John Fraser, and Frank Furness.¹¹ Hewitt & Hewitt became hugely prolific architects and completed large numbers of commissions mainly in the Philadelphia area and in New Jersey. The grandiose design for the expansion of the WFIS in 1901 never fully materialized—only the planned west wing was constructed for the Free Library of Philadelphia.

3. Original and subsequent owners:

Wagner Free Institute of Science (WFIS). In the Wagner Free Institute's *Supplementary Act of Incorporation* of March 30, 1864 and William and Louisa Binney Wagner's *Deed of Trust* of May 30, 1864, the institution and its associated edifice were conveyed to a Board of Trustees of which William Wagner remained president until his 1885 death.¹² The *Deed of Trust* outlined specific conditions for how the organization would be run after Wagner's passing at which time the Trustees would assume full responsibility for his legacy. The lot on which the Institute stands, measuring 177'-10" along Montgomery Avenue and 225'-0" along Seventeenth Street, is the full historic plot which was deeded to the Trustees in 1864.¹³

4. Original and subsequent occupants:

1865–present	Wagner Free Institute of Science
1892–1895	Branch Number One, Philadelphia Public Library
1895–1962	Branch Number One, Free Library of Philadelphia

5. Builder, contractor, suppliers:¹⁴

Brickmaker: (1859) William King
Stonemason: (1860) Frederick Gramlish
Roofing: (1860) Warren & Kirk
Tin roofing: (1875) John Schatt, Jr.; (1876) George McFarland; (1878) Thomas & Co., Ridge Road
Iron pipes for support of lecture room floor: (1879) Gloster Iron Works
General contracting for iron perimeter fence: (1879) David Pettet & Co.
Rolled ¾" iron: G. Winch
2" tubes: Reading Rail Road Iron Co.
Cast iron posts: James Moore

¹¹Tatman, 367–368.

¹²Wagner Free Institute of Science, *Supplementary Act of Incorporation*, 30 Mar. 1864; Wagner Free Institute, *Deed of Trust of William Wagner and Wife*, 30 May 1864 (Philadelphia: Wagner Free Institute of Science, 1920).

¹³Bolt, sect. 10.

¹⁴Most of the information regarding contractors and suppliers can be found in: William Wagner, "Annals of the Wagner Free Institute of Science, 1855–1884," (hereafter *Annals*), WFIS Archives, and Correspondence between Collins & Autenrieth and the Wagner Free Institute of Science, 1888–1889, WFIS Archives.

Marble for main entrance steps and porch: (1879) Messrs. Field & Sons
Iron “Cornises” (hoods) for first floor windows: (1879) Messrs. Opedike & Co.
Marble for Seventeenth Street steps and porch: (1884) Mr. Friedley, marble dealer at Walnut Street Wharf, Schuylkill (installed by Thomas McCouch)
General contracting for brickwork, lumber, carpentry, hardware, labor, and hauling: (1889) McCartney & Oler
Museum cases: (1889) Mahlon Fulton & Co., Perseverance Wood Working Mill
Cast iron: (1889) Royer Bros.
Wrought iron: (1889) Bancroft & Son
Plastering: (1889) Reeves Bros.
Painting and glazing: (1889) William McCarter
Millwork: (1889) D. A. Woelpper & Co.
Stairs: (1889) Stack & Bros.
Plumbing—water: (1889) Joseph School
Plumbing—gas: (1889) J. E. Eyanson
Heating: (1889) J. P. Wood & Co.

6. Original plans and construction:

Landscape

In the early 1840s, William Wagner purchased a nine-acre estate known as Elm Grove located near the intersection of Turner and Stump Lanes—two existing country roads whose demise was imminent with the continued northward advancement of Philadelphia’s rectilinear grid.¹⁵ At the time, Philadelphia above Spring Garden Avenue and west of Broad Street remained largely rural. In 1843, the irregular plat of the crossroads village of Francisville existed as the northernmost developed blocks west of Broad. Beyond Francisville, the landscape retained a bucolic mix of farms, country houses, cemeteries, and rural lanes.¹⁶ Most higher density development north of the city during the 1840s occurred east of Broad in the Spring Garden District.¹⁷ Reflections printed in 1883 nostalgically characterized the area around the time Wagner purchased Elm Grove: “The whole neighborhood was then a pretty piece of country, upon which the country-seats of noted Philadelphians stood.”¹⁸

¹⁵Annals, 1, for lane names; “Improvements in the Northwestern Part of the City—Professor Wagner’s Recollections—The Progress of Time,” *Public Ledger and Daily Transcript* 18 Aug. 1883, from Scrapbooks of the Wagner Free Institute of Science, 1847–1980 (hereafter Scrapbooks), box 8, vol. 3, for acreage; Bolt, sect. 8, for date.

¹⁶See research notes for visual.

¹⁷Webster, 287.

¹⁸“Improvements...,” box 8, vol. 3.

The district's rural nature would not hold as Philadelphia's population expanded. However, the first wave of significant expansion west of Broad was not so much in the form of the ubiquitous Philadelphia residential row or industry, but rather in a variety of institutional structures. Within the northern reaches of the Spring Garden District, the groundbreaking and influential Eastern State Penitentiary that fronted Coates Street (Fairmount Avenue) had its perimeter wall and initial cells completed by 1829.¹⁹

A few blocks to the north, within Penn Township, the original Girard College buildings designed by Thomas U. Walter had been rising on capacious grounds since 1833; construction continued through the end of 1847.²⁰ Founders Hall and its flanking subsidiary buildings faced south across S. College Avenue. Ridge Road was paved as far as out as Girard College by 1849 as was much of Girard Avenue in the blocks near its intersection with Ridge.²¹

A few blocks east of Girard College on Girard Avenue, the steeple of the Green Hill Presbyterian Church, constructed in 1847–1848 on plans by John Notman, pierced the skyline. Directly south across Girard Avenue, St. Joseph's Hospital was installed in a double house purchased by the Sisters of St. Joseph on June 18, 1849.²² The hospital added a number of more substantial buildings over fifteen years beginning in 1852.²³

Though it was constructed seven blocks north of Girard Avenue, virtually nothing existed between the thoroughfare and Wagner's property when he began construction of the WFIS's permanent home in 1859.²⁴ The building was auspiciously sited "upon the highest point of land between the Delaware and Schuylkill."²⁵ By this time, much of the platted grid south of the WFIS had been realized and horse-drawn streetcars made for easy travel to the Institute. "Those wishing to attend [the laying of the cornerstone] can avail themselves of the Fifteenth street cars up to Columbia avenue, within a short

¹⁹J. Thomas Scharf and Thompson Westcott, *History of Philadelphia, 1609–1884, vol. III* (Philadelphia: L. H. Everts & Co., 1884) 1835.

²⁰The Penn District was "erected out of Penn Township" by an Act of Assembly on February 26, 1844. The district was enlarged by Act of Assembly on February 17, 1847 and became the 20th Ward under the Act of Consolidation on February 2, 1854.

²¹Webster, 286, for general about roads; *Commissioners and Inhabitants of the District of Penn vs. James Clark and Commissioners and Inhabitants of the District of Penn vs. Michael Deamer*, March term 1849, case numbers 110 and 111, and *Commissioners and Inhabitants of the District of Penn vs. Jacob Peters*, March term 1849, case number 123, Dockets, Archives of the City of Philadelphia and the County of Philadelphia (hereafter ACCP), for paving; *Commissioners and Inhabitants of the District of Penn vs. Joseph Cabot*, March term 1850, case number 72 and *Commissioners and Inhabitants of the Penn District vs. Alexander Cummings*, March Term 1851, case number 62, Dockets, ACCP, for piping.

²²Scharf, vol. II, 1679; see research notes for visual.

²³*Ibid.*

²⁴See research notes for visual.

²⁵"Local Affairs: The Wagner Free Institute of Science," *Public Ledger and Daily Transcript* 2 Oct. 1860, box 6, vol. 2.

distance of the building.”²⁶ With the continued advancement of development northward assured, most critics lauded Wagner’s choice of permanent site. “The Institute, although far up in the north-western part of the city, is in a neighborhood where improvements are progressing rapidly.”²⁷ Speculation foresaw only a bright future for WFIS:

It contains the elements of success, and when its advantages become better known, and the city more thickly settled in that vicinity, it will doubtless become one of *the* Institutions of the city, and a source of much gratification to our citizens.²⁸

Building

Despite a major interior overhaul late in the 1880s and early in the 1890s, the fabric of which still largely exists, the building retains a programmatic coherence and continuity present from its earliest manifestation. Having already supervised the design and construction of his Cabinet at Elm Grove in 1847, William Wagner clearly believed in his capacity to direct the design and construction of the new Institute headquarters in 1859. “The plan of the building was designed by the founder, and the working plan was drawn out and presented by John McArthur;” “the work upon the building went steadily on, under the immediate supervision of Professor Wagner, who was at once architect and master builder of the structure.”²⁹

The foundations were dug during the winter of 1859–1860, and the clay removed from the pit used to manufacture thousands of bricks in on-site kilns.³⁰ On March 29, 1860 work on the foundations began; the stone floor of the cellar was 2’-4” thick and the stone walls 2’-0” thick and 7’-0” high.³¹ Work continued in fits during the Civil War and the finished building was dedicated on May 11, 1865.

Though the building was formally dedicated, it was not completely finished. The brick exterior walls, designed in the “Greco-Roman” idiom and meant to be covered in stucco incised and colored to mimic ashlar coursed sandstone, were left bare until after Wagner’s death in 1885.³² In 1867, the interior trim and woodwork was “completed and painted,” the floors were installed, blinds hung on first floor windows, and chandeliers, furniture, and scientific instruments placed in the eight school rooms flanking the central

²⁶“Corner Stone,” *Public Ledger and Daily Transcript* 1 Jun. 1860, from Scrapbooks, box 6, vol. 2.

²⁷“Wagner Free Institute,” *Philadelphia Inquirer* 11 Jan. 1861, from Scrapbooks, box 6, vol. 2.

²⁸“Wagner Free Institute,” *Philadelphia Inquirer* 4 Jun. 1860, from Scrapbooks, box 6, vol. 2.

²⁹“Local Affairs...,” 2 Oct. 1860, for building design; “The Wagner Free Institute of Science: The Great Popular College, A Brief Sketch of Its Progressive Career,” 6 Sep. 1873, from Scrapbooks, box 7, vol. 2, for “architect and master builder.”

³⁰*Annals*, 181.

³¹*Ibid.*

³²See field notes for visual.

corridor; at this time, seating for reportedly 1,300 people was put into the lecture room.³³ Wagner reportedly looked to the recently completed Smithsonian Institution in Washington, D.C. for the lecture room's form—"this is built in the form of an amphitheater, with a north and south gallery...lighted by eleven windows, and ventilated by new and improved apparatus."³⁴

On the first story, eight classrooms (27' x 18' each) flanked a wide central passage that ran from the main entrance opening onto Montgomery Avenue back towards the lecture room filling the rear portion of this floor.³⁵ On either side of the Montgomery Avenue entrance were staircases leading up to the museum hall which occupied the remainder of the building envelope. The space was 28'-0" high and encircled by two galleries. "The museum is lighted by twenty-four windows, and covered with a patent arched trussed roof."³⁶ The eight trusses were constructed on a Quigley & Burton design with four large skylights contained between some of their spans.³⁷ At this time, the glazing of the tall side windows did not include the rounded portions at the tops and the lunettes were filled with boarding. The reception of this space, and indeed the entire edifice, was largely positive:

Here the scene is ravishing to the student of history and science. The room we enter occupies the entire length and breadth of the building, and extending to the roof, embraces a floor and two galleries running round its four sides. Specimens from every department of science are here.³⁸

7. Alterations and additions:³⁹

1868—Between July and December, laboratory space was constructed along the western side of the main building and communicated with the lecture room. This single-story addition had a stone foundation, load-bearing brick walls, and a gravel roof. The room was finished with plaster walls and wood flooring, contained two furnaces for conducting research, and was separated from the lecture room by an iron fire door. Two planned observation towers for the grounds—one each for astronomical and meteorological study—never materialized.

³³Annals, 194.

³⁴"The Wagner Free Institute of Science," *Public Ledger and Daily Transcript* 28 May 1860, from Scrapbooks, box 6, vol. 2, for Smithsonian reference; "Wagner...," 11 Jan. 1861, for quote.

³⁵"Wagner...," 11 Jan. 1861, for classroom dimensions.

³⁶*Ibid.*

³⁷"Local Affairs...," 2 Oct. 1860, for Quigley & Burton.

³⁸"The Wagner Free Institute of Science in Philadelphia," *The Manufacturer and Builder* (1), from Scrapbooks, box 3, vol. 1.

³⁹Unless noted otherwise, all information regarding changes prior to 1885 can be found in the Annals, 196-316; direct quotes are specifically footnoted.

In September, “the road from Columbia Avenue [Cecil B. Moore Avenue] to the Hall [was] greatly improved by placing upon it 100 loads of sand and gravel.”⁴⁰ Subsequently, 350 cartloads of soil were deposited on the Institute grounds for grading. Materials were also purchased in this month for the construction of new museum cases.

1869—1500 cartloads of soil were deposited on the Institute grounds that “perfected the grading” and a new “pallissade (sic) fence” 5'-0" high erected to enclose the grounds.⁴¹

1871—Columbia Avenue and Seventeenth Street were completely curbed, paved, and lighted by gas lamps; “large rows of Houses have sprung up... on old Ball club grounds, and the whole neighborhood is rapidly being built up.”⁴²

1873—Gas lamps at the lecture room door, the front door, and the corner of Montgomery and Seventeenth were installed. Sewers were laid on Seventeenth Street between Columbia and Montgomery. Though the Institute building had been plumbed for gas since its erection and the lecture room had the benefit of artificial light since 1862, gaslight was apparently not in use throughout the entire building until this year.⁴³ At this time, burners and fixtures were attached to the piping—“a herculian (sic) task, and very expensive”—and piped water was introduced into the laboratory and museum.⁴⁴

1875—In April, the gravel roof of the Institute building was replaced with a “tin” roof. Less than one year later, in February 1876, “a severe storm arose toward midnight accompanied by a tornado which rooled (sic) up the New Tin Roof of the Hall into a Scroll and carried it off into an adjoining lot.”⁴⁵ A torrential rainstorm only days later caused a great deal of water damage to the interior of the roofless edifice. The roof was replaced, however, in October 1878, bad luck returned as “a tremendous (sic) gale passed over our City, tearing off more than half of the tin on the Roof of the Institute Building, and five of the Tere (sic) Cotta chimnies (sic) and demolishing much of the fence around the building.”⁴⁶ A subsequent rainstorm again caused further damage to the building’s interior.

1879—Iron “pipes” were installed under the sagging lecture room floor. An elaborate iron fence and accompanying gateways for the Montgomery

⁴⁰Annals, 198.

⁴¹Ibid., 200.

⁴²Ibid., 206.

⁴³“Recollections of a Contemporary,” *Sunday Dispatch* 5 Oct. 1862, from Scrapbooks, box 6, vol. 2.

⁴⁴Annals, 218.

⁴⁵Ibid., 234.

⁴⁶Ibid., 260.

Avenue and Seventeenth Street entrances were erected. The north façade entry was embellished with marble steps and a portico and the first floor windows all received decorative iron window hoods.⁴⁷

1884—The wooden stairs and porch at the lecture room entrance on Seventeenth street were replaced with marble ones.

1885–1892—William Wagner’s death left the Institute Trustees with a sizable portion of his estate and allowed them to embark upon an extensive building overhaul.⁴⁸

The timing for this overhaul coincided with tremendous changes in the vicinity. Where the WFIS had previously stood isolated amidst a bucolic landscape of country houses and farms, it was quickly overtaken by the expanding city.

Gradually the old landmarks began to disappear as the population and enterprise of Philadelphia increased... There are thousands of... houses now being built by persons in this neighborhood. The convenience offered by the street cars, the healthy atmosphere and the general neatness of the new houses combine to make the neighborhood agreeable and pleasant. Buildings are going up on Fifteenth, Sixteenth, Seventeenth, Nineteenth and Twentieth streets, and on Montgomery avenue, Berks, Diamond, Norris and other streets.⁴⁹

Within the rapidly evolving landscape of North Philadelphia and its component blocks of new churches, schools, and houses, the WFIS was fully rehabilitated.

The basement area was re-excavated and paved for improved drainage, the foundations strengthened, iron posts and girders installed, and the whole replastered; steam heating was introduced throughout the building.⁵⁰

On the first and second stories, very little of the original layout was altered, though structurally the whole building was reinforced with new iron posts and beams. The four classrooms on the east side of the building were opened-up into a large library reading room; the architects provided the

⁴⁷See field notes for visual.

⁴⁸Bolt, sect. 7.

⁴⁹“Improvements...,” 18 Aug. 1883.

⁵⁰Collins & Autenrieth, “Specifications for the Improvement of the Building of the “Wagner Institute,” 26 Mar. 1885, for details on changes; “Wagner Free Institute Improvements Requiring an Outlay of \$50,000,” *Public Ledger and Daily Transcript* 2 Jun. 1888, from Scrapbooks, box 1, vol. 1, for completed work.

designs for both the tables and shelving, though the main stacks continued to be housed on the upper gallery of the museum.⁵¹

The museum was entirely reconstructed with new support posts, girders, and tie rods running across the light well between truss ends.⁵² The large windows were replaced with decorative iron and wood sash.⁵³ New display cabinets were purchased and Joseph Leidy reorganized and expanded the natural history exhibits, these survive essentially unchanged to this day; the museum reopened in January 1891 to the praise of critics.⁵⁴ “It is one of the best arranged and most complete museums of natural history in the city, comparing favorably with the Academy of Natural Sciences [established in 1863], which has few peers in the world.”⁵⁵

Most of the interior flooring, wainscoting, plaster, and painting was all replaced or reapplied. The utilities and fixtures were upgraded or replaced; electrification did not occur until later.

On the exterior, the bare brick walls finally received an application of “roughcast” or stucco, though this was simply applied and not rendered to look like stone as originally planned.⁵⁶ This stucco was necessary for more than cosmetic reasons as the walls had deteriorated heavily since the building’s erection in the 1860s. “The settling of the building had caused unevennesses (sic), and the mortar had begun to wear away from the bricks, leaving deep interstices all over the four big walls.”⁵⁷ The tin roof was also repaired at this time.

Two aspects of the planned changes were never realized, though their conception reflects the manner in which WFIS, like the earlier Girard College, was meant to immortalize its founder. Included in the original 1860s construction was the Crypt—located in the basement’s north end under the entrance and entered through “heavy iron doors.”⁵⁸ The Crypt was built as mausoleum space for William Wagner and he was initially interred there, but transferred to Laurel Hill Cemetery after one year.⁵⁹ Under the tenure of Collins & Autenrieth, a magnificent memorial approach was at least planned in theory, but never was executed in three dimensions or possibly even on paper.

⁵¹Bolt, sect. 7.

⁵²See field notes for visuals.

⁵³Bolt, sect. 7.

⁵⁴“Wagner Institute: Its Work the Education of the Masses in Science,” ca. 1892, from Scrapbooks, box 1, vol. 1.

⁵⁵“The Wagner Institute: Its Museum and Library to be Opened to the Public,” *Public Ledger and Daily Transcript* 20 Jan. 1891, from Scrapbooks, box 1, vol. 1.

⁵⁶Bolt, sect. 7; see field notes for visual.

⁵⁷“Wagner Free Institute: Improvements...,” 2 Jun. 1888.

⁵⁸Bolt, sect. 7.

⁵⁹Ibid.

One of the leading improvements not yet begun is the construction of a magnificent archway from the pavement on Montgomery avenue to the present entrance. The arch will be a miniature representation of the front of the building... The porch now in front of the door is to be removed and heavy columns are to be run up. The intention is to make this entrance way a memorial to the founder of the Institute, whose body lies beneath.⁶⁰

The renovations of the WFIS and its accompanying institutional changes met with widespread applause as evidenced in an article from early in the 1890s.

This building, still old fashioned, composed of the same gray material, in the midst of the same lawn and with the same trees hanging over it, is yet there; but its interior has been greatly changed, and where before was silence and mystery there is now brightness and life.⁶¹

1892—In October, Branch No. 1 of the Free City Library opened in space allocated by the WFIS in its building.⁶² The four rooms on the west side of the main corridor were combined for the circulating library in a similar manner as the Institute's reference library on the east side.⁶³

1901—The architectural firm of G. W. Hewitt & W. D. Hewitt was hired by the WFIS to construct a wing on the west side of the building in order to accommodate the rapidly expanding public circulation library. The Institute trustees constructed the addition at no cost to the library as they viewed it as an extension of their own mission of free education.⁶⁴ The approximately 47' x 56' addition was one-story, designed in a pared-down classical mode, and stuccoed in a similar manner as the main building. It housed a single open reading/stacks room whose centerpiece was a large skylight supported by four iron columns.⁶⁵

A period G. W. Hewitt & W. D. Hewitt architectural rendering shows a matching wing on the building's east side, with a grandiose one-story entrance portico connecting the two sections.⁶⁶ Neither the east wing nor the portico were ever realized.

⁶⁰"Wagner Free Institute: Improvements...", 2 Jun. 1888.

⁶¹"Wagner Free Institute: Its Work...", ca. 1892.

⁶²*Bulletin of the Wagner Free Institute of Science* 5 (Oct. 1892), from Scrapbooks, box 2, vol. 1.

⁶³See research notes for visuals.

⁶⁴"Public Library Enlargement," *Public Ledger and Daily Transcript* 6 Apr. 1901, from Scrapbooks, box 4, vol. 1.

⁶⁵See field notes for visuals.

⁶⁶See field notes for visual.

B. Historical Context

As an organization, the WFIS remains essentially unaltered in “its original program, uniting the functions of a museum, research institution and a private school.”⁶⁷ Located in Philadelphia, a city with a long and active history in educational thought and action as well as social reform, the WFIS is an exceptional example of Victorian interests in philanthropy, science, and general learning.

Starting with Benjamin Franklin’s revolutionary notions for education and schooling in the mid-eighteenth century, Philadelphia became a model for many types of learning. From parochial academies to colleges and universities to mushrooming private institutions fostering a variety of learning opportunities, the city has few rivals in its educational legacy.

In the second and third quarters of the nineteenth century, this interest in educational advancement was coupled with the rapid founding of agencies for social reform. In only five short years the Asylum for the Deaf and Dumb (1824), the Franklin Institute (1824), the U.S. Naval Asylum (1826), and Eastern State Penitentiary (1829) were founded and greatly enhanced Philadelphia’s place as a vanguard city in matters of practical education, healthcare, and humanitarian “betterment.”

Essential to the founding of the WFIS was Stephen Girard’s 1831 will, which left most of his fortune to the founding of Girard College—a school for orphan boys—in what has been described as “one of the single most monumental acts of private philanthropy in American history.”⁶⁸ Girard’s action clearly had profound effects on his employee, William Wagner. In an 1883 interview, Wagner purportedly commented:

It was mostly due to the inspiration given me by my old master—aye, I take pride in calling him master—in erecting Girard College, that I established the ‘Wagner Free Institute’ and allowed it to bear my name.⁶⁹

Around 1840, Wagner left an active mercantile life and purchased an estate north of Philadelphia in Penn Township called Elm Grove.⁷⁰ In 1847, Wagner constructed a home for his vast collections of natural history artifacts and specimens, assembled while in Girard’s employ and during his

⁶⁷Bolt, sect. 8.

⁶⁸*Ibid.*

⁶⁹“Our Old Citizens: Prof. Wagner, Founder of the Institute of Science,” *Evening News* 31 Aug. 1883, from Scrapbooks, box 1, vol. 1.

⁷⁰Bolt, sect. 8.

own later travels abroad.⁷¹ This building, known as the “Cabinet,” was located at Elm Grove, and according to Wagner, was based on the form of the Museum of the Jardins des Plants in Paris; “the architectural design of such a building intended to combine all the requisite advantages of Light, Beauty, and Utility.”⁷² Sometime early in the 1850s, Wagner “added scientific lectures to the attractions of this museum which were attended by the *elite* of the city, until the accommodations of the small building proved inadequate [by 1855].”⁷³

At this time, Wagner obtained permission to use the Spring Garden District’s former Municipal Hall, made obsolete by the “Act of Consolidation of 1854,” located at Thirteenth and Spring Garden streets. “On May 21, 1855, the Wagner Free Institute of Science was formally established, its program codified in a charter drafted by Wagner himself.”⁷⁴ His stated objective was “the gratuitous instruction in the Natural Sciences” with the institute given “full power to grant degrees and diplomas in the Arts and Sciences.”⁷⁵ Despite this provision for conferring degrees, “one cannot rank it as a college.”⁷⁶ Rather, the establishment of the WFIS clearly denotes the common presence of alternative venues for learning in the Victorian city. While a three-tiered system of primary, secondary, and collegiate level education had been present in nascent forms since early in European colonization, full participation in its structure remained restricted mainly to well-off males. The foundation of the WFIS was part of a national antebellum trend in America whereby venues for extended education were made available to more and more people, a movement that paralleled the solidification of the “modern” middle class. An article reporting on the formal establishment of the WFIS commented:

We hope an enlightened public will properly appreciate this Institution, as filling a void long felt and regretted in our country, where students and amateurs may assemble and obtain free instruction upon subjects hitherto a sealed book in most colleges, and which is intended to fit those who graduate for professions and for active scenes of life.⁷⁷

Despite the above claim that the natural science instruction would be helpful in professional development, the Institute’s emphasis ultimately remained tied to lecturing and limited original research, rather than vocational

⁷¹Annals, 1.

⁷²*Ibid.*

⁷³*Manufacturer and Builder*.

⁷⁴Bolt, sect. 8.

⁷⁵Wagner Free Institute of Science, *Act of Incorporation*, March 8, 1855.

⁷⁶Garman, 53.

⁷⁷“The Wagner Free Institute of Science,” ca. 1855, from Scrapbooks, box 6, vol. 2.

preparation for a career.⁷⁸ A more “preparatory” type of institution analogous to the WFIS was the Cooper Union in New York, which had a strong emphasis on cultivating applicable skills for work in both the arts and sciences.⁷⁹ An 1895 Philadelphia city history recognized the by then graduated affinity between the institutions: existing “on an humbler scale than that of the great institution which Peter Cooper founded in New York, [the WFIS] has done a similarly useful work in this community.”⁸⁰ During Wagner’s lifetime, he continued to foster free learning through a regular series of seasonal lectures by leading scientists and expansion of his natural history museum. In 1864, he amended the original charter and outlined a deed of trust to assure the Institute’s continued mission of free scientific education after his death; these documents reflect both the provisos for the founding Girard College (1831) and the 1859 revised charter for the Cooper Union.⁸¹

Wagner’s 1885 death paradoxically injected a degree of new life and revitalization into the thirty-year old institution. In addition to the complete building refurbishment by Collins & Autenrieth, the Institute was able to secure the tenure of Joseph Leidy for the chair of academic programs.⁸² During his lifetime, Leidy became “the founder of American vertebrate paleontology, parasitology, and protozoology and [was] America’s foremost anatomist.”⁸³ Leidy’s primary taxonomical interests did not require expensive laboratory facilities for experimentation as he remained tied to more traditional and cost-effective methods of collection, description, and classification.⁸⁴ This approach to science, however, was much in keeping with “his conservative Philadelphia friends in quiet, scholarly institutions,” and Leidy’s 1885 appointment at WFIS was both logical and significant.⁸⁵ He expanded the Institute’s research endeavors, and its prominence as a learning institution was underscored through the *Transactions of the Wagner Free Institute of Science*, a journal intermittently published into the twentieth century.⁸⁶ Additionally, Leidy greatly augmented the museum’s collections, reorganized the specimen presentation based on an up-to-date system employing Darwin’s divisive ideas regarding evolution, and enriched the faculty with other well-known scholars.⁸⁷

⁷⁸Bolt, sect. 8.

⁷⁹*Ibid.*

⁸⁰Scharf, vol. I, 718.

⁸¹Bolt, sect. 8.

⁸²“Local Affairs: Plans of the Wagner Free Institute of Science,” *Public Ledger and Daily Transcript* 12 Aug. 1885, from Scrapbooks, box 1, vol. 1.

⁸³Leonard Warren, *Joseph Leidy: The Last Man Who Knew Everything* (New Haven: Yale University Press, 1998) 252.

⁸⁴*Ibid.*, 10–11.

⁸⁵*Ibid.*

⁸⁶Bolt, sect. 8.

⁸⁷*Ibid.*

Despite this expanded and refined view of the WFIS as an important scientific institution and continuance of a regular lecture schedule, their mission remained largely non-collegiate in purpose and curriculum.

The period during which any person or persons may conduct work in the Institute to be determined by circumstances, but no term of study or collegiate year...is to be established. Service in the laboratories, library or museum is not to entitle to any degree or certificate, but the Trustees at their option may confer a diploma of merit or degree for marked service to science on the part of any person... Also, the Trustees may arrange to confer, under suitable restrictions, a degree of Fellow of the Wagner Free Institute.⁸⁸

WFIS occupied a somewhat amorphous position when compared to more conventional colleges or universities, however the Institute under Wagner and later was recognized as occupying a vital niche in the world of not just free learning and education, but in formalized schooling as well.

He saw that a higher education was...within reach of only a very few of those who needed and were fitted to acquire it. He saw also the gulf between the public school education and the higher education of the university or college, was to the majority of people an impassable one, and so he determined to bring within reach of all the best results in the science and the arts.⁸⁹

The Institute continued to foster Wagner's desires in offering sound educational alternatives through its participation beginning in 1891 in the national university extension movement.⁹⁰ University extension courses were designed to provide further education for students who could not pursue a more conventional, but by no means widespread, collegiate education. The movement drew support from both universities and institutions like WFIS; strategies for extended education included both evening courses and lectures, as available at the WFIS, and correspondence study.⁹¹ The evening extension courses available at the Institute late in the nineteenth century and early in the twentieth century brought a more standardized curricular structure to its

⁸⁸"Plans...", 12 Aug. 1885.

⁸⁹"Wagner Institute: Its Work...", ca. 1892.

⁹⁰"The Wagner Free Institute: Announcement of the Early Autumn Courses," *The Times* 1 Sep. 1894, from Scrapbooks, box 2, vol. 1.

⁹¹Barbara L. Watkins, "Quite a Radical Idea: The Invention and Elaboration of Collegiate Correspondence Study," *The Foundations of American Distance Education: A Century of Collegiate Correspondence Study*, eds. Barbara L. Watkins and Stephen J. Wright (Dubuque, IA: Kendall/Hunt Publishing Company, 1991) 6.

lecture format. The Institute further supported free public education and learning through its donation of space for a branch of the public library in 1892, even absorbing the construction costs for a new wing in 1901.

Thus, the WFIS entered the twentieth century adhering to the mission outlined by its founder in the mid-nineteenth century, a mission that, like the building itself, continues to serve and fascinate visitors to this day.

PART II: ARCHITECTURAL INFORMATION⁹²

A. General Statement:

1. Architectural character: The Wagner Free Institute of Science remains an outstanding and peerless example of a Victorian era museum and educational building. Its pared-down exterior articulation is representative of the Greco-Roman revival exceedingly popular in antebellum American architecture. The interiors provide a clear understanding of how a nineteenth century institutional structure was laid out and finished.
2. Condition of fabric: Excellent.

B. Description of Exterior:

1. Overall dimensions: roughly 60' x 150' x 52.' The main building contains two principal stories; the upper (museum) story is approximately 28'-0" high and contains two subsidiary gallery levels. The 1901 library wing is approximately 47' x 56'.⁹³ The building sits back from both Montgomery Avenue and Seventeenth Street and the grounds are fully enclosed by an ornate iron fence. Two modest, contiguous single-story additions are located on the building's southwestern side.
2. Foundations: The foundation walls are composed of the local schist and are about 2'-0" thick.
3. Walls: The perimeter walls of the principal building, and the laboratory and library additions are composed of load bearing brick, as are the pilaster strips. The building is uniformly covered with buff-colored stucco.

North Elevation: This symmetrical temple-front entrance façade is divided vertically into three stages: a base separated from a double-height "portico" by means of a beltcourse with both topped by a parapet pediment. This gable is fully articulated by dentils and plainly filled with buff-colored stucco. The wall is further divided horizontally by paired pilaster strips at the middle

⁹²Additional summer 2000 photographs of the Wagner Free Institute of Science are located in the field notes file.

⁹³Dorothy S. Krotzer, "Wagner Free Institute of Science Library Annex: Examination and Analysis of the Exterior Finishes," 3 Jul. 1997, 7, for library addition dimensions.

stage, which sit on abstracted, extruded bases at the lower stage. Three arched windows are placed between the pilasters at the second story which correspond to an entrance and two flanking rectangular windows on the first floor. The main double doors are contained within a small tetrastyle wood portico, whose center was later enclosed to form a vestibule.

A marble tablet relocated from the WFIS's first home at the Spring Garden Hall is inset in the stucco above the north entrance. The Institute name, incorporation date, and a unique Latin motto—*cave deus ad est*, roughly meaning "God is within"—are etched into the tablet's marble face.⁹⁴

South Elevation: This wall is composed and detailed exactly like the north entrance façade. The only differences are the absence of the entrance portico, inclusion of a third rectangular window in place of the central door, and a slight lengthening of the second-story windows.

East and West Elevations: The walls are divided into nine bays denoted by single pilaster strips at the second story. There is one round-arched window contained in each bay that corresponds with one rectangular window or door on the first story, whose wall surface is plainly modeled. A denticulated cornice extends along the top of these lateral walls. The single-story additions obscure much of the west wall's original lower section.

4. Structural systems, framing: Load bearing-brick for all exterior walls. The interior support system is composed of iron columns and beams, with studded room divisions. On the first floor the columns are contained within wood "piers," however they are fully visible at the second floor and gallery levels. The gently arched museum ceiling is carried on eight wood and iron trusses set into the walls.
5. Openings:
 - a. Doorways and doors: The building has two principal entrances. The main double doors face south onto Montgomery Avenue and are contained within a small vestibule. A secondary entrance faces Seventeenth Street and services the lecture room; it is fronted by a small wood vestibule structure. This entrance is flanked on either side by double doors with small exterior stairs to the lawn. There is an auxiliary exit from the museum space on the south façade which is serviced by an iron fire escape. Another exterior door accesses the laboratory wing. There is one front entrance to the library addition.

The interior doors are either fully paneled or composed of paneled lower sections with single glazed panels above. In the museum floor, directly behind the large central window on the north façade, are two

⁹⁴Susan Glassman, telephone interview, 9 Aug. 2000.

trapdoors that originally opened to the entrance passage below and allowed for ease of moving items in and out of the museum.

- b. Windows: The upper round-arched windows are topped by brick and stucco window hoods. The windows are composed of groupings of large square glass panels surrounded by smaller rectangular and square lights. The sashes are composed of wooden frames; the lower and upper square panels—corresponding with the main museum level and the lower gallery—are of iron and pivot inward to open. The lunette topping each tall window is hinged and drops down to open. The first floor windows are uniformly double hung four-over-four wooden sash. These windows and the secondary first-floor doors are topped by decorative cast iron hoods. The exterior trim, and window and doorframes are painted green.

There are four large skylights, now blocked, arranged longitudinally down the middle of the museum's ceiling. At ground level, there are basement windows contained within shallow lightwells, now obscured by wooden covers.

6. Roof: The gently arched roof of the main building is covered in standing seam metal with patches of asphalt sheeting.

C. Description of Interior:

1. Layout: The first floor of WFIS is bisected between the main entrance and the lecture room by a wide passage. On the east side is the Institute library and across the hall to the west is an (originally) identical room, which originally housed the free circulating library and now used for archival storage and office space. The lecture room, with its tiers of seating and central staging area, fills the rear of the building. A stair to the east of the main entrance accesses the second story museum space. The museum is a large well-lit space that is fully open from the north to the south exterior wall. Two tiers of galleries encircle the room on four sides; the lower gallery is accessed by four staircases located at the room's corners and two staircases, one each in the northeast and southwest corners, lead to the upper gallery. The center portion of the lower gallery on the west side is an enclosed area that housed the curator's office.
2. Flooring: Pine flooring throughout with the exception of the museum, which is composed of diagonally-laid maple planks.
3. Wall and ceiling finish: Beaded tongue-and-groove North Carolina pine wainscoting is present throughout the building, with white plaster walls and ceilings above.

4. Trim and woodwork: The window frames and sills are all of pine. The gallery levels of the museum have iron and wood railings on the lower gallery and wood railings with turned balusters on the upper gallery. The museum cases are framed in cherry. There are oak bookcases built into the walls of the first-floor rooms to the east and west of the main corridor. The structural iron posts are contained within carved pine “piers.” The large rooms to the east and west of the first-floor corridor originally contained identical shelving and trim, however the eastern room (reference library) received pared-down trim and an enclosed office space some time in the 1910s.⁹⁵ The western room retains its original woodwork.
5. Mechanical: Ornamental iron air returns can be found throughout the building. The building has a system of steam heating which was probably first installed under Collins & Autenrieth, but entirely reworked early in the twentieth century.⁹⁶ There are window air conditioning units in the first floor offices, and the entire western side of the first floor, currently housing many of the archival materials, is fully air-conditioned; the rest of the building is not mechanically cooled.

William Wagner commented as early as 1878 that the building would be greatly enhanced through “the introduction of the Electric light, which I am determined to avail myself of the moment it is available.”⁹⁷ However, the Collins & Autenrieth’s renovation of late in the 1880s and early in the 1890s did not include the introduction of electricity. The lecture room was electrified by 1907, but the 1901–1902 library addition was lit by gas when completed.⁹⁸ The current electrical fixtures reflect changes made in the 1930s and fluorescent tubing in the museum most likely dates from early in the 1960s.⁹⁹

On the northwest side of the main building is a dumbwaiter that extends from the basement to the upper gallery.

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⁹⁸See research notes for visuals.

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PART IV: PROJECT INFORMATION

The documentation of the Wagner Free Institute of Science was undertaken during the summer of 2000 as part of a larger program to record historic landmarks and historically significant structures in North Philadelphia. The project was undertaken by the Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER), E. Blaine Cliver, Chief of HABS/HAER, and Paul D. Dolinsky, Chief of HABS; funding was made possible through a congressional appropriation for documentation in Southeastern Pennsylvania and supplemented by a William Penn Foundation grant to the Foundation for Architecture for educational purposes. The project was planned and administered by HABS historian Catherine C. Lavoie and HABS architect Robert R. Arzola. The project historian was James A. Jacobs (George Washington University). Large format photography was undertaken by Joseph Elliott. The measured drawings were completed by a team of architects: Project Supervisor Matthew Crawford (The School of the Art Institute of Chicago), architectural technicians Kwesi Daniels (Tuskegee University), Caroline LaVerne Wright (Tulane University), and Kenneth William Horrigan (ICOMOS-Sydney, Australia).