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A thesis in Historic Preservation Presented to the Faculties of the University of Pennsylvania in Partial Fulfillment of the Requirements of the Degree of Master of Science in Historic Preservation 2008.

Advisor: Melissa S. Meighan

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An Investigation Into Louis Comfort Tiffany's and Tiffany Studios' Architectural Metalwork

Abstract

The stimulus for this investigation into architectural metalwork designed and produced by Louis Comfort Tiffany and Tiffany Studios was the current project involving the conservation of the exterior envelope of the Philadelphia Museum of Art (hereafter referred to as the PMA). The scope of this project is quite large, involving work on different materials and assemblies, including several of the building's exterior metal components.

Disciplines

Historic Preservation and Conservation

Comments

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AN INVESTIGATION INTO LOUIS COMFORT TIFFANY'S AND TIFFANY
STUDIOS' ARCHITECTURAL METALWORK

Paula Kristina Kulpa

A THESIS

in

Historic Preservation

Presented to the Faculties of the University of Pennsylvania in
Partial Fulfillment of the Requirements of the Degree of

MASTER OF SCIENCE IN HISTORIC PRESERVATION

2008

Advisor

Melissa S. Meighan

Lecturer in Historic Preservation

Philadelphia Museum of Art, Conservator of Decorative Arts & Sculpture

Program Chair

Frank G. Matero

Professor of Architecture

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Introduction

The stimulus for this investigation into architectural metalwork designed and produced by Louis Comfort Tiffany and Tiffany Studios was the current project involving the conservation of the exterior envelope of the Philadelphia Museum of Art (hereafter referred to as the PMA). The scope of this project is quite large, involving work on different materials and assemblies, including several of the building's exterior metal components.

Research undertaken concurrently as part of a building survey of the PMA, conducted circa 2000, confirmed that much of the exterior metalwork on the building was produced by Tiffany Studios¹. This consists of bronze window frames and sashes, eighteen large (10' wide by 11'-6½" to 31'-6½" high)

¹ Andrew Lins (The Neubauer Family Chair of Conservation, Senior Conservator of Decorative Arts & Sculpture, Philadelphia Museum of Art), in discussion with the author, April 2008.

ornamental bronze window grills located on the north and south wings, and smaller iron grilles installed on the windows along the ground level. The authorship of the designs was confirmed by the original, stamped, shop drawings from the firm's factory in Corona, New York, which were retained in the architectural archives of the museum. During the preparation of materials for the current restoration work interest arose in uncovering more information regarding the extent to which the Studios produced this kind of work. There is substantial awareness and scholarship on the stained glass windows, Favrile glassware, mosaics, and other small decorative glass, ceramic and metalware objects designed and produced by Louis Comfort Tiffany himself and under his various companies. However the lack of knowledge regarding large scale architectural metalwork attributed to Tiffany himself and the Studios indicates that limited direct research has occurred in this area.

The justification for undertaking this research was two-fold. The uncovering of existing archival materials identifying the firm's completed works would be valuable to individuals and academics interested in the entire scope of Louis Comfort Tiffany's work and projects executed by Tiffany Studios. It would

also benefit professionals involved in the conservation of these works, both currently and in the future. Information about the manufacturing, finishing, and patination processes of these elements could assist in determining the authenticity of works, as well as helping to guide conservation treatments.

In order to pursue this topic further, it was necessary to define what was meant by the term “architectural metalwork”. This was done in order to both establish the scope of the research, and to give those individuals and institutions that assisted in this process, along with readers, a clear idea of what elements were of interest. Therefore “architectural metalwork” within this context was defined by the author as:

Any elements that are required or contribute to the functioning of a building. These can include: windows, doors, grilles, staircases/balustrades, elevators, interior screens, gates, fencing, and large panelling/sheathing installed on walls or structural members.

Furthermore, the author also defined a period of activity as 1880-1932. This period begins just after the establishment of the firm of L.C. Tiffany and Associated Artists, who were commissioned to design complete interiors of rooms and in some cases entire dwellings for their clients. The defined period

of activity ends with the bankruptcy of *Tiffany Studios* a year after the death of Louis Comfort Tiffany. Although Tiffany's personal involvement in many aspects of the firm's production wavered with time and fleeting levels of personal interest, it can be assumed that during this period of time he maintained some level of control and input over what the Studios produced. As a result it is further assumed that throughout this slightly more than fifty year period a certain level of consistency in design, fabrication, manufacture and resulting overall quality would be seen.

While it is unlikely that the exterior metalwork at the PMA was designed by Louis Comfort Tiffany himself, an understanding of his artistic and professional development provides a necessary context for the development of the Tiffany Studios.

Louis Comfort Tiffany

A brief overview of the life and career of Louis Comfort Tiffany provides the necessary context and point of departure for an investigation into the architectural metalwork produced by both Tiffany himself, and Tiffany Studios. Louis Comfort Tiffany was the son of Charles Lewis Tiffany, founder of the Tiffany & Company jewellery store. Family wealth and social status, provided many connections and opportunities along the way. However, Louis Comfort Tiffany acquired his own widespread fame, separate from the success of his father's business. While Charles's strong entrepreneurial skills allowed him to develop a thriving company, Louis's interests drew him towards the study and development of the arts and within a short period of time he became a recognized artist and designer. His experimentation with glass-making

techniques, combined with a broad range of other artistic talents, savvy business skills, and the good fortune of accessibility to his father's wealthy circle of friends, all contributed to his high level of financial and creative success.

Louis Comfort Tiffany was born in 1848, nine years after his father co-founded the retail luxury goods business Tiffany & Young, which in 1854 Charles assumed complete control of and renamed Tiffany & Company¹. Louis Comfort Tiffany showed little interest in either formal schooling or pursuing his father's business. Instead, he was insistent on becoming an artist, and began his casual training with American painters George Inness, followed by Samuel Colman. In 1865 at the age of seventeen, he took his first of many trips to Europe, returning with an armful of paintings and drawings². While he continued to paint for many years to come, he was most intrigued by the early Christian mosaics and the stained glass windows of twelfth- and thirteenth-century churches that he saw in Europe³. Furthermore, Samuel Colman's interest in the decorative arts also influenced Tiffany's change of focus from

1 Tiffany & Co. | History & Timeline|. <http://www.tiffany.com/About/Timeline.aspx>.

2 Hugh McKean, *The Lost Treasures of Louis Comfort Tiffany* (Garden City, NY: Doubleday & Company, Inc., 1980), 2.

3 McKean, 3.

painting to interiors. In 1879 Colman and Tiffany, along with Lockwood de Forest and Candace Wheeler, established the firm of L.C. Tiffany & Associated Artists. Each had their area of interest and expertise, ranging from carving, embroidery, to metalwork and furniture. Together they created innovative and elaborate interiors for their predominately wealthy and influential clients⁴. During the five years that the firm was in operation, they completed the commissions for several interiors in both public and private buildings and for clients such as George Kemp, Hamilton Fish, Cornelius Vanderbilt, and John Taylor Johnston⁵. These were mainly in Manhattan, and one of their most renowned public commissions being the Veterans Room in the Seventh Regimental Armory; but their work also included refurbished rooms in the White House for President Chester Alan Arthur and the home of Samuel Clemens (Mark Twain) in Hartford Connecticut⁶. Despite their success, the firm dissolved when the individual artists became more interested in pursuing separate careers.

4 Alastair Duncan, *Louis Comfort Tiffany* (New York: Harry N. Abrams, Inc., 1992), 31.

5 Alice Cooney Frelinghuysen, "Louis Comfort Tiffany at the Met," *Metropolitan Museum of Art Bulletin*, 56 (1998): 10.

6 Duncan, 35-40.

Tiffany had completed some interiors on his own for the Tiffany family during these years, and continued working as an interior designer after the partnership ended. Two major personal projects from this time included the Tiffany family's top floor Bella apartment, followed by their mansion on Seventy-second Street.⁷ During the mid 1880s through to the early 1890s, Tiffany completed a number of notable commissions for New York residences. Some of these projects incorporated large scale architectural metal work, including a large iron grill for the massive arched entranceway to the Tiffany mansion, and a hanging cast iron staircase constructed for the paintings gallery in the Havemeyer mansion on Fifth Avenue⁸ (See Figure 2.1). While these few examples can be found, his focus appears to have been on the design of complete interiors, with the culmination of this work being the ambitious chapel that he completed for the 1893 Columbian Exposition in Chicago⁹. Following this, it was installed in the crypt of St. John the Divine Cathedral in New York City. The chapel then moved twice more, first onto his Laurelton Hall estate in Oyster Bay, Long Island, and lastly to the Morse Museum in Winter

⁷ Duncan, 35, 40.

⁸ Duncan 38, 45.

⁹ L. C. Tiffany and C. DeKay, *The Artwork of Louis Comfort Tiffany* (Garden City, NY: Doubleday, Page and Company, 1914), 48.

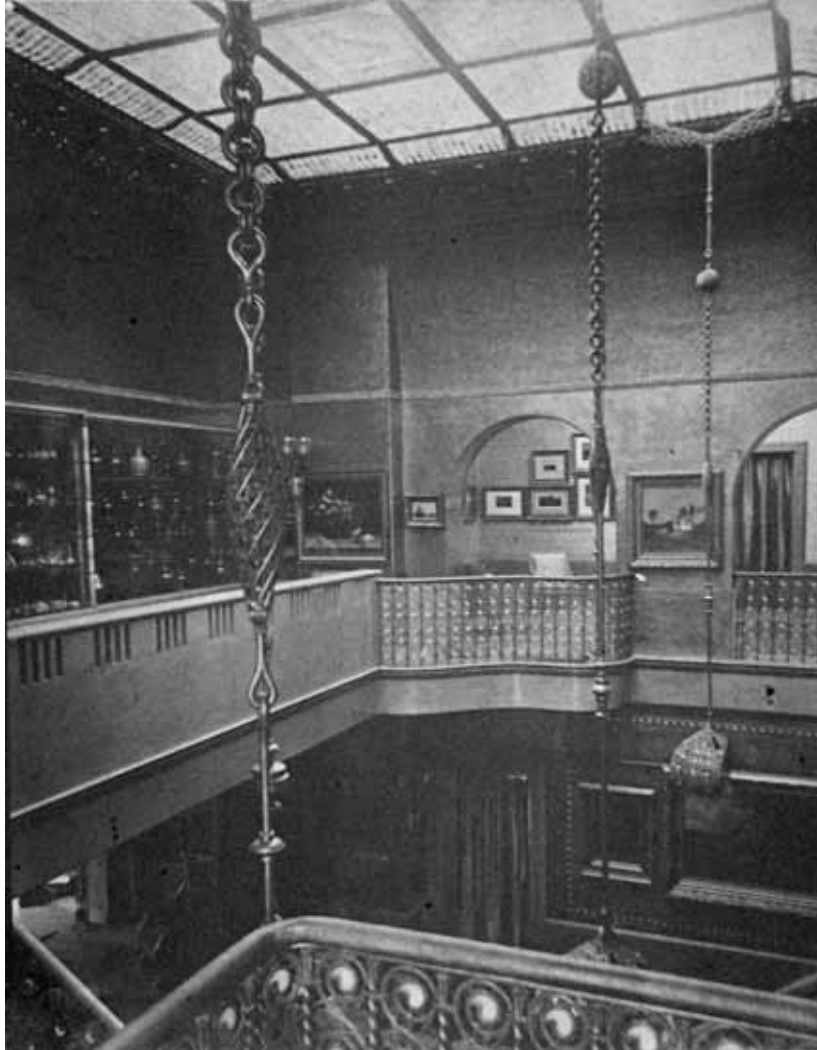


Figure 2.1. Cast iron and glass hanging staircase, view from third floor, designed 1890-1891. Paintings Gallery, H.O. Havemeyer Mansion, New York. Photograph courtesy of the Louis Comfort Tiffany Collection at the Charles Hosmer Morse Museum of American Art, Winter Park, FL.

Park, Florida. Described using variations on the term “Romano-Byzantine”, the original and overwhelming sensory experience it created resulted in the interior being awarded fifty-four medals by the Exposition’s jury¹⁰.

10 J.B. Bullen, “Louis Comfort Tiffany and Romano-Byzantine Design,” *The Burlington Magazine*, 147:1227 (2005): 390.

A synopsis from a Tiffany Studios catalogue available at the Columbian Exposition read: “we cover the whole field of decoration - frescoes and mural paintings, colored glass windows, marble and glass mosaics, wood carving and inlaying, metal work, embroideries, upholsteries and hangings.¹¹” Although he continued to offer interior design services through his various firms, according to most accounts, Tiffany’s attention was increasingly diverted to his interest and experiments in glass¹². One of the last major complete interior design projects Tiffany was involved with was for the Presidential Palace in Havana Cuba. Completed for President Menocal in 1918, it included metalwork, rugs, lamps and reproductions all fabricated at Tiffany Studios¹³.

Tiffany had been experimenting with glass since the early 1870s. Tiffany and John LaFarge, along with others, attempted to produce glass that came in a wide range of brilliant colours, and incorporated the leading as a part of the design¹⁴. This opalescent glass, which used metal oxides as a colourant, was a centuries old technique lost to most glass manufacturers who instead used

11 Marilyn A. Johnson, “Louis Comfort Tiffany: A Nineteenth-Century Artist,” in *Louis Comfort Tiffany Artist for All Ages*, ed. Marilyn A. Johnson (London: Scala), 41.

12 Johnson, 37.

13 Robert Koch, *Louis C Tiffany; Rebel in Glass* (New York: Crown Publishers, Inc, 1982, 3rd Ed), 193.

14 Duncan, 51.

coloured enamels fused in place¹⁵. Despite an initial collaboration, Tiffany and LaFarge ultimately chose to continue the pursuit of their techniques individually. These first experiments in glass took place at the Thill glasshouse in Brooklyn, New York, and in 1878 established his first glass house, hiring the Venetian Andrea Boldini as Supervisor¹⁶. When his facilities were twice destroyed by fires, he moved once again, in 1880, to the Heidt glasshouse in Brooklyn, New York¹⁷.

Tiffany Glass Company was founded in 1885¹⁸, and following the American Civil War, a sharp rise in ecclesiastical construction helped to establish Tiffany Glass Company as the leader and largest stained glass studio in the United States. This increase in both small and large scale commissions led Tiffany to gather a team of designers to form a window department within the company¹⁹. During 1890, Arthur J. Nash arrived in the United States from Stourbridge, England. Nash had worked in the British glass industry, and it was with his help that in 1892 Tiffany was finally able to establish his own glass

15 McKean, 2.

16 Paul E. Doros, *The Tiffany Collection of the Chrysler Museum at Norfolk* (Richmond, VA: W.M. Brown & Son, Inc, 1978), 14.

17 Koch, 1982, 53.

18 Frelinghuysen, 1998, 11.

19 Duncan, 56.

furnaces, which were constructed in Corona, New York²⁰. Nash was interested in working with Tiffany because his workshop operated as more of an arts studio, rather than becoming involved in solely commercial glass production, and ultimately was placed in charge of glass manufacturing²¹.

At this time Tiffany also changed the name of his company to Tiffany Glass & Decorating Company²². Within a few years the firm had also perfected its techniques at blown glass, and at the end of 1894 patented the trade name of “Favrile” glass (Trade-Mark No. 25,51223), which Tiffany chose to allude to its handmade nature²⁴. Before the turn of the century, his workrooms and furnaces were mass producing art glass and other small decorative wares which were then sold not only to commissioning clients, but also to the public at large by the way of the Tiffany Studios showroom on Madison Avenue²⁵.

With the death of Charles Lewis Tiffany in 1902, Louis assumed management and ownership of his father’s jewellery store and simultaneously

20 Leslie Hayden Nash, “Tiffany Favrile Glass” in *Behind the Scenes of Tiffany Glass Making*, (New York, NY: St. Martin’s Press, in association with Christie’s Fine Arts Auctioneers, 2001): 5.

21 Nash, 5.

22 Duncan, 60.

23 In Koch, 118.

24 McKean, 5.

25 McKean, 5.

became the first art director for Tiffany & Company. It was in this same year that the Tiffany Studios name - which had been in use since 1900 - became officially incorporated, and replaced the entity Tiffany Glass & Decorating Company²⁶. The combination of these events permitted Tiffany to easily display his works for sale. Almost everything being produced by his firms could be found either in the Tiffany Studios showroom, in the Tiffany & Company store itself, or in the *Blue Book* catalogue of Tiffany & Company merchandise²⁷.

It was also during 1902 that Tiffany purchased the estate in Oyster Bay, Long Island where his summer home, Laurelton Hall, would be built²⁸. He tore down the existing hotel, but maintained the name. He employed a young architect from Tiffany Studios, Robert L. Pryor, to design his second home, while Tiffany himself created many of the interior rooms, and some exterior spaces.²⁹ While originally designed as a retreat dwelling for his family, he would later use the estate, complete with his decorative schemes and artwork, as an inspirational setting for his foundation students.

²⁶ Johnson, 49.

²⁷ McKean, 6.

²⁸ McKean, 113.

²⁹ Ibid.

His lamps, Favrile glass, enamels, and jewellery designs maintained their popularity for almost two decades. However, by the 1920's tastes had changed. While Tiffany remained committed to the *Art Nouveau* movement, many began to view his designs as outdated when compared to the burgeoning modernist art movement, and organizations such as the *Bauhaus*, which advocated unadorned, geometric designs³⁰.

At this same point Tiffany slowly began to limit his direct involvement in many of his businesses. He resigned as artistic director of Tiffany & Company in 1918³¹. The following year, 1919, the Nash brothers took over the management of glass production at the Corona factory. Then in 1928 John Polachek, who at one point ran the operations at the Tiffany foundry, took proprietorship³². As owner of John Polachek Bronze & Iron Plant, Polachek played a part in the consolidation of eleven American foundries, including Tiffany Studios Bronze & Iron Plant, into the General Bronze Corporation³³. Production continued, with some credit still going to those commissions/works fabricated at the Corona

³⁰ McKean, 131.

³¹ Duncan, 124.

³² "Bronze Corporation Buys Tiffany Studios", *The New York Times* (January 28, 1928).

³³ In this same year, Roman Bronze Works, another of the subsidiary companies purchased by General Bronze Corporation moved into the Tiffany bronze foundry (Gray 1987). Salvator Schiavo, who came from a line of workers at the Corona foundry, purchased Roman Bronze Works and the plant from General Bronze Corporation in 1948 (Jonathan Frembling, email, February 11, 2008). The business continued until the late 1980s, when Schiavo sold the complex to a real estate developer with the hope of obtaining a combination of a major sculpture-related tenant, several other smaller artists, and creating a gallery space (Gray 1987).

foundry³⁴. The Nash brothers closed the glass factories by 1930, and in 1932 Tiffany Studios filed for bankruptcy³⁵.

At the same time as Tiffany was removing himself from his businesses, he made the decision to begin the Louis Comfort Tiffany Foundation in 1917, which provided young artists of all disciplines - industrial and fine arts - the opportunity to pursue research, and participate in loosely structured courses. The foundation was incorporated the following year and an endowment was established which was comprised of Laurelton Hall mansion and its approximately 62 acres of land, including the chapel designed for the 1893 Columbian Exposition, all of Tiffany's art collections, and \$1.5 million in funding³⁶. Tiffany saw this as the opportunity to establish a lasting legacy, confirming his place as an artist, and not merely a successful entrepreneur.

Tiffany died in 1933. Despite the bankruptcy and closure of Tiffany Studios, along with financial difficulties brought on by the stock market crash in 1929 and the ensuing decades, the foundation managed to survive in a modest form. In 1945 the foundation was modified to functioned as a grant

34 General Bronze Corporation advertisement, "The Quality of distinction in ornamental metal productions", *The Metal Arts* 3:1 (1930):6.

35 Johnson, 52-53.

36 Duncan, 142.

program offering financial awards to artists pursuing work in several areas. Today areas of study include: painting, sculpture, printmaking, photography, video and craft media³⁷. The foundation continues to provide annual grants to the figure of approximately \$100,000 to artists³⁸.

It took several decades for people to redevelop an interest in Louis Comfort Tiffany's work. The resurgence began in the mid 1950's with a retrospective exhibit of his works at the Museum of Contemporary Crafts in New York. Interest in Tiffany's work remained strong for the second half of the twentieth-century, with several larger exhibits organized in the early nineties. These included ones at the Metropolitan Museum of Art, and the Smithsonian Institution, the latter of which also travelled to venues in Japan³⁹. Most recently, ending in May of 2007, the Metropolitan Museum of Art held an exhibit, *Louis Comfort Tiffany and Laurelton Hall - An Artist's Country Estate*, which brought together many of the surviving architectural and decorative elements of the house⁴⁰. The Charles Hosmer Morse Museum of American Art in Winter Park

37 Alice Cooney Frelinghuysen, *Louis Comfort Tiffany & Laurelton Hall: An Artist's Country Estate* (New Haven, CT: Yale University Press, 2006), 212.

38 Duncan, 144.

39 Duncan, 149.

40 The Metropolitan Museum of Art Special Exhibitions: Louis Comfort Tiffany and Laurelton Hall - An Artist's Country Estate, http://www.metmuseum.org/special/se_event.asp

Florida acquired a large portion of the architectural embellishments from Laurelton Hall, and continues to purchase and collect Tiffany decorative works and archival materials.

For the most part, all these exhibits and collections focus on either the smaller decorative wares such as his lamps, Favrite glass, and enamels, his stained glass windows, or combined interior decoration schemes. What appears to have been overlooked is the larger scale architectural metalwork that had either been designed by Louis Comfort Tiffany himself, or was designed and manufactured by Tiffany Studios. This gap provides the opportunity to further investigate yet another facet of Tiffany's production.

Literature Review

The names Louis Comfort Tiffany and Tiffany Studios are almost exclusively associated with the brilliantly coloured stained glass windows, lamps, glassware, and small metalwares designed and produced by these entities. Recognizing that Tiffany was a forerunner of the *Art Nouveau* movement in the United States, much of what has been researched and written on him focuses on his work with objects and specifically his glasswork. Furthermore, museum exhibitions of his work have also focused on these, since many of these objects were easily acquired, displayed, and stored by institutions and collectors. Thus the lack of information available on architectural metalwork produced through Tiffany Studios is possibly a result of the size of the work and its nature as a permanent installation/functional component of buildings.

However there are examples of large mosaic work installations, such as *The Dream Garden* featured in the lobby of the Curtis Publishing Company building in Philadelphia, that are fairly well known. Therefore the lack of knowledge on architectural metalwork might be because the designs may not have belonged to Tiffany himself, but rather were the artistic compositions of workers in the foundry or collaboration with outside architects.

There are many books, exhibition and collections catalogues, and articles which address everything from Louis Comfort Tiffany as a person, and the evolution of his career, to those dealing more specifically with each of the different media he worked with, some even focusing on single works. Most of these sources recap the general progression of his work and artistic interests from painting, moving next to the design of complete interiors, and then to experimentations in glass, both in large and small scale. Most of the sources also mention the various firms that Tiffany established to deal with the different areas of his work. This information is often times confusing since most authors do not mention the complete chronology of firms that evolved, but instead mention only those which dealt with manufacture of specific goods¹.

¹ An overall timeline is provided in Appendix A.

Much of the literature on Tiffany mentions not only his work as an interior designer, but also his interest in architectural design and collaborations with well-known architects of the time. However the same projects are discussed repeatedly, all of which were high-profile either because of their collaborative nature, the client, or the international acclaim that followed. The commissions for wealthy patrons that were completed by Louis Comfort Tiffany & Associates are often mentioned. However few details are given, with most sources merely listing for whom the work was completed. This indicates that it was more important who they were designing interiors for, rather than the composition of the spaces themselves. Very few of these works remain entirely intact, if they remain at all, and little documentation of their appearance seems to exist.

It has proven difficult to find sources that make worthwhile comment on Tiffany's individual larger-scale work or contributions to architectural designs, particularly metalwork. Perhaps the most well-known and written about of his interiors is the chapel he designed for the 1893 World Columbian Exposition in Chicago, which mostly made use of glass mosaics to execute his design scheme.

The depth of information on this particular work appears to be the result of several factors: the international acclaim it drew at the time, combined with its continued existence and installment in prominent locations, and recognition as an important example of how Tiffany sought to create complete interiors.

The other frequently mentioned architectural work was Tiffany's 1890 design for a staircase in the paintings gallery of the Havemeyer mansion located in New York City (McKean, 1980, 111) (Figure 3.1). Tiffany's unique design called for a hanging staircase and second story balustrade constructed from cast iron and glass. This particular work is mentioned in a range of publications on Tiffany, including even Joseph Purtell's *The Tiffany Touch*, which uses predominantly a series of anecdotes to recount the development and influence of Tiffany & Company (Purtell, 1971, 128). Although the house was demolished in 1930 (Johnson, 2005, 53) several archival photographs and a section of the balustrade remain and are in the University of Michigan Museum of Art's collection. The institution published a catalogue, *The Havemeyer Tiffany Collection at the University of Michigan Museum of Art* (1992). This publication features not only the archival photographs alongside images of the salvaged

staircase components, but also includes images of the massive bronze, wood and glass main entrance door that Tiffany designed, a design element that few sources mention.

Hugh McKean's *The "Lost" Treasures of Louis Comfort Tiffany* (1980) is one of few comprehensive sources available. In addition to a broad investigation into all of Tiffany's areas of interest, it provides brief narratives, along with a few photographs, of architectural metalwork made as part of his interior and architectural designs.

Specifically, McKean mentions the large metal gate designed for the Tiffany family mansion built in 1885, at the corner of 72nd Street and Madison Avenue (McKean, 1980, p.108-9) (Bullen, 2003, p.393) (Koch, 1982, p.63). Influenced by the designs of H.H. Richardson, the firm of McKim, Mead and White designed the building, while Tiffany controlled the design of the interior. Additionally, Tiffany himself mentioned his part in the design of this home, and the gate specifically, in the book he co-authored with DeKay in 1914, entitled *The Artwork of Louis C. Tiffany* (Tiffany and DeKay, 1914, 57).

Tiffany only had 300 copies produced of this book that he co-authored with DeKay. Tiffany dedicated the book to his children, with the intention of illustrating to them his accomplishments as a professional artist. McKean and other sources have indicated that this personal publication of Tiffany's is useful as it examined in detail all of his abilities, including his architectural ones (Duncan, 1989, 9). Unfortunately, the information that DeKay provides in chapter eight entitled "A Builder of Homes" is still very limited, and again only mentions those projects discussed above.

The commission for the mosaic fire curtain in the National Theater, Palace of Fine Arts in Mexico City is another major Studios project that also has direct associations with Tiffany, and is mentioned in several sources. Dating from 1909-1911, the image used as the basis of the glass mosaic, a view of the two mountains Popocatepetl and Ixtaccihuatl, was painted by Harry Stoner. However it is only McKean who notes that the development of the system of counterbalancing weights used to raise and lower the twenty-seven ton metal and glass curtain was attributed to Tiffany himself (McKean, 1980, p.145).

Despite poor documentation and referencing of specific works, the ongoing interior design work completed by Tiffany Studios is mentioned fairly often. Marilynn A. Johnson's *Louis Comfort Tiffany: Artist of the Ages* includes the following synopsis of a Tiffany Studios advertisement posted at the firm's exhibit space at the Columbian Exposition in Chicago of 1893:

“We cover the whole field of decoration - frescoes and mural paintings, colored glass windows, marble and glass mosaics, wood carving and inlating, metal work, embroideries, upholsteries and hangings” (Johnson 2005, p.41).

Weisberg's *Art Nouveau Bing Paris Style 1900* (1985, p. 49), tells of how Samuel Bing, during his 1894 trip to America, was drawn to Tiffany's work on account of the size, scale and complexity of operations occurring at the firm's manufacturing site. A quote from *Artistic America* during this time said the following about operations at Tiffany Studios:

“...A vast central workshop that would consolidate under one roof an army of craftsmen representing every relevant technique: glass makers, embroiderers and weavers, case makers and carvers, gilders, jewelers, cabinet makers - all working to give shape to the carefully planned concepts of a group of directing artists” (Weisberg, 1985, p.49).

Frelinghuysen in fact indicates how Tiffany continued doing this kind of work throughout his career, to a much greater extent than is often recognized by writers and scholars (Frelinghuysen, 1998, 11). It seems that because his interests were so varied, that he would begin exploring a certain area or medium of the fine or decorative arts, establish a division for the production of a given type of merchandise, and then move onto something new. As a result of this constant shifting between areas of interest, combined with reigning popular tastes of the time, and the promotion of certain areas of the Studios over others, certain aspects of his creative work are less noted.

Since few books and articles written on Louis Comfort Tiffany and Tiffany Studios mention architectural metalwork, the search was broadened to include general sources dealing with large scale metalwork during this period. This was done both for historical context and to determine if any mention known works completed by Tiffany Studios. This avenue of research did uncover some valuable information, albeit by indirect means. While searches through indexes did not prove fruitful, personal inquiries into Historical Societies and even particular buildings, visual surveys of the photographic

plates, and in some cases advertisements, in reference books and journals revealed a few works by Tiffany.

Geerlings's *Metal Crafts in Architecture* of 1929 is an excellent source for information on the historical and contemporary methods of metalwork production. The book is organized according to metals, beginning with the most popular material for architectural works bronze, brass, cast iron and copper, followed by the less ubiquitous architectural metals. Geerlings includes 164 illustrations, some of foundries and workshops, but mostly of completed work. The geographic location of the illustrated works varies depending on the material, although each category tends to favour work from a relatively narrow area. For example, the American bronze works featured are predominantly from New York City, where as much of the iron work is from South Carolina. This limited geographic representation of works seems to be an indication of the materials' popularity in one area over another, and therefore the foundries servicing those areas.

The buildings showcased came from a small selection of metal craftsman studios: John Polachek Bronze and Iron Company, Renaissance Bronze and

Iron Works, General Bronze Corporation, Superb Bronze & Iron Co. Inc., Gorham Company, and Wm. H. Jackson Company, indicating a strong regional/geographical leaning and/or preference for particular foundries, most of which were located along the Atlantic coast or North-Eastern region of the United States. It is unknown whether this is a result of the author's bias, or if this is truly representative of how these few firms may have dominated the industry. However amongst all this is a lone example of metalwork that is attributed to Tiffany Studios, a bronze marquee entrance to "The Sheridan Shop on Fifth Avenue New York"².

The book *Metals in America's Historic Buildings: Uses and Preservation Treatments 2nd Edition*, is another excellent source providing an overview of the properties, methods of production and uses of common architectural metals, as well as historic examples. The buildings featured in image plates tend to be more varied than in Geerlings's book, however the almost fifty years between publication dates is no doubt a factor. There is one mention of a Tiffany commission, for the bronze sheathing on the columns in the main lobby of the

² Gerald K. Geerlings, *Metal crafts in architecture; bronze, brass, cast iron, copper, lead, current developments, tin, lighting fixtures, specifications*, (New York, NY: C. Scribner's Sons, 1929), 84.

City-County Building in Pittsburgh, Pennsylvania³, although it inaccurately refers to the designer as “Tiffany & Co.”⁴, rather than Tiffany Studios.

A journal directed towards architects, decorators and craftsmen in metal was published between 1928 and 1932. Originally titled *The Metal Arts*, and edited by Eugene Clute, it was absorbed in 1930 into the journal *Metalcraft* published by Furniture Publishing Corporation in Jamestown, New York. Interestingly, during the years it was known as *The Metal Arts*, the journal focused much more on the contributions of the metal craftsmen, noting which firms executed all of the works featured in the periodical. However with the change in editorial staff, the focus became far more on the architects of buildings, and unfortunately makes almost no note of who manufactured the metalwork contained in or on the featured buildings.

While no works directly attributed to Tiffany Studios are featured in the journals, projects executed by General Bronze Corporation can be found throughout every month. Advertisements for General Bronze begin to appear

³ Margot Gayle and David W. Look, *Metals in America's Historic Buildings: Part I. A Historical Survey of Metals*, (Washington: U.S. Dept. of the Interior, Heritage Conservation and Recreation Service, Technical Preservation Services Division, 1980), 33.

⁴ *Tiffany & Company* operated almost solely as a jewelry and luxury goods retail store. While throughout its history it has completed several special commissions for small scale metal work, such as redesigning of the Great Seal of United States of America (1885), the National Football League's Super Bowl Trophy (1967), and a NASCAR trophy (2004), the firm otherwise did not complete private commissions, and never designed large-scale work (www.tiffany.com/about/Timeline.aspx). However the small glass and metal decorative objects produced by *Tiffany Studios* were displayed and sold at the Fifth Avenue store, and in the *Tiffany Catalogue*.

with the January 1930 edition, where they published an advertisement entitled “The Quality of Distinction in Ornamental Metal Productions”, which announced the consolidation of a group of previously private companies, listing all of them including Tiffany Studios and the subsequent creation of the corporate entity General Bronze Corporation (Metalcraft, 3:1, 6). This same advertisement ran for a second time in the February 1930 issue (Metalcraft, 4:1, 393). It is curious that this notice first appeared in January of 1930, yet the previous two volumes of the journal referred to works by General Bronze Corporation. The purchase of Tiffany Studios was mentioned in a *New York Times* article on January 31st, 1928. This leads to the question of whether or not some of the pre-1930 articles featuring works attributed to the General Bronze Corporation, consisted of metalwork actually designed and manufactured by one of the eleven subsidiary companies absorbed into the corporation.

Other advertisements for General Bronze Corporation include images from buildings for which the ornamental metalwork was produced in one of their subsidiary plants. Two of these included projects where part of the work was carried out at the Tiffany Studios Corona foundry.

Since the Tiffany work at the Philadelphia Museum of Art was the impetus for this investigation there was hope that David Brownlee, in his book *Making a Modern Classic: The Architecture of the Philadelphia Museum of Art*, would have remarked in some depth on this unique element of the building's design. Unfortunately the metalwork produced by the Studios was only mentioned in passing, with no reference to the existence of the confirmatory source of this - the original drawings housed in the museum's archives (Brownlee, 1997, p.84).

The only other example of work not directly attributed as a design of Tiffany himself, but rather just a product of Tiffany Studios, and which is mentioned outside of any book written specifically on Tiffany, is the Old Post Office and Federal Building located in Dayton, Ohio. A 1980 article from *Bulletin of the Association for Preservation Technology*, written by Peter A. McGraw, and titled "The Old Post Office and Federal Building in Dayton, Ohio: A Case History of Restoration and Adaptive Reuse," discusses the conservation and restoration work undertaken by the firm of Lorenz and Williams Incorporated. McGraw mentions how the centerpiece of this 1915 building is the spacious and

elaborately articulated lobby which includes decorative bronze work executed by Tiffany Studios.

The reference information readily available on this aspect of work completed by Tiffany himself and the Studios is certainly limiting. However, by broadening the scope of research, combined with the opportunity to view Tiffany Studios published catalogues and archival materials it can be shown that this area of production may to have been much larger than previously thought.

Catalogues

Tiffany Studios

The Studios did publish a number of catalogues themselves, which ranged in purpose and product focus. Some gave an overview of all works produced by the Studios, whereas others were department¹ specific. Those produced for some of the smaller decorative wares such as: lamps, desk sets, Favrile glass and ceramics, gave more clear idea about exactly what goods were available for purchase at the showroom. It was not possible to view any copies of the *Blue Book* published annually by Tiffany & Company, contemporary to this period; however it seems reasonable to assume that these pamphlets or

¹ Archival materials in the Louis Comfort Tiffany Collection at the Charles Hosmer Morse Museum of American Art indicates that the studios workshop was divided into distinct departments, each responsible for a particular group of items: lamps, ecclesiastical, stained glass, windows metals, rugs, etc.

catalogues for the smaller decorative wares presented information similar to what may have been provided in the *Blue Book*.

These catalogues allowed consumers to determine what they would like to purchase from a selection of pre-fabricated goods with common design themes. On the other hand, certain catalogues were meant to be consulted as examples of the kind of work that the Studios was capable of producing, both in large quantities and for individual clients. This usually involved larger scale objects such as memorials - particularly mausoleums - but also some examples of architectural and interior design work.

While no catalogues specifically for the Ornamental Bronze and Iron Work department appear to exist, significant examples of this kind of work are featured in two catalogues produced by the Studios. *Character & Individuality in Decorations and Furnishings* which dates from 1913 provides a general overview of Tiffany Studios products, and espouses the firm's decorative aims of "comprehensiveness and distinctiveness²." The catalogue contains three photographic plates of large scale metalwork: a bronze stair railing, a bronze

²Tiffany Studios. *Character & Individuality in Decorations and Furnishings*, New York: Tiffany Studios, 1913.



Figure 4.1. “Bronze Stair Railing Executed by Tiffany Studios”. Photograph from *Character and Individuality in Decorations and Furnishings*, published by Tiffany Studios 1913. Courtesy of the Louis Comfort Tiffany Collection at the Charles Hosmer Morse Museum of American Art Archives.



Figure 4.2. “Bronze Marquee Executed by Tiffany Studios”. Photograph from *Character and Individuality in Decorations and Furnishings*, published by Tiffany Studios 1913. Courtesy of the Louis Comfort Tiffany Collection at the Charles Hosmer Morse Museum of American Art Archives.

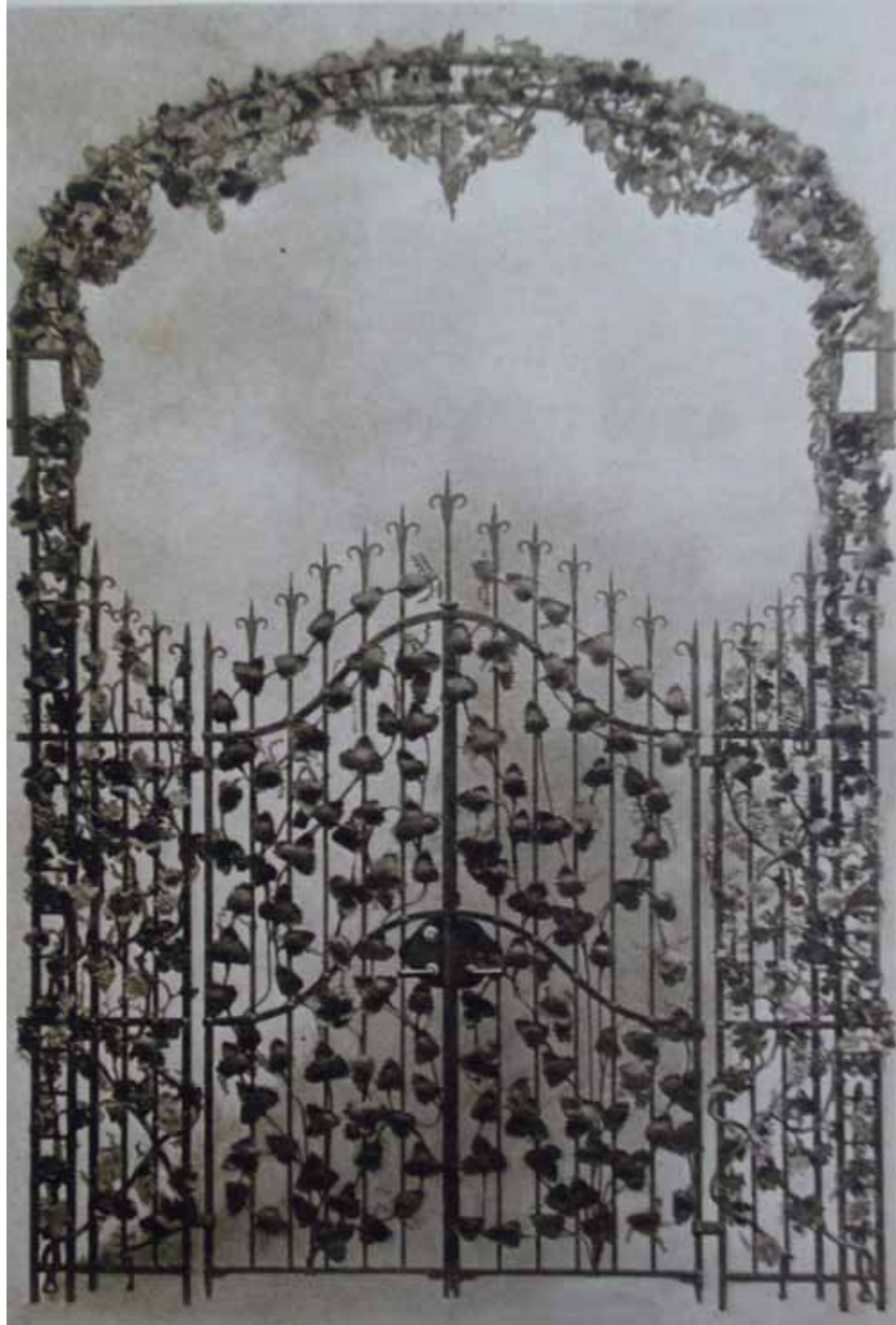


Figure 4.3. “Wrought Iron Arch Executed by Tiffany Studios.” Photograph from *Character and Individuality in Decorations and Furnishings*, published by Tiffany Studios 1913. Courtesy of the Louis Comfort Tiffany Collection at the Charles Hosmer Morse Museum of American Art Archives.

marquee and an iron arched gate (Figures 4.1-4.3). This particular catalogue also contains photographs of views into the various rooms in the Tiffany Studios showrooms located at 357-355 Madison Avenue in New York City. Included is one of the Metal Showroom (Figure 4.4). While it is difficult to make out the details of this photograph, the room is filled with many of the smaller metalwares such as desk sets, table and hanging lamps, sconces, candlestick holders, and andirons. Samples of what one can assume is patterned metalwork appear on the upper portions of the walls. Specifically what type of decorative



Figure 4.4. “Metal Showroom. Tiffany Studios”. Photograph from *Character and Individuality in Decorations and Furnishings*, published by Tiffany Studios 1913. Courtesy of the Louis Comfort Tiffany Collection at the Charles Hosmer Morse Museum of American Art Archives.

work they would be used for is uncertain, but it is possible that these could have illustrated popular designs and motifs for fire screens, wall or door panelling, or larger framing elements.

A separate catalogue titled *Activities of Tiffany Studios*, is yet another catalogue discussing the varied production of decorations and furnishings undertaken by the firm. Although the catalogue is not dated, the address of the studios is given as “47th Street and Madison Avenue”, meaning that this catalogue must have been published sometime after 1905 when the showroom moved from Fourth Avenue near 25th Street, to their later location in Midtown Manhattan³. Page nineteen of the catalogue summarizes the work undertaken by the firm’s Ornamental Bronze and Iron division:

“Tiffany Studios manufactures bronze and iron work for all kinds of building construction - private residences, banks, hotels, clubs and office buildings. The work includes plain and ornamental bronze doors, trim, grilles, bank screens, stairs and balustrades, fountains, windows, elevator enclosures, store fronts and monuments.”

³ Century Deal a Future, Sells Choice Parcels on Manhattan for More Than \$2,000,000,” *New York Daily Tribune*, March 12, 1905.



Figure 4.5. "Ornamental Bronze and Iron" division. Drawing from *Activities of Tiffany Studios*, published by Tiffany Studios, no date. Courtesy of the Louis Comfort Tiffany Collection at the Charles Hosmer Morse Museum of American Art Archives.

It goes on to say that “casting and finishing are done in [their] own foundries under the supervision of expert craftsmen, thus ensuring the correct interpretation of the architect’s and sculptor’s arts⁴.” Beneath all the text is a drawing of a door, presumably to be executed in bronze or iron (Figure 4.5).

It is curious that so little is known or written regarding this scale of metalwork produced by the studios. Not only do both these catalogues advertise these services, but they were also listed on the plaque placed outside the Studios’ showroom on 45th Street and Madison Avenue. The wording of this plaque indicates a willingness on the part of the firm to work with the designs of architects, stating that the firm included, “workers in metal[,] wood[,] glass and fabrics[,] makers of rugs[,] mosaics & ornamental bronze[,] teak wood carvings executed in India from architects design.⁵”

Tiffany Studios’ Ecclesiastical Department published a number of separate catalogues. These included ones discussing many different types of funerary monuments, to those showcasing only specific types. *Out-of-Door Memorials: Mausoleums, Tombs, Headstones and all Forms of Mortuary Monuments,*

⁴Tiffany Studios, *Activities of Tiffany Studios* (New York: Tiffany Studios), 19.

⁵Rubbing taken from a bronze plaque outside the Tiffany Studios showroom on 45th Street and Madison Avenue, New York City. Louis Comfort Tiffany Collection, Charles Hosmer Morse Museum of American Art Archives.

was published by the Studios in 1898, which at that time were still under the official title of Tiffany Glass & Decorating Company. Unfortunately this publication has little information to offer. It gives brief definitions of the different types of funerary monuments available, along with when and where they are most appropriate. Additionally, it provides a very superficial overview of the development of these different types of memorials, along with well-known and obvious historical examples for each. It includes photographs, all of which have the captions “Tiffany Studios”, leading to the assumption that they are all works executed by the Studios. While both the photographs and most of the text are of little interest to the area of large scale metal work, the discussion on Mausoleums suggests the use of bronze as a durable material for fabricating frames, locks, handles and sockets, although no photographs of these kinds of details are included.

Another similar catalogue titled *Out-of-Door Memorials, God's Acre* was published five years later in 1903. The content is similar in terms of the narrative, although illustrations rather than photographs of works designed by Tiffany Studios are included. One notable difference between these two

publications is the additional back page of the later catalogue. “Ornamental Iron and Bronze Work” is included as a separate department of the newly incorporated Tiffany Studios. In addition to an index of the factory departments there is a list of select awards given to works produced by the Studios. This includes a gold medal at the Turin Exposition (1902) for their metalwork, a gold medal for their art metal work at the Pan American Exposition in Buffalo, New York (1901), as well as the 54 medals that both Tiffany & Company and Louis Comfort Tiffany won at the 1893 Columbian Exposition in Chicago.

More significant than either of these is a catalogue published over a decade later titled, *Mausoleums*⁶. This document clearly states its purpose to be a “brochure published as an advertising medium”. While it still uses the same narrative on easily recognizable historic examples of the different types of memorials, it also includes many drawings, photographs of scale models and photographs of completed memorials installed in their final settings (See Figures 4.6 and 4.7). This catalogue is similar to architectural or decorative pattern books in that it shows typical examples of what they list as distinct styles or materials: Classical, Egyptian, and Tiffany Granite. However, regardless

⁶Tiffany Studios, *Mausoleums* (Baltimore and New York: Munder-Thomsen Press, 1914).



Figure 4.6. “A Tiffany Mausoleum - Front Elevation.” Drawing from Tiffany Studios *Mausoleums* Catalogue. Courtesy of the Louis Comfort Tiffany Collection at the Charles Hosmer Morse Museum of American Art Archives.

of the style or structural material used for the mausoleums, almost all of them include some large-scale metalwork such as sets of decoratively articulated bronze doors, iron window grilles, or other paneled decorative components. Furthermore, in referencing one of the works, it mentions the mausoleum as having a “specially designed Tiffany Bronze Door”. This could imply that in addition to carrying out architects’ designs for mausoleums, the Studios either created special designs upon request, or had a series of stock designs for the doors. Although a place of production is not mentioned it is reasonable to assume the manufacturing of the doors took place at the Tiffany Studios factory.

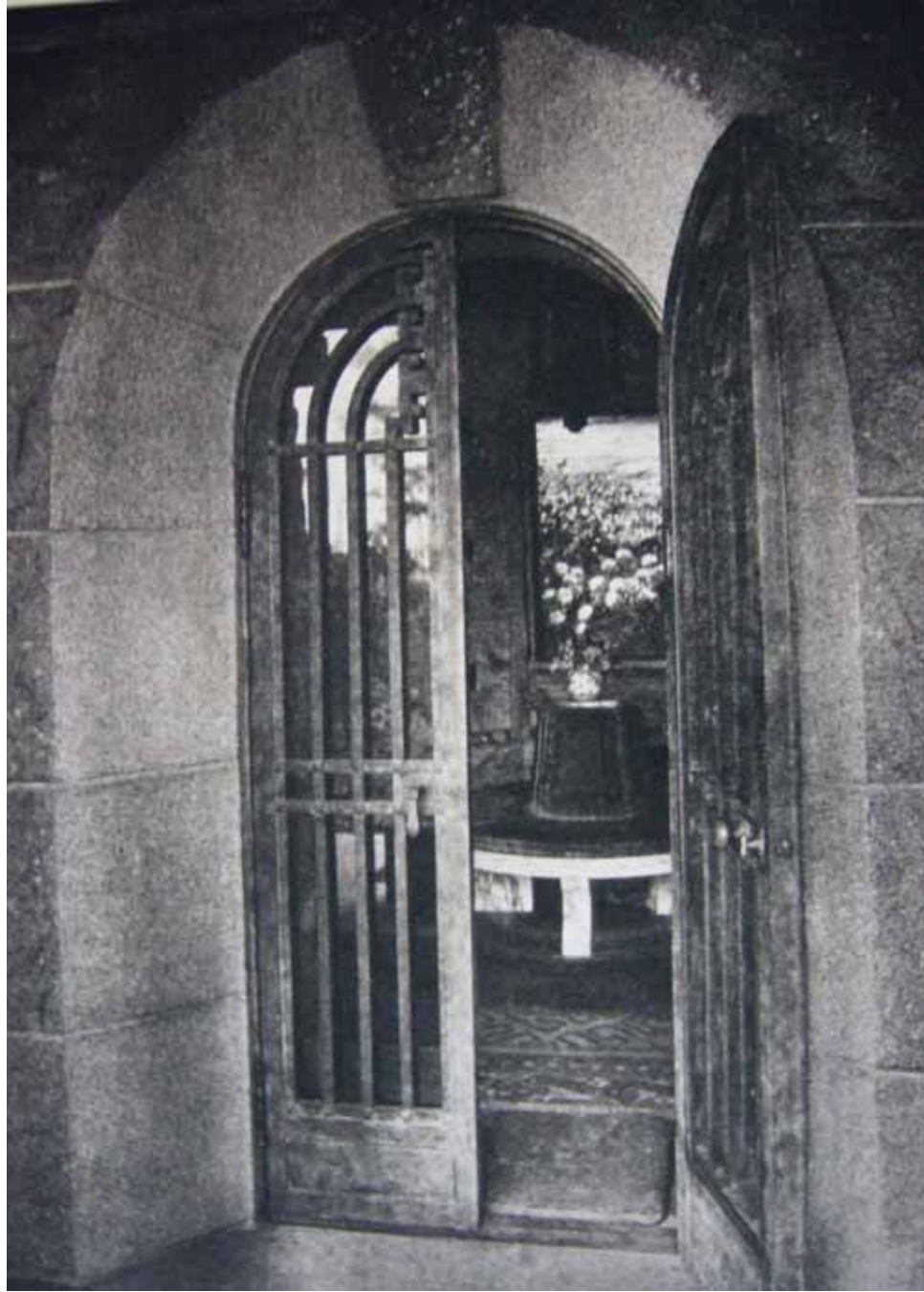


Figure 4.7. "A Tiffany Mausoleum - the Entrance." Photograph from *Mausoleums*, published by Tiffany Studios, no date. Courtesy of the Louis Comfort Tiffany Collection at the Charles Hosmer Morse Museum of American Art Archives.



Figure 4.8. “Interior of Theatre and Mosaic Curtain.” Photograph from Tiffany Studios *Mosaic Curtain for the National Theatre of Mexico* Catalogue. Courtesy of the Louis Comfort Tiffany Collection at the Charles Hosmer Morse Museum of American Art Archives.

The foundry’s ability to handle large commissions is reaffirmed by another brochure published after 1911 called *Mosaic Curtain for National Theatre of Mexico*⁷. It appears this pamphlet publicized the Studios’ commission to design and construct a fire curtain for the National Theatre in Mexico City (See Figure 4.8). Interestingly the mosaic pattern design of a view of two well known volcanos was not Tiffany’s, but rather was created by Harry Stoner⁸. However,

⁷ Tiffany Studios, *Mosaic Curtain for the National Theatre of Mexico*, (New York: R.L. Stillson Co).

⁸ Hugh F. McKean, *The “Lost” Treasures of Louis Comfort Tiffany*. (Garden City, NY: Doubleday & Company, Inc., 1980), 145.

the brochure clearly states that the design and execution of the twenty-seven ton bronze frame was carried out at the Tiffany Studios factory in Corona, New York. In their seemingly endless self-promotion, the Studios makes the comment that they were selected for the project on account of the fact that their, “careful attention to detail has resulted in a suitable harmonious setting.”

Trade Catalogues

In addition to the catalogues published by Tiffany Studios themselves, they also advertised in trade catalogues. From the period of 1911 to 1928 advertisements appeared in *Sweet’s Architectural Trade Catalog*⁹. These have proven to be superior in not only identifying works executed, but also the variety of products and commissions the Studios worked on.

The top of each advertisement card, bears the heading “Tiffany Studios Ornamental Bronze and Iron, Interior Decorations and Furnishings”, beneath which is the company’s New York showrooms address. Between the years of 1911 and 1915, the locations of two additional offices were included. One was a New England Office located in Boston and a Western Office located in Chicago.

⁹ Avery Library, *Sweet’s Architectural Trade Catalog*, (New York: Clearwater Publishing Company, 1911-28).

This certainly indicates that enough demand for their products existed that expanding to include additional offices was both necessary and profitable.

Certain elements of the advertisements changed over time, such as: the complete title caption, how information was presented and the photographic examples of works that accompanied the advertisements. However much of the information presented remain unchanged throughout their run in the *Sweet's* catalogue. Most importantly ornamental bronze and iron work was included until the date of the last advertisement, 1928, which also coincides with the year that Tiffany Studios was bought out by the General Bronze Corporation. The products listed were:

Entrance and vestibule doors, Gates and Archways,
Marquises, Candelabra, Bank Screens, Check Desks,
Tablets, Clocks, Stair Railings and Facias, Elevator
Fronts and Cars, and Statuary Bronzes.

Whether or not the additional offices continued up until this time is unknown. However, regardless of what amount of business may have continued through the satellite offices, this did not appear to have a bearing on the scope of work the Studios was willing to undertake.

All the advertisements also drew attention to the advantages Tiffany Studios provided to their customers. Their own factory located in Corona, New York, where the combination of “up-to-date appliances and machinery” and the skillful labour of the artisans who worked there, enabled them to execute whatever was specified in architectural drawings or by sculptors. Furthermore, they boast of the advantage available to customers thanks to the large selection of photographs and colour drawings of completed public and private work that were on view in the Studios’ showrooms, and also available through the mail upon request by potential clients. These visual records of completed works aided in the selection of “suitable drawings and patterns.¹⁰” Additionally they assert that not only are they prompt in submitting job cost estimates, but that most customers will see that their prices are quite reasonable considering their distinction in design, and the consistent quality of their craftsmanship.

These advertisements indicate that during this period Tiffany Studios was not only actively, but aggressively, soliciting special contracts for architectural work. Therefore, the author supposes that ornamental metalwork

¹⁰ Avery Library, *Sweet's Architectural Trade Catalog*, (New York: Clearwater Publishing Company, 1912), card 109: 438.

was as successful an operation as the other products, such as the Favre glass, mosaics works, lamps, and stained glass windows.

Archival Materials¹

Charles Hosmer Morse Museum of American Art Archives

In addition to housing several catalogues published by Tiffany Studios, the *Louis Comfort Tiffany Collection* in the Archives of the Charles Hosmer Morse Museum of American Art in Winter Park, Florida, contains other archival materials that provided insight into the production at the factory in Corona, who their clients were and what kinds of commissions they were receiving.

Two project ledgers, and an accompanying worker logbook for one of the ledgers, are included in the collection. Because entries were often vague, viewing these items on their own proved difficult to extract precise information about projects that may have included components of architectural metalwork².

¹The Tiffany & Company Archives were also contacted. Administrative staff said that the archives contains no material pertaining to Tiffany Studios. Conversations with Jennifer Thalheimer of the Charles Hosmer Morse Museum of American Art, and Alice Cooney Frelinghuysen of the Metropolitan Museum of Art also indicated that their experience confirmed there was little to no information relating to this subject matter at the Tiffany & Company Archives.

²There were additional logbooks specifically dedicated to other departments such as the Rug Department.

A ledger book dating from November 23, 1905 to April 4, 1911, listed mainly what could be smaller pieces produced at the Corona factory. Some entries give the title of a client or building, with no indication of the work requested. The assumption can be made that buildings of particular functions were likely to have included large scale metalwork. Examples of such buildings are: banks, post offices or other civic or monumental structures. Specific entries of note were the “People’s Bank Building” in Wellsboro, Pennsylvania³, and the “Merchants Bank” in Scranton Pennsylvania⁴. A second ledger from 1912 to 1932 listed similar types of projects including a “Citizens Bank” in Cleveland Ohio, and several entries for work on the Cathedral in St. Louis, Missouri.

Additionally there appear to be several private residences listed in both the ledgers which do not specify what work was done for them. While a broad range of possibilities does exist, these may have been for metal doors, gates or fences, or even mausoleums/memorials. Judging by catalogues, and photographic evidence, these seemed to be some of the more popular items produced by the Tiffany Studios.

³ Ledger, 111. Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives, Accession number: 1999-066.

⁴ Ledger, 153. Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives, Accession number: 1999-066.

Once again, information on metalwork production as a whole was scarce. However, there is a sizable amount of archival material pertaining to specific projects: the McKim Mead and White designed building for Tiffany & Company to be located at 37th Street and Fifth Avenue, and for the Presidential Palace in Havana Cuba for President Menocal. Although there is uncertainty over the actual place of manufacture, the evidence of direct correspondence and exchange of construction documentation makes it seem probable that Tiffany considered executing the work in Corona. This would be particularly reasonable in the case of work for the Tiffany & Company store, where the addendum mentions that Tiffany Studios held the original contract⁵. It also seems reasonable to assume that the cost of work would be lower if fabricated in Tiffany's own factory, since this building was constructed after his father's death, and once Louis Comfort Tiffany was in charge of Tiffany & Company. Furthermore, the ledgers contained many additional entries for smaller work projects at the Tiffany & Company store.

Documentation for the Tiffany & Company building consists of a set of 1904 revised specifications and an addendum for "Ornamental Steel, Brass and

⁵ Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives. Accession number: 1999-026:2.

Bronze Work”⁶. Elements discussed included: bronze grilles, elevators, railings, as well as bronze, brass and steel framing in vestibules. In regards to one group of eight bronze window grilles to be installed on the bulkhead windows along both the Thirty-Seventh Street and Fifth Avenue facades, specific installation and finishing directions were given. These stated that the windows must be “accurately filled, firmly secured as directed, and oxidized as per approved samples.”⁷ A document titled “Miscellaneous Iron Work” mentions changes to iron work commissioned, steel structural elevator frames, the use of cast iron and wrought iron for the vault doors and frames, and building gutter brackets⁸.

The information for work completed at the Presidential Palace in Cuba is a series of correspondences between the General Manager of Tiffany Studios, Hugh White, and people holding various positions in the office of the President⁹. The scope of work for this project was quite broad, and an early estimate of all components, dated from October 3, 1917, stated a cost of \$47,500 for the ornamental bronze and ironwork alone. Additions and changes to the

6 Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives. Accession number: 1999-026:1-3.

7 Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives. Accession number: 1999-026:2.

8 Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives. Accession number: 1999-026:3.

9 Row 1, Right 4. Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives.

assumed original bid mentioned the following metalwork: iron balconies, grillwork, elevator enclosures, front entrance doors, additional iron doors and a grille at one staircase, exterior iron gates, and the addition of bronze shields to all of the entrance doors¹⁰. Another letter from two days later sent by Tiffany Studios mentions in relation to item number fourteen¹¹ “Iron and Bronze”, that it may be possible for Tiffany Studios to execute most of this work in their own factory¹². Curiously the correspondence with President Menocal describes the rooms as not in the Tiffany style¹³. Perhaps a reason for this may be that components may have been either designed by another artist, or selected from stock designs offered by the Studios and therefore they lacked the creative individuality and eclecticism associated with work designed specifically by Louis Comfort Tiffany. Another correspondence from November 23, 1918 from Tiffany Studios to “Martinez” discusses how the cost estimate given by the Studios was much higher than when they placed a sub-contract out to another

10 Correspondence between General Manager of Tiffany Studios to President Mario G. Menocal in Havana, Cuba, October 3, 1917. Row 1, Right 4. Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives.

11 It is assumed that this number reference is from the original bid, as it does not correspond with the item number allotted to Iron and Bronze work from the previous correspondence.

12 Correspondence between General Manager of Tiffany Studios to Rafael M. de Arozarena in Havana, Cuba, October 5, 1917. Row 1, Right 4. Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives.

13 Correspondence between General Manager of Tiffany Studios to Rafael M. de Arozarena in Havana, Cuba, October 5, 1917. Row 1, Right 4. Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives.

factory in order to obtain a price comparison¹⁴. Perhaps the greater cost associated with producing the work themselves is because what the architect's drawings detailed was not similar enough to what the Studios were producing at the time, thereby making the work too costly. It should also be kept in mind that Tiffany Studios was more of a design studio, rather than an industrial factory. As a result they probably would - and could - demand higher prices.

¹⁴ Correspondence between General Manager of Tiffany Studios to Martinez in Havana, Cuba, November 23, 1918. Row 1, Right 4. Louis Comfort Tiffany Collection in the Charles Hosmer Morse Museum of American Art Archives.

The Metropolitan Museum of Art

One of the most important documents to be uncovered was an album in the Prints and Drawings Collection at the Metropolitan Museum of Art titled *Bronze Work*¹⁵. This eighty-plus page leather bound volume contains a collection of photographs of Tiffany Studios architectural metalwork, most of which have “Tiffany Studios NY” burned into or hand printed onto the print. Although the album’s origins are not known, they appear to be a series of record photographs taken for use in catalogues, advertisements or to send to clients wishing to see more of their work¹⁶. This supposition can be confirmed by photos such as the one on the tenth page of the album which appears to be the same photograph that appeared in both Tiffany Studios’ 1913 Catalogue *Character & Individuality in Decorations and Furnishings* (refer to Figure 4.3 from previous chapter), as well as in an advertisement placed in a 1911 issue of *Sweet’s Architectural Trade Catalog*¹⁷. Another example is a detail photograph of a “hand wrought bronze stair rail” completed for the “Harkness Residence” in New York City, designed

¹⁵ Tiffany Studios, *Bronze Work* (New York: Tiffany Studios, ca. 1912) in the Prints & Drawings Collection at the Metropolitan Museum of Art. Accession number: 1996-19.

¹⁶ This book was purchased by the Department of Decorative Arts from a rare book dealer in Princeton, New Jersey, and did not come with any provenance (Frelinghuysen, telephone conversation, April 22, 2008).

¹⁷ Avery Library, *Sweet’s Architectural Trade Catalog*, (New York: Clearwater Publishing Company, 1911), card 99: 1552.

by architects Hale & Rogers. This very same hand annotated photograph is found in several adds from *Sweet's Catalog*¹⁸.

The context and settings for the photographs vary. Several are of the completed components in-situ; whereas others, while annotated as being from a particular project, appear either to have been taken in the factory before installation, or the developer of the photograph over- or underexposed the background building to highlight the metalwork, some of which included a scale. Additionally, there are photographs of building components such as fencing, gates and door grilles that may have served as models showing standard designs available through the Studios (See Figure 5.1).

Approximately a quarter of these photographs had been labeled with what appear to be an order or project numbers, since some of these numbers are repeated on several photographs showing different metalwork elements. Additionally, seven projects were identified with annotations handwritten directly on the photographs, while a further four buildings could be identified

¹⁸ Avery Library, *Sweet's Architectural Trade Catalog*, (New York: Clearwater Publishing Company, 1918), card 284: 526.

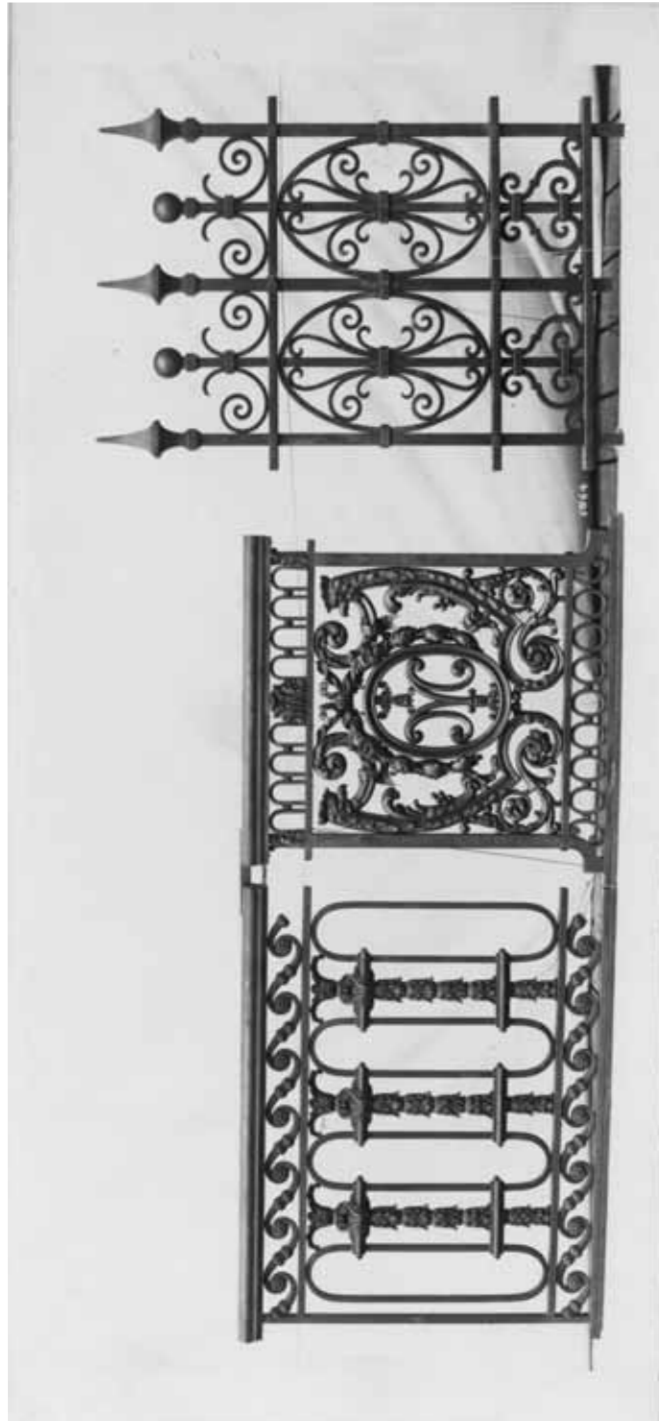


Figure 5.1. Possible example of three gate, fence or balcony section designs. Photograph reproduced with permission from Tiffany Studios *Bronze Work*. The Metropolitan Museum of Art, Friends of the American Wing Fund; Edward Pearce Casey Fund, 1996 (1996.19). Image © The Metropolitan Museum of Art.

because the photographs had been taken in-situ, after the installation of the metal components, and the name of the building was readily visible.

What is most significant about this collection of photographs is how they show the breadth of work executed by the Studios (See Figures 5.2-5.4). These three figures only begin to show confirmation of the complexity of designs and elements the Studios were capable of producing. Work showcased in these photographs included cast bronze doors, interior and exterior balconies and railings, elevator doors and frames, iron and bronze window and door grilles, teller windows, and exterior iron fencing. And while there is no accompanying narrative, the visual evidence shows a range in terms of materials and the intricacy in design that would require a high level of craftsmanship. From what could be extrapolated from the photographs, the work showed proficiency in all manners of fabricating metalwork - cast, extruded, rolled, and wrought. Those pieces that received a polished, bright finish, or very thin patination, could be distinguished from the reflection picked up even in the black and white photos. However for many of others the combination of black and white photography and the darker colouring made it more difficult to determine the materials and



Figure 5.2. View of elevator doors and vestibule. Photograph reproduced with permission from Tiffany Studios *Bronze Work*. The Metropolitan Museum of Art, Friends of the American Wing Fund; Edward Pearce Casey Fund, 1996 (1996.19). Image © The Metropolitan Museum of Art.



Figure 5.3. View from upper story landing of a stair railing installed in the George L. Rives Residence, New York, NY. Photograph reproduced with permission from Tiffany Studios *Bronze Work*. The Metropolitan Museum of Art, Friends of the American Wing Fund; Edward Pearce Casey Fund, 1996 (1996.19). Image © The Metropolitan Museum of Art.



Figure 5.4. Interior view of possibly a bank or postal office building, showing metal teller grilles installed in central counter. Photograph reproduced with permission from Tiffany Studios *Bronze Work*. The Metropolitan Museum of Art, Friends of the American Wing Fund; Edward Pearce Casey Fund, 1996 (1996.19). Image © The Metropolitan Museum of Art.

finishes used¹⁹.

Their clients ranged from government agencies such as the Post Office building in Dayton Ohio, to institutional work at Harvard University in Cambridge Massachusetts, to commissions for places of worship (such as an unidentified pair of cast bronze doors, which presumably from the hebrew script on the panelling were executed for a synagogue), to private businesses such as the Boston Insurance Company, to the residences of the famously wealthy such as the Rockefellers, to more modest clients. While many of these appear to have contained at least components that were designed with the specific project in mind, there are also many examples of the more simple decorative ironwork they produced for more modest dwellings and office buildings.

A photograph on the twenty-ninth page of the album is of a set of door grilles with a cast decoration in the arch above them, and the letters “C” and “S” incorporated, one each into the center oval of the doors (See Figure 5.5).

This same photograph appears in the 1912 issue of *Sweet's* and identifies the

¹⁹ Reproduction costs and copyright limited the number of photographs chosen to be reproduced for editorial use in this thesis.

doors as belonging to the residence of Charles Scribner²⁰. A current photograph of the entrance doors to the Permanent Mission of the Republic of Poland to the United Nations located at 9 East 66th Street in New York shows doors of almost the exact same design except without the initials in the center ovals (See Figure 5.6). Examples such as this, together with personal and trade catalogue advertising support the speculation that a significant amount of standard designs were available for production through the Studios.

²⁰ Avery Library, *Sweet's Architectural Trade Catalog*, (New York: Clearwater Publishing Company, 1912), card 109: 439.



Figure 5.5. Set of entrance door grilles with decorative metalwork above. Photograph reproduced with permission from Tiffany Studios *Bronze Work*. The Metropolitan Museum of Art, Friends of the American Wing Fund; Edward Pearce Casey Fund, 1996 (1996.19). Image © The Metropolitan Museum of Art.



Figure 5.6. Entrance doors to the Permanent Mission of the Republic of Poland to the United Nations located at 9 East 66th Street New York, NY. Photograph taken by author (April 2008).

Architectural Metalwork

While this research developed a preliminary list of buildings containing metalwork either designed by Louis Comfort Tiffany himself, or designed and produced through Tiffany Studios, it has proven much more difficult to obtain information on materials, production methods and finishing techniques. Original bids and specifications exist and are accessible for two building projects - the Philadelphia Museum of Art and the City-County Building in Pittsburgh, Pennsylvania - and provide some information on materials and finishes. What was specified or recommended in these documents might not have been what was eventually executed, and over the course of the buildings' histories many changes could have occurred both from active renovation projects and passive change due to the materials' propensity to change.

However they still provide some idea of what was available to clients, as well as the facilities necessary to complete contracts for large scale components.

Philadelphia Museum of Art, Philadelphia, Pennsylvania

At this time, the bronze and iron window grilles installed on the exterior of the Philadelphia Museum of Art are a rare example of Tiffany work where there is confirmation of authenticity. The original, dated shop drawings, stamped with “Tiffany Studios Corona, NY”, along with project specifications which refer to the fabrication, manufacture and finishing of the metal elements are still kept in the Museum’s archives. Three details, taken from two selected drawings, showing examples of the various components designed by Tiffany Studios, are included at the end of this section on pages 73-75.

A later 1926 set of building specifications which included several changes to the original project document, include instructions on the fabrication and finishing of all metal work to be erected in the building. This included the following components: bronze doors at the West Entrance Vestibule, interior “Bronze Studded Doors”, bronze elevator doors, frames, and sills, a bronze guard rail which was to be installed in front of the large window

located on the second floor in the main stair alcove, bronze windows and grilles, bronze covered sash windows, and iron window grilles¹. The following chart outlines what specifications were given for metalwork²:

Component	Process	Material	Strength	Fabrication
Bronze windows and frames, Bronze Grilles,	Extruded Bronze - Hot Process	60% purest ingot copper 40% tin, zinc or other approved alloy	Greater than 50,000 psi; withstand wind pressure of 30 psi	Drawn through steel dies to achieve true, sharp design
Bronze windows and frames, Bronze Grilles,	Extruded Bronze - Cold Process and Kalamein Process	85% purest ingot copper 15% tin, zinc or other approved alloy	Greater than 50,000 psi; withstand wind pressure of 30 psi	Drawn through steel dies to achieve true, sharp design
Ornamental work on grilles, panelling	Cast Bronze	77% purest ingot copper 23% best block tin	Greater than 50,000 psi; withstand wind pressure of 30 psi	Sand Casting ensuring after all parts are free of sand, pits, air holes or other defects
Panelling and large flat surfaces	Rolled sheet bronze			
Iron Grilles	Wrought	Standard grade of Swedish iron		Straight and true, free from surface imperfections

Directions for the finishing of the bronze work are somewhat vague, stating that the architect must approve of the final colour, and that they then be

¹ C.L. Borie Jr., Horace Trumbauer, C.C. Zantinger, *Specification of Labor and Materials Required for the Construction of Certain Portions of the Philadelphia Museum of Art (Known as Change no. 36) for the Commissioners of Fairmount Park with Form of Proposal and Form of Acceptance*, [1926], 45-49, 81-87.

² Borie, Trumbauer, Zantinger, 1926, 3, 45,-49, 81-87.

left to obtain a “natural weather finish³”. Additional instructions stated that the following steps were followed:

Upon completion all bronze work shall be scoured to a uniform surface and given a coat of linseed oil and turpentine or a coat of wax and oil.

After erection all the bronze work shall be oiled over with crude oil once every 2 weeks for a period of 3 months so as to produce an old golden bronze finish, as approved by the architect⁴.

All other metalwork, including the much smaller wrought iron grilles installed along the ground level were to be “cleaned of scale and painted with 1 shop coat of red lead and linseed oil⁵.”

It appears that there is no exact information on who manufactured each of the components in the building. Paul Jennewein is credited with the design for the giant interior elevators, and the acroteria placed on the apexes and bottom corners of all the roof pediments⁶. Interestingly the General Bronze Corporation advertisement showcasing the PMA, published in the February 1930 issue of *Metalcraft*, features a drawing of an acroterium, and lists the

3 Borie, Trumbauer, Zantlinger, 1926, 87.

4 Borie, Trumbauer, Zantlinger, 1926, 87.

5 Borie, Trumbauer, Zantlinger, 1926, 45.

6 David B. Brownlee, *Making a Modern Classic, The Architecture of the Philadelphia Museum of Art*, (Philadelphia, PA: Philadelphia Museum of Art, 1997), 84.



Figure 6.1. Scan of advertisement for General Bronze Corporation published in the February 1930 issue of *The Metal Arts* journal.

“sculptural and architectural bronze” metalwork as being executed by Roman Bronze Works, Tiffany Studios, and John Polachek Bronze & Iron Plants⁷ (See Figure 6.1). By the time this advertisement ran, Roman Bronze Works had

⁷ General Bronze Corporation advertisement, *Metalcrafts*, (Jamestown, NY: Furniture Publishing Corporation), 3:2: 10.

moved into the Tiffany factory, making it possible that the casting of these decorative elements could have taken place in Corona. Furthermore, the advertisement mentions how the design of these elements required the use of the lost wax method of casting bronze. Roman Bronze is credited with reviving this method of metal casting⁸. Additionally, some uncertainty exists regarding who designed and manufactured the original bronze entrance doors on the West Entrance Vestibule. It has become even more difficult to determine this since laboratory analysis showed them to be made of anodized aluminum.

In addition to the archive material available on the building, preliminary material analysis, de-installation of the components and treatments which are a part of the current conservation project have added further to the understanding of how these components were assembled. This has provided an opportunity to develop reasonable theories about the scale and complexity of the firm's operations.

The larger grilles are composed of two to four larger sections, connected with steel bars inserted into the hollow frame support beams. Further

⁸ Christopher Gray. "Streetscapes: Tiffany Studios; In Queen's, a Remembrance of a Luminous Legend." *The New York Times*, December 27, 1987, <http://proxy.library.upenn.edu:2100/> (accessed January 19, 2008).

inspection and disassembly of the grilles for restoration work revealed that they were made of many smaller, repeating, and interchangeable pieces, none of which are marked with a numbering system to assist in piecing together the components. The scale, intricacy, and durability of the grilles, combined with the high level of craftsmanship exhibited by the individual pieces of metal, and also the joinery and assemblage, indicates that they were completely fabricated at the factory⁹. The final objects are simply too complex for field assembly.

⁹ Andrew Lins (Head Conservator, PMA), in conversation with the author, April 2008.

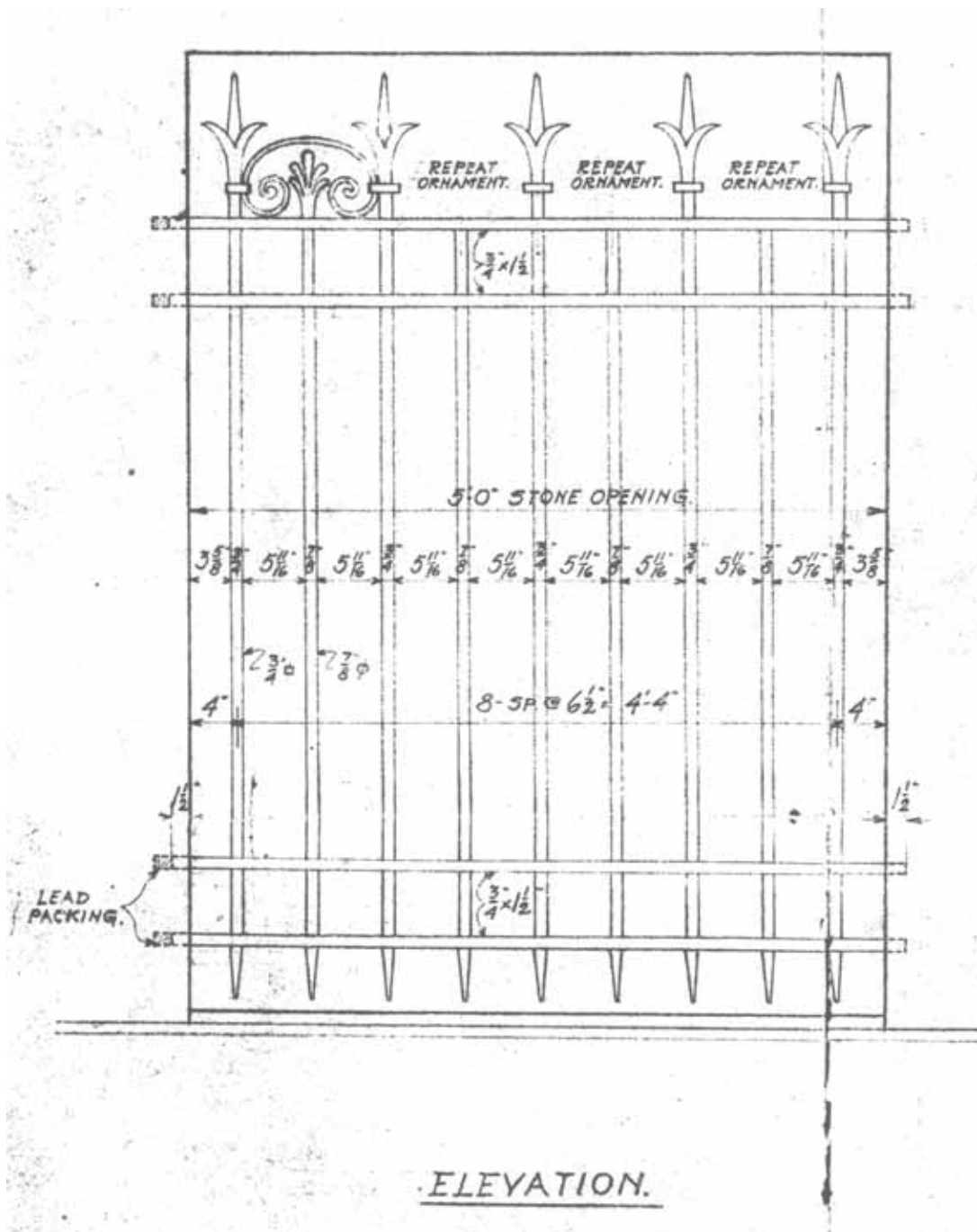


Figure 6.2. Detail from Tiffany Studios Drawing 9 for PMA "1/2" scale detail of wrought iron window guards ground floor windows" Stamped with "Tiffany Studios Factory Corona N.Y." Dated Sept-25-24. Courtesy of the PMA Architectural Archives.

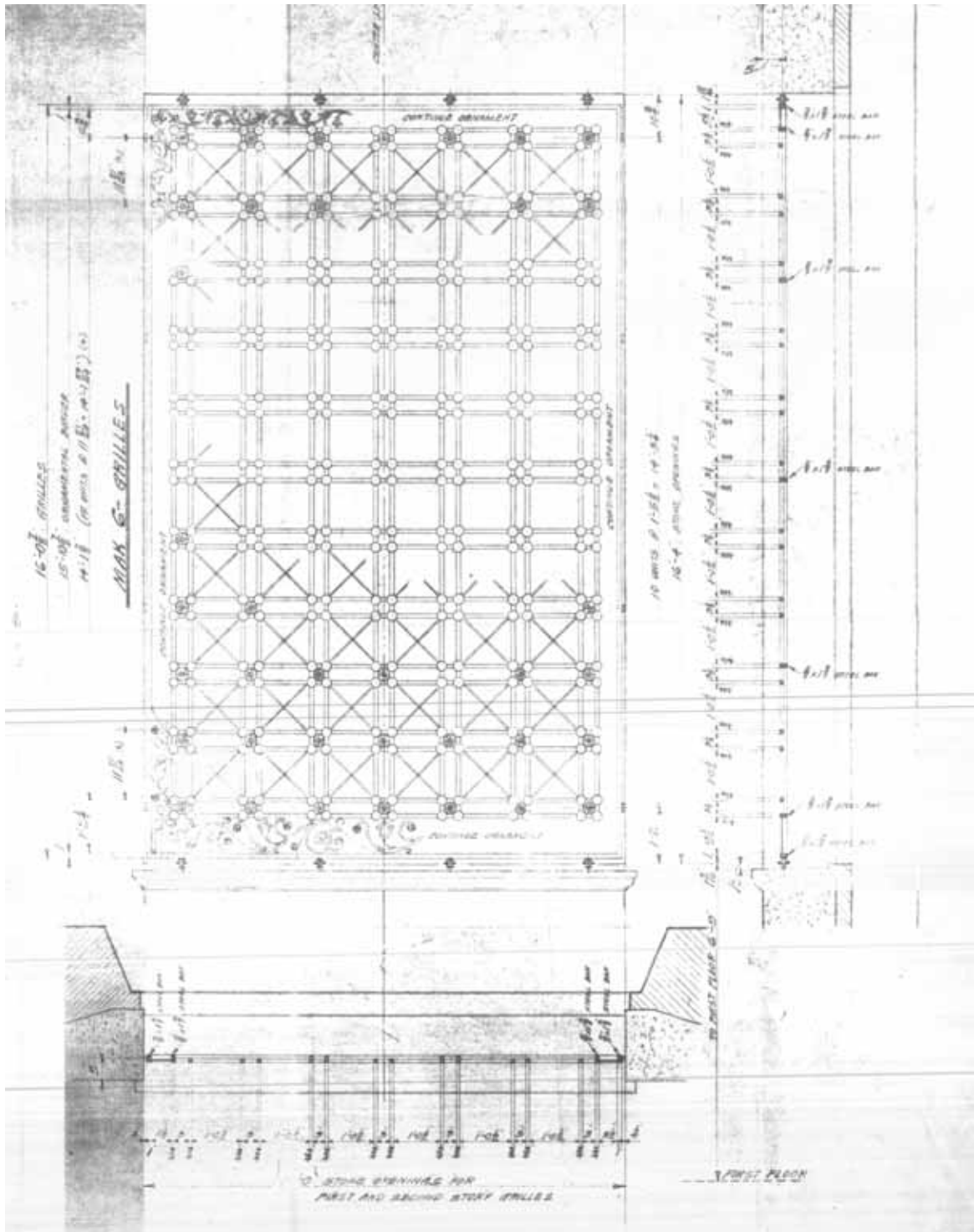


Figure 6.3. Detail from Tiffany Studios Drawing 7 for PMA “12 bronze window grilles (total)...Philadelphia Museum of Art Fairmount Park” Stamped with “Tiffany Studios Factory Corona N.Y.” Dated Nov-14-25. Courtesy of the PMA Architectural Archives.

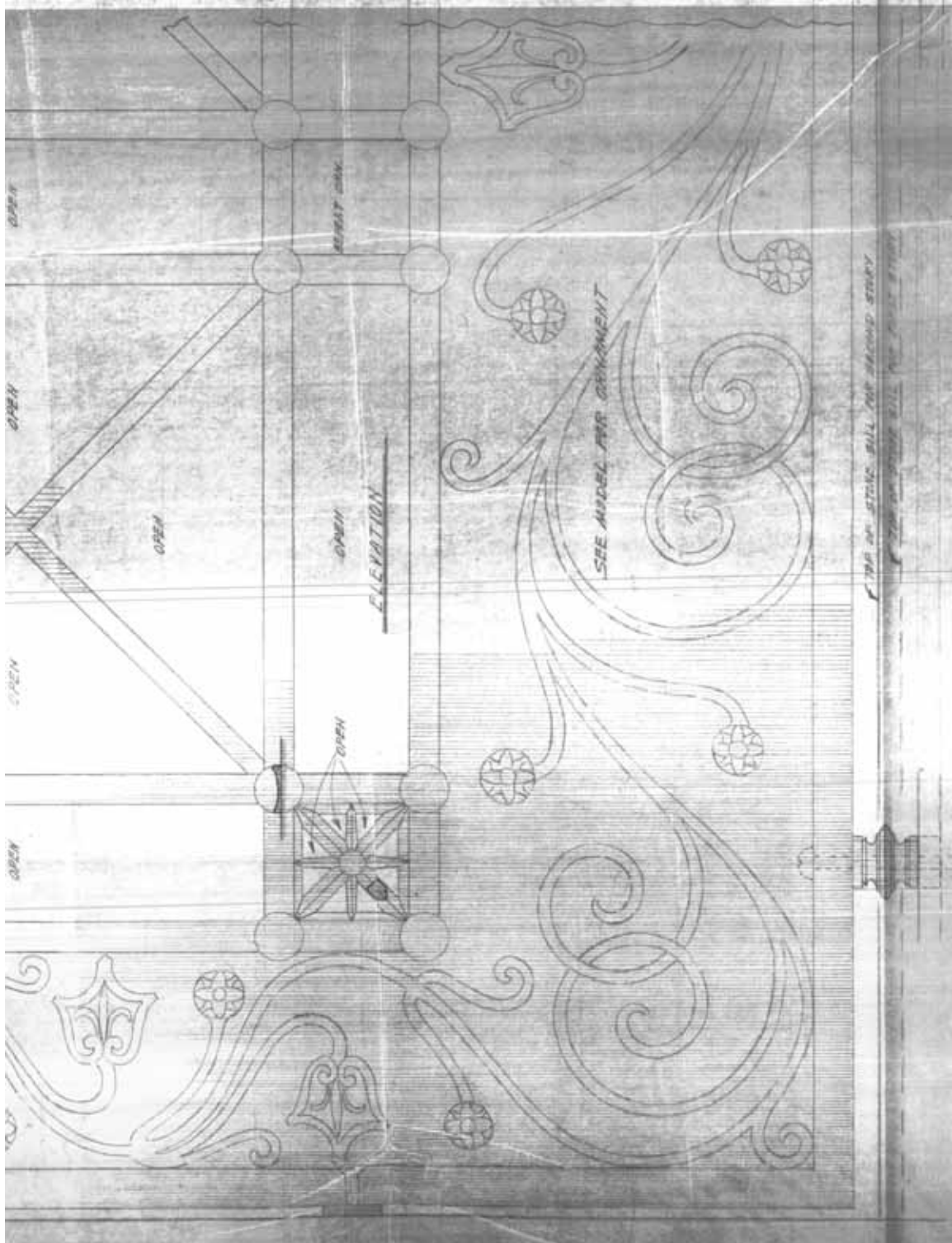


Figure 6.4. Detail from Tiffany Studios Drawing 7 for PMA. Detail of decorative cast bronze frame of grille. Drawing Stamped with "Tiffany Studios Factory Corona N.Y." Dated Nov-14-25. Courtesy of the PMA Architectural Archives.

City-County Building, Pittsburgh, Pennsylvania

Built between 1915 and 1917, this block wide civic building located in downtown Pittsburgh was designed by the firms of Edward B. Lee and Palmer, together with Hornbostel & Jones, although much of the design credit is given to Henry Hornbostel alone¹⁰. One of the standout features of the interior space is the over 150 foot long barrel-vaulted passage which is lined with columns. Made of steel encased by bronze, that included detailed sculpted gilt-bronze bases, these decorative components were all executed by Tiffany Studios¹¹. Additional decorative metalwork includes elaborately designed first floor bronze elevator doors. Tiffany Studios apparently only executed the bronze work on the columns, and it is unknown who obtained the commission for the remainder of the metalwork.

Original copies of the specifications put out to request bids on the bronze work for the City-County building exist. These documents are housed as part of the Henry Hornbostel (1867-1961) Collection in the Architectural Archives at Carnegie Mellon University. The scope of the bronze work to be

¹⁰ Walter C. Kidney, *Henry Hornbostel: An Architect's Master Touch* (Pittsburgh and Boston: Pittsburgh History & Landmarks Foundation in cooperation with Roberts Rinehart Publishers, 2002), 144.

¹¹ Kidney, 145.

included in this project consisted of: bank screen grilles, nosing on counters, drinking fountains, hand railings, bronze columns including bases and caps, elevator fronts, frames and doors, running ornament in loggias, door frames, and architraves and cornices in one entrance vestibule, as well as wrought iron railings¹². As was done with the PMA, the building specifications for the City-County building specifically laid out what materials, processes and finishes were to be used, which are summarized in the table below¹³:

Process	Material	Strength	Fabrication
Bronze Casting	90% ingot copper 8% pure pig tin 2% pure pig lead	No less than 3/16” thick, and heavier where required	Made in fine, dry sand or other process approved by Architect, producing a clean, sharp, smooth and accurate pattern
Rolled or drawn Bronze	90% pure lake copper 10% pure zinc	No less than 3/16” thick, and heavier where required for securing substantial and rigid work	

The specifications required that almost all of the exposed bronze work in the building simply be “buffed smooth and true,” with no additional finish¹⁴.

¹² “City and County Building Specification for Bronze Work - Preliminary,” ca. 1915, 1-2. Henry Hornbostle (1867-1961) Collection Carnegie Mellon University Archives.

¹³ “City and County Building Specification for Bronze Work - General” ca 1915, 2. Henry Hornbostle (1867-1961) Collection Carnegie Mellon University Archives.

¹⁴ “City and County Building Specification for Bronze Work - General” ca 1915, 2. Henry Hornbostle (1867-1961) Collection Carnegie Mellon University Archives.

The only exceptions to this were the flag pole sockets and brackets which were to be “treated with sulphate of ammonia or other bath to produce a dark bronze color”, after which linseed oil was to be thoroughly applied, then gently rubbed off and cleaned with a soft cloth¹⁵.

No further details are given that are specific for the bronze sheathing on the columns. The decorative detailing on the bases of the columns, referred to as “sculpted”, could be considered cast ornament, in which case the directions for this work are fairly vague, stating that the models simply follow the Architects’ drawings and direction, and that further changes may be required to ensure that the end products meet their satisfaction¹⁶. As for the gilded finish on these bases, it seems that the type of work done in the other departments of the Studio’s would easily facilitate this treatment of the metal, since workers with these skills would be available. Photographs of this interior space do show that the columns have a bright finish.

¹⁵ “City and County Building Specification for Bronze Work - General” ca 1915, 2-3. Henry Hornbostle (1867-1961) Collection Carnegie Mellon University Archives.

¹⁶ “City and County Building Specification for Bronze Work - General” ca 1915, 5. Henry Hornbostle (1867-1961) Collection Carnegie Mellon University Archives.

Conclusions

Even the small amount of material that was uncovered through this preliminary investigation into the architectural metalwork produced by Tiffany Studios has begun to answer many questions, although others remain unanswered, requiring further investigation and analysis.

The information presented confirms that their scope of work was quite broad in terms of the types of architectural elements they produced, and their variety of clients. The Tiffany metalwork at the PMA is an important and beautiful part of the Museum's aesthetic, however while some of the individual components are much larger in scale than many of the other identified examples of Tiffany metalwork, this type of project is by no means unique.

It is also seems reasonable to assume that they executed original designs, as well as many items based on stock patterns and designs. Although no standard design templates or moulds were found, photographs showing several designs for a similar component lined up together, and the presence of re-occurring shapes and motifs are preliminary proof this idea.

Both store catalogues and trade catalogues advertisements published by Tiffany Studios appear to give almost equal weight to all areas of their work. This, combined with the number of executed works from this period of activity, indicate that architects and artists, as well as independent clients were well aware of their showrooms, operations and manufacturing facilities. Therefore it remains surprising that so few people are familiar with this aspect of the Studios' work. Why is it that these works of art became overshadowed by Tiffany's Favrile glassware, stained glass windows and mosaics?

One explanation may be the lack of designs developed by Tiffany himself. While his strict adherence to the Art Nouveau movement caused most of his designs to fall out of favour in the 1930's, the renewed interest beginning in the second half of the twentieth-century, probably the recognition of his

talent as an artist with a distinct individual style. In addition, his innovation in developing his patented materials set these objects apart. On the other hand, many of the designs appear to be typical of the metalwork during the first three decades of the last century. This lack of distinction in style, may be a contributing factor to the relative obscurity of this work. Additionally, when General Bronze Corporation purchased the Tiffany Studios metal plant in 1928 there would certainly have been outstanding contracts, which even though the work was fabricated in Corona, once completed these were attributed to the General Bronze. Advertisements such as the one for the PMA published in the February 1930 issue of *Metalcraft*¹, along with an advertisement in the following month's issue for the Fuller Building², help to corroborate this hypothesis by crediting the Tiffany Studios as the facility where production of certain elements for these buildings occurred.

The lack of markings to distinguish any of the work as produced by Tiffany Studios may have been another factor. All of the smaller wares produced by Tiffany Studios bore some kind of stamp as an indication of

1 Advertisement, "The General Bronze Corporation, Distinctive productions in all metals," *Metalcraft* 3:2 (1930): 10.

2 Advertisement, "The General Bronze Corporation, Distinctive productions in all metals," *Metalcraft* 4:4 (1930): 483.

authenticity. In fact, most catalogues explicitly and repeatedly stated that all works bore a stamp. A collection of photographs showing the various markings is included in some works on Tiffany, including McKean's *The Lost Treasures of Louis Comfort Tiffany*³. However no markings for architectural work are listed in McKean's appendix, nor were any marks found on any part of the PMA's metalwork. Perhaps as someone who was interested in "going after the money that there is in art⁴," Tiffany took full advantage of what the mechanization of production could do, and would exploit all avenues of decorative production, as long as what was produced (under his watch) maintained a certain level of quality.

Analysis and close examination of the metalwork at the PMA has confirmed that this work is of high-quality craftsmanship. Although it may lack both a direct link to Louis Comfort Tiffany himself, and his unique designs, it is an aspect of work produced by Tiffany Studios that warrants further investigation to identify additional buildings, both existing and now demolished, that have decorative architectural metalwork. Furthermore, in-

3 Hugh F. McKean, *The Lost Treasures of Louis Comfort Tiffany*, (Garden City, NY: Doubleday & Company, Inc, 1980): 279-286.

4 Louis Comfort Tiffany, Originally quoted by Canadace Wheeler. McKean, 101.

depth research on identified buildings is needed to collect information regarding the fabrication, manufacturing, and finishing of these components.

Recommendations for Further Research

This thesis provides a starting point for additional research, as time limitations have left many avenues open for further investigation. The resources available at the following institutions and repositories could not be consulted, but might prove to contain valuable information: Queen's Museum of Art, Queen's Historical Society, Archives of American Art, New York Landmarks Commission, and the New York Historical Society. The latter two might better serve a researcher equipped with a list of buildings identified as having Tiffany metalwork. The Archives of American Art obtained records, as well as a collection of casts and molds from Roman Bronze Works that date from the early 1900s to the end of their occupation of the Tiffany foundry in Corona. Additionally, insurance records from the Corona factory should provide a list of

all equipment, machinery and other contents of value, although this requires first determining what insurance company they dealt with, and then locating the records if possible.

Out of the buildings listed in Appendix B, only the owners of two were contacted directly. Some further information regarding two other buildings was obtained, in one case through the Pittsburgh History and Landmarks Foundation, and in the other through an architectural firm responsible for the renovation of the building's interior. The current owners of all the existing buildings listed could be contacted to inquire if they have further information on the building's history, and specifically if original construction documents still exist, and if so, where they might be located. Additionally, buildings constructed between 1928 and 1930 which contain metalwork attributed to General Bronze Corporation could be investigated to determine if these included work from outstanding contracts held by Tiffany Studios before the sale to General Bronze, or even if a portion of the work under separate contracts was executed at the Corona foundry.

The current list of works executed by Tiffany Studios included in Appendix B shows that some architects designed more than one building that incorporated architectural metalwork produced by Tiffany Studios. It is possible that these architects favoured the Studios' work, and therefore consistently approached them with these types of commissions. The General Bronze advertisement from March 1930 supports this hypothesis, as it states that: "The experience of these owner-buildings, as well as those of the architects warrant them entrusting the execution of the Ornamental Metal Contract on this building to [them]." Therefore an investigation into buildings designed by these architects during the defined period of activity might uncover further work executed by the Studios.

Additionally, since both the ledger books at the Charles Hosmer Morse Museum of American Art and several of photographs in the *Bronze Work* album at the Metropolitan Museum of Art identify projects by distinct order or job numbers. If additional ledger books or worker logs were to be located, it may be possible to connect the piecemeal information scattered throughout these different sources.

Finally, a thorough search of other trade catalogues in print between the 1890s and the 1930s that are similar to *Sweet's*, or journals such as *Metalcraft* and *Metal Arts*, might help to identify additional work executed by Tiffany Studios. Additionally, issues of architectural journals dating from this same period of activity such as *Architectural Record* or *American Architect* might also be useful in identifying works.

Bibliography

Books

Brownlee, David B. *Making a Modern Classic: The Architecture of the Philadelphia Museum of Art*. Philadelphia, PA: Philadelphia Museum of Art, 1997.

Davey, Norman. "Chapter 25: Metals" In *A History of Building Materials*, 211. London: Phoenix House, 1961.

Duncan, Alastair. *Louis Comfort Tiffany*. New York: H.N. Abrams in association with the National Museum of American Art, Smithsonian Institution, 1992.

Duncan, Alastair, Martin Eidelberg and Neil Harris. *Masterworks of Louis Comfort Tiffany*. New York, NY: Harry N. Abrams, Inc, 1989.

Eidelberg, Martin and Nancy A. McClelland. *Behind the Scenes of Tiffany Glassmaking, The Nash Notebooks*. New York, NY: St. Martin's Press in association with Christie's Fine Arts Auctioneers, 2001.

Gayle, Margot, and David W. Look. *Metals in America's Historic Buildings; Part I. A Historical Survey of Metals*. Washington: U.S. Dept. of the Interior, Heritage Conservation and Recreation Service, Technical Preservation Services Division, 1980.

Geerlings, Gerald K. *Metal crafts in architecture; bronze, brass, cast iron, copper, lead, current developments, tin, lighting fixtures, specifications*. New York, NY: C. Scribner's Sons, 1929.

---. *Wrought iron in architecture; wrought iron craftsmanship; historical notes and illustrations of wrought iron in Italy, Spain, France, Holland, Belgium England, Germany; America; modern wrought iron; lighting fixtures and knockers; specifications*. New York, NY: C. Scribner's sons, 1929.

Johnson, Marilynn A. *Louis Comfort Tiffany: artist for the ages*. London: Scala Publishers Ltd, 2005.

Kidney, Walter C. *Henry Hornbostel: An Architect's Master Touch*. Pittsburgh and Boston: Pittsburgh History & Landmarks Foundation in cooperation with Roberts Rinehart Publishers, 2002.

Koch, Robert. *Louis C Tiffany; Rebel in Glass*. 3rd Ed. New York, NY: Crown Publishers, Inc, 1982.

Loring, John. *Louis Comfort Tiffany at Tiffany & Co*. New York, NY: Harry N. Abrams, 2002.

---. *Magnificent Tiffany Silver*. New York, NY: Harry N. Abrams, 2001

---. *Tiffany's 150 Years*. Garden City, NY: Doubleday, 1987.

McKean, Hugh F. *The "Lost" Treasures of Louis Comfort Tiffany*. Garden City, NY: Doubleday & Company, Inc., 1980.

National Park Service. *Metals in America's Historic Buildings: Uses and Preservation Treatments 2nd Edition*. Washington, DC: U.S. Dept. of the Interior, National Park Service, Cultural Resources, Preservation Assistance, 1992.

Purtell, Joseph. *The Tiffany Touch*. New York, NY: Random House, 1971.

Tiffany, L.C. and C. DeKay. *The Artwork of Louis C. Tiffany*. Garden City, NY: Doubleday, Page and Company, 1914.

Ware, William Rotch. *Door and window grilles in bronze and iron*. Boston, MA: American Architect and Building News, 1902.

Weisberg, Gabriel P. *Art Nouveau Bing Paris Style 1900*. New York: Harry N. Abrams Inc., 1986.

Articles

"BRONZE CORPORATION BUYS TIFFANY STUDIOS :John Polachek Again in Control of Metal Working Plant Which He Once Managed.." *New York Times* (1857-Current file), January 31, 1928, <http://proxy.library.upenn.edu:2100/> (accessed February 09, 2008).

"Bronze Corporation Buys Tiffany Studios." *The New York Times* (1857-Current file), January 31, 1928. <http://proxy.library.upenn.edu:2100/> (accessed February 09, 2008)

Bullen, J.B. "Louis Comfort Tiffany and Romano-Byzantine design." *The Burlington Magazine*, 147, no. 1227 (2005): 390.

"Century Deals a Feature, Sells Choice Parcels on Manhattan Island for More Than \$2,000,00.00." *New York Daily Tribune*, March 12, 1905.

Clute, Eugene, ed. *The Metal Arts*. Jamestown, NY: Furniture Publishing Corporation, 1928-1930.

Clute, Eugene, ed. *Metalcraft*. Jamestown, NY: Furniture Publishing Corporation, 1930-1932.

By CLARE M. RECKERT "ALLIED PRODUCTS PLANNING MERGER :Agreement Is Set on Joining With General Bronze Corp. in \$25-Million Deal." *New York Times* (1857-Current file), August 9, 1967, <http://proxy.library.upenn.edu:2100/> (accessed April 12, 2008).

Frelinghuysen, Alice Cooney. "Louis Comfort Tiffany at the Met". *Metropolitan Museum of Art Bulletin* 56 (1998): 4.

---. "Tiffany and the H.O. Havemeyers." *The Magazine Antiques* 163 (April 1993): 596.

- Gray, Christopher. "Streetscapes: Tiffany Studios; In Queen's, a Remembrance of a Luminous Legend." *The New York Times* (1857-Current file), December 27, 1987, <http://proxy.library.upenn.edu:2100/> (accessed January 19, 2008).
- Hunting, MaryAnne. "The Seventh Regiment Armory in New York City." *The Magazine Antiques* 155 (January 1999): 158.
- McGraw, Peter A. "The Old Post Office and Federal Building in Dayton, Ohio: A Case History of Restoration and Adaptive Use." *Bulletin of the Association for Preservation Technology*, 12, no. 4 (1980): 55.
- Rozhon, Tracie. "Big Deal; The House Tiffany Built, or Did He?" *The New York Times* (1857-Current file), November 20, 1997 <http://proxy.library.upenn.edu:2100/> (accessed January 19, 2008).
- "TIFFANY STUDIOS DEAL :Bronze Works Only Were Included in Recent Sale.." *New York Times* , February 4, 1928, <http://proxy.library.upenn.edu:2100/> (accessed April 12, 2008).

Catalogues

- Avery Library. *Sweet's Architectural Trade Catalog*. New York: Clearwater Publishing Company, 1911-1928.
- Doros, Paul, E. *The Tiffany Collection of the Chrysler Museum at Norfolk*. Richmond, VA: W.M. Brown & Son, Inc, 1978.
- Hennessey, William J. *The Havemeyer Tiffany Collection at the University of Michigan Museum of Art*. Ann Arbor, MI: University of Michigan, 1992.
- Tiffany Glass & Decorating Company. *Out-of-Door Memorials: Mausoleums, Tombs, Headstones, and all Forms of Mortuary Monuments*. New York: Tiffany Glass & Decorating Company, 1889.
- Tiffany Studios. *Activities of Tiffany Studios*. New York: Tiffany Studios.

Tiffany Studios. *Character and Individuality in Decorations and Furnishings*. New York: Tiffany Studios, 1913.

Tiffany Studios. *Mausoleums*. New York: Munder-Thomsen Press, 1914.

Tiffany Studios. *Mosaic Curtain for National Theatre of Mexico*. New York: R.L. Stillson.

Tiffany Studios. *Out-of-Door Memorials God's Acre*. New York: Tiffany Studios, 1903.

Reports

C.L. Borie Jr., Horace Trumbauer, C.C. Zantzinger. *Specification of Labor and Materials Required for the Construction of Certain Portions of the Philadelphia Museum of Art (Known as Change no. 56) for the Commissioners of Fairmount Park with Form of Proposal and Form of Acceptance*. [1926?].

Vitetta Architect & Design Team Lead. *Philadelphia Museum of Art, Exterior Envelope Renovations Project*. December, 2005.

Archival Materials

City-County Building Contracts. Henry Hornbostle (1867-1961) Collection. Carnegie Mellon University Architectural Archives.

Louis Comfort Tiffany Collection. Charles Hosmer Morse Museum of American Art. Winter Park, FL.

Tiffany Studios. *Bronze Work*. New York: Tiffany Studios, ca. 1912. (Album of photographs). Prints & Drawings Collection. The Metropolitan Museum of Art. New York. Friends of the American Wing Fund, Edward Pearce Casey Fund, 1996 (1996-19).

Electronic Resources/Websites

The Metropolitan Museum of Art Special Exhibitions: Louis Comfort Tiffany and Laurelton Hall - An Artist's Country Estate. http://www.metmuseum.org/special/se_event.asp.

Tiffany & Co. | History & Timeline|. <http://www.tiffany.com/About/Timeline.aspx>.

Appendix A Timeline

- | | | | |
|--------|--|------|---|
| 1839 | <i>Tiffany & Young</i> founded | 1883 | <i>LCT & Associated Artists</i> dissolved |
| 1848 | Louis Comfort Tiffany born | 1885 | Stanford White, with input from LCT designs Tiffany Mansion at 72 nd Street, Manhattan |
| 1854 | <i>Tiffany & Young</i> renamed <i>Tiffany & Company</i> | 1885 | <i>Tiffany Glass Company</i> founded |
| 1865 | LCT first trip to Europe | 1890 | LCT designs hanging iron staircase for paintings gallery at H.O. Havemeyer house |
| 1870's | LCT begins experimenting with glass | 1892 | Glass furnaces established in Corona, NY; Arthur J. Nash in charge of Favrile glass production |
| 1878 | LCT establishes first glass house, later destroyed by two fires | | |
| 1879 | <i>LCT & Associated Artists</i> founded | | |
| 1880 | LCT moves glass production to <i>Heidt</i> glass house in Brooklyn | | |

- | | |
|---|---|
| <p>1893 World's Columbian Exposition Chicago, Chapel design wins 54 medals</p> <p>1893 <i>Tiffany Glass Company</i> becomes <i>Tiffany Glass & Decorating Company</i></p> <p>1894 LCT patents trade name of <i>Favrile</i> glass</p> <p>1897 Foundry is added to glass furnaces in Corona factory</p> <p>1898-9 Enameling department established</p> <p>1902 <i>Tiffany Studios</i> officially incorporated</p> <p>1902 Death of Charles Lewis Tiffany. LCT takes over management and ownership of <i>Tiffany & Co.</i>, and become the company's first Art Director</p> <p>1905 Tiffany Studios moves to new location at Madison Avenue & 45th Street</p> <p>1905 LCT begins construction of Laurelton Hall in Oyster Bay Long Island</p> | <p>1908 Leslie H. Nash in charge of blown glass department</p> <p>1911 Mosaic fire curtain for the National Theater in Mexico City completed</p> <p>1917 <i>Louis Comfort Tiffany Foundation</i> established</p> <p>1918 Work on Presidential Palace in Havana, Cuba for President Menocal</p> <p>1918 LCT resigns as Artistic Director of <i>Tiffany & Co.</i></p> <p>1919 Arthur J. Nash & Leslie H. Nash take over glass production at the Corona factory</p> <p>1920 Reorganizes glassworks as <i>Louis C. Tiffany Furnaces Inc.</i></p> <p>1924 <i>Louis C. Tiffany Furnaces Inc.</i> dissolved; <i>A. Douglas Nash Company</i> established</p> <p>1928 <i>General Bronze Corporation</i> buys out <i>Tiffany Studios</i> factory in Corona</p> <p>1928 Philadelphia Museum of Art Completed</p> |
|---|---|

1930 Nash brothers close glass furnaces at Corona factory, end of *A. Douglas Nash Company*

1930 H.O. Havemeyer Mansion at 66th Street & Fifth Avenue demolished

1932 *Tiffany Studios* declares bankruptcy

1933 Death of Louis Comfort Tiffany

1936 Tiffany Mansion at 72nd Street & Madison Avenue demolished

1936 Remaining *Tiffany Studios* inventory sold to auctioneer Percy A. Joseph, New York

1946 *Louis Comfort Tiffany Foundation* sells contents of Laurelton Hall

1957 Fire destroys Laurelton Hall

Appendix B Works Executed by Tiffany Studios

The following list of buildings known to contain metalwork either designed by Louis Comfort Tiffany, and/or executed by Tiffany Studios is in no way exhaustive. Those buildings marked with an asterisk (*) indicate that the design is attributed to Louis Comfort Tiffany. Those buildings marked with a cross (†) are buildings listed in the Tiffany Studios ledger books that possibly contain metalwork.

American Academy of Arts & Sciences, Boston, Massachusetts

Address unknown

Bronze Entrance Doors

Architect unknown

c. 1917

Banking Room, E.P. Wilbur Trust Company, South Bethlehem, Pennsylvania

4th Street & Broadway

Teller Grilles

Architect: A.W. Lew

Date unknown

Boston Insurance Co., Boston, Massachusetts

Address unknown

Bronze Entrance Doors; Railings, Elevator Fronts

Architect unknown

Date unknown

Citizens Bank, Cleveland, Ohio †

Address unknown

Architect unknown

ca.1901-1905

City-County Building, Pittsburgh, Pennsylvania

Grant Street

Brass-Sheathed Columns

Architects: Palmer, Hornbostel and Jones; Edward B. Lee, associate architect
1915-1917

Colonial Trust Co. Building, Philadelphia, Pennsylvania

17th Street & Walnut Street (unconfirmed)

Bronze Entrance

Architect: Edger V. Seeler; Horace Trumbauer

Date unknown

First National (Bank) Building, Detroit, Michigan

660 Woodward Avenue

Polished Steel Grille Gate, Bronze Counter Screens

Architect: Albert Kahn

1922

Forsyth Dental Infirmary, Boston, Massachusetts

140 The Fenway

Bronze Entrance Doors

Architect: Edward T.P. Graham

1912



Figure B1. Detail photograph of bronze paneled lobby elevator door, Fuller Building, New York, NY. An advertisement for the General Bronze Corporation in the March 1930 issue of *Metalcraft* states that the casting of these doors was executed at the John Polachek and Tiffany Studios foundry in Corona, Long Island. Photograph Courtesy of the current owners of the building: Vornado Office Management, LLC.

Fuller Building, New York City

41 East 57th Street

Bronze Elevator Doors

Architects: Walker and Gillette

1928-29

Littlefield Building, Austin, Texas

NE Corner, 6th Street & Congress Avenue

(Now on display at University of Texas Ashbel Smith Hall)

Solid Bronze Doors

Architects: C.H. Page & Bro. Doors Sculpted by Daniel Webster

1910

Merchants Bank, Scranton, PA †

Address unknown

Robert W. Gibson

ca. 1902

National Theatre of Mexico, Mexico City*

Bronze Frame for Mosaic Fire Curtain

Architect unknown

1910-11

Old Post Office and Federal Building, Dayton, Ohio

Southeast corner of West Third & Wilkinson Streets

Bronze Panels framing Service Windows and Lock Boxes, Bronze Windows and Grilles in Lobby

Architects: James Knox Taylor, and Oscar Wenderoth

1915

Pediatric Department Building Harvard University, Cambridge, Massachusetts

Address unknown

Bronze Entrance Doors

Architect unknown

Date unknown

Peoples Bank Building, Wellsboro, Pennsylvania †

Address unknown

Architect unknown

ca. 1901-1905

**Permanent Mission of the Republic of Poland to the United Nations,
New York, New York (unconfirmed)**

9 East 66th Street

Door Grilles

Architect unknown

Date unknown

Philadelphia Museum of Art, Philadelphia, Pennsylvania

Benjamin Franklin Parkway

Bronze and Iron Window Grills, Bronze Window Frames and Sashes

Architects: C.L. Borie Jr., Horace Trumbauer, C.C. Zantzinger; Julian Abele
1919-1928

Private Residence, Charles Scribner, New York, New York

Address unknown

Bronze Door Grille

Architect: Ernest Flagg

Date unknown

Private Residence, George L. Rives, New York, New York

14 West 38th Street (unconfirmed)

Railing

Architect: Carrère & Hastings

Date unknown

Private Residence, H.O. Havemeyer Mansion, New York, New York*

848 Fifth Avenue (demolished 1930)

Hanging Cast Iron Stair and Second Story Balcony with Balustrade

Architect: Charles Haight

1890-1 (Decoration of Interior)

Private Residence, Harkness, New York, New York

933 Fifth Avenue (unconfirmed)

Wrought Iron Stair Railing

Architect: Hale & Rogers

ca. 1895 (unconfirmed)

Private Residence, James B. Clews, New York, New York

1 East 88th Street

Entrance Doors and Window Grilles

Architect: Horace Trumbauer

ca. 1910-1911

Private Residence, John D. Rockefeller Estate, Pocantico Hills, New York

200 Lake Road

Wrought Iron Entrance Arch

Architects: Chester Holmes Aldrich & William Adams Delano (house) William Welles Bosworth (landscape)

1913

Private Residence, Tiffany Mansion, New York, New York*

Madison Avenue at 72nd Street (demolished 1936)

Iron Gate at Arched Main Entrance

Architect: Stanford White

1885

Sheridan Shop, New York, New York

Fifth Avenue

Bronze Marquise and Cresting

Architects: Carrère & Hastings

Before 1929

St. Louis Cathedral, St. Louis, Missouri †

4431 Lindell Boulevard

Stained Glass Windows, Altar

George Barnett

1907

Standard Oil Building, New York, New York

26 Broadway Avenue

Bronze Entrance Doors, Interior Bronze door grilles, frames, and decorative ornament above doorways

Architects: Carrère & Hastings; Shreve, Lamb & Blake Associated Architects

1920-28

Strauss Building, New York, New York

Fifth Avenue

Bronze Entrance Doors

Architects: Warren & Wetmore

Date unknown

Thomas Morgan Rotch Memorial Hospital, Boston, Massachusetts

Shattuck Street (sold to Harvard University in 1923, was later repurchased by the Children's Hospital Boston and is used for administrative offices)

Bronze Entrance Doors

Architect unknown

1914

Appendix C

**Conservation of the Tiffany Studios Window Grilles at the
Philadelphia Museum of Art¹**

The current conservation work on the PMA's Tiffany Studios metalwork is one example of how further information on the fabrication, manufacture, finishing/patination, assembly, and installation could help to inform conservation treatments. The ultimate decision on how to restore the bronze and iron window grilles was based on the guidelines from the original building specifications, examination of disassembled grilles, analytical testing and guiding principals for the conservation of artistic and historic property. The project is a collaboration among the Philadelphia based architectural firm responsible for the entire building envelope restoration, Vitetta, the PMA's

¹All information regarding the conservation work was obtained during a personal interview with Andrew Lins, Senior Conservator of Decorative Arts & Sculpture at the Philadelphia Museum of Art, unless otherwise noted.

Conservation Department, and tradesmen, including Historical Arts and Castings Incorporated in West Jordan, Utah.

While the entire project deals with many of the exterior elements and materials on the building, and all of the metalwork, this brief summary deals solely with the Tiffany Studio's designed window grilles.

Later treatments or alterations to the grilles, combined with areas of damage required a restoration approach. Therefore principles for the restoration of cultural property were followed, and the decision was made to reveal and preserve that which through analytical testing and original documentation is believed to be the original aesthetic of the grilles².

The removal of the grilles required a high skill level. As a result all the contract workers on site were formally trained in awareness and handling to avoid unnecessary damage and to ensure appropriate care was taken. Furthermore, understanding the high level of skill involved in such work, the architectural firm solicited a company that specialized in historic metalworking

² "Article 9", *International Charter for the Conservation and Restoration of Monuments and Sites - The Venice Charter*, (Venice: 2nd Congress of Architect and Technicians of Historic Monuments, 1967.)

and casting techniques, and was large enough to handle a project and objects of this size³.

A thirty-one page specification document was drafted by Vitetta with PMA direction, which clearly outlines the restoration work for the metal components⁴. This includes every aspect of the process from testing and mockups, delivery, storage and handling, sequencing and scheduling, to execution of the treatments. Additional guidelines regarding quality assurance, and product information for all materials: new metal, cleaning materials, and finishing products are also included in the Vitetta document. As the project evolves, Historical Arts and Castings provides the PMA with updated annotated drawings and progress reports.

Since two different materials and scales of grilles were dealt with, each will be addressed separately.

³ Nan Gutterman (Associate Architect, Vitetta), in discussion with the author, April 2008.

⁴ Vitetta, *Historic Ornamental Metal Restoration and Cleaning, Section 05910* (October 2006).

Ground Floor Iron Window Grilles

While the grilles appear to be sound, the surface of the metal is displaying some finish deterioration, where enough of the paint coat has been cracked locally, exposing the metal surface to weathering. This has resulted in minor corrosion of the metal. In view of the excessively thick paint layers now on the iron work, the recommendation was made to strip the surfaces to bare metal and then repaint them.

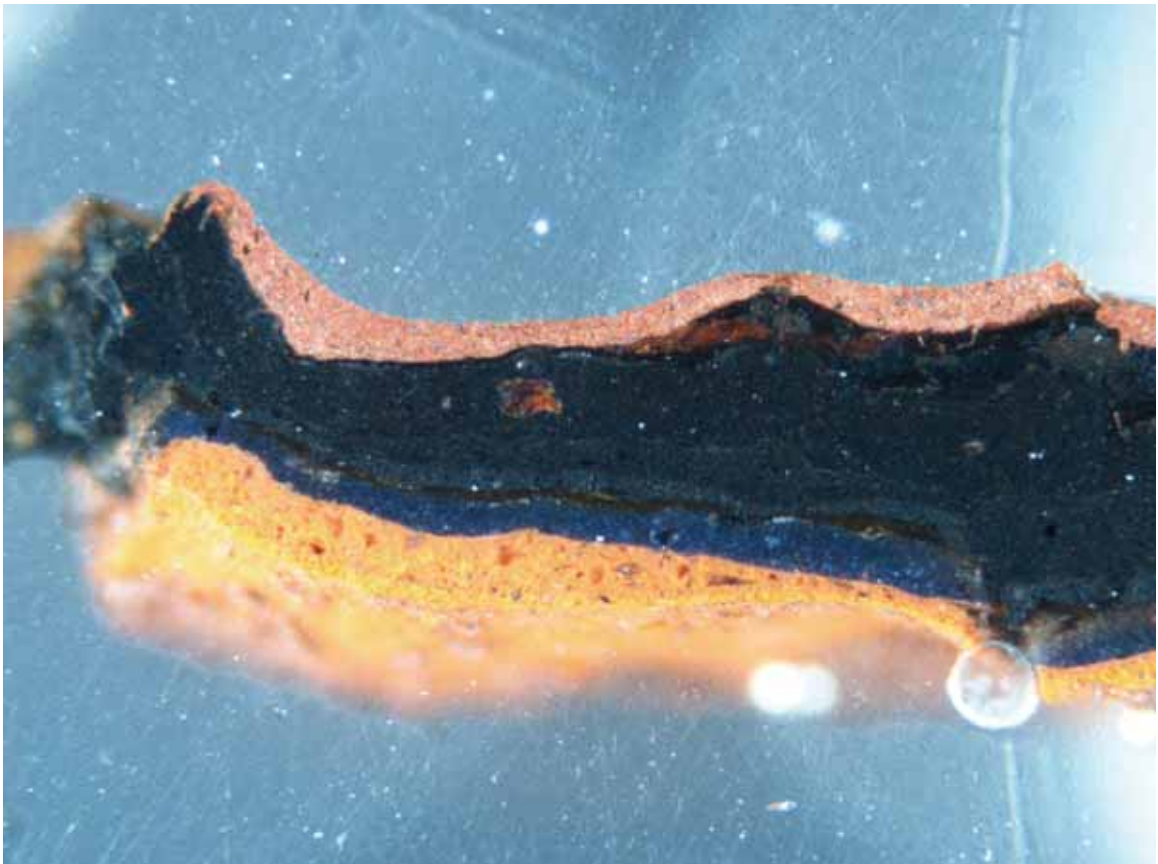


Figure C1. Photomicrograph of iron grille cross section. Sample taken, prepared and reported on by Albert Michaels Conservation, Inc. Photomicrograph courtesy of Melissa S. Meighan, PMA.

The PMA took a standard conservation approach in determining the appropriate paint colour. Vitteta contracted the work out to Albert Michaels Conservation Incorporated and, which began with 30 samples being taken, one from three different elements on each of ten grilles, in order to view and document the cross sections using photomicrography. The images showed not only the paint campaigns over the years, but also showed the original painted finish to be a deep purple blue colour (See Figure C1). The pigment was identified as “ultra-marine” by SEM-EDS at the PMA. This discovery contrasted with the original specifications for the ironwork to be finished with a shop coat of red lead and linseed oil⁵. This vibrant blue colour has been covered with bituminous black, and the most recent layer is a red brown (Figure C2).

The decision to take the finish and appearance of the metalwork back to this original blue colour required additional steps in order to decide on the restoration paint choice, both in terms of colour and gloss. Even “artificial ultramarine” is an expensive pigment, no longer used on large scale projects, so a modern synthetic substitute would be used to colour match. The colour was

⁵ C.L. Borie Jr., Horace Trumbauer, C.C. Zantlinger, *Specification of Labor and Materials Required for the Construction of Certain Portions of the Philadelphia Museum of Art (Known as Change no. 36) for the Commissioners of Fairmount Park with Form of Proposal and Form of Acceptance*, [1926?], 45.



Figure C2. Iron grilles before conservation treatment, with the most recent paint layer, a red brown. Photograph courtesy of Melissa S. Meighan, PMA.

narrowed down to three possible Munsell chips based on the cross sections and those three colours were selected to be prepared by the paint manufacturer. Three areas on one grille were scraped back as best possible to expose the original blue layer and a team of five conservators attempted to match these areas with small examples of the manufacturer's paint. The final choice was made from comparing the same three colours painted onto two grilles still installed on the building.

The cleaning and repainting process required the grilles to be removed in order to ship them to Utah. The original shop drawings indicated that they were to be inserted into the masonry wall openings using traditional lead packing, however instead they appeared to be held in place using grouting⁶. Removal was accomplished by first drilling out the grout, and then sliding the grille anchors out of the masonry openings. A cleverly devised design utilizes an end leaf on a terminating finial that is merely screwed in place. Once removed, the entire unit can be slid far enough in one direction for the opposite end of the grille to be pulled forward and out of the stonework.

The cleaning method selected for the iron grilles was to grit blast the metal to obtain a SSPC-SP6 surface preparation finish, and specified to “only clean what can be primed in a 24 hour period⁷.” The following three-coat paint system was used⁸:

- a) Primer coat: TNEMEC series Omnithane 2-3 mil dry film thick first coat.
- b) Second coat: TNEMEC series 66 high build expoline, 4-6 mil dry film thick.

⁶ Vitetta Architect & Design Team Lead, “Section 2: Survey Findings & Recommended Work”, *Philadelphia Museum of Art, Exterior Envelope Renovations Project*, (December 2005), 2.17.

⁷ Historical Arts & Castings, drawing 3.0, revised January 25, 2008, West Jordan, Utah.

⁸ Ibid.

c) Finish coat: 73 Endurashield 2-5 mil dry film thick.

A combination of spray and brush application is being used to ensure complete coverage, particularly where the upright barrier bars intersect the crossbars. Additionally, any voids in the metal are repaired using an epoxy filler, and the removable leaf is detached and finished separately, to ensure complete coverage and optimal results⁹. The piece will be reattached for shipment in order to keep all components of each grille together¹⁰.

At the time of this printing, the cleaning and repainting of several iron grilles had been completed, and these have been reinstalled at the PMA (Figure C3). While there was some concern that the dramatic change in colour may potentially cause some strong or negative reactions, this remains to be seen. Furthermore, part of the rationale for returning to this original blue colour was that many felt that it better suited the intention of the Charles Borie who was responsible for the decision to adorn the building with bright colours where ever possible¹¹.

9 Ibid.

10 Ibid.

11 David B. Brownlee, *Making a Modern Classic, The Architecture of the Philadelphia Museum of Art*, (Philadelphia, PA: The Philadelphia Museum of Art, 1997), 83.



Figure C3. Treated and repainted iron grilles reinstalled at the PMA. Photograph taken by author (April 2008).

Ornamental Bronze Window Grilles

The bronze grilles are much larger, with a more complicated assembly. The main support frames, are made from extruded bronze, while the more decorative patterning along the edges and the cross work in the centre is cast bronze. As stated earlier in the chapter “Tiffany Studios Architectural Metalwork”, the original building specifications called for all the bronze elements to be “a color approved by the Architect and shall be left for a natural weather finish”¹². Additional directions detailed that the grilles were to be coated in linseed oil and turpentine or conversely a coat of wax and oil, and that they should be further oiled for the first three months after erection so as to obtain a “golden bronze finish”¹³. It is difficult to say what was truly meant by these guidelines and how Tiffany Studios ultimately finished the pieces. Regardless, over time both faces of the grilles have almost entirely converted from what was originally there.

The conditions survey of the grilles established that the surfaces of the bronze had converted to a light green patina with little deterioration below the

¹² C.L. Borie Jr., Horace Trumbauer, C.C. Zantlinger, 87.

¹³ Ibid.

surface. However the large amounts of guano on the back side of the grille contributes to the deterioration. Steel connecting reinforcement bars were inserted into the extruded hollow bronze of the main supports, have created problems at the intersections. Water intrusion at these butt joints has caused significant corrosion of the iron, resulting in rust-jacking, which has blown apart or separated the bronze at the weak points along the corners¹⁴.



Figure C4. Steel bracing for removal of bronze grilles in 2007. Photograph courtesy of Melissa S. Meighan, PMA.

¹⁴ Vitetta, 2005, 2.16.

To properly restore the metalwork it was necessary that these grilles also be removed. A large steel frame was clamped to them as bracing and they were removed as a single unit using a crane (Figure C4). To disconnect these larger grilles from the masonry the bronze fasteners were cut since their location between the edges of the grille and stone provided little to no clearance for tools¹⁵. The grilles were stacked separated by 4" by 4" wooden beams, and loaded onto a flat bed truck to be driven to Utah.

In Utah the grilles are disassembled, requiring the careful removal of the corroded steel reinforcement bars inserted in the main supports. These are replaced with silicon bronze inserts, which when properly hardened are stronger than the steel and have a lower galvanic coupling potential. Any previous splits are repaired by welding. Missing parts, plus the extra units required by the specifications, will be replaced with newly cast pieces, using the alloy provided in the project specifications¹⁶ (cast bronze CDA #875 alloy)¹⁷.

Several different cleaning systems were tested to achieve the desired result. The decision was made to strip the pieces down to bare metal, which

¹⁵ Vitetta, 2005, 2.16.

¹⁶ Vitetta, 2006, 17.

¹⁷ Historical Arts & Castings, drawing 1.0, revised January 25, 2008, West Jordan, Utah.

required the use of a medium abrasive enough to remove the outer layers, yet would not harm the undamaged inner surface of the metal¹⁸. The project team finally selected to blast and clean the grilles with 105 micron aluminium oxide at a pressure of approximately 120 PSI¹⁹.

Following the cleaning, the goal is to obtain a finish that might be close to the “natural weathered” finish that was originally specified for the grilles. They are patinated using Birchwood Casey M-20. This process is followed by a rinse using deionized water. The grilles are then dried before applying the Inralac finish (Rohm & Haas Acryloid B44 with Benzotriazole) according to manufacturer’s recommendations, and are dried again. The final coat, Aquatec (Kynarfluorocarbon emulsion), is then sprayed onto the front and sides, while the back of the grilles are to be waxed, both used as protective coatings²⁰.

Once they are ready for reinstallation a modified fastening system will be used. This less complex method will also be more accessible and secure, utilizing stainless steel fasteners placed into newly drilled holes, while the

18 Nan Gutterman, (Associate Architect, Vitetta), in conversation with the author, April 2008.

19 Historical Arts & Castings, drawing 1.0, revised January 25, 2008, West Jordan, Utah

20 Vitetta, 2005, 2.16.

original anchor holes will be filled with grouting matched to the colour of the stone.

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