

**PARKE EDWARDS AND BRYN ATHYN CATHEDRAL (1913-1929): A CASE
STUDY OF MONEL METALWORK IN MACHINE-AGE AMERICA**

by

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A thesis submitted to the Faculty of the University of Delaware in partial
fulfillment of the requirements for the degree of Master of Arts in American Material
Culture

Fall 2012

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ACKNOWLEDGMENTS

I have always been uneasy with the estranging powers of modernity, marked by mass consumerism, technological “advancements,” and machine production. In our contemporary era of rapid change in the techno-industrial sector, the notion of consumer choice remains a quaint idea, as so-called social media leads the charge to digitize and repackage the human experience into discreet units of consumable identities. The fads of today are not marked merely by new technology, but by the technology’s ability to instantly reshape how we view ourselves and our world.

For this reason and others, I am drawn to manual labor and craft, not because it is somehow more pure or valuable than machine production, but because it serves as a reminder of our human faculties. I am reminded of my friend Craig Dunn with whom I spent many months as a drywall installer in the industrial city of Manchester, New Hampshire, seemingly the perfect backdrop against which to juxtapose a return to manual labor and the production of craft-based skill. Egging one another on after a day of fishing, Craig and I swam across the Merrimack River, once heavily polluted in the nineteenth and early twentieth century by the textile mills which flanked the river’s edge. The act of defiance against conventional wisdom (don’t swim in a once polluted river) was my own personal rebellion against the modern age. I am forever indebted to Craig for guiding me on my journey of self-validation through manual labor in that gritty industrial city we call life. This thesis is dedicated to all those committed to revolutionary gestures in our modern age and who recognize the value in the human transformation of humble materials.

This thesis would not have been possible without the mentorship and guidance of Brock Jobe, Professor of American Decorative Arts at Winterthur Museum. Brock's unparalleled knowledge and enthusiasm for the decorative arts has helped fuel my fire these past two years, and I am truly grateful for all of the wisdom he has so generously shared. I am equally thankful to J. Ritchie Garrison, Director of the Winterthur Program in American Material Culture. As a new student to the Winterthur program, Doctor Garrison assured me that upon completion of the program my world would never look the same. Thanks to him, this prediction became true. I am forever indebted to Dr. Garrison for giving me the tools to investigate our material world and contemplate its significance upon the landscape of human existence.

I must also thank Gregory Jackson, the archivist at Bryn Athyn College and Glencairn Museum. Greg graciously gave his time to help me locate Parke Edwards's material within the Glencairn Museum Archive. His wealth of knowledge concerning the Pitcairn family and the building of Bryn Athyn Cathedral has greatly informed this thesis. I would also like to thank Robert Edwards for his generous donation of archival material to Winterthur Museum and the Athenaeum of Philadelphia. Robert's dedication to the artistic merit and cultural value of Parke Edwards's work has helped ensure his legacy.

A "thank you" is also in order to Parke's son, James L. Edwards, who regaled me with wonderful memories of his time at Bryn Athyn Cathedral as a child and his father's amazing contribution to the structure. I am, of course, indebted to the library staff at Winterthur Museum including Jeanne Solensky, Helena Richardson, Emily Guthrie, and Laura Parish for their great patience and assistance with this project. Thanks also to Claire Yellin of Samuel Yellin Metalworkers Co., Peter Renzetti,

formerly in charge of Samuel Yellin Metalworkers Co., and Kerry Rhoades, the master blacksmith and owner of Forged Creations. Kerry's guidance in the art of blacksmithing has greatly increased my appreciation and first-hand knowledge of the art. I would also like to thank Becca Bertrand and all of my classmates for their friendship and support.

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ABSTRACT

This thesis examines the Monel metalwork at Bryn Athyn Cathedral in Bryn Athyn, Pennsylvania and the contributions of the Cathedral's chief metal designer, Parke Emerson Edwards, between the years 1913 and 1929. Using archival letters, preparatory drawings, period photographs, and the extant Cathedral structure as evidence, this thesis re-examines Bryn Athyn Cathedral and its Monel metalwork as a product of modernity and not America's Arts and Crafts movement. The quality of the metalwork at Bryn Athyn Cathedral is equal to or exceeds that produced by small Arts and Crafts communes or larger companies alike, but the Monel metalwork at Bryn Athyn was not a commercial enterprise and for this reason, among others, has not received adequate attention in the scholarship. Although medieval in style, the Cathedral can be more thoroughly understood as Bryn Athyn's skyscraper extraordinaire, a twentieth-century building constructed for, and in response to, a new American era. Parke Edwards and Bryn Athyn Cathedral's Monel metalwork provide parallel narratives that explore the contradictions between modernity and anti-modernity operating in the Cathedral's construction. This thesis contributes to existing scholarship that explores the social and economic tensions in the first quarter of the twentieth century and the series of Arts and Craft revivals that punctuate the period.

Chapter 1

INTRODUCTION

Bryn Athyn Cathedral in Bryn Athyn, Pennsylvania is one of the most architecturally significant ecclesiastical buildings in the United States. Built largely between 1913 and 1929, the structure excels in its display of America's grand architecture of the early 20th century, combining inspiration from the twelfth century Romanesque and fourteenth century Gothic styles. As the largest New Church (Swedenborgian) congregation, it is an important religious institution for those who follow the path to the Lord through the Bible and the writings and revelations of eighteenth-century theologian Emmanuel Swedenborg.

The funding to construct the Cathedral came from a single source, Bryn Athyn's community patriarch, industrialist, and prominent Swedenborgian John Pitcairn (1841-1916), a founder of Pittsburgh Plate Glass. Pitcairn commissioned Ralph Adams Cram (1863-1942) of the Boston architectural firm Cram, Goodhue, and Ferguson to oversee the Cathedral's ultimate design. Ralph Cram was a leading architect of the Gothic Revival, completing ecclesiastical and well as collegiate structures in the style. By the year 1913, when he was approached by John Pitcairn to draft plans for the new Cathedral at Bryn Athyn, Cram had already engaged his services in several high-profile projects including All Saint's Church in Ashmont, Massachusetts (completed in 1892), the Saint Thomas Church in New York (1905-1913), and the Cathedral of St. John the Divine in New York City (begun 1912).

John Pitcairn's son, Raymond, a lawyer by training and equally ardent supporter of the Swedenborgian faith, assumed a leadership role at the Cathedral soon after ground was broken on the project. With increasing frequency, Raymond offered suggestions on the Cathedral's architectural design. Raymond's involvement eventually led to conflicts with the leading architect, Ralph Cram. Although the ego of the two men clashed, Cram was probably largely responsible for infecting Pitcairn with the very enthusiasm which drove him to insist on a seemingly endless number of modifications. Cram generally deemed these modifications unnecessary and overly time-consuming. He and his draftsmen came to resent the younger Pitcairn, feeling that he overstepped the boundary between client and architect.

But Raymond Pitcairn had his own, legitimate objections to Cram. Ralph Cram's work throughout the country required his presence at his Boston office, which resulted in infrequent visits to the Cathedral construction site. This apparent distance from the project irritated Raymond. Cram's (perceived or actual) absence from the project, combined with disputes over the Cathedral's architectural elements, led to the severance of the professional relationship between the two men before the project was finished. Ralph Cram's best draftsmen however, including Robert Tappan, John Walter, E. Donald Robb, Harold T. Carswell, and Frank Parziale, remained on the project (Figure 2). Although Cram was no longer officially involved, his men remained on Pitcairn's payroll. For this reason, credit for the architectural contributions at Bryn Athyn can most fairly be put in the lap of Ralph Cram, or at least the draftsmen working under his banner.

Most importantly, and at Cram's recommendation, the Cathedral project became a testing ground to revive medieval craft practices, with the help of modern

technology. The most notable revival of craft came from the glass studio at Bryn Athyn where recent European immigrant artisans replicated medieval glass-blowing techniques to create some of the most significant stained glass outside Europe at this period.¹ Workshops were also established for masonry, carpentry, and metalwork. The metalwork, in material and design, offers a unique case study of the relationship between historicism and modernism at the start of the twentieth century.

Although Cram led the design of the Cathedral's major architectural elements, Raymond Pitcairn carried the project to completion, in many ways moving above and beyond Cram's recommendations in pursuit of an ideal structure. Pitcairn's legacy to the edifice can be found in the height of the aisle and clerestory walls, the addition of transepts, the arched windows in the nave clerestory, and the curve of the nave walls.² These changes went beyond recommendations made by Cram, for reasons of economic feasibility and time, the limits of which were seemingly ignored by Raymond Pitcairn. The Cathedral stands as a testament to the Pitcairns' religious fervor and unyielding drive to artfully assemble a timeless place of worship and a monument to the Swedenborgian faith.

Raymond Pitcairn's influence also infiltrated the Bryn Athyn craft studios, insisting as he did on the use of plaster mock-ups. Once completed, these plaster

1 For Bryn Athyn Cathedral's stained glass windows see E. Bruce Glenn, *Bryn Athyn Cathedral: The Building of a Church* (Bryn Athyn: The Bryn Athyn Church of the New Jerusalem, 1971), 133-142. Shelly Kaplan, "The Art and Craft of the Ecclesiastical Path" (MA thesis, University of Delaware, 1990).

2 For a discussion of architectural design at Bryn Athyn Cathedral see Glenn, *Bryn Athyn Cathedral*, 46-52.

maquettes for arches, column caps, and pinnacles—ranging from quarter size to full scale—were placed in situ, to be evaluated against other aspects of the Cathedral. Only those elements judged by Pitcairn to be in harmony with the rest of the structure were then cut in stone, carved in teak or oak, or forged in Monel, an alloy of nickel and copper which was first introduced to the commercial market in 1905, just eight years before Cathedral construction began at Bryn Athyn.

Parke Edwards led the blacksmiths at Bryn Athyn, designing most of the metalwork elements. Parke Emerson Edwards was born on November 9, 1890 in Smithville, Lancaster County, Pennsylvania.³ On September 28, 1911 he began his schooling at the Pennsylvania Museum School of Industrial Arts (hereafter PMSIA).⁴ In 1912, as a sophomore, he was awarded a scholarship to travel to Europe, where he studied art and produced sketches and watercolor drawings of metalwork, pottery, glass, mosaics, and decorative ornament. Parke's drawings reflect his artistic promise and demonstrate an early understanding of thirteenth- and fourteenth-century European art and design (Figure 3). While a student at the PMSIA, Parke was trained in the art of blacksmithing and metalwork by the renowned Samuel Yellin (1885-1940). Yellin learned metalworking in his native Poland before emigrating to the

³ Parke Edwards draft card, Ancestry.com, accessed August 5, 2012, www.ancestry.com.

⁴ "He is a Lancastrian: High Praise for a Young Student of a Philadelphia Industrial Art School," undated newspaper clipping, *New Era*, Parke Edwards Scrapbook, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

United States and through taking classes at the PMSIA himself in 1907, where he later worked until 1919 before opening his own studio.⁵

In November of 1915, just months after graduating from school, Edwards was hired by Raymond Pitcairn to design the metalwork for Bryn Athyn Cathedral, a massive project that had begun two years prior. Edwards had recently won acclaim for a wrought iron door he had completed at the PMSIA (Figure 4). In preparation for the work to be completed at Bryn Athyn, Pitcairn sent Edwards to study metalwork from the thirteenth through fifteenth centuries at the Metropolitan Museum of Art, Columbia University's Avery Library, and the New York Public Library, among other repositories. Edwards worked in Bryn Athyn for more than thirty years, designing almost all of the metalwork, first for the great Cathedral and later for Raymond Pitcairn's family home, Glencairn. His work was interrupted by service in the army during World War I. Stationed in Washington, D.C. at the Anatomical Department of the Army Medical Museum, he produced drawings of gas-infected animal lungs in 1916 and 1917. He returned to Bryn Athyn shortly thereafter, and continued to work for Pitcairn for another decade.

Parke Edwards's artistry, of course, is only part of the story here. The majority of metalwork at the Cathedral, what we might expect to be wrought iron, is actually a nickel alloy known as Monel. The impact of this modern material remains virtually unexamined in the current scholarship. Monel's qualities as a corrosion-resistant alloy with greater strength than steel (at high temperatures) and a warm

⁵ Jack Andrews, *Samuel Yellin: Metalworker* (Ocean City, MD: SkipJack Press, 1992), 3.

patina made it the perfect choice for Pitcairn, looking to create a monument to his faith that was both architecturally impressive as it was structurally sound. The use of Monel at the structure speaks to an interesting dialectic between religion and industry and the impact of modern materials and methods in the creation of this church.

Building at Bryn Athyn involved both traditional skills and modern technology. The typical progression of work for the Cathedral's largest and most prominent metalwork features moved from sketch to full-scale wash, plaster model, iron "mock-up," and then finally concluded with the forging of Monel. In addition to some plaster models of door handles, knockers, and the West door tympanum (all most likely designed and executed at least in part by Parke Edwards), the Cathedral blacksmiths created scrollwork hinges, screens, and balustrade "mock-ups" in iron before rendering the designs in Monel.⁶ Mistakes are more easily corrected in less labor-intensive two-dimensional drawings and three-dimensional plaster models and therefore Monel was only used once the model for a hinge or screen had first been perfected and approved in these mediums. A considerably more expensive material than iron, Monel was reserved by the blacksmiths for the last and final execution of the metalwork designs.

Although much has been made of Bryn Athyn Cathedral as an example of the American Arts and Crafts movement, this house of worship also testifies to the

⁶ Some of the original plaster models of figural handles, door pulls, and the West door tympanum are housed in the Glencairn Museum Archives, Bryn Athyn, PA. Other figural handles, a column cap, and modeling tools (presumably owned and used by Edwards) are part of the Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

impact of America's so-called Machine-Age, marked by unprecedented technological advancements, cultural change, and the creation and use of new materials. A modern workforce was unleashed on Bryn Athyn, aided by electric and steam-powered devices that allowed production to move faster and achieve uniform results where appropriate.⁷ The resources selected for the construction of the Cathedral are seemingly ordinary: wood, stone, metal, and glass. But a closer analysis reveals that many of the materials, such as teak from India and Java used for the interior woodwork, sandstone imported from Ohio, and Monel from Canada were unconventional materials by contemporary standards and certainly had no historical precedence in medieval-era church building. The adoption of the newly minted Monel, discovered in 1905, offers the most interesting insight into the dialectic between modernism and anti-modernism at work in the Cathedral.⁸

The marketing of Monel by the International Nickel Company, who owned the metal's patent, contributed to its popularity from about 1915 to at least 1935. Specifically, the company's suggestion that the metal existed naturally must have appealed to Pitcairn, who by and large opposed modern materials in the construction of the Cathedral. The metal must also have been appealing for its strength and resistance to corrosion. Per Raymond Pitcairn's request, the hinges,

⁷ One notable example of machine-aided preparation of materials includes some of the sandstone on the interior nave wall, machine-planned at the quarry. Glenn, *Bryn Athyn Cathedral*, 105.

⁸ The most notable source for a discussion of the ideology of antimodernism is T. J. Jackson Lears, *No Place of Grace: Antimodernism and the Transformation of American Culture, 1880-1920* (Chicago: University of Chicago Press, 1981).

grilles, gates, railings, screens, and lockplates drew inspiration from great European churches. Most notably, the great door of Paris's Notre Dame Cathedral was the model for Bryn Athyn's West Door.

Monel metal was worked through modern means to produce a design that was in conversation with, or at least reflected, the designs of the past. Although the historically derived design of the metalwork was achieved by the traditional method of coal forging, the welding process required the use of an oxygen and acetylene gas welding technique developed in 1903. Parke Edwards, trained through a curriculum of applied arts at the Pennsylvania Museum School of Industrial Arts, provided the designs and renderings of the metalwork to immigrant-artisans from Europe, many of whom had been trained through the guild system. The artisans, materials, and methods utilized to create the Monel metalwork which adorns Bryn Athyn Cathedral is truly a melting pot of the old and new.

My research into Bryn Athyn Cathedral began with archival material at the Winterthur Library's Joseph Downs Collection of Manuscripts and Printed Ephemera.⁹ Through the partial gift of Swarthmore, Pennsylvania, antiques dealer Robert Edwards, Winterthur acquired a large body of material relating to Parke Edwards (no relation to the donor). Winterthur's collection includes hundreds of original sketches by Parke Edwards as well as later designs for Raymond Pitcairn's home, Glencairn, now a Museum and archive. In addition, Winterthur's collection contains iron "mock-ups" for some elements that would eventually be wrought in

⁹ Parke Edwards: Collection 99, The Winterthur Library: Joseph Downs Collection of Manuscripts and Printed Ephemera, Winterthur, DE.

Monel metal at the Cathedral. Robert Edwards also donated relevant materials to the Athenaeum of Philadelphia, including Parke's scrapbook, plaster models and modeling tools, and full-scale drawings for metalwork at the Cathedral. Finally, but perhaps most important to my research is the large body of business records, correspondence, photographs and sketches at Glencairn Museum, which remained on site at the insistence of Ralph Cram who saw Bryn Athyn as a case study and publicity opportunity.

From these rich resources, I set out to understand Parke Edwards as a metalworker and draftsman in the early twentieth century. How had his accomplishments, education, and skill prepared him for the work at Bryn Athyn, and how is his legacy preserved in the Cathedral's metalwork? As my research progressed, it became clear that Edwards's story and the metalwork at Bryn Athyn serve as a microcosm and case study of the tension between modernity and tradition in the early twentieth century. These tensions represent the larger cultural effort to negotiate a changing world.

Chapter 2

ECCLESIASTICAL BUILDING AND GOTHIC REVIVALISM IN MACHINE-AGE AMERICA

“When we build, let us think that we build forever.” John Ruskin *The Seven Lamps of Architecture* (1849)

The building of Bryn Athyn Cathedral did not occur within a cultural vacuum, but was rather very much influenced by the architectural landscape of the time. In particular, the Chicago World’s Fair of 1893 expressed a new American nationalism through large structures in the Neoclassical style. The effort to codify a robust national identity through America’s architecture led to the erection of hotels, libraries, public monuments, museums, universities, and hospitals on a massive scale.¹⁰

The unprecedented building of ecclesiastical structures at the turn of the twentieth century was one expression of this new American identity. Church building, however, was most heavily influenced by the Gothic. Through this architectural style, religious leaders and some architects sought to renew a moral code in American life,

¹⁰ Michael Tavel Clarke, *These Days of Large Things: The Culture of Size in America, 1865-1930* (Ann Arbor: University of Michigan Press, 2007), 143. John F. Sears, *The American Scene* (New York: Penguin Books, 1994), “Introduction.”

the perceived lack of which received much lamentation from critics at the time. This new moral identity was also a reactionary discourse, aimed at the unprecedented number of new immigrants from Southern and Eastern Europe. For many, immigrants posed a threat to the American way of life. Skepticism and outright xenophobia led some to question if these foreign peoples could be assimilated into American culture. Through architecture, some religious institutions sought to gain the following of immigrants who would view America's churches as familiar to their own¹¹ A few of the notable churches built during the era include New York's St. Patrick's Cathedral which opened in 1879, Ralph Adams Cram's St. John the Divine in New York begun in 1892, Washington's National Cathedral begun in 1907, and Frank Lloyd Wright's famed Unity Temple built in Oak Park, Illinois between 1905 and 1908.

Among architects of his day, Ralph Adams Cram emerged as the most celebrated Gothic revivalist. In architecture, Cram sought to establish a link with the past.¹² For Cram, the Middle Ages represented a kind of "paradise lost," a preindustrial era against which to measure and correct the conditions of modernity.¹³

¹¹ Peter W. Williams, "The Medieval Heritage in American Religious Architecture," Bernard Rosenthal and Paul E. Szarmach, editors, *Medievalism in American Culture: Papers of the Eighteenth Annual Conference of the Center for Medieval and Early Renaissance Studies* (Binghamton, NY: Medieval and Renaissance Text and Studies, 1989), 184.

¹² Clark, Michael D. "American Religious Architecture," Bernard Rosenthal and Paul E. Szarmach, editors, *Medievalism in American Culture* (Binghamton, NY: State University of New York, 1987), 127.

¹³ Robert Muccigrosso, "Ralph Adams Cram and the Modernity of Medievalism," *Studies in Medievalism I* (Spring 1982): 28-29, 34.

Cram saw a pureness in medieval craft; the conditions of which he felt were later destroyed by the “egocentric” nature of Renaissance artists.¹⁴

Cram was not alone in his love of the cathedrals of the Middle Ages and the artistic merit they embodied. Regarding these structures, historian William R. Lethaby explains,

In the building of the great cathedrals...there is an element that we do not understand...The old builders worked wonder into them; they had the ability which children have to call up enchantment. In these high vaults, and glistening windows, and peering figures, there was magic even to their makers.¹⁵

Cram brought this “magic” to Bryn Athyn with the idea to create shops on site for bespoke work in the hands of the best stone cutters, glass-blowers, and metalworkers available, many of whom were recent European immigrants.

Of course, Bryn Athyn, like other ecclesiastical structures of the era, would have been impossible without a large capital investment. The early twentieth century witnessed the amassing of great fortunes in the hands of railroad and oil industrialists, who benefited from the lack of a graduated income tax.¹⁶ John Pitcairn’s financial backing for the building of Bryn Athyn Cathedral was made possible by his investments in industry and profits amassed from his co-partnership in Pittsburgh Plate Glass. Ironically, monies for building at Bryn Athyn came from

¹⁴ Clark, “American Religious Architecture,” 206.

¹⁵ Quoted in *Ibid.*, 125.

¹⁶ Williams, “The Medieval Heritage,” 186.

business practices and labor organizations that the Pitcairns consciously avoided in the construction of the Cathedral.

Chapter 3

METALWORK IN EARLY TWENTIETH CENTURY AMERICA

Before 1850, the blacksmith was an integral member of the rural United States. Usually working with one or two apprentices, the village blacksmith provided horseshoes, wheels, nails, and tools to a growing American population. By 1908, when ground was broken on Bryn Athyn Cathedral, few traditional blacksmiths remained. Historians of the blacksmithing trade John Holmstrom and Henry Holford, writing in 1916, recognized the enormous changes over the past decades and lamented that most implements “formerly made by the smith are now manufactured by machinery, and the respect for the smith is diminished in the same proportion.”¹⁷ Simply put, factory production made the smith obsolete.

By some measure, however, industrial design schools in Europe and America which emerged after the turn of the century as an effort to retain such skills helped keep trades like blacksmithing alive. Concern over the lack of artistry in mass-produced goods led to the creation of a number of organizations in America including the Artist-Artisans Institute, the Decorative Art Society, the Society of Applied Arts, and the National Arts Club.¹⁸ In 1900 the National Board of Education established a

¹⁷ John Gustaf Holmstrom and Henry Holford, *American Blacksmithing, Toolsmiths' and Steelworkers' Manual* (Chicago, IL: Frederick J. Drake & Co., 1916), 11.

¹⁸ Arthur J. Poulos, *American Design Ethic: A History of Industrial Design* (Cambridge, MA: MIT Press, 1983), 243.

committee that would develop a proposal for a comprehensive industrial arts curriculum in American education. Driving this was the belief that the economy and manufacturers would benefit from better designed products. In 1909 the National Society for the Promotion of Industrial Education was founded at the Cooper Union in New York.¹⁹ Influenced by the views of John Cotton Dana, the director of Newark's city museum, Richard F. Bach began an industrial art program at the Metropolitan Museum of Art devoted to "the application of arts to manufacture and practical life."²⁰ The Art Institute of Chicago, the Rhode Island School of Design, Cooper Union, Cranbrook, The Pratt Institute, and the Pennsylvania Museum School of Industrial Arts were early examples of schools with a curriculum aimed at improving mass production by training students in industrial design.²¹ Parke Edwards was one such student. Most of these initial American design schools were characterized by a conservative program teaching revival styles.²² Because most schools were associated with museums, as design historian Jeffrey Meikle notes, students drew inspiration from museum collections which reflected a variety of earlier styles.²³

Most overviews of America's so-called Machine-Age and the emergence of industrial arts curriculum correctly recognize the impact of the industrial designer

¹⁹ Ibid., 250.

²⁰ Jeffrey L. Meikle, *Twentieth Century Limited: Industrial Design in America 1925-1939* (Philadelphia, PA: Temple University Press, 2001), 20.

²¹ Kaplan, "The Art and Craft," 225, 302.

²² Meikle, *Twentieth Century Limited*, 20.

²³ Ibid., 20.

emerging at the conclusion of the first quarter of the twentieth century. These accounts link industrial designers with a new modern aesthetic marked by simplicity and new materials. However, such accounts do not always acknowledge and therefore obscure the fact that craftsmen working with a traditional aesthetic continued to operate alongside industrial designers. Certainly, many craftsmen adapted their aesthetic sensibilities in keeping with the rising preference for streamlined design, but figures like Parke Edwards and Ralph Adams Cram continued to create anew in the shadow of tradition. Parke Edwards, drawing from his training under Samuel Yellin and his exposure to earlier styles through museum collections, stood at the juncture of historical knowledge and modern realities.

The first metal workshop in this era of industrial arts was the “Wrought Iron” class taught by Samuel Yellin at the Pennsylvania Museum School of Industrial Art beginning in 1908.²⁴ The forge was located in the carriage house behind the school. Classes were taught by Yellin on Monday and Wednesday from 7:30 p.m. to 9:00 p.m., and he was paid \$3.00 for the evening.²⁵ After Yellin retired from teaching at the school in 1919, Parke Edwards took over the reins and taught classes for three years.

The turn of the twentieth century witnessed a marked increase in the use of metal in the design of architecture and consumer products. The Arts and Crafts and Colonial Revival movements promoted the notion of a traditional aesthetic that largely

²⁴ Andrews, *Samuel Yellin Metalworker*, ix-2.

²⁵ *Ibid.*, 2.

resisted the *look* of modernity, even though much of the work was created by the same mechanisms of modernity that the movement ostensibly resisted. The move to modernity included new materials like Monel metal. As the predecessor to stainless steel, Monel was the forerunner to later chrome and nickel-based alloys. The gleam of stainless steel, aluminum, nickel alloys, and chrome gave a distinct look to one's surroundings from the teens through the thirties.

Chapter 4

AN ALLOY FOR A NEW CENTURY, MONEL METAL: ITS INTRODUCTION, PROPERTIES, AND USES

In order to understand Monel, it is necessary to ascertain the properties of this material, its history, uses, and finally its significance to the metalwork at Bryn Athyn Cathedral. Monel consists of roughly sixty-seven per cent nickel and thirty per cent copper with small percentages of iron, manganese, carbon, silicon, and sulphur. It was among the first nickel or chromium based alloys to reach the market in the twentieth century. It is also the first corrosion-resistant, nickel-based alloy.²⁶ Monel's melting point is 1300-1350° C (2370-2460° F), slightly lower than that of iron. It cannot be extruded, but can be worked in all other ways including forging and casting.²⁷ Monel can be silver soldered, welded, and brazed and achieves a soft, lustrous, yellowish-gray color when polished.²⁸ The alloy is highly resistant to corrosion from acids, brines, water, and food products. Since its introduction in 1905, Monel has been used extensively in industry for chemical handling, food processing,

²⁶ Outside of trade journals and nickel industry publications, there is virtually no work examining the history of this nickel alloy. For a brief, but informative historical overview of the development, implementation, and uses of Monel metal, see Lewis E. Shoemaker and Gaylord D. Smith "A Century of Monel Metal: 1906-2006," *Journal of Metals*, September 2006, 22-26.

²⁷ International Nickel Company, *Practical Design in Monel Metal* (New York: International Nickel Company, 1931), 9.

²⁸ Oppi Untracht, *Metal Techniques for Craftsmen: A Basic Manual on the Methods of Forming and Decorating Metals* (Garden City, NY: Doubleday, 1968), 30-31.

construction of naval vessels and luxury yachts, kitchen sinks, and even decorative hardware.

The history of Monel begins with the discovery of nickel deposits in western Canada's New Caledonia and Sudbury, Ontario in 1866. They launched the world's modern nickel industry, and since 1905 Canada has led the world in production.²⁹ Canada's largest supplier, the International Nickel Company, resulted from the merger of the Canadian Copper Company of Ontario and the Orford Copper Company of New Jersey, combining Canadian nickel mines with the Orford Company's patented refining process.³⁰

In 1905, the metal that would come to be known as Monel was first discovered in nickel ore mined in Ontario. Monel is a binary alloy consisting primarily of two types of atoms- nickel and copper. Because the ratio of the nickel and copper in the alloy is the same as that found in the ore from which it is derived, Monel has often been called a "natural" alloy. However, the alloy occurs naturally in such small quantities that commercially available Monel has to be smelted, and is therefore "man-made" to a significant extent.³¹ D.H. Browne, a metallurgical engineer at Copper Cliff works and Robert Stanley, assistant manager of the works, developed an improved method of refining the nickel-copper alloy and on January 30, 1906 U.S. patent 811,239 was issued to Ambrose Monell, the president of the

²⁹ Ibid., 29. Shoemaker and Smith, "A Century of Monel," 22.

³⁰ Shoemaker and Smith, "A Century of Monel," 22.

³¹ Ibid., 22.

International Nickel Company and namesake for the company's new product.³² The patent included an oxide reduction process, smelting, calcining, and "besserrization."³³ This gave the International Nickel Company the exclusive rights to process the metal for its various commercial purposes.

In 1907 the International Nickel Company sold more than a quarter million kilograms (551,156 lbs) of Monel and in 1908 received a massive order for 119,748 kilograms (263,999 lbs) to sheath the roof of New York's Pennsylvania Railroad Station, installed in 1909.³⁴ The International Nickel Company outsourced Monel production to companies with adequate facilities such as the American Sheet and Tin Plate Company, West Penn Steel, Central Iron and Steel, the Crucible Steel Company, and the Bayonne Casting Company.³⁵ During World War I the United States and British navies chose Monel for propellers and shaft props because of the metal's excellent resistance to sea water corrosion. It was also used for aircraft parts and United States military identification tags.³⁶

After the war, International Nickel began to market Monel for an increased variety of uses. The company invested 3 million dollars to build a

³² Ibid., 22.

³³ Ibid., 22.

³⁴ Ibid., 22-23.

³⁵ Ibid., 23. Alexander P. More, *The Chemistry Leaflet*, 6:28 (30 March 1933). (check date)

³⁶ Shoemaker and Smith, "A Century of Monel," 23.

Huntington, West Virginia facility (beginning production on May 25, 1922) for thermal and mechanical processing of the metal.³⁷ Monel was used extensively for architectural hardware for several public buildings. In addition to Penn Station, other notable buildings with Monel roofs include the Philadelphia Museum of Art, National Gallery of Art, the Pentagon and National Cathedral in Washington, DC. Architects also chose the metal for decorative screens, gates, and hardware, most style in the then popular Art Moderne aesthetic. One such example is the interior of the Guardian Building in Detroit which “paved the way for the use of ‘white metals’ in modern architecture.”³⁸ The recent refurbishing of the Statue of Liberty included over 65,000 self-tapping Monel screws to replace corroded rivets.³⁹

Prior to this thesis, no research has been conducted specifically examining the metalwork of Bryn Athyn Cathedral for its prolific, decorative use of the nickel-copper alloy in a revival style. The Cathedral offers a unique opportunity to examine the aesthetic, structural, and spiritual impact of Monel and remains the most profuse and artistically significant example of its decorative use anywhere in the world.

Given that Raymond Pitcairn placed a great premium on natural and traditional construction materials, the choice of Monel for the Cathedral’s roof and hardware is somewhat idiosyncratic, although certainly not the only example of contradictions between the rhetoric and reality in the Cathedral’s planning and

³⁷ Ibid., 23.

³⁸ Ibid., 23.

³⁹ Ibid., 24.

construction. For design inspiration, Pitcairn asked Edwards to examine the wrought metalwork on Europe's medieval cathedrals. Pitcairn was especially fond of the leaves and scrolls executed for the hinges of Notre Dame Cathedral and commissioned a model of the hinges for study by Edwards and his men. The fact that these great cathedrals of the medieval period used wrought iron for the construction of hinges, screens, and hardware seems to have been of little concern to Pitcairn. Rather than use iron or mild steel, Pitcairn sought out a new metal in Monel, touted by industry publications and distributors as a "natural" alloy with superior properties.

Chapter 5

THE BUILDING OF A CATHEDRAL

In Bryn Athyn Cathedral, John and Raymond Pitcairn sought to create a monument to the Swedenborgian religion and establish a North American seat of the church. Their pursuit of perfection included the hiring of Ralph Adams Cram (Figure 5) and the Boston architectural firm of Cram, Goodhue, & Ferguson, regarded as the leading medieval revival architects of their day. On November 27, 1912 Raymond Pitcairn wrote to Cram expressing his interest in hiring the firm.⁴⁰ During these early discussions, Cram spoke enthusiastically about recreating working conditions comparable to that of the medieval guilds, an idea to which John and Raymond were receptive. “[Pitcairn] likes idea of making own glass, but doubts as to practicability & cost,” a note from September 3, 1913 in the Cathedral construction journal reads.⁴¹ Recreating stained glass comparable to that produced in medieval cathedrals was just one example of bespoke work to be undertaken at the Cathedral. In addition to glass-blowing, shops were erected on site for drafting, carpentry, masonry, and metalwork. The General Contractor for the project, Pringle Borthwick, located suppliers for the lumber, stone, metal, and other required resources. Raymond Pitcairn, in particular, took great interest in the selection of appropriate materials. This included teak wood

⁴⁰ E. Bruce Glenn, *Bryn Athyn Cathedral*, 30.

⁴¹ Cathedral Construction Scrapbook, 13.09.03.03, Glencairn Museum Archives, Bryn Athyn, PA.

from Java and Indonesia and sandstone from Ohio. His insistence on particular materials suggests that he was also instrumental in the selection of Monel for the wrought architectural metalwork. Like Pitcairn, Cram sought to use the newest and best materials to achieve the desired results at the Cathedral, although Cram publically exaggerated the traditional construction methods at the Cathedral, a move motivated no doubt by his own publicity campaign and the branding of his image.⁴²

Construction Begins

Construction at Bryn Athyn began in 1913.⁴³ In these early days, Pringle Borthwick oversaw orders for construction supplies and raw materials, including Monel. The first recorded order for Monel emerges in the archival material on June 5, 1913. An order was placed for “1 Monel Metal Rod ½” Dia[meter]- 5 ft long” from Philadelphia’s Supplee-Biddle Hardware Company at a cost of \$1.39.⁴⁴ This Monel bar marked the first of many subsequent orders from Supplee-Biddle. The ½” rod may have served as a practice piece for the two blacksmiths currently working on site prior to Parke Edward’s arrival at the project. These men may not have had experience working with the new material.⁴⁵ Raymond Pitcairn likely chose the metal for its corrosion-resistant properties and lustrous, gray hue. He wanted a structure built from

⁴² See Cram, Goodhue & Ferguson, Architects, “Specification for Excavation and Foundations: Bryn Athyn Church of the New Jerusalem,” Glencairn Museum Archives, Bryn Athyn, PA.

⁴³ Kaplan, “The Art and Craft,” vii.

⁴⁴ Receipt, Pringle Borthwick File, Glencairn Museum Archives, Bryn Athyn, PA.

⁴⁵ Pringle Borthwick File, 14.03.19.05, Glencairn Museum Archives, Bryn Athyn, PA.

the best materials available, and the nickel industry offered him a superior product in Monel, touted for its strength and aesthetic allure. The selection of Monel also ensured that no matter what architectural direction the Cathedral took, it would not simply mimic older designs, but would integrate new materials to a new effect.

Monel metal was considerably more expensive than iron and its use illustrates the costly undertaking posed by the Cathedral. In a note dated July 7, 1913 Ralph Cram acknowledged that the efforts to build “the most beautiful church” could involve “excessive & undue expense,” but assured Pitcairn that the result would “go down in history as unique in Modern Times.”⁴⁶ With Pitcairn’s seemingly unlimited budget, Cram was optimistic that Bryn Athyn Cathedral would be a structure of major historical significance. The relationship between the two men initially seemed to be one of reciprocal admiration during that first summer of construction. On July 23, Cram’s firm responded to some of Pitcairn’s recommendations as “very interesting” and agreed that “in principle all could be adopted.”⁴⁷

Within a year however, frequent disagreements between the two men developed. Two key factors were responsible for the gradual deterioration of their relationship. First, Pitcairn resented Cram’s infrequent visits to the Cathedral. As one of the most popular architects of the time, Cram oversaw other projects that required his presence in Boston. As a result, Cram was not always available to see first-hand the progression of work at Bryn Athyn, and Pitcairn became concerned by Cram’s

⁴⁶ Cathedral Construction Journal, 13.07.01.02, Glencairn Museum Archives, Bryn Athyn, PA.

⁴⁷ Cathedral Construction Journal, 13.07.23.03, Glencairn Museum Archives, Bryn Athyn, PA.

apparent detachment from the project. Almost as soon as construction began, Pitcairn's role in the project shifted from client to managing architect.

Although Pitcairn's contributions are today seen as fundamental to the architectural importance of the church, at the time of construction, Cram begrudged Pitcairn's meddling. Cram was comfortable giving oversight of the architecture to *his* men on the ground, but he could hardly tolerate the constant edits to his designs made by Raymond (although Cram would later lecture on this aspect of the project as one of its greatest merits.)⁴⁸ One of the most significant disagreements between the two men arose in response to Pitcairn's establishment of a modeling department and his insistence on the use of scale and full-size plaster models for the Cathedral's architectural elements. Pitcairn's establishment of the model department resulted in what he later called the first "hot letter" from Cram, reprimanding Pitcairn for overstepping his bounds and questioning the authority of the architect.⁴⁹ Pitcairn had no formal training as an architect, a fact which further supported Cram's belief that Pitcairn maintain a limited role in the design.

Metalwork at the Cathedral

At least two blacksmiths were on site in Bryn Athyn prior to the arrival of Parke Edwards. They may have been Matthias Schmidt and Lucas Scherwinger, as these two are featured in early photographs with Parke Edwards (Figure 6). Born about 1870, Matthias Schmidt, an Austro-Hungarian, arrived in New York aboard the

⁴⁸ See Raymond Pitcairn, "Response to Cram," Cathedral Construction Journal, Glencairn Museum Archives, Bryn Athyn, PA.

⁴⁹ Ibid., 12.

Auguste Victoria on May 17, 1903 and headed to Philadelphia, where he may have had family or hopes for employment. This ship's manifest lists his occupation as blacksmith.⁵⁰ Less is known about Lucas Scherwinger, although his involvement was no less significant.

On March 12, 1914 "5 Pcs Monel Metal Rod" were ordered from Supplee-Biddle for \$6.31. These Monel pieces were likely intended for one of the first metalwork projects at the Cathedral, "monel metal grills for [the] little basement windows."⁵¹ These grills, no larger than a few feet in height and width, would have provided an excellent test for the metal's ability and look, as these were not prominent elements at the Cathedral. A construction note from the 19th of March tells of "a new wrought iron man" having been located by Robert Tappan, one of Cram's draftsmen. This is confirmed by Pringle Borthwick's first weekly report in June, which lists a blacksmith.⁵² By the end of the month, two blacksmiths were on site using this metal for the creation of the Cathedral's basement windows.

By the fall of 1914, Pitcairn's plans to use Monel at the Cathedral had broadened. On September 29, he wrote metal brokers Hyde & McFarland Company of Chicago expressing this interest. Noting that he had recently inspected the company's Monel roof on the Pennsylvania Station railroad terminal in New York

⁵⁰ "New York Passenger Lists, 1820-1957," Ancestry.com, accessed August 5, 2012, www.ancestry.com.

⁵¹ "Week ending June 22" and "Week ending June 25," Pringle Borthwick File: 14.06.22.06 and 14.06.25.06, Glencairn Museum Archives, Bryn Athyn, PA.

⁵² "Week beginning June 2," Pringle Borthwick File: 14.03.19.05, Glencairn Museum Archives, Bryn Athyn, PA.

City, Pitcairn asked the firm for the metal's weight, sought to learn more about their experience with this new material, and asserted his consideration of the metal for Bryn Athyn.⁵³

Parke Edwards Prepares for Bryn Athyn

As the Cathedral building progressed in Bryn Athyn, a young student at the PMSIA was receiving praise for his wrought metalwork. In 1911, Parke Emerson Edwards entered the PMSIA to be trained in drafting and metalwork.⁵⁴ He immediately excelled and the school awarded him a scholarship during his second year to travel abroad to Europe to study art and metalwork. Remarking on the event, the Lancaster *New Era* recognized that this was the first time the award had been given to anyone other than a fourth-year student.⁵⁵ The article went on to predict,

It is probable that Mr. Edwards, when he completes his course, now half finished, may engage in the business of artistic work in wrought iron, a business in which this country has but one expert at the present time [Samuel Yellin], and he is Mr. Edwards' instructor. The young man is predicted to have a brilliant career before him.⁵⁶

The prediction proved to be true. Possibly owing to local praise for his artistic abilities and a particular wrought-iron gate that was featured in the local Lancaster

⁵³ Raymond Pitcairn to Hyde and MacFarland Co., September 29, 1914, Glencairn Museum Archives, Bryn Athyn, PA.

⁵⁴ "He is a Lancastrian: High Praise for a Young Student of a Philadelphia Industrial Art School," undated newspaper clipping, *The New Era*, Parke Edwards Scrapbook, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁵⁵ Ibid.

⁵⁶ Ibid.

newspaper (Figure 4), Raymond Pitcairn sought out Edwards, possibly as early as 1914, to lead a team of blacksmiths in the creation of artistic metalwork at Bryn Athyn. Pitcairn wrote to Edwards,

Mr. Asplundh and I both feel that it is most important for you to continue your present work [at the Pennsylvania Museum School of Industrial Arts], and should learn all you can about the various branches of metal work, which it would be possible for us to take up, in case you should be chosen for this work.

Pitcairn continued,

The best course for us to pursue may be for me to tell Mr. Cram that we have someone in mind for the work, but that you would not be ready to take up the work before the beginning of the year, nor, for that matter, would the work on the church be sufficiently advanced.⁵⁷

For a man with Edwards's training in what by now was considered all but a lost art, sustained work in the employment of one of America's wealthiest families must have given Edwards great cause for relief, a shot to his self-esteem, and the prospect of a burgeoning reputation.

There is no record that Parke Edwards had worked with Monel prior to his employment at Bryn Athyn, but it is likely that his instructor at the PMSIA, Samuel Yellin, may have introduced the metal to his students there. According to Yellin biographer Jack Andrews, Yellin's early production typically involved triple refined wrought iron, but he did use Monel for "special cases," including exterior fixtures.⁵⁸ At the same time architects were adapting cast and etched Monel for municipal

⁵⁷ Raymond Pitcairn to Parke Edwards, undated, Box 1 of 2, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁵⁸ Andrews, *Samuel Yellin*, 11-12.

buildings, America's most celebrated and revered metalworker, Samuel Yellin, was forging Monel like iron.

Before Edwards's arrival to Bryn Athyn, two blacksmiths worked through the winter of 1914. On February 16 of the following year, the local firm of Bryn Athyn Stone Company delivered 5160 pounds of soft coal to the blacksmith shop. This coal provided the blacksmiths with the necessary fuel to keep their forge operating, as they likely forged some of the preliminary metalwork in iron and Monel. It would still be another six months before Parke Edwards joined the project. In a letter dated August 3, 1915 Raymond Pitcairn wrote to Parke, referencing a meeting the two were to have at Bryn Athyn the following week.⁵⁹ The specifics of that meeting are not known, but we can speculate that Pitcairn introduced Edwards to the overall operation and the other artisans at the site. The two would likely have also shared their mutual expectations for the project and the scope of Edwards's responsibilities as Pitcairn saw them.

One particular letter from Raymond Pitcairn to Ralph Cram, written after their relationship had been severed, documents (at least from Pitcairn's view) the circumstances under which Edwards was brought to Bryn Athyn. Pitcairn explained,

Later I found Edwards, and he located our two craftsmen smiths. Here again Tappan, who once in a while still paid us a visit, had no use for the department, and said with feeling that Edwards was nothing but a schoolboy, and that is [it] was perfectly ridiculous for us to employ a schoolboy to design so important a feature as the chapel screen. It is true that Edwards had just left school a few months before, but what Tappan failed to realize was that Edwards with the help of our blacksmiths and sympathetic help and encouragement of Robb and

⁵⁹ Raymond Pitcairn to Parke Edwards, August 3, 1915, Glencairn Museum Archives, Bryn Athyn, PA.

some of the rest of us would produce better screens than have ever been made in America.⁶⁰

This insight into Edwards's arrival at Bryn Athyn must be understood in the context of the letter in which it appears, Raymond Pitcairn's unpublished "Bryn Athyn Church: The Manner of its Building and A Defense Thereof Written in Reply to Ralph Adams Cram." The lengthy, undated letter was drafted by Pitcairn in reply to an article by Cram, "A Note on the Bryn Athyn Church" which appeared in *The American Architect* May 29, 1918. Among Cram's many assertions, he declared Bryn Athyn Church a "tragedy," because the rightful architect (himself) was not granted rightful authority to oversee the project. Speaking directly to Cram's claims, Pitcairn composed a lengthy outline of his grievances against Cram. That Edwards was deemed an unwelcomed addition to Bryn Athyn by some of Cram's men can only be speculated, but it is clear from this letter that Pitcairn held Edwards in high regard and considered his work to be of the highest caliber and to pose great potential for the Cathedral.

Regardless of how he was viewed by the other men, by November of 1915, Parke was officially employed as head of the metalworking studio. That fall and winter, Raymond Pitcairn sent Edwards to New York to sketch designs at the Metropolitan Museum, Avery Library, Pratt Institute, and New York Public Library in preparation for the metalwork to be executed in connection with Bryn Athyn. While at these sites, Edwards examined some of the finest metalwork wrought in France,

⁶⁰ Raymond Pitcairn to Ralph Cram, 52, undated, "Pitcairn's response to Cram" file, Glencairn Museum Archive, Bryn Athyn, PA.

England, and Germany from the thirteenth through fifteenth centuries. Conveniently, this metalwork was also the subject of Parke's thesis, completed at the PMSIA.

Parke used his study drawings from the aforementioned sources and his own time spent studying abroad to augment his design vocabulary. This knowledge carefully informed the Cathedral's most significant metalwork elements: a large screen which separates the nave and chapel, called the Chapel Arcade Screen (Figure 7), and a large door with elaborate foliate hinges at the Cathedral's west entrance, called the West Door or Great West Door (Figure 8). The Chapel Arcade Screen and West Door were not merely meant to embellish the Cathedral structure, but to serve as important architectural features in their own right, integral to the Cathedral's design and function. The Arcade Screen is the single largest element of decorative metalwork at the Cathedral. It is comprised of four segments, one with a door that opens into the Chapel from the Cathedral nave.

In addition to these large undertakings, the metal smiths at Bryn Athyn fabricated latches, knobs, lockplates, switchplates, decorative screens, grates, door sheathing, tie bars and screws, all under the artistic direction of Parke Edwards. For the scope of this inquiry, the objects of most interest are the Chapel Arcade Screen and West Door. They received the most attention from Pitcairn, Edwards and the Bryn Athyn blacksmiths, are the most architecturally significant metalwork elements, and are extensively documented in the archive.

Chapel Arcade Screen

As early as March of 1916, the Bryn Athyn blacksmiths began to create a large screen to separate the Nave from the Chapel (Figure 7). That preceding February, 3730 pounds of soft coal from Bryn Athyn Stone Company, priced at \$5.00 per ton,

was delivered to the Blacksmith Shop, indicating that extensive smithing was underway.⁶¹ Raymond Pitcairn remained as involved with the metalwork as he had with the architecture, approving every detail of the screen before it was hammered on the anvil. In a letter dated March 24, 1916, Raymond Pitcairn reported,

Mr. Edwards is working on the screen for the Chapel arcade and I feel that it is coming on well, although the upper portion still leaves a good deal to be desired. He has worked up a full size drawing of the screen on paper [Figure 9], which he intends to render with a wash, and which we shall cut in silhouette so that it can be hung in place. Schmidt executed a small section in iron which looks very well [Figure 10], and I think we are now in a position to order the monel metal for this screen. I have asked Edwards to try the full size again in a more free hand way slightly varying the heights and shapes of the different courses of quatrefoils. On Tuesday or Wednesday of last week when I came down to the church site I found Mr. Robb in the blacksmith's shop, and found that the tooling was too coarse. The hammer marks had given me considerable concern, and one of the andirons was at the time apart for the very purpose of smoothing it up in this respect. Mr. Robb also suggested making a continuous curve for the legs of the andirons. We are having the andirons made of monel metal [Figure 11]. The wrought panels of the fire screen for the Bishop's study are finished and Keller is working at the frame [Figure 12].⁶²

The aforementioned andirons and fire screen were some of the earliest projects to be wrought by the blacksmiths before their attention turned to the chapel arcade screen. These pieces were destined for the Bishop's room at the Chapel and served as practice pieces for later projects in Monel. As was the case with the architectural elements carved in stone, Pitcairn supported the practice of creating full-scale drawings and partial models of the metalwork. A "full size drawing of the screen on paper," later

⁶¹ Invoice, February 21, 1916. Pringle Borthwick File, Glencairn Museum Archives, Bryn Athyn, PA.

⁶² Raymond Pitcairn to unknown, March 24, 1916, Glencairn Museum Archives, Bryn Athyn, PA.

“render[ed] with a wash,” was produced so that it could be placed in situ within the church. Edwards’s role in this process was that of drafter and designer. Edwards produced draft after draft of the chapel arcade quatrefoils and the lockplate and handle until Pitcairn was satisfied with the design. Given his training, Edwards would certainly have been capable of completing the work but his skill and speed may not have measured up to that of Mathias Schmidt or Lucas Scherwinger, the most experienced and technically proficient smiths on the project. Some photographs in Parke’s scrapbook in the Athenaeum of Philadelphia show metalwork labeled “by Mathias Schmidt.” (Figure 13) Schmidt’s artistic ability and skill is on full display in the work featured in these photographs and gives us some insight into, and illustrates why he and Lucas Scherwinger were responsible for the forging and welding of the metalwork designed by Edwards.

Pitcairn’s letter also provides insight about the aesthetic he was trying to achieve. He was particular about the finish of the Monel and the look of the arcade screen, a major element of the Cathedral. Pitcairn writes, “I have asked Edwards to try the full size again in a more free hand way slightly varying the heights and shapes of the different courses of quatrefoils.” While he surely wanted to achieve some measure of symmetry to the screen’s design, Pitcairn did not want it to appear too uniform. In other words, he wanted the screen to appear hand wrought as opposed to cast, and therefore suggested variations to the width and finish one would only expect to see on hand-forged metal.

Work continued on the large screen and on April 12 an order for “4 bars of $\frac{1}{2}$ x 1- $\frac{3}{16}$, 2 bars $\frac{3}{8}$ x 3, 1 bar $\frac{3}{4}$ x 1 $\frac{1}{2}$ (monel)” was placed to Supplee-Biddle Hardware. The 219 pounds of metal cost \$76.65. Invoices for Monel rods, bars, nails,

and sheets from Supplee-Biddle continued through early August of 1917.⁶³ Finding appropriate Monel stock was not easy. Parke Edwards noted that Canada had recently restricted the export of nickel because the country was using its available reserves for ammunition during World War I. Parke lamented,

It is impossible to get special sizes of any kind; all the metal was larger than the size required. This was forged down to the size needed, by hand. (The size) (1/4" x 5/8") each scroll requires about 12 1/2" of metal, the stock size of the metal is 1/4" x 3/4" this is forged down to 1/4" x 5/8" this thickness is slightly varied in each one. This gives it a free character. The length of each scroll, length of metal required to make each scroll varies, some are twisted tighter than others. The ends of metal all vary in each scroll.⁶⁴

Aside from the difficulty of forging the metal to the desired length and thickness, this account documents the unique characteristics of each individual scroll that makes up the chapel arcade screen.

The challenge of acquiring the appropriate Monel stock was just one obstacle the shop faced. In late April of 1915, the blacksmith shop caught fire. A note to Cram's firm confirms a fire in the blacksmith's shop at 1:30 am on the 22nd that spread to the carving and model shed.⁶⁵ In an undated note by Parke Edwards, likely authored shortly after the fire, he writes,

The chapel screen was first started in the shop which was destroyed by fire April 2[2], 1916. This fire destroyed all drawings I had made-

⁶³ Receipt, April 12, 1917. Pringle Borthwick File, Glencairn Museum Archives, Bryn Athyn, PA.

⁶⁴ Parke Edwards note, undated, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁶⁵ Unauthored note to Cram & Ferguson, Architects, undated, 16.04.24.01, Cathedral Construction Journal, Glencairn Museum Archives, Bryn Athyn, PA.

about four and one half months work. Including wax models, etc. The work which we had completed was also badly damaged. The fire set was repaired, except the fire screen. Parts of it was [sic: were] burned, requiring an entire new screen. About six weeks were spent in repairing the machines. Two drill presses and stand for emery wheel, the motor, power hack saw was destroyed. I spent my time at the Inn making scale drawings- suggestions for chapel screen (in my room).⁶⁶

The fire posed a huge setback to Edwards and the blacksmiths. New drawings had to be rendered, new sections of the arcade screen forged, and damaged equipment repaired. Parke was probably sent away to sketch while the blacksmith shop was rebuilt. On July 21 he sketched designs of pomegranates at the New York Public Library for a set of finials which were to be set atop the arcade screen (Figure 14). These designs guided the styling of finials with a central pomegranate flanked by four petals gracefully tapering from the stem to the edge of the leaves.

On September 15, Parke noted that the new shop had been finished. A July 1917 report compiled the following summer by the State Workmen's Insurance Fund lists a hack saw, emery wheel, drill press, and engine lathe in service at the blacksmith shop.⁶⁷ Parke later wrote,

When the new shop was completed I started my first full size drawing for the screen. After making two full size ones, with a section in iron, we (Mr. Pitcairn and I)—decided to start the first section in Monel Metal...I spent my time designing and refining various types of scrolls, making drawings full size. At present I am working on the full size drawing which includes the gate (sept 26).⁶⁸

⁶⁶ Parke Edwards note, undated, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁶⁷ Inventory, State Workmen's Insurance Fund, July 1917, Pringle Borthwick File, Glencairn Museum Archives, Bryn Athyn, PA.

⁶⁸ Parke Edwards note, September 15, 1915, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

The fire postponed the forging of the Chapel Screen, but the delay was not without positive consequences. The additional time allowed Parke Edwards to refine his designs, and meet frequently with Raymond Pitcairn. At every step Pitcairn offered advice and recommended adjustments.

By December 1917, there were five employees working in connection with the blacksmith shop (Appendix A).⁶⁹ While little is known about most of the metalworkers and how they assisted Schmidt and Edwards, many of these men must have assisted to some extent with the completion of the Chapel Screen, a large and complex undertaking for one or two men. As the Monel scrollwork and finials for the screen began to take ultimate shape, attention shifted to the creation of the West Door, arguably the most important spiritual piece of metalwork at the Cathedral.

The West Door

In the Spring of 1917, Edwards began working on what was to be the most scrutinized aspect of the Cathedral—the West Door. Unlike the Arcade Screen which was not modeled on any preexisting structure, Raymond Pitcairn’s vision for the West Door included wrought Monel hinges, based on those found at Notre Dame Cathedral and the Church of St. Giles.⁷⁰ As they had for the Chapel Arcade screen, Parke Edwards and the blacksmiths followed a similar design process for crafting the West

⁶⁹ Pringle Borthwick, “Pay Roll Report for State Workmen’s Insurance Fund,” December 31, 1916 to December 31, 1917, Pringle Borthwick File, Glencairn Museum Archives, Bryn Athyn, PA.

⁷⁰ See sketches, Box 2, Collection 99: Parke Edwards Collection, The Winterthur Library: Joseph Downs Collection of Manuscripts and Printed Ephemera. See also Glenn, *Bryn Athyn Cathedral*, 132.

Door—moving from sketch to model, then working in iron before completing the design in Monel. Also, as he had done in preparation for designing the Arcade Screen, Parke visited various institutions, gaining access to models of the hinges that Pitcairn had in mind as inspiration. Edwards examined a model of Notre Dame's hinges at the Metropolitan Museum of Art and photographs of the St. Giles hinges at the Carnegie Museum in Pittsburgh.⁷¹ These models helped Edwards to envision not only the specific design aspects of what was to be rendered at Bryn Athyn, but they also gave him a feel for the fourteenth-century context in which Notre Dame's hinges were forged. Edwards likely felt some degree of pressure from Pitcairn to match the craft skill and delicate rendering represented by these masterful hinges of a bygone era. The hinges display elegant details which gently taper and terminate in foliate designs. The artistry of the hinges at St. Giles and Notre Dame is the integration of the individual design elements into one unified design statement.

Soon after Parke began drafting designs for the West Door, however, his progress was interrupted by the first World War. Given his artistic abilities, Edwards was drafted by the Army to produce exacting drawings of animals whose lungs had been infected by nerve gas. Edwards was stationed at the Army Medical Museum in Washington, DC, where he produced anatomical drawings of gas-infected animal lungs. These sketches would later inform Edwards's rendering of a horseman figure for the West Door tympanum, an element that never came to fruition until many years after Parke's association with the Cathedral (Figure 15).

⁷¹ Glenn, *Bryn Athyn Cathedral*, 132.

Edwards's work in connection with the war effort continued through the next year, but he remained in contact with Pitcairn, discussing the West Door and progress at Bryn Athyn. By the spring of 1918, work on the West Door had moved ahead significantly. In a letter dated April 10, 1918, Pitcairn noted his recent assessment of a photograph of the West Door hinge and that he "was particularly impressed with the tapering off of the size of the metal as it left the main hinge and worked out through the scrolls to the smaller portions."⁷² It is likely that Mathias Schmidt and the other metalworkers used Parke's drawings to forge designs for Pitcairn to inspect (Figures 16-17). It is clear from Pitcairn's letter that the overall composition of the hinges was of great importance to him. Pitcairn wanted the forged metal to reflect nature, but not mimic it. The foliate designs that terminate at the ends of the scrolls had to be rendered to Pitcairn's ideal.

In addition to the hinges, the Bryn Athyn blacksmiths also forged nail heads for the West Door. Pitcairn wrote to Edwards in Washington to keep him abreast of the work. In a May 8 letter, Pitcairn noted that Mathias Schmidt was, at the present, working on the aforementioned nail heads for the West Door hinges. That week the blacksmiths, including Schmidt, were paid \$50.95 for 80 ½ hours of work.⁷³ Work of this type was extremely rare, as most metalworking jobs at this date were in the employment of commercial operations that rarely required the level of artistry or metalsmithing skill that Edwards, Schmidt, or the others possessed. Raymond worked

⁷² Raymond Pitcairn letter, April 10, 1918, Box 2/2, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁷³ Wage record, June 1, 1918, Pringle Borthwick File. Glencairn Museum Archives, Bryn Athyn, PA.

closely with all the men in the blacksmith shop, not just Edwards, to control costs as well as to guide the design. When describing a meeting with Mathias Schmidt, Pitcairn recalled, "I went over this with him this morning and asked him to be quite conservative in the matter of design, keeping to the type of St. Jiles [sic] hinge and to the form of the simple gothic leaf, which is the dominating motive [sic] in our hinges."⁷⁴ This letter offers some insight into Schmidt's, or even perhaps Edwards's impulse to execute the hinges more elaborately than Pitcairn wished; Schmidt was certainly capable of taking the hinges beyond what Pitcairn envisioned.

As work progressed on the West Door, the Chapel Arcade screen, begun three years earlier, was finally completed on May 15, 1918.⁷⁵ For the week prior, the blacksmiths were paid \$45.20 for 73 hours of work.⁷⁶ With one project fully completed, Pitcairn shifted his focus exclusively to the West Door. He wrote to Edwards,

I have been thinking a great deal about the leaves for the hinges and feel that a more careful study of precedents of early work will be a great help. In studying gothic leaves for our glass work, we have found that what at first seemed very simple and perhaps even crude, was much more subtle than it had appeared. Some of the leaves on the Paris hinge are especially fine. Some days ago in looking over the first volume of 'Musee de Sculpture Trocadero' I found a large photograph of a portion of one of the Notre Dame Paris hinges which showed the detail of the leaf forms quite well. In the same collection a number of

⁷⁴ Raymond Pircarin to Parke Edwards, undated, Box 2/2, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁷⁵ Raymond Pitcairn to Parke Edwards, May 15, 1918, Glencairn Museum Archives, Bryn Athyn, PA.

⁷⁶ Wage Record, ca. May 15, 1918, Pringle Borthwick File, Glencairn Museum Archives, Bryn Athyn, PA.

conventional designs in stone work are to be found, which express gothic leaves in a satisfactory manner. Indeed, there is one photograph which I think would suggest an admirable motive for one of the remaining doors, possibly the south door.

Pitcairn concluded,

In looking at your tracing for the large lower hinge, I have wondered whether there is danger of the hinge seeming a little too bare and open; in other words, if leaves are used very sparingly, it might be that scrolls could have a third member in places and perhaps the scrolls might be a little tighter.⁷⁷

It is not clear how Edwards reacted to such criticism. Constant revisions and additions clearly consumed much of his time and energies. In spite of Pitcairn's ever-looming criticisms, Edwards's devotion to the project at Bryn Athyn appears to have been firm throughout; of Pitcairn's, there can be no question.

Parke produced a particularly insightful letter on June 25 in which he indicated his aggravation, not with Pitcairn, but with Ralph Cram and his men. This letter appears to be the only reference to any dissatisfaction from Edwards, who was otherwise resolute in his work and commitment. Apparently, Parke felt that Cram took too much credit for the work of the craftsmen in a recent article by Cram in the *American Architect*. According to Edwards, Cram visited the metal shop only twice and although impressed by their work, gave no input. Edwards was clearly upset by Cram's article and vented to Pitcairn. He wrote,

When I came to Bryn Athyn November 15, 1915, my understanding with you was that I was to be in full charge of the Metal Department, and not under any of the architects who were working at the Church, but to work in harmony with everybody. The object was to produce, if possible, under modern conditions, Metal Work equal to that of the

⁷⁷ Raymond Pitcairn to Parke Edwards, May 15, 1918, Glencairn Museum Archives, Bryn Athyn, PA.

Middle Ages. With this object in view, the best metal workers possible to obtain in their country were selected from personal knowledge of their ability, certainly not chose from miscellaneous sources.⁷⁸

This letter is remarkable for many reasons, the first that it exists. But it also clearly outlines the understanding between Edwards and Pitcairn, and the scope of Edwards's involvement with the project, as seen through his eyes. Like Edwards, Pitcairn resented Cram's recent boasting. Clearly, credit was not given where it was due: to Edwards and the dozens of other craftsmen that built Bryn Athyn Cathedral from the ground up. Moreover, the letter provides insight into the selection of the other blacksmiths by Edwards and others working on the project. Filippo Bonaventure, for example, knew Parke from their years of schooling under Samuel Yellin at the PMSIA. Edwards inserted examples of Bonaventure's ironwork in his scrapbook (Figure 18).

Despite Edwards's own frustrations with Cram's ego, work on the West Door continued. On June 26, another letter from Pitcairn to Edwards includes advice on the modeling of the West door hinges. Pitcairn writes,

The enlargement of the photograph of the Paris hinge should help considerably. I think Schmidt's last leaves are very fine, although we shall now have to beware of swinging to the other extreme, and tending toward too realistic and renaissance a feeling in the work. At all events I am looking forward with great interest to the completion of a portion of one of the big hinges in the new style, which can readily be modified if we have gone too far.⁷⁹

⁷⁸ Parke Edwards to Raymond Pitcairn, June 15, 1918. Glencairn Museum Archives, Bryn Athyn, PA.

⁷⁹ Raymond Pitcairn to Parke Edwards, June 26, 1918, Glencairn Museum Archives, Bryn Athyn, PA.

Pitcairn's specificity for the hinges knew no boundaries and he was clearly never shy about critiquing the work thoroughly. The blacksmiths worked to achieve Pitcairn's desired balance between realism and representationalism in the hinge design.

Raymond Pitcairn even asked for permission from curators at the Metropolitan to take a plaster cast of *their* model of the Notre Dame hinge. By July 12 this cast was complete, but Pitcairn was ultimately unhappy with the detail of the cast and in the end was not charged for the Metropolitan's work.⁸⁰ The work at Bryn Athyn engaged the time and professional efforts of many.

On July 12, Raymond Pitcairn wrote to Edwards who was still stationed at the Army Medical Museum. Pitcairn wrote, "Schmidt is moving along a little faster than he was last week, although I told him that I still felt his scroll was a bit too regular. He amused me by replying that the men who are doing the glazing criticized the chapel screen for lack of symmetry in the scrolls."⁸¹ Perhaps the men in the glass shop were provoking the men at the metal shop, knowing that they were also working under the same strict guidance of Pitcairn. As an aside, this letter also referenced Edwards's desire to experiment with the technique of metal enameling. That same day, Pitcairn wrote to the Fire Marshall requesting the purchase of a small amount of acids so that Edwards could experiment with enamels, a technique that he employed

⁸⁰ Howard Freemont Stratton to Parke Edwards, July 11, 1918, Box 2/2, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁸¹ Raymond Pitcairn to Parke Edwards, July 12, 1918, Glencairn Museum Archives, Bryn Athyn, PA.

on some of the pushbutton switchplates he would come to design and execute for some of the Cathedral rooms.⁸²

On July 15, the Metal Department was expanded to include a Mr. John Walter. Pitcairn writes,

I feel sure that we should have one man in addition to Mr. Schmidt working in the metal department. Besides the fact that Mr. Walter could readily try out variations, inasmuch as he can draw better than Mr. Schmidt, it would be a great saving if he could help Mr. Schmidt when he needed help and on the other hand, Mr. Schmidt could help him when Mr. Walter needed help. As it is we do not have work sufficient to keep a helper busy.⁸³

On July 16, a letter from the Office of Military Aeronautics, addressed to the Fire Marshall in Washington, DC, requested a permit to obtain acids for Mr. Edwards for purposes of etching silver.⁸⁴ On July 29, Raymond wrote to Parke.

I should be much interested to learn of your progress on the west door hinges. If you can send us your ideas for the center portion of the lower hinge, upon which Schmidt is now working, it would enable us to go ahead and as soon as this is done, it should be worth while for you to come up and see the hinge and bring with you whatever details you have been able to work out for future work.⁸⁵

⁸² Raymond Pitcairn to Fire Marshall. July 12, 1918, Glencairn Museum Archives, Bryn Athyn, PA.

⁸³ Raymond Pitcairn to Parke Edwards, July 15, 1918, Box 2/2, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁸⁴ Office of Military Aeronautics to Fire Marshall, July 16, 1918, Box 2/2, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁸⁵ Raymond Pitcairn to Parke Edwards, July 29, 1918, Box 2/2, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

Little more than a week later on Aug 10, Pitcairn sent a telegram to Edwards. He suggested, "Schmidt agrees with me that perhaps there are too many strands in shaft of hinge and that a reduction by two might improve it. It might be well for you to come up Sunday if possible. Otherwise please mail tracing of second hinge. Also new end for present hinge."⁸⁶ The design of the hinge was apparently remedied to Pitcairn's satisfaction (Figure 19). On August 20, Pitcairn wrote to Edwards,

The revision of the new hinge along the lines which we discussed when you were here last, is fine, and I set Schmidt to work immediately upon it. We have not as yet undertaken the center members of the original hinge, as I am not yet quite satisfied with the drawings, and am determined to let this await your next visit, when we can discuss the matter fully. Mr. Walter started work yesterday.⁸⁷

A September 12 letter also includes praise for the first large hinge of the west door. Pitcairn writes,

Upon my return to the church I was delighted to find the first big hinge has been put together. It certainly is very beautiful and worth all the effort which has been bestowed upon it. So far as the straight bars in the center of the hinge are concerned, I feel that it would be improved if the strands should graduate in the matter of height from the center out, so that the center bar should be higher and the others gradually lowered until the outside is reached. In other words I feel that the two which sink below the others give the hinge at this point a light feeling of weakness. The lead work and design of the bands are splendid. There are two mouldings on the band which may have a trifle too much

⁸⁶ Raymond Pitcairn to Parke Edwards, August 10, 1918, Box 2/2, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁸⁷ Raymond Pitcairn to Parke Edwards, August 20, 1918, Box 2/2, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

projection, but I should like to see the hinge set on a door before this matter is determined.⁸⁸

By the first of October Pitcairn must have been getting impatient with progress on the West door hinges. He wrote to Parke,

I was not quite satisfied with the last drawing for the center hinge, and in view of your present service, which I understand will occupy most all your time, I felt that it was a good opportunity to see what capabilities Walter has in the matter of drafting and designing. He has taken up the work with admirable spirit and I am convinced that, with the designing that you have already done, and the two lower hinges completed, he will be able to finish the work along the lines which you have established.⁸⁹

Pitcairn always respected Edwards and his role in the design department, but in his absence Mr. Walter was asked to fill his shoes. On October 23, Pitcairn wrote to Edwards to reassure him that progress under Walter's direction was going well. Pitcairn explained, "I am sure you would be pleased with the middle hinge which Walter has been working on. The last one which he has done is too elaborate; but I feel sure, having accomplished what he did with the former one, that he can work back into the character which is desired."⁹⁰ In a December 30 letter to the Surgeon General, Merritt W. Ireland, Pitcairn requested Edwards's early discharge from the Army's Anatomical Department, Instruction Laboratory, of the Army Medical Museum. Pitcairn explained that he was anxious for Edwards to return to Bryn Athyn

⁸⁸ Raymond Pitcairn to Parke Edwards, September 12, 1918. Glencairn Museum Archives, Bryn Athyn, PA.

⁸⁹ Raymond Pitcairn to Parke Edwards, October 1, 1918, Box 2/2, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

⁹⁰ Raymond Pitcairn to Parke Edwards, October 23, 1919, Box 2/2, Folder 7, Parke Edwards Collection, The Athenaeum of Philadelphia, PA.

to complete the “main portals” that he had left unfinished. Pitcairn justified his request by noting that Edwards was needed to ensure that the Cathedral could be dedicated that fall, as scheduled.⁹¹

In January 1919, Parke was indeed granted an early release from the Army. With the major metalwork elements of the Cathedral complete, attention turned to more ornamental works, like a hymn board, which while important to the church ministry, had little structural significance to the work as a whole. His sketches for a hymn board and lighting litter the archive. A March drawing titled “west door metalwork suggestions” shows the further development of scrolls for the West Door, which at this date were still being tweaked. Interestingly, some strap hinge designs for the West Door are signed by John Walter, indicating that he continued to design, even after Edwards’ return from the service. A June 19 sketch of “door to chapel” and a July 19 sketch titled “door in East Wall, south transept” document other projects in the summer of 1919. The variety of designs and infrequent modifications to these designs suggest that work was now moving at a much faster pace, under pressure from Pitcairn to complete the Cathedral, now seven years into construction.

As the leaves in Bryn Athyn turned and autumn arrived, smaller tasks were approached and tackled by the Bryn Athyn smiths. A sketch from September 8 shows designs for the candelabras in the small chapel. On October 27, Edwards sketched a “suggestion for west porch screen,” a feature which would never come to be built, likely due to time constraints. In December, Parke completed another design for the “door in east wall, s. transept.” The artistry of these doors is magnificent, but we lack

⁹¹ Raymond Pitcairn to Merritt Ireland, December 30, 1918, Glencairn Museum Archives, Bryn Athyn, PA.

the archival references to know if Pitcairn considered them as significant as the West Door or Arcade Screen, the production of which he seems to have monitored much more closely.

As work at Bryn Athyn drew to a close, Parke sought other tasks. He began a three-year tenure as an instructor at the Pennsylvania Museum School of Industrial Art. However, in 1922, at the age of thirty-two, Edwards returned to Bryn Athyn as a full-time employee at a pay rate of \$390 monthly. It is not clear whether Edwards ever became tired of his involvement with Pitcairn or the Cathedral, but what is certain is that work of this type for a metal smith was rare. By comparison, Mathias Schmidt, a much older and more skilled smith, was paid \$53 weekly.⁹² Work continued at Bryn Athyn as it had a decade earlier. Between 1922 and 1929, Parke designed a number of smaller elements for the Cathedral including switch plates, door knobs, latches, grates, lighting, and an impressive set of keys—one for each door of the Cathedral.

By 1929 the Cathedral was nearly complete, more than two decades after John Pitcairn made his initial financial commitment to endow the project. As the nation's concerns shifted to the looming impact of the financial crisis ignited by the crash of the stock market that fall, Raymond Pitcairn focused the attention of his employees on a new project, his family home Glencairn. For another ten years, Pitcairn continued to employ Edwards as chief metalwork designer, alongside the dozens of men who had been so instrumental in the building of the Cathedral.

Writing on his experience with Bryn Athyn Cathedral, Ralph Adams Cram recalled,

⁹² "List of Employees at Bryn Athyn Cathedral, October 16, 1922," Pringle Borthwick File, Glencairn Museum Archives, Bryn Athyn, PA.

I seemed to see here a chance to put into practice some of my theories of a Medieval guild system, and the idea was cordially received. What I tried to do was to make all the workmen of every sort joint partners with the architects in producing a building that should be wholly personal in its structural qualities and its craftsmanship, and also to establish, all around the projected cathedral, workshops and studios for the production of sculpture and stone-carving, cabinetwork and joinery, metalwork and stained glass.⁹³

Edwards remained in the employment of Raymond Pitcairn until 1945 when he left to co-found the Brilliant Manufacturing Company in Philadelphia. The company fabricated metal battery boxes during World War II.⁹⁴ Edwards managed the company until 1965, while producing occasional pieces of metalwork for Raymond Pitcairn. Edwards died of a stroke in Lancaster, Pennsylvania in 1975. He was survived by his wife Mae and two sons, Parke E. Edwards Jr. and James L. Edwards.

In spite of his prolific career at Bryn Athyn, few scholars have considered Parke Edwards's artistic accomplishments or the importance of Monel at Bryn Athyn. Bruce Glenn's books on the building of the Cathedral and Glencairn provide only introductory insights into Edwards's career.⁹⁵ A Winterthur master's thesis by Shelley F. Kaplan examines the building of the Cathedral but does not include a discussion of Edwards' metalwork.⁹⁶ Only a short account by Robert Edwards, the donor of the

⁹³ Ralph Adams Cram, *My Life in Architecture* (Boston: Little, Brown, and Company, 1936), 248.

⁹⁴ James L. Edwards, personal communication, March 15, 2011.

⁹⁵ See Glenn, *Bryn Athyn Cathedral and Glencairn: The Story of a Home* (Bryn Athyn, PA: Academy of the New Church, 1990).

⁹⁶ See Kaplan, *The Art and Craft*.

Parke Edwards material to Winterthur and the Athenaeum of Philadelphia, chronicles the contributions of this exceptional artist.⁹⁷

⁹⁷ Robert Edwards, “Reform of Craftsmanship: The Art Work” in Wendy Kaplan, editor, *The Art that is Life: The Arts and Crafts Movements in America, 1875-1920* (Boston: Museum of Fine Arts, 1987), 225-227.

CONCLUSION

The Gothic revival of the nineteenth and early twentieth centuries is fraught with inconsistencies. These incongruities provide the backdrop against which Bryn Athyn Cathedral came into being. A wealthy industrialist hired one of the country's most elite (and expensive) architects to oversee the construction of a Cathedral, highly influenced by designs of the past. Skilled immigrants made a significant contribution in its creation, merging craft production of the highest order with contemporary machinery and a modern workday. A young, American born and trained designer, Parke Edwards, led the charge to design and shape the metalwork at Bryn Athyn Cathedral in the image of earlier precedents, at a time when new ideas of art and design rejected historicism to embrace a modern architectural idiom. Rather than disavow Parke's and other's contributions to the architectural landscape of the early twentieth century, his story is central to this dialectic.

Using extensive archival records of the Cathedral's construction, this thesis examines Parke Edwards and his manipulation of Monel metal within the cultural framework of America's grandest architectural revival. At a time when few Americans were trained in the once-honored craft of blacksmithing, Parke Edwards availed himself of a new metalsmithing curriculum at a local institution, the Pennsylvania Museum School of Industrial Arts. His schooling did not guarantee employment, but uniquely prepared him for the work at Bryn Athyn Cathedral, where he designed and oversaw metalwork worked in the Romanesque and Gothic styles.

The Monel metalwork chosen for the Cathedral presented a new ecclesiastical aesthetic, one in which modernity offered a mat chrome finish to update its outdated, iron precedent. At a time when nickel and chromium alloys were employed in the Art Moderne or Art Deco styles, Monel was modeled by Edwards and the blacksmiths at Bryn Athyn after designs that were centuries old. Examination of the Cathedral's largest works in Monel, the Chapel Arcade Screen and West Door, emerges a unique and complicated conversation between the past and the present.

Information about most of the sixteen (or more) blacksmiths and metalworkers employed at Bryn Athyn continues to be a mystery. Further inquiry into these men's lives and their roles at Bryn Athyn would help to create a more robust image of the metal studio and how it operated throughout its thirty year history. An extensive and equally rich archival record exists for the stone masons, carpenters, glass artisans, and many of the tradespeople employed at Bryn Athyn Cathedral. These stories will expand our understanding of Bryn Athyn as a unique structure of the twentieth century, one that could not have been created at any other time in history in exactly the same manner. Further research into the uses and eventual decline of Monel for architectural metalwork would also add to our understanding of this unique metal, its marketability, and legacy on the American architectural landscape. Ultimately, the story of Parke Edwards and the Monel metalwork at Bryn Athyn transcends religion or craft. It speaks to a cultural dialectic between modernity and the past, so prevalent in this era, and stands as a testament to the bricolage of old designs combined with new materials to create something completely unique.

BIBLIOGRAPHY

Printed Sources

Andrews, Jack. *Samuel Yellin: Metalworker*. Ocean City, MD: SkipJack Press, 1992.

Clark, Michael D. "American Religious Architecture." In *Medievalism in American Culture*, edited by Bernard Rosenthal and Paul E. Szarmach. Bringhamton: State University of New York, 1987.

Clarke, Michael Tavel. *These Days of Large Things: The Culture of Size in America, 1865-1930*. Ann Arbor: University of Michigan Press, 2007.

Cram, Ralph Adams. "A Note on Bryn Athyn Cathedral" *The American Architect*. Vol. 113. 29 May 1918. no. 2214

Cram, Ralph Adams. *My Life in Architecture*. Boston: Little, Brown, and Company, 1936.

Glenn, E. Bruce. *Bryn Athyn Cathedral: The Building of a Church*. Bryn Athyn: The Bryn Athyn Church of the New Jerusalem, 1971.

Glenn, E. Bruce. *Glencairn: The Story of A Home*. Bryn Athyn: Academy of the New Church, 1990.

Holstorm, John Gustaf and Henry Holford. *American Blacksmithing, Toolsmith's and Steelworkers' Manual*. Chicago: Frederick J. Drake & Co., 1916.

International Nickel Company. *Practical Design in Monel Metal*. New York: International Nickel Company, July 1931.

Kaplan, Shelly. "The Art and Craft of the Ecclesiastical Path." MA thesis, University of Delaware, 1990.

- Kaplan, Wendy. *'The Art that is Life': The Arts and Crafts Movement in America, 1875-1920*. Boston: Museum of Fine Arts, 1987.
- Lears, T.J. Jackson. *No Place of Grace: Antimodernism and the Transformation of American Culture, 1880-1920*. Chicago: University of Chicago Press, 1981.
- Meikle, Jeffrey L. *Twentieth Century Limited: Industrial Design in America, 1925-1939*. Philadelphia: Temple University Press, 1979.
- More, Alexander P. *The Chemistry Leaflet*, 6:28 (30 March 1933).
- Muccigrosso, Robert. "Ralph Adams Cram and the Modernity of Medievalism," *Studies in Medievalism I* (Spring 1982): 28-34
- Pulos, Arthur J. *American Design Ethic: A History of Industrial Design to 1940*. Cambridge: MIT Press, 1983.
- Rosenthal, Bernard and Paul E. Szarmach, editors. *Medievalism in American Culture: Papers of the Eighteenth Annual Conference of the Center for Medieval and Early Renaissance Studies*. Binghamton, NY: Medieval and Renaissance Text and Studies, 1989.
- Rourke, Constance. *Charles Sheeler, Artist in the American Tradition*. New York: Harcourt Brace, 1939.
- Sears, John F. *The American Scene*. New York: Penguin Books, 1994.
- Shoemaker, Lewis E. and Gaylord D. Smith. "A Century of Monel Metal: 1906-2006." *Journal of Metals*. 58, no. 9 (2006), 22-26.
- Untracht, Oppi. *Metal Techniques for Craftsmen; A Basic Manual for Craftsmen on the Methods of Forming and Decorating Metals*. Garden City, NY: Doubleday, 1968.

Manuscript Materials

- Cathedral Construction Journal. Glencairn Museum Archives. Bryn Athyn, PA.
- "New York Passenger Lists, 1820-1957." Ancestry.com. www.ancestry.com.
- Parke Edwards: Collection 99. The Winterthur Library: Joseph Downs Collection of Manuscripts and Printed Ephemera. Winterthur, DE.

Parke Edwards Collection. The Athenaeum of Philadelphia, PA.

Parke Edwards draft card. Ancestry.com. www.ancestry.com.

Parke Edwards Scrapbook. Parke Edwards Collection. The Athenaeum of Philadelphia, PA.

Pringle Borthwick File. Glencairn Museum Archives. Bryn Athyn, PA.

Appendix A:
CATHEDRAL METALWORKERS

Ralph E. Allen (1917-)- metalworker

Parke E. Edwards (1890-1975)- metalwork designer, draftsman

Garfield Gavigan- blacksmith

George W. Gordon- blacksmith

Cornelius Kennelly- sheet metal worker

Karl Koell- blacksmith

James J. Laksh- blacksmith

Julius Nemesh- blacksmith

Frank L. Oehmig- sheet metal worker

Harry Sheldron- blacksmith, maintenance

Lucas Sherzinger (1864-1960)- blacksmith, ornamental metalworker

Mathias Schmidt- blacksmith, modeler

William G. Schweiker- architectural sheet metal

James Scott- metalworker

John J. Walter (1909-1968)- metal designer

Stephen Yehl- metal smith

Appendix B

FIGURES



Figure 1: Bryn Athyn Cathedral. Courtesy Glencairn Museum, Bryn Athyn, PA.



Figure 2: Photograph outside the draughtsman studio, Bryn Athyn, 1916. From left to right: Harold T. Carswell “designer”, Harold A. Walker “head draughtsman”, Charles Sifferlin “draughtsman”, Frank Parzial(l)e “draughtsman”, Egbert G. Globe “bookkeeper”, Raymond Pitcairn, Llewelyn Price “draughtsman”, Edwin T. Asplundh “chief engineer”, E. Donald Robb “designer”. Construction Scrapbook. Glencairn Museum Archive. Bryn Athyn, PA.



Figure 3: Parke Edwards *Design Motive Aconitum* PMSIA 1913 . Parke Edwards Collection, Col: 99, The Winterthur Library: The Joseph Downs Collection of Manuscripts and Printed Ephemera.



Figure 4: Door in wrought iron, made by Parke Edwards at the Pennsylvania Museum School of Industrial Arts c.1912. Parke Edwards Scrapbook, Parke Edwards Collection, Athenaeum of Philadelphia.



Figure 5: Raymond Pitcairn (left) and Ralph Adams Cram c.1913. Cathedral Construction Scrapbook. Cathedral Collection Journal, Glencairn Museum Archives, Bryn Athyn, PA.



Figure 6: Photo outside the metal shop, Bryn Athyn c.1917. From left to right: George Gordon, John Walter, Mathius Schmidt, Lucas Scherwinger, Parke Edwards. Cathedral Construction Scrapbook. Cathedral Collection Journal, Glencairn Museum Archives, Bryn Athyn, PA.

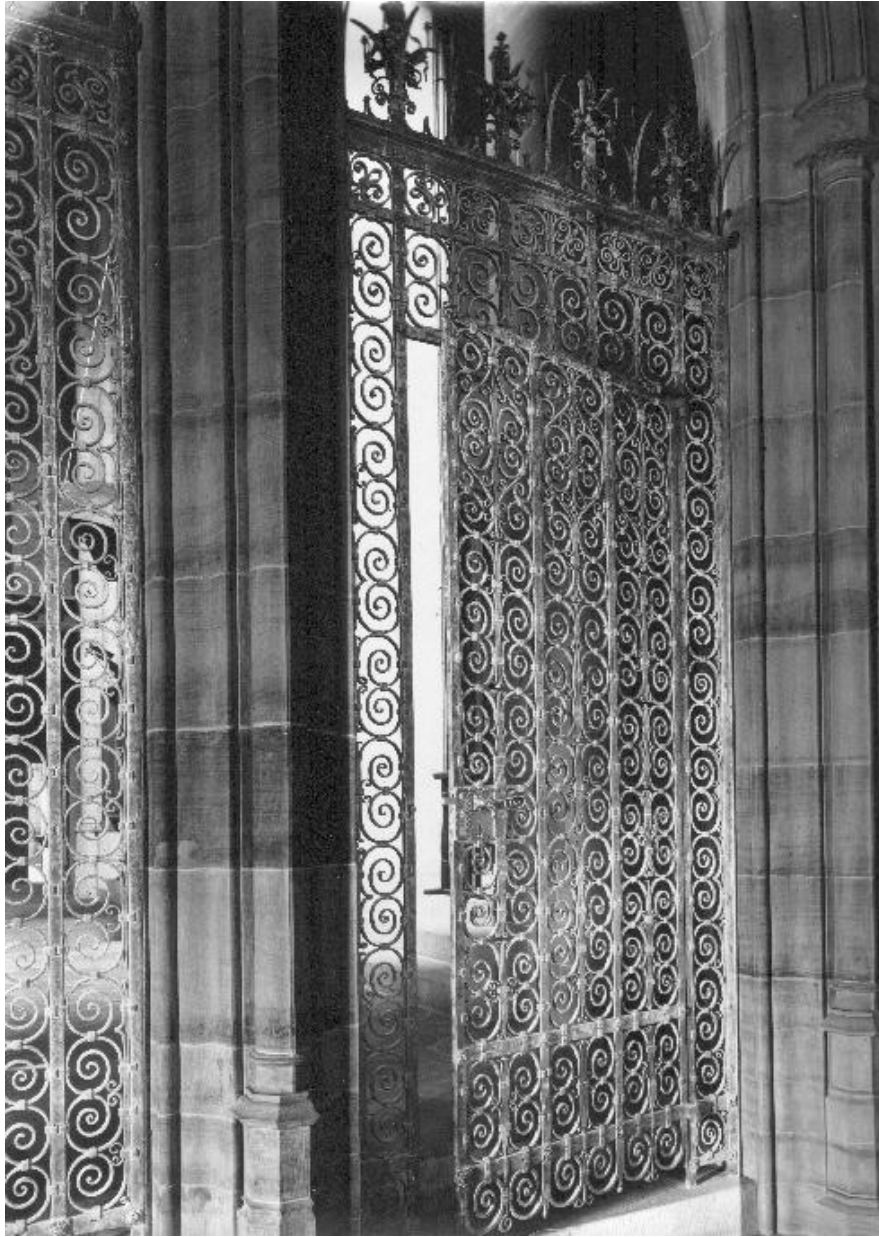


Figure 7: Chapel Arcade Screen, after 1918. Cathedral Construction Journal, Bryn Athyn Cathedral Collection, Glencairn Museum Archives, Bryn Athyn, PA

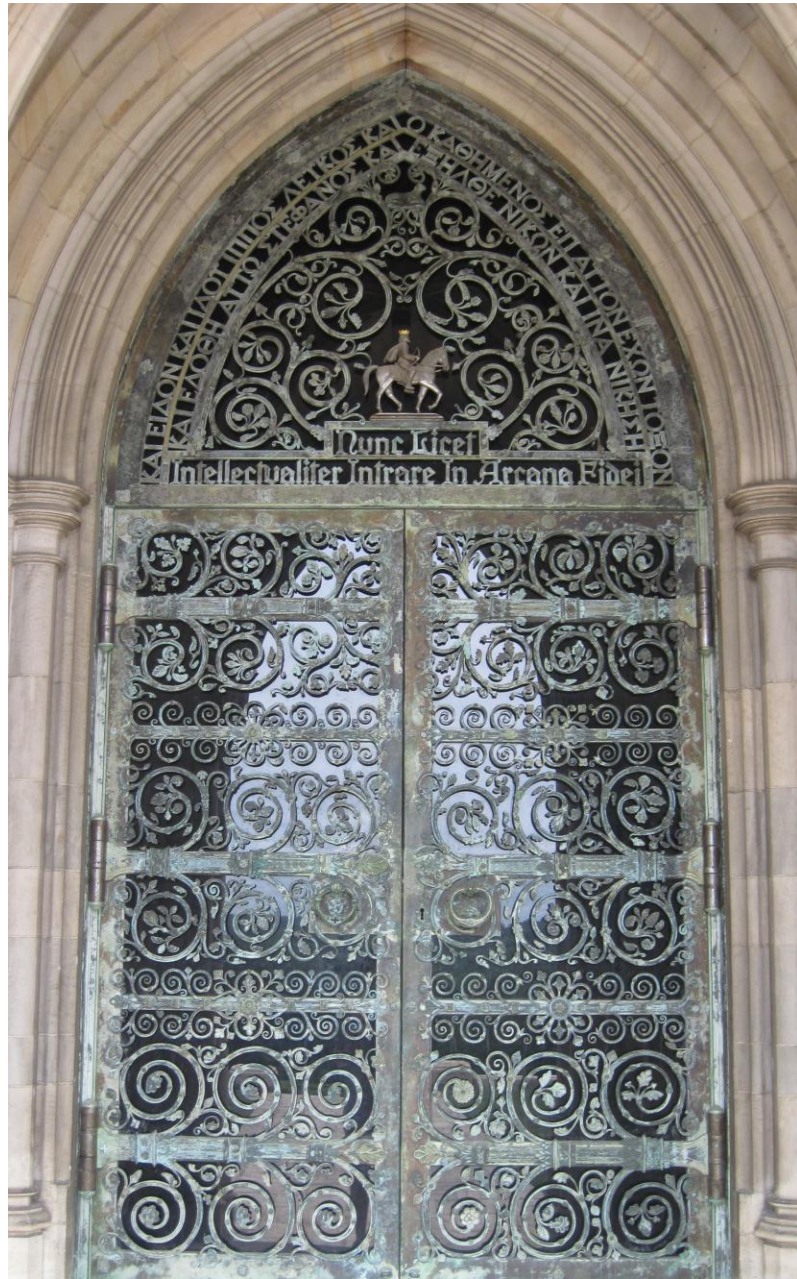


Figure 8: West Door. Bryn Athyn Cathedral, 2011. Photograph by author.

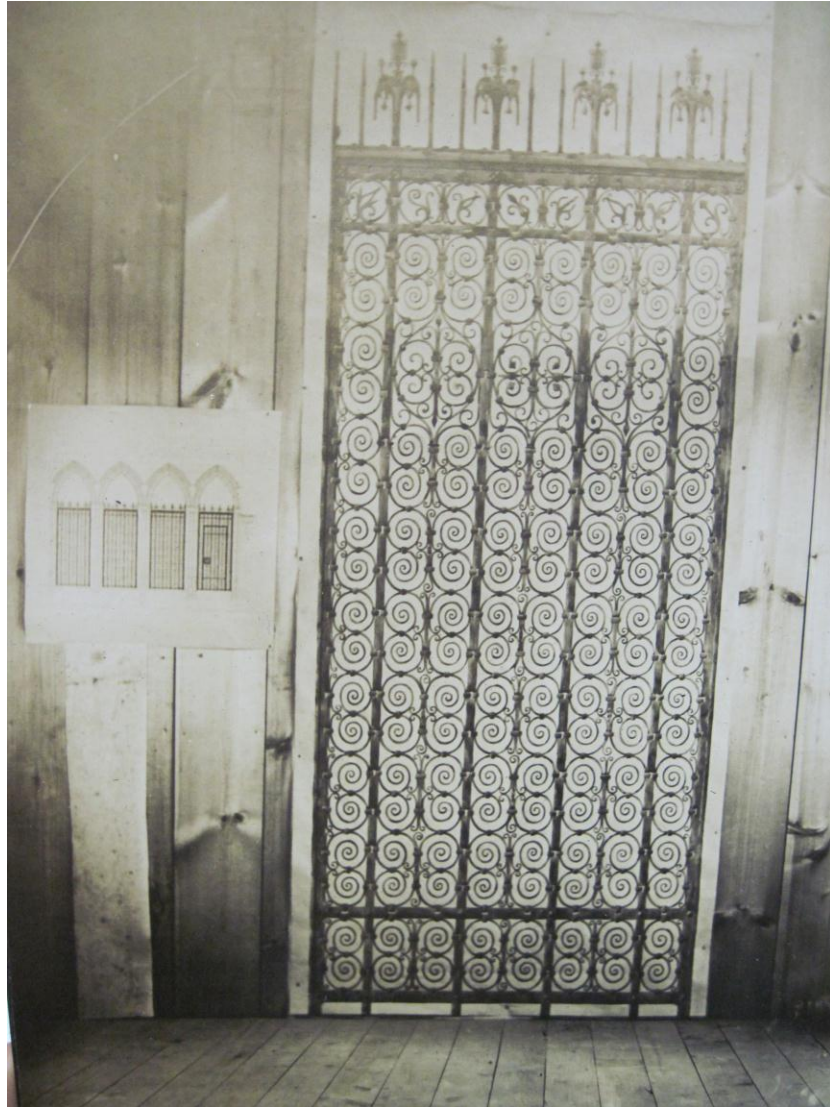


Figure 9: Early full scale design for Chapel Arcade. Cathedral Construction Scrapbook. Glencairn Museum Archives, Bryn Athyn, PA.



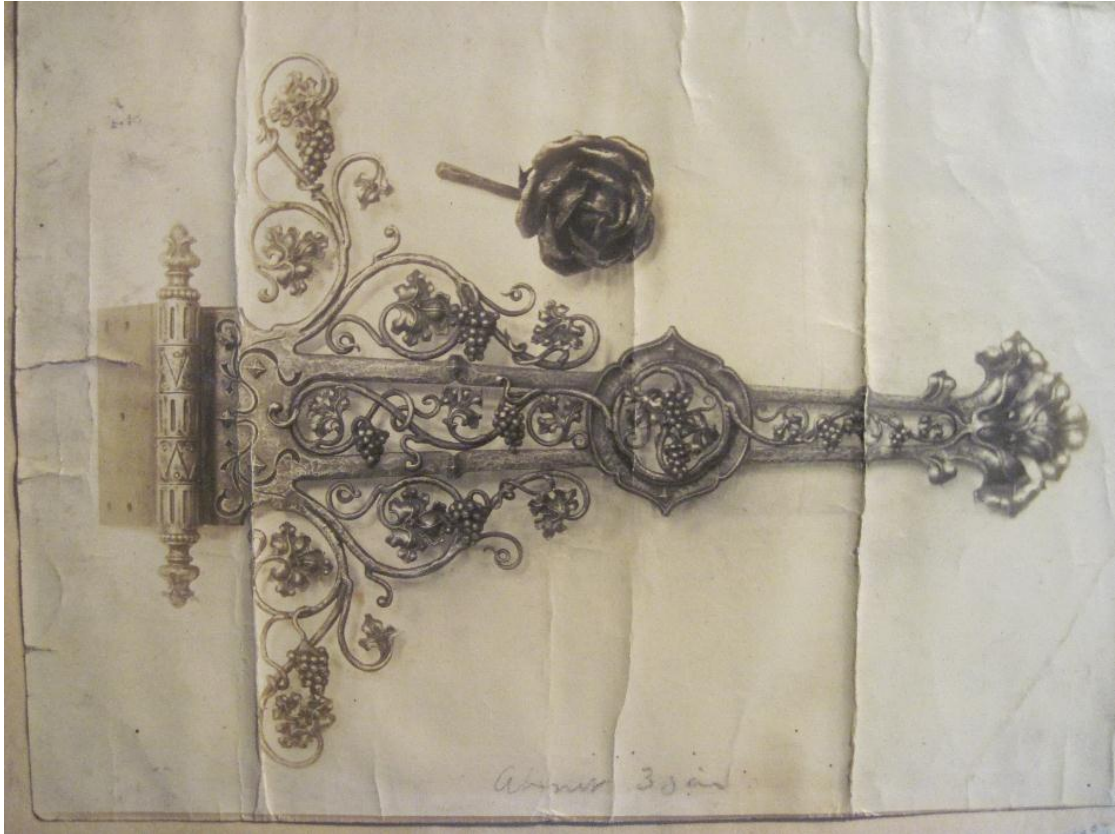
Figure 10: Iron scrollwork maquette, likely executed by Mathias Schmidt for Chapel Arcade Screen. Parke Edwards Collection, Col: 99. The Winterthur Library: The Joseph Downs Collection of Manuscripts and Printed Ephemera.



**Figure 11: Monel andirons for the Bishop's Study c.1916. Parke Edwards
Scrapbook, Parke Edwards Collection, Athenaeum of Philadelphia.**



Figure 12: Fire Screen wrought at Bryn Athyn for the Bishop's Study. (from left to right) Parke Edwards, Filippo Bonaventure, Keller ?, Matthias [sic] Schmidt. Parke Edwards Scrapbook, Parke Edwards Collection, Athenaeum of Philadelphia, PA.



**Figure 13: Ironwork hinge by Mathias Schmidt. Parke Edwards Scrapbook.
Parke Edwards Collection, Athenaeum of Philadelphia.**

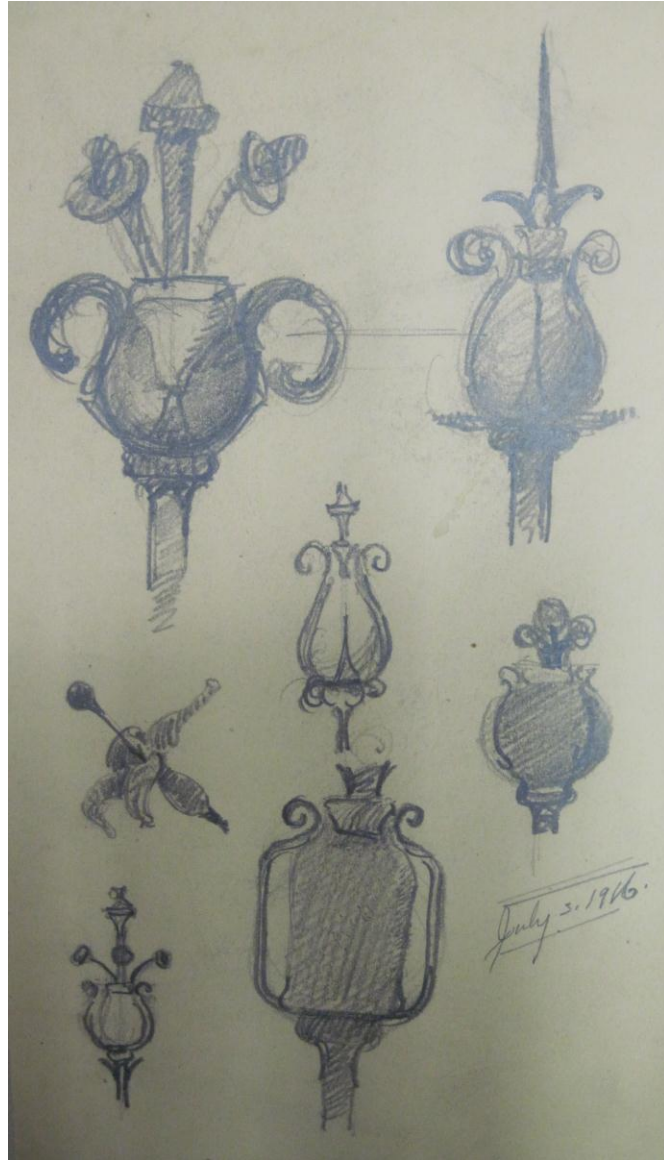


Figure 14: Stylized pomegranate figures sketched by Parke Edwards July 3, 1916. Glencairn Museum Archives. Bryn Athyn, PA.

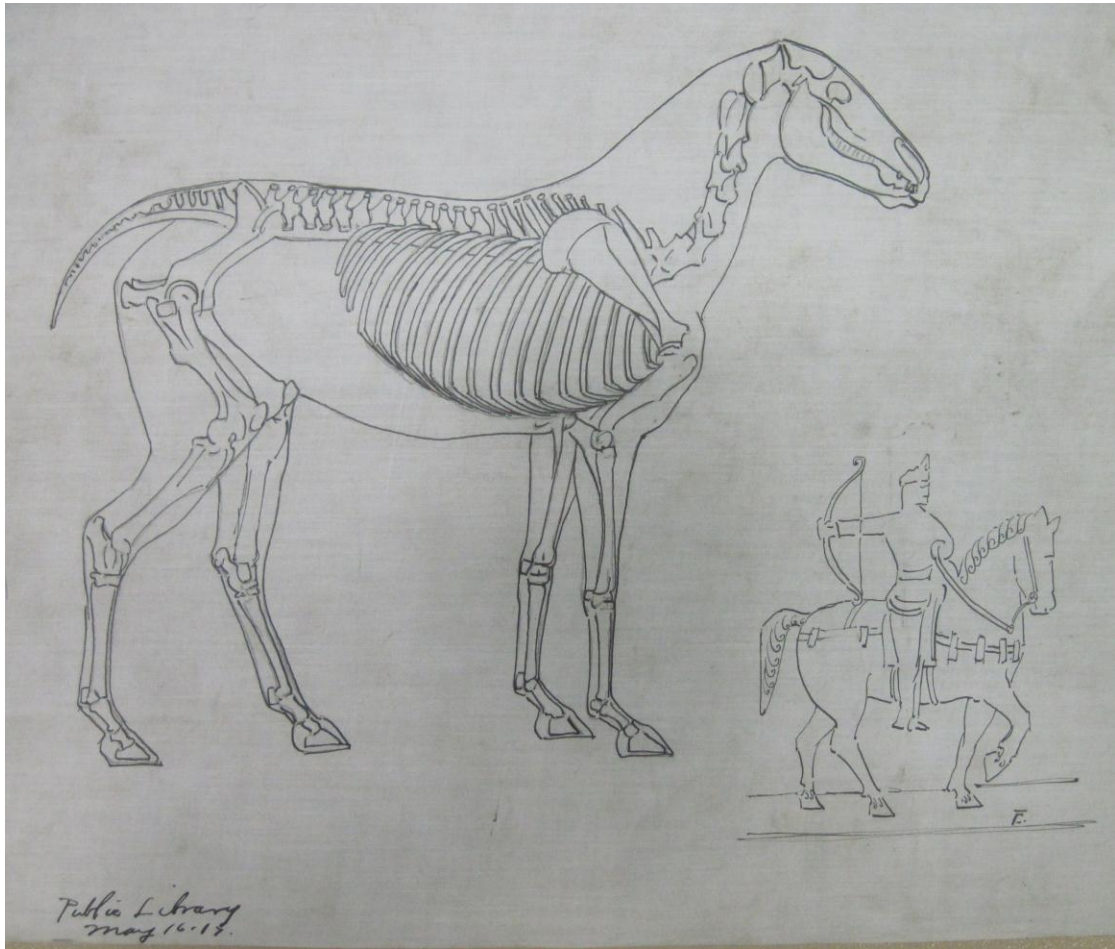


Figure 15: Study for West Door tympanum. May 16, 1919. Glencairn Museum Archives. Bryn Athyn, PA.



Figure 16: “First Sketch of West Door.” Glencairn Museum Archives. Bryn Athyn, PA.

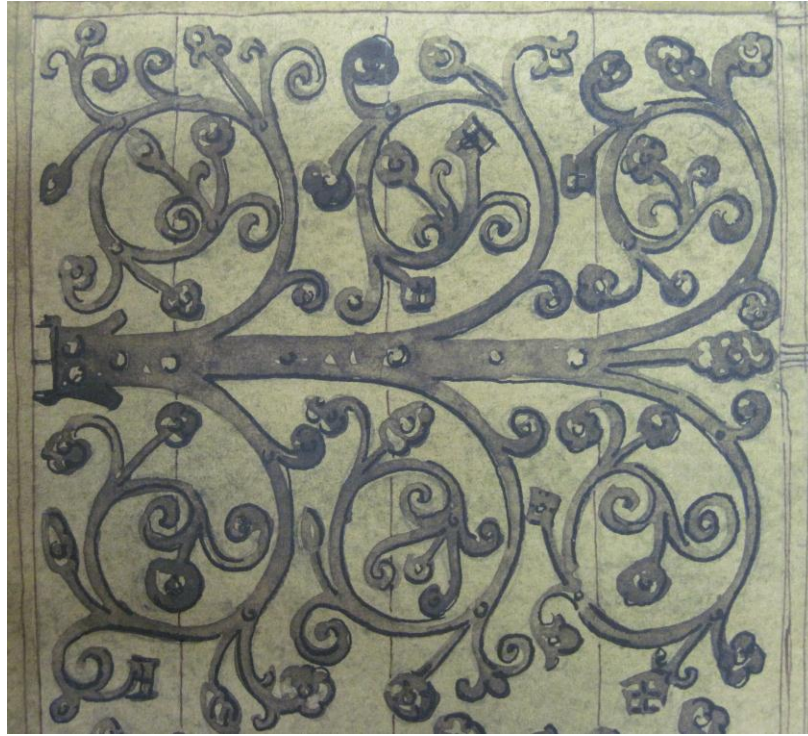


Figure 17: Sketch of West Door, April 11, 1918 (detail). Glencairn Museum, Bryn Athyn, PA.



Figure 18: Metalwork by Fillipo [sic] Bonaventure, probably done while studying with Parke Edwards at the Pennsylvania Museum School of Industrial Arts c.1912. Parke Edwards Scrapbook. Parke Edwards Collection. Athenaeum of Philadelphia.

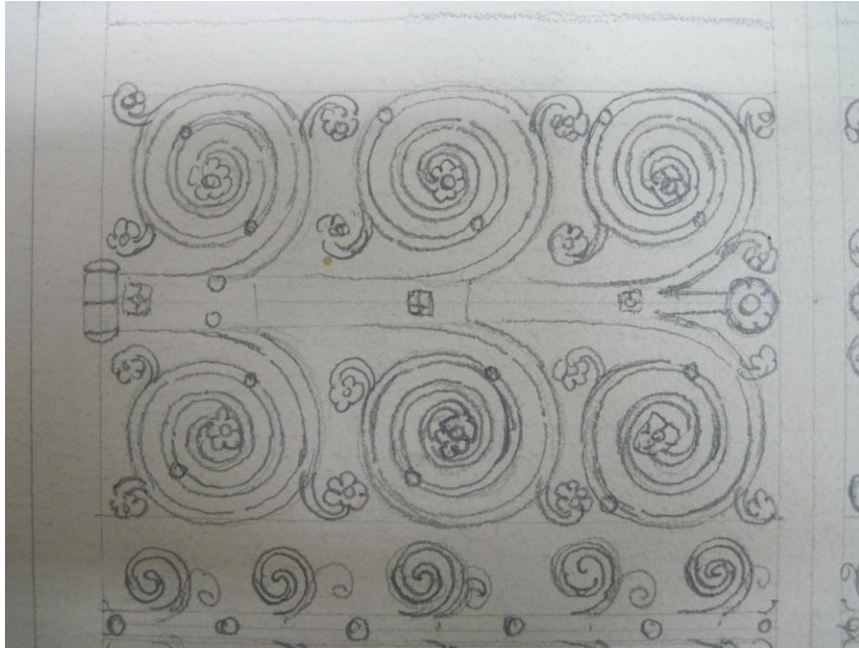


Figure 19: Sketch for West Door hinge (detail) Aug 13, 1919. Glencairn Museum Archives. Bryn Athyn, PA.

Appendix C

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November 5, 2012

Timothy Andreadis
6406 Ferry Rd.
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Figure 11: Monel andirons for the Bishop's Study c.1916. Parke Edwards Scrapbook, Parke Edwards Collection, Athenaeum of Philadelphia.

Figure 12: Fire Screen wrought at Bryn Athyn for the Bishop's Study. (from left to right) Parke Edwards, Filippo Bonaventure, Keller ?, Matthias [sic] Schmidt. Parke Edwards Scrapbook, Parke Edwards Collection, Athenaeum of Philadelphia.

Figure 13: Ironwork hinge by Matthias Schmidt. Parke Edwards Scrapbook, Parke Edwards Collection, Athenaeum of Philadelphia.

Figure 18: Metalwork by Filippo [sic] Bonaventure, probably done while studying with Parke Edwards at the Pennsylvania Museum School of Industrial Arts c.1912. Parke Edwards Scrapbook, Parke Edwards Collection, Athenaeum of Philadelphia.

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- Figure 7: Photograph of chapel Grade screen c. 1918
- Figure 9: Photograph of full-scale wash for chapel screen
- Figure 14: Sketch of plans for chapel screen, 1916
- Figure 15: Study for W. Door Tympanum, 1919
- Figure 16: First sketch of West Door.
- Figure 17: Sketch of West door (detail) 1918
- Figure 19: Sketch for west door (detail) 1919

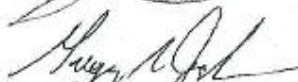
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