The "Skyscraper Problem" and the City Beautiful:

The Woolworth Building

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by

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ABSTRACT

The "skyscraper problem" challenged the thought and practice of civic designers and architects prior to World War I. It referred to the incompatibility of City Beautiful principles with economically propelled land development, and to the contradiction between the notion of architecture as an art and the skyscraper's programmatic and technical requirements.

Civic designers in New York had difficulty accommodating the skyscraper in their large-scale plans. They also found that it intruded on their vision for the business street, hindered their attempts to plan City Hall Park as New York's civic center, and created a chaotic skyline.

Bruce Price, Louis Sullivan, Thomas Hastings, Cyrus L.W. Eidlitz, and other architects suggested alternative proposals for subjecting the skyscraper to the constraints of design. Prior to the design of the Woolworth Building, however, architectural critics did not unanimously endorse any single approach.

Frank Woolworth chose a site for his proposed headquarters at the intersection of City Hall Park, New York's civic center, with lower Broadway, the spine of its business district. Woolworth commissioned Cass Gilbert to design the Woolworth Building in 1910. Gilbert shared the City Beautiful vision of McKim, Mead & White and Daniel Burnham. He also accepted the skyscraper's pragmatic requirements.

Woolworth intended his headquarters to function as a speculative office building, but also to look like a civic institution. The imagery of a civic institution would represent the capitol of his commercial "empire" as well as display his civic-mindedness, wealth, and cosmopolitanism.

The Woolworth Building's siting at New York's civic center, its composition, its arcade, and its sculptural and mural decoration identified it with the prevailing concept of the civic building. The soaring vertical piers of its exterior recalled Gilbert's earlier design for the West Street Building, which was influenced by the functionalist ideas of Louis Sullivan.

The Woolworth Building convinced critics that a suitable architectural expression could be found for the skyscraper. Zoning reformers regarded it as a benign skyscraper. Contemporary observers attuned to City Beautiful aesthetic principles thought that the Woolworth Building strengthened the order and image of New York's civic center and enhanced the view of the city from afar.

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PREFACE

The Woolworth Building is often regarded in histories of American architecture as the progenitor of the twenties skyscrapers. This is due to its extreme height and expression of structure with soaring vertical lines. To see the Woolworth Building as one of a family of twenties skyscrapers, however, is to misrepresent its status as a prewar building. As a skyscraper that stood on the threshold between the American culture of the prewar years and the twenties, it culminated a set of architectural developments that preceded it. It looked back towards the Victorian halcyon days of nineteenth-century America. It embodied those aspects of prewar culture that architects later rebelled against. As the ideas that characterized modern civilization became more pronounced, the Woolworth Building looked increasingly out of date, despite Cass Gilbert's forward-looking expression of its structure. It was eventually regarded by modernists as an artifact that demonstrated the shortcomings of a former era.

When Gilbert designed the Woolworth Building in 1910, signs of the incipient cultural revolution were beginning to appear. In 1909 Sigmund Freud lectured on psychoanalysis at Clark University and in 1911 Frederick W. Taylor published Principles of Scientific Management. In 1913 modern art was introduced in America at the Armory Show. Nineteenth-century American civilization, by contrast, was guided by a stable set of beliefs. To interpret the Woolworth Building as an artifact that reveals the characteristics of its historical moment, one must enter this nineteenth-century world. This civilization had not experienced the devastation of two world wars, nor comprehended the sociological and psychological implications of Marx's and Freud's theories. Only the rudimentary indications of the modern thought of the twentieth century were discernible.

According to the cultural historian Henry F. May, most Americans had faith in the certainty of moral values, the importance of traditional culture, and the inevitability of progress. Cass Gilbert's design for the

Woolworth Building embodied the beliefs in traditional culture and progress. Its composition, which recalled a late Gothic hôtel de ville, its monumental arcade, and its decorative sculptures, murals, mosaics and glass were associated with the European architectural tradition. Its vertical exterior and its towering height were associated with progress.

Frank Woolworth wanted the Woolworth Building, the capital of his "empire" of five-and-ten-cent stores, to look like a civic monument. Woolworth identified with the European architectural tradition and its patronage, whether he chose to build a mansion in the style of a Loire valley chateau or a corporate headquarters that looked like a late Gothic hôtel de ville. He found in this tradition the architectural means by which to demonstrate his civic-mindedness and to secure an institutional and a personal identity. Woolworth differed from philanthropists such as Seth Low, who donated the Low Library to Columbia University, because he financed his monument by also making it a speculative office building. Woolworth's combination of a civic monument with an office building had the added advantage of dampening the criticism that zoning reformers and advocates of the City Beautiful directed towards the skyscraper. Woolworth chose not to undertake a greedy building project like the Equitable Building (1914-15), which rose straight upwards from its site boundaries to its cornice. Instead, he demonstrated his benificence by sacrificing office space in the Woolworth Building's upper stories with the provision of an isolated tower. To enhance his monument's civic associations and to ensure its visibility, Woolworth displayed it at New York's civic center, City Hall Park.

The institutional identity Woolworth secured with architecture projected corporate wealth and power. Woolworth's career paralleled the emergence of the corporation as the dominant productive unit in the American economy. His entry into the international market after the turn of the century followed the emergence of the United States as an imperial power. In contrast to the European imperialism of the period, American imperialism was commercial rather than colonial. It sought access to markets. In choosing to design his headquarters so that it looked like a governmental institution, Woolworth equated his commercial empire with the

expanding political empires of the day. Woolworth's aspirations for his empire were represented in the Woolworth Building's decoration, which included sculptures portraying the continents involved in world trade and the mural "commerce," which depicted global conquest through mercantile pursuits.

Cass Gilbert designed the Woolworth Building as a monument that occupied an important position within the pervasive City Beautiful vision of the American city. Gilbert thought that civic buildings should rely heavily on tradition, because their programs were timeless. The architectural monuments of Europe set the standard for Gilbert's civic designs. He considered these designs part of a family of great artistic works. Gilbert did not intend to create a native American architecture as Louis Sullivan did, but instead to represent powerful public and private institutions with architectural images that rivalled those found in the European architectural tradition. Gilbert believed that he would raise the standard of American architecture by establishing a line of continuity with such a tradition.

Gilbert also designed the Woolworth Building as a skyscraper. Its white terra cotta exterior elaborated the envelope he designed for the West Street Building (1905-7), which had been influenced by Louis Sullivan's Bayard Building (1897-98). Gilbert classified the skyscraper with the railroad station and the bridge as modern building programs. He thought that these programs should receive an architectural expression that truthfully conveyed function and structure. Gilbert was familiar with Sullivan's functionalist ideas and the rational theories of Viollet-le-Duc. This led him to advocate the expression of a skyscraper's height with soaring vertical lines.

The Woolworth Building was not a typical skyscraper, because it was the tallest office building in the world in its day. Its height was equated with progress. To attain height, Gilbert and his structural engineer, Gunvald Aus, employed standard technologies. Once the technologies required to construct skyscrapers were developed, the quest to create the most spectacular and complex object utilizing these technologies

took precedence. Woolworth chose to build an office building on a gigantic scale rather than a mansion on a gigantic scale, like George Washington Vanderbilt's Biltmore (1889-95) in Asheville, North Carolina. Woolworth's patronage of an extremely tall office building celebrated his pragmatic outlook on the world. Gilbert associated the immensity of Woolworth's project with the grandeur of similar colossal projects in history, such as the pyramid of Cheops at Giza and St. Peter's in Rome.

During the decade and a half preceding the design of the Woolworth Building, architects and civic designers in New York were puzzled by the "skyscraper problem." Those who considered American architecture an extension of the European tradition were appalled by the crude materialism of the skyscraper, which reflected the profit motive. While other progressive reformers concentrated their criticism on the factory and municipal government, City Beautiful reformers targeted the skyscraper as the chief cause of the ills of disorder and congestion in the American city. Builders of skyscrapers disregarded City Beautiful aesthetic and environmental principles. Instead, they viewed progress as a struggle for the "survival of the fittest" and attempted to tower over their neighbors to maximize their access to light and air. They believed that the city evolved from a simple to a complex condition according to an economically-determined, or "natural" law.

The disparities between the common good and reckless individualism appeared to be reconciled in the Woolworth Building, which might be regarded as an example of the resigned coexistence of the City Beautiful and the city commercial. Woolworth was not a reformer dedicated to looking out for the public interest, however. His motives were instead connected with the attainment of image and status. Nevertheless, his civic-minded objectives corresponded with the artistic aims of the City Beautiful movement. His desire to represent the power of his private corporation with architecture and art paralleled the City Beautiful interest in similarly representing the importance of civic institutions in public life.

INTRODUCTION: THE "SKYSCRAPER PROBLEM"

> For what occupies the attention of architects of all times is...the single question how to do the work in hand in a sensible and agreeable manner. The way for us to understand why the men of other times answered this question in the way they did, and thus to enter into the real understanding of the results, is to put ourselves as far as possible into their places, and set before ourselves not their achievements, as examples to be classified, arranged and comprehended, but the problem they had to solve and the conditions which controlled their solution of it.[1]
>
> William R. Ware, 1895

This study explores the relationship between Cass Gilbert's 1910 design for the Woolworth Building and a set of specific issues associated with the skyscraper. Prior to World War I, civic designers, architects, and critics labeled these issues the "skyscraper problem." The skyscraper problem, which had both an urban and an architectural component, became an issue in the eyes of informed observers after the construction of the American Surety Building (1894-95). As the first building constructed in New York with a complete steel frame, it represented the full emergence there of the new building type. The skyscraper posed insurmountable difficulties to advocates of municipal art and civic improvement in New York, indicating the deficiencies of their craft, which had not yet developed into the modern discipline of city planning. The new building type also challenged the thought, practice, and professional authority of architects. For civic designers, the skyscraper problem stood for a perceived disjunction between the urban actuality of unbridled skyscraper construction, propelled by economic forces, and the notion that the city should become a work of art. Architects faced the dilemma of trying to reconcile the programmatic and technical requirements of the new building type with the constraints of design.

Both design and discourse were directed toward solving the skyscraper "problem." The search was guided by the optimism of the pre-World War I American culture, with its belief in progress. Despite repeated setbacks and unsuccessful proposals, designers and critics had faith in the eventual

discovery of a suitable solution, which would accommodate the spatial demands and meet the technical requirements of the new building type.

The skyscraper was a central theme in the writings of Montgomery Schuyler, one of the most prolific and insightful American architectural critics at the turn of the century. His 1903 essay, "The Skyscraper Problem," most concisely summarized the urban and architectural issues associated with the new building type. Schuyler labeled the skyscraper problem's urban component the "civic problem." He assessed the civic problem of the skyscraper predominantly from an aesthetic perspective, but also touched upon environmental concerns. Schuyler thought the skyscraper aesthetically unsuitable for New York's business district, which contained streets that were vestiges of "Old New York." The skyscraper's adverse environmental effects were evident in the dark atmosphere of the business streets, according to Schuyler, which had become "gloomy and windy canyons." Schuyler also noted that a skyscraper could destroy the appearance of a square, as demonstrated by the intrusion of Westminster Chambers above the cornice line of Boston's Copley Square, which resulted in an "aesthetic nuisance." He felt the skyscraper was to blame for the dramatic changes in New York's skyline, which had become a "horribly jagged sierra." Schuyler's solution to the urban problem of the skyscraper rested with the New York City Improvement Commission, whose efforts might lead to the creation of broad avenues, the imposition of height restrictions, or both.[2]

In laying out large-scale plans for Manhattan, civic designers preferred to deny the presence of the business district, despite the visual prominence of its skyscrapers and its pressing traffic problems. They refused to accommodate its unpredictable, disordered mass with their controlled aesthetic vision of broad, sweeping avenues and a monumental civic center. Yet, they could not ignore the problems the skyscraper caused at the immediate scale. Like Schuyler, they found that the skyscraper adversely affected the street, the square, and the skyline. It created the congested, dark environment and towering, irregular street facade of lower Broadway. It intruded upon the borders of City Hall Park, New York's civic center and historic seat of municipal government. It

caused a confused and chaotic skyline. Criticism focussed on these localized problems created by the skyscraper, which civic designers attempted to ameliorate. They proposed recommendations that laid the groundwork for the Zoning Resolution of 1916 and the transformation of City Hall Park into a new civic center. The basis of the urban predicament created by the skyscraper, however, was conflicting interests between the community's right to define and protect its public space, and the right of individuals and private corporations to build on their property as they desired. Eventually, a reconciliation represented by the 1916 resolution was attained, but not a widespread consensus on how the city should take shape.

When he evaluated the skyscraper as a work of architecture, Schuyler considered the skyscraper problem as a set of contradictions between the architect's formal preconceptions and the spatial and technical constraints of skeleton construction. In his 1903 essay, "The Skyscraper Problem," Schuyler described as cataclysmic the transforming building technologies and processes that made skeleton construction possible: "no such innovation in the art of building has been so swiftly accomplished since the development and expression of groined vaulting in masonry in the twelfth and thirteenth centuries...." Yet, instead of a new set of forms emerging in concert with a new set of building techniques, as had happened in Gothic architecture, the new building type, with its predetermined spatial configuration, was presented by land speculators to American architects as a fait accompli. Thus, Schuyler associated the advent of the skyscraper problem with the appearance of the first metal-framed buildings, the Home Life Insurance Building (1884-85) in Chicago and the Tower Building (1888-89) in New York. Schuyler realized that the steel frame, in contrast to the inherent limitations of bearing wall construction for elevator buildings, had the potential to achieve heights at least five times as great. The unsuccessful attempt to find a suitable architectural expression for skeleton construction--a design in which the contradiction between the dimensions of the steel frame and conventional architectural forms became evident--Schuyler labelled the "extreme skyscraper that we know and disrespect." The facade of such a skyscraper Schuyler viewed as an "irrelevant compilation of historical architecture."[3] Such statements

were based on Schuyler's observations of the recently completed Park Row Building (1898-99) by R.H. Robertson or the St. Paul Building (1896-98) by George Post.

Schuyler's thoughts were echoed in the observations of his contemporaries. In his 1904 article "The Art of the High Building," Barr Ferree perceived Schuyler's contradiction as simply an antimony between the "artistic" and the "engineering" conceptions of the tall building. Harry Desmond questioned whether such a contradiction need concern architects at all. If architecture was considered an art, as it had been since the Renaissance, then concerns relating to the logical treatment of structure might lie outside its realm. In 1909, after an increase in the height of the tallest skyscrapers in New York, Claude Bragdon identified Schuyler's contradiction as the incongruity that existed between "formal beauty" and the tall building as an "economic idea." Bragdon designated the architect's task as the realization of the steel frame's "latent aesthetic possibilities."[4]

Cass Gilbert, unlike his contemporaries, found few contradictions in the problem of the skyscraper. He had assumed an important role in promoting and financing the second skyscraper he designed, the Broadway Chambers Building (1899-1900). He understood and accepted the skyscraper's economic basis. Gilbert opposed the legislation of height restrictions in New York, precisely at the time many of his contemporaries were developing proposals for controlling the skyscraper's adverse effects on the city. Gilbert thought the design of a skyscraper was not a dilemma, but a challenge, although not a challenge without obstacles. Fully accepting its programmatic and technical requirements as inflexible elements in its design, Gilbert viewed the architect's task as the creation of a suitable aesthetic envelope:

> In a business building...we cannot waste space for arches or colonnades or other architectural features, without sacrificing the rentable area, and we cannot project beyond the property line, therefore we have to deal with a perfectly flat surface without "relief" which would give light and shade. We have also to provide windows at frequent and regular intervals both horizontal and vertical. It is these conditions that make the skyscraper problem so difficult of solution.[5]

From 1894, when Bruce Price designed the first complete steel-framed skyscraper in New York, through the first decade of the twentieth century, architects suggested alternative proposals for overcoming the skyscraper problem. Their designs were evaluated by a number of critics, such as A.D.F. Hamlin, Claude Bragdon, Russell Sturgis, and Schuyler, who was the most vocal. The specific proposals developed by architects for various types of sites in Manhattan included Bruce Price's classical "campanile" for the American Surety Building, Louis Sullivan's structurally expressive facade for the Bayard Building, Thomas Hastings's tripartite composition for the facade of the Blair Building, and Cyrus L.W. Eidlitz's Gothic-inspired tower for the New York Times Building. When critics evaluated these designs, they addressed such matters as composition, the treatment of structure, and the suitability of a particular historical precedent to the architectural problem at hand. At the end of the decade, neither the architects nor the critics had agreed on the merits of any single approach to skyscraper design.

During this struggle over the urban and architectural problems created by the skyscraper, Cass Gilbert designed the Woolworth Building. The site Frank Woolworth chose for his proposed building was at the intersection of lower Broadway, Manhattan's preeminent commercial thoroughfare, and its most important municipal square, or civic center, City Hall Park. The spine of New York's skyscraper district, lower Broadway was the location of the most intensive skyscraper development that had occurred in any American city prior to World War I. In contrast, both the form and purpose of the civic center lay at the heart of the City Beautiful vision. The obvious differences between these two settings were underscored in two etchings of the Woolworth Building by Joseph Pennell. One showed its relationship to lower Broadway and the other to City Hall Park (Figs. 1, 2). The site was also one of the most visible and accessible locations for a tall building in lower Manhattan. It was located at the center of the narrow tip of Manhattan Island, flanked by two busy waterways. As shown in another etching by Joseph Pennell, the completed building would be prominent on the skyline (Fig. 3). City Hall Park functioned as a transportation center, a convergence point for the principal subway, surface, and elevated lines from the surrounding metropolitan region. Woolworth certainly recognized

the advantages of such a site. He had refined the art of selecting favorable sites for stores, and now proposed to erect an office building that would be both conspicuous and profitable.

When designing the Woolworth Building, Cass Gilbert not only took into account the criteria set forth in Woolworth's building program, but also addressed the urban and architectural issues associated with the skyscraper problem. Gilbert had a thorough understanding of the pragmatic requirements of skyscraper design, a Beaux-Arts-influenced architectural training, an adeptness at forging identities for America's emergent, powerful institutions, and an intense awareness of the interrelationship between the design of a building and its urban setting. Frank Woolworth intended that the design for his office building and corporate headquarters follow civic Gothic precedent, function as a showy advertisement for his chain of stores, and serve the city as an "ornament." This led Gilbert to fuse the demanding programmatic and technical requirements characteristic of the new building type with Beaux-Arts notions of planning, the expressive verticality found in the facades of Sullivan's skyscrapers, and with compositional concepts, motifs, and details drawn chiefly from Gothic-influenced civic architecture in Britain, the Low Countries, and northern France. The completed Woolworth Building would be the largest of a series of office structures that lined lower Broadway and would connect at its base with the rapid transportation system that fed the business district. At the same time, like a public building, it would contain an interior decorative scheme comprised of mural paintings and ornamental mosaics, metalwork, and glass. The building's white exterior and ornate tower would define the boundary of the urban square that was the seat of municipal government. Those who assessed the architectural design of the Woolworth Building and its relationship with its urban surroundings viewed it not only as a skyscraper, but also as an artifact in the "City Beautiful" conception of the city.

When it was completed in 1913, the Woolworth Building concluded an era of skyscraper building in lower Manhattan. After World War I, New York planners and architects addressed the problem of the tall building with a new set of design criteria. The vision and ideology that guided the City

Beautiful movement began losing efficacy with the rise of the regional planning orientation. The morphology of the skyscraper changed with the implementation of the setback provisions in the Zoning Resolution of 1916. The concerns of critics broadened as Lewis Mumford brought social criteria into a dominant role. Cass Gilbert's Woolworth Building can be viewed as an artifact embodying many suggestions of the era that began with the introduction of the steel-framed office building in New York. Civic designers sought means of accommodating the skyscraper within their vision, and architects sought to give form to the skyscraper. Critics sought a set of standards for evaluating the efforts of both. Although the Woolworth Building cannot be considered a final solution to the problem of the skyscraper, an examination of contemporary thought, practice, and criticism shows that Cass Gilbert's design responded in a number of ways to explicit and pressing contextual issues.

CHAPTER 1: SHAPING A METROPOLITAN IMAGE

> The interest of the real estate speculator demands congestion and concentration of business and population, which enormously increases real estate values along particular lines and at particular points, while the interest of the whole people in a beautiful and convenient city demands the distribution of population and business in the most liberal manner according to an organic plan.[1]
>
> Herbert Croly, 1907

As early as the 1870's, the skyline of central business districts in the largest American cities began to change, led by New York and Chicago. The invention of the hydraulic elevator at the beginning of the decade made possible a marked increase in the number of stories in office buildings. These "elevator buildings" eventually created a new skyline of six to nine stories in business districts formerly only half as high. In the 1890's, the widespread use of the fireproofed iron or steel frame and the electric elevator led to another significant augmentation of skylines in New York and Chicago. The changes doubled or in some cases tripled, the height of the skyline compared to that created by earlier elevator buildings (Figs. 4, 5). The gearless traction elevator in 1902 increased the maximum speed of elevator travel safely and economically by one third, to 600 feet per minute. With this development all of the technical means were available to build skyscrapers that greatly exceeded the height limitations imposed by earlier technical restrictions. In New York, buildings of twenty to twenty-five stories in height soon became commonplace.[2]

Until the mid-1890's, Chicago was the leader in the design and construction of tall buildings. In 1893, however, Chicago's city council imposed a height restriction of 130 feet, partly in response to pressure from property owners confronted with an overbuilt market. New York became the skyscraper capital. By 1899, R.H. Robertson's thirty-two-story Park Row Building claimed the title of "tallest building in the world." As the first decade of the new century drew to a close, the construction of monumental skyscrapers became a competitive goal in Manhattan. In 1908

Ernest Flagg's Singer Tower took the title, which in 1909 went to Napoleon LeBrun's Metropolitan Life Insurance Building, the only tall, slender skyscraper in midtown at the time. When it was completed in 1913, Cass Gilbert's Woolworth Building, about twice as high as the Park Row Building, was widely publicized for topping all earlier records (Fig. 6).[3]

The creation of the skyscraper was connected to New York's powerful economic position in world trade. At the end of the nineteenth century, New York was the world's busiest port. It functioned as the key link in commercial transportation routes between Europe and America, North America and South America, and between the port cities of North America. New York's vast, deep-water harbor, a terminus basin for the Erie Canal, contained miles of piers. Moreover, due to the Atlantic trade economy, New York became the second largest city in the world by 1900, with over four million inhabitants. New York was also a manufacturing and industrial city, like other cities at the hearts of spreading distribution networks. The city therefore provided a desirable location for the headquarters of large commercial enterprises, including railroad and steel companies, of banking and professional interests, and of smaller commercial concerns. Furthermore, New York was the terminus of an extensive system of railroads that stretched across the North American continent. Manhattan Island, surrounded with water, remained for the most part disconnected from this system. Prior to 1910, only two railroad routes entered Manhattan--one along Fourth Avenue, ending at 42nd Street, and the other, the only railroad for goods traffic, along the Hudson River, terminating in the warehouse district on the west side of the island.[4]

The height and density of construction in lower Manhattan would have been impossible without a corresponding development in local systems of transportation. The skyscrapers that housed the administrative operations of commercial Manhattan first centered around City Hall Park, which provided visibility for tall buildings. Subsequently, skyscrapers that housed the city's financial operations centered around Wall Street, which provided access to the Stock Exchange. As a whole, the business district below Chambers Street was confined to an area no greater than three-quarters of a square mile. Every day, virtually all the commuters of

Manhattan and the surrounding boroughs converged upon this district. Travellers arriving by water routes were accommodated by ferry terminals extending along the Hudson and East Rivers from the Battery to 14th Street. Those arriving by land routes faced the congestion of horse-drawn coach traffic. The construction of the Ninth Avenue and Sixth Avenue elevated lines in the early 1870's alleviated congestion, as did the construction in the 1890's of the Second and Third Avenue elevated lines. These lines provided rapid transit service between Manhattan and the Bronx. The completion of the Brooklyn Bridge in 1883 visually and functionally connected Manhattan and Brooklyn, but most travelers continued to arrive by ferry. In 1901 work began on the first subway line along lower Broadway. By 1904, the subway joined City Hall Park with 145th Street in uptown Manhattan and, in 1906, with 180th Street in the Bronx.[5]

As internal traffic on Manhattan Island intensified, connections to the boroughs beyond the rivers continued to be provided almost solely by ferry (Fig. 7). A large-scale transportation network had not been integrated into a unified relationship with the financial and commercial metropolitan center. By 1911, however, a series of major changes dramatically altered this condition. The first tunnel below the East River opened in 1908, extending the Broadway subway line to Brooklyn Heights. In 1910 two new tunnels below the Hudson River connected the Hudson Terminal Building in the financial district with Jersey City. The Queensborough Bridge (1909) and the Manhattan Bridge (1910) joined Manhattan Island to Queens and Brooklyn, respectively (Fig. 8).[6] The forging of such transportation linkages between Manhattan and its surrounding boroughs paralleled the erection on skyscrapers on an unprecedented scale.

Individuals and private corporations involved in skyscraper planning supported this major urban transformation. To meet the spatial demands caused by large-scale economic change, they defined a new building type--the skyscraper--and influenced the shape of its urban setting, the business district. The criteria for employing the new building type in urban development were set forth by contemporary spokesmen, the most rigorous and thorough of whom was Richard Hurd. Hurd described the urban characteristics of the skyscraper in the context of the theory that the

goal of urban development is to maximize land values. The views of individuals such as Hurd are not typically discussed in histories of architecture. Such viewpoints represent the general culture of building rather than the specific culture of architecture. Yet the predicament of the contemporary architect and civic designer cannot be understood in all its dimensions without defining this general culture and the precise nature of its building agenda. Clearly, the ideologies of these cultures were poles apart. Despite repeated attempts to grapple with the processes described by Hurd, designers often found them intractable.

Richard Hurd developed a theory of urban development based on a single controlling objective--the intensive utilization of urban space, given technical limitations, for the purposes of maximum economic gain. A pragmatist in the narrow sense of the term, Hurd viewed the city as a palimpsest reflecting the demands of land speculation. At Yale University, from which he graduated in 1888, Hurd probably became acquainted with the popular professor of political and social science, William Graham Sumner. Sumner's aim was to create a "systematic science of society" based on the thought of Herbert Spencer. A formal view of social phenomena, removed from the stream of social experience, characterized nineteenth century social thought.[7] Hurd's analysis of urban development was influenced by Spencer, whom he mentioned in his text.

In 1901 Hurd became the president of the Lawyer's Mortgage Insurance Company, where he developed an interest in land economics. He consulted old maps, local histories, and commercial geographies to develop a theory of the structure of cities. He also sought a means of determining the land values produced by the different "utilities," or land uses, within cities. Hurd's Principles of City Land Values (1903) met a new demand for an objective explanation of land economics and its role in urban development. Widely read and influential, the book was illustrated with historical maps and views, contemporary photographs, and maps drawn by the architect Cecil C. Evers showing current land values in various cities. A map of New York's business district indicated the steep land values associated with property along lower Broadway, the location of the Woolworth Building's site (Fig. 9).[8]

In Hurd's scenario, people could not control the economic forces that propelled urban development, and were consequently blameless. Legal restrictions did not exist so that land values would reach optimal levels. Hurd agreed that political, social, and cultural concerns affected the city's structure, but that these concerns were secondary to the economic forces of commerce and manufacturing. According to Hurd, the arrangement of commercial, industrial, and residential districts in the city depended on their profitability in a particular location, and on their convenience to transportation systems. Identifiable districts would form after the city established a convenient point of contact with the outer world, typically a trade route. First the business district separated from the residential district. Then retail stores either clustered around business centers or along major transportation lines. The wholesaling district was located adjacent to either the retail district, the shipping and receiving terminals, or both. Manufacturing operations sought out a section of the city separate from their administrative components in the business district. The expansion and differentiation of districts continued efficiently and predictably according to economic determinants, unless it met insurmountable barriers. Barriers included topographical faults, rivers, and historic structures, and prevented the uniform growth of the city from its point of origin. The business districts of large cities often grew explosively after they were surrounded by other districts. Hurd asserted flatly that the business district's increasing needs for office space could be met either by building higher or by pushing outwards on the retail and wholesale districts.[9] Surrounding urban areas would be invaded by an expanding aggregation of tall buildings.

Hurd's principles found their fullest expression in the crowded skyscrapers of the business district. They represented the logical outcome of his premise that land was always sold to the highest bidder, and that the highest bidder made the land earn maximum profit. Encouraged by the anticipation of personal economic gain, and by a greater demand for space in favored locations, land speculators began to increase the height of buildings. Hindrances to vertical expansion were promptly overcome with practical inventions, including skeleton construction and the elevator. "Plottage value," or the unearned increment gained from the assembly of

plots to support a larger building, further augmented the value of land in the business district.[10]

According to Hurd, development within a city, depending on the accessibility of a given location, increased at the termini of transportation systems. Transportation systems enhanced land values in the central business district by improving access to and from the district as well as within it. A highly developed transportation network, such as a number of subway lines with a number of stops, stabilized land values by creating overlapping streams of pedestrian traffic. Hurd also observed that business streets, as a rule, had developed with little regard for width, so their economic value could not be augmented by widening them to accommodate more traffic. As traffic became more dense, additional levels of transportation could be added below and above the surface of the street to relieve the pressure. Besides, narrow streets in business districts facilitated contact and created the desired impression of immediacy. This sense of an intense proximity was reinforced by the lack of any relationship between the width of the street and the height of its buildings.[11]

The ramifications of Hurd's principles on urban space were illustrated in the hyperbolized graphics of Harry M. Pettit's fantastic view of lower Broadway, drawn in 1908 from an elevated perspective north of Bowling Green (Fig. 10). Frank Woolworth selected a site for his building along this busy thoroughfare, at a location just north of the Singer Tower, which appears at the left of Pettit's drawing. Pettit's view was not a futuristic vision, but an overstatement of contemporary tendencies. It was predicated on current mechanical and structural technologies and on conventional architectural forms and details. The drawing's Coney Island atmosphere suggested a comical escapism. Leavened by such frivolity, Hurd's Spencerian concepts seemed less dehumanizing. Yet a foreboding atmosphere persisted. One wondered who would toil near the roar of rapid transit systems in the dark offices near the street, where work continued only under incandescent light. The tenuous quality of bridges spanning blackened wells of space, the chaotic flight paths of aircraft, and the incessant movement of trains on the elevated railroads sustained an air of

impending catastrophe. The randomly located box-like buildings formed a dense and chaotic mass. Architectural embellishment was reserved for the skyline, where it erupted in a dizzy display of domes, campaniles, and turrets. Only the roofs permitted the city's inhabitants to rise above the din, darkness, and fumes from traffic below to a realm of clear air. As in Hurd's scenario, Pettit's drawing revealed that the infrastructure of transportation had supported more offices and that more offices had required a more complex infrastructure. The city appeared to have grown by itself--the product of brute, uncontrollable force--rather than by the will of man. Parks, squares, public buildings, and monuments were conspicuously absent. Pettit named the dirigibles after places on all parts of the globe. Moses King called the scene "the cosmopolis of the Future," suggesting that the skyscraper district was, in itself, an image of world ascendancy.

Amidst the intensive skyscraper development in the business district, there developed concurrently an effort to aesthetically improve the increasingly confused urban condition to which skyscrapers contributed. Localized interests in urban beautification began to organize, beginning with the formation of New York's Municipal Art Society in 1893. Other art societies were subsequently founded in New York and major cities. The beautification interests gathered strength after the depression of the mid-1890's. They originated the City Beautiful movement, along with diverse interests in civic improvement, the influence of the Chicago Fair, and greater public awareness of the contrast between the crude American city and artistic travel images of European cities. The term, "City Beautiful," borrowed from the arts and crafts movement in England, first emerged in 1897 in the literature of the municipal art movement. It appeared in an article entitled "Civic Architecture," by the New York architect, Charles Rollinson Lamb.[12]

The concerns of the municipal art and civic improvement groups were echoed by Charles Mulford Robinson in his Improvement of Towns and Cities (1901). This work combined earlier discourse, embellishment schemes, and piecemeal design efforts into a general guide for civic improvement. At the beginning of the century, the municipal art and civic improvement

interests joined the mainstream of Progressive reform, and shifted towards city planning. The 1902 McMillan plan for Washington focused attention on conceptualizing the city as a whole. Robinson's Modern Civic Art (1903) presented a coherent aesthetic paradigm for the overall plan of the city. While Improvements of Towns and Cities became a manual for local improvement societies, Modern Civic Art addressed issues relevant to those concerned with large-scale planning. By 1904, San Francisco and New York secured large-scale plans, and in 1905 and 1907, respectively, published final reports.[13]

Charles Mulford Robinson aimed to define and create an American urban culture that was equivalent to the urban cultures of European metropolises at the turn of the century. Initially a reporter and assistant editor for the Rochester Post-Express, Robinson travelled in Europe in 1891 and 1894, and to the Columbian Exposition in 1893. Afterwards, he contributed a series of ground-breaking essays on municipal art to Atlantic Monthly and Harper's Magazine. These essays provided the basis for his Improvement of Towns and Cities. In Modern Civic Art, Robinson used his observations of European cities, in particular the Renaissance architecture and city planning of Italy and Flanders to further develop his concept of civic beauty. He was also aware of developments in American urban beautification influenced indirectly by the teachings of the Ecole des Beaux-Arts, first realized at the Chicago Fair, and had a glancing interest in British, French and German planning practice. Like Richard Hurd's Principles of City Land Values, Modern Civic Art had a large following.[14]

The ideal city plan described by Robinson in Modern Civic Art contrasted on a number of levels with Hurd's exploitative urban building agenda. However, while Hurd's economic determinism must have been incomprehensible to Robinson, Robinson did not deny the role of economics in city planning. One of his arguments for the implementation of civic art schemes was that beauty could serve economic ends. An attractive city could revitalize the local economy by promoting tourism and trade. Robinson also acknowledged that cities progress by expansion, or by encompassing a larger area.[15] Robinson's culturally based urban order, however, bore little relationship to Hurd's economically based urban order.

Robinson's concept of civic art included aesthetic, utilitarian, and social criteria. Robinson's text was devoted principally to a discussion of aesthetic matters, although he assumed an interdependence of aesthetic and social criteria. He believed that art which is ignorant of its social role is without purpose. Beauty should "clothe" both utility and convenience. Robinson invested civic art with miraculous powers. It dominated other programs of reform. Pragmatic concerns were secondary. Issues of tenement-district and zoning reform, subjects increasingly debated as the first decade of the twentieth century unfolded, Robinson regarded as hygienic problems. He believed such problems would be addressed, if not resolved, once the tenets of civic art were applied. Robinson did not discuss in depth the engineering problems--such as the construction of bridges, tunnels, railroads, subways, and water, sewage and electrical systems--which had to be solved to develop the modern city. Unlike aesthetic problems, he believed, engineering problems did not require inspiration, and thus lay outside his realm of concern. Robinson's aesthetic criteria were unity, variety, and harmony.[16] These criteria shaped the buildings and street facades of his urban vision.

Hurd's description of the city as a product of land speculation was hard and objective, a static point of view. Robinson's description of the city as a cultural artifact, on the other hand, was empathic and subjective, an anticipatory point of view. Robinson applied nineteenth century evolutionary theory to his studies of the historical development of cities, and arrived at the concept of "municipal evolution." Modern cities had evolved from a simple aggregation of people into a physically congested state. Then the prospect of a beautiful city took root in citizens' minds. In this evolutionary cycle, the typical American city was leaving its "iron age" and embarking on a program of civic improvement, indicated by the increasing appearance of stone monuments and beautiful buildings. Robinson verified with historical examples this progression towards beauty as cities developed. Babylon, Athens, and Rome, for example, were the crowning cultural achievements of their respective civilizations.[17]

Robinson's paradigm for the modern city was influenced by his observations of European cities, including modern capitals such as Vienna

and Paris, and smaller, historic capitals, such as Venice, Bruges, and Florence. His followers believed that with popular support his Europe-inspired vision could transform the disordered and dirty American city. In general, Robinson proposed the design and embellishment of focal points, the creation or widening of avenues, and the arrangement of these according to a harmonious, ordered, and workable plan. The focal points, which provided opportunities for vistas, created a sense of urban structure and monumentality, thus strengthening the city's image. Focal points included the water approach, the land approach, and the civic center.[18]

The water approach permitted an assessment of the overall composition of the city. Viewed from afar, the city revealed at a glance the dreams, aspirations, and progress of its inhabitants, and instantly identified the character of the community. Prominent land forms, such as cliffs or hills, added topographical interest to this view. As travellers approached the city, they could see details reinforcing the larger composition, and could identify the waterfront entrance to the city, or the "water gate." Travellers from the countryside concluded their journeys at the land entrance, or portal. Robinson observed that unlike the city gates of the past, contemporary railroad stations became portals. The land entrance was no longer located on the edge of the city, but within it. Since visitors formed their first impressions of the city at the portal, Robinson suggested that the railroad station be located on a prominent site facing an open square.[19]

The most important focal point in Robinson's ideal city plan was the administrative or civic center. While Hurd's idea of the city found its ultimate expression in the skyscrapers of the business district, Robinson's ideal of an enlightened municipal culture was embodied in his image of the administrative center. Robinson's aesthetic paradigm did not contain a single center, but a series of centers, dominated by the administrative center. The centers were comprised of a group of public buildings situated around a public garden or a square. For Robinson, such squares were the city's ornaments. They created variety in a regularly plotted grid plan, functioned as public gathering places, and added an aura of stateliness to commercial districts. Robinson believed that civic buildings should remain

where they were located historically, regardless of pressure from expanding real estate interests. They should also be safeguarded from any private structure that might dwarf them, screen them from view, or block their sunlight. The ambiance of a reposeful urban square could be destroyed by the violent contrast that resulted when tall buildings crowded around it.[20]

Hurd's and Robinson's respective proposals regarding the treatment of traffic also reflected their opposing convictions. Hurd spoke of multi-level streets and an extensive system of rapid transportation with multiple stops linking people to shops and places of work. Robinson proposed a skeleton of broad arterial thoroughfares that would facilitate travel from point to point and ease congestion caused by service and passenger vehicles, foot traffic, and rapid transit systems. The width of these diagonal thoroughfares would be proportioned to their apparent length. This would allow the buildings bordering them and the monuments terminating them to be displayed advantageously in relation to a foreground or vista. The broad avenues would converge on open spaces surrounded by secondary groupings of public buildings, or "nerve centers." To alleviate the environmental problem of congestion in the business district, Robinson proposed the strategic location of rapid transportation systems to disperse the city's population towards its outskirts.[21] However, because he considered the location of rapid transit systems a utilitarian rather than an artistic problem, Robinson did not elaborate upon their design.

Robinson's and Hurd's disagreements typified the struggle between public aspirations and private demands in the American city at the turn of the century. Robinson's aesthetic paradigm of public buildings and public spaces opposed Hurd's conception of the full utilization of private space and reduction of the public domain. Robinson proposed to transform the districts of repetitious commercial buildings by interjecting order, harmony, and hierarchy--properties associated with groups of public buildings. This vision contrasted radically with the chaotic, yet uniform, urban fabric Hurd envisioned in a city that maximized land values with skyscraper districts. Robinson's broad avenues with ancillary transportation systems facilitating movement through a spacious public realm contradicted Hurd's compact transportation network. The

incompatibilities between Hurd's and Robinson's visions of the city were particularly apparent along the boundary where the skyscrapers of the business district met the heart of the civic art paradigm, the administrative center.

Such conflicts were not entirely new, but the battle lines had never been drawn so clearly. Never had two descriptions of the American city presented a greater graphic contrast. This rift was symptomatic of larger cultural divisions. The heyday of the American belief in progress coincided with a heightened search for a national cultural identity. A new awareness of the public nature of art developed alongside technological innovations stimulated by private interests. Unprecedented population growth and the intensive transformation of urban space coincided with the discovery that cities function as environments requiring order, maintenance, and conservation. Because of New York's emergent role as a world commercial center, the city needed new channels for expediting the flow of goods, and a larger administrative base for an expanding world market. Recognition of the city's new international role heightened demand for a corresponding urban image.[22]

Contemporary observers, who criticized the skyscraper on both aesthetic and environmental grounds, recognized the disparity between the economically-determined land development described by Hurd and the model embraced by advocates of municipal art and civic improvement. According to one critic, the imposition of private interests on public life was conspicuously evident in the formidably tall buildings of the business district. The buildings were "architectural monstrosities", devoid of unity, harmony, form and grace. They were simply "iron cages" that made it possible for private interests to appropriate every square foot of urban space. Charles McKim asserted that "nearly every one of our thoroughfares is given over to a new franchise, the sole aim of which is for private gain and apparently without much reference to any other consideration." In 1897, the sculptor and mural painter, Frederick Stymetz Lamb, noted that every new mechanical or structural invention fostered another set of tall buildings, which eclipsed a greater portion of the available light and air in the city, to the detriment of the public domain. Narrow, congested,

dark, and dirty, the public street had been sacrificed too readily to the real estate speculator. The reserving of appropriate settings for public buildings had been ignored and old landmarks had been destroyed. Another writer described New York as "the formless product of almost unrestricted speculative real estate and business enterprise." Still another asserted that the city "calls itself the American metropolis; but it is quite without well-ordered metropolitan concentration and distinction."[23]

Most critics believed the confused and misshapen character of commercial New York resulted from the disinterest of individual builders, who did not conform to the larger aesthetic conception of urban order and harmony promoted by advocates of municipal art. The typical skyscraper, according to Barr Ferree, had "become a synonym for things of horror, and a blot upon the artistic aspects of our modern cities." At times, even the architect, in Lincoln Steffens's opinion, did not care enough for beauty to "strive for unity and proportion in the completion of a block," for in the American city, the "individual is supreme, and, thus far, unchecked." Montgomery Schuyler viewed New York's skyscraper district as "bewildering and stupefying in the mass, with no ensemble but that of universal strife and struggle." The lack of any controls, including the implicit ones of "public sentiment" and the explicit ones of "official authority," dismayed the art critic, Charles Caffin. The business district of New York had become a confused agglomeration of varying styles, dimensions, and degrees of quality that resulted in an overall lack of harmony.[24]

Urban beautification schemes and planning proposals introduced by artists, architects and civic designers around the turn of the century attempted to reconcile land economics with the objective of creating an identifiable urban culture, as described by Robinson. The most ambitious of these proposals was presented by the Municipal Art Society of New York, which, along with other New York art and architectural societies, evolved an approach towards civic design. This approach began with isolated beautification efforts, but culminated in a coordinated set of improvements for the entire city. The founders of the Municipal Art Society stated explicitly that they aimed to adorn New York City's parks with sculpture and its buildings with sculpture and mural decoration. It soon became

clear, however, that they also intended to increase the city government's awareness of urban embellishment and ultimately to secure its patronage. The Society's first president was the Beaux-Arts-trained architect Richard Morris Hunt. Several architects who had worked in Hunt's atelier became members of the society in its early years. They included its second president, Bruce Price, along with George Post, A.D.F. Hamlin, William R. Ware, R.H. Robertson, and the firms of Carrère & Hastings and McKim, Mead & White.[25] As a whole, the Society was comprised of architects, artists, and civic leaders of New York.

When the city governments of the five boroughs were joined to form Greater New York in 1898, the Municipal Art Society began campaigning for an ambitious program of civic improvement on a metropolitan scale. Seth Low, mayor of New York in 1902 and 1903 and member of the Municipal Art Society, provided the requisite political sanction for the large-scale plan. In 1903 the Society's City Plan Committee prepared a preliminary report that was submitted to Low by the current secretary, Frederick Stymetz Lamb. The report included six sections on freight terminals and tunnels, subways and arcades, parks, public buildings, decoration of public buildings, and monuments. The interest it generated led George B. McClellan Jr., Seth Low's successor as mayor, to found the New York City Improvement Commission in 1904. Although comprised of prominent citizens who brought no specific planning qualifications to their task, the Commission's proposals nevertheless reflected a widely held aesthetic vision for New York. The Commission's 1904 report responded to the recommendations of the Municipal Art Society's City Plan Committee. The commissioners suggested coordinated pier development and an elevated highway along the Hudson River, but were principally concerned with creating a unified plan for Greater New York. To achieve this unity, they proposed cutting avenues into the existing gridiron pattern of streets, both to facilitate the traffic flow between Manhattan and the separate boroughs and to convey the appearance of a consolidated metropolis. They also discussed a preliminary plan for a new civic center at City Hall Park.[26]

The New York City Improvement Commission's 1907 report reinforced the 1904 objective of integrating the distinct municipalities of Greater New York into a unified whole (Fig. 11). The stated purpose of such a large-scale plan was to create an urban image for the newly consolidated city that would make it one of the western world's great metropolises. To develop this image, the commissioners emphasized the broad avenues joining plazas in Manhattan to those in separate boroughs. They also called for a new civic center at City Hall Park that would rival European civic centers. Because the commissioners emphasized aesthetic devices to achieve their goals, and desired to give New York the semblance of a European city, they tended to ignore the business district with its cluster of skyscrapers and its traffic problems. The commissioners' drawing actually denied the existence of the towering skyscrapers. Depicted as blending into the plan's flat, Versailles-like expanse, the skyscrapers were virtually imperceptible. The commissioners were certainly aware of the immense quantity of traffic flowing daily into the financial district of lower Manhattan. They proposed two 100-foot wide avenues to join Brooklyn's new circular Bridge Plaza with Manhattan, via the Manhattan and Brooklyn bridges (Fig. 12). But their attempts to deal with traffic problems ended with these wide avenues. The commissioners neglected the transportation infrastructure supporting the development and the day-to-day functioning of the skyscrapers in the business district--subway systems, bridges, tunnels, and railroads. As a result, the 1907 report was not conscientiously implemented by local authorities.[27]

The desire to create a bold, unified urban image led to large-scale proposals for Manhattan by the architects Julius F. Harder, member of the Architectural League of New York, and Ernest Flagg. Their plans did not incorporate the business district, despite its increasingly assertive presence. Harder's large-scale plan of 1898, which he presented the following year at a special city planning meeting of the Architectural League of New York, became the first concrete civic-improvement proposal for Manhattan (Fig. 13). Harder stated that he intended to integrate an ideal plan with the existing urban pattern. He thought that lower Manhattan, a center for exchange and distribution, should remain intact, even though such a strategy might compromise the ideal plan. As a

commercial clearing house for the entire nation, a "nucleus of anticipated accumulation," the district required the concentration of docks, bridges, railroad terminals, and the manufacturing and warehouse districts. Harder also felt that congested lower Broadway was beyond any hope of magnificence. He therefore proposed converting it into a multi-level street, but did not discuss the key role of a rapid transportation system in such an arrangement.[28]

Harder daringly proposed the relocation of New York's civic center from City Hall Park to Union Square, an idea that was later abandoned. He felt Union Square had greater potential for the creation of monumentality and image. The new site offered a spacious, dignified, and harmonious setting, given it's centrality and distance from the jarring contrasts and perpetual threat of the skyscrapers in the adjacent business district. From Union Square, Harder extended a series of diagonals, inspired by the plans of Paris and Washington, D.C., establishing vistas and easing the traffic flow between each city district and the civic center.[29] Despite his stated intentions, Harder did not fully integrate the demands of the business district with the aesthetic urban ideal espoused by advocates of municipal art and civic improvement. Instead, through his clear separation of an existing urban condition from the desired city plan, he emphasized the divergent spatial requirements of each, including their different methods of accommodating traffic.

Like Harder, Ernest Flagg did not suggest altering or controlling the skyscrapers in the business district at the tip of Manhattan Island, despite his earlier stand against the tall building. In his 1904 planning proposal, he preferred to ignore skyscrapers. With the design of a single avenue that extended the length of the island, Flagg concentrated instead on creating a monumental order where a large-scale transformation seemed feasible (Fig. 14). Without considering rapid transportation systems, Flagg attempted to solve some of the business district's traffic problems by improving access. He proposed a new avenue diagonally intersecting Broadway at City Hall Park. The diagonal avenue connected to the broader, central avenue that extended the length of the island. By providing a second direct means of access to the tip of the island, in addition to

Broadway, the diagonal avenue would also alleviate congestion on parallel avenues running north and south. Flagg was captivated by the possibilities of such an avenue for shaping a powerful urban image. While advocates of civic art thought a civic center would provide this image, Flagg thought that an avenue of gigantic dimensions would best appropriately represent the "metropolis of the new world."[30]

Daniel Burnham's plan for Chicago of 1909 appeared to resolve the difficulties Harder, Flagg, and the New York City Improvement Commission had with the skyscrapers and transportation systems of New York's business district. In Burnham's plan the urban ideal advocated by civic art, now widely known as the "City Beautiful," attained its most comprehensive, integral expression (Fig. 15). While the earlier New York plans emphasized the distinction between beauty and the "utilitarian" factors of land use and traffic, Burnham stressed their integration. He intended to transform the city into an "efficient instrument" by directing its development towards an end that "must seem ideal, but is practical."[31]

Citing Haussmann's Paris as a source for the Chicago plan, Burnham expressed his concept of civic order by locating public buildings at the convergence points of avenues, creating a unified urban composition. The most important focal point, the civic center, became the physical and symbolic pivot point for the entire plan. Burnham also proposed a consolidated rail system for freight transportation, to "enhance the commerce of Chicago," and a central freight handling center, a "perfect machine in itself."[32] Incoming passenger rail lines connected with both a street car system and a subway system (Fig. 16). The street car system consisted of an elevated loop system and a surface system with minor extensions into the city center. The extensive subway system ran beneath the grid of streets that comprised Chicago's business district. Burnham clearly separated the transportation of goods from the transportation of people, and pedestrian traffic from systems of rapid transportation. These separations were achieved by skillfully layering and overlapping the business district's efficient and compact rapid transportation networks with the City Beautiful's sweeping circulation spaces. The broad avenues and open plazas of the new Chicago remained unobstructed by the congestion

typically associated with inadequate or poorly defined transportation systems.

Burnham overcame one of the weaknesses of the predominantly aesthetic emphasis found in earlier civic improvement schemes by systematically confronting the utilitarian problem of traffic. His plan appeared to achieve a synthesis between the ideal and the pragmatic. However, his proposal for the treatment of skyscrapers lining his broad avenues only proved the impossibility of such a synthesis. Although Chicago's height restriction of 260 feet allowed the construction of very tall buildings, the plan's drawings showed skyscrapers that were only about 175 feet, or approximately fifteen stories, high (Fig. 17). This alteration of the tops of skyscrapers contradicted the requirements of land speculation. Civic designers in New York had not been bold enough to suggest such changes. Like them, Burnham could not find a satisfactory solution to the urban problem of the skyscraper. He had asserted that as awareness of City Beautiful principles intensified, architectural teamwork would lead to an orderly composition of tall buildings. This form of wishful thinking was equivalent to the conviction of reformers that once civic art had fulfilled its educative purpose, the will of the individual would be transformed into a communal spirit.[33] Consequently, Burnham's apparent synthesis of aesthetic principles and the demands of land speculation was deceiving. In the places his plan seemed to exert the greatest control, it actually had very little.

Like Burnham, New York advocates of municipal art and civic improvement expected their urban vision to be implemented once the general public learned to appreciate its aesthetic principles and moral implications. In 1900 Charles Caffin optimistically predicted that a "transition from individualism to civicism" would soon take place. The transition would occur when cooperation replaced competition, and when widespread public interest replaced the concern of an enlightened few. While he acknowledged the impossibility of creating a Paris in an American urban context, Caffin thought a critical body of opinion could be developed through public education. Art was universalizing; it would provide cohesion in a socially fragmented community by improving the quality of

urban life for diverse groups of people. Both Caffin and Frederick Stymetz Lamb maintained that more responsible citizens could be created by initiating laymen into the virtues of civic awareness and commitment, and heightening their appreciation of the principles of beauty. Robinson thought that knowledge of a potential "City Beautiful" would inspire citizens, not only aesthetically, but intellectually, morally, and politically as well.[34] Such citizens would advance the progress of civic art.

The architectural critic and social reformer, Herbert Croly, did not hold such high expectations. During the first decade of the twentieth century, Croly and Robinson argued about the relevance of the civic art paradigm to the urban building agenda of turn-of-the-century New York. They also disagreed about the development of a body of public opinion powerful enough to effect the urban transformation civic designers and reformers envisioned. In 1903, the year Hurd's and Robinson's texts were published, Croly denounced the current state of New York urban affairs. The "finer and more constructive social and aesthetic ideals," which were exerting a greater influence on American life, had yet to be expressed adequately on a local level. Land speculators and builders continued to disfigure the city. Unlike other American cities, including Boston and Chicago, New York had not imposed a height restriction on its skyscrapers and had treated its significant public buildings, including the City Hall, with irreverence.[35]

Aware of the failings of civic art to control or counteract such developments, Croly began in 1904 to attack the ideal city discussed by Robinson and his fellow reformers. Croly labelled it a "pseudo-classic Beaux-Artist New Jerusalem." Croly considered Robinson's text the most authoritative discussion of the tenets of civic art. He concluded, however, that the aesthetic orientation of civic designers did not represent any single larger cultural objective about the purpose of art. He emphasized, instead, that it expressed one aspect of two opposing American mentalities: "That which is artistic is very artistic. That which is useful is very useful, and its grim utility is equally a matter of loud proclamation."[36]

In 1907 Croly asserted that civic improvement efforts had failed in New York and stated the reasons for their failure. Municipal funds were not available to implement artistic urban proposals; financial resources had been expended on more urgently needed public works such as the extension of the subway system. The enormous cost of real estate on Manhattan Island presented another obstacle. While diagonal thoroughfares were desperately needed to relieve congestion, they were not practicable, because of exorbitant land values and the excessive number of skyscrapers. In his response to Croly's criticism, Robinson asserted that Croly had not accounted for the short duration of civic art reform, and the number and the magnitude of obstacles to reform. Plans had been implemented in Washington, D.C.; Cleveland, Ohio; Philadelphia, Pennsylvania; Oakland, California; Springfield, Massachusetts; and Harrisburg, Pennsylvania. The movement's achievements could therefore be considered surprisingly vast rather than hopelessly inadequate, as Croly had implied.[37] In the final analysis, however, Robinson evaded Croly's criticism of the New York urban predicament. Robinson based his response to Croly on plans devised by cities other than New York--cities with far fewer skyscrapers.

Architects and civic designers in New York glossed over or disregarded the skyscraper in their large-scale plans, because the general nature of the plans did not require that they confront it directly. The skyscraper's adverse effects on its immediate surroundings, however, incited their criticism. They felt the localized problems created by the skyscraper prevented the full realization of their aesthetic vision. Localized problems occurred in the streets of the business district, at the civic center, and on the skyline. The problems skyscrapers caused in the business streets led to the development of a set of specific proposals to control their design, which laid the groundwork for the Zoning Resolution of 1916. Skyscrapers and the transportation systems that served them intruded on the borders of City Hall Park. They posed a constant setback to civic designers as they developed proposals to strengthen the image of New York's civic center, the symbolic heart of the new metropolis. The skyscraper also affected the view of the city from afar. Informed observers criticized and discussed the new skyline's composition and meaning. These localized problems developed in the immediate vicinity of

the Woolworth Building's site, at the intersection of lower Broadway and City Hall Park. As architects and civic designers attempted to solve them, Cass Gilbert designed the Woolworth Building.

The Business Street

The localized problem the skyscraper created in the streets of the business district arose from the intrusion of economically-determined urban development, as described by Hurd, on the vision of advocates of municipal art, as described by Robinson. The skyscrapers that lined the streets of New York's business district at the turn of the century violated Robinson's concept of the business street. They disrupted pre-existing cornice lines, destroying horizontal order and scale. Their facades were imperceptible from the sidewalk because they could not be seen from a great enough distance. In contrast, the commercial architecture of Robinson's paradigm bordered sweeping avenues, defined subsidiary streets, or surrounded small squares. It provided a coherent street plan and created vistas. Low, even cornice lines provided the backdrop against which public buildings were displayed. To ensure the visual integrity and formality of a business street, Robinson recommended legal statutes controlling the placement of balconies and awnings, constructing porticoes over walks, and most important, regulating the cornice line. The rue de la République in Lyons, France, exemplified Robinson's concept of the modern business street (Fig. 18).[38]

Builders maximizing land values along business streets, according to principles set forth by Richard Hurd, prevented civic designers from realizing their vision. The frontispiece of Hurd's book, a view of lower Broadway, shows skyscrapers lining the street as an example of the highest attainment of Hurd's principles (Fig. 19). Tall structures control small, adjacent buildings in their shadows. In this pattern of development, skyscrapers were first built on the corners of blocks, and then in an alternating sequence along their length. This optimal configuration was uninfluenced by aesthetic criteria. Despite the arbitrariness and tendency to compactness, Hurd maintained that a height restriction was not

necessary. The New York land speculator could rely instead on checks imposed by economics.[39]

As early as 1894, while the American Surety Building was under construction, architects discovered disparities between their notions of how a business street should look and the visible changes the skyscraper had already caused in the streets of New York's business district. They also noticed that the uncontrolled construction of skyscrapers adversely affected the street environment. This led to discussion of means of improving the appearance and environment of business streets and implementing height restrictions. Architects discussed these issues in April and December, 1894, at two meetings of the Architectural League of New York. At the April meeting, discussion centered on a specific question: "Is it or is it not desirable that a law should be passed restricting the heights of buildings?" The architects present included Daniel Burnham and Dankmar Adler of Chicago, New Yorkers Thomas Hastings, Edward Kendall, Charles Rollinson Lamb and George Post, the Architectural League's president. In December, other New Yorkers joined the discussion, including Bruce Price and Francis H. Kimball. Aesthetic issues predominated, although participants also discussed the quality and safety of the street environment and the rights of property owners.

In assessing the aesthetic role of tall buildings in urban settings, the architects identified the problems and proposed solutions, but did not reach a consensus on these solutions. At the April meeting, Daniel Burnham, who had recently organized the Chicago Fair, asserted that tall buildings could not have any "aesthetic merit" unless designed as a group in a block or in a neighborhood, under the control of an "aesthetic commission." Thomas Hastings concurred and suggested the regulation of cornice lines at ten to twelve stories. George Post advocated restricting building heights to three times the width of the street. At the next meeting in December, Post stated that the isolated tower had an artistic advantage over the typical skyscraper, and Bruce Price agreed. Price advocated the architectural treatment of all four sides of a tower, as in his recently designed American Surety Building. Edward Kendall, president of the American Institute of Architects, challenged the assumption that

such towers had artistic merit. He proposed instead that tall buildings be composed as entire city blocks or with three sides of a building forming the end of a block. Blocks would be surrounded by broad streets, making skyscrapers isolated landmarks throughout the city. Such landmarks might resemble a European cathedral or city hall as seen from a distance. Kendall, Post, and Price agreed that tall buildings designed as "slices" of a block destroyed the integrity of the street.[40]

The architects concurred that the tall building adversely affected the quality and safety of the street environment. They voiced concern over the street's air quality and increasing congestion. Most speakers called attention to the street's dark, damp, and often windswept, canyon-like atmosphere. Edward Kendall noted that the streets of Chicago were so congested as to be impassable. Dankmar Adler, who had played an active role in zoning discussions in Chicago between 1891 and 1895, voiced concern for office workers, who he believed had a right to a reasonable degree of sunlight. With Louis Sullivan's proposal for a setback skyscraper city in mind, Adler suggested constructing tall buildings in receding stories, or terraces, to allow light and air to reach the street. In December Post questioned the safety of the metal frame, claiming that it was inadequately protected from both fire and corrosion. As remedies for corrosion, Hastings suggested an enforced program of inspection, and Kimball advocated waterproofing both the frame and its surrounding walls.[41]

While agreeing that skyscrapers had unfavorable consequences for the appearance and environment of business streets, the architects remained undecided about the imposition of public controls on the owners of private property. At the April meeting, Burnham suggested that a height restriction of 150 feet might be acceptable to the property holder, because this would have a minimal effect on land values. Hastings argued that property owners had a right to demand that they would not be deprived of sunlight by an adjacent property owner. Adler questioned whether legislation was necessary. At the second meeting, Price argued that it was unreasonable to tell property owners that they could not build as high as their neighbors. He suggested that, as a protective measure, owners of tall buildings secure control of adjoining property. Post perceptively

commented that building heights should be limited by law, but that such a law would be passed only after property owners united and decided such action was necessary.[42]

In January 1896 the members of the New York Chamber of Commerce became the first body to sponsor legislation restricting building heights in New York. Earlier, their Committee on Internal Trade and Improvements had prepared a study on the subject. The study addressed issues concerning the internal and external environments of tall buildings and the safety of the steel frame from fire or corrosion. The study also proposed that a bill be introduced in the state legislature to limit the height and bulk of buildings. The proposed law would fix the height of buildings in proportion to the width of the street, restrict buildings over 80 feet tall to 80 per cent of their lots, and would require tall buildings to have two fireproof staircases. The study did not address aesthetic issues, which lacked legal standing.[43]

The Chamber of Commerce proposal excited more commentary on height limitations by architects such as Barr Ferree, Ernest Flagg and the New York architect George Martin Huss. Ferree did not discuss aesthetic issues, but argued that tall buildings were not the threat to the urban environment they were imagined to be, nor were they structurally unsafe. Unlike Ferree, Flagg stressed the central role of aesthetic criteria in any proposal to control building heights, and denounced the Chamber of Commerce's disregard for them. According to Flagg, the beauty of the city was not improved by the "gigantic monuments to greed rearing their heads at intervals above the other buildings," lacking the chief requirement of successful design--proportion. Flagg reiterated the problem of the dark, damp, and congested street environment skyscrapers created. He was also convinced that the metal skeleton was unsafe. The danger of corrosion leading to the eventual collapse of the frame was always present because of the leakage of pipes and tanks and the difficulty of inspection. The thin stone or brick veneer wrapping the metal supports, which often flew off when exposed to heat, offered little protection from fire. In a fire, the building functioned as a gigantic flue because the floors were vertically linked by staircases and elevator shafts. Furthermore, Flagg argued, it

was unjust to allow a landowner to completely fill a lot with a high building, cutting off light from a neighbor who was then forced to leave part of his lot vacant. To circumvent this problem, he proposed landowners be prohibited from building on the greater proportion of their site.[44]

Huss's counter argument aligned him with land speculators and the doctrine of Richard Hurd. Huss accused Flagg and others of exaggerating the impact of the tall building on public health, and the threat of corrosion and fire, which could be prevented through periodic inspection and proper fireproofing of the frame. The law of "demand and supply" allowed the purchase of rights to light and air among adjacent landowners, which would ensure the pattern of isolated skyscrapers Flagg desired. Huss felt legal restrictions were unnecessary.[45]

Less than a month after publication of the Chamber of Commerce's resolution, the City Club decided on a different resolution to introduce in the state legislature. For this purpose, they asked Post to devise a formula for determining the allowable height of a building. Post's formula limited the height of any building, with the exception of those located on public squares, to fifteen times the square root of the width of the street. The formula also included a setback provision, probably influenced by Adler's discussion of tall buildings with receding stories. The setback provision allowed a greater height for any portion of the building set back from the property line. Introduced by Senator Pavey in the Albany state senate in February 1896, the bill met the opposition of builders, real estate companies, and trade unions. That March, a lawyer for New York real estate firms, Jefferson M. Levy, held a meeting in his office to devise a strategy for defeating Post's proposal. In December 1896 Levy appeared before the New York Board of Trade and argued in favor of the tall building, pointing out its record of safety from fire and negligible effect on public health. He also announced his intention to fight restrictions imposed on the rights of property holders.[46]

Called the Pavey law, Post's bill received the endorsement of the New York Chapter of the American Institute of Architects in April 1896. The A.I.A. president, Richard M. Upjohn, called a meeting to discuss it, the

organization's first official involvement in the question of height limitations. At this forum, George Post, known for the diversity of his proposals for restricting building heights, again suggested the skyscraper be treated as a tower. This treatment would make skyscrapers artistically successful despite threats to their independence on the skyline by other high structures. Post was concerned about the effect of legislation on private property. He assumed, however, that a height restriction would decrease the value of large parcels and increase the value of small ones, thus enhancing and equalizing the value of property throughout the city. At the same meeting, John Carrère insisted that architects view the street as a public court, to be kept healthful, beautiful, and useful through protective legislation.[47]

Perhaps as a response to the languishing Pavey bill, Ernest Flagg published a manifesto entitled "The Dangers of High Buildings," in May 1896. The manifesto was particularly critical of skeleton construction, noting its "flimsy character," susceptibility to corrosion, and tendency to warp during fire. Flagg, like Post, advocated cage construction, where the self-supporting outer walls looked like "real walls," and protected the frame against fire and excessive moisture. Flagg's concept for limiting building heights became more specific. The height of a building should not exceed one and one half times the width of the street on which it faced. A fixed percentage of the total area of the lot above the ground floor should remain open to receive light and air.[48]

Despite Flagg's efforts, the Pavey bill eventually died in the State Legislature because of the opposition of Levy and others. Several months later, the Board of Trade and Transportation took up the fight initiated by the City Club. In December 1896 their Committee on High Buildings invited George Post, John Carrère, Bruce Price, and other architects to discuss the issue of height limitations. All of the architects agreed that the height of buildings should be limited, but only Bruce Price suggested a concrete proposal, an elaborated version of the tower concept he had mentioned at the Architectural League discussions in 1894. Price suggested that any skyscraper exceeding one hundred feet should have an unobstructed environment of ten feet on all sides. The building's proportions should be

controlled by restricting its height to five times the width of its narrowest facade. The Board of Trade and Transportation's resolution of January 1897 was far simpler than the scheme Price had proposed. The resolution perfunctorily stated that no building shall exceed a height of two hundred feet. Assemblyman Austin, who had supported the earlier City Club bill, introduced the new resolution into the state legislature, but the bill failed.[49]

This second failure of a bill to limit the height of buildings can be attributed in part to the fact that the Greater New York Charter was pending. When the charter went into effect in 1898, it authorized the municipal government to restrict the height of buildings. In January 1899, with the support of the Architectural League and the Chamber of Commerce, the Board of Trade and Transportation presented a revised version of the bill to the municipal assembly. Discussion of the bill had to await the approval of the Board of Aldermen. Meanwhile, the fire in the Home Life Insurance Building in December 1898 led Chief Hugh Bonner of the New York Fire Department to assert that high buildings should be limited to a height of 150 feet. The Board of Aldermen shifted their attention to the issue of fire hazards. Once the Board enacted new fire regulations and the Fire Department authorized them, the question of restricting the heights of buildings was dropped. In 1901 a law restricting the height of tenements was enacted, but it had little effect on height legislation for commercial buildings.[50] Until the turn of the century, therefore, attempts to regulate the skyscrapers of New York's business district met with a lack of consensus among architects, indecision on the part of legislators, and the hostility of real estate interests.

In 1898 the architect Charles Rollinson Lamb developed the clearest scheme at the time for controlling the height and bulk of tall buildings in New York. Lamb was fascinated with the skyscrapers of Adler and Sullivan, and familiar with Adler's description of Louis Sullivan's concept of a setback skyscraper city at the April 1894 Architectural League meeting. Lamb outlined a proposal for terracing skyscrapers away from the street, uniting the monumentality of civic art with what he called the modern city's "lines of realty." Lamb used the term "constructive architecture"

to describe buildings which had been strongly influenced by social conditions outside the architect's control. Examples of the expression of individualism and competitiveness characterizing past constructive architecture included the irregular form of Florence's chief civic building, the Palazzo Vecchio, and the town of San Gimignano (Fig. 20). Lamb suggested that New York architects apply the lessons of these civic and private structures to their own civic and commercial buildings, which might become modern examples of constructive architecture. Architects could develop effective height restrictions only by recognizing the impressive character of New York's existing commercial architecture.[51]

Lamb did not hesitate to emphasize that the development of the tall building had been accomplished at the expense of the public welfare, and that New York's congested business district suffered both hygienically and artistically. To alleviate congestion, Lamb recommended two modifications: controlling the height of facades along the street and constructing an arcade system, by cutting through solidly built-up blocks. Sunlight and fresh air would reach ground level if a building facade stepped back towards the center of a lot before rising to an unlimited height. Upper "streetways" or terraced roof gardens could be located on the setbacks, which Lamb compared to the hanging gardens of Babylon and the belvederes of Rome. The arcades might be lined with shops, or become "arteries of travel," allowing continuous circulation between blocks.[52]

As chairman of the Municipal Art Society's Committee on Transportation, Lamb continued to advocate the arcade. In a bulletin published by the society in 1904 on improving the circulation of traffic, Lamb defined three kinds of arcades--those providing a route through a congested district, those passing through private property, and those lining the sidewalk of existing business streets. In 1908 Lamb executed a drawing that graphically represented his 1898 proposal, indicating arcades, bridges, and aerial streets running through, between, and over setback buildings (Fig. 21). Lamb's 1898 article influenced Milo Roy Maltbie's discussion of the arcade as a remedy for congestion in his 1904 article, "Arcades." Maltbie noted that Lamb's concepts of the aerial street and the unification of blocks at upper levels with bridges had not been adopted

because of their impracticality and expense. Maltbie urged the adoption of the arcade at street level. By excluding vehicles, arcades would facilitate flow of foot traffic and conserve protected public space for the pedestrian. Arcade construction was practicable and would enhance the "artistic character" of the street and the city. Maltbie ideally preferred the elaborate European public arcades such as the Galleria Vittorio Emanuele in Milan and the Galerie St. Hubert in Brussels (Fig. 22). He also recognized, however, the value of a recent urban phenomenon in New York--the increasingly common construction of arcades through privately owned office and commercial buildings.[53]

After 1900 commentary on height restrictions quieted for a number of reasons. When the authority to legislate buildings was transferred from the state to the municipality, the city became occupied with reorganizing its own government to meet the requirements of the 1898 charter. Also, construction of conspicuously large office buildings in Manhattan temporarily declined after the completion of R.H. Robertson's Park Row Building in 1899. Finally, empirical tests answered questions about the safety of the frame when exposed to fire or sources of corrosion. Post-fire inspection at the Home Life Insurance Building assuaged doubts about the effectiveness of the fireproofed steel frame. Inspectors found that the steel frame and interior walls of the building escaped material damage. Fire did not spread from one story to another through the floors. The building had actually functioned as a bulwark, preventing the travel of flames to surrounding buildings to the south and west. Only the wood trim, doors, floors, and furniture burned. To answer questions about the effects of corrosive conditions on the steel frame, Professor Charles L. Norton of M.I.T. tested various protective coatings for steel under atmospheric conditions that accelerated the corrosive process. In 1902 Norton ascertained that neat cement prevented rusting, even when applied to steel in thin layers.[54]

The height of the tallest group of buildings in lower Manhattan dramatically increased after 1905 with the addition of Francis H. Kimball's Trinity Building, the U.S. Realty Building, the Singer Tower, and the City Investing Building, all of which bordered lower Broadway (Fig. 23). Debate

over height restrictions resumed. Questions of aesthetics and safety had abated, and architects emphasized instead the environmental issues associated with increasing height and bulk. At the same time, some real estate interests began to view the control of building heights as a means of bringing order and predictability to land economics. By 1902, a number of owners of towering buildings had purchased adjoining properties for the purpose of protecting their own light and air.[55] Their behavior illustrated Richard Hurd's concept of the economic check, which he thought replaced the need for legislation regulating the development of tall buildings.

In May 1907 the Building Code Revision Commission decided to incorporate a law limiting the heights of buildings, as part of their revision of New York's 1899 building code. In September the commission discussed the control of bulk in the skyscraper district, or the "limitation of the areas of buildings--vertically as well as horizontally." At that time, John Carrère proposed that the erection of skyscrapers "be checked by the burden of taxation." Owners of skyscrapers would be required to pay taxes in proportion to the cubic footage of space occupied by their buildings. This would encourage the construction of skyscrapers with receding setbacks, according to Carrère, which would provide the greatest amount of light and air at street level for a building of a given cubic volume.[56]

By March 1908, a special committee of the Building Code Revision Commission was in charge of the issue of bulk. The committee invited the architect Ernest Flagg to speak on height limitations. Flagg further developed his earlier proposal. He suggested limiting the height of new buildings to one and one half times the width of the street they faced, but never exceeding one hundred feet in height. He also suggested limiting the area of the high portion of a building to twenty-five per cent of the total site area. By the end of the month, Flagg had published an outline of his new proposal. He argued vigorously for the immediate implementation of height restrictions, based on long-standing criticisms relating to congestion, obstruction of light and air from the street and adjacent property, fire safety, property rights, and aesthetics. In light of the

Baltimore fire of 1904 and the 1906 San Francisco fire, Flagg asserted that fire safety was still a problem. Controlling the density of the skyscrapers would hinder fire, but the danger would not disappear until all wood windows, doors, and trim were replaced with metal and wood floors were replaced with concrete. In the final version of his proposal, Flagg emphasized the importance of compromise in reconciling the conflict between the rights of property owners and the welfare of the community. "Any law for the regulation of building should provide the greatest liberty for the individual builder consistent with public interests and justice to neighboring land owners." The proposal also allowed adjoining owners to buy and sell the right to build high within the stated limitations, and specified that all sides of a structure above the height limit be "treated architecturally" according to the tower concept outlined earlier by Bruce Price.[57]

Flagg continued to argue for the "order and sobriety" of a uniform cornice line along the street. He aesthetically justified the protrusion of masses and towers above the cornice line as contributions to a picturesque, distant skyline. Flagg considered his recently completed Singer Tower a demonstration of his proposal, despite the fact that the building's base was higher than one hundred feet and its tower covered less than twenty-five percent of the total site area. A sketch attributed to Flagg illustrated the possibilities for a picturesque skyline in Flagg's proposed "city of towers" (Fig 24). The sketch appeared in a monograph on the Singer Building written by its structural engineer, Otto Francis Semsch. To Flagg, the drawing represented a thoroughly modern city, "a Vertical City of the Twentieth Century" where new methods of construction and systems of vertical transportation were fully developed.[58]

As chairman of a Society of Beaux-Arts Architects committee on building code revision, Flagg presented a more complex proposal for height and bulk limitations. The proposal was endorsed by the American Institute of Architects and submitted to the city's Building Code Revision Commission. In essence, it combined Flagg's "city of towers" proposal with the setback idea suggested earlier by a number of architects. Like Flagg's earlier proposal, it required that building heights should not exceed one

hundred feet above the curb. A certain portion of any plot might be built upon to any height, and a property owner might buy or sell the right to build to any height. The added setback provision of the new proposal allowed a decreasing percentage of the building's volume to terrace back at an angle of sixty degrees. Above 185 feet, between 25 percent and 50 percent of the lot could be built upon to an unlimited height.[59]

The suggestions of Carrère, Flagg, and the Society of Beaux-Arts Architects, however, had little apparent effect on the Building Code Revision Commission. In October 1908 the commission presented a comparatively simple proposal to the Board of Aldermen for approval. It advocated a general height limitation of 300 feet with two exceptions. When the width of a street was less than 45 feet, the height of its flanking buildings could not exceed 135 feet. When a building was located on a park, square, or plaza, its height could not exceed 350 feet. Instead of responding to architects' suggestions, the commission responded to the recent suggestions of the Committee on Congestion of Population, founded in the winter of 1907 to collect data on the density of buildings. Their studies began with the tenement district in Manhattan's lower East Side and extended to the business district by July 1908. The committee also studied height restrictions based on street width in Washington, Boston, and a number of European cities. These precedents had the greatest influence upon the commission's final proposal. Dissatisfied with this proposal, Flagg presented a joint protest from the New York Chapter of the American Institute of Architects and the Society of Beaux-Arts Architects. They opposed the proposal on the grounds that it would further aggravate congestion. By February 1909, however, the Board of Aldermen had approved the proposal. It then required only the approval of the Board of Estimate and Apportionment to become law.[60]

Meanwhile, in November 1908, David Knickerbacker Boyd delineated the most fully-developed scheme yet presented for regulating the heights of buildings according to the setback principle. Boyd was president of the Philadelphia Chapter of the American Institute of Architects. He had followed the activities of the New York Building Code Revision Commission, and was aware of Flagg's proposal, earlier setback proposals, and the

commission's pending proposal for a uniform height restriction of 300 feet. Boyd's scheme had two objectives--the widening of streets bordered by tall buildings and the terracing of the building's upper stories. The angle governing the height of the setback portions of the building--the "building and height line"--would be determined by extending an angled line from the curb to a point along the building line at a height of one and one quarter times the width of the street (Fig. 25). If set back from the building line, the street elevations of buildings could exceed the height of those built along the building line, as long as they remained within the area defined by the slanting building and height line. This encouraged the construction of terraced structures, which would allow light and air to enter the street. It also encouraged the creation of wider sidewalks in front of tall buildings, which would ease congestion and increase the amount of public space along the street.[61]

Montgomery Schuyler found the proposals of Flagg and Boyd the clearest "practical measures for restriction" yet suggested. He concluded that Flagg's proposal to "Parisianize" the city by retaining the plane of the street front was more desirable than Boyd's scheme in which recessions and projections might result in irregular street and cornice lines. At best, both plans would lead to the creation of a picturesque skyline and, at worst, a collection of "shapelessnesses." However, Schuyler clearly favored the prospect of a city with regularized streets as advocated by proponents of the City Beautiful. In 1909 Claude Bragdon suggested combining Flagg's uniform cornice line and regular street front with Boyd's tiers of tall terraced buildings "facing one another across a wide interval." Bragdon regarded this solution as suitable from both an aesthetic and a practical standpoint. He thought it might "strike a new and impressive note in the concert of municipal art."[62]

In 1907 property owners in the retail district lining Fifth Avenue, seeking to protect their own interests, joined the movement to restrict the height of buildings. The proliferation of manufacturing lofts adjacent to their stores spurred them to form the Fifth Avenue Association to encourage legislation controlling the physical development of the area. They realized that by restricting building heights they could make the

construction of the taller manufacturing lofts unprofitable without affecting retail activity. In their 1912 report the association requested that Fifth Avenue be placed under the jurisdiction of the Board of Estimate and Apportionment, which they believed had the authority to restrict the height and character of buildings in the city. However, real estate interests in general were divided on the issue of height restrictions. Some supported them on the basis that they would preserve the value of their investments and bring order and stability into the real estate market. Others accused the supporters of protecting their self-interests, having already improved their landholdings.[63]

Informed citizens concerned about the adverse effects of density continued to oppose the tall building. In 1908 the Committee on Congestion of Population made public its suspicion of the Equitable Life Assurance Society's plans to erect a massive 909-foot high structure on lower Broadway, designed by D.H. Burnham & Company of Chicago. Within a few weeks, it was announced that Ernest Flagg's office was preparing the drawings for an even taller 1000-foot high tower at Broad Street and Exchange Place across from the New York Stock Exchange. The Commission on Congestion of Population, appointed in 1910 by Mayor William Gaynor, completed a report in 1911 that pinpointed the tall office building as a cause of congestion problems.[64]

These developments prompted Manhattan Borough President George McAneny to propose in February 1913 that the New York Board of Estimate and Apportionment study in depth the question of restricting building heights. Shortly thereafter, McAneny established the Committee on the Height, Size, and Arrangement of Buildings. The committee set up an advisory body, the Heights of Buildings Commission. The advisors' final report of December 1913 to the Board of Estimate and Apportionment included statements by Flagg, Boyd, and Hastings concerning the form the proposed height regulation might take. Flagg adhered to his original concept, but Boyd now favored a continuous cornice line at a fixed height and the isolation of stories above the cornice line. Thomas Hastings offered a modified version of Carrère's original concept. He suggested imposing a progressive tax on the upper stories of a proposed structure to limit height. The landscape

architect and city planner, Frederick Law Olmsted Jr., advocated an "inclined plane," which would relate the building's cornice height to the width of the street, but would allow the erection of terraced upper stories and towers to indefinite heights. His ideas were echoed in the Zoning Resolution of 1916, in which the height of a building along the building line was based on five varying multiples of the street width. Upper stories were contained within the setback line, and a tower of indefinite height was permitted on 25 percent of the lot.[65]

The Civic Center

Another localized urban problem associated with the skyscraper was the intrusion of the tall buildings and the transportation systems that served them on the boundaries of City Hall Park. Despite this setback, advocates of municipal art and civic improvement developed a cohesive theory of the purpose and image of the civic center, which guided the development of civic centers in a number of major American cities. Speculation on the civic center occurred in writings on the grouping of public buildings.

In 1902 the term "civic center" first appeared in Municipal Affairs, in an article by John DeWitt Warner, president of the Municipal Art Society of New York. Warner described and illustrated European civic centers and preliminary proposals for civic centers in Cleveland, San Francisco, and Chicago. He advocated developing a plan for a civic center in Manhattan. This plan would respond to the marked growth of local civic pride in New York as "the world's capital." In his Civic Art of Northern Europe (1903), Milo Roy Maltbie, an authority on municipal government, gave an account of his tour of Europe for the Municipal Art Commission of New York. Maltbie described the plans and embellishment of major cities he visited, including St. Petersburg, Vienna, Berlin, Brussels, Antwerp, and Paris. He devoted a section of his report to civic centers. In 1904 the Municipal Art Society of Hartford published a bulletin containing eight essays on the grouping of public buildings, five of which discussed civic centers. The bulletin was favorably reviewed by the editors of Architectural Record and widely distributed.[66]

Robinson dedicated a chapter of his Modern Civic Art to the "administrative center," which he also called the civic center. Robinson's thoughts on the civic center were grounded in his observations of isolated developments in the grouping of public buildings, of groups of public buildings in large-scale plans, such as the plan of the Chicago Fair and the McMillan Plan, and of arrangements of public buildings in European cities. In his paradigm for the civic center, Robinson emphasized the importance of a prominent site, the complementary relationship of public buildings, and the useful and symbolic value to civic life. The public buildings of the civic center, according to Robinson, reflected the pride of citizens and officially represented the city. He suggested locating public buildings on the city's most conspicuous site, for example the waterfront, where they would add stateliness to views of the city from the water, or on an eminence, where they would be the most "striking objects of the scene." The buildings could be harmoniously unified in appearance as a group without loss of individuality by adopting a common module or scale. Robinson did not suggest a common style for the civic center buildings. He discussed instead the merit of groups of public buildings in European cities, such as Venice, Florence, and Antwerp, known for their stylistic diversity. Responding to municipal reform efforts of the 1890's, which aimed to improve city government by making its operations more systematic and scientific, Robinson suggested that arrangements of public buildings conveyed cooperation between government departments. The flexibility and variety inherent in Robinson's paradigm was illustrated in his 1906 plan for Denver's civic center. The existing street pattern framed a heterogeneous set of public buildings, which were dispersed in a park-like setting rather than rigorously organized in a unified scheme (Fig. 26).[67]

As might be expected, Richard Hurd maintained a position that was blind to the aspirations shared by Robinson and his fellow reformers. Hurd thought groups of public buildings generally acted as obstacles to the optimal exploitation of urban land and efficient circulation through it. Hurd discounted civic pride in public buildings as inconsequential to the ultimate realization of his principles. He felt that groups of public buildings for city or county government hindered the expansion of business districts. They also interrupted the desired contiguous order of

commercial development. In addition, the parks or squares typically associated with public buildings interfered with the growth of an economically controlled urban structure.[68]

Robinson's paradigm for the civic center stimulated further discussion by the members of the New York Municipal Art Society and Municipal Art Commission, and catalyzed the interest of municipal authorities in the development of New York's civic center. Daniel Burnham gave the paradigm a concrete and specific architectural character. Burnham designed civic centers which responded to similar requirements for a striking urban identity, but showed less flexibility in the arrangement and appearance of individual buildings. Unlike Robinson, he promoted his planning ideas with elaborate drawings. With the completion of his 1909 plan for Chicago, Burnham elevated the civic center to a position of dominance as the controlling element of a large-scale plan. With John M. Carrère and Arnold W. Brunner, Burnham completed and published in 1903 a "group plan" for Cleveland, consisting of public buildings arranged around a spacious mall, patterned after the Court of Honor at the Chicago Exposition (Fig. 27). As an isolated plaza linked with the city's railroad station, the Cleveland civic center was not viewed as a focal point in a large-scale plan. Burnham did not propose the civic center as focal point until 1905, when he developed his plan for San Francisco with multiple centers. His 1909 plan for Chicago was dominated by a single center (Figs. 28, 29). The Cleveland proposal heightened interest in planning civic centers, because it was the earliest realized proposal of such a monumental scale. In the years immediately following publication of Modern Civic Art and of the group plan for Cleveland, the cities of St. Louis, St. Paul, Buffalo, Pittsburgh, Indianapolis and Springfield, Massachusetts, began formulating comparable plans for groups of public buildings.[69]

This discussion in New York of the significance of civic centers and their design elsewhere by Burnham and others was coupled with the realization that skyscrapers were intruding on the boundaries of City Hall Park. In addition, low government buildings, which could not be sited at other nearby locations already occupied by commercial buildings, were being constructed in the park itself. It is not surprising, then, that

architectural and urban critics attuned to the concerns of municipal art and civic improvement voiced dissatisfaction with the appearance and atmosphere of City Hall Park. In 1902 the editors of Architectural Record criticized the civic center's formlessness, disorder, and general lack of distinction. A jumble of tall buildings surrounded the park and other buildings occupied the park, dwarfing and obscuring City Hall (Fig. 30). The vista of City Hall, from the approach along lower Broadway, had been blocked by the erection of the Federal Post Office (1869-80), designed by Alfred B. Mullet. In his Modern Civic Art, Robinson blamed the municipal government for the lack of foresight resulting in the erection of towering office structures along Park Row, the southeastern border of the park, none of which was an "art possession." An "apparently lost opportunity," City Hall Park might have been the center of municipal life in the country's chief city if its scale had been maintained by height restrictions typical of any European city.[70] Herbert Croly thought that the maltreatment of the City Hall, the one public building in New York that was "a subject of general interest and pride," characterized the municipal government's attitude towards matters of propriety and public appearances. By allowing the construction of buildings in the park, it had

> ...degraded one of the most spacious and delightful squares with which any City Hall in America was surrounded into an insignificant little park, over-run with buildings, with no approaches, no vistas, very little atmosphere, and no disposition of any kind to give space, distinction, and dignity.[71]

In response to this criticism, the Municipal Art Society and architect-consultants to the New York Department of Bridges proposed remedies for the appearance and the arrangement of buildings at New York's civic center. The Municipal Art Society's Committee on Civic Centers published a report in 1902 containing the first improvement scheme that retained the civic center's location at City Hall Park. The report included a diagram establishing City Hall Park as the geographical center of Greater New York in relation to the surrounding boroughs (Fig. 31). The committee identified three major problems in the City Hall Park area: municipal offices were isolated and scattered; the Brooklyn Bridge was overcrowded, especially at its termination in the park; and a number of undistinguished structures had encroached on the park (Fig. 32). The

committee recommended removing all the buildings from the Park except the City Hall (Fig. 33). They also advised that the city purchase property north of the park along Chambers Street for city offices and county courts, and property east of the park at the intersection of Centre Street and Park Row for a bridge terminal. They proposed that the city erect a municipal office building on the upper levels of the bridge terminal. Finally, they advocated keeping the Post Office at the intersection of Broadway and Park Row to define the park's southern boundary.[72]

J.R. Thomas's Hall of Records, begun in 1899, probably influenced the committee's decision to locate offices and courts along Chambers Street, to serve as an architectural backdrop for the City Hall. The composition of Thomas's design recalled the Hôtel de Ville of Paris (Fig. 34). According to Schuyler, Thomas had performed a "municipal service" by designing a wing for a terrace of buildings. Furthermore, the building's decoration, including mural painting and sculpture, satisfied the urban beautification criteria of the Municipal Art Society. Schuyler regarded Thomas's design as a model for the kind of structure that should flank City Hall Park.[73] The committee anticipated that the historic City Hall standing on a cleared, spacious green flanked by public buildings would constitute the ideal civic center.

In 1903 the Committee on Civic Centers addressed a report to the Board of Estimate and Apportionment urging the acquisition of property north of the park for city and county use. In 1905 the committee addressed a second report to the New York City Improvement Commission summarizing ideas for civic centers by John DeWitt Warner, Milo Roy Maltbie, and others. This report also referred to the Chicago Exposition as a model of group planning, and criticized the city's inattention to the grouping of public buildings, which were isolated and scattered about lower Manhattan (Fig. 35). In an effort to galvanize the city's planners and officials into action, the report emphasized the urgency of including the civic center in the commission's large-scale plan for civic improvement. The Committee on Civic Centers also approved a new proposal for the civic center and an adjacent bridge terminal, which had been commissioned in 1903 by Gustav Lindenthal of the New York Department of Bridges.[74] The new proposal

replaced the Municipal Art Society's 1902 proposal as the guide for subsequent improvements at City Hall Park.

Gustav Lindenthal chose George B. Post as consulting architect and Henry Hornbostel as design architect to develop a new terminal at the Brooklyn Bridge and a design for the civic center (Figs. 36, 37). Lindenthal had been appointed by Mayor Seth Low. The new proposal followed most of the recommendations of the Municipal Art Society's Committee on Civic Centers. The architects designed a larger bridge terminal than was originally proposed, replacing the train shed that protruded into the park. They also consolidated municipal offices on the north side of the park, and removed all existing buildings from the park except the City Hall. The proposal endorsed the Municipal Art Society's recommendation for locating a municipal office building on the upper levels of the bridge terminal. Post and Hornbostel gave the original concept striking architectural form by designing a 650-foot Gothic-inspired municipal office tower. Its elaborate crown with a pyramidal roof anticipated Gilbert's design for the tower of the Woolworth Building. The municipal office tower contained forty-five stories, dwarfing the City Hall, and projected almost twice as high as the Park Row Building, the tallest building in New York at the time.[75]

As a backdrop for the City Hall, Post and Hornbostel designed a terrace containing municipal and county offices in the style of the Hall of Records (Fig. 36). In contrast to the Municipal Art Society's 1902 proposal, they chose not to retain the Post Office at the southern edge of the park. To enframe the City Hall and emphasize its historical significance, they relied instead on towers located at the three corners of the park. The towers included R.H. Robertson's Park Row building, Cass Gilbert's Broadway Chambers Building, and the proposed municipal office building. Since commercial office buildings had already encroached on the park, the architects must have chosen to utilize the presence of these buildings to further their concept of municipal art. The existing commercial office buildings along Park Row, enlivened with towers and domes, suggested that their architects and patrons had been conscious of their civic surroundings. The central tower of Richard Morris Hunt's Tribune Building (1873-75), the central lofty dome of George Post's

Pulitzer Building (1889-90), and the soaring twin domes of R.H. Robertson's Park Row Building (1899) might be viewed as responses or challenges to the cupola of Mangin and McComb's City Hall.

In 1905 a new Commissioner of the Department of Bridges, George Best, retained Carrère & Hastings to improve Post and Hornbostel's bridge terminal design. The design had been criticized for its expense and its excessively complex treatment of traffic. In Carrère & Hastings's design, vehicular traffic entered the bridge at street level through portals in a semicircular court (Figs. 38, 39). Pedestrian traffic met Brooklyn trolley cars and elevated trains via stairways in the adjoining terminal buildings. Like Post and Hornbostel's design, it provided an "ornamental entrance to the bridge" and a suitable backdrop for the City Hall. It also resolved the city's requirements for urbanity and monumentality at the same time that it resolved pressing demands of traffic.[76] In conjunction with the terminal building, the entrance closed the eastern side of the park and blocked the view of the bridge, with the exception of its looming piers.

The New York City Improvement Commission's 1907 report treated the civic center as the heart of the plan. Like the Municipal Art Society and the New York Department of Bridges before them, the commissioners decided that City Hall Park was the most suitable location for the civic center, despite the high land values in the park's vicinity (Fig. 12). Several government buildings were already located there, including the Hall of Records, the Federal and Criminal Courts, the District Attorney's office, and most important, the City Hall. The grouping of additional civic monuments around the park, the commissioners decided, would create an appropriate image for the metropolis and would publicize the city's artistic progress. City Hall Park was one of the most accessible locations within the metropolis, which the commissioners viewed as an advantage.[77]

The Department of Bridges sponsored a competition for a new municipal office building in 1907 and invited twelve architects to participate. The select group included Cass Gilbert, but he declined to submit a design. William Kendall of McKim, Mead & White won the competition on the basis of his design's well-lit, flattened V-shaped floor plan and classical

elevation (Fig. 40). The jury concluded that a building based upon classical precedent most appropriately expressed the image of municipal government. They awarded second place to Howells & Stokes's Gothic-influenced design with accentuated vertical piers that presaged the shaft of the Woolworth Building (Fig. 41). Kendall distinguished the Municipal Building, the third tallest building in New York, from the typical commercial skyscraper. Kendall's design featured white stone cladding and an exterior sculptural program executed by Adolf A. Weinman. The sculpture included the figures "Guidance" and "Executive Power" and relief panels portraying "Civic Duty" and "Civic Pride." It also featured an elaborate lantern, a double-tiered modified Choragic Monument of Lysicrates surrounded by four tourelles and surmounted by the figure "Civic Fame." Kendall intended the lantern to complement the cupola of the City Hall.[78] The design of the Municipal Building--its height, white exterior, ornamental tower, and siting at the corner of the park--set the standard for Gilbert's design of the Woolworth Building.

The Municipal Art Society and the New York Department of Bridges publicized intentions to restore City Hall Park to its former nineteenth-century appearance as an open public green surrounded with public buildings. In 1909, however, the city's Court House Board decided to replace the spatially inadequate Tweed Courthouse with a larger structure. They planned to locate the new courthouse on the same site, in the park proper behind the City Hall. The centennial of the City Hall was less than two years away. The New York Chapter of the American Institute of Architects, the Municipal Art Society, the Architectural League of New York, and other art societies and civic organizations immediately protested. The City Club cited the Cleveland plan as a model civic center, and asked why New York persisted in its haphazard planning of public buildings. The larger courthouse would not only consume the northern half of the park, but would also detrimentally affect the grouped relationship of the City Hall, the Hall of Records, and the new Municipal Building. It would increase congestion at the park and obstruct the view of the proposed office terrace along Chambers Street. The American Scenic and Historic Preservation Society insisted that City Hall Park, as the city common, had historical significance. For more than two centuries it had assumed a

"sacred" quality as the site of numerous events and traditions. Historical associations were documented on a map included with the society's report (Fig. 42). Like a composite archaeological map, it indicated former structures including fortifications, barracks, a prison, an arsenal, an almshouse, a temporary firehouse, churches, burial grounds, statuary, subway kiosks, and an outline of the proposed new courthouse.[79] As the map demonstrated, the proposed courthouse would eclipse this rich setting.

For both Montgomery Schuyler and Ernest Flagg, the predicament at City Hall Park illuminated larger planning issues. In an article entitled "New York's City Hall Park Problem," Schuyler emphasized the irony of the failing campaign to educate the city and the public on the appropriate uses of a public park. "It can never be said to have succeeded beyond the possibility of a reverse." The Court House Board's proposal to erect a giant courthouse in City Hall Park had retarded New York's development of a real civic center. Schuyler advocated the destruction of the disorderly range of buildings along Chambers Street behind the City Hall. He again emphasized that they should be replaced with a series of public buildings like John R. Thomas's Hall of Records Building, as suggested in Post and Hornbostel's proposal. Such buildings would create an appropriate backdrop for the seat of municipal government.[80]

Ernest Flagg expressed cynicism over the disorganized attempts of the municipality and civic organizations to plan the city. He attributed their failure to a disparity between the preferred ideal of the European city, which set off its public monuments with "long sober lines," and the stubborn reality of the American city, which bent to commercial interests and created settings "as wild, confused, and fantastic as a magician's dream." This disparity was magnified at historic City Hall Park, according to Flagg. The municipal government, desiring to adhere to a historic location, chose the point of greatest resistance as a site for its civic center. The proposed civic center could be accomplished only with great difficulty by destroying costly existing buildings or condemning valuable land. Flagg could not accept the construction of an enlarged courthouse behind the City Hall. It would disfigure the city, "in blotting out as it

does the square on which it stands and in destroying the vista of the streets which it obstructs."[81]

In 1910 James Riely Gordon addressed the problems of finding adequate space for a new courthouse in the vicinity of City Hall Park, siting the proposed structure in a complementary relationship to the City Hall, and avoiding encroachment on the park. Gordon proposed a new 1000-foot high courthouse on a site facing Chambers Street, on axis with the City Hall (Fig. 43). Gordon's courthouse surpassed the giantism of the 650-foot municipal office building of Post and Hornbostel's earlier proposal. Its cluster of four colossal Doric columns were adapted from Stanford White's 1899 design for the Detroit Bicentennial Memorial Column. A comparable monumentality was unattainable in the courthouse, however, because the flutes of its columns were incised with vertical rows of windows to illuminate the circular court chambers inside. Contemporaries saw its central location bordering the park as a means of providing definition and order to the civic center.[82] Its crowning 192-foot statue of Justice towered over the skyscrapers of lower Manhattan, a gesture of defiance against the intruding skyscraper city.

While the Woolworth Building was being constructed on the southern corner of City Hall Park in 1912, the Department of Bridges under Commissioner Arthur J. O'Keefe released still another design for the proposed civic center at City Hall Park. The design, delineated by the illustrator Harry M. Pettit, resembled Post and Hornbostel's earlier proposal (Fig. 44). It displayed the City Hall at the center of a restored City Hall Park, cleared of the Tweed Courthouse and the Federal Post Office, and other obstructions. Pettit emphasized the park's role as a tranquil public promenade with greenery, fountains, and statuary. The drawing departed from Post and Hornbostel's design in ways indicating the design efforts of the preceding decade. The 650-foot Gothic-inspired municipal office tower was replaced by the new Municipal Building designed by William Kendall of McKim, Mead, & White. The bridge terminal was now isolated from the municipal offices, and took the form of a single symmetrical white facade concealing the view of the bridge from the park. With the exception of the Hall of Records, the proposed terrace of

municipal and county offices along Chambers Street had yet to be constructed.[83]

That same year, municipal authorities proposed a secondary civic center to the northeast of City Hall Park, in order to provide an appropriate setting for Guy Lowell's circular New York County Courthouse. Lowell had placed first in a competition for the new courthouse to which Gilbert was also invited. With Lowell acting as an advisor, the Committee on Civic Improvements of the New York Chapter of the American Institute of Architects made suggestions for the new civic center that were approved by the Board of Estimate and Apportionment in 1913 and by the Committee on the City Plan in 1914 (Fig. 45). Its site had been selected by the Board of Estimate in consultation with the New York Chapter of the A.I.A., which had been authorized to replace the Court House Board. Schuyler assessed Lowell's design as "one of the worthiest, as well as one of the most striking, of the civic monuments of our generation." The design's centralized location established a new focal point near the existing civic center, competing with the historic City Hall. Some observers felt that the new courthouse contributed to an expanded civic center that would extend from City Hall Park to the Manhattan Bridge Plaza. The editors of Architectural Record, however, were not wholly satisfied with the arrangement. "No trained observer would be able to look upon the civic center as it is proposed without feeling deeply its shortcomings." The confusion and disorder of its layout, they thought, were caused by the independent axes created by the City Hall, the Municipal Building, and the new courthouse. Efforts to develop a unified, comprehensive plan for the civic center, they stated, had been thwarted by the limitations long imposed by the local real estate market.[84]

The Skyline

Besides creating localized problems in the business district's streets and in and around City Hall Park, the skyscraper had a dramatic and controversial impact on the view of lower Manhattan from the surrounding

waterways. By the late 1890's, skyscrapers had visibly and permanently altered this view. Nevertheless, Robinson and advocates of civic art argued for the merits of a skyline image presented by a city planned as an ensemble. To be a work of art, the city should appear as a compositional whole when viewed from a distance. Ideally, this view would form a memorable "picture" for its beholder. Its component parts would be harmoniously united as a coherent image. The view would convey a "single message...the true message of the town." It would inspire civic pride. As examples Robinson referred to the often painted, striking views of Florence from San Miniato heights, of Rome from the Campagna, and of Venice from the sea (Fig. 46). While entertaining idealized notions about the composition and significance of city views, Robinson could not disregard the towering skyscrapers in turn-of-the-century New York. He acknowledged that the cluster of skyscrapers at the tip of Manhattan Island fulfilled some of his requirements for a powerful urban image. The buildings marked New York with an unmistakable personality. Robinson did not suggest that designers of skyscrapers resign themselves to ad hoc additions to this chaotic image. On the contrary, he advocated a pattern of development in which individual skyscrapers were added among existing buildings to create an effective ensemble from a distance. He advised designers that, ideally, large skyscrapers should be scattered about the city, located on a topographical axis or center, proportioned in relationship to their vistas, and arranged in a composition with their neighbors.[85]

Critics' assessment of lower Manhattan's changing skyline sought qualities in its undesigned mass that might fulfill the aesthetic standards upheld by advocates of municipal art. When critics reflected on the skyline's significance, however, they realized that it did not convey their ideal of a civic-minded community. An early use of "sky line" appeared in the title of an eye-level view of lower Manhattan from Brooklyn drawn by Charles Graham in 1896 (Fig. 47). That year an anonymous critic contemplated the architectural quality of the city's silhouette from a distance. Viewed from the Hudson River, the East River or the Upper Bay--the tall buildings resembled packing-boxes, factory chimneys, or geological formations, but not architecture as it was traditionally understood. Even a skyscraper with the tall slender proportions of a

medieval tower, for example, the American Surety Building, fell short of the time-honored notion of "tower." The building's thin walls and proliferation of windows weakened the impression of massiveness characteristic of those old, formidable structures. Nevertheless, the critic acknowledged that under atmospheric conditions that concealed architectural detail and emphasized instead the outline of a mass, a building could be appreciated on the skyline for its picturesque qualities, although such qualities had a minimal connection to its true architectural merit.[86]

In his article of 1897, "The Sky-line of New York, 1881-1897," Montgomery Schuyler contrasted the skyline image generated by the business district's existing piecemeal, additive design from the prevailing desired concept of the city view as an "ensemble," possible only with the controlled lines that might be achieved by height restrictions. The confusion and formlessness of New York's existing urban image contrasted with the harmony and order of an urban image consciously created as a whole (Fig. 48). Given this incoherent urban condition, Schuyler concluded that architects could only hope to improve it through the design of tall buildings that contributed to a picturesque distant silhouette. Despite the jumbled arrangement of the skyscrapers, Schuyler felt that they nevertheless gave the city a new monumentality. Their sheer size, in contrast with the scale of the earlier commercial buildings they replaced, created a forceful and impressive effect. At the same time, the sudden monumentality of the skyline conveyed a new meaning not typically associated with earlier monumental forms of building. According to Schuyler, the skyline revealed plainly the character of contemporary American social life. To immigrants and European visitors, it "looked like business." To American travelers, it frankly displayed a power and prosperity acquired at the expense of the interior.[87]

Like Schuyler, Charles Caffin admitted that the aggregation of tall buildings at the tip of Manhattan Island introduced monumentality and hierarchy into the city and expressed, often powerfully, the values and motives of its citizens, both ignoble and virtuous. Unlike Schuyler, however, Caffin intimated that the skyscrapers might fulfill the

requirements of a widely shared communal symbol. From the bay, the heterogeneous mix of tall structures formed a single composition, "a towering mass of human endeavor" (Fig. 49). This mass no longer appeared to be the arbitrary outcome of land speculation, but rather an actualization of the "corporate life of the community." This distant scene provided detachment, insight, and a forceful sense of identity. In the final analysis, however, Caffin was as ambivalent as Schuyler in his assessment of the meaning of the aggregation of skyscrapers. Despite the drama and impact of the view from a distance, it failed to compensate for the appearance and meaning of the immediate perspective: the brutal, competitive, and shapeless city that resulted from unimpeded individualism.[88]

Schuyler and Caffin's guarded critical stance was challenged, however, in the middle of the first decade of the new century. Then the general height of the cluster of buildings at the tip of the island doubled. On some of the most conspicuous sites high buildings sported turrets, domes, and complex roofs (Fig. 50). The identifiable skyscrapers of this genre included the Park Row Building, the City Investing Building, the Trinity and U.S. Realty Buildings, the West Street Building, and the Singer Tower, all of which were completed by 1908. These taller skyscrapers with more elaborate roofs provided punctuation and animation in the existing jumble of boxy structures. The bristling new skyline recalled the silhouette created by towers with turrets and spires in earlier images of European centers of trade, including London (Fig. 51). The most recent of these skyscrapers, the Singer Tower, was viewed as innovative because of its extreme slenderness, height, and isolation. It was not without precedent; similar towers had been constructed at the Produce Exchange and Madison Square Garden. But the Singer Tower was the first of its kind to contain offices. Such towers were "striking and spectacular" skyline features, emancipating architects from the limitations of ordinary skyscrapers.[89]

In 1907 Giles Edgarton, a writer for the Craftsman, attempted to dispel completely critics' uncertainties about the appearance and meaning of lower Manhattan's skyline. Edgarton saw compositional merit in the random order of the existing assemblage of forms. Arbitrary in location

and purpose, a building on the skyline did not need another building for symmetry or proportion. Besides, the fragmented silhouette of the business district became a compositional whole in the distant view. Like a village on a hill, the scene possessed a "beauty which is expressed as picturesque." Under particular atmospheric conditions--twilight or fog--the skyline became mysterious and magical. Edgarton thought that the skyscrapers of the business district, not City Beautiful proposals, would provide the urban image necessary to a cultural identity. The skyscraper's unfettered adaptation to need and its suitability to American life and work made it the most authentic form of building. The etchings of Joseph Pennell, according to Edgarton, captured its enigmatic appeal without exaggeration or false representation (Fig. 52). Pennell proved that New York had indeed "redeemed herself from ugliness."[90]

Edgarton found the new skyline image meaningful because he perceived the skyscraper as a uniquely American creation and the embodiment of American values of which he approved. Schuyler, on the other hand, considered a suitable, authentic character meaningless unless the character itself was commendable. By 1907, Schuyler was more critical of the meaning and appearance of the densely built up business district, which he considered an expression of the maleficent aspects of American individualism. It was futile for architects to consider the urban context of skyscrapers, which consisted of buildings that were uncompromising, independent "individuals." An effort to design a building so that it would complement adjacent structures would be defeated by the design efforts for the next skyscraper. The tendency towards extreme compactness and more showy exteriors eventually resulted in a riotous crowd of indistinguishable buildings.[91] Excessive individualism had created the impression of a city of confusion, an image that contradicted the City Beautiful ideals of "civic responsibility" and urban order.

Others were skeptical of Edgarton's aesthetic evaluation of the skyline. They suspected that he had generalized on the basis of observations made under atypical atmospheric conditions. The editors of Architectural Record found it unfortunate that he had viewed skyscrapers only in an environment of a "semi-veiling character." He may have reached

different conclusions had he studied them on a clear day, since only sunlight revealed architectural problems such as a lack of truth in construction or a lack of quality in detail. According to the editors, critics had already noted that only in "half-light" did New York have any chance of "redeeming herself from ugliness." Unfortunately, the deceiving conditions created by half-light preoccupied both Pennell and Edgarton.[92]

While some observers spoke of the skyline's picturesqueness, monumentality, or efficacy, a critical consensus on its meaning and appearance did not exist. In September 1907, as construction on the steel frame of the Singer Tower neared completion, the editors of American Architect and Building News were not convinced that the distant view of the skyline was beautiful, much less picturesque. Furious over adulatory commentary in newspapers, they feared that such uninformed opinion might lead some New Yorkers "to believe that the skyscraper has improved the city's reputation as a 'city beautiful.'" The editors flatly stated that any citizen "of sensibility and artistic perception" would find the skyline a sad sight indeed:

> The world does not afford a more inartistic aspect than is afforded by this vaunting of a sheer materialism--America? Yes, intensely American, these jagged featureless prisms stood on end. As for "silhouette:" one just as artistic can be had any day by descending into an excavation and taking a sight across a forest of driven piles before they are sawed off to grade.[93]

CHAPTER 2: DESIGNING A NEW BUILDING TYPE

> Modern commercial architecture in general, when it is done by artistic designers, is such a compromise. It bears the scars of a conflict, if not between the architect and client, between the claims of utility and of art, or I should prefer to say between the facts of the case and the notions of the architect.[1]
>
> Montgomery Schuyler, 1896

Richard Hurd's economically-determined theory of land development, which advocated the intensive construction of skyscrapers in a city's business district, found its counterpart in George Hill's analysis of the optimal programmatic and technical requirements of the office building. An architect and engineer, Hill defined the office building as a repetitive arrangement of cubical spaces, serviced by mechanical and electrical systems, and housed in a steel-framed structure of moderate height, or about sixteen stories. Hill's requirements were governed by economic considerations and adjusted according to the shape and orientation of the specific building site. Hill emphasized the primacy of the floor plan (Fig. 53). Informed and rigorous planning maximized rental space, and thus optimized the land speculator's investment in the site and in the building's construction. To meet tenants' spatial demands and so produce income for the owner, the plan reflected the requirement that a building be well-lit, accessible, and serviced.[2]

Bringing light into the interior of the office building was the single greatest factor controlling the overall shape and disposition of the plan. To ensure adequate ambient light, Hill recommended that all offices face either a light court eighteen to twenty-five feet wide, or a street. Ideally, the building and its light court would be designed along a north-south axis with its individual offices arranged in parallel rows facing east and west. Since sunlight would enter the light court from the south, Hill recommended that the parallel rows of offices be joined at the north end, creating a U shape. Windows were enlarged as much as the structure and heating requirements would permit, in order to admit the

maximum amount of natural light to the interior. The discrete office unit varied in its dimensions according to the tenant's demands, but tended towards a typical size of about sixteen feet deep, beyond which lighting was inadequate, and twenty feet wide.[3]

Elevators, staircases, and halls provided access to these cellular office spaces. Elevators and staircases created vertical shafts of space for circulation between the building's lobby and its upper floors and thus intersected every floor. The vertical shafts and the regular depth of offices economically justified the planning of identical floors. Hill advised that corridors be designed solely for the purpose of circulation, measure four to six feet wide, and directly connect offices to elevators and stairwells. To provide space for waiting passengers, Hill suggested doubling the width of corridors in front of the elevators. In plan, the elevators were to be located at a point where they could be conveniently reached from a public street, and, if possible, at the northern end of the light court. The standards of good elevator service required that tenants and visitors wait no longer than forty seconds to board a car going in either direction.[4]

To create a comfortable environment that would attract tenants, Hill believed that an office building should be serviced with the most up-to-date mechanical and electrical devices available for heating, ventilating and lighting. Offices were generally heated with low-pressure steam piped to radiators located below the window sills, a method Hill endorsed. He recommended generating steam in a self-contained power plant located on the building premises, rather than purchasing heat from a public utility. To ventilate offices, Hill suggested a combination of methods. These included dampers that opened to the exterior in front of the radiators; operable windows and transoms over doors, which encouraged air flow from the exterior up through vertical shafts; and blast fans for the ventilation of large spaces in the lower stories, such as banking halls. Hill further advised providing offices with electrical outlets on all walls and with incandescent bulbs for electrical light.[5]

Height was also a factor in the equation that governed Hill's economically-planned office building. For a number of reasons, construction costs per story greatly increased in buildings over sixteen stories. While lower steel-framed office buildings could be supported on foundations of piles or grillages, buildings over sixteen stories required concrete piers and caissons during construction. Buildings over twelve stories typically required an additional elevator car for every three stories. Heating stories above the tenth story cost twice as much as heating those below the tenth story. Hill argued that in stories above the sixteenth, the rental value of the office space was insufficient for paying the interest on the higher cost of construction. The overall height of the building depended upon the minimum height of the individual stories. Hill recommended nine feet as the minimum height for the typical upper stories, and twelve to fifteen feet for the first two stories.[6]

A major theme in Hill's description was the trade-off between the tenant's expectation that the office building have an attractive exterior, and the landlord's assumption that the building produce a profit. Extraneous embellishment and architectural features that the tenant viewed as desirable, such as towers and sloping roofs, detracted from the office building's earning capacity. The rigid provisions of the new building type--the maximum amount of cellular space with the minimum amount of supporting structure--caused Hill to assess the skyscraper as an engineering problem rather than an architectural one, and to treat the architect as an embellisher of a bare skeleton rather than the designer of a building. The architect and engineer Barr Ferree, who also analyzed the office building type, concurred for the most part with Hill. Unlike Hill, however, he regarded the appearance of an office building's exterior and its lobby as an important consideration in economical design. Attractive facades and public spaces appealed to a wealthier class of tenants and would thus make the office space more remunerative.[7]

Repeated publication of Hill's criteria reflected the influence of his interpretation of the new type on architects and builders. Moreover, informed observers depended on his criteria as authoritative guidelines for evaluating recent office building projects. The "Wasted Opportunities"

series in Architectural Record used Hill's standards to examine existing office buildings in New York and Chicago for defects in their plans, to analyze the consequences of such defects, and to redesign the plans to correct them. In each case, the authors of the series emphasized that "making money for the owners" was the main goal of erecting an office building. Consequently, each of the proposed changes to the existing plans represented an "opportunity" for earning a profit that had been "wasted." The authors scrutinized and then methodically corrected items that had been discussed by Hill, including the location of the building's elevators and stairs, the configuration of its light court, the orientation of its windows, and the partitioning of each of its floors. Using the old and new designs, the authors also made detailed calculations to precisely demonstrate the loss in potential profit to a property owner. They compared the ratios of the leasable square footage to the total square footage in the old and new floor plans to arrive at the respective costs of each building.[8]

In 1906 Theodore Starrett designed an imaginary skyscraper of gigantic proportions. Starrett was an acknowledged authority on the construction of tall buildings, and founder and president of the Thompson-Starrett Company, which specialized in the construction of large-scale projects. Starrett's fantastic design, with its economy and disregard for proportion and scale, exaggerated the programmatic and technical criteria outlined by Hill (Fig. 54). For the builder, constructing an office building was a conquest. Progress was gauged by the project's size and the speed with which it was completed. The ethos of the Thompson-Starrett Company at this time was described by its next president, Louis J. Horowitz. "Every one of us in the company felt himself to be an adventurer. We visioned the cities of America rising to dizzy, gleaming heights. We dreamed of unshaped inventions that would become part of fabulous, mechanistic structures we were going to build."[9] The main features of Starrett's skyscraper--conservative construction, great size, and programmatic complexity--found their parallel in the Woolworth Building project.

Starrett did not aim to create futuristic architecture or to experiment seriously with technology for technology's sake. He wanted to

create an up-to-date, fully-equipped and -serviced structure that met a potential tenant's demand for comfort and safety. His skyscraper contained pneumatic tube elevators. Its internal atmosphere was precisely regulated through the control of temperature and humidity. For fireproofing, its frame was constructed of concrete.[10] Starrett attempted to monumentalize bare-bones structure and space through the sheer size of the building. Programmatic and technical requirements, governed by economics, became more than factors in an equation. They became the factors that governed a way of building in general.

Starrett incorporated all other architectural programs within the skyscraper, indicating that he perceived the skyscraper as the only form of urban construction that mattered. His building was shown looming above the Singer Tower, on which construction had actually only recently begun. It housed the spectrum of activities that occur in a large city. Industry was located at the bottom, business in the next section, residences above, and a hotel at the top. The sections were separated with public spaces that included shops and theaters.[11] Such an arrangement of diverse activities within a single structure presaged not only the programmatic complexity of the Woolworth Building, but also the mid-twentieth-century concept of the "multi-use" project. Irresponsive to its context, the skyscraper might have stood in any potentially profitable location in the city. A builder's fantasy, it did not reflect the limitations imposed by the humanistic and aesthetic concerns of architects.

Architectural critics were intensely aware of the design difficulties presented by the new building type's technical and programmatic requirements. Montgomery Schuyler remarked on the manner in which the steel frame defined space. "Look at the steel cage that forms the skeleton of the sky-scraper....There is the problem crudely stated, and it does not seem to suggest its own solution" (Fig. 55).[12] Schuyler quoted an anonymous architect to describe the prior constraints that this structural configuration placed upon the architect.

> "I get from my engineer a statement of the minimum thickness of the steel post and its enclosure of terra cotta. Then I establish the minimum depth of floor beam and the minimum height of the sill from the floor to accommodate what must go between them. These are the

data of my design."[13]

Henry Van Brunt described the demands that the skyscraper's internal programmatic requirements imposed on the design of the exterior. To meet lighting requirements, the piers were reduced to the smallest dimensions, and the glazed openings between piers were expanded to the largest dimensions. The building's entire upper structure rested on a girder spanning the ground story, which required the largest possible size of glazed openings. Such demands prevented architects from using "brute masses of material" as in the arcuated architecture of the Romans, and "the venerable laws of statics and proportion" as in the lintel construction of the Greeks.[14]

Russell Sturgis noted that the modern office building was based on a program with no historic parallel. He identified the skyscraper's distinguishing feature as a tendency towards uniformity in the design of its exterior.

> It must be many stories in height, and the stories must be of the same height. Every story must have a vast number of windows, and those windows must be equally spaced, or nearly so....A high-pitched roof is an absurdity; a broken sky-line is false economy; the abandonment of a square foot of rentable space for the purpose of breaking up the exterior is out of the question; deep shadow is unattainable, because all the openings must be fitted with glazed sash....[15]

Sturgis favored the picturesque, but the skyscraper defied artistic treatment by means of irregular massing and shadow.

Architectural critic A.D.F. Hamlin provided the most thorough account of the difficulties the skyscraper presented the architect, a "problem" he considered "the most knotty and perplexing that can be conceived." Hamlin touched not only upon the problem's urban component, but fully described its architectural component. He found that economic forces determined the program, to which the structural framework and mechanical systems were subservient.

> Upon a plot of ground usually narrow and irregular in shape, hemmed in by lofty buildings, he [the architect] must erect an edifice many stories high and divide it into the greatest possible number of offices, so arranged as to bring in the largest possible revenue. He is usually enjoined against "wasting" in courts and areas a foot of space not "absolutely necessary"--the proprietor usually constituting

himself the judge of the amount required; while at the same time he is expected to provide all the offices with sufficient daylight. Everything being determined upon a basis of possible revenue, stairs and halls must be reduced as much, and partitions made as thin, as safety or the building laws will allow. The structure thus planned must be threaded and honeycombed with pipes and shafts, flues and chimneys; innumerable wires must be concealed in its walls and ceilings; and its basement must be filled with machinery of various sorts.[16]

Composition was scarcely the prerogative of an architect who was faced with such intractable constraints.

New York architects who were trained at the Ecole des Beaux-Arts or influenced by its teachings criticized the skyscraper for its compositional shortcomings and questionable character. Ernest Flagg asked how a building that was "punched full of holes" and proportioned without reference to its urban surroundings could possibly be considered "a work of art." He thought that the character of such a building was inappropriate to the "civilized" modern community. Skyscrapers were constant reminders of the greed of landowners, and should have been immediately restrained. Thomas Hastings described the spatial characteristics of the office building as "simply a bee-hive, or a manifold collection of similar cells, with equal divisions, both lateral and perpendicular." In Stanford White's view, skyscrapers were merely "jails" or insignificant piles of cubicles, not architecture. He disdained the assumption that commerce, like religion, could raise "monuments to itself." In 1909 Charles McKim lamented the continued multiplication of skyscrapers, asserting that the skyline of New York "grows daily more hideous." The most recent addition to the skyline, the new Metropolitan Life Insurance Tower on Madison Square, had "the merit of bigness and that's all." Although he had designed the Singer Tower by 1906, Flagg expressed misgivings in 1911 about the propriety of such a building type. "We have a lurking inward consciousness that [tall buildings] do not belong to the highest type of art." Flagg and McKim both thought that the architecture of the tall building represented an "abnormal" development.[17]

Contemporary criticism pointed out the disparity between the programmatic and technical requirements of commercial building and the idea of architecture as a form of art. Van Brunt spoke of the "irrepressible

conflict" between the "inexorable requirements of modern commercial civilization" and the "discipline of the schools." He believed that it was impossible to reconcile practice with theory. Even Montgomery Schuyler, known for his loyalty to the progressive tendencies of the Chicago School, stated in 1896 that "Chicago construction...has not yet found its artistic expression," and that "no designer has yet learned to deal successfully with a structural change so radical that it has abolished the wall." A.D.F. Hamlin's 1892 essay, "The Battle of the Styles," centered on the idea that modern building conditions discouraged the unity of practice that had characterized styles in the past. These conditions, typically associated with the office building, included the hostility of engineering to art, the increasing specialization of building industries, and the urgency of mechanical considerations.[18]

Hamlin and Van Brunt considered the skyscraper's role in the pervasive late nineteenth-century search for a unified modern style. To avoid the pitfall of "revivals" in this search, Hamlin advocated the subordination of historic styles to the "scheme of composition best befitting the programme." The designer should turn to a historic style solely for the purpose of providing the composition with "body and clothing," or form and decoration. As an example, Hamlin offered the office building's compositional tendency towards tripartite facades with Renaissance or Romanesque detailing. Hamlin saw in this approach the desired convergence of style in commercial architecture.[19]

In his 1893 essay, "The Growth of a Characteristic Architectural Style in the United States," Van Brunt concurred with Hamlin, stating that an archaeological treatment of style would lead to a "succession of unfruitful revivals." He did not discuss composition, but advocated extracting architectural principles from a historic style rather than applying the style as a formula. In "The Historic Styles and Modern Architecture" (1893), Van Brunt urged architects to integrate the "romantic lines" of "the Gothic, the Romanesque, the Saracenic styles" with "classic art" as a means of forging a new style, given the altered material and social conditions inherent in commercial construction. Employing the principles of romantic styles would promote spontaneity and invention, ensuring

architectural development. Knowledge of classical principles would restrain "unprofitable invention," and impart an artistic ideal with "majesty of authority" and the "imposing beauty of a perfected language of form." Once architects applied these principles, and the office building became "architectural" rather than "practical," they would be advancing towards a modern style.[20]

Van Brunt died in 1903, and so did not come to grips with the later increases in the vertical dimensions of New York's skyscrapers. Hamlin, however, faced having to alter his critical perspective as the programmatic requirements of the skyscraper changed. He soon realized that this transformation destroyed the stylistic cohesion he had originally observed in the tripartite facade composition of low office buildings with Renaissance and Romanesque detailing. In 1896 he asserted that "a satisfactory solution of the problems raised by these tall buildings has yet to be found." Land speculators continued to propose towering buildings for lower Manhattan, including the record-breaking twenty-seven-story Park Row Building of 1899. In his 1905 essay, "Style in Architecture," Hamlin advocated that architects designing modern office buildings turn to the Gothic style for principles of structural logic and decorative features. Hamlin had initially characterized Sullivan's designs for skyscrapers as "composed on utilitarian lines," with "minute surface decoration, remotely inspired from the Moresque," and had considered them "too personal in [their] character to be perpetuated." Later, he viewed Sullivan's efforts as exemplary applications of principles drawn from the Gothic style to the problem of the modern office building.[21]

Hamlin had chosen to examine historical styles for their applicability to the skyscraper's program. Schuyler, on the other hand, was interested in finding an aesthetic envelope for the skyscraper's structure. Schuyler equated the use of any historic style with "archaeology." He thought the resolution of the problem of the skyscraper had little connection to the development of a new style, but related instead to the evolution of a new type. Schuyler's concept of type was not plan-related, but based on the organic relationship of a building's parts, expressed in volume and revealed on the building's external surface. According to Schuyler, the

tripartite configuration and limited height of the elevator building were positive influences on the development of the skyscraper as a type. The steel frame, however, with its range of architectural possibilities, seemed to hinder this development.[22]

Schuyler, like Hamlin, modified his criticism of the skyscraper as its programmatic and technical requirements changed at the turn of the century. The comparatively low, steel-framed skyscrapers of the Chicago School were soon dwarfed by the towering skyscrapers of New York, which were twice as high. This transformation frustrated Schuyler's search for a type as the "solution" to the problem of the skyscraper. In 1909, after the Singer and Metropolitan Life Insurance towers were completed, Schuyler doubted whether the technical requirements of the skyscraper, in particular its steel frame, would ever permit the crystallization of a type. "Architecturally, the skeleton construction has by no means 'found itself.' It was not to be expected that a new architectural type should be soon evolved from the exposition of a construction of which, as we have seen, concealment, by means of a 'protective envelope,' is of the essence."[23]

Among architectural critics, Montgomery Schuyler's perspective was the most discerning and inclusive. Poised between the two dominant, but disparate, architectural developments characteristic of his era--the tendency towards consolidation and order represented by the work of the Beaux-Arts architects, and the persisting organicism and rationalism found in the architecture of the Chicago School--Schuyler maintained a detached critical orientation that assessed each. The search for an architectural solution to the problem of the skyscraper was his primary theme. No other critic so carefully examined architects' attempts to come to grips with the new building type. In the criticism of the skyscraper, Schuyler emerged as the dominant voice. Although other critics, such as A.D.F. Hamlin, maintained a point of view on the design of the skyscraper, they did not consistently evaluate recently completed projects. Schuyler evaluated all of Cass Gilbert's built designs for skyscrapers in New York during the first decade of the twentieth century--the Broadway Chambers Building, the West Street Building, and the Woolworth Building. In the Woolworth Building, Schuyler found the embodiment of many of his critical ideals.

Like other critics, Schuyler did not discuss the plans of buildings, but instead concentrated on their exteriors. His evaluation of their composition was informed by his knowledge of Beaux-Arts architecture. Schuyler did not hesitate to credit the advantages of a training at the Ecole des Beaux-Arts, which cultivated "a perception of proportion and relation, of adjustment and scale," and which provided the "sobriety, measure and discretion" that distinguished the "work of the educated architect from the work of an uneducated architect." He professed admiration for these qualities in the work of Richard Morris Hunt and Henry Hobson Richardson.[24]

In general, however, Schuyler's reaction to American architecture influenced by the Ecole was marked by ambivalence. He disapproved of the practice of Beaux-Arts-trained architects that immediately followed the Chicago Exposition. The architects relied too heavily on archaeological reproduction, creating a classicism that excluded "life and progress," by which Schuyler was referring to the work of McKim, Mead & White. Architects also directly imported Parisian architecture, attempting the "acclimatization of an exotic," by which Schuyler meant the work of Ernest Flagg or Carrère & Hastings. After the turn of the century, Schuyler was receptive to Beaux-Arts architecture that responded to his criteria, for example, McKim, Mead & White's Knickerbocker Trust Building (1902-4), which employed "order as structure" rather than "reducing it to the place of a superficial decoration" (Fig. 56).[25] Given his ambivalence towards Beaux-Arts architecture, Schuyler turned to a "universal" principle for evaluating the composition of the skyscraper's exterior, rather than a set of standards based on historic precedent.

According to Schuyler, designers could make the exterior shell of the skyscraper a "work of art," by heeding the "Aristotelian precept" that a work should have a beginning, middle and end. The worst possible deviation from this precept was the attempts by academic architects to disguise the frame with an "aggregation of academic forms." The Aristotelian precept, Schuyler believed, should serve as a model to be employed, but not a pattern to be copied. He regarded this model as superior to the column analogy. The simple assumption that the vertical elevation of the

skyscraper should be divided into a base, a shaft, and a capital, Schuyler labelled "convention."[26]

Schuyler asserted that a building "triply divided" in accordance with the Aristotelian precept was "more 'agreeable to the spirit of man'" than a building of repetitive cells. Yet he had difficulty reconciling the precept with an economically-determined, three-dimensional, structural grid, which he called "the facts of the case." Such a reconciliation violated the "functional-organic" dictum he had absorbed from his reading of Leopold Eidlitz's Nature and Function of Art. This dictum required that the exterior of a building reveal its interior uses. Schuyler was skeptical at first of external terminating embellishments that seemed to contradict the realities of structure and program--for example, the arches and the bulls' eyes under the cornice of the Guaranty Building (Fig. 57). Only after completion of the Bayard Building in 1899 did he regard the top of a skyscraper as a separate element that need not compromise the utilitarian nature of the shaft (Fig. 60). The top justified itself as an ornamental crown, Schuyler argued, because it functioned as a terminating element for the undifferentiated bulk of the building. At the urban scale, the top met standards of decorum and enhanced the distant prospect of the city, a prospect typically hindered rather than improved by the random heights of plain "parallelepipeds." In 1907 Schuyler sought to rectify the Aristotelian precept with the program of the skyscraper. He stated that the building's base, housing the entrance to the building, and its top, housing smaller or less important offices and supporting the roof, could be distinguished from the identical tiers of offices housed in the shaft by their respective uses.[27]

Schuyler realized that not all owners erected skyscrapers as purely speculative ventures. Some organizations viewed the tall office building as a means of establishing a corporate identity and gaining visibility to the public. They often occupied only a small percentage of the total available space in a structure filled with anonymous tenants. Insurance companies and newspaper publishing companies were among the first to construct elaborate and imposing office buildings. Adhering to Eidlitz's functional-organic dictum, Schuyler sought elements in the external

composition of buildings which signalled the location of company offices and identified the building itself as the home of the "institution." In the headquarters of the New York Evening Post, the crown of the building served this purpose. In the headquarters of the New York Times, it was the tower. In the corporate offices of the Metropolitan Life and Home Life Insurance companies, the scale, elaboration, and ornamentation of the story above the entrance designated the "institution" (Figs. 61, 71, 76, 78).[28]

Schuyler's understanding of structure was influenced by the convictions of Leopold Eidlitz and Viollet-le-Duc, both of whom advocated reason as a guide to architectural development. Schuyler valued a rational approach to structure in his evaluations of the architecture of the steel-framed office building. From Eidlitz, Schuyler gained an appreciation for the masonry tradition of medieval architecture. According to Eidlitz, structure was manifested through the modelling of mass, as in medieval construction. Schuyler's knowledge of Viollet-le-Duc led him to seek the visible and truthful expression of structural forces.[29] Viollet-le-Duc demonstrated his theories with drawings of exposed iron structures. Schuyler did not accept the naked steel frame as architecture, however. It was devoid of the structural integrity expressed in Eidlitz's concept of modelled mass. Steel lacked the ability of masonry construction to convey the impression of weight. Furthermore, the steel frame undercut the widely held concept, attributable to John Ruskin, that the wall provided a means to display the truthful use of materials. Characteristics such as texture, color, and weight could only be revealed in the thickness and the murality of the wall.

Before the widespread use of the steel frame, Schuyler found that certain characteristics of elevator buildings, such as the Ames, Monadnock, and Union Trust buildings, met his criteria of criticism (Fig. 58). Schuyler noted that in such buildings the window reveal's shadow emphasized the thickness and weight of the wall, conveying its "expressiveness." The exterior shell of the building was expressive if it displayed the concept of reality in the use of its materials. The bare frame lacked such an expressive capacity. To Schuyler, the unemphatic skeleton of the Reliance Building, for example, exhibited the problem of the skyscraper and not a

solution to it (Fig. 59). Given the inevitability of the skyscraper and its steel frame, Schuyler was forced to ignore the frame itself, and seek his criterion of expressiveness in its terra cotta envelope. Encasing the frame, the terra cotta envelope revealed and emphasized underlying structure, without concealing the tiers of identical office units in the interior. The envelope thus met Schuyler's criterion of expressiveness without violating Viollet-le-Duc's principles for the truthful manifestation of a building's method of construction and program. Schuyler viewed this expression of the frame as at once "logical" and "artistic." Structural expression, then, or the conveyance of the "idea" of a steel-framed structure wrapped in an envelope of terra cotta, became one of Schuyler's critical ideals.[30]

While critics such as Schuyler sought ways of accommodating the skyscraper within their vision of American architecture, the architects of New York attempted to give architectural form to the skyscraper's programmatic and technical requirements. They proposed the application of compositional precepts formulated for the most part at the Ecole des Beaux-Arts. Before the steel frame achieved widespread use in New York in the late 1890's, Ecole des Beaux-Arts influence on American architects had intensified. By 1890, six schools of architecture had opened in America with Ecole-influenced curricula. American students continued to enroll in the Ecole, with twice as many attending after 1890 as had attended in the decade before. Leading New York architectural firms, where many young architects received professional training, were headed by Ecole-trained men. These firms included first the atelier-office of Richard Morris Hunt, and later the offices of McKim, Mead & White, Carrère & Hastings, and Ernest Flagg. Some of the architects, notably Ernest Flagg, were uncharacteristically rigid in their adherence to Ecole principles. Others, at the opposite extreme, had not received a Beaux-Arts education, directly or indirectly. Nevertheless, the methods inculcated by the Ecole permeated architectural practice in New York to varying degrees.[31]

Composition was central to the theoretical doctrine of the Ecole des Beaux-Arts. In architectural design, composition had become an objective in itself by 1900. Julien Guadet's Eléments et théories de l'architecture,

published in 1901-04, codified the rules and principles of composition that had dominated theoretical instruction at the Ecole during the late nineteenth century. Guadet thought that although composition related to the design of a building as a three-dimensional entity, the plan was its underlying generating force. In the act of composing, the designer combined intuition and synthesis to seize upon a fully-developed architectural idea, or parti. The parti's validity depended on the designer's fidelity to the program and his successful evaluation of its discrete parts. The parts, each representing a particular function of the building, were ordered hierarchically. This typically resulted in a composition in which the most important element of the program occupied the center of both the plan and the elevation. This element also culminated the sequence of circulation through the building. Each program was divided into occupiable rooms and circulation spaces. The principal challenge of composition was to simply and commodiously connect the rooms with the circulation elements, uniting them into a coherent whole. According to Guadet, the arrangement of rooms and their corresponding circulation elements should be guided by the principles of symmetry, axiality, and variety. Variety could both enhance the beauty of the composition and infuse it with character. Character provided the moral aspect of the program with an appropriate architectural expression.[32]

John Vredenburgh Van Pelt's A Discussion of Composition (1902) and John Beverly Robinson's Principles of Architectural Composition (1899) revealed the influence of Beaux-Arts compositional theories on American architectural thought at the turn of the century. Van Pelt, one of the first Americans to receive a diploma from the Ecole, taught architectural design at Cornell University. He credited Guadet's influence on his ideas about composition. Robinson, on the other hand, had not trained at the Ecole, but in the office of George Post. Post, in turn, had studied in Hunt's atelier. Robinson dedicated his text to William R. Ware, whose pedagogical objectives must have been familiar to him.[33] Ware had founded two architectural schools in America, one at M.I.T. in 1868 and the other at Columbia College in 1881. The design curriculums of both schools were adapted from the Ecole's.

A comparison of the texts of Van Pelt and Robinson reveals two American viewpoints on the task of composition, both influenced by the principles and methods of the Ecole. Van Pelt's text might be considered a derivative exposition of Guadet's teachings, while Robinson's text might be considered a specifically American interpretation of them. Van Pelt briefly discussed the arrangement of a proposed building's volumes in elevation, as part of a general analysis of composition in mural painting, ornament and architecture. He then focused on the role of composition in plan. Here, he emphasized the overall importance of unity and harmony in composition, the organizing purposes of the horizontal and vertical axes, and the focal point.[34]

In contrast, Robinson believed the generating source of a composition was not the plan, but the arrangement and proportions of a building's external volumes. "Even before we think much about the plan, we must make up our minds as to the general character of the exterior we are about to try to create." Nevertheless, if only in regard to a building's exterior, Robinson's text emphasized concepts articulated by Guadet, such as unity and hierarchy. Although familiar with the concept of parti, Robinson interpreted it in a looser fashion than Guadet. He saw parti as "a general conception of the result that we wish to reach," which "must be formed in the very beginning."[35] Robinson's interpretation of composition might be viewed as evidence of an American interest in the pictorial or scenographic effect of a composed exterior.

Van Pelt and Robinson both favored an unconstrained adaptation of historic precedent. On grounds of logic and taste Van Pelt openly opposed those seeking to unify American practice through adherence to a single line of stylistic development. "All architectural styles of civilized countries, from the classic to the modern, seem to me to have a possible relation with some phase of our present existence." Van Pelt did not mean to imply that architects should arbitrarily ransack the styles of the past. He cautioned his readers to exercise discretion in the adoption of any given style, in order to avoid detracting from the character of the proposed building or misinterpreting the aims of the style's creators. Robinson also based his analysis of composition on a series of buildings

from a range of locations and historical periods. They included examples as diverse as a Mosque in Cairo, the Farnese Palace in Rome, the Temple of Poseidon at Paestum, and a Richardsonian Romanesque train station in Ogden, Utah. The exploratory attitudes of Van Pelt and Robinson towards the architectural past were diametrically opposed to those of their more resolute Ecole-trained contemporaries. They disagreed with Ernest Flagg and Thomas Hastings, for example, who advocated "retrieving the lost thread of Renaissance architecture" and adapting it to modern conditions to create a national style.[36]

Van Pelt and Robinson both assessed the problem of the tall office building, but neither proposed a single comprehensive, or typological, solution. Despite his overriding interest in composition, Van Pelt criticized the character of designs for the exteriors of steel-framed office buildings. These designs continued to assume the false appearance of rusticated stone, as opposed to the more truthful and rational encasement of the frame with terra cotta. Van Pelt did not rely on principles of composition for his evaluation, but turned instead to the "Chicago school" theoretical tradition. He maintained that the character of the office building should be governed by a Ruskinian notion of truth in materials and a rational approach to the expression of structure, despite the association of such ideas with a "factory" aesthetic. Robinson, on the other hand, did not express any interest in the theoretical tradition of the "Chicago school." Instead, he simply suggested that the cubic mass of the office building's exterior be divided horizontally into three unequal parts. The largest part would be the shaft, and the design emphasis would be concentrated on the base and the crown.[37]

Van Pelt's and Robinson's texts illuminated the proclivities of American architects schooled by the Ecole des Beaux-Arts or its American offshoots. They demonstrated the prevalent concern with composition, both in the organization of the plan and in the arrangement of external volumes. They also demonstrated a broad awareness of historic precedent, and the persistence in American architectural thought of the Ruskin's ethical bias and Viollet-le-Duc's rational strain. In their various approaches to the problem of the skyscraper, New York architects brought to bear diverse

components of this theoretical background. Most of them stressed composition over the demonstration of rationality in the treatment of structure or of reality in the use of materials.

To give architectural form to the programmatic and technical requirements of the skyscraper, New York architects developed a diversity of proposals. They included Louis Sullivan's structurally expressive facade for the Bayard Building, the tripartite composition of Thomas Hastings's facade for the Blair Building, Bruce Price's classical "campanile" for the American Surety Building, and Cyrus L.W. Eidlitz's Gothic-influenced tower for the Times Building. These proposals influenced Cass Gilbert's designs for skyscrapers in New York. The proposals of Sullivan and Eidlitz, in particular, served as precedents for the Woolworth Building.

The critics who evaluated these designs lacked a shared grounding, Schuyler's dominant voice notwithstanding. Despite this fact, a clear set of issues emerged in their discussions. The issues related solely to the design of the skyscraper's exterior. This is not surprising, for the office building's interior, with the exception of the lobby, was rarely considered the province of the architect. The engineer typically designed the building's structure and foundations, and the appearance of the individual offices concerned only the tenant. Critics' issues included composition, the treatment of structure, the resolution of the crown, and the merits of one source of historic precedent over another. Before Gilbert began his design for the Woolworth Building in 1910, criticism merely identified faults and virtues in the architects' proposals, and did not endorse any single, successful line of approach.

Architects of skyscrapers in New York were confronted with three different kinds of programs, depending on the location of the proposed building's site. Location placed constraints on design. Buildings of moderate height, about twelve to fifteen stories high, were planned for sites located at the middle of a block. Architects treated the fronts of these buildings as a piece of a larger urban whole, the street facade, and assumed that their sides and back would not be seen by pedestrians.

Buildings of about eighteen to twenty stories were proposed for highly visible corner sites, which typically bordered a well-travelled thoroughfare. In this case, the problem required a building visible not only from the street, but also from afar--perhaps from a distant point within the city, from one of the waterways, or from a skyline approach. Thus, architects conceived these buildings as towers, to be seen from many angles. Buildings as tall as the fifty-five-story Woolworth Building were proposed for highly visible corner sites bordering a prominent thoroughfare or square. These skyscrapers consisted of a block of offices surmounted by a slender tower, also containing offices. The tallest buildings were intended to be seen from a number of locations--the street, the square, the waterways surrounding Manhattan Island, and points in the metropolis beyond the waterways.[38]

Architects took two approaches to the facade designs for moderate-height office buildings located on sites at the middle of a block. One stressed structure, the other composition. The Bayard Building (1897-98) on Bleecker Street was noted by critics for its logical emphasis of structure (Fig. 60). It influenced Gilbert's treatment of structure in his designs for the West Street and Woolworth buildings. The only building in New York designed by Louis Sullivan, the Bayard Building boldly exhibited the influence of the "Chicago school" theoretical tradition. In his 1896 essay, "The Tall Office Building Artistically Considered," Sullivan stated that the office building, by which he meant a comparatively low structure of about sixteen stories, "must be recognized and confronted at the outset as a problem to be solved--a vital problem, pressing for a true solution." He believed that the architect must recognize the social basis of the office building and elevate the problem of its design from basic programmatic and technical considerations to a "true architectural expression." Sullivan postulated that a new building type would arise once his "final comprehensive formula" was applied to the problem. The new building type would represent modern American civilization, as the great architectural types of the past, such as the Gothic cathedral, had represented their civilizations. Sullivan stated that his formula heeded both the reasoning of the intellect and the "voice of emotion." Reasoning justified the division of the exterior of the building into three parts,

according to its interior functions. Emotion found its outlet in structural expression.[39] With his choice of cream-colored terra cotta sheathing and his design of elaborate figural ornamentation for the building's facade, Sullivan consciously introduced his formula into a new urban context, turn-of-the-century Manhattan.

In their observations of Sullivan's Bayard Building, Montgomery Schuyler, Harry Desmond, and Russell Sturgis agreed that the vertical piers and colonettes of the shaft rationally emphasized its frame. However, they were divided in their evaluation of the arches and ornamentation below the cornice. Desmond regarded the arches that joined the piers as "functionless." In Sturgis's view, the arches prevented Sullivan's design from being "completely realistic." Disagreeing with Sturgis, Schuyler contended that the building's "aesthetic," as opposed to "scientific," attractiveness lay in the embellishment lavished upon it. Its elaborate crown was justifiable as a terminating element, especially since the designer had already uncompromisingly adhered to the "facts of the steel cage." Schuyler praised similar attributes in the facade of the Evening Post Building (1906-7) on Vesey Street by Robert D. Kohn, who had received a Beaux-Arts education at Columbia University (Fig. 61). The building's flat, vertical piers "hardly draped" but "articulated" its steel skeletal structure according to "the facts of the case," and the building's ornamental scheme was logically subordinated to visible structure. Despite the interest generated by Kohn's design, Claude Bragdon noted at the end of the decade that New York architects had yet to succeed as Sullivan had in combining "stern logic in the matter of form, with originality and grace in the matter of ornament."[40]

Besides treating structure logically, both the Bayard and Evening Post designs suited Schuyler's preference for the Aristotelian precept. Schuyler noticed that the base of the Bayard Building, unlike those of Sullivan's earlier skyscrapers, was limited to the ground floor only, conforming to "fact" as opposed to "proportion." Neither the column analogy nor any other similar convention interfered with the more important task of providing a realistic enclosure for the frame. Sullivan's design for the Bayard Building combined Schuyler's critical ideals of structural

expression and the Aristotelian precept. Kohn's design for the Evening Post Building also combined Schuyler's ideals, and advanced them another step by logically justifying the precept. Given that the top story housed the newspaper's composing room and the ground story its lobby, Schuyler noted that the building's base and capital were distinguished visually as well as programmatically from its shaft, which housed rentable office space. Schuyler's classic ideal now meshed with Eidlitz's functional-organic principles, which required that a building's exterior express the uses housed within. Moreover, Schuyler saw the unconventional capital, containing three large windows flanked by statuary, as a device that conveyed to the urban spectator the institutional status of the building and its purpose as the headquarters of a newspaper publishing company.[41]

In Carrère & Hastings's design for the Blair Building (1902-3) on Broad Street, which Schuyler did not critique, composition took precedence over the treatment of structure (Fig. 62). Before designing the Blair Building, Thomas Hastings had delineated his position on the problem of the skyscraper in his 1894 paper, "High Buildings and Good Architecture," read at the Annual Convention of the American Institute of Architects. In keeping with his background as an Ecole des Beaux-Arts graduate, Hastings presumed that knowledge of the principles of composition constituted the primary skill of the architect. He also maintained a clear conceptual separation between the supporting function of the frame and the enclosing function of the wall. According to Hastings, the facade was foremost a device for revealing the interior condition of the building. To avoid the expedient and inartistic solution of simply piercing the facade with windows equal in size and distribution, the architect should study the proportional relationship between the wall and its openings. Hastings cited the compositional principle of "unequal division" and argued that structure should be rationally revealed. He suggested combining the window openings at the center of a facade to form a single "motif." The iron construction displayed in the motif would be treated ornamentally as a response to the "nature of the material."[42] The resulting tripartite arrangement with strengthened masonry corners flanking an open metal center was similar to Parisian commercial facades.

Critics recognized Hastings's proposal, but remained divided over the merits of his decision to focus on the composition of the building's envelope rather than the emphasis of its structure. Harry Desmond viewed Hastings's design as the first significant attempt to apply Beaux-Arts principles of composition to the problem of the commercial skyscraper. Although Desmond called Hastings's design a "brilliant success," he did not discuss in depth its tripartite composition. He focused instead on its structure. Desmond stated that although the design's planar marble facade did not emphasize structure, its disclosure of internal "structural facts" was indeed rational. In a second article, however, Desmond criticized Hastings's "pictorial" method of design.[43]

Not all critics, however, were convinced that the solution to the problem of the skyscraper had to be derived from emphasis of structure. One critic called the design for the Blair Building "rational and consistent," noting that its steel-framed structure enveloped with stone paneling had been compared by Carrère to a timber-framed structure covered with clapboards. The new system of construction provided a range of decorative possibilities and contained the essentials of a new style. Later, Claude Bragdon concluded that Carrère and Hastings's audacious use of the principles of composition in the Blair Building provided a competing alternative to Sullivan's theory on the design of the tall building.[44]

The New York architect Bruce Price developed the first significant proposal for the tall building as a tower (Fig. 63) when he designed the Sun Building (1890), proposed for a site adjacent to Richard Morris Hunt's Tribune Building, facing City Hall Park. He viewed the tower as a "monumental structure" that would suit his patron's demand for a memorable image. Two means of achieving a memorable image were building higher than the economical height, and employing an elaborate ornamental scheme on a building's exterior. Both strategies were already visible in the design of some elevator buildings in New York. These included the Tribune and the World buildings, headquarters of competing newspapers located next to the site of the proposed Sun Building. Price also regarded his tower idea as a response to the aesthetic criticism of skyscrapers in which architectural embellishment was reserved for street facades. The tower was the only

"artistic solution" to the problem of the skyscraper. Price's American Surety Building (1894-95), located at the intersection of Broadway and Pine, lacked the Sun's battered walls and pyramidal roof, and might be considered a compromised version of Price's first design (Fig. 64). The configuration of the building's volume was a nearly square plan with a height of over three hundred feet, which made it at least three times as high as the neighboring structures. This configuration gave Price the opportunity to design the exterior as a tower finished on all four sides, or a "campanile." Price designed each face of the tower as a fluted pilaster, the flutes containing vertical rows of windows.[45]

Upon completion of the American Surety Building, critics did not wholeheartedly applaud Price's tower proposal. Russell Sturgis viewed it as a reaction against skyscrapers designed with crude rear and side walls. However, he found little merit in Price's seemingly arbitrary division of the tower into a base, shaft, and capital. In 1899 Schuyler questioned Price's reliance on the column analogy, a debasement of the Aristotelian precept. He saw the column analogy as an arbitrary convention that did not assist and probably prevented the "expression in design of structure and of function." Schuyler also believed that the building's walls, which assumed the traditions of masonry construction, had little relevance to skeleton framing.[46]

Because of the extreme height of the American Surety Building in comparison with surrounding structures, its crown was readily visible from points in Brooklyn beyond the East River (Fig. 65). Such conspicuousness raised questions concerning the effectiveness of its ornament from a distance. Russell Sturgis criticized the crown for its inadequate treatment of the problem of scale. Furthermore, he disdained its conventional encircling row of columns as a sham device for creating variety. The device neither expressed the structure of the building, nor related to its overall composition. An anonymous critic commented on the ineffectiveness of the building's terminating ornamentation when viewed from afar, where it blurred and faded into its box-like outline. A more effective ornamental element for the skyline, stated the critic, might be a distinctive roof outline, either pyramidal in shape or sloping and

picturesque. According to Schuyler, few distant observers would deny that the building needed "the crown that would convert it to a campanile." He praised the wedge-shaped, picturesque roof of Cyrus L.W. Eidlitz's Washington Life Building (1897-98) as a termination with which a plain, boxy shaft could not compete (Fig. 66).[47]

Despite such criticism, the merits of Price's tripartite classical "campanile" shone in contrast with R.H. Robertson's Park Row Building (1898-99) and George Post's St. Paul Building (1896-98)(Figs. 67, 68). The odd configuration of the sites of both buildings precluded the adoption of the tower proposal, and the architects viewed their problem as the design of a facade. Critics regarded the buildings as failed attempts to come to terms with the problem of the skyscraper. In particular, they disparaged the facades for their lack of unity. The designers had stacked architectural elements as combined groups of stories and had separated these by horizontal stringcourses. This effectively played down the vertical dimension, but created an overall disjointed effect. Barr Ferree regarded the method behind the designs as "an unfortunate system that never should have been tried more than once." Sturgis assessed Post's design for the St. Paul Building as ugly "from nearly every point of view." Its general mass, proportions, and outline against the sky were "unfortunate and ungainly." With blank gable walls punched with holes, and superimposed stories, it demonstrated in "aggravated form" the problems of office buildings that towered obtrusively over their neighbors. Schuyler censured the St. Paul Building for its untruthful representation of the program of the office building, where every story was "identical in function and equal in dignity." Post had misrepresented the truth by overlaying on a cellular "honeycomb" a "trellis" of architectural orders. Schuyler regarded the facade of Robertson's Park Row Building as a "warning," rather than as an "example." The stacked orders of its open center were confusing rather than composed. Another observer viewed Robertson's design as evidence of the new trend of accentuating the horizontal dimension of the office building, which de-emphasized the building's true height, but created compositional difficulties.[48] Both designs might be considered as responses to a widespread aesthetic preference for the horizontal lines advocated by civic art.

The Fuller Building (1902-3), designed by Daniel H. Burnham & Company, was located on a highly visible site (Figs. 69, 70). Burnham acknowledged this siting opportunity by designing all the building facades according to the tripartite method established by Price's design for the American Surety Building. Under president Harry S. Black, the Fuller Company moved its headquarters from Chicago to New York, purchased a site in 1901, and financed the new building, whose upper floors it intended to occupy. The Fuller site was located on the southwest corner of Madison Square, where Broadway intersected with Fifth Avenue at East 23rd Street. This was one of the approximately half dozen intersections of diagonal Broadway with Manhattan's gridiron plan. The completed building was visible from across the square, from points along Broadway, and from the surrounding streets. Although Burnham's design adopted Price's tripartite composition, it was not shaped like Price's tower. From an oblique perspective of the main facade the building appeared to be a slab, a three-dimensional model of the narrow plat. This perspective also revealed Burnham's intentions as a city planner. The building's classical facade, flat roof, and precise definition of its site boundaries characterized his treatment of the skyscraper in his 1909 plan for Chicago. In the Chicago plan, the chief purpose of the city's buildings, which were drawn as vertical extrusions of the blocks they occupied, was to clarify the street pattern.[49]

One critic, probably Montgomery Schuyler, recognized that the urban implications of Burnham's proposal were more significant than its architectural design. The critic considered it an unsuccessful proposal, however, because it conveyed too clearly the economic basis of its program. Instead of designing a skyscraper that extended straight up from the building lines, Burnham should have created a prominent focal point with his building, because of the uniqueness of its triangular site in an otherwise monotonous gridiron plan. The municipal government was also at fault. Any "civilized municipality," recognizing the site's novelty, would have reserved it for a public building. Furthermore, the unusual shape and location of the site called for an equally distinctive and unusual architectural solution. Burnham's design, in contrast, seemed commonplace. The building had not been designed as a picturesque monument to be seen in the round as the site suggested. Burnham had instead designed a series of

elevations, huge screens with openings conveying weakness instead of strength. The building's site controlled its shape. Its flat elevations and narrow forward edge suggested that it was simply a greedy extrusion of its site, or a "stingy piece of pie."[50]

The Blair, Evening Post, American Surety, and the Fuller buildings were not constructed solely for the purposes of land speculation. They were also intended to create an identity for a particular business organization. To make skyscrapers profitable, organizations sought image-conscious tenants, who would be attracted by a distinctive package for an otherwise ordinary commodity--office space. A distinctive exterior also publicly announced the tenant's location in the city.[51] The patrons of the tallest and most conspicuously sited skyscrapers with blocks of offices surmounted by towers also made their showy buildings economically viable by renting space to tenants. Extreme height accompanied a distintive exterior to distinguish the programs of these skyscrapers from programs for speculative office buildings. Height represented a company's financial power and respectability.

The Times Building, the Singer Tower and the Metropolitan Life Tower were constructed after changes within the organizations they housed. Changes included market dominance or competitive advantage, expansion, and enhanced reputation as an "honest" institution. In their building campaigns, these organizations attempted to outdo each other to secure the most conspicuous image in the city, relying on both visual effects and height. Frank Woolworth entered this competition in 1910, one year after the Metropolitan Tower was constructed.

The completion of the New York Times Building (1903-4) reflected the company's new position as a widely-circulating metropolitan paper. Aldolf Ochs, a newspaper and trade journal publisher from Chattanooga, took over the New York Times in 1896, rescuing it from bankruptcy. Within three years circulation had tripled. The Times had also emerged as an honest newspaper after an era of scandalously personal, or "yellow," journalism epitomized in the battle between Joseph Pulitzer's New York World and William Randolph Hearst's New York Journal.[52]

The Singer Tower was constructed during the final phase of the Singer Company's expansion in the international market. Expansion had begun with sales efforts in France and Great Britain before the Civil War and the establishment of manufacturing facilities in Scotland after the war. By the turn of the century, despite the challenges of European economic nationalism, the Singer Company had penetrated foreign markets in India, China, Russia, Spain, Japan, Australia, Turkey and Germany, and had built factories in Austria, Scotland, Russia and Germany.[53]

When the Metropolitan Life Insurance Company completed construction on its tower, it was the world's largest insurance company. The company had survived intact the 1905 New York State Armstrong Investigation, which had checked the unmonitored growth and disreputable business practices of the "Big Three"--the Mutual, Equitable, and New York Life Insurance Companies. Metropolitan Life profited immediately from its vindication. Between 1906 and 1913, when the tower was constructed, the company's ordinary insurance department accounted for about half of its total business volume. The department gained almost fifty per cent more business than equivalent departments in the Big Three combined. In addition, after initiating a public health care program for its policyholders in 1909, the company considered itself a progressive "social service" institution.[54]

The Gothic-influenced New York Times Building, designed by Cyrus L.W. Eidlitz, was the second tallest skyscraper on Manhattan Island and the first with a composition comprised of a tower united with a lower block (Figs. 71, 72). The composition, and the Gothic modeling and ornament of its tower, anticipated Gilbert's design for the Woolworth Building. The Times Building's site was similar to the Fuller Building's site. It was one of the few triangular sites located on Broadway. It faced Longacre Square, later called Times Square, at Broadway's intersection with Seventh Avenue at West 43rd Street. Ochs needed a site for a building with rentable office space and larger, more up-to-date quarters for the expanding New York Times, then located on Park Row. In his search Ochs noticed Longacre Square, near which new theaters, the new Astor Hotel, and the New York Public Library had located. He had also observed the general northward trend of the city's growth.[55] The location and height of the

completed Times Building caught the attention of street pedestrians, as well as observers from the surrounding waterways. Ochs viewed the building from the harbor in 1904, and celebrated its contribution to the beauty of the city. The building was also a monument to his own achievements, a subject of personal pride.

> The new building loomed up in all its beautiful and grand proportions, out of mid-New York, as we sailed away, and my heart swelled as I thought of association with it's erection. Then it stood foremost and most conspicuous among the best buildings in the Metropolis of the World--and I really grew sentimental. It is a beauty...it is there and it will be a monument to one man's daring.[56]

Unlike most of his New York contemporaries, Cyrus L.W. Eidlitz had not studied architecture under the authority of Beaux-Arts methods. He was educated at the Polytechnic School in Stuttgart and in the office of his father, Leopold Eidlitz. The elder Eidlitz advocated a medieval-inspired approach to architecture, which emphasized the modelling of mass to reveal structure and function. It is not surprising, then, that the son should turn to Gothic precedent, a choice which was further encouraged by the irregularity and the compactness of the Times Building's site. When evaluating Eidlitz's design, Schuyler praised the modelling of its tower, which asserted the skeletal structure behind it. He disapproved of Eidlitz's proposal, however, in that the building did not address the "facts of the case" throughout. Besides, the combination of an office block for renting with a monumental tower was a "contradiction in terms." Although uncomfortable with the evident disparities in the building, Schuyler identified redeeming features. Like Kohn's Evening Post Building, the internal functions of the Times Building were expressed on the exterior. The editorial offices occupied the tower and the top story of the office block housed the composing room. The program justified Schuyler's preference for the Aristotelian division. Furthermore, the tower signified the "institution." Its composition was derived from Giotto's campanile in Florence, and its moldings bristled with Gothic ornament. These elements combined to create "a monumental superposition on a purely commercial structure" that was "at once incorporated in the substructure and detached from it, 'belonging' everywhere." Schuyler also commended Eidlitz for designing a building suited to the conspicuousness

and isolation of its site, unlike the Fuller Building, which was "built to the limit" in all directions.[57]

Eidlitz's Gothic-influenced design for the Times Building's tower prompted a protracted discussion about the adaptability of the Gothic style to the programmatic and technical requirements of the modern office building. A.D.F. Hamlin and Henry Van Brunt had maintained in the early 1890's that historic styles could inform the design of office buildings. Discussion on the applicability of historic styles to skyscraper design reopened after the turn of the century, when the soaring heights attainable with the steel frame altered the skyscraper's programmatic and technical requirements. In 1905, Frederick Stymetz Lamb, a Beaux-Arts-trained sculptor, mural painter and member of the Architectural League of New York, championed the suitability of the Gothic style to the problem of the office building. In Lamb's opinion, Eidlitz's design for the Times Building, a "monument to private enterprise," demonstrated the style's advantages. Unlike the column and lintel system of classical architecture, which was governed by proportional relationships, the Gothic style conformed to building programs demanding great height and well-lit interiors. In Gothic architecture, ornament and detail were subordinate to structure. The building's weight was concentrated on isolated points of support, and its walls, like screens, were nonstructural. Light entered the interior through the full vertical openings between the supports. Such features found a parallel in the modern office building. To further support his argument for the appropriateness of the Gothic style, Lamb drew a historiographic parallel. The increasing height of the modern office building corresponded to the increasing height of the cathedral.[58]

Lamb had viewed the Gothic style as the basis for deriving a series of modern constructional principles. Louis Sullivan, on the other hand, felt that historic precedent in any form would hinder the development of a modern American architecture. He reprimanded Lamb for suggesting the adoption of a past style, a form of revivalism that could not address the needs or social life of modern America. To Sullivan, Lamb's ideas represented the corruption of both American architectural thought and American civilization. Judged by its architecture, American civilization

had "reached the appalling depths of moral degradation." A.D.F. Hamlin, however, agreed with Lamb. He endorsed applying logical structural principles from the Gothic tradition to the design of modern office buildings on the grounds that they were appropriate and adaptable to the requirements.[59]

After the replies to Lamb's essay were published, Schuyler endorsed Lamb's and Hamlin's point of view. Schuyler argued that the Gothic architecture of the French cathedrals, representing "the attainment of 'the system arising out of a principle,'" provided modern architects with rational guidelines for design. The English Gothic, a "picturesque degeneration of that system," did not. According to Schuyler, among those who viewed Gothic precedent as the source of principles and not "merely a storage warehouse of forms," Louis Sullivan was the most Gothic of modern architects.[60] The relationship between Gothic precedent and the design of the skyscraper was not fully acknowledged in the work of New York architects until Gilbert designed the Woolworth Building in 1910.

As in the tower portion of the Times Building, the primary purpose the Singer and Metropolitan towers was to display on the skyline the success of their corporate patrons. The towers' extreme heights, and small, inefficient floor plans betrayed patrons' competitive motives. The buildings diverged significantly from Hill's recommendations for economy. Utilitarian results were a minor concern to these patrons. Conspicuously sited on New York's preeminent commercial avenue, lower Broadway, the 612-foot Singer Tower dominated the cluster of skyscrapers at the tip of the island. Like its trade advertisements, the tower stressed the company's financial stability and predominance in the international market for sewing machines (Figs. 73, 74). While the Singer Company opted for a new architectural image to convey this message, the Metropolitan Life Insurance Company chose instead to borrow an existing architectural prototype. Metropolitan Life's president, John Rogers Hegeman, had specified that the Metropolitan Tower should imitate the campanile of St. Mark's in Venice (Figs. 75, 76), a civic and ecclesiastical tower, and that it should dominate the Singer Tower in height. During the design stage, Hegeman increased the tower's height from 658 to 700 feet. Hegeman viewed

the tower as an advertisement for the company, financed by its tenants, and as a symbol of the company's recently verified moral stature. The building's white marble exterior and the site's Madison Square associations would enhance the Metropolitan Tower's civic aura. The square had become the locus of public-spirited celebratory activity when the Dewey Arch was erected in 1899. Designed by the architect Charles Rollinson Lamb and executed in white plaster by the National Sculpture Society, the arch celebrated Admiral George Dewey's imperialistic "triumph" in the Philippines during the Spanish-American War (Fig. 77).[61]

The Singer and Metropolitan towers were additions to existing office complexes. The Singer Company's office building was constructed in three building campaigns. The first two occurred between 1896 and 1899, with the original Singer Building and the Bourne Building, and the second occurred between 1906 and 1908 with the addition of the tower. The Metropolitan Life Insurance Building was the result of major building campaigns in 1890 and in 1901. In both cases, the towers were not designed integrally with the buildings, but were added to terminate a piecemeal construction process. Located on a small site adjacent to existing office block, the Metropolitan Tower rose from a base firmly planted at grade (Fig. 76). The Singer Tower, however, like the tower of the Times Building, abruptly joined a block of offices below (Fig. 73). The editors of Architectural Record commented that in both cases, the juxtaposed tower and block formed a discontinuous relationship.[62]

Each facade of the Singer Tower was designed according to the tripartite compositional format that Flagg used in the Scribner Buildings and Singer Loft Building, and Hastings used in the Blair Building (Fig. 74). As Hastings had advocated, Flagg flanked the open tiers of offices at the center of each tower elevation with a masonry veneer, which enclosed and visually strengthened the tower's corners. The enclosed corners also concealed the building's wind bracing, so as not to interfere with the clear revelation of the horizontal floor structure at the tower's center. Flagg terminated the tower with a mansarded dome encrusted with elaborate Second Empire ornament. Schuyler noted Flagg's attempt to "convey" the skeleton behind the building's external shell, rather than concealing it as

the designers of the Metropolitan Tower had done. Schuyler clearly preferred revealed structure to concealed structure. The Singer Tower, however, did not emphasize structure, nor convey the "idea" of the skeletal building, as Schuyler had defined it.[63] As in Hastings's design for the Blair Building, Flagg's design for the Singer Tower subordinated structural reality to a compositional end.

The Metropolitan Tower, designed by Napoleon LeBrun with the assistance of Pierre and Michel LeBrun, used the campanile of St. Mark's in Venice as a prototype, as in Bruce Price's unexecuted project of 1890 for the Sun Building. The Tower may therefore be seen as a fully realized version of Price's tower concept (Figs. 75, 63). Its white marble exterior, slender proportions, and steep roof were similar to the LeBruns' earlier facade for the Home Life Insurance Building, which, according to Schuyler, prefigured the Metropolitan Tower (Figs. 75, 78). The Home Life Building displayed the same "artistic qualities" and germinal features of the type fully developed in the Metropolitan Tower. These included adherence to the Aristotelian precept and the monumentalization of the second floor with an arcade, which to Schuyler signalled the home of a "proprietary institution."[64]

Schuyler's sole criticism of the Metropolitan Tower was reserved for its top. To the detriment of the crown, he observed, the square shaft had been allowed to project above the loggia. Schuyler did not call attention to the fact that the building's frame was concealed by a wall and the organization of its facade resembled more closely the conventional column analogy than the Aristotelian precept. Instead of considering these features, which he might typically have thought were weaknesses, Schuyler emphasized the building's overall elegance, the generally skillful combination of its constituent parts, and the refinement of its detail. As if the Metropolitan Tower were not a steel frame structure, and as if its external walls carried their own weight, like the walls of an elevator building, Schuyler commended LeBrun for the expression in the building's outer shell of the qualities of mass, weight, and thickness.[65]

Considering the coherent standard of criticism Schuyler had evolved for evaluating skyscrapers, he was uncharacteristically accommodating towards the Singer and Metropolitan towers. In light of his previous writings, one would expect Schuyler to criticize the treatment of structure in both buildings as well as the conventional form of the Metropolitan Tower. In his 1909 essay on the history of the skyscraper, "The Evolution of the Skyscraper," Schuyler reaffirmed his chief criterion of criticism--structural expression. The Bayard and Guaranty Buildings met this criterion and thus came closest to solving the problem of the skyscraper. If they did not emphasize structure, however, certainly both the Singer and Metropolitan tower designs responded to Schuyler's preference for an elaborate crowning element. Schuyler equated the towers themselves with such an element, because on the skyline they fulfilled a purely artistic role. They were "ornaments to the city." They provided not only the patrons an opportunity to distinguish themselves, according to Schuyler, but the architect as well. It was "only in the sky-line, in the upper termination, that [the architect] has, as an artist, a real chance." The Metropolitan Tower legitimately commanded interest on the skyline as a "center of interest...the cynosure of middle Manhattan," while meeting standards of urban decorum. It was designed in "'good taste.'"[66]

The design guidelines established by the City Beautiful movement accepted the building of stunning and impressive structures to gain exposure, but frowned on the display of lettering and graphics in large and gaudy signs (Fig. 79). A conspicuous building offered a publicly acceptable alternative to signs for achieving the same advertising objective. Although big business became the subject of vociferous criticism during the Progressive Era, critics of architecture did not discuss the underlying motives and social ramifications of architectural advertisement. Lincoln Steffens, who considered the pursuit of private profit as an obstacle to reform, nevertheless believed that impressive business structures existed soley to attract notice, insuring exposure of company names. The architectural press also identified promotion as the principle motive for constructing tall, ornamental structures. One writer noted that the visibility of the new Metropolitan Tower from water approaches served the company's advertising aims. Other motives were found

as well. Another writer, noting the Metropolitan Tower's prominence "from any point in New York or nearby towns," viewed it as the "sort of monument a man can be proud to leave behind him." Another pointed out that life insurance companies, like banks, needed to project the image of "opulent stability."[67] While such observations hardly suggested a broad critical awareness of the interaction between architecture and society, they nevertheless pinpointed the architectural goals of private commercial interests--to project an image and to legitimize visibility by identifying with noncommercial artifacts.

CHAPTER 3: CASS GILBERT AS CIVIC DESIGNER AND ARCHITECT

> Our great World's Fairs have demonstrated one thing beyond question and that is that the assembling of buildings in well organized groups is of the first importance in monumental design.
>
> It is less than 22 years since the first ten-story office building was erected, and today we speak of a twenty-story building as one of moderate height...practically the whole art of building has been re-adjusted. The steel column and the rapid elevator have met the need. The art of design as applied to these tall structures has not kept pace, but we are learning that the be-columned and pilastered type of the Mullets of a generation ago will not adjust itself to the facades of these buildings.[1]
>
> Cass Gilbert, 1909

Cass Gilbert found few contradictions in the problem of the skyscraper because his outlook as a civic designer and as an architect stressed the pragmatic as much as the aesthetic, while it disregarded social welfare concerns. As an advocate of the City Beautiful, Gilbert promoted the decoration of public buildings not to enhance the quality of urban life with art, like some of his contemporaries, but to forge identities for America's newly powerful institutions. He also concentrated his efforts as a civic designer on the strictly aesthetic problem of grouping public buildings. He did not pay attention to contemporaries' proposals for controlling the tall building or reforming the tenement. Gilbert chose instead to support real estate interests. He criticized "City Beautiful," thinking it did not emphasize strongly enough the role of material factors in city planning. Gilbert's designs for buildings lacked a firm ideological basis. He was initially committed to the theories of Ruskin and Viollet-le-Duc and indifferent about his Beaux-Arts instruction at M.I.T. After the Chicago Fair, however, in his efforts to maintain an Eastern orientation, Gilbert embraced a monumental Beaux-Arts classicism. As a designer of the skyscraper, he advocated structural expression, but continued to propose tall buildings with classical, tripartite exteriors.

Education and Influences

Gilbert began his architectural career in 1876 as a draftsman in the office of Abraham Radcliffe in St. Paul, Minnesota. Like most architects practicing in St. Paul at that time, Radcliffe imported Eastern architectural attitudes to the Midwest. In Radcliffe's office, Gilbert regularly read American Architect and Building News, which began publication in Boston at the beginning of that year. This may have influenced his decision to go to Boston to attend M.I.T., the only American architectural school in existence at the time. In the spring of 1878, Gilbert left Radcliffe's office to take a surveying job with the Hudson and River Falls Railroad in Wisconsin. That fall, he attended M.I.T. as a special student with Clarence Johnston and James Knox Taylor, two Minnesota friends who had enrolled at M.I.T. the previous year.[2]

M.I.T.'s school of architecture was housed in the upper stories of the Rogers Building near Copley Square. The school was founded by William Robert Ware in 1869, about ten years before Gilbert's arrival in Boston. Ware began his architectural training in 1859 in the atelier of Richard Morris Hunt, the first American architect to attend the Ecole des Beaux-Arts. He subsequently formed an atelier with Henry Van Brunt in Boston between 1864 and 1869. He was appointed professor of architecture at M.I.T. in 1865, but did not begin teaching there until 1868. After travelling to Paris in 1867, Ware proposed to M.I.T. officials a Beaux-Arts-influenced architectural curriculum that integrated liberal arts courses, including the history of architecture, with courses in architectural design and construction. In 1872, four years after the department of architecture officially opened, Ware appointed Eugene Lètang. The Ecole had become the principal model for the design education at M.I.T. Lètang was an élève in the Atelier Vaudremer between 1865 and 1869, and a winner of three medals. He based M.I.T. design problems on Ecole programs and taught M.I.T. students a process of design based on Ecole methods. He emphasized, for example, that the design of a building should begin with a conceptual sketch of the ground plan. Traditions associated with American architectural practice also had an impact on M.I.T.'s curriculum. Students were taught to study external composition by means of sketched

perspectives, rather than drawings in elevation as taught by the Ecole. To complement their design education at M.I.T., students were encouraged to develop the skill of freehand sketching in pencil, pen, ink, and watercolor. In this they were assisted by "some of the best architectural draughtsmen in Boston."[3]

From his arrival in America in 1871 until his death in 1892, Lètang was the only native French, Ecole-trained architect with a teaching position in an American school of architecture. Although little known outside the architectural department at M.I.T., and remembered by his contemporaries for his modesty and reserve, Lètang won recognition for significantly affecting the development of American architecture. He attempted to control tendencies towards the picturesque in student work, which was the result of Victorian Gothic and Richardsonian influences on American architecture in the 1870's and 1880's. Lètang overcame these tendencies by emphasizing proportion and simplicity as the key elements in good design. He suggested that students avoid design decisions that could not be logically defended. He also enforced the competitive spirit of the atelier in his display and criticism of student work before juries comprised of practicing Boston architects.[4]

When Gilbert entered M.I.T., he brought with him not only his practical office experience, but also his own convictions about architecture. Gilbert's thoughts on architecture, as they evolved throughout his educational experience at M.I.T., were set forth in letters to Clarence Johnston and to his mother, Elizabeth Fulton Wheeler Gilbert. In his letters, he established his allegiance to medieval architecture, and his admiration for Viollet-le-Duc's theories and research and Ruskin's writings. Gilbert's inclinations were further clarified by his ranking of contemporary British architects with whom he hoped to apprentice. He expressed the greatest enthusiasm for the work of George Edmund Street (1824-81), followed by Alfred Waterhouse (1830-1905), Richard Norman Shaw (1831-1912), and William Burges (1827-81). Street approached Gilbert's "ideal of artistic excellence." Such distinction, Gilbert thought, could be attributed to Street's rigorous application of Gothic principles and exacting treatment of Gothic detail. Such utilization of the Gothic

tradition produced an architectural dignity and "grandeur", a classical clarity and order that was unattainable in Shaw's more picturesque and casual style. Gilbert particularly admired Street's Law Courts (1866-85), then under construction. If he could not apprentice in one of the London offices, Gilbert planned to return to Boston and train at the offices of Henry Hobson Richardson, Ware & Van Brunt, or William Ralph Emerson. Gilbert contrasted the designs of the British Gothic Revivalists, which he esteemed for both aesthetic and moral reasons, with those of the typical "classical architect." The designs of classicists were hampered by convention, susceptible to the vagaries of taste, and lacked an ethical basis. Gilbert regarded Ruskin's concept of truth in architecture as an "antidote" for an architect's temptation to fall back on "the narrow limits of style." As might be expected, Gilbert balked at Lètang's efforts to refine and purify his designs.[5]

Gilbert's interest in Gothic architecture was not unusual among students at M.I.T. As a result of Lètang's teachings, however, the influence of Gothic precedent on student work gradually diminished during the 1870's. Student interest in Gothic architecture had persisted for a number of reasons. First, medievalizing characteristics were still present in the work of the profession's leaders, including Richard Morris Hunt and Henry Hobson Richardson, both of whom had studied at the Ecole. Medievalism also persisted in the buildings designed by Ware & Van Brunt, despite Ware's commitment to the educational value of the classical tradition as taught by the Ecole. Second, the influential and widely read American Architect and Building News tended to focus on current British architectural developments. The journal sympathized with the British architectural press, and published the High Victorian Gothic and picturesque designs of their American contemporaries. Finally, there existed a widespread popular taste for the Gothic and the picturesque, which could not be readily overthrown by Lètang's teachings. By 1877, however, six years after Lètang arrived in America, Gothic tendencies had disappeared from student thesis projects, signalling the entrenchment of Ecole methods at M.I.T. Gilbert's persistent interest in the Gothic, despite the transformation in M.I.T.'s curriculum, can be explained by his early association with Radcliffe, his reliance on American Architect and

Building News, his observations of architectural practice in Boston, and his inclinations as a designer towards the romantic and picturesque.[6]

While in Boston, Gilbert attended lectures and executed design projects at M.I.T. He also independently made architectural sketches and visited the offices of local practitioners. Gilbert found particularly stimulating Ware's lectures on architectural history and polychromatic decoration. Ware taught history according to Albert Rosengarten's A Handbook of Architectural Styles, which concentrated on the major monuments of world architecture and viewed Renaissance architecture as not only the first, but the purest of the modern styles. The decorative possibilities of color were explored through Owen Jones's Grammar of Ornament. Gilbert methodically studied major buildings by sketching. He viewed this practice as an integral component of his architectural education, and as an aid to the conceptual visualization of architectural form, structure, and detail. Sketching was inextricable from the process of design. Gilbert's sketchbook functioned as a source book for a series of architectural prototypes, elements, motifs, and details he planned to incorporate in future designs. When he visited local offices, including those of Henry Hobson Richardson, Cummings & Sears, Peabody & Stearns, and Rotch & Tilden, Gilbert showed his sketchbook and asked to see the working drawings of projects he planned to observe under construction.[7]

Unlike many students who attended M.I.T. in the 1870's, Gilbert did not seriously consider entering the Ecole des Beaux-Arts. His reluctance can be attributed in part to his unfamiliarity with French, as he told Johnston, and in part to his financial limitations. The financial support provided by his father's estate discontinued within one year, when Gilbert turned 21. Gilbert's reluctance to attend the Ecole was certainly also due to his convictions about Gothic architecture and disagreements with Lètang. Gilbert had a better relationship with Ware, who offered to assist him in securing a position in one of his chosen London offices. Gilbert seemed to value the less formal tradition of apprenticeship. He preferred associating with a generation of practicing architects who had produced a cohesive body of built work.[8]

After he arrived in London in January 1880, however, Gilbert's efforts to secure an office position were frustrated. Gilbert spent the next eight months traveling near London and through France and Italy with his sketchbook. He saw this sketching tour as an extension of his education as an architect. In London, Gilbert sketched the Law Courts and the Crystal Palace, and visited the Houses of Parliament, Westminster Abbey, the Somerset House, the Bank of England, and several "Wren churches." He traveled outside London to Salisbury and Ely to see the cathedrals, and to Cambridge, where he saw King's College Chapel. In France, he visited the sites of Romanesque and Gothic cathedrals and chateaux, including Clermont-Ferrand, Orléans, Chartres, Blois, and Tours. In Paris, he saw the Opera, the Hôtel de Cluny, the Palais de Justice, including the Sainte Chapelle, and wrote Johnston about the noble and inspiring qualities of the Cathedral of Notre Dame. He also ventured south to visit St. Mark's in Venice.[9]

The sheer volume and high quality of Gilbert's travel sketches and watercolors reveal their importance in the development of his knowledge of historical precedent. Gilbert's contemporaries regarded him as a talented painter. Like the nineteenth-century German architect, Karl Friedrich Schinkel, Gilbert had become accomplished as both a painter and an architect. His pencil sketches of Romanesque and Gothic cathedrals in France and palaces in Venice betrayed a Ruskinian devotion to irregularities of surface and the textural intricacies of ornament and detail. His watercolor paintings from his first tour, including the cathedral towers at Amiens and Rouen and the interior of St. Mark's in Venice, show a heightened sensitivity to the nuances of color and light, like French Impressionist paintings (Figs. 80, 81, 82). After the turn of the century, Gilbert embarked annually on sketching tours abroad. His watercolor paintings of European buildings and sites were exhibited and catalogued at the Architectural League of New York, and were published in American Architect and Pencil Points. Gilbert continually advised architectural students to travel with a sketchbook.[10]

By September 1880, Gilbert had found a position as an apprentice in the New York office of McKim, Mead & White. The firm had been established

in 1879 after Charles Follen McKim and Stanford White met while working in Henry Hobson Richardson's office in Boston. McKim and White became part of the team of architects, painters, and sculptors who collaborated on the design of Trinity Church, led by Richardson and John La Farge, and also including Frank Millet and Augustus Saint-Gaudens. When Gilbert arrived in New York, the new firm of McKim, Mead & White was known as one of the principle architectural firms in which M.I.T. students apprenticed. In 1881, the year Ware left M.I.T. to start a school of architecture at the Columbia School of Mines, nine of the twenty-nine assistants at McKim, Mead, and White had been educated at M.I.T. The firm was esteemed for its sense of responsibility towards the development of young architects. In addition, success in landing important commissions and its location in New York, which swiftly overshadowed Boston as a center of architectural practice, attracted apprentices. Gilbert was wise in his choice of firms, for by 1887 McKim, Mead & White had "reached a commanding position in the profession, [although] not quite the undisputed primacy of five or ten years later." The firm had founded a "school of design" which "deeply affected the architecture of the United States."[11]

The assistants at McKim, Mead & White knew that new designers at the office would soon be called either "McKim's men" or "White's men." Each partner had evolved a distinctive approach towards composition. McKim emphasized the monumental and the academic, which was partly a reflection of his education at the Ecole. White, who began his career as a painter and emulated J.M.W. Turner in his watercolor sketches, concentrated on external decorative, textural, and coloristic effects attained through the manipulation of surface and ornament.[12] Untutored in the architectural formulas taught at the Ecole, White had a vision of architecture that was essentially sensuous and pictorial. His inclinations as a designer were probably most aptly assessed by the art critic, Royal Cortissoz:

> He could be classical when he chose, as classical as McKim; but I think he was a romanticist at heart, a sworn devotee of the picturesque. The trait comes out even in so careful a drawing as his sketch of the cathedral tower at Coutances, and it lies more obviously on the surface of the bulk of his drawings from French churches and chateaux.[13]

Of the various academic and professional experiences that trained Gilbert as an architect, the influence of Stanford White was most crucial.

A dashing, impulsive, and prolific designer, White would rapidly sketch a range of architectural concepts and choose a few for his associates to study and develop. Although he favored Italian Renaissance architecture, White studied a range of historic precedents, including Early Christian, Byzantine, French Renaissance, and Colonial architecture. White based his choice of historic sources on the message he intended to convey to the spectator about a building's purpose. For Madison Square Garden (1887-91), White chose a light exterior color scheme and created a composition with a variety of exotic architectural elements and ornamental motifs (Fig. 83). This evoked the qualities of festivity and gaiety that related to the building's purpose. Exotic elements included a tower based on the Giralda tower of Seville and tourelles comprised of onion domes surmounting tholos-like structures. The whole was accented with Italian quattrocento detailing. When designing the Pantheon-like Madison Square Presbyterian Church (1903-6, demolished), White drew upon Early Christian and Byzantine sources, to suggest Protestantism, as Gothic sources were known for their long-standing association with the Catholic church (Fig. 84). White based his design for the Washington Memorial Arch (1889-92) in Washington Square on the triumphal arches of the Roman Empire (Fig. 85).[14] This emphasized the memorializing function of the arch and expressed permanence.

White considered architecture an urban, communal art, for the purpose of ornamenting the avenues and squares of a city. Both White and McKim stressed the ornamental and communicative role of architecture in a given urban context. They therefore emphasized the interrelationship between the external shell of a building and its urban surroundings. Ecole-trained doctrinaires, by contrast, emphasized the correspondence between a building's interior spaces and external volumes. McKim and White also viewed the massing of the exterior as the germinating concept of a design, as opposed to the ground plan, as taught by the Ecole. Ecole-trained contemporaries accused them of conceiving a building from the outside in, or worse, of stuffing a disordered set of interconnected spaces behind a deceptively simple, monumental facade. They pointed to McKim, Mead & White's Boston Public Library (1888-95) as an example of the tendency to design the exterior at the expense of the interior.[15]

When Gilbert joined the office of McKim, Mead & White at the top floor of 57 Broadway, the firm was already known for its studio atmosphere and policy of promoting collaboration among architects and artists. The young architects and their visitors, such as Augustus Saint-Gaudens, Francis D. Millet, and John La Farge, informally discussed an anticipated "renaissance" in American art. A.D.F. Hamlin's period of apprenticeship, which began in February 1882, overlapped Gilbert's. Joseph Morrill Wells, who joined the firm in 1879, was traveling in Europe when Gilbert arrived, but returned in April 1881. Wells then began his stunning and influential design for the facade of the Villard Houses (1882-86), based upon the Palazzo Cancelleria in Rome (Fig. 86). Well's design was a signal of the firm's increasing reliance on Roman and Renaissance precedent in subsequent work. After McKim and Mead toured New England in 1877, the firm also developed an interest in colonial architecture. According to Mead, this tour explained the firm's increasing interest in the classical past.[16]

During the early 1880's, McKim, Mead & White designed spacious resort buildings in a distinctive American style. The style combined Shavian and colonial sources with a picturesque, domestic tradition in wood, later called the "shingle style." These buildings included the Isaac Bell House (1881-83) in Newport and the Newport Casino (1879-81)(Fig. 87). The firm also designed city houses, including the Charles A. Whittier House (1880-83) in Boston, the Ross R. Winans House (1882-83) in Baltimore (Fig. 88), and the Charles L. Tiffany Houses (1882-85) in New York. In their planning, composition, and detailing, these houses resembled Henry Hobson Richardson's city houses in Boston, such as the Rectory for Trinity Church (1879-80) and the F.L. Higginson House (1881-83), which adjoined the Whittier House. The city houses combined elements of French chateaux architecture with Shavian detailing.[17]

While apprenticing with McKim, Mead & White, according to his early biographers, Gilbert worked on the Newport Casino and two rowhouses in New York, the J. Coleman Drayton House (1882-83) and the Charles T. Barney House (1880-82). He also purportedly assisted Stanford White in the design of the Winans and Tiffany houses, and assisted Wells in the design of the Villard Houses. It is certain Gilbert supervised the construction of some

of the firm's projects, including the Winans House and the alteration of a stable for Richard Watson Gilder, editor of Century Magazine.[18] Whatever his extent of involvement in particular projects, Gilbert was confined to residential commissions. The firm developed two distinct modes of design for such commissions, which corresponded to the given context. One was the informal "shingle style" for country houses and the other was a more monumental and urban chateau architecture for city houses.

In August 1882, Gilbert left New York to supervise the construction of the Ross R. Winans House in Baltimore, and returned briefly in December. In January 1883 he began practicing architecture in St. Paul. Personal and professional circumstances encouraged Gilbert's return to St. Paul. He felt responsible towards his family (his mother was ill) and he was impatient with the limitations of his subordinate role as a draftsman for Stanford White. St. Paul offered Gilbert a propitious environment in which to open a practice, due to its expanding population and potential client pool of family acquaintances and old friends.[19]

In St. Paul, Gilbert maintained close contact with McKim, Mead & White, viewing their practice as a model for his own. Initially, he acted as McKim, Mead & White's official representative in the West. In that capacity he supervised the construction of depots, boarding houses, and hospitals for railway workers along the segment of the Northern Pacific Railroad that ran between St. Paul and Tacoma, Washington. He designed details, wrote specifications for, and supervised construction of the Northern Pacific Beneficial Association Hospital (1882-83) in Brainerd, Minnesota. Gilbert suggested to Mead in June 1883 that the firm open a branch office in St. Paul, with the designs produced there to be credited to Gilbert. Mead expressed interest in the proposition. In January 1884 the Northern Pacific Railroad's president, Henry Villard, suspended the building program because of financial troubles, and Gilbert's scheme fell through. In the spring of 1884, Gilbert formed a partnership with James Knox Taylor, whose technical skills and administrative talents complemented his own as a designer.[20]

During his two decades of practice in St. Paul, Gilbert regarded New York as the preeminent center of architectural practice and maintained his Eastern orientation. His developing conservatism caused him to overlook the vitality of the Chicago scene in American architecture. He did not participate in the century's most significant regional development--the theoretical discussion and innovative design solutions for commercial buildings, later identified as the "Chicago school." He was not particularly interested in the formation of the Western Association of Architects in 1884 by Sullivan, Burnham & Root, nor in the Inland Architect, which began publication in 1883. As a designer, Gilbert viewed his task as transmitting the latest architectural developments in New York to the frontier of American civilization in St. Paul. Like Daniel Burnham after the death of John Wellborn Root, Gilbert attempted to transcend what he considered the limitations of his locale by strengthening his bond with the Eastern architectural establishment. Gilbert participated in the activities of the American Institute of Architects, serving three terms in the 1890's as president of the Minnesota chapter. He sent drawings to the annual exhibitions of the Architectural League of New York. He remained loyal to the American Architect and Building News, to which he submitted his drawings.[21]

In his projects for ecclesiastical, residential, commercial, and public buildings, Gilbert relied primarily upon conventions of design already established in the East, particularly those found in the ecclesiastical work of Richardson and the shingle-style resort architecture of McKim, Mead & White. Gilbert's St. Clement's Episcopal Church (1894-95) in St. Paul, for example, resembled Richardson's Grace Episcopal Church in the massing of its nave, tower, and entrance vestibule (Figs. 89, 90). Gilbert's designs for houses relied upon the same sources. The gable of a Cottage Park house he designed in 1893 recalled the broad, unifying gable of McKim, Mead & White's Low House (1887). When McKim, Mead & White became more rigidly academic in their application of colonial precedent and Beaux-Arts concepts of planning, as in their design for the H.A.C. Taylor House (1885-86, demolished) in Newport, Gilbert's designs for houses also became more symmetrical and reliant on abstract order. Gilbert & Taylor's Charles P. Noyes House (1889) in St. Paul strongly resembled the H.A.C.

Taylor House. Gilbert's design of the Endicott Building (1888-89), which contained an L-shaped shopping arcade, used the austere, refined and symmetrical palazzo prototype that Wells used for the Villard Houses. This prototype provided Gilbert the image of urbanity he thought appropriate for the heart of St. Paul's business district (Figs. 91, 86). Gilbert's use of the Chicago window in the second and third stories of the E.D. Chamberlain Building (1895) in St. Paul, however, indicated his acknowledgement of Chicago developments in commercial construction (Fig. 92).[22] He may have observed Charles Atwood's use of the Chicago window in D.H. Burnham & Company's Reliance Building of 1894.

As a student, Gilbert had resisted Lètang's attempts to control his designs through the discipline of Beaux-Arts compositional techniques. Receptive to changes in the architectural milieu of which he was a part, however, Gilbert embraced a monumental Beaux-Arts classicism in designs for major public buildings. He began receiving commissions for such buildings in the mid-1890's. The shift towards classical precedent by American architects was hastened in 1893 by the World's Columbian Exposition in Chicago. Even before the death in 1891 of the exposition's designer-in-chief, John Wellborn Root, Charles F. McKim had vigorously advocated the adoption of Roman and Renaissance precedent for the design of the exposition structures. The process of planning the exposition notably affected the subsequent work of participants, including Daniel Burnham and Richard Morris Hunt. Afterwards, Burnham turned to Roman and Renaissance precedent for the architecture of his City Beautiful proposals and for such monumental public buildings as the Union Station (1903-7) in Washington, D.C. Hunt employed a robust, Roman classicism in designing the entrance facade at the Metropolitan Museum of Art (1894-1902) in New York, which contrasted markedly with his authentic Beaux-Arts design for the Lenox Library (1870-75, demolished) in New York. Likewise, Gilbert's first built design for a major public building, the Minnesota State Capitol (1895-1905) in St. Paul, exhibited the same post-exposition tendencies and generally followed the example set by McKim, Mead & White's Rhode Island State Capitol (1891-1903) in Providence (Figs. 93, 94).[23]

Gilbert's partnership with Taylor ended in 1891. Shortly after the death of Root that same year, on Mead's advice, Gilbert pursued the possibility of joining Daniel Burnham as a partner. Mead had already counseled Gilbert in 1890 to leave the cultural backwater of St. Paul and go to New York or Chicago. According to Gilbert's account, Burnham offered him a position in 1892 as designer-in-chief of the World's Columbian Exposition in Chicago. Gilbert stated he would accept the position only as Burnham's partner in practice. Negotiations for the partnership began, but in the final hour Burnham chose Charles Atwood instead. Atwood had been recommended to him by Ware as both partner and designer-in-chief of the exposition. Gilbert played a minor role in the exposition as a member of the architectural jury in the Department of Fine Arts.[24] Although his partnership with Burnham never materialized, Gilbert's career was later influenced by Burnham's professional example as an architect-businessman, administrator, and architect-civic designer.

As Root's partner, Burnham made no secret of his dissatisfaction with a practice that concentrated on small-scale projects. According to Louis Sullivan's later account, Burnham wanted to "work up a big business to handle big things, deal with big businessmen, and to build up a big organization." Burnham's prodigious skill at engaging and directing the talents of others secured his position in architectural history. Gilbert unquestionably identified with the professional role Burnham played. Association between the two men continued until Burnham's death in 1912. After selecting Atwood as a partner in 1892, Burnham continued to seek Gilbert's advice on various matters. In 1907 Burnham solicited Gilbert's opinion on his preliminary ideas for the plan of Chicago. Burnham wrote to Gilbert in 1888, praising his design for the Endicott Building, and again in 1911, extolling his "most noble" Woolworth Building. In 1909 both Burnham and Gilbert were appointed to the Council of Fine Arts by President Theodore Roosevelt. In an obituary on Burnham written in 1912, Gilbert lauded Burnham's two major accomplishments--his supervision of the Chicago Exposition, "a great artistic triumph," and his guidance of the McMillan Commission in the development of a comprehensive plan for Washington. Gilbert characterized Burnham as the kind of individual who "would have been successful in any walk of life." Although Burnham was sometimes

"sophomoric in his extravagance of praise and adulation of a thing that appealed to his sense of beauty," he was also "direct" and "practical," a "man of affairs."[25] Gilbert might have used the same words to describe himself.

A number of Gilbert's contemporaries noted his unusual ability to combine art and business in architectural practice. Glenn Brown, the Washington, D.C., architect and historian, characterized Gilbert as a "rare combination of Executive and Artist." One of Gilbert's biographers marveled that he overcame the difficulty of "finding time to draw, while handling the business organization necessary to produce such designs and buildings." Another biographer found it "remarkable that one man working without partners could accomplish so much and do it so well." A British commentator surmised that Americans were attracted to "great 'executives'--men who are capable of daring enterprise," and thus to men like Gilbert. Gilbert became a "public hero," because he was an atypical architect skilled in "directing all the forces of production combined" towards a building's making. Gilbert was also known for his ability to sell his professional services. Many of his new commissions resulted from his ability to persuade prospective clients. According to his contemporary, Edgarton Swartwout, Gilbert was careful not to talk over their heads.[26]

Both Burnham and Gilbert strove to enhance the professional standing of architects. To this end, each contributed his administrative skills and support to the American Institute of Architects. Burnham was elected president of the A.I.A. in 1893 and 1894. While in office, he campaigned to raise professional ethics and standards and urged rapid implementation of the Tarsney Act, passed by Congress in 1893, which required architectural competitions for major federal building projects. Gilbert was elected a fellow of the A.I.A. in 1892, served as a member of the Institute's Board of Directors and as its vice-president, and was elected president in 1907 and in 1908. As president of the American Institute of Architects, Gilbert sought to increase the professional authority and the financial stability of the Institute. He developed codes governing fee schedules, ethical conduct, and competitions, and voiced the Institute's

firm commitment to scholarship, research, and education. Although legal victories of Richard Upjohn and Richard Morris Hunt had advanced the professional standing of architects Gilbert continued the struggle to win adequate fee schedules. In 1908 the Institute voted in favor of a fee schedule with a five percent minimum, but after a "pep talk" by Gilbert in 1909 the minimum was raised to six percent. Gilbert applauded signs of increased public recognition of architects. These signs included the Tarsney Act, the licensing of architects in some states, and the hiring of architects by local civic improvement associations and municipal authorities. To curb the Institute's longstanding financial difficulties, Gilbert advised an increase in dues and the creation of an Institute reserve fund.[27]

Gilbert strengthened his alliance with McKim, Mead & White and with Daniel Burnham by supporting the American Academy in Rome. Both McKim and Burnham realized that their shared vision for the future of American architecture would be accomplished in part through the appropriate training of young architects and artists. When he began organizing the American Academy in Rome in 1894, McKim appealed to Daniel Burnham for assistance, as well as Daniel Chester French, Augustus Saint-Gaudens, and John La Farge. The American Academy in Rome opened its doors to architects in 1895, largely through the efforts of McKim and Burnham. Painters and sculptors began attending in 1897. McKim and Burnham aimed to promote a collaborative spirit among architects and artists that would reproduce the kind of atmosphere that had created a synthesis of artistic effort at the Chicago Exposition.[28]

By the turn of the century, the American Academy in Rome was regarded as an alternative to the Society of Beaux-Arts Architects, founded in 1893. The Society of Beaux-Arts Architects had organized a system of American ateliers in which students could pursue an authentic Beaux-Arts architectural education, as an alternative to a less rigorous Beaux-Arts-influenced university education. McKim, on the other hand, intended the American Academy in Rome to be equivalent to the French Academy in Rome. His goal was to directly introduce American students to the fountainhead of classical architecture, to avoid the Parisian

interpretation of the classical tradition. McKim and Burnham became the Academy's lifelong benefactors. By 1905, Gilbert had officially joined their cause. At that time, he assisted McKim in obtaining a national charter for the Academy, which secured recognition of the institution by the federal government. He also encouraged the cooperation of Italian officials and gave the Academy financial support.[29]

When he moved his office to New York in 1899, Gilbert securely belonged to a group of architects who believed in adapting Beaux-Arts methods of design to American conditions in order to create a native version of Beaux-Arts architecture. This group of American architects, many of whom had actually studied at the Ecole, opposed the Society of Beaux-Arts Architects and the "French school," or unmediated importation of French practice. Led by McKim, Mead, White and Burnham, the group shared participation in the Columbian Exposition and support for the American Academy in Rome. The scholar and critic, A.D.F. Hamlin, for the most part, agreed with their point of view.

Like Gilbert, Hamlin had studied with William Robert Ware at M.I.T. Ware supported the position that American architecture would advance by adapting and modifying the educational traditions of the Ecole, including its professionalism, drawing technique, and principles of composition. Ware's outlook was influenced by his apprenticeship with Richard Morris Hunt, whose work exemplified the integration of an Ecole training with American design concerns. Moreover, Ware thought that the French system was limited by an overemphasis on technique, and strove to make students aware of the impact of social and cultural factors on architecture. Hamlin absorbed this perspective, and before entering the McKim, Mead & White office, he attended the Ecole des Beaux-Arts in Julien Guadet's atelier between 1878 and 1881. While Hamlin's writings reflected Guadet's general theoretical outlook, Hamlin tailored this outlook to fit the characteristics of American architectural thought and practice at the time, just as Ware, McKim, and Gilbert modified Ecole methods to fit the requirements of American building. After his apprenticeship with McKim, Mead & White during the period 1882 to 1883, Hamlin began teaching at the new department of architecture in Columbia College's School of Mines. In

1903 he replaced Ware as director of the program. At Columbia, Hamlin invited local practitioners, including Gilbert, to speak on topics concerning architectural practice.[30]

Hamlin regarded the architecture of the "French school" as a "new and pernicious" influence affecting the practice of Ecole-associated American architects during the 1890's. According to Hamlin, the French influence was characterized by a "negation of restraint" and a substitution of "rank ugliness" for "classical proprieties." Such an assessment was certainly based on Hamlin's observations of the practice of American architects who attended the Ecole in the 1890's. Before the 1890's, Hamlin had believed that the Ecole had a positive influence on American architecture. Richard Morris Hunt and Henry Hobson Richardson had viewed its teachings as a groundwork on which to develop a distinctively American architecture. American architecture had come into its own with the opening of the Centennial Exposition in 1876 and had steadily evolved. In Hamlin's view, the architects returning from Paris in the 1890's, such as Ernest Flagg, had unfortunately been seduced by the "false glamour" of a "cartouche architecture" and were attempting to transplant it into an American environment, to which it had little relevance. Flagg, along with Thomas Hastings, John M. Carrère, William A. Boring, Edward T. Tilton, E.L. Masqueray, and Walter B. Chambers, formed a loose association as members of the Society of Beaux-Arts Architects.[31]

Hamlin's assessment of the "French school" was shared by Montgomery Schuyler, McKim, and Gilbert. In 1898 Schuyler wrote that the "specially French form" of the "classic revival" had resulted from the "zealous propaganda" of recent graduates of the Ecole des Beaux-Arts. These architects had attempted to import forms that were the product of a "long foreign tradition," and to literally reproduce them in America. According to McKim's biographer, Charles Moore, McKim never liked "modern French taste" and felt a greater affinity for Rome than for Paris. The architect Donn Barber noted that although McKim had studied at the Ecole, he refused to "sanction the spread of the so-called Beaux-Arts influence in this country." McKim believed that the Society of Beaux-Arts Architects, through its system of training, encouraged the abandonment of American

circumstances, and spawned buildings even uglier than their French counterparts. To rescue American architecture from the infringement of foreign taste, McKim had not only established and supported the American Academy in Rome, openly opposing the French school, but had endowed a scholarship program at Columbia University for Italian study.[32] Gilbert believed that the basic principles of architectural design in the Ecole tradition, adapted by Ware for architectural education at M.I.T., were relevant for American architects. Like McKim, however, Gilbert had little sympathy for unmodified contemporary Ecole doctrine and aesthetics.

> ...the training that is desirable for France is not always usable in America. Their principles, planning, and composition are of the highest value, but in matters of taste, that is to say sheer beauty, I feel there is much to be desired in the French school.[33]

Hamlin's position as a Guadet-influenced scholar and theorist was echoed in Gilbert's point of view as an architect. Hamlin emphasized composition in his theoretical writings. However, he did not view the plan as the generating source of a composition, like Guadet. Hamlin gave equal weight to the composition of a building's plan and to its exterior. Gilbert also saw the composition of a building's exterior as an "outgrowth" of its plan, but did not stress the primacy of the plan per se. Further diverging from Guadet's theoretical position, which did not consider style at all, Hamlin saw the historical styles as a means of giving "body" to a composition based on a given program. In a similar fashion, Gilbert viewed the appropriation of motifs from the historical styles as a means of infusing a composition with color, texture, and detail.[34]

Hamlin explained Gilbert's attitude towards the historical styles in his 1892 essay "The Battle of the Styles." Hamlin observed that the practice of some of the most experienced architects had become dominated by the influence of a single historical style. He also noticed that a number of societal forces mitigated against the grounding of current design on a single source of precedent. Such forces included the divergent tastes of clients, changes in techniques and processes of construction, and the proliferation of a wide variety of building programs. In light of these forces, Hamlin argued that one source of precedent could not be universally adopted. Hamlin proposed the use of different kinds of precedent for

different classes of work.[35] Gilbert utilized this design strategy, but did not apply it universally. Gilbert often adopted a historical style to suggest the purpose of a proposed structure, for example, Italian Renaissance for the St. Louis Public Library (1906-8), Tudor Gothic for the Union Theological Seminary competition project (1907), and "colonial" for the Waterbury, Connecticut, City Hall (1913-15)(Figs. 95, 96, 97). However, Gilbert did not consistently coordinate specific historical styles with specific architectural programs. In his choice of a source of precedent, Gilbert often responded to the particularities of patronage and to the distinctive characteristics of the proposed building's setting.

Both Hamlin and Gilbert thought that architects should modify architectural tradition, as codified in the historical styles, to develop a modern architecture. Hamlin believed architects should resist invention, which would be "disastrous" for design. Instead architects should adapt received historical precedent according to patterns that matched stylistic developments in history. Hamlin's notion of progress in architecture was influenced by Guadet's belief that modern architecture should respond to modern building conditions and respectfully acknowledge tradition. Gilbert also endorsed this theory of architectural progress. Technological changes, such as the discovery of electricity and the invention of new processes for producing steel, had dramatically transformed building practices. However, according to Gilbert, the art of architecture could not be expected to keep pace with material change. Instead, architecture should record the complexity and spirit of the civilization that produced it, while acknowledging the lessons of the past. Gilbert justified his point of view with the argument that the natural laws of evolution governed change in language, art, and science. The case of language provided an especially vivid analogy. Just as new words are added to the body of a language to express new meanings, so new forms are added to the repertoire of architectural precedent to meet new requirements.[36]

Advocate of the City Beautiful

For Gilbert, no clear boundary existed between architectural design and urban design. His integrated, predominantly aesthetic vision included the decoration and design of public buildings, the grouping of public buildings in urban settings, and large-scale planning. At the turn of the century, the involvement of American Beaux-Arts architects with urban issues was variously isolated, piecemeal, or comprehensive. McKim, Mead & White were constantly mindful of the interrelationship between a public building and its urban setting. They strove to create a sense of hierarchy within an existing urban fabric by inserting monumental structure and space, as in the Pennsylvania Railroad Station (1902-11) in Manhattan (Fig. 98). They also developed urban settings appropriate to the design of public buildings, as in the Boston Public Library (1887-95) in Copley Square (1888)(Fig. 99). To call attention to an institution, they used a striking and unified arrangement of public buildings, such as the urban campus of Columbia University (1892-1901)(Fig. 100). As designers in an environment that pretended public interest, but was governed by private demands, McKim, Mead & White chose to embellish the city in isolated places with ornamental structures. Moreover, they chose not to become involved in nationwide civic improvement efforts. Daniel Burnham, on the other hand, engaged in comprehensive planning, while other architect-civic designers, including Gilbert, John M. Carrère and Arnold Brunner, took the piecemeal approach. Rather than attempting to mold the entire fabric of the city, they planned their endeavors as related civic design problems, according to the wishes and demands of local civic associations, municipal art commissions, and business groups or clubs. Unlike some of his more progressive contemporaries, such as George B. Post and Ernest Flagg, Gilbert was not concerned with social welfare. He opposed the implementation of height restrictions in New York. He was uncharitably disinterested in improving living conditions for the socially disadvantaged, or in developing plans for model tenements.

After the 1893 World's Columbian Exposition, Gilbert played a central role in the development of the Renaissance-inspired ideal of artistic collaboration between architect and artist. His designs for the Minnesota

State Capitol (1896-1904) in St. Paul and the United States Custom House (1899-1905) in New York incorporated mural painting, sculpture, and other ornamentation according to a predetermined decorative program. In this he followed the fashion of earlier noteworthy public buildings, including Boston's Trinity Church (1876-79), the Boston Public Library (1887-1895), and the Library of Congress (1873, 1889-98) in Washington, D.C. Gilbert turned to history to support his argument for artistic collaboration.

> In art there should be no "specialists," or at least the lines of subdivision should be very slight. In the old days, the architect, painter, and sculptor were frequently one and the same man. There is no reason why this should not be so now.[37]

Gilbert also turned to history to support his argument for public art. Echoing Robinson's concept of "municipal evolution," he asserted that citizens typically demanded art once a community overcame "the sordid struggle for existence" and reached a "position of moderate prosperity." According to Gilbert, after a community became prosperous, it had a "natural desire" to "express its ideas through artists" and to receive "impressions" and "instruction" from art. Gilbert cited numerous historical examples of this phenomenon, including the public buildings of ancient Rome, the Gothic cathedrals, the palaces of the Renaissance, and recent public buildings in France. A.D.F. Hamlin, who chaired a Municipal Art Society committee on the decoration of public buildings, shared Gilbert's view that sculpture, painting and architecture should be cultivated together. Hamlin identified the Renaissance and other "great epochs" as times when architecture reached the "supremest heights of achievement," and the arts of painting and sculpture were used to "embellish and glorify the work of the builder."[38]

Gilbert's participation in the National Academy of Design certainly affected his perceptions of the relationship between the decorative arts and architecture, and strengthened his commitment to the collaborative ideal. After Charles F. McKim, Gilbert was the second architect to be elected as an academician, in 1908. Founded in 1825 as an organization directed by artists, the National Academy of Design offered instruction in art and exhibited contemporary works. After the Chicago Fair, it established an institutional goal of supporting the collaborative

ideal--the integration of architecture, mural painting, and sculpture in the design of public buildings. The Academy had expanded its definition of the arts to embrace architecture. After the turn of the century a new category of membership was created for architects. Besides Gilbert, architects elected to the Academy prior to World War I included William R. Mead, John Carrère, Thomas Hastings, Henry Bacon, George B. Post, John Russell Pope and Walter Cook. The architects consulted the Academy's painters and sculptors when they received commissions for public buildings requiring unified decorative schemes.[39]

Collaboration between architect and artist on a major project first took place in the design and construction of Trinity Church (1872-77), when Henry Hobson Richardson enlisted John La Farge to execute its mural and decorative paintings (Fig. 101). Both French-trained, Richardson and La Farge shared the Ecole des Beaux-Arts idea of unifying the arts. In the 1880's, after completion of the Trinity Church, the movement to decorate secular public buildings gathered force. When McKim, Mead, & White were commissioned to design the Boston Public Library in 1887, decorative public art played a conspicuous role from the project's inception. The firm engaged mural painters and sculptors trained in the classical tradition. McKim also developed a new plan for Copley Square (1888) that included a Roman fountain. Imbued with a Renaissance spirit, the collaborative concept initiated by Richardson was extended to a civic dimension (Figs. 99, 102). The turning point in the American development of the collaborative ideal, however, was the World's Columbian Exposition of 1893, the staging on a grand scale of the first consolidated artistic effort by architects, painters, and sculptors. Organized by Daniel Burnham, with Charles Atwood (architecture), Augustus Saint-Gaudens (sculpture), and Francis D. Millet (painting), the exposition stimulated a latent public enthusiasm for the unified artistic effort.[40]

Richard Morris Hunt's pyramidally composed Administration Building commanded the Court of Honor as the Fair's most prominent structure. As the chief edifice and the vestibule for visitors arriving by train, it was thoroughly bedecked with art, celebrating the concept of the collaborative ideal (Figs. 103, 104). The building's decorative program combined the

Fair's themes of cultural progress, scientific and industrial progress, cosmopolitanism, and the triumph of civilization over primitive nature. The octagonal interior displayed lavish color, amplified by a flood of light from an oculus fifty feet in diameter, which pierced the apex of the building's ribbed outer dome. At the ground story, roundels in the spandrels of eight large arches identified the nations represented at the Fair. At the attic story, a series of panels recorded events in world history. At the top of the drum, a frieze displayed the names of discoverers and inventors; and above it, at the base of the dome, a row of medallions with female portraits represented the world's different races. The outer dome was ornamented with W.L. Dodge's "The Glorification of the Arts and Sciences," in which an enthroned Apollo paid tribute to eminent artists, scientists, and war heroes. The building's exterior sculpture was conceived by Karl Bitter to convey the theme of mankind's progress from barbarism to civilization. Allegorical sculptures articulated the corners of the main story's four square pavilions and flanked the domed circular pavilions at the corners of the Ionic loggia. The sculptures illustrated such ideal themes as "Peace," "Liberty," and "Art," but also themes that today lack such noble meanings, including "Commerce" and "War." At the building's entrances stood highly animated sculptural groups portraying man's struggle with and domination over the natural elements.[41]

The program of decoration for the Library of Congress in Washington, D.C. (1885-98) was regarded as the largest, most elaborate, and most complex of any public building completed after the Chicago Fair. This permanent building showed a wide public audience the formal and didactic possibilities of the collaborative ideal (Fig. 105). Although the original design did not provide for sculptural or mural decoration, in 1895 funds were appropriated for a decorative program. The decoration of the library was supervised by the architect Edward Pearce Casey, who had worked for McKim, Mead & White and attended the Ecole des Beaux-Arts, and by the muralist Elmer Garnsey, who had painted at the Chicago Fair. The library's mural paintings, sculpture, and decoration, executed by forty-eight artists, joined the Boston Public Library's theme of learning with the Fair's themes of cosmopolitanism, nationalism, and cultural progress. The art represented the library as the storehouse of world culture, and

learning as the basis of a stable and strong civilization. The building's main facade displayed the allegorical figures "Literature," "Science," and "Art" in the spandrels of its projecting entrance pavilion, executed by Bela Pratt, who had completed similar figures for the Boston Public Library's exterior. The colonnade of the second story, conceived by Herbert Adams, Frederick Ruckstull, and J.S. Hartley, had busts of eminent men of letters, such as Demosthenes, Emerson, Goethe, Hawthorne, and Dante. A series of thirty-three ethnological heads, sculpted by William J. Boyd and Henry Ellicott, formed the keystones of the first story windows (Fig. 106). The masks betrayed a passion for classification, a consciousness of an emergent American identity, and an assumption of Anglo-Saxon cultural superiority. European physiognomies were represented at the main entrance and African and Indonesian types at the back.[42]

The plan of the library was organized around a tall octagonal reading room (Figs. 107, 108). In this monumental, central public space, where the patron first encountered the book, the sculpture and painting reinforced the didactic themes of the exterior. More importantly, the art impressed upon the spectator the presence of a purposeful compilation of human knowledge. Bronze statuary portraying the great thinkers, such as Augustus Saint-Gaudens' Homer, Daniel Chester French's Herodotus, and Frederick MacMonnies' Shakespeare, stood on pedestals encircling the parapet level, gazing outward upon the space. At the apex of the dome, "The Evolution of Civilization," painted by Edwin H. Blashfield, surrounded the opening below the lantern with a collar of allegorical figures (Fig. 109). The figures represented a chronology of the world's cultures and their individual contributions to civilization, beginning with Egypt and, in keeping with the ubiquitous and ardent nationalistic spirit, ending with America.[43]

While the Library of Congress was in progress, Cass Gilbert designed the Minnesota Capitol (Fig. 110). The Minnesota Capitol was the first major public building erected after the Chicago Fair in which the decorative program was supervised by the designing architect. After winning the competition for the building in 1895, Gilbert convinced the Board of State Capitol Commissioners to allocate funds for a unified scheme of mural and sculptural decoration, to be executed by prominent New York

artists. Impressed by the decoration of the Chicago Fair's buildings, the Board was receptive to Gilbert's idea. They requested murals portraying the settlement of the Northwest and its growth in agriculture, manufacturing and commerce. The capitol's dome was modelled on the dome of St. Peter's in Rome. The projecting entrance pavilion was adapted from the triple-arched facade of Richard Morris Hunt's entrance wing at the Metropolitan Museum of Art. The wings were based on Jacques-Ange Gabriel's buildings for the Place de la Concorde. Renaissance elements and details were inspired by McKim, Mead & White's Rhode Island State Capitol. The skillful assemblage of these elements, however, and the subtle manipulation of proportions in the whole composition were strictly Gilbert's contributions. These features, along with the exterior of white Georgia marble and the allegorical art depicting progress in the Northwest, linked the capitol to the Chicago Fair's ideal of the decorated public building. At the attic level of the entrance pavilion six statues by Daniel Chester French represented the six virtues believed to promote good citizenship and the advancement of the state (Fig. 111). A gilded quadriga located on top of the pavilion, French's "The Progress of The State," showed a figure representing prosperity, carrying a horn of plenty and a banner displaying the state symbols. Prosperous Minnesota was guided by horses (nature) and two female figures (civilization)(Fig. 112).[44]

Gilbert had already experimented with variegated marbles in the arcade of the Endicott Building in St. Paul, but in the Minnesota State Capitol's interior, he developed a color scheme incorporating the texture and color not only of stone and marble, but of mural and decorative painting as well. In the rotunda, on a buff-colored base of local Kasota stone, Gilbert layered exotic marbles to highlight the columns, pilasters, walls, and the entablature. In the central corridor and stairhall, his polychromatic treatment with assorted types of marble created a scintillating vista across the building's vast interior through its open, central rotunda (Fig. 113). Allegorical mural painting in the building's major public and ceremonial spaces augmented the vibrant display of marble. In the rotunda's pendentives, Edward Simmons painted four panels portraying "The Civilization of the Northwest," which showed a young pioneer progressing towards prosperity, guided by two female figures representing hope and

wisdom (Fig. 114). In the Senate Chamber, Edwin H. Blashfield painted "The Discoverers and Civilizers Led to the Source of the Mississippi" and "Minnesota, the Granary of the World." For the Supreme Courtroom, John La Farge created four murals illustrating the theme of justice. To Minnesotans the new capitol and its program of decoration represented the arrival of culture in the Midwest. One writer noted that Minnesota had "placed herself first among the states of the Union in point of art," while other states remained in "the Egyptian darkness of inartistic capitols." According to Kenyon Cox, the new capitol could "hardly fail of a great influence on the artistic education of the West."[45]

Although the themes of the decorative program for the Minnesota Capitol may seem naive and trite by today's standards, they fulfilled the objectives of the Capitol Commissioners and captured the public imagination. Moreover, the capitol showed off Gilbert's skill in creating an identity for a powerful institution through the coordination of art and architecture, an identity that cogently expressed the institution's place in social and economic life. Gilbert received a second, more compelling opportunity to define an institutional image when he won a commission to design the United States Custom House in New York. This was a major federal building to be located on a prominent urban site. Gilbert got the Custom House commission in 1899 immediately after his arrival in New York when he won, somewhat controversially, a competition for the building's design. Located at the tip of Manhattan Island, on the axis of lower Broadway facing Bowling Green, the building had a weighty and bombastic Beaux-Arts facade with "modern French" detailing (Fig. 115). The facade recalled in its siting, proportions, and in the placement of its sculptural groups and statuary the facade of Charles Garnier's Opéra (1862-75) in Paris.[46] One of the challenges of the design, as Gilbert viewed it, was to create a building that would appear monumental, despite its siting amidst the giant skyscrapers lining both sides of lower Broadway and the pressing spatial demands of its program:

> It appears to me most desirable that this building, located upon a conspicuous site, at the beginning of the greatest street in the world; at the entrance of the greatest port of our country, should be given a serious and dignified style; and that the scale should be large, even grandiose, while not attempting to compete in height with the towering structures nearby. It should be so impressive by reason

> of the majesty of its composition, rather than its actual size, that it should be truly a monument. It has been my sincere effort to produce such an effect without sacrificing the use and practical necessities of the structure.[47]

The Custom House was organized around a vast, oval rotunda recalling the rotunda of its former quarters on Wall Street (Figs. 116, 117). Elevated twenty feet above the street with access from Bowling Green by way of a monumental stair and vestibule, the rotunda set the stage for the principle activity of the institution--the complex financial transactions required to clear goods for entry through the port of New York. Besides the main entrance, Gilbert provided two subsidiary entrances at grade level, connected by a broad transverse corridor that joined State Street with Wall Street.[48] The Custom House facade took on a scenographic character unprecedented in earlier, comparable designs for public buildings. This was because of its siting at the terminus of lower Broadway in the midst of the densely built up and crowded financial district. Acutely aware of the building's setting, Gilbert exploited the facade's visibility to present to the urban spectator the institution's image.

By the turn of the century, the port of New York controlled over half the total volume of the nation's foreign trade. Customs departments supplied one fifth of the federal treasury's income. Gilbert thought his design should do more than announce the purpose of the Custom House as the institution that registered the value of the world's goods arriving by sea. It should also convey the hegemony of the United States in world trade and the contribution of the port of New York to the nation's emergence as a commercial power. Gilbert believed the building's adornment provided the vehicle for conveying these messages. The decorative program of the interior would "illustrate the commerce of ancient and modern times, both by land and sea...." It included a group of scenes depicting world ports, painted by Elmer Garnsey for the collector's office, and the names of famous explorers ringing the skylight in the rotunda. The sculptural program of the main facade expanded the theme of world trade (Fig. 118). At the base, "four great seated figures" by Daniel Chester French represented "the four great continents" that contributed to the "commerce

of the world"--America, Europe, Asia and Africa. In the attic story, twelve figures by various sculptors, including Frederick Ruckstull and Louis Saint-Gaudens, portrayed in historical sequence "the great commercial nations of the world." Crowning the facade, an ornamental shield of the United States supported an American flag visible from the water, flanked by two female figures sculpted by Karl Bitter. In its minor details, also, the Custom House's exterior alluded to global commerce and the sea. Granite capitals designed by Gilbert showed the head of Mercury and a winged wheel, representing commerce and transportation respectively. Ethnological heads resembling those at the Library of Congress, carved by Vincenzo Alfano after designs by Gilbert, formed the keystones of the first story windows (Fig. 119). Ornamental motifs suggesting the sea included dolphin's masks, tridents, and conventionalized waves.[49] The encyclopedic array of continents, nations, and races in maritime history was dominated by the shield and flag of the United States, again reflecting the spirit of ardent nationalism that had emerged in earlier decorative programs.

The construction of Gilbert's Minnesota Capitol and United States Custom House strengthened the commitment of architects and artists to promote didactic art in the embellishment of public buildings. Their consensus had been presaged by New York's art and architectural societies founded in the nineteenth century. The National Sculpture Society was created in 1893 to "encourage the production of ideal sculpture", and to "promote the decoration of public and other buildings, squares, and parks with sculpture...." Likewise, the National Society of Mural Painters was organized and incorporated in 1895 to "promote the delineation of the human figure in relation to architecture." By the turn of the century, the Architectural League of New York, reorganized in 1886 and incorporated in 1888, considered its central purpose "the promotion of architecture and the allied fine arts" and of the "essential alliance" between the decorative arts and architecture. The League required that an architect serve as president, a mural painter as one of the vice-presidents, and a sculptor as the other. All three organizations took responsibility for the education of potential patrons of public art in New York, principally through the regular sponsorship of exhibitions.[50]

In 1895 the Fine Arts Federation of New York had called for "united action" by New York art societies in all "matters affecting their common interests" and the "artistic interests of the community." Two years later, Frederick Stymetz Lamb called upon architects, sculptors, and painters to consolidate their efforts in raising the aesthetic standard of New York City, better known as a manufacturing center than as an art center. By 1898, the National Sculpture Society, National Society of Mural Painters, and Architectural League of New York had joined the Municipal Art Society in assuming an active role in civic improvement efforts. That year, to address issues of urban beautification, the Architectural League of New York established a Committee on Municipal Improvements, chaired by the New York sculptor, H.K. Bush-Brown. The art and architectural organizations formed alliances with the Merchant's Association of New York, the New York Board of Trade and Transportation, the Manufacturer's Association of New York, and the American Society of Civil Engineers.[51]

The efforts of the New York art and architectural societies led to a preliminary plan for the civic improvement of New York. The Municipal Art Society submitted the plan to Mayor Seth Low in 1903, and as a result the New York City Improvement Commission was formed in 1904. The report that accompanied the plan urged the proper arrangement and decoration of public buildings, which "should have not only consistent architecture, but should have as well their sculptural and mural decorations selected with reference to the purpose for which the building was created and the historic interest of the section in which it is placed."[52]

The New York art and architectural societies worked to foster a spirit of artistic collaboration, to develop a system of patronage, and to enlighten a potential public audience. At the same time, new avenues opened in the education of architects, painters, and sculptors, based upon the premise that painting and sculpture should complement architecture. In the second half of the nineteenth century, the curriculum of the Ecole des Beaux-Arts and other French art schools emphasized the relationship of painting and sculpture to architecture, and each discipline's contribution to the enhancement of civic beauty. By the 1880's, American painters had begun to move away from the eclectic sources they drew upon and towards the

abstract order represented in Italian Renaissance prototypes. They also admired the murals of Puvis de Chavannes, particularly those in the Pantheon and the Sorbonne, which exhibited the neoclassical tendencies in European decoration. At the turn of the century, the American Academy in Rome was training a second generation of sculptors and mural painters with architects. The National Academy of Design in New York also trained painters and sculptors, basing its curriculum on the Ecole des Beaux-Arts and the Royal Academy School in London. Despite their interest in Italian Renaissance precedent and Beaux-Arts influences, American painters developed individual techniques that responded to American requirements. They saw their adaptation and modification of received traditions as evolutionary, much like change in the history of art itself.[53]

At the turn of the century the architect was regarded as the "creator of a whole" by sculptors and muralists. The patron gave the architect responsibility for developing the building's painting and sculpture program. The program presented the spectator with an orchestrated set of messages, often variations on a theme. The subject matter of the art, however, was viewed as less important than its decorative function. Although the artists responsible for decoration were expected to suggest appropriate subject matter, muralists had to compose their pictures with the architectonic configuration of the room in mind, and sculptors had to respect a building's external composition. In mural painting, commonly held strictures assured that the artist's work remained decorative. Murals should lack perspective and reinforce their hierarchical relationship to the building as a whole through their composition, color, and scale. Gilbert upheld this code. He emphasized that the composition of a mural, an "arrangement of color and form composing a consistent design," should be controlled by the architecture of the interior space in which it was executed.[54]

Advocates of the embellishment of public buildings understood the social ramifications of their efforts. They believed, quite simply and perhaps naively, that they would transform the quality and character of urban life through art. According to Charles Mulford Robinson, public buildings provided the "truest reflection of the people." City halls,

courts, and churches were the "people's houses." A.D.F. Hamlin thought decorative art should respond to a latent capacity for the ideal deep in American nature, by expressing such themes as truth, patriotism, and altruism, or by recording great thoughts and deeds. Once realized and appreciated, public art would cogently express "the character and the aspirations of the people." The sculptor and mural painter Frederick Stymetz Lamb viewed the art of the public building as a vehicle for the "art education" of the citizen. Accessible to all social groups, and not just an elite, public art would reduce ethnic tensions and class conflict through a "humanization" of the masses. For Lamb, "social reform" and "municipal art reform" were interchangeable concepts. The mural painter Edwin H. Blashfield viewed public art as democratic, the "property of all men."[55]

A few observers assessed the popular reaction to decorative programs in public buildings. Russell Sturgis pointed out that the Library of Congress, with its mural and sculptural adornments, had become a "sightseeing attraction." The sculptor H.K. Bush-Brown called the library one of the major sights in Washington. Barr Ferree judged architectural sculpture the "most public of the arts." People responded more readily to sculpture than to the other arts and the sculptor's audience was thousands of people in the stream of everyday life. Ferree, however, noted a need for a greater appreciation of sculpture by the general public. The spectator's actual comprehension of the period's programs of decoration is unknown today. Historical and allegorical subjects were used in pageants, increasing public knowledge of them. Prominent pieces of symbolic sculpture, such as the Statute of Liberty, became enshrined in the public imagination. Nevertheless, advocates of decorative art probably never fully evoked the desired public response to social goals.[56]

Those who promoted the collaborative ideal in the decorative programs of public buildings did not object to imitation by private commercial concerns. Robinson thought that the private demand for embellishment, indicated by the appearance of sculpture on commercial structures, served to strengthen the aims of civic art advocates. Blashfield argued that the historical patrons of public decoration, such as the artisans, magistrates,

and merchants of Athens, Florence, Venice, Bruges, or Nuremberg, had their counterparts in the contemporary American city. The library was thematically treated as an "intellectual resource" and the town hall as the "heart of the people." By the same token, building types associated with commerce, such as a bank, clearing house, or exchange, could be represented with programs depicting the history of trade. America had many opportunities for celebrating the "spirit of progress" with art, including an untapped potential for commemorating the modern corporation's industrial or commercial achievements. In 1904, Charles M. Shean, president of the National Society of Mural Painters, applauded the mosaic decoration and mural paintings in two unnamed office buildings in New York's financial district. Such buildings, he asserted, offered good locations for murals portraying the history of the types of commerce conducted by institutions they housed. Gilbert was silent about the possibilities of public art for transforming social life. He did not hesitate to say, however, that the main purpose of public art was "to record the history of our country, express the importance of its commerce, its industries, and to put in visible form its aspirations for the finer things in life."[57]

The opulent and monumentally-scaled lobbies of the Singer and Metropolitan Life buildings did not contain decorative programs with allegorical subjects. They were nevertheless responses by private concerns to the objectives of civic art advocates. Like the ornamental towers constructed by each company, the lobbies not only forged an identity for each institution, but also improved its relationship with the public. The composition of the Metropolitan Life Building's lobby, entered from Madison Avenue, was dominated by a monumental stair (Fig. 120). The lobby resembled a scaled-down version of Charles Garnier's Paris Opéra lobby, with Italian Renaissance detail instead of the Opéra's sumptuous and inventive ornamental scheme. Executed in marble, the lobby complemented the building's exterior. The Singer Building's lobby extended from the Broadway entrance past a row of elevators to a rear staircase (Fig. 121). It contained rows of marble-encased piers spanned with a series of open saucer domes. The Singer lobby's elaborate, light-colored ornamental scheme recalled the architecture of the Universal Exposition in Paris

(1900) and extended the building's "modern French" detailing to its interior.[58]

The lobbies of office buildings became increasingly luxurious after the turn of the century, but even the highly ornamented lobbies of the West Street and City Investing buildings were mere corridors, compared to the grand monumental spaces of the Singer and Metropolitan Life buildings (Figs. 122, 123). Writers and critics viewed such displays of extravagance as contributions to urban beautification by private interests. In his 1893 handbook of New York City, Moses King concluded that the lobby of the Metropolitan Life Building eclipsed all other lobbies in commercial buildings, and that such status had earned it the "gratitude of all art-lovers." A few years later, Barr Ferree observed that its "sumptuousness of effect" was equalled only in the "palatial architecture of Europe." Its creation was a monument to the public appreciation of art in business buildings and to the fortunes of modern merchants. In 1905 the Metropolitan Life lobby was still regarded as "one of the finest...in this country." Montgomery Schuyler thought its "clear showing that the richness of material was required by the design..." rescued the lobby from a "taint of vulgarity." "There is nothing which smacks of what the scorner of preciosity describes as 'early Pullman or late North German Lloyd.'" When presented with a comparable opportunity to design a lobby, Barr Ferree advised the architect to make it both luxurious and splendid, like the Metropolitan Life lobby.[59]

Given his record of active involvement in the Architectural League of New York, it is almost certain that Gilbert followed civic improvement activities in New York, particularly after his arrival there in 1899. As previously mentioned, Gilbert was an original founder of the Architectural League of New York during his apprenticeship with McKim, Mead & White. He continued his association with the League throughout his many years of practice in St. Paul, as indicated by his submissions of drawings to their annual exhibitions. Gilbert rejoined the League upon his return to New York, and became its president in 1913. The League's official purpose had by then become "the promotion of architecture and the allied fine arts."[60]

Gilbert became increasingly visible in nationwide efforts to promote the City Beautiful. In 1899 the Architectural League of America, an umbrella organization for the architectural societies of various cities, appointed a National Committee on Municipal Improvement and Civic Embellishment. The committee was comprised of nine individuals with Cass Gilbert as chairman. Its membership--comprised of architects, sculptors, mural painters, and writers--included Charles Mulford Robinson and H.K. Bush-Brown. Bush-Brown was also chairman of the Committee on Municipal Improvements for the Architectural League of New York. The National Committee considered itself an advisory team, which would travel to cities and provide advice on beautification matters.[61]

Gilbert also played a central role in the creation of the Commission of Fine Arts. For a decade, professionals had lobbied for a council to ensure the development of Washington, D.C. in accordance with the McMillan Plan. Gilbert addressed this issue in 1908 at the national convention of the American Institute of Architects. The following year, Gilbert, Glenn Brown, and Francis D. Millet persuaded President Theodore Roosevelt to appoint such a council by executive order. Roosevelt appointed the Fine Arts Council in 1909, but soon afterwords President William Howard Taft dismantled it because of a lack of support in Congress. Gilbert and the A.I.A. lobbied to reinstate the council. In 1910 Congress passed a bill sponsoring the establishment of a Commission of Fine Arts. The bill authorized the President of the United States to appoint a commission of seven men in the field of fine arts for a term of four years. President Taft appointed Daniel Burnham as the chairman of the first commission, whose members included Cass Gilbert, Thomas Hastings, Frederick Law Olmsted Jr., Daniel Chester French, and Francis D. Millet.[62]

In addition to assuming a leading role in organizations dedicated to the advancement of the City Beautiful, Gilbert became a civic designer. He applied Beaux-Arts concepts of planning to problems involving the grouped arrangement of buildings, such as campus plans, exposition plans, or the disposition of public buildings in an urban setting. Gilbert's June 1899 competition entry for Washington University in St. Louis skillfully employed Beaux-Arts planning principles in a multi-axial, symmetrical

arrangement (Fig. 124). His plan surpassed earlier grouped arrangements of buildings, such as McKim, Mead & White's plan for Columbia University (1892-1901) and the Court of Honor at the Columbian Exposition (1892-93). Gilbert's entry was completed in October 1899, approximately a month after the judging of entries to the competition for the University of California at Berkeley. Gilbert's entry resembled the University of California entries, such as the plan of G. Héraud and W.C. Eichmuller (Fig. 125), more than the other entries in the Washington University competition, including those of McKim, Mead & White, Carrère & Hastings, Shepley, Rutan & Coolidge, Cope & Stewardson, and Eames & Young (Figs. 126, 127). Using the general concept of a block plan developed in 1895 by Olmsted, Olmsted & Eliot, Gilbert enriched his plan spatially by creating tensions with projections and recessions across a grid of major and minor axes, which tied the symmetrically-disposed plan elements--or circulation paths and buildings--into an inextricably bound whole. Gilbert's rigorous application of Beaux-Arts concepts to such a planning problem might be explained by the presence of the Beaux-Arts-trained architect, Samuel-Stevens Haskell. Haskell began working for him in St. Paul, shortly before his move to New York in March 1899.[63]

Gilbert's 1908 project for the University of Minnesota in Minneapolis was selected through a competition by an advisory board that included Daniel H. Burnham, Walter Cook, and William M. Kenyon. The project infused City Beautiful imagery into the Beaux-Arts planning concepts that had emerged in his Washington University plan. Like McKim, Mead & White's design for Columbia University (1892-1901), Gilbert's project located the University of Minnesota on a highly visible urban site, designed as a separate entity within the city, but tied to the city with intersecting avenues. Gilbert's earlier scheme for the campus had a prominent domed structure, similar to McKim, Mead & White's Low Library, at the head of the central axis (Fig. 128). The final scheme, submitted in 1910, culminated in a neoclassical "academic hall," which looked out upon a tree-lined rectangular green, similar to Olmsted's design for the Mall in the McMillan Commission Plan (Fig. 129). The hall was joined to two subsidiary structures with curved loggias. The green led to a plaza that resembled a French residential square, such as the Place des Vosges, from which the

lower campus terraced towards the Mississippi River. The terracing had symmetrically disposed hemicycles and a diagonal ramp system, both from the ancient Roman site, Palestrina, which was perhaps known to Gilbert through a Beaux-Arts reconstruction drawing. The terracing was combined with motifs and landscape features reminiscent of Versailles. Contemporaries viewed this "grand ensemble" as an impetus for the transformation of Minneapolis into a City Beautiful.[64]

After the Chicago Fair, American Beaux-Arts architects assumed an increasingly active role in exposition planning, in addition to designing campus plans and ensembles of public buildings. C. Howard Walker worked on the plan for the Trans-Mississippi and International Exposition in Omaha (1897-98), for which Gilbert designed the Agricultural Building (Fig. 130). Carrère & Hastings planned the Pan-American Exposition in Buffalo (1899-1901). In 1901 C. Howard Walker and Gilbert began work on a plan for an exposition in St. Louis to commemorate the centennial of the Louisiana Purchase. Gilbert and Walker, along with Emmanuel L. Masqueray as director of the works, were appointed as planners by an advisory board comprised of architects. The board was headed by the St. Louis architect Isaac S. Taylor, who was charged with overseeing the arrangement and design of the exposition structures. Gilbert also received the commission to design the exposition's two most important buildings--the Festival Hall, the structure at its focal point, and the Art Building, its only permanent structure.[65]

When it opened in April 1904, the Louisiana Purchase Exposition was widely recognized as a striking example of large-scale planning, although Montgomery Schuyler criticized its "overly ambitious" attempt to be larger in size and lower in budget than the Chicago Exposition. The exposition gave the City Beautiful movement fresh impetus, for it led civic organizations to offer new commissions to advisory planners. The exposition's entire fan-like layout and broad central axis focused on Gilbert's pantheon-like Festival Hall, which was centered on a curved ridge at the site's highest point (Figs. 131, 132). The hall resembled the central rotunda of the Petit Palais, designed by Charles Girault, which was located on the main axis of the Universal Exposition in Paris (1900). Festival Hall was flanked by a curved colonnade designed by Masqueray

called the "Terrace of the States." The colonnade contained shallow niches framing fourteen allegorical statues of the states of the Louisiana territory (Fig. 133). Two circular pavilions, also designed by Masqueray, terminated the colonnade and acted as focal points for the ensemble's two ancillary axes. Three cascades descended from the Festival Hall and its adjoining pavilions, recalling the Fountain of Longchamps in Marseilles, the whole composing the "main picture."[66]

In 1900, Glenn Brown, secretary of the American Institute of Architects, and Robert S. Peabody, the Institute's president, scheduled the A.I.A.'s annual convention to coincide with the centennial celebration of the United States Capitol. Gilbert prepared a plan for Washington employing at an urban scale the Beaux-Arts principles of collegiate group planning demonstrated in his plan for Washington University (Fig. 134). The topic of the annual convention was "Grouping of Public Buildings, Landscape, and Statuary in the City of Washington." Besides making Washington "beautiful," Brown and Peabody hoped to recover Major Pierre Charles L'Enfant's plan of Washington (1791). In the 1890's Brown had rediscovered the merits of L'Enfant's plan while writing a history of the Capitol. Brown was astounded by the disrespect shown towards L'Enfant's plan in a number of the proposals for commemorating the centennial. The speakers at the convention included Gilbert, the architects Joseph C. Hornblower, C. Howard Walker, Edgar V. Seeler, George O. Totten Jr., and Paul J. Pelz, the landscape architect Frederick Law Olmsted Jr., and the sculptor H.K. Bush-Brown. Drawings showing specific proposals were presented by Gilbert, Seeler, Totten, Pelz, and Brown. At the Cosmos Club on Lafayette Square, as part of the convention, Brown staged an exhibition of the drawings from the University of California competition that he regarded as instructive examples of the successful grouping of buildings.[67]

Gilbert's drawing was not only the most fully developed and skillfully executed, but the most comprehensive in addressing planning problems in and around the Mall. These planning problems, outlined by Olmsted, included the disposition of public buildings around the Mall, the alignment of the Mall's axis with the Washington Monument, the improvement of the existing railroad crossing on the Mall, and the precise location of the proposed

memorial bridge. Gilbert structured his plan around two major axes, the axis of the Capitol, delineated by an avenue tilted to align with the Washington monument, and the axis of a proposed new White House located one mile beyond the existing one. Both axes were emphasized by termini--a reviewing ground and a historical museum--and by flanking, symmetrical arrangements of public buildings. A proposed memorial to the nation's founders counterbalanced the Washington Monument, located slightly off the White House axis. Gilbert retained the railroad station on the Mall, but submerged its tracks below grade. He chose not to align the proposed memorial bridge with the Capitol axis, as suggested by some plans, but with New York Avenue instead. Recommendations by other speakers found their way into the final plan, including Pelz's suggestion to site public buildings on the blocks surrounding the Capitol, creating a "capitoline acropolis," and Olmsted's notion that the main axis should be kept open and demarcated with trees and turf rather than an avenue. Gilbert's proposal, however, most directly prefigured later McMillan Commission Plan (Daniel Burnham, Charles McKim, Frederick Law Olmsted Jr., Augustus Saint-Gaudens, 1901)(Fig. 135).[68] The features proposed by Gilbert and retained in the McMillan Plan included the tilted main axis that aligned the Washington Monument with the Capitol, the emphasis on the vista from the White House, the grouped arrangement of public buildings in the vicinity of the White House, and the suggestion to preserve the park-like character of the Mall.

The papers presented at the convention generally featured the functional and aesthetic virtues of axial planning and the grouped arrangement of public buildings. Presenters showed photographs of European capitals, plans of expositions, recent American campus plans, and Prix de Rome drawings. Gilbert, however, took the opportunity to set forth explicit aesthetic guidelines on the grouping of public buildings. The guidelines were based on Beaux-Arts principles regarding the placement of axes and the disposition of masses around the axes. Arguing that grand schemes with a single focal point lacked interest, Gilbert advocated minor axes as a source of "infinite variety." Cautioning that the mere length of an axis would not insure a monumental effect, he suggested proportioning the length of a vista to its width and to the height of the building at its terminus. For a dignified vista, Gilbert advocated a uniform cornice line

along an avenue. Buildings of great prominence, he believed, should be sited to create focal points at the termini of street axes or should form a composition with neighboring buildings. Otherwise, prominent buildings became intrusions on the fabric of the city and destroyed the scale of the buildings around them. For a harmonious relationship among a group of buildings, Gilbert suggested that such characteristics as color, light, and shade be given as much attention as composition. Gilbert recommended that Washington's public buildings be limited to four stories in height, be "monumental and serious in type," and be designed in the "classic style."[69]

Without question, the contributions of the A.I.A. convention and the formal clarity of the McMillan Commission Plan influenced Charles Mulford Robinson's Modern Civic Art, published three years later. In considering the grouping of public buildings, Robinson reiterated some of Gilbert's guidelines, including the importance of a dignified approach to a monumental structure, a proportional relationship between a public building and its vista, and an effective composition between prominent buildings and their neighbors. Robinson disagreed with Gilbert on one point, however--his seemingly arbitrary advocacy of a classical style for Washington's government buildings. Arguing for "fitness" instead, Robinson said the choice of a historical style should be governed by its appropriateness to the geography or history of a particular location.[70]

In a lecture at Yale in 1907 on the grouping of public buildings, Gilbert insisted that a unified and imposing effect could be achieved, as in the Court of Honor at the Chicago Exposition, independently of the source of historic precedent. Unity could be secured through height, proportion, color, texture, and scale. The use of the classical orders alone would not ensure a harmonious relationship between one building and another. According to Gilbert, decisions about the appearance of a group of public buildings were not arbitrary. Instead, they should be designed with respect to the traditions of their sites. The city of New Haven, Connecticut, gave Gilbert an illustrative example. Its new buildings should respect the city's Georgian architectural heritage, especially buildings located around the Green. Gilbert's convictions about the use of historic precedent in an urban context contradicted the opinions of Daniel

Burnham and John Carrère, who saw Paris as the primary model to which any American city should aspire.[71]

With his proposal for three monumental approaches to the Minnesota Capitol in St. Paul, Gilbert officially joined other architect-civic designers in the advancement of the City Beautiful (Fig. 136). Gilbert presented his scheme in December 1903 at a public meeting in St. Paul's Commercial Club. This took place four months after Daniel Burnham, John Carrère, and Arnold Brunner presented their design for Cleveland's Civic Center, one year after the Municipal Art Society of New York developed its plan for New York's civic center, and one year after the publication of the McMillan Commission Plan for Washington, D.C. Gilbert's proposal prompted the Common Council of St. Paul to appoint a commission of five, including Gilbert, to study the scheme further and to report on costs, property acquisition, and demolition. The plan outlined by the Capitol Approaches Commission, published in 1906, corresponded to Gilbert's initial scheme.[72]

The scheme called for three new approaches, one of which was a mall, framing the new Capitol within a set of vistas, much as Pennsylvania Avenue, Maryland Avenue, and the Mall framed the United States Capitol. The proposed Central Approach, an avenue 180 feet wide, bordered with walks, lawns and trees, opened a view to the Capitol from the business district (Fig. 137). The Summit Avenue Approach created a vista between the Capitol and the new Cathedral of St. Paul (Emmanuel L. Masqueray, 1906-15). The Mall, 300 feet wide, provided an expansive setting for the Capitol and a spacious green for the grouping of future public buildings in an arrangement similar to Cleveland's civic center. Gilbert also designed a symmetrical plaza in front of the Capitol. The scheme's central purpose, according to the report, was to enhance the new Capitol's setting in a way that would rival the urban surroundings of comparable American or European monuments. To justify the plan economically, Gilbert and the commissioners relied on the same arguments advanced by other local civic improvement groups. The improvement would yield tax revenue from increased land values. It would also publicize Minnesota's enterprise, public spirit and culture, and thus boost the local economy by drawing visitors.[73]

Gilbert's perspective as a civic designer broadened as the first decade of the twentieth century drew to a close. His outlook had been limited in scale to isolated improvement efforts, including his designs for monumental avenues, civic centers, campus plans, and exposition plans. When he collaborated with Frederick Law Olmsted Jr. on the plan for New Haven (1907-1910), his outlook expanded to incorporate a wider range of planning concerns. The New Haven Civic Improvement Committee engaged the planning services of Gilbert and Olmsted two years after Daniel H. Burnham and Edward H. Bennett had completed their plan for San Francisco. Olmsted had consulted on the plans for Washington, D.C. in 1902, as a member of the McMillan Commission, as well as plans for Detroit, Michigan (1905) and Baltimore, Maryland (1906, with John M. Carrère and Arnold W. Brunner).[74]

Gilbert and Olmsted's plan for the heart of New Haven linked the proposed New Haven Railroad Station with a proposed "secondary civic center," located at Congress and Church Streets, and with the historic Green via a widened Temple Street (Figs. 138, 139). Gilbert and Olmsted justified creation of the secondary civic center by arguing that the proposed grouping of civic structures would speed the transaction of official business, and that the new post office should be located near the Green midway between the city's railroad station and business district. They advocated the restoration of New Haven's Green to its appearance of a century earlier by removing all its nondescript structures except for the three historic churches at its center. Although all of the churches were designed at the beginning of the nineteenth century, the Center Church (1812-14) by Ithiel Town and Asher Benjamin was the only one of the three that was authentically "colonial" in the treatment of its exterior. The report, however, assumed they were all colonial and recommended restoring them to their original appearance by removing old paint from their brickwork and painting their woodwork white. Respecting the "historic traditions" of the site, Gilbert designed the Ives Memorial Library (1908-11) adjacent to the Green as a "colonial" building, according to Beaux-Arts interpretations of that period in American architecture (Fig. 140). The library's tripartite facade evoked Georgian residential architecture and its exterior colors and materials--red brick with white

trim--evoked a host of colonial buildings, but its planning and composition were Beaux-Arts in concept.[75]

The report treated the New Haven Railroad Station as the vestibule to the city for arriving passengers. Following Robinson's guidelines in Modern Civic Art, it was designed to strikingly impress the visitor, to connect visually and functionally to the city beyond it, and to be placed in the "proper setting," that is, a generous fronting plaza (Figs. 141, 138). Freight yards lay behind the station and in outlying areas along the tracks. As in Gilbert's plan for St. Paul, the creation of new avenues and the widening of existing avenues were not justified by convenience or vistas alone, but by the increased land values they generated. To alleviate traffic congestion, which might prevent the efficient transaction of business in the city, Gilbert and Olmsted proposed a subway system beneath Temple Street adjacent to the Green, and street car lines on every main thoroughfare. To link the plan's elaborate system of parks, which ranged in scale from local parks and playgrounds to rural parks and reservations, the report proposed a system of connecting parkways (Fig. 142).[76] In the scope and diversity of its transportation planning, the plan for New Haven approached the comprehensiveness of Daniel H. Burnham and Edward M. Bennett's plan for Chicago. Gilbert's perspective as a civic designer, aided by Olmsted's contribution, enlarged from the piecemeal to the inclusive. But Gilbert had yet to demonstrate a clear commitment to social welfare concerns, such as zoning reform and housing reform, even though such concerns were addressed in the report.

Gilbert and Olmsted advocated zoning the heart of New Haven with flexible, differentiated height restrictions, based on their studies of height restrictions in Boston, Washington, and European cities. Citing Boston's Copley Square, they recommended a height restriction of one hundred feet for buildings surrounding the Green, and comparable height restrictions for the new civic center and station plaza. Citing regulations in Paris, Gilbert and Olmsted maintained that building heights be proportioned to the width of the proposed avenues leading from the station to the Green and other selected thoroughfares. They also recommended uniform building lines along main avenues, to establish a

regularized street facade. Gilbert and Olmsted referred to both aesthetics and the quality of the urban environment as justifications for implementing height restrictions. Specific reasons for restrictions included preserving the appearance of the Green and the skyline, controlling the composition of the city from a distance, and protecting the public's right to light and air. Probably to gain support for the plan from the city's real estate interests, the report argued that height restrictions would cause commercial structures to spread horizontally, thus increasing land values over a broader area.[77]

Gilbert followed discussions on height restrictions in New York before completing the plan for New Haven. He had heard about the organized attempts to legislate building heights by the City Club and the Board of Trade and Transportation in 1896 and 1897. In promoting the Broadway Chambers project in 1897, he pressed Theodore Starrett's Guaranty Construction Company to quickly move ahead, to ensure the building's completion prior to the implementation of a height restriction. Gilbert speculated that such a restriction would limit competition for tenants. While his New York colleagues, including George B. Post, Ernest Flagg, and John M. Carrère, insisted that tall buildings be regulated, Gilbert continued to be concerned about the effect of such legislation on the property owner. In 1907 discussions concerning height limitations intensified after the Building Code Revision Commission proposed to incorporate a height restriction in its new code. Gilbert argued that the control of building heights would be "unjust and impracticable" on the grounds that it would hinder improvements by owners of small sites and encourage the construction of commercial buildings by "large corporate interests," who combined several parcels. Gilbert's concern for the small property owner in New York may be seen as an architect's vested interest in the economic well-being of his current and future patrons. At the same time, Gilbert was not insensitive to the aesthetic argument for controlling building heights. In his proposal for St. Paul's capitol, Gilbert had suggested restricting the heights of buildings on the approaches leading to the capitol--vistas which a skyscraper might destroy.[78] Likewise, in the New Haven plan, Gilbert had recognized the capacity of height restrictions to shape the form of squares, avenues, skylines, and to enhance the urban

environment in general. Consequently, Gilbert sided with the real estate interests in New York and chose not to advocate legislation. Beyond any doubt, however, he was keenly aware of such laws as tools for preserving or enhancing the form of a city.

The New Haven report also made specific recommendations for improving housing in tenement districts, but offered no final solutions. The recommendations concerned playgrounds, typically the metier of a landscape architect such as Olmsted, rather than that of an architect-civic designer such as Gilbert. The report proposed an innovative concept for rear-lot housing, in which new streets would access the unused or poorly used rear sections of the deep, narrow lots in tenement districts. This would open lots to improved development or new playgrounds. Following in the footsteps of McKim, Mead & White and Daniel Burnham, rather than some of his more socially conscious colleagues, such as I.N. Phelps Stokes or Ernest Flagg, Gilbert had never shown real interest in improving housing units or tenement districts. His attitude towards improving the environment in which the socially disadvantaged lived was patronizing and dispassionate. Consequently, the concerns voiced in the New Haven report may be viewed as Olmsted's response to housing issues explored by Benjamin Marsh and the Committee on Congestion of Population at the "Congestion Show" of 1908.[79]

Like most architect-civic designers, Gilbert concentrated on the purely formal aspect of city planning, a natural extension of Beaux-Arts principles of large-scale planning. Architect-civic designers only occasionally mentioned zoning and housing reform in their proposals. For example, John Carrère and Arnold Brunner's 1909 plan for Grand Rapids, Michigan, recommended height restrictions, based in part on Ernest Flagg's "city of towers" proposal for New York, and a discussed "artistic" designs for workingmen's houses.[80] The thrust of the architect-civic designers' activity, however, was concentrated upon design problems of the type that Burnham and Bennett considered in their 1909 plan for Chicago, as well as their earlier plan for San Francisco. These design problems included the civic center, the arrangement and appearance of streets, transportation systems, and parks.

By 1909, civic art, zoning reform, and housing reform began to coalesce at the national level into the discipline known as comprehensive city planning. In May 1909 the First National Conference on City Planning convened and representatives of diverse reform groups publicly shared their points of view. Architect-civic designers, who typically placed priority on aesthetic concerns, could no longer neglect their potential roles in enhancing the general social welfare. Meanwhile, reformers began to study European policies on matters beyond beautification, particularly those formulated in Germany. The "Congestion Show" of 1908, organized by Benjamin Marsh and the Committee on Congestion of Population, urged the adaptation of German town planning and zoning to American conditions, as did Marsh's An Introduction to City Planning (1909). German policies not only zoned land according to use, lot coverage, and building heights, but authorized the taxing of land on its increased value after each transfer of title. The policies also empowered municipalities to purchase land, which removed large areas within the city from the real estate market. At the First National Planning Conference in 1909, Frederick Law Olmsted, who had recently returned from Europe, presented an elaborate account of German and Swiss town planning practice, and other speakers advocated the adoption of zoning regulations like those enforced in German cities.[81]

Amidst increasing awareness of the multifaceted nature of city planning and the objectives of planning practice abroad, a number of architect-civic designers repudiated the term "City Beautiful." They had decided the term no longer adequately described the complexity of their undertaking. Gilbert led this reaction. At Yale in 1907, in his lecture on the grouping of public buildings, Gilbert expressed dislike for the term because it suggested "the romantic, the sentimental, and the superficial." It functioned inadequately as a label, to Gilbert's thinking, because it did not convey the vital role of material factors in city planning, in particular land use and economics. In his address to the Seattle Chapter of the American Institute of Architects in October 1909, Gilbert asserted that he feared the phrase "city beautiful" would destroy planning as a discipline in "the eyes of practical men." Seattle's reason for existence, after all, was its natural location as a center of exchange and distribution in America's Northwest region. Besides, "all great cities of

modern times" were "great by reason of their commerce." As retiring president of the American Institute of Architects, Gilbert denounced the term once again in December 1909. "Let us have the city useful, the city practical, the city livable, the city sensible, the city anything but the city beautiful." The architect-civic designer Arnold Brunner joined Gilbert in the rejection of the term. Presenting a design for Baltimore's civic center to the city's mayor in 1909, Brunner declared, "I shall not speak of the city beautiful, which seems to imply sculpture, fountains, and a world of pretty things; ...the City sensible is more to the point." That same year, Brunner argued that beautiful cities were brought about by "concerted action" and "civic pride," which could be stimulated only by laying "theories" aside and showing that "art pays."[82]

Architect of the Skyscraper

Gilbert assessed the skyscraper in 1900, shortly after he designed the Broadway Chambers Building in New York. His observations revealed that he endorsed its economic basis. Gilbert called the skyscraper an "economic question," and asserted that its dimensions--its height and the area of its floors--were not affected by matters of design. Dimensions were determined by "business expediency, probable income, and profitable investment." While the skyscraper was "merely the machine that makes the land pay," this did not mean to Gilbert that excessive economy should be exercised with regard to its external appearance. This he viewed in strictly material terms as an attractive package, for "beauty, judged even from the economic standpoint, has an income-bearing value." Gilbert recommended that the land speculator secure a site of suitably high value, as established by the desirability of its location, in order to maximize profit. The business district of Manhattan, the headquarters of important American commercial enterprises and the "gateway to the Western world," contained a number of such potentially profitable building sites.[83]

Gilbert was not concerned with the difficulties of the skyscraper for architects and civic designers, because he identified with New York's land

speculation interests. To establish his architectural practice, he had developed and promoted a financial scheme for the construction of the Broadway Chambers Building. He discussed his scheme in 1896 with the owner of the property, Edward R. Andrews of Boston, and then with Harry S. Black, vice-president of the Fuller Company in Chicago, and finally in 1897 with Theodore Starrett, vice-president of the Guaranty Construction Company in Chicago. In 1899 he assembled a team of investors comprised of Andrews, Black, and Starrett. When the Fuller Company began construction on the building, Black and Starrett were its first vice-president and second vice-president, respectively.[84]

Gilbert regarded the skyscraper as an "enterprise," because it involved design and engineering skill, financial risk, and rapid construction. Gilbert noted that both the value of the site and the speed of construction affected the skyscraper's profitability. Expeditious construction minimized the time during which the earning potential of the land could not be utilized. The eighteen-story Broadway Chambers Building, completed in less than four months, was a source of pride to its architect and builder, and a subject of great interest to the construction industry. Trade journals in New York and Chicago praised it as a meticulously orchestrated feat using experienced construction management, a well-organized construction force, and thorough knowledge of the technical requirements of skyscraper construction. Timing, such as the sequenced shipping of prefabricated materials to the site, was essential to the rapid construction progress.[85]

Gilbert not only viewed the skyscraper as a pragmatic problem, involving details of financing and construction, but as an aesthetic problem as well. Prior to designing the Woolworth Building, Gilbert proposed at least two alternatives for giving architectural form to the programmatic and technical requirements of the skyscraper. In his designs for both the Brazer Building (1896-97) and the Broadway Chambers Building (1899-1900), Gilbert treated the skyscraper as a tower by concealing the steel frame and dividing the exterior into a base, a shaft, and a capital, following the example of Bruce Price's tower proposal for the American Surety Building of 1894-95 (Figs. 143, 144, 145). In his design for the

West Street Building (1905-7), a larger structure located on a more conspicuous waterfront site, Gilbert emphasized structure with soaring terra cotta verticals, recalling the shaft of Louis Sullivan's Bayard Building (1897-98)(Figs. 146, 147). The verticals represented a dramatic shift away from his initial tower approach. In addition, Gilbert's design for the West Street Building, with its elaborate crowning element and decorative lobby, showed a heightened concern for the skyscraper's civic and ornamental possibilities.

The eleven-story Brazer Building was Gilbert's first realized project for a skyscraper (Fig. 143). It was located at State and Devonshire streets in Boston, financed in part by Alexander Porter, and constructed by the Fuller Company.[86] Gilbert had already completed several designs for warehouse and office buildings in St. Paul, including the palazzo-like seven-story Endicott Building, influenced by Joseph Morrill Wells's design for the Villard Houses, and his four-story E.D. Chamberlain Building. On the latter he experimented successfully with colored terra cotta and unsuccessfully with combining several types of fenestration, including the Chicago window (Figs. 91, 92). Yet Gilbert had not yet encountered the architectural problem faced by his contemporaries in New York--the design of a relatively tall, narrow, steel-framed building. In designing his first skyscraper, given the conservatism of Boston's existing tall buildings and his interest in strengthening ties with the Eastern architectural establishment, it is not surprising that Gilbert looked to New York for inspiration instead of Chicago.

Gilbert chose to combine Bruce Price's classical "campanile," including a double cornice and transitional stories between the base, shaft and capital, with a base containing tall arched openings, as in earlier arcaded office buildings in New York, such as McKim, Mead & White's Cable Building (1892-94)(Figs. 143, 148). Gilbert readily experimented within the confines of these received conventions. While Price's American Surety Building shaft was a fluted pilaster, Gilbert's Brazer Building shaft was a single continuous textured surface instead, punched with windows, which wrapped and concealed the frame. Gilbert located windows at the curved corners of the building where the appearance of support was typically

emphasized with solid vertical piers. The window locations emphasized the independence of the terra cotta enclosure from the frame and the enclosure's non-structural purpose. Gilbert called attention to the building's capital with vibrant ornamentation. Double-height pilasters overlaid two stories of fenestration with tripartite windows and oeils-de-boeuf. The pilasters were highlighted with colored terra cotta and marble, and the cornice ringed with an animated gilt bronze cheneaux. In his first design for a skyscraper, a type known for irrelevance to its urban setting, Gilbert deferred to the Worthington Building (Carl Fehmer, 1894), located across a narrow street. He aligned the Brazer Building's base and cornice with its neighbor's base and cornice, creating an ensemble that expressed through the outline of its mass the irregular historic shape of the site.

Gilbert's preliminary design for the Broadway Chambers Building (1899-1900), with its uniformly light-colored tripartite facade and arcaded base, resembled his earlier design for the Brazer Building. Clearly, he intended to improve on the design formula he had developed for his first skyscraper. The arcaded base he initially proposed was dropped, however, at the request of the rental agent, Frederick Southack. Southack thought the arches would interfere with the illumination of the building's lowest story, which contained stores, banks, and large offices (Fig. 144). As in the Brazer Building, the brick cladding of the Broadway Chambers Building's shaft called attention to surface rather than structure, despite the walling at its corners. Gilbert refined with subtle adjustments the proportional relationships between the building's base, shaft and capital. He amplified its capital into an emphatic crowning element with a deep arcaded loggia, elaborate terra cotta sculpture and ornament, and a bold projecting cornice. The conspicuousness of the capital befitted its proposed use as the quarters of a downtown club. Gilbert differentiated the base, the shaft, and the capital with light gray granite, dark red brick, and polychromed terra cotta. He eased the transition between the shaft and the capital with alternating bands of red brick and light-colored terra cotta. In the capital, rich color lined the soffits of the arches, and panels of lighter color were set within the pilasters and roundels. Gilbert's experiments with color were motivated in part by Andrews's

request that his building stand out from the more typical light-colored facades of New York's commercial structures. This was particularly important because of the visibility and prestige of the site on lower Broadway, New York's famous commercial avenue, at the corner of City Hall Park, New York's historic green.[87]

Montgomery Schuyler assessed Gilbert's Broadway Chambers Building as a design that conformed to the precedent established by Bruce Price's American Surety Building. Gilbert had relied on the "aesthetic conventions" of this precedent, in particular, the column analogy. Although he disapproved of the column analogy in principle, Schuyler could not completely condemn Gilbert's use of it in the Broadway Chambers Building. This was so because the building epitomized one approach to the design of the tall building and could thus be considered the final outcome of an evolutionary process. It was the "'last word' in the prosecution of the analogy of the classical column." Schuyler noticed Gilbert's improvement on Price's use of the analogy. In his tower proposal, Gilbert used both color and materials to clarify the three divisions of the Broadway Chambers Building shaft. He had also refined the connections between the base, shaft and capital with transitional stories, which recalled similar transitions in an actual column. By the end of the decade, Gilbert's design had become the conventional solution to the problem of a moderately tall office building, of twelve to twenty stories, located on a corner site in New York. At least fifteen such structures had been erected above City Hall Park, along Fourth Avenue between Union Street and 30th.[88]

In early May 1905 Gilbert designed the twenty-three-story West Street Building, his first structurally expressive scheme for a skyscraper (Fig. 146). It was the most conspicuously vertical design for a skyscraper in New York at the time. Gilbert had already become acquainted with Louis Sullivan's formula for the design of tall buildings. After setting up his practice in New York while the Broadway Chambers Building was under construction, Gilbert certainly had the opportunity to see Sullivan's recently completed Bayard Building (1897-99). Gilbert may have read Schuyler's criticism of the building, which judged it as the most

successful solution to the problem of the skyscraper. He at least knew about its generally favorable critical reception. Gilbert's interest in Sullivan's formula may have stemmed from his awareness of Chicago architectural developments from his St. Paul days. In all likelihood he saw the innovative designs for Chicago office buildings produced by Charles B. Atwood in the Burnham office. Atwood's work included the Reliance Building (1894) and its more historicized successor, the Fisher Building (1895-96)(Figs. 149, 150). The Reliance Building had a frame encased with cream-colored terra cotta, daringly thin piers, and prosaically narrow spandrels embossed with quatrefoil motifs. Towering over neighboring tall buildings in Chicago's business district, the Fisher Building had continuous vertical uprights emphasizing height. Atwood's Reliance Building, by contrast, emphasized the horizontal with continuous spandrel edge moldings emphatically crossing the vertical piers. The Gothic detailing of the Fisher Building's salmon-colored terra cotta exterior, the decoration of its elevator lobby with ironwork, marble and mosaic (Fig. 151), and its spacious two-story banking hall were drawn from fifteenth-century Gothic civic structures such as the Palais de Justice (1499-1526) in Rouen and the hôtel de ville in Bruges (1376-87). More significantly, when Gilbert travelled to St. Louis to plan the Louisiana Purchase Exposition, he probably noticed the bold verticality of Sullivan's Wainwright Building (1890-91). In 1899 Gilbert had attended the first annual convention of the Architectural League of America, in which Sullivan was honored by young architects representing thirteen architectural clubs in major cities. Sullivan's work was held up as a model of the future prospect for a native American architecture.[89]

After the completion of the West Street Building, at least one observer assumed that its design was influenced by the Bayard Building. The shafts of the two buildings were similar, articulated with alternating vertical piers and colonettes and surfaced with light-colored terra cotta (Figs. 146, 147). Yet Gilbert did not rely on Sullivan's example alone. He replaced Sullivan's thin projecting cornice with a crown resembling Eidlitz's designs--the upper stories of the Times Building (1903-4) combined with the picturesque roof of the Washington Life Building (1897-98)(Figs. 152, 153). At first glance Gilbert's design for the West

Street Building skillfully assembles elements from recent New York skyscrapers, using the same formula for the proportional relationships of the base, shaft, and capital that he had refined for the Broadway Chambers Building. But further examination of the building's composition, particularly the massing of its major elements, reveals that Gilbert turned to other design sources as well. The West Street Building's original design included an off-center, six-story tower, a picturesque gesture that harmonized with the asymmetrical massing of the building's two rear wings (Fig. 154).[90] This composition of a central tower with a lower blocky structure recalled late Gothic town halls, in particular the hôtels des villes in Brussels (1402-54) and Middelburg (1452-1520) (Figs. 155, 156). Eidlitz's composition for the Times Building (1903-4) and Richard Morris Hunt's design for the Tribune Building (1873-75) probably also influenced Gilbert's decision to top a lower block of offices with a tower.

Conveying an impression of monumentality was clearly one of Gilbert's primary objectives in designing the West Street Building. Atwood and Gilbert had studied similar historical sources--the fifteenth-century Gothic civic architecture of the Low Countries and northern France. However, Gilbert treated the same forms differently. In the Fisher Building, Atwood employed late Gothic detail to decorate the flat surfaces of a terra cotta exterior defined by the clear structural lines of a light, open tower. In the West Street Building, however, Gilbert applied terra cotta ornament in the form of projecting canopies, corbelled colonettes, crockets, and finials, treating the structure as if it were carved on site (Figs. 150, 146). Gilbert's modification of the alternating pier and colonnette pattern from Sullivan's Bayard Building also showed his concern with monumentality. He widened the piers to create the illusion of greater structural solidity (Figs. 146, 147). In addition Gilbert enclosed the building's corners and gradually champfered them until they terminated in the hexagonal tourelles at the crown, creating the impression of solid corner piers. Horizontal belt courses visually tied together the building's soaring verticals, recalling the horizontal bands that unified a High Gothic cathedral nave, such as Reims. Gilbert enriched the ivory-toned terra cotta facade with accents of color. At the building's

entrances and on its crown, the impression of a thick wall was conveyed with inset bands of parti-colored geometric panels.

The lobby of the West Street Building, with its spaciousness and sumptuous decoration, corresponded in spirit to the building's exterior. Double-height vaults and elaborate decorative detail distinguished the lobby from its more frugal predecessors. In the lobby of the Broadway Chambers Building, for instance, a single narrow corridor connected the entrance with the bank of elevators, and in the lobby of the Fisher Building, the Gothic ornamental scheme appeared wooden by comparison (Figs. 157, 151). The West Street Building's lobby had broad arches with soffits of polychromed terra cotta, which were spanned with groined vaults. The structural lines of the vaults were emphasized with stenciled patterns. Panels of ornamental ironwork, forged in slender vertical mullions and tracery motifs, were set within the structural bays, creating storefronts, elevator enclosures, and entrances.

Gilbert explained the building's design in a lecture at West Point Military Academy in 1909. Gilbert thought that "strictly modern" architectural problems, such as the skyscraper, were the outcome of rapid material change. They could not be addressed by the noble tradition of "Art," which was better suited to the timeless public building. The skyscraper designer could turn only to the lesson of organic form--that design should be adapted to use. Gilbert cited Sullivan's dictum, "form follows function." Logic demanded that a skyscraper's height be accentuated with vertical lines, rather than played down with such traditional masonry elements as the column and lintel, the arch, or the projecting cornice. The supports in the skyscraper's frame replaced the original structural purpose of these elements and rendered them useless. Gilbert argued that the exterior wall of the skyscraper should be treated as a non-structural envelope or veneer. It should not imitate real masonry. Ideally, the wall should be made of a richly colored and textured hard material--terra cotta, brick, or marble--fabricated to create brilliant and variegated surfaces, as seen in the Palazzo Ducale and St. Mark's in Venice, or the campanile of the Florence Cathedral. Although Gilbert had adopted the functionalist theory of the "Chicago school," he

was also dedicated to the time-honored principles of composition. He believed axiomatically that every design should have a beginning, middle, and end, and therefore that every skyscraper should have a base, shaft, and terminal. Gilbert's concern with tripartite composition echoed Schuyler's Aristotelian precept, although his reliance on a convention cannot be equated with Schuyler's pursuit of a classic ideal. Gilbert thought that the problem of the skyscraper could be solved through the combined application of functionalist concepts and principles of composition. This would ultimately lead to the creation of a new type that would characterize modern civilization in the same way that earlier types characterized the great epochs of the past.[91]

Although Gilbert was acquainted with Sullivan's functionalist theory and skyscraper designs, it is doubtful that he fully understood Sullivan's theoretical speculations and their relationship to his designs. Gilbert's attraction to the thought and work of Sullivan can be explained by his interest in the rational theories of Viollet-le-Duc. Although Gilbert may have read Sullivan's writings, such as "The Tall Office Building Artistically Considered," it is just as likely that he heard of them through secondary sources, such as Schuyler's criticism. While Sullivan had committed himself to a particular ideological position on skyscraper design, Gilbert saw the "Chicago school" functional theory as an available architectural idea, and Sullivan's vertical skyscraper shaft as an available architectural motif. He divorced Sullivan's ideas and designs from their ideological underpinnings.[92] Gilbert's proposals for classicized skyscrapers betrayed his noncommittal stance. These included the Kinney Building in Newark, New Jersey (1912-13), derived from the Palazzo Davanzati (late 14th century) in Florence, and the Union Central Life Insurance Company Building in Cincinnati, Ohio (1911-13), in which a tower inspired by the campanile of St. Mark's in Venice was joined to a conventional office block (Figs. 158, 159).

Schuyler approved of the West Street Building because it combined structural expression with a composition based on the Aristotelian precept. He endorsed Gilbert's technique of encasing the frame with modelled terra cotta. This technique created projection and relief on the building's

facade, but did not conceal in shadow the tiers of identical openings that truthfully revealed the building's function. He saw Gilbert's design for the crown as an advance over the capital of the Broadway Chambers Building. Its depth, elaboration, modelling, and terminating sloping roof identified the crown as a discrete but related part of the tower. The crown's visual separation from the lower stories did not compromise the "utilitarianism" of the shaft, and it was effectively scaled to both near and distant viewpoints. Referring to Ruskin's evocative description of Gothic towers and pinnacles, Schuyler noted that Gothicized ornamental schemes created striking impressions from a distance. The effectiveness of the crown led Schuyler to commend Gilbert's choice of a medieval prototype for the asymmetrical massing of the building. However, Schuyler found the West Street Building's base less successful. Like a remnant of a tower designed by the column analogy, the base had a heavy, mural appearance disassociating it from the building's skeletal superstructure.[93]

The West Street Building's highly visible waterfront site, chosen by the client, General Howard Carroll, certainly affected Gilbert's decision to design a monumental commercial building with an elaborate crown reminiscent of fifteenth-century Gothic civic architecture. Carroll, vice-president of the Starin Transportation Company, wanted his company's headquarters to present a striking image to river traffic. Railroad and river transportation companies in New York took pride in the location and the visibility of their quarters. The Hudson River and the docks and piers that lined West Street were constantly busy with ferry and freight traffic. Passengers streamed into lower Manhattan while cargo was transferred to the warehouses or railroad termini that flanked the river (Fig. 160).[94]

To civic art reformers, however, the development of the waterfront created chaos, compromising its dignity. Charles Mulford Robinson was disappointed that West Street failed to function as a portal to the city. The street was merely an unsightly margin along a waterway littered with piles of merchandise and disfigured with storehouses and sheds. At monthly meetings of the Architectural League of New York in 1898 and 1899, architects discussed proposals for improving and embellishing New York's waterfront, including West Street. Suggestions involved restoring the

street to its proper width by clearing away obstructions, erecting a harmonious row of buildings, elevating freight tracks, and installing an esplanade above the tracks from which to view waterfront activity. Gilbert was sensitive to such concerns. In 1907, in a lecture at Yale, he expressed dismay over the unkempt, unplanned, and unsightly appearance of American waterfronts, compared to the river embankments of Paris and London.[95] Gilbert may have envisioned a new future for New York's waterfront when he designed the ivory-colored facade of the West Street Building, which fronted on the river. The project gave him an opportunity to enhance West Street's image in anticipation of its civic improvement.

CHAPTER 4: FRANK WOOLWORTH'S BUILDING PROGRAM

> Much has been said about the Woolworth Building, and though that structure had been taking form in my mind for a great many years, and though it is, as I have said, the result of one of my daydreams, I must in all honesty admit that it did not exactly originate with me. While in Europe a few years ago, wherever I went the men with whom I came in contact asked about the Singer Building and its famous tower. That gave me an idea.[1]
>
> Frank Woolworth, 1913

Frank Woolworth conceived his skyscraper as a speculative venture, but also as a monument, an elaborate Gothic tower. To ensure both the profitability and the visibility of his skyscraper, Woolworth chose a site located both on lower Broadway, near the heart of the financial district, and at the corner of City Hall Park, facing a spacious square. In his timing of the skyscraper's construction, Woolworth followed the example set by patrons of the Times Building, Singer Tower, and Metropolitan Tower. He initiated the project after rising to a clear position of dominance over competitors, incorporating the company, and expanding operations across the continent and abroad. Woolworth's Gothic tower served a combination of purposes. It identified the administrative center of an expanding hierarchy that oversaw a spreading chain of stores. It advertised the chain on an international scale. It functioned as a showpiece for his wealth, cosmopolitanism, and civic-mindedness, and as a memorial to his own career. Woolworth economically justified the construction of the Gothic tower through speculative office building uses and a broad spectrum of ancillary uses to attract tenants. He chose the appropriate architect to design such a building. Gilbert had built his reputation designing scenographic Beaux-Arts buildings for America's emergent, powerful institutions, but he also viewed the skyscraper in strictly pragmatic terms, as "merely the machine that makes the land pay."

It is not known when Frank Woolworth first thought of constructing a speculative office building that would also function as the headquarters of the F.W. Woolworth Company, a vast network of five-and-ten-cent stores. He

had rented a desk room at 104 Chambers Street upon his move to New York in July 1886, and an office in a loft at 321 Broadway at the end of 1887. In September 1888 Woolworth opened a buying office on the Chambers street side of the Stewart Building, formerly A.T. Stewart's department store (1846-62), located at the northeast corner of Broadway and Chambers Street. Finding his quarters on the Chambers Street side of the Stewart Building too small, Woolworth moved to the Reade Street side a month later, only to return to the Chambers Street side in 1905 when the company was incorporated.[2] Before completion of the Woolworth building, the company's executive offices looked out on City Hall Park from the fifth floor of the Stewart Building.

When Woolworth chose offices in the vicinity of City Hall Park, the park was the locus of the city's political and social life, and the largest open space in lower Manhattan (Fig. 161). It became the seat of municipal government after the completion of City Hall (1812), and the center of public attention after the construction of the Brooklyn Bridge (1869-1883). From his office on the Chambers Street side of the Stewart Building, Woolworth had a view of City Hall and the New York City (Tweed) Courthouse, (1861-72). He could also see the skyscrapers along Park Row, including the Tribune Building with its soaring central tower. In 1905 the Tribune Building was enlarged with the addition of seven stories. The new Tribune Building would overtop Joseph Pulitzer's adjacent sixteen-story World Building (1889-90), once the tallest skyscraper in lower Manhattan. Woolworth might have noticed the connection between this building program and the intense rivalry among New York's journal publishers, who competed for the largest readership in New York's burgeoning population. Woolworth also must have seen the construction of the tall, slender facade of the Home Life Insurance Company Building (1893-94) on Broadway. Facing the park, its white marble exterior complementing the City Hall, the building displayed a concept of urbanity similar to Chicago's "white city" (Fig. 162). Across Broadway, Gilbert's showy Broadway Chambers Building was completed in 1900. Woolworth was generally interested in the development and transformation of cities and towns and had keen powers of observation. It is not surprising that he was aware of proposals for strengthening the image of New York's civic center, including plans to construct a new

municipal office building, a row of city offices and county courts along Chambers Street, and to demolish the Federal Post Office Building.[3]

When Woolworth moved his company's buying office to New York City in 1886, he controlled seven stores. At that time he considered himself a prosperous and successful businessman, despite the fact that at least five of his new stores had already failed. Woolworth's inventive merchandising concept was the product of his early retailing experience and development of the five-and-ten-cent idea. He rejected the drudgery and limits of life on the family's farm near Great Bend in Jefferson County, New York. After completing two brief terms in a Watertown business college, the 21 year old Woolworth launched a career in retailing in 1873. He began as an unpaid apprentice at Augsbury & Moore, a dry goods store in Watertown, and became a paid clerk three months later. Attracted by a higher salary, he left after two years to clerk at A. Bushnell & Company, a competing dry goods store. Woolworth apparently excelled at cataloging merchandise and creating attractive window displays. His failure as a salesman, however, led to a substantial reduction in his wages. Disappointment, overwork, and failing health led Woolworth to reconsider rural life. In the summer of 1876 he married Jennie Creighton of Watertown and purchased a farm. Four months later he returned to a retailing career at the request of his former employer, W.H. Moore, who had become a partner in a new dry goods business, Moore & Smith.[4]

In the spring of 1878 Woolworth heard about a new strategy for stimulating business--the five-cent counter. This involved selling small, inexpensive items at low fixed cash prices as a means of rapidly turning over surplus stock. Woolworth convinced Moore to order a stock of five-cent goods ("Yankee notions"), and to hold a five-cent sale for stimulating business. The goods rapidly disappeared and Moore conducted a second, equally successful five-cent sale. Meanwhile, the five-cent counter became a popular phenomenon among other merchants in upstate New York. Woolworth watched the public flock to these counters and saw a demand for stores that catered to the purchasers of small items. He decided to focus his ambitions on opening a five-cent store. Weak in salesmanship and wishing to trim the expense of sales help, Woolworth

devised ways in which goods would sell themselves. He created attractive displays to entice customers into the store. He created the illusion of availability and abundance by openly displaying goods on tables rather consigning goods to storage behind inaccessible counters. Woolworth took his retailing idea to the consumer, actually creating demand. The five-cent idea gave Woolworth a marketing advantage based on the public appeal of a bargain.[5]

In February 1879, with about $300 worth of goods attained on credit from W.H. Moore, Woolworth opened his first store in nearby Utica, New York. After scouting out its commercial district, he chose a corner space at Bleecker and Genessee Streets. Above the space he placed a showy sign, "The Great Five Cent Store." The novelty of the store created a rush of activity, but as its newness wore off so did its power of attraction. By May, Woolworth was forced to close. Attributing the store's failure to its poor location, Woolworth decided in June to open a store in Lancaster, Pennsylvania, again with the assistance of Moore. He had heard from a reliable source of Lancaster's stable economy and "thrifty" Pennsylvania Dutch population. In choosing the site for his Lancaster store, Woolworth carefully observed the local townspeople. He studied at dusk the browsing and shopping of potential customers and noticed street crowding unlike the sedate commercial atmosphere and sparsely populated sidewalks of Utica. He located his store on North Queen Street, and enlarged it to include ten-cent items in order to increase the diversity and quality of his merchandise (Fig. 163). The Lancaster store became profitable, and Woolworth considered expansion. To open additional stores, he enlisted partners, his brother, C.S. Woolworth, and his cousin, Seymour H. Knox.[6]

Stores failed in Harrisburg and York, Pennsylvania and in Newark, New Jersey, but succeeded in Scranton, Reading, and Erie, Pennsylvania. Woolworth gradually refined the art of tracking consumer behavior. By trial-and-error, he learned which types of location would succeed and which would fail. He learned the hours of the day people shopped and which days they shopped from observing the behavior of the crowds. In Scranton, he searched for "the right spot in the street through which men and women passed who understood the value of a nickel." Later, Woolworth measured

the ebb and flow of urban traffic, determining the precise locations where the greatest number of shoppers passed during a given period of time. The location of goods within the store was based on their anticipated sales appeal. "Leaders"--items intended to catch the interest of passersby with their novelty, seasonableness, or good value--were displayed in the show windows. Woolworth encouraged customers to browse among the merchandise undisturbed. He wanted them to approach the open displays of goods as if they were attending an exposition or fair, interested but not pressured to buy. That way, people would buy on impulse. Like the department store entrepreneurs John Wanamaker and Marshall Field, Woolworth advised his managers to treat their customers as guests. Customers should be respected, entertained, and offered free refreshments. By anticipating the needs of his customers, Woolworth acted as their purchasing agent, allowing himself to be guided by their needs and desires.[7]

As the nineteenth century drew to a close, Americans migrated from the countryside to the cities, and the tide of European immigration swelled. In 1870, one quarter of the American population lived in cities; by 1910, the percentage rose to one half. During this period, the cities absorbed a fivefold increase in the number of inhabitants. Woolworth's career paralleled America's transformation into an increasingly urban commercial culture. Studying this growing and shifting population, Woolworth maintained elaborate charts showing changes in towns and cities, and attempted to diagnose future developments. From his observations, Woolworth plotted expanding markets for his five-and-ten-cent goods by establishing closer contact with potential customers and by effectively channeling to them the greatest possible variety and number of inexpensive goods.[8]

Woolworth applied his "cash only" policy throughout his business operation. He gradually increased the number of his stores, refusing to shoulder the debt required for rapid expansion. In the fall of 1886 he owned seven stores. By 1895, he owned twenty-five stores and in 1900, fifty-nine stores. Although he had cautiously ventured into the South in 1890 to open a store in Richmond, Virginia, for the most part Woolworth restricted the location of his stores to the Northeast. Before

incorporating his syndicate as "F.W. Woolworth & Company" in 1905, however, he expanded into the Midwest and West, with a regional headquarters in Chicago. He bought twenty-three stores from four independent five-and-ten-cent store operators in Illinois, Iowa, Indiana, Minnesota, Missouri, and Colorado. A few months later, he purchased twelve stores in Pennsylvania from a single owner and four independently-operated stores in Massachusetts. Woolworth added these acquisitions to his expanding chain to create a total of 120 stores. In 1909, the year before he commissioned Gilbert to design the Woolworth Building, Woolworth opened a store in Liverpool, England. Within two years, he had twelve stores in that country. In 1911 Woolworth eliminated his conservative competition by absorbing four five-and-ten-cent chains belonging to his former partners, with whom he had remained on good terms. The merger increased Woolworth's chain from 318 to 596 stores, including stores in the East, the Midwest, the South, and Canada. Woolworth now owned stores in thirty-seven states. He called his new business the "F.W. Woolworth Company."[9] Before the Woolworth Building was completed in 1913, Woolworth's chain had become visible not only in international locations, but in a spreading network across the American continent.

In choosing locations for his stores, Woolworth cautiously moved from insular towns to major cities. With a secure financial base in the hinterlands, he decided to risk competition with the palatial department stores in the glamorous shopping districts of bustling urban centers. Woolworth opened his first big city store in Washington in August 1895, and his second in Brooklyn that November. The following year he opened stores in Philadelphia, Boston, and New York. When he expanded his scope of operations to England in 1909, Woolworth considered cities smaller than London, such as Liverpool, Northampton, Brighton, Reading, Coventry, and Manchester.[10]

Aside from consumer research and the geographic distribution of outlets, Woolworth concerned himself with the sources of his goods--the manufacturer. Typically, goods found their way from the manufacturer to the consumer via the wholesaler and retailer. For several reasons, Woolworth wanted to circumvent the wholesaler from the start. First, to

satisfy the desires of his customers, Woolworth sought to increase the variety of available five- and ten-cent items, and to speed up their delivery to his stores. The purchase of goods in large volume directly from the manufacturer would enable him to create new merchandise that responded to and shaped current tastes. Second, Woolworth soon discovered that increased volume led to greater economy and thus greater profits. By purchasing a large quantity of goods directly from the manufacturer, he could obtain them at a lower cost. This meant he could sell goods at lower prices to his customers, further stimulating demand. Moreover, buying and selling a massive volume of goods ensured a high turnover of stock and thus a steady cash flow. This allowed Woolworth to operate and expand on less profit per unit.[11]

By the mid-nineteenth century, department stores such as A.T. Stewart in New York and Hovey, Williams & Co. of Boston had begun buying directly from manufacturers. The wholesalers' domination of American distribution networks began declining in the mid-1880's. Department stores had also adopted the policies of fixed price, cash sales only, and rapid turnover, in order to operate on a low margin with a substantial volume of merchandise.[12] Woolworth advanced the mass retailing practices developed by the department stores by greatly reducing the fixed price of his goods, and greatly expanding the volume of sales by distributing them through numerous outlets. Woolworth's retailing concept challenged conventional merchandising notions by showing that the smaller the price of the article, the greater the profit.

Initially, manufacturers refused to deal directly with Woolworth, insisting that he buy through wholesalers. Custom and policy required such an arrangement. Soon, however, they realized they too could reap substantial profits through the sale of immense quantities of low-cost goods. Woolworth laid the foundation for a large buying organization when he moved to New York in 1886. Many of the manufacturers and wholesalers of novelties and other small articles of interest to Woolworth were located along side streets flanking lower Broadway. Shortly after his arrival, Woolworth convinced manufacturers that he could surpass wholesalers in the volume of goods he ordered and thus increase their profits. Woolworth

began to arrange exclusive one-year contracts with manufacturers of different kinds of goods, keeping their factories operating full time, and taking their entire output. Meanwhile, often in response to suggestions made by Woolworth or his associates, manufacturers increased production with new time-saving processes and mechanical devices. By 1905, manufacturers regularly solicited his executive office for orders. Eliminating the wholesaler, Woolworth bridged the gap between production and consumption. This allowed him to match, accurately and instantaneously, the preference of the consumer with a wide range of goods, of which he controlled either the manufacture or purchase.[13]

In his quest for a greater variety of goods, Woolworth did not limit himself to local manufacturers. In 1890 he acted on the advice of B.F. Hunt Jr., a partner in Horace Partridge & Company, the largest American importer of toys, and made a trip to Europe seeking a broader range of "high quality" goods at lower prices. Subsequently, Woolworth embarked on European buying excursions at least twice a year. By 1902, approximately twenty percent of his goods came directly from manufacturers abroad, including china, dolls, marbles, vases, and Christmas ornaments.[14]

As Woolworth's company expanded geographically, his concept of its organizational structure changed. Before moving his headquarters to New York in 1886, Woolworth enlisted partners with capital to share half the risk of opening each new store in return for half of its profits. Woolworth assumed all buying and administrative responsibilities in his company until he was debilitated by typhoid fever in 1888. Forced to delegate tasks, he devised an administrative hierarchy that replaced the partner-manager system and decentralized management to better accommodate his geographically dispersed chain of five-and-ten-cent stores. He hired a buyer and a general manager, promoted store managers to administrative positions, and trained scouts to select and equip stores, specialists to open them, and inspectors to approve their day-to-day operations. Each store was placed under the supervision of a salaried manager, who was entitled to twenty-five percent of its profits. Woolworth's system kept the flow of goods, store operating costs, and profits under strict control.[15]

Woolworth incorporated the F.W. Woolworth & Company in 1905 to ensure the immortality of the organizational hierarchy that he had created and the company that bore his name. In the spring of 1908, Woolworth realized that the central administration of his chain had become unwieldy. He divided stores geographically into groups and placed each group under supervision of a district manager, creating a new regional level in the hierarchy of his national organization. Regional administration was appropriate to regional consumer preferences for certain types of goods. Woolworth compared his corporate hierarchy to a military organization. Selecting top managers was a matter of finding "good generals." He called lesser managers "lieutenants." With his army, Woolworth believed, he might forge a global commercial empire. According to a contemporary interviewer, it was Woolworth's "ambition to cover the whole earth with his stores."[16]

Woolworth viewed the architecture of his stores as a means of attracting potential customers and establishing an institutional identity. His storefronts communicated to the urban crowds the commodities available inside. Large, clear show windows became more common in the mid-1890's, as inexpensive, high-quality plate glass became available. Multiple entrances funneled shoppers into the store's interior towards tables covered in bright red cambric, exhibiting a colorful array of goods. Woolworth refused to invest in print advertising, instructing his managers to "remember [that] our advertisements are in our show windows and on the counters." By 1886, he had introduced his red storefront, inspired by the design of the earliest retailing chain in America, the Great Atlantic and Pacific Tea Company, founded in 1859. Woolworth's opaque billboard-like sign was much larger than those of other comparably-sized stores. The sign and the enticing display of inexpensive articles through clear plate glass powerfully identified Woolworth's emerging institution. In 1900, after expanding his chain and opening larger stores in big cities, Woolworth standardized the design of his sign, choosing bright carmine red with raised gold-leaf lettering and edge molding (Fig. 164).[17]

From the start, Woolworth was keenly aware of the power of the show window to stimulate consumer desire. As if in a miniature theater or picture gallery, the five-and-ten-cent items were arranged to be seen in

their best possible light. Using plate glass mirrors and brilliant incandescent illumination, which became economical in the late 1880's, Woolworth and other merchants experimented with optical effects. They strove to create the illusion of extravagance and abundance by highlighting the unique characteristics of each item. Woolworth carefully inspected the show windows when he travelled on his circuit. He abhorred "cheap and hasty" window displays and often stopped to rearrange the merchandise in the windows himself. Storefronts were transformed during the Christmas season. The show window announced the arrival of a peak shopping season and contributed to the holiday atmosphere. Woolworth called Christmas the "harvest time," the company's most profitable time of the year. He instructed his managers to give their stores a "holiday appearance" by hanging up Christmas decorations and placing trees in the windows.[18] On other occasions, the show window was used to capture customers in competitive rivalries with other emerging five-and-ten-cent chains. In 1905, in response to a rumor about an anti-Woolworth combination, Woolworth advised his managers to engage in the following method of attack:

> When your competition puts a line of goods in his window, pick out the best selling items in these goods and put them in your window at just half his price; and keep them there just as long as he keeps similar goods in his window.[19]

From the time he hung up his first sign in Utica--"The Great Five Cent Store," Woolworth demonstrated a flair for showmanship and a knack for amusing the public. He designed his signage and displayed his goods to dazzle and entice the consumer. As his chain became a presence in the densely-populated environments of major cities, Woolworth sought similar means of heightening the store's visibility. He followed the example of the department store merchants, who heightened consumer longings with an atmosphere of luxury and festivity, and sponsored celebratory extravaganzas. Woolworth began to devote more attention to the quality of his store interiors and to an urban audience becoming increasingly attuned to the drama of display. His Brooklyn store, which opened in 1895, had dark woodwork and wood and glass showcases, each lit by a single incandescent light. Noticing the public relations value of the tasteful interior, Woolworth undertook a "beautification program" on the interiors of his existing stores and installed similar "fine fixtures" in new stores.

In his New York store on Fourteenth Street, which opened in 1900, Woolworth installed a pipe organ to entertain his customer-guests with "classical and sentimental" music. Big New York department stores such as Siegel-Cooper regularly offered concerts. After the turn of the century, Woolworth celebrated the openings of his "Eastern big-city emporiums" with gala events, scheduled on a Saturday and featuring an orchestra. The opening festivities were preceded by a reception and preview on Friday afternoon, to which a selected group of guests and "prominent persons" were invited from the surrounding neighborhood. When Woolworth launched a second store in Lancaster in 1900, he hired an orchestra and filled the store with cut flowers, palms, and ferns, a botanical fantasy probably inspired by the floral shops and miniature conservatories of the department stores.[20]

Woolworth's perceptions of art and architecture were not conditioned by formal schooling, but were molded by his surroundings--the exhibitionistic ambiance of the city's commercial institutions, the theatrical settings in department stores, and the ornamental qualities of merchandise. On his first buying trip to Europe, twenty years before commissioning Gilbert to design his corporate headquarters, Woolworth recorded observations of the architecture of commercial buildings and the monuments generally included on the tourist's itinerary. He contrasted the small shops of London with New York's spacious department stores, and regarded the Bon Marché in Paris as a grandiose version of John Wanamaker's department store in Philadelphia. Woolworth was most impressed with the Paris store's fame and enormous size, which he gauged not only by its appearance, but by the number of its employees and the amount of its sales. The small shops of Vienna appealed to Woolworth's sense of showmanship and the exotic. "The store windows make the finest display of any city I was ever in. Everything looks so new and odd, and very tempting."[21]

Woolworth ethnocentrically criticized the Viennese for not speaking English and regarded architectural monuments as relics of former splendor rather than cultural artifacts. He spoke of the "grandeur" of Paris and called Charles Garnier's Opéra "indescribably beautiful." Impressed by civic sculpture and mural painting, Woolworth noticed that a public

building in Vienna displayed "fine statuary on every side" and that its interior contained several paintings, hung not "in the frames but painted on the wall itself." He also demonstrated a clear preference for Gothic architecture. He called the Cathedral of Cologne one of "the finest in Europe," Westminster Abbey the "greatest sight in London," and mentioned a visit to the Houses of Parliament. Woolworth often seemed to regard the monuments he visited as interchangeable with the commodities he had travelled to Europe to purchase. Ecclesiastical architecture, for example, was shorn of its meaning and objectified. "[I] visited several fine churches that were simply grand and must have cost a mint of money." Like the consumers he served, Woolworth was drawn to articles bearing the cosmopolitan associations and patina of European origin. In his Lancaster, Pennsylvania store, he conspicuously exhibited the slogan, "goods displayed in Woolworth stores are collected from all parts of the world." He proudly described the reaction to the new European goods for sale at his Syracuse store as "a riot."[22]

In 1899 Woolworth decided to construct a speculative office building in Lancaster to commemorate the founding of his first five-and-ten-cent store in that town twenty years earlier. He wanted a highly visible landmark that accommodated diverse activities within a single building and that positively affected its surroundings. As the architect, Woolworth selected the firm Schickel & Ditmars of New York, based on his familiarity with their designs for office buildings. Called the "Woolworth Building," the five-story Lancaster office building was small in scale compared to Woolworth's next office building project, but it nevertheless commemorated the beginnings of his company (Fig. 165). The Lancaster project was not a typical speculative office building. Programmatically complex, it housed on the ground floor a five-and-ten-cent store, other stores, and a restaurant. It had a roof garden with a stage at its top, and four stories of offices in between.[23] In accommodating diverse uses, it recalled the internal arrangement of the department store, which supported a spectrum of activities besides retailing, including restaurants and roof gardens.

The "modernly appointed" Lancaster office building might be regarded as an attempt to imitate the appearance of a department store. The

gold-domed cupolas at the corners of its facade imitated those of the Bon Marché (Fig. 166). The atmosphere and facilities provided all possible comforts and conveniences to the patron. With height, Woolworth sought to achieve a public presence: "I bought enough property...to erect a building that would overshadow everything, not only in Lancaster, but in that part of Pennsylvania." The cupolas, illuminated by electricity at night, were "to be seen for several miles." Woolworth also planned to intervene in the urban surroundings to transform the "wrong" side of the street, where the proposed building was sited, to the "fashionable" and "prosperous" side of the street. After completion of the building, he watched with satisfaction the change in crowd behavior and the increased value of adjacent property.[24]

The Lancaster building also demonstrated Woolworth's evolving interest in the public visibility of his company. With his decision in 1900 to give his stores a unified appearance with identical red fronts, he treated them as parts of an institution rather than discrete merchandising units. By 1905, when his company was incorporated, Woolworth had not only relocated his offices within the Stewart Building, but had added to his new headquarters an impressive entrance hall and luxuriously furnished private offices for each of his executives. With such "system" and "magnificence," Woolworth contended, the five-and-ten-cent store business could no longer be considered a "cheap John affair." Remaining as conservative, thrifty, and attentive to details as usual in the conduct of his business, Woolworth justified the opulence of the new headquarters to store managers by pointing out the impression it made on visitors. It was a legitimate business expense, he argued. It attracted business from manufacturers, salesmen, and banks, and showed visitors that they were in the "presence of a successful and important concern."[25]

Woolworth used architecture to signal his private accumulated wealth as well as the public image of his expanding syndicate. In 1901 Woolworth moved from a brownstone house on Jefferson Avenue in Brooklyn to the Hotel Savoy on Fifth Avenue at the southeast corner of Central Park. That year, he purchased a site for a residence on a conspicuous corner at Fifth Avenue and Eightieth Street. The site was located along the section at Fifth

Avenue between Seventy-Ninth and Ninetieth streets called the "Billionaire District." It had become a fashionable location for residences by 1902 with the completion of the Andrew Carnegie house at Ninetieth Street. Woolworth commissioned the architect C.P.H. Gilbert to design his house in the style of the French Renaissance chateaux of the Loire river valley. This style was represented by the William K. Vanderbilt House located at the corner of Fifth Avenue and Fifty-Second Street (Fig. 167). Designed by Richard Morris Hunt, the Vanderbilt house, completed in 1883, was considered the most widely admired residence in New York. The Vanderbilt House inspired a number of imitations along Fifth Avenue, including the Josephine Schmid House (1895) by Richard Morris Hunt, the Isaac D. Fletcher House (1899) by C.P.H. Gilbert, and the Mrs. William K. Vanderbilt House (1905-6) by McKim, Mead & White.[26] Woolworth probably chose C.P.H. Gilbert as architect because Gilbert specialized in the residential design Hunt had initiated, which Woolworth admired.

In choosing in a house with an exterior designed as a seventeenth-century French chateau, complete with a moat, Woolworth identified himself with the Vanderbilts (Figs. 168, 169). He may also have wanted to create the impression of timelessness. The grey limestone facade with profuse, elaborate carving and decorative sculpture suggested the antiquity and permanence of the monuments Woolworth saw on his European buying trips. According to Herbert Croly, businessmen such as Woolworth, who were politically, socially and culturally conservative, wished to "live by tradition alone" and to "free themselves, their heirs, and their countrymen" from the "reproach of being raw and new." The historical associations of European furnishings and objets d'art were more important than their aesthetic virutes. The job of the architect and decorator was to draw out historical associations by selecting and assembling the pieces into an evocative setting. However, despite the influence of his sedate, refined surroundings, Woolworth retained a penchant for the flashy, gaudy, and theatrical. He devised a sound and colored light show that illuminated portraits of composers in synchrony with an electric organ, with roll music penetrating unexpected corners of the house. Other mansions in the "Billionaire District" contained pipe organs, but the mechanical features and special effects of Woolworth's organ seemed to

place it in a class by itself. In 1914 Woolworth erected residences for his daughters at 4, 6, 8, and 10 Eightieth Street, adjacent to his house, creating the beginnings of a family compound like the Vanderbilt precinct along Fifth Avenue between Fifty-First and Fifty-Eighth streets. It was rumored that Woolworth had plans to erect a new marble residence that would extend a full block along Fifth Avenue. The Fifth Avenue houses of Cornelius Vanderbilt II, Andrew Carnegie, and Henry Clay Frick commanded entire block fronts.[27]

In 1910, when Woolworth chose a site for his corporate headquarters at the intersection of Broadway with Park Place, he was a seasoned expert at selecting profitable sites for stores. He had also noticed the transforming effect his Lancaster office building had had on its urban surroundings. His observations of the capacity of a stunning new structure to attract tenants and patrons and to significantly modify its urban setting influenced his choice of a site on the northern edge of the financial district. Woolworth concluded that despite its distance from the Stock Exchange the site was located at an important center. He reached this conclusion by analyzing day-to-day operations and anticipated changes in the institutions situated around City Hall Park. The Post Office, while it remained, attracted important financial concerns to the area because a large volume of business was conducted through the mail. The new Municipal Office Building was the hub of the city government's affairs. A new structure housing the city and county courts was planned for the Stewart Building site and Woolworth assumed that trial lawyers would seek nearby quarters.[28]

Woolworth also noticed that thousands of people poured into the park daily from the Brooklyn Bridge. Just as he sited a store by identifying the point along a street where the greatest number of people passed, Woolworth studied the movement of New York crowds along lower Broadway. He found that traffic was densest at Broadway's intersection with Park Place.[29] His choice of a site was undeniably calculated to achieve visibility. His building would be seen by the urban throng from across the Brooklyn Bridge, the principal link between Brooklyn and lower Manhattan, from the open space of City Hall Park, a center of social and political

activity, from lower Broadway, the busiest thoroughfare in the metropolis, and from the surrounding waterways.

From the beginning, the proposed office building was a joint project between Frank Woolworth and the Irving National Bank. Woolworth had been invited by Lewis Pierson of New York National Exchange Bank to become a member of its Board of Directors. Woolworth subsequently nominated Pierson as the Bank's president. Pierson sought to increase the bank's deposits and to this end, Woolworth arranged a merger between the New York National Exchange Bank and the Irving Bank after three years of negotiations. As a consequence, the new Irving National Bank outgrew its quarters. Woolworth became a member of the bank's site selection committee and advocated a site for its new building on lower Broadway. The bank's directors opposed the idea, fearing the bank's customers in the produce trade would be reluctant to mix with the crowds on New York's fashionable commercial thoroughfare. Woolworth prevailed. Considering sites along lower Broadway, he discovered that Mercantile National Bank might sell a parcel at the corner of Broadway and Park Place. Realizing the parcel was too small, Woolworth inquired as to whether the parcels immediately south might be purchased. Finding it possible, he engaged the broker Edward J. Hogan of the real estate firm, John N. Golding, to begin negotiations.[30]

It is not known exactly when Woolworth began to entertain the idea of erecting a tall building on this site. In March 1910, however, he first proposed such a project to the Board of Directors of Irving National Bank. A few weeks later, Woolworth suggested that the Broadway-Park Place Company be incorporated to finance the project. The initial purchase price of the property was estimated at $1.5 million, two-thirds of which Woolworth agreed to underwrite if the bank officials adhered to his stipulations. These included allowing Woolworth to attach his name to the proposed building, agreeing to lease the second floor and part of the basement, and underwriting the remaining third of the purchase. The several million dollars needed to finance the Woolworth Building project still remained. The New York Times reported that Woolworth secured a mortgage on the building from a European bank, but Woolworth insisted that he paid for the construction in cash as the work progressed, because he found interest

excessively high on real estate loans in New York. After the completion of the project in May 1914, at a final cost of $13 million, Woolworth purchased all of the shares of stock owned by Irving National Bank, and thereafter owned the property outright.[31]

Woolworth assembled all the parcels for the Woolworth Building's final site by January 1911, nine months after purchasing his first parcel at the corner of Broadway and Park Place. As he accumulated parcels, Woolworth modified the scope of his project, which became both larger and more complex. When the final site was assembled, one observer called the feat "one of the biggest things" that had happened in "New York real estate circles in many years." Investors typically waited years to assemble parcels for the kind of site Woolworth had put together in the short period of nine months. In March 1910, with the assistance of Hogan, Woolworth acquired parcels at 233, 235, and 237 Broadway and at 6 and 8 Park Place for about $2 million. In June Woolworth told Gilbert he planned to obtain the entire Broadway frontage. By July 1910, he had 231 Broadway and 10 Park Place. The owners of the remaining corner parcel at Broadway and Barclay Street, however, demanded an exorbitant price, which Woolworth refused to pay. By adding property at 3 and 5 Barclay Street, Woolworth was able to isolate the corner. Meanwhile, the scale of the project had enlarged. Gilbert's design for a 625-foot tower was published in November 1910. By the beginning of January 1911, the owners of the desired corner capitulated, afraid of losing the income-producing value of their property once it was overshadowed by the large structure. They reportedly sold their property for $100 thousand below the price Woolworth had offered six months earlier.[32]

Edward J. Hogan, who was credited with securing the site, was already acquainted with Woolworth. Perhaps the two men first met when Hogan sold Woolworth the property for his house on Fifth Avenue and Eightieth Street. Hogan specialized in the sale of property along Fifth Avenue and was employed in the office of John N. Golding when it assembled about a dozen blocks needed for the construction of Grand Central Terminal. Hogan probably introduced Woolworth to Gilbert in April 1910. Hogan knew the builder of Gilbert's West Street Building, John Pierce, and he might have

brought the merits of the recently completed skyscraper to Woolworth's attention. Woolworth also reportedly knew the owner of the West Street Building, General Howard Carroll. With the completion of the Custom House, Broadway Chambers Building, and West Street Building, Gilbert had established himself as a prominent New York architect with a national reputation. Consequently, Woolworth might also have discovered Gilbert and his work by himself. Later, Woolworth stated that he chose Gilbert because of Gilbert's "enormous and magnificent and artistic buildings" such as the Minnesota State Capitol, the Custom House, and the West Street Building. By the end of April, Gilbert had the commission for the Woolworth Building. Hogan congratulated Gilbert as the "lucky architect," adding "I naturally have a great deal of interest in this transaction, having been with it from the start."[33]

In May 1910 Woolworth told the Board of Directors of Irving National Bank that he was planning a twenty-story building. By July, however, after assembling his first five parcels at Broadway and Park Place, he proposed the addition of a ten-story tower to the twenty-story office block. The thirty-story building would have surpassed in height R.H. Robertson's Park Row Building, at the time the tallest tower on City Hall Park, as well as the gold dome of the World Building. In June, when it was clear that Woolworth intended to acquire the entire block front, Gilbert prepared a still taller second proposal for the ideal site, the entire Broadway frontage of about 150 feet. The program of the first proposal--the thirty-story building that was announced in July--included leasable offices, ground floor retail space, the corporate headquarters of F.W. Woolworth & Company, and the banking hall and offices of Irving National Bank. The program of the second proposal, however, which was forty stories and approximately five hundred feet high, added a monumentally-scaled arcade lined with shops.[34]

Woolworth was still contemplating both proposals in the beginning of August when he met with Gilbert in London. At this time, he decided against the second proposal, stating that the larger building would tie up too much of his capital in a single enterprise. Despite Woolworth's discouragement, Gilbert remained hopeful of carrying out the larger project

and wrote his office manager, John Rockart, to encourage Woolworth to reconsider. On return from Europe at the end of August, Woolworth vacillated, hesitant to go ahead with the larger project without financing from New York banks. Woolworth then added a parcel he had already purchased at 231 Broadway, increasing the Broadway frontage from eighty feet to 105 feet. This parcel had formerly been designated for providing light and air for the proposed building. In September Gilbert and Woolworth agreed on a third proposal for a 550-foot building on the new site with a twenty-five-story base and a fifteen-story tower.[35]

At the beginning of November, however, Woolworth decided to top the Singer Tower, and authorized Gilbert to prepare a design for a building 620 feet tall. Less than two weeks later, a new variation of the third proposal was published in the New York Times. The program included a swimming pool in the basement, a gymnasium and a running track on the twenty-fifth story at the top of the office block, restaurants in the basement and in the top story, and a downtown club in the tower. Such complexity of program distinguished the Woolworth Building from its similar image-creating predecessors--the Times, the Metropolitan, and the Singer Buildings--and allied it with the fantastic, city-like skyscraper designed by Theodore Starrett. As in his Lancaster office building, influenced by the complex program of the department store, Woolworth provided a spectrum of diversions, comforts, activities and services for his "customers," or tenants. He intended to ensure the building's success by offering the public more than his competitors. Significantly, Woolworth drew up a "binding provision" to prevent the location of a five-and-ten-cent store in the building.[36] His Lancaster office building had commemorated his achievements with the location of a five-and-ten-cent store at the base of a towering structure. Woolworth's New York headquarters, however, had a major bank at the base of a magnificent skyscraper. Woolworth thus severed his association with nickel and dime merchandising to join the world of high finance.

Although the third proposal seemed final, Woolworth still had not settled on the height of the building, nor acquired the Barclay Street corner. In the middle of December, Gilbert pressured Woolworth to make a

decision on the building's height because construction had begun on its foundations and the structural engineer, Gunvald Aus, had completed the structural steel drawings up to the twentieth story. Even an immediate decision would mean wasted efforts and significant delays. Yet Woolworth remained indecisive. In Gilbert's words:

> He continued to advocate the higher tower on the ground that it would be the greatest tower in the world and yet he was not finally determined upon doing it. He seems unable to make up his mind.[37]

Clearly, Woolworth found it difficult to settle for constructing the second tallest skyscraper in New York. Gilbert retained the surveyor John G. Van Horne to measure the height of the Metropolitan Tower. By the beginning of January 1911, Woolworth secured the Barclay Street corner. Three weeks later, Gilbert had completed the new and final scheme for a fifty-five-story building about 750 feet high.[38]

With its spectacular height and complex uses, Woolworth's building program diverged from the spare, profit-making speculative office building program defined by George Hill. Nevertheless, it responded to the forces that shaped Hill's program and its differences only helped fill the building with tenants. Height, though uneconomic, advertised a tenant's quarters. The various conveniences on the premises enticed the prospective tenant with special amenities in addition to the standard leasable square footage. Similarly, as Barr Ferree contended, a tastefully designed exterior attracted tenants, or as Gilbert succinctly stated, it possessed an "income-bearing value." Besides planning the Woolworth Building as a profitable office building, however, Woolworth saw the structure as a monument that would identify the headquarters of his "empire" of stores and commemorate his personal accomplishment. These objectives became more salient as the project's scale enlarged.

According to Gilbert, Woolworth from the start had envisioned a building with a "great tower," and had requested that his building be designed in the "'Gothic' style." Woolworth must have known that a tower would provide greater corporate visibility than the "red fronts" could provide, despite their number and spread across the continent and abroad. The tower would link to a common administrative and symbolic center the vast, scattered chain of stores. Like the owners of the Singer and

Metropolitan towers, Woolworth knew that his enormous and elaborate tower not only strengthened the identity of his corporation, but also functioned as a splashy international advertisement of that identity. When Louis Horowitz, president of the Thompson-Starrett Company and builder of the Woolworth Building, questioned Woolworth on the financial soundness of the project, Woolworth responded that he was banking on "an enormous hidden profit outweighing any loss." He conceived the building as a "giant signboard to advertise around the world a spreading chain of five and ten cent stores." According to Woolworth, this idea came to him while travelling abroad when he discovered the international visibility and renown of the Singer Tower.[39]

The Woolworth Building also represented Woolworth's personal accomplishment. "After I was making a lot of money as a merchant, I wanted to build something bigger than any other merchant had. The Woolworth Building is the result." Like the office building in Lancaster, Woolworth's New York office tower commemorated the scale of his financial achievement. Between 1879 and 1912, his mercantile operation had expanded from a single five-and-ten-cent store to a $65 million corporation. A greater example of "conspicuous consumption" than his ornate chateau-like mansion on Fifth Avenue, the Woolworth Building was a showpiece ostentatiously displaying its owner's accumulated wealth to an emergent urban commercial culture. Gilbert and others insisted that Woolworth had constructed the building as a personal "monument." Woolworth asserted that the building did not serve an aggrandizing or memorializing purpose. He had "no desire to erect a monument that would cause posterity to remember me."[40] Yet, it cannot be denied that Woolworth's sense of identity was entangled with the project. As builder Louis Horowitz observed for posterity,

> Beyond a doubt his [Woolworth's] ego was a thing of extra size; whoever tried to find a reason for his tall building and did not take that fact into account would reach a false conclusion.[41]

Woolworth viewed Gothic precedent as the means of providing his corporate headquarters with an appropriate civic image. His advocacy was based on his knowledge of two Gothic-inspired structures--the Victoria Tower of the Houses of Parliament (1836-68) in London, a civic tower, and

the West Street Building, a commercial office building with civic pretensions (Figs. 170, 171). On a number of occasions, Gilbert mentioned Woolworth's admiration for the Victoria Tower. According to Gilbert, Woolworth had shown him a photograph of the tower at the beginning of the project and had examined the exterior with him when they met in London. Gilbert did not mention Woolworth's interest in the West Street Building, but in 1912 Theodore Starrett did. "The Woolworth Building is, as I understand, an outgrowth of the West Street Building, Mr. Woolworth having admired the Gothic style of that structure."[42]

As the project evolved and the building grew larger, Woolworth began to view it as an "ornament to the city." He felt it would actually enhance the architectural image of the skyline, or in Gilbert's terms, "add to the beauty of the city." For this reason, Woolworth specified that Gilbert design the tower with the same amount of embellishment on all four sides. Other towers built for purposes of image, such as the Singer and Metropolitan Towers, had also been designed with attention to their appearance from any angle. According to Gilbert, Woolworth's reasons for designing an architectural "ornament" included his "consciousness of civic responsibility to a very unusual degree," and another motive as well. Woolworth believed that beauty was a "business asset," in effect, that his patronage of a beautiful building would endow his corporation with an aura of high-mindedness.[43]

CHAPTER 5: DESIGN AND CONSTRUCTION

> Art glorifies Commerce and Commerce pays its willing tribute to its friend.[1]
>
> Cass Gilbert, 1915

> ...the Woolworth Building stands alone among all buildings of the world as one of the grandest and most beautiful ever erected by man...[2]
>
> Frank Woolworth, 1914

Gilbert's design for the Woolworth Building, based on Frank Woolworth's building program, was both a speculative office building and a civic monument, a Gothic tower. As constructed, the skyscraper culminated at least two decades of developments in the technology of the equipped and serviced steel-framed office building and combined these developments on an unprecedented scale. It was also the first skyscraper along lower Broadway to directly link with the subway line. Furthermore, its construction was governed by the same pressing economic demands that gave rise to the office building type. The Thompson-Starrett Company had organized to rapidly carry out such large-scale projects. The Woolworth Building was assembled systematically from materials fabricated in advance, according to a predetermined, strict schedule. At the same time, the Woolworth Building's exterior--its composition, the soaring Gothic monumentality of its piers, and its ornamental ivory-colored terra cotta cladding--tied it to the prevailing concept of the civic building. This association was reinforced by the Beaux-Arts planning of its arcade and upper floors and by its decorative program of sculpture, mural painting, and ornamental mosaics, metalwork, and glass. It was heightened by the ceremonial and electrical displays at its opening, which drew upon traditions established by exposition openings and civic pageantry.

As a patron, Woolworth remained highly involved with his project throughout its design and construction phases. He attributed his nervous

collapse of April 1912 to two events--the recent merger that doubled the size and dramatically increased the net value of the F.W. Woolworth Company, and the design and construction of the Woolworth Building. Although Woolworth made design suggestions, he left the final decision on such matters to Gilbert. The engineers and the builder, however, he watched carefully to make sure they were meeting his standards of economy and quality of materials, equipment, and methods of construction. According to Louis Horowitz, the greatest difficulty he faced on the project was preventing Woolworth "from making decisions which only specialists were fitted to make...." As might be expected of a five-and-ten-cent store entrepreneur, Woolworth was obsessed with detail and rarely made observations or suggestions about the building as a whole. Instead he chose to haggle with Gilbert's office over such items as electrical outlets, door widths, door checks, metal trim, and locks on elevators. He personally selected the building's plumbing fixtures and hardware. Woolworth often vacillated on these small matters, just as he had hesitated in defining the program and the size of the building. This led an impatient Gilbert to warn him more than once that he was "building a skyscraper" and that his indecision was "holding up the job."[3]

Woolworth insisted that his building contain "modern up-to-date things." He thought the mechanical and electrical engineers might be too conservative with their designs and asked Gilbert to monitor them. He requested that five hundred electric clocks be installed in the building, and that the costly "air cushion" be introduced in the elevator shafts, in addition to the typically complete set of safety devices usually provided with elevators. He also requested that the appearance of the mechanical equipment in the subbasement rival the machinery on display in the recently completed City Investing Building. Early in the project, he endorsed Gilbert's suggestion for placing a revolving electric light on the top of the tower. Gilbert reassured Woolworth's Broadway Park Place Company, which oversaw the project, that the Woolworth Building was designed "in accordance with the highest standard of modern office building construction."[4]

Gilbert's attempt to enhance the professional stature of the architect by raising the standard minimum fee was tested during the Woolworth Building project. Gilbert had campaigned for that cause two years earlier at the 1908 national A.I.A. meeting in Washington, D.C. Because of the number of designs developed for its changing site, the Woolworth Building could not be considered a typical project. Questions regarding the determination of fees were bound to arise. Woolworth insisted that Gilbert's fee should be based on a fixed percentage of the anticipated cost of the building, as decided at the project's beginning. Gilbert maintained that it should be based instead on the cost of the completed building, in accordance with the A.I.A. fee schedule. The argument arose when Gilbert billed Woolworth $61 thousand after completing working drawings for the final scheme. Woolworth asserted that Gilbert had exceeded his fixed percentage fee. Gilbert argued that his fee should be based on the three different proposals he had developed for the building, to reflect the incremental increase in the site's dimensions. Gilbert refused to compromise on the matter and, according to Glenn Brown, his "nerve won a victory for the Institute Schedule and a handsome remuneration for himself." Ultimately, Woolworth paid Gilbert the standard six percent fee on the $7 million building, about $425 thousand. A thumbnail sketch of the first proposal, accompanied by a series of figures that included the total cost of the building, was probably drawn by Gilbert in the course of a discussion over fees (Fig. 172).[5]

Gilbert's office organization and design process were influenced by his experience with McKim, Mead & White. The atelier-like atmosphere of American Beaux-Arts practice created a spirit of cooperation and camaraderie that facilitated teamwork in the designing of projects. The coordination of a team effort was less crucial to small projects, which had accounted for the bulk of the work in Gilbert's St. Paul office during the 1880's and early 1890's. However, in designs for monumental buildings produced by Gilbert's New York office and other American Beaux-Arts practices, a team effort was necessary. The systematic logic of the Beaux-Arts design process facilitated the delegating of tasks among individual designers.

Like Charles F. McKim, Gilbert initiated design with a conceptual sketch analogous to the Beaux-Arts parti, which was based on an analysis of the proposed building's program. Subsequently, the concept was developed into a completed design by Gilbert's assistant designers and draftsmen, who were specialists attuned to the office's method of work and to its standards. As the project moved ahead, Gilbert assumed the role of critic and proposed revisions in the drawings of his subordinates. Gilbert's office and other American Beaux-Arts practices did not welcome the excessive systematization of design tasks, however, so as not to destroy the studio atmosphere.[6] Instead, shared knowledge of the design process and commitment to a deadline created the momentum necessary to complete the project.

As sole principal of his firm, Gilbert relied on a force of able assistants to complement his skills as designer and administrator. When he entered the New York Custom House competition, for example, Gilbert assigned two leaders to assist with the development of the design and to oversee its progress. They included an office manager, Samuel-Stevens Haskell, and a chief designer, Ernest Hèbrard, both of whom were trained at the Ecole. To ensure the rapid and successful completion of a project, Gilbert hired predominantly Ecole-trained or Ecole-influenced designers and draftsmen. Gilbert, like McKim, would spot promising, talented young men in his office and subsidize their travels in Europe. Gilbert was known to support Ecole des Beaux-Arts training for young men "whose architectural ambitions he considered worthy."[7] The systematic treatment of a design problem by a number of contributors hindered the development of a wholly original, nonstandard approach to a solution. Furthermore, as sole principal in his firm, Gilbert was saddled with both design and administrative duties. Time spent securing commissions and attending to quotidian affairs left less time for creativity. Consequently, while Gilbert's team design efforts produced buildings with a distinctive character, as a group they did not bear Gilbert's personal stamp.

Gilbert's New York office was located at 11 East 24th Street in the Metropolitan Life Insurance Company Annex Building. During the Woolworth Building project, Gilbert's architectural staff, photographed on the

building's roof, numbered around twenty-five individuals (Fig. 173). To produce the construction documents for the project, this group was supplemented by a team of "structural draftsmen" employed by the structural engineer, Gunvald Aus Company, and by a team of "ornamental draftsmen" employed by the Atlantic Terra Cotta Company. Both teams generated complete sets of shop drawings out of Gilbert's office.[8] Throughout the project, Gilbert depended on a small group of talented individuals including the office manager, John Rockart; an authority on construction practice, George H. Wells; and Gilbert's chief designer and delineator, Thomas R. Johnson.

As project manager, Rockart kept the office in order during Gilbert's prolonged absences, and informed Gilbert by letter of current developments. He coordinated the work of the mechanical and electrical engineers with the developing architectural design. During construction he led meetings between Woolworth, representatives of the Thompson-Starrett Company, and Gilbert's architectural staff. Wells represented Gilbert's office on matters of construction. These included scheduling the project, supervising delivery of building materials to the site, periodically inspecting construction progress, and overseeing construction contracts. As the chief designer and delineator, Johnson generated almost all of the major perspectives and elevations of the Woolworth Building as the project developed. The magnitude of Johnson's actual contribution to the Woolworth Building project cannot be precisely determined. Gilbert clearly acted as the final authority on matters of design. From remaining drawings, it appears that Johnson's decisions were guided by Gilbert's evolving vision of the building, which he documented in his quick conceptual sketches. Johnson probably suggested fenestration patterns, specific ornamental motifs, and details of construction--items that called for concentrated attention as drawings became more specific and refined--under the watchful, critical eye of Gilbert. After the preliminary design phase, Johnson assumed responsibility for approving full-scale drawings and models of the exterior terra cotta, stonework, and ornamental copper and the interior ornamental stonework and metalwork. After completion of the Woolworth Building project, the two men's working relationship approached the truly collaborative. For example, Gilbert wrote to Johnson in 1914 concerning a

competition entry for the proposed William McKinley Memorial in Washington, D.C. In his letter Gilbert approved Johnson's suggestion to set off the Memorial's base with relief sculpture, proposed changes in the overall composition and the proportions of the columns, and left the final decision on such matters to Johnson.[9]

Before entering Gilbert's office in 1901, Johnson, a Canadian, had worked for the Toronto architect, E.J. Lennox, and also reportedly for Ernest Flagg. Johnson assisted Gilbert on the design of the Custom House, the Festival Hall at the Louisiana Purchase Exposition, the New Haven Railroad Station, the West Street Building, and the University of Minnesota. Contemporaries considered Johnson both a "master of every form of architectural draughtsmanship" and "a designer of rare ability." He was particularly well known for his skillfully and rapidly drawn perspectives, in which he combined "pencil, water color, and colored chalks with the most remarkable effectiveness and truth of representation." After completion of the Woolworth Building, Johnson's role in the profession was clearly defined, according to the editors of Brickbuilder. "Much of the work from Mr. Gilbert's office is now designed in perspective [by Johnson] aided by Mr. Gilbert's criticism and suggestions." Johnson's perspectives were precise, but also pictorial and inviting to the spectator. They served the twofold purpose of elaborating Gilbert's designs and convincing clients, juries, or the public of their plausibility. As a designer, Johnson respected the past, but also prized originality. "A deep student of architectural precedent," he refused to allow historical knowledge to detract from his "inventive powers as an artist, which were exceptional, not only in the intricate detail of architectural ornament, but in the larger forms of planning and composition." Johnson died in 1915, two years after the Woolworth Building was constructed, and shortly after completing a perspective drawing for the Austin Nichols Warehouse (1913-15) in Brooklyn. The design for the warehouse prefigured the later United States Army Supply Base, also in Brooklyn (1918-19), one of the Gilbert office's most abstract, forward-looking designs (Fig. 174).[10]

Not all of the drawings associated with the Woolworth Building project remain. The existing plans, exterior elevations, and perspectives can be

grouped according to the three different proposals the Gilbert office developed to accommodate the changing size of the site. On 17 May 1910, a plan was proposed for a typical upper floor occupying the entire Broadway frontage between Barclay Street and Park Place (Fig. 175). This resembled the final plan for the typical upper floor of the building. This early plan demonstrated Woolworth's ambition to acquire the large site at the outset. The difficulties and delays, coupled with Woolworth's impatience to finish the building and fill it with tenants, caused Gilbert to develop in depth the three different proposals.[11] The first proposal showed a building occupying a partial frontage of about 80 feet along Broadway. The second showed a building occupying the entire Broadway frontage, or about 150 feet, and the third showed a building occupying a "compromised" Broadway frontage of about 105 feet. The final design was actually a variation of the second proposal.

Plans, perspectives, and elevations showing the first proposal were completed within two and a half weeks in late April and early May 1910. The plans, defined by the boundaries of the smallest site, were titled "Woolworth Bank and Office Building," as opposed to "Woolworth Building." The title indicated that Woolworth perceived the original project as a speculative bank and office building as well as a home office. The first drawings produced for the project, dated 21 April 1910, included plans of the lobby and a typical upper floor, and showed a design for an office building similar in size to Gilbert's recently completed West Street Building (Fig. 176). The ground story was divided into leasable retail space and an elevator lobby, which was entered from Broadway. The lobby contained a large stair leading to the quarters of the Irving Bank in the second story. The upper stories contained leasable offices. Subsequent plans for the small site showed variations of this scheme. The elevators and stairs were shifted to different locations and some of the drawings indicated a secondary entrance from Park Place (Fig. 177).

Like the plans, the drawings showing the exterior of Woolworth's first proposal for a bank and office building demonstrated consistency in conceptual development. All showed a thirty to thirty-five-story tower joined to a lower twenty-story block. Johnson completed the first drawing

of the proposed building's exterior, a perspective, on 22 April 1910, one day after the first plan was drawn (Fig. 178). The tower portion of the building resembled the Victoria Tower of the Houses of Parliament in London, evidence of Woolworth's preference for this monument as a model for the building (Fig. 179). Gilbert's design differed from this model, however, by boldly expressing structure with a multiplicity of vertical lines and by emphasizing extreme openness in the building's exterior envelope. Woolworth had stated that he wanted a building in the "'Gothic' style." According to Gilbert's later account, he told Woolworth that it was practicable to use Gothic detail, but not masonry construction. The chief requirement of the skyscraper--great height--could be fulfilled only with a steel structure, and this "fact" should be emphasized in its design. Height should be expressed with "a dominance of vertical lines." The "true and logical solution to the problem" had "no real precedent."[12] Gilbert had earlier offered a similar explanation of the principles that guided the design of the West Street Building. He had invoked Sullivan's concept of structural expression to support his argument that the steel frame should not be disguised with conventional architectural elements.

Nevertheless, like the Victoria Tower--an English Tudor Gothic precedent--the tower of Woolworth's bank and office building was composed of four tourelles that enframed three fully open bays in each facade. The whole was spanned with decorative horizontal belt courses and surfaced with rectilinear Perpendicular detail. The gridded surfaces and the fenestration of Tudor Gothic architecture and its antecedent, the Perpendicular Gothic, made these precedents particularly adaptable to the programmatic demands of the skyscraper, which had a proliferation of cellular office spaces, all requiring light. Woolworth requested enclosed corner tourelles, thinking they might provide spectacular views up and down Broadway. Their tiny windows, however, admitted inadequate passage of light. Moreover, as Gilbert warned Woolworth, the projecting tourelles required setting the building's walls back from the property line, thus sacrificing valuable floor space.[13]

Gilbert corrected this drawback in a second perspective, drawn by Johnson, dated 25 April, in which the tourelles were replaced with

strengthened corner piers. The piers contained window openings at the prized corner locations of the interior, but still emphasized the tower's corners and enframed the open stories at its center (Fig. 180). The horizontal belt courses in the lower stories were removed, resulting in a greater impression of verticality. Both changes diminished the English Tudor and Perpendicular Gothic qualities of the design, but did not entirely erase them. Significant traces remained in the multiplicity of soaring vertical lines, which created a pattern of structural piers alternating with thin vertical mullions, and in the band of narrow rectilinear windows that ringed the exterior, which visually tied the soaring tower to the lower block. Both traces recalled the choir of Gloucester Cathedral (1337-67)(Fig. 181). The highest stories of the tower were set back as in the Victoria Tower. The deeply recessed windows in the upper stories recalled both the Tower and the example set by Gilbert's earlier Broadway Chambers and West Street buildings, where a loggia motif demarcated the crown (Figs. 182, 183).

Gilbert sketched a perspective the following day, dated 26 April 1910, that might be viewed as a critical evaluation of Johnson's drawing for the second scheme (Fig. 184). In his perspective Gilbert instructed Johnson to enrich the tower and the top of its adjoining block with an elaborate encrustation of ornament. This created a two-part division between the ornamental monumentality of the tower and the plain and prosaic quality of the office block, the same division found in Cyrus L.W. Eidlitz's design for the New York Times Building (Fig. 185). More significantly, Gilbert's prospective demonstrated his shift away from the Victoria Tower prototype and towards the example of the Gothic civic architecture of the Low Countries and northern France, his chief source for the design of the West Street Building. His emphasis on enclosure and vertical continuity in the corner tourelles, the pitched roof punctuated with dormers, and the projecting canopies enhancing the effect of depth in the loggia all recalled his design for the West Street Building (Fig. 183).

The studies in perspective were followed by two studies of the building's Park Place elevation, both drawn by Johnson. The first study, dated 3 May, showed Johnson's experiments with the design of a distinctive

crown with a projecting canopy, enclosed corner tourelles, and a central dormer window, as suggested by Gilbert's sketch (Fig. 186). Yet, unlike Gilbert's sketch, the detailing of the building remained predominantly Tudor and Perpendicular Gothic in character. The decorative treatment of the lower stories harmonized with the tower, and horizontal belt courses appeared again at every fourth story. In the second elevation, dated 9 May, Johnson elongated the proportions of the tower and continued experimentation with its crown (Fig. 187). Johnson shifted in his choice of precedent, probably at Gilbert's suggestion, from the Victoria Tower to the Clock Tower of the Houses of Parliament, basing the new design on the Clock Tower's three part division and steeply pitched double roof (Fig. 188). Johnson also studied the shape of the vertical piers and drew, for the first time, the projecting angular pier--a hallmark of the building's final design. Gilbert had not employed this type of pier in any of his earlier projects. However, a version of this type appeared in Howells and Stokes's entry to the Municipal Building competition of 1908, the design of which was also based on Tudor Gothic precedent (Fig. 189).[14] The angularity of the pier caused one face to reflect light and the adjoining face to remain in shadow. This conveyed an illusion of projection and mass, or monumentality, which counteracted the potentially flimsy appearance of uniform tiers of offices. Johnson showed the projecting angular piers in an alternating sequence with colonettes across the shaft of the building, recalling Sullivan's treatment of the shaft in the Bayard Building (Fig. 190).

The second proposal Gilbert's office prepared for the project design assumed full occupation of the Broadway frontage, and reflected Woolworth's altered concept of the purpose of the building. As Gilbert later recalled, when Woolworth decided to acquire the entire block front, he abandoned the idea of constructing a mere "office building" and entertained the possibility of "erecting a landmark to the city."[15] The label "Woolworth Building" appeared for the first time on a plan dated 14 May 1910, showing an enlarged lobby with a central monumental stair (Fig. 191). A few days later, on 17 May, the first plan was drawn in which the project occupied the entire block front, indicating the arrangement of a typical upper office floor (Fig. 175). Studies of the ground floor also continued. In a

drawing dated 21 June, the concept emerged of a spacious central arcade, leading from the Broadway entrance to the rear of the site (Fig. 192).

The first exterior drawing showing the enlarged second proposal, an elevation delineated by Johnson, was completed on 27 June. On 6 July, Johnson finished the only exterior perspective of the new proposal, which corresponded closely to his elevation drawing (Fig. 193). The ornament, in the form of projecting canopies encircling the upper stories of the tower and block, was still discernibly Gothic, although it lacked the first proposal's associations with a specific source of precedent. The fenestration of both the tower and the block still imitated the alternating pier and colonette pattern of the Bayard Building. The tower that had stood isolated on Broadway, however, was in the second proposal flanked by the two symmetrical subsidiary wings and emerged from, rather than abutted, the lower office block. Gilbert had already utilized a version of this composition--a tower united with a block--in a preliminary sketch for the West Street Building (Fig. 194). The Singer and Metropolitan buildings, products of piecemeal building campaigns, both had office blocks that joined towers, but the towers and blocks were not connected to form an integral compositional whole (Figs. 195, 196). The unified tower and block composition was not solely a New York phenomenon, nor did it originate with Gilbert. Solon S. Beman utilized the formula for his 1891 design of the Pabst Building in Milwaukee and Schmidt, Gardner & Martin for their 1902 design of the Montgomery Ward and Company Building in Chicago (Figs. 197, 198). In each case, the composition was used to design an office building housing the headquarters of a commercial enterprise. Architects choosing to unite a tower and a block had with full knowledge of the composition's civic associations; it evoked the hôtel de ville of the Low Countries and northern France from which it was derived. Documentation of this building type had appeared in architectural periodicals during the 1890's. After construction of the Woolworth Building, Gilbert insisted that he had intended to "express the idea of a civic or commercial building" and therefore had based its design on the "medieval civic building." He identified as examples the town halls at Middelburg and Brussels and the

Cloth Hall at Ypres, all of which, like the Woolworth Building, displayed towers of "proportionally great height" (Figs. 199, 200).[16]

At the beginning of October, after Woolworth had added another parcel to the site to gain approximately 105 feet of frontage along Broadway, Gilbert developed a third proposal for his project. This proposal represented a surprising departure from the Gothic schemes prepared for the first two proposals. An exterior perspective drawn by Johnson dated 1 October 1910 reveals that Gilbert had decided to consider classical precedent as the source for the design of the building's exterior envelope (Fig. 201). The soaring, angular piers of the earlier schemes were replaced by a tripartite composition with enclosed corners and an open center, like the facades of Carrère & Hastings's Blair Building and Ernest Flagg's Singer Tower (Figs. 202, 195). Unlike Hastings and Flagg, Gilbert chose to express the building's steel skeleton structure with multiple vertical lines at the center of the facade. The scheme's classical overtones contradicted Gilbert's earlier stance regarding the emphasis of structure in skyscraper design. These overtones represented a departure from the project's norm and were not mentioned, much less explained, by either Gilbert or Woolworth.

Gilbert may have proposed this classical alternative as a more suitable architectural expression for a building sheathed with stone. Two weeks earlier, Gilbert and Woolworth had discussed granite and limestone as possible materials for the building's external cladding. They were concerned about expense and speed of construction. The classical scheme would have presented a realistic alternative to the more ornate Gothic scheme, which was difficult, impractical, and time-consuming to execute in stone.[17] Gilbert's decision may also have been influenced by the requirements for windbracing in a tower of such tall and narrow proportions. A conventional, diagonal system of windbracing would have required a design with enclosed corners.

In early November 1910, when Woolworth decided to top the Singer Tower, Johnson drew a taller variation of the third proposal, with a tower in three distinct stages (Fig. 203). The drawing shows that Gilbert had

decided not to develop the classical scheme, but to return to Gothic sources. The new Gothic-influenced scheme included the angular vertical piers, the projecting ornamental canopies, and the horizontal belt courses of earlier schemes. Before Johnson began his drawing, Gilbert had decided to adopt a system of portal bracing in the tower for lateral resistance. Unlike the typical diagonal system of windbracing, portal bracing allowed him to design the building's fenestration so as to create the effect of screen-like openness between key points of support. Gilbert had also decided to use terra cotta for the building's exterior cladding material. Gilbert did not regard the published and exhibited, Gothic-influenced version of the third proposal as a final design.[18]

In a quick conceptual sketch, dated 31 December 1910, Gilbert suggested strengthening the impression of uplift in the tower by elongating its roof and by successively diminishing in height its three upper stages (Fig. 204). This major alteration in the proportions of the tower was incorporated in the final design of the building, which was shown in a detailed perspective drawn by Johnson on 20 February 1911, after Woolworth secured the entire Broadway frontage and decided to top the Metropolitan Tower. Johnson's perspective was sent immediately to the New York architectural renderer, Hughson Hawley, for coloring (Fig. 205). It was subsequently copyrighted by Woolworth, photographed, and distributed to New York newspapers for simultaneous publication in their Sunday editions.[19]

The final design of the Woolworth Building was actually a refined and taller version of the second proposal--a central tower emerging from a lower block--which incorporated concepts and details of the Gothic-influenced version of the third proposal and of the earlier schemes. Proportional refinements were made in the fenestration pattern and ornament. Pitched roofs joining steep gables eased the transition between the lower block's roof and the tower. The uppermost stage of the tower, now octagonal in form, was flanked by four tourelles. This resembled the crossing tower of Notre Dame in Coutances, a photograph of which was kept in the office, and the southwest tower of Ely Cathedral, which Gilbert had seen and sketched during his European travels (Fig. 206, 207). The design

of the tower's steep octagonal roof was based on the roof of the Guild Hall in Cologne, Germany (Fig. 208).

In its general outlines, the tower and the upper portion of the block resembled the composition of the hôtel de ville in Compiègne, France (Fig. 209). The pitched roof surmounting the lower block recalled those of the hôtels des villes of the Low Countries, such as Middelburg, Louvain, or Audenarde (Fig. 210). Breaks in the sheer ascent of the tower were punctuated with buttresses at the forty-second and forty-seventh stories. The vertical mullions of these upper stages were subdivided, as in the tower of the Antwerp Cathedral, to create an effect of lightness and delicacy, reinforcing the sensation of uplift (Fig. 211). According to Gilbert, he chose to emphasize height "not only by the dominance of vertical lines," but also by the "repeated insistence upon them by minor verticals and resolving these again and again into minor subdivisions of a decorative sort as was done in the architecture of the 15th Century."[20]

The building's lacy ornamental motifs were drawn from the flamboyant Gothic architecture of northern France, the tracery of which Gilbert found "light, graceful, delicate, flame-like, and capable of infinite subdivision." Gilbert identified specific sources for the tracery, including the Hotel de Cluny in Paris, the Palais de Jacques-Coeur in Bourges, and the Cathedral towers of Reims, Antwerp, and Malines (Figs. 212, 213). Another source was the Flamboyant choir of the church at Mont-Saint-Michel, a photograph of which was in Johnson's possession (Fig. 214). The Late Gothic detailing decorated the major lines of the building's composition. The composition was a synthesis of Gilbert's adaptation of Sullivan's concept of structural expression and the Perpendicular and Tudor Gothic characteristics from the earliest phases of the project.[21]

The Woolworth Building's steel structure, designed by the structural engineer, Gunvald Aus, complemented Gilbert's concept for the design of the building's exterior. Aus and the thirty engineer-draftsmen he employed on the project produced the shop drawings that the American Bridge Company used to fabricate the building's steel members. Aus emigrated from Norway

in 1883 with a civil engineering degree from Heidelberg University. From 1894 to 1900, he directed structural design in the Office of the Supervising Architect in Washington, D.C., and established the Gunvald Aus Company in New York in 1902. He had been retained by Gilbert as a structural consultant for the Minnesota Capitol, the Custom House, and the West Street Building. In January 1911, when Woolworth acquired final frontage and requested a taller building, Aus was forced to redesign the steel superstructure and the reinforced-concrete pier foundation, utilizing the thirty-eight piers already in place (Fig. 215). He had by that time completed the foundation design, drawings for the steel framing as far as the twentieth story, and the steel shop drawings as far as the fourth or fifth story.[22]

According to Aus, the requirements of the Woolworth Building's architectural design governed its engineering design. The placement of the structural steel columns in the front of the building was controlled by the design of its street facade. Their placement in the wings was controlled by the size of its offices. The system of windbracing was chosen in light of the nature of the building's window openings and internal partitioning requirements.[23] Aus thought structural design should serve architectural design, but maintained an independent point of view on the aesthetics of structure. Aus regarded as "freak designs" the recently erected tall buildings in New York which treated the steel frame as a "necessary evil" demanding concealment. Aus clearly supported Gilbert's decision to express structure on the Woolworth Building's exterior.

> From an engineering point of view, no structure is beautiful where the lines of strength are not apparent...where one cannot follow the distribution of the loads from the top of the structure to its foundations. There are many examples of architecture around New York which should hurt every trained eye because they look entirely unstable, and it is only the knowledge that steel members concealed behind the masonry prevent their collapse, which makes one pass without fear in front of such structures.[24]

In essence, Aus advocated structural rationalism. A tall building should be designed so that its supporting elements were visibly indicated, and so that its masonry exterior was visibly an enclosure rather than a heavy wall. In the final design for the Woolworth Building, Aus's rationalism found full expression (Fig. 216). The thickness, and thus the ostensible

strength of the exterior columns, corresponded to the actual structural load the columns carried. The piers seemed most massive at the corners of the tower, less massive at its center, and even lighter in the adjoining wings. The non-load-bearing vertical mullions between were least massive of all.

Aus recommended the portal arch system of windbracing, not commonly used, for the Woolworth Building's central tower (Figs. 217, 218). According to Aus, the portals could "generally be arranged so as not to interfere with window openings." The piers in the tower could therefore "be made very much lighter than would be possible with a system of diagonal braces." In addition, the portal arch system provided more rigidity than other systems of windbracing, and therefore decreased the sway at the top of the structure. Known to limit flexibility in the location of interior partitions, the portal arch system was nevertheless well suited to the Woolworth Building's central tower, which contained mainly elevators. The portal arch component, a specific type of portal brace, consisted of steel plates riveted together to form a deep arch-shaped web. The windbracing had been developed by the engineer Corydon T. Purdy in collaboration with Holabird & Roche for the Old Colony Building in Chicago (1893-94) (Figs. 219, 220). Costly to fabricate, it nevertheless suited Gilbert's Gothic-influenced design, which called for delicacy and a screen-like openness in the treatment of the building's enclosure. This openness resulted from a pattern of extremely narrow mullions and recessed spandrels, which spanned between the monumental yet gracefully thin projecting angular piers. Standard systems of windbracing, such as cross bracing or knee bracing, as used in the Singer and Metropolitan Towers, respectively, would not have permitted such uniformly large openings in the fenestration pattern between the piers, and consequently would have destroyed the enclosure's weightless appearance.[25]

The Woolworth Building's central tower, from top to base, was designed as a structurally independent element and was stiffened with windbracing to resist lateral forces from any direction. The building's flanking wings, in turn, depended on the tower for lateral stability. They were stiffened across their narrow dimension with portal bracing and were joined in tandem

with portal struts that spanned the light court at every fifth story. In the tower, wind stresses were transferred from the apex down to the fiftieth floor through the inclined members of the octagonal roof structure, and then down to the forty-seventh floor through interior columns joined to portal bracing. From there stresses reached the twenty-eighth floor through outer columns joined to deep girders with knee bracing, and then traveled down to the foundation through portal arch bracing. At the base of the tower, the point of the greatest potential lateral stress, additional measures were taken to brace the structure. A system of double arch portals was used in the first four stories of the Broadway elevation, and concrete floors were used in the basement and the first story. The concrete floors functioned as a diaphragm to resist and distribute lateral forces. The gravity loads carried on the building's columns exceeded the lateral loads, further stabilizing the steel structure. All loads were transferred by means of steel and concrete grillage footings through concrete piers to bedrock, or the submerged rocky ridge that underlies lower Manhattan Island.[26]

Gilbert preferred the standard to the innovative in the technical aspects of the Woolworth Building project. He asked Aus to be "extremely careful and conservative" with his structural design. To ensure that Aus's design was safe, Gilbert intended to have it checked by the structural engineering firm, Boller & Hodge, who had checked the structural design of the Singer and Metropolitan Towers. Woolworth insisted, however, that an examination by the Thompson-Starrett Company, as originally planned, was adequate. Gilbert then urged the Thompson-Starrett Company to check the structural drawings carefully, for although he had confidence in Aus's calculations, he wanted to be certain that the building was absolutely stable, given its extraordinary height. Aus, to the contrary, thought his design excessively conservative. He attributed the cause of this conservatism not to Gilbert but to the antiquated strictures of the New York Building Code, adopted in 1899. Aus used his involvement with the Woolworth Building's structural design to criticize the code's excessive structural requirements for wind loading as well as live loading--the assumed gravity load carried on a structure by its occupants and movable objects. Like Aus, other engineers were critical of the code for the same

reasons and advised that it be amended. Chicago's building code was cited as a desirable model.[27]

Gilbert had designed the exterior of the Woolworth Building by February 1911. Long after construction began, however, design continued on the ground floor arcade and the other distinctive spaces on the interior, such as the corporate offices, the swimming pool, the barber shop, the rathskeller, the downtown club, and the tearoom. The spacious central arcade was modified as late as December 1911. As it first appeared in a drawing dated 21 June 1910, the arcade led from the Broadway entrance to the rear of the site (Fig. 192). Near the main entrance, it intersected with an elevator hall and at the back of the site, with a corridor joining Park Place to Barclay Street. In a later plan, which no longer exists but was published in 1920, the elevator corridor was extended to join both Park Place and Broadway (Fig. 221). This created a cross-shaped arcade that forcefully linked the building's interior with the three surrounding streets. Finally, in January 1911, Gilbert, Woolworth, and Lewis Pierson decided to shift the location of the stairs leading to the banking hall, which at the time were tucked inconspicuously among the arcade shops (Fig. 222). Gilbert suggested widening the cross-shaped arcade to accommodate a monumental stair on axis with the main entrance. Woolworth feared that pushing back the rows of shops lining both sides of the arcade in order to create space for the monumental stair might detract from their rental value. Gilbert argued that the stair would enhance the vista from the main entrance, and Woolworth finally agreed, perhaps recalling the impressive, monumental stairs in the lobbies of the Singer and Metropolitan buildings.[28] The west arm of the cross-shaped arcade was subsequently widened to create a tall rectangular room, roofed with a skylight that flooded the space with illumination from the building's light court (Fig. 223).

Woolworth and Gilbert devoted considerable attention to the design of the arcade shops and the show windows. In June 1911 Woolworth presented Gilbert a sketch with specific recommendations regarding the show windows at the Park Place entrance to the arcade. In December Gilbert strictly advised Woolworth not to place show windows in the building's main entrance

vestibule, which he thought would detract from its imposing impressiveness to visitors.[29] When completed, the ground floor contained eighteen stores with plate glass show windows, four of which opened onto the north-south axis of the arcade, and twelve small shops concentrated mainly in the west arm of the arcade (Fig. 222). The arcade retained the cohesiveness and monumentality associated with Beaux-Arts plans, despite its diverse elements--shops, elevators and stairs--and its intense commercial use. The monumentality can be partly ascribed to Gilbert's decision to fur the steel columns with thin walls to create the effect of heavy piers and solid masonry construction. The lobby plan exhibited the Beaux-Arts attributes of axiality, symmetry, and hierarchy. The main sequence of circulation especially exemplified the Beaux-Arts planning tradition. The sequence, which expressed if not overstated the purpose of a commercial building, began at the main entrance off lower Broadway, ascended the monumental central stair, and culminated in the grandiose double-height space of the banking hall, appropriately situated at the heart of the plan.

While the final plan of the arcade was being resolved, a perspective was sketched, probably by Gilbert, showing a view of its interior from a point near the Broadway entrance (Fig. 224). The sketch's proportions and suggestion of a fan vaulting system recalled the Perpendicular nave of King's College Chapel in Cambridge (1446-1515)(Fig. 225). As the design evolved, the Gothic proportions remained unchanged, but the fan vaults were simplified to a series of domical vaults, as shown in another anonymous sketch. This was then simplified to a barrel vault, creating a space over the plan's east and west cross-arms, resembling in its shape and proportions a Romanesque nave (Fig. 226). The final cross-shaped configuration of the arcade also recalled the Byzantine Mausoleum of Galla Placidia (425-50) in Ravenna, with a domical vault at the center, tympana at the ends of the north and south cross-arms, and a surface of gold mosaic (Figs. 227, 228). Regardless of any precise correspondence between the form of the arcade and a Byzantine prototype, Gilbert recaptured the luminous qualities of the Byzantine interior. These he had studied in his sketch of the crossing of St. Mark's (Fig. 82) and may have observed in the sanctuary of Stanford White's recently completed Parkhurst Church (1903-6), which was based on the interior of Hagia Sophia (532-37) in Constantinople.

The cross-shaped plan with a monumental stair of Fonthill Abbey, Wiltshire (1796-1812)(Fig. 229), designed by James Wyatt, was another possible precedent for the lobby design, particularly as it appeared in some of the early drawings showing its central stair nearer the main entrance.[30] In the lobby, as in the exterior, a number of diverse prototypes, elements, and details from the past were grafted together into a synthetic ensemble that suggested no single model or source. In early 1912 the final perspective of the arcade, showing a view from the main entrance towards the monumental stair, was laid out by the New York delineator, Zenas M. Matteossian, and in April rendered by Thomas R. Johnson (Fig. 230).

The final plan of the typical upper story displayed a skillful synthesis of Beaux-Arts concepts of spatial organization and the prosaic, minimal requirements of office building planning outlined earlier by George Hill (Figs. 231, 53). The plan adhered to Hill's prototypical U-shaped plan by arranging offices in two parallel rows along a light court, and by connecting them near the building's main entrance to accommodate stairs and elevators for vertical circulation. The concept of the final typical upper floor plan had appeared in an early typical upper floor plan, developed within a month after Gilbert began work on the project on 17 May 1910 (Fig. 175). The early plan, with its minimal public spaces and imbricated office layout, emphasized the profit-making purpose of the office building to the detriment of its interior proportions. In the final plan, however, the cross-shaped elevator lobby at the center of the U-shaped plan was capacious and monumental. It was also inefficient compared to other office buildings, although not necessarily wasteful, for the size of the building alone demanded large waiting areas near the elevators. The corridors leading to the offices provided a system of circulation distinctly separate from the elevator lobby, and generously exceeded minimal requirements. Corridors were surfaced with a wainscot of marble, the type of which varied from floor to floor. Aus's placement of the structural columns was skillfully coordinated with the disposition of the plan.

The designs for the major public and commercial spaces of the Woolworth Building's interior did not reflect the character of the exterior. Instead they employed historic precedent in the form of

stylistic motifs and exquisite furnishings. The styles either expressed the use of a particular space or conveyed by means of historical association a message about the social position, interests, or fantasies of the space's occupants. To achieve these results, Gilbert and Woolworth relied in part on decorating firms. Mack, Jenney & Tyler designed the "Pompeiian" decoration for the swimming pool. Theo Hofstatter & Company designed the general offices of the Woolworth Company's corporate headquarters in the twenty-fourth story. Baumgarten & Company designed Frank Woolworth's office and the company's board room in the "French Empire" style of Napoleon I (Fig. 232). Gilbert designed Woolworth's private office on the fortieth floor in a "Flemish Renaissance" style, the banking hall of Irving Bank in a "Late Gothic" style, and the rathskeller in the basement in a "Medieval German" style (Figs. 233, 234, 235). The rathskeller, patterned after the cellar of a German city hall in which beer was sold, reinforced the civic associations of the building's tower and block composition. The proposed and abandoned design for the quarters of a downtown club on the twenty-seventh and twenty-eighth floors included a lounge, a gymnasium, a dining room, and a "Dutch" grill room. A tearoom, shown in a sketch by Johnson, was planned for the tower's octagonal roof (Fig. 236).[31] These eclectic settings were concentrated at the base of the building, at the top of its office block, and at the pinnacle of its tower, as in earlier, similar tripartite arrangements of internal functions in office buildings. The multiplicity of interior settings with disparate styles betrayed a self-assured, ethnocentric global awareness such as Harry M. Pettit's in his "Cosmopolis" centered on lower Broadway. The settings reinforced the Woolworth Company's self-image as a presence on the international financial scene, Woolworth's somewhat naive and materialistic attitude towards the artifacts of other cultures, and Gilbert's facility at concocting old-world surroundings that appealed to his patron and played upon current taste.

The two largest construction companies in New York, the Thompson-Starrett Company and the George A. Fuller Company, competed for the opportunity to build the Woolworth Building. Each pursued Woolworth and Gilbert with the hope of securing the contract, a "prize for which contractors were almost ready to trade an eye or leg," according to Louis

J. Horowitz, then the newly elected president of the Thompson-Starrett Company.[32] Paul Starrett, president of the George A. Fuller Company, similarly described the competitive atmosphere surrounding the project.

> The rumor had been about for a long time that F.W. Woolworth was playing with the idea of a gigantic skyscraper in New York, to bear his name, and all the leading builders had their ears pricked up. This would be a prize worth fighting for![33]

Like Starrett, Horowitz reported that rumors of the project had been circulating in the building community long before Woolworth commissioned Gilbert for its design. Woolworth had supposedly narrowed down the group of competitors "after three years" to the two chief rivals in New York construction. In the end, the Thompson-Starrett Company received the contract. Later, the president of each company provided a different explanation for Woolworth's final choice of a builder. Paul Starrett attributed his company's failure to the advice he gave Woolworth about the inability of terra cotta to withstand New York's extreme weather conditions and to Gilbert's clear preference for the Thompson-Starrett Company. According to Horowitz, on the other hand, the Fuller Company did not receive the contract because Starrett insulted Woolworth by telling him he had made a mistake in personally letting the contract for the building's foundations.[34]

The persistent, uncompromising economic demands that governed the construction of a skyscraper included the requirement that it be erected as quickly as possible so that its earnings would compensate investors for their costly stake in the site. As a result, the construction industry organized so that projects of an unprecedented scale could be executed as rapidly as possible. Big, tightly organized contracting firms, such as the George A. Fuller and the Thompson-Starrett companies, specialized in such large-scale, carefully-timed construction. Paul Starrett stressed the central role of speed in the successful completion of any project.

> Time is important in building. Equipment is tied up, other jobs wait, tenants are ready to move in, the owner stands on the sidelines counting the days. Speed pleases everybody and is money in the pocket. Speed gets jobs.[35]

Horowitz considered as an "unusual hardship" any extension in the construction period beyond the agreed deadline, which typically fell during the renting season. A missed renting season meant the loss of a year's

rental income for the owner, and the cost of the project correspondingly increased.[36]

To achieve rapid construction, large construction firms implemented organizational concepts more characteristic of the industrial corporations than the building trades. These organizational concepts, forerunners of today's "construction management," entailed the systemization of the construction process and the specialization of tasks within the construction firm. It was generally recognized that these concepts could not be fully adopted by the building industry, because little duplication occurred among construction jobs and because the conditions of construction could not be entirely controlled. Nevertheless, some builders believed that the discipline of construction methods eliminated confusion on the job site, fostered the most efficient disposition of labor, materials, and equipment, and facilitated a smooth working relationship among builder, owner, and architect. A strict, predetermined schedule, based on an analysis of the many distinct operations involved in completing a building, lay at the heart of an efficiently organized project. The schedule allotted time to each trade's portion of work and to the sequence and coordination of tasks performed by each trade. The construction superintendent made sure that manufacturers and subcontractors rigorously adhered to the schedule.[37]

In 1911, while the Thompson-Starrett Company was constructing the Woolworth Building, president Louis Horowitz described the impact of concepts of systematization and specialization on the building industry. Horowitz noted that economic conditions had inflated land values, which required the construction of "large and necessarily complicated structures" to ensure reasonable returns on financial investments in land. Three factors--speed, cost, and quality--determined economy in a building operation and their absence or neglect by the traditional contractor had given rise to the "modern building organization." Under the old system of construction, asserted Horowitz, the subcontractors knew little about each others' operations, continually bickered with each another, and had little knowledge of the construction operation as a whole. This lack of interdependence among the subcontractors slowed down the process of

construction and increased the cost. Under the new system of construction, which Horowitz also called a "machine," the building organization directly handled many lines of work and procured business in volume. Horowitz believed that to function smoothly the machine should be as sound in its component parts as the construction industry would permit. This meant that the organization should know subcontractors' costs in labor and materials, intelligently adjust to changes in the construction process, and quickly and economically purchase equipment, supplies and materials. Departmentalization allowed the organization to carry out these operations and to coordinate them with various aspects of construction. Before construction began on the project, departments promoted jobs, estimated costs, scheduled project tasks, and secured contracts for labor and materials. After construction began, they expedited the transfer of materials to the site, supervised project changes, tracked project costs, and prepared and supervised the construction site.[38]

To expedite the construction of the Woolworth Building, the Thompson-Starrett Company prepared a detailed schedule. The schedule indicated the expected sequence of work by individual trades, the delivery of equipment and materials to the building site, and the fluid coordination of labor, equipment, and materials as the project advanced. The company's office activities were complemented by representatives on the site, an organized crew with a general superintendent. The crew included a civil engineer, a foreman, a deputy foreman for each trade, and a group of outside inspectors. Inspectors regularly reported on the manufacture, fabrication, and shipment of the needed materials and equipment.[39]

Contemporary commentary marvelled at the rapid transformation of the city by the construction of steel-framed buildings. Construction in steel permitted preparation of components away from the site, so that when they arrived and were assembled, a structure could be erected at an unprecedented speed. Both the steel frame and the exterior terra cotta cladding for the Woolworth Building project were produced in the shops of subcontractors and then shipped to the site and assembled. The steel columns, girders, and beams were prefabricated from standard parts in the shop of the American Bridge Company. The terra cotta pieces were modelled

and fired at the Perth Amboy factory of the Atlantic Terra Cotta Company. Prefabrication minimized the work to be carried out on the site and thus streamlined the construction operation. The Woolworth Building's site was surrounded by three congested streets. This required that work be carried out in a restricted space by several trades simultaneously and that materials stored on the premises, along with small buildings used as shops and offices, be moved about by derricks as construction progressed (Fig. 237). Little space remained available for the preparation and storage of building materials. These factors virtually demanded a process of assembly. The structural steel and terra cotta had to be requisitioned in batches as required. After fabrication in the bridge shop, the steel was shipped to the yards of the Pennsylvania Railroad Company, about twenty miles from the site. There it was sorted by an engineer and loaded on lighters for shipment to the site as ordered by the job superintendent two or three days in advance. The terra cotta was transported to the site as it was manufactured and attached to the steel framework as it arrived.[40]

Construction on the Woolworth Building began long before the design was completed, in accordance with a process now known as the "fast-track method." Thompson-Starrett's construction schedule was coordinated with the preparation of architectural drawings by Gilbert's office. In September 1910, six months before Gilbert's office completed the final design of the building, and eight months before it completed working drawings for the project, the five- and six-story buildings occupying the site were razed. At the beginning of November, the Foundation Company began excavating the site and underpinning adjacent buildings. In mid-December 1910, work began on the first reinforced concrete piers. The piers were constructed by the pneumatic caisson method, which had been in general use since the early 1890's, through fine sand to a substratum of bedrock, located between 110 feet and 120 feet below grade level and 70 feet below ground water level. An average force of two hundred men, disparagingly called "ground hogs," excavated the shafts by hand, working around the clock in three sequential eight hour shifts. When Woolworth decided to enlarge the site in January 1911, causing Gilbert to relocate the tower to the center of the Broadway front, the concrete piers were supplemented by Aus's design for thirty-one new ones. The new piers were

joined to the existing piers with transfer girders, which supported the eccentric loads of the tower's columns, to create a total of sixty-nine piers (Fig. 215).[41]

At the end of September 1911, before excavation of the cellar was completed, erection and riveting of the steel superstructure began. This work was done by the Thompson-Starrett Company by a force of thirty to forty men working in single eight-hour shifts. Aus continued work on the structural steel drawings after the erection of the steel began, until the end of November 1911. Visible above the street level in early December 1911, the steel frame was completed to the thirtieth story by early April 1912 and to the top of the tower on 1 July 1912. As the steel erectors assembled the frame, they were followed by riveters, painters, and workmen constructing floor arches. At the beginning of February 1912, before the steel frame was completely assembled, workers positioned on scaffolding encircling the building began attaching terra cotta to the frame and backfilling it with brick. In mid-April, workmen began setting the granite water table and limestone base at the lower four stories of the building. At the end of October 1912, the last shipment of terra cotta arrived at the building site. Altogether, the erection of the steel frame had occurred within a short period of nine months and the attachment of the terra cotta cladding to the frame within an even shorter period of eight months. After the completion of the building on 1 April 1913, both Gilbert and Woolworth praised the Thompson-Starrett Company for their speed in carrying out the project. They attributed its rapid construction to a carefully managed and unified effort that promoted the systematic assembly of steel, terra cotta, and stone.[42]

The Woolworth Building did not contain any noteworthy technological innovations per se. However, contemporary journals of engineering and construction heralded its construction because of its large scale and unprecedented incorporation of recent developments in the technology of the tall building. A number of technical problems and complications arose solely as a result of the project's large scale. Horowitz recalled that because of their immense weight, the steel members had to hauled to the site along a special route to avoid crushing streets honeycombed with

networks of pipes and tunnels. A transfer girder that shifted the load from one of the building's columns to its foundation was so heavy that a team of forty-two horses and a one-hundred-ton truck were needed to transport it to the site from a lighter at the waterfront. Because of the enormous wind load transmitted to the building's foundations, some of the columns that supported the steel frame had an unprecedented cross-sectional area and weighed more than any member formerly used in construction. The quantity of individual steel components required was so large that only a few years earlier a large bridge shop could not have produced them to meet the construction schedule. Moreover, it would have been extremely difficult at an earlier time to fabricate the heavier steel members, much less to ship or erect them. New processes for hoisting had to be developed because of the unprecedented height of the building and weight of the materials, and because of the confinement of the site. The derricks and scaffolds required for such unusual conditions did not exist and had to be devised by the Thompson-Starrett Company. Standard piping systems to carry steam and water had to be specially designed. The height of the building called for cross-sectional pipe dimensions never before required and created new problems of vertical expansion and contraction.[43]

The completed building was serviced with up-to-date mechanical and electrical equipment in conformity with the office planning standards set forth by George Hill, which had been based upon tenant expectations. Like its foundations and steel superstructure, the Woolworth Building's mechanical and electrical equipment and distribution systems were not innovative. Instead, they represented the culmination of at least two decades of experimentation in equipping the office building. The service systems were adapted to the requirements of a mammoth-sized structure with a tenancy of approximately eight thousand people. In accordance with the design of the consulting heating engineer, Nygren, Tenney & Ohmes, the offices were heated by steam, which circulated by vacuum pressure to radiators on remote upper floors. The steam was generated by six coal-fired boilers located in the subbasement. The exhaust was vented via a cast-iron flue through the crown's northeast tourelle. The lower four stories of the building, including the banking hall and the restaurant, were ventilated with blast fans and cooled with a rudimentary form of

evaporative air conditioning. Outside air was drawn in through a vent above the fifth floor, and then purified and chilled with a device called an "air washer"--a curtain of continuously circulating clean water. The immense height of the building necessitated five mezzanine stories among the regular office stories to house its water supply tanks, a common practice today but a sophisticated and novel arrangement at the time (Fig. 238). Each tank distributed water from the city mains to the floors below it and to the next lower tank. Separate piping and tank systems were designed for cold water, hot water, and fire protection.[44]

To ensure prompt elevator service, the consulting electrical engineer, Mailloux & Knox, designed six high speed elevators in a main battery of twenty-four. The elevators operated at the unheard-of speed of 700 feet per minute and required special approval by New York's building department. Mailloux & Knox likened the elevator system to a small railroad, and advised Gilbert that it should be operated the same way trains were dispatched. This led to the decision to locate a "dispatcher" near the elevator lobby, with a telephone for calling elevator cars. The dispatcher was equipped with a large flashing panel indicating the position of each car, to control the schedule and to detect faults or delays in the system. To shorten the tenants' waiting period and to speed their ascent to the upper floors, the elevator system was divided into express and local service, like Manhattan's new subway system.[45]

Several measures were taken to ensure the building was absolutely safe for its tenants. Its steel frame was protected from the hazard of rust or fire and measures were taken to prevent the possibility of an elevator accident. The Woolworth Building was advertised as not only the "highest" skyscraper in the world, but the "safest" as well. To prevent rusting, Aus recommended painting the steel frame with two coats of red lead paint and a coat of waterproof paint, and then spraying it with cement mortar. Aus was clearly responding to the concern of architects and engineers that the steel frame be protected from the danger of corrosion. All known methods were employed to fireproof the building. In its basement and in its first story, the floors were constructed of poured reinforced concrete and the columns were encased in concrete. In the upper stories, hollow terra cotta

tile was used for the floors and columns. Throughout the building, hollow terra cotta tile partitions divided tenant spaces. The doors and interior trim were fabricated from hollow pressed steel. Such thorough fire protection had value as reassurance, given the recent conflagrations in Baltimore and San Francisco and the outspoken suspicion of wood by such architects as Ernest Flagg. In addition to the standard safety devices, the gearless traction elevators were equipped with costly "air cushions," an invention patented by F.T. Ellithorpe and in service since 1879 (Fig. 239). To create the "air cushion" the elevator shaft was sealed and strengthened to withstand pressure. Steel and reinforced concrete were applied to the shaft's outside walls and heavy doors were installed at each story. Occupants in a falling car, which would function like a loose-fitting piston in the shaft, would be spared the jolt of a sudden stop.[46]

Woolworth further enhanced the tenant's sense of security by installing as many services as practicable on the premises, making the building as independent as possible from municipal services. For a secondary source of water, a well was drilled to approximately 1,500 feet below grade. Electricity to run the elevators, lights, and power was produced in the building's subbasement by a self-contained power plant with a capacity of 1,400 kilowatts. The fire protection system, designed by the consulting engineer Albert L. Webster, could begin functioning without the aid of the city's fire department. It consisted of six standpipes connected to designated water storage tanks in the five service mezzanines, and included up to five seventy-five-foot fire hoses on each floor.[47]

At the request of Frank Woolworth, the building's tenants were provided with the convenience of direct access to the recently completed subway line along lower Broadway. In 1912 the engineering firm, Jacobs & Davies, designed a large central portal leading from the building to the subway platform. The portal was located on axis with the broad central stair leading down to the basement from the arcade. Woolworth's interest in an underground linkage between his office building and the adjacent subway system may have been suggested by existing precedents. The New York Times Building (1903-4) was built over the Broadway subway line. Clinton &

Russell's Mercantile Building (1904) at Twenty-third Street and Fourth Avenue contained a basement arcade connecting the building's elevator located at the back of its site to a subway platform at its front. The Hudson Terminal Buildings (1906-8) by Clinton & Russell with Jacobs & Davies was located a few blocks south of the Woolworth Building. It combined a railroad terminal for the recently completed McAdoo Tunnels with a twenty-two story office building and a concourse containing shops (Fig. 240). The basement of the Trinity Building could apparently be entered from the subway platform beneath Broadway. A connection to the Third Avenue elevated railroad and a subway station were planned for the basement of the Municipal Building, then under construction at the opposite side of City Hall Park.[48] The Woolworth Building, however, was the first of the large skyscrapers lining lower Broadway to directly link with the adjacent Broadway subway line. In doing so, it reflected Richard Hurd's principles regarding the intensive utilization of urban space. The subway link represented the first step towards Harry M. Pettit's futuristic image of lower Broadway, with its dense and interconnected development of skyscrapers and transportation systems (Fig. 10). This bold, direct connection between a tall building and an underground transportation system presaged the development exemplified by Rockefeller Center (1927-35). The development combined the extreme verticality of towering structures with the spreading horizontality of superimposed levels for carrying traffic.

Several characteristics of the Woolworth Building exhibited tendencies found in the gargantuan, imaginary skyscraper designed by Theodore Starrett (Fig. 54). Its towering height, like the giantism of Starrett's skyscraper, was not the result of a particularly innovative or appropriate use of steel or concrete structural technologies, as found in Gustav Eiffel's tower (1889) in Paris or Robert Maillart's Rhine Bridge (1905) at Tavanasa. Rather, its height was the primary criterion of the project, for which existing technologies were appropriated. Likewise, safety and comfort were paramount in the design of the building's equipment and services. Deviations from conventional practice were adaptations to the condition of unprecedented height. The attempt to self-contain the building's services tended to isolate it from the workings of the surrounding city, although it did not fully attain the inwardness of

Starrett's hermetic structure. The housing of diverse activities also identified the Woolworth Building with Starrett's city-like skyscraper. Such tendencies towards giantism, self-containment, and multiple functions besides leasable offices first appeared in the Woolworth Building project and later culminated in the John Hancock Building (1965-70) in Chicago by Skidmore, Owings & Merrill (Fig. 241). The John Hancock Building's system of external cross bracing may be regarded as an inventive structural concept. However, in its other key features--enormous size, a detached exterior, and a self-contained pattern of activities--the John Hancock Building may also be viewed as a realization of Starrett's proposal.

The enclosure and decoration of the Woolworth Building infused its bare bones of structure with grace and monumentality. The framework was enclosed with ornamental ivory-colored terra cotta, the exterior decorated with sculpture, and the lobby embellished with sculpture, mural painting, decorative mosaics, metalwork, and glass. In Gilbert's terms, the steel frame was "enriched and beautified" by its cladding. Woolworth's intention was "not alone to make it a purely commercial structure," but to "clothe it with beauty" and ultimately, to create a "worthy ornament to the great city of New York."[49] Terra cotta was considered a particularly appropriate material for the cladding of the Woolworth Building for two reasons. It could be shaped to attain the highly ornamental qualities Woolworth and Gilbert desired, and it could be manufactured expeditiously to meet the demands imposed by the economics of rapid construction. Gilbert's treatment of the terra cotta envelope incorporated the thought and practice of the day regarding the appropriate use of terra cotta for the exterior of steel-framed skyscrapers. Architects were concerned with the interrelationship between terra cotta and steel, the treatment of ornament, and the application of colored glazes.

William Le Baron Jenney's inaugural essay of 1890, "An Age of Steel and Clay," advocated using terra cotta to its fullest potential as an ornamental cladding for skeleton construction, and not merely as a fireproofing material or as an ancillary decorative medium. Jenney was knowledgeable of the possibilities and limitations of particular materials, their construction technologies, and their histories. Jenney recognized

the significance of new materials to new types of architecture. In response to the increased demand for fireproof skeleton construction in Chicago, Jenney advocated a new method of manufacturing terra cotta that would meet those demands. This manufacturing process included the use of machines to rapidly and economically produce standard pieces of terra cotta, and a craft process for forming ornamental pieces by hand. The use of strong, hollow, light-weight terra cotta as fireproofing and exterior cladding for the steel frame would allow architects to build as they never had built before, to "enter upon a new age--an age of steel and burnt clay." In 1894 George Twose wrote an essay that supported Jenney's point of view. Twose regarded terra cotta as a protective material for withstanding fire and weather and as an impressible medium for artistic expression. This made the material ideally suited to skeleton construction. In addition, because of its plasticity, terra cotta could readily express "the true nature of the substructure it shields." According to Twose, terra cotta would liberate skeleton construction from its dependence upon bulky and archaic masonry forms, and would permit a substantive architectural expression for the new office building type.[50] The notion that terra cotta and the steel frame complemented each other, and the idea that terra cotta gave skeleton construction an authentic architectural expression, found fullest realization in Louis Sullivan's designs for skyscrapers.

Early discussion concerning the relationship of terra cotta to skeleton construction focused mainly on architectural developments in Chicago. After the turn of the century, Herbert Croly's writings assessed the use and development of terra cotta in New York. Like Jenney, Croly observed that major periods in architectural history were identified with the characteristic use of particular materials. Croly believed that architectural design should be adapted to the unique possibilities of terra cotta. As exterior cladding for steel-framed skyscrapers, Croly insisted that terra cotta should not imitate stone. However, he did not go so far as to suggest that it should express the underlying skeletal structure. Instead, Croly advocated uses of the material that reflected its qualities of durability, lightness, and fire-resistance. Recognition of such "practical" attributes by the designer would lead to its genuinely

"artistic" treatment. Skeleton construction, because it supported its enclosure with its frame, required a material light both in weight and appearance. The walls, no longer load bearing, functioned simply as screens or curtains. Croly thought that terra cotta had been successfully employed in such designs as the Fuller Building and the New York Times Building (Figs. 242, 243), where its lightness was visibly and convincingly displayed. In these and other designs for tall buildings, however, Croly criticized the use of ornamental terra cotta on the crowns, a treatment he found ineffective because it was too minutely scaled to be perceived from the street.[51]

In buildings of the 1870's and 1880's terra cotta was used in a piecemeal fashion, chiefly for ornamentation and fireproofing. The unglazed terra cotta street facades of Burnham & Root's Rand McNally Building (1889-90) in Chicago displayed the first use of the material as a continuous protective and decorative surface. The later Reliance and Fisher Buildings, by D.H. Burnham & Company, followed this example, although their facades were of glazed, light-colored terra cotta (Figs. 244, 245). The Chicago discovery of the complete terra cotta envelope, like the early development of skeleton construction, did not catch on immediately in New York. George Post was the first New York architect to express rather than to de-emphasize the true nature of the material. Post used it in its natural burnt red state rather than coloring it to look like stone. He made it an integral part of the decoration of a major building, as in his designs for the Long Island Historical Society Building (1878-79) and the Produce Exchange (1881-85)(Fig. 246). Louis Sullivan's Bayard Building (1897-98) represented an early use of terra cotta for continuously cladding the entire front facade of a New York office building (Fig. 190). Ernest Flagg's innovative but uninfluential design for the Singer Loft Building (1902-4) incorporated terra cotta throughout its street facade, but emphasized the material's manufacture as discrete, small, prefabricated pieces, rather than the material's plasticity (Fig. 247).[52] Prior to the design of the Woolworth Building, three New York skyscrapers vividly expressed the decorative possibilities of terra cotta as a continuous modelled surface for the facades of a steel-framed skyscraper. In each building the material was employed to attain a distinct design

objective--the undulating, highly textured, screen-like facades of the Fuller Building; the embellished upper stories and sculptural tower of the Times Building; and the bold vertical shaft and emphatically modelled crown of Gilbert's West Street Building (Figs. 242, 243, 183).

Because of its inherent properties and its process of manufacture, architects viewed terra cotta as a particularly suitable medium for creating ornament. Its lightness and strength made possible elaborate, bold, projecting features and modelling in high relief. Its texture and plasticity sustained fluid, graceful lines, fine detail, and undercutting, which created deep shadow effects. It remained pliable prior to its hardening by firing, which allowed the architect to examine, approve, and modify the executed design of individual pieces. The architect was generally responsible for the design of decorative terra cotta, but the result also reflected the skill of the modellers, many of whom were trained as sculptors. In the modelling shop, a clear distinction was made between the plain pieces, which did not contain embellishment, and the decorative pieces. Pieces surfaced with ornamental or sculptural detail were executed exclusively by modellers of great artistic skill.[53]

After the architect approved a model, it was cut up into pieces of an appropriate size for molds. The mold made possible the production of a large number of identical terra cotta blocks within a short period of time. Mass production reduced the material's cost compared to limestone or sandstone, without decreasing its architectural possibilities or the quality of its decorative features. The burgeoning demand for terra cotta after the turn of the century quadrupled production within a short period of twelve years. Rapid technological advances in the mechanization and standardization of the terra cotta industry provided an economic advantage. The advantage, however, was offset by demands for originality in ornamentation, as opposed to stock or repetitive designs. Original forms had to be modelled and finished by hand, a labor intensive process. Ultimately, therefore, the amount of time taken in manufacturing terra cotta for a structure, which affected the total cost of the project, depended on the amount of original modelling required.[54]

New York architects assumed a leading role in experimenting with colored terra cotta. The use of the material in its natural burnt red state, initiated by George Post, was superseded by McKim, Mead & White's popularization of buff-colored terra cotta, which they had used on the exteriors of the Madison Square Garden (1890) and the Judson Memorial Church (1892)(Fig. 248). Designers then began applying ivory-colored glazed terra cotta to sheathe the facades of tall buildings, including the Bayard, the Times, and the West Street buildings. By 1900, after several experiments in the 1890's, terra cotta manufacturers had developed effective colored glazes, by borrowing techniques from other ceramic processes. These experiments increased the range of polychrome terra cotta available to architects. McKim, Mead & White's Parkhurst Church on Madison Square (1903-6) was considered "the first important example of polychrome terra cotta" in America and a "triumph of restrained color," heralding the architectural possibilities of scintillating blue, green, yellow, and ivory terra cotta detail (Fig. 249). The turn towards color was impelled by a waning Ruskinian interest in the colored marble and stone architecture of Venice and an increasing fascination with Greek polychromy. Color had a civic dimension as well. Advocates of civic art viewed polychrome terra cotta, along with variegated stone, granite, and marble, as a palette of exquisite materials for "improving" the city's streets. Color created points of accent in a district identified by a uniform ground color, like the color accents on the white background of the Chicago Fair's Court of Honor. The city's government buildings, they suggested, should also be white, accented with the rich color of mural paintings and ornament. Its commercial buildings should be a less radiant, warm grey or yellow and highlighted with the varied hues of glazed terra cotta and with ornamental metalwork.[55]

Croly and others considered colored terra cotta the consummate medium for concealing the steel frame with a surface rich in texture and luminosity. The material offered a number of alternatives for defining or varying the office building's lofty and repetitive stories. Alternatives included accenting salient vertical lines, differentiating the spandrels from story to story, creating the effect of highlighting or shadow in ornament, and grading a facade in relation to its distance from the street

pedestrian. Croly believed that the increased use of polychromatic terra cotta would foster its "idiomatic" treatment in architectural design. He noted Gilbert's exterior of the Broadway Chambers Building, where the most vivid colors of terra cotta were located furthest from the eye of the street pedestrian, and his exterior of the West Street Building, with its lively manipulation of color to call attention to ornamental features.[56] Gilbert's inventive experiments with colored terra cotta in the cladding of skyscrapers paralleled its use in monumental structures, such as McKim, Mead & White's Parkhurst Church.

The manufacture of terra cotta for the Woolworth Building project at the Perth Amboy plant of the Atlantic Terra Cotta Company followed conventional practice with a few important exceptions. Full-size shop drawings were typically created from the architect's drawings in the manufacturer's construction department. Gilbert insisted, however, that the Atlantic Terra Cotta Company's draftsmen produce the full-size drawings in his office under the supervision of Thomas R. Johnson. Furthermore, although modelling was often carried out by the manufacturer's craftsmen, Gilbert permitted only simple pieces to be produced by the manufacturer. The intricate ornamental terra cotta pieces for the Woolworth Building project were to be executed by a modelling firm of Gilbert's choice. The project's specifications on terra cotta differentiated the models as either "straight and simple molded parts" or "foliate or intricate ornamental parts." Gilbert chose the New York architectural modelling firm, Donnelly & Ricci, to create the full-size models for the tracery, crockets, gargoyles, and other Gothic-inspired ornamental features of the building's terra cotta exterior. The firm also made models for the building's carved limestone base and for the decorative stonework in its arcade. Gilbert insisted that Donnelly & Ricci produce the ornamental terra cotta models at the Atlantic Terra Cotta Company's Perth Amboy factory, rather than in their own shops.[57]

Once the full-scale models were completed, they were subject to Johnson's approval prior to the manufacture of the terra cotta. Molds were made from the models and the clay was pressed into the molds. Once stiffened, the molded clay units were dried in the air for about a week,

and then coated with a liquid slip that became a thin, hard, protective glaze. Finally, the units were fired in a kiln for twelve to fourteen days. When they were removed from the kiln, the molded clay units were slowly cooled and fitted together in an "assembling diagram"--an arrangement duplicating their placement on a building facade, and then carefully packed for shipment.[58]

The terra cotta pieces were individually attached to the Woolworth Building's steel frame with metal anchors, and were then backed with brick and cement mortar, a detailing technique that had fully developed by 1910.[59] Assembled, the separate pieces formed a smooth, continuous modelled surface, transforming the horizontality of the frame, in the tower and in the wings flanking the tower, into a series of soaring, vertical lines (Fig. 250). The cladding counteracted any suggestion of the building's actual heaviness and imbued its mass with the illusion of lightness and uplift. Thin, triangular terra cotta mullions with recessed terra cotta spandrels formed a diaphanous fenestration pattern between the sculptural angular piers, which corresponded to Croly's concept of the terra cotta wall as a screen. Projecting terra cotta canopies culminated the soaring vertical lines of each successive stage of the tower and the adjoining lower block. At the twenty-sixth story, the canopies encircled the building to visually unify the composition (Figs. 251, 252, 253). At least eight different designs for terra cotta spandrels were placed in a random arrangement from story to story, forming an overall pattern symmetrically arranged around the central axis of the tower. The pattern repeated vertically in the four groups of stories that divided the main block (Fig. 254).

Throughout the exterior, color was employed to enhance the clarity of the design. The general color combined various shades of ivory- and cream-colored mat glaze to produce a lustrous surface with the patina of age. A darker tone of the same color was applied to the spandrels, creating the illusion of recession and further accentuating the soaring Gothic monumentality of the piers. In color, Gilbert said he found the means by which to "enhance the shadows" and to "accent" the "main lines of the structure." By darkening the spandrels, he intended to lead the eye

"upward" with "the light lines and the planes of the piers." Rich color--golden yellow, sienna, bronze-green, and light and dark blue--was placed on the undersides of the canopies and in the background of the spandrels to highlight and demarcate the Gothic ribs and tracery patterns. In his choice of colors, Gilbert maintained, he sought to increase the apparent height of the tower and to relate it to the backdrop of the sky. Gilbert also used color to create the impression of monumentality at key locations in the building's composition. Deeply set spandrels below the canopies that ringed the main mass of the building at the twenty-sixth story were colored a dark bronze-green; combined with the dark blue that lined the canopies' undersides, the spandrels created the effect of a cavernous recess beneath the crown (Fig. 255). To create a similar effect of shadowy depth, the terra cotta spandrels below the ornamental canopies surrounding the first stage of the tower were glazed with dark shades of color.[60] Gilbert regarded color in Ruskinian terms as the principle tool for challenging the design limitations imposed by the skyscraper:

> Bear in mind that the wall surface of the skyscraper has little or no thickness, little or no third dimension such as is so potent an element in the older forms of architecture; but color may be invoked to aid in the desperate need of thickness, by an architect if he be an artist...for the effect it may produce in emphasizing form.[61]

As if responding to Croly's criticism of the inconspicuous terra cotta detailing at the tops of recent skyscrapers, Gilbert exaggerated the proportions of the ornament outlining the upper stages of the Woolworth Building's office block and tower. The exaggeration ensured that the ornament would read emphatically from a distance (Figs. 256, 251, 252). Legibility was further enhanced by Gilbert's use of color to accent the ornament's detachment and projection from the main mass of the building. Despite its inflated size, the ornament lost none of its delicacy, but bestowed upon the entire composition a palpable scale, greatly reducing the massive skyscraper's actual size in the eyes of the spectator. In this subtle and calculated manipulation of scale, Gilbert depended more upon on the tradition of classical architecture than the tradition of Gothic architecture.

The decorative program of the Woolworth Building--its sculpture, mural paintings, and ornamental mosaics and glass--followed similar concepts in public buildings, although its themes exalting commerce and work reflected its purposes as a commercial building and a monument to Woolworth's career. As in many public buildings, the subject matter of the Woolworth Building's sculpture, painting, and ornament was secondary to its ornamental function as art. The themes of decorative art might convey a general message that referred to the purpose of the building. However, Gilbert did not plan the themes as a specific programmatic statement. Nevertheless, Gilbert regarded his design of the Woolworth Building's decorative scheme as a task similar to those presented by his projects for the Minnesota State Capitol and the United States Custom House.

In developing the sculptural program of the Woolworth Building, Gilbert met indecisiveness on the part of Woolworth and Lewis Pierson and disagreement over the propriety of particular types of statuary. At Pierson's suggestion, Gilbert consulted with Daniel Chester French, sculptor for his earlier Minnesota Capitol, Custom House, and St. Louis Art Museum. They discussed a statue of Frank Woolworth, to be placed in a niche at the end of the arcade behind the monumental stair, on axis with the building's main entrance. After communicating with French, Gilbert advised Pierson against erecting the statute in the arcade, for the "good taste" of the gesture would be doubted by the public and thus convey the "wrong impression" of Woolworth. A month later, Woolworth posed in Donnelly & Ricci's modelling shop for a bust instead, to be placed on a corbel in the arcade. The bust took the form of a grotesque, shown counting coins, the nickels and dimes on which Woolworth built his business. Other grotesques represented key figures involved with the project, including Gunvald Aus, Louis J. Horowitz, Lewis Pierson, Edward Hogan, and Gilbert, shown holding a model of the building (Figs. 257, 258). The grotesques were suggested and perhaps designed by Johnson, known for his skill with caricature. For the two niches flanking the main entrance, Gilbert proposed that Donnelly & Ricci model figures in terra cotta, fired with a gold glaze. He intended one to represent the merchant Jacques Coeur of Bourges and the other, the shipowner Jean Ango of Dieppe, both French magnates of the sixteenth century. Woolworth rejected the sketches for the

two figures and they were never executed. He objected that they would make the building look like "still more of a cathedral," referring to a popular conception of the building that he disdained.[62]

The major pieces of sculpture first suggested for the building to commemorate Woolworth and his achievements never materialized. However, similar themes were echoed in Donnelly & Ricci's sculptural decoration on the building's four-story limestone base. The main entrance, a Tudor arch set within a depressed arch, contained two spandrel panels with reclining allegorical figures (Fig. 259). One of them, a male figure with a winged cap, was probably intended to represent commerce, and the other, a female figure with a horn of plenty, abundance. Grotesque allegorical figures in the connected niches forming the archivolt, recalling the figures lining archivolts in cathedral portals, showed young men and women engaged in various types of work. A "W" in Gothic script appeared at the corners of the depressed arch and an eagle with a shield, an adaptation of the seal of the United States, was centered over the entrance. Allegorical masks representing the four continents that contributed to world trade--America, Europe, Africa, and Asia--lined the building's three public facades (Fig. 260). These resembled the masks of the racial stereotypes decorating the keystones of the Library of Congress and the United States Custom House. Figures portraying the races had also been sculpted by Karl Bitter for the facades of two adjacent commercial buildings, the Pulitzer and St. Paul buildings, both of which faced City Hall Park.[63] Whether Gilbert or Donnelly & Ricci proposed the specific subjects of the Woolworth Building sculptures is unknown, but Gilbert probably suggested the themes, and certainly approved their execution. The sculptural decoration of the Woolworth Building contained signs and allusions identifying the building as a commercial structure and specifically as the headquarters of the F.W. Woolworth Company. The decoration also paid tribute to the ethic of work, characterized the global scope of the company's operations, and announced the international stature of Frank Woolworth's achievement.

The allegorical themes of the Woolworth Building's exterior were repeated on its interior. In the tympana of the balconies overlooking the arcade, "Labor" and "Commerce" were painted by the muralist and sculptor

Carl Paul Jennewein, who had worked with Donnelly & Ricci on the exterior sculptural decoration (Figs. 261, 262). Born in Stuttgart, Germany, in 1890, Jennewein had arrived in New York by 1907. In 1911 he began work on the murals for the Woolworth Building, one of his first painting commissions. Jennewein was a member of the National Sculpture Society and the Architectural League of New York, where he may have met Gilbert. Gilbert originally requested the muralist Elmer E. Garnsey, who declined to execute the murals for the Woolworth Building. Garnsey had completed paintings for the Minnesota State Capitol and was working on paintings for the United States Custom House.[64]

Jennewein's allegorical murals, each painted in a symmetrical triptych format, followed accepted conventions of mural composition and technique. Both murals had flat, abstract masses of color within clear boundaries that emphasized the planarity of the wall, and thus ornamental role of the paintings. In "Labor," which nostalgically portrays the virtues of harvesting the land, a central female figure holds a spindle of flax, flanked by two kneeling youths, one holding a sheaf of grain and the other a cluster of fruit. In "Commerce," which represents the historic inevitability of global conquest by trade, a similar female figure holds a globe, flanked by youths carrying a clipper and a locomotive. "Commerce" had been a common theme in mural painting and sculpture of the previous two decades. Daniel Chester French's "Commerce" adorned the entrance to Arnold Brunner's Federal Building in Cleveland, Ohio (1906). Kenyon Cox portrayed commerce with a male figure in a mural entitled "Venice" in McKim, Mead & White's Walker Art Gallery (1891-94) at Bowdoin College. It is likely that Gilbert selected the allegorical themes labor and commerce for the mural paintings of the Woolworth Building's interior. Shortly after the building's completion, he lauded Woolworth's fulfillment of Daniel Webster's invocation, "let us develop the resources of our land." In a talk delivered at the Architectural League of New York, "The Future of New York in Art and Commerce," Gilbert referred to commerce as "the great civilizing agent of the world."[65]

The allegorical mural paintings provided focal points for the cross-axis of an arcade decorated with a scheme of ornamental glass,

mosaics, and metalwork, rivalling the opulence of the Singer and Metropolitan lobbies. On the main axis of the arcade above the tall rectangular stair hall, a stained glass "ceiling light" illuminates the monumental stair. The light was designed by the decorators Heinigke & Bowen, who specialized in glass mosaic and stained glass. The decorative motifs surrounding the light were also suggested by Heinigke & Bowen and approved by Gilbert. They include the names and seals of the "great mercantile nations" (Spain, China, Japan, Russia, Italy, German Empire, Austria, Argentina, Brazil, France, United States, Great Britain). The letter "W" also appears and the dates "1879," the year Woolworth opened his first successful store, and "1913," the year the Woolworth Building was completed. Heinigke & Bowen also fabricated the colored glass mosaics that line the barrel vaults and central domical vault, based on sketches by the Gilbert office. The predominance of gold in their background evoked Early Christian and Byzantine mosaics in general and in particular the naturalistic motifs and geometric patterns of mosaics in Santa Costanza (c.350) in Rome and the Mausoleum of Galla Placidia (425-50). In the late 1800's mosaic had become a popular medium for decorating the lobbies of major office buildings, as well as the public spaces of hotels, theaters, and clubs.[66] The walls of the Woolworth Building lobby were sheathed in golden and pink veined marble, and capped with marble tracery cornices modelled by Donnelly & Ricci. Gilded tracery, also modelled by Donnelly & Ricci, outlined the balconies and the elevator enclosures. The elevator doors, by Tiffany Studios, were adorned with tracery patterns in etched steel set off against a gold-plated background.

The Woolworth Building was officially opened on the evening of 24 April 1913 by President Woodrow Wilson, who pushed a button in Washington, D.C., which had been wired to the building's power plant. The thousands of electric lights filling its interior flashed on at once and the building leapt into full view as a brilliantly illuminated object against the evening darkness (Fig. 263). Expectant crowds filled City Hall Park and stood at points as distant as the New Jersey shore to witness the uncomplicated but breathtaking act.[67] Dazzling urban crowds by instantaneously setting aglow one of the largest objects in the world exemplified Woolworth's love of spectacle as well as his flair for amusing

the public. His earlier experiences with showmanship--the lighting effects he devised to accompany his electric organ and the extravaganzas he arranged to open his stores--paved the way for the opening of this new building. He intended to make an unforgettable impression on an entire metropolitan audience, and he did.

The opening, treated as a "public event of importance" rather than a private occasion, borrowed ceremonial and technical effects from exposition openings, patriotic pageantry, and private promotional schemes. Presidents Grover Cleveland and Theodore Roosevelt, respectively, had opened the World's Columbian Exposition in Chicago and the Louisiana Purchase Exposition in St. Louis by pressing a "golden key" attached to a wire, setting the exposition's fountains and machinery in motion. Comparably stunning electrical effects had been employed for patriotic and promotional ends in earlier celebrations in New York. In the Admiral George Dewey celebration of 1899, a large electrical "Welcome Dewey" sign was hung on the Brooklyn Bridge. A few years later, Adolf Ochs celebrated the first New Year's Eve in his recently completed Times Building with large incandescent numbers that signalled the demise of the old year and the arrival of the new. The real estate and publicity agent, Hugh McAtemney, was responsible for the organization of Woolworth's opening ceremony. To meet the objective of putting the building on the "international map," McAtemney arranged President Wilson's participation in the event and flashed the news of it to European capitals via the Eiffel Tower's wireless station.[68]

The opening was part of a larger ceremony that included a dinner held by Woolworth in Cass Gilbert's honor. Woolworth's approximately eight hundred guests came from a broad and diverse cross-section of American culture. They included the drygoods merchants, Moore & Smith, who first employed Woolworth, and the financier, Otto Kahn. Also among the guests were individuals from a number of occupational backgrounds including art, banking, architecture, merchandising, publishing, real estate, and politics. Woolworth transported his guests from Boston and Washington on special trains equipped with sleeping compartments. On arrival, the guests were taken by automobile to the Waldorf-Astoria Hotel to dress, and then to

a reception on the ground floor of the Woolworth Building. Woolworth and Gilbert met them there and guides showed them the highlights of the new structure. The dinner was held on the twenty-seventh floor of the building and was hosted by Woolworth, Gilbert, Louis Horowitz, and other architects, engineers, and builders directly involved with the project. Woolworth presented Gilbert with a silver cup engraved with both his name and a rendering of the building. This gesture repeated one of the high points of the Dewey celebration, Mayor Van Wyck's presentation of a gold cup to Admiral Dewey at the City Hall.[69]

Woolworth requested Gilbert and Horowitz to give speeches at the dinner. According to Horowitz's later account, Gilbert had confided to him that the purpose of the dinner was to ensure Woolworth proper credit for his accomplishments. Horowitz then told his speech writer in reference to Woolworth, "'When in doubt, flatter him some more'." Appropriately, both men spoke of the building as Woolworth's creation. Gilbert called Woolworth the "real architect of the building" as well as a "great patron of the arts," and compared him to Augustini Chigi of Rome and Jacques Coeur of Bourges. These men had recognized a "civic obligation" to make buildings beautiful, stated Gilbert, which made them "public benefactors" in the broadest sense of the term. Horowitz commended Woolworth's founding of the five-and-ten-cent store, which "would have been enough," but added that he then went on to create the "eighth wonder of the world." Woolworth thanked the individuals who helped make the building possible--first, those who had contributed to his success in the "mercantile world," including his former employer Moore & Smith, and second, the "extraordinary architect," who had become an "even greater architect" than before.[70]

Besides unveiling the Woolworth Building to an enormous public audience at its official opening ceremonies, Woolworth presented the building to his store managers. In two of his regularly mailed "general letters," Woolworth justified the building's extravagance by emphasizing its international renown, and thus its advertising clout on behalf of the F.W. Woolworth Company. Woolworth pointed out that the building was a "standing advertisement" that reached a far greater audience than print advertising. Moreover, it was a "credit to the 5 and 10¢ business." The

"beauty of its exterior," particularly at night, had excited the imagination of artists, writers, and photographers. Its lobby, "beautiful beyond description," rivalled the interior of the Hagia Sophia in Constantinople. The chief executive's office, the "Empire Room," was the "the handsomest office of any corporation in this country, and possibly the world."[71]

Woolworth clarified his images of his corporation and of himself as chief executive in the scheme he chose for decorating and furnishing his office (Fig. 232). Woolworth told his managers that he turned to history for assistance in choosing the "Empire style" of Napoleon I. He had decided this after visiting and studying Napoleon's rooms at the Palace of Fontainebleau, the Chateau of Malmaison, and the Palace at Compiègne. One of the rooms in the Palace at Compiègne, with marble walls and mahogany furniture, perhaps the State Drawing Room, had provided the model for the "Empire Room." Besides its "Empire style" furnishings, which were manufactured by Baumgarten & Company, the room contained Woolworth's personal collection of Napoleonic memorabilia: a large portrait of Napoleon in his coronation robes, copied from the portrait at Versailles, a bronze bust of Napoleon, and a clock, supposedly given to Napoleon by Czar Alexander I of Russia. Woolworth suggested that store managers visiting the building should not fail to see the exhibited items.[72]

Woolworth naively heroized Napoleon in his letter, stating that he had "probably done more and accomplished more than any other one man in this world...not only in war and victories on the battlefield, but also as a businessman." Moreover, Napoleon was an "originator in nearly everything," who was solely responsible for creating "the Empire style of architecture and decoration." Woolworth's distortion of Napoleon's reckless imperialistic tactics, self-serving economic policies, and debasement of Neoclassicism into a decorative revival of the antique can be attributed to Woolworth's obsession, or "kingly affliction," as Horowitz described it. Woolworth viewed Napoleon's career, which had reportedly fascinated him since boyhood, as a model for his own.[73] Napoleon was the inspiration for Woolworth's policy of territorial expansion across political boundaries, for his creation of a corporate hierarchy resembling a military

organization, and for his ambitions as a patron of architecture. Whereas Napoleon symbolized his imperial sovereignty in Paris landmarks such as the Arc de Triomphe, the Bourse, and the north wing of the Louvre, Woolworth symbolized his achievements with a commemorative office building that looked like a civic monument.

CONCLUSION: SKYSCRAPER AND METROPOLIS

> Its inherent right to its dominant position there is none to dispute, unless haply some architect who has taken of the problem of the tall building a view incompatible with that which has resulted in so shining a success, and finds himself under the sad necessity of disputing the indisputable. The "secure world," meanwhile, has already judged. As an ornament of our city, as a vindication of our artistic sensibility, of our use of the opportunities thrust upon us by the exigencies of our commercial building and of the meeting of them by our strange new mechanical devices what have we, so visible from afar, to put into competition with this latest birth of the "skeleton construction?" Its noblest offspring is its last.[1]
>
> Montgomery Schuyler, 1913

Before Gilbert began his design for the Woolworth Building in 1910, the architects and critics of New York had struggled unsuccessfully for at least a decade and a half with the multifaceted problems presented by the steel-framed skyscraper. The issues defined by architectural critics had served as standards by which to identify faults or virtues in designs, rather than to endorse any single, successful approach. Only Sullivan's design for the Bayard Building had responded fully to Schuyler's critical criteria, but this was a comparatively low skyscraper located at the middle of a block. Schuyler praised the salient and striking Singer and Metropolitan towers for their ornamental qualities, but neither skyscraper addressed his criterion of structural expression, nor even acknowledged Frederick Stymetz Lamb's and A.D.F. Hamlin's recommendations that the lessons of Gothic precedent should be employed in office building design. Gilbert's design for the Woolworth Building, by contrast, not only met Schuyler's critical standards, but altered his perceptions of the skyscraper problem. Schuyler's assessment of the design was supported by other critics, including A.D.F. Hamlin, who viewed it as evidence that a suitable architectural expression could be found for the programmatic and technical requirements of the skyscraper.

The conflict between the imagined ideal of a City Beautiful and the urban reality of the skyscraper became increasingly apparent during the

first decade of the twentieth century, especially as manifested by the localized problems skyscrapers created in the streets of New York's business district, at its civic center, and on its skyline. By virtue of its siting, the Woolworth Building was associated with these localized urban problems. After their first meetings at the Architectural League in 1894, architects and civic designers continued to regard the skyscraper as an unsightly intrusion on the street. It increased congestion, blocked light, inhibited the circulation of air, and could not withstand the constant threat of fire and corrosion. Beginning with the first scheme for restricting building heights, sponsored by the New York Chamber of Commerce in 1896, they attempted to control its adverse effects with formal remedies such as the uniform cornice line, the isolated tower, setbacks, arcades, and the progressive widening of streets.

Likewise, tall office buildings and the transportation infrastructure that served them threatened the appearance and ambiance of City Hall Park, creating a disordered and undistinguished condition that incited critical commentary after the turn of the century. Civic designers attempted to forge an architectural image for the civic center that would embody the aspirations of municipal reform and powerfully represent the new metropolis. In light of escalating land values in the area and the forceful visual presence of the office towers in the business district, civic designers were eventually compelled to turn to the skyscraper as a means of housing the expanding facilities of the municipal government and of commanding an identity on the skyline.

Lower Manhattan's skyline captured the interest of several observers as it became increasingly picturesque towards the end of the first decade of the twentieth century. But critics still saw it as a frenzied, disordered mass susceptible to the vagaries of individual builders and unproven concepts of propriety and composition. Cass Gilbert's design for the Woolworth Building, in its siting, composition, and construction, acknowledged the suggestions and proposals advanced by architects and civic designers for ameliorating these urban problems caused by the skyscraper. In each case, the Woolworth Building altered critical perceptions of these problems.

The Woolworth Building temporarily silenced architectural criticism of the skyscraper. Montgomery Schuyler assumed that Gilbert's design, "so shining a success," put to rest the question of whether the skyscraper was a "problem." He also saw in Gilbert's design a realization of his criteria of criticism, if not a demonstration of his critical theory. The Woolworth Building displayed the qualities he sought in the earlier skyscrapers of New York, including those by Gilbert (Fig. 264). The building's main mass adhered to the Aristotelian precept--the principle that a work of art should have a beginning, middle, and an end--which Schuyler had distinguished from its debasement, the column analogy. The base of the building, which housed shops and a bank, also responded to Schuyler's qualification that the Aristotelian precept should be programmatically justified. The distinction of the building's lower stories, or "'plinth'," from its shaft through the use of tall arched openings and Gothic detail expressed the different activities housed in those stories. Finally, the demarcation of the lower stories with adornment befitted the "'institution'," or the bank. The bank's requirement for new quarters had helped make the building possible.[2]

Gilbert's design exemplified Schuyler's criterion of structural expression--the visible affirmation of the "idea" of a steel-framed building wrapped in an envelope of baked clay. Schuyler characterized Gilbert's design for the building's shaft as the "subject of a lecture on Mr. Louis Sullivan's text: 'Where function does not vary, form does not vary'." The Woolworth Building could not be mistaken for a masonry building, such as the Metropolitan Tower, asserted Schuyler, since it "most unmistakably denotes its skeleton." The terra cotta envelope jacketed its steel columns, simultaneously concealing them, protecting them from fire, and revealing their function as structural supports. Schuyler deemed the bold depth and projection of the modelling more advanced than the alternating pier and colonette pattern of the West Street Building. The resulting audacious verticality did not suggest to Schuyler a mere borrowing of Gothic forms. It suggested instead a process of design that began with the rejection of classical precedent.[3]

To create an "organism, with related and interdependent parts," the architect had to seek out "precedents and analogies" in which "attenuation and articulation" was manifested. To Schuyler, this meant the Gothic tradition. Only a year earlier he had observed that "developed Gothic was the nearest approach to a skeleton construction of which the nature and limitations of masonry admitted." Schuyler assumed that Gilbert had analyzed the similarities between skeleton construction and Gothic masonry construction. This assumption led him to conclude that Gilbert had resisted the facile imitation of past forms to become instead a "Gothic architect without knowing it."[4]

The Woolworth Building also fulfilled Schuyler's expectations regarding the proper relationship between a conspicuous building and its urban setting. These expectations were based on his knowledge of developments in civic art. The building was an "elaborated work of art" and an "ornament of our city," an impressive achievement that documented the aesthetic sensibilities of the people of New York. The architect had designed it as an object that enhanced its setting, to be seen from any near or distant viewpoint. Its crown especially suited the prominence and visibility of the building. Schuyler observed that Gilbert had completely abolished the cornice, a visual and structural anachronism, traces of which had unfortunately remained in his West Street Building. Gilbert substituted the cornice with a crown that appealed to both the aesthetic and the organic elements in Schuyler's critical vision. It was a "fairy filagree," but also an "efflorescence" of "buds and blossoms" that culminated the "stalks" of the shaft.[5]

Schuyler noted that terra cotta, with its plasticity and adaptability to color treatment, provided a particularly suitable medium for the crown's ornamental effects. The terra cotta's plasticity permitted the fine quality of the detail, with its sharp outlines and intricate pattern of projections and recessions. Gilbert, skillfully using subtle adjustments and color, had created Gothic detail that could be viewed effectively both from close at hand and from afar. The tower, "not an addition but a completion," with its receding upper stages, pinnacles, and "crowning finial," embellished the skyline and glistened "over city and river."[6]

The architectural press corroborated Schuyler's conclusion that Gilbert's design had temporarily nullified the skyscraper problem. The editors of American Architect saw it as convincing evidence that the skyscraper now possessed "artistic qualities and possibilities." In the previous decade, architects had explicitly agreed that the new type "presented little of interest or merit architecturally." Gilbert, by contrast, demonstrated in the Woolworth Building a truth that he had prefigured in his design for the West Street Building. This truth was that the skyscraper was "not of necessity ugly." Architects need search no further for solutions, the editors stated, but should follow the "standards of excellence which have now been established." "Concerning the possibility of furnishing a satisfactory solution to the architectural difficulties of the tall building, there can be no further doubt."[7]

A.D.F. Hamlin was certainly thinking of the Woolworth Building when he wrote an essay in 1916 surveying the history of American architecture from 1891, the year he thought architects had "accepted" the steel frame "as more than a mere experiment." Hamlin no longer saw the frame as a hindrance to the advancement of American architecture, as he and others previously had. The frame was instead a structural system that liberated architecture from the "massive walls which had for ages kept it from soaring otherwise than in the frail and beautiful but practically useless form of the spire." Hamlin admitted that "the problem of the ideal artistic treatment of the skyscraper" had not been finally solved, but stressed that "we have gone a long way towards it; and meanwhile our architecture has been endowed with wholly new resources and possibilities."[8]

Contemporaries of Cass Gilbert, who shared his conservative vision for American architecture throughout the twenties, asserted retrospectively that the Woolworth Building's design had presented either one solution or the solution to the problem of the steel-framed skyscraper. In 1931 the architect and historian Glenn Brown called the Woolworth Building "a solution for a steel skeleton structure." In 1934 the architectural historian Charles Moore wrote in an obituary on Gilbert that "in the epoch-making Woolworth Building, he grasped firmly and solved adequately

the New York problem of the skyscraper." William Francklyn Paris, an art historian, stated in a 1948 biography on Gilbert that the steel frame had not been fully acknowledged by architects until Gilbert had "pioneered with the Woolworth Building." His design was "its own answer."[9]

The localized urban problems that Gilbert's design had seemed to resolve included issues associated with the height and density of tall buildings in the streets of the business district, their relationship to civic art and architecture, and their impact on the skyline. The Woolworth Building provided an example for zoning reformers, enhanced City Hall Park with a Gothic tower, and ornamented the skyline of lower Manhattan.

With Frederick Law Olmsted Jr., Gilbert had proposed legal restriction of building heights as a means of directing the growth of New Haven. He understood the potential of height restrictions to shape the streets and squares of a city into the public setting espoused by advocates of the City Beautiful. Gilbert opposed the implementation of height restrictions in New York, however, in an effort to protect the financial interests of the property owner. He was not concerned with determining what form such a restriction might take in that city, although he certainly knew about his contemporaries' proposals. Gilbert's outlook was contradictory. He was unwaveringly tolerant of the uncontrolled construction of skyscrapers, yet firmly committed to the aesthetic objectives of the City Beautiful movement. Gilbert did not resolve this contradiction. Instead, he embraced the opportunity to design the tallest building in the world, but also designed it so as to take into account City Beautiful aesthetic objectives.

Unlike Ernest Flagg's design for the Singer Tower, Gilbert's design for the Woolworth Building was not a demonstration of a specific position on zoning reform. Nevertheless, certain elements in the Woolworth Building's composition and siting related to the aesthetic suggestions of Gilbert's New York contemporaries. Its slender tower, ornamented on all four sides and projected from a lower block, recalled Bruce Price's tower concept. Ernest Flagg had developed this concept into a "city of towers." The Woolworth Building was sited as if it were an isolated landmark,

because of its full occupation of the end of a block otherwise taken up by low structures, and because of its distance from the financial district. At the 1894 meeting of the Architectural League, Edward Kendall had suggested that such isolated tall buildings might recall cathedrals or European city halls in providing their urban settings with hierarchy and focus. Because of the Woolworth Building's site at the corner of City Hall Park, spectators could appreciate the full height of its facade. The building therefore escaped Robinson's aesthetic criticism of imperceptibility in tall buildings facing narrow streets.

Gilbert's design for the Woolworth Building also responded to environmental concerns raised by the New York zoning reformers. This cannot be attributed to a deliberate intention of Gilbert's, but rather to the fortuitous circumstances of the building's composition, siting, and construction. The Woolworth Building's slender tower cast a narrow shadow and did not rob neighboring properties of light and air. The building was not located along the densely built up section of lower Broadway at Wall Street, but along the section that intersected City Hall Park. It did not worsen the gloomy conditions of the street with another steep facade. Rows of tall buildings typically dispersed their occupants into the crowded, narrow streets of the business district, but the park absorbed the Woolworth Building's departing tenantry. Also, because of its subway line connection and its arcade, the Woolworth Building did not aggravate congestion along lower Broadway. According to William G. McAdoo of New York's Rapid Transit Commission, the subway link was approved because it reduced congestion.[10] The arcade followed the earlier suggestions of Charles Rollinson Lamb and Milo Roy Maltbie for easing congestion by providing continuous circulation between office blocks. Gilbert ensured fire safety by encasing the Woolworth Building in concrete and terra cotta and using metal doors and trim.

The Heights of Buildings Commission did not criticize Gilbert's design for the Woolworth Building in their 1913 report, despite the fact that its floor area of approximately thirty thousand square feet was larger than that of any preceding office building. Instead, the commissioners treated it as an example for a proposed exception to the provision allowing a tower

of unlimited height. Since the Woolworth Building fronted a public park, the commissioners decided that the towers of other skyscrapers bordering open spaces could be placed at the building line rather than set back the required twenty feet. Under the later Zoning Resolution of 1916, the Woolworth Building's envelope would have received only minor adjustments (Fig. 265). Its tower would have been allowed to occupy a greater percentage of its lot. Its lower block would have terminated at the twenty-third story instead of the twenty-seventh story, and setbacks would have been added to the upper stages of its light court. By contrast, major changes were proposed for the Equitable Building (1912-15) by Graham, Anderson, Probst & White. Its complete lot coverage and egregious bulk only facilitated the passage of the Zoning Resolution (Fig. 266).[11]

The Woolworth Building was completed at the southern corner of City Hall Park after more than a decade of struggle to give order, definition, and a powerful image to the civic center. Gilbert did not have a voice in the selection of the building's site, nor did he have a final say in its program, both of which were Woolworth's prerogatives. Nevertheless, given Gilbert's experience in the theory and practice of grouping public buildings and his general involvement in civic improvement, he certainly knew about earlier designs for New York's civic center. Gilbert's design for the Woolworth Building was informed by his understanding of the interrelationship between a new building and its setting.

Although the Woolworth Building was a commercial skyscraper, it took on the aura of a civic building. It fulfilled the civic designers' objectives regarding public buildings and their arrangement at City Hall Park. The Woolworth Building's white exterior, composition, ornate tower, and decorative lobby identified it with adjacent civic structures. In particular, it resembled the Municipal Building (Fig. 267). Both buildings parlayed the identity of their respective institutions on the skyline with decorative towers that extended out of massive winged blocks of offices below. Some of the Woolworth Building's features recalled those of earlier, unrealized projects for the municipal office building. The slender tower resembled the campanile-like tower with a pyramidal roof found in Post and Hornbostel's proposal. The vertical shaft evoked the

Gothic-influenced exterior of Howells & Stokes's second place entry in the municipal office building competition. In addition, the activities the Woolworth Building housed programmatically linked it to the civic structures around the park. Its tenants included consulting engineers and manufacturing, railroad, and construction companies. But the building also housed federal courtrooms and the offices of lawyers.[12]

The Woolworth Building formed a reciprocal relationship with the Municipal Building at the opposite corner of City Hall Park, and thus strengthened the image of New York's civic center. Like the towers that surrounded the park in Post and Hornbostel's proposal, the two buildings focussed on the treasured historic structure and seat of municipal government at the park's center (Fig. 268). Moreover, when a secondary civic center was planned for Guy Lowell's circular New York County Courthouse, to the northeast of City Hall Park, the Woolworth Building acted as an anchor amidst the sweep of urban change. Gilbert's design for the Woolworth Building might also be viewed as a response to the objective of securing a dominant civic image on the skyline. This objective was implicit in Post and Hornbostel's 650-foot municipal office tower, and in Gordon's 1000-foot high courthouse. It cannot be denied that Woolworth primarily intended to create a personal monument and a conspicuous advertisement for his company, even though he specified that the Woolworth Building be an "ornament to the city." Still, his building met the aesthetic standards civic designers upheld for public buildings. Thus, it offered a substitute, although hardly an authentic one, for the tower civic designers anticipated would dominate the skyscrapers of lower Manhattan's business district.

In the vista from Brooklyn, the Woolworth Building combined with the Municipal Building to act as a portal to the city (Fig. 269). Although civic designers' proposals for a bridge terminal had established a visible threshold between the bridge and the City Hall Park, the intimate scale of the terminal seemed out of place in relation to the technological bravura of the bridge. Furthermore, the terminal's white facade was designed to be seen by the crowds leaving City Hall Park. From Brooklyn the terminal was obscured and dwarfed by the bridge itself. When the Woolworth and

Municipal buildings were completed, however, the bridge was flanked by two symmetrically arranged white structures. The new "portal" suited the scale of the bridge and the experience of entering New York's civic center from Brooklyn. Crowds were provided with an indication on the skyline of the place where they would arrive. This vista was emphasized in the poster for the City Planning Exposition of 1913 (Fig. 270).[13]

Contemporary observers attuned to the principles of civic art viewed the Woolworth Building as a civic tower that enhanced the image of New York's civic center. In their 1922 handbook on civic art, Werner Hegemann and Elbert Peets regarded the Woolworth Building as an example of the advantages of the tower over the dome in civic design. They did not distinguish it from towers associated with governmental institutions, such as the Municipal Building in New York and the Customhouse in Boston, all of which they classified as "promising." Given the success of such civic towers, Hegemann and Peets concluded that "the intelligent use of the skyscraper in civic design" would be "America's most valuable contribution to civic art."[14] Architect and city planner George Burdett Ford thought that the Woolworth Building represented New York's progress in civic design. Ford served as Secretary and Director of Investigations for the Heights of Buildings Commission, and later as a consultant to the Committee on the City Plan. The city's Board of Aldermen charged the Committee with the preparation of the 1914 planning report. In the report Ford discussed the merits of building groups such as Columbia University, the civic centers planned for all five boroughs, and the decoration of streets and parks with statuary. He also boasted that vistas could be found in New York that rivalled those of any city in the world. He was thinking particularly of the vista of the Woolworth Building from across City Hall Park (Fig. 271):

> ...almost nowhere can we find a view that compares in charm and inspiration with that obtained by standing in front of the northwest door of the Municipal Building, looking up through its beautifully designed arch, over that gem of architecture, the City Hall, to the wonderful Woolworth Building rising beyond. It is a remarkable standard for the City to live up to in its future civic art.[15]

When Gilbert designed the Woolworth Building, he certainly knew that it would change the appearance of lower Manhattan as viewed from the

surrounding waterways. Mildred Stapley, a writer for Harper's Monthly Magazine, noted that Gilbert had "concentrated his best efforts on the tower" because it would be silhouetted against the sky and would thus be his "greatest contribution" to the view of the city from afar. Gilbert's design did alter the appearance of lower Manhattan's skyline, but in this it was not alone. Within a year after the Woolworth Building was constructed, the Municipal Building (1907-14) by McKim, Mead & White and the Banker's Trust Building (1911-14) by Trowbridge & Livingston were also completed. With Ernest Flagg's Singer Tower of 1908, the new group of high towers with ornamental crowns surpassed the picturesque roof silhouettes found in the skyscrapers of the mid-decade (Figs. 272, 273). The lower, boxier buildings of the former skyline formed a hill-like base from which the slender towers with decorative crowns rose. The siting of the towers was not planned, but their dispersed arrangement nevertheless fulfilled Robinson's recommendation that large skyscrapers should be scattered about the city. Contemporary writers and photographers tried to integrate the towers into their concept of the City Beautiful. Stapley thought that the towers had "arranged themselves" in a "composition" and some photographers composed their views of the skyline to convey the impression of a symmetrical relationship among the towers (Fig. 274).[16]

After Gilbert published his final design for the Woolworth Building in early 1911, negative criticism of lower Manhattan's skyline significantly abated. Stapley described the skyline as "startlingly beautiful," despite the "early disrepute of the sky-scraper." The Woolworth Building, the latest addition to the mass, heralded the "triumph of the artistic over the practical." The associations of the skyline with private profit and rampant individualism no longer mattered, for the "commercial" had become "lost in the esthetic." Even Schuyler declined to raise the familiar questions of character and meaning, and instead evaluated the "'tiara of proud towers'" as "successes in the subjugation of our strange new monster," and thus "civic possessions." Among these towers the Woolworth Building had surpassed the "artistic as well as the altitudinous" record.[17] Schuyler and other critics did not discuss the purposes the towers served for the private corporations with which they were identified. Instead, they invested the Woolworth Building with qualities that denied its actual

commercial origins. The editors of the Craftsman compared it to a campanile in a European city. An art critic, Clarence Ward, observed that it rose above surrounding buildings in much the same way a Gothic spire dominated the surrounding roofs in a medieval town. Schuyler endowed it with human characteristics:

> ...the tower itself, for all it punctures of shadow and its bristling of outstanding pinnacles, is but a "fair attitude," a gracious and commanding shape, an overtopping peak in the jagged sierra which calls itself the skyline of lower Manhattan.[18]

FOOTNOTES

Abbreviations

AAA	Archives of American Art, Smithsonian Institution
ALCU	Avery Architectural and Fine Arts Library, Columbia University
LC	Manuscript Division, Library of Congress
MA	Municipal Archives, New York City
MHS	Manuscript Library, Minnesota Historical Society
NMAH	Division of Mechanical and Civil Engineering, National Museum of American History, Smithsonian Institution
N-YHS	Map and Print Collection, New-York Historical Society
YU	Manuscripts and Archives, Yale University Library

Introduction

1. William R. Ware, "The Study of Architectural History at Columbia College," School of Mines Quarterly 17 (1895): 61, as quoted in J.A. Chewning, "William Robert Ware at M.I.T. and Columbia, "Journal of Architectural Education XXXIII (December 1974), 27, n. 14.

2. Montgomery Schuyler, "The Skyscraper Problem," Scribner's Magazine XXXIV (August 1903): 255-56.

3. ibid., 253-54.

4. Barr Ferree, "The Art of the High Building," Architectural Record V (May 1904): 445; Harry W. Desmond, "A Rational Skyscraper," Architectural Record XV (March 1904): 275-76; Claude Bragdon, "Architecture in the United States III: The Skyscraper," Architectural Record XXVI (August 1909): 85-90.

5. Cass Gilbert, "Architectural Design," in "The Woolworth Building, Most Modern Example of the Fire-proof Structure--How it Was Built," Real Estate Magazine, July 1912, 56. Gilbert also discussed the design of the skyscraper as a "problem" in "Skyscrapers and the Skyline of the Future," New York Times, 10 May 1908, pt. 5, p. 1, and in "100-Story Building Entirely Possible," New York Times, 20 October 1912, pt. 3, p. 4.

Chapter 1

1. Herbert Croly, "'Civic Improvements': The Case of New York," Architectural Record XXI (May 1907): 352.

2. In the 1890's, safety against corrosion caused by rust was an issue in the choice of an iron over steel frame. According to William J. Fryer Jr., in his article "Skeleton Construction," Architectural Record I (July 1891-July 1892): 233-34, mild steel rusted faster than wrought iron at first, then slower. Cast iron oxidized in damp locations, but not to the point of deterioration. Thus Fryer recommended cast iron for the frame at the interior of the building while he recommended rolled steel, more economical under tensile loading conditions, for interior floor beams and girders. Ernest Flagg reiterated the problem of steel corrosion in "The Dangers of High Buildings," The Cosmopolitan 21 (May 1896): 76. The change in the heights of buildings in the business districts of New York and Chicago was recorded in contemporary drawings and photographs. Moses King, King's Views of New York, 1896-1915 (New York: Benjamin Blom, Inc., 1974 reprint of 1896, 1903, 1905, 1908, 1911, 1915 eds.); Isaac Newton Phelps Stokes, The Iconography of Manhattan Island, 6 vols. (New York: Arno Press, 1967 reprint of 1918 ed.); Frank A. Randall, History of the Development of Building Construction in Chicago (Urbana: University of Illinois Press, 1949); Mayer and Wade, Chicago. A statistical analysis of the heights of office buildings in Manhattan is included in Appendix VI in the Report of the Heights of Buildings Commission to the Committee on the Height, Size and Arrangement of Buildings of the Board of Estimate and Apportionment of the City of New York (New York: Board of Estimate and Apportionment, 1913), pp. 161-70. Architectural historians have generally agreed that the rapid development of the office building type was an outcome of new spatial demands and the availability of technical means to meet them. Carl W. Condit, The Chicago School of Architecture (Chicago: University of Chicago Press, 1914), pp. 14-25; Earle Schultz and Walter Simmons, Offices in the Sky (New York: Bobbs-Merrill Co., 1959), pp. 11-62; Winston Weisman, "New York and the Problem of the First Skyscraper," Journal of the Society of Architectural Historians XII (March 1953): 10. The distinctions between "elevator building" and "skyscraper" are discussed in J. Carson Webster, "The Skyscraper: Logical and Historical Considerations," Journal of the Society of Architectural Historians XVIII (December 1959): 126-39. The history of the elevator is discussed briefly in Leopold Arnaud, "The Tall Building in New York in the Twentieth Century," Journal of the Society of Architectural Historians XI (May 1952): 15; and Condit, Chicago School, p. 21. In 1903 the first gearless traction elevator for extensive use was installed in the Beaver Building, New York City. The First One Hundred Years (New York: Otis Elevator Company, 1953), p. 24.

3. As a result of pressure from real estate interests, in 1902 Chicago's city council raised the height limitation to 260 feet. In 1910, due to a increased awareness of problems created by excessive density, congestion, and an oversupply of office space, it passed an ordinance establishing a new height limitation at 200 feet. Charles M. Nichols,

comp., Studies on Building Height Limitations (Chicago: The Chicago Real Estate Board, 1923), pp. 14-17. Mark Girouard, Cities and People (New Haven: Yale University Press, 1985), p. 323. Montgomery Schuyler, "The Towers of Manhattan," Architectural Record XXXIII (February 1913): 99-104. Scientific American (New York: 1845-) followed closely the competition for height between builders of skyscrapers.

4. Girouard, Cities, pp. 308, 322. Anthony Sutcliffe, "Introduction: Urbanization, Planning, and the Giant City," in Metropolis, ed. Anthony Sutcliffe (London: Mansell, 1984), p. 5; Kenneth T. Jackson, "The Capital of Capitalism: the New York Metropolitan Region, 1890-1940," in Metropolis, p. 319; Condit, New York, p. 241.

5. Girouard, Cities, p. 321; Mona Domosh, "The Skyscrapers of New York, 1880-1910," manuscript; Carl W. Condit, The Port of New York (Chicago: University of Chicago Press, 1980), pp. 239-58; Robert A.M. Stern, Gregory Gilmartin, and John Montague Massengale, New York 1900 (New York: Rizzoli International Publications, Inc., 1983), pp. 34-55; Stokes, Iconography, vol. 3, pp. 783-831.

6. Condit, Port of New York, pp. 239-47.

7. "Richard M. Hurd, 75, Finance Firm Head," New York Times, 7 June 1941, p. 17; Richard Hofstadter, Social Darwinism in American Thought, rev. ed. (New York: George Braziller, Inc., 1955), pp. 53-55. Morton G. White, Social Thought in America: The Revolt Against Formalism, 2nd ed. (Boston: Beacon Press, 1957), pp. 11-15. Richard M. Hurd, Principles of City Land Values (New York: Record and Guide, 1903), p. 18. Hurd's assumptions that social phenomena were to be examined scientifically, that urban order was unplanned, that the sole purpose of the law was to uphold the right of the individual, and that cities evolved by means of increasing specialization, found parallels in Spencer's espousal of economic and social laissez-faire. Hofstadter, Social Darwinism, pp. 31-50.

8. Hurd's text went through three editions within seven years. Real Estate Record and Builder's Guide stressed that every man involved in real estate should purchase a copy of Hurd's text. The entire text was also published serially in the journal between 24 January and 21 March 1903. "How to Value Real Estate," Real Estate Record and Builder's Guide LXXIII (9 January 1904), p. 59.

9. Hurd, Principles, pp. 19-21. ibid., pp. 58-59. ibid., pp. 75-85.

10. ibid., pp. 1-2, 55, 97-102. Hurd's description of the effect of land speculation on the business district was germane: not only had lower Manhattan's skyline changed in a major way by the turn of the century, but a pattern of landholding had emerged where large parcels owned by an individual or corporation replaced the former smaller, more intricate, pattern.

11. Hurd, Principles, pp. 42-43. ibid., pp. 48, 94-96.

12. Christine M. Boyer, Dreaming the Rational City: The Myth of American City Planning (Cambridge: MIT Press, 1983), pp. 43-56; Anthony Sutcliff, Towards the Planned City (New York: St. Martin's Press, 1981), pp. 96-99, 102-114, provide a general background on the City Beautiful movement. Jon A. Peterson, "The City Beautiful Movement, Forgotten Origins and Lost Meanings," Journal of Urban History II (August 1976): 415-34, emphasizes the small-scale aspects of the City Beautiful movement; its origins in municipal art, civic improvement, and outdoor art; and the central role of Charles Mulford Robinson, as does, idem, "The Origins of the Comprehensive City Planning Ideal in the United States, 1840-1911" (Ph.D. diss., Harvard University, 1967). Peterson also discussed the origins of the term, "City Beautiful," in "City Beautiful Movement," 419. Charles Rollinson Lamb first used the term in "Civic Architecture," Municipal Affairs II (1898), 72. Thomas S. Hines, Burnham of Chicago, Architect and Planner of Cities (New York: Oxford University Press, 1974) pp. 73-157, 174-96, and John W. Reps, Monumental Washington (Princeton: Princeton University Press, 1967), pp. 93-138, discuss the monumental aspects of the City Beautiful movement and the central role of Daniel Burnham. The movement in its totality is best understood as an amalgamation of both developments, although Robinson's influence dominated the planning objectives of the municipal art reformers of New York.

13. Peterson, "The City Beautiful Movement," 426-30.

14. Robinson wrote a descriptive essay on the Columbian Exposition with Ruskinian overtones. Charles Mulford Robinson, "The Fair as Spectacle," A History of the World's Columbian Exposition (Chicago, 1893), pp. 493-512. Charles Mulford Robinson, The Improvement of Towns and Cities, or the Practical Basis of Civic Aesthetics (New York: G.P. Putnam's Sons, 1901). Sutcliffe, Towards the Planned City, p. 103; Peterson, "The City Beautiful Movement," pp. 426-28. Robinson refers repeatedly to Italian and Flemish cities throughout his text. American architects trained at the Ecole, such as Richard Morris Hunt and Charles F. McKim, and the students to whom they taught Ecole methods, were responsible for the design of many of the American buildings Robinson mentioned to illustrate his points. Charles Mulford Robinson, Modern Civic Art (New York: G.P. Putnam's Sons, 1903). Robinson also discussed European planning developments in relationship to municipal administration of planning objectives. Robinson, Civic Art, pp. 21-23. Robinson's awareness of contemporary German developments was betrayed by his suggestion of combining of an urban radial street pattern with a residential curvilinear street pattern in his ideal city plan, and in his frequent reference to the "science of city-building." Sutcliff, Towards the Planned City, p. 104. Urban historians have generally concurred that Robinson was the chief spokesman for the early municipal art reformers and that the basic principles he set forth found a consensus among his followers. Boyer, Dreaming the Rational City, pp. 43-52; Sutcliff, Towards the Planned City, pp. 103-4; Harvey A. Kantor, "Modern Urban Planning in New York City: Origins and Evolution, 1890-1933" (Ph.D. diss., New York University, 1971), pp. 54-56. Modern Civic Art went through three editions within six years.

15. Robinson, Civic Art, pp. 6-9, 46, 47.

16. ibid., pp. 24-36.

17. ibid., pp. 4-23. Robinson thought that the progress of mankind was represented by its ending in a celestial city, after having started in a garden. Charles Mulford Robinson, The Improvement of Towns and Cities, p. 293.

18. Robinson, Civic Art.

19. Robinson, Civic Art, pp. 39-80.

20. ibid., pp. 81-98.

21. ibid., pp. 9, 84-86, 112-14.

22. The larger imperatives of nineteenth-century American civilization that remained influential throughout this period stemmed from a triadic system of beliefs relating to morality, progress, and culture. Henry F. May, The End of American Innocence (New York: Alfred A. Knopf, 1959), pp. 3-51. A theme in American thought at the turn of the century, the search for order in a culture that was becoming increasingly complex, found expression in the urban proposals of the municipal art advocates. Robert H. Wiebe, The Search for Order: 1877-1920 (New York: Hill and Wang, 1967). The awareness of the city as an environment spurred housing and zoning reform efforts. Hong-Bin Kang, "Environmentalism: Philosophical Sources of Nineteenth Century Urban Thought" (Ph.D. diss., MIT, 1980); Blake McKelvey, The Urbanization of America, 1860-1915 (New Brunswick, N.J.: Rutgers University Press, 1963), pp. 86-98. The search for a national identity stimulated the attempt to create an identifiable American architecture. William B. Rhoads, "The Colonial Revival and American Nationalism," Journal of the Society of Architectural Historians XXXV (December 1976): 239-54; Mardges Bacon, "Towards a National Style of Architecture: The Beaux-Arts Interpretation of the Colonial Revival," in The Colonial Revival in America (New York: W.W. Norton and Co., 1985), p. 91. By the end of the nineteenth century, America had forged a new commercial empire, which brought with it additional political responsibilities and problems. When William H. Seward entered the State Department in 1861, the purpose of expansion had become the acquisition of new markets instead of land. Walter LaFeber, The New Empire (Ithaca, N.Y.: Cornell University Press, 1963), pp. 1-61, 407-17.

23. "To Make New York Beautiful," Outlook LXXI (23 August 1902): 1006; McKim to Saint Gaudens, as quoted in Richard Guy Wilson, McKim, Mead & White, Architects (New York: Rizzoli International Publications, Inc., 1983), p. 34; Frederick S. Lamb, "Municipal Art," Municipal Affairs I (December 1897): 674-75, 681; "The Problem of the Street System of New York," Architectural Record XII (February 1903): 176; "A Monument and Its Site," Architectural Record XII (November 1902): 658.

24. Barr Ferree, "The Modern Office Building," Journal of Franklin Institute CXLI (February 1896): 139; J. Lincoln Steffens, "The Modern Business Building," Scribner's Magazine XXII (July 1897): 39-40; Montgomery Schuyler, "Some Recent Skyscrapers," Architectural Record XXII (September 1907): 161; Charles H. Caffin, "Municipal Art," Harper's Magazine C (April 1900): 656.

25. Peterson, "City Beautiful Movement," 417. Barr Ferree, ed., Yearbook of the Art Societies of New York, 1898-1899 (New York: Leonard Scott Publication Co., 1899), pp. 87-93; Yearbook of the Municipal Art Society of New York (New York, 1908); Nathalie Dana, 1892-1967, The Municipal Art Society, n.p.

26. Harvey A. Kantor, "The City Beautiful in New York," New York Historical Society Quarterly LVIII (April 1973): 153-9; idem, "Modern Urban Planning in New York City: Origins and Evolution, 1890-1933" (Ph.D. diss., New York University, 1967), pp. 59-84; Robert A.M. Stern and Gregory Gilmartin, "Apropos 1900: New York and the Metropolitan Ideal," in The Making of an Architect: 1881-1981, ed. Richard Oliver (New York: Rizzoli International Publications, Inc., 1981), p. 59; Frederick Stymetz Lamb, "New York City of the Future," House & Garden III (June 1903): 295-310. The Report of the New York City Improvement Commission (New York, 1904); Kantor, "The City Beautiful," pp. 159-63.

27. Report of the New York City Improvement Commission (New York, 1907); Kantor, "The City Beautiful," pp. 163-71; Robert A.M. Stern, Gregory Gilmartin, and John Montague Massengale, New York 1900 (New York: Rizzoli International Publications, Inc., 1983), pp. 30-31; Frederick Stymetz Lamb, "New York City Improvement Report," Charities and The Commons XIX (February 1, 1908): 1533-36. Kantor, "Modern Urban Planning," p. 96.

28. J.F. Harder, "The City's Plan," Municipal Affairs II (March 1898): 37; "The Planning of Cities," Public Improvements I (15 October 1899): 297-300.

29. Harder, "The City's Plan," 26, 32, 37-39.

30. Flagg thought the tall building, which he considered a product of greed, disfigured streets and damaged adjoining property. Ernest Flagg, "The Dangers of High Buildings," The Cosmopolitan XXI (May 1896): 70-79. Ernest Flagg, "The Plan of New York and How to Improve It," Scribner's Magazine XXXVI (August 1904): 253-56; Mardges Bacon, Ernest Flagg: Beaux-Arts Architect and Urban Reformer (New York and Cambridge: Architectural History Foundation and MIT Press, 1986): pp. 223-24; Stern, Gilmartin, and Massengale, New York 1900, pp. 29-30.

31. Daniel H. Burnham, The Plan of Chicago (New York: Da Capo Press, 1970 reprint of 1909 ed.), pp. 1-2.

32. ibid., p. 66.

33. ibid., pp. 86-87, plate CXXI; Hines, Burnham, pp. 315-16, 334-45.

34. Caffin, Municipal Art," Harper's New Monthly Magazine C (April 1900): 655; Caffin, "The Beautifying of Cities," The World's Work III (November 1901): 1435. It can be assumed that Caffin was referring to arriving immigrants. Caffin, "Municipal Art," 598; F.S. Lamb, "Municipal Art," 684; Robinson, Civic Art, pp. 28, 35-36. Later, critics associated the City Beautiful movement with American imperialism and expansionism. Lewis Mumford, Sticks and Stones (New York: Horace Liveright, 1924), pp. 123-51; Michael T. Klare, "The Architecture of Imperial America," Science and Society XXXIII (Summer-Fall 1969): 257-84; Mario Manieri-Elia, "Toward an 'Imperial City': Daniel Burnham and the City Beautiful Movement," in The American City, ed. Giorgio Ciucci et al. (Cambridge: MIT Press, 1979) pp. 1-142.

35. The argument between Croly and Robinson is discussed in Kantor, "The City Beautiful," pp. 100-101. Herbert Croly, "New York as the American Metropolis," Architectural Record XIII (March 1903): 198-99.

36. Herbert Croly, "What is Civic Art?," Architectural Record XXI (May 1907): 49-50.

37. Herbert Croly, "'Civic Improvements': The Case of New York," Architectural Record XXII (August 1907): 117-20; Charles Mulford Robinson, "'Civic Improvements': A Reply," Architectural Record XXII (August 1907): 117-20.

38. Robinson, Civic Art, pp. 123-36; Robinson, "The Evolution of the Street," 15-17.

39. Hurd, Principles, pp. 100-101.

40. Francisco Mujica, History of the Skyscraper (Paris: Archaeology & Architecture Press, 1929), p. 45, briefly discusses the meetings held at the Architectural League of New York in 1894. Between these meetings at the Architectural League and at the Annual Convention of the American Institute of Architects in October 1894, Hastings argued for the implementation of a height restriction to ameliorate the "broken sky-lines of our streets." The lack of a controlled urban framework in which to design undermined the contribution of the individual architect: "it is almost discouraging to spend one's energies upon fifty or one hundred feet of an avenue or street, when, however good the result in itself may be, we are only making a blot upon the ensemble of the general line of building." Thomas Hastings, "High Buildings and Good Architecture," American Architect and Building News XLVI (17 November 1894): 67.

41. Louis Sullivan's proposal for a setback skyscraper city was published in The Graphic V (19 December 1891). Donald Hoffmann, "The Setback Skyscraper City of 1891: An Unknown Essay by Louis H. Sullivan," Journal of the Society of Architectural Historians XXIX (May 1970): 181-87. Adler wrote on the economic advantages of the setback. Allowing more light to enter the interior of an office building, it would increase the value of office space. "Light in Tall Office Buildings," The Engineering Magazine IV (1892): 186.

42. "Limit for High Buildings," New York Times, 5 April 1894, p. 1; "The Architectural League and High Buildings," Real Estate Record and Builder's Guide LIII (7 April 1894): 530; "Architects on High Buildings," Real Estate Record and Builder's Guide LIII (21 April 1894): 615-16; "Limit to High Buildings," New York Tribune, 30 December 1894, p. 5.

43. "Tall Buildings Opposed," New York Times, 3 January 1896, p. 6; "Against High Buildings," Real Estate Record and Builder's Guide LVII (4 January 1896): 4; "High Buildings," Real Estate Record and Builder's Guide LVII (7 March 1896): 383.

44. Huss designed several office buildings and warehouses. He also entered the design competitions for the United States Custom House and the Cathedral of St. John the Divine, both in New York. A History of Real Estate, Building, and Architecture in New York City (New York: Arno Press, 1967 reprint of 1898 ed.), pp. 683-85. Barr Ferree "In Streets and Papers," Architecture and Building XXIV (11 January 1896): 20. Ernest Flagg, "Arguments for and against Tall Buildings," Architecture and Building XXIV (18 January 1896): 32-33. Flagg was thinking of the recent fire in the Manhattan Bank Building. The effects of the fire were described in "The Warping of the Steel Skeleton Under Fire, "The American Architect and Building News L (30 November 1895): 93. The author attributed the inability of the building to withstand fire to the warping of its frame and the subsequent loss of its fireproofing.

45. George Martin Huss, "Arguments for and against Tall Buildings," Architecture and Building XXIV (18 January 1896): 32; "A Rejoinder," Architecture and Building XXIV (1 February 1896): 57-58.

46. "George B. Post's Building Bill," New York Times, 28 January 1896, p. 9; New York (State), Senate, "An Act to Regulate the Height of Buildings in the City of New York, February 12, 1896," New York (State) Laws, Statutes (1896), no. 523. Francis H. Kimball and Bruce Price also spoke out against the bill, not because they disagreed with height limitations in principle, but rather with Post's specific proposal. "High Buildings," Real Estate Record and Builder's Guide LVII (14 March 1896): 432; "Plea for High Buildings: Mr. Levy Argued Against a Legislative Restriction," New York Times, 22 December 1896, p. 9; Harvey A. Kantor, "Modern Urban Planning in New York City: Origins and Evolution, 1890-1933" (Ph.D. diss., New York University, 1971), pp. 168-79.

47. "The New York Chapter A.I.A. against High Buildings," American Architect and Building News LII (25 April 1896): 33; "New York Chapter, A.I.A.: Discussion of the High-Building Bill," Architecture and Building XXIV (23 May 1896): 250-51. "New York Chapter A.I.A.--High Building Limit," American Architect and Building News LII (30 May 1896): 86-87.

48. Ernest Flagg, "The Dangers of High Buildings," Cosmopolitan 21 (May 1896): 70-79; "The Question of Height Limit in Buildings," Architecture and Building XXIV (16 May 1896): 229-30; Mardges Bacon,

Ernest Flagg: Beaux-Arts Architect and Urban Reformer (New York and Cambridge: Architectural History Foundation and MIT Press, 1986), p. 183.

49. "Height of Buildings," New York Times, 11 December 1896, p. 9; "Against High Buildings," New York Times, 18 December 1896, p. 9; "To Limit the Height of Buildings," Real Estate Record and Builder's Guide LIX (16 January 1897): 79; Kantor, "Modern Urban Planning," pp. 170-72. The resolution also contained a provision stating that all buildings should be prepared to cope with fire above 137 feet, the height beyond which the apparatus of the fire department was ineffective.

50. "Severe Fire Test of a Modern 'Skyscraper'," Scientific American LXXIX (17 December 1898): 389-90; "Building Code and High Buildings," Real Estate Record and Builder's Guide LXIII (7 January 1899): 10; Kantor, "Modern Urban Planning," pp. 172-75.

51. Charles Rollinson Lamb, "Civic Architecture from Its Constructive Side," Municipal Affairs II (March 1898): 46-54.

52. ibid., 56-62, 68-72.

53. [Charles R. Lamb], "Planning for a New Street System," Real Estate Record and Builder's Guide LXXIII (5 March 1904): 482-83; George R. Collins, Visionary Drawings of Architecture and Planning, 20th Century through the 1960's (Cambridge: MIT Press, 1979), n.p. Milo Roy Maltbie, "Arcades," House and Garden V (May 1904): 252-57.

54. "Partial Destruction of a New York Sky-scraper, the Home Insurance Company's Building," American Architect and Building News LXII (10 December 1898): 85; "The Repairs Made on the Home Life Insurance Building, New York," American Architect and Building News LXII (25 February 1899): 57; "The Success of Fireproof Construction," Real Estate Record and Builder's Guide LXII (17 December 1893): 907; "Severe Fire Test of the Modern 'Sky-scraper'," Scientific American LXXIX (17 December 1898): 389-90. Prior to the publication of Norton's results, the issue was discussed at the Annual Convention of the American Society of Civil Engineers in August 1902. One speaker maintained that steel encased in concrete would not rust; another suggested that cement mortar prevented rusting. "Relative Permanence of Steel and Masonry Construction," American Architect LXXVIII (11 October 1902, 18 October 1902): 11-13, 19-20. Norton's results were published in both the architectural and the engineering press. "Corrosion of Steel Frames in Buildings," Engineering Record 46 (8 November 1902): 442-43; "Investigation into the Corrosion of Steel-frame Construction by the Insurance Engineering Experiment Station," American Architect and Building News LXXVIII (25 October 1902): 25-26.

55. "Skyscrapers in 1902," Real Estate Record and Builder's Guide LXXI (3 January 1903): 2-3; Hurd, Principles, pp. 100-101. According to Joseph D. McGoldrick et al., Building Regulation in New York City (New York: The Commonwealth Fund, 1944), p. 92, New York City's property

owners "faced economic death through the destruction of existing realty values."

56. "Building Code Revision," Real Estate Record and Builder's Guide LXXIX (4 May 1907): 860-61; John M. Carrère, "Must Skyscraping Cease?," Real Estate Record and Builder's Guide LXXX (28 September 1907): 472-73.

57. "To Limit Skyscrapers," New York Times, 7 March 1908, p. 3; Ernest Flagg, "A Scheme for Limiting Building Height," Real Estate Record and Builder's Guide LXXXI (14 March 1908): 441-42. Ernest Flagg, "Fire-proof Buildings," American Architect XCIII (29 April 1908): 141-43, was devoted solely to the issue of fire prevention. Ernest Flagg, "The Limitation of Height and Area of Buildings in New York," American Architect and Building News XCIII (15 April 1908): 125-27.

58. Flagg, "A Scheme for Limiting Building Height," p. 441; Otto Semsch, A History of the Singer Building Construction: Its Progress from Foundation to Flagpole (New York: Singer Manufacturing Company, 1908); Flagg, "The Limitation of Height and Area of Buildings in New York," p. 126; Bacon, Ernest Flagg, pp. 220-22, 229-31.

59. "Plan for the Limitation of the Height and Area of Buildings for New York, as Proposed by the Committees on the Building Code Revision of the American Institute of Architects," American Architect and Building News XCIII (17 June 1908): 15; "Tower Skyscrapers Planned for Future," New York Times, 30 May 1908, p. 16.

60. "May Limit Skyscrapers," New York Times, 7 October 1908, p. 5; "Want Law to Limit High Buildings Here," New York Times, 12 October 1908, p. 8. Peterson, "The Origins of the Comprehensive City Planning Ideal," pp. 377-83; Mel Scott, American City Planning Since 1890 (Berkeley, Ca.: University of California Press, 1969), pp. 83-87; "Skyscrapers Bad for City," New York Times, 3 July 1908, p. 1; "Would Colonize the Skyscrapers," New York Times, 7 August 1908, p. 6; "Congestion and Building," Real Estate Record and Builder's Guide LXXXII (8 August 1908): 284. "How High Should Buildings Go?," Real Estate Record and Builder's Guide LXXXII (14 November 1908): 919-21; "Skyscraper Law Hearing," New York Times, 4 February 1909, p. 6.

61. David Knickerbacker Boyd, "The Skyscraper and the Street," American Architect and Building News XCIV (18 November 1908): 161-167.

62. Montgomery Schuyler, "To Curb the Skyscraper," Architectural Record XXIV (October 1908): 300-2. Claude Bragdon, "Architecture in the United States: The Skyscraper," Architectural Record XXVI (August 1909): 88.

63. S.J. Makielski, The Politics of Zoning (New York: Columbia University Press, 1966), pp. 11-14; Kantor, "Modern Urban Planning," pp. 178-84. Montgomery Schuyler, "The Evolution of the Skyscraper," in American Architecture and Other Writings, vol. 2, eds. William H. Jordy and Ralph Coe (Cambridge: Harvard University Press, 1961), p. 434.

64. "909-Foot Skyscraper to Tower above All," New York Times, 30 June 1908, p. 1; "Skyscrapers Bad for City," p. 1; "Tower 1,000 Feet High," New York Times, 19 July 1908, pt. 2, p. 1; Bacon, Ernest Flagg, p. 229; Anthony Sutcliffe, Towards the Planned City (New York: St. Martin's Press, 1981), p. 117; Scott, American City Planning, p. 153.

65. Makielski, The Politics of Zoning, pp. 14-17; Kantor, "Modern Urban Planning," pp. 183-200. Report of the Heights of Buildings Commission to the Committee on the Height, Size, and Arrangement of Buildings of the Board of Estimate and Apportionment of the City of New York, 1913, pp. 188-90, 223-29, 234-35, 255-60. McGoldrick et al., Building Regulation in New York City, pp. 93-94; Harvey W. Corbett, "High Buildings on Narrow Streets," American Architect CXIX (8 June 1921): 603-8, 617; Aymar Embury II, "New York's New Architecture," Architectural Forum XXXV (October 1921): 119-24.

66. John De Witt Warner, "Civic Centers," Municipal Affairs VI (March 1902): 23. John A. Peterson, "The Origins of the Comprehensive City Planning Ideal in the United States, 1840-1911" (Ph.D. diss., Harvard University, 1967), pp. 298-302. According to Peterson, by 1904 the "civic center ideal had become a well-articulated part of city-making fully expressing many of the reform values of the era." Peterson, "Origins," pp. 301-2. Maltbie was the assistant secretary of the Municipal Art Commission. In response to a proposal made by John M. Carrère before the Fine Arts Federation, the Commission was created to oversee all works sponsored by the city. Kantor, "Modern Urban Planning," pp. 39, 50. Milo Ray Maltbie, Civic Art in Northern Europe: A Report to the Art Commission of the City of New York (New York, 1903), pp. 20-22. Maltbie was also editor of Municipal Affairs and secretary of the Reform Club Committee on Municipal Administration. "Biographical Notices," Municipal Affairs II (June 1898): 337. Frederick L. Ford, compiler, The Grouping of Public Buildings (Hartford, Conn.: Municipal Art Society, 1904). Maltbie wrote essays on Berlin's civic center and on civic centers in Europe. The bulletin also included extracts on the civic center from Robinson's Modern Civic Art. "Notes and Comments," Architectural Record XVII (April 1905): 347-48. Peterson, "Origins," p. 299.

67. Robinson, Modern Civic Art, pp. 81-98. Richard Guy Wilson, "Architecture, Landscape, and City Planning," in The American Renaissance, 1876-1917 (New York: Brooklyn Museum, 1979), pp. 90-91. Wilson contrasted Robinson's plan with Arnold W. Brunner and Frederick Law Olmsted Jr.'s more regularized plan of 1912 for Denver's civic center.

68. Hurd, Principles, pp. 65-70.

69. Daniel H. Burnham, John M. Carrère, and Arnold W. Brunner, The Group Plan for the Public Buildings of the City of Cleveland, Report Made to the Honorable Tom L. Johnson and to the Honorable Board of Public Service (1903); Peterson, "Origins," pp. 289-97. Charles Mulford Robinson, "New Dreams for Cities," Architectural Record XVII (May 1905): 410-21, discusses the group plans for Cleveland and St. Louis. Charles Mulford Robinson, "Ambitions of Three Cities," Architectural

Record XXI (May 1907): 337-46, describes Cass Gilbert's plan for St. Paul.

70. "A Monument and Its Site," Architectural Record XII (November 1902): 658. Robinson, Modern Civic Art, p. 96.

71. Herbert Croly, "New York as the American Metropolis," Architectural Record XIII (March 1903): 199.

72. Memorial of the Municipal Art Society Relative to Proposed Changes in and about City Hall Square, New York City (New York, 1902); "A Civic Centre for New York," Municipal Affairs VI (Fall 1902): 478-83; Robinson, Modern Civic Art (New York: G.P. Putnam's Sons, 1903), p. 97; "Suggested Changes in the City Hall Park, New York," American Architect and Building News LXXVII (16 August 1902): 49; Robert A.M. Stern and Gregory Gilmartin, "Apropos 1900: New York and the Metropolitan Ideal," in The Making of an Architect: 1881-1891 (New York: Rizzoli International Publications, Inc., 1981), p. 61.

73. Montgomery Schuyler, "The New Hall of Records," Architectural Record XVII (May 1905): 387.

74. Municipal Art Society of New York, Memorial from the Municipal Art Society to the Board of Estimate (New York, 1903); Municipal Art Society of New York, Report of the Committee on Civic Centers (New York, 1905).

75. Post and Hornbostel's drawing was included in the 1905 report of the Committee on Civic Centers. "Proposed Brooklyn Bridge Terminal and City Offices," Architects' and Builders' Magazine 4 (August 1903): 483-89; "The Proposed Brooklyn Bridge Terminal Improvements," American Architect and Building News LXXXI (15 August 1903): 50; Stern, Gilmartin, and Massengale, New York 1900, p. 64.

76. "The Extension of the Manhattan Terminal of the New York and Brooklyn Bridge," Architect's and Builder's Magazine VI (September 1905): 521-30; Robert A.M. Stern, Gregory Gilmartin, and John Montague Massengale, New York 1900 (New York: Rizzoli International Publications, Inc., 1983), p. 64.

77. Report of the New York City Improvement Commission (1907), pp. 28-31.

78. "Mr. Cass Gilbert's Withdrawal from the Competition for the New Municipal Building, New York, N.Y.," American Architect and Building News XCIII (4 January 1908): 7. William Walton, "The New Municipal Building, New York, and Its Sculpture," American Architect CI (20 March 1912): 133-38, 140; Leland M. Roth, McKim, Mead & White, Architects (New York: Harper & Row, 1983), pp. 337-39; Stern, Gilmartin, and Massengale, New York 1900, pp. 64-67; John Tauranac, Elegant New York (New York: Abbeville Press, 1985), pp. 37-38.

79. The Court House Board was created in 1903 by an act of state legislature after judges and lawyers complained about the crowded conditions of the Tweed Courthouse. "New York Courthouse Story in

Brief," Architectural Record XXXVI (July 1914): 77. The centennial of the City Hall is discussed in "City Hall in an Old-Fashioned Celebration," Real Estate Record and Builder's Guide LXXXVII (1 July 1911): 1235-36. "The Proposed Encroachment on City Hall Park by New Buildings" American Architect XCVII (30 March 1910): 139; "The New York Court House," Architectural Record XXVII (April 1910): 359-60; "The Growing Tendency in Art Circles to Prevent the Erection of the Proposed New Court House in City Hall Park," American Architect XCVII (27 April 1910): 175. City Club of New York, Save the City Hall and City Hall Park (New York, 1910). The American Scenic and Historic Preservation Society, An Appeal for the Preservation of City Hall Park, New York (New York, 1910), pp. 3-5, 20-21.

80. Montgomery Schuyler "New York's City Hall Park Problem," Outlook 95 (23 July 1910): 647-56.

81. Ernest Flagg, "Public Buildings," in Proceedings of the Third National Conference on City Planning (Boston, 1911), pp. 47, 49-52.

82. "A Monumental Design for a Supreme Court House," Architects' and Builders' Magazine X (August 1910): 427-29; "A Tower Building a Thousand Feet High," Real Estate Record and Builder's Guide LXXXV (30 April 1910): 921-22; Stern, Gilmartin, and Massengale, New York 1900, p. 67.

83. "The Creation of a Dignified Civic Center in New York: Restoration of City Hall Park by Removal of Unsightly Buildings," Scientific American CVI (2 March 1912): 195.

84. "Competition Invited for Court House Plans," Real Estate Record and Builder's Guide XC (24 August 1912): 355-56; "New York's Proposed Civic Center," Real Estate Record and Builder's Guide LXXXIX (20 January 1912): 109-10; "New York Court House Story in Brief," Architectural Record XXXVI (July 1914): 77-78. Montgomery Schuyler, "The New York Court House and Its Site," Architectural Record XXXVI (July 1914): 9-11. "Great Plans for Court House Square," Real Estate Record and Builder's Guide XCI (29 March 1913): 658; "New York's Civic Center," Architectural Record XXXI (March 1912): 309-10.

85. Charles Mulford Robinson, "The Picture of the City," Independent (September 1902): 2207-8; Robinson, Modern Civic Art, pp. 39-41, 127-30. Robinson, Civic Art, pp. 126-32.

86. Seymour I. Toll, Zoned American (New York: Grossman Publishers, 1969), p. 55; "High Buildings," Scribner's Magazine XIX (January 1896): 127-28.

87. Montgomery Schuyler, "The Sky-Line of New York," Harper's Weekly XLI (March 20, 1897): 295. After the turn of the century, artists and photographers demonstrated a newfound interest in the skyscraper, but they did not realistically interpret it, nor its affect on the city. Instead, they portrayed it within the conventions of landscape painting, emphasizing the general effects created by overpowering size, mass, and the contrasts of light and shadow. Consequently, even

from the near viewpoint, the painters studied silhouette. Wanda M. Corn, "The New New York," Art in America LXI (July-August 1973): 59-65; Dominic Ricciotti, "Symbols and Monuments: Images of the Skyscraper in Amercian Art," Landscape XXV (Spring 1981): 22-29. Some writers also viewed the aggregation of tall buildings as an impressive landscape. This sort of description appeared in literary magazines rather than in architectural journals. See John Corbin, "The Twentieth Century City," Scribner's Magazine XXXIII (March 1903): 259-62. "New York's Big Buildings," Architectural Record XX (September 1906): 249, describes the reaction by artists and writers to the skyscraper.

88. Caffin, "Municipal Art," Harper's New Monthly Magazine C (April 1900): 657.

89. "The Newest Thing in Sky-scrapers," Architectural Record XIX (May 1906): 399.

90. Giles Edgarton, "How New York Has Redeemed Herself from Ugliness - An Artistic Revelation of the Beauty of the Skyscraper," Craftsman II (January 1907): 458, 467-68. Mildred Stapley, "The City of Towers," Harper's Monthly Magazine CXXIII (October 1911): 697, agreed with Edgarton. According to her observations, etchings of the skyline by various artists had shown that by the end of the first decade of the twentieth century the skyscraper was no longer "merely fantastic;" but it displayed "that peculiar sort of beauty which makes a picture." Edgarton, "How New York Has Redeemed Herself from Ugliness," 470-71. Local artists did not find the skyscraper worthy of serious attention until after the turn of the century. Even at this time, Alfred Stieglitz had to defend his interest in the Flatiron Building against the attacks of his father. Ricciotti, "Symbols and Monuments," pp. 22-23. Stieglitz concealed architectural detail with atmospheric filters, unlike Pennell.

91. Montgomery Schuyler, "Some Recent Skyscrapers," Architectural Record XXII (September 1907): 161.

92. "Skyscrapers in a Half-light," Architectural Record XXI (May 1907): 391.

93. "The Skyscraper and Silhouette," American Architect and Building News XCII (21 September 1907): 89.

Chapter 2

1. Montgomery Schuyler, "Architecture in Chicago: Adler & Sullivan," in American Architecture and Other Writings, ed. William H. Jordy and Ralph Coe. (Cambridge: Harvard University Press, 1961), pp. 381-82.

2. George Hill wrote at least three articles describing the programmatic and technical characteristics of the office building: "Some Practical Limiting Conditions in the Design of the Modern Office Building," Architectural Record II (April-June 1893): 446-68; "Office Building," in A Dictionary of Architecture and Building, vol. 3, ed. Russell Sturgis (London: Macmillan and Co., 1902), pp. 11-18; "The Economy of the Office Building," Architectural Record XV (April 1904): 313-27. Others similarly assessed the office building, including Barr Ferree, "The Modern Office Building," Journal of the Franklin Institute CXLI (January 1896, February 1896): 47-55, 124-40; William H. Birkmire, The Planning and Construction of High-Office Buildings (New York: John Wiley & Sons, 1898), p. 66; Cecil C. Evers, The Commercial Problem in Buildings (New York: Record and Guide Co., 1912). pp. 177-98. Hill, "Limiting Conditions," 445.

3. Hill, "Limiting Conditions," 447-48; idem, "Office Building," 12-16.

4. Hill, "Limiting Conditions," 446-47, 451; idem, Office Building," 16.

5. Hill, "Limiting Conditions," 448-50; idem, "Office Building," 17-18.

6. Hill, "The Economy of the Office Building," 325-27.

7. Hill, "Limiting Conditions," 445-46; Hill, "The Economy of the Office Building," 313-14; Ferree, "The Modern Office Building," 47-55, 124-25, 140.

8. "Wasted Opportunities," Architectural Record III (July-September 1893): 72-77; "Wasted Opportunities, No. II," Architectural Record III (October-December 1893): 169-74; "Wasted Opportunities, No. III," Architectural Record III (April-June 1894): 436-40.

9. Theodore Starrett worked in the office of Burnham and Root, where he supervised the design and construction of some of the early Chicago skyscrapers, including the Rookery and Monadnock Buildings. In 1891 he formed a partnership with George A. Fuller, becoming vice-president of the Fuller Company in 1897, upon its move to New York. With Henry S. Thompson, Starrett formed the Thompson-Starrett Company in 1899, of which he was president until 1908. Under Louis J. Horowitz, the Thompson-Starrett Company would construct the Woolworth Building. "Theodore Starrett," in The National Cyclopedia of American Biography, XXIV (New York: James T. White, 1935), p. 41; Louis J. Horowitz and Boyden Sparkes, The Towers of New York (New York: Simon and Schuster, 1937). Horowitz and Sparkes, Towers, p. 67.

10. "One Hundred Story Concrete Building to be Next Wonder," New York Herald, 13 May 1906, pt. 3, p. 8.

11. ibid.

12. Montgomery Schuyler, "Architecture in Chicago: Adler & Sullivan," in American Architecture and Other Writings, vol. 2, ed. William H. Jordy and Ralph Coe (Cambridge: Harvard University Press, 1961), p. 387.

13. Schuyler, "Architecture in Chicago," p. 381.

14. Henry Van Brunt, "Architecture in the West," in Architecture and Society, ed. William A. Coles (Cambridge: Harvard University Press, 1969), p. 190; Henry Van Brunt, "The Growth of Characteristic Architectural Style in the United States," in Architecture and Society, p. 326.

15. Russell Sturgis, "The Works of George B. Post," in Great American Architects Series, no. 4, ed. Adolf K. Placzek (New York: Da Capo Press, 1977 reprint of May 1895-July 1899 editions), p. 6.

16. A.D.F. Hamlin, "The Difficulties of Modern Architecture," Architectural Record I (October-December 1891): 145.

17. Ernest Flagg, "The Dangers of High Buildings," The Cosmopolitan 21 (May 1896): 77; Thomas Hastings, "High Buildings and Good Architecture," American Architect and Building News XLVI (17 November 1894): 67; Flagg, "Dangers," 70, 77-79. Charles C. Baldwin, Stanford White (New York: Da Capo Press, 1971 reprint of 1931 edition), pp. 227-28; Charles McKim, personal letter, 18 May 1909, as quoted in Leland Roth, "The Urban Architecture of McKim, Mead & White, 1870-1910" (Ph.D. diss., Yale University, 1973), p. 739; Ernest Flagg, "Public Buildings," in Proceedings of the Third National Conference on City Planning (Boston, 1911), p. 48; Roth, "The Urban Architecture of McKim, Mead & White," p. 741; Flagg, "Public Buildings," p. 43.

18. Henry Van Brunt, "Architecture in the West," p. 188; Montgomery Schuyler, "Architecture in Chicago," p. 387; A.D.F. Hamlin, "The Battle of the Styles," Architectural Record I (January-March, April-June 1892): 272.

19. Hamlin, "Battle of the Styles," 405, 412-13.

20. Van Brunt, "Growth of Architectural Style," pp. 323-24; Henry Van Brunt, "The Historic Styles and Modern Architecture," in Architecture and Society, pp. 302-3; Van Brunt, "Growth of Architectural Style," p. 326; Mardges Bacon, Ernest Flagg: Beaux-Arts Architect and Urban Reformer (New York and Cambridge: Architectural History Foundation and MIT Press, 1986), p. 56.

21. A.D.F Hamlin, A Text-Book of the History of Architecture (New York: Longmans, Green, and Co., 1896), p. 396; idem, "Style in Architecture," Craftsman VIII (June 1905): 329-31; idem, A Text-Book of the History of Architecture, p. 397.

22. Schuyler viewed architectural practice within the confines set by the historic styles as arbitrary and limiting. Montgomery Schuyler,

"Modern Architecture," in American Architecture, vol. 1, pp. 112-13. According to Hélène Lipstadt, Schuyler rarely used style as a term of analysis and his concept of the skyscraper as a type had "no relation to structure and function or their expression," but to the tripartite arrangement of its exterior, or the column analogy. Hélène Lipstadt, "Montgomery Schuyler and the Architectural Aberrations, 1891-1913," manuscript, 1986, p. 8. William H. Jordy and Ralph Coe emphasize the importance of Eidlitz's functional-organic convictions to the development of Schuyler's point of view. Eidlitz posited, for example, that mass be compartmentalized into a hierarchy of space-enclosing shapes and that it reflect the functional and symbolic actions housed within a building. Jordy and Coe, "Editors' Introduction," in American Architecture, vol. 1, pp. 23, 26.

23. In 1909 Schuyler wrote, "upon the whole it is not an encouraging reflection how much less the skeleton construction has done towards the establishment of an architectural type, towards the creation of an architectural organism, than was done in the transitional tall buildings..." Montgomery Schuyler, "The Evolution of the Skyscraper," in American Architecture, vol. 2, p. 436. Schuyler, "The Evolution of the Skyscraper," p. 434.

24. Schuyler, "Modern Architecture," pp. 103, 110-12.

25. Montgomery Schuyler, "Schools of Architecture and the Paris School," Scribner's Magazine XXIV (December 1898): 765-66; Montgomery Schuyler, "A 'Modern Classic'," in American Architecture, vol. 2, p. 592.

26. Hélène Lipstadt, "Montgomery Schuyler," stresses the significance of the Aristotelian precept in Schuyler's criticism. Schuyler, "Glimpses of Western Architecture: Chicago," in American Architecture, vol. 1, p. 257; Schuyler, "Modern Architecture," pp. 105, 113; Montgomery Schuyler, "The 'Skyscraper' up to Date," Architectural Record VIII (January-March 1899): 232-33, 250-51.

27. Schuyler, "The 'Skyscraper' up to Date," 250; Schuyler, "Architecture in Chicago," pp. 382, 388. Jordy and Coe assess Nature and Function of Art as "the fullest statement of the functional-organic view of architecture, based on a medieval-inspired approach to structure and composition, produced by any nineteenth-century American." "Editors' Introduction," p. 23. Leopold Eidlitz, The Nature and Function of Art, More Especially of Architecture (New York: Da Capo Press reprint of 1881 ed.). Schuyler, "Architecture in Chicago," pp. 393-94; Schuyler, "The 'Skyscraper' up to Date," 243-46, 256-57. Schuyler, "The 'Skyscraper' up to Date," 251. Montgomery Schuyler, "The West Street Building," Architectural Record XXII (August 1907): 108; idem, "An Interesting Skyscraper," Architectural Record XXII (November 1907): 365-66; Lipstadt, "Montgomery Schuyler," pp. 12-13, discusses Schuyler's attempts to justify the Aristotelian precept in his discussion of two skyscrapers designed by Robert D. Kohn: the Hermitage (1907)(a residential hotel) and the Evening Post Building (1906)(the headquarters of a newspaper).

28. Montgomery Schuyler, "Some Recent Skyscrapers," Architectural Record XXII (September 1907): 170-74, 176; Montgomery Schuyler, "The Evolution of a Skyscraper," Architectural Record XIV (November 1903): 332; Montgomery Schuyler, "The Work of N. LeBrun & Sons," Architectural Record XXVII (May 1910): 376-77.

29. Donald Hoffmann, "Frank Lloyd Wright and Viollet-le-Duc," Journal of the Society of Architectural Historians XXVIII (October 1969): 179. Jordy and Coe, "Editors' Introduction," p. 26.

30. Schuyler, "The Evolution of the Skyscraper," in American Architecture, vol. 2, pp. 434-36; Jordy and Coe, "Editors' Introduction," pp. 66-71, see the Bayard Building as occupying an intermediary position between the "spindly" Reliance Building, which Schuyler detested, and the thick wall of the Monadnock, which he admired; Montgomery Schuyler, "D.H. Burnham & Co.," in American Architecture, vol. 2, p. 417. Hoffmann, "Frank Lloyd Wright and Viollet-le-Duc," 176. Montgomery Schuyler, "The Skyscraper Problem," Scribner's Magazine XXXIV (August 1903): 254.

31. Bacon, Ernest Flagg, pp. 49-51; J.A. Chewning, "William Robert Ware at MIT and Columbia," Journal of Architectural Education XXXIII (December 1974): 27.

32. J. Guadet, Eléments et théories de l'architecture, vol. 1 (Paris: Libraire de la Construction Moderne, 1901), chap. 3, "The Major Rules of Composition," pp. 117-36; "J.-A. Guadet, Elements and theories of Architecture," trans. L. M. Roth and Jean-François Blassel, in America Builds, ed. Leland M. Roth (New York: Harper & Row, 1983), pp. 328-32; Mardges Bacon, "Towards a National Style of Architecture: The Beaux-Arts Interpretation of the Colonial Revival," in The Colonial Revival in America, ed. Alan Axelrod (New York: W.W. Norton & Co., 1985), pp. 92-93.

33. John Vredenburgh Van Pelt, A Discussion of Composition (New York: The MacMillan Co., 1902); John Beverly Robinson, Principles of Architectural Composition (New York: The Architectural Record Co., 1899); "Cornell University," Architectural Annual I (1900), pp. 264-65; "John Beverly Robinson," in Henry F. Withey and Elsie Rathburn Withey, eds., Biographical Dictionary of American Architects (Deceased) (Los Angeles: Hennessey and Ingalls, 1970), pp. 517-18. In 1905, Van Pelt began teaching in an atelier with Thomas Hastings at Columbia University and in 1910, Robinson began teaching architecture at Washington University.

34. Van Pelt, Composition, pp. 188-203.

35. Robinson, Composition, p. 319.

36. Van Pelt, Composition, pp. 155-57; Ernest Flagg, "American Architecture as Opposed to Architecture in America," Architectural Record X (October 1900): 180; Thomas Hastings, "The Relations of Life to Styles in Architecture," Harper's New Monthly Magazine LXXXVIII (May 1894): 962; Bacon, Ernest Flagg, p. 54.

37. Van Pelt, Composition, pp. 7-13; Robinson, Composition, pp. 61-66.

38. Robert A.M. Stern, Gregory Gilmartin, and John Montague Massengale, New York 1900 (New York: Rizzoli, 1983), pp. 152-77, employ roughly similar categories in their discussion of the New York skyscraper, which they label urban infill, corner infill, and skyscraper, respectively.

39. Louis Sullivan, "The Tall Office Building Artistically Considered," in Kindergarten Chats and Other Writings (New York: Dover Publications, 1979 reprint of 1918 edition), pp. 202-13; idem, The Bayard Building (New York: Post Printing and Publishing Company).

40. H.W. Desmond, "A Rational Skyscraper," Architectural Record XV (March 1904): 279; Russell Sturgis, "Good Things in Modern Architecture," Architectural Record VIII (July-September 1898): 101; Schuyler, "The 'Skyscraper' up to Date," 256-57. Kohn graduated from Columbia in 1890. Robert A.M. Stern and Gregory Gilmartin, "Apropos 1900: New York and the Metropolitan Ideal," in The Making of an Architect: 1881-1981, ed. Richard Oliver (New York: Rizzoli, 1981), pp. 77, 79. Schuyler, "Some Recent Skyscrapers," 176. Claude Bragdon, "Architecture in the United States, III: The Skyscraper," Architectural Record XXVI (August 1909): 94.

41. Schuyler, "The 'Skyscraper' up to Date," 255; Schuyler, "Some Recent Skyscrapers," 176; Lipstadt, "Montgomery Schuyler," pp. 12-13.

42. Hastings graduated from the Ecole des Beaux-Arts in 1884 and was one of the founders of the Beaux-Arts Society of Architects in 1893. Thomas Hastings, "High Buildings and Good Architecture: What Principles Should Govern Their Design," American Architect and Building News XLVI (17 November 1894): 67-68.

43. H.W. Desmond, " A Beaux-Arts Skyscraper--The Blair Building, New York City," Architectural Record XIV (December 1903): 436-43; Desmond, "A Rational Skyscraper," p. 275.

44. H.A. Caparn, "The Riddle of the Tall Building: Has the Skyscraper a Place in American Architecture?," Craftsman X (July 1906): 483; Bragdon, "Architecture in the United States," 94-96.

45. Barr Ferree, "A Talk with Bruce Price," in Great American Architects Series, no. 5, ed. Adolf K. Placzek, p. 75. ibid., pp. 75-78.

46. Russell Sturgis, "The Works of Bruce Price," in Great American Architects Series, no. 5, ed. Adolf K. Placzek, pp. 4-7; Schuyler, "The 'Skyscraper' up to Date," 250-51.

47. Sturgis, "Bruce Price," pp. 8-11; "High Buildings," Scribner's Magazine XIX (March 1896): 389-90; Schuyler, "The 'Skyscraper' up to Date," 243-50.

48. Barr Ferree, "The Art of the High Building," Architectural Record XV (May 1904): 462; Russell Sturgis, "The Works of George B. Post," in

Great American Architects Series, no. 4, ed. Adolf K. Placzek, p. 22; Schuyler, "The 'Skyscraper' up to Date," 236-38, 253; "The Tallest of Modern Office Buildings," Scientific American LXXIX (24 December 1898): 410.

49. Paul Starrett, Changing the Skyline (New York: McGraw-Hill, 1938), pp. 85-90; Mario Manieri-Elia, "Towards an 'Imperial City'," in The American City, ed. Giorgio Ciucci, et al. (Cambridge: MIT Press, 1979), p. 73, sees Burnham's design as a proposal for a new formal urban structure, because its volume accentuated the divergence of Broadway and Fifth Avenue.

50. "Architectural Appreciations--No. II: The 'Flatiron' or Fuller Building," Architectural Record XII (October 1902): 528-35. American Architecture, vol. 2, ed. Jordy and Coe, attributes another essay in the same series to Schuyler. It is "Architectural Appreciations--No. III: The New York Immigrant Station," Architectural Record XII (September 1902): 413-20.

51. Sharon Irish discusses Gilbert's designs for office buildings as commodities that suited consumer taste. She also observed that an office building's ornamental exterior advertised a tenant's location within the city. Irish, "Cass Gilbert's Career," pp. 146, 255.

52. Meyer Berger, The Story of the New York Times, 1851-1951 (New York: Simon and Schuster, 1951), pp. 87-148; Kenneth Turney Gibbs, Business Architectural Imagery in America, 1870-1930 (Ann Arbor, Mich.: UMI Research Press, 1984), pp. 115-122.

53. Robert Bruce Davies, Peacefully Working to Conquer the World: Singer Sewing Machines in Foreign Markets, 1854-1920 (New York: Arno Press, 1976), pp. 38-42, 115, 140; Bacon, Ernest Flagg, p. 213.

54. Shepard B. Clough, A Century of American Life Insurance: A History of the Mutual Life Insurance Company of New York, 1843-1943 (New York: Columbia University Press, 1946), pp. 215-28; H. Roger Grant, Insurance Reform: Consumer Action in the Progressive Era (Ames: Iowa State University Press, 1979), pp. 38-43; Louis I. Dublin, A Family of Thirty Million: The Story of the Metropolitan Life Insurance Company (New York: Metropolitan Life Insurance Company, 1943), pp. 55, 60-68; Gibbs, Business Architectural Imagery, p. 138.

55. "The New Times Building," Architects' and Builders' Magazine VI (March 1905): 241-45, 248; Meyer Berger, The Story of the New York Times, 1851-1951 (New York: Simon and Schuster, 1951), pp. 144-45.

56. Ochs wrote these words to his mother from the Deutschland, en route to Europe. Berger, The New York Times, p. 151; Gibbs, Business Architectural Imagery, p. 122.

57. "L. Eidlitz, Form and Function in Architecture," in America Builds, ed. Leland M. Roth (New York: Harper & Row, 1983), pp. 274, 276, 283; Jordy and Coe, "Editors' Introduction," in American Architecture, vol. 1, p. 26; Schuyler, "The Evolution of a Skyscraper," pp. 332, 338-43.

58. Frederick Stymetz Lamb, "Modern Use of the Gothic: The Possibilities of a New Architectural Style," Craftsman VIII (May 1905): 150-58, 160.

59. Louis H. Sullivan, "Reply to Mr. Frederick Stymetz Lamb on 'Modern Use of the Gothic; The Possibility of a New Architectural Style'," Craftsman VIII (June 1905): 336-38; A.D.F. Hamlin, "Style in Architecture," ibid., 329-31.

60. Montgomery Schuyler, "Is Gothic Dead?" and "Gothic Revivals," Architectural Record XIX (January 1906): 66-67.

61. Davies, Peacefully Working to Conquer the World, p. 334; Louis I. Dublin, A Family of Thirty Million, p. 75; "Tower to Be 700 Feet," New York Times, 19 April 1908, pt. 2, p. 1; William Henry Atherton, The Metropolitan Tower: A Symbol of Refuge, Warning, Love, Inspiration, Beauty, Strength (New York, 1915), pp. 6-7; Gibbs, Business Architectural Imagery, p. 136. Charles H. Caffin, "The Sculptor's Patriotism," Harper's Weekly XLIII (9 September 1899): 901.

62. Bacon, Ernest Flagg, pp. 209-12, 215; "Manhattan's Highest Skyscraper," Real Estate Record and Builder's Guide LXXIX (26 January 1907): 169; "The Metropolitan Tower," American Architect XCVI (6 October 1909): 124-29; "The Newest Thing in Skyscrapers," Architectural Record XIX (May 1906): 398-400.

63. Bacon, Ernest Flagg, pp. 216-17, 227-28; Montgomery Schuyler, "'The Towers of Manhattan' and Notes on the Woolworth Building," Architectural Record XXXIII (February 1913): 104.

64. A collage created by the Metropolitan Life Insurance Company, showing the tall, thin elevation of a competitor's headquarters, the Home Life Insurance Building, juxtaposed to their existing complex of offices indicated that the company perceived the Home Life Building as an image to be replicated yet surpassed in both size and design. Gibbs, Business Architectural Imagery, p. 144. "Napoleon Eugene LeBrun," in Henry F. Withey and Elsie Rathburn Withey, eds., Biographical Dictionary of American Architects (Deceased) (Los Angeles: Hennessey and Ingalls, 1970), pp. 366-67. Schuyler, "The Work of N. LeBrun & Sons," 378-79.

65. Schuyler, "'The Towers of Manhattan'," 104, 108; idem, "The Work of N. LeBrun & Sons," 378-79.

66. Schuyler, "The Evolution of the Skyscraper," p. 436; Schuyler, "'The Towers of Manhattan'," 104; Schuyler, "The Work of N. LeBrun & Sons," 379-81.

67. Charles Mulford Robinson, Modern Civic Art (New York: G.P. Putnam's Sons, 1903), pp. 132, 152-60. Lincoln Steffens, The Shame of the Cities (New York: Hill and Wang, 1963 reprint of 1902 edition), pp. 3-5; J. Lincoln Steffens, "The Modern Business Building," Scribner's Magazine XXII (July 1897): 55. "The Metropolitan Tower," Architects' and Builders' Magazine X (July 1909): 419; "Architectural Criticism," Architecture XX (15 September 1909): 129-30; A.C. David, "The New

Architecture: The First American Type of Real Value," Architectural Record XXVIII (December 1910): 390.

Chapter 3

Existing studies of Cass Gilbert and his work include: Howard Frederick Koeper, "The Gothic Skyscraper: A History of the Woolworth Building and its Antecedents" (Ph.D. diss., Harvard University, 1969); William Towner Morgan, "The Politics of Business in the Career of Cass Gilbert" (Ph.D. diss., University of Minnesota, 1972); Robert Allen Jones, "Cass Gilbert, Midwestern Architect in New York (Ph.D. diss., Case Western Reserve University, 1976); Patricia Anne Murphy, "The Early Career of Cass Gilbert: 1878 to 1895" (Master's thesis, University of Virginia, 1979); Anthony W. Robins, "Cass Gilbert (1859-1934)," in "Woolworth Building, 233 Broadway, Borough of Manhattan," New York Landmarks Preservation Commission Report, 12 April 1983; Sharon Irish, "Cass Gilbert's Career in New York, 1899-1905" (Ph.D. diss., Northwestern University, 1985); Geoffrey Blodgett, "Cass Gilbert, Architect: Conservative at Bay," Journal of American History 72 (December 1985): 615-36.

1. Cass Gilbert, "The Architecture of Today," lecture, West Point Military Academy, 4 May 1909, pp. 37, 6-7, Cass Gilbert Papers, LC.

2. Radcliffe moved from New York City to St. Paul in 1858, where he continued practice until 1886. Donald R. Torbert, A Century of Art and Architecture in Minnesota (Minneapolis: University of Minnesota Press, 1958), pp. 48-50; Sharon Irish, "Cass Gilbert's Career in New York, 1899-1905" (Ph.D. diss., Northwestern University, 1985), p. 37; Robert Allen Jones, "Cass Gilbert, Midwestern Architect in New York" (Ph.D. diss., Case Western Reserve University, 1976), pp. 4-6; Koeper, "The Gothic Skyscraper," pp. 137-38.

3. Richard Chafee, "The Atelier Vaudremer and the Ecole des Beaux-Arts," in A Continental Eye: The Art and Architecture of Arthur Rotch, ed. Harry L. Katz (Boston: Northeastern University Press, 1986), pp. 40-41; John A. Chewning, "William Robert Ware and the Beginnings of Architectural Education in the United States, 1861-1881" (Ph.D. diss., MIT, 1986), pp. 129, 133-35; Chewning, "William Robert Ware at MIT and Columbia," Journal of Architectural Education XXXIII (4 December 1974): 25-26; "William Robert Ware," in Dictionary of American Biography XIX (New York: Charles Scribner's Sons, 1936), pp. 452-53; A.D.F. Hamlin, "William Robert Ware," American Institute of Architects Journal III (September 1915): 382-86. "The Architectural Department of the Massachusetts Institute of Technology: New Instructors and Their Proposed Work," American Architect and Building News X (17 September 1881): 128.

4. Chewning, "William Robert Ware and the Beginnings of Architectural Education," p. 81; "Death of Professor Eugene Lètang," American Architect and Building News XXXVIII (3 December 1892): 141; Caroline Shillaber, Massachusetts Institute of Technology School of Architecture and Planning (Cambridge: MIT, 1963), pp. 12, 27.

5. I would like to thank Jay Chewning for making available copies of Cass Gilbert's letters to Clarence Johnston. Jones, "Cass Gilbert," quotes extensively from Gilbert's letters to Johnston. Gilbert to Johnston,

21 July 1879, Clarence Johnston Papers, MHS; Gilbert to Gilbert, 23 May 1880, Cass Gilbert Papers, MHS. Jones, "Cass Gilbert", pp. 32-35; Gilbert to Johnston, 22 June 1879, Clarence Johnston Papers, MHS; Gilbert to Johnston, 3 August 1879, ibid.; Gilbert to Johnston, 26 August 1879, ibid. Gilbert to Johnston, 21 July 1879, ibid. Gilbert wrote to Johnston: "Yesterday Lètang and I had a regular fight, as usual....I am thoroughly disgusted with Lètang. I think there is no hope for him. He got very mad and we had an exceedingly lively talk. I am going to carry out my design." (Gilbert to Johnston, 5 January 1879, Clarence Johnston Papers, MHS; Patricia Anne Murphy, "The Early Career of Cass Gilbert: 1878 to 1895" [Master's thesis, University of Virginia, 1979], pp. 8, 136 n. 12). In an autobiographical letter to Francis Swales, who was preparing a series of articles on American architects for Builder's Journal, Gilbert wrote about Lètang: "I do not recall that I found myself particularly sympathetic with his point of view although I recognized him as an admirable man in his way." Gilbert to Swales, 24 September 1909, p. 5, Cass Gilbert Papers, LC.

6. Chewning, "William Robert Ware and the Beginnings of Architectural Education," pp. 136-39. In a description of one of his architectural drawings in a letter to Johnston, Gilbert concentrated upon the characteristics of color, light, shadow, and atmosphere at the expense of the building itself. Gilbert to Johnston, 16 January 1879, Clarence Johnston Papers, MHS. Chewning, "William Robert Ware and the Beginnings of Architectural Education," p. 344 n. 115.

7. Albert Rosengarten, A Handbook of Architectural Styles, trans. W. Collett-Sanders, ed. T. Roger Smith (New York: Appleton, 1876); Owen Jones, The Grammar of Ornament (London: Quaritch, 1868). Chewning, "William Robert Ware and the Beginnings of Architectural Education," p. 113; Gilbert to Johnston, 16 January 1879, Clarence Johnston Papers, MHS. Gilbert boasted to Johnston that not another portfolio surpassed his in the quality of its drawings and spoke of his intention to send some of his sketches to American Architect and Building News. Gilbert to Johnston, 22 June 1879, Clarence Johnston Papers, MHS. Buildings Gilbert sketched in and around Boston included the New York Mutual Life Insurance Company Building (Peabody & Stearns, 1874-75), First Church (Unitarian) (Ware & Van Brunt, 1865-67), Brattle Square Church (H.H. Richardson, 1870-73), Trinity Church (H.H. Richardson, 1872-77), and Central Congregational Church (R.M. Upjohn, 1866). Chewning, "William Robert Ware and the Beginnings of Architectural Education," p. 346 n. 124. Gilbert to Johnston, 16 January 1879, Clarence Johnston Papers, MHS.

8. Chafee, "The Atelier Vaudremer," pp. 39-41; Gilbert to Johnston, 22 June 1879, Clarence Johnston Papers, MHS; Jones, "Cass Gilbert," pp. 31-32.

9. Harry L. Katz, "Arthur Rotch," in A Continental Eye, pp. 12-14, describes travel sketches by Arthur Rotch of sites in Europe and North Africa, completed during 1874-80. Gilbert to Johnston, 30 January 1880, Clarence Johnston Papers, MHS; Gilbert to Johnston, 21 March 1880, ibid; Gilbert to Johnston, 2 April 1880, ibid; Jones, "Cass Gilbert," pp. 38-42; Murphy, "The Early Career of Cass Gilbert," p. 8.

10. W. Francklyn Paris, "Cass Gilbert: Master Builder," in The Hall of American Artists, New York University, v. 4, ed. W. Francklyn Paris (New York, 1944), n.p. Francis S. Swales, "Master Draftsmen, XVII: Cass Gilbert," Pencil Points VII (October 1926): 583-98, contains a series of Cass Gilbert's watercolor sketches. Sketches that appeared in American Architect include: "Mont S. Michel, France," CII (26 March 1913); "Laon Cathedral France," CVIII (13 October 1915); "Durham Cathedral," CVIII (8 December 1915); Irish, "Cass Gilbert's Career," pp. 53, 93.

11. Contemporary biographers stated that Gilbert was an assistant to Stanford White. Francis S. Swales, "The Work of Cass Gilbert," Architectural Review XXXI (January-June 1912): 3; F.E. Bennett, "Mr. Cass Gilbert," Architect's Journal (8 June 1927): 792; Paris, "Cass Gilbert," in The Hall of American Artists, n.p. Charles C. Baldwin, Stanford White (New York: Da Capo Press, 1971 reprint of 1931 ed.), p. 34; Charles Moore, The Life and Times of Charles Follen McKim (Boston: Houghton Mifflin, 1929), Appendix II: "Office Roll of McKim, Mead & White," pp. 327-28; Chewning, "William Robert Ware and the Beginnings of Architectural Education," pp. 245-6; Leland Roth, McKim, Mead & White, Architects (New York: Harper & Row, 1983), pp. 5-6; H. Van Buren Magonigle, "A Half Century of Architecture, 3: A Biographical Review," Pencil Points XV (March 1934): 115.

12. Magonigle, "A Half Century of Architecture, 3," 116; Baldwin, Stanford White, p. 37; Richard Guy Wilson, McKim, Mead & White, Architects (New York: Rizzoli International Publications, Inc., 1983), pp. 11-13.

13. Royal Cortissoz, "Stanford White," in American Artists (New York: Charles Scribner's Sons, 1923), p. 301.

14. Baldwin, Stanford White, pp. 115, 176; Magonigle, "A Half Century of Architecture, 3," 116. Baldwin, Stanford White, p. 236. White's thoughts on the design for the Washington Memorial Arch are quoted in Roth, McKim, Mead & White, pp. 135-36.

15. Baldwin, Stanford White, p. 215; Magonigle, "A Half Century of Architecture, 4," Pencil Points XV (May 1934): 224.

16. Baldwin, Stanford White, p. 115; Roth, McKim, Mead & White, p. 64; Moore, Charles Follen McKim, Appendix II: "Office Roll," pp. 327-28. Magonigle, "A Half Century of Architecture, 4," 223; Wilson, McKim, Mead & White, pp. 95-96; Moore, Charles Follen McKim, p. 48; Baldwin, Stanford White, pp. 112-14.

17. Vincent Scully, The Shingle Style and the Stick Style: Architectural Theory and Design from Downing to the Origins of Wright, rev. ed. (New Haven, Yale University Press, 1971). Wilson, McKim, Mead & White, p. 14.

18. Swales, "Master Draftsmen," 583; Paris, "Cass Gilbert," n.p.; Gilbert to Howard Greenley, 20 April 1921, Cass Gilbert Papers, AAA.

19. Irish, "Cass Gilbert's Career," p. 39; Jones, "Cass Gilbert," pp. 53-55; Murphy, "The Early Career of Cass Gilbert," p. 31; Koeper, "The Gothic Skyscraper," pp. 138-39. In his autobiographical letter to Francis Swales, Gilbert stated that "the interests of my family required me to go to St. Paul." Gilbert to Swales, 24 September 1909, Cass Gilbert Papers, LC.

20. William Towner Morgan, "The Politics of Business in the Career of Cass Gilbert" (Ph.D. diss., University of Minnesota, 1972), p. 38; Roth, McKim, Mead & White, p. 92. Taylor worked for Bruce Price in New York while Gilbert was working for McKim, Mead & White. Jones, "Cass Gilbert," pp. 62-65.

21. Patricia Murphy discusses in depth Gilbert's orientation towards the Eastern architectural establishment. Murphy, "The Early Career of Cass Gilbert," pp. 36-38, 106-13; Paris, "Cass Gilbert," n.p.; pen and ink sketches by Gilbert of the Kirby Barnum House, the Bethlehem Presbyterian Church, and St. Clement's Memorial Church were published in American Architect and Building News XVII (17 January 1885); XXXII (4 April 1891); XLVII (8 June 1895).

22. Patricia Murphy pinpoints some of the similarities between Gilbert's Minnesota designs and the contemporary work of McKim, Mead & White. Murphy, "The Early Career of Cass Gilbert," pp. 40-41, 67-69, 78-81.

23. Paul R. Baker, Richard Morris Hunt (Cambridge: MIT Press, 1980), pp. 396-403. Patricia Murphy describes Gilbert's experience with the design of a number of classical, monumentally-scaled buildings for competitions, prior to entering the competition for the Minnesota Capitol. Murphy, "The Early Career of Cass Gilbert," pp. 103-5.

24. Morgan, "Politics," p. 55. Gilbert mentioned Burnham's offer in an autobiographical sketch he sent to Treasury Secretary Lyman Gage in 1899. Irish, "Cass Gilbert's Career," p. 43; D.H. Burnham, "Lessons of the Chicago World's Fair," Architectural Record XXXIII (January 1913): 42. Other members of the jury included William E. Eames of St. Louis and Dankmar Adler, Solon S. Beman, and Charles B. Atwood of Chicago. "Chicago," American Architect and Building News XXXIX (25 March 1893): 186.

25. This is Thomas Hines's assessment of Burnham's career. Thomas Hines, "Daniel H. Burnham," in Macmillan Encylopedia of Architects, vol. 1, ed. Adolf K. Placzek (New York: Macmillan Publishing Co., Inc., 1982), p. 352. Louis Sullivan, The Autobiography of an Idea (New York: Dover Publications, 1956 reprint of 1924 ed.), p. 285, as quoted in Hines, "Daniel H. Burnham;" Charles Moore, Daniel H. Burnham: Architect and Planner of Cities, 2 vols. (Boston: Houghton Mifflin Co., 1921), vol. 1, pp. 65-67; vol. 2., p. 15. Murphy, "The Early Career of Cass Gilbert", p. 37; Thomas Hines, Burnham of Chicago: Architect and Planner (Chicago: University of Chicago Press, 1979), p. 349; Cass Gilbert, "Daniel Hudson Burnham: An Appreciation," Architectural Record XXXII (August 1912): 175-76.

26. Glenn Brown, 1860-1930, Memories (Washington, D.C.: Press of W.F. Roberts Co., 1931), p. 568; Swales, "Master Draftsmen," 585; Edgarton Swartwout, "Cass Gilbert," in Dictionary of American Biography XXI, suppl. 1 (New York: Charles Scribner's Sons, 1944), p. 343; Bennett, "Cass Gilbert," pp. 791-92; Swartwout, "Cass Gilbert," p. 343. Swartwout, who stated his biographical essay of Gilbert was "based in part on personal recollections," worked for McKim, Mead & White during 1892-1900. Cass Gilbert Jr. considered the essay a "scurrilous sketch." Gilbert Jr. is quoted in Geoffrey Blodgett, "Cass Gilbert, Architect: Conservative at Bay" Journal of American History LXXII (December 1985): 616 n. 2.

27. Hines, Burnham of Chicago, pp. 125-34. Henry H. Saylor, The A.I.A.'s First Hundred Years (Washington, D.C.: American Institute of Architects, 1957), pp. 60, 80-81; "The Forty-Second Annual Convention of the American Institute of Architects, Held at Washington D.C., December 15, 16 and 17, 1908 -- The First Day's Proceedings," American Architect and Building News XCIV (23 December 1908): 205-9; "Convention of the American Institute of Architects," American Architect XCVI (22 December 1909): 272-73. Gilbert also played an instrumental role in procuring the Octagon House in Washington, D.C. (William Thornton, 1978) for the Institute's headquarters. Glenn Brown recommended leasing the house in 1898 and Gilbert advised its purchase in 1902. Subsequently, Gilbert raised twenty thousand dollars to aid in the payment of the house's mortgage and to purchase property to the north of the house for a proposed auditorium. Saylor, The A.I.A.'s First Hundred Years, pp. 69-71; Brown, Memories, p. 573. Koeper, "The Gothic Skyscraper," pp. 148-50.

28. Brown, Memories, pp. 423-25, 442-44; Moore, Burnham, vol. 2, p. 75; Roth, McKim, Mead & White, p. 6.

29. Mardges Bacon, Ernest Flagg: Beaux-Arts Architect and Urban Reformer (New York and Cambridge: The Architectural History Foundation and MIT Press, 1986), pp. 50-52. Robert A.M. Stern and Gregory Gilmartin, "Apropos 1900: New York and the Metropolitan Ideal," in The Making of an Architect: 1881-1981, ed. Richard Oliver (New York: Rizzoli International Publications, Inc., 1981), pp. 83-84; Donn Barber, "Charles Follen McKim," New York Architect III (September 1909), n.p.; Irish, "Cass Gilbert's Career," p. 85; Lucia and Alan Valentine, The American Academy in Rome, 1894-1969 (Charlottesville, Va.: University Press of Virginia, 1973).

30. Gilbert to Swales [autobiographical letter], 24 September 1909, p. 5, Cass Gilbert Papers, LC; Talbot Faulkner Hamlin, "William Robert Ware," in Dictionary of American Biography XIX (New York: Charles Scribner's Sons, 1936), p. 453; "Alfred Dwight Foster Hamlin," in Dictionary of American Biography VIII (New York: Charles Scribner's Sons, 1932), pp. 193-94; Peter Kaufman, "A.D.F. Hamlin and the Academic Tradition," in Abstracts of Papers Presented at the Thirty-Ninth Annual Meeting of the Society of Architectural Historians (Washington, D.C., 1986), n.p.; Steven M. Bedford and Susan M. Strauss, "History II: 1881-1912," in The Making of an Architect, pp. 38-39.

31. A.D.F. Hamlin, "Modern French Architecture," Architectural Record X (October 1900): 174-75; Bacon, Ernest Flagg, pp. 50-52, 58; A.D.F. Hamlin, "The Influence of the Ecole des Beaux-Arts on Our Architectural Education," Architectural Record XXIII (April 1908): 241-42, 244-47.

32. Montgomery Schuyler, "Schools of Architecture and the Paris School," Scribner's Magazine XXIV (December 1898): 765-66; Bacon, Ernest Flagg, pp. 55-56; Moore, Charles Follen McKim, p. 25; Barber, "Charles Follen McKim," n.p.

33. Gilbert to Swales [autobiographical letter], 24 September 1909, pp. 4-5, Cass Gilbert Papers, LC.

34. A.D.F. Hamlin, "The Battle of the Styles," in America Builds, ed. Leland M. Roth (New York: Harper & Row, 1983), pp. 410-11. In 1912 Gilbert discussed the dependence of a building's external massing upon its plan and in 1929, he emphasized the proportions of the plan as a key consideration in a well-proportioned exterior. Cass Gilbert, "The Relation of the Architect to His Client, to the Builder, and to His Brother-Architect, and to the Organization of an Architect's Work," lecture, Harvard University, 20 February 1912, p. 9, Cass Gilbert Papers, LC; Cass Gilbert, "The Greatest Element of Monumental Architecture," American Architect CXXXVI (5 August 1929): 142. Charles C. Baldwin, McKim's biographer, quoted Philip Sawyer: "to White, the artist, architecture meant color first, and form and texture next, and proportion afterward, and plan last of all." Baldwin, Stanford White, p. 265. On Guadet's attitude towards the historical styles, see the chapter on Guadet in Reyner Banham, Theory and Design in the First Machine Age, 2nd ed. (New York: Praeger Publishers, 1967), pp. 15-19, and Colin Rowe, review of Talbot Hamlin, ed., Forms and Functions of Twentieth Century Architecture, in Art Bulletin XXXV (July 1953), p. 170. Hamlin, "The Battle of the Styles," pp. 411, 415; A.D.F. Hamlin, "Style in Architecture," Craftsman VIII (June 1905): 325-26. Gilbert maintained that form, proportion, color, texture, scale, and detail all affected style in architecture. Cass Gilbert, "The Architecture of Today," lecture, West Point Military Academy, 4 May 1909, p. 28, Cass Gilbert Papers, LC. Baldwin stated that White found most important in architecture the refinements of form, color, and texture, and that ornament was his passion. Baldwin, Stanford White, pp. 264-65, 313-14.

35. Hamlin, "The Battle of the Styles," pp. 411-15.

36. A.D.F. Hamlin, "The Battle of the Styles," pp. 407-8. On Guadet's concept of modern architecture see Bacon, Ernest Flagg, pp. 45-46, and Colin Rowe, review of Talbot Hamlin, ed., Forms and Functions, p. 170. Gilbert, "The Architecture of Today;" Cass Gilbert, untitled manuscript, 26 December 1921, pp. 3-7, LC; Cass Gilbert, "Response on the Occasion of the Presentation of the Gold Medal for Architecture of the Society of Arts and Sciences," in Julia Finch Gilbert, ed., Cass Gilbert: Reminiscences and Addresses (New York: privately printed, 1935), pp. 48-51. For Guadet, Hamlin, and Gilbert, "modern" simply

meant up-to-date; the term contained none of its later associations with the avant-garde or social change.

37. Cass Gilbert, as quoted in Julie C. Gauthier, The Minnesota Capitol: Official Guide and History (St. Paul, Minn.: Pioneer Press, 1907), pp. 17-18.

38. "Letter from Cass Gilbert to Governor Donaghey Relative to Mural Painting in the State Capitol," 12 October 1914, in George W. Donaghey, Building a State Capitol (Little Rock, Arkansas: Parke-Harper Company, c. 1937), pp. 369-70; A.D.F. Hamlin, "The Relation of Decorative Painting and Sculpture to Architecture," The Western Architect IX (April, July 1900): 37-38, 74-75.

39. Steven Bedford, "The Development of the Collection and the Membership," in Between Traditions and Modernism: American Architectural Drawings from the National Academy of Design (New York: National Academy of Design, 1980), n.p.

40. Saint-Gaudens and Millet had worked on the interior of Trinity Church. Barbara Weinberg, The Decorative Work of John La Farge (New York: Garland Publishing Co., 1977), pp. 77-79, 89, 118, 243; Peterson, "Origins," pp. 153-54; Richard N. Murray, "Painting and Sculpture," in The American Renaissance, 1876-1917 (New York: Brooklyn Museum, 1979), p. 181; Pauline King, American Mural Painting (Boston: Noyes, Platt & Co., 1902), p. 55.

41. Michele H. Bogart, "In Search of a United Front: American Architectural Sculpture at the Turn of the Century," Winterthur Portfolio XIX (Summer/Autumn 1984): 155-58; David F. Burg, Chicago's White City of 1893 (Lexington: University Press of Kentucky, 1976), pp. 155-57; Paul Baker, Richard Morris Hunt (Cambridge: MIT Press, 1980), pp. 407-8; James M. Dennis, Karl Bitter: Architectural Sculptor, 1867-1915 (Madison: University of Wisconsin Press, 1967), p. 46.

42. Murray, "Painting and Sculpture," p. 185; Richard Guy Wilson, "Architecture, Landscape, and City Planning," in The American Renaissance, 1876-1917 (New York: Brooklyn Museum, 1979), pp. 105-6; Bogart, "United Front," pp. 166-68; Russell Sturgis, "The New Library of Congress: A Study in Decorative Architecture," Architectural Record VII (January-March 1898): 296-305; Lois Marie Fink, "19th Century Evolutionary Art," American Art Review IV (January 1978): 108. One contemporary author viewed the masks as a series of "racial models" that ranged from the "Anglo-Saxon, lord of creation, down to the lowest savage." Nannie Belle Maury, "The New Congressional Library," Cosmopolitan 23 (May 1897): 10-20, as quoted in Bogart, "United Front," p. 167.

43. Sturgis, "The New Library of Congress," 318-19; Murray, "Painting and Sculpture," p. 185; King, American Mural Painting, pp. 197-200.

44. Henry-Russell Hitchcock and William Seale, Temples of Democracy: The State Capitols of the U.S.A. (New York: Harcourt Brace Jovanovich,

1976), p. 215, 219-20; Neil B. Thompson, Minnesota's State Capitol (St. Paul: Minnesota Historical Society, 1974), p. 65. Gilbert's adaptation of the dome of St. Peter's was praised by Kenyon Cox, who called it a "vast piece of sculpture" and criticized by Russell Sturgis, who questioned the architectural merit of a "cupola closely copied from the great one at Rome and put to very different work." Kenyon Cox, "The New State Capitol of Minnesota," Architectural Record XVIII (August 1905): 97; Russell Sturgis, "Minnesota State Capitol," Architectural Record XIX (January 1906): 33. Gauthier, The Minnesota Capitol, pp. 10-15; Thompson, Minnesota's State Capitol, p. 56. The capitol's quadriga resembled the quadriga French had conceived for the Columbian Arch at the Chicago Exposition.

45. Cox, "The New State Capitol," 109-12; Elmer E. Garnsey, "The Color Decoration of the Minnesota Capitol," Western Architect IV (October 1905): 17-25; Thompson, Minnesota's State Capitol, pp. 65-68; Gauthier, The Minnesota Capitol, pp. 16-27, 40-47; Weinberg, The Decorative Work of John La Farge, pp. 290-94. "The New Minnesota Capitol at St. Paul," Western Architect IV (October 1905): 5; Cox, "The New State Capitol," 112.

46. The French characteristics of the building's plan and exterior might be attributed to one of its designers, Ernest Hèbrard, who Gilbert brought from the Ecole des Beaux-Arts to work on the competition. Sharon Irish, "Beaux-Arts Teamwork in an American Architectural Office: Cass Gilbert's Entry to the New York Custom House Competition," New Mexico Studies in the Fine Arts VII (1982): 10-13.

47. Cass Gilbert, as quoted in "Cass Gilbert's New York Custom House Design," Inland Architect and News Record XXXV (February 1900): 6.

48. "Cass Gilbert's New York Custom House Design," 6-7; "The New York Custom House," Architects' and Builders' Magazine IX (November 1907): 51-56; Charles DeKay, "The New New York Custom-House," Century Magazine LXXl (March 1906): 733-43; "Design for the United States Custom House, New York, N.Y.," American Architect and Building News LXVII (24 March 1900); Montgomery Schuyler, "The New Custom House at New York," Architectural Record XX (July 1906): 1-14; Jones, "Cass Gilbert," pp. 96-100. Irish, "Cass Gilbert's Career," pp. 256-322, discusses the imagery of the Custom House, the political controversy surrounding the Custom House competition, and the organization of Gilbert's office during the design of the project, as does Koeper, "The Gothic Skyscraper," pp. 140-41.

49. Irish, "Cass Gilbert's Career," p. 260. Cass Gilbert, as quoted in "Cass Gilbert's New York Custom House," 6-7; Dennis, Karl Bitter, pp. 116-17; DeKay, "The New New York Custom House," 739; Kathryn T. Greenthal and Michael Richman, "Daniel Chester French's Continents," American Art Journal VIII (November 1976): 47-58. In 1937 Reginald Marsh completed murals illustrating the port of New York, which lined the elliptical dome of the rotunda.

50. Barr Ferree, ed., Year Book of the Art Societies of New York, 1898-99 (New York: Leonard Scott Publication Co., 1899), pp. 46, 108, 146.

51. Ferree, ed., Year Book, p. 155; Lamb, "Municipal Art," 683-84; Bogart, "United Front," 162; Peterson "Origins," p. 215; Robinson Improvement of Towns and Cities, p. 9; idem, "Obligation of Architects to City Beauty," in Architectural Annual I, ed. Albert Kelsey (Philadelphia: The Architectural Annual, 1900), p. 48; Frederick Stymetz Lamb, "New York the Beautiful," Public Improvements VI (January 1903): 9-11.

52. Lamb,"New York the Beautiful," 10.

53. Weinberg, The Decorative Work of John La Farge, p. 445; Ferree, Year Book, pp. 23-24; Bogart, "United Front," 151-53; Homer Saint-Gaudens, The Reminiscences of Augustus Saint-Gaudens, vol. 2 (New York: Century Co., 1913), p. 216; Lois Marie Fink, "The Innovation of Tradition in Late Nineteenth-Century American Art," American Art Journal X (November 1978): 65-67; Edwin H. Blashfield, Mural Painting in America (New York: Charles Scribner's Sons, 1913), p. 256.

54. Blashfield, Mural Painting, p. 111; Bogart, "United Front," 164; Will H. Low, "The Mural Painter and His Public," Scribner's Magazine XLI (February 1907): 255-56; William Walton, "Mural Painting in This Country Since 1848," Scribner's Magazine XL (November 1906): 637-39; King, American Mural Painting, p. 5; Edwin Howland Blashfield, "Mural Painting," Municipal Affairs II (March 1898): 90-100; "Letter from Cass Gilbert to Governor Donaghey," in State Capitol, p. 370.

55. Charles Mulford Robinson, Improvement of Towns and Cities, p. 188; A.D.F. Hamlin, "The Relation of Decorative Painting and Sculpture to Architecture," 75; Frederick S. Lamb, "Municipal Art," Municipal Affairs I (December 1897): 683-84; Edwin Howland Blashfield "A Plea For Municipal Art," in Ferree, ed., Year Book, pp. 94-96; Blashfield, "Mural Painting," 100; Low, "The Mural Painter," 253.

56. Sturgis, "The New Library of Congress," 298; H.K. Bush-Brown, "Sculpture in Washington," in Papers Relating to the Improvement of the City of Washington, comp. Glenn Brown (Washington, D.C.: Government Printing Office, 1901), p. 73; Barr Ferree, "The Lesson of Sculpture," Craftsman VII (November 1904): 121-22; Trudy Balz, "Pageantry and Mural Painting: Community Rituals in Allegorical Form," Winterthur Portfolio XV (Autumn 1980): 211-28. Bogart, "United Front," 170.

57. Robinson, Improvement of Towns and Cities, p. 190; Blashfield, "Mural Painting," 106-7; Charles M. Shean, "Mural Painting from the American Point of View," Craftsman VII (October 1904): 23; "Letter from Cass Gilbert to Governor Donaghey," in State Capitol, p. 370.

58. Bacon, Ernest Flagg, pp. 218-19.

59. Moses King, King's Handbook of New York City, 1903, vol. 2 (New York: Benjamin Blom, 1972 reprint of 1893 edition), p. 678; Ferree, "The Modern Office Building," p. 140; "The Metropolitan Building, New York City," Architects' and Builders' Magazine VI (January 1905): 145; Schuyler, "The Work of N. LeBrun & Sons," 379; Ferree, "The Art of the High Building," 465.

60. Gilbert to Howard Greenley, 28 April 1921, Cass Gilbert Papers, AAA, describes the founding of the Architectural League of New York. Peterson, "Origins," p. 151.

61. H.K. Bush-Brown, "The National Committee on Municipal Improvements and Civic Embellishment," Architectural Annual I, p. 52. At the same meeting, Robinson urged architects everywhere to become involved in the aesthetic improvement of their own communities. Robinson, "Obligation of Architects," ibid., p. 48.

62. "The Need of a Permanent Federal Art Commission," Architectural Record XXII (November 1907): 323-24; "The Forty-Second Annual Convention of the American Institute of Architects, Held at Washington, D.C., December 15, 16, and 17, 1908--The First Day's Proceedings," American Architect and Building News XCIV (23 December 1908): 207; "Convention of the American Institute of Architects," American Architect XCVI (22 December 1909): 272; Brown, Memories, pp. 353, 356-57, 365, 379; Moore, Daniel H. Burnham, vol. 2, pp. 116, 119 n., 122, 130-132; Sue A. Kohler, The Commission of Fine Arts: A Brief History, 1910-1976 (Washington, D.C.: Commission of Fine Arts, 1985), pp. 2-5.

63. The jury, which included Robert Andrews, Walter Cook, and R. Clipston Sturgis, chose the plan submitted by Cope & Stewardson because of its flexibility and adaptation to change, in contrast to the rigidity and finality of the others. Buford Pickens and Margaretta J. Darnall, Washington University in St. Louis: Its Design and Architecture (St. Louis: Washington University, 1978), pp. 32-44. The International Competition for the Phoebe Hearst Architectural Plan for the University of California (San Francisco, 1899). Irish, "Beaux-Arts Teamwork," p. 10, states that Haskell, who studied at the Ecole des Beaux-Arts during 1894-96 in the ateliers of Jules-Alexis Godefrey and Jacques-Eugène Freynet, assisted Gilbert with the relocation of his offices in New York and the preparation of the entry for the New York Custom House competition during May-September 1899.

64. Carol McMichael, Paul Cret at Texas (Austin: University of Texas, 1983), pp. 107-9. Gilbert's concept was altered by Clarence Johnston, who replaced him as the campus designer. David Gebhard and Tom Martinson, A Guide to the Architecture of Minnesota (Minneapolis: University of Minnesota Press, 1977), pp. 48-49. Paul Venable Turner, Campus: An American Planning Tradition (Cambridge: MIT Press, 1984), pp. 191, 196. Turner calls Gilbert's design "the most authentically French Beaux-Arts plan for an American campus," next to Emile Bénard's winning entry for the University of California competition. "The University of Minnesota," Town Planning Review I (July 1910): 151-52; "Mr. Gilbert completes his work for the U. of M.," Western Architect XVI (1910): 78; Francis J. Shenehon, "Adherence to the Original Plan for the Greater Campus--University of Minnesota," Western Architect XIX (June 1913): 54-55. Later, Gilbert designed campus plans for the University of Texas (1910) and Oberlin College (1912).

65. Carrère & Hastings were also the supervising architects for the 1915 Panama-Pacific Exposition in San Francisco. Peterson, "Origins," pp. 184-85. Charles Howard Walker, "The Great Exposition at Omaha,"

Century Illustrated Monthly Magazine LV (February 1898): 518-21; "The Pan-American Exposition," American Architect and Building News LXX (15 December 1900): 83-85. David R. Francis, The Universal Exposition of 1904 (St. Louis: Louisiana Purchase Exposition Company, 1913), pp. 46-52, 82-88; Richard Cornfeld, "The Poetic Vision: The Design of the St. Louis World's Fair," Classical America (1973): 56-66; C. Howard Walker, "The Louisiana Purchase Exposition at St. Louis, Missouri," Architectural Review (Boston) XI (August 1904): 197-220; Irish, "Cass Gilbert's Career," pp. 323-86. Irish discusses Gilbert's relations with the building committee, the development of the exposition plan, the design of the Festival Hall under the supervision of Thomas R. Johnson, and the design of the Art Building.

66. Montgomery Schuyler, "The Architecture of the St. Louis Fair," Scribner's Magazine XXXV (April 1904): 385-86; idem, "The Architecture of the Louisiana Purchase Exposition," Architectural Record XV (April 1904): 335-39; Mel Scott, American City Planning since 1890, pp. 69-71. The Art Building was comprised of a permanent main building, later the St. Louis Art Museum, and two temporary annex buildings, which were removed after the exposition. "Art Building, Louisiana Purchase Exposition, St. Louis, Mo.," Architectural Review (Boston) IX (July 1902): 127.

67. John W. Reps, Monumental Washington (Princeton: Princeton University Press, 1967), pp. 73-81; Peterson, "Origins," pp. 189-91; Jon A. Peterson, "The Nation's First Comprehensive City Plan: A Political Analysis of the McMillan Plan for Washington, D.C., 1900-02," Journal of the American Planning Association 51 (Spring 1985): 134-38, 141-42; Robert S. Peabody, "The Need of Artistic Treatment of Government Work in Washington," in Papers Relating to the Improvement of the City of Washington, pp. 11-12; Mel Scott, American City Planning since 1890 (Berkeley: University of California Press, 1969), p. 49.

68. Frederick Law Olmsted Jr., "Landscape in Connection with Public Buildings in Washington," in Papers Relating to the Improvement of the City of Washington, pp. 28-34; Paul J. Pelz, "The Grouping of Public Buildings in Washington," in ibid., p. 88; Olmsted Jr., "Landscape in Connection with Public Buildings," in ibid., p. 31. Koeper, "The Gothic Skyscraper," pp. 145-46.

69. Cass Gilbert, "Grouping of Public Buildings and Development of Washington," in ibid., pp. 78-82.

70. Charles Mulford Robinson, Modern Civic Art (New York: G.P. Putnam's Sons, 1903), pp. 82-83, 98, 128, 134, 282-83.

71. Cass Gilbert, untitled lecture at Yale University on grouping public buildings, December 1907, pp. 1-12, Cass Gilbert Papers, LC. Daniel H. Burnham, The Plan of Chicago (New York: Da Capo Press, 1970 reprint of 1909 ed.), pp. 1-2; John M. Carrère, City Improvement from the Artistic Standpoint (Hartford, Conn.: Municipal Art Society, 1908), p. 6.

72. Pierce Butler, et al., Report of the Capitol Approaches Commission to the Common Council of the City of St. Paul (St. Paul: Pioneer Press, 1906), n.p.; Charles Mulford Robinson, "Ambitions of Three Cities," Architectural Record XXI (May 1907): 338-40; Webster Wheelock, "Resetting Minnesota's Capitol," Charities and The Commons XIX (1 February 1908): 1545-46. Gilbert's scheme was not fully realized.

73. Butler, Report of the Capitol Approaches Commission, n.p.

74. Cass Gilbert and Frederick Law Olmsted Jr., Report of The New Haven Civic Improvement Commission (New Haven, 1910), pp. 3-4; George B. Ford and Ralph F. Warner, eds., City Planning Progress in the United States (Washington, D.C.: Journal of the American Institute of Architects, 1917), pp. 12-13, 52-53, 114-15; Peterson, "Origins," 223, 334-35.

75. Gilbert and Olmsted, Report of the New Haven Civic Improvement Commission, pp. 47-58; Mardges Bacon, "Toward a National Style of Architecture: The Beaux-Arts Interpretation of the Colonial Revival," in The Colonial Revival in America, ed. Alan Axelrod (New York: W.W. Norton & Company, 1985), pp. 107-21. Playing upon local cultural traditions with evocative associations was a theme in the work of many American Beaux-Arts architects. McKim, Mead & White's John Andrew House (1883-86) in Boston, for example, with its austere brick facade and curved bays, responded to the Federal period architecture on Beacon Hill. Carrère & Hastings's Ponce de Leon Hotel (1885-87) in St. Augustine, Florida, synthesized Spanish and exotic architectural elements and details to play up the local Spanish heritage. Richard W. Longstreth, "Academic Eclecticism in American Architecture," Winterthur Portfolio XVII (Spring 1982): 70-72. Gilbert's design for the Cox Administration Building at Oberlin College (1913-15) incorporated the horizontal proportions and spreading hipped roof characteristic of current Midwestern residential architecture, in particular Frank Lloyd Wright's Winslow House (1893). Robert Venturi, "Plain and Fancy Architecture by Cass Gilbert at Oberlin," Apollo CIII (February 1976): 86. In his design for the Library at the University of Texas at Austin, Gilbert drew upon Spanish sources, particularly for its detailing, to evoke a local character. Drury Blakeley Alexander, "Introduction," in McMichael, Paul Cret, p. 18.

76. Gilbert's office developed a preliminary design for the New Haven Railroad Station prior to the beginning of Gilbert and Olmsted's study of the city. The station was constructed between 1918 and 1923. "The New Haven Railroad Station, New Haven, Conn.," The American Architect-The Architectural Review CXXIII (31 January 1923): 105-11. Report of the New Haven Civic Improvement Commission, pp. 13, 19-20, 22, 45, 54, 56-58.

77. Report of the New Haven Civic Improvement Commission, pp. 26-28, 51-54. In 1899 Washington, D.C. imposed height restrictions limiting nonfireproof residential structures to 60 feet, other residential structures to 90 feet, and buildings along the widest thoroughfares to 130 feet, to preserve the dominance of the Capitol dome on the skyline. Boston adopted height regulations in 1904, which limited

wooden buildings to 49 feet, commercial buildings in the business district to 125 feet, and other buildings to 80 feet. Scott, American City Planning, pp. 75-76.

78. In 1897 Gilbert wrote to the Guaranty Construction Company of Chicago: "The present agitation in New York looking to a law limiting the height of buildings will doubtless be effective, and it is desired to consummate this matter at an early date so as to be in advance of this restriction, and if such law is put into operation, it would then be advantageous as limiting the amount of competition in the renting of offices." (Gilbert to Guaranty Construction Company, 22 February 1897, Cass Gilbert Papers, MHS, as quoted in Jones, "Cass Gilbert," p. 73). "Skyscrapers and the Skyline of the Future," New York Times, 10 May 1908, pt.5, p.1; Butler, et al., Report of the Capitol Approaches Commission to the Common Council of the City of St. Paul, p. 3.

79. Report of the New Haven Civic Improvement Commission, pp. 38-40. On the role of Stokes in tenement house reform, see Roy Lubove, "I.N. Phelps Stokes: Tenement Architect, Economist, Planner," Journal of the Society of Architectural Historians XXIII (May 1964): 75-87. For Flagg, see Bacon, Ernest Flagg, pp. 234-66. When discussing the purpose of an assembly hall in a neighborhood center in Davis Square, Chicago, Gilbert stated: "The most frequent use is for a sort of dance known as a social--one might think, perhaps, not a very elevating use for a hall erected by the municipality. But if you consider the kind of people in the stockyard district and what they might be doing if they were not going to the social, you will readily agree that the thing has a distinct elevating influence." (Cass Gilbert, untitled lecture on civic improvement, December 1907, pp. 17-18, School of Fine Arts Records, box 13, folder 92, YU). The "Congestion Show," an exhibit at the Museum of Natural History, included diagrams showing room crowding, death rates and the incidence of tuberculosis, along with models of a tenement house in Manhattan's Lower East Side. The provision of parks and playgrounds was suggested as one ameliorative measure. Scott, American City Planning, pp. 84-86; Peterson, "Origins," p. 382.

80. Arnold N. Brunner and John M. Carrère, Preliminary Report for a City Plan for Grand Rapids (Grand Rapids: Common Council of Grand Rapids, Mich., 1909), pp. 18, 38; Municipal Art Society of Baltimore, Partial Report on "City Plan" (1910); Ford and Warner, City Planning Progress, pp. 12-13, 68-69; Peterson, "Origins," p. 409. In contrast to the architect-civic designers, Charles Mulford Robinson immediately joined and supported those who recognized the potential of city planning to achieve social welfare objectives. He became an active member of the Committee on Congestion of Population and edited a series of articles for Charities and The Commons, published in February 1908, in which German city planning and garden cities were discussed and Benjamin Marsh argued for new priorities in American city planning. Charles Mulford Robinson, ed., "The City Plan," Charities and The Commons XIX (1 February 1908): 1489-1566; Peterson, "Origins," pp. 383-84.

81. Anthony Sutcliffe, Towards the Planned City: Germany, Britain, The United States, and France, 1780 -1914 (New York: St. Martin's Press,

1981), pp. 113-14; Scott, American City Planning, pp. 85-89, 97-98; Peterson, "Origins," pp. 395-99.

82. Cass Gilbert, untitled lecture at Yale University on grouping public buildings, December 1907, p. 12, Cass Gilbert Papers, LC; Cass Gilbert, lecture to the Seattle Chapter of the A.I.A. on city planning, October 1909, pp. 1-2, ibid.; Horace McFarland, "The City Planner," in Arnold W. Brunner and His Work, ed. Robert Ingersoll Aitken (New York: Press of the American Institute of Architects, 1926), p. 24; "Civic Art an Investment," Architectural Record XXV (February 1909): 44.

83. "Building Skyscrapers, Described by Cass Gilbert, Architect," Real Estate Record and Builder's Guide LXV (23 June 1900): 1091; "Skyscrapers and the Skyline of the Future," New York Times, 10 May 1908, pt. 5, p. 1.

84. Jones, "Cass Gilbert," pp. 72-73; Irish, "Cass Gilbert's Career," pp. 153, 158-61. George A. Fuller was president of the Fuller Company until his death in 1900. On Fuller's career, see Irish, "Cass Gilbert's Career," p. 435 n. 67.

85. "Building Skyscrapers," p. 1089; "The Financial Importance of Rapid Building," Construction News 12 (7 July 1900); "The Financial Importance of Rapid Building," Engineering Record XLI (30 June 1900): 623-24; Broadway Chambers: A Modern Office Building (New York: George A. Fuller Co., 1900).

86. Alexander Porter was a real estate broker for Edward R. Andrews, the owner of the Broadway Chambers Building site. Irish, "Cass Gilbert's Career," pp. 173-4, 200. Robert Allen Jones called the group of Bostonians who financed the Brazer Building the "Brazer Building Trust." They proposed to demolish the old Brazer Building and to construct a new, taller building in its place. Jones, "Cass Gilbert," p. 69. "The Brazer Building, Boston," American Architect and Building News LVI (22 May 1897), p. 64.

87. Both Sharon Irish and Robert Allen Jones state that the early scheme for the Broadway Chambers Building was derived from the Brazer Building. Irish, "Cass Gilbert's Career," p. 193; Jones, "Cass Gilbert," p. 74. Southack also specified the height of the building's stories (ten feet for the upper floors) and urged Andrews to add two additional stories. Irish, "Cass Gilbert's Career," p. 189. Irish describes in great detail all aspects of the Broadway Chambers project, including its architectural and engineering features, the background of Andrews, the financing of the project, the role of its engineering consultants (Purdy & Henderson, structural engineer; Reginald P. Bolton, mechanical engineer), and the process of design in the Gilbert office. Irish, "Cass Gilbert's Career," pp. 146-208. "Broadway Chambers, Broadway and Chambers Street, New York, N.Y.," American Architect and Building News LXVII (24 February 1900): 63; "The Broadway Chambers," Architects' and Builders' Magazine II (November 1900), pp. 45-52; Broadway Chambers: A Modern Office

Building, pp. 9-23; Koeper, "The Gothic Skyscraper," pp. 67-68; Jones, "Cass Gilbert," p. 75.

88. Irish, "Cass Gilbert's Career," pp. 153-57, discusses Edward Reynolds Andrews as a patron. Montgomery Schuyler, "The Woolworth Building," in American Architecture and Other Writings, vol. 2, ed. William H. Jordy and Ralph Coe (Cambridge: Harvard University Press, 1961) p. 614. Gilbert's design for the Broadway Chambers Building, in both its plan and the composition of its facade, achieved the appropriate balance between economical planning and the aesthetic proprieties demanded by the contemporary financier of the speculative office building in New York, who found the office buildings of the Chicago School dominated by practical requirements. A.C. David, "The New Architecture: The First American Type of Real Value," Architectural Record XXVIII (December 1910): 389-403.

89. Montgomery Schuyler, "The West Street Building: New York City," Architectural Record XXII (August 1907): 102-9. The discussion concerning the relevance of Gothic precedent to the design of the office building, which occurred between Frederick Stymetz Lamb, Louis Sullivan, A.D.F. Hamlin and others in the pages of the Craftsman during May and June 1905, was published after Gilbert developed his first vertical scheme. Sharon Irish dates the first vertical scheme 7 May 1905. Irish, "Cass Gilbert's Career," p. 238. Irish also describes three more early schemes for the building developed by Thomas R. Johnson and others, explains the influence of General Howard Carroll's connection with the Starin Transportation Company on the final solution, and assesses the building's unusual and controversial pile foundation, designed by the structural engineer, Gunvald Aus. Irish, ibid., pp. 209-55. Charles E. Jenkins, "A White Enamelled Building," Architectural Record IV (January-March 1895): 299-302; "The Fisher Building, Chicago--A Building Without Walls," Inland Architect and News Record XXVII, suppl. (May 1896): n.p. F. Hart, W. Henn, and H. Sontag, Multi-Story Buildings in Steel (New York: John Wiley and Sons, 1978), pp. 22-23. The proceedings of the convention were published in Architectural Annual I, ed. Albert Kelsey (Philadelphia: The Architectural Annual, 1900). Bacon, Ernest Flagg, pp. 58-59. Jon A. Peterson, "The Origins of the Comprehensive City Planning Ideal in the United States, 1840-1911" (Ph.D. diss., Harvard University, 1967), pp. 214-15, describes the opinion of Louis Sullivan shared by the young architects and the general rebellious tone of the meeting.

90. Theodore Starrett, "The Architecture of Louis H. Sullivan," Architecture and Building XLIV (December 1912): 474, notes the similarity between the Bayard and the West Street buildings. "Original Scheme for the 'West Street Building,' New York, N.Y.," American Architect and Building News XCl (19 January 1907) shows plans, elevations, and details of the scheme with a six-story tower. In April 1906, while the building was under construction, Carroll decided to eliminate the tower. This change led Gilbert to redesign the building's crown, increasing the height of its tourelles and enriching its detail. Irish, "Cass Gilbert's Career," p. 221.

91. Gilbert's treatment of theoretical issues was virtually always justificatory and explanative, as opposed to generative and speculative. Cass Gilbert, "The Architecture of Today," lecture, West Point Military Academy, 4 May 1909, pp. 4, 7-9, 26-28, Cass Gilbert Papers, LC.

92. Montgomery Schuyler, "The 'Sky-scraper' up to Date," Architectural Record VIII (January-March 1899), p. 255, for example, stated: "Mr. Sullivan, some years ago, wrote a very interesting paper on the aesthetics of the tall building, of which the fundamental position was that form must follow function, and that 'where function does not vary form does not vary'." Mardges Bacon states that French Beaux-Arts architects in the late nineteenth century "were inclined to regard academic classicism or structural rationalism as design options or available 'styles.' They selected these according to the building type or program." Bacon, Ernest Flagg, p. 24. Gilbert similarly chose not to subscribe to an overarching architectural theory, but to freely utilize the options at hand.

93. Montgomery Schuyler, "The West Street Building," Architectural Record XXII (August 1907): 106-9; Koeper, "The Gothic Skyscraper," pp. 70-71.

94. Irish describes the building's site, its tenants, and the background and business interests of Carroll. Irish, "Cass Gilbert's Career," pp. 217-21. idem, "Cass Gilbert's West Street Building, New York City: A Monument to Transportation Progress," manuscript, 1987, views the West Street Building as a monument to water and rail transportation progress because it linked these forms of transportation to the superstructure of the city, its tenantry brought together major railroad and ferry concerns in New York, and its Gothic-influenced exterior celebrated the financial success of the Starin Transportation Company. The company's president, John Henry Starin, had developed an inventive method for transporting freight cars on floats.

95. Charles Mulford Robinson, The Improvement of Towns and Cities, or the Practical Basis of Civic Aesthetics (New York: G.P. Putnam's Sons, 1901), pp. 8-10; H.K. Bush-Brown, comp., "The Planning of Cities," Public Improvements I (15 October 1899), 297; Cass Gilbert, untitled lecture on civic improvement, Yale University, December 1907, pp. 22-24, School of Fine Arts Records, box 13, folder 92, YU.

Chapter 4

1. Frank Woolworth, as quoted in Leo L. Redding, "Mr. F.W. Woolworth's Story," World's Work (April 1913): 663.

2. John K. Winkler, Five and Ten: The Fabulous Life of F.W. Woolworth (New York: Robert M. McBride & Company, 1940), pp. 70-72, 146; "Frank W. Woolworth," in B.C. Forbes, Men Who Are Making America, 2nd ed. (New York: Forbes Publishing Co., 1918), p. 432.

3. Mona Domosh argues that City Hall Park became the initial location for tall building development because it fulfilled the spatial and symbolic needs of the newspaper industry. Mona Domosh, "The Skyscrapers of New York, 1880-1910," in Proceedings of the New England-St. Lawrence Valley Geographical Society XIII, ed. Timothy J. Rickard (Central Connecticut State University, 1983), pp. 22-23. Michele H. Bogart, "Maine Memorial and Pulitzer Fountain: A Study in Patronage and Process," Winterthur Portfolio XXI (Spring 1986): 45, 62. "F.W. Woolworth Invests His Millions in Towering Broadway Office Building," New York City American, 22 February 1911, in scrapbook, Cass Gilbert Collection, N-YHS; Woolworth Building (Highest in the World) (New York: F.W. Woolworth Company, 1912), a rental brochure, contains a plan that stresses the location of the Woolworth Building at New York's civic center and indicates graphically the prevailing assumption that the Federal Post Office would be demolished.

4. Winkler, Five and Ten, pp. 23-36; "Woolworth," in Forbes, Men Who Are Making America, pp. 428-29; "F.W. Woolworth Leaves $65,000,000," New York Times, 9 April 1919, p. 11; "Frank Winfield Woolworth," in Dictionary of American Biography XX (New York: Charles Scribner's Sons, 1936), p. 523; Howard Frederick Koeper, "The Gothic Skyscraper: The Woolworth Building and its Antecedents" (Ph.D. diss., Harvard University, 1969), p. 153.

5. "Yankee notions" included the essentials for a home dressmaker, such as needles, pins, threads, and buttons, but also other small wares, such as brushes, mirrors, pocketbooks, parasols, games, dolls, and toys. In department store merchandising, they were included in the category, "fancy goods." Ralph M. Hower, History of Macy's of New York: Chapters in the Evolution of the Department Store (Cambridge: Harvard University Press, 1946), p. 100. "Frank Winfield Woolworth," in Dictionary of American Biography XX, p. 523; Winkler, Five and Ten, pp. 37-40; "Woolworth," in Forbes, Men Who Are Making America, p. 430; "F.W. Woolworth Leaves $65,000,000," p. 11; Leo L. Redding, "Mr. F.W. Woolworth's Story" World's Work (April 1913): 660. Daniel J. Boorstin, The Americans: The Democratic Experience (New York: Random House, 1974), pp. 113-15; Winkler, Five and Ten, p. 65.

6. Redding, "Mr. F.W. Woolworth's Story," 660-61; Winkler, Five and Ten, pp. 42-51; Godfrey M. Lebhar, Chain Stores in America, 1859-1962, 3rd ed. (New York: Chain Store Publishing Corp., 1963), p. 37; "Frank Winfield Woolworth," in Dictionary of American Biography XX, p. 523; Koeper, "The Gothic Skyscraper," pp. 153-54.

7. "The Man Who Saw Millions in a Nickel," Literary Digest LXI (3 May 1919): 78; Frank Woolworth, as quoted in Redding, "Mr. F.W. Woolworth's Story," 660; William J. Baxter, Chain Store Distribution and Management (New York: Harper & Brothers Publishers, 1928), pp. 120-26; Winkler, Five and Ten, p. 138.

8. Richard Guy Wilson, "Cultural Conditions," in The American Renaissance (New York: Brooklyn Museum, 1979), p. 27; William R. Taylor, "The Launching of a Commercial Culture in New York City," paper presented at Winterthur Museum conference on consumerism and display, University of Delaware, November 1986; Winkler, Five and Ten, p. 102; Baxter, Chain Store Distribution and Management, pp. 119-20.

9. Redding, Mr. F.W. Woolworth's Story," 660. Lebhar, Chain Stores in America, pp. 37-42; Winkler, Five and Ten, pp. 131, 143, 151, 174-75; "The 'Five and Ten'--An American Institution," in F.W. Woolworth Company: 100th Anniversary, 1879-1979, pp. 17-19; "Woolworth," in Forbes, Men Who Are Making America, pp. 432-33; "Frank Winfield Woolworth," in Dictionary of American Biography XX, p. 523; Koeper, "The Gothic Skyscraper," p. 176 n. 56.

10. Winkler, Five and Ten, pp. 114-16, 154.

11. Alfred D. Chandler Jr., The Visible Hand: The Managerial Revolution in American Business (Cambridge: Harvard University Press, 1977), pp. 224, 236; Lebhar, Chain Stores in America, pp. 81-82, 98.

12. Ralph M. Hower, History of Macy's of New York, pp. 38, 87-90, 92; Michael B. Miller, The Bon Marché: Bourgeois Culture and the Department Store, 1869-1920 (Princeton: Princeton University Press, 1981), pp. 53-56. "Woolworth," in Forbes, Men Who Are Making America, p. 423.

13. Winkler, Five and Ten, pp. 67-70, 146-47; "Woolworth," in Forbes, Men Who Are Making America, p. 422; F.W. Woolworth Co., Fortieth Anniversary Souvenir, F.W. Woolworth Co., 1879-1919 (Chicago: Manz, 1919), pp. 21, 25. Lebhar, Chain Stores in America, p. 89.

14. Winkler, Five and Ten, pp. 78, 135. In 1870 Macy's of New York began buying merchandise in Europe. Hower, History of Macy's of New York, p. 112.

15. "Woolworth," in Forbes, Men Who Are Making America, p. 432; John P. Nichols, Skyline Queen and Merchant Prince: The Woolworth Story (New York: Simon & Schuster, 1973), p. 36; Chandler, The Visible Hand, pp. 234-36.

16. Winkler, Five and Ten, pp. 143, 149-50; "The 'Five and Ten'," in F.W. Woolworth Company, p. 17; "Woolworth," in B.C. Forbes, Men Who Are Making America, p. 434.

17. William R. Leach, "Transformations in a Culture of Consumption: Women and Department Stores, 1890-1925," Journal of American History 71 (September 1984): 325; "The 'Five and Ten'," in F.W. Woolworth

Company, p. 13; Baxter, Chain Store Distribution and Management, pp. 122-26, 138; Boorstin, The Americans: The Democratic Experience, pp. 114-15.

18. Leonard S. Marcus, The American Store Window (London: The Architectural Press, 1978), pp. 13-15; Leach, "Transformations in a Culture of Consumption," p. 323; Hower, History of Macy's, p. 275; Boorstin, The Americans: The Democratic Experience, pp. 158-59.

19. Winkler, Five and Ten, pp. 165-66.

20. Stuart Ewen and Elizabeth Ewen, Channels of Desire: Mass Images and the Shaping of American Consciousness (New York: McGraw-Hill, 1982), pp. 68-70; Leach, "Transformations in the Culture of Consumption," 321-22, 326, 329-30; Miller, The Bon Marché, pp. 167, 169-71; Winkler, Five and Ten, pp. 115-16, 128, 130; Nichols, Skyline Queen, pp. 58-59.

21. Winkler reprints several of the letters Woolworth mailed to his business associates during his first European buying trip. Five and Ten, pp. 91, 98.

22. Five and Ten, pp. 83-85, 91-93, 98, 130; Nichols, Skyline Queen, p. 53, quotes from one of Woolworth's "general letters" to his store managers.

23. The Woolworth Building, Lancaster, Pa. [1900].

24. ibid., Redding, "Mr. F.W. Woolworth's Story," 661-62.

25. Anthony W. Robins, "F.W. Woolworth & Company: The "5 and 10" and the World's Highest Building," in "Woolworth Building, 233 Broadway, Borough of Manhattan," New York Landmarks Preservation Commission Report, 12 April 1983, p. 4; Woolworth is quoted in Winkler, Five and Ten, p. 146.

26. Robins, "F.W. Woolworth & Company," p. 4; Winkler, Five and Ten, pp. 123, 146; Franz K. Winkler [Montgomery Schuyler], "Architecture in the Billionaire District of New York City," Architectural Record XI (October 1901): 679, 693-95; Herbert Croly, "The Contemporary New York Residence," Architectural Record XII (December 1902): 707, 720; Paul R. Baker, Richard Morris Hunt (Cambridge: MIT Press, 1980), p. 274; Robert A.M. Stern, Gregory Gilmartin, and John Montague Massengale, New York 1900 (New York: Rizzoli International Publications, Inc., 1983), pp. 315-16, 321. C.P.H. Gilbert designed a country house for Woolworth (1916-17) in Glen Cove, Long Island. Herbert Croly, "The Residence of the Late F.W. Woolworth, Esq.," Architectural Record XLVII (March 1920): 195-213.

27. "Residence, F.W. Woolworth, Fifth Avenue and Eightieth Street, New York," Architecture IV (15 November 1901): 304-6; Herbert Croly, "Rich Men and Their Houses," Architectural Record XII (May 1902): 29-31; Koeper, "The Gothic Skyscraper," p. 155. Thomas A.P. Van Leeuwen, "Sacred Skyscrapers and Profane Cathedrals," AA Files 8 (January 1985): 43, sees Woolworth's pipe organ as a reflection of his "modest

upbringing," his lack of a proper education, and his "taste for vulgarity." Robert A. Jones, "Mr. Woolworth's Tower: The Skyscraper as Popular Icon," Journal of Popular Culture 7 (Fall 1973): 412, states "Woolworth's fully orchestrated house represented the ultimate in nouveau riche artistic expression." Louis J. Horowitz and Boyden Sparkes, The Towers of New York (New York: Simon and Schuster, 1937), pp. 119-20, also describe Woolworth's mechanical organ: "other minds, other skills conceived the music but his was the will to control the speed and the volume." John Tauranac, Elegant New York (New York: Abbeville Press, Inc., 1985), p. 185, shows the organ pipes in the Pulitzer house (McKim, Mead & White, 1903). North Shore Journal 15 (31 May 1984), n.p., discusses Woolworth's plans for a new mansion. Woolworth's house on Fifth Avenue was demolished in 1919. Koeper, "The Gothic Skyscraper," p. 177 n. 62.

28. Taylor, "The Launching of a Commercial Culture," discussed the relationship between Woolworth's choice of sites for his stores and his choice of a site for his corporate headquarters. "F. W. Woolworth Invests His Millions in a Towering Broadway Office Building," New York City American, 22 February 1911, in scrapbook, Cass Gilbert Collection, N-YHS.

29. "The Man Who Saw Millions in a Nickel," Literary Digest 61 (3 May 1919): 74; Redding, "Mr. F.W. Woolworth's Story," 664; Koeper, "The Gothic Skyscraper," p. 81.

30. "Frank W. Woolworth," Americana 11 (October 1916): 353-56; Allen E. Beals, "Edward J. Hogan, Agent," Real Estate Record and Builder's Guide XC (9 November 1912): 869-70.

31. Robert Holmes Elmendorf, "Evolution of Commercial Banking in New York City, 1851-1951, in Which is Recorded the Story of the Irving Trust Company," typescript, 1951, pp. 124-25; "Obtains $8,000,000 for Big Skyscraper," New York Times, 2 August 1911, in scrapbook, Cass Gilbert Collection, N-YHS; "Hard to Borrow on New York Realty, Says Woolworth," New York American, 19 September 1911, in scrapbook, Cass Gilbert Collection, N-YHS; Tauranac, Elegant New York, pp. 18, 20, 23; "F.W. Woolworth Leaves $65,000,000," New York Times, 9 April 1919, p. 11. Koeper states in "The Gothic Skyscraper," p. 157, that "when the construction of the Woolworth Building was being arranged, French capitalists sent a representative to New York who offered to put up $7,500,000. So sure were they of acceptance, that they notified the newspapers that it was a certainty."

32. "A Realty Triumph in Assembling Plot," New York Times, 22 January 1911, pt. 7, p. 10; office memo, 15 June 1910, Cass Gilbert Papers, N-YHS; Redding, "Mr. F.W. Woolworth's Story," 664. At the beginning of August Woolworth told Gilbert that he and the owners of the Barclay Street corner were $50,000 apart on the sale price. Gilbert to John Rockart, 3 August 1910, Cass Gilbert Papers, N-YHS. Beals, "Edward J. Hogan," p. 870; "New Woolworth Building on Broadway Will Eclipse Singer Tower in Height," New York Times, 13 November 1910, pt. 7, p. 1; Koeper, "The Gothic Skyscraper," p. 102 n. 8, lists the legal transfer dates of the property, as recorded in the Property Records

Office in New York City: 233 Broadway, 2 May 1910; 237 Broadway, 8 June 1910; 235 Broadway, 6 Park Place, 8 Park Place, 9 June 1910; 10 Park Place, 16 August 1910; 231 Broadway, 3 September 1910; 1, 3, 5 Barclay Street, 24 February 1911; 229 Broadway [Barclay Street Corner], 28 February 1911.

33. Beals, "Edward J. Hogan," p. 869; Edward J. Hogan Jr., S.J., telephone conversation with author, 10 September 1984; Jones, "Mr. Woolworth's Tower," p. 410; Dinner Given to Cass Gilbert, Architect, by Frank W. Woolworth (New York: Munder-Thomsen Press, 1913), p. 38; Hogan to Gilbert, 30 April 1910, Cass Gilbert Papers, N-YHS; Koeper, "The Gothic Skyscraper," p. 82.

34. Elmendorf, "Evolution of Commercial Banking," pp. 124-25; "$2,000,000 Broadway Building," New York Times, 10 July 1910, pt. 6, p. 9; office memo, 22 June 1910, Cass Gilbert Papers, N-YHS. The first perspective that showed the proposed building occupying the entire Broadway frontage was dated 27 June 1910.

35. Cass Gilbert, "Relative to Designing a Skyscraper," manuscript, n.d., p. 3, Cass Gilbert Papers, LC; Gilbert to John Rockart, 3 August 1910, Cass Gilbert Papers, N-YHS; office memo, 22 August 1910, ibid.; office memo, 16 September 1910, ibid.; Robert Allen Jones, "Cass Gilbert, Midwestern Architect in New York" (Ph.D. diss., Case Western Reserve University, 1976), p. 112.

36. Office memo, 2 November 1910, Cass Gilbert Papers, N-YHS; "New Woolworth Building on Broadway Will Eclipse Singer Tower in Height," New York Times, 13 November 1910, pt. 7, p. 1; office memo, 19 October 1910, Cass Gilbert Papers, N-YHS; "Human Nature as Seen in the World's Tallest Office Building," Literary Digest 68 (8 January 1921): 56.

37. Office memo, 13 December 1910, Cass Gilbert Papers, N-YHS.

38. Jones, "Cass Gilbert," p. 112; Van Horne to Gilbert, 20 December 1910, Cass Gilbert Papers, N-YHS; Gilbert to Broadway-Park Place Co., 24 December 1910, ibid.; office memo, 30 December 1910, ibid.; office memo, 21 January 1910, ibid.

39. Cass Gilbert, "The Woolworth Building," in Masterpieces of Architecture in the United States (New York: Charles Scribner's Sons, 1930), p. 215. Taylor, "The Launching of a Commercial Culture," discussed the interrelationship between the vast, horizontal spread of a company's operations and the construction of a conspicuous vertical landmark. Earle Shultz and Walter Simmons, Offices in the Sky (Indianapolis: Bobbs-Merrill Company, Inc.), p. 66; Redding, "Mr. F.W. Woolworth's Story," 663.

40. "The 'Five and Ten'," in F.W. Woolworth Co., pp. 19, 24; "The Man Who Saw Millions in a Nickel," 74. W. Francklyn Paris, "Cass Gilbert: Master Builder," in Hall of American Artists, New York University, vol. 4, W. Francklyn Paris, ed. (New York, 1948), n.p.; "Building a Building with Nickels and Dimes," Buildings and Building Management (July 1915): 38. Koeper, "The Gothic Skyscraper," p. 152, calls the

building "Woolworth's true monument to himself, the skyscraper in excelsis." Commemorative projects Woolworth discussed with Gilbert prior to his death in 1919 included a memorial church (1913-15) in Great Bend, New York, the village near the farm on which Woolworth grew up, and an office building (1916) in Watertown, New York, the town in which Woolworth launched his career in retailing.

41. Horowitz and Sparkes, The Towers of New York, p. 120.

42. Koeper, "The Gothic Skyscraper," p. 88; Jones, "Cass Gilbert," pp. 114-15. Gilbert, "Relative to Designing a Skyscraper," pp. 1-3; idem, "The Tenth Birthday of a Notable Structure," Real Estate Magazine of New York XI (May 1923): 344; Theodore Starrett, "The Architecture of Louis H. Sullivan," Architecture and Building XLIV (December 1912): 474.

43. "New Woolworth Building on Broadway Will Eclipse Singer Tower in Height," New York Times, 13 November 1910, pt. 7, p. 1; Cass Gilbert, "Response on the Occasion of the Presentation of the Gold Medal for Architecture of the Society of Arts and Sciences," in Cass Gilbert: Reminiscences and Addresses, ed. Julia Finch Gilbert (New York: privately printed, 1935), p. 46; idem, "The Tenth Birthday," 345.

Chapter 5

1. "Address of Cass Gilbert, President Architectural League of New York, at the Dinner Preceding the Annual Exhibition," American Architect CVII (3 March 1915): 156.

2. Frank Woolworth, "General Letter to All Stores: United States, Canada, and Great Britain," 20 February 1914, Cass Gilbert Papers, N-YHS.

3. Woolworth to Gilbert, 27 July 1914, Cass Gilbert Papers, N-YHS. Woolworth's role in the project has been construed from a number of letters and office memoranda in the Cass Gilbert Papers, N-YHS. Louis J. Horowitz and Boyden Sparkes, The Towers of New York (New York: Simon and Schuster, 1937), p. 110; Howard Frederick Koeper, "The Gothic Skyscraper: A History of the Woolworth Building and its Antecedents" (Ph.D. diss., Harvard University, 1969), pp. 159-60; office memo, 10 October 1911, Cass Gilbert Papers, N-YHS.

4. Woolworth to Gilbert, 19 June 1911, Cass Gilbert Papers, N-YHS; office memo, 22 October 1911, ibid.; office memo, 19 October 1910, ibid.; Gilbert to Broadway Park Place Co., 31 August 1911, ibid.

5. Glenn Brown, 1860-1930, Memories (Washington, D.C., 1931), pp. 570-71; Woolworth to Gilbert, 24 April 1911, Cass Gilbert Papers, N-YHS; Gilbert to Woolworth, 11 May 1911, ibid.; office memo, 5 September 1911, ibid. Koeper, "The Gothic Skyscraper," pp. 86-87, 148-49. Gilbert also based his argument for a higher fee on the following criteria: the entire earning capacity of his office was absorbed by the project between April 1910 and January 1911, he had devoted eighty per cent of his time to the project, and during ninety days, between January and April 1911, the office reorganized old drawings and produced new drawings to form a complete set of construction documents for the project. Gilbert to Woolworth, 11 May 1911, Cass Gilbert Papers, N-YHS. Despite such disagreements, Gilbert and Woolworth parted on good terms. Woolworth praised Gilbert's skills as a designer, staged a celebratory dinner in his honor upon the completion of the building, and commissioned him for future projects. Gilbert would repeatedly refer to Woolworth's virtues as a patron.

6. Henry Hobson Richardson's office, in which McKim apprenticed, was organized like a Beaux-Arts atelier. Richardson's quick thumbnail sketches, executed at the beginning of a project, contained the germinating idea of the design and its successful development was due in part to Richardson's ability to choose talented assistants. James F. O'Gorman, H.H. Richardson and His Office (Cambridge: Department of Printing and Graphic Arts, Harvard College Library, 1974), pp. 10, 17, 23-24, 27. According to Henry Bacon, McKim initiated design with a quick sketch, gave the sketch to his draftsmen, and then critiqued its development with overlays of tracing paper. Charles Moore, The Life and Times of Charles Follen McKim (Boston: Houghton Mifflin, 1929), pp. 57-63. Sharon Irish, "Cass Gilbert's Career in New York, 1899-1905" (Ph.D. diss., Northwestern University, 1985), pp. 118-45,

describes the organization of Gilbert's office at the turn of the century with an examination of the process by which the Union Club (1900-1903) was designed. According to Irish, Gilbert often produced the initial sketch for a project, but sometimes his assistant designers joined him in the process. These sketches were sometimes exchanged and discussed by mail. Richard Guy Wilson, McKim, Mead & White, Architects (New York: Rizzoli International Publications, Inc., 1983), p. 14, discusses the claim by the staff of McKim, Mead & White that the office in which they worked retained the atmosphere of an atelier instead of a "plan factory," despite its large size.

7. Sharon Irish, "Beaux-Arts Teamwork in an American Architectural Office: Cass Gilbert's Entry to the New York Custom House Competition," New Mexico Studies in the Fine Arts VII (1982): 11-12. Irish states that "the talents of these two French-trained architects [Haskell and Hèbrard] were largely responsible for the Beaux-Arts elegance of Gilbert's Custom House design." W. Francklyn Paris, "Cass Gilbert: Master Builder," in The Hall of American Artists, New York University, vol. 4, ed. W. Francklyn Paris (New York, 1948), n.p.

8. Irish, "Cass Gilbert's Career," p. 132, states that between 1902 and 1905, Gilbert's staff numbered between twenty and twenty-five. Koeper, "The Gothic Skyscraper," p. 33 n. 22, states that at its largest, Gilbert's staff numbered forty-five individuals. This number included the architectural staff and the secretarial and janitorial help. By contrast, Daniel Burnham's office had about 180 individuals on its payroll at its peak in 1912 and McKim, Mead & White's staff numbered over 100 at the turn of the century. Thomas S. Hines, Burnham of Chicago: Architect and Planner (Chicago: University of Chicago Press, 1979), p. 269; Wilson, McKim, Mead & White, p. 14. Gilbert made the distinction between "structural draftsmen" and "ornamental draftsmen" in "Mr. Cass Gilbert and the Woolworth Building," Architect's Journal (28 July 1920): 90.

9. The contributions of Rockart, Wells, and Johnson to the Woolworth Building project have been deduced from remaining drawings, ingoing and outgoing correspondence, and office memoranda, dating from 22 June 1910 to 27 December 1912, in the Cass Gilbert Collection, N-YHS. John Rockart (1872-1951) began working with Gilbert & Taylor in St. Paul after attending secondary schools in that city. Prior to the turn of the century, he left St. Paul to study at the Ecole des Beaux-Arts for two years. Upon returning to work for Gilbert, he supervised the construction of the Minnesota Capitol, and later worked on the Louisiana Purchase Exposition, the libraries in Detroit and St. Louis, the New York Life Insurance Company Building, and the Supreme Court Building in Washington, D.C. "John Rockart Dies; Noted Architect," New York Times, 14 October 1951, p. 88. Gilbert to Johnson, 24 November 1914, Thomas R. Johnson Archive, ALCU. Antonin Raymond, Antonin Raymond: An Autobiography (Rutland, Vermont: Charles E. Tuttle Company, 1973), pp. 26, 29, briefly describes the roles of Rockart and Johnson. Hugh Ferriss joined the office in fall 1912. He laid out a measured interior perspective of the banking hall at the second story. Antonin Raymond, who assisted with the detailing of the terra cotta

cladding, also began working for Gilbert towards the end of the project.

10. Obituary on Thomas R. Johnson clipped from a Toronto newspaper, Thomas R. Johnson Archive, ALCU; "Monographs on Architectural Renderers, Being a Series of Articles on the Architectural Renderers of Today, Accompanied by Characteristic Examples of Their Work: The Work of Thomas R. Johnson," Brickbuilder 23 (1914): 110-12; Alexander B. Trowbridge, Secretary, "Statement by the Architectural League of New York" [upon the death of Thomas R. Johnson], 6 May 1915, Thomas R. Johnson Archive, ALCU. Sharon Irish, "Cass Gilbert's Career," pp. 239-240, 308-9, 356-57, discusses Johnson's role in the West Street Building, Custom House and Louisiana Purchase Exposition projects. Irish has also written a brief biography on Johnson. "Monographs on Architectural Renderers," 110; "Statement by the Architectural League of New York." Shortly after the completion of the Woolworth Building project, Gilbert gave Johnson a check for five thousand dollars. Gilbert to Johnson, 26 August 1913, Thomas R. Johnson Archive, ALCU. In 1914 Charles Loring of Loring & Leland in Boston asked Johnson to associate with their office to prepare a competition entry for the Scott Memorial Fountain in Detroit (the Gilbert office also entered the competition and won): "for a competition like this, we would have to have a few performers in your class to get anywhere" (Loring to Johnson, 12 January 1914, Thomas R. Johnson Archive, ALCU). After Johnson's death, a family friend told his widow that he and others believed that Johnson had actually designed the Woolworth Building: "the people that know, know to whom the credit is due and someday it will be spoken of as Tom's creation and is today by the ones on the inside" (J.W. Corrigan to Grace D. Johnson, 7 February 1916, Thomas R. Johnson Archive, ALCU).

11. The drawings that remain include: 88 unsigned floor plans on tracing paper showing 28 different schemes, dated 21 April 1910 to 20 August 1910; eleven drawings of the exterior, including two conceptual sketches drawn by Gilbert and six perspectives and three elevations drawn by Thomas R. Johnson, dated 22 April 1910 to 20 February 1911; and two unsigned and undated interior perspective sketches of the ground floor arcade. With the exception of one of Gilbert's conceptual sketches, which is housed in the Prints and Photographs Division of the Library of Congress, these drawings comprise part of the Cass Gilbert Collection, N-YHS. Koeper, "The Gothic Skyscraper," p. 84, mentions a perspective drawing labelled "scheme 17" and dated 27 May 1910, which I have been unable to locate in the Cass Gilbert Collection, N-YHS. Koeper, "The Gothic Skyscraper," p. 82, states that the early plan drawings "indicate an exploratory range and also the fact that Woolworth had the eventual site in mind long before he acquired all the parcels."

12. Koeper, "The Gothic Skyscraper," p. 82, considers a perspective drawing dated 25 April 1910 the "earliest existing exterior study." According to my findings, it is the second existing exterior drawing. Cass Gilbert, "The Woolworth Building," in Masterpieces of Architecture in the United States (New York: Charles Scribner's Sons, 1930), p. 215; Cass Gilbert, "Response on the Occasion of the

Presentation of the Gold Medal for Architecture of the Society of Arts and Sciences," in Cass Gilbert: Reminiscences and Addresses, ed. Julia Finch Gilbert (New York: privately printed, 1935), p. 51; Cass Gilbert, "The Woolworth Building," in Masterpieces, p. 215.

13. Cass Gilbert, "Relative to Designing a Skyscraper," manuscript, n.d., Cass Gilbert Papers, LC, pp. 2-4. Gilbert ordered two large photographs of the Victoria Tower for his office. Robert Allen Jones, "Cass Gilbert, Midwestern Architect in New York "(Ph.D. diss., Case Western Reserve University, 1976), p. 119; Koeper, "The Gothic Skyscraper," p. 106 n. 25.

14. "New York City Municipal Building Competition," American Architect and Building News XCIII (27 May 1908), illustrations. Gilbert was invited to enter the competition, but declined. "Mr. Cass Gilbert's Withdrawal from the Competition for the New Municipal Building, New York, N.Y.," American Architect and Building News XCIII (4 January 1908): 7.

15. Cass Gilbert, "The Woolworth Building," in Masterpieces, p. 215.

16. See, for example, "Architecture of the Low Countries--II," American Architect and Building News XXXIX (18 March 1893): 163-67, and "Town-Halls--I," American Architect and Building News XL11 (4 November 1893): 67-68. Cass Gilbert "Tenth Birthday of a Notable Structure," Real Estate Magazine XI (May 1923): 344-45; Koeper, "The Gothic Skyscraper," p. 89.

17. Office memo, 16 September 1910, Cass Gilbert Papers, N-YHS. O.W. Norcross inquired as to whether Gilbert would be interested in constructing the building of white marble. Norcross to Gilbert, 30 November 1910, Cass Gilbert Papers, N-YHS.

18. Office memo, 19 October 1910, Cass Gilbert Papers, N-YHS. The scheme was published in the New York Times on 13 November 1910 and sent to the annual exhibition of the Architectural League of New York in early February. Gilbert to Arthur W. Page, 9 February 1911, Cass Gilbert Papers, N-YHS.

19. A revised scheme, showing the building occupying the entire block front, dated 21 January 1911, no longer exists. Gilbert to Woolworth, 3 May 1911, Cass Gilbert Papers, N-YHS; Gilbert to Record & Guide, 4 May 1911, ibid. Like Jules Guerin, another free-lance architectural renderer, Hawley rarely constructed perspective drawings, but expected the architect to furnish them instead. Hawley, who was originally a scene painter, brought the cold precision of a measured perspective drawing alive with brilliant color, shade, and shadow, and an animated setting. The resulting pictorial quality of the drawing engaged the viewer. "Hughson Hawley: Scenic Artist and Architectural Painter," Pencil Points IX (December 1928): 761-74; Richard Guy Wilson, "Architecture, Landscape, and City Planning," in The American Renaissance, 1876-1917 (New York: Brooklyn Museum), p. 99.

20. Koeper, "The Gothic Skyscraper," p. 91, states that "the detail of the ornament was derived from Flamboyant Gothic....Gilbert subordinated it

in the allover view to an essentially English Perpendicular Gothic revival expression." Gilbert, "Response on the Occasion of the Presentation of the Gold Medal," in Cass Gilbert, p. 51.

21. Gilbert, "Tenth Birthday," 344. Cass Gilbert, "Regarding Woolworth Building," manuscript, 21 December 1927, Cass Gilbert Papers, N-YHS, as cited in Koeper, "The Gothic Skyscraper," p. 91. A photograph of the Guild Hall in Cologne was published in American Architect XCVIII (9 November 1910). Johnson drew a caricature on the back of a photograph showing the Flamboyant choir of the church at Mont-Saint-Michel. Gilbert's sketchbooks of 1882-86 (ALCU), 1898, and 1905 (SNMAH) contain studies of Flamboyant tracery.

22. Gilbert assured Woolworth that Aus had performed such a service a number of times for large shops. Office memo, 19 October 1910, Cass Gilbert Papers, N-YHS; office memo, 13 December 1910, ibid. The structural steel drawings of the Woolworth Building are housed at the Smithsonian National Museum of American History, Division of Mechanical and Civil Engineering. "Gunvald Aus," New York Times, 7 June 1950, p. 29; Sharon Irish, "Biography of Gunvald Aus," manuscript, n.d., pp. 1-2; Koeper, "The Gothic Skyscraper," p. 123. In some cases, Aus spanned between existing piers and new piers with steel transfer girders, which carried the loads imposed by the steel columns of the superstructure. Office memo, 13 December 1910, Cass Gilbert Papers, N-YHS; "The Woolworth Building Foundations," Engineering Record 64 (26 August 1911): 256-57; "The Steel Substructure of the Woolworth Building in New York City," Engineering Record 65 (17 February 1912): 177-78; Koeper, "The Gothic Skyscraper," pp. 85-86, 116.

23. Gunvald Aus, "Engineering Design of the Woolworth Building," American Architect CIII (26 March 1913): 157-60.

24. Aus, "Engineering Design," 158.

25. ibid., 167. Carl W. Condit, American Building: Materials and Techniques from the First Colonial Settlements to the Present (Chicago: University of Chicago Press, 1968), p. 129; idem, American Building Art: The Twentieth Century (New York: Oxford University Press, 1961), pp. 10-12; idem, "The Wind Bracing of Buildings," Scientific American 230 (February 1974): 98; Koeper, "The Gothic Skyscraper," pp. 121-22. The term "portal bracing" was initially used to describe the bracing in the entrance frames of bridges, from which the wind bracing technique for the skyscraper was derived. In both, rigidity and an unobstructed opening were required. Condit, "Wind Bracing," p. 95. Cross bracing was derived from bridge construction and knee bracing from naval architecture. W.L.B. Jenney, "The Chicago Construction, or Tall Buildings on Compressible Soil," Inland Architect and News Record XVII (November 1891): 41. Purdy & Henderson designed the structure of the Metropolitan Tower and Otto Francis Semsch the Singer Tower. "Description of the Structural Steel Framework for the Tower of the Metropolitan Life Insurance Building," The American Architect XCVI (6 October 1909): 130-33; "A Twentieth Century Campanile," Scientific American XCVI (30 March 1907): 270;

O.F. Semsch, ed., A History of the Singer Building Construction: Its Progress from Foundation to Flagpole (New York: Trow Press, 1908), p. 22.

26. The portal bracing in the wings and the upper stories of the tower was comprised of columns joined to deep girders with gusset plate connections through the depth of their webs. "The Tallest Office Building in the World," Scientific American CVIII (8 March 1913): 224; "The Woolworth Building, New York," Engineering Record 63 (27 May 1911): 591-92; S.F. Holtzman, "Design of the Woolworth Building: Features of Substructure and Calculations for Wind Bracing of Tower," Engineering Record 68 (5 July 1913): 22-24; "Wind bracing of the Woolworth Building," Engineering Record 65 (24 February 1912): 220-21; "The Steel Substructure of the Woolworth Building," 178.

27. Gilbert to Aus, 12 September 1911, Cass Gilbert Papers, N-YHS; Gilbert to Woolworth, 11 May 1911, ibid.; Woolworth to Gilbert, 15 May 1911, ibid. The engineer of the Thompson-Starrett Company reported that he had "gone through the wind strains and found that they were correct in every respect, that he had not checked the live and dead loads, but that the work was in all respects of such high class so far as he had gone that he saw no occasion for proceeding any further." Office memo, 12 September 1911, Cass Gilbert Papers, N-YHS. The New York Building Code required tall structures to resist a wind load of thirty pounds per square foot over the entire building's surface and a live load of seventy-five pounds per square foot. Aus, "Engineering Design," pp. 164-67. Robins Fleming, Six Monographs on Wind Stresses (New York: Engineering News, 1915), pp. 53-55, 59, criticized the New York building code's requirements for wind bracing and suggested that the Chicago building code be used as a standard instead. It assumed buildings should be designed to resist a horizontal wind pressure of 20 pounds per square foot. William Frederick Bensing, "New York's New Building Code," Buildings and Building Management XIII (September 1913): 24, was critical of excessive live floor loads.

28. A preliminary plan for the lobby was published in "Mr. Cass Gilbert and the Woolworth Building," Architects' Journal (28 July 1920): 90. Office memo, 31 January 1911, Cass Gilbert Papers, N-YHS; office memo, 3 February 1911, ibid.; Woolworth to Gilbert, 27 December 1911, ibid. Koeper, "The Gothic Skyscraper," p. 93, states that the monumental stair in the Woolworth Building recalled those in the Singer and the Metropolitan Life buildings.

29. Woolworth to Gilbert, 6 June 1911, Cass Gilbert Papers, N-YHS; office memo, 20 December 1911, ibid.

30. The arcade vaults are non-structural. They are supported by tension rods hung from the building's structural steel framework. Koeper, "The Gothic Skyscraper," pp. 94, 109 n. 38, maintains that the cruciform arrangement of the lobby plan suggests Fonthill Abbey or the Houses of Parliament and that the study of the lobby's interior, showing a fan-vaulted ceiling, suggests King's College Chapel in Cambridge. Views of the interior and exterior of the Mausoleum of

Galla Placidia were published in the American Architect LXXIV (2 November 1901).

31. Office memo, 5 September 1911, Cass Gilbert Papers, N-YHS; office memo, "List of Subcontractors," ibid. The German decorations in the rathskeller were removed after World War I.

32. Paul Starrett to Gilbert, 16 May 1910, Cass Gilbert Papers, N-YHS; Theodore Starrett to Gilbert, 10 June 1910, ibid.; Louis J. Horowitz and Boyden Sparkes, The Towers of New York (New York: Simon and Schuster, 1937), p. 103. Louis J. Horowitz was elected president of the Thompson-Starrett Company on 21 March 1910, just before Gilbert received the Woolworth Building commission. Horowitz immigrated to New York from Poland in 1892, at age 17. He began his career in construction by investing in apartment buildings and soon formed the Brooklyn Heights Improvement Company, of which he was president. In 1903, he joined the Thompson-Starrett Company as a financial expert. He bailed the company out of financial trouble by liquidating its assets and securing new business, turning it into a profit-producing operation prior to becoming its president. Horowitz and Sparkes, The Towers of New York; Louis Jay Horowitz, The Modern Building Organization (New York: Alexander Hamilton Institute, 1911), pp. 3-5; Earle Schultz and Walter Simmons, Offices in the Sky (Indianapolis: Bobbs-Merrill Company, 1959), pp. 66-67. Like his brother, Theodore Starrett, who founded the Thompson-Starrett Company with Henry S. Thompson in 1899, Paul Starrett began his career in the office of Burnham & Root in Chicago. He left Burnham & Root in 1897 to join the George A. Fuller Company and, by the turn of the century, was placed in charge of the company's Manhattan projects. In 1905 he became the Fuller Company's president. Paul Starrett, Changing the Skyline (New York: McGraw-Hill Book Company, Inc., 1938); "Paul Starrett, Builder, 90, Dies," New York Times, 6 July 1957, p. 15.

33. Paul Starrett, Changing the Skyline, p. 165.

34. Horowitz and Sparkes, The Towers of New York, pp. 104-6; Starrett, Changing the Skyline, pp. 165-67.

35. Starrett, Changing the Skyline, p. 172.

36. Horowitz, The Modern Building Organization, p. 7.

37. "System in Contracting," Real Estate Record and Builder's Guide LXXVI (19 August 1905): 312; "Skyscraper Construction," Real Estate Record and Builder's Guide LXXIX (23 March 1907): 579; Starrett, Changing the Skyline, pp. 71-72, 172-77.

38. Horowitz, The Modern Building Organization, pp. 6-36. A chart showing the organization of the Thompson-Starrett Company supplemented Horowitz's text.

39. Under Horowitz, the Thompson-Starrett Company constructed Gilbert's Union Central Life Insurance Building in Cincinnati and the Equitable Building in New York. The company was headquartered in New York and

had branch offices in Chicago, San Francisco, Philadelphia, Washington, Pittsburg, Salt Lake City, and Portland. "The Tallest Building," Engineering Record 66 (27 July 1912): 86; "Construction of the Woolworth Building," Engineering Record 66 (27 July 1912): 99-100.

40. "Rapid Erection of Steel-Frame Buildings," American Architect and Building News LXXVI (10 May 1902): 40; Shultz and Simmons, Offices in the Sky, p. 70; "Construction of the Woolworth Building," 97; "Steel Erection for the Woolworth Building," Engineering Record 65 (29 July 1912): 714-15; "The Tallest Building," 86; office memo: "Approximate Dates for Completing Details, Shipment & Fabrication of Various Portions of the Woolworth Building," 11 April 1912, Cass Gilbert Collection, N-YHS.

41. Mario Salvadori, Why Buildings Stand Up: The Strength of Architecture (New York: W.W. Norton & Company, c.1980), p. 112, defines the "fast-track method." Gilbert to Thompson-Starrett Company, 27 April 1911, Cass Gilbert Papers, N-YHS; "Construction of the Woolworth Building," 97; "The Woolworth Building Foundations," Engineering Record 64 (26 August 1911): 256-57; "The Method of Excavating the Cellar of the Woolworth Building in New York," Engineering Record 65 (27 April 1912): 472-73; Aus, Engineering Design," 160-65; The Woolworth Building, New York," Engineering Record 63 (27 May 1911): 591-92; Koeper, "The Gothic Skyscraper," pp. 85-86, 116-19. The pneumatic caisson method was developed for the purpose of constructing watertight bridge piers. It was devised by the Englishman Thomas Cochrane in 1830 and first used extensively in America by James B. Eads on a bridge that spanned the Mississippi River at St. Louis, Missouri (1867-73). In consultation with the bridge engineer, William Sooy Smith, Adler & Sullivan decided to use caissons to construct the concrete piers under the west columns of Chicago's Stock Exchange Building (1893-94), an early application of the new foundation technology. Caissons were first used in the construction of S.E. Chamberlain's City Hall in Kansas City, Missouri (1888-90), a project possibly unknown to Smith. Condit, American Building, pp. 129, 148-49; Koeper, "The Gothic Skyscraper," p. 115.

42. "Steel Erection for the Woolworth Building," 714-15; "Construction of the Woolworth Building," 97-98; Gilbert to Thompson-Starrett Company, 16 November 1911, Cass Gilbert Papers, N-YHS. Thompson-Starrett Company: Building and Industrial Construction (Montreal, Canada: Thompson-Starrett Company, Ltd., 1922), n.p., contains extracts from letters by Gilbert and Woolworth. Frank W. Woolworth, "Forward," in The Master Builders: A Record of the Construction of the World's Highest Commercial Structure (New York, 1913), p. 5.

43. "The Tallest Building," 86; "The Woolworth Building," Architecture and Building XLV (July 1913): 277; J.F. Springer, "Tallest Office Building in the World," Building Age XXXIV (September 1912): 456; "New Woolworth Building on Broadway Will Eclipse Singer Building in Height," New York Times, 13 November 1910, pt. 7, p. 1. Horowitz and Sparkes, The Towers of New York, pp. 110-11, 118-19; Condit, American Building Art, p. 12; S.F. Holtzman, "Design of the Woolworth Building: Features of Substructure and Calculations for Wind Bracing of Tower,"

Engineering Record 68 (5 July 1913): 23; Koeper, "The Gothic Skyscraper," p. 121.

44. "The Woolworth Building," 288, 290; The Master Builders: A Record of the Construction of the World's Highest Commercial Structure (New York: Hugh McAtamney and Co., 1913), pp. 51-53, 60, 63-64; Frank W. Skinner, Woolworth Building, New York City (American Bridge Company, n.d.), pp. 10, 77-80; George T. Mortimer, "The Woolworth Building, Most Modern Example of the Fireproof Skyscraper--How it Was Built," Real Estate Magazine I (July 1912): 56-60; office memo, 13 June 1912, Cass Gilbert Papers, N-YHS. Office memo, 21 October 1913, ibid., states that "when the temperature on the street is 90° the temperature in the room cannot be reduced to 70° unless refrigeration is employed in connection with the fan, but in the summertime, with the use of the air washer the temperature of air in the room can be kept at a point somewhat below that of the incoming air." "Water-Supply System in the Fifty-Five-Story Woolworth Building, New York," Engineering Record 68 (13 July 1913): 44-45; Koeper, "The Gothic Skyscraper," p. 126.

45. The Master Builders, pp. 45-51; "The Woolworth Building, Most Modern Example of the Fireproof Skyscraper," p. 65; C.E. Knox to Gilbert, 10 May 1911, Cass Gilbert Papers, N-YHS; "Running a Skyscraper Traction System," Buildings and Building Management XIV (January 1914): 20-22.

46. An advertisement for the Woolworth Building appeared in Real Estate Record and Builder's Guide LXXXIX (23 March 1912): 587. Aus, "Engineering Design," 167-69; "The Woolworth Building, New York," 592; Master Builders, p. 25; "The Tallest Office Building in the World," Scientific American CVIII (8 March 1913): 224; Koeper, "The Gothic Skyscraper," p. 123. The first Ellithorpe "air cushion" was publicly tested at the Board of Trade Building in Chicago in 1879. "The Woolworth Building, Most Modern Example of the Fireproof Skyscraper," 68-69; "The Tallest Office Building in the World," 224-25, Koeper, "The Gothic Skyscraper," p. 125.

47. Master Builders, pp. 53-54; "The Woolworth Building," Architecture and Building XLV (July 1913): 288; "Office Buildings: Woolworth Building, New York City," Insurance Engineering XXII (December 1911): 1-2; "Water-Supply System in the Fifty-Five Story Woolworth Building," 44; Koeper, "The Gothic Skyscraper," pp. 127-28, 196.

48. Jacobs & Davies were were retained by the Subway Commission. Office memo, 11 July 1912, Cass Gilbert Papers, N-YHS. Office memo, 28 August, 1912, ibid. "New York's First Underground Sidewalk," Architects' and Builders' Magazine VI (October 1904): 29-35; Robert A.M. Stern, Gregory Gilmartin, and John Montague Massengale, New York 1900 (New York: Rizzoli International Publications, Inc., 1983), p. 48; Carl W. Condit, The Port of New York: A History of the Rail and Terminal System from the Beginnings to Pennsylvania Station (Chicago: University of Chicago Press, 1980), pp. 250-54; Joseph B. Gilder, "The City of Dreadful Height," Putnam's Monthly & The Reader, November 1908, pp. 141-42; Koeper, "The Gothic Skyscraper," p. 196.

49. Cass Gilbert, "The Architect's Approbation," in The Master Builders, p. 9.

50. W.L.B. Jenney, "An Age of Steel and Clay," Inland Architect and News Record XVI (December 1890): 75-76; G. Twose, "Steel and Terra-Cotta Buildings in Chicago and Some Deductions," Brickbuilder III (January 1894): 1-4; Joseph M. Siry, "The Carson-Pirie-Scott Building in Chicago" (Ph.D. diss., MIT, 1984), pp. 352-57.

51. Herbert Croly, "The Use of Terra Cotta in the United States; How It Has Increased," Architectural Record XVIII (July 1905): 86, 92; idem, "The Advantages of Terra Cotta," Architectural Record XVIII (October 1905): 321-22; idem, "The Proper Use of Terra Cotta," Architectural Record XIX (January 1906): 77-78, 80.

52. Theodore Henricus Maria Prudon, "Architectural Terra Cotta and Ceramic Veneer in The United States Prior To World War II: A History of Its Development and an Analysis of its Deterioration Problems and Possible Repair Methodologies" (Ph.D. diss., Columbia University, 1981), pp. 43-45; Sharon S. Darling, Chicago Ceramics & Glass (Chicago: Chicago Historical Society, 1979), pp. 172-79; Croly, "The Use of Terra Cotta," 89; idem, "The Proper Use of Terra Cotta," p. 75; Winston Weisman, "The Commercial Architecture of George Post," Journal of the Society of Architectural Historians XXXI (October 1972): 108; Mardges Bacon, Ernest Flagg: Beaux-Arts Architect and Urban Reformer (New York and Cambridge: Architectural History Foundation and MIT Press, 1986), pp. 189-93.

53. Atlantic Terra Cotta: A 52-Story Facade (New York: Atlantic Terra Cotta Company, 1913), pp. 11-12; Croly, "The Advantages of Terra Cotta," p. 319; "Architectural Terra Cotta," in International Library of Technology, vol. 31D (Scranton, Pa.: International Textbook Company, 1922), pp. 28-29; Walter Geer, Terra-Cotta in Architecture (New York: Gazly Bros., 1891), pp. 25-26; idem, The Story of Terra Cotta (New York: Tobias A. Wright, 1920), pp. 216-32; Darling, Chicago Ceramics & Glass, pp. 198-99.

54. "Architectural Terra Cotta," in International Library, pp. 28-29; Geer, Terra-Cotta in Architecture, pp. 26, 40; Darling, Chicago Ceramics & Glass, pp. 163, 185-86; Prudon, "Architectural Terra Cotta and Ceramic Veneer," p. 42; Croly, "The Advantages of Terra Cotta," 318.

55. Croly, "The Use of Terra Cotta," 90; Prudon, "Architectural Terra Cotta and Ceramic Veneer," pp. 44, 79. Walter Geer, The Story of Terra Cotta, pp. 56-57, 212. Elmer Ellsworth Garnsey, "Notes on Terra-Cotta for Exterior Polychrome Decoration," Brickbuilder VII (June 1898): 119-20; Herbert Croly, "Glazed and Colored Terra-Cotta," Architectural Record XIX (April 1906): 315, 319, 322. Frederick S. Lamb, "The Civic Treatment of Color," Municipal Affairs II (March 1898): 113-19; George Kriehn, "The City Beautiful," Municipal Affairs III (December 1899): 596-97.

56. Croly, "Glazed and Colored Terra-cotta," 315, 319-23; Croly, "The Advantages of Terra Cotta," 322; "Polychrome Terra Cotta: Its Increased Use and Rapid Development," American Architect XCVIII (26 October 1910): 139-41.

57. The Perth Amboy plant was the Atlantic Terra Cotta Company's largest manufacturing facility. Atlantic Terra Cotta: A 52-Story Facade, p. 7. Gilbert to Thompson-Starrett Company, 2 October 1911, Cass Gilbert Papers, N-YHS. Full-size shop drawings typically included a factor to compensate for the shrinkage of terra cotta during firing. The drawings produced in Gilbert's office, however, did not include this factor. "Exterior Terra Cotta," in "Woolworth Building Specifications," vol. 4, 1913. Cass Gilbert to Thompson-Starrett Company, 27 October 1911, Cass Gilbert Papers, N-YHS. Donnelly & Ricci also made two one-quarter-inch-scale plaster models of the Woolworth Building, one of which was sent to the Deutsches Museum in Munich, Bavaria, and the other to the Panama-Pacific Exposition in San Francisco of 1915. Office memo, 18 September 1913.

58. "Architectural Terra Cotta," in International Library, pp. 30-37; Darling, Chicago Ceramics & Glass, p. 164; Atlantic Terra Cotta: A 52-Story Facade, p. 13; Prudon, "Architectural Terra Cotta and Ceramic Veneer," pp. 60-90.

59. Prudon, "Architectural Terra Cotta and Ceramic Veneer," p. 96.

60. Atlantic Terra Cotta: A 52-Story Facade, pp. 5-6; "A 52-Story Facade of Atlantic Terra Cotta," Atlantic Terra Cotta II (April 1915), n.p.; "Artistic Terra Cotta Effects," New York Times, 28 July 1912, pt. 8, p. 2; Koeper, "The Gothic Skyscraper," pp. 90-91. Cass Gilbert, "The Woolworth Building," in Masterpieces of Architecture in the United States (New York: Charles Scribner's Sons, 1930), p. 215. Anthony W. Robins, "Woolworth Building, 233 Broadway, Borough of Manhattan," New York Landmarks Preservation Commission Report, 12 April 1983, pp. 13-17, contains a description of the Woolworth Building exterior.

61. Cass Gilbert, "Response on the Occasion of the Presentation of the Gold Medal for Architecture of the Society of Arts and Sciences," in Cass Gilbert: Reminiscences and Addresses, ed. Julia Finch Gilbert (New York: privately printed, 1935), p. 51.

62. Daniel Chester French to Gilbert, 20 September 1912, Cass Gilbert Papers, N-YHS; office memo, 3 October 1912, ibid.; office memo, 26 November 1912, ibid. Edward Hogan heard of plans for the caricatures, thought he would not be included, and wrote Gilbert to ask if he might be squeezed in among the group. Hogan to Gilbert, 18 January 1913, Cass Gilbert Papers, N-YHS. Jacques Coeur (c.1396-1546) participated in the Levant trade. Jean Ango (c.1480-1551) owned a fleet that took part in exploration under Francis I. In 1524, he equipped the ships used by Giovanni da Verrazano to explore the New York harbor. Koeper, "The Gothic Skyscraper," p. 108 n. 36. Office memo, 25 April 1914, Cass Gilbert Papers, N-YHS.

63. Three figures, a Negro, an Oriental, and a Caucasian, kneeled above the entrance to the St. Paul Building. A Caucasian, an Indian, a Mongolian, and a Negro appeared to support the pediment of the Pulitzer Building. James M. Dennis, Karl Bitter: Architectural Sculptor, 1867-1915 (Madison: University of Wisconsin Press, 1967), pp. 38, 64.

64. In 1907 Jennewein was apprenticing with Buhler & Lauter, architectural sculptors in New York who were often employed by McKim, Mead & White. In 1910, he studied painting with Clinton Fehlers of New York. Carl Paul Jennewein Papers, AAA. Garnsey to Gilbert, 17 September 1912, Cass Gilbert Papers, N-YHS.

65. Kenyon Cox also designed a figure "Commerce" for a one hundred dollar bill. Richard N. Murray, "Painting and Sculpture," in The American Renaissance (New York: Brooklyn Museum, 1979), p. 178. Cass Gilbert, "The Architect's Approbation," in The Master Builders: A Record of the Construction of the World's Highest Commercial Structure (New York: Hugh McAtemney and Co., 1913), p. 9; "Address of Cass Gilbert, President Architectural League of New York, at the Dinner Preceding the Annual Exhibition," American Architect CVII (3 March 1915), p. 156.

66. Heinigke & Bowen to Gilbert, 6 March 1913, Cass Gilbert Papers, N-YHS. Koeper, "The Gothic Skyscraper," p. 95, states that the arcade mosaics suggest those of the Mausoleum of Galla Placidia in Ravenna and Santa Costanza in Rome. Anthony W. Robins, "Woolworth Building, 233 Broadway, Borough of Manhattan, New York," pp. 11-12, contains a description of the arcade. The Fisher Building in Chicago contained a vaulted mosaic ceiling by the decorators Healy & Millet. Darling, Chicago Ceramics & Glass, pp. 136-39.

67. Dinner Given to Cass Gilbert by Frank W. Woolworth (New York: Munder-Thomson Press, 1913), p. 16.

68. Dinner Given to Cass Gilbert, p. 19. David R. Francis, The Universal Exposition of 1904 (St. Louis: Louisiana Purchase Exposition Company, 1913), p. 176; "The Programme for the Dewey Holidays," Harper's Weekly XLIII (30 September 1899): 986; Marion Wilcox, "Dewey's Triumph," Harper's Weekly XLIII (7 October 1899): 1030; Meyer Berger, The Story of the New York Times, 1851-1951 (New York: Simon and Schuster, 1951), p. 155. Spark, "A Record Publicity Feat: How Hugh McAtemney Put the Woolworth Building on the International Map," Real Estate Magazine II (May 1913): 50. William R. Taylor discussed the opening of the Woolworth Building as a spectacular event designed to elicit a response from crowds attuned to display. William R. Taylor, "The Launching of a Commercial Culture in New York City," paper presented at Winterthur Museum conference on consumerism and display, University of Delaware, November 1986.

69. Spark, "A Record Publicity Feat," 49; Seymour I. Toll, Zoned American (New York: Grossman Publishers, 1969), p. 63; Glenn Brown, 1860-1930, Memories (Washington, D.C.: Press of W.F. Roberts Co., 1931), pp.

571-72; Koeper, "The Gothic Skyscraper," pp. 161-62; "The Programme for the Dewey Holidays," 986.

70. Louis J. Horowitz and Boyden Sparkes, The Towers of New York (New York: Simon and Schuster, 1937), p. 121; Dinner Given to Cass Gilbert, pp. 46-49, 38, 57; Koeper, "The Gothic Skyscraper," p. 163.

71. Frank Woolworth, "Executive Office," 4 March 1915, Cass Gilbert Papers, N-YHS; idem, "General Letter to All Stores: United States, Canada, and Great Britain," 20 February 1914, Cass Gilbert Papers, N-YHS.

72. Woolworth, "General Letter to All Stores."

73. Horowitz and Sparkes, The Towers of New York, p. 120; John K. Winkler, Five and Ten (New York: Robert M. McBride & Company, 1940), p. 20.

Conclusion

1. Montgomery Schuyler, "The Woolworth Building," in American Architecture and Other Writings, vol. 2, ed. William H. Jordy and Ralph Coe (Cambridge: Harvard University Press, 1961), p. 608.

2. ibid., pp. 608, 617-18. Howard Frederick Koeper, "The Gothic Skyscraper: A History of the Woolworth Building and its Antecedents" (Ph.D. diss., Harvard University, 1969), p. 182, notes that "his [Schuyler's] critical satisfaction with the Woolworth Building ended his search for an appropriate expression of the skyscraper form."

3. ibid., p. 617. Montgomery Schuyler, "The Towers of Manhattan," Architectural Record XXXIII (February 1913): 104, Schuyler, "The Woolworth Building," 616, 618.

4. Schuyler, "The Woolworth Building," 606, 616. [Montgomery Schuyler], "An Apartment House Aberration," Architectural Record XXV (June 1909): 436; Schuyler, "The Woolworth Building," 616.

5. Schuyler, "The Woolworth Building," 606, 608, 619; Schuyler, "The Towers of Manhattan," 111-14.

6. Schuyler, "The Woolworth Building," 606, 619-20.

7. "The High Building," American Architect CIII (26 March 1913): 171-72.

8. A.D.F. Hamlin, "Twenty-Five Years of American Architecture," Architectural Record XL (July 1916): 3.

9. Glenn Brown, 1860-1930, Memories (Washington, D.C.: Press of W.F. Roberts Co., 1931), p. 570; Charles Moore, "Cass Gilbert, Architect," American Architect CXLIV (July 1934): 20; W. Francklyn Paris, "Cass Gilbert: Master Builder," in The Hall of American Artists, New York University, vol. 4, ed. W. Francklyn Paris (New York, 1944), n.p.

10. Office memo, 29 August 1912, Cass Gilbert Papers, N-YHS; office memo, 4 September 1912, ibid.

11. Carl Condit, American Building Art: The Twentieth Century (New York: Oxford University Press, 1961), p. 12. The Woolworth Building was not criticized during meetings of the Heights of Buildings Commission. Minutes of the Heights of Buildings Commission, 1913, MA. Report of the Heights of Buildings Commission, p. 60. According to Stephen Zoll, "The Woolworth Building (by Cass Gilbert) of 1913, was a block and tower, that is, it was designed as one integrated unit. Its design became the ideal form and model for the comprehensive Zoning Resolution of 1916." Stephen Zoll, "Superville: New York--Aspects of Very High Bulk," Massachusetts Review (Summer 1973), p. 468. Seymour I. Toll stated that the affect of the proposed zoning regulations on the Woolworth Building would be negligible. Seymour I. Toll, Zoned American (New York: Grossman Publishers, 1969), p. 163. The Fuller,

Singer, and Municipal buildings also would have received only minor adjustments under the proposed regulations.

12. "Two-Thirds of Woolworth Building Space Leased," Wall Street Journal (9 February 1914), in scrapbook, Cass Gilbert Collection, N-YHS.

13. "New York's City Planning Exhibition," American City IX (December 1913): 504.

14. Werner Hegemann and Elbert Peets, The American Vitruvius: An Architect's Handbook of Civic Art (New York: The Architectural Book Publishing Co., 1922), pp. 135, 147.

15. Thomas Adams, Planning the New York Region: An Outline of the Organization, Scope and Progress of the Regional Plan (New York: Regional Plan of New York and Its Environs, 1927), p. 33; George B. Ford, "Recreation, Civic Architecture, Building Districts and General Summary of Present City Planning Needs," in Development and Present Status of City Planning in New York City (New York: Board of Estimate and Apportionment, Committee on the City Plan, 1914), pp. 60-62. City Hall Park would remain the focus of New York's civic center planning efforts throughout the 1920's. Gilbert would assume a leading role in these efforts. Beginning in 1923, he chaired an advisory committee that was assigned the task of developing a proposal for City Hall Park, as part of the Regional Plan of New York and Its Environs. The suggestions submitted by Gilbert's committee echoed those raised in earlier studies of City Hall Park. Cass Gilbert, "City Plan: City Hall and Courthouse Region," 15 October 1923, Cass Gilbert Papers, LC; Regional Plan of New York and Its Environs: Second Report of Progress, February 1923 to May 1924 (New York: Regional Plan of New York and Its Environs, 1924), p. 43; Adams, Planning the New York Region, p. 53; Thomas Adams, Regional Plan of New York and Its Environs, vol. 2, The Building of the City (New York: Committee on Regional Plan of New York and Its Environs, 1931), p. 382.

16. Mildred Stapley, "The City of Towers," Harpers Monthly Magazine CXXIII (October 1911): 702, 698.

17. Stapley, "City of Towers," 697-98; Schuyler, "The Woolworth Building," 608-9.

18. "The American Skyscraper: The Giant in Architecture: Its Purpose, Beauty and Development," Craftsman XXIV (April 1913): 10; Clarence Ward, "The Woolworth Building in New York City," American Magazine of Art VII (December 1916): 54; Schuyler, "The Woolworth Building," 608.

The "Skyscraper Problem" and the City Beautiful:

The Woolworth Building

vol. 2

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Illustrations

1. Joseph Pennell, "The Woolworth Building," 1915
2. Joseph Pennell, "Through the Arch," 1921
3. Joseph Pennell, "New York from Hamilton Ferry," 1915
4. Chicago from the Auditorium Tower, c. 1895
5. Lower Broadway, New York, c. 1900
6. Cass Gilbert, Woolworth Building, New York, 1910-13
7. Plan of Manhattan, 1903
8. Richard Rummell, "Bird's Eye View of Greater New York," 1904
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11. New York City Improvement Commission, plan of Greater New York, 1907
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13. Julius F. Harder, plan of Manhattan, 1898
14. Ernest Flagg, plan of Manhattan, 1904
15. Daniel Burnham and Edward H. Bennett, plan of Chicago, 1909
16. Daniel Burnham and Edward H. Bennett, plan of Chicago, transportation systems
17. Daniel Burnham and Edward H. Bennett, plan of Chicago, civic center and business district, 1909
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31. Municipal Art Society, Committee on Civic Centers, map showing relation of City Hall Park to five boroughs, 1902

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36. Henry Hornbostel and George B. Post, proposed Brooklyn Bridge terminal and civic center, 1903
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38. Carrère & Hastings, proposed Brooklyn Bridge terminal, plan, 1905
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40. McKim, Mead & White, Municipal Building, competition entry, 1907
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60. Louis Sullivan, Bayard (Condict) Building, New York, 1897-98
61. Robert D. Kohn, Evening Post Building, New York, 1906-7
62. Carrère & Hastings, Blair Building, New York, 1902-3
63. Bruce Price, proposed Sun Building, New York, 1890
64. Bruce Price, American Surety Building, New York, 1894-95
65. New York skyline from Brooklyn, 1900
66. Cyrus L. W. Eidlitz, Washington Life Building, New York, 1897-98
67. R.H. Robertson, Park Row Building, New York, 1898-99
68. George B. Post, St. Paul Building, New York, 1896-98
69. D.H. Burnham & Company, Fuller Building, New York, 1903
70. D.H. Burnham & Company, Fuller Building and Fifth Avenue
71. Cyrus L.W. Eidlitz, New York Times Building, New York, 1903-4
72. Cyrus L.W. Eidlitz, New York Times Building and Times Square
73. Ernest Flagg, Singer Building, New York, 1896-1908
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75. Napoleon LeBrun & Sons, Metropolitan Life Insurance Building, New York, 1890-1909
76. Napoleon LeBrun & Sons, Metropolitan Life Insurance Building and Madison Square

77. Charles Rollinson Lamb and the National Sculpture Society, Dewey Triumphal Arch and Colonnade, Madison Square, New York, 1899
78. Napoleon LeBrun & Sons, Home Life Insurance Building, New York, 1893-94
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81. Cass Gilbert, "Rouen, France," 1880
82. Cass Gilbert, "St. Mark's, Venice"
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89. Cass Gilbert, St. Clement's Episcopal Church, St. Paul, 1894-95
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95. Cass Gilbert, St. Louis Public Library, 1906-8
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97. Cass Gilbert, City Hall, Waterbury, Connecticut, 1913-15
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116. Cass Gilbert, United States Custom House, longitudinal section
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122. Cass Gilbert, West Street Building, lobby, New York, 1905-7
123. Francis H. Kimball, City Investing Building, New York, lobby, 1905-7
124. Cass Gilbert, Washington University, St. Louis, competition entry, 1899
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148. McKim, Mead & White, Cable Building, New York, 1892-94
149. D.H. Burnham & Company, Reliance Building, Chicago, 1894
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152. Cyrus L.W. Eidlitz, Times Building, New York, 1903-4
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155. Hôtel de Ville, Brussels, Belgium, 1402-54
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158. Cass Gilbert, Kinney Building, Newark, New Jersey, 1912-13
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169. C.P.H. Gilbert, F.W. Woolworth House, plan
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172. Cass Gilbert, Woolworth Building, preliminary sketch
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174. Cass Gilbert, United States Army Supply Base, Brooklyn, New York, 1918-19
175. Woolworth Building, preliminary plan for typical upper floor, 17 May 1910
176. Woolworth Building, first proposal, plan of lobby, 21 April 1910
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184. Cass Gilbert, Woolworth Building, first proposal, conceptual sketch, 26 April 1910
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186. Woolworth Building, first proposal, Park Place elevation, 3 May 1910
187. Woolworth Building, first proposal, Park Place elevation, 9 May 1910
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190. Louis Sullivan, Bayard (Condict) Building, New York, 1897-98
191. Woolworth Building, second proposal, plan of lobby, 14 May 1910
192. Woolworth Building, second proposal, plan of arcade, 21 June 1910
193. Woolworth Building, second proposal, perspective, 6 July 1910
194. Cass Gilbert, preliminary design for the West Street Building, New York, 1905
195. Ernest Flagg, Singer Building, New York, 1896-1908
196. Napoleon LeBrun & Sons, Metropolitan Life Insurance Building, New York, 1890-1909
197. Solon S. Beman, design for Pabst Building, Milwaukee, Wisconsin, 1891
198. Gardner & Martin, Montgomery Ward and Company Building, Chicago, 1902
199. The Keldermans of Malines, Hôtel de Ville, Middelburg, Netherlands, 1412-1599
200. Jakob van Thienen and Jan van Ruysbroeck, Hôtel de Ville, Brussels, 1402-
201. Woolworth Building, third proposal, perspective, 1 October 1910

202. Carrère & Hastings, Blair Building, New York, 1902-3
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205. Woolworth Building, final design, perspective, 20 February 1911
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207. Cass Gilbert, Ely Cathedral, southwest tower
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217. Woolworth Building, windbracing
218. Woolworth Building, detail of portal arch windbracing
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223. Woolworth Building, arcade
224. Woolworth Building, conceptual sketch of arcade
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242. D.H. Burnham & Company, Fuller Building, New York, 1902-3
243. Cyrus L.W. Eidlitz, New York Times Building, New York, 1903-4
244. D.H. Burnham & Company, Reliance Building, Chicago, 1894
245. D.H. Burnham & Company, Fisher Building, Chicago 1895-96
246. George Post, Produce Exchange, New York, 1881-85
247. Ernest Flagg, Singer Loft Building, New York, 1902-4
248. McKim, Mead & White, Judson Memorial Church, New York, 1892
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250. Woolworth Building, tower under construction, 1912
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254. Woolworth Building, spandrels
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261. Carl Paul Jennewein, "Labor," Woolworth Building, arcade
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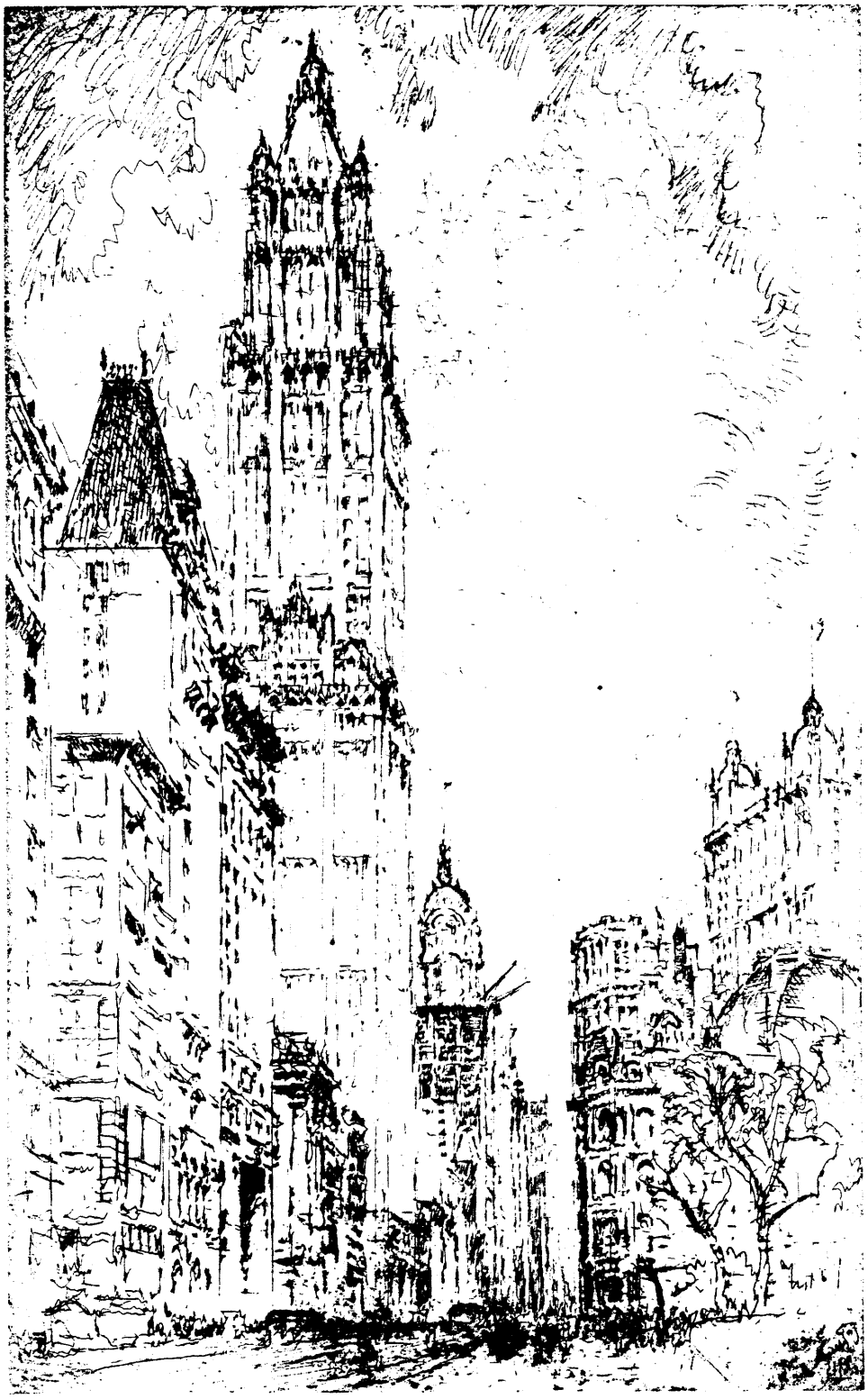
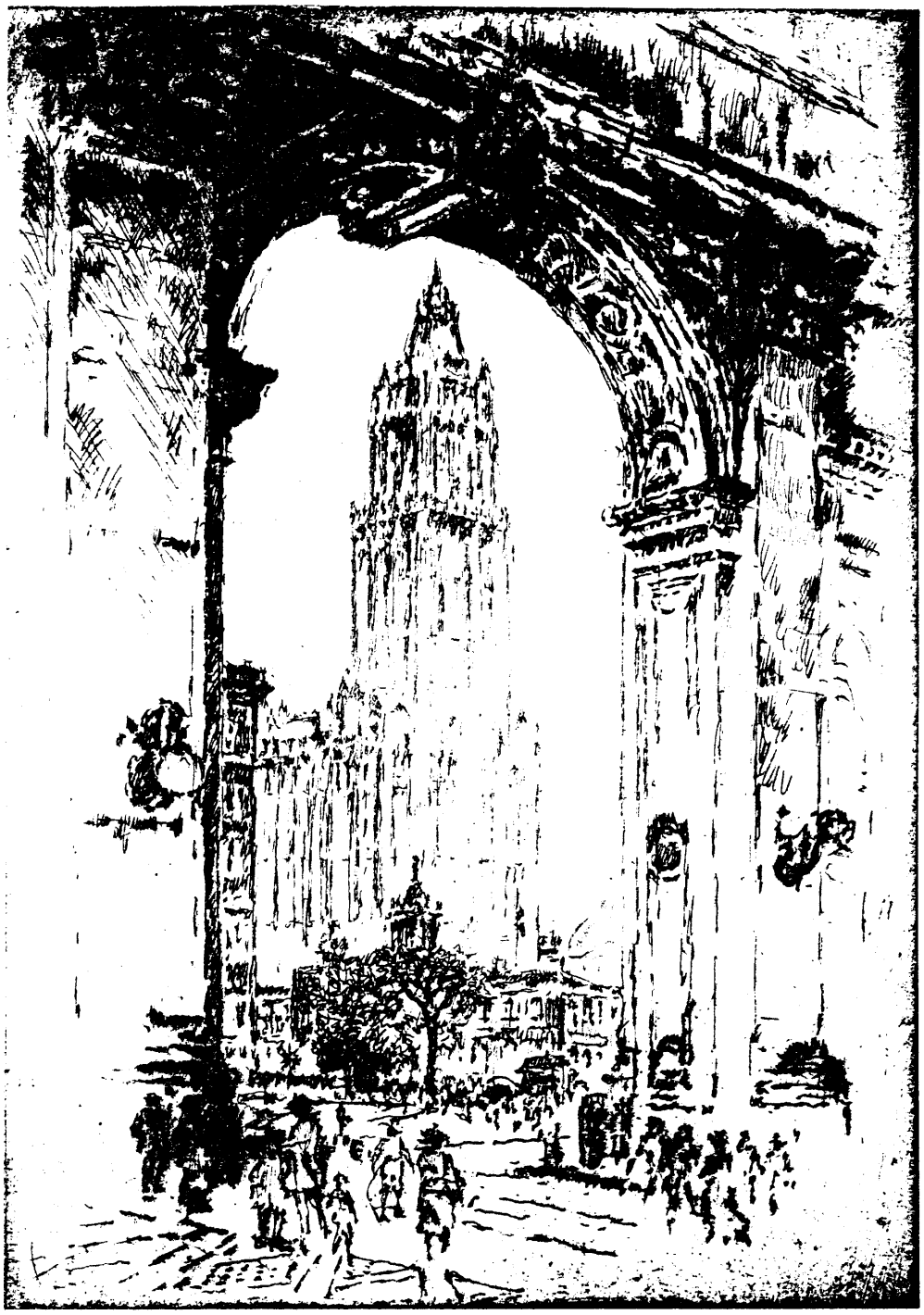
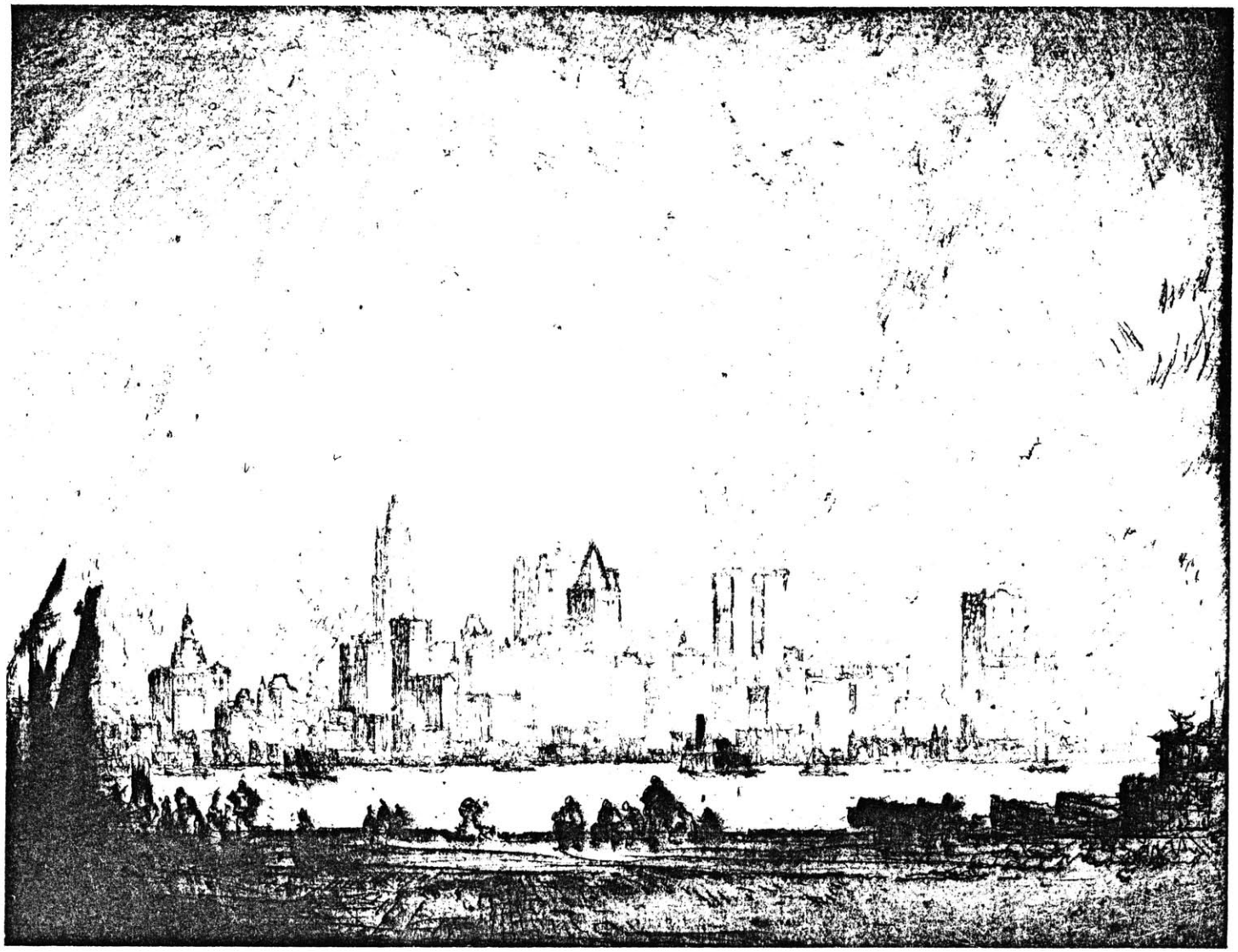
265. Heights of Buildings Commission, study of Woolworth Building's envelope, 1913
266. Heights of Buildings Commission, study of Equitable Building's envelope, 1913
267. Woolworth Building and Municipal Building, c. 1914
268. Woolworth Building and City Hall Park, c. 1913
269. Lower Manhattan from the Brooklyn Bridge, c. 1914
270. City Planning Exhibition, poster, 1913
271. Woolworth Building from the Municipal Building, 1913
272. New York skyline from New Jersey, c. 1914
273. New York skyline from the Upper New York Bay, c. 1914
274. New York skyline from Brooklyn, c. 1914



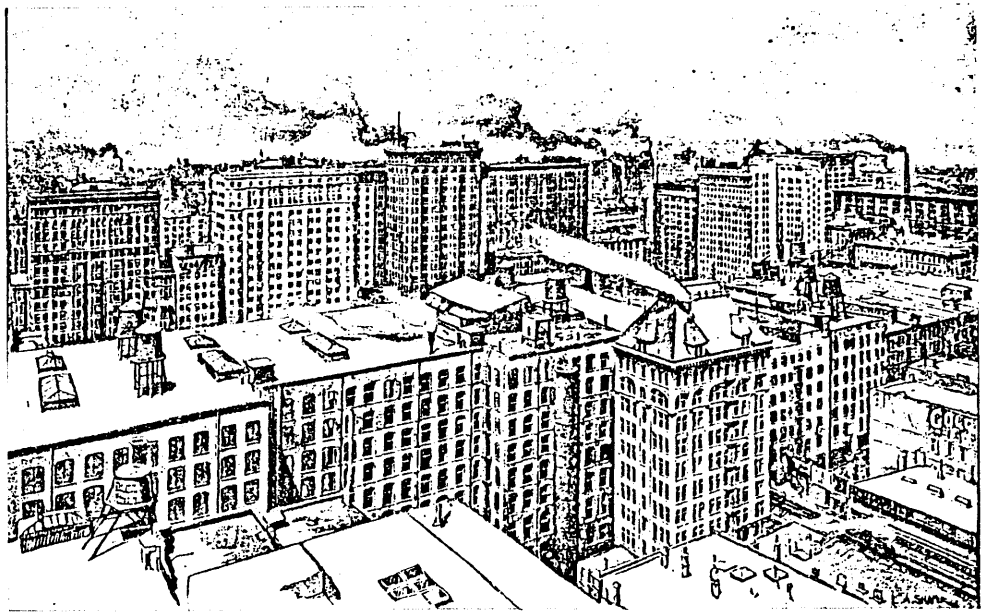
1. Joseph Pennell, "The Woolworth Building," 1915



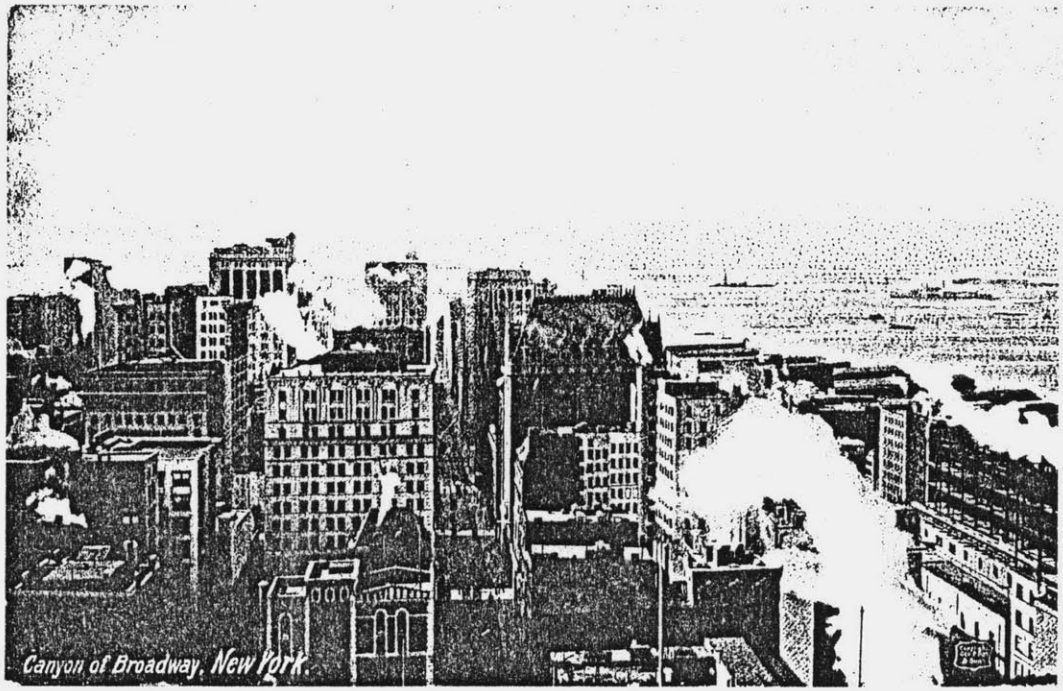
2. Joseph Pennell, "Through the Arch," 1921



3. Joseph Pennell, "New York from Hamilton Ferry," 1915

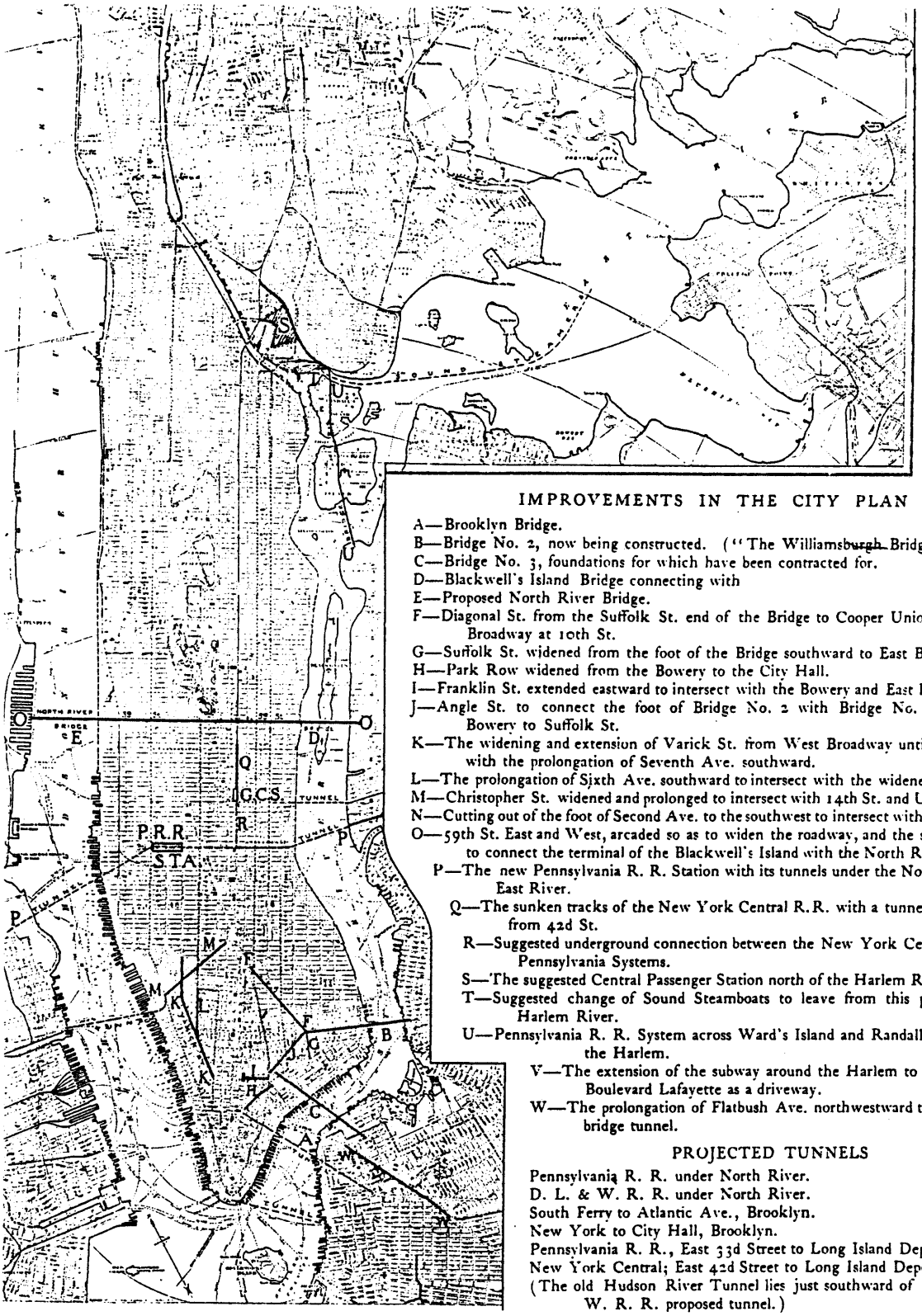


4. Chicago from the Auditorium Tower, c. 1895



5. Lower Broadway, New York, c. 1900

6. Cass Gilbert, Woolworth Building, New York, 1910-13



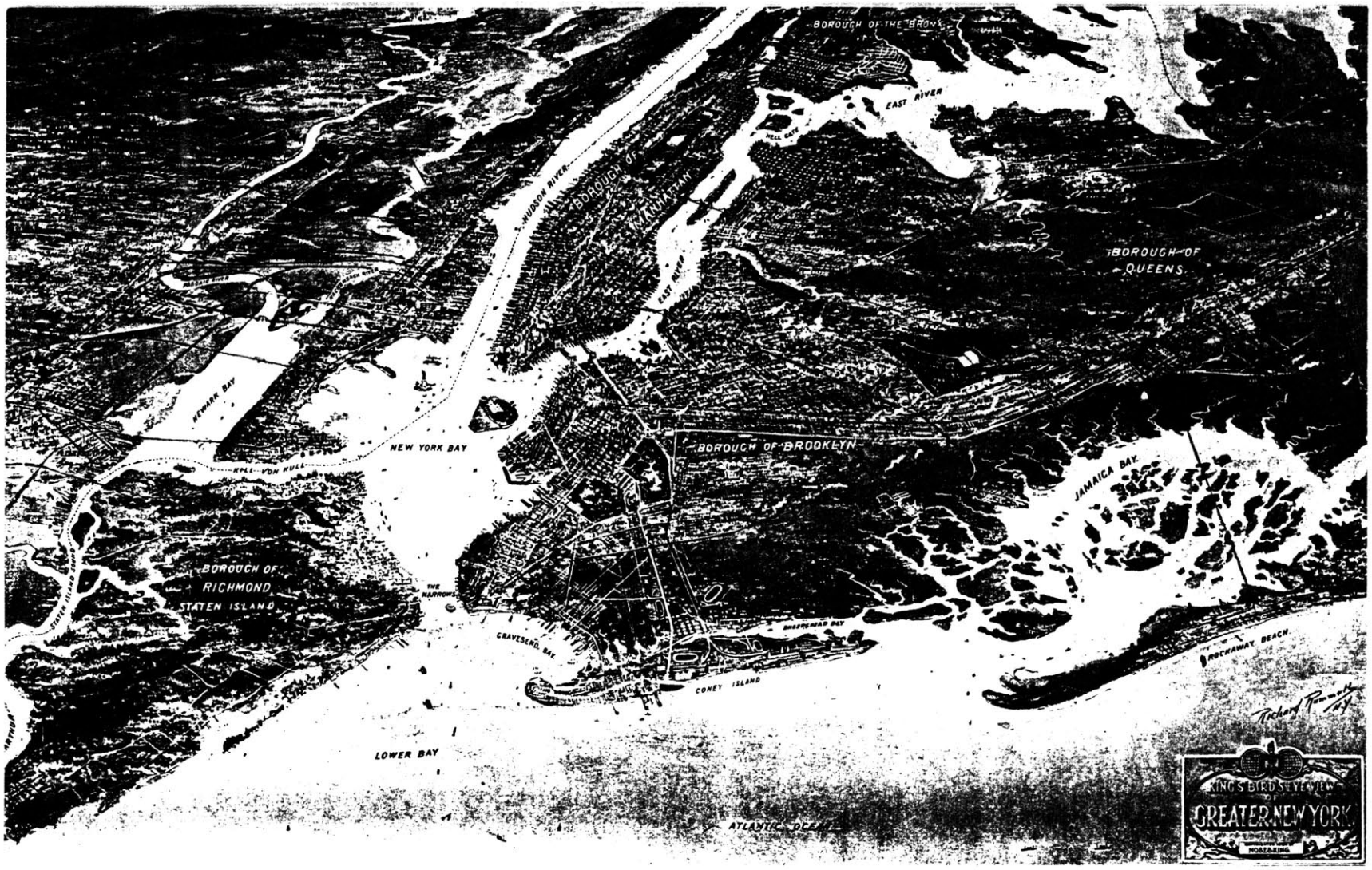
IMPROVEMENTS IN THE CITY PLAN

A—Brooklyn Bridge.
B—Bridge No. 2, now being constructed. ("The Williamsburgh Bridge").
C—Bridge No. 3, foundations for which have been contracted for.
D—Blackwell's Island Bridge connecting with
E—Proposed North River Bridge.
F—Diagonal St. from the Suffolk St. end of the Bridge to Cooper Union Square an Broadway at 10th St.
G—Suffolk St. widened from the foot of the Bridge southward to East Broadway.
H—Park Row widened from the Bowery to the City Hall.
I—Franklin St. extended eastward to intersect with the Bowery and East Broadway.
J—Angle St. to connect the foot of Bridge No. 2 with Bridge No. 3, from th Bowery to Suffolk St.
K—The widening and extension of Varick St. from West Broadway until it intersect with the prolongation of Seventh Ave. southward.
L—The prolongation of Sixth Ave. southward to intersect with the widened Varick St
M—Christopher St. widened and prolonged to intersect with 14th St. and Union Square
N—Cutting out of the foot of Second Ave. to the southwest to intersect with the Bowery
O—59th St. East and West, arcaded so as to widen the roadway, and the subway unde to connect the terminal of the Blackwell's Island with the North River Bridge.
P—The new Pennsylvania R. R. Station with its tunnels under the North River an East River.
Q—The sunken tracks of the New York Central R.R. with a tunnel and subwa from 42d St.
R—Suggested underground connection between the New York Central and th Pennsylvania Systems.
S—The suggested Central Passenger Station north of the Harlem River.
T—Suggested change of Sound Steamboats to leave from this point on th Harlem River.
U—Pennsylvania R. R. System across Ward's Island and Randall's Island or the Harlem.
V—The extension of the subway around the Harlem to connect with Boulevard Lafayette as a driveway.
W—The prolongation of Flatbush Ave. northwestward to the presen bridge tunnel.

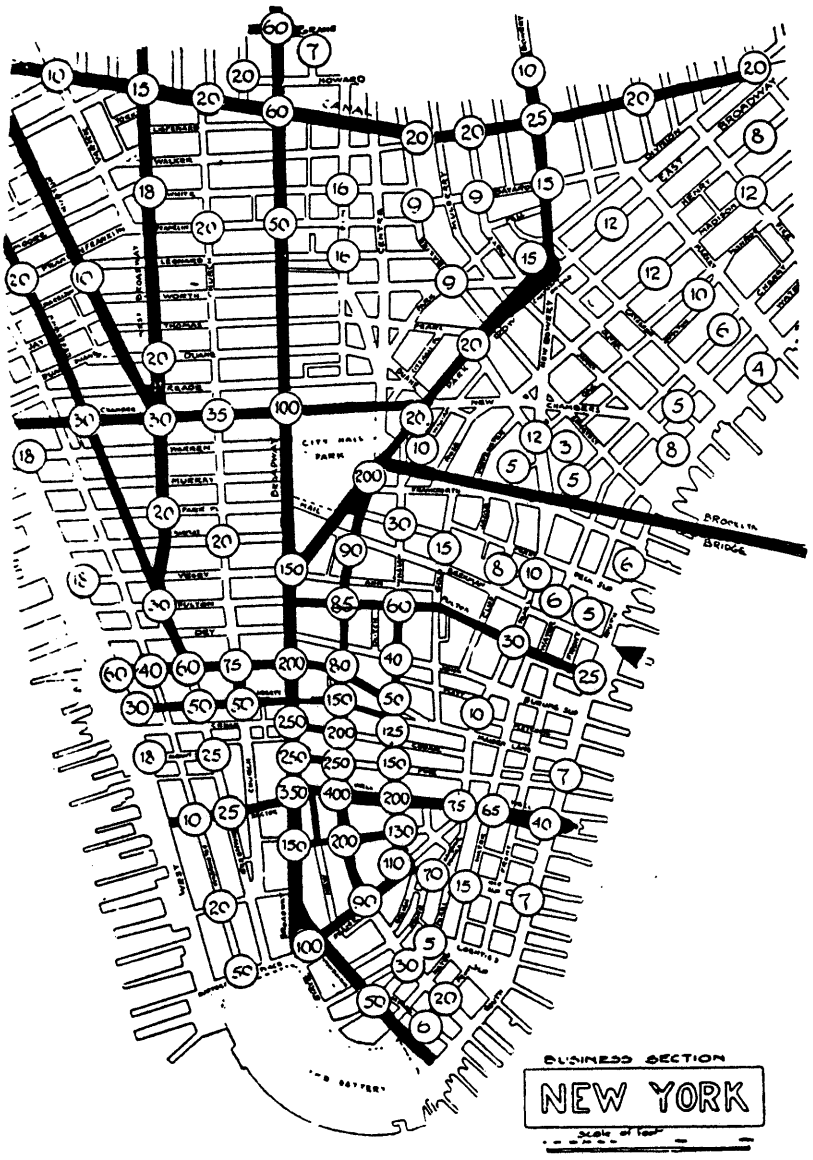
PROJECTED TUNNELS

Pennsylvania R. R. under North River.
D. L. & W. R. R. under North River.
South Ferry to Atlantic Ave., Brooklyn.
New York to City Hall, Brooklyn.
Pennsylvania R. R., East 33d Street to Long Island Depot.
New York Central; East 42d Street to Long Island Depot.
(The old Hudson River Tunnel lies just southward of the D. L. & W. R. R. proposed tunnel.)

7. Plan of Manhattan, 1903



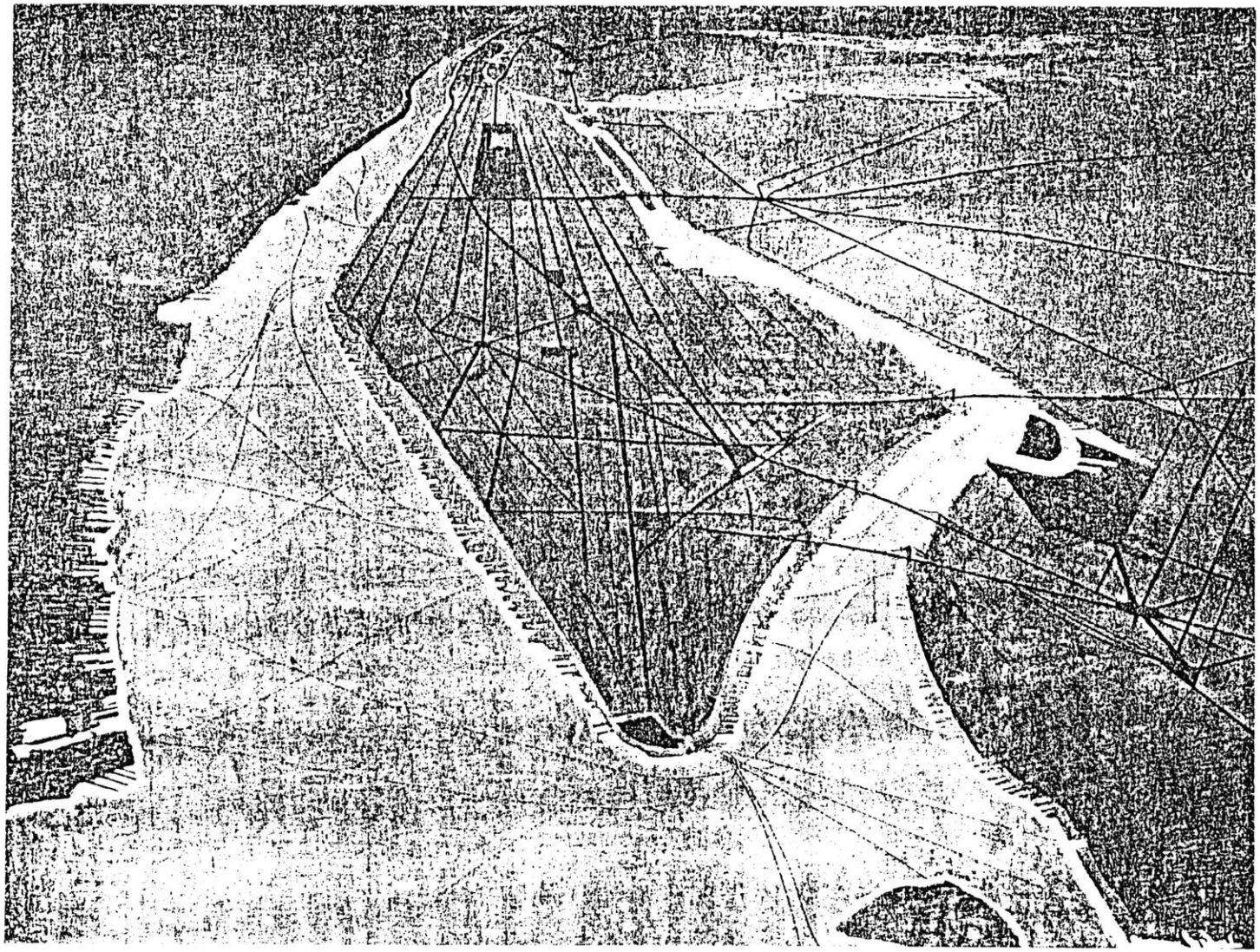
8. Richard Rummell, "Bird's Eye View of Greater New York," 1904



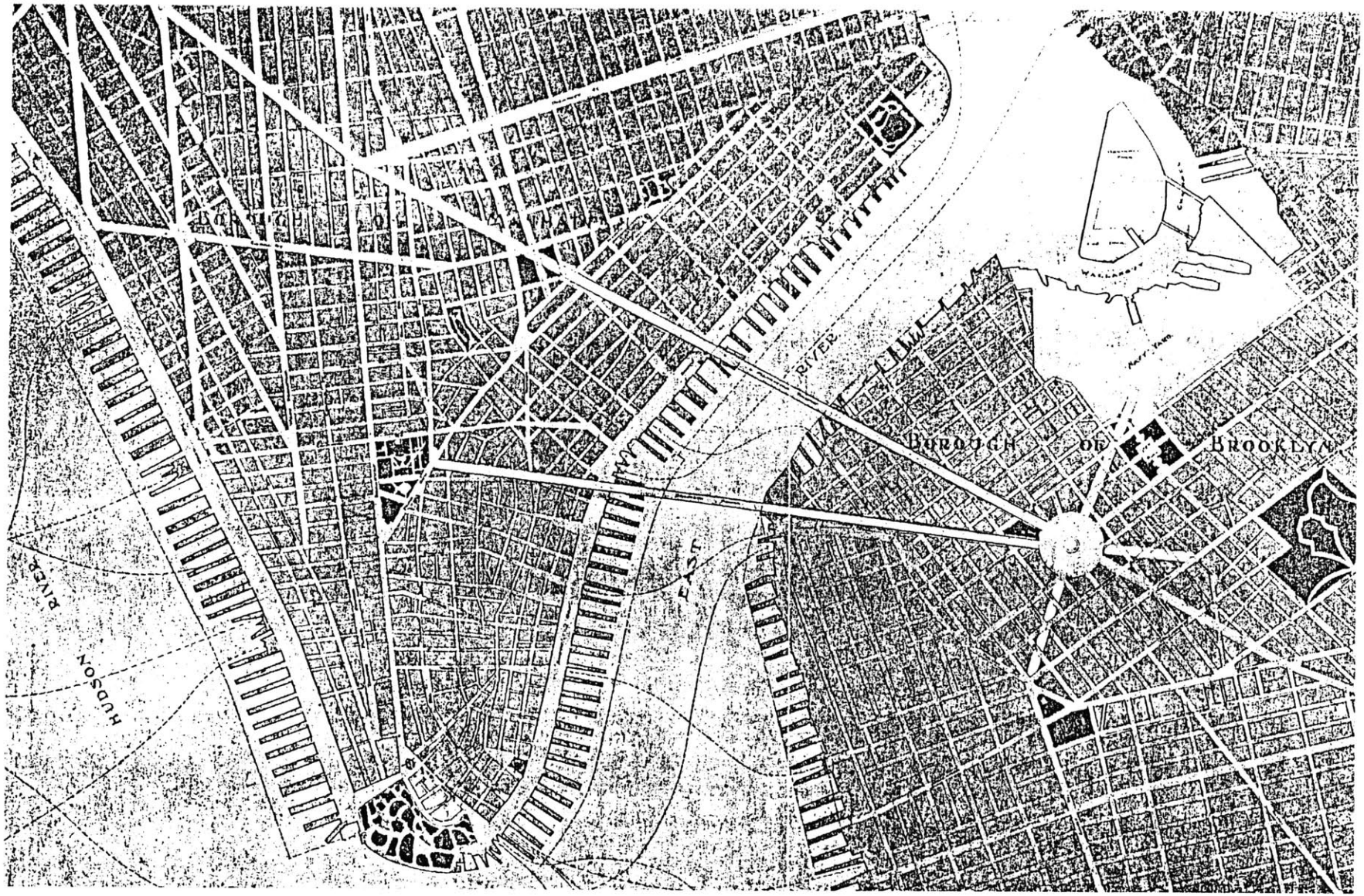
Map Showing Value per Square Foot in Dollars of New York Real Estate.

9. Cecil C. Evers, business district, lower Manhattan, 1903

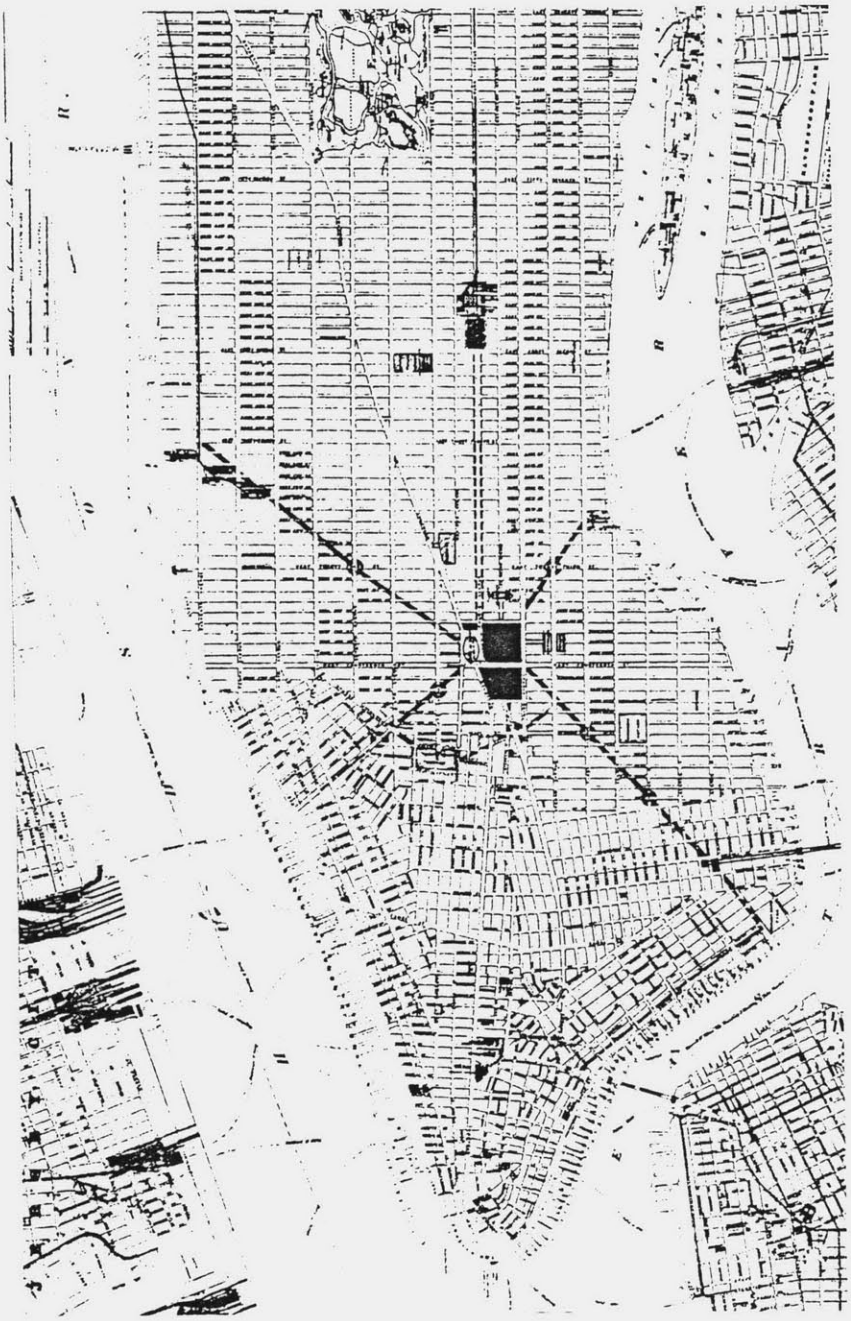
10. Harry M. Pettit, "King's Dream of New York," 1908



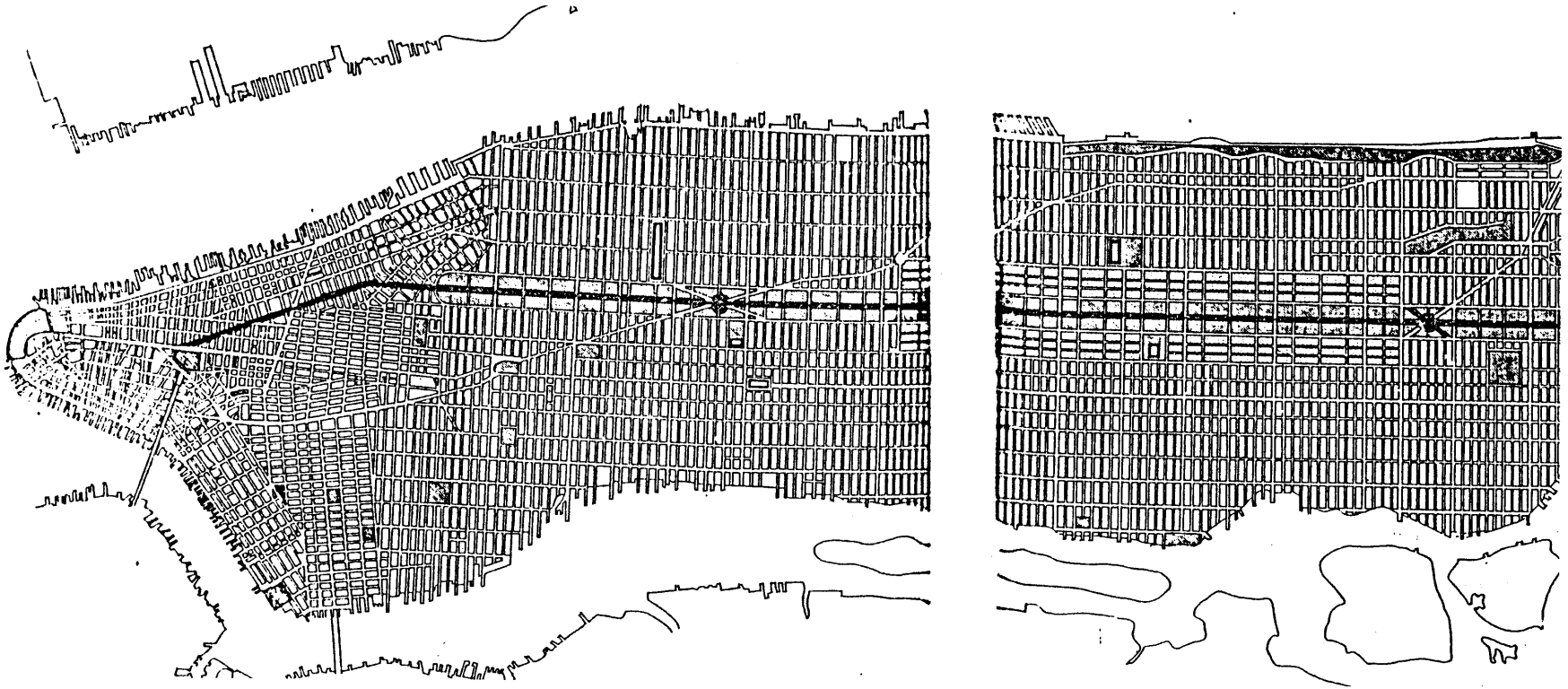
11. New York City Improvement Commission, plan of Greater New York, 1907



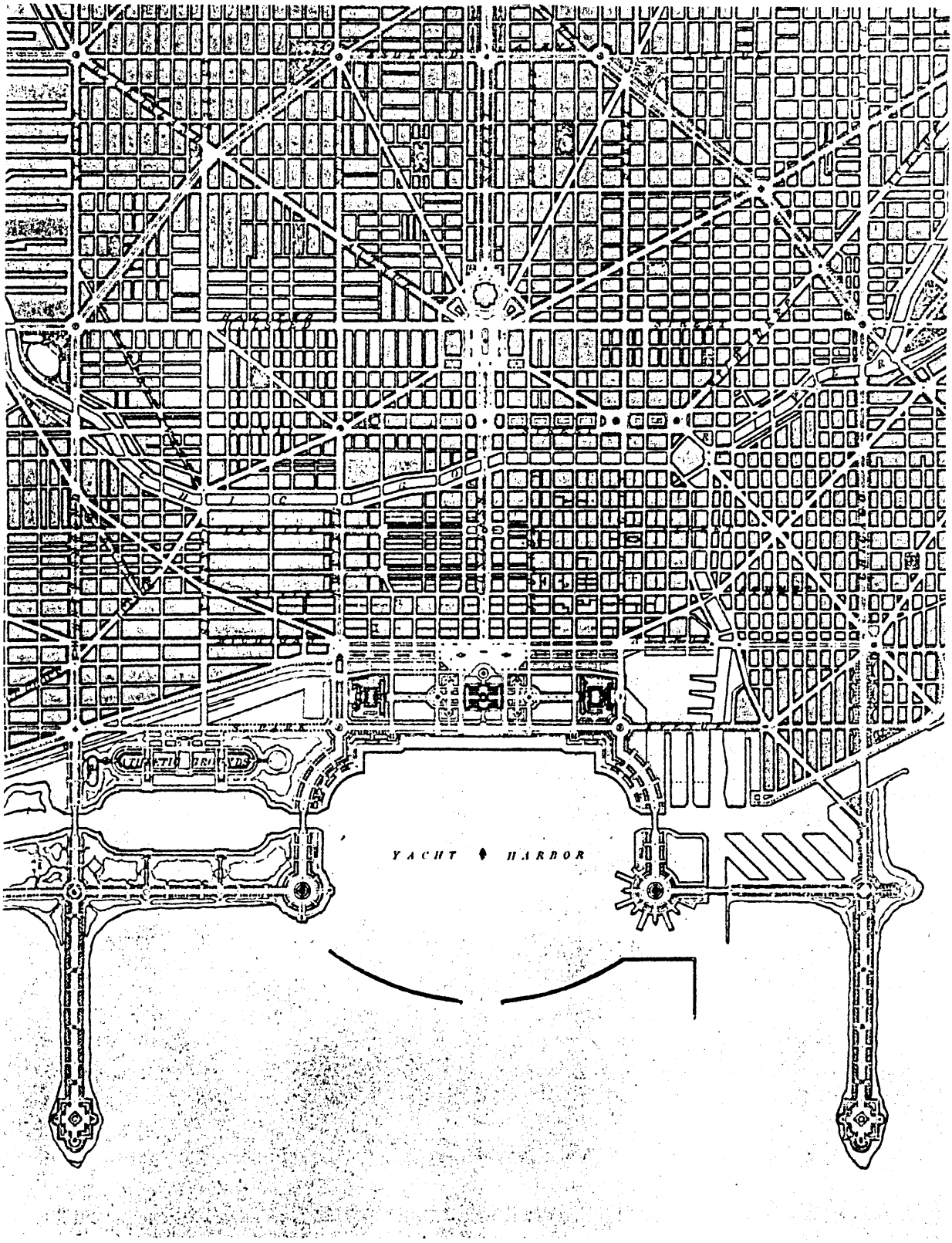
12. New York City Improvement Commission, plan of Greater New York, detail



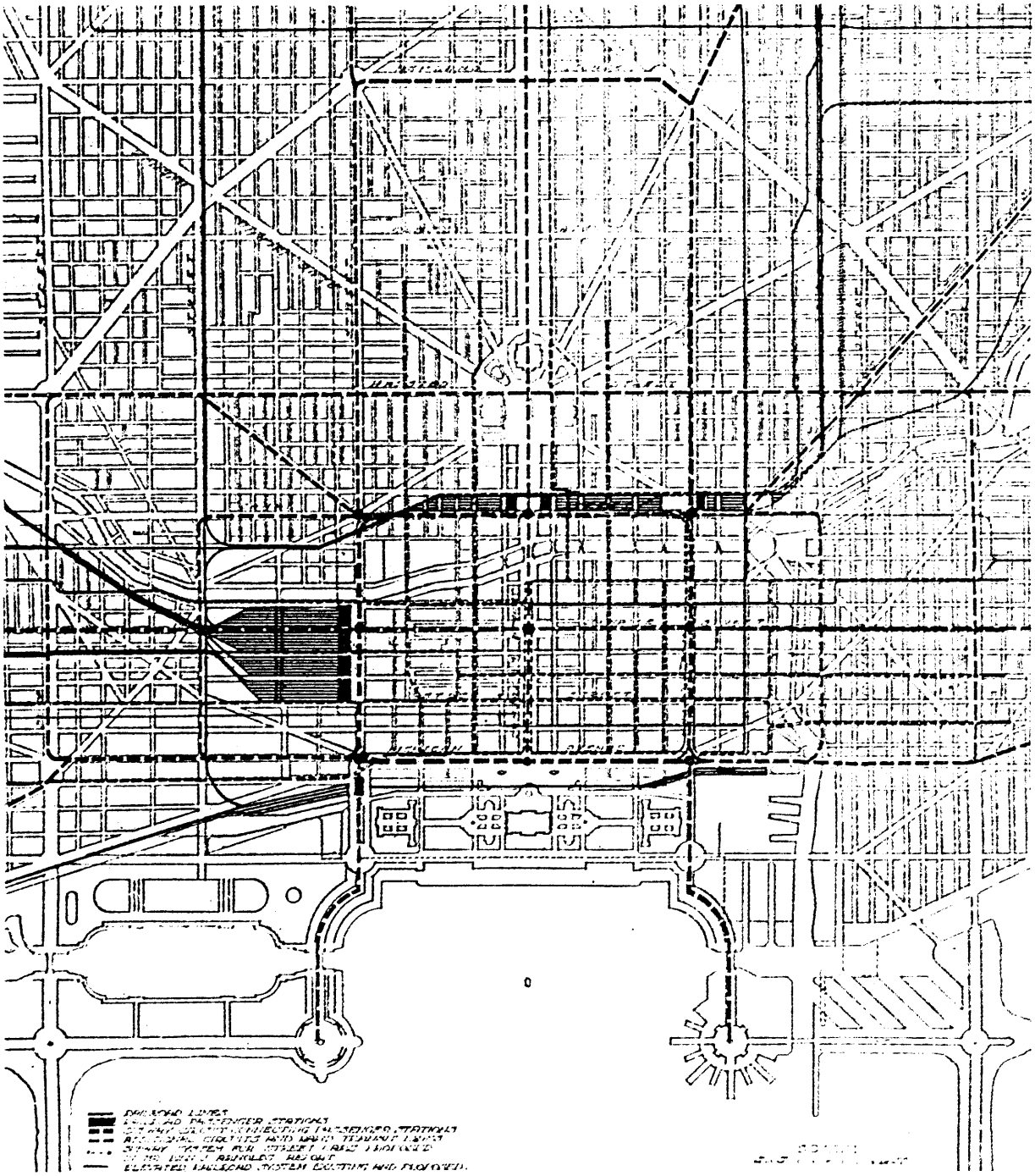
13. Julius F. Harder, plan of Manhattan, 1898



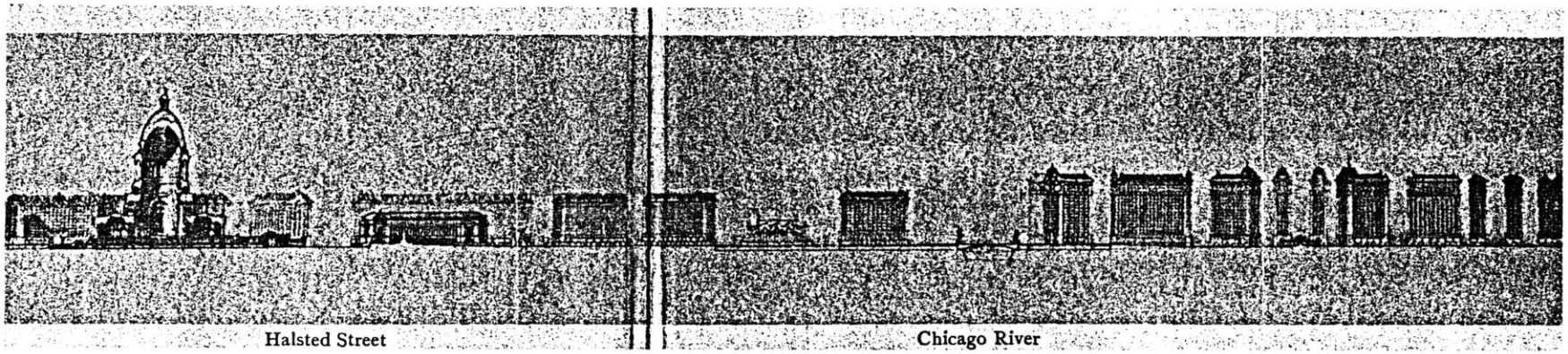
14. Ernest Flagg, plan of Manhattan, 1904



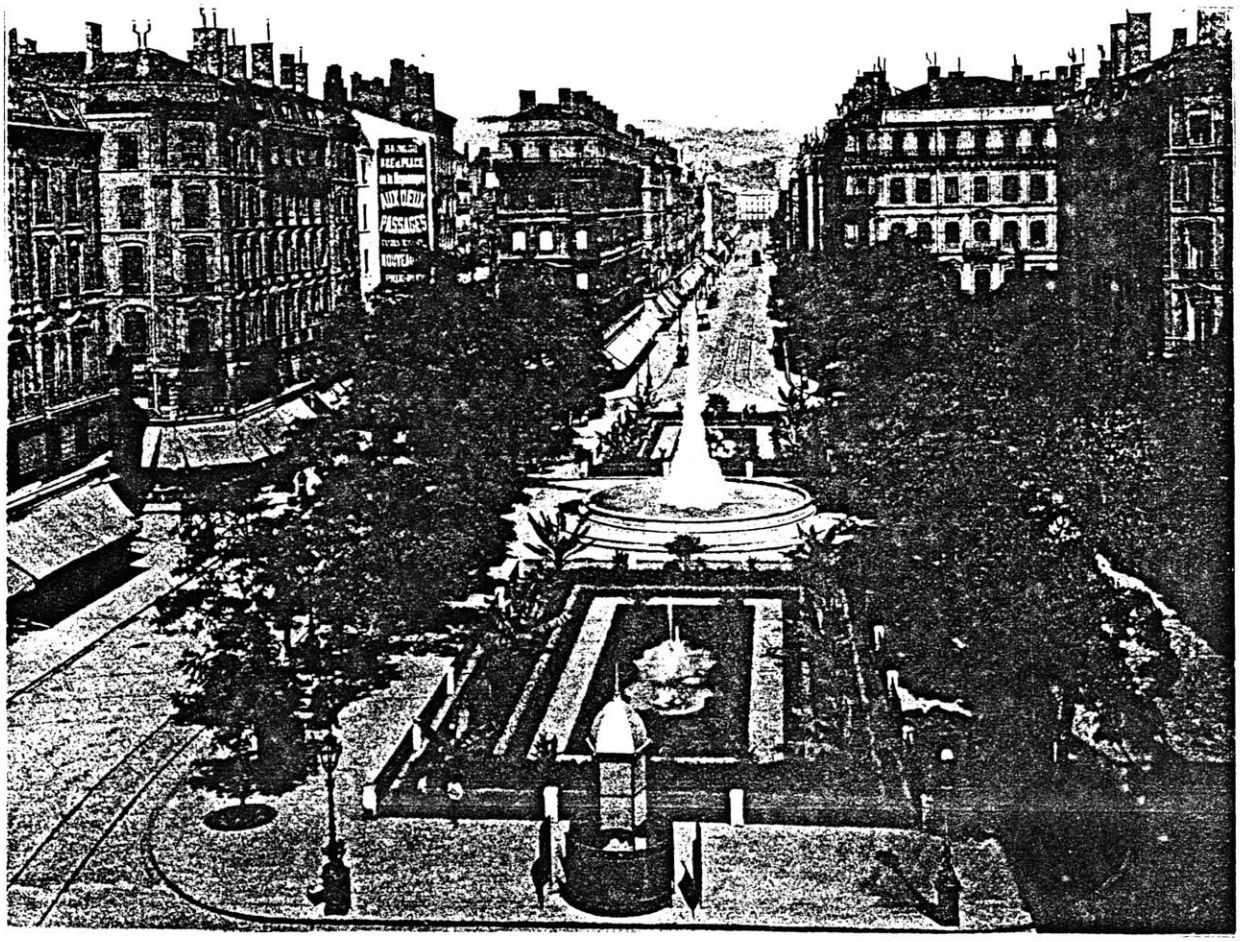
15. Daniel Burnham and Edward H. Bennett, plan of Chicago, 1909



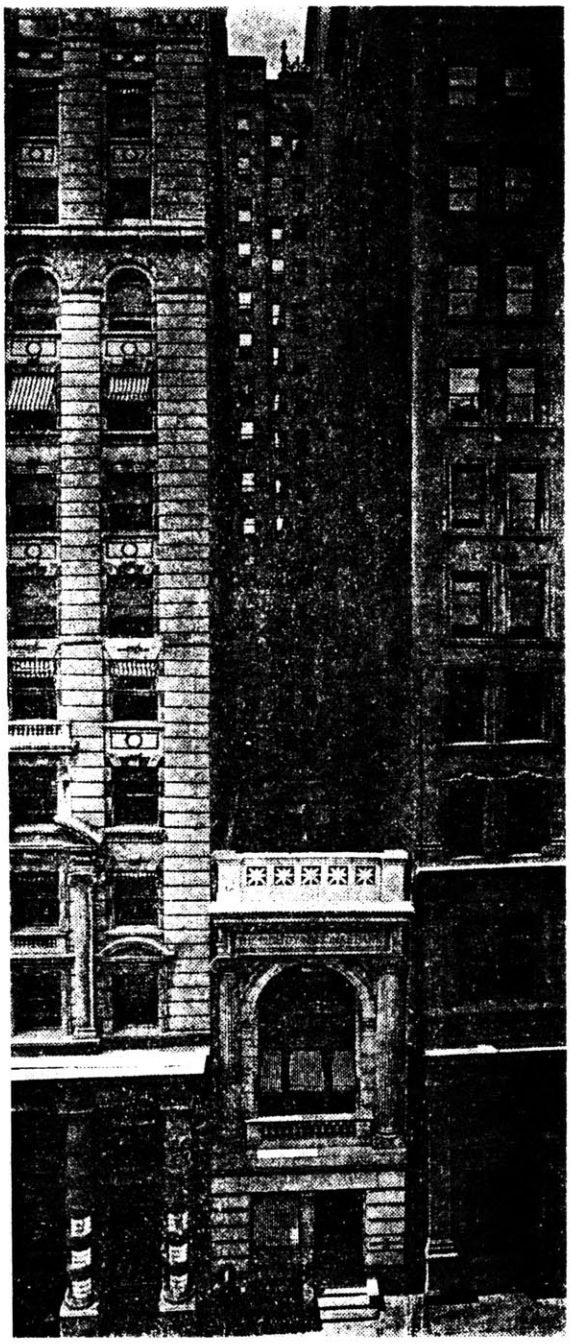
16. Daniel Burnham and Edward H. Bennett, plan of Chicago, transportation systems



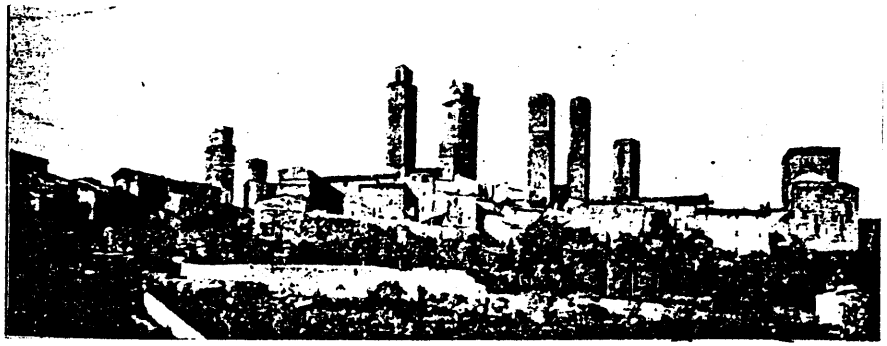
17. Daniel Burnham and Edward H. Bennett, plan of Chicago, civic center and business district, 1909



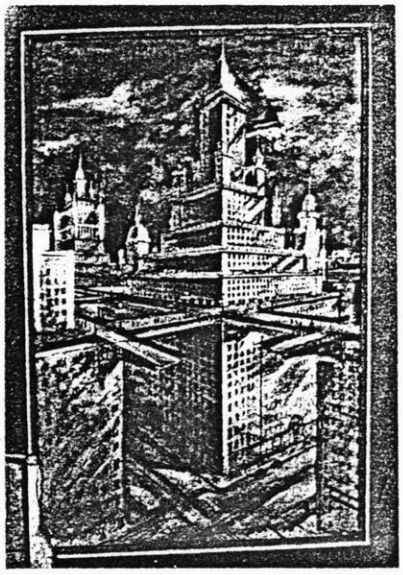
18. rue de la République, Lyons, France



19. "Example of highest type of improvement of short block front," Principles of City Land Values, 1903



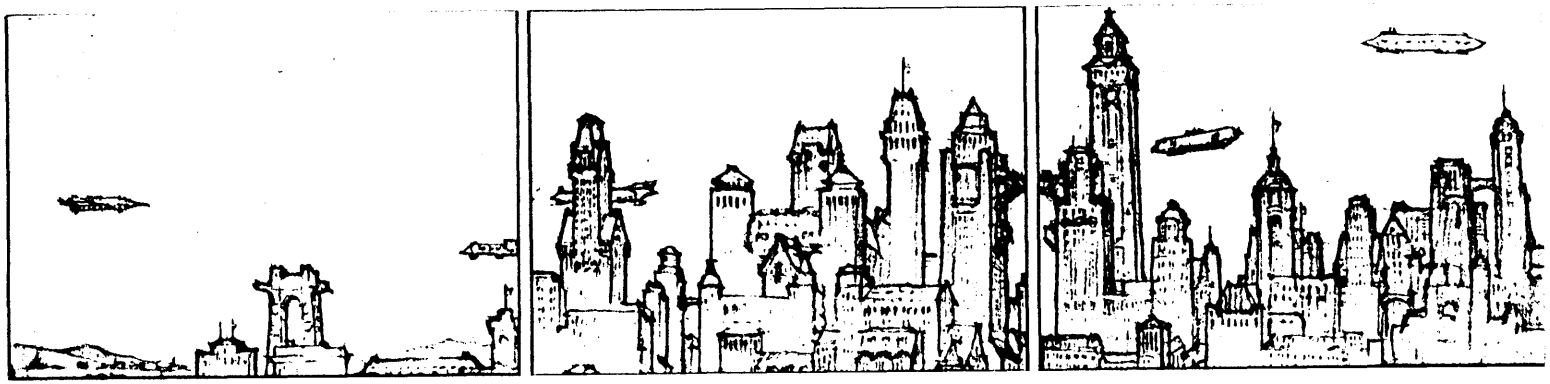
20. San Gimignano, Italy



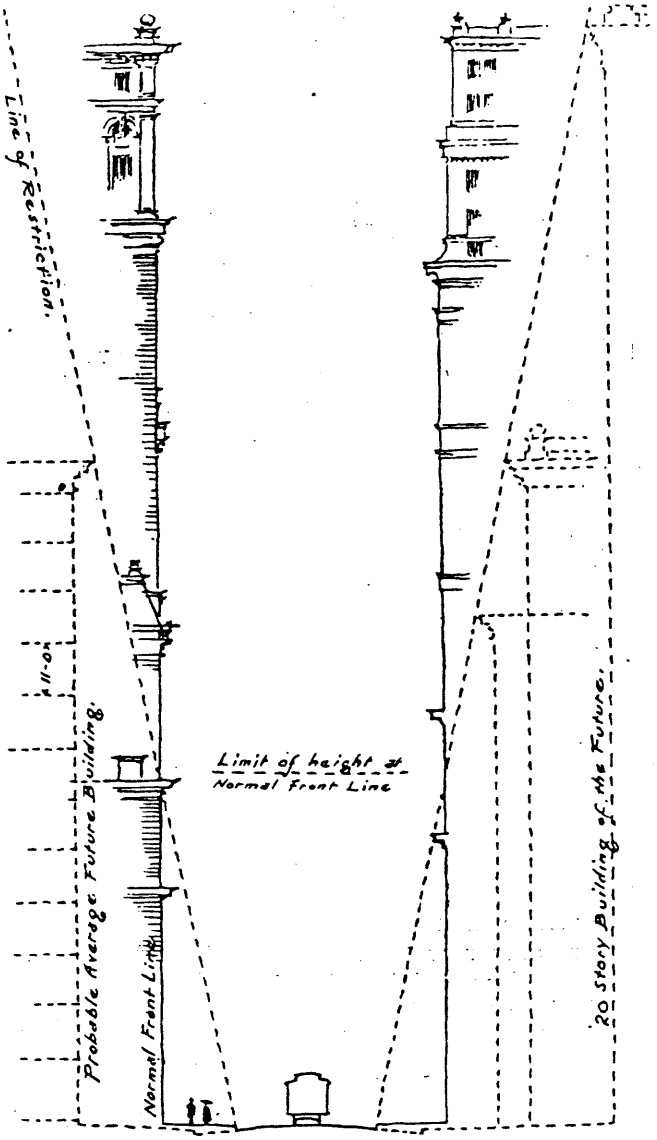
21. Charles Rollinson Lamb, setback skyscrapers with "streetways" and arcades, 1908

22. Giusseppi Mengoni, Galleria Vittorio Emanuele, Milan, 1865-78

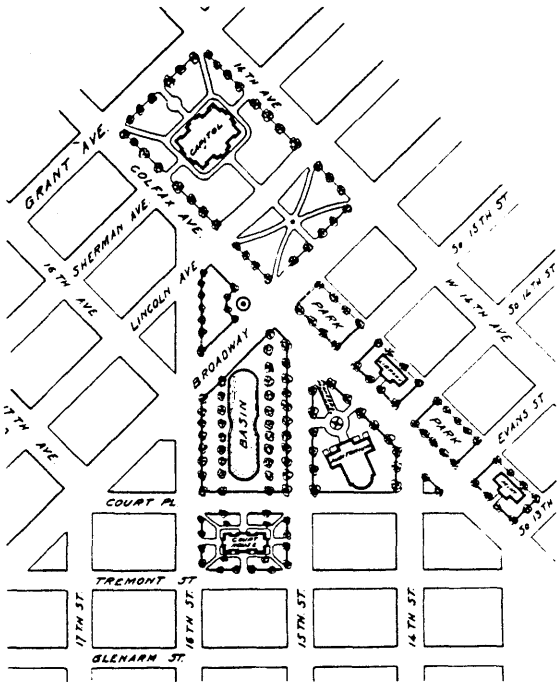
23. Lower Broadway, New York, c. 1909



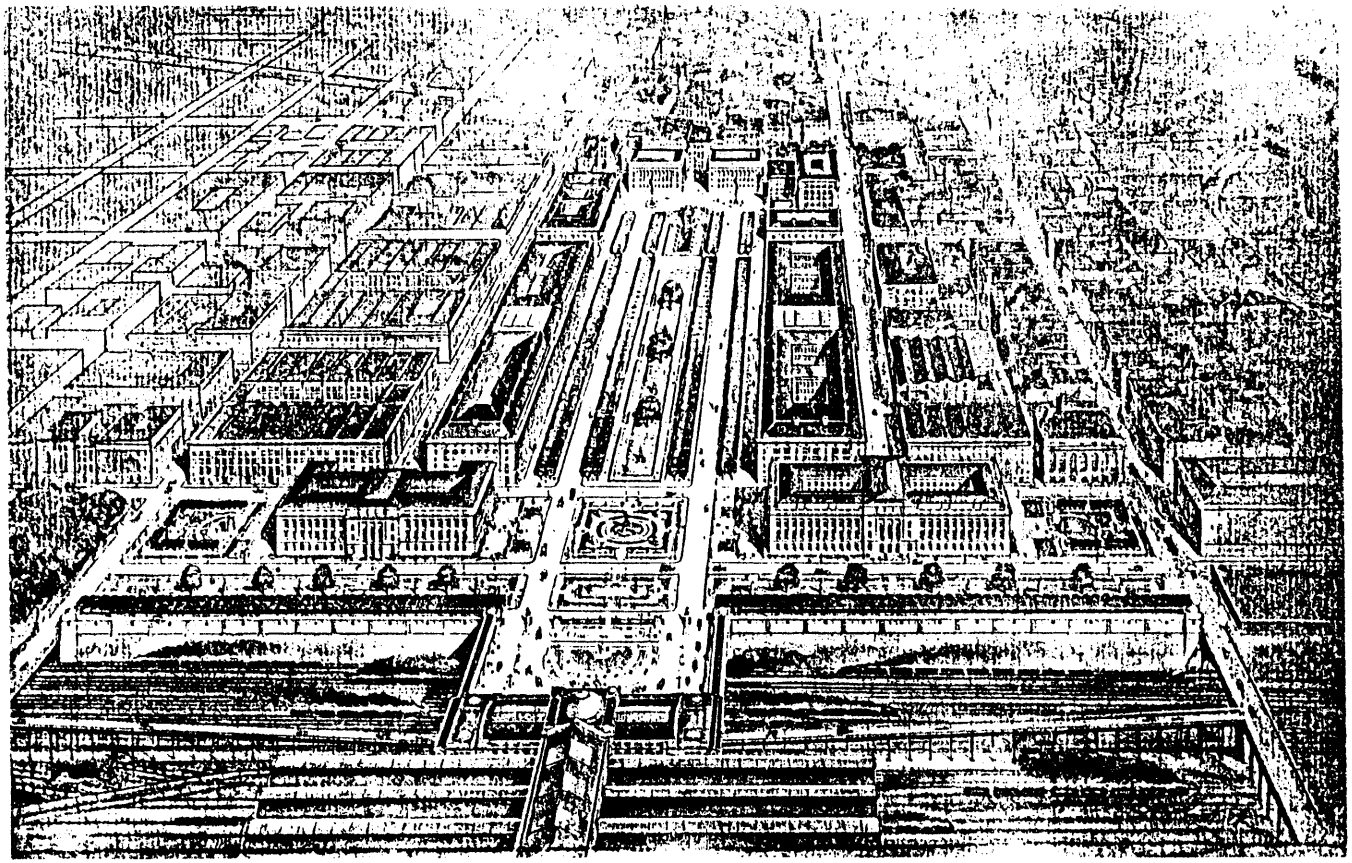
24. Ernest Flagg, "City of Towers," 1908



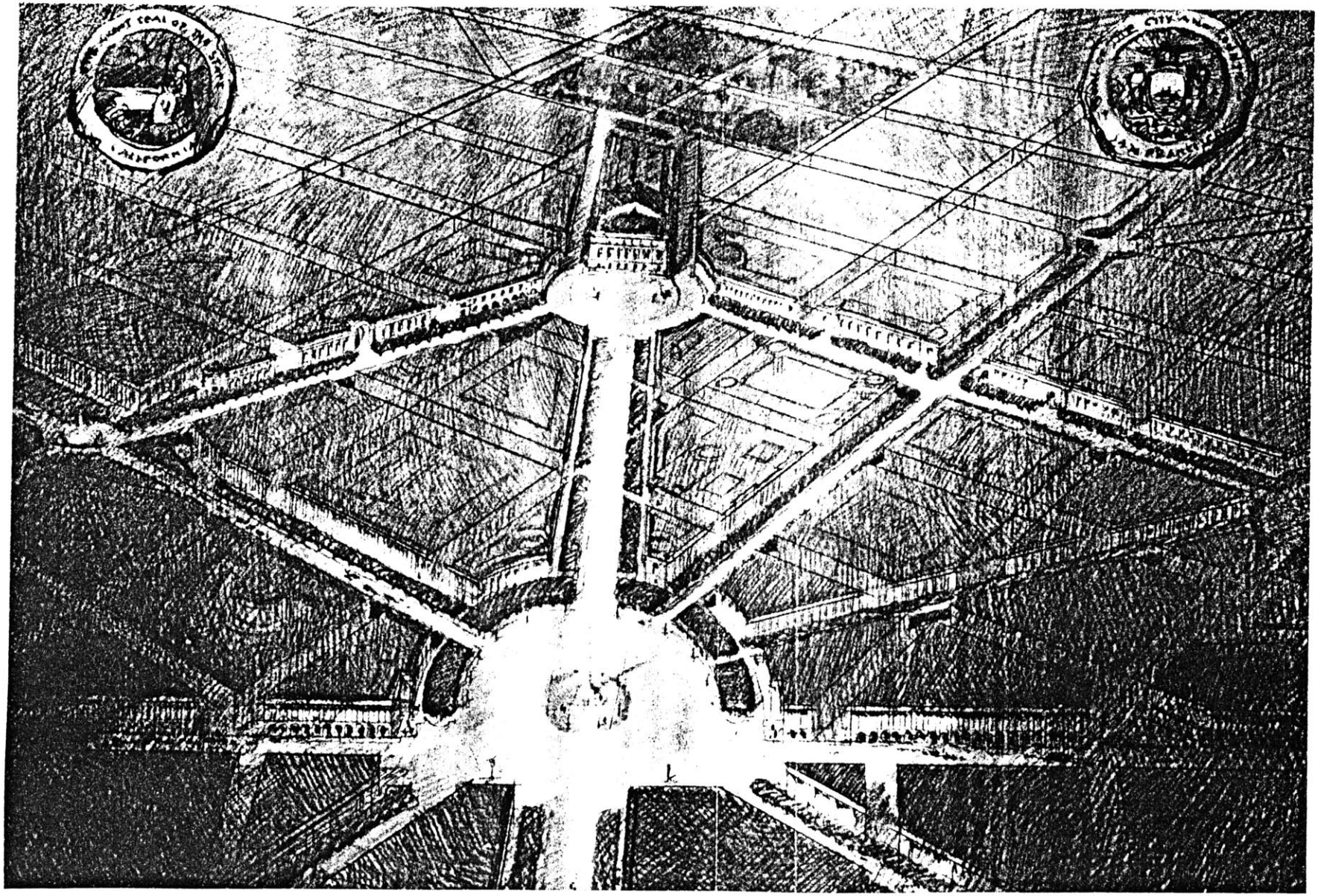
25. David Knickerbacker Boyd, setback proposal for regulating building heights, 1908



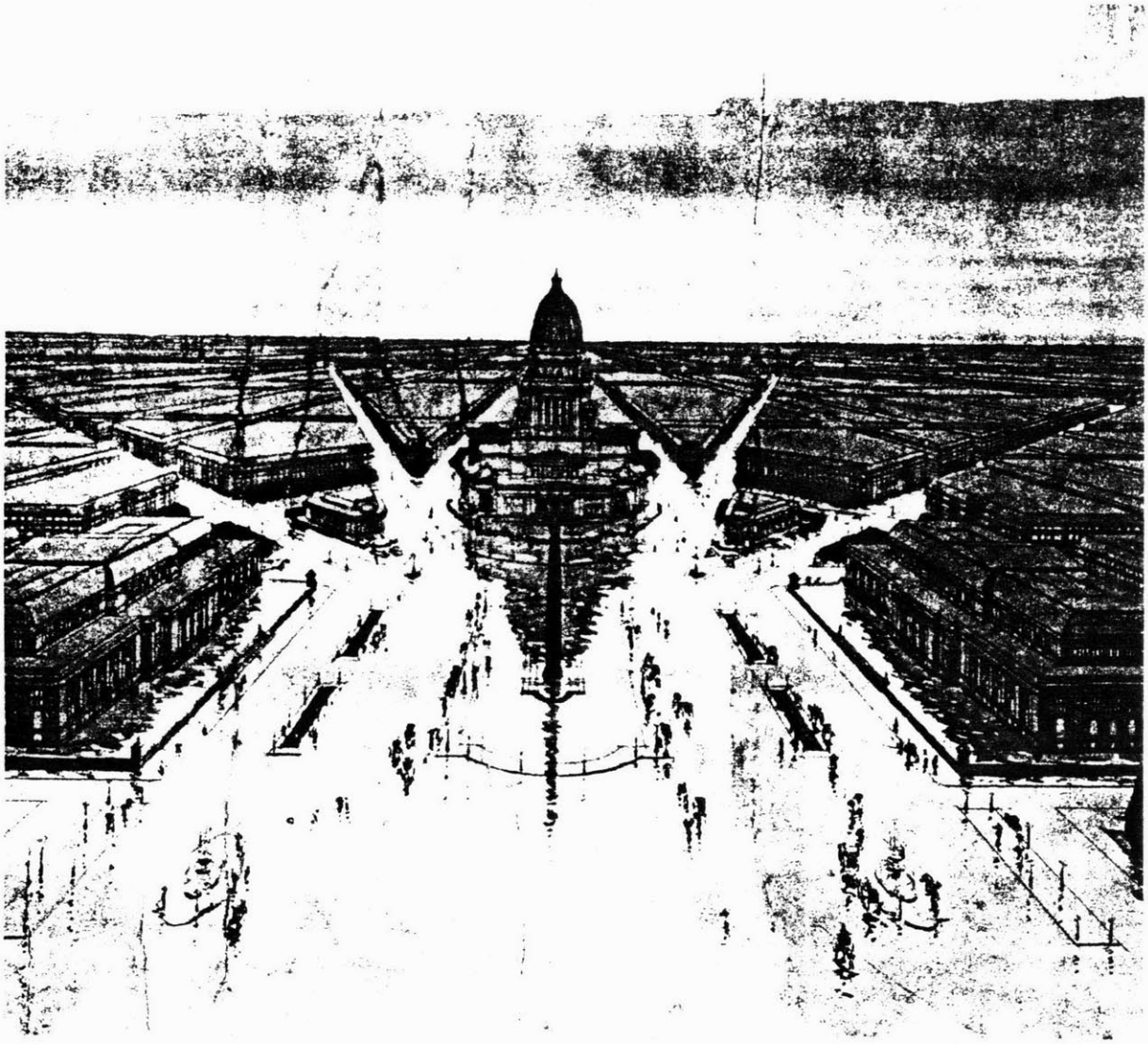
26. Charles Mulford Robinson, plan for the center of Denver, 1906



27. Daniel H. Burnham, John M. Carrère, and Arnold W. Brunner, group plan for Cleveland, 1903



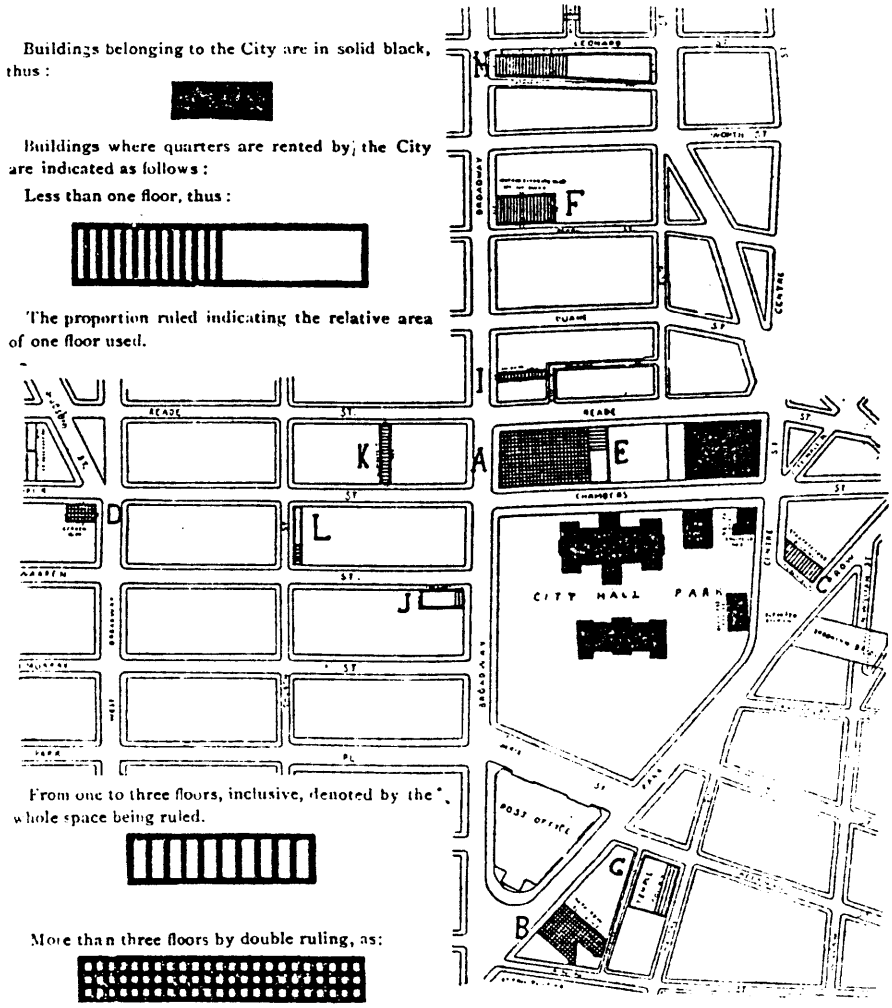
28. Daniel H. Burnham and Edward H. Bennett, plan of San Francisco, civic center, 1905



29. Daniel H. Burnham and Edward H. Bennett, plan of Chicago, civic center, 1909

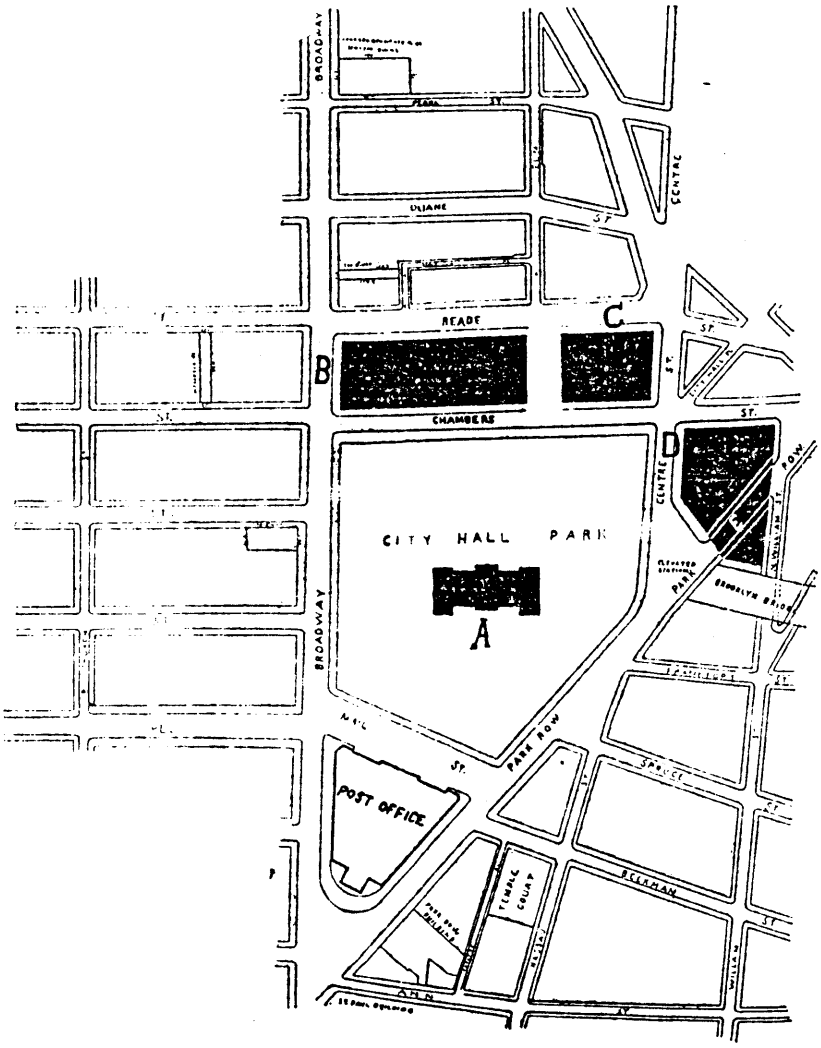
30. City Hall Park, New York, c. 1900

31. Municipal Art Society, Committee on Civic Centers, map showing relation of City Hall Park to five boroughs, 1902



32. Municipal Art Society, Committee on Civic Centers, existing plan of City Hall Park, 1902

MAP II.



A—City Hall.

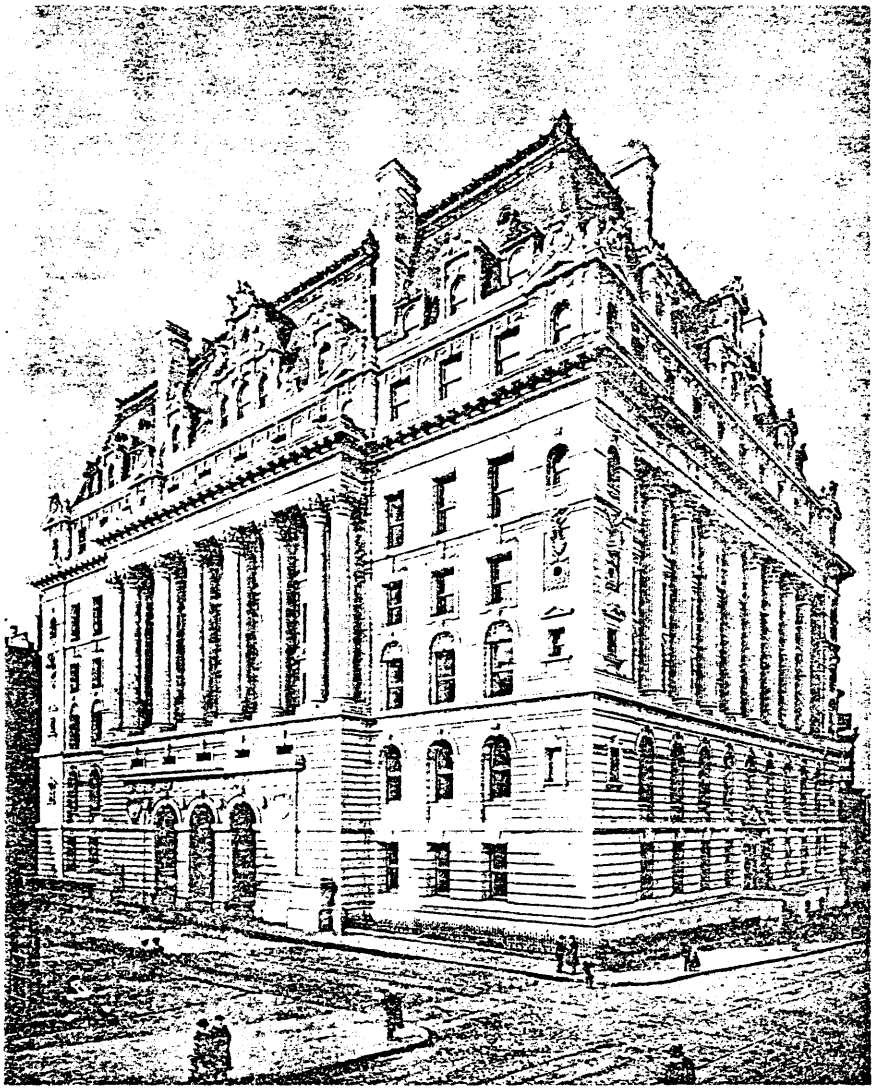
B—City Office Building—New.

C—Hall of Records.

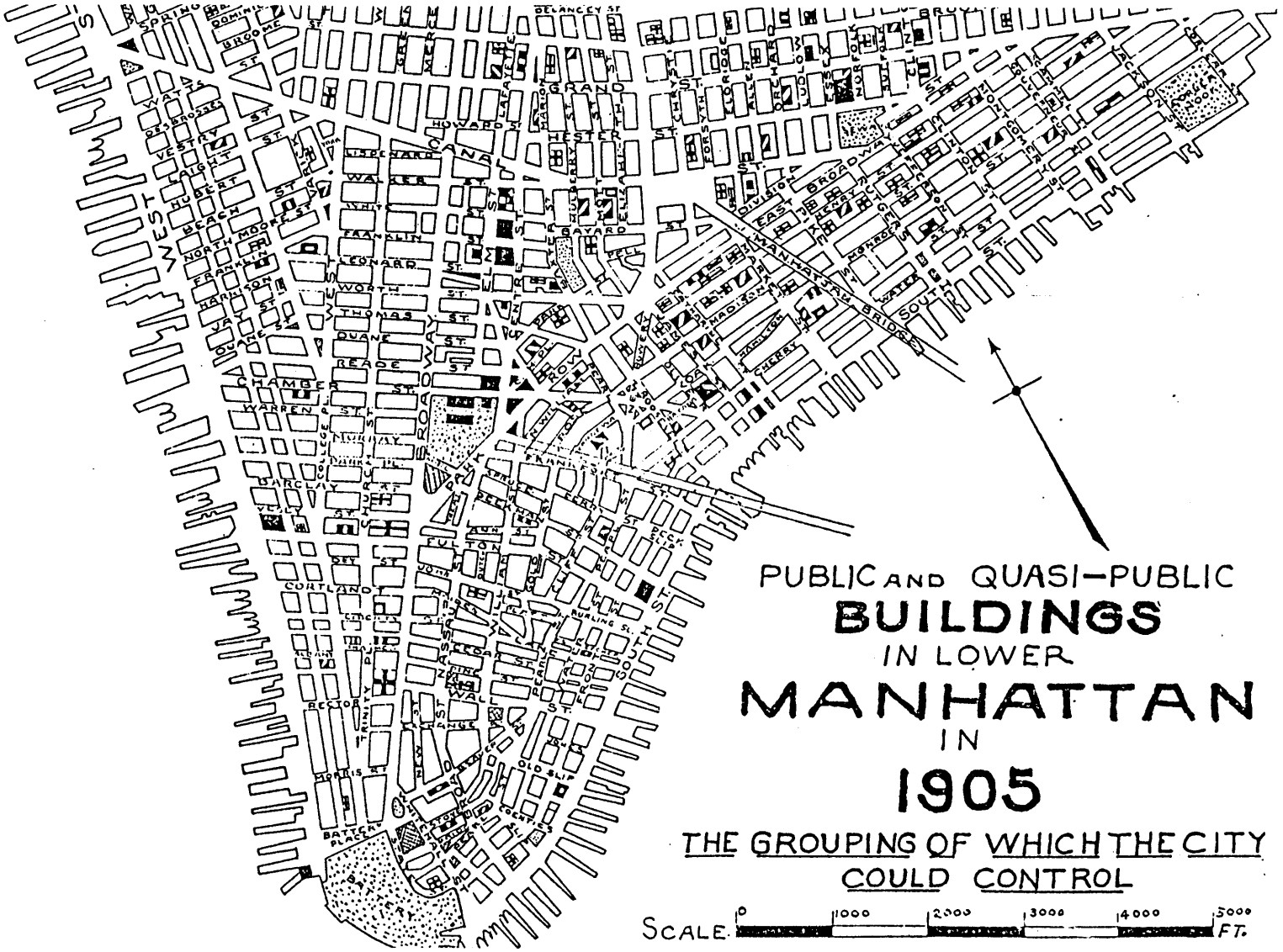
D—Bridge Terminal and City Offices—New.

E—Arcade over Park Row, leaving street and "L" station passable as at present.

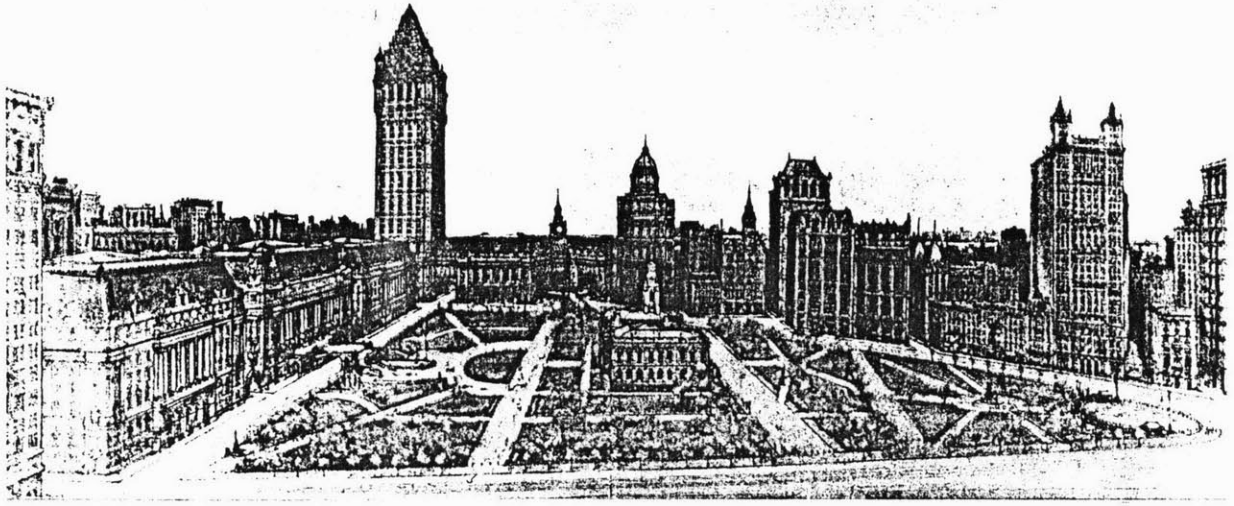
33. Municipal Art Society, Committee on Civic Centers, proposed plan of City Hall Park, 1902



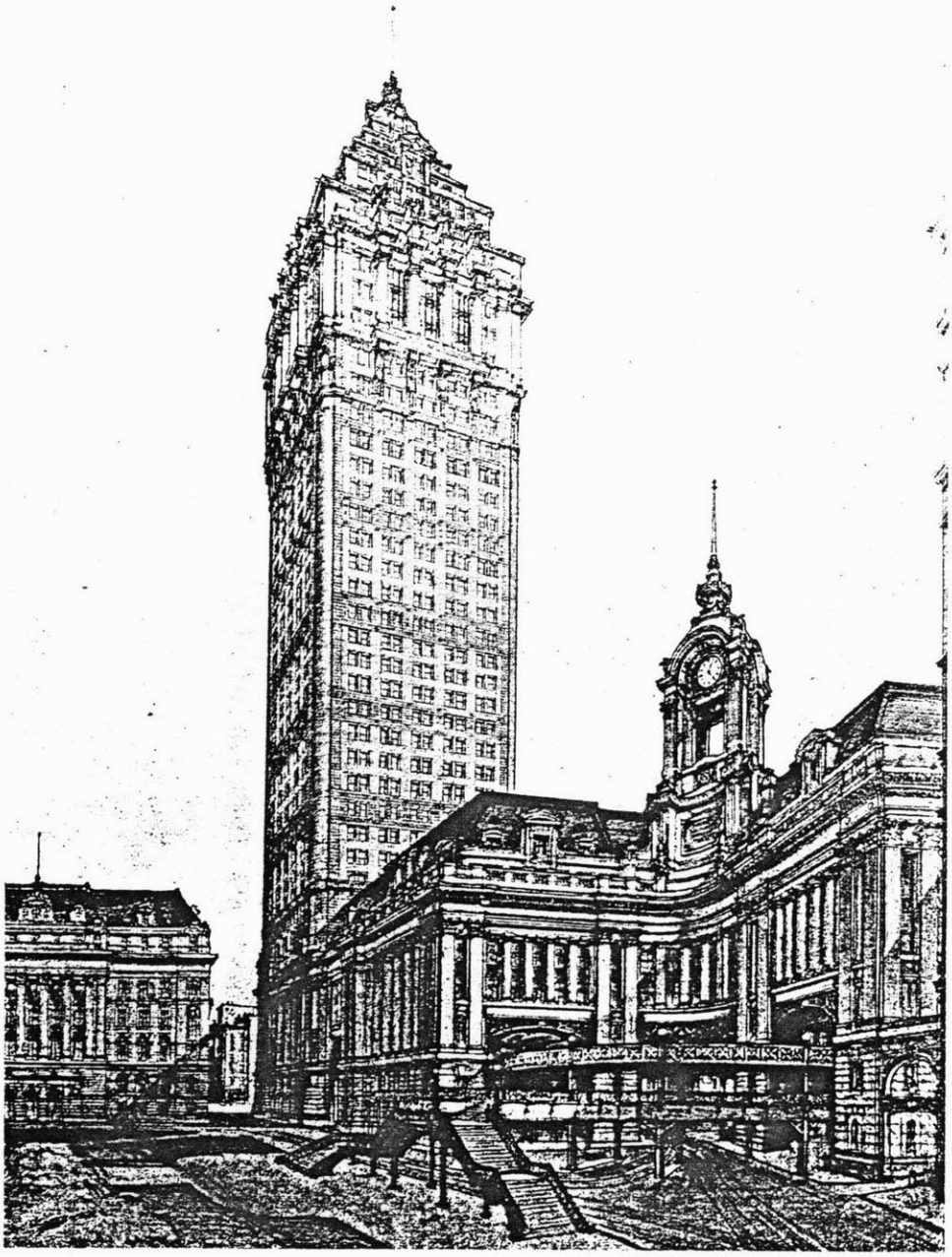
34. J.R. Thomas, Hall of Records, New York, 1899-1905



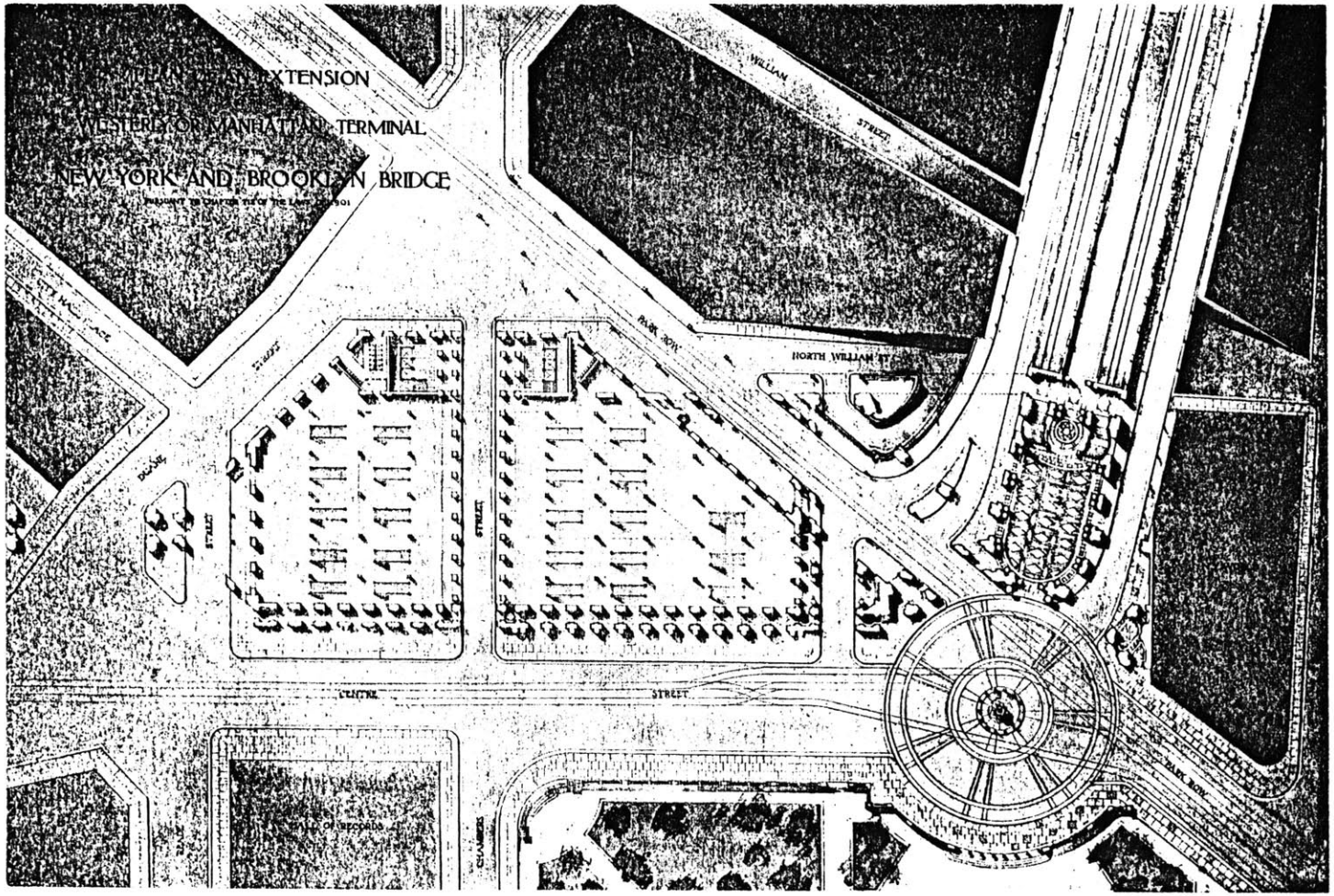
35. Municipal Art Society, Committee on Civic Centers, "Public and Quasi-Public Buildings in Lower Manhattan in 1905"



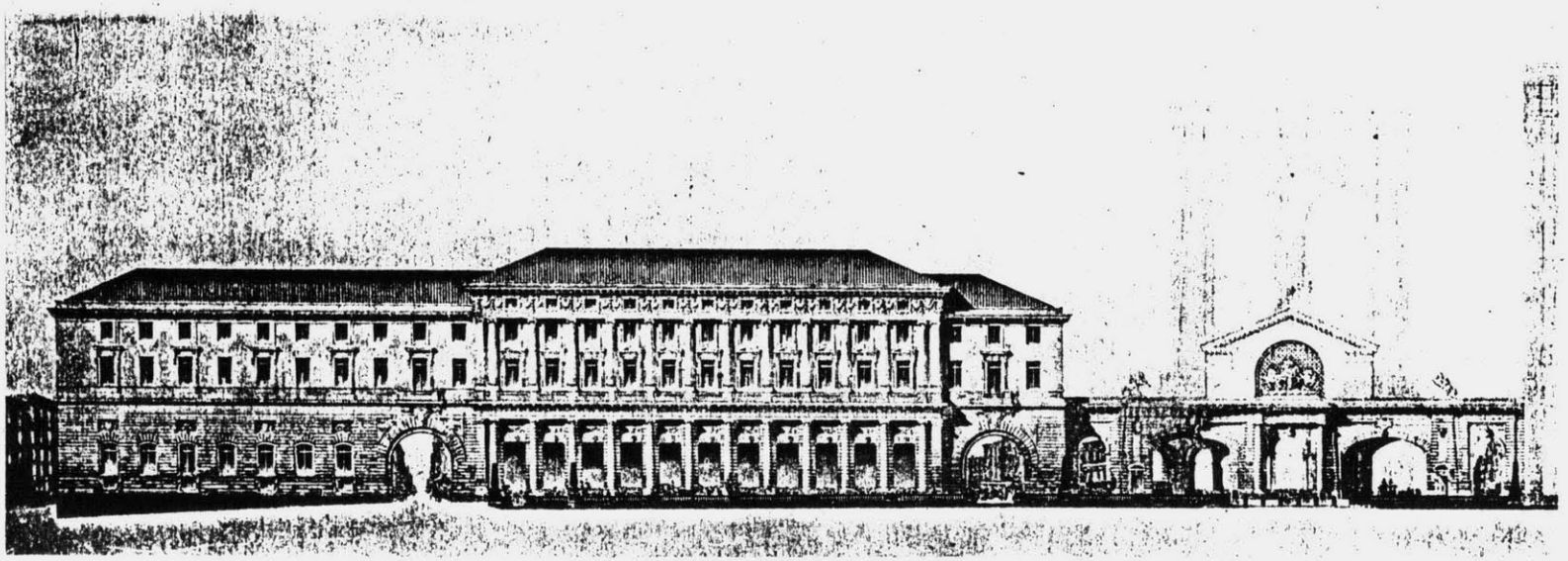
36. Henry Hornbostel and George B. Post, proposed Brooklyn Bridge terminal and civic center, 1903



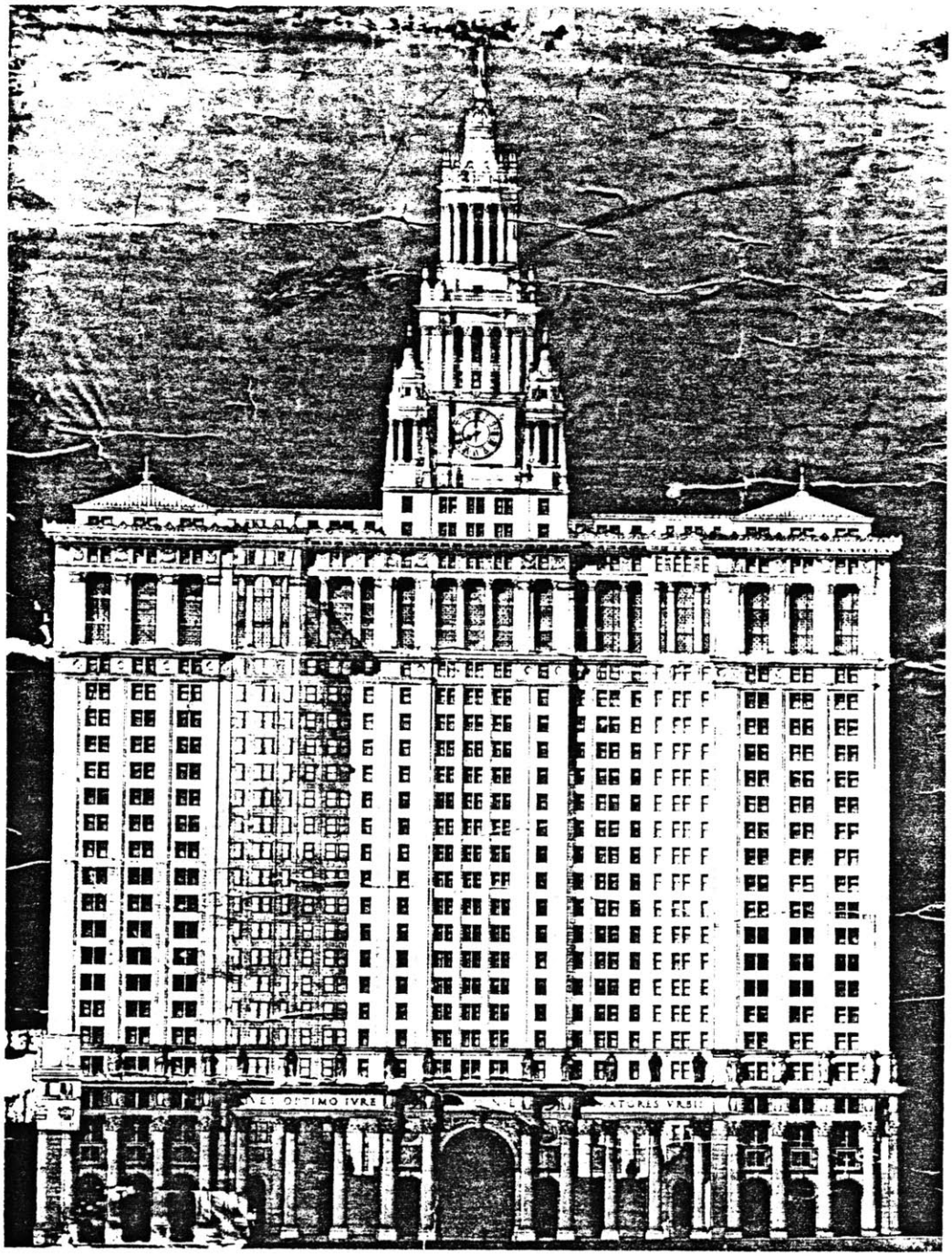
37. Henry Hornbostel and George B. Post, proposed Brooklyn Bridge terminal and civic center, municipal office tower, 1903



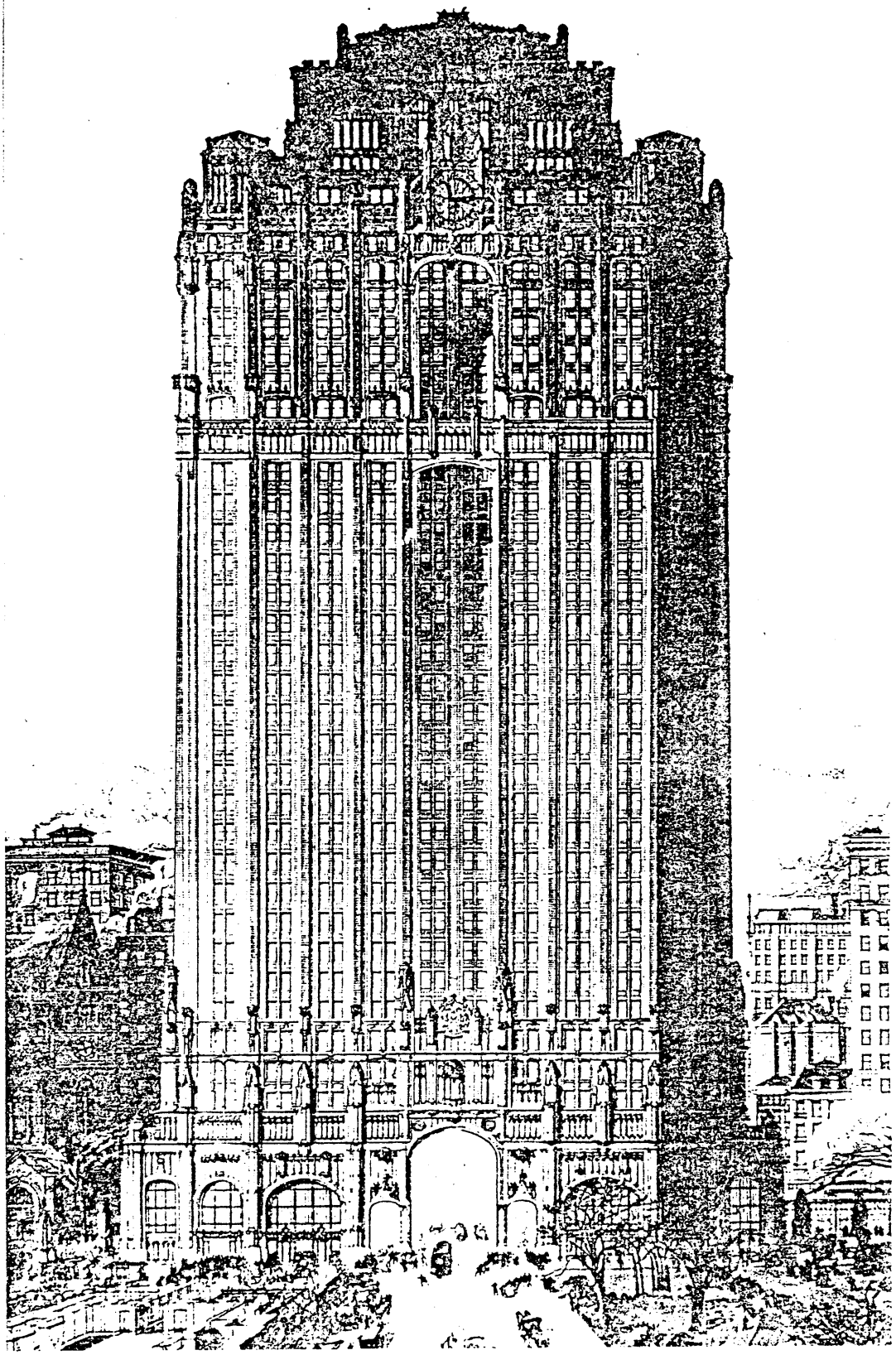
38. Carrère & Hastings, proposed Brooklyn Bridge terminal, plan, 1905



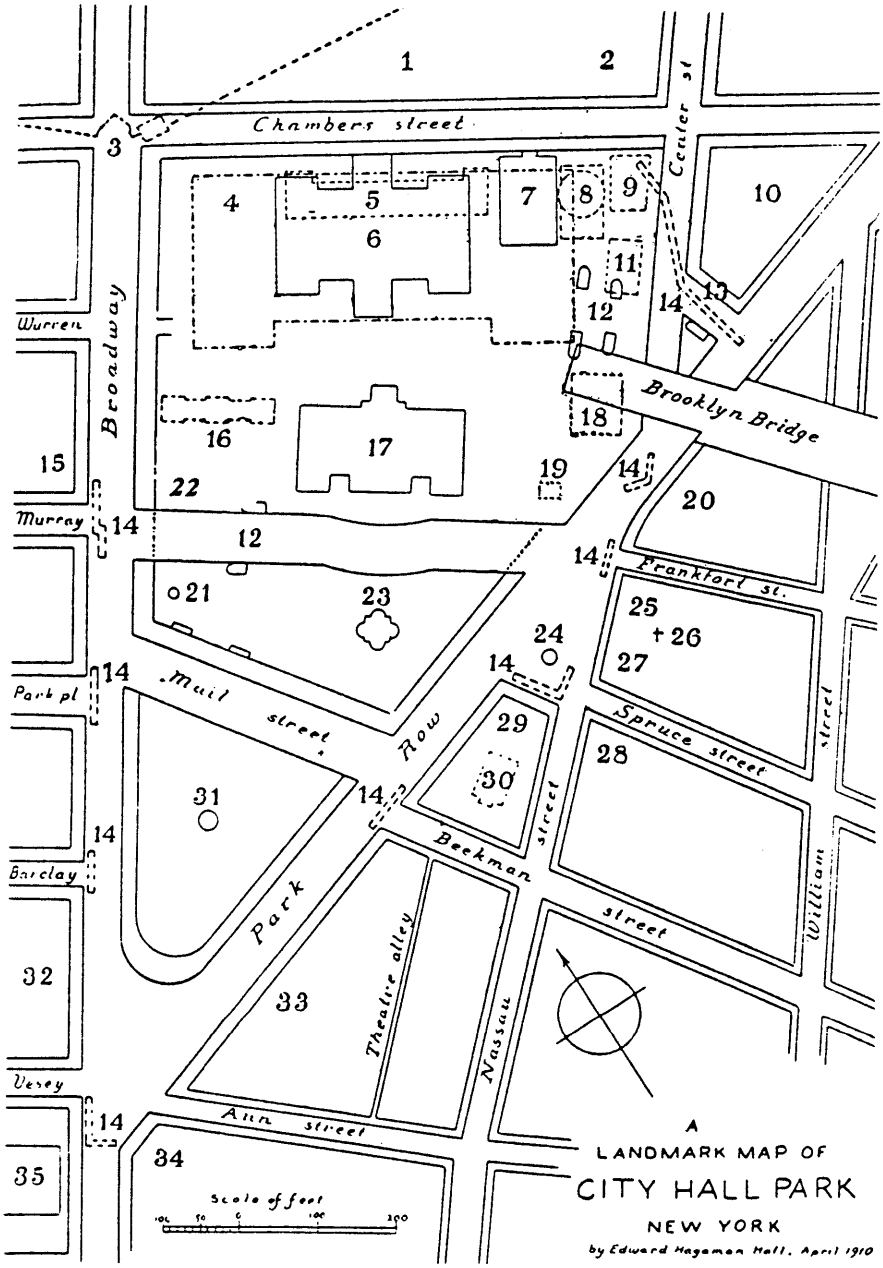
39. Carrère & Hastings, proposed Brooklyn Bridge terminal, elevation



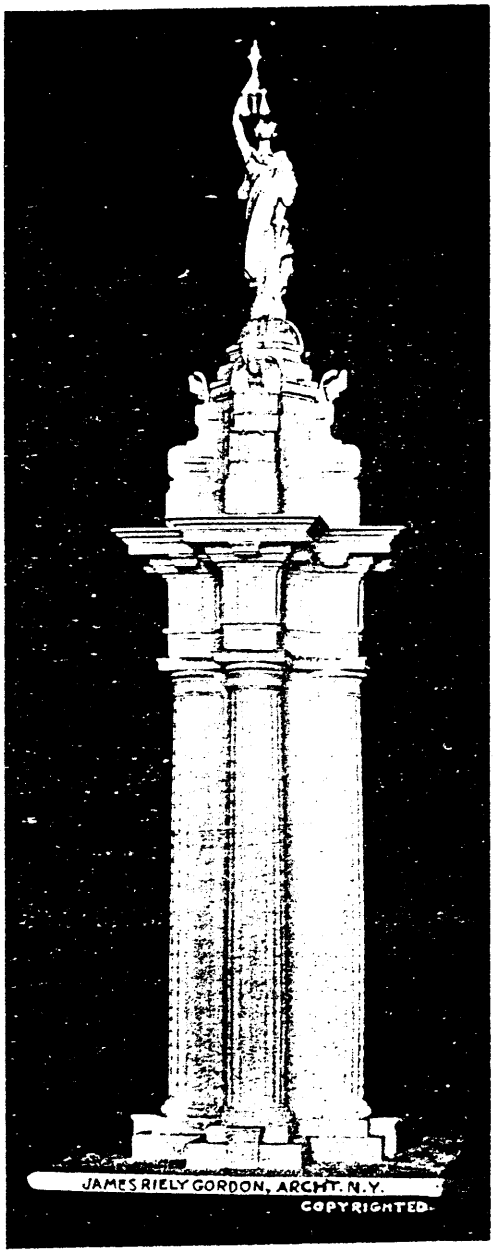
40. McKim, Mead & White, Municipal Building, competition entry, 1907



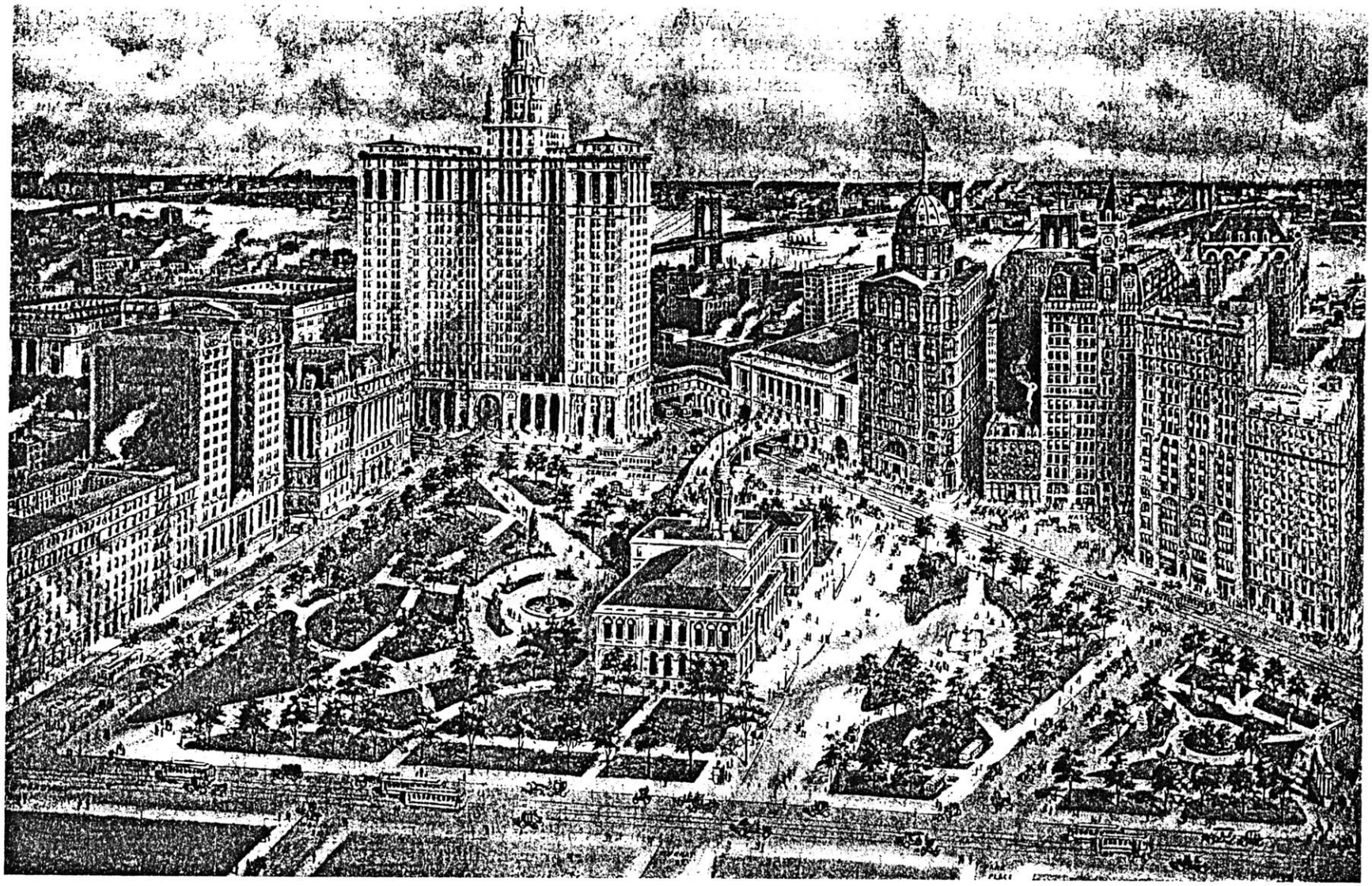
41. Howells & Stokes, Municipal Building, competition entry, 1907



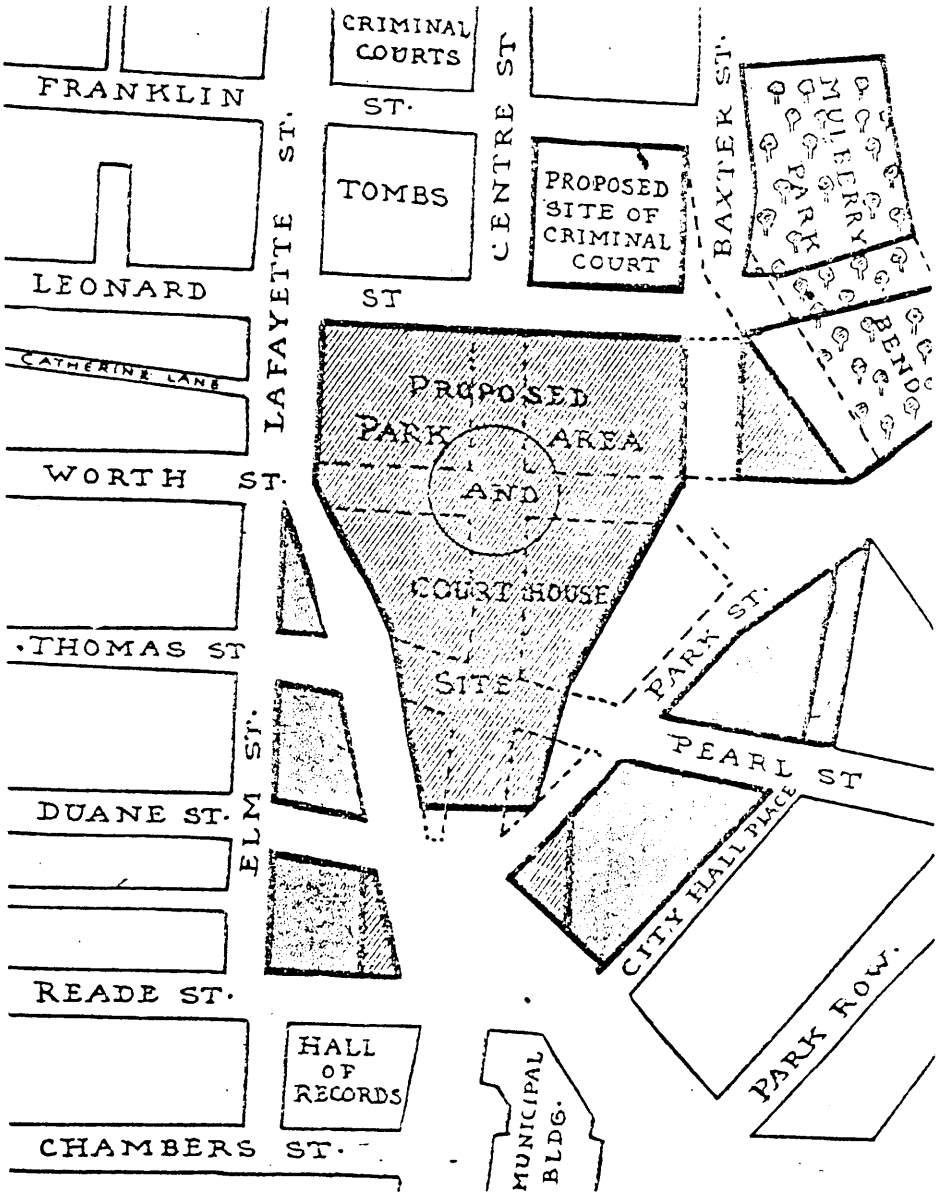
42. American Scenic and Historic Preservation Society, "A Landmark Map of City Hall Park," 1910



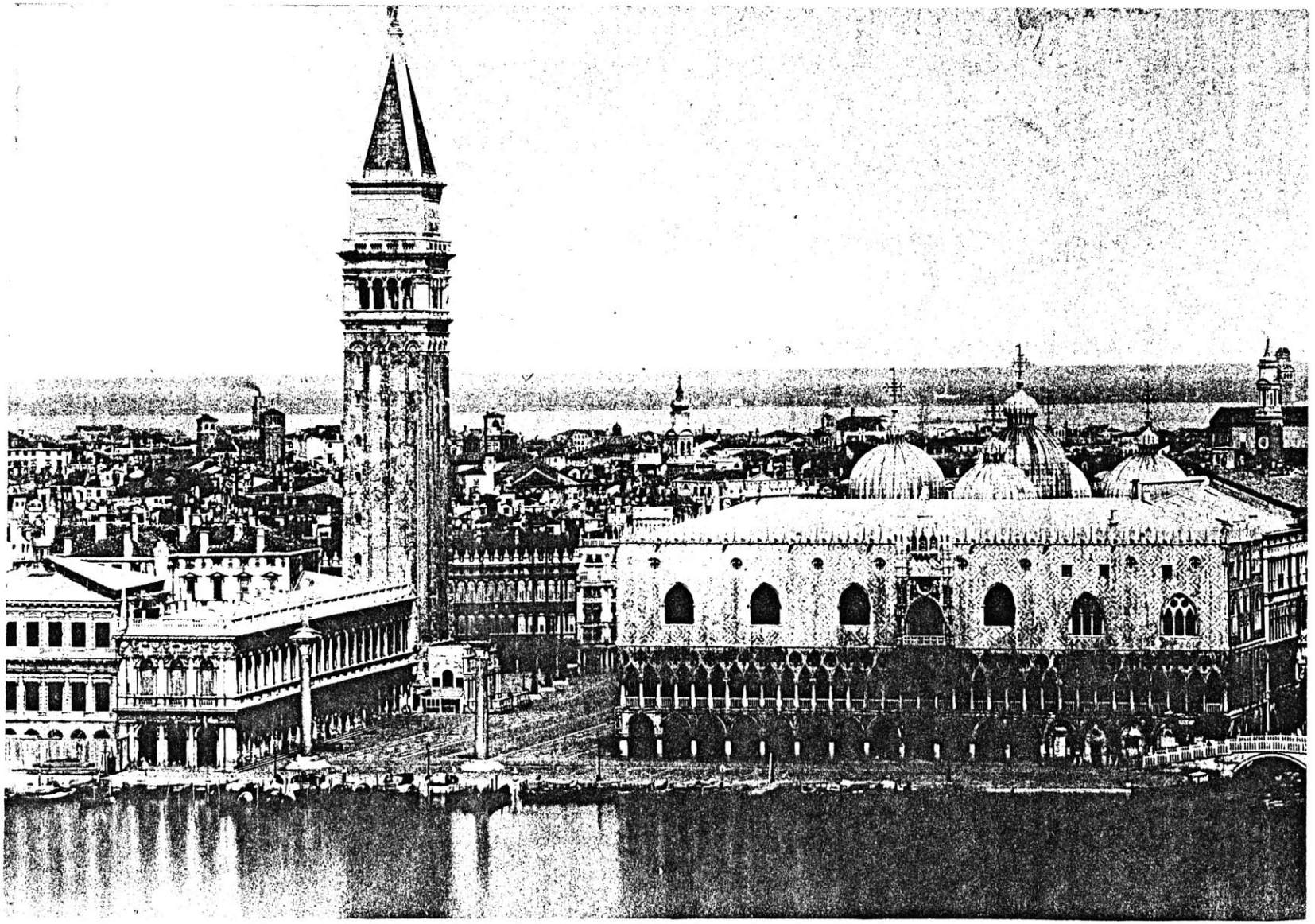
43. James Riely Gordon, proposed 1000-foot high courthouse, 1910



44. New York Department of Bridges, proposed civic center, New York, 1912

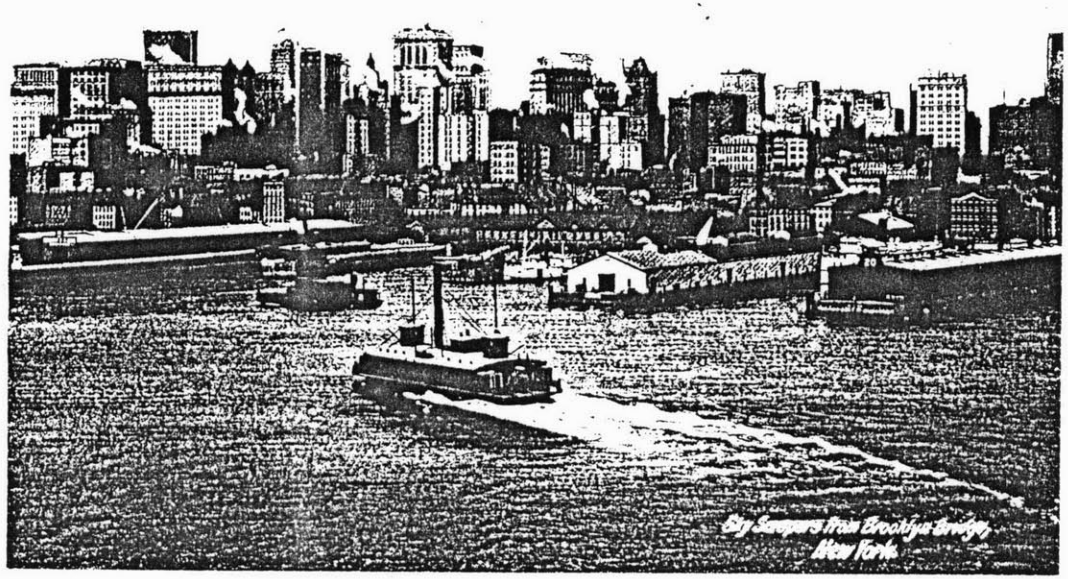


45. Site for new civic center, New York, 1912



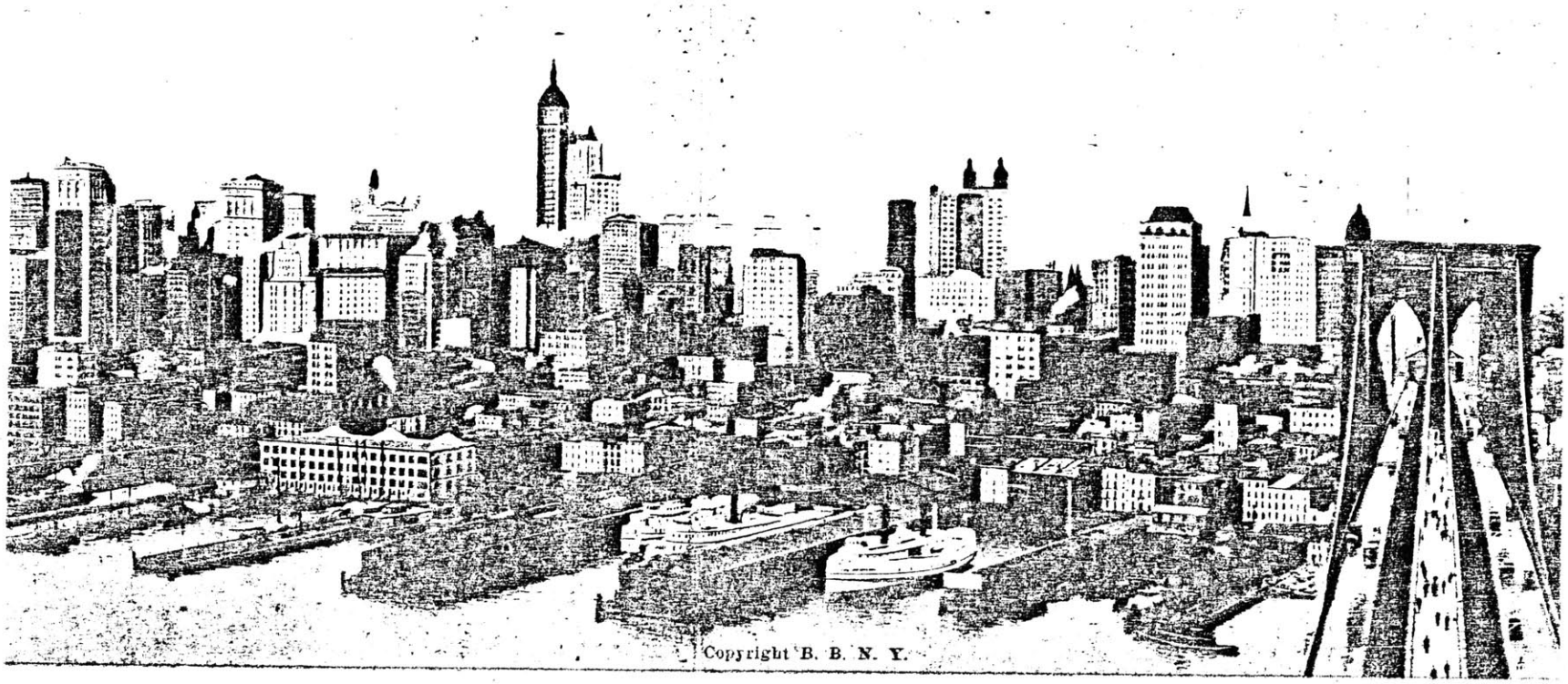
46. Venice, Italy

47. Charles Graham, New York skyline, 1896

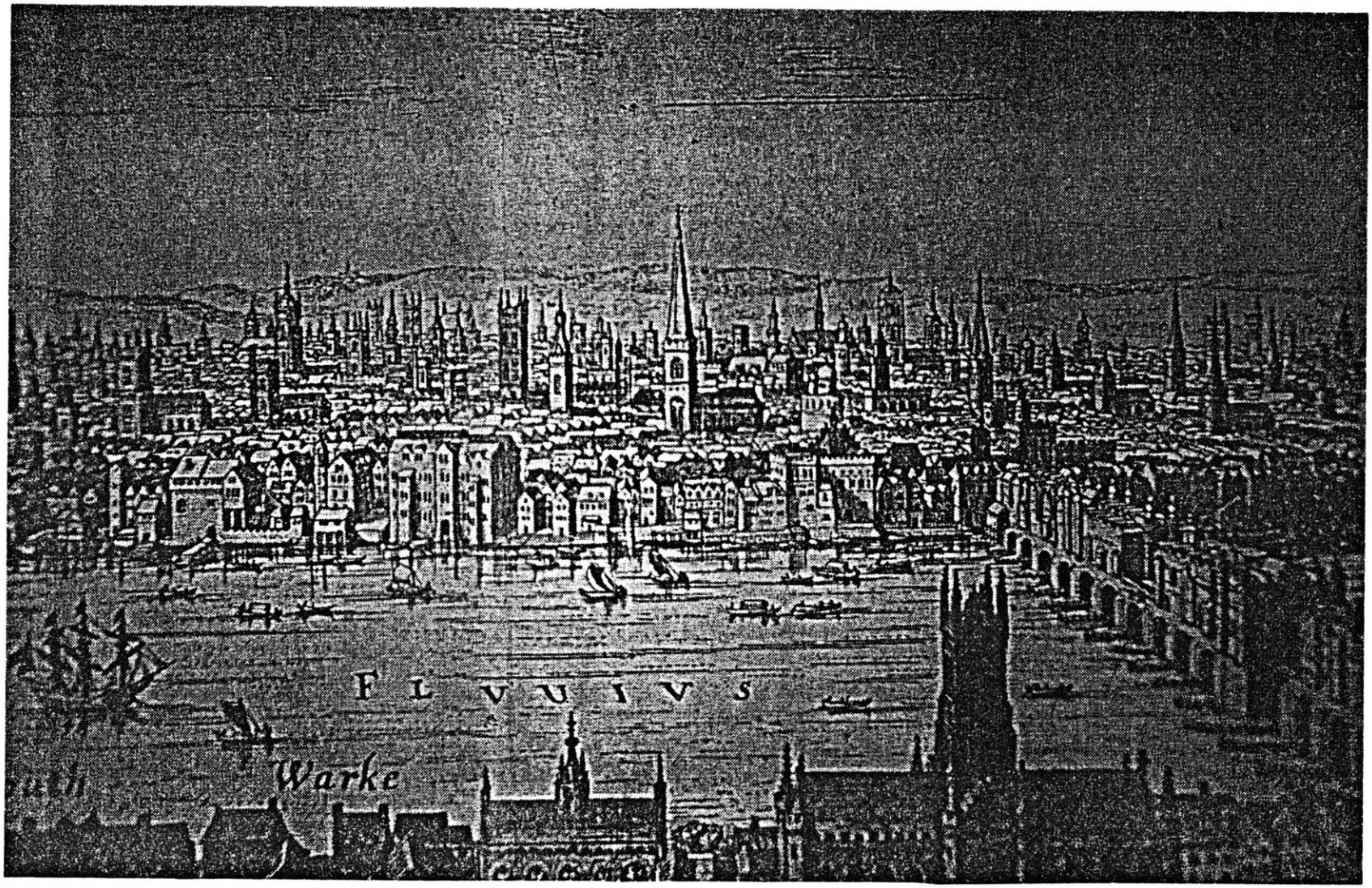


48. New York skyline from the Brooklyn Bridge, c. 1900

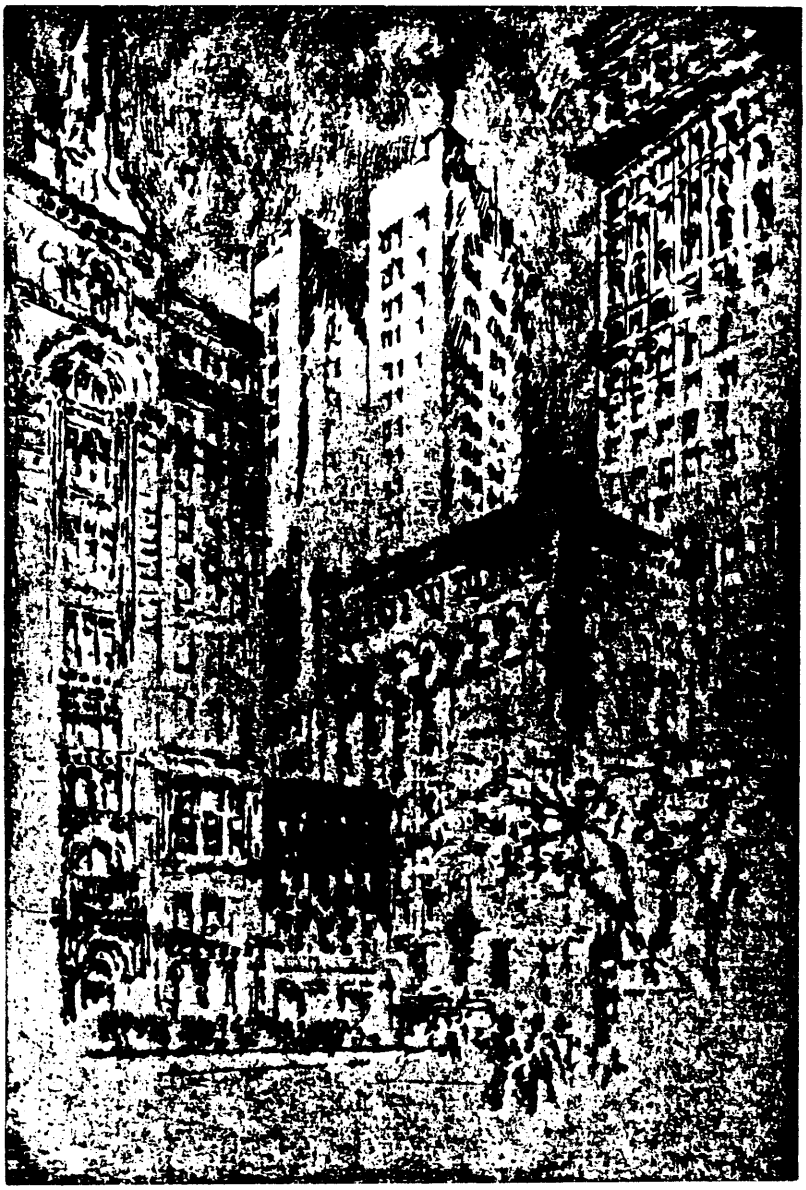
49. New York skyline from the Upper New York Bay, c. 1900



50. New York skyline from Brooklyn, c. 1908



51. Merian, London before the fire, 1610



52. Joseph Pennell, "Four-Story House," 1904

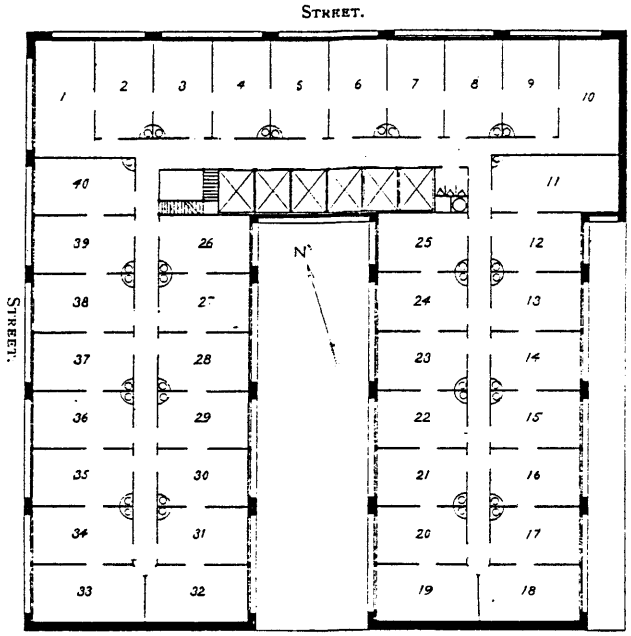


FIG. 5.—100 x 100 building on corner. Office unit 9.9 x 15.0.

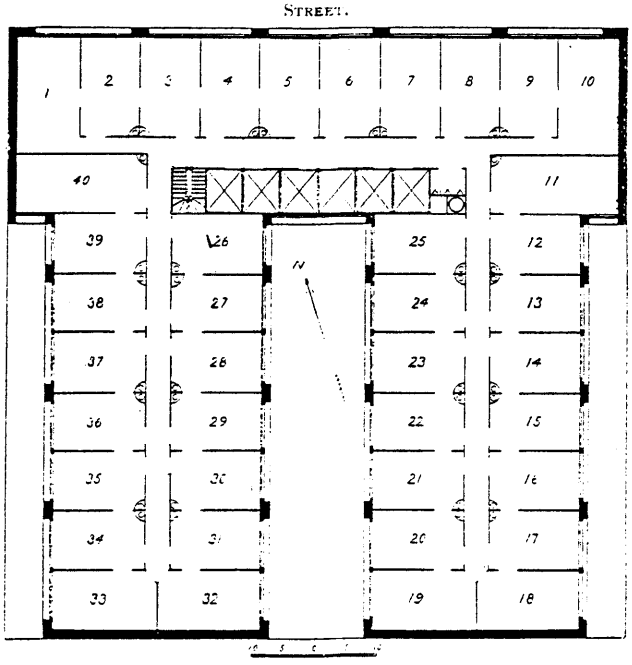
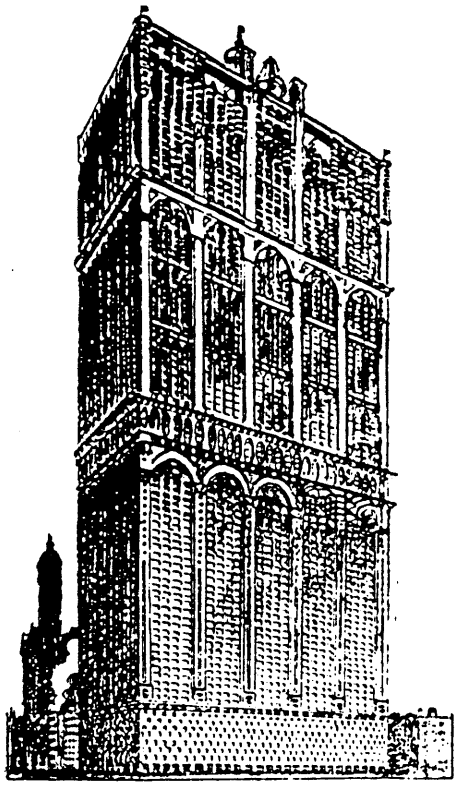
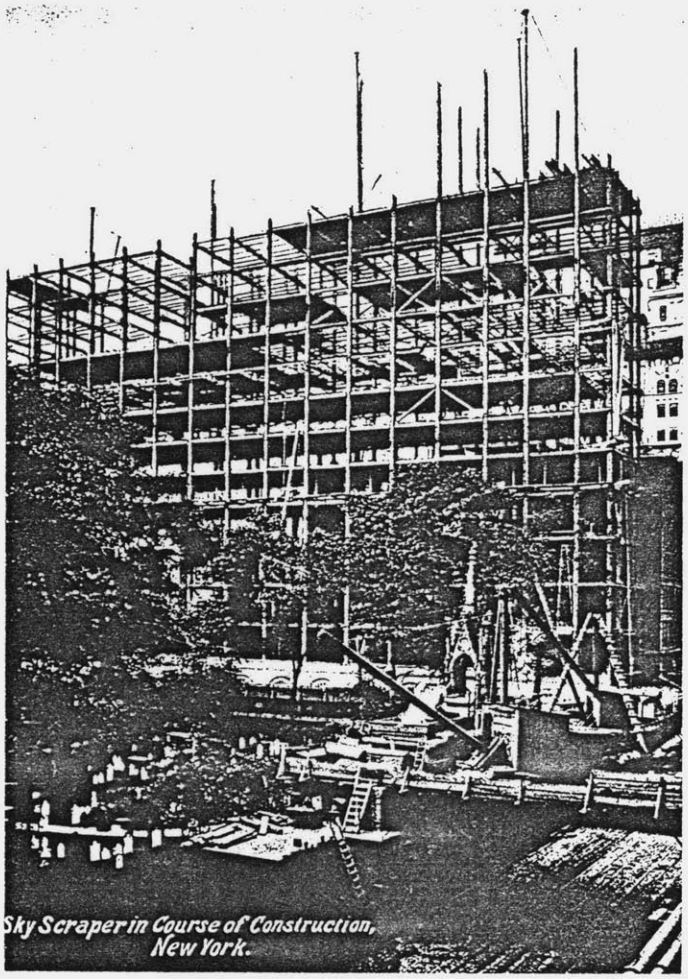


FIG. 6.—100 x 100 building in interior of block. Office unit 9.9 x 15.0.

53. George Hill, floor plans for office buildings on 100'x 100' sites



54. Theodore Starrett, proposed 100-story building, 1906

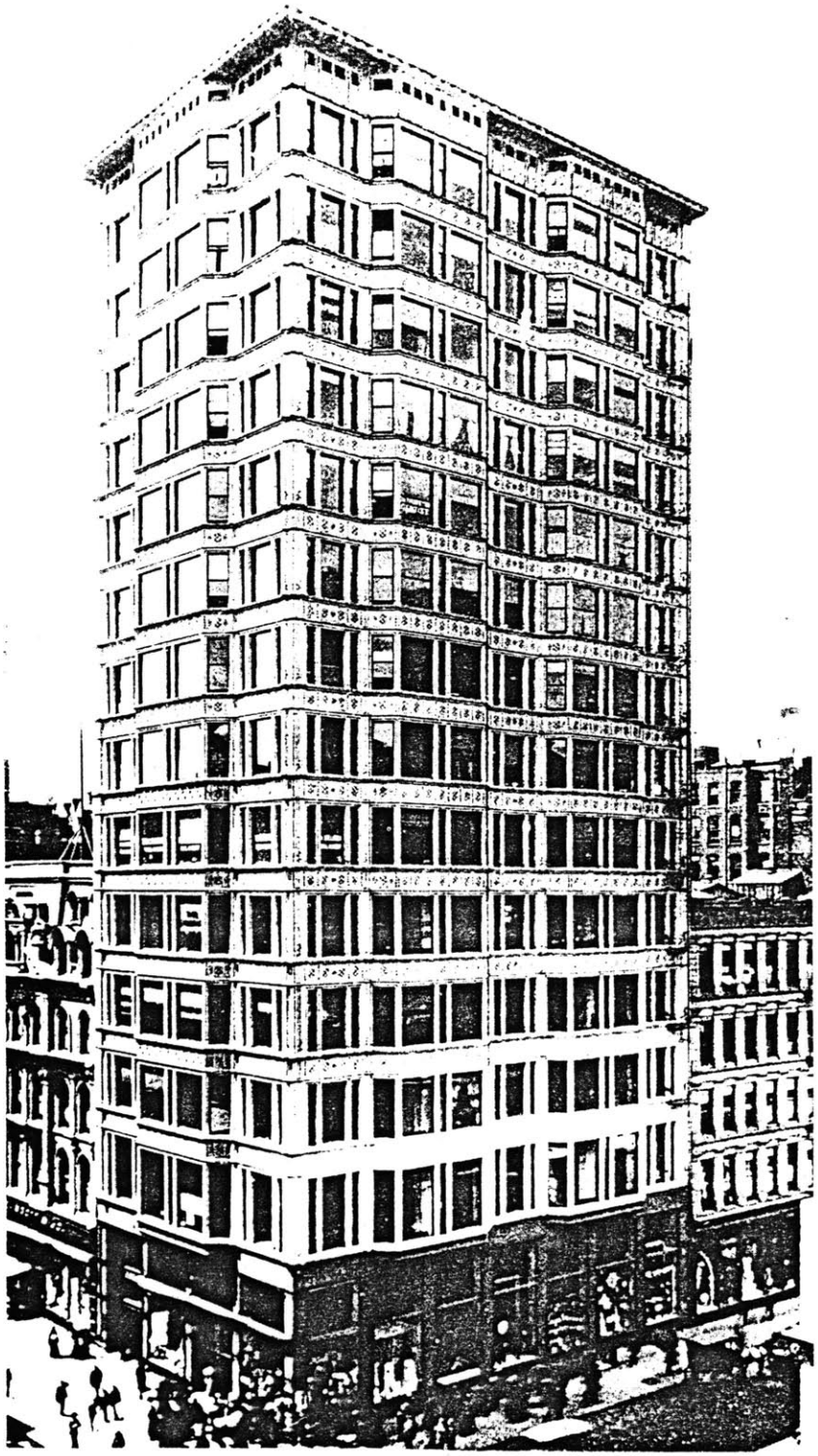


55. Skyscraper under construction, New York

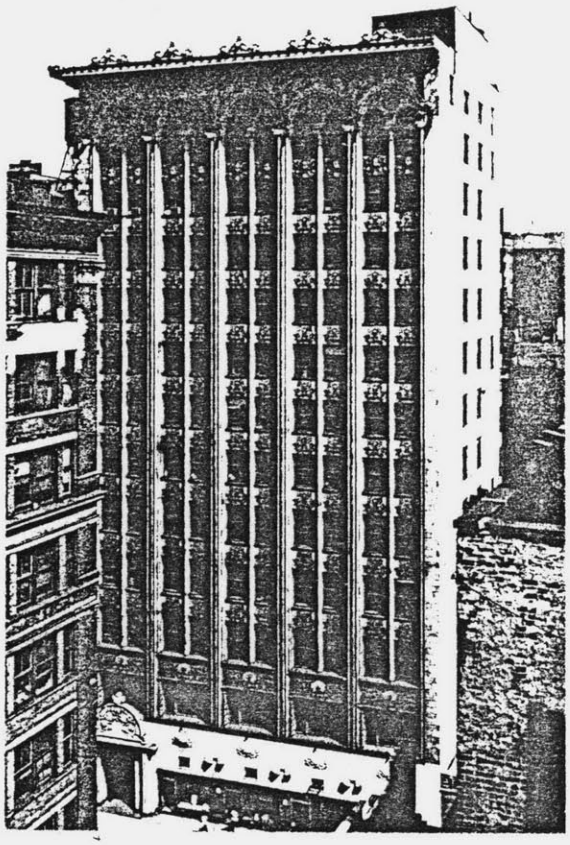
56. McKim, Mead & White, Knickerbocker Trust Building, New York, 1902-4

57. Adler & Sullivan, Guaranty Building, Chicago, 1894-95

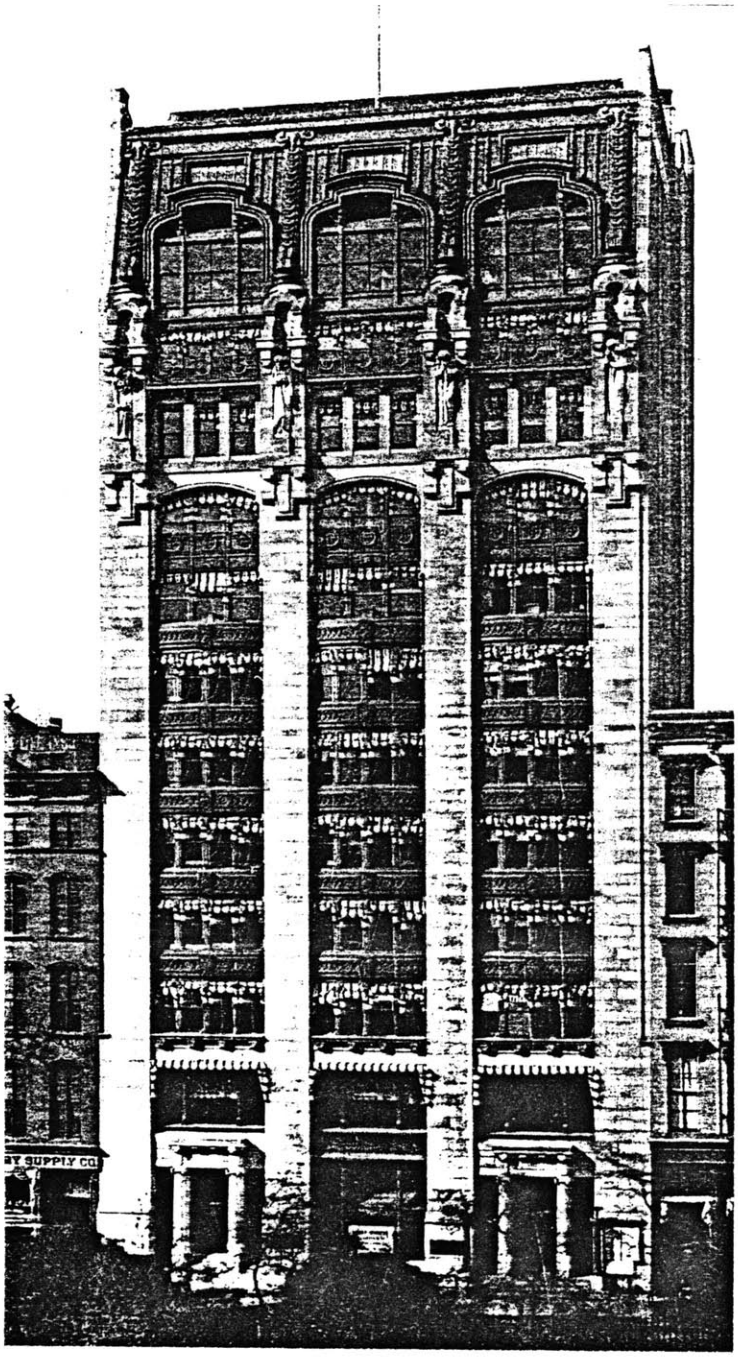
58. George B. Post, Union Trust Building, New York, 1889-90



59. D.H. Burnham & Company, Reliance Building, Chicago, 1894

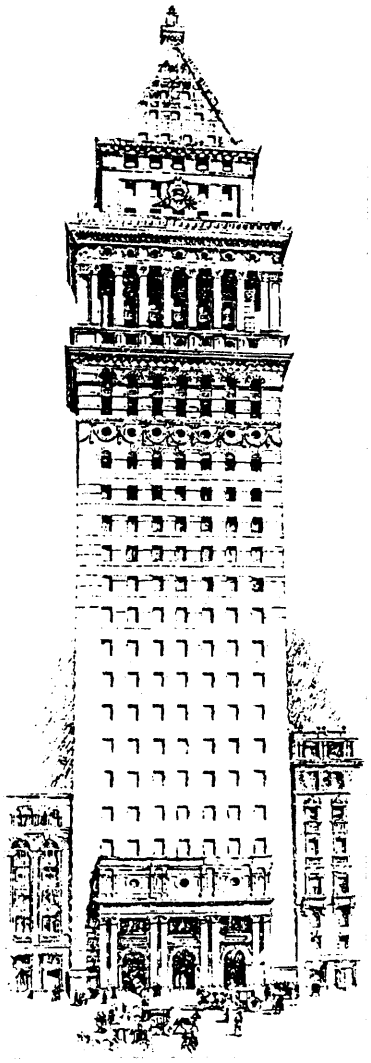


60. Louis Sullivan, Bayard (Condict) Building, New York, 1897-98

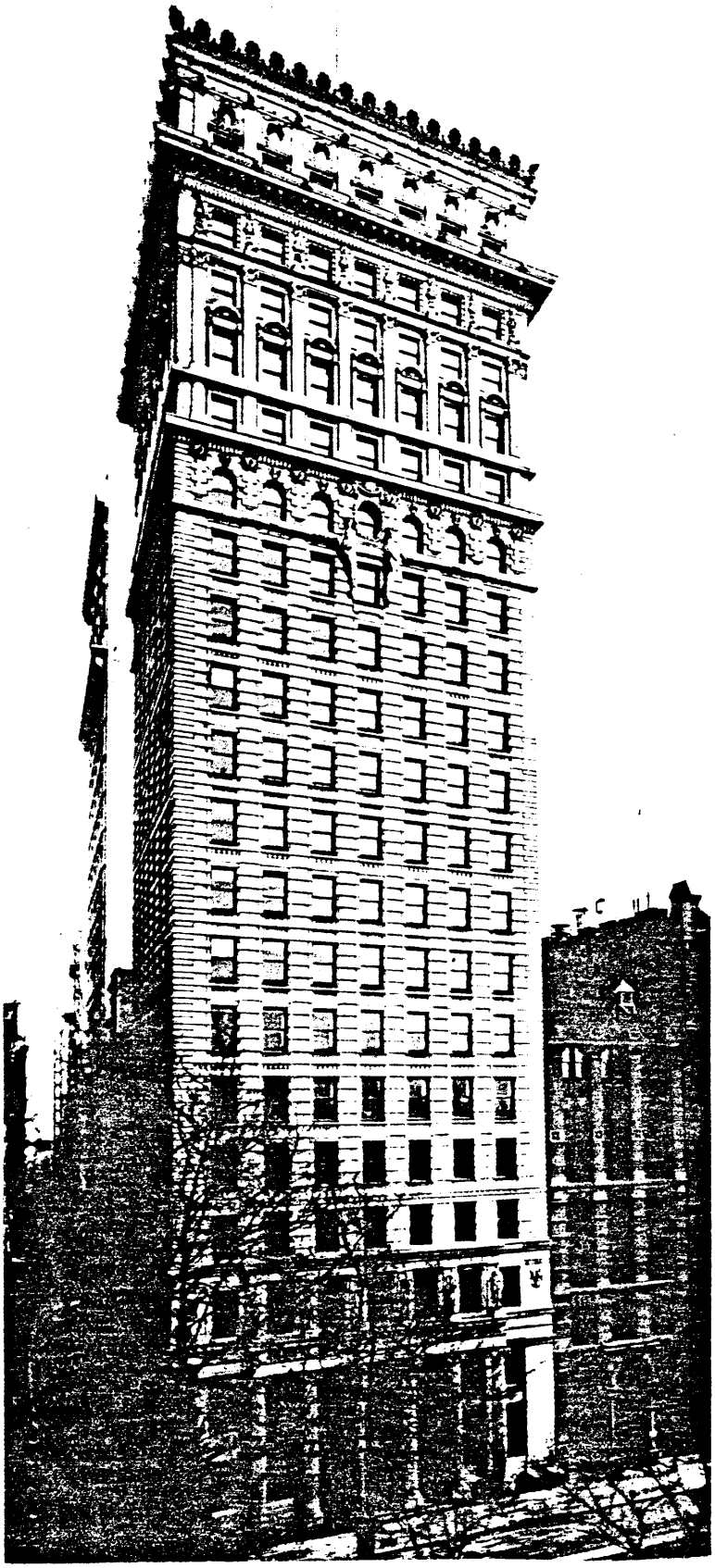


61. Robert D. Kohn, Evening Post Building, New York, 1906-7

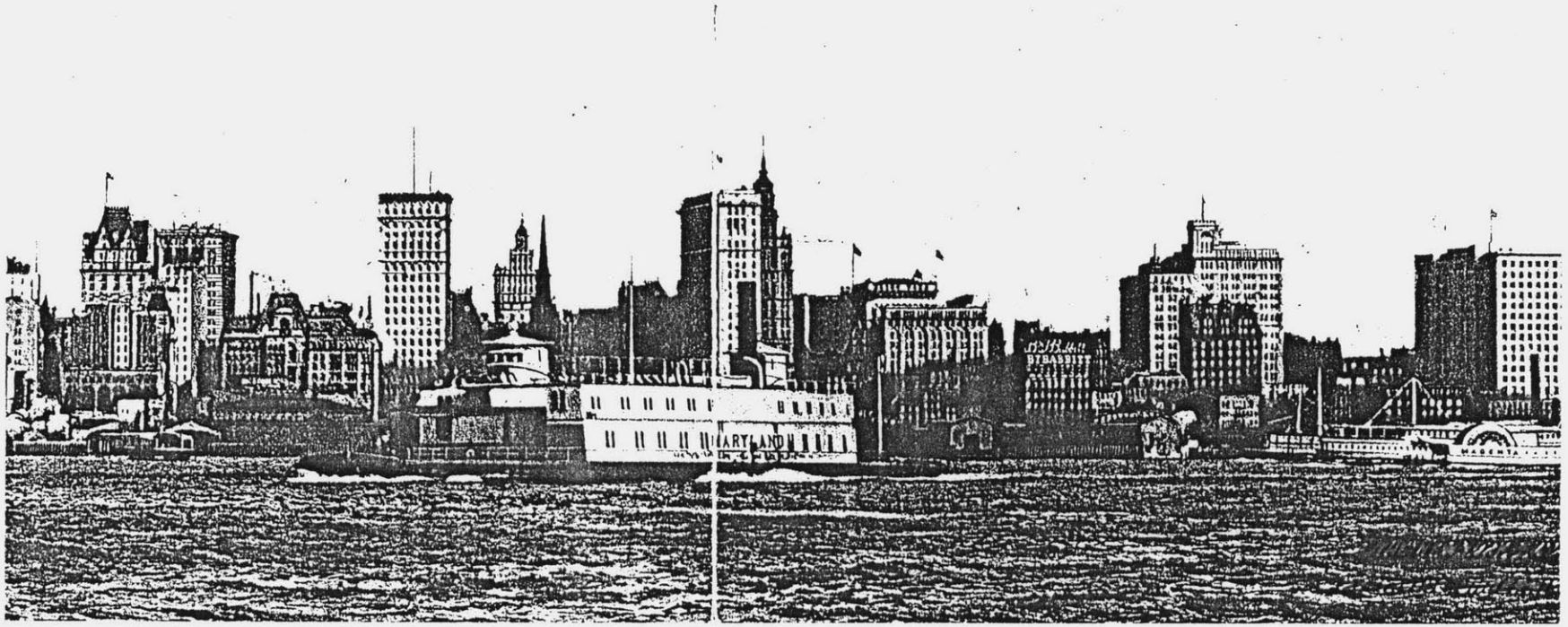
62. Carrère & Hastings, Blair Building, New York, 1902-3



63. Bruce Price, proposed Sun Building, New York, 1890

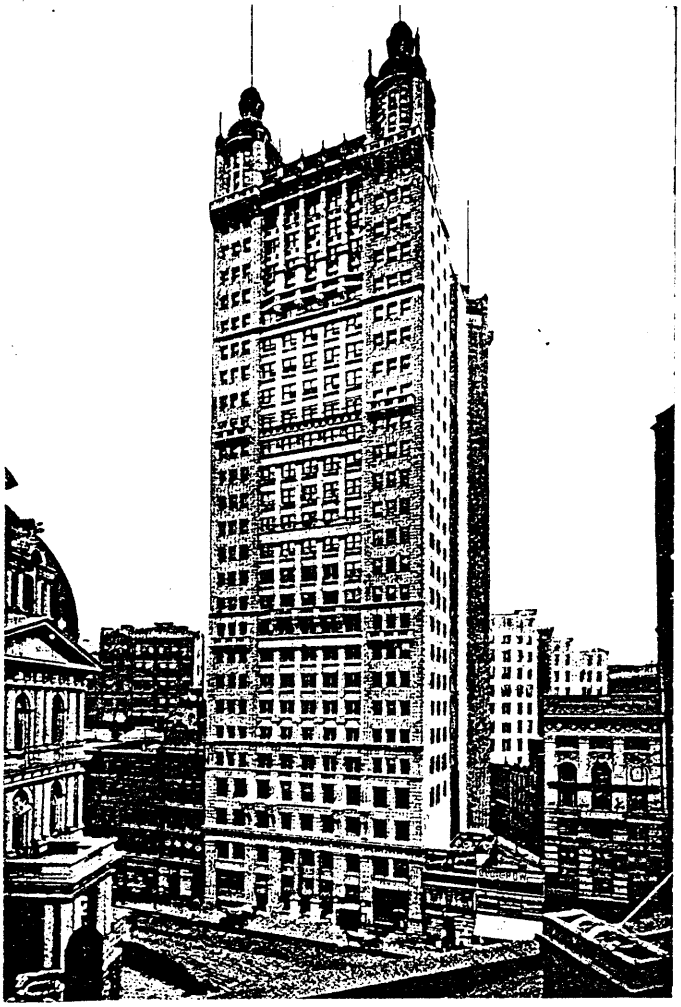


64. Bruce Price, American Surety Building, New York, 1894-95

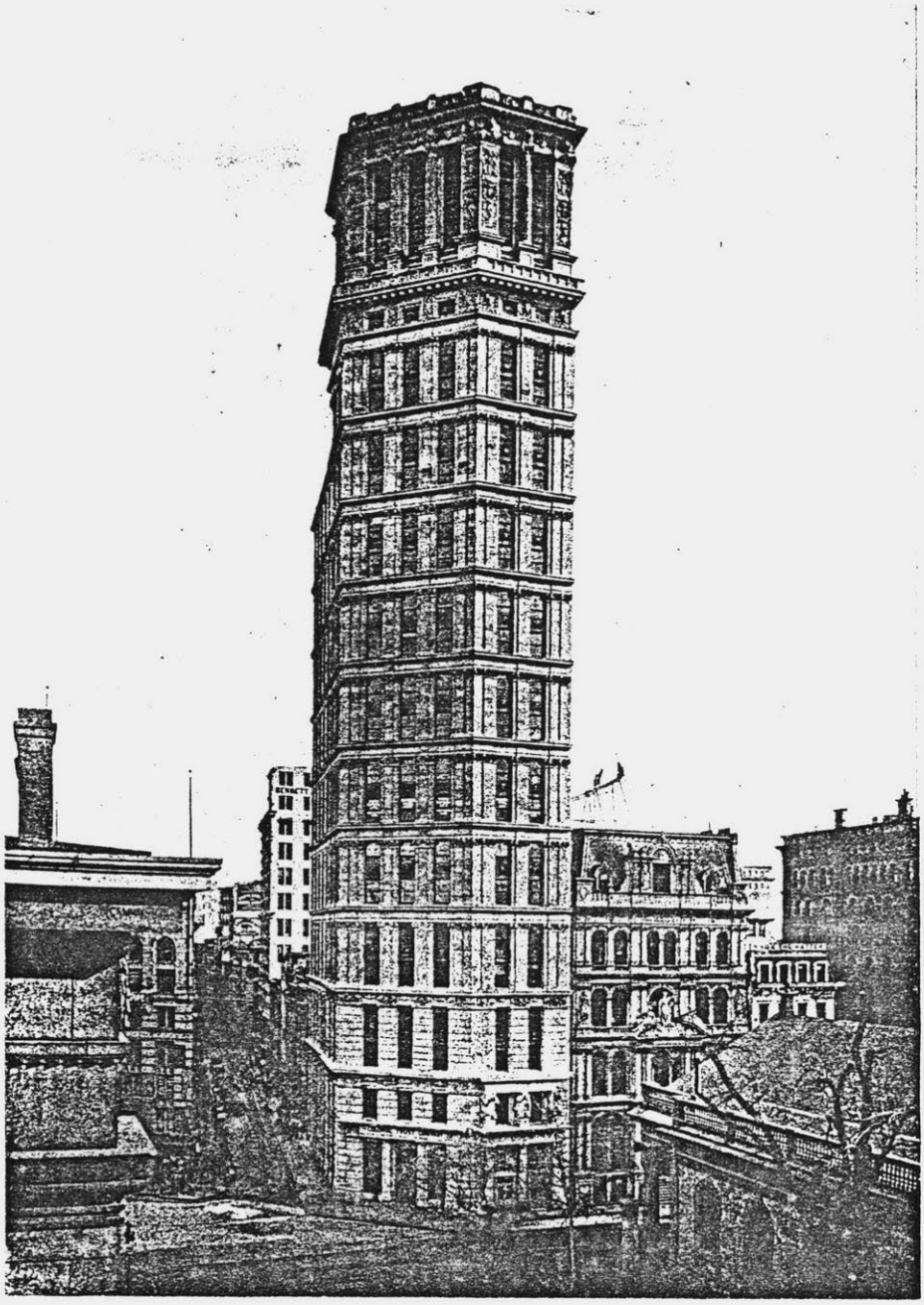


65. New York skyline from Brooklyn, 1900

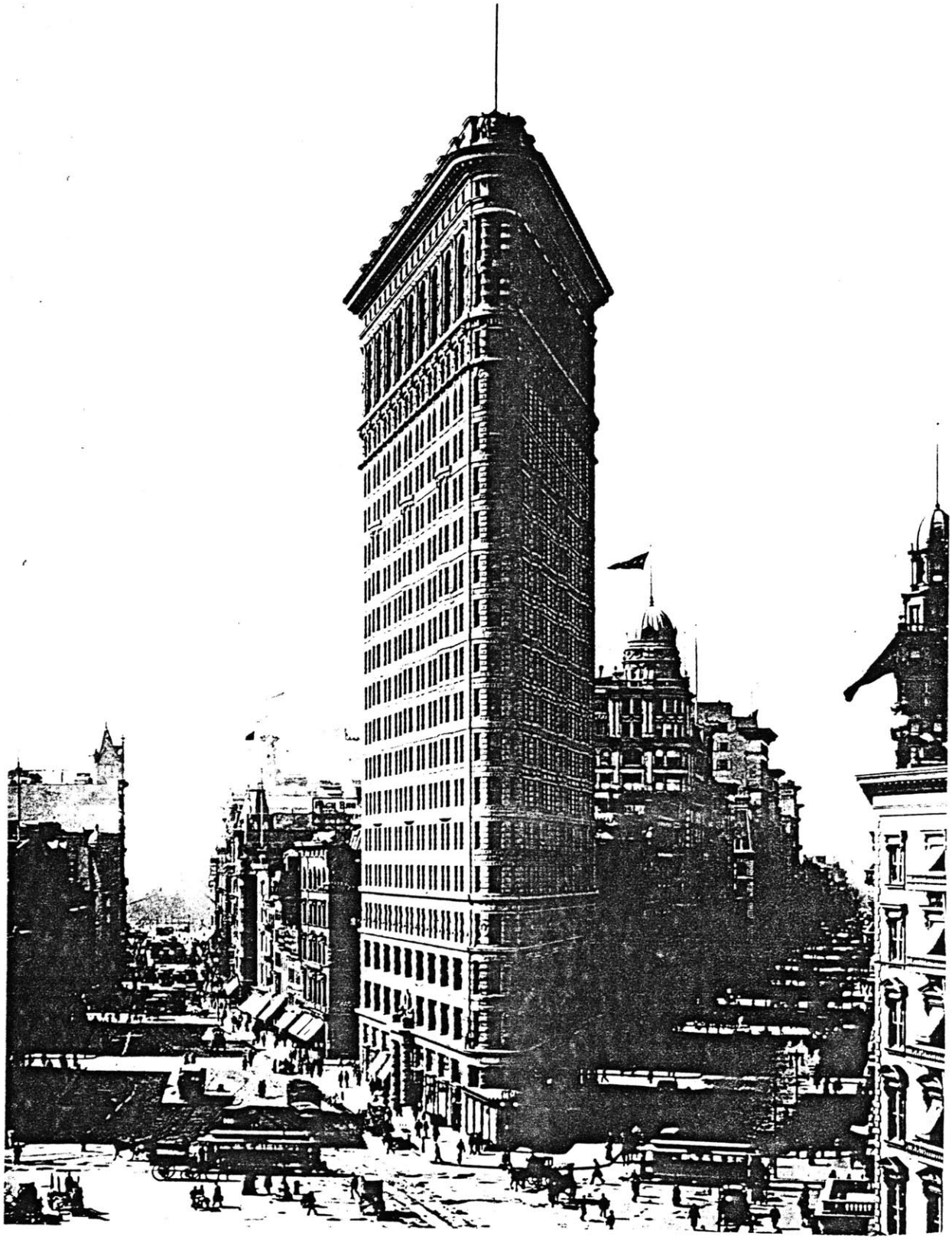
66. Cyrus L. W. Eidlitz, Washington Life Building, New York, 1897-98



67. R.H. Robertson, Park Row Building, New York, 1898-99

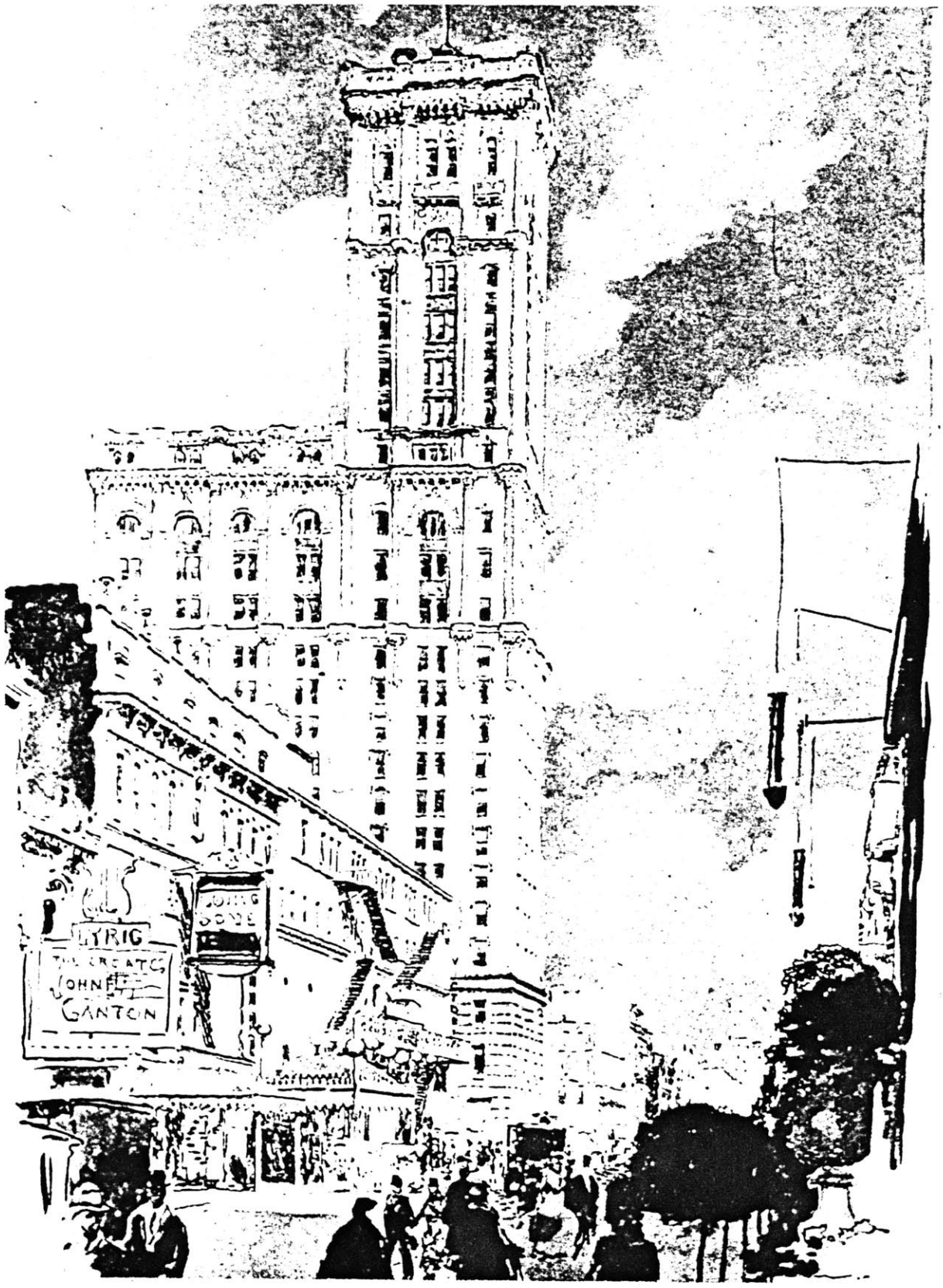


68. George B. Post, St. Paul Building, New York, 1896-98

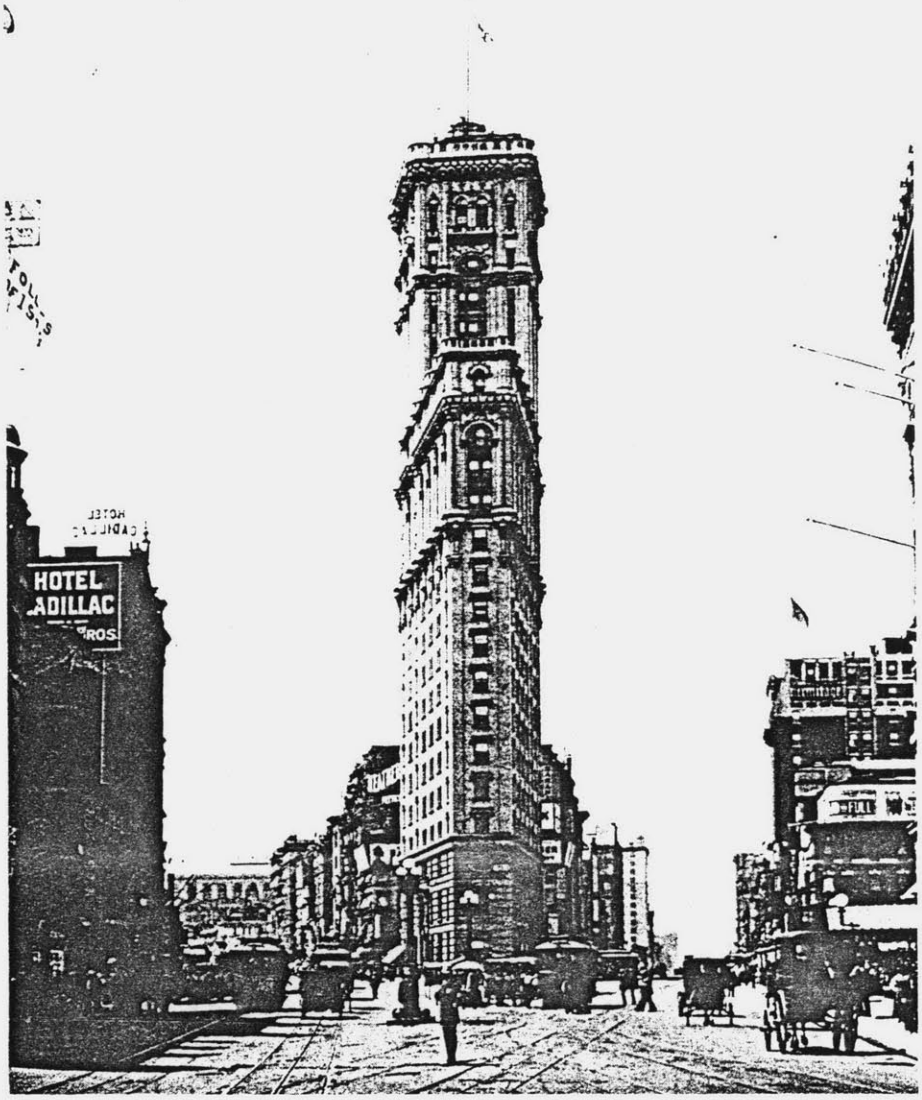


69. D.H. Burnham & Company, Fuller Building, New York, 1903

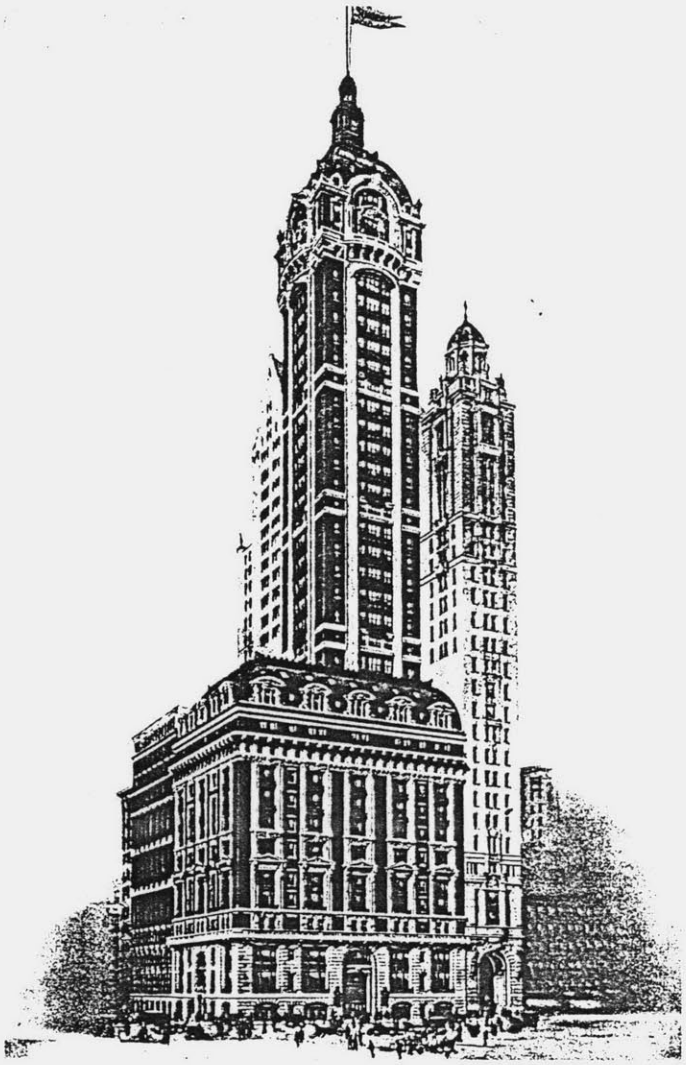
70. D.H. Burnham & Company, Fuller Building and Fifth Avenue



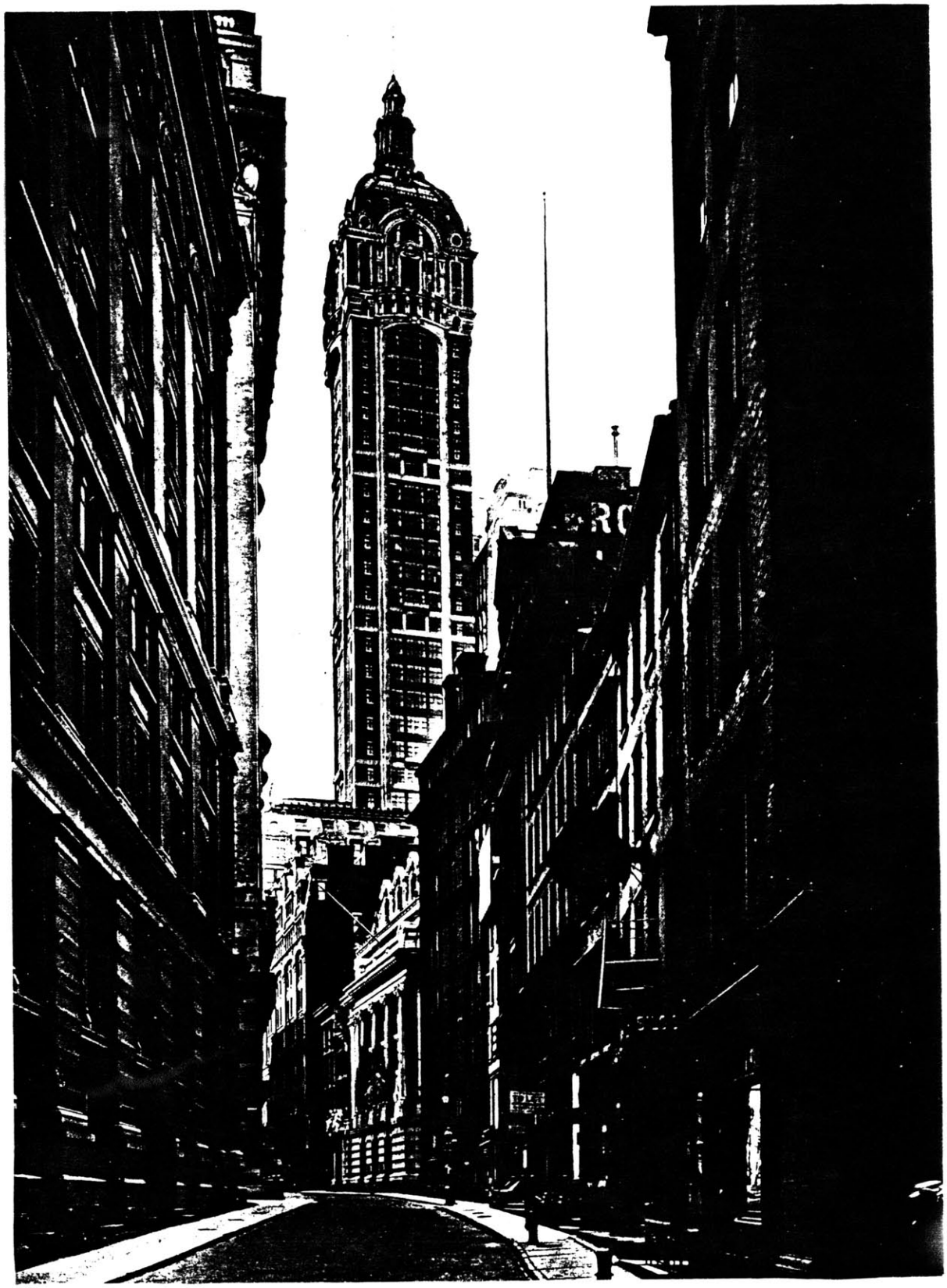
71. Cyrus L.W. Eidlitz, New York Times Building, New York, 1903-4



72. Cyrus L.W. Eidlitz, New York Times Building and Times Square



73. Ernest Flagg, Singer Building, New York, 1896-1908

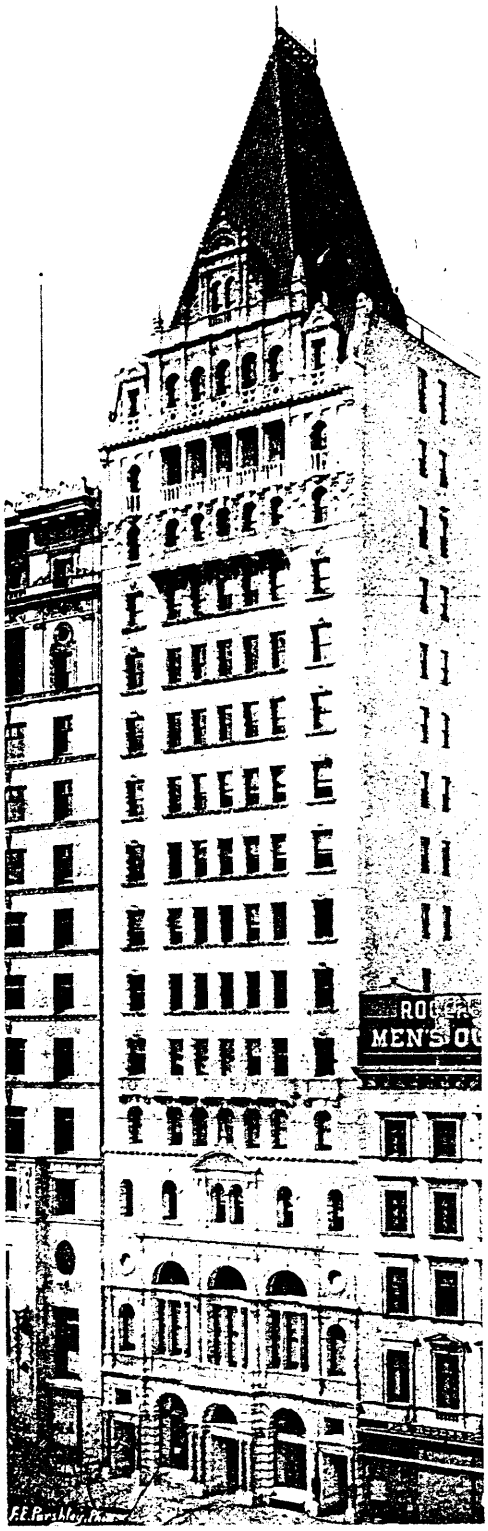


74. Ernest Flagg, Singer Tower from Liberty and William Streets, 1906-8

75. Napoleon LeBrun & Sons, Metropolitan Life Insurance Building, New York, 1890-1909

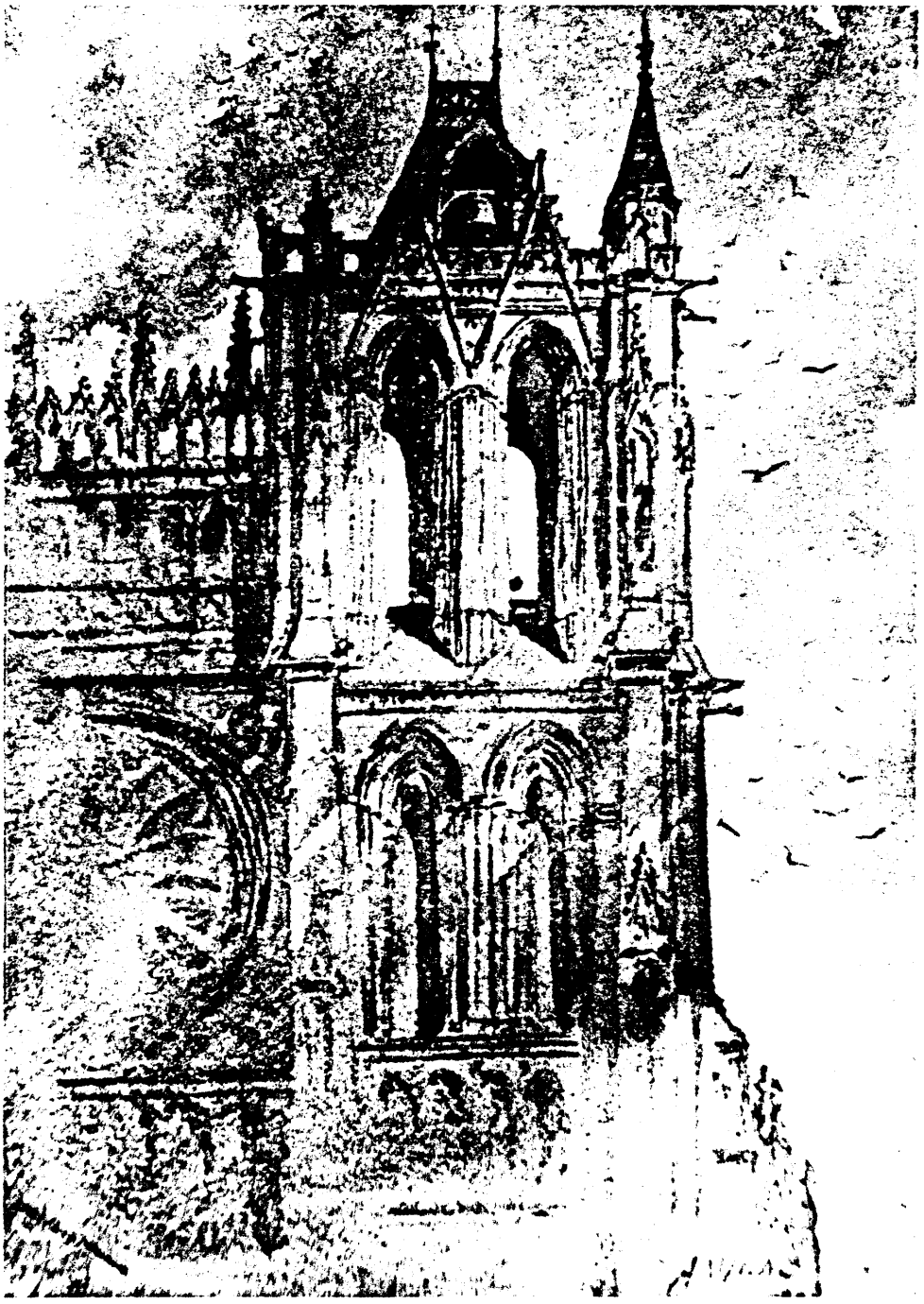
76. Napoleon LeBrun & Sons, Metropolitan Life Insurance Building and Madison Square

77. Charles Rollinson Lamb and the National Sculpture Society, Dewey Triumphal Arch and Colonnade, Madison Square, New York, 1899

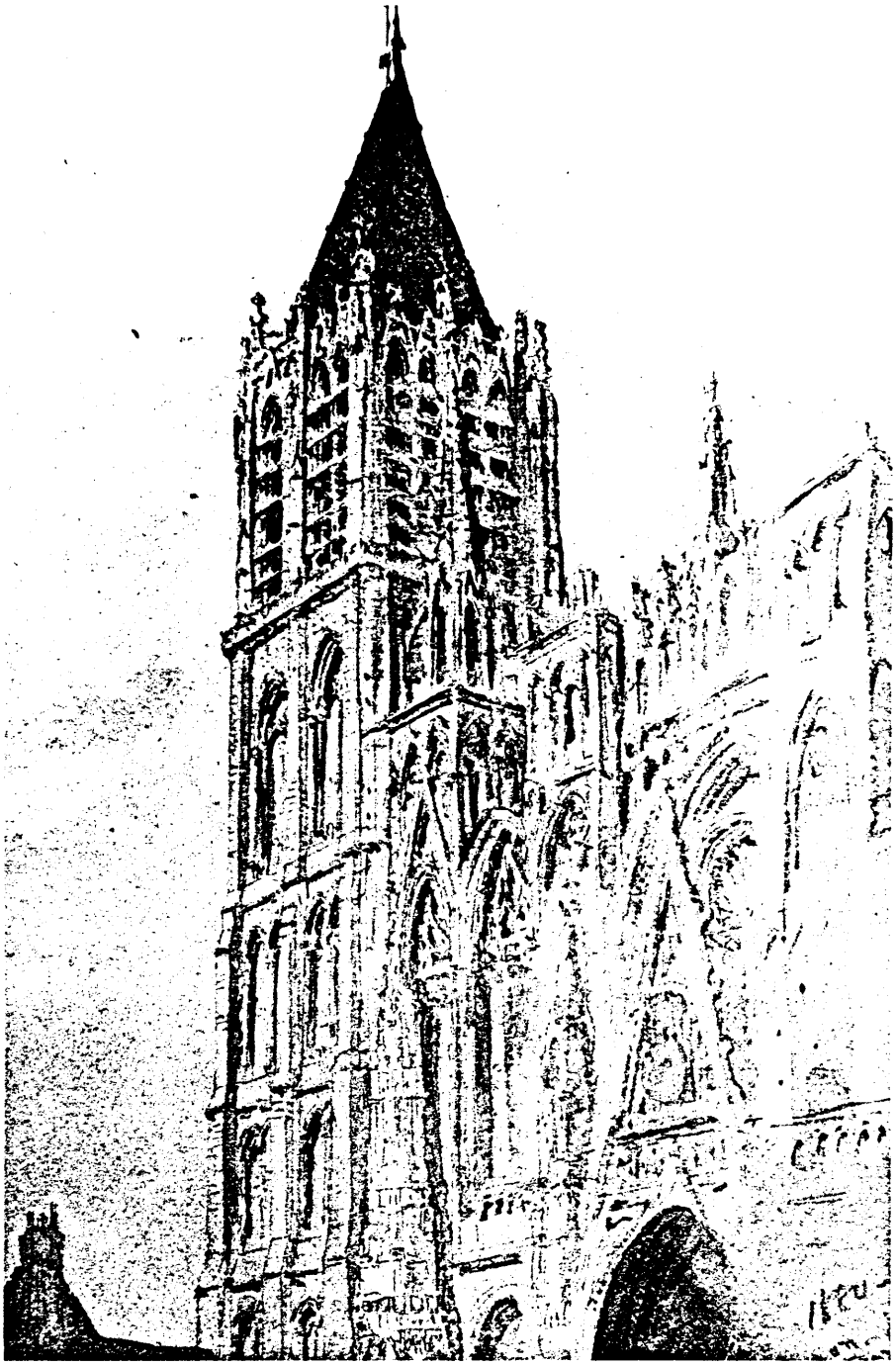


78. Napoleon LeBrun & Sons, Home Life Insurance Building, New York, 1893-94

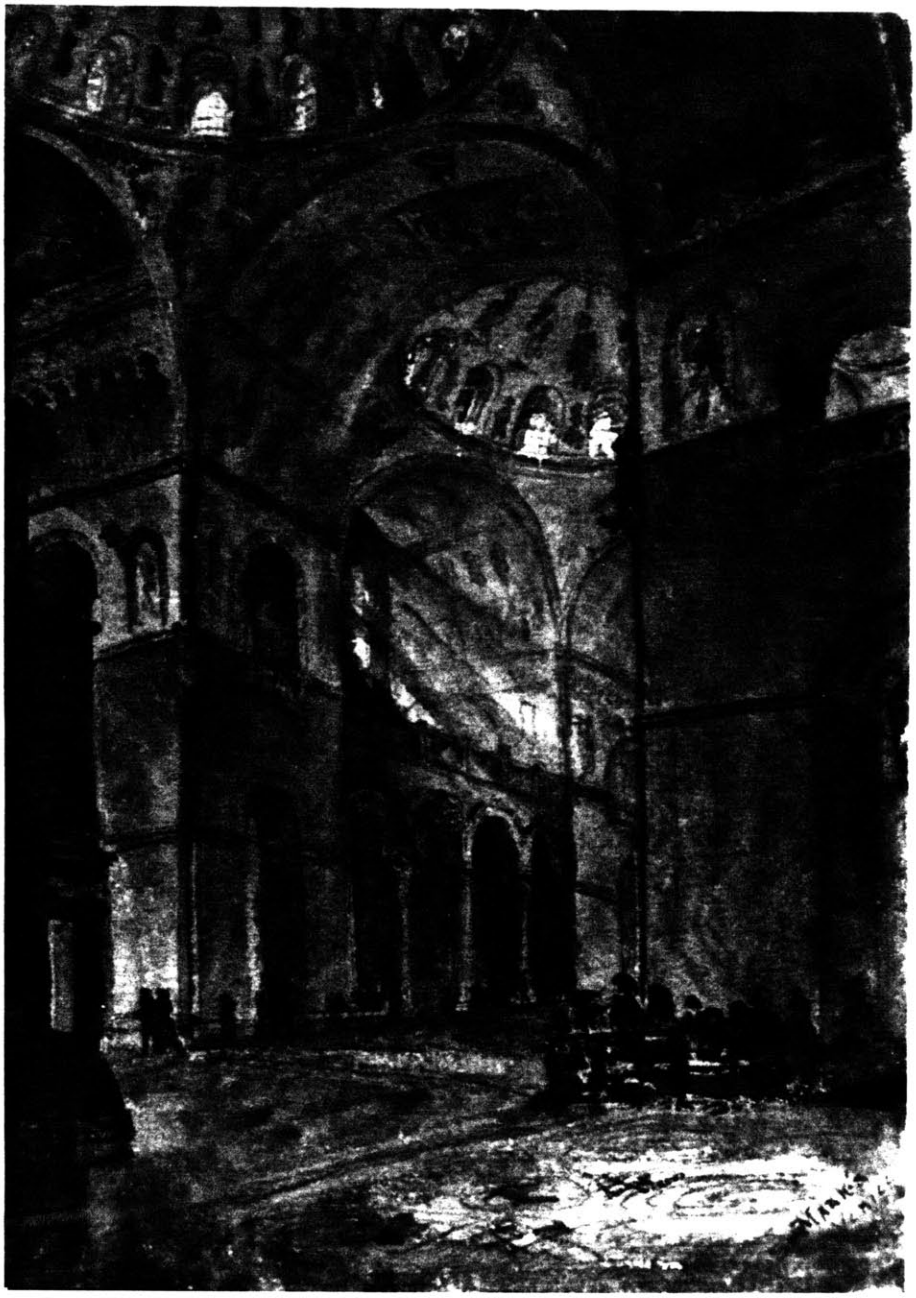
79. Signs on street facades, New York, c. 1900



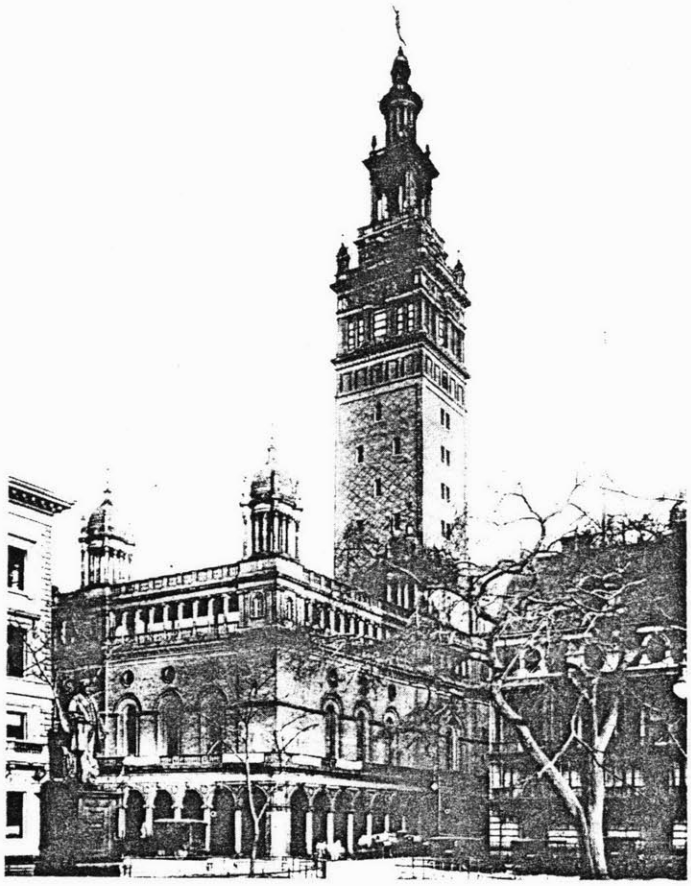
80. Cass Gilbert, "Amiens," 1880



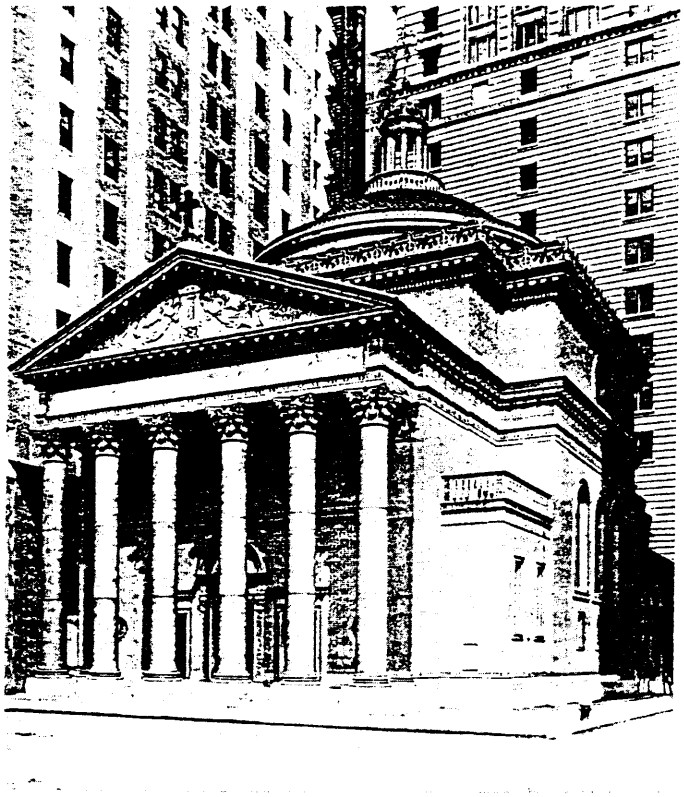
81. Cass Gilbert, "Rouen, France," 1880



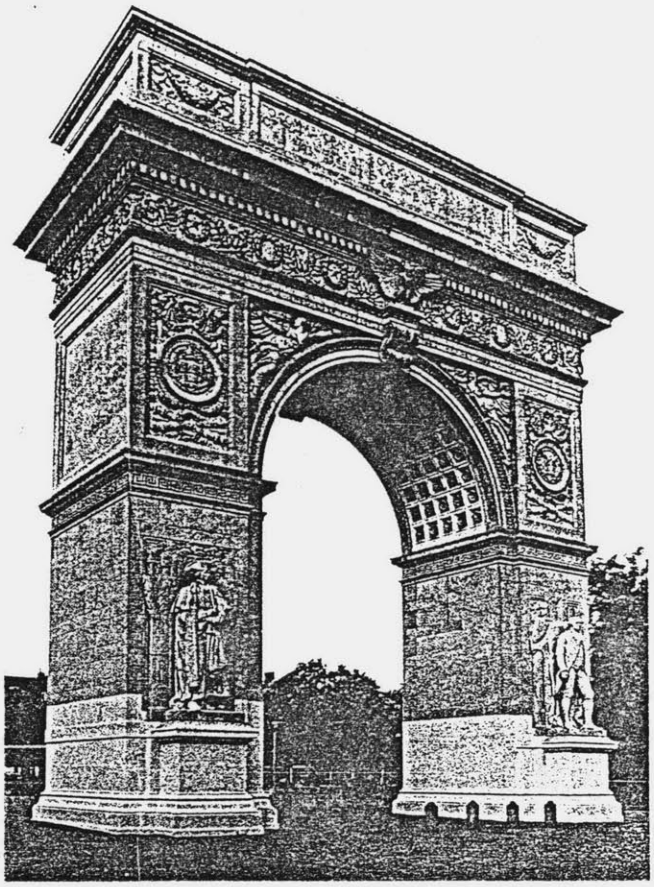
82. Cass Gilbert, "St. Mark's, Venice"



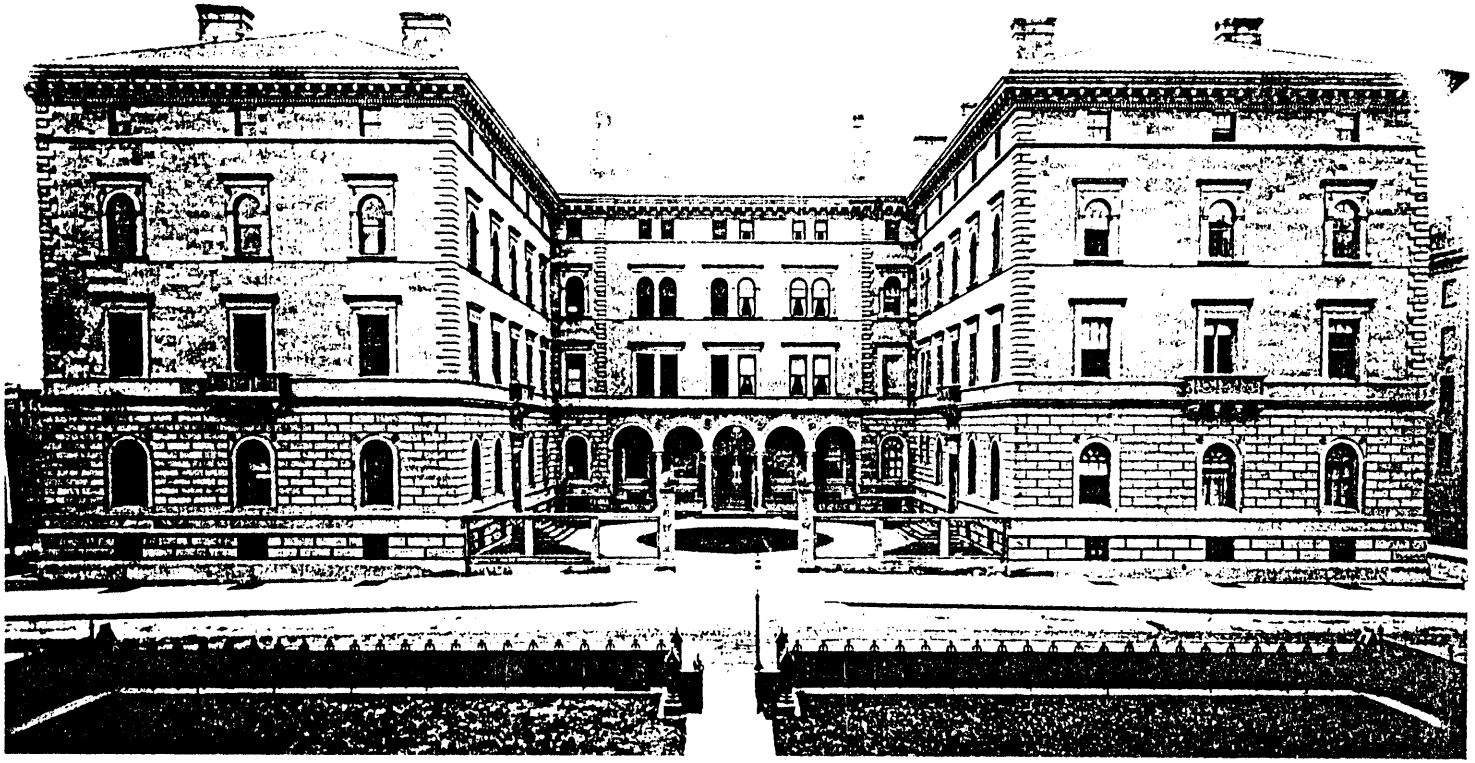
83. McKim, Mead & White, Madison Square Garden, New York, 1887-91



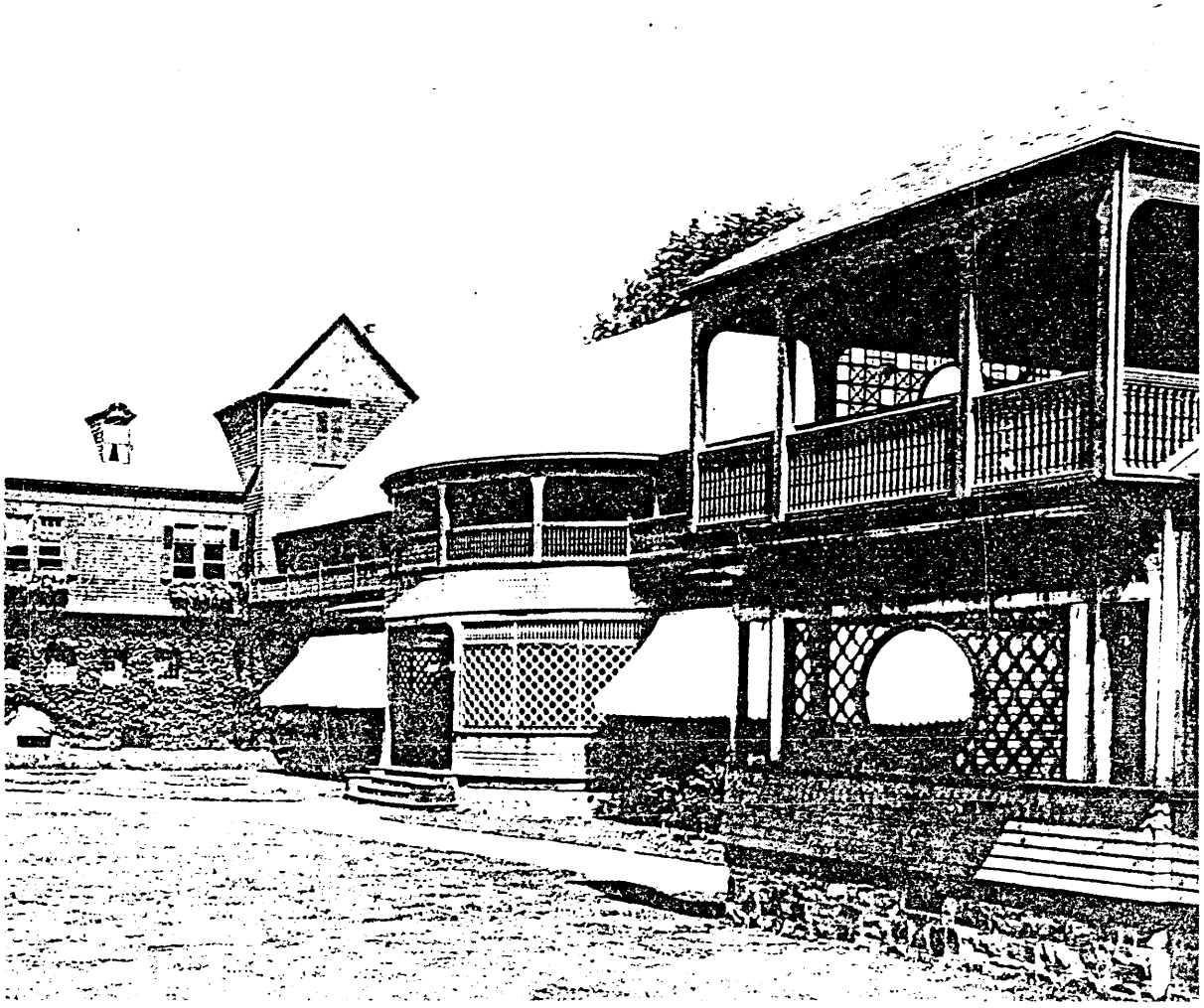
84. McKim, Mead & White, Madison Square Presbyterian Church, New York, 1903-6



85. McKim, Mead & White, Washington Memorial Arch, New York, 1889-92

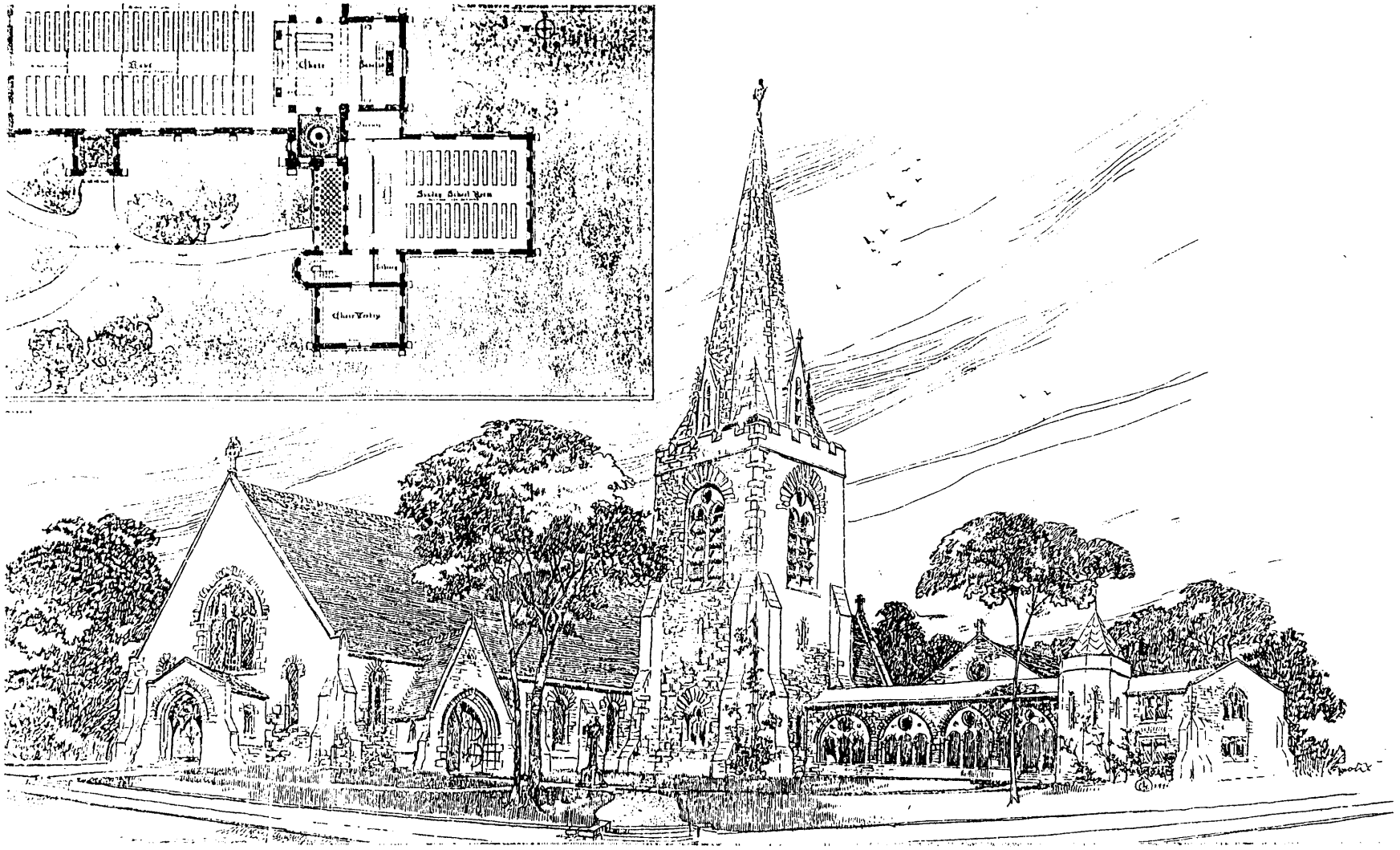


86. McKim, Mead & White, Henry Villard Houses, New York, 1882-86



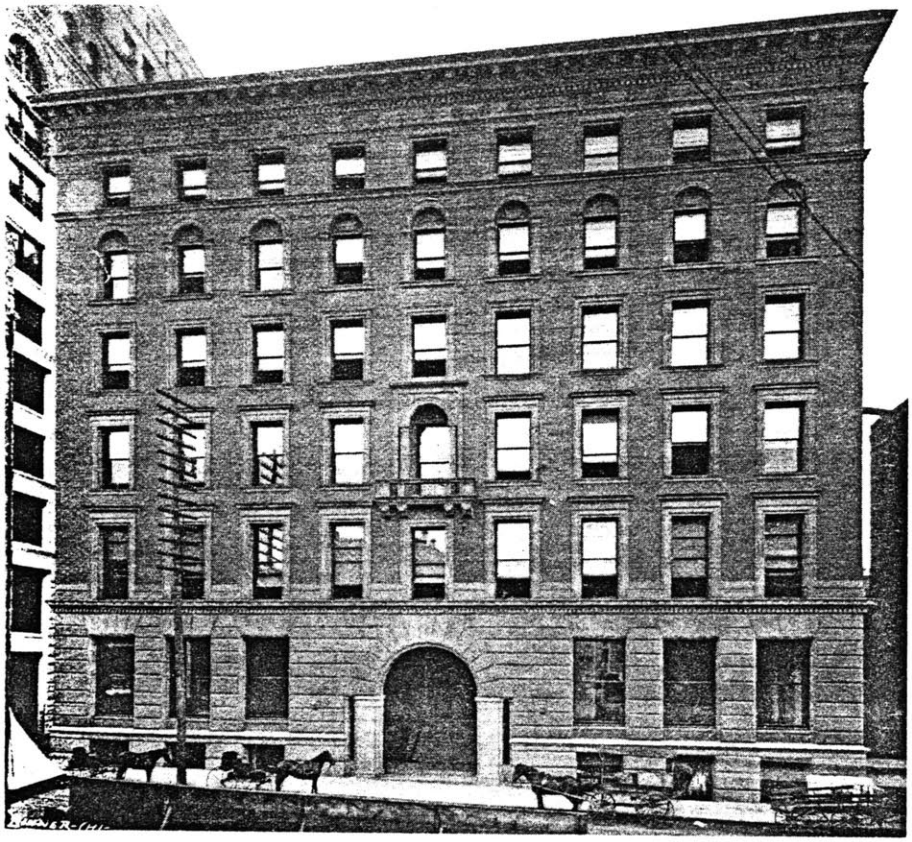
87. McKim, Mead & White, Newport Casino, 1879-81

88. McKim, Mead & White, Ross R. Winans House, Baltimore, 1882-83

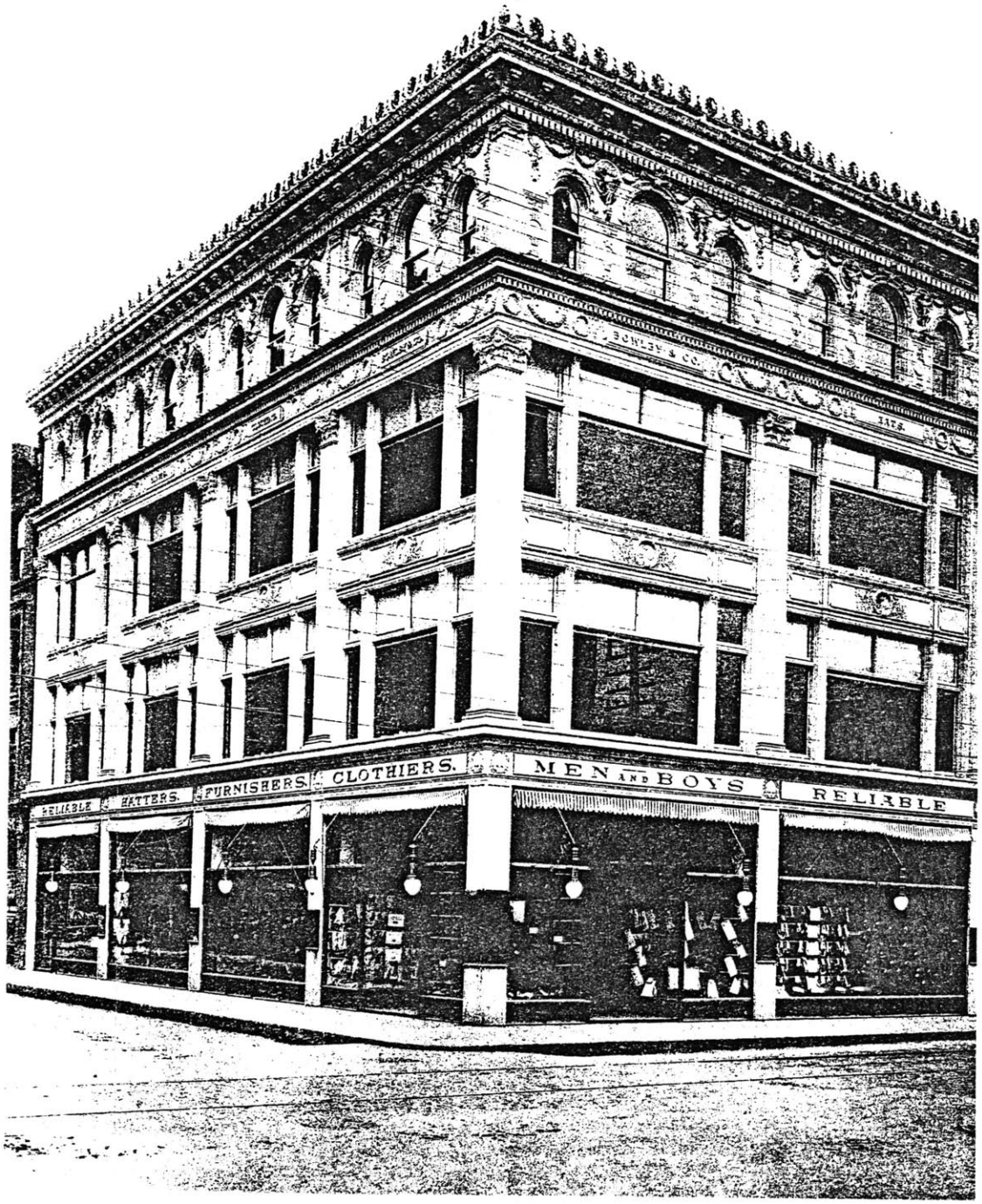


89. Cass Gilbert, St. Clement's Episcopal Church, St. Paul, 1894-95

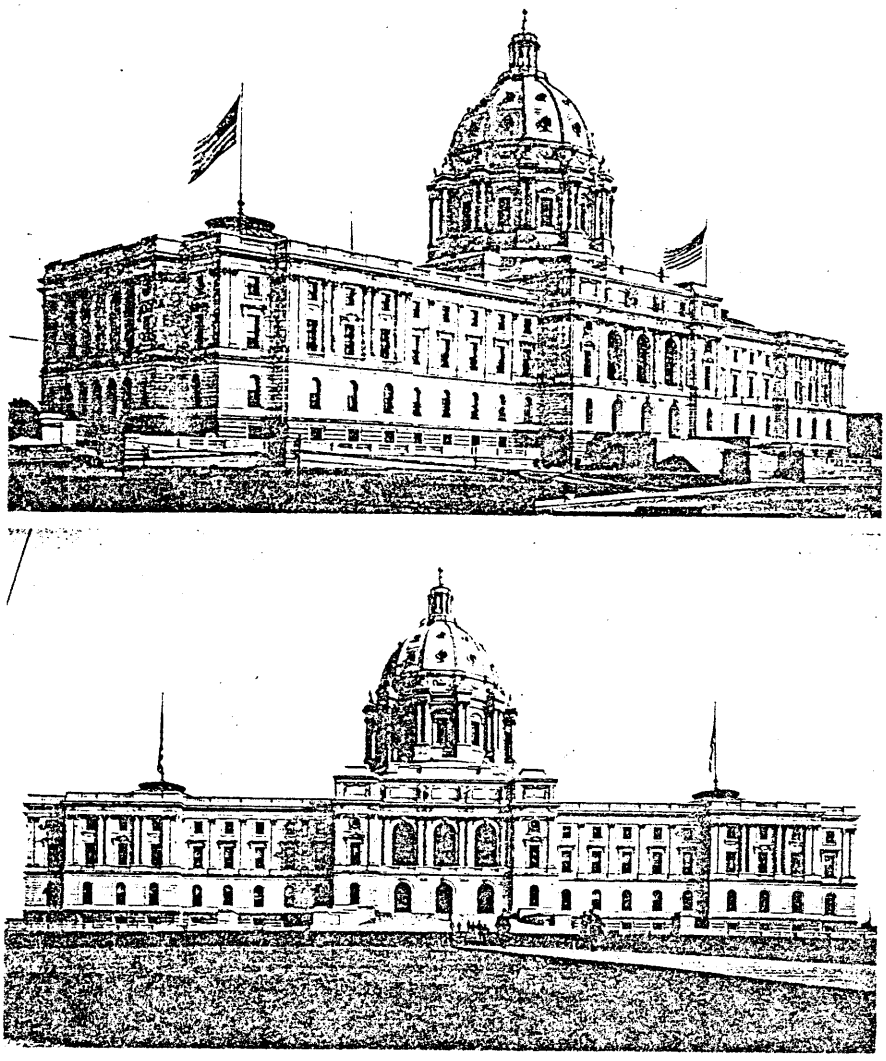
90. Henry Hobson Richardson, Grace Episcopal Church, Medford, Massachusetts, 1867-69



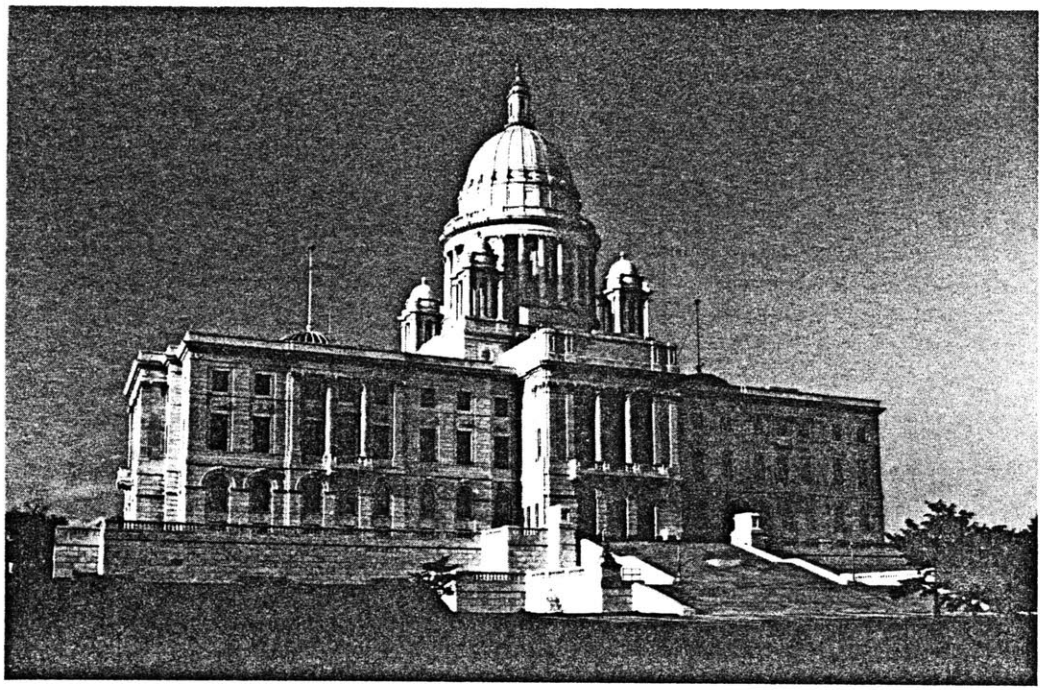
91. Gilbert & Taylor, Endicott Building, St. Paul, 1888-89



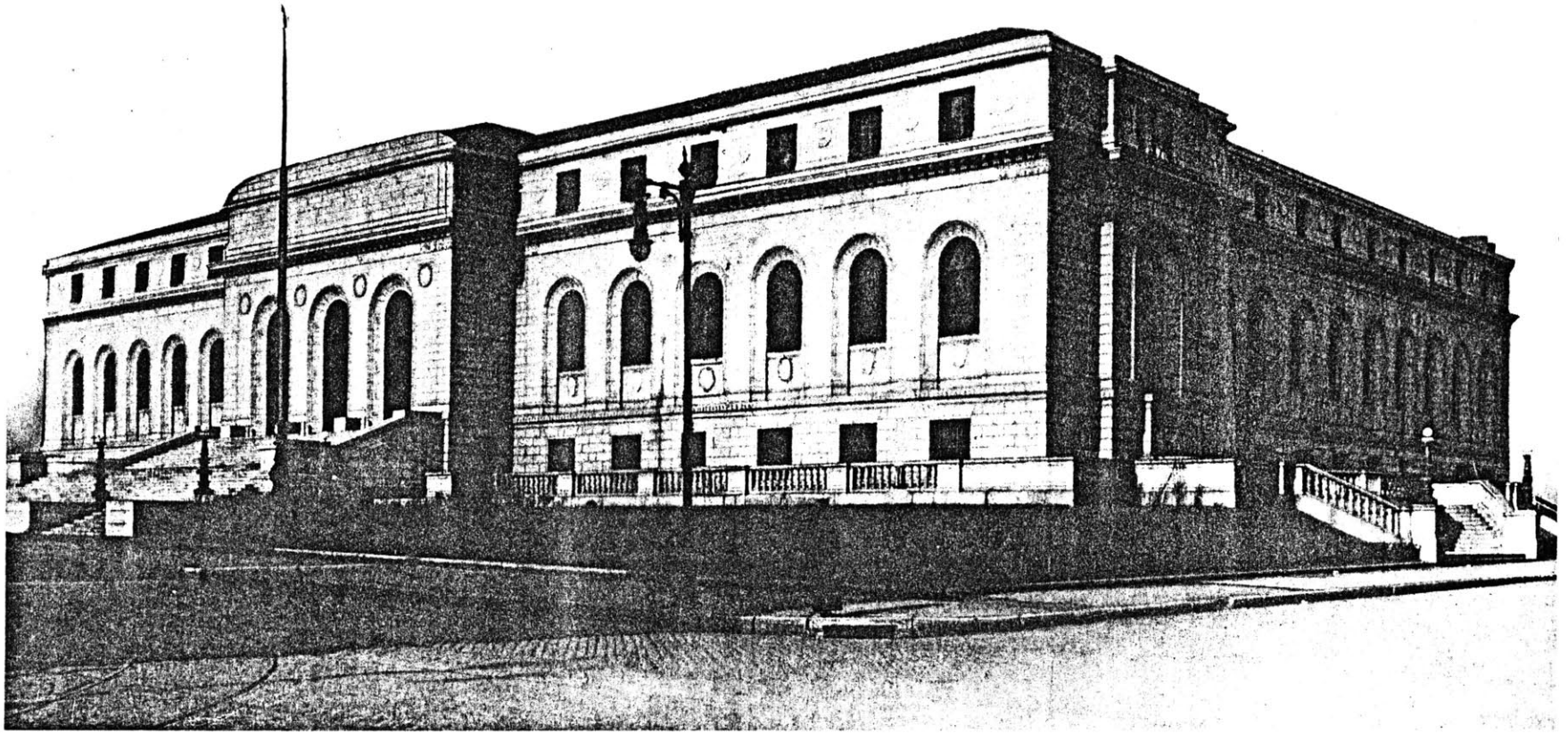
92. Cass Gilbert, E.D. Chamberlain Building, St. Paul, 1895



93. Cass Gilbert, Minnesota State Capitol, St. Paul, 1895-1905

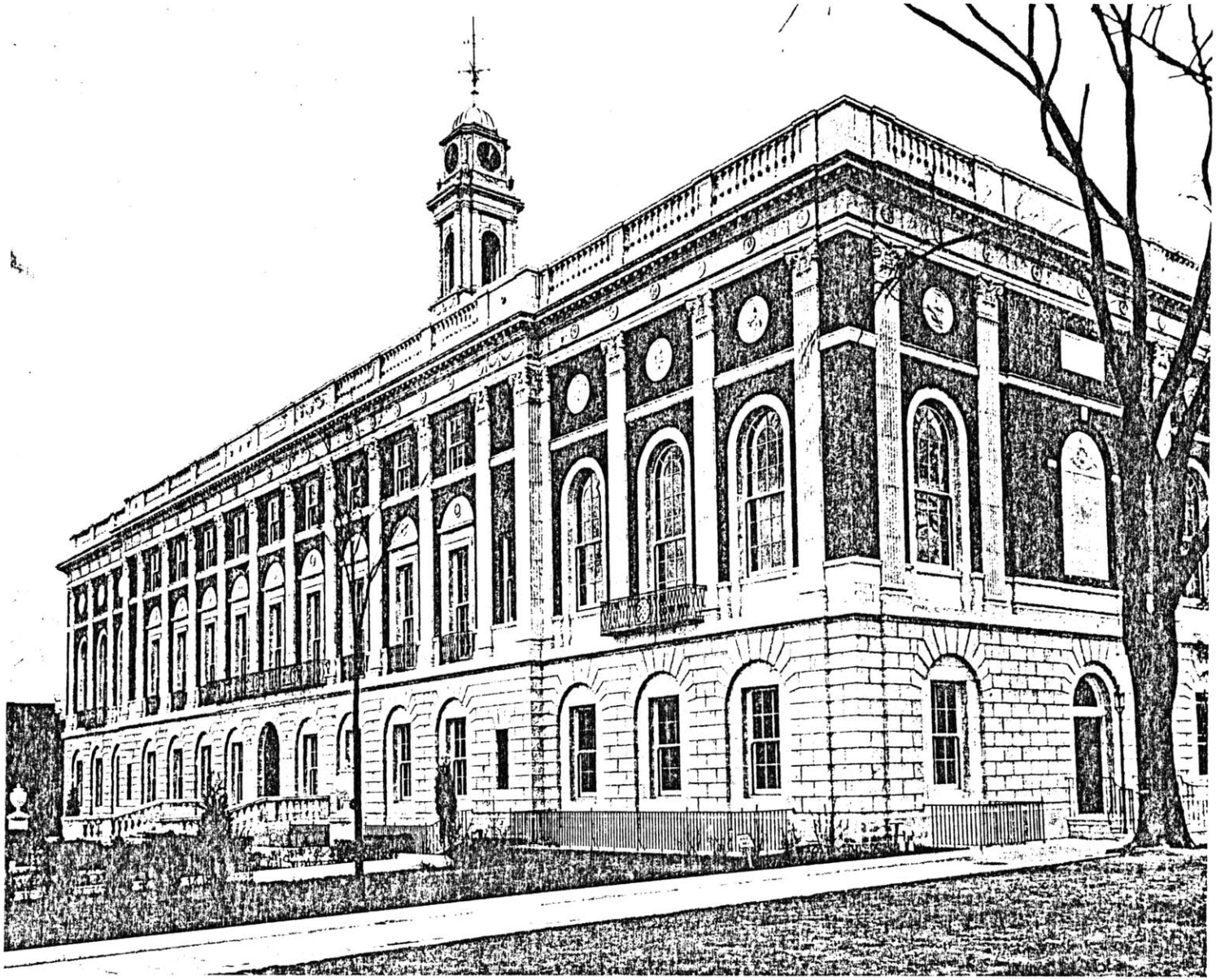


94. McKim, Mead & White, Rhode Island State Capitol, Providence, 1891-1903

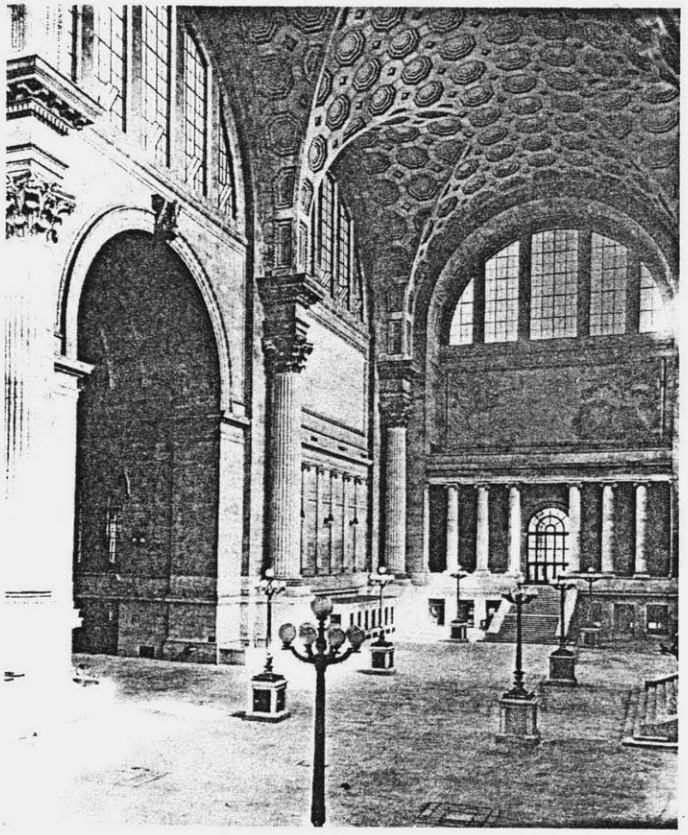


95. Cass Gilbert, St. Louis Public Library, 1906-8

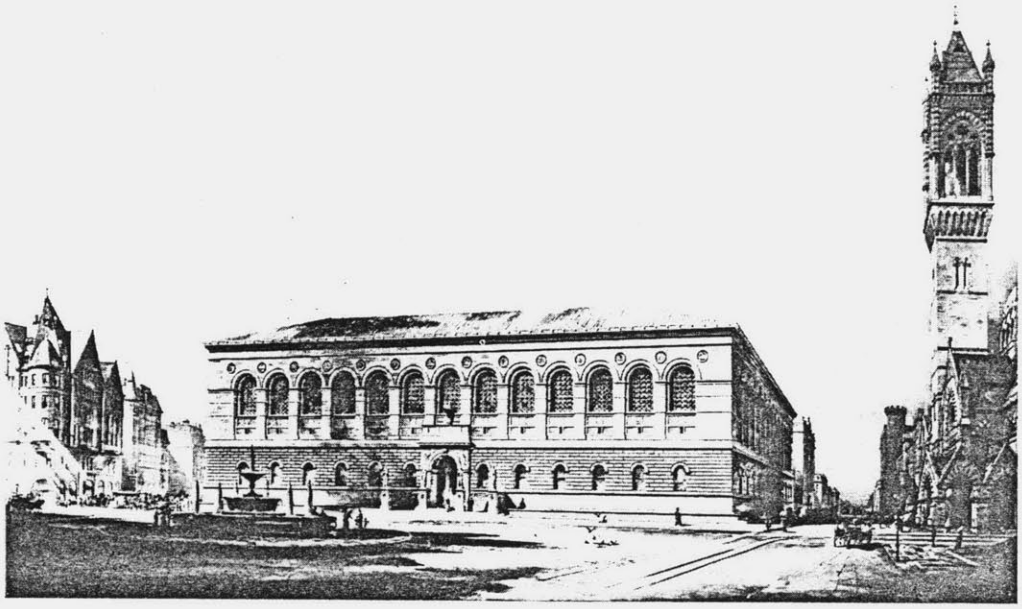
96. Cass Gilbert, Union Theological Seminary, competition entry, 1907



97. Cass Gilbert, City Hall, Waterbury, Connecticut, 1913-15

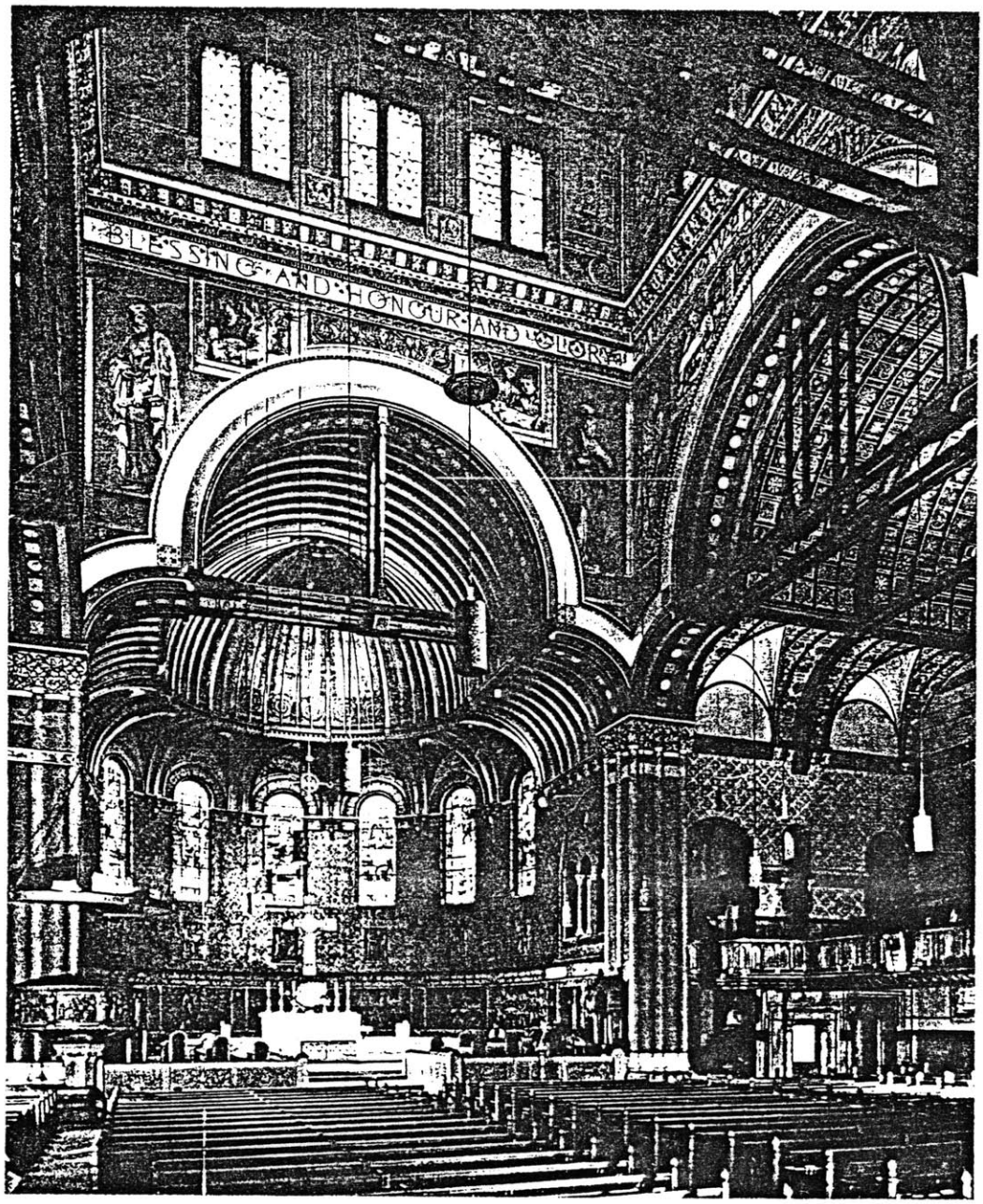


98. McKim, Mead & White, Pennsylvania Station, waiting room, New York, 1902-11

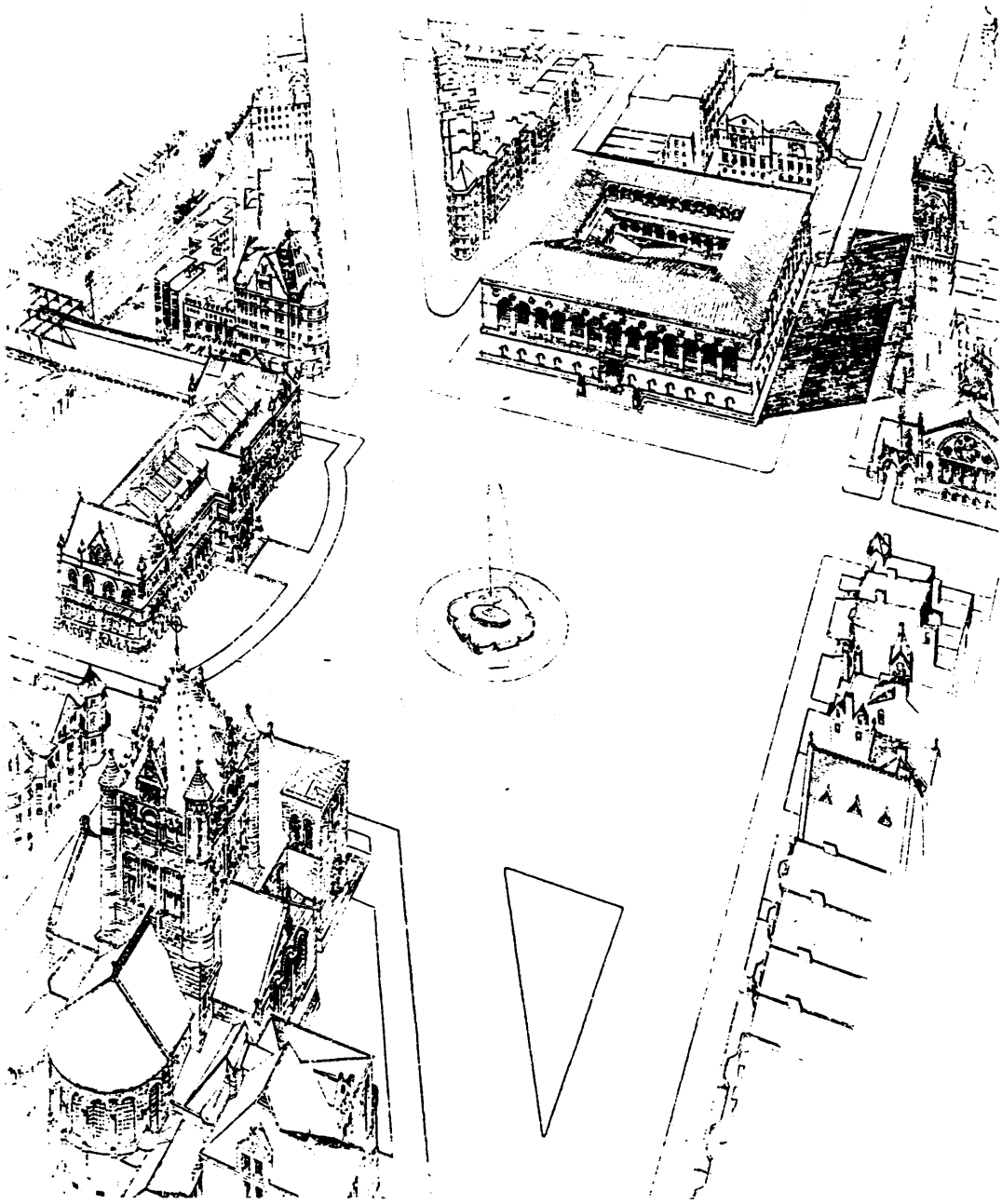


99. McKim, Mead & White, Boston Public Library, 1887-95

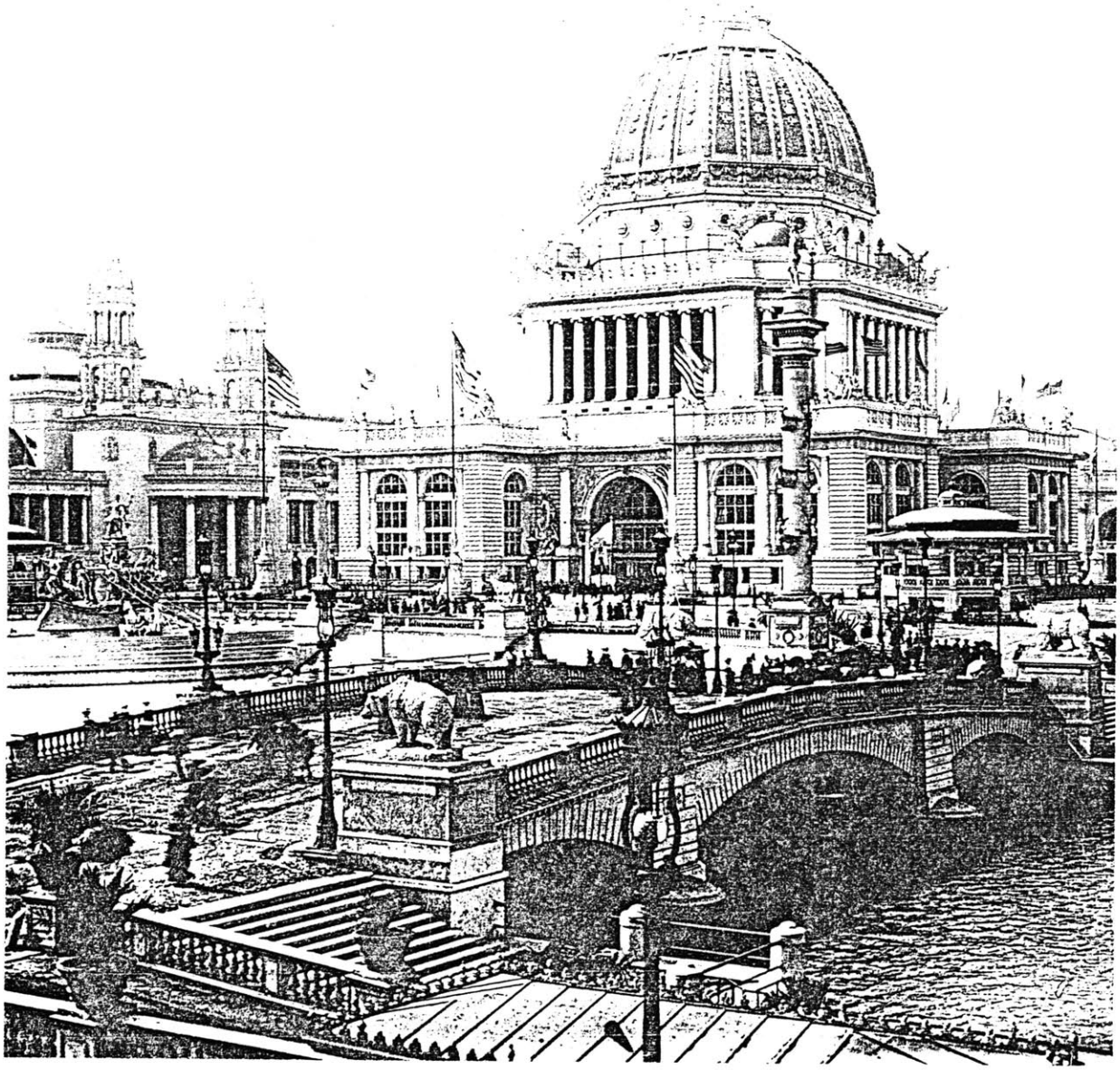
100. McKim, Mead & White, Columbia University, 1892-1901



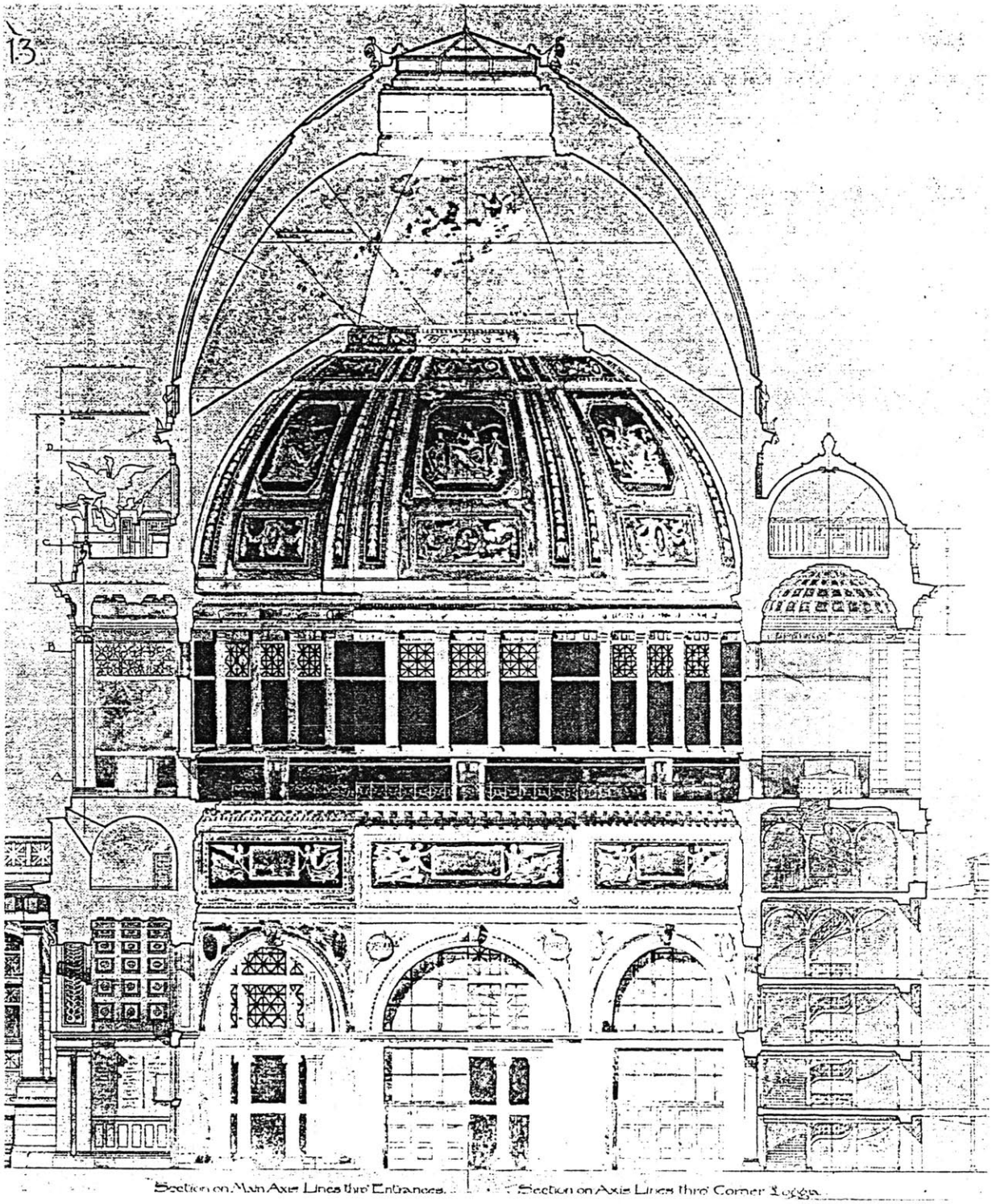
101. Henry Hobson Richardson, Trinity Church, Boston, interior, 1872-77



102. Charles F. McKim, proposal for Copley Square, Boston, 1888

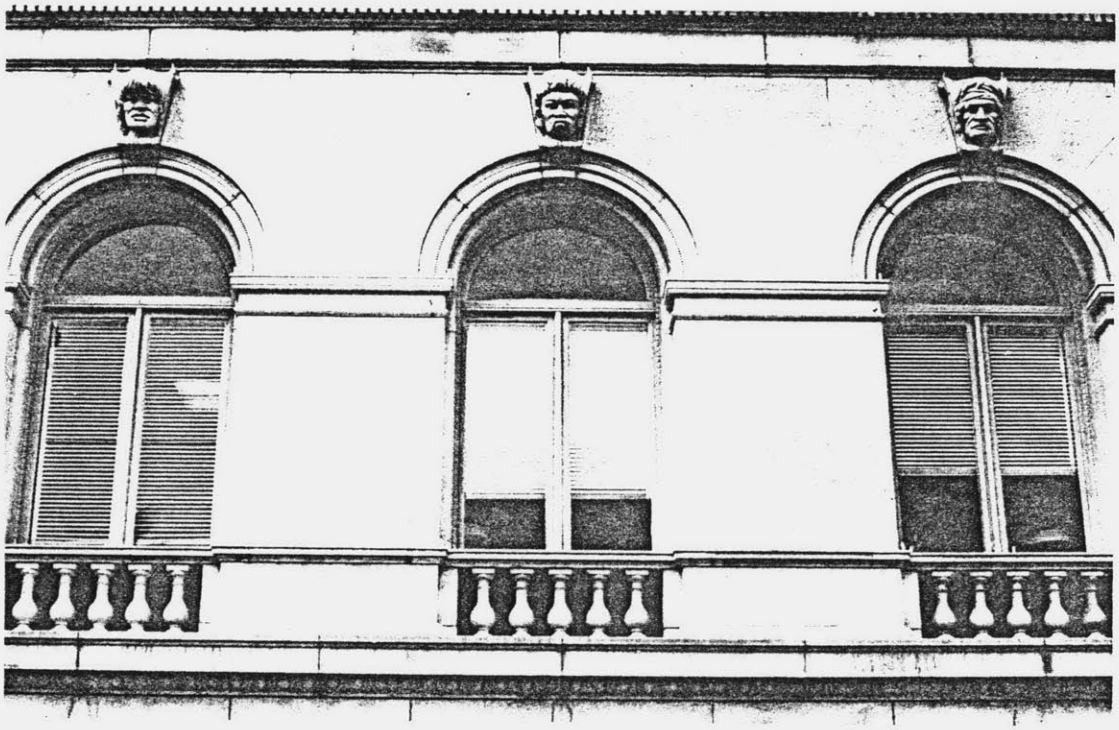


103. Richard Morris Hunt, Administration Building, World's Columbian Exposition, Chicago, 1893

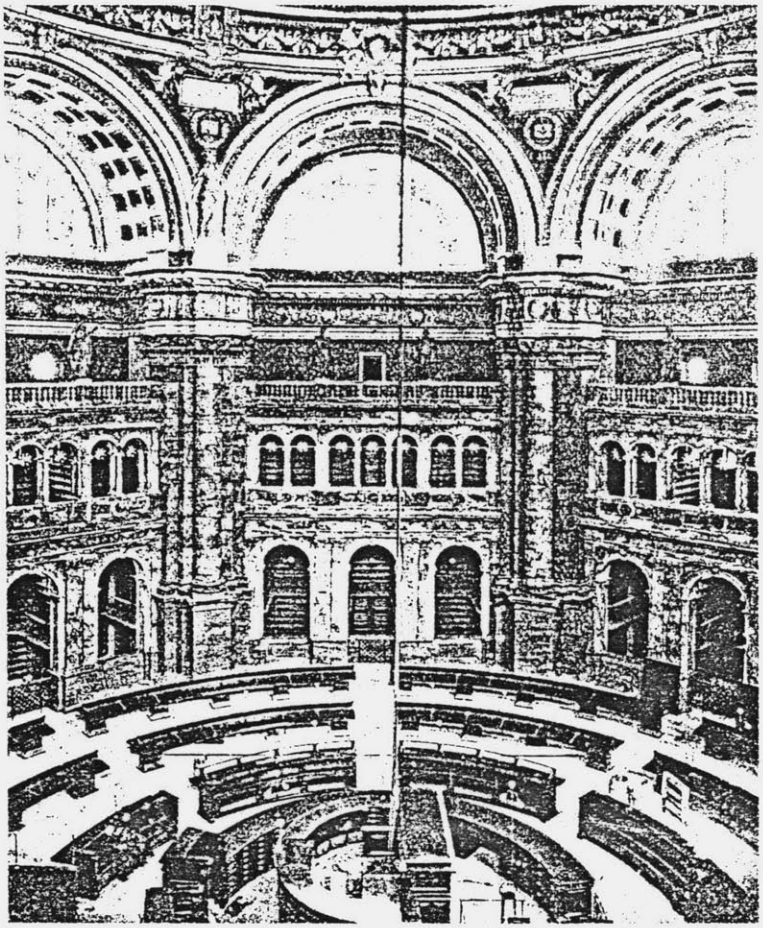


104. Richard Morris Hunt, Administration Building, World's Columbian Exposition, section, 1892

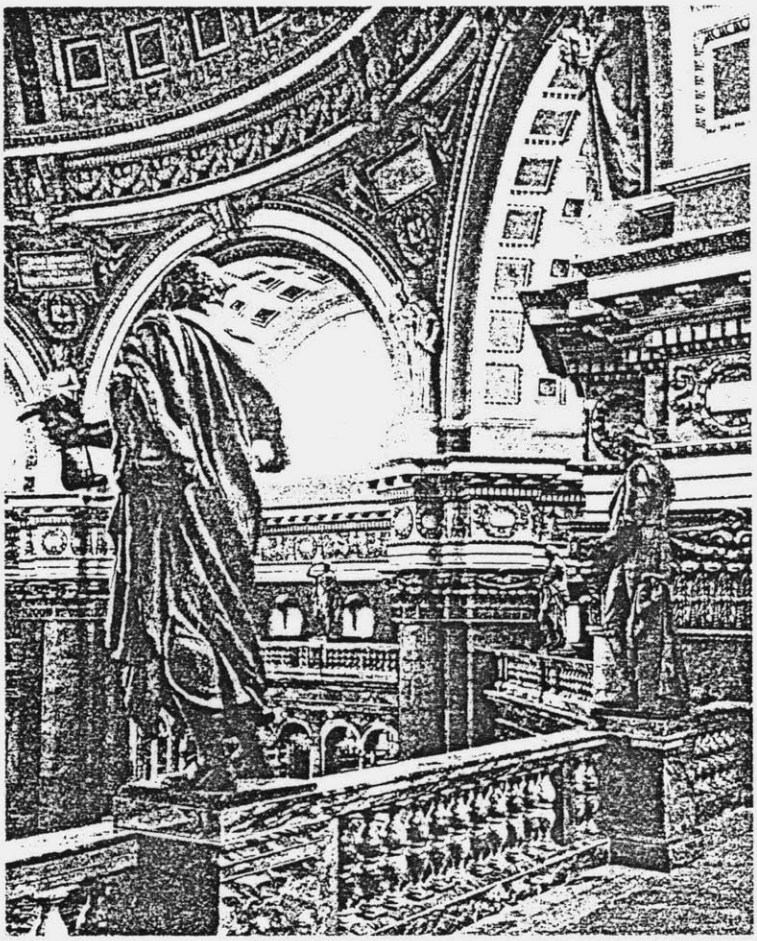
105. Smithmeyer & Pelz and Edward Pearce Casey, Library of Congress, Washington, D.C., 1885-98



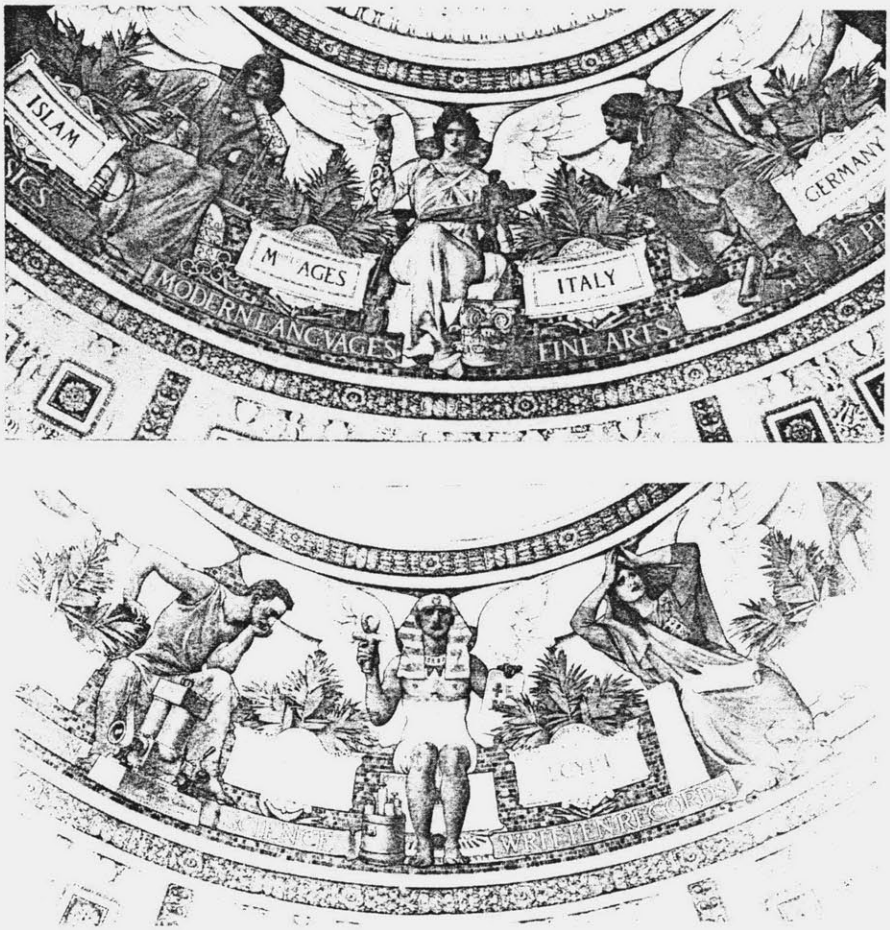
106. William J. Boyd and Henry Ellicott, keystone heads, Library of Congress



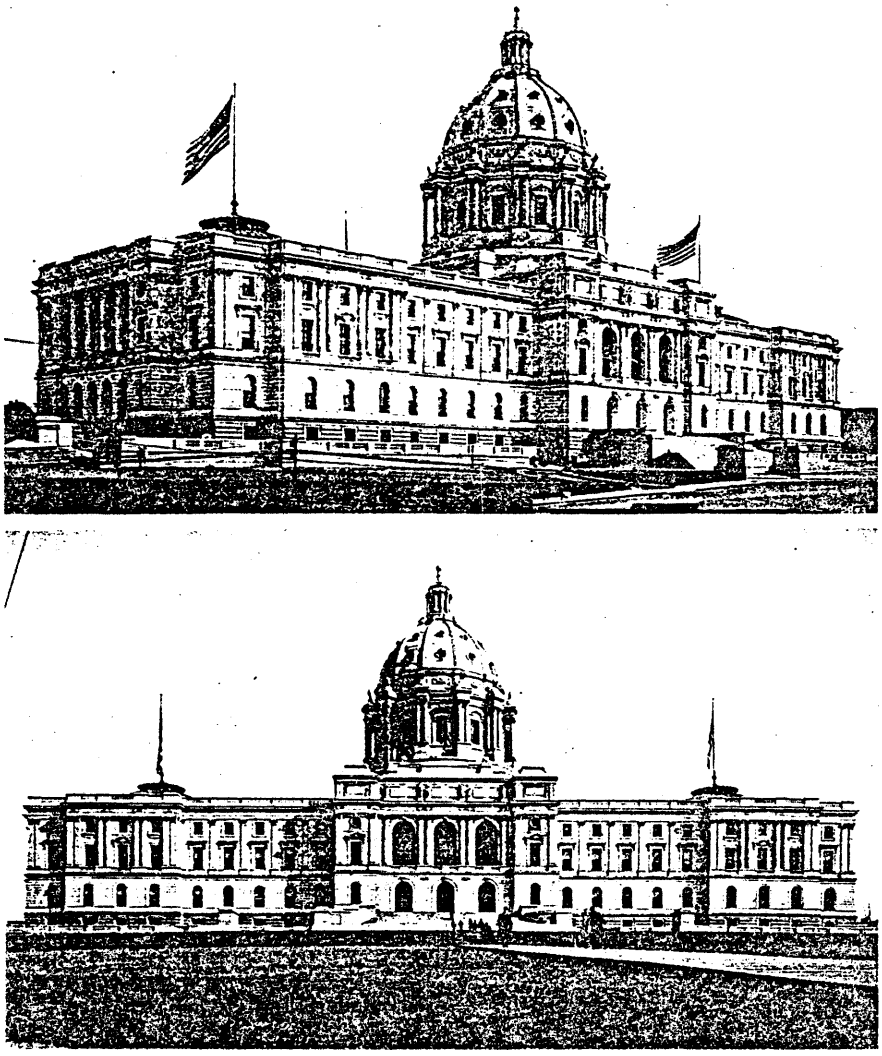
107. Smithmeyer & Pelz and Edward Pearce Casey, Library of Congress, reading room



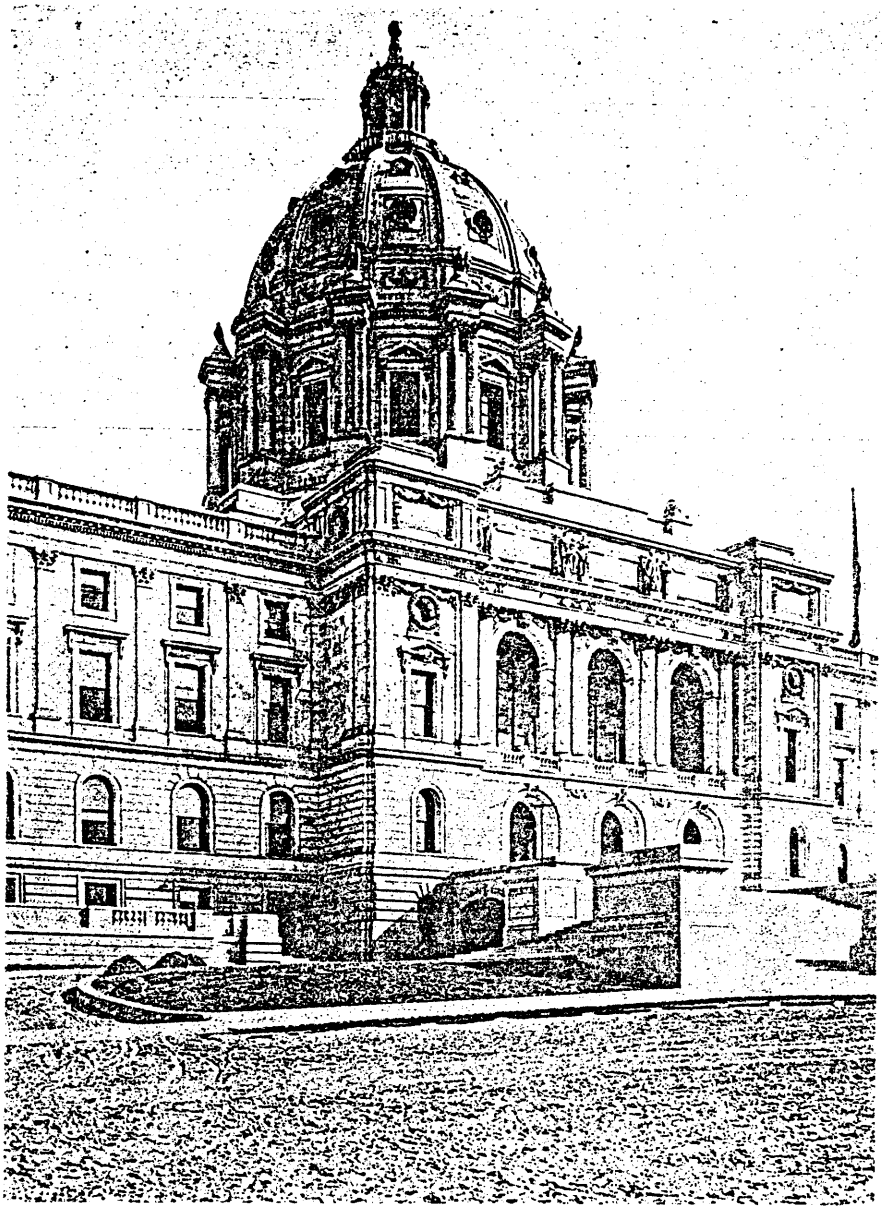
108. Smithmeyer & Pelz and Edward Pearce Casey, Library of Congress, reading room, parapet level



109. Edwin H. Blashfield, "The Evolution of Civilization", Library of Congress, reading room

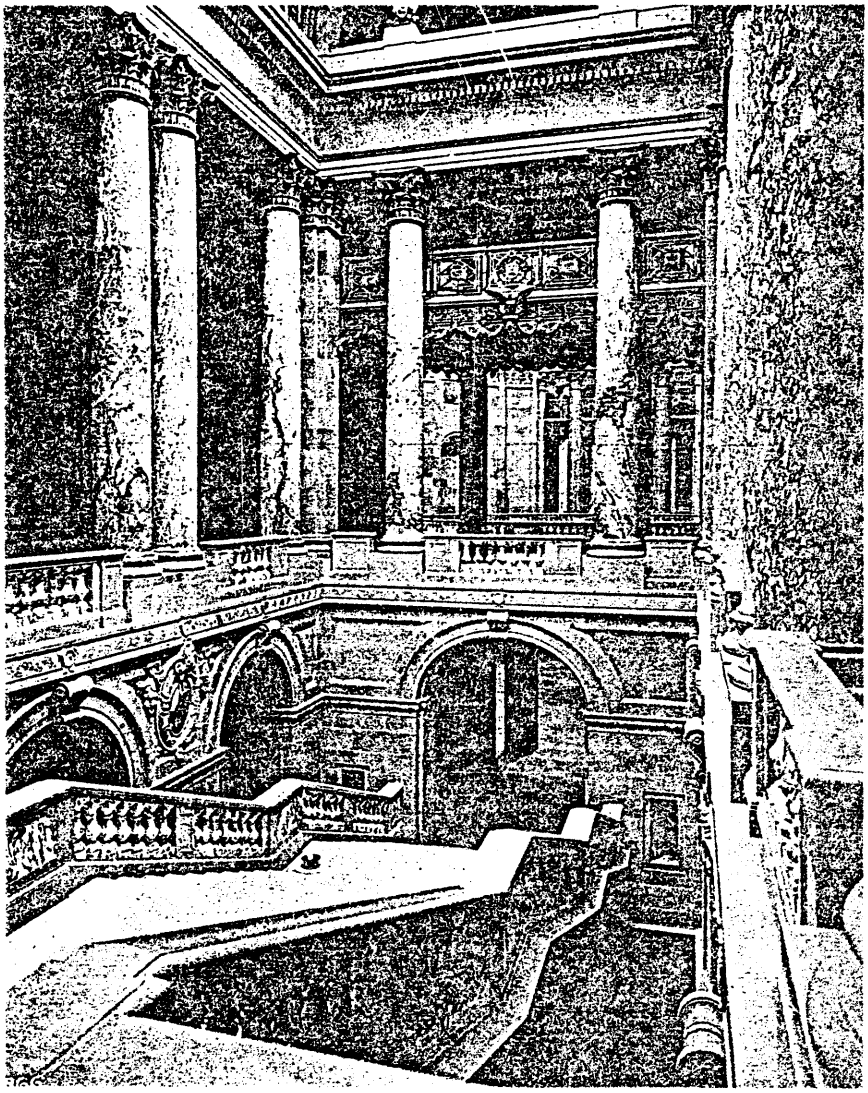


110. Cass Gilbert, Minnesota State Capitol, St. Paul, 1895-1904

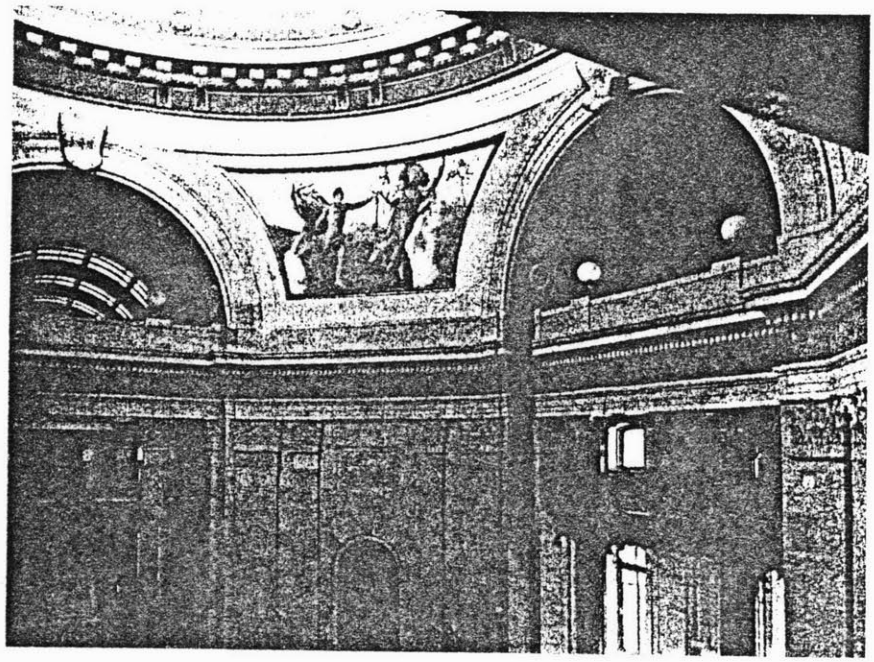


111. Cass Gilbert, Minnesota State Capitol, south entrance

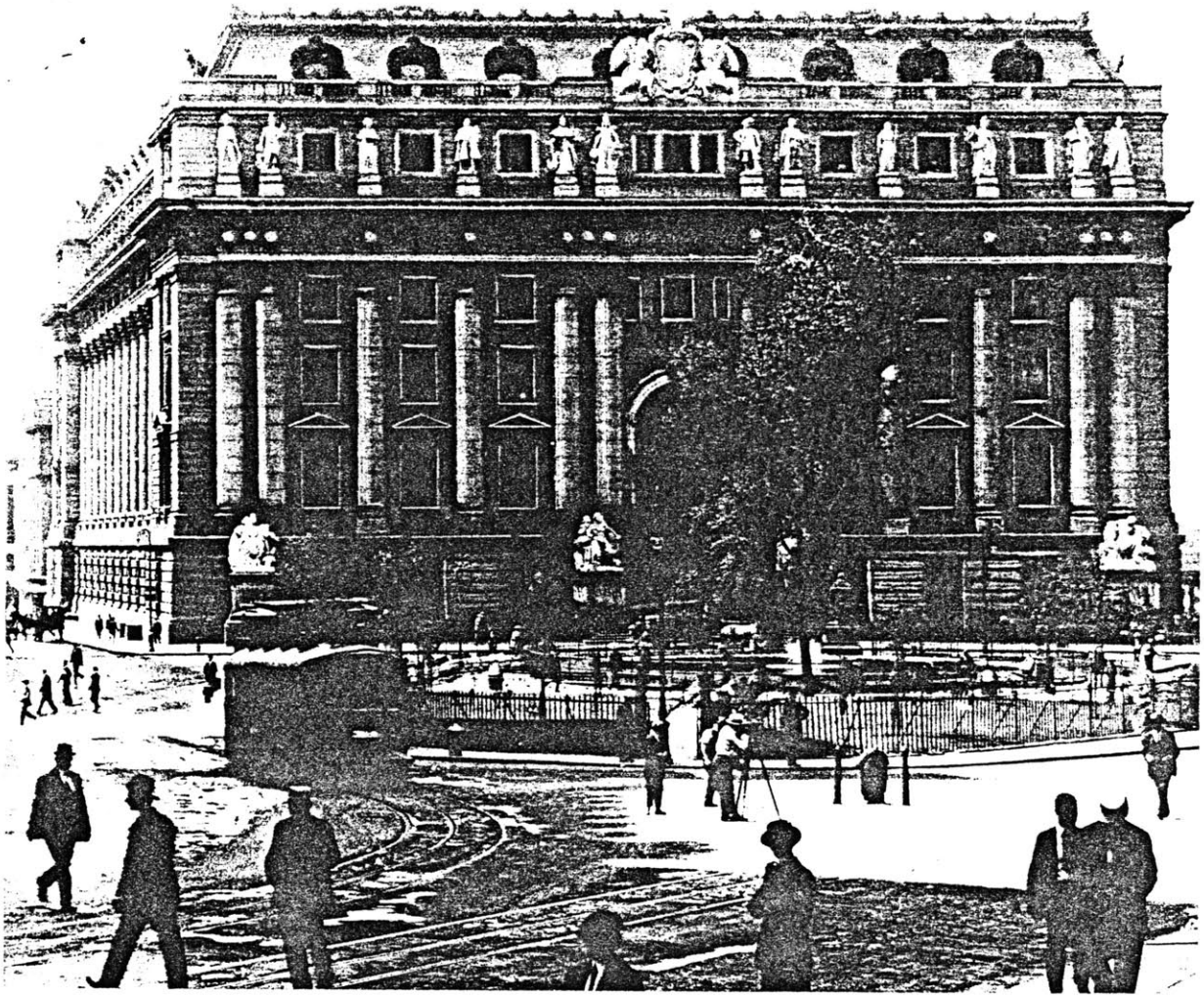
112. Daniel Chester French, "The Progress of the State," Minnesota State Capitol



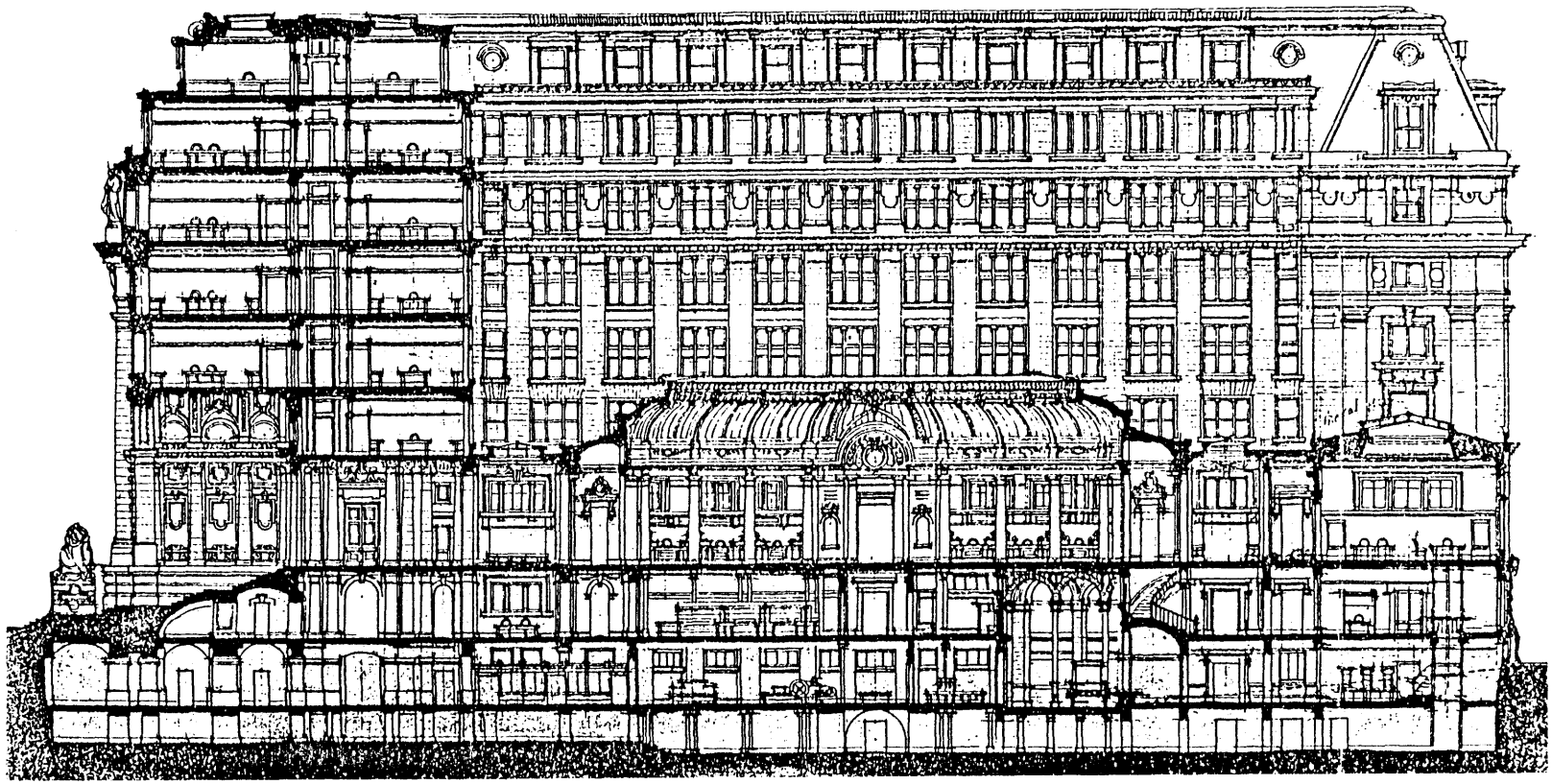
113. Cass Gilbert, Minnesota State Capitol, interior



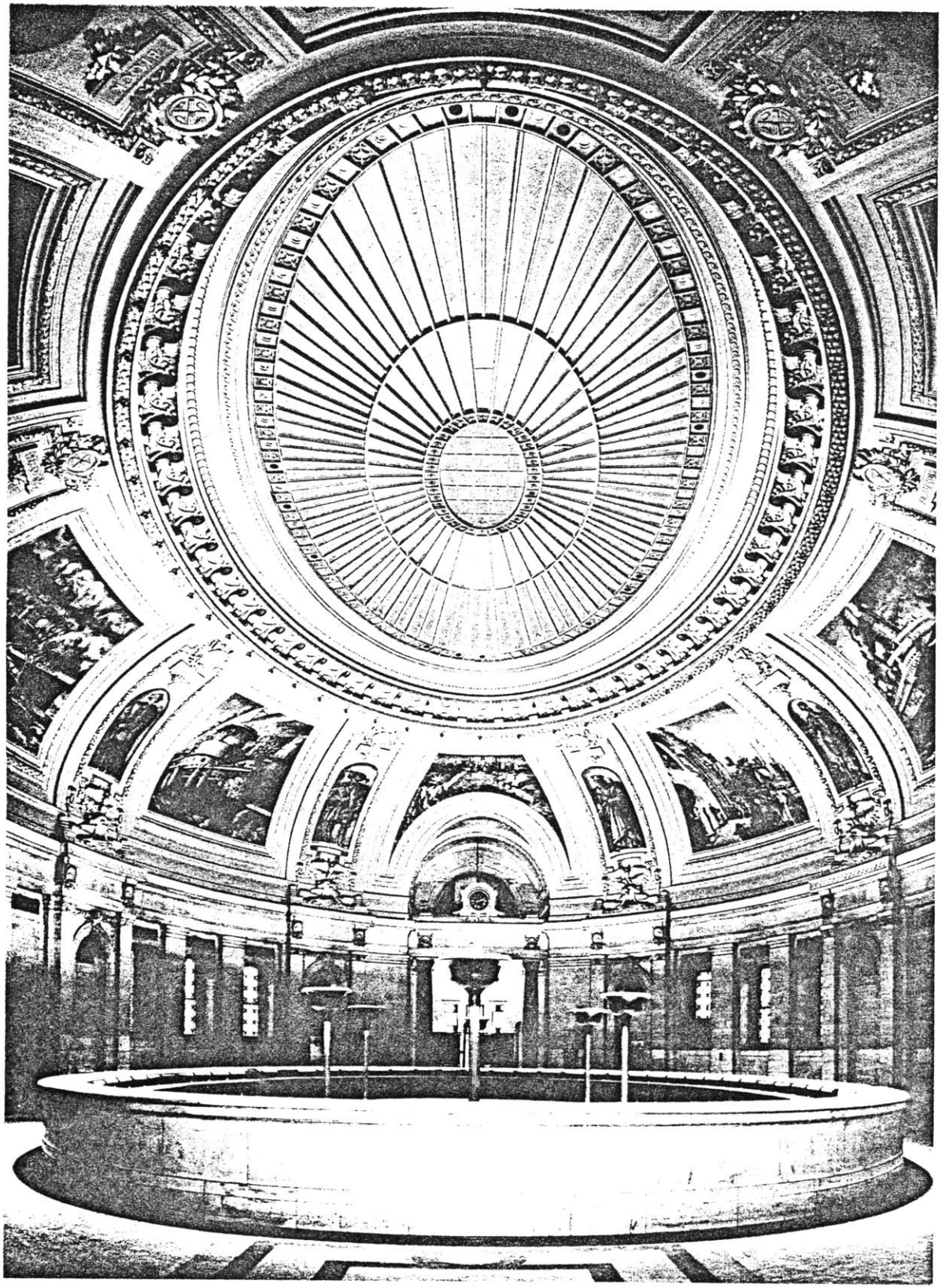
114. Edward Simmons, "The Civilization of the Northwest," Minnesota State Capitol



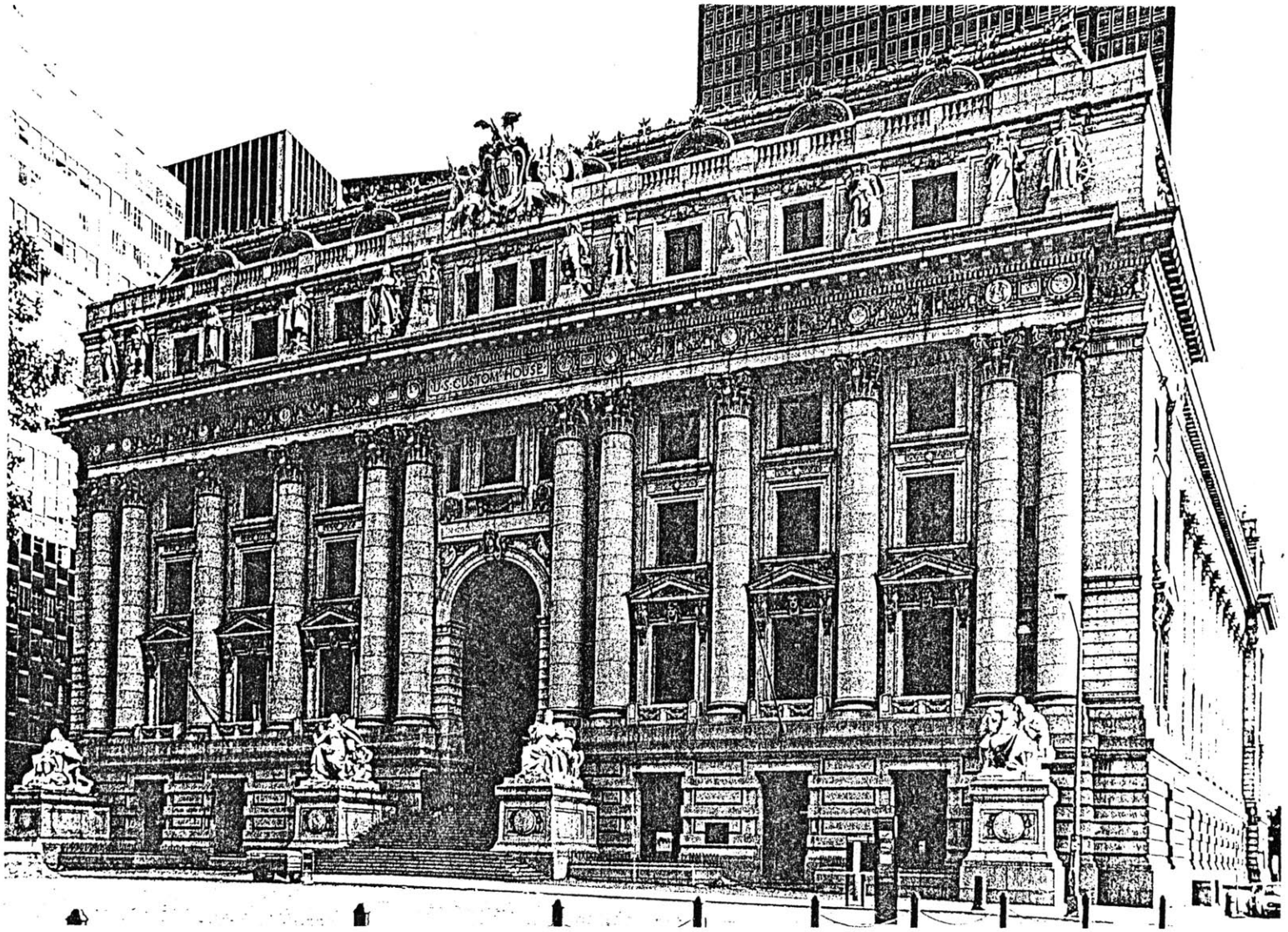
115. Cass Gilbert, United States Custom House, New York, 1899-1906



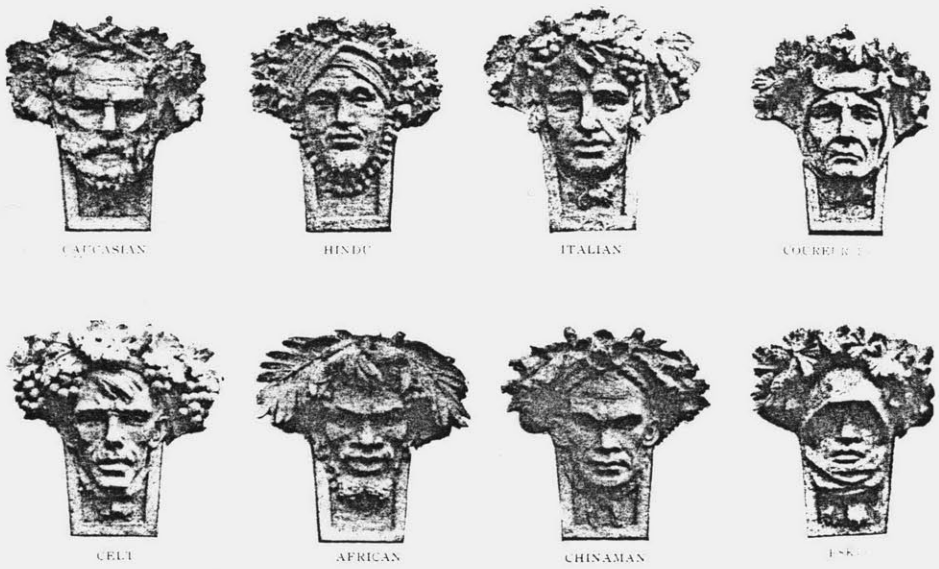
116. Cass Gilbert, United States Custom House, longitudinal section



117. Cass Gilbert, United States Custom House, rotunda



118. Cass Gilbert, United States Custom House, main facade

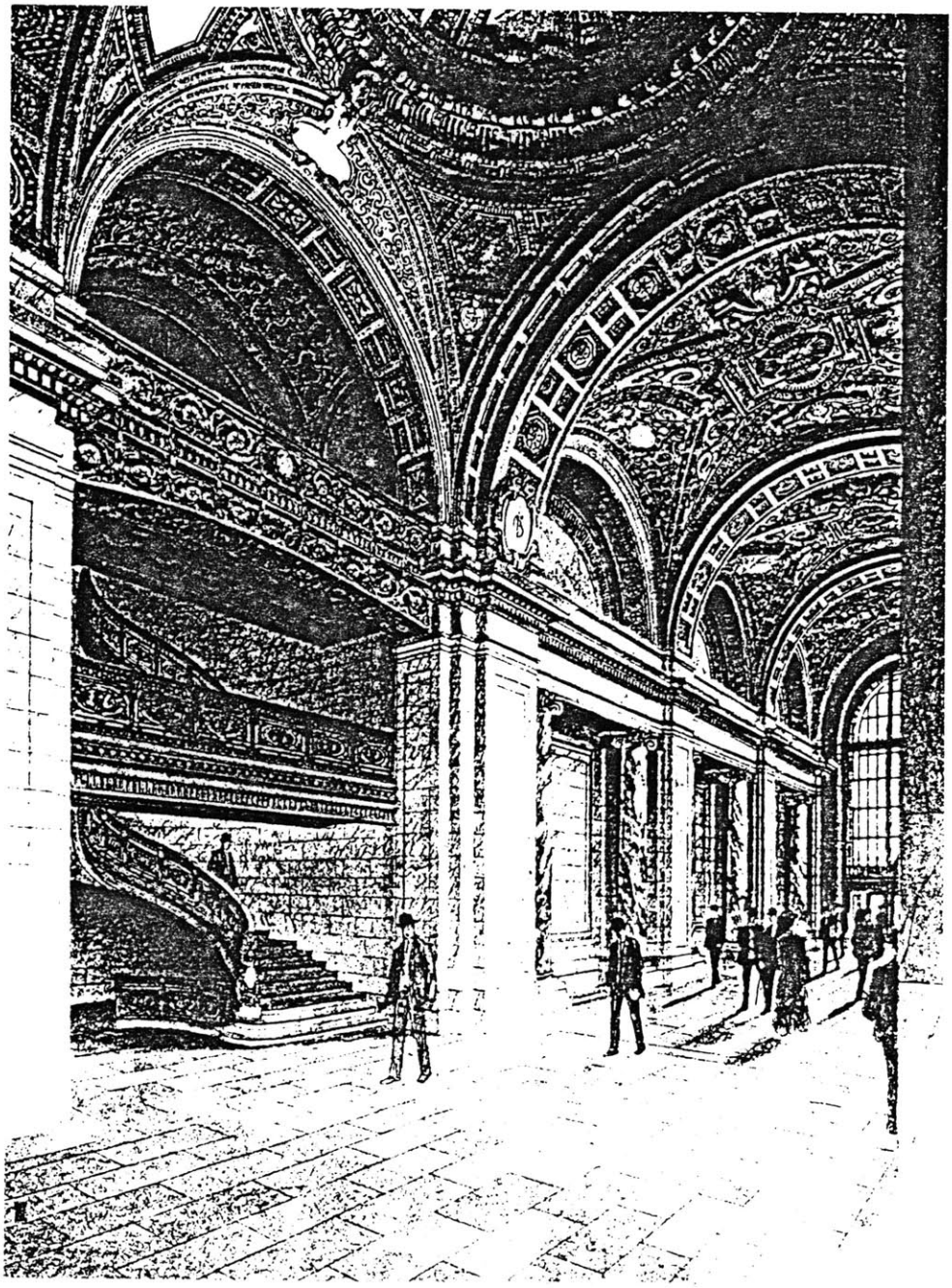


119. Vincenzo Alfano, keystone heads, United States Custom House

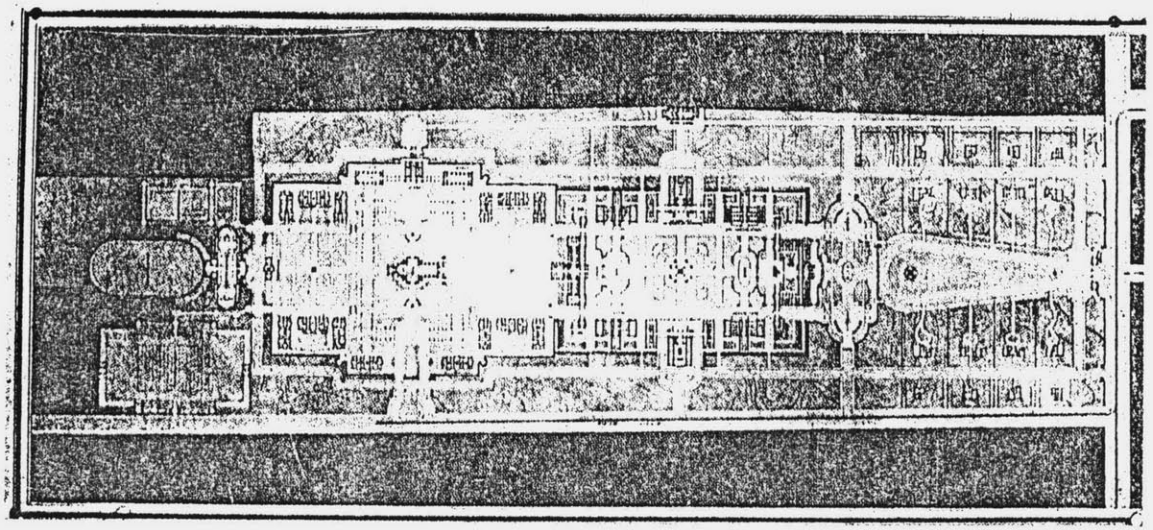
120. Napoleon LeBrun & Sons, Metropolitan Life Insurance Building, New York, lobby, 1890-93

121. Ernest Flagg, Singer Building, New York, lobby, 1906-8

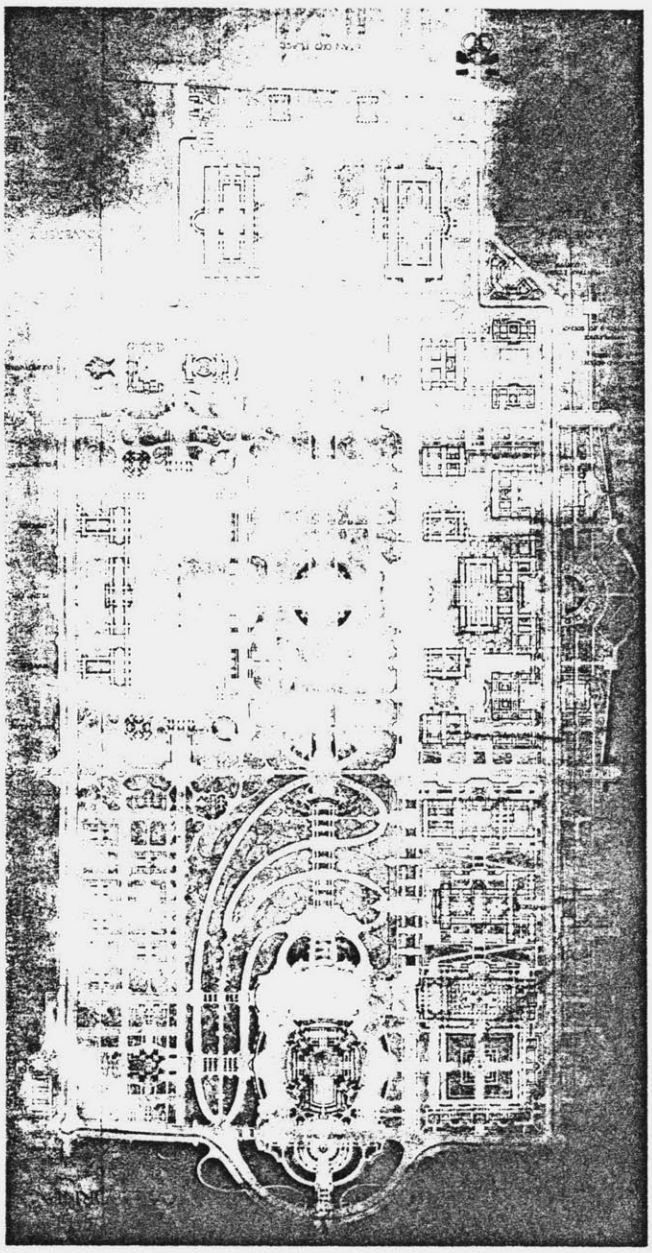
122. Cass Gilbert, West Street Building, lobby, New York, 1905-7



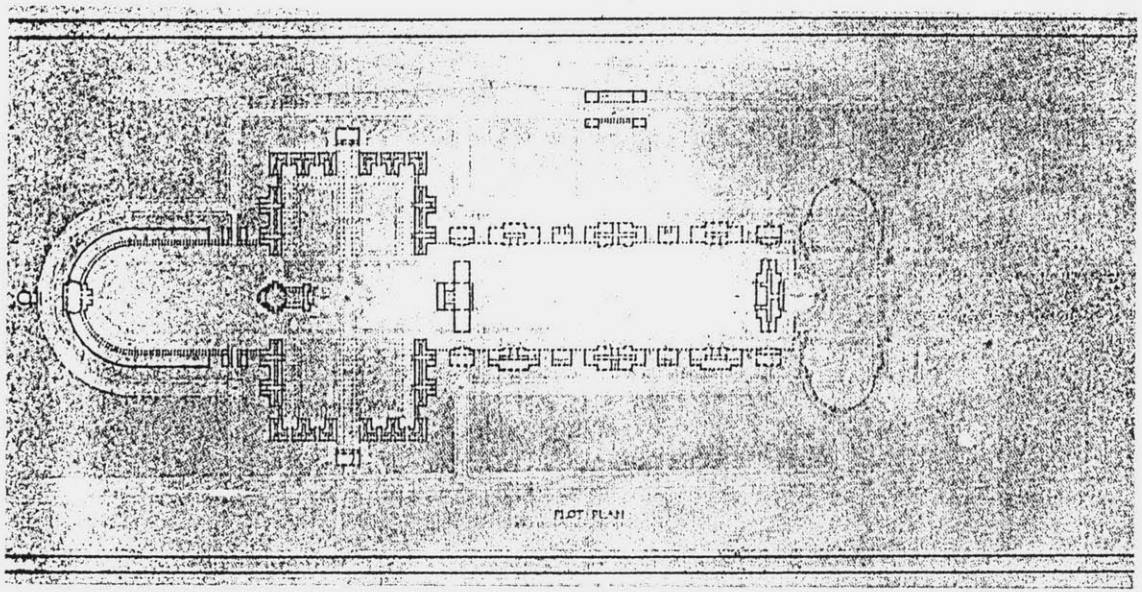
123. Francis H. Kimball, City Investing Building, New York, lobby, 1905-7



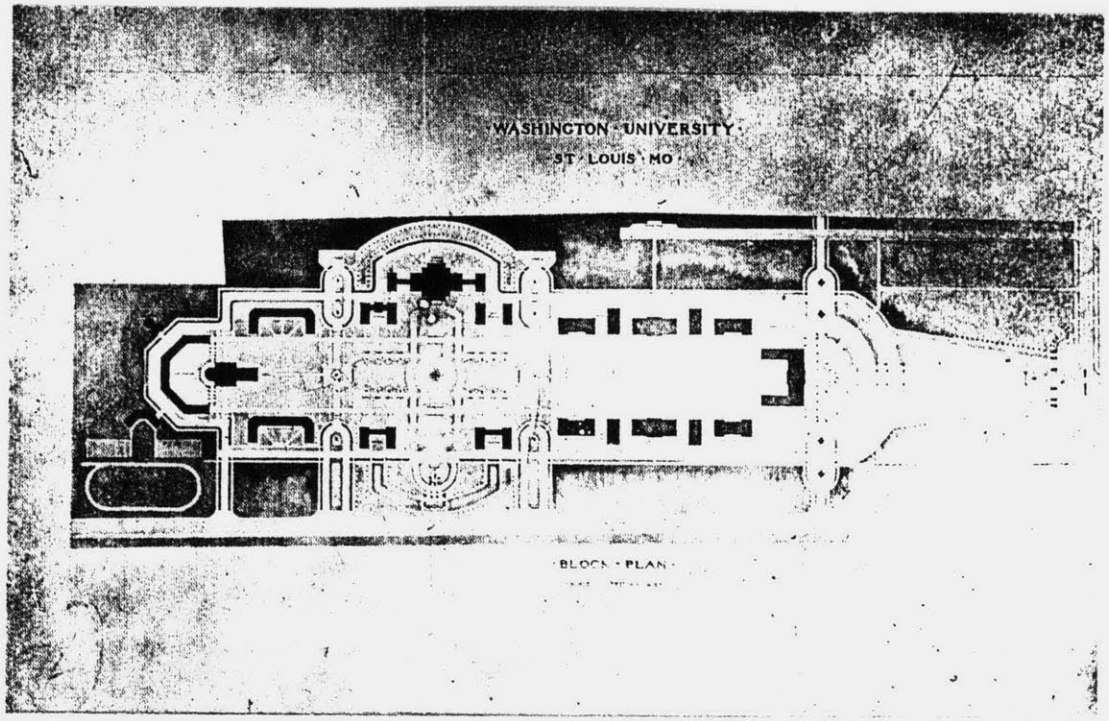
124. Cass Gilbert, Washington University, St. Louis, competition entry, 1899



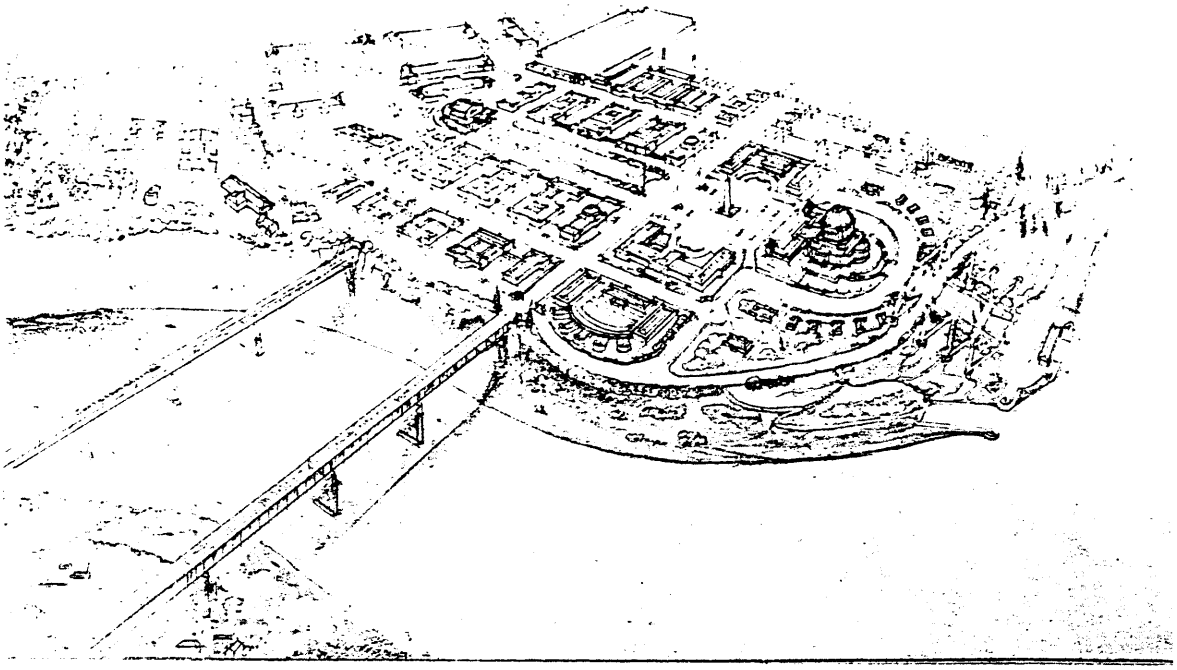
125. G. Héraud and W.C. Eichmuller, University of California at Berkeley, competition entry, 1899



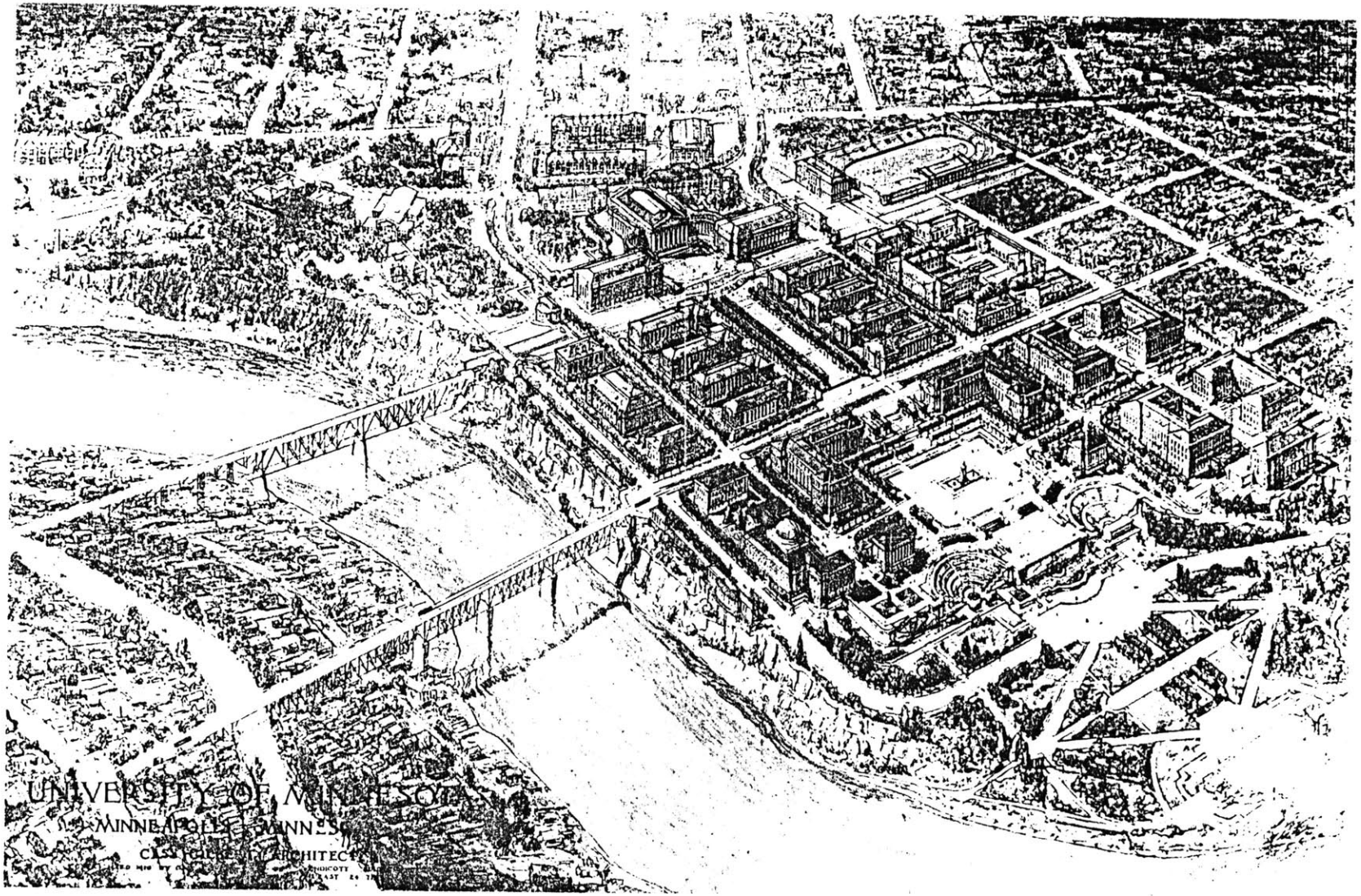
126. McKim, Mead & White, Washington University, competition entry, 1899



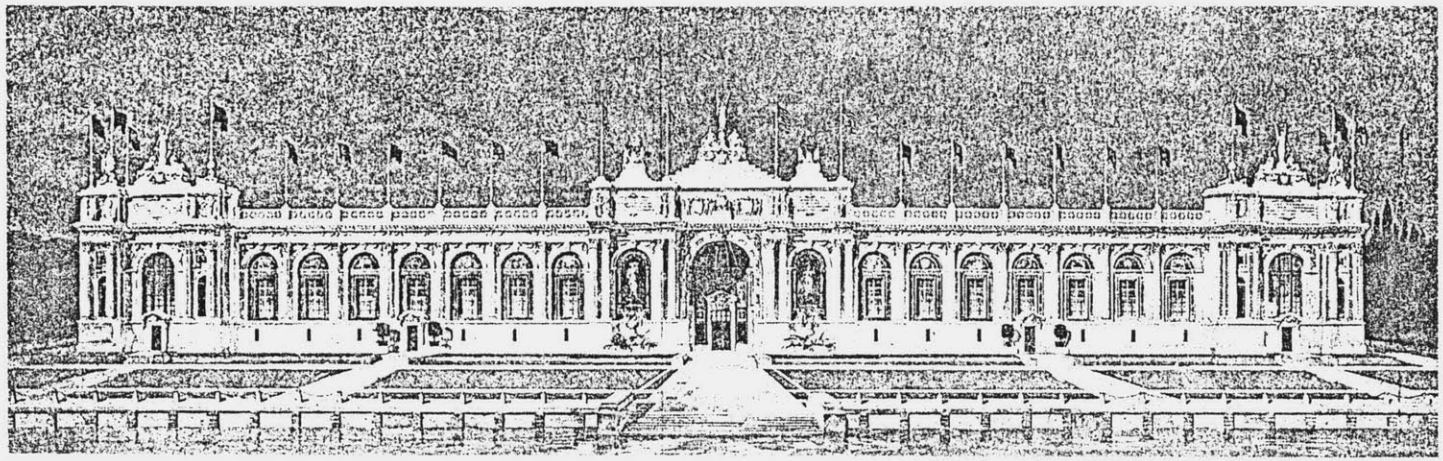
127. Carrère & Hastings, Washington University, competition entry, 1899



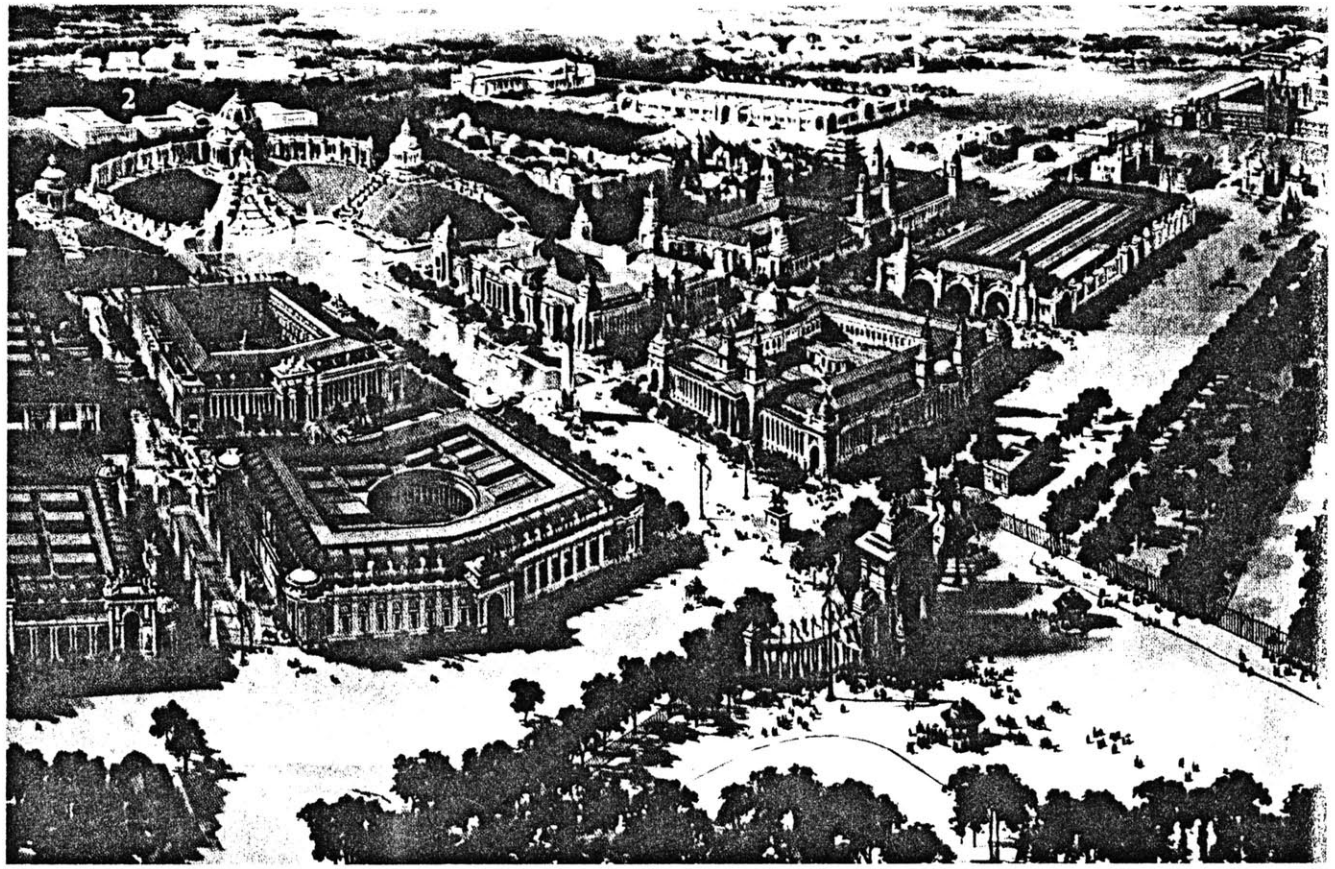
128. Cass Gilbert, University of Minnesota, Minneapolis, preliminary scheme, 1908



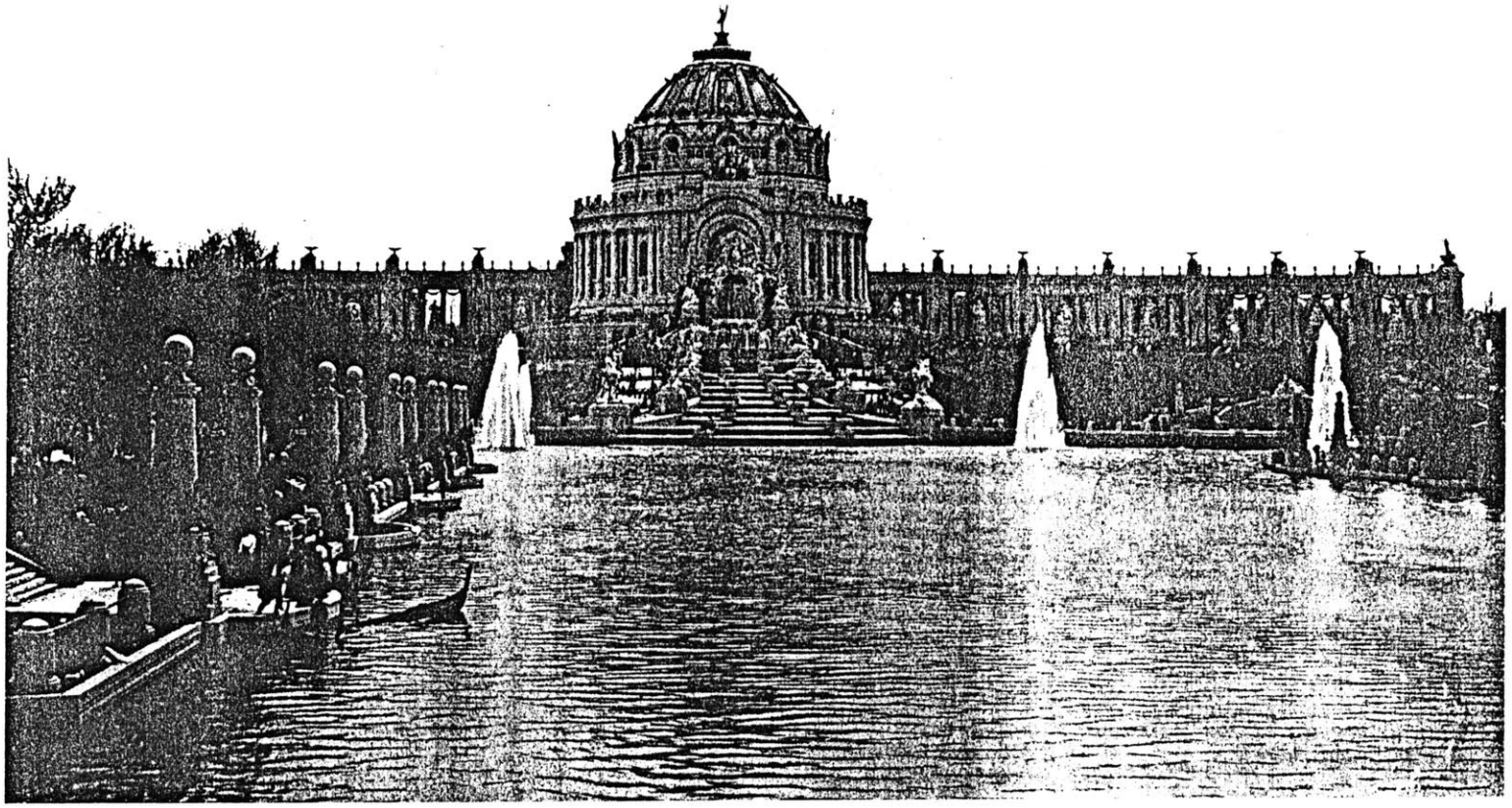
129. Cass Gilbert, University of Minnesota, final scheme, 1910



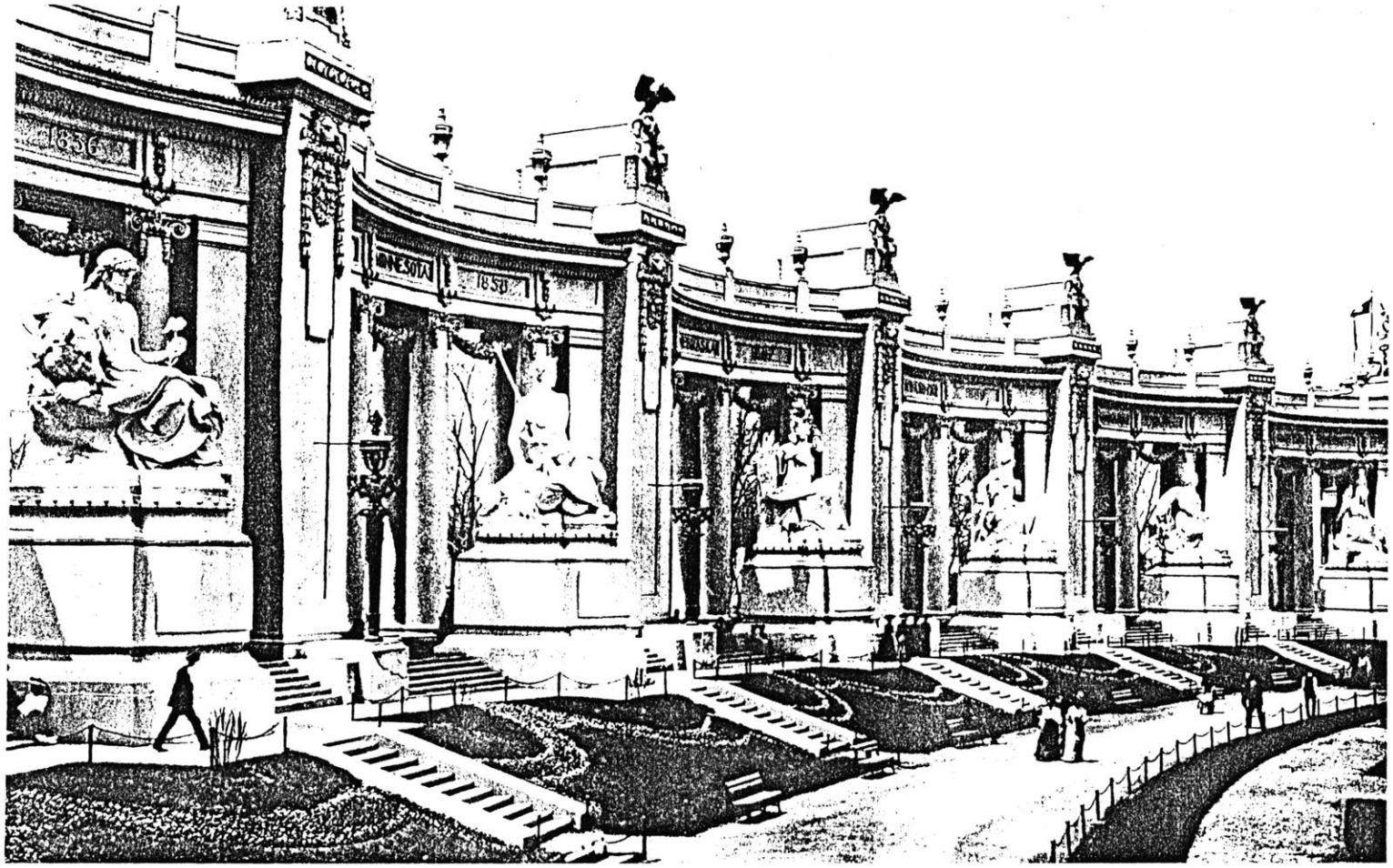
130. Cass Gilbert, Agricultural Building, Trans-Mississippi and International Exposition, Omaha, Nebraska, 1898



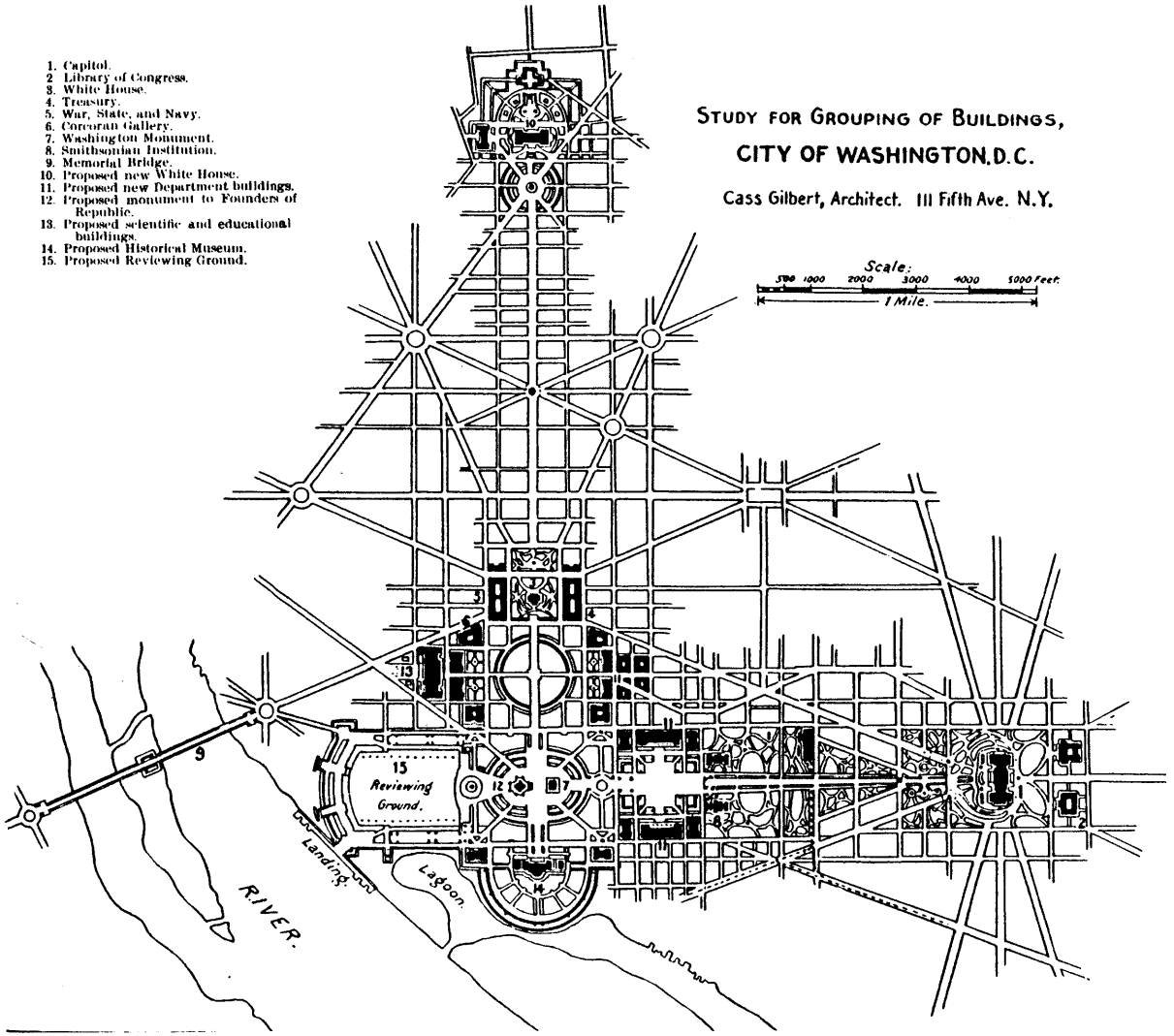
131. Louisiana Purchase Exposition, St. Louis, Missouri, 1904



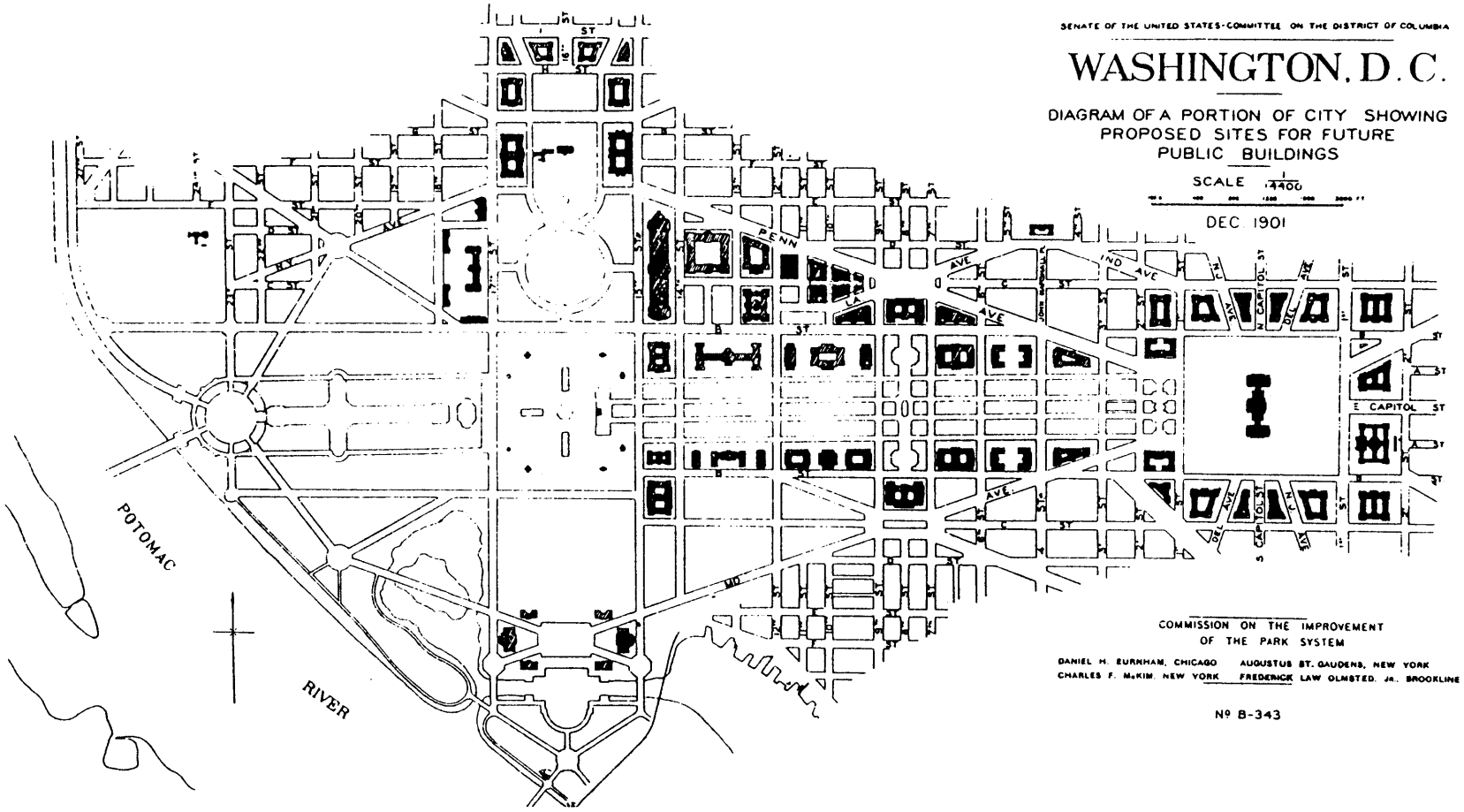
132. Cass Gilbert, Festival Hall, Louisiana Purchase Exposition



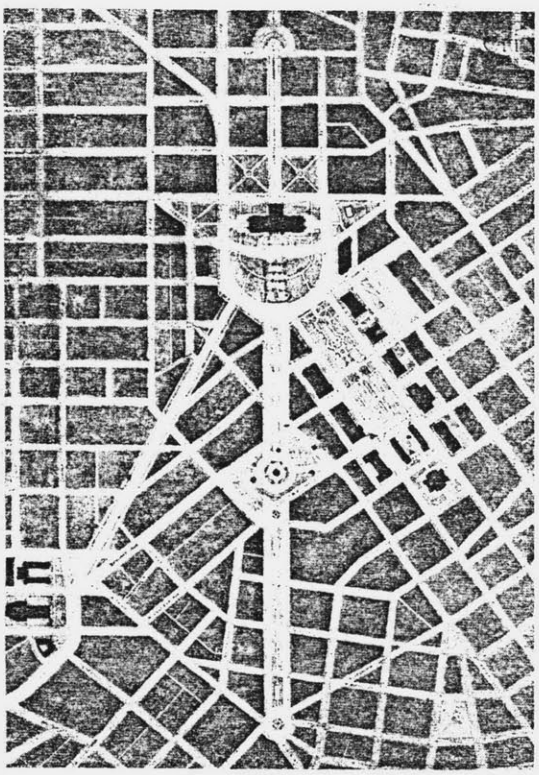
133. Emmanuel L. Masqueray, "Terrace of the States," Louisiana Purchase Exposition



134. Cass Gilbert, "Study for Grouping of Buildings, City of Washington, D.C.," 1900



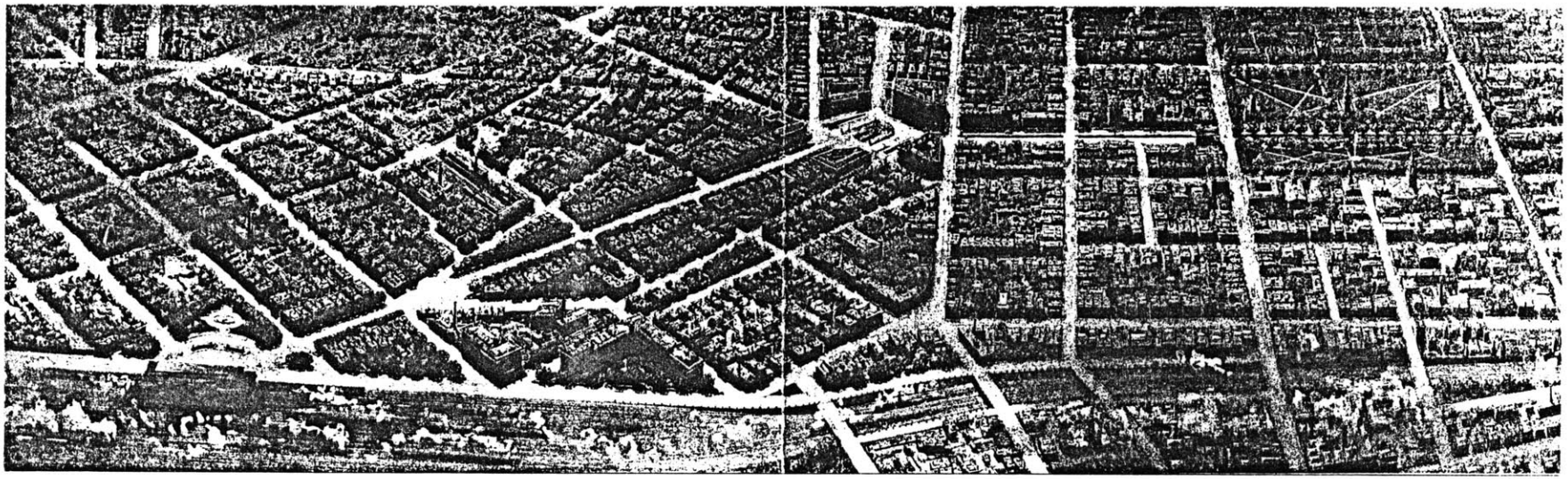
135. McMillan Commission (Daniel Burnham, Charles McKim, Frederick Law Olmsted Jr., Augustus Saint-Gaudens), plan of Washington, D.C., 1901



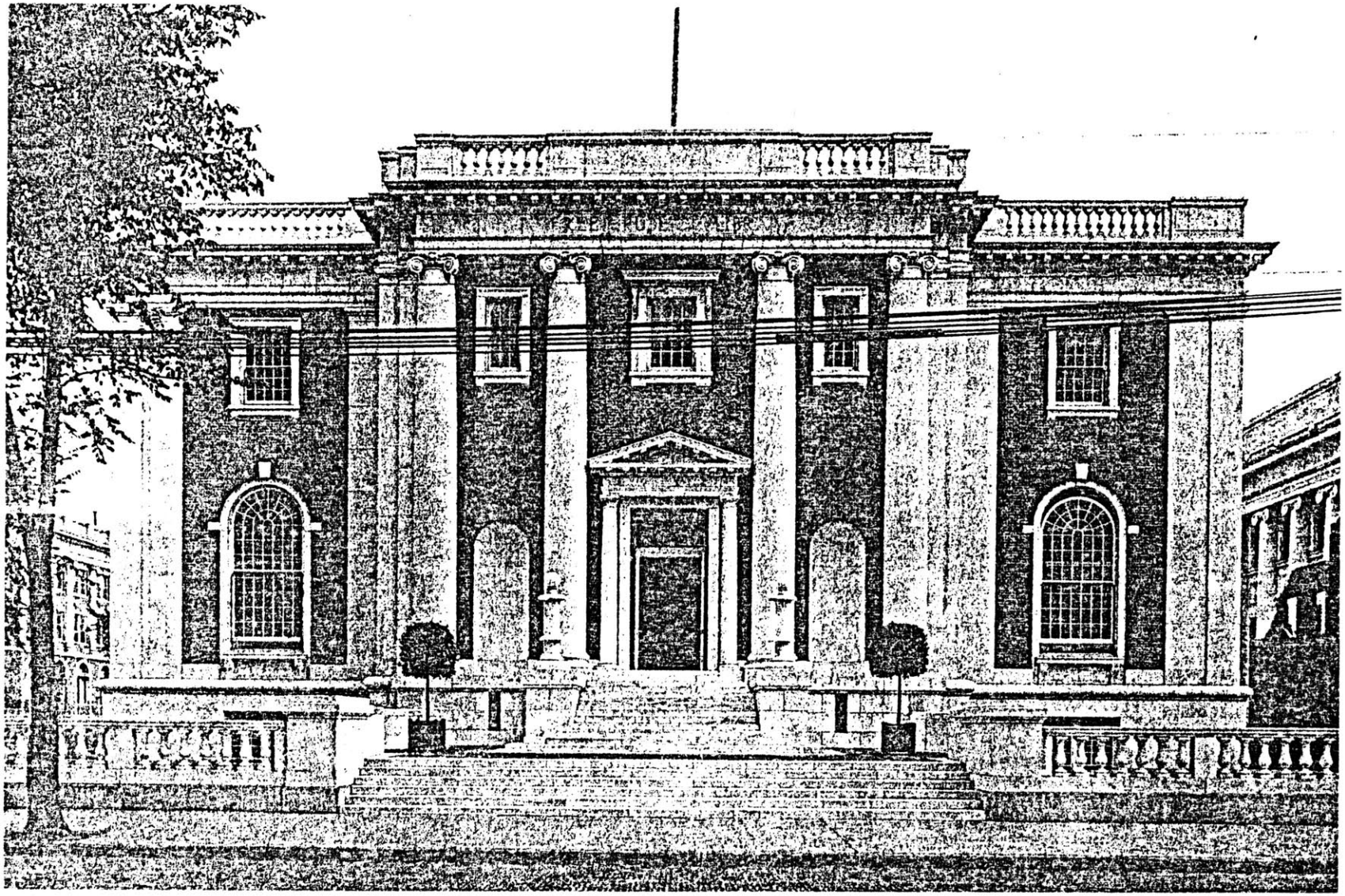
136. Cass Gilbert, plan for approaches to Minnesota State Capitol, St. Paul, 1903-6

137. Cass Gilbert, proposed Central Approach to Minnesota State Capitol

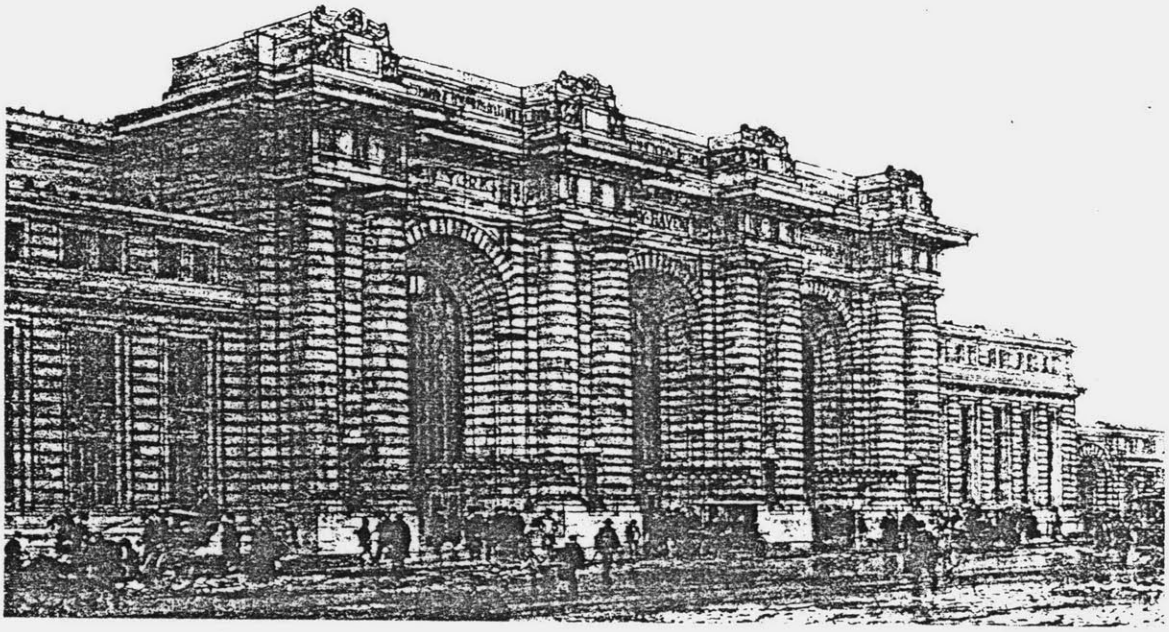
138. Cass Gilbert and Frederick Law Olmsted Jr., plan of New Haven, Connecticut, 1907-10



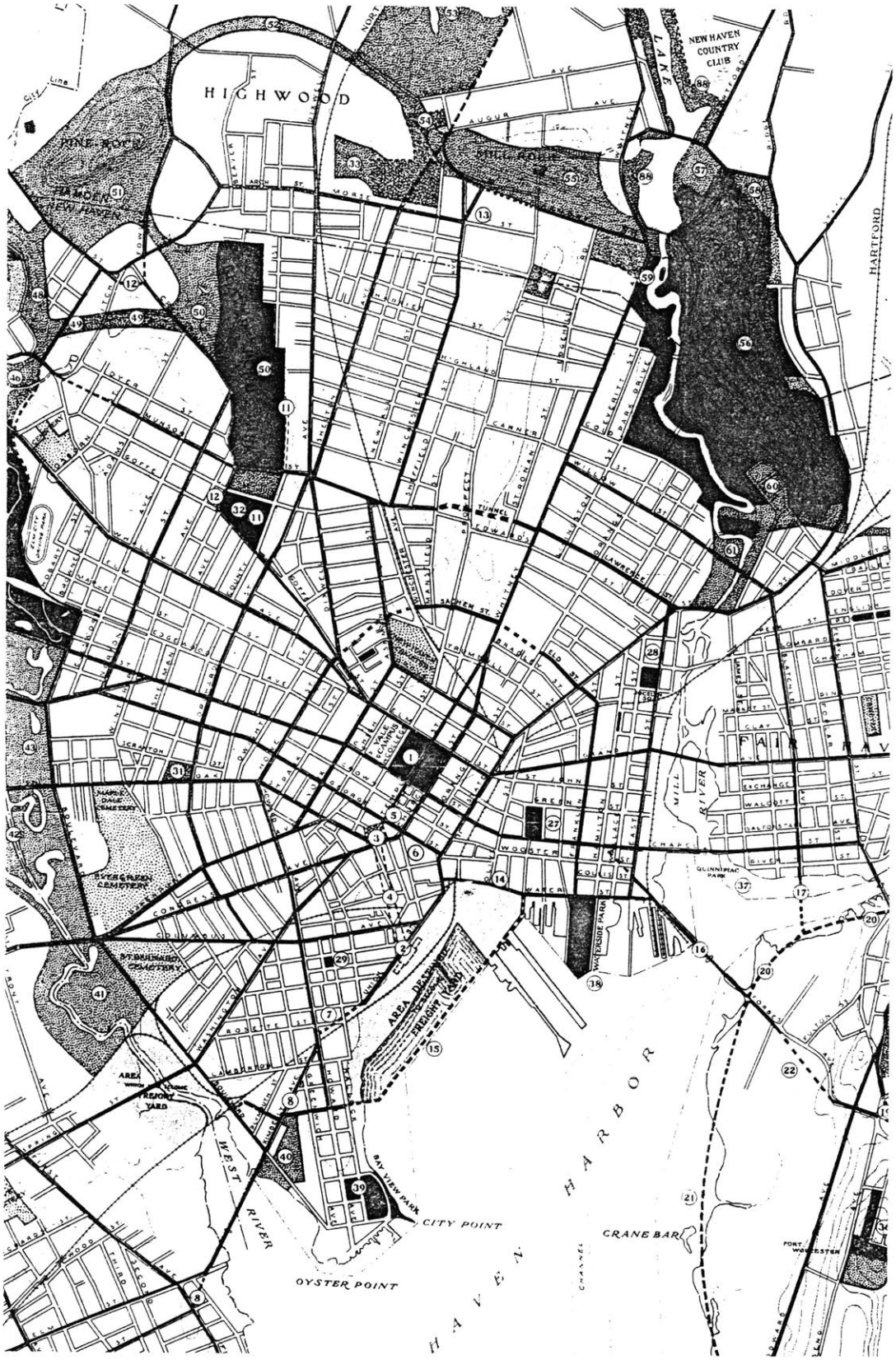
139. Cass Gilbert and Frederick Law Olmsted Jr., plan of New Haven, perspective



140. Cass Gilbert, Ives Memorial Library, New Haven, 1908-11



141. Cass Gilbert, proposed New Haven Railroad Station, 1907

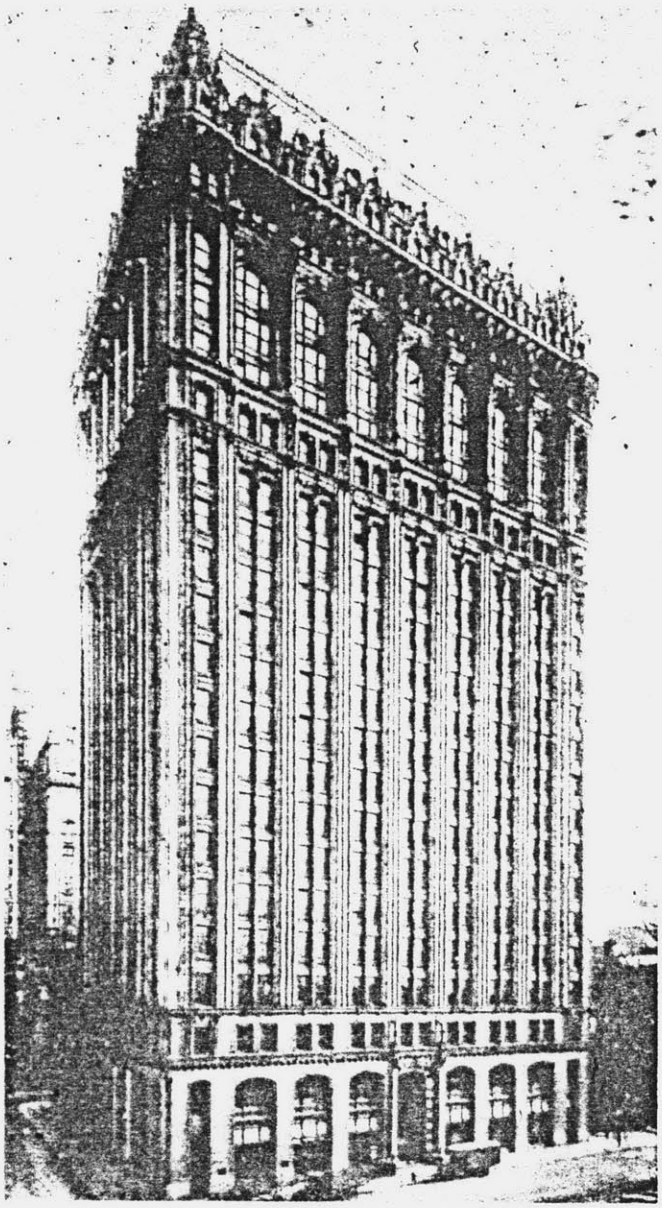


142. Cass Gilbert and Frederick Law Olmsted Jr., plan of New Haven, parkway system

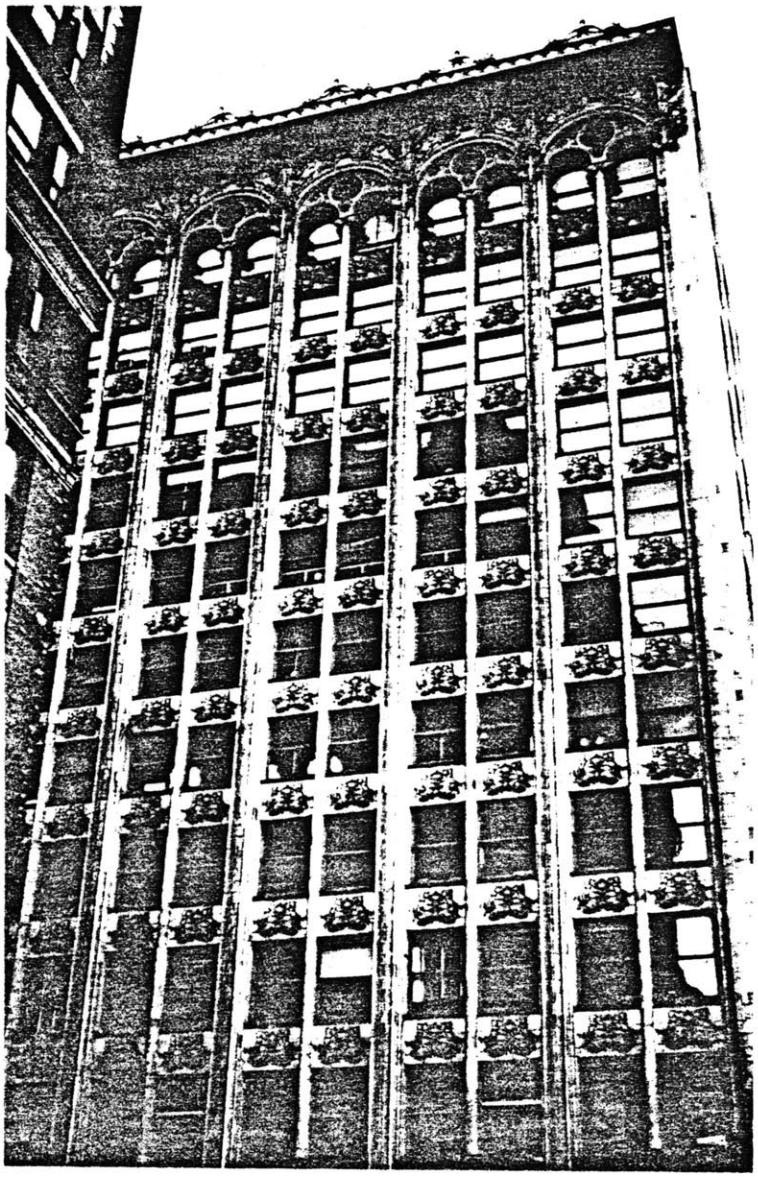
143. Cass Gilbert, Brazer Building, Boston, 1896-97

144. Cass Gilbert, Broadway Chambers Building, New York, 1899-1900

145. Bruce Price, American Surety Building, New York, 1894-95

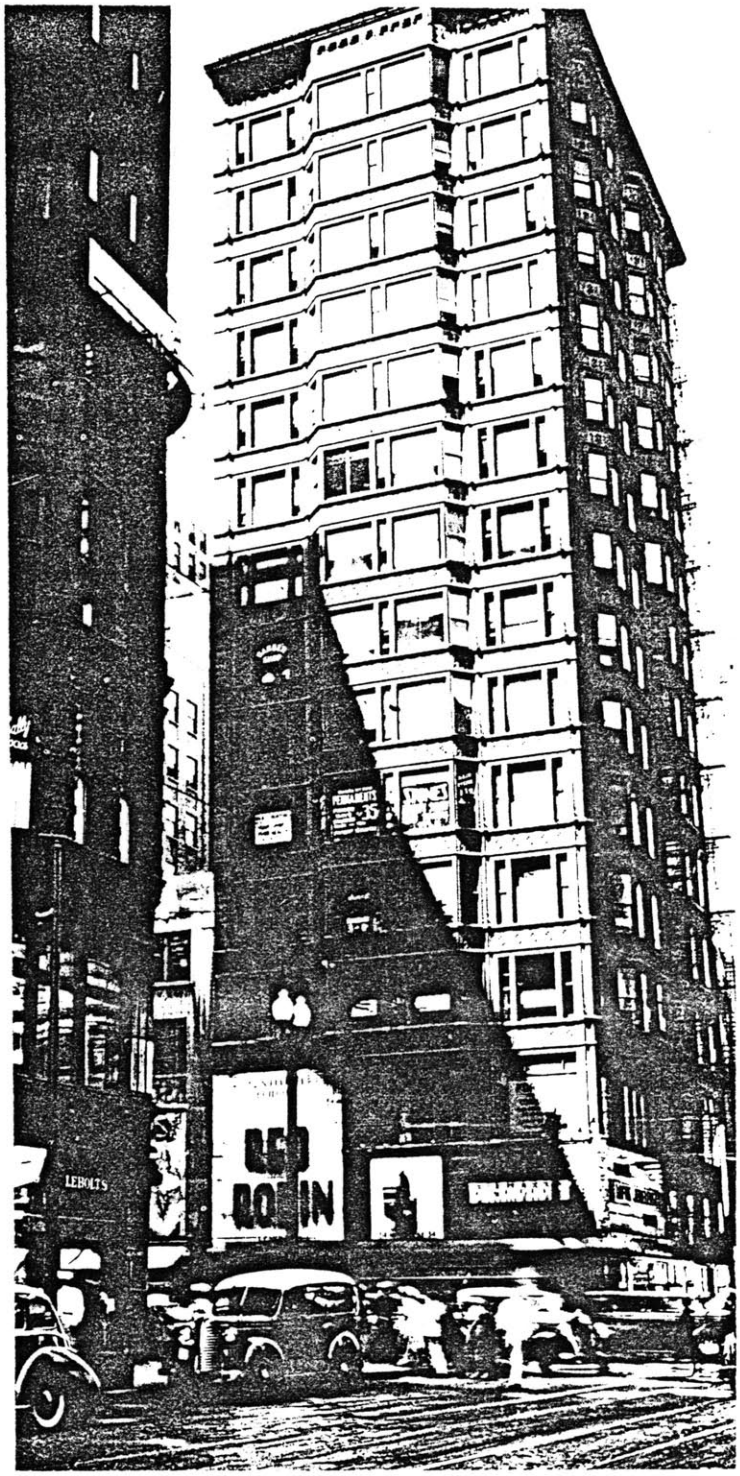


146. Cass Gilbert, West Street Building, New York, 1905-7



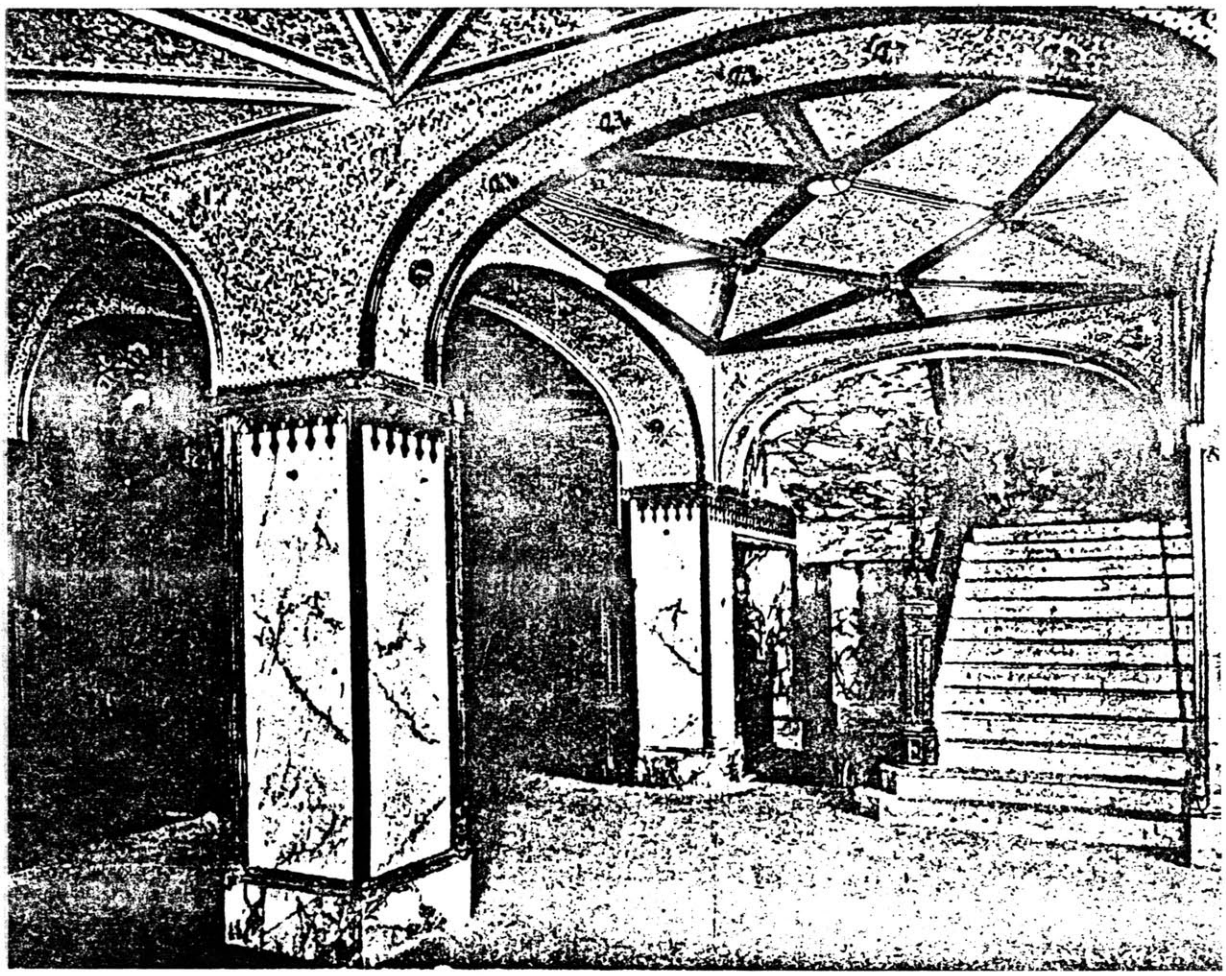
147. Louis Sullivan, Bayard (Condict) Building, New York, 1897-98

148. McKim, Mead & White, Cable Building, New York, 1892-94

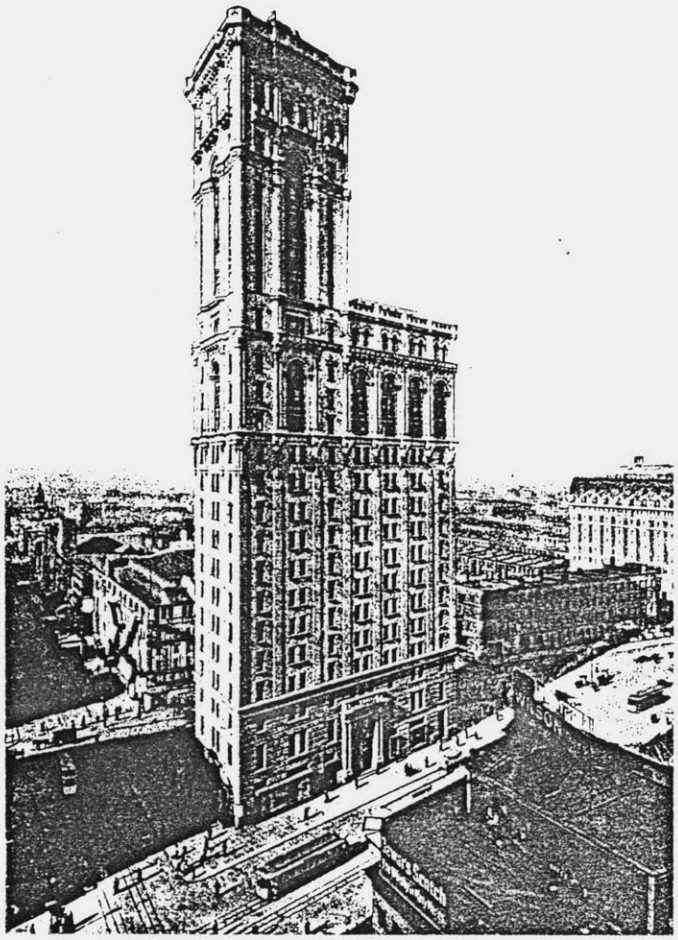


149. D.H. Burnham & Company, Reliance Building, Chicago, 1894

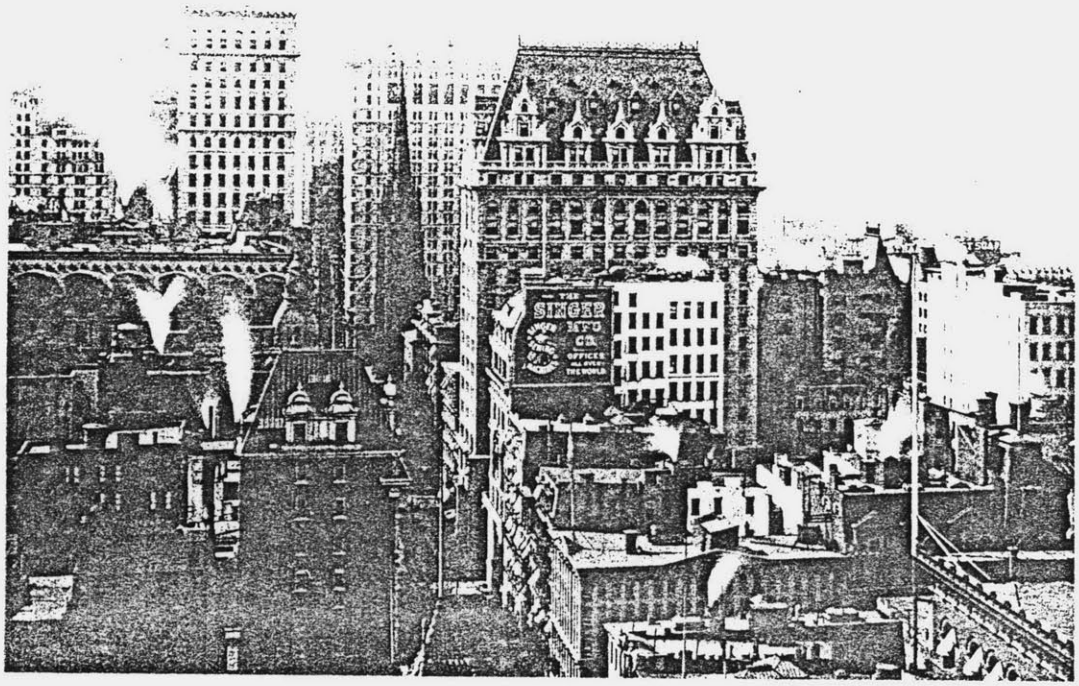
150. D.H. Burnham & Company, Fisher Building, Chicago, 1895-96



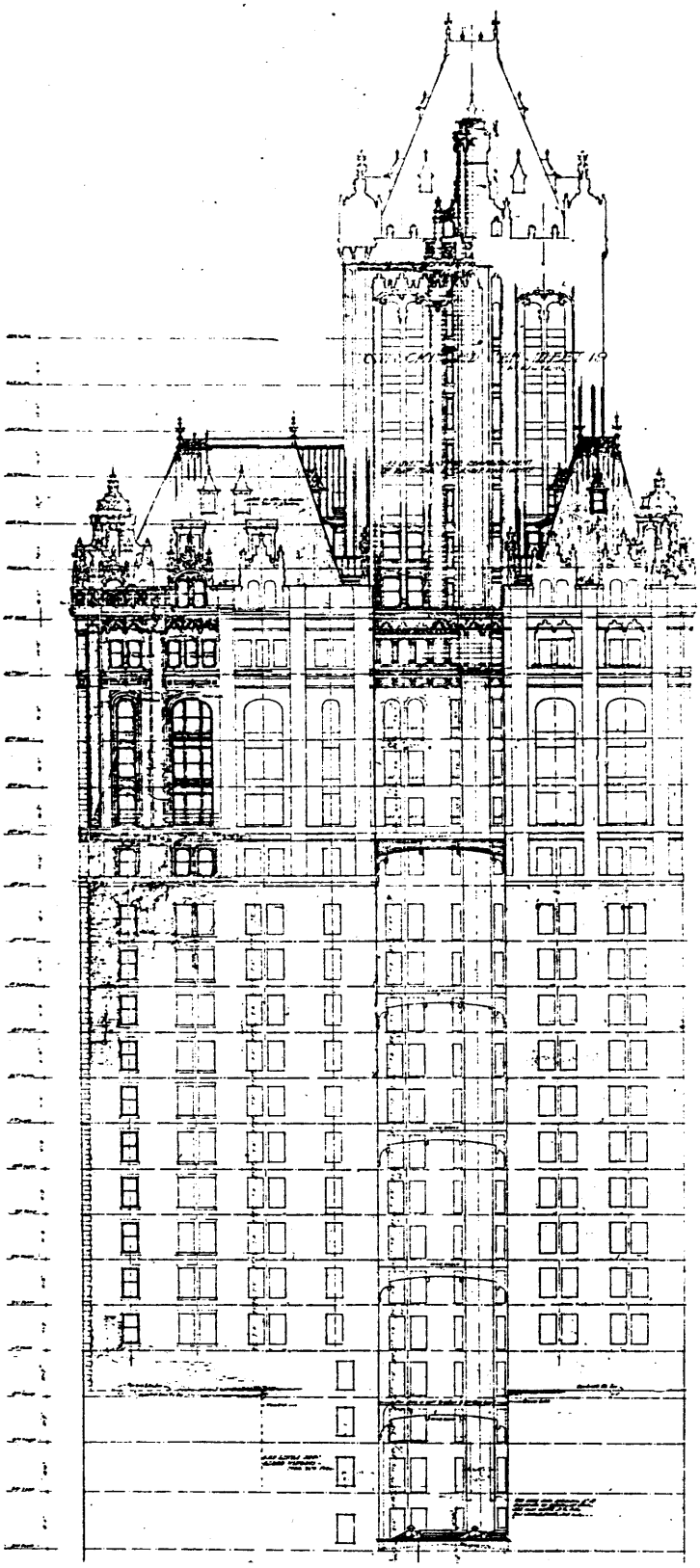
151. D.H. Burnham & Company, Fisher Building, lobby



152. Cyrus L.W. Eidlitz, Times Building, New York, 1903-4

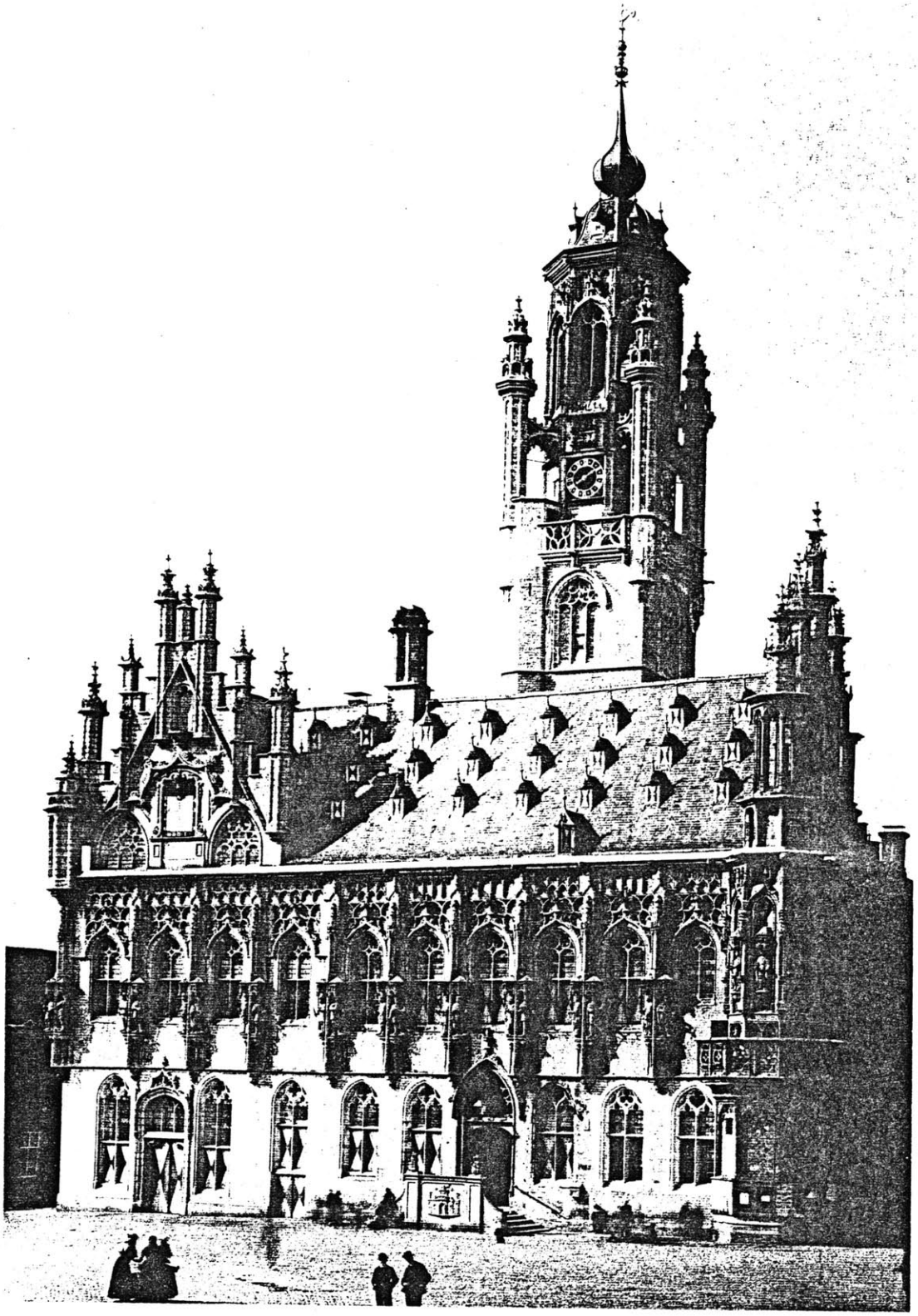


153. Cyrus L.W. Eidlitz, Washington Life Building, New York, 1897-98

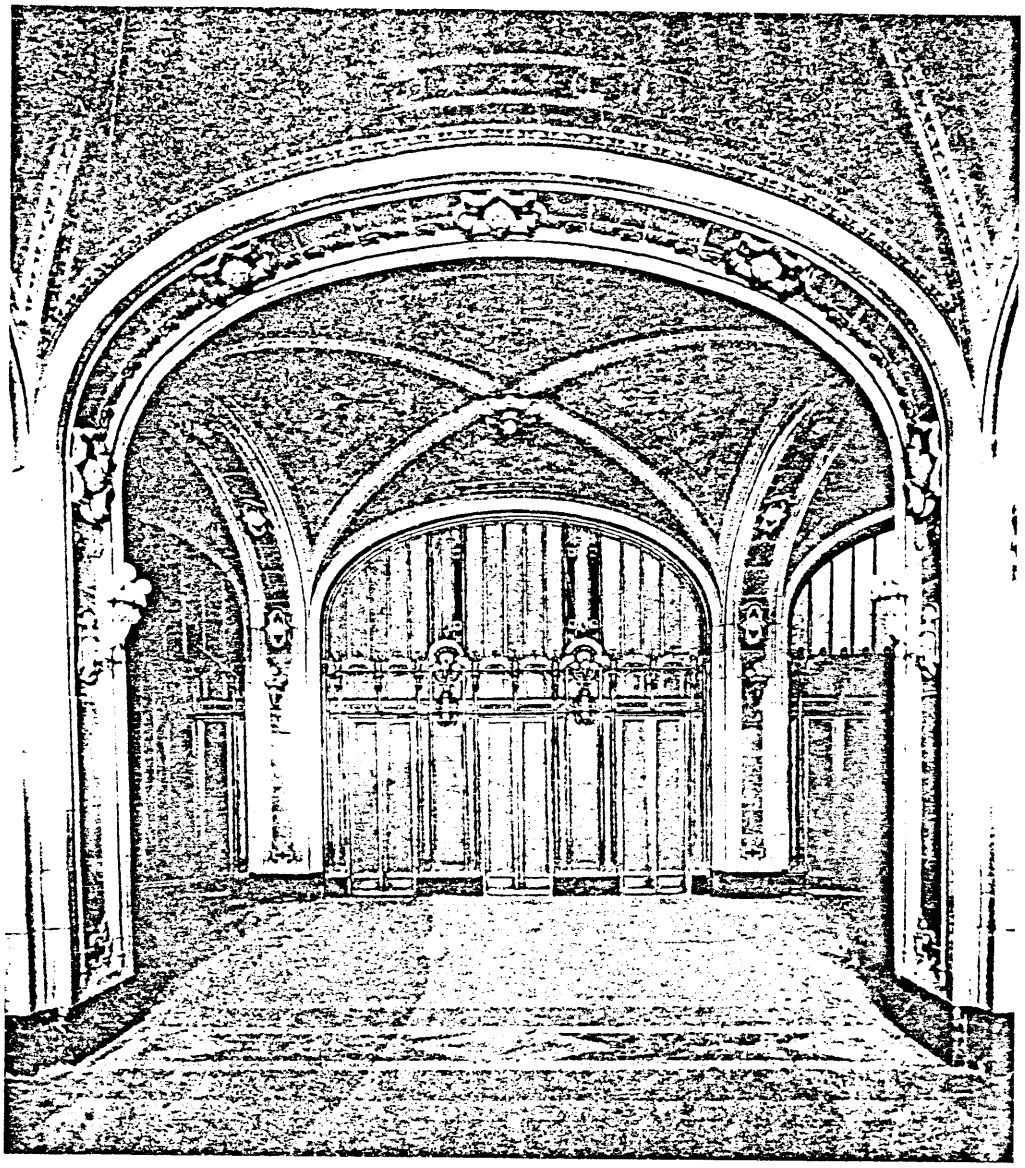


154. Cass Gilbert, West Street Building, original design, 1905

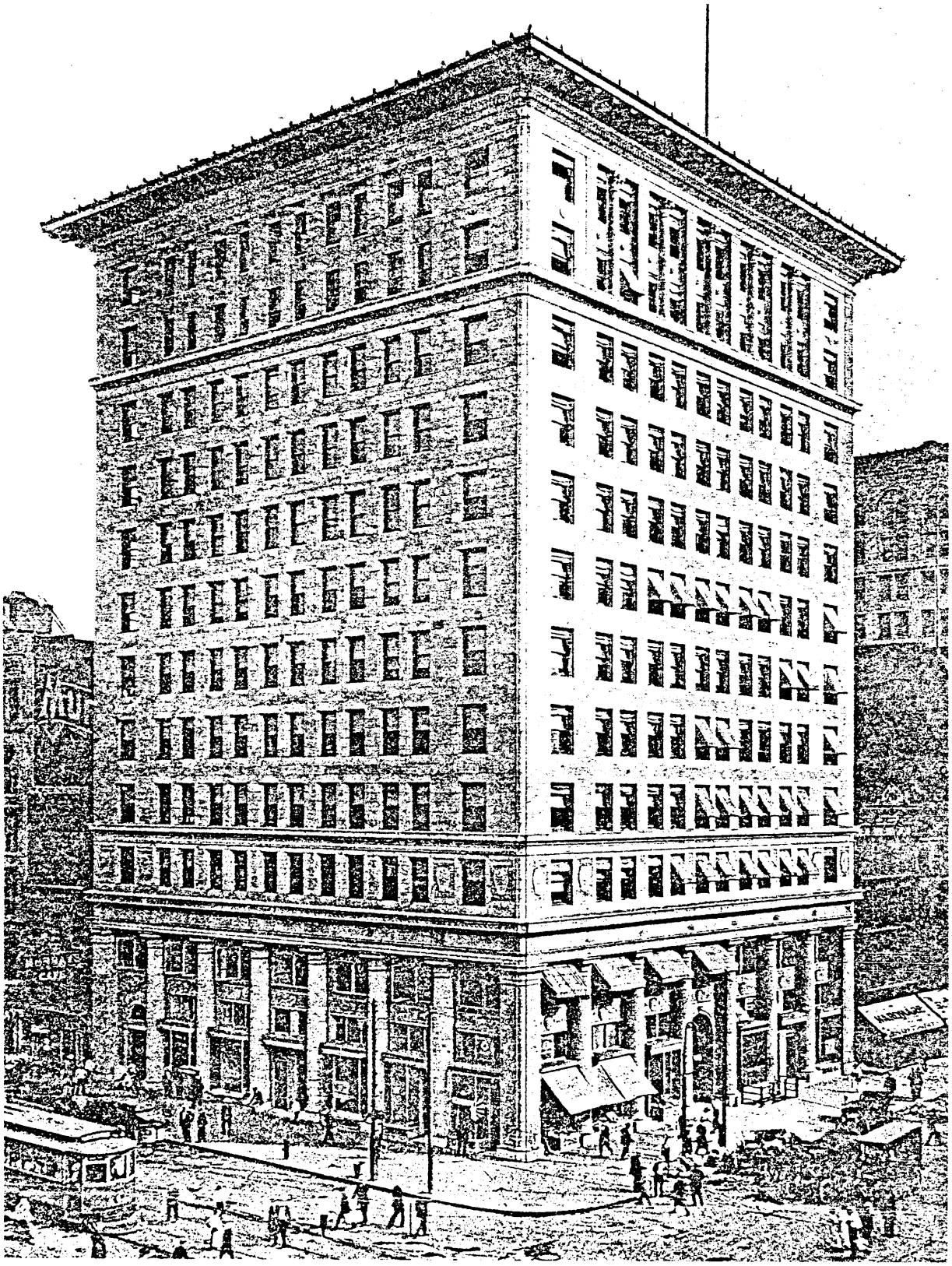
155. Hôtel de Ville, Brussels, Belgium, 1402-54



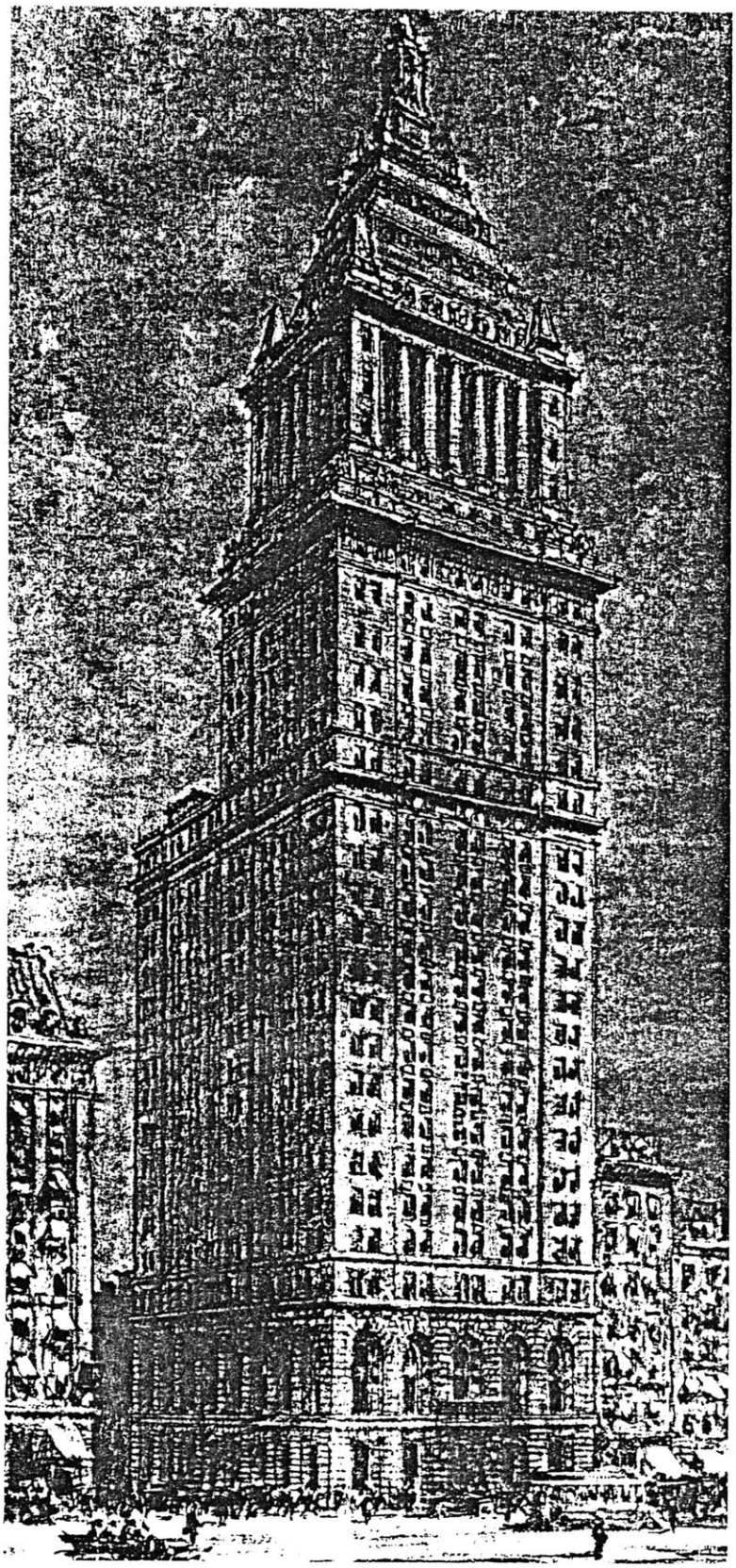
156. Hôtel de Ville, Middelburg, Netherlands, 1452-1520



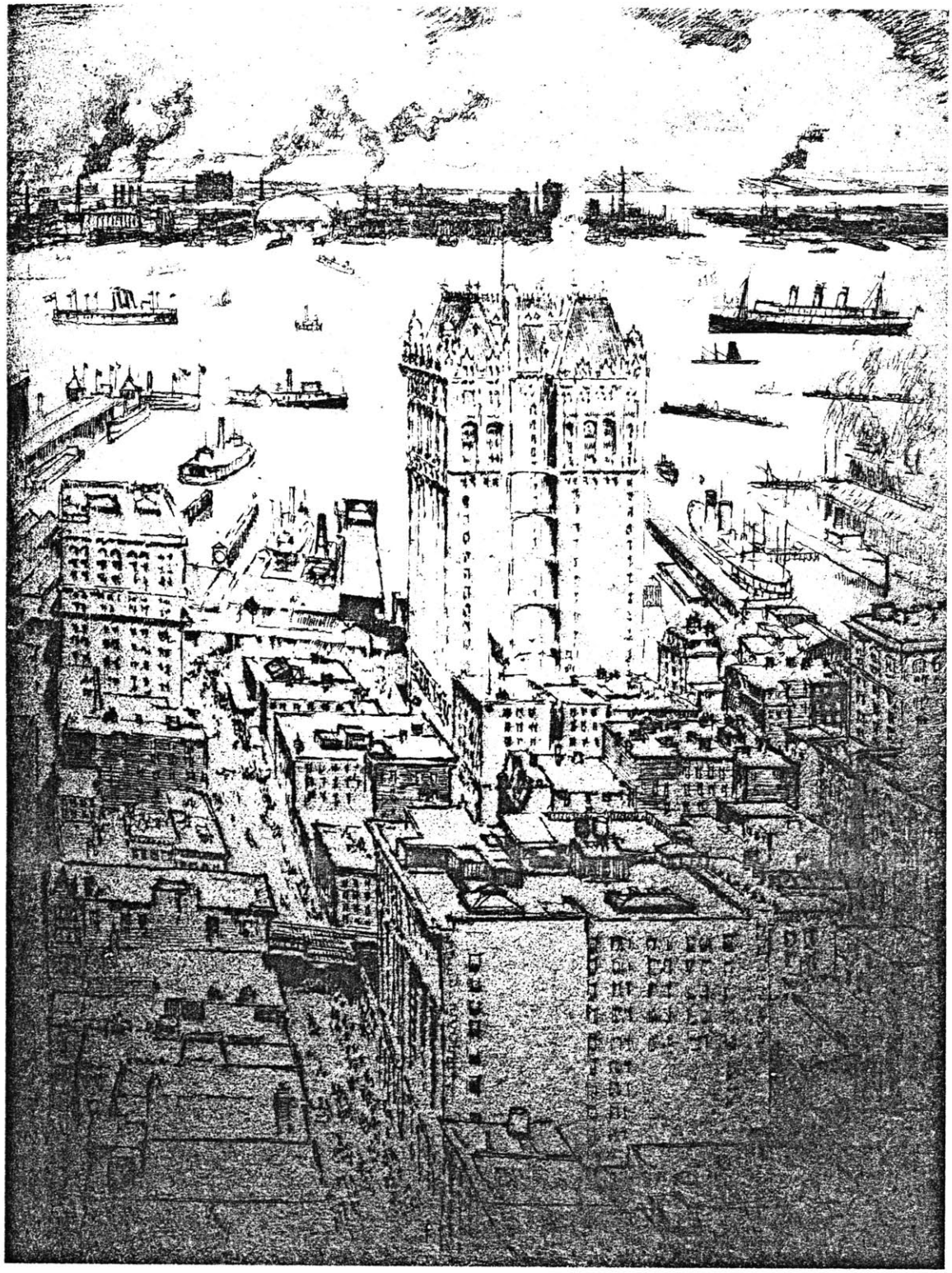
157. Cass Gilbert, West Street Building, lobby



158. Cass Gilbert, Kinney Building, Newark, New Jersey, 1912-13

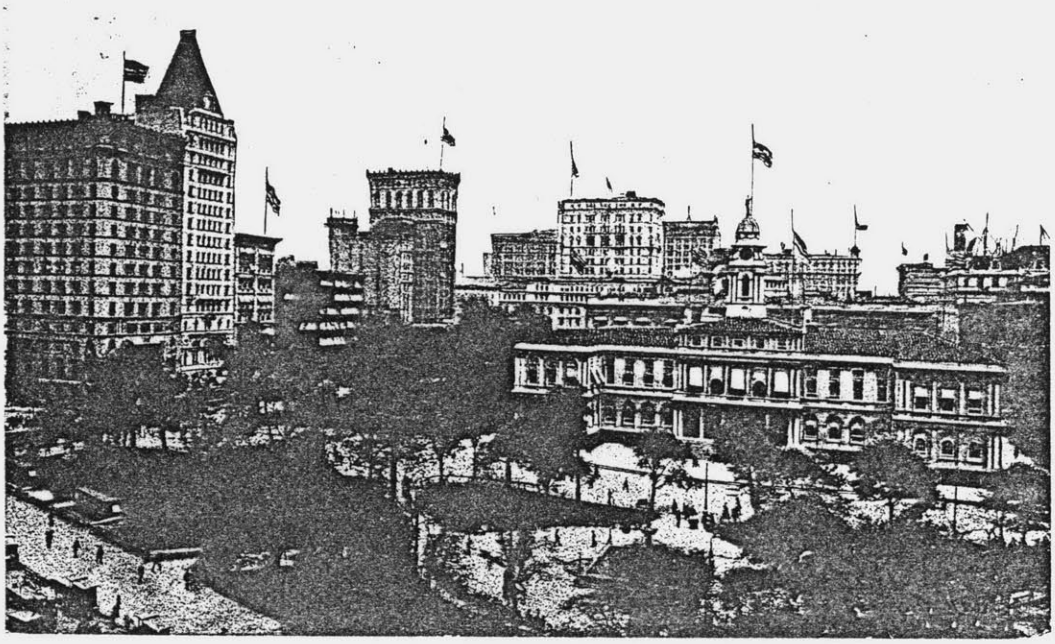


159. Cass Gilbert, Union Central Life Insurance Company Building, Cincinnati, preliminary design, 1911

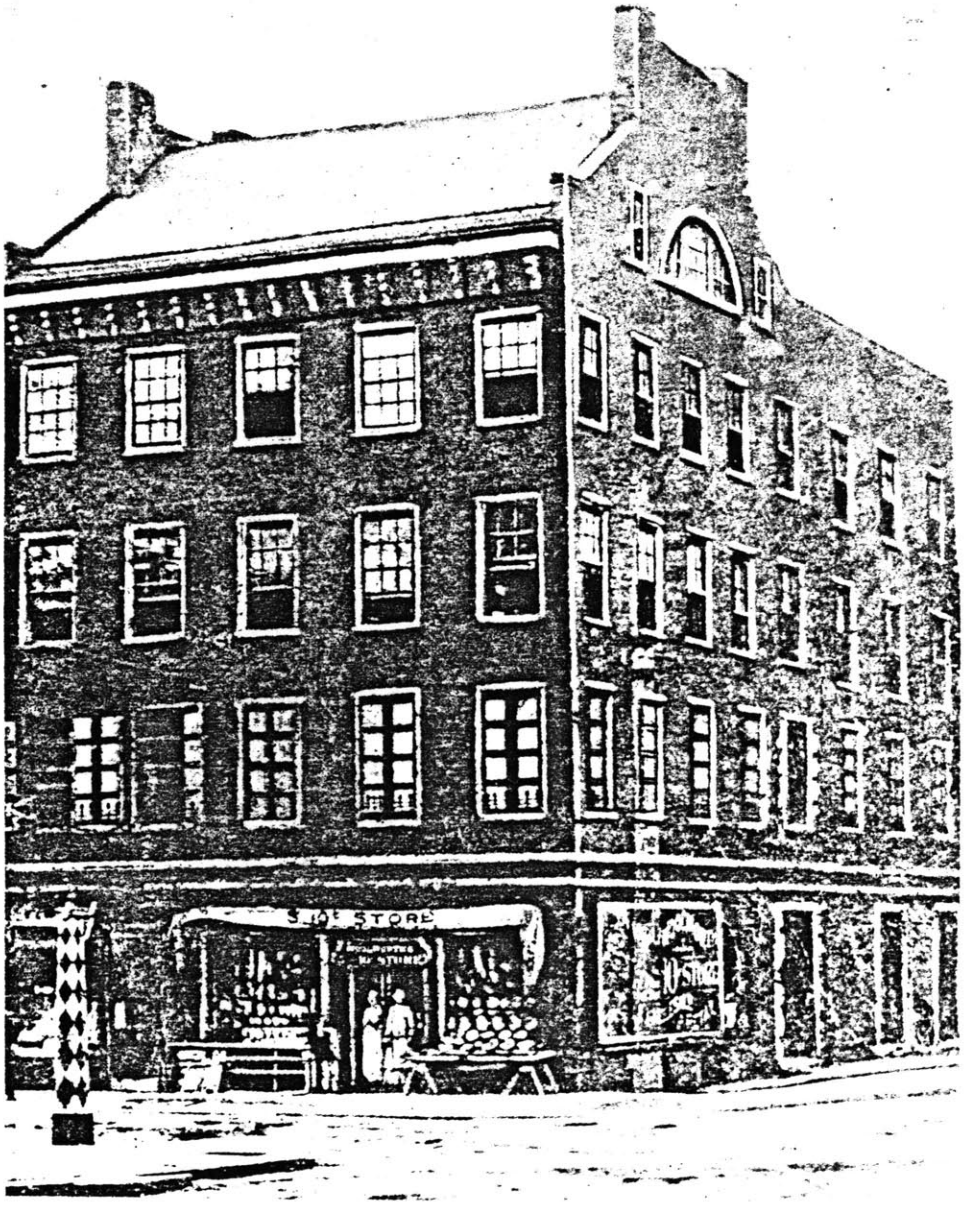


160. Joseph Pennell, "The West Street Building from the Singer Building," 1908

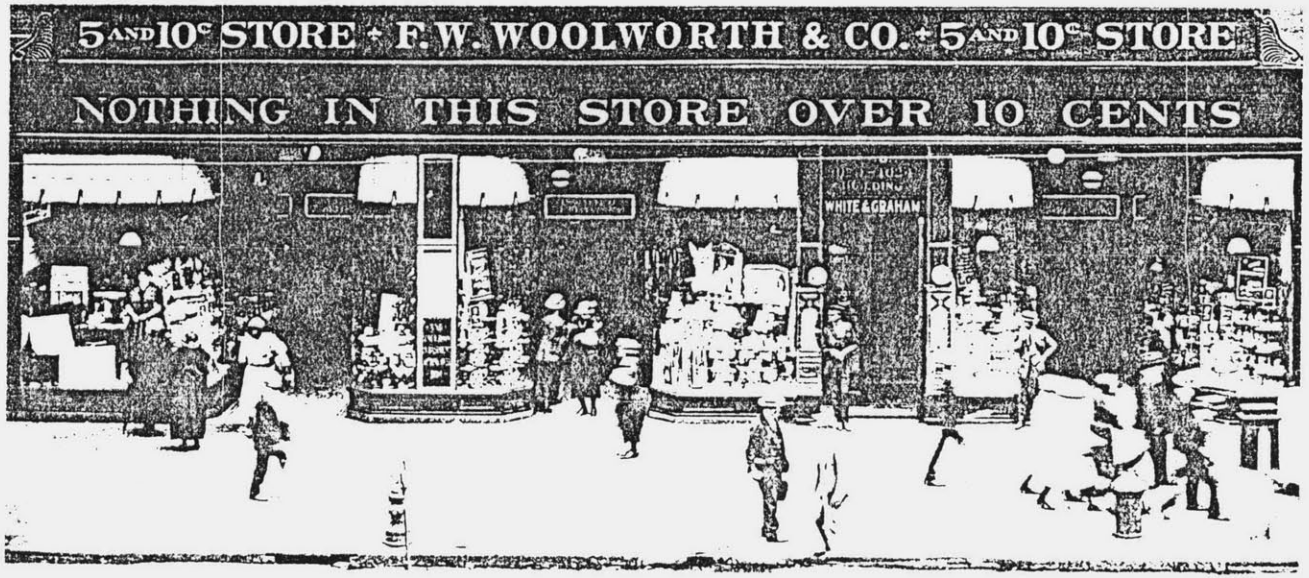
161. City Hall Park, New York, c. 1900



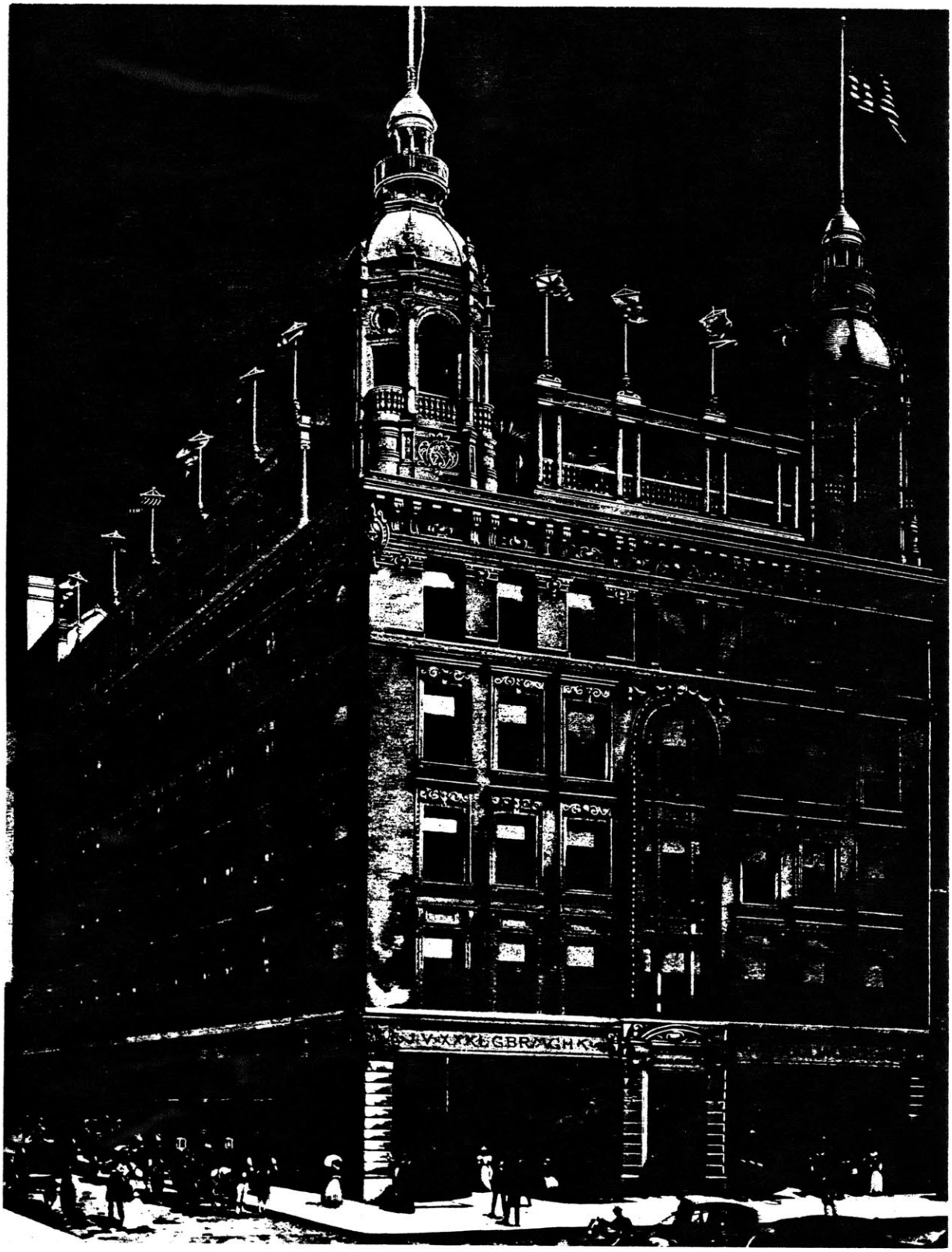
162. City Hall Park, New York, c. 1900



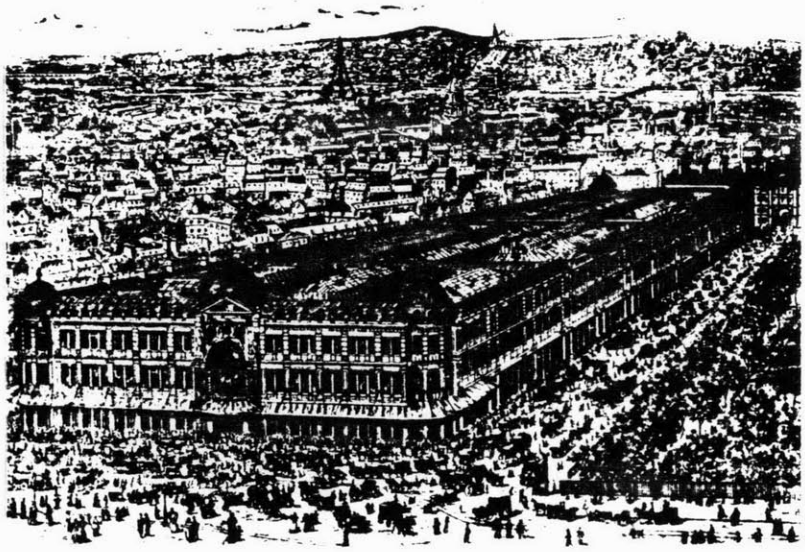
163. Woolworth's 5 and 10¢ Store, Lancaster, Pennsylvania, 1879



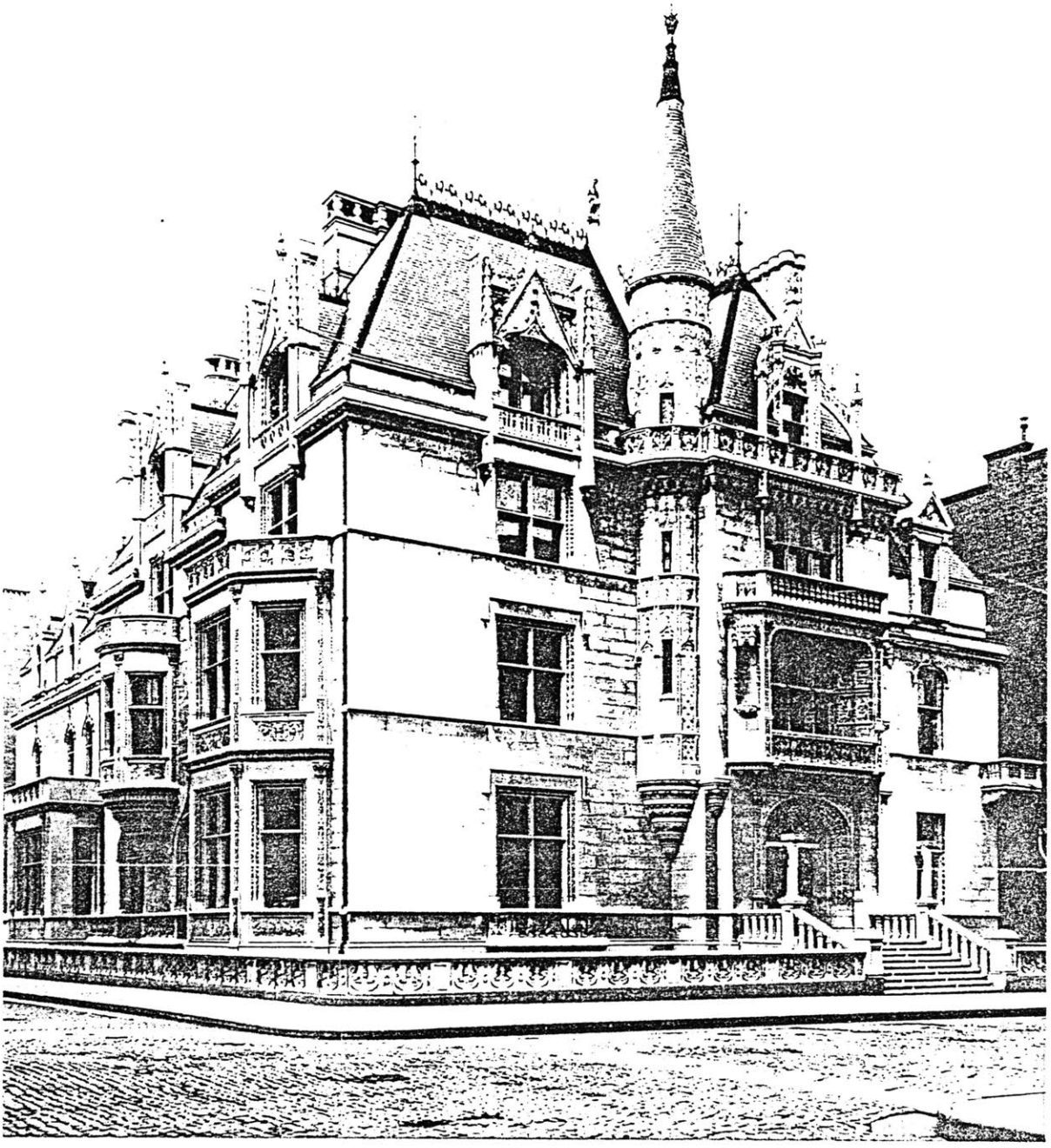
164. F.W. Woolworth & Co., 5 and 10¢ Store, c. 1905



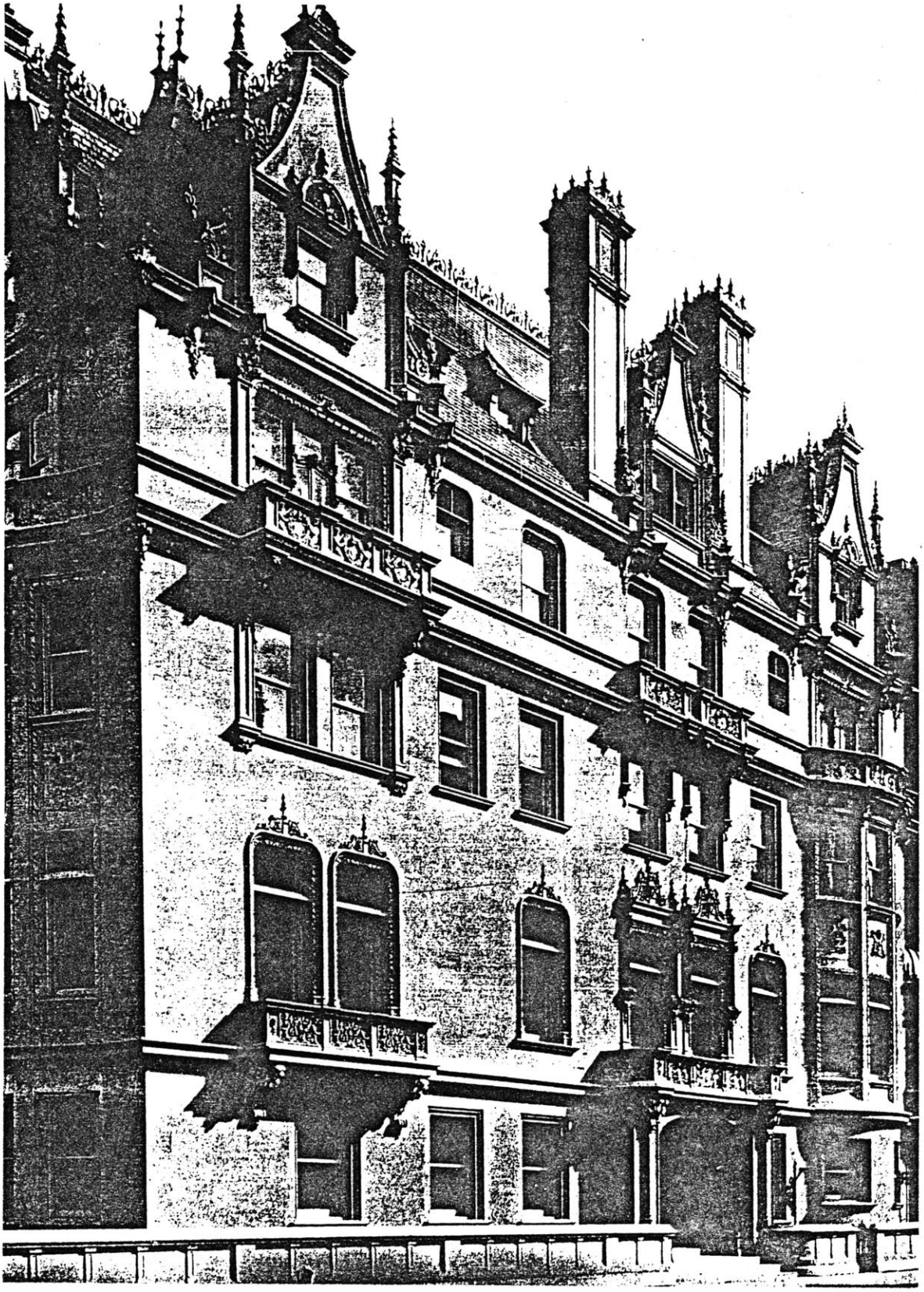
165. Woolworth Building, Lancaster, Pennsylvania, 1899



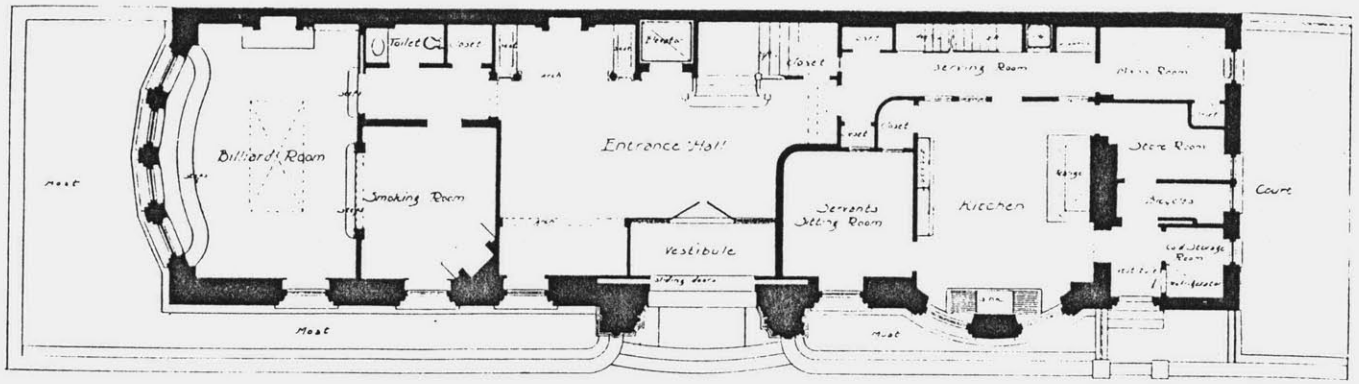
166. Bon Marché, Paris, 1869-72



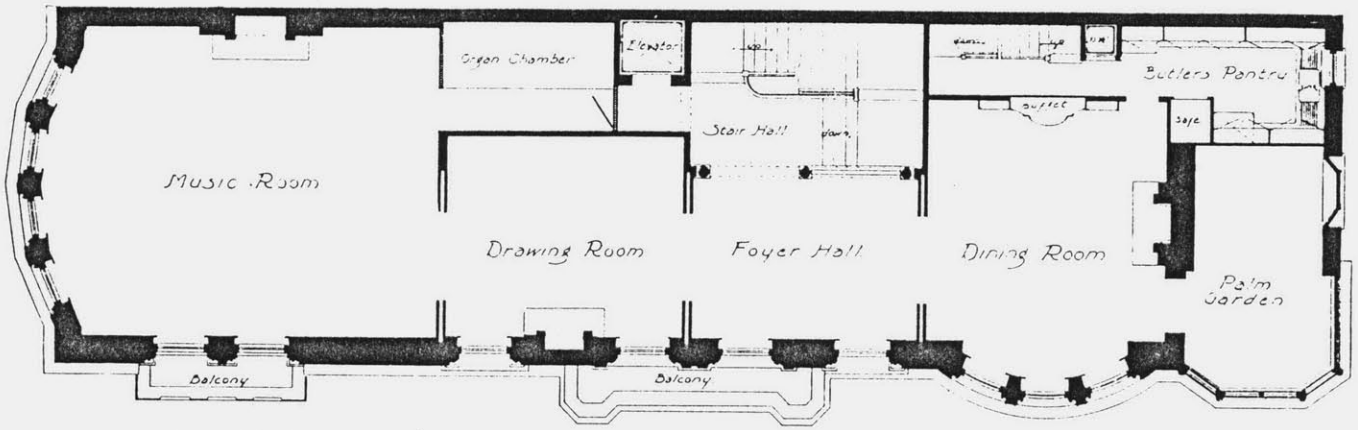
167. Richard Morris Hunt, William K. Vanderbilt House, New York, 1878-83



168. C.P.H. Gilbert, F.W. Woolworth House, New York, 1901

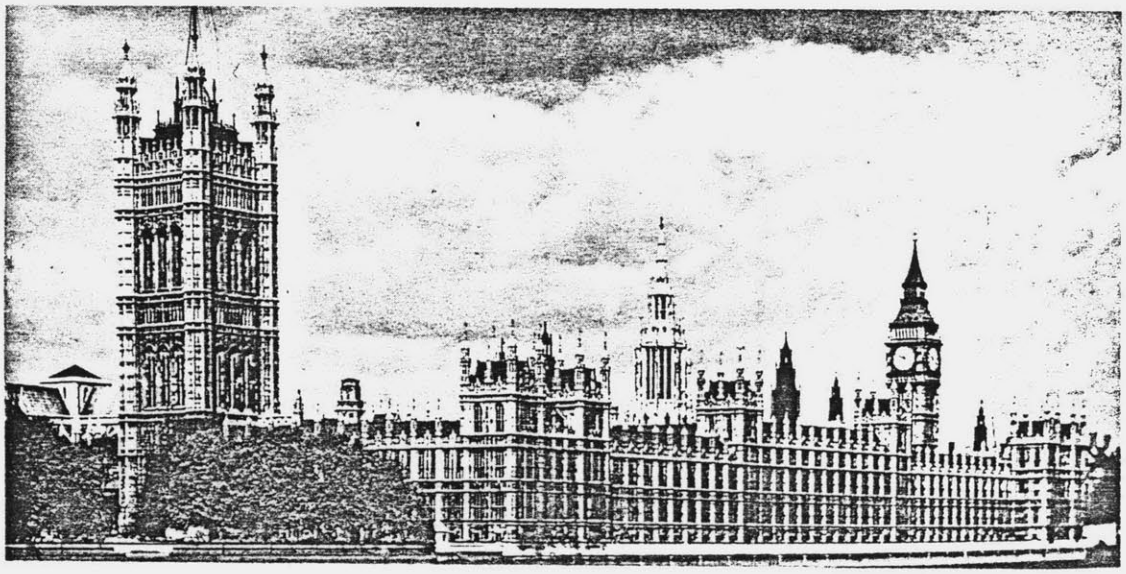


GROUND FLOOR PLAN, RESIDENCE, F. W. WOOLWORTH, FIFTH AVENUE AND EIGHTIETH STREET, NEW YORK.
C. P. H. Gilbert, Architect.

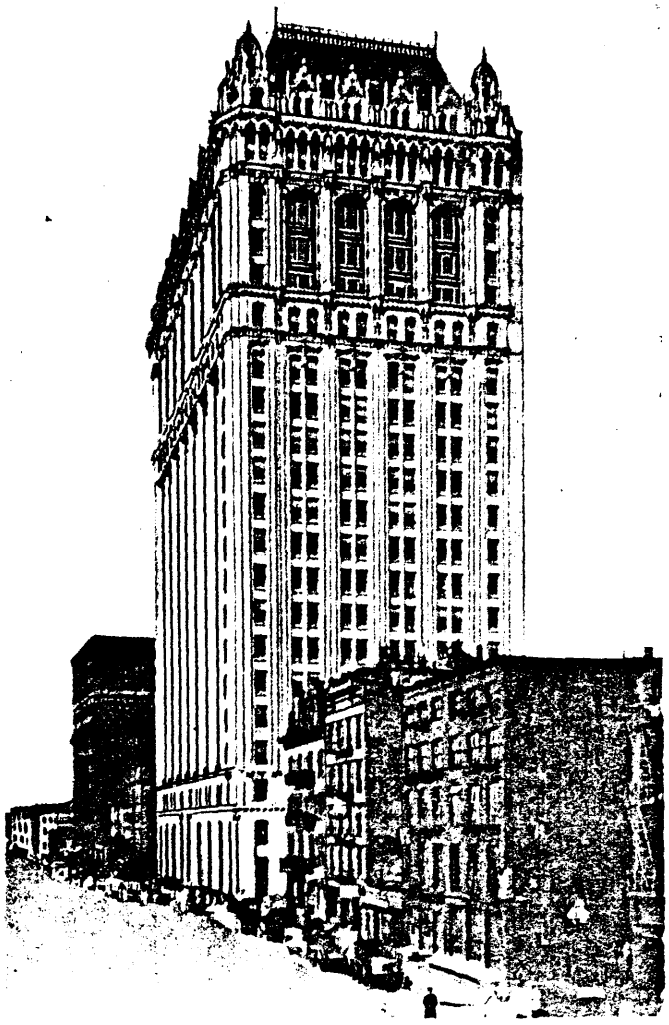


FIRST STORY PLAN, RESIDENCE, F. W. WOOLWORTH, FIFTH AVENUE AND EIGHTIETH STREET, NEW YORK.
C. P. H. Gilbert, Architect.

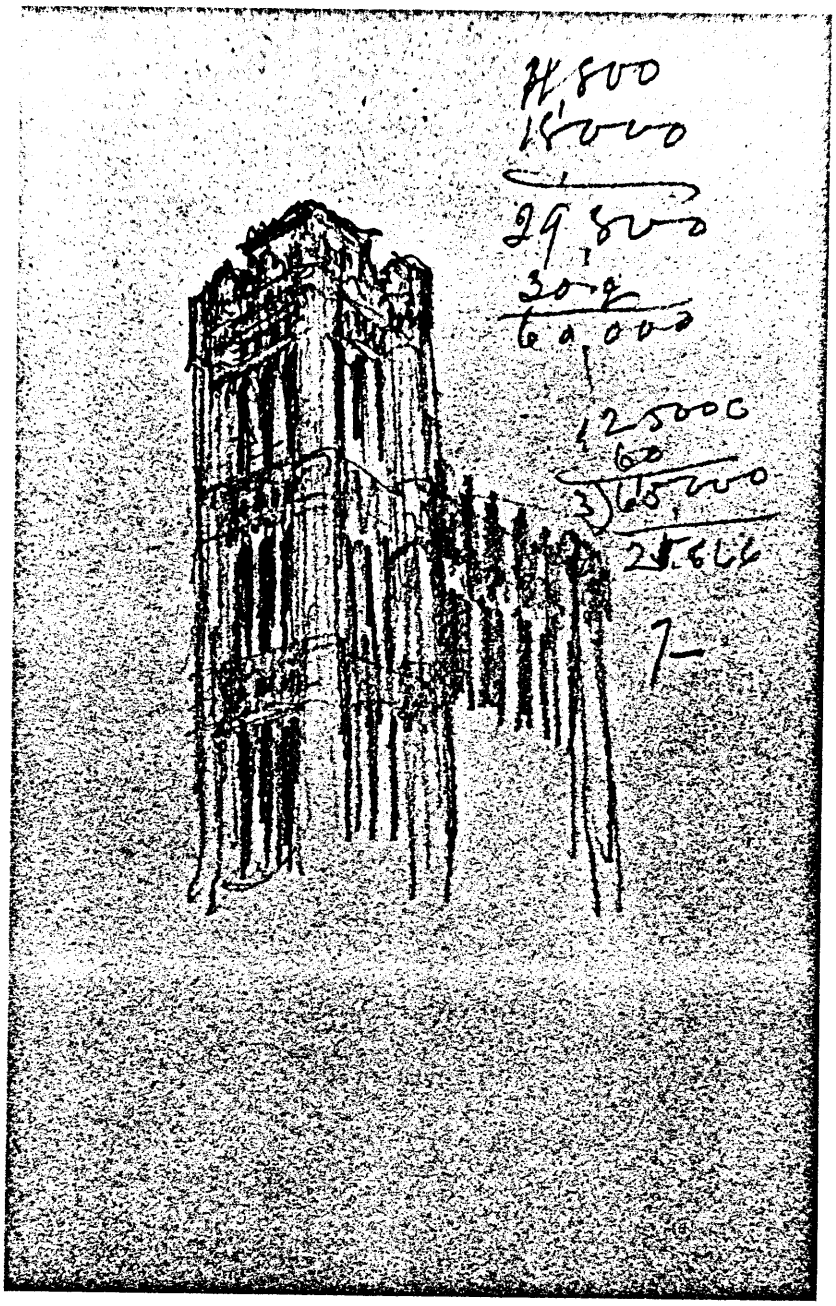
169. C.P.H. Gilbert, F.W. Woolworth House, plan



170. Houses of Parliament (Victoria Tower to left), London, 1836-68



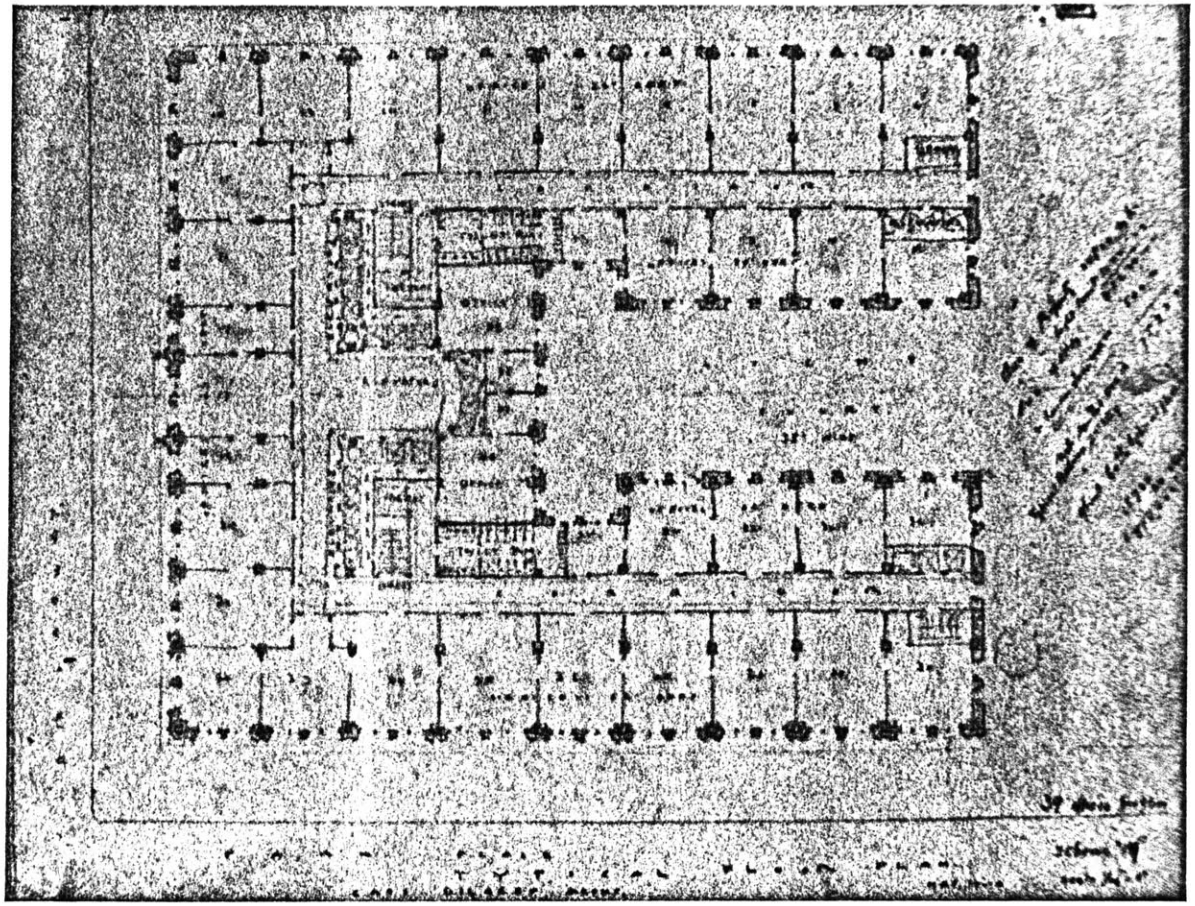
171. Cass Gilbert, West Street Building, New York, 1905-7



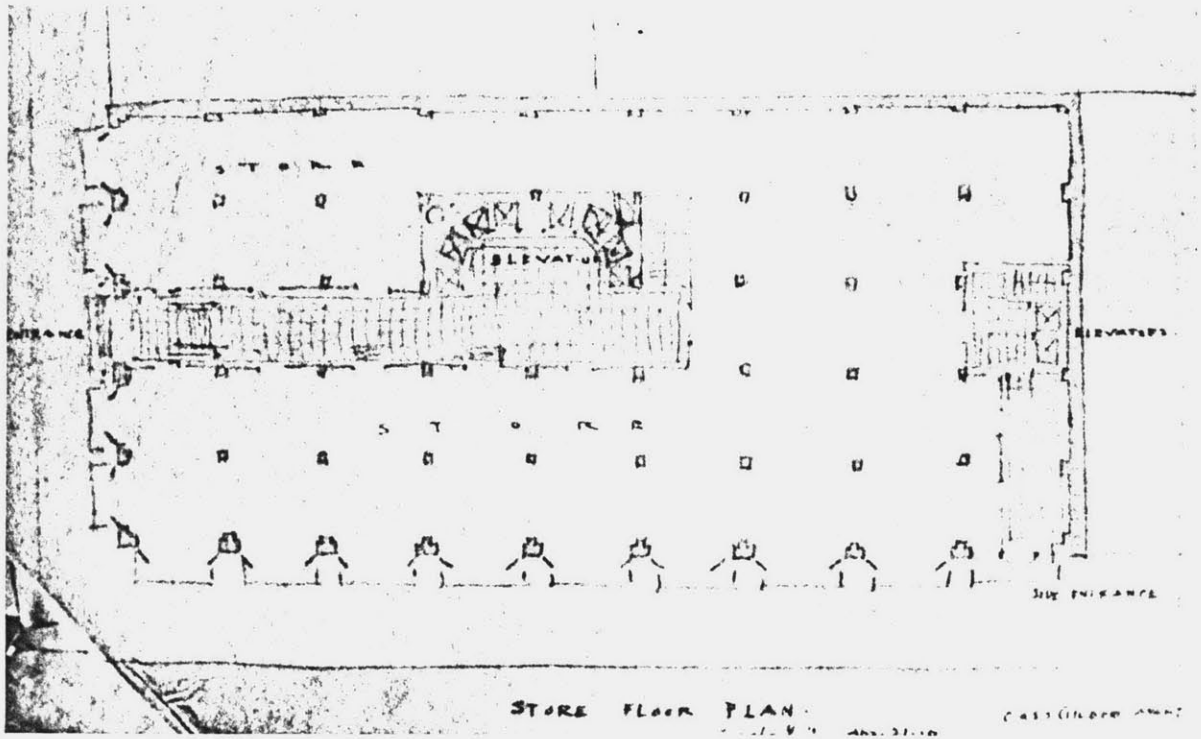
172. Cass Gilbert, Woolworth Building, preliminary sketch

173. Cass Gilbert and architectural staff on roof of Metropolitan Life Insurance Annex Building, c. 1910

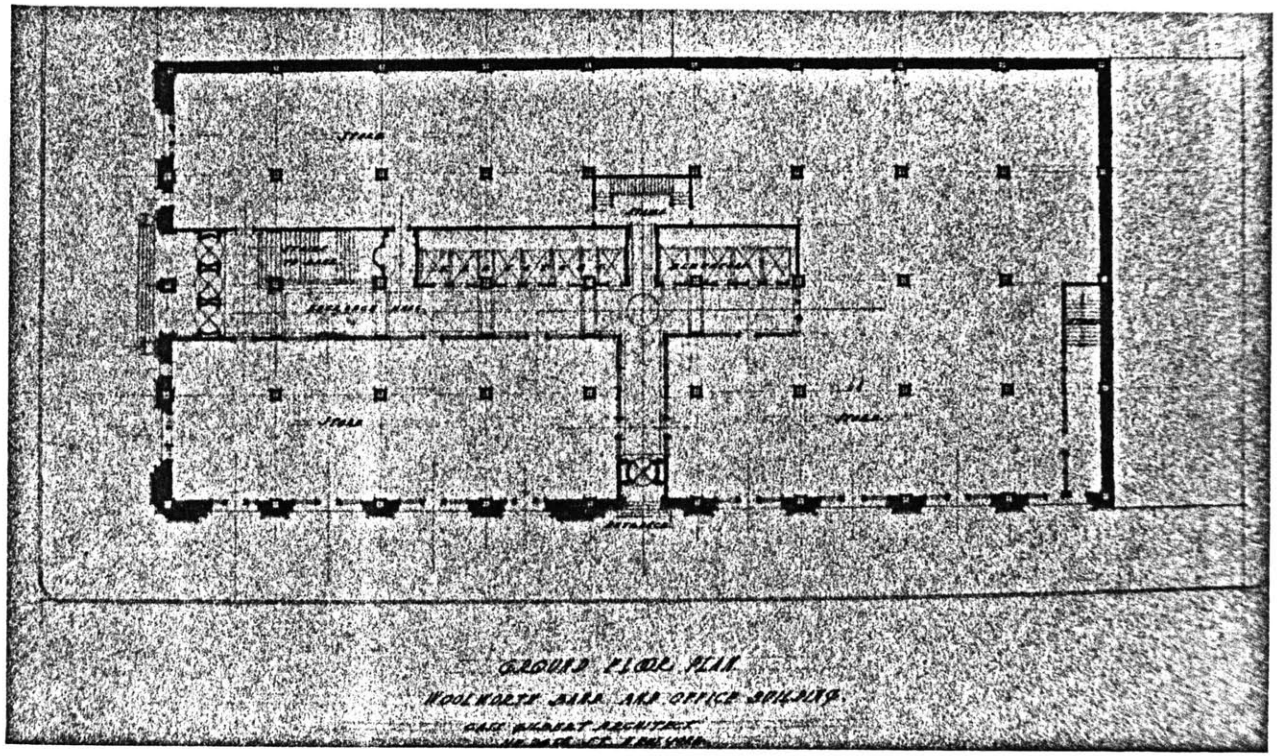
174. Cass Gilbert, United States Army Supply Base, Brooklyn, New York, 1918-19



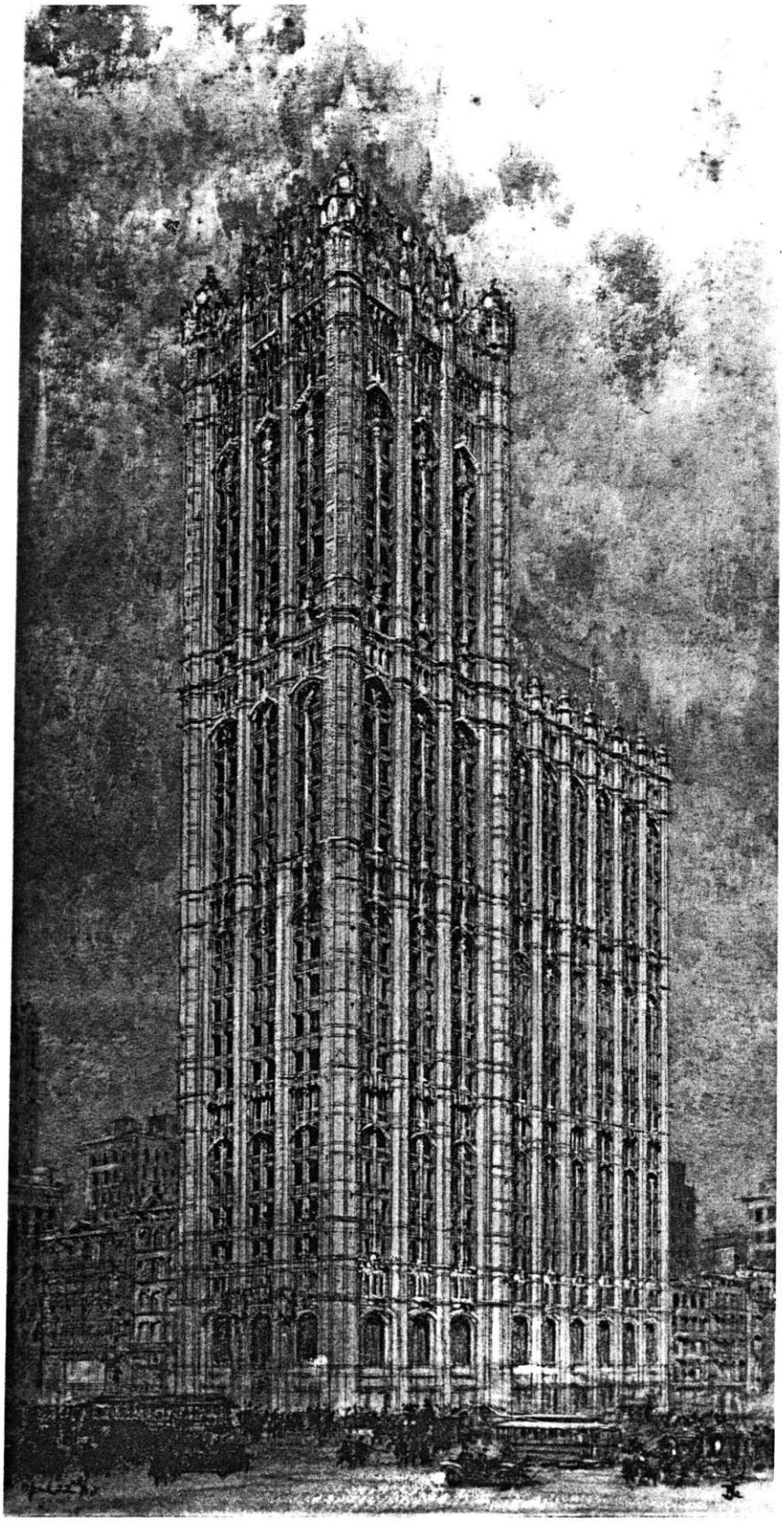
175. Woolworth Building, preliminary plan for typical upper floor, 17 May 1910



176. Woolworth Building, first proposal, plan of lobby, 21 April 1910

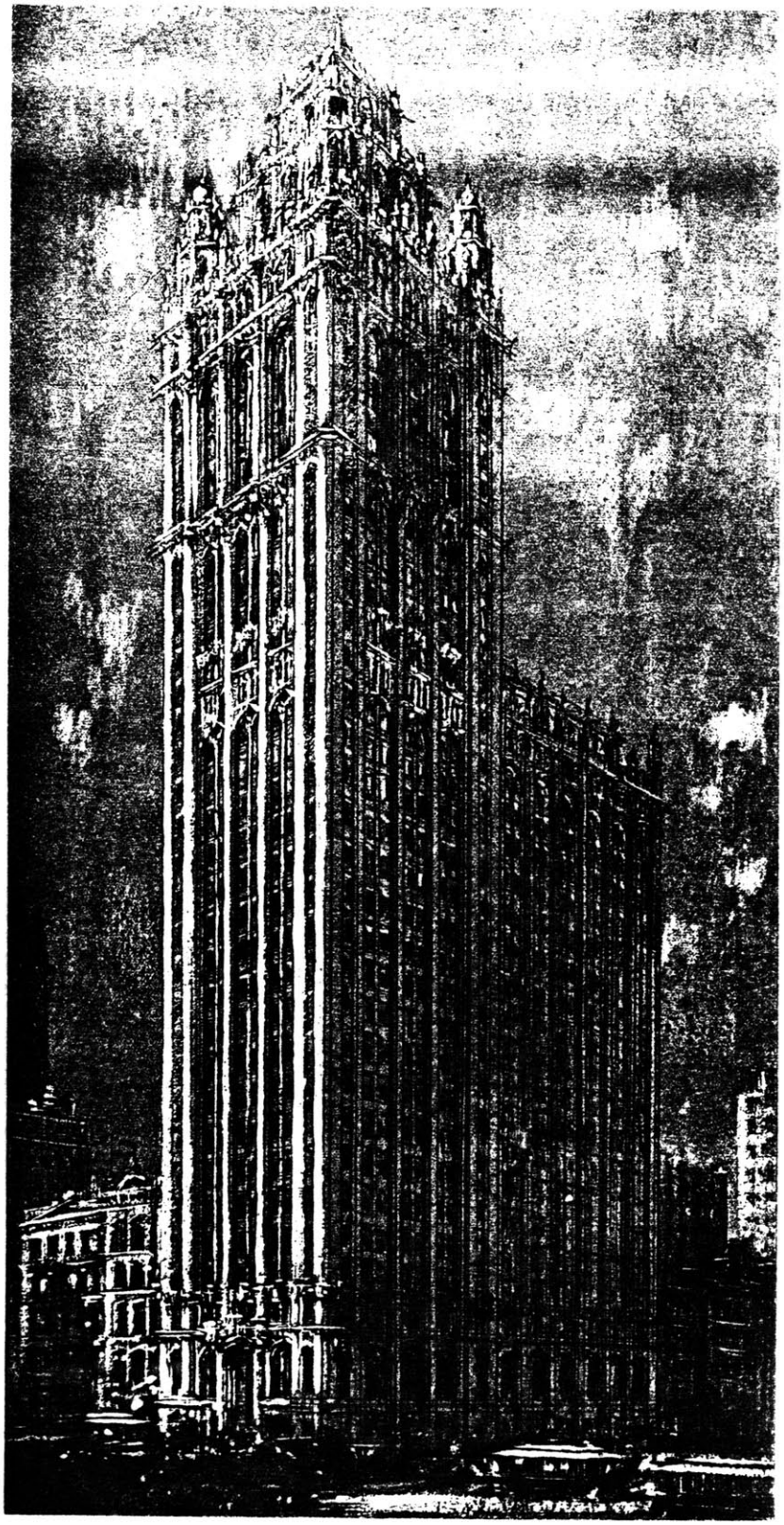


177. Woolworth Building, first proposal, plan of lobby, 5 May 1910

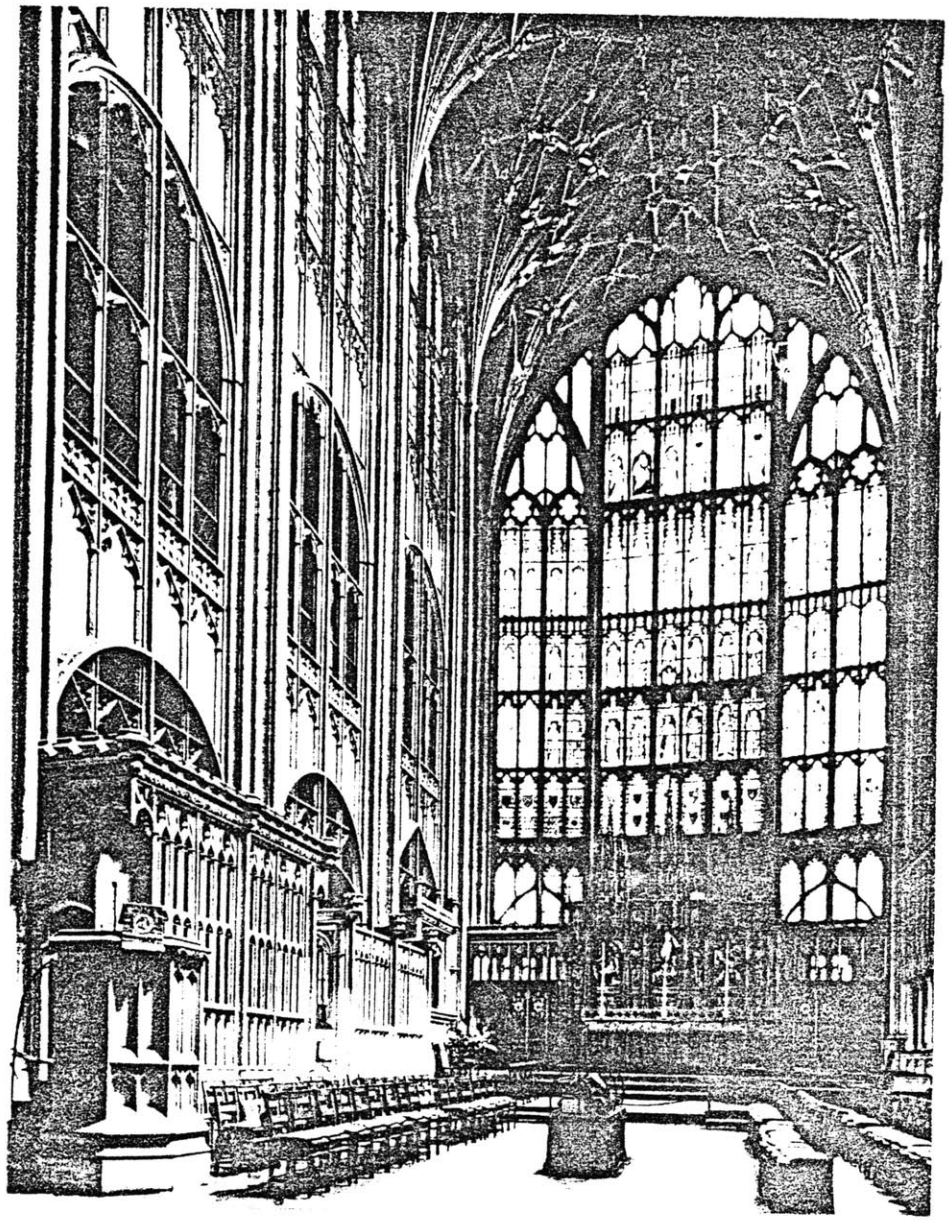


178. Woolworth Building, first proposal, perspective, 22 April 1910

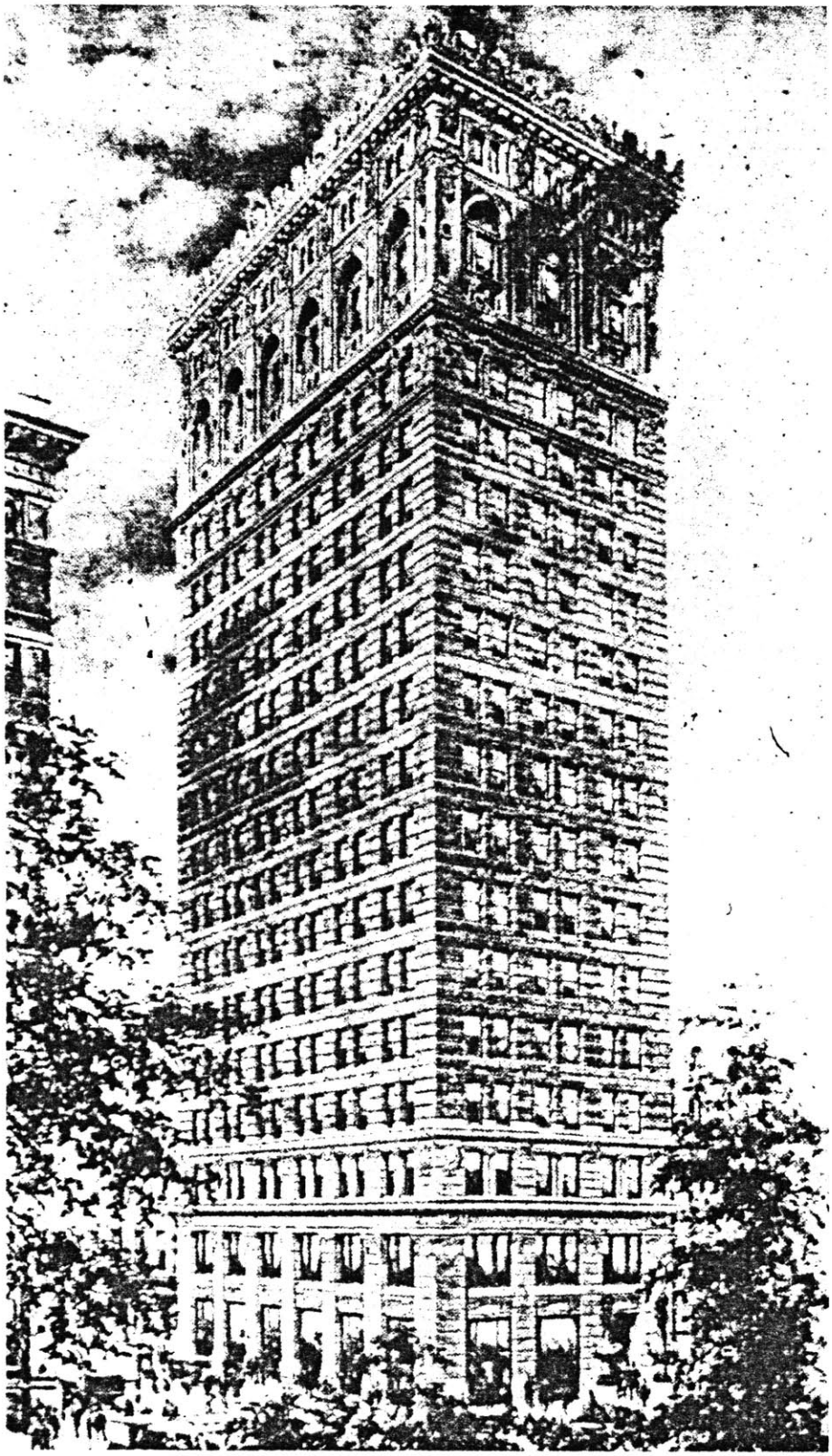
179. Victoria Tower, Houses of Parliament



180. Woolworth Building, first proposal, perspective, 25 April 1910

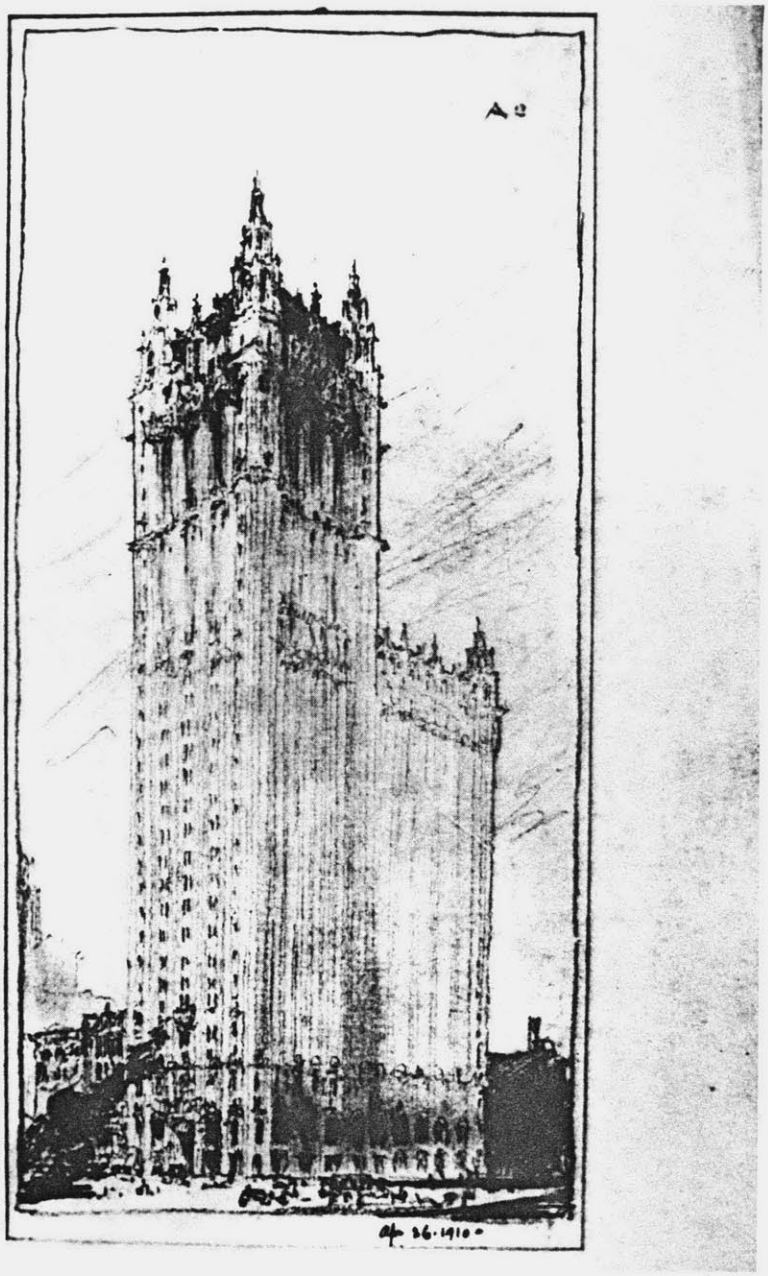


181. Gloucester Cathedral, choir, 1337-67



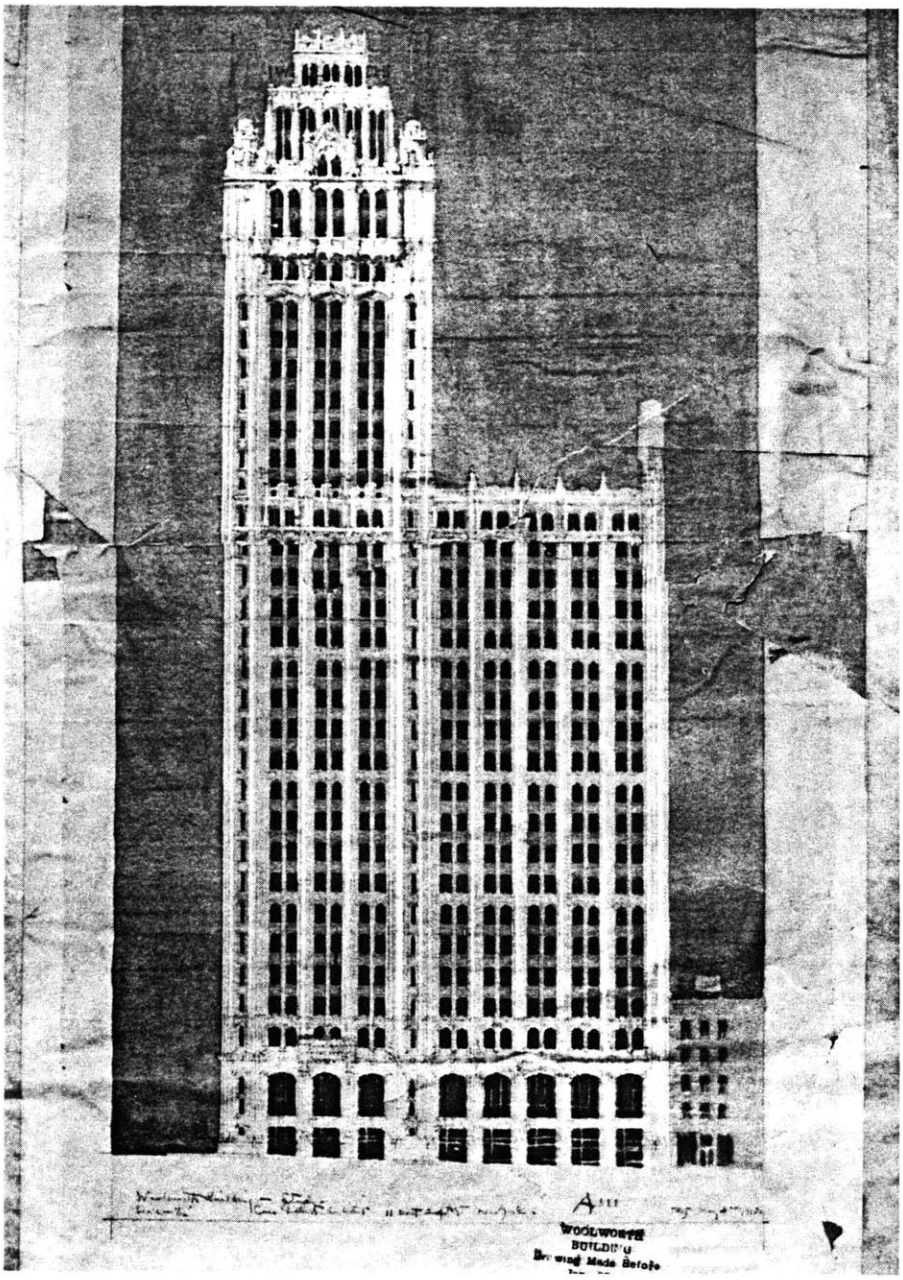
182. Cass Gilbert, Broadway Chambers Building, New York, 1899-1900

183. Cass Gilbert, West Street Building, New York, 1905-7

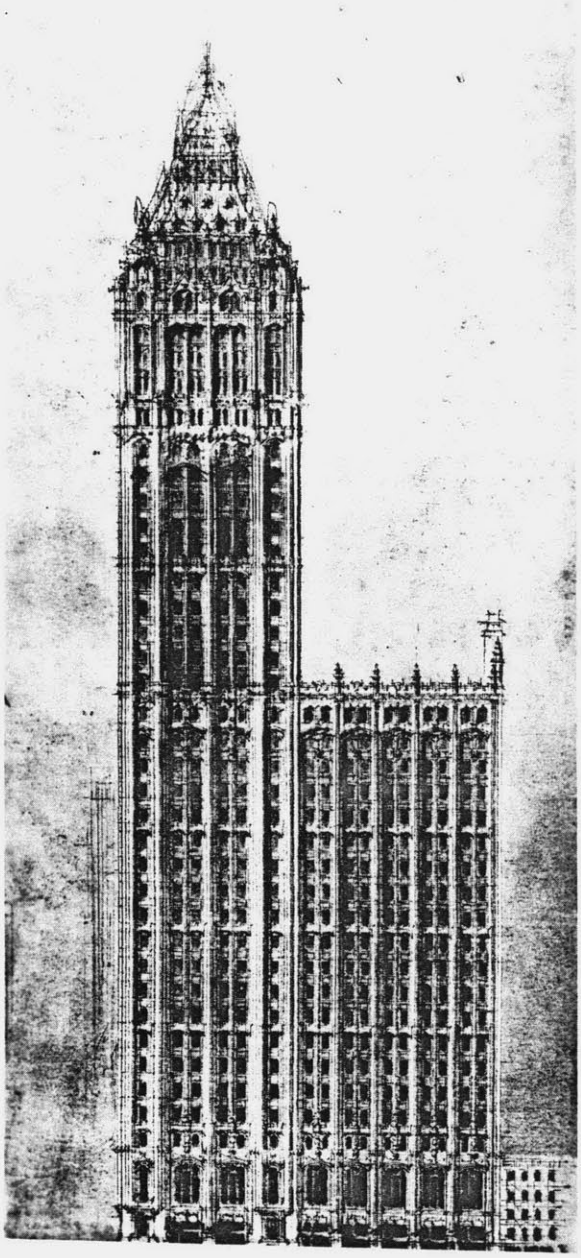


184. Cass Gilbert, Woolworth Building, first proposal, conceptual sketch, 26 April 1910

185. Cyrus L.W. Eidlitz, New York Times Building, New York, 1903-4

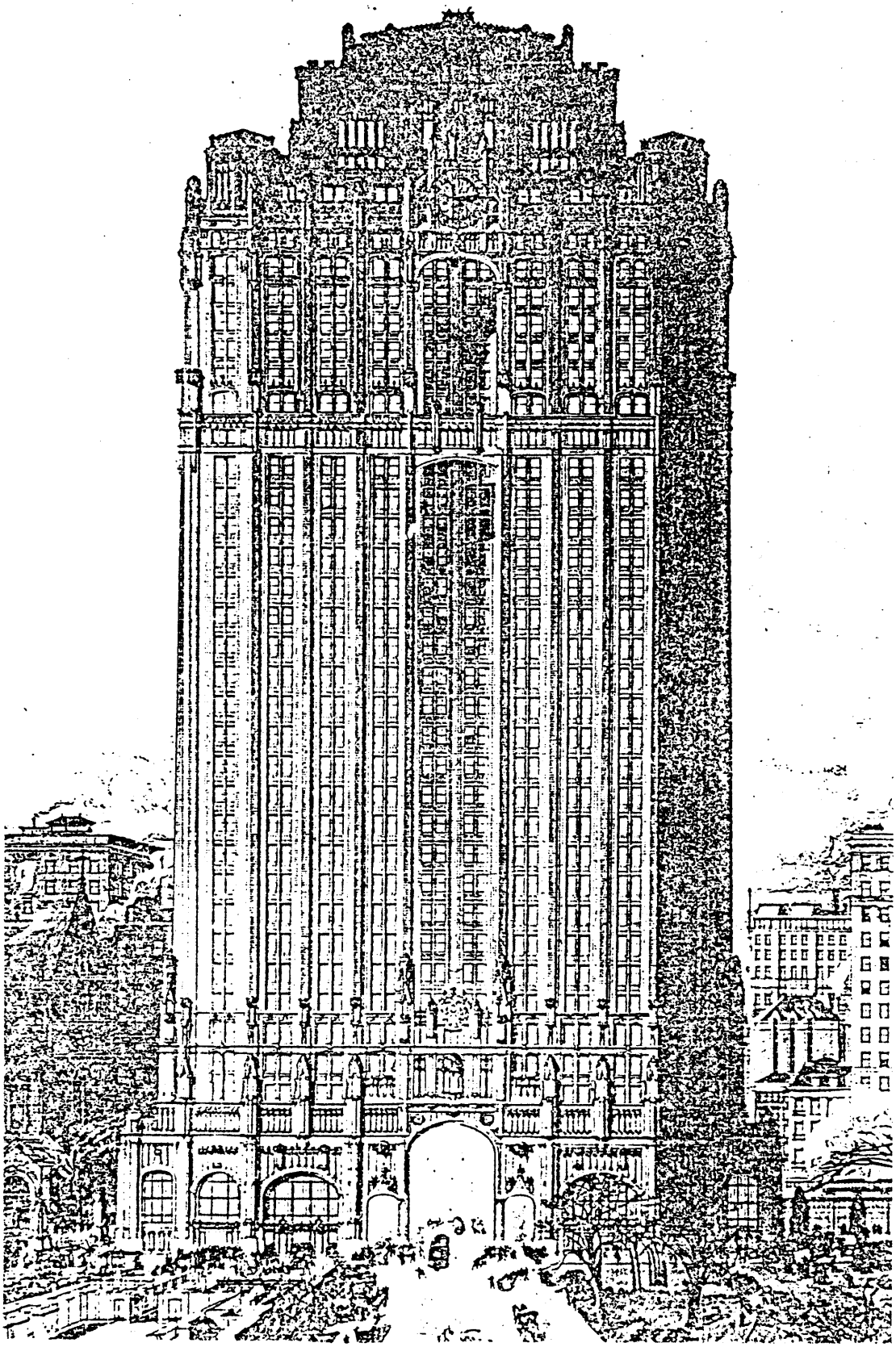


186. Woolworth Building, first proposal, Park Place elevation, 3 May 1910



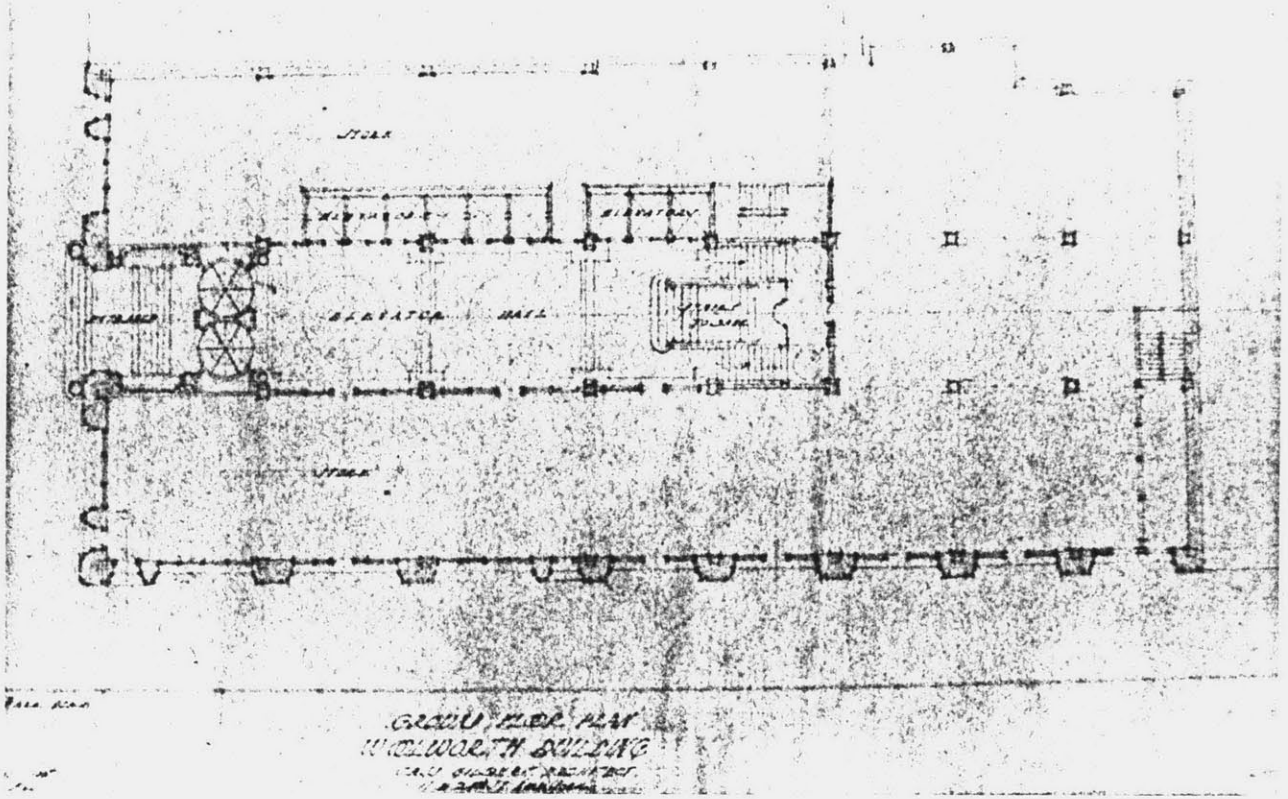
187. Woolworth Building, first proposal, Park Place elevation, 9 May 1910

188. Clock Tower, Houses of Parliament

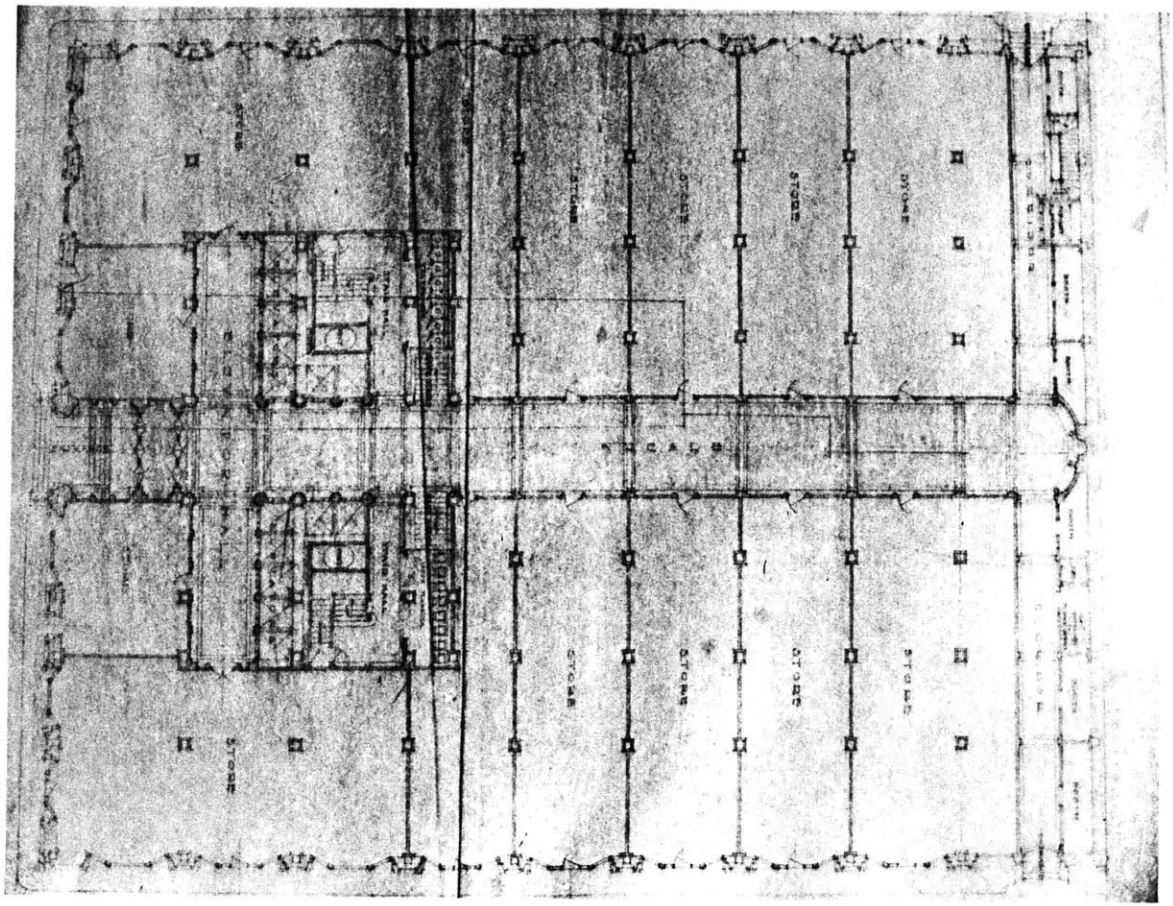


189. Howells & Stokes, Municipal Building, competition entry, 1907

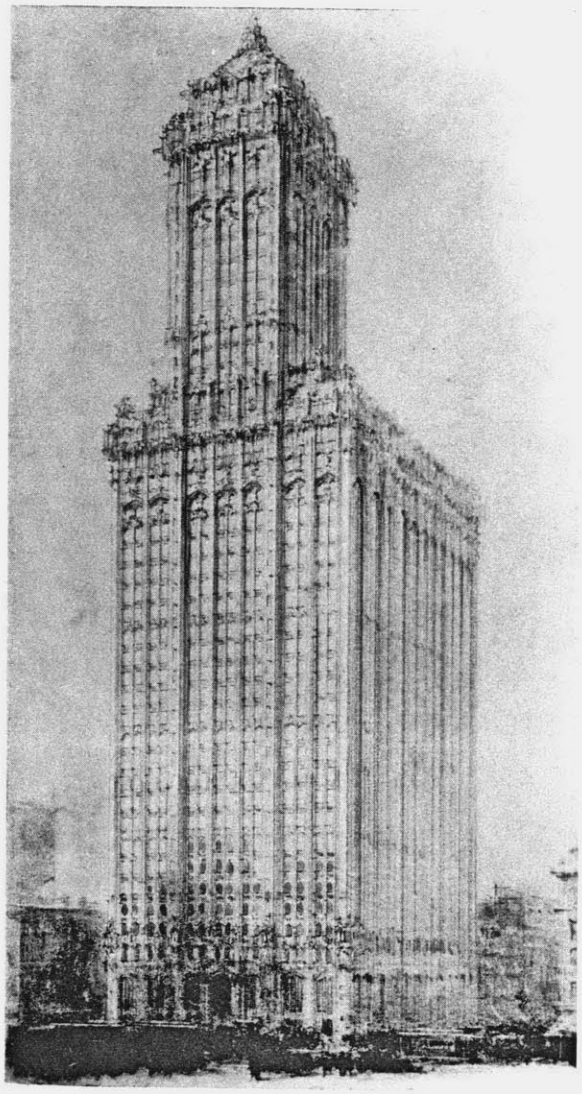
190. Louis Sullivan, Bayard (Condict) Building, New York, 1897-98



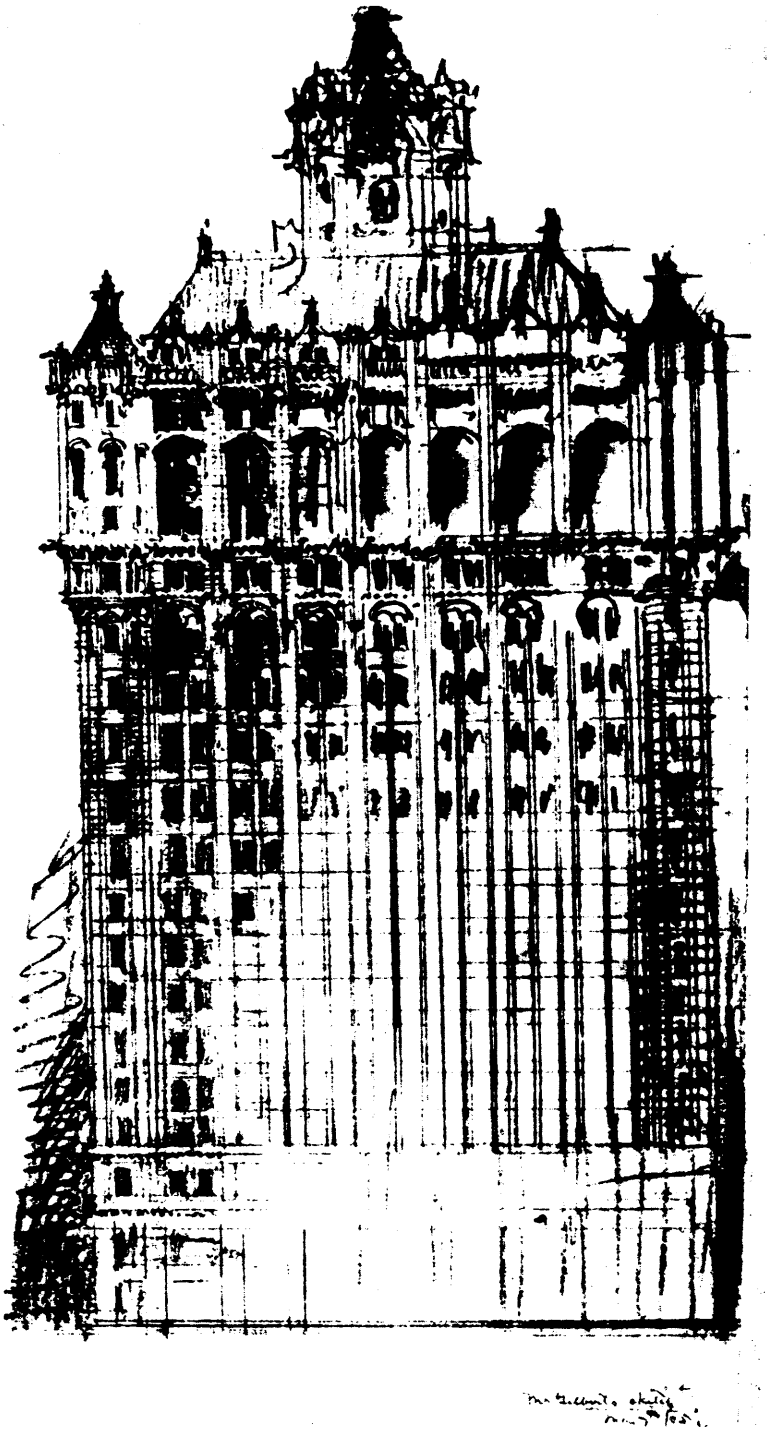
191. Woolworth Building, second proposal, plan of lobby, 14 May 1910



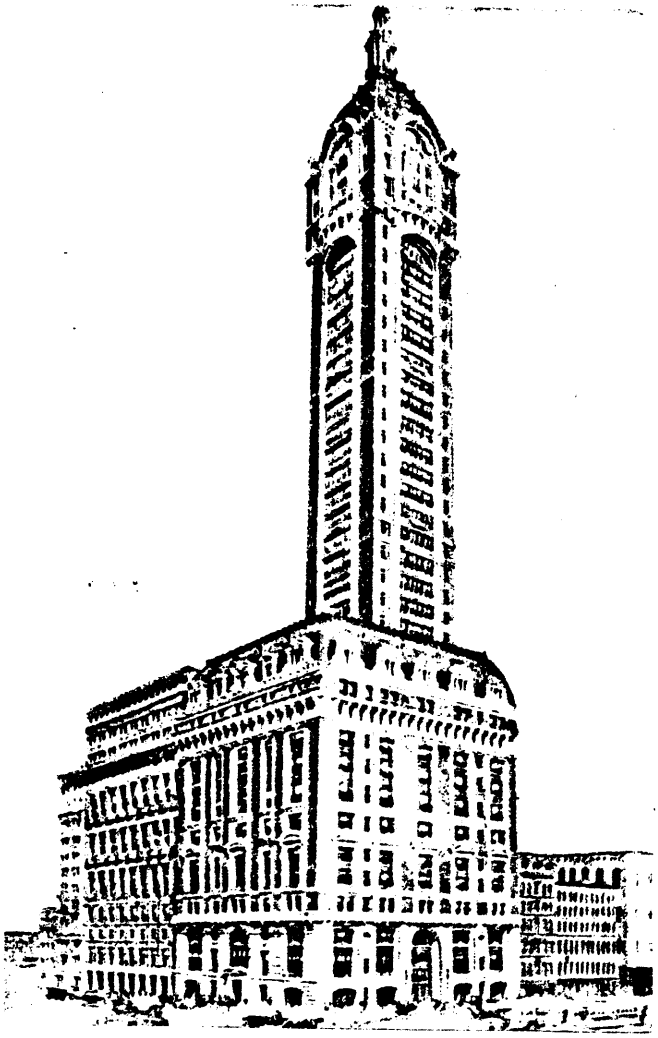
192. Woolworth Building, second proposal, plan of arcade, 21 June 1910



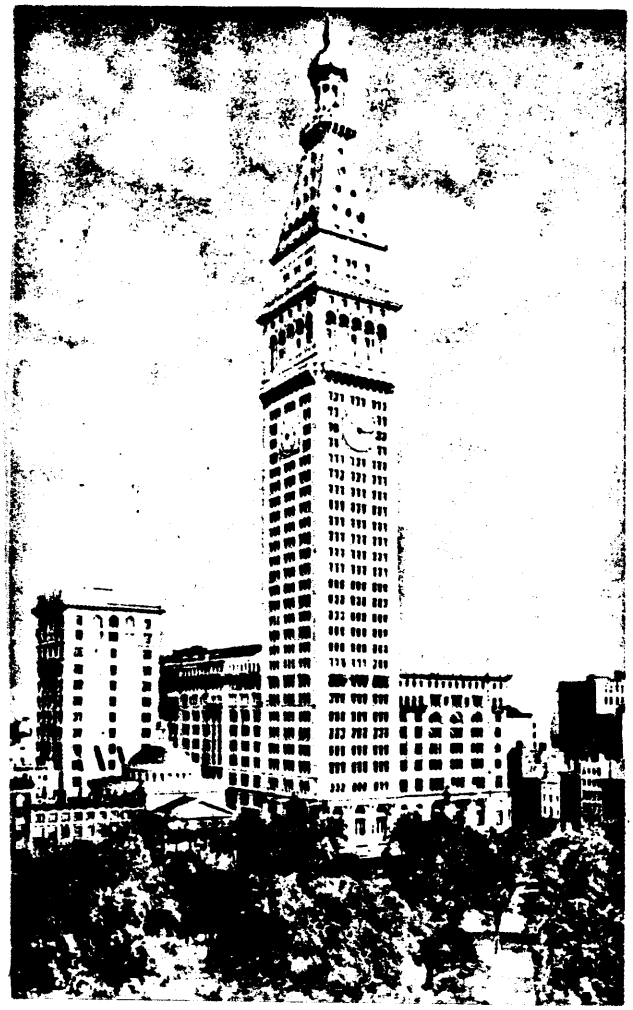
193. Woolworth Building, second proposal, perspective, 6 July 1910



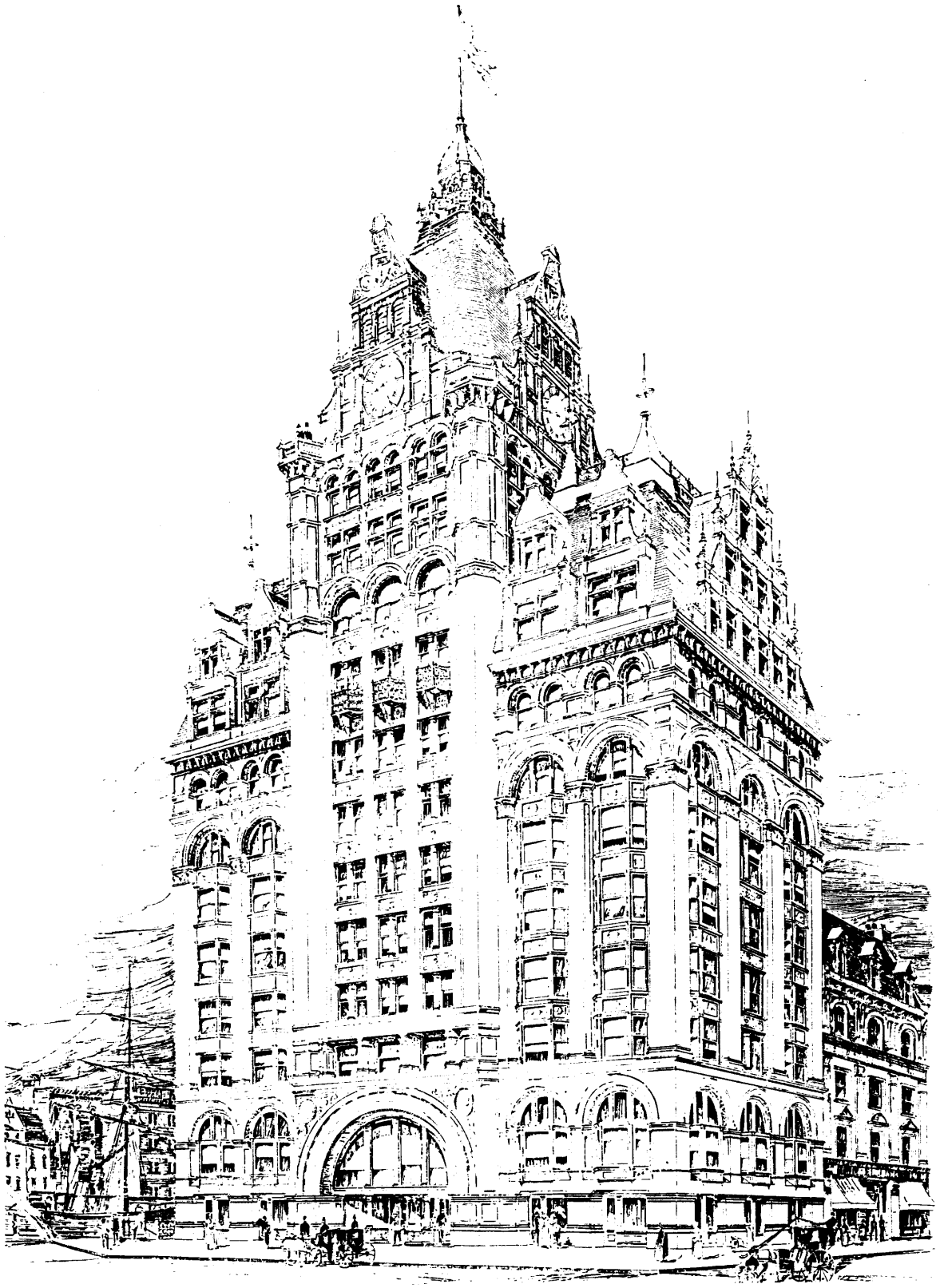
194. Cass Gilbert, preliminary design for the West Street Building, New York, 1905



195. Ernest Flagg, Singer Building, New York, 1896-1908

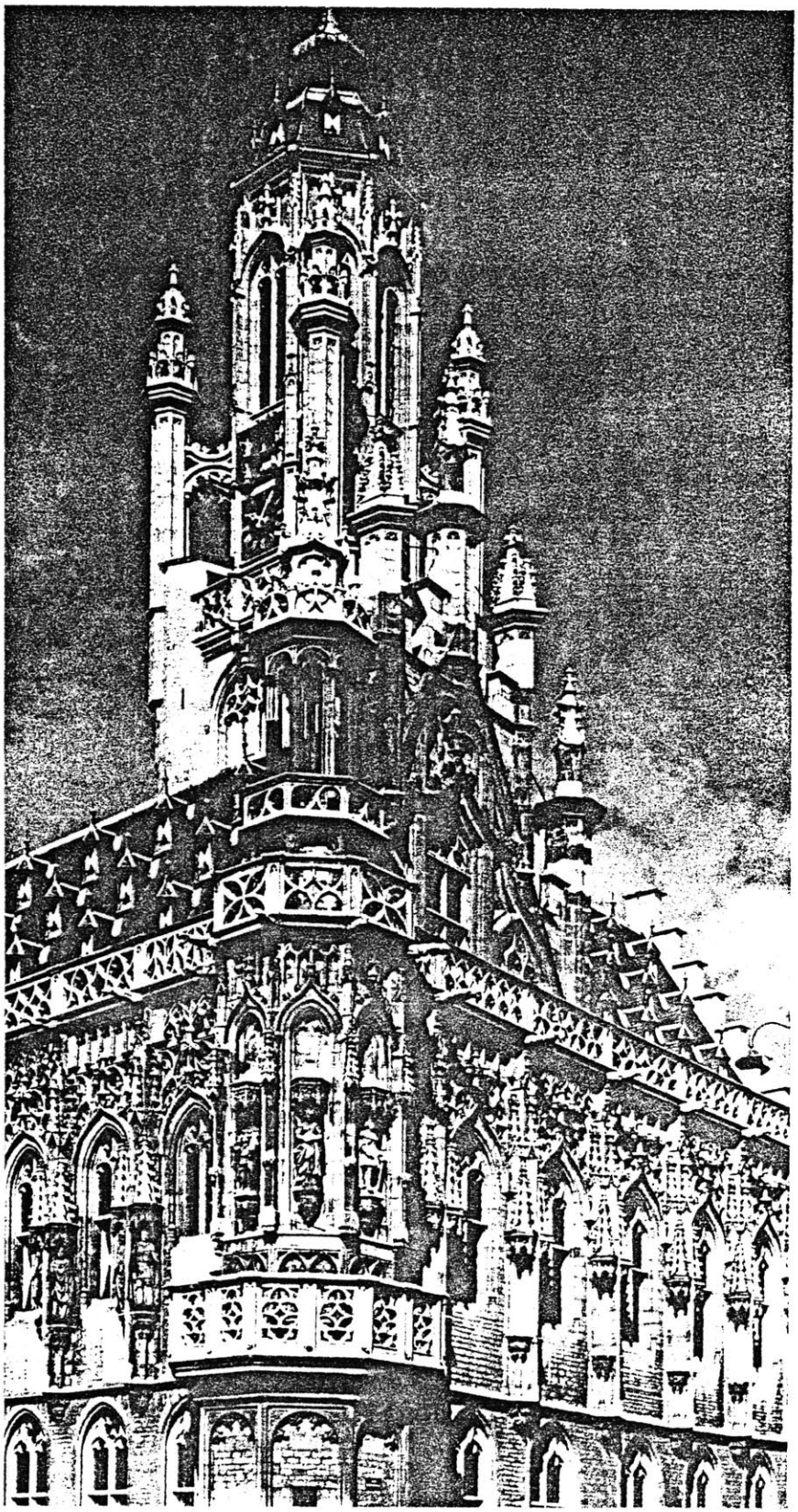


196. Napoleon LeBrun & Sons, Metropolitan Life Insurance Building, New York, 1890-1909



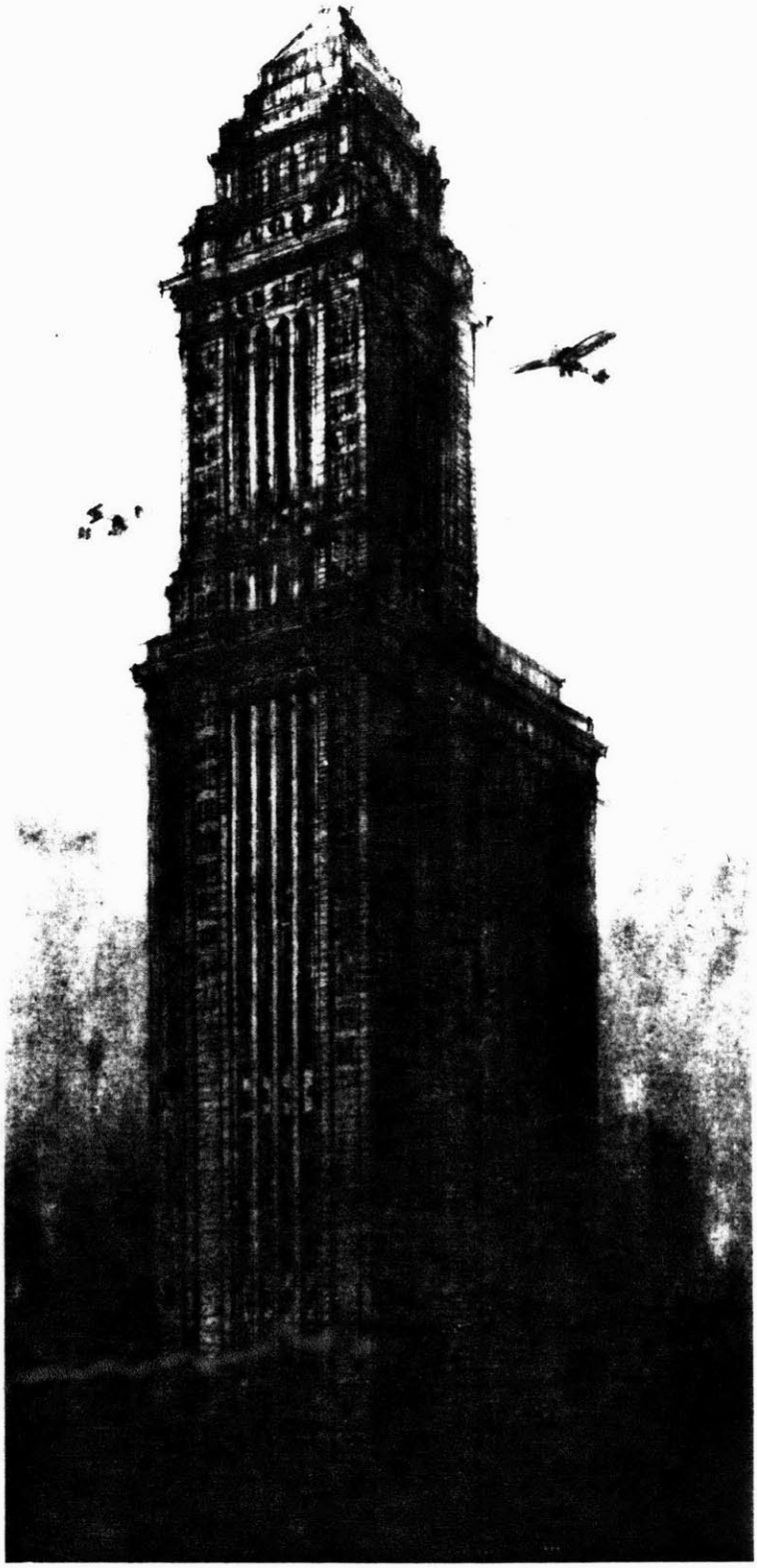
197. Solon S. Beman, design for Pabst Building, Milwaukee, Wisconsin, 1891

198. Gardner & Martin, Montgomery Ward and Company Building, Chicago, 1902



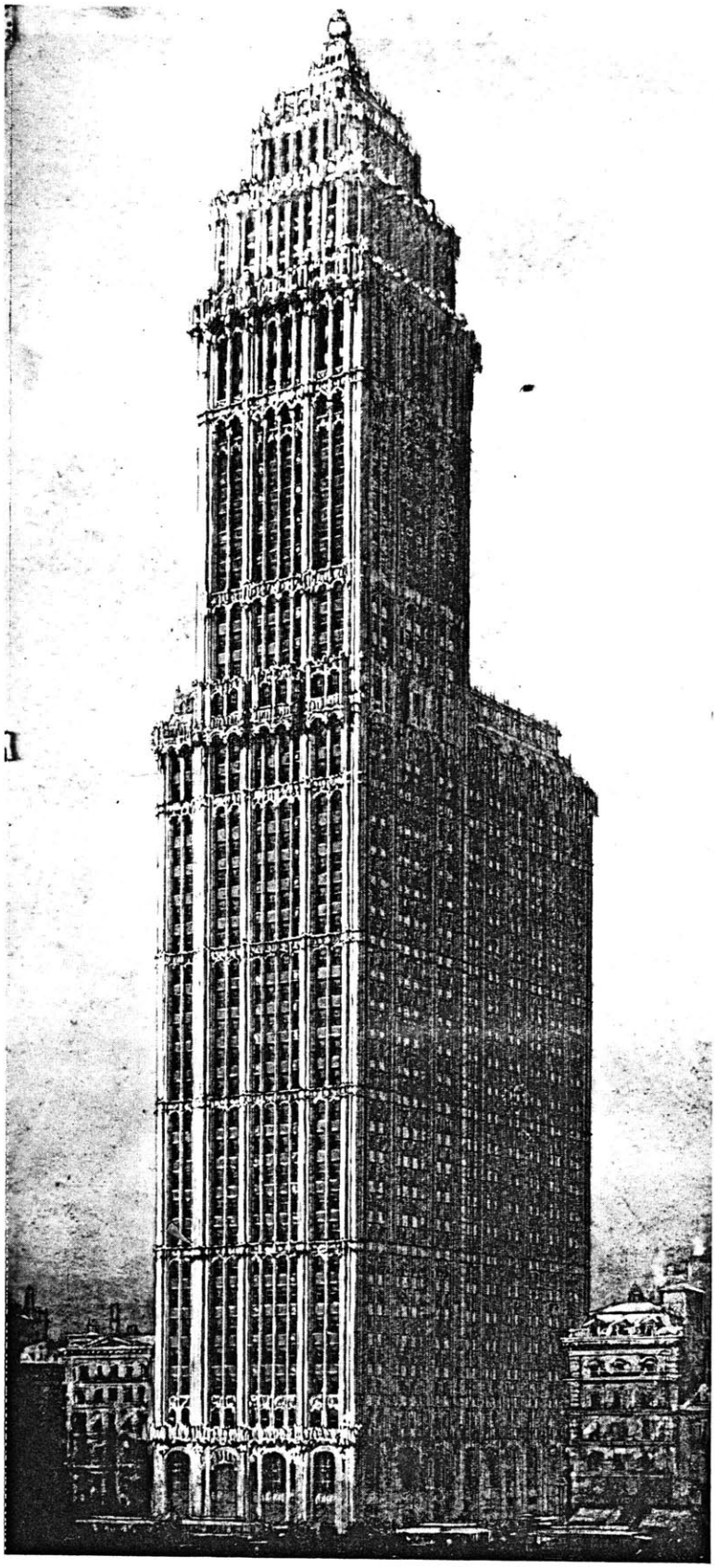
199. The Keldermans of Malines, Hôtel de Ville, Middelburg, Netherlands, 1412-1599

200. Jakob van Thienen and Jan van Ruysbroeck, Hôtel de Ville, Brussels, 1402-

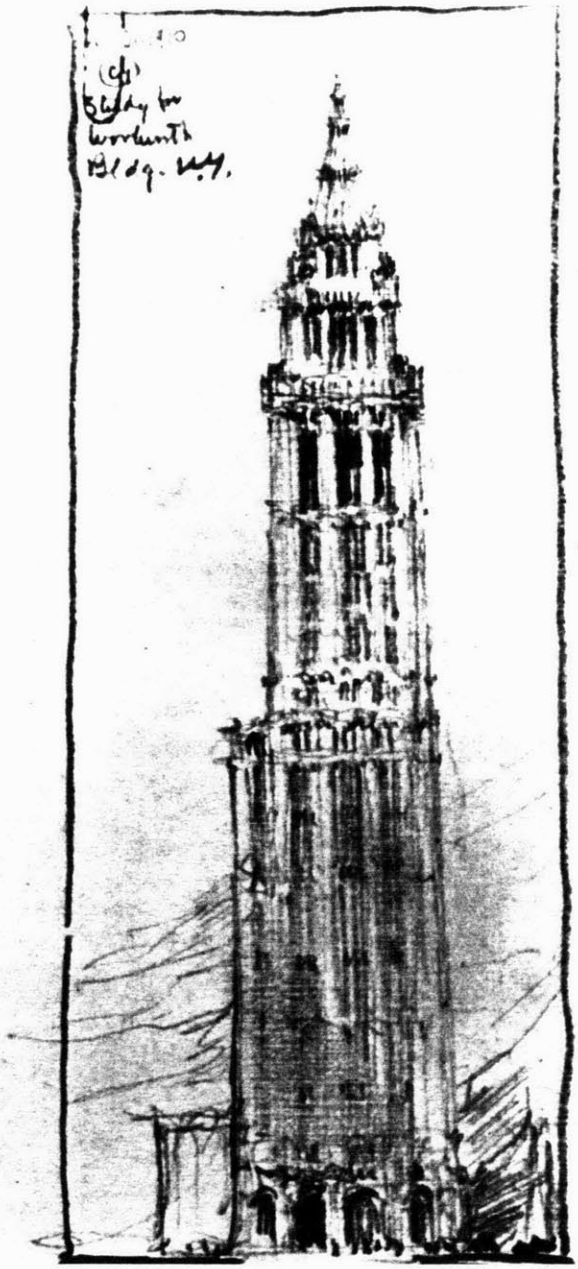


201. Woolworth Building, third proposal, perspective, 1 October 1910

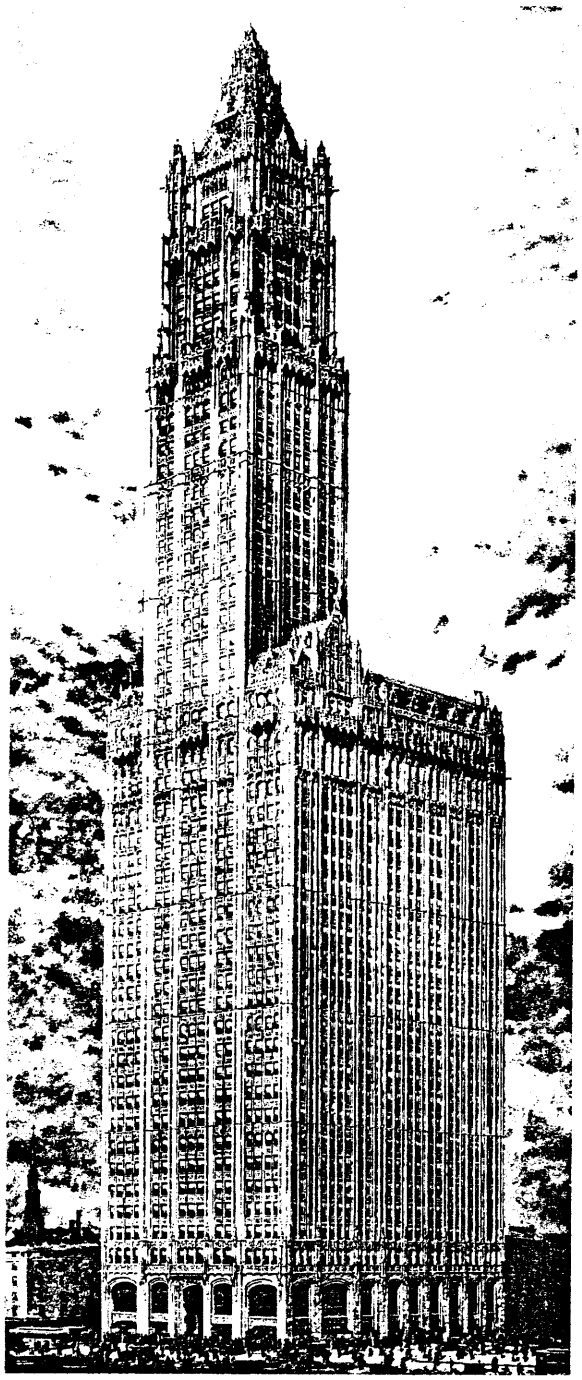
202. Carrère & Hastings, Blair Building, New York, 1902-3



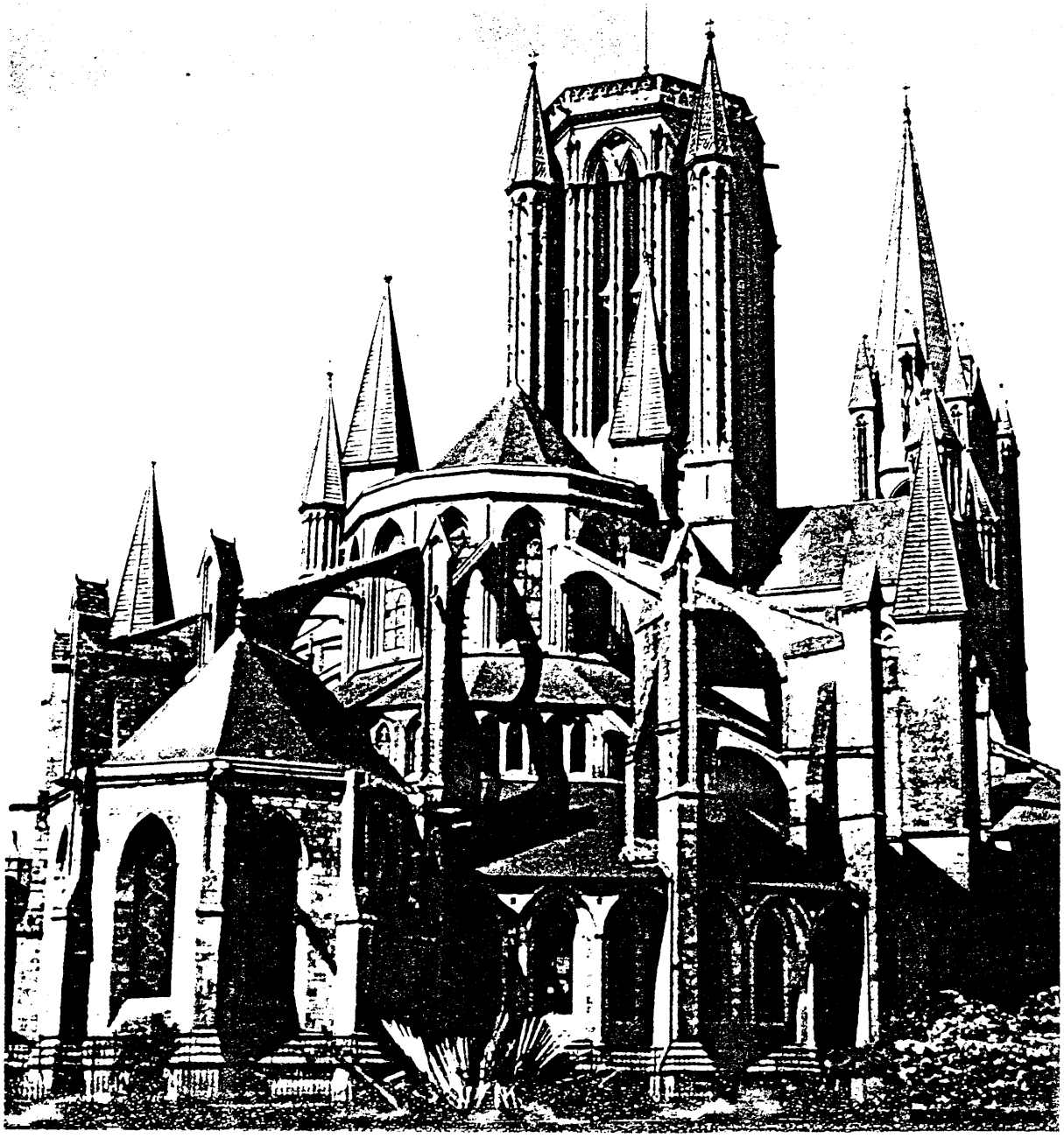
203. Woolworth Building, third proposal, perspective, November 1910



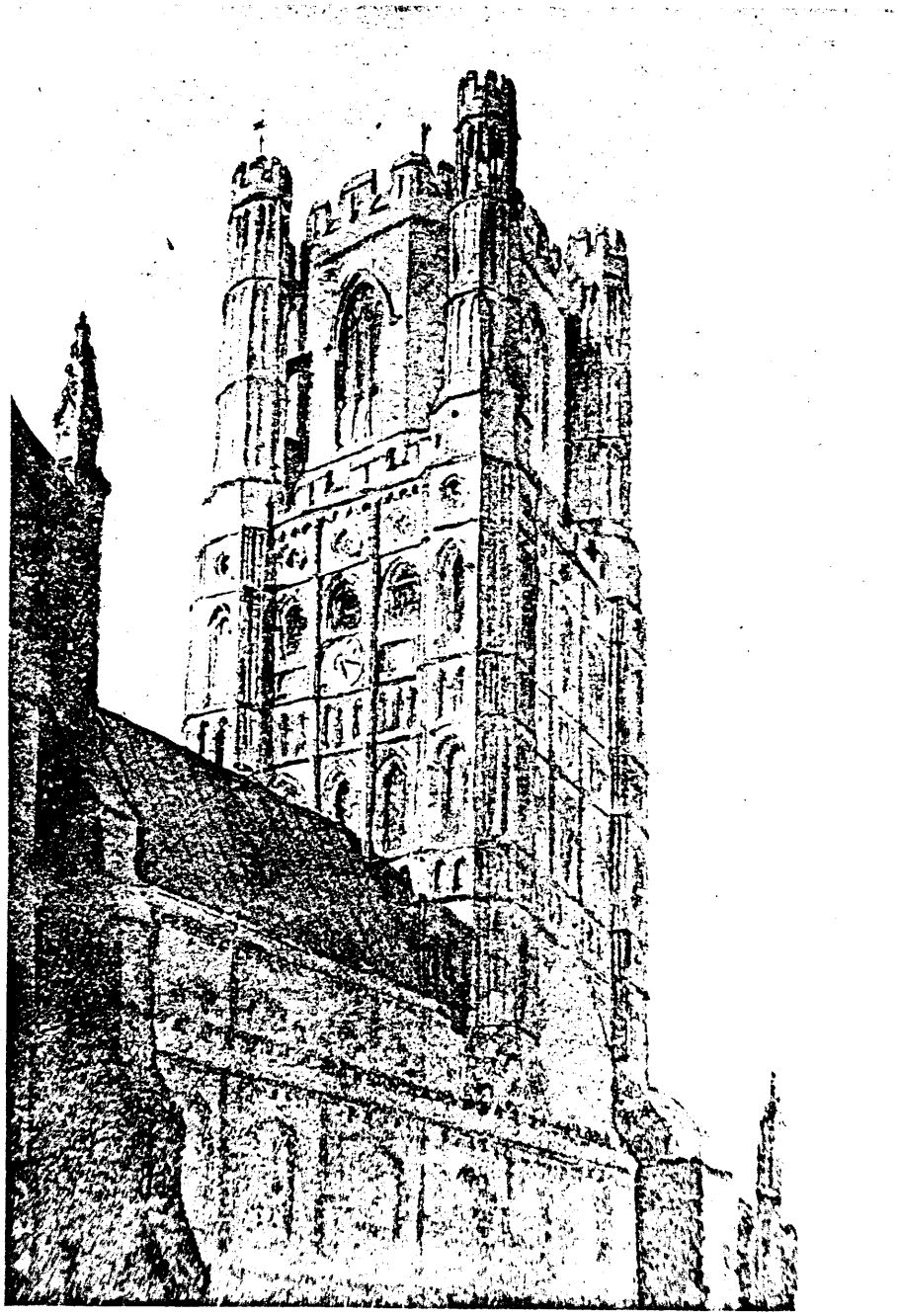
204. Cass Gilbert, Woolworth Building, conceptual sketch, 31 December 1910



205. Woolworth Building, final design, perspective, 20 February 1911

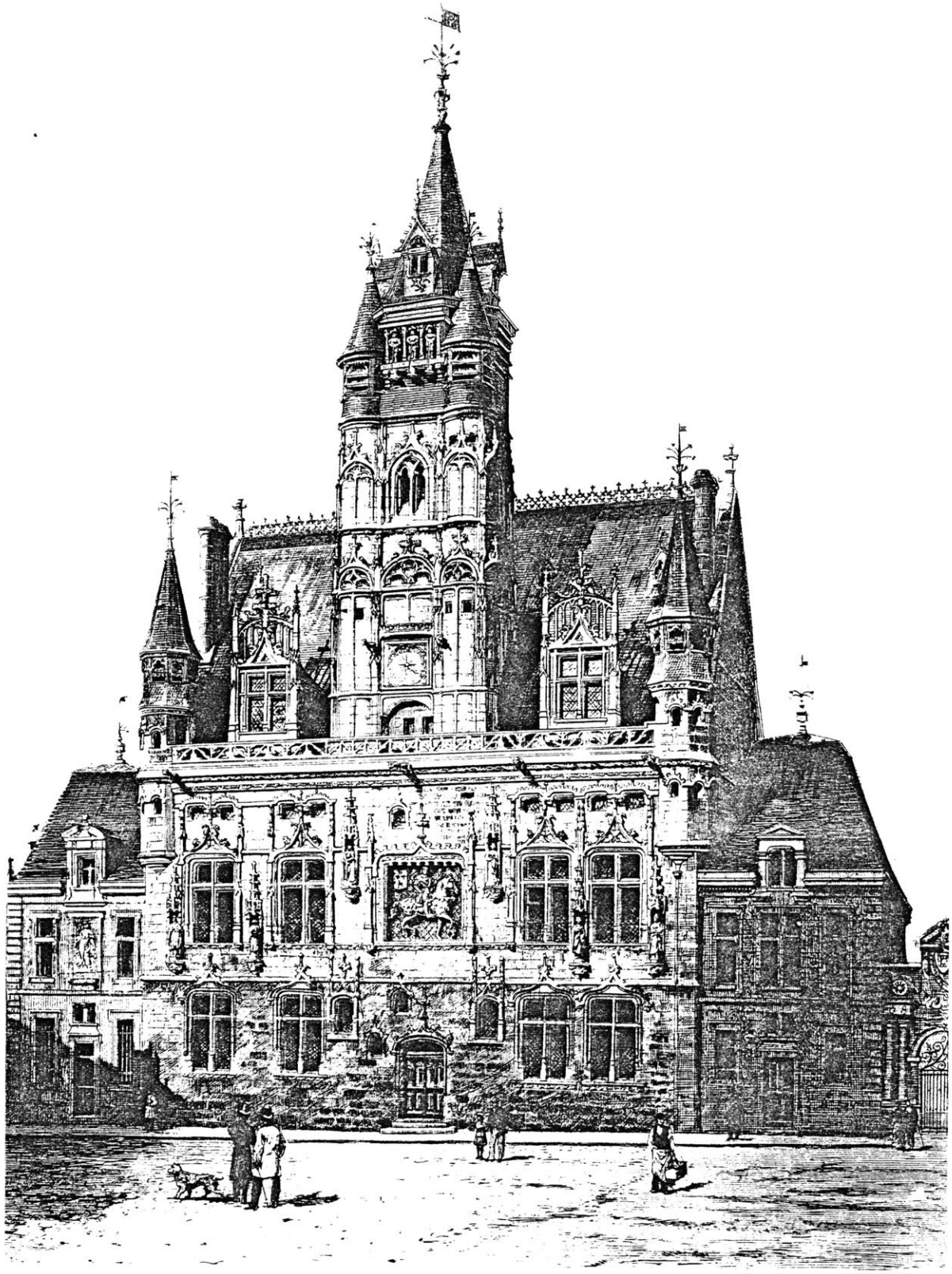


206. Notre Dame de Coutances, France, 1235-55

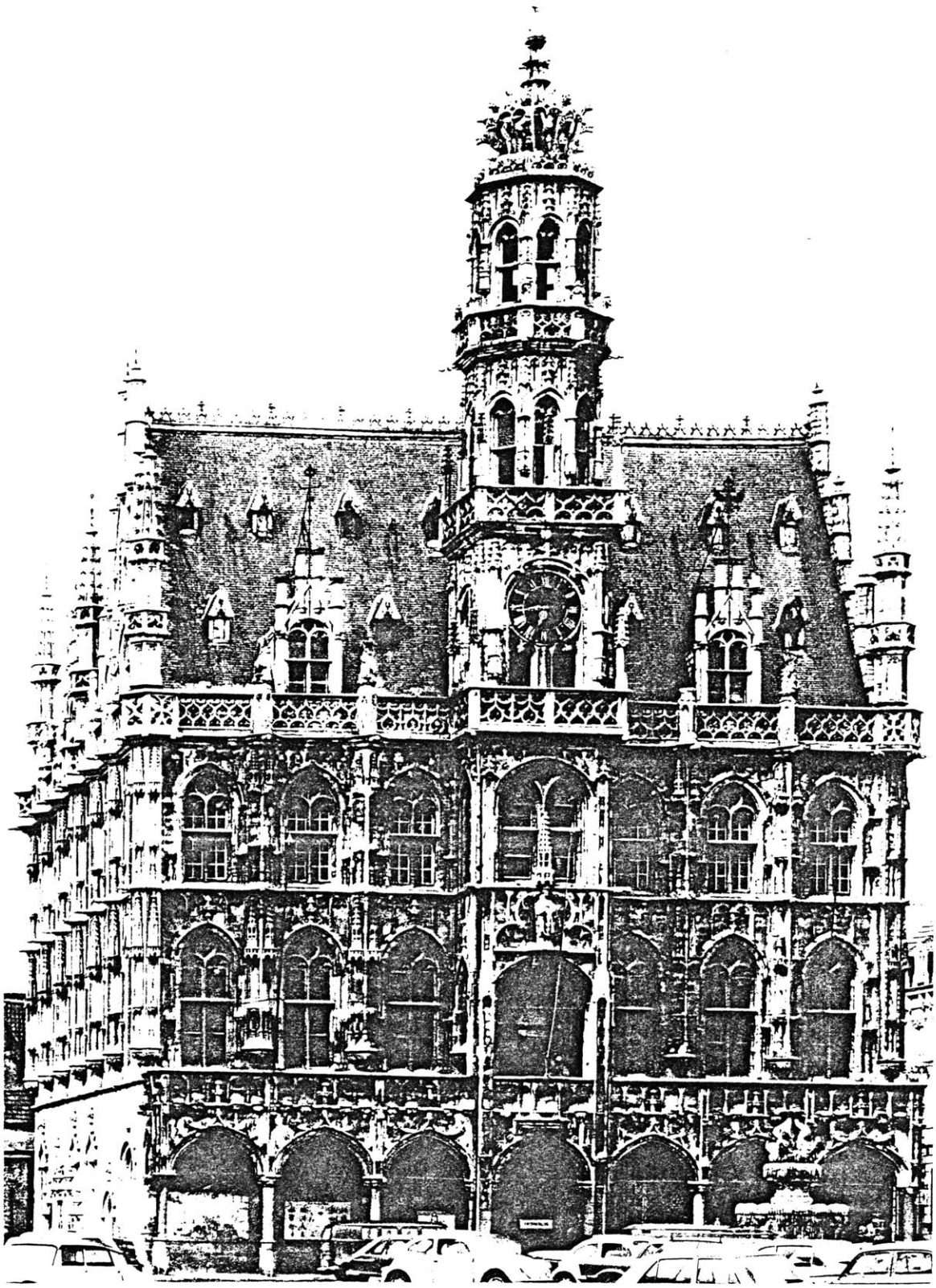


207. Cass Gilbert, Ely Cathedral, southwest tower

208. Guild Hall, Cologne, Germany, 1437-44

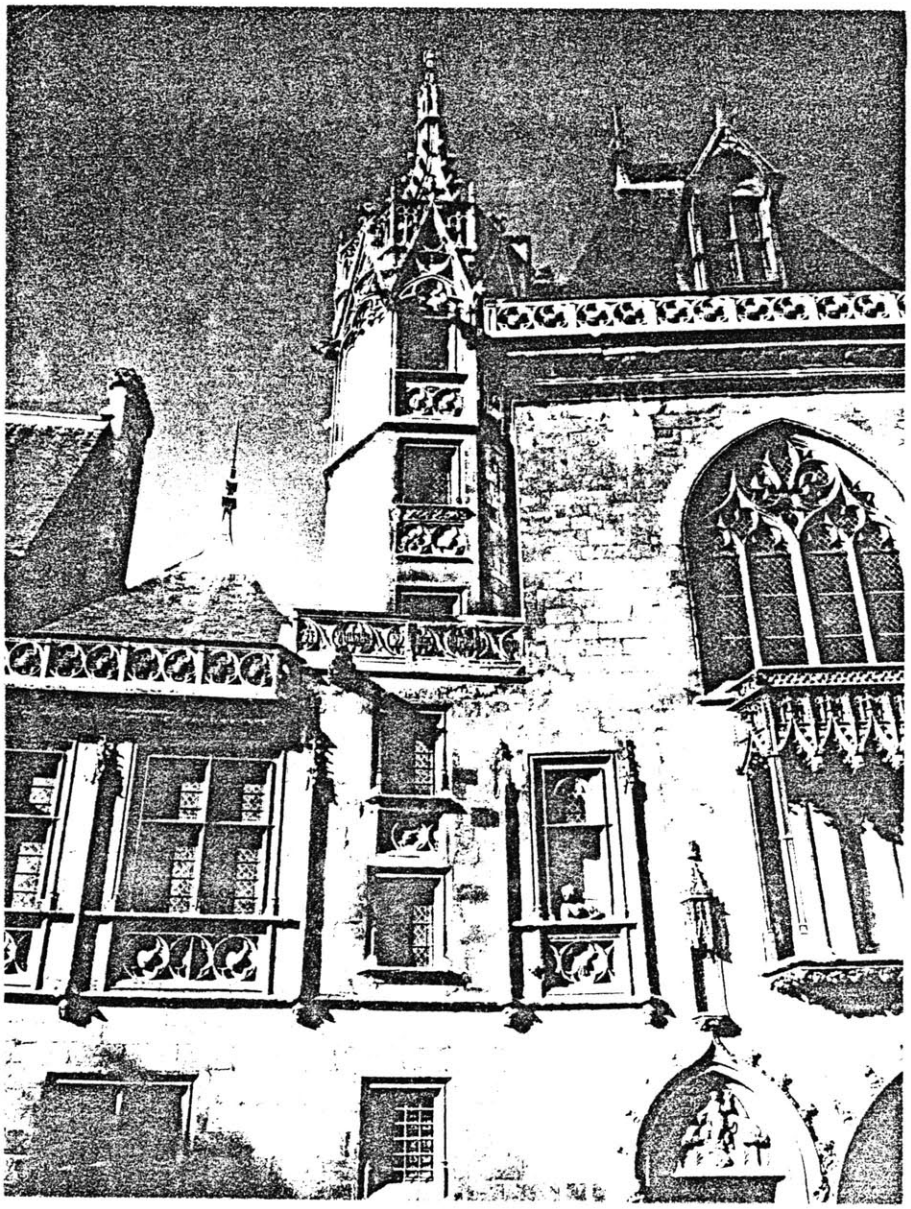


209. Hôtel de Ville, Compiègne, France, 1509



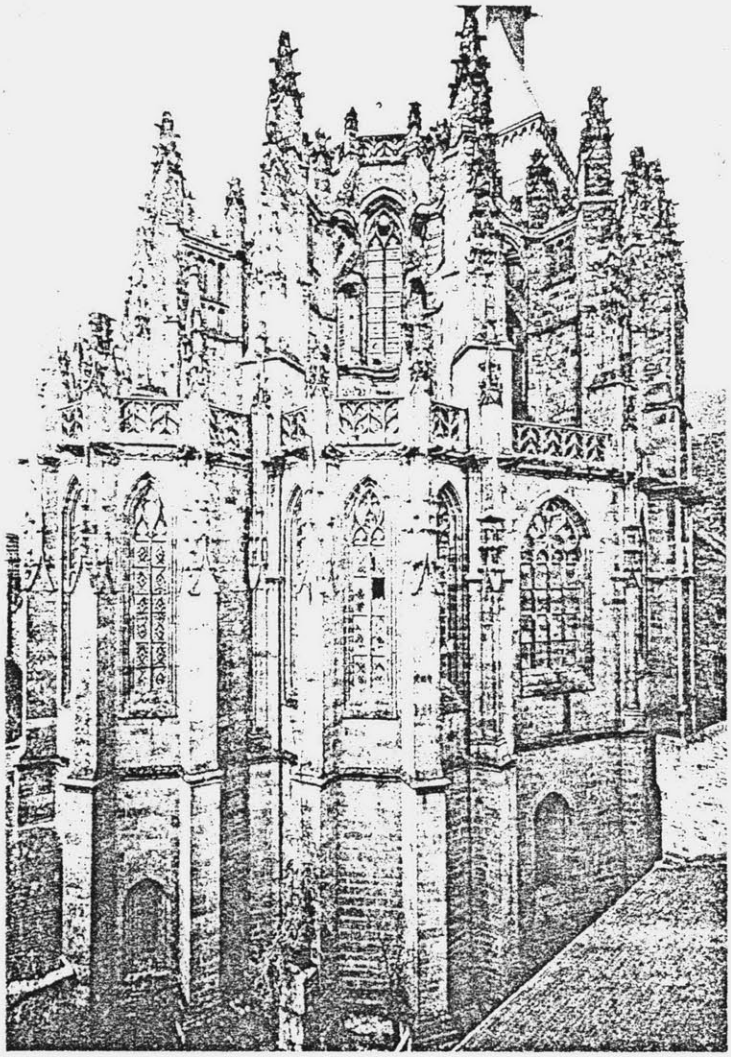
210. Jan van Pede, Hôtel de Ville, Audenarde, Belgium, 1525-30

211. Antwerp Cathedral, tower, 1422-1521

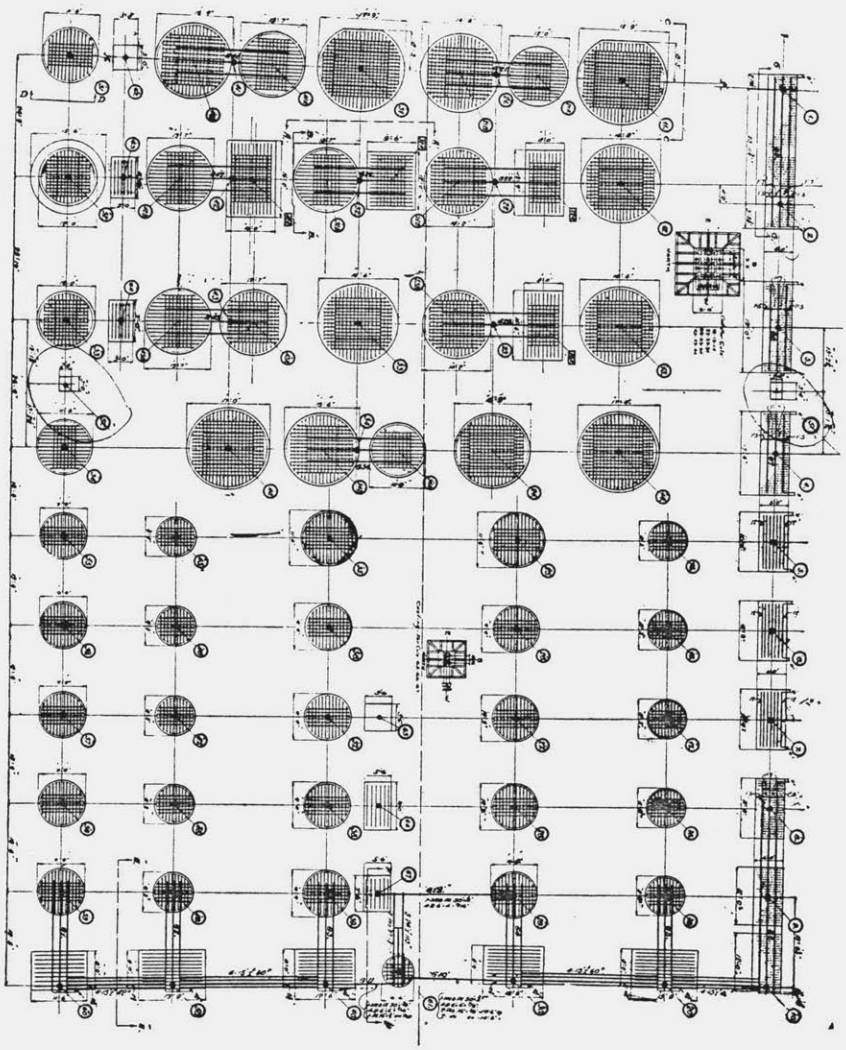


212. Palais de Jacques-Coeur, Bourges, France, 1442-53

213. Cathedral of St. Rombout, Malines, Belgium, 1217-1546

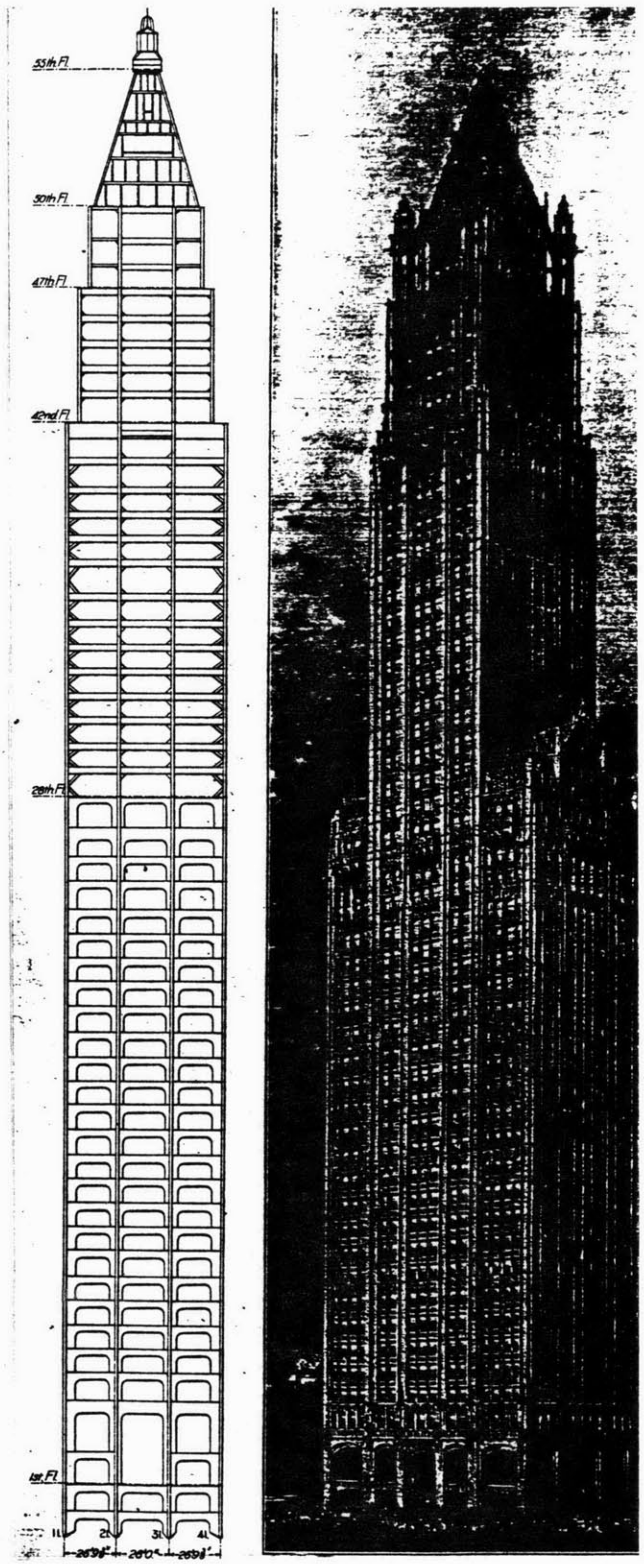


214. Church, Mont-Saint-Michel, choir, 1456-1521

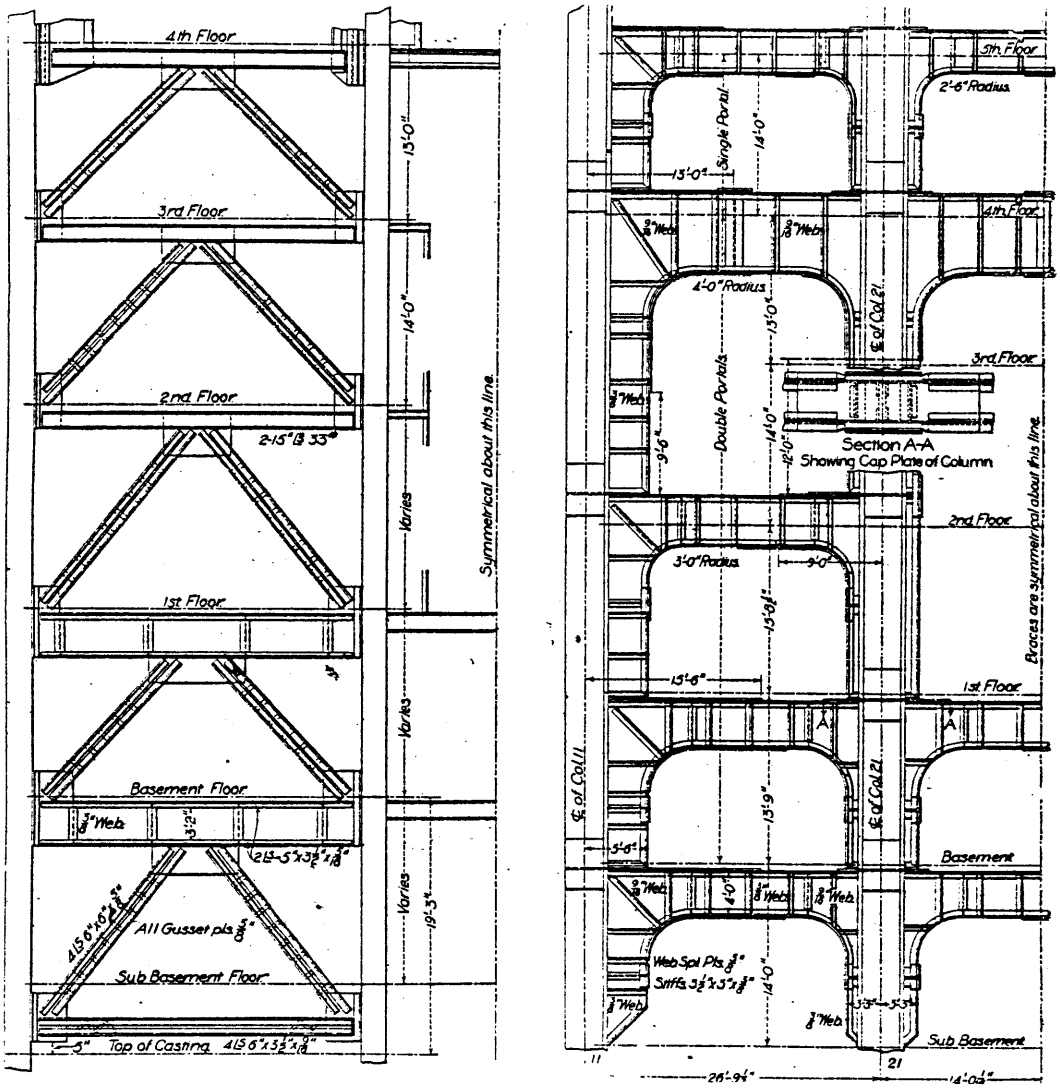


215. Woolworth Building, plan of foundation

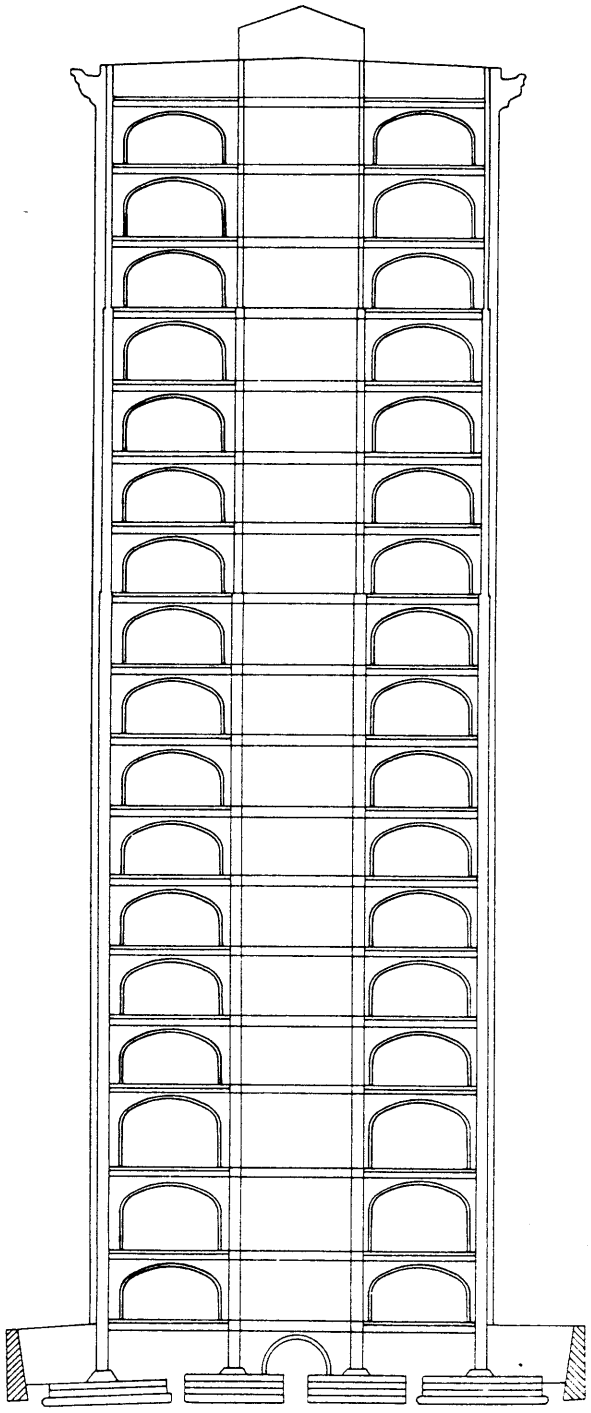
216. Woolworth Building



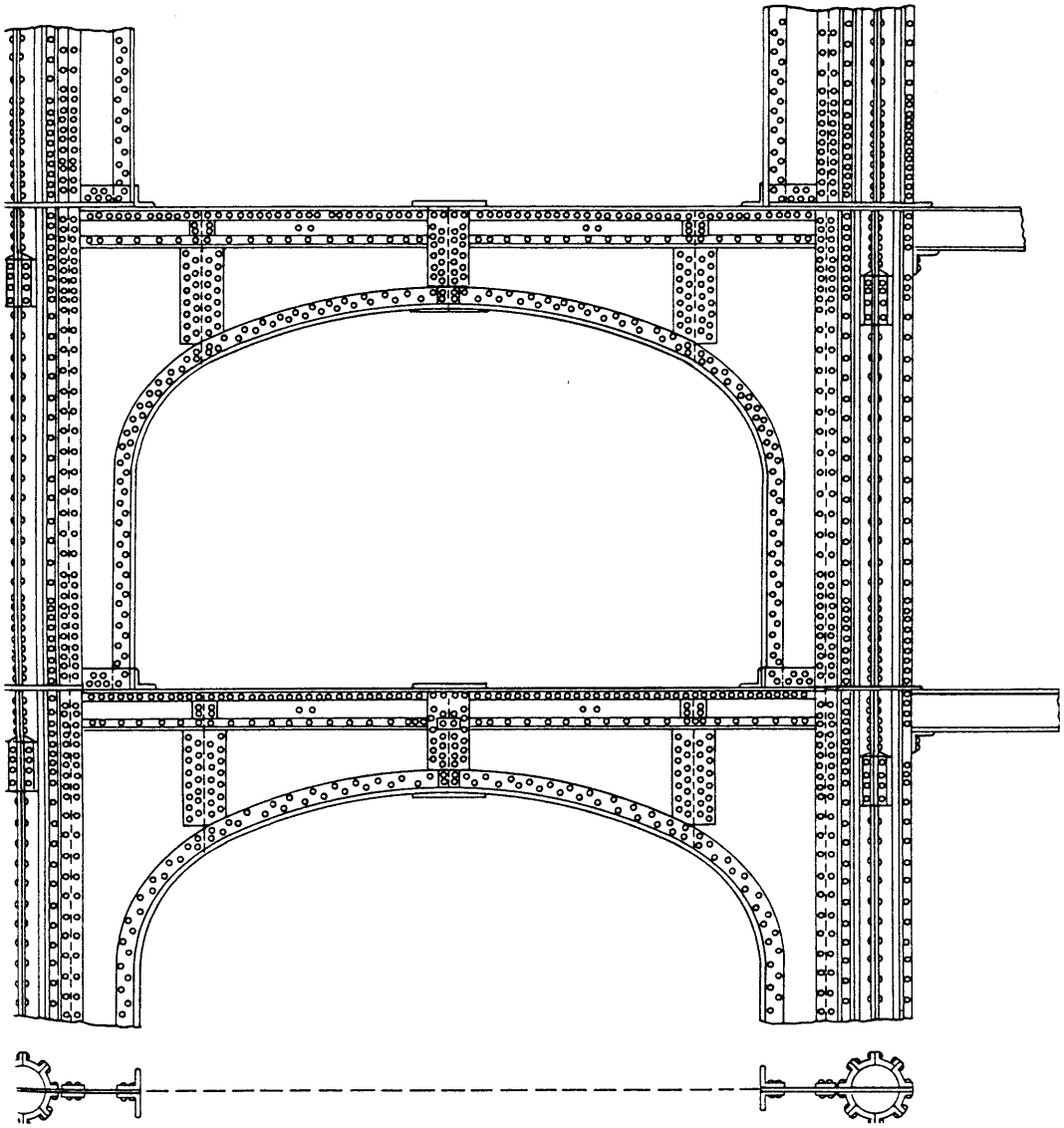
217. Woolworth Building, windbracing



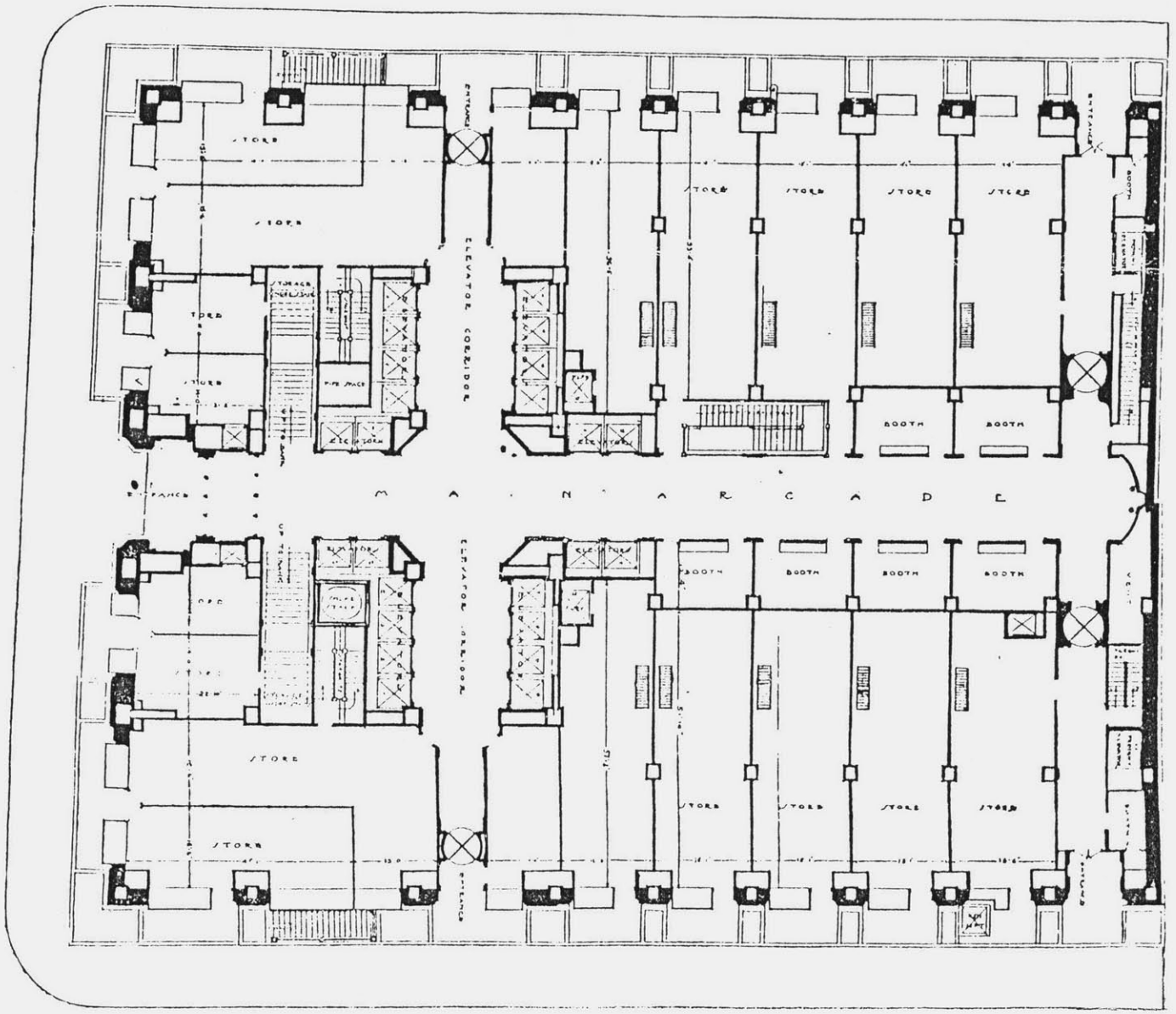
218. Woolworth Building, detail of portal arch windbracing



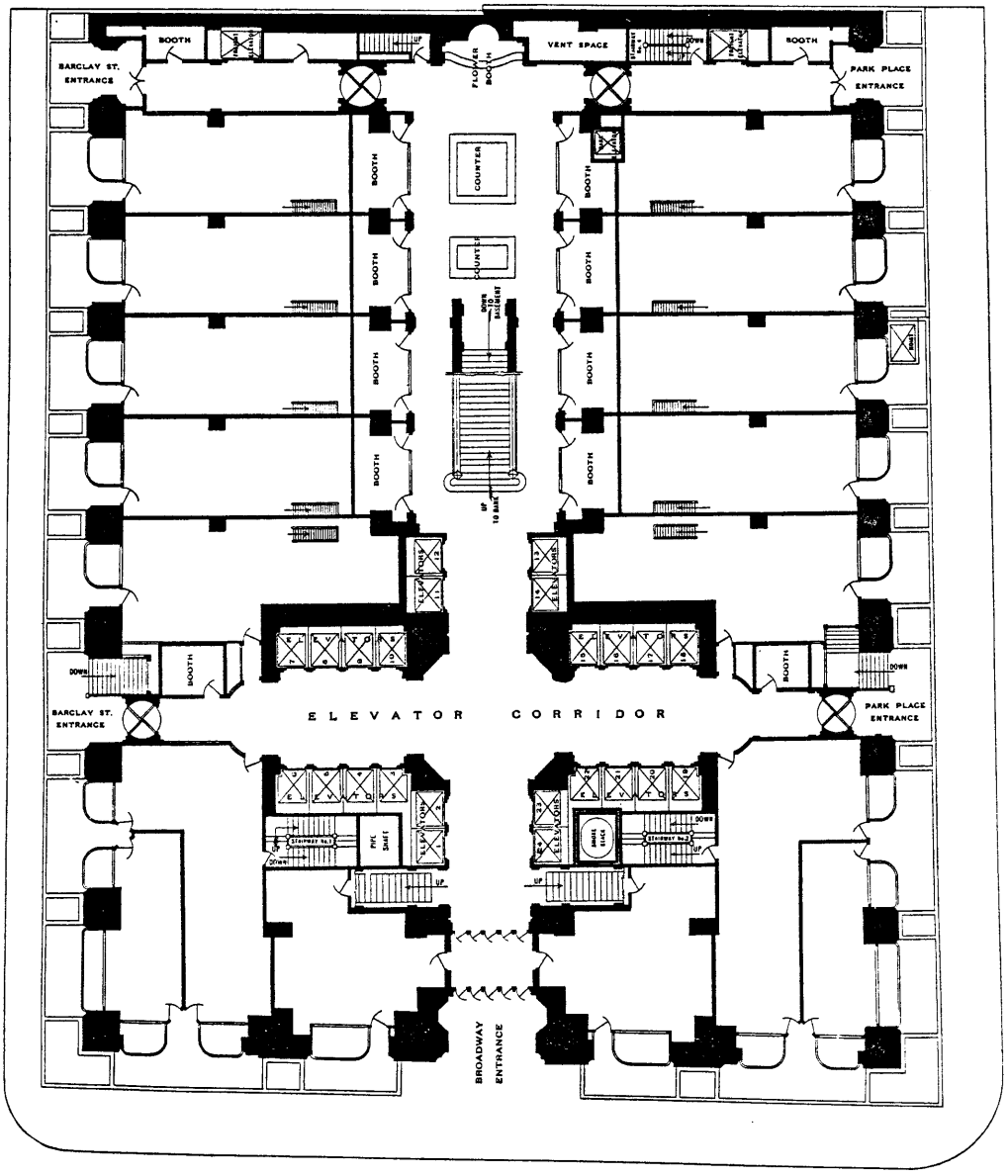
219. Holabird & Roche, Old Colony Building, Chicago, portal arch windbracing, 1893-94



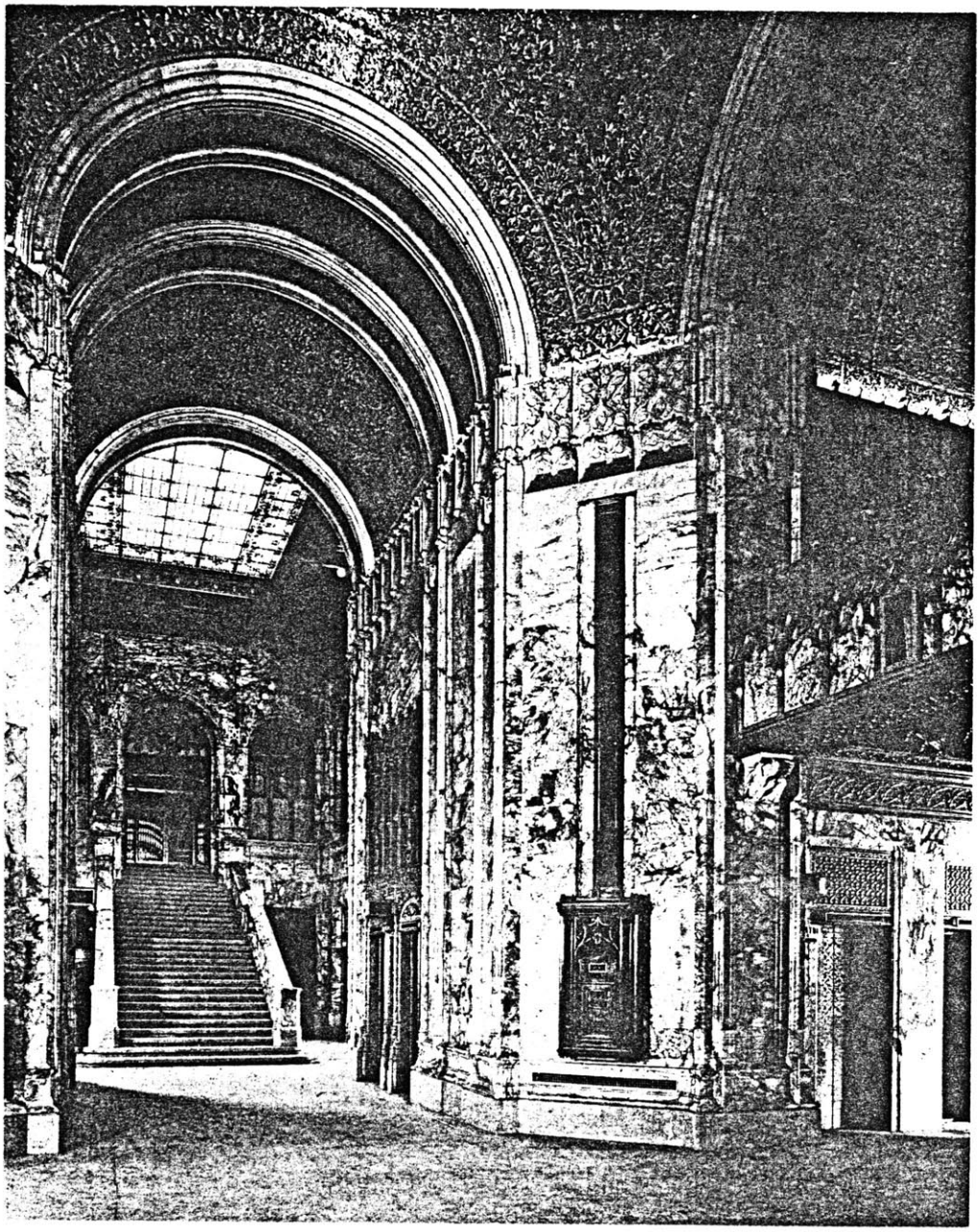
220. Holabird & Roche, Old Colony Building, detail of portal arch windbracing



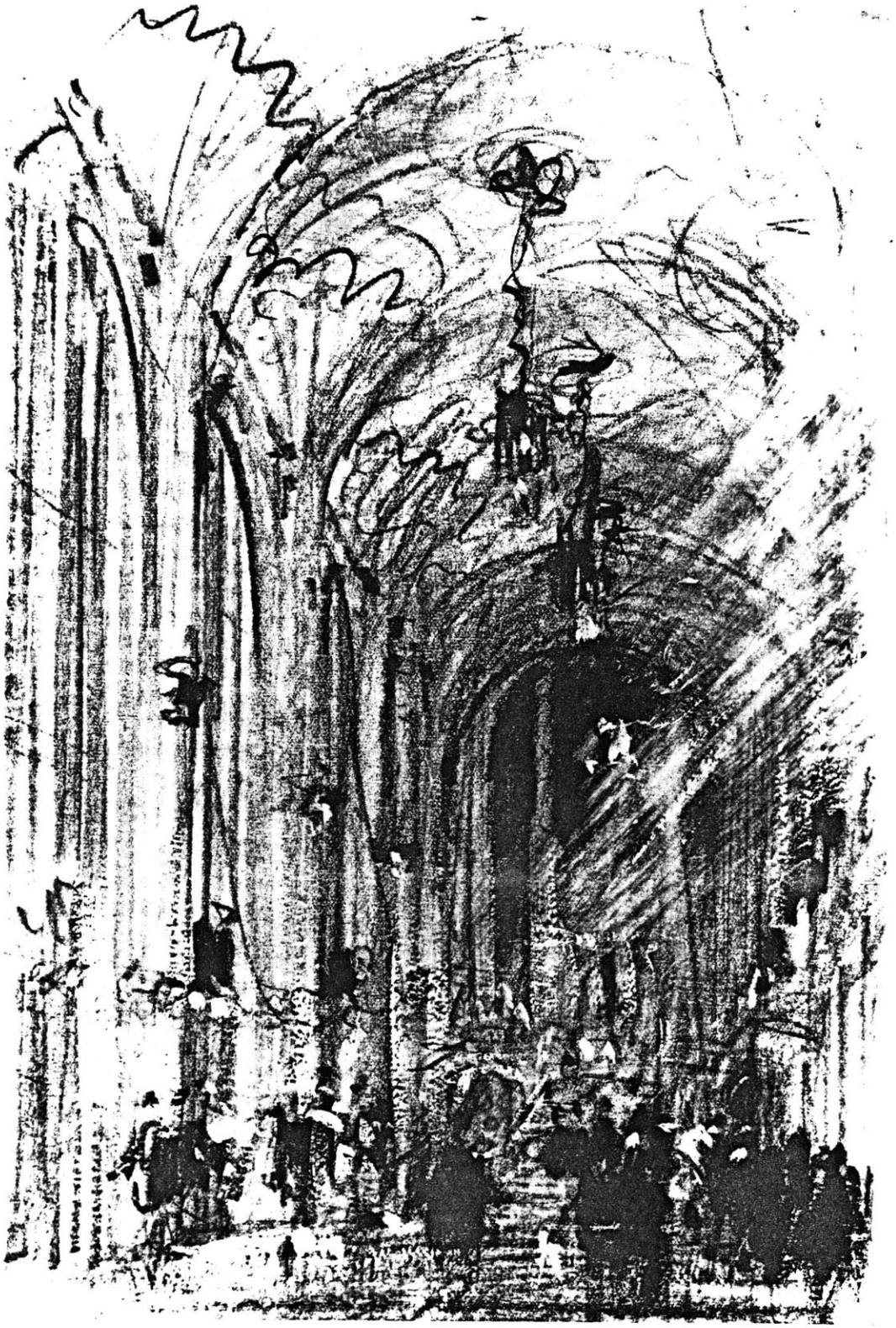
221. Woolworth Building, preliminary plan of arcade



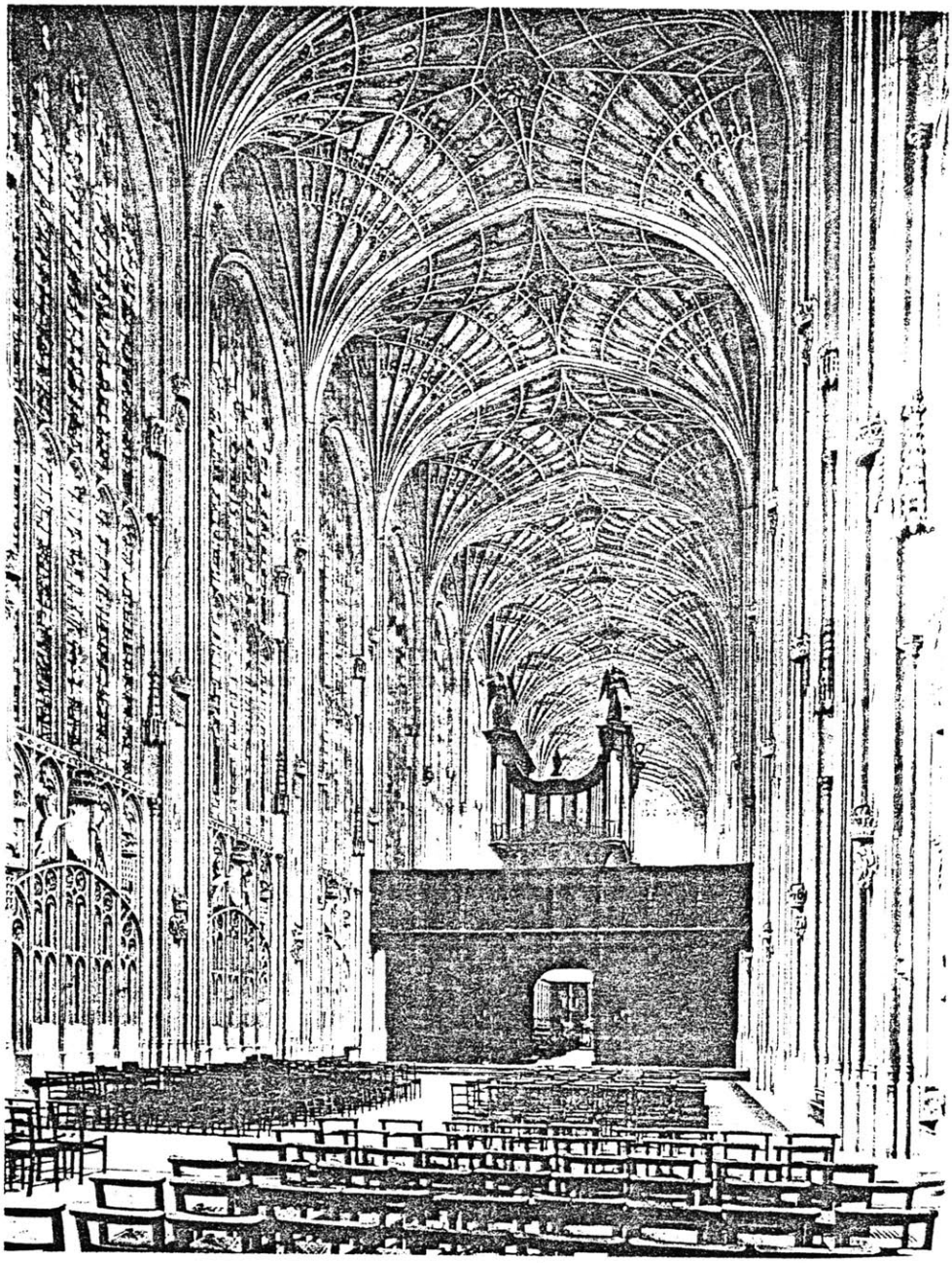
222. Woolworth Building, final plan of arcade



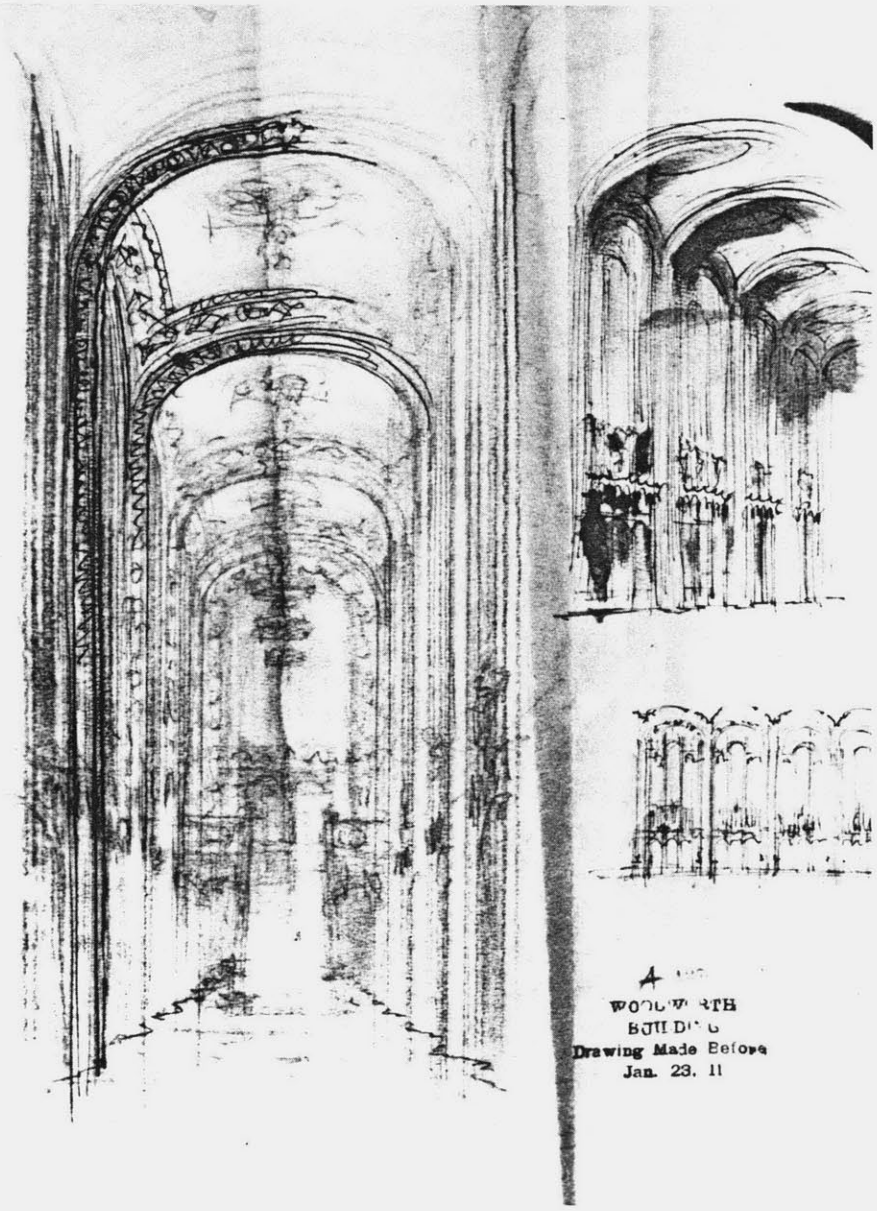
223. Woolworth Building, arcade



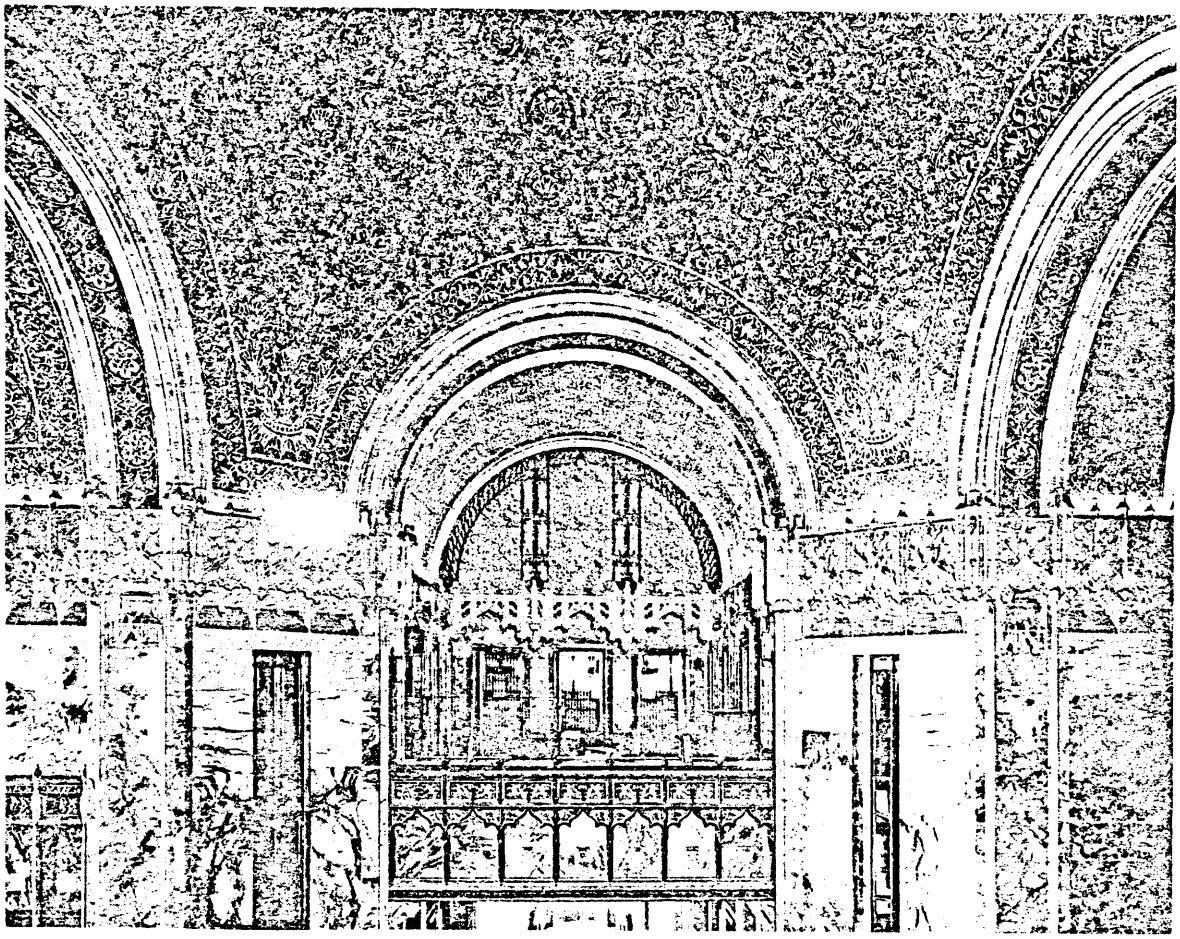
224. Woolworth Building, conceptual sketch of arcade



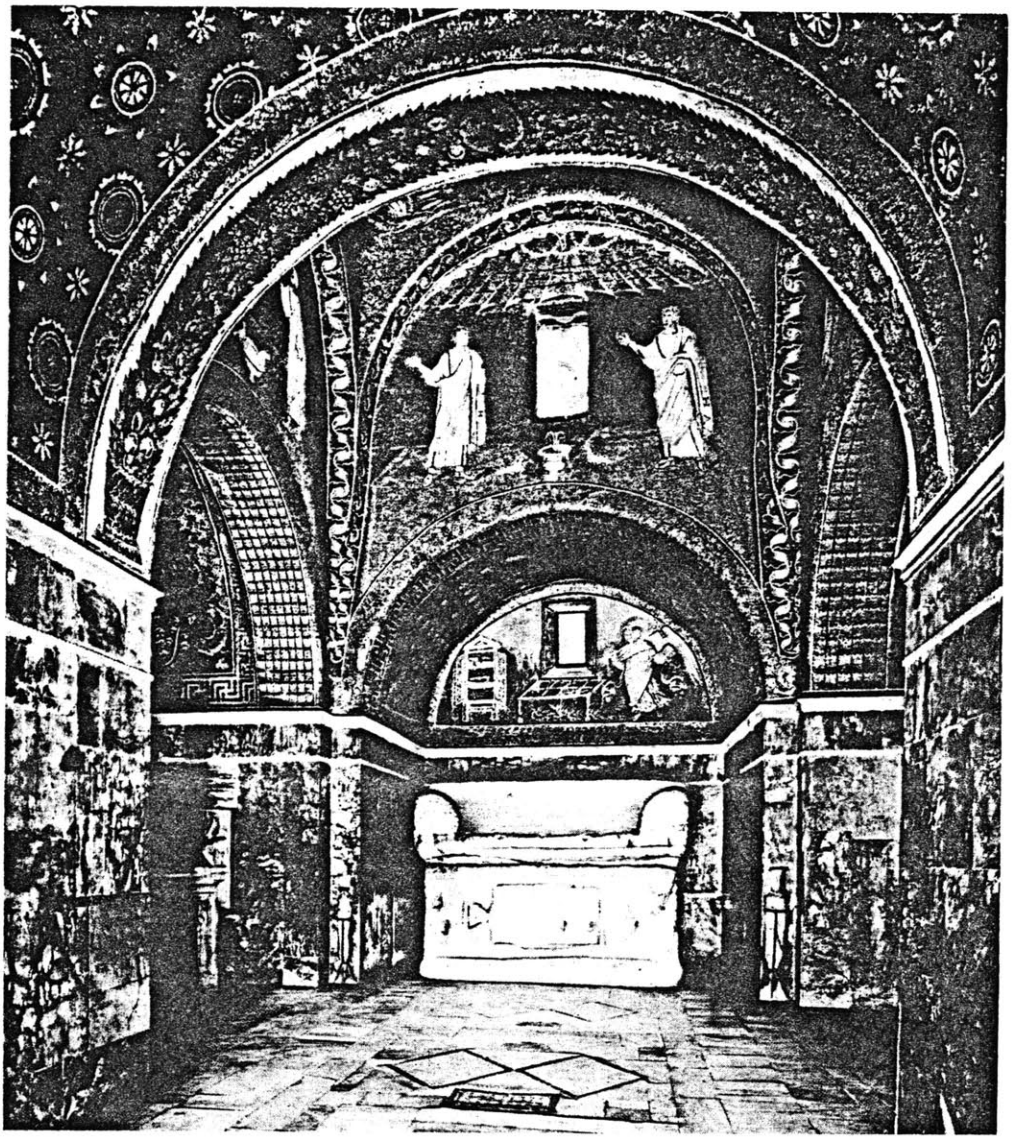
225. King's College Chapel, Cambridge, England, 1446-1515



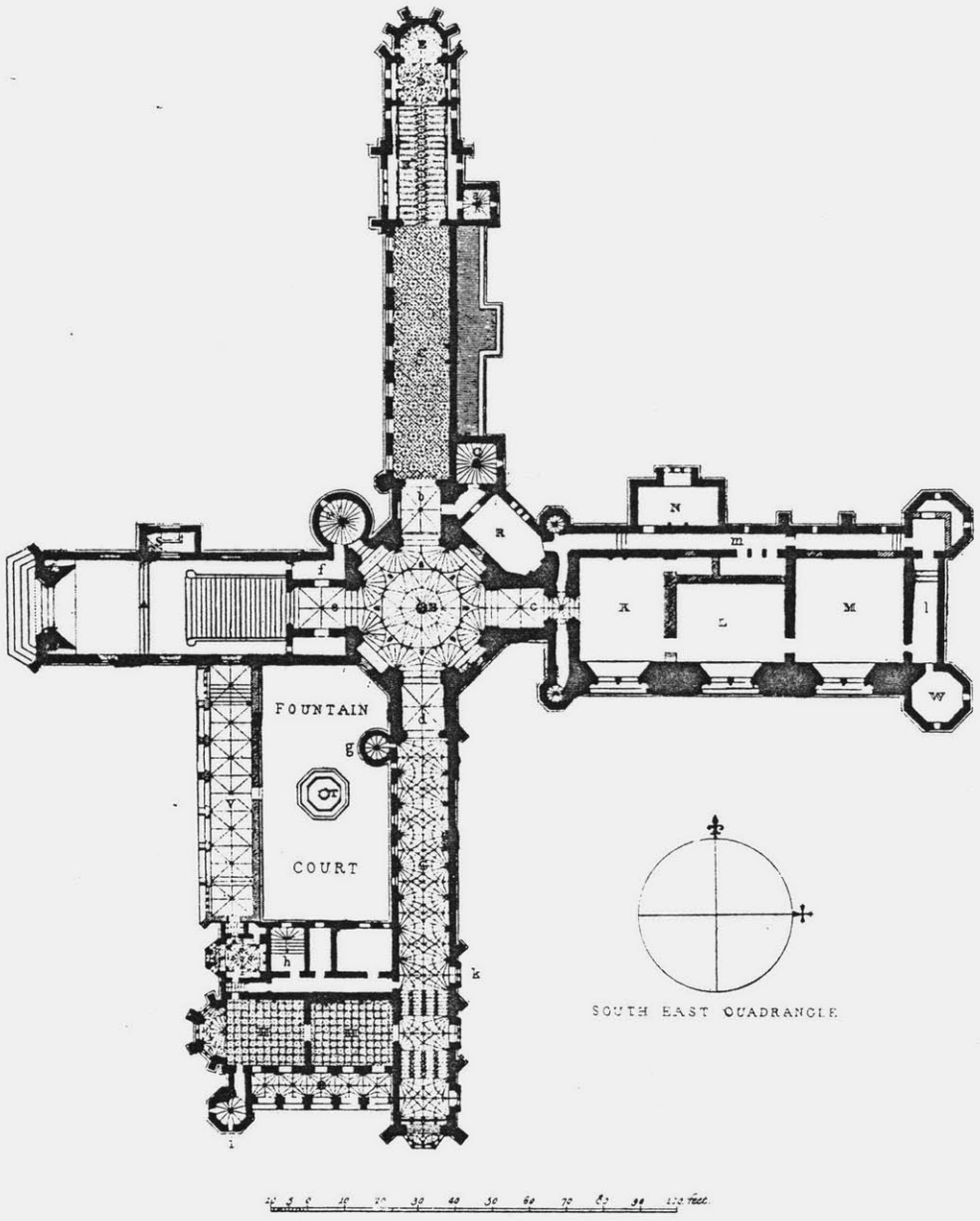
226. Woolworth Building, preliminary perspective of arcade



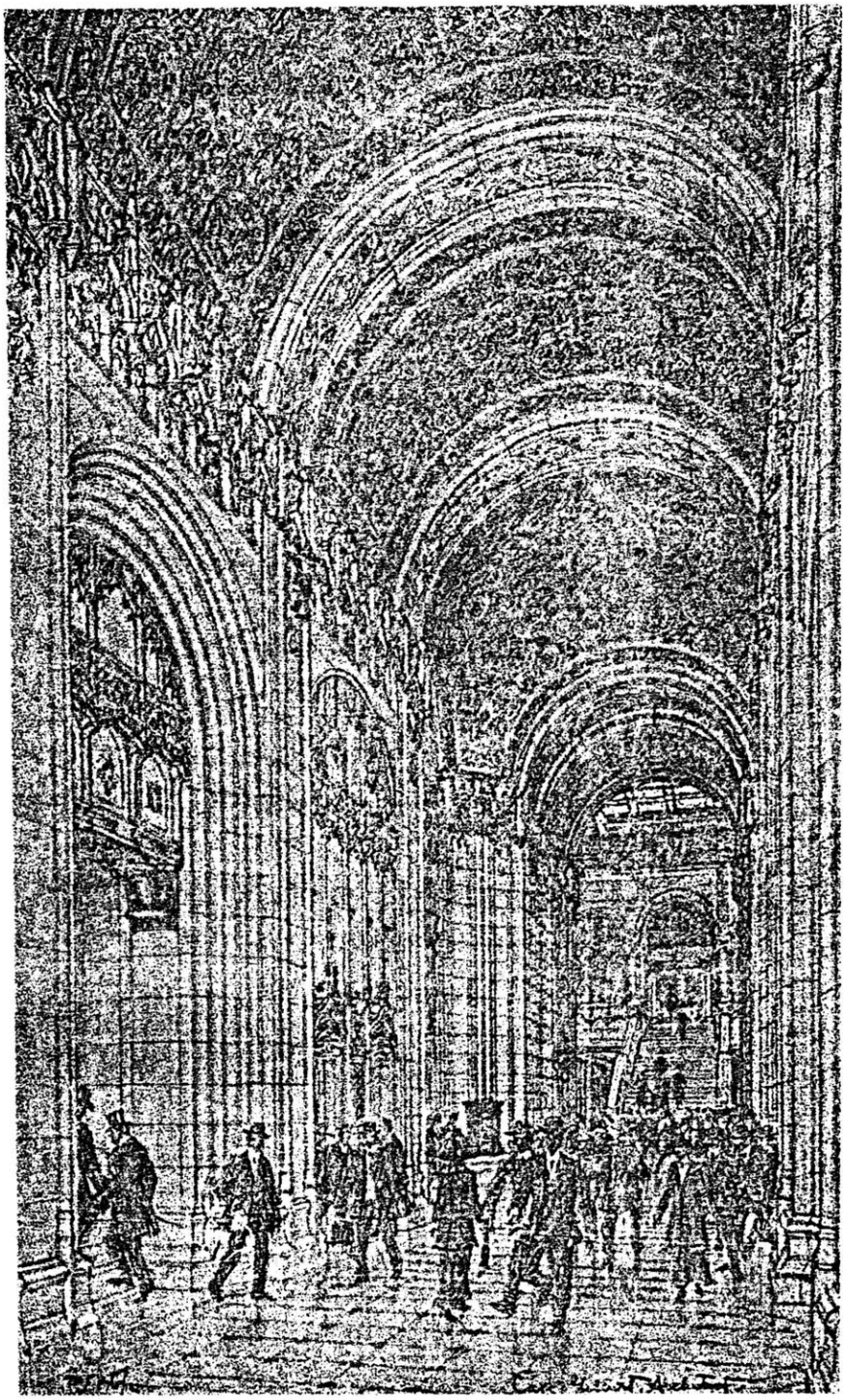
227. Woolworth Building, arcade



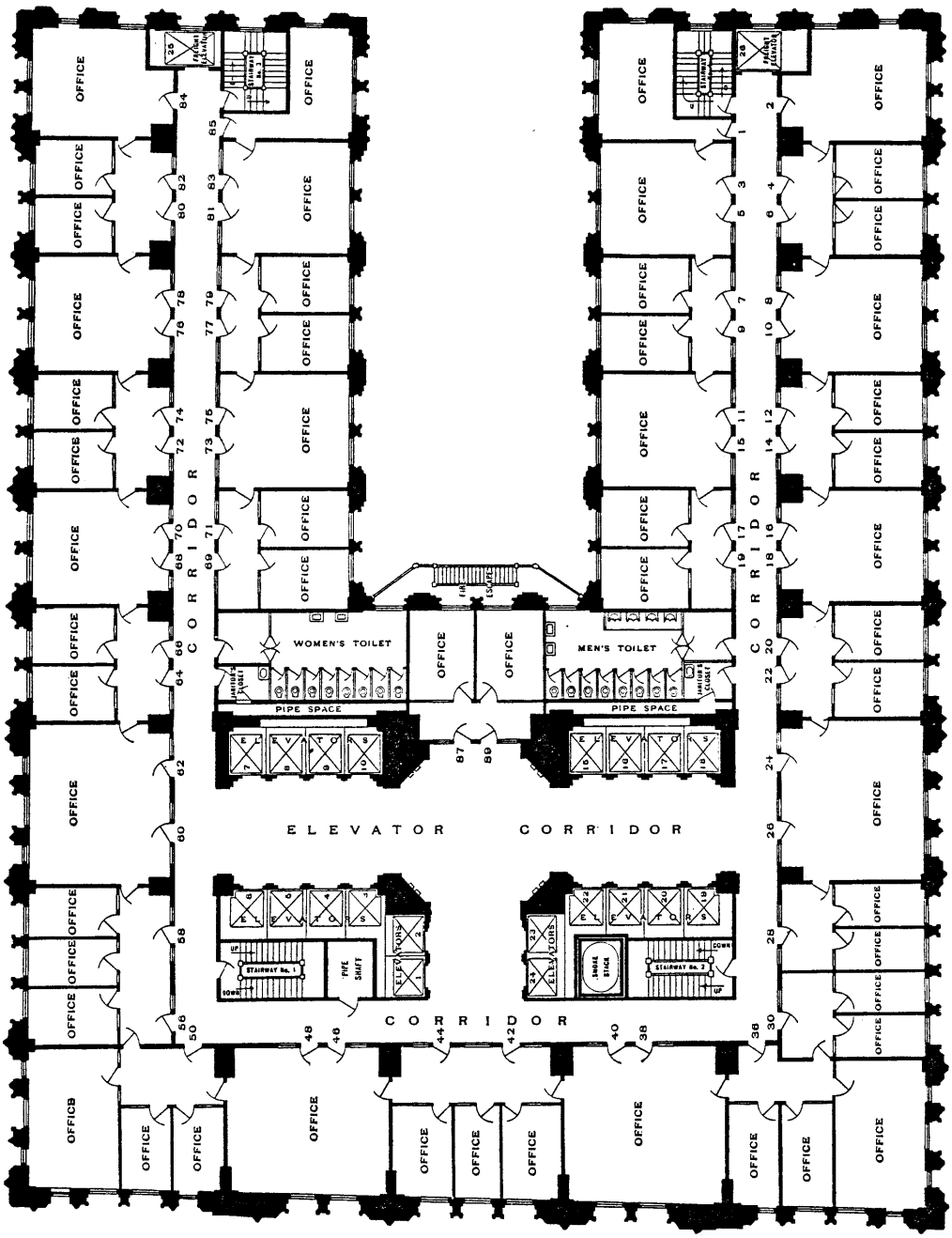
228. Mausoleum of Galla Placidia, Ravenna, 425-50



229. Fonthill Abbey, Wiltshire, England, plan, 1798-1812

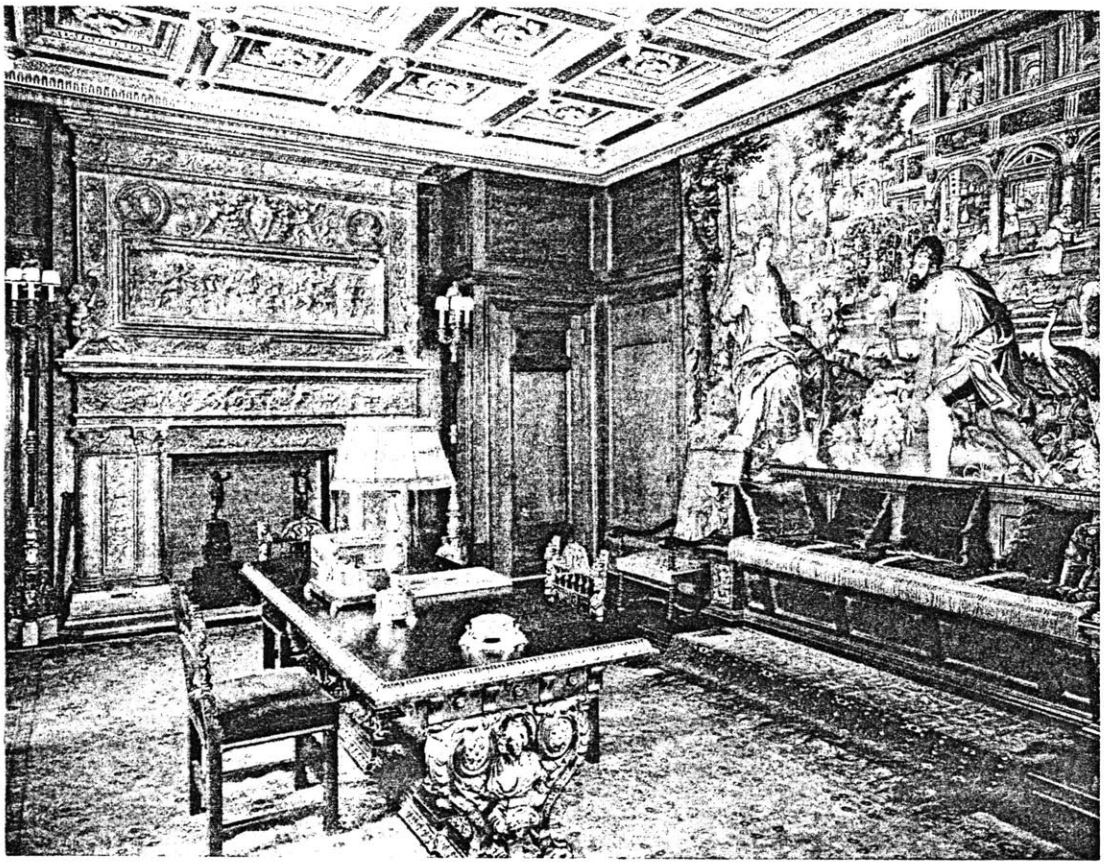


230. Woolworth Building, arcade, perspective, April 1912

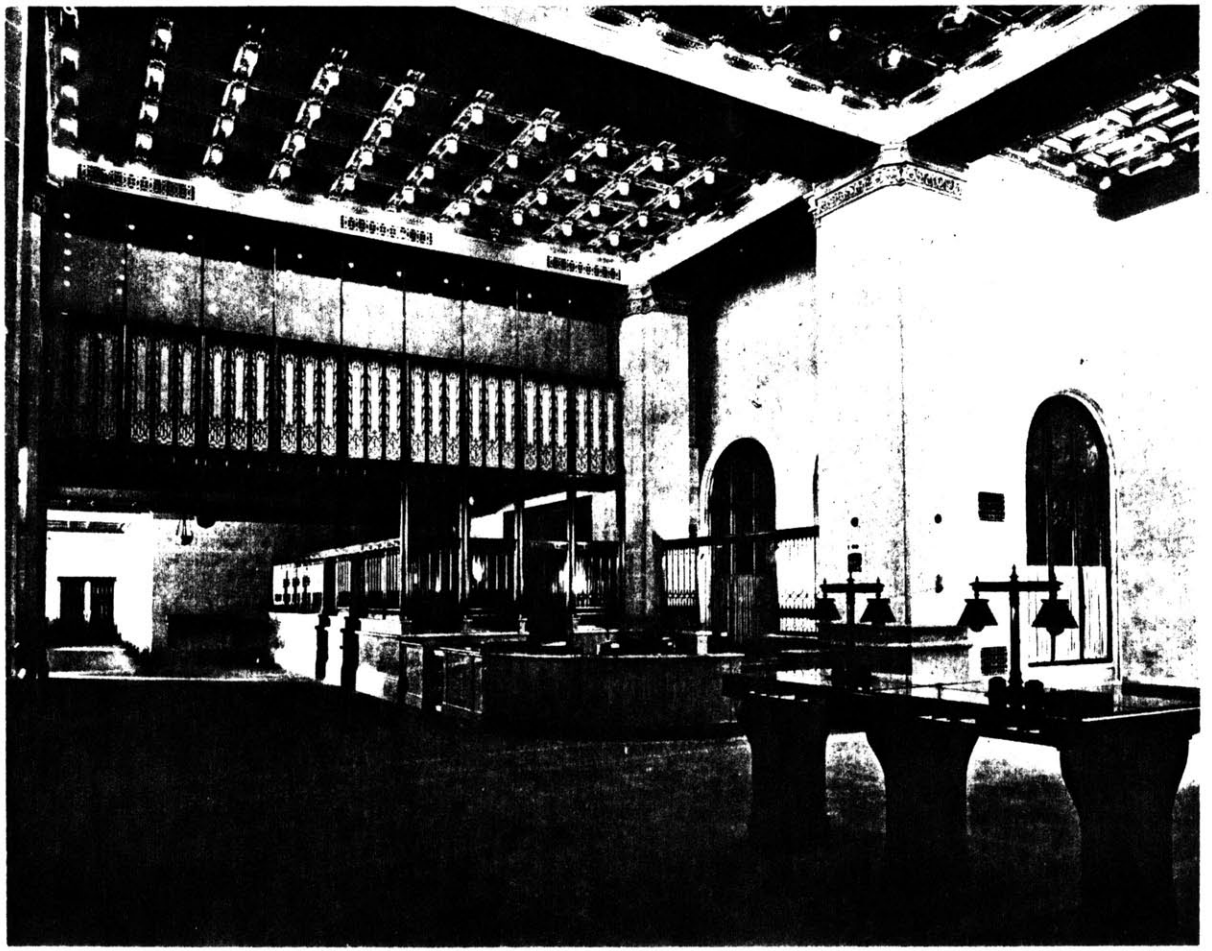


231. Woolworth Building, plan of typical upper floor

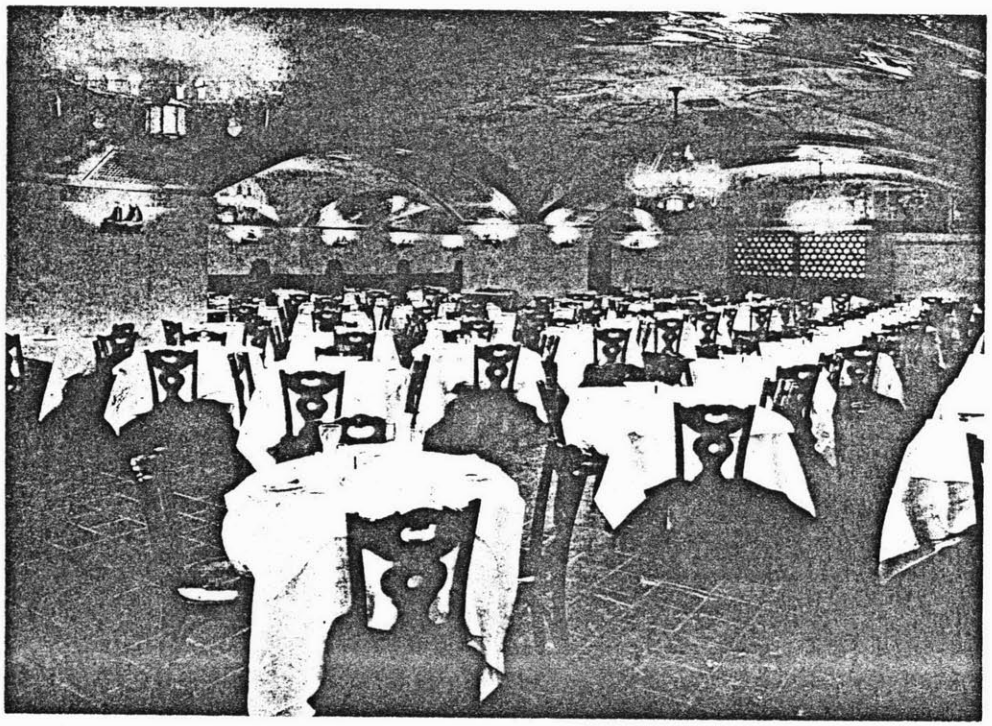
232. Woolworth Building, Frank W. Woolworth's office



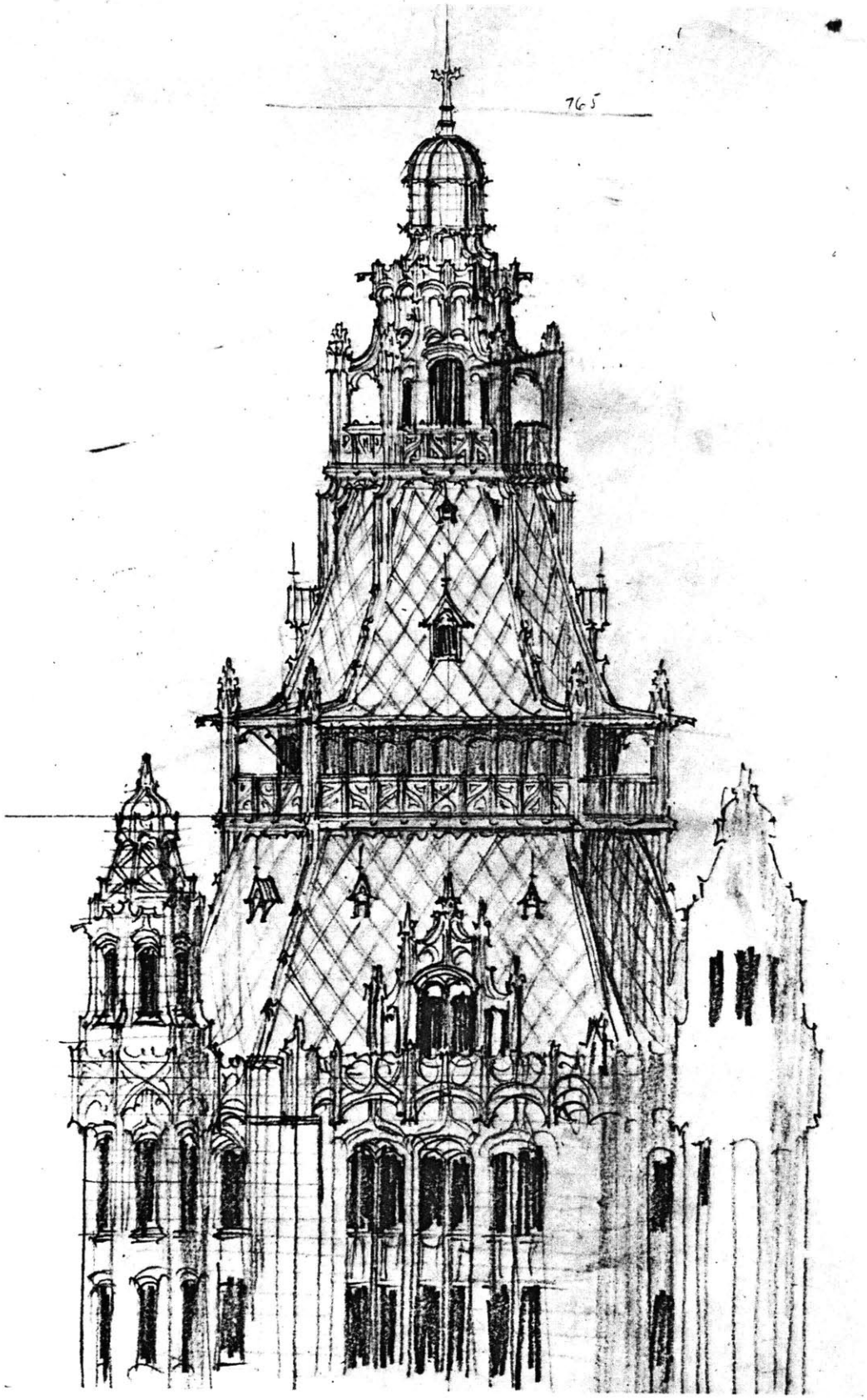
233. Woolworth Building, Frank W. Woolworth's private office



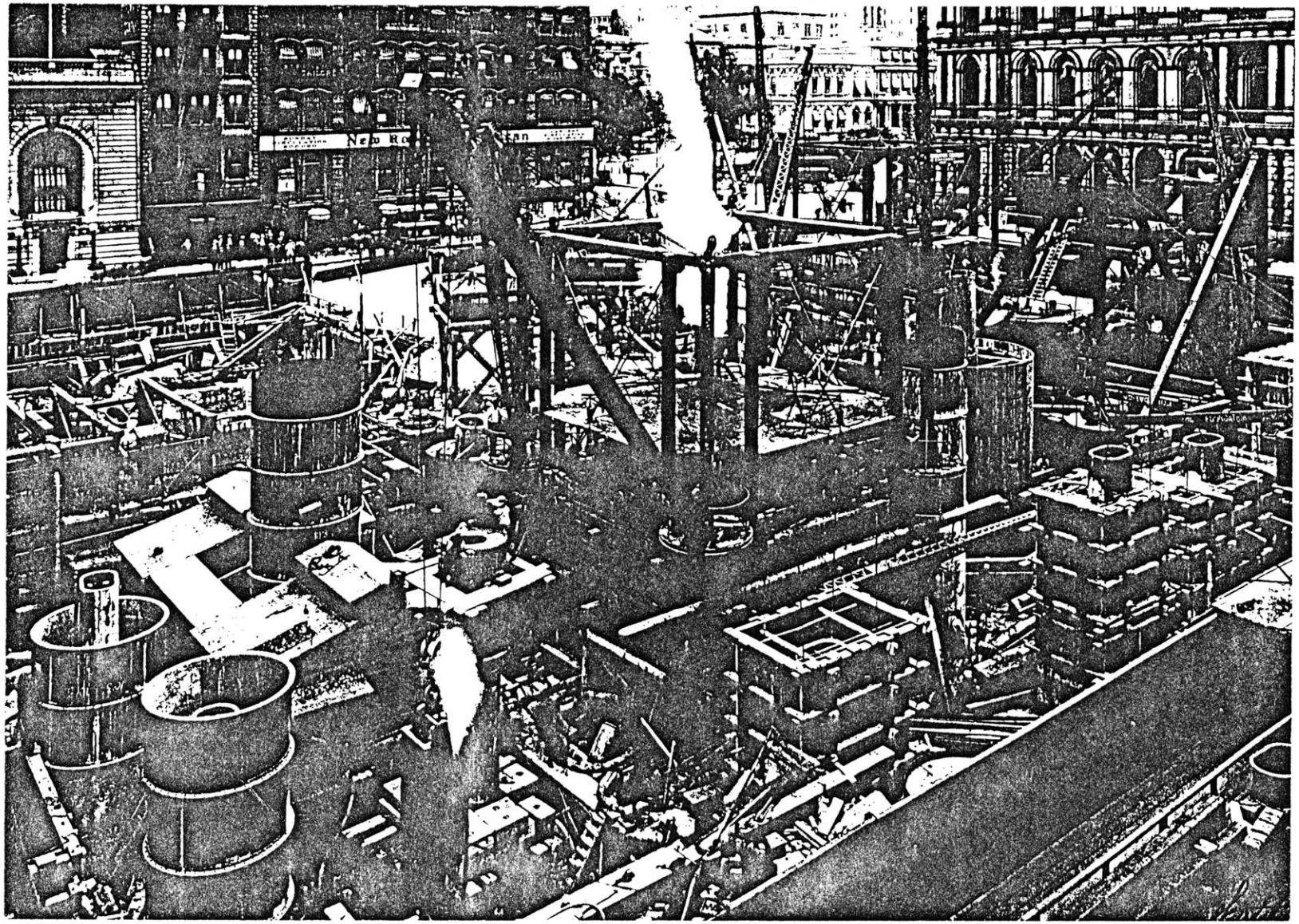
234. Woolworth Building, banking hall of Irving National Bank



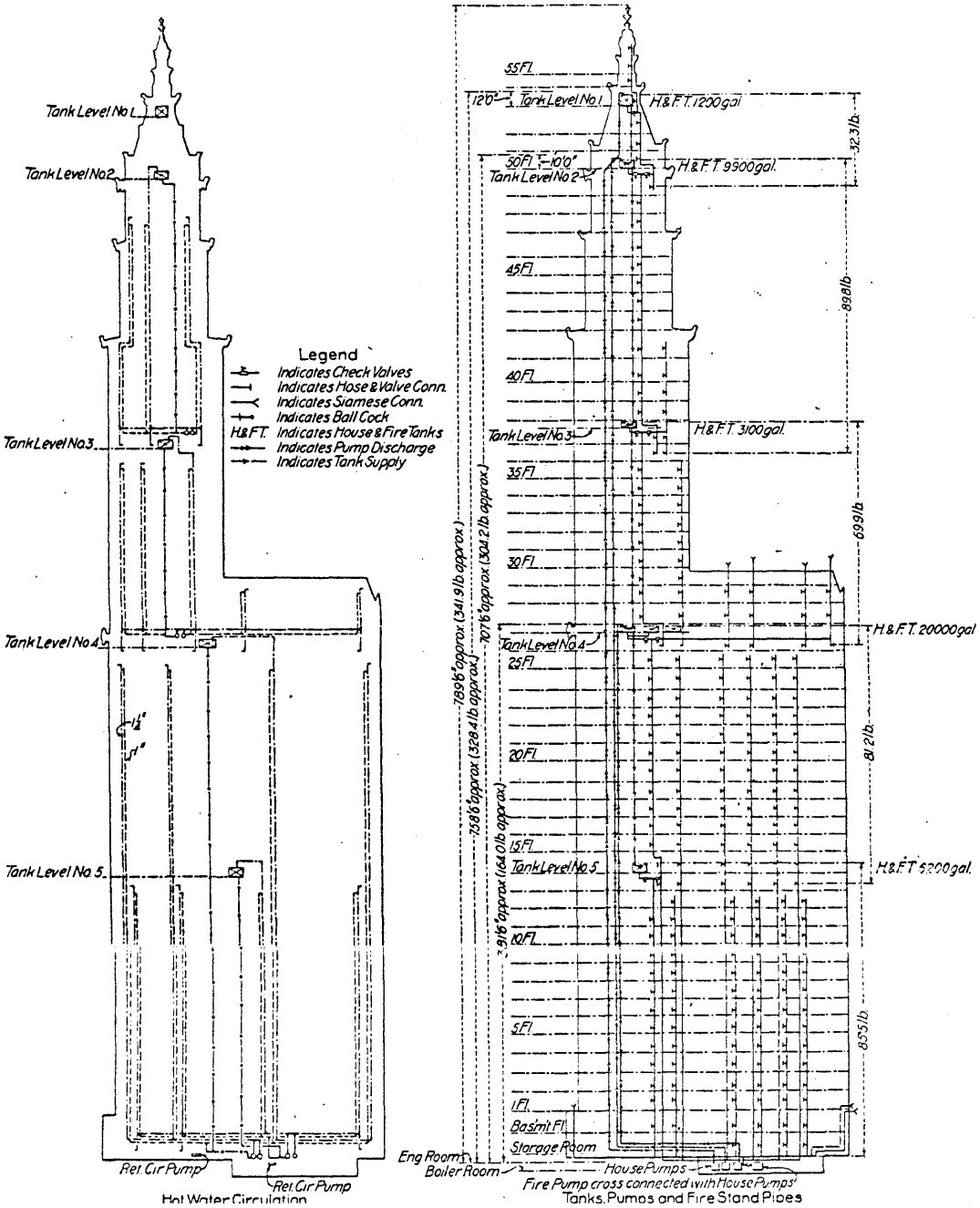
235. Woolworth Building, rathskeller



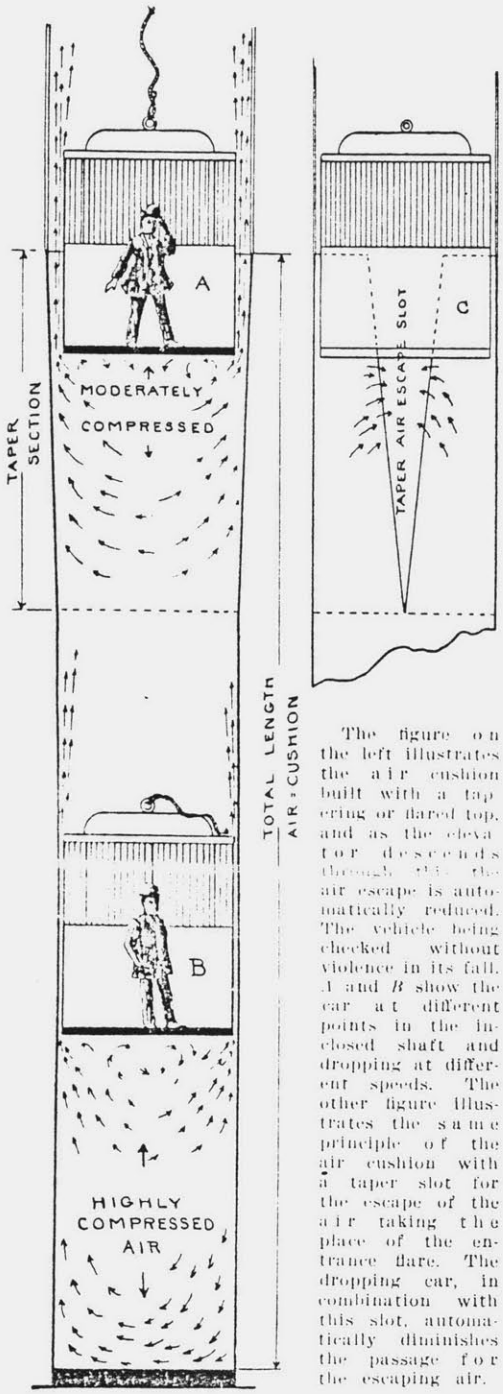
236. Woolworth Building, preliminary sketch of tearoom



237. Woolworth Building, construction site, 8 July 1911

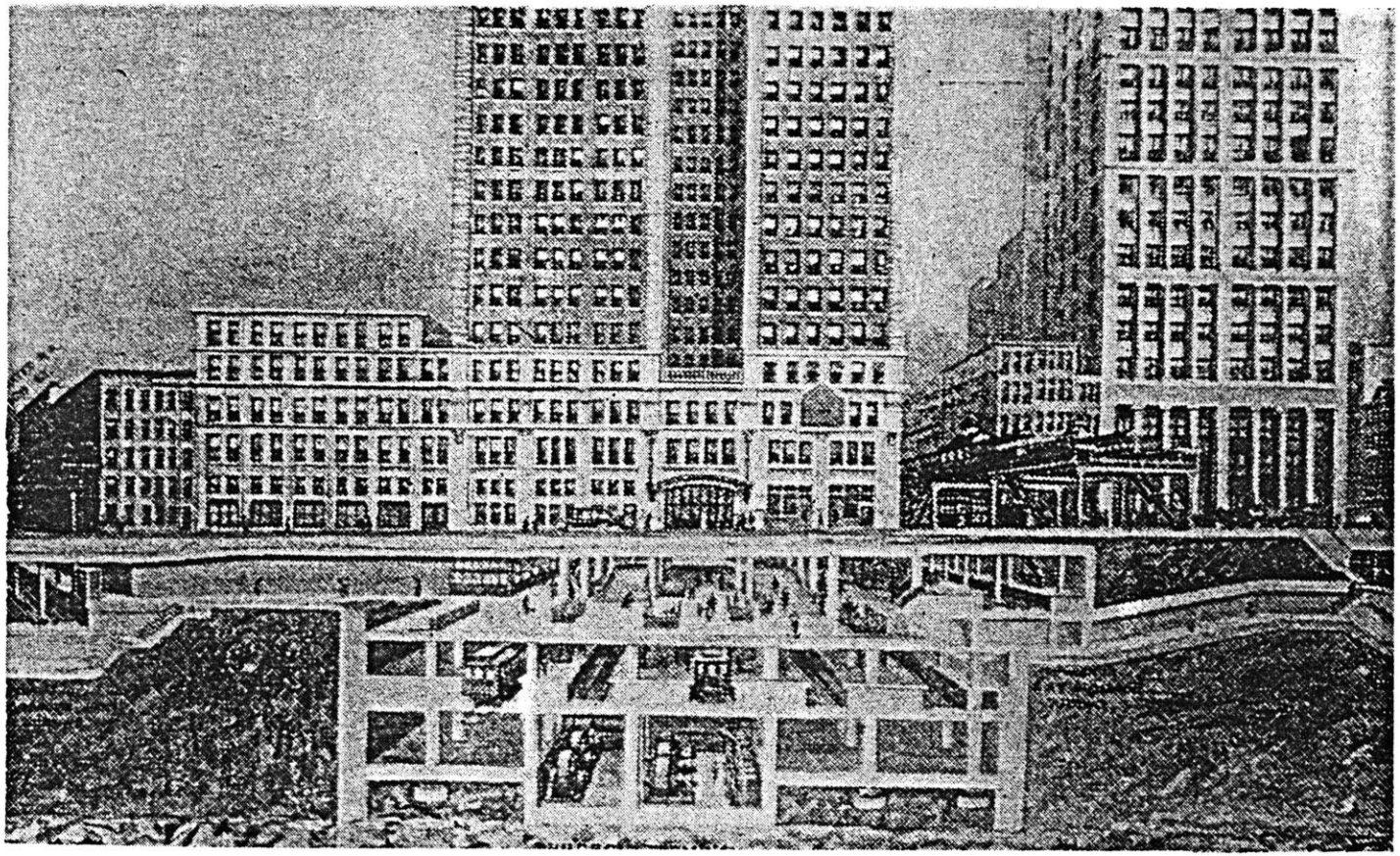


238. Woolworth Building, diagram of tanks and piping

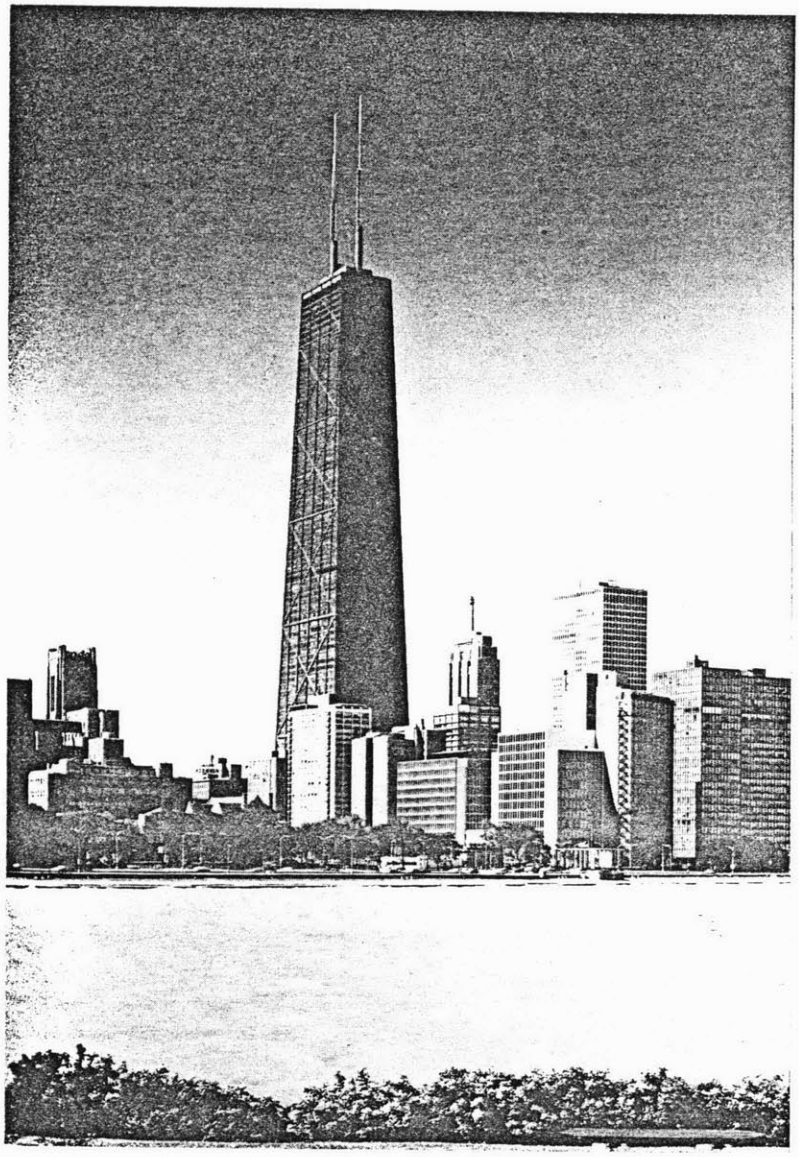


The figure on the left illustrates the air cushion built with a tapering or flared top, and as the elevator descends through this the air escape is automatically reduced. The vehicle being checked without violence in its fall. *A* and *B* show the car at different points in the inclosed shaft and dropping at different speeds. The other figure illustrates the same principle of the air cushion with a taper slot for the escape of the air taking the place of the entrance flare. The dropping car, in combination with this slot, automatically diminishes the passage for the escaping air.

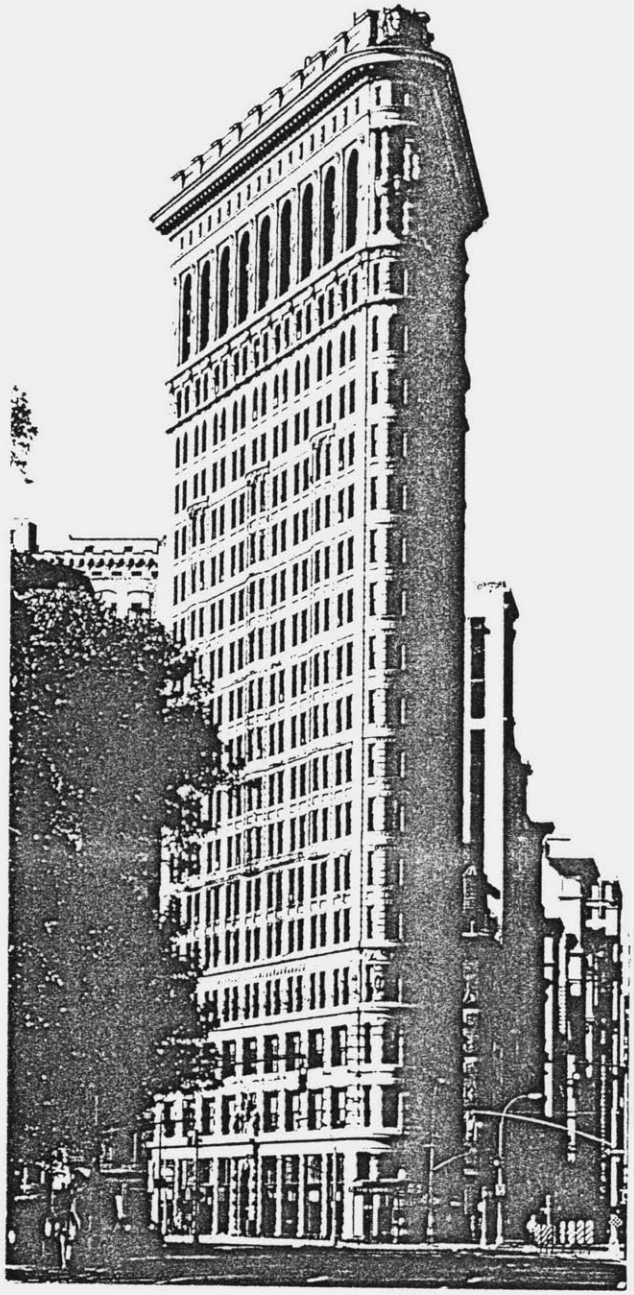
239. Woolworth Building, air cushions in elevator shafts



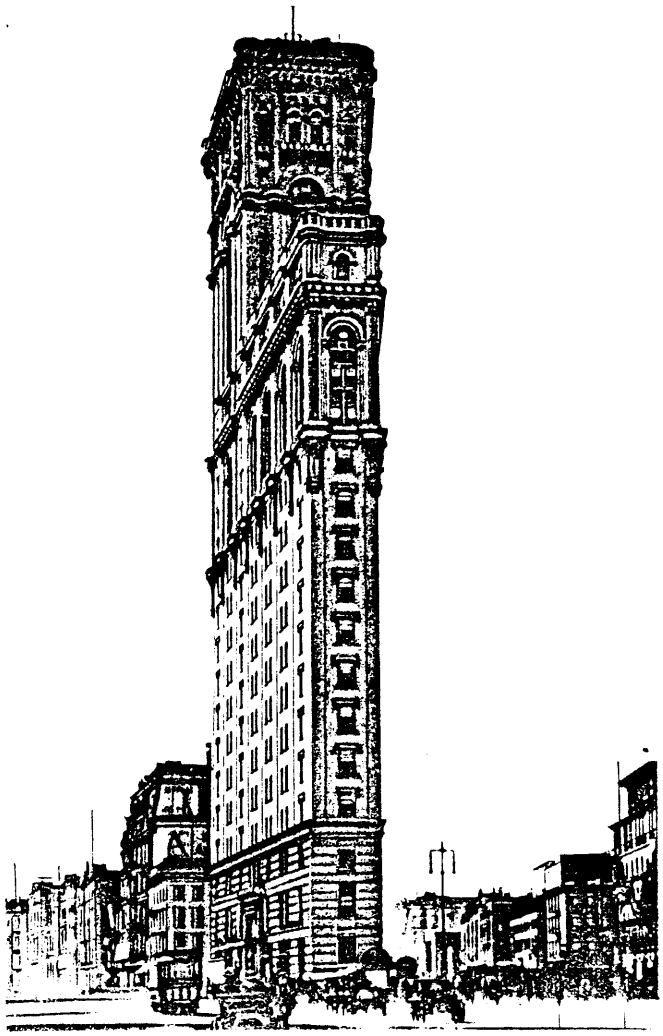
240. Clinton & Russell and Jacobs & Davies, Hudson Terminal, 1906-8



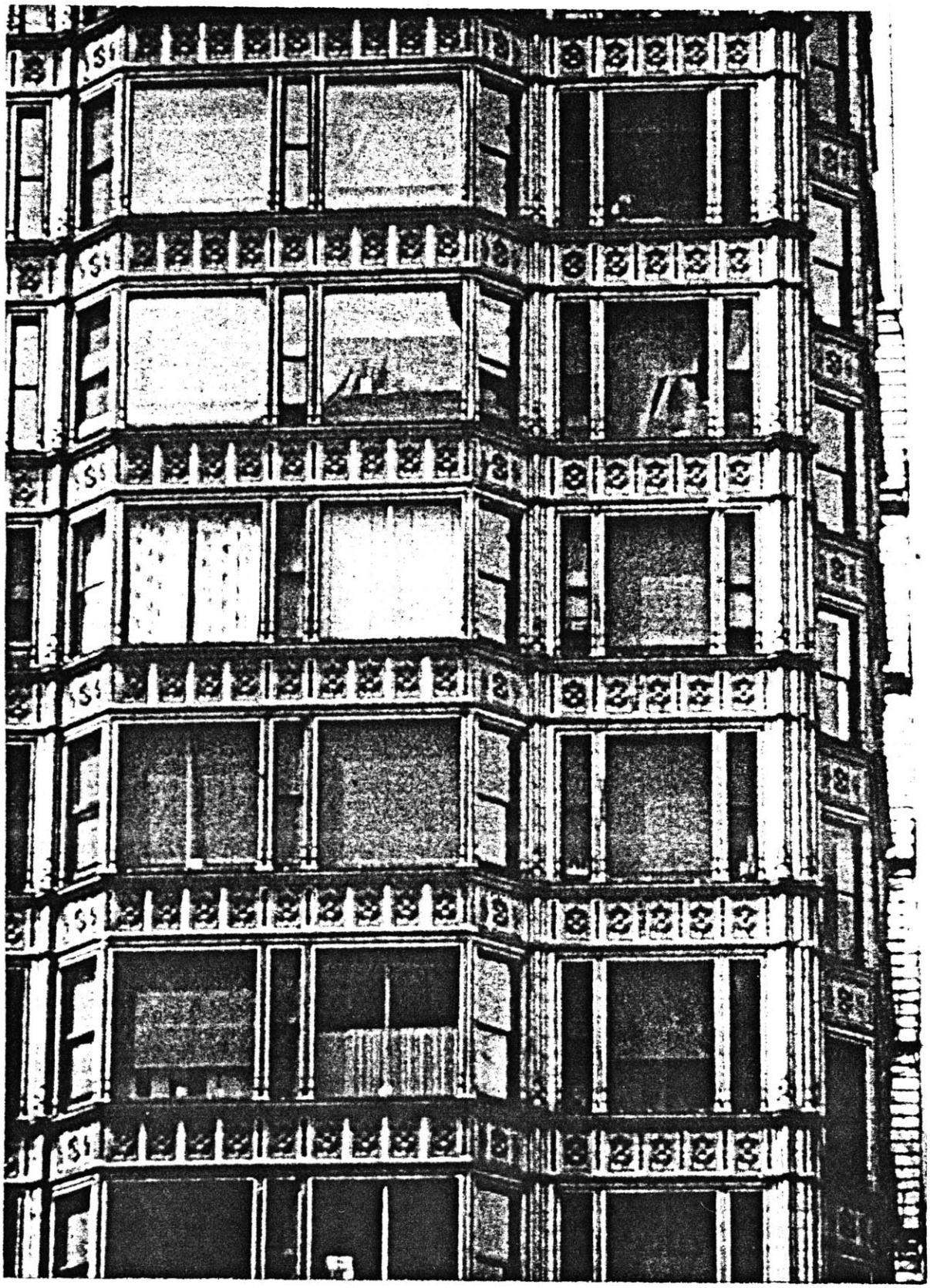
241. Skidmore, Owings & Merrill, John Hancock Building, Chicago, 1965-70



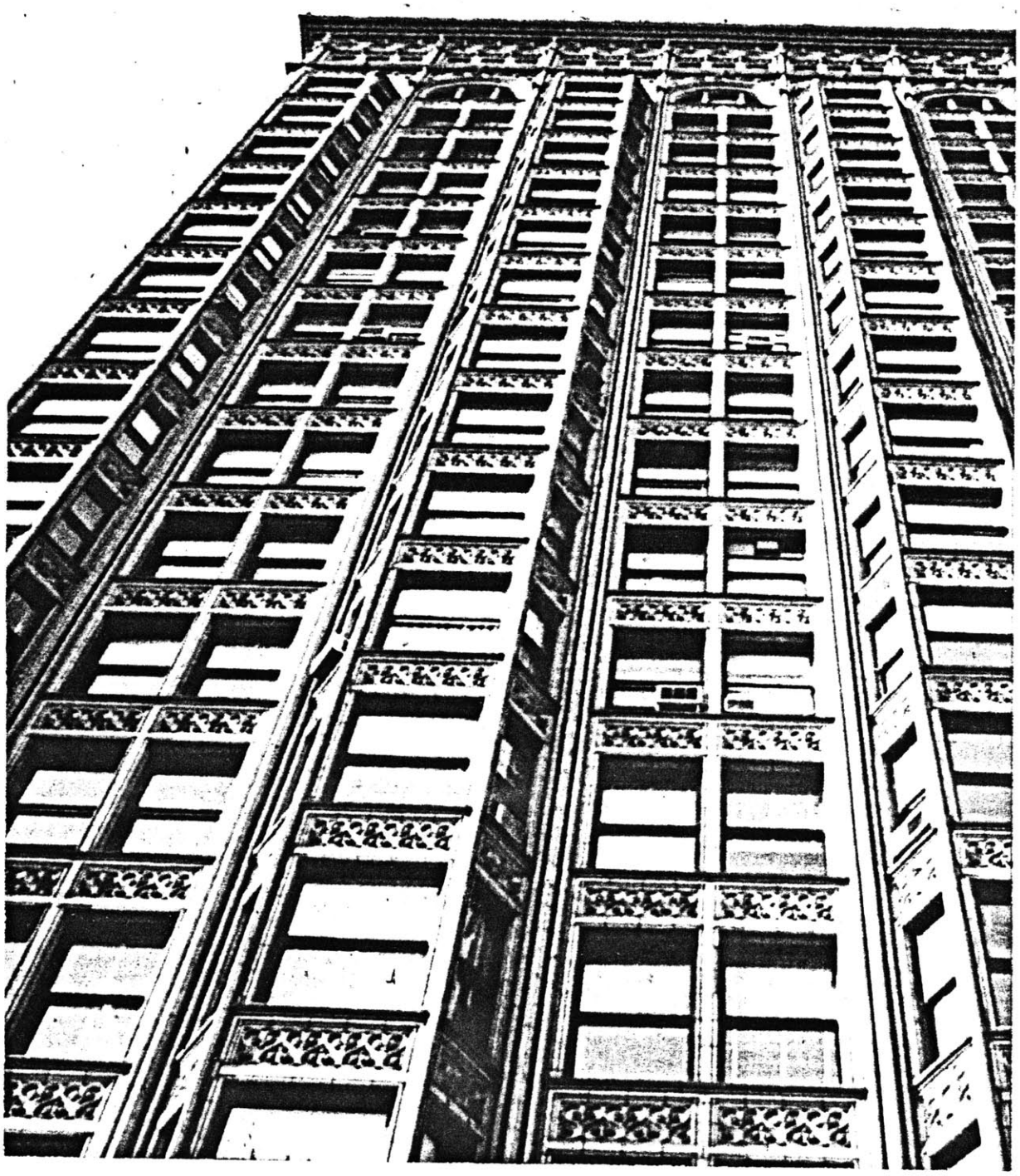
242. D.H. Burnham & Company, Fuller Building, New York, 1902-3



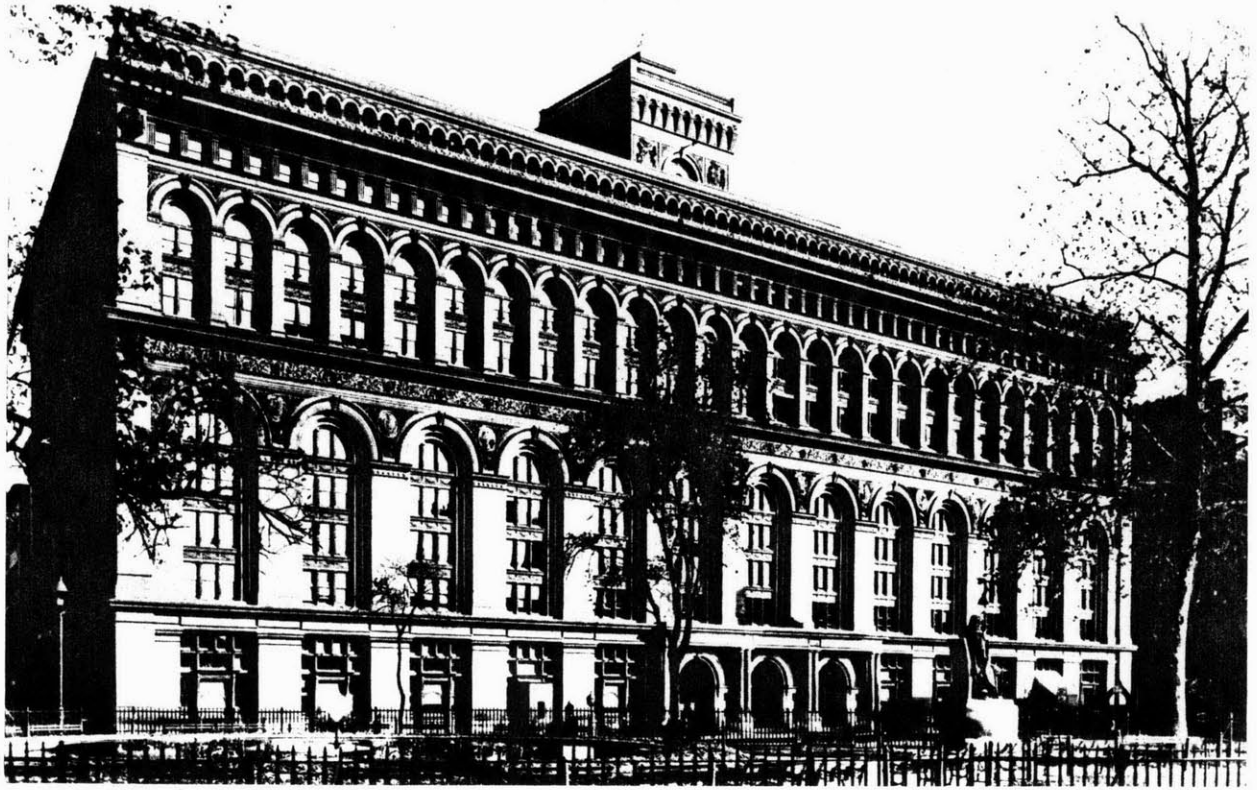
243. Cyrus L.W. Eidlitz, New York Times Building, New York, 1903-4



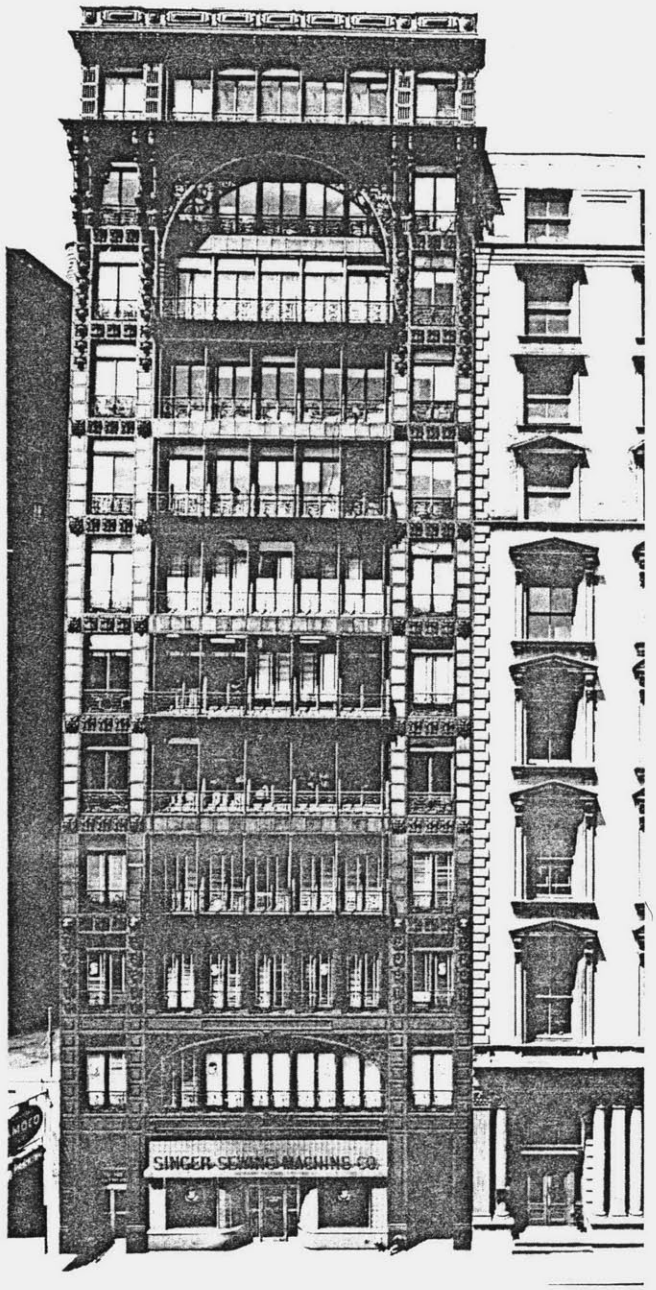
244. D.H. Burnham & Company, Reliance Building, Chicago, 1894



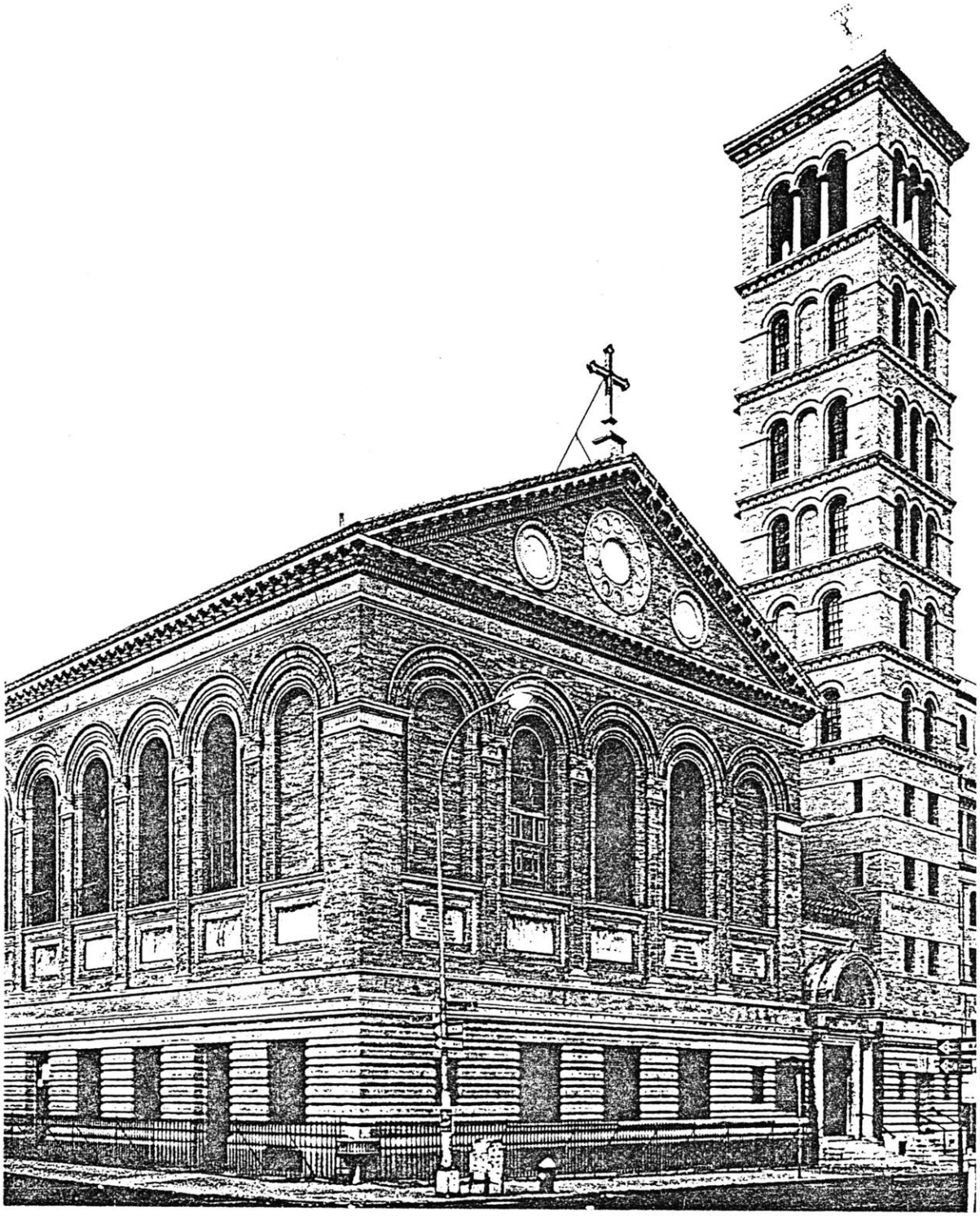
245. D.H. Burnham & Company, Fisher Building, Chicago 1895-96



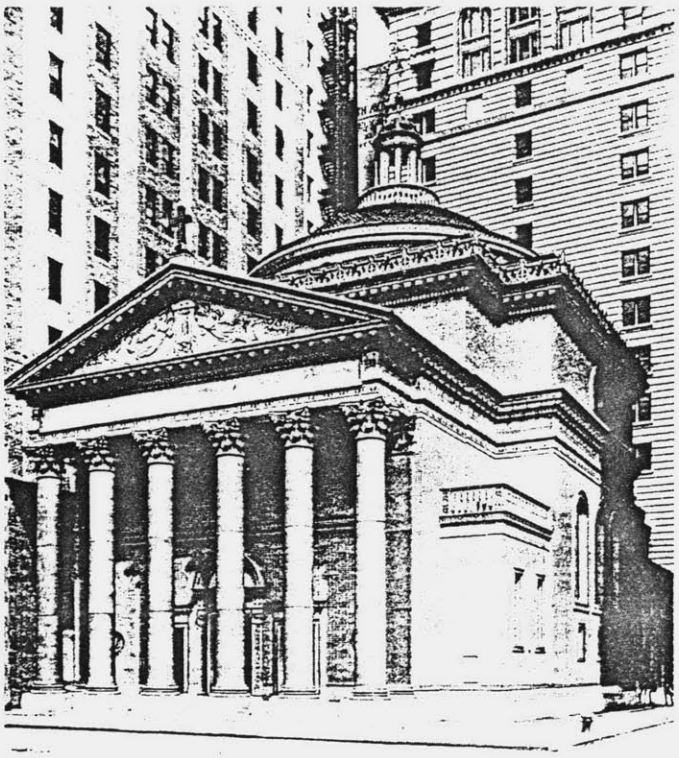
246. George Post, Produce Exchange, New York, 1881-85



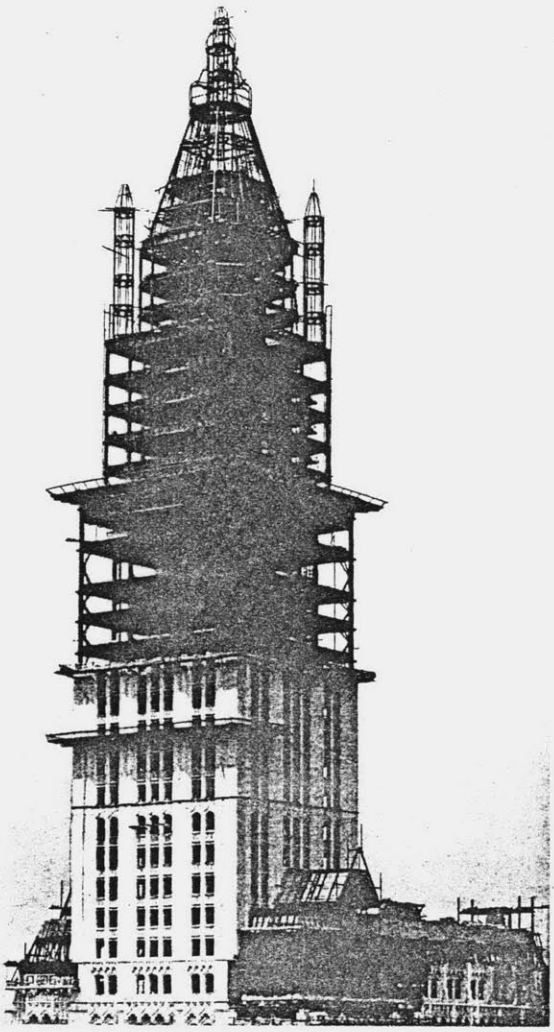
247. Ernest Flagg, Singer Loft Building, New York, 1902-4



248. McKim, Mead & White, Judson Memorial Church, New York, 1892

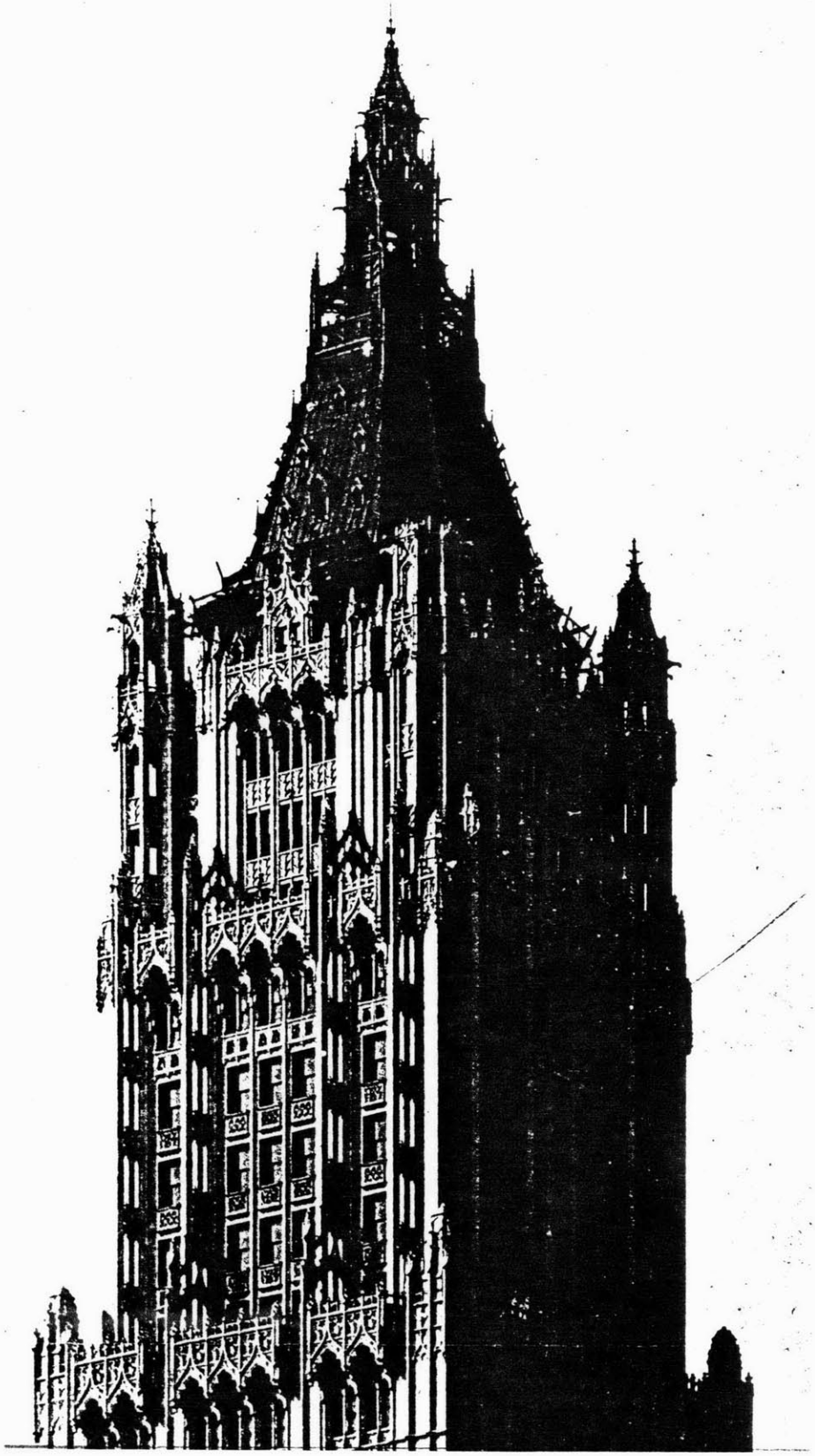


249. McKim, Mead & White, Parkhurst Church, New York, 1903-6

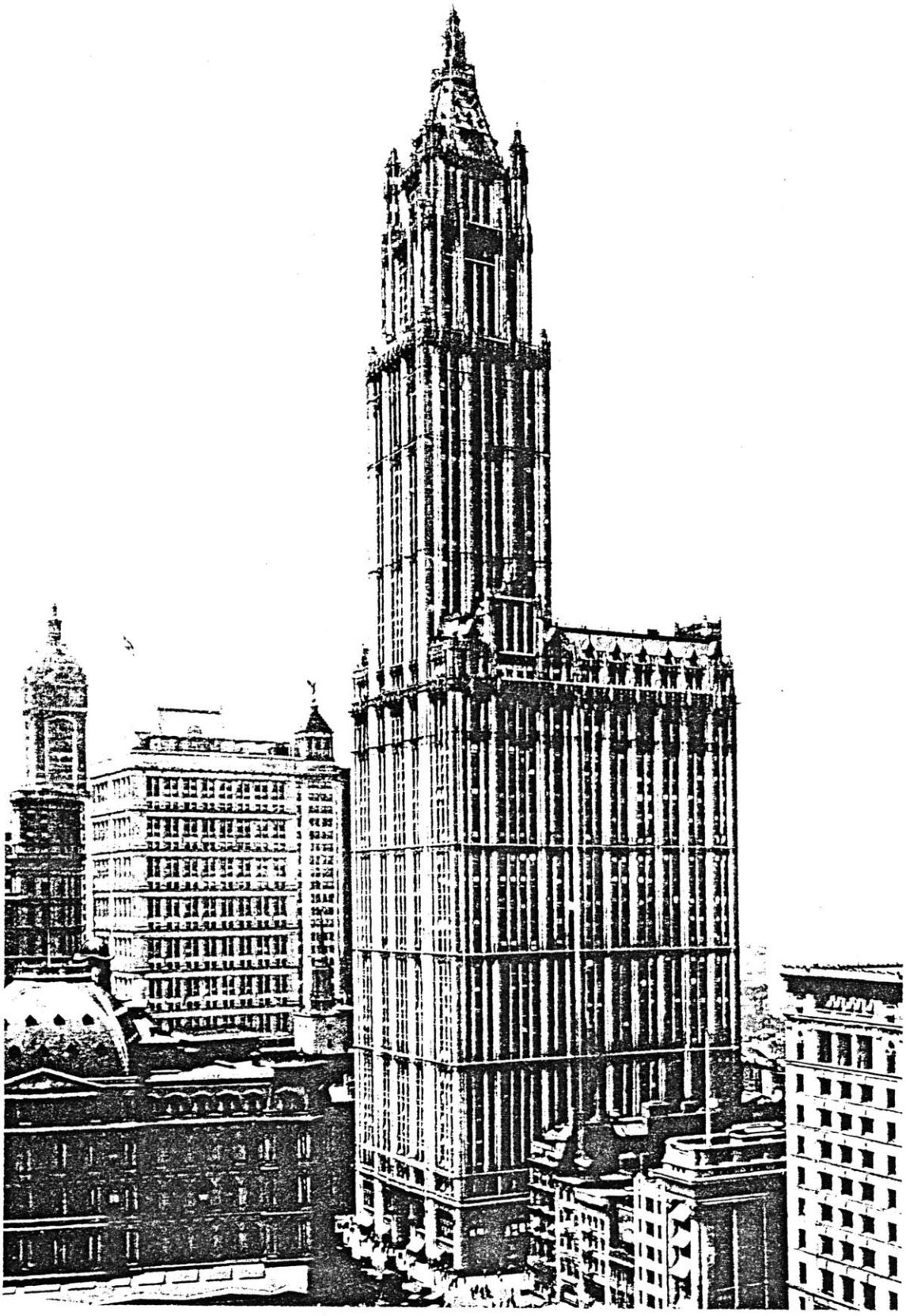


250. Woolworth Building, tower under construction, 1912

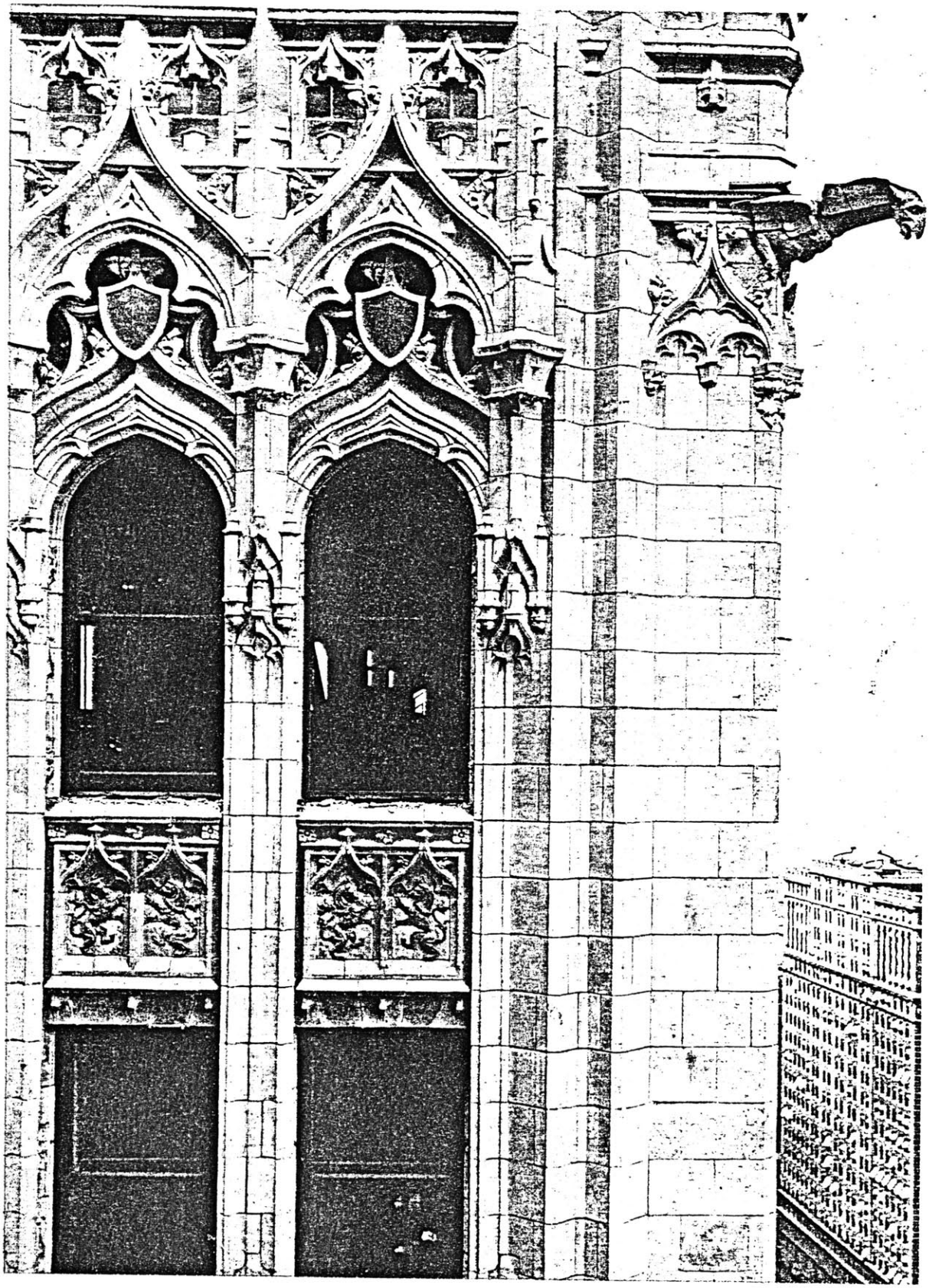
251. Woolworth Building, terra cotta canopy at twenty-seventh story



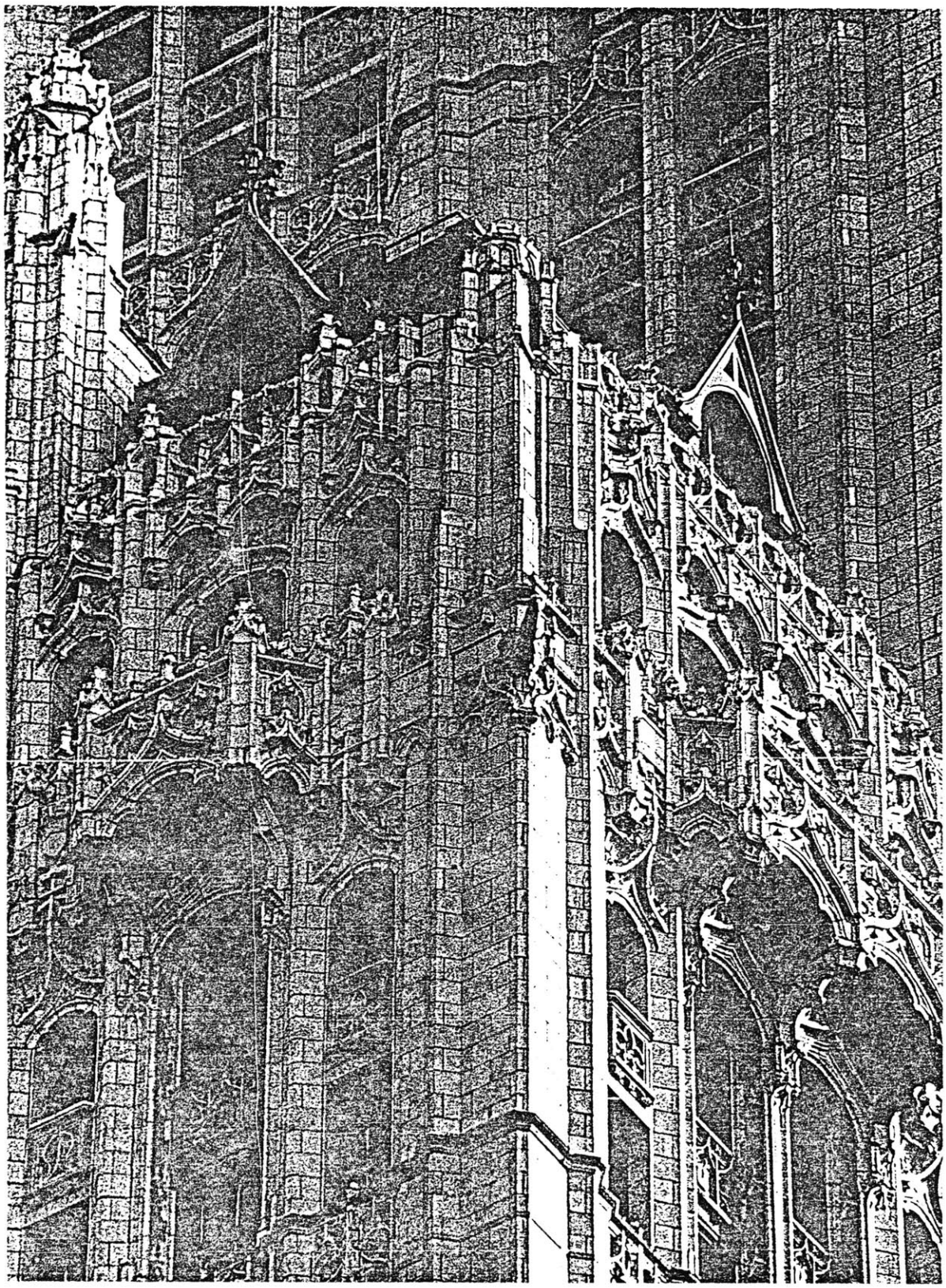
252. Woolworth Building, tower



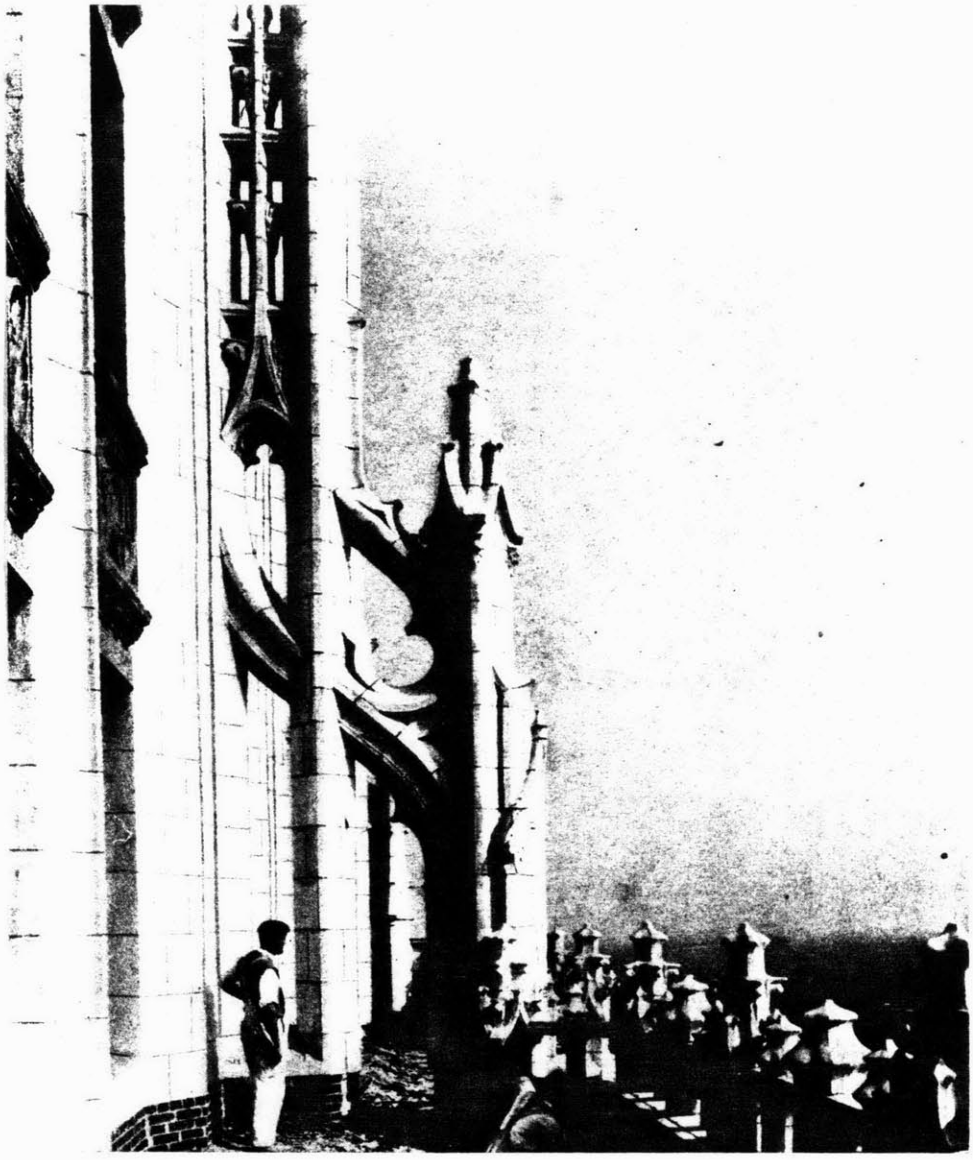
253. Woolworth Building



254. Woolworth Building, spandrels



255. Woolworth Building, crown



256. Woolworth Building, buttress at forty-second story

257. Woolworth Building, arcade, grotesque of Frank W. Woolworth

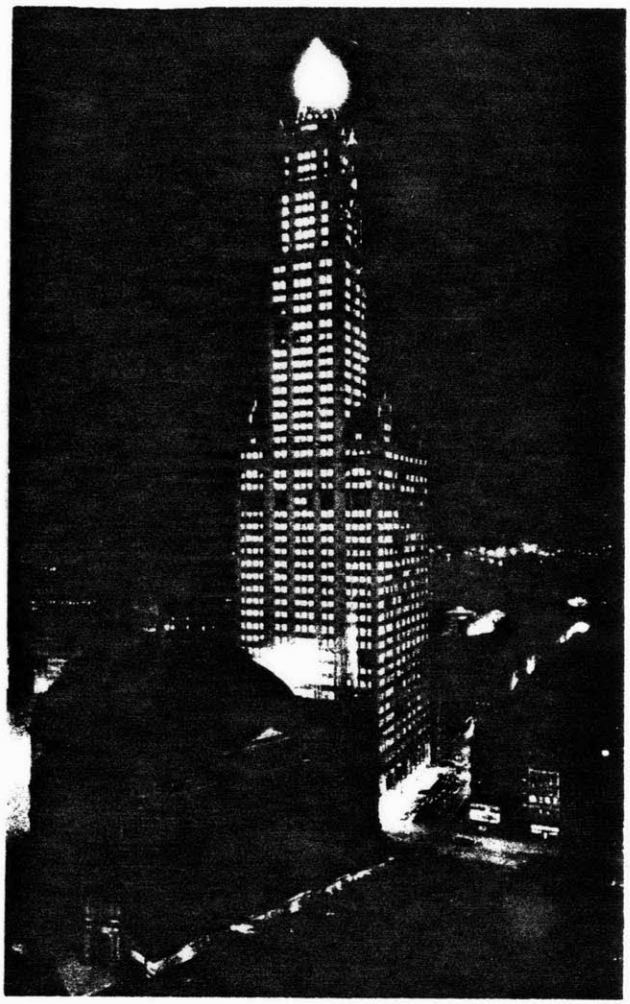
258. Woolworth Building, arcade, grotesque of Cass Gilbert

259. Woolworth Building, main entrance

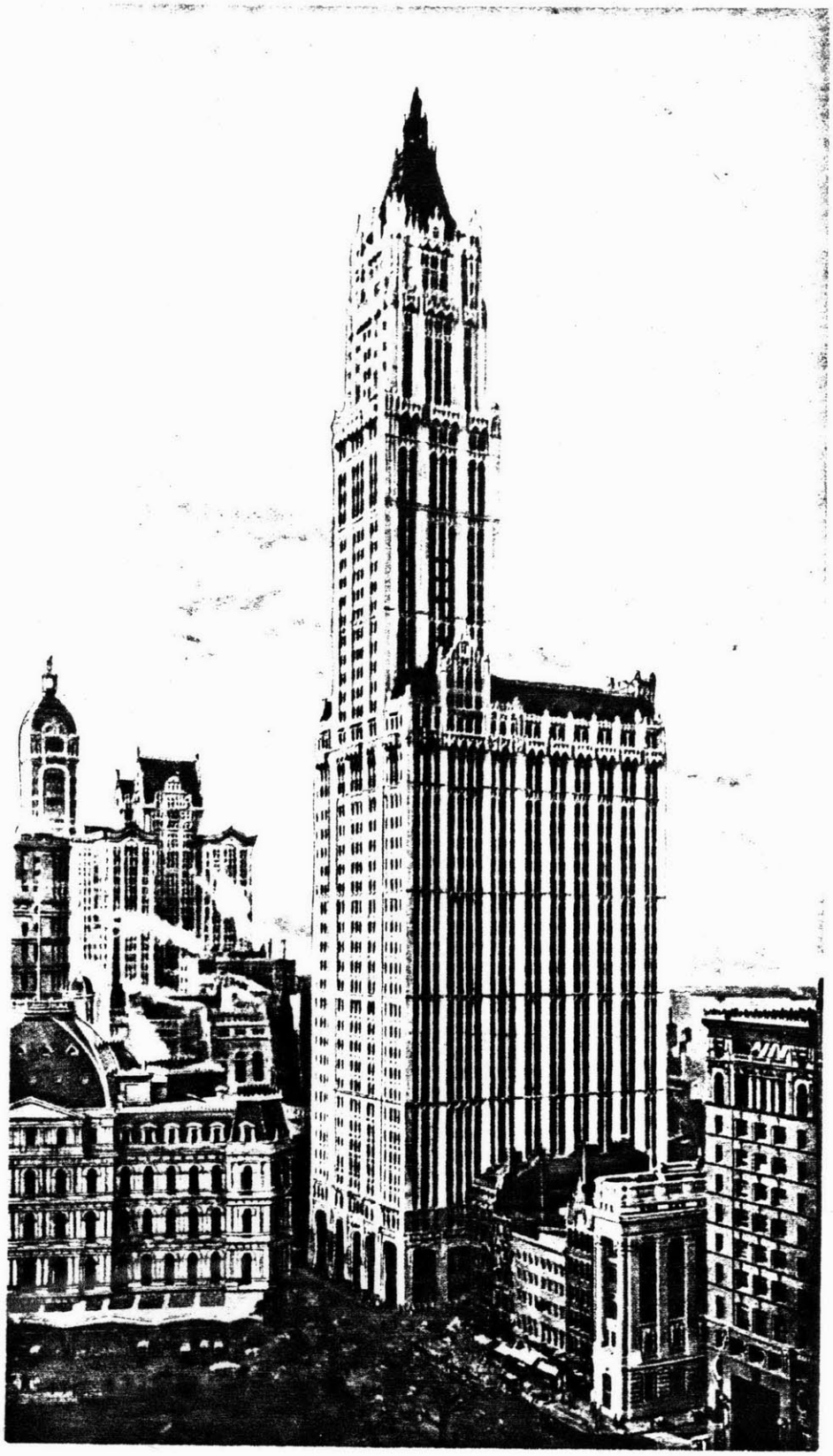
260. Woolworth Building, base, allegorical mask

261. Carl Paul Jennewein, "Labor," Woolworth Building, arcade

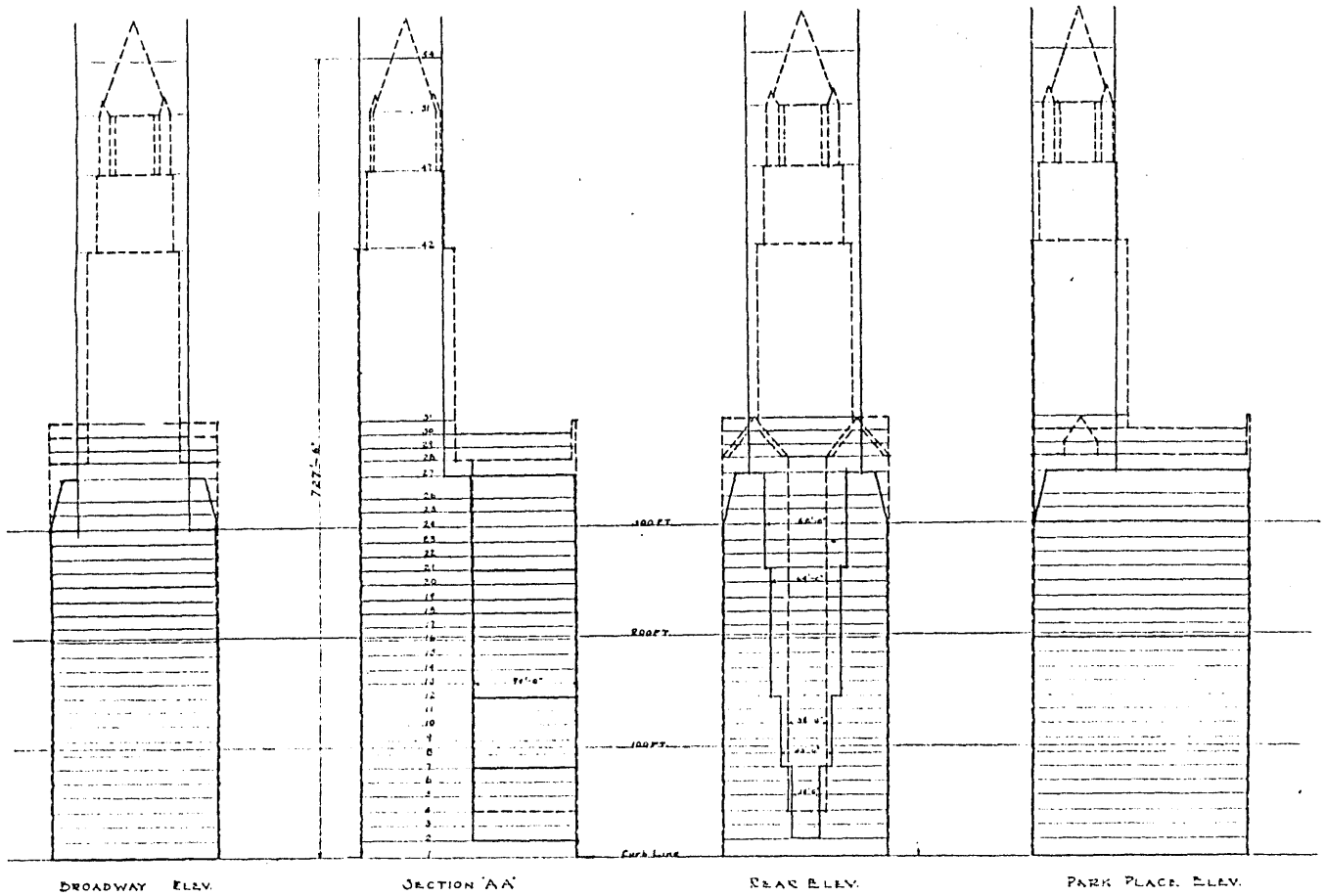
262. Carl Paul Jennewein, "Commerce," Woolworth Building, arcade



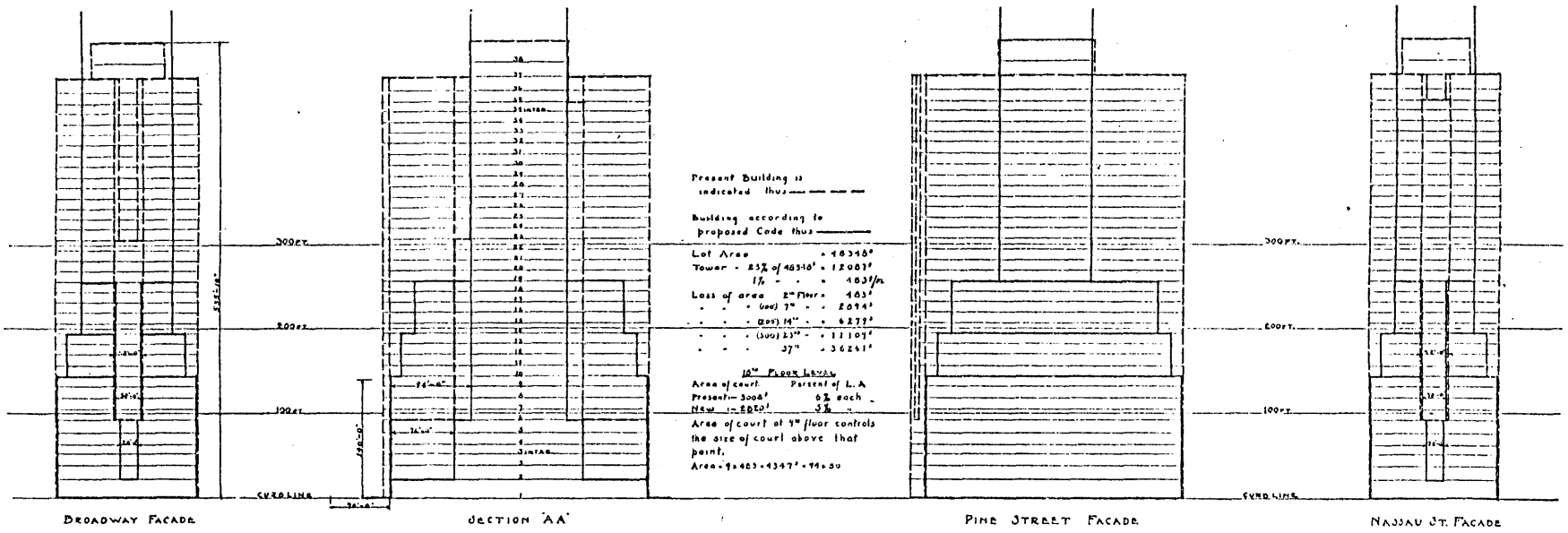
263. Woolworth Building at night



264. Woolworth Building



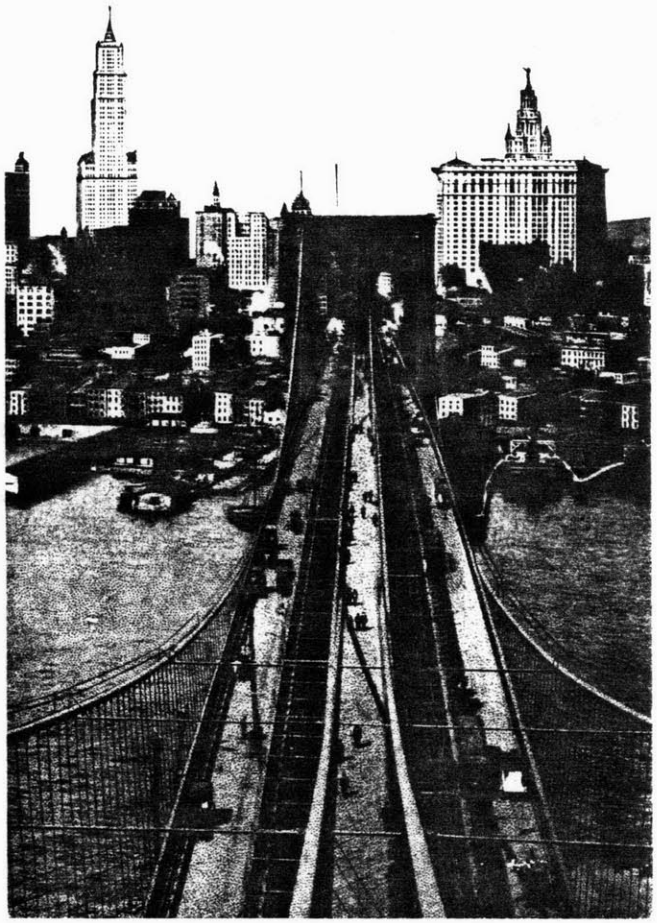
265. Heights of Buildings Commission, study of Woolworth Building's envelope, 1913



266. Heights of Buildings Commission, study of Equitable Building's envelope, 1913

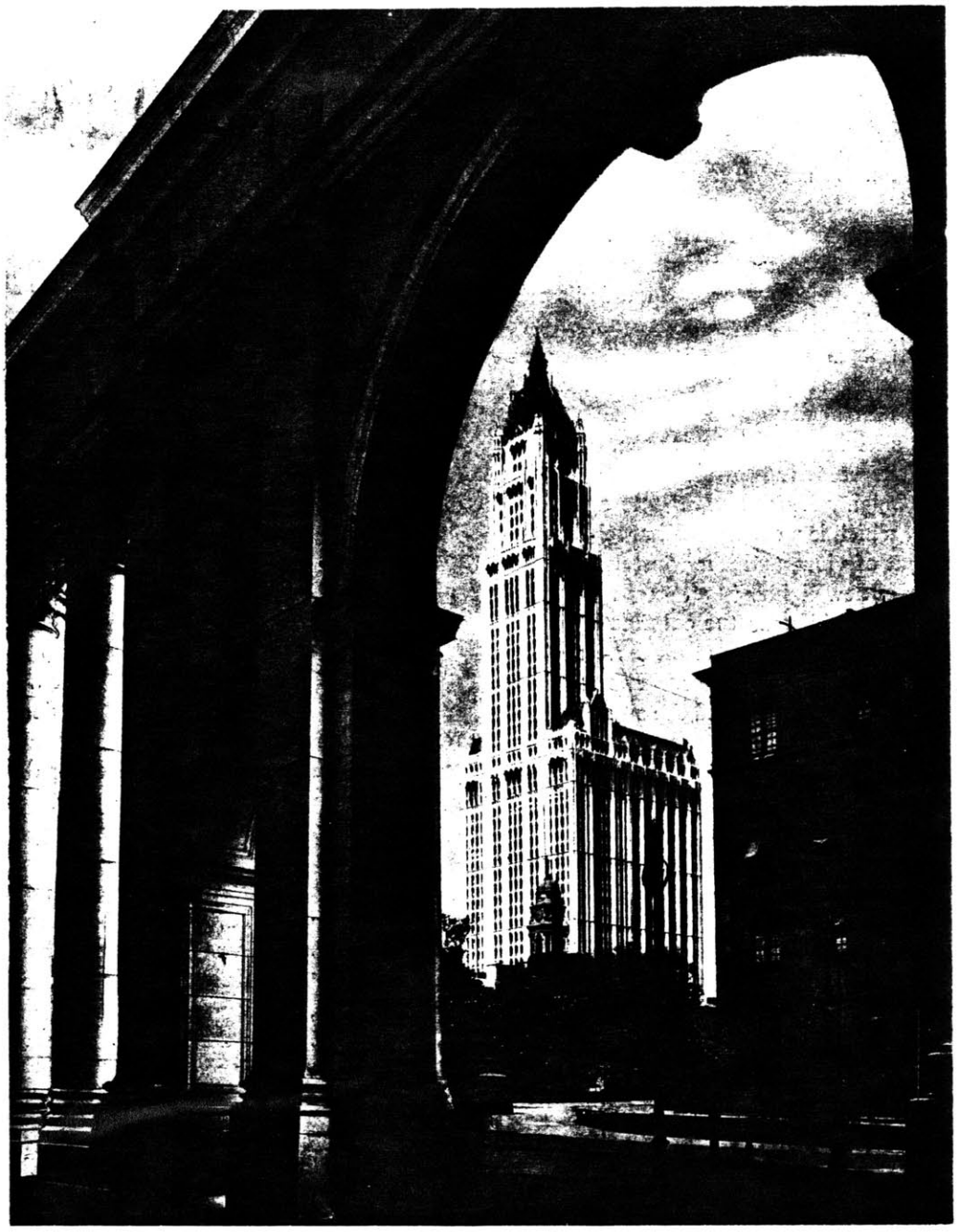
267. Woolworth Building and Municipal Building, c. 1914

268. Woolworth Building and City Hall Park, c. 1913



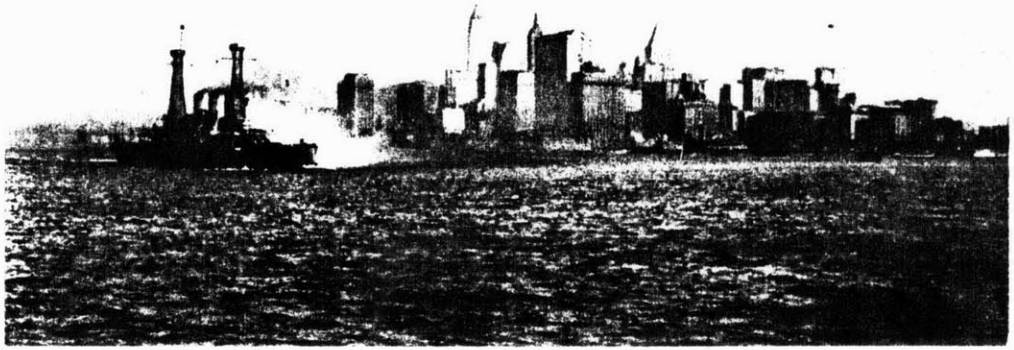
269. Lower Manhattan from the Brooklyn Bridge, c. 1914

270. City Planning Exhibition, poster, 1913

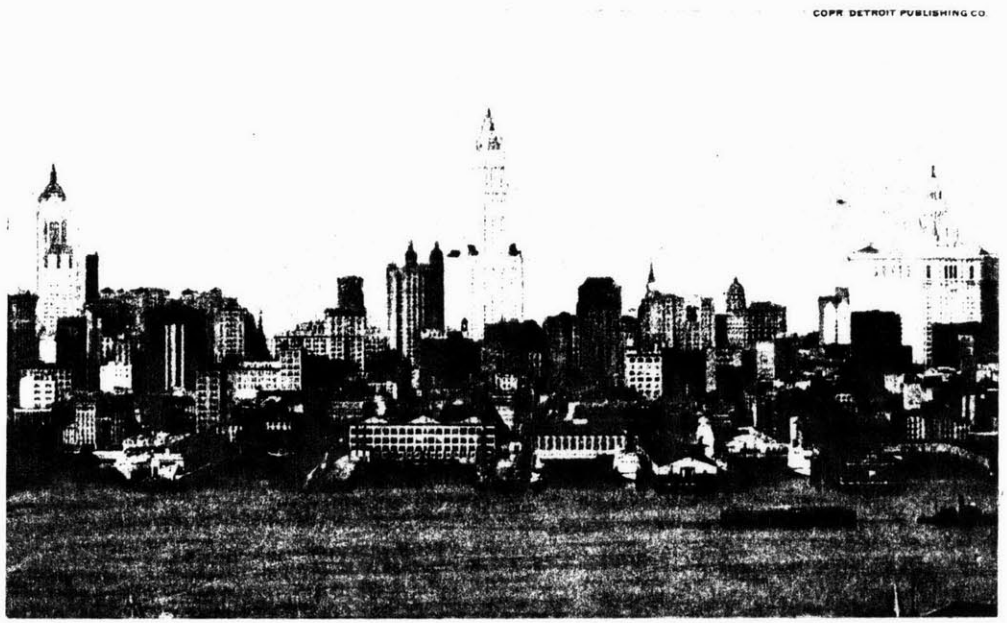


271. Woolworth Building from the Municipal Building, 1913

272. New York skyline from New Jersey, c. 1914



273. New York skyline from the Upper New York Bay, c. 1914



274. New York skyline from Brooklyn, c. 1914