

THE NATIONAL COLLEGE OF ART AND DESIGN
CRAFT/METALWORK

THE ART NOUVEAU IRONWORK OF VICTOR HORTA
AND LOUIS SULLIVAN

By

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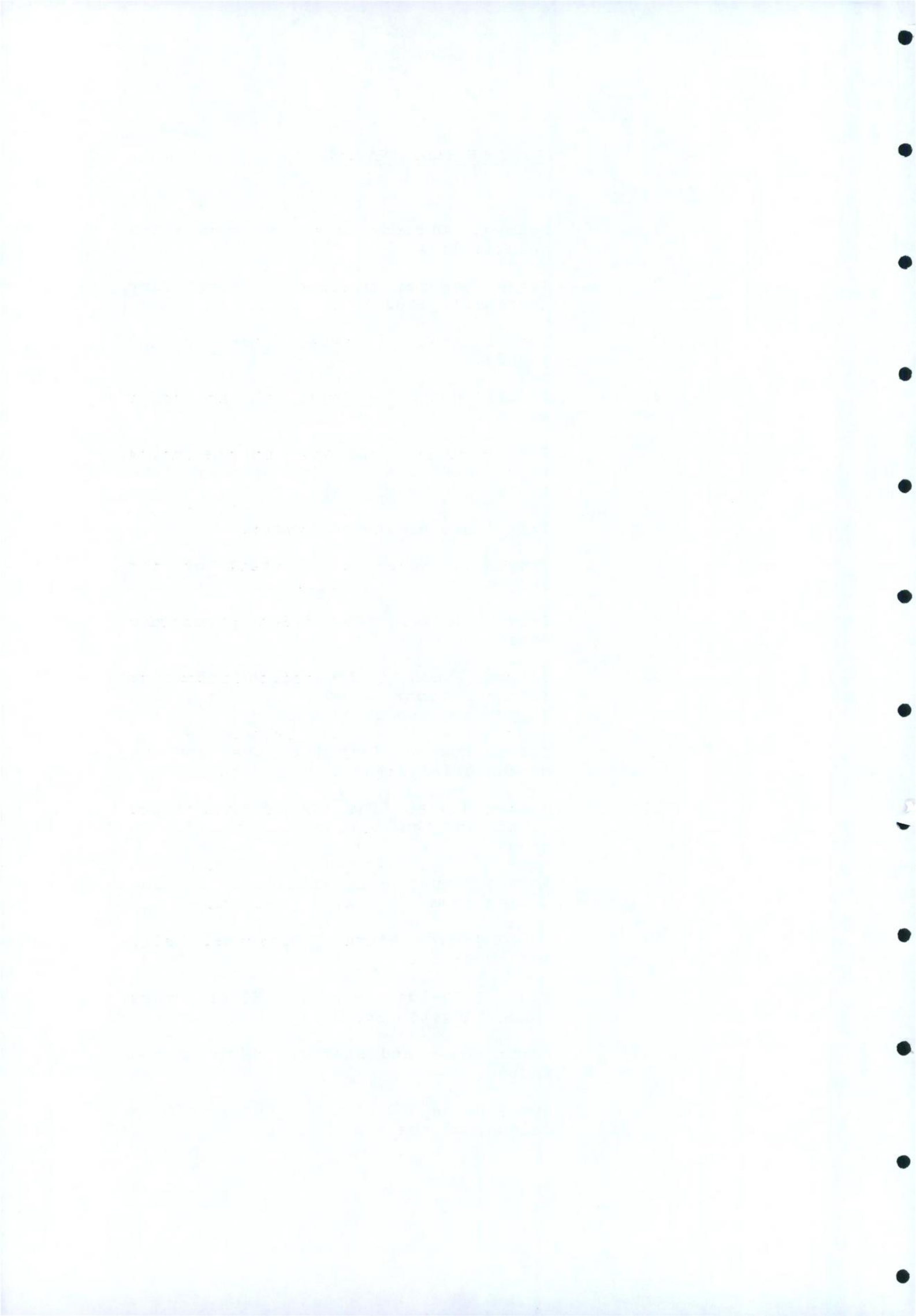
A member of the Institute of Architects for his kind permission in allowing me to view his private collection.



LIST OF ILLUSTRATIONS

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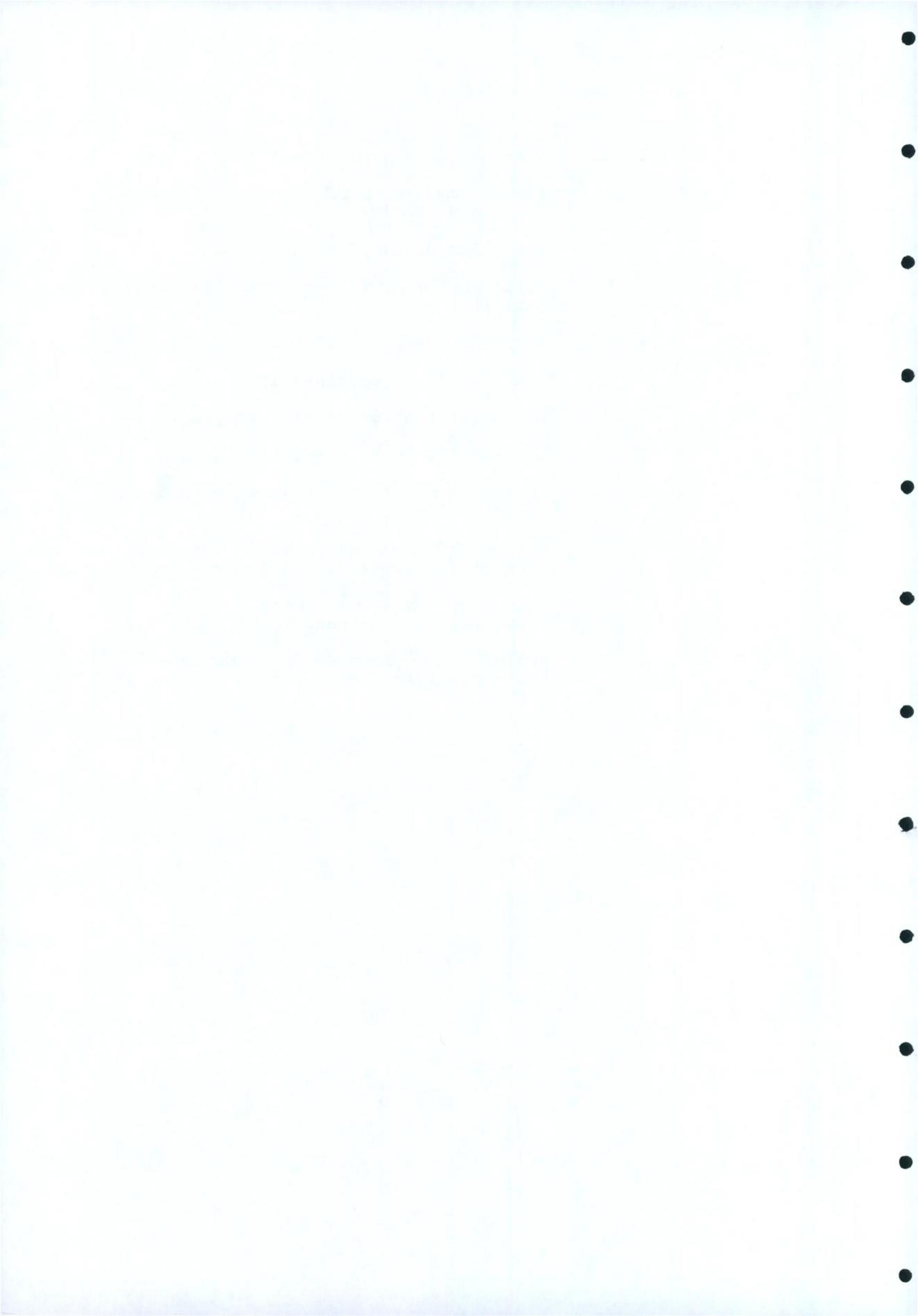
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INTRODUCTION



We should refrain entirely from the use of ornament for a period of years, in order that our thought might concentrate acutely upon production of buildings well formed and comely in the nude.

Ornament in Architecture,
Louis Sullivan, 1892 (13, p.51)

Not only is ornament produced by criminals but also a crime is committed through the fact that ornament inflicts serious injury on people's health, on the national budget and on cultural evolution.

Ornament and Crime, Adolf Loos, 1908 (14, p.28)

It would appear that the American Art Nouveau architect Louis Sullivan when speaking these words disliked the use of ornamentation. However he accepted it but abhorred the over use of ornamentation in architecture. In continuing the above quotation he states

Simple forms will carry with natural ease, the raiment of which we dream and that our buildings thus clad in a garment of poetic imagery, will appeal with redoubled power, like a sonorous melody overlaid with harmonious voices.

Ornament in Architecture, 1892 (p.51)

Ornamentation was to be conceived as an enhancement of the basic beauty.

Adolf Loos, the Austrian architect, visited the world's exposition in Chicago, 1893. He remained in America for three years and during this time he became familiar with the theoretical writings of Sullivan especially his Ornament in Architecture of 1892. His argument against ornament was that it entailed the unnecessary use of material and the exploitation of labour. His priority was utilitarian simplicity.



Ludwig Mies van de Rohne, director of the Bauhaus in Germany in 1930 was a keen supporter of Loos's writings. The motto that was attributed to him "Less is more"(19, p.331), meant that through simplification a better architecture would be created, adapting to the needs of modern society.

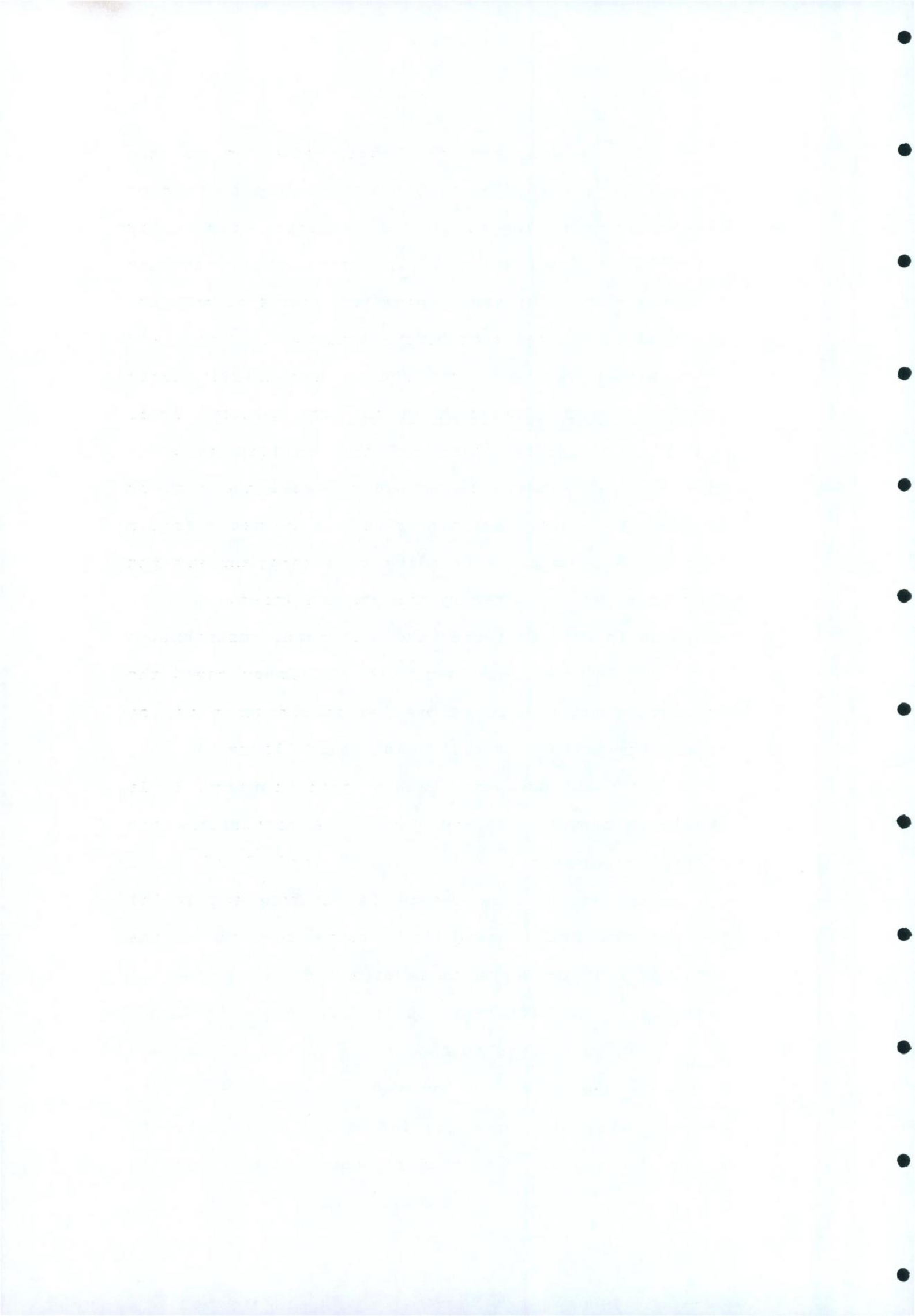
Robert Venturi's "Less is a bore" (28, p.311) Complexity and Contradiction in Architecture, 1966, was of a different school of thought from Loos and Mies van der Rohne. He considered that the lack of ornament rendered a building dull and uninteresting.

This discourse regarding ornamentation and the lack of it was prompted by the personalities and their writings in what is termed the Art Nouveau movement.

Art Nouveau was primarily an ornamental and decorative style which expressed itself in a two or three dimensional form. Initially there is the surface, then movement within this surface. It developed between the style known as historicism and the modern movement.

The aim of this thesis is to draw a parallel between the Art Nouveau decorative ironwork of the architect Victor Horta in Belgium and the ornamental ironwork of the architect, Louis Sullivan in America.

Chapter 1 looks at the origin of the Art Nouveau movement and how it evolved. It discusses its characteristic features and influences in relation to its predecessors. The chief exponents of the style



and their work in the various countries are outlined.

Chapter 2 introduces the use of iron in later nineteenth century architecture. Iron was a very important component for the Art Nouveau designer because of its versatility which is evident when looking back to the eighteenth century. Iron was used structurally in the building of bridges and train stations. Later in the nineteenth century Louis Sullivan introduced the use of steel in buildings.

Chapter 3 discusses the influences which motivated the work of the Belgian architect, Victor Horta. The decorative qualities of cast and wrought iron were very much in evidence in his works.

Chapter 4 introduces the American contribution to Art Nouveau. The Great Fire in Chicago paved the way for the use of steel in the construction of the framework in tall buildings by Louis Sullivan.

Chapter 5, the theories and writings of Louis Sullivan in connection with his buildings are discussed, in addition to the individuals who influenced him and his work. The integration of his complex ironwork ornamentation with the simple forms of his buildings are also discussed.



CHAPTER 1



Art Nouveau - what exactly was it? Was it just a flash in the pan? Did it have more enduring qualities? Did it influence the environment? Did it influence people's lives?

The term 'Art Nouveau' represents a style in architecture and in both the figurative and decorative arts which thrived in the late 1880s and the beginning of the twentieth century. It was present throughout western Europe and created a unity of western Europe culture.

The essence of Art Nouveau is characterised by the line, a long sinuously extended curved line which is found in almost every design of the style. Art Nouveau designers renounced sharp angles and straight lines and opted for much more fluidity in their designs. Solid compact hard masses contradicted the whole ideology of Art Nouveau. Whereas the flowing, rippling line brought an aura of gentleness, gaiety liveliness and grace(24, p.38). So in order to focus attention on this type of line obviously a malleable material was what was required. Lines could evoke turbulence or serenity. They could be rhythmic, undulating, flowing, flaming and dynamic, which resulted in a strong force of energy exuding from the life force within the lines. These movements formed the ultimate motif of the Art Nouveau style. An excellent example of this motif is Hermann Obrist's embroidered wall hanging 'Cyclamen' (1895) nicknamed

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whiplash. In this particular work the natural aspect is secondary to an amazingly strong s-shaped design(22, p.47).

Art Nouveau artists did in fact worship nature. They studied it extensively not to actually copy from it but to capture the essence of nature. This they actually did. The end result was not representational but it was basically nature stylized that provided the fluid and twisting, interlacing plant forms which became such a hallmark of the Art Nouveau movement(2, p.13).

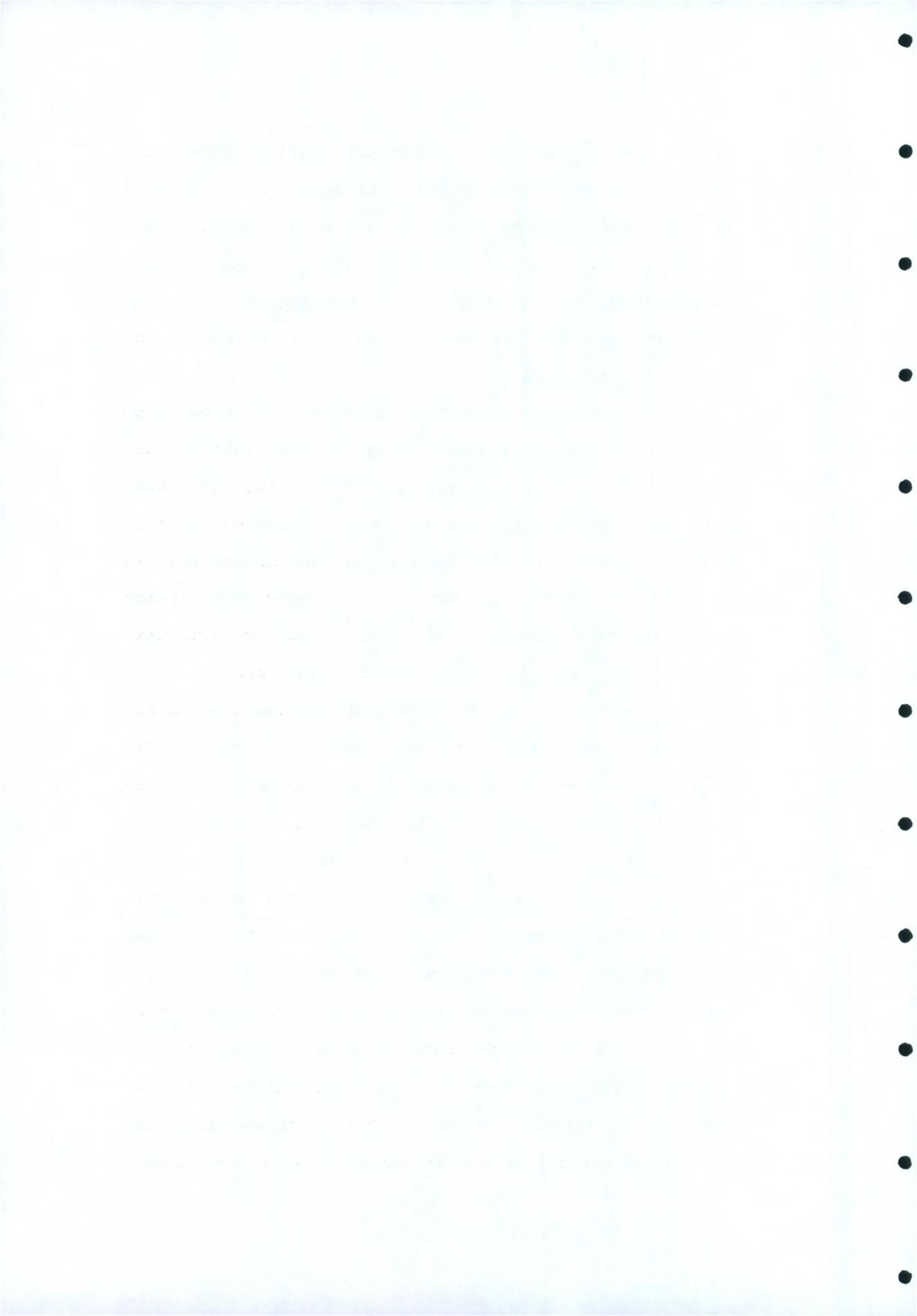
Apart from light, carefree, airy strokes derived from nature, strong striking strokes were incorporated into many of the works. This contrast could be seen primarily in poster advertising, ceramics, furniture and architecture.

Roses, lilies, poppies, irises were combined with other subject matter. The aysmmetrical form of the beautiful swan and peacock, particularly the tail feathers of the peacock, were captured because of the exquisite curves of their bodies and were used to the best advantage in many designs(22, p.39). The lovely fragile qualities of the dragonfly and butterfly were displayed mostly in the jewellery area.

The artist concentrated more on the languid female form in its entirety as opposed to the male form. They were entranced with her ethereal form with its long drifting hair. The Art Nouveau woman was

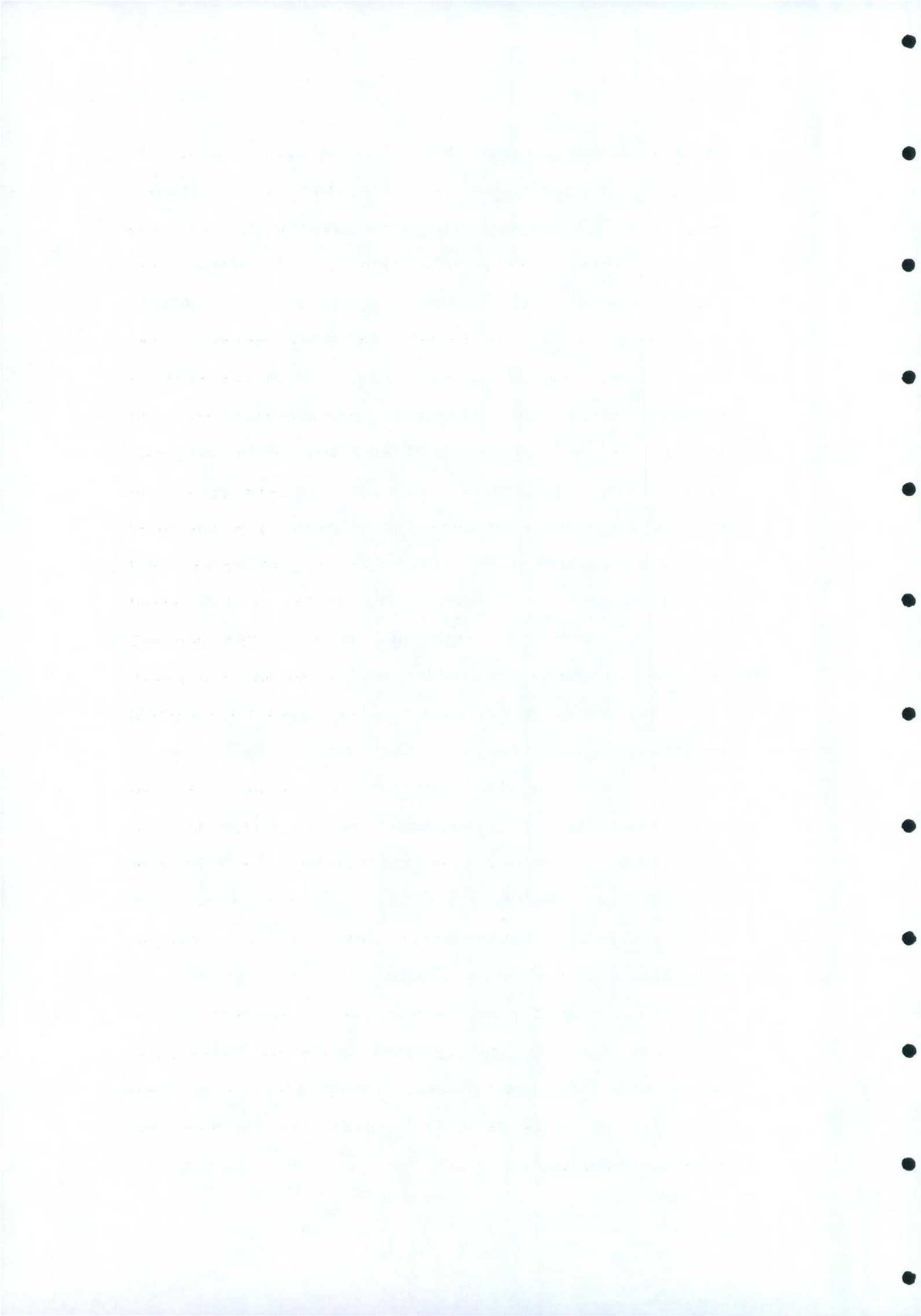
embodied by the American dancer Loie Fuller 1865-1928. Because of her swaying writhing movements combined with her soft flowing garments, she became a model for artists. In contrast Aubrey Beardsley's concept of woman was of a more dramatic violent seductress which was emphasised by the use of the two extremes, black and white(22, p.42).

The characteristic curving forms of Art Nouveau were reported to have appeared in England, then spread rapidly throughout Europe, to many cities, but each city had its own translation and conception of the style. Paris and Nancy in France, Munich and Berlin in Germany, Brussels, Barcelona, Glasgow and Vienna were the main places where this type of art was concentrated and it then extended to the rest of Europe. Centres in New York and Chicago were also influenced by this art. However at this time confusion reigned in relation to what this particular art should be called. It had several names many of which refer to actual artist's names or to the decorative features of their particular work. The English referred to this style 'Art Nouveau' which one finds rather bewildering considering it is a French term. Even more bewildering was 'Modern Style', the English name given to this particular art by the French. The architect Hector Guimard invented the term 'Style Guimard' or 'Style Metro' in relation to his design for the entrances to the Paris underground.



It was called 'Style Horta' in Belgium after the architect Victor Horta, also 'Paling Stijl' meaning eel, the eel representing one aspect of the Art Nouveau style. 'Stile Liberty' in Italy named after the London department store - Liberty and Company founded in 1875 which sold printed, oriental and textile wares in the new style. Sezessionstil in Austria after the Viennese Secession under the leadership of Klimt Hoffman and Olbrich, and 'Jugendstil' in Germany which derived its name from the popular Munich magazine Jugend meaning youth which was first published in 1896. Spanish Art Nouveau was termed modernismo. However in spite of all these different names the term Art Nouveau was finally accepted in the various countries(24, p.38).

But where did this term 'Art Nouveau actually originate? It was simply the name of a shop which Samuel Bing, a German, opened in Paris in 1895. He was an established connoisseur, dealer and writer on Japanese art. Bing called his gallery 'La Maison de l'Art Nouveau' to emphasize the modernity of his work he exhibited. Contemporary designers as well as painters and sculptors exhibited their work there. Bing commissioned Henry Van de Velde to design four interiors for the gallery also Louis C. Tiffany to design stained glass panels, although Tiffany had been producing as early as 1893. Other artists also had been instrumental in displaying their works and this



indicates that the style had been in existence before it was christened Art Nouveau. The shop displayed posters by Beardsley, Crane and Bradley. There was glass by Galle and Tiffany, jewellery by Lalique and sculpture by Rodin(22, p.9).

Numerous periodicals and magazines were published during the Art Nouveau style, advertising venues for exhibitions. Illustrations in the publications were designed and executed by artists. Jugendstil as already mentioned was one magazine, Pan from Berlin and the American The Studio was another. And through these exhibitions, shops, galleries, and magazines the style gained weight and spread throughout Europe and over to America. The general public's curiosity and interest was aroused to a great extent by this new extraordinary and remarkable style(24, p.39).

Although Britain was the birthplace of Art Nouveau its influence was not effective due to the lack of interest by the artistic community. It was considered a foreign, unattractive concept and it floundered. It developed to its highest degree in the continent of Europe.

The Industrial Revolution had a profound effect on many artists. Goods were being produced which were shoddy, cheap and substandard. From the aesthetic point of view they were unbelievably ugly, according to artists(26, p.20).

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William Morris, the English designer, was the first to strike out against this trend that had developed. Morris, himself, was influenced by the writer and art critic, John Ruskin. The machine and all it stood for was despised by both Ruskin and Morris because of its mass production of goods. They wanted to return to the middle ages where craftsmanship reigned supreme. Art for everybody in all aspects was their slogan. However this aspiration was not to be a success because of the excessive expense of handcrafted goods, which resulted in only the very rich buying them(6, p.12).

Morris channelled the thoughts and notions of Ruskin along more practical lines and fulfilled many of his ambitions with his unimitable business acumen. Upon completion of 'Red House', Morris's marital home designed by the architect Philip Webb furnished with the help of his colleagues, qualified in the area of handcraftmanship, Morris and this team of helpers in 1861 formed the company 'Morris, Marshal, Faulker and Co.', which was of paramount importance to the arts and crafts movement. Every item of work from start to finish with all its time consuming intricacies was to be hand made, furniture, tapestries, wallpapers, fabrics and pottery(26, p.22).

The Art Nouveau artists and designers had the same ideology as Morris in their rejection of mass production and a return to craftsmanship. It was

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necessary for the handcrafted products of the arts and crafts movement to be both functional and practical. This did not appear to be one of the philosophies in relation to the Art Nouveau movement.

William Morris, founder of the arts and crafts movement in England, exerted a tremendous influence not only on writers and craftsmen in Britain but also in America and Europe. The American writer, philosopher, Elbert Hubbard, established a movement called the Roycrofters in New York based on the same ideologies as Morris. He wrote:

To the influence of William Morris does the civilized world owe its salvation from the mad rage and rush from the tawdry and cheap in home decoration. It will not do to say that if William Morris had not called a halt someone else would. . . the refreshing fact remains that one half the homes of England and America have been influenced by the good taste and vivid personality of one strong, earnest, courageous man(6, p.14).

The fascination with natural forms in relation to Art Nouveau was also a feature in the arts and crafts movement except there was more attention to detail in the latter.

The experts on this period Pevsner, Madsen and Benevolo, all agree that the first true example of Art Nouveau design is to be found in the work of Arthur Macmurdo, who was a follower of Morris(2, p.15). He was influenced by Morris's technique and style, i.e. the curving natural forms which he altered to reveal a much more elongated flame-like pattern. He was the

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30. The thirtieth part is a list of bridges.

first artist to use all the characteristics of the style. This can be seen in the excellent illustrated title page of his book Wrens City Churches published in 1883. The illustration embraces dark, heavy almost flame-like violent lines in an asymmetrical design. A bird on either side looking like a sentinel completes the picture. The origins of MacMurdo's style can be observed in the work of William Blake which had an influence on the continent. Other artists who contributed to the development of Art Nouveau were the pre-Raphaelites, Beardsley, Rossetti and Walter Crane(24, p.40).

It has been suggested that Art Nouveau was a completely new concept in the artistic world, that it had no historical connection, but this is not completely true. Inspiration was drawn from past styles, i.e. going back as far as medieval times which seemed so far removed from the Art Nouveau era. However, these artists and designers actually combined, used and reinterpreted features of previous styles. Their unique, personal touch appeared to produce a completely, original and modern style.

Art Nouveau ideas can be seen in Rococo, Gothic, Celtic, Nordic and Japanese art.

The eighteenth century's Rococo preference for soft organic curves, asymmetrical ornamentation was very much akin to Art Nouveau. Rather than taking the complete style of the Rococo period, they concentrated

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more on removing one aspect of the style which was the lightness and delicacy of line(7, p.50).

The Gothic period was also inspirational to the Art Nouveau designer. Their interest in it was as an origin for new ideas. There were many different styles in the Gothic period from the early refined, plain lines to the more flamboyant style. And it was from this latter style that Art Nouveau extracted the lace-like pattern, the flowing shapes and the curved arches. The colour and design of stained glass in the middle ages was also an important feature(7, p.50).

The flowing curvilinear, interlacing designs of Irish Celtic work which were found in Celtic jewellery, stonework and the beautifully illustrated illuminated work of the monks, the Books of Kells, Durrow and Lindisfarne were used to a great extent in Art Nouveau works. These works had a preponderance of stylized elongated plant and animal motifs which had an affinity with the Art Nouveau artists. The typical Celtic contrast, prolific decoration in a confined area is offset by clear spacing and can be seen very clearly in the work of Charles Rennie Mackintosh, a Glasgow architect(24, p.43).

Nordic art in the Scandinavian countries was similar except that it was stark in design. The dragon-like beasts with ribbon-like bodies were woven into methodical patterns.

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5. The fifth part of the document provides a summary of the key findings and conclusions. It also includes a list of references and a bibliography of the sources used in the study.

Japanese art left its mark on Art Nouveau in relation to paint, woodcuts, lacquers, architecture and furniture. Although they had the curved flowing line the design was more abstract and simple.

James Whistler, the American painter was the medium between Japanese art and Art Nouveau. It was he who designed the Peacock Room in 1867. The decoration was entirely Japanese inspired(22, p.31).

Art Nouveau was embraced by most of the European countries and to a lesser extent in America. However, the interpretation of the style varied, from an architectural viewpoint, in the different countries. In France, Belgium and Spain the floral theme predominated, whereas in England, Scotland, Germany and Vienna, the theme was more geometrical which appeared to have more in common with Art Deco and the early Modern Movement(12, p.80).

In Scotland it was Charles Rennie Mackintosh, the architect, who had a love of strong verticals and stylized roses, who was responsible for the rectilinear style developing in Austria and Germany. Even though his work had great success in these countries he got little or no appreciation and recognition in his own country(26, p. 168).

Austria accepted this particular style. A style similar to the arts and crafts movement and one created by Mackintosh insofar as it had little surface ornamentation except a few repetitive patterns of

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small circles or squares. Josef Hoffman and Koloman Moser, students of the architect Otto Wagner set up the 'Vienna Secession' in 1903. Hoffman's tutor, Wagner, in his publication Moderne Architektur of 1895 wrote about the relationship between modern life and architecture, and in Hoffman's interpretation of Wagner's theories embraced the squares and straight lines which were present in the Austrian Neoclassical tradition, but it was also very popular and functional in the twenties(21, p. 237).

In Germany, Munich was the centre of the Art Nouveau style. The presence of the Belgian architect, Henry Van de Velde instigated a development of the style. This was in two distinctive phases. In the years before 1900 the emphasis was on naturalistic and representational forms. Its leading exponent was considered to be Otto Eckmann whose illustrations were contained in the periodical Pan(22, p.176).. There was a similarity between his work with its thick curving lines and contrasting area of black and white with Van de Velde's work and Macmurdo's. In contrast, after 1900, there emerged a more geometric and abstract form. The architect Peter Behren's work is typical of this form. Two important aspects of his work were simplicity and that it should be functional. These factors provided an example for the architects of the Modern Movement(22, p. 181).

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4. The fourth part of the document discusses the implications of the findings and offers suggestions for further research. It highlights the need for continued monitoring and evaluation of the system to ensure its long-term effectiveness.

5. The fifth part of the document provides a summary of the key points and conclusions. It reiterates the importance of the findings and the need for continued attention to the issues discussed.

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8. The eighth part of the document includes a list of figures and tables. It provides a clear overview of the visual elements used in the study, including charts, graphs, and tables.

9. The ninth part of the document contains a list of footnotes and a glossary. It provides a clear overview of the additional information and definitions used in the study.

10. The tenth part of the document includes a list of acknowledgments and a list of authors. It provides a clear overview of the individuals and organizations that supported the study and the authors of the document.

Belgium was the first continental country to take Art Nouveau to its heart. Here it flourished(30, p.92).Through exhibitions organised by the 'Societe des Vingt' 1884 many artists from other countries were encouraged to display their work. The British restraint did not manifest itself but a more forceful energetic style emerged. Horta developed this line and a beautiful example is his staircase in the 'Maison Tassel' of 1893. This represents the first true expression of Art Nouveau. Henry Van de Velde was responsible for the popularity of Art Nouveau. He was commissioned by Bing to design interiors for his gallery 'l'Art Nouveau' in Paris(22, p.9). His designs were published in the German periodical Pan and he continued to work in Germany. Due to this publicity the style spread to adjoining countries, France and Germany.

In France Art Nouveau had two separate centres, one in Paris, the other in Nancy(30, p.97). Emile Galle was the founder of the school of Nancy 1901. His forte was for decorative glass which contained Japanese and Rococo elements, which combined very successfully with those elements of Art Nouveau. A contemporary of Galle, Rene Lalique, the name in jewellery design. He created jewellery which was luxurious and expensive. Flowers and insects played a major part in his work. France's Art Nouveau architect, Hector Guimard, was famous for his powerful

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and expressive entrances to the Paris metro stations. These were executed in cast iron in solid, organic and stylized orchid like forms(30, p.102). The greatest architect of the whole of the Art Nouveau movement is considered to be Antonio Gaudi, in Spain. He developed his own individual style and he did not adhere rigidly to its principles. In such works as Guell Park, the Sagrada Familia and Casa Mila, his outstanding genius is very obvious.

Art Nouveau in Italy did not have much impact because it was considered by the majority to be a bourgeois taste. It modelled its style from existing Art Nouveau European countries, especially Austria, as it did not develop a style of its own in the very early stages. Very little has been recorded in relation to the movement in Italy, but material has been gathered by a group of individuals anxious to make up for the lack of knowledge(22, p.309).

In America, the architect, Louis Sullivan expressed his style by using ornament composed of flowers, scrolls, leaves in certain parts of the structure of his building. The glass artist, Louis Comfort Tiffany developed a highly elegant, colourful, rhythmic form of Art Nouveau. One of his pieces is the famous dragonfly tablelamp 1900(12, p.81).

What emerged from the Art Nouveau style was that it was primarily an art of decoration and ornamentation with delicate relief, and this style

dominated throughout Europe. Initially it was two-dimensional, posters, book design, illustrations, etc. However the style excelled in architecture. To a lesser extent Art Nouveau drew its inspiration from historical styles without copying them and retained its own individualistic qualities.

Art Nouveau was closely related to a movement in the arts, poetry, theatre, music. Its followers were often referred to as symbolists(2, p.15).

There were two opposing directions in Art Nouveau. On one hand we had the purely decorative, natural forms and on the other abstracted forms. The stylists who adopted the latter were responsible for the Modern Movement.



CHAPTER 2



Architecture provided a perfect display case for the various creations of Art Nouveau. The fine and decorative arts complemented each other and much of this work was undertaken by the major architects of the time. William Morris who was completely against mass-production played a significant part in the revival of craftsmanship, he was an architect. His colleague Philip Webb and Arthur Mackmurdo were trained architects also. Horta, Guimard, Van de Velde, Behrens, Mackintosh and Gaudi were architects who spearheaded the Art Nouveau movement(24, p.52).

In Art Nouveau architecture the most prevalent element was where the architect produced a uniformity of design. There was no well defined separation between the floors, walls and ceilings. Structural elements were not concealed, and decoration was used to gain the maximum effect.

A proportion of Art Nouveau designers used metal because it was so versatile and because of the range available. These were at times mixed with other materials, i.e. enamel, ivory, wood to create the desired effect.

Art Nouveau architects used cast and wrought iron and on the other extreme the jewellers used precious metals in their intricate jewellery.

Iron played a very important part in Art Nouveau architecture both in its decoration and structure. Wrought iron in particular was very popular because of

its ease in bending and its durability, which resulted in delicate thread-like decoration(24, p.54).

A connection existed between the outside and the inside work. From exterior balconies, window mullions and gates, the design continued to the columns, bannisters, beams, door handles and furniture decoration on the interior.

Glass was used to a great extent in Art Nouveau architecture, by using a combination of glass and metal, lightness, transparency and sinuosity were achieved, which had a great appeal for the Art Nouveau architect.

Art Nouveau artists were not the first innovators of the use of iron. It had been used in facades and also in ornamentation for facades long before the advent of Art Nouveau. As far back as 1767 Abraham Darby was mass-producing cast iron rails. It was he, John Wilkinson and Thomas Pritchard, the architect, who were responsible for the designing, building and erecting of the earliest structural all-iron bridge, the Coalbrookdale Bridge in 1777(26, p.102). Cast iron window tracery was used in the early Gothic revival churches. The two most famous buildings of the 1840s are Labrouste's Bibliotheque Ste/Genieve in Paris of 1843-50 and Bunning's Coal Exchange in London in 1847-49(19, p.296). Labrouste's used slender cast iron for the columns and the vault in the library where the metal construction of the interior was aesthically

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3. The third part of the document focuses on the role of technology in modern data management. It discusses how advanced software solutions can streamline data collection, storage, and analysis, thereby improving efficiency and accuracy.

4. The fourth part of the document addresses the challenges associated with data security and privacy. It stresses the importance of implementing robust security measures to protect sensitive information from unauthorized access and breaches.

5. The fifth part of the document explores the ethical implications of data collection and analysis. It discusses the need for transparency in data handling practices and the importance of obtaining informed consent from individuals whose data is being collected.

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pleasing. The exterior was in a conventional stone structure. There was a vast exposure of iron in Bunning's building which lent itself to ornamental display. And in this cast iron structure glass was incorporated in the dome.

Joseph Paxton's famous building, The Crystal Palace of 1851, was erected for the Great Exhibition. What makes this building outstanding is its enormous site, a third of a mile long, and its prefabricated structure in iron and glass, which was erected in the short space of four months. Technically it was a remarkable achievement. However, it was not without its critics. Pugin called it the "Crystal Humbug" and the "Glass Monster". Ruskin called it "a greenhouse larger than greenhouse was ever built before"(26, p.133). The mere fact that the Crystal Palace was re-erected in 1854, indicated that this new marriage of glass and iron had an appeal for the general public and was here to stay(19, p.295).

The Oxford museum built by Deane and Woodward in 1855-59 had Ruskin as its consultant. The building had Ruskin's full approval and consisted of tall iron columns with naturalist forms in iron decoration, but when he realised a cast iron roof was to be used, he objected because of his principles and relinquished his post. Despite this, the cast iron and glass roof was completed. It stands on the Gothic brick and stone structure(19, p.294). The use of iron in construction

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was not considered true architecture according to Ruskin "A railway station" construction in iron would be on par with a "wasp's nest" and a "rat hole"(26. p.133). Viollet-Le-Duc, the French architect and philosopher in his Entretiens sur l'Architecture 1863 spoke of the possibility of a complete iron framed building and although Ruskin, who disapproved of the concept came round to the thinking that a change was inevitable regarding "new architectural laws"(26, p.134). Viollet-Le-Duc paved the way for the undisguised use of iron in buildings. He developed a style whereby the actual ornament was part of the structural material, in contrast to the method of decoration used at the time to cover structure. His priorities in relation to construction were that you choose the design of the structure most suitable for its need and then obtain the necessary materials. All other considerations are secondary.

In architecture, there are two necessary ways of being true. To be true according to the programme is to fulfil exactly and simply the conditions imposed by need; to be true according to the methods of construction, is to employ the materials according to their qualities and properties . . . purely artistic questions of symmetry and apparent form are only secondary conditions in the presence of our dominant principles.

(13, p.64)

Viollet-Le-Duc's philosophical writings and architecture made a pronounced impact on the thinking of Victor Horta, Antonio Gaudi and Hector Guimard.

Following the success of the British exhibitions, in the Crystal Palace of 1851 and 1862, the French took their cue and mounted five international exhibitions between 1855 and 1900. Machinery, clothing, furniture, fine and decorative arts were exhibited. The final exhibition of 1900 was the culmination of the Art Nouveau style. At the 1889 Exhibition Gustave Eiffel, the engineer built the highest ever structure, the Eiffel Tower, 984 feet high(26, p.140). The Eiffel Tower was constructed completely of wrought iron, although steel was beginning to replace it having been introduced four years previously.

Around this time steel was being more widely used which caused a dramatic change not only in the construction of buildings but in the end result which in turn had an effect on the character of cities. The first steel skyscrapers of America were executed by the Chicago architects of the 1880s and 1890s. And it was Louis Sullivan, the architect, who pioneered this breakthrough in steel construction(26, p.141).



CHAPTER 3

HORTA







Lines, rising like curling smoke, rippling snake-like movements, spirals ending in hook-like shapes. These words describe the 'whiplash'(Illus. 1) phenomenon and it is this 'whiplash' that is Horta's distinctive signature. Exterior of buildings turning slightly inwards, pleating cornices, ledges doubling over, ribs converging at a point and fanning outwards light penetrating glass and focussing on the decorative ironwork staircase, this phenomenon permeates every aspect of Victor Horta's work.

Horta's metaphor "leave aside flowers and leaves, take the stems"(5, p.46) was illustrated continuously in his work. An energetic living force from which emerged spirituality, rhythm and space, was a high point in his work. Horta's imagery was inspired by nature but it never copied natural forms. Horta was not completely satisfied with the mere study of nature in relation to his work, he wanted more from it, he wanted it to reflect a living force and a spirituality. Even "the warmth of stones was enough to make me happy"(5, p.13) he wrote in relation to the Maison du Peuple in his memoirs. These were inanimate objects yet he felt there was life within them. And it was this life that he wanted to portray in his use of materials from its conception to its completion.

Horta was interested in theories derived from nature and he came to the conclusion that 'theories of nature' were theories of living forms(5, p.14) and

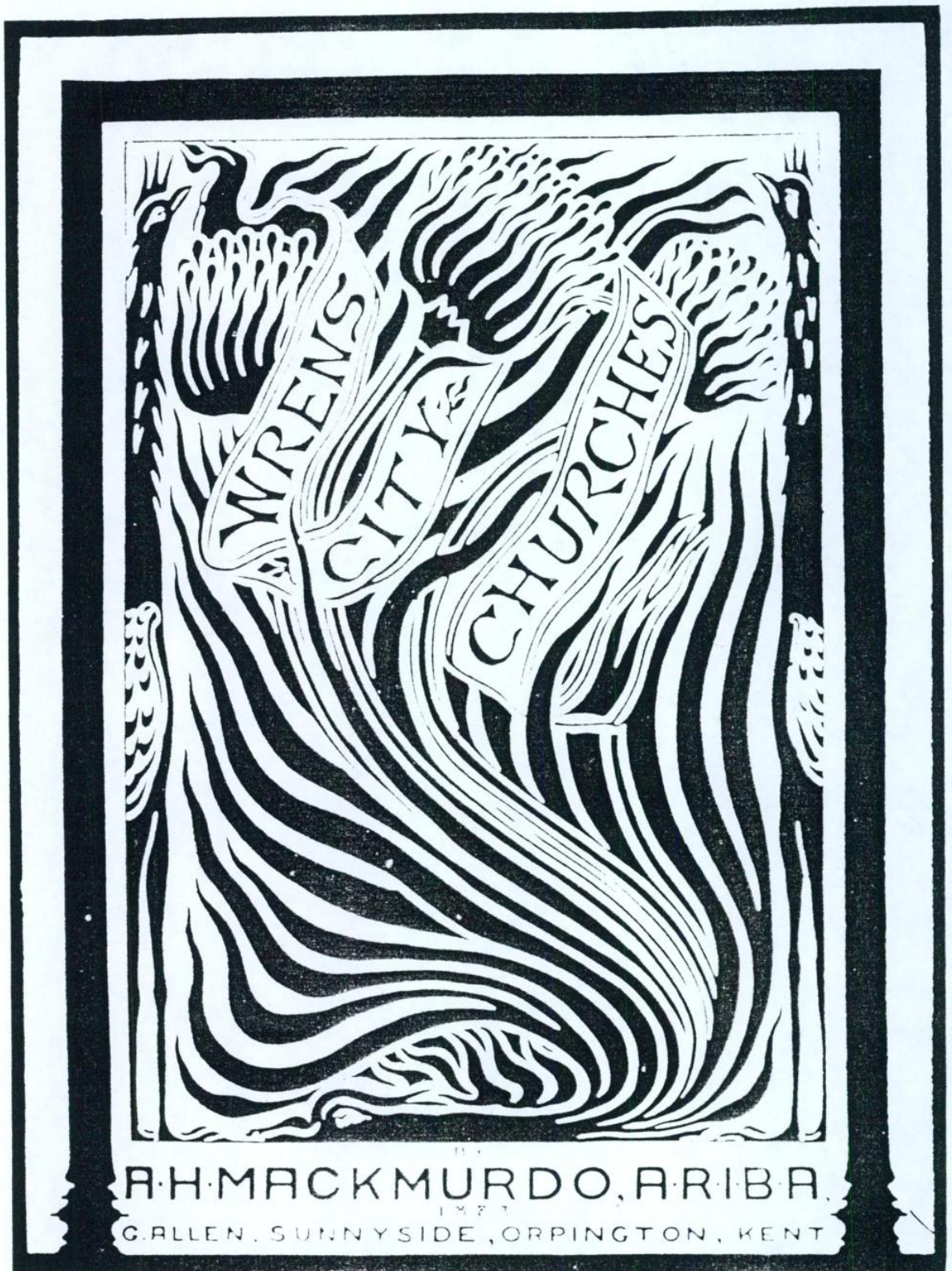


these theories on living forms could affect our minds to the point where we interpret them in our own individual way.

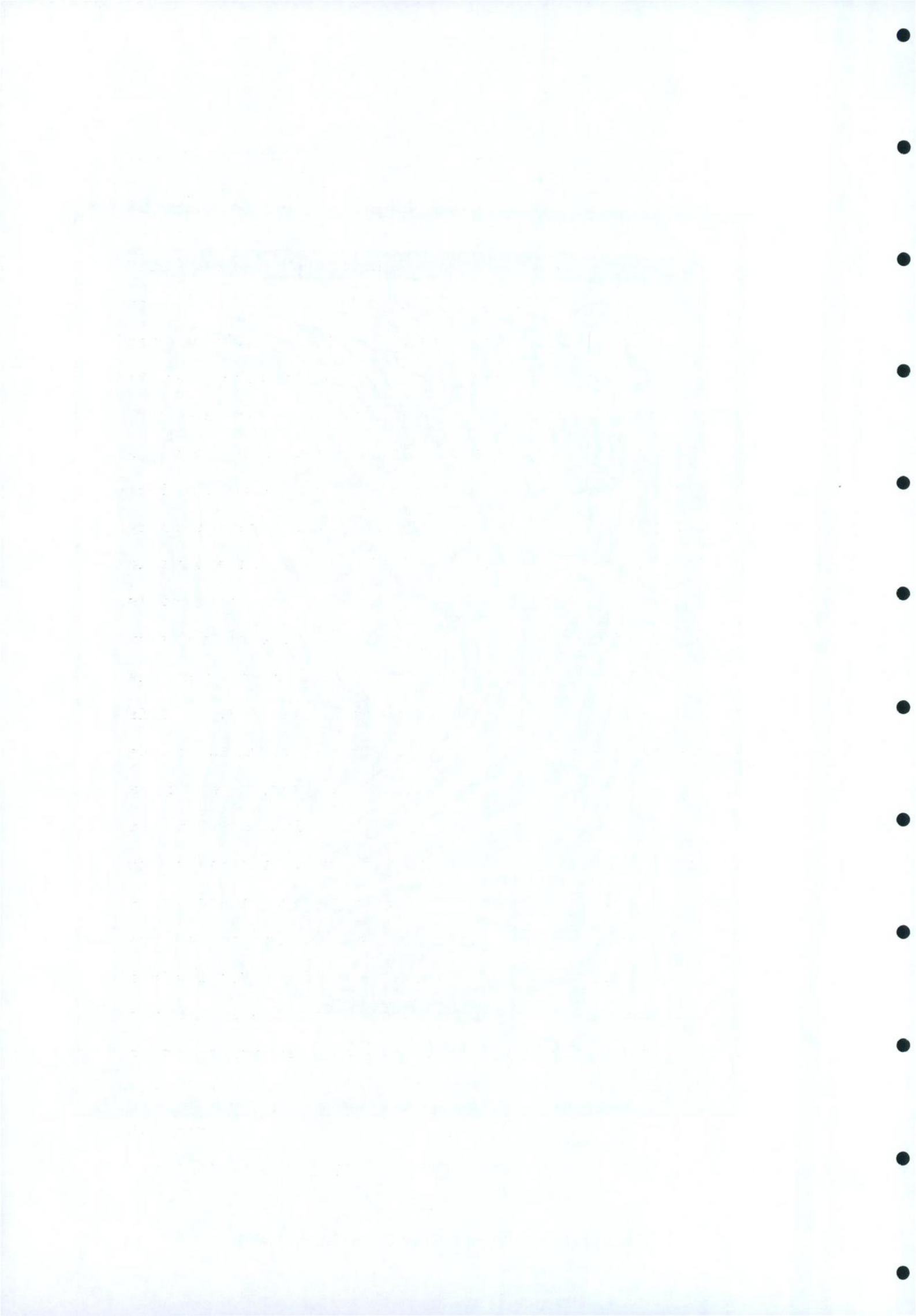
Horta was the first to realise that comfort was an essential part of living. He deviated from tradition because he realised that modern man's needs and habits were different from what they had been in the past. He improved on all amenities, making openings for ventilation, shaped radiators according to their surroundings, there could be gilled pillars, concave grates or horizontal panels. He paid great attention to the layout of rooms, taking into account the need for privacy, easy communication and adaptation. He experimented with various materials. Glass was a material he used extensively. Iron helped to save space and it gave the appearance of lightness and transparency where other materials could look heavy and dense. Horta was quick to point out that, comfort does not mean that one sits back and becomes lazy. One should use one's rhythm and energy to strive towards new goals. He himself was amenable to this way of thinking. New approaches to life, housing and movement were always at the forefront of his mind and this had the effect of making his work extraordinary.

Historians of modernism agree with Nikolous Pevsner who is of the opinion that there is a connection between Horta's decorative expression and British art, from Blake to Rossetti, Ruskin, Morris,





2. Mackmurdo's 'Wren's City Churches', 1883.



Mackmurdo, Crane and Voysey. The paintings of Munch, Toorop and Hodler show similar qualities to Horta's works. Historians maintain that the characteristic Art Nouveau line as seen in Mackmurdo's 'Wren's City Churches' influenced Horta directly(Illus. 2). However other contemporary designers like Michel Thonet, the furniture producer, had more in common with Horta's work. Amazingly enough, similarities between the work of Thonet and Horta have been ignored by historians writing on the subject. This could be due to the fact that Thonet's work was mass produced which was contrary to Art Nouveau ideals(5, p.21). It may be unbelievable to think that Horta had a knowledge of Mackmurdo's 'Churches of Wren' because there is evidence to show that as late as 1895, wallpaper was bought for the Tassel House which was completed in 1893. This disproves the suggestion by historians that Horta was directly influenced by Mackmurdo. However, there is a possibility that Horta was familiar with English Art Nouveau design, and even if he was influenced by it, he was the first architect to translate these two-dimensional forms. Horta's decorative designs for the Tassel House are at variance with Mackmurdo's intertwined, curling lines which flow freely in the foreground of the wall and in the background, a second design introduces itself with whirling star-shaped forms. The lines develop and result in a hook-like shape. It is obvious that plants played a part in the

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creation of this design. The designs of Morris and Mackmurdo are more representational whilst Horta's concern was in theories taken from nature(5, p.22).

These motifs, including many other decorative qualities of Horta's were evident in the furniture of Thonet which was displayed at the Great Exhibition of 1851 in London. Thonet's designs in wood consisted of clusters coming from a nodule which branch outwards and upwards in different directions in uneven lengths. This was not so with Mackmurdo's work where there was very little change in direction. Horta's trademark the 'whiplash' bears a striking resemblance to Thonet's steam bent beech wood.

Horta observed much from Thonet's work and combined these observations with those of Viollet-Le-Duc and Gustave Eiffel. Horta may also have been influenced by Vincent Van Gogh whom Horta often referred to in his memoirs. Van Gogh's, whirling brushstrokes, flame-like forms, and swirling curves that twist and turn and repeat themselves throughout, reflect Horta's work. This was the beginning of an independent original discovery.

A combination of stone and iron had already been used in the eighteenth century, by introducing a metal structure into masonry. The problem with this was that it required huge, solid foundations. Gustave Eiffel arrived at a solution which is present in the support of the aqueduct at Garebit, 1880, and also in the base

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of the Eiffel Tower, 1889, which had metal ribs rising out of enormous blocks of granite. Eiffel's design was significant in so far as it combined both beauty and technology in one what had been a technical necessity to others became for Horta the nucleus for his inspiration of style. Horta's designs combined different materials, stone and iron, cast iron and iron, wood and marble, iron and glass and with this unification between materials his aim was that they should enhance and complement each other. Communication should exist between them. This provided the opportunity for him to become innovative(5, p.31).

Viollet-Le-Duc advocated the use of modern materials. He had already combined an interest in iron as a new structural material, with an interest in its decorative possibilities. From the use of these modern materials he hoped a new form would emerge.

It is obvious that Horta must have studied Viollet-Le-Duc's theories and illustrations in his 'Entretien sur l'Architecture'. His writings establishes the truth. Horta drew his inspiration from Viollet-Le-Duc. His ornamentation was of a unique and definite style which encompassed freedom and spontaneity, while Viollet-Le-Duc designed images from past and present construction, Horta was seeking a new art, something unique.

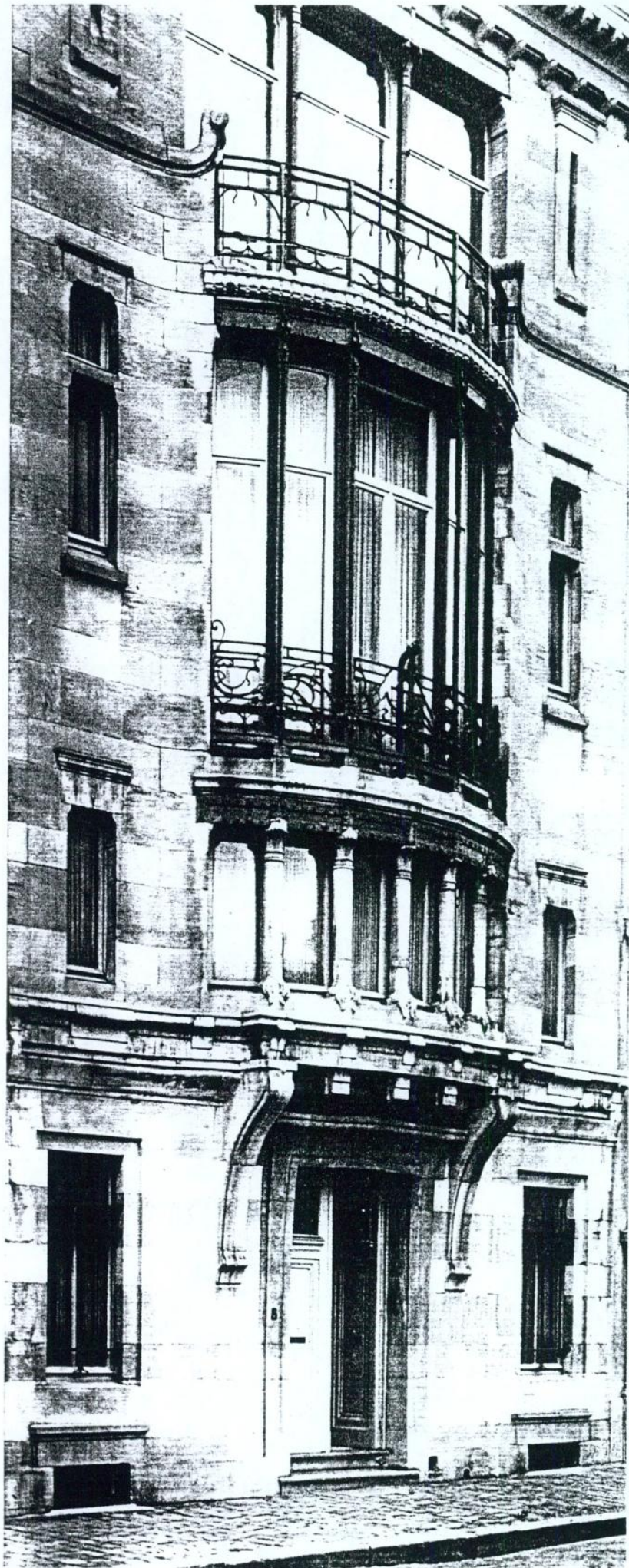
Horta was possibly also influenced by Gothic art, i.e. carved stone and two-coloured stone, which could



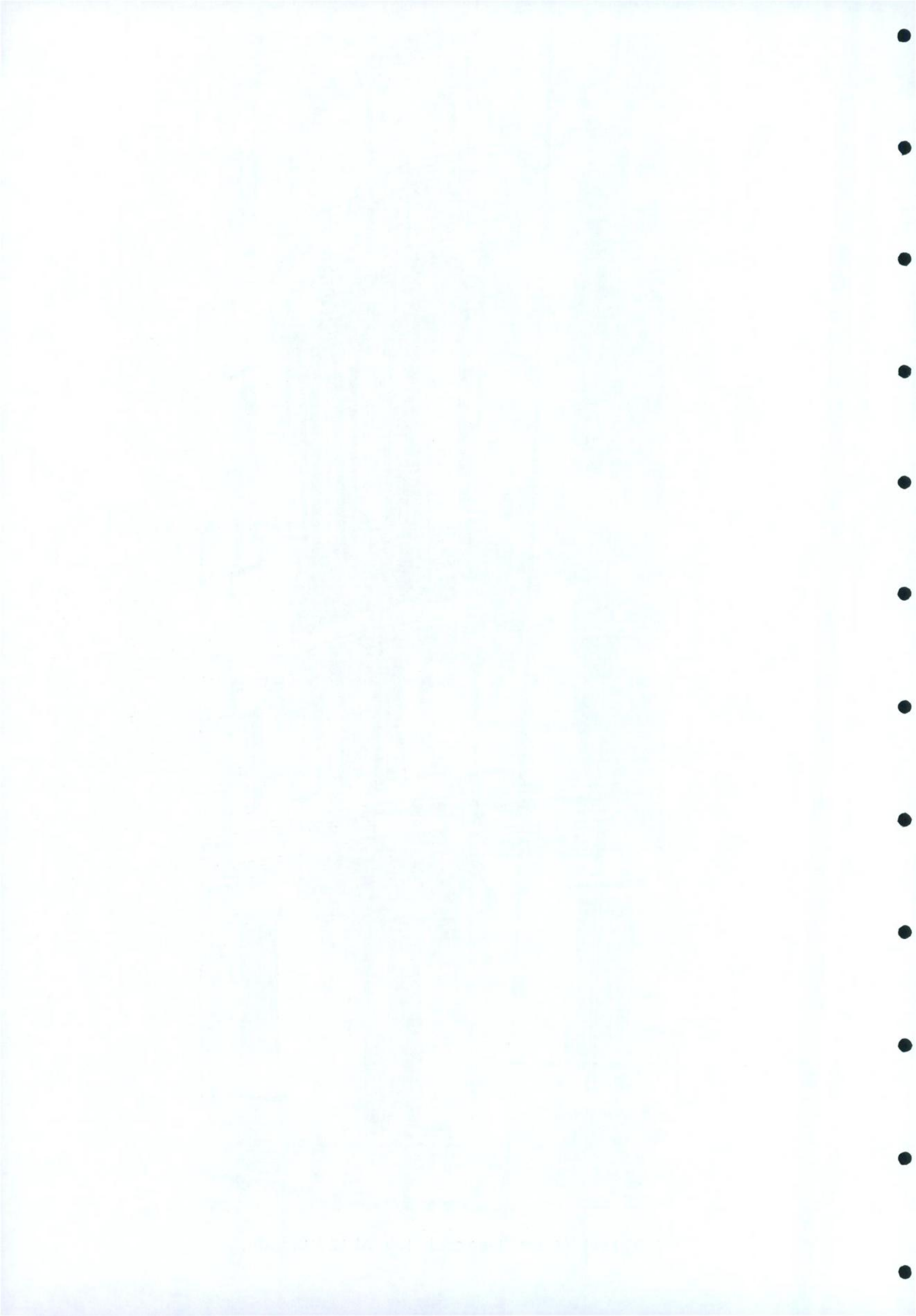
be found in buildings in Brussels. However, there is nothing to substantiate this as Horta never mentioned them. Therefore it is hypothetical whether Gothic art had an influence on him. However, the verifiable influence on Horta's development was the architecture in the fifteenth century Flemish paintings. His lectures in the United States during the First World War illustrated a thorough knowledge of Flemish art. The Flemish painters paid particular attention to the role of architecture in relation to the subject matter in their paintings in order to create harmony between both. Stained glass windows were a feature of the Flemish tradition of painting. Horta also incorporated stained glass in his buildings(5, p.38).

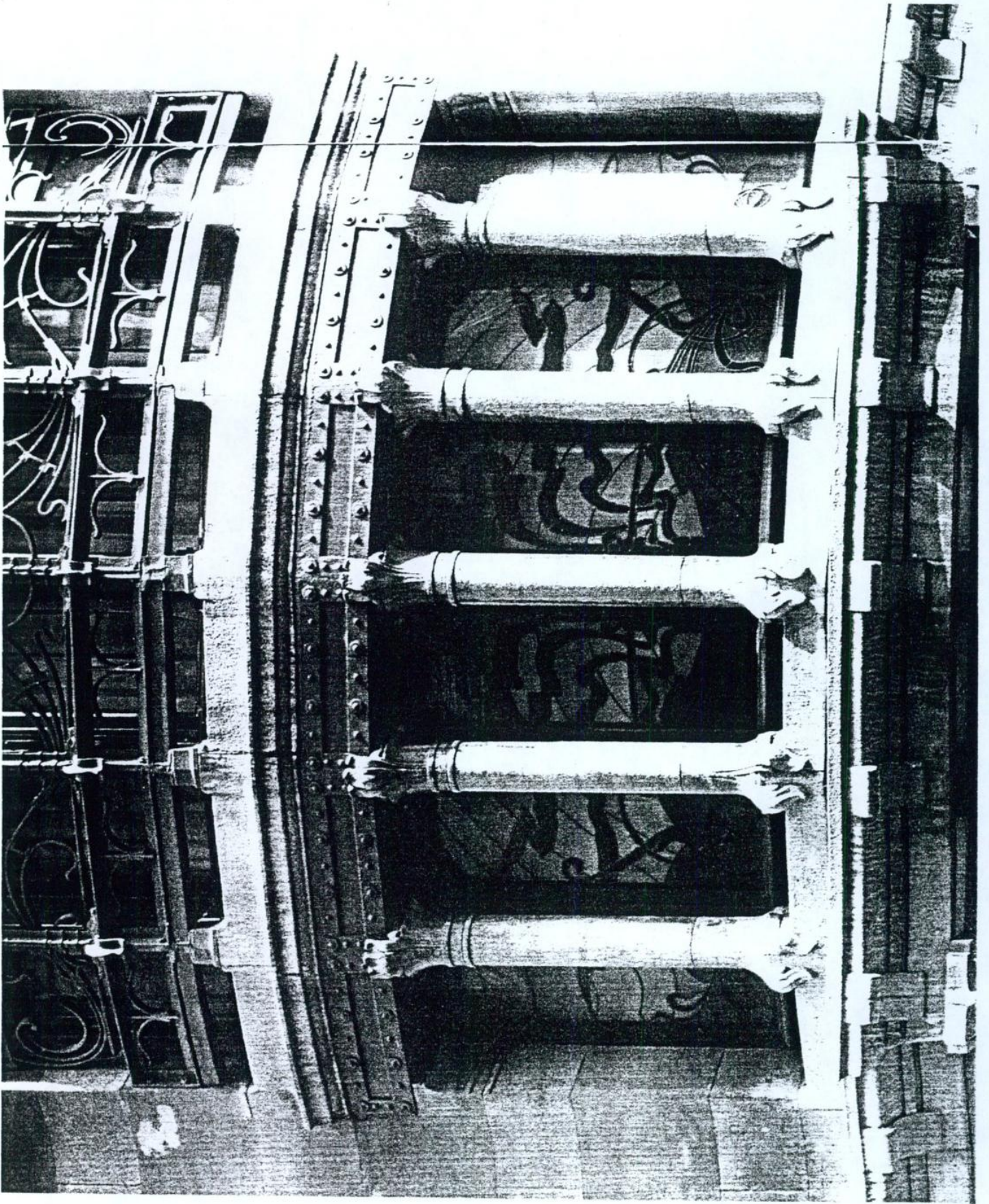
Horta was born on January 6th 1861 at Ghent. He was the son of a shoemaker (who inherited from his father an interest in the arts). He enrolled at the Academy of Fine Arts in Ghent in 1876 where he studied drawing, weaving and architecture. He received an award for architecture at the age of fifteen and a friend of the family, an architect himself, suggested that he study architecture seriously. He continued his studies at the Academie des Beaux Arts at Brussels. Having spent his apprenticeship with Alphonse Balat where he was trained in strict classical disciplines, like his master, Horta's first work in 1886, a group of three houses in the Rue des Douze Chambres at Ghent, were in the traditional Neo-Renaissance style(5, p.403).



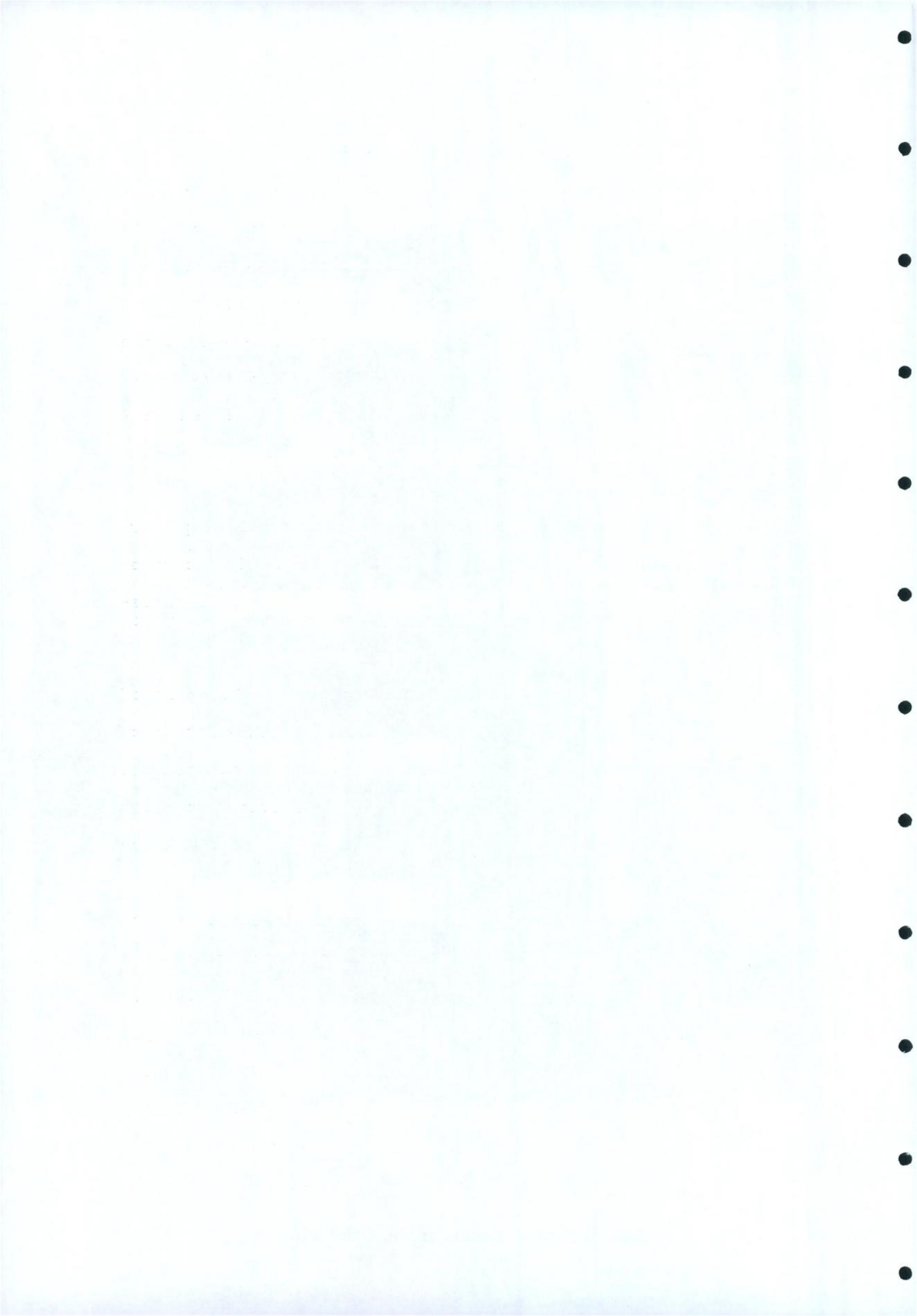


3. Tassel House. General view of the facade.





4. Tassel House. Detail of the Oriel window.



Horta's great architectural ability was evident despite the fact it was a modest undertaking. The work did not reflect what was to emerge six years later when the creator revealed his mature architectural and decorative expertise in the Maison Tassel (Illus. 3). The total conception of the Maison Tassel established a new language of architecture. And it is this house built in 1892-93 which is considered the first true example of Art Nouveau architecture. Robert Schmutzler writes

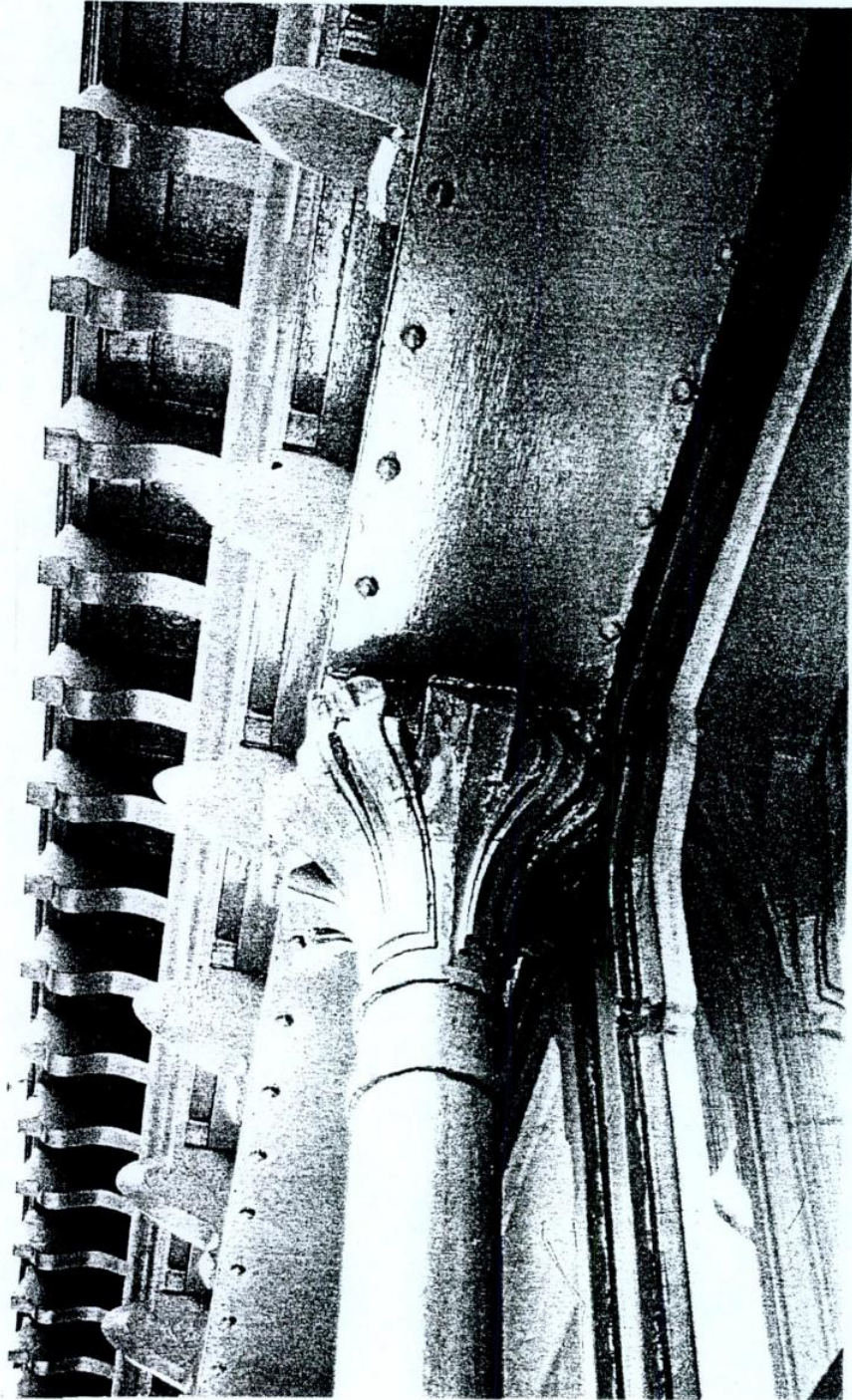
It remains a fact that continental High Art Nouveau found its first and complete expression in the Maison Tassel, inasmuch as it combined architecture and decoration, structure and ornament, the two-dimensional and the three-dimensional, in other words the total work of art.

(32, p.133)

The Maison Tassel is remarkable from the point of view that it was the first private house to make dramatic use of iron both in structure and decoration. In the simplistic exterior, metal structure supports were incorporated and also in the ostentatious interior (24, p.54).

The symmetrical floor plan is reflected in the facade. A wide glazed oriel window in the form of a semi-circle is the focal point of the facade (Illus. 4). There is a two-coloured stone, concave in shape, framing the window on both sides. Five stone columns rise from the base clasping the lintel above it, which is made of iron plates. The rivets in these iron plates are visible. A strong cornice at ceiling level



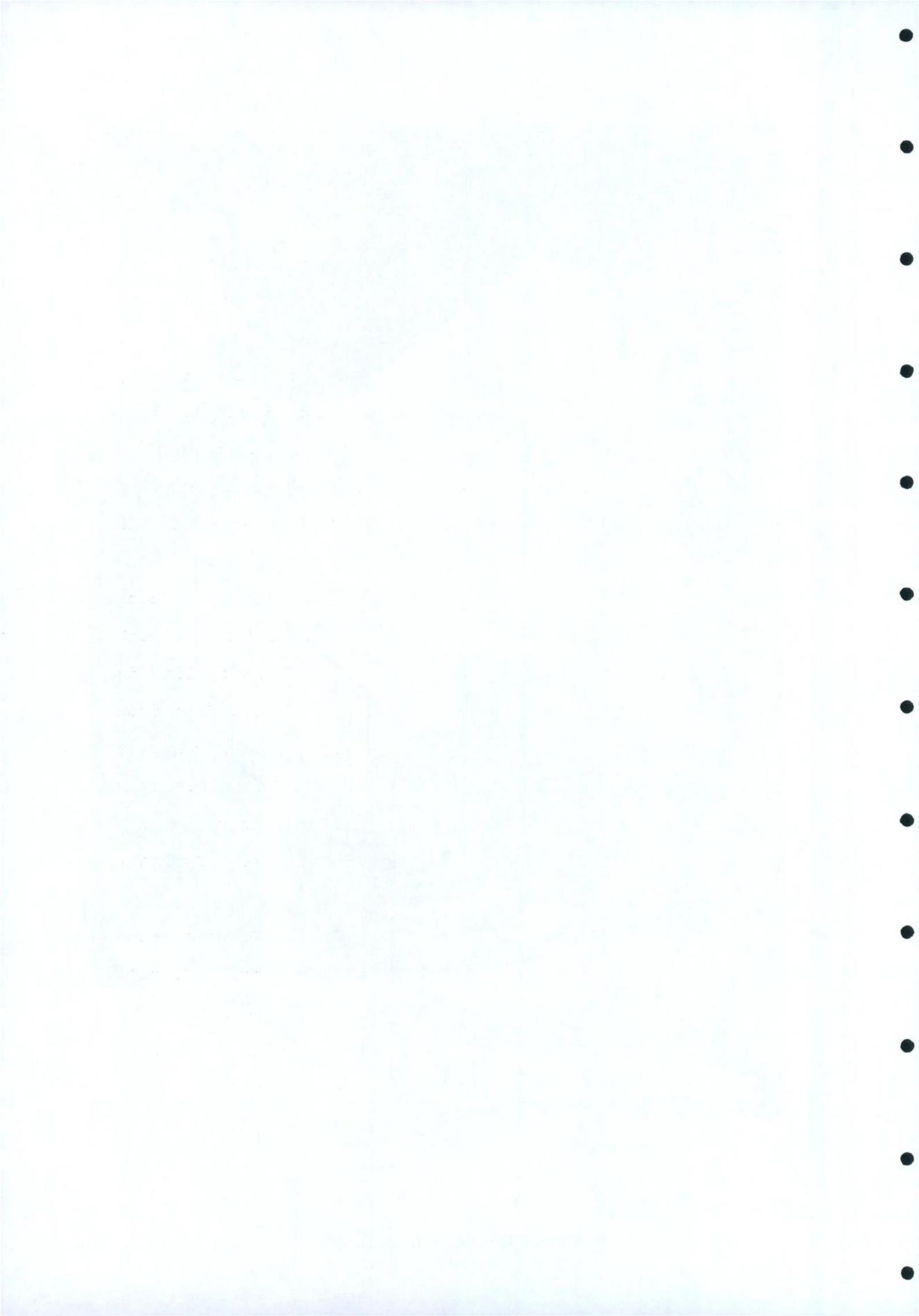


5. Tassel House. Balcony on the third floor cast iron column supporting the lintel of the window.





6. Tassel House. The Stairwell.

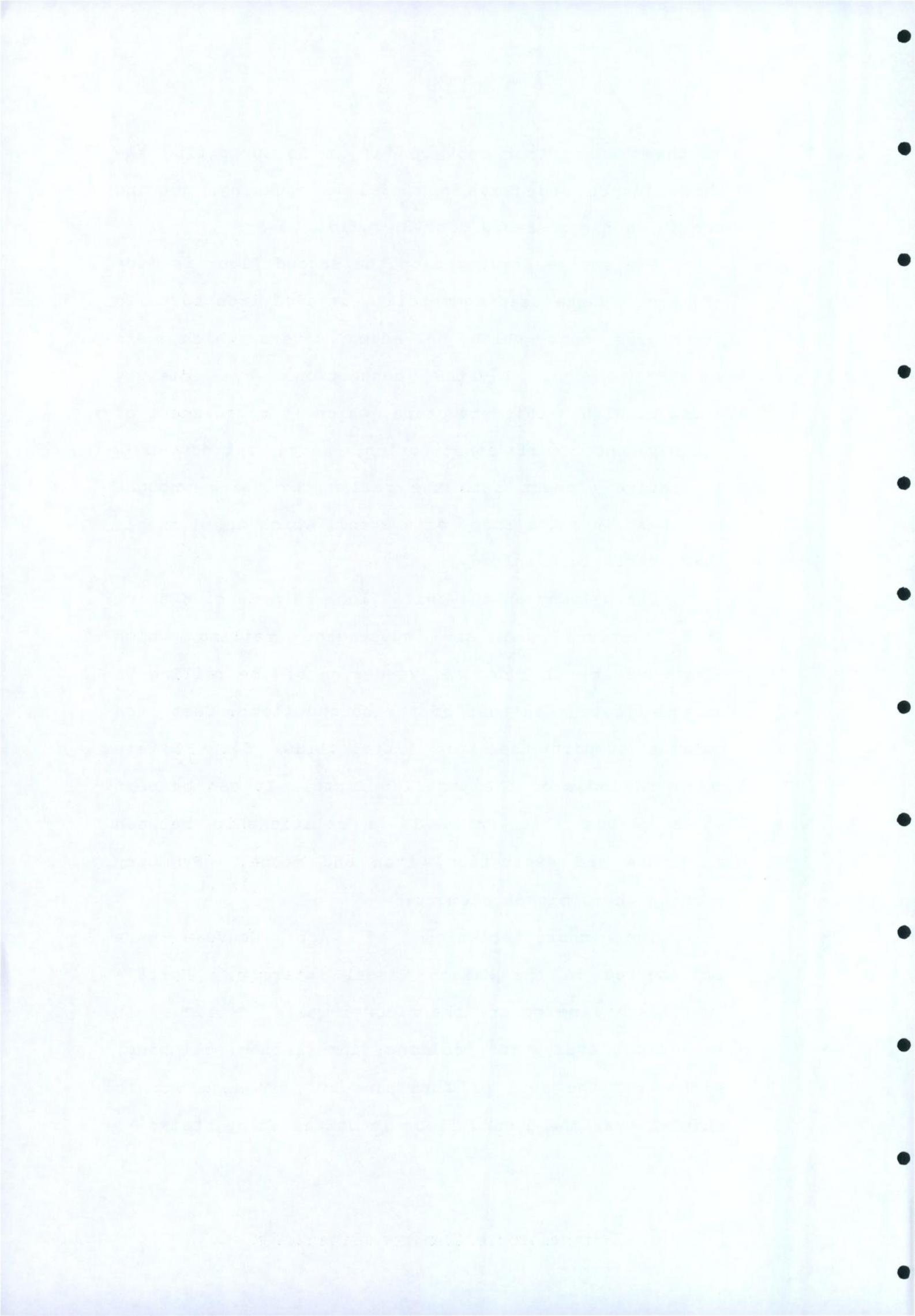


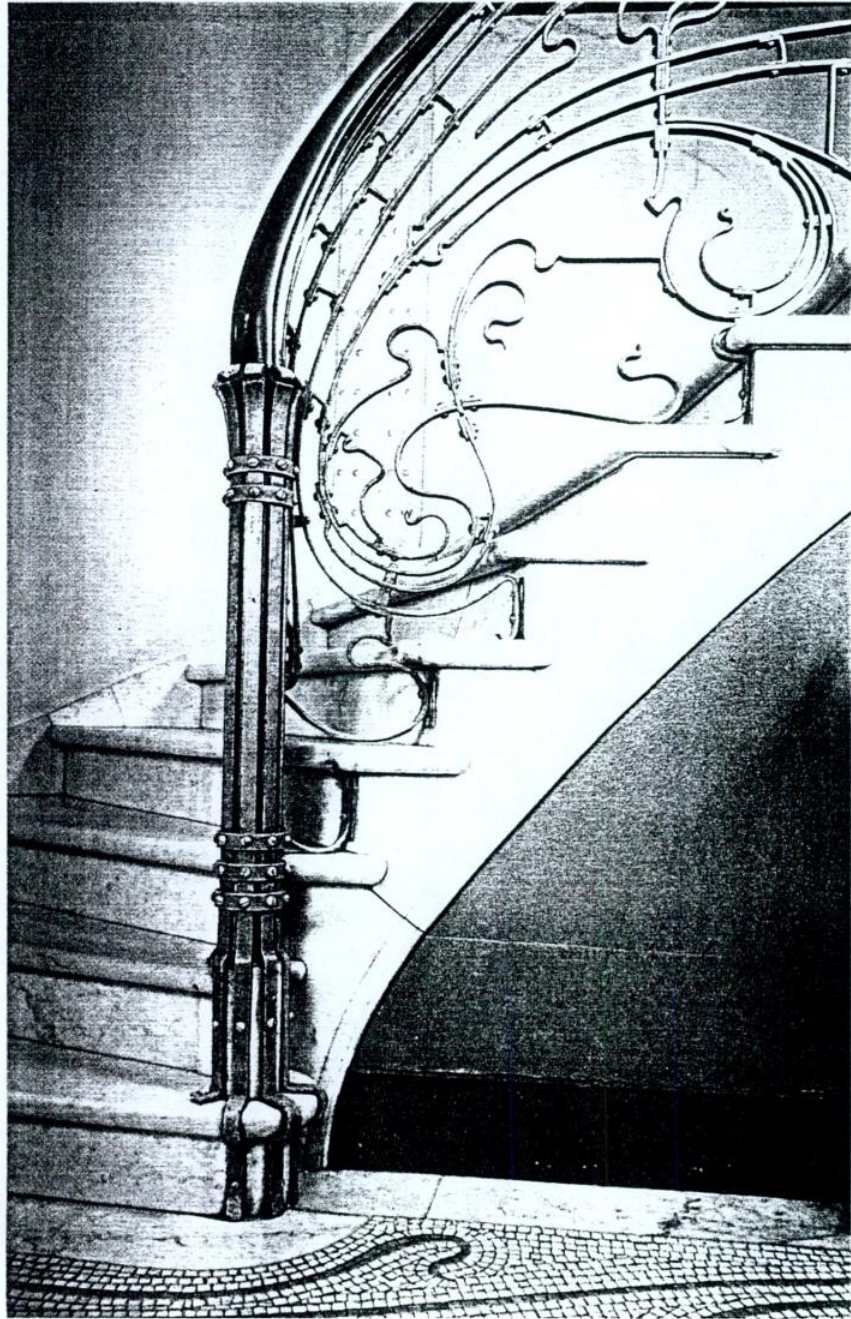
on the ground floor looks as if it is supporting the whole facade and forms a roof-like covering, jutting out above the entrance door(5, p.56).

The entire structure on the second floor is made of iron. Horta used commercial extruded iron to build structures onto which he added rivets which were equally spaced. Riveted connections are clearly visible. Within this structure, which is reminiscent of railway and naval construction, Horta introduced a decorative element into the railing by using wrought iron bent into the shape of a scroll which ended in his characteristic whiplash.

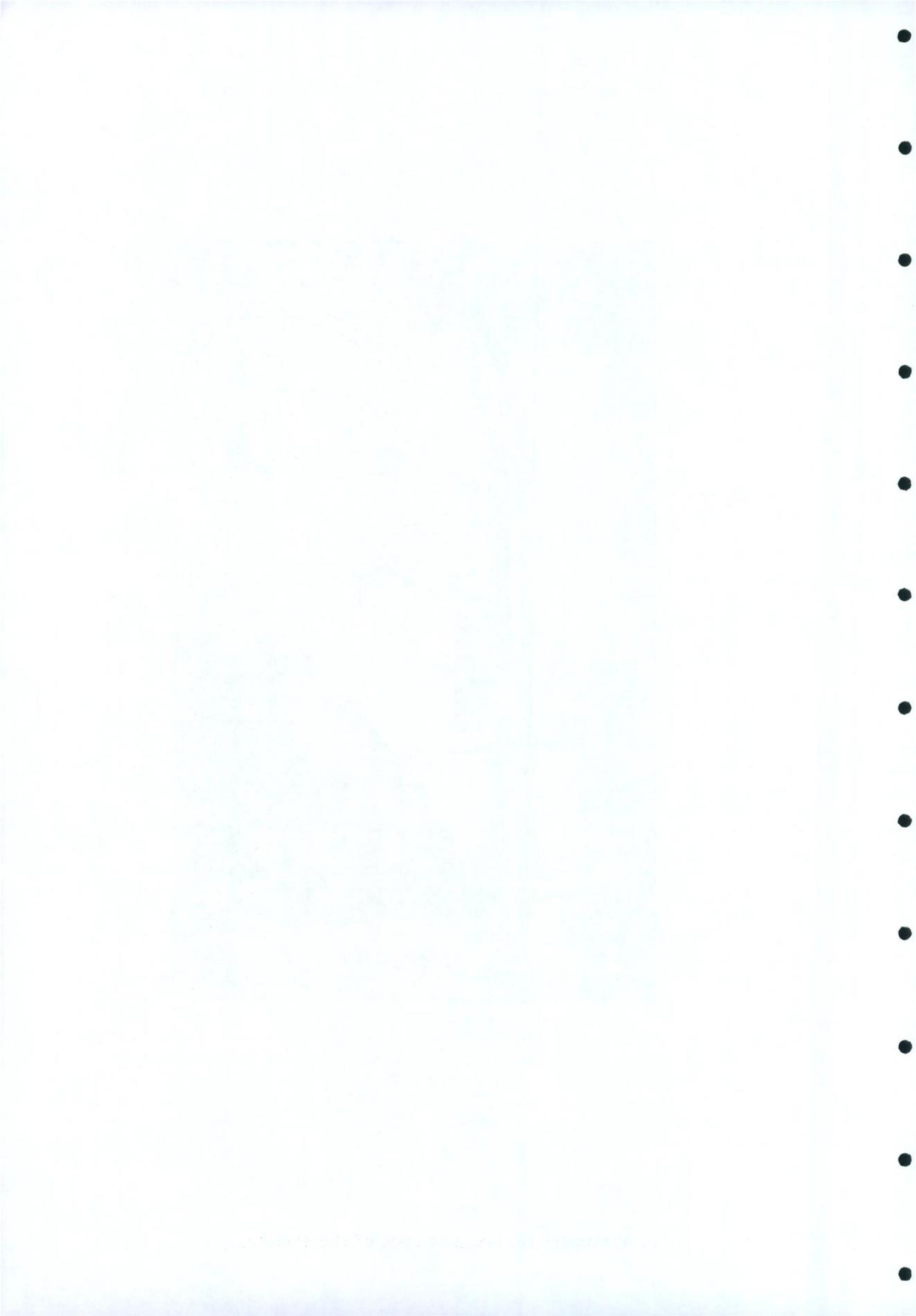
The balcony on the third floor is made of a thick iron platform and an independent railing which surrounds it. The decorative design of the railing is more delicate than that of the second floor. Cast iron columns support the iron lintel(Illus. 5). Rivets cover the edge of the panelled lintel. It can be seen at a glance that there is a relationship between structure and decoration, iron and stone. Symmetry remains the dominant element.

The characteristics of Art Nouveau are implemented in the Maison Tassel interior. Horta's 'whiplash' line covers the floors, walls, ceilings, it lashes out everywhere, coiling, interlacing, climbing, encircling the feet of furniture and breaking out in chandeliers. The ground floor is dominated by stairs



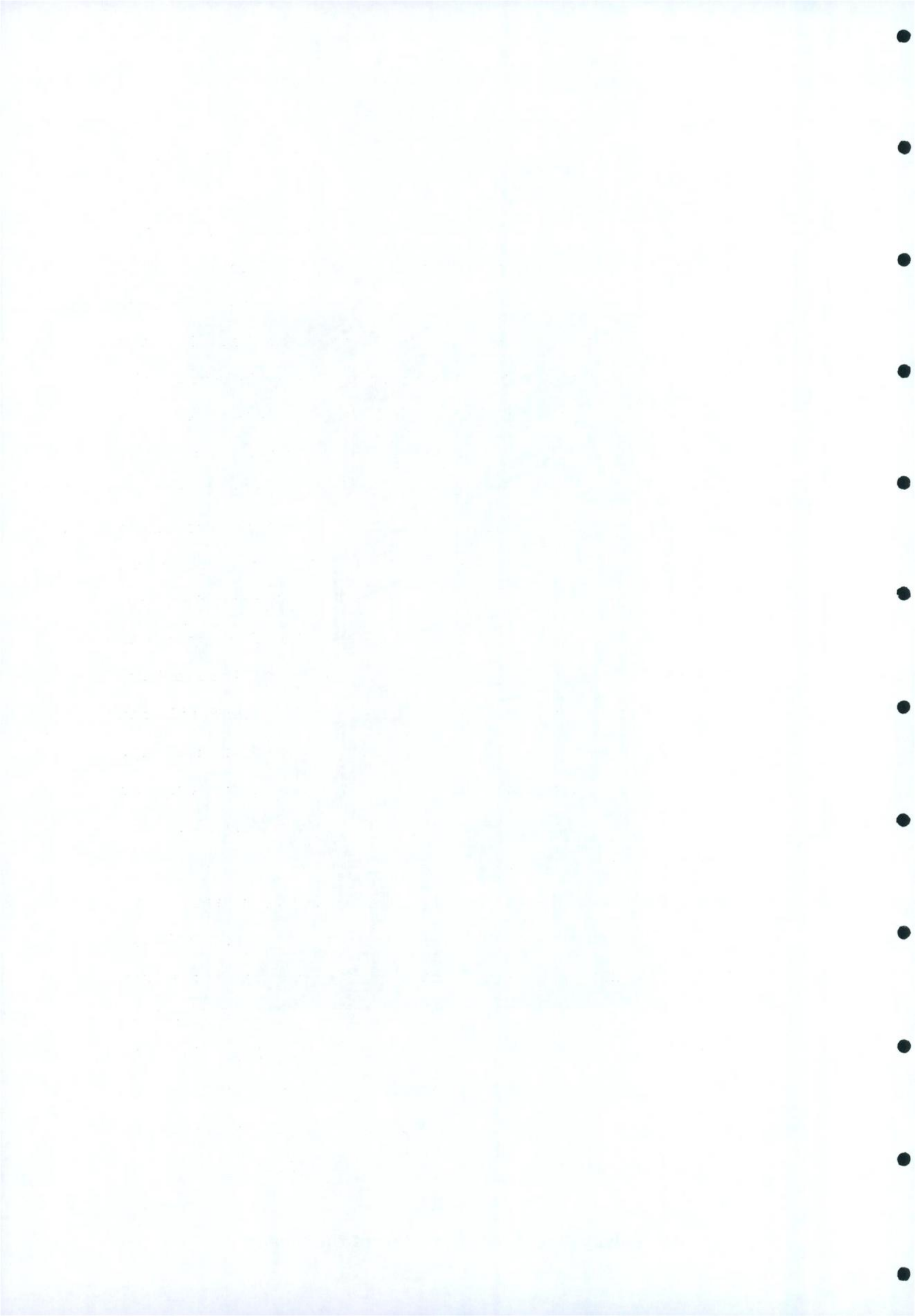


7. Wissinger House. The foot of the stairs.





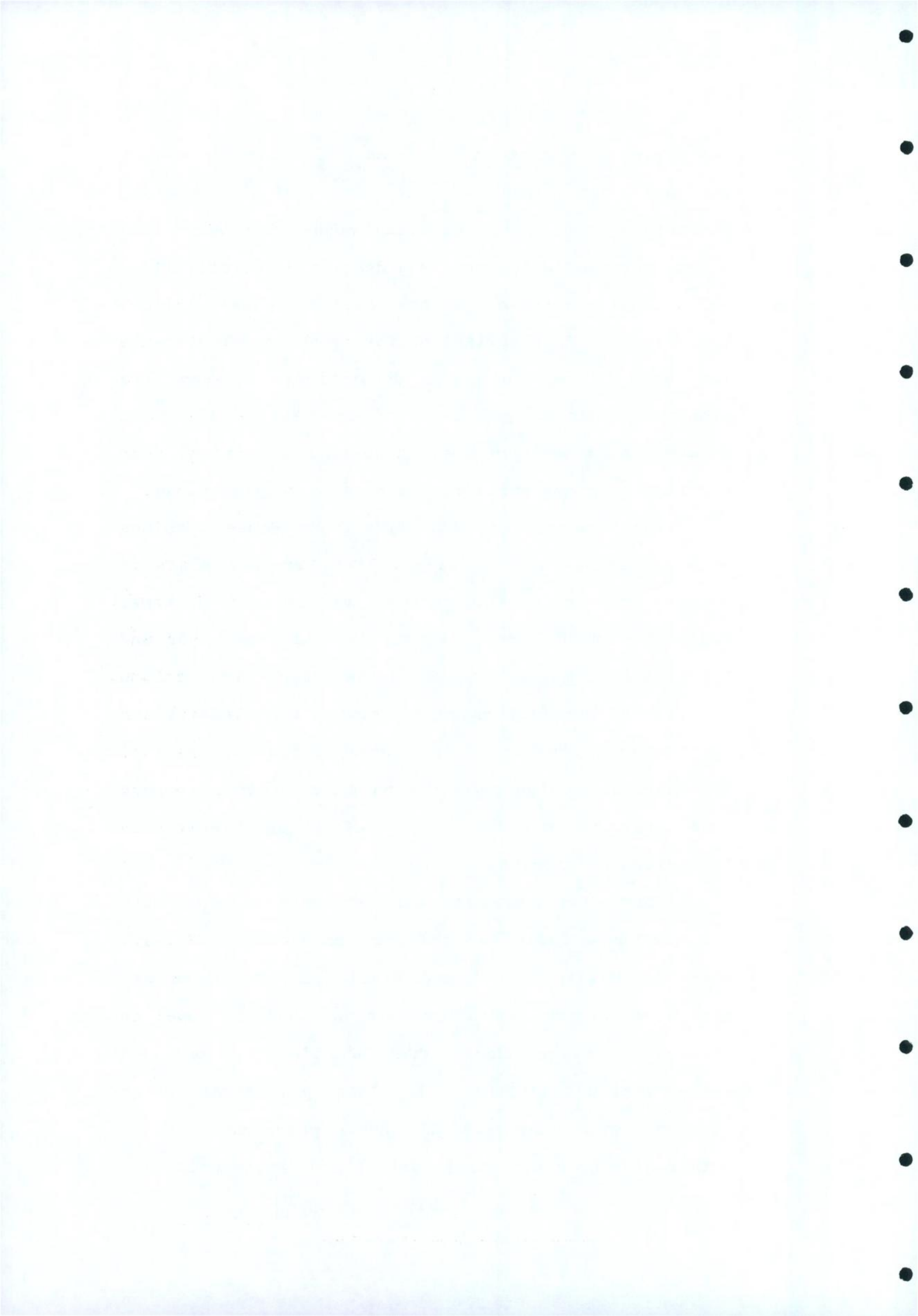
8. Solvay House. General view of the facade.

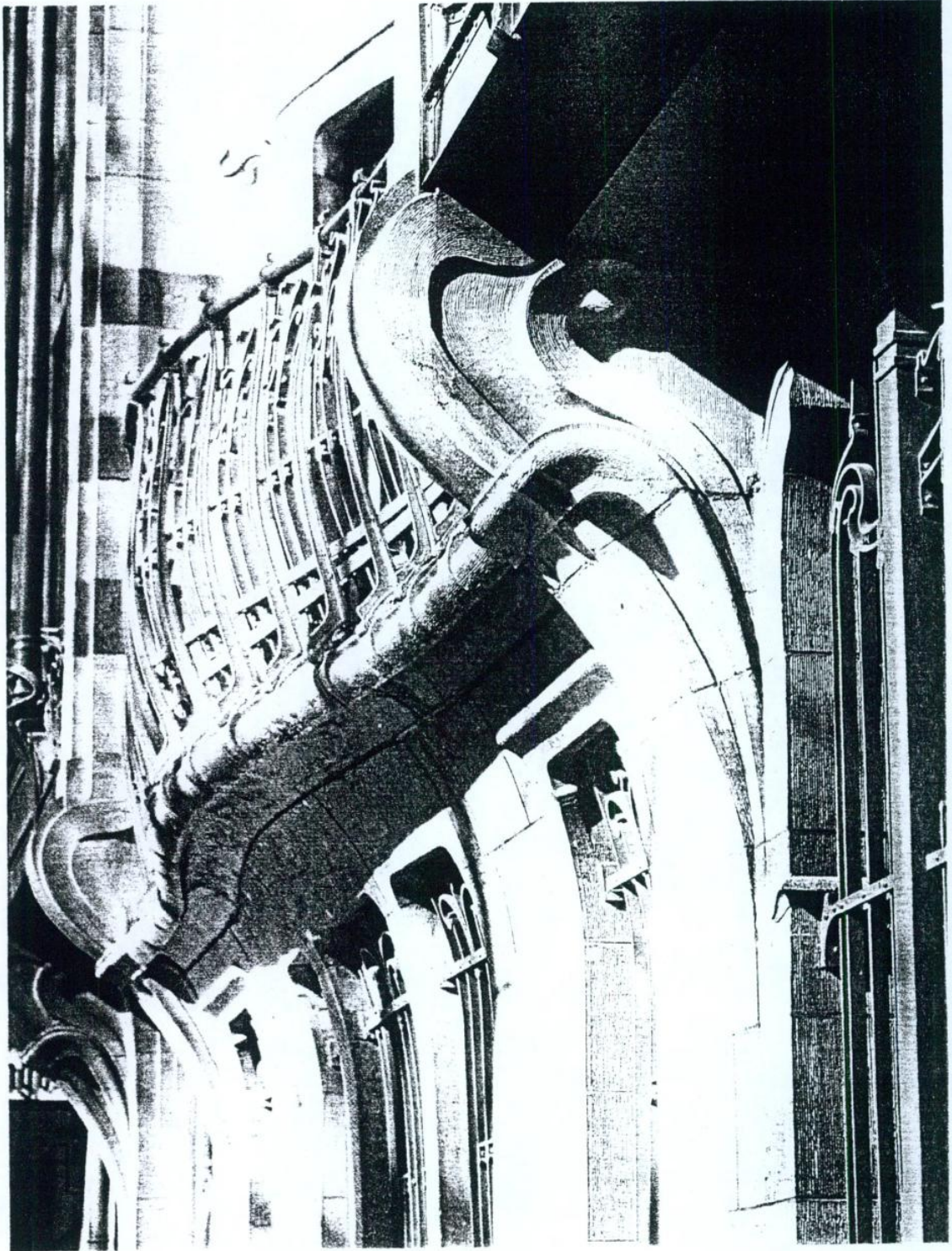


supported on a cast iron column. This slender column branches out like a tree resembling twisting vegetation, and forms brackets connecting with iron beams, parts of which end in a decorative scroll (Illus. 6). The staircase of the Maison Tassel follows Viollet-Le-Duc's theories insofar as the metal elements are both structural and decorative. Between the mahogany handrail and base of the stairs there is decoration of wrought iron snake-like curves and this winding staircase embraces all three floors (5, p.57).

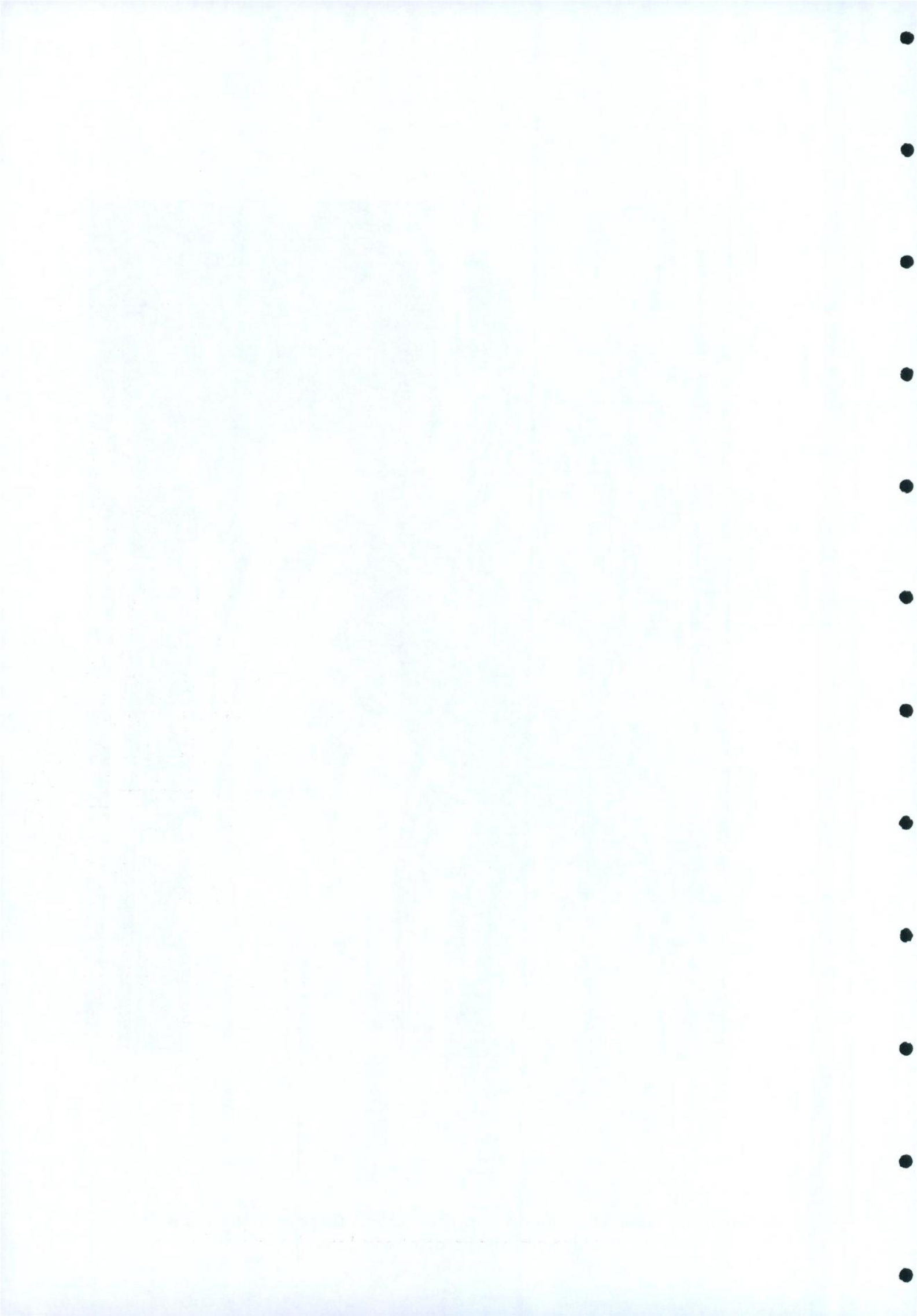
The staircase in the Winssinger House combines very different elements (Illus. 7). Vertical slats of wrought iron are riveted to the first and second steps. Bands of wrought iron, riveted, encircle the upper and lower part of the column. From the wrought iron column a varnished handrail emerges. Between the handrail and the marble stairs there is a wrought iron undulating, asymmetrical design. The design is much more compact than that of the Maison Tassel which results in intensity and vibrancy.

Horta achieved even more striking effects with the townhouse built for the rich manufacturer Solvay. Like the Maison Tassel and Winssinger the house was part of a terrace but with more space than was usual in Brussels, Solvay House has a rigidity due to symmetrical design (Illus. 8). This symmetrical design revolves around four oriel windows which protrude on either side of the central part of the facade which



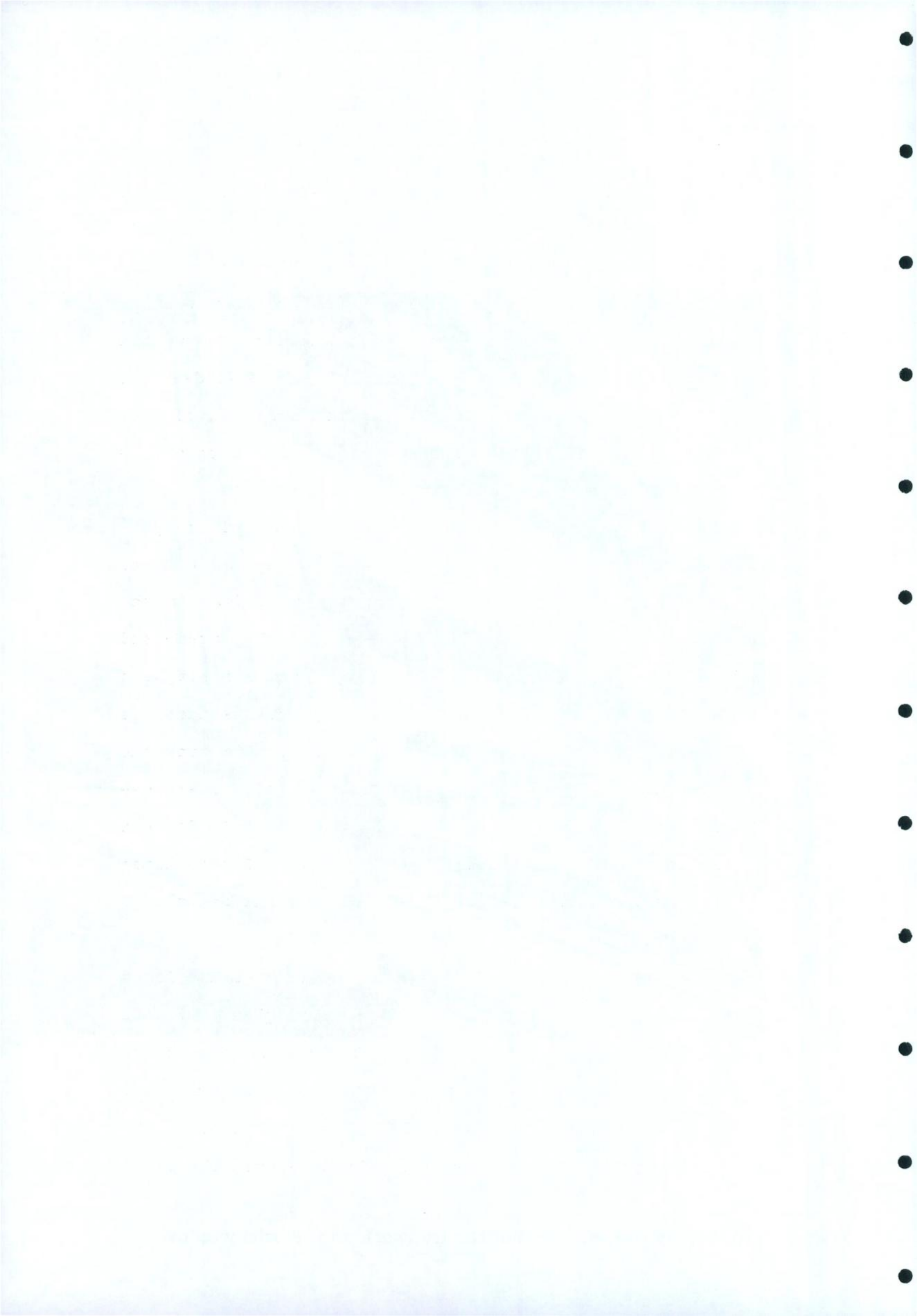


9. Solvay House. The balcony on the second floor and the consoles supporting the oriel window.





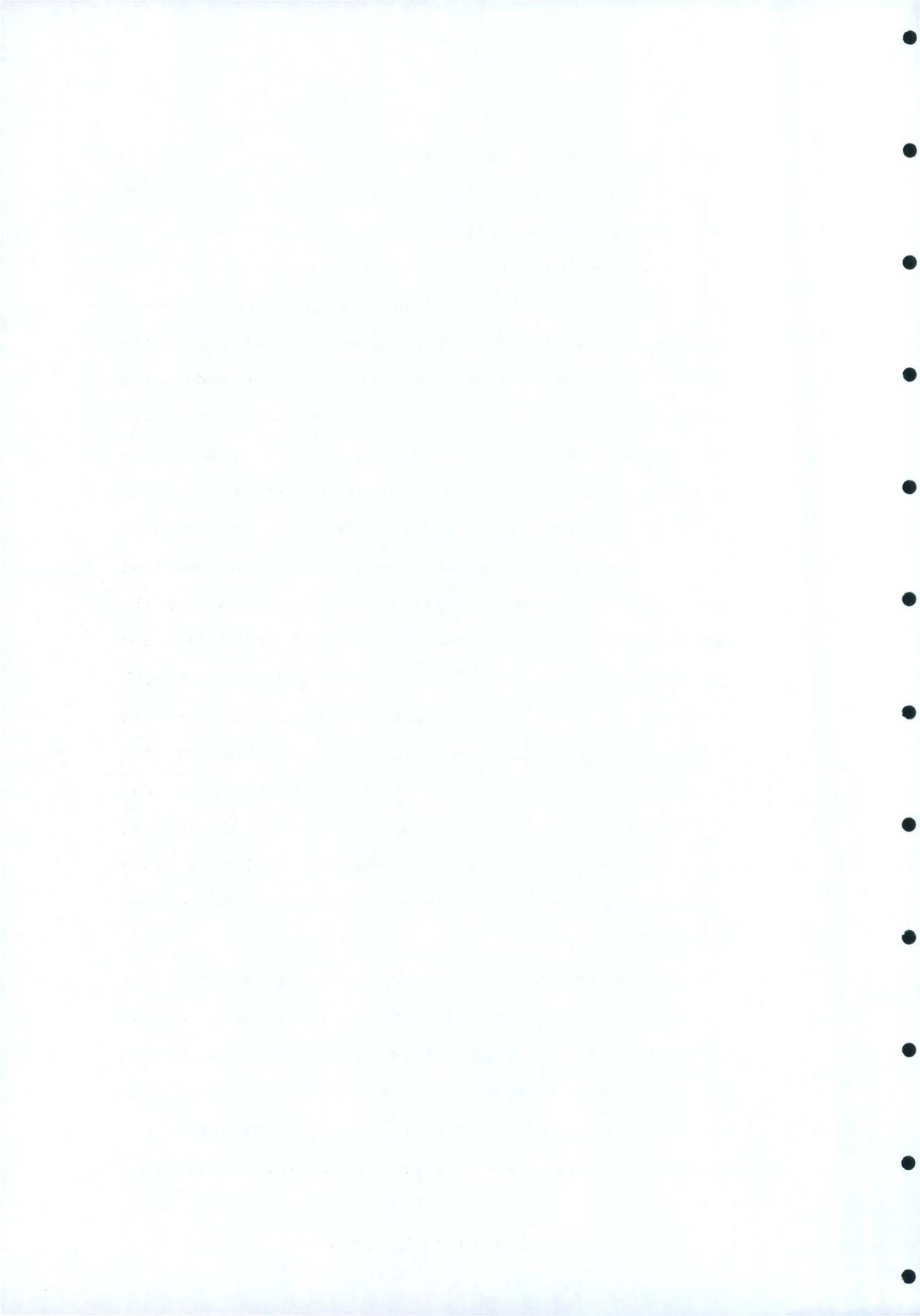
10. Solvay House. Detail of the ironwork on the oriel window.

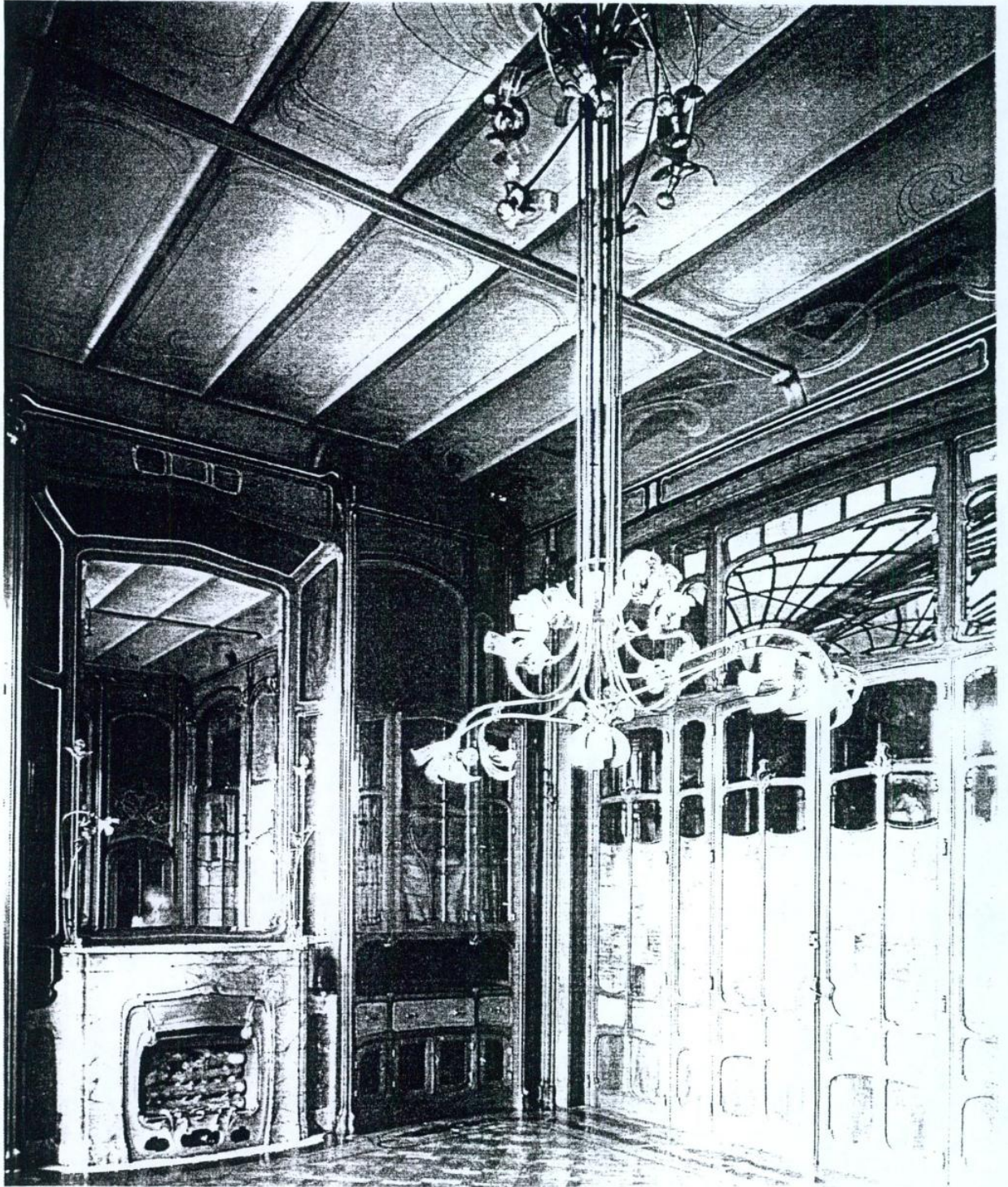
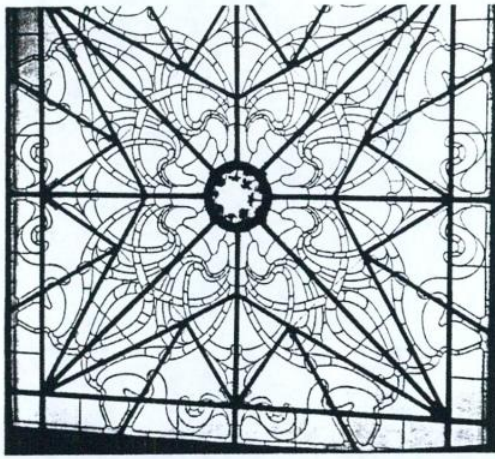


seems to recede. Heavy consoles support the oriel windows and the iron floor of the second story(Illus. 9). The jutting out parts of the oriel window are made of iron. Two thin iron columns rise along two stories and reach the upper iron lintel supporting the stone cornice and upper baluster. The combination of the sandstone consoles and the iron brackets under the columns are necessary to support the heavy structure. At the base of the iron columns, an iron ribbon-like shape is loosely tied around the iron brackets.

In the middle of the first floor the balcony juts out in a slight curve and leans on the two central consoles. The metal lintels above the windows on the second floor do not follow the curve of the facade and are designed straight. Iron plates in the shape of a double T are combined with plates with rivets that are visible(Illus. 10). The decorative motifs in the baluster on the first floor are typical of Horta's use of flat wrought iron in constant thickness. It is bent and connected through visible riveting. Delicate lines and the great expanse of glass is a dominant feature of the facade(5, p.64).

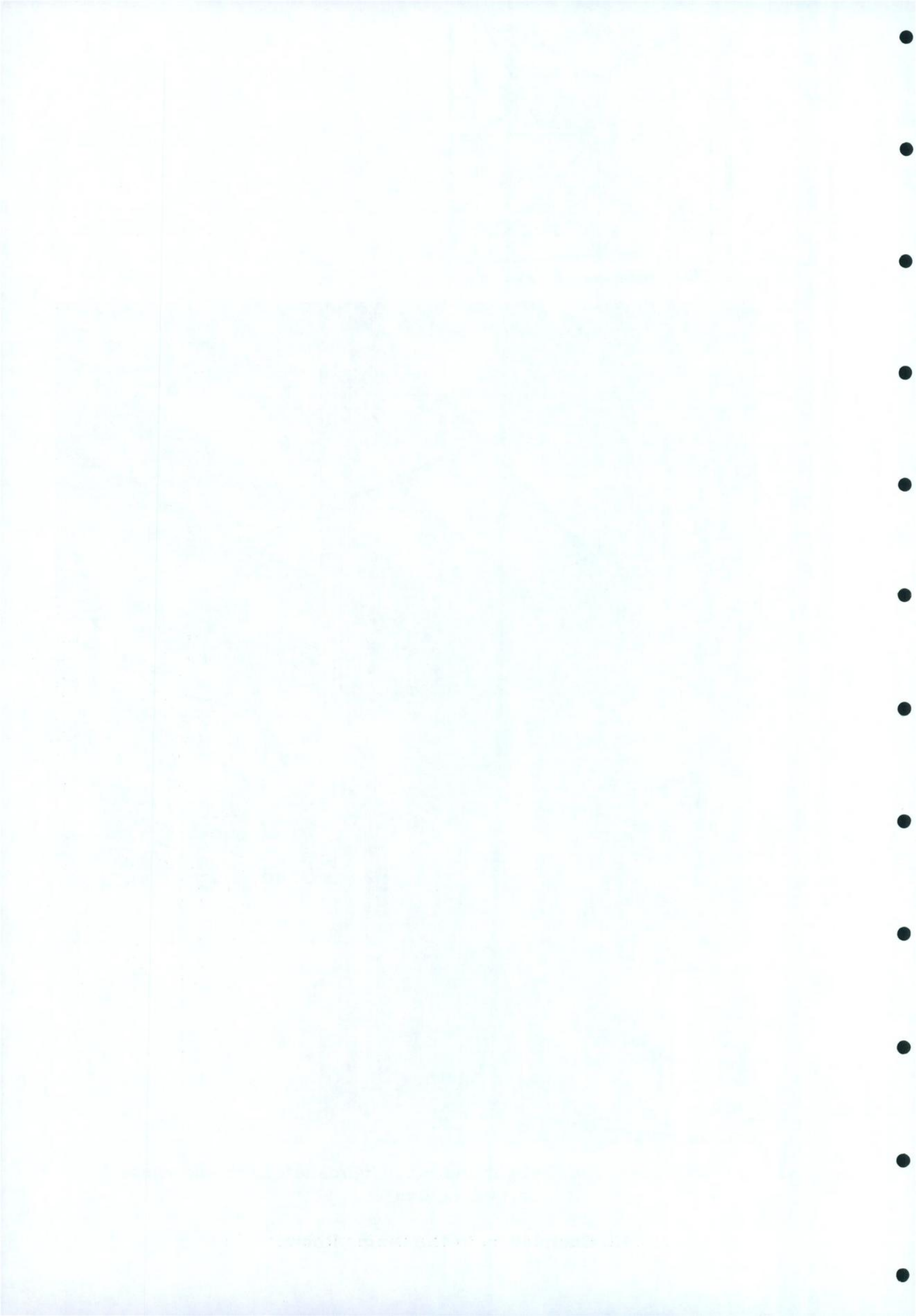
Space in the Solvay House is created by light streaming down from the huge skylights in the roof(Illus. 11). A gilded metal banister complement the broad double staircase made of green marble. The whole interior was designed by Horta himself, the ceilings, floors, wood panels, inlaid parquet floors,

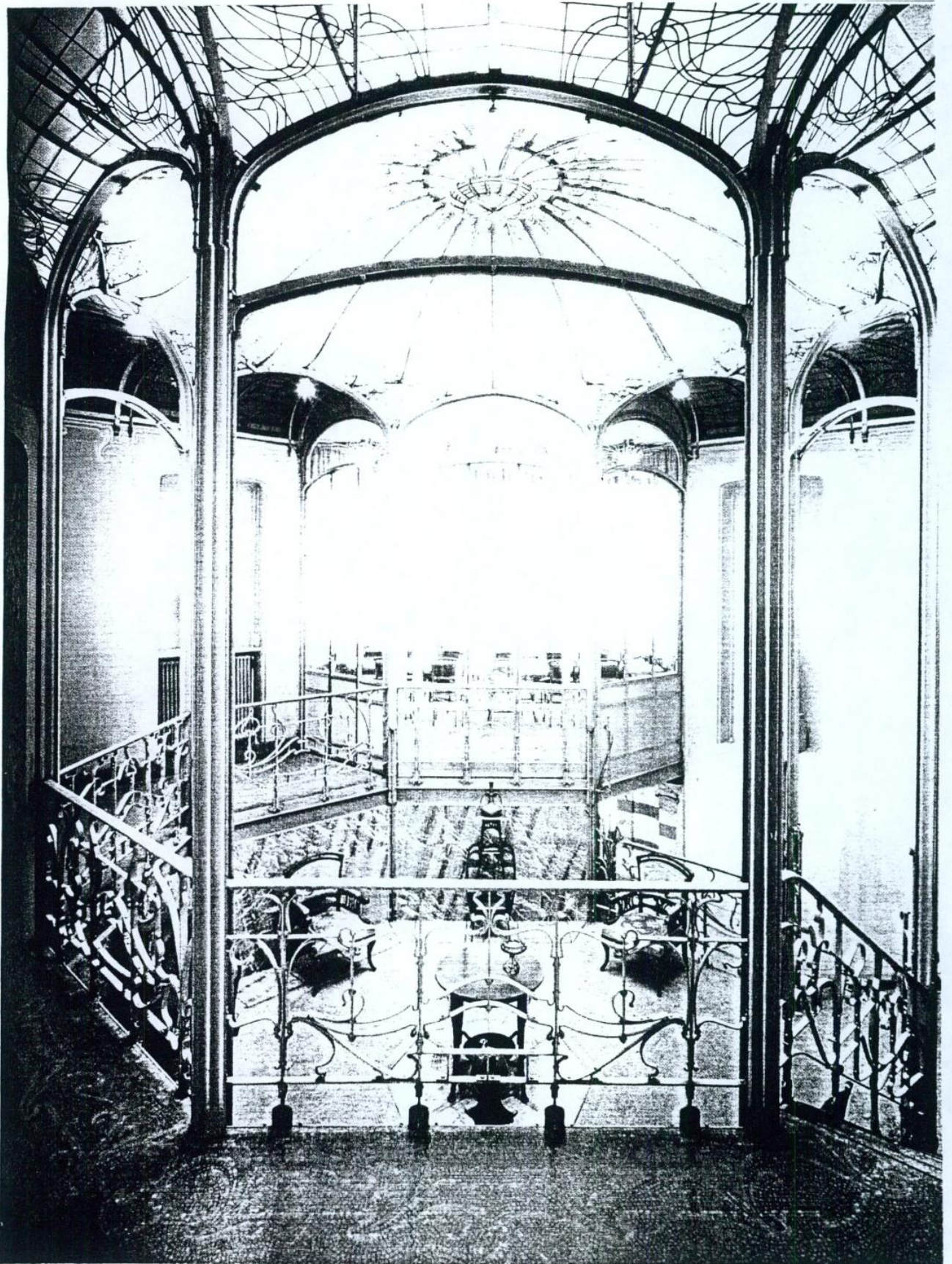




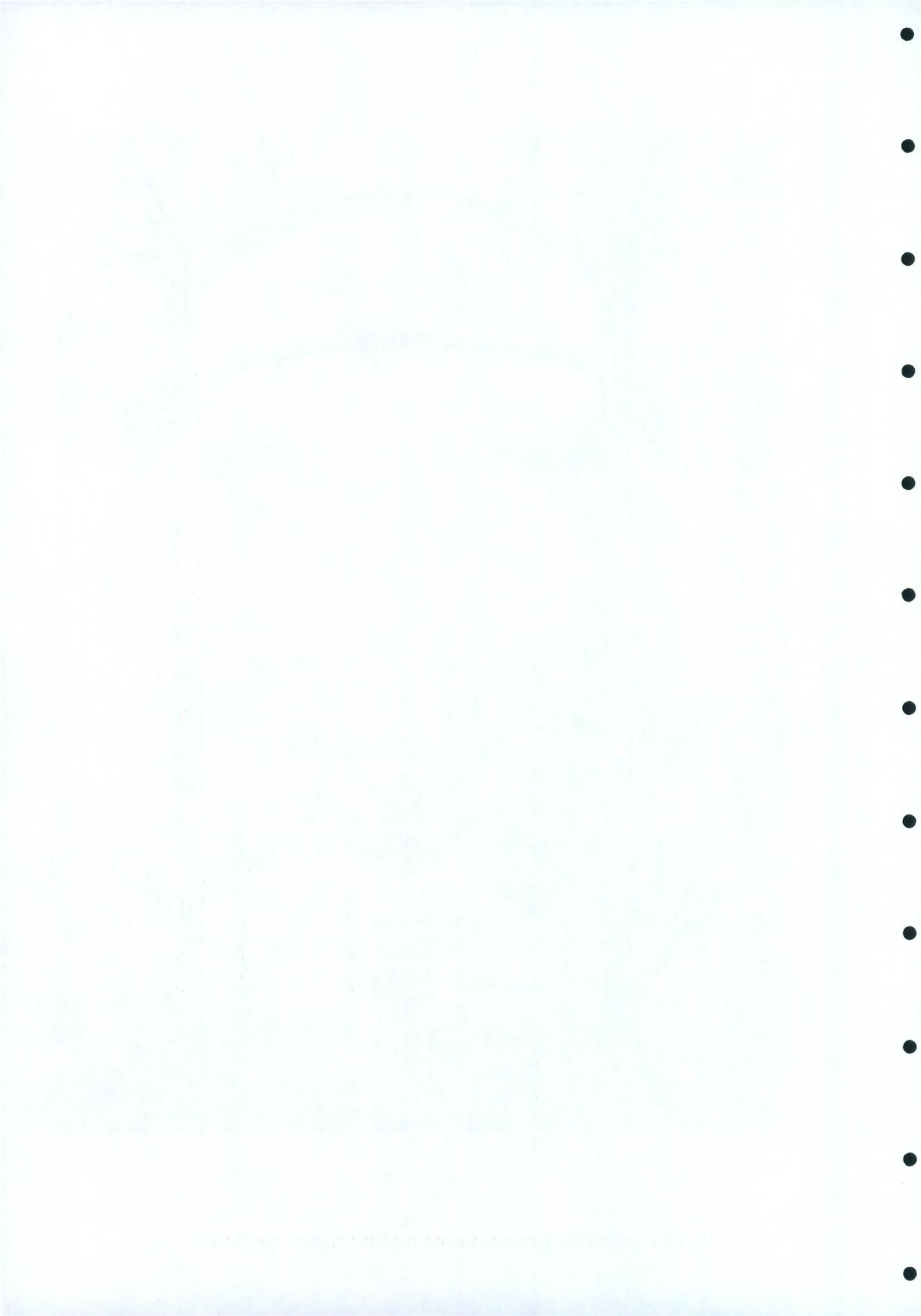
11. Solvay House. The skylight above the light shaft in the northern part of the house.

12. Chandeliers in the Dining Room.





13. Van Eetvelde House. Octagonal Hall. Second floor.





14. Van Eetuelde House. Metal ribs supporting the skylight.



furniture, windows, light fixtures, even the iron keyholes, door handles and hinges. Horta left the riveted metal structures visible and painted them a light green. Vertical, slender iron rods form the structure from which chandeliers are suspended (Illus. 12).

Flower-shaped light shades are attached to the stems. These stems explode in a centrifugal motion.

Art Nouveau can be seen in its maturity in the Hotel Solvay built between 1895-1900

it is an astonishing symbiosis, of Baroque and classical, sentiment and reason, craftsmanship and industry, colour and form, with aesthetics dominating technology.

(12, p. 150)

Among the private homes that Horta built, his Van Eetuelde House displays a particularly beautiful dome. Arched above the octagonal central hall, Horta's dome displays a filigree structure of glass and iron and these membranes remind one of the veinings on butterfly wings. The mosaic decoration becomes more intense at the intersection of the eight cast iron posts which support the skylight (Illus. 13, 14).

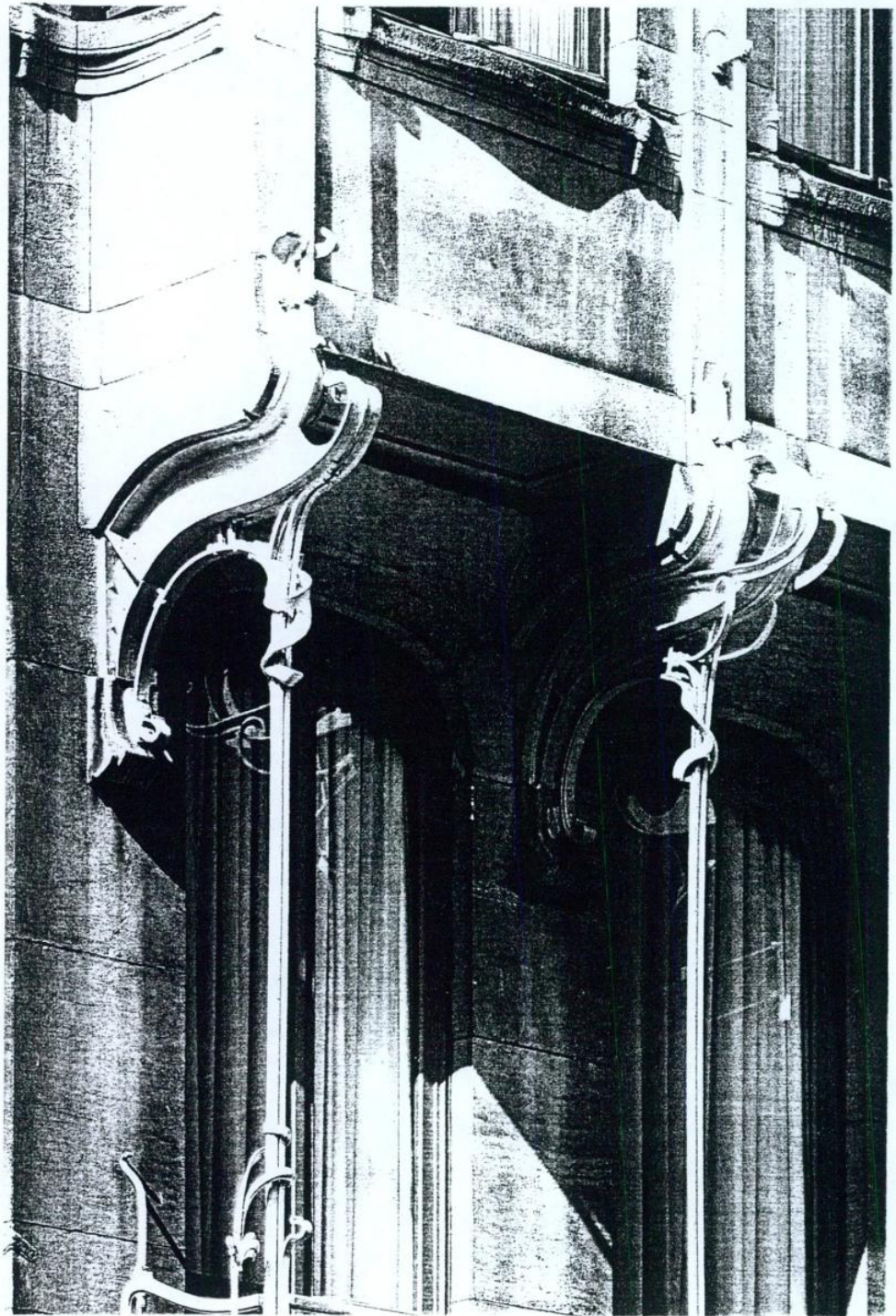
Between 1898 and 1900 Horta built two houses for himself. The first one was designed as a studio and the second one as his private home. The facade of Horta's private home is dominated by an oriel window on top of which an elaborate iron railing is shaped like the wings of a butterfly. Iron posts descend from the architraves on the second floor to join the brackets



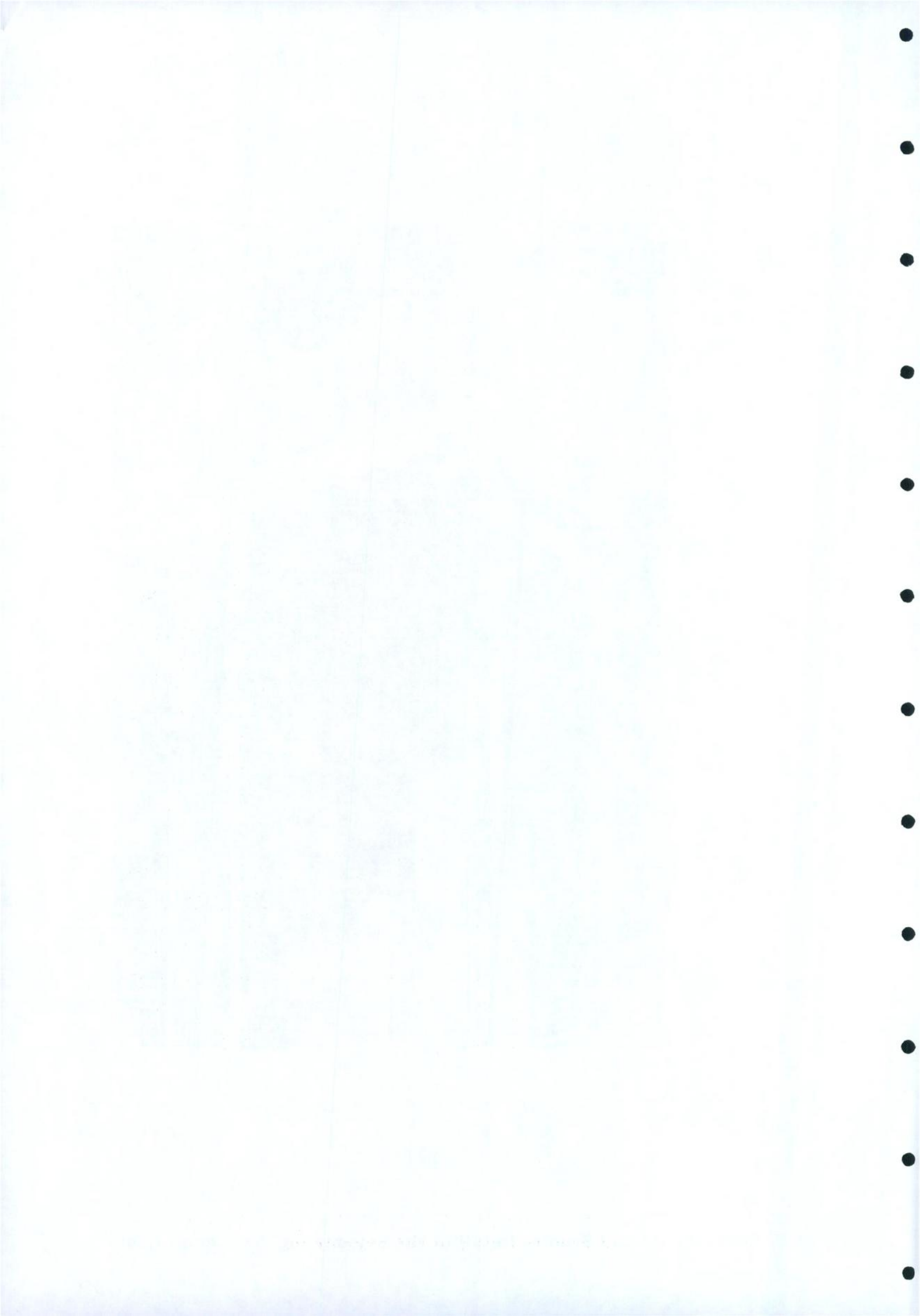


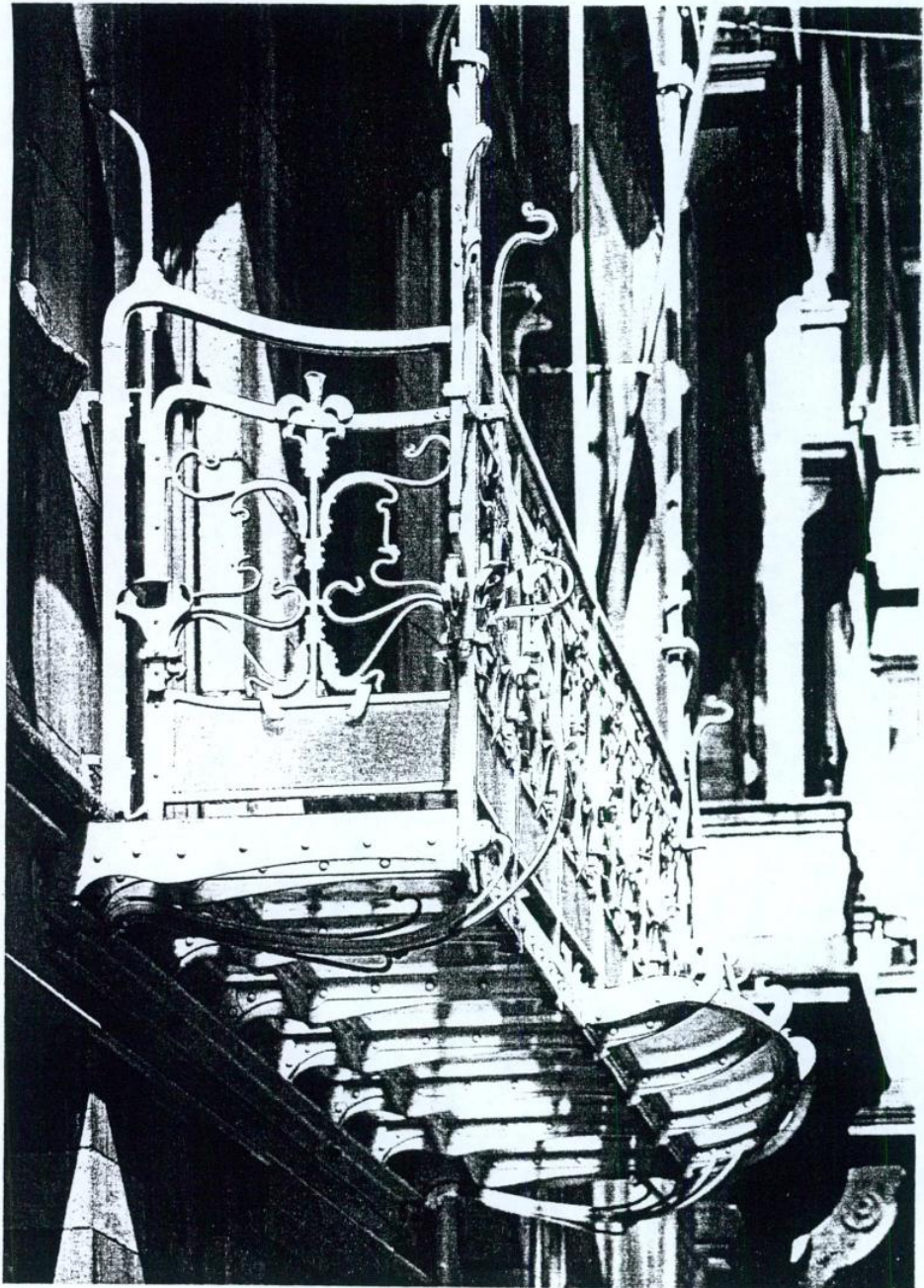
14. Horta House and Studio. View of the facade.



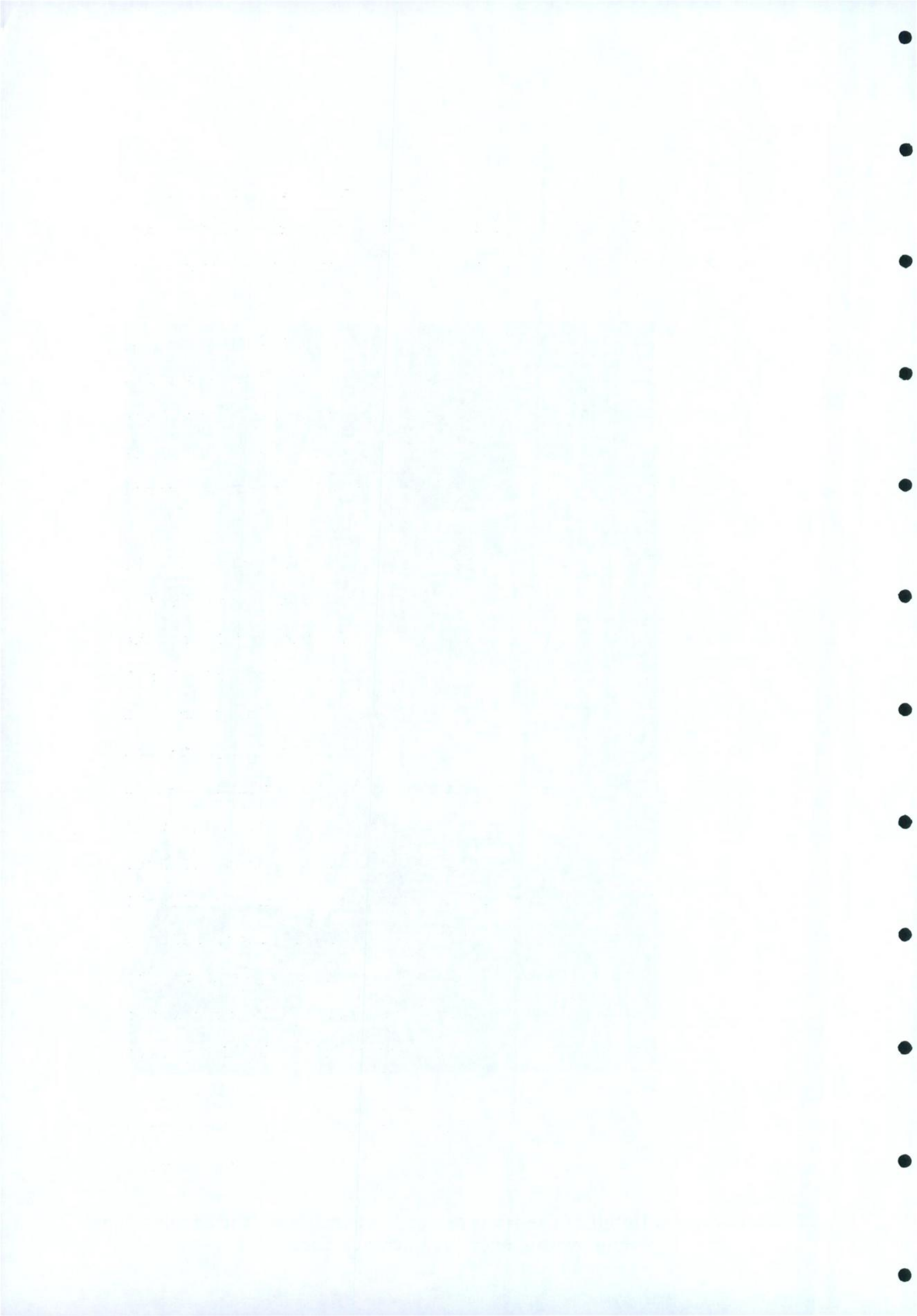


16. Horta House and Studio. Detail of the balcony on the second floor.





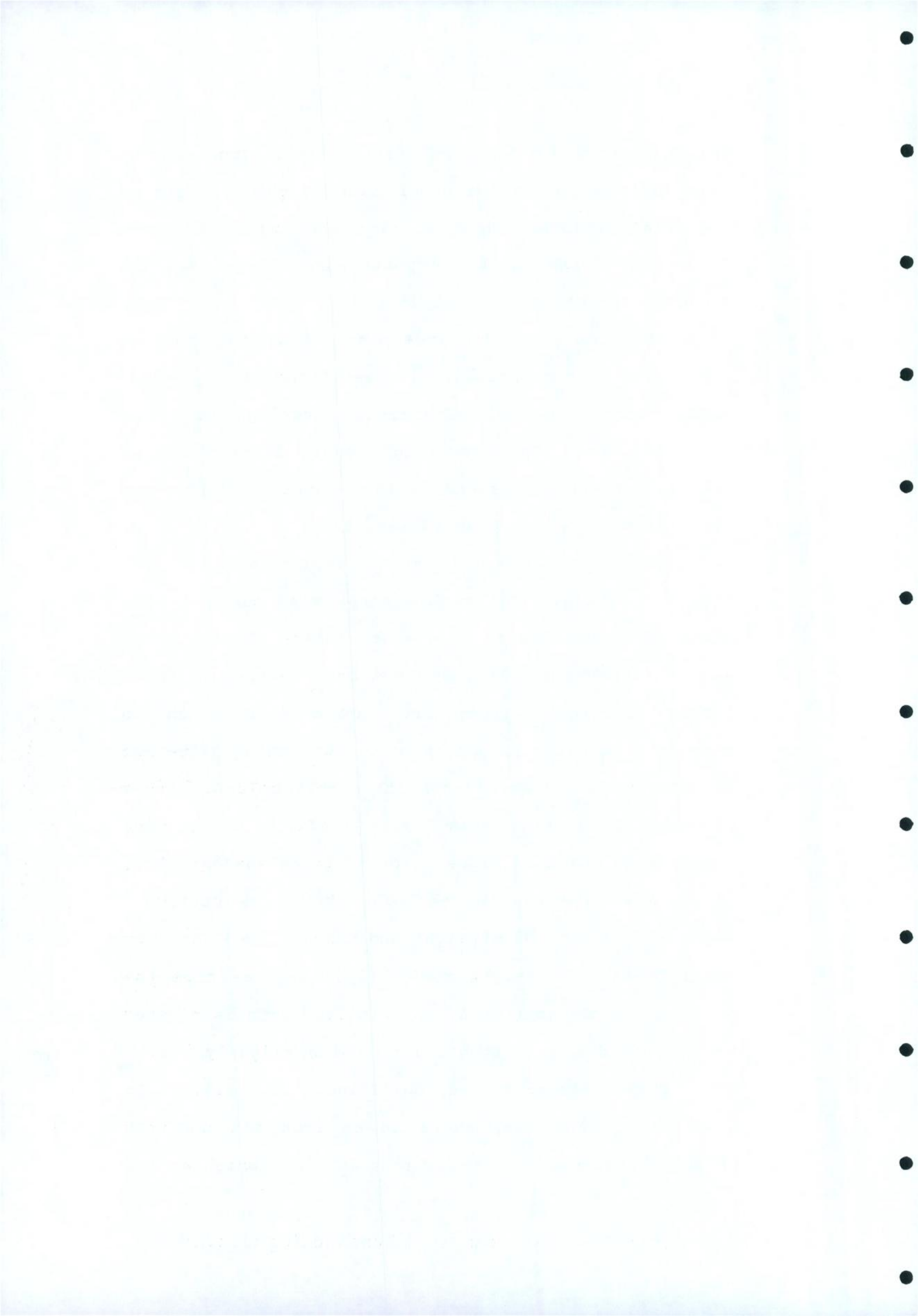
17. Horta House. Detail of the ironwork of the balcony on the second floor and awning over the entrance door.

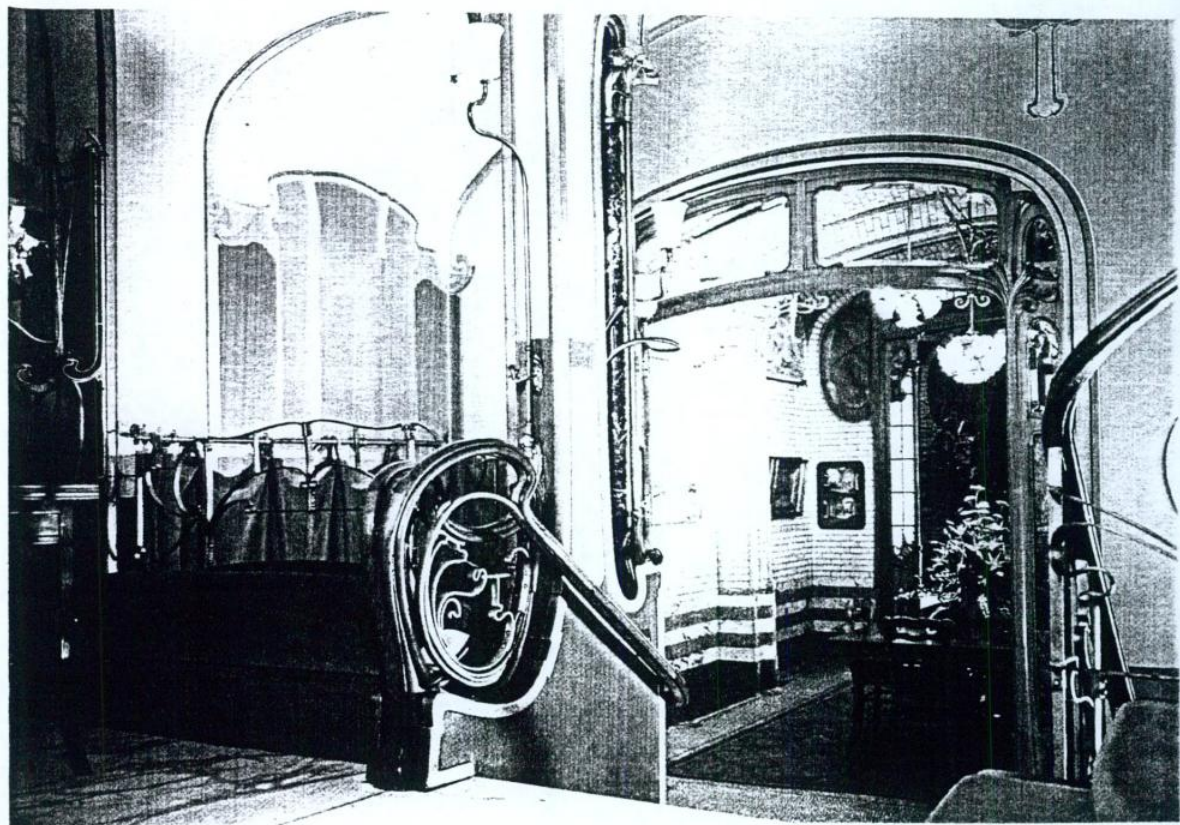
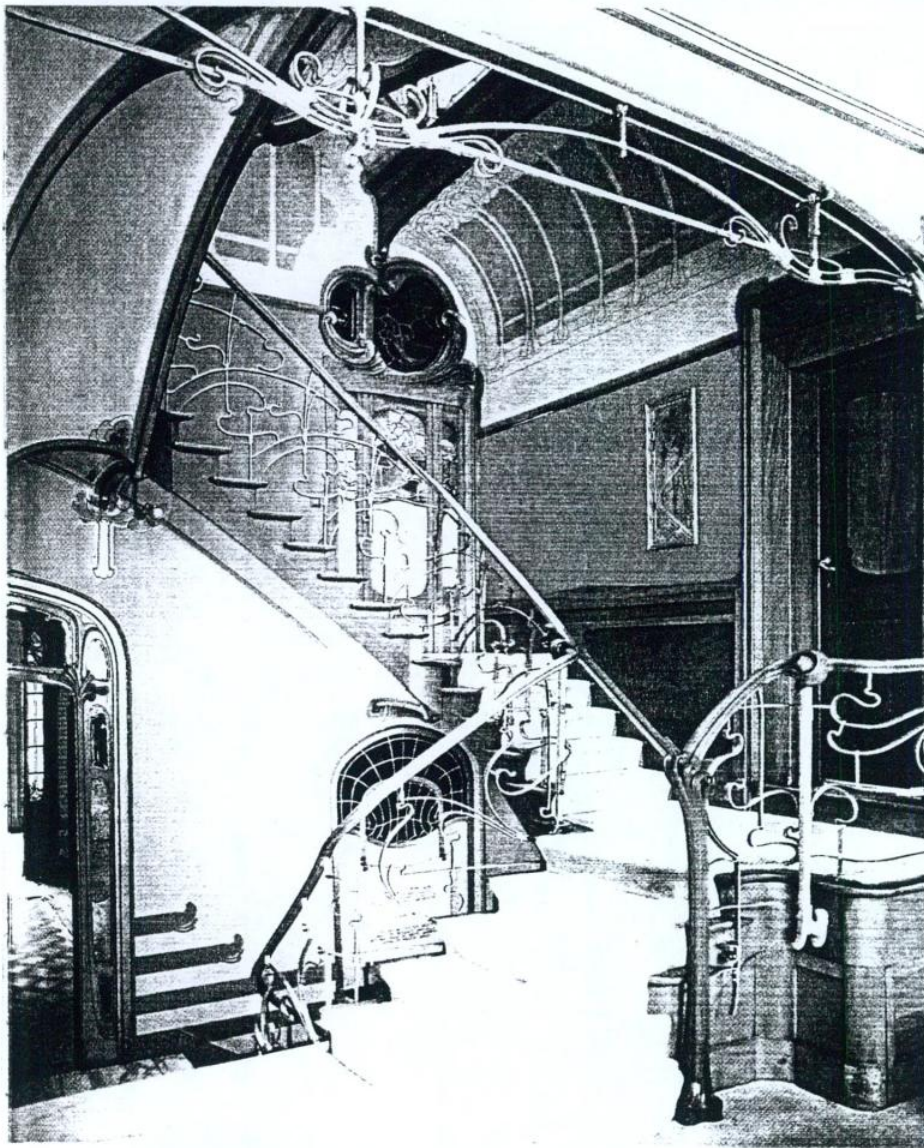


that support the oriel window(Illus. 15). Iron ribbon-like coils cling to the upper post on the brackets of the oriel windows. This decoration is repeated at the lower end of the two outer posts which merge into the wrought iron balcony(Illus. 16).

The iron posts continue past the balcony holding its railing and reaching to its metal and glass paving. This paving forms a transparent covering above the entrance door. This covering arches slightly and is held by curved shapes ending in a whiplash and joined with two of the iron posts(Illus. 17).

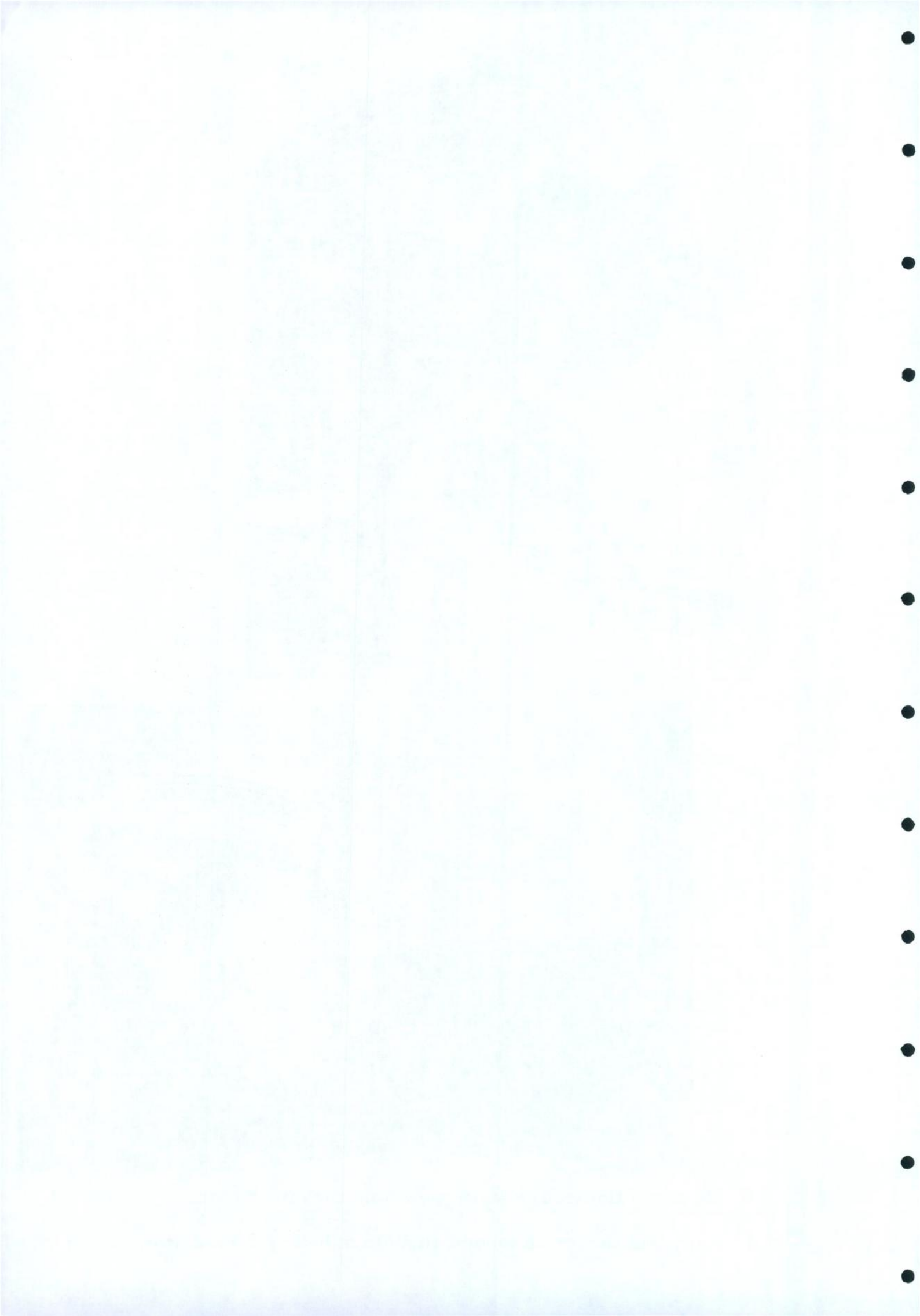
The stairs are the most elegant part of the interior design. The marble steps wind along in the shape of an L and head to a space in the middle of the second floor(Illus. 18). There a most remarkable bench serves also as a radiator. Behind this bench an elaborate marble column rises. Two thin gilt-iron columns flank and strengthen the marble column. Stems of gilt brass rise from these small columns, wind around them and hold glass electric light shades(Illus. 19). A double vaulted skylight above the stairwell forms a structure of straight and curved lines, held by metal posts. A straight rod of iron emerges from the decorative iron stairwell. A twin iron arch is riveted to the rigid iron upright, from which slightly curved iron light fixtures fan out(Illus. 20, 21). In contrast, further up, there is an iron fixture from which is suspended electric light fittings which appear





18. Horta House. The stairs view from the music room

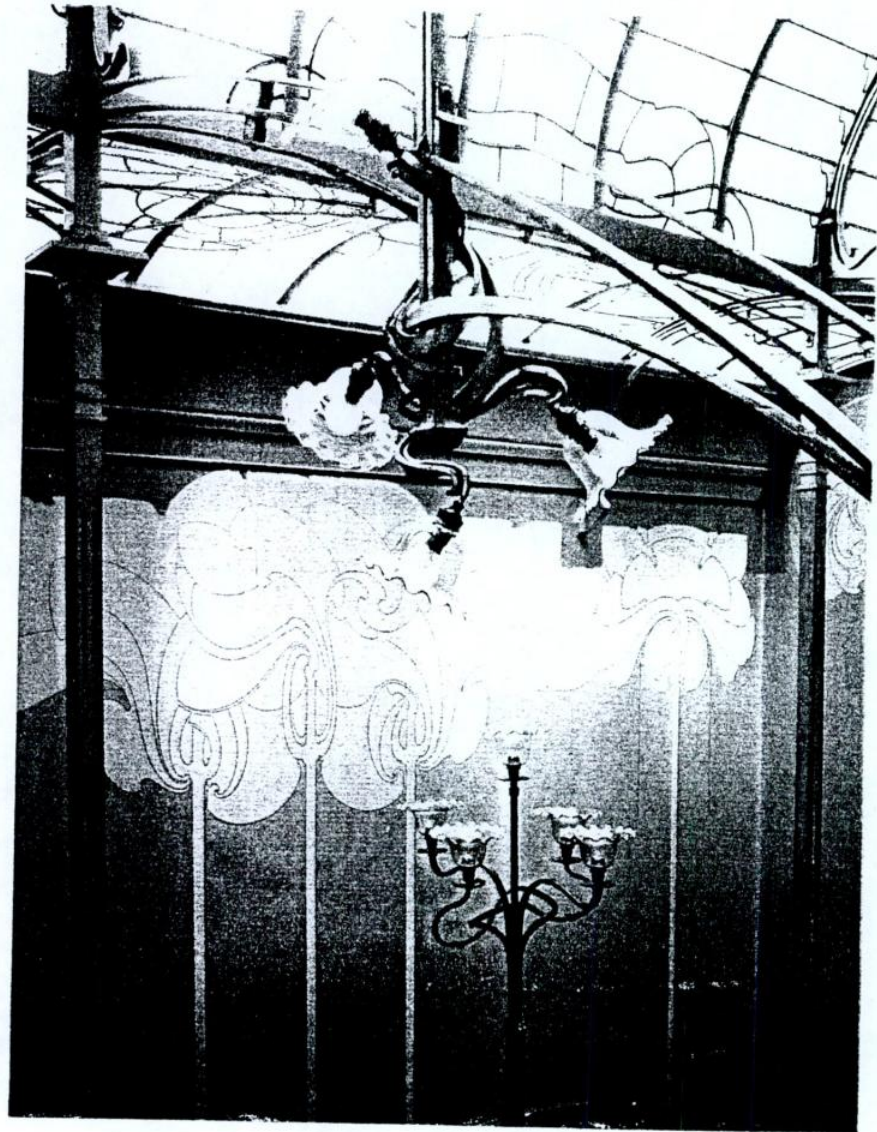
19. A corner in the music room with a bench hiding the radiator.





20. Horta House. Details of the ironwork and skylight.





21. Horta House. Chandelier in the stairwell and light fixture on the landing.

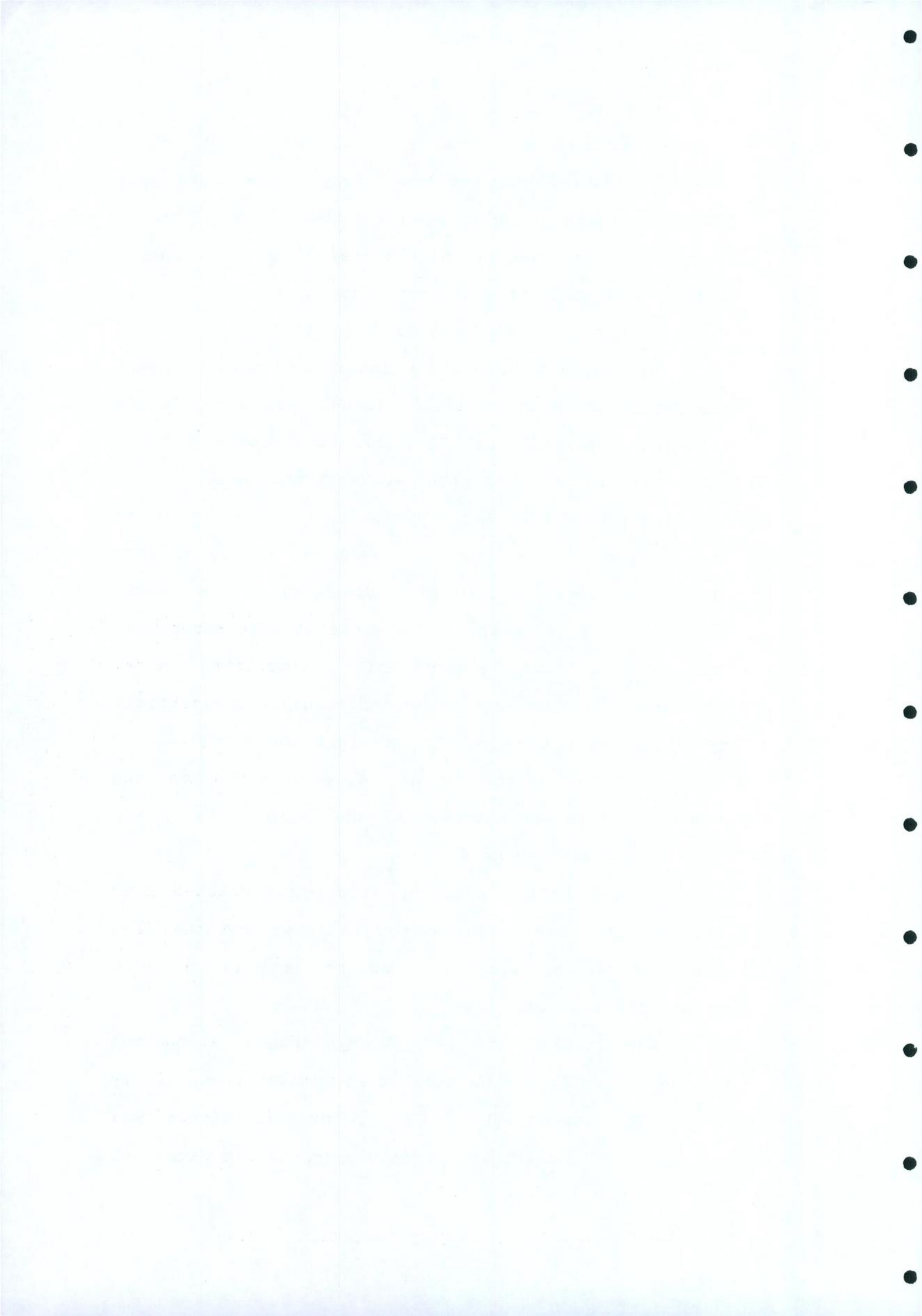


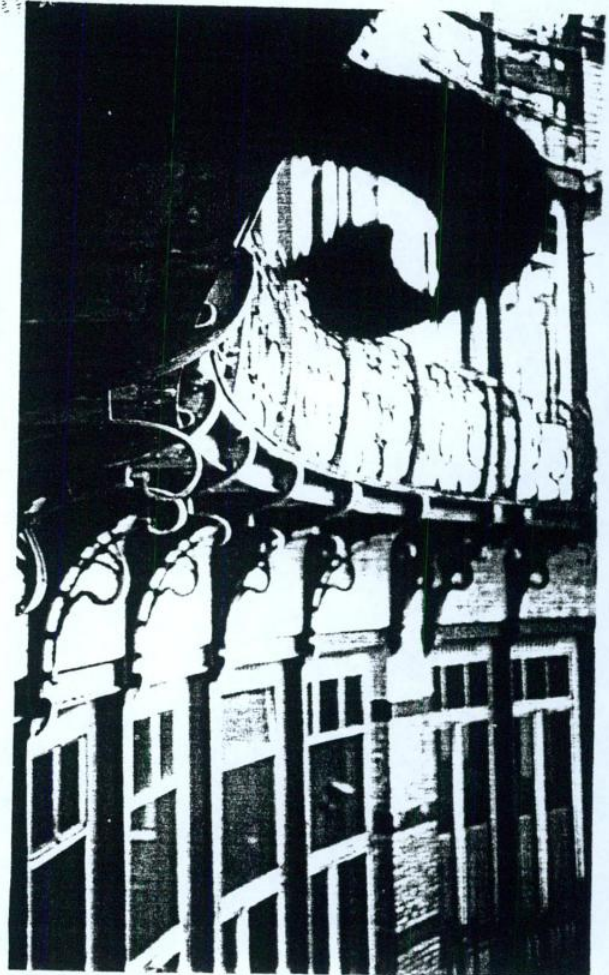
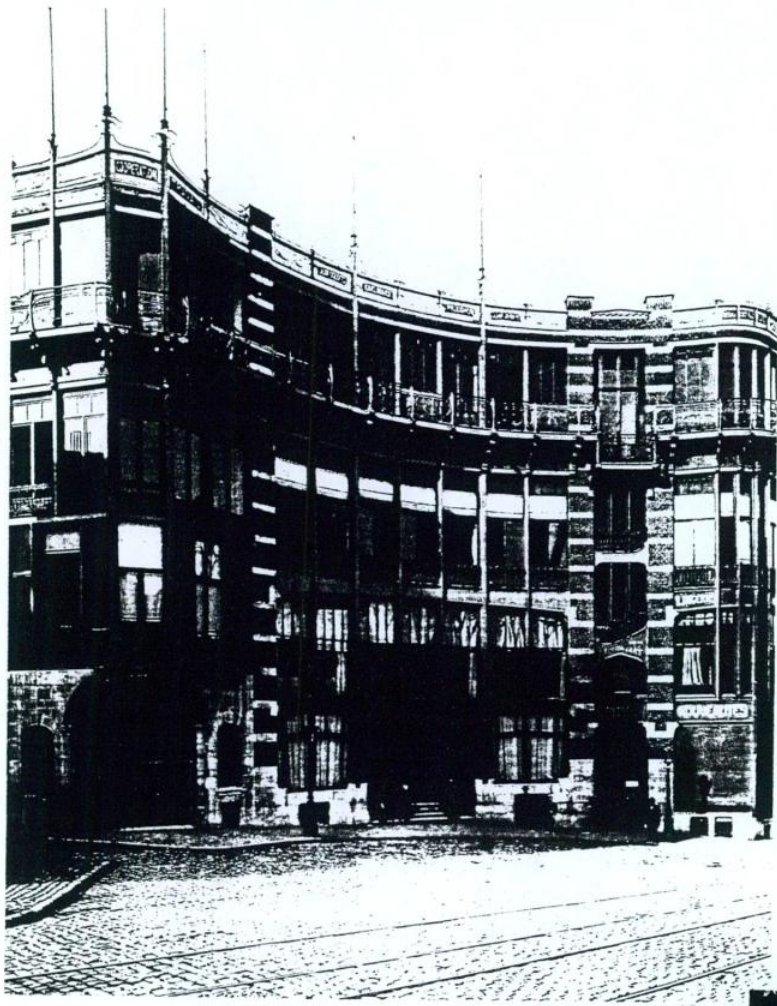
= more delicate and linsome. The warm, rust colour scheme resembles that of the Solvay House, with gilt strips, echoing the gilt iron and the colour of brass. Decoration and space are highlighted by mirrors. In the dining room, gilt iron stems bridge the arch and hold a cluster of tulip shaped shades(5, pp.74-75).

In contrast to Horta's luxurious, private home, the Maison Du Peuple built in 1986-99 was a completely different concept(Illus. 22). Horta was commissioned to build it by the Belgian workers movement. This building proved that Art Nouveau really could be an art for everyone. The framework was built mainly of iron which was visible through large surfaces of glass giving it the appearance of a skeletal-like structure. Art Nouveau was exceptionally simplified here. Ornamental details lost their importance. The vertical metal structures were all straight and only a few horizontal undulating movements were added to the concave and convex movement of the facade. Harsh and rigid lines were adopted.

On top of the building iron posts reached into the sky like masts. Above the banister and the flag posts pieces of iron bent upwards and ended in a whiplash(Illus. 24).

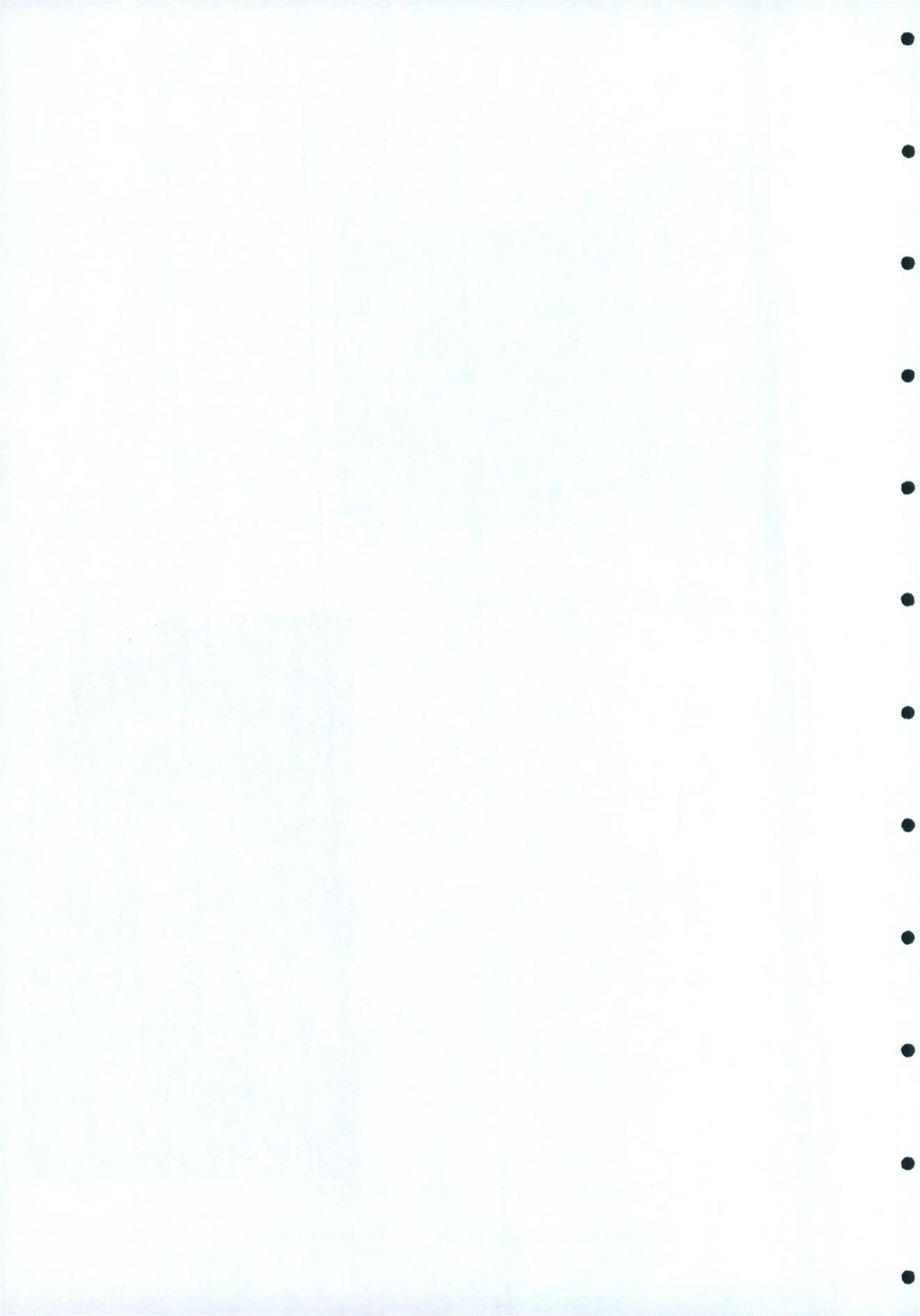
The railing of the balcony running along the facade was built in the usual flat wrought iron, simply bent and riveted(Illus. 23). A dynamic effect was created by a combination of double and triple layers of

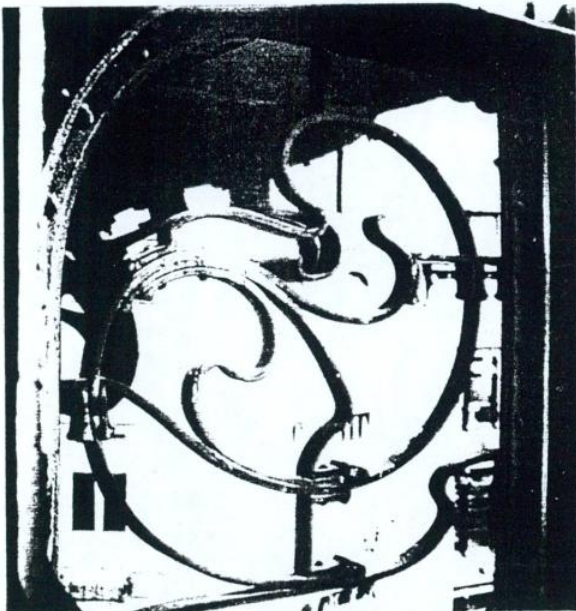
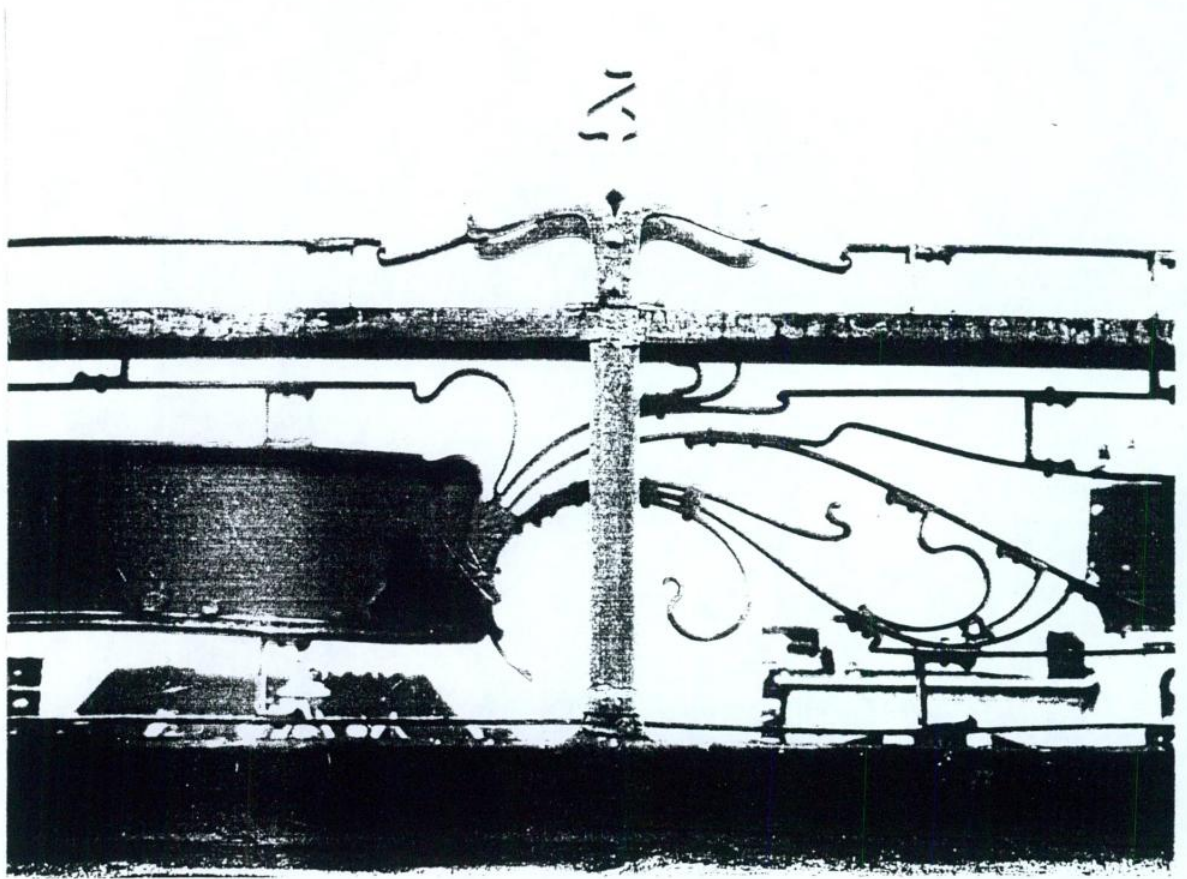




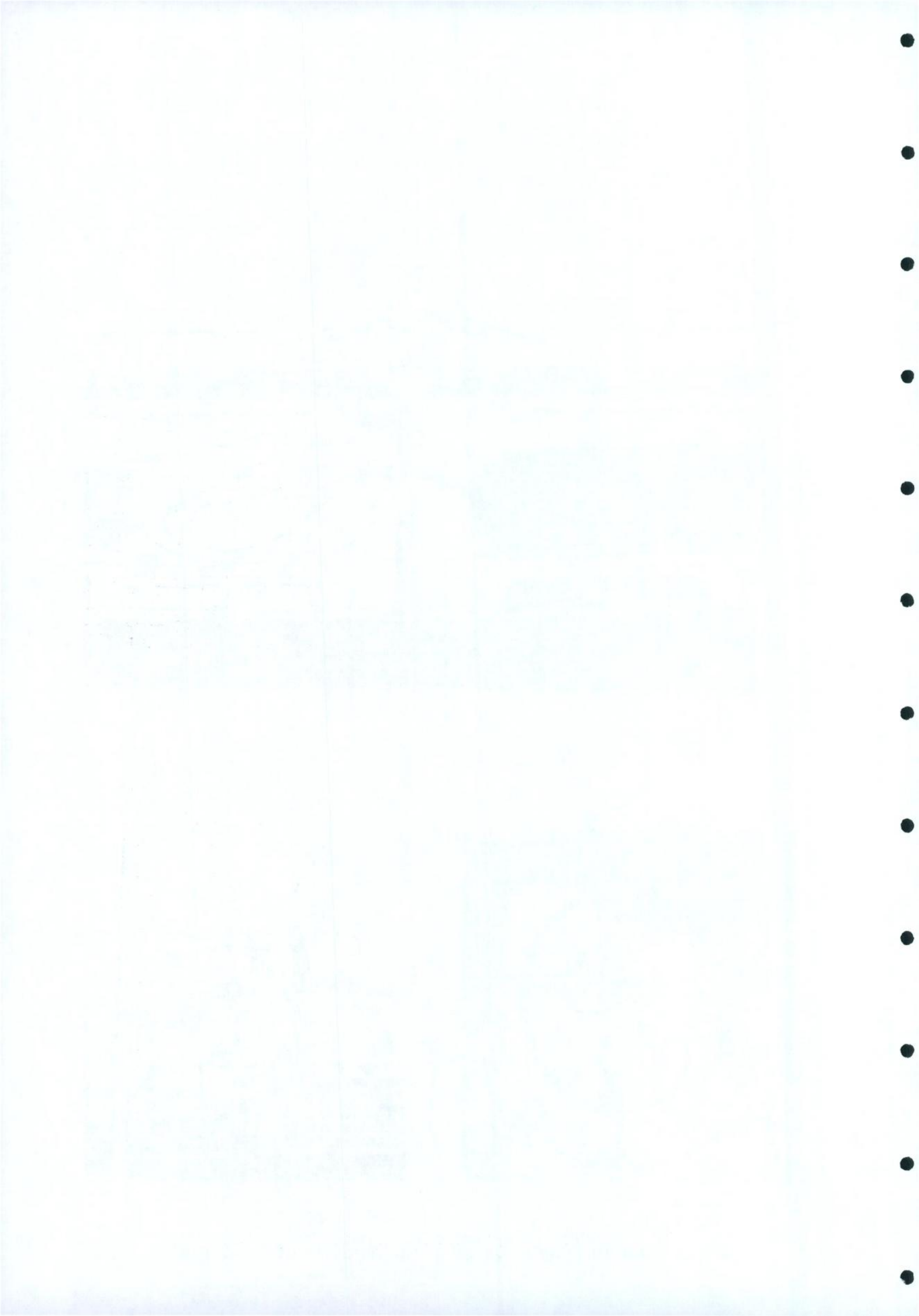
22. Maison du Peuple. The Facade.

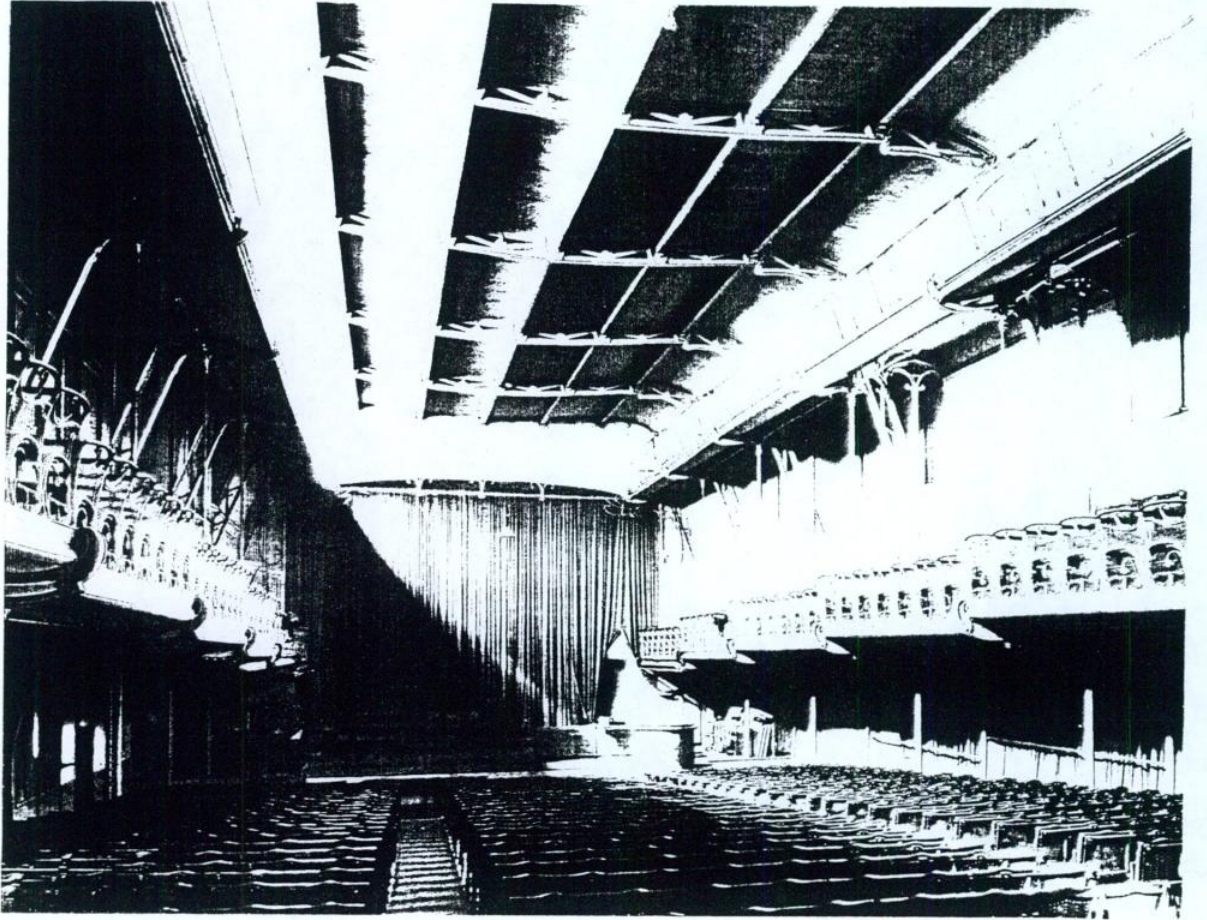
23. Detail of the balcony on the fourth floor.





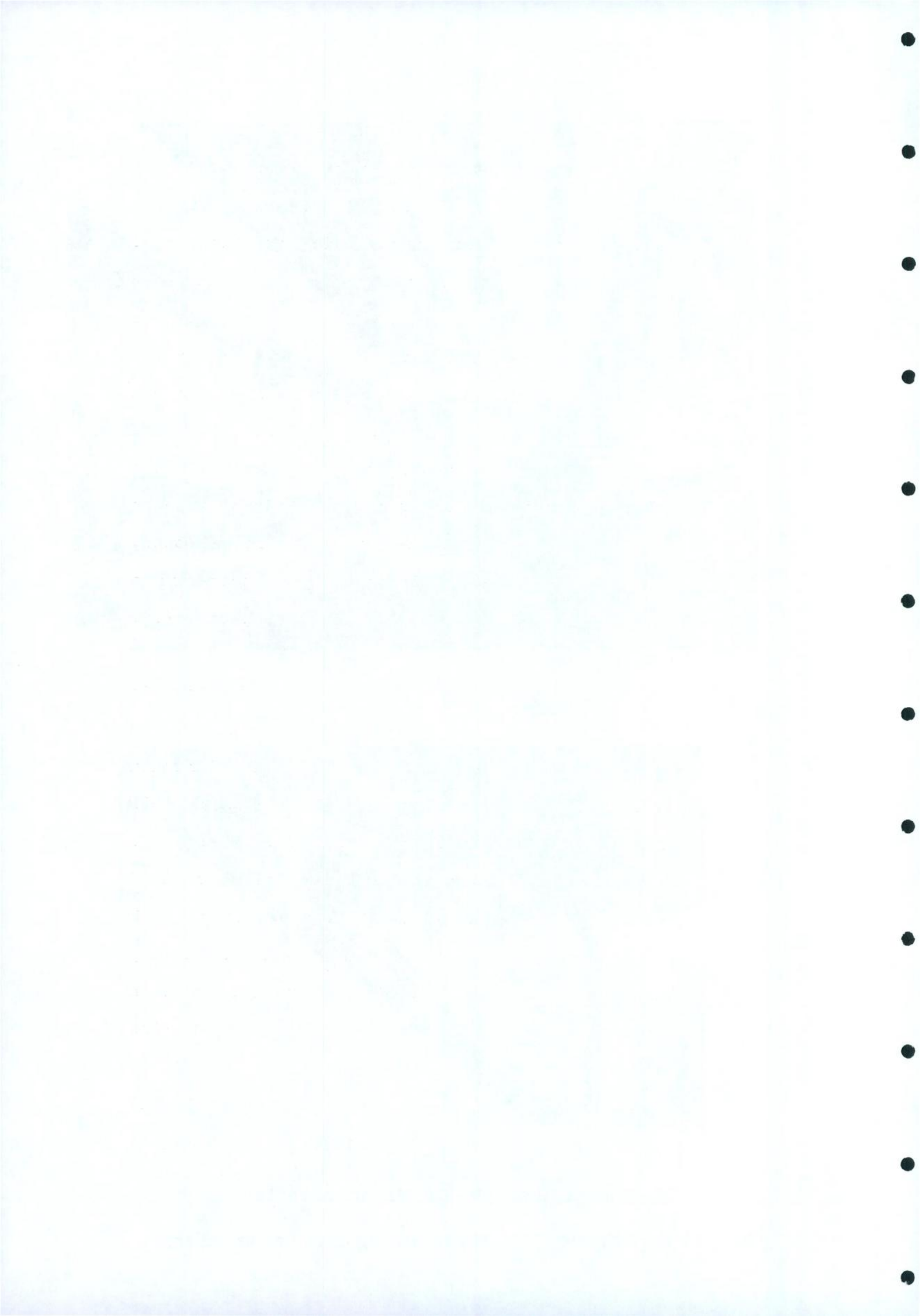
24. Maison du Peuple. Detail of the banister of the coping.





25. Maison du peuple. The Performance Hall.

26. The Performance Hall. Stairs leading to the great gallery.



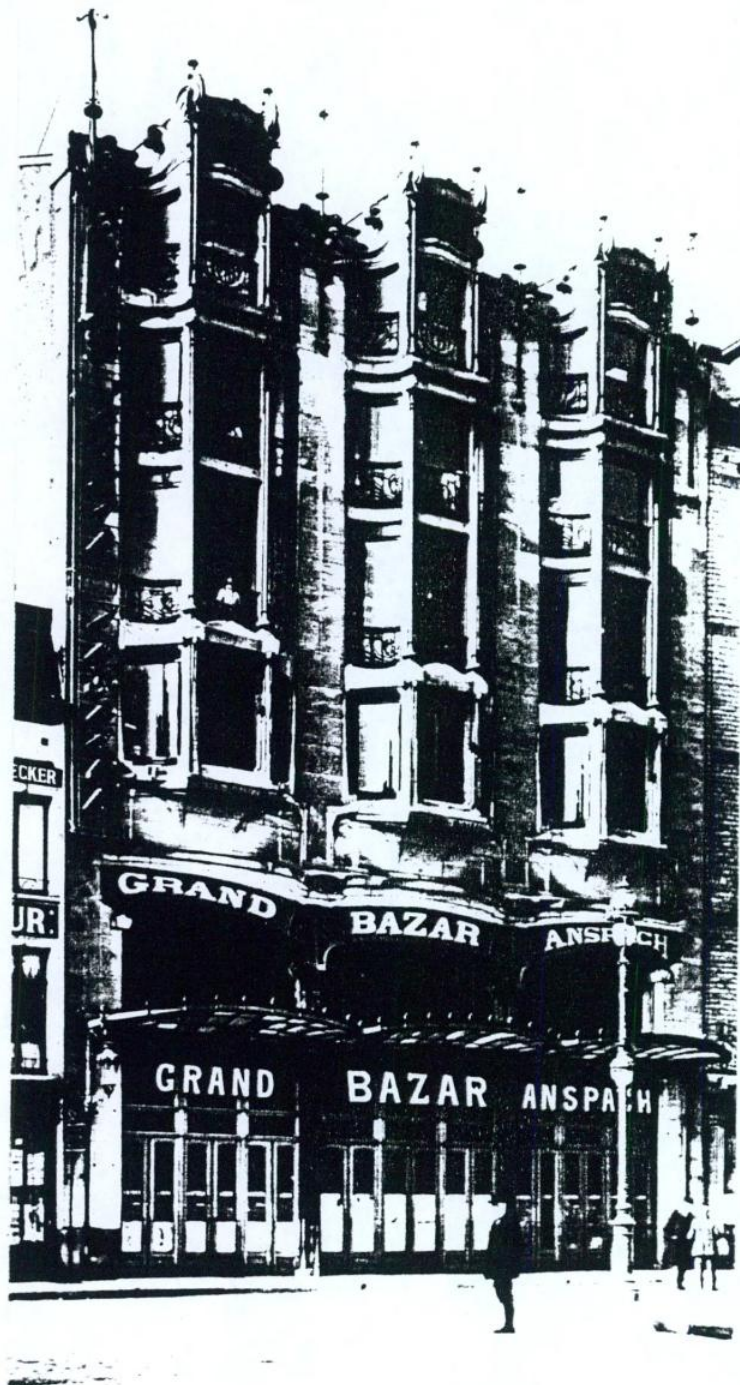
iron which were placed on top of a curved member which ended in Horta's 'whiplash' shape(31, p.48).

As is general in Art Nouveau buildings the inside is more successful than the outside. In the auditorium, under the roof of the building, prefabricated supports bend gracefully across the top in curves(Illus. 25). There is a distinction between the firm lines of these members and the more decorative pattern of the balcony window, which consists of fine mesh enclosed in two curved horizontal bands of wrought iron which rests on top of the upper horizontal band, whilst, under the lower horizontal curve there is a sparsely decorated wrought iron pattern(13, p.69)(Illus. 26).

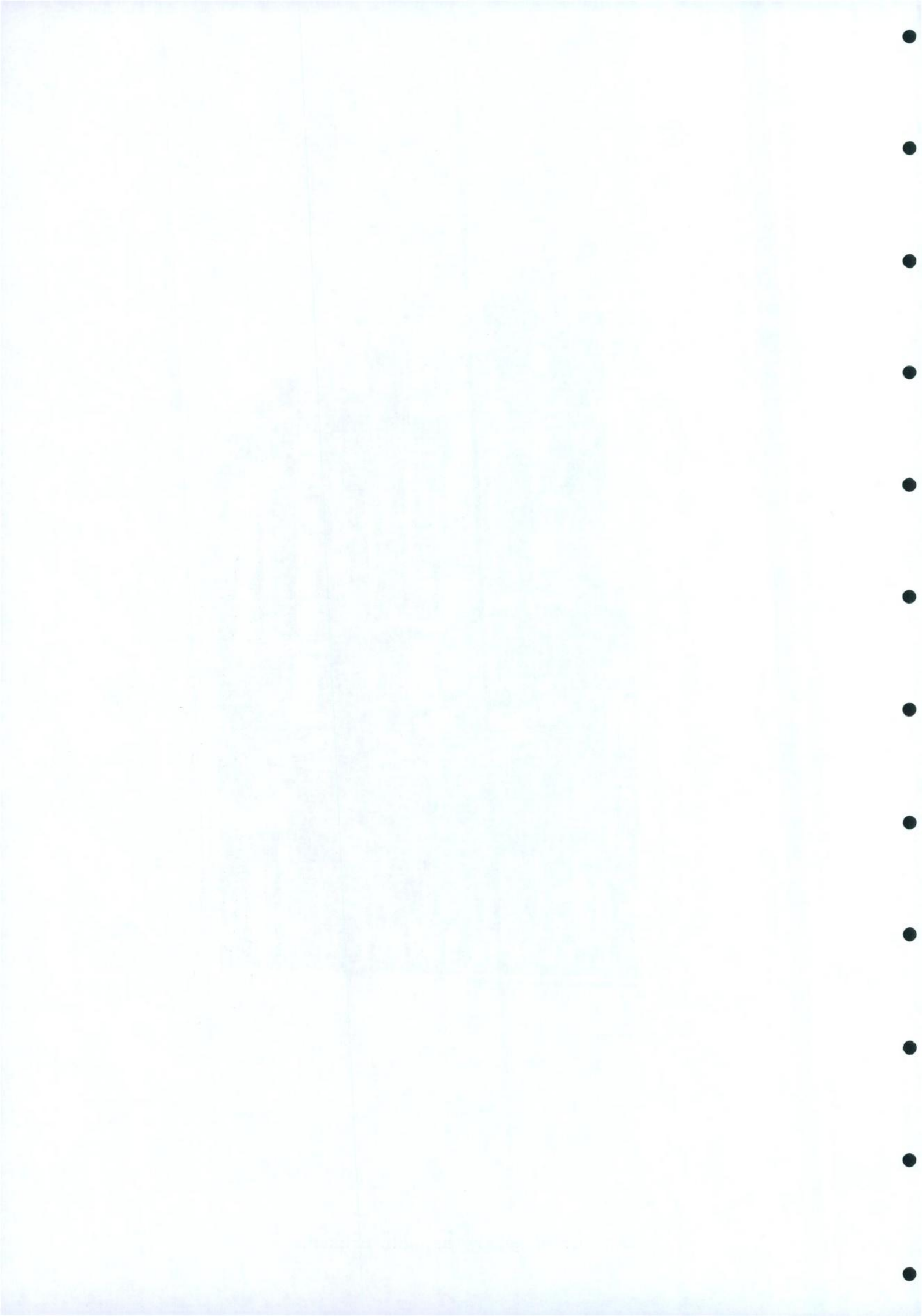
The Maison Du Peuple marked a peak in Horta's creative period. Its clarity of design and construction fulfilled its purpose and function perfectly. His department stores l'Innovation 1900 and Grand Bazar, 1903 were his swan song(Illus. 27, 28). He deviated from his use of iron and restrained his use of curvilinear detail. This appeared to mark his departure from the Art Nouveau style. Following his return from America, 1919, his architecture took on an austere, classical direction. The straight line superseded the Art Nouveau line.

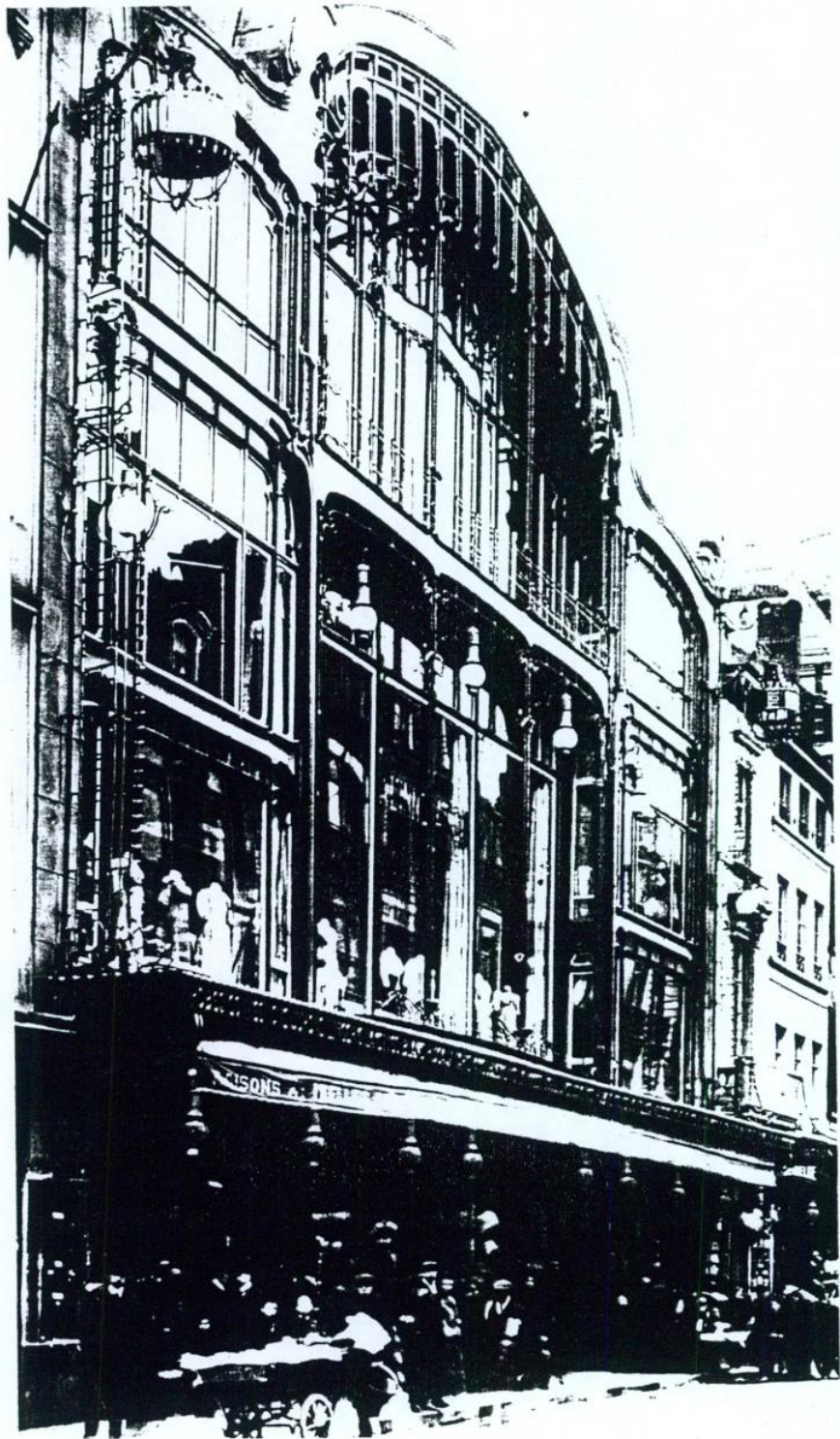
The cooperative board who commissioned the building, Maison du Peuple were extremely proud of the premises. However, shortly before it was demolished



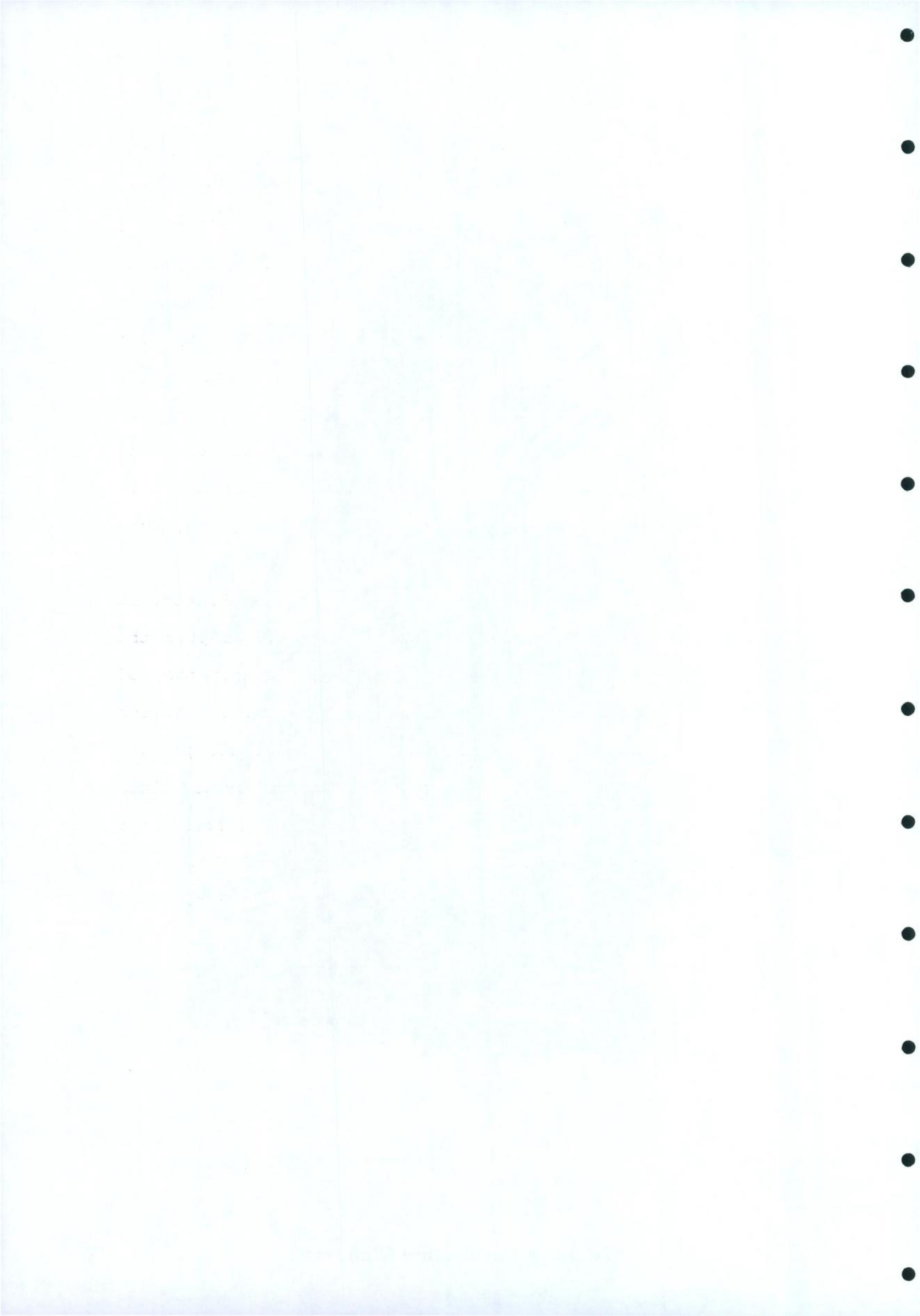


27. Grand Bazar Anspach. Brussels.





28. Department Store L'innovation



sixty-five years later, a former board member of the Maison Du Peuple, Camille Huysmaus remarked that the Maison Du Peuple was a "deplorable building"(5, p.70). Jean Delhaye, a student of Horta's made every effort to save the Maison du Peuple but to no avail. All that is left now, is an exhibition of photographs, and reconstructions due to Delhaye's devotion, and a few original pieces from the building. These can be seen in the Horta museum which was formerly his private home. The Tassel and Solvay houses have been restored to their original beauty. It took Delhaye nine years, from 1971 - 1980 to do this(5, p.71).

Horta's buildings reveal his architectural initiative in relation to Art Nouveau. He adapted the techniques of engineering to the requirements of functional architecture, as can be seen in his Maison du Peuple and also in his requirements for his private homes. Decorative qualities were incorporated into structural elements. This combination proved that Horta was indeed a real innovator in his field. These qualities should destroy the myth that Horta was "primarily a decorator"(26, p.98).



CHAPTER 4

AMERICA



The work of the architect Louis Sullivan and the decorator and glass designer Louis Comfort Tiffany, were the main contributors to Art Nouveau in North America. From the very beginning, they both regarded Art Nouveau as a surface style but the work of both had characteristical qualities which were independent of European Art Nouveau(32, p.227).

Chicago at the turn of the century was America's fastest growing city. It flourished largely because of its proximity to the Great Lakes. It offered excellent transportation facilities both by water and by rail. Because of its coal and ore deposits, industry and mechanical engineering were a prominent feature. It was America's largest producer of iron and steel, harvesting machines and it had the largest railway junction and inland port in the country. The population of course, expanded with the economy and immigrants from Europe contributed greatly to this expansion.

The Great Fire of 1871 which had destroyed one-third of Chicago was a catastrophe but it proved to be a stimulating rather than an inhibiting factor, and it paved the way for an era of cool, practical planning. It was revealed that cast iron frames are susceptible to fire(31, pp.195-197). Burning buildings produce intense heat and exposed iron will bend, bulge, twist or melt altogether. To prevent a recurrence of fire, building methods and codes were revised. The solution

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was to make the iron members inside fireproof, by encasing them in heat resistant materials such as hollow tiles, concrete or brickwork. The facade was more difficult to fireproof so a temporary return to masonry was used. However there was an enormous pressure to develop a fireproof iron-structured facade. The advantage of iron construction at facades being thinness of structure which allowed more windows which resulted in more light. The solution was found in creating a curtain wall which was a masonry screen hung story by story on the fireproof iron frame. This meant that each story's curtain wall only supported its own fabric.

The partnership of Daniel Burnham and John Wellborn root of the Chicago School produced the Monadnock building. Their clients the Brook brothers demanded clear cut lines. Root gave this tall building a tapered base almost like an Egyptian pyramid. The structure had internal iron framing with exterior walls of solid load-bearing masonry. In this masonry the thickness of the walls grows in proportion to the height of the building. This resulted in valuable floor space being utilised with limited fenestration and an enormous pressure was exerted on Chicago's mud-like soil. The Monadnock building was the last of its kind as far as masonry framing was concerned.

In 1883, the architect William Le Baron Jenny invented the construction technique that made the

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modern skyscraper possible leading to taller building, rivalling these of New York. He built the Home Life insurance building where he developed a complete iron and steel frame for the upper floors, hanging on it the external brick and terra cotta sheathing. Thought only ten stories high, this skeletal metal-framed building made the potential for height in commercial building seem unlimited. Technically it was the most advanced building of its time(28, p.174).

In contrast to the massive masonry of the Monadnock building, the reliance building (1894-95) designed after Root's death, displayed a lightness in its structure. A steel framed structure supported sixteen floors which were covered in white glazed terra cotta contained the 'Chicago window' which consisted of large horizontal windows with fixed centre and movable sides(16, p.418).

The reliance and Marquette building was designed by Holabird and Roche in 1893-94, another couple of the Chicago school. These buildings, compared with the works of the third team of Chicago designers, Adler and Sullivan, seem almost simplistic. And it was Sullivan who produced the most definitive version of the skyscrapers and its decorative potential.



CHAPTER 5

SULLIVAN



Louis Sullivan was born in Boston in 1856 and spent his summers with his grandparents in Massachusetts where he developed a love of nature. He received a varied education, studying at two prestigious academies, the Massachusetts Institute of Technology and the Ecole des Beaux-Arts, Paris, where he studied for less than a year in each. In between his studies, Sullivan worked for a year in the office of Frank Furness in Philadelphia who had a profound effect on his career. John Edelman introduced Sullivan to the Chicago architectural establishment, first to William Le Baron Jenney and then to Dankmar Adler(13, p.51). They were two diverse personalities, Sullivan the sentimentalist and Adler the tough minded engineer, planner and builder. This might suggest that Sullivan depended to a great extent on Adler's support, but this would not be true considering after they parted in 1895 Sullivan produced and created his most outstanding work, the Schlesinger and Meyer store now called the Carson Pirie Scott store.

Sullivan's influences came from many sources. Richardson's Marshall Field store was of paramount importance to him. The transport building in the world's Columbian Exposition held in Chicago in 1893 designed by Adler and Sullivan featured great semi-circular arches which were reminiscent of the Romanesque element and resembled Richardson's work. In contrast to Richardson's use of heavy stone and

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geometric simplicity Sullivan applied ornamentation to brighten the wall surfaces. This was his way of endeavouring to 'transcend mundane materialism'(18, p.129). The work of Frank Furness with its carved ornament appealed to him greatly.

The exterior of the Rookery designed by John Wellborn Root contained heavy masonry whilst in the interior, there was an open vault of iron, decorated with leaf ornamentation. This harmonious blend provided inspiration for Sullivan's interrelationship of 'form, function, and ornament'.

Sullivan's transportation building contained many Islamic elements. His contemporaries referred to the "oriental fantasy of the ornament"(18, p.129) Shades of Owen Jone's 'Arabian' ornamental drawings which he wrote about in his Grammers of Ornament of 1856 are also present. This book was a pattern book for architectural decoration which drew on the historical element in oriental design. Sullivan himself published his own decorative inventions in a System of Architectural Ornament in 1924. Christopher Dresser, Owen Jone's pupil wrote General Principles of Ornament in which he displayed the abstracted patterned forms of historical styles and nature, to be incorporated in functional design. Sullivan also admired and related to the drawings of Ruprich-Roberts, a professor of the history and composition of ornament at the Ecole des Arts Decoratifs in Paris,

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published his book Flore Ornamentale between 1866 and 1876 in which he demonstrates methods for the decorative abstraction of real plants and for these to be transferred into painted and carved ornamentation(36, p.19).

Adler and Sullivan's transportation building was praised not only in Chicago but it merited praise also in Europe. Andre Bouilhet, remarked that it was "the only building among the palaces which is truly original"(18, p.127). And it was on his report and recommendation that the Union Centrale des Arts Decoratifs awarded Sullivan Gold, silver and bronze medals. Sullivan was invited to exhibit at the Musee des Arts Decoratifs in Paris and he sent photos, models and casts of its ornament. These caused widespread interest and the result was that duplicates were made to be dispersed over the continent. Perhaps there is the possibility that European Art Nouveau could have been influenced by Sullivan considering as Peusner stated Sullivan's "ornamental style was complete"(26, p.97) by 1888 which was four years before the commencement of Horta's famous Tassel House.

Sullivan's mind was one of the most searching and analytical of his day. His interest extended to all forms of nature and it was from nature that he derived inspiration for his ornamentation on buildings. It was not the surface appearance of plant

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life that was an inspiration to Sullivan but its inherent shapes and fundamental anatomy and energy. To Sullivan this energy could only be expressed to its highest degree through ornament in architecture. In Sullivan's A System of Architectural Ornament According with a Philosophy of Man's Powers published after his death in 1824, he uses the winged seed of the sycamore to illustrate the vitality of his ornamentation, "the seed pod bursting with wings of life"(36, p.124).

Sullivan used ornament on his buildings to the best possible advantage. His horizontal bands of ornament, placed between the vertical elements of the structure, were composed of scrolls, leaves, flower dusters, all symmetrically arranged within a defined space. However, in spite of this symmetry they appear to be alive and play a transcending role in connection with the structure. Sullivan's aim was to elevate ornament from its subordinate role in architecture.

'Flashes of wisdom'(10, p.123), were often contained in Sullivan's writings. They displayed an amazing foresight into the way architecture was to develop. In his manifesto of 1892 Ornament in Architecture he questions the virtue of putting ornament on buildings, without first of all exploring all aspects of its structure in its nudity.

It would be greatly for our aesthetic good if we should refrain entirely from the use of ornament for a period of years, in order that



our thought might concentrate acutely upon production of buildings well formed and comely in the nude.

Louis Sullivan, Ornament in Architecture, 1892

(13, p.51)

The complete structure of the building must first be analysed and having done that the building can then be enhanced with ornamentation. However one must be discerning in the amount of ornamentation we apply to these buildings. We are creatures of emotion and these feelings should flow and be expressed both in structure and decoration. The beauty of ornament makes a building attractive and therefore more comfortable to live and work in.

Sullivan maintains that one should determine at the beginning of the design whether the design should contain ornamentation or not.

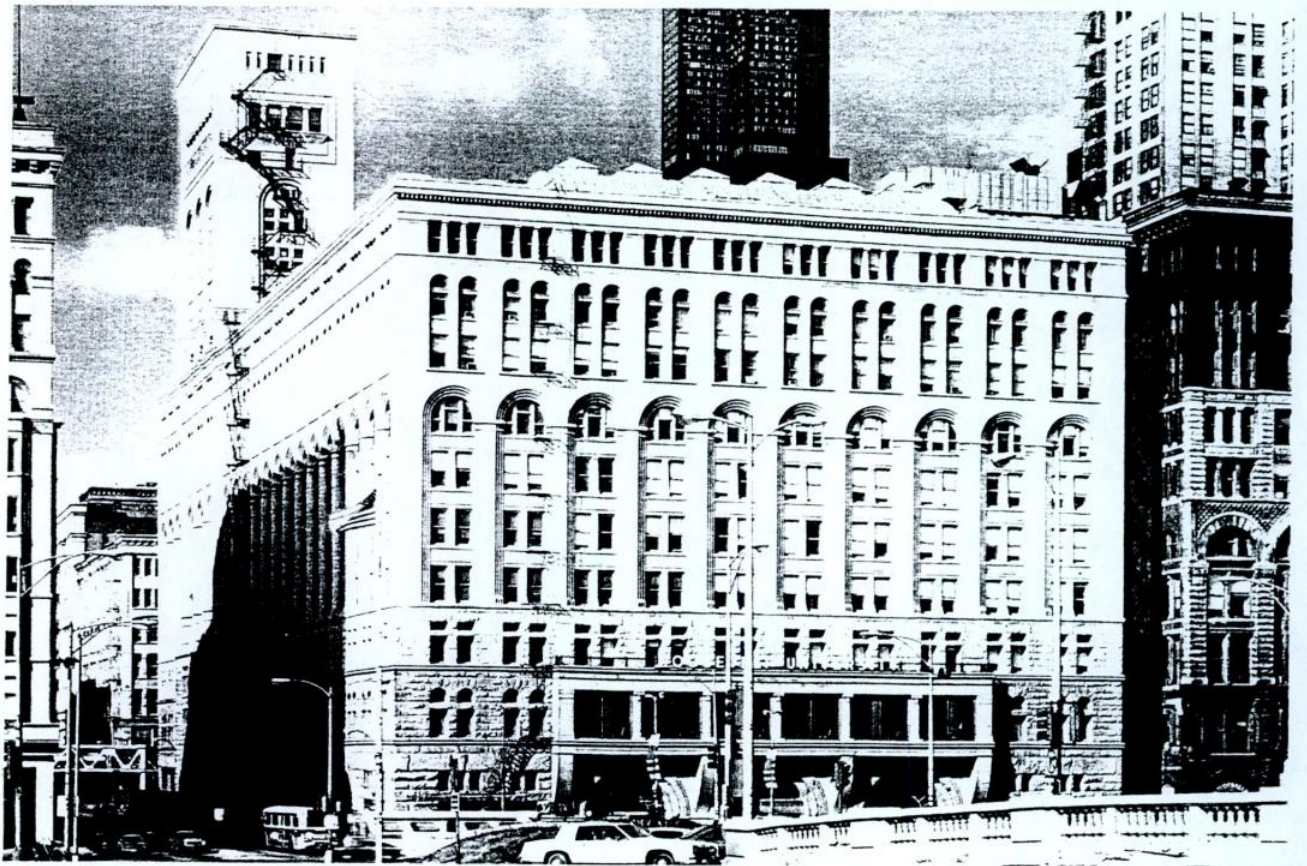
In his manifesto of 1892 he states that inspiration for decoration can be found in one place - nature. Having explored and perceived the various nuances of nature, its ever changing movements we realise that the simplicity of nature is the inspiration for the creativity of the individual artist.

We must turn again to nature, and hearkening to her melodious voice, learn, as children learn, the accent of its rhythmic cadences. We must view the sunrise with ambition, the twilight wistfully, then, when our eyes have learned to see we shall know how great is the simplicity of nature, that brings forth in serenity such endless variations.

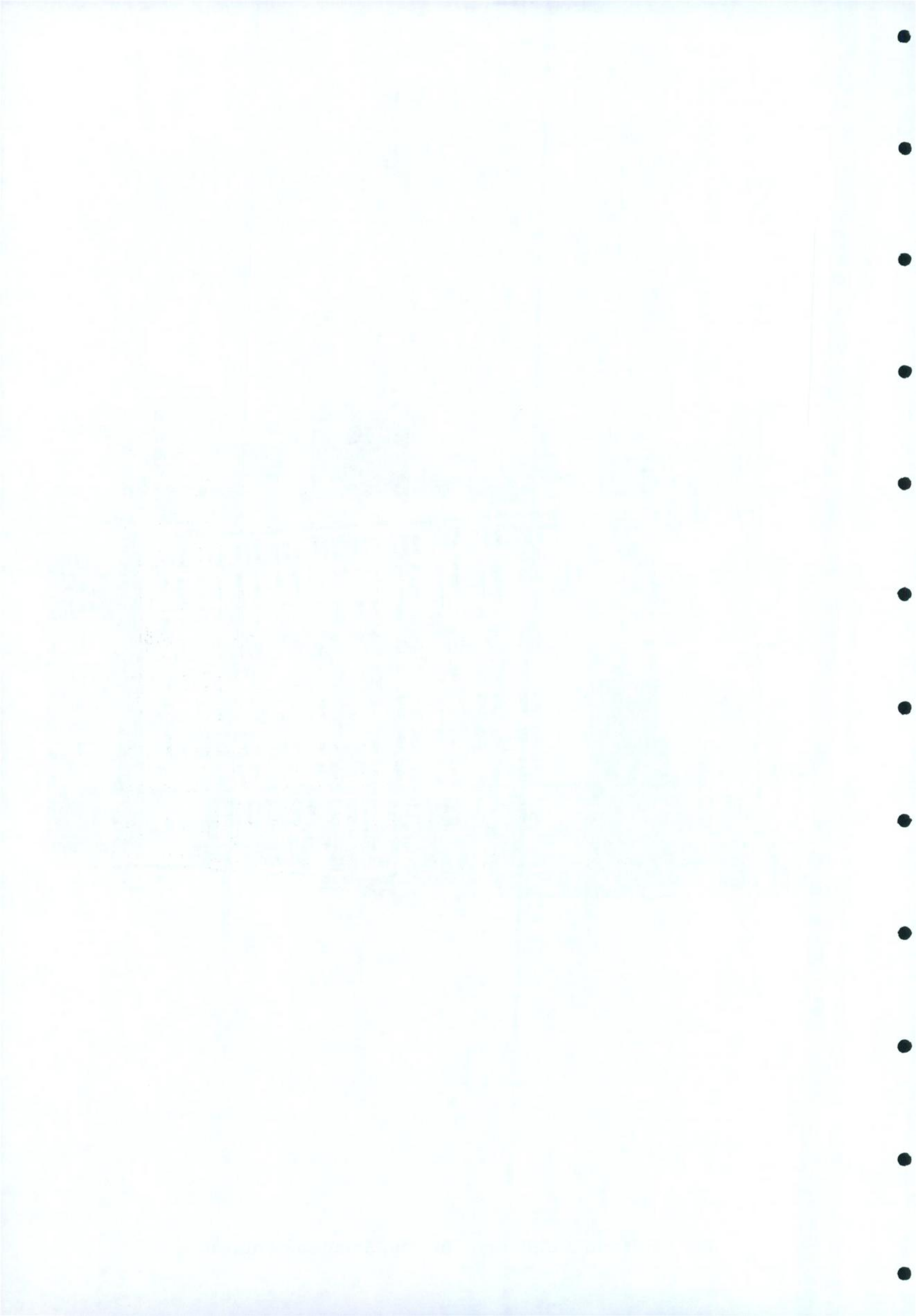
Louis Sullivan, Ornament in Architecture, 1892

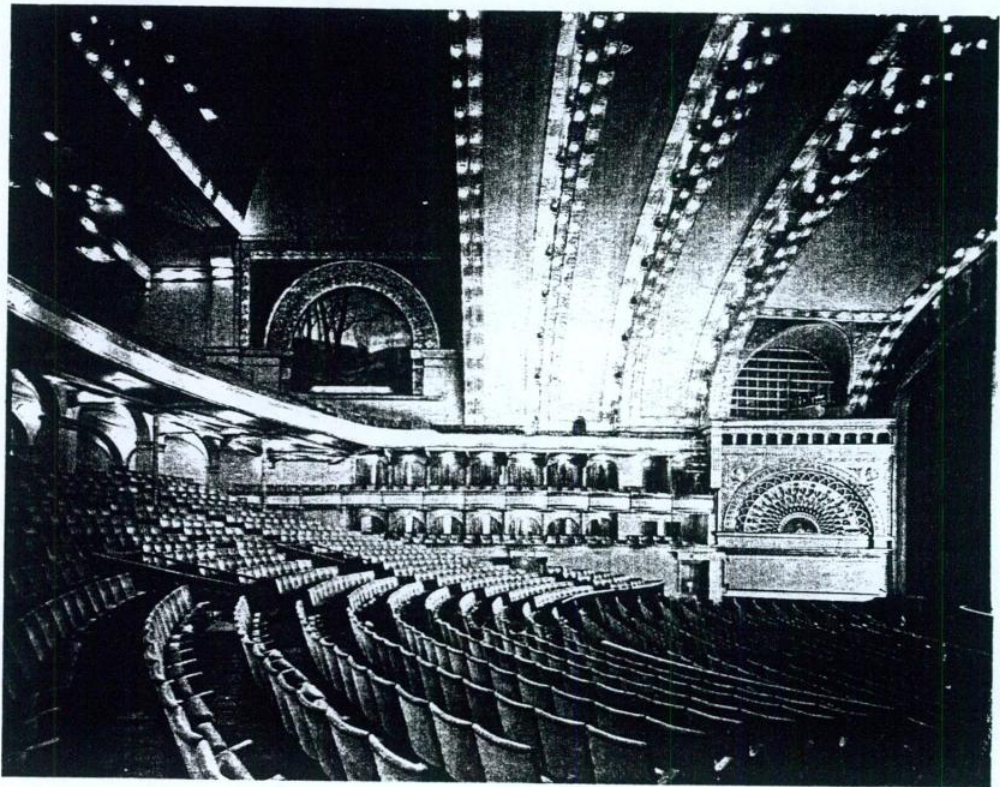
(3, p.45)



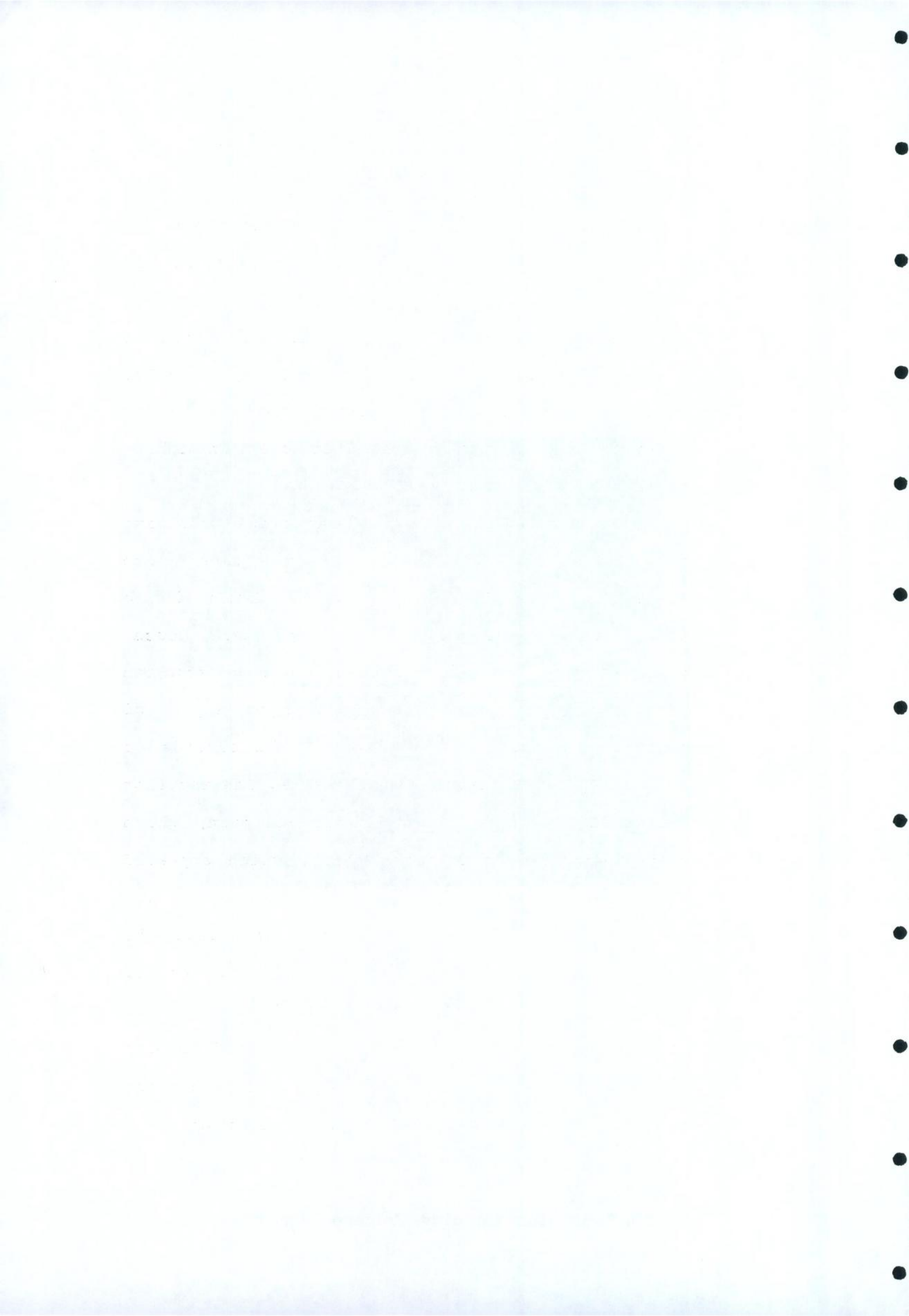


29. Auditorium Building. Chicago, Adler and Sullivan.





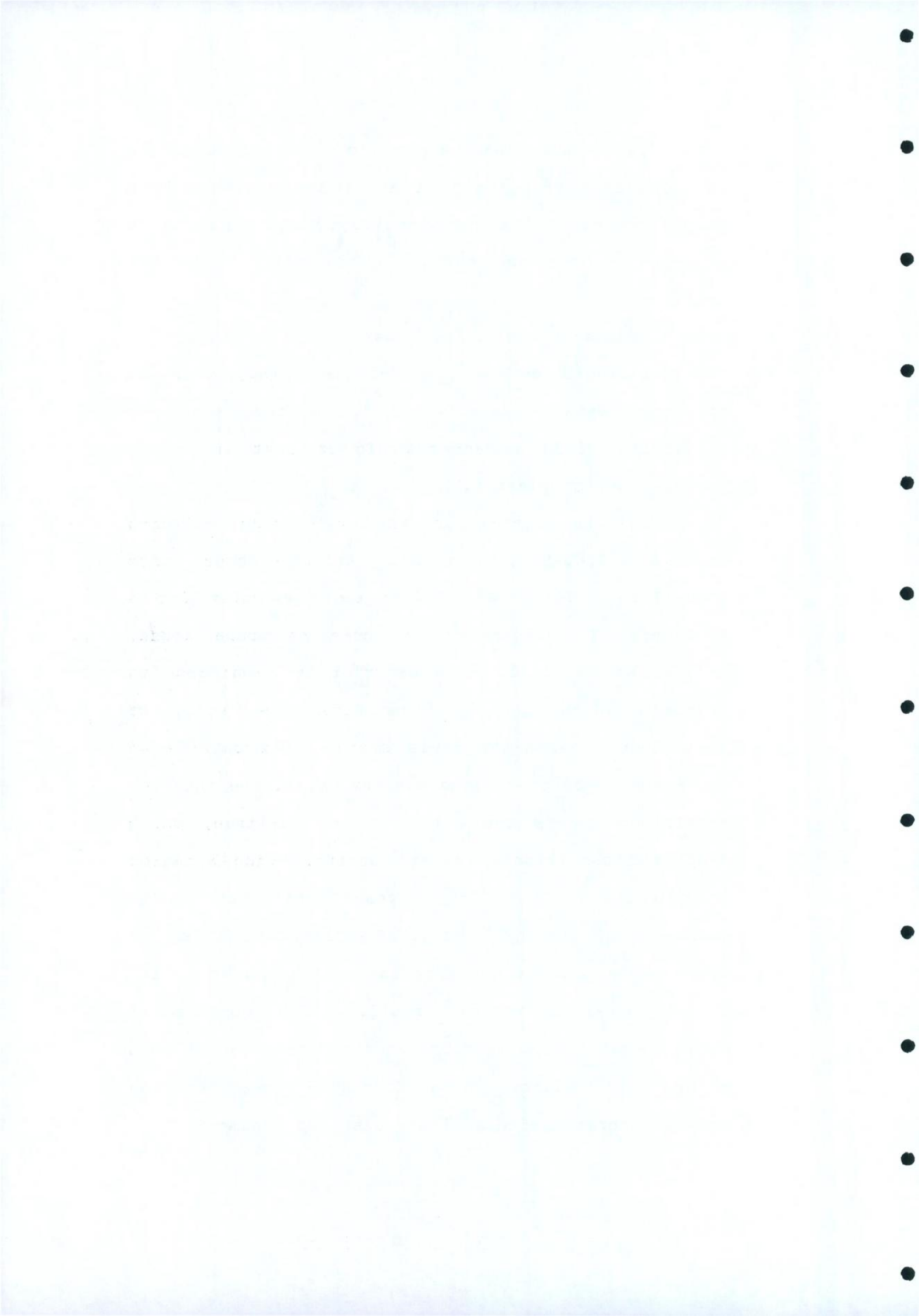
30. Auditorium Building, Chicago. Interior.

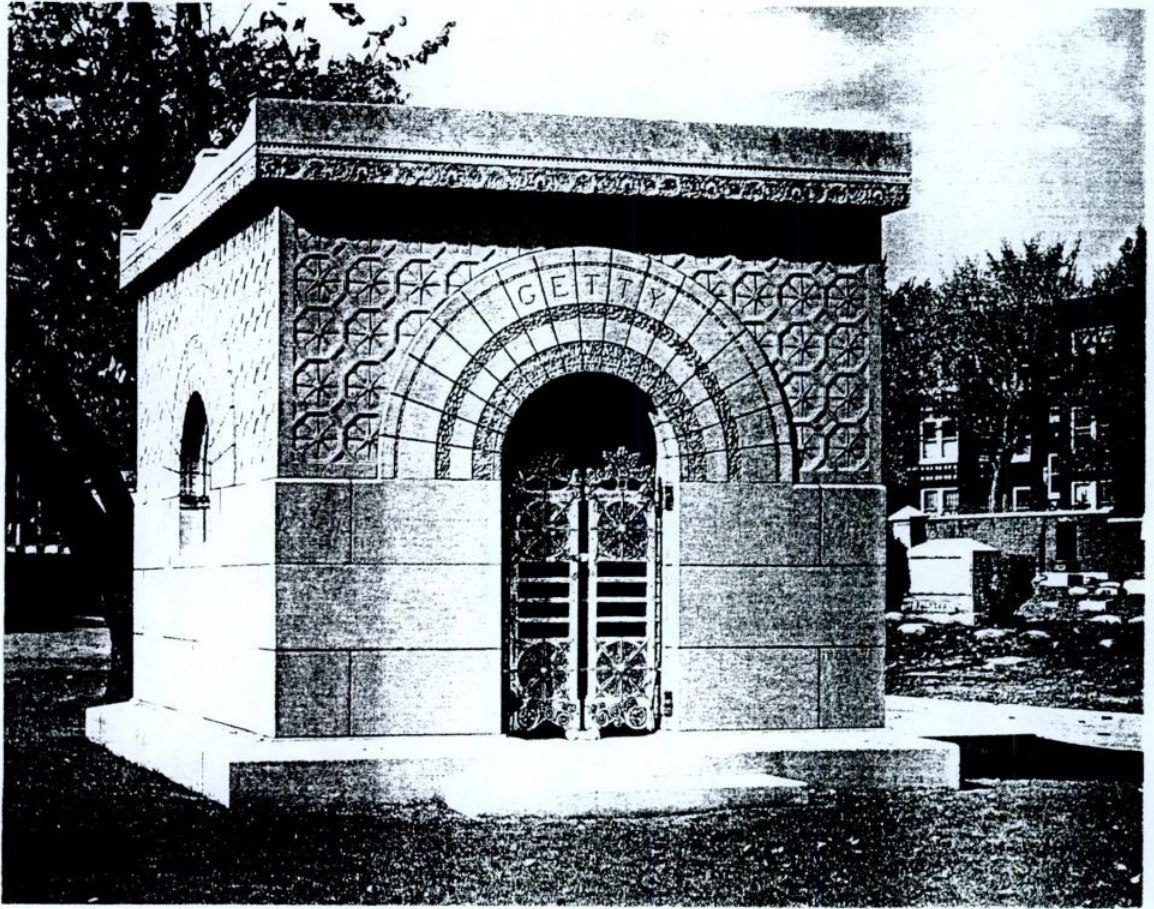


Sullivan's own style in his architecture reflects this thinking in that it is decorated in a simple botanical and organical way. Obviously he is adhering to his own philosophy as outlined in his manifesto.

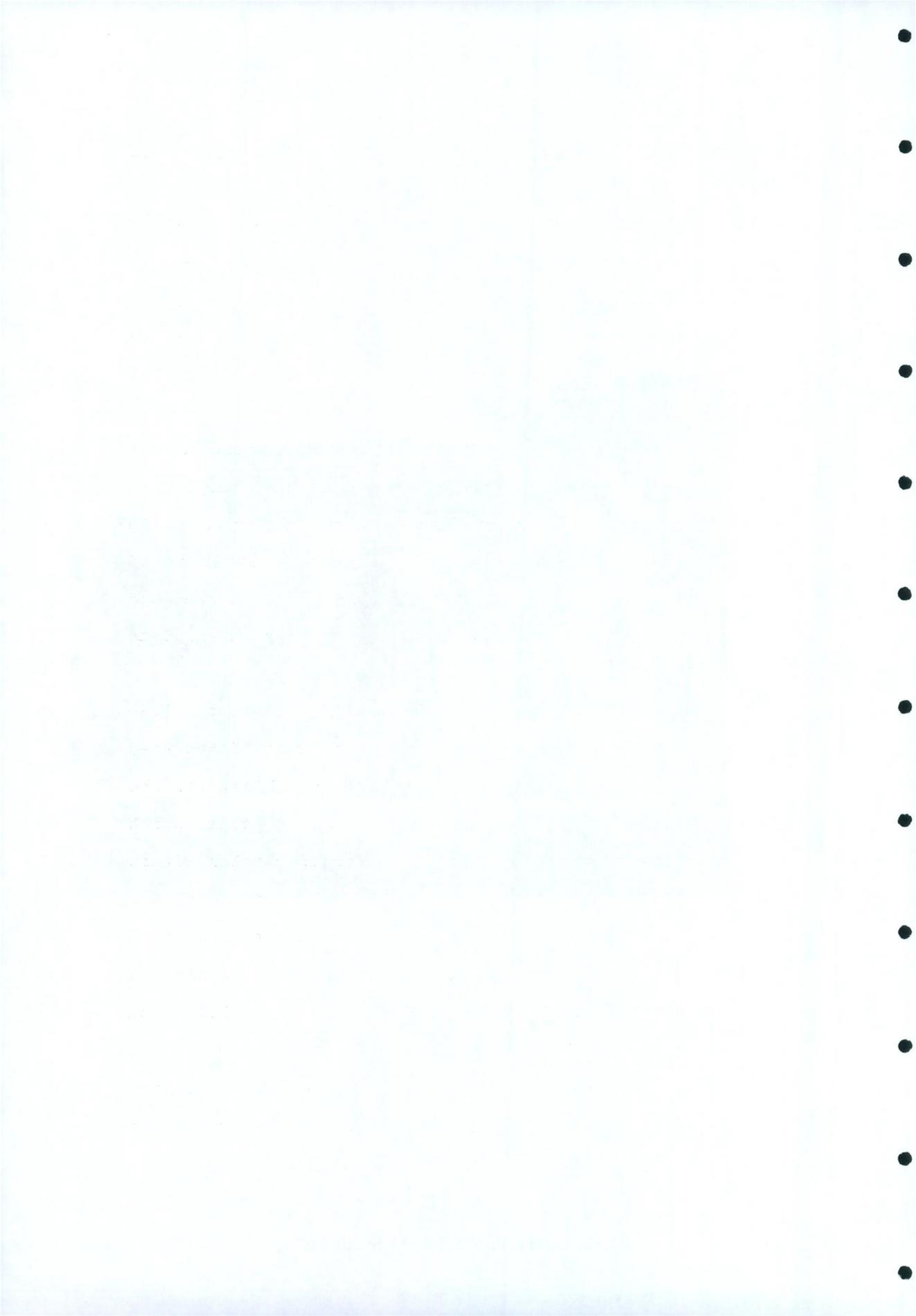
Ornament for Sullivan was an integral part of the building's design, and his swirling, circular patterns were generally designed for ease of production, from a master mould or cast in terracotta, iron, or plaster.

In the design of the Auditorium building Chicago (1866-9) Sullivan's talent comes into focus (Illus. 29). The Auditorium was built for a syndicate of businessmen to house an opera house, offices and a hotel. The exterior is a uniform ten stories, which imitated the Romanesque style of Richardson's Marshall, Field store. The outside of which consisted of massive masonry walls. The interior embellishment was the sole work of Sullivan, which displayed curvilinear foliate motifs, which appeared to resemble European Art Nouveau architecture. The ironwork in the hall of the Auditorium, like the ironwork in the staircase banisters leading up to it, reveal 'quasi-linear' patterns (32, p.278) composed of metal rods. The Auditorium was the brainchild of both Adler and Sullivan which displayed great ceiling arches decorated with a linear branched ornament





31. Getty Tomb. Louis Sullivan.



ending in flower-like forms containing a myriad of electric light bulbs(Illus. 30).

The Auditorium balconies with decorated arched boxes, have vertical bands below with patterns of circular interlace contrasting with the vertical organic pattern on the spandrels. The columns between the boxes are decorated with plant-like forms(36, p.41).

Richardson remained the ultimate influence on Sullivan's early style. Sullivan simplified Richardson's Romanesque style which he developed in his Walker warehouse of 1888 and his Dooly Block of 1890. These were surely the buildings "well formed and comely in the nude"(13, p.54) to which he referred to in Ornament in Architecture 1892.

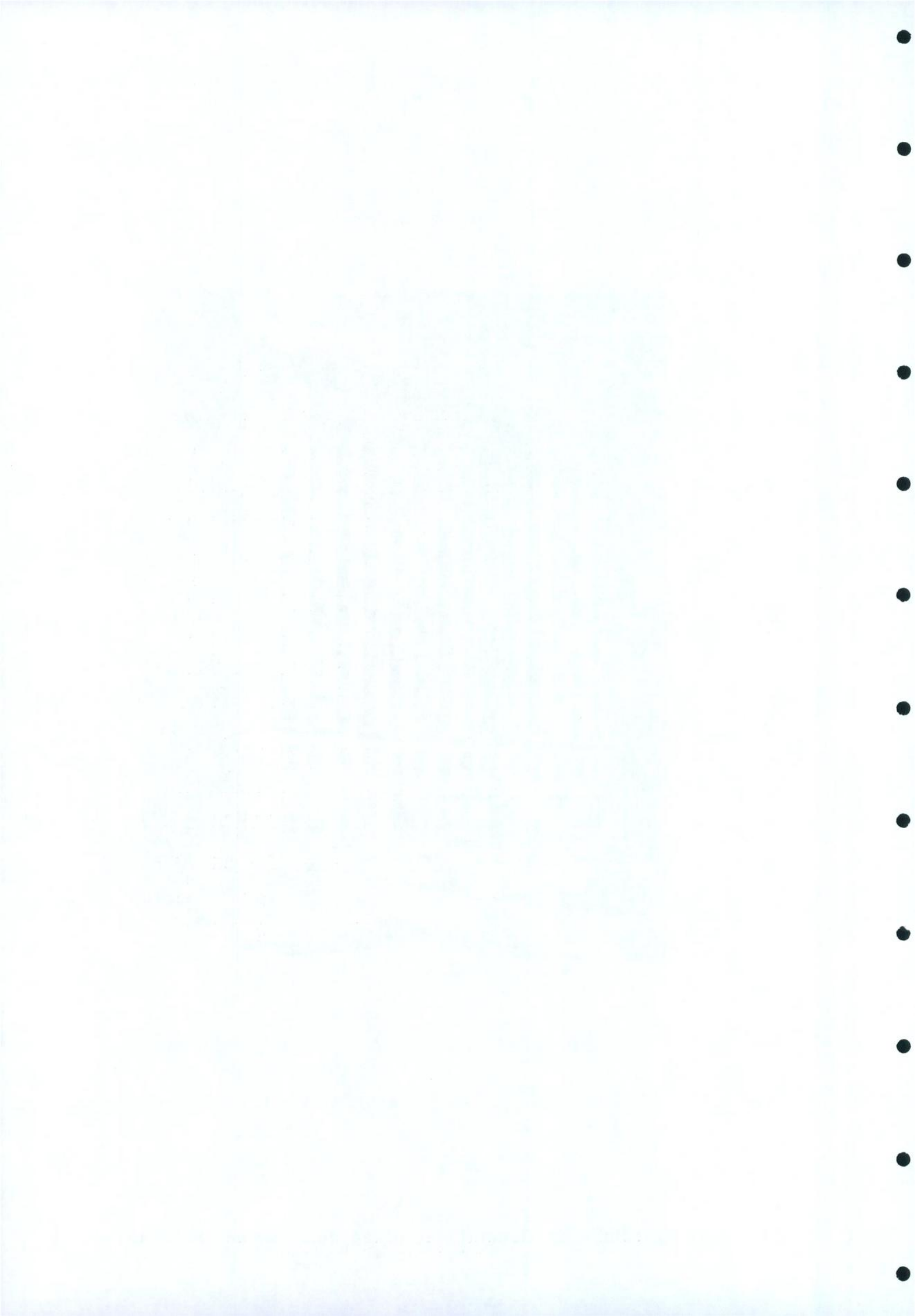
Louis Sullivan in his Getty Tomb of 1890 created a metaphorical expression that integrated architectural forms and their ornament(Illus. 31. The gate-like iron door is an example of this which consists of three part grilles made of circles within squares overlaced with eight pointed stars which are separated by four horizontal bars. On the inner iron door there are similar motifs. The circles within the squares symbolises the interweaving of life and death(18, p.140).

The character of Sullivan's ornamentation differs completely in the Auditorium and the Wainwright building, 1890-91(Illus. 32). The



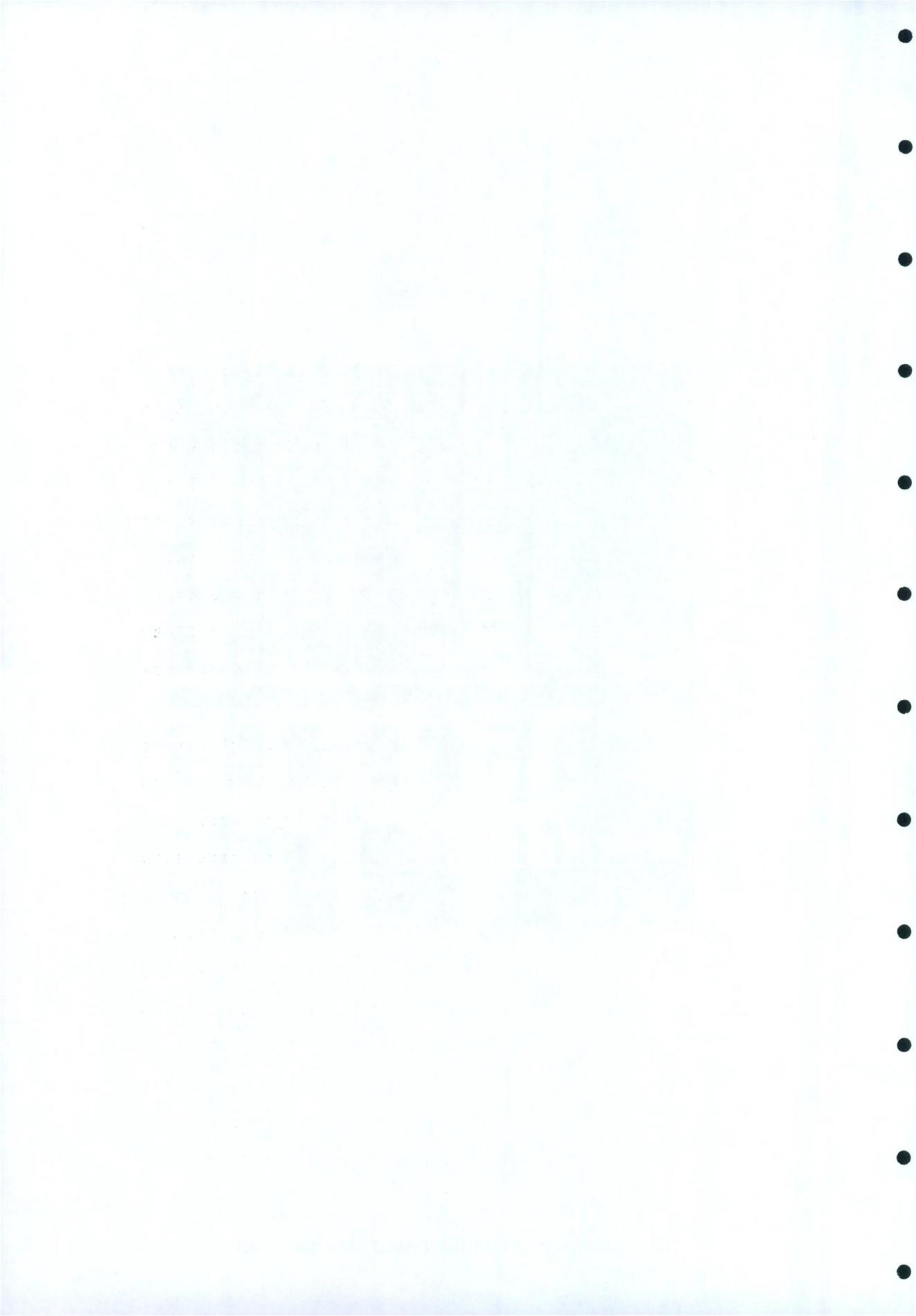


32. Wainwright Building. General view of facade. Adler and Sullivan.



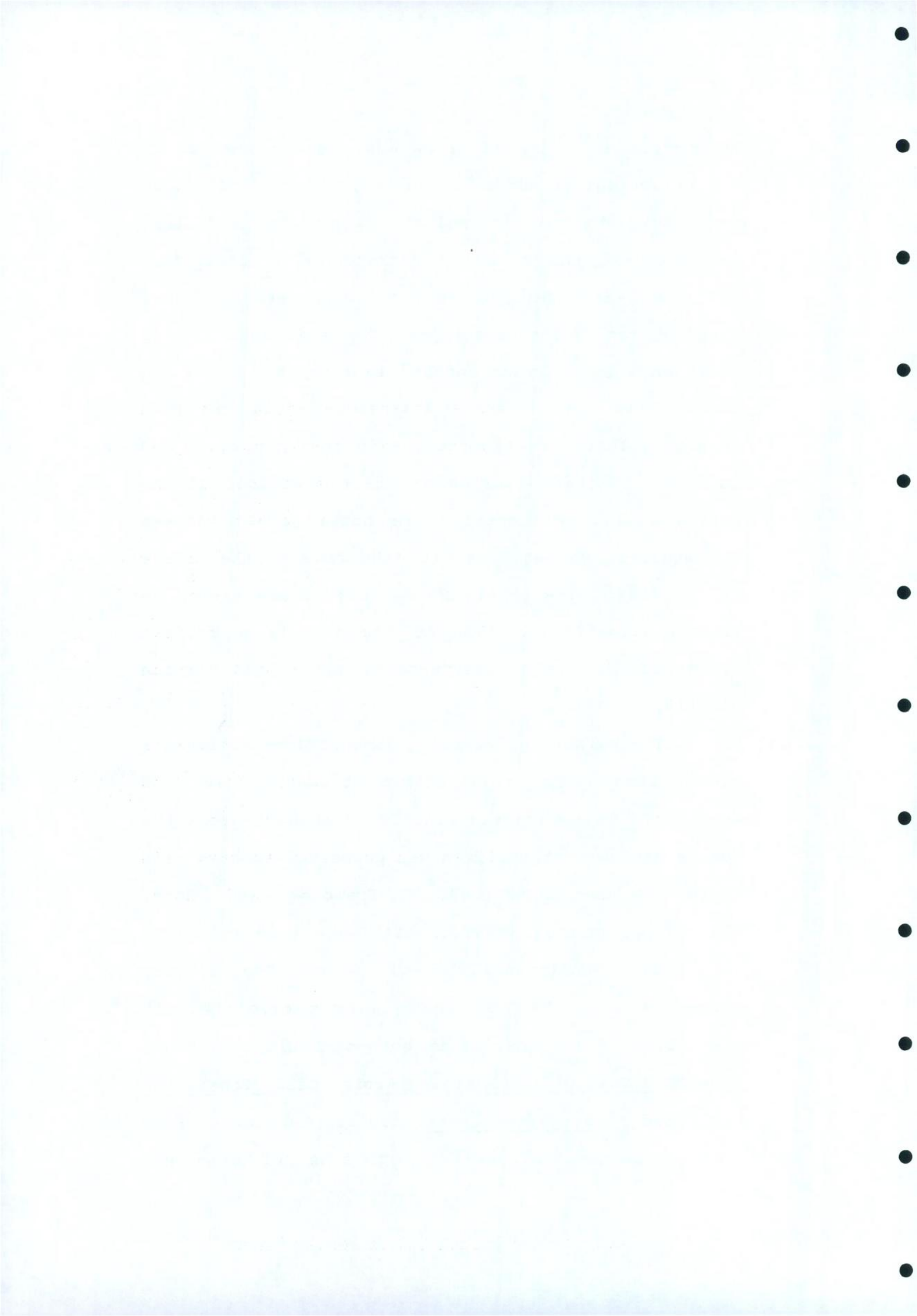


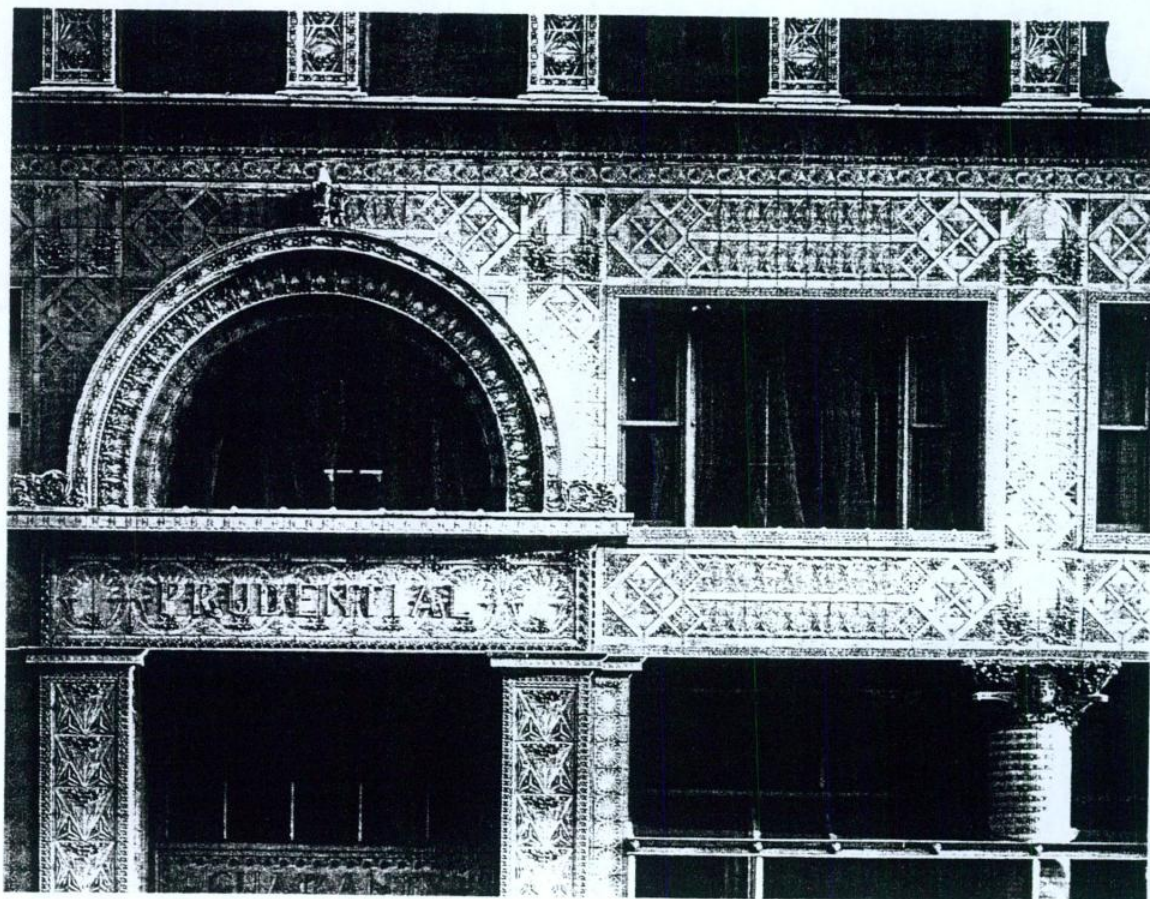
33. Wainwright Building. Detail on office wall.



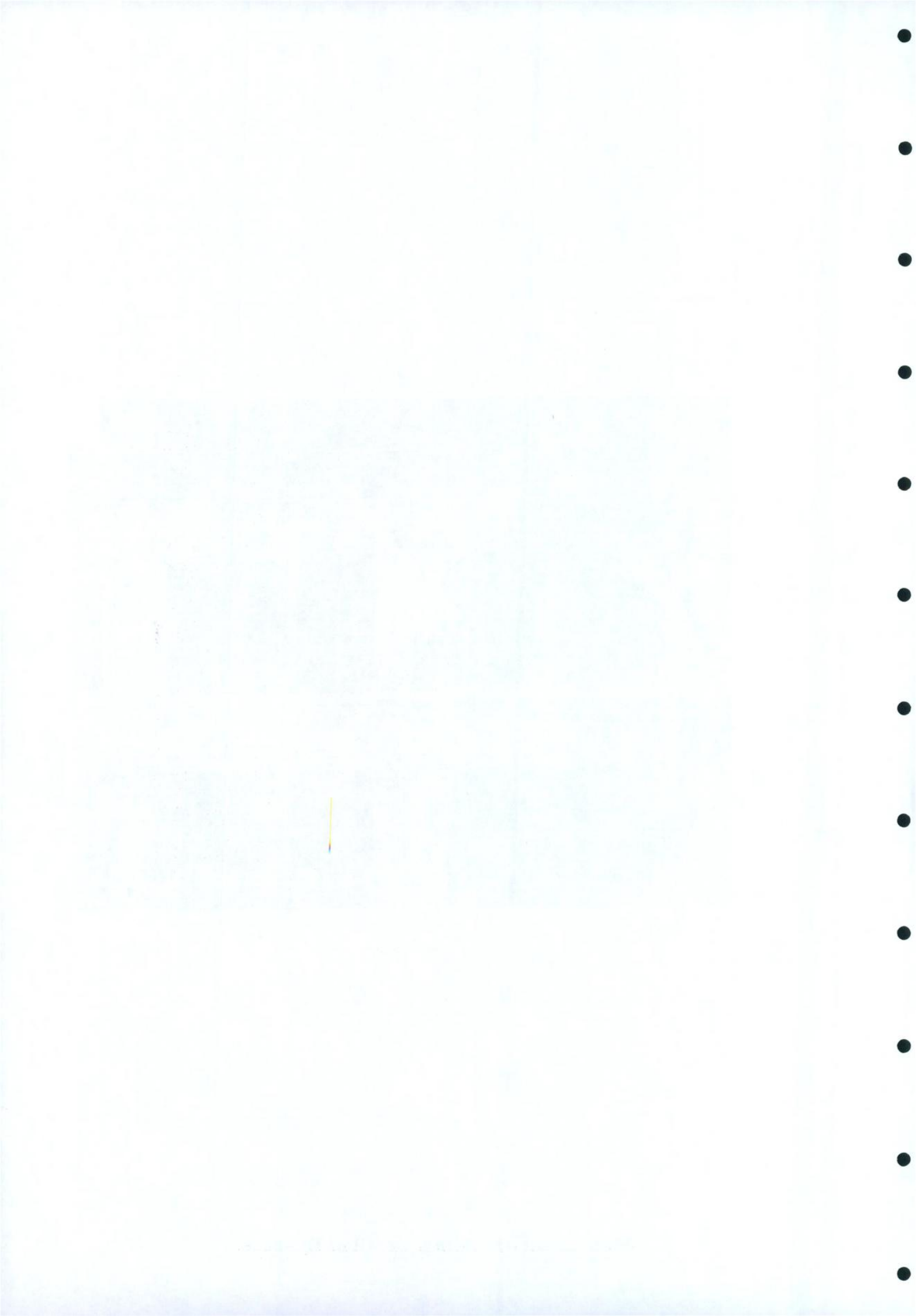
Auditorium is free, flowing, and organic whereas in the Wainwright it adopts a precise, geometric line. In the Wainwright building all the elements of structure and form of the modern skyscraper were developed. Sullivan was the pioneer of the steel framed construction of the skyscraper. The entire building is built on a steel frame encased in fireproof brick and terra cotta. Richardson's Romanesque style has been forsaken. There are ten stories in the Wainwright and in seven of these stories are narrow windows of the office cells. Horizontal terra cotta panels between the windows are set back from the face of the narrow brick piers. The panels in between floors varies in ornamentation(Illus. 33). At the top is a foliate frieze of high relief terra-cotta and a bold cornice slab(19, p.308).

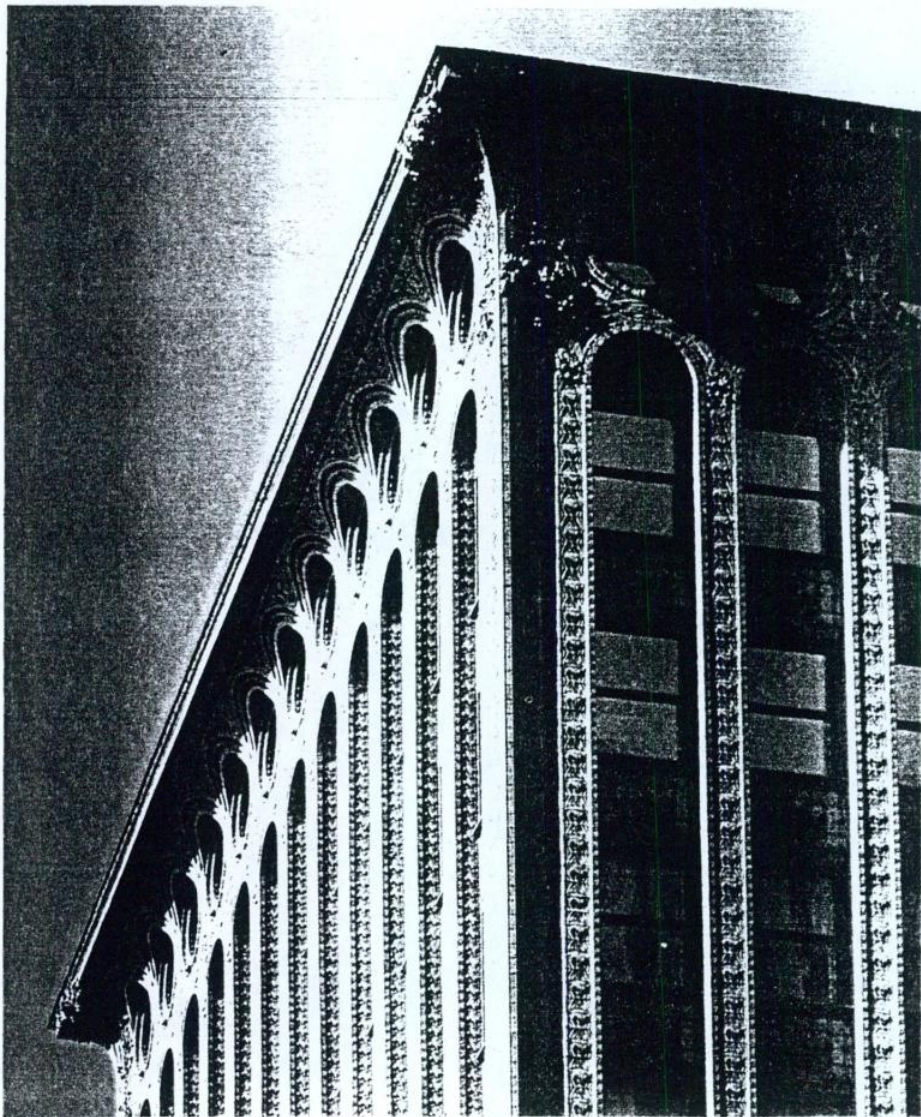
The Wainwright building demonstrates Sullivan's views about the relationship between form and function. There are two schools of thought about the famous dictum that Sullivan was purported to have said "Form follows Function". Framptom and Roth, historians, on the subject, attribute this statement to Louis Sullivan whilst other Trachtenberg maintains that the statement is "not original with him"(35, p.257). However in both of Louis Sullivan's books The Tall Office Building Artistically Considered 1896, and Kindergarten Chats, 1901-2, he states "Form follows Function"(37, p.9). By this he did not mean





34. Guaranty Building. Detail of the base.





35. Guaranty Building. Detail of the Cornice.



functionalism only, but something more complex. Function was to lead to form, not mechanical, but organical. Sullivan states that form and function are inseparable when viewing a building in total. They should be "interwoven, intermeshed, interconnected, interblended"(33, p.25). However if they are to be discussed and analysed each becomes a separate entity.

To my thinking, the mass-composition and the decorative system of a structure such as I have hinted at, should be separable from each other, only in theory and for purposes of analytical study.

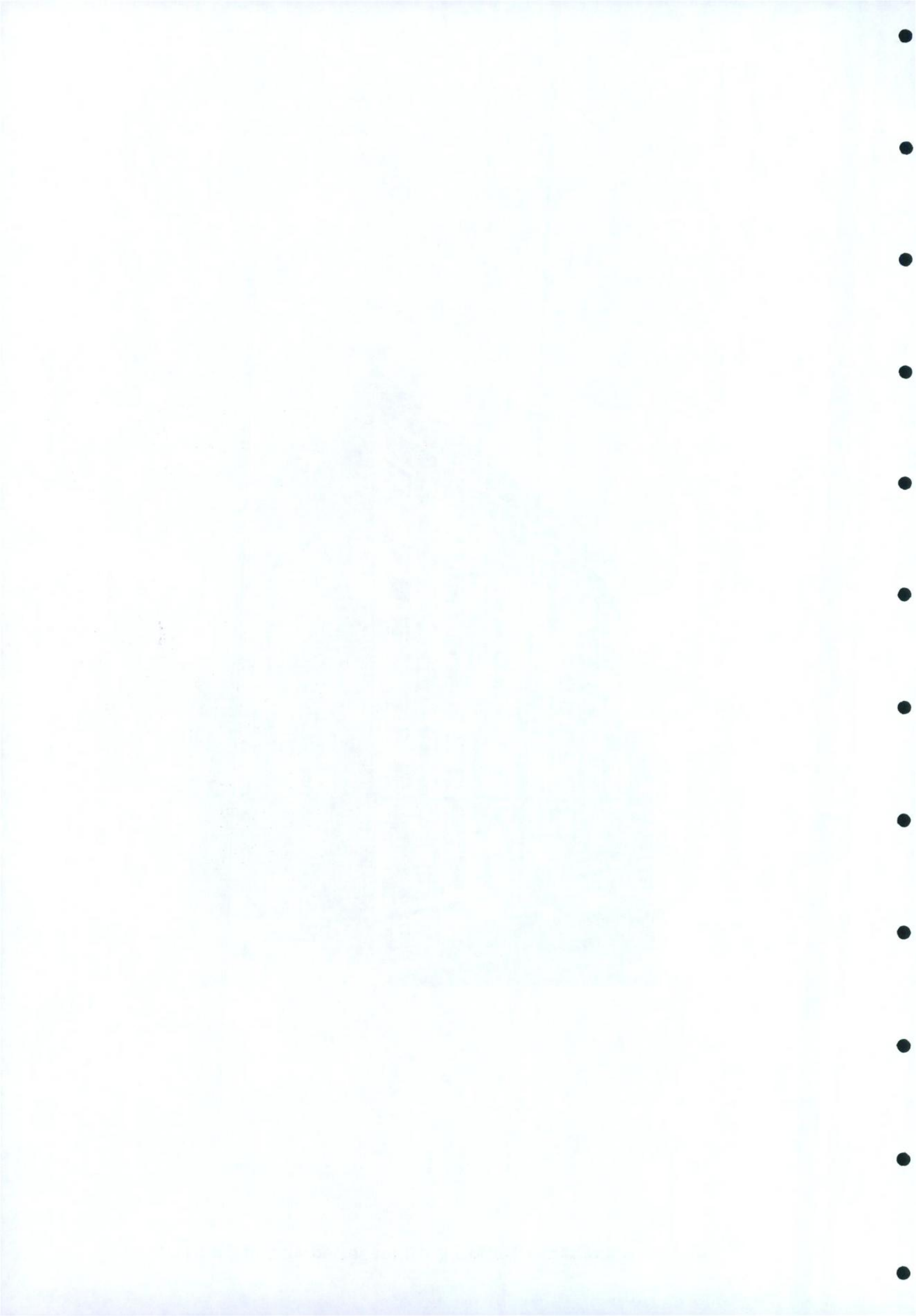
Ornament in Architecture, 1892 (3, p.44)

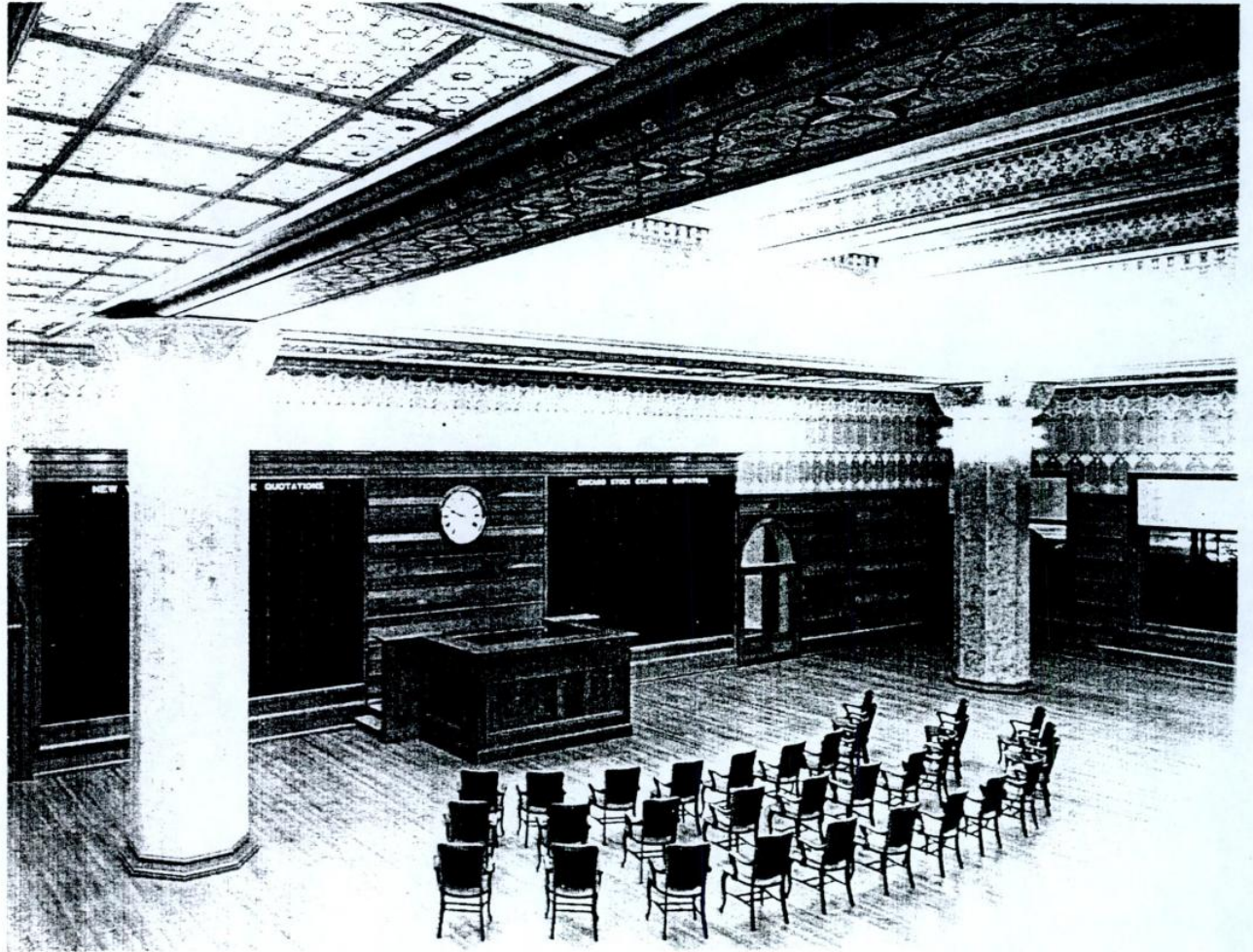
The Guaranty building of 1894 had the same formula in the design as the Wainwright building except that the ornamentation played a more dominant part in the Guaranty building, which resulted in it being one of the most richly ornamented of Sullivan's high buildings(Illus. 34). Luxurious ornamental terracotta envelops the whole exterior. Each panel on the horizontal lintels contains a large, three-dimensional plant-like form. The vertical piers have repeated patterns of hexagons leading up from the base to the top, where an ornamental 'life force' on the surface of the millions swirls around the circular attic windows(Illus. 35) which 'completes itself and makes its grand turn, ascending and descending'(13, p.56), A System of Architectural Ornament According with a Philosophy of Man's Powers 1924. The elevator doors are constructed of light net-like iron almost geometric in shape.



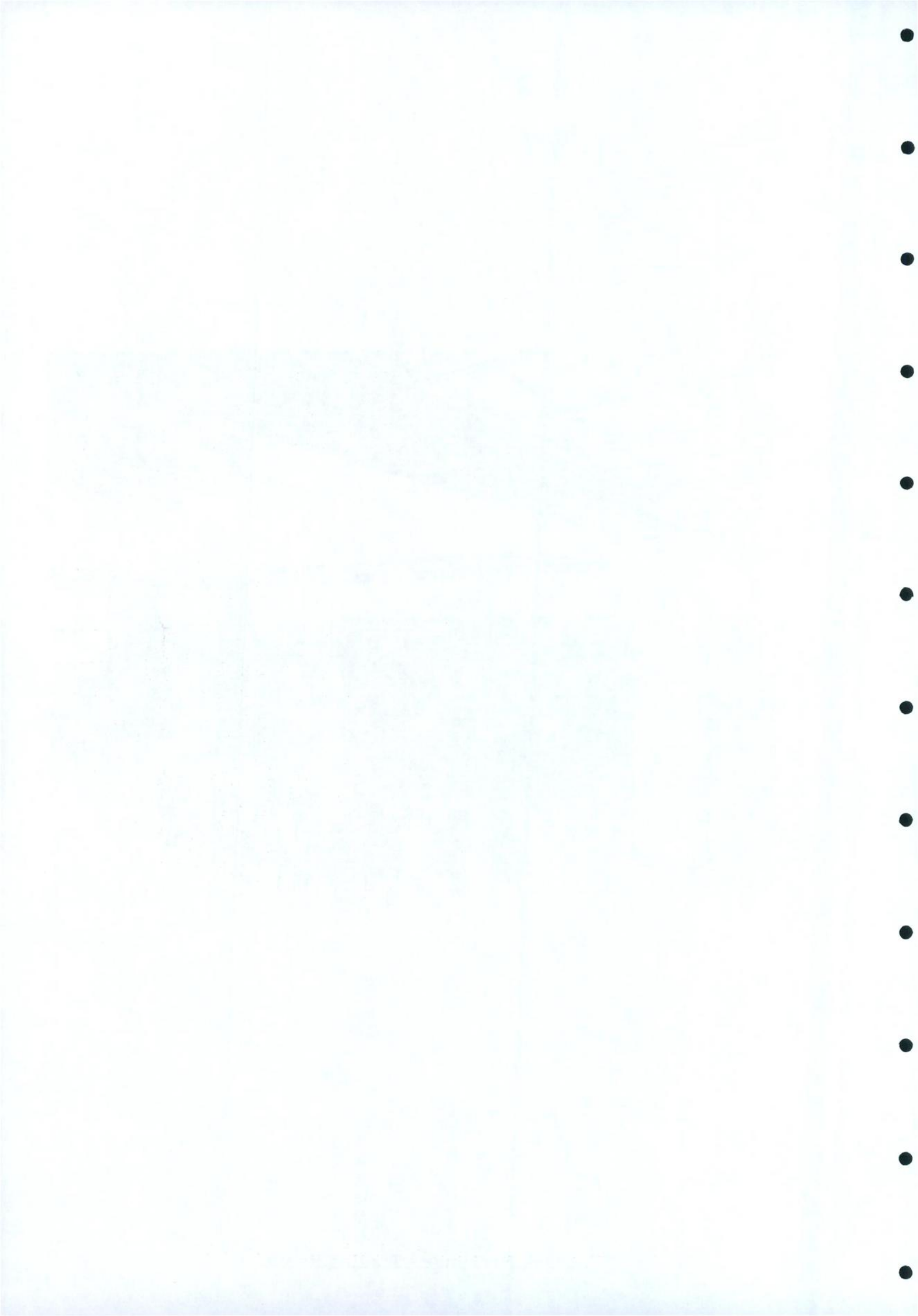


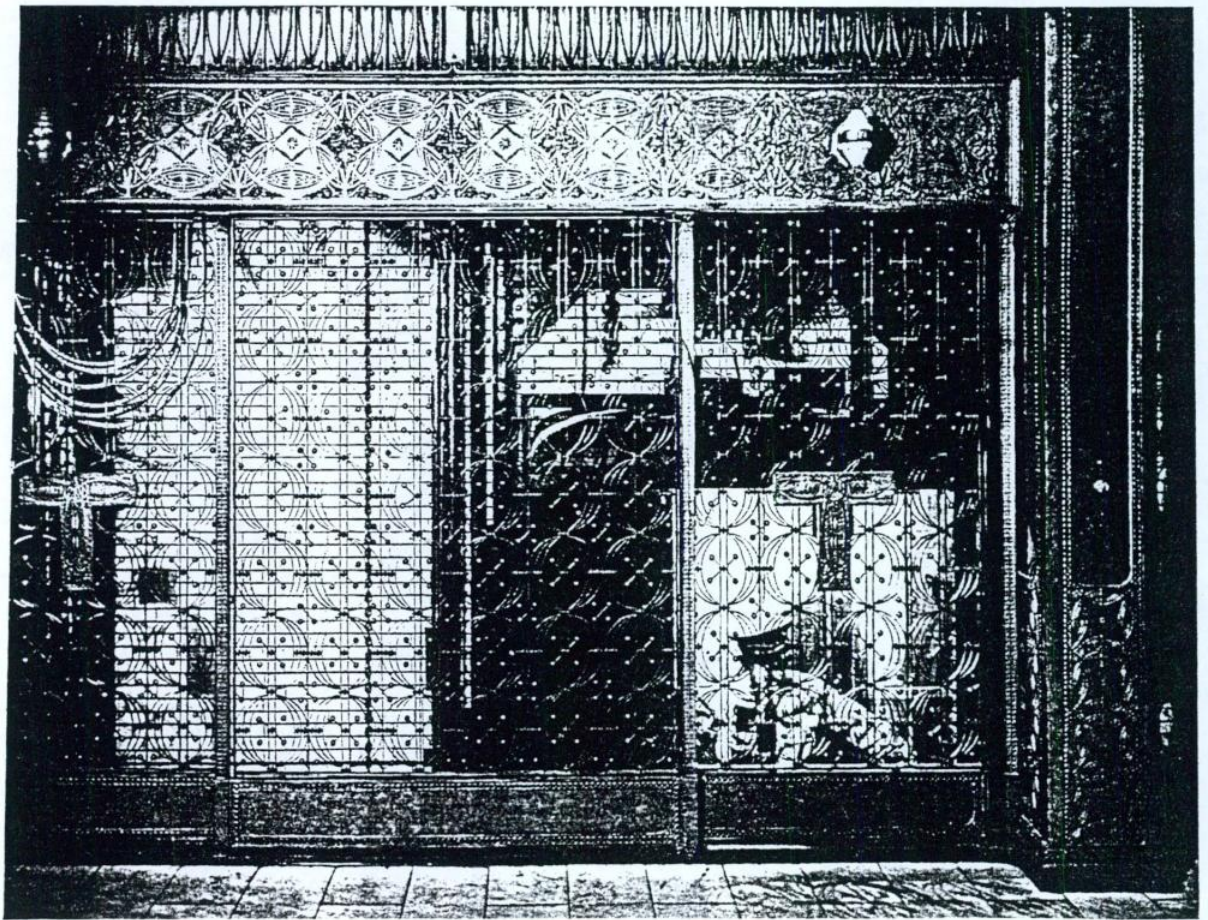
36. Stock Exchange Building, Chicago. Adler and Sullivan.



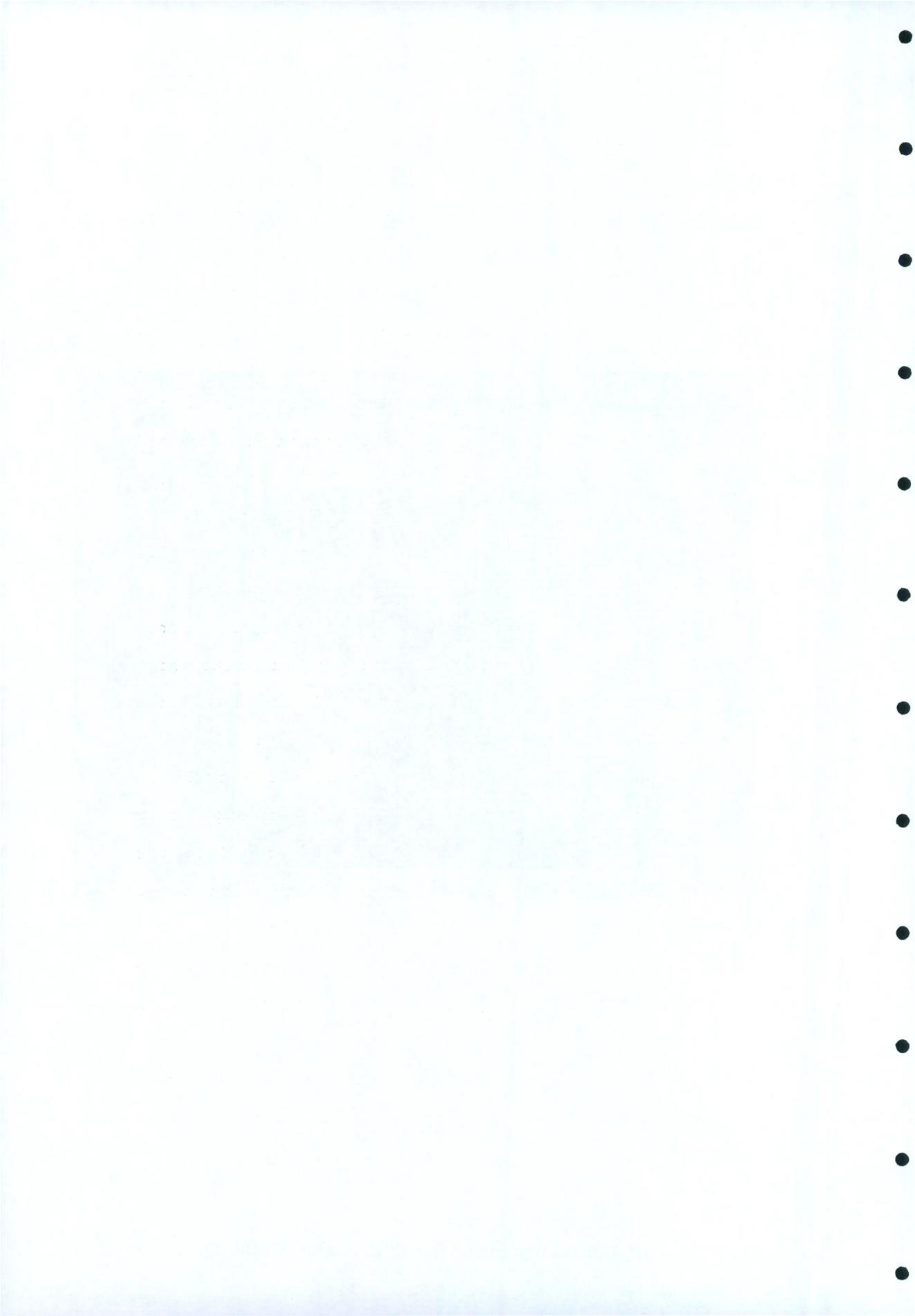


37. Stock Exchange - Trading Room.





38. Lift Grilles in the Stock Exchange Building.



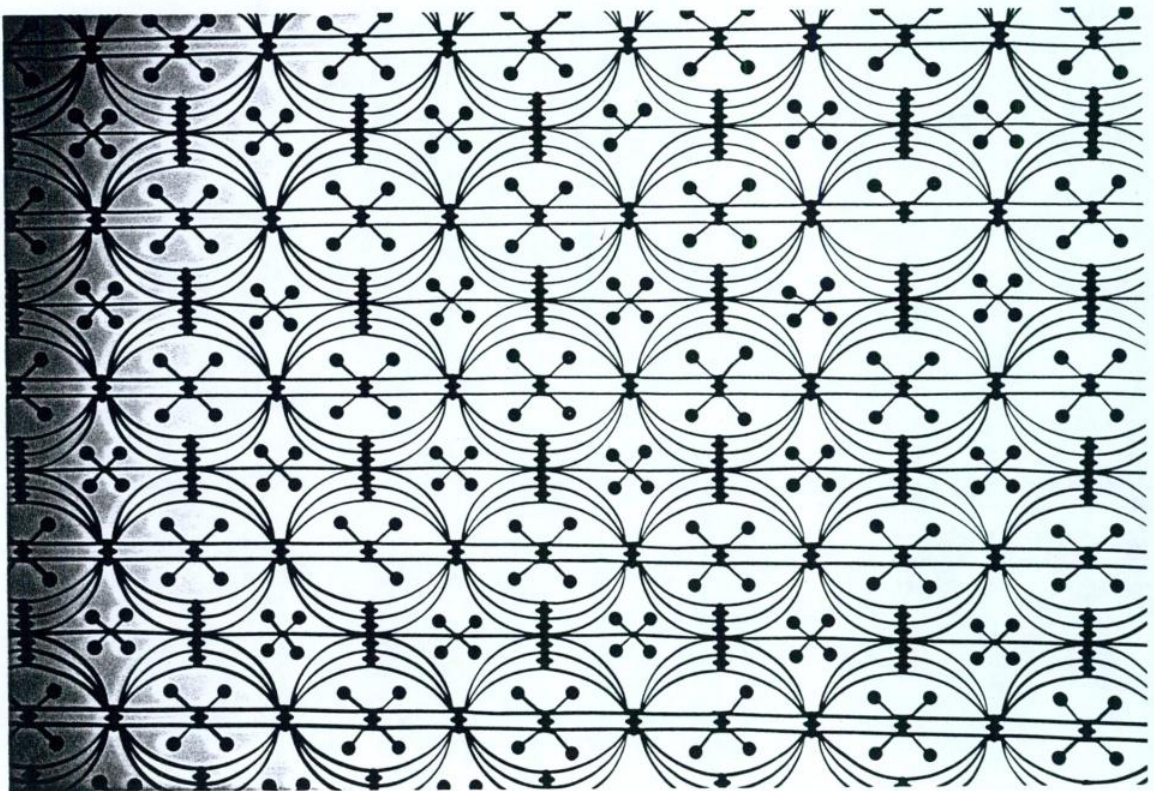
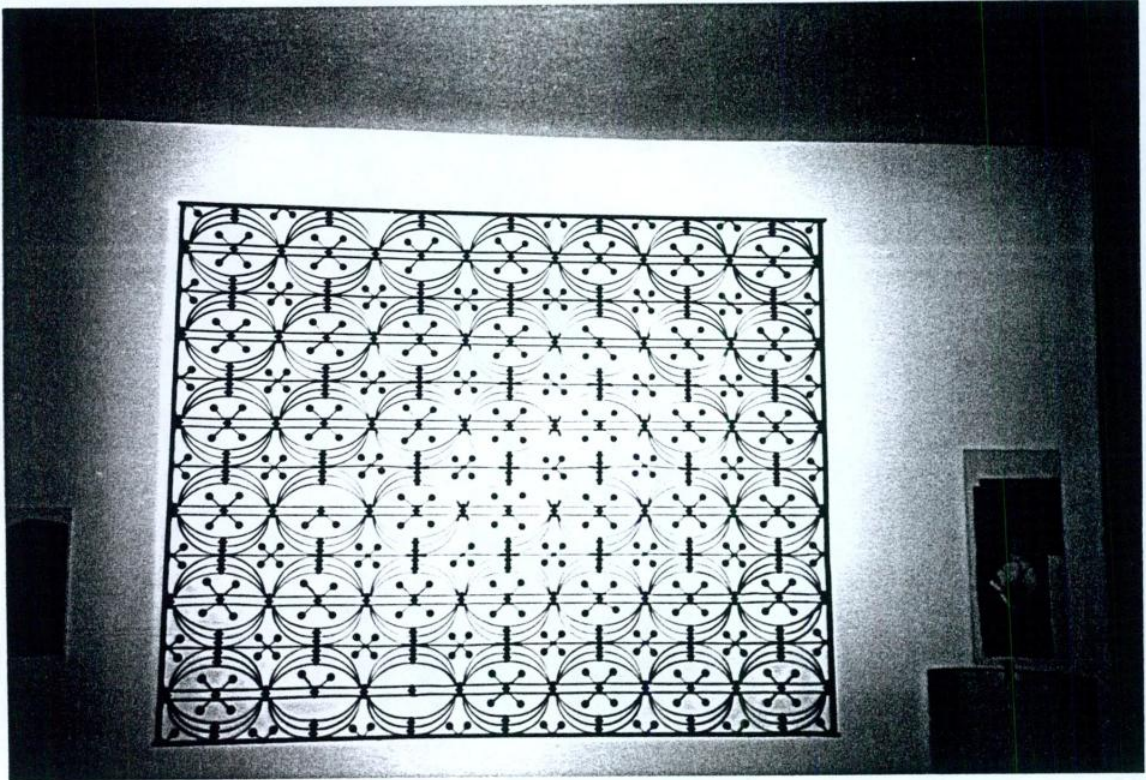
Shades of Richardson's, Marshall Field wholesale store, were displayed in Sullivan's Stock Exchange building(Illus. 36). The base of the building in contrast to the offices above, looked almost like a separate entity. The decorated entrance arch interlocks with a row of two storied arching piers, under which are shop fronts at street level. The method used by Sullivan to bring light into the interior was to use alternating vertical bay and horizontal Chicago windows. This feature is the 'most original aspect of the Stock Exchange'(36, p.99). No other important Chicago office building displays this particular feature. At the top, deep-set windows are recessed between a continuous row of columns. These are capped by an overhanging cornice of ornament which echoes the ornamentation of the arched entrance below.

The trading room in the interior showed a stylized repetition of linear motifs which could be seen in the friezes on the trading room ceilings(Illus. 37). This pattern was echoed in the lift grilles which screened the shafts from floor three to thirteen of the building(Illus. 38).

I was extremely privileged to have had the opportunity to photograph the mid-section of an original piece of an iron elevator grille.

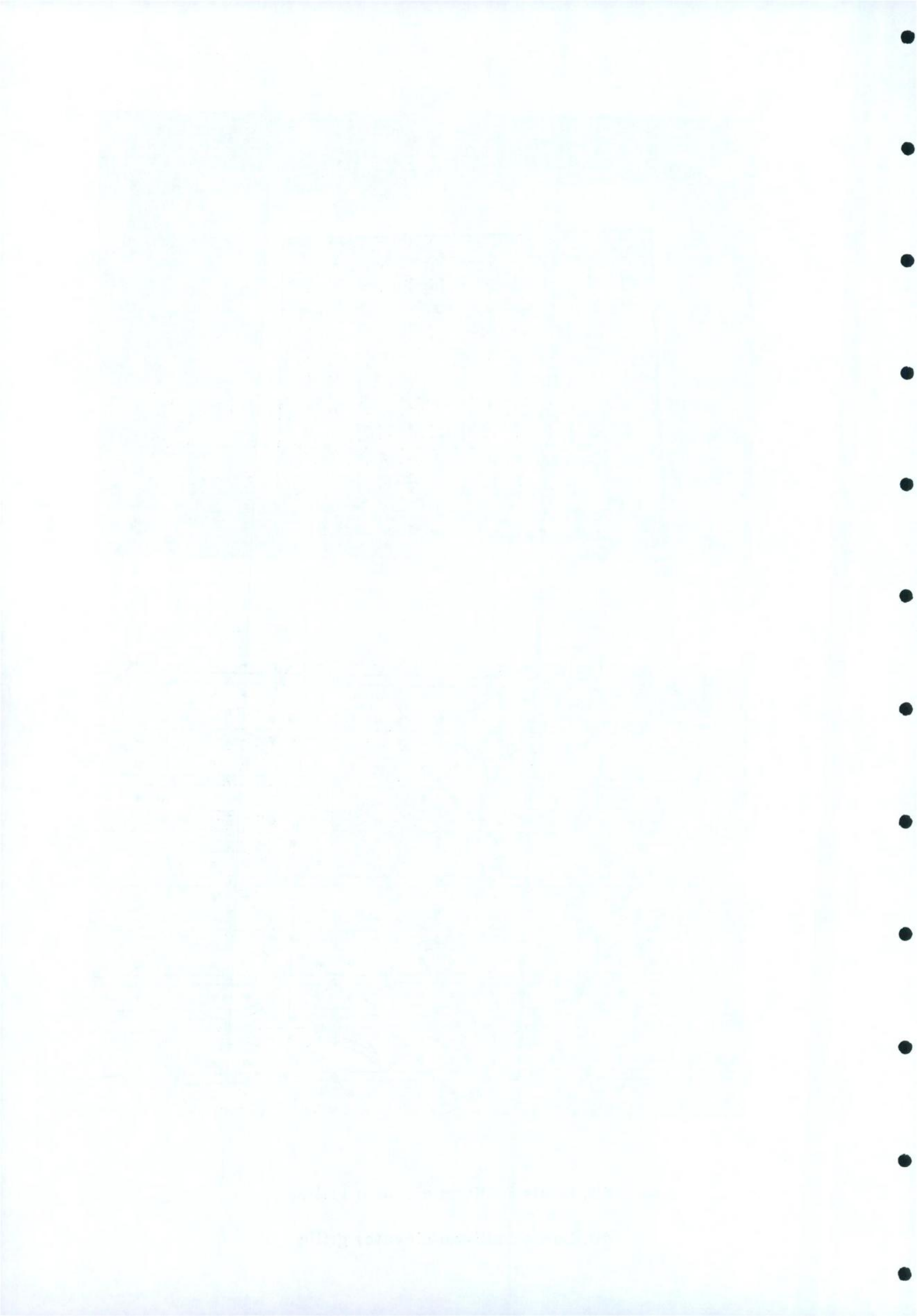
The grilles that flanked the mid-section were originally framed by bronze-plated cast iron casings and ornamented with cast bronze T plates.

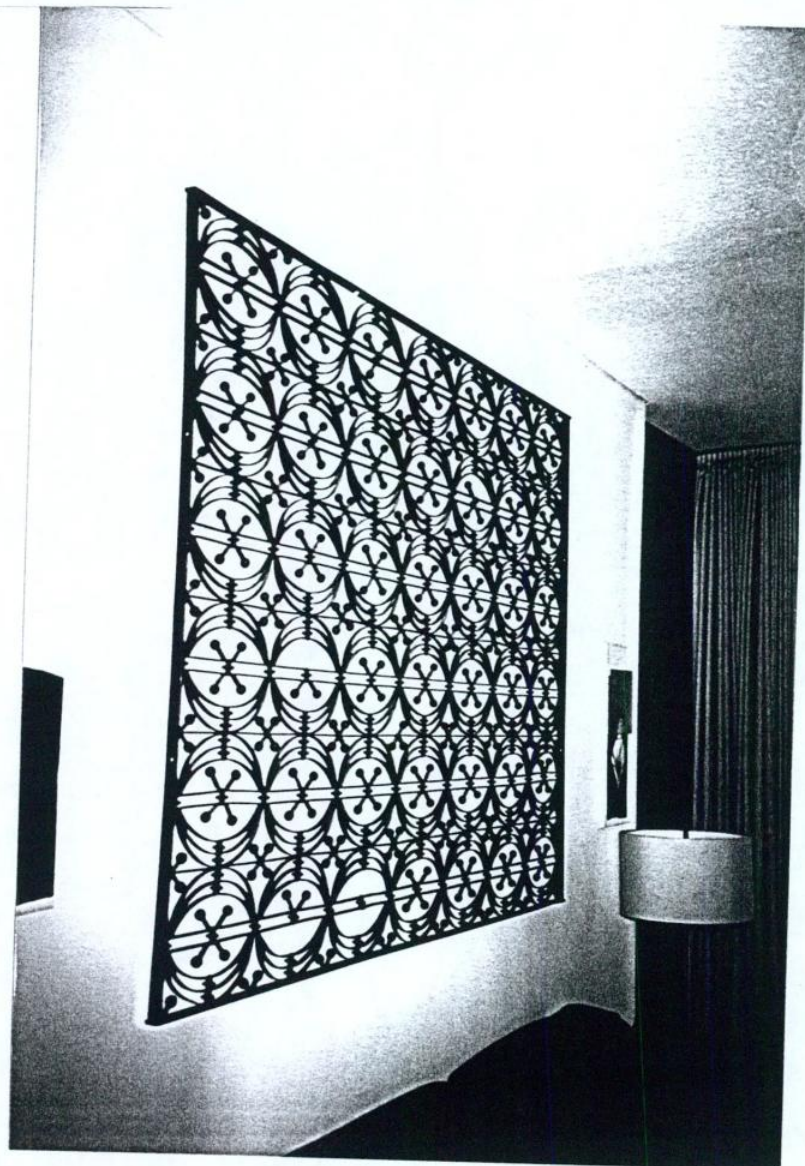
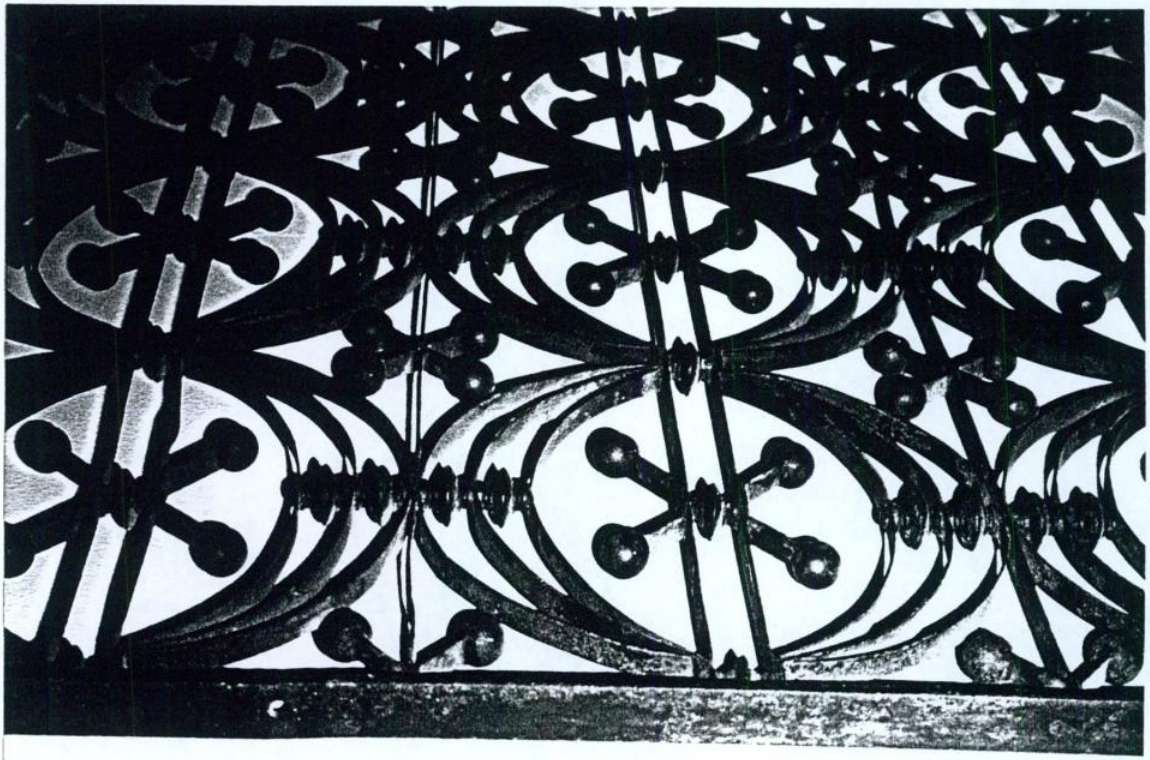




39. Louis Sullivan elevator grille

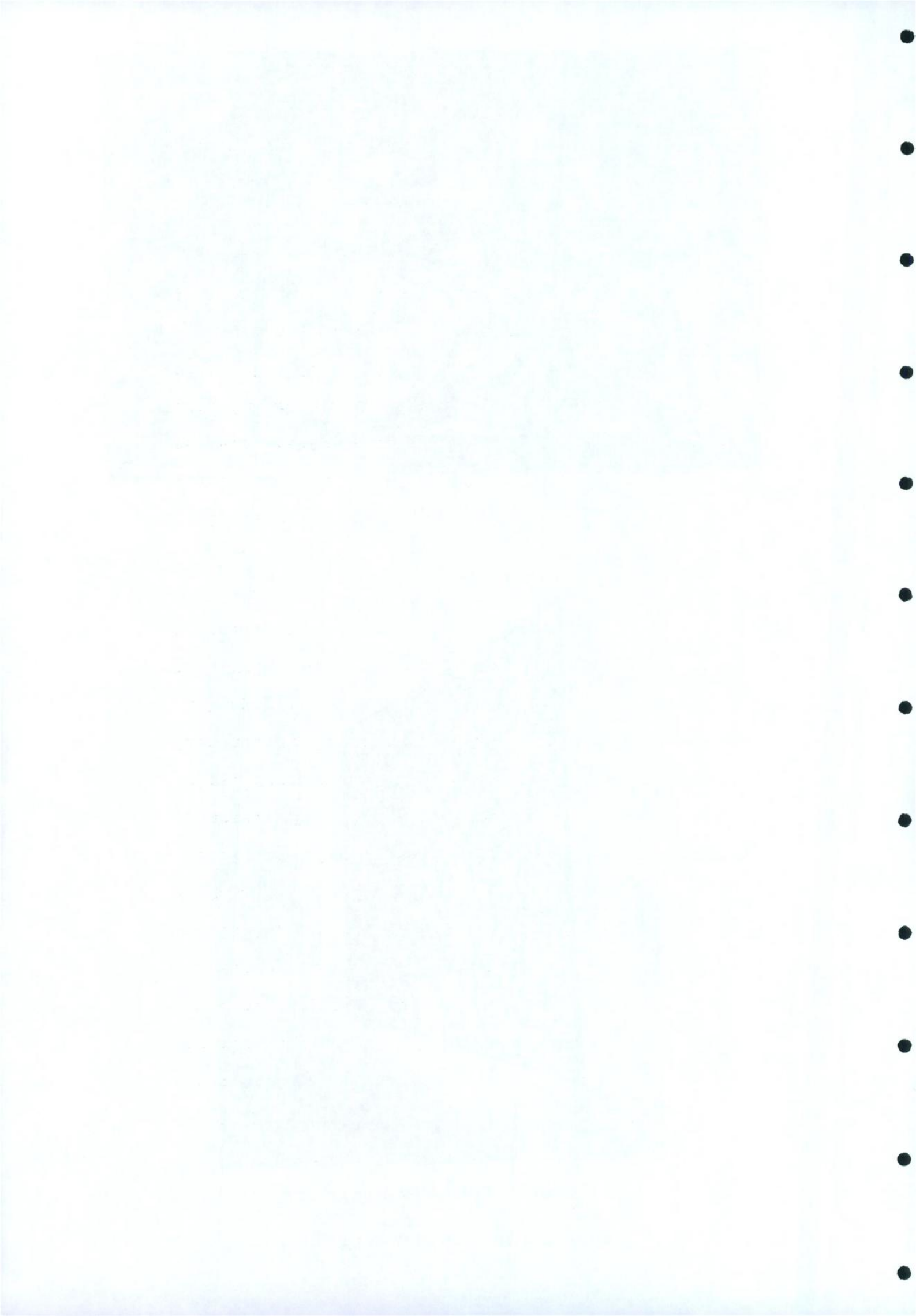
40. Louis Sullivan elevator grille





41. Louis Sullivan elevator grille

42. Louis Sullivan elevator grille

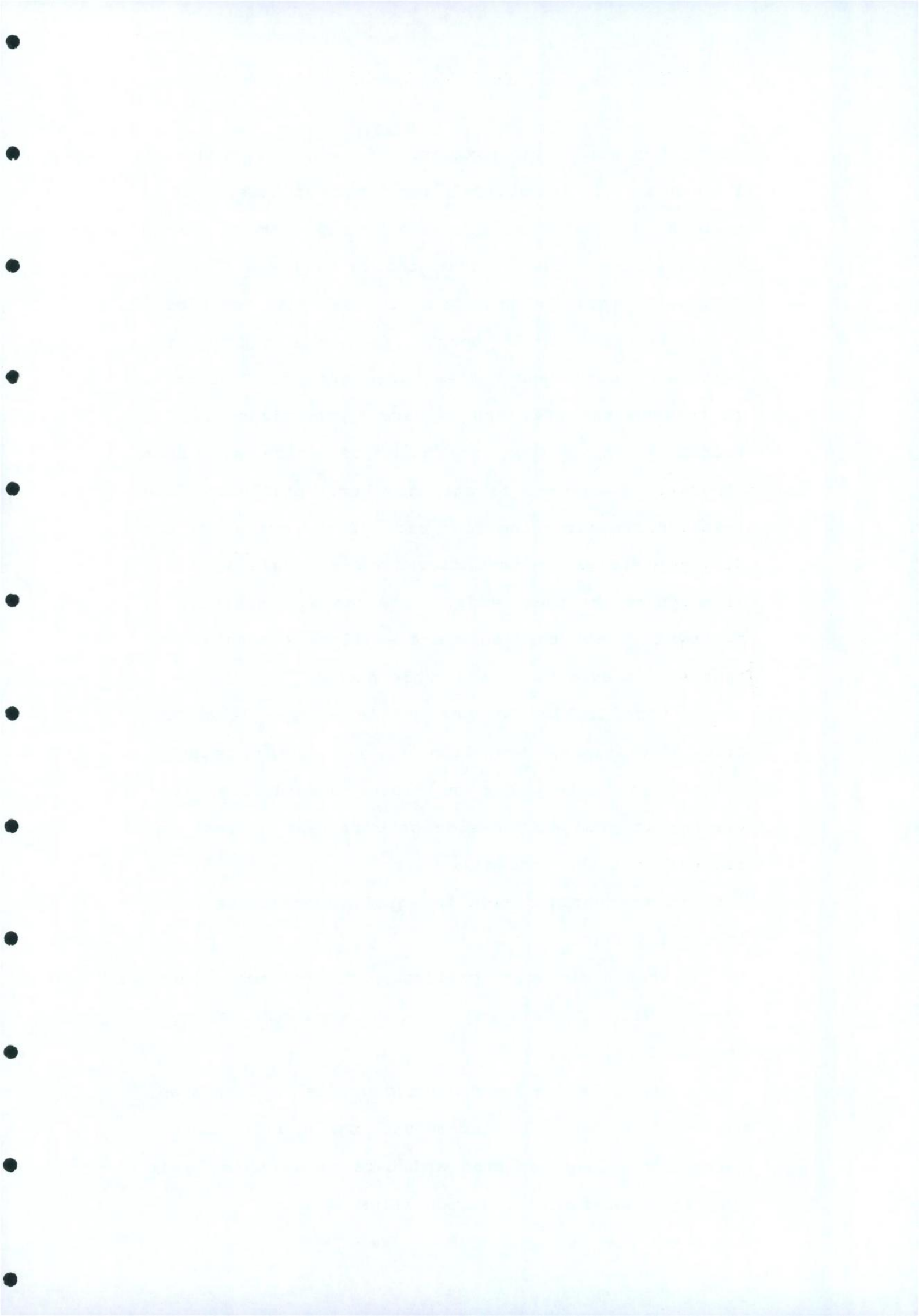


The grille (approximately 6' x 7'), rectangular in shape and symmetrical in design consists of a combination of strap iron and small iron spheres(Illus. 39). Within the rectangle are forty-two oval shapes. Each side of the oval has three bars of strap iron which emerge from the top of two verticals, curve and retreat into the same vertical. In between the oval and verticals two diagonals are bolted in place, on the ends of which are four spheres. Each oval is attached horizontally by four bolts. Surrounding the four arcs of the ovals are two diagonal strips of iron placed on a single vertical with spheres at their ends. They resemble the ones in the oval except that they are smaller. A tension and tautness is evident in the whole piece.

When looking at the grille at eye level and from a distance, the iron in the design appears delicate and fine, but on closer examination, when viewing it from either side or different angles, one can see that the thickness of the curved and vertical iron in the whole design is equal (approximately one inch thick(Illus. 40)).

These elevator grilles were painted black, however with the passing of time rust has begun to appear(Illus. 41).

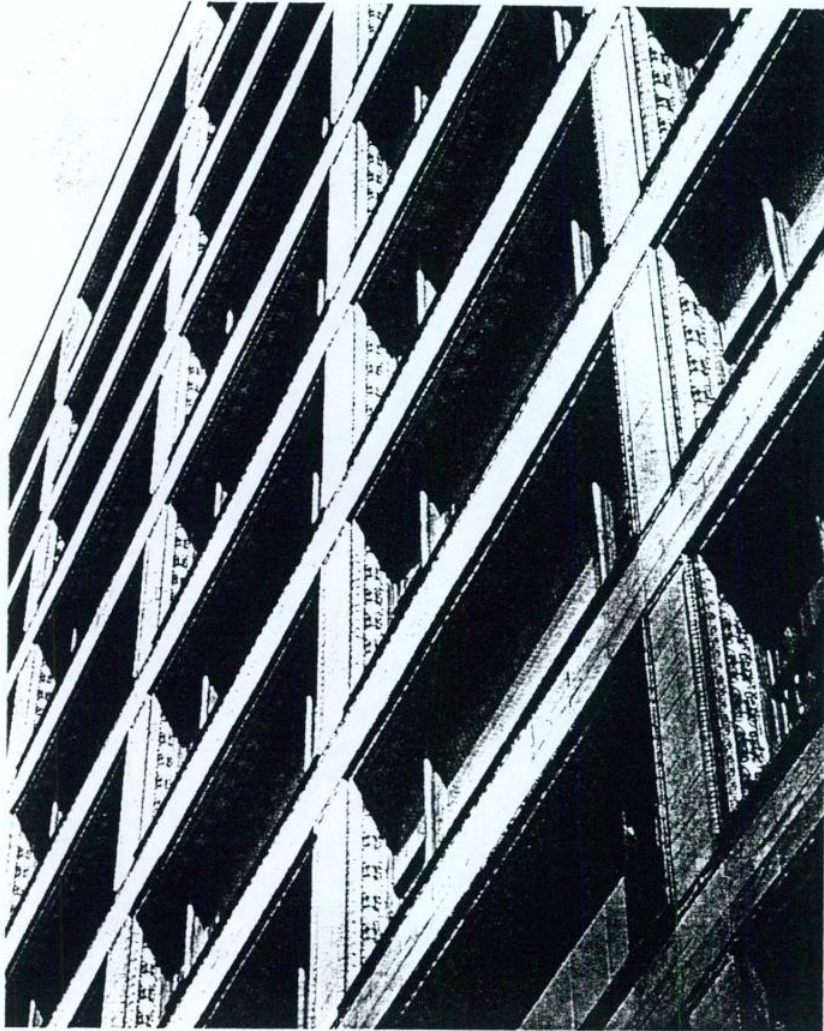
In the house in which the grille is displayed, the wall could not accommodate the grille in the correct vertical position and because of this it is hung in a horizontal position(Illus. 42).



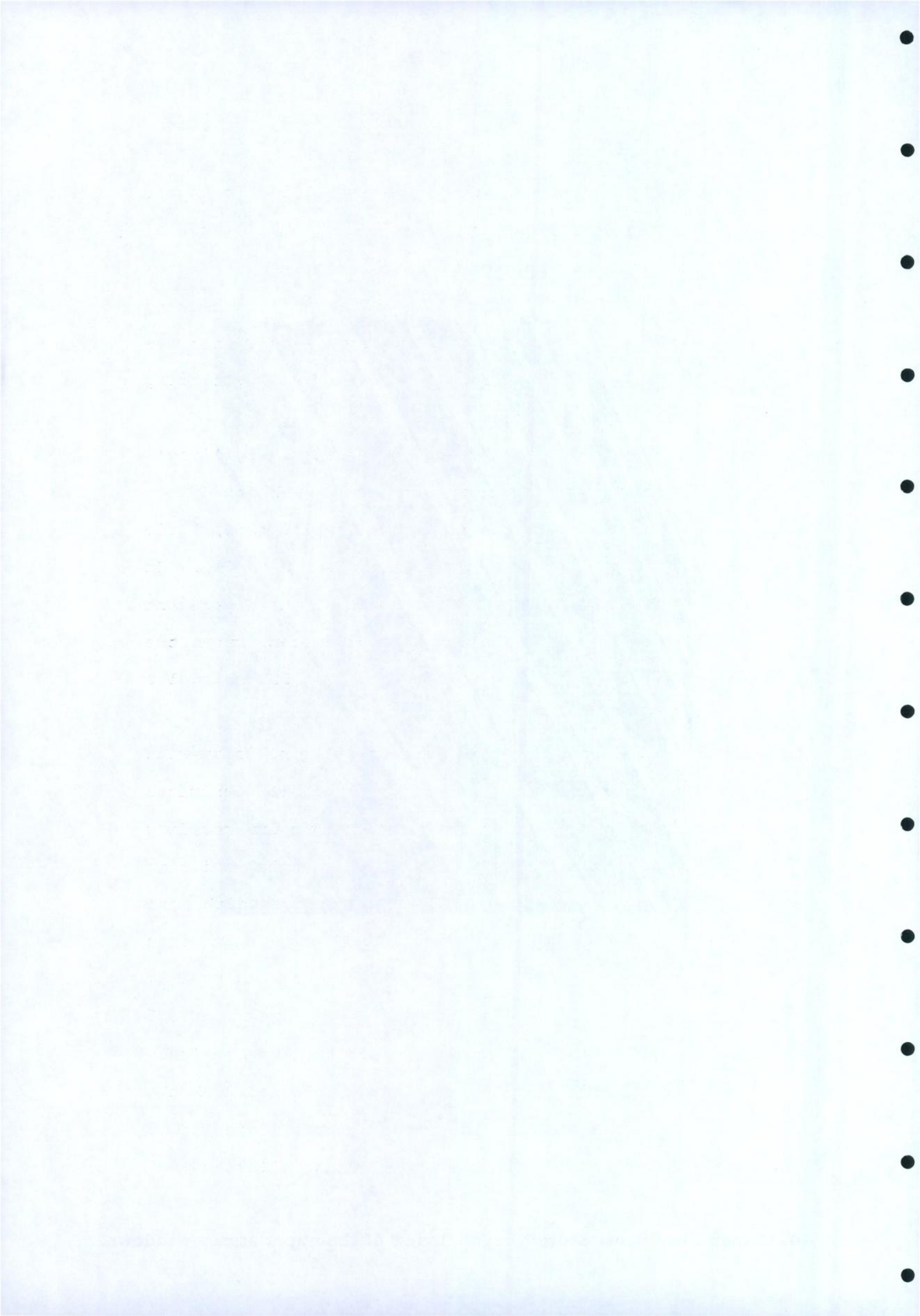


43. Corson Pirie Scott Department Store. Louis Sullivan.





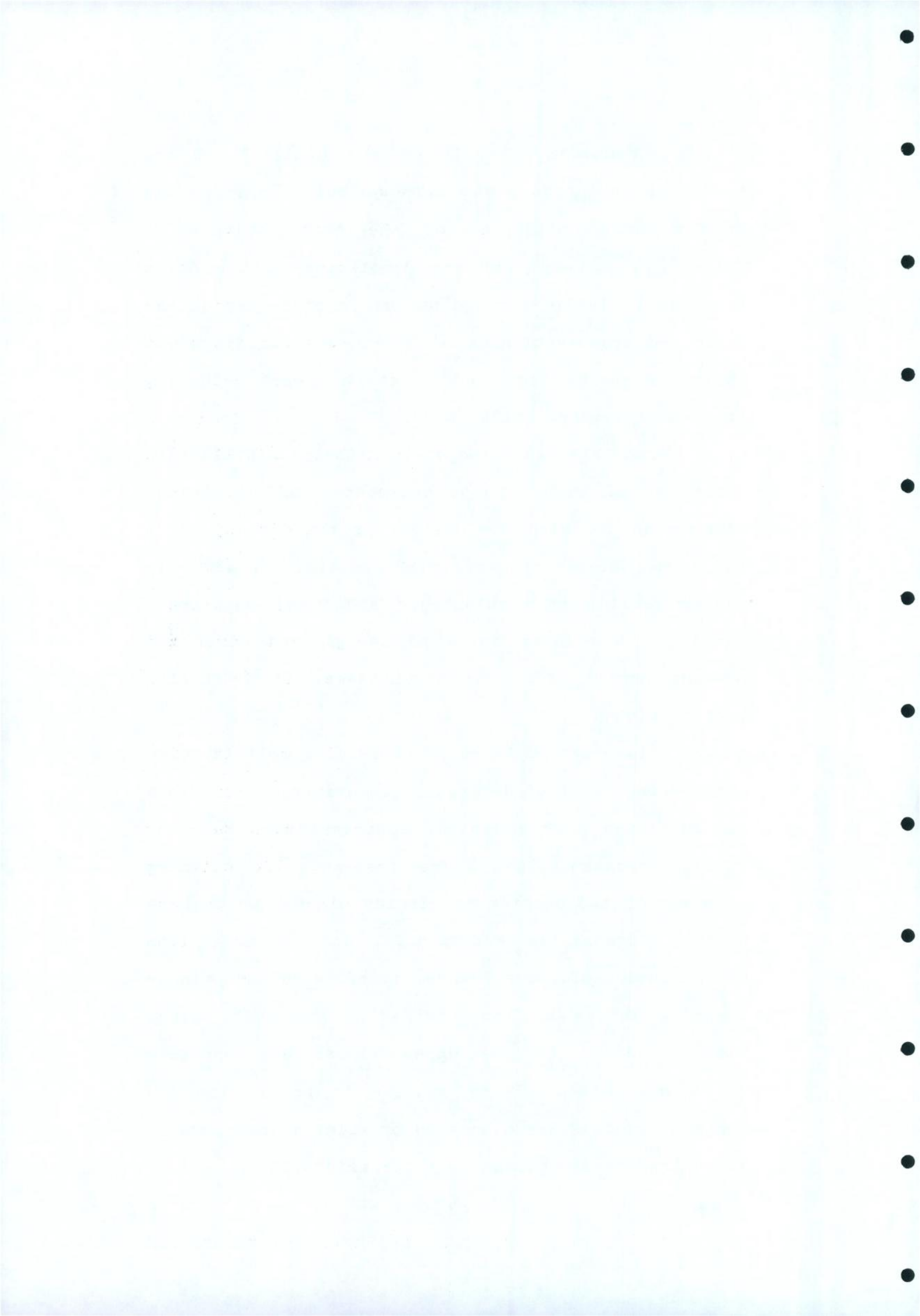
44. Corson Pirie Scott Store. Diagonal view of the upper storey windows.

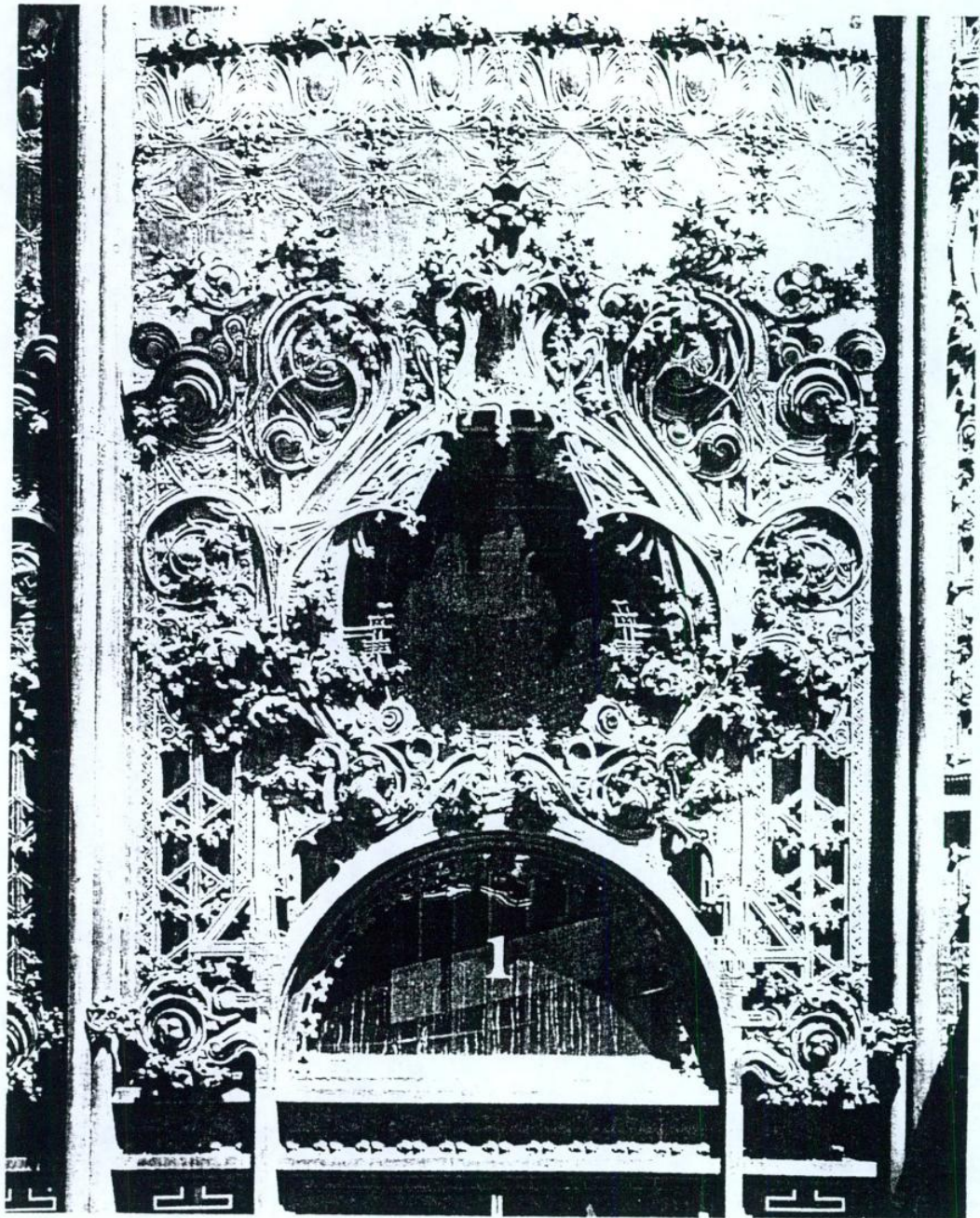


A complete assembly of the grilles and the trading room in the Stock Exchange building is in the architectural collection of the Art Institute of Chicago, acquired after the demolition of the Stock Exchange in 1972. Richard Nickel, a photographer and dedicated preservationist of Sullivan's buildings was buried beneath its rubble as he was gathering fragments of ornament(36, p.99).

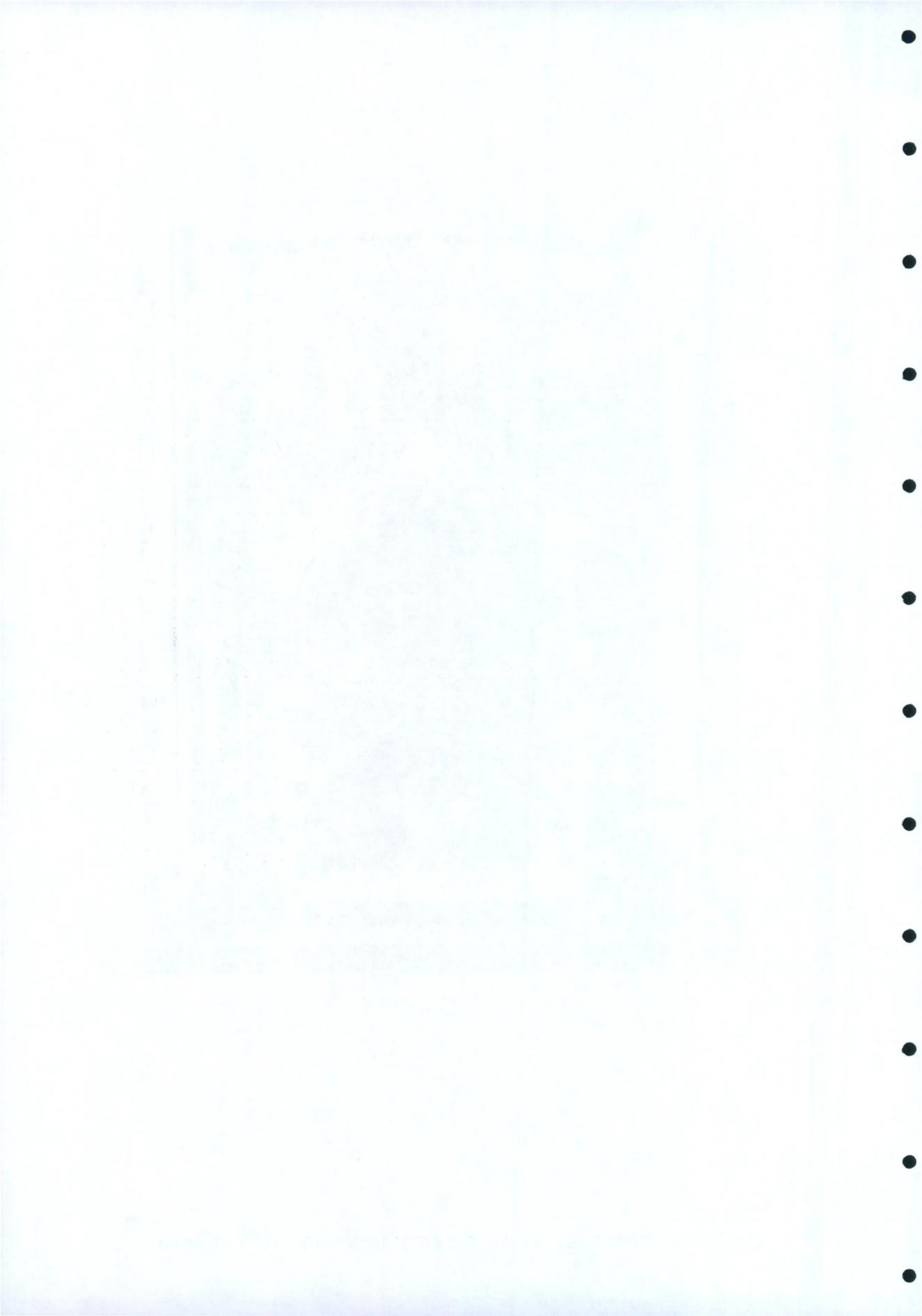
With his last major commission, Sullivan's career as an architect of ornamental tall buildings came to an end with the design for the Carson, Pirie and Scott department store, 1899-1904(Illus. 43). It was originally the Schlesinger and Meyer department store but was later sold and reorganised under the present name. Built in two phases, it is twelve stories high.

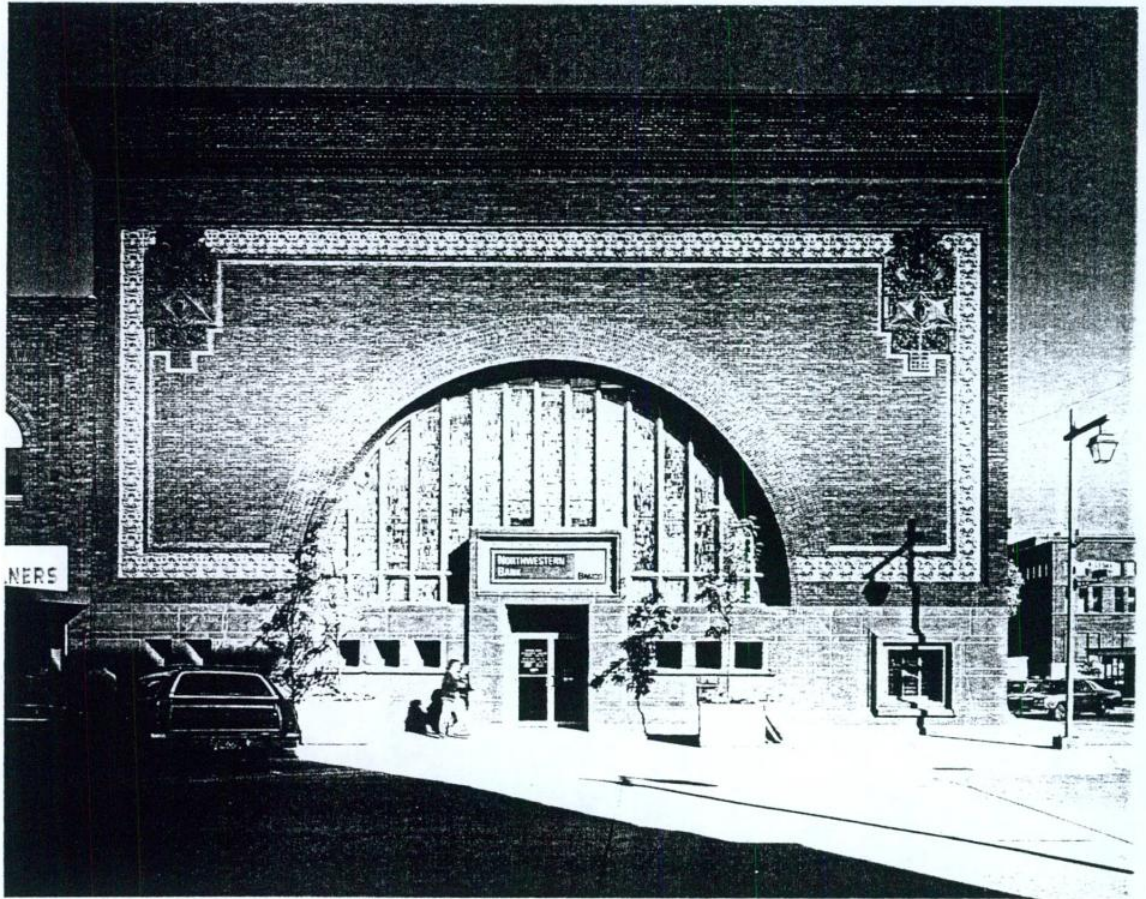
Sullivan's hallmark of over-all simplicity with contrasting areas of decoration is evident. Luxurious ornamentation in high relief contrasts with receding surface ornamentation. The base of the building consists of two stories of display windows which have picture, frame-like surrounds. In the cast iron ornamentation of these frames, overflowing and prickly acanthus leaves are intertwined with smooth spiral ribbons of metal. The upper floors are entirely different. Each of the windows is framed and the bands of windows are connected by friezes above and below which display geometric interlacings(Illus. 44).



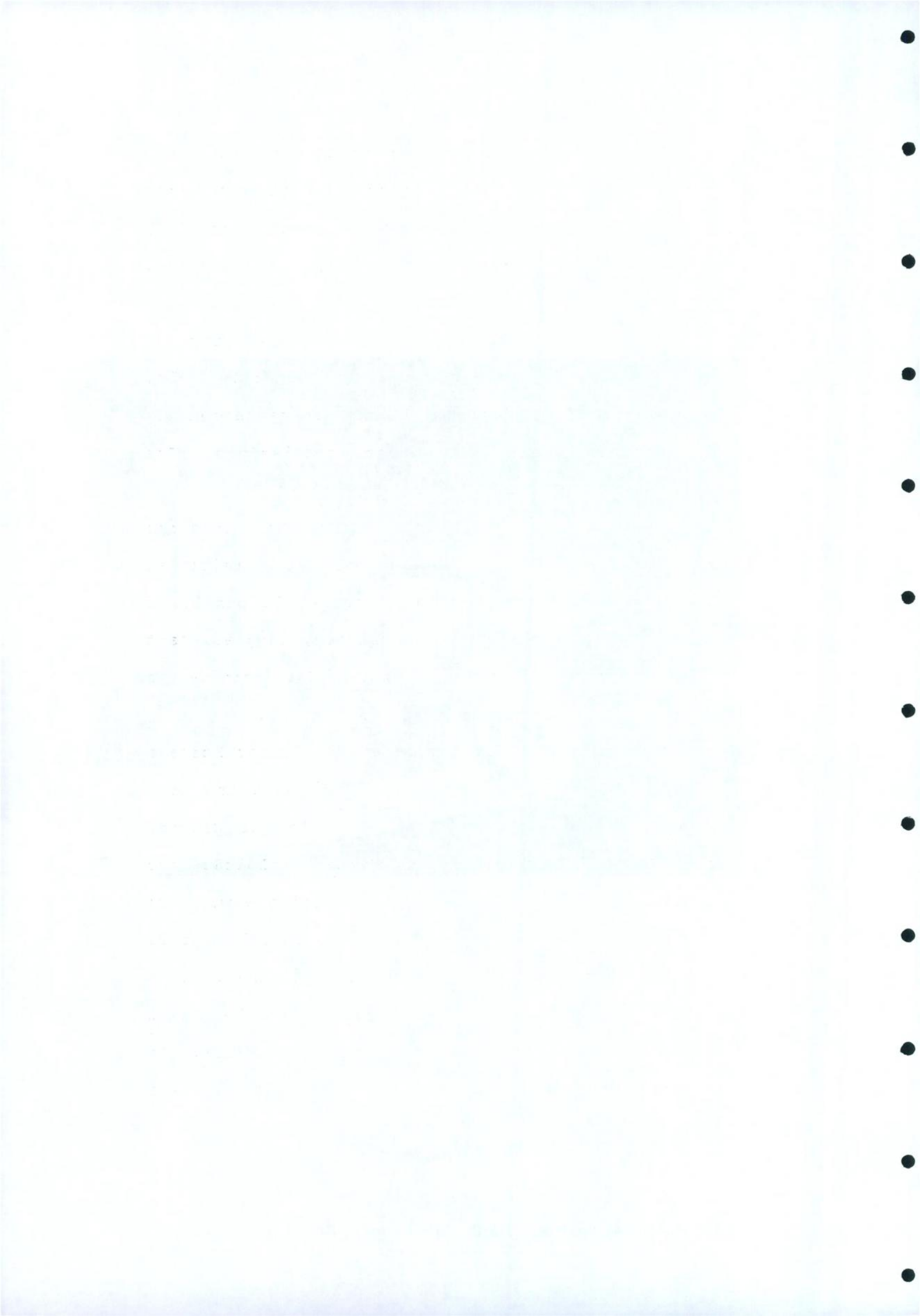


45. Corson Pirie Scott Store. Detail of ironwork over entrance.





46. National Farmers Bank. Minnesota. Louis Sullivan.

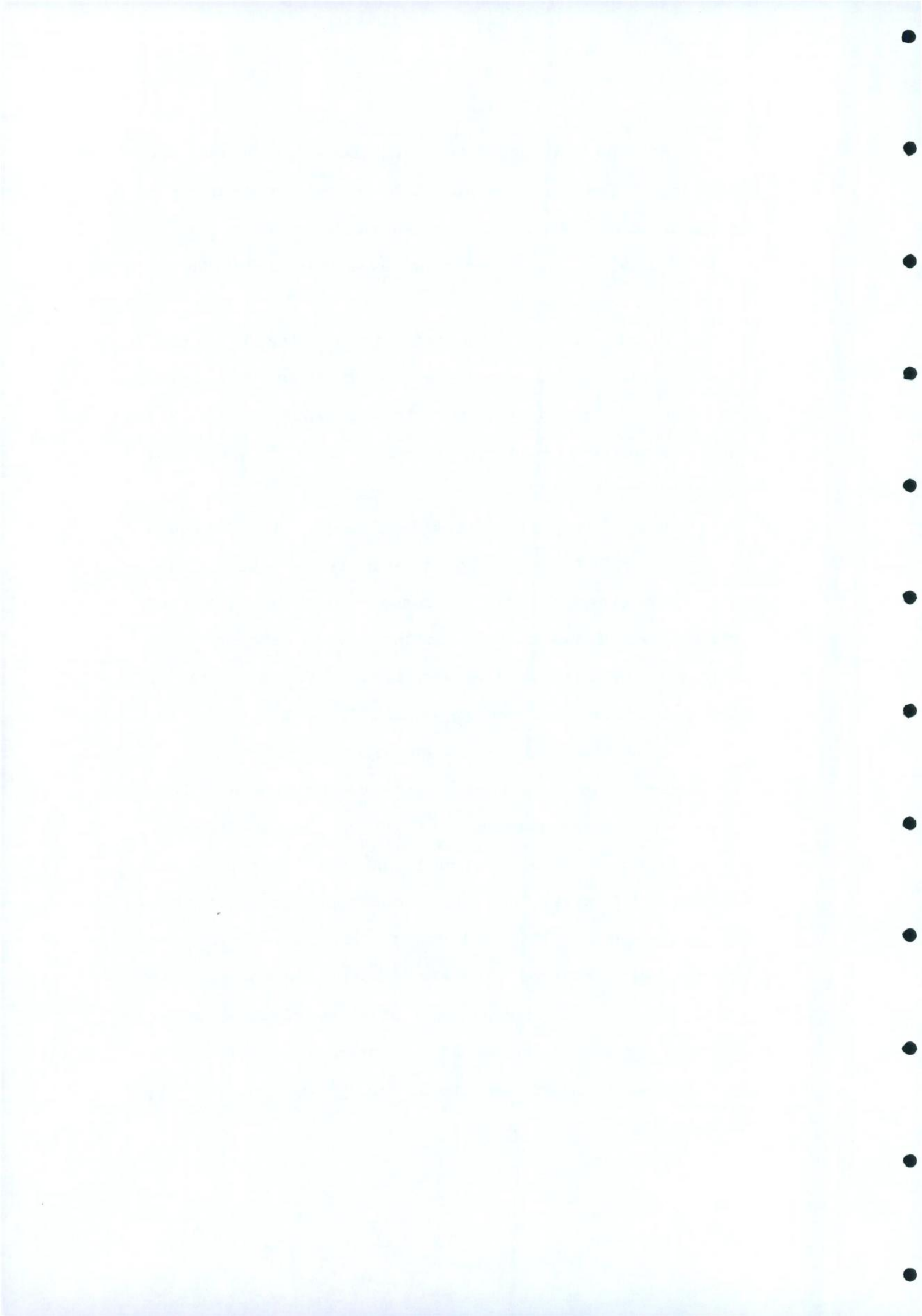


At the entrance to the store at State and Madison, there is a lush elaboration in cast iron ornamentation over the corner entrance. The design is comprised of circular wreaths over the doors (Illus. 45).

Within the iron wreath is a glazed recess, around and out of which leaves and tendrils spin. This burst of energy depicted in the ornamentation was used extensively in his later commissions, The Banks (36, pp.131-133).

The National Farmer's Bank in Ouatonna Minnesota, 1907-8 is a good example of this (Illus. 46). The ornamentation is concentrated in panels of bronze-green terra-cotta with intricate, tangled, cast iron escutcheons at the corners. The cornice is simple courses of corbelled brick (37, p.72).

A parallel can be drawn between Victor Horta's and Louis Sullivan's work. Horta used glass and iron in the Maison du Peuple and Sullivan in his Carson, Pirie, Scott store, although Horta exploited the aesthetic of metal and glass construction even more than Sullivan. With Sullivan the structural members of metal were covered with terra-cotta and the visible metalwork was decorative, but Horta's visible metal elements were structural and decorative. Sullivan's ironwork was either functional or decorative whereas Horta's was both (19, p.312).



CONCLUSION



Art Nouveau whose origins were to be found in historicism later became the point of departure for the Modern Movement. Louis Sullivan was rightly proclaimed "the father of Modern Architecture"(28, p.184)(34) because he was both creator and prophet of the modern steel skyscraper. The predominant features in the architectural style of the Modern Movement consisted of the steel frame and glass edifices. Sullivan's famous dictum "form follows function"(37, p.9) was misinterpreted by the modernists. They considered it to mean pure functionalism whereas Sullivan meant that form represented ornamentation and that both form and function should be conceived as one.

Frank Lloyd Wright, Sullivan's understudy reiterates Sullivan's words contained in his Manifesto of 1892 "Form and Function are one". The two cannot be separated. Both are equally important.

The ironwork and ornamentation in Louis Sullivan's buildings indicate that he was an Art Nouveau architect but remove this adornment and he qualifies as a modern architect. Pevsner, when describing Sullivan's Guaranty Building states that

in technique and in its strong vertical emphasis it points forward to the twentieth century, but its elaborate and complex ornamentation places it still in the age of Art Nouveau.

Most architectural historians who do not consider Louis Sullivan an Art Nouveau architect include Henry Russell Hitchcock. Sullivan and Gaudi were 'parallel

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to, not an integral part of, the international Art Nouveau movement'(30, p.123). This assumption is based on one argument, when comparing Louis Sullivan's work with that of Victor Horta or Hector Guimard in France, Sullivan's work is found to be based on geometric, symmetrical, rigid forms rather than on the organic. Consideration has not been given to the inspiration derived from Celtic decoration of the Scottish style or the fundamentally geometric patterns of the German Austrian Secession.

Art Nouveau cannot be considered as one distinctive style, but rather a variety of styles within the Art Nouveau Movement, which differed from country to country. The common denominator for these styles was, however, the better understanding of ornament and of the harmony of the object with its decoration.

Peter Selz, writing on Louis Sullivan's work as an Art Nouveau architect states Sullivan, arrived in the 1880s, at a type of decoration what prophetically heralded European trends of a decade later'(30, p.105) not only considers Louis Sullivan an Art Nouveau architect, but also suggests that he had an influence on Europe rather than the other way around as was previously concluded. Robert Schmutzler claims that Sullivan and Tiffany are the 'North American contribution to Art Nouveau', whilst being distinct from each other and from Europe(32, p.227).

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The popularity of Art Nouveau waned after 1910. Many of the designers became tired of working within the confinement of the style and their creative ability was overtaxed. The designs were excessively elaborate, time consuming and expensive. They abandoned the Art Nouveau style and tended towards a more simplistic and practical approach with less emphasis on decoration. Another reason for the demise of the style was that it became commercially exploited with a decline in quality and taste. Many of the original designers died in the 1900s, Erkmann in 1902, Galle in 1904 and Olbrich in 1908.

Up to the 1930s, a critical attitude towards Art Nouveau reigned. Many critics opposed this style, they considered it to be just a passing phase without any significance. It was either 'ignored or violently rejected'(6, p.3). In 1936, Nikolaus Pevsner published his Pioneers of Modern Design from William Morris to Walter Gropius. Art Nouveau, here was considered for the first time as an entirely valid and independent style in art and as one of the prerequisites for the development of modern architecture and design(32, p.279).

Architects, artists and designers in the 1930s were dissatisfied with the rigid rationalism of the 1920s. They felt the need to adopt and return to more flexible forms and to achieve a new organic harmony with the environment.



A revival of interest in Art Nouveau was evidenced by various exhibitions, Zurich in 1952, the Victorian and Albert Museum in 1953, where the English and Scottish contributions to the Art Nouveau movement were displayed, a Louis Sullivan show in Chicago in 1955, a Louis Comfort Tiffany show in New York in 1958.

The interest in these exhibitions heralded the advent of a revival of interest in the late 1960s and early 1970s much to the despair of the international modernists.

The Art Nouveau revival occurred mostly in graphics, poster art and advertising, with an array of vibrant psychedelic colours. Again there was present the celebrated line and sharp cut profiles peculiar to Art Nouveau poster design.

Art Nouveau's historical significance lay in the fact that it marked the beginning of a new period of original forms after centuries of forms based on traditional styles. In this one respect Art Nouveau belongs to the new rather than to the old century, in all others it remained part of the old.

The twentieth style in decoration is a style of industrial design. Art Nouveau is a style of handicraft.

Though ignored in the recent past Art Nouveau has permanently affected our concepts of function and design and its influence will undoubtedly continue to be felt as new styles emerge.



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