Boston, Paris, Chicago
The extraordinary life history of an American who graduated from Paris
William Le Baron Jenney
(École Centrale Paris 1856)

Good morning everyone. The World's Fair is an opportunity for me to come back to Paris, the place I spent several happy years almost 50 years ago. Since then, my dear Central colleagues, I have not, I'll admit, provided any news of myself, but then, neither have you all stayed in touch with me. In 1889, I made a request of Gustave Eiffel, a man one year older than I am, and I was a little disappointed by his response:

> *Sir and dear colleague, regrettably, I am unable to give you a positive response to your letter of the 13th in which you ask me to make available to you the construction designs for the tower, so that you might make a similar one in Chicago, using the name Eiffel Tower.*

I have always proudly claimed to be an overseas engineer from the École Centrale des Arts et Manufactures and have never forgotten how much I owe to the training I received in its buildings in the Marais between the years of 1853 and 1856. I am pleased to come here today to tell you the story of what my life has been.

I was born in Fairhaven, a town to the south of Boston, in September of 1832, the second of seven children. Even though my mother, whose maiden name was Le Baron, was of French ancestry, we were English speaking. My father, William Proctor Jenney, was the product of an old New England family and a successful whaling ship owner. It was in Fairhaven, in 1841, that Hermann Melville embarked on the expedition from which he gathered the material for Moby Dick. The bay, upon which Fairhaven and its neighbor, New Bedford, lie, harbored the first great whaling fleet. The whale oil which it generated was the principal way Americans created light.

In 1849, at the age of 18, I was seized by wanderlust and got my father's permission to sail on Captain Scott's vessel, Friendship, destined for San Francisco. We set sail on September the 2nd and were taken around Cape Horn. We made a stop in Valparaiso and finally arrived in San Francisco on February 22nd, 1850. I stayed there 3 months, mixing in with the flow of immigrants who had been attracted to the Gold Rush since 1848. On May, the 18th, a huge fire broke out and destroyed most of the wooden houses in the city.

I then set sail aboard the William Sprague, a clipper ship under the command of Jesse Chase. First port of call: Honolulu. Having sailed through a typhoon, we put in at Manila. I stayed there three months, in order to experience the good things the country had to offer. I admired the bamboo construction and the use of mother of pearl, to tint windows and soften the light. In September of 1850, I set sail again on the William Sprague. We headed for Java;

before undertaking such a journey, we went around St. Helena Island and finally got to New York in January 1851. The trip around the world took 17 months.

After the first trip, I wanted to return to Manila, as an engineer, and decided to start studying Spanish. With the help of my father, I got into Lawrence Scientific School, which was part of Harvard University, created in 1847 by Abbott Lawrence, a successful cotton magnate from Lowell, MA, a town just North of Boston.

Alas, the course was not what I had hoped. Oriented toward the natural sciences, the courses were too different from the idea I held of what engineering training should be. Two sisters from Cuba lived at the old lady's house, where I rented a room. Their brother was a student in Paris, at a school that more closely matched my tastes: l'École Centrale des Arts et Manufactures.

L'École was designed, from its very inception in 1829, to admit foreigners. It had welcomed Spaniards, Greeks, Germans and even some Americans. An 1845 report lists the foreigners who had come to the school to study - among them: 13 Brazilians, 16 Mexicans, 12 Cubans and 25 North Americans, of whom 13 were from Louisiana, which is not surprising, as the region was still largely French speaking.

Centrale's participation in the Universal Exhibition organised in London in 1851 conferred upon it a certain degree of international recognition, acclaim and renown.

In order to be admitted to l'École Centrale, I had to learn French. So, I took private classes at Harvard. I sailed for France in the spring of 1853. After having found a place to live, a furnished room at 20 rue Duphot, next to the famous store Les Trois Quartiers. I enrolled in a preparatory class. To better my chances of getting admitted, I had a letter of recommendation from my engineering professor at Lawrence. I see that you have saved it, and copies of my exams, too!

To get into l'École Centrale you had to take a short exam, to show that you knew something about mathematics and drawing. Foreigners also had to take a written exam, to show themselves capable of following a lecture and taking notes in French.

Admitted in September 1855 with honorable mention, I started classes at the end of October. The teaching style was very structured: lectures, tutorials and long drawing sessions, followed by more drawing sessions, ad nauseam.

I learned physics and industrial chemistry, I took one of the finest courses, anywhere, on railroads, and, as I had chosen, as my major, construction, I took, with special interest, civil engineering courses with an engineer of bridges and roads, Charles-Francois Mary, who was formerly the head of the Paris Water Works.

I took architecture courses from a former Centrale student named Pierre Bénard, as well as drawing lessons from an architect, Nicolas Thumeloup, a specialist in ancient and renaissance ornamentation.

Centrale was a private school, where one paid tuition, but it had no dormitory facilities. So, I had to find a place to live. At first, I wanted to live somewhere near the Marais, on the Boulevard Beaumarchais, but then I decided to locate myself in a livelier neighborhood, Chaussée d'Antin, near the new Saint-Lazare train station.

During vacation, from August to October, we visited factories and studios and created a book of sketches and observations, to present when school resumed.

Even though studies at Centrale were demanding, I had free time in the evenings, on the weekends and during the summer vacation, to explore Paris.

I spent most of my free time with a colleague who also started at Centrale in 1853, Edward Yorke. Edward's father was responsible for the gas lights and benches in New Orleans, but a bankruptcy led him to move to Europe in the 1840's. The Yorkes invited me to spend my vacations with them at Montereau, where I ran into the young Sarah, born in Paris in 1847. She would become the first female American archeologist.

At Centrale, we regularly visited work sites, like the Grand Hall of the Saint-Lazare train station, or the Auteuil line's hall, which opened in 1854, and went out to the new Bois de Boulogne and to the houses that were popping-up around it, like Villa Montmorency, which was built by Auguste Charpentier, our tutor, Pierre Bénard's boss. The station hall at Saint-Lazare and the Auteuil line were designed by the engineering firm led by Eugène Flachat, which was staffed entirely by young graduates of Centrale - so much so, that it was called the Centrale Annex. The impression created by the great station hall at Saint-Lazare, they say, was the reason that Napoléon III made Victor Baltard use iron construction to build the new Les Halles.

Like most of my colleagues, I visited the first World's Fair many times during the months of May and June in 1855, with its Palais of Industry, the iron part of which was the work of another graduate of Centrale, Alexis Barrault.

On my daily route from Chaussée d'Antin to the Marais, I got to see the work that was starting to transform Paris, like the spectacular extension of the rue de Rivoli where the Hotel du Louvre and its big store were being built. I also witnessed the appearance of the first worker housing built in Paris, under the direction of Napoléon III - specifically the project at rue de Reuilly, conceived by Centrale educated, Emile Muller, ten years older than I am, using as a model the project built in the vicinity of Mulhouse. Having only recently arrived in Paris, he had just created a big brick and tile factory in Ivry, on the banks of the Seine to the south of Paris.

During the third year, we worked on several projects: a water distribution network, a wooden bridge, a road re-alignment, and a train station. The competition, that was the final

exam at Centrale, featured the study of a project which was to be built in the school in 35 days; among the themes was the construction of various sheet metal and masonry viaducts.

It was easier, in those days, to get into the École Centrale than it was to be graduated from it. Of the 176 students admitted as first year students, in 1853, only 66 received a diploma in 1856. The results were posted on August 18th, I graduated 11th, having majored in construction.

With my diploma in hand, I left for Geneva, to join Frederick Roelofson, a colleague whom I had met in Paris. He was the son of an industrial cotton merchant from Vermont, who had taken some courses at the École Polytechnique.

Having returned to Fairhaven in the autumn of 1856, I almost immediately received an offer from my friends the Yorkes. They, too, had returned to the US, and Mr. Yorke was working for a newly founded firm, the Louisiana Tuhuantepec Railroad Company, which had acquired the concession to take on a long standing project to build a railroad in southern Mexico, to connect the Atlantic and Pacific Oceans. The project was of strategic value to America, especially since 1848, when California became part of the United States. Responsible for the work site, I stayed near the Pacific Ocean, in el Barrio, for three months, but due to lack of funds and the complexity of the relationship with Mexico, the project was cut short.

Back in New Orleans, I received a telegram from Roelofson inviting me to return to Paris. I was to represent their interests and those of Hiram Berdan in a new industrial bakery process. Aaron Wilson, Roelofson's uncle, was the president of the Marietta-Cincinnati Railway. He had come to Paris in 1853, looking for capital to build furnaces somewhere around Marietta. Hope Furnace still bears witness to this era; it is located not far from Zaleski, a little mining town, which was named after a rich Polish immigrant, Count Peter Zaleski, who supported the town financially. The Financial Crisis of 1857 forced yet another return to Europe, to look for help. The Bureau of American Securities was created to meet that need. William Roelofson had as an associate, Thomas Ewing, the brother-in-law of the future General William Sherman, who, at the end of 1860, was proposed as the president of American Securities in London.

My work for American securities left me some free time. I frequented the American community in Paris whose gathering spot was Madame Busque's creamery on the rue de la Michodière; she had a good recipe for pumpkin pie. Among others, I encountered, at Madame Busque's, Francis Vinton, who came to Paris between 1856 and 1860, to take courses at the School of Mines and to visit one of his comrades from West Point, the painter William Abbott Whistler.

Being with them made me decide to learn painting and drawing, which I had, it is true, practiced a lot at Centrale. I went to copy the classics at the Gallery of Luxembourg and spent time in studios. The Franco-British writer and artist George du Maurier was also a denizen of

Madame Busque's creamery. He pulled material from our stories for his successful novel, *Trilby*, which was published in 1894, with its own illustrations. Some among us thought that I was the model for his character Little Billie; it is all purely imagination, but I must confess that du Maurier knew how to paint a picture of the bohemian and friendly atmosphere that reigned among us. Along with Vinton and Whistler, we would find ourselves on Wednesday evenings in a multi-lingual painter's studio, whose nationality no one ever really knew, a man we called Old Sandy. His studio was on the rue de la Vieille Lanterne. The evenings were joyous, enlivened by Whistler, who would organize singing shows, while Old Sandy played the violin.

I often think of this happy time - my 25th year.

Paris continued to change. The Bois de Boulogne had become an elite area, for strolling, that you could easily get to, by train. I admired the technical achievements, particularly the artesian wells in Passy, which provided water for the big waterfalls. The train also took us to the work site of the new town, Le Vésinet, where they were building the first villas. Particular care was given to the water that was provided by public and private springs, to feed the lakes and creeks. It had a new fire pump and a water tower. In the center of Paris the demolition continued, and the boulevard des Capucines marked the start of the work that would give birth to the new Opera.

My obligations to the people of Marietta-Cincinnati finally forced me to return to the United States. With my friend Frederick Roelofson, who was already in Cincinnati, I started an engineering firm, with the ambition to do architecture, as well. Cincinnati was, at the time, the most attractive city of the Midwest. I got the chance to create a cut-over plan, to take the Marietta-Cincinnati network over to the close town of Loveland. When I was in Cincinnati, I lived at the Burnet House, a prestigious hotel, where Abraham Lincoln gave a speech on the 12th of February 1861, just before his inauguration. It was Cincinnati, where William Sherman came, to visit to discuss his eventual Presidency of American Securities. Sensing the imminent start of the Civil War, he finally told us that he had no wish to be away in Europe just then.

The Civil War broke out in April 1861. I volunteered for duty, and, with the recommendation of Sherman, they gave me a job as a military engineer in Cairo, IL, a town at the confluence of the Ohio and Mississippi Rivers. It was there that the Army of the North was posted, to defend the western front of the Mississippi region. I busied myself in Cairo, establishing a fortified line. In August 1861, General Grant arrived, and I was immediately assigned to his Chief of Ctaff. We took the town of Paducah in September; then, in February 1862, we took Forts Henry and Donelson. I next participated in the battle of Shiloh in Tennessee. These decisive battles opened the route to Nashville, which allowed Grant and Sherman to penetrate into the southern states through Georgia. On board gunships, I followed the Mississippi and its tributaries. I managed the construction of provisional defenses, with armies of diggers, composed of Irishmen and of Blacks, who had fled plantations in the South. I

built makeshift bridges, sabotaged rail road lines and dismantled forts - in particular, Fort Donelson, from which I took the cannon and munitions to fortify the mouth of the Ohio River.

I supervised the making of topographical maps of the area around Fort Donelson and Vicksburg, and it is there that I lost the pair of compasses that I had so carefully kept since my stay in Paris. It was during this time that I had the chance to spend several days with Frederick Law Olmsted, the designer of Central Park, who was, at that time, responsible for sanitation for the Armies of the North.

I rejoined Sherman's Chief of Staff at his request, as an engineer. I built fortifications at Memphis and, then, at the siege of Vicksburg, which fell at the beginning of July. In 1864, when Sherman entered Georgia, I was assigned to the defense of Nashville, and I had to withstand the glacial cold during the Southern counter attack in December. I ended the war in North Carolina, where I learned on April the 14th, 1865, that President Lincoln had been assassinated.

These four years of war marked me forever. I certainly learned how to make do, for example to make boats run by burning bacon, but what I really learned was just how horrible war is. In the general hullabaloo, I also met a lot of people, many of whom I would see again in Chicago. In June of 1865, I experienced the terrible pain of losing my friend Frederick Roelofson, who died in Cincinnati from complications of wounds.

The war over, I was assigned to St. Louis, with the rank of Major, and entrusted with mapping Sherman's campaigns, some of which were published in his memoirs.

I quit the army in 1866 and went to Oil City in northwestern Pennsylvania, not far from where Colonel Drake drilled his first exploratory wells in 1859. I had accepted a proposal made to me by William Roelofson, on behalf of Wilson, Gibson and Associates, of which he was a director, to manage a modern oil refinery that had been in operation in Plummer since 1862 - the Humbolt Oil Company.

At the same time, I was still hoping to head more toward architecture, urban planning and urban landscape design. My training as a civil engineer, the experiences I had, among others, in designing railroad routes and mapping topography for the Union Army, encouraged me to try my chances. Starting in September, 1865, I wrote to Frederick Law Olmsted, whose words at Vicksburg had so impressed me, to ask him if there were some way that I could work with him - I had learned that he had been hired to create Prospect Park in Brooklyn, NY.

It was not until 1867, however, that my little project began to take shape. It was the year of the second World's Fair in Paris, and I had met James Bowen, the Chicago industrialist who was an official US representative to the Fair, in the field of construction techniques and materials. I followed the draft of his report, where he addressed questions with which I was very familiar, like fire resistant construction and the worker housing conceived by Emile Muller, who had just been appointed Professor of Civil Engineering at Centrale. Bowen chose me to build his

country house in Chicago, modeled after a Swiss chalet, like the one in which the General Commissioner of the Paris Fair lived.

In 1867, I married Elizabeth Cobb, the daughter of an editor from Cleveland. So, I moved to Chicago where I opened an office in association with an architect already in business there - Sanford Loring. We built various buildings, one of which was a church in the French gothic style: Grace Episcopal Church. We also wrote a book, which my brother-in-law published in 1869: *Principles and Practices of Architecture*. In it, we presented our body of work, to which I added some thoughts about French architecture, concentrating on buildings being built then in Paris such as rental apartments and worker housing.

A champion of a city, Chicago, was taking advantage of its exceptional position, between the Great Lakes and the Mississippi River Valley. It had become an immense railroad hub, where 11 lines converged. Confronted by a rapidly expanding population, ever since the end of the Civil War, the municipality dreamed of putting a little order into the anarchy that was the urban landscape. I was lucky enough to be asked by Olmsted to help create the little residential city of Riverside, to be built on the west side of the city. Hired as an engineer by the Riverside Improvement Company, I executed Olmsted's plan, which reminded me of Le Vésinet, with its winding roads and its parks, starting with the issues of drainage and water supply. An original system made Riverside the least flooded of all the surrounding areas. I had an artesian well dug and a big water tower built. I worked as an architect, too. I built a hotel and five chalet-style houses on the site, one of which was to be mine, and another was for one of the two engineers with whom I was working, Shermerhorn, who had worked with Olmsted on the new park in Brooklyn.

In June of 1869, I was appointed, still with the help of Olmsted, Chief Engineer of the West Chicago Parks Commission. He had been tasked, in effect, with creating a belt of parkland around the city, composed of a series of parks connected by large boulevards. Charged with developing the three western parks, I set about transforming the prairie into verdant parkland with lakes, waterfalls and boulders.

I, later, continued my landscape architecture work, starting in 1876 on work on an extension of Graceland Cemetery.

The huge fire that ravaged Chicago from October 8 to 10, 1871, led me, yet again, to re-direct my carrier. About 6 square kilometers and 1,750 buildings had been destroyed, which created a need for a huge amount of rebuilding. With a new associate, William Mundie, I set about building, not in the suburban areas, but in the center of town - buildings that were essentially commercial. The first buildings that we created after 1872, like the Mason, the Lakeside Building and others in Indianapolis, had a neo-Renaissance façade, comparable to what was being done in Europe at the time.

I was asked, several times during this period, to give a course on construction and architectural history at the University of Ann Arbor in Michigan. I also built a few buildings there, one of which was the Museum of Natural History. This was an opportunity for me to dive back into French architecture treatises and to discover the work of Viollet-le-Duc.

But starting at this time, the increasing rarity of land in the center of the city led developers to demand buildings be built higher and higher, which was possible thanks to the invention of the elevator. Their spread would change the structure of American cities. I, therefore, started to imagine buildings that were both tall and functional, with my team of architects and engineers. In Chicago, the first problem that this type of construction would pose was the foundation, because the city is situated on a layer of compressible clay, 20 to 30 meters deep. Second, was the problem of choosing the material, a problem for which my training and experience had well prepared me. I started from 1872 with the Portland Block, a building of only four stories, but the first of its kind to be built largely of brick, a light, fire resistant material, for which commercial production had just started in Chicago, with the creation of the Chicago Terra Cotta Company, of which my former associate, Sanford Loring, was a manager.

Then, in 1879, I built the first Leiter Building, a big store, with large panes of glass, mounted in cast iron frames. In 1884, the 11 story Home Insurance Building made me famous. It is considered the first building to be framed entirely in metal, and consequently, the first sky-scraper. Honesty compels me to say that there were already buildings like it in Europe, but, using this technique in Chicago was necessary, to put up buildings on loose soil. In fact, what was new, compared to what they were doing in Europe, was the use of steel, instead of iron, for the girders on the last three floors. I must admit that the choice of steel was largely due to Carnegie's engineers, from its Pittsburgh steel business, who convinced me to take the plunge, which allowed me to reduce weight. They were hoping to find an alternative outlet for their steel, because the sale of railroad bridge girders and rails had dried up. For the second Leiter Building in 1899, a big, six story, 30 meters high, store, all of the girders were riveted steel, again on the advice of the Carnegie engineers, who were attempting to standardize their production, to gain control of the Chicago market. For the Manhattan Building, which was built that same year, however, I used cast iron columns and iron girders. With its 16 floors, it was the tallest building in the world, and, as it was relatively thin,, we had to carefully calculate its resistance to the wind and devise a system, to compensate for it. The huge, completely, glass Fair Store of 1891, and the Ludington Building, were then the first buildings made entirely, both posts and girders, in riveted steel.

The Chicago World Fair of 1893, called The Columbian Exhibition, gave me the opportunity to work on different projects. I built the Horticultural Building there, an immense greenhouse, the dome of which looked like the dome on the Bourse du Commerce in Paris, and which adhered to the traditions of the grand metal buildings of the Palais d'Expositions in Paris, which were the products of Centrale graduates, Henri de Dion and Victor Contamin. It also happened, at this time, that I had undertaken to build a 12-story building, the New York Life

Insurance Building. I took advantage of its then being built, to show it to French Engineers and Architects who were in town for the Columbian Exhibition, and to give them an illustrated brochure. Among them was the civil construction professor from the school of bridges and roads and the Conservatory of Arts and Crafts, Jules Pillet, who quickly integrated the description of the building into his courses. Thanks to this publicity, the New York Life building was also the subject of an article in the *Revue du Génie Civil* which hitherto had only summarily dealt with tall American buildings. This interest thrilled me, because I was always very conscious of the transfer of knowledge, and, more generally, in training the next generation. In my firm, where as many as 100 people worked, we favored on the job training. The young designers and architects had a library at their disposal; some of them, like Daniel Burnham or Louis Sullivan made big careers. It is also for this reason that, in 1883, I had become one of the founders of the *Inland Architect*, the first architectural review of the Midwest.

After 1893, I was 60 years old and slowed down my activities.

Here I am, then, returned to Paris, 40 years after my last visit, to participate in this summer of 1900 in The International Congress of Architects. I have just spoken about metal framing, but as I have forgotten my French, it was my friend Jules Pillet, who on the 3rd of August read my speech in the grand amphitheater of the École des Beaux-Arts. He enhanced it with projected photographs. We saw the design of the foundations, the steel superstructure of the New York Life Building and its brick and stone façade - its flannel vest, festooned with skeletons, as Pillet described it.

The same day, we toured the new Orsay Station, with its architect, Victor Laloux. We admired the ornamentation of its façade, its big canopy and its coffered, vaulted ceiling. For my part, I found, with joy, the building conceived and built by Eugène Bertrand de Fontviolant, professor of construction at École Centrale, a building with a metal framework whose stone walls, as it is so often repeated, were only masks.

My stay comes to an end, and I will soon return to the USA. Chicago is a good way away, dear colleagues, and most of you have no idea what I accomplished there. One day, maybe, you will realize that I took a little of your Paris there, with its metal buildings.

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