



# NEWSLETTER

It is a New Year and our fifth in operation. Thank you all for making this possible and a reminder to renew your memberships for 2013.

Early November saw us at MIT in Cambridge for our 3rd Biennial Meeting. Just as Philadelphia in 2010 was bigger and better than Atlanta in 2008, so this most recent event was also an advance with attendance up to nearly 100. The level of enthusiasm was noticeable due in part to a full and enjoyable two day program and the location and organization. Thanks are due to John Ochsendorf and his staff at MIT for pulling it together. A fuller report on the meeting is included starting on page 2.

Also of note was the membership attendance at 40, nearly one-third of all our members. This included 20 new members who took advantage of the special registration offer. Our welcome to you.

During the following week members in Minneapolis-St Paul arranged a two-hour session on construction history in conjunction with the State AIA annual meeting. This will have helped to broaden an appreciation for the subject prior to our next Biennial meeting at that location in 2014.

A reminder that we will hold our telephonic Annual General Meeting for 2012 on Wednesday, 23rd January. You have been advised of this but contact [chs@coa.gatech.edu](mailto:chs@coa.gatech.edu) if you have mislaid the call-in number and code. We hope you can join us then.

Brian Bowen  
Chair, Management Committee

Don Friedman  
Newsletter Editor

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Grand Central Terminal 1913

### 3RD BIENNIAL MEETING, MIT, CAMBRIDGE

Our third biennial meeting was held over November 2nd & 3rd at the Massachusetts Institute of Technology in Cambridge, MA. A total of 93 delegates attended on either both days, or one of them. The first day was devoted to American Construction History 1850-1950 and the second to Guastavino Vaulting: Past, Present and Future.

Fortunately tropical storm Sandy largely bypassed the Boston area and most people registered from areas affected by it made it in safely, welcoming a warm bed and electric power! In addition we welcomed a contingent of twelve Guastavino scholars from Spain.



Bob Silman, John Ochsendorf & Santiago Huerta, Meeting Reception at MIT, November 2<sup>nd</sup>

#### **American Construction History 1850-1950**

The keynote of the day, *100 Years of American Construction 1850-1950 and the Parallel Emergence of Pragmatism*, was given by Robert Silman, Chairman, Robert Silman Associates. The talk took the position that Pragmatism, largely a unique American philosophy, that determines meaningfulness in terms of rational and practical usefulness, influenced our approach to design and construction at this time. It was not by theory but rather by practice in accepting ideas that worked and by discarding those that did not, that led to the principles of American construction during the period. He then reviewed some specific features such

as Skyscrapers, Balloon frames, Long span steel bridges and construction components such as elevators, MEP systems, curtain walls, roofing membranes, glass, etc., and concluded that pragmatism still influences our practices today.

This set the stage for four paper sessions which included 22 presentations on a wide variety of subjects, reminding us of the breadth of construction history as a subject. A listing of the papers and copies of abstracts have been posted at the Society website ([www.constructionhistorysociety.org](http://www.constructionhistorysociety.org))

#### **Guastavino Vaulting – Past, Present and Future**

Janet Parks, Curator of Drawings & Archives at the Avery Architecture and Fine Arts Library, Columbia University, New York, Gave the keynote address for the second day of the meeting titled *Guastavino and Gilbert*. Drawing on the Avery files, Ms. Parks related the story of the building of the Minnesota State Capitol (1896 – 1905) and the connection between Cass Gilbert, the architect, and the Rafael Guastavino company, which installed several vaulted ceilings in the building.

Paper sessions followed which included presentations on Guastavino history, construction techniques and technology and current preservation activities. Paper titles are at the website and copies of abstracts can be requested.



Janet Avery, Keynote Address, Guastavino & Gilbert

**Receptions and Tours**

Evening receptions allowed for delegates to meet, mingle and discuss their shared interests and research. These were held at:

- Guastavino exhibit “Palaces for the People” at the Boston Public Library, Boylston Street. It remains open to the public through February 24th and then moves to the National Building Museum, Washington, DC.
- Housemaster’s Suite on the MIT Campus, sponsored by Ochsendorf, DeJong and Block Engineering.
- The former Guastavino tile factory in Woburn, MA now renovated and converted into offices of the Tocci Building Companies, who sponsored the reception.

On the Sunday morning two tours were arranged:

- Boston Waterworks Museum, Beacon Street guided by Dennis DeWitt
- Guastavino Vaults in Boston led by John Ochsendorf

with the sense that Construction History had become a viable field of research and enquiry. It was noted that the next biennial meeting would be in Minneapolis in 2014, followed by the 5th International Congress which we will be hosting in Chicago in 2015.



*Meghan Elliott, Brian Bowen, Tom Leslie & John Ochsendorf at closing session*



*John Tocci, Tocci Building Companies, Woburn, MA – Reception in converted Guastavino Tile Factory*

*Photographs by Benjamin Ibarra-Sevilla*

**Sponsors**

CHSA is most grateful to the sponsors who supported the meeting. Thank you!



APT Northeast Chapter



Tocci Construction



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**General Remarks**

An informal survey of delegates provided very positive feedback on the two day event. Several commented on the level of enthusiasm at the sessions and all were left

## GRAND CENTRAL TERMINAL, NEW YORK – A CENTENNIAL

February 2013 marks 100 years since the official opening of the current Grand Central Terminal, after ten years of phased construction. This station, the third on the site, was designed for 500,000 passengers per day and has 67 tracks served by 44 platforms.

Grand Central Depot opened in 1871 as the first major station on the site at Park Avenue and 42nd Street. It was a union station that combined the New York Central and the New York and Harlem Railroads (a leased NY Central subsidiary), with the New York and New Haven Railroad. The construction of this station allowed the Central to abandon passenger service on its original line on the far West Side of Manhattan, allowed the Harlem to eventually abandon service below 42nd Street in favor of streetcars and (after 1878) the Third Avenue Elevated, and allowed the New Haven to provide direct service to New England from New York. From the beginning, the station served both commuters from the northern and northeastern suburbs and long-distance trains from upstate New York and further west. Grand Central Depot had one of the first long-span arched truss “balloon shed” roofs in the United States, constructed largely of wrought iron and glass. This was later supplemented by a separate arrivals track area. The Depot was also the first elevated platforms in the United States.

Growth of passenger traffic led to the original station being expanded into Grand Central Station in 1899-1900, with a large increase in the size of the headhouse building that wrapped around the train shed, and improvements to the track layout. This expansion had a number of serious flaws: First, between the expansion and the construction of the arrivals platforms, Fourth Avenue (now Park Avenue) was effectively blocked. Second, the large train yard north of the station effectively divided Midtown Manhattan in half, inhibiting its growth with both a physical barrier and the pollution from coal-fired locomotives. Finally, the old platforms and waiting areas were still inadequate for the growing numbers of passengers.

The problem of locomotives was made clear by a two-train collision in the Park Avenue Tunnel - a portion of the station approach - that killed 15 people in 1902. Not only were many of the dead and wounded burned

by an engine’s boiler that ended inside a passenger car, but smoke in the tunnel was a probable cause of one engineer missing a stop signal. The New York City government moved to forbid the use of steam locomotives, adding to the railroads’ problems with their existing system.



*Grand Central Terminal 1913*

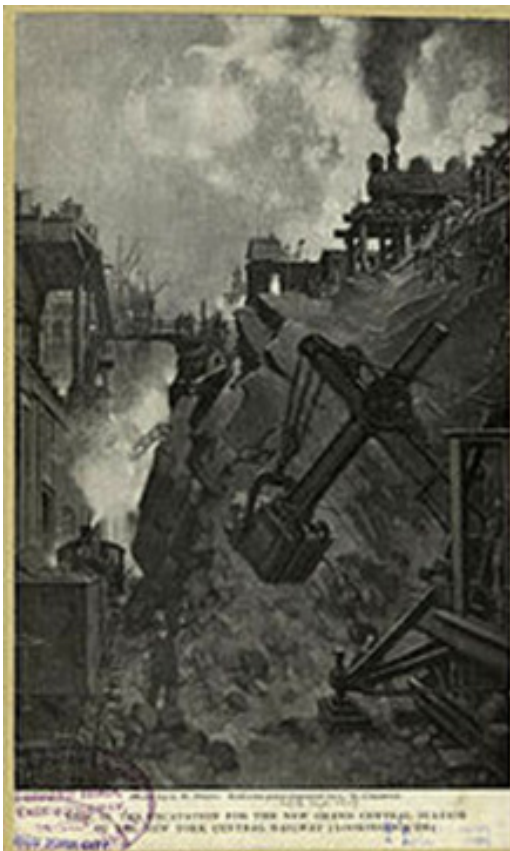
The final plan included the partial electrification of the Central (which had by this time completely absorbed the Harlem) and the New Haven, and the construction of an entirely new station building with two levels of platform, an underground yard, and a much longer approach tunnel. Because the current station could not be taken out of use without disrupting the most profitable part of the Central’s business, the new station, yard, and approach were constructed in phases as the old was demolished in phases. This contributed to the ten-year construction schedule, which was also the result of an architectural competition for the new building, and two changes in architect (from Reed & Stem to Warren & Wetmore, and then from Warren & Wetmore to an association of that firm with Reed & Stem). After the main station was complete, the final piece of the new complex was put in place with the Park Avenue Viaduct, which reconnected the two halves of the street with an elevated path at the second floor level of the station.

Because the track complex is entirely underground, the functional station is quite different from the architectural station. The classically-styled head-house runs from Vanderbilt Avenue to Depew Place (both small streets inserted into grid to mark the boundaries of Central property) which the track layout is three times as wide, stretching nearly from Lexington to Madison Avenues. Passageways leading to tracks are located within the boundaries of adjoining buildings, which are built on air-rights over the terminal property. Because of the approach and yard, all buildings on Park Avenue as far as 50th Street, and several further north, are built on air-rights with their columns extending through the apparent street grade into the tunnels below, where they are visible between railroad tracks and running down the center of platforms. Expansion joints are visible in the surface of the side streets on either side of Park Avenue where the buried roof of the yard adjoins actual grade.

Beyond the sheer engineering complexity of the track layout, air-rights construction, and yard of this dead-end station, Grand Central is best known for its architecture. Because it straddles the line of Park Avenue, the 42nd Street facade is visible from a distance; because of the large number of commuter-train and subway passengers who pass through it every day, the 275 by 120 foot main concourse, with its 125-foot high ceiling, was famous before it was used as a backdrop for movies and television shows.

The terminal is no longer used for long-distance trains, but current construction of the East-Side Access project will bring Long Island Railroad passengers from the eastern suburbs in the near future.

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*Grand Central Terminal 1913 - Excavation in Progress*

### BUILDING TECHNOLOGY EDUCATORS' SOCIETY (BTES)

This is a new group that will be of interest to some CHSA members. They will be holding their 2013 Conference at Roger Williams University, Bristol, RI on July 12 – 13, titled Tectonics of Teaching. More information at [www.btesonline.org](http://www.btesonline.org)

“WILLIAM LE BARON JENNEY (1832-1907): FROM THE ÉCOLE CENTRALE OF PARIS AND TO THE SKYSCRAPERS OF CHICAGO.” REPORT ON A CONFERENCE HELD DECEMBER 17 – 19, 2012, PARIS, FRANCE

People who take a survey course in American architectural history will come across the nineteenth-century architect (and engineer) William Le Baron Jenney (1832-1907). Architectural history survey texts usually include Jenney’s Home Insurance Co. Building in Chicago (1884-85) in a section treating the development of the skyscraper, describing it as “the first true skyscraper” or in similar terms<sup>1</sup>. The only other mention of Jenney in these surveys would be in connection with the “Chicago School,” a name given to Chicago buildings from the 1880s and 1890s that had no architectural revival style – a group that included the Home Insurance Co. Building and several other Jenney projects. Apart from this, one hears no more of Jenney. The only biography of him is Theodore Turak’s dissertation<sup>2</sup>; and Turak published several articles on aspects of Jenney’s life and work.



*Home Insurance Building, Chicago, IL*

In recent years, Jenney’s claim to fame in these two regards has been challenged. As construction historians know, the Home Insurance Co. Building – with its load-bearing party walls and ground level street facades, and thick masonry piers with cast iron columns inside – could hardly be considered a skeleton-frame<sup>3</sup>. Moreover, that a “Chicago School” of undecorated buildings actually influenced the work of early European Modernist architects has been questioned, for example, by Robert Bruegmann in a 1991 essay<sup>4</sup>.

So if Jenney did not design the first skyscraper, and the role, or even existence, of a Chicago School, is doubtful, and at any rate, Jenney like other Chicago architect by no means rejected revival styles – he worked in the variety of styles in fashion over the course of his career – then what is his place in history?

This was not exactly the question posed by the organizers of a conference on the life and influence of William Le Baron Jenney, held in December 2012 in Paris, France. They largely took Jenney’s importance for granted. And it is incontrovertible that Jenney was a technologically adept architect working in a city – Chicago – where the latest building technology was being used, and he participated in the technological developments of his day. Nevertheless, there has been little recent research about Jenney’s work, his influence, or the history of skeleton-frame construction, so this conference was an opportunity to explore these matters.

The three-day conference was organized by Jenney’s alma mater, the École Centrale Paris (ECP), the alumni association of which named him alumni of the year. Led by Jean-Francois Belhoste of L’Ecole pratique des hautes études, the meeting brought together scholars from France and the United States. Papers covered Jenney’s career, nineteenth-century technical education, the transformation of Paris in the mid-nineteenth century, and contemporary practitioners. There was even a film about Jenney’s life made by Belhoste and Philippe Denizet, entitled (English translation): “Boston, Paris, Chicago: the story of an extraordinary American Centralian.”

Jenney graduated from the ECP, then known as the École Centrale des arts et manufactures, in 1856. This private

engineering and technical school, founded in 1829, trained students for jobs in the private sector – as architects, builders, civil and mechanical engineers, and chemists. It was probably the world’s best engineering school in the 1850s, which is why Jenney, who had to learn French to attend, wanted to enroll. That he completed the three-year course, majoring in construction (civil engineering and architecture), and did well, was impressive. He started his work-life as a civil engineer, served as an engineer-officer during the Civil War, and at the end of the war, began a career as a landscape architect and architect in Chicago.

The third day of the conference was devoted to Jenney’s work in Chicago, including his usually over-looked work in the 1860s and 1870s as a landscape architect – a new field at the time. Julia Bachrach discussed Jenney’s designs and implementation of Chicago’s West Parks; this was a complicated project that called for making an attractive landscape on a barren, unpromising site. Isabelle Gournay presented another little known Jenney project: implementing Olmsted and Vaux’s plan for the Chicago suburb Riverside. Jenney designed many of the houses built in this community, as well as a hotel and picturesque water tower. Tom Leslie spoke about framing in Jenney’s tall, commercial buildings. I spoke about the history of structural hollow tile and Jenney’s use of this material in the Home Insurance Co. Building and later projects, and concluded that Jenney was in the mainstream, although not in advance, in adopting this material. (Jenney was one of the leaders in advocating steel members for buildings.) Gerald Larson reprised his debunking of the Home Insurance Co. Building as the first skeleton-frame building, and argued that this “legend” was created and kept alive by Chicago architects to avoid having to pay royalties to Leroy Buffington, who patented a skeleton frame structure in 1888. By pointing to the Home Insurance building, architects could claim that Buffington’s patent lacked novelty. Likewise, Robert Bruegmann reprised his criticism of the notion of a Chicago School.

So what is Jenney’s place in history? Jenney was one of the best educated architects and engineers in the U.S. in his day, when college-educated engineers and architects were rare. In a concluding discussion, David Van Zanten argued that Jenney’s main influence was as a teacher – not at the first, short-lived architecture school at the University of Michigan, where Jenney taught until the state legislature cut the program; but in his office, where he trained many young men who went on to have successful careers as architects. Tom Leslie also noted the important example Jenney set

for the architectural profession by the way he ran his office successfully yet ethically. In the days when contractor kick-backs to architects were common, Jenney refused them. And while it did not come out in the papers at the conference, except that Larson asserts otherwise, Jenney’s Home Insurance building *was* influential in the history of skeleton-frame construction – for the structural ideas it suggested, not as a model that was copied; or so I argue in my book manuscript, “When Architects Were Engineers: Architect-Engineers in Nineteenth-Century America.”

Thus the conference brought a fresh look at Jenney’s work and place in history.

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1 Marcus Whiffen and Frederick Koeper, *American Architecture 1607–1976* (Cambridge: MIT Press, 1981), 243-246.

2 Theodore Turak, *William Le Baron Jenney: A Pioneer of Modern Architecture* (Ann Arbor. Mich.: UMI Research Press, 1986, 1967).

3 A factual description of the building shows that it would not qualify as a skeleton frame, defined as a building in which all loads are carried on a metal frame; for an discussion of the building, see Gerald R. Larson and Roula M. Geraniotis, “Toward a Better Understanding of the Evolution of the Iron Skeleton Frame in Chicago,” *JSAH* 46 (March 1987).

4 Robert Bruegmann, “Myth of the Chicago School,” in Charles Waldheim and Katerina Ruedi Ray, editors, *Chicago Architecture: Histories, Revisions, Alternatives* (Chicago: U. of Chicago Press, 2005).

## CHSA MINNEAPOLIS – ST PAUL

Could sleepy Minneapolis-St. Paul, Minnesota be a hotbed of interest in Construction History? On Wednesday, November 7th, at 8:00 AM no less, approximately 250 architects and allied professionals woke up to “Construction History: An Integrative Approach to Practice and History” featuring three CHSA speakers/topics introduced by Meghan Elliott, PE: Dr. Lee E. Gray discussing heating, ventilating and communication systems in early skyscrapers, Professor Benjamin Ibarra-Sevilla discussing the geometry and construction of sixteenth century ribbed stone vaults in Mexico, and A. Peter Hilger, AIA presenting on Keystones and how they transformed over time from a structural element to an architectural marker. By all accounts, this two hour session, the third in collaboration with the state AIA convention, was a success, and an indicator of potential interest in the 2014 Biennial scheduled for the Twin Cities.



*CHSA members Lee Gray & Benjamin Ibarra-Sevilla at AIA meeting, Minneapolis in November*



## WHO WE ARE

The Society is dedicated to the study of the history and evolution of all aspects of the built environment—its creation, maintenance and management. It is a forum for scholars and professionals in the field to share, meet and exchange ideas and research.

Membership is open to a wide range of construction related disciplines involved in the planning, development, design and construction of buildings and engineering infrastructure, in addition to those concerned with their operation and preservation.

Members share a passion for examining how our existing structures were planned, designed and built, with the purpose of using this knowledge to better preserve what we have and to guide us in determining future directions.

The US branch of the Construction History Society is a distinct entity catering to the historical studies and interests of its members here in America. Membership in the US branch includes full benefits in CHS at large, including receipt of the Society's Journal and newsletter and links to scholars in the field worldwide.

## CORRESPONDING SOCIETIES

Public Works Historical Society, [www.pwhs.net](http://www.pwhs.net)

Historical Construction Equipment Association, [www.hcea.net](http://www.hcea.net)

Society of Architectural Historians, [www.sah.org](http://www.sah.org)

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- \* your interests in construction history, your current research, précis of recent lectures, etc.
- \* books, texts & articles that your fellow readers should know about
- \* names and e-addresses of colleagues and friends that we can include on our mailing list
- \* if you are willing to write a brief article for us.

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