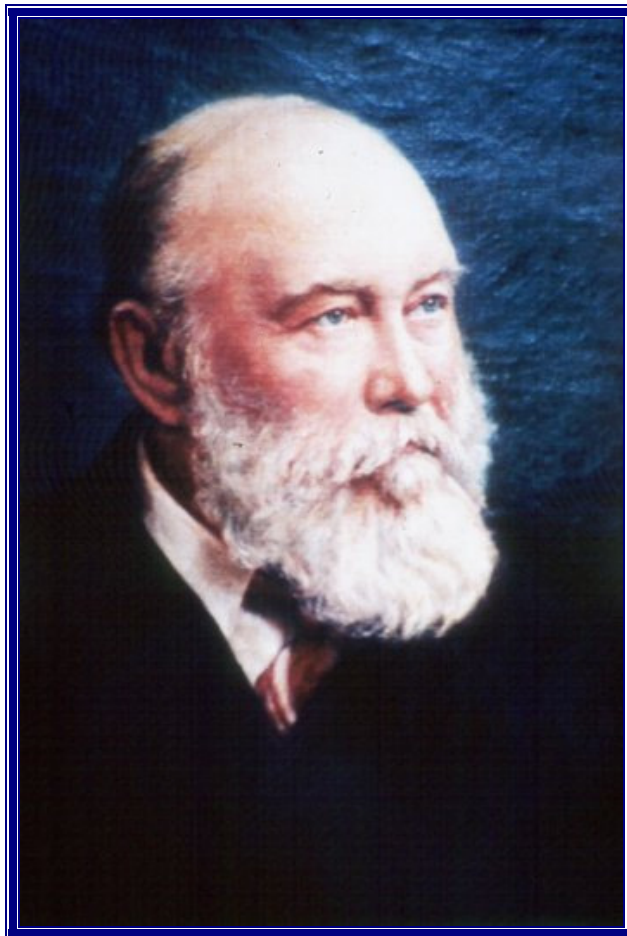


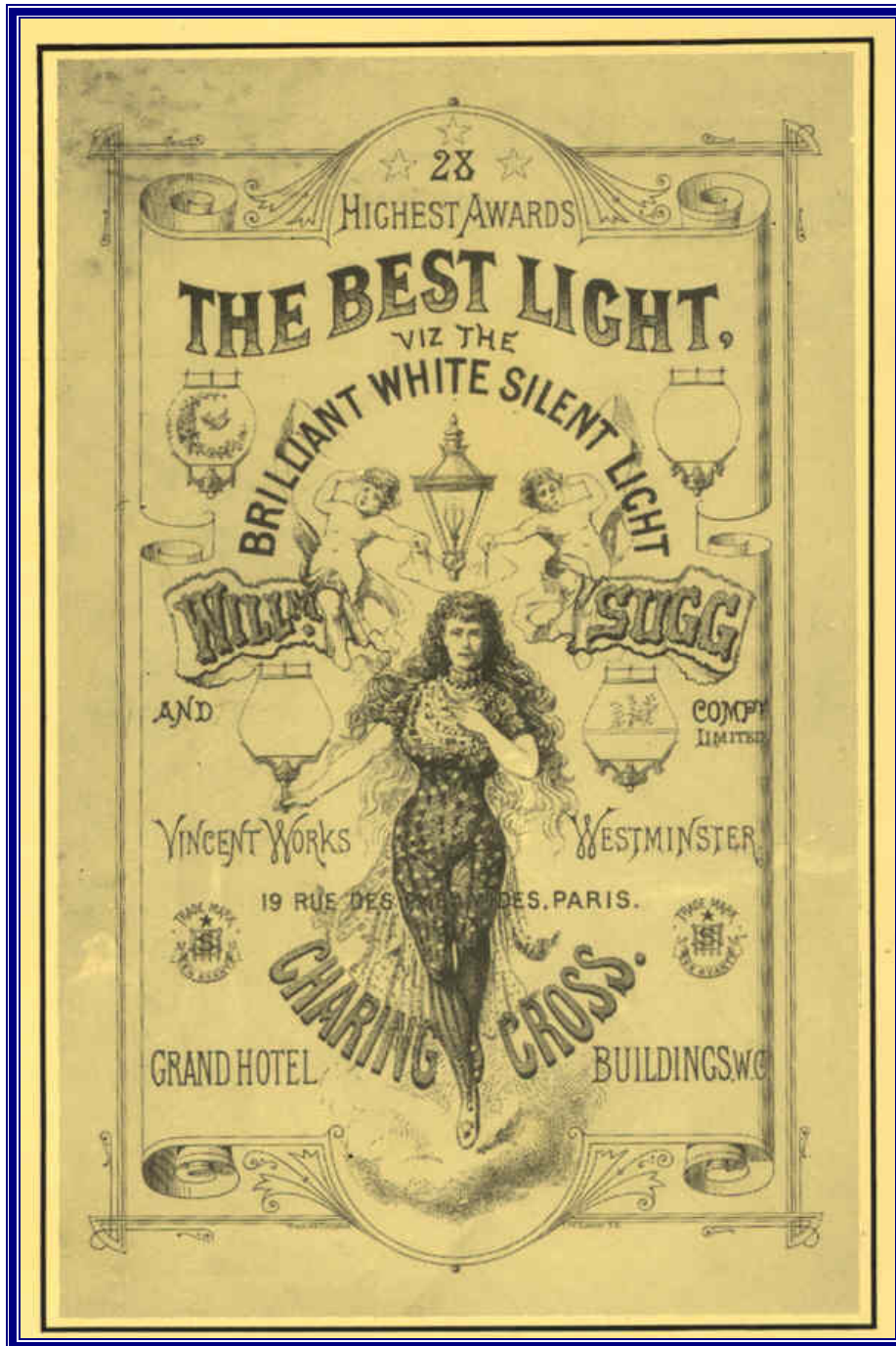


WILLIAM SUGG
1832-1907

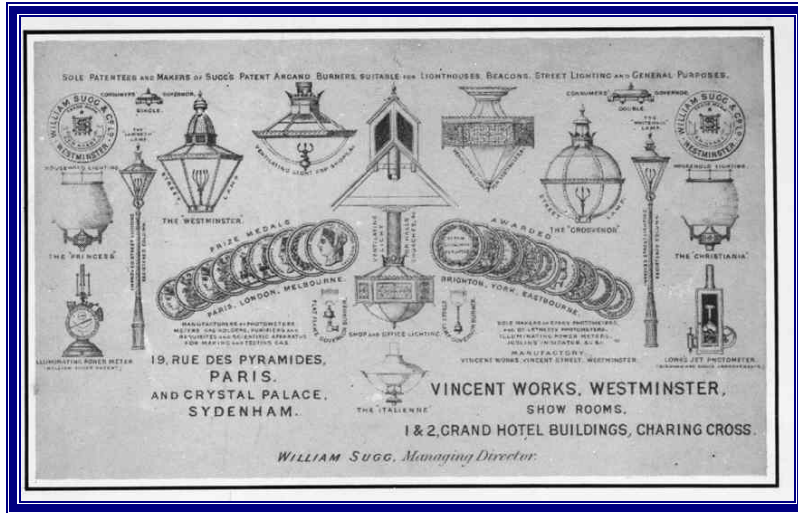


“The Father of Gas Lighting”

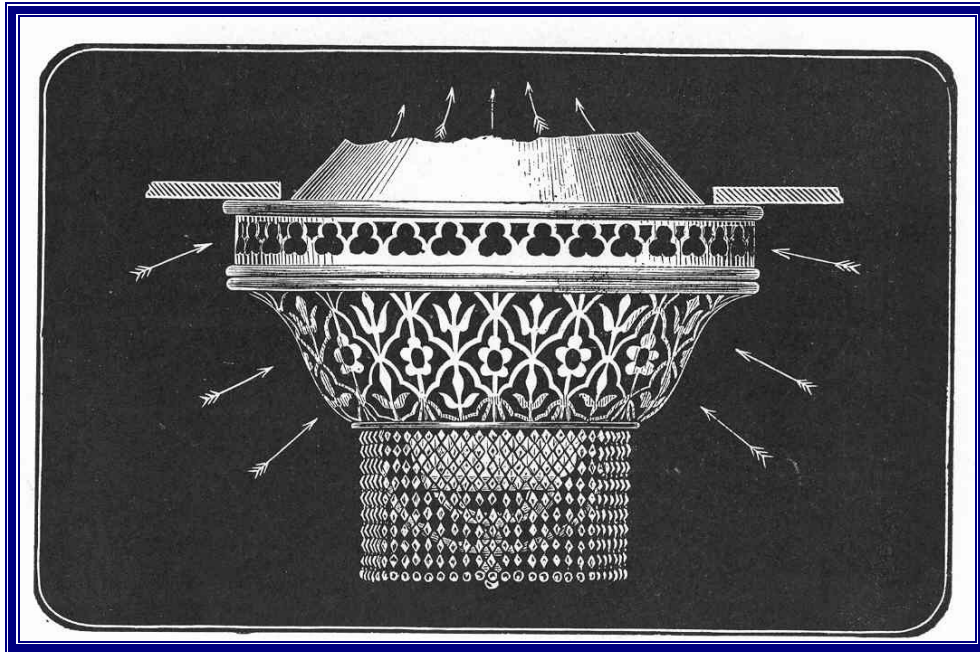
*A Detailed History is available as “Wm Sugg & Co (The Family and the Firm”
Under ELECTRONIC BOOKS elsewhere on this website*



Advertisement mid-1770s



Company Headed Notepaper 1870s



Sugg Ventilating Gas Burner of 1883

Sugg's
"ALADDIN"

PATENT
(SELF GOVERNING)

READING
LAMP

3 FT OF GAS
 PER HOUR.
 EQUAL TO 16 CANDLES.

SUPERIOR TO THE
 ELECTRIC LIGHT.

FOR THE OFFICE,
 STUDIO,
 LIBRARY,
 WORKROOM.

PRICE -
25/-


COMPLETE AS SHOWN.

BRILLIANT
 SILENT

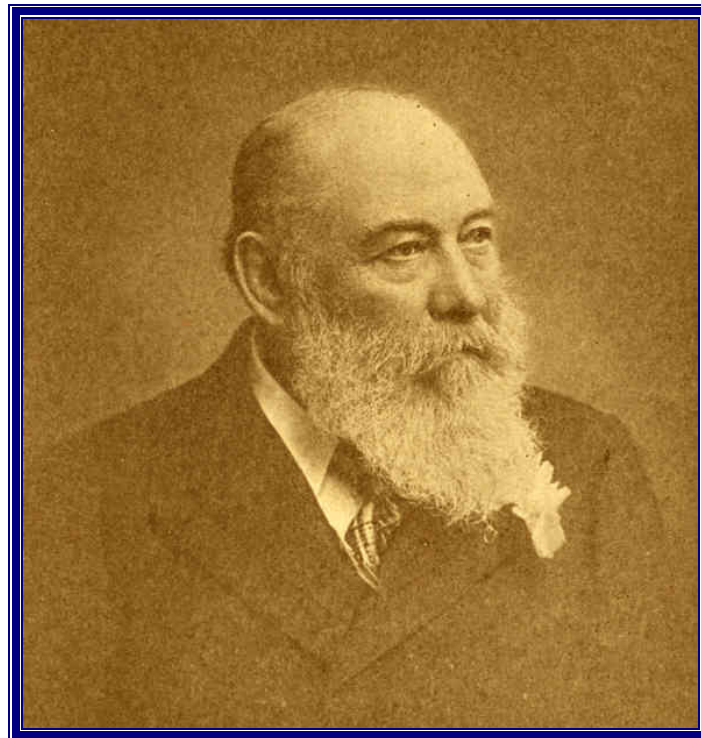
WHITE
 LIGHT

1/4 FULL SIZE.

GRAND HOTEL B^{DOGS} CHARING **X** W.C.



Advertisement from 1887



William Sugg

ON THE OLD SYSTEM

THE BURNERS
 CHIEFLY IN USE ONLY GAVE
 ONE HALF THE ILLUMINATING POWER

OF THE GAS!
 AND SEVERAL TESTED
 BY THE GAS REFERES GAVE

THREE ORDINARY BURNERS, each consuming Eight Cubic Ft. of Gas per Hour.

ONLY ONE QUARTER THE LIGHT
 OF THE GAS.

Note. SIMILAR BURNERS
 ARE STILL VERY LARGELY
 USED 1886

Sugg Brochure 1881



Wm Sugg at the Crystal Palace Gas Exhibition of 1887



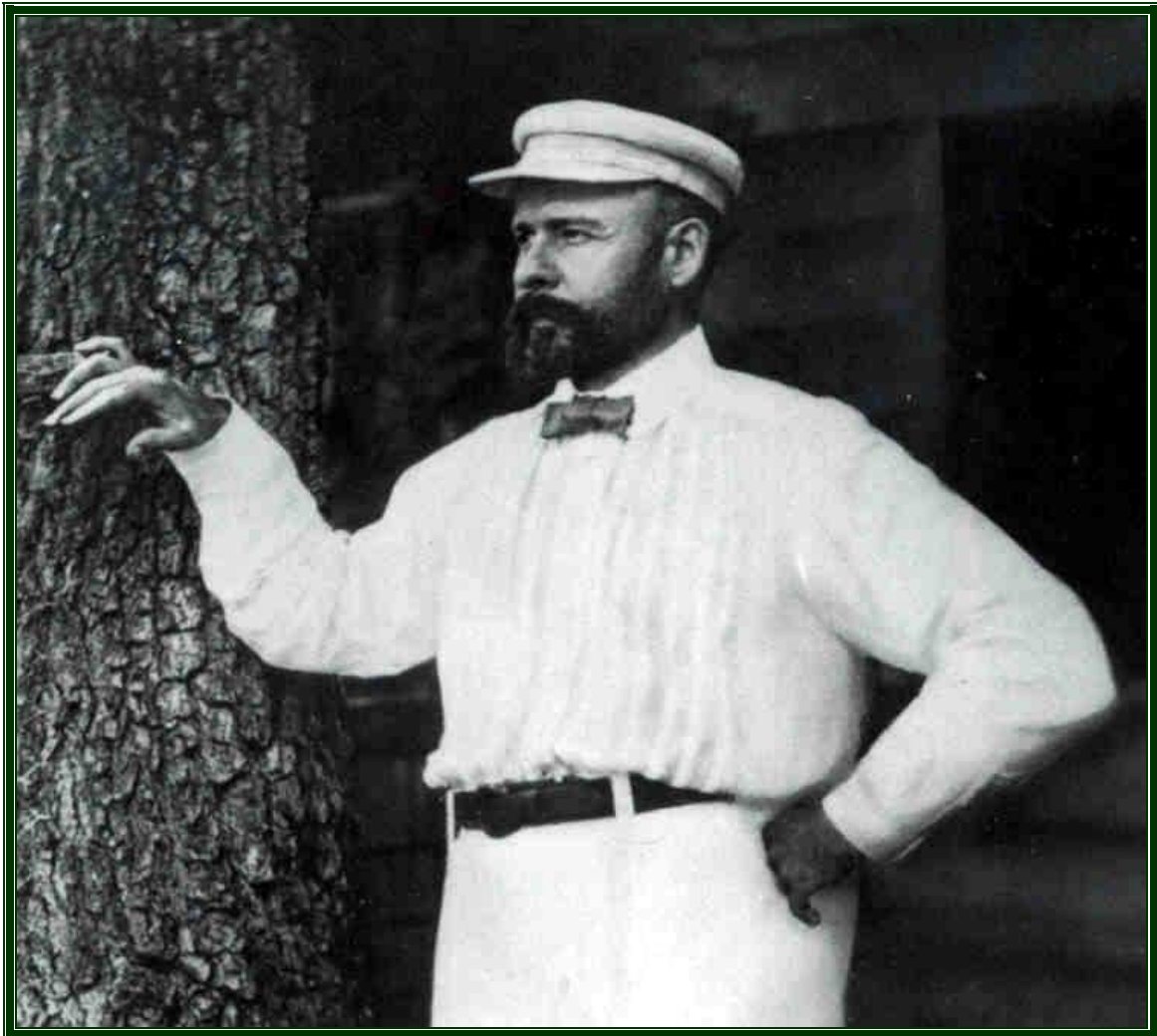
William Sugg and Family c.1900



Company Brochure 1981



LOUIS HENRI SULLIVAN
1856-1924



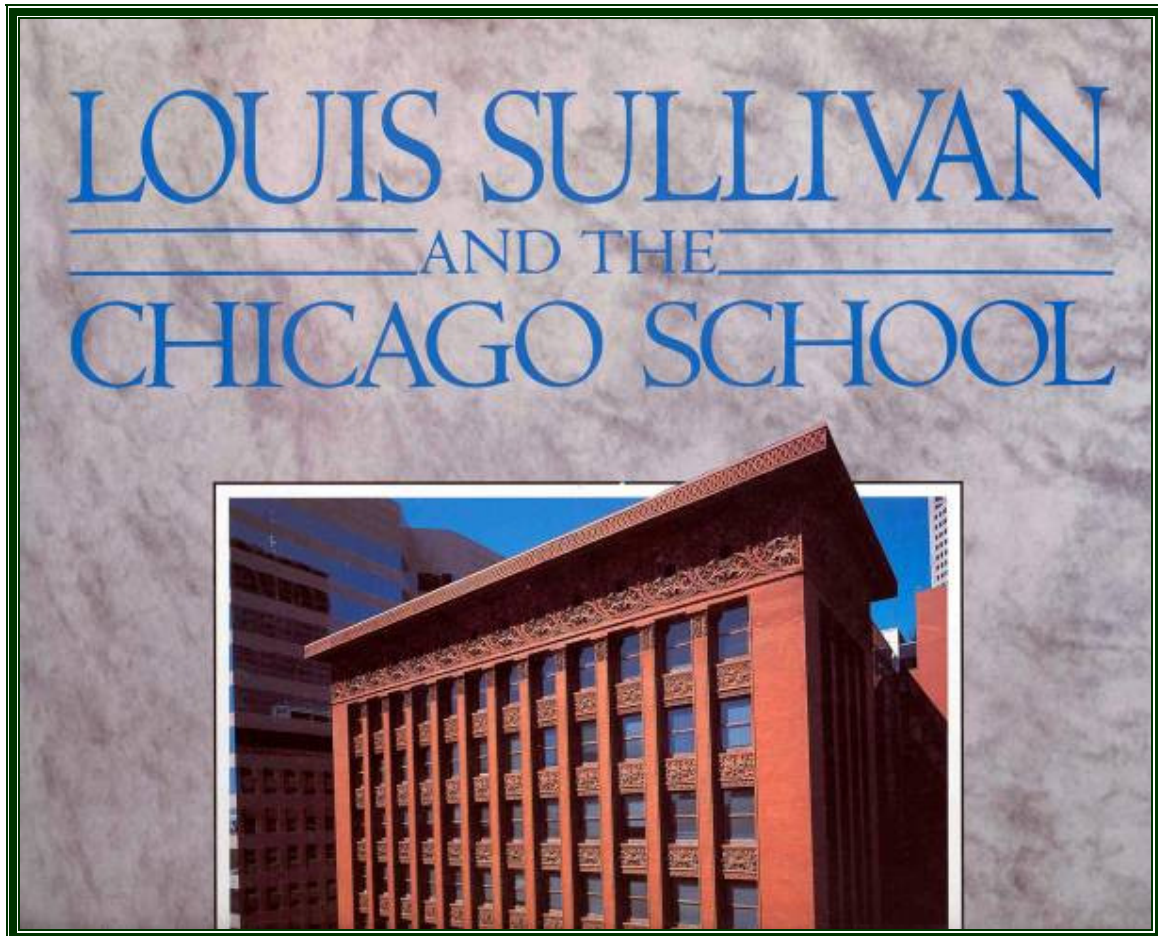
Coined the dictum "Form Follows Function"

[199] Louis Henri SULLIVAN

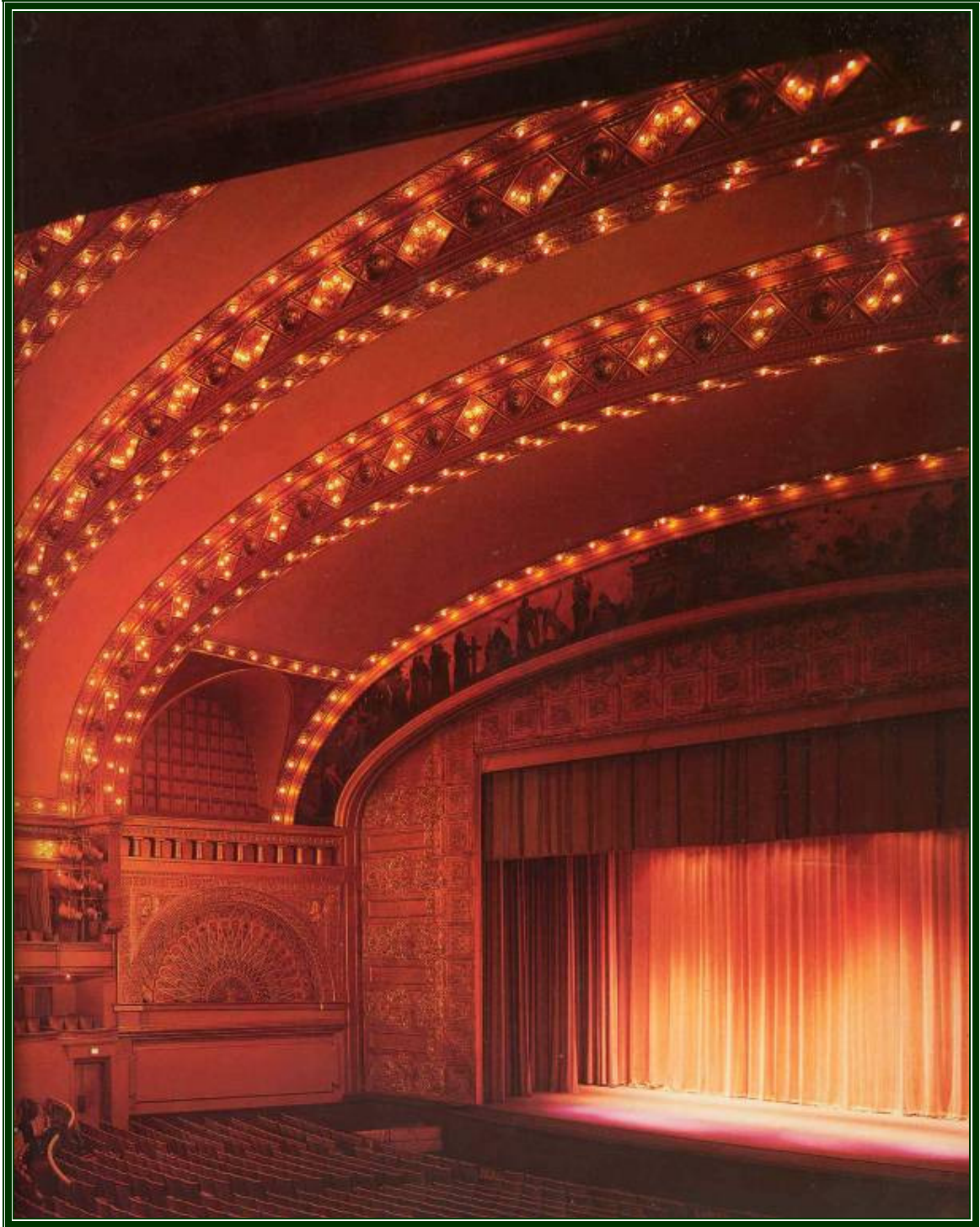
1856-1924

American architect. Pioneer in the design of metal-framed buildings and early skyscrapers of the Chicago School. Worked for a number of years with Adler [198]. Coined the dictum "Form Follows Function." Designed the Wainwright Building, St. Louis (1891), and the Guarantee Building, Buffalo (1895). He trained Frank Lloyd Wright [201] and has been termed the "Prophet of Modern Architecture."

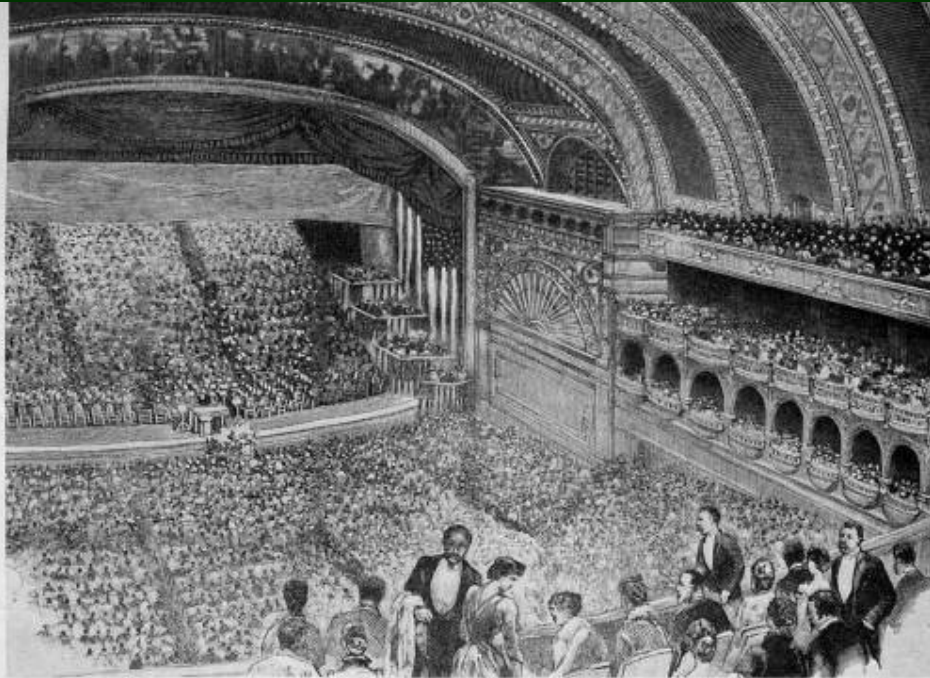
(Mini-biography from "The Comfort Makers," Brian Roberts, ASHRAE, 2000)



*"Louis Sullivan and the Chicago School," Nancy Frazier, 1991:
CIBSE Heritage Group Collection)*



Auditorium Theatre, Chicago, 1889



Courtesy Chicago Historical Society.

1 CHICAGO AUDITORIUM THEATER first opened on December 9, 1889. This scene was recently re-enacted at the theater's reopening following restoration.

Eighty Year Old Theater Reopens

"Integrated ceiling" designed in 1880s provides light, air, and ornamentation in the restored Chicago Auditorium Theater

By **HARRY J. SCHARRES**
Scharres & Associates
Consulting Engineers
Chicago, Ill.

A NEW generation that recognized a great heritage gathered on October 31, 1967 to celebrate the rebirth of the 78 year old Chicago Auditorium Theater. The gala reopening represented a re-enactment of the scene shown in Fig. 1, a portrayal of the first opening night on December 9, 1889.

The Chicago Auditorium Theater, formally opened by President Benjamin Harrison, originally had seats for approximately 5000 persons although more than 6000

could be seated for special events by providing temporary seating on the stage and in the gallery. And an audience count in those days did not include the "standing room only" crowd, for which ample space was provided.

The seating capacity of this 78 year old theater still exceeds that of any of the fine theaters and opera houses of the world. In addition, it features comfort air conditioning, excellent sight lines, and almost perfect acoustics.

Restore, Not Remodel

It is significant to note that all the important features of a well

designed theater—good acoustics, sight lines, air conditioning, lighting, and seating capacity—were provided in the original design executed by the firm of Adler and Sullivan (engineer and architect, respectively) almost 80 years ago. Very little remodeling was necessary to meet modern building code requirements, and the completed work can be considered more a restoration than a modernization.

The condition of the theater before the restoration began is indicated by Fig. 2. Most of the seats on the main floor had been removed. The stage fire curtain could not be raised; the air conditioning system had deteriorated beyond repair; and extensive water damage was in evidence everywhere (as indicated by the white spots in the photo), the result of a leaking roof and complete disintegration of the roof drains and downspouts. The theater had been left unheated through many winters, and electric lighting was accomplished by makeshift temporary connections to a few selected circuits.

The deterioration was so exten-

4 AIR DIFFUSERS, supplied by sheet metal ducts above ceiling, were precast plaster hemispheres. They were reused without alteration.

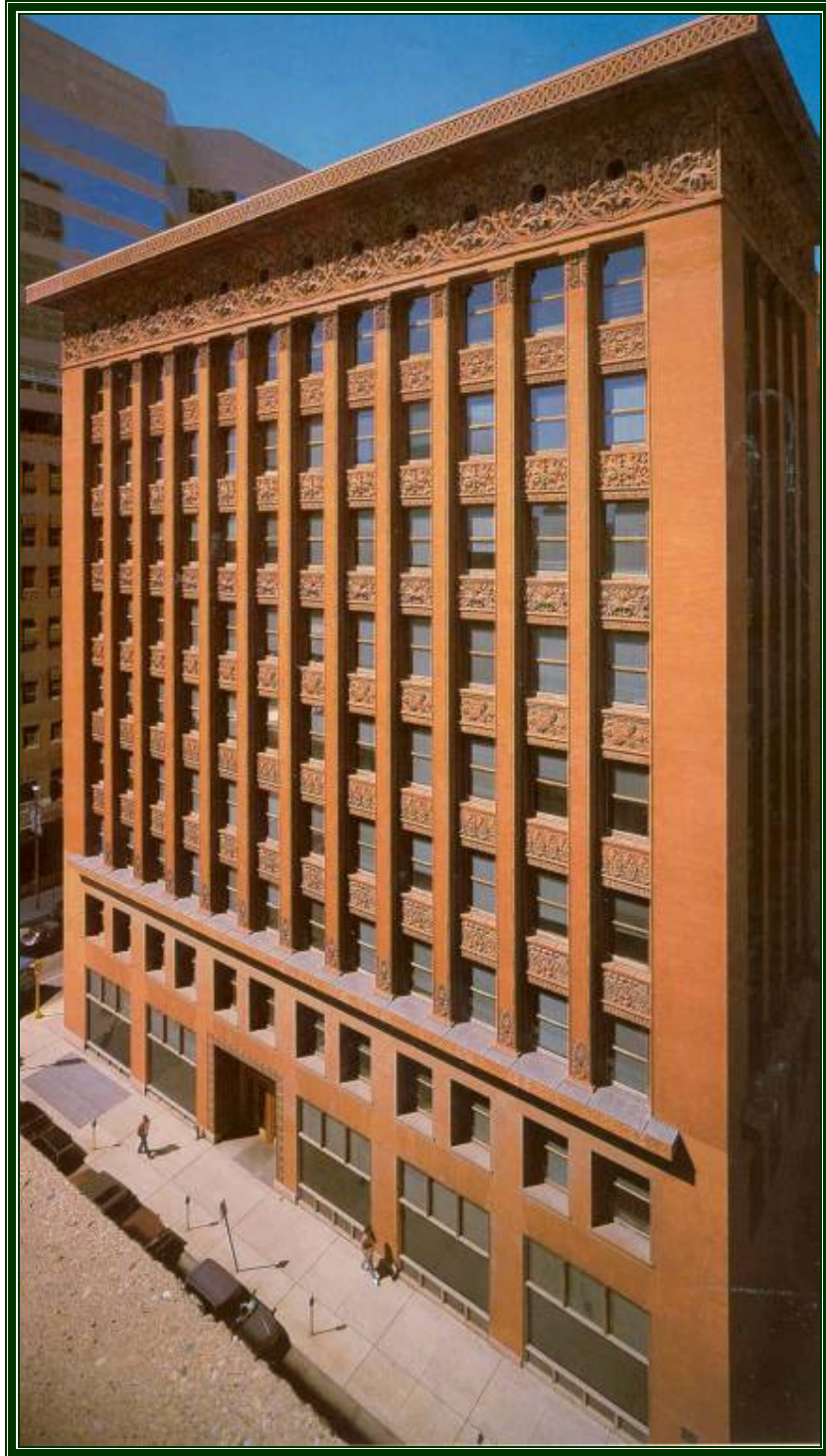
5 AIR DIFFUSERS were, and are, an integral part of the ornamentation of the ceiling arches. This feature is typical of the theater design, which combined form and function throughout.



Courtesy United States Gypsum Co.



Courtesy United States Gypsum Co.



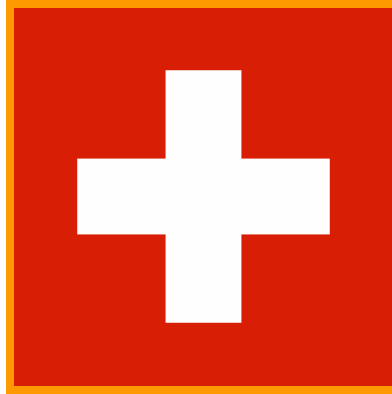
Wainwright Building, St Louis, Mo, 1890



Atrium of Wainwright Building



Bayard Building, New York City, 1897



SULZER BROTHERS



*History of the Industry and of Sulzer Bros 1991
(CIBSE Heritage Group Collection)*

JOHANN JACOB SULZER
1806-1883



SALOMON SULZER
1809-1869



[230] Johann Jakob SULZER

1806-1883

[231] Salomon SULZER

1809-1869

Swiss brothers. With their father's assistance, opened a new iron foundry at Winterthur (1834). The company was Sulzer Brothers. Attention turned to the manufacturing of equipment and they produced their first wrought-iron steam boiler (1841). Later, the Cornish type boiler was manufactured (1860s), the inclined multitubular boiler (Grand Prix, Paris, 1878), and then water-tube boilers (by 1900). Over the years, the company has developed into a manufacturer of heavy machinery, which includes internal combustion engines, compressors, turbines, pumps, process, and textile plant. Now an industrial giant and active around the world, its comfort engineering activities embrace boiler plant, refrigerating machinery, the installation of heating, ventilating, and air conditioning, and district heating.

(Mini-biography from "The Comfort Makers," Brian Roberts, ASHRAE, 2000)



Sulzer Foundry, Winterthur, Switzerland, 1849

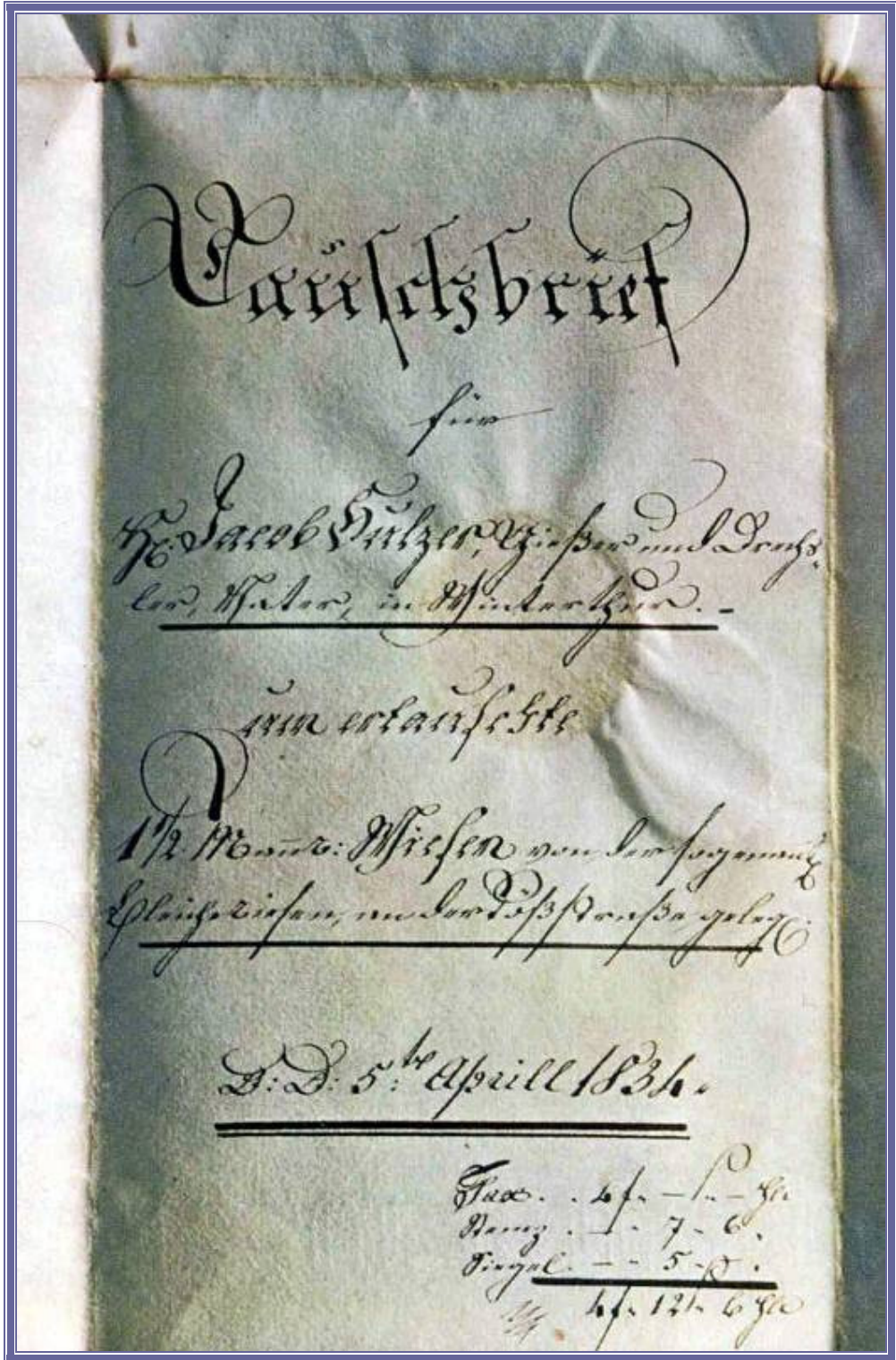
In the spring of 1834 the brass-founder and turner Jakob Sulzer acquired a piece of land to the south-west of the town of Winterthur, now enclosed between the railway and the road to Zurich. The deed of exchange relating to the transaction is still extant (opposite page): the town of Winterthur ceded the land to Jakob Sulzer in return for another property near the Holdertor (a town gate) with a small brass foundry. Jakob Sulzer and his two sons, Johann Jakob and Salomon, were determined to apply their skill and experience to the opening of a larger foundry and a small workshop on the new premises.

The two sons had both been trained in their trade. Their study of the theory and practice of casting and metal working had brought them into contact with training centres and experts all over Europe. They returned home just at the time when cast iron was beginning to replace the hitherto predominant brass, and this fact was no doubt to help them in making a successful start. The capital of the new enterprise consisted solely in a thorough and up-to-date knowledge of the working methods and requirements of an iron foundry. Just as the modern Sulzer company depends for survival and success on the know-how of its engineers, so the professional knowledge of the two Sulzer brothers was the real foundation-stone of their enterprise.

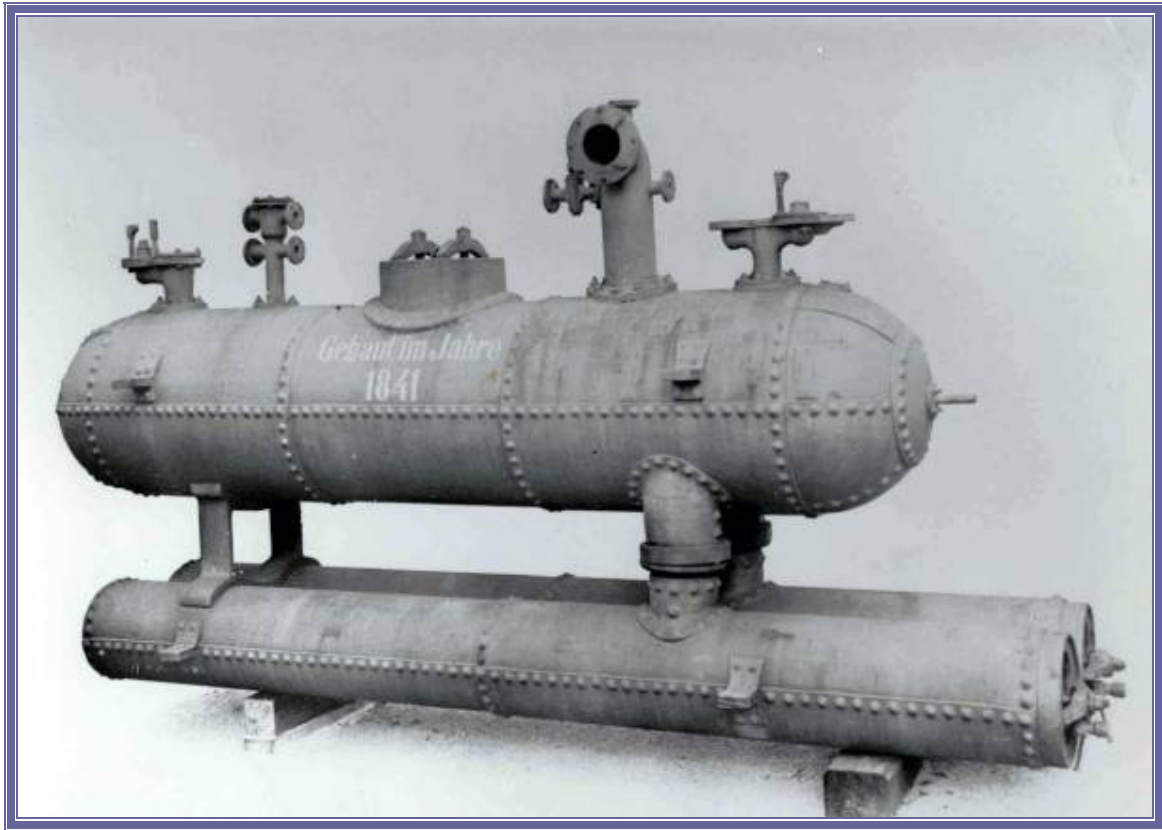
It was not many years before a trade venture developed into an industrial undertaking. The outward manifestation of this change was the addition of an engineering works to the foundry. By 1849, however, the foundry itself was no longer able to cope with the growing production volume, and a drawing (page 6) by Johann Jakob Sulzer's son, at that time a boy of twelve, already shows an impressive new building.

Yet even this was to prove a mere beginning. The next few decades were to earn the Sulzer company an international reputation and to link its name durably with the progress of heavy engineering.

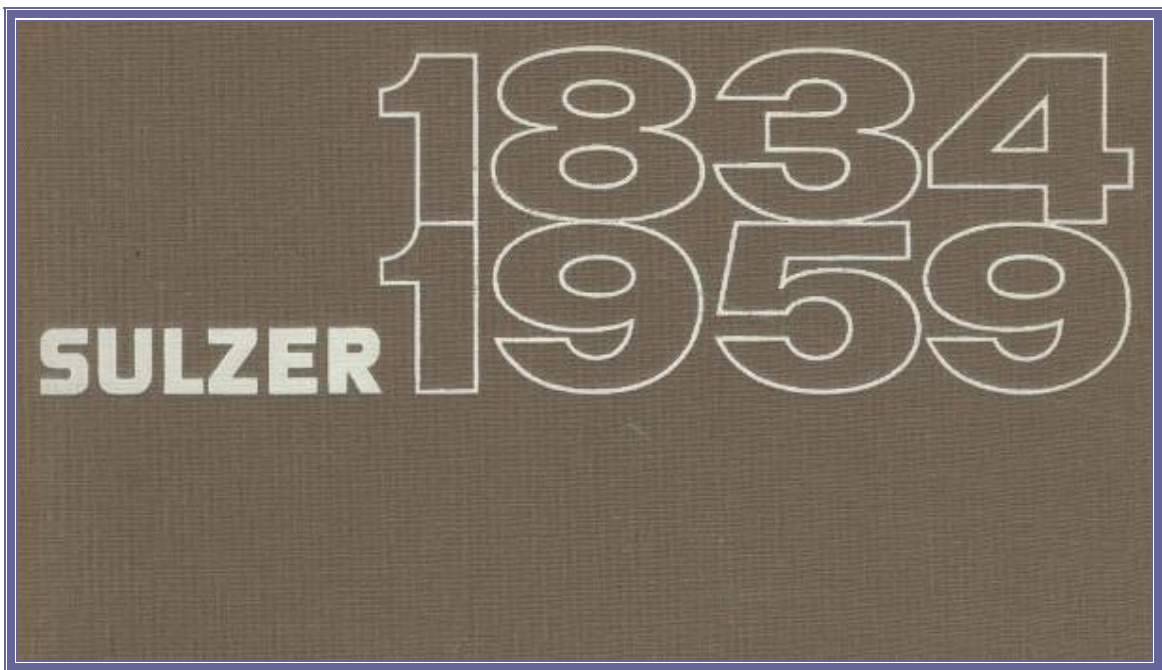
The Start of Sulzer Bros



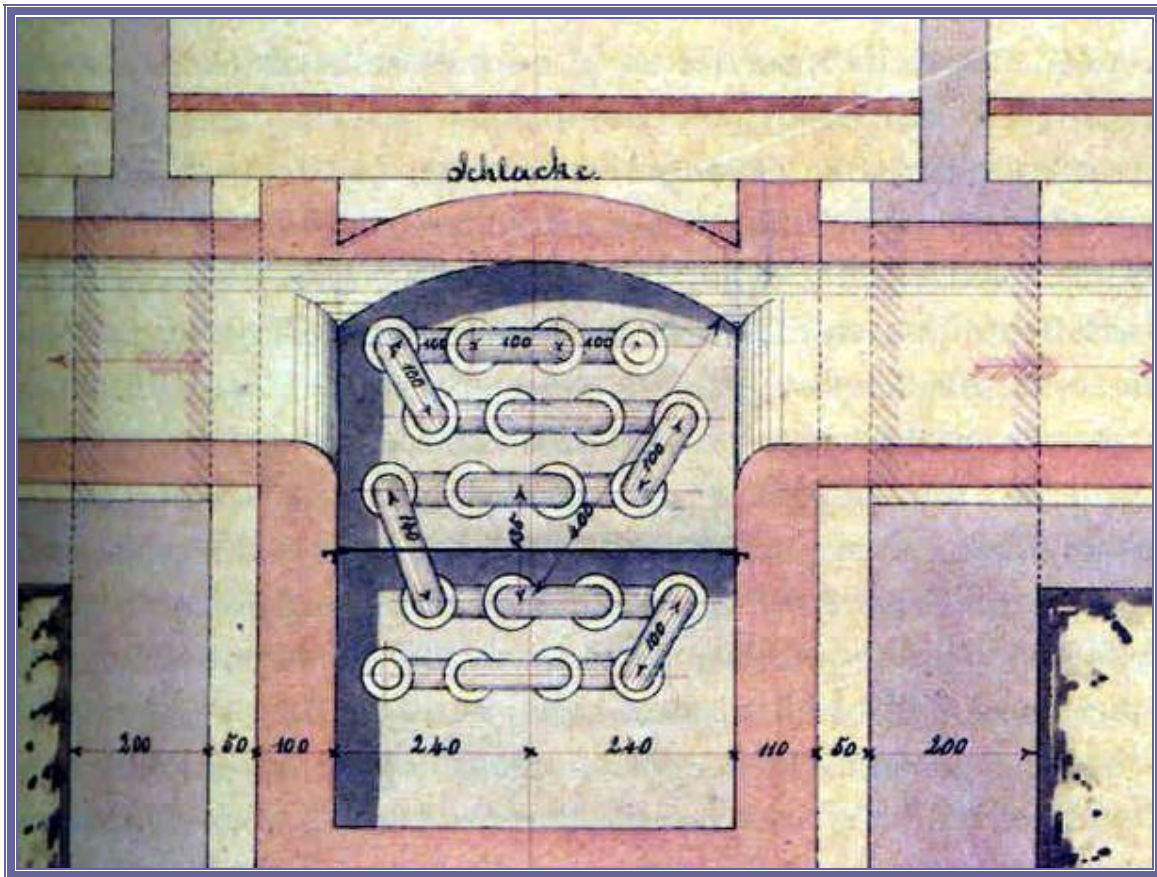
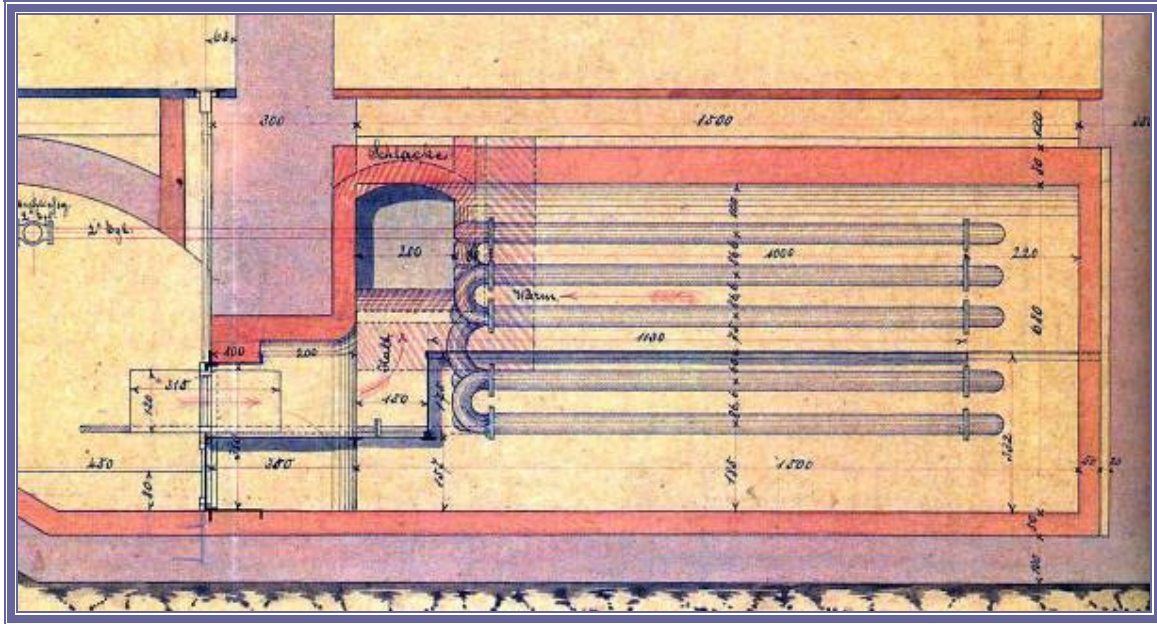
The Deed of Exchange, mentioned above



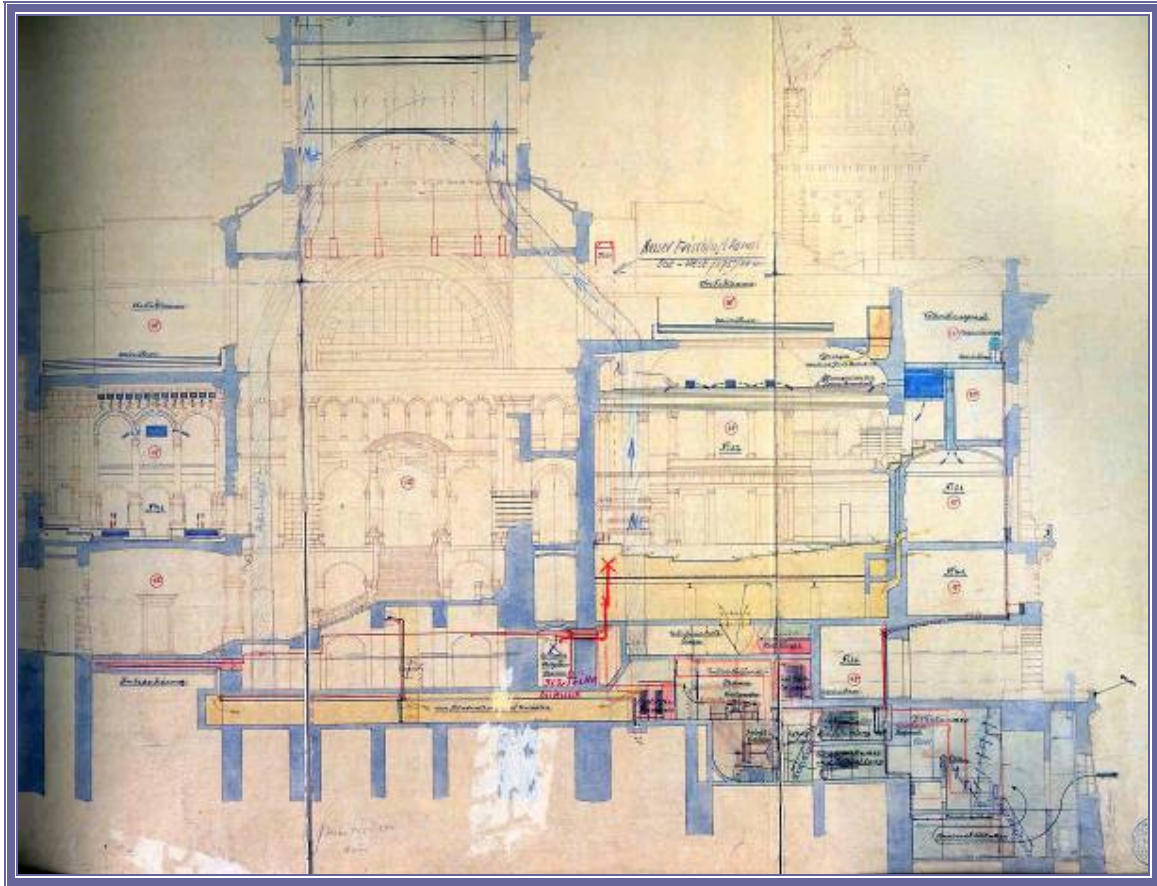
The First Steam Boiler, 1841



Cover Title Block, Company History (CIBSE Heritage Group Collection)



Early Sulzer Bros Drawings of Steam Air-Heating Coils



*Detail from Sulzer Bros Heating & Ventilating System Drawing
Bundeshaus, Bern, 1902*

A CENTURY OF ENGINEERING PROGRESS

This year marks the centenary of the foundation of the firm of Sulzer Bros.

The firm's history constitutes a record of steady progress and pioneer work in many branches of engineering. Commencing as an Iron Foundry in 1834 attention was soon devoted to Central Heating and from the first Sulzer boiler constructed for that purpose in 1841 until the present day, when the Sulzer Electrode Boiler has attained a pre-eminent position in this field, and the latest coke fired boiler is about to be placed upon the market, the name of Sulzer has been synonymous with excellence of design and workmanship.

Sulzer's Technical Staff is freely placed at the service of Architects for the preparation of competitive schemes.

SULZER

The latest of the Firm's publications is an illustrated Brochure, "High Temperature Hot Water," which may be had upon application.

SULZER BROS. (LONDON) LTD.
31, BEDFORD SQUARE, LONDON, W.C.1

HEATING
VENTILATING
AIR-
CONDITIONING
REFRIGERATING
COMBINED
HEATING &
POWER PLANT
DIESEL ENGINES
CENTRIFUGAL
& TURBINE
PUMPS

The Royal Institute of British Architects (Architect: G. Grey Wornum, F.R.I.B.A.) selected Electric-Thermal-Storage for the Central Heating of their New Headquarters in Portland Place, London, W., employing The Sulzer System

No. 2

SULZER TECHNICAL REVIEW

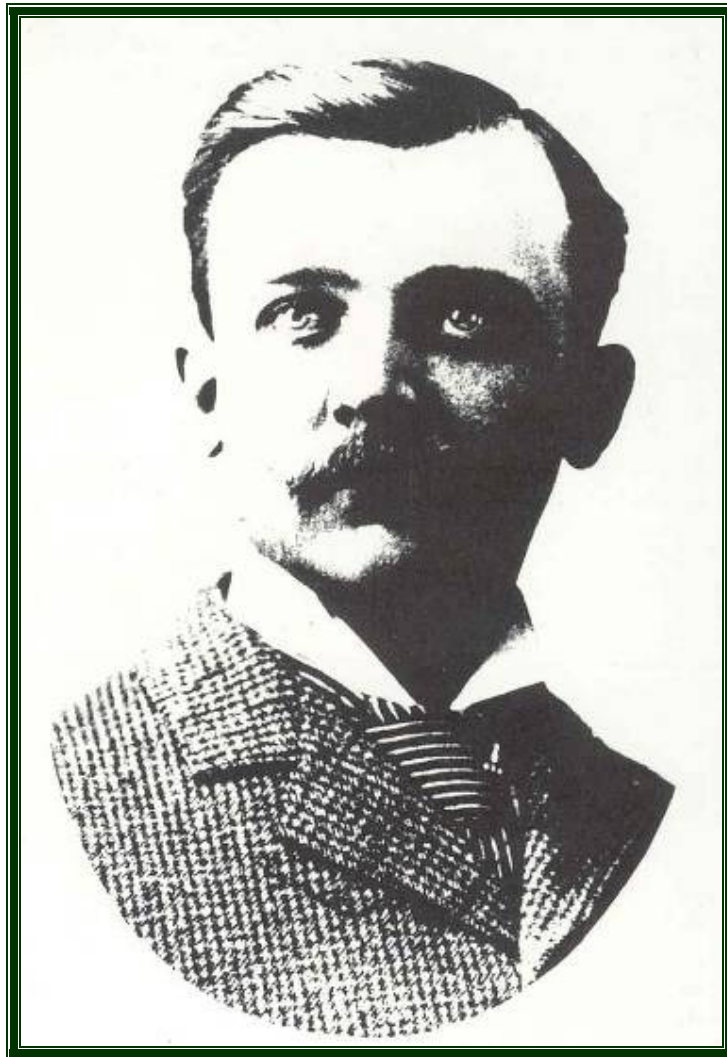
1834-1959



Company Magazine, 125 Years Issue (CIBSE Heritage Group Collection)



WILLIAM RICHARD SWEATT
1867-1937



Co-founder of Honeywell

[130] William Richard SWEATT

1867-1937

Established the Sweatt Manufacturing Co. in Minneapolis to make wooden wheelbarrows and wooden washing machines (1891). Invested in the Electric Thermostat Co., which was then manufacturing the *damper flapper* of Butz [129]. After a number of difficult years, Sweatt bought out the other stock holders (1900). Later (1905), the company made a thermostat and two types of damper motors and that year introduced a clock thermostat. The company became (1912) the Minneapolis Heat Regulator Co. The company expanded and prospered under the direction of his son, Harold W. Sweatt, later (1927) merging with the business of Mark Honeywell [133].

(Mini-biography from "The Comfort Makers," Brian Roberts, ASHRAE, 2000)

Whew! It's Hot!
and Boo! It's Cold!

are expressions never heard in homes equipped with the

**MINNEAPOLIS
HEAT REGULATOR**

which maintains an even heat whether the outside temperature be ten below or forty above. Set thermostat for the degree of temperature you desire. It will automatically open and close dampers on a change of one degree maintaining even, healthful and economical heat.

Applied to Hot Water, Hot Air, Steam, Natural Gas, Street Steam Valves

**With or Without
TIME ATTACHMENT**

With time attachment (illustrated) the point of temperature may be set to any lower degree. Set alarm hand of clock at any hour when you desire temperature changed. The pointer will at that hour automatically move to 70; the thermostat remaining in control at all times.

SAVES FUEL TROUBLE **INSURES HEALTH COMFORT**

Sold on a Positive Guarantee by the Wholesale and Retail Heating Trade and proven successful by a quarter century of market experience.

1908 Booklet free from nearest office.

William R. Sweatt, Secy.

144 High Street, Boston 404 Phoenix, Minneapolis 606 Court Street, Syracuse

A detailed illustration of a vertical thermostat. The top part is a cylindrical metal housing with a dial and a pointer. Below this is a complex mechanical assembly with various gears and levers. At the bottom, a circular clock face is attached, showing the time and a specific temperature setting. The entire device is shown in a side profile.

Advertisement of 1908 ("Honeywell – The First 100 Years")

During the early 1880s, Albert M. Butz developed a thermostatically controlled draft damper for heating systems in Minneapolis, Minnesota. Butz, a partner in the Mendenhall Hand Grenade Fire Extinguisher Co., received two U.S. patents (341,092 and 347,866) in 1886 and attempted to sell his invention through the Butz Thermoelectric Regulator Company. After Butz left the company in 1888, it was

renamed the Consolidated Temperature Controlling Company.

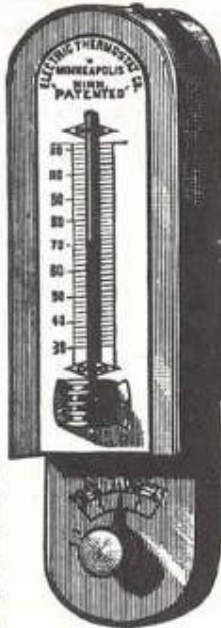
William R. Sweatt (Figure 10-14) moved to Minneapolis in 1891 at the age of 24, where he began the Sweatt Manufacturing Company to build wooden wheelbarrows, grocery boxes, and wooden washing machines. He "had not been in Minneapolis very long before he was approached by the Electric Thermostat Company to invest some money. It was the old Consolidated Temperature Controlling Company, reorganized and renamed in 1889."³⁹ The company manufactured a thermostat and a hand-wound, spring-powered motor that controlled indoor temperatures by opening and closing a flapper draft damper on a coal-fired furnace or boiler. However, this first product did not sell and the company continued to have financial problems until 1893, when the company raised funds and was incorporated as the Electric Heat Regulator Company (Figures 10-15 and 10-16). The following years continued to be difficult. In 1905, the company made a thermostat and two kinds of damper motors, one spring powered and the other powered by gravity. W.R. Sweatt introduced a clock thermostat in 1905. In 1912, the company changed its name to the Minneapolis Heat Regulator Company and, by 1913, there were four thermostat models available.

W.R. Sweatt turned more and more to his son H.W. Sweatt to manage day-to-day operations of the company.

H.W. Sweatt called on heating equipment manufacturers to understand their changing needs and maintain the company's leadership. In 1917, the use of oil for domestic heating was dictated by shortages of coal as a result of World War I, and the company shifted its emphasis to oil burner controls.

In the 1920s, the largest competitor was the Honeywell Heating Specialties Company at Wabash, Indiana. "It was started by Mark Honeywell as the Honeywell Heating Specialty Company to manufacture a hot water heating appliance invented by Mark Honeywell and known as a 'Heat Generator.'"⁴⁰ In 1927, W.R. Sweatt and Mark Honeywell met to discuss the possibility of a merger between the two companies. The new company was incorporated in Delaware as the Minneapolis-Honeywell Regulator Company (Figure 10-17).

ON THE } PULSE



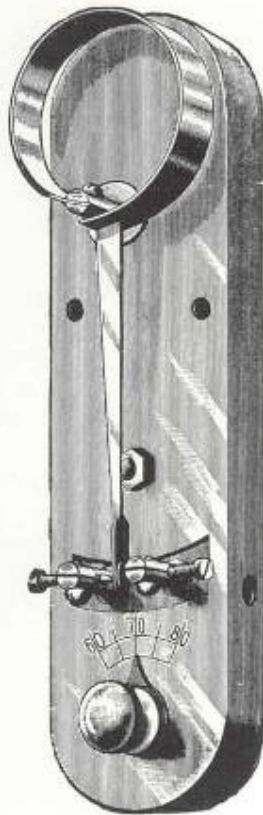
Of your heating apparatus we lay an unerring Mechanical "Finger," with which we guarantee to maintain, without variation, any desired degree of heat in your building. 'Tis simple in construction, easy of application, moderate in cost, and astonishingly effective in operation. Space forbids details here. The time to investigate, however, is most propitious. Write, and simply ask us, What of that FINGER?

Electric Heat Regulator Co.

26th St. and D Ave., South

MINNEAPOLIS, - MINNESOTA.

Figure 10-15 Thermostat, Electric Heat Regulator Co., 1895 (from Heating and Ventilation, May 15, 1895).



GOLD or SILVER

WHICH SHALL BE
THE STANDARD?

People cannot agree, but everyone agrees that both gold and silver can be **saved** by using a **HEAT REGULATOR** to control any style of heating plant, and maintain automatically an **EVEN TEMPERATURE**.

Well informed people agree also that there is but one "**STANDARD**" Regulator, which was **FIRST** and is still **BEST**. Sold by **Heating Trade** generally. **No Agencies**.

SEND POSTAL FOR DISCOUNT AND TERMS.

WM. R. SWEATT, Secretary,

Electric Heat Regulator Co.

Twenty-sixth Street and A Ave.

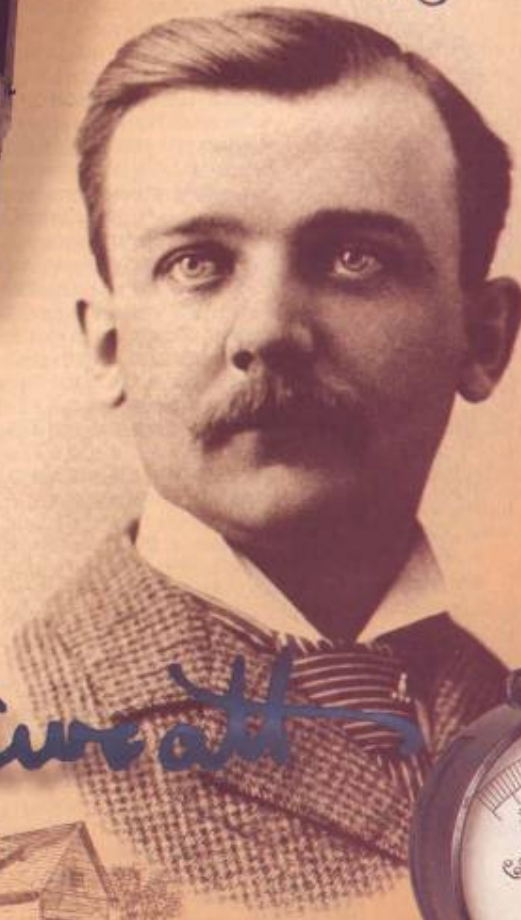
MINNEAPOLIS, MINN.

89-91 Centre St., NEW YORK CITY.

Figure 10-16 Thermostat, Electric Heat Regulator Co., 1895 (from *Domestic Engineering*, vol. 9, June 1895).

(Text and pictures from "Heat & Cold: Mastering the Great Indoors,"
Barry Donaldson & Bernard Nagengast, ASHRAE, 1994)

SWEATT MFG. CO.
WHEEL BARROWS,
WASHING MACHINES, ETC.
MINNEAPOLIS
MINN.



W. R. Sweatt





Interior and exterior views of the former bowling alley show the first building Sweatt purchased for Electric Heat Regulator Company in 1908-1909. The building was in such disrepair that it was said the walls had to be braced in a strong wind to keep production pulleys and belts in alignment.

(From "The Legend of Honeywell," Jeffrey L Rodengen, 1995)