



ASHRAE American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

LA CROSSE AREA CHAPTER

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1991-1992

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April 1, 1992

Mr. James M. Ritter, P.E.
Region VI Historian
2535 1st Ave. W.
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Subject: Gold Ribbon and Log Book of TIME Award
10th Entry - History of a Company

Dear Mr. Ritter,

I am enclosing the La Crosse Area Chapter, 10th entry, for the Gold Ribbon and Log Book of TIME Award. The La Crosse Area Chapter is a very active chapter of Region VI and we are submitting the History of a Company that is extremely active with ASHRAE disciplines - Northern States Power Company - Wisconsin.

Thank you.

Very truly yours,

James M. Ritter, P.E.
Chapter Historian
La Crosse Area Chapter

Enc.

CHAPTER MAY NOT ACT FOR SOCIETY

THE HISTORY OF A COMPANY

NORTHERN STATES POWER COMPANY - WISCONSIN

The history of Northern States Power Company - Wisconsin can be traced back to the early settlement of the City of La Crosse on November 9, 1841. An attempt had been made in 1836-37 by John B. Coons and Colonel Cabbage to establish a trading post at Prairie La Crosse, but after their store had been twice destroyed by fire, presumably set by the Winnebagos, they gave up the venture.

Nathan Myrick had learned about Prairie La Crosse and the description of the place led him to believe that the site was well suited to his purpose. The Winnebago Indians, who inhabited the area, came to this place down the Black River and other streams and held pow-wows as well as their tournaments. Myrick loaded a keel boat with a stock of goods and started up the river, from Prairie du Chien, with a partner, H.J.B. Miller. They reached their destination on November 9, 1841 and built a cabin opposite State Street on Barron's Island, which is now Pettibone Park.

Business was brisk and it was decided to move to the mainland. Logs were cut and the new cabin was built at the present location of Front Street, north of State Street. The young traders moved in before the cabin was completed. A howling blizzard during the night ripped off the roof boards and deposited six inches of snow in the cabin. Despite discouragement, the new store was completed and the stock laid in. Business was so good that Myrick found it necessary to make repeated trips for additional supplies of goods. Myrick and Miller each staked out and claimed large parts of what is now the city of La Crosse.

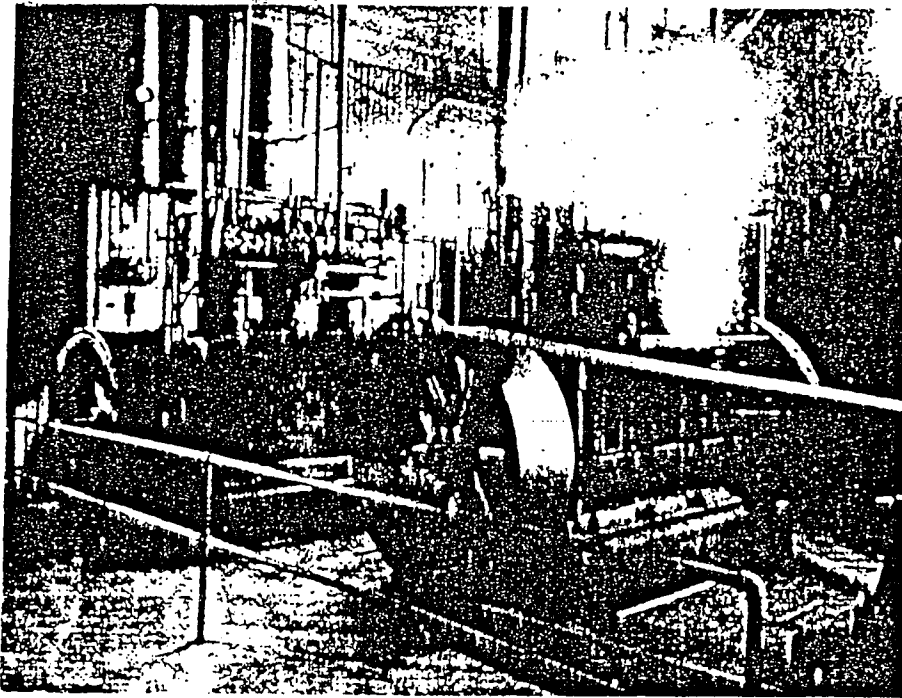
Only a few settlers moved in during the following several years, but beginning in 1852 there was a very rapid increase in population. A saw mill was built in 1851. There were only 5 dwellings in April, 1851, but in November, 1853, there were 104 dwellings, 8 dry goods stores, 4 grocery stores, 2 drug stores, 1 harness shop, 4 blacksmith shops, 1 gun shop, 2 bakeries, 1 cabinet shop, 3 physicians, 4 lawyers, 1 justice, 5 taverns, 1 barber shop, 1 print shop, 1 saw mill, 1 wagon shop, and miscellaneous other places.

Altogether, up to 1910, there were 33 saw mills at various times in La Crosse, North La Crosse, and Onalaska.

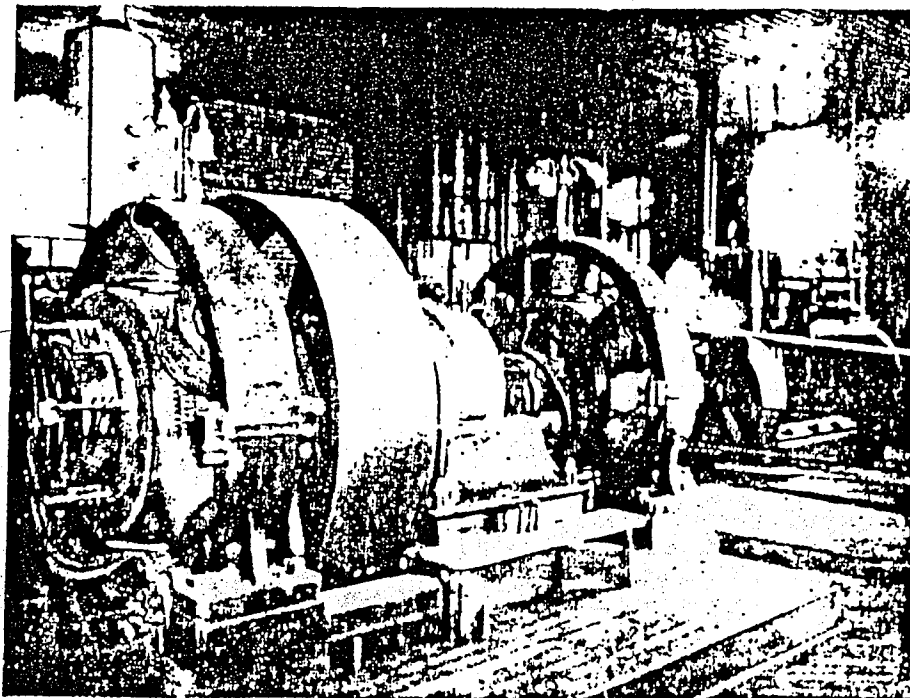
The January 20, 1860 issue of the La Crosse Union and Democrat mentions the organization of the La Crosse City Gas and Coke Company. Its officers were Wm. Brewster, president; Samuel S. Smith, vice president, and Edwin Flint, secretary and treasurer. A contract was let to W. Orrin Baker of New York for the erection of a gas works. The property was described as lying between the plank road bridge and the La Crosse River, containing about five acres. A later article described the project in the following words: "The metre house 20 x 30 feet; a basement for purifying of the same dimensions, with the tar and water wells, are already built. A temporary tank and holder 24 feet in diameter by 10 feet deep will be erected immediately. The retort house 30 x 60 feet will be put up early in the spring. The present metre house is large enough to make gas on a small scale and will answer the present needs of the city. A six-inch conducting pipe will be laid on Second Street to Pearl, branching on either side and cross streets." Gas service apparently was not started until some time after the middle of 1861. The Civil War had begun and labor was scarce and money was tight. The plant was on the site of the present gas plant.

The first plant was designed as a coal gas plant but coal was expensive and consequently various substitutes were tried, among them briquets made of sawdust and oil. The plant had hardly started operations when Mr. Baker tried to find a gas leak with a match and blew up the holder.

On March 19, 1863, the La Crosse Gas Light Company was organized, which took over the older company and its plant. In 1869, control of the company passed to Alex McMillan and D.D. McMillan. The first gas street lighting was installed at this time. Previously the streets had been lighted by kerosene lamps.



THESE TWO GAS ENGINES of 85 horsepower each, in the old Edison plant in LaCrosse, used commercial gas for power. They drove two Edison bi-polar generators for emergency purposes only. The generators were 110 volt, 50 kilowatt units, and were installed about 1900.



THIS UNIT in the old Edison plant in LaCrosse consisted of two G. E. 600 ampere, 110 volt, D.C. generators direct connected to a Ball and Ball engine. It was located in the northeast corner of the plant and was installed about 1895.

The new owners began extensive improvements, including the laying of new mains and the construction of new coal sheds. In 1880 a new brick retort house 36' x 40' was constructed in which were installed three benches of five retorts each, with space for a fourth. The holder at this time was 35 feet in diameter and 16 feet deep, enclosed in an octagonal building. There were 3 miles of main and 61 street lights.

The regular gas house crew consisted of six men, who were paid \$14 per week each for a twelve-hour day, seven days per week.

In 1893, the La Crosse Gas Light Company was purchased by the Dawes Brothers of Chicago, one of whom was Charles Dawes, who later became vice president of the United States.

First Electric Service in La Crosse

The first electric company in La Crosse was the La Crosse Brush Electric Light and Power Company. It was incorporated on October 29, 1881, and the following officers were elected:

President G. R. Montague
Vice President. Mons Anderson
Secretary. Mills Tourtelette
Treasurer. B. B. Healy

Contracts were made immediately with the Western division of the Brush Electric Company for the delivery of equipment to the plant, which was in the Hirschheimer Building at 2nd and Badger Streets. The first shipment was made in December and other equipment was delivered from time to time as it was completed. In the meantime, a crew was busy building foundations for the boilers and heavy machinery and installing line shafting, pulleys, boilers, piping, and engines.

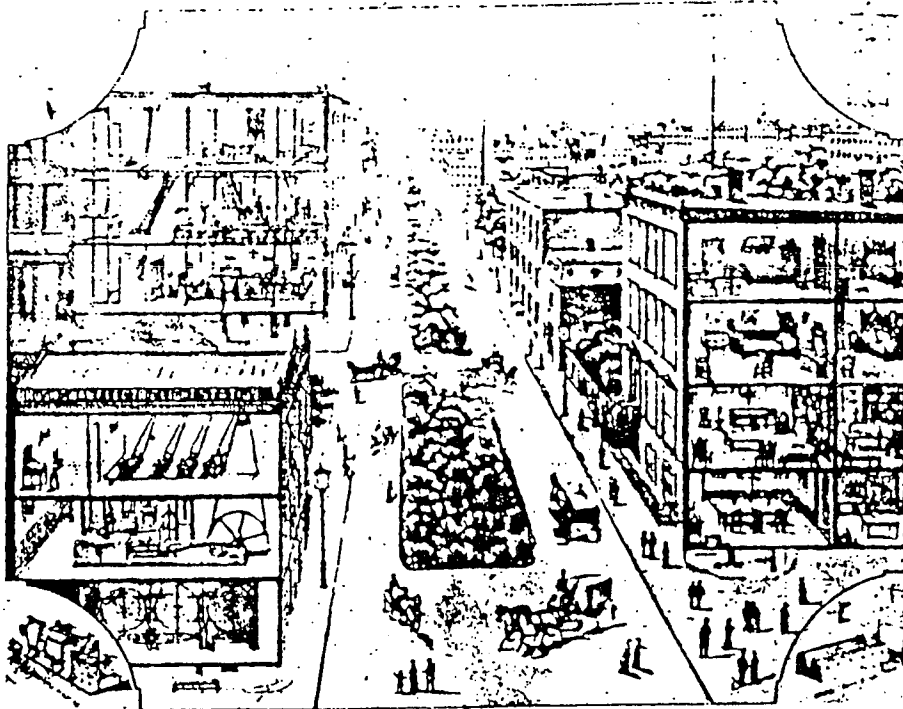
The La Crosse Chronicle of January 22, 1882, carried the following item:

"The officers of the Electric Light Company certainly have no cause to find fault with the public interest shown in their enterprise. The announcement yesterday that a number of lamps would be lighted in the evening brought out a large number of people and the streets reminded one of the night after election. The company's officers and employees worked hard all day to keep their promise and satisfy the public, although it was evident that they had a bigger contract on hand than they had counted on. Finally at eight o'clock the connection was made with all the lamps that were ready. The light furnished is more than good and better than the most enthusiastic had expected. The flickering was slight and will be entirely overcome after everything is in order, while the light through the shaded globes is intense yet soft and apparently comfortable to the eyes."

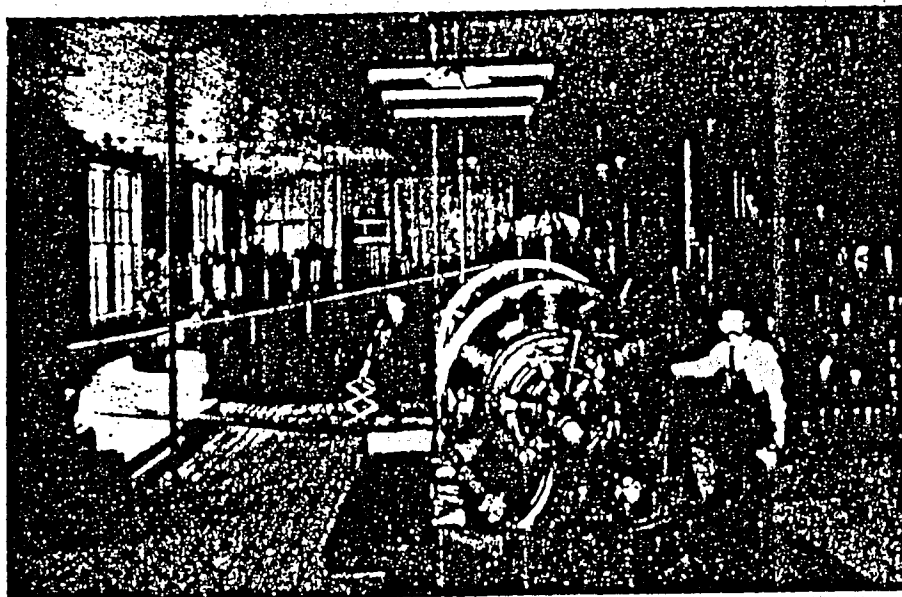
This plant of the Brush Company was one of the earliest in the midwest. The Company installed a number of 150 foot towers, each of which carried three 2,000 c.p. arc lamps. The lamps were trimmed by a man who ascended the light tower in a boatswain's chair attached to a cable and counter-weighted. Four of these towers were still in service after 1920. They were located at 17th and Jackson, East Avenue and Main, 13th and Travis, and one on the north side at Onalaska Avenue, north of Gillette. The last tower was not removed until 1928. Other arc lights were installed at the street corners.

Mark Twain in his "Life on the Mississippi" tells of his trip by steamboat on the upper river in the late 1880's. Concerning La Crosse he said: "Here is a town of twelve or thirteen thousand population, with electric-lighted streets, and blocks of buildings which are stately enough, and also architecturally fine enough to command respect in any city."

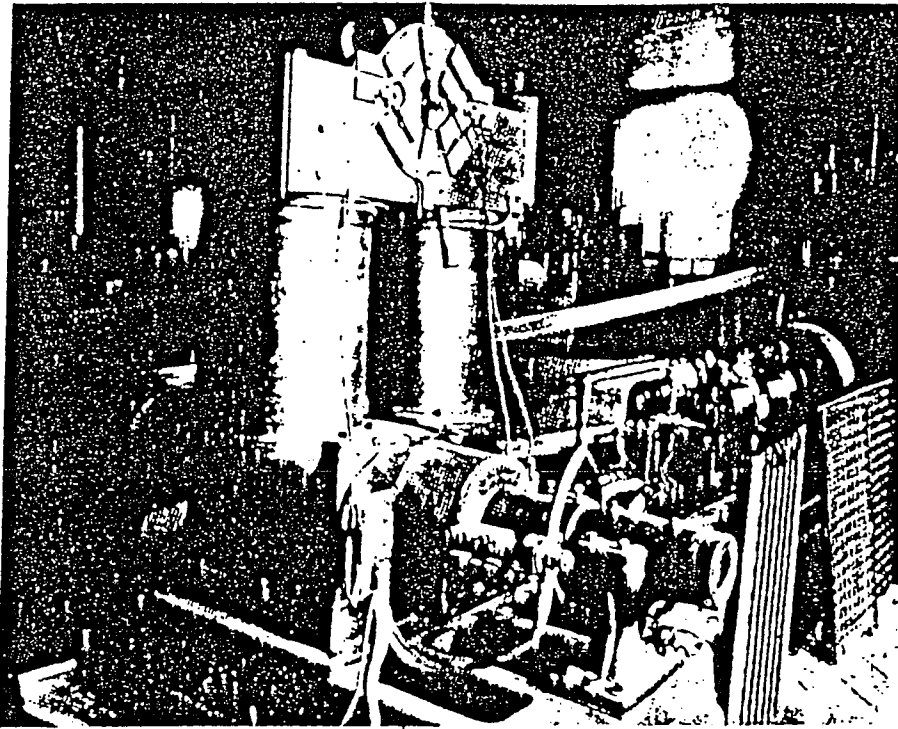
The Brush Company was the only operating electric company in La Crosse until 1887. There was, however, a company which was organized in 1881 known as the La Crosse Illuminating Company which planned to supply some sort of electric service, either arc or incandescent, but it did not build a plant. The Edison Light and Power Company of La Crosse was incorporated February 28, 1887, and built a plant at 2nd and King Streets.



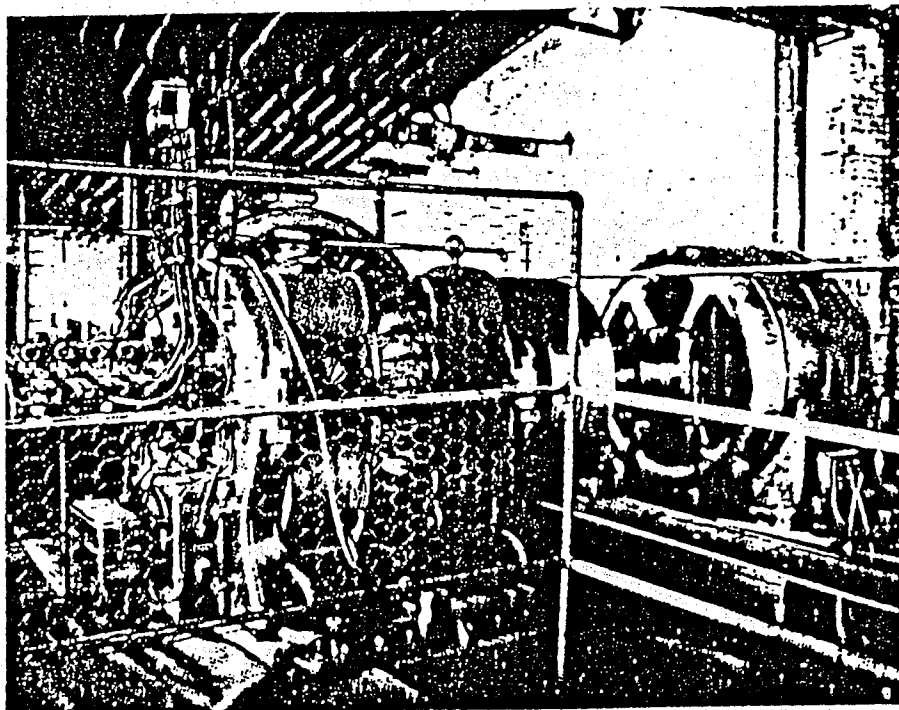
THIS IS A SCHEMATIC DIAGRAM of the Brush-Swan system of incandescent lighting. Batteries were charged from series arc circuits and incandescent lights were operated from the batteries.



HERE'S THE INTERIOR of the old LaCrosse Edison plant of the Edison Light and Power Company, pictured in 1896. It cost \$20,000.



AT THE LEFT is shown one of the very first of the Edison bi-polar, 400 amperes, 110 volt direct current shunt wound generators in the old Edison plant at LaCrosse. When the peak load came on, the brushes were shifted ahead by the attendant, with rocker arm seen on the right side of the machine to take care of sparking of the brushes on the commutator to obtain the neutral point of saturation. Just to the right of this machine is seen the small Brush arc machine, 25 light capacity, used on the downtown all-night circuit. The arc lamps had two sets of carbons in each lamp, the lower six inches long and the upper, 12 inches. They burned about 10 hours a night, and the lamps had to be trimmed every morning.



THIS PHOTO, taken about 1908, shows the latest type 125-light arc machine used at the time, in the old Edison plant at LaCrosse. The machine operated circuits of 6.6 ampere magnetite lamps. It was run either by the engine, the belt of which is seen, or by the 200 h.p., 2300 volt, 3-phase motor at the right.

The initial installation consisted of two 200 hp Ball engines driving four 400 ampere 110 volt Edison bi-polar generators. The first plant superintendent had an English bulldog who roamed about the plant at will until one day he apparently tried to jump over a moving belt and was carried into the flywheel and became suddenly a very dead dog. The extra pull on the belt put a strain on the engine shaft which thereafter had a slight wobble.

A larger Ball engine was installed in 1895, belted to two 600 ampere 110 volt direct current generators. Alternating current service was first introduced in La Crosse in the summer of 1897 when a 100 ampere G.E. single phase generator, probably 1100 volts, was direct connected to a 220 volt direct current motor. Also in 1897, a 750 horsepower McIntosh and Seymour engine was installed which was belted to a combination of two generators on the same shaft; one was direct-current and one alternating current. These machines were probably about 200 kilowatts each.

In 1900, two 85 hp gas engines operating on commercial gas were installed, each of which was belted to a 50 kilowatt direct current generator.

Competition between the Edison Company and Brush Company was very keen. The Brush Company had most of the street lighting business while the Edison Company had the commercial and residential lighting.

Arc lights were used to some extent for interior illumination during the early period of electric lighting but they were satisfactory only in rather large public buildings. There was another rather serious defect in the use of arc lights for interior lighting. That was the fact that high voltage was needed to supply an arc light circuit whose lamps were connected in series, and this high voltage was a hazard. The parent company, the Brush Electric Company of Cleveland, recognized the superiority of incandescent lamps for interior lighting and undertook to furnish incandescent service by charging storage batteries from its arc circuits and the batteries, in turn, were used to supply the incandescent lights. In some instances banks of incandescent lights were connected directly to the arc circuits.

The Brush Company was unable to obtain Edison lamps for its use and therefore entered into an arrangement with the Swan Company, a British concern, for the use of its lamps under what was known as the Brush-Swan system.

Consolidation of Companies

The La Crosse Gas and Electric Company was incorporated November 21, 1901, and it purchased the La Crosse Gas Light Company, the La Crosse Brush Electric Light and Power Company, and the Edison Light and Power Company of La Crosse. The Brush plant was shut down a short time later and the equipment was moved to the Edison plant.

Central Electric Company

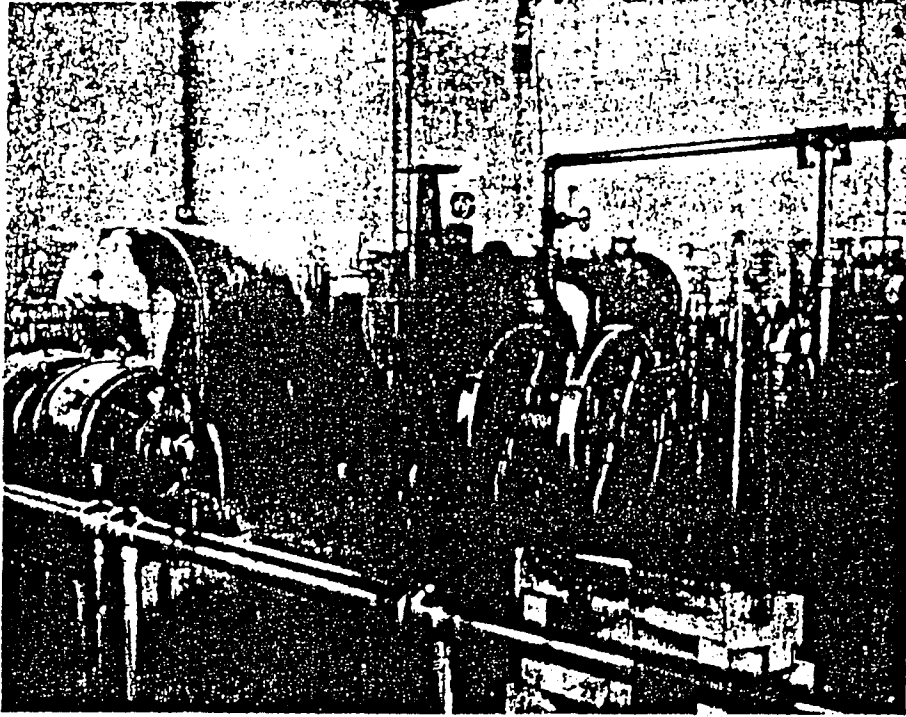
A new electric company was organized shortly before the consolidation of the other utilities was completed. The Central Electric Company was incorporated October 23, 1901, and installed direct current generating equipment in a three-story brick building on State Street between 2nd and Front Streets. Most of its equipment was changed to alternating current in 1906. This company was absorbed by the La Crosse Gas and Electric Company June 15, 1907.

Wisconsin Light and Power Company

North La Crosse had both gas and electric service prior to 1900 but there was no plant in North La Crosse. On December 14, 1904, a company known as the Wisconsin Light and Power Company was incorporated and started the construction of a plant on the Black River in North Crosse, which was known the the Logan Street plant.

This plant was completed in 1906 and contained two 400 kilowatt horizontal turbo-alternators. These machines had been installed originally at the 1904 St. Louis Exposition and were among the earliest such turbines made.

The Wisconsin Power and Light Company was purchased by the La Crosse Gas and Electric Company April 27, 1907. Since its plant was the most modern in La Crosse it was operated to supply as much of the load as possible.



THE NORTH SIDE PLANT at LaCrosse was built in 1905. Shown is one of two 400 KW, 2300 volt, 3-phase, 360 rpm, 60 cycle Westinghouse Parsons turbo-generator units. The plant was located on the Black river because of the softness of the water, which engineers claimed was treated by the bark on the logs lying at the river bottom. On one Christmas Eve 1200 KW was carried by this plant.

Heating System

The Edison Light and Power Company installed a hot water heating system in 1900. Insulated heating mains were buried in the streets of the downtown area, from which service connections were run to heating customers. It was the plan to heat water at the generating plant with exhaust steam from the engines. In the first installation, steam was fed into a vessel called a commingler, in which the steam was condensed in the water which was then pumped through the heating system. Sometimes live steam was introduced into the commingler. Later a Wickes water tube boiler was used as a heater when there was a shortage of exhaust steam. The water for the heating system was circulated directly through the boiler.

This type of service could not be satisfactorily metered and it was, therefore, sold on the basis of a flat rate per square foot of required radiation for the heating season. The required radiation might be more or less than the radiation installed because it was based on a calculation of the heat losses of the premises which were served.

Street Railway

David Law, a resident of La Crosse, and his associates were granted a charter for a street railway by the La Crosse City Council but they did not construct a street railway at that time. In 1872, Mr. Law, with C. C. Washburn and others, again obtained a franchise but again the matter was dropped. Mr. Law organized a third company in 1878. This time there was a rival group which included Horace Baker, Wm. F. Sommerfield, and Daniel A. McArthur, which was also trying to obtain a franchise. The Common Council awarded the franchise to Mr. Law's group. The street railway was built and the first horse cars were operated July 4, 1879. This company was called the La Crosse Street Railway.

The second street railway appeared in 1881. The Chronicle of November 8, 1881, had the following item: "Today the new street railway company will begin collecting fares. Two cars were running yesterday to accustom the horses to their work." This second company, the City Street Railway Company, absorbed the La Crosse Street Railway in 1885 to form the La Crosse City Railway Company.

The street railway system was electrified in 1893. Power at first was furnished by a steam plant owned and operated by the railway company.

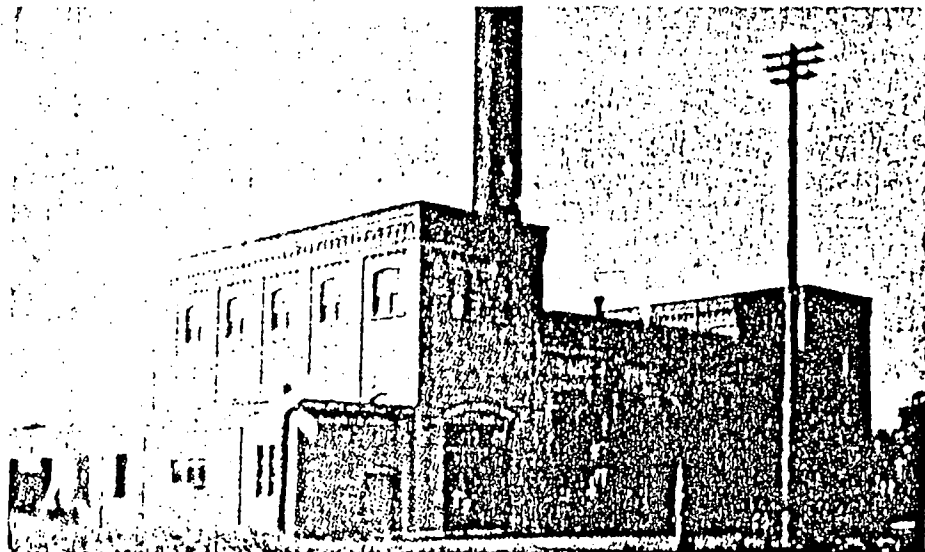
La Crosse Water Power Company

A group of La Crosse men organized a company known as the La Crosse Water Power Company, and this company acquired the water rights on the Black River at Hatfield, about 60 miles from La Crosse. This company undertook the construction of a dam and power plant at the Hatfield site in 1908 with the J. G. White Company acting as engineers and contractors. Originally the plant had a capacity of 4800 kilowatts, but was later increased to 6000 kilowatts by installing larger turbines. A 44,000 volt line was built into La Crosse, which at first terminated at the Edison plant, where a railway motor-generator was installed. Later a sub-station was constructed near the car barns in which rotary converters were installed for supplying the street railway company. A tap was made on the 44,000 volt transmission line north of Holmen, from which a line was run to Winona to connect with the lines of the Winona Light and Power Company. The La Crosse Water Power Company had planned also to build an interurban electric railway line between La Crosse and Winona but this project was never carried out.

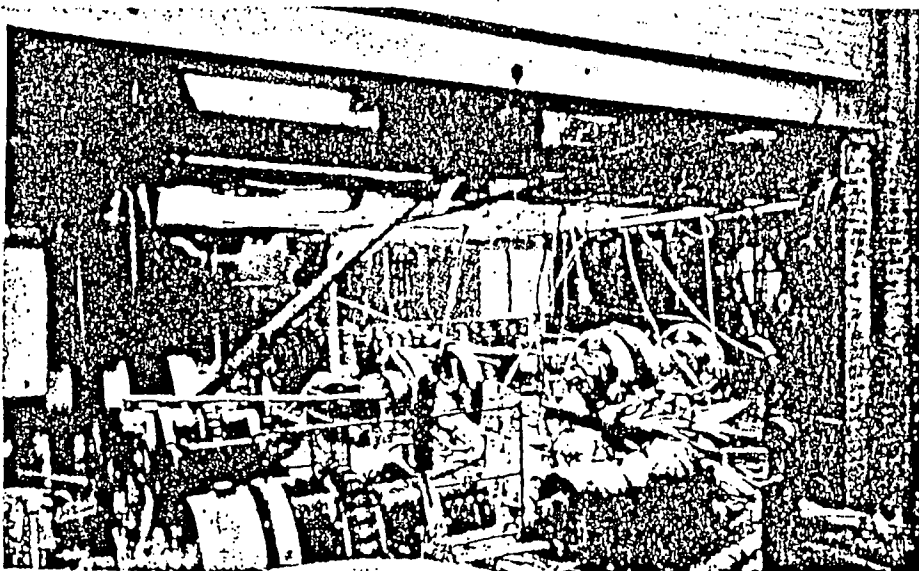
In 1913, the Water Power Company went into receivership. A new company called the Wisconsin Railway Light and Power Company took over the La Crosse Water Power Company, the La Crosse City Railway Company, and the Winona Light and Power Company.

Alternating Current

The installation of a motor-generator set in 1897 to supply a limited amount of alternating current service was mentioned earlier, as was the changeover by the Central Electric Company in 1906. At that time most of the La Crosse Gas and Electric Company's service was direct current but in 1906 a large scale conversion to alternating



THIS PICTURE of the Logan Street plant in LaCrosse was taken in 1912. The structure was being dismantled at the time that lightning and fire wrecked the old Edison plant in May, 1916.



THE OLD EDISON PLANT in LaCrosse was struck by lightning twice within three minutes early in the morning of May 25, 1916, and set afire. This was the scene after the flames were extinguished.

current was begun. Most of the system, except the downtown area, was changed to alternating current. The Wisconsin Power and Light Company system, which was supplied by the Logan Street plant, was entirely alternating current from the beginning. Direct current was not completely eliminated from the downtown area until 1925.

Company is Purchased by Joseph H. Brewer

The La Crosse Gas and Electric Company was purchased by Joseph H. Brewer, president of the Kelsey-Brewer Company of Grand Rapids, Mich., December 26, 1912, from a local group including Wm. W. Cargill, Wm. S. Cargill, Geo. MacMillan, Henry C. Wood, and J. B. Taylor. The first named Cargill was the founder of the grain firm which bears his name.

On June 11, 1914, the name of the La Crosse Gas and Electric Company was changed to the Wisconsin-Minnesota Light and Power Company by amendment of its articles of incorporation, which were further amended to permit the company to buy, own, sell or otherwise dispose of securities and to engage generally in the public utility business.

On June 12, 1914, Joseph H. Brewer disposed of all of his stock in the La Crosse Gas and Electric Company (which had become the Wisconsin-Minnesota Light and Power Company) to the American Public Utilities Company, a holding company under the management of the Kelsey-Brewer Company. On July 1, 1914, the Wisconsin-Minnesota Light and Power Company acquired the Chippewa Valley Railway, Light and Power Company and the Chippewa Valley Construction Company, and December 1, 1914, acquired the Red Wing Gas Light and Power Company and the Minnesota-Wisconsin Power Corporation, giving the Wisconsin-Minnesota Light and Power Company control of the utilities at La Crosse, Eau Claire, Chippewa Falls, Red Wing, and the surrounding communities. Transmission lines had already been built connecting the northern parts of this system but La Crosse was still operating separately.

On December 1, 1914, the Wisconsin-Minnesota Light and Power Company acquired the Winona Gas Light and Coke Company, which supplied gas in the city of Winona.

The first gas plant and distribution system in Winona was built by the Winona Gas Light Company in 1870. This company operated until about July 31, 1901, when it was purchased by the Winona Gas Company, a Minnesota corporation organized July 31, 1901. The company was, in turn, sold to the Winona Gas Light and Coke Company July 18, 1905. The latter company was incorporated in Minnesota July 17, 1905.

Growth of the System

Under the management of the Kelsey-Brewer Company, the load at La Crosse grew substantially and new equipment was added from time to time at the old Edison plant. Plans were prepared for the construction of a new plant adjacent to the old Edison plant. Work was started in June, 1915, and progressed rapidly through the fall. The building and stack were completed by mid-October and by spring the boilers and a 2500 Kw turbine were ready for operation.

In the early morning of May 25, 1916, the old Edison plant was struck by lightning twice in three minutes and was set afire. The equipment in the plant was completely destroyed and La Crosse was without electric service for 24 hours. The 2500 kilowatt unit in the new plant was in service but many electrical connections had to be rebuilt. The Logan Street plant was being dismantled because the two 400 kilowatt turbo-alternators were being moved to the Edison plant.

The fire and ensuing interruption of service revealed the serious situation which existed in La Crosse. Arrangements were made with the Wisconsin Railway Light and Power Company of Winona to build a sub-station at Bluff Siding, through which the 60,000 volt system of the Wisconsin-Minnesota Company was connected to the 44,000 volt system of the Winona Company, thereby establishing a transmission tie over which the power from the Wisconsin plant (which was under construction) could reach La Crosse. Until Wisconsin was

completed, however, the entire system was short of capacity. The sub-station went into service July 30, 1917, with a capacity of 2500 kilowatts.

The remainder of the new Edison plant was rushed to completion by the installation of the two 400 kilowatt units from the Logan Street plant, and the necessary connections to the heating system were made.

After the Wissota plant was put in service in the spring of 1917, La Crosse was able at times to receive additional capacity from the 44,000 volt connection at Bluff Siding. In 1920, a 33,000 volt line was built from Sparta to La Crosse which terminated at the newly-built Indian Hill sub-station and completed a connection to Eau Claire. This line made transmission line service a little more secure but the growth of industrial and other loads in La Crosse was crowding all of its electric power facilities.

The Wisconsin-Minnesota Company had, for a number of years, been in financial difficulties. The Wisconsin-Minnesota Company was purchased by Northern States Power Company as of December 29, 1923, although actual operation began in July, 1923.

Northern States Power Company had many problems to meet. Among other things, the physical property had deteriorated and had become obsolete and inadequate. After the purchase by Northern States Power Company, better service and lower rates followed. The credit of the new company was, of course, excellent. Improving the physical property took time, however. Distribution systems were rebuilt, transmission lines were reinforced, and sub-stations were improved.

In 1925, the two 400 kilowatt turbo-alternators were removed from the Edison plant and a 4000 kilowatt unit, which had been removed from the Third Street plant in St. Paul, was installed. The voltage of the line from Sparta had been raised to 60,000 volts and later this voltage became 66,000, and still later, 69,000 volts. There were no further major changes in La Crosse for several years.

With the growth of the industrial load in La Crosse, the need for capacity became acute. In 1940, a new station was built containing a 10,000 kilowatt unit which was later rerated to 12,500 kilowatts. The station was built on the south end of French Island, from which it took its name. A second 12,500 kilowatt unit was installed in 1948, bringing station capacity to 25,000 kilowatts. The fuel used is Southern Illinois coal, delivered to French Island station by river barge.

Gas

Originally gas had been used in La Crosse primarily for lighting. The saw mills produced such quantities of wood fuel for many years that there were few gas ranges. The growth of the gas business was, therefore, slow during its first 50 years, especially because electricity was taking away the lighting business.

The saw mill era came to an end about 1910 and in that year the gas company offered a gas range installed and piped, with a gas light on the wall behind the range, for \$15. Gas ranges began to sell and business picked up.

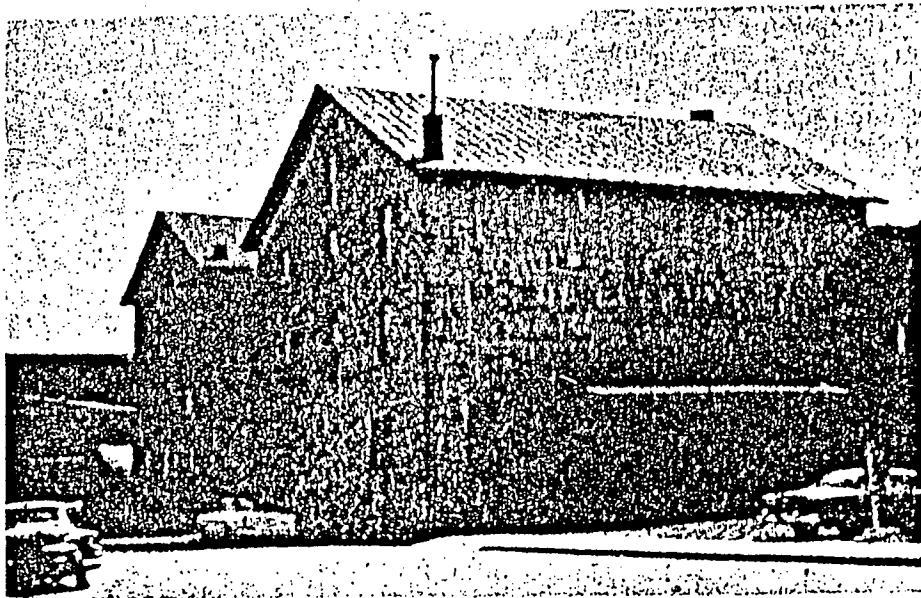
The present gas plant was built in 1912 and at that time a 5-foot water gas set was installed, in addition to the coal gas benches. In 1921, a 6-foot set replaced the 5-foot water gas set.

Offices

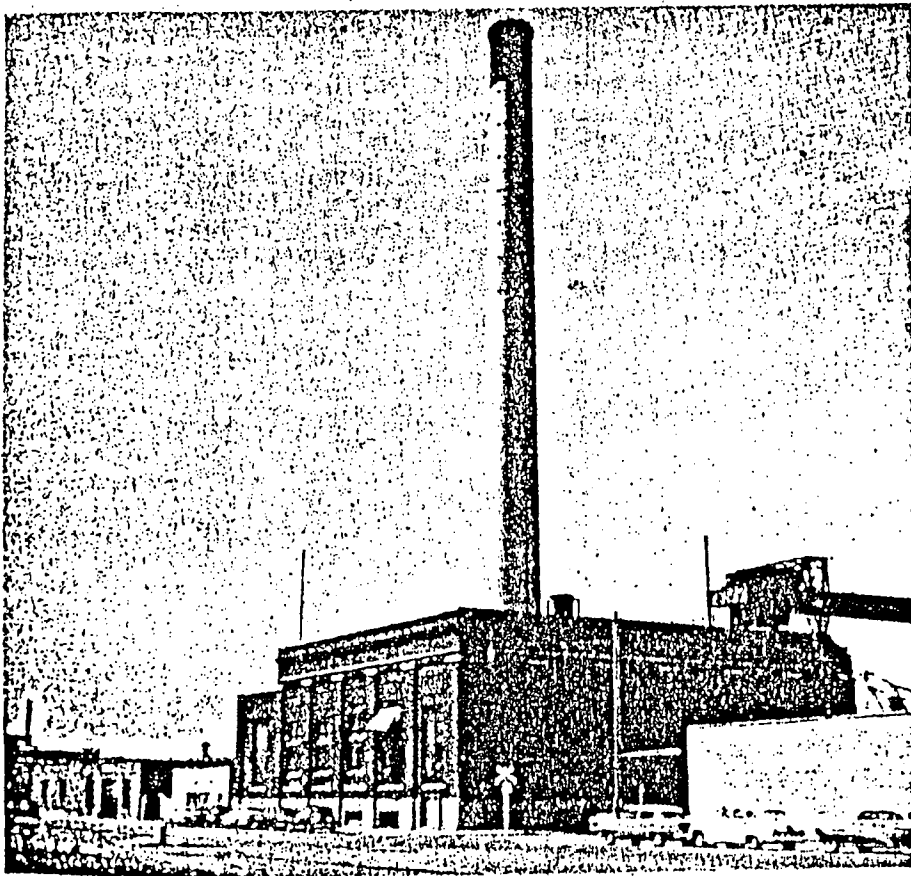
The original gas company was on the north side of Pearl Street between 3rd and 4th. In 1908, the office was moved to the south side of Main Street between 2nd and 3rd, and in 1915 was moved to the present site at 122 5th Avenue North.

Northern States Power Company - Wisconsin continued to grow in order to meet the ever increasing demand for electric and gas energy in Wisconsin.

The electric operation of the company continued to add electric transmission lines into the area so that a 69,000 volt "loop" envelopes the metro area. This allows for excellent continuity of service in that power sub-stations



This building was used by the old Central Electric Company in LaCrosse. It's located on State St. between Second St. and Front St. The old structure still stands, with this picture being taken in August, 1955.



THIS IS THE EDISON STEAM PLANT, heat department, and garage of NSP of Wisconsin at LaCrosse. Construction of this plant was started in June, 1915.

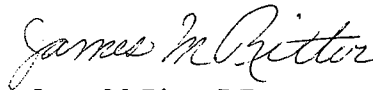
can be fed from two sources when proper switching is used. In addition, the area is served by several high voltage transmission lines - 169,000 volt, 115,000 volt, and 69,000 volt systems. In the early seventies, electric energy capacity was adequate and no future additions were planned.

In 1973, the energy scenario made an astonishing change. Northern States Power Company was leading the field to develop, propose, promote, and implement energy conservation measures. This effort will eventually squeeze every bit of electrical energy out of the thermal energy put into the generation of electricity. Northern States Power Company is continually providing incentives to the customer to use energy wisely and efficiently.

In 1960, natural gas was installed into the La Crosse area and again Northern States Power Company provides incentives to the customer so that the most energy efficient equipment is installed.

Northern States Power Company is very compatible with ASHRAE, since the power and gas required to fuel the intricate operation and control of the multiplicity of systems associated with heating, ventilating and air conditioning are of vital concern to the "Technology for a Better Environment."

Respectfully submitted,

A handwritten signature in cursive script that reads "James M. Ritter".

James M. Ritter, P.E.
Chapter Historian
La Crosse Area Chapter