NATIONALLY IMPORTANT ELECTRIC EXPERIMENTS INTRODUCED HERE

When Thomas A. Edison cheered at the first successful glow of a glass enclosed carbonized thread 52 years ago he had no thought in his mind of a humble lumbering community in northern Wisconsin. Although when he planned the dynamos, cables, insulation, switches, meters, sockets and other things that were needed to make the use of his strange invention possible, he was dreaming of the day when any community could utilize it.

It has been recorded that Edison said years after "we sat and looked (at the first lamp) and the lamp continued to burn. The longer it burned the more fascinated we were. None of us could go to bed, and there was no sleep for forty hours. We just sat and watched it with anxiety and growing elation."

The forty hours that Edison sat were not idle hours, nor were those that followed so close and fast any more empty. Everything had to be built to generate and transport this newly discovered servant of humanity. The world has not yet appreciated the tremendous fever of activity that made it possible to have these practical electric lamps in operation all over a vast, almost backwoods nation in just a matter of months.

The same year saw the almost simultaneous operation of the first steam electric generating plant in New York and the first hydro-electric generating plant in Appleton, Wisconsin. Word spread from ocean to ocean that something wonderfully new was to be seen. Excursion trains carried thousands to see the wonder of a tiny slice of paper glowing in a glass globe.

As fast as equipment could be turned out by the many manufacturers that swarmed to the new field it was snatched up by eager men in anxiously awaiting communities. The pioneers of the country enabled the inventors to test their exciting products in the actual situations that they were intended to reach. Improvements crowded upon improvements. Theorists battled with theorists. Newspapers rushed their editions to press packed full of the details of the developments, the contradictions, the promises of electricity. Each community eagerly awaited its opportunity to join in the new parade.

Merrill Steps in

In 1886 or 87 it was Merrill's turn to step into the electric picture, when the T. B. Scott Lumber Company, one of the pioneers of the northern part of the state, installed a small 500 volt Western Dynamo, one of the newest and most favored of the electrical developments. This brave step in progress furnished current for eight 70 volt lamps in the yard and mill of this lumber firm. The eight lights burned as a unit, the infancy of the industry not having achieved the age of switches. The success of this effort led to the extension of the lighting system to include uptown stores and offices, and the development of a resistance type of shunt mounted on the top of the lamp socket, so that current for individual lamps could be diverted through this resistance and the light extinguished when not in use.

So interesting and so new was the tiny Merrill plant that one of the most noted of the early authorities on high voltage phenomena, Dr. Harris J. Ryan of Leland Stanford University, California made a personal inspection and elaborate report on the system in 1888. His observations were of material aid in guiding the rapid strides of electric development during the next few years.

Merrill citizens were not content with having contributed so materially to the progress of this new industry . . . they stepped into a new field, that of the electric railway. In 1889 the Merrill Electric Railway and Lighting Company was incorporated, taking over the Scott plant. Their first move was to install two Edison bipolar dynamos of about 25 K. W. capacity, one of the best improvements that had come out of the first few rushing years of electrical history. They wired the city with a three wire Edison network, covering it quite well during the next few years.

Street Railway

In 1890 they built a street railway, again adopting the latest developments in this field. The Appleton street railway, started only a few years before, was still operating with the crude devices that had started it out. The Merrill cars boasted the newest type of trolley, a single wheel at the end of a pole running on the under side of the copper wire strung down the center of the street. The Appleton system utilized a double wheel arrangement perched atop the wire, much in the same fashion that a barn door hanger rests on the door rail. The Merrill installation was the first of its kind in the state.

So crude were these early cars, despite their last minute features, that the electric motors were protected from the water, dirt and mud of the street only by canvas curtains and a sheet iron pan underneath, secured by hay wire. Service was a matter of constant interruptions due to ruined motors. But as in the case of every other pioneering endeavor improvements followed each other rapidly.

In 1893 the Railway and Lighting Company had three plants. A new Corliss engine, located in the Central Factory, at the site of the present high school, operated the street railway system. The West side was lighted by a 30-light Thomas Houston arc machine, a 20 K. W. Edison dynamo and one of the original Western dynamos taken from the Scott mill. All of this equipment was in turn belted to a Corliss machine in the Wright Lumber Company dry kiln.

The East side of the city had the advantage of being different, for here the early company utilized the original two Edison K. W. dynamos and the other Scott Machine, belted to a Leffell special 72 inch water wheel, located to the South of what is now known as the "old hydro plant."

Changes were frequent from '93 to 1900. The railway generator was moved for a few months to the Stange Factory and then to the East side, in the Scott mill The frame building first used as a car barn burned to the ground and was replaced by the present brick building now used as a bus and car garage. Three second hand cars were purchased from the Boston, West End Railway and the original pioneering equipment became a bit of history. A storage battery system was installed at the car barns. It consisted of 240 cell Edison Storage Batteries connected in series for railway work during the day and split into two series of 120 cells each for the Edison lighting net work in the evening. The application of this storage battery was so unique that an inspection of the installation was considered essential by all students taking the electrical engineering course at the University of Wisconsin.

Mill Burns

The city experienced one of the early worries of all electric plants when in 1898 the Scott mill burned and for six months thereafter the entire east side of the city was without electric service. When water conditions improved in the spring of the following year the hydro plant was able to supply a rather inadequate service. It was necessary because of the primitiveness of the equipment to operate a unique 125-250-500 volt system.

Several experiments were attempted in an effort to establish uniform voltage. Voltage balance was originally maintained by the storage battery. Later a four machine balancer was installed and still later a motor generator booster was placed in series with the battery. A Tirrill regulator was tried out for voltage regulation, but was abandoned in favor of a home made regulator which proved to be much more satisfactory.

At this time in the history of electric operations there was a great controversy over the matter of the desirability of using direct current or alternating current for city systems, reams of engineering reports being offered in support of the opposing ideas. DC operation at that time was held out to be the best solution by manufacturers' engineers. It was therefore decided that direct current should be the standard in the new equipment that was installed in 1899, later experience causing abandonment of this equipment in favor of AC.

During the early years of electric service in Merrill, the citizens found themselves pioneers in many of the developments of electrical history and particularly were they pioneers in the development of the isolated electric plant entirely separated from outside assistance.

The Merrill Railway and Lighting Company made every effort to assure the city of adequate, uninterrupted light and power service and for a number of years were relatively successful in doing so. The inadequacy of local equipment to meet unexpected emergencies was well demonstrated when in 1912 the Wisconsin River overflowed its banks, tore out part of the retaining wall and dam itself and flooded the generator rooms of the early power dam. The entire city was without electric service for thirty hours.

Wausau Company Here

Three years later the Wausau Street Railway Company absorbed the Merrill Railway and Lighting Company and as soon as possible connected the two cities by a transmission line. The antiquated Merrill direct current plant was abandoned and an entirely new hydro-electric plant together with transformation equipment interconnected with the transmission system constructed to take its place. It was necessary to completely rebuild the city distribution system, poles being removed from streets and placed in alleys or rear lot lines wherever possible.

The following years saw the further interconnection of the Merrill-Wausau line with other transmission systems to other parts of northern Wisconsin until today Merrill is no longer dependent upon the vagaries of an isolated generating plant, but is in a position to receive electricity from plants as widely separated as the Minnesota state line on the west and Green Bay on the east. Instead of being dependent alone upon hydro generation within the limits Merrill now has power available from a great number of steam generating stations as well as from the hydro electric plants.

The street railway system also proved itself a definite pioneer in many of the outstanding developments in city transportation equipment. It is interesting to record that the first trackless trolley in the country operated at Merrill in 1913. Previous to that time this type of equipment was only to be seen in England and on the European Continent. It became necessary to extend the transportation service to that part of the city lying west of the Wisconsin river known as the Sixth ward. The laying of rails in this locality proved be a burdensome expense particularly as it was felt that the bridge would not stand the burden of heavy street car equipment. Motor busses were practically unheard of at that time, the electrically driven trackless trolley being almost as much of a rarity.

Trackless Trolley

The new equipment was felt by the early railway operators to furnish the ideal answer to their problem and they were willing to experiment with it in an effort to render the service the people of the community deemed desirable. The bus itself would hold 18 passengers. It was operated by a single individual on a pay-as-you-enter basis. Energy came from an overhead trolley and the return circuit, which ordinarily on a street railway system is supplied by the rails, was furnished in this case by a second trolley wire hung beside the first. It was possible for the car to vary from 10 to 12' on the side of the center of the trolley wire. It is told that the citizens of Merrill and the many visitors gazed in awe at a street car that would suddenly leave the center of the street and pull up at the curb. The car weighed 3 tons, had long flat springs and solid rubber tires. The latter two items of equipment were intended to add to the comfort of the passengers, but it is doubtful whether they competed successfully with the rough cobblestone street and it was not long before the difficulty of the frequent daily trips required its abandonment.

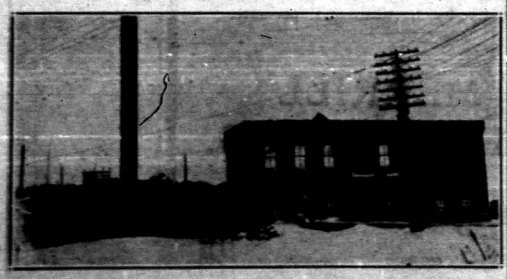
Trackless trolleys are today offered by many large city transportation systems as a desirable solution to transportation problems in outlying sections and are used extensively as feeder equipment for large city trolley lines. Although refined and improved in every detail and no longer the hard riding equipment of 1913, they are essentially the same in principle and are a tribute to the pioneering instinct that brought the first one in the country to Merrill. This bus was finally sold to the Boston Railway Company and is believed to have continued in service there for a number of years after it left Merrill. Had it not been for the rough condition of some of the early streets, it is highly probable that this type of service would have continued in the city for many years.

In November, 1921, the continued falling off in street railway revenues and the increasing costs of maintenance and operation caused the abandonment of the street railway system in favor of busses. This was looked upon with disfavor at the time, but unquestionably resulted in an improvement in the comfort of the service being rendered.

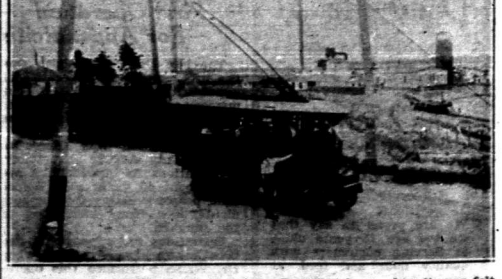
At the present time, Merrill is serviced by the Wisconsin Public Service Corporation which has retained the same familiar faces in connection with its local operations. This company has a record of endeavoring in every way to serve the industries and individuals of the city in the most satisfactory manner.

OLD WIRING IN MERRILL

This picture shows how the telephone wires were strung along the main streets instead of in the alleys as at present. The change was made in 1915 when the Wausau Street Railway company took over the Merrill plant and overhauled the entire system.



When this station was erected in 1899, direct current was favored over alternating current by most manfacturer's engineers. This equipment was abandoned in 1915 when the Wausau Street Railway company took it over.



The first trackless trolly in America. Installed here when it was felt the bridges would not support regular street cars, this car had to be abandoned because of the bumpy cobble stones in the streets. It was sold to the Boston Railway company and used there for some time.