

Many "Firsts" in Electric Field Show Progressive Spirit of City

Just as the year of Thomas Edison's birth, 1847, coincided with the year Merrill first became a community under the name of Jenny Bull Falls, so did the development of the electric industry in Merrill synchronously with Thomas Edison's inventions and improvements in the commercial development of the generation of electricity. It was just four years after Edison, in 1852, had established the first central station for the generation and distribution of electricity for incandescent lighting that Merrill pioneers installed their first dynamo for generating electricity for lights in the T. B. Scott mill on a site approximately 200 feet north of the present Merrill hydro plant.

That the pioneer spirit was especially strong in Merrill is evidenced by the many "firsts" that appeared in this community. Undaunted by the experimental nature of most of their ventures, these early settlers are credited with making a most noteworthy contribution to the rapid development of the electric industry. Bryant switches and sockets, in universal use today, were invented by Red Bryant, a Merrill boy. Merrill is credited with having the first double trolley electric railway system in the United States and the second city in Wisconsin to have an electric street railway. The people of Merrill were first users of the Tantalum direct current lights, predecessors to the Tungsten lamps. The first use of water power for street railway purposes was made in Merrill. The Edison Storage Battery set in use to operate the street railway 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. One of the first trackless trolleys in America made its brief appearance in Merrill.

One year before Wisconsin became a state, Andrew Warren started the construction of a dam across the Wisconsin river at a point slightly upstream from the present Merrill dam. O. B. Smith, one of the experienced dam builders working on the construction, came from Elburn, Illinois, with a party of 13, in 1844. They had to walk through the wilderness from Chicago to Wausau, there being then no railroad in the country north of Chicago. This railway dam was constructed of wood timbers and arched slightly upstream. The profile and 16-inch square timbers with huge rocks on top were found when the present dam was built in 1912.

Merrill followed closely on the heels of the first generating station in the world, and in 1856 a 500-volt dynamo of the Weston Constant Potential Type was installed in an addition built to the T. B. Scott Lumber Company to house the engines, boilers and dynamos. Current was furnished for eight 70-watt lamps in the yard and mill. Due to the lack of transformers it was necessary to burn the eight lamps in series. At the request of the Heinenman department store (now Livingston's) an additional dynamo was added to furnish lights for the store. Clusters of 5 lamps, 110 volts each, were installed in series to use up the 550 volts

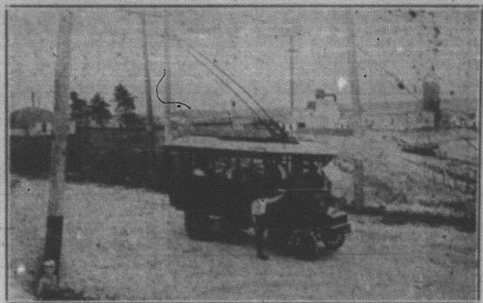
that came over the wires by direct current.

The success of this venture led to the extension of the lighting system to other downtown stores and offices and soon spread to nearby residences. A resistance type of shunt bird-cage like box, mounted on top of the lamp socket to divert current for individual lamps, was developed so that the light could be extinguished when not in use, and the current could be diverted through this resistance.

So important was the electric plant at Merrill that Doctor H. J. Ryan of Leland Stanford University, California, who at that time was connected with the Western Engineering Company, of Lincoln, Nebraska, made a personal inspection and an elaborate report on the system in 1888. His report refers to the plant as a "Long Distance" electric lighting plant. Actually services were all within several blocks of the plant. His statement that "power is supplied from a turbine water wheel with no regulating appliances whatever except the gate for shutting off and on," presents an entirely different picture from the present day hydro plants with their circuit breakers, regulators, controls, relays and other automatic equipment. The operation of the plant was a sideline job of a man with a regular job to perform in the lumber mill.

The tiny plant served as an experimental laboratory for the young lads about town who came down to the plant to learn of the magnetic field created by the bi-polar direct current dynamo. They learned that it was impossible to pull a monkey wrench from the machine with a steady pull, but by jerking one corner loose and working back and forth with jerky movements it came away with ease. The principle demonstrated there is one which later was used in the development of the huge electro-magnets now used in industry.

In 1858 a new power house was built north of the flume and in 1859 the Merrill Electric Railway and Lighting Company came into being. The Company was organized by J. N. Cotter and Harry Turner. In addition to these two men, John Daley, E. S. King, John O'Day, H. W. Wright, Walter Scott, Frank Hixon and H. R. Pehland and others had money invested in the company. Mr. King who had come from Wisconsin Rapids to operate a drug store was elected president and became active manager, a job he held until 1915. It was fortunate for Merrill that a man like Mr. King was given this responsibility in view of his incentive for experimenting and eagerness to try anything new. He found a willing cohort for his experimental ventures in the person of his superintendent, Hollis M. Kellogg. For the first ten years the railway company purchased power from the T. B. Scott company. Two Edison bi-polar dynamos were added which gave the plant four dynamos. They were run by water power by the same wheels that turned the saws in the mill. A gas engine and room were added for emergency use. From this plant a three-wire system provided lights for the east end of town and all lights



THE TRACKLESS TROLLEY—The car operated between the West Side and Sixth Ward about 1910 and was the forerunner of the Electric trolley bus which were rapidly replacing street cars in most metropolitan cities.

were run in banks of eight lamps in series. It was necessary, because of the primitiveness of the equipment, to operate a unique 125-250-500 volt system.

Establishing uniform voltage was originally done by 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.

Credited with the successful voltage regulation attained at Merrill, Hollis M. Kellogg, is often referred to as an "electrical wizard of the early days" by the citizens of Merrill and his fellow workmen. Kellogg was general superintendent of electric operations in Merrill until the time of his retirement in 1940.

By 1890 the Merrill Electric Railway and Lighting Company was operating its first street cars and within three years three power plants were in existence. In addition to the Scott plant there was a U. S. steam-driven generator run by a Corliss engine, located at the Central Manufacturing Company at the site of the present high school building. The generator was a four-pole, bi-polar type. The west side was lighted by a 30-light Thomson-Houston arc machine, a 20 kv Edison dynamo and one of the original Weston dynamos from the Scott Mill. All this equipment was in turn belted to a Corliss engine in the Wright Lumber Company dry kiln. The west end of town was wired with a two-wire system. Back streets were lighted with 16 candle power lamps and 32 candle power lamps were used on the main street. This compares with a 25-watt and a 40-watt lamp in use today.

The city experienced one of the worries of all early electric plants when in 1885 sparks from the dynamo set fire to sawdust on the floor of the power house resulting in the complete destruction of the entire Scott mill. The east end of Merrill was without electric service for close

to a year. During this time providing service with a three cylinder gasoline engine installed back of the Herold office proved unpopular with the public. The din from the machine could be heard all over town and even after placing the exhaust under water in the river the noise was still prohibitive. The project was abandoned. Extensive repairs were needed in the dam and a new power house was built with 4 water wheels. In a few years an addition was added to the plant to house a fifth unit.

The unique Edison Storage Battery system, first of its kind west of Boston, consisted of 240 batteries in 2 sections of 120 each. Sections were used separately at night for street lighting and used double during the day to operate the street cars. The system was housed in a building next to the street car barns. When the barns burned down the Battery system was moved to the second story of the newly built power house and installed in two tiers around the walls of the room. The system was in use until 1917 when the hi-line from Wausau was completed.

Leasing a building site to the Lindauer Pulp and Manufacturing Company in 1904, including all water power at the site subject to the prior water rights of a flour mill on the south side of the river (80 to 100 hp), the Merrill Electric Railway and Lighting Company retained water rights sufficient to run its four 42" water wheels. After acquiring an additional water wheel, it was sometimes necessary for the power plant to shut down the fifth wheel to insure the Lindauer people sufficient water to run their grinders. The failure of the power plant generators ran thru a tunnel which was diagonally across and under the flume which comprised the headrace of the Lindauer mill.

In 1916-17 the Wisconsin Valley Electric Company abandoned the old hydro and steam plant which was at the head of the flume. The site is now filled in land but the tunnel under the flume is still in place. At that time the Wisconsin Valley Electric Company purchased the Lindauer property removed two grinders in the south end of the mill and installed two turbo-generators after making necessary alterations to that portion of the building. The remaining three grinders were leased to Ewing-Everest Company allowing the pulp mill rights to water for grinding pulp. The year 1923 saw the last of pulp grinding operations and several years later the equipment was all removed from the building.

The inadequacy of local equipment to meet unexpected emergencies was well demonstrated in 1912 when the Wisconsin River overflowed its banks, tore out part of the retaining wall and dam, flooded the generator rooms of the early power dam and the entire city was without electric service for thirty hours. Over 11 inches of rain had fallen. In the south end of the river, both reached safety just as the south section of the dam wall gave way and the ground over which Kellogg had run was under several feet of raging water.

Previous to the installation of

The youngsters have heard the old timers talk about Merrill Electric street railway that ran from the corner of Main and Stuyvesant streets to W. Main and Cottage street. It was a two-trolley system and was the only one of its kind to be successfully operated. The motor mat shown on the steps is Emil Tschackert.