"Rainfall, streamflow and evaporation spell the ceaseless cycle which makes the power of the waterfall the constant servant of mankind." ~ George S. Anderson, 1923

"When the Tunnel goes thro'
Won't there be an ado!
Won't the Cataract Town have a boom!
When the Falls all day long,
Will unite in the song,
That resounds from the forge and the loom.
When the Village gives way
To a City we pray,
That the old fogies won't look so blue,
What a shake up! Dear me!
Of the Dry Bones we'll see,
When the Tunnel, the Tunnel goes thro'!" ~ Author unknown, 1887

The words to the Tunnel Song referred to Thomas Evershed's plans for the construction of a subterranean tunnel under the Village of Niagara Falls, New York, from the upper Niagara River into the bottom of the gorge. All along the surface of the ground above the tunnel, Evershed foresaw a new industrial district with factories along the tops of wheel pits attached to the tunnel. Waterpower would turn the wheels of production.

According to Evershed, water for the tunnel would be diverted a considerable distance, over a mile, above the falls, so that the natural beauty would not be interfered with, while an enormous amount of power was obtained with only a slight reduction in the volume of water going over the falls.

Instead of a series of wheel pits and factories over a tunnel, it was decided to build a hydroelectric power plant above the entrance to the tunnel which would supply power for all factories in the village. In 1886, the Niagara Falls Power Company was formed, and it obtained a charter from the state of New York giving it permission to use water sufficient to generate 200,000 horsepower (149,209 kilowatts) of electricity. New York capitalists and bankers soon furnished the necessary funds.
The tunnel for the Powerhouses (later called "power stations" or, together, a "power plant") was horseshoe shaped, more than one and a quarter mile long, 21 feet high and 20 feet wide. It was constructed mostly by immigrant laborers from 1890 to 1893. Over 345,000 tons of dolostone and shale were excavated and dumped on nearby marshy land owned by the company. About 16 millions hard-burned bricks, 16 inches thick, lined the inside of the tunnel. Water left the tunnel at the bottom of the gorge, about one quarter mile below the American Falls.

William B Rankine, a Niagara Falls attorney, as vice president of the Niagara Falls Power Company, oversaw the formation, construction and completion of the power plant. He also brought industries to Niagara Falls to use the power. Nikola Tesla described Rankine as a person "who thinks while others sleep, works while others think, and does while others try."

Edward D Adams

A number of men played critical roles in the creation of the world's first alternating current hydroelectric power plant in Niagara Falls. Edward Dean Adams, president of the 'Cataract Construction Company, the owner of all of the Niagara Falls Power Company's stock and the builder of the power plant, helped obtain the essential financial backing.

"I am a resident of New York whose heart is always at Niagara." ~ Nikola Tesla, 1902

If it weren't for Nikola Tesla's polyphase alternating current system, the Niagara Falls Power Company would never have been able to make enough money to pay for the construction of its power plant. The Village of Niagara Falls did not have enough
industries, so it was absolutely necessary to find a way to get electricity to the many more businesses in Buffalo. Direct current wouldn’t work. Tesla’s system did.

Stanford White, the most prominent architect in the United States, designed the power plant buildings. He also designed the Niagara Falls Power Company’s Village of Echota, located just east of the Village of Niagara Falls on company property. The village was strictly for company employees.

Charles B. Gaskill, president of the Niagara Falls Power Company, said on October 4, 1890, at the groundbreaking ceremony for the power plant, "a great future is in store for us ... as each year passes, we will see great industries located here along the Niagara river ... adding wealth to this already favored region, making it the seat of the greatest manufacturing city in the world."

Water was taken out of the upper Niagara River using a 1,200-foot long canal, about a mile and a half above the American Falls. It was actually a great reservoir into which water backed. Gates had to be placed at its entrance to control the flow of the rapidly moving river water. Most of its excavation was done by physical labor.
Dolostone masonry was used to line the canal. Along the top of these sturdy walls, on each side, were the gateways through which water was admitted by short canals to pits emptying into huge steel pipes or penstocks. The penstocks ended at the bottom in wheel boxes in which were placed bronze turbine wheels weighing about 30 tons each. The turbines were connected to the surface by means of steel shafts. From the turbine wheels the water whirled and rushed on through a passage to the main tunnel through which it flowed into the Niagara gorge.

The directors of the Niagara Falls Power Company wanted their Powerhouses to be "attractive, artistic in grandeur, dignified, impressive, enduring, monumental, protective and instructive." To most observers, these criteria were entirely met. Two magnificent Powerhouses made of local dolostone on the outside and brick coated with white enamel paint on the inside.

"These dynamos and turbines of the Niagara Falls Power Company, for example, impressed me far more profoundly than the Cave of the Winds; are, indeed, to my mind, greater and more beautiful than that accidental eddying of air beside a downpour." ~ H. G. Wells, 1906

Powerhouse Number 1 as completed in 1895 was known as the "Electrical Wonder of the World." When finished its wheelpit was 424 feet long, 17 feet wide and 178 feet deep. Its dimensions were 450 feet by 70 feet. Its 10 turbines produced 50,000 horsepower (37,284 kilowatts) of electrical energy.

The electricity for the 1901 Pan-American Exposition in Buffalo came from Powerhouse Number 1. On September 6, President William McKinley toured the powerhouse and told everyone that he was "thoroughly impressed." Later that day,
he was shot by an anarchist at the exposition. He died eight days later.

Powerhouse Number 2 was constructed from 1899 to 1904. Built on the other side of the inlet canal, the tunnel had to be extended another 650 feet to connect with its wheelpit. Its 11 turbines (one on permeant stand-by) would produce 50,000 horsepower making a plant capacity of 74,570 Kw. Marble was used in the construction of its lobby and main staircase.

All of the generators in the Powerhouses were built by the Westinghouse Electric & Manufacturing Company.

Directly across the inlet canal from Powerhouse Number 1 was the Transformer House, where the 2,200 voltage produced in the Powerhouses was stepped up to 22,000 volts before sending electricity to distant locations. Built at the same time as Powerhouse Number I, the Transformer House was originally 90.5 feet long and 39 feet wide. A 10 foot wide stone bridge connected it to the powerhouse.

Originally, electricity from the Powerhouses was going to travel through underground "subway conduits" to customers, but that method proved to be too costly, so wires attached to poles above ground were used instead.

Both Powerhouses were first heated with iron coils suspended on each side of the buildings. The coils were scrapped after heat from the 2,200-volt alternators became sufficient to warm the buildings.
Located south of Powerhouse Number 1 was the Niagara Falls Waterworks, a subsidiary of the Niagara Falls Power Company. Visitors were encouraged to visit the Powerhouses. A small fee was charged for a tour. The money was used to defray the cost of guides, doorkeepers and a bed endowed for use by employees at the Niagara Falls Memorial Hospital.

In 1918, the Niagara Falls Power Company and the Schoellkopf's Hydraulic Company were merged in the interest of more efficient use of water for the war effort. Thus, all hydroelectric power interests on the American side of the Niagara River were consolidated. The new corporation took the name of the Niagara Falls Power Company, but the control and management were vested in the owners of the former Hydraulic Power Company of Niagara Falls.

Now known as the Edward Dean Adams Plant, Powerhouses Number 1 and Number 2 were in operation nearly continuously until 1961, when, on September 30, they were decommissioned.

In 1896, Thomas C. Martin said the following about Powerhouse Number 1: "the massive canal powerhouse is a handsome building, designed by Stanford White, and likely to stand until Niagara, spendthrift fashion, has consumed its way backward, through its own crumbling strata of shale and limestone, to the base of it."

He was wrong ... Despite pleas by many people to convert the Adams Plant into a museum, it was razed in 1964. All that was left was the Transformer House. Two generators and other pieces of equipment were acquired by Ontario Hydro and the Smithsonian Institution. A local group tried unsuccessfully to raise $70,000 to create a power memorial in Porter Park, where they hoped to place a generator shell, the plant's flagpole and the portal from Powerhouse Number 1.

Today, Powerhouses Number 1 and Number 2, as well as the Niagara Falls Waterworks, lie at the bottoms of the wheel pits and all that remains are the tunnel, which is used by the city's Waste Water Treatment Plant and the Transformer House Pictured above.

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