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The Arc Light Origins Of Public Power

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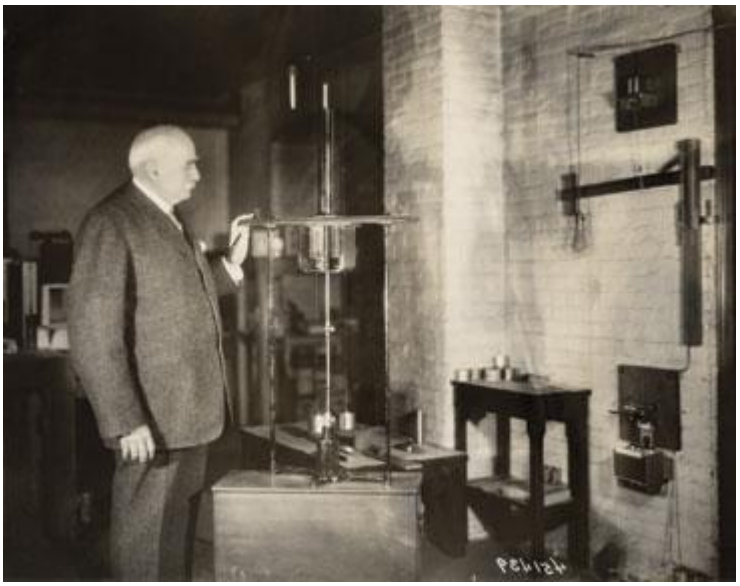
On the evening of Wednesday, March 31, 1880, public power was born in the farm community of Wabash, Ind. Shortly after 8 p.m. that early spring evening, with light rain showers moving across the sky, mechanics hitched a threshing machine engine to the west wall of the Wabash County Courthouse and sent motive power to a generator in the basement. Within minutes, 12,000 candlepower in four Brush arc lights atop the courthouse bathed downtown Wabash in brilliant light.



Cleveland's Charles F. Brush launched public power when his arc lights illuminated Wabash, Ind. Photo from Case Western Reserve University.

One newspaper reporter wrote that the bright light enabled one to "find a needle in a haystack at midnight." Another wrote that large print could be easily read up to a half-mile from the light. The local Wabash Plain Dealer waxed eloquent, describing a "light exceeded in power only by the sun."

The Wabash City Council's decision to own its electric lighting system instead of franchising the new utility to a private company created America's first municipal utility 125 years ago. Wabash later relinquished the title of America's oldest public power community to Butler, Mo., when it sold its electric utility to a private company. But Wabash created a model in the spring of 1880 that would be adopted by thousands of American communities in the next century-and-a-quarter.

Wabash's decision to electrify the community with arc lights made sound technological sense at the time. Most Americans today tend to identify the birth of electric power with Thomas Alva Edison. The "Wizard of Menlo Park" was, in reality, one of dozens of inventors and tinkerers on both sides of the Atlantic Ocean who were trying to harness the awesome potential power of electricity. In October 1879, Edison had demonstrated a workable incandescent bulb. It would not be until the fall of 1882 that Edison unveiled his Pearl Street Station in Manhattan, the world's first incandescent lighting system.

The incandescent system championed by Edison and others was particularly suited for interior lighting. But arc lighting used to illuminate city streets during the 1880s was by far the superior technology. Introduced early in the 19th century by Sir Humphrey Davy, arc lighting derived its name from Davy's 1809 discovery that an electric arc could be induced to jump across the air gap between two carbon electrodes.

Arc lighting technology first made its presence felt in Europe in the late 1870s. Paul Jablochkoff demonstrated a workable arc lighting system in Paris at the 1878 World Exposition. The next year, Paris authorities began installing the Jablochkoff Candles on the city's boulevards. Arc lighting gave off a bright illumination that most observers thought far superior to the competing gas light technology of the day. The carbon arc spark, however, radiated such intense heat that the light was unsuitable for all but the most cavernous interior rooms of a building. Like gas lighting, arc lighting had to be maintained on a regular schedule. The rods had to be trimmed frequently and replaced at least monthly. It was customary to wash the glass globe to eliminate soot buildup whenever the rods were replaced.

Still, Gilded Age America viewed arc lighting as a tremendous technological leap forward. And the man who personalized that technological leap was Charles F. Brush, the Cleveland-based entrepreneur and inventor who had installed the arc lights atop the Wabash County Courthouse. Born in 1849, Brush grew up on the family farm just west of Cleveland. Northern Ohio in the mid-19th century must have been fertile ground for electrical inventors; Edison, two years older than Brush, was born 20 miles west of the Brush farmstead in Milan. Unlike Edison, whose formal schooling stopped at the age of 12, Brush was well educated for the day. Too young to serve in the Civil War, Brush graduated from Cleveland's Central High School in 1867. A maternal uncle loaned him the money to attend the University of Michigan, where he earned a degree in science with the class of 1869.

Degree in hand, Brush returned to Cleveland and found work as a consulting chemist. A boyhood friend backed Brush's vision of constructing a rudimentary dynamo capable of powering an arc-light system and in 1877 Brush applied for and was awarded his first patent for the dynamo. He also designed an improved arc light that was simple to maintain and, in 1878, sold his first arc light system to a doctor in Cincinnati.

The Brush installation of the arc lights atop the courthouse in Wabash gained the Cleveland inventor international acclaim and he followed his triumph on the Indiana prairie with the incorporation of the Brush Electric Co. in the summer of 1880. Before 1881 was over, Brush Electric had installed the Cleveland inventor's arc lighting systems in dozens of U.S. and Canadian cities, including New York, Montreal, Buffalo, Philadelphia, Boston and San Francisco.

Brush sold the Brush Electric Co. to the Thomson-Houston Electric Co. in 1889 and two years later, Charles Coffin merged Thomson-Houston with Thomas Edison's electric light interests to form the General Electric Co. Brush retired to his mansion in Cleveland, where he experimented in his basement laboratory, operated a wind power generator in his backyard and helped his son establish a berylium manufacturing company following World War I.

Charles F. Brush died in the late spring of 1929 as America celebrated the 50th anniversary of Edison's incandescent light. Few marked the passing of the man who had lighted the streets of America with arc lamps.