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Schenectady, New York

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LIGHTING THE STEAMSHIP COLUMBIA

WITH EDISON'S FIRST COMMERCIAL LIGHT PLANT

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The celebration of the fiftieth anniversary of Thomas A. Edison's arrival in Schenectady to start the Edison Machine Works, the forerunner of the General Electric Company, recalls many interesting incidents concerning the installation of the first electric light plant on the S. S. Columbia.

It was in 1879 while the "light in a bottle" was still attracting crowds to Edison's Menlo Park laboratory that Henry Villard, president of the Oregon Railway and Navigation Company, determined the S. S. Columbia, then under construction at Chester, Pa., for his company, should be equipped with this new development.

John Roach, the builder of the vessel, is reported to have said when he heard of the arrangement, "Let them try it out on land first -- not on a ship." It was even rumored that the underwriters would refuse to insure the ship and its cargo if the new-fangled lights were carried. But Villard, later prominent in Edison General Electric affairs, remained steadfast.

In January, 1880, the contract was made, and Edison put through a rush order to New York for four Edison generators and the necessary electric accessories and fixtures.

The Columbia, a vessel of 3,200 tons capacity and one of the finest steamships of the time, was launched on February 24, 1880



and proceeded to New York under the command of Captain F. Bolles with J. C. Henderson aboard as chief engineer and company representative. She docked at the foot of Wall Street to receive her cargo and be equipped with the Edison lights.

From New York Henderson went to Menlo Park for a consultation with Edison concerning the proper arrangement of the dynamos and other equipment he was to install. Mr. Edison, busy at the time, took a piece of blotting paper from his desk, made a few dots and lines, marking a dynamo here, another here, exciter there, wires running in this direction, and that was about all the instruction he ever received.

The dynamos installed on the Columbia were like those used by Edison a year previous in his demonstrations, except for changes in the collector-brush and switchboard arrangements. They were designated as the "A" type, each generator supplying 60 "A" lamps of 16 candlepower each. Today the generators would be known as six-kilowatt machines. The generators had wooden bases, it being several months before Edison used iron for this purpose.

The four generators were arranged in a line along one wall in the engine room of the Columbia. Three of them supplied current to the lighting circuits, while a fourth was run at half voltage and excited the fields of the power-supplying generators. Two vertical steam engines mounted in an adjacent room supplied power to run the generators through a belt and pulley system. The attendant had no meters or instruments to aid him in regulating the plant; instead he adjusted the voltage of the generators by observing the brightness of the lamps in the engine room.



All the insulated wire available at that time was crudely made and had poor insulating qualities. That used on the Columbia had a simple cotton covering which was treated with hot paraffin to make it "moisture proof". When the conductor led over metal, a soft rubber tubing was slid over it. Across woodwork, the line was held in place with iron staples. After they were installed, the wires were painted, one color for the positive pole and another for the negative.

From the generator switchboard the system was divided into seven feeders and a number of branch lines which supplied various sections of the ship. All the feeders and branch lines were protected with fuses which consisted of a short piece of lead wire inside a glass tube mounted on a wooden block.

The branch lines had individual switches which were placed in wooden boxes outside the staterooms. Therefore, if a person wanted the light in his stateroom on or off he had to call the steward to unlock the box and throw the switch.

The lamp sockets were like those used by Edison at Menlo Park. They were made with wooden bases, with two metal strips to which the line conductors were connected. The majority of the lamps were held in the fixtures in an upright position, although some, through a special arrangement, were inverted. Oil lamps were installed as reserves, ready for immediate use in case the electric lamps failed.

The utmost care was used in transporting the delicate lamps from the laboratory to the ship. Each bulb with its horseshoe-shaped, carbonized paper filament was carefully wrapped in cotton batting and packed with the others in a large basket which was car-



ried through the streets of New York by two men taking special care to avoid collisions with passersby. One accidental shock and the frail filaments would have been destroyed.

The plant was finished by the end of April, and Henderson had completed a 40-hour running test of the equipment by May 4. This was the first demonstration of the Edison electric light system outside Menlo Park, and crowds visited the ship before sailing time to look at the new marvel.

In early May the S. S. Columbia sailed from New York with a cargo of 13 locomotives, 200 cars, and other railroad supplies. After the lengthy voyage around the Horn, she docked in Portland, Ore., on July 26. The Edison electric light system had satisfactorily finished its first practical test.

After the Columbia reached the coast she was equipped with lamps having bamboo filaments to replace those having carbonized paper filaments. The new lamps made the long overland journey packed in flour barrels. According to Chief Engineer Van Duzer the bamboo filament lamps performed perfectly, having been in the circuit 415 hours and 45 minutes without a single failure at the time he made the report.

The original plant served in the Columbia for fifteen years, until in 1895 the ship was overhauled and a modern equipment installed. The Columbia continued regular schedule trips between Portland and San Francisco until she collided with another ship off Shelter Cove in 1907 and sank.

When the original dynamos were replaced in 1895, the Oregon Railroad and Navigation Company sent two of them to the General



Electric Company. One was presented by the General Electric Company to the Smithsonian Institution; the other was stored in Schenectady until seven or eight years ago when it was presented to Henry Ford, who placed it in the reconstructed Edison Menlo Park machine shop in Dearborn.

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