The Sun.

TUESDAY, DECEMBER 21, 1880.

UNDER THE ELECTRIC ARC.

THE FIRST TRIAL OF THE NEW LIGHT IN NEW YORK STREETS.

The Brush Company Successfully Illuminating Fourteen Blocks of Broadway—The Men in the Enterprise and their Plans.

The first three-quarters of a mile of New York streets to be lighted by electricity was that part of Broadway between Fourteenth street and Twenty-sixth street. Counting the cross streets along which the light made the gas jets cast shadows for a long distance, the territory was considerably greater. There were 10,000 feet of wire, along which the current travelled last night to fifteen lamps.

There was no excitement in crowded Broadway as the lights blazed up along the line, for nobody could take in the entire view at one time. Nor was there any particular ceremony observed by the officers of the Brush Electric Light Company, under whose direction the illumination was. The hour announced for the turning of the current was 5½ P. M. exactly. But at 5:27¾ o'clock P. M. Mr. A. A. Hayes, Jr., the Secretary and Treasurer of the company, who was overseeing the final preparations in the station, 133 West Twenty-fifth street, gave directions to start up the engine. Simultaneously with the starting of the machinery an assistant turned on the current, through a misapprehension of the order, and the thing was done.

The Corliss engine that runs the generators is of 125 horse power. For the fifteen lamps in the street and the one in the station only fourteen horse power was used last night. Another engine is to be put in the station, and ultimately 500 horse power will be generated there.

The light that blazed from the top of the twenty-feet poles is of that whiteness and intensity that characterize all the electric lights exhibited in the city. Beside it the gas jets were of a sickly yellow tint, and where the white rays did not reach there was dark shadow. The strongest light was cast obliquely at an angle of about forty-five degrees. For a radius of ten or fifteen feet from the tall posts there was also a deep shadow in which a man could hardly see to read print. Of course the placing of the lamps at closer intervals would do away with the shadows.

The carbon points which emit the light are totally unlike the thread-like loops of Edison's lamp. The Brush carbon is a round stick, like a sharpened lead pencil, about a third of an inch thick. It is made of a composition known only to its inventor, which is enclosed in a copper tube. It takes two carbons to make a lamp. They stand perpendicularly, the one above the other, with their pencil-like points almost touching. The light is made by the arc formed by the passing of the current from one carbon to the other. As each lamp consumes from 1½ to 2 inches of carbon per hour, the tips would recede from each other without some means of moving them up. Mr. Brush has met this trouble by an ingenious device. The lower carbon is stationary. The upper one moves down automatically as fast as it is needed. The same mysterious electric current that furnishes the light is the motive power of the automatic regulator. Attached to every lamp, too, is an electric shunt or switch, through which the current passes and goes along down the line to the next lamp in case any particular lamp does not burn properly. There is a disk in the station, something like a hotel annunciator, that indicates the going out or turning out of any lamp. Each lamp can thus be controlled independently of every other.

The lamps thus far erected are of a simple pattern. The glass is a plain globe, with two inches of the lower part ground so as to mitigate the brightness of the light. The post is of iron, fluted at the base and with projections from the upper section for the feet of the men who will climb up daily to put in new carbons.

That the light was strong and steady was apparent to all before it had burned an hour. The question that everybody asked, and that could only be answered by a thorough practical test was, What does it cost? The experiments made in Cleveland, along the mile and a half of river front in Montreal, and in other places on a large scale, afforded a basis for an estimate that one of the Broadway lamps of 2,000 candle power would cost about 2½ cents an hour, or 40 cents for the sixteen hours that the city gas lamps are now kept burning. To-night the company will light up exactly on the schedule time for lighting the gas, and an account will be kept of the expenditures. The city officials will decide how much nearer together they want the lamps to be placed, and the Brush Company will be invited to send in a bid for lighting a square mile of territory. Mr. Brush, the inventor, will be in the city within a few days to look after the working of the light.

The wires have already been laid to Thirty-fourth street, and the current will be sent through them in a few days. From the Twenty-fifth street station, the company expects to furnish light for a mile east and west. Other stations will be built when the resources of that one are fully taxed.

The experiment was regarded as eminently satisfactory by the gentlemen of the company, who watched the lights until a late hour from the offices at Eighteenth street and Broadway. A champagne lunch was served to the friends of the stockholders who called to congratulate them on their enterprise.

The Brush Electric Light Company of New York was incorporated in September by Josiah M. Fiske, David L. Einstein, W. L. Strong, A. D. Juilliard, A. G. Paine, W. L. Romeyn, Thomas Dolan of Philadelphia, A. A. Hayes, Jr., C. W. Griswold, S. M. Schafer, and C. M. Rowley, with a capital stock of $100,000. The company holds the right to manufacture and sell the light on Manhattan Island. The officers are: President, W. L. Strong; Vice-President, A. D. Juilliard; Secretary and Treasurer, A. A. Hayes, Jr.; General Manager, C. M. Rowley. It is a separate and distinct corporation from the Brush Company of Cleveland, Ohio, the holder of the original patents. The inventor, C. E. Brush, who lives in that city, is a man of 34 or 35 years, who from boyhood has devoted his time to scientific investigation and experiment. He has amassed a handsome fortune from his inventions. His aim has not been to get a subdivided light for household use, such as Edison is trying to perfect, but to furnish a practicable and economical means of illuminating streets, stores, factories, churches, theatres, public halls, &c. Two years ago he lighted Monument Park, a square in Cleveland, with lamps similar to those now erected on Broadway. The experiment was so satisfactory that the City Council ordered twelve of the lamps, which now run steadily the year round. San Francisco, Chicago, St. Louis, Detroit, Grand Rapids, and other cities have used the light to greater or less extent for some time, and the company that bought the right for England speedily got contracts to light the Houses of Parliament, St. Paul's Churchyard, Blackfriar's Bridge, Charing Cross station, and other conspicuous places. Wabash, Ind., a town of 10,000 inhabitants, boasts that she leads all American cities in adopting the light of the future. Four big lights of 3,000 candle power each on the Court House dome light up every corner of the city.

The Brush Company of New York selected a district in the heart of the city for the beginning of its business. The district extended from Fourteenth street up Broadway to Thirty-fourth street, and included in its boundaries thirteen hotels, five club houses, half a dozen theatres, and as many restaurants. The Gilsey, Sturtevant, and Brunswick hotels, Dorion & Schuler's and Koster & Bial's, Brentano's, the Park Theatre, and Steinway Hall are to be furnished with the electric current in a short time.

THE NEW YORK

Daily Commercial Bulletin

33 BROADWAY.

DECEMBER 21, 1880.

THE BRUSH ELECTRIC LIGHT.

ITS INTRODUCTION TO THE STREETS OF NEW YORK—BROADWAY ILLUMINATED—A SUCCESSFUL EXPERIMENT.

At half-past five Monday night the wonderful machinery at the Brush Electric Light Company's central electrical station at No. 133 West Twenty-fifth street, was set in motion and a few seconds later the lamp at Fourteenth street was in full blaze, and Broadway, from Fourteenth street to Twenty-sixth, inclusive, an area of 3,000 square yards, was brilliantly illuminated by fifteen lamps of the Brush patent.

It is unnecessary to suppose that this is the first practical experiment of this light in street illumination. About two years ago, Mr. C. E. Brush, a man under forty, but with large experience and education in scientific matters (having graduated at Ann Arbor, Mich.), stepped into the office of the Telegraph Supply Company at Cleveland, O., and exhibited his system of electric light, adapted for street purposes. After satisfying themselves of the utility of the invention, the Company changed its name to the Brush Electric Light Company, and began the manufacture of the lamps. Their operations are already very large, and it is said they have orders months ahead and must quadruple their facilities. Already Superior street, the great business thoroughfare of Cleveland, for a distance of fourteen hundred feet, and the park at its head, are illuminated by this light. Montreal also uses it extensively, and the great work of loading and discharging vessels is carried on at night with as much ease as in the day. San Francisco, London and other domestic and foreign cities are preparing to use the light or already are in possession of it. The London *Times* recently, alluding to the subject, in connection with the projected employment of the Brush light in the House of Parliament, said that it hoped that it would make a clean sweep there. Indeed, in England the system has gained a strong foothold, through contracts signed to light the Houses of Parliament, Charing Cross station, Ludgate Hill station, Blackfriars Bridge and St. Paul's churchyard. The experiment Monday night, however, was the first real application of the light to our streets.

Last September the company was incorporated for the introduction of the light into Manhattan Island, the right to that territory having been purchased from the Cleveland company. The names of the gentlemen interested and trustees of the New York company are as follows: Josiah M. Fiske, David L. Einstein, W. L. Strong, A. D. Juilliard, A. G. Paine, W. L. Romeyn, Thomas Dolan of Philadelphia, A. A. Hayes, Jr., C. W. Griswold, S. M. Schafer and C. M. Rowley. The following are the officers: President, W. L. Strong; Vice-President, A. D. Juilliard; Secretary and Treasurer, A. A. Hayes, Jr., and General Manager, C. M. Rowley.

There is a preliminary paid-up capital of $100,000, though the gentlemen interested represent millions of dollars. The New York company has no intention of manufacturing the lamps or even repairing them to any great extent. Mr. Strong will not, for one, have the light in New York city. Mr. Hayes, the secretary, says the Company would be glad to light the streets at the price paid at present to the gas companies, and agrees to furnish a better light. The test applied to the light last night was successful, both as to steadiness and quantity of light, no photometric measurements were made or data collected as to the economy of electricity in street illumination. The lamps will be extended to Thirty-fourth street and will be kept running nightly for two or three months, so that the exact cost of lighting the city may be computed from the results obtained. By an ingenious device, if a lamp gets out of order the current is thrown through a magnet which cuts off that lamp without affecting the rest of the lamps on the circuit. As the upper carbon consumes and the arc increases the current weakens and allows it to feed down to the lower piece, which is stationary, just fast enough to keep the arc always the same. The movement is imperceptible and causes no flicker whatever in the light. As the lights in the shop windows were put out one by one the brilliant effect of almost a mile of electric lamps in one line and all in full blaze, was fully appreciated by quite a number of people who lingered till a late hour on Broadway to enjoy the novelty. The Fifth Regiment Fair, in Twenty-third street, was lighted by four lights, operated by the same engine. A short time ago a forty-light machine, capable of furnishing a light equal to 100,000 candles, was purchased for use in the English navy. The carbons in this light are as large as a man's wrist and burn before a reflector which will throw the light a distance of thirty miles. It is the largest machine of the kind ever made, and is intended to be used in lighting the vessel into harbor or in sighting the enemy's ships in time of war. An electric headlight for locomotives has just been perfected and will soon be tried on the Cleveland and Pittsburg Railroad. The power will be furnished by a small engine placed behind the smokestack and furnished with steam from the main boiler.

NEW YORK HERALD

DECEMBER 21.

BROADWAY ILLUMINATED.

A MILE OF THE GREAT THOROUGHFARE MADE LIGHT WITH ELECTRIC LIGHTS.

At half-past five last evening Broadway, between Fourteenth and Twenty-sixth streets, was suddenly snatched from deepening twilight by the simultaneous lighting of the fifteen electric lamps, recently erected by the Brush Electric Light Company, to show the people of New York that gas for street illumination must now give way to its more powerful rival. Soon after the lighting of the lamps the gas along the street was turned off in order that the full effect of the new light might be observed. Experiments were made by a large crowd of interested spectators at all points along the streets. Newspapers were produced in many instances, and several gentlemen were delighted to find that they were able to read the smallest type anywhere along the illuminated line. About eight o'clock the gas was turned on again, but no difference was noticed, the electric light actually throwing the shadow of the gas jet on the pavement. Madison square was rendered especially brilliant, the gilded tops of the two candelabra in front of the Fifth Avenue Hotel having been removed and electric lights substituted. The lamps were all arranged in a circuit containing ten thousand feet of wire and were operated by one large generator located at No. 133 West Twenty-fifth street. Contrary to what has been stated, the wire used to furnish the current is only one size larger than common telegraph wire. The generating machine is driven by a double Corliss engine of 125-horse power, and is capable of giving current enough to supply sixteen lamps of 2,000 candle power or fifty gas burners each. The engine is also used in running other machines. From the station on Twenty-fifth street the wires run on poles to Sixth avenue, pass under the "L" road and enter the Broadway circuit at Twenty-fourth street. The lamps, which are placed on posts twenty feet high, being located on each corner, consist of a large plain glass globe, slightly ground at the bottom, containing two pieces of carbon and the machinery for regulating them. The upper or positive carbon has a small cavity in the lower end, and produces all the light. Before the current is turned on both pieces of carbon, each of which resembles a round stick about twelve inches long and three-eighths of an inch in diameter, touch each other, but when the current passes through the circuit the upper piece is instantly lifted by a magnet about a quarter of an inch away from the lower carbon point, and voltaic air being formed a spark is emitted which causes the light. Each lamp contains two sets of carbons; one set burning eight hours, when the others ignite, the current being transferred by an ingenious automatic device.

A STEADY LIGHT.

It was noticed in the test trial on Saturday night that some of the lamps flickered and seemed at times to die down. This defect was not noticeable last evening, all the lights burning brightly from the time they were first lighted till long after midnight. Although the trial last night was successful both as to steadiness and quantity of light, no photometric measurements were made or data collected as to the economy of electricity in street illumination. The lamps will be extended to Thirty-fourth street and will be kept running nightly for two or three months, so that the exact cost of lighting the city may be computed from the results obtained. By an ingenious device, if a lamp gets out of order the current is thrown through a magnet which cuts off that lamp without affecting the rest of the lamps on the circuit. As the upper carbon consumes and the arc increases the current weakens and allows it to feed down to the lower piece, which is stationary, just fast enough to keep the arc always the same. The movement is imperceptible and causes no flicker whatever in the light. As the lights in the shop windows were put out one by one the brilliant effect of almost a mile of electric lamps in one line and all in full blaze, was fully appreciated by quite a number of people who lingered till a late hour