

ANNUAL REPORT
OF THE
LAMP DEPARTMENT,
FOR THE YEAR 1900.

[DOCUMENT 21 — 1901.]

HON. THOMAS N. HART,

Mayor of the City of Boston :

SIR, — In accordance with Section 24, Chapter 3, of the Revised Ordinances of 1898, I have the honor to submit for your consideration the annual report of the Lamp Department for the year 1900.

It contains a tabulated statement of the expenses of the Department during the year 1900, tables showing the average annual cost of burning the number of electric, gas, and naphtha-lamps in the different sections of the city, that were in use on the tenth day of January, 1901, at the present contract rates, other tables showing the increase or decrease of the various kinds of lamps in the several sections, copies of the contracts for furnishing the electric, gas, and naphtha-lamps, and an abstract of the general work performed by the Department during the past year, and such other information as may be of public interest.

The amount of money appropriated for the lighting of the streets, parks, and places, though large, must necessarily increase, as new lamps are added from year to year. Money expended by the City, in the proper illumination of its streets, is not only a great benefit to the public in the lighting of many dark places, but also acts in a certain measure as police protection.

The original amount appropriated for this Department for the financial year ending on January 31, 1901, was \$680,000,

a sum that was insufficient for the purposes of maintaining the existing lamps under contract, or admitting of the installation of any new lamps; an additional sum of \$62,000 was provided by the City Council in the supplementary appropriation bill passed on July 24, 1900. Owing to the fact that the necessary funds were not available until late in the season, the Department was unable to finish work that had been contemplated, for the installation of lamps on many new streets, and the improvement of the lighting of others.

There was expended \$728,107.09, leaving a balance of \$13,892.91. The comparative cost of maintenance between the electric-lamps and the gas and naphtha-lamps is shown as follows:

1899-1900.

| | |
|--|--------------|
| Paid for gas and naphtha-lamps | \$280,655 36 |
| Paid for electric-lamps | 366,693 72 |

1900-1901.

| | |
|--|--------------|
| Paid for gas and naphtha-lamps | \$311,942 57 |
| Paid for electric-lamps | 389,046 00 |

An increase of \$31,287.21 for gas and naphtha-lamps and an increase of \$22,352.28 for electric-lamps.

The seemingly large increase in 1900-1901 of the cost of maintaining the gas and naphtha-lamps is explained by the fact that during 1899-1900 the new Welsbach lamps were installed, and burned only for the last six months of the year, whereas during the past year these lamps have been maintained for the full twelve months.

There has been installed during the year 793 new lamps of all kinds, and 44 replaced lamps on such streets, parks, and places where needed; and many changes have been made in the location of lamps and the method of lighting in various sections of the City, which, upon investigation and inspection by night, have been found to be inadequately lighted.

Owing to the largely increased traffic and the numerous requests from the public for more light, the square at the South Terminal Station, Summer street, between Washington street and Dewey square, and a portion of Federal street have had sixteen "double" or "twin" arc-lamps located thereon, making a total of thirty-six lamps; and additional arc-lamps to the number of twenty-five have been

installed on the streets in the "South Cove" district and "Chinatown," for the better protection of the public, and in co-operation with the Board of Police in improving the morality and safety of this district at night, so that now it is considered the best lighted section of the City.

Summer-street extension and the new railroad bridge, L street and L-street bridge have been lighted their entire lengths. On the railroad bridge six "twin" arc-lamps were installed; special castings were required to be made for these lamps and bolted to the bridge structure in order to hold the posts in position, as no provision had been provided for the location of lamp-posts. The lighting of Haymarket square has been improved, and the main thoroughfares in the outlying wards have had arc-lamps substituted for the gas or naphtha lamps; among them may be mentioned Hyde Park avenue, Washington street, South street and Spring street, West Roxbury; Minot street and Geneva avenue, Dorchester; Faneuil street, Brighton; Columbia road, between Blue Hill avenue and Buttonwood street; also fifty-three lamps have been added to the Franklin Park arc system. Arc-lamps have been installed at the various skating grounds on the Park system for use during the skating season.

In Charlestown, along Main street, from City square to Sullivan square, at Hancock square and at Thompson square the arc-lamps have been relocated, and new ones added so as to overcome the darkness and shadows caused by the structure of the Boston Elevated Railway Company. The lighting of the new Charlestown bridge with thirty-five special crane lamps attached to the elevated structure has been assumed by this Department.

Owing to the change of grade of Cambridge street, Charlestown, occasioned by the abolishing of the railroad grade crossing, the arc-lamps were removed, and new ones relocated as the work on the street has progressed.

On Washington street, between Castle street and Bartlett street, the arc-lamps have been relocated and lowered as the obstruction of the light by the "Elevated" structure has made necessary the re-adjustment.

Work has been commenced for the lighting of Commonwealth avenue, between Brighton avenue and Chestnut Hill avenue, with arc-lamps, and is progressing as rapidly as the condition of the ground and other circumstances will admit.

Talbot avenue, between Washington street and Nightingale street, has been lighted with fourteen of the Kitson hydro-carbon lamps, as an experiment, and so far they have given a very brilliant and powerful light.

The Welsbach system of street lighting that was installed in June, 1899, in place of the old method of lighting the street gas-lamps in this city, has proven entirely satisfactory to this Department.

These lamps have been extended in the suburban wards, as far as practical, where the several gas companies have laid additional mains, and the new lamp has been substituted for the old naphtha-lamps wherever covered by the gas mains. On Blue Hill avenue, between Harvard street and Walk Hill street, these lamps have been installed, and the lighting of the avenue thus greatly improved.

A great many signs and numbers have been ordered and placed in the street lanterns, and it has been the endeavor of the Department to extend this convenience to the public wherever a necessity for the same has been found to exist. It is the intention of the Department to make as perfect a system as is possible in placing the proper signs and numbers in the lanterns.

During the fall months all of the gas and naphtha-lamp-posts, and also the brackets attached to buildings in use by this Department, were painted with "Blackite" in a thorough manner, thus improving their appearance.

Much work on underground repairs has been attended to; many service pipes that have had pick holes in them, that have been broken off or become rusted out, have been renewed; also service pipes that have become trapped or obstructed have been cleared or relaid. Quite a number of services have been relocated on account of the construction of sewers and the laying of water mains, etc.

Three hundred and thirty-seven lamp-posts of all kinds have been reset to line and grade or straightened as required by changes in the grades of streets, and 758 lamp-posts and brackets have been removed from the streets. The number of posts that have been broken has decreased during the past year.

On the main thoroughfares and the streets in the business section most of the unused lamp-posts have been removed. Forty-seven naphtha and 34 gas posts have been shifted and set in new locations where better service could be obtained by the change. Of common naphtha-lamps 84 have had new boulevard Welsbach lamps substituted in place of them, and the Department finds that as a result they give a light equal to the gas-lamps, and it is recommended that Welsbach naphtha lamps be substituted for all the common naphtha-lamps, and thus give to the citizens of those portions of the city now supplied with the common or ordinary naphtha-

lamps a system of lighting that will be a decided improvement over the present system.

The large net increase (239) in Dorchester of the new Welsbach lamps and the corresponding decrease (200) of the naphtha-lamps, as compared with the other sections, has been brought about by the activity of the gas company in extending its mains in that section.

A new contract has been entered upon with the Brookline Gas Light Company for furnishing arc lamps in the Brighton district; the company agrees to furnish and set hard pine lamp-poles without expense to this Department and substitute new inclosed arc-lamps. A reduction in the price per lamp is made as the number in use increases from time to time, according to a schedule as embodied in the new contract.

Under the existing lighting contracts there being no present use for the shop and yard on Albany street, it was recommended that the stock (old and new) on hand be disposed of to the best advantage of the City, and that the premises, consisting of 8,000 feet of land and the buildings located thereon, be rented to responsible parties. With the approval of the Mayor, the shop and yard were rented to the Rising Sun Street Lighting Company, as tenants at will, and the stock, etc., was sold to the same company.

The old lanterns that were stored in the yards of the Street Department were disposed of under authority of the following order passed by the City Council.

Ordered. That the Superintendent of Lamps, with the approval of the Mayor, be, and hereby is, authorized to sell the old street lamps in charge of his Department.

Tests of the electric current have been made at the power-station of the Boston Electric Light Company, and found to conform with the requirements of the contract, which is, "not less than 500 watts in the average and not less than 480 watts in any case." Without the knowledge of the company, private tests of the arc-lamps have been made at night on the streets in various districts, by responsible electrical experts. Their report is as follows:

BOSTON, May 25, 1900.

DEAR SIR, — We beg to give below results of tests made on the arc-lights service of the Boston Electric Light Company on May 22d. Three lamps were tested. One on Hamilton street in the business district, one at the North End, and another at Franklin Park. Tests on each lamp lasted for at least one hour and fifteen minutes, with the following results: Average amperes, 6.8; average volts, 74.5; average watts, 507. You will note from these results that the

average watts is slightly over 500. The tests show that occasionally watts dropped below 480, but these periods of low wattage are only of rare occurrence for very short durations of time. Trusting that this report will meet with your approval, we beg to remain,

Yours very truly,

STONE & WEBSTER.

On October 10, 1900, the number of all the arc-lamps furnished by the Boston Electric Light Company to the City having reached the number of 2,750, the price, as provided for in the second article of the contract, was reduced from 35 cents to 34½ cents per lamp per night, and the price for arc-lamps connected to the underground wires belonging to the City was reduced to 33½ cents per lamp per night.

Owing to the thickness of the foliage and low hanging limbs on the trees on many of our suburban streets the diffusion of light is obstructed greatly. In some instances the lamps have become so surrounded by the foliage as to be practically useless, as far as shedding a satisfactory light upon the street is concerned. It is true that some of these trees are situated on private grounds, but they overhang the sidewalk to such an extent as to be a detriment to the lighting of the street. Some action should be taken toward having any and all trees trimmed that are now interfering with the proper diffusion of the light on the streets and ways of the City.

GAS LIGHTING.

The following table shows the total number of gas-lamps in use each year, as per annual reports, since 1866:

| | | | |
|---------------|--------|---------------|--------|
| Dec. 15, 1866 | 3,568 | Dec. 15, 1884 | 9,781 |
| Dec. 15, 1867 | 4,304 | Dec. 15, 1885 | 9,986 |
| Dec. 15, 1868 | 4,414 | Dec. 15, 1886 | 10,080 |
| Dec. 15, 1869 | 5,040 | Dec. 15, 1887 | 10,157 |
| Dec. 15, 1870 | 5,405 | Dec. 15, 1888 | 10,104 |
| Dec. 15, 1871 | 5,888 | Dec. 15, 1889 | 9,878 |
| Dec. 15, 1872 | 6,344 | Dec. 15, 1890 | 9,247 |
| Dec. 15, 1873 | 6,776 | Jan. 15, 1892 | 8,907 |
| Dec. 15, 1874 | 8,420 | Jan. 15, 1893 | 8,731 |
| Dec. 15, 1875 | 9,040 | Jan. 15, 1894 | 8,752 |
| Dec. 15, 1876 | 9,525 | Jan. 15, 1895 | 7,440 |
| Dec. 15, 1877 | 9,749 | Jan. 15, 1896 | 7,592 |
| Dec. 15, 1878 | 9,992 | Jan. 15, 1897 | 7,682 |
| Dec. 15, 1879 | 10,139 | Jan. 15, 1898 | 8,103 |
| Dec. 15, 1880 | 10,296 | Jan. 15, 1899 | 8,151 |
| Dec. 15, 1881 | 10,427 | Jan. 10, 1900 | 8,320 |
| Dec. 15, 1882 | 10,278 | Jan. 10, 1901 | 8,637 |
| Dec. 15, 1883 | 9,623 | | |

The new Welsbach gas-lamps located during the past year have been distributed as follows :

| | | <i>Dorchester.</i> | |
|-----------------------------|---|-----------------------------|---|
| Adams street | 1 | Kerwin street | 3 |
| Allston street | 1 | Kineo street | 1 |
| Alpha road | 2 | Lauriat avenue | 1 |
| Ashmont park | 1 | Mather street | 1 |
| Ballou avenue | 4 | Morton street | 1 |
| Barnes street | 2 | Mt. Ida road | 1 |
| Blue Hill avenue | 3 | Mt. Vernon street | 2 |
| Bowman street | 2 | Nottingham street | 1 |
| Brent street | 1 | Northam park | 3 |
| Brunswick street | 2 | Pinekney road | 2 |
| Buttonwood street | 1 | River street | 1 |
| Calder street | 2 | Roseclair street | 1 |
| Callender street | 2 | Rowe street | 2 |
| Centre court | 1 | Salisbury park | 2 |
| Cottage terrace | 2 | Shepton street | 2 |
| Dix street | 1 | Sidney street | 2 |
| Draper street | 4 | Stratton street | 3 |
| Dudley street | 1 | Sunmer terrace | 1 |
| Duke street | 3 | Tenean street | 1 |
| Euclid street | 1 | Whitby terrace | 2 |
| Folsom street | 1 | Wilbur street | 1 |
| Greenwood park | 2 | Willowwood street | 2 |
| Greenwood street | 2 | Withington street | 1 |
| Harlem street | 1 | York street | 3 |
| Harwood street | 2 | | |

| | | <i>West Roxbury.</i> | |
|----------------------------|---|-----------------------------|---|
| Albano street | 1 | Grovenor road | 4 |
| Aldworth street | 3 | Hathaway place | 1 |
| Arcadia street | 1 | Irving street | 1 |
| Beethoven street | 1 | Jackson place | 1 |
| Boylston place | 1 | Lindall street | 1 |
| Brook road | 1 | Lorraine street | 1 |
| Brookside avenue | 1 | Lotus place | 1 |
| Brown avenue | 1 | Montebello street | 6 |
| Brown place | 1 | Montclair avenue | 3 |
| Burlingame way | 1 | Montello street | 1 |
| Call street | 2 | Mt. Vernon street | 1 |
| Centre street | 1 | Ophir street | 2 |
| Chestnut avenue | 1 | Patten street | 4 |
| Congreve street | 1 | Paul Gore street | 1 |
| Corey street | 3 | Robinwood avenue | 1 |
| Custer street | 2 | South street | 1 |
| Dudley avenue | 1 | Sycamore street | 2 |
| Fletcher street | 1 | Tomfohrde place | 1 |
| Garfield avenue | 4 | Tower street | 1 |
| Germania street | 2 | Williams terrace | 1 |
| Glade avenue | 1 | Willow street | 3 |
| | 1 | | |

Roxbury.

| | | | |
|------------------------------|---|-----------------------------|---|
| Alleghany street | 1 | Hollander street | 3 |
| Bickford avenue | 1 | Homestead park | 1 |
| Bragdon street | 1 | Huntington avenue, rear | |
| Calumet street | 1 | of | 1 |
| Codman Hill street | 1 | Hutchings street | 4 |
| Creighton street | 1 | Longwood avenue, rear of, | 1 |
| Creighton street, rear of . | 1 | Magazine street | 1 |
| Cunard street | 1 | Mozart place | 2 |
| Davenport street | 1 | Oscar street | 1 |
| Echo street | 1 | Paulding street | 1 |
| Eustis street, rear of . . . | 1 | Rheims place | 1 |
| Fairweather street | 2 | Ruggles street | 1 |
| Fisher avenue | 5 | Sunderland street | 1 |
| French terrace | 1 | Sunnyside street | 1 |
| Gardner avenue | 1 | Ward street | 1 |
| Georgia street | 1 | Warren street | 2 |
| Glenwood street, rear of . | 2 | Waunbeck street | 1 |
| Gore avenue | 1 | Yeoman place | 1 |
| Harold street | 8 | Yeoman court | 1 |
| Harrishof street | 5 | | |

City Proper.

| | | | |
|-----------------------------|---|-----------------------------|---|
| Allston place | 1 | Myrtle street | 1 |
| Appleton street, rear of . | 1 | Newbury street, rear of . | 1 |
| Barrett street | 1 | Northampton street . . . | 1 |
| Chandler street, rear of . | 1 | Public alley 435 | 1 |
| Clarendon street, rear of . | 1 | Rutland street | 1 |
| Farwell avenue | 4 | Stillman street | 1 |
| Ferry court | 1 | Union Park street | 1 |
| Friend street | 1 | Way street | 1 |
| Kennard avenue | 1 | Webster avenue | 1 |
| Lovett place | 1 | | |

Brighton.

| | | | |
|-----------------------------|---|-----------------------------|---|
| Adie street | 1 | High Rock way | 2 |
| Allston tunnel | 1 | Kilsyth road | 1 |
| Dunboy street | 1 | Oak Square avenue | 5 |
| Farrington avenue | 1 | Weitz street | 2 |
| Franklin street | 1 | | |

Charlestown.

| | | | |
|------------------------------|---|------------------------------|---|
| Carter street | 1 | Lincoln street | 1 |
| Furbush court | 2 | Mansfield place | 1 |
| Gilbert avenue | 1 | Oak street | 1 |
| Harvard square | 1 | Park street, rear of | 2 |
| Joiner street | 1 | Temple street, rear of . . . | 1 |
| Joiner street, rear of . . . | 1 | Wood street | 1 |

South Boston.

| | | | |
|-------------------------|---|--------------------------|---|
| Acadia street | 1 | Peters street | 1 |
| Burnham place | 1 | Second street | 1 |
| First street | 2 | Seventh street | 1 |
| Harold place | 1 | | |

East Boston.

| | | | |
|---------------------------------|---|---------------------------|---|
| Bremen street | 1 | Leyden street | 1 |
| Havre street, rear of | 1 | Meridian street | 1 |

The Welsbach gas-lamps that have been substituted for naphtha-lamps have been distributed as follows:

Dorchester.

| | | | |
|-----------------------------|----|------------------------------|----|
| Angell street | 1 | Morton street | 5 |
| Ballou street | 2 | Rich street | 2 |
| Bernard street | 1 | Rockland street | 2 |
| Blue Hill avenue | 1 | Rock terrace | 2 |
| Buttonwood street | 3 | Sanford street | 2 |
| Callender street | 12 | Sullivan place | 1 |
| Codman street | 1 | Templeton street | 2 |
| Danube street | 1 | Tenean street | 13 |
| Evelyn street | 1 | Tileston street | 8 |
| Fessenden street | 2 | Wainwright street | 2 |
| Frederika street | 2 | Wales place | 3 |
| Granville street | 1 | White terrace | 1 |
| Granite avenue | 10 | Willis street | 1 |
| Lauriat street | 2 | Woodlawn street | 3 |
| Locust street | 2 | Woolson street | 1 |
| Mattapan street | 5 | West Selden street | 22 |
| Milton street | 6 | | |

West Roxbury.

| | | | |
|----------------------------|---|-----------------------------|---|
| Ashland street | 1 | Mozart street | 5 |
| Aldrich street | 2 | Penfield street | 3 |
| Dudley avenue | 1 | Plainfield street | 3 |
| Fletcher street | 1 | Sycamore street | 4 |
| Hawthorne street | 3 | Temple street | 3 |
| Jackson place | 1 | Willow street | 3 |
| Montclair avenue | 1 | | |

South Boston.

| | | | |
|-----------------------------|---|---------------------------|---|
| Old Harbor street | 1 | Third street | 1 |
| Rawson street | 2 | Washburn street | 2 |

Roxbury.

| | | | |
|--------------------------|---|----------------------------|---|
| Bragdon street | 1 | Woodcliff street | 1 |
| Dacia street | 2 | | |

| | | | | | | |
|-----------|------|------|-----------|------|------|-----------------------------------|
| Sept. 15. | 6.15 | P.M. | Sept. 16. | 4.15 | A.M. | |
| " 17. | 6.00 | " | " 18. | 4.15 | " | |
| " 24. | 5.45 | " | " 25. | 4.30 | " | |
| Oct. 1. | 5.30 | " | Oct. 2. | 4.30 | " | |
| " 8. | 5.30 | " | " 9. | 4.45 | " | 30 nights. 322½ hours. |
| Oct. 15. | 5.15 | P.M. | Oct. 16. | 4.45 | A.M. | |
| " 22. | 5.00 | " | " 23. | 5.00 | " | |
| " 29. | 4.45 | " | " 30. | 5.00 | " | |
| Nov. 5. | 4.45 | " | Nov. 6. | 5.15 | " | |
| " 12. | 4.30 | " | " 13. | 5.30 | " | 31 nights. 376½ hours. |
| Nov. 15. | 4.30 | P.M. | Nov. 16. | 5.30 | A.M. | |
| " 25. | 4.15 | " | " 26. | 5.45 | " | |
| Dec. 14. | 4.15 | " | Dec. 15. | 5.45 | " | 30 nights. 400 hours. |
| Dec. 15. | 4.15 | P.M. | Dec. 16. | 5.45 | A.M. | |
| " 24. | 4.30 | " | " 25. | 6.00 | " | |
| Jan. 14. | 4.30 | " | Jan. 15. | 6.00 | " | 31 nights. 418½ hours. |
| | | | | | | Total, 365 nights or 3,828 hours. |

GAS LIGHTING CONTRACT.

The Rising Sun Street Lighting Company, a corporation duly established under the laws of the State of Maine, having a usual place of business in the City of Boston, in the County of Suffolk, and Commonwealth of Massachusetts, hereinafter called the contractor, of the first part, and the City of Boston, a municipal corporation in said Commonwealth, hereinafter called the City, of the second part, agree as follows:

ARTICLE I. Said contractor shall have the charge of all gas-lanterns hereafter used for lighting the streets and places of said City, except, such lanterns as said contractor shall be notified from time to time by the Superintendent of Lamps of said City to discontinue; shall within four months after June 1, 1899, place on every post designated, within one month after the date hereof, by said Superintendent, a boulevard lantern of said contractor like the lantern deposited as a sample in the office of said Superintendent and marked "Welsbach Boulevard, No. 1," and shall within five days after being notified by said Superintendent so to do, place on every additional post specified by the said Superintendent, and furnished with a supply pipe from the gas main to the top of the post, a similar lantern; shall, when required by said Superintendent, furnish in place of any lantern, whether owned by the City or said contractor, other than a boulevard lantern, a lantern of the pattern now kept in said office as specified by said Superintendent, or any other lantern, if the contractor and the Superintendent shall so agree; shall place and maintain on every gas-lantern when in use, whether owned by the City or said contractor, a Welsbach burner and mantle, and furnish gas and keep it burning in every such lantern during the hours shown on time cards to be furnished by said Superintendent, so as to give a sixty (60) candle-light; shall keep all lanterns when in use in good repair and condition and well painted, and properly replace all broken or displaced glass and signs on said lanterns before the next time of lighting, the signs to be furnished by the City, but placed and kept securely fastened by the contractor; shall clean all lanterns when in use as often as once a week, and oftener if required, to keep the light from being obstructed; and shall when it removes a lantern without substituting another therefor, properly plug the pipe so that the gas will not escape therefrom.

The Superintendent of Lamps and the contractor may agree at any time to install in lieu of gas-lamps as many Welsbach naphtha

lights of sixty (60) candle-power each with boulevard lanterns of approved pattern as may be necessary to fully carry out this contract, same to be kept and maintained as herein provided under and subject as to cost and other requirements to all the other provisions and obligations of this contract applicable thereto.

ARTICLE II. Said contractor shall report in writing at the office of said Superintendent on Thursday of each week, and on the ninth of each month, the number of said lanterns lighted on each night subsequent to the last report, giving in each report the name of each person engaged in lighting the lanterns and the number lighted by each person.

ARTICLE III. Said contractor shall have the use of all property now belonging to the City, and used by the Superintendent of Lamps in carrying on the duties of his Department, as the contractor considers necessary to carry out this agreement; shall keep the same in good condition and repair, and replace any thereof that shall be destroyed or injured, and shall return the same to said City in like good order and condition when the lanterns to be placed within four months from the time this contract goes into effect are so placed.

ARTICLE IV. Said City shall lay and maintain all gas-pipes to the burners in the care and charge of said contractor and keep the same in good condition and repair; as full payment for everything furnished or done by, or resulting to, the contractor in carrying out this contract, shall for each year of three thousand eight hundred twenty-eight (3,828) hours pay for each and every lantern taken care of and lighted by said contractor as aforesaid, at the rate of thirty (30) dollars per year, in proportional monthly payments on the first day of each and every month; *provided, however*, that if any lantern has not been kept and lighted in accordance with this contract during all the hours required by said time card a proportional deduction, as determined by said Superintendent, shall be made; and *provided, further*, that if at any time by reason of a reduction by any gas company in the price of gas, the contractor shall procure its gas supply at a lower average price per lamp for the whole number of lamps lighted than the average price paid for gas by the contractor when the system provided for herein is fully installed, the said rate paid by the City shall be reduced by the amount of the reduction in the price of gas so secured. (It is understood and agreed that any reduction made prior to the complete installation of the Welsbach system shall be calculated in the deduction from the rate to be made as before provided with like force and effect as if made thereafter, but the contractor shall receive the full rate until such installation is complete.) The contractor shall render to the City statements every three months, showing such reductions, if any, and the amounts of same accrued during the prior three months shall be deducted from the next payments due the contractor. The said rate paid by the City shall then be adjusted in accordance with such reductions.

ARTICLE V. This contract shall take effect June 1, 1899 (which date may be changed by mutual consent), and shall continue in force subject to the necessary appropriation being made for gas-lighting, for the term of seven years from June 1, 1899,—but any change of date shall not relieve the contractor from its obligation to have the Welsbach system as provided herein fully installed and in operation within four months from June 1, 1899, and shall continue thereafter until a new agreement is made by the parties, or until the

expiration of three months after notice in writing which may be given prior to said date by either party of its election to terminate the contract at the end of the period of seven years as herein provided, and on such termination the said contractor may remove its lanterns and all other property by it furnished under this agreement, providing the same is not purchased by the said City. If at the expiration of said term the Mayor of said City desires that the City shall purchase the lanterns, burners, and mantles of said contractor and notifies the contractor to that effect, the contractor shall convey the same to the City upon terms to be agreed upon by the parties at that time, and, if they cannot agree, the same shall be fixed by three persons, one to be selected by the Mayor of said City, one by the contractor, and the third by the two so selected, and the decision of a majority thereof shall be binding upon the parties; and *provided, further*, that the contract shall continue for a second period of seven years if the Mayor of said City shall within three months from the expiration of the first period of seven years so notify in writing the contractor.

In witness whereof, the said Rising Sun Street Lighting Company, by its proper officer, and the said City by its Superintendent of Lamps, duly authorized and approved by the Mayor, have hereunto set their hands and seals on this thirty-first day of May, A.D. 1899.

THE RISING SUN STREET LIGHTING COMPANY,

By WESLEY A. GOVE, *President.*

CITY OF BOSTON,

By

JAMES DONOVAN, *Superintendent of Lamps.*

Approved.

JOSIAH QUINCY, *Mayor of Boston.*

NAPHTHA LIGHTING.

There are in use at present 2,304 common and 33 Welsbach naphtha-lamps. There are 43 common naphtha-lamps fitted with mantles. These lamps are located principally in the suburban districts, and in alleyways where there are no gas mains or other means of lighting.

The rate of compensation is \$22.81 per lamp per annum for the ordinary naphtha burner, and when an incandescent mantle burner is used the sum of three-quarters of one cent additional per lamp per night is paid.

The rate for the Welsbach naphtha-lamps is \$30 per lamp per annum.

The following table shows the total number of naphtha-lamps in use each year since their introduction:

| | | | |
|---------------|-----------------|---------------|-----------------|
| Jan. 15, 1892 | 80 | Jan. 15, 1897 | 2,624 |
| Jan. 15, 1893 | 2,846 | Jan. 15, 1898 | 2,646 |
| Jan. 15, 1894 | 2,803 | Jan. 15, 1899 | 2,615 |
| Jan. 15, 1895 | 2,709 | Jan. 10, 1900 | 2,551 |
| Jan. 15, 1896 | 2,676 | Jan. 10, 1901 | 2,304 |

The new naphtha-lamps, located during the past year have been distributed as follows:

West Roxbury.

| | | | |
|----------------------------|---|-----------------------------|---|
| Amesbury street | 2 | Kittredge street | 1 |
| Augustus avenue | 1 | Linden street | 1 |
| Berwick street | 3 | Malcolm street | 3 |
| Billings street | 2 | Montello street | 3 |
| Clarendon avenue | 2 | Mt. Vernon street | 4 |
| Clarendon park | 2 | Myer street | 4 |
| Clifton street | 1 | Patten street | 2 |
| Durant street | 4 | Porter street | 1 |
| Fletcher street | 3 | Vermont avenue | 3 |
| Hamilton street | 3 | Walnut street | 1 |
| Harrison street | 1 | Wiggin street | 1 |

Dorchester.

| | | | |
|--------------------------|---|----------------------------|---|
| Ballou place | 1 | Rockland avenue | 2 |
| Bullard street | 1 | Washington court | 1 |

Brighton.

| | | | |
|---------------------------|---|-----------------------------|---|
| Faneuil street | 4 | Oak Square avenue | 1 |
| Montfern street | 3 | | |

East Boston.

| | |
|---------------------------|----|
| Boardman street | 10 |
|---------------------------|----|

South Boston.

| | |
|---------------------------------|---|
| Third street, rear of | 2 |
|---------------------------------|---|

Roxbury.

| | |
|----------------------|---|
| Dove court | 2 |
|----------------------|---|

Naphtha-lamps that have been changed to Welsbach naphtha-lamps have been distributed as follows:

Dorchester.

| | | | |
|----------------------------|----|-------------------------|---|
| Blue Hill avenue | 58 | Granger place | 1 |
| Duncan street | 2 | Leonard place | 1 |
| Fenton street | 2 | Morton street | 8 |
| Granger street | 3 | | |

South Boston.

| | | | |
|-------------------------|---|---------------------------|---|
| Athens street | 1 | Mitchell street | 2 |
| Bolton street | 1 | Ninth street | 2 |
| Baldwin place | 2 | | |

Roxbury.

Codman place 1

New Walsbach naphtha-lamps have been distributed as follows :

West Roxbury.

Arborway 8

Brighton.

Kilsyth road 3

The new "Kitson" lamps have been distributed as follows in Dorchester :

Denny street 2 | Talbot avenue 14

NAPHTHA CONTRACT.

The following is a copy of the new contract :

The Rising Sun Street Lighting Company, a corporation organized under the laws of the State of Maine, having its usual place of business in the Commonwealth of Massachusetts, and the City of Boston, a municipal corporation of said Commonwealth, by the Superintendent of Lamps of said City, agree as follows :

ARTICLE I. Said Company shall have the lighting of all naphtha street lanterns that may be used by said City for lighting its streets and places during the continuance of this contract; shall, within ten days of the day on which it shall be notified by said Superintendent that any additional naphtha street lantern mounted on a post or bracket is required to be used, furnish and supply to such lantern one of said Company's naphtha burners, with pipe, stop-cock, water-trap and a reservoir capable of holding sufficient naphtha to operate the burner for fourteen hours, and with incandescent mantle, if required by said Superintendent shall keep all said lanterns, except such as are unfit to be used and such as the Superintendent shall notify the Company that he has discontinued the use of, and the lighting apparatus thereof clean and in good condition and repair, and shall renew such mantles as often as may be necessary to maintain a proper light therefrom; shall be responsible for all damages occasioned to any such lantern or burner by any act or neglect of said Company, its agents or employees; shall notify said Superintendent as soon as any post or bracket has been damaged, or any lantern has become unfit to be used, and the Superintendent shall, if he desires the use thereof continued, forthwith repair the same, or furnish a new one in its place; glass broken shall be renewed by said Company.

ARTICLE II. Said Company shall furnish for all lanterns that are to be used naphtha of the best quality, seventy-four to seventy-six degrees (74-76) gravity; shall light and extinguish said lanterns according to a time card to be furnished by said Superintendent;

shall so furnish and keep the burner of every lantern to be used as aforesaid that it will give at all times a light equal to that given by an ordinary gas-burner burning four feet of fourteen-candle gas per hour, and a light equal to at least twice such an amount in case an incandescent mantle is used.

ARTICLE III. Said Company shall do all said matters and things relating to said lanterns, burners and mantles, and the lighting, care and repair thereof to the satisfaction of said Superintendent, and shall report in writing at the office of said Superintendent, on Thursday of each week, the number of said lanterns lighted on each night of the preceding seven (7) days, and on the fifteenth day of each month the number of said lanterns lighted on each night subsequent to the last report; and shall, in each of said reports, give the name of each person engaged in lighting the lanterns and the number lighted by each person, and shall specify the lanterns furnished with said mantles, and give dates of renewal of same.

ARTICLE IV. Said City, as full compensation for the performance by said Company of its agreements aforesaid, shall pay to said Company the sum of twenty-two dollars and eighty-one cents (\$22.81) per year of three thousand eight hundred and twenty-eight (3,828) hours for each and every naphtha lantern so taken care of and lighted by said Company, when lighted by a burner known as the ordinary naphtha burner, such as the City is now using, and the sum of three-quarters of one cent ($\frac{3}{4}$ of 1 cent) additional per night when lighted by a naphtha incandescent mantle light; said payments to be made in proportional monthly instalments on the first day of each month; *provided, however*, that if any lantern has not been kept lighted as aforesaid to the satisfaction of said Superintendent during all the hours required by said time card, a proportional deduction may be made therefor in said monthly payments.

ARTICLE V. The contract now existing between said Company and said City, dated March 18, 1896, is hereby annulled and this contract shall take the place thereof, and shall, subject to the necessary appropriation being made annually therefor, continue in force for the term of five years from the date hereof, and thereafter until terminated on three months' notice in writing by either party, which notice may be given at any time after four years and nine months from the date hereof; and upon any such termination said Company may remove its lighting apparatus from said lanterns.

Signed this thirty-first day of October, A.D. 1898.

ELECTRIC LIGHTING.

The arc-lamps located in the City proper, East Boston, South Boston, Dorchester, Roxbury, and West Roxbury, are furnished by the Boston Electric Light Company, those in Charlestown by the Charlestown Gas and Electric Company, and in Brighton by the Brookline Gas Light Company. The new lamps used are the enclosed series arc-lamp of 500 watts, and are placed on hard-pine poles, with ornamental iron tops and porcelain-lined reflectors, devised to meet the requirements of the law. (Chapter 228, Acts 1895.)

These lamps have been installed in the whole district supplied by the Boston Company, and the open arcs in the districts supplied by the Charlestown and Brookline Companies are being gradually changed for the inclosed lamp. The companies are required to keep all the poles, lines and lamps used for the City's lighting in good condition, and to the satisfaction of the Superintendent of Lamps.

The following table shows the number of arc-lamps in use each year:

| | | | |
|-----------------------------|-------|----------------------------|-------|
| December 15, 1882 | 114 | January 15, 1893 | 1,547 |
| December 15, 1883 | 381 | January 15, 1894 | 1,580 |
| December 15, 1884 | 401 | January 15, 1895 | 2,358 |
| December 15, 1885 | 446 | January 15, 1896 | 2,434 |
| December 15, 1886 | 501 | January 15, 1897 | 2,566 |
| December 15, 1887 | 577 | January 15, 1898 | 2,735 |
| December 15, 1888 | 704 | January 15, 1899 | 2,893 |
| December 15, 1889 | 798 | January 10, 1900 | 3,024 |
| December 15, 1890 | 1,125 | January 10, 1901 | 3,416 |
| January 15, 1892 | 1,447 | | |

The 406 new arc-lamps erected during the past year have been located as follows:

City Proper.

| | | | |
|-----------------------------|---|-----------------------------|----|
| Astor street | 1 | Falmouth street | 1 |
| Atlantic avenue | 5 | Federal street | 3 |
| Battery street | 1 | Harrison avenue | 1 |
| Beach street | 1 | Haverhill street | 1 |
| Bedford street | 2 | Haymarket square | 1 |
| Belvidere street | 1 | Hersey place | 1 |
| Blackstone street | 1 | Lancaster street | 1 |
| Boston Common | 1 | Lincoln street | 1 |
| Broad street | 1 | New Charlestown bridge, | 13 |
| Broadway | 1 | Oliver street | 2 |
| Buckingham street | 1 | Otis street | 1 |
| Central wharf | 1 | Oxford place | 2 |
| Chambers street | 1 | Oxford street | 2 |
| Chandler street | 1 | Purchase street | 1 |
| Columbia street | 1 | South street | 1 |
| Congress street | 1 | Summer street | 13 |
| Dartmouth street | 1 | Tremont street | 3 |
| Dorchester avenue | 1 | Trinity place | 1 |
| East street | 1 | Tufts street | 1 |
| Edinboro' street | 1 | Utica street | 2 |
| Essex street | 2 | Washington street | 1 |
| | 1 | | |

Brighton.

| | | | |
|--------------------------|---|-----------------------------|---|
| Faneuil street | 4 | Linden street | 1 |
| Holton street | 1 | Washington street | 1 |

Roxbury.

| | | | |
|---------------------------------------|---|--------------------------------|---|
| Amory street | 1 | Maywood street | 1 |
| Beacon street | 1 | Mt. Pleasant avenue | 3 |
| Brookline avenue | 1 | Parker street | 1 |
| Columbus avenue | 1 | Parker Hill avenue | 1 |
| Columbus-avenue play-ground | 3 | Regent street | 1 |
| Conant street | 1 | Riverway | 1 |
| Dale street | 1 | Smith street | 2 |
| Dudley street | 2 | St. Alphonsus street | 1 |
| Gannett street | 1 | Terrace street | 5 |
| Heath street | 1 | Warren street | 1 |
| | | Washington street | 1 |

Dorchester.

| | | | |
|-----------------------------|----|-----------------------------|---|
| Adams street | 1 | Lauriat avenue | 1 |
| Boston street | 1 | Minot street | 4 |
| Charles street | 2 | Morton street | 1 |
| Centre street | 1 | Norfolk street | 1 |
| Columbia road | 26 | Park street | 5 |
| Dorchester avenue | 3 | Rockwell street | 1 |
| Franklin field | 8 | Waldeck street | 2 |
| Geneva avenue | 5 | Washington street | 2 |

West Roxbury.

| | | | |
|----------------------------|----|-----------------------------|----|
| Ashland street | 1 | Kittredge street | 3 |
| Boylston street | 4 | Park street | 1 |
| Centre street | 1 | South street | 11 |
| Chestnut avenue | 1 | Spring street | 10 |
| Corey street | 1 | Washington street | 7 |
| Franklin park | 53 | Williams street | 2 |
| Hyde Park avenue | 22 | | |

South Boston.

| | | | |
|-------------------------------------|---|--------------------------------|----|
| Broadway | 1 | Seventh street | 1 |
| Columbia road | 6 | Sixth street | 2 |
| Fifth street | 1 | Summer street | 12 |
| L street | 8 | Summer-street bridge | 12 |
| Marine park boat-landing, | 2 | Swett street | 1 |
| Ninth street | 1 | Third street | 2 |

East Boston.

| | | | |
|-----------------------------|---|---------------------------|---|
| Bennington street | 1 | Saratoga street | 1 |
| Bremen street | 1 | Thurston street | 1 |
| Chelsea street | 1 | Trenton street | 1 |
| Maverick square | 1 | | |

Charlestown.

| | | | |
|----------------------------------|---|----------------------------------|----|
| Alford street | 1 | Haverhill street | 1 |
| Cambridge street | 6 | Malden bridge | 2 |
| Charlestown playground | 4 | Main street | 12 |
| Essex street | 1 | New Charlestown bridge | 22 |
| Hamblen street | 1 | Spice street | 1 |

There have been fifteen arc-lamps discontinued, as follows:

| | |
|------------------------|---|
| City proper | 2 |
| South Boston | 3 |
| Roxbury | 1 |
| Charlestown | 9 |

The number of arc-lamps as furnished by each of the several companies is as follows:

| | |
|--|-------|
| Boston Electric Light Company | 2,951 |
| Brookline Gas Light Company | 211 |
| Charlestown Gas and Electric Company | 254 |

INCANDESCENT LAMPS.

There are in use 28 incandescent lamps of 32-candle power, located as follows: Under bridges on the Back Bay Fens, 7; on Castle Island bridge, 7, and in the tunnel under the Boston & Albany Railroad, at Allston, 14. There has been no increase in the number of these lamps during the past year.

UNDERGROUND SYSTEM.

There are 1,212 of the arc-lamps furnished by the Boston Electric Light Company connected with the wires in underground conduits. Practically all of them in that portion of the City proper, north of Dever and Berkeley streets, have been so connected. Quite a number of the arc-lamps have been connected outside of the above-mentioned district, as the company is required to lay two miles of conduit each year. The Brookline Gas Light Company has six arc-lamps connected underground on Boylston-street extension. Of the above-mentioned lamps connected with the underground system, there are 319 located on the parks and parkways as follows:

| | |
|--------------------------------------|----|
| North End Park | 7 |
| Boston Common | 49 |
| Commonwealth avenue | 39 |
| Back Bay Fens | 45 |
| Riverway and Olmstead Park | 53 |
| Jamaica Park and Arborway | 63 |

| | |
|----------------------------|----|
| Franklin Park | 39 |
| Marine Park | 4 |
| Wood Island Park | 20 |

All of the cable and conduits connecting the lamps in the preceding table is the property of the City.

ELECTRIC CONTRACTS.

The following is a copy of the contract made with the Boston Electric Light Company on February 20, 1894, with the new extension of said contract dated August 29, 1898.

THIS AGREEMENT, made and entered into this twentieth day of February, A.D., 1894, by and between THE BOSTON ELECTRIC LIGHT COMPANY of Boston, a corporation duly established under the laws of the Commonwealth of Massachusetts, hereinafter called "the Company," of the first part, and the City of Boston, a municipal corporation in the County of Suffolk, Massachusetts, and hereinafter called "the City," of the second part:

WITNESSETH:

First. The Company agrees to furnish for a period of five years from and after this date such number of electric arc-lights as may be legally located in the streets, ways, squares and public places of the City, except in those portions of the City formerly Brighton, Charlestown, or part of Brookline.

Said arc-lights to be furnished as follows: For thirteen hundred and fifty lights, and any additional lights to the number of fifteen hundred, at the rate of thirty-eight and one-half cents each per night; for fifteen hundred and any additional lights up to seventeen hundred and fifty, at the rate of thirty-seven and one-half cents each per night; for seventeen hundred and fifty and any additional lights up to two thousand, at the rate of thirty-six cents each per night; and for two thousand or over, at the rate of thirty-five cents per light per night; *provided, however,* that if two thousand lights are erected by December thirty-first of the present year, the price paid shall be thirty-five cents per light per night for the entire number from February first, eighteen hundred and ninety-four, and if a less number is in use on that date (December 31, 1894), then the price paid for the entire number from February 1, 1894, shall be reduced so that the cost to the City of such lights shall be at the prices fixed for the number next below the number in use December 31, 1894; the adjustment to be made in the bills payable December 1, 1894; and January 1, 1895. In ascertaining the number of lights in use on said December 31, 1894, the lights furnished by the Company for the parks and public buildings shall be counted. Said arc-lights are to be kept lighted continuously between dusk and dawn, during such hours as the Superintendent of Lamps may direct, the total number of hours per year not to exceed thirty-eight hundred and fifty.

Whenever lamps are connected to underground wires belonging to the City, or any department thereof, the price will be one cent per lamp less per night than otherwise.

The electric current to be furnished for the arc-lights is never to be less than nine and six-tenths amperes, at the pressure at each lamp not less than forty-eight volts, being an electrical energy of

four hundred and sixty-one watts. If less amperes are used then the volts shall be enough greater to require four hundred and sixty-one electrical watts per lamp, and giving a nominal candle-power of two thousand.

Carbons used must be one-half or seven-sixteenths inch in diameter, of the best quality and style adapted for street lighting, and must burn uniformly, and give a clear and steady light. The globes are to be of clear glass, unless otherwise ordered by the Superintendent of Lamps, free from lettering, and all of best quality and proper shape to avoid casting rings and streaks of light and shadow.

All globes are to be thoroughly brushed inside and outside at least three times a week, and washed as frequently as may be considered necessary by the Superintendent of Lamps; and any globes that may become broken are to be immediately replaced by sound ones.

The present overhead system of construction is to be used, the Company only to connect City posts with such adjacent underground wires as may be hereafter located in the Company's conduits for commercial lights; in which case the City is to prepare the posts so as to allow of the passing of the cable up through them.

Second. The Company further agrees to indemnify and save the City harmless from and against any and all claims and demands for damages, costs and expenses for or on account of injuries to persons or property arising from imperfect construction and maintenance, or from any use of its wires and apparatus, and from any and all claims for damage by reason of any infringement of patent rights in the use of lamps, lights, wires, poles, machinery, and appliances connected therewith.

Third. And further, the said Company agrees that should any of the lamps fail to burn uniformly and give a clear and steady light, to the satisfaction of the Superintendent of Lamps, the Company will, at its own expense, replace them with others satisfactory to said Superintendent.

Fourth. The Company agrees at its own expense to maintain an efficient system of patrol for inspecting the lamps during the hours which they are in use, so that any lamp which fails to burn properly shall be promptly reported and put in order, or immediately replaced.

For this inspection a sufficient number of men shall be employed to enable each lamp to be examined at least three times during each night.

Fifth. The City agrees that if said Company shall well and faithfully perform the promises and conditions of this contract in all its parts, first satisfying the said City that no proceedings either in law or equity have been begun against said City on account of any infringement of patent rights, or the wrongful use or injury by said electric lamps, lights, wires, poles, machinery and appliances, or any of them, then the City will pay the Company monthly during the period of this contract such sum as the total number of lights burning at the price named may amount to. In case any such suit or suits against said City shall have been begun, or notice of a claim for damages shall have been given, the City shall pay any amount due under this contract, notwithstanding such suit or notice, if the Company shall furnish the City with a bond of indemnity with satisfactory sureties. Said sum shall be in full payment and discharge for any and all expenses attending the care, maintenance and use of such lights and apparatus, and it is hereby understood and agreed that if through accident, or other cause, the said lamps, or any of them,

shall fail to be lighted, and kept so lighted, as stated above, any night or nights during the period of this contract, then for each lamp that shall fail to be lighted there shall be deducted from the sum to be paid by said City an amount for each light not so lighted equal to the rate to be paid for lighting the same under this contract as provided. In case the actual current supplied to any of the lamps shall be less than called for herein, payment shall only be made for the actual current as ascertained. The amount to be based *pro rata* on the amount which would be paid were the current equal to that required hereby, unless said deficiencies should amount to over twenty per cent. of the current called for, in which case no payment shall be made, the lights being considered useless.

And further, this is not to be construed to imply a right to continue to furnish lights under this contract at reduced currents.

For the purpose of making tests of currents and of examining the lamps, wires, poles, apparatus and appliances with the view of learning whether the Company is complying with the terms of this agreement, it is further understood and agreed that at all proper times the City, by such person or persons as the Superintendent of Lamps may authorize, shall have access to all said lamps, wires, poles, apparatus and appliances in the city, and also to the plants of the Company, and shall have the further privilege at any time, and at all times, of attaching in any of the circuits, at such point or points as they may select, one or more ammeters or other measuring instruments, and to maintain the same during its pleasure, and have the further right to remove at any time one or more lamps for the purpose of testing the candle power of such said lamp or lamps.

This contract shall continue in force for five years from the date hereof, subject to appropriations; and shall continue thereafter until a new agreement is made by the parties, or until the expiration of six months after notice, in writing, by either party of its election to terminate the contract.

In consideration of this contract and of the above promises of said City, the Company agrees to furnish electric arc-lights for the lighting of the public buildings, parks and public grounds, when so requested to do by the departments having charge of said parks, buildings and public grounds, at the same rates, and on the same conditions, provided for in this contract; this clause also to apply to the lights mentioned in contract for the Fens, dated October 7, 1893.

IN WITNESS WHEREOF, said Company, by its proper officers, and said City, by its Superintendent of Lamps, duly authorized, have hereunto set their hands and seals.

AGREEMENT FOR THE EXTENSION OF THE EXISTING CONTRACT BETWEEN THE BOSTON ELECTRIC LIGHT COMPANY AND THE CITY OF BOSTON.

It is hereby agreed, in consideration of the mutual covenants herein contained, that the contract now existing between the Boston Electric Light Company and the City of Boston, dated February 20, 1894, shall be, and hereby is, extended, subject to appropriations from year to year, for the term of ten years from and after February 20, 1899, and thereafter until a new agreement is made, or until the expiration of six months after notice, in writing, by either party, of its

election to terminate the contract, which notice may be given at any time after nine (9) years and six (6) months from February 20, 1899, upon the following terms and conditions, namely:

First. Said Company shall, immediately upon the execution of this instrument, apply to the Board of Aldermen of the City of Boston and the Board of Park Commissioners of said City for the grant to said Company of the necessary locations, and, upon receiving such grant, shall forthwith set and connect in the streets and parks of the City, without any charge or expense to the City, two thousand three hundred and sixty-five (2,365) wooden lamp-poles belonging to the Company, with ornamental iron tops and porcelain-lined reflectors substantially of the same size, style, and kind as those now erected and in use on Arlington street, and to be shown on plans and specifications to be signed by the parties hereto and then attached to this instrument. Said new poles shall be set substantially in the same locations in the public streets and parks as those now occupied by the iron lamp-posts belonging to the City, which latter posts shall, when the new posts are ready for setting, be removed by the Company, which shall keep an account of the expense of the removing and handling of said posts, and shall, if practicable, sell the same, at the best price obtainable, accounting to the City for any surplus realized over and above such expense; but said locations may be varied so far as may be necessary to secure a better and more uniform distribution of the light in any given locality. All locations in the public streets shall be approved by the Superintendent of Lamps before application for such locations is made to the Board of Aldermen; and all locations in the public parks shall be approved by the Board of Park Commissioners; but the Company shall, from time to time, apply to the Board of Aldermen for such locations (less than all) in the public streets as shall then have been approved by said Superintendent.

The Company further agrees to set and connect, without charge or expense to the City, similar wooden lamp-poles with ornamental iron tops and porcelain-lined reflectors for all City arc-lamps in addition to the present number of two thousand three hundred and sixty-five (2,365) which may be ordered by the City during the term of this agreement, and to place the same in such locations in the streets, ways, squares and public places in any part of the City as may be required by the Superintendent of Lamps, and authorized by the Board of Aldermen, and in such locations in the public parks as may be agreed upon between the Company and said Board of Park Commissioners, and in such other places as may be required by the Mayor of said city.

But it is expressly understood and agreed that the foregoing provisions of this agreement as to the substitution of new wooden poles for the present iron lamp-posts shall not be operative unless and until the necessary locations shall be granted by the Board of Aldermen and the Board of Park Commissioners as aforesaid; and, further, that the operation of the remaining provisions of this instrument shall not in any way be affected by the foregoing provisions upon the signing hereof, whether said new locations are granted by the Board of Aldermen and the Board of Park Commissioners and said poles are substituted for the present poles or not.

All the poles, lines, and lamps of the Company used for the City's business shall be kept and maintained by the Company in good order and condition.

Second. The Company shall replace all of its present open arc nominal 2,000-candle power City lamps with its new enclosed arc-lamps as fast as practicable after the starting up of the Company's new station in South Boston, as many new lamps as possible to be put into use before the ground freezes in 1898, and all of said lamps to be put into use before July 1, 1899. Said new enclosed arc-lamps shall be of substantially the same kind and style as those now in use on Arlington street, and shall be of a manufacture substantially like that described in United States Letters Patent No. 603,630, dated May 10, 1898, and shall require an electrical energy of not less than five hundred (500) watts on the average, and not less than four hundred and eighty (480) watts in any case. The price to be charged by said Company and paid by said City for said new enclosed arc-lamps shall be as follows:

| Number of Lights. | | Price per Night. | Price per Year. | |
|-------------------|---------------------|------------------------|-----------------------|----------|
| For not less than | 2,365 nor more than | 2,749 | 35 cents | \$127 75 |
| " | " | 2,750 | " | 125 92 |
| " | " | 3,000 | " | 124 10 |
| " | " | 3,250 | " | 122 27 |
| " | " | 3,500 | " | 120 45 |
| " | " | 3,750 | " | 118 62 |
| " | " | 4,000 | " | 116 80 |
| " | " | 4,250 | " | 114 97 |
| " | " | 4,500 | " | 113 15 |
| " | " | 4,750 | " | 111 32 |
| " | " | 5,000 | " | 109 50 |

In estimating the number of lights for the purpose of fixing the price, as aforesaid, all arc-lights furnished by the Company for the City shall be counted.

For all lamps connected to underground wires belonging to the City in the public parks, Common and Public Garden, the price shall be one cent per lamp per night less than the prices hereinbefore provided.

Third. At any time within ninety days prior to the expiration of the periods of two years and six months and seven years and six months, respectively, after February 20, 1899, if the Mayor of said City shall so elect and notify said Company, in writing, and in any event at the expiration of the period of five years after February 20, 1899, an arbitration shall be had as follows: Said Mayor and said Company shall each appoint one arbitrator within thirty days after the notice aforesaid and within thirty days after the expiration of said period of five years, and the two arbitrators so chosen shall appoint a third disinterested arbitrator. If either party fails to appoint an arbitrator within said thirty days, the other party may appoint both arbitrators, and these shall appoint a third disinterested arbitrator. Said arbitrator shall thereupon hear and consider the evidence and arguments of the parties and shall determine the following matters:

- (1.) The proportion of the actual output of electricity or electrical energy generated at the station or stations of the Company for the public lights provided for in this contract, as compared with the Company's entire output, both to be measured in kilowatt hours, it being agreed by the Company that it will measure and record its electrical output on behalf of the said

public lights, and also, but separately, its electrical output on behalf of its other business, and that such measurements and records shall be subject to the inspection, at all reasonable times, of the City Engineer of said City. Such inspection, however, shall be regarded as confidential, and the results thereof shall not be exhibited or made known to anybody except the Mayor of said City.

- (2.) The total investment of the company, computed by taking the total cost of the land, buildings, plant, poles, lines, conduits, cables, meters, machinery, apparatus and other appliances owned and used by the Company for the manufacture and distribution of electricity.
- (3.) The investment of the Company on account of its public business, computed by taking the proportion of the Company's total investment, determined as provided in the second clause of this article, that the Company's electrical output on behalf of the public lights bear to its total output, measured as provided in the first clause of this article. The foregoing method of computing the investment of the Company on account of its public business is adopted by the parties as the fairest and most equitable method now known to them; but it is agreed that if, at the time of any arbitration, the three arbitrators shall unanimously be of the opinion that some other method of computing the investments of the Company on account of its public business would be more fair and equitable, such other method may be used by them.
- (4.) The total operating expenses of the Company, meaning the annual outlay for fuel, water, supplies, wages, salaries, insurance, accidents, rent, taxes, and all other expenditures incurred in the manufacture and distribution of electricity and the general conduct of the Company's business except expenditures on account of depreciation in excess of ordinary repairs.
- (5.) The operating expenses of the Company on account of the public lights, computed by taking the proportion of the total operating expenses of the Company, determined as provided in the fourth clause of this article, that the Company's electrical output on behalf of the public lights bear to its total output measured as provided in the first clause of this article.
- (6.) The undivided or surplus earnings of the Company, being its gross annual income derived from the sale of electricity, less operating expenses, determined as provided in the fourth clause of this article, and the amounts paid out for interest and dividends; and the percentage which the Company's annual surplus thus determined bears to the total investment of the Company, determined as provided in the second clause of this article, exclusive of the land.
- (7.) An allowance for depreciation in excess of ordinary repairs of the Company's investment in plant and property used in its public business, computed by taking the same percentage of the value of the Company's investment on account of its public business, determined as provided in the third clause of this article, but excluding the land, as the total amount of the undivided earnings of the Company, found as provided in the sixth clause of this article, is of the Company's total investment, determined as provided in the second clause of this article, but exclusive of the land; but such allowance shall not exceed 7 per cent. of the

Company's said investment on account of its public business, exclusive of the land.

- (8.) An allowance for interest or profits, computed at 6 per cent. per annum on the Company's investment on account of its public business, determined as provided in the third clause of this article; but in case the cost of any part of the Company's investment shall have been met by the issue of bonds bearing interest at a lower rate than 6 per cent. per annum, and any of such bonds are still outstanding, the amount thereof shall be apportioned between the Company's total investment and its investment on account of its public business, in the proportion to electrical output measured as provided in the first clause of this article; and the allowance provided for in this clause shall be computed on so much of the Company's investment on account of its public business as is represented by said bonds at the rate actually paid thereon, and on the remainder of its said investment at the rate of 6 per cent. per annum.

If the cost of manufacturing and distributing the public lights furnished by the Company, and the allowances for depreciation and profit determined as provided in the fifth, seventh and eighth clauses of this article, amount in the aggregate to a sum less than the price then being paid by the City, the price of said lights shall be reduced, for the remainder of the term of this contract, or until again reduced by arbitration as herein provided, to a sum equal to the said cost of manufacturing and distributing said lights, plus said allowances for depreciation and profit as aforesaid.

The decision of a majority of said arbitrators in any of the foregoing matters shall be binding on both parties to this agreement.

Fourth. If, in case of arbitration as aforesaid, the City shall claim and shall give the Company not less than sixty days' notice of such claim, that a discovery, invention, or method of producing, distributing or converting electricity for arc-lights has been made and put into successful commercial use, by the adoption and use of which the cost of producing, distributing or converting electricity for street lights, including interest and depreciation, could be substantially reduced below the cost, including interest and depreciation, at the time of such arbitration said City shall, unless said Company shall agree to adopt the discovery, invention or method in question as soon as practicable, have a right to submit its said claim to said arbitrators, who shall, after hearing and considering the evidence and arguments of the parties thereon, making a finding upon the claim aforesaid. And if such arbitrators shall sustain such claim, they may make a reduction in the price to be charged and paid for lights hereunder by such an amount as they shall deem to be fair and reasonable in view of the facts so found.

And if the Company shall adopt or agree to adopt as soon as practicable the discovery, invention, or method named in said notice given by the City to the Company, the arbitrators shall take said fact into consideration in determining the total operating expenses of the Company and the operating expenses of the Company on account of the public lights, as provided in clauses (4) and (5) of Article Third of this indenture, and shall be governed in fixing said items of operating expenses by the expense involved in or the saving to come from the future use of the new discovery, invention, or method in question, and not by the expense incident to the past use of the invention or method supplanted.

Fifth. The provisions of the contract of February 20, 1894, requiring that all globes are to be thoroughly brushed inside and outside at least three times a week, and that the lamps are to be examined at least three times during each night, are hereby annulled. Said globes shall be brushed and kept clean to the satisfaction of the Superintendent of Lamps.

Sixth. All the terms, conditions and provisions of the contract of February 20, 1894, not affected by this extension and modification thereof, shall remain in full force and effect till the termination of the contract as hereby extended.

IN WITNESS WHEREOF, said company by its proper officers, and said City by its Superintendent of Lamps, both thereto duly authorized, have hereunto caused their corporate seals to be set and their corporate names to be signed on the twenty-ninth day of August, A.D. 1898.

BOSTON ELECTRIC LIGHT COMPANY,

By

F. A. GILBERT, *President.*

Per

SAMUEL S. SIAS, *Treasurer.*

CITY OF BOSTON,

By

JAMES DONOVAN, *Supt. of Lamps.*

Approved as to form.

THOMAS W. BABSON,

City Solicitor.

Approved.

JOSIAH QUINCY, *Mayor.*

The following is a copy of the contract for arc-lamps in the Charlestown District:

ELECTRIC CONTRACT WITH CHARLESTOWN GAS AND
ELECTRIC COMPANY.

The City of Boston, a municipal corporation in the Commonwealth of Massachusetts, and the Charlestown Gas and Electric Company, a corporation duly established under the laws of said Commonwealth, agree as follows:

ARTICLE I. The Company shall provide the electric arc-lights now in use in the Charlestown District of said City, as and where now located, and similar arc-lights in such other places in the highways, squares, parks, public grounds, public buildings and other places in said district as may, from time to time, be ordered by the board or officer having authority to place or locate lamps in such places.

ARTICLE II. Said Company, before February 1, 1905, if the board or officer having authority in the premises shall grant the company locations therefor, shall provide and set up new enclosed electric arc-lamps in place of the other lamps above described; all such lamps so substituted to be substantially like those now in use on Arlington street, in said City, of a manufacture substantially like that described in the United States Letters-Patent No. 603,630, dated May 10, 1898,

of the best quality and style for street lighting, with clear glass globes, free from lettering, unless otherwise ordered by said board or officer, and of the best quality and shape, to avoid casting rings and streaks of light and shade. The Company shall continue to have the right to use, free of charge, the iron hoods or reflectors now belonging to the City, and the City shall supply to said Company, free of charge, such additional similar hoods as may be necessary for use in connection with all lamps, whether of the present or enclosed arc pattern, hereafter installed in addition to those now in use; and said Company, before said February 1, 1905, if the board or officer having authority shall grant the Company locations therefor, shall set and connect in the streets of said Charlestown District of said City, without charge or expense to the City, wooden lamp-posts belonging to the Company, in place of and substitution for an equal number of iron lamp-posts belonging to the City, said wooden posts to be substantially of the same size, style and kind as those now erected and in use on Arlington street, in said City. When the wooden posts are ready for setting, the iron posts shall be removed by the Company, which shall keep an account of the expense of the removing and handling of said posts, and shall, if practicable, sell the same, at the best price obtainable, accounting to the City for any surplus realized over and above such expense; but if there shall be no such surplus, the Company may retain all sums realized from the sale of said iron posts, as the consideration for the erection of said wooden posts without other expense to the City. The locations of the new wooden posts shall be substantially the same as those of the old iron posts, unless varied by said board or officer to secure a better and more uniform distribution of the light in any given locality; it being expressly understood and agreed that the foregoing provisions of this agreement as to the substitution of new wooden poles for the present iron lamp-posts shall not be operative unless and until the necessary locations shall be granted by the board or officer having authority in the premises as aforesaid; and further, that the operation of the remaining provisions of this instrument shall not in any way be affected by the foregoing provisions as to the poles, but said remaining provisions shall become operative upon the signing hereof, whether said new locations are granted or not.

ARTICLE III. Said Company shall keep all electric arc-lamps now or hereafter set up in said district for the City, and the posts, carbons, hoods and globes therefor, clean and in good condition, satisfactory to the Superintendent of Lamps of said City; and shall keep said lamps properly lighted, so as to give a clear and steady light, during such hours between dusk and dawn, not exceeding thirty-eight hundred and fifty (3,850) hours in any one year, as the board or officer ordering them shall require; each old lamp to be lighted by a current of electricity, furnishing usually in the lamp an electrical energy of not less than four hundred and sixty-one (461) watts, and each new electric arc-lamp substituted as aforesaid to be lighted by a current of electricity, furnishing usually in the lamp an electrical energy of not less than five hundred (500) watts, and never less than four hundred and eighty (480) watts; said Company shall employ a sufficient number of capable inspectors to inspect the lamps during the hours of burning, and promptly report at the office of said Company every lamp not so kept, and said Company shall immediately, to the satisfaction of said Superintendent, cause every such lamp so reported and every such lamp found to be put in good condition or replaced by a new electric arc-lamp.

ARTICLE IV. Said Company shall assume the defence of, and hold the City, its agents and employees, harmless from any and all suits arising in doing anything above required of the Company or its employees, from the use of any invention, patent or patent right, or material, labor or implement, or arising from any act, omission or neglect of the Company, its agents or employees.

ARTICLE V. Said City, by such persons as said Superintendent may authorize, shall have access to said lamps, posts and reflectors, and the machines, wires and other apparatus and appliances used in making or distributing electricity to said lamps; may at any time attach and maintain at any point or points in the circuits of such electricity one or more ammeters; and may at any time remove any lamp and test the same.

ARTICLE VI. The City, as full payment for everything furnished or done by or resulting to the Company in carrying out this contract, shall, after the first day of each and every month during the continuance thereof, pay on bills presented prior to the fifteenth day of the preceding month, approved by the board or officer ordering the same, for each electric arc-lamp kept in good condition and well lighted as aforesaid prior to said day and not paid for, if furnished with electricity by underground wires paid for by the City, the sum of thirty-four (34) cents; otherwise, the sum of thirty-five (35) cents for each night that the lamp is so kept; but if any such lamp shall fail to be so kept during any part of said hours, the City may deduct for that night from said sum a proportional part thereof, as determined by said Superintendent, and if during any night the deficiency of the electrical energy in any lamp shall be twenty (20) per cent. or more, of the required energy, as so determined, the City shall make no payment for that night for that lamp; and if such deficiency occurs for more than five (5) nights in succession, or if in the opinion of said Superintendent it occurs oftener than the public interest should bear, said Superintendent, with the approval of the Mayor, may make such reduction in the sum to be paid per lamp for each night as he shall determine, or may cancel this contract.

ARTICLE VII. The existing contract under which said Company is now supplying electric arc-lamps to said City, dated December 29, 1894, is hereby cancelled, and this contract shall commence with the date hereof, and continue in force, subject to an appropriation therefor for each year and subject to cancellation as hereinbefore provided, until February 1, 1905, and thereafter until six (6) months after either party shall in writing notify the other party that the contract is to be terminated, which notice may be given at any time after four (4) years and six (6) months from December 2, 1899.

Signed this second day of December, A.D. 1899.

CITY OF BOSTON,

By

JAMES DONOVAN, *Superintendent of Lamps.*

CHARLESTOWN GAS AND ELECTRIC COMPANY,

By

JAMES F. HUNNEWELL, *President.*

Approved.

JOSIAH QUINCY, *Mayor.*

The following is a copy of the new contract made with the Brookline Gas Light Company for furnishing arc-lamps in the Brighton District.

The CITY OF BOSTON, a municipal corporation in the Commonwealth of Massachusetts, and the BROOKLINE GAS LIGHT COMPANY, a corporation established under the laws of said Commonwealth, agree as follows :

ARTICLE I. The Company shall maintain the existing electric arc-lamps in the district which includes the territory which was formerly Brighton and the territory bounded by Muddy river, Charles river and the Town of Brookline as and where now located, and may until October 1, 1901, continue to use free of charge the iron hoods or reflectors of said City on said lamps, but on or before that date shall substitute new enclosed electric arc-lamps for said existing lamps; and the Company shall from and after the date hereof furnish and set up new enclosed electric arc-lamps in such other places in the highways, squares, parks, public grounds, public buildings and other places in said district as may from time to time be ordered by the board or officer having authority to place or locate lamps in such places; and said Company forthwith, after being requested thereto by said Superintendent, when duly authorized, shall furnish lamps on Commonwealth avenue, between Brighton avenue and Chestnut Hill avenue in such places, and with such hard pine poles, as he shall specify, and shall on or before the expiration of five years from the date hereof replace the poles with the wooden lamp-posts hereinafter described, and furnish electricity for lighting said lamps by an underground conduit.

ARTICLE II. The Company shall furnish and set up all new electric arc-lamps to be furnished as aforesaid, of the enclosed pattern (substantially like those now in use on Arlington street in said City) with clear glass globes free from lettering unless otherwise ordered by such board or officer, of a quality and shape to avoid casting rings and streaks of light and shade, and of a style approved by the Superintendent of lamps of said City.

ARTICLE III. The Company shall furnish for all such enclosed arc lamps, wooden lamp-posts belonging to the Company, substantially of the same size, style, and kind as those now in use for said lamps on said Arlington street, and shall remove and sell all posts for which the wooden posts may be substituted, shall keep an account of the expense of such removals and sales, and account with, and pay over to, the City the surplus, if any, out of said sales over and above said expense, and shall have no claim upon the City for any part of said expense except as provided in this Article. The Company shall inform said Superintendent when about to substitute any post and shall place the post in the same location as the post for which the wooden post is substituted, unless the Superintendent shall vary the location to secure a better and more uniform distribution of light.

ARTICLE IV. The Company shall keep all electric arc-lamps now or hereafter set up in said district for the City, and the posts, carbons, hoods, or globes therefor, clean and in good condition, satisfactory to the Superintendent of Lamps of said City; and shall keep said lamps properly lighted so as to give a clear and steady light during such hours between dusk and dawn, not exceeding

thirty-eight hundred and fifty (3,850) hours in any one year, as the board or officer ordering them shall require; each old lamp to be lighted by a current of electricity, furnishing usually in the lamp an electrical energy of not less than four hundred and sixty-one (461) watts, and each new electric arc-lamp furnished as aforesaid to be lighted by a current of electricity furnishing usually in the lamp an electrical energy of not less than five hundred (500) watts, and shall never less than four hundred and eighty (480) watts; said Company shall employ a sufficient number of capable inspectors to inspect the lamps during the hours of burning, and promptly report at the office of said Company every lamp not so kept, and said Company shall immediately, to the satisfaction of said Superintendent, cause every such lamp so reported and every such lamp found to be defective to be put in good condition or replaced by a new electric arc-lamp.

ARTICLE V. The Company further agrees to indemnify and save the City harmless from and against any and all claims and demands for damages, costs and expenses for or on account of injuries to persons or property arising from imperfect construction and maintenance, or from any use of its wires and apparatus, and also to assume the defence of and to hold the City, its agents and employees, harmless from any and all claims for damage by reason of any infringement of patent rights in the use of lamps, lights, wires, poles, machinery and appliances connected therewith.

ARTICLE VI. The City, by such persons as said Superintendent may authorize, shall have access to said lamps, posts and reflectors, and the machines, wires and other apparatus and appliances used in making or distributing electricity to said lamps; may at any time attach and maintain at any point or points in the circuits of such electricity one or more ammeters; and may at any time remove any lamp and test the same.

ARTICLE VII. The City as full payment for everything furnished or done by or resulting to the Company in carrying out this contract, shall, after the first day of each and every month during the continuance thereof, pay, on bills presented prior to the fifteenth day of the preceding month, the sums hereinafter stated for each electric arc-lamp kept in good condition and well lighted as aforesaid prior to said day and not paid for, viz.:

| | |
|---|-------|
| For each lamp of a number not less than 249 | 35c. |
| For each lamp of a number not less than 250 nor more than 299 | 34½c. |
| For each lamp of a number not less than 300 nor more than 349 | 34c. |
| For each lamp of a number not less than 350 nor more than 399 | 33½c. |
| For each lamp of a number not less than 400 nor more than 449 | 33c. |
| For each lamp of a number not less than 450 nor more than 499 | 32½c. |
| For each lamp of a number not less than 500 nor more than 599 | 32c. |
| For each lamp of a number not less than 600 nor more than 699 | 31½c. |
| For each lamp of a number not less than 700 nor more than 799 | 31c. |
| For each lamp of a number not less than 800 nor more than 899 | 30½c. |
| For each lamp of a number not less than 900 nor more than 999 | 30c. |

provided, however, that if any such lamp shall be furnished with electricity by an underground wire belonging to the City, the price for each lamp per night shall be one cent less than the above prices, and if any such lamp shall fail to be kept as aforesaid during any part of the hours required therefor, the City may deduct for that night from the price therefor otherwise due a proportional part thereof as determined by said Superintendent, and, if during any

night the deficiency of the electrical energy in any lamp shall be twenty (20) per cent. or more of the required energy, as so determined, the City shall make no payment for that night for that lamp; and if such deficiency occurs for more than five (5) nights in succession, on the same light, said Superintendent with the approval of the Mayor, may make such reduction in the sum to be paid per lamp or lamps for each night as he shall determine.

ARTICLE VIII. This contract shall commence with the date hereof, and continue in force, subject to an appropriation therefor for each year, until February 20, 1909, and thereafter until six (6) months after either party shall, in writing, notify the other party that the contract is to be terminated, which notice may be given at any time after four (4) years and six (6) months from the date hereof.

Signed this eleventh day of December, A.D. 1900.

CITY OF BOSTON,

By

WM. D. LANG, *Superintendent of Lamps.*

BROOKLINE GAS LIGHT COMPANY,

By

H. M. WHITNEY, *President.*

Approved.

THOMAS N. HART, *Mayor.*

LOCATION OF LAMPS.

The public lamps are distributed in the various sections of the city as follows:

| January 10, 1901. | Welsbach Gas Lamps. | Electric Arc Lamps. | Naphtha Lamps. | Welsbach Naphtha Lamps. | Kitson Lamps. | Incan- descent Lamps. | Fire- Alarm Lamps. | Total. |
|--------------------|---------------------|---------------------|----------------|-------------------------|---------------|-----------------------------|--------------------------|--------|
| City Proper | 1,502 | 1,067 | 101 | ..... | ..... | ..... | 80 | 2,750 |
| Roxbury | 1,654 | 529 | ..... | ..... | ..... | 7 | 7 | 2,197 |
| Dorchester | 2,370 | 386 | 513 | 12 | 16 | ..... | 2 | 3,299 |
| West Roxbury | 1,201 | 397 | 1,082 | 10 | ..... | ..... | 2 | 2,692 |
| South Boston | 418 | 352 | 295 | 8 | ..... | 7 | 4 | 1,084 |
| Charlestown | 489 | 254 | ..... | ..... | ..... | ..... | 11 | 754 |
| East Boston | 359 | 220 | 138 | ..... | ..... | ..... | 4 | 721 |
| Brighton | 642 | 211 | 175 | 3 | ..... | 14 | 2 | 1,047 |
| Chelsea | 2 | ..... | ..... | ..... | ..... | ..... | ..... | 2 |
| Totals | 8,637 | 3,416 | 2,304 | 33 | 16 | 28 | 112 | 14,546 |

The following table shows the number of lamps of all kinds in use on the 10th day of January, 1901, as compared with the 10th day of January, 1900.

| | Jan., 1901. | Jan., 1900. | Increase or Decrease. |
|------------------|--------------|--------------|--------------------------|
| Welsbach gas | 8,637 | 8,320 | 317+ |
| Common naphtha | 2,304 | 2,549 | 245- |
| Welsbach naphtha | 33 | 2 | 31+ |
| Kitson | 16 | — | 16+ |
| Electric | 3,416 | 3,024 | 392+ |
| Incandescent | 28 | 28 | — |
| Fire-alarm | 112 | 106 | 6+ |
| | <hr/> 14,546 | <hr/> 14,029 | <hr/> 517+ |

The changes during the past year have been as follows :

| <i>Gas Lamps.</i> | | Increase. | Decrease. |
|-------------------|--|-----------|-----------|
| City Proper | | — | 7 |
| Roxbury | | 35 | — |
| West Roxbury | | 42 | — |
| Dorchester | | 239 | — |
| South Boston | | — | 7 |
| East Boston | | — | 11 |
| Charlestown | | 13 | — |
| Brighton | | 13 | — |
| Chelsea | | — | — |
| Net increase | | 317 | — |

| <i>Naphtha Lamps.</i> | | Increase. | Decrease. |
|-----------------------|--|-----------|-----------|
| Dorchester | | — | 200 |
| West Roxbury | | — | 19 |
| South Boston | | — | 23 |
| East Boston | | — | 7 |
| Brighton | | 4 | — |
| Net decrease | | — | 245 |

| <i>Electric Lamps.</i> | | Increase. | Decrease. |
|------------------------|--|-----------|-----------|
| City proper | | 78 | — |
| Roxbury | | 30 | — |
| Dorchester | | 64 | — |
| West Roxbury | | 118 | — |
| South Boston | | 46 | — |
| East Boston | | 7 | — |
| Brighton | | 7 | — |
| Charlestown | | 42 | — |
| Increase | | <hr/> 392 | — |

Welsbach Naphtha Lamps.

| | | |
|------------------------|----|---|
| Dorchester | 11 | — |
| West Roxbury | 9 | — |
| South Boston | 8 | — |
| Brighton | 3 | — |
| | — | |
| Increase | 31 | — |

Kitson Lamps.

| | | |
|----------------------|----|---|
| Dorchester | 16 | — |
| Increase | 16 | — |

Fire-alarm Lamps.

| | | |
|------------------------------|-----|---|
| City proper | 1 | — |
| Charlestown | 5 | — |
| | — | |
| Increase | 6 | — |
| Total net increase | 517 | — |

NEW WORK.

The number of gas-lamps located during the past year was 279.

The number of gas-lamps replaced was 38.

The number of arc-lamps that have been installed is 406, and one lamp replaced.

The number of common naphtha-lamps located was 75 and 11 Welsbach naphtha.

Five common naphtha-lamps have been replaced.

The number of common naphtha-lamps changed to Welsbach naphtha was 84.

Also 171 common naphtha and 64 Welsbach naphtha have been changed to gas-lamps, in accordance with an understanding with the several gas companies that wherever they extend their mains the public lamps will be connected thereto.

The number of "Kitson" lamps erected was 16.

During the year 6 fire-alarm signal-box lamps have been erected by the Fire Department, and this Department has assumed the lighting of the same.

The total number of new lamps of all kinds set up and replaced during the year was 837.

| | Gas and Naphtha Posts. | Electric Posts. | Gas and Naphtha Brackets. | Kitson Posts. | Electric Cranes. |
|----------------------------------|------------------------|-----------------|---------------------------|---------------|------------------|
| Set for new lamps..... | 361 | 406 | 4 | 16 | |
| Set in place of broken ones..... | 14 | 6 | | | |
| Set in place of brackets..... | 7 | | | | |
| Set in place of cranes..... | | 3 | | | |
| Set in place of post..... | | | | | 1 |
| Shift to new location..... | 81 | 25 | 1 | | |
| Straightened..... | 101 | 2 | | | |
| Reset to line and grade..... | 209 | 25 | | | |
| Removed..... | 743 | 15 | 37 | | |
| Repaired..... | | 1 | 2 | | |

LAMPS DISCONTINUED.

| | | | | | | | | | |
|----------|---|---|---|---|---|---|---|---|------------|
| Gas | . | . | . | . | . | . | . | . | 235 |
| Naphtha | . | . | . | . | . | . | . | . | 70 |
| Electric | . | . | . | . | . | . | . | . | 15 |
| Total | . | . | . | . | . | . | . | . | <u>320</u> |

LAMP OUTAGE.

The following table shows the total number of hours reported by the police that the street lamps were not lighted the required length of time from January 10, 1900, to January 10, 1901:

| | Arc. | Incandescent. | Welsbach. | Naphtha. | Kitson. | Total. |
|---|----------------------|---------------------|---------------------|---------------------|------------------|----------------------|
| Boston Electric Light Company..... | 13,967 $\frac{1}{2}$ | | | | | |
| Charlestown Gas and Electric Company..... | 962 $\frac{1}{2}$ | | | | | |
| Brookline Gas Light Company..... | 734 $\frac{1}{2}$ | 1,136 $\frac{1}{2}$ | | | | |
| Rising Sun Street Light Company..... | | 1 | 3,153 $\frac{1}{2}$ | 3,142 $\frac{1}{2}$ | 52 $\frac{1}{2}$ | 23,149 $\frac{1}{2}$ |

EMPLOYEES.

On the first of February, 1900, there were twelve men employed, viz.:

Superintendent \$3,500, assistant superintendent \$1,800,
 1 clerk \$1,800, 1 clerk \$1,400, 1 messenger \$20 per week,

1 messenger \$12 per week, 1 inspector at \$15 per week, 1 inspector at \$13.50 per week, 2 inspectors at \$12 each per week, 1 watchman at \$14 per week and 1 boy at \$6 per week.

On the thirty-first of January, 1901, there were 6 men employed, viz.:

Superintendent \$3,500, 1 clerk \$1,800, 1 clerk, \$1,800, 1 inspection clerk \$1,100, 1 messenger at \$20 per week, 1 messenger at \$12 per week.

INVENTORY OF PROPERTY ON HAND JANUARY 10, 1901.

- 3 horses.
- 3 sets single harness.
- 2 buggies.
- 1 democrat wagon.
- 2 old carriages.
- 2 old sleighs.
- 2 whips.
- 2 mats.
- 4 blankets.
- 2 street blankets.
- 6 robes.
- 1 test meter.
- 2 hammers.
- 500 stakes.
- 1 100 ft. tape measure.
- 1 drill.
- 5,000 flat street signs.
- 1,500 street numbers.
- Street plans, maps and atlases.

Annual Cost of Lighting Present Number of Incandescent Lamps.

| LOCATION. | Electric Light Companies. | Number of Lamps, Jan. 10, 1901. | Candle power. | Number of nights. | Rate per month. | Rate per year. | Total cost per year. |
|-------------------------------|--------------------------------|---------------------------------|---------------|-------------------|-----------------|----------------|----------------------|
| Roxbury Parks..... | Boston Electric Light Company, | 7 | 32 | 365 | \$2 50 | \$30 00 | \$210 00 |
| South Boston, Castle Island.. | Boston Electric Light Company, | 7 | 32 | 365 | 2 50 | 30 00 | 210 00 |
| Brighton, Allston Subway.... | Brookline Gas Light Company, | 14 | 32 | 365 | 3 00 | 36 00 | 504 00 |
| Totals..... | ..... | 28 | 32 | 365 | ..... | ..... | \$924 00 |

Annual Cost of Lighting Present Number of Naphtha Lamps, as per Contract.

| LOCATION. | Number of Lamps, Jan. 10, 1901. | Rate per Lamp per year. | Total cost per year. | Number of Welsbach Naphtha Lamps. | Rate per Lamp per year. | Total cost per year. |
|-------------------|---------------------------------|-------------------------|----------------------|-----------------------------------|-------------------------|----------------------|
| City proper..... | 101 | \$22 81 | \$2,303 81 | — | — | — |
| Dorchester..... | 513 | 22 81 | 11,701 53 | 12 | \$30 | \$360 00 |
| South Boston..... | 295 | 22 81 | 6,728 95 | 8 | 30 | 240 00 |
| East Boston..... | 138 | 22 81 | 3,147 78 | — | — | — |
| West Roxbury..... | 1,082 | 22 81 | 24,680 42 | 10 | 30 | 300 00 |
| Brighton..... | 175 | 22 81 | 3,991 75 | 3 | 30 | 90 00 |
| Totals..... | 2,304 | \$22 81 | \$52,554 24 | 33 | \$30 | \$990 00 |

43 Lamps with mantles, \$2.73½ extra = \$117.71.

Annual Cost of Lighting, and Care of Present Number of Gas Lamps, as Per Contract.

| LOCATION. | Number of Welsbach Lamps, January 10, 1901. | Total hours of burning each Lamp per annum. | Rate per Lamp per annum. | Total cost per annum. | Number of Fire Alarm Lamps, January 10, 1901. | Total cost per annum. |
|-----------------------------|---|---|--------------------------|-----------------------|---|-----------------------|
| City Proper..... | 1,502 | 3,828 | \$30 00 | \$45,060 00 | 80 | \$2,400 00 |
| Roxbury..... | 1,654 | 3,828 | 30 00 | 49,620 00 | 7 | 210 00 |
| Dorchester..... | 2,370 | 3,828 | 30 00 | 71,100 00 | 2 | 60 00 |
| West Roxbury..... | 1,201 | 3,828 | 30 00 | 36,030 00 | 2 | 60 00 |
| South Boston..... | 418 | 3,828 | 30 00 | 12,540 00 | 4 | 120 00 |
| East Boston..... | 359 | 3,828 | 30 00 | 10,770 00 | 4 | 120 00 |
| Charlestown..... | 489 | 3,828 | 30 00 | 14,670 00 | 11 | 330 00 |
| Brighton..... | 642 | 3,828 | 30 00 | 19,260 00 | 2 | 60 00 |
| Meridian-street Bridge..... | 2 | 3,828 | 30 00 | 60 00 | | |
| | 8,637 | 3,828 | \$30 00 | \$259,110 00 | 112 | \$3,360 00 |

LAMP DEPARTMENT.

Annual Cost of Lighting Present Number of Electric Lights, as per Contract.

| LOCATION. | Electric Light Companies. | Number of Lamps, Jan. 10, 1900. | Number of months. | Rate per Lamp per night. | Rate per Lamp per year. | Total cost per year. |
|------------------------------------|---|---------------------------------|-------------------|--------------------------|-------------------------|----------------------|
| City Proper..... | Boston Electric Light Company..... | 959 | 12 | \$0 34½ | \$125 92 | \$120,757 28 |
| City Proper, Parks and Common..... | Boston Electric Light Company..... | 95 | 12 | 33½ | 122 27 | 11,615 65 |
| Roxbury..... | Boston Electric Light Company..... | 13 | 7 | 34½ | 125 92 | 954 89½ |
| Roxbury Parks..... | Boston Electric Light Company..... | 431 | 12 | 34½ | 125 92 | 54,271 52 |
| Dorchester..... | Boston Electric Light Company..... | 95 | 12 | 33½ | 122 27 | 11,615 65 |
| Dorchester Parks..... | Boston Electric Light Company..... | 3 | 1 | 34½ | 125 92 | 31 48 |
| South Boston..... | Boston Electric Light Company..... | 366 | 12 | 34½ | 125 92 | 46,086 72 |
| South Boston Parks..... | Boston Electric Light Company..... | 20 | 1 | 34½ | 125 92 | 209 86½ |
| South Boston Parks..... | Boston Electric Light Company..... | 318 | 12 | 34½ | 125 92 | 40,042 56 |
| East Boston..... | Boston Electric Light Company..... | 4 | 12 | 33½ | 122 27 | 489 08 |
| East Boston Parks..... | Boston Electric Light Company..... | 30 | 6 | 34½ | 125 92 | 1,888 80 |
| West Roxbury..... | Boston Electric Light Company..... | 200 | 12 | 34½ | 125 92 | 25,184 00 |
| West Roxbury Parks..... | Boston Electric Light Company..... | 20 | 7 | 33½ | 122 27 | 1,426 48½ |
| West Roxbury Parks..... | Boston Electric Light Company..... | 290 | 12 | 34½ | 125 92 | 36,516 80 |
| Charlestown..... | Boston Electric Light Company..... | 105 | 12 | 33½ | 122 27 | 12,838 35 |
| Charlestown Parks..... | Charlestown Gas and Electric Company..... | 2 | 1 | 34½ | 124 92 | 20 98½ |
| Brighton..... | Charlestown Gas and Electric Company..... | 250 | 12 | 35 | 127 75 | 31,937 50 |
| Brighton Parks..... | Brookline Gas Light Company..... | 4 | 1 | 35 | 127 75 | 42 58½ |
| Totals..... | ..... | 3,416 | ..... | ..... | ..... | \$422,885 45½ |

Table Showing the Expenditures in detail During the Municipal Year, 1900.

| ITEMS. | 1900. | | | | | | | | | | | 1901. | | |
|--|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--|
| | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | January. | Totals. | ITEMS. |
| Gas Lighting and Care..... | \$21,427 86 | \$21,480 18 | \$19,386 28 | \$20,865 67 | \$20,793 24 | \$21,488 45 | \$20,924 49 | \$21,683 31 | \$21,781 32 | \$21,297 12 | \$22,155 74 | \$21,559 01 | \$254,842 67 | Gas Lighting and Care. |
| Underground Work..... | 833 19 | 307 73 | 107 91 | 60 52 | 38 20 | 296 62 | 560 94 | 331 57 | 555 63 | 762 93 | 1,542 96 | 1,466 45 | 6,864 65 | Underground Work. |
| Wrought-Iron Work..... | 28 75 | 1 50 | | | 11 00 | 14 00 | 10 50 | 8 00 | | 45 50 | | 4 00 | 123 25 | Wrought-Iron Work. |
| Horse Shoeing and Veterinary..... | | | | 7 00 | 8 00 | 7 50 | 8 50 | 8 00 | 10 00 | 12 25 | 9 50 | 30 25 | 101 00 | Horse Shoeing and Veterinary. |
| Horse Feed and Keeping..... | | | | 29 64 | 64 84 | 62 10 | 79 48 | 92 29 | 99 07 | 83 42 | 34 42 | 91 82 | 637 08 | Horse Feed and Keeping. |
| Painting Lamp-Posts..... | 6 00 | | | | | | | | 390 75 | 1,887 60 | 662 65 | | 2,941 00 | Painting Lamp-Posts. |
| Telephone Rentals, etc..... | | 1 10 | 80 | 61 00 | | | 10 | 33 00 | | | 39 81 | | 135 81 | Telephone Rentals, etc. |
| Inspection and Testing of Lamps..... | | 227 95 | 154 50 | | | | 127 00 | | | 50 00 | 50 00 | | 551 50 | Inspection and Testing of Lamps. |
| Plans of Streets..... | | | | | | 25 00 | | | | | | 12 50 | 37 50 | Plans of Streets. |
| Salaries..... | 708 33 | 708 33 | 704 17 | 591 67 | 591 67 | 591 67 | 591 67 | 591 67 | 591 67 | 591 67 | 591 67 | 591 63 | 7,445 82 | Salaries. |
| Horse and Carriage for Superintendent..... | 11 00 | 5 00 | 16 00 | 48 25 | 9 25 | 10 00 | 42 75 | 19 75 | 4 00 | 332 25 | 316 85 | | 815 10 | Horse and Carriage for Superintendent. |
| Street Signs and Numbers..... | | 593 10 | 615 60 | 73 41 | 507 80 | 531 53 | 27 76 | 22 95 | 31 50 | 25 95 | 38 23 | 60 60 | 2,528 43 | Street Signs and Numbers. |
| Periodicals..... | | | 6 00 | 3 00 | | | | | | | 3 50 | | 12 50 | Periodicals. |
| Travelling Expenses and Tolls..... | 20 00 | | | 10 00 | | | | | 10 00 | | | 25 00 | 65 00 | Travelling Expenses and Tolls. |
| Printing and Stationery..... | | 10 10 | 21 26 | 71 10 | 4 25 | 19 25 | 8 15 | 5 34 | 49 85 | 90 00 | 24 75 | 72 45 | 376 44 | Printing and Stationery. |
| Horses, Harnesses and Carriages..... | | | | 150 00 | 145 50 | | | 2 25 | 4 75 | 95 25 | 21 15 | 11 00 | 429 90 | Horses, Harnesses and Carriages. |
| Repairs to Shop and Stable..... | 13 86 | | | | 4 17 | | | | 31 17 | 6 07 | 24 50 | | 143 72 | Repairs to Shop and Stable. |
| Electric Light Changes and Repairs..... | 111 00 | 136 25 | 139 13 | 58 69 | 19 00 | 36 80 | 350 41 | 30 27 | 77 80 | 75 60 | 158 30 | 247 85 | 1,441 10 | Electric Light Changes and Repairs. |
| Electric Lighting..... | 31,736 88 | 31,909 55 | 29,007 35 | 32,350 45 | 31,199 16 | 32,373 61 | 32,151 59 | 33,124 43 | 33,769 63 | 33,176 00 | 34,271 15 | 33,976 20 | 389,046 00 | Electric Lighting. |
| Naphtha Lighting..... | 4,982 56 | 4,966 50 | 4,493 80 | 4,969 89 | 4,811 99 | 4,973 38 | 4,617 84 | 4,832 31 | 4,810 97 | 4,586 04 | 4,616 85 | 4,437 77 | 57,099 90 | Naphtha Lighting |
| Kitson Lamps..... | | | | | | | | | | | 278 06 | 111 78 | 389 84 | Kitson Lamps. |
| Messengers..... | In January Draft. | 153 20 | 146 00 | 160 55 | 128 00 | 160 55 | 128 00 | 128 00 | 172 05 | 212 36 | 212 36 | 477 81 | 2,078 88 | Messengers. |
| Totals..... | \$59,879 43 | \$60,500 49 | \$54,798 74 | \$59,510 84 | \$58,336 07 | \$60,590 46 | \$59,629 18 | \$60,913 14 | \$62,390 16 | \$63,330 01 | \$65,052 45 | \$63,176 12 | \$728,107 09 | Totals. |

Respectfully submitted,

WILLIAM D. LANG,

Superintendent of Lamps.

