

time the companies have an excess of power, whereas in winter the maximum is very seldom above the average for the whole year, and it could easily be arranged never to exceed it. The power companies might possibly be ready to grant better terms to the city if the facts were better understood.

### Electric Lighting.

We have seen that in case the filtration plant is heated by exhaust steam the power needed in the near future by the city will be as follows:—

Pumping at Atwater Avenue .....	8,570	
Filtration plant .....	1,910	
		10,480
Lighting .....	4,330	
Total .....		14,810 h.p.

None of the schemes we have considered gives enough power for lighting. The only question before us, therefore, was to find out whether it would be cheaper for the city to buy power and do its own lighting, or have the lighting done by contract as at present.

We have estimated for the near future on 3,000 lamps of 6.6 ampères and 2,000 lamps of 4 ampères, as per Mr. Parent's report to you, dated September 12th, 1916, assuming wires underground for a distance of 25 miles of streets and aerial distribution for 425 miles of streets.

We estimated that for the city to do its own lighting would require a capital cost of \$1,670,000, and the cost of operation, not including the cost of current, would be \$286,000 per annum, and that the cost of lighting by contract at present prices would be \$365,000 per annum. This would leave a difference available for current of \$79,000 per annum, or \$18.24 per h.p., or \$24.32 per e.h.p. at Atwater Avenue.

We must remark, however, that the price of current is a small item of the cost of lighting, but that the place where the current is delivered has great importance on this item, so that if the current could be bought by the city at \$25 per e.h.p., delivered at sub-stations, the cost of doing the lighting and buying current and the cost of having the lighting done by contract would be equal.

It must be noted that should the city take over the lighting it will no doubt have to erect some 18,000 extra poles. This should be guarded against, and it is suggested that all the aerial systems be placed under the control of the commission now in charge of the underground work. There is no doubt that in that case the cost of lighting would be materially lessened.

We have seen that Scheme 2 has 2,520 h.p. available, and that there will be 25 miles of street with wires underground. The city pays for the lamp-posts, the cables laid in place, and pays also the rent of the conduits where the cables are laid. When the price of copper has become normal, the city might undertake that part of its lighting. For the time being it would be more advantageous for the city to continue to have the lighting done by contract, as at present, leaving the consideration for doing its own lighting for some future time, in case it could produce electric current at a lower price than it could be bought, and when the price of copper would have become normal again.

The amount of interest for each scheme shown in the following table must be deducted from the total cost of each scheme, as the city is not allowed to charge interest to capital account, but must charge it to current expenditure.

### Financial Statement.

Loans authorized:	
Issued .....	\$6,701,000
To be issued .....	3,799,000
	<hr/> \$10,500,000
Estimated discount .....	319,000
	<hr/> \$10,181,000
Less filtration works .....	\$1,894,490
“ pumps .....	72,137
	<hr/> 1,966,628
Amounts available for aqueduct .....	\$ 8,214,371
Amortized at end of 1916 .....	274,608

### Interest Charges.

	Actual needs.	Future needs.
Work abandoned .....	\$1,072,948	\$1,072,948
Scheme 1 .....	1,200,744	1,231,234
“ 2 .....	.....	1,299,398
“ 3 .....	1,152,076	1,184,924
“ 4 .....	1,098,590	1,111,411
“ 5 .....	1,082,524	1,090,191

### Amounts Chargeable to Capital Account.

Work abandoned .....	\$4,821,898	\$4,821,898
Scheme 1 .....	7,335,880	7,945,675
“ 2 .....	.....	9,308,752
“ 3 .....	6,341,728	7,019,290
“ 4 .....	5,334,723	5,591,137
“ 5 .....	5,019,150	5,177,077

### Yearly Expenditure and Revenue of the Aqueduct.

Year.	Cost of operation and maintenance.	Ordinary revenue.
1904 .....	\$ 200,772	\$ 836,537
1905 .....	226,990	911,520
1906 .....	237,939	972,586
1907 .....	291,942	1,027,179
1908 .....	288,178	941,611
1909 .....	272,496	984,432
1910 .....	391,676	1,051,047
1911 .....	454,897	1,168,209
1912 .....	663,769	1,328,029
1913 .....	811,464	1,626,147
1914 .....	1,036,375	1,414,192
1915 .....	1,195,309	1,374,793

The cost of operation, maintenance, etc., does not include the interest on the invested capital nor any provision for amortizing or depreciation.

### Remarks on Costs and Conclusions.

It must be clearly understood that we have estimated the cost of the different schemes on condition that they be executed with despatch, in a businesslike way and without undue delays.

We have found that the cost of putting the canal in proper shape if the work were discontinued is \$5,894,846, of which \$1,072,948 represents interest. We had, therefore, to charge \$294,742.30, being the interest at 5 per cent. per annum on the said cost, to the cost of pumping by steam or of buying electric current (Schemes 4 and 5).

On account of fluctuating rates and prices, it is impossible at present to make an estimate of cost which would hold good for any length of time. This must not be forgotten in comparing estimates made as early as 1905 with those made now.