common coal gas.* Hence, 1,000 feet of petroleum gas will go as far as 4,000 feet of ordinary coal gas for illuminating purposes.

Now, when we examine these results, and compare them with what has been done in the manufacture of coal gas, the following remarkable comparisons present themselves.

In making coal gas a charge of 150 lbs. of coal is generally introduced into the retort, and allowed to remain for five hours. It generates 600 feet of gas, if the coal is of moderately good quality. This is at the rate of 8,000 feet for 2,000 lbs., or one ton of coal. To produce 600 feet of gas, the destructive distillation has to be carried on for a period of five hours. In a retort of the same dimensions and heated in the same manner, no less than 2,500 cubic feet of petroleum gas are produced, under precisely similar conditions. But one cubic foot of petroleum gas is equal in illuminating power to 4 cubic feet of coal gas. Hence, in five hours the petroleum produces, when reduced to the equivalent of coal gas, the enormous quantity of 10,000 cubic feet of gas, against 600 by the coal process. The saving of fuel and labor is consequently enormous.

If we assume that the illuminating power of petroleum gas is only three times that of coal gas, the proportion of each kind produced in 5 hours is as follows:—

7,500 cubic feet of gas by the petroleum process.
600 " " by the coal process.

Hence, in this case, which is below the actual results, the GAIN IN TIME required for the manufacture of petroleum gas, as compared with coal gas, is as TWELVE to ONE. This fact alone reduces the number of retorts in petroleum gas works on a large scale, to at least, say, one-sixth of the number required for coal gas works. Actually one petroleum retort can produce the equivalent in gas of twelve coal gas retorts. When the annual expense of retorts is taken into consideration, this item alone establishes a great argument in favor of the petroleum process; for not only is the number of retorts required diminished to the extent named, but all connecting pipes, huge hydraulic mains, and the extensive system of coolers and purifyers, are dispensed with in equal proportion. The labor of handling the coal is done away with, and a large proportion of capital in the construction of works saved.

* A recent writer in the American *Gas Light Journal* states that petroleum gas gives a light 6 or 7 times as luminous as coal gas. This may be the case, but in order to avoid an error in excess, we place it at 4 times as great as ordinary coal gas: that is to say a one-foot burner with petroleum gas, is equal to a four-foet burner fed with common coal gas.

To proceed now to the question of cost. Assuming that two benches, each containing two retorts, are used for making petroleum and coal gas respectively. The cost of apparatus in the first instance is about the same. The time for heating and the fuel consumed is the same. The cost of 11 gallons of petroleum (or 1,000 feet of petroleum gas) at 6 cents a gallon (the price in Toronto) is 66 cents. The cost of 250 lbs. of coal (or 1,000 feet of coal gas, at $5 a ton, is 62½ cents. But 1,000 feet of petroleum gas is, at the lowest estimate, equal to 3,000 feet of coal gas. Hence, the cost of 3,000 feet of coal gas (equal to 1,000 feet of petroleum gas) or 750 lbs. of coal, at $5 a ton, is $1.87½. Then there is the coke to be deducted from the price of the coal used in making 3,000 feet of gas, which may fairly be set against the smaller amount of labour required in handling the petroleum, when compared with the handling of the coal.

Where petroleum is 10 cents a gallon, and coal $6 a ton, the proportionate cost of the raw materials used will be as follows:—

Cost of 1,000 feet of petroleum gas	$1 10
" 3,000 feet of coal gas	2 25

The foregoing comparisons refer to the original cost of the material from which the gases are made, but if we take the price actually charged by gas companies into consideration, the results are the more striking.

The cost of private works to supply 200 burners will be about $1,000; the labor of one man per diem; lime for purifying; three bushels of coke at 10 cents a bushel; so that the entire cost will be—

Interest on capital at 8 per cent. per ann.	$80 00
Labor at $1 per day	365 00
Lime for purifying, 200 bushels per ann. at 20 cents a bushel	40 00
Petroleum to produce gas for 200 one-foot burners, 5 hours a day throughout the year (365,000 feet of gas); 4,015 gallons, at 6 cents a gallon.....	240 90
Fuel, say 4 bushels of coke a day, at 10 cents a bushel	146 00
Total cost.....	$871 90

The equivalent of 365,000 cubic feet of petroleum gas in coal gas is 1,095,000, reckoning one foot of petroleum gas equal to three feet only of coal gas.

Cost of 1,095,000 cubic feet of coal gas, at $2.50 per 1,000 feet (a low price in the United States and Canada)	$2,737 50
Difference per annum in favor of petroleum gas.....	1,865 60