

made, the variation in this value was so trifling that the average may be used with the probability of very slight error.

An analysis of the gas made February 2nd, 1892, gave the following results:—

Benzene (C <sub>6</sub> H <sub>6</sub> ) . . . . .	0.5%
Other Unsaturated Hydrocarbons (C <sub>2</sub> H <sub>2</sub> , C <sub>3</sub> H <sub>4</sub> , etc.) . . . . .	5.9%
Oxygen . . . . .	0.2%
Carbon Monoxide . . . . .	9.5%
Hydrogen . . . . .	47.0%
Methane (CH <sub>4</sub> ) . . . . .	32.9%
Nitrogen (separate determination) . . . . .	3.8%

Carbon dioxide is absent, and the methane is possibly too low and the hydrogen too high.

For complete combustion one volume of the above gas requires 5.85 volumes of air, and at atmospheric pressure and at a temperature of 60° Fahr. one cubic foot weighs 0.03079 pounds.

TABLE II.—Calorific value of the gas analysed above.

Constituent.	Per cent. volume.	Calorific value per cubic foot B.T.U.	Calorific value of constituent in 1 cubic foot of gas. B.T.U.
Methane . . . . .	32.9	1,065	350
Hydrogen . . . . .	47.0	345	162
Carbon Monoxide . . . . .	9.5	341	32
Benzene . . . . .	0.5	4,000	20
Other Unsaturated Hydrocarbons . . . . .	5.9	1,700	100
Calorific value of one cubic foot of gas . . . . .			664 B.T.U.

If calculated from the above analysis, the theoretic calorific value of the gas will be found to be slightly higher than the value obtained from the calorimeter, and the value used in subsequent calculations. But since the analysis was made February 1st, 1902, and the calorimeter values were all made after September 25th, 1902, this amount of variation, about six per centum, is not surprising.