MUNICIPAL OWNERSHIP

With a Special Survey of

MUNICIPAL GAS PLANTS IN AMERICA AND EUROPE

COMPRISING A VIEW OF THE GENERAL PRINCIPLES OF PUBLIC OWNERSHIP; ITS RELATION TO THE PUBLIC WELFARE; WITH A SPECIAL STUDY OF GAS WORKS IN AMERICAN AND EUROPEAN CITIES UNDER BOTH PUBLIC AND PRIVATE OWNERSHIP; A COMPARISON OF EFFICIENCY, COSTS, AND RATES OF CHARGE; AND THE INFLUENCE OF PUBLIC OWNERSHIP ON GENERAL PROSPERITY, GOOD GOVERNMENT, AND DEMOCRACY.

By

ALBERT M. TODD

President Public Ownership League of America; Former Member of Congress; President A. M. Todd Company; Member American Academy of Political and Social Science, American Association for the Advancement of Science, National Municipal League, Society of Chemical Industry, Etc.

Public Ownership League of America
CHICAGO, ILLINOIS
1918

MUNICIPAL OWNERSHIP

With a Special Survey of

MUNICIPAL GAS PLANTS
IN AMERICA AND EUROPE

COMPRISING A VIEW OF THE GENERAL PRINCIPLES OF PUBLIC OWNERSHIP; ITS RELATION TO THE PUBLIC WELFARE; WITH A SPECIAL STUDY OF GAS WORKS IN AMERICAN AND EUROPEAN CITIES UNDER BOTH PUBLIC AND PRIVATE OWNERSHIP; A COMPARISON OF EFFICIENCY, COSTS, AND RATES OF CHARGE; AND THE INFLUENCE OF PUBLIC OWNERSHIP ON GENERAL PROSPERITY, GOOD GOVERNMENT, AND DEMOCRACY.

By

ALBERT M. TODD

President Public Ownership League of America; Former Member of Congress; President A. M. Todd Company; Member American Academy of Political and Social Science, American Association for the Advancement of Science, National Municipal League, Society of Chemical Industry, Etc.

Public Ownership League of America
CHICAGO, ILLINOIS
1918

PREFACE

Because of intimate relations early in life with the railroads, telegraph and other public utilities, the conviction came to me that the corporations operating them were not only usurping functions which rightly belonged to the government, but were rapidly becoming so rich and powerful as to be a serious menace to liberty, justice and democracy, in defiance of which, private monopoly ever sought to control the making and administration of law.

Believing it to be the duty of every citizen to contribute from his powers or experiences whatever would best promote the common good, I have for over thirty years made a special study of public utilities under both public and private ownership in our own and in foreign countries. This little book, while giving a brief view of the general principles involved in public ownership, is largely a plain and homely contribution to a discussion of but one of the important necessities of life. The facts and data given have been gathered through many years of personal study and investigation, both in our own and foreign countries, and are supported by the highest official authorities.

As one who turns a hopeful face toward the days of reconstruction ahead of us when the spirit of genuine democracy shall rule the earth, so I now present, as amply expressing my own idea of what should be the future attitude of every citizen, the following high standard of real citizenship so nobly expressed by our honored President, Woodrow Wilson:

"The days of political and economic reconstruction which are ahead of us no man can now definitely assess—but we know this, that every program must be shot through and through with utter disinterestedness, that no party must try to serve itself, but every party must try to serve humanity, and that the task is a very practical one, meaning that every program, every measure in every program, must be tested by this question, and this question only: 'IS IT JUST, IS IT FOR THE BENEFIT OF THE AVERAGE MAN, WITHOUT INFLUENCE OR PRIVILEGE; DOES IT EMBODY IN REAL FACT THE HIGHEST CONCEPTION OF SOCIAL JUSTICE AND OF RIGHT DEALING, WITHOUT RESPECT TO PERSON OR CLASS OR PARTICULAR INTEREST.' "—

If this high ideal of civic consciousness prevail, service not profit, democracy not autocracy will rule the world. What we sow today, we reap tomorrow. As our forefathers gave to us a new nation, so the opportunity is ours to guide the affairs of state so that the priceless heritage of liberty shall not perish from the earth. As penned in the opening chapter of this work, "We look forward to the time, which we hope may be in the very near future, when

through the patriotism of our citizens and the heroism of our soldiers victory shall come to our arms, bringing a peace that shall be wise and just to all mankind as the fruits of the great sacrifices America and her allies are making in this world struggle. Among the fruits of such peace, those who believe in equality of opportunity, civil liberty and democracy, hold as highly essential the public ownership and operation of public utilities and natural resources, for in this way alone can control be 'of the people, by the people and for the people.' "

ALBERT M. TODD.

Kalamazoo, Michigan, September 1st, 1918.

EXPLANATION OF SOME ABBREVIATIONS AND TERMS USED IN CONNECTION WITH THE GAS INDUSTRY

B. T. U.—"British Thermal Unit."
The recognized standard for measuring heat. One B. T. U. is the measure of heat required to raise the temperature of one pound avoirdupois of water one degree Fahrenheit.

C. P.—"Candle Power."
Illuminating power of a standard sperm candle, six of which weigh one pound, and each of which burns 120 grains of sperm one hour.

C. F. or Cu. Ft.—"Cubic Feet."
Rates for selling gas are based on 1,000 cubic feet.

Calorific.
Capable of producing heat. Thermal.

Carbonize.
To convert coal into coke or carbon by distillization, for removal of the gas.

Corporation.
The municipal government in British cities is known as a "Corporation," being equivalent to the word "Municipality" in America. Associations of citizens using private capital are known in Great Britain as "Companies," being thereby equivalent to the word "Corporations" as understood in America.

Incandescent.
Made luminous by heat; white or glowing with heat.

CONTENTS.

CHAPTER VI

CHAPTER VII

CHAPTER VIII

CHAPTER IX

CHAPTER X

CHAPTER XI

CHAPTER XII

CHAPTER XIII

APPENDIX

I

II

CHAPTER I.

THE BASIC PRINCIPLES OF PUBLIC OWNERSHIP AND A SURVEY OF ITS WORLD ACCOMPLISHMENT.

"This country and all that is within it belongs to the people who inhabit it."—*Abraham Lincoln.*

"Real public ownership is the very essence of Democracy. Instead of debasing human nature by conflict and corruption, and dividing men into masters and mastered, it brings men together in a union of interest, accords to all a share in the development arising from the exercise of judgment and discretion in the control of business affairs, and affords the cooperative conditions necessary for the highest traits of conscience and character."—*Prof. Frank Parsons, Boston Law School, in "The City for the People."*

The principles underlying public ownership may be divided into two classes. One is connected with ideal government in its relation to civil liberty, democracy, and equality of opportunity. This we call "political justice." The other relates to providing those material things and services necessary to our welfare and happiness which we call "economic justice." Both are closely interwoven, and together they form the sum of human justice which we know as "social justice," a term inclusive of all the relations of mankind in an ideal commonwealth.

"Justice is the rightful sovereign of the world," said Pindar several centuries before Christ. And Aristotle, writing in the same era, held justice to be the "practice of virtue toward others." In later times when Rome swayed the world, the Emperor Justinian, in the beginning of his "Institutes of Roman Law," defined justice as "the eternal and unchanging desire to give to every man his due."

In modern ethics, liberty and equality are essential principles of justice as determined by social inheritance. But to conceive rightly the trend of social relations, a broad comprehension of economic conditions is necessary. It was this desire to study questions of justice and civil liberty which led the author many years ago to seek information concerning the great public utilities and their relation to national life and public welfare.

Constant and intimate relations for a number of years with the railway, telegraph, telephone, express and various other public utilities had brought valuable experience to the writer in his business relations as manufacturer and shipper. Investigations carried on while a member of the National House of Representatives added to this experience facts of an official nature which but increased the determination to prove or disprove certain conclusions which were forced upon him. Repeated visits abroad gave opportunity to investigate personally the conditions under which public utilities were being operated in foreign lands under both public and private

ownership. The last visit occupied fourteen months in the years 1912-1913, during which time fourteen countries were visited. These, together with those investigated during other trips, included Austria, Bavaria, Belgium, Denmark, Egypt, England, France, Greece, Holland, Italy, Norway, Prussia, Saxony, Scotland, Sweden, and Switzerland.

Rapid Spread of Public Ownership.

All of these countries, sixteen in number, publicly own and operate their telephone and telegraph systems as parts of the postal service; ten publicly own and operate their entire railway systems, four own them in part, while only two (England and Scotland) have been operating their railroads entirely under private ownership. Since the outbreak of the present war, the government of these two countries has taken possession of the railroads also, and without doubt will assume actual and permanent government ownership in the near future. Russia, Japan, Australia, and New Zealand also publicly own and operate their entire railroad systems, while China, Mexico, and the countries of South America own theirs in whole or in part. All of these own their telephone and telegraph systems as well, and many countries own the majority of their municipal utilities. *The United States of America is the only nation in the world which does not publicly own and operate its telephone and telegraph systems as government functions, and will have the unenviable distinction of being the only civilized country controlled by special privilege* should she alone decide to continue this intolerable system of "invisible government."

It may have been this tendency to be ruled by private monopoly which led Ambassador Bryce to declare in his "American Commonwealth," "In England, we have the form of a monarchy with the spirit of democracy; while in America there exists the form of a democracy with the spirit of monarchy." This statement is unfortunately too true; and it is due to the fact that in England as well as in all the other countries of Europe, public utilities are largely owned and operated by the people, their operation being considered necessary and natural governmental functions. Those few minor undertakings which are allowed to be privately owned in those countries are considered as public trusts which are required to give impartial service and make full accounting to the people.

Public Ownership a Natural Government Function and Necessary to Secure Democracy.

In America, on the other hand, the private monopolies which own and control the great public utilities have practically become the financial and political masters of the people, for, by means of unjust rates made possible by fictitious capitalization, dishonest financing and illegal practices, they have amassed great wealth and

have grown so powerful as largely to control law and government. By secret rates and rebates they have crushed out competition and obtained monopoly. By interlocking directorates and combination of capital they have controlled or defied law and evaded regulation. Through control of much of the press and of universities, they have influenced public opinion, largely controlling nominations and elections to public office, ultimately directing the making and administration of law.

When a few men thus control the great functions of government, that equality of opportunity which is fundamental to democracy cannot exist. There can be no function of government more natural and necessary to the promotion of general prosperity and happiness than the public ownership and operation of all those agencies which contribute to the public good and which by their nature are monopolies. And these include not only the public utilities devised by man, but those vast resources of nature which the Almighty placed above and below the earth for the service of all his creatures.

Since our National Constitution was written a century and a quarter ago, human genius has harnessed nearly all the forces of nature in so many ways that there is scarcely a function in our daily life that is not performed by them, nor a condition of life which they have not revolutionized. Then, we could speak only within the radius of our voices; now, we speak from ocean to ocean. Then, courier, stage or slow sailing boat carried our written messages; now, a few seconds suffice to encircle the globe. Then, our persons and the products of our farms and factories traveled on land at the rate of twenty miles a day; now, our fastest trains exceed a thousand.

As the Creator of the Universe gave to all mankind from the foundation of the world to the end of time, the air, the water, the sunlight, the heat, the treasures of the earth with all their powers and possibilities; so it devolves upon the city, the state and the nation to preserve inviolate to its citizens the widest and freest use of these gifts for the common welfare. This cannot be done where private monopoly exists, for one man or a group of men usurp those rights which belong to all.

Success of Public Ownership in Europe.

When traveling in France in 1875, I first observed over the entrance of all the churches and other public buildings the motto of the French Revolution, "LIBERTY, EQUALITY, FRATERNITY." These constitute the essence of "political justice." Evidences of "social justice" were likewise apparent here as well as elsewhere, for, under the reign of public ownership of public utilities, one was deeply impressed with the excellence of the service, the low rate of charge, the efficiency and interest displayed by the managers and wage earners, all of which exerted an influence for good upon citizenship and government.

In order to secure indisputable evidence of the success of public ownership with which to disprove misstatements continually being made in the press and in pamphlets issued at the instigation of private companies in America, I procured a large and valuable collection of official reports and data of an absolutely authoritative nature, besides personally taking over 500 photographs of the various utilities in operation in many countries. To this collection I added several hundred photographs taken by official photographers.

This interesting collection contains street railway tickets from many cities and countries of Europe, with *fares of but one cent for moderate distances, and averaging but one and five-eighths cents for all distances.* These gave superior service from the receipts of which each city made a large profit applied for reducing taxation or swelling the fund of the "Common Good."

In England the very highest quality of coal gas was being supplied under municipal ownership, in some instances, at rates as low as 24 cents per 1,000 cubic feet. And even at this rate, a profit was made, owing to honest and efficient administration.

Electricity was everywhere supplied at rates lower than those charged by private companies in America, notwithstanding the fact that in most of these countries there is but little water-power.

Local telephone calls were two cents, and 'phones in homes and offices cost less than half the American rate.

Checking of baggage or parcels at the railway station was *only two cents,* as against ten cents in the United States. And all these public utilities were efficiently administered and gave a profit to the government.

Triumphs of Public Ownership in Switzerland.

The republic of Switzerland well illustrates the beneficent results of public ownership which prevail in the various countries mentioned. Traveling through this "Mountain Republic," one is immediately impressed with the industry, dignity, and the liberty-loving spirit of the people, evidenced by their every act and word. The locomotive engineers, the conductors, the firemen, the brakemen and the men who construct and maintain the tracks know that they are not mercenary employees, but are part owners of the railways and of the other public works, and as such, they take a just pride and interest in their duties and labors.

Under this system, strikes and lockouts are unknown, for each employee realizes that in rendering his best service he is rendering a service to the State, and as a citizen of the State, to himself. It will thus be readily seen how with each employee giving his best possible endeavor and each setting an example to those operating the utilities (in all of which each "citizen-employer" has a personal interest), the State secures much higher efficiency and service with proportionate decrease in cost to the public, and relative increase

in wages. As the fictitious salaries paid in America to presidents of the public service corporations with the intent of absorbing the earnings of the utility find no counterpart in Switzerland, and as all officers and employees are co-workers under civil service rules, "soldiers for the common good," private graft and plunder are impossible and unknown.

Illustrating the results under this system, I purchased a ticket for 42 days continuous or intermittent rides in Switzerland at the pleasure of the holder, over any or all of the railways and steamboats, for the equivalent of $27, or at the rate of about 67 cents a day. Tickets are also issued for three, six, and twelve months at still lower rates; and yet, though these roads, in some places tunneled through giant mountains, skirting precipitous cliffs, and spanning wild canyons at dizzy heights, cost a million dollars per mile to construct in places, and averaging over five times the actual cost of the American railways, the results are so highly satisfactory that the Republic is constantly building extensions as rapidly as possible.

Results in efficiency and economy equally marvelous as compared with our corporate-owned systems prevail in the telegraph, telephone, express and street railways. In comparison with this, one wonders how the American people, in the face of the reckless speculating and plundering of the public utilities by so-called "high financiers," can be induced to permit the functions of their life to be thus controlled and abused. It seems incredible that intelligent men engaged in manufacturing and other legitimate lines of business should not join the farmers and wage earners in the demand for public ownership. Under the present corporate system the rule of the railroads is to charge "all the commodity will bear," thus limiting both the profits of the producers and the power of the consumers to pay, while they levy the largest tax possible without entirely killing the industry.

Public Ownership Brings Justice to Labor.

The rule prevailing in both municipal and national utilities in countries where public ownership exists, is that labor shall be paid not less than the full wages accorded by private companies for like service, nor less than the amount fixed by labor unions. In many countries a minimum wage law exists in reference to government employees upon the railroads, telegraph, telephone systems, etc., and this rule exists in principle under municipal ownership in nearly all cities.

In Great Britain wages paid municipal employees on the tramways, gas and electric utilities were about $1.75 per day, skilled labor being higher. And these wages have, of course, risen rapidly since the war. When it is remembered that the families of employees get their street car tickets, gas and other services at about one-third the cost in American cities, their wages, when measured

in public service to their families, will be seen to be more than double those paid in America. For instance, a motorman or other workman can buy one hundred rides of the average length as in the United States, or one hundred and seventy-five rides of nearly two miles each, for one day's wage, whereas the American employee will receive but fifty rides for the same money. One day's wage in England and Scotland will buy on the average over 4,000 cubic feet of gas of the best quality, double the amount derived in America for the same work, although the wages are higher as measured in money.

Strikes and labor trouble of any kind are so extremely rare as to be almost unknown under public ownership, for the public has no interest nor desire to treat its own "citizen employees" otherwise than with generosity and justice. It desires to receive the best service and is glad to give a full equivalent. The sole consideration under public ownership is to secure to everyone perfect service under just conditions, while under private ownership as practiced in America, the sole motive is to obtain private profit; and even where good service is given the motive remains the same.

Under public ownership, laws and agreements are entered into providing for conciliation, arbitration, etc., by which all questions are usually settled quickly and amicably. Employees being partners in the business and enjoying the public service for themselves and their families have no motive to destroy that which tends to their own welfare. The facts already given would seem sufficient to show that a degree of social justice greater than is known elsewhere prevails where public ownership exists, for the public as consumers secure the necessities of life upon terms far more just than could be otherwise possible, while the employees receive better wages and better treatment as well.

Public Ownership in Accord With Our Constitution.

The greatest statesman and constitutional lawyers of every democratic country agree in the view that *it is not only the right but the duty of government,* national, state and municipal to perform every function which is necessary to protect and extend the rights, opportunities and happiness of its citizens. In fact, this was the supreme purpose of the founders of our Republic, and in order to secure and protect these rights, they placed at the head of our National Constitution the following preamble:

"We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and to our posterity, do ordain and establish this Constitution for the United States of America."

It must be noted that they sought to provide and secure to posterity—the people of today—*all the blessings which accompany civil*

liberty. Should our present lawmaking power refuse in this great crisis to provide, in letter as well as in spirit, progressive legislation necessary to carry out the fundamental principles of the Constitution, there is left an appeal to the citizenship which our martyred president, Abraham Lincoln, stated in the following words:

"This country and all its institutions belong to the people who inhabit it; and whenever they shall tire of their existing government they have the Constitutional right to amend it, or the revolutionary right to overthrow it."

If, then, this principle that the will of the people should rule, found its advocates among makers of laws and constitutions through the centuries when the conditions of society were more simple than now, and when nations owned and operated their own highways, post offices, etc., is it not much more natural, necessary and just that these same principles of public ownership should be extended under the present more complicated conditions of society, when the various forces of nature are imperatively called upon to render service? Justice replies, "Yes!"

We are living in an era of evolution and revolution. Democracy must triumph over greed. That "invisible government" of monopoly which sets at nought the will of the people through the combined power of the railways, telegraph, telephone, gas, electricity, street railways and other public utilities must be done away with in the name of liberty.

We who believe that the public ownership and operation of all public utilities which by their nature are necessary to the welfare and happiness of the people are natural government functions, believe that the time is ripe for action. The rightful solution of the question is not based upon the exigencies of the hour alone. Government operation of the railroads and of other national utilities should not end with the close of the war. We look forward to the time, which we hope may be in the very near future, when through the patriotism of our citizens and the heroism of our soldiers victory shall come to our arms, bringing a peace that shall be wise and just to all mankind as the fruits of the great sacrifices America and her allies are making in this world struggle. Among the fruits of such peace, those who believe in equality of opportunity, civil liberty and democracy, hold as highly essential the public ownership and operation of public utilities and natural resources, for in this way alone can control be "of the people, by the people and for the people."

CHAPTER II.

EARLY HISTORY AND DEVELOPMENT OF THE GAS INDUSTRY.

A systematic history of the origin and development of an industry of such magnitude as has been attained by the production of gas would be replete with interest; but since the chief purpose of this work is to place before the public the salient facts relating to the gas problem, especially those concerning its economic and political phases and their relation to the general welfare, a brief historical sketch including some of the most prominent features only must suffice.

The manufacture and distribution of artificial gas, supplying one of the prime necessities of life to the inhabitants of cities and villages, has become one of the important industries of the world which is still in the infancy of its development. Although its progress has been slow up to the present, the future stages of its advancement will be more rapid.

First Practical Use, 1792.

Like the steam engine, railways, electric telegraph, telephone, light and power, and many other important inventions which have revolutionized civilization, the successful application of gas to human needs was perfected in the century recently closed. The honor of being the first to employ coal gas successfully as an illuminating agent is generally given to an Englishman, William Murdock, by name, who about 1792 actually used it for such purpose at Bedruth in Cornwall, England. After continued experimentation for about ten years he succeeded in demonstrating its great possibilities by lighting the steam engine factory of Boulton, Watt & Co. at Soho in Birmingham in 1802.

But though Murdock was the first to produce and apply gas in actual practice successfully, its presence in coal was known as early as 1691 by Dr. John Clayton of Kildare, Ireland, who collected in bladders gas which he distilled from coal, and by pricking the bladder and applying a match proved it to contain luminous qualities.

Experimental Lighting, 1726.

In 1726 Stephen Hales first measured and published the amount of gas obtained from a given quantity of coal, when in a laboratory experiment he produced 180 cubic feet of "inflammable air" from 158 grains of coal. Later in 1785, Professor Jean Minckelers of the Universities of Leyden and Maestricht, experimentally lighted his lecture room with coal gas, but developed no practical methods for

its production and use. Four years later Lord Dundonald, while distilling coal for the purpose of obtaining tar, collected some of the escaping gas with which he lighted the nearby Hall of Culross Abbey, Scotland.

First Commercial Patent, 1802.

The idea that coal gas might be made of commercial value appears to have first occurred to Phillippe Le Bon, a Frenchman, who secured a patent and demonstrated it publicly in Paris in 1802. Among those who witnessed the exhibition, was a German named F. A. Winsor who attempted to buy the secret and the exclusive right to operate it in Germany; but the inventor refused to sell. Winsor accordingly applied himself vigorously to investigation and soon duplicated the Frenchman's discovery. Foreseeing its commercial possibilities, he made an exhibition of the working of his process at the Lyceum Theatre, London, in 1804, and attempted to incorporate a company, but without immediate success, as his patent was opposed by Murdock who claimed priority of invention.

First Public Street Lighting, 1807.

In 1807, Winsor first introduced public street lighting by gas in Pall Mall, one of the western districts of London, and two years later he again applied to Parliament for consent to incorporate the "National Heat and Light Company," which was at first refused; but finally, after eliminating part of his claims, Parliament in 1812 consented to the incorporation of a company under the title of "The Chartered Gas Light and Coke Company." This company was the predecessor of the world-famous "Gas Light and Coke Company," of London, the largest gas company of the world, the business of which, owing to the constantly increasing demand for gas, reached in 1916 the following stupendous figures:

Coal and cannel carbonized, 1,791,166 tons; gas made, 29,247,656,000 cubic feet; coke produced, 1,103,444 tons; receipts from gas, coke, and other residuals in 1916, $29,166,975.57. The sales in London and its suburbs of the three London companies, the "Gas Light," the "Commercial," and the "South Metropolitan," for gas and its products in 1916 totaled $46,988,523.28; truly a marvelous growth from the little experiment of Murdock a century and a quarter earlier, and exactly a century from the time when gas first began to be in general use!

Improvements in Methods and Equipment.

In the meantime, the best chemists, technical engineers and inventors had applied themselves to improvements in methods and apparatus, resulting in a constant decrease in the cost of production due in part to the growing increase in the yield of gas per ton of coal, and radical changes in "carbonizing ovens," etc.

Evolution of Gas Burners.

The development of gas burners has had a highly important share in the growth of the industry. When gas was first successfully used for illumination at the beginning of the past century, it escaped directly into the open air through the well-known "fish-tail" burner which had an opening very thin as compared with its length. This with minor improvements, continued to be used in substantially the same manner for three quarters of a century, until the "Argand" burner was invented which greatly increased lighting efficiency.

This also in turn was superseded by a still more valuable invention about twenty-five years later which increased the illuminating power, technically known as "candle power," about ten fold as compared with the original fish-tail type. This new invention, the "Welsbach" burner, which came into use between 1890 and 1900 was revolutionary in its character, as illumination was now effected by enveloping the flame in a mantle of such composition that upon being heated it became highly luminous, and though the *flame itself was no longer visible, its lighting efficiency was vastly increased.*

"Candle Power" and Heat Value.

The value of gas now became largely dependent, not upon its "candle power" as formerly, but upon its *"calorific" or heating power,* which was further increased by a skillful arrangement of the burner inside the mantle which permitted the atmospheric air to be mixed with the gas in whatever proportion was necessary to produce the hottest flame. This calorific or "thermal" power is measured in "British Thermal Units," usually designated by "B. T. U." Hence, in intelligent modern practice, the interests of consumers are best conserved by requiring an adequate measurement in B. T. U.'s for all purposes, without regard to "candle power," which is more expensive and less valuable.

Advent of the Gas Engine.

The discovery of gas and its successful application in lighting and heating resulted in the later wonderful invention of the "internal combustion engine," which has for many purposes replaced steam engines and made possible the universal use of automobiles. It is interesting to note that in the year 1794 a patent was issued in London, suggesting the principle of internal gas explosion, which was followed by various experiments and patents until in the year 1860 E. Lenoir, a Frenchman, perfected the first gas engine that was brought into successful use. The complete mastery of the problem, however, was effected by Dr. Otto in 1876, who, overcoming all obstacles, produced an engine which quickly spread into

wide commercial use, thus paving the way for the modern gasoline motor.

Gas Applied to Motor Vehicles, and a Return to Primitive Methods.

This agency which has supplied the power for over a million automobiles and motor-buses for service in the world of business and pleasure, is in some places now replaced by power of a more primitive nature. Since the war has caused a scarcity of gasoline for industrial purposes in Europe, many omnibuses in London are now being operated by means of coal gas contained in portable bags and connected with the motors by means of small rubber pipes. Thus the ancient experiment shown by Dr. Clayton about 1691, when gas was collected in a bladder, has been resumed in actual practice, and the first cycle of discovery, development and return has been completed in a period of 228 years.

Boon to Civilization.

Mr. William Newbigging of Manchester, England, recognized as the world's greatest authority on municipal gas, and whose death in 1916 was a deep loss to the world, in summing up the importance of the gas industry said (in his "Handbook for Gas Engineers and Managers," 8th edition, London, 1913):

"It is not too strong an assertion to make, that gas lighting during the century of its existence, has proved one of the greatest boons enjoyed by civilized humanity, and no industry that can be named has had a steadier or more abundant success."

This historic outline thus far devoted to coal gas because of its greater interest, would be incomplete if no allusion were made to two other modern competitors, "carburetted water gas" and "natural gas." The former is largely replacing coal gas in many cities, while natural gas is largely used in the petroleum districts.

"Water Gas."

"Carburetted water gas" is produced by allowing superheated steam to pass through a mass of incandescent coke where it is decomposed, and a new combination of gases is effected called "blue gas," which is non-luminous. This is afterwards "enriched" and made luminous by absorbing "gas oil" (a byproduct of petroleum). In some cities the carburetted water gas plants are used only in emergencies when the regular coal gas plants are unable to meet the demands, while in some other cities the entire supply of gas is of this kind; in still other cities the gas supplied is a mixture of both.

Natural Gas.

Natural gas was first found in commercial quantities and made available for practical use soon after the discovery and exploitation of petroleum. Since its production is largely limited to the areas where petroleum exists, its use is chiefly confined to those cities lying sufficiently near to permit the construction of pipe lines for its economic transportation. The chief use of natural gas has thus far been in smelting works and factories of near-by cities; and since practically its entire cost is in the drilling of wells and laying of pipe lines, it is the cheapest of all fuels, coal included, and was formerly sold on such a basis. Being, however, controlled largely by the Standard Oil Company, whose interest controls also directly or indirectly the affairs of most of the gas plants in the cities of the United States, as well as the coal, oil, and the railways which transport them, the price of natural gas has risen as rapidly as franchises and contracts permitting such advances could be secured by the corporations which control the combined monopolies.

CHAPTER III.

PRESENT GROWTH AND SCOPE OF THE GAS INDUSTRY.

A general view of the growth of the gas industry in the United States during the last twenty-five years is found in a bulletin issued by the Department of Commerce, Bureau of the Census, entitled: "The Manufacture of Gas," printed by the Government during 1917. The following data are extracts or summaries from this official report.

The value of products of the industry in 1914 was nearly four times as great as in 1889, the period covered being a quarter of a century, and the number of wage earners employed in 1914 being approximately three and a half times the number employed in 1889.

The census of 1914 covered 1,284 establishments, in which 43,792 wage earners were employed, with gas valued at $220,237,790. This value represents that of the product delivered to the consumer, and in 25 years it had increased at the rate of 286 per cent, while the quantity of gas in 1914 was 458 per cent greater than the output in 1889.

The industry is well established throughout the United States, some establishments being reported for every state. New York is the most important state in the manufacture of gas; in 1914 it reported 24 per cent of the total value of products and 23 per cent of the wage earners. Illinois, which ranked second, reported 12.8 per cent of the total value of products and 8.9 per cent of the wage earners. The five other leading states in order were Pennsylvania, Massachusetts, New Jersey, California and Michigan.

The Standard Oil Company which controls the gas companies of many cities has recently advanced the price of "gas oil," (a by-product of petroleum, used to "enrich" water gas) *which formerly sold below 4 cents per gallon, to 13.3 cents in 1914 and to over 40 cents in 1917, exceeding ten times the original price,* thus increasing the profits of the company immensely, and furnishing also a pretext for advancing rates for gas. Here is an added reason for the public ownership of coal, oil, and other natural resources.

These figures show clearly the injustice both to wage earners and the public, as it is seen that each wage earner produces per annum gas which is sold to the public for $5,026.90, which added to the by-products mentioned below, increase this amount to about $7,400, for which the wage earner averaged about $600. It is shown later on by the companies own official statements that wages paid were but one twenty-fourth of the amount claimed as "costs."

Municipally Owned Establishments.

Municipal establishments are most numerous in the West North Central division, where in 1914 they constituted 28.8 per cent of all establishments. The statistics show an increase of 16 per cent in number of establishments and 19.4 per cent in value of products for the five-year period.

The gas works of Philadelphia, although owned by the city, *are operated by a private corporation and are not here included.** The two establishments with products exceeding $100,000 are the gas works of Richmond, Va., and Holyoke, Mass. Included in the "$20,000 to $100,000" group, 1914, are five with products in excess of $50,000—those of Norwich, Conn., Westfield, and Wakefield, Mass., and Danville and Alexandria, Va. These seven establishments had products valued at $1,199,886 and the remaining 131 establishments had products valued at $557,131.

Features of Government Report Purposely Lacking—Injustice to Labor.

The above brief summary of the Government report is necessarily incomplete, since the extracts as given are intended to give general ideas only of the scope of the industry. Items of grave importance are intentionally omitted in the official report. We quote verbatim: "The census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of depreciation and miscellaneous expenses. Consequently they cannot be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses reported."

This policy of suppressing information at the dictates of the gas monopoly is in striking contrast to that followed in England and Scotland where municipal ownership has so long prevailed and where the public demand and get itemized accounts of all expenses of manufacture and operation under both public and private ownership; and it is therefore possible there to ascertain what profits are being made by any gas undertaking, public or private. Such reports as tabulated from official records will be alluded to in detail when discussing cost of operating in Europe.

The Situation Since 1914.

The Bureau of Mineral Resources of the United States Geological Survey (1917) reports the amount of *artificial gas* (oil gas, water gas, and coal gas from retorts and from by-product coke ovens) marketed and sold in 1915 as 266,204,248,000 cubic feet valued at $173,832,132.

* Philadelphia is still under the control of the "Philadelphia Gas Ring" which is the subject of the famous chapter under that title in the first edition of "Bryce's American Commonwealth," which chapter the "interests" got excluded in the later edition.

Coke to the value of $105,503,868 for 41,581,150 short tons was made in 1915, on which a gain was made of 31 per cent in quantity and 62 per cent in value in 1916.

Tar produced in 1915 amounted to 276,745,885 gallons, of which 14 per cent was used for fuel and 86 per cent was sold at an average price of 2.8 cents a gallon.

Ammonium sulphate or its equivalent produced from coal gas plants in 1915 was 52,311 tons of 2,000 pounds, of which 51,921 tons was sold at a value at the works of $1,329,651. The marketed production of ammonium sulphate from by-product coke-oven plants was 197,128 tons, valued at $9,867,475, and the total for the United States was 249,049 tons, valued at $11,197,126.

Growth of Municipal Ownership of Gas Plants in the United States.

The first municipal gas works in America antedate the Civil War. In 1852 the city of Richmond, Virginia, constructed municipal gas works which rank as the largest and oldest not only in the United States but in all North America. A year later Alexandria, Virginia, took the same progressive step. Two other Virginia cities, Danville and Charlottesville, acquired municipal gas works in 1876, and Fredericksburg in 1893. The plant at Henderson, Kentucky, dates from 1866. Duluth, Minnesota, which has made a most striking success of its municipal gas works, obtained possession in 1898. Holyoke, Massachusetts, began to operate its gas and electric light plants in December, 1902. Other cities have followed their lead, but the growth in general has been slow as compared with the rapid stride made by the private plants, the reason being that the public has been too lethargic to realize the importance of owning and operating its gas plants while profiteers have eagerly grasped the opportunity to secure long term franchises at rates unjust to the public.

In 1899, out of a total of 965 gas plants in the United States, 14 (1.5 per cent) were municipally owned and operated. In 1916, there were 2,359 plants of which 126 (5.34 per cent) were socialized. The total number of gas plants more than doubled during this period of seventeen years at the end of which time there were eight times as many municipal plants as there were in 1899.

The Extent and Growth of the Gas Industry in America.

(Brown's Directory of American Gas Companies—1917)

Summary.

Total number in United States and Canada.....2,359
Municipal 126
Private 2,233

	Municipal Plants	Private Plants
Artificial Gas	49	1,130
Natural Gas	10	758
Acetylene Town Plants	26	108
Gasoline Town Plants	41	29
Parent Companies	..	161
Public Service Commissions	..	47
Total	126	2,233

Municipal Gas Plants by City and State. Artificial Gas Plants.

I. United States.

	Population		District Supplied	
Alabama				
Eufaula	4,259		4,000	
Talladega	5,854		3,500	
California				
Gilroy (Leased to private company)	.....		2,437	
Newport Beach (Gas supplied by private company)	.....		1,500	
Santa Clara	4,348		6,000	(est.)
Connecticut				
Norwich	20,367		30,000	
Florida				
St. Petersburg	4,127	Normal, Winter,	8,500 20,000-25,000	
Tallahassee	5,018		7,000	
Georgia				
Albany	8,190	(1910)		
	12,500	(est. now)		
Cartersville	5,500		2,000	
Dalton	5,324		3,000	
La Grange	5,587		8,250	
Iowa				
Dexter	800		600	
Newton	4,616		5,000	
Kentucky				
Henderson	11,452		8,000	
Louisiana				
Alexandria (to be constructed)				
Massachusetts				
Holyoke	57,730		65,000	
Middleboro	8,214		4,000	
Wakefield	13,000		10,000	
Westfield	18,600	(est. 1917)		

Michigan			
Escanaba	15,000	(est. now)	10,000
Ypsilanti	6,230		9,000
Minnesota			
Adams (to be superseded by electricity)	.....		576
Duluth	78,466		70,000
Jasper	.....		804
Renville	1,182		1,239
Slayton (discontinued)			
Virginia	10,473		12,000
West Minneapolis	3,520		4,000
Nebraska			
Albion	1,584		1,300
New Jersey			
Paulsboro	2,121		4,000
New York			
U. S. Military Academy (controlled by U. S. Govt.	.....		2,550
North Carolina			
Rocky Mount	8,054		8,054
Wilson	6,715		6,000
Ohio			
Bellefontaine	8,239		5,000
Lebanon	2,698		2,000
Ripley	1,840		1,840
Pennsylvania			
Philahelphia (Leased for private operation)	1,722,000		.....
South Dakota			
Dell Rapids	1,367		1,700
Virginia			
Alexandria	15,329		21,000
Charlottesville	6,765		12,000
Danville	22,000	(1917)	15,000
Fredericksville	6,138		6,200
Richmond	158,700		134,700
West Virginia			
Wheeling (Discontinued operations March 31, 1916).			
II. Dominion of Canada			
British Columbia			
Nelson	7,000		2,500
Ontario			
Belleville	12,000		900
Brockville	.....		10,000
Deseronto	.....		2,000
Guelph	17,000		17,000
Kingston	.....		20,000
Kitchener	.....		19,382
Owen Sound	.....		12,566
St. Catherine	18,000		18,000
St. Thomas	18,000		18,000
Waterloo	5,016		5,016
Quebec			
Sherbrooke	.....		20,000
Sorel	.....		9,000

Several other plants have come under municipal ownership since the above data were collected.

CHAPTER IV.

HOW GAS IS MADE.

A Brief Summary.

The general processes used in the production of gas are relatively simple, and the industry requires no more skill nor training than is required in the successful operation of the majority of business enterprises.

Coal gas and carburetted water gas are the most important gases artificially made and these are most widely used either alone or in combination. The processes which produce these gases vary, but the general principles governing the production of each conform to established rules.

"Carbonizing" of Coal Gas.

The destructive distillization or "carbonizing" of coal in "retorts" or "ovens" produces coal gas, but since coal varies widely in its composition, bituminous coal is utilized to the greatest advantage as it is most productive of hydrogen.

The yield and the quality of the gas and of the by-products produced depend upon varying conditions and are controlled to a large extent by the temperature existing in the retorts, by the size of the charge of coal used, by its distribution in the retorts, by the length of time the distillation has been going on, and by the affinity of other factors of a more or less complex nature. In spite of these variations, however, the products in their main characteristics will remain the same. Among the solids are coke and retort carbon; the liquids consist largely of tar and ammoniacal liquor; while the gas produced requires purification. The approximate average yield per ton of coal of the various grades used is between 10,000 and 11,000 cubic feet of gas and between 1,200 and 1,300 pounds of coke.

Carburetted Water Gas.

"A carburetted water gas plant is a useful adjunct to the ordinary coal gas plant of a gas-works. The plant is used both for gas making and for gas enriching. The gas is made by admitting superheated steam at 100 to 120 pounds pressure through the bed of incandescent coke in the generator, where it is decomposed into its constituent gases, oxygen and hydrogen. The resultant oxygen combines with the carbon of the coke, forming carbon dioxide, which, rising through the higher layers of the incandescent coke,

is reduced to carbon monoxide, and this mixing with the hydrogen constitutes what is known as "blue" gas. This is non-luminous, and is afterwards enriched with oil in the carburettor, which imparts to the gas its light-giving properties." [1]

Relation of Candle Power and British Thermal Units to the Quality and Usefulness of Gas.

We speak of gas as having a certain "candle power." "The standard candle is a sperm candle, six of which weigh one pound, and each burns 120 grains of sperm per hour." [2] "In England, Wales, and Ireland, the gas actually supplied to consumers varies in illuminating power from 14 to 22 standard candles, according to the quality of coal used. In Scotland, the range of illuminating value is from 12 to 32 candles." [3] In America, there is no uniform standard required, each city or state, as the case may be, determining what candle power shall be furnished. A law enacted, June 27, 1907, in the State of New York may serve as an illustration. It states: "The maximum illuminating power required and minimum illuminating power permitted of gas so furnished or supplied in any such city shall be as follows: if a coal gas, sixteen candles; if a mixed coal and water gas, eighteen candles; if a carburetted water gas, twenty candles." [4]

"The British standard unit of heat (British Thermal Unit, designated by B. T. U.) is the amount of heat required to raise the temperature of one pound avoirdupois of water one degree Fahrenheit." [5] The calorific power of gas supplied in Great Britain ranges from about 492 B. T. U. to 580 B. T. U. In America, the number of heat units required is generally higher. The average is about 600 B. T. U., though the range varies from about 550 to 825 B. T. U.

The relation of candle power and heat value of gas to its usefulness for fuel and also for lighting purposes was thoroughly investigated by the Bureau of Standards on behalf of the City of Chicago in the recent controversy between the city and the People's Gas Light and Coke Company. The law in force required the gas company to furnish gas of not less than 22 candle-power and of a total heating value of not less than 600 British Thermal Units (B. T. U.) per cubic foot. The gas company proposed that these two requirements be repealed and that a single requirement of 565 B. T. U. per cubic foot be fixed as the monthly average total heating value.

1. "Handbook for Gas Engineers and Managers."—Newbigging, pp. 99-100.

2. Newbigging, page 381.

3. Newbigging, page 470.

4. "Rules and Regulations Governing Inspection of Gas."—State of New York Public Service Commission, Second District. Page 14.

5. Newbigging, page 464.

In order to meet the candle power requirement, the gas company had been compelled to furnish a heating value of approximately 665 to 670 B. T. U. per cubic foot which cost the company more than it would have done if it had furnished gas of 600 B. T. U. value which it could not do and meet the candle-power requirement. The increased cost was largely due to the increased price of oil used in the production of water gas employed in maintaining the heat standard.

This phase of the gas question is of interest at the present time since the gas companies of the country are practically all interested in getting a lower B. T. U. standard for gas. "This is due to the increased price of benzol for war demands, to the discovery of a method of extracting benzol from water gas, to the increased price of oil used in the production of water gas and to the possibilities of using a cheaper coal gas or a coal that will give a leaner gas and better coke. Many of these companies have openly insisted that the "leaner" gas was just as valuable to the consumer as the richer, and have seldom suggested any reduction of rates (and never a proportionate reduction of rates) for the lowering of the B. T. U. standard. This report of the Bureau of Standards here summarized by Dr. Clyde L. King clearly shows that *the price of gas should be reduced proportionately with the B. T. U. standards.* The findings of the Bureau after exhaustive research run counter to the opinion publicly advanced by company managers and engineers that so-called "leaner" gas (lower B. T. U. or lower candle power) will be approximately as useful per cubic foot as the richer or higher B. T. U. gases." [6]

Products from a Ton of Coal.

The average percentage yield, *by weight,* of good bituminous coal is as follows: [7]

Gas	22%
Coke and breeze	64%
Tar	5%
Ammoniacal liquor	9%
	100%

Each degree of temperature in the distillation of coal has its own products of decomposition, and each rise in temperature produces a further breaking up and re-arrangement of the compounds which previously existed. The usual temperature attained in actual practice is from 1800° to 2000° Fahr. at which temperature there is a maximum yield of benzene, toluene, phenol, etc., in the tar, with

6. "The Utilities Magazine," July, 1917.

7. Newbigging.

a maximum illuminating power in the gas. Should the temperature be beyond this, there will be a larger production of gas, at the expense of the light-giving constituents.[8]

"A good average yield in gallons per ton of coal carbonized should be: Tar, 7 gallons; benzol, 1.5 gallons; and toluol, 0.35 gallons."[9]

The relative value of different grades of bituminous coal depends upon its light and heat-giving qualities and the several residual products. Two qualities of coal may be compared as follows:[10]

No. 1, yielding—

10,600 cubic feet gas per ton (17½ candles' value = 636 pounds sperm).
13½ hundredweight coke.
10 gallons tar.
22 gallons ammoniacal liquor.

No. 2, yielding—

9,700 cubic feet gas per ton (16¾ candles' value = 557 pounds sperm).
14 hundredweight coke.
9 gallons tar.
20 gallons ammoniacal liquor.

8. Newbigging.

9. Extract from "The Conveyor" in "The Gas Age," July 16, 1917.

10. Newbigging.

CHAPTER V.

"FINANCING" A TON OF COAL AND PROFITS ON GAS.

"We must choose then, between a monopoly managed by the public in the interests of the public, and a monopoly in the hands of private parties who, to judge from all experience, will fleece the public to the utmost extent. . . . It would appear almost as a matter of course that, if it is necessary to organize a monopoly in order to secure the interests of the public, this monopoly should be within the control and management of the public. Public ownership is, therefore, the natural system in all cases of necessary monopolies." *—Dr. Edmund J. James, President of the University of Illinois, in "The Relation of the Modern Municipality to the Gas Supply."*

Gas Companies make their profits by "subtracting the greater from the less and getting more." It will surprise many consumers to learn that a gas company receives much more for the by-products or "residuals" left from a ton of coal after the gas has been extracted than it pays for the coal in the first place with the gas included. It will be still more surprising to learn that for a single residual, "coke," consumers in America are charged a sum greater than the cost of the coal which produced it when it contained all its original constituents. This nets a profit in addition to that received from other residuals, including coal tar, ammonia, etc., to say nothing of the clear profit on the gas manufactured. The gas alone has been bringing over four times the cost of the coal.

From a ton of coal which cost about $3.00 per ton delivered at the gas works in cities of the United States prior to 1915, the following products were obtained, approximately:

1282 cu. ft. gas @ $0.905 per 1,000 cu. ft.	$11.53
1286 lbs. coke @ $5.85 per ton	3.76
12 gals. tar	.75
30 gals. ammoniacal liquor @ .50 (est.) per gallon	.75
Total receipts from a ton of coal	$16.79

The prices and quantities given are the average ones reported from those cities where data were available. Some companies bought their coal at from $2.50 to $2.70 per ton delivered. The above figures are on the basis of a "gross" ton of coal, (20 cwt. or 2240 lbs.) which is the ton that has been largely used by gas companies. But to cover all contingencies, and reducing the ton to 2,000 pounds, the standard used in weighing most other commodities, the receipts from a ton of coal would be as follows:

Gas	$10.28
Coke	3.35
Tar and ammoniacal liquor (estimated)	1.50
Estimated receipts from a ton of coal	$15.13

Thus it will be seen that under the normal conditions preceding the war, the gas companies received for two-thirds of a ton of coke approximately from 10 to 25 per cent more than the cost of the entire original ton of coal. The gas and hy-products together brought approximately five times the cost of the coal.

Owing to the Unjust Advance in Prices for Their Coke, Greater than Increase in Cost of Their Coal, Gas Companies Receive Greater Profits on Gas, Without Raising its Price.

Since 1915 the increased price of coal has been used by the companies as an excuse for raising the price of gas, but this is deceptive and unjust as they have raised the price of coke to such an extent (in some cases to $9 or $10 per ton or more) that *their actual profits are now greater than ever, even at the old prices for gas, especially when the higher prices which they get for other by-products are considered!*

Since the war also the gas companies have used the increased cost of coal as an argument for decreasing the quality of the gas, thus furnishing a poorer grade for a higher price. This costs the consumer more because more gas must be used for both lighting and cooking. This, too, seems most unjust since the margin of difference between the cost of the material and the receipts therefor in commercial form nets the gas companies profits greater than that of normal times while the consumer, as usual, pays the bill.

Concealed Profits on Gas.

By E. W. Bemis, Ph. D. in "Municipal Monopolies"

"Gas companies have various ways of concealing their profits, even in the reports they are forced to make to the Massachusetts Gas Commission. Not only are exorbitant salaries, legal fees, and "legislative" or "advertising" expenses often paid, but directors sometimes justify their titles by "directing" the money of their corporations into their own pockets through excessive prices for oil, acetylene patents, or other properties in which they are personally interested. One company may thus buy from another for 60 cents, or even a dollar, in the holder, gas which it can itself make for 20 to 30 cents.

"Gas can be sold at a profit on the structural value of the plants for 75 cents per thousand feet in most of the cities of over 200,000 people east of the Rocky Mountains. In such cities the cost of duplication of the plants would rarely exceed $4.00 per thousand feet of annual output. In the famous Cleveland Gas Case in 1892, the officers of the leading gas company of that city reported the cost, aside from depreciation and profit, but inclusive of taxes, as *38 cents per thousand feet at the burner.* Mr. Baker, chairman of

the Massachusetts Gas Commission, testified that seven cents was ample for depreciation, and such has been the experience in the Richmond (Va.) works the past ten years. This would mean 45 cents as the entire cost in Cleveland in 1890 and 1891, aside from profit. Since then the two Cleveland companies, one with an output of only 161,000,000 feet in 1893-94, and 207,671,000 feet in 1896-97, have never skipped a dividend of 6 per cent or more, although allowed to charge but 80 cents per thousand feet, and compelled to pay back 6 per cent of that, or 5 cents, to the city, in addition to the taxes.

"In this Cleveland case the evidence seemed to warrant the claim of the city's attorney, General Meyer, that without any cash payments for stock save the original $100,000 about 1850, there had been such an issue of new securities without the passing of a single dividend on any of them, that in 1892 an original investor of $1,000 was in possession of $24,000 of securities. On these he was receiving yearly 6 per cent, or 144 per cent on his only cash investment. When the well-known manufacturer of gas meters and gas apparatus, John McIlhenny of Philadelphia, was asked in court his opinion of this, he gave the following illuminating answer:—

" 'That is not an unusual thing in this growing country at all. It is about the history of all the prosperous gas-works; and it is further more about the history, as you have explained it, of all prosperous manufacturing concerns.'

"The truth of the last part of his answer will be seriously questioned by some business men, but there is abundant evidence of a large measure of truth in the reference to gas companies. In an affidavit in a gas case in Chicago it was asserted that only $100,000 had ever been paid in in cash to the Chicago Gas Light and Coke Company, whose stock, in 1887, was $4,984,000, and which in that year issued a dividend in bonds of $7,650,000, while the stockholders almost doubled their stock in a consolidation of companies then effected. Only $750,000 in cash was ever paid in to the oldest of the New York companies; yet this company, after paying dividends averaging on this original payment 40% yearly from the origin of the company, had increased its stock, through stock dividends, to $7,600,000 in 1884.

"The public are thus prevented from realizing the profits of these companies by their extensive stock and even bond watering. For example, The Mutual Fuel Gas Company of Chicago, above referred to, was bought by the People's Gas Company in 1898; and in lieu of its $1,500,000 of stock representing $2,119,667 of tangible assets the purchasers issued $5,000,000 of bonds, making the capitalization $9.00 per thousand feet of annual output in all of the Chicago companies; and on this basis they are doing so well with gas

(Above is extracted from "Municipal Monopolies," pp. 588-593, by Edward W. Bemis, Ph. D. Copyrighted 1899.)

at $1.00 that all their securities, representing about $20,000,000 of structural value, and $40,000,000 of free gift by the people, are above par."

Cost and Profit.

Two questions of keen interest to the student of the gas problem are: "What does it cost to produce and deliver gas?" and "What profit does a gas plant make?"

The answers to these two questions depend to a large extent upon who controls the plants, the amount of watered stocks, the methods of bookkeeping, etc. It is the object here to give figures as shown by the company's own books, and to refer the reader to other portions of this work which discuss phases of these two questions.

According to the "Schedule of Manufacturing Costs," published by the Boston Consolidated Gas Company, September, 1917, this company estimated the total cost (excluding depreciation and reserves) to be 51.51 cents per 1,000 cubic feet of gas sold.

The Gas Record in its issue of April 25, 1917, gave the cost of making carburetted water gas per 1,000 cubic feet as 24.2 cents in 1914 and 55.3 cents in 1917, this being the net cost in the holder. The same authority gave the cost of making coal gas as 41.2 cents in 1914 and 56.4 cents in 1917.

The reports of the Boston Consolidated Gas Company and of the *Gas Record* follow:

Boston Consolidated Gas Company Files Schedule of Manufacturing Costs.

In accordance with the requirement of State law, which provides that the company shall annually publish, in September, a report showing the cost of gas in the holder, wages, distribution, depreciation and maintenance, the Boston Consolidated Gas Company issued its statement on September 28, 1917.

This showed that 2,895 million cu. ft. of gas were purchased and 4,153 million cu. ft. were manufactured, during the year to June 30. Of this total of 7,053 million, 6,693 million cu. ft. were sold.

Unit costs of manufactured gas per 1,000 cu. ft. were, as reported by the Company:

Wages at works	$0.0285
Coal and coke, in gas manufacturing	.0955
Coal, coke, etc., in making steam	.0135
Enriching materials	.1077
Purifying materials	.0020
Water	.0014
Stable and laboratory wages and other expenses at works	.0084
Total operating expense	$0.2570
Deduct residuals made	.0015

Net operating expense	$0.2555
Repairs and maintenance	.0137
Total cost in holder	$0.2692

The costs of purchased gas were:

Average purchase price per 1,000 cubic feet	$0.2828
Purification and storage expense	.0112
Total cost and operating expense	$0.2940
Maintenance and repairs of storage and purifying plant	.0020
Total cost in holder[1]	$0.2960

The average cost in the holder of all manufactured and purchased gas was 28.02 cents per thousand feet, and of all gas sold, 29.09 cents.

Distribution costs and general expenses were: for distribution wages and expenses, 4.32 cents; maintenance and repairs of distribution system, 3.47 cents; general expense and management, 7.07 cents; taxes and insurance, 7.56 cents; total, 22.42 cents.

The cost of maintenance and repairs for 1,000 cu. ft. sold were:

	Per 1,000 cu. ft.
At works	$0.0084
Of services and mains	.0198
Of meters	.0091
Of distribution works and holders	.0058
Of storage and purifying plant	.0009
Total	$0.0440

The total costs are thus summarized:

Cost of manufactured and purchased gas, per 1,000 cu. ft. sold	$0.2909
Cost of distribution and general expenses	.2242
Total cost (excluding depreciation and reserves)	$0.5151

—*"American Gas Engineering Journal,"* Oct. 6, 1917.

1. It must be understood that this company is financed in the usual way with watered securities, and that the cost under municipal ownership would have been much less.

How Rockefeller and the Standard Oil Monopolies which Control both Oil and Gas, Advanced the Price of "Gas Oil," (a byproduct of Petroleum Formerly Selling at about 4c per gallon), to 14c in 1914, and to over 40c in 1917, so as to Make the Apparent Cost of "Water Gas" Equal to that Claimed for Coal Gas. The Increased Profits on the "Gas Oil" alone Exceed Ten Times all the Wages Paid in Producing Gas!

Cost of Making Carburetted Water Gas,[2] as Claimed by the Company.

	Cost in cents per 1,000 cu. ft. 1914	1917
Oil, 1.9 gallons	13.3	38.9
Coke, 60,000 cubic feet gas per ton	5.8	8.6
Boiler fuel	1.0	2.0
Wages	1.8	2.3
Water	0.1	0.1
Purifying	0.1	0.2
Repairs and maintenance	2.9	3.8
Total	25.0	55.9
Less residuals	0.8	0.6
Net cost into holders	24.2	55.3
Increase		31.1
		=129%

The above figures taken from the company's own books show that while they claim an increased cost from 1914 to 1917 of 31.1c, they *increased wages only one-half of one cent,* the water cost no more because they obtained it from the municipally owned water works, while the Standard Oil interests that control the works, made 25.3c extra.

Cost of Making Coal Gas, as Claimed by Company.

	Cost in cents per 1,000 cu. ft. 1914	1917
Coal, 12,000 cu. ft. per ton	31.50	43.7
Coal handling	0.6	0.7
Coke for setting, 10%	2.9	4.3
Repairs and maintenance	2.1	2.8
Boiler fuel	0.3	0.6
Wages carbonizing	2.1	2.7
Electrical power	0.1	0.1
Purifying	1.3	1.4
Solvene	0.4	..
Paraffin	..	0.1
Total	41.2	56.4
Less residuals	17.8	27.1
Net cost into holders	23.4	29.3
		Increase = 25%

2. *The Gas Record,* April 25, 1917.

The Gas Situation in Philadelphia,
65 Cent Gas to the Consumer a Possibility by a Fair Deal.

The Gas Works of Philadelphia were taken possession of by the city in 1841, but they have never been really and completely public. At the beginning of municipal ownership, a Board of Trustees, under the rulings of the Court, became the agents of the bondholders and absolute masters of the situation as against the city until the bonds should be paid. Byrce in his "American Commonwealth" cites this as one of the most corrupt forms of private ownership in history, as the Gas Trust practically owned the city government, instead of the city's owning the gas works.

In 1887 a change took place and for a period of ten checkered years, in spite of determined effort on the part of private interests to discredit municipal operation, the city plant paid for itself out of its net earnings, and furnished cheaper gas during nearly all of its history than the private plants of New York, Baltimore and Washington.[3]

"In fact, official city reports show that during the period of nearly eleven years of direct city operation, 1887-1897, the receipts from the gas operations exceeded all expenditures (including approximately $2,500,000 for extensions and betterments) by $4,945,-931. In other words, in eleven years the city treasury had absorbed cash profits to the amount of nearly $5,000,000, which would have been ample to rehabilitate the plant in 1897. This record is opposed to the carefully nourished impression spread among the citizens that the old gas works were a source of expense to the taxpayers, an idea still held by some city officials supposedly in a position to know the facts."[4]

In 1897 the gas plant was leased for thirty years to the United Gas Improvement Company. This lease was practically a private business transaction between the City Council and the Gas Company because there was no city ordinance by which the people could demand that the question of leasing the works be submitted to popular vote. Prof. Bemis in his "Municipal Monopolies" (p. 606) has shown that the works were not leased for the financial good of the city, for the city could have secured lower prices than are provided by the lease. Nor were the works leased to the highest bidder, thanks to the corporate interests whose golden fleece promised well to be worth not less than 40 or 50 million dollars in years to come.

As the time approaches for the termination of the lease in 1927, public interest is being aroused to insure fair play for the city and the people of Philadelphia in the matter of municipal ownership and operation. It is our belief that these efforts will prove successful for the world has sounded the knell of graft and despotism.

3. Parsons, "The City for the People," page 249.

4. Report for 1914, Bureau of Gas, Philadelphia, page 7.

Extracts From 1915 Report of Bureau of Gas, Philadelphia.
JUDSON C. DICKERMAN, Chief.

In 1915 the Bureau of Gas of the City of Philadelphia, under the able leadership of Judson C. Dickerman as Chief, made a thorough investigation of all conditions pertaining to the gas situation not only in Philadelphia but in the leading cities of the United States. Their report is most valuable and we recommend that cities wishing to secure the data first hand request copies of the Reports of the Bureau of Gas for the years 1914 and 1915.

The following is copied verbatim from the Report of 1915 and it shows that *50 cents is a fair estimate of the total cost per 1,000 cubic feet,* including all expenses except taxes, operating expenses for street lamps aside from gas, and returns on capital invested. We quote from Appendix C, pages 64 and 65:

"The estimated total cost of 50 cents per thousand cubic feet of gas sold includes materials (deducting returns from residuals), labor, repairs and ordinary maintenance, commercial, office and general expense—everything except taxes, operating expenses for street lamps aside from gas, and returns on capital invested. This would also pay the salaries of the engineers and executives, upon whom the credit of expert management rests and not on the stockholders and promoters. The lessees pay no local or state taxes or fees on the property utilized for, or the income from the gas business, except a tax on horses owned. The costs given below, figured on the basis given above are, therefore, directly comparable with the costs in Philadelphia.

"E. W. Bemis's review of W. J. Hagenahs' investigation of the Peoples Gas Light & Coke Company of Chicago, gives a total cost for the above items of gas sold as 41.48 cents per thousand feet in 1909. In 1904, cost was not over 45.45 cents. Also it states that in Milwaukee in 1910, the cost was 32 cents. The report of the Minneapolis Gas Company to the city authorities for 1912 and 1913 shows cost of 46.76 and 49.5 cents. New Jersey Public Service Corporation costs (including taxes) for its large city business as per court records, 1911-12, 47 to 50 cents. City of Duluth showed 1909, 51.6 cents. New York City, average of reports of all operating gas companies to the Public Service Commission for 1908 showed cost of 47.12 cents.

"The same company's costs in 1909 were 42.5 cents.
1910 42.5 cents.
1911 43.2 cents.
1912 45.7 cents.

"For the New York Consolidated Gas System, excluding the smaller companies, costs were
1909—41.0 cents per thousand feet sold
1910—41.0 cents
1911—41.6 cents
1912—44.0 cents

"According to the reports of the Massachusetts Gas & Electric Light Commission, costs in four seaport cities and two interior cities were as follows:

	Boston	Cambridge	Fall River	Lynn	Springfield	Worcester
1910	39.6	49.9	46.0	40.0	48.6	46.3
1911	38.4	48.1	44.1	41.7	47.2	43.9
1912	40.2	48.2	47.0	42.0	49.8	47.6
1913	39.0	48.3	45.7	44.4	49.9	47.8
Average	39.3	48.6	45.7	42.0	48.9	46.4

"These are all smaller cities, using coal and oil at higher prices than Philadelphia, most of them with less consumption per consumer.

"In 1901 four small companies in Massachusetts, selling less than 10 per cent as much gas as the Philadelphia Works at that date, reported an average cost of 56 cents.

"The Washington, D. C., Gas Lighting Company reports costs in 1911, 1912, 1913 and 1914 of 47.55, 43.6, 44.7 and 46.5 cents respectively, an average of 45.6 cents yet selling only 25 per cent as much gas as in Philadelphia.

"In 1914 the manager of the Kenosha, Wis., plant in an address to gas men, used 43.4 cents as a cost for gas.

"The Consolidated Gas, Electric Light and Power Company of Baltimore reports to the Maryland Public Service Commission a cost of 37.4 cents. This, however, includes much gas purchased at 8.2 cents, the 2,600,000,000 cubic feet of gas made by the company costing 42.1 cents.

"The reports of the trustees of the Northern Liberties Gas Company of Philadelphia show a total cost including taxes, but not including capital charges, an average for five years (1909-13) of not over 45 cents, and for ten years not over 46 cents, and fifteen years (1900-14) average of 50.7 cents; see statement page 21.

"It is not unreasonable to assume that during the past four or five years the costs in Philadelphia have not exceeded 45 cents. In view of the size of the business and the reputation for skill enjoyed by the lessees' management, an estimate of 40 cents would appear highly reasonable. Undoubtedly, during the first few years of the lease, with smaller production and extensive repairs needed, the cost may have been considerably higher, possibly 55 or even 60 cents. An average of 50 cents for seventeen years is certainly liberal, especially when it is considered that the lessees have been allowed to charge to 'betterments, alterations, improvements, removals and extensions' such items as they pleased without engineering criticism from public authority.

"An interesting sidelight is that a privately owned works, appraised in 1897 as worth $1,060,000 with a capacity of 16,000,000 cubic feet per day, was selling 22-candle-power gas to the city for 37 cents per thousand. Assuming a minimum of 15 per cent for

return on investment and depreciation, leaves a maximum cost delivered to the holder of 29 cents. As it is highly improbable that the projectors of that deal were to be satisfied with 9 or 10 per cent profit on the actual investment, it is probable that the real cost of the gas was not over 25 cents per thousand. Adding the usual distribution and general expense to this means that gas of that quality could easily have been sold at a total cost, excluding return on capital, of 50 cents.

"Widnes, England, is selling gas at a net cost of 16 cents, excluding returns on capital but including taxes of all kinds.[5]

The Philadelphia Report of 1915 also gives details respecting the Northern Liberties Gas Company which operates in the same city but which has never been municipally owned. After examining the public reports of this company, it was found that it had had a continuous dividend record, beginning two or three years after its establishment. Most of this time it had paid 8 per cent or better, occasionally exceeding 12 per cent and even 14 per cent annual dividends.

It was also found that the net cost of gas per 1,000 cubic feet had not exceeded 45.2 cents during the five year period from 1910 to 1914. This was the average total cost of manufacture and distribution, including all material, labor and depreciation. From 1905 to 1914 the corresponding total cost was 45.6 cents, and from 1890 to 1914 it was estimated to be 50.6 cents.

Following the usual method of fictitious book-keeping practiced by most public service corporations with watered securities, certain "capital expenses" were added to the real cost of operation in order to make it appear that the gas really cost more than it actually did. The following shows how the "cost" price was raised:

Years	Cost	Amount added for "capital expenditures"	Total cost
1910-14	45.2 cents	15.85 cents	60.40 cents
1905-14	45.6 cents	10.30 cents	55.90 cents
1890-14	50.6 cents	11.65 cents	62.25 cents

Since the company evidently feared that the public would take action to secure a lower rate, the accounts were "juggled" as shown above so that it would appear from their own books that the gas cost them 60.40 cents (1910-14) on which it was necessary that they should make a "reasonable" profit, so accordingly they charged $1.00 per 1,000 cubic feet on which they made a clear profit of about 40 cents.

The following is quoted from page 12 of the 1915 Report of the Bureau of Gas of Philadelphia in reference to this company:

"The net profits above both operating and capital account expenditures on the $475,000 outstanding capital stock have therefore been 15 per cent, or almost 40 cents per M., sold for the past ten

5. Appendix C, 1915 Report of Bureau of Gas, Philadelphia.

years, and in sixteen years 12 per cent, while also providing out of receipts, capital necessary to enlarge the works from sales of 80,000,000 to 180,000,000 cu. ft. per year. Since 1908 the selling price of gas has been $1."

Gas Facts.

To call special attention to important facts proven in their investigation, the Bureau of Gas of Philadelphia printed the following salient points at the beginning of the Report for 1915. These are as follows:

"60 CENTS IS THE TOTAL COST OF GAS, PER THOUSAND FEET, DELIVERED TO PHILADELPHIA CONSUMERS.

5 CENTS ADDITIONAL MEANS A CLEAR ANNUAL PROFIT OF $500,000.

65 CENTS SHOULD BE THE PRICE OF GAS TO CONSUMERS.

U. G. I. CO. GETS 80 CENTS FOR GOOD QUALITY GAS.

NORTHERN LIBERTIES CO. GETS $1.00 FOR A POORER QUALITY GAS."

"45 Cents, or less, per 1,000 cubic feet sold is the operating cost in many large cities."

"5 Cents per 1,000 cubic feet sold is more than the cost value of the free gas and lamps now given Philadelphia."

"10 Cents per 1,000 cubic feet sold exceeds the reported yearly cost for improvements and extensions to Philadelphia Gas Works for several years past."

"The $20,000,000 reported by the United Gas Improvement Company as having been expended for extensions, improvements, etc., since 1897 have been paid back by the profits."

"10 Cents per 1,000 cubic feet sold has been the average clear profit during the past 17 years over and above this refund."

"20 to 25 Cents per 1,000 feet sold is the present clear profit to the United Gas Improvement Company over all expenses for operation, extensions and improvements. None of this is applied as returns on the previous investment, which has been repaid."

"5 Cents per 1,000 feet sold, as clear profit to the lessees, would mean now $500,000 per year, and toward the end of the lease nearly $1,000,000 per year."

"65 Cents per 1,000 feet, as a fair selling price, would pay for all operating expenses, all extensions, fair taxes to the city, and a handsome profit to the lessees"

"5 to 7 Cents per 1,000 feet is usually paid as taxes in other states. Philadelphia Gas Companies pay nothing in taxes."

"Northern Liberties Gas Company makes large profits while furnishing lower quality gas to its district than the remainder of the city receives from the United Gas Improvement Company."

Consolidation of Gas Companies Force Up Gas Rates.

Opinion of EDMUND J. JAMES, Ph. D., now President of the University of Illinois.

"Every American city which has permitted competing gas companies to lay pipes in the streets, has suffered through the consolidation of the companies, the capital having been increased, and the consumers forced to pay higher prices for their experience,...

"Before consolidation the price of gas in New York City was seventy-five cents per thousand feet, but as soon as the six companies came together they watered their capital from $18,308,920 to $39,078,000, and raised the price of gas one dollar per thousand feet, making it one dollar and seventy-five cents.[6]

"In Baltimore the price of gas was advanced seventy-five cents per thousand feet; in Harrisburg it was raised from one dollar to two dollars: in Paterson, N. J., and in Savannah, Ga., the price was also raised."

"In Detroit, Mich., a stringent charter was granted upon the filing of a bond to secure the city against the possible combination of the old company with the new one; but in spite of this iron-clad agreement a combination was effected, and the people were forced to pay not only all the expense of the gas war and the duplication of works, but also a large dividend on an inflated capitalization."[7]

Effect of Public Control of Private Management in England.

Opinion of EDWARD W. BEMIS, Ph. D. (Writing in 1905).

"There is surely a close connection between the fact that the English consume four times as much gas per capita as do we, and the other fact that gas is sold for less than 75 cents per 1,000 cubic feet on the average, or only at about half the current American prices. These lower prices, with the great social as well as financial benefits resulting therefrom in the saving of labor from the substitution of gas for coal and oil, are not due to any great dif-

6. When later on the law in New York required a lowering of the rates, the company refused to comply and forced the consumers to continue to pay the rates charged or else go without gas. The courts were then invoked by the city, and pending the legal controversy which the company continued for many years hoping to finally tire out the people, the case was carried to the United States Supreme Court which decided in favor of the city and ordered the company to refund to the consumers the amount illegally extorted from them totalling about $12,000,000. To prevent the natural fall of the company's stock on the market incident to this decision, the directors promptly issued a public statement admitting *they still had over $10,000,000 cash reserve left from their profits in their treasury, after having paid the $12,000,000 illegally extorted from the consumers!*

7. Edmund J. James, Ph. D., in a paper read before the Social Science Association at Philadelphia, February 11, 1888, entitled, "The Relation of the Modern Municipality to the Gas Supply" (page 14), and published by that association. Dr. James was then a professor in the University of Pennsylvania and is now president of the University of Illinois.

ference in the cost of placing gas in the burner in the two countries. Rather is the lower price and more extensive use of gas abroad due to the public control of private management, and to the prospect of city ownership ever impending over the English private companies, if they do not fairly approach the record of the publicly-owned companies."—Edward W. Bemis in "Municipal Monopolies," p. 628.

Other Sources of Information on "Cost" and "Profit" in this Work.

The attention of the reader is called to other portions of this work in which details of cost and profit are discussed in full.

The Report of William Newbigging to the City of Kalamazoo "On the Gas Supply of the City of Kalamazoo, and on the Proposal to Establish a Municipal Plant" gives the opinion of the world's greatest gas expert that 75 cents should cover all possible expenses and make profits large enough to pay for a municipal plant in 20 years in addition to paying all current and accrued accounts.

The Chapter on Municipal Ownership of Gas Plants in Europe gives details in full respecting the cost, receipts, and net profits of gas plants which have been municipally owned for a great many years.

The report of the municipal plant at Richmond, Virginia, which has successfully conducted the largest municipal plant in America since the days before the Civil War, and which has been selling gas at 80 cents per 1,000 cubic feet, is most valuable.

Attention is also called to the operation of the gas works of the City of Duluth, Minnesota where gas is sold from 50 cents to 75 cents per 1,000 cubic feet.

CHAPTER VI.

MUNICIPAL GAS WORKS IN VIRGINIA.

Richmond Municipal Gas Works
A Record of Achievement.

Within the limits of the beautiful city of Richmond, Virginia, often called "the modern Rome," stand many monuments of the independent spirit of democracy from which evolved the world's greatest charter of human rights—"The Declaration of Independence." The glory of Thomas Jefferson and his illustrious colleagues still hallow the place, and this city which has furnished to our nation so many of its famous heroes and statesmen, furnishes today also a living example of progress and justice in applied democracy.

Richmond owns its gas works, water works and electric light plant, all of which are operated with such high success that the municipalization of street railways also is hoped to be accomplished. Because of the high success of its gas works and the fear on the part of the great financial interests that control gas in America that a knowledge of the true facts respecting this plant would rapidly increase municipal ownership, these interests have persistently published false and misleading statements regarding this plant. Because of this dishonorable campaign which will undoubtedly be continued, greater details will be given herein from the official records as well as from the statements of high authorities respecting its history and success in the past as well as in the present.

$271,869.61 Profit on 80 Cent Gas in 1916.

The 1916 report of the Richmond Gas Works shows the flourishing condition of the plant at the present time. The excess of receipts over expenditures was $257,938.80, which, added to the amount consumed by the city and public institutions which was not charged for, made the total amount in favor of the works at the close of the year $271,869.61 as shown in detail.

During the year the works produced 718,142,300 cubic feet of gas which was an increase of 170,588,019 feet over that of the preceding year. As is the case with all the gas works of the world, there is a loss from condensation and in leakage of the pipes over the city. In this case, the loss due to the above cause was 8.48 per cent, which is less than the average loss of the works under private

ownership in America so far as ascertained. The consumption was as follows:

Private consumption	638,123,737	cubic feet
Public consumption	14,606,600	" "
Used at the Works	4,381,637	" "
Total consumption	657,111,637	" "

The city has 800 incandescent high candle power lamps in use all night every night in the year, and 81 lamps are in front of the various churches, which are in use two nights each week during church services, thus making a total of 881 lamps. The amount of gas thus consumed by the city, valued at 80 cents per 1,000 cubic feet was worth to the city $11,685.28.

The quality of gas supplied during the year was much higher than that supplied by privately owned plants, averaging 19.8 candle power. This was furnished consumers at 80 cents per 1,000 cubic feet, which is about 10½ cents less than the average price charged by the companies in the United States as shown on page 19 of the report. "The cost at the consumer's burner" for the manufacture and distribution, including materials, labor and maintenance of plant and distributing system was but 35.51 cents per 1,000 cubic feet; adding this to the selling and general expenses which include advertising, salaries, etc., the total actual cost was 40.81 cents per 1,000 cubic feet. The selling price being 80 cents gave the city a gross profit as already stated, $271,869.61. As a matter of book-keeping, however, and to keep the finances of the works in the best possible condition, a charge of 3 per cent as a reserve for "depreciation" is made against the works, although this appears to be really an unjust charge because the works are kept constantly in a state of high efficiency and repair. This fund amounts to $43,-394.32, being 6.8 cents per 1,000 cubic feet of gas, and if added to the cost, there is still a profit to the city of $228,475.29, making the total cost per 1,000 cubic feet 47.61 cents. But the city also desires to make large revenues from this plant to reduce taxation and create public improvements, hence it charges the plant as "taxation" $20,017.21, which is a larger tax than is charged on the average for similar works under private ownership. But there is still left, after deducting "depreciation" and "taxes," *$208,458.08* as *net profits.*

To further increase the money in the treasury, the city uses these works as a revenue producer to provide the means for public improvements, and charges as *"interest"* on the plant investment value 4 per cent annually, amounting to $60,641.27, *notwithstanding the fact that the plant has been entirely out of debt for many years, having paid for itself several times over in profits.*

These three items, "taxation," "depreciation" and "interest," which are known as "fixed charges," aggregate $123,052.80, or 19 cents per 1,000 cubic feet, yet, even after deducting these charges,

which are chiefly *a gift from the plant to the city,* there still remains from the gross profits in favor of the works $148,817.81.

From the fact that the plant is maintained in high class condition, and has paid for itself many times out of the profits, the fixed charges for depreciation, taxes and interest are not a fair charge from the standpoint of cost of production and distribution, so that 40.81 cents represents the full cost. For the purpose of comparison with private plants which pay taxes, the tax charges, $20,017.21, (though excessive) may be deducted, which will leave for profits, $251,852.40.

Because of the campaign of misstatement on the part of the companies, and because of his desire to personally verify the truth or the error of the official records, the author made two visits to this plant at an interval of about three years. These visits proved conclusively to him that all of the claims made for the success of the plant at Richmond, as shown in the official reports, were true.

RICHMOND GAS WORKS

Extracts From 1916 Official Report.

Average illuminating candle power	19.86
Average heating units (B. T. U.)	609.8
Details given at the rate of 1,000 cubic feet	
Manufacturing cost of coal gas	27.95 cents
Manufacturing cost of water gas	25.35 "
Total cost of coal and water gas manufactured less amount used at the plant	26.20 "
Distribution cost of gas sold	6.84 "
Total selling expense, less amount used for advertising display (Municipal exhibit)	4.53 "
General expense	0.74 "
Total cost to manufacture, distribute, and sell	40.81 "
Total "fixed charges" [1]	19.00 "
Total cost of operating and "fixed charges"	59.81 "
Selling price of gas at burner	80.00 "

Early History of the Richmond Municipal Gas Works.

The wide-known fact that from time to time for many years various companies have used every influence in their power to induce Richmond to sell its gas works and have been willing to pay a price which they claim to be more than fair value, should in itself be a significant answer to their untrue statements respecting its proved efficiency. The uniform success of this plant as compared with that of private plants in other cities is so well known that special interest attaches itself to an early history of the Richmond gas works which appears in an article ably written by Pres. Edmund J. James, now President of the University of Illinois on the subject,

1. This includes interest paid the city (although the plant is out of debt, having paid for itself long ago out of the profits), for the city desires to get additional revenue for public purposes and charges "interest" on the plant value. It also includes $20,000 taxes and depreciation, although the plant is maintained in first-class shape.

"The Relation of the Modern Municipality to the Gas Supply," read before the Philadelphia Social Science Association in 1886. This high authority says:

"The city of Richmond, Virginia, after sending a committee of seven of the city council to the cities of Baltimore, Philadelphia, New York and Boston, to investigate the gas business as conducted in those centers, decided in 1850, to erect and manage its own works. They were in successful operation by the 22nd of February, 1851, and have ever since been managed by the city. The price of gas which stood at $4.00 per thousand feet in 1851, was gradually reduced to its present figure, $1.50 to private consumers and is furnished free to the city. The number of consumers increased from 1,500 in 1854 to 5,000 in 1885, and the amount consumed from 300,000 cubic feet in the former year to 138,004,258 in the latter. Although the total consumption is at present relatively small and the cost of manufacture is therefore relatively high, yet the works in 1885, received $52,093 more than they expended, besides furnishing nearly 29,000,000 cubic feet of gas to the city for public lamps, etc., free of charge; which at the same rate as charged to private consumers would represent about $14,500 more, or a total of more than $86,000 profit, being equal to a rate of 17 per cent. The gas averaged more than 18 candle power. Gas was manufactured at the works in December, 1884, *at a cost of 49 cents* in the holder. The opinion of citizens of Richmond in regard to the success of their undertaking may be fairly represented by a statement of the Hon. W. C. Carrington, who in March, 1886, wrote to me as follows: 'Our gas works have been operated with great success—furnishing our public lights free for streets and buildings, paying all expenses of manufacture and leaving in addition almost enough profit to pay six per cent. interest on the whole cost of original and additional construction.' The manager, Mr. John H. Knowles, wrote about the same time: 'The gas works are the only paying institution which the city possesses. Every tax-payer is a stock-holder. I have been first inspector and then superintendent for thirty-three years. The people, the owners of the works, seem satisfied with the management.' In his annual report of 1882, Mr. Knowles stated that it becomes more and more apparent as time rolls on, that it was wise and prudent in the city to own her own gas works; her ownership prevents opposition works or imposition; and it is now generally conceded that one gas works can supply gas cheaper than two in the same city, and the profits made by the works go into the treasury and are equivalent to relieving the people of that amount of tax; besides the works are becoming more valuable every year."

"An attempt was made in 1882 by a private company to persuade the city to sell to them its gas works. It held out what seemed to be most extraordinary inducements in the way of cheap and rich gas, etc. After a careful investigation, during which a

committee was again sent in order to examine the works of many other cities, the common council, by a large majority, decided that it was the best policy for the city to keep its works and manage them itself. It is worthy of note that the committee which reported in favor of the city's keeping its own works was of the opinion that 'as a matter of fact there is more danger to be feared from the presence of a wealthy corporation having valuable franchises, seeking to influence our elections by corrupt means, than there is that political harm will result from the city's control of its own gas department.' It is safe to say, that the management of the public works in Richmond will compare favorably from any point of view, with that of any private works in the country."[2]

Labor and Wages in the Richmond Municipal Gas Plant.

In the report published in 1907 of the special committee appointed by the National Civic Federation to investigate the public utilities of the United States and of Europe, and of which committee, Prof. John R. Commons, Ph. D. was the chairman, is the following:[3]

"The wages paid by the Richmond municipal plant, all of whose employees are white, are 90 per cent. higher than the wages paid to negroes who do similar work in the Atlanta private undertaking, and the wages paid to white mechanics and apprentices at Richmond are 30 per cent to 120 per cent higher than those paid to the corresponding white employees by the Atlanta company."

In the same report (pp. 148-149) is a further reference to this plant, as follows:

"Richmond has had municipal ownership of its gas works since 1852, and during that time has vied with Atlanta, among all the cities of the South, in leadership in the reduction in price, while its expert accountants who have audited the books have reported that the plant has not only been paid for out of earnings, but has turned into the city treasury over $1,500,000 in addition.

"It is therefore greatly to be regretted, from the standpoint of our investigation, that the city authorities would not permit a full investigation to be made by the Committee. The mayor, the chairman of the gas committee of the Upper House of the City Council and the superintendent of the works united in telling a member of the Committee, Mr. Bemis, that a recent investigation had been considered very unfair, and the people had been so worked up over it and over other suggestions for a lease that the question of the retention of the plant had largely entered into the election in

2. Edmund J. James, Ph. D., in "The Relation of the Modern Municipality to the Gas Supply," written when Professor of Public Science and Administration in the University of Pennsylvania and published by the American Economic Association in its issue, Vol. 1, Nos. 2 and 3 (May and July, 1886) pp. 51-53.

3. National Civic Federation Report: "Municipal and Private Operation of Public Utilities," Part I, Volume 1, pp. 110-111.

the spring of 1906, and the council, with only one dissenting voice, voted to retain and improve the gas works. These officials stated that more of the profits had gone into the city treasury and less into improvements of the plant than desirable from the standpoint of keeping the plant in first class shape, but even the thorough modernizing of the plant would not cost one-half as much as it has turned over in cash to the city during the last fifteen years. Improvements were at that time being voted by the council, but it was feared that if another investigation were entered upon, whose report would probably not be published for many months, this fact would be urged as an excuse for delaying the improvements and extensions until the appearance of the report.

"Fortunately, before this decision was reached by the Richmond authorities our labor experts, Messrs. Sullivan and Commons, had made a study of the plant. They reported a good city government, comparatively free from the spoils system and from graft. They also reported that the workmen employed there were an excellent class of white labor, who were paid nearly twice as high wages as were the negro laborers in the gas works of Atlanta."

Rates Per 1,000 Cubic Feet Charged by Municipal and Private Plants in Virginia.

Investigation of the rates charged for gas by private and by municipal plants in the United States shows that the municipal plants sell gas per 1,000 cubic feet at an average of from 15 cents to 20 cents cheaper than do the private plants; and in addition, even at these lower rates, the municipal plants make a profit which benefits the public through reduced taxation and greater civic improvement. A striking example of this is shown in the report of Richmond, Virginia, which sold gas in 1917 at 80 cents and made a net profit of $208,458.08.

The rates charged by the public plants in the State of Virginia, as reported by "Brown's Directory of American Gas Companies, 1917," are as follows:

Municipal Plants—Virginia.

City	Population Supplied	Annual Sales of Gas	Maximum Rate for Gas
Alexandria	21,000	46,023,000 cu. ft.	$1.30
Charlottesville	12,000	23,000,000 "	1.25
Danville	15,000	71,962,600 "	1.00
Fredericksville	6,200	18,090,000 "	1.10
Richmond	134,700	638,123,737 "	.80
Average		159,439,867 cu. ft.	$1.09

Private Plants—Virginia

City	Population Supplied	Annual Sales of Gas	Maximum Rate for Gas
Graham	(Organization not completed)		$1.50
Lynchburg	20,000	60,000,000 cu. ft.	1.20
Newport News	45,000	135,250,000 "	1.00
Norfolk	86,000	394,000,000 "	1.10
Petersburg	25,582	85,533,200 "	1.25
Portsmouth	23,000	110,000,000 "	1.10
Richmond	8,000	50,000,000 "	1.10
Roanoke	40,000	113,000,000 "	1.20
Salem	(Organization not completed)		1.60
Staunton	10,000	30,000,000 "	1.25
Suffolk	6,000	20,000,000 "	1.50
Winchester	6,000	12,600,000 "	1.50
Average		101,038,320 cu. ft.	$1.27

It will be noted from the above that the average maximum price at which the municipal plants sell gas per 1,000 cubic feet is $1.09 and the average maximum price which the private plants charge is $1.27, the municipal plants selling gas 18 cents cheaper than do the private plants. If the 1,010,383,200 cubic feet of gas reported sold by the private plants of Virginia had been sold at the average price charged by the municipal plants the consumers would have saved $181,868.97 during 1917 alone.

Beneficial Effect of Municipal Rates on Private Rates.

It is not generally understood to what extent the low rates offered by municipal plants tend to lower the rates which the private companies put forth every effort to raise. In the city of Richmond, Virginia, a part of the people are furnished gas by the Henrico County Gas Company. The price charged by that company had formerly been reduced from a higher rate to 90 cents which in the spring of 1918 the company asked to have raised again to $1.10 per 1,000 cubic feet. The feeling was general among the consumers that since the city furnished gas at 80 cents, at which price the city made a large profit, that the private company should not raise its rates above 90 cents, and the administrative board recommended that no advance in rates be allowed.

CHAPTER VII.

MUNICIPAL GAS WORKS IN MINNESOTA.

Having given an example of municipal operation of gas plants in a Southern State, a like example is now furnished of municipal operation in a Northern State.

Municipal Ownership of Gas in Duluth, Minnesota.

The city of Duluth, Minnesota combines the operation of its gas and water departments. The net income realized over and above all operating expenses, together with the depreciation reserve set aside for future replacements has amounted in the last few years to $175,000.00. This is used annually to make extensions and betterments, and for replacing or enlarging such portions of the gas and water plants as may become inadequate.

The increase of gas consumption during the past year (1917) has been the largest net increase of any year since 1912; since 421,300,100 cubic feet of gas were sold in 1917 which exceeded the consumption of 1916 by 37,041,800 cubic feet.

When public operation began in 1898, there were but 1,111 meters; now there are 12,388. Then it cost 49.68 cents to manufacture 1,000 cubic feet of gas; now it costs 10 cents less. Then it cost 33.64 cents for general and distributing expenses including maintenance; today the same costs 17.84 cents. From the total cost then of $1.53 a gross revenue was realized of $1.3054; from the total cost in 1917 of 66.52 cents a gross revenue was had of 75.82 cents.

The monthly gas rates to consumers for 1917 were as follows:

For general purposes, for first 50,000 cubic feet.....$0.75 per 1,000 cu. ft.
For general purposes, all over 50,000 cubic feet..... .50 per 1,000 cu. ft.
For heating of premises and gas engines (meters separately) ..... .50 per 1,000 cu. ft.
Penalty for each trip in case of non-payment of water or gas.....$0.50

The following extracts from the 1917 Report are of interest:

"Cost increase during the year in labor amounts to nearly 20%, cast iron pipe nearly 70% in excess of the previous year, brass goods about 10%, coal, the largest of any of the necessary supplies, 133%.

"The water gross revenue shows a total increase of nearly $11,000 and the gas increase of nearly $30,000. The net revenues, however, of the water department after deducting all expenses, including depreciation and interest charges, are some $16,000.00 less than the previous year, and the gas net increase was but $2,700.00.

"A renewal of the contract with the Zenith Furnace Company to

supply the department with gas was negotiated on October 9th, which reduced the cost of gas to the department for general purposes from 40 to 37½ cents, and for gas used for house heating purposes from 37½ cents to 32½ cents a thousand cubic feet."

In spite of the increased cost of operating and upkeep, the net gas surplus for 1917 was $18,671.51, as compared with $16,038.42 in 1916, a gain of $2,703.93.

Rates Per 1,000 Cubic Feet Charged by Municipal and Private Plants in Minnesota.

Not only in the extreme East of the United States is the rate charged for gas in favor of municipal ownership, but in the Middle West the advantage is also apparent. Here the average rate charged by all gas plants is higher than is the average price current in the Atlantic Section.

"Brown's Directory of American Gas Companies for 1917" gives data for six municipal gas plants in Minnesota with which comparison may be made with the 20 private plants in the same state.

Municipal Plants—Minnesota.

City	Population Supplied	Annual Sales of Gas	Maximum Rate for Gas
Adams	576		$1.40
(Plant to be superseded by electricity)			
Duluth	70,000 (1910)	384,259,000 cu. ft.	.75
Jasper	804	12,000,000 "	1.25
Renville	1,239	3,000,000 "	1.50
Virginia	12,000	13,000,000 "	1.35
West Minneapolis	4,000	4,180,500 "	1.40
Average		83,287,900 cu. ft.	$1.28

Private Plants—Minnesota.

City	Population Supplied	Annual Sales of Gas	Maximum Rate for Gas
Albert Lea	7,500	18,000,000 cu. ft.	$1.50
Austin	7,000	23,600,100 "	1.40
Bemidiji	5,000 (1916)	Not reported	1.60
(Plant under construction)			
Brainerd (Operation started Oct., 1916)			
Crookston	6,000	14,000,000 "	1.65
Duluth (Plant under construction to furnish gas to over 30 neighboring towns)		"	1.50
Excelsior	1,015	5,000,000 "	1.75
Faribault	7,000	35,984,000 "	1.25
Northfield	3,000	Not reported	1.50
Mankato	14,100	48,000,000 "	1.25
Minneapolis	260,000	2,655,993,000 "	.92
New Ulm	5,000	10,000,000 "	1.50
Owatonna	4,200	16,000,000 "	1.40

Red Wing	12,000	46,000,000	"	1.40
Rochester	10,000	45,000,000	"	1.45
St. Cloud	10,000	20,000,000	"	Average 1.60
St. Paul	255,000	1,463,314,500	"	1.05
So. St. Paul	4,500	Not reported		1.25
Stillwater	12,000	27,094,000	"	1.30
Winona	15,000	84,000,000	"	1.30
Average		300,799,040	cu. ft.	$1.40

Reference to the above data shows that the municipal gas plants in Minnesota sold gas at an average maximum rate of $1.28 per 1,000 cubic feet, while the private plants charged an average maximum price of $1.40, this being 12 cents in favor of municipal operation. Since the minimum rate charged by all gas plants varies with the quantity of gas used or is regulated by a sliding scale, it would be difficult to obtain an average minimum rate. However, Duluth sells gas as low as 50 cents under municipal operation, while the lowest rate charged by any of the private plants is 75 cents at St. Paul, the minimum rate in this comparison therefore being 25 cents lower under municipal operation.

The city of Duluth furnishes an example of the difference between operation of gas plants for service by the municipality and operation for profit by a corporation. The city buys its gas from the Zenith Furnace Company and distributes it through its municipally owned system selling it for lighting purposes at the maximum price of 75 cents, all over 50,000 cubic feet being furnished at 50 cents, while it sells gas for fuel for the purpose of heating premises by gas at 50 cents, net. According to "Brown's Directory 1917," a plant was being constructed by the Northern Utilities Company at that time which was expected to furnish gas to about 30 neighboring towns at $1.50 gross for light and fuel, while net rates were to slide from $1.40 down to $1.00.

CHAPTER VIII.

CITIZENS GAS COMPANY OF INDIANAPOLIS

A Model Franchise of a Model American Gas Company Which is Paving the Way for Municipal Ownership. Gas at 55 Cents Per Thousand Cubic Feet—The Lowest Price in the United States.

While the corruption and extortion practiced in general by public service corporations has caused the word "franchise" to become detested or feared in the minds of thoughtful men as the emblem of injustice, there is fortunately one bright example in America of a company whose record is so honorable, and whose franchise is so just, that it is a pleasure to make public a copy of its franchise and a brief history of its accomplishments.

The Citizens Gas Company of Indianapolis as at present organized began operations October 1, 1913, the result of the merging of two gas companies. At the end of twenty-five years, the property of the Citizens Gas Company may become the property of the city of Indianapolis. This is provided for in the franchise agreement which states that "whenever a certificate holder shall have received, by dividend or otherwise, an amount equal to the face value of his certificate of stock together with interest thereon at the rate of ten per cent. per annum, his subscription is to be deemed fully paid and cancelled, and his rights are to be transferred to the city."

The terms are highly honorable and just both to the city and to the stockholders.

Among the provisions of the franchise, the following will be found to be of unusual interest:

Provision for Municipal Ownership.

The franchise clearly provides that when the stockholders shall have received the amount of their original investment, by dividend or otherwise, with interest at ten per cent. per annum, the entire plant shall automatically become the property of the city. Municipal ownership will thus begin without any of the contests which have hitherto prevailed whenever a city has tried to assert control of its streets after the expiration of its franchise.

High Quality Gas of 600 British Thermal Units, Voluntarily Reduced from 60c to 55c per 1,000 Cubic Feet.

The franchise provides that the maximum price of gas charged any consumer shall at no time exceed 60 cents per 1,000 cubic feet, and that the quality shall be such as to contain not less than 600 British Thermal Units per cubic foot.

It is well known that under modern existing conditions under which gas is used for lighting, cooking and other heating in the home, that the value of gas depends upon its *heat* content, since this causes the incandescent mantles to glow, making this kind of lighting of far greater value than that produced by the open flame jet which required high candle power. Respecting the quality of gas called for by the franchise, we have been unable to learn of any complaints made by consumers concerning it, at any time.

About the latter part of 1916, the company of its own accord reduced the price of gas to 55 cents which it continued to charge with profit during 1917, but in April, 1918, it asked the city authorities for a return to the 60 cent rate, owing to conditions caused by the war.

Accounts to Be Made Public.

The franchise also provides that a semi-annual public statement of the affairs of the company shall be published in detail in Indianapolis twice yearly; that the controller of the city shall have the right to inspect books of the company at any time for any purpose; and that the city engineer shall have the right to examine the plant at any time.

Stock to Be Sold at Public Auction.

It is also provided in the franchise that no increase of capital stock shall be made unless it be submitted at public auction after 30 days notice, at the end of which time, the stock shall be sold at the highest price obtainable, and if any premium be obtained above par value, it shall go to the surplus stock of the company and bear no dividends.

It will thus be seen that both the citizens of Indianapolis and the stockholders are absolutely secured against the speculation of financiers, or embezzlement or absorption of funds by the directors for their own use through private contracts for material in which they make private profit, or through those other forms of maladministration which have almost universally been the cause of injuring the credit of gas companies, and of maintaining high rate for service.

Under these terms of the franchise which secure to the stockholders honest and intelligent management, and which provide for the reversion to the city of the entire property of the company without any added payment therefor, municipal ownership will undoubtedly occur before the term of the franchise shall have expired.

A By-Product Plant.

This plant is of a type differing from most of the gas plants operating in the United States. Aside from manufacturing gas, the company operates by-product coke ovens as well, producing during the process great quantities of coke and supplies of pintsch gas

(used exclusively for lighting railway cars), benzol, cyanide, etc. As benzol products and ammonia are essential materials for the manufacture of munitions, the Government has taken over the benzol and ammonia operations absolutely and allows no toluol or ammonia to be shipped from the plant except under Government direction.

The profit derived from the by-products enables the company to sell gas at a price lower than might otherwise be possible. Because the people of Indianapolis used an unprecedented amount of gas for fuel during the winter of 1917, the company was compelled to manufacture water gas, the added expense of which decreased their ordinary profits. Yet in spite of increased cost of operation, *the company made a net profit last year of $290,155.05.*

Extracts From the Report of the Citizens Gas Company of Indianapolis for the Year Ending December 31, 1917.
Regarding Public Service, Manufacturing and Cost Details, etc.

"The unusual demand for gas could not be met satisfactorily. Yet in spite of difficulties, your Company supplied the people of Indianapolis with 14.5 per cent more gas in 1917 than in 1916, and also delivered to the people of Indianapolis for domestic consumption 31.4 per cent more coke than in the preceding year. Although our record for the trying year was by no means up to our own desires, it is certainly true that the people of Indianapolis received no such increased supply of any other important commodities required by them—and at no increase in cost."

"The service rendered this community by your Company as a public utility may, perhaps, be measured by the saving which the gas consumers have made on the amount of gas used by them during the past eight years of operation by your Company. During the first half of this period, your Company certainly saved the people of Indianapolis 30 cents per thousand cubic feet on all gas purchased from the two gas companies which were then in existence, while during the second half of this period, there has been a saving of 35 cents per thousand cubic feet on all gas used.

Savings to gas consumers (during past eight years).....$5,356,208
Dividends to stockholders (during past eight years)..... 882,473

Operating Results.

"It has been a matter of gratification to your Directors that the Company has been able to continue to supply the city with gas at the price of *55 cents* per thousand cubic feet as the maximum—this continuing to be by all odds THE LOWEST PRICE IN THE UNITED STATES—and it is their hope that the Company will be able to pass through the vicissitudes of the war without asking the Public Service Commission for relief in the matter of rates,

even to the extent of returning to the franchise rate of 60 cents per thousand cubic feet."

Comparative Statistics.

	1917	1916	1915
Coal carbonized—tons	534,154	571,516	468,990
Coke produced—tons	410,771	443,916	350,153
Gas sent out—cubic feet	2,939,884,000	2,647,873,000	2,386,812,000
Miles of gas mains in use	624	616	587
Number of meters in use	60,183	59,107	53,008
Cost of coal carbonized	$2,149,117	$1,587,553	$1,225,833
Payrolls	843,471	720,162	575,265
Taxes	115,134	105,388	84,292
Dividends Paid	218,198	250,008	87,493
Reserves and Surplus	1,010,276	807,481	486,534

Enlargements.

"Earnest attention has been given to the problem of increasing the producing capacity of your plants, and enlargements will be made as soon as it is found practicable to do so. In view of the fact that material enlargement of your coke ovens will involve the gradual replacement of certain portions of the plant with new and larger equipment, your Directors have deemed it wise to make heavier appropriations for depreciation reserves than would otherwise have been considered necessary. The increase in these reserves since 1915 amounts to nearly $300,000.

REVENUE STATEMENT

Twelve Months Ending December 31, 1917.

Operating Revenue		
Gas	$1,466,689.44	
Coke	2,458,224.79	
Ammonia	243,304.82	
Coal tar	129,112.10	
Miscellaneous	663.67	
		$4,297,994.82
Operating Expenses		
Manufacturing	$3,204,658.39	
Distribution	198,759.01	
Commercial	64,653.62	
Coke and by-products—Sales expense	128,636.52	
General (administration, insurance, legal, etc.)	72,582.89	
		$3,669,290.43
Net operating revenue		$ 628,704.39
Taxes		115,134.60
Net operating income		$ 513,569.79

Non-Operating Revenue		
Net mercantile earnings	$ 4,395.89	
Net pintch gas earnings	7,854.83	
Net benzol earnings	227,349.08	
Net cyanide earnings	18,472.53	
Interest and discount	15,555.15	
Miscellaneous	1,528.89	$ 275,156.37
Total net revenue		$ 788,726.16
Leasehold rental		376,892.50
Net earnings		$ 411,833.66
Interest		121,678.61
Net profits		$ 290,155.05

Dividends Paid January 1—December 31, 1917.

March 27—Regular semi-annual dividend No. 15 (5%)	$62,500.00
April 30—Special dividend—Accruals from January 1, 1910 to June 30, 1911, at rate of 10 per cent per annum	80,698.03
Sept. 27—Regular semi-annual dividend No. 16 (5%)	75,000.00
	$218,198.03

Dividend Declared.

"A regular semi-annual dividend (No. 17) of 5 per cent has been declared out of the earnings to December 31, 1917, payable March 28th, 1918, to stockholders of record at the close of business March 12, 1918.

J. D. Forrest,
Secretary and General Manager.

Indianapolis, February 1, 1918."

In the face of the remarkable success of this company, in supplying a high quality of gas at rates so far below those prevailing in other cities; and in the face of the insistant demand of so many gas companies for an increase in rates in opposition to franchise obligations as to price and quality, it seems highly desirable that all public officials, including courts and commissions, who will be called upon to decide important gas cases, should know these facts. In order both to verify to any readers who may doubt the accuracy of statements made herein, and to enable the public officials who may be called upon to decide respecting the best form of wording under which the interests of the public may be best safe-guarded, verbatim quotations from the franchise of the Citizens Gas Company of Indianapolis are given below.

EXTRACTS FROM FRANCHISE OF CITIZENS GAS COMPANY OF INDIANAPOLIS.

Capital Stock.

"(a) The capital stock shall be not less than one million ($1,000,000.00) dollars, to be divided into shares of twenty-five ($25.00) dollars each.

"(b) No increase of capital stock shall be made except it be provided that each new stock shall be submitted to the public at public auction upon thirty days' notice of the time and place of sale to be published in three Indianapolis newspapers having the largest city circulation, at which time said stock shall be sold at the best price obtainable therefor and any premium offered and paid for such stock shall go to the surplus capital of said company and shall bear no dividend.

Publicity of Reports.

"(c) The said company by its board of directors shall make and publish in at least two Indianapolis newspapers of general circulation, a semi-annual public statement in detail of the affairs of said company, including accounts of its assets and liabilities, disbursements and receipts; and the controller of said city shall have the right to investigate the books of said company at any time for the purpose of examining into the correctness of said report, or for other purpose; and the city civil engineer shall have the right at any time to make examination of said company's plant and property.

Trustees.

"(d) The entire capital stock of the corporation shall be placed under the control of a board of five (5) trustees and their successors, who shall be stockholders in said company, who shall be designated in said articles of incorporation and one of whom shall be nominated by the mayor of said city; which said board of trustees shall have full, complete, exclusive and irrevocable power during the continuance of this corporation, to hold said stock and vote the same as fully and completely as if they were the owners of said capital stock.

Removal of Trustees.

Any member of the board of trustees may be removed by the Marion circuit court upon the showing that said trustee is an employe or holder of any of the securities or capital stock of any other company organized for the purpose of manufacturing or delivering gas to consumers residing in, or in the vicinity of the city of Indianapolis, or for any corrupt practice or any misconduct which said court may deem detrimental to the interests of said company. Re-

moval from the city of Indianapolis shall, *ipso facto,* vacate the office of any trustee.

Disposal of Earnings

(f) The earnings of said company shall be used in the following manner, to-wit: first, to the payment of matured debts and operating expenses; second, to the payment semi-annually of said dividends of ten per centum per annum and any unpaid accrued dividends; third, to such extensions and betterments as may be ordered by the board of public works of said city; and the excess to the payment in whole or partial payments of the amounts subscribed: Provided, however, That when any part of the amount subscribed and paid in by any certificate holder has been repaid only the balance unpaid shall thereafter be entitled to receive such dividend of ten per centum per annum.

Transfer of Property to City.

(g) When said certificate-holder shall have received, by dividends or otherwise, upon said certificates an amount equal to the face value thereof together with interest thereon at the rate of ten per centum per annum payable semi-annually, then said certificates issued to said subscribers shall be deemed fully paid and cancelled and it shall be the duty of the trustees and directors of said company to convey said gas plant and property belonging to said company to said city, to be owned and operated or leased by it, and all the rights, title and interest of said company or its certificate-holders, stockholders, officers, directors or trustees, shall be deemed to be fully paid and extinguished, and all such certificates, whether of stock or otherwise, shall be surrendered and cancelled and said corporation shall be wound up.

531. Bond of Indemnity.

4. Before said parties of the second part or their assigns shall enter upon or take possession of any street, alley, avenue or other public place within said city for said purposes aforesaid, they or their assigns shall execute to said city of Indianapolis a good and sufficient bond to be maintained throughout the term of this franchise, in the sum of twenty-five thousand ($25,000) dollars, with surety to the approval of said board of public works, and conditioned for the indemnification of said city against all loss by reason of damages sustained by any person, form or corporation by reason of the construction or operation of said gas plant by the said parties of the second part...

538. Materials, Quality.

11. All materials used in the equipment or construction of said plant shall be of the best quality and the mains of said company shall at all times be of sufficient size to render adequate service...

540. Quality of Gas.

13. The parties of the second part...agree that the gas so to be furnished, sold and distributed shall have at least six hundred (600) British thermal units per cubic foot, measured according to standard methods employed for such purposes.

541. Price of Gas.

14. The parties of the second part and assigns further agree that the price to be charged the consumer for gas so to be furnished under this contract shall never at any time exceed the sum of sixty (60) cents per thousand cubic feet, and in the event the said parties of the second part or their assigns shall ever increase its rates for gas in excess of sixty (60) cents per one thousand (1,000) cubic feet, aforesaid, for gas furnished under terms of this contract, then and in that event all the rights, privileges and franchises herein granted shall at once become null and void and its rights to longer occupy or use any of the streets, alleys, avenues, public places or other parts of said city may be terminated, and the city shall have the right to acquire said plant as herein provided as upon the termination of the franchise period.

544. Extension of Lines—Forfeiture.

17. The parties of the second part hereby bind themselves, their successors and assigns, to so extend the various lines and mains of said plant that all the inhabitants of said city may be supplied with gas for fuel and lighting purposes, when they may reasonably require the same and when a petition therefor has been presented to the board of public works...(details omitted here).

547. Test of Meters.

547. Test of Meters, Forfeiture on Failure to Furnish Gas.

20. Said board of public works shall at all times have authority to inspect or cause to be inspected and to test or cause to be tested any meters in use by the parties of the second part or assigns, or to inspect and test the apparatus, mains or plant of said company, and to test or caused to be tested the quality of the gas and the calorific and illuminating value of the same for the purpose of determining

whether the same does comply with the terms and provisions thereof. And (any) unsafe apparatus or imperfect meters shall be immediately replaced upon order of said board of public works. ...and the gas shall be made to conform to the standard herein fixed, and if said company shall fail to make its gas of the standard and quality herein fixed within a period of five days after such order, it shall forfeit to said city the sum of one hundred ($100.00) dollars for each day's failure to comply with such order, and in addition to the above penalty the city shall have the right by any proper action at law or equity, to compel said company to furnish gas of the quality herein prescribed.

CHAPTER IX.

THE FIGHT FOR MUNICIPAL GAS IN KALAMAZOO WITH AN INVESTIGATION OF COSTS AND PROFITS, BY THE WORLD'S GREATEST GAS EXPERT, WILLIAM NEWBIGGING.

All of the public utilities of Kalamazoo, Michigan, with the exception of the electric lighting of the streets and the operation of the public water plant are under the control of a single monopoly directed from 14 Wall Street, New York City, which corporation also controls the public utilities of many of the other cities of Michigan as well as those of other states. In order to hide the real identity of this great controlling force in its various ramifications, and to evade the spirit if not the letter of the law, frequent changes of names and of organizations have been resorted to. The struggle on the part of the citizens to free the city from the tentacles of this octopus grown greedy through its profits has been long and hard fought, and the end is not yet. But the rapid growth of public sentiment in favor of municipal ownership of public utilities lends encouragement to those who have worked for its accomplishment.

At the present time, 1918, consumers pay their bills for electricity to the "Michigan Light Company," and for gas to the "Consumers Power Company," both of which companies use the same office and clerical force. Although the streets of Kalamazoo and the public buildings are lighted by a highly efficient municipally owned electric plant, commercial electricity and power to operate the street railways are obtained from this private corporation.

About ten years ago when the franchise of the Gas Company had yet ten years to run, the company applied for a new franchise, promising better service at reduced rates. However, when it became known that certain terms of the proposed new franchise were highly unjust, a citizen's league was formed to defeat not only this franchise but all future franchises which would extend to a private corporation the monopoly of any public utility. As a result, the proposition to grant a new franchise was overwhelmingly defeated.

Some time after this, an attempt was made to obtain a franchise granting further rights in the streets for laying of pipes, etc., presumably for the purpose of heating buildings by steam. It was advertised that this movement was promoted by parties opposed to the Gas Company and in competition with them, but the truth leaked out that the Gas Company itself fathered this movement. Certain citizens became so incensed at this dishonest method of defeating justice that they formed the Kalamazoo Municipal Ownership League that forced the matter to an election in which all hopes of the

Gas Company to extend its franchise were frustrated, and a movement was set on foot to erect a municipally owned gas plant.

The spring of 1915 saw this fight for municipal ownership wax to a white heat. Both sides bent every energy to win. The Kalamazoo Gas Company retained nine lawyers to aid in planning the campaign, writing editorials, and working other schemes to defeat municipal ownership. They were aided by a national association which is a combination of all the electric, gas, street railway, telephone, telegraph and other public utility companies, to form a unit and work together to defeat public ownership, either national or municipal, wherever the attempt is made. In this campaign they sent one or more lawyers from New York as well as from other large cities. They violently assailed in the most malicious and mean manner every newspaper and every person who took an active interest in public ownership.

The City of Kalamazoo, upon the recommendation of the author of this work, who at that time was president of the Municipal Ownership League, sent to Manchester, England, for the world's greatest gas expert to ascertain the facts which the company had refused to give to the public relative to the gas plant and its operation in Kalamazoo. This expert was Mr. William Newbigging, a man of life-long association with the gas industry. For 34 years he had been associated with his father, Mr. Thomas Newbigging, author of the "Handbook for Gas Engineers and Managers," editor of "King's Treatise on Coal Gas," ex-president of the British Gas Institution, and an acknowledged leading engineer. His brother, Mr. John G. Newbigging, Chief Engineer of the Manchester Corporation Gas Undertaking, also ranked as a leading municipal engineer.

Concerning his own experience, Mr. William Newbigging wrote as follows:

"Most of my work has been done for local authorities owning gas works, but I am also chief engineer of the Dublin Gas Company in addition to my municipal appointments.

"I acted as advising gas engineer to the National Civic Federation when they visited Britain as you would gather from a perusal of the Reports issued by the body.

"I constructed the Government gasworks in Tokio, Japan, and I have visited the United States with a view to familiarizing myself with the conditions of gas supply there.

"I have constructed Works in all parts of the world.

"I am joint author with the late Mr. Thomas Newbigging of a book on the "Valuation of Gasworks for Rating or Assessment Purposes," and I have been largely engaged in the valuation of Gas Undertakings when purchased by local authorities."

Mr. Newbigging left England January 9, 1915, and upon his arrival in Kalamazoo made a thorough examination of the gas plant and its properties. At the request of the city's authorities, he was

allowed to inspect such of the company's books as were in Kalamazoo. Shortly after his return to England, Mr. Newbigging sent to the city's authorities an official report of his findings and conclusions. This report is most valuable as it stands as the testimony of one whom the world has been pleased to honor with confidence and responsibility.

Armed with the testimony of this man who was known widely in three continents, the Municipal Ownership League again took up the fight. But the lavish expenditure of money on the part of the gas company so influenced public opinion through the press and widespread misrepresentation of facts by means of cunningly-worded literature, that the vote for a municipally owned gas plant, taken September 7, 1915, was lost, the law requiring a favorable three-fifths vote of all ballots cast at the election. However, since so large a number of voters expressed themselves at the polls as being in favor of public ownership, the feeling was general that the vote would have carried had it not been for the underhanded propaganda of the utility company.

Since then the sentiment in favor of municipal ownership has grown so rapidly that early in 1918 the people incorporated their wishes in the new City Charter[1] which is universally recognized as a model of its kind. By the terms of this charter no exclusive grants are permitted. No franchise can be granted and be of force without a vote of the people thereon. Full supervision of public utilities is provided for, and every possible safeguard used to protect the city's interests. The right is reserved to the city to purchase or condemn the franchises and property of public utilities at any time.

Interesting and enlightening facts were revealed as a result of the examination of the company's books by Mr. Newbigging. It was shown that eight directors resident in Kalamazoo, who were simply "dummies" to hold meetings and vote as dictated by the New York financiers, were allowed $40 apiece at each meeting they attended in their own city, and the charge for this was made against operating expenses. This was but one item of what it "cost" to "produce gas."

The company also insisted that they be allowed to enter a price for coal which was higher than that actually paid by them, claiming that the city could not buy as cheaply. Such an allowance would add to the "cost of operation." It should be noted that Mr. Newbigging formed his estimates on the figures which he found in the books of the company, so that if such fictitious and unnecessary charges had been eliminated before he arrived at his estimate, and if the company had been honestly financed, the cost of gas could not have exceeded 50 cents and unquestionably would have been less.

---

1. The provisions respecting public utilities, franchises, etc., as adopted in this charter will be found printed elsewhere in this work.

75 Cents a Reasonable Maximum Charge.

It will be seen from the Newbigging Report which follows that after allowing all expenses as claimed by the company, a *municipally-owned plant could furnish the highest quality of gas to consumers at 70.51 cents per 1,000 cubic feet, and at the same time yield a profit sufficient to provide for the payment of a new plant within twenty years,* the expense items to include not only the original cost of the plant but also depreciation, interest, etc., in the intervening years, so that at the end of the period the city would own the plant free of debt.

Mr. Newbigging, being highly conservative by nature, and wishing to allow for all possible contingencies, added a margin to his estimate of 70.51 cents, and gave as his opinion that 75 cents per 1,000 cubic feet would be a reasonable rate at which gas should be sold in Kalamazoo in order to include all possible cost of operation, maintenance, depreciation, interest, etc. so that at the expiration of twenty years when the last bonds should have been retired, the plant should not fail to have been fully paid for and maintained in perfect condition out of the profits realized.

In order that other cities may have the benefit of the investigations and counsel of Mr. Newbigging also, his report follows:

REPORT BY WILLIAM NEWBIGGING ON THE GAS SUPPLY OF THE CITY OF KALAMAZOO, MICHIGAN, AND ON THE PROPOSAL TO ESTABLISH A MUNICIPAL PLANT MARCH 8, 1915.

To the Honorable Mayor and Common Council of the City of Kalamazoo.

Gentlemen:—

Agreeably to your instructions received by cable from your City Attorney, Mr. Schaberg, I visited Kalamazoo, inspected the works of the Gas Company and the district of gas supply, examined the accounts of the Company, and have given careful consideration to the gas question generally.

I wish here to accord my appreciation of the able assistance rendered to me by the officials of the city, and also the fact that the officials of the Company answered all my queries without reserve and permitted me to make a thorough examination of the property and records of the Company.

Since my return to England I have made an exhaustive survey of the particulars obtained during my visit to Kalamazoo.

As you are aware the franchise granted to the Kalamazoo Gas Light Company in 1894 will expire next year and the question which now confronts the City Council is whether a new franchise should be granted to the Company, and if so, on what terms; or on

the other hand, whether the city should municipalize the gas undertaking.

In order not to complicate this report I have kept the general description of the works separate from the report.

A plan showing the lay-out of the works and plant, and a map of the city with the main pipes marked thereon, also accompany the report.

Under the original franchise the Company were empowered to charge the following rates per 1,000 cubic feet of gas supplied;

When the monthly consumption is

Between 200 cu. ft. and 5,000 cu. ft.	$1.25
Between 5,000 cu. ft. and 10,000 cu. ft.	1.15
10,000 cu. ft. and over	1.00

When the monthly consumption is 200 cu. ft. or less a flat rate of 25 cents to be charged.

Ten per cent had to be deducted from these rates when the total annual consumption of gas reached 50,000 million cu. ft.

This consumption was reached in 1901, and the new scale of charges came into operation in July of that year.

The new scale of maximum rates under the franchise is as follows:

Between 200 cu. ft. and 5,000 cu. ft.	$1.12
Between 5,000 cu. ft. and 10,000 cu. ft.	1.03
10,000 cu. ft. and over	.90

The Company actually charge—

Between 200 cu. ft. and 5,000 cu. ft.	$1.12
Between 5,000 cu. ft. and 10,000 cu. ft.	1.00
10,000 cu. ft. and over	.90

It will seem therefore, that the Company are not enforcing to the full their powers in the matter of the rate per 1,000 cubic feet.*

The quantity of gas made during the year ending December 1914, amounted to 288,097,700 cubic feet.

The total sale of gas, including that used by the Company, amounted to 272,673,000 cubic feet.

The difference between these two quantities, i. e., 15,424,700 cubic feet, represent the gas loss or unaccounted for, and is equal to 5.35 per cent of the output.

In common with many other gas undertakings in the United States, the growth of this undertaking has been considerable. The consumption of gas in 1914 shows a reduction of 11,806,200 below the consumption of 1913, but this decrease, in my opinion, is only temporary.

---

* Mr. Newbigging was not informed of the fact that when the company was compelled under the franchise to reduce its rates, it evaded the intent of the franchise by *reducing the quality to a greater degree than the price*, so that its rate of profit was increased rather than diminished.

The sales of gas during the last fourteen years has been as follows:

Year	*Cubic Feet*
1900	49,635,300
1901	62,139,400
1902	79,473,900
1903	103,071,100
1904	124,261,200
1905	153,663,700
1906	186,113,400
1907	210,090,600
1908	212,199.700
1909	234,330,600
1910	250,940,500
1911	259,314,000
1912	281,581,000
1913	284,479,200
1914	272,673,000

Physical Value.

An inventory of the plant is given as an appendix to this report and deducting the figure of value from my structural valuation, I arrive at the conclusion that the physical value of the works and plant at the 31st December, 1914, was $945,893.

Receipts and Expenditures.

In submitting the figures of the receipts and expenditures of the Company, I have taken the year ending 31st December, 1914, as a basis. These show the latest results, and the Company is entitled to the benefit, if any, arising therefrom, as a matter of fact, however, there would not have been any substantial difference if I had taken the average of the last three years.

The results are worked out, as is usual, on the basis of cost per 1,000 cubic feet of gas sold—not on the gas made.

Gross Earnings.

The total earnings of the Company for the year under review amounted to 141.22 cents per 1,000 cubic feet sold, made up as follows:

Gas Sales	101.15 cents
Residuals	37.58 cents
Non-operating revenues	2.49 cents
Total	141.22 cents

Gross Earnings Less Operating Expenses.

The operating expenses, which include manufacture, distribution, utilization, commercial and miscellaneous charges, during this period amounted to 75.11 cents per 1,000 cubic feet sold.

	Per 1,000 cu. ft.
Gross earnings	141.22 cents
Operating expenses	75.11 cents
Net earnings	66.11 cents

The net earnings of the Company per 1,000 cubic feet are, therefore, 66.11 cents, out of which are to be paid the interest on the funded debt, interest on the floating debt, and taxes.

The total revenue received from the sale of gas amounted to $275,820.75, and this is equal to an average rate of 101.15 cents per 1,000 cubic feet.

The total quantity of gas sold is divided as follows;

Domestic and illuminating purposes	244,857,600
Industrial purposes	17,203,400
Hotels and restaurants	10,612,000
	272,673,000

The gross cost of gas into holder amounts to 53.02 cents per 1,000 cubic feet, made up as follows:

	Cubic Feet
Work superintendence	1.86 cents
Retort house labor	7.94 cents
Purifier house labor	.37 cents
Miscellaneous labor	.50 cents
Bench fuel	5.16 cents
Coal carbonized	32.34 cents
Enricher	.07 cents
Purification material	.32 cents
Steam	2.06 cents
Retort house and works supplies	.53 cents
Repairs	1.87 cents
	53.02 cents

The income received from residuals amounted to 35.56 cents per 1,000 cubic feet, made up as follows:

Coke	27.53 cents
Tar	4.15 cents
Ammonia	3.83 cents
Carbon	.05 cents
	35.56 cents

Net Cost of Gas Into Holder.

Gross cost of gas into holder	53.02 cents
Less residuals	35.56 cents
	17.46 cents

or, calculated on the gas it is equal to 18.44 cents per 1,000 cubic feet.

The Company have a carburetted water gas plant, particulars of which I gave in the inventory, but this plant has not been in operation since 1912.

The reason for this is that it does not pay the Company to manufacture carburetted water gas with oil at present prices. The plant is, however, indispensable for the purpose of meeting the demand for gas when there is a shortage of coal due to labor troubles and other causes.

Distribution.

The distributing system comprises about 83 miles of main pipes, and these range in size from under 2 in. to 20 in. in diameter. The length of main under 2 in. in diameter is 3,294 feet.

The Company, at my request, opened the ground in several places along the line of main, to admit of an inspection of the pipes. The mains were found to be in a satisfactory condition. The leakage, or unaccounted for gas, is low.

The number of consumers on the 31st December, 1914, was 9,415 and the meters in use 9,438.

The cost of distributing the gas amounts to 3.84 cents per 1,000 cubic feet sold, made up as follows:

Distribution superintendence	.39 cents
Operating labor	.75 cents
Re-setting and removing meters	.50 cents
Distribution system expense	.41 cents
Repairs of mains	.22 cents
Repairs of services	.40 cents
Repairs of meters	1.17 cents
	3.84 cents

Utilization and Commercial Expense.

The utilization and commercial charges amount to 7.67 cents per 1,000 cubic feet sold, made up as follows:

Commercial arc expense	.03 cents
Consumers premises expenses	.55 cents
Loaned appliance expense	.07 cents
Salaries of meter indexers	.59 cents
Salaries and expense of com'l office clerks	2.13 cents
Salaries and com. of collection bureau	1.23 cents
Commercial office rent	.32 cents
Commercial office supplies and expenses	.41 cents
Sales department expense	2.34 cents
Total	7.67 cents

General and Miscellaneous Expenses.

The general and miscellaneous charges during the period under review amounted to 7.56 cents per 1,000 cubic feet, made up as follows:

Salaries and expenses of general offices	4.54 cents
Salaries and expenses of gen. office clerks	1.16 cents
General office rents	.32 cents
General office supplies and expenses	.17 cents
Printing and stationery	.14 cents
Law expenses-general	.02 cents
Injuries and damages	.26 cents
Insurance	.13 cents
Miscellaneous general expense	.44 cents
Store's expense	.05 cents
Uncollectable bills	.33 cents
	7.56 cents

Operating Expenses.

The following table summarizes the manufacture, distribution, utilization, commercial, general and miscellaneous expenses incurred per 1,000 cubic feet sold:

Manufacture	18.44 cents
Distribution	3.84 cents
Utilization and commercial	7.67 cents
Miscellaneous and general	7.56 cents
Total operating expenses	37.51 cents

I am of the opinion that this figure of 37.51 cents, representing the total net cost of supplying gas to the consumers, is, in the aggregate, a reasonable cost for the company to incur.

Capital Charges.

The following table shows the assets and liabilities of the Company at the 31st December, 1914.

Assets.

Plant and investment		$1,261,185.48
Park Club stock		1.00
G. A. R. Building Assn. stock		1.00
Michigan Light Co. deposit account	$65,659.88	
Cash in bank	39,925.81	
Cash in hand	600.00	
Accounts receivable—gas	29,435.56	
Accounts receivable—inter company	1,754.42	
Accounts receivable—merchandise	5,760.57	
Accounts receivable—residuals	7,891.56	
Accounts receivable—miscellaneous	32.17	
Material stock account	46,215.66	
		$194,275.63

Expenses paid in advance		$ 72.47
Municipal regulation deposit		250.00
Salvage account		1,690.00
Total		$1,457,475.58

Liabilities.

Capital stock- common		$300,000.00
Bonds due 1920, interest at 5 per cent		400,000.00
Recovery account		1,690.00
Bills payable	$469,500.00	
Accounts payable	13,921.11	
Bills paid twice and over paid	42.83	
Consumers' deposits	8,469.95	
Deferred payments	2,173.90	$494,107.79
Accrued accounts		27,172.85
Adjustment account		8,168.57
Contingent reserve account		56,821.78
Surplus—old account		53,582.59
Total surplus—current account	$115,932.00	115,932.00
Total		$1,457,475.58

The interest charges on the capital stock invested in the undertaking, exclusive of the common stock, but including taxes, per 1,000 cubic feet gas sold, I find to be as follows:

Interest on funded debt	7.33 cents
Interest on floating debt	11.65 cents
Taxes	4.60 cents
Total	23.58 cents

The interest payable on the funded debt is at the rate of 5 per cent and the interest on the floating debt varies from 6 to 7 per cent.

The interest on the debt, viz., 23.58 cents, deducted from the net earnings of the Company, i. e., 66.11, leaves a sum of 42.53 cents per 1,000 cubic feet sold as the net profit; and this is equal to 38.64 per cent on the common stock of the Company.

Rate at Which Company Should Supply Gas Under New Franchise, if Such Be Granted.

In order to ascertain the rate at which gas should be supplied under a new franchise, I have assumed that 8 per cent. is a reasonable return on the common stock of the Company.

The total charges per 1,000 cubic feet for interest would then be as follows:

Interest on common stock at 8 per cent	8.80 cents
Interest on funded debt	7.33 cents
Interest on floating debt	11.65 cents
Taxes	4.60 cents
Total charges for interest and taxes	32.38 cents

Adding to this figure of 32.38 cents, the total operating expenses i. e., 37.51 cents, I arrive at a total cost of 69.89 cents.

It is only fair that a margin should be allowed on this figure in order to meet any contingencies that may arise and I therefore add 5.11 cents, making a total of 75 cents per 1,000 cubic feet.

The figure of 75 cents is a fair rate at which the Company should supply gas in the event of a new franchise being granted to them.

Proposed Municipal Plant.

I will now deal with the cost to the municipality of building and equipping a plant to meet the requirements of the city.

The make of gas for the year ending December, 1914, was 288,097,000 cubic feet.

A new works should be designed with a view to easy extension in the future.

I consider that it would not be wise to put down a works of a less capacity than 350 million cubic feet per annum.

With such a works, designed in accordance with modern practice, it would be possible to manufacture gas at a less figure than the Company are capable of doing with the existing works.

The cost of providing such a works and distributing plant, and including land, I estimate to be $975,000.

It would not be policy, however, for the city to provide a new gas works and new distributing plant, inasmuch as in the event of the transfer of the undertaking to the city, the existing works and plant could be modernized where necessary.

The question, therefore, resolves itself into the terms on which the city could acquire the undertaking from the Company.

The purchase price would be settled either by agreement or by arbitration, and assuming, in the event of failure to agree, the Court decided that a fair basis would be the repayment of the capital invested in the undertaking, the position would be as follows:

Common stock	$300,000
Bonds	400,00
Floating debt	469,500
Consumer's deposits	8,469
	$1,177,969

Assuming that the Company were willing to sell and the Council agreeable to purchase on this basis I have calculated the rate at which the city could supply gas, assuming that no profit were made and the purchase money were realized by a 4½ per cent. loan redeemable in 20 years.

The interest and sinking fund charges on, say, $1,200,000 amount to 33 cents per 1,000 cubic feet.

This figure is based on the sale of gas for the year ending December, 1914.

To this figure of 33 cents must be added the operating expenses, and I assume these to be the same as those incurred by the Company, viz., 37.51 cents.

Adding these figures together and allowing a margin for contingencies, I arrive at the figure of 75 cents, the rate at which the city could supply gas.

It will be apparent that whether the concession of the Company be renewed, or the undertaking be transferred to the city, a rate of 75 cents is sufficient either to remunerate adequately the company, or, on the other hand, to meet the expenses of the undertaking on a municipal basis.

Moreover, it must be remembered that the city would, by means of the sinking fund, be reducing the capital debt on the undertaking year by year, until, at the end of twenty years, it would be free from the original debt.

The principal argument against municipalization of gas undertakings in the United States is that the service in the hands of the municipality would not be as efficient as it is in the hands of a company. Another argument is in regard to the difficulty in securing the services of competent men to take charge as general managers and as engineers.

The first argument is one on which the Council and citizens generally are more capable of forming a judgment than I am.

As regards the second argument, I readily admit that in view of the great majority of gas undertakings in the United States being controlled by corporations, municipal gas engineers are not so numerous as company engineers. But there are many men in company employ occupying subordinate positions who would welcome the opportunity of showing their abilities in more responsible posts, and the difficulty, if any, is by no means insurmountable.

There is little risk in the ownership of a gas undertaking; on the contrary, if the rate charged were reduced, the gas consumption in Kalamazoo would rapidly increase, bringing with it increasing financial prosperity.

In short, if the Company are not prepared to enter into a new franchise on the basis of 75 cents for gas, then I recommend the Council to give notice of their intention not to renew the franchise, and to take such steps as are necessary to acquire the works and plant.

Yours faithfully,
WM. NEWBIGGING.

5 Norfolk St.,
Manchester, England.
March 8, 1915.

NOTE.—The above report was completed with an Appendix, giving the "Inventory of Real Estate and Plant by the Kalamazoo Gas Company," but as the details enumerated are not necessary to this discussion, the Appendix is omitted here.

CHAPTER X.

MUNICIPAL OWNERSHIP OF GAS WORKS IN GREAT BRITAIN.

"Social and Financial Benefits of Municipal Ownership of Gas in England"

Mr. Arthur Silverthorne, an eminent authority on civic problems who has been quoted by Pres. Edmund J. James of the University of Illinois in his paper on "The Relation of the Modern Municipality to the Gas Supply" read before the Philadelphia Social Science Association, 1886, said in a letter to Dr. James:[1]

"I have never swerved for a moment from the opinion that borough monopolies in the form of public *companies* (that is what we call private gas monopolies, such as exist in nearly all American cities), afford the *very worst form of despotism that a community can be subject to,* and I feel great surprise that anything can ever be urged in their favor. The gradual repeal of these monopolies (for the movement is still in progress) has led to *cheaper gas, richer gas, and purer gas.* From the moment our English municipalities succeeded in wresting the management of these concerns from the lethargic handling of these private companies, the gas corporations (municipalities) set such an example of improved working that it completely awoke the modern Rip Van Winkles, so much so that they have never ceased to imitate the municipal management, and in a large measure have later emulated the prosperity of the town-managed gas undertakings.

"I say, without fear of contradiction, that from a scientific point of view, twenty years ago the cities found the production of gas, owing to the inefficiency of management, a mere distillation of tar, conducted without any regard to scientific laws. The distillation of coal is now, on the contrary, owing largely to the influence of the public example, conducted on the most scientific principles; residuals that were thrown away by our predecessors are now properly manufactured into useful products, and the influence of scientific method is present at every stage of the process. The proper extraction of carbonic acid gas alone was a source of increased light unthought of by the old style manager. In the same category may be put the development of ammonia as a means of reducing the cost of manufacture. But the public (municipal) corporations have done a great deal more than the private companies can ever achieve. They have redeemed our capital debts and lightened public taxation."

---

1. Publication of Amer. Econ. Ass'n, Vol. 1, Nos. 2 and 3, pp. 59-60.

Municipal Gas in Great Britain. A Lesson in Efficiency, Justice and Democracy.

Public ownership is largely responsible for the growth of the spirit of democracy among the English people. It has given to them the ability to understand and to practice successfully democratic ideas in government and society. It has advanced their ideals, widened their intelligence, encouraged their self-reliance, and cemented their love of country. The advantages of public ownership and operation in securing justice are apparent in all the undertakings of the British municipalities. The effect upon private monopolies is powerful.

"Although company undertakings are practically monopolies, the interests of the public have been protected by Parliament, and local authorities have considerable power of control. They may appoint examiners to test the illuminating power and quality of the gas supplied, which must be in accordance with a fixed standard. Statuary provisions relating to the testing of gas meters are administered by the town councils of boroughs having 10,000 inhabitants, and in other cases by the county councils. The Gas Works Clauses Act of 1847 limits the average profits of gas companies to 10 per cent per annum on the paid-up capital, and other provisions in this connection have been made by later Acts. Gas companies are required by Sec. 35 of the Gas Works Clauses Act of 1871 to send to the local authorities an annual statement in the form prescribed by statute, made up to 31st December, on or before 25th March. A copy of such statement must be sold by the company to any applicant at a price not exceeding one shilling."[2]

From these official government statistics it has been possible to gain much valuable information which has been compiled for general use in "THE MUNICIPAL YEAR BOOK:" "FIELD'S ANALYSIS OF THE ACCOUNTS OF THE PRINCIPAL GAS UNDERTAKINGS IN ENGLAND, SCOTLAND AND IRELAND," and other authentic annual municipal reports.

According to "THE MUNICIPAL YEAR BOOK OF THE UNITED KINGDOM FOR 1913," a report for year 1910-11, there were 298 gas plants operated by "local authorities" (municipal corporations), and 511 by private companies. The total capital invested by the "local authorities" was about $150,000,000, and that by the companies more than three times as much. The local authorities operated their plants at a ratio of 72.96 per cent. to their income, while the private companies claimed the higher ratio of 74.87 per cent of the gross earnings. The equivalent return upon capital invested by the municipalities was 9¾ per cent, while that of the private companies was but 5 and ⅝ per cent. The local authorities

2. Municipal Year Book of the United Kingdom, for 1914.

sold 67,491,765 thousand cubic feet of gas to 2,666,146 consumers at an approximate average charge of sixty cents per thousand cubic feet. The private companies sold 115,342,163 thousand cubic feet of gas to 3,751,703 consumers at an approximate average charge of sixty-six cents per thousand cubic feet.

By far the larger number of private gas companies operate in England and Wales, chiefly in London, Liverpool and Sheffield. Scotland has 55 municipal gas plants, and only five are privately owned, while in Ireland 16 municipalities own their gas works and the private companies own 13.

The Municipal Gas Works of Widnes, England, a Triumph of Municipal Ownership. Best Quality Gas Costing 16 Cents Per 1,000 Feet Supplied to Consumers During 1915 at 22 Cents to 24 Cents for Lighting and 16 Cents for Power Purposes Yielding Large Profit to the City.

Widnes, England, claims the distinction of making the lowest priced gas in the world.

This interesting place lies on the Mersey river, in Lancashire, twelve miles south and east of Liverpool. It is a city of strictly modern growth, its population having increased from 2,000 to 1851 to 31,544 in 1911. Lying close to the coal fields and having capacious docks, its situation is ideal for the manufacturing industry which it maintains.

Concerning this town the "Municipal Year Book" (1914) says:

"Widnes became an incorporated borough in 1892, after its growing prosperity of twenty years The former local board acquired the gas and water undertakings in 1867. *Both are very remunerative undertakings, and the price of gas is lower in Widnes than in any other town in the kingdom.*"

The revenue account, 1912-13, as given in the "Municipal Year Book," 1914, is as follows:

Total capital expended	$671,644.80
Total capital repaid, or in sinking fund, as provided by revenue	158,457.60
Total loans outstanding	301,154.76
Income	248,832.00
Expenditure	200,640.00
Surplus or gross profit	48,192.00
Sinking fund or loan payments	9,768.00
Interest on loans	11,318.40
Income tax on profits	1,684.80
Net surplus or net profit	25,420.80
Balance of reserve or renewal funds	8,505.60
Charges for gas	22c and 26c

The following very interesting comparison of rates *in Widnes and Lancaster, England, appeared in "The Gas Age."*[3]

3. *The Gas Age,* (New York), March 15, 1918, page 247.

"Lancaster recently claimed to make gas cheaper than Widnes, the English city that has for years held the record. Isaac Carr, the manager at Widnes denies such claim and gives the cost in holder, exclusive of all taxes and charges not involved in manufacture, for the year 1917 as 20.02 cents for Lancaster and 15.90 for Widnes; in 1915 it was respectively 16.20 and 9.60 cents per 1,000 cu. ft. of gas sold. Including all charges, he submits the figures for 1917 as 39.78 and 32.10, respectively, as compared with 38.14 and 22.32 for 1915. The price of gas in Lancaster, England, in 1916 was: Lighting, 52.6 to 48.6 cents; power, 48.6 to 30.3 cents net per 1,000 cu. ft. sold. At Widnes the price in 1917 was: Lighting, 36.3 to 32.3 cents; power, 28.3 cents; in 1915 the lighting rate was 24.3 to 20 cents and the power rate 16 cents. These figures indicate that, although high costs produce a proportionately high rate of increase in the price of low-rate gas, the price is even then comparatively low. It will be noted that the Widnes increase in price was 12.3 cents for light and power; the increased cost of manufacture, which evidently represented the increased cost of coal and labor, was 6.3 cents for Widnes, or about half the total increase in price."—*Gas Age,* Mar. 15, 1918, p. 247.

In *"The Gas World Analyses of Municipal Gas Accounts, 1913-14,"* which gives the full details of expenses and receipts respecting 78 municipally owned gas plants in British cities, the net cost of manufacturing and distributing highest quality of gas in Widnes is given as 15.8 cents per 1,000 cubic feet after receipts from residuals and other sources had been deducted.

These statistics show that it cost Widnes, per 1,000 cubic feet, 9.7 cents to manufacture, 3.04 cents to distribute and 3.06 to cover all other expenses, making a total cost of 15.8 cents per 1,000 cubic feet, after deducting receipts from residuals.

Notwithstanding the low prices charged the consumers, the city made a gross profit or surplus of $48,192, from which, after deducting all taxes, reservations and capital expenses, there remained a net surplus or profit of $25,420.80.

During this fiscal year (1913-14) this plant carbonized 45,090 tons of coal producing 502,421,000 cubic feet of gas, some of which was used for lighting the city without credit being given the works for this service, and 474,511,000 cubic feet of which was sold to consumers at 24 cents per 1,000 cubic feet for which the city received $115,817.50.

The city also sold 14,686 tons of coke at $1.22 per ton for which it received $17,938.54. It will be of interest to the American people who are paying exorbitant rates to gas companies for coke to know of the justice with which municipal plants distribute coke as well as gas to the public. The unjust charges exacted for coke by the gas companies of America may be realized when the fact is known that

they sell the coke for more than they paid for the coal before the gas was extracted. Municipal plants are not operated in this unjust way.

Municipal Gas Works of Birmingham, England, Contribute $267,966.92 to Aid in Reducing Taxation, Leaving a Net Profit $915,083.02 All Made in One Year, While Supplying Consumers at 32 Cents!

Birmingham, the fourth largest city of England, owns its supply of gas, water and electricity. Control of the gas was taken over in 1875, of the water in 1892 and of the electricity in 1900. This city of 525,960 population (1911) has made a remarkable success of its municipal undertakings.

The official report of the Gas Committee of the City of Birmingham for the Year 1913 records most interesting data. In addition to having contributed various sums to the "Workmen's Sick Fund" and for "bonuses" to officers and workmen, *they paid $267,966.92 into the city treasury for the relief of taxation, and had a net profit left of $915,083.24.* The gas was supplied to consumers at an average price of 32 cents.

In view of these large profits which were made in spite of a national coal strike with resultant increased cost of fuel and labor, the situation was somewhat parallel to that which faces the American public today. We quote from page 7 of the report:

"When these facts are taken into consideration it will be seen that the Gas Department is contributing a sum larger than in the previous year, and this in the face of the national coal strike causing a large increase in the cost of coal, and the advance in workmen's wages granted by the Council in February last year, which alone represents £10,000 ($48,600) per annum to the Gas Department. Further, the Council is well aware that the cost of all kinds of stores and materials has largely increased during the last twelve months, while the year just ended felt the full effect of the reductions in the price of gas granted in 1911."

According to *"Field's Analysis of the Accounts of the Principal Gas Undertakings in English Provincial Towns (1913),"* Birmingham Gas Works carbonized 631,672 tons of coal from which they made 9,164,962,000 cubic feet of gas. From this they sold 8,659,731,000 cubic feet at an average price of 32 cents. They also sold 293,194 tons of coke at approximately $3.03 per ton.

For every 1,000 cubic feet of gas sold, it cost Birmingham, approximately 13 cents to manufacture, 5 cents to distribute, and a trifle over half of one cent to manage, making with other items, a total working expense per 1,000 cubic feet of about 22 cents. After paying all expenses, the city made a net profit of about 7 cents per 1,000 cubic feet of gas sold.

Contrasted with this report for 1913 under nearly normal condi-

tions, Birmingham furnishes proof of what a municipality can do for its people under stress of war.

In 1916 it carbonized nearly 200,000 more tons of coal, the increased price of which per ton raised the cost of material to produce each 1,000 cubic feet of gas sold, from $0.2572 to $0.3922, yet by careful management there was practically no increase in the total working expenses.

But in order to meet increased expenses in general due to higher prices for material, they raised the price of gas from 40 cents to 46 cents per 1,000 cubic feet, and increased the price of coke per ton from $3.03 to 3.51. At the same time the Suburban Companies were selling coke at an average price of $4.88, and the Metropolitan Companies charged an average price of $5.31, while in some cases the private companies charged over 30 cents more per 1,000 cubic feet of gas sold, than did the municipalities.

The net profit per 1,000 cubic feet of gas sold fell in Birmingham from 7.12 cents in 1913 to 3.54 cents in 1916, but in spite of this it put $127,491 into the city treasury to relieve taxation after it has previously paid much more than twice this amount as regular taxes. The argument in favor of public ownership thus finds ample justification in the case of Birmingham, England.

Municipal Ownership of Gas in Manchester, England.

As a municipality, Manchester is modern, and today its municipal industries excel in magnitude those of any other British Provincial town. The City Council not only serves Manchester, but carries on a large business on behalf of its smaller neighbors, as Manchester is the center of an aggregate population of about a million and a quarter, to whom it supplies water. The area of its gas supply extends 47½ square miles and includes seven outlying districts. During the year 1913, the contributions made by the municipal trading undertakings in "aid of rates" (taxes) were: tramways, $486,000; gas, $243,000; electricity, $119,070; and markets, $68,040.

The Manchester Gas Works were established in 1847 by the Police Commissioners, who were at that time the governing body of the town. On the 24th of June, 1843, the powers and duties of the Commissioners were transferred to the "Corporation," and from that date the Gas Works became municipal property. Private parties have, therefore, never owned the gas plant.

Comparative Accounts of Municipal Gas Works, Manchester, England, For Years 1913, 1914 and 1916.[4]

	1913	1914	1916
Coal carbonized (tons)	402,287.00	442,983.00	390,370.00
Gas made (1,000 cu. ft.)	5,944,838.00	6,130,677.00	6,067,751.00
Coke made (tons)	280,401.00	297,298.00	272,196.00
Gas sold (1,000 cu. ft.)	5,605,233.00	5,771,415.00	5,700,014.00
Price of gas per 1,000 cu. ft	.54	.52	.64
Coke sold (tons)	212,790.00	230,524.00	218,282.00
Price of coke (per ton)	3.15	2.39	3.86
Receipts for coke	668,013.64	558,209.88	838,414.84
Total income	4,164,252.12	3,846,964.96	4,549,570.30
Rates and taxes	295,211.26	313,829.64	209,038.84
Net Profit	926,544.42	394,272.36	686,202.10
Aid of Rates	243,000.00	253,157.40	243,000.00
Per 1,000 cubic feet of gas sold:			
From sale of coke	$0.1194	$0.0956	$0.1478
From sale of gas	.5400	.5200	.6400
Net profit	.1632	.0674	.1190
Aid of rates	.0428	.0434	.0422
Total working expenses less public lamps	.2160	.2204	.2382

4. Field's "Analysis of the Accounts of the Principal Gas Undertakings in England, Scotland, and Ireland."

CHAPTER XI.

MUNICIPAL OWNERSHIP IN GREAT BRITAIN CONTINUED. COMPARATIVE RESULTS IN EFFICIENCY AND SOCIAL JUSTICE.

Highly interesting data taken from official reports, respecting the relative efficiency, wages, costs, profits, rates charged consumers, etc. is found in "FIELD'S ANALYSIS OF THE PRINCIPAL GAS UNDERTAKINGS OF ENGLAND, SCOTLAND AND IRELAND FOR 1913," which is universally acknowledged as authoritative, and gives statistics for the principal "municipal corporations" operating gas works in England and Scotland, including Birmingham, Bolton, Bradford, Carlisle, Leeds, Leicester, Manchester, Nottingham, Oldham and Salford, Edinburgh and Leith, and Glasgow. The same report also gives the data for the companies operating the nine largest gas plants under private ownership (exclusive of Greater London with 7,000,000 population), at Bath, Brighton, Bristol, Derby, Newcastle-on-Tyne, Plymouth, Portsea, Rochester, Sheffield and Dublin.

Accounts of Gas Plants in English Provincial Towns.

(Field's Analysis of the Accounts of the Principal Gas Undertakings in England, Scotland, and Ireland, for the Year 1913.)

	Municipal Operation		Private Operation	
	Total Amount	Average Amount	Total Amount	Average Amount
Gas Made (1,000 cubic feet)	29,526,720	2,952,672	17,973,027	1,997,003
Gas Sold (1,000 cu. ft.)	27,768,134	2,776,813	16,863,128	1,873,681
Gas unaccounted for (Per cent on make)	4.77		4.98	
Gas used in Works (1,000 cu. ft.)	351,753	35,175	215,114	23,901
Coal & Channel (Tons carbonized)	2,286,006	228,600	1,412,421	56,936
Coke made (Tons)	1,475,910	147,591	870,712	96,746
Coke used for fuel (Tons)	361,415	36,141	214,316	23,817
Coke made for sale (Tons)	1,114,495	111,449	656,396	72,933
Miles of Mains	4,869	486	2,766	307
Private Consumers	877,266	87,726	479,571	53,286
Private Consumers (Per Mile of Mains)	180		173	

It will be seen from the above data that the plants under municipal operation do a much larger volume of business in the English Provincial Towns, and that they are more efficiently managed since there is less gas unaccounted for and more customers are served per mile of mains.

Comparison of Accounts of Gas Plants in English Provincial Towns For the Years 1913 and 1916 Under Both Municipal and Private Ownership. Receipts.[5]

(Per 1,000 Cubic Feet of Gas Sold.)

	1913		1916	
	Municipal	Private	Municipal	Private
Net Gas Rate	$0.4832	$0.4316	$0.5404	$0.5080
Meter Rental	.0016	.0300	.0018	.0294
Stove Rental	.0036	.0226	.0046	.0238
Total Gas Charges	$0.4884	$0.4842	$0.5468	$0.5612
Coke	$0.1110	$0.1220	$0.1424	.1664
Breeze	.0000	.0046	.0000	.0042
Tar and its Products	.0484	.0354	.0300	.0260
Amm'l. Liquor	.0474	.0398	.0504	.0480
Total Receipts from Residuals Sold	$0.2068	$0.2018	$0.2228	$0.2446
Summary of Receipts.				
From Gas Charges	$0.4884	$0.4842	$0.5468	$0.5612
From Residuals	.2068	.2018	.2228	.2446
Miscellaneous	.0026	.0044	.0032	.0046
TOTAL INCOME	$0.6978	$0.6904	$0.7728	$0.8104

(Per 1,000 Cubic Feet of Gas Sold)
(Less Public Lamp Charges.)

It should be noted that while the total charges for gas and the use of the meters and stoves was slightly greater under municipal operation during 1913, the municipal plants constantly supplied a higher quality than the companies, as shown hereafter; and the order was reversed in 1916 when the total charge under private operation was greater. It must be remembered, that in addition to the higher taxes which they paid, the municipal plants made large profits, which were used for public improvements and the "common good," while the companies profits were enjoyed only by the stockholders. During both years the private plants sold coke to the people at a higher price, but received less for their tar and ammoniacal liquors which would indicate that these latter products were either inferior or that they were sold to business firms instead of to the general public as the people would be more interested in buying coke at the lowest rate possible, since coke is so generally used for fuel in the homes, and a larger profit would result to the companies by raising the rate on coke. Hence it will be seen by the report of 1916 that the people were directly benefited by municipal operation by paying less for their gas and less for their coke. The saving to the people in these two respects has no

5. Data from "Field's Analysis of the Accounts of the Principal Gas Undertakings in England Ireland, and Scotland" for the years 1913 and 1916.

doubt helped greatly in assisting the people to aid the Government through small loans to help win the war.

Addition of the total gas charges under municipal ownership during the years 1913 and 1916 respectively gives an average charge for the two periods of 51.76 cents per 1,000 cubic feet and the corresponding average under private ownership is 52.27 cents. It must not be forgotten that in both cases a large profit was made in the operation of the gas works, which in the case of the municipal plants went to the people and in the case of the private plants benefited none but the few stockholders.

Comparison of Accounts of Gas Plants in English Provincial Towns For the Years 1913 and 1916 Under Both Municipal and Private Ownership.

Expenses[6]

Per 1,000 Cubic Feet of Gas Sold.

	1913		1916	
	Municipal	Private	Municipal	Private
Cost of Material.				
Coal, oil, and spirits	$0.2592	$0.2992	$0.3612	$0.4084
Less residuals	$0.2068	.2018	.2228	.2446
Net coal	$0.0524	$0.0974	$0.1384	$0.1638
Cost to Manufacture.				
Salaries	$0.0064	$0.0072	$0.0066	$0.0068
and Wages	.0448	.0384	.0420	.0432
Purifying	.0032	.0092	.0016	.0078
Wear & Tear	.0682	.0738	.0744	.0766
Total	$0.1226	$0.1286	$0.1246	$0.1344
Cost to Distribute.				
Salaries & Wages	$0.0180	$0.0132	$0.0178	$0.0132
Wear & Tear	.0194	.0228	.0154	.0218
Meter Repairs	.0130	.0178	.0120	.0150
Stove Repairs	.0092	.0220	.0092	.0236
Gas Fittings	.0000	.0010	.0000	.0008
Total	$0.0596	$0.0768	$0.0544	$0.0744
Cost to Manage.				
Directors & Auditors	$0.0000	$0.0052	$0.0000	$0.0050
Salaries	.0052	.0072	.0054	.0078
Collectors' Commissions	.0060	.0056	.0058	.0056
Stationery & General Charge	.0054	.0070	.0054	.0076
Total	$0.0166	$0.0250	$0.0166	$0.0260
Public lamps	$0.0014	$0.0030	$0.0006	$0.0012
Rents Payable	$0.0022	$0.0250	$0.0024	$0.0010
Rates and Taxes	$0.0402	$0.0250	$0.0472	$0.0278

6. Data from "Field's Analysis of the Accounts of the Principal Gas Undertakings in England, Ireland and Scotland," for the years 1913 and 1916.

Perusal of the above table relative to the respective expenses incurred by the municipal and by the private plants will show that the companies paid more for coal than did the cities. This probably may be accounted for by a duplication of interest on the part of certain directors holding stock both in the gas plants and in the coal mines, whereby profit may be made on high prices for coal as well as on the gas manufactured from the coal. It is an almost universal custom in America among the railway, gas, electric, power, and other public utility companies to take advantage of interlocking directorates in the purchasing of supplies, whereby they buy from one another to their mutual advantage, and at the expense of the public which pays the difference.

Summary of Receipts and Expenses of Municipal and Private Gas Plants in English Provincial Towns.[7]

For the Year 1913.

(Per 1,000 Cubic Feet of Gas Sold.)

	Municipal Operation		Private Operation	
Total Income		$0.6978		$0.6904
Cost of Coal, etc	$0.2592		$0.2992	
Working Expenses	.2448		.2620	
Total Coal & Working Expenses		$0.5040		$0.5612
GROSS PROFIT		$0.1938		$0.1282
NET PROFIT		$0.1140		$0.1092

For the Year 1916.

(Per 1,000 Cubic Feet of Gas Sold.)

Total Income		$0.7728		$0.8104
Cost of Coal, etc	$0.3612		.4084	
Working Expenses	.2606		.2734	
Total Coal & Working Expenses		.6218		$0.6818
GROSS PROFIT		$0.1510		$0.1286
NET PROFIT		$0.0734		$0.1062

Conclusions Respecting Comparative Efficiency and Charges for Gas Under Municipal and Private Ownership in English Provincial Towns.

In the final summary of the accounts of the gas plants in the principal English Provincial Towns certain facts are self evident. During normal conditions the municipally operated plants made an average net profit slightly above that made by the privately operated plants, but all of this profit went for the public good in the way of reducing taxation, erecting public improvements, increasing the

7. The data from "Field's Analysis" for the year 1913 includes ten town plants under municipal operation and nine under private plants. The data for 1916 includes eleven plants under municipal operation and nine under private operation.

efficiency of the gas plant by introduction of improved methods and machinery whereby better service could be obtained, whereas all the net profits of the private plants were enjoyed by the stockholders alone. For instance, during 1913 the group of municipally owned plants above referred to, in addition to the net profit made from their plants, paid into the public fund in the form of rates and taxes the combined sum of $1,130,193.74, while the corresponding group of private plants paid rates and taxes only to the amount of $425,-493, this being at the rate of 4.02 cents per 1,000 cubic feet of gas sold for the municipal plants and 2.5 cents for the private plants. In 1916 the municipal plants paid taxes at the rate of 4.72 cents per 1,000 cubic feet of gas sold, while the private plants paid but 2.78 cents.

Further comparison of the statistics given in the foregoing data showed the higher efficiency of municipal ownership and operation the benefits of which add to the well-being of the people.

Higher Efficiency of Municipal Ownership.

1. *The "Municipal corporations" furnish a better quality of gas both in illuminating power and heating capacity.* In 1913 the municipal corporations supplied an average candle power in England of 16.99 candles, and in Scotland of 17.55 candles. The private companies supplied an average of 15.95 candles in England, while in Dublin the illuminating power fell to 14.50 candles. In England the municipalities furnished gas containing from 570 to 617 British Thermal Units, while that supplied by the private companies ranged from 475 to 600 B. T. U.

2. *The municipal corporations produce gas at less cost than do the private companies. This is largely due to the higher efficiency* in the operation of the plants, as well as to the fact that the municipalities can buy coal cheaper because there are no private interests involved to advance the price and secure unjust profits, as in America, where gas directors also control coal mines. On the average, it requires .077 tons of coal to produce 1,000 cubic feet of gas. Both the quality and quantity of the gas depends to some extent upon the grade of the coal and the method of manufacture. In 1913 the average cost to English municipal corporations to produce and distribute 1,000 cubic feet of gas was 24.48 cents, while it cost the English private companies 1.72 cents more. The private company in Dublin expended 37.84 cents for the same results, this being ten cents more than it cost the municipal corporations in Scotland.

3. *The municipal corporations pay higher wages* on the average, and *furnish better working conditions for their* employees. For instance, in 1913 the English municipalities paid, per 1,000 cubic feet of gas produced, .64 cents for salaries and 4.48 cents for wages in the manufacturing department. The private companies paid .72 cents for salaries and 3.84 cents for wages to labor in the

same department. The municipalities paid 1.80 cents per 1,000 cubic feet for salaries and wages to distribute their gas, and the private companies paid 1.32 cents for the same services. Under "management charges," the municipalities apparently paid nothing to directors and auditors while the private companies paid .52 cents per 1,000 cubic feet of gas produced. In this department, the salaries of the officials in the private offices were greater by .10 cents per 1,000 cubic feet. These items together with the increased expenditures for stationery and general charges made the total management charges of the private companies average 2.50 cents per 1,000 cubic feet of gas produced, while the municipalities managed their business for 1.66 cents per 1,000 cubic feet. The reader will note in this connection that the working man in England earns more wages when employed by the municipality than when working for a private company. The latter employed discriminates in favor of salaries. What the municipality saves from salaries it gives to labor.

4. *The municipal corporations obtain more gas and more by-products from a ton of coal.* In 1913 the English corporations obtained 29,526,720 thousand cubic feet of gas and 1,475,910 tons of coke from 2,286,006 tons of coal carbonized. The English private companies obtained 17,973,027 cubic feet of gas and 870,712 tons of coke from 1,412,421 tons of coal carbonized. Coke was thus produced at the rate of 12.91 cwt. per ton of coal by the municipalities and at the rate of 12.33 cwt. by the private companies. *Less gas was also unaccounted for* by the public works in England, the ratio being 4.77 per cent. by the corporations and 4.98 per cent. by the private companies.

5. *The municipal corporations sell gas at a lower rate and charge the people less per ton of coke.* This is the natural result of the change of aim from private profit to public service. The "Municipal Year Book for 1913" gives the approximate average charge for 1,000 cubic feet of gas as 60 cents by the municipal authorities, and as 66 cents by the private companies. However, the same year Lancaster Corporation sold gas at 46 cents per 1,000 cubic feet for private lighting, and the little town of Widnes with a population of 31,544 (Census 1911) sold gas to large consumers at 22 cents and to smaller consumers at 26 cents.

According to "Field's Analysis for 1913," the English corporations sold coke at an average price of $2.77 per ton, while the private companies there sold it at an average price of $3.17 per ton. The lowest rate made by the municipalities was at Salford where the price of coke was $2.17, this being just $1.00 less than the average price charged by the private companies. The lowest rate made by the companies was at Bristol where the price of coke was $2.77. It will be noted that this is the average price charged by the municipalities.

6. *Meter rents are also unusually low under municipal opera-*

tion. This is probably due to the large use of prepayment meters which are more frequently furnished without charge to the poorer classes to encourage the use of gas. During 1913 but five of the ten English cities mentioned charged meter rental in the municipal gas works and this charge was at the average rate of .16 cents per 1,000 cubic feet of gas sold. On the other hand, the average meter rental charged by the private companies the same year was 3 cents per 1,000 cubic feet sold, being eighteen times as great. No meters were free and the lowest meter rental was 1.94 cents. For stove rental pere 1,000 cubic feet sold, the municipalities charged on the average .36 cents and the private companies 2.26 cents.[8]

"This policy—for it is a conscious attempt upon the part of the towns to make gas lighting as cheap as possible—does not affect the finances greatly. The receipts are reduced somewhat, it is true, and the expenses are increased, but the great social gain which comes from the much larger number of consumers per 1,000 population where there are municipal plants, more than pays for any loss of profits."[9]

7. *Gas is used more extensively when under municipal operation.* "Probably the most striking difference between private and public ownership is to be seen in the number of consumers. Upon the basis of capitalization, receipts, expenditures, coal carbonized, gas sold, etc., the ratio of private to municipal works is about two to one; yet the number of consumers is practically equal; that is, the per capita consumption under private operation is much greater than under municipal operation. .. This fact does not indicate a disposition upon the part of the people in the same social and economic position to use less where the supply is public; indeed, the contrary is true, owing to cheaper price and better service. What it does indicate is that under municipal operation, a larger number of the poorer classes use gas."[10]

During 1913 the average number of cubic feet used by "consumers" of municipal gas in England was 31,652, while each "consumer" of private gas averaged 3,509 cubic feet more.[11] If the private companies had had a greater number of patrons, the average would have been less, hence it is easy to see that a greater number of people take advantage of municipal operation.

8. The attitude of the municipality towards *profits* differs greatly from that of the private company. Companies aim to declare as large dividends as possible. Municipalities think more of better service and lower charges than of decreased taxes. In Scotland the law prohibits the use of profits to lower taxation ("in aid of rates"), but permits them to be used for public improvements. In other

8. Field's Analysis 1913.

9. "Gas Lighting in Great Britain," by Milo Roy Maltbie, in "Municipal Affairs," Vol. 4, page 557.

10. *Idem*, page 559.

11. Field's Analysis, 1913.

parts of the realm the usual aim is to benefit the taxpayer. During 1913 the English municipal works contributed $1,455,163.20 to relieve general taxation, while the English companies paid into this fund but $296,270.

9. *The plants of the municipalities are more substantial, efficient and artistic than those of the companies,* pains being taken to secure symmetry and artistic effect, while practicing the strictest economy possible. The reason for this is that the plants under municipal ownership are public institutions, and the municipalities feel a civic pride in them. The private companies are more interested in producing profits. This is evidenced by the fact that the cost of municipal plants averages $2.51 per 1,000 cubic feet of gas production annually, while the companies under private operation invest in construction 10 cents per 1,000 cubic feet less, but with an actual value far less than the difference in cost.

10. *Lighting of public places is more adequate when done by municipal authorities,* for the people of Great Britain realize that an abundant use of artificial light is a potent safeguard against crime. "Each light counts for a constable," is a common saying of the chiefs of police. Not only are the courts and regular streets lighted at public expense, but the common stairs of tenement houses are equally well lighted. It is safe to say that more than one half of the gas used in the United Kingdom is both supplied and consumed by the public.

Universal Satisfaction.

The gains of public operation in Great Britain are so obvious that there is no desire to return to private control. Men of the highest type take civic pride in serving upon the city council since it affords an opportunity for patriotic service. They give generously of their time, and study improved methods both at home and abroad. As a rule, cities which conduct municipal undertakings are eager to introduce improvements. The mass of the people take an active interest in the reports of the various departments, and even friendly rivalry is stimulated between cities, as is evidenced in the case of Widnes and Lancaster. Perhaps no other nation so well reveals the superiority of public to private operation as does Great Britain where the test of time throws the balance in favor of public ownership and operation of public utilities.

Municipal Ownership in New Zealand.

New Zealand's towns have had for many years the right to establish municipal water, gas, and electric light plants, and tramlines. Sir Robert Stout, now Chief Justice of the Colony, said a few years ago: "In most towns that have been incorporated the municipality owns both the gas and the water works. The tramways pay a rental to the municipality which reserves the option of purchase. There are some privately owned gas works it is true, but the tendency is for the municipality to become its own supplier of gas, water, libraries, bath houses, etc." At present (1903) all the cities own and operate their street-car lines, water, gas and electric plants, and the general results are very satisfactory. The service is good and the rates much lower than in the United States with private ownership, the ordinary wages and prices range higher in New Zealand than in our country.

—Parsons: "The Story of New Zealand," page 428.

CHAPTER XII.

MUNICIPAL OWNERSHIP IN GERMANY.

The recognized success attending both national and municipal ownership in Germany has been such that private ownership of any public service will soon be practically unknown unless the war results in radically changing the conditions preceding it. Efficiency and reduction of rates to the public has marked Government operation of the railways, the telegraph and the telephone for many years. Even at lowered rates, an immense revenue has been derived from these sources, and taxation has thereby been materially reduced.

Municipal ownership has met with equal success. Of the 50 largest German cities, the entire 50 now own their gas works, water works and slaughter houses; 45 own the electric works, and 30 the street railways. Besides these, many cities own their markets, baths, laundries, banks for loaning to the poor, etc. This shows an advance since 1908, at which time a report was made of 85 cities of over 50,000 inhabitants, when 79 owned their water-works, 65 their gas works, 63 the electricity supply, 35 the tramways, and 82 the abattoirs or slaughter houses, while a large per cent of the cities between 5,000 and 20,000 and 20,000 and 50,000 own the same activities.

In the majority of instances the tramways and gasworks were originally operated by private corporations under grants from the cities. Substantial revenues were and are received for these concessions. In 1910 Berlin derived a revenue of $2,500,000 from concessions of all kinds. But private ownership has generally proved to be unsatisfactory and the tendency of municipalities is to acquire possession as rapidly as possible.

The largest contribution to the city treasury came from the gas, electric works and tramways. The total amounts received as profits to be used for the relief of taxation in a number of the larger cities in 1910 were as follows: Berlin, population 2,071,800, gas-works $1,939,900, water-works $705,100, and tramways $42,750; Breslau, population 512,100, gas-works $659,050, electric-works $310,500, water-works $263,200: Cologne, population 516,500, gas-works $328,650, electric-works $274,950, water-works $283,850, and tramways $292,400, or a total of $1,179,850. Dresden, population 548,-300, makes an even better showing. It also owns all of its public service utilities. The gas-works earned $782,000, electric-works $400,250, water-works $45,650, and tramways $271,800, or a total of $1,499,700. Frankfort-on-the-Main does not own its gas service, but the electric-works yielded $725,400, the water-works $170,-

900, and the tramways $368,550. Including the royalties from the gas-works, the net receipts from the public-service corporations were $1,426,300 for the year. Nuremberg, population 333,200 owns all the public utilities, and received (1910) a total contribution for the relief of taxation of $61,700, while Munich, population 596,500, which also owns all its public utilities, enjoyed a total income from these sources of $1,110,100. Taking twelve of the larger cities, with a combined population of 7,464,300, it appears that the net profits amounted to $17,107,300, or an equivalent of $2.30 per capita.

The profits referred to are the net earnings after all payments have been made for interest, depreciation, redemption of capital, and additions to the renewals and reserve funds. The profits are also independent of any payments on account of paving and street cleaning and local taxes.

As a consequence of the policy of municipal socialism the indebtedness of the average German city is very high, but as an offset a large part of the indebtedness is for undertakings which are self supporting and involve no burden to the taxpayers, whereas the indebtedness of the average American city is for the most part for streets, sewers, parks, schools, playgrounds, and fire and police equipment, which are non-revenue producing. The indebtedness of the German cities is very largely of a profit-making sort.[12]

Berlin and Philadelphia in 1909 had practically the same total indebtedness although Berlin is the larger city of the two. Practically two-thirds of the indebtedness of Berlin was for productive undertakings and one-third for other purposes such as schools, streets, sewers, etc., while the order of indebtedness in Philadelphia was reversed, one-third being for productive undertakings and two-thirds for other purposes.

"Herein is one explanation of the protest against municipal indebtedness in this country. Our indebtedness is "dead" indebtedness. It yields no return. It is a burden to the taxpayers. And it is growing rapidly. The German city, on the other hand, has no fear of indebtedness, for it is usually represented by profit-making properties. It is recognized as good business for the city to go into debt, especially where a financial return may reasonably be expected from the investment, either immediately or in the future.[13]

12. Howe, "Socialized Germany," pp. 292-294.

13. "Socialized Germany," page 295.

CHAPTER XIII

OPINIONS RESPECTING PUBLIC OWNERSHIP BY EMINENT AUTHORITIES.

Public ownership of public utilities is not merely a matter of philosophy, it is a question of justice and expediency. A century of test in Europe and America amid the spread of mis-information and prejudice has recorded results which thinking men are bound to consider. The progressive student of public affairs cannot search the records of the past nor investigate the conditions of the present without coming to but one conclusion, namely, that public ownership and operation of public utilities is an essential and fundamental feature of democratic government.

It is not only a right, it is also a duty. It involves democracy, public welfare, social justice and the national defense. There can be no good and useful citizenship without civic responsibilities and the actual participation in government by the citizens. Otherwise, the citizen is degraded to an automaton, who, while nominally holding the rights of citizenship, is unable to exercise those rights properly for his own and the common good.

Every moment which endures and serves humanity passes through successive stages of evolution, in time reaching its highest efficiency. Contemporary with it, the mind of the on-looker changes until at length he gets the vision of infinite possibility and falls into line to aid and be aided. Such is the history of public ownership.

The line of great thinkers who have thus championed this most progressive issue yearly increases. In America and in foreign countries alike, the number of statesmen and scholars who advocate public ownership as essential to social justice is rapidly augmented. Since the previous chapters of this work have been devoted largely to a study of conditions as they actually exist under both public and private ownership as exhibited in the official reports and records, or as described from the personal observation of the author, it seems fitting that, in closing, a place should be given to the publicly expressed opinions and conclusions of men whose character is universally acknowledged as the highest, and whose scholarship is so well-known as to place them among the most eminent authorities. It is accordingly with pleasure that the author presents the following quotations.

Corporate Plots to Strangle Public Opinion.

HON. NEWTON D. BAKER.

In his opening remarks as presiding officer at one session of the Conference of American Mayors held in Philadelphia, November, 1914, Hon. Newton D. Baker, now Secretary of War, then Mayor of Cleveland, expressed his opinion concerning municipal ownership. He stated as his belief that the movement for municipal ownership in the United States was the direct and immediate fruit of the misconduct of privately owned public utilities. He called attention to that vulgar worship of success in the United States which emulated as the highest development of American initiative those men who had secured grants of great privileges out of which they had made great fortunes, and by whose unprecedented riches we had been dazzled. This worship of the "Golden Calf" has corrupted American politics and the social fabric. But scenting the fact that an effort would be made to throw off corporate power, the private interests have taken the initiative of combining to defeat such a policy. In calling attention to this point, Mr. Baker said:

"The whole controversy has now come, I think, to this state, that the privately owned public utilities are banded together to maintain the *status quo*. By that I mean that they have in large part abandoned the idea that they can secure extortionate and exorbitant grants from the public now, but the combined efforts of the privately owned public utilities companies in this country are exerted in the direction of maintaining what they have already secured. They now would, I think, be perfectly willing and perfectly satisfied to have practically every city in the country take over for public management the public utilities if they would pay them the face value of their claims, for what they have already secured. They would be willing to sell us their plants and their sins, if we would buy both. The difficulty with the situation is that we want to buy their plants and do not want to buy their sins. The consequence of that is, there is a highly confederated, expertly organized, skillfully managed combination among the privately owned public utilities of this country to pervert and mislead and strangle public opinion on the subject."[1]

The Way Out: Municipal Ownership.

HON. FREDERIC C. HOWE.

United States Commissioner of Immigration, Author of "Privilege and Democracy in America," "The City the Hope of Democracy," "European Cities at Work," Etc.

"In almost every state we have endeavored to correct the evils of monopoly by public regulation. Railway and franchise commissions have been created, and the resources of legislation and the

1. "Annals of the American Academy," Vol. LVII, page 192.

common law called to our aid in this attempt. Upon this alternative of regulation we have rested all our hopes, for all admit that competition has failed and unregulated monopoly is inimical to freedom. Aside from public regulation, there is but one alternative, and that is public ownership. In hundreds of instances we have tried the former alternative. Resort has been had to legislation in some form or other in almost every state in the Union. But the uniform experience in national, state and city affairs has demonstrated that in many instances these creatures of the law have become greater and more powerful than the source of their power, the state, which gave them being.

"The Citizens' Union of New York in reporting on the legislation of the session of the Assembly at Albany in 1905, said of the bill creating a State Gas and Electric Commission: "In so far as it provides for regulation of incorporations, and of stock and bond issues, it is a wise measure. Otherwise, its provisions are violative of Home Rule. Moreover, the commission is likely in years to come to prove merely political, and will *probably become a safeguard to the corporation rather than a protection to the public.*"[2]

"In the discussion of municipal ownership many are inclined to reduce the question to the basis of, does it pay? can the community produce at as low a cost as the private corporation? We have attempted to discountenance any extension of the public service by an appeal to the purse. But there is another measure of value than the tax rate, another standard of utility than money cost. The question should rather be, "does municipal ownership pay in a higher civic morality, an aroused public sentiment, a union of all forces against corruption, a higher standard of comfort, a better quality of service, a dearer sense of the city?" Such are the standards by which we measure all other expenditure; such is the justification of our police and fire departments, our schools, libraries, and parks, our health, streets, and charity departments. Municipal dividends do not compare in importance with municipal health and well-being, with a cleaner home environment, an enlarged opportunity for life. These are the standards by which every public activity is to be measured, and in these regards municipal ownership has justified itself."[3]—Howe.

The Relation of Public Service Corporations to the Public.

DELOS F. WILCOX, Ph. D.

In his highly valuable work, "Municipal Franchises," Delos F. Wilcox, Ph. D., formerly Chief of the Bureau of Franchises of the Public Service Commission for the First District of New York, and author of "The American City," "The Study of City Government," etc., most ably discusses the entire question of franchises

2. Howe, "The City the Hope of Democracy," page 115.

3. "The City, the Hope of Democracy," page 124.

and the relation of public service corporations to the public. From his "Municipal Franchises" the following is quoted:[4]

"The experience of American cities in franchise granting makes a dark, but instructive chapter in the political and business history of the country. ... As the prosperity of the companies increases and the most profitable franchises are being taken up, it begins to dawn upon the political parasites of the cities that a franchise is worth money. There are attracted to the council chambers unscrupulous men who look upon political power as a means of self-enrichment through blackmail and bribery. Then a new epoch in franchise granting is ushered in. Meritorious applications are referred to committees, where they sleep mysteriously. Other applications with apparently less in their favor, are recommended by committees and passed without debate. It is believed that in many cities the use of corruption funds by franchise seekers becomes, at times, so habitual that bribery is regarded as almost a conventional offense. This condition holds during the long period between the time when the aldermen learn that franchises are valuable and the time when the people at large learn it. The stench of corruption and the gradual recognition that municipal franchises are monopolies, and in rapidly growing cities, monopolies of great value, result in a demand that, not the aldermen, but the taxpayers at large, should receive compensation for franchise grants. ...

Demand for Municipal Ownership.

"Even indeterminate franchises and almost unlimited powers of public regulation have sometimes seemed insufficient to protect, in practice, the rights of the public. And so, in recent years, a powerful and wide-spread demand has arisen for municipal ownership of public utilities. Some, basing their argument on the apparent inability of the public authorities to control the highways so long as private companies are permitted to place and maintain as their own property permanent fixtures in the streets, have urged that street railway tracks, gas pipes, conduits, poles, wires, etc., should be constructed and owned by the city and be leased for operation to such private parties as would agree to furnish the service on the best terms. Others, foreseeing endless trouble between the city and the lessees of its property under the plan of municipal ownership and private operation, have gone the full length of declaring that public utilities are essentially public enterprises and should no more be farmed out to private contractors than the schools, the police and the fire service are. The advocates of municipal ownership and operation have persistently urged that only by following this policy could the people effectually eliminate the corruption, inefficiency, extortion, stock manipulation and other evils heretofore attaching in a greater or less degree to the granting, operation and

4. Vol. I, pages 3-9.

ownership of public utility franchises. This view has had a marked effect in recent times upon the drafting of franchises and the framing of constitutions and charters. Nowadays it has become a common practice to reserve in franchise grants the right of the city to purchase the property of the grantee either at the expiration of the grant or, in some cases, at any time. . . .

Franchises Drafted by Those Who Seek Them.

"An alderman seldom has had sufficient experience and legal training to prepare a franchise himself, and in the absence of some consistent theory of franchise policy, he has permitted the attorneys for public service corporations to draft the franchises they wanted and present them to him for approval. . . .It is one of the tricks of the public service corporation lawyer, to draft a franchise for his client so that the powers of regulation of which the city could not be deprived in any case appear to be reserved to the public authorities in the most explicit terms, and this reservation is pointed out to prove how liberal to the city the company's proposition is. When public opinion has reached such a state that the corporation asking for a franchise foresees the necessity of making concessions on points concerning which franchises are usually silent, the expert attorney introduces clauses making extraordinary reservations to the city, which further on in the franchise are so limited, checked and modified as to be in reality worthless from the public standpoint. A few weasel words judiciously distributed at strategic points, a few omissions easily overlooked in the *ensemble* of technical phrases, a few fairsounding reservations upon which lawsuits in the Federal courts may be based, are likely to vitiate any franchise ordinance or contract drafted by lawyers who are paid to outwit the city. . . .

Public Authorities Negotiate in the Dark.

"Until very recently there has been practically no publicity of public service corporation accounts. Even in those cases in which the books of the companies have been open either to the city's financial officer or to other accountants for the purpose of determining the amount of gross receipts upon which the companies were required to pay a tax, no real light has been thrown upon the essentials of corporate finance. Access to the books showing investment and cost of service has been denied, or double sets of books and the intricacies of accounting have concealed the most essential facts. In the larger cities public service corporation managers have frequently been so deeply engaged in financial jugglery and the manipulation of the stock market that they themselves have been more or less in the dark as to the exact status of the business enterprises for which they were nominally responsible. And so, when

franchise negotiations have been pending, the officers representing the city have had nothing to base their claims upon except the desires of the public, and any statistics voluntarily furnished by the other parties to the negotiations have been *ex parte* evidence, with no guaranty of proper book-keeping."

The Profits of Private Monopoly.

FRANK PARSONS, B. C. E., Ph. D.

Lecturer in Boston Law School, Author of "The Railways, the Trusts and the People," "The Story of New Zealand," "The Telegraph Monopoly," "The City for the People," Etc.

"Get a franchise, issue a lot of stock, keep enough of it to retain control of the enterprise, sell the rest, build your plant, bond it for all it is worth, and recoup all you put into the concern; then double up the stock and keep adding to it as the business grows, so that an actual profit of 20, 50, or 100 per cent on the real investment will be only 5 or 6 or 7 per cent. on the bonds and stocks, and so appear on the face of the accounts to be only a reasonable profit, not likely to arouse opposition or set in motion the legislative or administrative machinery for the reduction of the rates—such is the normal monopolistic plan. And if some public spirited citizen should stir things up and obtain a law or ordinance or order reducing rates, the monopolist can take the matter into the courts and protect his extortions in large degree by showing that much of the bonds and stocks have come into the hands of 'innocent purchasers for value,' wherefore he must be allowed to make interest and dividends on the whole capitalization, else the said innocent holders will be cheated out of a fair return and their property practically confiscated, which would be a very wicked thing if it were caused by legislative reduction of rates acting on a condition of grievous capitalization, but is perfectly justifiable if caused by the stock manipulation or the profit-absorbing tendencies of the monopolist himself. Water in the capital is useful also in protecting the monopolist from public ownership. Dilute the figures so that the profits will seem quite small and the people will let things go on till the business pays 5 or 6 per cent or more, on the whole capitalization, and the stock rises to par in the market, water and all; then if the people get to reading 'foolish' books on public questions, or become disgusted with corporate monopolies by direct experience, and begin to demand public ownership of gas, electric light works, or street railways, or whatever line you may be in, you can get the legislature to pass a law (if it has not already done so) requiring that cities desiring public ownership of public utilities shall buy out existing plants, and the courts will make the cities pay full market value,[5] the effect of which will be to keep your city from going

5. Value based on fictitious stocks and bonds.

into public ownership, or to give you several times the value of your plant if it does.

"The New York Senate investigation of 1885 (Sen. Doc. 41) brought out the fact that 'The gross sum paid for the past ten years by the gas consumers in the city of New York to the companies, irrespective of any other source of income to them, was $74,656,884. Of this amount nearly half was clear profit, viz., $30,074,715. ... During the last ten years, in addition to cost of gas and 10 per cent on the share or nominal capital of the companies named, there has been paid by the consumers of New York City about $9,000,000... Taking all the companies, $4,941,000 have been paid in dividends in excess of 10 per cent. on the nominal capital in ten years, and the works have been increased out of the earnings to the extent of $6,413,000.'—more than 11 millions above 10 per cent on the nominal capital, water and all. *'If the 10 per cent annual dividends are calculated on the capital actually paid in by the stockholders, it woud appear that the gas consumers in ten years have not only contributed such 10 per cent dividend, but a further amount sufficient, in fact, to nearly duplicate the present system of gas supply.'* The dividends on stock during the ten years were in nearly all cases from 8 to 35 per cent, in spite of the water or inflation, which, at the time of the investigation, amounted to about two-thirds of the capitalization."

* * *

"In the Cleveland gas case the evidence showed that the company was paying cash dividends of $1440 a year on each original investment of $1,000, besides stock dividends amounting up to 1892 to a total of $24,000 for each investment of $1,000. The original investor of $1,000, without further payment, was receiving an innocent looking 6 per cent on the $24,000 of securities—144 per cent cash profit per year on the real investment and a gift of new securities that would sell in the market for more than $24,000."

"When John McIlhenny, of Philadelphia, was asked in court his opinion of this, he said: 'That is not an unusual thing in this growing country at all. It is about the history of all the prosperous gas works."[6]

Conclusions Reached by Edmund J. James Ph. D., Now President of the University of Illinois, in His Discussion of "The Relation of the Modern Municipality to the Gas Supply," as Given by Him in a Paper Read Before the Philadelphia Social Science Association, February, 1886.

"I. A good supply of pure and strong gas at low prices has become an absolute necessity of life in our modern city. It is necessary to the comfort of the home as well as to the efficiency of industry and trade.

6. Parsons, "The City for the People," pages 34-35.

"II. The technical and administrative conditions of the manufacture and distribution of gas, make the business a practical monopoly.

"III. We must choose then, between a monopoly managed by the public in the interests of the public, and a monopoly in the hands of private parties who, to judge from all experience, will fleece the public to the utmost extent.

"IV. The common argument against the public management that it is necessarily more expensive than private management, is not well grounded, either in reason or in fact, since a careful analysis of the case shows that there are some reasons why public companies can, as a rule, manufacture more cheaply than private companies, and a study on statistics shows that public companies where properly organized are able to show at least as good results so far as cheapness and quality of manufacture are concerned as the private companies.

"V. The argument that if private works manufacture the gas, they will not take part in politics in such a way as to bring about the results inevitably connected with public works, is not well taken either; for it is perfectly possible to get rid of the worst effects of public ownedship by a properly organized civil service, while the evil is not remedied by transferring the management of such works to the private companies, but all that is accomplished is that the form of the evil is changed. The private companies do not go out of politics, on the contrary they devote the whole of their ability to the attempt to avoid the restrictions and regulations which the public must in pure self-defense impose. They go into the councils and into the legislatures and buy up councilmen and legislators in the most shameless way. They bribe the inspecting officers, and do not stop at anything which seems to promise any assistance.

"VI. This action in politics is very evident by its fruits since no country in the world has been able to secure effective supervision, which has not at the same time been fully able to manage the works through the government. It is idle to expect to be able to keep the companies within bounds. The only way is to assume the management by the city.

"VII. So far as Philadelphia is concerned, it would be the grossest folly for her to sell the gas works. The property is of considerable value, and no company would propose to give what it is really worth. We are now ready to take possession of the whole works, and it is now possible for the first time in our history to introduce a sensible system of management. To sell them now would be to hand ourselves over soul and body to a type of monopoly which, wherever it has been able to establish itself, has been peculiarly obstinate and unscrupulous. We should have to pledge ourselves not to share in any of the improvements in the system of lighting for the period of the charter. We should have to give

up all idea of having cheap gas, and all the advantages which this boon would bring with it. We should lose a valuable source of income to the city. There is no reason why the city should not put the price very low, and at the same time make a handsome profit. By handing over the works to a private company, we should open the way for an enormous corrupting machine to carry on its work in our very midst, with which every city, both in this country and England, has proved itself unable to cope and give up a system which we are just now learning how to control so as to get rid of the worst forms of abuse.

"Let us put it another way: are you in favor of paying double prices for gas? Then vote to let a private company get the monopoly of the business. Are you in favor to agree not to take any advantage of any new discoveries in the system of artificial lighting for the next twenty years? Then vote to sell the gas works to a private company. Are you in favor of erecting a company within the city whose interest it will be to join hand in hand with every form of monopoly which now curses us? Then vote to start a private gas company. Are you in favor of diminishing the interest which the citizens now feel in the administration by taking away the most important functions? Then hand over to a private company the business of looking after the gas supply. Are you in favor of still further limiting the use of gas and thus diminishing the comfort of thousands of citizens? Then vote to hand the business over to a private company. Are you in favor of making it more difficult for Philadelphia merchants and manufacturers to compete with those of other cities and countries? Then vote to deliver them over to the tender mercies of a private monopoly.

"On the other hand, if you would like to see low prices for gas with all which that implies, if you would see the comfort of every house in Philadelphia enormously increased by the general application of gas to heating, cooking and manufacturing, if you would like to be in a position to avail yourselves within twenty-four hours of all improvements in the system of gas or other lighting, if you would like to see your tax bills lower, your city government become more economical, if you would see every interest take a greater share in the government of the city, if you would like to see the service of the city put upon a non-partisan basis, then by all means put forth all your effort to keep the city from doing such a foolish thing as to sell this very valuable franchise and to bind herself hand and foot to do the bidding of still another unscrupulous and all powerful private corporation."

APPENDIX

CONTINUED SUCCESS OF MUNICIPAL OWNERSHIP IN GREAT BRITAIN IN 1918. PUBLIC SERVICE PROFITEERS IN WAR TIME. PROFLIGACY OF AMERICAN RAILROAD MANAGEMENT. BELFONTAINE'S MUNICIPAL GAS PLANT. MODEL CHARTER PROVISIONS RESPECTING PUBLIC UTILITIES. BRIEF—"RESOLVED THAT PUBLIC UTILITIES SHOULD BE PUBLICLY OWNED AND OPERATED." CONSTITUTION OF THE PUBLIC OWNERSHIP LEAGUE OF AMERICA.

I

CONTINUED SUCCESS OF MUNICIPAL OWNERSHIP IN GREAT BRITAIN IN 1917-18

In a U. S. Consular Commerce report entitled, "Returns of Nottingham's Municipal Undertakings," under date of June 4, 1918, United States Consul C. M. Hitch gives interesting information regarding the municipal gas, street cars, and electric plants, all under public ownership. From this report the following facts appear:

Nottingham Municipal Gas Works

Notwithstanding the fact that England has been in the midst of war four years, the price of the best coal gas has not risen above 68 cents per 1,000 cubic feet to domestic consumers, and 50 cents to power consumers, and yet Nottingham made a gross profit during the past year on its gas of $787,060. After deducting interest, payments into the "sinking fund" for payment of the plant, and "depreciation," there still remained $477,235. Of this, $150,000 was placed in the city treasury to reduce taxation; $150,000 was placed in the "renewals fund" to use in renewals and extensions of the plant; and $175,000 was placed in the "reserve" fund, these two latter funds being in certain respects investments and capable of being loaned in whole or in part. The soundness of this financing (the same as prevails in Great Britain in all municipal undertakings) is in marked contrast to the system of "frenzied finance" and the constant increase of stocks and bonds and other forms of indebtedness as practiced in the United States.

The quantity of gas sold during the year was 2,244,670,300 cubic feet, an increase of 159,538,700 cubic feet over the preceding year. The amount of gas sold per ton of coal carbonized was 12,004 cubic feet, as compared with 11,802 cubic feet for the previous year. These results show increasing efficiency and progress.

Nottingham's Municipal "Tramways"

This municipal street car system during the year carried 39,244,107 passengers (74½ per cent of the total number) at 2-cent fares, and its profits were $416,915 at these low rates, owing to the hon-

esty and efficiency of the management. The following is quoted verbatim from the reports referred to:

"The Nottingham Tramways Committee, in its statement to the city for the year ended March 31, 1918, reports total receipts of $1,194,335, which is an increase of $178,560 over the previous year. The operating expenses were $777,420 for the same period, which is an increase of $88,835. There was a decrease in the cost of maintenance, compensation, law charges, and for miscellaneous expenses amounting to $12,620. In consequence of the serious shortage of labor and material, it was not possible to carry out permanent-way renewals to any considerable extent, the amount expended therefor being $12,125.

"The miles traveled by the cars during the year totaled 3,776,225, an increase of 9,864 miles as compared with the previous year. The average number of cars in service rose from 116 to 119 per day. Passengers carried numbered 52,690,881, being an increase of 5,209,947. Of the total number of passengers carried, 39,244,107 were the ordinary 2-cent fares, or 74½ per cent of the total. The ordinary 2-cent fares were increased to 3 cents beginning April 1.

"After deducting all of the operating expenses, there was a net balance of $416,915, which was disposed of as follows: Interest on stock and loans, $83,190; repayment of capital, $120,870; reserve and renewals fund, $122,835; reserve accident fund, $10,000; and the remainder, $80,000, was applied to the district tax rate."

II

PUBLIC SERVICE PROFITEERS IN WAR TIME

The Increased Shameless Injustice of the Public Service Corporations Who Are Using the War as an Excuse to Further Augment Their Profits

It is well known to those who have investigated the promotion and finances of the public service corporations, that in practically every case where their finances are precarious it is due to fictitious capitalization, mismanagement, extravagance, and dishonest accounting, and not because the former charges to the public are insufficient for operating purposes and fair profits, if these companies were honestly managed.

Many of these companies have been making even larger profits than before the war, because of increased business, and in the case of gas companies because of the higher prices they receive for their by-products. Why then are they so urgently pressing their demands for increased charges? Simply by increased profits to advance the earning power of their capital, and on the strength of this to again inflate their stocks and bonds, and dispose of them to the public, while they, the promoters and financiers, having disposed of their watered securities can saddle the defense of their illegal acts and the accompanying losses, upon the defrauded investors. Indeed, the gas companies and other public service corporations had already before the war, practiced so much dishonesty

in their financing; and their directors had embezzled so much of the stockholders' money by dishonest accounting, that many and probably the great majority would have been found on the verge of bankruptcy, had their accounts been fully and fearlessly investigated. The rates charged the public were more than adequate under honest management, but no rate could be made high enough to satisfy the cravings of the profiteer directors.

A clear distinction must be made between the companies and publicly owned utilities. In extremely few cases relatively have the latter raised their rates; and in practically all these cases the rates were lower than those of the companies; and the cities desired to increase the earnings to be used for the "common good." In like manner, the national government has increased railroad rates, to secure additional revenues for war purposes.

To illustrate the case of the gas companies, and their demand for increased rates. Before the war the Michigan Light Co., which controls the gas, electricity and street railways in many cities, sold its coke (a by-product of the gas works) at an average price of about $5.85 per ton, when its coal cost about $3.00 per ton. Since then its coal costs about $2.00 per ton more, but it demands about $4.00 per ton more for coke. As there is produced from a ton of coal about 1,200 lbs. of coke, this brought when coal cost $3.00 per ton, approximately $3.50, or 50 cents more than the entire ton of coal; and when coal advanced to $5.00, the company demanded about $9.50 per ton of coke, or $5.70 for the coke from a ton of coal, being *70c more than the entire ton of coal cost, before the gas and other residuals were extracted!* In addition to this, the ammonia, coal tar, etc., are sold at increased prices.

III

THE PROFLIGACY OF THE AMERICAN RAILROADS UNDER PRIVATE OWNERSHIP.

If the above charges of dishonest management seem to some readers too severe, let them read carefully the conclusions of the Interstate Commerce Commission, reporting the dishonest methods of the directors of six of the great American railway systems, covering over fifty thousand miles of railway, which in every case were found to violate the laws of every state through which they passed; bribe legislators and other public officials, bribe and control the press; control politics; all being done by illegal use of the stockholders' money; embezzlement of stockholders' money, and the falsifying and burning of their accounts to hide their illegal acts. A fair example of the profligacy and dishonesty with which all these roads were managed, and which fairly represent many gas, electric and street railway companies under private ownership, is shown in the following extracts from the "Official Report No. 6569 of the Interstate Commerce Commission, "respecting the financial transactions of the New York, New Haven and Hartford R. R., July 11, 1914," in which it is shown that the directors wasted

through fraud and extravagance $60,000,000 to $90,000,000 of the stockholders' money. The committee say on pages 32-35:

"Public hearings were held extending over a period of 60 days of almost continuous session. Witnesses in a position to have knowledge of the transactions under scrutiny were examined. In the search for truth the Commission had to overcome many obstacles, such as the burning of books, letters, and documents and the obstinacy of witnesses who declined to testify until criminal proceedings were begun for their refusal to answer questions. The New Haven system has more than 300 subsidiary corporations, in a web of entangling alliances with each other, many of which were seemingly *planned, created, and manipulated by lawyers expressly retained for the purpose of concealment or deception.*

"The result of our research into the financial workings of the former management of the New Haven system has been to disclose one of the most glaring instances of maladministration revealed in all the history of American railroading. In the course of the investigation many instances were uncovered of violation of the laws of different states.

"The difficulties under which this railroad system has labored in the past are internal and wholly due to its own mismanagement. Its troubles have not arisen because of regulation by governmental authority. Its greatest losses and most costly blunders were made in attempting to circumvent governmental regulation and to extend its domination beyond the limits fixed by law."

"The subject matter of this inquiry relates to the financial operation of a railroad system which, on June 30, 1903, had a total capitalization of approximately $93,000,000, of which $79,000,000 was stock and $14,000,000 bonds. In the ten years from June 30, 1903, this capitalization was increased from $93,000,000 to $417,000,000, exclusive of stock premiums, or an increase of $324,000,000. *The financial operations necessary for these acquisitions, and the losses which they have entailed, have been skillfully concealed by the juggling of money and securities from one subsidiary corporation to another.*

"Significant Incidents"

"Marked features and significant incidents in the loose, extravagant, and improvident administration of the finances of the New Haven as shown in this investigation are the Boston & Maine despoilment; the iniquity of the Westchester acquisition; the double price paid for the Rhode Island trolleys; the recklessness in the purchase of Connecticut and Massachusetts trolleys at prices exorbitantly in excess of their market value; the unwarranted expenditure of large amounts in "educating public opinion;" the disposition, without knowledge of the directors, of hundreds of thousands of dollars for influencing public sentiment; the habitual payment of unitemized vouchers without any clear specification of details; the confusion inter-relation of the principal company and its

subsidiaries and consequent complication of accounts; the practice of financial legerdemain in issuing large blocks of New Haven stock for notes of the New England Navigation Company, and manipulating these securities back and forth; fictitious sales of New Haven stock to friendly parties with the design of boosting the stock and unloading on the public at the higher "market price;" the unlawful diversion of corporate funds to political organizations; the scattering of retainers to attorneys of five states, who rendered no itemized bills for services and who conducted no litigation to which the railroad was a party; extensive use of a paid lobby in matters as to which the directors claim to have no information; the attempt to control utterances of the press by subsidizing reporters; payment of money and the profligate issue of free passes to legislators and their friends; the investment of $400,000 in securities of a New England newspaper; the regular employment of political bosses in Rhode Island and other states, not for the purpose of having them perform any service but to prevent them, as Mr. Mellen expressed it, from becoming active on the other side;" the retention by John L. Billard of more than $2,700,000 in a transaction in which he represented the New Haven and into which he invested not a dollar; the inability of Oakleigh Thorne to account for $1,032,000 of the funds of the New Haven intrusted to him in carrying out the Westchester proposition; the story of Mr. Mellen as to the distribution of $1,200,000 for corrupt purposes in bringing about amendments of the Westchester and Port Chester franchises; the domination of all the affairs of this railroad by Mr. Morgan and Mr. Mellen and the absolute subordination of other members of the board of directors to the will of these two; the unwarranted increase of the New Haven liabilities from $93,000,000 in 1903 to $417,000,000 in 1913; the increase in floating notes from nothing in 1903 to approximately $40,000,000 in 1913; the indefensible standard of business ethics and the absence of financial acumen displayed by eminent financiers in directing the destinies of this railroad in its attempt to establish a monopoly of the transportation of New England. A combination of all these has resulted in the present deplorable situation in which the affairs of this railroad are involved."

In the case of the Chicago, Rock Island and Pacific R. R. System, the Interstate Commerce Commission's Report, No. 6834, June 5, 1915, it is shown on pages 47-49, that nine officers drew salaries varying from $32,000 to $75,000 each, and one officer, L. F. Loree, Chairman of the Executive Committee, who was drawing $75,000 salary, was given from the stockholders' money a bonus of $450,000 if he resign at the end of ten months. Several of the directors took large sums of the stockholders' money from time to time for their private use, without rendering any account to the company.

The above are fair examples of public utility financing under private ownership in the U. S. They surpass in extent, and rival in iniquity the acts of the "buccaneers" of old.

IV

BELLEFONTAINE'S NEW MUNICIPAL PLANT NOW IN OPERATION

The Success Attending Municipal Ownership in Bellefontaine, Ohio, Is Followed by the Opening of an Enlarged and Modern Gas Plant in July, 1918. A Detailed Description of This New Municipal Plant.

The following is taken from the *"American Gas Engineering Journal,"* of July 20, 1918, and since it gives many details of construction, equipment and processes, should be of value to officers of cities contemplating municipal plants:

The new Municipal Coal Gas Plant, located on the Jesse M. Dowell property and the Big Four Railroad, Bellefontaine, Ohio, was put in operation July 5.

The board of public service of Bellefontaine has realized for some time past that the Water Gas Plant was inadequate with regard to its capacity, and in the latter part of 1916 took up for serious consideration the construction of a new gas plant to take care of the requirements of the city.

Clair A. Inskeep, director of public service and acting in accordance with Mayor Kennedy, took up the investigation of the proposed plant, having in mind that another water gas plant constructed along modern lines would best meet the requirements.

After thorough investigation, it was decided that owing to the high cost of coke and the rapidly increasing price of oil, used in making water gas that it would be impossible to manufacture water gas excepting at prohibitible cost to the user, so that other types of plants were then considered, and a coal gas plant was decided by them as the logical solution of the problem.

City officials, realizing the responsibility placed upon them in reaching this decision, considered it proper to secure the services of engineers of experience and standing before proceeding with the work along lines as had been dictated, and in this connection secured the services of Professor McCracken, engineer of the Ohio State University, of Columbus, Ohio, and G. Herman Gamper.

These engineers, after a careful survey of the situation, entirely agreed with the opinion of the city officials, and then proceeded to draw up plans and specifications for the installation, after which bids were advertised and contracts placed with D. W. McGrath Company, of Columbus, Ohio, for the grading, foundations and buildings, and with the Gas Machinery Company, of Cleveland, Ohio, for the gas benches, gas works apparatus, purifiers and ammonia plant.

Considerable of the material used was secured in Bellefontaine, the McGrath Company making contracts with the Bellefontaine Bridge Company for the structural steel used in the building con-

struction, and the Gas Machinery Company likewise having considerable dealings with the bridge company as well as other business concerns in Bellefontaine.

The contract for the new plant was made May 24, 1917, at which time it was anticipated that the plant would be completed, ready for making gas, within one year.

The unprecedented cold weather of the past winter delayed the building construction, which necessarily had to be completed before the apparatus could be installed, but even with the handicap caused by this delay, the plant is now producing gas, being completed only about five or six weeks later than first contemplated. The formal starting of the plant was attended by Mayor Kennedy, Director of Public Service Inskeep, Service Director Hiatt and other public officials, representing Bellefontaine, beside a large number of public-spirited citizens.

Professor McCracken and Mr. Gamper, the engineers from Columbus, were also present to see the thing start off in proper shape, and the Gas Machinery Company was represented by Henry Schremser, its construction and operating engineer, who is at present in active charge of the plant, and also C. H. Printz, from the Cleveland office.

The plant as completed represents the last word in the art for gas plants of the size proper for supplying needs, due consideration being given in all details to extension of the plant to take care of the rapidly increasing demand.

The retorts in which the coal is coked are made of silica materials to withstand the high temperature, and are placed in settings of six retorts each, each setting being heated by a coke fire generator or furnace of a recuperative type so that the spent gases passing from the benches are utilized to superheat the primary and secondary air used in connection with the producer fire for maintaining temperature in the benches ranging from 2,000 to 2,500 deg. Fahr.

The speed at which these benches are operated is dependent upon the temperature maintained and the weight of the coal charged, and varies from four-hour periods to eight-hour periods.

The coal is charged into these retorts from the charging buggies by means of scoops, and the men handling these coal scoops distribute coal equally throughout the length of the retorts.

After the coal has been in the retorts the proper time to insure thorough distillation, the coke which is left after the gas and other vapors have been driven from the coal is pushed from the retorts by hand-operated pushing machines and discharged into receiving hoppers supported from the floor in the rear of the benches, where it is quenched by means of water sprayed onto the outside surfaces of the coke, which water, of course, immediately vaporizes, forming steam, which acts as the principal quenching and cooling agent for the hot coke.

After the coke is discharged, the rear mouthpiece door of the retort is closed and a fresh charge of coal shoveled into the retort, after which the front door is then sealed and the gas-making process continued.

The new plant contains four benches, each bench consisting of six retorts, and the charge of coal is varied from 400 to 600 lb., according to the demands of the plant, the condition of the heats of the benches and other operating features which must be carefully considered.

From every ton of coal charged into the retorts it is estimated that there will be produced 10,000 cu. ft. of gas, 10 gal. of tar, 4½ lbs. of ammonia and about 1,300 lbs. of coke, about 300 lbs. of which is required to heat the benches for each ton of coal carbonized.

The gas, tar and ammonia all pass in vapor form through the ascension or standpipes into the hydraulic mains which are provided with a water seal to prevent the return of the gas to the retorts when the lids are opened for discharging the coke and refilling with coal.

It is essential that the gas be taken from the hydraulic mains as rapidly as it is produced in order that no back pressure may be caused in the retorts which would result in a loss of gas made, as the same would leak through the walls of the retorts into the combustion chambers, where the furnace gas is burned for heating the retorts, and consumed there.

In order to draw the gas from the hydraulic mains, an exhauster of the positive blower type is provided which machine is driven by a steam engine.

As the amount of gas made fluctuates from time to time, owing to the freshness of new charges or retorts being opened for discharging and filling, it is necessary that this exhauster shall be driven at proper speed to maintain a practical constant inlet pressure at the exhauster regardless of the volume of gas made.

This regulation is secured by means of a gas float actuated by a steam regulating valve at the exhauster engine, so that the machine automatically increases or reduces its speed according to the demands reflected from the gas float, which is in turn connected to the main gas inlet pipe leading to the exhauster.

The gas, when it passes the exhauster, is heated, and in order to recover the tarry and other liquids carried in vapor form, the gas is cooled after passing the exhauster in condensers.

This condenser is a large steel tank 6 ft. in diameter and 19 ft. high, and is fitted with a large number of 3-in. tubes.

The gas passes inside of the shell but around the tubes, and water passes through the tubes, flowing in the opposite direction to the passage of the gas, so that the gas is rapidly reduced in temperature to about 60 deg. Fahr., to permit the proper recovery of tar and ammonia.

The next apparatus in series is a tar and ammonia washer,

which is a cast-iron vessel provided with baffle plate at the inlet of the gas, which baffle plate connects to a number of horizontal inverted U-shaped ducts which are provided with serrated edges.

The lower edge of these ducts is immersed in water, and the gas is obliged to bubble through the water in minutely divided streams caused by the serrated edges, which arrangement insures thorough washing of gases.

The tar is partly condensed from the gas in the condenser above described, and the remaining injurious tar is removed in the tar and ammonia washer by active contact with the washing liquid.

After the tar and ammonia washer is located, the ammonia scrubber, which is a large steel shell placed in vertical position, and the inside of which is filled with wooden grids.

The gas enters the scrubber at the bottom of these grids and passes upward to the outlet gas connection near the top of the shell, and during the passage of gas through this shell it is subjected to intimate contact with the wetter grids, the water being fed into the top of the scrubber by an automatic flushing arrangement to insure thorough saturation of the gas.

The function of this scrubber is to remove the ammonia from the gas and water, which has a strong affinity for ammonia, is used as the scrubbing agent.

From the scrubber the gas passes to two large purifiers, which are located on the site of the old gas plant.

These purifiers are each 15 ft. in diameter and 12 ft. in height, and built for a divided gas flow to insure maximum efficiency.

Each purifier is fitted with two layers of trays suitably supported, and on these trays is placed the oxide through which the gas passes to remove the sulphurated hydrogen and other injurious impurities.

This oxide, which is frequently referred to as iron sponge, is made of fine cast-iron borings thoroughly oxidized and planer chips to make the material porous and permit passage of gas without excessive back pressure.

After the gas passes the purifiers it goes through a station meter to permit measuring the total amount of gas produced.

From the station meter, the gas passes into the main gas storage holder, which is the only part of the old plant that is used in connection with the making of coal gas.

The demands on the gas plant have grown to such an extent that the pipe lines are inadequate to supply the service during hours of excess demand, when depending entirely upon the holder pressure, and in order to improve the quality of service the new plant is provided with a high-pressure booster, which will, when operated, increase the pressure on the street mains, and thereby sufficiently increase the amount of gas which they pass to insure an adequate supply at all hours.

This booster will only be operated during hours of peak demands.

All of the apparatus is connected together by means of ten cast-iron pipes, and each piece of machinery is also provided with by-pass valve connections so as to permit shutting down any individual piece without interfering seriously with the operation of the plant for the time necessary to make replacements or repairs.

The water which is used in the washer and scrubber for treating the gas passes into a large concrete sealed tank or basin, and ammonia contained in same is then treated in an ammonia concentrator or still so as to prepare this product for the market.

The concentrated liquor as it comes from the still is stored in a large steel tank of 12,000 gal. capacity until a sufficient amount has been made to permit shipment to the refiners in tank cars.

The tar which is recovered at various points throughout the plant passes into a large receiving well, where it is stored until shipment is made.

For the operation of the exhauster engine, tar and liquor pumps and ammonia concentrator, a considerable amount of steam is required. To provide for same, the plant is equipped with duplicate boilers so as to insure an adequate supply at all times, not only for the operation of the plant, but for the heating of the building and the water in the gas storage holder tanks during the cold weather.

The coke used in the generators for heating the retorts is handled directly from the retorts by means of a hot coke chute, which operates on overhead tracks feeding directly into the furnaces, thus assuring highest efficiency from the coke used for this purpose.

The coke which is not required in the operation of the plant will be sold to the public of Bellefontaine.

The coke which is made for sale, after being quenched in the quenching chutes, is discharged into industrial cars, which are propelled by means of cable haul to a high coke trestle.

These cars are equipped with automatic dumping doors, so that the operator at the furnace floor will be able to discharge cars at any point desired within the limits of the trestle, and it is probable that within a short time a screening plant will be provided for cleansing and sorting the various sized coke.

The plans prepared for this plant contemplate at a future time the installation of a coal-handling apparatus for minimizing the labor in unloading the cars of coal as they may be received and placing the coal in storage, and provision is also made in the existing retort house by the installation of an extra arch for six additional retorts, and this generating capacity may be still further extended by the addition of other benches as they may be required from time to time until the present capacity of the plant is more than doubled.

The retort house is of steel framing, the sides and roof being covered with corrugated asbestos cement.

The design of this building represents the most advanced ideas of retort-house buildings, insuring well-lighted and well-ventilated working quarters for the men, offering unusual facilities for extension, and being absolutely fireproof and practically indestructible.

All floors within the building are neatly and substantially paved with cement.

V

MODEL PROVISIONS RESPECTING FRANCHISES AND THE CONTROL OF PUBLIC UTILITIES IN THE NEW CHARTER OF THE CITY OF KALAMAZOO

The injustice under which the people of Kalamazoo suffered from the domination of the city by the public utility companies finally resulted in public meetings and conferences of the most progressive citizens. Some of the best experts of the country were employed to investigate the situation and to become informed concerning various progressive measures adopted by other leading cities. They also came in touch with the most desirable literature on civic administration.

Meantime a "New Charter League" was formed for the purpose of revising the existing charter and presenting necessary amendments to the people for ratification. It soon became apparent that progress could be made most easily by making an entirely new charter which was adopted by unanimous vote of the "Charter Commission," October 15, 1917 and approved by the governor the same month. This charter was presented to the people for their adoption or rejection at a special election February 4, 1918, after its provisions had been thoroughly discussed through the press and at numerous public meetings. The vote resulted in the unanimous adoption of the new charter.

The city now has a commission form of government with six commissioners and a city manager in the place of the former administration by a mayor and board of aldermen. Although only a few months have elapsed since the inauguration of the new system, tremendous progress has been manifested in that the city is now practically free from the old regime of ignorant, inefficient, and often corrupt rule for which the public service corporations had at times been responsible.

The author recommends that cities contemplating a charter revision procure copies of this charter for examination, it having been the result of long and careful study on the part of able and progressive men. Briefly, the following are some of its advantageous provisions:

Commission form of government with city manager; initiative,

referendum and recall; election of the city commission by proportional representation; and civil service for the selection of employees.

The special provisions relative to public utilities are as follows:

FRANCHISES AND PUBLIC UTILITIES,

Power to Grant Franchises.

SECTION 144. The power to grant irrevocable franchises for any public utility, enterprise or service, and to renew, amend and extend the same, shall be exercised by ordinance only, which ordinance shall not become effective until it shall have:

(a) Been passed by the City Commission.

(b) Been unconditionally accepted in writing by the grantee.

(c) Been published in full, together with the grantee's acceptance, in a daily newspaper of the city, at least once a week for five consecutive weeks, the last insertion to be made within the week immediately preceding the date of the popular vote.

(d) Received the affirmative vote of three-fifths of the electors of said city, voting thereon at a regular or special election, and upon such propositions women taxpayers having the qualifications of male electors shall be entitled to vote.

Revocable Permits.

SECTION 145. Permits, revocable at the will of the City Commission, for such minor or temporary public utility privileges as may be specified by general ordinance may be granted and revoked by the City Commission from time to time in accordance with the terms and conditions to be prescribed thereby; and such permits shall not be deemed to be franchises as the term is used in this charter. Such general ordinance, however, shall be subject to referendum as provided in section 58 of this charter and shall not be passed as an emergency measure.

Time Limitations and Term.

SECTION 146. No ordinance granting or renewing a franchise shall be adopted by the City Commission within sixty days after application therefor has been filed, nor shall a franchise ordinance be submitted to the electors of the city until after the expiration of sixty days after its preparation and adoption by the City Commission and the grantee has filed with the City Commission its unconditional acceptance of the proposed franchise or renewal if granted by the electorate. No franchise shall be renewed before three years prior to its expiration. No franchise shall be granted for a longer term than thirty years, and every amendment and alteration thereof, and all rights thereunder, shall expire at the same time as the original grant, unless a shorter term has been prescribed in the amendment or alteration.

Right of the City to Purchase or Condemn.

SECTION 147. Every franchise or renewal thereof shall reserve to the city the right to purchase or lease all the property of the utility, enterprise or service used in or useful for the operation of such utility, enterprise or service at a price either fixed in the ordinance or to be fixed in the manner provided by the ordinance granting the franchise or renewal, which price shall not include or be affected by the value of the franchise or good will or profits to be earned on pending contracts or any other intangible element. Nothing in such ordinance shall prevent the city from acquiring the property of any such utility, enterprise or service by condemnation proceedings, or in any other lawful mode; and all such methods of acquisition shall be alternative to the power of purchase reserved in the franchise or renewal as herein provided. Upon the acquisition by the city of the property of any utility, enterprise or service by purchase, condemnation or otherwise, all franchises or renewals, and all rights thereunder, shall at once terminate. The power of the city to purchase or condemn the franchises and property of any utility, enterprise or service, as hereinbefore provided, shall apply to existing franchises.

Rights of the City.

SECTION 148. All grants, renewals or amendments of the franchises of any public utility, enterprise or service shall contain a clause subjecting them to all the provisions of this charter, and, whether so provided in the ordinance or not, shall be subject to the right of the city:

(a) To repeal the same by resolution at any time for misuse, non-use, or failure to begin construction within the time prescribed, or otherwise to comply with the terms prescribed.

(b) To require proper and adequate extensions of plant and service, and the maintenance of the plant and fixtures at the highest practicable standard of efficiency.

(c) To fix the maximum rate of charge to the public for the service furnished, and to readjust such rate of charge at intervals to be fixed by said ordinance, but not oftener than once in five years; and to establish and enforce reasonable standards of service and quality of products: Provided, that no rate of charge shall ever be fixed above the maximum named in the franchise.

(d) To prescribe the form of accounts for, and at any time to examine and audit the accounts and records of, any such utility, and to require annual and other reports by each such utility, covering whatever subjects or items (relating to its ownership, conduct, operation, debts or profits) which the City Commission shall specify. The City Commission shall have access to the plants, works or other property of any such utility.

(e) To impose such other regulations as may be conducive to the safety, welfare and accommodation of the public.

Assignment of Franchises.

SECTION 149. No franchise granted by the City Commission shall ever be leased, assigned or otherwise alienated except in accordance with the express provisions of said franchise, and all franchises granted by the City Commission shall provide how and in what manner and under what conditions said franchise may be leased, assigned or alienated.

City to Control and Regulate Use of Streets.

SECTION 150. The right is hereby reserved to the city to use, control and regulate the use of its streets, alleys, bridges and public places, and the space above and beneath them. Every franchise for the operation of a public utility, enterprise or service occupying the streets, alleys, bridges or public places of the city, or the space above or beneath them, shall be subject to the limitation that the city may permit the joint use of the property of such public utility, enterprise or service located in the streets, alleys, bridges or public places of the city by any other public utility, enterprise or service, of the city, on such reasonable terms as it may impose, and upon payment of a reasonable compensation to the owner thereof. If the owner of such property and the one desiring such joint use are not able to agree on such terms and compensation for the use thereof within sixty days from the time of opening negotiations therefor, then the City Commission shall, by ordinance, after a fair hearing, fix the terms and conditions of such joint use and compensation, which award of the City Commission when so made shall be binding and final and observed by all parties concerned.

Pavement of Streets by Street Railway.

SECTION 151. No franchise shall be granted or renewed for street railway purposes except the same shall contain a condition that the grantee, its successors and assigns, shall, as the City Commission may direct, pave and keep in repair the street or streets on which its tracks are located, or shall be located, between the outer rails of the track or tracks, and for a space outside of said rails of eighteen inches, in such manner and with such materials as the City Commission may order, and shall re-pave any such parts of streets as often as the City Commission shall deem necessary and so order; and every such franchise or renewal shall contain a requirement that every pavement torn up or damaged by the grantee, its successors or assigns, in the work of constructing or repairing such tracks shall be replaced at the sole expense of such grantee, its successors or assigns, in as good condition and with the same kind of material.

Value to be Fixed and Determined.

SECTION 152. Every franchise hereafter granted or renewed shall provide that before the franchise becomes operative the value of the property of the utility, enterprise or service within the city, and of such portion of the property beyond the city limits as is actually or necessarily used in, belonging to and a part of the local service, and which the city may own and operate under the constitution and general laws of the State, shall be fixed and determined: Provided, that such value shall not include or be affected by the value of the franchise, or good will, or profits to be earned on pending contracts, or any other intangible element.

Payment for Public Improvements.

SECTION 153. All utility grantees, their successors or assigns, using the streets, alleys, bridges or public grounds, or the space over or under the same, shall pay such part of the improvements, repairs, rebuilding and maintenance of the streets, alleys, bridges and public grounds, on, over or under which its wires, pipes, conduits or poles are located as the City Commission shall by resolution in each case determine.

Cost of Special Franchise Election.

SECTION 154. No franchise shall be submitted to the electors of the city at a special election unless the expense of holding the election, as determined by the City Commission, shall be paid in advance to the City Treasurer by the grantee of said franchise.

Power of City to Compel Resumption of Service.

SECTION 155. Whenever any public service corporation operating in the city shall fail in the opinion of the City Commission to render adequate service it shall be the duty of the City Attorney, when so instructed by the City Commission, at the expense and in the name of the city, to forthwith institute mandamus or other appropriate proceedings to compel resumption of service.

Power of City Commission to Regulate Rates.

SECTION 156. The City Commission shall have the power and authority to regulate the rates of all public utility companies using the streets, alleys or public places of the City of Kalamazoo in all cases in which the franchise rights of such utility companies have expired or at the expiration of any franchise hereafter.

Power of City to Acquire and Operate Utilities.

SECTION 157. The City of Kalamazoo shall have and it is hereby given the right and power to acquire, construct, own, operate and maintain, either within or without its corporate limits, any public utility, enterprise or service, as the City Commission may from time to time determine and designate, and to acquire all property, real and personal, necessary therefor, and to maintain and operate the same, or to lease the same, or any part thereof, to other corporations or individuals for the purpose of maintenance and operation. Said city may also sell and deliver the products of service of any such utility or enterprise as it is now or may be hereafter authorized to do by the laws of the State.

City May Issue Its Mortgage Bonds.

SECTION 158. To acquire, construct, own, operate or maintain any public utility, enterprise or service the city may issue its mortgage bonds therefor beyond the limit of general bonded indebtedness prescribed by law, and subject only to the conditions and limitations now or hereafter contained in the constitution and the laws of the State.

Procedure to Acquire Utility.

SECTION 159. The City Commission by ordinance may prescribe, or the people by ordinance duly initiated and approved under the provisions of this charter, may prescribe the procedure to acquire any public utility, enterprise or service.

Accounts of Municipally Owned Utilities.

SECTION 160. Accounts shall be kept for each public utility owned or operated by the city, distinct from other city accounts, and in such manner as to show the true and complete financial result of such ownership, or ownership and operation, including all assets, liabilities, revenues and expenses. Such accounts shall show the actual cost to the city of each public utility owned; all expenses of maintenance; the cost of all extensions, additions and improvements; the amounts set aside for sinking fund purposes, and in the case of city operation, all operating expenses of every description. The accounts shall show as nearly as possible the value of any service furnished to or rendered by any such public utility by or to any other city or governmental department. The accounts shall also show a proper allowance for depreciation, insurance and interest on the investment on other than invested profits of the utility and estimates of the amount of taxes that would be chargeable against the property if privately owned. The City Commission shall annually cause to be made and printed for public distribution a report showing the financial results of such city ownership, or owner-

ship and operation, which report shall give the information specified in this section and such other information as the City Commission shall direct.

VI

BRIEF

Resolved That Public Utilities Should Be Publicly Owned and Operated

INTRODUCTION

1. It is granted that conditions and results of present monopolistic system are unsatisfactory.
2. Public utilities should be developed for the benefit of the people and protected from monopoly by large corporations.
3. The question therefore becomes:
    1. Has the public the paramount right to own and operate public utilities?
    2. Under whose control is it more expedient to own and operate gas plants?

THE ARGUMENT

I

The Right to Own and Operate Public Utilities Is a Fundamental Right of Government.

1. The services performed by public utilities are of a public nature.
2. That the public has the right to control and operate other public utilities than gas plants, such as the post office, water works, sewers, parks, schools, etc., has been demonstrated.

II

It Is the Duty as Well as the Right of Our Government, National, State and Municipal, to Take Over and Operate All Utilities of a Public Nature, Because:

Democracy, the public welfare, social justice, good government and the national defense are involved and require it.

III

Public Services Must Be Monopolistic in Order to Be Efficient, and if Controlled by Private Corporations, Such Corporations

1. May become sufficiently strong under private control to be independent of government.

2. May usurp the powers of government.
3. May tend to control legislative and regulative bodies, who, therefore represent the corporations and not the people.
4. May become a social menace.

IV

A Private Monopoly Is Always Objectionable.

1. Private financiers encroach upon the government domain.
2. Public utilities are too closely related to politics.
3. Legislative corruption possible through corporation bribes.
4. Stock heavily watered.
5. Charges under private monopoly inequitable.

V

Public Ownership Is More Efficient, and Supplies the Public at Lower Rates.

1. Each employee is a partner, and the sole motive is to render justice and service to both employees and the public; while under private ownership the sole motive is profit for the financiers only.
2. Public ownership is conducted openly, while private ownership is conducted secretly, and is accompanied with records and accounts which are always misleading, and often flagrantly false.
3. Efficient service guaranteed by success of streets, sewers, schools, water works, etc.
4. Reduction of management and of operating cost can be accomplished through
    1. Elimination of necessity of dividends on watered stock.
    2. Elimination of expenses to influence legislation.
    3. Elimination of advertising bills.
    4. Elimination of insurance expense.
    5. Elimination of extravagant salaries to directors.
    6. Elimination of fraudulent bookkeeping by enforced publicity of accounts.
    7. Decrease in cost of material and of interest on money employed by co-operation with national Government, and elimination of profits made through interlocking directorates.
5. Municipal service furnished at cost, or at modest profit would make possible
    1. Cheaper rates.
    2. More general use in homes and in commercial lines.
    3. Reduced expenses for city lighting.
6. Municipal ownership of gas plants in other countries has resulted in

1. Greater use of gas for domestic and industrial purposes.
2. Better quality of gas furnished.
3. Gas produced at less cost.
4. Higher wages paid employees, on the average.
5. More gas and by-products obtained from ton of coal.
6. Gas and coke sold the people at lower rate.
8. More substantial and artistic plants.
7. General taxation relieved by net profits.
9. Better working conditions.
10. More adequate lighting in public places.
11. Demand for accuracy of accounts and publication of same.
12. Greater democratic spirit manifested.

7. Capital easily secured by city government.
   1. No taxes.
   2. Low interest.
   3. Bonds issued for adequate time and paid from profits.

VII

CONSTITUTION OF THE PUBLIC OWNERSHIP LEAGUE OF AMERICA

Article I

Name and Purpose

This organization shall be known as the Public Ownership League of America.

The public ownership and operation of public utilities and natural resources being a function of government and necessary for securing democracy, social justice and good government, it is the purpose of this league to promote the public ownership, efficient management and democratic control of public utilities and natural resources—municipal, state and national—as rapidly and as far as may be practical and consistent with the public welfare; all to be operated with justice both to the public and the employee.

To effect this purpose, the League will secure, classify and disseminate information relating to those subjects by all proper means and methods.

The League, being non-partisan, shall not officially endorse any political party or its candidates, but each member shall be free to act politically as his judgment may dictate.

Article II

Officers and Committees

The officers of this League shall be a president, seven vice-presidents, a secretary and a treasurer, who with the exception of the secretary shall be elected at the annual meeting and serve for one year or until their successors are elected.

There shall also be elected at each annual meeting an Executive Committee of five members; and a Finance Committee of five or more members may be appointed by the president. The members of the Finance Committees and the officers of the League shall also be ex-officio members of the Executive Committee. Five members shall constitute a quorum of the Executive Committee.

The Executive Committee shall direct and supervise the work of the League, shall elect the secretary, fix his compensation, direct and supervise his work, and shall have the power to fill any vacancies of officers or members of committees until successors are elected; and may also increase the membership of any committee or the number of vice-presidents until the next annual meeting. It shall also elect any special committees that in its judgment are required from time to time, and shall perform all other duties which usually pertain to such committee.

In recognition of special service rendered in advancing the purposes of this League, the Executive Committee may elect honorary members and officers, as it may find desirable.

Article III

Membership

Any person in accord with the objects and principles of this League may become a member by filing a signed application with the secretary and paying the membership fee, subject to the approval of the Executive Committee. There shall be three types of members: (1) associate members, paying $2.00 membership fee per year; (2) regular members, paying $5.00 per year; and (3) contributing members, paying $10.00 or more per year.

The regular and contributing members shall be entitled to all publications and bulletins of the League and to such other services as the League may render its members. The associate members shall be entitled to similar service in proportion to their fees and contributions. All members shall be entitled to attend and to have a voice and a vote in all meetings of the League.

Article IV

Meeting

An annual meeting of the League shall be held each year for the election of officers and for the transaction of all other business, which may properly come before such meeting. The meetings shall be called at such time and place as the Executive Committee shall direct. Special meetings of the League may also be called by the president with the approval of the Executive Committee or upon the written application of fifty members, all members to be notified in advance by mail of each regular or special meeting.

Article V

Local Organizations and Affiliated Bodies

Local organizations of the League may be formed subject to the approval of the Executive Committee whenever a sufficient number of members can be secured to make such organization practical. The National League shall encourage the formation of such local organization which shall have full control of their own local affairs, fix their own dues, and shall take out and maintain at least five memberships in the National organization and as many more as they are able. Such local organizations shall be entitled to as many votes in the meetings of the League as they have paid up memberships, Local municipal or public ownership leagues already formed and other organizations in accord with the objects of this League may, subject to the approval of the Executive Committee, join upon the same basis as above.

Article VI

Information Service

The League shall conduct an information service, the purpose of which shall be to collect through research, and to classify and make available data and information on the subject of public ownership throughout the world. It shall be the aim of this service to supply the members of the League and affiliated organizations, public officials and others desiring it, reliable information bearing upon the public ownership of public utilities.

Article VII

Amendments

This constitution may be amended at any regular or special meeting of the League.

Application for Membership

Public Ownership League of America,
1437 Unity Building,
127 N. Dearborn Street,
Chicago, Illinois.

Approving the purposes of your League, I hereby apply for membership in the same and enclose herewith_____

(P. O. order or check)

$_____for the class indicated by the amount of this payment as per the various rates noted herewith.

Yearly membership fees:

Associate, $2.00

Active, $5.00.

Contributing, $10 and upwards.

Name _____

No. and Street_____

City and State_____